

**Louisiana Association of Professional Biologists
and the
The Wildlife Society Louisiana Chapter**

*2013 Fall Symposium on
Recent Natural Resource Research in Louisiana*

*with a Focus Session on
River Diversions and Restoration*

August 15th and 16th

Waddill Outdoor Education Center, 4141 North Flannery,
Baton Rouge, LA 70814

LAPB 2013 Fall Symposium: Oral Presentations

Thursday, 15 August 2013

- 8:00-8:40 Coffee
- 8:40-8:50 Welcome
- 8:50-9:10 **INTERACTING EFFECTS OF NUTRIENT ENRICHMENT AND SIMULATED HERBIVORY ON METHANE EMISSIONS AND METHANE ASSOCIATED MICROBIAL COMMUNITIES IN FRESHWATER MESOCOSMS.** *Anthony Rietl.* LSU AgCenter, School of Renewable Natural Resources, Baton Rouge, LA
- 9:10-9:30 **DISEASES AND PARASITES IN LOUISIANA'S BLUE CRAB (*CALLINECTES SAPIDUS*) POPULATIONS.** *Holly A. Rogers and Julie A. Anderson.* LSU AgCenter and Louisiana Sea Grant College Program, Baton Rouge, LA
- 9:30-9:50 **DISTRIBUTION AND ABUNDANCE OF ALLIGATOR SNAPPING TURTLES (*MACROCHELYS TEMMINCKII*) IN SOUTHWESTERN LOUISIANA.** *Cybil C. Huntzinger¹, Irvin Louque¹, Eddie K. Lyons¹, Will Selman².* ¹Harold and Pearl Dripps Department of Agricultural Sciences, McNeese State University, Lake Charles, LA. ²Rockefeller State Wildlife Refuge, Louisiana Department of Wildlife and Fisheries, Grand Chenier, LA.
- 9:50-10:10 **PIPING PLOVER (*CHARADRIUS MELODUS*) AND BENTHIC MACROINVERTEBRATE COMMUNITY RESPONSE AND RECOVERY RATES FOLLOWING BEACH NOURISHMENT.** *Jessica L. Schulz¹, Clinton Jeske², Paul L. Leberg¹.* ¹University of Louisiana at Lafayette, Department of Biology, Lafayette, LA. ²United States Geological Survey, National Wetlands Research Center, 700 Cajundome Boulevard, Lafayette, LA
- 10:10-10:30 (break)
- 10:30-10:50 **THE SABINE MAP TURTLE (*GRAPTEMYS SABINENSIS*) IN SOUTHWESTERN LOUISIANA: A COMPARISON OF POPULATIONS AND MORPHOLOGY IN THREE RIVER SYSTEMS.** *Irvin Louque¹, Cybil C. Huntzinger¹, Eddie K. Lyons¹, Will Selman².* ¹Harold and Pearl Dripps Department of Agricultural Sciences, McNeese State University, Lake Charles, LA. ²Rockefeller State Wildlife Refuge, Louisiana Department of Wildlife and Fisheries, Grand Chenier, LA.
- 10:50-11:10 **INFLUENCE OF BARRIER ISLAND LOSS ON THE DISTRIBUTION AND SURVIVAL OF BROWN PELICANS IN COASTAL LOUISIANA.** *Kristen Wakeland, Scott T. Walter, Jordan Karubian, and Paul L. Leberg.* University of Louisiana at Lafayette, Department of Biology, Lafayette, LA

11:10-11:30 **DEVELOPMENT OF ALTERNATIVE BAIT FOR THE LOUISIANA COMMERCIAL BLUE CRAB FISHERY.** *A. Nikki Anderson and Julie A. Anderson.* LSU AgCenter and Louisiana Sea Grant College Program, Baton Rouge, LA

11:30-1:30 (lunch on your own)

1:30-1:50 **FLUOROMETRIC APPROACH FOR RAPID ESTIMATION OF BIOCHEMICAL OXYGEN DEMAND.** *Zhen Xu and Y. Jun Xu.* LSU AgCenter, School of Renewable Natural Resources, Baton Rouge, LA

1:50-2:10 **AQUATIC HERPETOFAUNA OF BOTTOMLAND HARDWOOD FORESTS ON BOEUF WILDLIFE MANAGEMENT AREA IN NORTHEASTERN LOUISIANA.** *Clayton Faidley and John L. Carr.* Department of Biology, College of Arts and Sciences, The University of Louisiana at Monroe, Monroe, LA

2:10-2:30 **USING CITIZEN SCIENCE TO MONITOR LOUISIANA'S BIRD POPULATIONS: AN INTRODUCTION TO THE BLUEBONNET BIRD MONITORING PROGRAM.** *Jared Wolfe¹ and Erik Johnson².*
¹LSU AgCenter, School of Renewable Natural Resources, Baton Rouge, LA, and ²National Audubon Society, Baton Rouge, LA.

2:30-2:50 **FORMATION AND MAINTENANCE OF HUMMOCK-HOLLOW TOPOGRAPHY: AN ECO-HYDROLOGICAL ANALYSIS.** *Yu-Hsin Hsueh.* School of Renewable Natural Resources, Louisiana State University

2:50-3:10 **STORM SURGE INFLUENCE ON POREWATER SALINITY AND CONSEQUENCES FOR WETLAND PLANTS.** *Morgan McKee, John White, Lorna Putnam-Duhon.* Department of Oceanography and Coastal Sciences, LSU, Baton Rouge, LA.

3:10-3:20 **(break)**

3:20-4:20 **LAPB Fall Business Meeting**

4:20-7:00 **Social** (Fried Catfish, Orzo Salad, French Fries, Brownies)

LAPB 2013 Fall Symposium: Poster Presentations and Focus Session

Friday, 16 August 2013

- 8:00-9:40 **POSTER SESSION**
- 9:40-9:50 **Opening Remarks to Focus Session on River Diversions and Wetland Restoration.**
- 9:50-10:10 **RIVER DIVERSIONS: GEOLOGIC BOUNDARY CONDITIONS AND OTHER CONSIDERATIONS.** *Harry Roberts*, Louisiana State University, Department of Geology and Geophysics, Baton Rouge, LA.
- 10:10-10:30 **RIVER DIVERSIONS AND COASTAL RESTORATION.** Chris Swarzenski, U.S. Geological Service, Baton Rouge, LA
- 10:30-10:50 **BENEFITS OF SEDIMENT DIVERSION TO COASTAL WETLANDS: THE WAX LAKE DELTA MODEL.** *John White*. Louisiana State University, Department of Oceanography, Baton Rouge, LA.
- 10:50-11:10 **RIVER DIVERSIONS AND WETLAND RESTORATION.** *John Day*. Louisiana State University, Department of Oceanography, Baton Rouge, LA
- 11:10-11:30 **CONSTRUCTED DIVERSIONS: WETLAND GAIN OR LOSS?** *Gene Turner*. Louisiana State University, Department of Oceanography, Baton Rouge, LA
- 11:30-11:50 **RIVER DIVERSIONS, DISTURBANCE, AND THE DELTA LOBE CYCLE.** *Andy Nyman*. LSU AgCenter, School of Renewable Natural Resources, Baton Rouge, LA.
- 11:50-12:10 Presentation of Poster Award and Closing Comments

**Presentation Abstracts
Louisiana Association of Professional Biologists
2013 Fall Symposium**

**DEVELOPMENT OF ALTERNATIVE BAIT FOR THE LOUISIANA
COMMERCIAL BLUE CRAB FISHERY**

A. NIKKI ANDERSON and JULIE A. ANDERSON

Louisiana State University Agricultural Center and Louisiana Sea Grant College Program, Baton Rouge, LA 70803

The blue crab (*Callinectes sapidus*) is a commercially and recreationally important species in Louisiana's coastal waters, with 19 thousand metric tons valued at \$36 million landed in Louisiana in 2011. Atlantic menhaden (*Brevoortia tyrannus*) is the dominant bait used in the northern Gulf of Mexico, but management concerns regarding Atlantic menhaden stock abundance has resulted in a 20% decrease in total allowable catch beginning in 2013. Decreased landings increase bait costs for the blue crab industry, providing the impetus for development of a new cost-effective alternative bait. Such bait could be based on attractants produced from waste products associated with the fisheries processing industry, particularly penaeid shrimp. Over 40 thousand metric tons of shrimp are landed annually in Louisiana, and the shrimp cephalothorax, which accounts for approximately 34% of the total biomass, could provide an effective attractant in an alternative bait formulation. In laboratory choice bioassays, blue crabs responded favorably to an alginate-based bait created with ground shrimp waste as the attractant. Field trials conducted under three temperature regimes demonstrated the bait can be fished for the same amount of time as the current bait used by commercial crabbers. Additionally, the alternative bait diffuses proteins, which stimulate feeding in crabs, at levels higher than or similar to natural bait. Interviews conducted with commercial fishers indicate the industry is willing to use an economically-viable alternative bait, which would benefit blue crab fishermen, help protect Atlantic menhaden stocks, and provide a new value-added product for shrimp processors.

**DOCUMENTING AND QUANTIFYING FERAL PIG DAMAGE IN MARSHES OF
SOUTH LOUISIANA.**

ANTHONY BALLARD¹, EDMOND MOUTON², KIM MARIE TOLSON¹, and Dr. JAMES LACOUR²

¹Department of Biology, University of Louisiana Monroe

²Louisiana Department of Wildlife and Fisheries.

Feral pigs (*Sus scrofa*) were originally introduced to North America by Spanish explorers in the 1500s along the coast of Florida and now occupy no less than 36 states. In addition to competition with a number of native species, they are responsible for the extensive

degradation of aquatic and terrestrial habitats nationwide. The mosaic of terrestrial and aquatic habitat present in Louisiana's marshes is a unique and sensitive ecosystem that could suffer adverse effects by the encroachment of feral pigs. This project aims to document and quantify feral pig damage in Louisiana's marsh habitats. The study area is a 498,000 acre block of land in Terrebonne Parish in southern Louisiana. This particular area was selected because it exhibits all four marsh types found in the coastal marshes of the southeastern United States (fresh, intermediate, brackish, and salt). Damage in this site was identified by flying seventeen north-south transects by helicopter. The transects were flown 1.77 miles apart and covered a total observation width of .5 mi (.25 mi on each side). Seventeen total damage sites were detected over the entire study area. All sites were restricted to freshwater marsh and were concentrated in the northwestern quadrant of the study area, with damage site sizes ranging from 3 to 76.2 acres in size. In total, 227.5 acres of damage were detected over the 141,640 total acres observed along the transect lines. Since all damage sites found along the transect lines were located in freshwater marsh, extrapolation methods were used only within this category. Assuming equal distribution and occupancy of feral pigs in this area, we estimate that damage could meet or exceed 796 total acres within the freshwater marsh alone. Since feral pigs have been documented in intermediate, brackish, and salt marsh types, we realize that total acres of damage within the study area could rise significantly as encroachment into the marsh continues.

USING CITIZEN SCIENCE SURVEY DATA FROM THE LOUISIANA WINTER BIRD ATLAS TO DETERMINE LANDSCAPE-SCALE HABITAT ASSOCIATIONS OF RUSTY BLACKBIRDS (*EUPHAGUS CAROLINUS*)

SINEAD M. BORCHERT and PHILIP C. STOUFFER

School of Renewable Natural Resources, Louisiana State University, Baton Rouge, LA 70803

The global Rusty Blackbird population has experienced a dramatic decline of as much as 93%, probably due in part to forested wetland loss and degradation in the wintering range, which includes Louisiana. Previous studies have considered Rusty Blackbird habitat characteristics at smaller, local scales of 100 m or less around survey sites, but land cover preferences at the landscape level remain relatively unexplored. In order to provide appropriate management recommendations, it is essential to determine which land cover variables are related to abundance. Using the 2006 National Land Cover Database land cover data layer and the 2010 USDA National Agricultural Statistics Service cropland data layer, we analyzed the habitat composition of USGS 7.5-minute quadrangle survey units throughout the state in ArcGIS. We compared land cover percentages with Rusty Blackbird abundance data from the same quadrangles collected in 2007 – 2013 through the Louisiana Winter Bird Atlas. These data allow us to map hotspots of bird abundance. Using information-theoretic model selection, we can determine the cover variables that best explain Rusty Blackbird abundance. With this information, we can describe larger-scale habitat requirements and target management to the appropriate spatial scale.

TRAP SUCCESS AND DISTRIBUTION OF RAZORBACK MUSK TURTLES (*STERNOTHERUS CARINATUS*) IN SOUTHWESTERN LOUISIANA

KATIE M. CANTRELLE¹, CYBIL C. HUNTZINGER¹, IRVIN J. LOUQUE¹, JESSE L. EAKER¹, EDDIE K. LYONS¹, and WILL SELMAN²

¹Harold and Pearl Dripps Department of Agricultural Sciences, McNeese State University, Lake Charles, Louisiana 70609

²Rockefeller Wildlife Refuge, Louisiana Department of Wildlife and Fisheries

Razorback musk turtles (*Sternotherus carinatus*) are a common species throughout the state of Louisiana. They are found in wide flowing streams but also have been found in smaller cuts and bayous. From 28 May through 25 July 2013, we trapped in the Mermentau and Calcasieu watersheds for a total of 197 trap nights using hoop nets and modified crab traps. Traps were set for 1 to 3 trap nights and checked daily. Trapped turtles were aged, sexed, measured, and marked before being released to calculate turtles per trap night (TTN). Modified crab traps had more success than hoop nets; 0.64 compared to 0.18 TTN, respectively. Previously, the southern range of *S. carinatus* in Louisiana stopped at Mermentau, LA. Through our trapping efforts, the range was extended 32.5-river km south into Cameron Parish (30.0292864° N, 92.7706999° WGS84).

BAIRD'S POCKET GOPHER (*GEOMYS BREVICEPS*) HABITAT CHARACTERISTICS AND RELATIONSHIP WITH THE LOUISIANA PINE SNAKE (*PITUOPHIS RUTHVENI*)

B.S. COOPER¹, C.A. MELDER², S.E. CARNAHAN², and S.E. PEARCE³

¹U.S. Fish and Wildlife Service, Fort Polk, Louisiana

²CEMML, Colorado State University, Fort Polk, Louisiana

³DPW, ENRMD, Conservation Branch, Fort Polk, Louisiana

The purpose of this project is to examine the ecology of Baird's Pocket Gopher (*Geomys breviceps*) and its relationship with Louisiana pine snake (*Pituophis ruthveni* Stull) through habitat characteristic sampling and radio telemetry efforts on Fort Polk Military Installation. Gopher complexes (n = 340) were located and recorded by UTM. Forty-five random complexes were chosen and habitat characteristics were collected. Soil series was determined by NRCS soil maps and soil texture was calculated using a soil pyramid. Vegetation was sampled by the Daubenmire Method. This included means for Woody cover (2.7 %), Grass cover (18.18 %), Forb cover (10.69 %), and Bare cover (30.49 %). The other collected variables means include: Slope (8.41 %), Aspect (173.71 °), Total logs (11.29), Pine logs (10.51), Hardwood logs (0.78), Total gopher mounds (56.80), Burrows (0.22), Total basal area (87.44), Canopy pine basal area (78.67), Canopy hardwood basal area (5.33), Midstory pine basal area (3.00), Midstory hardwood basal area (0.44), Canopy closure (62.86 %), Clumps (5.60), Stems (16.8), Snags (0.11), Stumps (3.09), Sand (71.57 %), Loam (20.95 %), and Clay (7.48 %). Briley loamy fine sand

1-5 % slopes (n =118) and Ruston fine sandy loam 1-3 % slopes (n = 108) were the top 2 soil series (n = 340). *Toxicodendron radicans* and *Pinus palustris* were the top 2 woody species identified. *Schizachyrium scoparium* and *Dichantheium acciculare* were the top 2 grass species identified. *Pityopsis graminifolia* and *Pteridium aquilinum* were the top 2 forb species identified. Five *G. breviceps* were captured from 729.08 hrs trap time and 6 were captured after training in ~191.00 hrs of trap time. Mean mass was 81.20 g. One *G. breviceps* was implanted with a radio transmitter and tracked for 2 months. More data collection will be necessary for further comparison to controls and for LPS snake trap habitat comparison. This will also allow for a more precise Landscape Resources Selection Function Model.

DISTRIBUTION, RANGE, AND CONCENTRATION OF SABINE MAP TURTLES (*GRAPTEMYS SABINENSIS*) WITHIN THE CALCASIEU WATERSHED

JESSE L. EAKER¹, KATIE M. CANTRELLE¹, CYBIL C. HUNTZINGER¹, IRVIN J. LOUQUE¹, EDDIE K. LYONS¹, and WILL SELMAN²

¹Harold and Pearl Dripps Department of Agricultural Sciences, McNeese State University, Lake Charles, Louisiana 70609

²Rockefeller Wildlife Refuge, Louisiana Department of Wildlife and Fisheries

Sabine map turtles (*Graptemys sabinensis*) are a locally abundant species in the Calcasieu watershed, but little is known about their distribution and range within the watershed. We utilized point count surveys within the Calcasieu watershed (0530085 E, 3409925 N to 0476400 E, 3346823 N) including 6 major tributaries to identify the range of *G. sabinensis*. We recorded all turtle species observed within sight by binoculars and spotting scope. We counted 23 total Sabine map turtles, 13 females, 7 males, and 3 juveniles. The West Fork Calcasieu River (0471666 E, 335719 N) yielded the highest number of *G. sabinensis* (n = 5). Sabine map turtles accounted for 16% of the total number of all turtle species seen. The northernmost point that we observed *G. sabinensis* was at the Oakdale Dam (0530200 E, 3408269 N). The southernmost point that we observed *G. sabinensis* on the Calcasieu river main body was the salt water barrier (0479081 E, 3346944 N). The data that we have collected has expanded the most current knowledge of what was previously known about distribution, range, and concentration of *G. sabinensis* in the Calcasieu watershed.

AMPHIBIANS USING MAN-MADE POOLS, CREATED BY MILITARY ACTIVITY, ON KISATCHIE NATIONAL FOREST IN LOUISIANA

STEPHEN M. ECREMENT¹, and STEPHEN C. RICHTER²

¹Fort Polk Conservation Branch/Colorado State University – Center for the Environmental Management of Military Lands (CEMML), Fort Polk, Louisiana 71459.

² Department of Biological Sciences, Eastern Kentucky University, Richmond Kentucky 40475

Unintentionally created vernal pools may provide breeding habitat for many amphibian species. We conducted larval amphibian surveys on 48 small man-made pools, created from military maneuver training (tank defilades), on the Fort Polk Intensive Use Area of Kisatchie National Forest, Louisiana. Surveys were conducted monthly March–September 2012 and will continue through September 2013. Based on initial analyses of data we found that anuran species composition varied across the tank defilades, with environmental data appearing to explain the presence and abundance of some species (currently only two species are abundant enough for analysis). Open canopy ($p=0.013$) and a low percent slope ($p=0.02$) were positively related to abundance of Cajun Chorus Frogs (*Pseudacris fouquettei*), but not on Southern Leopard Frogs (*Rana sphenocephala*) ($p=0.72$) and ($p=0.73$). Our results show how these two species use the man-made vernal pools differently, highlighting the importance of having pools in varying conditions. The initial year of sampling (2012) confirmed tadpoles of seven anuran species in 89.6% (43 of 48) of the tank defilade pools. *P. fouquettei* and *L. sphenocephalus* were the most abundant species with a total of 2,403 and 1,985 tadpoles, respectively. *P. fouquettei* were encountered in 31 pools while *L. sphenocephalus* were encountered in 30 pools. Eastern narrow-mouthed toads (*Gastrophryne carolinensis*) were the third most abundant species and resulted in 35 individual tadpoles in four TD's. Although created unintentionally, these vernal pools now serve as suitable amphibian breeding habitat.

LIVER COPPER LEVELS IN LOUISIANA WHITE-TAILED DEER.

RACHAEL ELKHARASH¹, JAMES M. LACOUR², and KIM MARIE TOLSON¹

¹Department of Biology, College of Arts and Sciences, University of Louisiana at Monroe, Monroe, LA

²Wildlife Division, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA

White-tailed deer, *Odocoileus virginianus*, population management is essential to control the increasing number of herds across the state. In order to ascertain the health of a deer herd, biologists may conduct liver analyses to check for adequate mineral levels. Copper is a necessary mineral required for normal growth and metabolism. Copper deficiency in ruminants has been associated with poor growth weights and coats in calves, low body weights in adults, and low rate of pregnancy in herds. Micronutrient information such as copper levels, will allow biologists to determine areas that are low in copper, and in turn, adjust their management programs accordingly. The livers of 131 Louisiana white-tailed deer were collected from hunter or agency harvested animals between 2009 and 2012. Samples were analyzed to determine liver copper levels and this analysis revealed that

30% (39/131) of the deer were either marginal or deficient in liver copper levels. In the first year, 2009-2010, 63% (15/24) were marginal or deficient. In the second year, 2010-2011, 11% (2/19) were marginal or deficient, and in the third year, 2011-2012, 25% (22/87) were found to be marginal or deficient. Age, sex, and weight of the deer sampled were also recorded. Liver copper levels will be evaluated along with soil mapping data in order to develop a strategic plan for deer management in areas low in copper throughout the state.

AQUATIC HERPETOFAUNA OF BOTTOMLAND HARDWOOD FORESTS ON BOEUF WILDLIFE MANAGEMENT AREA IN NORTHEASTERN LOUISIANA

CLAYTON FAIDLEY and JOHN L. CARR.

Department of Biology, College of Arts and Sciences, The University of Louisiana at Monroe, Monroe, LA 71209

Boeuf Wildlife Management Area (BWMA) is a state-owned and managed public recreation area in Caldwell and Catahoula parishes. BWMA is one of the few remaining tracts of bottomland hardwood forest in the Mississippi Alluvial Valley of northeastern Louisiana and is important for bottomland hardwood conservation. Many reptiles and amphibians use a wide variety of water-bodies associated with bottomland hardwood forests, often using both the aquatic and terrestrial habitats at some point in their lives. Our objective is to sample the herpetofauna in a variety of water-body types and the adjoining forest to assess the relationship between herpetofaunal diversity and habitat type. Aquatic herpetofaunal surveys have been conducted at a total of 27 different localities on BWMA using non-baited aquatic drift-fences and several types of baited traps, including collapsible traps, turtle hoop-nets, minnow traps and crawfish traps. Each site also received time-constrained visual encounter surveys (VES) during each trapping season. For all sampling techniques combined, the total number of specimens recorded was 2791. Of the 38 species documented so far, the most abundant species were Blanchard's Cricket Frog (*Acris blanchardi*, 1405) for VES, Stinkpots (*Sternotherus odoratus*, 62) for aquatic drift-fences, and Red-eared Sliders (*Trachemys scripta elegans*, 167) for turtle traps. Catch-per-unit-effort (CPUE) for aquatic drift-fences was 0.241 animals/trap-night, 30.387 animals/person-hour for VES, and 0.115 animals/trap-night for all other trapping methods.

VARIATION IN GREEN HERON NESTING SUCCESS IN COASTAL LOUISIANA MARSHES

MOLLY M. FOLKERTS^{1,3}, JAMES INGOLD¹, ERIK I. JOHNSON², KAREN A. WESTPHAL², and TIMMY J. VINCENT²

¹Louisiana State University in Shreveport, One University Place, Shreveport, LA 71115

²Audubon Louisiana, National Audubon Society, 6160 Perkins Rd., Baton Rouge, LA 70808

The Green Heron (*Butorides virescens*) is an under-studied wading bird with a flexible nesting strategy, nesting colonially, solitarily, or in loose aggregations. We initiated a Green Heron banding project in 2013 at Audubon's Paul J. Rainey Wildlife Sanctuary (Vermilion Parish, Louisiana) to

determine factors that drive nesting flexibility and influence nest success. We located 244 nests between May and July by boat, measured nest-tree dimensions, and banded 142 nestlings from 71 nests. We revisited a subset of nests every 1-3 weeks, and estimated nest success to be 51.1% (n=184). Of the 244 nests, 44 occurred in trees with multiple nests, whereas the remaining nests were solitary. Nest success in multi-nest trees was 48.6% (n=35), whereas nest success in solitary trees was 51.7% (n=149), suggesting sociality may not be the most important factor in predicting variation in nest success. Nests were found in eight tree and shrub species, with the highest success of 85.7% in *Baccharis halimifolia* (n=7). The greatest number of nests (n=95) were found in *Acacia farnesiana*, with success of 48.9% (n=88). Variation in nest success may be associated with access to foraging sites, water quality metrics, and water level stability, which we will continue to examine in 2014 as we expand work to additional study sites.

OBSERVATIONS OF BLACK SKIMMER (*RYNCHOPS NIGER*) NESTS USING INFRARED CAMERAS IN COASTAL LOUISIANA

BREHAN C. FURFEY¹, THOMAS RISCH², and AARON R. PIERCE²

¹Department of Biological Sciences, Arkansas State University, Jonesboro, AR 72401

²Department of Biological Sciences, Nicholls State University, Thibodaux, LA 70310.

We monitored the reproductive and foraging ecology of Black Skimmers (*Rynchops niger*) on the Isles Dernieres Barrier Island Refuge (IDBIR) in coastal Louisiana from May-August 2011, 2012, and 2013. The IDBIR represents an ecologically sensitive area that is historically important habitat for wintering and breeding waterbirds, and is currently threatened by habitat loss, disturbance, and climate change. Similar to many coastal birds, there is a paucity of information on skimmer foraging and nesting ecology; specifically, where they forage and what prey species they deliver to the nest. In our study, we employed infrared nest video cameras to quantify adult attendance and prey delivery rates, prey identification, and nesting fate. We sampled approximately 1400 hours (n = 15 nests) of nesting behavior during the incubation and chick rearing stages. In the last two years skimmers nesting on the IDBIR experienced complete reproductive failure due to flooding events prior to the hatching stage, and failed at all attempts of re-nesting. Based on available camera data from 2011, we found that the females made more prey deliveries (67%) to nests than the males, (n = 36 feedings). We also found that skimmers mostly fed young at night (81% feedings occurred at night; n = 36) with a mean food provisioning rate of 0.625 fish per hour. Fish prey deliveries to nests consisted primarily of Pogie (*Brevoortia partornus*), Mullet (*Mugil cephalus*), and Silverside (*Menida peninsulae*) in 2011 and adults preyed mostly upon Atlantic Silversides (*Strongylura marina*) in 2013. In addition to confirming environmentally caused reproductive failure, we documented depredation events by Nutria (*Myocaster coypus*), Ghost Crabs (*Ocypode quadrata*), Laughing Gulls (*Leucophaeus atricilla*), Ruddy Turnstones (*Arenaria interpres*), as well as intraspecific depredation. Our data suggests camera sampling at waterbird nests can provide valuable insight on the proximate causes of nesting failure that is currently poorly understood in highly ephemeral habitats.

SEED SELECTION BY MOURNING DOVES (*ZENAIIDA MACROURA*) IN NORTHEASTERN LOUISIANA

WILLIAM FUTCH¹, JEFFREY DUGUAY², and KIM MARIE TOLSON¹

¹Department of Biology, College of Arts and Sciences, University of Louisiana at Monroe, Monroe, LA

²Wildlife Division, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA

The mourning dove (*Zenaidura macroura*) is the most widely distributed game bird in North America. Mourning doves are among the ten most abundant bird species on this continent with the autumn dove population reaching as high as 475 million birds. During this study, two types of seeds, sunflower (*Helianthus annuus*) and brown-top millet (*Urochloa ramosa*) were planted in a total of 6 plots on Floy McElroy WMA in northeast Louisiana. Point-count surveys were conducted throughout the month of September 2012 and parts of October 2012. Observers were positioned in pop-up blinds so as to view an entire plot, and the number of birds that landed in each experimental plot was counted. A managed hunt was conducted on Floy McElroy WMA on September 15-16, 2012. The breast meat on all harvested birds was removed and returned to the hunter. The crop and gizzard was removed on 52 birds. The crops were dissected and the contents were removed to determine composition of ingested seeds. The preliminary results of this two year study revealed that 50% (26/52) contained millet, 5% (3/52) contained sunflower, and 2% (1/52) contained both sunflower and millet. Gizzards were first x-rayed for the presence or absence of lead shot, and then dissected to confirm x-ray results. Seed selection data along with shot analysis data will be used by private land-owners and government agencies to develop a habitat management plan for the mourning dove in Louisiana.

FORMATION AND MAINTENANCE OF HUMMOCK-HOLLOW TOPOGRAPHY: AN ECO-HYDROLOGICAL ANALYSIS

YU-HSIN HSUEH

School of Renewable Natural Resources, Louisiana State University

Hummocks are patchy, elevated terrain features that have been identified in and at the boundaries of boreal wetlands, grasslands, riparian swamps, coastal swamps, and marshes. Creation and consequences of hummocks are examined based on the ecology of vegetation types, with special focus on those found in coastal forested wetlands. Hummocks are possibly an initial element in the creation of a complex swamp ecosystem under the influence of fluctuating hydrology. Moreover, biogeochemical variation modifies accretion of hummocks, which further gives rise to vegetation zonation. Maintenance of hummocks relies on hydrological fluctuations, detritus accretion, decomposition, local biogeochemical variability, and biogeomorphological activities. However, hummocks, in some cases, become vulnerable under climate change; a negative feedback may exist in which the degradation function of vegetation leads to ecosystem conversion. Key remaining questions focus on how disturbances such as prolonged flooding, subsidence, salinity increase vary on a microtopographic scale, and vegetation plasticity shifts ecosystem balance under climate change.

DISTRIBUTION AND ABUNDANCE OF ALLIGATOR SNAPPING TURTLES (*MACROCHELYS TEMMINCKII*) IN SOUTHWESTERN LOUISIANA

CYBIL C. HUNTZINGER¹, IRVIN LOUQUE¹, EDDIE K. LYONS¹, and WILL SELMAN²

¹Harold and Pearl Dripps Department of Agricultural Sciences, McNeese State University, Lake Charles, Louisiana, USA

²Rockefeller State Wildlife Refuge, Louisiana Department of Wildlife and Fisheries, Grand Chenier, Louisiana, USA

High harvest rates during the 1900s led to the decline of the Alligator Snapping Turtle (*Macrochelys temminckii*) throughout much of its range in North America. Limited research has been conducted to determine the current status of *M. temminckii* in Louisiana, particularly in southwestern Louisiana. Only 3 of the 8 southwestern parishes have records for *M. temminckii*, even though there is suitable aquatic habitat in all of these parishes. To determine the distribution of the Alligator Snapping Turtle, trapping was initiated throughout the Calcasieu, Mermentau, and Sabine watersheds. As a result of low trapping success ($n = 13$; turtles per trap night = 0.02) during the 2012 field season a questionnaire was formulated and distributed to licensed recreational fishermen in a seven-parish area. In addition to field status surveys, this questionnaire will serve as an important tool for collecting baseline data and will help determine an appropriate management plan for the conservation of *M. temminckii*.

AVIAN RESPONSES TO MARSH MANAGEMENT IN SOUTHERN VERMILION PARISH, LA

ERIK I. JOHNSON^{1,2}, KAREN A. WESTPHAL¹, and TIMMY J. VINCENT¹

¹Audubon Louisiana, National Audubon Society, 6160 Perkins Rd., Baton Rouge, LA 70808

The Audubon Paul J. Rainey Wildlife Sanctuary protects 26,000 acres of intermediate and brackish marshes in southeastern Vermilion Parish, and through the Rainey Conservation Alliance with neighboring landowners (E. A. McIlhenny Enterprises, Vermilion Corporation, and Sagrera Lands), over 170,000 acres of coastal marshes are under coordinated management to reduce land loss and improve marsh quality. Projects include strategic placement of water-control structures to maintain hydrologic processes across landowner boundaries, and pioneering work to rebuild broken marsh with a small dredge operated by one or two people. In addition, winter prescribed fire management is employed in a 2- to 3-year rotation to decrease summer marsh-fire fuel, improve nutrient circulation and soil quality, and stimulate vegetative growth. We evaluated the effectiveness of marsh management on a suite of breeding secretive marshbirds using the Conway point count protocol from April to May 2012 and 2013. In breeding seasons following a prescribed fire ('burned marshes'), King Rail relative abundance was 1.8x higher ($F_{1,26} = 4.78$, $p = 0.038$) and Sora relative abundance was 3.0x higher ($F_{1,26} = 3.59$, $p = 0.069$) than in marshes not burned during the previous winter ('unburned marshes'). Other species, like Seaside Sparrow, Least Bittern, Common Gallinule, and Marsh Wren, showed no difference in relative abundance between burned and unburned marshes, but instead appeared to respond to other habitat variables, such as marsh heterogeneity and amount of open water. With continued monitoring in upcoming breeding seasons, statistical

treatments at sampling points will change with rotating fire management, increasing our power to disentangle complex interactions between marsh vegetation composition and fire.

DIET COMPOSITION AND APPARENT SURVIVAL OF ROYAL TERNS AND SANDWICH TERNS ON LOUISIANA BARRIER ISLANDS

JEFF LIECHTY and AARON R. PIERCE

Department of Biological Sciences, Nicholls State University, Thibodaux, LA 70301

Twenty one species of waterbirds comprising ~40,000 pairs annually breed on Isles Dernieres Barrier Islands Refuge (IDBIR) in Terrebonne Parish, Louisiana. The dense aggregation of waterbirds that breed on IDBIR indicates its importance to regional waterbird populations. Royal Terns (*Thalasseus maxima*) and Sandwich Terns (*T. sandwicensis*) are two of the most abundant seabirds breeding on IDBIR. The objectives of this study are to determine breeding site fidelity, annual adult survival rate, and diet composition in Royal and Sandwich Terns. Between 2009 and 2013 1,420 terns were banded on IDBIR. Breeding site fidelity will be determined via re-sighting of color-banded adults returning to breed on IDBIR in 2013 and 2014. 14 Royal Tern and 10 Sandwich Tern adults banded in 2012 were observed again in 2013. Rates of return will be used to better understand population dynamics and model adult annual survivorship. Tern diet composition will be determined by analyzing prey items regurgitated as a defense mechanism during banding efforts and by observing adults returning to the colony with prey items in their beaks. Prey items will be identified to the lowest possible taxa, weighed, and estimated in length. Analysis of variation in diet composition between tern species and between adults and pre-fledgling chicks will enable identification of important food resources, and provide information on resource partitioning between species and susceptibility to biomagnifications of contaminants. This study will provide information on IDBIR's importance to breeding seabirds and can be used to inform future conservation, restoration, and management decisions. I also present preliminary results of tern movements based on re-sight reports of banded individuals over the past 3 years.

STORM SURGE INFLUENCE ON POREWATER SALINITY AND CONSEQUENCES FOR WETLAND PLANTS

MORGAN MCKEE, JOHN WHITE, and LORNA PUTNAM-DUHON

School of Oceanography and Coastal Sciences, LSU, Baton Rouge, LA

It is possible that a short-term change in salinity, such as storm surge, can have a significant effect on the salinity of a soil in a freshwater wetland. The salinity in different soil cores was measured after each core was flushed with seawater for one, two, or four weeks. Comparisons were made between soils from an island (non-vegetated) and marsh (vegetated) site in Louisiana's Wax Lake Delta. The movement of salinity in the island core started high after all periods of flooding and decreased with depth. In the marsh site core, salinity followed a similar pattern at all time-series, and the salinity dropped down to the control level by or before the 16 cm line. Extractable ammonium was found to vary significantly within each of the cores, and there appears to be some correlation with the change

in salinity. Total carbon, total nitrogen, and total phosphorus values will be analyzed to determine if there is any connection with a change in salinity.

THE SABINE MAP TURTLE (*GRAPTEMYS SABINENSIS*) IN SOUTHWESTERN LOUISIANA: A COMPARISON OF POPULATIONS AND MORPHOLOGY IN THREE RIVER SYSTEMS

IRVIN J. LOUQUE¹, CYBIL C. HUNTZINGER¹, EDDIE K. LYONS¹, and WILL SELMAN²

¹ Harold and Pearl Dripps Department of Agricultural Sciences, McNeese State University, Lake Charles, Louisiana, USA

² Rockefeller State Wildlife Refuge, Louisiana Department of Wildlife and Fisheries, Grand Chenier, Louisiana, USA

Very little knowledge exists of the turtle community in the three major watersheds in southwestern Louisiana. Among the least known of these is the Sabine map turtle (*Graptemys sabinensis*) which has been recorded in the Sabine-Neches river drainage in east Texas and its border with Louisiana, as well as the Calcasieu and Mermentau River drainages in southwestern Louisiana. Due to the need to collect baseline data on *G. sabinensis*, we initiated fine scale trapping and mark-resight studies at two sites in each river system. Sabine map turtles were permanently marked with drill holes and measured. During the fall and spring, at least ten *G. sabinensis* were paint-marked and resighting occurred on the following days. The highest population densities occurred in the lower reaches of the Mermentau River and the West Fork of the Calcasieu while the lowest population densities occurred at the Sabine River near Deweyville, TX and the East Fork of the Calcasieu. Sabine map turtles were more numerous at sites with stable water levels than those with rapidly changing ones. Across our sites, *G. sabinensis* exhibit morphological differences possibly related to different and altered water conditions.

DON'T TREAD ON ME: LEAST TERN NESTING SUCCESS ON GRAND ISLE, LOUISIANA

NICOLE NORELLI^{1,2,3}, HEATHER FRASER^{1,2}, ERIK I. JOHNSON¹, and KACY RAY²

¹Audubon Louisiana | National Audubon Society, 6160 Perkins Rd., Baton Rouge, LA 70808

²American Bird Conservancy, 4249 Loudoun Ave., The Plains, VA 20198

Grand Isle is the only inhabited barrier island in Louisiana and provides important habitat for beach-nesting birds. In 2012, the National Audubon Society and the American Bird Conservancy began an annual program to monitor and protect Least Tern (*Sternula antillarum*) nesting sites. Least Tern colonies were monitored from April to August in 2012 and 2013 and public education was introduced to complement 2.5 miles of symbolic fencing placed around colonies. We conducted nest and chick monitoring every 2-4 days, and in 2013 chicks were color-banded to better measure fledging success. We also conducted periodic disturbance surveys to record colony failure or movement in 2013. In both years, <8% of nest failures were directly related to human disturbance versus at least 11-22% lost

to predators and 17-24% lost to weather. Least Tern nest success rates were 50% in 2012, but dropped to 12% in 2013 due to an increase in weather-caused failure and depredation. In 2012, we estimated 133 Least Tern pairs fledged 20 chicks. Preliminary estimates in 2013, suggest that 173 pairs of Least Terns fledged 38 chicks, including 23 that were color-banded, and another 15 that were unbanded. Disturbance surveys indicated that although disturbances by humans were less frequent than by natural predators, the duration of human disturbances were disproportionately long. These surveys throughout the 2012 and 2013 seasons have allowed for valuable insights in mitigating for pressures these birds face during the nesting season, both on Grand Isle and throughout the region.

INTERACTING EFFECTS OF NUTRIENT ENRICHMENT AND SIMULATED HERBIVORY ON METHANE EMISSIONS AND METHANE ASSOCIATED MICROBIAL COMMUNITIES IN FRESHWATER MESOCOSMS.

ANTHONY RIETL

LSU AgCenter, School of Renewable Natural Resources, Baton Rouge, LA

Large fluctuations in CH₄ emissions from wetlands are observed from year to year, yet the underlying factors controlling this variability remain unknown. Plant community composition is one factor thought to exert the most control over emissions; an estimated 90% of total CH₄ emissions from wetlands results from emergent aquatic vegetative transport. Thus, plant community disturbances such as herbivory have the potential to alter CH₄ emissions. We tested the effects of simulated herbivory under three differing nutrient and clipping levels on methane emissions in freshwater microcosms using static flux chambers placed over small monospecific stands of four differing plant species (*Sagittaria lancifolia*, *Panicum hemitomon*, *Echinochloa walteri*, and *Eleocharis macrostachya*). Sediment samples were analyzed for the functional genes *mcrA* of methanogens and *pmoA* of methanotrophs by PCR-DGGE with no observable changes in these communities. A significant three-way interaction between species and the two treatments of nutrient addition and simulated herbivory was detected via a mixed effects model. Of the four species tested, *S. lancifolia* and *P. hemitomon* responded to treatments in terms of methane emission. The interaction between nutrient and clipping level suppressed methane emission at mid-levels of N-enrichment, while high-level N-enrichment produced responses similar to that of untreated controls. Treatments where plants were clipped below the water line increased in mean methane emission after 3 days. The results of this experiment show that localized disturbances to wetland plant communities have the potential to affect global atmospheric methane concentrations.

DISEASES AND PARASITES IN LOUISIANA’S BLUE CRAB (*CALLINECTES SAPIDUS*) POPULATIONS

HOLLY A. ROGERS *and* JULIE A. ANDERSON

Louisiana State University Agricultural Center and Louisiana Sea Grant College Program, Baton Rouge, LA 70803

Research on the prevalence of blue crab (*Callinectes sapidus*) diseases and parasites in the Gulf of Mexico (GoM) has been limited and sporadic. Without consistent, population specific prevalence data, future correlation between increased disease and parasite prevalence and decreased commercial landings in the GoM is nearly impossible. The selected seven diseases and parasites for this study are *Loxothylacus texanus*, shell disease or shell rot, *Vibrio* spp., *Lagenophrys callinectes*, *Hematodinium perezii*, *Urosporidium crescens*, and *Whispovirus* spp. All of these diseases and parasites are known to occur in Gulf blue crabs from observational reports and infrequent scientific surveys. This project has begun the process of establishing disease and parasite prevalence for blue crabs along Louisiana’s coast in order to better understand the current health of the populations. Large juvenile and adult crabs (greater than 11 cm carapace width) will be collected along the coast and from commercial shedding facilities throughout 2013. In order to determine prevalence, disease or parasite diagnosis will be conducted via PCR, bacteriology, basic microscopy, and visual gross diagnosis. Currently, we have collected crabs during the winter, spring, and summer of 2013 and have also begun to collect crabs held at commercial shedding facilities. We expect the highest prevalence of all seven diseases and parasites to occur in the summer and early fall. In our wild caught and shedding facility samples we have observed shell rot, *Vibrio* spp., *L. callinectes*, and *U. crescens*. PCR results for *H. perezii*, *L. texanus*, and *Whispovirus* spp. have indicated that none of our samples from the winter or spring have been infected with this dinoflagellate. These results were not unexpected as it has been previously determined that infections with these three parasites can vary seasonally. We will begin PCR on the shedding facilities and summer samples in the near future.

PIPING PLOVER (*CHARADRIUS MELODUS*) AND BENTHIC MACROINVERTEBRATE COMMUNITY RESPONSE AND RECOVERY RATES FOLLOWING BEACH NOURISHMENT

JESSICA L. SCHULZ¹, CLINTON JESKE², *and* PAUL L. LEBERG¹

¹University of Louisiana at Lafayette, Department of Biology, 300 E. St. Mary Boulevard, Lafayette, Louisiana 70506

²United States Geological Survey, National Wetlands Research Center, 700 Cajundome Boulevard, Lafayette, Louisiana 70506

Beach nourishment is an important tool for barrier island restoration in Louisiana. However, nourishment can impact beach ecosystems in ways that are unintended and poorly understood. In preparation for a planned nourishment project on Whiskey Island in Terrebonne Parish, Louisiana, I am collecting baseline data on density of piping plover (a federally threatened shorebird that winters in coastal Louisiana), as well as the distribution and biomass of benthic invertebrates, the bird’s prey.

Measurements of piping plover density, invertebrate density, diversity, and biomass as well as multiple environmental covariates, will be compared for pre- and post-nourishment periods as well as between nourished and unnourished islands in this chain, with the goal of demonstrating the relationship between the bird, its prey base, and environmental conditions. In particular, I hope to shed some light on the post-nourishment benthic invertebrate recovery time and environmental factors that affect recovery rate, as well as any potential changes in piping plover habitat use during and following the restoration. Information on these relationships will have management implications for future restoration projects, which may be designed in ways that will better benefit this species and others.

INFLUENCE OF BARRIER ISLAND LOSS ON THE DISTRIBUTION AND SURVIVAL OF BROWN PELICANS IN COASTAL LOUISIANA.

KRISTIN WAKELAND, SCOTT T. WALTER, JORDAN KARUBIAN, and, PAUL L LEBERG.

Biology Department, University of Louisiana at Lafayette

Louisiana's coastal barrier islands have provided important historical roosting, feeding, and nesting sites for brown pelicans (*Pelecanus occidentalis*). Loss of barrier islands in coastal Louisiana has the potential to be highly detrimental to a species where so few suitable nesting habitats remain. Between 2007-2009 over 1000 brown pelicans were banded on two islands to compare the effects of barrier island loss. Weekly band resightings took place March 2013 through July 2013 over 14 different islands in three distinct regions of coastal Louisiana, Terrebonne Bay, Barataria Bay, and Cameron Parish.

USING CITIZEN SCIENCE TO MONITOR LOUISIANA'S BIRD POPULATIONS: AN INTRODUCTION TO THE BLUEBONNET BIRD MONITORING PROGRAM

JARED D. WOLFE¹ and ERIK I. JOHNSON^{1,2}

¹School of Renewable Natural Resources, Louisiana State University, Agricultural Center and Louisiana State University, Baton Rouge, LA 70808.

²National Audubon Society, 6160 Perkins Rd., Baton Rouge, LA 70808

Fragmented habitat in close proximity to urban development may support healthy bird populations. Conversely, these same small fragments may be ecological traps where bird populations exhibit low annual survival and reproductive success due to edge effects, increased predation and brood parasitism. The Bluebonnet Bird Monitoring Project is a growing network of volunteer bird banding stations in southern Louisiana focused on quantifying the ecological value of urban forests to resident and migrant bird communities. Using three years of constant effort banding data and transient mark-recapture models we found that annual survival estimates of Brown Thrasher (*Toxostoma rufum*), Carolina Chickadee (*Poecile carolinensis*) and Northern Cardinal (*Cardinalis cardinalis*) were

considerably lower relative to baseline values derived from the South Central region of the United States. We believe that disease and semi-annual movements in-and-out of urban forest fragments were most likely responsible for low annual survival. Because our volunteer-based effort provides important avian demography data, training opportunities for university students and environmental outreach for the local community, we believe our bird banding program is a model for similar efforts throughout the region.

FLUOROMETRIC APPROACH FOR RAPID ESTIMATION OF BIOCHEMICAL OXYGEN DEMAND

ZHEN XU and Y. JUN XU

School of Renewable Natural Resources, LSU Agricultural Center, Baton Rouge, LA

Development of a technique for rapid estimation of biochemical oxygen demand (BOD) is necessary for cost-effective monitoring and management of urban lakes. While several studies reported the usefulness of fluorescence technique in predicting 5-day BOD (BOD5) of wastewater and river waters, little is known about the predictability of fluorescence for BOD of urban lake waters that are constantly exposed to the mixture of chemicals compounds. This study was conducted to develop a numeric relationship between fluorescence and BOD for a shallow urban lake that is widely representative of lake environmental in the subtropical southern United States. From October 2012 to August 2013 in-situ measurements at the studied lake were made every two weeks on fluorescence and other water quality parameters including temperature, pH, dissolved oxygen, turbidity, and specific conductivity. Water samples were taken for 5-day and 10-day BOD (BOD10) analysis with and without incubation. The results showed a clear seasonal trend of BOD being high during the fall and summer and low during the winter. There was a linear, positive relationship between fluorescence and BOD, and the relationship appeared to be stronger with BOD10 ($r^2 = 0.83$) than with 5-day BOD5. Fluorescence reading declined each day with BOD, indicating that phytoplankton is the main source of BOD in the studied lake.