December 8, 2006

Louisiana's Contribution to Global Biodiversity Conservation

Richard Martin, Louisiana Nature Conservancy

Abstract**:** The Nature Conservancy (TNC) and its partners have recently completed an ambitious, science-based planning effort focused on the goal of ensuring that at least 10 percent of the world's major habitat types are effectively conserved by the year 2015. This process required a fresh vision of global biodiversity conservation that included an understanding of terrestrial, freshwater and marine biogeography. Each TNC region then developed interim 3-year conservation plans that would contribute to the 2015 Goal by focusing resources within priority ecological regions. Factors such as biodiversity health, threat status and capacity were employed as part of the decision matrix. I will describe TNC's process for identifying priority landscapes for conservation around the globe and highlight the fact that the Southeastern US is considered one of the World's centers for biological diversity. I will then describe how the Louisiana Field Office of TNC will play a significant role in assisting the conservation community reach it's ambitious goal. Lastly, I will touch on Louisiana biogeography and some of Louisiana's special natural areas that are accessible to the public.

Biographical Sketch: Richard Martin received a B.S. in Wildlife Management from Humbolt State University in 1979 and a M.S. in Wildlife Management from LSU in 1985. He has experience in wildlife management in Arizona and New Mexico and has worked in Louisiana with the Department of Wildlife and Fisheries from 1985-1992 and with the TNC since 1992. He is now the Director of Science and Stewardship of the TNC.

November 3rd, 2006

Developmental Optimization of Caverns for Natural Gas Storage

Gary L. Jones, AGL Resources

Abstract: Current long term market fundamentals have shown a need for additional storage and infrastructure. Natural gas storage in salt cavern affords maximum flexibility for customers to respond to changes in weather and market conditions. In Louisiana, six projects have been certificated by the Federal Energy Regulatory Commission (FERC) for construction. Four are to be developed by conventional solution mining techniques, while two others are conversions of caverns previously used for brine production. Other projects are under consideration.Costs for material and labor continue to increase; long lead items get even longer. With recent increases in commodity prices, pad gas costs can be as much as a third of total capital requirements. Depending upon header requirements, it is not uncommon to see initial capital needs in excess of $150 million. Recent incidents involving gas storage caverns have prompted regulatory responses, and with the increased visibility, there is an even more urgent need for increased safety, risk assessment and public education.All this has necessitated a different approach to cavern development. To counter increases in capital costs, cavern operators have employed more sophisticated rock mechanics testing to both simulate long term creep and quantify minimum pressures to preserve cavern integrity. Using the results, different operating strategies such as

compensated storage can be modeled to mitigate pad gas costs. Refraction salt proximity is an effective tool for determining the salt face position, assisting in the location of offset caverns. More recently, thermodynamic models are able to simulate the operation of the cavern, and aid in evaluating different operational scenarios. Other techniques are discussed.

Biographical Sketch**:** Gary L. Jones joined Pivotal Energy Development in April, 2004. He began working for Pivotal in a consulting role shortly after the formation of the Business Development unit in Houston in July, 2003. Gary Jones is currently Manager of Business Development for Pivotal Energy, which is the business development arm of AGL Resources. As part of the business development team, he is responsible for examining opportunities for investment in pipeline and storage assets, as well as other energy projects. Gary has over 25 years experience in the industry working at Nicor Gas and Aquila. While at Nicor Gas, he held various positions in engineering, rates, supply, storage, gas control and transmission, with a focus on underground gas storage. As Manager of Analysis and Structuring at Aquila, he was involved in the feasibility and development of gas storage projects in the U.S and U.K. More recently, he was part of a team that assisted the Romanian state utility Amgaz in technical and economic studies involving the conversion of certain depleted reservoirs in Translyvania to gas storage. Gary holds a B.S degree from the University of Missouri at Rolla in Geological Engineering. He and his wife Gina, a neonatal intensive care nurse at Memorial Hermann and bereavement coordinator, have one son, Pierce. Gary still finds time to travel to Colorado in pursuit of mountaineering adventures, and is currently training for a climb in the Andes.

October 13th, 2006

Hurricane Rita Storm Surge Data, Southwestern Louisiana, and Southeastern Texas, September-November, 2005

Ben McGee, U.S.G.S.-Ruston

Abstract: Pressure transducers and high-water marks were used to document the inland water levels related to storm surge generated by Hurricane Rita in southwestern Louisiana and southeastern Texas. On September 22 to 23, 2005, an experimental monitoring network consisting of 47 pressure transducers (sensors) was deployed at 33 sites over an area of about 4,000 square miles to record the timing, extent, and magnitude of inland hurricane storm surge and coastal flooding. Sensors were programmed to record date and time, temperature, and barometric or water pressure. Water pressure was corrected for changes in barometric pressure and salinity. Elevation surveys using global-positioning systems and differential levels were used to relate all storm-surge water-level data, reference marks, benchmarks, sensor measuring points, and high-water marks to the North American Vertical Datum of 1988 (NAVD 88). The resulting data indicate that storm-surge water levels over 14 feet above NAVD 88 and rates of water-level rise greater than 5 feet per hour occurred at three locations near the Louisiana coast. Quality-assurance measures were used to assess the variability and accuracy of the water-level data recorded by the sensors. Water-level data from sensors were similar to data from co-located

sensors, permanent U.S. Geological Survey stream gages, and water-surface elevations performed by field staff. Water-level data from sensors at selected locations were compared to corresponding high-water mark elevations. In general, the water-level data from sensors were similar to elevations of high quality high-water marks, while reporting consistently higher than elevations of lesser quality high-water marks.

Biographical Sketch: Ben is a Louisiana native. He has attended Louisiana Tech University and Louisiana State University, completing degrees in Forestry and Geology and graduate studies in Geology. He has worked for the U.S. Geological Survey in Louisiana for over 18 years. Currently, he is the Supervisory Hydrologist for the Ruston Program Office of the U.S. Geological Survey and is responsible for various projects and programs dealing with surface water, ground water, and water quality in north Louisiana.

September 8, 2006

U.S. Geological Survey research efforts post Katrina, and future research needs from an earth- and ecological science perspective

Demas, C.R.; Plumlee, G.S.; Demcheck, D.D.; VanMetre, P.C.; Skrobailowski, S.C.; Stoeckel, D.M.; Lavoie, D.L.; Plunkett, M.L.; and Clark, A.P.

Abstract: The entire Louisiana coast was hit by category 4 (Katrina) and 3 (Rita) hurricanes within less than a month in 2005. The U.S. Geological Survey (USGS) mobilized shortly before landfall of the first storm to document the water quality, bacterial, ecological, and physical impacts. Following landfall of Katrina, the USGS conducted LIDAR over flights, installation of temporary flood gages, and documentation of storm surge, saltwater intrusion, coastal wetland damage, and barrier island erosion. Water-quality impacts of floodwaters on the Lake Pontchartrain estuary and New Orleans area, and ground water were investigated.

Biographical Sketch: Charles Demas began his career as a water-quality hydrologist with the USGS Louisiana District in 1974 after graduating from Cornell University and Humboldt State University. During his career he has worked on several water-quality and sediment projects on the Atchafalaya and Mississippi Rivers and a toxics study of the Calcasieu River. He served as the District QW Specialist from 1986 to 2003, acting SE Regional Biologist from 1990 to 1992, and the Acadian-Pontchartrain NAWQA study chief from 1997 to 1999. He has been a member of the USGS sediment action committee and was the USGS representative on the Federal Interagency Sedimentation Project for 2 years. He has been the Director of the USGS Louisiana Water Science Center since 1999.

May 12, 2006

KATRINA AND LAKE PONTCHARTRAIN: THE BACKDOOR INTO NEW ORLEANS

Dr. Don Davis, Louisiana Applied and Educational Oil Spill Research and Development Program.

Abstract: New Orleans dates back to 1718 and has survived yellow fever epidemics, crevasse-induced river flooding, hurricanes, fires, war, and now must rebuild and reinvent itself. The city expanded from the relative high ground of the natural levees towards the near sea-level property parallel to Lake Pontchartrain. To keep dry, New Orleans built an elaborate pump-drainage system. People living inside this below sea level city felt safe. Katrina overwhelmed the system. The storm hit the city from Lake Pontchartrain and Lake Borgne uprooted centuries old cultures and changing the city's landscape. As a result, there is a great deal to be done to recapture the essence of the Crescent City and the surrounding communities. As it has in the past, New Orleans will rebuild.

Biographical Sketch: Dr. Davis is Administrator of the Louisiana Applied and Educational Oil Spill Research and Development Program. His professional career has focused on investigating various human/land issues in Louisiana's wetlands. In this regard, he has written or co-authored numerous papers on these topics. Currently, he is involved in projects related to restoring Louisiana's wetlands, the state's oil and gas industry's economic impacts, and rebuilding after hurricanes Katrina and Rita.

April 7, 2006

Where will future gas supply in Louisiana come from?

Mike French, Louisiana Department of Natural Resources

Abstract: Louisiana is a long-developed, mature producing province, well into the downward side of the long term production decline curve. There is a remaining resource frontier, though, that has hardly been tapped -- deep and ultra-deep gas. I will take a look at the potential of this resource base and what it means to Louisiana.

Biographical Sketch: Mike is a native of Monroe, Louisiana and initially worked in industry for 6 years - first with Texaco in the Natural Gas Department, and then at Ethyl Corporation in R&D in process development and project evaluation. For the past 26 years, Mike has been with the Louisiana Department of Natural Resources in Baton Rouge, where he is the Director of the Technology Assessment Division. This Division provides energy policy analysis, economic analysis, forecasting, and modeling services to the Secretary of Natural Resources, the Governor's Office, and the Legislature in all areas of energy. Mike is a registered professional engineer, and a member of the American Institute of Chemical Engineers, and Tau Beta Pi (national engineering honor society). Mike has an Honorable Discharge from the U.S. Air Force as a Captain. He earned B.S. and M.S. degrees in Chemical Engineering from Louisiana Tech University.

March 10, 2006

The use of a small-scale physical model to investigate large-scale Mississippi River diversions

Rudolph “Rudy” Simoneaux, Louisiana Department of Natural Resources

Abstract: A small-scale physical model of the Mississippi River Delta is housed in the Vincent A. Forte Coastal and River Hydraulics Research Laboratory at LSU. The purpose of this model is to: (1) reproduce, qualitatively, river sediment transport patterns under existing conditions, and (2) evaluate various alternatives for flow and sediment diversion, and new navigation channels between Pointe-a- la-Hache and the Head-of-Passes. The SSPM is a distorted scale model (i.e., 1:12,000 horizontal and 1:500 vertical) that reproduces an area of about 9,027 km2, equivalent to 3,526 square miles. For large scale water diversion from the Mississippi River, sand transport and its deposition patterns are simulated directly by model sediment material reproducing sands of particle size between 62 and 300 μ (1000 μ = 1 mm) which comprise about 20% to 25% of the total sediment load transported by the Mississippi River. The depositional area of the remaining 75% to 80% of sediment load consists of silt and clay (particle sizes between 62 - 4μ, and less than 4μ respectively) and is determined by time-lapse photographs taken at regular intervals of dye patterns. The combined depositional patterns of sands, silts and clays will thus give a good idea of the expected long-term land building process (approximate surface areas covered by the sediment deposition and depths above initial ground level). Two main advantages of this type of model study are: (1) visualization of sedimentation processes along the Mississippi River and around the coast line and selected diversion channel arrangements; and (2) the model sedimentation time scale enables reproduction of one year’s evolution in 30 minutes. Thus it can reproduce fairly long-term three dimensional sedimentation processes within a few hours of testing time (100 years of sedimentation processes in 50 hours of testing). The model, therefore, helps to assess and compare the performance of project concepts, possibilities for their improvement, and makes decision-making on site selection easier and decisive. Results will be presented from several study intervals and I will briefly talk about the development of a new graduate program in coastal engineering at LSU.

Biographical Sketch: Rudy received his B.S. in Civil Engineering from Louisiana State University in 2003. He was born and raised in the small Assumption Parish town of Plattenville before moving to Baton Rouge in 1998 to attend college. Rudy is currently seeking a Coastal Engineering Certification from Old Dominion University in Norfolk, Virginia via correspondence. He is employed by The Louisiana Department of Natural Resources-Coastal Engineering Division where he responsible for the design and management of coastal restoration projects. Rudy has been a member of the American Society of Civil Engineers since 2003 and currently serves as an associate director on the Baton Rouge Branch Board. During his free time, Rudy enjoys fresh/salt water fishing with friends, boating, and playing tennis in several local leagues.

February 10, 2006

Chicxulub and the K/T Boundary

Gary L. Kinsland, Ph.D., University of Louisiana at Lafayette

Abstract: The Chicxulub Impact Structure is the leading candidate for the cause of the extinction at the end of the Cretaceous known as the K/T boundary. This structure is located on the northwestern corner of the Yucatan Peninsula in the state of Yucatan in the country of Mexico. The crater is filled and buried by Tertiary carbonates so that surface evidence of the 180 km diameter, 3 km deep crater which resulted from the impact is very sparse. In 1980 gravity data and well data led to the first interpretation that a crater underlies the carbonates but the crater was not then linked to the K/T boundary. In 1990 a ring of cenotes, karstic pits which are partially water filled, led to the interpretation as the K/T crater. In this presentation gravity data, both from archives and personally collected, and topographic data, both from archives and from the Shuttle Radar Topography Mission (SRTM), will be presented and interpreted to show that surficial effects of the buried crater do exist. I have correlated the gravity and topography in a 3-D virtual reality system. These results will be shown. The “dry” science will be “moistened” with pictures from a gravity data collection field excursion along the western coast of the Yucatan Peninsula.

Biographical Sketch: Gary L. Kinsland, Ph.D. grew up on the coast of Oregon before attending the University of Rochester (U of R) for his formal education. From the U of R he received a BS in Physics in 1969, an MS in Geology in 1971 and his PhD in Geology in 1974. After two years as a post-doc at U of R he was a visiting assistant professor in geology at Arizona State University in ’76 – ’77. Since then he has been in Lafayette, Louisiana at the University of Southwestern Louisiana/University of Louisiana at Lafayette where he has been a geophysicist working in gravity, magnetics and seismics. In 1993 he

became involved in research related to the Chicxulub Impact Structure on the Yucatan Peninsula of Mexico when he was a Summer Faculty Fellow at the NASA Jet Propulsion Laboratory in Pasadena CA.

January 13, 2006

THE HISTORY OF THE JENNINGS FIELD DISCOVERY

Byron Miller, Louisiana Geological Survey-Louisiana State University

Abstract: Jennings Field is the first significant oil field discovered in Louisiana and one of the earliest in the Gulf Coast, having been discovered just 9 months after the Texas Spindletop discovery in 1901. The field has produced over 118 MMBO and 51 BCFG from Miocene through Oligocene Anahuac and Frio age sands associated with the supercap and flanks of a shallow salt dome. The field is still producing today. The subsurface geology of Jennings Field will be presented, followed by a discussion of the history of the Jennings discovery; a tale that spans the nation, leads to the Klondike gold rush, and ends up in the Louisiana State Senate.

Biographical Sketch: Byron Miller is a Research Geologist with the Louisiana Geological Survey. His interests are subsurface field studies, hydrocarbon exploration and development, carbon sequestration, and production related subsidence. Byron has Bachelor and Master's degrees in Geology from the University of North Carolina at Chapel Hill. Byron has worked in gold exploration with Phelps Dodge Exploration, and as a petroleum geologist for Amoco Production Company where he worked a variety of assignments, both onshore and offshore Louisiana, including some of Amoco's initial deepwater exploration wells in the Gulf of Mexico.