

**Inter-Agency Katrina Meeting**  
**September 22, 2005**  
**Cohosted by LSU Coop Unit and The Nature Conservancy**

*Notes*

**Purpose: Exchange of information to facilitate cooperation/coordination with Katrina assessment**

**1. Glen Constant – US Fish and Wildlife Services, Baton Rouge, Louisiana** – still trying to assess who's doing what. To date, primary emphasis has been on recovery effort. Are currently consulting with Louisiana Department of Wildlife and Fisheries to determine gaps in data collection. Ecological Services in Lafayette is doing a lot of oil spill response.

Proposals from USFWS Fisheries:

**Coastal Habitat Assessment**

1. Assessment of sea grasses and other essential habitat for Service trust species threats using remote sensing to determine areas impacted by Hurricane Katrina.

\$250,000

2. Effects of Hurricane Katrina on substrate composition in areas of Lake Pontchartrain and barrier islands utilized by Gulf sturgeon.

\$40,000

**Riverine and Estuarine Species and Their Habitats**

1. Assessments of population and habitat impacts to Service trust fishery resources in the rivers of Lake Pontchartrain and in the Pearl and Pascagoula River Systems.

\$550,000

2. Assessments of population and habitat impacts to listed and candidate freshwater mussel species in the rivers of Lake Pontchartrain and in the Pearl and Pascagoula River Systems.

\$200,000

3. Assessment of health impacts to Service fisheries trust resources in the rivers of Lake Pontchartrain and in the Pearl and Pascagoula River Systems.

\$80,000

4. Development and implementation of debris removal best management practices in the rivers of Lake Pontchartrain and in the Pearl and Pascagoula River Systems.

\$75,000

5. Mitigation of loss of striped bass production from the Gulf Coast Research Laboratory, Ocean Springs, Mississippi

\$50,000

6. Habitat restoration in the rivers of the Lake Pontchartrain, and the Pearl and Pascagoula River Systems for the benefit of Service trust resources.

Restoration activities will be dictated by assessment results, but should include activities like stream bank stabilization, channel realignment,

placement of grade control structures, wetland revegetation, removal of debris blockages, and removal of silt from hard-substrate spawning areas.  
\$900,000

### **Invasives**

Assessments of aquatic nuisance species populations and introductions in the rivers of Lake Pontchartrain and in the Pearl, Pascagoula, and Escambia River Systems.\$85,000

### **Imperiled Species**

Genetic analysis and cryopreservation of gametes from Service trust species to ensure that remnant stocks and populations are protected  
\$64,000

The following report is from the USFWS regional office  
Hurricane Katrina impacted not only U. S. Fish and Wildlife Service lands and facilities in Alabama, Mississippi, and Louisiana, but also left a wide path of destruction that is impacting trust resources such as migratory birds, fisheries, and threatened and endangered species habitats. The following items begin to illustrate the critical needs that the Service and partners will face in the coming months and years as the true effects of the hurricane are realized:

- We estimate that the National Wildlife Refuge system in the Southeast Region experienced direct land losses, accelerated degradation or other damage on more than 150,000 acres of coastal and bottomland wetlands. Without immediate assessment, stabilization, and plans for restoration, coastal wetland loss will continue at an unprecedented rate.
- Severe impacts may have occurred to several habitat types and to imperiled species that inhabit those areas. For example, the critically-imperiled Mississippi sandhill crane was directly affected and a significant number of marked birds are not yet accounted for. Remaining captive Mississippi sandhill cranes and whooping cranes at the ACRES Audubon facility in New Orleans can no longer be housed there and other facilities for these flocks must be found and supported. Loss of primary dune habitat means that endangered beach mice have been hit hard in Alabama for the second consecutive year and nesting areas for sea turtles may be impacted. Effects of the hurricane to brown pelicans are not yet known.
- Southeastern Louisiana, and especially Breton National Wildlife Refuge, is important for colonial nesting birds. Up to 15% of the world's Brown Pelicans and up to 30% of the world's Sandwich Terns nest there. Many other species occur there in large numbers as well, and the area is also important in winter for relatively large numbers of Piping Plovers and in the seagrass beds one of the larger flocks of Redheads outside of Laguna Madre in Texas. Within Breton National Wildlife Refuge proper, the Chandeleur Islands have served in the past not only as a break to soften the impact of oncoming storms for New Orleans, but also served as a break to soften the impact on the most heavily used nesting islands directly to the west of the this barrier chain. Hurricane Katrina is the latest (and most severe) in a series of successive storms to impact the Southeast Louisiana Coast within the last 10 years. The Chandeleurs, as a result of these

past storms, were in the process of disappearing already. The future of Breton National Wildlife Refuge's capability to still serve as a major nesting ground for supporting such high numbers of pelicans and terns is in serious doubt.

- Because some of the affected area is critically important for continental waterfowl populations, the effects of wetland losses may be seen in waterfowl population declines. It could also have significant impact to spawning and nursery habitat to aquatic species.
- The effects of the hurricane and the aftermath on aquatic ecosystems may be catastrophic due to severe water quality degradation from oil spills and other releases of contaminants. The influx of huge amounts of organic matter and industrial run-off into the Lake Pontchartrain Basin, and the Pearl, Pascagoula, and Escambia River Basins has likely severely impacted populations of the threatened Gulf sturgeon. A similar situation was seen last year when Hurricane Ivan forced large amounts of organic matter into the Escambia River, dramatically lowered dissolved oxygen levels, and triggered a major die-off of adult Gulf sturgeon. Sea grass beds and essential habitat for interjurisdictional species have also likely been degraded or destroyed as a result of the storm.
- In some cases, we lack basic maps of oil and gas infrastructure (pipelines, wellheads, etc.) located on many of our National Wildlife Refuges, which hampers our ability to monitor their status and quickly address releases of contaminants which may have occurred.
- The hurricane likely increased dramatically the number and distribution of exotic, invasive plant and animal species in the affected portions of the southeast, especially Asian carp. Saltwater intrusion and degraded habitat quality may pave the way for a damaging influx of both aquatic and terrestrial exotics.

### **Purpose**

- 1) To assess the extent and nature of impacts to DOI/FWS trust resources and to determine when, where, and how restoration or other response may be necessary
- 2) To make recommendations that may influence future resource and land use decisions in hurricane impacted areas in a manner beneficial to fish and wildlife conservation
- 3) To provide information in the preparation of emergency response guidelines for future disaster events to protect FWS trust resources.

### **Approach**

Our approach is to quickly determine the assessments the Service believes necessary to understand the impacts. We are working cooperatively with other agencies to assess activities underway or planned by other agencies or organizations, to eliminate any duplication and ensure complementary approaches and sharing of information. We invite input and collaboration from other affected agencies. From there we can move on to performing the necessary assessments (short and longterm) and recommending the appropriate response (e.g., habitat restoration, longterm monitoring, etc.) where necessary.

### **Information Needed**

The Service has begun to compile our needs in terms of both the assessments that will be necessary to complete and the restoration actions that will follow. The following represents a preliminary look at the broad categories of hurricane impacts that the Service is considering.

#### Resources

Service lands (e.g., impacts to National Wildlife Refuges; attachment 1)

Coastal wetlands

Beaches/dune systems

Nearshore benthic habitats

Longleaf pine forests

Fuel loading and fire danger

Water quality

Effects of oil, chemicals, or other hazardous waste releases

Effects of non-native plants and animals released from captive facilities

Fish habitats and populations

Migratory bird habitats and populations

Threatened or endangered species habitats and populations

- Mississippi sandhill crane

- Mississippi gopher frog

- Louisiana black bear

- brown pelican

- several species of beach mice

- red-cockaded woodpeckers

- sea turtles

- Gulf sturgeon

- bald eagle

- piping plover

#### Processes

Saltwater intrusion

Acceleration of invasives

Succession: loss of old growth or mature stages

Siltation

Dune formation

Darrier island overwash and breaching

#### **USFWS Contacts**

**USFWS Task Force Lead:** Noreen Walsh 404 679 7085

**USFWS Contact for other Federal Agencies:** David Horning 404 670 7116 and Erin Clark 404 679 7379

**Contact for Spatial Imagery and Analysis:** Jaymee Fojtik 404 679 4192 is heading a subteam compiling spatial imagery **needed** to assess impacts throughout the affected area and spatial imagery **available** through other agencies or entities.

**2. Stuart Johnson – Louisiana Department of Culture, Recreation, and Tourism, Division of State Parks** – Primary response has been to provide accommodations for evacuees, all parks free through October. FEMA will house evacuees at parks.

Resource Assessment: Much damage to resources. Grand Isle shift in dunes, erosion. Land mass can be reclaimed. St. Bernard state park must be totally rebuilt. Bayou Signette, a lot of trees down. Fontainebleau state park, trees all down, previously hit hard by pine beetle. Fairview Riverside, lost a lot of trees, 50 %. N.O. Rebirth – comprehensive plan focused on rebuilding greater METRO N.O., considering culture resource etc .

POC: Stuart Johnson

**3. Dugan Sabins - Louisiana Department of Environmental Quality, Water Quality Division** –Power point presentation to media yesterday, is up on website. Lake

Pontchartrain Basin Foundation cohosted press conference. 24 stations around lake, teamed up with Charlie Demas, USGS. Many parameters tested. Plan for monitoring surface water quality conditions is up on website. Phase I sampling most critical. Early on, only sampling done by DEQ was in Lake. EPA did all sampling in city as they were able to have secure conditions. Have historical data on many sites. Preliminary data results indicate that Katrina amounted to a massive urban storm water event. Nothing more. No facility in NO area that contributed toxic chemicals. Bottomline, water (with toxics, bacteria) set in city in bright hot conditions, contributed to degradation, etc. Degradation and assimilation of bacteria happening. First sample taken at sewer main break and this is what was reported by media (high concentrations). Strike team organized for water quality response. First round of samples show urban storm water event. Most south shore stuff out to Gulf through Pass Rigolets. Entire contents of N.O. at 5 feet, would only fill 6% of lake. We are protecting MS river, the primary source of drinking water for river communities, by pushing water through lake. After days exposed to sun, not seeing huge bacterial numbers; in fact they are lower than what was in city canals before storm (drought). Only two samples (?), 90% of water already pumped.

Phase II monitoring will go out beyond Lake to Passes. Currently difficult to get to these areas. Will work with NOAA, USGS, EPA. USGS has done water quality work there. Bacterial counts in Passes safe for shellfish beds. (Latimore: possibility of toxics, etc. settling to bottom of lake and affecting rangia?? Dugan: rangia intolerant of higher salinities so naturally west in Lake toward freshwater inflows...affects of Katrina mostly to east.) Phase II will begin to get at sediment issues. EPA will be taking the lead on a lot of that. Permitting issues: trying to get drinking water, sewerage treatment back on line. N.O. sewerage system reliant on a single plant, almost gutted. Lines torn out, aging anyway, leaking sewerage already to lake. Air: DEQ helicopter, trying to id sources of Hcarbons, air monitors deployed. Corps working with DEQ on final dewatering, etc with Rita. Robert: focus on N.O. what about St. Bernard, Venice, etc. Dugan: all being pumped out with huge amount of oil. We know exactly where oil is. Murphy tank, farthest most tank, something smashed into tank, started leaking after storm passed. Now contained in neighborhood canals .. holding back on pumping that. Most of St. Bernard

was dewatered without using that pump station so can contain most of oil. Contained half of what was discharged. Robert..South? other big spills way down river Dugan: ¾ picked up and recovered. Robert: trying to pump into ships, then what? Dugan: would hope “recovered” Robert: Extensive wetland contamination...speculation? Dugan: NOAA took boat, samples...doesn't look like has been widely broadcast, impact to marshes will be minimal. Small spills from production facilities. Pat: datasets, exclusively from L Pontchartrain and river (no major problems). Eventually, other data sets added by EPA, contract to assimilate data. They will interpret first then make available to public. Robert: total calculation, volume of water in NO = 3% of volume of lake vs. Bonnet Carre which was 26%. Fish kills in lake expected to be minimal.

#### **POC – Dugan Sabins for water.**

**4. Charlie Demas – USGS, Baton Rouge.** Lost 23 gauges. About half. Reestablished weather service at mid lake. Comparison of water levels in lake and city. Only two gauges in NO that show how water is draining. Three in Plaquemines now. Security initially an issue. 10 WQ sites on lake. All wq activities by all state and fed agencies..everyone is talking to each other. 22 bacteria sites in and around lake. Water chemistry at ten sites, ambient concentrations. EPA in city, doing grosser detection limits. Surficial sediments...dewatering suspended sediments. Bacterial contaminants not bad. Northshore counts high as expected. A lot of main channels have filled in in Barataria. 13 samples in Chalmette area that will be analyzed for “everything” Not a lot to collect in NO in terms of sludge. Analyzed by geologic division and others. Chris D. and Tom D. looking at Jean Lafitte, floatant marsh did okay. River, two days afer event up here, data available soon. Coordination: all feds and DEQ, one site on web that will tell who is doing what at what site. FDA will also cooperate on site. USGS also doing shallow ground water. NOAA doing shellfish bed Mussel watch. Oyster tissues, pathogen indicators, sediments for contaminants, coordinating with FDA.

**5. John McCaulley (?), EPA. Gulf Breeze Lab.** Working with Reg 4 and 6. they focus on drainages of lake to rigolets, borgne and east to dauphin island (MS sound). Sampling water and sediments. Quarterly hypoxia survey in dead zone. To collect similar samples. To catch anything coming out of barataria into gulf. Add to Charlie's stuff at Lake, ecological assessment...probability design...indicators. summary document with Sammy. Partnered with NOAA directly, 50/50. Robert: indicators, described in documents, reference condition?, interpretation. National Coastal Assessment data (2003-04) used as baseline for this assessment. This is a delta, unique characteristics..must come up with better indicators unique to deltaic system in LA. Needs to be passed by local scientists.

Reg IV – developed design complementary to sound work (ie. In bays and bayous). Water quality and sediment.targeting dioxin (MS)

Gulf of Mexico Program – doing okay as office, withstood winds.

**6. Greg Steyer – USGS National Wetlands Research Center** – search and rescue at first. Geocoding for 911 rescue efforts. Spatial products. CoE, locate all levee breaks,

hospitals, infrastructure, etc. developing geodatabases. Assembling information, coordinating with EROS (will direct to all sites). LIDAR. Oblique photography

Prelim assessments on land loss. John Barr, first satellite imagery (sep 7). Water levels still high then. Next image tomorrow (every 16 days). Doing classification with each image. Coordinating field trips through affected areas for CWPPRA, WRDA projects. Also working with DNR, LDWF, FWS, etc. to create point locations for all post Katrina data (DOI and other agencies) and getting on common website. Assessment plans for longer term recovery, resiliency etc. six focus areas. Being developed top down and bottom up..will merge into single report for National Wetlands Research Center.

**Greg provided the following information for locating remotely sensed data:**

**FEMA:**

**FEMA Mapping and Analysis Center**

<http://www.gismaps.fema.gov/2005pages/katrina.shtm>

**Remote Sensing Data**

<http://www.gismaps.fema.gov/2005pages/rsdrkatrina.shtm>

**USGS/EDC:** POC: Brenda Jones via e-mail: [bkjones@usgs.gov](mailto:bkjones@usgs.gov)

To download LANDSAT, ASTER, DOQs, and aerial imagery use:

<ftp://edcftp.cr.usgs.gov/pub/data/disaster/katrina>

Note: 9/08, The aerial photography contracted by the US Army Corps of Engineers/FEMA has started to arrive. The first shipment has been loaded and is available at]

[ftp://edcftp.cr.usgs.gov/pub/data/disaster/katrina/usace\\_aerial](ftp://edcftp.cr.usgs.gov/pub/data/disaster/katrina/usace_aerial)

There is restricted use to download licensed imagery *RADARSAT, SPOT, IKONOS, IRS* ...

[http://edcftp.cr.usgs.gov/disaster\\_restricted/katrina](http://edcftp.cr.usgs.gov/disaster_restricted/katrina) 

**The National Map Hazards Data Distribution System**

[http://gisdata.usgs.gov/website/Disaster\\_Response](http://gisdata.usgs.gov/website/Disaster_Response)

*Click on CONUS for the US map. You can view your area of interest by using the icons on the left hand side of the page. To use the new download tool, under the download section on the left, click on ftp. It will load a drop down menu under the image. The dropdown will lists available datasets. Currently the only ones listed are Landsat 5, Landsat7, and IKONOS. Select the layer you need and then go to the image portion of the screen, draw a box to define your area of interest and a pop up will appear with all scenes within your area. Select the ones you want to ftp for download.*

**NGA:**

<http://www.nga.mil>

This is the NGA home page on the WWW. It contains links to Imagery and some GIS information.

-or-

<http://www.nga.mil/portal/site/nga01/>

Click on [Katrina Relief Support](#)

## Restricted access to NGA Shape Files & Secondary Imagery

<ftp://ftp.matf.org/Katrina/>



### NOAA:

High Resolution Aerial Photos

<http://www.ngs.noaa.gov>

NOAA Imagery of damage in Bay St Louis, Mississippi

[http://alt.ngs.noaa.gov/katrina/089I30C\\_KATRINA.HTM](http://alt.ngs.noaa.gov/katrina/089I30C_KATRINA.HTM)

DMSPP detection of power outage following Hurricane Katrina:

<http://dmsp.ngdc.noaa.gov/interest/katrina.html>

### NOAA Google Earth overlays.

(If you don't have Google Earth yet, go [here](#))

To use, click on the link below to load into Google Earth. Zoom in to the globe and click on one of the colored dots around the Louisiana/Mississippi coast. You'll have the option to download an overlay onto the globe, or to view the original 4k x 4k image in a web browser.

Download [NOAA Google Earth overlay \(govt\)](#)

Version 19 features:

- Includes approx 6,300 NOAA images from 8/30 - 9/5
- Timestamps in each bubble

### USDA:

**USDA Geospatial Data Gateway**

*County Based Data Products such as Mosaicked DOQ, NAIP Imagery, DRGs*

<http://datagateway.nrcs.usda.gov/>

- *Click on get data.*
- *I recommend that you use quick county(s) → Select state and one or two counties at a time. → Click on the data you need. Most recent imagery is 2004 NAIP for MS. Listed as "2004 National Ag. Imagery Mosaic" → Fill out Delivery Information. FTP option sends you an email when your order is ready for download.*
- *All data is available at no charge via FTP. In addition, if any Federal, State or Local agency cannot download the data via FTP, the NCGC will provide datasets in the Gulf coast area free of charge on CD/DVD-ROM as you need for your coordination roles. Please have your technical persons follow the directions on the website listed above and ignore payment information listed on "Step 5". Please contact RosemaryRivera (817)-509-3371 or Tony Kimmet at (817)-509-3434.*

**New Orleans Mosaic**

The USDA/NRCS/NCGC has a mosaic in a MrSID format of the greater New Orleans area including Lake Pontchartrain, north to Covington and east to Gulf of Mexico. The data source is 2004 Louisiana orthoimagery. The mosaic is called "la\_neworleans.zip" and is available at the NCGC FTP site listed below.

<ftp://ftp.ftw.nrcs.usda.gov/outgoing/>

If you need this particular dataset on DVD-ROM, please contact Tony Kimmit at (817)-509-3434.

### **CropExplorer**

*Provides maps and imagery: Rainfall, Soil Moisture, Weather. Daily Terra and Aqua Imagery*

<http://www.pecad.fas.usda.gov/cropexplorer/index.cfm>

*Go Directly to MODIS Imagery:*

[http://www.pecad.fas.usda.gov/cropexplorer/modis\\_imageview2.cfm?regionid=us&product=modis](http://www.pecad.fas.usda.gov/cropexplorer/modis_imageview2.cfm?regionid=us&product=modis)

### **NASA:**

<http://earthobservatory.nasa.gov/>

### **Dartmouth Flooding Areas:**

<ftp://edcftp.cr.usgs.gov/pub/data/disaster/katrina>

The Dartmouth Flood Observatory has provided inundation polygons generated from Landsat and MODIS data. [gisfiles/DFO\\_inundation\\_polygons](#)

### **EPA:**

#### **Restricted Access to ASPECT DATA :**

POC: Brenda J. Smith 202.564.2034 [smith.brenda@epa.gov](mailto:smith.brenda@epa.gov)

ASPECT is a screening chemical and radiological platform and is not a first order measurement platform. The photographic collection uses two Olympus E20N digital cameras of 5 MPix.

<ftp://ftp.lanl.gov> 

### **US Air Force:**

Film was processed at Wright Patterson with select annotated images posted on the NAIC web site at

<http://www.wpafb.af.mil/naic/katrina.html>

### **US Army:**

[ftp://ftp.usace.army.mil/pub/hqusace/GIS-Hurricane\\_Katrina/Maps/UOC/](ftp://ftp.usace.army.mil/pub/hqusace/GIS-Hurricane_Katrina/Maps/UOC/)

<ftp://ftp.usace.army.mil/pub/sad/season2005/data/>

<ftp://ftp.usace.army.mil/pub/sad/season2005/katrina/shapes/>

The data contained in these folders were just dumps of what we could quickly send out. I will try to get it better organized into folders. I did not receive metadata but will see if it is available. The CADD files should be in LA State Plane NAD'83. I thought they would be 3D, but after reviewing them found that they weren't.

Anonymous login and use your email address as the password

### **US Army Topographic Engineer Center:**

<http://www.tec.army.mil/KatrinaEOC.htm>

To download the 02 Sep IKONOS mosaic:

<ftp://ftp2.erdc.usace.army.mil/pub/crl/Katrina/>

WMS service for ArcMap9.0 or later. We are populating this site with several data layers. You can display the IKONOS mosaic along with the twice daily updates of the NGA damage assessment polygons. We will be adding other vector and raster data as we receive it. The WMS address is

<https://rsgis.crrel.usace.army.mil/cgi-bin/wms/katrina>

### **Vendor Sites:**

All vendors have Katrina imagery online. Sites allow user to view imagery without any special software.

### **Space Imaging:**

<http://www.spaceimaging.com/>

Restricted Access

<ftp://katrina.needhighspeed.net> 

or <ftp://NGA:AQ99WP@katrina.needhighspeed.net/> 

### **Digital globe**

For a very fast look at imagery.

<http://www.globexplorer.com/disasterimages/>

### **ORBIMAGE:**

<http://www.orbimage.com/>

### **Google Maps:**

Some Digital Globe imagery can be viewed with the Katrina tab on Google Maps. You need to zoom in to a coastal area to have the Katrina tab show up.

## State/University Data:

### Mississippi Automated Resources Information System (MARIS)

[www.maris.state.ms.us](http://www.maris.state.ms.us)

The different layers are listed on the site. It varies in vintage and quality. Recently added orthophoto data (NAIP August 2004, One meter true color, seamless by-county) is available and downloadable at this site for all 82 Mississippi counties. County-wide LIDAR data for the three coastal counties (Jackson, Hancock and Harrison) will be available shortly.....maybe this coming week. 10 meter DEMs are available at this site for the counties.

**7. Latimore Smith – The Nature Conservancy** – aerial and ground work to assess damage on our resources. Also policy work, supplemental bill, recommendations. 50 or so important portfolio sites. What's happened to biodiversity and what is long term impacts to biodiversity. Fish kills in small streams in fl parishes w/ decreased DO? Trees, massive downage. Huge wildfire potential. Old growth damages. Usually trees bigger than 20 dbh are ones that snapped. Marshes ripped out old Spanish fort area. Lower pearl? About eighty percent got hit, hardwood mostly though closer to coast, cypress got hit too. Honey island okay. Older trees got hit hard.

Turtle cove, 7-8 ppt salinity (3-4 pre storm). Schaffer said okay. Not a huge pulse in to Maurepas due to north wind. Four real time probes in operation on Lake Pontchartrain.

**8. Louis Heaton – Department of Agriculture and Forestry - Office of Forestry** – flew area north of lake just after storm. % of parish damaged determined. Applied to forest inventory analysis data in order to determine damaged timber. Softwoods, roughly 1 billion board feet damaged. Hardwoods same. Forest service did aerial image sketch map of three hardest hit parishes, analyzing data and will be developing more precise map. Brought in incident management team in from Texas for relief work. New team, assessment team moving forward. Doziers practically useless given amount of downed timber. Fire needs being assessed. FL team will bring in additional suppression resources. Recent mtgs with LFA, mills, loggers, consultants, etc. to identify options for salvage. May be able to salvage upwards of 40% of downed material. Majority of loss in larger size classes younger plantations likely salvageable. DEQ/LDAF to expedite permitting to establish wet decking sites to hold excess supply of salvaged material. Logging capacity limited so looking to bring in loggers from other regions in LA and other states (competition for loggers and mill capacity with MS). Have approx a month from damage to salvage and put under flooded conditions. Increased availability of reforestation cost share programs needed for private landowners. Will focus some assessment resources on increase in invasives in disturbed areas. Need to treat seedlings with systemic insecticide to allow for immediate reforestation in recently cleared sites (minimize weevil problems) have capacity for a minimum of 5 million seedlings.

POC – Paul Frey, secondarily Louis Heaton

### **9. Parke Moore—Louisiana Department of Wildlife and Fisheries**

Storm prep for Rita; emergency staging response. Assessment to resources. 50,000 acres in mm system, prior to Katrina. 65% in hardwoods damage similar in pines. Pearl, minimal damage. Massive areas where marsh has rolled onto woody overstory. Opened areas. 30,000 acres of marsh habitat impacted. Submerged aquatic damage substantially damaged. Alligator season delayed one week. Closed lottery teal hunts at white lake.

### **10. Quin Kinler – Natural Resources Conservation Service**

#### **EMERGENCY WATERSHED PROTECTION PROGRAM**

- NRCS personnel continue to work closely with local government officials to carry out emergency work. Thus far, work has been initiated to execute approximately 30 exigency contracts, primarily pertaining to removal of debris from clogged bayous and canals to prevent additional flooding in the event of additional significant rainfall. Additionally, NRCS is working on exigency contracts to repair damaged levees in affected areas.
- NRCS personnel are working with contractors, local government officials, and landowners to remove and dispose of dead animal carcasses under the authority of FEMA. Thus far, in Tangipahoa, Washington, and St. Tammany Parishes, carcass removal has been primarily composed of pets and wildlife. In Plaquemines Parish, over 100 cattle and other large animals have been removed and disposed of with NRCS assistance.
- Beyond the ongoing exigency measures, NRCS will continue to work with local officials to assist with debris removal, canal bank and levee stabilization, pump repairs, etc.

#### **COASTAL WETLANDS**

- NRCS personnel have assessed the effect of Hurricane Katrina on a number of NRCS-sponsored coastal wetlands restoration projects, including projects in the planning stages, under construction, and previously constructed. Assessed projects include: Naomi Outfall Management Project (BA-3c); Barataria Landbridge Shoreline Protection Phases 1, 2, 3, and 4 (BA-27, BA-27c, BA-27d); Jonathan Davis Wetland (BA-20); Raccoon Island Shoreline Protection and Marsh Creation (TE-48); Raccoon Island Breakwaters Demonstration Project (TE-29); South Shore of The Pen Shoreline Protection and Marsh Creation (BA-41); GIWW to Clovelly Hydrologic Restoration (BA-2); Barataria Bay Waterway West Shoreline Protection (BA-23); Barataria Bay Waterway East Shoreline Protection (BA-26), TE-46 West Lake Boudreaux Project.

#### **ISSUE OF CONCERN**

- It has been estimated that 1.4 Billion board feet of pine and 1 Billion board feet of hardwood has been damaged by Hurricane Katrina. It is estimated that 20-30% can be salvaged. Un-salvaged material will result in a tremendous amount of debris, creating severe fire hazards and preventing re-planting / reforestation of damage lands. Attempts to remove the debris will present quite a challenge from a disposal standpoint. Efforts to compost or otherwise utilize un-salvageable material should

be pursued in lieu of broad scale burning. New and innovative uses / method should be considered.

**11. Rick Raynie – Department of Natural Resources** – initial response, social services and field assistance. Damage assessment focused on CWPPRA, State, and WRDA restoration projects. First assessments have been on project infrastructure via flyovers and ground site visits. LDNR may be going to Chandeleurs soon to assess the PO-27 project. Structural damage to most restoration projects is minimal. However, substantial damage to water control structures associated with Caernarvon Outfall Management project (not the diversion structure) was apparent from the flyover. Ground assessment has not yet occurred. Monitoring section is in the process of assessing ecological effects of Hurricane Katrina and is working with Greg Steyer (USGS) and federal partners to get on ground to reassess variables associated with restoration projects. Environmental conditions will be documented to assess storm impacts, and serve as a baseline for documenting environmental recovery. Logistics have prevented some ground assessments. LDNR would like to coordinate with other agencies. The monitoring section has not yet been able to visit remote water level and salinity data recorders since Katrina. Field trips are being planned for early October.

POC – Rick Raynie 225-342-9436, [Richard.Raynie@LA.gov](mailto:Richard.Raynie@LA.gov)

**State and Federal Agency Post Hurricane Katrina  
Natural Resource Monitoring and Assessment Efforts Known to Date**

***DRAFT SUMMARY***  
***(9/23/05)***

**Habitat Assessment**

- ***United States Geological Survey, National Wetlands Research Center*** – NWRC conducted a preliminary investigation of land loss from Thematic Mapper 5 Satellite imagery collected on September 7, 2005 and will be obtaining satellite imagery every 16 days to determine extent of land loss. NWRC is looking to coordinate field ground-truthing of the imagery. NWRC has also conducted post-hurricane aerial flights to assess (with oblique photography) damage on CWPPRA projects, barrier islands and Department of Interior (DOI) lands. The NWRC has prepared a Katrina Assessment and Science Strategy that identifies research and assessment objectives and tasks that is currently being reviewed by USGS leadership. It focuses on six key areas: (1) Wetlands and Coastal Environments: Impacts, Protection, and Restoration; (2) Migratory Birds and Other Wildlife: Habitat and Population Impacts; (3) Contaminant Risks to Aquatic and Terrestrial Life; (4) Zoonotic Disease Risks: Transmission Pathways and Impacts and Predictive Modeling; (5) Landscape Modeling and Integration; and (6) Science for Emergency Response and Recovery. The NWRC, as co-chairs with LDNR on the CWPPRA monitoring program, is developing a plan to conduct post-hurricane assessments of restoration projects in the impact area. The NWRC is currently working with DOI agencies and other partners to develop a clearinghouse of what post-hurricane monitoring is being conducted. This will be a Interactive Map Server identifying the monitoring station locations, what is monitored, frequency of collection and contact information. Information on NWRC activities can be found at <http://www.nwrc.usgs.gov/hurricane/katrina.htm>.
- ***United States Geological Survey, Eros Data Center*** – USGS/EDC has developed a remote sensing clearinghouse located at <http://edc.usgs.gov/katrina/>. This site contains aerial photography, satellite imagery, landcover, and elevation datasets, as well as maps and links to other USGS science support.
- ***United States Geological Survey, Coastal and Marine Geology Program*** – USGS/CMGP has conducted laser altimeter (lidar) surveys and before/after photo comparisons at Dauphin Island, AL, along the Mississippi Shoreline, and along the Chandeleur Islands. Information can be found at <http://coastal.er.usgs.gov/hurricanes/katrina/>.
- ***US Fish and Wildlife Service*** – USFWS estimates a direct loss of 150,000 acres of coastal wetlands from Katrina. Additional direct losses include severe impacts to species at risk including the Brown Pelican, beach mice, Mississippi Sandhill Crane, sea turtles, Piping Plover, Sandwich Terns, and Redhead ducks. Secondary losses to habitat and species are predicted to result from damages caused by oil spills, reduced oxygen, saltwater intrusion and increased fuel loads. USFWS will

- be working with other agencies to assess the impacts of Katrina on saltwater intrusion, water quality, fuel loading and fire danger, effects of oil, chemicals, or other hazardous waste releases, acceleration of invasives, successional changes (loss of old growth or mature stages), siltation, dune formation, barrier island overwash and breaching, effects of non-native plants and animals released from captive facilities, fish habitats and populations, migratory bird habitats and populations, threatened or endangered species habitats and populations.
- ***Louisiana Department of Wildlife and Fisheries*** – LDWF estimates a tremendous loss to wildlife habitat in Southeast Louisiana as a result of Katrina. Total economic losses resulting from a decline in hunting, trapping, and fur harvest approach \$150 million during fiscal year 2005/06 with losses in subsequent years anticipated until adequate habitat is restored. Additionally, it is unknown how releases of polluted waters will impact the entire aquatic food chain. The department has developed an initial proposal to address research, monitoring and equipment needs which approaches \$12 million. Studies they will be conducting include vegetation transects to monitor species regeneration, availability, and utilization; transect studies by ground travel to monitor wildlife species, alligator, nongame species, deer, turkey, rabbits, squirrels; restoration of wildlife species if needed; forest impact studies; waterfowl, migratory game and non-game bird studies; assessment of threats and deviations from CWCS/Wildlife Action Plan to restore non-game wildlife; aerial photography analysis to assess land/water ratios and habitat changes pre and post Katrina, on selected sites; natural community assessments in Washington and St. Tammany Parishes. Importantly, an additional \$2 million is required to establish adequate water monitoring stations through the impacted area for a 10 year period to assess impacts to aquatic wildlife.
  - ***Louisiana Department of Agriculture and Forestry, Office of Forestry*** – Have developed estimates of damage to forest resource in Florida Parishes based on flyovers and Forest Inventory Analysis data. Forest Service has done aerial image sketch map of three hardest hit parishes. Upwards of \$1 billion damage to softwoods, \$1 billion to hardwoods. In process of analyzing data and will be developing more precise maps.
  - ***The Nature Conservancy*** – Aerial imagery assessed to determine damages to portfolio sites (areas of high biodiversity significance) across Louisiana, Mississippi, and Alabama. Site visits to several preserves though many not yet accessible.
  - ***Louisiana Department of Natural Resources*** – DNR personnel have begun assessing the effects of Hurricane Katrina on constructed CWPPRA, State, and WRDA projects. Several flyovers have been conducted and also ground trips have been conducted and are ongoing.
  - ***Natural Resources Conservation Service*** - NRCS personnel have assessed the effect of Hurricane Katrina on a number of NRCS-sponsored coastal wetlands restoration projects, including projects in the planning stages, under construction, and previously constructed.

- **Louisiana Department of Culture, Recreation and Tourism** – State Parks early response is on human needs though have done initial visual assessment of habitat loss throughout state park system.

### **Water/Sediment Quality Monitoring**

- **Louisiana Department of Environmental Quality** – Phase I consists of monitoring for a variety of constituents in surface waters of Lake Pontchartrain and surrounding areas (tributaries and drainage canals entering into the lake, as well as the Passes through which the lake discharges). Parameters tested for include conventionals, sodium, dissolved mercury, dissolved metals (Cr, Cu, Cd, Pb, Ni, As, Zn), nutrients, total organic carbon, BOD5, COD, volatile organic compounds, semi-volatile compounds, pesticides, PCBs, cyanide, and fecal coliform.
- **United States Geologic Survey, Water Resources Division\*\*** – conducting water chemistry sampling at 10 sites on lake, 22 bacterial sites on lake. Working with DEQ on strike team. Geologic Division will be analyzing sludge from in and around city. USGS will also be monitoring for shallow ground water contamination.
- **US Environmental Protection Agency** – Early response water quality monitoring in city proper. In New Orleans monitoring and analyzing sediments. 13 soil sampling sites have been established in St. Bernard Parish, Louisiana, location of large oil spill.
- **EPA, Gulf Breeze Lab**. Working with Reg 4 and 6, focusing on drainages of lake (Passes, Lake Borgne) and east to Dauphin Island (i.e. MS sound). Sampling water and sediments. Also doing quarterly hypoxia survey in dead zone. Partnering with NOAA to do National Coastal Assessment data. 2003-04 used as baseline for this assessment though will be coming up with better indicators due to unique deltaic system in LA. Reg IV is developing a design complementary to Gulf Breeze's sound work that will focus on bays and bayous. Looking at water quality and sediment (and dioxin in MS).

\*\* USGS is developing a website that will house spatial information on water quality monitoring and assessment efforts across the affected area by all known agencies and researchers.

### **Biological Sampling**

- **American Fisheries Society** is polling fisheries biologists to determine monitoring work being planned.
- **NOAA** doing shellfish monitoring through Mussel Watch program - Oyster tissues, pathogen indicators, sediments for contaminants. Coordinating with FDA.