



# PIANC Bulletin

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Permanent International Association of Navigation Congresses (PIANC)

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## Editor's Note

As a departure from regular duties and endeavors, the energies of many of us have been most recently focused on addressing the impacts of Hurricanes Katrina and Rita that have occurred along the Gulf Coast. For this reason, the current issue of the U.S. Section PIANC Bulletin has been developed as a Fall-Winter issue. We anticipate resuming quarterly issues in Spring 2006.

Edmond J. Russo, Jr., P.E.  
Editor, U.S. Section PIANC Bulletin

## Emergency Response to Navigation Infrastructure Impacts Resulting from Hurricane Katrina, Rita, and Wilma by Edmond Russo

The 2005 Hurricane Season was extremely active, having a significant impact on navigation infrastructure across the U.S. Gulf Coast. The Corps' Southwestern Division, Mississippi Valley Division, and South Atlantic Division, all became involved in emergency response to rapidly assess damage and address navigation infrastructure restoration needs. The charge was to minimize disruption to shallow- and deep-draft navigation, which is heavily integrated into the continuously operating worldwide cargo transportation network.

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The identification of post-hurricane conditions and restoration work involved collaboration between the Corps, pilots, shippers, ports, U.S. Coast Guard, NOAA, U.S. Navy, contractors, and others, to identify impacts, set up lines of communications, and orchestrate restoration efforts of channels and structure operations.

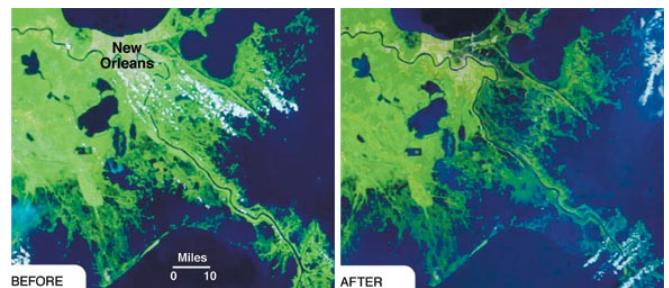
Major navigation facilities impacted included the Corpus Christi Ship Channel, Houston Ship Channel, Galveston Entrance Channel and Harbor, Sabine-Neches Channel, Calcasieu River Ship Channel, Mississippi River Ship Channel, Mississippi River – Gulf Outlet, Gulfport Channel and Harbor, Pascagoula Channel and Harbor, Mobile Channel and Harbor, and the Gulf Intracoastal Waterway.

Teams rapidly formed to obtain channel hydrographic surveys for determination of shoaling impacts, as well as to identify the locations and disposition of sunken obstructions. Dredges were deployed in emergency mode to address critical channel reaches, and floatillas of salvage plant were deployed to raise wrecks located in channels, as well as around navigation structures. Low-level lift bridges over waterways, as well as locks, were inspected, repaired, and returned to operations. Aids to navigation that were found to be lost in the storm were replaced.

The entire effort required a tremendous level of effort by those involved. They quickly developed synergy working together for a common cause to bring the U.S. Gulf Coast navigation back on line. The chronology and status of navigation impacts and response can be found at the following website: <http://www.hq.usace.army.mil/cepa/katrina/navigation.html>.

## Integrating Water Resources Solutions Among Multiple Objectives for a Full Range of Hurricane Protection in South Louisiana *by Edmond Russo*

South Louisiana has a rich diversity of water-related projects of National proportion, spanning from an ecologically unique and productive coastline, to a geographically significant infrastructure that supports America's economy. The wide scale catastrophic impacts of Hurricanes Katrina and Rita on water resources developments in South Louisiana have stimulated discussion at the National level of how the United States characterizes the region's water-related problems, as well as what we as a people value in project development. This is evidenced by recent legislation authorizing the Corps to perform analysis and design for identification of alternatives that comprehensively address a full range of hurricane protection in South Louisiana in a multi-objective context. In the project development process, emphasis will be placed on achieving synergistic, interoperable integration of hurricane protection, flood control, interior drainage, navigation, and ecosystem restoration projects.



*Pre- and Post-Katrina/Rita comparison of Southeast Louisiana land loss (Credit: [www.umces.edu](http://www.umces.edu))*

During report development, the Corps will consult with the State of Louisiana and its agencies. The State will solicit and synthesize the diversity of views of interested parties on the project for consideration during the analysis and design work.

A wide variety of experts are anticipated to work on the effort, from in and outside of the government, nationally and abroad. With work beginning in January 2006, the resulting technical report will take approximately 2 years to complete, and has an estimated cost of \$20 million. Edmond Russo, formerly of the U.S. Army Corps of Engineers, New Orleans District, and currently Chief of Coastal Engineering Branch at the U.S. Army Engineer Research and Development Center's Coastal and Hydraulics Laboratory, was recently tasked to manage the project.

This is the water resources challenge of the century for our Nation, requiring the best expertise and technologies available. Achievements of other countries on this scale, having addressed problems of similar scope and complexity in the past, are tangible examples to examine, and demonstrate that the need can be met. In particular, the Netherlands made great strides in this arena, as exhibited by construction of the Maeslant and Eastern Scheldt (Oosterschelde) Storm Surge Barriers, among a multitude of other related water projects.

The Maeslant Barrier resides at the entrance of the New Waterway (Nieuwe Waterweg) in the Port of Rotterdam. Based on a 2003 annual cargo throughput of 328 million tons at the port, it is the largest in Europe and the world. With such great economic importance at stake, the barrier was designed with the capability to open and close on demand for minimizing impacts to shipping. The barrier is only closed under exceptional storm-related circumstances, which occurs about once or twice each decade. This moveable gate plan implemented at the channel entrance eliminated the need for raising the dikes around Rotterdam, and provides the capability of keeping storm surge water from entering the port's interior. With sector gates that can close off an approximately 1,000-ft-wide navigation channel opening, the barrier fulfills multiple water resources objectives by not hindering shipping while providing elevated storm protection to the interior.



Maeslant (●) and Eastern Scheldt (★) Barriers (Credit: sio.midco.net)

The Netherlands (Credit: plasma.nationalgeographic.com)



**Maeslant Barrier, Port of Rotterdam (photograph credit: [explorer.altopix.com](http://explorer.altopix.com)).**

After a catastrophic dike-breaching storm event in 1953, it became apparent that storm surges should be prevented from entering the Eastern Scheldt estuary. Prevention of elevated water levels on the dikes around the Eastern Scheldt would reduce the threat to loss of their integrity during storm events. To address this problem, the Eastern Scheldt Storm Surge Barrier was built. In other regions, continuous impermeable barriers were built to keep storm waters away from protected areas. This was a great concern at the Eastern Scheldt estuary, due to the implications on the coastal environment. The ability for clean, salty seawater exchange in the estuary sustains its rich feeding and nursery grounds for a diversity of wildlife and fisheries, which are highly valued commercially. A unique variety of plants grow in this fertile environment, and mudflat, salt marsh, and sandbar geomorphological structure form important functions of providing natural bird habitat.



**Eastern Scheldt Storm Surge Barrier (photograph credit: [explorer.altopix.com](http://explorer.altopix.com)).**

To preserve the estuary's ecological functions, the Dutch built a barrier that can open and close. It consists of piers that support moveable gates for this purpose. This design allows the gates to remain open for exchange of tidal waters between the sea and Eastern Scheldt estuary. The gates are closed during storm events to achieve storm protection. With a high value placed on maintaining the unique ecology of the Eastern Scheldt estuary, the barrier design has a theme of achieving multiple water resources objectives of storm protection and ecosystem preservation.

In both the cases of the Maeslant and Eastern Scheldt Barriers, there were other alternative plans that were less costly, but did not achieve the multiple objectives of the implemented plans. The Dutch's higher order of project planning and commitment to follow through embody a model to follow for advancing a comprehensive, full ranging hurricane protection plan that is synergistic with sustaining a populated, working, and ecologically valuable coastal Louisiana.

## Submit Your Abstract for PORTS 2007 – “30 Years of Sharing Ideas... 1977-2007” by Bruce Lambert

Port and harbor facilities development are undergoing exciting and significant challenges in response to the world’s ever changing trade, economic, and political conditions. PORTS 2007, Co-sponsored by U.S. Section PIANC (US-PIANC) and the American Society of Civil Engineers’ (ASCE) Coasts, Oceans, Ports, and Rivers Institute (COPRI), will offer an all-encompassing array of professional and technical papers pertinent to the progress of port and harbor facilities development.

These papers are expected to address the complex, innovative, and state-of-the-art technical aspects associated with the planning, design, construction, maintenance, and operations of worldwide port and harbor facilities. A diverse group of attendees involved in the successful development and operations of port and harbor facilities will attend this conference and hear presentations of these papers. Attendees will exchange ideas, debate points of view, discuss case studies, methods, procedures, standards, and techniques; and share experiences, innovative solutions, knowledge, and lessons learned.

In the PORTS Conference traditions, special emphasis will be placed on providing a practical international and national forum for issues and ideas related to ports and harbors, inland waterways, and navigational improvements.

Join us March 25-28, 2007, in San Diego, California, to continue the tradition of the ten prior PORTS Conferences. U.S. Section members are invited to take this opportunity to share your personal port and harbor development insight, technical experience, and knowledge, by submitting an abstract for consideration.

See the PORTS 2007 website for details on abstract submittal:  
<http://www.asce.org/conferences/ports07/index.cfm>.

## An Invitation for U.S. Section PIANC Members to Collaborate Internationally in Port Development by Bruce Lambert

Dr. Roland Boutin, Director, Maritime Works of the Atlantic Region, Brest French Navy Port (Direction des travaux maritimes de la région Atlantique, Brest Armees), is seeking international collaboration for design of a dry dock caisson gate. The installation must be able to resist seismic action that would place stress in the rubber gasket of the system. This is a very challenging technical consideration. Dr. Boutin invites the PIANC community to contact him for discussion of the problem and exchange of technology applied internationally in this situation.

Dr. Boutin may be reached using the following contact information:

Direction des travaux maritimes de la région  
 Atlantique  
 Le Château  
 BP 15  
 29240 BREST ARMEES  
 Tel +33 2 98 14 92 11  
 Fax +33 2 98 22 07 15  
 Email: [roland.boutin@wanadoo.fr](mailto:roland.boutin@wanadoo.fr)

## Fourth Meeting of the Organization of American States’ (OAS) Inter-American Committee on Ports (CIP), September 12–16, 2005, Maracaibo, Venezuela by Bruce Lambert

**Background on the Principal Objectives and Functions of the OAS CIP.** The purpose of the OAS CIP is to serve as a permanent Inter-American forum for the highest-ranking national government

authorities on port-related issues in the 34 member states, and to strengthen cooperation in the area of hemispheric port development, with the private sector's active participation and collaboration. To accomplish these objectives, the CIP holds regular meetings every 2 years. The main functions of the CIP are the following:

- To serve as the principal advisory organ of the Organization and its member in all topics concerning the development of the port sector.
- To propose and promote hemispheric cooperation policies in accordance with the guidelines of the General Assembly, the Inter-American Council for Integral Development (CIDI), and the Summit of the Americas.
- To facilitate and propose the improvement of the activities of the port sector in the hemisphere.
- To promote the adoption of port sector cooperation agreements among the governments of member states.
- To collect and disseminate information related to port sector activities among member states.
- To generate, analyze, propose and adopt programs, projects and activities on port sector matters, among other functions.

The CIP has held four meetings: Guatemala, Guatemala (1999), San Jose, Costa Rica (2001), Merida, Mexico (2003), and Maracaibo, Venezuela. The OAS 34 member States are: Antigua and Barbuda, Argentina, Belize, Bahamas, Barbados, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Dominica, the Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Saint Kitts and Nevis, Trinidad and Tobago, the United States, Uruguay and Venezuela.

#### **Structure of the September 2006 Meeting.**

During the first 2 days of the conference, there were

meetings of the CIP's three Technical Advisory Groups (TAGs): Port Operations, Navigation Safety and Environmental Protection, and Port Security. The conference's Plenary Sessions were held on the third through the fifth day. Mr. Bruce Lambert, Secretary of the U.S. Section, made a brief presentation on the Memorandum of Understanding (MOU) between the U.S. Section PIANC and CIP during the conference. The meeting was translated into English and Spanish, and the presentations were made available to attendees on CD.

**Observations on the CIP Meeting.** Echoing the three TAGs, three themes arose throughout the session:

- The correct value of ports and port operations.
- The environmental issues concerning ship operations and dredging.
- A continued focus on port security.

The contribution of ports to the national economies of the CIP member nations remained a constant theme throughout the meeting. The first speaker spoke on port tariffs (port charges) and the ability of ports to generate sufficient revenues to meet various objectives. Mr. Ricardo Sanchez, with the United Nations Economic and Social Commission for Latin American and the Caribbean (UN ECLAC) mission, suggested that economic growth is dependent upon both the quality of service and the investment in infrastructure, but it is difficult to quantify growth objectives to examine investment needs in the region. The "correct valuation" of ports and port concessions were mentioned in other sessions, including a very informative presentation by Price-Waterhouse consultants in attendance at the conference. Others suggested the need to estimate the Net Present Value of Port facilities. The correct valuation would allow ports to meet stated objectives, to be profitable to meet local stakeholders or to generate new revenues for infrastructure development. But in this mix, the laws for port ownership and operations are still somewhat unsettled in the region, unlike the United States, and to a lesser

extent, the European Union. One speaker mentioned that in some ways environmental concerns were forcing port users to pay for environmental impacts from navigation operations. Another mentioned that simply changing rates might not lead to greater efficiencies, especially if investment decisions are not adequately funded. The major observation is the region seems to be struggling with the political ramification of port privatization, which in some regards looks very similar to the U.S. port landlord model.

The Navigation Safety and Environmental Protection TAG discussed a number of different topics. Mr. Essig, with the Venezuelan Instituto Nacional de los Espacios Acuaticos e Insulares, made two very interesting speeches on invasive species in ballast water and port contingency planning in Latin America. Most ports do not have well defined port contingency plans, which may be an area that should be pursued for additional research and support. There was an interesting presentation on vessel squat related to vessel operations in response to water depth and channel dimensions. During the Plenary session, the environmental TAG mentioned the desire to see reliable criteria on port design and operations, etc., established for the region, to assist in port and harbor planning, but saw these standards coming from the Environmental Protection Agency (EPA) in each respective country.

Port security remains a high interest topic, especially from the perspective of the U.S. Mission to the OAS. Most of the port security efforts focused on training, with the U.S. Coast Guard's assistance, but there are other groups within OAS that want to be more involved in port security. Guatemala is looking at developing a 24-hour notification system, and Argentina is looking at implementing International Maritime Organization (IMO) security standards. The Venezuelan Government questioned the apparent conflict between various standards on maritime security and even with relationship of international standards and national sovereignty.

**Other Topics Discussed.** There was a valuable discussion on short sea shipping. Clearly, some areas of Latin America are more interested in developing coastal trade than others, but the region is seeing water as one mechanism to develop freight infrastructure.

There was also an interesting session on training in the region. There currently are many venues for training and conferences in the region. Most people recognized the need for continuing education, but were concerned over scheduling, funding needs, and conveying the importance of it as an investment in port personnel.

## **U.S. Section PIANC Signs MOU with Organization of American States** *by Bruce Lambert*

The U.S. Section has begun promoting PIANC in the Latin American region, through its partnerships with the American Association of Port Authorities, and now with the Inter-American Committee on Ports. The U.S. Section recognizes the unique role of the Inter-American Committee on Ports to provide leadership to governments, as well as ports, and industry groups throughout the Americas on navigation in the region.

PIANC International supports sharing navigation information to the region, which was expressed through its 2005 Resolution, entitled "PIANC for the Americas," which outlined three areas of support to the region:

- First, providing assistance in developing innovative and sustainable solutions to enhance development of harbors and waterways.
- Second, mutual cooperation to ensure safe and secure operation of navigation infrastructure.
- Third, development of mechanisms and agreements that transfer technological assistance, training and research.

On December 7, 2005, the Assistant Secretary of the Army (Civil Works), in his capacity as the Chairman of the US-PIANC signed a MOU between US-PIANC and the General Secretariat of the Organization of American States (GS/OAS). This MOU is intended to encourage cooperation between US-PIANC and GS/OAS and to provide a framework for the entities to pursue cooperative projects.

In his address at the signing ceremony, Mr. Woodley placed an emphasis on fostering international port partnerships. Mr. Woodley stated “Ports are no longer stand alone entities, but national and regional economic drivers with their influence reaching further than the port gate. In this new age of ports, identifying and sharing solutions ensure our success in developing sustainable economic and environmental navigation projects with relevant parties.”

The signing was held in conjunction with the meeting of the Executive Board of Inter-American Committee on Ports of the Organization of American States. This is a semi-annual meeting that was held December 7-9, 2005, in Houston, Texas.

## Ship Channel Manual Highlights

by Bruce McCartney

Manuals and Reports on Engineering Practice No. 107, *Ship Channel Design and Operation*, 2005, developed by the Waterways Committee of ASCE COPRI, represent a major achievement.



*Figure 8-2. From the Manual, two Lakers passing in the St. Clair River, Michigan*

The importance of ship channel safe and efficient operation has had little visibility in the United States in the past. Over 95% of all foreign imports and U.S. exports use ship channels. Based on this activity, our national economy, and everyday lifestyle depend on this vital transportation link. Ship channels are also of major strategic military importance for Navy and Coast Guard ship deployment.



*Figure 13-5. From the Manual, restricted bridge clearance, Charleston Harbor*

Manual 107 presents an overview of the 100+ years of ship channel design and operation experience of the U.S. Army Corps of Engineers. Some of the manual subjects are channel dimensions, dredging and disposal, environmental



considerations, past and present jetty construction methods, and maintenance requirements following natural disasters (volcano eruptions, earthquakes, major floods, and hurricanes).



**Figure 10-2.** From the Manual, *Industry Hopper Dredge SUGAR ISLAND splits its Hull in Gulf of Mexico near Galveston, Texas*

While the manual's principal focus is practice in the United States, the chapters on channel dimensions include design methods used in other countries as reported by PIANC. The channel design criteria presented in the PIANC report "Approach Channels, A Guide for Design", June 1997, was compared to methods used by the U.S. Army Corps of Engineers in the United States. This comparison showed very good correlations for the factors used in concept design. For detailed design both PIANC and the Corps recommend the use of vessel simulators.



**Figure 12-1.** From the Manual, *Soo Locks at Sault Ste. Marie, Michigan; ship departing from Poe Lock*

The Manual also presents the activities of the U.S. Coast Guard and NOAA that support navigation. The Coast Guard responsibilities include aids to navigation, accident response, ship-safety inspection, ice breaking, and waterway security. NOAA provides navigation charts, tide and current information, and marine weather forecasts.



**Figure 19-8.** From the Manual. *USACE Hopper Dredges ESSAYONS, WHEELER, and McFARLAND at the Mississippi River Head of Passes*

This manual is another step toward developing a body of literature to support an emerging specialty, Navigation Engineering, in the Civil Engineering discipline. Manual 107 along with ASCE Manual 94, *Inland Navigation: Locks, Dams, and Channels* (1998), provide the first comprehensive overview of the U.S. navigation system. These two manuals cover ship channels for deep draft vessels and inland channels for barge traffic.

This manual is intended to be a design guide for practicing engineers, text for graduate-level courses, and reference for management and others involved with the deep-draft vessel navigation system. The 257-page manual includes 126 photographs and graphics in an easy to read format. Current practice is supplemented with past methods to show the path traveled to reach the present.

Bruce McCartney is a member of the ASCE COPRI Waterways Committee, Email: [MCFAMM@aol.com](mailto:MCFAMM@aol.com). To order this manual, please visit [www.pubs.asce.org](http://www.pubs.asce.org), ISBN number 0-7844-0770-3, List \$123.00, ASCE/COPRI members \$92.95.

## Corps' Fish Study Nets Useful Data

by JoAnne Castagna, Ed.D.

In a New York City conference room with large windows overlooking the Port of New York and New Jersey, Dr. Mary Fabrizio, Chief of the Behavioral Ecology Branch of the Northeast Fisheries Science Center, recently presented to scientists the results of an extensive fish tagging study she performed for the U.S. Army Corps of Engineers.

As the study's principal investigator, Fabrizio told the scientists, "The findings will be used to update the EPA's criteria that determine what dredged material from the port is environmentally safe to place in the Historic Area Remediation Site" (HARS).

After undergoing a series of biological and chemical analyses, dredged sediment from the channels within the Port of New York and New Jersey is placed in the Atlantic Ocean at HARS if found acceptable as remediation material.

The HARS is an approximately 15.7 square nautical mile area – 3.5 nautical miles east of Highlands, New Jersey, and 7.7 nautical miles south of Rockaway, New York.

Remediation material is used to cover or "cap" the dredged sediment that was placed there previously, which does not meet EPA's current placement standards. This cap remediates the site and improves the habitat conditions for aquatic life in HARS.



*Inserting a transmitter into a black sea bass*

"After consultation with the Corps' New York District, the U.S. EPA Region 2 sets the final criteria for what is suitable for placement in HARS. Several years ago, EPA indicated they wanted to update this criteria by using a risk-based approach," said Monte Greges, Chief of Dredged Material Management Section, U.S. Army Corps of Engineers, New York District.

"One of the parameters that goes into creating this risk-based criteria is the residency time of fish in HARS because it is assumed that the more time the fish spend at HARS, the more organisms they

will eat that have been impacted by dredged material placed there.”

“The New York District felt that EPA’s information on residency time was incomplete and needed to be improved, so we initiated and funded a fish tag study to better answer the question of how much time the fish actually spent within the HARS boundary,” said Greges. “The results from this study will be provided to EPA for use in their development of this risk-based criteria for dredged material proposed for HARS placement.”

The Corps’ U.S. Army Engineer Research and Development Center, Waterways Experiment Station in Vicksburg, Mississippi, managed the study and contracted the Northeast Fisheries Science Center (NEFSC) to perform it.



*Scientists disassembling an array that holds the receiver in order to retrieve the data*

The study was from June 2003 to June 2004 and included 145 healthy adult fish captured at HARS. The species captured included 122 black sea bass (*Centropristis striata*) and 23 summer flounder (*Paralichthys dentatus*) or “fluke,” both important recreational and commercial fishing. The two species studied were active at HARS from May to December. During the winter these species move to deeper offshore waters.

To monitor activity, fish were tagged with ultrasonic transmitters that were surgically implanted in their abdominal cavities. The transmitters are 30 mm long and 9 mm in diameter and were programmed to send 68 KHz signals, or pings, once every 3 to 5 minutes for about an entire year.

To pick up the signals, 72 receivers were strategically moored throughout HARS, 800 meters apart. Every signal detected by a receiver was decoded electronically and the receiver recorded the identification number of the transmitter, the date, and the time of the day the signal was detected.

These records were accumulated in the memory of the receiver. The receivers were retrieved in the summer of 2003 and the summer of 2004. When the receiver was retrieved, scientists downloaded the data to a computer. Scientists had collected 1.4 million records.



*HARS Study Site*

Recently, preliminary results revealed information on the fishes’ use of the HARS habitat, seasonal activity, and dispersal out of HARS.

#### *Preliminary Results.*

- **Habitat usage:** The ocean floor of HARS is composed of varying levels of dredged sediment. During the summer, both fish

species spent most of their time in the shallow areas of the placed sediment.

- **Seasonal activity:** Black sea bass exhibited greater activity in HARS during the summer than during the fall. Summer flounder activity patterns were more complex.
- **Dispersal:** All of the fish were captured and released within the HARS boundaries, but each species moved or “dispersed” out of the HARS at different times and rates. A handful returned to HARS 1 year later.

Fabrizio said the study was extremely interesting and she learned the importance of using appropriate equipment, selecting sufficient staff to conduct the work at sea, and coordinating the logistics required for a large field study.

“Deploying and retrieving sensitive acoustic equipment at sea for long periods of time is difficult,” said Fabrizio. “Each time we attempted to retrieve the 72 receivers, we usually needed about 10 full days, which we had to schedule around the weather, including Hurricane Isabel in September 2003.”

“If I did the study again, I would use acoustic receivers with modem capabilities – this allows the scientists on board the vessel to download the information from the receiver’s memory without having to retrieve the gear off the bottom of the sea,” she said. “However, this equipment was not yet developed when we started our work and it is very expensive.”

Fabrizio was still satisfied with the equipment used and was confident it would work because she performed pilot studies prior to performing this study at HARS.



*Retrieving an array that holds the receiver*

When it came to field deployments and retrievals of the receivers, Fabrizio said that the most important aspect was the skill of the captain and the capabilities of the vessel. “Never underestimate the complexity of these tasks! Hire a captain who has years of experience and is a good trouble shooter – he or she is worth every penny!”

She added, “It was also very interesting learning from, and working with the captains of the vessels that assisted us on this study.”

The results of the study answered questions about the length of time fish reside at HARS, but there are additional data that were obtained that still need to be analyzed. “In complex studies such as these, it is not unusual for the analysis phase to require as much time, or sometimes more, as the field work,” said Fabrizio.

“Some of the findings we will examine further include the black sea bass’s increased activity during dusk, the bass’s dispersal out of HARS early in the summer, and both species preference for the shallow complex habitats at HARS.”

“Data from this study will benefit both the public and the environment. Scientifically defensible data will be used by EPA to create the new HARS criteria, a more realistic picture of human and ecological risk will be ascertained and dredged material that poses an unacceptable risk for introduction into the food chain will not be disposed in the ocean,” Greges said.

For additional information about the U.S. Army Corps of Engineers, New York District dredging projects and studies, please contact the author at Email: [Joanne.castagna@usace.army.mil](mailto:Joanne.castagna@usace.army.mil).

Dr. JoAnne Castagna is a technical writer for the U.S. Army Corps of Engineers, New York District.

## **Cooperative Gulf Sturgeon Studies in the Pearl River System, Louisiana**

*by Phil Kirk, Elizabeth Behrens, Howard Rogillio, and Tim Ruth*

The Gulf of Mexico sturgeon (*Acipenser oxyrinchus desotoi*) or Gulf sturgeon was listed as a threatened species in 1991 (56 FR 49653). A subspecies of the Atlantic sturgeon, Gulf sturgeon range along the Gulf Coast from Florida to the Mississippi River, Louisiana. These sturgeon overwinter in estuarine and marine habitats with much of the rest of the year spent in coastal rivers. They normally show fidelity to a single river system and movements between rivers are rare. Thus, populations are usually identified on a river system basis.

Despite having been listed for over a decade, much remains to be learned about Gulf sturgeon, the cause of their decline, and factors that limit their recovery. A recent lawsuit required the U. S. Fish and Wildlife Service (USFWS) to designate critical habitat for Gulf sturgeon. This ruling could potentially affect the Corps of Engineers' responsibilities aimed at maintaining established shipping lanes such as the Mississippi River Gulf Outlet (MRGO). To address potential concerns, the New Orleans District and the Louisiana Department of Wildlife and Fisheries (LDWF) are funding cooperative studies that benefit both agencies.

This multi-year study will lower study costs through cooperative efforts that share personnel, equipment, and data. The Corps of Engineers' objectives are to characterize movement patterns in

the Pearl River system and the Mississippi Sound, determine the extent that Gulf sturgeons use the MRGO and surrounding disposal sites, and determine the potential impact of channel maintenance to this species.

Research will focus on Gulf sturgeon residing in the Pearl River system since these fish have the greatest potential to use the MRGO and be affected by channel maintenance. Gulf sturgeon will be netted in the Pearl River system (which includes the Bogue Chitto River) during the summer and fall. Captured fish will be weighed, measured, aged, and tagged for later identification. Some fish will be equipped with either radio or sonic telemetry tags and tracked. Movements out of freshwater into brackish water and then into marine habitats will be monitored.

Age, growth, and recapture information will be used in models to project population trends and the potential effects of dredging and channel maintenance. The Corps of Engineers is also interested in the extent to which juvenile Gulf sturgeon use inland disposal areas in the MRGO. This will be investigated using gillnets and possibly high-resolution acoustic imaging systems such as the Dual Imaging Detection Sonar (DIDSON).

Most Gulf sturgeon likely to be found near the MRGO are Pearl River residents. However, biologists using telemetry in other river systems have tagged Gulf sturgeon and shared frequency and pulse information so that the location of other tagged Gulf sturgeon near the MRGO can be detected. Thus, through regular monitoring, the abundance and size structure of Gulf sturgeon near the MRGO and disposal areas can be characterized.

During the summer and fall of 2004, approximately 40 Gulf sturgeons were acoustically tagged with either sonic or dual sonic/radio tags. This represents more tagging success than either agency, working independently, could achieve. The LDWF will use capture information to determine the viability of the population and will monitor

tagged fish to determine movement chronologies and winter habitats. Corps of Engineers biologists will continue monitoring the Mississippi River Gulf Outlet using telemetry and will sample nearby disposal sites to determine summer time use of these areas by juvenile Gulf sturgeon. Initial results of these cooperative studies were presented at the 2004 Gulf Sturgeon Science and Management Workshop held in Louisiana during November 2004.



*From left to right, Elizabeth Behrens (USACE), Jeffrey Thompson (LDWF), Jay Collins (USACE), and Ian Abba (student)*

Biologists from the Corps of Engineers and the LDWF weigh a Gulf sturgeon in the Bogue Chitto River during the summer of 2005.

Phil Kirk works with the Environmental Laboratory at the U.S. Army Engineer Research and Development Center. Elizabeth Behrens works at the U. S. Army Corps of Engineers, New Orleans District. Howard Rogillio and Tim Ruth work at Louisiana Department of Wildlife and Fisheries.

## **Wetland Restoration Project Brings Community to Poplar Island** *by*

*Joyce M. Conant*

Amid bright sunshine and warm breezes, more than 50 volunteers and staff from the Baltimore

District and the National Aquarium in Baltimore kicked off a 10-day wetland restoration planting June 16, 2005, at Poplar Island. The Chesapeake Bay Island is located in Talbot County, Maryland.

Recently reduced to 3 acres and on the verge of extinction, Poplar Island is a national model for habitat restoration and the beneficial use of dredged material. Beginning in 2001, Poplar Island began receiving clean material dredged from the Chesapeake Bay approach channels to the Port of Baltimore to restore the Island.



*COL Robert J. Davis, Commander, U.S. Army Corps of Engineers, Baltimore District, plants grasses at the wetland restoration event held at Poplar Island, June 17, 2005*

The Port of Baltimore is one of the nation's largest ports, handling over 40 million tons of commerce a year, of which more than 31 million tons is foreign commerce valued at over \$31 billion. The Port provides significant economic benefits and employment to the State of Maryland and mid-Atlantic area.

Poplar Island will continue to receive dredged material from maintenance of the main ship channels until approximately 2015. By that time, approximately 40 million cubic yards of dredged material will have been placed in the site and used to create remote island environmental habitat.

“Poplar Island’s footprint has been restored to its 1847 size of 1,140 acres, half of which will be wetlands, and the entire western side will be created into upland habitats, including forest and meadows,” said Chrissy Albanese of the Maryland Environmental Service. Albanese serves as Poplar’s tour director.

The island is home to more than 100 species of birds. Twenty of these species can be found nesting on the island, said Albanese. The diamondback terrapins hatch in the fall and can be found nesting near the water’s edge. According to Albanese, there were 185 terrapin nests found on the island last year.

More than 6 acres were planted during the 10-day wetland restoration spearheaded by the aquarium. Aquarium staff was on hand each day, ensuring volunteers were hydrated, safe, and enjoying themselves while restoring the island’s wetlands for wildlife habitat.

Glenn Page, director of conservation at the aquarium, estimated that more than 1,000 volunteers planted six of the 33 acres of wetlands in the area of Poplar called Cell 3D. Environmental Concern, Inc., is under contract to the U.S. Army Corps of Engineers, Baltimore District, to plant the remaining 27 acres.

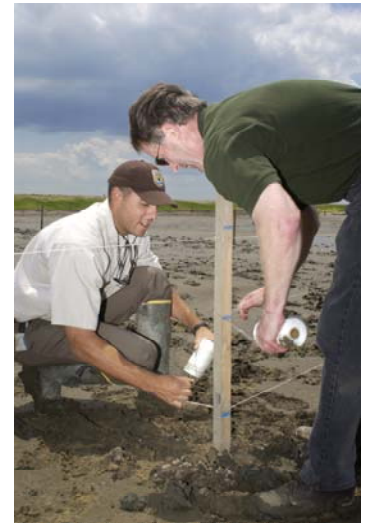
The island is an active construction site. Visitors must be with a partner at all times, said Laura Bankey, the aquarium’s project manager. Barriers were placed around the restoration area to keep volunteers in a safe zone.

After the planting area had been packed down, one person dug holes with large drills, another placed a slow-release fertilizer in each hole, and the next volunteer placed the plant plugs and covered their roots with the mud otherwise known as clean dredged material.

“We expect the plants to do very well,” said Page, who indicated the dredged material is full of nutrients and minerals.

The event brought people together from all backgrounds and age groups to help restore island habitat.

Mary Sidlowski, a 13-year aquarium volunteer, a mother of six, grandmother of 12, and great grandmother of six, said you are never too old to get out and help the environment. The Long Island, New York, native donated 3 days of her services and bunked with the younger staff and volunteers at a nearby Audubon campsite.



***Scott Johnson, project manager, U.S. Army Corps of Engineers, Baltimore District and Jason Miller, U.S. Fish and Wildlife Service team to string wooden posts to keep birds from flying into the areas of the newly installed plants and eating them***

“Mary’s dedication and hard work ethics keep everyone on their toes,” said Page.

Kimberly Godwin, a 21-year-old, newly married college student from Bowie, Maryland, recently visited the aquarium. While surfing the organization’s Web site, she learned about the Poplar Island wetland planting.

Godwin, a former Girl Scout, said she enjoys public service and especially enjoyed scouting, but she is now too old for scouting unless she wants to become a leader.

“This was a great way for me to be able to give back to the community,” said Godwin. She returned Sunday with a few of her friends. If it had not been

for homework and a paper she needed to finish, she said she would have stayed for the entire weekend.

Day two of the event was held under blue skies, cooler temperatures, and light winds. More than 50 volunteers and 40 special guests visited Poplar Island for a ceremony that provided guests with the history of the Poplar Island project and a vision for its future.

After the ceremony and a light lunch, several of the special guests donned booties and gloves and participated in the wetland planting.



*Aquarium volunteer looks on as Glenn Page, director of conservation at the National Aquarium in Baltimore, teaches Joyce Conant, public affairs specialist, U.S. Army Corps of Engineers how to string the wooden posts to help keep birds from flying into the areas of the newly planted grasses. Three rows of string are strategically placed on each post*

COL Robert J. Davis, Baltimore District Commander, led the pack carrying armfuls of stakes that would be driven into the ground to cordon off the planting areas. Three rows of string were strategically placed around each stake to keep birds from swooping down and devouring the newly planted grasses. Davis teamed with Corps' employee Scott Johnson, Poplar Island project manager, and Jason Miller of the U.S. Fish and Wildlife Service.

“This is partnership at its finest,” said Davis. “We have representatives from Senator Sarbanes’ office, Congressman Cardin’s office, the Maryland Port Administration, the Chesapeake Bay Trust, the National Fish and Wildlife Foundation, the University of Maryland Center for Environmental Studies, the U.S. Fish and Wildlife Service and many other volunteer groups. Where else would you find such a large group of people interested in protecting our natural resources?”

“The restoration of remote island habitat, which helps to offset the loss of over 10,000 acres of remote island habitat in the Chesapeake Bay is already a success,” said Johnson. He said Poplar Island attracts a variety of wildlife, including a diverse community of birds, fish and reptiles.

## Wetlands Committee Needs Your Input

The COPRI Wetlands and Sediment Management Committee is soliciting information for a Resource Guide that is planned as a Web-based resource to:

- Describe regional activities and organizations specific to wetlands and sediment management.
- Identify and catalog relevant resources and research needs for the civil engineering and allied technical community.

Professionals having expertise and/or interest in wetlands and sediment management are encouraged to contribute knowledge by responding to a questionnaire posted on the committee webpage (<http://www.coprinstitute.org/inside/wsmsubcom.cfm>). A working draft of information to be included in the Resource Guide is available and may also be downloaded from the committee website. The first edition of the Resource Guide is planned for summer 2006, so please respond to this query by March 1, 2006.



For additional information, please contact Julie Dean Rosati, Subcommittee for Information Resource, Needs and Dissemination (IRND) at [Julie.D.Rosati@erdc.usace.army.mil](mailto:Julie.D.Rosati@erdc.usace.army.mil).

## Call for 2007 Papers – De Paepe-Willems Award Contest *by Edmond Russo*

The De Paepe-Willems Award is given by PIANC for the most outstanding technical paper prepared on an aspect of waterborne transport. Categories include policy, management, design, economics, integration with other transportation modes, technology, safety, public involvement, and the environment. The competition is open to anyone 35 years of age or under.



**Ir. Gustave Willems**  
1901 - 1982



**Ir. Robert De Paepe**

Ms. Tracy Fidell, P.E., was the U.S. Section's 2006 award winner, for her paper entitled "Developing a Model to Quantify Port-Related Emissions." Ms. Fidell is employed by Moffat & Nichol Engineers, in their Long Beach, California, office. Runner up contestants were Mr. Edward Brauer and Mr. Jasen Brown, both of the U.S. Army Corps of Engineers, St. Louis District. The title of Mr. Brauer's submission is "Geomorphology Study of the Mississippi River, St. Louis, Missouri, to Cairo, Illinois". Mr. Brown's paper is entitled "Generic Dike Flume Study: Bathymetric Trends of New and Existing Hydraulic Structures." Many thanks to contestants participating in 2006!

The U.S. Section's award winner in 2007 receives a \$1,000 U.S. Savings Bond, an expense-paid trip to the 2007 U.S. Section Annual Meeting,

and an individual membership in the U.S. Section PIANC for 5 years. The U.S. Section winner's paper is forwarded for international competition in 2007. The international winner in 2007 receives a trip to the 2007 Annual General Assembly. The International award winner receives € 5,000 and a 5-year individual membership.

Abstract submittal is open for the 2007 competition. The deadline for submitting paper abstracts for the 2007 contest is **May 1, 2006**, with technical paper submittals required by **August 1, 2006**. For more details contact Edmond Russo, Chairman, Publications Committee, U.S. Section PIANC, at [edmond.j.russo@erdc.usace.army.mil](mailto:edmond.j.russo@erdc.usace.army.mil).



## Upcoming PIANC Events

*by Edmond Russo*

**2006 PIANC Congress.** May 14-17, Estoril, Portugal.



The 31<sup>st</sup> PIANC Congress will be held in Estoril, Portugal. The venue is sponsored by the Portuguese Section of PIANC. The website for additional information on events, attendance, and papers, is contained at the following website:

<http://www.pianc2006.org/>. Send any questions that you may have to: [pianc2006@lnec.pt](mailto:pianc2006@lnec.pt).

## Upcoming Related Conferences

### 2006

- [Offshore Technology Conference](#). May 1-4, Houston, TX.
- [30th International Conference on Coastal Engineering](#). September 3-8, San Diego, CA.
- [Restore America's Estuaries](#). December 9-13, New Orleans, LA.

### 2007

- [Ports 2007](#). March 25-28, San Diego, California.
- [Coastal Sediments 2007](#). May 13-17, New Orleans, Louisiana.

## About PIANC *by Anne Sudar*

**What is PIANC?** The International Navigation Association (PIANC) is a worldwide organization of individuals, corporations, and national governments. Founded in 1885 in Brussels, Belgium, it is concerned with maritime ports and inland waterways. The Association promotes contact and advances and disseminates information of a technical, economic, and environmental nature between people worldwide in order to efficiently manage, develop, sustain, and enhance inland, coastal and ocean waterways, ports and harbors, and their infrastructure, in a changing environment.

**Where is PIANC?** The international headquarters is located in Brussels, Belgium, at facilities provided by the Belgian Government. The headquarters of the United States Section is located in the Washington, DC, area, within facilities provided by the U.S. Army Corps of Engineers.

**International Interaction.** The Annual General Assembly operates through a Council, which directs

the working level permanent technical committees, international study commissions, and working groups.

**Working Groups.** Technical working groups are composed of participants from member countries who have interest in various subjects being studied. The groups gather, analyze, and consolidate state-of-the-art material from each country. The resulting reports are published and sent to each PIANC member. Working group reports and the International Bulletin are sent to each member from Brussels.

Every 4 years an International Congress, open to all members and other registrants, is held for the presentation and discussion of papers on subjects pertaining to waterways and maritime navigation.

PIANC also participates in technical activities with other organizations to study navigation problems and joins with them to present symposia on related subjects.

**In the USA.** The United States became a member of PIANC by Act of Congress in 1902. The Chairman of the U.S. Section is the Assistant Secretary of the Army (Civil Works). The Director of Civil Works for the U.S. Army Corps of Engineers serves as President. A National Commission of 11 individuals, which represent both private industry and the Federal Government, manages the Section. The U.S. Section has two standing and four technical committees, which promote the flow of information between members and facilitate cooperation with other national organizations. The committees are Membership, Publications, Environment, Inland Navigation, Maritime Navigation, and Ports and Recreation Navigation.

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U.S. Section, PIANC  
7701 Telegraph Road  
Alexandria, VA 2315-3868*

*Bruce Lambert  
Secretary  
[bruce.lambert@usace.army.mil](mailto:bruce.lambert@usace.army.mil)*

*Edmond J. Russo, Jr., P.E.  
Chairman, Publications Committee, and  
Editor, U.S. Section PIANC Bulletin  
[edmond.j.russo@erdc.usace.army.mil](mailto:edmond.j.russo@erdc.usace.army.mil)*

