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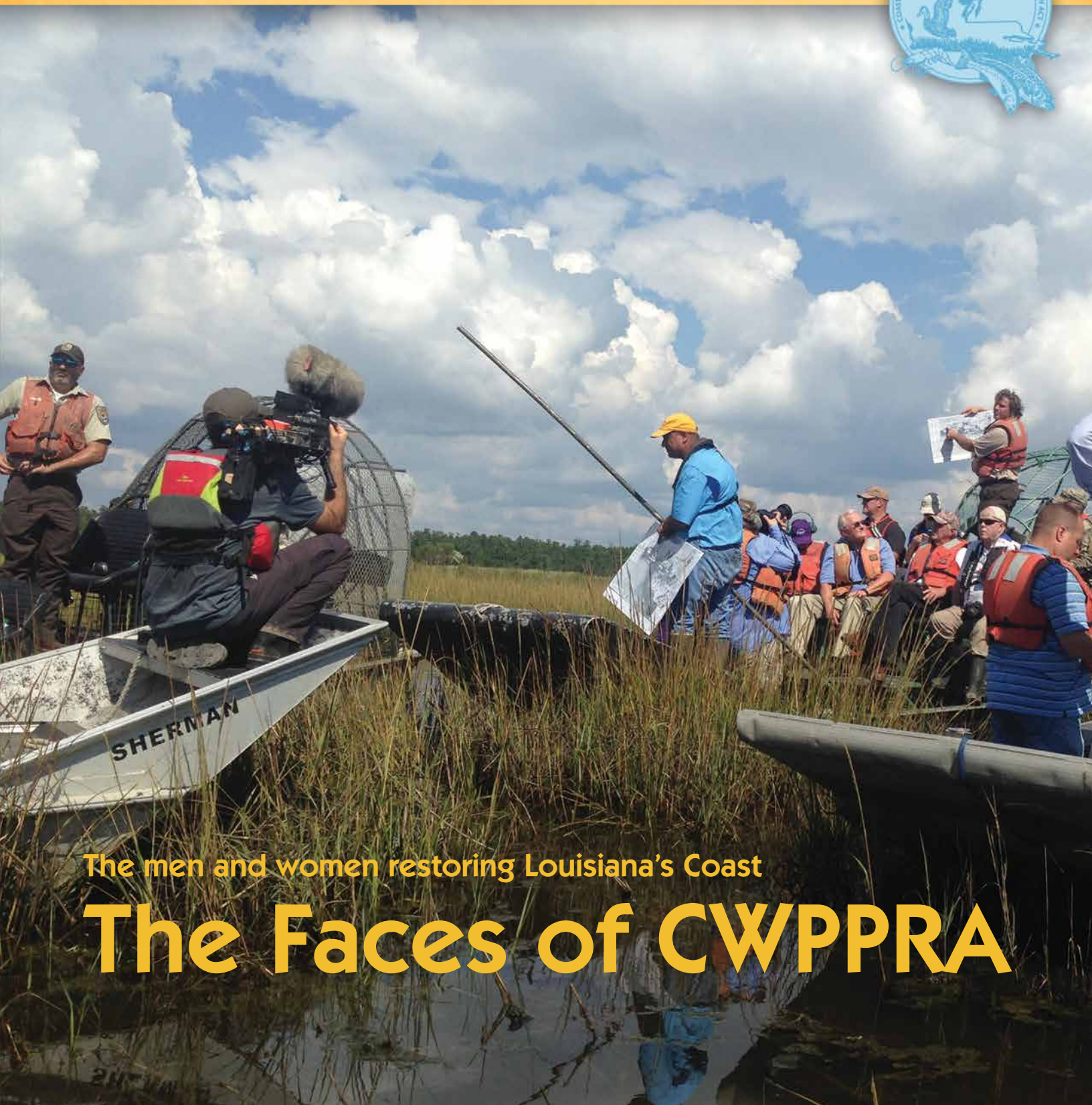
WATER MARKS

Louisiana Coastal Wetlands Planning, Protection and Restoration News

October 2020 Number 62



The men and women restoring Louisiana's Coast

The Faces of CWPPRA

October 2020
Number 62

WaterMarks is published two times a year by the Louisiana Coastal Wetlands Conservation and Restoration Task Force to communicate news and issues of interest related to the Coastal Wetlands Planning, Protection and Restoration Act of 1990.
This legislation funds wetlands restoration and enhancement projects nationwide, designating nearly $80 million annually for work in Louisiana. The state contributes 15 percent of total project costs.

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ABOUT THIS ISSUE'S COVER . . .

CWPPRA dedication ceremonies attract a broad range of people who have an interest in the state of Louisiana's wetlands. From the scientists and engineers who design and implement CWPPRA projects to government officials instituting policies to address Louisiana's coastal crisis, from locals eager to see measures taken to protect and restore nearby bayous and marshes to members of the media who help to inform the public about the condition of the coast – all come to celebrate CWPPRA's successes.

Photo credit: CWPPRA

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CWPPRA

From proposal to priority list

The People Who Turn Ideas into Projects

An early leader in Louisiana's efforts to restore and protect its coast, CWPPRA is a familiar acronym but the Coastal Wetlands Planning, Protection and Restoration Act remains an enigma to many. "Although it's a foundation of Louisiana's coastal program, it's hard to define precisely what CWPPRA is," says Kent Bollfrass, one of the state's representatives to CWPPRA. "It's a funding stream. It's a cost-sharing arrangement, and it's a work in progress, always adapting as conditions and circumstances change year to year."

CWPPRA's Many Faces

CWPPRA's complexity might best be understood through the men and women who make the program work and by using the analogy of baseball to describe CWPPRA's processes. For instance, if CWPPRA were like baseball, Louisiana's retired Senator John Breaux would be the home team coach. "Senator Breaux incorporated two features in the legislation that provide CWPPRA, also known as the Breaux Act, with unusual strength and stability," says Brad Inman, chair of CWPPRA's Planning and Evaluation Subcommittee (P&E). "First, he created a structure that forces the six agencies responsible for administering CWPPRA –

John Breaux

Louisiana native John Breaux trained as a lawyer before joining Congress. After 15 years in the House, he was elected to the Senate in 1987. His signature legislation was CWPPRA, or the Breaux Act, passed in 1990.

After leaving the Senate in 2007, Breaux' interest in the state's wetlands continued, earning him the moniker "father of Louisiana's coastal restoration." He is often a guest at project dedications and other CWPPRA celebrations, and he remains concerned about the condition of the coast. "Erosion is a silent hurricane," he says. "Every wave is eating away at the coast."

From left to right, Brad Inman, Senator John Breaux (retired), John Snell, New Orleans television broadcaster

Brad Inman

Brad Inman is the branch chief of projects and restoration for U.S. Army Corps of Engineers, New Orleans District, but a relative newcomer to CWPPRA. He moved to Louisiana after Hurricane Katrina with 20 years' experience as a field scientist trained in soil and water resources. "I had been designing manmade wetlands for wastewater treatment, but I knew I wanted to work in coastal restoration. CWPPRA was on the ground, already funded and building projects." He was appointed to a vacant position on the Planning and Evaluation Subcommittee in 2011. He now serves as its chair.

"I've seen how CWPPRA has developed generations of scientists, engineers and policy-makers," says Inman. "It provides working-level opportunities to develop technical expertise and cultivate relationships. Many of our current leaders in both the public and private sectors have been affiliated with CWPPRA. CWPPRA has trained a workforce that makes good decisions for our wetlands and for our future."

In the foreground, Brad Inman

Darryl Clark

Darryl Clark had a long association with CWPPRA, first as a member of the Planning & Evaluation Subcommittee, then of the Technical Committee, before retiring from the U.S. Fish and Wildlife Service in 2019. His memories encompass not only CWPPRA's 30-year history but also Louisiana's journey toward protecting and restoring its coast. "Scientists began to recognize Louisiana's land loss crisis in the early 70s," says Clark. "The state legislature created the Coastal Protection Trust Fund in 1981 and issued its first coastal wetland plan in 1994. CWPPRA was enacted in 1990. With a secure funding stream, CWPPRA was one of the earliest programs to construct projects."

In 1998 CWPPRA collaborated with the state of Louisiana to issue Coast 2050, an initiative approved by all 20 coastal parishes that established restoration goals and methods. "CWPPRA's practice of holding regional meetings began during the development of Coast 2050," says Clark. "We brought in everyone – local citizens, parish officials, landowners, fishermen, environmental groups – and listened. Anyone could attend and suggest a restoration project. That open-door policy and the practice of building relationships among partners continue today."

From its earliest days, the CWPPRA program was active and innovative, Clark says. "There was an attitude of 'let's get things done, let's get projects on the ground.' CWPPRA was not afraid to think outside the box and try things out. Consequently we could test innovations and develop better ways to restore the coast."

Examples of CWPPRA's innovations include constructing emergent earthen terraces to trap sediment, reduce wave action and limit erosion; rebuilding marsh with Mississippi River sediment; and breaching or degrading containment dikes in marsh creation projects. "Engineers feared sediment would drain away from the site if we cut gaps in the dikes," Clark says. "Then we started to think the marsh would revegetate naturally and more quickly if there were greater water flow through it. Now gapping containment dikes is the accepted practice."

Clark cites hurricanes Katrina and Rita in 2005 as another milestone in Louisiana's coastal planning. "The storms were a huge wake-up call," says Clark. "They increased awareness of the urgency of addressing Louisiana's land-loss crisis."

As a result, the state formed the Louisiana Coastal Protection and Restoration Authority (CPRA). Superseding previous state coastal agencies and building on the vision of Coast 2050, CPRA released Louisiana's first master plan in 2007. "The master plan laid out a comprehensive blueprint for Louisiana's future," says Clark. "CWPPRA's experience provided planners with insight into the viability of various restoration techniques and strategies. Today CWPPRA coordinates with CPRA to align its projects with the master plan, which is updated every five years."

Another milestone was the Deepwater Horizon oil spill in 2010. "Louisiana has allocated most of its oil spill fines and penalties to coastal restoration," Clark says. "Having a master plan already in place gave Louisiana a jump-start on environmental recovery."

Despite money from the oil spill, Clark thinks that funding continues to be the biggest hurdle to restoring Louisiana's wetlands – and the greatest threat to CWPPRA's future. "The money we've spent on coastal restoration plus the money promised may sound like enough," says Clark, "but it is dwarfed by the size of the problem we face. To preserve Louisiana's wetlands, we need funds from all the sources available to us."

five federal agencies and the state of Louisiana – to work together. Then he established a trust fund for CWPPRA through the transportation bill that shields it from the uncertainty of annual appropriations. Although the budget fluctuates year to year, financial stability has been a strength of the program for 30 years."

Selecting a CWPPRA project is a year-long process; building a project can take years more. But every project starts at a regional meeting.

Phase 0: Have an idea? Bring it to the RPT

Continuing with the analogy, the large, open, meetings held by CWPPRA's Regional Planning Teams (RPT) are the rookie experience—it's T-ball writ large, where everybody gets a chance to swing.

"You don't have to be an expert to pitch an idea to CWPPRA," says Ron Boustany, planning team leader of Region 3. "No special knowledge or expertise is required, though projects must support the overall, long-term goals of the state's Master Plan for a Sustainable Coast."

Planning team members are from the five federal CWPPRA agencies, the Coastal Protection and Restoration Authority (CPRA) for the state of Louisiana, and the region's parishes. Every idea proposed in February meetings – as many as 80 coastwide – acquires a CWPPRA federal sponsor; the state partners with them all. Local sponsors, often a parish government official,

Ron Boustany

Ask Ron Boustany what his job is and he'll tell you he's a biologist with the Natural Resources Conservation Service (NRCS). Press him a little harder and he'll admit to being a member of both CWPPRA's Environmental and Monitoring Work Groups. Pester him some more and he will allow that he is the leader of Region 3's planning team. "The position is an honor and a responsibility," Boustany says. "I think of it as my way to contribute to the CWPPRA program."

Boustany not only contributes to it, he helps to define its character. "RPT meetings are somewhat celebratory, an opportunity to acknowledge the many people who make CWPPRA work," says Boustany. "The meetings are the gateway for bringing projects into CWPPRA; we encourage citizens and parish representatives to participate and talk publicly about their local concerns."

Boustany's favorite part of the CWPPRA year is field trips, usually in June, to visit sites of candidate projects. "In addition to learning the geography and ecology across Louisiana's coast, we get to know people from different agencies, developing respect and camaraderie," says Boustany. "John Breaux succeeded in structuring CWPPRA in a way that interagency cooperation has become a hallmark of the program. Our trips increase our ability to work together."

Taking field trips together strengthens personal relationships and fosters trust and cooperation among the six government agencies responsible for the CWPPRA program.

Mart Black

"CWPPRA has been a godsend for our parish," says Mart Black, director of the Coastal Restoration and Protection Department for Terrebonne Parish. "It's put many good projects on the ground. Of all the restoration programs, CWPPRA's been around the longest. Its work should continue."

When Black accepted his position in 2016, his responsibilities included serving as the local sponsor for CWPPRA projects proposed in the parish. "It's exciting to go to the winter RPT meetings, talk to people and try to get a couple of projects in the pipeline," says Black. "As the parish representative I get to vote in the first round of project selection. If any of ours moves forward, I join field trips to the site, track work groups' evaluations and lobby the Technical Committee in favor of our project. It's a good process, competitive, and how the program's set up with federal sponsors works pretty well."

Black acknowledges the challenges of securing a CWPPRA project. "There are conditions in some areas of the parish that, despite great need, make construction difficult," he says. "Still, it's a disappointment when one of our projects is not chosen. But we realize there's only so much money. Ultimately it comes down to the feasibility of the project and cost-benefit analyses."

At RFP meetings, everyone gets a chance to pitch their favorite idea to become a CWPPRA project. CWPPRA relies on citizens' involvement to address local conditions and residents' concerns.

Susan Testroet-Bergeron

"If you want people to invest in coastal restoration," says Susan Testroet-Bergeron, a long-time Louisiana educator and community advocate, "teach them about its benefits. When the public understands the value of restoration, they support it."

Testroet-Bergeron observed this truth as she worked over decades to engage people in protecting the environment. Serving CWPPRA as its media specialist and then as outreach coordinator and in support of CWPPRA as education coordinator and then as director of the Barataria-Terrebonne National Estuary Program (BTNEP), she herself has been a major contributor to CWPPRA's success in engaging the public. "CWPPRA is unique in bringing partners together in a public forum," says Testroet-Bergeron. "The program does a fantastic job of reaching out to local landowners, businesses and citizens so they can learn where projects are located and how they affect their community. Public engagement is crucial to the program's success."

For years Testroet-Begeron was an influential voice on CWPPRA's Outreach Committee, which is responsible for developing the program's communications, events, educational materials and strategy. "The committee finds the right tool for reaching each target audience," Testroet-Bergeron says. "Its federal and state representatives are assisted by its non-voting members – BTNEP, the Coalition to Restore Coastal Louisiana and the Sea Grant program at Louisiana State University. These organizations provide different viewpoints and new ideas, helping CWPPRA develop relevant products and effective approaches. There is great synergy among committee members, and great respect for the insight and expertise the others bring to the table."

Testroet-Bergeron has seen years of outreach bear fruit. "CWPPRA, working in partnership with other entities, has spent time educating the public. We've taught an entire generation about the importance of restoration and laid the groundwork for public support for the state's master plan for coastal protection. That plan puts Louisiana several jumps ahead of most other states in addressing environmental issues."

Testroet-Bergeron points to residents' responses to the recent hurricane Laura as verification of increased appreciation for wetlands. "The Lake Charles area was expecting even greater devastation," she says. "While CWPPRA projects built between populated areas and the coast certainly were not the only mitigating factor, people recognized the role wetlands played in knocking down storm surge and understood how the projects added protection to their community."

represent community interests. Sponsors develop arguments for supporting their projects, painting with broad strokes a picture of need, benefits and cost.

If the RPT meeting is T-ball, then selecting which ideas to advance would be player try-outs. The more able move up while the others are sent back to develop greater strength. Voting by all RPT members coastwide within weeks of the meetings pares the list of proposals down to 20 or so nominee projects.

Then the CWPPRA Engineering and Environmental Work Groups help to develop nominee projects by

- defining potential wetland benefits
- determining affected acreage
- exploring viability and constructability
- making preliminary estimates of cost

These work groups have at least one member from each CWPPRA agency, as does the P&E. "Although the state does not vote on financial matters, all CWPPRA partners have equal representation on subcommittee decisions that affect the coast," says Inman.

If CWPPRA were baseball, the spring Technical Committee (TC) meeting would be the all-star draft. "Relying on the recommendations of the P&E and comments from the public, the committee selects 10 projects to move forward," says Britt Paul, the longest-serving member of

Britt Paul

Britt Paul has participated in CWPPRA since its beginning. The assistant Louisiana state conservationist at Natural Resources Conservation Service (NRCS) remembers the program's early struggles with the mandate that all parties work together. "The agencies had a history of antagonism," says Paul. "There was mistrust, and a tendency to guard one's turf. Agencies had different missions, different perspectives and different ideas. But we were legally bound to work together. Dedicated to the mission of protecting and restoring the coast, we worked through our biases. Now collaboration among agencies and among disciplines is a strength of CWPPRA. We still have disagreements, but usually we can come to consensus and move on. We have built respect for each other based on professional relationships."

Paul enjoys recalling some of CWPPRA's successes. "Early on we did a number of hydrologic restoration projects. We can see now how they have promoted marsh recovery," says Paul. "The Raccoon Island breakwater project – we weren't sure how it would work, but it turned out so well that a subsequent project to add more segments of shoreline protection was approved. The coastwide nutria project has been very successful in reducing damage to marsh vegetation. People have seen benefits of CWPPRA projects on the ground, and they appreciate them."

According to Paul, CWPPRA has always been on the cutting edge of planning, processes and projects. "Not all our projects worked," says Paul. "Earlier we built smaller projects, then realized how to augment their effectiveness by developing synergy among them. Our adaptive management strategies have evolved over time."

Looking toward the future, Paul thinks the greatest challenge in the coming years will be selecting the best projects for the available funding. "Larger funding streams are undertaking bigger ventures now. CWPPRA has always built mid-size projects, and we must continue to do that. There are still many areas in need of protection in the near term."

CWPPRA committees and work groups meet regularly to develop restoration projects focused on addressing Louisiana's land-loss crisis. Although representing different agencies, the people working in the CWPPRA program are united in their commitment to improve the health of the entire Louisiana coast.

Kevin Roy

With a degree in wildlife management, Kevin Roy went to work for the federal government in the early years of CWPPRA. A biologist at the U.S. Fish and Wildlife Service (USFWS), Roy says, "A background in coastal processes is essential for restoration planning, and if you stay with CWPPRA long enough, you'll develop a well rounded set of skills to take a project from inception through the end of its life."

Roy says he acquired his own broad range of skills by working with other CWPPRA specialists. "Most CWPPRA people are worker-bees," says Roy. "We don't get to focus on just one thing. As a project moves through the process, you learn about all of its aspects – planning, permitting, engineering, land rights acquisition, construction, financial management, monitoring – the list is long."

Roy's value to CWPPRA is reflected in the number of hats he wears. In addition to serving as chair of the Environmental Work Group, he is a member of the Technical Committee and the Planning and Evaluation Subcommittee. And informally he is a keeper of CWPPRA's history. "One big change over time is the types of projects we undertake," says Roy. "During the first decade or so we did a lot of hydrological restoration and shoreline protection projects. After seeing the devastation of Hurricanes Katrina and Rita, we realized the importance of rebuilding land, of creating a skeletal framework around shorelines and building marsh closer to infrastructure. We started to develop the concept of linking projects together, such as in rebuilding land bridges, to increase their effectiveness. Now marsh creation projects are quite popular. It's gratifying to see benefits pop up nearly immediately. In just a few years we can restore a marsh ecosystem with land, vegetation, and fish and wildlife habitat."

Another change Roy cites is the development of the state's master plan for coastal restoration. "Before, we scattered projects across the coast. Now CWPPRA projects must comply with the master plan, which focuses on building projects where they are most needed."

the committee. "They become candidate projects."

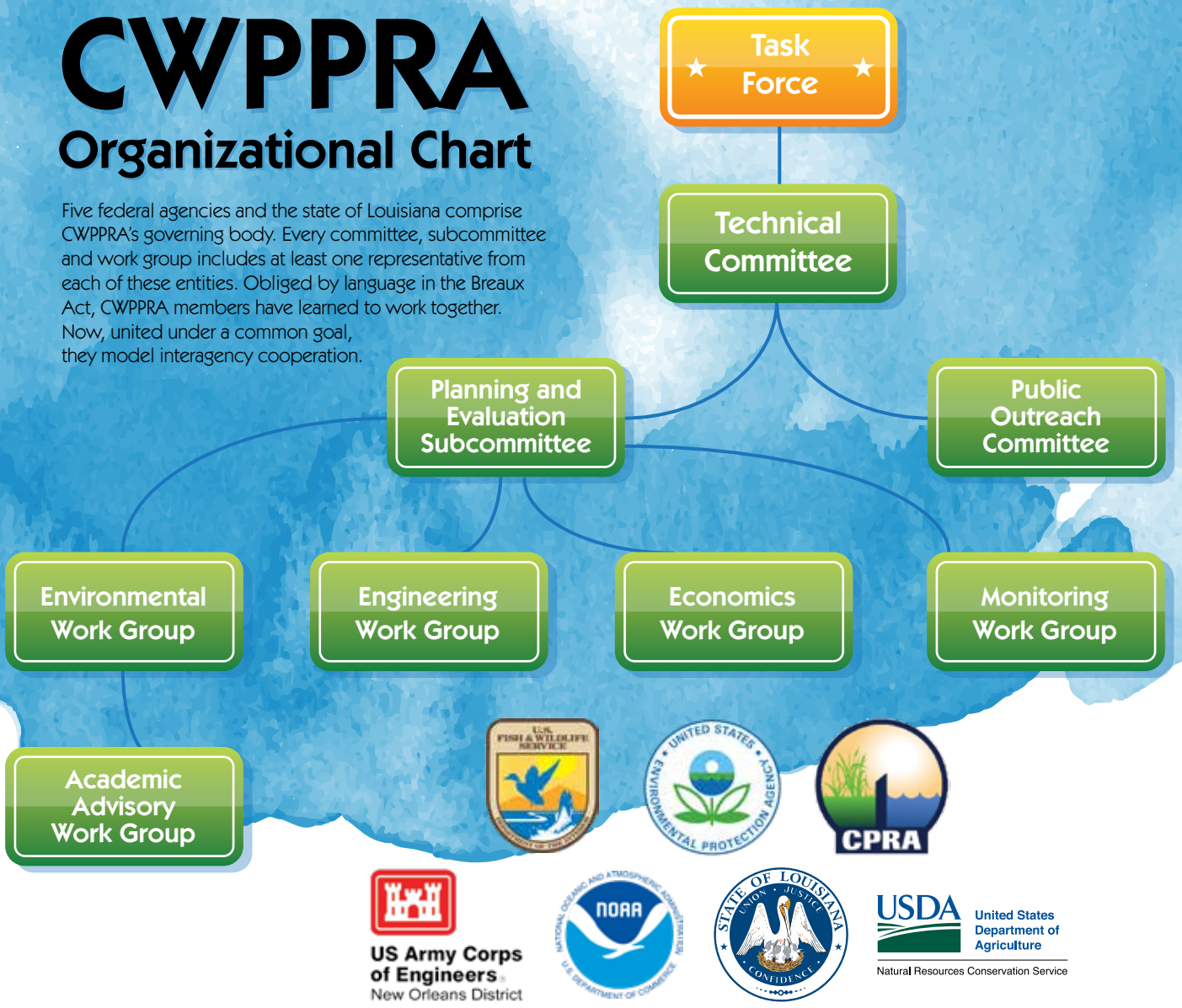
In the months that follow, the work groups undertake a more detailed assessment of each project, developing design features, determining boundaries and analyzing benefits. Benefits are calculated in Average Annual Habitat Units via the Wetland Value Assessment (WVA), a habitat community model devised specifically for CWPPRA. "CWPPRA developed the WVA as a single tool to evaluate all projects side-by-side," says Kevin Roy, chair of the Environmental Work Group and also a member of the TC and the P&E. "By looking at a set of variables that are common to a community of coastal species – things like salinity, vegetative cover and water depth – we can forecast conditions over 20 years with and without the project and compare projects quickly."

The Engineering Work Group also uses WVA field data to develop designs and cost estimates in Phase 0. "For example," says Roy, "knowing the water depth at a site, engineers can calculate the amount – and thus the expense – of dredged material needed to create marsh."

By fall, environmental and engineering analyses for candidate projects are complete and the activity of the Economics Work Group cranks up. Plugging the preliminary estimates into formulas based on vast data sets and economic analyses, they calculate the cost of funding a project over its 20-year life span. "It's a number that we adjust frequently to reflect changing economic conditions," says Matt Napolitano, chair of the

CWPPRA
Organizational Chart

Five federal agencies and the state of Louisiana comprise CWPPRA's governing body. Every committee, subcommittee and work group includes at least one representative from each of these entities. Obliged by language in the Breaux Act, CWPPRA members have learned to work together. Now, united under a common goal, they model interagency cooperation.



Matt Napolitano

"We incorporate dozens of factors in CWPPRA project cost calculations," says Matt Napolitano, chair of the Economics Work Group. A self-confessed number cruncher, the native New Orleanian is an economist at the U.S. Army Corps of Engineers (USACE). "In addition to labor and materials, there are intangible cost components such as acquiring real estate rights-of-way and overseeing environmental and cultural regulatory compliance."

Adding to the complexity of the task is the time frame that the computations cover. A project's expected life span is 20 years, but revisions to estimates are likely to occur multiple times before construction is finished. "Just designing a project often takes two to three years, and constructing it can add some years more," says Napolitano. "We review figures regularly and update them to reflect shifts in economic conditions, such as fluctuations in price levels and variations in interest and inflation rates. We might also have to adjust costs when plans are modified to address changing circumstances at the project site."

Andy Nyman

Shortly after the CWPPRA program was established, CWPPRA leadership realized the valuable resource of Louisiana's academic community and added the Academic Work Group to its organizational structure. The members of the work group, university professors and researchers, offer advice on project benefits and efficacy and bring pertinent information to CWPPRA's attention. "We keep agency scientists aware of new research that might help answer questions," says Andy Nyman, a professor at the School of Renewable Natural Resources at Louisiana State University and member of the committee. "For instance, when marsh creation projects were gaining popularity, we furnished studies that verified the importance of including ponds and channel access for fish and wildlife in project design."

While approaches differ, the interests of academicians and agency scientists are symbiotic. "Planners and project managers might read monitoring reports for information about specific projects, whereas academicians may want to compile data from numerous projects and look for patterns. Discerning those patterns could lead to better efficiency – and thus to monetary savings – in project management."

The work group follows the project selection calendar, increasing their support and guidance in spring as nominated projects become better defined. "We exchange information with CWPPRA frequently and listen to their questions. Then we keep our eyes open for answers, both in reviewing research and in conversing with our colleagues," says Nyman.

In early fall, the work group looks over collected data and runs models of anticipated benefits. "Our models call 'a ball a ball' every time. There is no favoritism," says Nyman. "Our task is to help screen and rank projects, not to select them. Sometimes there are outside factors that influence choices, such as distance from infrastructure or political considerations. But if there are issues that research can throw light on, we bring it to CWPPRA's attention."

The exchange between the universities and CWPPRA runs in both directions. "Sometimes CWPPRA's needs will inspire a graduate student's research," Nyman says. "And by observing how CWPPRA works, students see the intersection of science and policy. As they leave school and take jobs in environmental protection and restoration across the country, they recognize they are part of a huge, public system. The system is slow, but they enter it understanding that is the nature of dealing with public policy and public money."

work group, "but the information we provide in Phase 0 is critical for comparing and selecting projects."

The Technical Committee meeting in early December is like an exhibition game in front of big-league scouts. Scrutinizing each candidate project's goal, proposed solution, benefits and estimated cost; examining maps of project boundaries; and taking public comments into account, the TC recommends four projects for the Task Force, CWPPRA's governing body, to place on the Priority Project List in January.

Task Force members are the governor of Louisiana (or its appointee) and the secretaries (or their appointees) of the five federal CWPPRA agencies: the United States Army Corps of Engineers, the Departments of Agriculture, Interior and Commerce; and the Environmental Protection Agency. The Task Force is responsible for all final decisions concerning issues, policies and procedures involved in executing the CWPPRA program. WM

Phase I: Engineering and Design

From Project Selection to Project Site

If the CWPPRA process is analogous to baseball, Phase 1 of project development is the minor leagues: talented players are chosen and coached for advancement.

Considering the recommendations of the Technical Committee, in January the Task Force places four projects on the Priority Project List. These projects advance to Phase 1, Engineering and Design. "We go from back-of-the-envelope concepts to collecting extensive data, producing detailed plans and closing in on cost estimates," says Brad Crawford, a member of CWPPRA's P&E and the Engineering Work Group. "Some data is obtained through CWPPRA's Coastwide Reference Monitoring System (CRMS); some of it is collected by state or federal staff, and some of it is provided by private sector contractors."

Brad Crawford

Brad Crawford is an environmental engineer and project manager at the Environmental Protection Agency. Currently he is managing the Long Point Bayou marsh creation project, on Priority Project List 28, which is now in Phase 1. "This project will create marsh north of the Sabine National Wildlife Refuge using material that the USACE dredges from the Calcasieu shipping channel," Crawford says. "In Phase 1, we collect all the site information we need for the type of project it is. Typically for marsh creation, we need to know of any impediment to building the project, such as oyster leases or abandoned pipelines. Geotechnical surveys determine where to locate a borrow source, where to place sediment within the project boundaries and what transportation routes could link the two sites. Knowing the sediment properties at both sites, we determine the amount of sediment required for the project to mature at the target height.

Whether sourced from dredging a shipping channel or from a borrow site outside the project area, sediment is shaped to specifications with earth-moving equipment.

The more sediment we need, the more expensive the project becomes.

"As manager I have three major responsibilities," says Crawford, "to meet the project's stated goals and objectives, to stay on budget and to stay on schedule. This requires tweaking and balancing aspects of the project as work progresses. Because the Long Point Bayou project uses material that the Corps dredges, we coordinate closely with them; and because it is a federal project, we must comply with the National Environmental Policy Act. Ultimately, however, as project manager I am accountable to the taxpayer to ensure responsible use of CWPPRA funds."

Land rights acquisition is a component of all projects. Real estate specialists determine legal boundaries, procure permission and record easements. "A large percentage of Louisiana's wetlands is privately owned," says Jason Kroll, the National Oceanic and Atmospheric Administration's (NOAA's) representative on the Engineering Work Group. "To align goals, we build relationships with landowners and their managers. Most Louisianans are eager to see coastal restoration projects built on or near their property."

Because federally sponsored CWPPRA projects affect environmental and habitat conditions, every project must comply with the National Environmental Policy Act (NEPA). NEPA requires assessing a project's impact on the environment, including on air and water quality; on endangered or threatened species; and on socio-economic, historic, archaeological and cultural resources.

When a project's design is 30 percent complete, the sponsors submit it for review by other CWPPRA agencies and the local sponsor. They scrutinize its design and consider options that could resolve problems, speed achieving goals, reduce anticipated expenses for operations and monitoring, and manage growth of costs.

When the design is 95 percent complete, the sponsors submit a final report that includes a fully-funded cost estimate approved by the Economics Work Group; a Wetland Value Assessment (WVA), approved by the Environmental Work Group; an evaluation of the project's constructability; and a draft

Jason Kroll

"Building a CWPPRA project takes a village," says Jason Kroll, a civil engineer working for NOAA. "Designers, land surveyors, geotech firms that help with data collection – CWPPRA projects depend on contributions from a wide array of specialists."

As a member of the Engineering Work Group, Kroll is involved in all phases of a project. "From planning in Phase 0 through maintenance and operations, I assist in developing technically sound designs, accurate cost estimates and construction oversight guidance," says Kroll. "As one of NOAA's representatives to CWPPRA, I look at every project with the agency's mission of serving marine resources in mind. Every agency has a slightly different focus, but we all come together to support CWPPRA's mission of protecting and restoring Louisiana's wetlands."

Kroll appreciates the camaraderie among CWPPRA participants. "There's some turnover, but generally we are working with the same people year after year," says Kroll. "We enjoy getting to know each other and going out into the field together. CWPPRA people, as well as the many other professionals and stakeholders involved in projects, genuinely care about their work.

"CWPPRA has set the foundation for restoration in Louisiana," says Kroll. "It has an excellent track record, and an excellent process – it may seem complex, but it has been developed over years and has a nice flow. It has been a model for other entities implementing coastal restoration. Sometimes the best training is learning by doing. CWPPRA has done more, and learned more. We intentionally share that knowledge so that everyone can learn from our experience."

Michelle Fischer

From indicating proposed projects with dots on posters at RPT meetings to showing land changes at the end of a project's authorization, maps tell the story of coastal restoration in Louisiana.

Mapmaker Michelle Fischer is a member of that village Jason Kroll says it takes to a build a CWPPRA project. "We make all kinds of maps, from ones illustrating individual projects to those showing coastwide trends," says Fischer, who works for the U.S. Geological Survey. "Each project fact sheet has a map showing its location and footprint. Larger maps demarcate existing and proposed project sites; display environmental conditions such as marsh type, indicative of salinity; connected or broken marsh; or depict land loss or gain regionally or even coast-wide."

Earning a master's degree in geography, Fischer had taken a couple of cartography classes but honed her skills through on-the-job training. Now, with more than a decade of experience behind her, Fischer produces maps and manages data through all phases of a CWPPRA project. "Designers consult data about variable wetland conditions that we catalog from CRMS or from field notes," Fischer says. "The Environmental Work Group uses our land-water analyses in Wetland Value Assessments. And as engineers develop details in project design, we update maps to show new features or an altered footprint. At the end of a project's life we look at the same factors again to evaluate how well a project achieved its goals. Did it create marsh? Shift salinity measures? Alter the rate of land change?"

plan for operations, maintenance and repair and monitoring. In consultation with other CWPPRA members, the Technical Committee recommends that the Task Force vote to advance the project to Phase 2, Construction and Long-term Operations, Maintenance and Monitoring.

If CWPPRA were baseball, the 95 percent review is like the eve of the big-league draft for farm team players. WM

Coastwide and demonstration projects

In accordance with CWPPRA's Standard Operating Procedures, since 2006 the Task Force may select annually a single, small-scale project that demonstrates the use of new techniques or materials for coastal restoration. Although not selected every year, such projects in the past have tested innovative solutions that become features in other restoration projects.

Most projects are nominated in the region where they are located, but occasionally a project spans all regions. Notably nutria control and coastal planting projects have been conducted coastwide.

CWPPRA demonstration projects test new ideas, methods and materials for coastal restoration. Supporting these small-scale projects is one of the ways that CWPPRA encourages innovative thinking and explores cutting-edge options for saving Louisiana's wetlands. Images are from a demonstration project that assessed the efficacy and cost effectiveness of different shoreline protection configurations.

Projects Take Place in the Wetlands

No matter how talented the player, budgets influence a baseball team's roster. So it is with selecting CWPPRA projects for construction. "There are more projects than money," says Britt Paul, who serves on the Technical Committee. "It makes for hard decisions."

In recent years, usually two projects move from Phase 1 to Phase 2, with money allocated for construction. Private-sector companies, such as dredgers and marine construction enterprises, bid to build projects. The state and federal sponsors work together to oversee construction.

Project cost estimates include post-construction tasks – monitoring, operations, maintenance and repair. Budgets may include funds for implementing adaptive management, such as altering the timing or volume of diversion releases based on environmental observations. Sometimes additional money is allocated to take corrective actions, such as adding another tier of rock to sinking shoreline protection.

The information collected through monitoring is compiled in reports and analyses available to the public. "Anyone interested in coastal restoration can access CWPPRA's accumulated knowledge," says Kevin Roy, a biologist at USFWS. "Other restoration programs tap into our experience in project development and construction, or adopt our methodologies for estimating

Darin Lee

"Typically a project is monitored more frequently in its early years to be sure that nothing unexpected is happening," says Darin Lee, a coastal resource scientist at CPRA who manages monitoring of barrier island projects. "To determine if a project is meeting its goals and objectives, we collect information on an array of factors through field trips, fly-overs and remote sensors."

Although objectives vary due to project types and site conditions, projects frequently share some common factors. "We often look at gains or losses in land area; changes in elevation, subsidence and shoreline erosion; and alterations in sediment characteristics. We might compare land accretion within and without a project area. We might evaluate a project based not simply on improvements within its boundaries but on its success in meeting the overarching mission of protecting and restoring the coast. If we discover problems, we may respond by adjusting the project's management strategy – the process of adaptive management."

Lee emphasizes the importance of clearly establishing a project's goals and objectives. "If goals are well defined, we can use data gathered by monitoring to determine a project's success. But if there's ambiguity in stating the goals, success becomes a much more subjective judgment."

Lee is active not only in monitoring but in planning CWPPRA projects. "I work with the teams that are developing new projects to share lessons we have learned," says Lee. "CWPPRA agency scientists and other stakeholders consult us to see what insights we've gained project to project. All of the information we collect is available to the public."

With more than two decades experience, Lee has experienced how technological advances have changed his work. "When I first started, we acquired elevation data on site. Even surveying with GPS was relatively new back then. Now airborne lasers, satellites and drone technology can produce a quick and more comprehensive view of the coast."

Another change Lee cites is the growing list of CWPPRA projects. "More projects increase demands on the monitoring teams," Lee says, "and diminishes the time and money we have to examine each one closely. To keep up with the work, we need to continue to devise ways to look at the big picture and measure project accomplishments comprehensively across the coast."

Whitney Thompson

Whitney Thompson knows coastal restoration in Louisiana inside and out. Trained as a civil engineer, in college she took a course in coastal engineering. "It just clicked for me," Thompson says, "the way it combined protecting not just Louisiana's land, but its people and culture as well."

Thompson first worked for Louisiana's Department of Natural Resources (DNR). "At the time DNR was responsible for coastal restoration, and I was the state's representative on CWPPRA's Engineering Work Group."

Now in the private sector, Thompson has founded her own firm. Her experience gives her insight into how CWPPRA operates. "There's always a good dynamic among CWPPRA project team members," says Thompson. "When I am hired as a consultant, I am confident they truly value my professional opinion and expertise. They trust me with their project from design through construction, and I understand the level of quality they expect. I know their standards are high."

Thompson most enjoys being on site to oversee contractors building a project. "It's not always possible for others involved in the project to do that," she says. "It gives me an opportunity to make adjustments in the field. The coast is a dynamic environment – from design to construction, things can change quickly. A request to modify a project is usually approved; everyone realizes we have to stay flexible."

costs and our processes for involving the public."

Some of those programs have done more than consult with CWPPRA. They have taken benched Phase 1 projects – projects that CWPPRA developed but has not funded for construction – and used their funds to build them. "We're all focused on the same goal – protecting and restoring Louisiana's coast," says Brad Crawford, with the Environmental Protection Agency. "There may be a bit of pride involved in putting a project on the ground, but, if the coast benefits, it really doesn't matter which agency sponsors it or what funding stream pays for it."

CWPPRA projects are authorized for 20 years. "Mother Nature takes over some types of projects, notably marsh creation and barrier island restoration, with little upkeep to do," says Crawford. "But other projects require maintenance – managing water control structures, cleaning ditches or removing hazards to navigation." Projects now at the end of their life expectancy pose a new set of questions: What should be done with a 20-year-old project? Which should be decommissioned? Which should be re-authorized? Which transferred to another entity?

As it has for 30 years, CWPPRA itself will change and adapt, responding to developments in its program and in the environment. Tough choices lie ahead; there simply is not enough money to protect every coastal community, to restore every wetland. Paul notes CWPPRA's strengths have been its accessibility – to the public and to other restoration specialists – and the interagency cooperation it has fostered to promote collaboration and focus on a common goal. The success of CWPPRA has relied on the people who make CWPPRA work, and its future lies in their hands. WM

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The Outreach Committee: CWPPRA's Link to the Public

By creating the Outreach Committee as an intrinsic branch of the program's structure, the architects of CWPPRA acknowledged the importance of an informed and participative public to the success of its restoration program. To fulfill its mission to communicate the value of wetlands, the science of land loss and approaches to restoration, CWPPRA's outreach has generated numerous products, among them educational materials for the public and for the classroom; programs at community gatherings and presentations at scientific conferences; podcasts, videos and publications in both print and electronic formats. "Over the years technology has given outreach new tools to do its job," says Rex Caffey, a member of the Outreach Committee since 1998, "but it has always been an objective source of information about both CWPPRA and the broad range of issues facing the coast."

Along with staff from the six CWPPRA agencies and the outreach coordinator, representatives from non-governmental organizations involved in coastal issues – SeaGrant, BTNEP, CRCL* – serve on the committee. "These partners enrich our interactions and increase networking among stakeholders," says Caffey. "Such organizations help our communities confront difficult decisions about the coast's future."

Caffey says the strength of CWPPRA's outreach has always been its adherence to science and objectivity. "In these polarized times we must be honest about the limits of restoration," he says, "while staying true to what has made CWPPRA good and strong."

Rex Caffey is a professor at Louisiana State University Agricultural Center, specializing in coastal restoration economics and ecosystem service valuation. He is also the director of the university's Center for Natural Resource and Economic Policy and its Sea Grant marine extension program. WM

**NOAA's Sea Grant College Program at Louisiana State University, Barataria-Terrebonne National Estuary Program, Coalition to Restore Coastal Louisiana*