

Louisiana Sea Grant Strategic Plan 2018-2021

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CROSS-CUTTING GOALS

Managing Louisiana's coastal resources as part of the Gulf of Mexico large-scale ecosystem requires solutions to problems that balance human needs with environmental health in three fundamental areas:

- **A need for synthesis and communication of information about how Louisiana's coastal and Gulf ecosystems function, and how human activities alter these habitats and living resources in a way that limit the ecosystem services they provide;**
- **A need for management and decision making processes that are based on a synthesis of scientific information, together with stakeholder engagement that defines benefits from the beauty and bounty of Louisiana's coastal resources, that include mechanisms to evaluate trade-offs between human and environmental needs;**
- **A need for outreach through communication, education and extension to provide Louisiana citizens with the tools to understand the complexities of coastal environments and the interactions between human use and the health of coastal ecosystems.**

COMMENT:

Research Goal: Develop and distribute credible scientific information to advance understanding of the nature and value of Louisiana's coastal and Gulf resources, to identify new ways to restore, conserve and use these resources, and to support evaluation of the environmental impacts and social/economic trade-offs involved in coastal decision-making

Strategies

- Support research to generate the scientific, technical, economic, and legal information needed to increase sustainability of Louisiana's coastal and Gulf ecosystems and communities; support the development of new businesses, products, tools, and technologies (economic development) while also addressing the most pressing questions related to Louisiana's coastal and Gulf ecosystems including restoration, conservation, use, and management.
- Play a leadership role within and outside of the Louisiana Sea Grant network in increasing the amount of social/economic research available to help decision makers evaluate trade-offs of natural, social and economic systems, and assess risks to the future health and productivity of Louisiana's coastal and Gulf ecosystems and residents.
- Develop synthesis that communicates and disseminates research findings and technological discoveries to Louisiana's citizens, industries, and leaders who need them to capitalize on opportunities and make wise management decisions.

COMMENTS:

Outreach Goal: Develop and distribute decision-making procedures that involve the full-range of Louisiana’s coastal interests, that integrate efforts of public and private partners at the federal, regional, state, and local levels, and provide mechanisms for establishing common understandings that generate outcomes that focus on sustainable resources.

Strategies

- Use Louisiana Sea Grant’s research, extension, and outreach capabilities to encourage and support the creation of decision-making procedures that promote scientific synthesis, maximize effectiveness, and provide an integrated response to coastal problems and opportunities.
- Build consensus on complex issues such as coastal land use, water policy, energy development, public access, invasive species control, and climate change impacts by communicating cutting-edge research, building broader understanding among various constituency groups, and convening diverse groups of stakeholders to work together to find common solutions.
- Strengthen partnerships to promote national and regional collaborations on issues that face federal and state programs and other partners in coastal Louisiana and the Gulf region to support more effective and integrated coastal decision making.

COMMENTS:

EVALUATION:

FOCUS AREAS

- 1. Healthy Ecosystems and Habitats**
- 2. Resilient Communities and Economies**
- 3. Sustainable Fisheries and Aquaculture**
- 4. Education and Workforce Development**

Each focus area has goals, strategies, outcomes and performance measures.

- The goals describe the desired long-term direction for each focus area.
- The strategies are focused actions that guide Louisiana Sea Grant towards progress and link goals with outcomes.
- The outcomes are benchmarks from which Sea Grant can track progress toward achieving each goal.
- Performance measures are quantitative ways of measuring outcomes.
- Outcomes are commonly categorized as short-, medium- and long-term.
 - Learning (short-term) outcomes lead to increased awareness, knowledge, skills, changes in attitudes, opinions, aspirations or motivations through research and constituent engagement.
 - Action (medium-term) outcomes lead to behavior change, social action, adoption of information, changes in practices, improved decision making or changes in policies.
 - Consequence (long-term) outcomes require focused efforts over multiple strategic planning cycles. Consequence outcomes in a four-year strategic plan serve as reference points toward reaching focus area goals between the current and future strategic plans.

COMMENTS:

EVALUATION BY MARINE EXTENSION PROGRAM

Rank order of **goals** and strategies

- 6.15 **Providing Reliable Information**
Quality assurance/ value added
- 6.15 programming
- 6.10 **Ensure seafood supply and safety**
- 6.05 **Vibrant and accessible waterfronts**
- 6.05 Social and economic analyses
Promote optimal harvest/marketing
- 6.05 strategies
- 5.90 Educate leaders on env. stewardship
- 5.90 Empower sustainable development
- 5.90 **Seafood consumer research/outreach**
- 5.85 Examine/communicate surge and RSL
- 5.85 Seafood handling/processing technologies
- 5.80 Examine/promote sustainable aquaculture
- 5.80 Coordinate literacy via LA K-12 standards
- 5.75 Empower stakeholders in policy process
- 5.75 **Comprehensive community planning**
- 5.75 **Educating/adapting to climate & hazards**
- 5.75 **Environmentally literate public**
- 5.70 Collaborate with NOAA on EWD
- 5.65 **Promoting Ecosystem-Based Approaches**
- 5.60 Seafood nutritional/safety outreach
- 5.60 Advance Gulf literacy on multiple fronts
Create new undergrad and graduate
- 5.60 opportunities
- 5.55 Restore seafood habitat/populations
- 5.50 **Protecting habitat function**
- 5.50 Model/communicate restoration impacts
- 5.50 **Improving coastal water resources**
- 5.50 Examine/communicate MLOD
- 5.45 BMP education and policy outreach
- 5.40 Examine costs & benefits of restoration
- 5.40 Focus on building codes/ infrastructure
- 5.30 Model/mitigate climate change impacts
- 5.30 Outreach on sustainable resource use
- 5.20 Evaluate existing water policy
- 5.20 **Diverse STEM trained workforce**
- 5.15 Educate stakeholders on water policy
- 5.05 Optimize river diversion projects
Restore functional equivalent of natural
- 5.05 systems
- 5.00 Facilitate land use planning
- 4.80 Develop model water policy
- 3.70 Predict and monitor HAB

Additional Priorities: Healthy Ecosystems and Habitats (HCEH)

- Strategy 1 is very important to all the other options
- Promote and help facilitate the integration of local traditional ecological knowledge (TEK) as valuable information for inclusion into the research and decision-making processes related to protecting and restoring function and productivity of Louisiana's degraded ecosystems and habitats. Encourage and promote a two-way transfer of knowledge on these issues between local ecosystem users and scientists/decision-makers.
- GOAL: Creating healthy ecosystem and habitat via reduction of 'everyday' pollutants. These pollutants could include emerging contaminants (e.g., pharmaceuticals, personal care products, micro-plastics) and also relatively 'traditional' pollutants (e.g., nutrients, litter, pesticides) too. STRATEGY 1: Extension and outreach - Two-fold strategy = (1a) Assess community knowledge of common pollutants they may be using everyday but not be aware of (e.g., anti-microbials in handsoaps) using devices like e-surveys and in-person surveys; (1b) educate and inform citizens/community about types of everyday pollutants and sources. Should also include ways to minimize/eliminate release into the environment (ex: proper pharm disposal, non-use of plastic microbead scrubs and toothpastes, building plant boarders around yard/farm to 'catch' nutrient runoff). Could include extension and outreach pubs, but also informative (but fun) videos, and in-person demos. STRATEGY 2: Outreach - Involve community via citizen science effort to quantify microplastics in water samples from LA waterways. STRATEGY 3: Outreach - Involve community via quantitative citizen science beach/coast clean-ups. After tallying up findings would create extension and outreach materials based on most common types of litter on LA coasts. These docs would include quantitative look at types of pollution across LA coast and include info on consequences of each type of litter and ways to reduce its presence on our coasts. Additional examples for covering this goal and strategies: Sea Grant programs (e.g., Florida, Ohio, Illinois-Indiana, Pennsylvania).
- Goal 1 Strategy 2 should read "Provide research, information and support for efforts to improve...." Goal 3 Strategy 1 should read "Provide research, information and support for efforts to restore....."
- How very sad that "biological" or "biology" or even some compound "bio-..." term does not appear at all under the focus area of Healthy Ecosystems and Habitats... pretty much sums up the new Louisiana Sea Grant
- Goal 1: Strategy 2 seems a bit too detailed. Maybe could modify to say we would provide science based information to inform decision making on these projects. Goal 3: Strategy 2 is a strategy better suited for a restoration agency- we are educators and scientists, we don't build projects - we build human capital.

Additional Priorities: Resilient Communities and Economies (RCE)

- Fifty year vision is important
- Goal 6 Strategy 3 should read "Provide research and information to assist government and law makers in developing and enacting....."

- Not sure if this is goal or strategy - I think strategy. Using existing tools for community resilience and adaptation planning, facilitate conversations between local governments, adjacent industries, and community residents to understand and communicate the linkages between each sector of society and to encourage a joint approach to establishing nested processes of resilience, adaptability and sustainability.
- There is a preponderance of subtle "we know what's best for you" attitudes throughout this focus area. Many entries stray significantly from the simple, objective delivery of research-based information. We have no business 'developing and implementing' policies.

Additional Priorities: Sustainable Fisheries and Aquaculture (SFA)

- Keeping LA number one in the minds of the national consumer
- Develop strategies to help stakeholders learn to effectively manage the financial, production, marketing, legal and human risks associated with their businesses so that they are more efficient and competitive. Research should have a human dimension aspect and should be more citizen-science based.
- Harvesting technology development is important to fishermen - vessel maintenance and safety, gear development including shark repellents, doors, propellers, navigation equipment,...
- Fishermen education and business model sustainability and outreach to communicate best management practices, new technology and financial opportunities
- For Goal 9, I would like to see a strategy that is directly tied with helping consumers evaluate seafood sustainability
- Under goal 1, I have had feedback that these current goals limit research on non-habitat essentials such as threat of invasives, disease, etc. I would suggest a strategy to include identifying new harms/ threats to populations.
- Strategy 2 under Goal 9 is very similar to Strategy 3 under Goal 8 - strike Strategy 2 under Goal 9. Also, I think we should add something about educating consumers on paying attention to where their seafood comes from. Not just that it's healthy and good quality, but where is it coming from?

Final Comments: In the space provide below, please provide any general comments or recommendation that you might have regarding the strategic planning process

- Most of the long term projections on the fate of the coastal system is poorly understood and accepted by the public
- Three points: 1) one of LSG's niches is in its responsiveness to local stakeholder need. The new strategic plan should not limit this ability we have to be responsive to our constituents' needs; 2) another of LSG's unique niches is in its established network of local stakeholders. The new strategic plan should be focused on maintaining and continuing to develop this critical network - such as establishing a succession plan for retiring extension agents that maintains LSG's institutional knowledge and personal connections through established networks; 3) The HCE focus area goals should be re-worded to reflect that we don't restore wetlands or ecosystems,

rather we help facilitate knowledge/technology transfer and discovery that supports restoration efforts.

- We place significant emphasis on fisheries and aquaculture and rightly so given the importance of these items to Louisiana's economy. I would like to see more tie-in with items like healthy ecosystems and habitats. They should go hand-in-hand.
- There are many laudable goals and strategies here and it seems we could be spreading ourselves too thin. We should look for efficiency in executing our mission. A single effort might address more than one goal or strategy. For instance, when delivering information on safer building practices and land use planning we talk about ecosystem services that compliment and support the human actions. We do this already but don't do a good job of documenting the parts of the plan we have executed.
- Feedback I received after the last omnibus cycle from several science researchers (both applicants and non-applicants due to last piece) is that they felt these were worded in a complicated fashion, and several felt after reading through all the Goals/ Strategies that the focus was social science. Biological experimental research was not encouraged.
- Refer to NOAA CSC's Project Design and Evaluation Manual to double-check wording on the Goal statements and make sure all are consistent (action statement vs. ideal description)
- Sea Grant's ONLY agenda should be the generation and dissemination of objective, research based information to advance ALL of the focus areas identified above. Not wade into the domain of other state and federal agencies, nor shy away from politically hot topics. No more fiefdoms nor empire-building, please.
- More climate change, more GIS/maps

Focus Area: HEALTHY COASTAL ECOSYSTEMS AND HABITATS

Goal 1: Generate, synthesize and communicate credible information from the physical, environmental and social sciences to support ecosystem-based approaches to managing and restoring Louisiana’s coastal environment including fish, wildlife, and plants

The full potential of ecosystem-based management approaches will be realized with better understanding of current conditions, basic ecosystem processes, interactions of coastal and upland land uses on the health of coastal and Gulf environments, and the importance of healthy ecosystems to healthy fisheries. It is also necessary to develop the skills to transform new knowledge and understanding into sound management principles and practices. Louisiana Sea Grant will continue to build the necessary scientific foundation both by supporting research that produces useful information related to ecosystem health and by accelerating the transfer of this information to coastal residents, resource managers, businesses and industries.

Strategies

HCEH 1.1 Establish benchmark costs and benefits of coastal marsh restoration and protection projects, including impacts on the economies, residents, and cultures of coastal communities.

HCEH 1.2 Improve Louisiana’s wetlands with river diversion and sediment conveyance projects that optimally manage and allocate sediments, minimally impact local residents, native flora and fauna, and positively affect community, culture, and water quality.

HCEH 1.3 Predict, detect, monitor, and mitigate harmful algal blooms with both existing and newly developed methodologies and technologies.

Learning Outcomes

- 1.1. Develop and calibrate new standards, measures and indicators of ecosystem sustainability.
- 1.2. Identify critical uncertainties that impede progress toward achieving sustainability of ecosystems and the goods and services they provide.

Action Outcomes

- 1.3. Resource managers, policy makers, and decision makers use standards and indicators to support ecosystem-based management.

Consequence Outcomes

- 1.4. Dynamic ecological systems provide a wide range of ecological, economic and societal services and are more resilient to change.
- 1.5 Greater public stewardship leads to participatory decision-making and collaborative

ecosystem-based management decisions.

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Goal 2: Promote integrated ecosystem-based approaches to sustainably manage land, water, and living resources in Louisiana's coastal areas

The negative consequences of ecosystem degradation and tropical storms on natural resources, local economies, and human health are familiar to most residents of coastal Louisiana. The motivation to apply ecosystem-based management approaches to alleviating Louisiana's coastal challenges will require additional interaction with a wide variety of audiences. Louisiana Sea Grant's strong research and outreach capabilities must provide both scientific information on and technical assistance with ecosystem-based management. Extension and education capabilities also must engage citizens in stewardship activities that promote healthy ecosystems. Such efforts should be expected to result in regional and other collaborative approaches that address problems not only in Louisiana, but also extend beyond traditional geographic or governmental boundaries.

Strategies

HCEH 2.1 Reduce negative effects of climate change and development on the Louisiana coast with predictive models developed, refined, and applied in partnership with NOAA entities such as National Weather Service and Coastal Services Center.

HCEH 2.2 Model and communicate impacts of coastal restoration projects on residents and economies considering both the potential social and economic implications of the projects themselves and the desirable social and economic alternatives of such projects, including ecosystem service value.

HCEH 2.3 Educate Louisiana residents and community leaders about both their relationship with the marine and coastal environments and the critical need for conservation and restoration of these natural resources.

HCEH 2.4 Engage and empower Louisiana residents, community leaders, and policy makers in processes to gather and consider their perspectives of environmental, social, and cultural issues of the coast to encourage private sector/government partnerships and to use credible information in decision making.

Learning Outcomes

- 2.1. Stakeholders have access to data, models, policy information and training that support ecosystem-based planning, decision-making and management approaches.
- 2.2. Baseline data, standards, methodologies and indicators are developed through synthesis to assess the health of ecosystems and watersheds.
- 2.3. Residents, resource managers, businesses and industries understand the effects of human activities and environmental changes on coastal resources.
- 2.4. Resource managers have an understanding of the policies that apply to coastal protected species.

Action Outcomes

- 2.5. Methodologies are used to evaluate a range of practical ecosystem-based management approaches for planning and adapt to future management needs.
- 2.6. Resource managers apply ecosystem-based management principles when making decisions.
- 2.7. Resource managers incorporate laws and policies to facilitate and implement ecosystem-based management.
- 2.8. Residents, resource managers and businesses integrate social, natural and physical science when managing resources and work with all sectors in the decision making process.

Consequence Outcomes

- 2.9. Land, water and living resources are managed using ecosystem-based approaches.

Healthy Ecosystem and Habitats Performance Measures

1. Number of Sea Grant-supported tools, technologies and information services that are used by our partners/stakeholders to improve ecosystem-based management.
2. Number of ecosystem-based approaches designed to manage land, water and living resources in coastal areas as a result of Sea Grant activities.
3. Number of acres of coastal habitat protected, enhanced or restored as a result of Sea Grant activities.

***Focus Area:* RESILIENT COMMUNITIES AND ECONOMIES**

Coastal communities provide vital economic, social, and recreational opportunities for thousands of Louisianans, but population migration, especially since Hurricanes Rita and Katrina, have transformed our coastal landscapes and intensified demand on finite coastal resources. For example, the increase in population along the north shore of Lake Pontchartrain has resulted in new housing developments, recreation facilities, and other business activities. These changes are placing tremendous pressure on coastal lands, water supplies, and traditional ways of life. To accommodate more people and activity, and to balance growing demands on coastal resources, we must develop new policies, institutional capacities, and management approaches to guide the preservation and use of coastal and ocean resources. Louisiana Sea Grant will engage a diverse and growing coastal population in applying the best available scientific knowledge and use its extension and education capabilities to support the development of healthy coastal communities that are economically and socially inclusive, are supported by diverse and vibrant economies, and are functioning within the carrying capacity of their ecosystems.

Sea level rise, the increased number and intensity of coastal storms, the ongoing threat of oil spills, and other natural and human hazards are putting more people and property at risk along Louisiana's coast, with major implications for human safety and the economic and environmental health of coastal areas. It is essential that residents of coastal communities understand these risks and learn what they can do both to reduce their vulnerability and to respond quickly and effectively when destructive events occur. Louisiana Sea Grant will use its integrated research, training, and technical assistance capabilities and its presence in coastal communities to play a major role in helping local citizens, decision-makers, and industries plan for hazardous events and optimize the ability of their communities to respond and rebuild.

Goal 4: Promote vibrant and resilient Louisiana coastal economies that include working waterfronts, an abundance of recreation and tourism opportunities, and coastal access for all citizens

Marine resources and coastal access sustain local economies in Louisiana through fisheries and aquaculture, seafood processing, trade, energy production, and tourism and recreation enterprises. The state's ports and waterways continue to accommodate trade, staging areas for off-shore industries, tourism and recreational boating, and fishing fleets. At the same time, coastal land loss, the ravages of Hurricanes Katrina and Rita, and a weakened economy are displacing both traditional water-dependent industries and their employees and diminishing water and beach access for all Louisiana residents. Vacant industrial buildings and obsolete infrastructure facilities can be refurbished for new marine enterprises, public access, and planned mixed-use developments that bring both employment to residents and enjoyment to visitors. Louisiana Sea Grant's long-standing relationships with coastal communities and industries make it ideally suited to provide information, tools, and techniques to support working waterfronts, responsible energy development, the development of accessible recreation and tourism activities, and adoption of sustainable development practices.

Strategies

RCE 4.1 Support social and economic analyses of coastal communities that identify and communicate employment alternatives, such as either transitioning to local employment opportunities, applying traditional skill and knowledge to the aquaculture of finfish and shellfish, or ecotourism.

RCE 4.2 Engage, educate, and empower residents of Louisiana's coastal communities in processes that identify and pursue sustainable economic development and community sustainability alternatives, policies and programs.

Learning Outcomes

- 4.1. Communities are aware of both the economic contributions of coastal areas and the interdependence between the health of the economy and the health of the natural and cultural systems.
- 4.2. Communities have access to information needed to understand the value of waterfront- and tourism-related economic activities.
- 4.3. Communities understand the strengths and weaknesses of alternative development scenarios on resource consumption and local economies.
- 4.4. Communities are aware of regulatory regimes affecting economic sustainability.

Action Outcomes

- 4.5. Citizens are actively engaged in management and regulatory decisions.
- 4.6. Communities engage in economic development initiatives that capitalize on the value of their natural and cultural resources while balancing resource conservation and economic growth.

Consequence Outcomes

- 4.7. Communities have diverse, healthy economies and industries without displacing traditional working waterfronts.

Goal 5: Support Louisiana coastal communities in the use comprehensive planning efforts both to ensure efficient use of land, energy, and water resources and to protect the resources needed to sustain coastal ecosystems and quality of life

Among the most difficult challenges facing Louisiana's coastal communities, most notably along the north shore of Lake Pontchartrain, is how to manage growth and development without diminishing the health of the ecosystems upon which these communities depend. This is reflected in concerns about climate change and its potential negative effects on these communities. To respond to such challenges at a local and regional level, communities are seeking ways to use land and water, generate energy, and dispose of waste that will preserve environmental health and economic vigor. Determining the amount of the land, water, and other natural resources needed to sustain healthy communities is an essential first step in establishing sustainable policies and growth practices. Only when the dimensions of this environmental footprint are identified can coastal communities understand what their carrying capacities are and what will be needed for generations to come. Louisiana Sea Grant and its university partners are in a unique position to conduct research and develop models and forecasts that will help communities with this process.

Strategies

RCE 5.1 Invest the citizens and businesses of coastal communities in responsible water, land, energy, resource, and waste management policies and practices through the development and delivery of relevant educational and media appropriate materials and programs.

Learning Outcomes

5.1. Communities understand the connection between planning and natural resource management decisions that minimize user conflicts, improve resource conservation efforts and identify potential opportunities.

Action Outcomes

5.2. Communities make use of tools and information to explore the different patterns of coastal development, including community visioning exercises, resource inventories and coastal and land-use planning.

5.3. Communities adopt coastal and land-use plans.

5.4. The public, leaders and businesses work together to implement plans for the future and to balance multiple uses of coastal areas.

Consequence Outcomes

5.5. Quality of life in communities, as measured by economic and social well-being, improves without adversely affecting environmental conditions.

Goal 6: Improve coastal water resources to sustain human health and ecosystem services.

The pressures on Louisiana's ocean, coastal, and inland water resources continue to grow. Our citizens and decision makers have an urgent need for tools that will help them evaluate the implications of land use changes, coastal development pressures, and increased resource use in approaching the water policy and management decisions they face. Regional cooperation and coordinated land use and watershed planning are essential. Louisiana Sea Grant's well-established role as a trusted broker among a wide range of interests makes it a key player in providing sound information for decision-makers, convening stakeholders to seek common ground, and facilitating the development and implementation of new coastal water policies, plans, management approaches, and consensus-building strategies.

Strategies

RCE 6.1 Investigate the existing water policies of both state and local jurisdictions whose water management practices affect coastal resources to understand alternative water policies that might be beneficial for application in Louisiana and the wider Gulf region.

RCE 6.2 Develop and enact model water policies that will assist Louisiana in addressing the growing demands on its water resources from various sectors, including domestic, coastal restoration, fisheries, energy, and interstate transfers.

RCE 6.3 Educate stakeholders and decision makers on water policy issues with outreach information and materials developed by Sea Grant.

Learning Outcomes

- 6.1. Communities and state and local decision makers are aware of the impact of human activities on water quality and supply.
- 6.2. Communities understand the value of clean water, adequate supplies and healthy watersheds.
- 6.3. Communities and state and local decision makers understand water laws and policies affecting the use and allocation of water resources.

Action Outcomes

- 6.4. Communities and state and local decision makers engage in planning efforts to protect water supplies and improve water quality.
- 6.5. State and local decision makers adopt mitigation measures, best management practices and improved site designs in local policies and ordinances to address water supplies and water quality.

Consequence Outcomes

- 6.6. Water supplies are sustained.
- 6.7. Water quality improves.

Goal 7: Improve adaptation strategies of Louisiana coastal citizens, community leaders, and industries to complex interrelationships among social, economic and environmental values in coastal areas and reduce risks from hazards and climate change.

Communities and businesses are increasingly vulnerable to hazardous events brought on by climate-related changes, land use changes, and increased economic activity in coastal waters. There is a great need for information and tools to help communities assess the risks they face and identify the options available to them to minimize those risks. Louisiana Sea Grant will support the work of NOAA's Climate Program Office and its climate impact and adaptation-related activities. Louisiana Sea Grant will work with other federal, state, and local partners, the banking and insurance industries, and others to develop forecasting and risk assessment tools, economic and environmental impact models, and other mechanisms that will help families, businesses, communities, and regions understand their risks and take them into account in making personal, business, and community-related decisions.

It is not enough for communities and businesses to understand their vulnerabilities. They must act on this knowledge and become more resilient, or the human and economic losses will continue to mount. Individuals, businesses, and communities need to develop comprehensive emergency preparedness and response plans that increase their resiliency and enable them to respond effectively. Louisiana Sea Grant will contribute to this by providing synthesis to improve forecasting capabilities; by identifying development and best management practices that reduce the vulnerability of people, buildings and businesses to coastal hazards; and by advancing ways communities can manage and recover from these events when they occur.

Strategies

RCE 7.1 Design and implement outreach programs on sustainable use of coastal resources for coastal community residents, community leaders, and industry.

RCE 7.2 Investigate and communicate interactions among sea level rise, subsidence, and storm surge, including implications for saltwater intrusion, coastal flooding, agriculture, human health and safety, and cultural changes.

RCE 7.3 Develop and communicate models of successfully resilient communities, including contributions of community demographics, economic base, insurance coverage, building codes, education programs, health care resources, fishery infrastructure, and development.

RCE 7.4 Facilitate implementation of improved land use planning and building codes in Louisiana coastal communities by developing and distributing best practices information.

RCE 7.5 Understand, quantify, predict, and communicate impacts of both natural

features, including wetlands and upland vegetation, coastal/nearshore morphology, beach dunes, and barrier islands, and man-made structures in providing defense against tropical storms, storm surges, and technological disasters.

Learning Outcomes

7.1. Residents and decision-makers are aware of and understand the processes that produce hazards from climate change and the implications of those events for them and their communities.

7.2. Decision-makers are aware of existing and available hazard- and climate-related data and resources and have the knowledge and skills to assess local risk vulnerability.

7.3. Communities have access to data and innovative and adaptive tools and techniques to minimize the potential negative impact from hazards.

7.4. Decision-makers understand the legal and regulatory regimes affecting adaption to climate change, including coastal and riparian property rights, disaster relief and insurance issues.

Action Outcomes

7.5. Communities apply best available hazards and climate change information, tools and technologies in the planning process.

7.6. Decision-makers apply data, guidance, policies and regulations to hazard planning and recovery efforts.

7.7. Communities develop and adopt comprehensive hazard mitigation and adaptation strategies suited to local needs.

7.8. Residents take action to reduce the impact of coastal hazards on their life and property.

7.9. Communities adopt a comprehensive risk communications strategy for hazardous events.

Resilient Communities and Economies Performance Measures

4. Number of communities that implement sustainable economic and environmental development practices and policies (e.g., land-use planning, working waterfronts, climate change planning, smart growth measures, and green infrastructure) as a result of Sea Grant involvement.

5. Number of communities that implement hazard resiliency practices to prepare for, respond to, or minimize coastal hazardous events as a result of Louisiana Sea Grant involvement.

***Focus Area:* SUSTAINABLE FISHERIES AND AQUACULTURE**

Louisiana has experienced a decline in the profitability of many of its major fisheries. While seafood consumption nationwide has been simultaneously on the rise, domestic harvesters have faced competition from inexpensive imported seafood products and high cost of fuel for fishing vessels. Louisiana Sea Grant, through its research, extension, and education activities and work with industry partners, has helped to stabilize and improve many sectors of our fisheries industry. According to the NOAA Aquaculture Program, mariculture (aquaculture of saltwater species) is in its infancy in the U.S., amounting to just over \$1 billion of a \$70 billion worldwide industry. This is especially so in Louisiana. Mariculture creates important new opportunities to meet the increased demand for seafood, but a number of questions need to be addressed for its full potential to be realized. Seafood safety is a growing concern as international trade increases and fish diseases and contamination of imports loom as larger problems. Louisiana Sea Grant has key roles to play in advancing public understanding of the nature of these problems and opportunities. Through the use of its research, extension, and education capacities, Louisiana Sea Grant will support the kind of informed public and private decision making that will lead to a sustainable supply of safe seafood long into the future.

Goal 8: Secure a safe and sustainable supply of Louisiana seafood to meet public demand

Ensuring a sustainable supply of safe seafood requires an understanding of the effects of overfishing, past management decisions, and climate change on Louisiana's wild fish populations, as well as the role ecosystem-based fisheries management can play. It also requires better understanding of the range of complex issues related to developing the domestic mariculture industry. Louisiana Sea Grant will make major contributions by supporting research that provides the knowledge needed to understand the factors stressing fisheries and the complexities of mariculture development. Louisiana Sea Grant will also translate and transfer useful research findings through extension and education activities to ensure responsible and productive use of these resources in the future.

A healthy seafood industry requires harvesting techniques that minimize both waste of non-target species and damage to marine habitats. This requires development of value-added products, enhanced quality assurance, and education about how to market under-utilized species. Louisiana Sea Grant will involve harvesters, recreational fishermen, producers, and managers in being responsible stewards as well as successful entrepreneurs. Louisiana Sea Grant will support development of new technologies and participate in collaborative efforts to increase the range of seafood products produced, enhancing Louisiana's competitiveness in global markets.

Strategies

SFA 8.1 Restore important native recreational and commercial finfish and shellfish populations by identifying and protecting habitats essential to their reproduction, feeding, habitation, and growth to marketable size.

SFA 8.2 Develop practices, technologies, and systems designed for enhanced, more efficient operation of seafood culture facilities with minimal impact on coastal and oceanic environments and habitats, on natural fisheries, and on the people who depend on natural fisheries.

SFA 8.3 Develop new management, harvesting, handling, and processing technologies, value-added products, innovative waste management practices, and byproduct uses that maximize the quality, safety, and utilization of Louisiana's seafood products

SFA 8.4 Promote seafood harvesting and marketing strategies that both maximize efficiency and profitability and minimize environmental impacts.

Learning Outcomes

- 8.1. Fishery managers and fishermen understand the dynamics of wild fish populations.
- 8.2. The Louisiana seafood industry is knowledgeable about innovative technologies, approaches and policies.
- 8.3. Louisiana's Commercial and recreational fishermen are knowledgeable about efficient and responsible fishing techniques.
- 8.4. The commercial fishing industry is aware of innovative marketing strategies to add value to its product.
- 8.5. The seafood processing industry learns and understands economically viable techniques and processes to ensure the production and delivery of safe and healthy seafood.

Action Outcomes

- 8.6. Fishermen employ efficient fishing techniques, including bycatch reduction.
- 8.7. Fishermen apply techniques to reduce negative impacts on depleted, threatened or endangered species.
- 8.8. The seafood industry adopts innovative technologies and approaches to supply safe and sustainable seafood.
- 8.9. The commercial fishing and aquaculture industries adopt innovative marketing strategies to add value to their products.
- 8.10. The seafood industry adopts techniques and approaches to minimize the environmental impact of their sectors.
- 8.11. Resource managers establish policies and regulations that achieve a better balance between economic benefit and conservation goals.
- 8.12. The seafood processing industry implements innovative techniques and processes to create new product forms and ensure the delivery of safe and healthy seafood.

Consequence Outcomes

- 8.13. The Louisiana seafood supply is sustainable and safe.
- 8.14. There is an expansion of sustainable domestic fishing and aquaculture industries in Louisiana.

Goal 9: Inform consumers about the health benefits of seafood consumption and how to evaluate the safety and sustainability of the seafood they buy.

Fish and shellfish contain high quality protein and other essential nutrients and are an important part of a healthful diet. In fact, a well-balanced diet that includes a variety of fish and shellfish can contribute to heart health and aid in children's proper growth and development. The U.S. Departments of Health and Human Services and Agriculture issued Dietary Guidelines in 2010 that are intended to help people maintain their health. The guidelines suggest that Americans should increase their seafood consumption and eat seafood twice a week. In addition, the omega-3 fatty acids found in seafood may provide other significant health benefits. In order to maximize the health benefits of seafood, healthy preparation methods, like baking, are recommended. Major conclusions in the 2010 dietary guidelines describe the steps that can be taken to help all Americans adopt health-promoting nutrition including an increase in the amount and variety of seafood consumed by choosing seafood in place of some meat and poultry. As with any type of food, however, it is important to handle seafood safely in order to reduce the risk of foodborne illness. Following basic food safety tips for buying, preparing, and storing fish and shellfish will allow consumers to safely enjoy the fine taste and good nutrition of seafood.

Strategies

SFA 9.1 Educate consumers of the nutritional benefits of Louisiana seafood products and how to judge seafood safety and quality.

SFA 9.2 Develop new harvesting, handling, and processing technologies that maximize the quality and safety of Louisiana's seafood products

Learning Outcomes

- 9.1. The Louisiana seafood industry is aware of the standards for safe seafood.
- 9.2. The Louisiana seafood industry is knowledgeable about consumer trends regarding seafood sustainability and safety and how to adjust operations to meet emerging demands.
- 9.3. Louisiana seafood consumers have the knowledge to evaluate sustainable seafood choices.
- 9.4. Louisiana seafood consumers have an increased knowledge of the nutritional benefits of seafood products and know how to judge seafood safety and quality.

Action Outcomes

- 9.5. The Louisiana seafood industry adopts standards for safe seafood.
- 9.6. The Louisiana seafood industry adopts technologies and techniques to ensure seafood safety.
- 9.7. Louisiana seafood consumers preferentially purchase sustainable seafood products.

Consequence Outcomes

- 9.8. Consumers improve their health through increased consumption of safe and sustainable Louisiana seafood products.
- 9.9. The Louisiana seafood industry operates sustainably and is economically viable.

Sustainable Fisheries and Aquaculture Performance Measures

6. Number of fishermen, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities.
7. Number of seafood consumers who modify their purchases using knowledge gained in fisheries sustainability, seafood safety and the health benefits of seafood as a result of Sea Grant activities.

DRAFT

Focus Area: EDUCATION AND WORKFORCE DEVELOPMENT (EWD)

The scientific, technical and communication skills needed to address the daunting environmental challenges confronting our nation are critical to developing a national workforce capacity. The Congressional report, *Rising Above the Gathering Storm*, states that building a workforce literate in science, technology, engineering and mathematics is crucial to maintaining America's competitiveness in a rapidly changing global economy. These skills are also necessary to advance cutting-edge research and to promote enhanced resource management. In recognition of these needs, the America COMPETES Act mandates that NOAA build on its historic role in stimulating excellence in the advancement of ocean and atmospheric science and engineering disciplines. The Act also mandates NOAA provide opportunities and incentives for the pursuit of academic studies in science, technology, engineering and mathematics. Workforce needs are reflected in the broader science and technology communities of both the private and public sectors with whom Sea Grant works to fulfill its mission.

An environmentally literate person is someone who has a fundamental understanding of the systems of the natural world, the relationships and interactions between the living and non-living environment and the ability to understand and utilize scientific evidence to make informed decisions regarding environmental issues. These issues involve uncertainty and require the consideration of economic, aesthetic, cultural and ethical values.

Goal 10: Develop an environmentally literate public supported by a continuum of lifelong formal and informal engagement opportunities.

The 2004 U.S. Commission on Ocean Policy Report emphasized that restoring and sustaining Louisiana's coastal and Gulf environments requires an informed citizenry that understands the value and vulnerability of these resources. Louisiana needs scientists, planners, developers, engineers, and people involved in all water-related enterprises who understand the interactions between human activities and ecosystem health. NOAA has made ocean and aquatic literacy a strategic priority. Louisiana Sea Grant has been a leader in K-12, undergraduate, graduate, professional, and technical education in coastal and Gulf-related areas for decades and is committed to playing a leadership role, in partnership with the NOAA Office of Education and others, to advance coastal and Gulf literacy. This can be achieved both by capitalizing on Louisiana Sea Grant's strong university partnerships and by using its education and extension capacities to develop educational programs for students, professional development for teachers, and workforce training.

Strategies

EWD 10.1 Advance Louisiana's coastal and Gulf literacy through formal and informal learning opportunities for students, education professionals, and the public in our schools, museums, aquariums, and through other educational forums such as public events, online digital library collections, and the National Sea Grant Library.

EWD 10.2 Collaborate within NOAA and with other local and regional partners to build public awareness about critical coastal and Gulf issues using the integrated research, extension, education, and communication capacities of the entire Sea Grant network.

Learning Outcomes

10.1. Formal and informal educators are knowledgeable of the best available science on the effectiveness of environmental science education.

10.2. Lifelong learners are aware of and provided with informal science education opportunities focused on coastal topics.

Action Outcomes

10.3. Professionals use best practices in environmental education in their programs.

10.4. Programs are developed and refined using the best available research on the effectiveness of environmental and science practices.

10.5. Formal and informal education programs incorporate environmental literacy components.

10.6. Formal and informal education programs take advantage of the knowledge of Sea Grant-supported scientists and engagement professionals.

10.7. Formal and informal educators, students and/or the public collect and use coastal, weather and climate data in inquiry and evidence-based activities.

10.8. Lifelong learners make choices and decisions based on information they learned through informal science education opportunities.

10.9. Educators work cooperatively to leverage federal, state and local investments in coastal environmental education.

Consequence Outcomes

10.10. Members of the public incorporate broad understandings of their actions on the environment into personal decisions.

Goal 11: Develop a future workforce reflecting the diversity of the nation, skilled in science, technology, engineering, mathematics and other disciplines critical to Sea Grant’s mission and national needs.

Louisiana Sea Grant serves as a bridging organization that spans the divide between science, its applications, and policy. We build innovative and effective connections and partnerships between those who generate, educate and communicate science relevant to the environment and those who seek to use science to guide decisions at local, state, and national levels. By basing itself in the impartial use of science, and fostering an interconnected culture among all parties, Sea Grant has the ability to gain the trust of communities in disagreement or conflict. We assist communities in jointly finding acceptable solutions to complex environmental challenges by using expert facilitation, problem solving processes, and fostering joint implementation.

All sciences and technical areas relevant to decision making are recognized as important, especially their integration. This includes physical, biological, and social sciences as well as engineering. Also respected and utilized are basic and applied research, scientific synthesis and assessment, development of decision making tools, formal and informal education, communication, and other processes that bring communities together to understand each other and collaborate in developing science-based solutions.

Louisiana Sea Grant is a vigorous supporter of 1) expanded, integrated and science-driven education and research on environmental issues; 2) creation and application of science-based, decision making tools; 3) targeted services for stakeholder mediation; and 4) communication of science-based information to diverse public audiences. While we promote science and its use, Sea Grant does not take positions on environmental issues. Thus, we are able to provide a neutral forum for all.

Strategies

EWD 11.1 Advance environmental stewardship through teaching, professional development, and inclusion of age-appropriate marine and coastal subject matter while addressing Louisiana’s K-12 science, mathematics, and social studies education standards.

EWD 11.2 Use Louisiana Sea Grant’s strong university partnerships both to create new research and education opportunities in marine and aquatic science for undergraduate and graduate students and to develop information products and training opportunities that will help build the workforce capacity for coastal-related jobs and professions.

Learning Outcomes

11.1. Students and teachers are aware of opportunities to participate in science, technology, engineering, mathematics and active stewardship programs.

Action Outcomes

11.2. A diverse and qualified pool of applicants pursues professional opportunities for career development in natural, physical and social sciences and engineering.

11.3. Graduate students are trained in research and engagement methodologies.

11.4. Research projects support undergraduate and graduate training in fields related to understanding and managing our coastal resources.

Consequence Outcomes

11.5. A diverse workforce with degrees in science, technology, engineering, mathematics, law, policy and other fields critical to Sea Grant's mission are employed and have high job satisfaction.

Education and Workforce Development Performance Measures

8. Number of Sea Grant facilitated curricula adopted by formal and informal educators.

9. Number of people engaged in Sea Grant supported informal education programs.

10. Number of Sea Grant-supported graduates who become employed in a career related to their degree within two years of graduation.

Cross-cutting Performance Measures

11. Economic (market and non-market; jobs and businesses created or retained) benefits derived from Sea Grant activities.

12. Number of peer-reviewed publications produced by the Sea Grant network, and number of citations for all peer-reviewed publications from the last four years.

IMPLEMENTATION STRATEGY

This plan provides a national framework for the work of the Louisiana Sea Grant program. This strategic plan aligns with the National Sea Grant Strategic Plan with particular focus on the specific needs and priorities of Louisiana's stakeholders and coastal communities. The Louisiana Sea Grant Strategic Plan 2014-2018 will be implemented each of the programs' portfolios of merit-reviewed research, communications, education, extension and legal projects. This implementation strategy utilizes Louisiana Sea Grant's unique combination of research and engagement capabilities and capitalizes on its strong federal-university-state-private sector partnerships.

Progress toward meeting our strategic plans will be used to assess Louisiana Sea Grant's contribution toward meeting the goals outlined in this plan. The National Sea Grant Office will track state-level performance measures, other numerical metrics and impacts to highlight Louisiana Sea Grant's contributions in achieving the goals identified in this strategic plan. The National Sea Grant Office will track and disseminate best practices applied by individual Sea Grant programs and encourage their adoption by the entire Sea Grant network. The National Sea Grant Advisory Board will continue in its role of developing strategies to foster wider use of the National Sea Grant College Program to address the highest priorities regarding the wise utilization of the nation's coastal resources. Louisiana Sea Grant will revisit this plan annually to ensure that the organization is accomplishing its four-year goals while remaining vigilant for new trends and opportunities.