

# GEMS Social and Economic Metrics for Restoration in the Gulf of Mexico

## Metrics for: Living Shorelines

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### Core Metrics Key

Key	Habitat Restoration (HR)	Oyster Restoration (OR)	Recreation Enhancement (RE)	Water Quality Improvement (WQ)
Core Metric				
Not Core				
N/A				

Name	Outcome	Tier Scale	Description	Protocols	HR	OR	RE	WQ
<p>Awareness:</p> <p>Number of people with additional knowledge of habitat effects and other project outcomes on broader scale</p>	Cultural Values - Knowledge (R)	2 Program	The number of people with additional awareness of habitat effects and other project outcomes due to living or working in proximity to the project, assessed using program-scale methodologies such as surveys, interviews or focus groups.	<a href="#">Download</a>				
<p>Knowledge:</p> <p>Number of people with additional knowledge of habitat effects and other project outcomes based on project site</p>	Cultural Values - Knowledge (R)	2 Project	The number of people with additional awareness of habitat effects and other project outcomes due to proximity to the project, assessed using project-scale methodologies such as surveys, interviews or focus groups.	<a href="#">Download</a>				

Name	Outcome	Tier	Scale	Description	Protocols	HR	OR	RE	WQ
Education-related knowledge: number of people with additional knowledge of habitat effects and other project outcomes	Cultural Values - Knowledge (R)	2	Project	The number of people with additional knowledge of habitat effects and other project outcomes due to project-associated educational outreach, assessed using project-scale methodologies such as surveys, interviews or focus groups.					
Change in program identified cultural value	Cultural Values - Other (R)	2	Program	Identification and evaluation of cultural ecosystem services (CES), which vary by community, for monitoring which vary by community, for monitoring (e.g., <a href="#">Pascua et al. 2017</a> ). Where possible, program team can develop framework for pre-and post-restoration monitoring of CES.					
Change in project identified cultural value	Cultural Values - Other (R)	2	Project	Identification and evaluation of cultural ecosystem services (CES), which vary by community, for monitoring (e.g., <a href="#">Pascua et al. 2017</a> ). Where possible, project team can develop framework for pre-and post-restoration monitoring of CES.	<a href="#">Download</a>				

Name	Outcome	Tier Scale	Description	Protocols	HR	OR	RE	WQ
Change in economic activity from project associated commercial fish harvest	Economic Activity - Finfish/Shellfish Harvest (R)	2	Program	Jobs, labor income, gross state product, and total industry output modeled annually based on <a href="#">NOAA commercial harvest data</a> and state data (e.g. <a href="#">Florida commercial fisheries</a> ) for relevant species. Change in economic activity from commercial fish harvest could be due to changes in target populations or areas closed to harvest due to water quality issues. Reporting harvest and revenue (intermediate outputs for calculating this metric) may also be useful to give a full picture on how commercial harvest patterns have changed in response to the project.				
Change in economic activity from recreational fishing	Economic Activity - Recreation and Tourism (R)	2	Program	Jobs, labor income, gross state product, and total industry output modeled annually at a county to regional level. Angler surveys will account for the difference in activity associated with a restoration project, which would then be used as input into the economic impact analysis (see <a href="#">Texas Half Moon Reef example [PDF]</a> ).				

Name	Outcome	Tier	Scale	Description	Protocols	HR	OR	RE	WQ
Number of jobs supported through recreational fishing at project site	Economic Activity - Recreation and Tourism (R)	2	Project	The number of direct, indirect, and induced jobs associated with recreational fishers visiting the restored reef, based on fishing expenditures determined through a survey of recreational fishing anglers conducted by the restoration project.	<a href="#">Download</a>				
Change in recreational fishing expenditures associated with project site visitation	Economic Activity - Recreation and Tourism (R)	2	Project	Estimate of total recreational fishing expenditures due to the project compared to baseline of recreational fishing expenditures in surrounding area, calculated as the number of recreational fishing trips to the project site (estimated from random sampling counts as part of structured monitoring) multiplied by the average trip expenditure (from <a href="#">NOAA FEUS 2018 Report</a> ).	<a href="#">Download</a>				
Change in recreational activity expenditures associated with project site visitation	Economic Activity - Recreation and Tourism (R)	2	Project	Estimate of total recreational activity expenditures due to the project compared to baseline of recreational activity expenditures in surrounding area, calculated as the number of recreational trips to the project site (estimated from random sampling counts as part of structured monitoring).	<a href="#">Download</a>				

Name	Outcome	Tier	Scale	Description	Protocols	HR	OR	RE	WQ
Change in economic activity from restoration spending	Economic Activity - Restoration/Intervention (R)	2	Program	Jobs, labor income, gross state product, and total industry output would be modeled based on project expenditures.					
Number of restoration jobs supported by project	Economic Activity - Restoration/Intervention (R)	1	Project	The number of jobs directly supported by the restoration project, including but not limited to project design, construction, project site maintenance, education, and monitoring, reported every year.	<a href="#">Download</a>				
Total restoration expenditures by project	Economic Activity - Restoration/Intervention (R)	1	Project	The total amount of money spent on the restoration project as reported in the project budget every year.	<a href="#">Download</a>				
Proportion of protein or nutrition from food harvested at restoration site	Human Health - Food Security for Communities (R)	R & D	Program	Relative measure of contribution of subsistence harvest from areas with restoration projects (e.g. seafood, birds, mushrooms) to household nutrition, measured by adding questions to existing national nutrition surveys.					
Proportion of surveyed harvesters who say that food caught/harvested at the site is important for feeding their household	Human Health - Food Security for Communities (R)	2	Project	Estimate of proportion of surveyed harvesters who say that food harvested at project site is important for feeding their household and if that has changed since the installation of the project at site	<a href="#">Download</a>				

Name	Outcome	Tier	Scale	Description	Protocols	HR	OR	RE	WQ
Change in cognitive function	Human Health - Mental Health & Psychological Well-Being (R)	2	Project	Change in performance on simple recall or other cognitive function tests pre- and post- recreation activity or time at project site.	<a href="#">Download</a>				
Change in subjective well-being	Human Health - Mental Health & Psychological Well-Being (R)	2	Project	Change in self-reported state of well being. Survey of visitors pre- and post- time at project site.	<a href="#">Download</a>				
Number of properties or length of infrastructure adjacent to shoreline with reduced erosion after project	Property Protection & Value - Property Protection (Erosion) (R)	2	Project	Total amount of public infrastructure or private property (measured in number and type of properties, or length of road) that experiences decreased adjacent erosion rates due to the restoration project reported every year.	<a href="#">Download</a>				
Change in economic costs resulting from carbon emissions	Social Cost of Greenhouse Gas Emissions (R)	1	Project	Changes in economic costs resulting from carbon emissions associated with the project, measured using the social cost of carbon (a measure of the economic harm from greenhouse gas emissions emitted per ton of carbon equivalent). The current central estimate of the social cost of carbon is over \$50 per ton in today's dollars.	<a href="#">Download</a>				