Ecosystem Services and Connections to Wellbeing
Human dimensions of landscape use

Why include social dimensions in restoration?

Victoria C. Ramenzoni
with
Carlota Santos, David Yoskowitz, et al.

Mission Aransas NERR– 2016
Port Aransas, Tx
May 31, 2016

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14 The Dade-Collier Training and Transition Airport was originally planned as the Everglades Jetport, and construction started in 1968 on what was to be the world's largest airport with six runways to support supersonic transport. Being surrounded by the Big Cypress National Preserve, environmental concerns halted construction, and when commercial supersonic transport didn't arrive, the project was left as-is, now a lightly-used airport. Map, Street View. (© Google/USGS /DigitalGlobe) #

25 Canals and homes near Big Marco River on Marco Island, Florida. Map, Street View. (© Google/USGS) #

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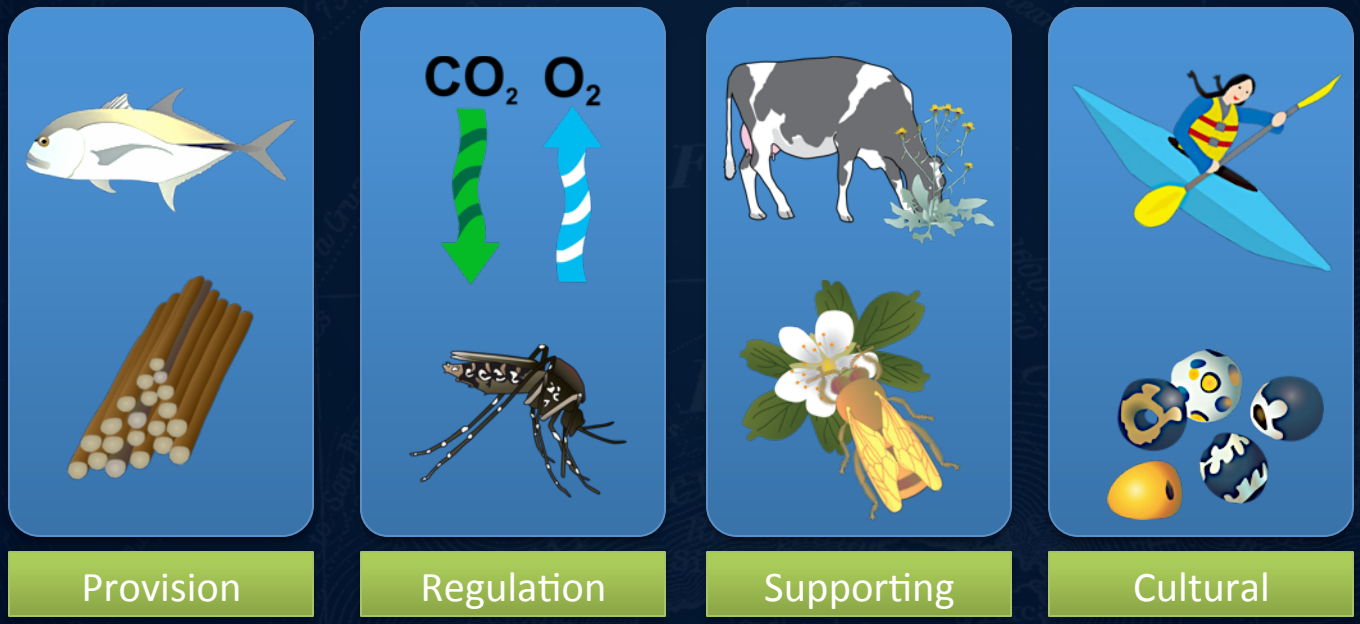
What *are* ecosystem services?

- material or energy outputs from ecosystems
- goods and services
- benefits



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Human transformation of ecosystems and the choices about the ways in which their services are used can either amplify or reduce the benefits to society.

The key question is how to understand and quantify the current and future benefits, costs, and risks involved in all cases. There is much human well-being at stake, both now and in the future.

*MEA 2005, 51.

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How are ES connected to wellbeing?

How are ES connected to value?

Blue Carbon?

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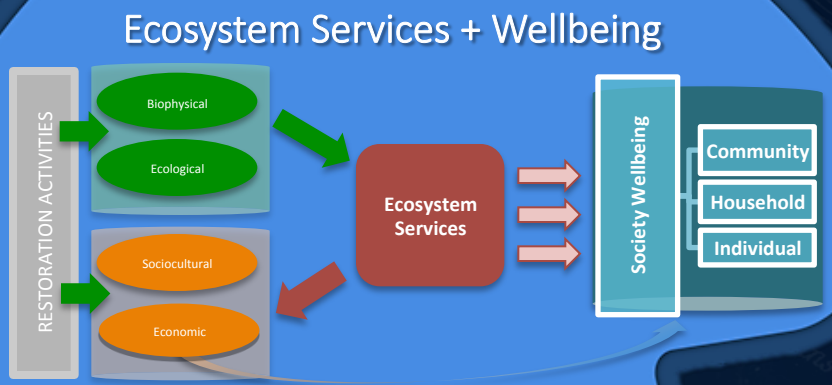

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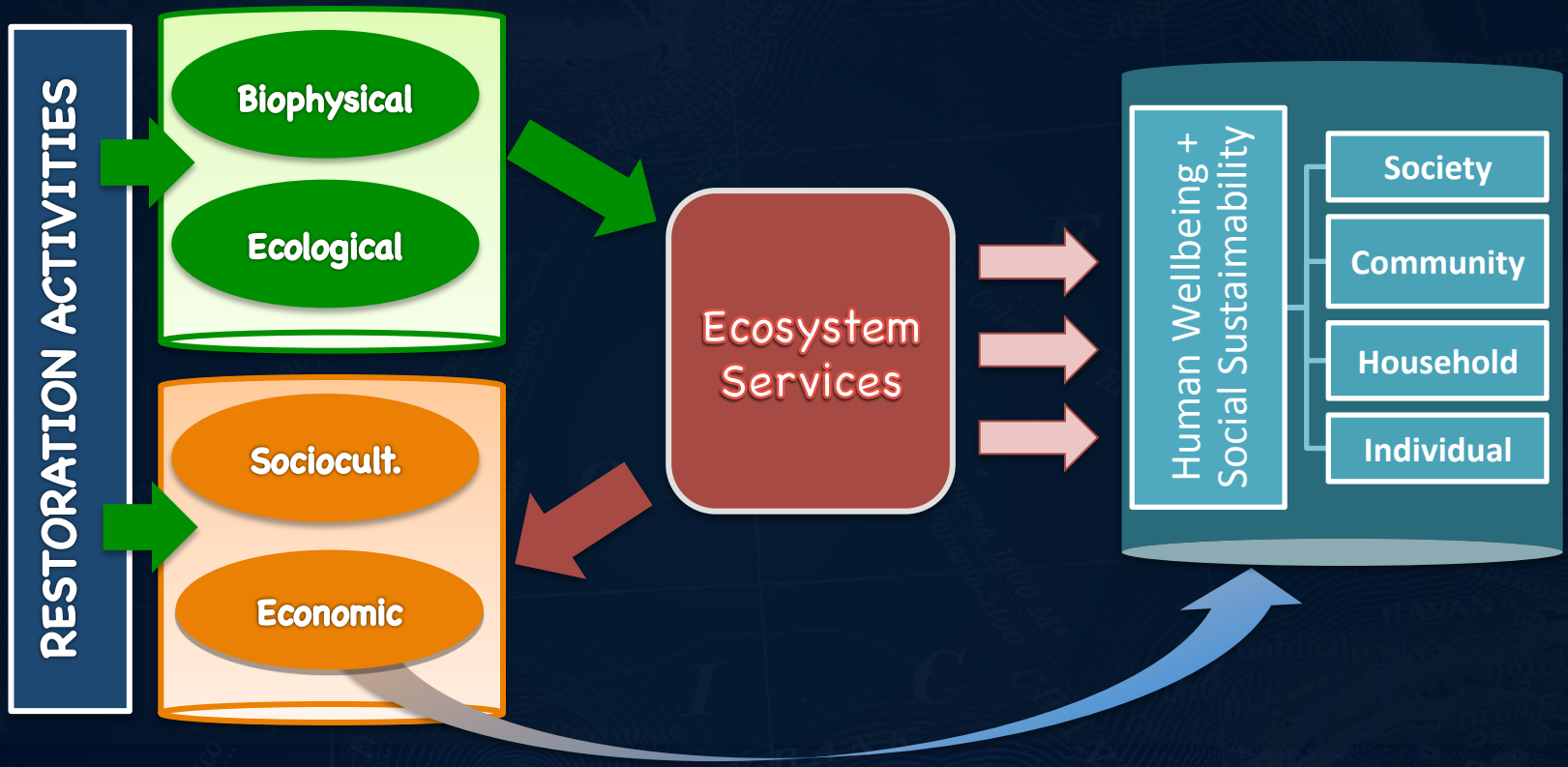
Ecosystem Services + Wellbeing



How can restoration affect the provision of ES?
How are ES changing?

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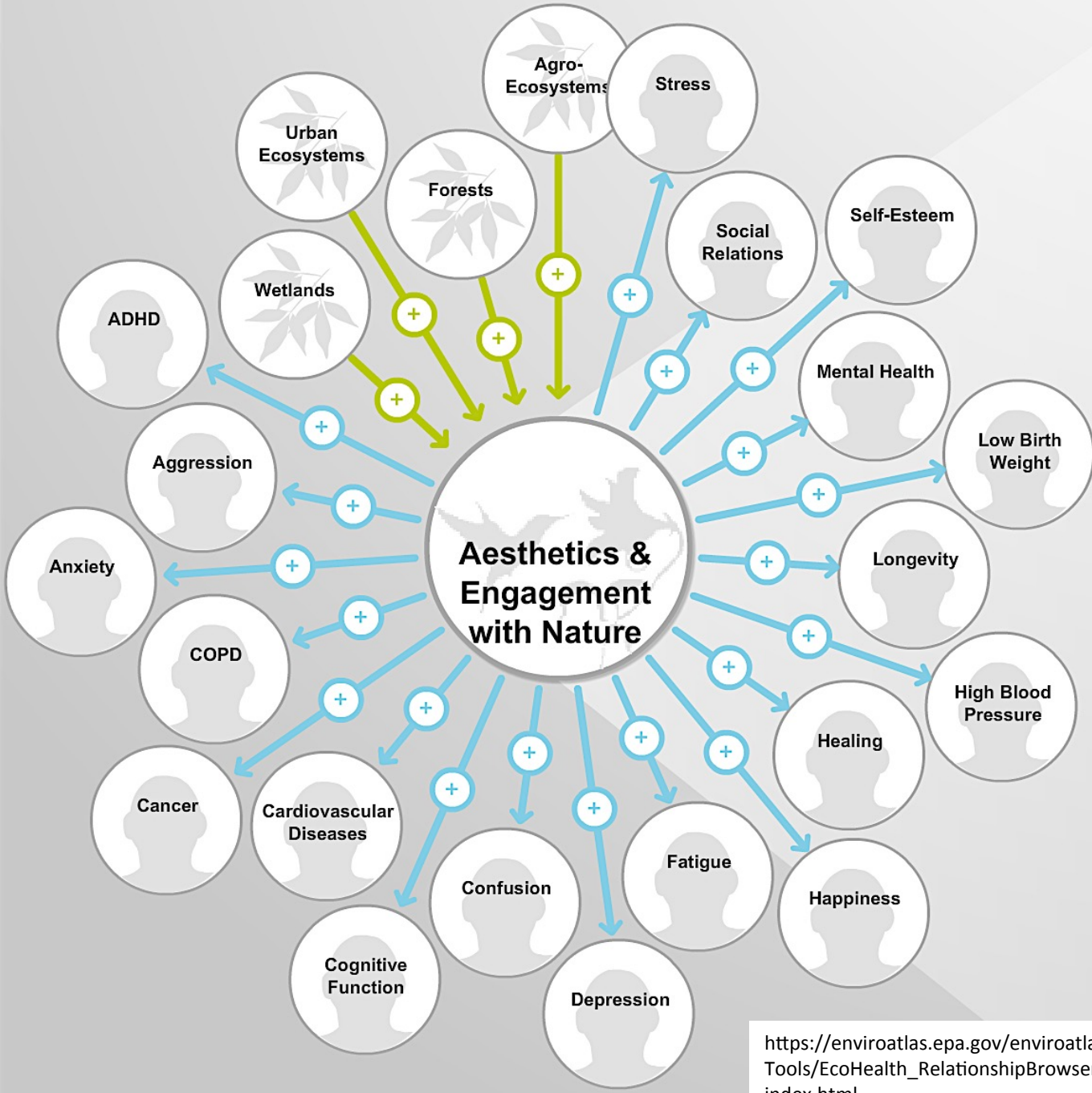
ecosystem services

benefits

wellbeing



https://enviroatlas.epa.gov/enviroatlas/Tools/EcoHealth_RelationshipBrowser/index.html

Value

val·ue

/ˈvalyo͞o/

noun

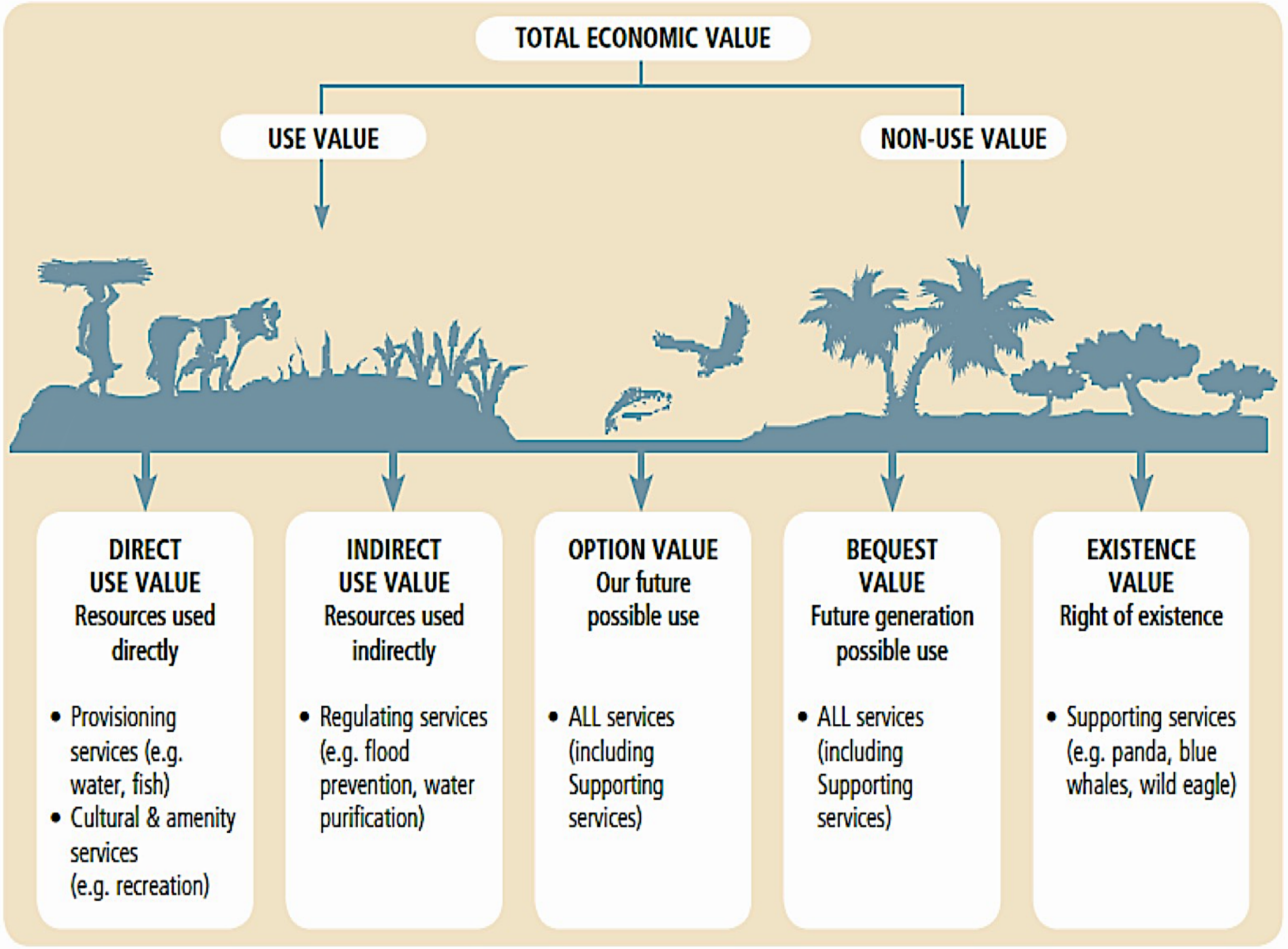
1. the regard that something is held to deserve; the importance, worth, or usefulness of something.
   "your support is of great value"
   synonyms: worth, usefulness, advantage, benefit, gain, profit, good, help, merit, helpfulness, avail; More

2. a person's principles or standards of behavior; one's judgment of what is important in life.
   "they internalize their parents' rules and values"
   synonyms: principles, ethics, moral code, morals, standards, code of behavior
   "society's values are passed on to us as children"

verb

1. estimate the monetary worth of (something).
   "his estate was valued at $45,000"
   synonyms: evaluate, assess, estimate, appraise, price, put/set a price on
   "his estate was valued at $345,000"

2. consider (someone or something) to be important or beneficial; have a high opinion of.
   "she had come to value her privacy and independence"
   synonyms: think highly of, have a high opinion of, hold in high regard, rate highly, esteem, set (great) store by, put stock in, appreciate, respect; More


TOTAL ECONOMIC VALUE
USE VALUE
NON-USE VALUE
DIRECT USE VALUE
Resources used directly
• Provisioning services (e.g. water, fish)
• Cultural & amenity services (e.g. recreation)
INDIRECT USE VALUE
Resources used indirectly
• Regulating services (e.g. flood prevention, water purification)
OPTION VALUE
Our future possible use
• ALL services (including Supporting services)
BEQUEST VALUE
Future generation possible use
• ALL services (including Supporting services)
EXISTENCE VALUE
Right of existence
• Supporting services (e.g. panda, blue whales, wild eagle)

October 7, 2015

M-16-01

MEMORANDUM FOR EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: Shaun Donovan, Director
Office of Management and Budget

Christina Goldfuss, Managing Director
Council on Environmental Quality

John Holdren, Director
Office of Science and Technology Policy

SUBJECT: Incorporating Ecosystem Services into Federal Decision Making

Overview. Nature provides vital contributions to economic and social well-being that are often not traded in markets or fully considered in decisions. This memorandum provides direction to agencies on incorporating ecosystem services into Federal planning and decision making. (Broadly defined, ecosystem services are the benefits that flow from nature to people, e.g.,

Specifically, this memorandum:

(1) Directs agencies to develop and institutionalize policies to promote consideration of ecosystem services, where appropriate and practicable, in planning, investments, and regulatory contexts. (Consideration of ecosystem services may be accomplished through a range of qualitative and quantitative methods to identify and characterize ecosystem services, affected communities' needs for those services, metrics for changes to those services and, where appropriate, monetary or nonmonetary values for those services.)

(2) Sets forth the process for development of implementation guidance and directs agencies to implement aforementioned policies and integrate assessments of ecosystem services, at the

How do we get at values, preferences, and perceptions?

"It is positive perceptions, not just objective scientific evidence of effectiveness, that ultimately ensure the support of local constituents thus enabling the long-term success of conservation".

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Study 1

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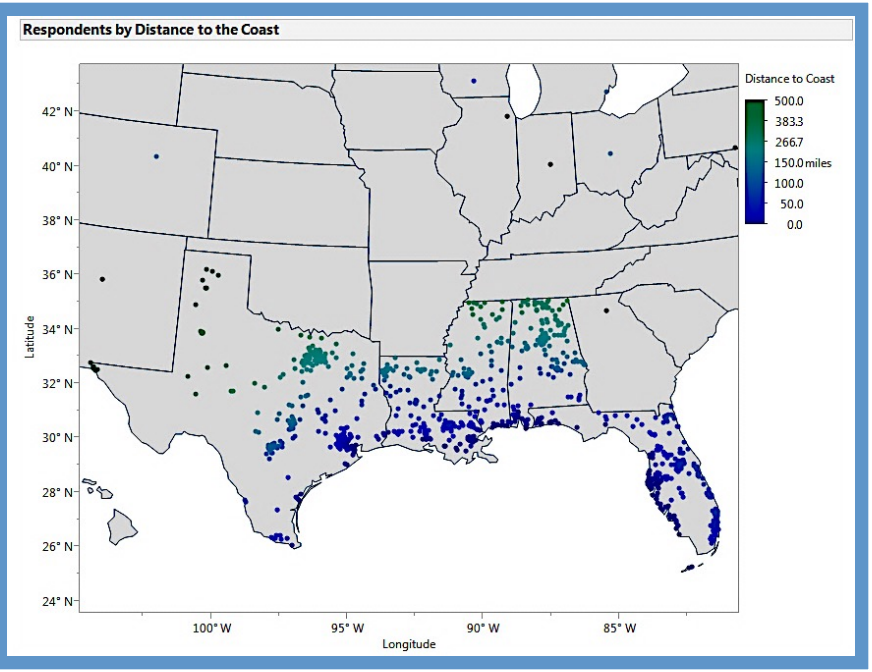
WTP

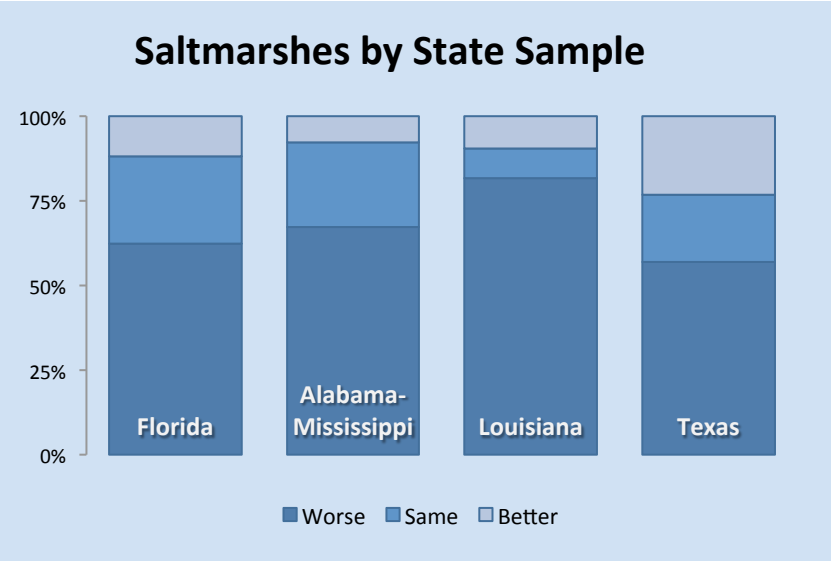
To prevent an additional 10% loss in marsh, households are willing to pay about $31 per year.

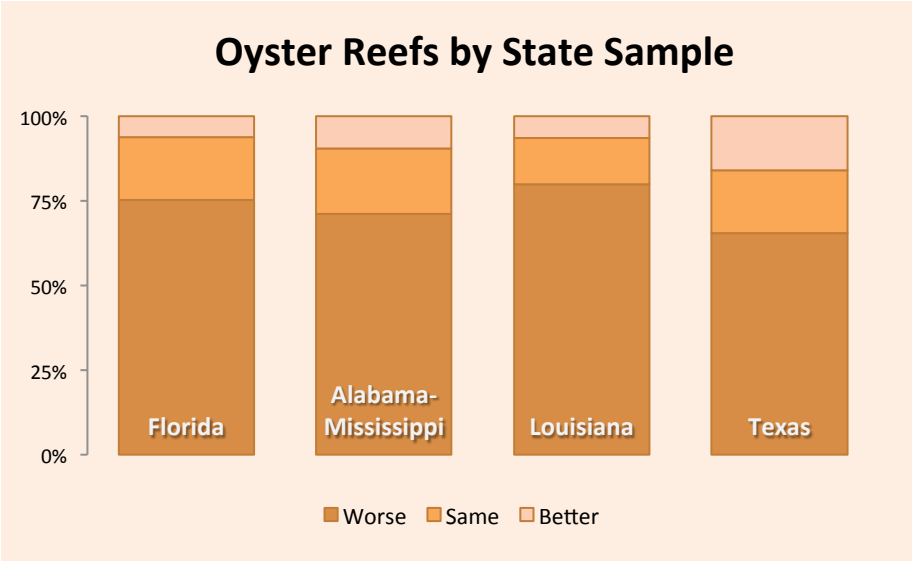


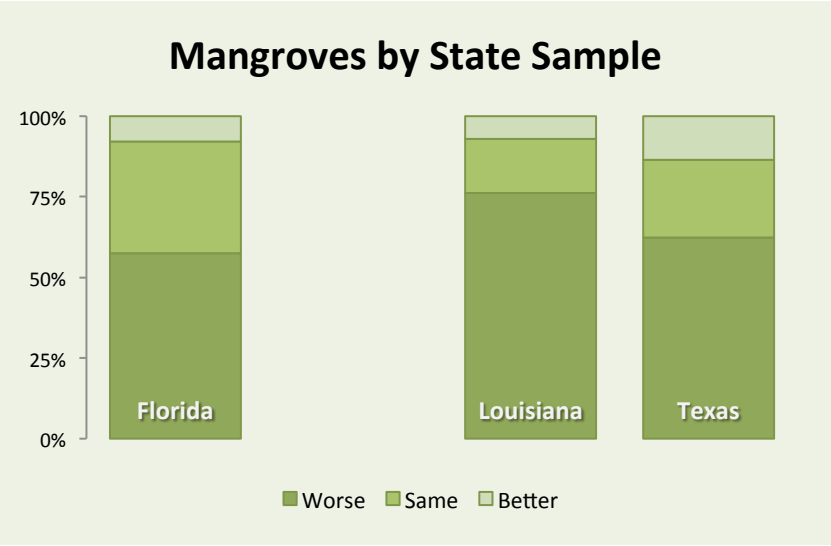
We characterized local residents of the five U.S. Gulf states and elicited information on their different levels of knowledge of environmental conditions affecting the GoM. Research was sponsored by the Gulf of Mexico Sea Grant and aimed to establish Gulf residents' willingness to pay for conservation programs.

316 respondents in Florida, 318 in Alabama-Mississippi, 297 in Louisiana, and 343 in Texas. Majority female (60%); with average age of 48.9 years (+-15.5); and white (70%). 56.5% were employed or self-employed; and 54.8% had annual income levels of $50k or more. Nearly all respondents were homeowners (80%). 85% were household heads, with a mode of 2 household members.

Perceptions of habitat condition





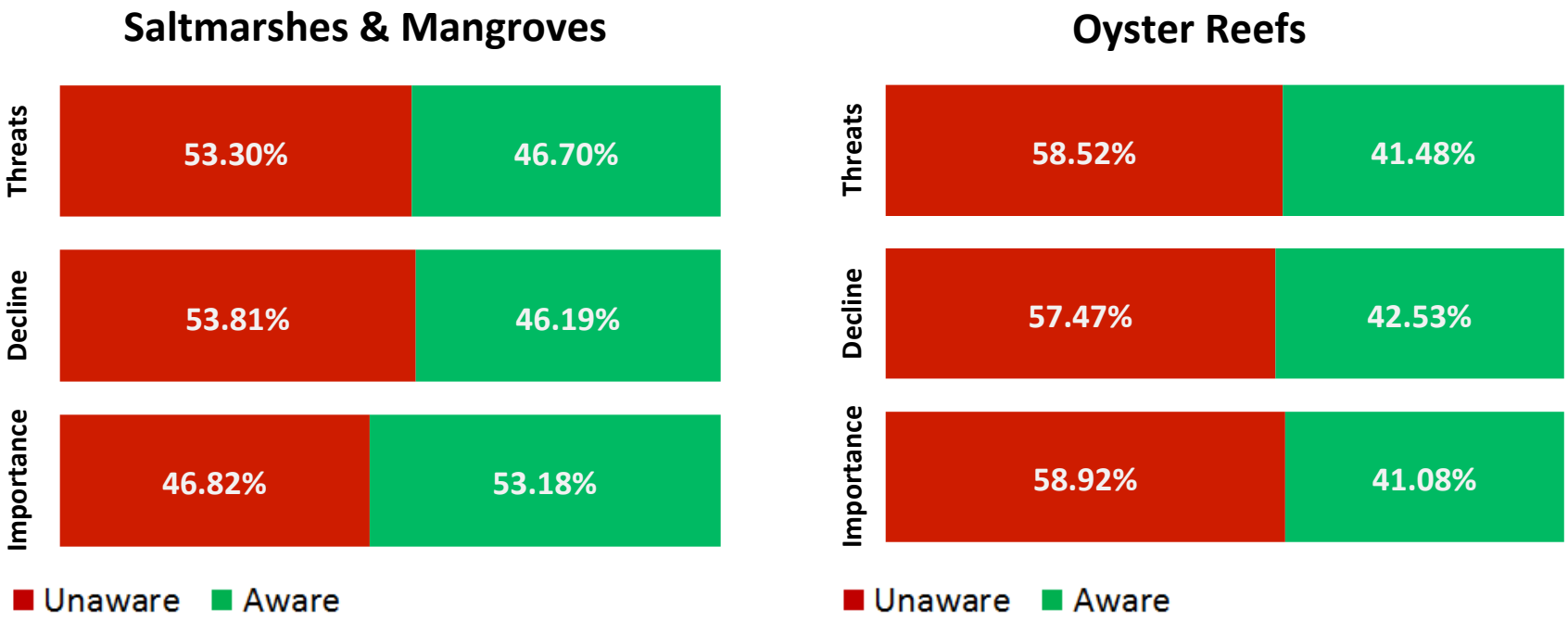


Histograms show perceptions of habitat degradation according to state of residency and combining Mississippi and Alabama responses.

Observe how perceptions vary according to the habitat. For example, comparatively Texas residents classified saltmarshes as doing better while participants in Louisiana saw these systems as more degraded. Similar results are observed for mangrove habitats and oyster beds.

N: 1274.

Awareness



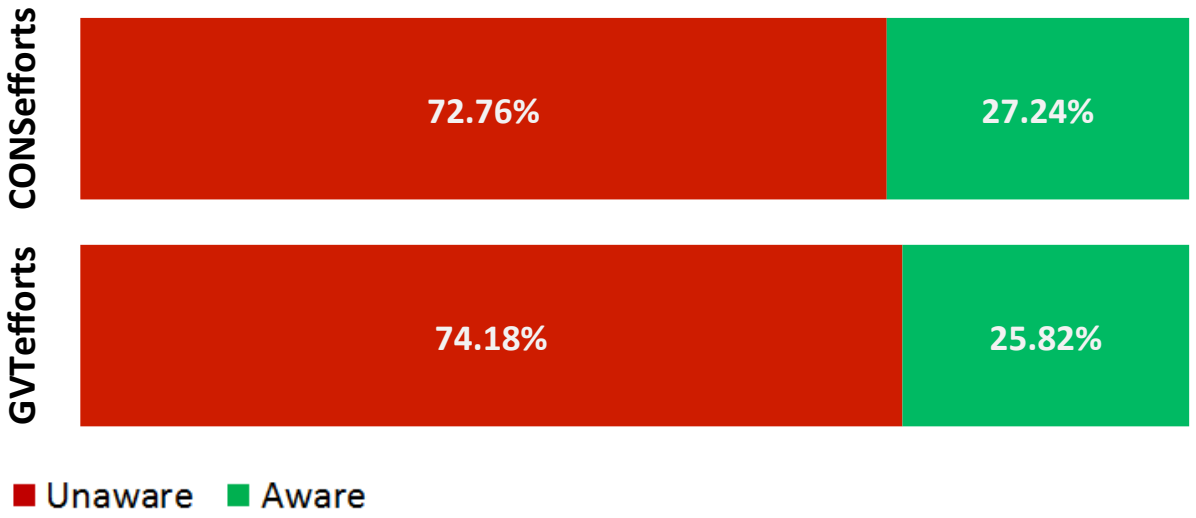
- **Respondents living less than fifty miles from the Gulf coast were between 2 and 2 and a half times more likely to be aware of the importance, conditions, and threats to saltmarshes, mangroves, and oyster reefs than further inland residents before taking the survey.**

- **Texas participants had lower proportions of awareness for all habitats in comparison to the other three samples, while the opposite was true for Louisiana.**

Concern

- **77% of participants** were concerned with the conditions of these habitats, of which **41%** indicated **strong concern**.
- Residents **within fifty miles from the coast** were **one and a half times more likely** to be preoccupied for the health and extent of oyster reefs.
- Participants that **were or had been members of a local or national environmental or conservation organization** were between **1.7 to 2 times more likely** to be concerned with the status of Gulf habitats.
- Respondents that **had visited the Gulf coast at least once in the past five years** were **2 times more likely** to be concerned for the state of environment habitats

Knowledge of state government actions and goals and conservation efforts



- **Respondents that had visited the Gulf coast at least once in the past five years were 2 times more likely to be aware of any environmental programs**
- **Individuals living less than 50 miles from the Gulf coast were 2.5 to 3 times more likely to know of any state government actions or conservation programs**
- **Participants that had attained at least a high school education diploma were 3 times more likely to know about their state governments' environmental goals and actions**

AT HRI we anticipate that a significant part of future restoration work in the Gulf will involve the systematic assessment of stakeholders' goals, values, and environmental knowledge to reach communities effectively.

(Wortley, Hero, and Howes 2013; Shackelford et al. 2013; Waddell and Olson 2015; van der Molen et al. 2015)

TOOLS

www.gecoserv.org

www.gecoview.org

http://www.teebweb.org/resources/training-resource-material/module-4/

https://www.epa.gov/enviroatlas/enviroatlas-eco-health-relationship-browser

victoria.ramenzoni@tamucc.edu

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STUDY 2
Assessing the Public Attitudes and Preferences of the Mission-Aransas National Estuarine Research Reserve, Texas Using Social Valuation

Victoria on behalf of
Mayra A. Lopez

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Research Objectives

- **Identify highly valued ecosystem services (ES) in the reserve**
- **Map location of ES**
- **Determine relationship of ES to underlying bio-physical variables**
  - Distance to water
  - Distance to roads
  - Land Use / Land Cover

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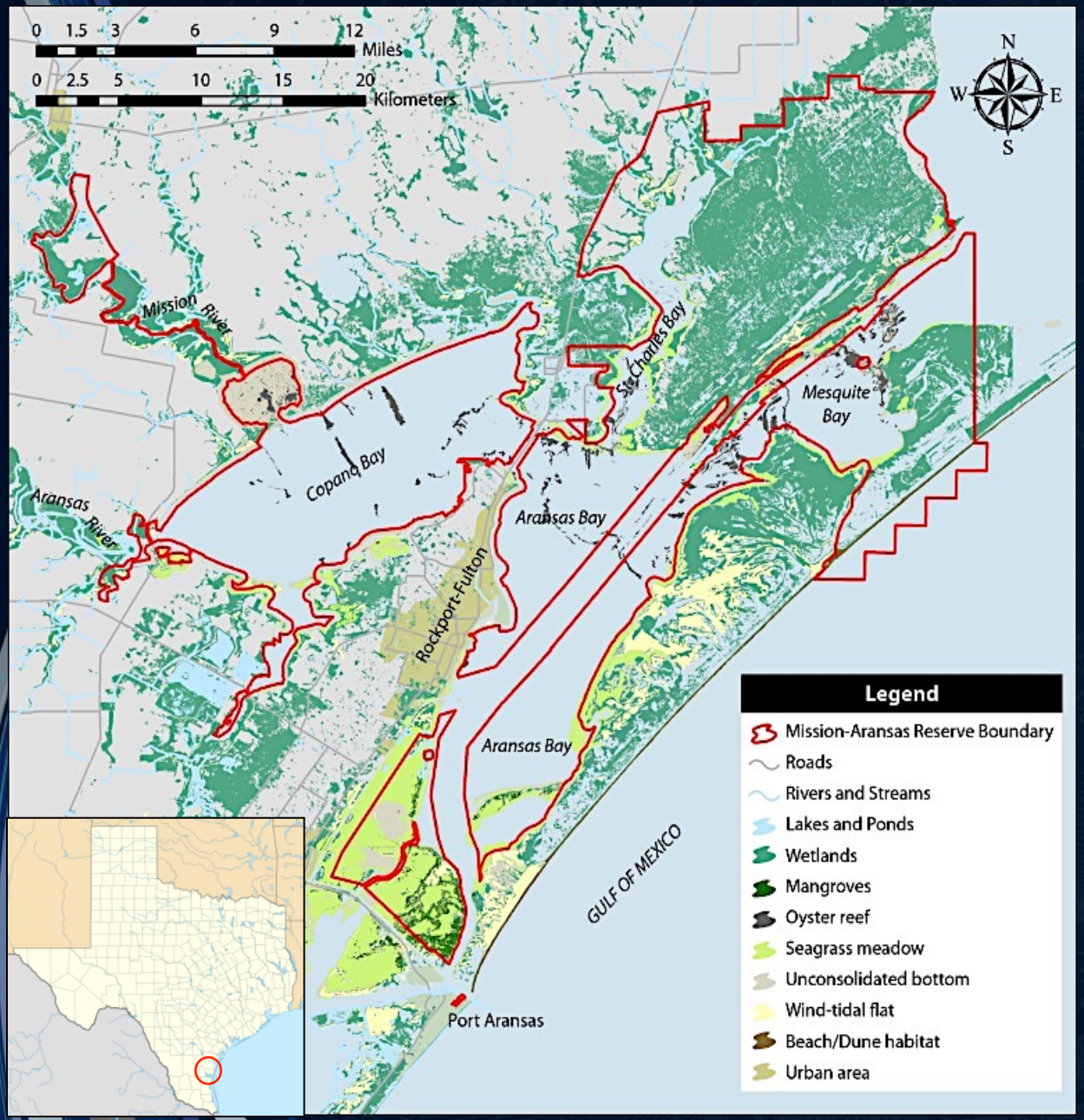

MA-NERR

- 186,000 Acres
- Established in 1996
- Only NERR in Texas
- 3rd largest

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Methodology

- **Survey**
  - 12 sampling sites, n:144
- **SoIVES Analysis**

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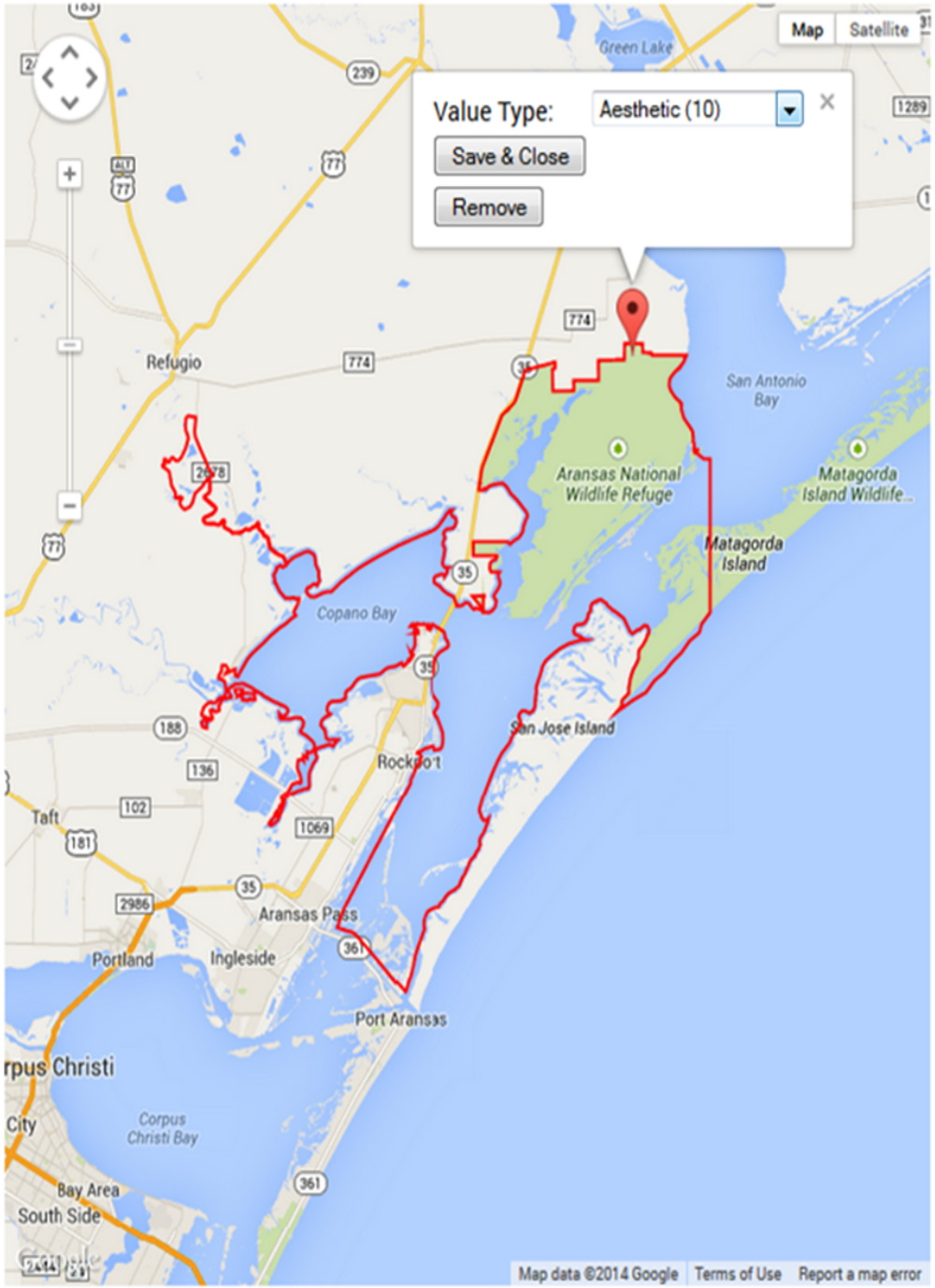
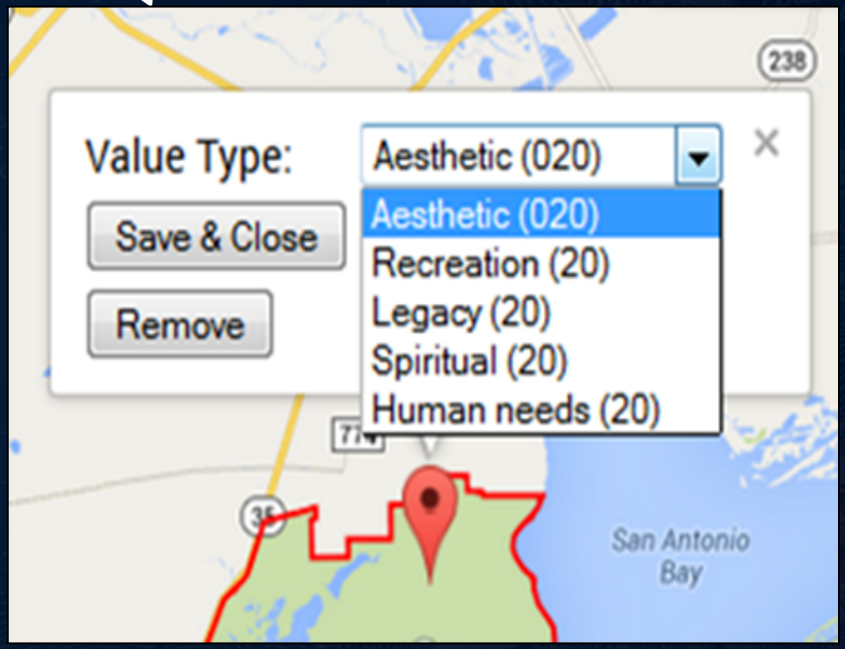
* All fields must have a number (zero or otherwise).

Current Total: 0 **Remaining Pennies:** 0 Clear Fields

Aesthetic: I value the Bays because I enjoy the beauty, sights, sounds, and smells.	0
Recreation: I value the Bays because they provide a place for my favorite outdoor recreation activities.	0
Legacy: I value the Bays because they allow future generations to know and experience the area for its contribution to wisdom, knowledge, traditions, and way of life.	0
Spiritual: I value the Bays because there are sacred, religious, or spiritually special places for me or because I feel reverence and respect for nature there.	0
Human Needs: I value the Bays because they help produce, preserve, clean, and renew air, soil, water, and food.	0
Learning: I value the Bays because they provide opportunities to learn about the environment through science and education.	0
Biodiversity: I value the Bays because they provide a variety of fish, wildlife, plant life, etc.	0
Wilderness: I value the Bays because they are undeveloped with minimal human impact.	0
Socializing: I value the Bays because they allow me to comfortably interact with others.	0
Inspiration: I value the Bays because they motivate me to thought or action.	0
In and of Itself: I value the Bays in and of themself, whether people are present or not.	0
Therapeutic Value: I value the Bays because they make me feel better, physically and/or mentally.	0
Economic Value: I value the Bays because they provide fisheries, oil and gas, and/or tourism opportunities.	0





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Sample characteristics

- Male, Caucasian.
- Age: 54 - 58
- Education: 2 - 4 Yr College Degree
- Occupation: Retired
- Average Income: $40,000 - 70,000

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Ranked services

Visitor Type	ES
Winter	Aesthetic
	Recreation
	Economic
Summer	Biodiversity
	Aesthetic
	Wilderness
Local	Biodiversity
	Aesthetic
	Economic
Non-Local	Biodiversity
	Aesthetic
	Recreation

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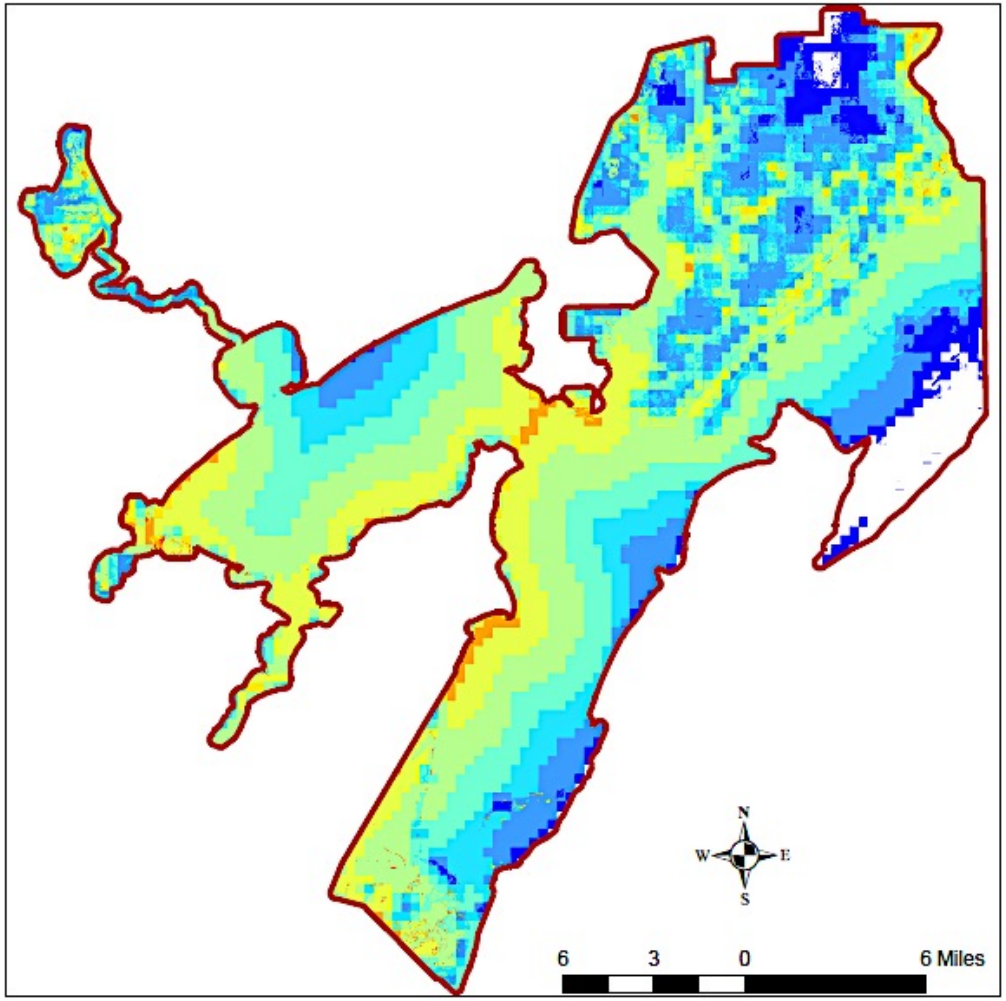
Winter Visitors

Aesthetic



Study Area Final

Value Index

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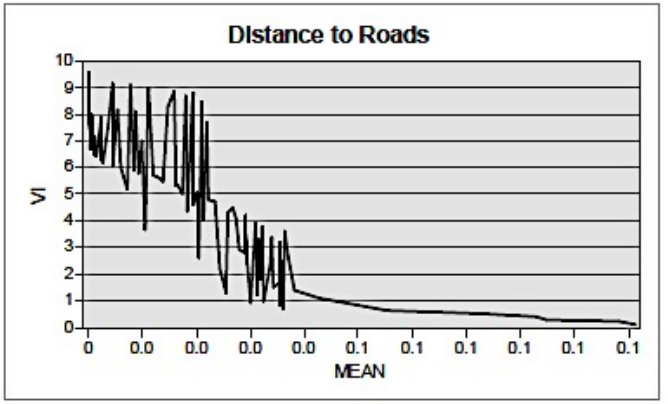
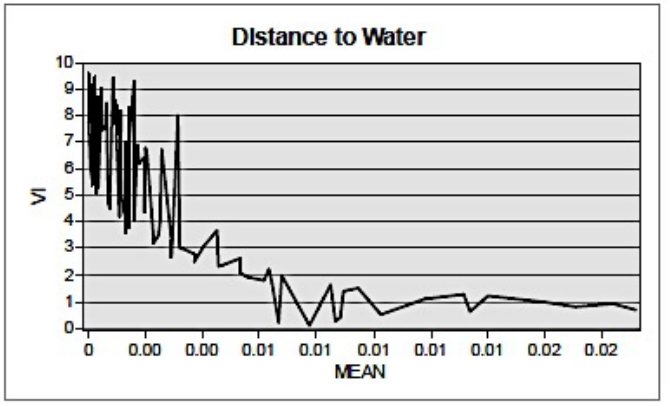
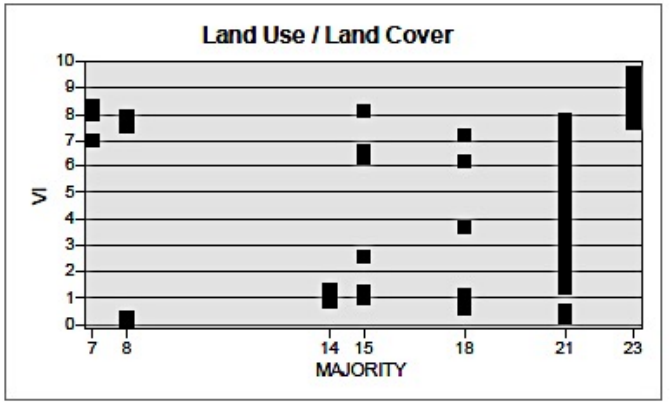
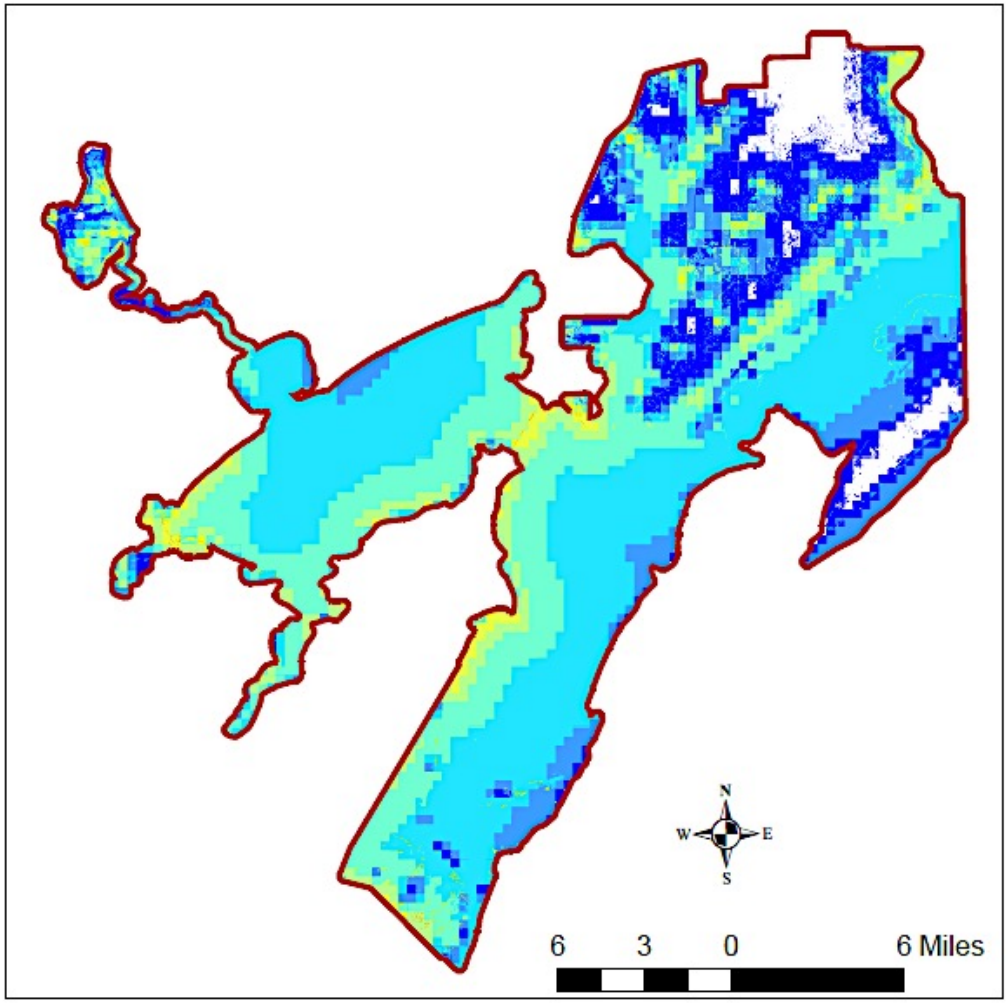






Summer Visitors

Aesthetic



Study Area Final

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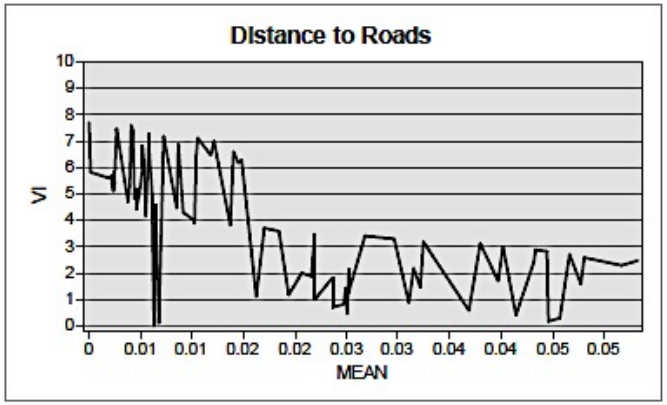
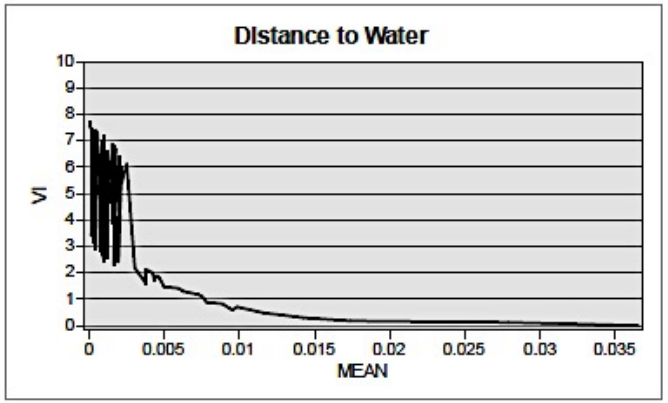
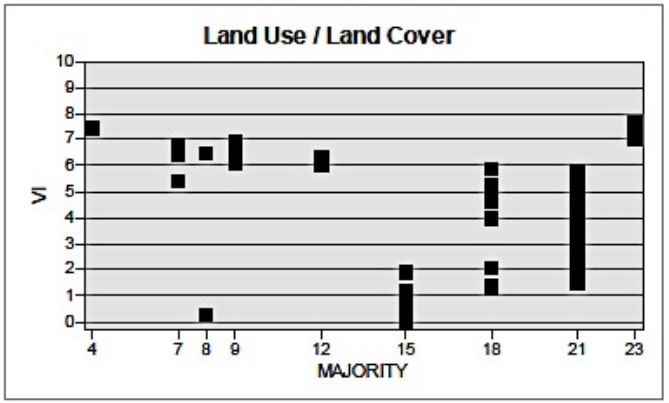
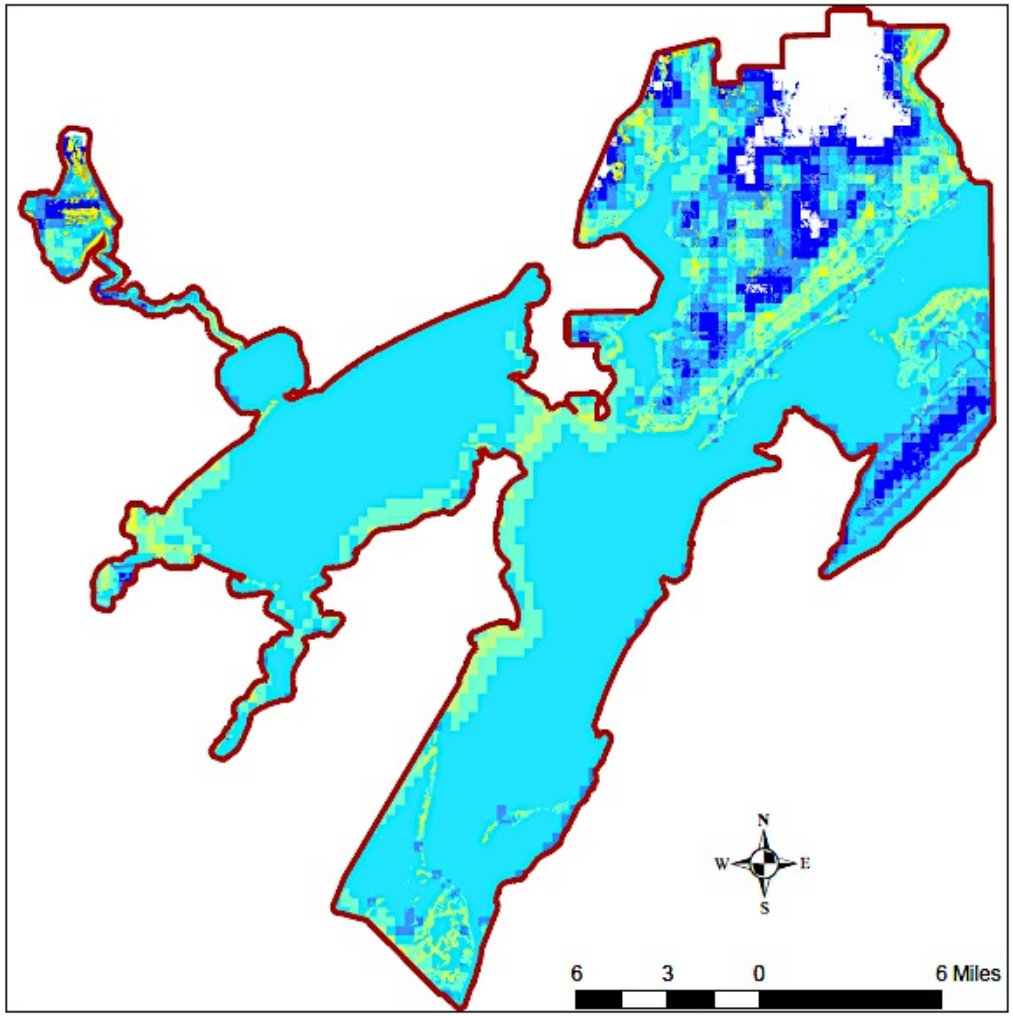






Local Visitors

Aesthetic



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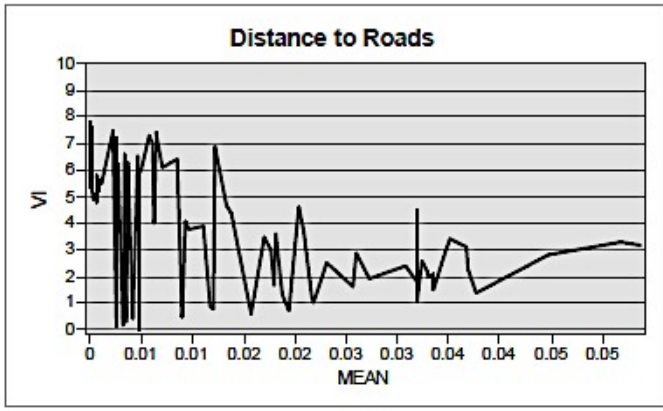
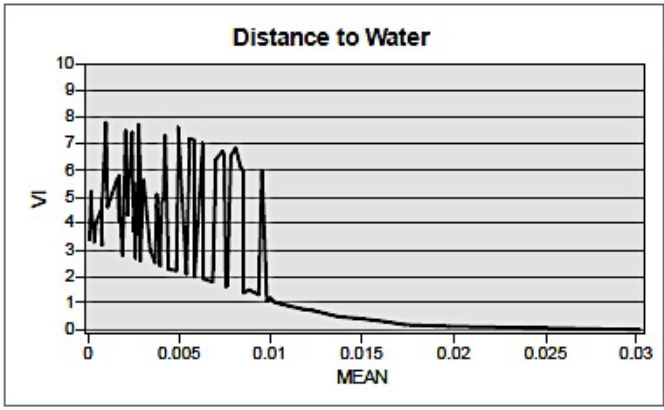
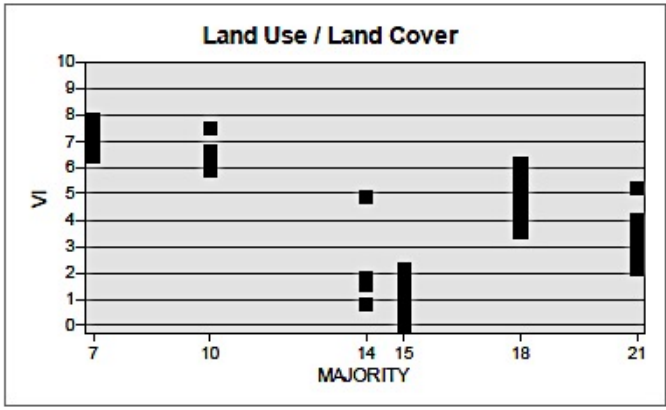
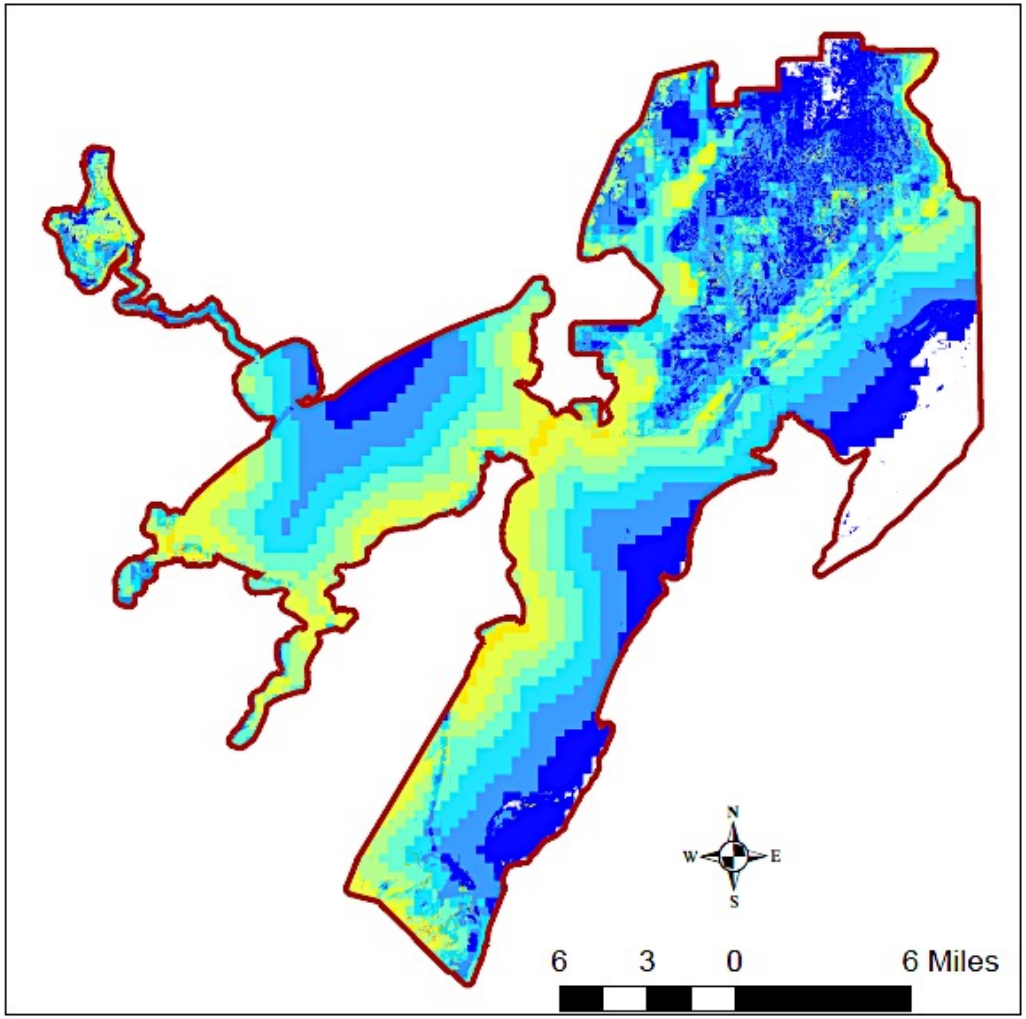






Non-Local Visitors

Aesthetic



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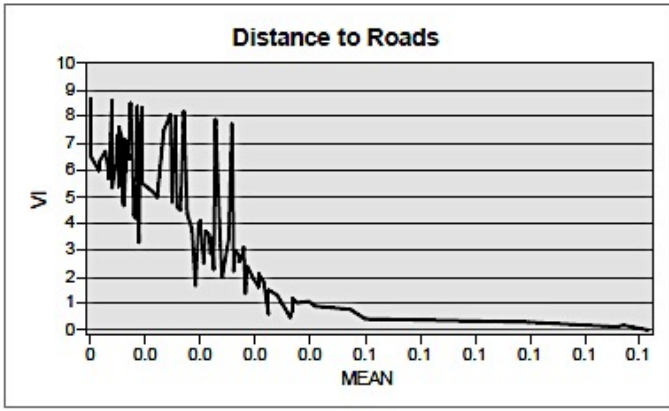
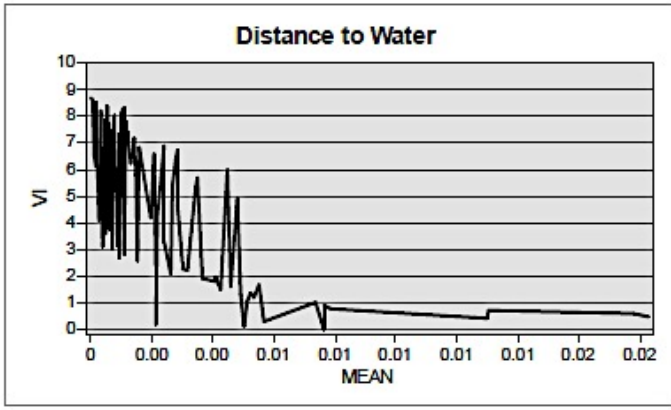
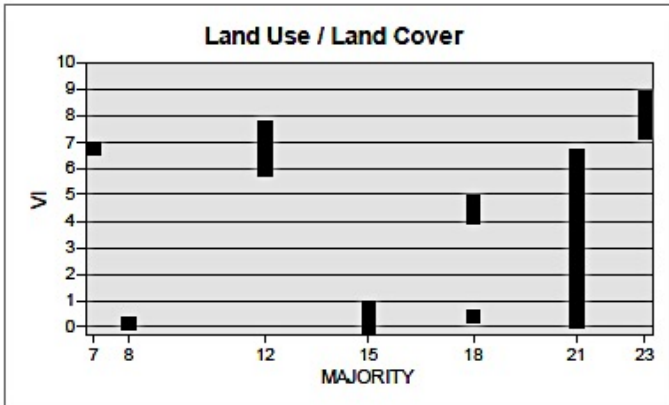
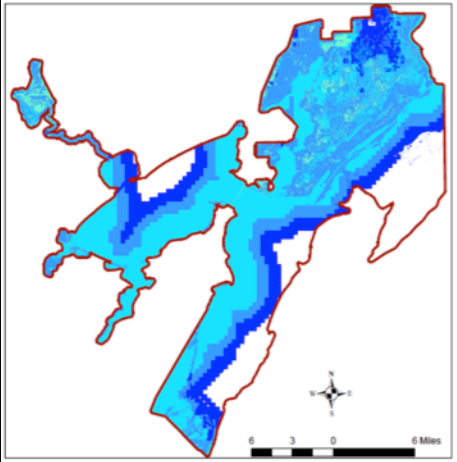


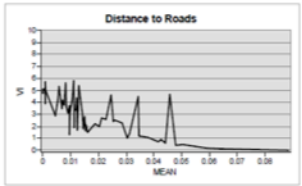


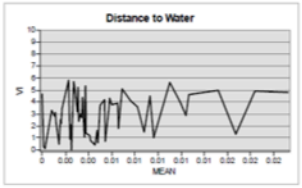


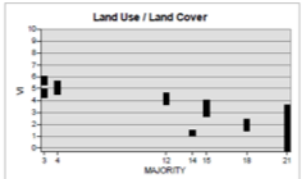
Winter Visitors

Biodiversity



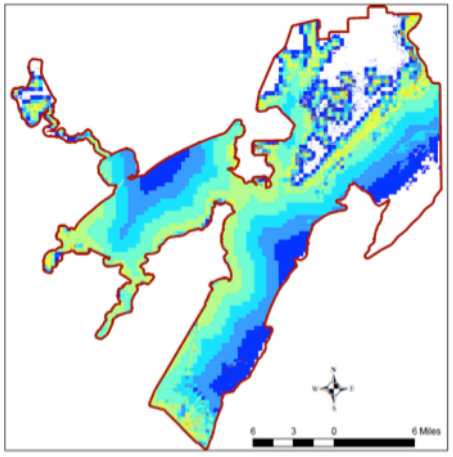


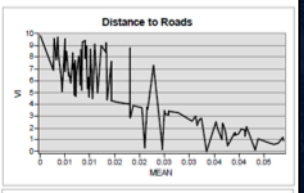


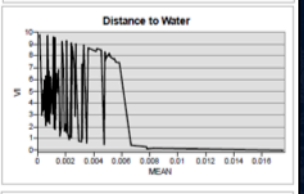


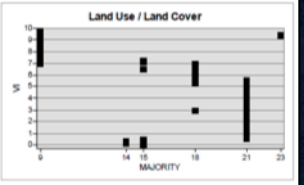
Summer Visitors

Biodiversity



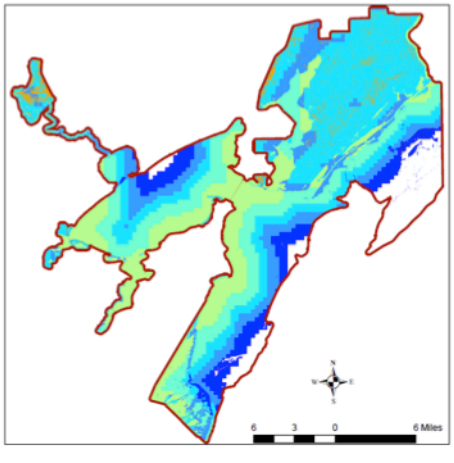


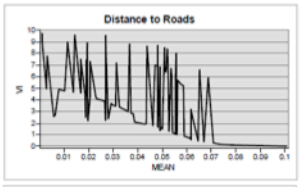


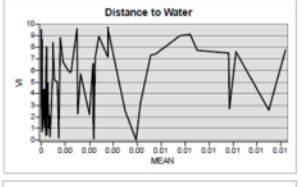


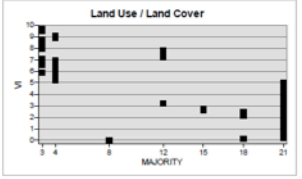
Local Visitors

Biodiversity



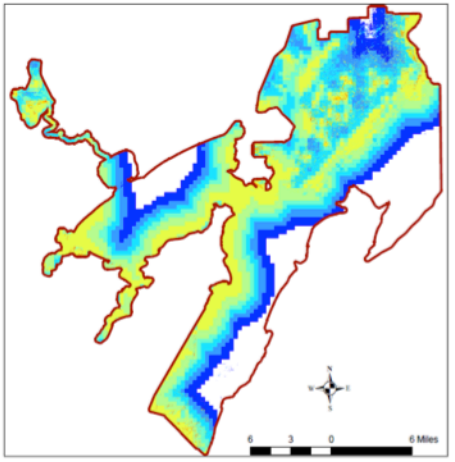


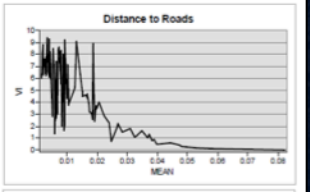


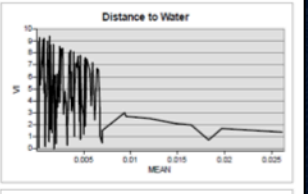


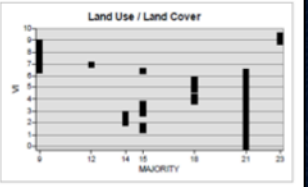
Non-Local Visitors

Biodiversity









Results

Inverse relation between distance to roads and water

that is…

Higher distance of ES to roads or water, lower value assignation

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Table 1. Bio-physical change responses for all survey respondents (percent).

Bio-physical Changes							
	Large Increase	Increase	No Change	Decrease	Large Decrease	Unsure/Don't Know	No Response
Abundance of oysters	0.69	11.81	19.44	11.11	2.78	51.39	2.78
Abundance of fish	2.08	11.11	31.94	29.86	5.56	18.06	1.39
Abundance of blue crabs	1.39	6.25	22.22	21.53	6.25	40.97	1.39
Abundance of seagrass	4.86	20.14	34.72	13.19	1.39	25.00	0.69
Shoreline erosion	2.08	29.17	41.67	4.86	0.00	21.53	0.69
Abundance of birds	2.08	28.47	40.28	9.72	2.78	15.97	0.69
Abundance of wildlife	1.39	22.22	47.92	16.67	2.08	9.03	0.69
Public access to land and water resources	1.39	11.11	39.58	7.64	0.00	38.19	2.08
Red tide occurrences	9.72	29.86	31.25	15.28	1.39	11.81	0.69
Abundance of jellyfish	**4.17**	**22.22**	**43.75**	**17.36**	**2.08**	**9.72**	**0.69**

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Results

- Management goals dealing with natural resources a high priority
- Management goals incorporating cultural/ social aspects into resource management lower priority

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Conclusions

- People visiting the MA-NERR for aesthetic value, to enjoy species diversity, and to recreate
- Current management goals of the reserve are a priority for respondents
- More access to resources, the more valued ES

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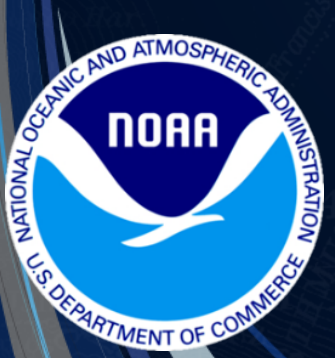
Thank you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