

Marsh Ecosystem Services, Benefits, and Perceptions of Value:

Case Studies in Massachusetts, Virginia, and Georgia

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- BACKGROUND:**
- Coastal marshes are among the **most ecologically productive & threatened ecosystems** on earth.
 - Leaders make use/conservation/restoration decisions based on the **perceived values** of the benefits these ecosystems provide.
 - There are two primary methods for assessing this value: revealed preference willingness-to-pay and stated preference willingness-to-pay methods (Johnston et al., 2011).
 - Both ignore a large component of value that people derived from ecosystems—**cultural value** (Chan et al., 2012).
 - Cultural values (e.g. spiritual, recreational, aesthetic, educational) are **difficult to quantify** in purely economic terms.
 - This research contributes to ecosystem valuation by exemplifying **qualitative processes** that can be used in conjunction with conventional quantitative methods.

- METHODS**
- Conducted 9 semi-structured, group interviews with local residents, that were audio recorded and transcribed verbatim.
 - Systematically developed theory through Grounded Theory approach to coding of qualitative data.
 - Calculated prominence of codes to determine major and minor themes.
 - Organized themes into process maps to **tell a story of what matters most to residents as related to the salt marshes in Massachusetts, Virginia, and Georgia.**
 - Presented results at stakeholder workshops in each community.

- RESULTS**
- Massachusetts:** Recreational experiences in beautiful marsh and open water landscapes inspire serenity, which, in the context of residential development, leads to conservation support.
 - Virginia:** Recreational experiences and water-based livelihoods inspire a marsh and "shore" identity, which, in the context of industrial agriculture and growing flood risks from rain and storm surge, leads to community activism and conservation needs.
 - Georgia:** Childhood experiences in expansive marshes inspire stewardship cultivation, which, in the context of industrial pollution and residential development, leads to regulatory enforcement needs.

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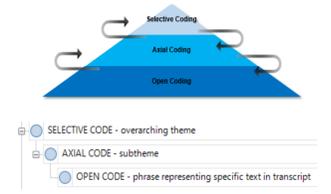
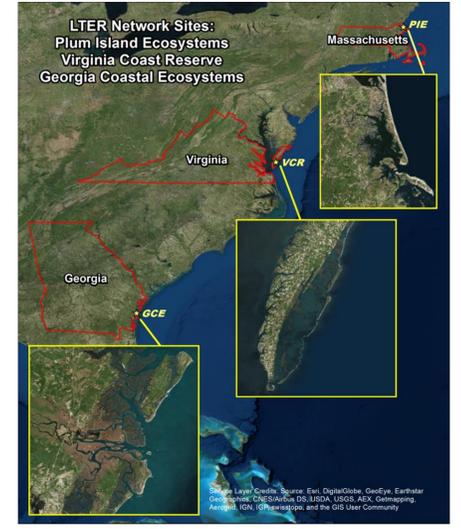
Coastal communities in Massachusetts, Virginia, and Georgia strongly value cultural ecosystem services, such as recreation, education, and sense of place, provided by salt marshes.

These non-economic experiences inspire serenity (MA), shore/marsh identities (VA), and stewardship cultivation (GA).



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<http://www.ces.fau.edu/coastal-resilience/nsf-sees.php>



Major Themes	Percentage	Major Subthemes
C1 CULTURAL BENEFITS	39%	recreational benefits, aesthetics of engagement, educational benefits, restorative benefits, sense of place
C2 COMMUNITY AGENCY AND ENGAGEMENT IN PROTECTION	20%	supporting protection, restrictions or support for restrictions, partners in protecting the marsh, community activism and engagement
C3 WILDLIFE AND HABITAT	18%	biodiversity, observing environmental change, habitat
C4 THREATENING THE MARSH OR PROVISION OF SERVICES AND BENEFITS	12%	development, pollution
C1 CULTURAL BENEFITS	20%	recreational benefits, sense of place, educational benefits
C2 COMMUNITY AGENCY AND ENGAGEMENT IN PROTECTION	20%	supporting protection, partners in protecting the marsh, desiring education, research, and data monitoring, community activism and engagement, restrictions or support for restrictions
C3 WILDLIFE AND HABITAT	18%	biodiversity, health of habitat or environment, habitat, observing environmental change
C4 COASTAL PROTECTION AND FLOODING	15%	concerns regarding flooding and storms, adapting to flooding
C2 THREATENING THE MARSH OR PROVISION OF SERVICES AND BENEFITS	15%	development, runoff and lawn chemicals, water supply, climate change and sea-level rise
C1 CULTURAL BENEFITS	30%	educational benefits, recreational benefits, aesthetics of engagement, sense of place
C2 WILDLIFE AND HABITAT	16%	biodiversity, health of habitat or environment, habitat, observing environmental change
C3 THREATENING THE MARSH OR PROVISION OF SERVICES AND BENEFITS	16%	pollution; development concern
C4 COMMUNITY AGENCY AND ENGAGEMENT IN PROTECTION	15%	supporting protection; partners in protecting the marsh; restrictions or support for restrictions, apathy or disrespect for the environment, community activism and engagement

Selective Code	Description	MA	VA	GA	Illustrative Quotation
COASTAL PROTECTION AND FLOODING	Concerns regarding flooding and storms, and appreciation of the coastal protection provided by the marsh.	9%	15%	9%	MA 3.7: "...if we didn't have the marshes we would've been flooded just like a lot of other areas that build in the marshes just like a lot of areas."
COMMUNITY AGENCY AND ENGAGEMENT IN PROTECTION	The ways in which local communities or individuals are interested and/or active in protecting their local environment.	20%	20%	15%	GA 1.2: "On a local level, we can continue to show up at the zoning board meetings and the commission meetings and let our voice be known."
CULTURAL BENEFITS	Experiences and cognitive processes that contribute to personal well-being or communal fulfillment.	39%	20%	30%	MA 3.11: "...the lack of light pollution here, the gorgeous sunsets being able to see so many shooting stars, watching storm clouds rolling in, all of that is just... it's just priceless to me."
ECONOMIC DEPENDENCE	Concern for indifference, corruption, or a lack of appropriate funding or support from federal, state, and local governments.	1%	6%	4%	VA 1.1: "...with all the cutbacks that's going on in Washington DC now, we just scatter in the wind."
KNOWLEDGE OF ECOSYSTEM FUNCTIONS	The ways in which the community understands provisioning, regulating, and supporting ecosystem services.	2%	3%	2%	GA 1.1: "They pollinate the marsh grass. Without those sand gnats, we wouldn't have any shrimp. So we gotta put up with them."
THREATENING THE MARSH OR PROVISION OF SERVICES AND BENEFITS	Anthropogenic factors contributing to a decline in marsh ecosystem health or provision of services.	12%	15%	16%	VA 1.9: "...runoff where you get chemicals in the ground, it goes right to our water source so it kills our fish, shellfish, everything."
WILDLIFE AND HABITAT	Presence, characteristics, and changes in wildlife and habitat.	18%	18%	16%	MA 1.5: "I've seen changes with, you know with the fish populations over the years... we had baby blue fish up the way a couple years ago and I've never seen them up there before."
Total		100%	100%	100%	

Credit: Edwards, 2017; Wood, 2017

