Shallow Water Use Conflicts & the Regulatory Process

A Literature Review

Results & Outputs

- Decision support tool to support regulatory review of projects that involve shallow water use conflicts (ex. living shorelines and SAV)
  - Highlight the value of SAV during review process
  - Focus on CB SAV species
  - Include gray literature *(taking any recommendations)*
- Improve recommendations to permitting authorities – based in science/literature
  - Are there designs that support SAV expansion (for all or some spp)?
  - What monitoring recommendations/parameters should be included – and inform performance standards and objectives? What does success/failure look like?
  - When/where is restoration successful – and for which species? Does that relate to mitigation recommendations?
  - How does the upland buffer zone management plan effect SAV minimization opportunities?
  - **Other…?**

Decision Support Tool: Themes, Recommendations

Recommendation theme	What information do you need?	Potential recommendation(s)	If missing - what's the recommendation?
Pre-impact data to characterize existing resources	habitat suitability info (other LR); site selection information	needed to properly assess net benefit; highlight differences of shallow water and intertidal services/functions	needed to properly assess net benefit; highlight differences of shallow water and intertidal services/functions
Design/BMPs to identify avoidance options (e.g. alternatives)	design considerations that avoid/minimize SAV impacts OR enhance/encourage SAV expansion	identify the designs that have been shown to support SAV; discourage use of XX (and why)	Call for more studies comparing designs that support SAV recruitment; call for monitoring data and db creation (public access) to compare
Appropriate (in-kind) mitigation	functional comparison	when is mitigation successful (or not); and what information is needed to determine that	develop functional/condition assessment(s)
Performance standards; monitoring information (feedback loop)	methodology; adaptive management plan	standardized methodology/protocols; require in permits	standardized methodology/protocols; require in permits; improve data storage & use for informing future projects
*Watershed level efforts (restoration, partnerships) to offset cumulative impacts	summary reports and monitoring data; partnerships	?	broader support for watershed level efforts; improve understand of restoration success/failures; intial and then sustainable funding avenues
Restoration options	MD DNR restoration guide	highlight guides that are in use; identify if there is a need to develop additional material	inform existing restoration guidance with more data

Search Terms

Terms
"Fetch" OR "hydrodynamics"
Ecosystem service*
Restoration
Preservation
Implementation
Management OR "adaptive management"
Minimization
"Compensatory Mitigation" OR "Mitigation"
Conservation*
Monitor*
Living shoreline*
shoreline protection
SAV OR "seagrasses"
"nature based" OR "nature based shoreline protection"

Type of Management Decision	Salinity Regime (see map)	Relevant SAV	Restoration Options	Examples
Bulkhead	Freshwater	*R sp., S sp.*	Shoots	Literature
Oyster culch	Tidal fresh?	*T sp., S. sp.*	Seeds	Literature
Liv shoreline	Brackish ?	*M sp., V sp.*	Etc.	Literature
Etc.	Oligohaline	*H spp.*	Etc.	Literature
Etc.	Mesohaline	*R sp., T sp.*	Etc.	Literature
Etc.	Polyhaline	*R.sp., T.sp.*	Etc.	Literature

performance standards; monitoring (feedback loop)

SAV spp.	Geo Conditions	WQ Conditions	Plant Ecology	Restoration Examples
Zm	HERE	HERE	HERE	AAA, BBB, CCC
Rm	HERE	HERE	HERE	DDD, EEE, FFF
Etc.	HERE	HERE	HERE	GGG, HHH, III