

INTEGRATED RISK AND RECOVERY MONITORING OF ECOSYSTEMS ON CONTAMINATED SITES

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WHY DO WE MONITOR?

Baseline Monitoring

- Pre-restoration or reference conditions

Implementation or Compliance Monitoring

- Performance standards

Effectiveness Monitoring

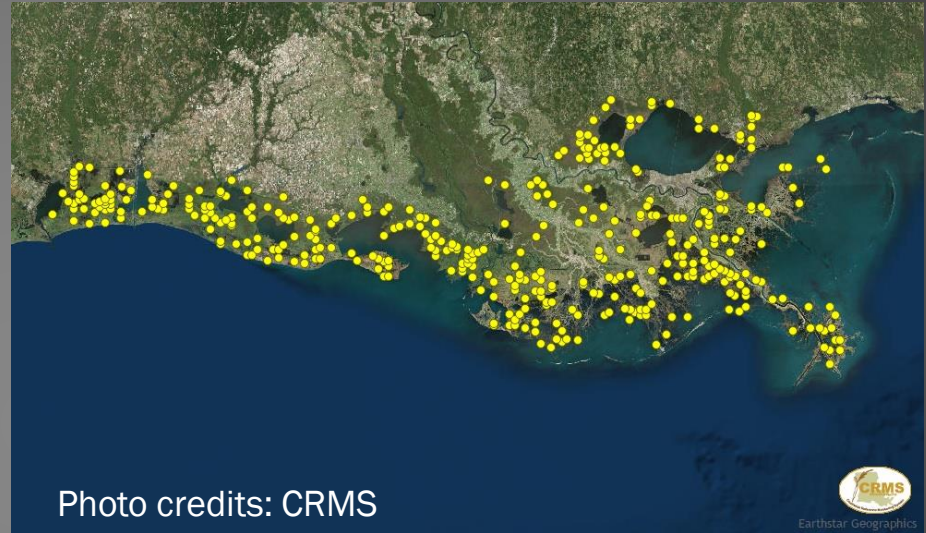
- Performance criteria/adaptive management

Validation Monitoring

- Causal relationship/advancing science/education

TEMPORAL AND SPATIAL SCALES

- Links to the goals of restoration and remediation
- Dependent on the type of monitoring
- Can be considered in the context of a larger system (e.g., CRMS)



RELATIONSHIP OF SERVICES & METRICS



Natural Resource Services

Ecosystem Functions

Measurable Metrics

Flood control



Wave attenuation



S. alterniflora density

Water quality



Fish productivity



Water temperature/DO

Biodiversity



Wildlife existence



Bird call surveys

CONSIDER MONITORING UPFRONT

- Goal setting is the right time to establish metrics > services
 - Multiple uses of Habitat Equivalence Analysis?
- Buy-in from stakeholders in the process
 - Correct spatial/temporal scale for each application
- Funding considerations



MONITORING ON A BUDGET

- Photo point monitoring
- Satellite imagery
- Citizen science
- Peer-reviewed models
- Comparison to regional data
- Chronosequence studies



THANK YOU!

