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Topics

- **LCR Tools Examples**
  - SWAMP
  - Rhode Island Tools
  - SCREAM
  - Lake St. Clair Integrated Coastal Management Tool

- **ICM development of criteria**
  - Stakeholders
  - Concept
  - Criteria
  - Functionality

- **ICM Example Problem**
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LCR Tools - SWAMP

- **Interdisciplinary Assessments**
  - Landscape ecology within a watershed context
  - Habitat ecology for salt marsh, freshwater riparian
  - Emphasis on Water Quality, Hydrology, and Habitat

- **Developed as a pilot project**
  - Not field tested in South Carolina

- **Criteria based on predecessor tool NC-CREWS**
  - Extensively tested in NC
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**LCR Tools – Rhode Island Suite**

Criteria based on Stakeholder needs and available data

- **Sea Grass Site Selection**
  - Prioritize eelgrass restoration opportunities
    - Avoid fishing areas
    - Target shellfish closure areas

- **Salt Marsh Site Selection**
  - Prioritize marsh restoration
    - Socioeconomic considerations
    - Feasibility
    - Ecological function
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**LCR Tools - SCREAM**

- Decision Support Tools that Support the Planning and Site Prioritization Goals of the WRP
  - SCREAM, Southern California Riparian Ecological Assessment Method
    - Examines the functional contributions of habitat, hydrology, and biogeochemistry to the watershed
    - Methodology developed with the WRP Science Advisory Panel and incorporated into a GIS-based decision support tool
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LCR Tools – Lake St. Clair ICM Tool

• A decision support tool to help coastal resource managers and planners
  – Examine decisions
  – Identify restoration and conservation priorities

• Criteria were developed through NOAA CSC and stakeholder interaction
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**Project Stakeholders**

- Cooperative Agreement Grant
  - NOAA Coastal Services Center and Great Lakes Commission
- Subcontractors
  - Michigan Natural Features Inventory
  - Walpole Island First Nation
- Project Management Team (Volunteers)
  - United States Government
  - Canadian Government
  - State and Provincial Governments (Michigan and Ottawa)
  - Local Agencies (Counties, Conservation Districts, Council of Governments)
  - Non-Profit Organizations
- Advisory Committee (Volunteers)
- All working together to develop the Lake St. Clair Coastal Habitat Restoration and Conservation Plan
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Development of Criteria - Stakeholders

• Spent time
  – Listening to concerns and responsibilities of stakeholders
  – Gathered information about issues

• Formed a working group
  – Spent more time listening

• Developed initial concept for comment
  – Core criteria based in landscape ecology
  – Easy to review and comment
  – Hard to start from blank page
  – Hard to visualize a DST

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LINKING PEOPLE, INFORMATION, AND TECHNOLOGY
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Criteria and Components of the Tool - Initial

• Metrics
  – Nearest Neighbor
  – Proximity
  – Size
  – Core Area
  – Impervious Surface
  – Inventory

• Queries
  – Metric Query
  – Category Query
  – Landscape Query
  – Aggregate Query

• Scenario Testing
  – Current state
  – Change
  – New state

• Output
  – Report Format
  – Map Format
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Criteria and Components of the Tool – Stakeholder Review

• Metrics
  – Nearest Neighbor
  – Proximity
  – Total Habitat Size
  – Size
  – Core Area
  – Impervious Surface
  – Inventory
  – Element Occurrences
  – Stream Corridor
  – Shoreline Hardening
  – Invasive Species

• Aquatics

• Queries and Overlays
  – Metric Query
  – Category Query
  – Landscape Query
  – Aggregate Query
  – Percentage Natural Area
  – Socioeconomic Growth
  – 1800s Land Cover
  – Historic Water levels
  – Soils
  – Land Ownership

• Scenario Testing

• Output
  – Report Format
  – Map Format
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Meeting Objectives

- A decision support tool to help coastal resource managers and planners
  - Examine decisions
    - Scenario Testing
  - Identify restoration and conservation priorities
    - Connectivity
      - Nearest neighbor
      - Proximity
  - Quality
    - Size
    - Core Area
    - Distance to Streams
    - Shoreline hardening
    - Element occurrences
    - Invasive Species
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Watershed Planning Goals – Development Needs

Goals

• No net loss of habitat

• Decrease the number of habitat patches, by creating linkages and increasing total size

• Conduct restoration activities in areas that would benefit rare, and high quality habitats (or threatened and endangered species).

• Create habitat buffers to rivers and streams.

• Situation

  – Developer wants to change a 1.0 acre deciduous forest to low density development

  – Developer is agreeing to conduct restoration campaign to plant trees and restore deciduous forest elsewhere

  – Will also consider other sites

• Using the Tool

  – Determine the current habitat situation within watershed

  – Use scenario testing to change proposed development and add forest in other areas.
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Output Examples - Quality
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Output Examples - Element Occurrences
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Output Examples – Economic Growth
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Changing Areas

Legend:
- Lower Clinton River Watershed
- Clinton river

Change Results:
- Habitat Lost
- Background
- No Change
- Habitat Gained
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Evaluating Change

• Outcomes
  – No net loss of habitat
  – Number of patches reduced
  – Average patch size increased
  – Increase Stream buffers *
  – Connections made to patches supporting rare and high quality areas*

*shown on previous slide

<table>
<thead>
<tr>
<th>Current Habitat</th>
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<tbody>
<tr>
<td>Total Area (acres)</td>
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<tr>
<td>Average Size (acres)</td>
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<tr>
<td>Number of Patches</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Habitat after Changes</th>
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</thead>
<tbody>
<tr>
<td>Total Area (acres)</td>
</tr>
<tr>
<td>Average Size (acres)</td>
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<tr>
<td>Number of Patches</td>
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</tbody>
</table>
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Functionality

- **Flexible data inputs**
  - Raster land cover (required)
  - All others optional and can be point, line or polygon

- **Flexible location**
  - Any polygon
  - User drawn polygon
  - Any geographical boundary
    - Watershed
    - County, township

- **Flexible classification**
  - User chooses what is habitat
    - Simple
    - Unique
    - Grouped

- **Flexible scoring**
  - User determines values
  - User determines scores

- **Optional features**
  - Queries
  - Overlays
  - Scenario Testing

- **Multiple outputs**
  - GIS Shapefiles
  - Map images
  - Reports
  - Tables