Status of the National Wetland Condition Assessment

Association of State Wetland Managers
2019 State/Tribal/Federal Coordination Meeting
Gregg Serenbetz, U.S. EPA
A national, statistically based survey of wetlands across the conterminous U.S.

- Part of the National Aquatic Resource Survey (NARS) program
- Conducted every 5 years beginning in 2011
- Approximately 1,000 wetland sites sampled each survey cycle

Objective: Report on the ecological condition of the nation’s wetlands and stressors most commonly associated with poor condition
2011 – 1,138 sites
1,984 individual sites sampled in NWCA (217 sampled both years)
NWCA Sampling Approach

0.5 hectare core assessment area
Collection of vegetation data at five 10m x 10m plots within Assessment Area

- Presence and cover for each vascular plant species
- Cover of all vascular species by strata
- Cover of bryophytes, lichens, and algae
- Tree counts, cover, and snags
- Ground cover (water, bare ground, litter, woody debris)
Collection of soil data at one soil plot (2016)

- Morphology (soil texture, color, redoximorphic features)
- Depth to water table
- Hydric soil field indicators
- Bulk density
- Soil chemistry (nutrients, heavy metals)
Surface water attributes and hydrology characterized at every site

- Water samples collected at sites with surface water (nutrients, chlorophyll-a, microcystin)
- Hydrology indicators (USACOE list)
- Hydrologic disturbances
Natural cover and stressors within 100 m buffer of core assessment area

- Assessed at three 100m² plots arrayed along each of four cardinal transect lines and at one plot at AA center
- Natural cover of veg and substrate by strata
- Anthropogenic stressors
- Nonnative species
How NWCA data is used

- National and regional estimates of wetland biological condition and stressors
- State-scale assessments
  - State CWA integrated reports
  - State and regional wetland assessment reports
  - Calibration/validation and comparability studies with state assessment methods
- Research
  - Soil hydric indicators and ESDs
  - Biodiversity modeling
National/regional estimates of wetland condition

Source: NWCA 2011 Report
Louisiana 2018 Integrated Report

2018
LOUISIANA WATER QUALITY INVENTORY: INTEGRATED REPORT

FULFILLING REQUIREMENTS OF THE FEDERAL CLEAN WATER ACT, SECTIONS 305(b) AND 303(d)

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL ASSESSMENT
WATER PLANNING AND ASSESSMENT DIVISION
P.O. BOX 4314
BATON ROUGE, LOUISIANA 70821-4314

Figure 3.2.11. Stress to Louisiana wetlands due to ditching or channelization.

Figure 3.2.12. Vegetation Condition (MMI) for Louisiana wetlands.
• NWCA 2011 data used to report on condition and stressors for wetlands in North and South Carolina
• UC Berkeley (Professor Iryna Dronova) and NASA Biodiversity and Ecological Forecasting Team

• Using Remotely Sensed Phenology to Monitor Biodiversity and Ecosystem Services in Wetlands
  • How biological diversity of vegetation affects spatio-temporal variation of wetland phenological characteristics
  • Potential to use these relationships to monitor ecological condition and stability at regional and continental scales

• NWCA field data used to test and validate potential phenological metrics derived from satellite based imagery
Use of NWCA data to inform wetland mitigation and voluntary restoration?

- ASWM webinar series
- Data to inform
  - mitigation and voluntary restoration designs
  - Ecologically-based performance criteria
## Design of mitigation/voluntary restoration: Plant species lists

<table>
<thead>
<tr>
<th>Plant Species</th>
<th>Site Occurrence in Region</th>
<th>% Cover Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer rubrum (red maple)</td>
<td>88%</td>
<td>0 - 60%</td>
</tr>
<tr>
<td>Arundinaria gigantea (giant cane)</td>
<td>25%</td>
<td>0 - 53%</td>
</tr>
<tr>
<td>Clethra alnifolia (coastal sweetpepperbush)</td>
<td>42%</td>
<td>0 - 8.6%</td>
</tr>
<tr>
<td>Cyrilla racemiflora (swamp titi)</td>
<td>33%</td>
<td>0 - 48.8%</td>
</tr>
<tr>
<td>Fraxinus pennsylvanica (green ash)</td>
<td>25%</td>
<td>0 - 60.6%</td>
</tr>
<tr>
<td>Ilex glabra (inkberry)</td>
<td>38%</td>
<td>0 - 37%</td>
</tr>
<tr>
<td>Ilex opaca (American holly)</td>
<td>46%</td>
<td>0 - 51%</td>
</tr>
<tr>
<td>Liquidambar styraciflua (sweetgum)</td>
<td>54%</td>
<td>0 - 14.4%</td>
</tr>
<tr>
<td>Lyonia lucida (fetterbush lyonia)</td>
<td>50%</td>
<td>0 - 39%</td>
</tr>
<tr>
<td>Magnolia virginiana (sweetbay)</td>
<td>58%</td>
<td>0 - 17%</td>
</tr>
<tr>
<td>Morella cerifera (wax myrtle)</td>
<td>50%</td>
<td>0 - 57%</td>
</tr>
<tr>
<td>Nyssa biflora (swamp tupelo)</td>
<td>54%</td>
<td>0 - 50%</td>
</tr>
<tr>
<td>Persea palustris (swamp bay)</td>
<td>71%</td>
<td>0 - 30%</td>
</tr>
<tr>
<td>Pinus serotina (pond pine)</td>
<td>25%</td>
<td>0 - 51%</td>
</tr>
<tr>
<td>Quercus laurifolia (laurel oak)</td>
<td>33%</td>
<td>0 - 31.02%</td>
</tr>
<tr>
<td>Smilax laurifolia (laurel greenbrier)</td>
<td>63%</td>
<td>0 - 36%</td>
</tr>
<tr>
<td>Taxodium distichum (bald cypress)</td>
<td>46%</td>
<td>0 - 21%</td>
</tr>
<tr>
<td>Toxicodendron radicans (eastern poison ivy)</td>
<td>63%</td>
<td>0 - 24.6%</td>
</tr>
<tr>
<td>Vitis rotundifolia (muscadine)</td>
<td>42%</td>
<td>0 - 18.82%</td>
</tr>
<tr>
<td>Woodwardia areolata (netted chainfern)</td>
<td>46%</td>
<td>0 - 40%</td>
</tr>
<tr>
<td>Woodwardia virginica (Virginia chainfern)</td>
<td>42%</td>
<td>0 - 55%</td>
</tr>
</tbody>
</table>

### Atlantic Coast Flatwoods MLRA (PFO and PSS sites)

Source: NWCA 2011
Design of mitigation/voluntary restoration: Typical soil characteristics

Source: NWCA 2011
Use of NWCA data to develop ecological performance criteria?

Atlantic and Gulf Coast Lowland Forest and Crop Region Land Resource Region (LRR T)

Depression (33) Riverine (23) Flats (80) Tidal (232)

Source: NWCA 2011
What’s coming

• 2016 data and report
  • Preliminary data files released to state/tribal partners as QA reviews are completed
    • Site info, water chemistry and characterization preliminary files released to partners last October
    • Soil, hydrology, buffer data imminent
    • All preliminary data by summer
  • Preliminary results by the end of year
  • Draft report by spring 2020

• Tools/training to explore results and analyze data
  • Data dashboards
  • Storymaps
  • Shiny apps
  • Regional/national workshops

• Database of native status and C-values (NWCA values and sources)
What’s coming

• 2021 survey planning is **underway**
  • Training improvements
    • Test of ideas at NWCA training for R7 Tribes this September
  • Electronic field app development
    • Available for field-testing by summer 2020
  • Survey design
    • NWI Digital Map GIS layer (as of July 1, 2019)
    • Opportunity for states to submit state-wide GIS layer for incorporation into NWCA design
    • 2021 sites out to states/tribes by end of 2019
• Indicator revisions
  • Opportunity to propose revisions/new indicators
  • Window for proposals is this summer/fall
Acknowledgements

- States and Tribes
- USDA-NRCS Soil Survey
- US FWS
- EPA Regions
- EPA ORD
NWCA data and contact information

Results, data and information on survey design, indicators, and methods available at:

https://www.epa.gov/national-aquatic-resource-surveys/nwca

Survey contact:

Gregg Serenbetz
Serenbetz.Gregg@epa.gov