EPA Tribal Wetlands Workshop

National Wetland Condition Assessment

Sept. 28, 2021

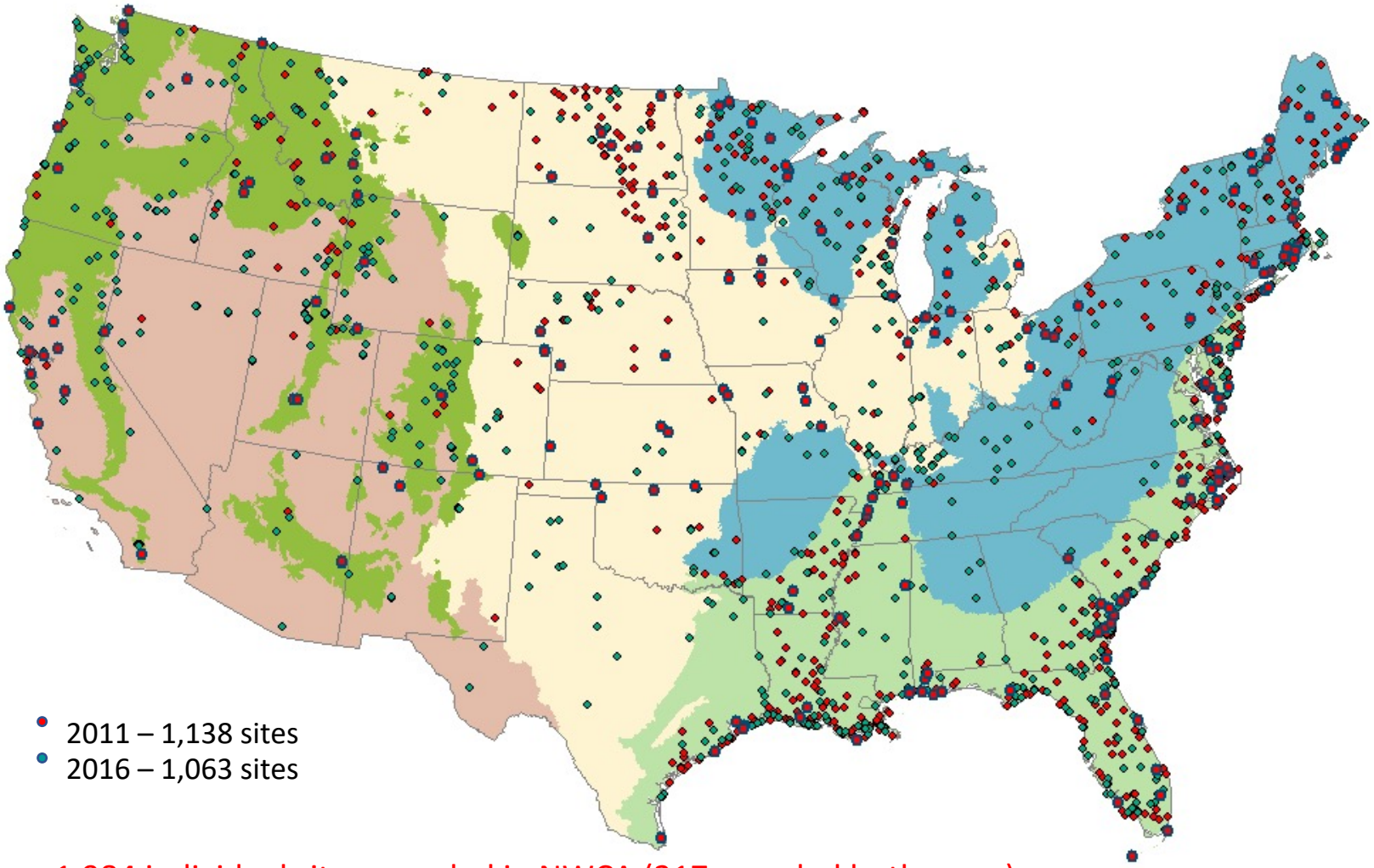
Today's presentation

- NWCA/NARS overview
- Sampling protocols
- Reporting/communicating results
- Tribes' involvement in NWCA

NWCA overview

- Part of the National Aquatic Resource Survey (NARS) program
  - Initiative under Clean Water Act to assess the quality of lakes, rivers and streams, wetlands, and coastal water using statistical surveys
  - EPA works with states, tribes, and federal partners to implement
- NWCA samples approximately 1,000 wetland sites across the country every 5 years
  - Surveys conducted in 2011, 2016, 2021
- NWCA uses a statistical design to select sites from mapped wetlands included in the National Wetland Inventory
  - Tidal and non-tidal wetlands
  - Rooted vegetation and when present, open water less than 1 meter deep
- Standard field methods used at all sites

NWCA sites



1,984 individual sites sampled in NWCA (217 sampled both years)

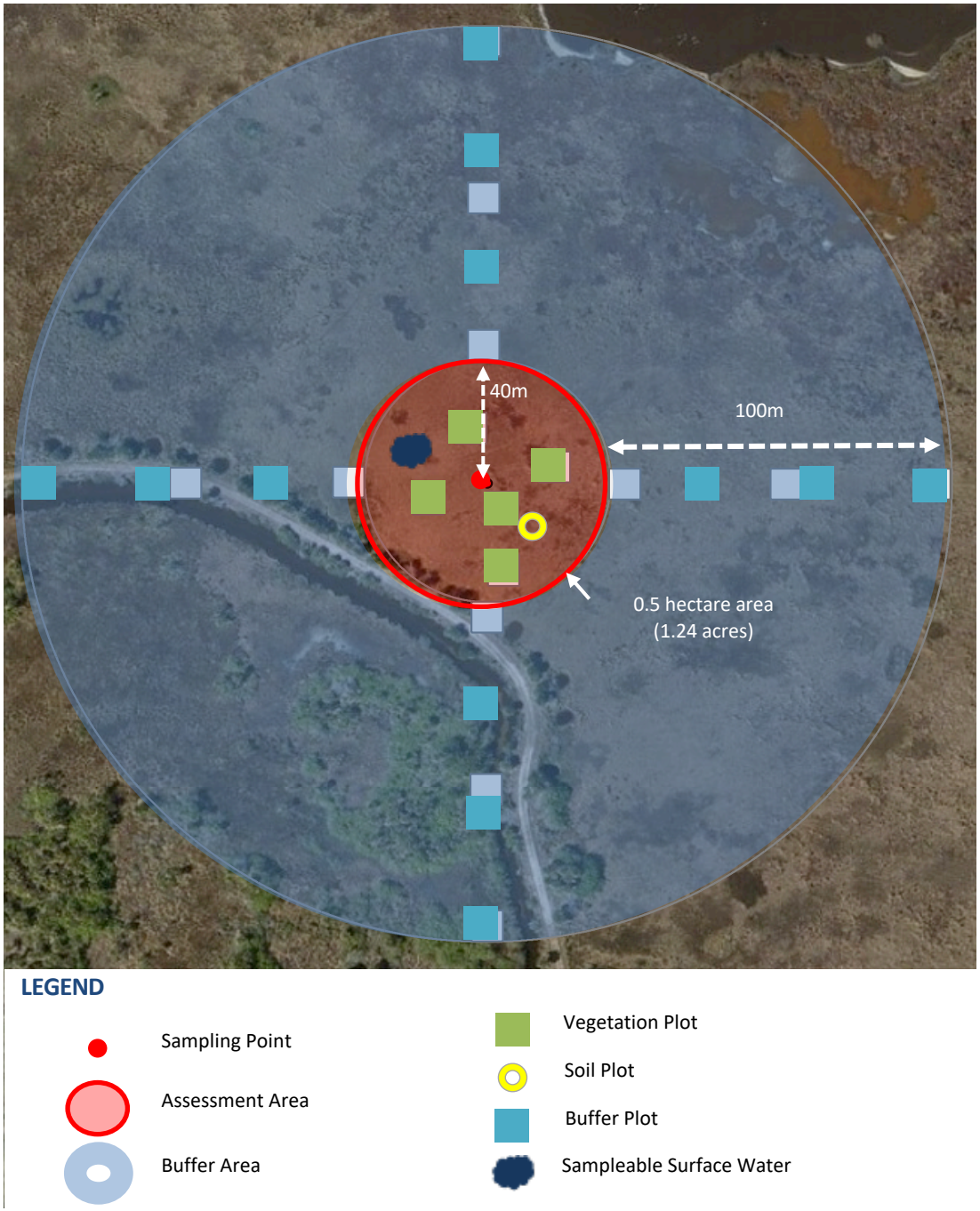
FIELD SAMPLING APPROACH

Core Assessment Area

- 80 m diameter circle around the sampling point (0.5 ha)
- Collect data on vegetation, soil, surface water, hydrology, and physical alterations

The Surrounding "Buffer"

- 100 m area outside the core assessment area
- Collect data on physical alterations in 12 plots



VEGETATION DATA

- Characterization of plant community at five 100m^2 plots
  - Presence and cover of 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)
- Plant vouchers
  - QA vouchers and unknowns
- Collected data used to
  - Assess biological condition
  - Assess extent of non-native plant species
  - Calculate other plant-based metrics

SOIL DATA

- Full characterization of soil at one plot location
- Soil pit dug to 125cm with manual tools (shovels, augers) to expose profile face
  - Morphology (texture, color, redox features)
  - Depth to water table
  - Hydric soil field indicators
- Soil samples collected
  - Each horizon layer
    - Bulk density
    - Chemistry
  - 10 cm cores at surface
    - Chemistry
    - Isotope analysis
- Collected data used to
  - Assess levels of metal contamination
  - Assess nutrient enrichment
  - Derive estimates of carbon storage

PHYSICAL DISTURBANCE DATA

- Presence of human-mediated physical alterations
  - Areal cover and severity within core assessment area (AA)
  - Presence within three 100m2 plots arrayed along cardinal transect lines in 100 m area outside AA
- 3 general categories
  - Vegetation
    - Removal and replacement
  - Hydrology
    - Flow obstruction and water addition/subtraction
  - Soil
    - Surface modification and hardening
- Collected data used to
  - Assess extent of habitat stressors
  - Characterize reference condition

SURFACE WATER & HYDROLOGY DATA

- Surface water attributes and hydrology characterized at every site
  - Water sources
  - Hydrology indicators
- Water samples collected at sites with surface water
  - Water chemistry
    - nitrogen, phosphorus, DOC, pH, conductivity, chloride, sulfate
  - Chlorophyll-a
  - Algal toxins (microcystin)
- Collected data used to
  - Assess risk of recreational exposure to algal toxins
  - Assess levels of nutrients

Analysis and reporting of data

- Compile and QA lab and field data
- Calculate and assess metrics for condition and stressor indicators
- Develop and refine benchmarks
- Estimate percentage of population in categories
  - Good, fair, poor
  - High, moderate, low

NWCA Indicators

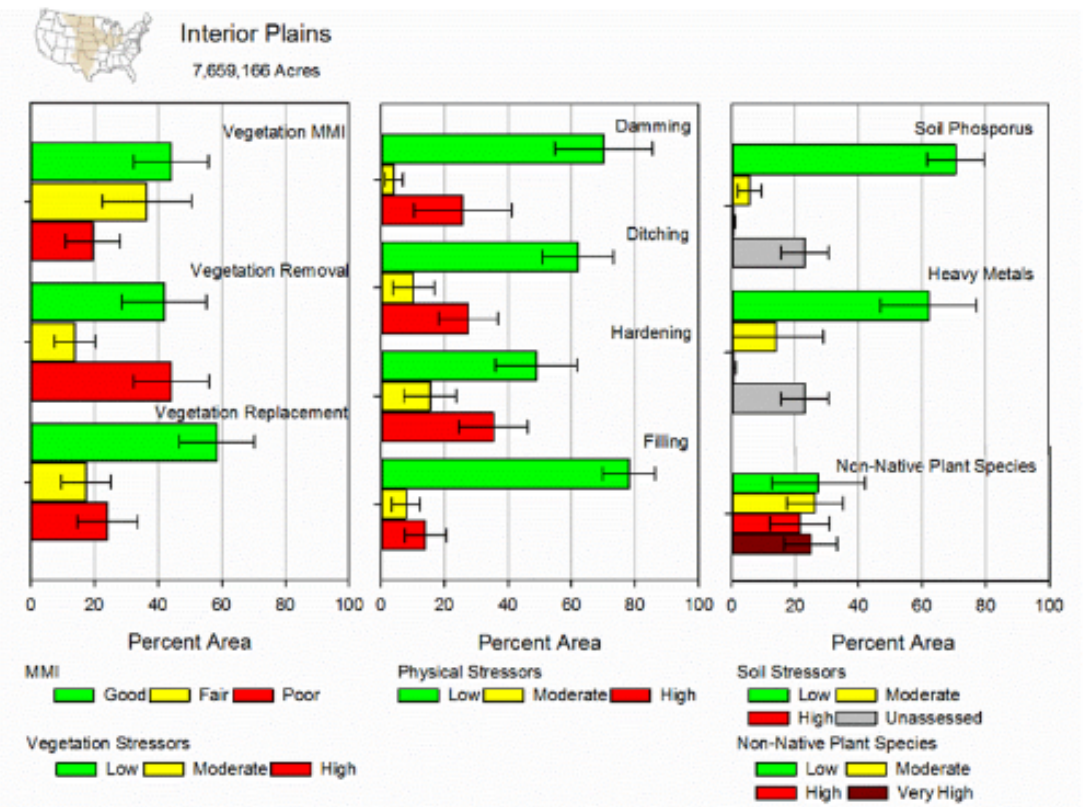
Biological
- Vegetation multimetric index
- Nonnative plant stressor index

Chemical
- Soil heavy metal index

Physical
- Vegetation removal
- Vegetation replacement
- Flow obstruction
- Water addition/subtraction
- Surface hardening
- Surface modification

Recreation
- microcystin

Analysis and reporting of data



- **44% of wetland area in good condition; 19% in poor condition**
- **Vegetation removal (44%), hardening (35%),** and **ditching (28%)** are predominant stressors at high levels
  - All physical stressors except filling/erosion above 20%
- **Nonnative plants** at high or very high stressor levels for **46%** of wetland area
  - **Only 4% inland herbaceous** wetland area at low stressor levels

NWCA 2011 regional findings for the Interior Plains region

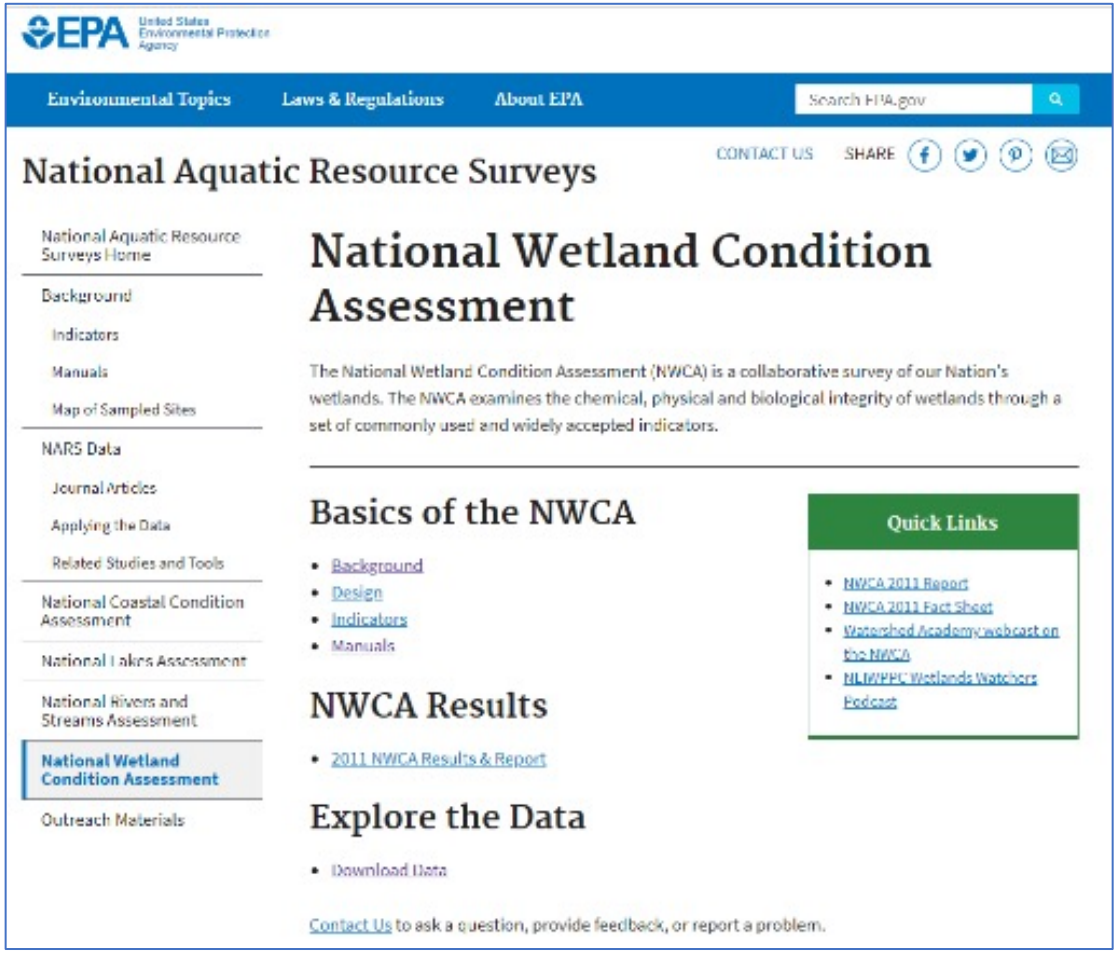
NWCA and Tribes

- Sampling wetland sites on Tribal lands
  - Sites chosen via the statistical design
  - Sites targeted for specific purposes
- Training on NWCA methods
  - EPA Region 10 (2012)
  - EPA Region 7 (2019)
  - EPA Region 5 (2022)
- Discuss opportunities with EPA Regional contacts
  - Wetland program development grant funding
  - Regional Workshops

Additional resources

- NWCA web page
- NWCA methods training modules
- ASWM Hydric soil training modules
- Topical collection of scientific papers in Environmental Monitoring and Assessment Journal

NWCA web page



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

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

Survey contact:

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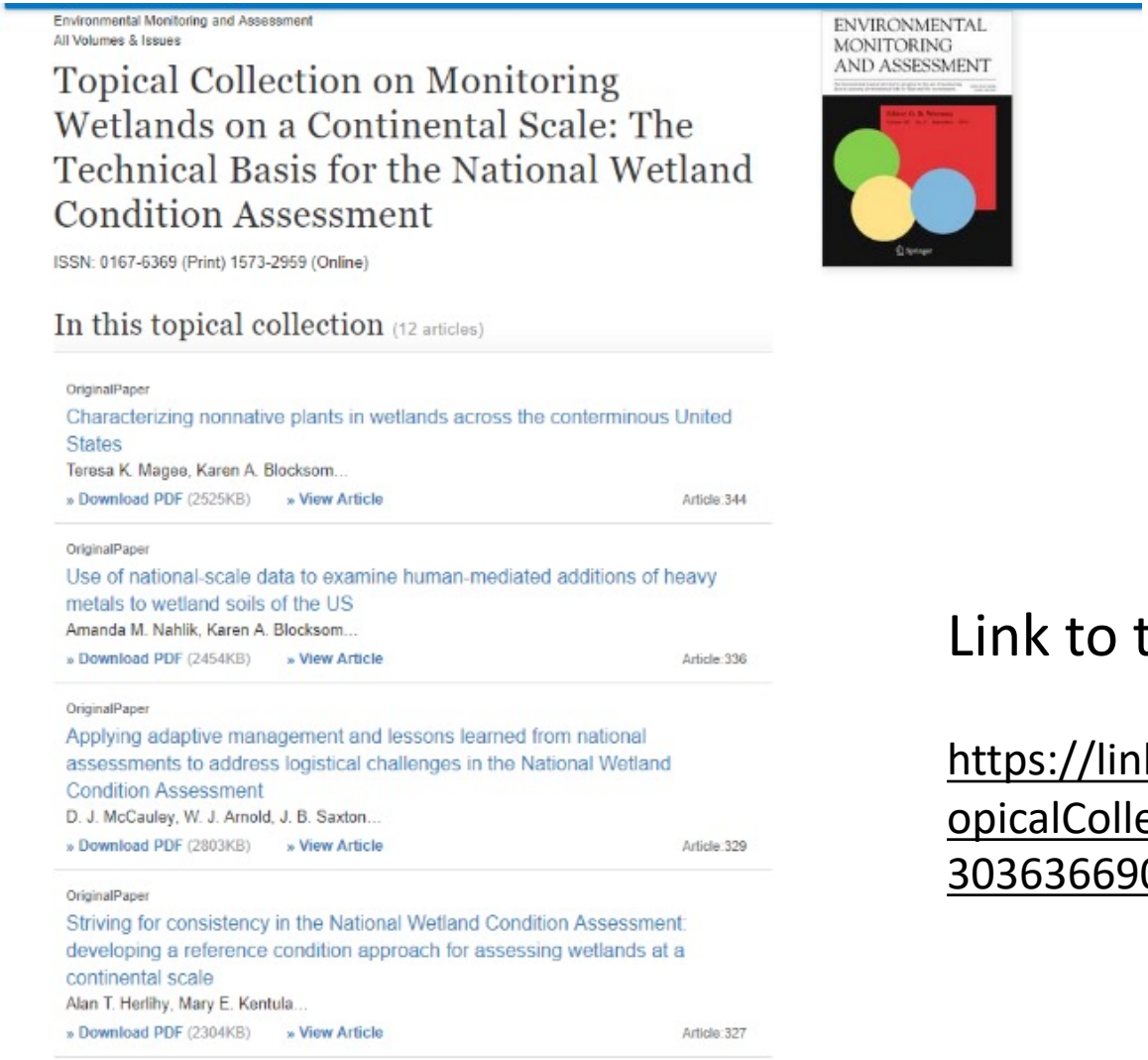
Hydric soil training modules

- Developed by Association of State Wetland Managers
- Training series for wetland field practitioners who need expertise in hydric soils and want to know
  - how hydric soils are formed
  - how to recognize and interpret the information they provide when observed in the field.
- 12 individual modules
  - Basics of Hydric Soils (3 modules)
  - Hydric Soil Processes (3 modules)
  - Landforms and Landscapes (3 modules)
  - Using Field Observations of Soils Onsite in Decision Making (3 modules)
- Access to video presentations is free and available at:

https://www.aswm.org/wetland-science/soils/9736-aswm-hydric-soils-online-training-series

Scientific papers



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