

Achieving Administrative and Ecological Success in Wetland Mitigation Policy:
Lessons Learned from U.S.
Experience 1989-2016

Jeanne Christie, Association of State Wetland Managers



Association of State Wetland Managers - Protecting the Nation's Wetlands.



ASWM Upcoming Webinars

- Managing Invasive Species in Wetland Restoration Projects 4-
- Restoring Functional Floodplain for Nature & People 4/28/16
- Financial Assurance and Compensatory Mitigation (5/25/16)

For a complete list of our upcoming webinars, click here.

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In the News:

- USDA Seeks Partner Proposals to Protect and Restore Critical
- · Two widely used pesticides likely to harm 97% of endangered species in
- · The link between vulnerabilities in energy, food, and water systems
- . Keystone I Leak Raises More Doubts About Pipeline Safety
- · Bay cleanup threatened by nutrients flowing past Conowingo Dam, study concludes
- · Wetland Breaking News Current Issue

46th Anniversary of Earth Day - April 22, 2016 - Trees for the Earth

We have made a lot of progress in protecting and restoring wetlands since 1970, so this is a day to celebrate our efforts. There are many ways to celebrate Earth Day. Here are a few wetland specific ideas:

- · Go for a nature walk in your favorite local wetland
- · Volunteer for your state or local wetland program
- · Help your local wetland critters in the Northeast migrate to their vernal pools
- · Read a story about wetlands to your children
- · Support national and local wetland protection efforts
- · Donate or become a member of ASWM
- · Learn about International Mother Earth Day

Here are some ideas from the Earth Day Network:

- . Get involved with Earth Day 2016.
- . Pledge an Act of Green toward their goal of A Billion Acts of Green®.
- . Take our Ecological Footprint Quiz to find your impact on the planet.
- · Promote Healthy and Green Schools with their Green Schools Campaign.
- . Donate to Earth Day and help power the movement.
- . Earth Day Action Toolkit.
- · Join their tree planting Canopy Project.
- . Do your part with their impactful Campaigns and Programs.
- · Find an Earth Day event.
- Get started on the Earth Day Network Homepage.

A SWM Blogs of Interest:

- . For Peats Sake: Earth Day and Wetlands Maria Stelk, ASWM (April 18,
- · Salameander: April Showers, Adaptation, and Earth Day Peg Bostwick, ASWM (April 18, 2013).
- . The Compleat Wetlander: Another Earth Day and Another Compleat Wetlander Anniversary Jeanne Christie, ASWM (April 22, 2011)
- . The Compleat Wetlander: Anniversary Celebration and a Challenge Jeanne Christie, ASWM (April 27, 2010)

Picture of the Week Layering



Jeanne Christie photo

For information about this picture and to see past pictures of the week click here.

ASWM RECENT PUBLICATIONS

- Status and Trends Report on State Wetland Programs in the United States
- Uses of Wetland Monitoring and Assessment: Considerations for State and Tribal Programs
- ASWM 2015 White Paper on Wetlands and Climate Change

For other ASWM Publications, click here.

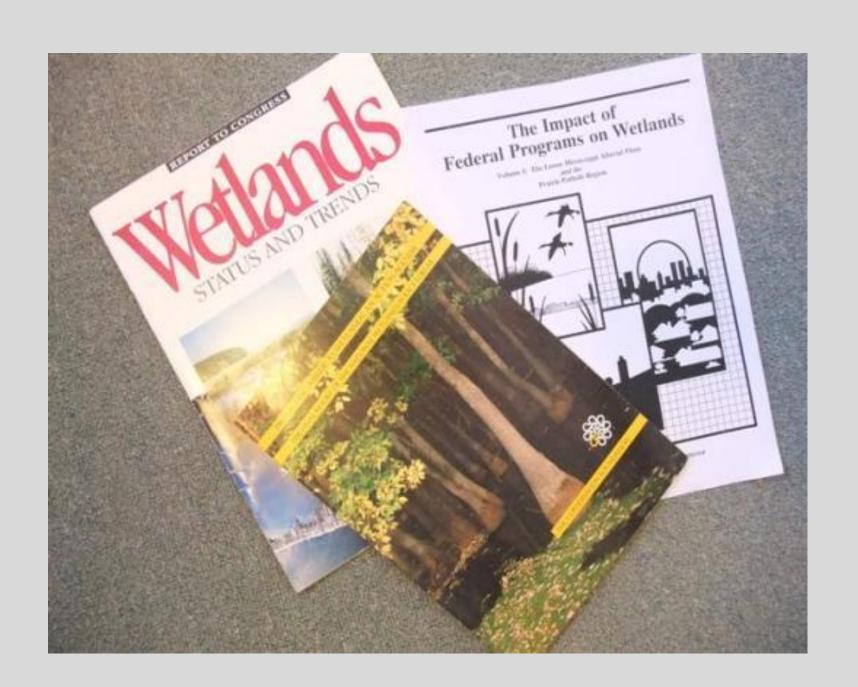




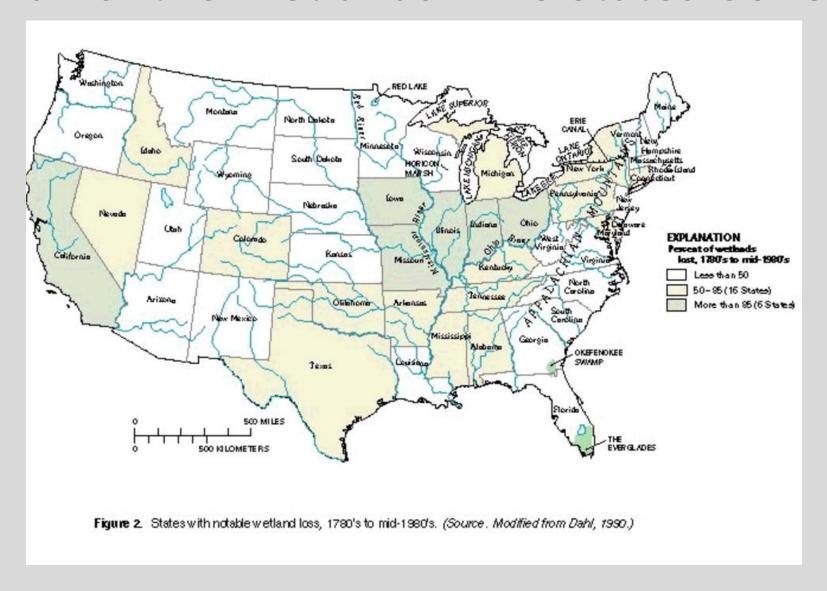
ASWM Focuses on U.S. Programs/Policies Related to:

- Water Clean Water Act
- Agriculture Farm Bill
- Natural Hazards Flood/Hurricane Recovery and Prevention, Flood Insurance, etc.



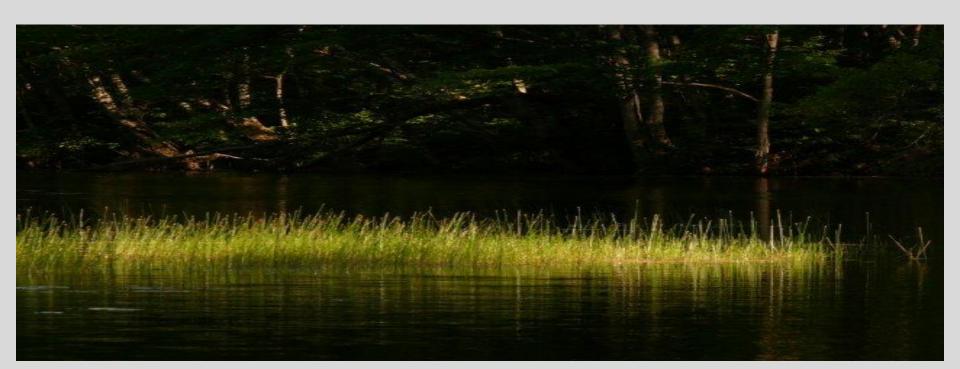


Half of the Wetlands in 48 States Gone



Federal vs. State

- Clean Water Act Applies to All 50 States
- States May or May Not have Similar or Stronger Regulations





Status and Trends Report on State Wetland Programs in the United States

Association of State Wetland Managers 2015

ASWM *State of State Wetland Programs*Project Background



- ASWM State Summaries Update and Expansion
- Project funded by an EPA Wetland Program Grant, McKnight Foundation and the Switzer Foundation
- Built on a foundation of existing information
- Focus on EPA 4 Core Elements, <u>Climate</u>
 <u>Change</u> & Integration Work
- Snapshot: December 2014

Project Products

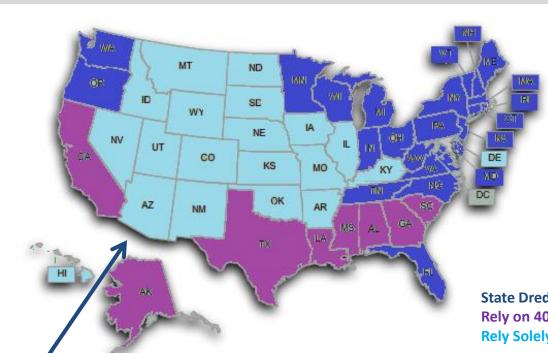
- 50 online ASWM State Summaries
- Include links and references to hundreds of examples, models and templates
- Comparative maps
- National Status & Trends Report

http://www.aswm.org
State Wetland Programs

Photo Credit: US Fish and Wildlife Service

Project Results: State Regulatory Role

Core Element 1: Wetland Regulation



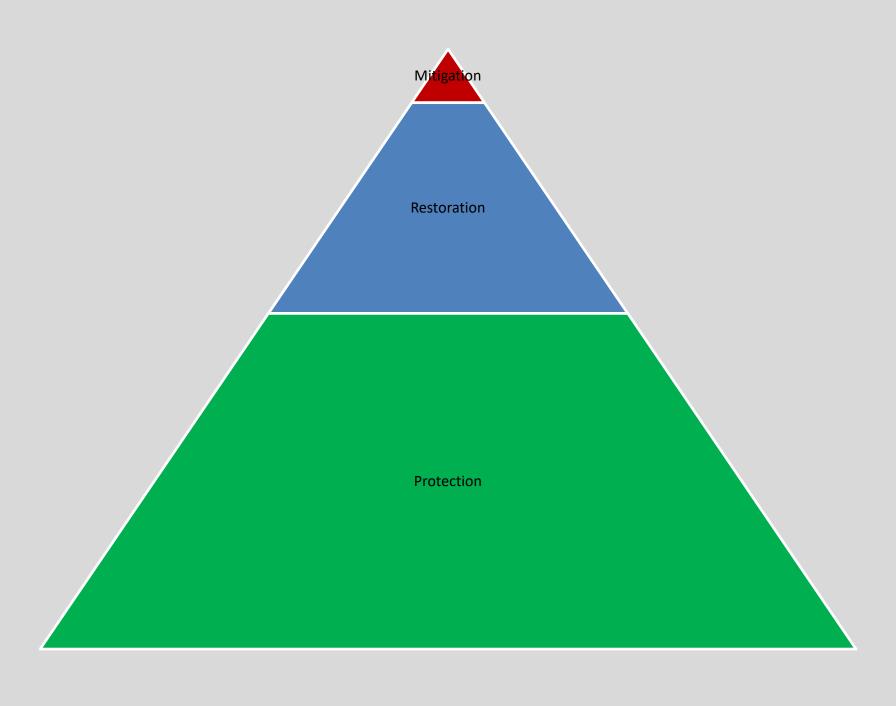
Important Note: Study did not collect information about which components of a regulatory program states are actively doing (e.g. own enforcement) or evaluate the quality of these efforts

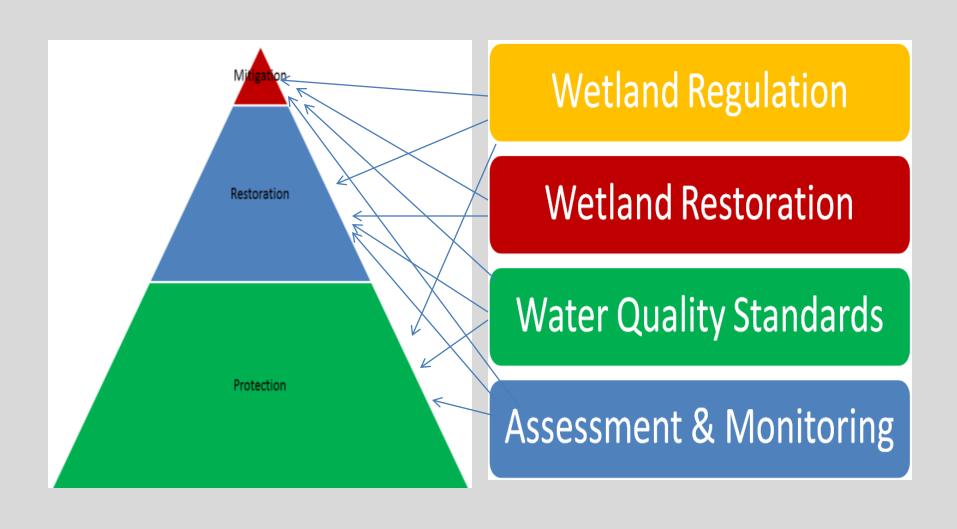
State Dredge and Fill Permitting Program (22 states)
Rely on 401 Certification Program + Other (8 states)
Rely Solely on 401 Certification (20 states)

For those states that rely solely on the §401 Certification Process, strengthening the state's conditioning process is one way to potentially improve protections

401 Cert + Programs examples:

- Non CWA waters
- Isolated
- Tidal/Coastal
- Admin orders





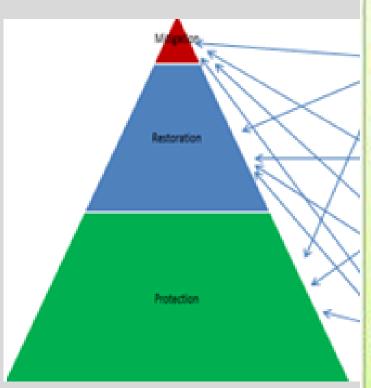
Wetland Regulation

Wetland Restoration

Water Quality Standards

Assessment & Monitoring

Climate change Drought **Flooding** Sea Level Rise Nutrient pollution **Ecosystem Degradation** Failing Infrastructure Species/Ecosystem Recovery



Climate change Drought Flooding Sea Level Rise Nutrient pollution **Ecosystem Degradation** Failing Infrastructure Species/Ecosystem Recovery



Project Results:

State Mitigation Guidance

Core Element 1: Wetland Regulation



For states that rely solely on the Corps for the mitigation of impacts to wetlands, opportunity lies in strengthening their relationship with the Corps and the Corps strengthening mitigation in areas of concern to the State Formal State Mitigation Guidance (22 states)

Informal State Mitigation Guidance (7 states)

Developing State Guidance (1 state)

Rely Solely on the Corps (19 states)

Unknown/No data available (1 state)

Evolution of Mitigation Policy

- No Net Loss Goal Adopted 1988
- Restoration and Creation: Status of the Science, 1989, Kentula and Kusler Editors
- Mitigation Memorandum of Agreement 1990
- Compensating for Wetland Losses Under the Clean Water Act, National Research Council, 2001
- National Mitigation Action Plan 2002
- Final Compensatory Mitigation Rule, 2008
- Mitigation Rule Retrospective 2015

Institute for Water Resources



White Paper Available to Review

http://www.aswm.org/pdf lib/wetland restoration whitepaper 041415.pdf

This white paper is currently in draft form only. The final version is expected to be completed by the end of 2016. Chapter Two will be extensively revised after significant consultation with federal and state agencies and non-governmental organizations involved in wetland restoration efforts in order to identify actions that are already being done, new actions that can be done, and agencies/organizations that can implement them.

Wetland Restoration

Contemporary Issues & Lessons Learned

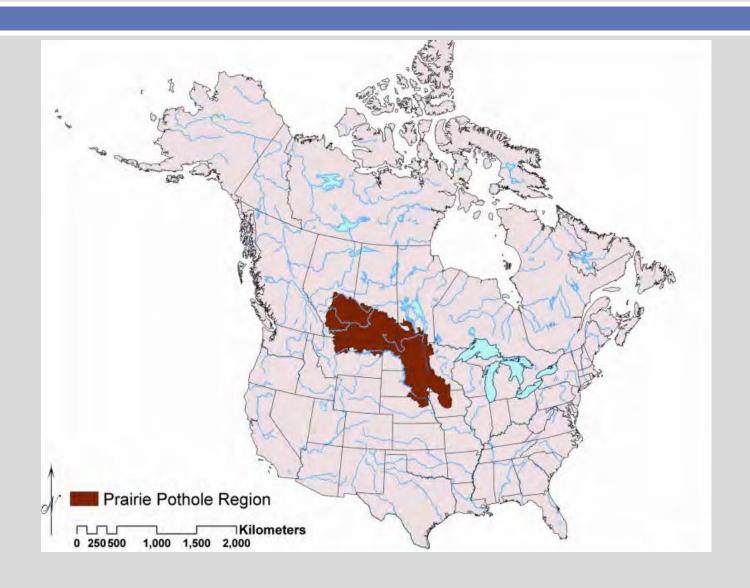
v. 1.11.16

Overall Challenges

- 1: Inconsistent & Subjective Evaluation of Wetland Restoration Outcomes
- 2: Vague Performance Criteria & Insufficient Monitoring Horizons
- 3: Narrowly Focused Regulations & Permit Applications Don't Anticipate Variability
- 4: Lack of Access to Expertise, Training & Knowledge Sharing
- 5: Underestimation of Restoration Costs in Developing Cost Estimates
- 6: Lack of Certification, Accountability & Enforcement
- 7: Altered Landscapes & Changing Land Uses
- 8: Climate Change
- 9: Silos for Wetland & Stream Restoration
- 10: Lack of an Adaptive Management Framework

Next Steps: Determine Actions Needed

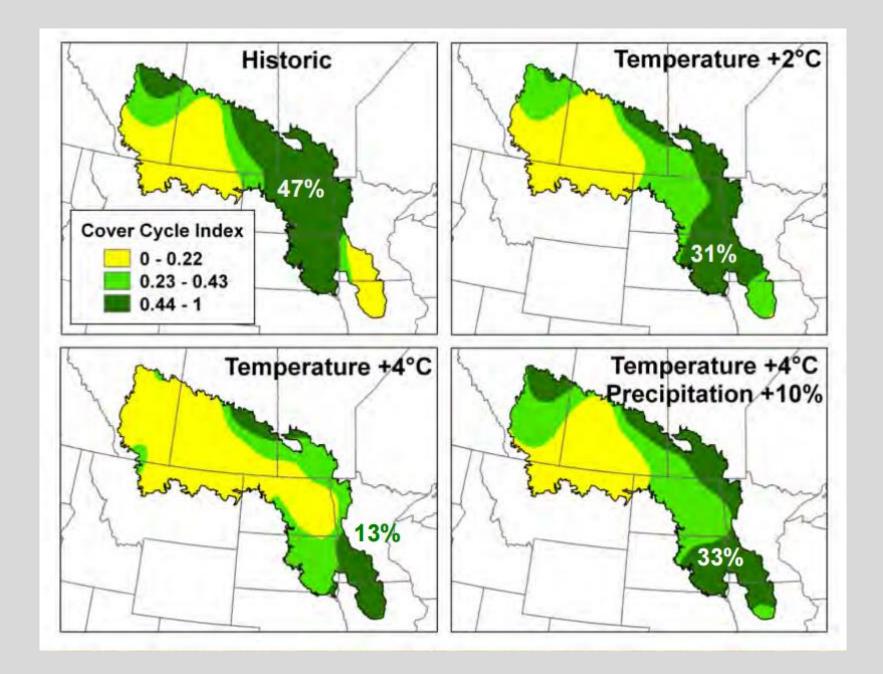
- Identify concrete <u>actions</u> that can be taken within specific practice areas (i.e., regulatory, policy, planning & design, construction, etc.).
- Identify who and/or what organization(s) is best suited to implement those actions (or is already working on them).
- □ Determine <u>how</u> actions can be best implemented.
- Develop a <u>national strategy</u> for improving wetland restoration practice and outcomes.



Prairie Wetland Drainage by State

- lowa......99%
- Minnesota...... 70-90%
- South Dakota....35%
- North Dakota.....60%

 Source: Tiner 1984; Dahl et al. 1990, 1991



Conclusions-Science

- Air temperature really matters to wetland dynamics
- Western PPR wetlands most vulnerable to climate change
- Under a warmer and drier climate, the best climate for waterfowl production would shift eastward, but most wetlands there have been drained

Cause of Failure	Recommendation	Because of high variability in climate and other factors that influence wetland water budgets, negative effects of climate change may go undetected for decades	
Climate change effects remain undetected	Initiate monitoring on long- term field sites and/or use wetland models to simulate future conditions		
Wetlands restored in high risk parts of the PP	Priority for restoration should match up geographically with areas expected to have the best wetland climate	PPR may experience ly with areas greatest loss of wetland have the best functionality. Future	
Wetland restoration too little too late	Massive restoration efforts will be needed to offset wetland losses due to climate warming and drying	Wetland losses continue to exceed gains. This trend needs to be reversed soon if we are to at least partially mitigate for climate change.	





Initial Revegetation Patterns

3 years post reflooding – 64 wetlands

Ditched wetlands retained refugia for hydrophytes during agricultural use. Emergent perennials spread vegetatively and rapidly became the initial, dominant cover.

Tiled basins lacked refugia for hydrophytes. Upon reflooding, mudflat annuals and submersed aquatics were the initial colonists.

Regardless of drainage history, reflooded wetlands lacked wet meadows.

Galatowitsch and van der Valk 1996

Five Recommendations for Improving Success of Prairie Pothole Restorations

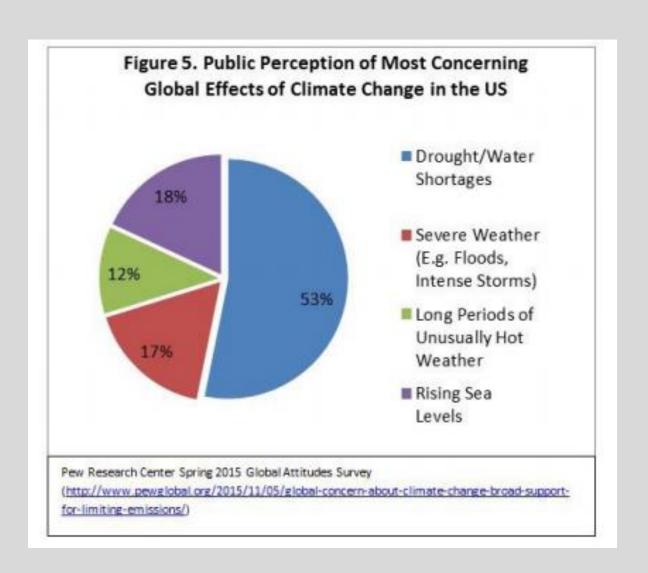
Cause of Failure	Recommendation	Details
Over-estimating ecosystem resilience	Assess likelihood that wetland plant community will recolonize after reflooding	Resilience is a function of duration of drainage and distance to natural wetlands
Spread of invasive species	Control species such as RCG, especially prior to and following reflooding	Invasive perennial plants cause arrested succession in more than 75% of PP restorations.
Conflicting project goals	Recognize tradeoffs between goals—especially biodiversity support and water quality or stormwater interception	Stormwater and nutrient interception are ecosystem stressors that greatly reduce biodiversity support.
Inadequate after care	Continue to manage vegetation during the establishment phase	For nearly a decade following reflooding, a PP restoration is still in a state of recovery and typically more invasible.
Lack of adaptive management	Link decision-making to monitoring	Ignorance is not bliss. Not detecting problems related to hydrology and biotic recovery often lead to insurmountable problems.

Why has "hit and run" restoration become the prairie pothole norm?

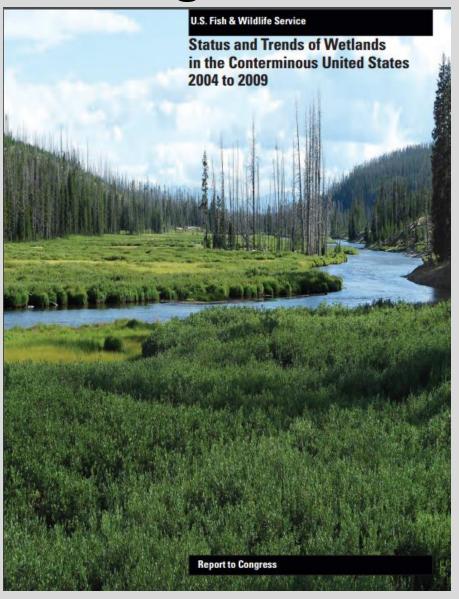
Engaging & Enraging the Public

- 1989 Wetland Delineation Manual
- Wetland Mapping and Swampbuster
- Mitigation MOA
- Clean Water Act Jurisdiction
- Flint Michigan Lead in Water
- Algal Blooms
- Nonpoint Source Pollution

Important Does Not Mean Urgent

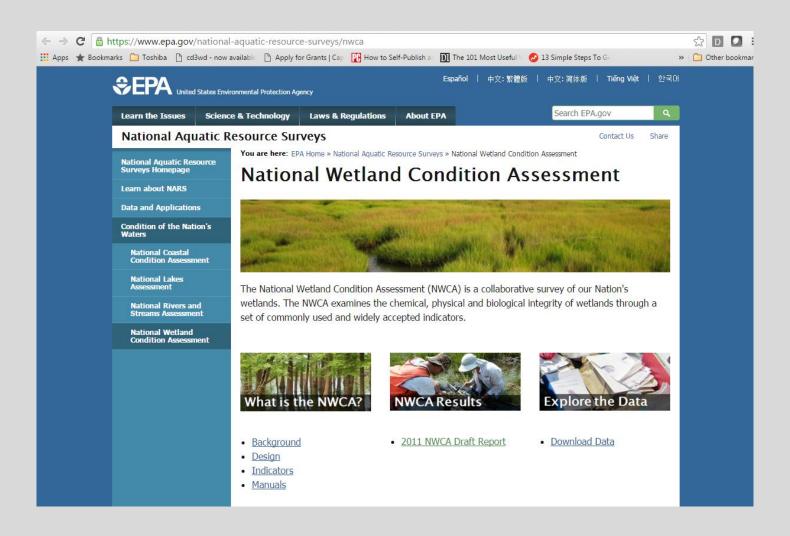


Achieving No Net Loss



Final Report: Mid-May

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



Important Opportunity for States

http://www.aswm.org/wetland-science/national-wetland-condition-assessment



Factsheet on Overall Report

http://www.aswm.org/pdf lib/wetland assessment/nwca report factsheet.pdf

Understanding the Key Findings of the National Wetland Condition Assessment: A Summary for Non-scientists

Compiled by the Association of State Wetland Managers (Last revised 2-16-16)

The National Wetland Condition Assessment (NWCA) is an evaluation of the environmental health of the nation's wetland resources that has been carried out by the U.S. Environmental Protection Agency along with state and tribal partners. The NWCA is one of four National Aquatic Resource Surveys initiated in 2006. These studies provide nationally-consistent and scientifically-defensible assessments of our lakes, rivers, wadeable streams, coastal waters, and wetlands, and can be used to track changes over time. The first NWCA survey was completed in the summer of 2011; the survey will be repeated in 2016.

EPA National Aquatic Resource Surveys (NARS) are conducted every year with each resource type sampled on five year cycles. This will allow us to evaluate changes in aquatic resource conditions over time

2007	2008-2009	2010	2011
Lakes	Rivers and Streams	Coastal Waters	Wetlands
2012	2013-2014	2015	2016
Lakes	Rivers and Streams	Coastal Waters	Wetlands

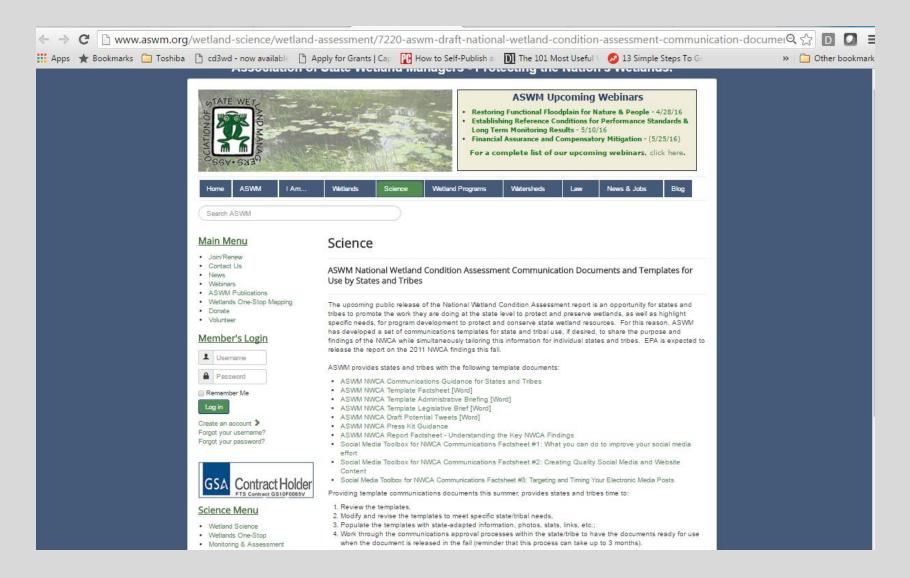
NWCA provides an overview of the condition

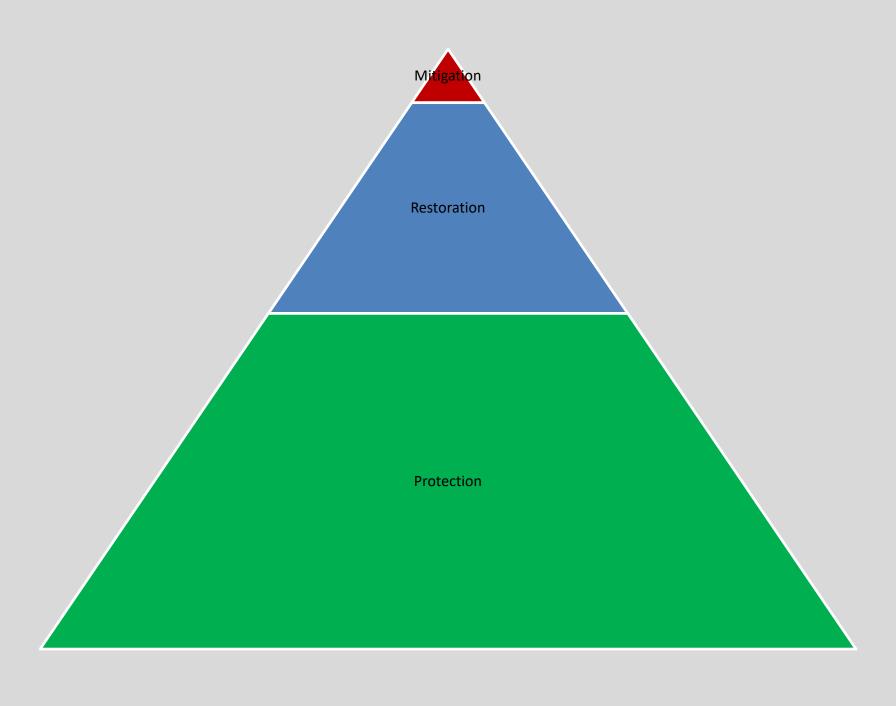
(quality) of wetlands that remain in existence, and does not address wetland loss due to drainage or filling. It is intended to compliment national wetland status and trends studies by the U.S. Fish and Wildlife Service that measure wetland gains and losses, and estimate the area (quantity) of the nation's remaining wetlands. It is assumed that an ecologically healthy wetland will not only provide superior fish and wildlife habitat, but will be better able to provide other ecological services that benefit the public, such as reducing pollutants from stormwater runoff, buffering storm surges, and storing/releasing water supplies. Therefore, identifying factors associated with poor or degraded condition was also an important component of the study.

What was actually measured during the NWCA and why?

Templates for State Communication

http://www.aswm.org/wetland-science/wetland-assessment/7220-aswm-draft-national-wetland-condition-assessment-communication-documents-and-templates-for-use-by-states-and-tribes







What It Is, How To Do It, and Best Practice Recommendations

This report is intended to assist those interested in using ecosystem service valuation to promote wetland restoration by: explaining what ecosystem service valuation is; framing it within the history of wetland science and policy; identifying available methods and tools; offering examples of use through case studies of watershed and/or wetland restoration projects that have utilized ecosystem service valuation; and providing recommendations for using ecosystem service valuation within the context of wetland restoration. Five case studies are summarized to provide examples of the use of ecosystem service valuation and the various methods and techniques that can be applied in a variety of settings. A glossary of terms, references, links, and a list of available tools for ecosystem service valuation are provided at the end of the report.

New Report Available

A COMPARATIVE ANALYSIS OF ECOSYSTEM SERVICE VALUATION DECISION SUPPORT TOOLS FOR WETLAND RESTORATION



Prepared for the Association of State Wetland Managers

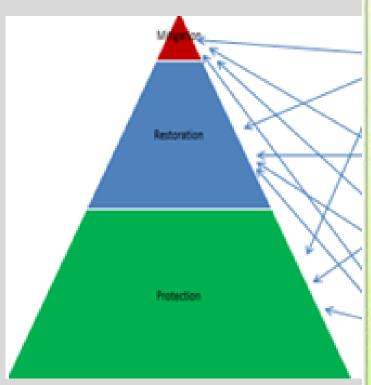
By Mark Healy and Dr. Silvia Secchi

Southern Illinois University

Web link:

http://www.aswm.org/pd f lib/ecosystem service v aluation 032116.pdf

Paper will be presented at SWS Conference in Corpus Christie, TX.



Climate change Drought Flooding Sea Level Rise Nutrient pollution **Ecosystem Degradation** Failing Infrastructure Species/Ecosystem Recovery

Beaver Reintroduction

- □ To address drought, water retention, stream flow, flooding, fire hazard, habitat → All influenced by climate change
- Emerging successes
- A potential tool
- ASWM focusing on the Montane West
- Significant interest at state & federal levels

Currently refining needs/work priorities

- Individual calls with states and agencies
- Meeting/call with interested federal agencies in DC in October at EPA headquarters
- Upcoming planning conference call -12/18





Photo credit: Joe Wheaton

References

- Wetland Restoration and Creation Status of the Science1988
 Volume 1: http://www.aswm.org/pdf lib/wetland creation restoration vol 1.pdf
 Volume 2: http://www.aswm.org/pdf lib/wetland creation restoration vol 11.pdf
- Mitigation Memorandum of Agreement 1990 https://www.epa.gov/cwa-404/memorandum-agreement
- Compensating for Wetland Losses Under the Clean Water Act, National Research Council, 2001 http://www.nap.edu/read/10134/chapter/1#vi
- National Mitigation Action Plan 2002
 https://www.epa.gov/sites/production/files/2015-
 08/documents/national wetlands mitigation action plan 0.pdf
- National Mitigation Rule 2008 http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/mitiginfo.aspx
- Mitigation Rule Retrospective 2015 http://www.iwr.usace.army.mil/Media/NewsStories/tabid/11418/Article/626925/iwr-releases-the-mitigation-rule-retrospective-a-review-of-the-2008-regulations.aspx
- Association of State Wetland Managers Reports on Wetland Restoration including White Paper, Webinars, Ecosystem Services Report and more http://www.aswm.org/wetland-science/wetland-restoration
- Association of State Wetland Managers Reports on State Programs http://www.aswm.org/wetland-programs/state-wetland-programs



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