Association of State Floodplain Managers Annual Conference June 19-24, 2016

Challenges and Solutions for Restoring Floodplain Wetlands

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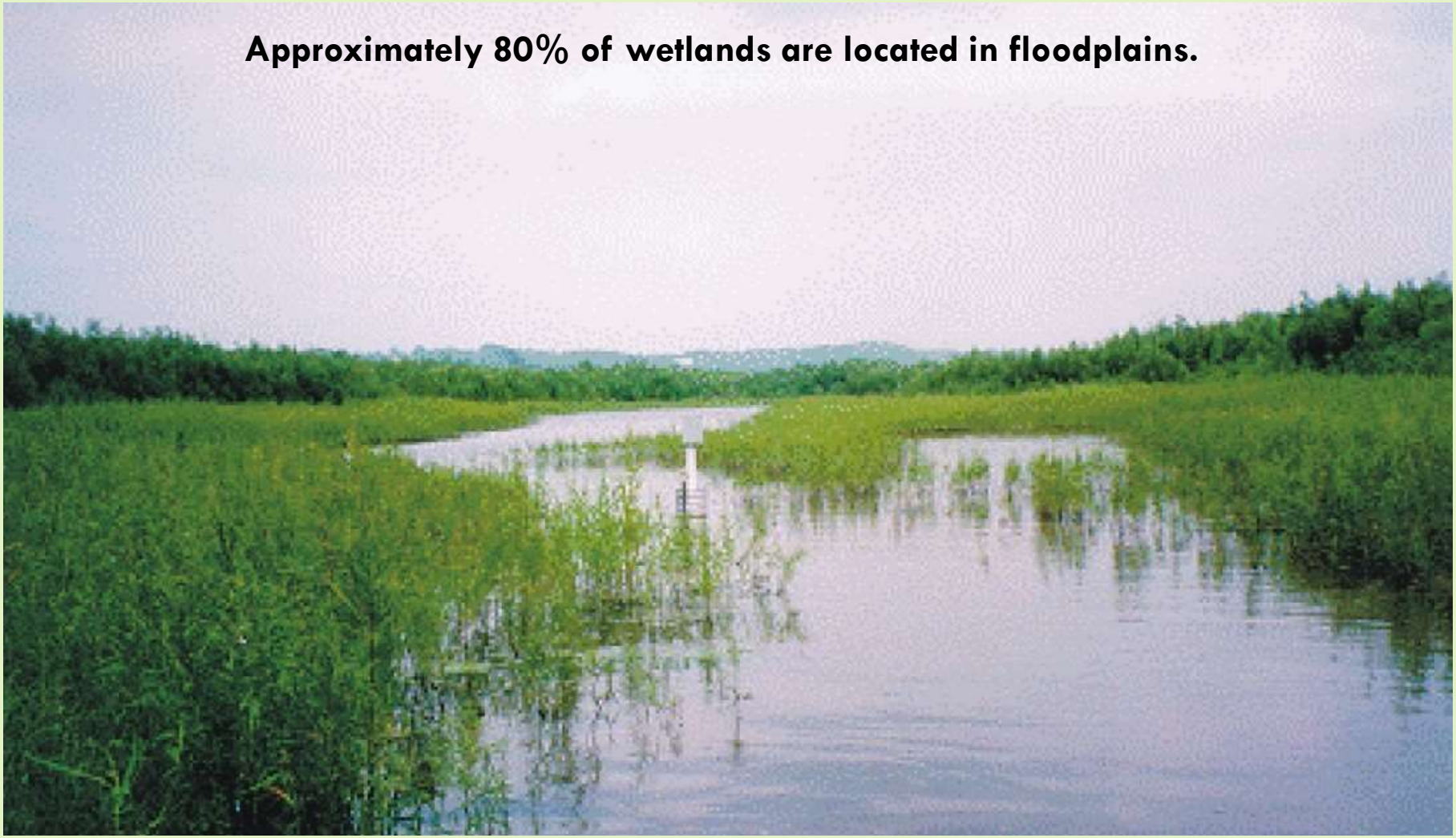
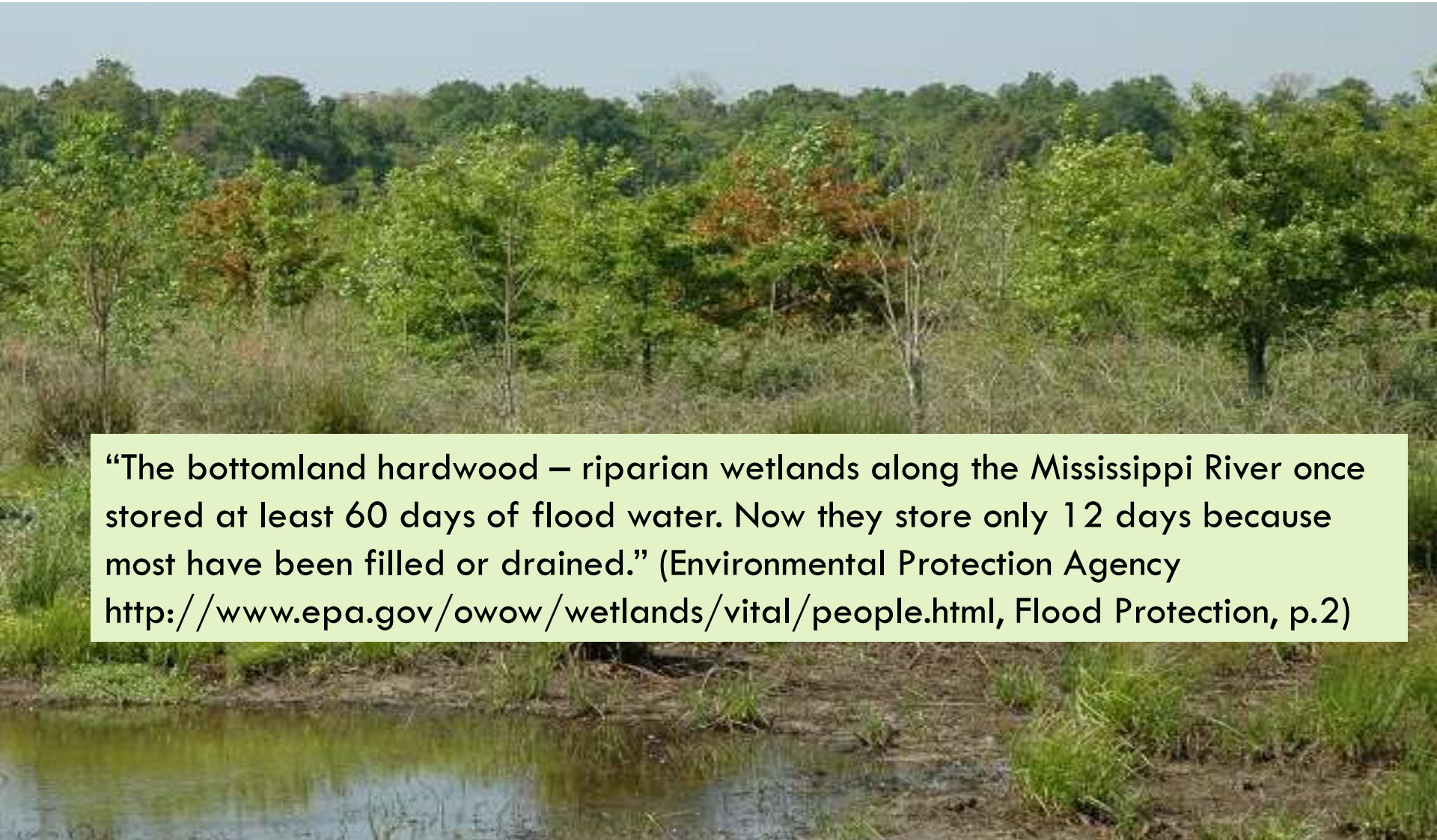
Wetlands & Floodplains



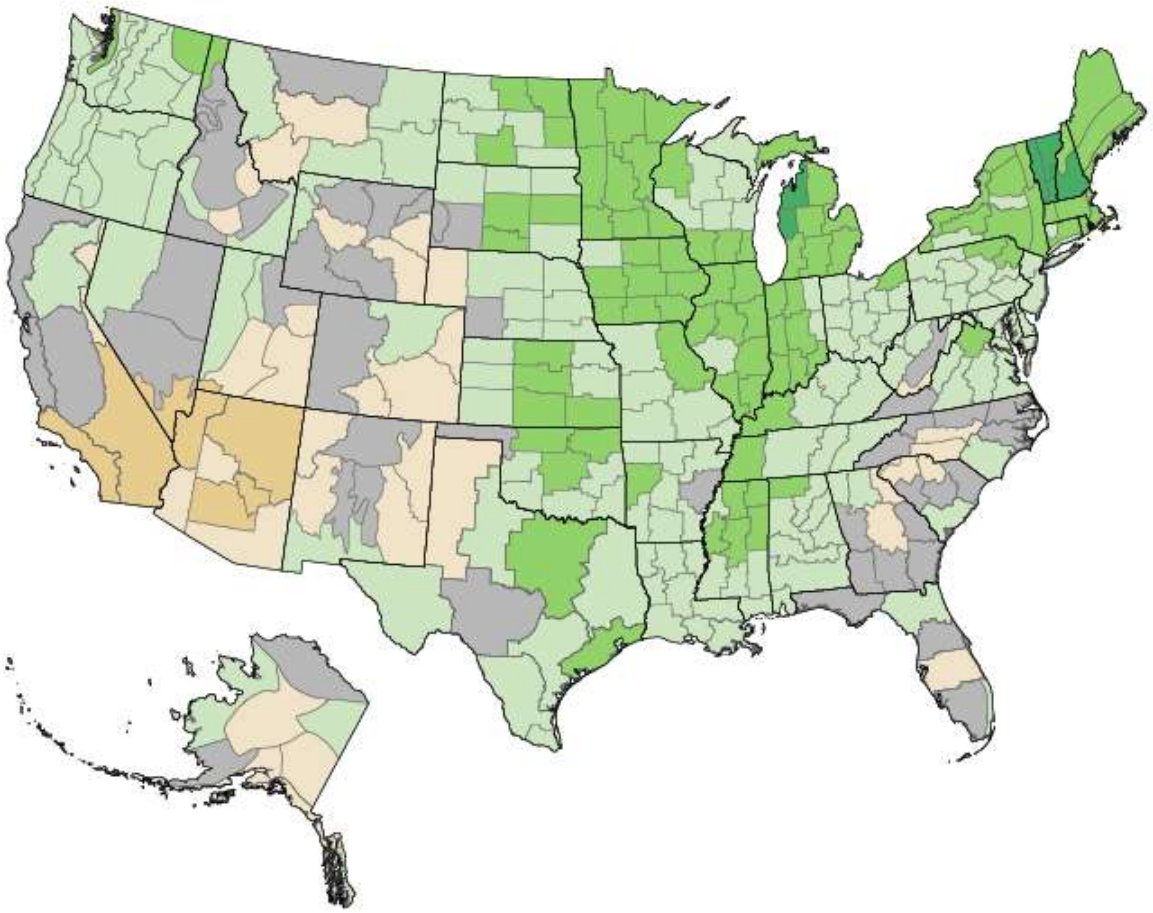
The Wetland-Floodplain Connection



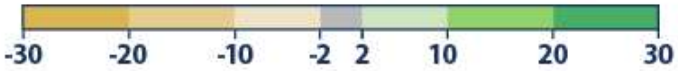
"The bottomland hardwood – riparian wetlands along the Mississippi River once stored at least 60 days of flood water. Now they store only 12 days because most have been filled or drained." (Environmental Protection Agency http://www.epa.gov/owow/wetlands/vital/people.html, Flood Protection, p.2)

Wetlands & Climate Change

Change in Precipitation in the United States, 1901–2014



Percent change in precipitation:



*Alaska data start in 1925.

Data source: NOAA (National Oceanic and Atmospheric Administration). 2015. National Centers for Environmental Information. Accessed April 2015. www.ncei.noaa.gov.

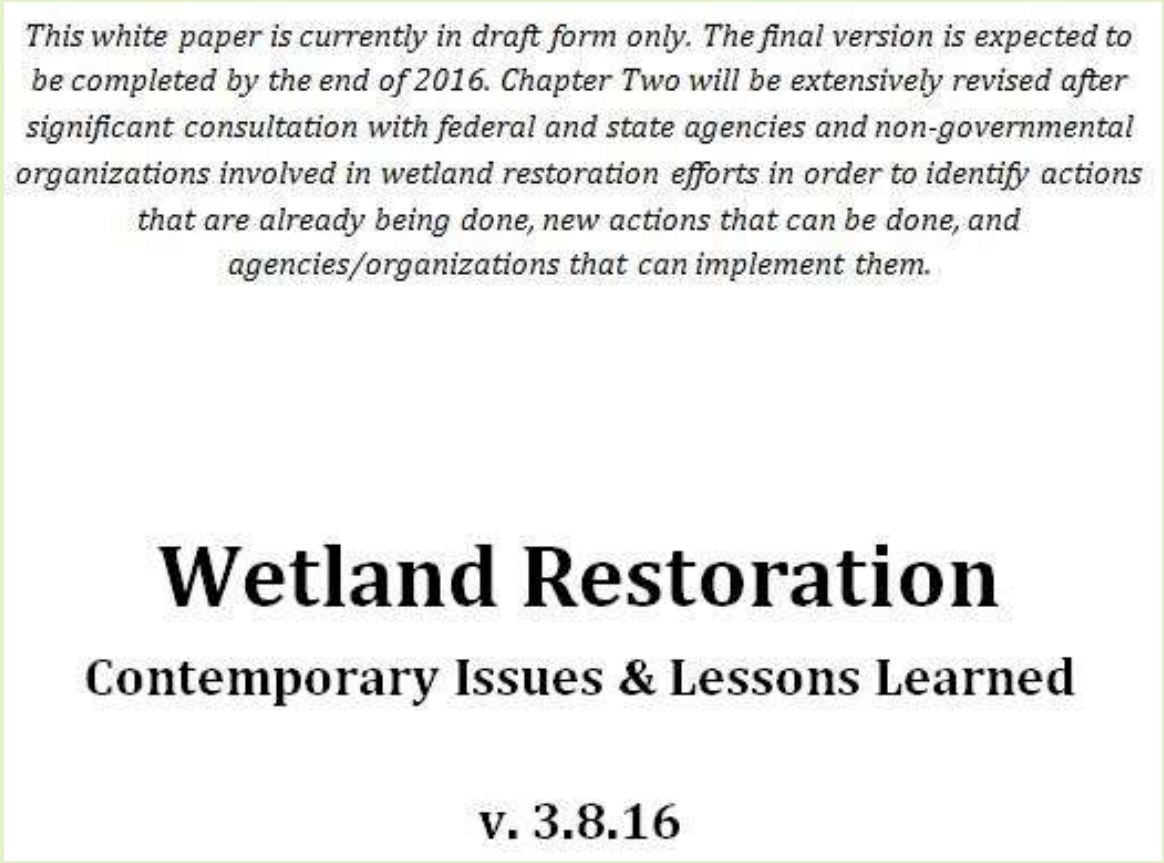
For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climatechange/indicators.

ASWM Wetland Restoration Project

- **2 U.S. EPA Wetlands Division Grants**
  - Identifying Best Management Practices for Restoration (2013-2014)
  - Raising the Bar on Wetland Restoration Success (2015-2016)
- **Interdisciplinary work group**
- **Monthly webinar series**
- **White paper based on webinars and participant feedback**
- **Pursuing strategies that:**
  - Maximize outcomes for watershed management
  - Include ecosystem benefits
  - Consider climate change
  - Improve permit applications and review
- **Develop a national strategy for improving wetland restoration outcomes**
  - Implementation: identity current actions & key future actions & players

White Paper Available to Review

http://www.aswm.org/pdf_lib/wetland_restoration_whitepaper_041415.pdf



Additional Information: http://www.aswm.org/wetland-science/wetland-restoration

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

ASWM Upcoming Webinars

- Using Beaver as a Wetland Restoration Tool - July 29, 2015
- The Florida Wetlands Integrity Dataset: Part 2 - September 16,2015

For a complete list of ASWM webinars, click here.

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Improving Wetland Restoration Success Project

Recent news articles from 2013, such as Architects of the Swamp published in Scientific American, have sounded the alarm about the success, or lack thereof, of wetland restoration. ASWM responded by completing two publications in 2013. The first publication titled, Permits for Voluntary Wetland Restoration: A Handbook was completed in November of 2013. However, during discussions among the stakeholder workgroup, it became apparent that some positions or concerns advanced by participants could not be readily resolved through the publication of a handbook. So a white paper titled, Voluntary Restoration of Wetlands: Complex Issues in the Regulation of Restoration Projects was developed in order to document those unresolved concerns – including suggested program modifications that would require regulatory and or statutory changes beyond the purview of most wetland program managers. In July of 2014, ASWM published a report titled, Ecosystem Service Valuation for Wetland Restoration: What It Is, How To Do It, and Best Practice Recommendations, as a way to improve wetland restoration planning, prioritization and garner more public and policy support.

Wetland restoration panel discussion moderated by Jeanne Christie (with Joseph Shisler and Rob Brooks; Robin Lewis and Joy Zedler participated in the panel by remote broadcast)

However, in March of 2014, ASWM held its annual Federal/State/Tribal Coordination Meeting at the NCTC in West Virginia. During that 4 day meeting, an expert panel session was held on Why Do Wetland Restoration and Mitigation Projects Fail? Robin Lewis, Joe Shisler, Joy Zedler and Rob Brooks participated on the panel. During that panel and in a later evening restoration workshop, ASWM was able to glean some insight in to some of the barriers to successful restoration and suggestions for potential solutions. In April of 2014, ASWM continued this effort by developing a Wetland Restoration Work Group consisting of twenty-five experts including practitioners, regulators, policy makers, scientists and academics. The work group was tasked with developing a series of webinars to delve into the issue more deeply as well as contribute to a white paper and a restoration bibliography. This webinar series is the result of this collective effort.

Future Webinar Schedule | Past Webinar Materials | Restoration Bibliography

http://www.aswm.org/aswm/aswm-webinarscalls/6773-improving-wetland-restoration-success-project

Overall Challenges

1) Subjective Evaluation Of Wetland Restoration Outcomes & Vague Project Goals
2) Insufficient Monitoring Horizons
3) Narrowly Focused Regulations & Permit Conditions
4) Altered Landscapes & Changing Land Uses
5) Separation of Wetland & Stream Restoration
6) Underestimation of Restoration Costs
7) Lack of an Adaptive Management Framework
8) Lack of Accountability
9) Limited Access to Expertise, Training & Knowledge Sharing

#1: Subjective Evaluation Of Wetland Restoration Outcomes & Vague Project Goals

"I restored it, so it's a success."

"It's green, so it's a success."

"We spent a million bucks, so it's a $ucce$$."

"I saw a marsh bird, so it's a success."

"I took a course in restoration, so it's a success."

"Mom likes it, so it's a success."

Why it's time to publish research "failures"

Publishing bias favors positive results; now there's a movement to change that.

Source: Elsevier.com

If NOTHING is right, It's still "on its way to success."

Recommendation: Develop Clear Project Goals & Use Appropriate and Quantifiable Performance Standards to Measure Progress

#2: Insufficient Monitoring & Performance Criteria

- 3-5 years time window
- Water quality inputs and existing soil conditions
- Reference wetlands

Recommendation: Develop Achievable Performance Criteria For Short Term Evaluation And Establish A Long-term Management Plan

#3: Narrowly Focused Regulations & Permit Conditions

- Wetland types & regions are ecologically diverse
- Voluntary vs compensatory
- Different goals and methods for wetland restoration (voluntary vs compensatory), enhancement, creation & construction

Recommendation: Establish Appropriate Performance Criteria Based on Restoration Goals & Project Type

#4: *Altered Landscapes & Changing Land Uses*

- Lack of consideration of the historical, current and projected future context of the proposed restoration site constrains restoration
- Drainage
- Soil condition
- Modified streams and rivers
- Future LULC

Recommendation: Research the Site's Land Use History and Model Potential Future Stressors Using Historical Trend Data

#5: Separation of Wetland & Stream Restoration

- Wetland and stream restoration are still largely addressed separately
- Wetland projects determined to be a "success" by all wetland scientists can have serious negative impacts on stream and floodplain function - the same occurs for stream restoration projects

Recommendation: Use a Watershed Approach

#6: Underestimation of Restoration Costs

- Restoration costs, particularly pre and post construction costs, are frequently underestimated
- Pressure to further reduce anticipated costs
- Very little information available to compare restoration costs
- Restoration benefits often undervalued because they are public goods

2 + 2 = 3…?

Recommendation: Include Pre and Post Construction Costs in Estimates

#7: Lack of an Adaptive Management Framework

"The unexpected is to be expected." (Cottam, 1987)

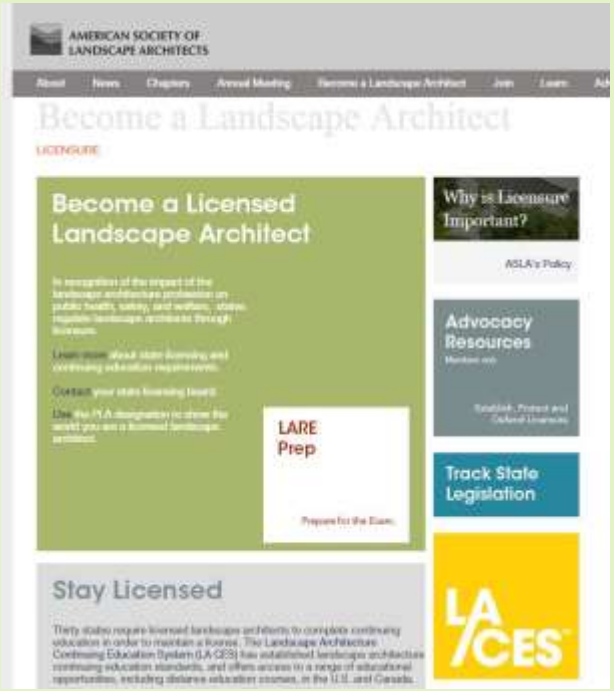
- Layers of historical drainage
- Contamination
- Invasive species
- Wildfire
- Drought
- Changing climate
- Politics
- Funding

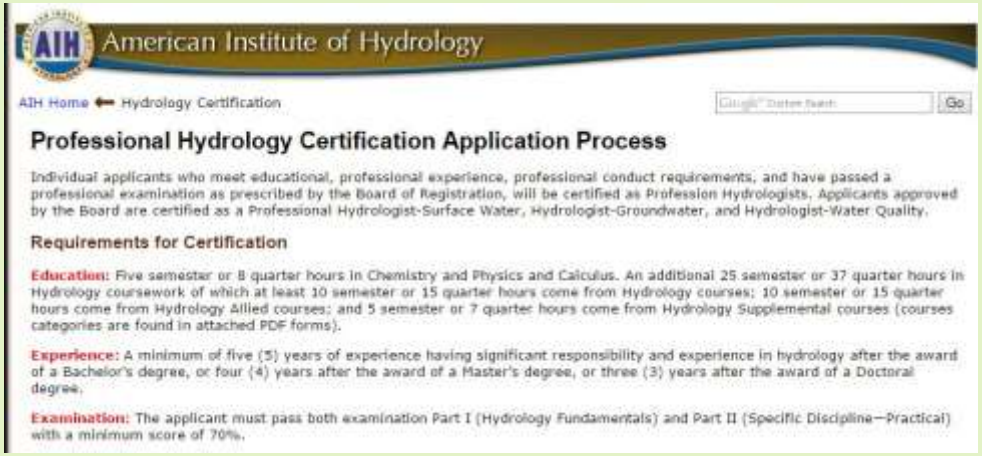
Recommendation: Use an Adaptive Management Approach Throughout the Life of the Project

#8: *Lack of Accountability*

- No wetland restoration certification program
- Monitoring and assessment reports rarely result in revisions and changes
- Monitoring reports are usually provided by the permit applicant
- There is no penalty for a restored wetland that doesn't meet performance criteria

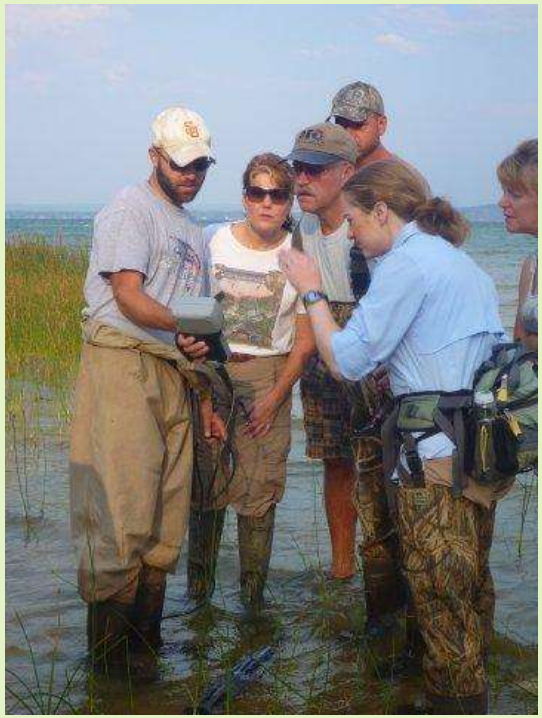
Recommendation: Require Documentation of Credentials, Provide Incentives & Enforce Accountability





#9: Limited Access to Expertise, Training & Knowledge Sharing

- Prohibitive costs to academic journals
- Insufficient time to review literature
- Few undergraduate and graduate studies
- Limited training opportunities for practicing professionals
- Lack of access to information about performance of wetlands previously restored
- Professional silos



Recommendation: Improve Access to Knowledge & Training and Engage Multi-Disciplinary Interdisciplinary Teams

Next Steps: Determine Actions Needed

- Identify concrete actions 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 how actions can be best implemented.
- Develop a national strategy for improving wetland restoration practice and outcomes.

Resources

- ASWM Wetland Restoration Bibliography http://www.aswm.org/pdf_lib/restoration_webinar/wetland_restoration_bibliography_0415.pdf
- Wetland Restoration: Contemporary Issues & Lessons Learned (draft white paper) http://www.aswm.org/pdf_lib/wetland_restoration_whitepaper_041415.pdf
- Ecosystem Service Valuation for Wetland Restoration: What It Is, How To Do It, and Best Practice Recommendations http://www.aswm.org/state_meeting/2014/ecosystem_service_valuation_for_wetland_restoration.pdf
- A Comparative Analysis of Ecosystem Service Valuation Decision Support Tools for Wetland Restoration http://www.aswm.org/pdf_lib/ecosystem_service_valuation_032116.pdf
- Permits for Voluntary Wetland Restoration: A Handbook http://www.aswm.org/pdf_lib/permits_for_voluntary_wetland_restoration_handbook.pdf
- Voluntary Restoration of Wetlands: Complex Issues in the Regulation of Restoration Projects http://www.aswm.org/pdf_lib/voluntary_restoration_of_wetlands.pdf
- ASWM Restoration Webpages http://www.aswm.org/wetland-science/wetland-restoration

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