



*Potential Frameworks for
NWCA Reporting:
Building on the Previous
NARS Assessments*

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**National Water Quality Monitoring Conference
April 30 – May 4, 2012**

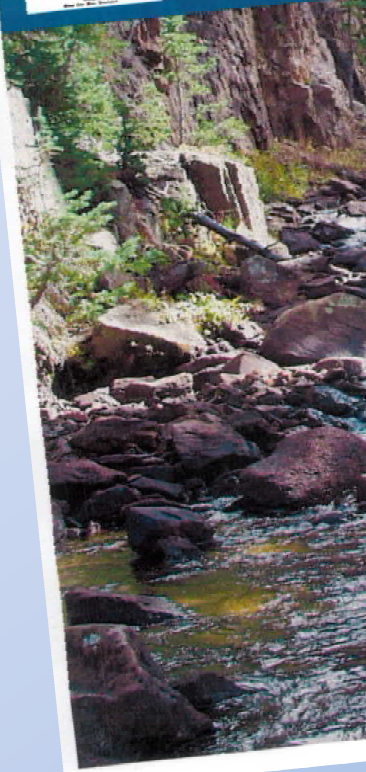
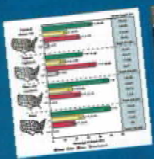


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Washington



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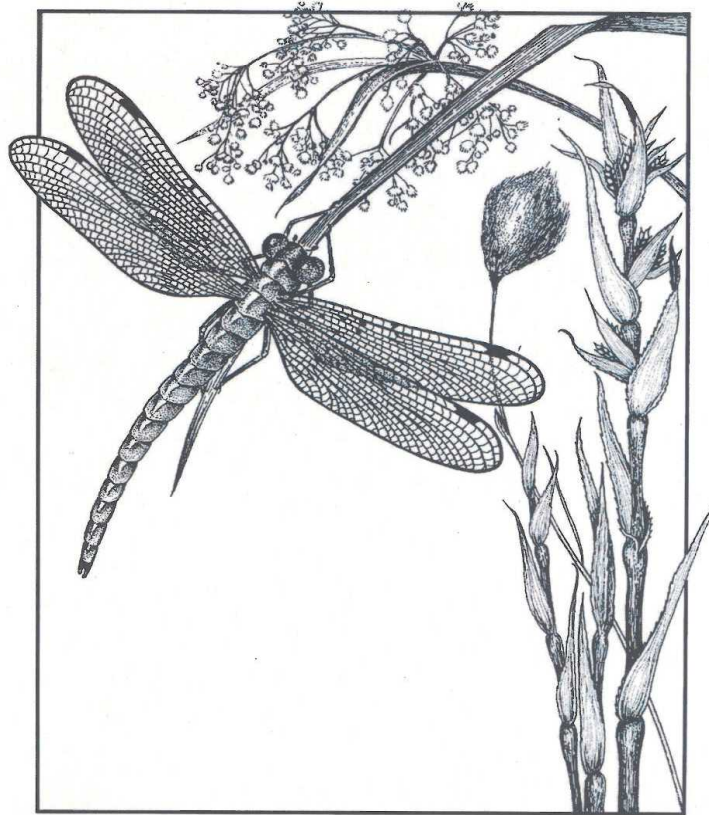


United States
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National Health and Environmental
Effects Research Laboratory
Corvallis, OR 97333

EPA/600/R-11/104
September 2011

**POTENTIAL FRAMEWORKS FOR REPORTING
ON ECOLOGICAL CONDITION AND ECOSYSTEM SERVICES
FOR THE 2011 NATIONAL WETLAND CONDITION ASSESSMENT**



Assessment
Nation's Lakes



Chapters in NARS Reports

Ties to FWS Status
& Trends reporting

- Extent of Condition and Overview
- Ecological condition of resources
- Extent of stressors
- Relationship between stressors and condition
- Summary
- Highlights

Reference Condition
Jan Stevenson

Vegetation –Teresa Magee
Soils – Lenore Vasilas

Stressor Extent
Relative and Attributable Risk
Alan Herlihy

Report on Microcystin
Keith Loftin

USA-RAM
Josh Collins



Extent of Resource

Example from NWA

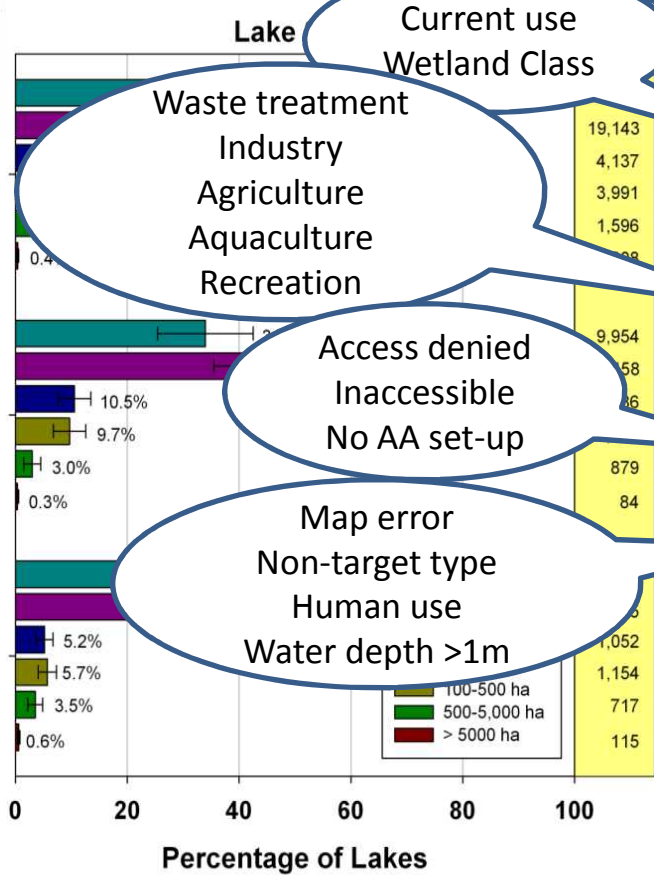
Options for NWCA



National
(49,546)

Natural
(29,308)

Man-Made
(20,238)



S&T Class
HGM Class

Current use
Wetland Class

Waste treatment
Industry
Agriculture
Aquaculture
Recreation

Access denied
Inaccessible
No AA set-up

Map error
Non-target type
Human use
Water depth >1m

Area of resource and by class

Description of Palustrine
Farmed Class

Description of Palustrine
Unconsolidated Bottom Class

Description of unsamplable

Description of non-target

- Relationship to FWS Status and Trends reporting



Condition of the Resource

The current state of the resource compared to reference relative to physical, chemical, and biological characteristics

– Algae

- Use soil indicators

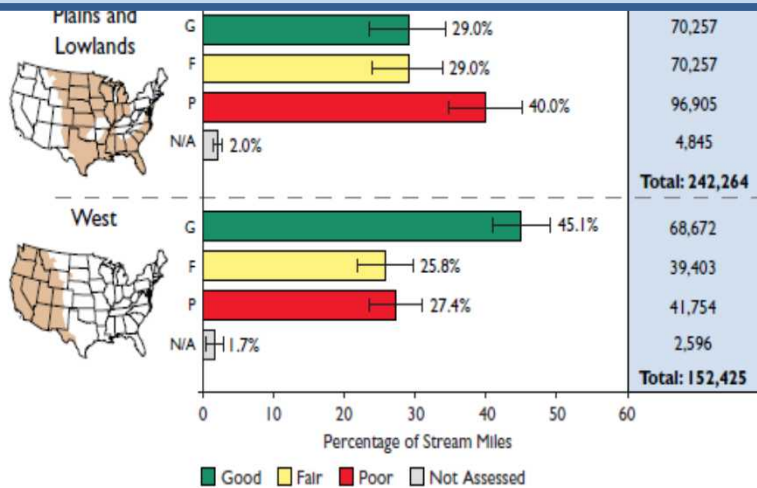


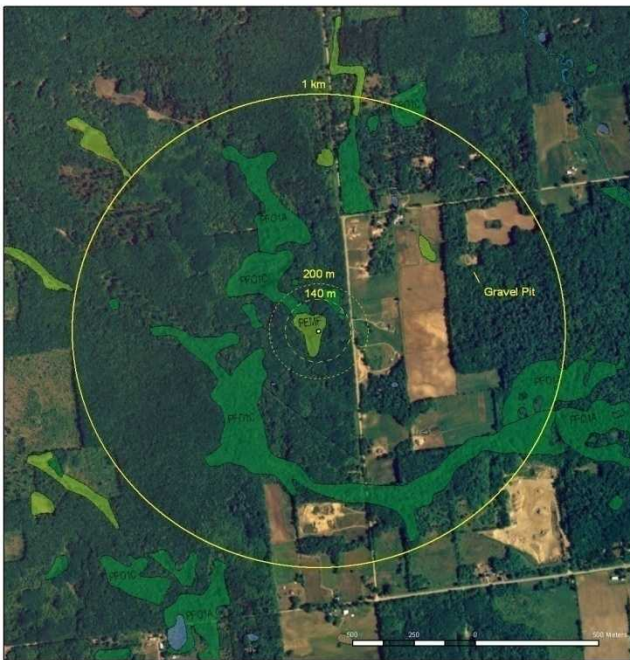
Figure 13. Biological condition of streams based on Macroinvertebrate Index of Biotic Condition



Reference Condition

Definition: least-disturbed

Aerial Photo Interpretation, Candidate Reference Site MI01_021



Landscape Screen Results

Status	State	Sampled	Wet Type	Access	Proximity	Barren	Hydrology	Forestry	Riparian	Recovery	Recovery	Recovery	Roads	Drainage	Drainage	Score
A	MI01_021	Y	Y	Y	Y	Y	0	0	3	0	0	1	3	0	2	11

Source of Reference Sites:

- Recommended sites screened using criteria for landscape setting
- Selected from sampled sites
 - ✓ Filter using criteria for stressor data
 - ✓ Model reference values



Extent of Chemical Stressors

Example from WSA

Options for NWCA

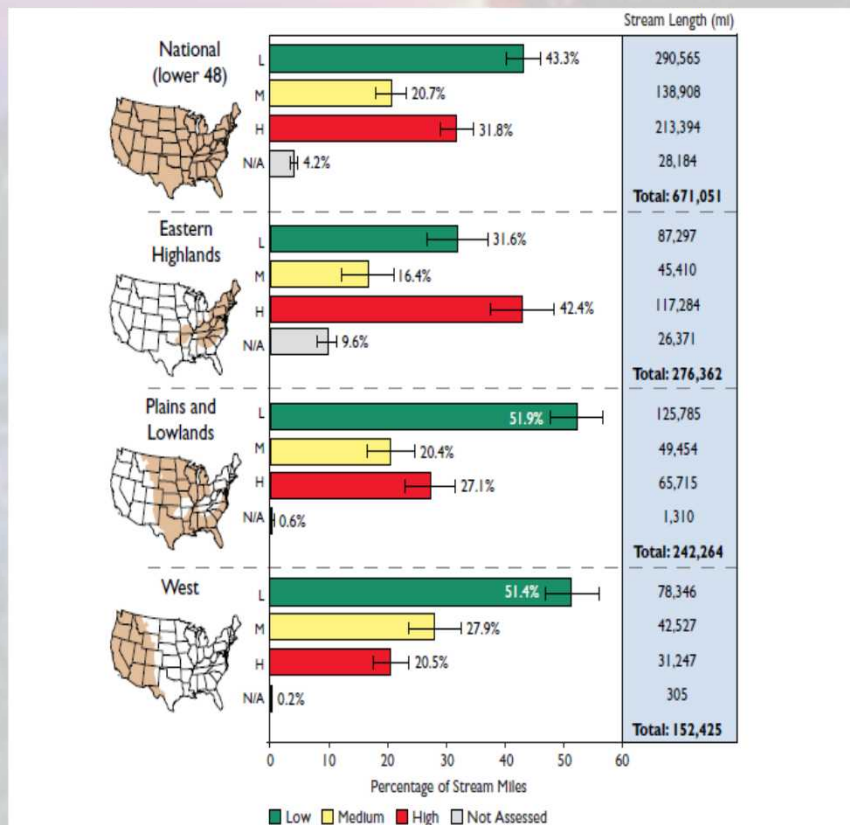


Figure 16. Total nitrogen concentrations in U.S. streams (U.S. EPA/WSA). Percent of stream length with low, medium, and high concentrations of nitrogen based on regionally relevant thresholds derived from the least-disturbed regional reference sites. Low concentrations are most similar to reference condition; medium concentrations are greater than the 75th percentile of reference condition; and high concentrations are greater than the 95th percentile of reference condition.

Water chemistry

- pH
- Conductivity
- Nitrogen
- Phosphorus

Soil chemistry

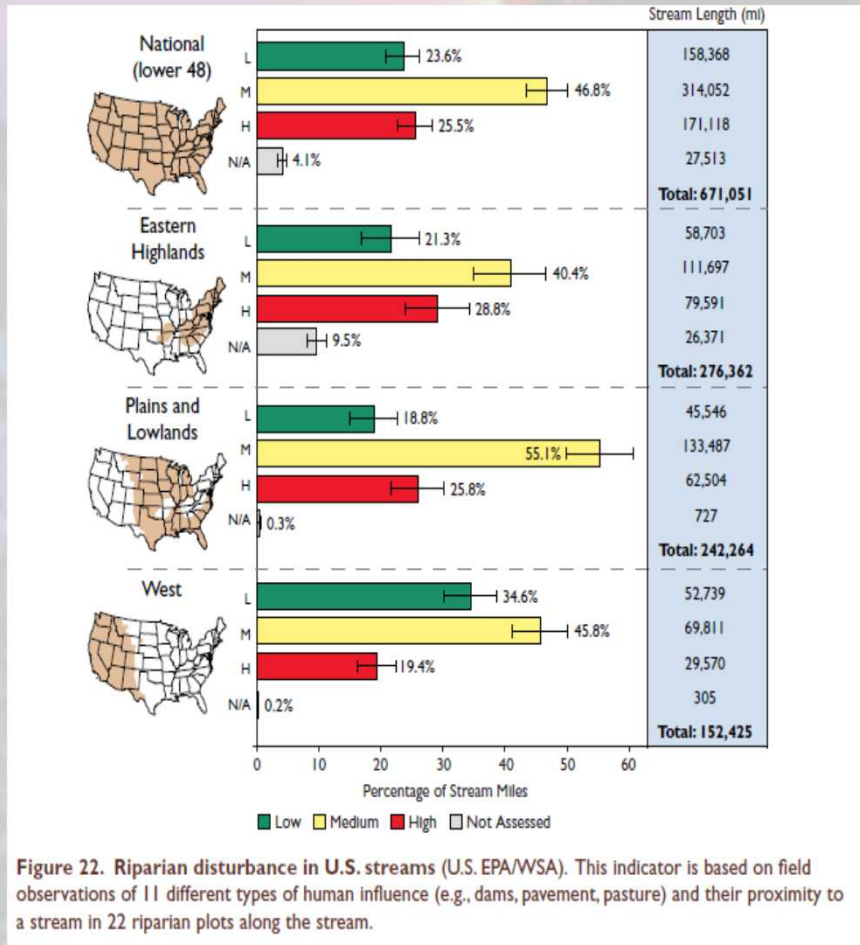
- Carbon
- Nitrogen
- Sulfur
- Calcium
- Potassium
- Magnesium
- Sodium
- Aluminum
- Iron
- Manganese
- Trace Elements
 - Mercury
 - Arsenic
 - Cadmium
 - Lead
 - Zinc
 - Etc.



Extent of Physical Stressors

Example from WSA

Options for NWCA



In Assessment Area

- Vegetation Structure
- Hydrology stressors
- Soil bulk density

In Buffer

- Land use
- Vegetation structure
- Hydrology stressors



Extent of Biological Stressors



CAUTION

Biological stressors are not reported in other NARS surveys. Care must be taken in their use to avoid circular reasoning.



Stressors and Condition

Example from NLA

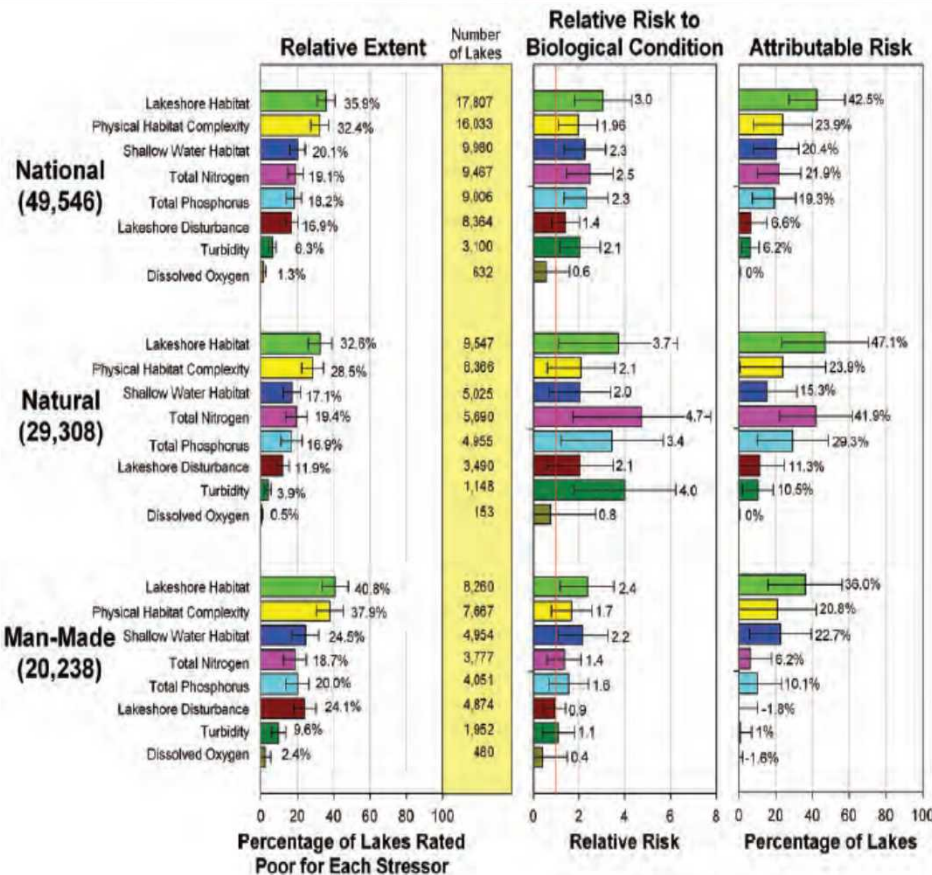


Figure 15. Relative extent of poor stressors conditions. Relative risks of impact to plankton O/E and Attributable risk (combining Relative extent and Relative risk).

Relative risk – expresses the likelihood of having poor ecological condition when a stressor is high

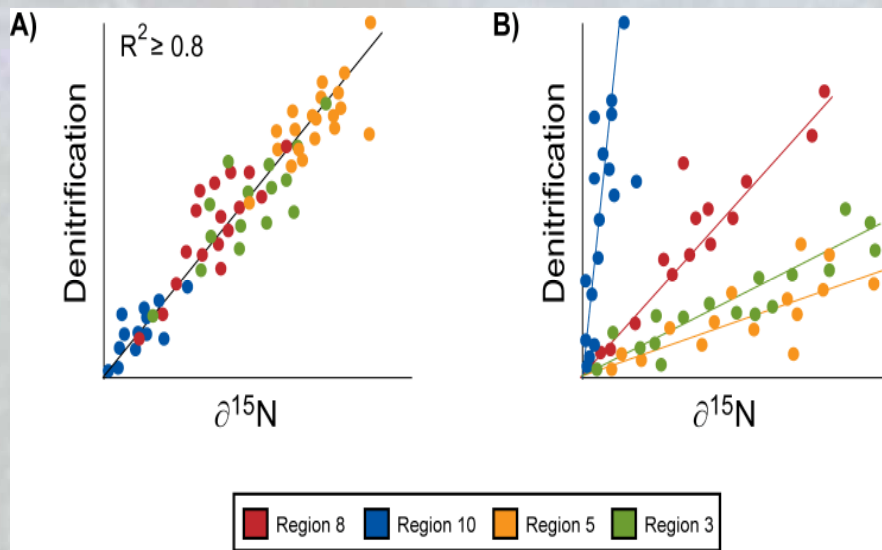
Attributable risk – estimates the proportion of the population in poor condition that would be reduced if a particular stressor were eliminated



Wetland Ecosystem Services



Provision of
Water for Consumption
thru
Signatures of the Stable
Isotope of Nitrogen ($\delta^{15}\text{N}$)
as an
Indicator of Denitrification



Courtesy of A. Nahlik, NHEERL-WED



Chapters in Report of 2011 NWCA

- Introduction and Overview of Assessment
- Extent of resource **with FWS Status & Trends**
- Ecological condition of resource – biologic, **soils**
- Extent of stressors – chemical, physical, **biologic**
- Relationship between stressors and condition
- Summaries of the above by Ecoregion
- **Ecosystem services - denitrification**
- Highlights including **USA-RAM reporting**

