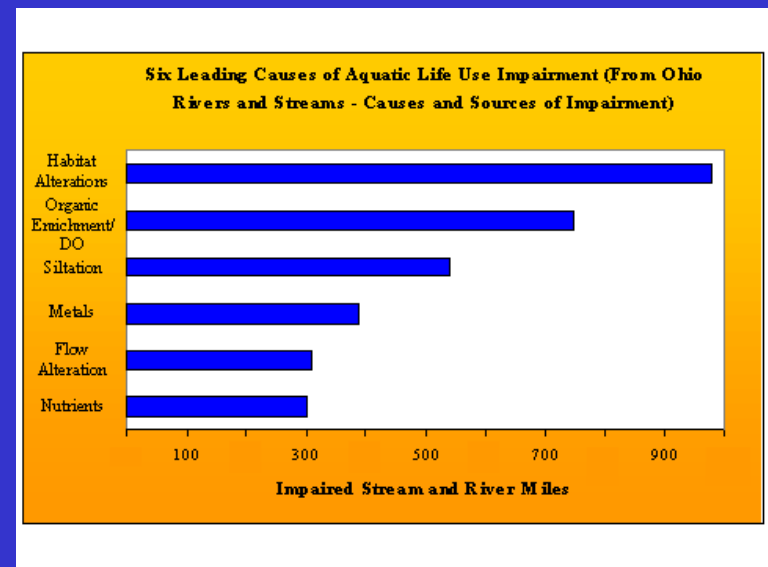


How Are Our Wetlands Doing?

Monitoring birds (for their own sake) vs.
as indicators of *wetland condition*

EPA & the States	“attaining aquatic life use designation” (Sections 305(b) and 401 of Clean Water Act)
Corps of Engineers	“meeting function performance standards” (mitigation)
BLM et al.	“achieving Proper Functioning Condition”
National Park Service	“meeting Desired Future Condition”

*What % of a region's wetlands
are functioning as they
should?*



What's Affecting Ability of Wetlands to Support Birds?

Direct Loss (Filling)

Hydrologic Disruption

Contamination

Recreation



Invasive Organisms

Disease

Fragmentation



Why don't states routinely monitor wetland condition?

When they do, why aren't birds being used?

Strategies for Assessing Regional Wetland Condition:

Option 1. Only assess wetland distribution & habitat structure.

Option 2. Only use plant community composition.

Option 3. Also count birds.



Option 1. Only assess wetland distribution & habitat structure.

- Can be comprehensive. Methods available,
e.g., HEP, HGM, ORAM, AREM
- Know structural requirements for most wetland bird species.
- More stable than counts. Reflects potential capacity.
- Can't assess contaminants.
- Hydrologic degradation also hard to detect.
- Structure for *which species?*



Option 2. Only use plant community composition.

Plants & invertebrates might reflect site conditions better than birds:

- Less mobile, less area-sensitive.
- Vegetation is fundamentally important to wetland function.

BUT:



Wetlands good for plants aren't always good for birds (& vice versa):

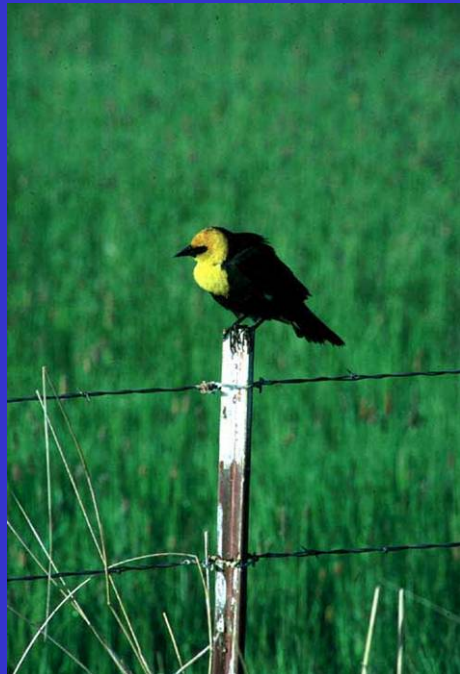
- Managed wetlands aren't "least-altered reference" but can be productive and necessary.
- Birds are more vulnerable to wetland distribution & to some contaminants.
- Thus, bird-plant correlations have limited utility.

Option 3. Count birds directly.

- Minimizes some assumptions.
- Proven indicator of *fragmentation* of forested & some wetland landscapes.

But:

- Avian mobility confounds meaningful interpretation.
- How often do wetland birds reflect water quality?



Going from data to *condition* – which bird metrics work?

(Scattered empirical data from PA, OH, VA, ME, MN, OK, CO, OR, AZ, CA).

Ubiquity-weighted richness, evenness, density.

Percent-similarity to least-altered reference of same wetland type.

Richness, density (ideally “use-days”) for:

Neotropical migrants (for fragmentation).

Low-nesting songbirds (for urbanization).

Regionally declining species (from BBS data).

Peripheral species (for climate change).

For landscape-scale analysis:

Wading birds (for hydrologic change, recreation impacts).

Functional guild richness.

Ambiguous: Wetland-dependency ratings of species.

How best to represent the *disturbance* to which we correlate these?

What bird community attributes do we *value*?