National Biological Assessment and Criteria Workshop

Advancing State and Tribal Programs

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# WET 101

# *Wetland Classification: Goals and Strategies*


***Presented by***

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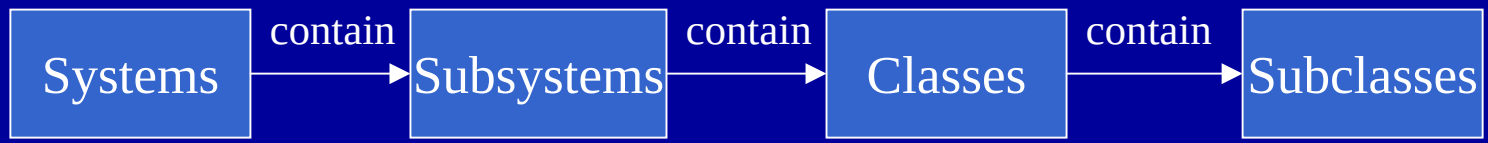
# What is Classification?

- assigning wetlands to categories based on their origin, structure, flooding frequency, dominant organisms, or some other combination of physical and/or biological attributes
- many classification schemes are hierarchical



# Goals of Classification

- Reduce variability with wetland classes
- Enable detection between least-impacted and impaired wetlands more easily within a class
- Two approaches
  - based on geography
  - based on local environmental characteristics

# Goals of Classification: What is the Reference condition?

- "describes the *wetland* characteristics least impaired by human activities and are used to define attainable biological or habitat conditions" (USEPA 1990)
- Those wetlands with the 'highest, sustainable level of functioning' (Smith et al. 1995)
- Based on a wetland class and/or region

# Wetland Classes: forested wetlands

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# Wetland Classes: open water wetlands

# Wetland Classes: wet prairie wetlands

# Wetland Classes: fen wetlands

A central New York fen bordering open water.

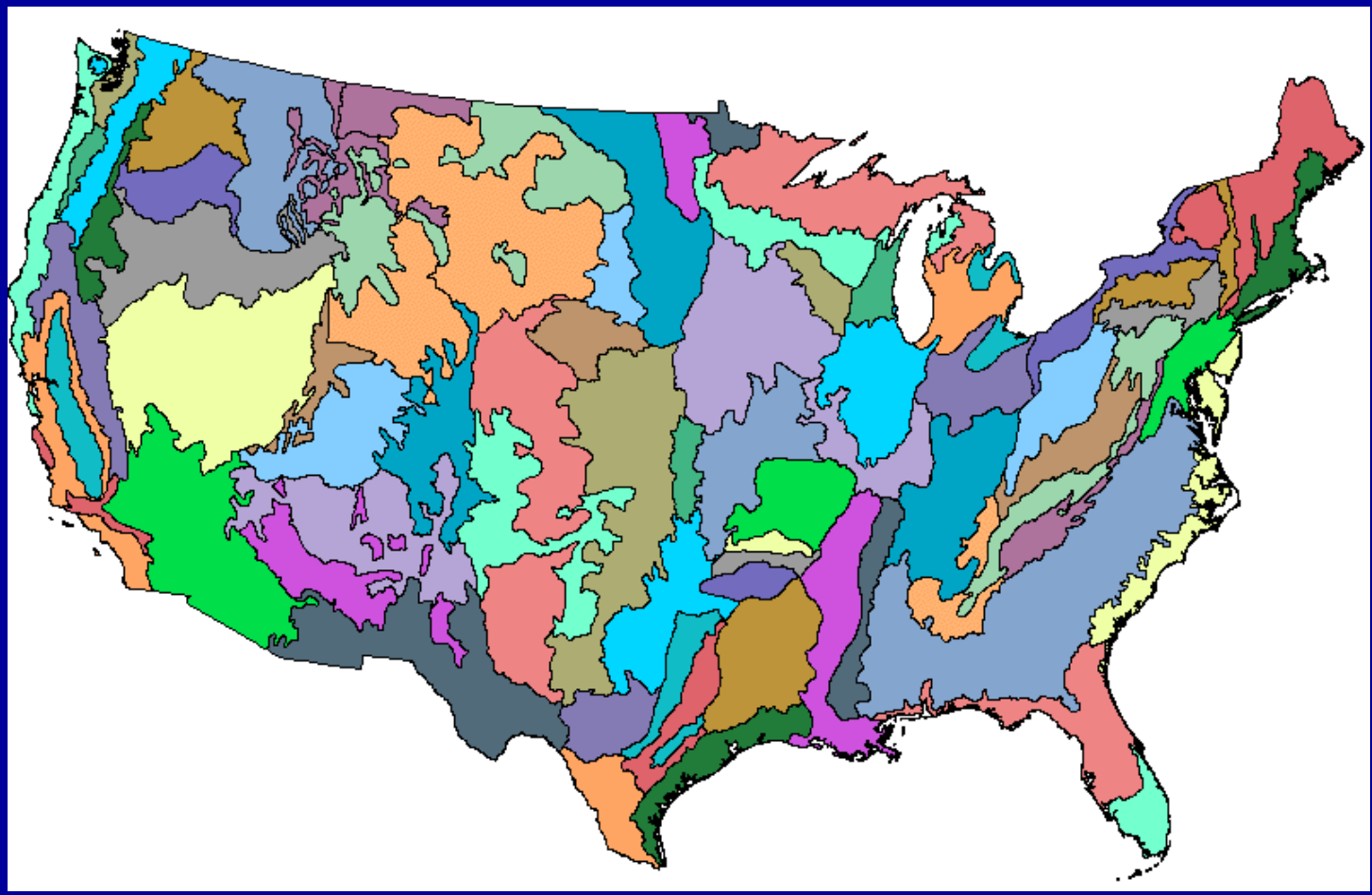
# Existing Wetland Classification Schemes

- Omernik's Ecoregions
- Bailey's Ecoregions
- Cowardin Classification
- Hydrogeomorphic Classification

# Existing Wetland Classification Schemes: Omernik's Ecoregions

- Based on:
  - Landform
  - Soil types
  - Potential natural vegetation cover
  - Land use
- Widely used for streams, not tested extensively for wetlands

# Omernik's Aquatic Ecoregions



# Existing Wetland Classification Schemes: Bailey's Ecoregions

- Based on:
  - climate
  - landform
  - Potential natural vegetation cover
- Cowardin et al. (1979) added coastal and estuarine waters
- Emphasis on terrestrial systems, has not been used extensively

# Bailey's Ecoregions with Coastal and Estuarine Provinces Amended

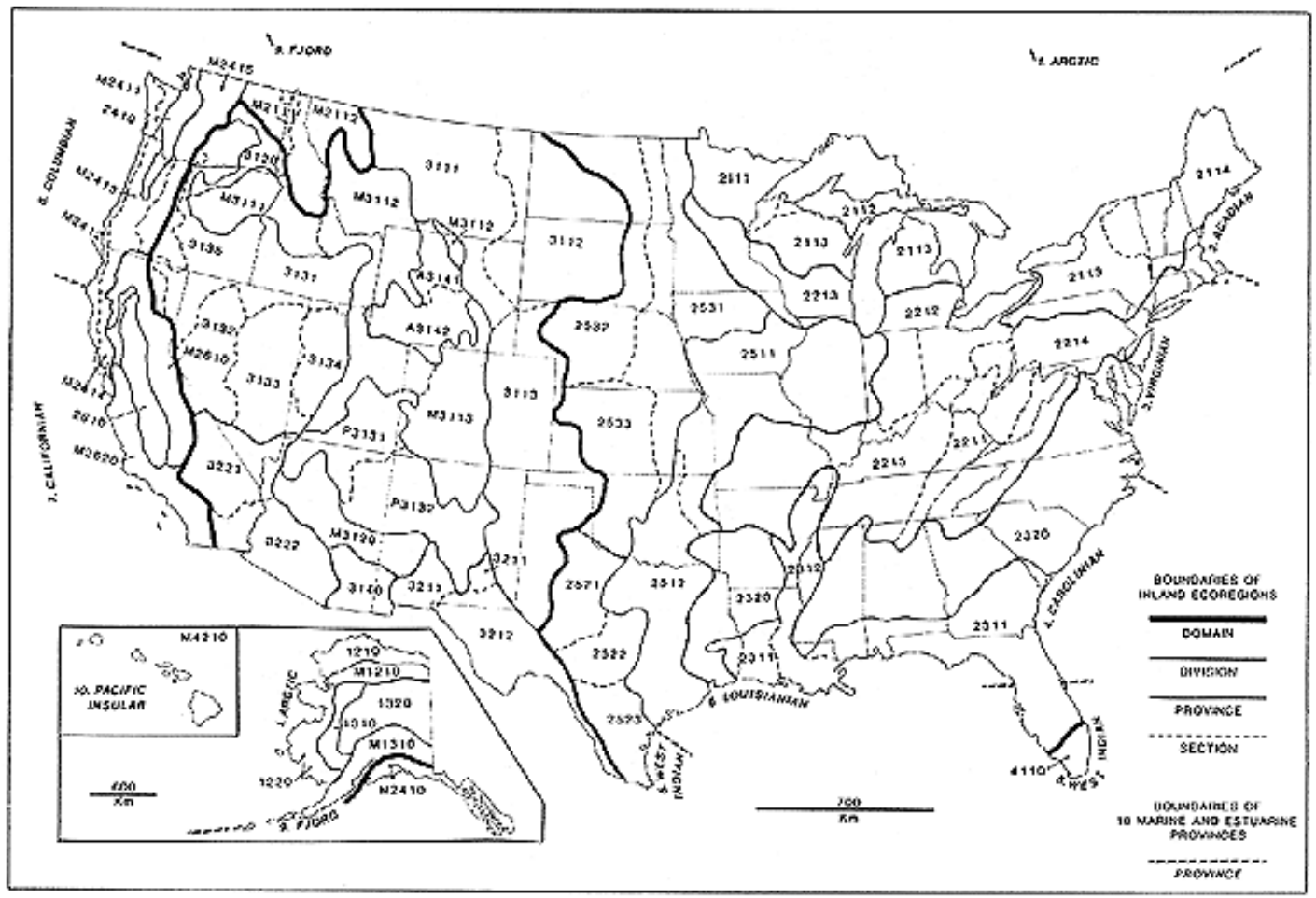



Fig. 7. Ecoregions of the United States after Bailey (1976) with the addition of 10 Marine and Estuarine Provinces proposed in our classification.

# Existing Schemes: Cowardin Classification System

## (Cowardin et al., 1979)

- Developed for the US Fish and Wildlife Service for identifying , classifying and mapping wetlands and other aquatic sites

- Federal system for wetland inventory & mapping

# Cowardin Classification: A Hierarchical System

- **Categorization based on:**
  1) Landscape position
     - –tidal - lacustrine
     - –riverine - palustrine
  2) Habitat type (vegetation cover)
     - –open water - shrub
     - –submerged aquatic bed - forested
     - –emergent
  3) Hydrologic regime
     - –Ranges from saturated to permanently flooded

# The Cowardin Classification System's Hierarchy

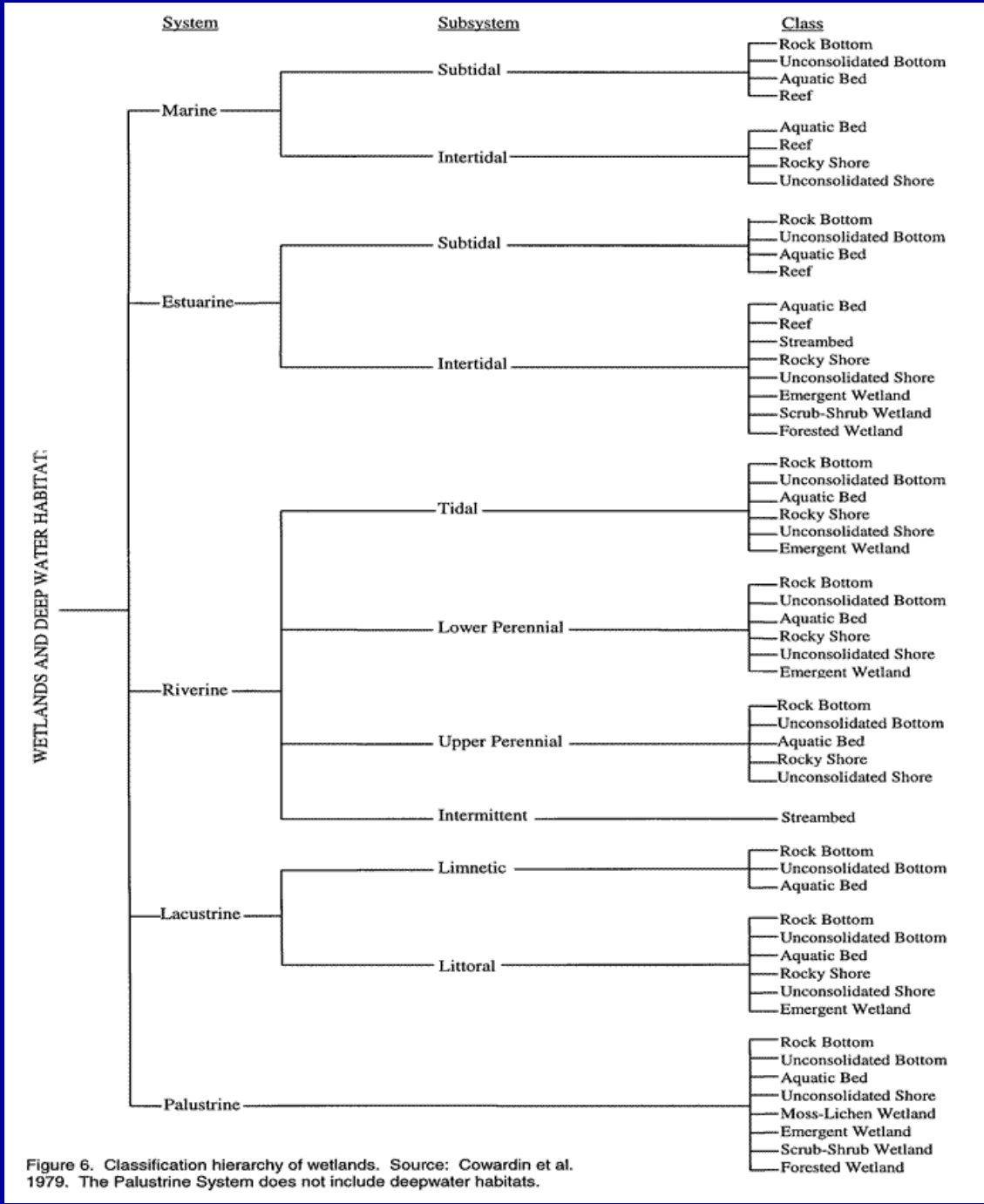



Figure 6. Classification hierarchy of wetlands. Source: Cowardin et al. 1979. The Palustrine System does not include deepwater habitats.

# Cowardin Classification: Palustrine Wetlands

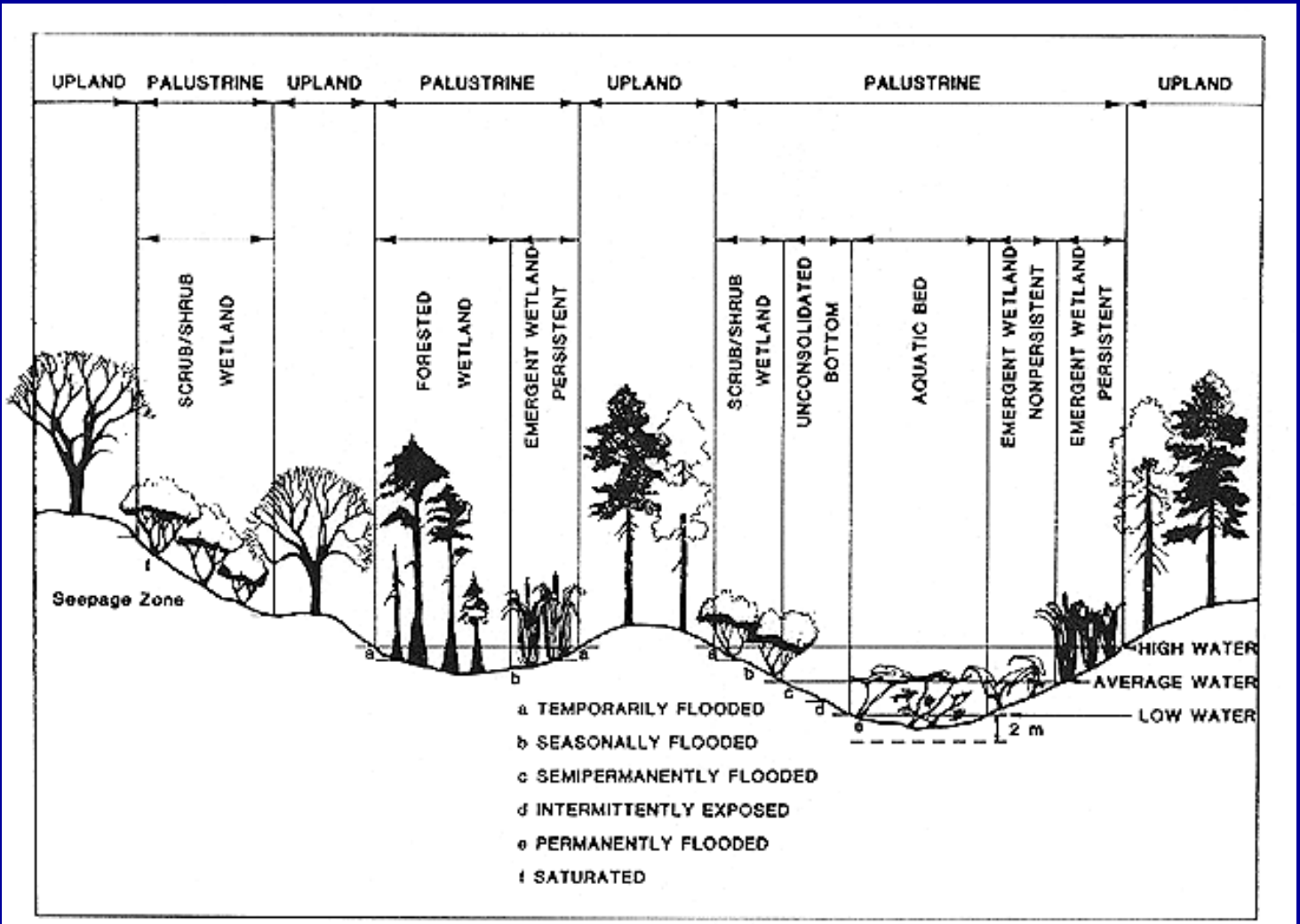



Fig. 6. Distinguishing features and examples of habitats in the Palustrine System.

# Cowardin Classification: Riverine Wetlands

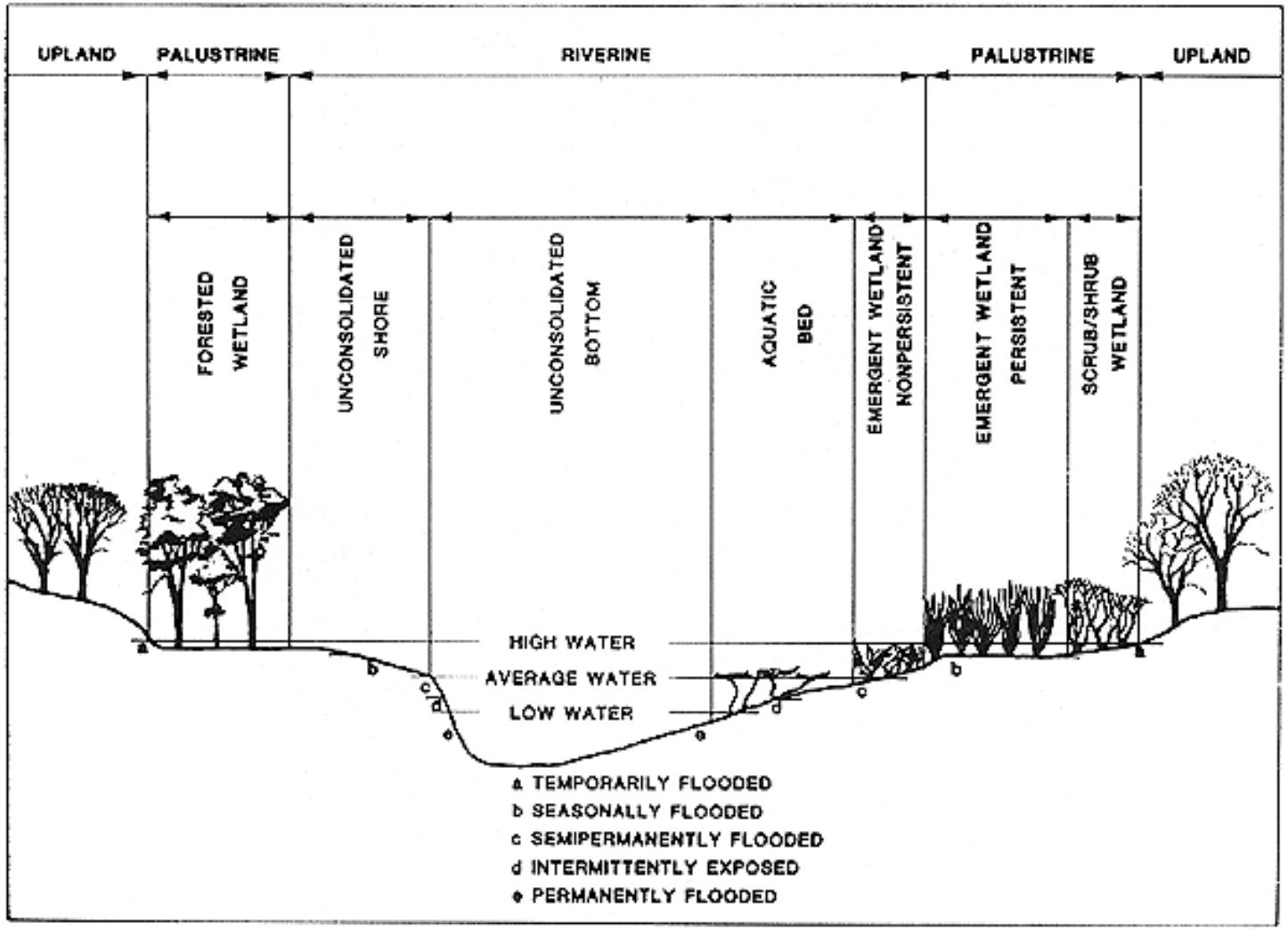
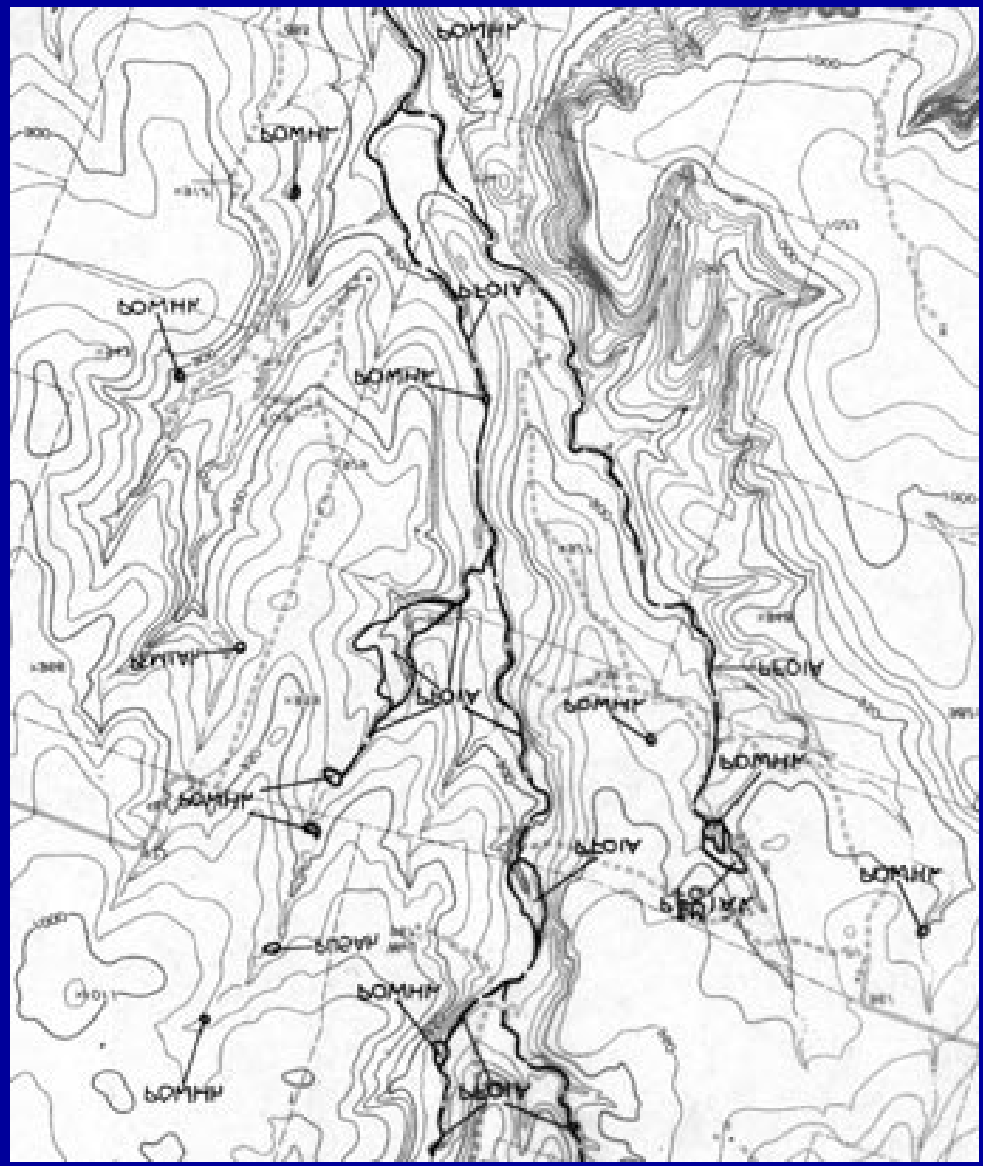



Fig. 4. Distinguishing features and examples of habitats in the Riverine System.

# Cowardin Classification: wetland inventory and NWI mapping

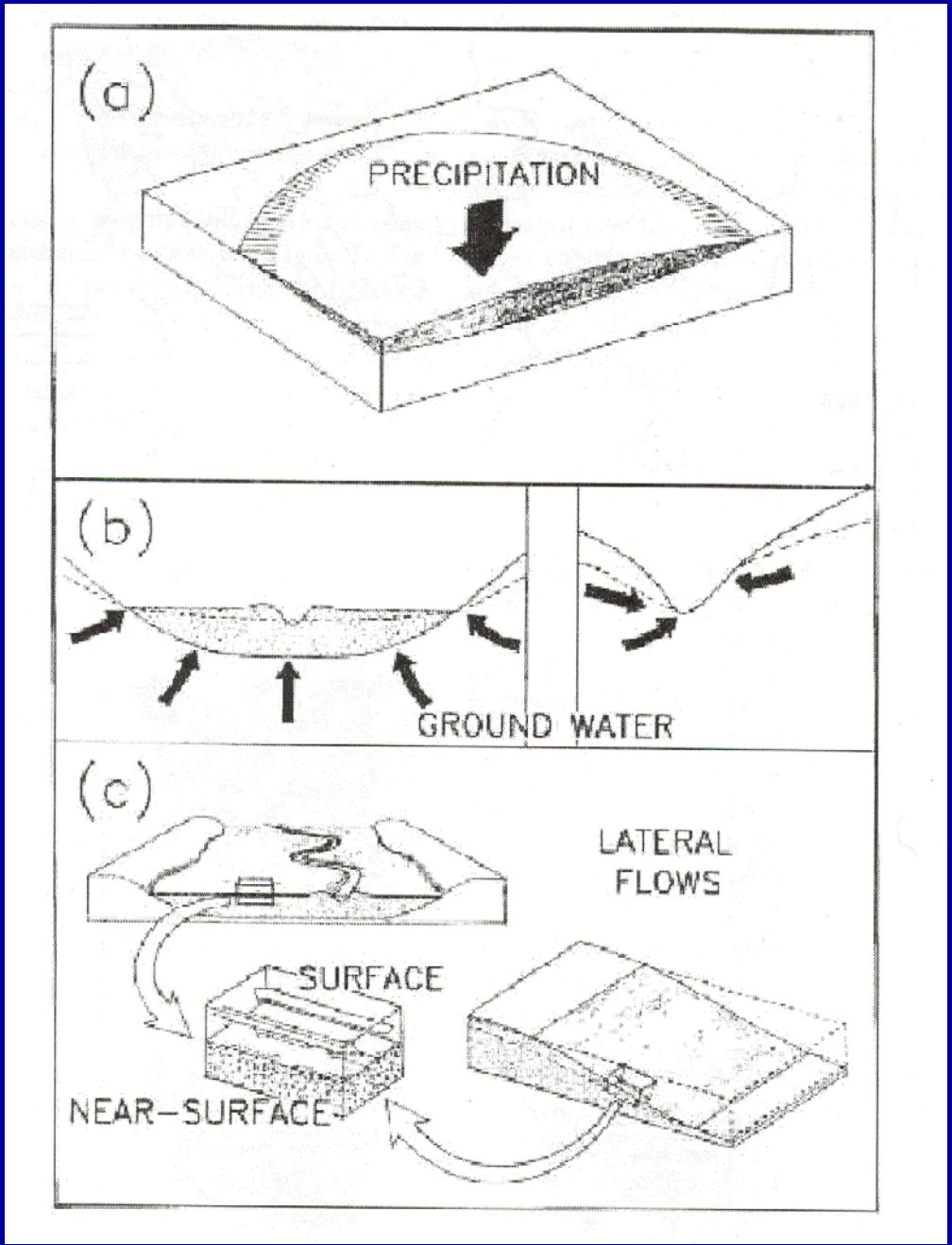


# Existing Classification Schemes: the Hydrogeomorphic Classification System (Brinson 1993)

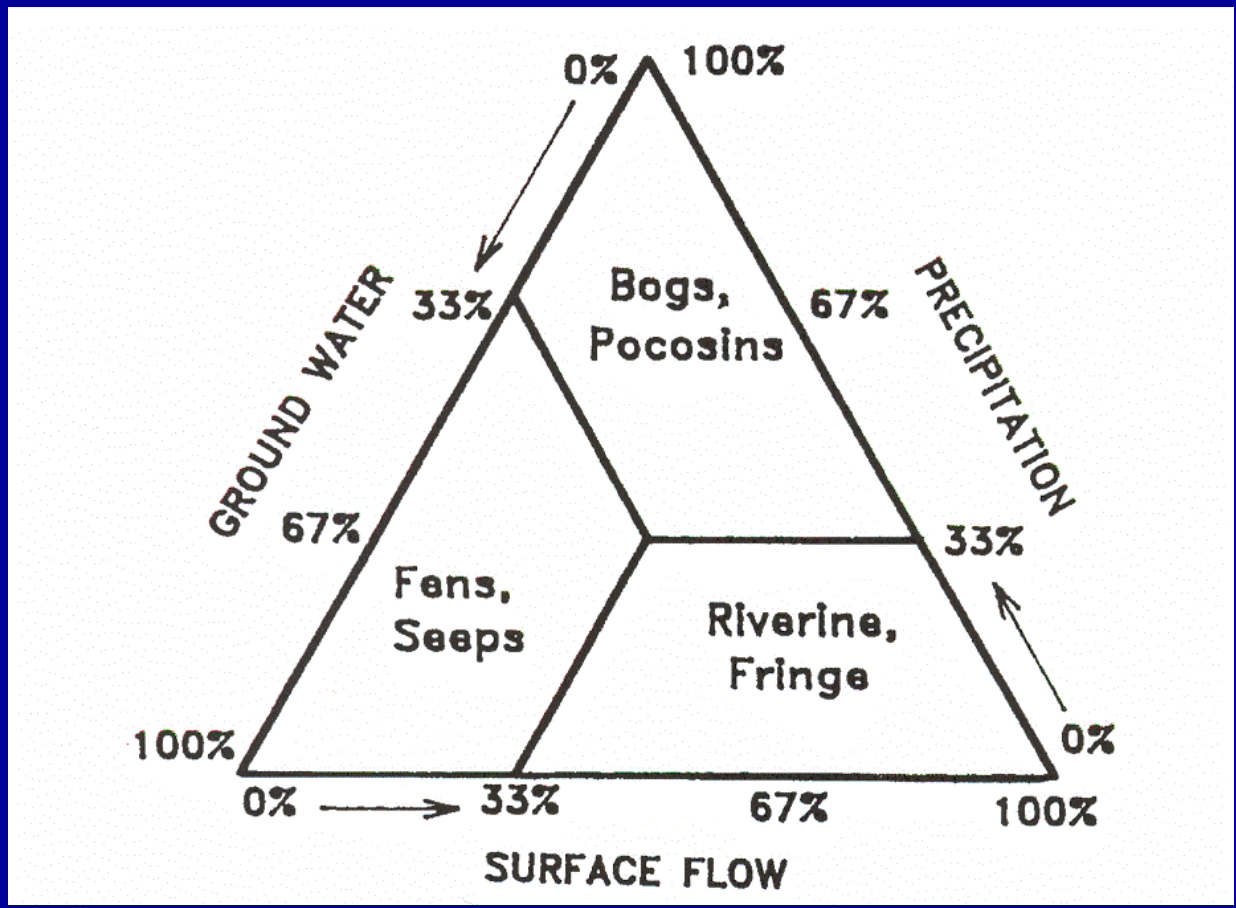
Based on:

- geomorphic setting
- dominant water source
- hydrodynamics

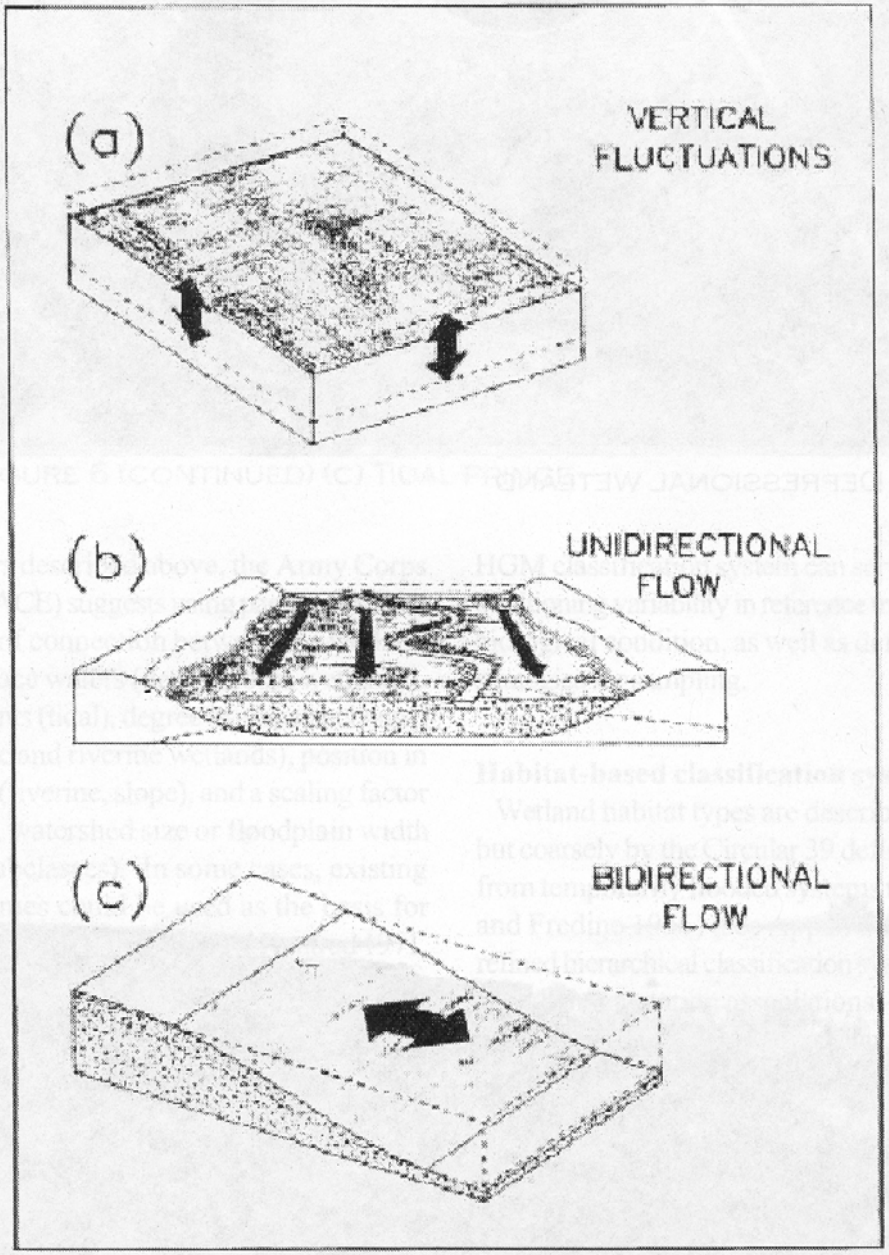
# HGM: Dominant water sources to wetlands



# Relative contribution of 3 water sources in HGM classification



# HGM: Dominant hydrodynamic regimes

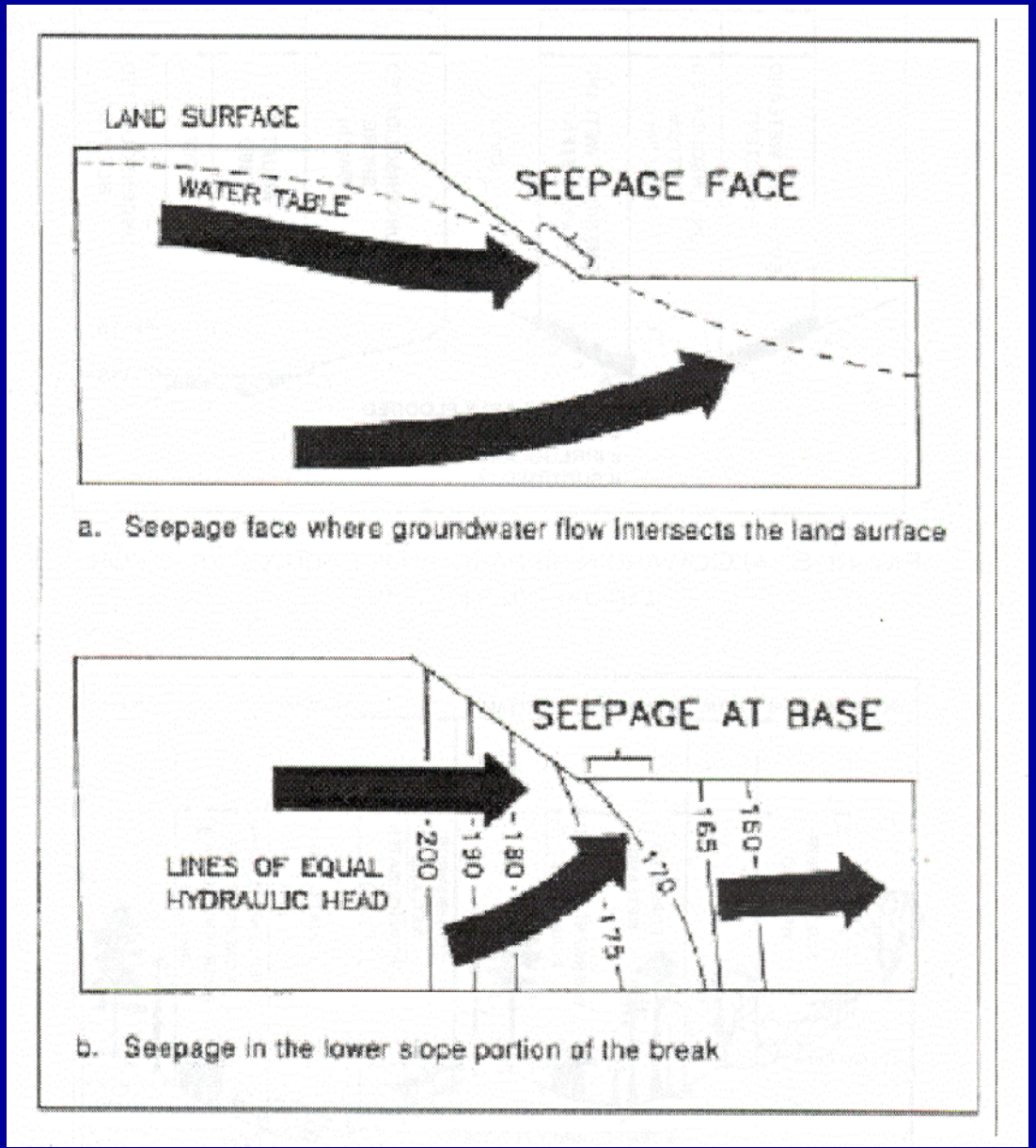


# The Hydrogeomorphic Classification System

**Seven Wetland Types Described**

- riverine
- slope
- depressional
- mineral soil flats
- organic soil flats
- tidal fringe
- lacustrine fringe

# HGM:
# Slope Wetlands

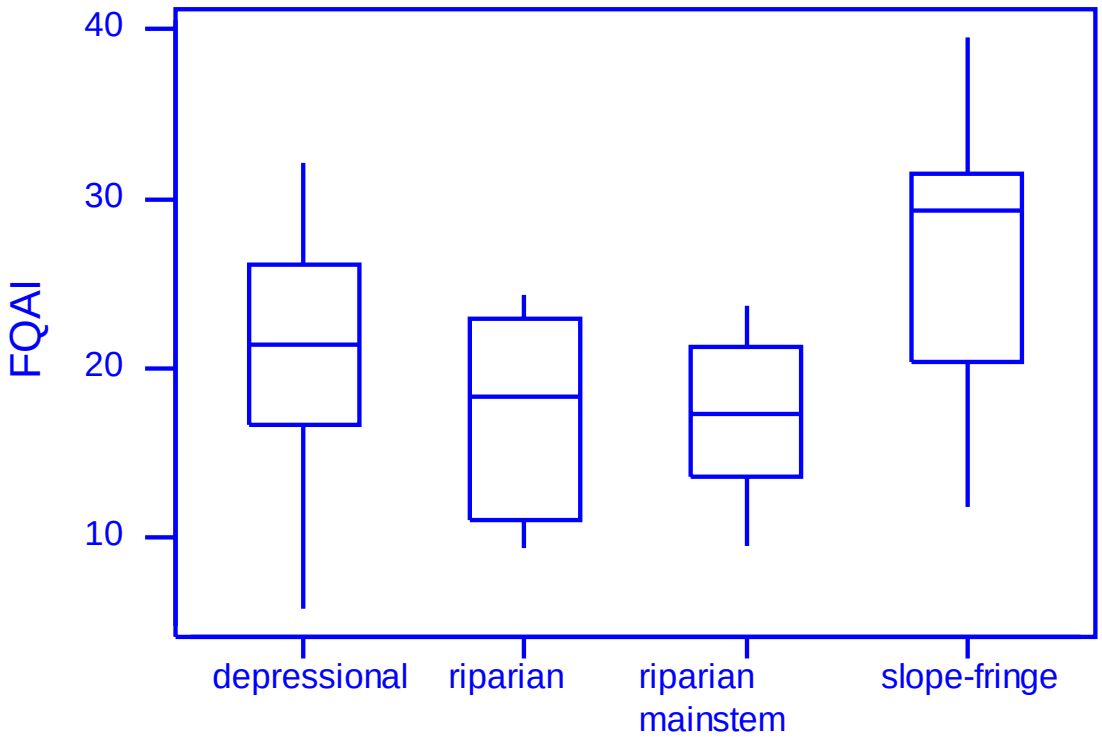


# The Hydrogeomorphic Classification System

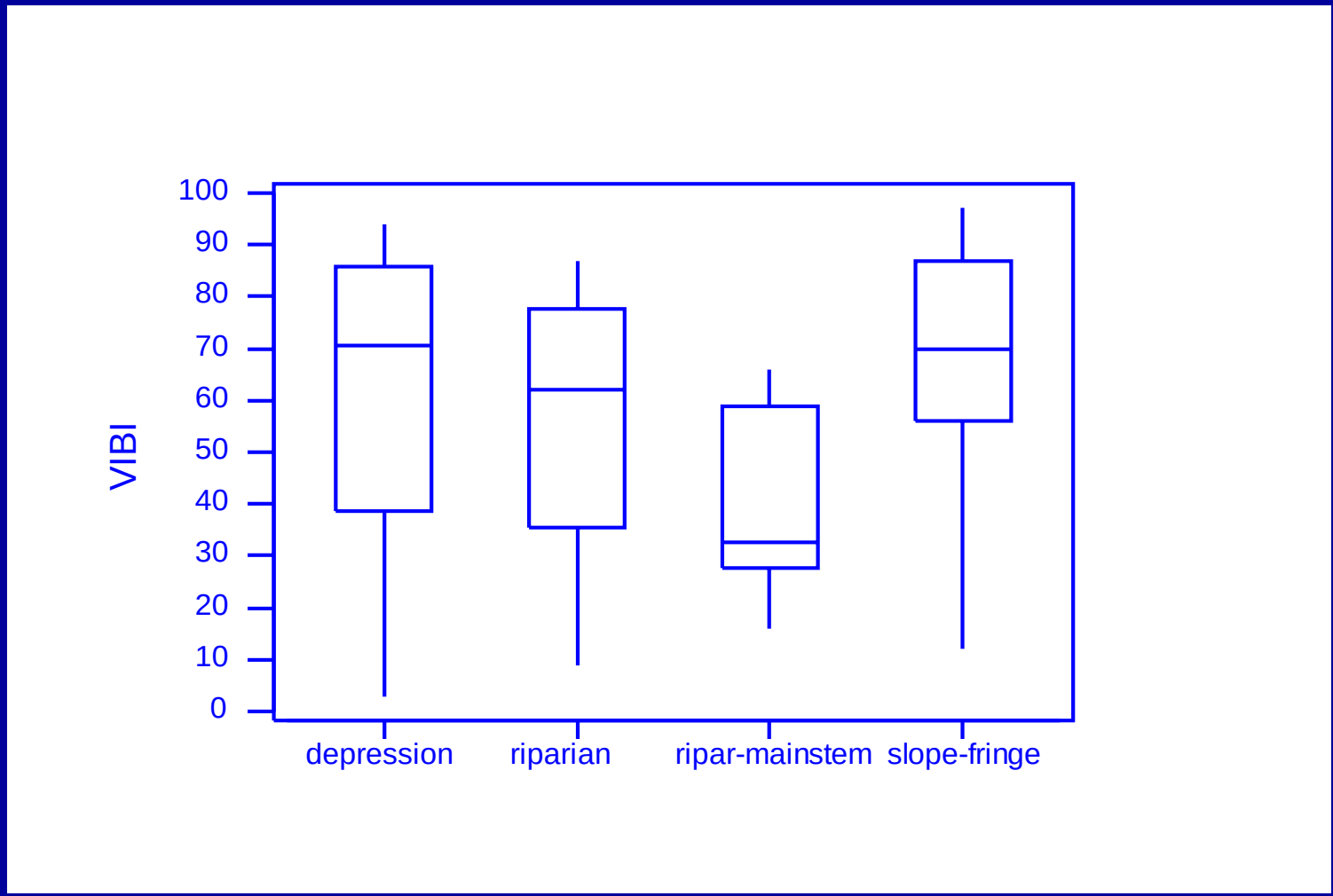
- Originally designed for functional assessment

- Proven to be very useful in developing biological assessment methods

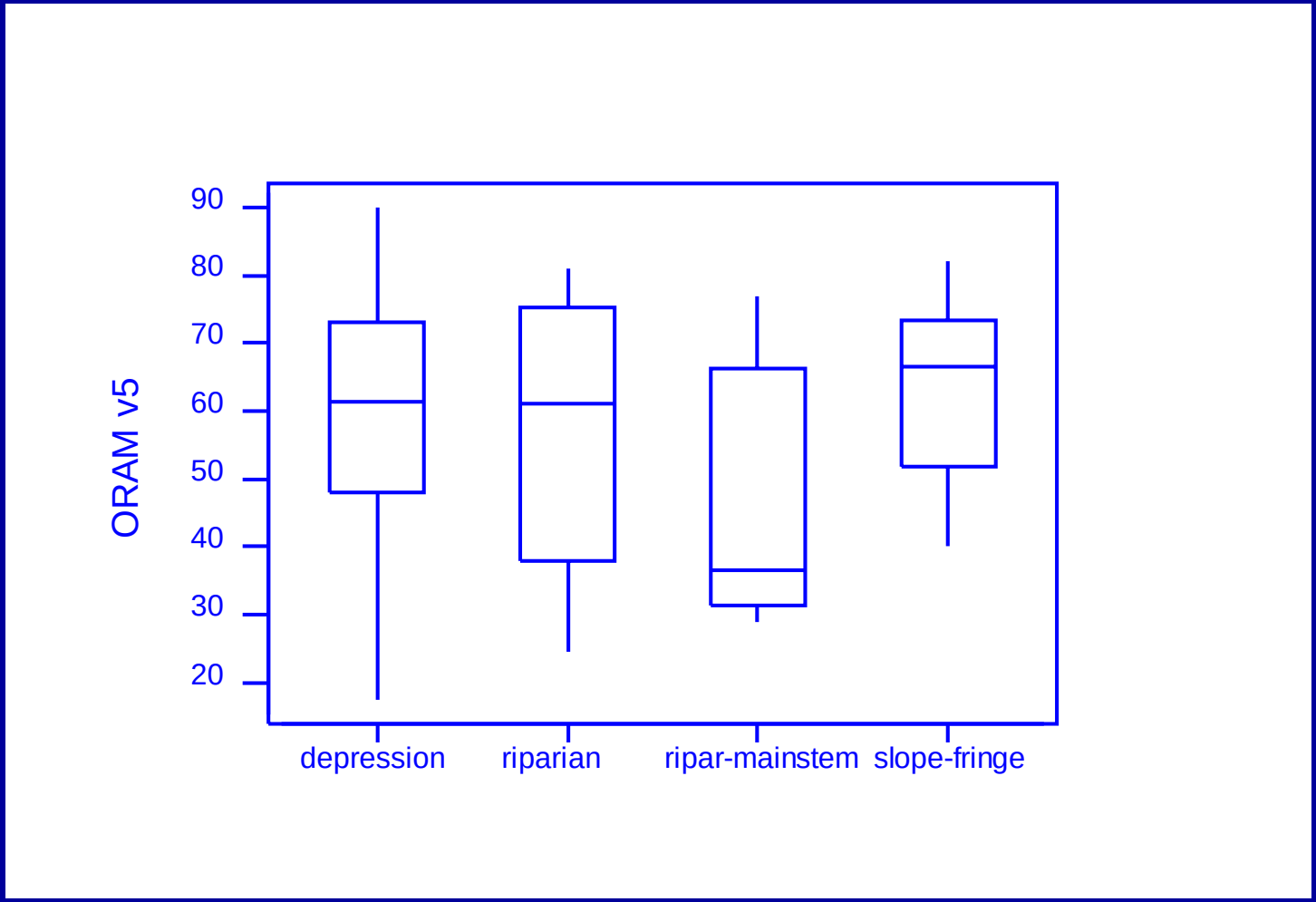
# Ohio Bioassessment Data: the Floristic Quality Assessment Index (FQAI) by HGM class



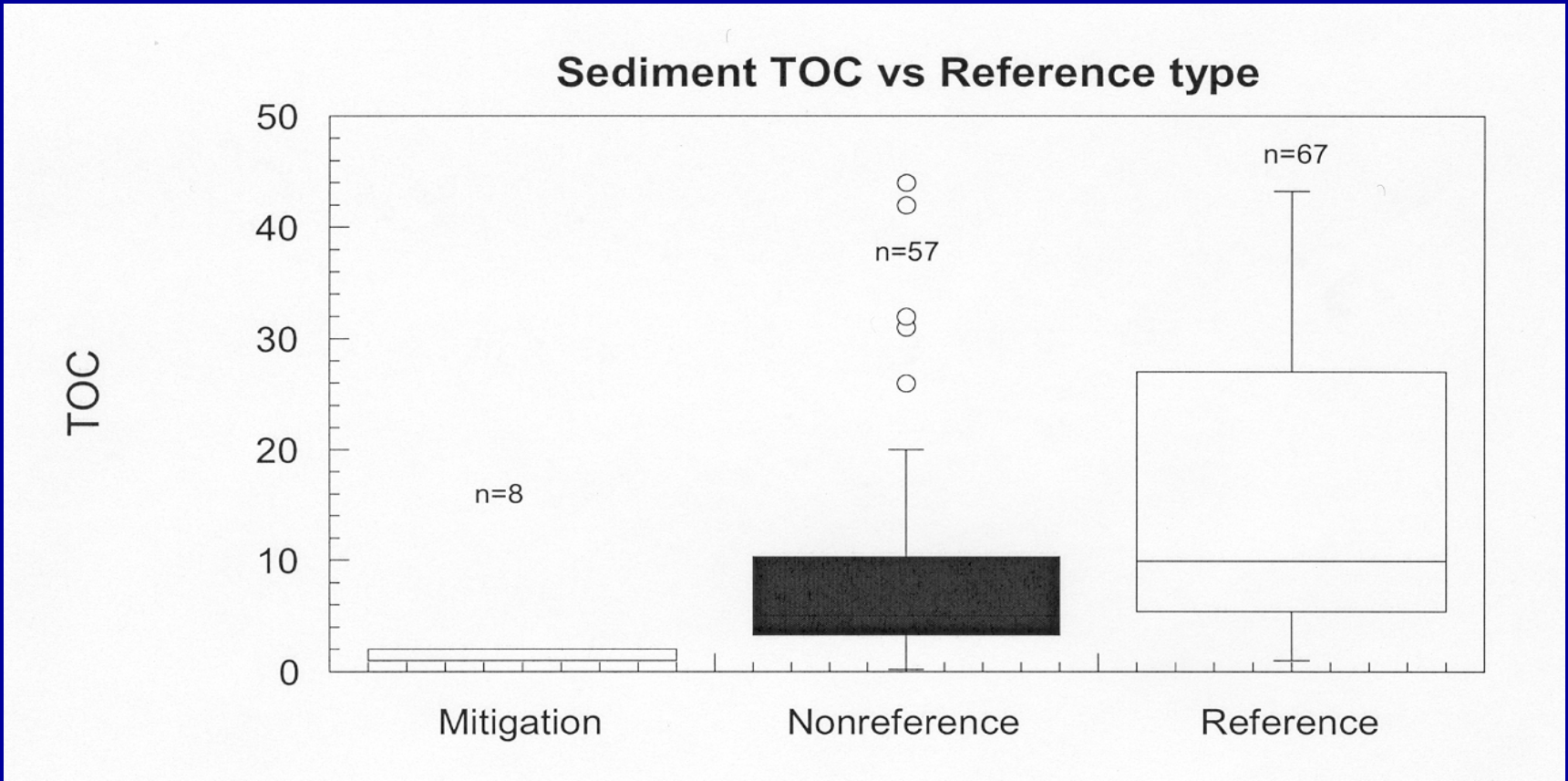
# Ohio Bioassessment Data: the vegetation IBI by HGM class



# Ohio Bioassessment Data: the Ohio Rapid Assessment Method (ORAM) by HGM class



# Ohio biological assessments: reference vs. non-reference data



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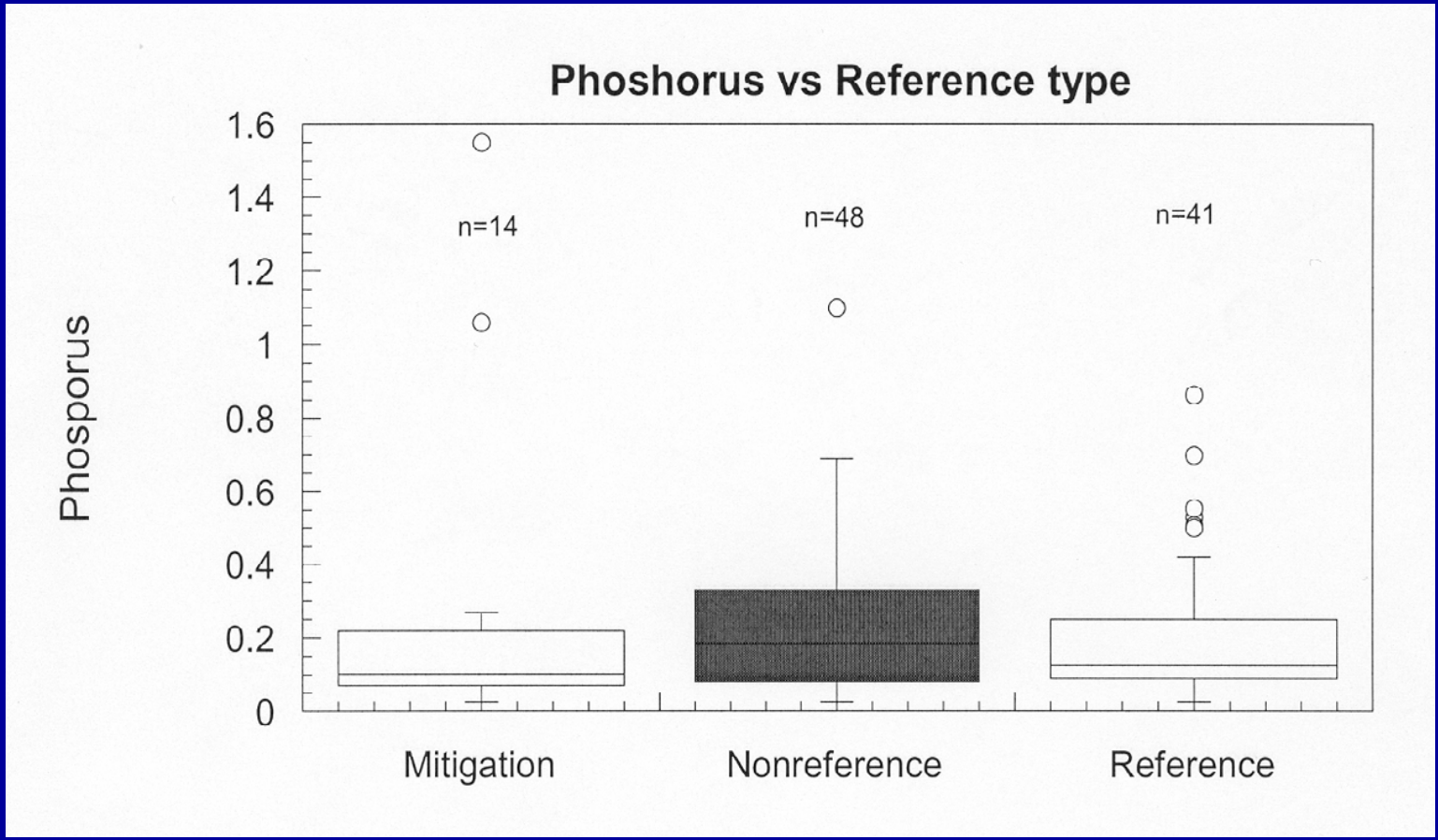
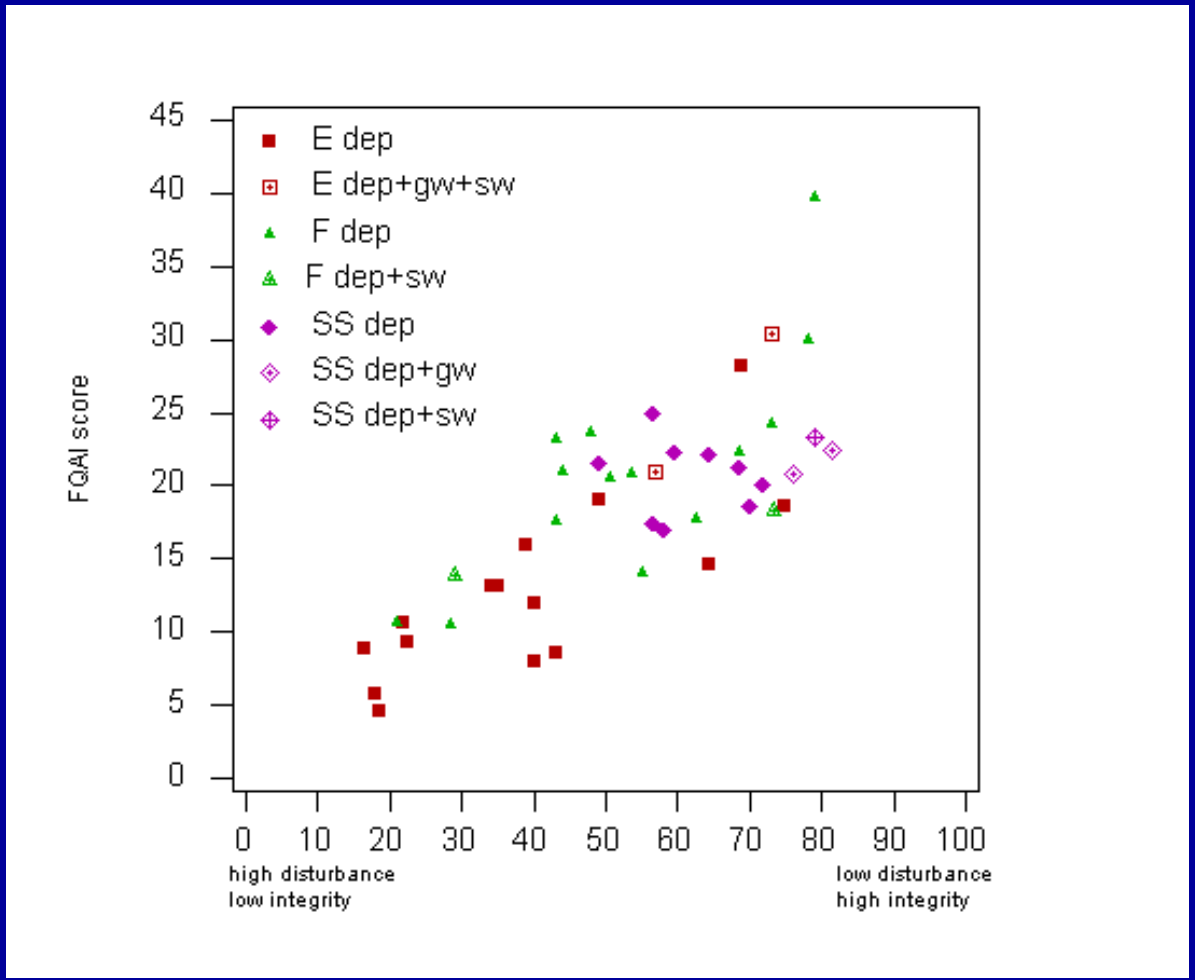
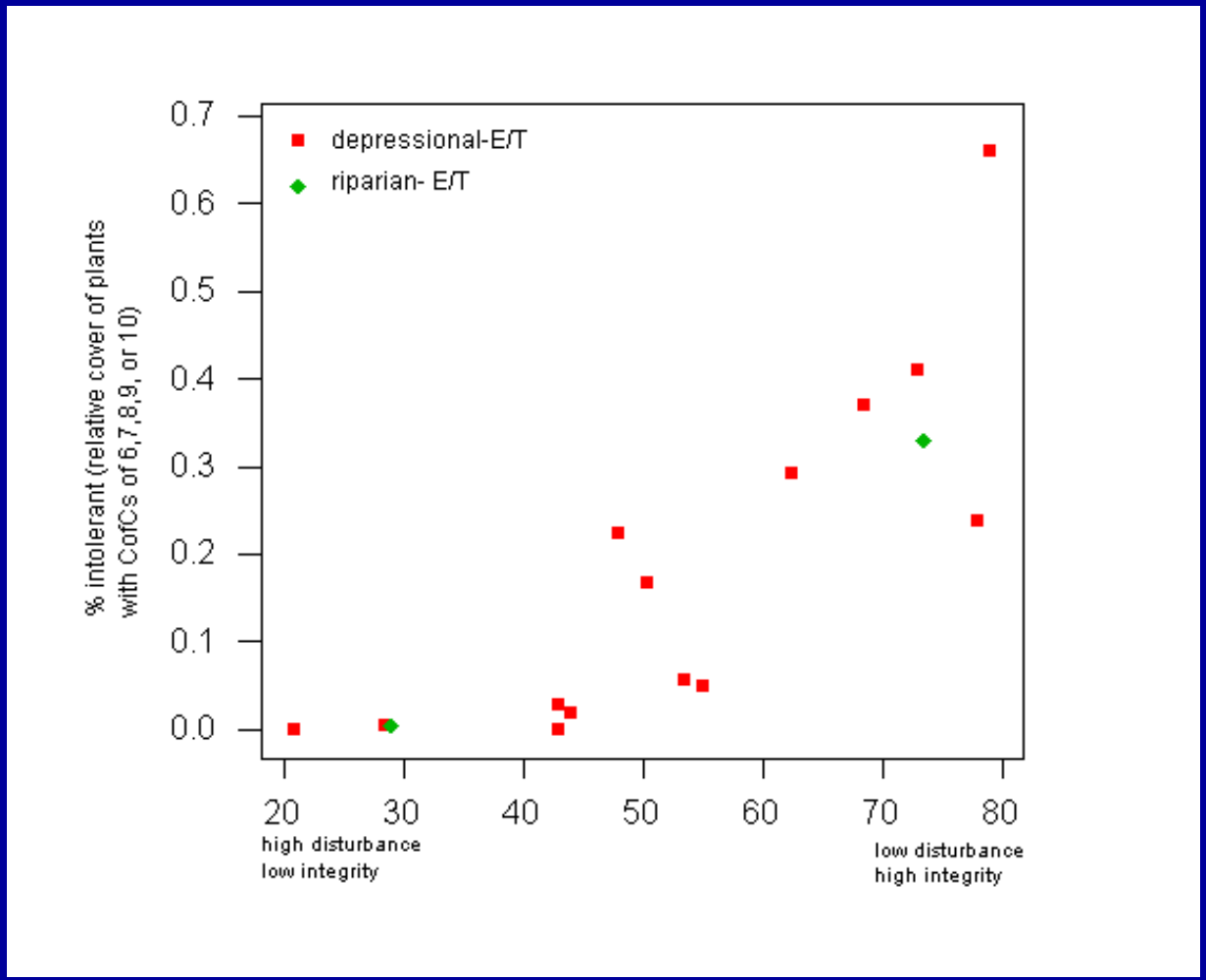


# Response of FQAI to a Gradient of Human Influence



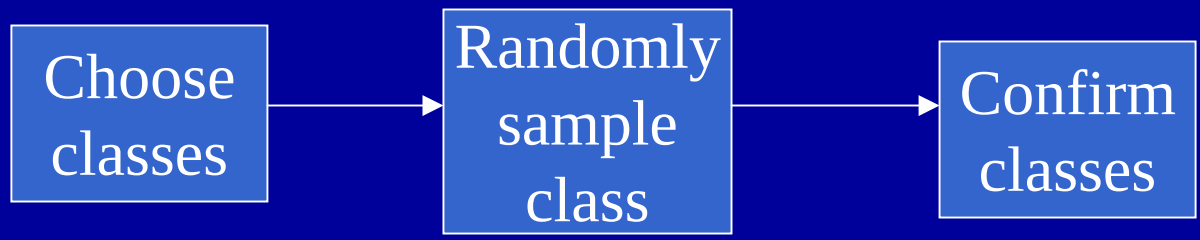
# Response of sensitive plant species guild to gradient of human influence



# Existing Wetland Classification Schemes: analysis

- Classification is an interative process
- Two options for testing classification:

1)

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