Stream Habitat Assessment in Iowa

Workshop on Stream Habitat Assessment

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Tom Wilton
Water Quality Bureau
Environmental Protection Division
Iowa Department of Natural Resources
Tom.Wilton@dnr.state.ia.us
Stream Habitat Assessment in Iowa

- Information Uses
- Data Collection and Assessment Methods
- Data Synthesis, Analysis, and Interpretation
- Needs and Recommendations
Habitat Information Uses

- Stream Designated Use Classifications
- Trend Monitoring
- Biocriteria Development
- Section 305b Designated Use Assessment
- Fisheries Management Research
Levels and Types of Habitat Data Assessed

- **Landscape/Watershed** (land cover, soils, mean basin slope)
- **Segment** (riparian vegetation, stream order, sinuosity, channel slope)
- **Reach** (buffer vegetation and width, bank condition, channel shading, wetted channel width, average depth, channel bedforms, substrate composition, large wood debris, instream cover)
- **Micro-habitat** (benthic substrates / habitat niches)
Habitat Assessment Methodologies

- Stream Classification Survey
- Rapid Bioassessment Protocols
- Habitat Suitability Models
- Quantitative Channel Transect Approach
Transect Data Synthesis

- Raw data aggregated to stream reach scale
- 3 types of variables summarized:
  1) riparian / streamside
  2) channel morphology and dimensions
  3) instream habitat
- Habitat summary variables stored in relational data base
Data Analysis and Interpretation

- Statistical analysis supporting biocriteria development
- Section 305b assessment of designated use impairment causes and sources
- Multivariate statistical analysis to identify linkages between landscape/habitat variables and aquatic community
Habitat-Related Section 305b
Impaired Use Causes and Sources

Causes:
- 1100 Siltation
- 1600 Other habitat alterations

Sources:
- 1410 Pasture grazing - riparian
- 7000 Hydromodification
- 7100 Channelization
- 7550 Habitat Modification (other than hydromodification)
- 7600 Removal of riparian vegetation
- 7700 Bank or shoreline modification/destabilization
Summary and Needs

- IDNR uses stream habitat information for multiple purposes

- No formal guidelines or standards governing collection, analysis, and interpretation of habitat information

- Many needs:
  - improved data collection methods
  - improved assessment models (at all scales)
  - methodology for causes/sources assessment
  - regional reference stream habitat conditions
Channel Transect Data Collection Methods
% Fish in Sample as Benthic Invertivores and % Stream Bottom Area as Fine Sediments All Sites and Ecoregions (1994 - 1997)
Proportion of Stream Benthic Macroinvertebrate Sample Comprised of 5-Dominant Taxa: Standardized Habitat Samples, 1994 - 1997

Habitat Index Score (Barbour and Stribling, 1991)

Reference Site
Test Site

(p=0.81)
(p=0.04)
Fish IBI X Stream Habitat Index
All Sites and Ecoregions (1994 - 1997)

Site Type:
- Reference
- Impact
- Watershed

$r^2 = 0.48$
Relationship of fine sediments, vascular aquatic vegetation, and water depth in Bloody Run Creek, Site BR1

- % fine sediments
- % vascular aq. veg.
- avg. depth (cm)

Data for years:
- '92: 17 cfs
- '93: 33 cfs
- '94: 23 cfs
- '95: 20 cfs
- '96: 21 cfs
- '97: 14 cfs
Questions