

Use of Biological Monitoring Results at Multiple Spatial Scales: Area Wide to Site Specific

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Purpose of presentation



- Example of using results from probability-based monitoring for site-specific assessment
- Lake Allatoona/Upper Etowah River watershed, northern Georgia

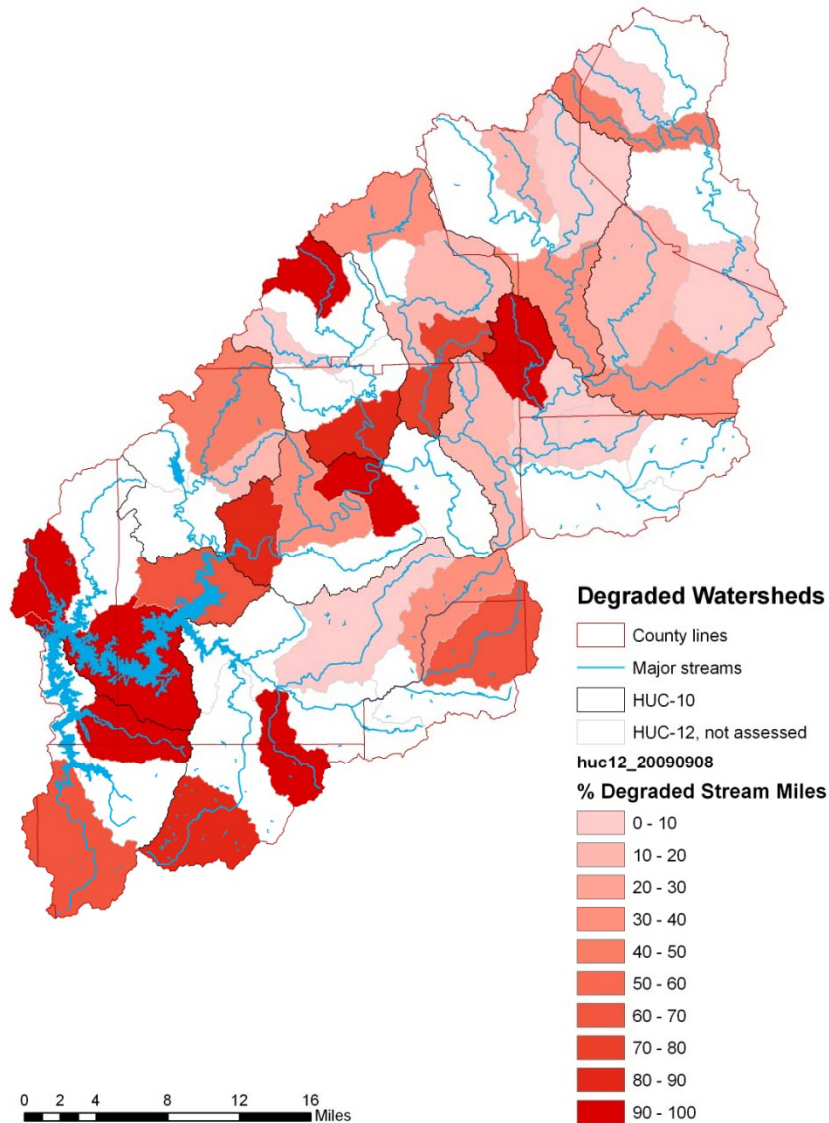


Data quality documentation



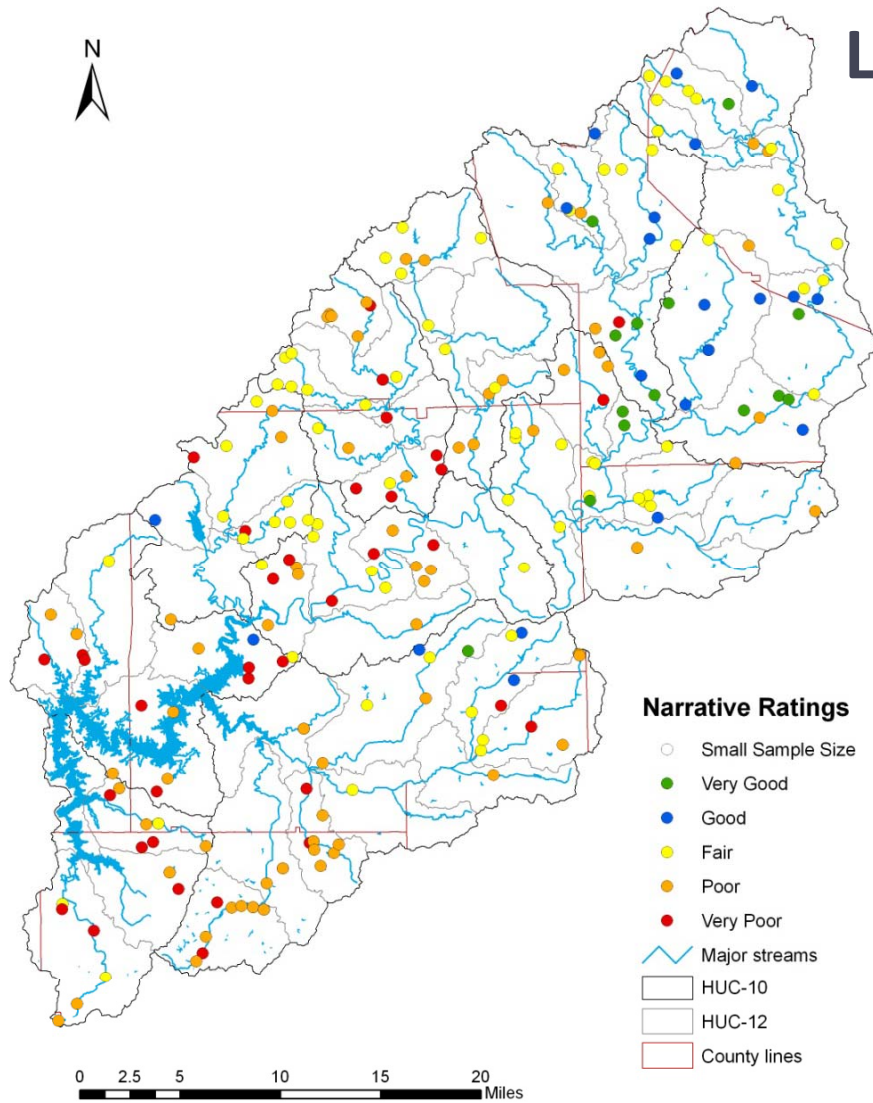
Sorting/subsampling bias	n	median			MQO target
Percent sorting efficiency (PSE)	46	92			>90
Taxonomic precision					
Percent difference in enumeration (PDE)	13	0.7			<5
Percent taxonomic disagreement (PTD)	13	7.6			<15
Field sampling precision		Scoring range	CI90	CV	
Physical habitat	15	0-200	14.2	6.5	
Biological index (MMI 45a)	14	0-100	6.7	8.6	

Lake Allatoona/Upper Etowah River Watershed; Georgia

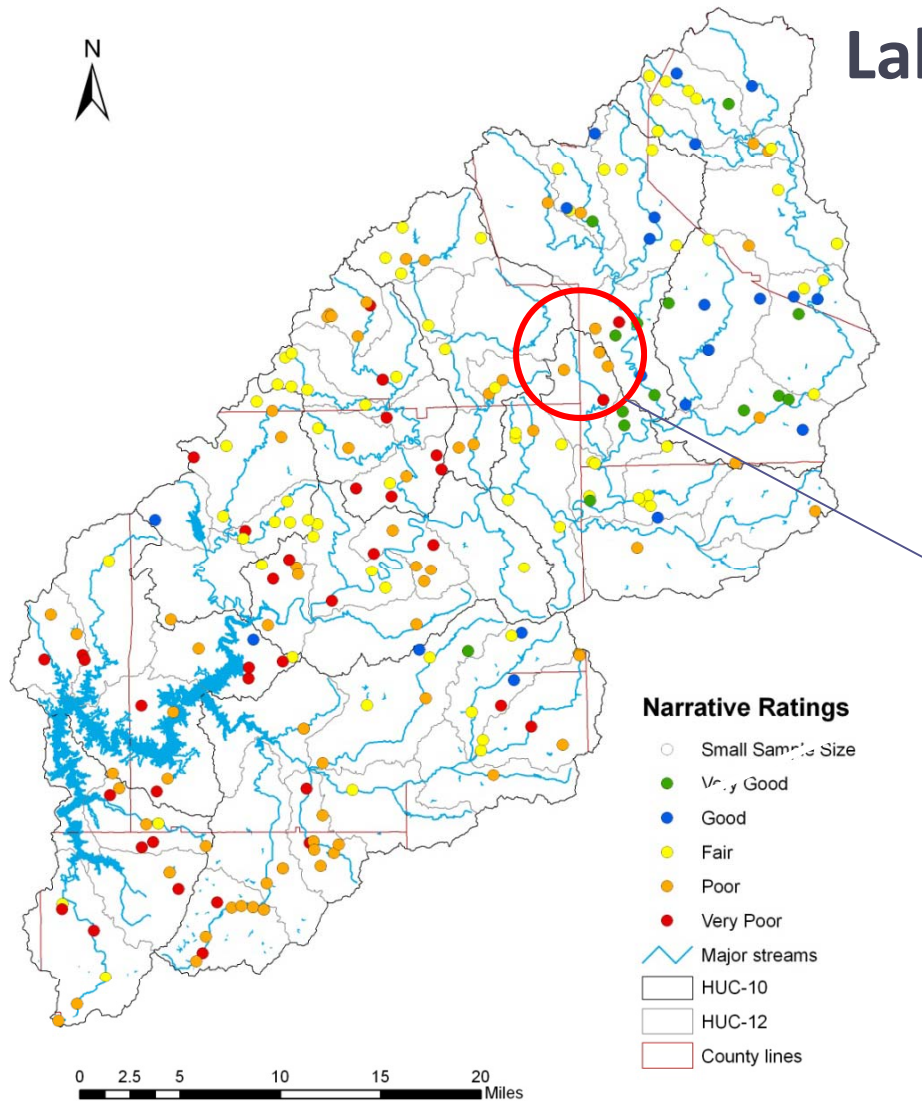


- 1612 total stream channel miles
- Through 2008-09 (Year 4): 211 sites sampled
- Basin is 65% assessed (1,047 mi.)
- 42.2% degraded (442 mi.)

Lake Allatoona/Upper Etowah River Watershed; Georgia



Lake Allatoona/Upper Etowah River Watershed; Georgia

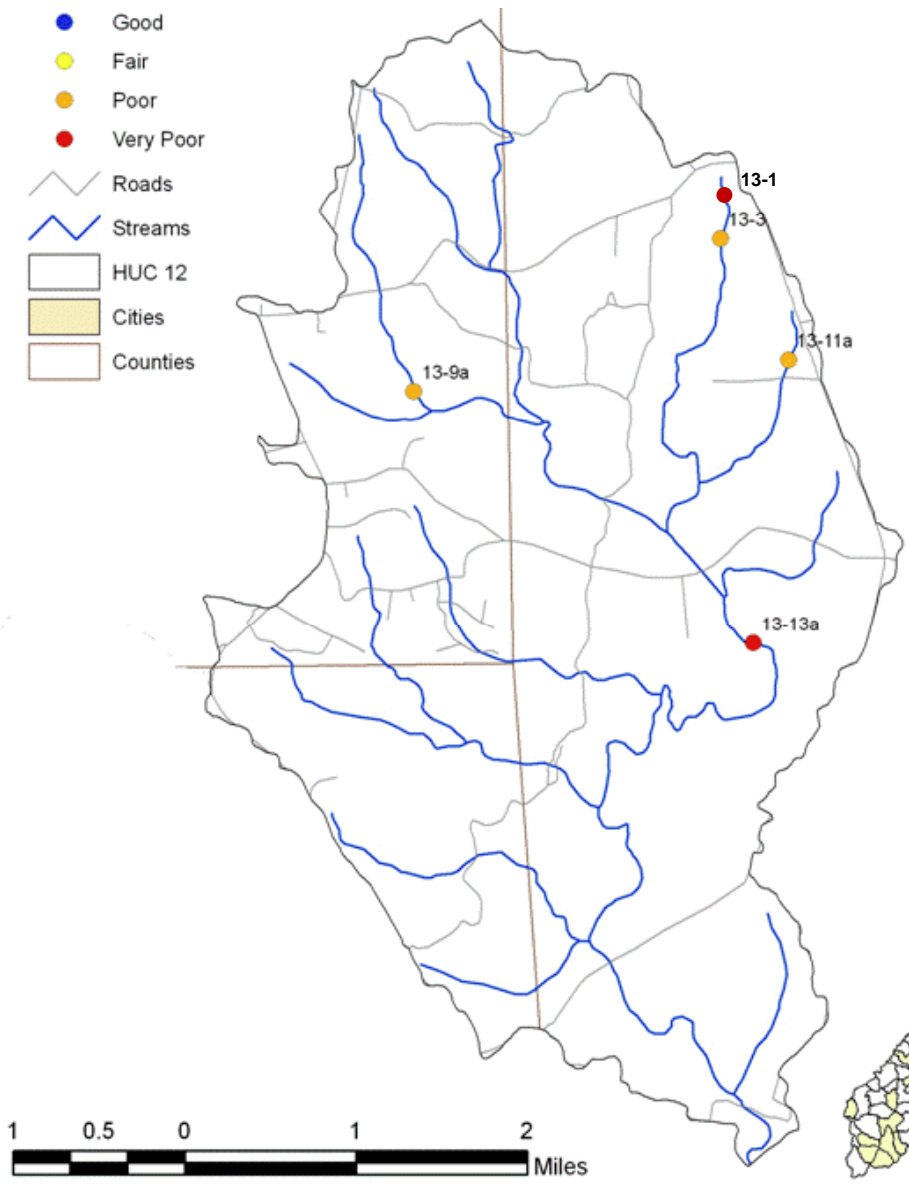


Example

- Yellow Creek HUC12 subwatershed
- 27.9 stream miles of biological degradation

Narrative Ratings


- Very Good
 - Good
 - Fair
 - Poor
 - Very Poor
- Roads
- Streams
- HUC 12
- Cities
- Counties



Yellow Creek subwatershed
-17.0 mi² drainage area
-Land use/cover - primarily forested, some agriculture, transportation corridors, limited areas of urban development



Biological assessment results - Yellow Creek



StationID	Multimetric Index (MMI) score	Narrative
13-1	36.9	Poor
13-11a	29.9	Very poor
13-13a	Too few organisms	Very poor
13-3	39.7	Poor
13-9a	46.7	Poor

Biological assessment results - Yellow Creek



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Disaggregated metric results - Yellow Creek Site 13-11a

Level 4 ecoregion 45a	
Metrics	Metric values
NCBI	5
No. Burrower taxa	11
No. Coleoptera taxa	2
No. Plecoptera taxa	2
No. Predator taxa	9
Pct. Chironomidae individuals	63.2
Pct. Plecoptera individuals	9.6
Pct. intolerant individuals	17.7
Percent Trichoptera individuals	8.2
Simpson's diversity	0.04

Sample results – Unnamed tributary to Yellow Creek (Site 13-11a)

TAXON	Count	Tolerance	FFG	Habit	TAXON	Individuals	Tolerance	FFG	Habit
Ablabesmyia	1	8	Coll	Sprw lr	Limnephilidae	2	4	Shrd	Cmbr
Acerpenna	5	4	Coll	Sw m	Lype diversa	3	2	Scrp	Cngr
Allocaenia	14	3	Shrd	Cngr	Maccaffertium	4	4	Scrp	Cngr
Anchytarsus bicolor	9	4	Shrd	Cngr	Micropsectra	10	7	Coll	Cmbr
Apsectrotanypus johnsoni	4	5	Pred	Burr	Microtendipes	25	7	Coll	Cngr
Brillia	2	5	Shrd	Burr	Molanna	5	6	Scrp	Sprw lr
Calopteryx	1	6	Pred	Cmbr	Optioservus	7	4	Coll	Cngr
Ceratopogoninae	4	6	Pred	Burr	Paralauterborniella nigrohalterale	1	8	Coll	Cngr
Chaetocladius	1	6	Coll	Sprw lr	Parametricnemus	5	5	Coll	Sprw lr
Cheumatopsyche	1	5	Fil	Cngr	Phaenopsectra	2	7	Scrp	Cngr
Chimarra	1	4	Fil	Cngr	Polypedilum	3	6	Shrd	Cmbr
Cordulegaster	2	3	Pred	Burr	Potthastia	1	2	Coll	Sprw lr
Corynoneura	8	4	Coll	Sprw lr	Probezzia	1	6	Pred	Burr
Cricotopus/Orthocladius	3	6	Shrd	Sprw lr	Procladius	2	9	Pred	Sprw lr
Dicrotendipes	1	8	Coll	Burr	Psilotreta	2	0	Scrp	Sprw lr
Diplectrona	3	0	Fil	Cngr	Tanytarsus	2	6	Fil	Cmbr
Diplocladius cultriger	2	8	Coll	Sprw lr	Thienemannimyia genus grp.	22	6	Pred	
Eukiefferiella	12	8	Coll	Sprw lr	Tipula	1	4	Shrd	Burr
Hexagenia	1	6	Coll	Burr	Tipulidae	2	3	Shrd	Burr
Hexatoma	3	2	Pred	Burr	Tribelos	9	5	Coll	Burr
Hydropsyche	1	4	Fil	Cngr	Trissopelopia ogemaw i	10	6	Pred	Sprw lr
Leptophlebiidae	2	2	Coll	Sw m	Zavrelimyia	13	8	Pred	Sprw lr
Leuctra	7	0	Shrd	Cngr					



Site 13-11a
Unnamed 1st order
tributary to Yellow Creek
MMI = POOR



Image U.S. Geological Survey
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Imagery Date: Mar 31, 2008

34°24'27.45" N 84°13'57.59" W elev 0 ft

Eye alt 2635 ft

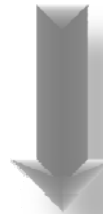
Unnamed tributary to Yellow Creek (Site 11-13a)

- Stressors (*stressor sources*)
 - Physical habitat degradation (*watershed and riparian de-vegetation, some logging and other agricultural activities*)
 - Nutrients (*chicken houses <100m from sample location [<1.5 miles from each site in basin]*)
- “Fixes” (=stressor reduction activities)
 - BMPs, re-vegetation, nutrient management restrictions, bank stabilization, etc.





Stressors sources



Stressors



Response indicators

