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EMAP
Great River Ecosystems



Mississippi Department of Environmental Quality's Non-wadable Streams Bioassessment Methods Development Project

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And

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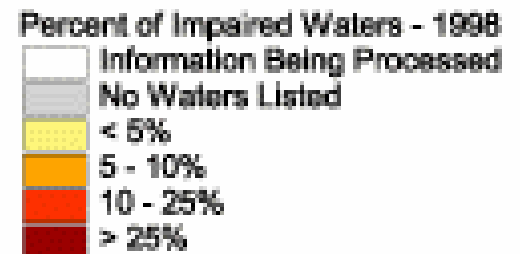
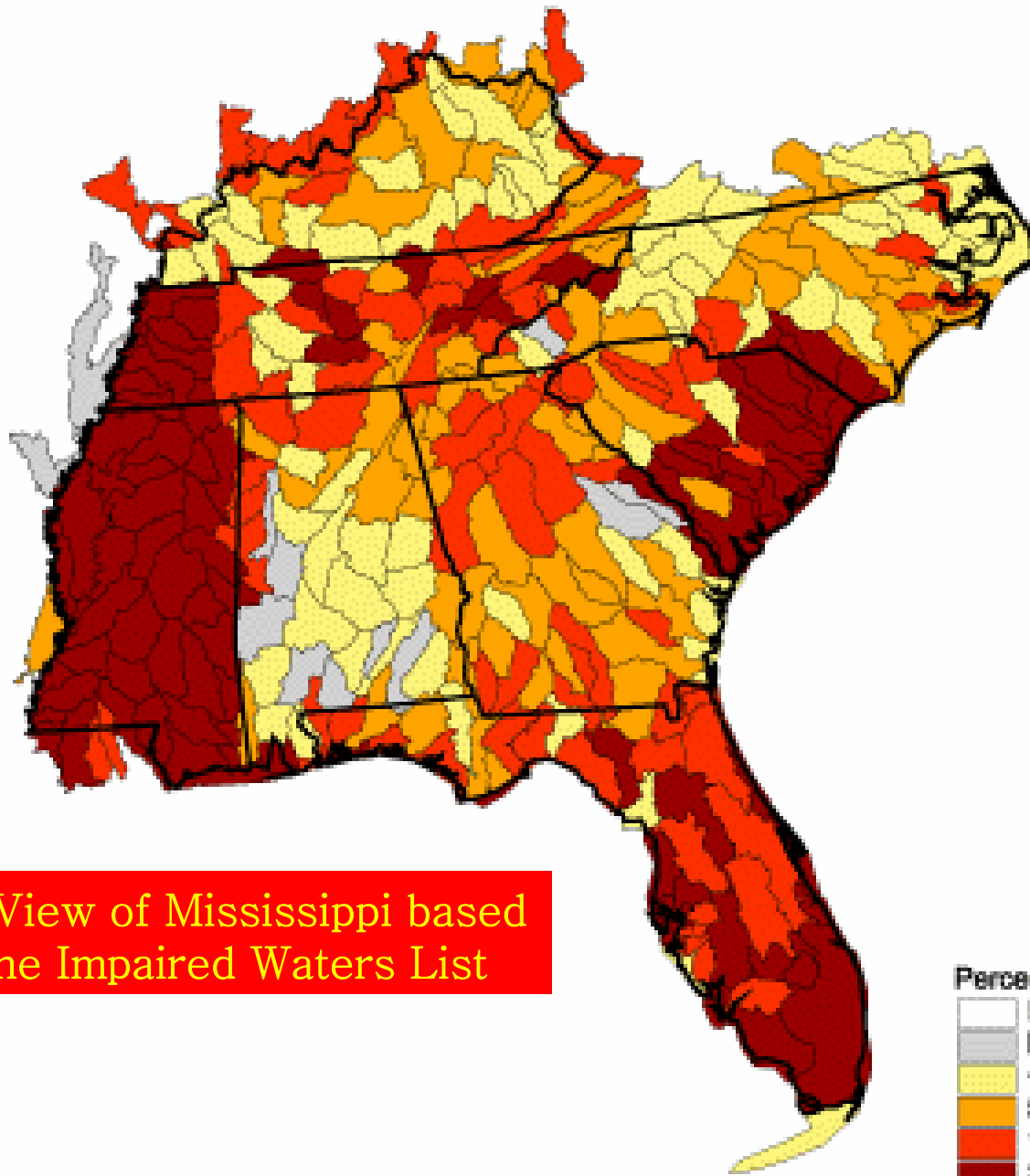
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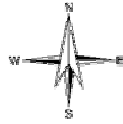
Early 1980's
environmental groups file
lawsuits forcing EPA to
establish impaired water
bodies list a.k.a. 303(d)
and declare TMDL's

1997 the Sierra Club sued
EPA for not developing
TMDL's








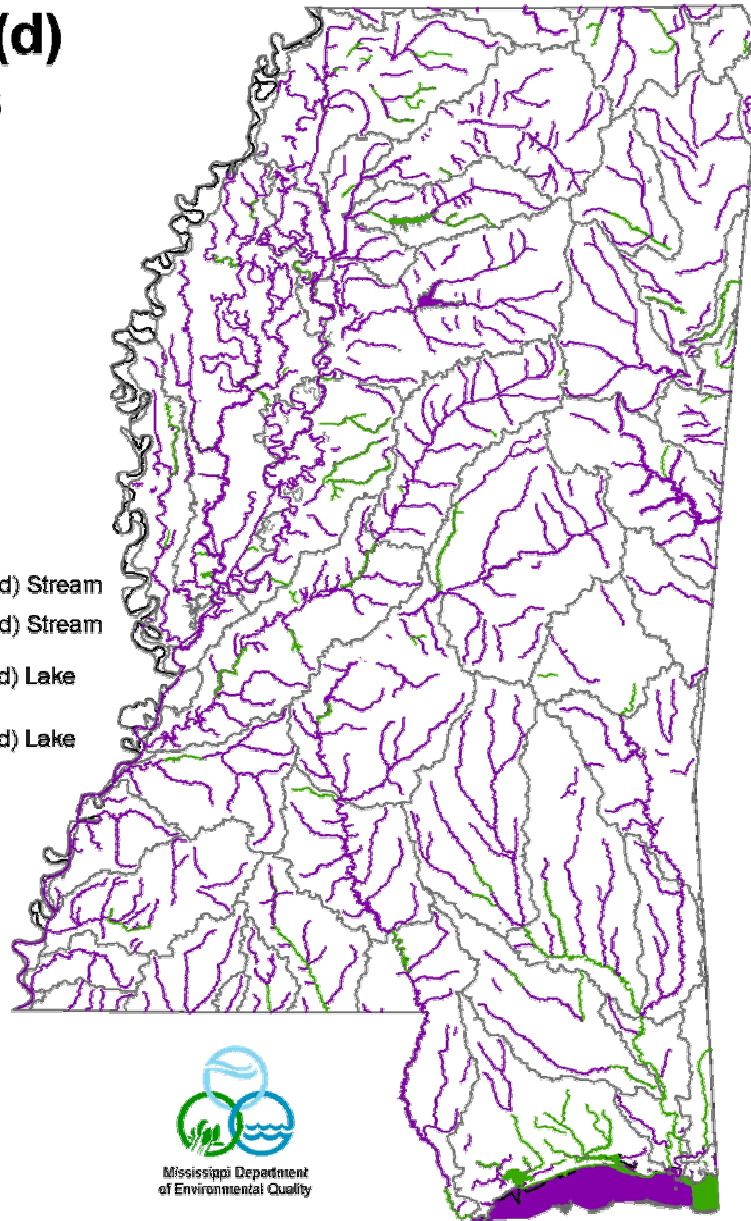
1998 View of Mississippi based
on the Impaired Waters List

1998 303(d) Waters



Legend

-  Evaluated 303(d) Stream
-  Monitored 303(d) Stream
-  Evaluated 303(d) Lake
-  Monitored 303(d) Lake
-  8 Digit HUC

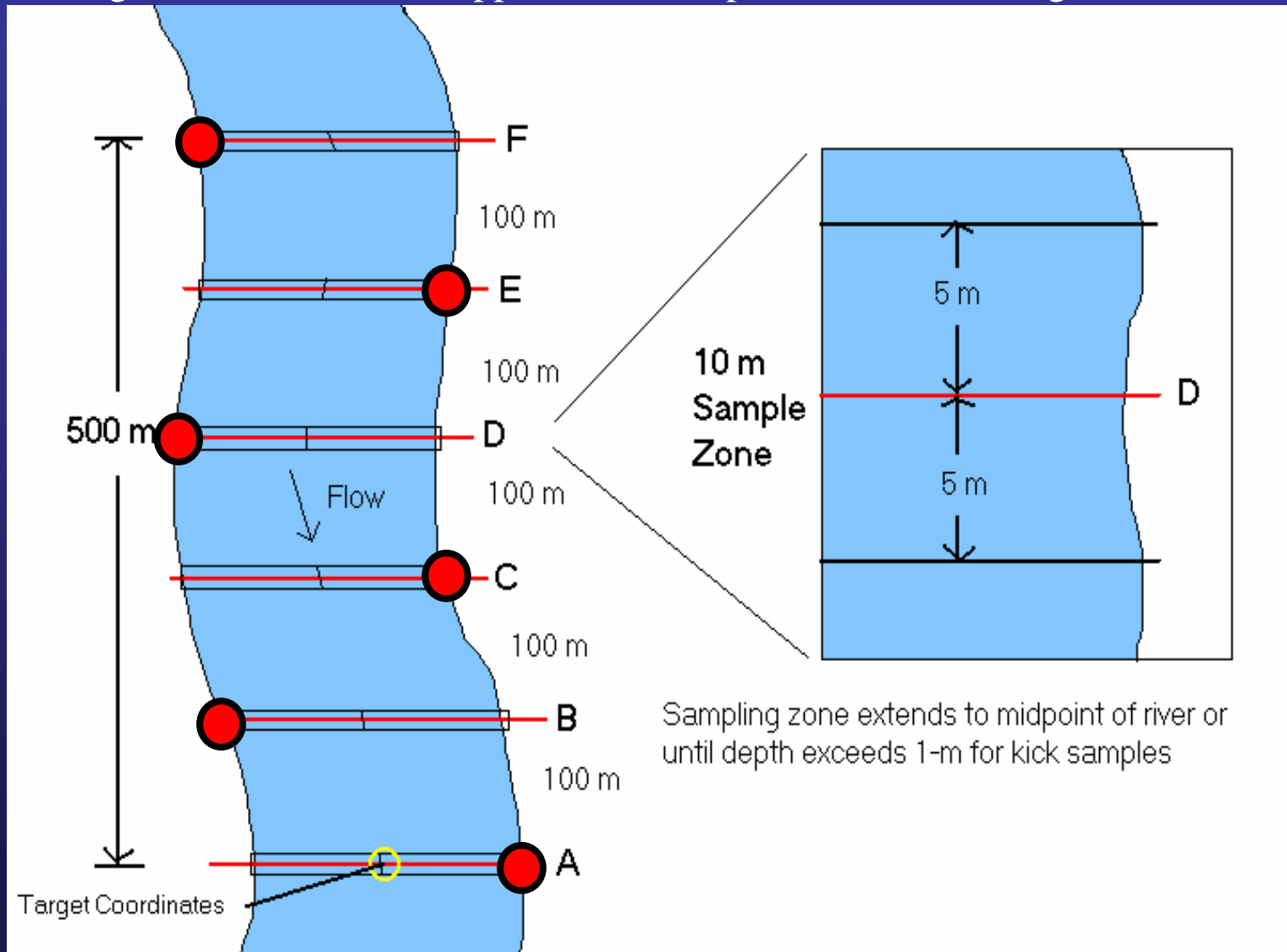




Large River Method Development

- **Wanted to collect nutrient samples for nutrient criteria development and other physical/chemical water quality parameters**
- **Wanted to develop a method to be used in non-wadeable streams and rivers**
 - **Biological Assessment using Benthics**
 - **Physical Habitat Assessment**
 - **Substrate Composition**
 - **Began to review Joe Flotemersch's work**
 - **Very involved**
 - **Too much work for our limited resources**

Example of the 6 transects and 6 sample zones for collection of benthic macroinvertebrates in the Pascagoula river of Mississippi. This example starts on river-right.

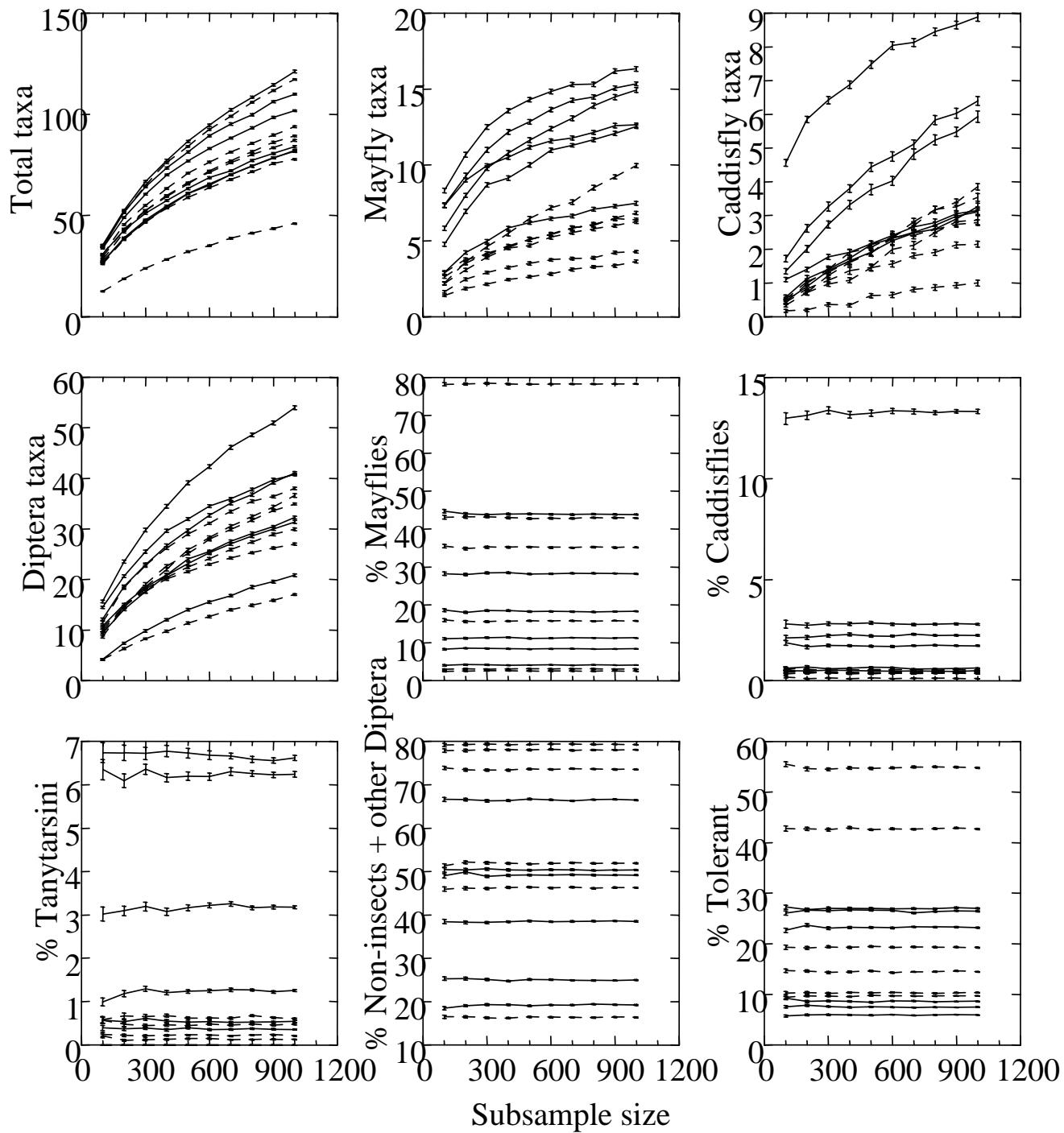


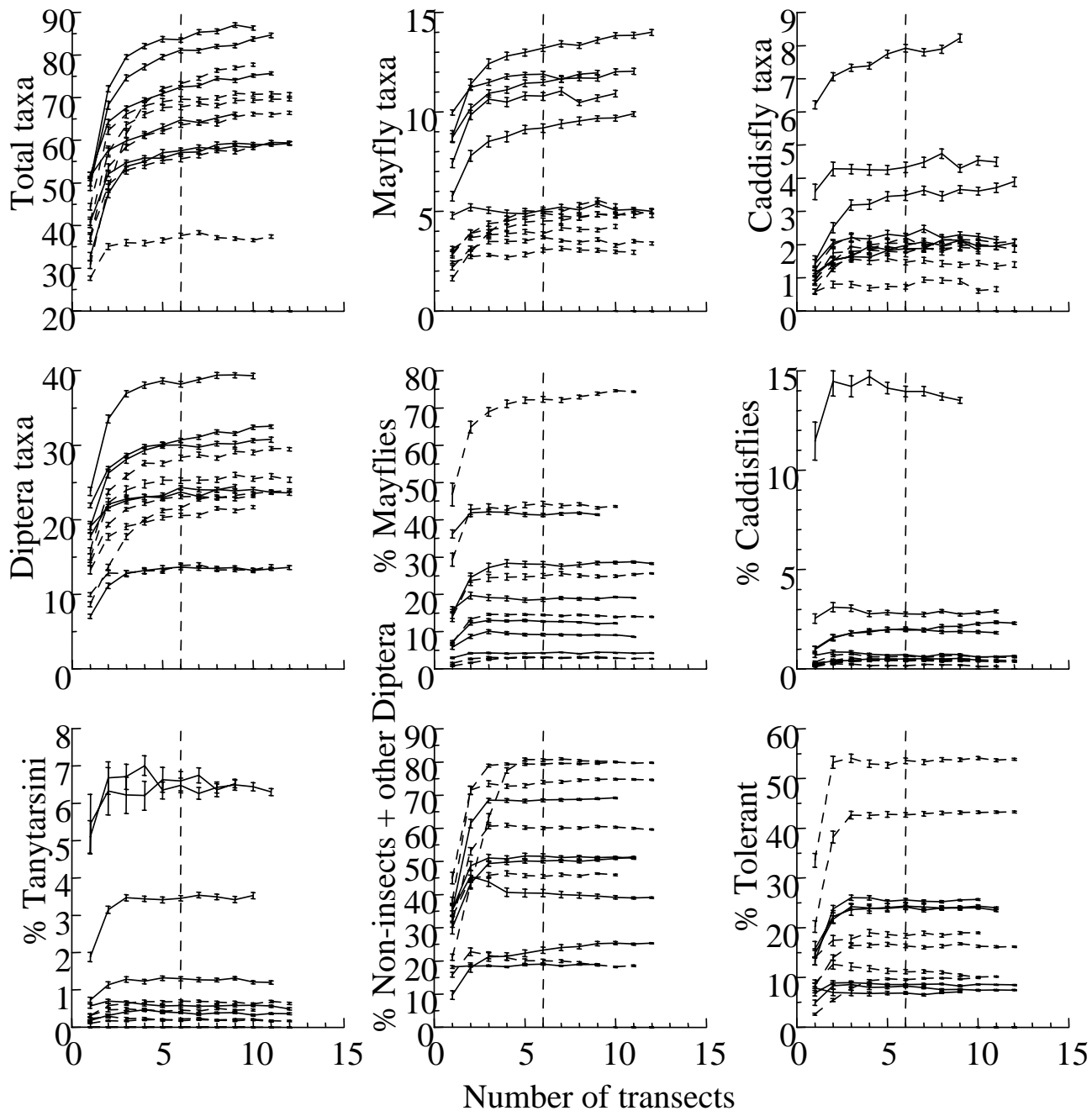
Modifying the Sampling Protocol

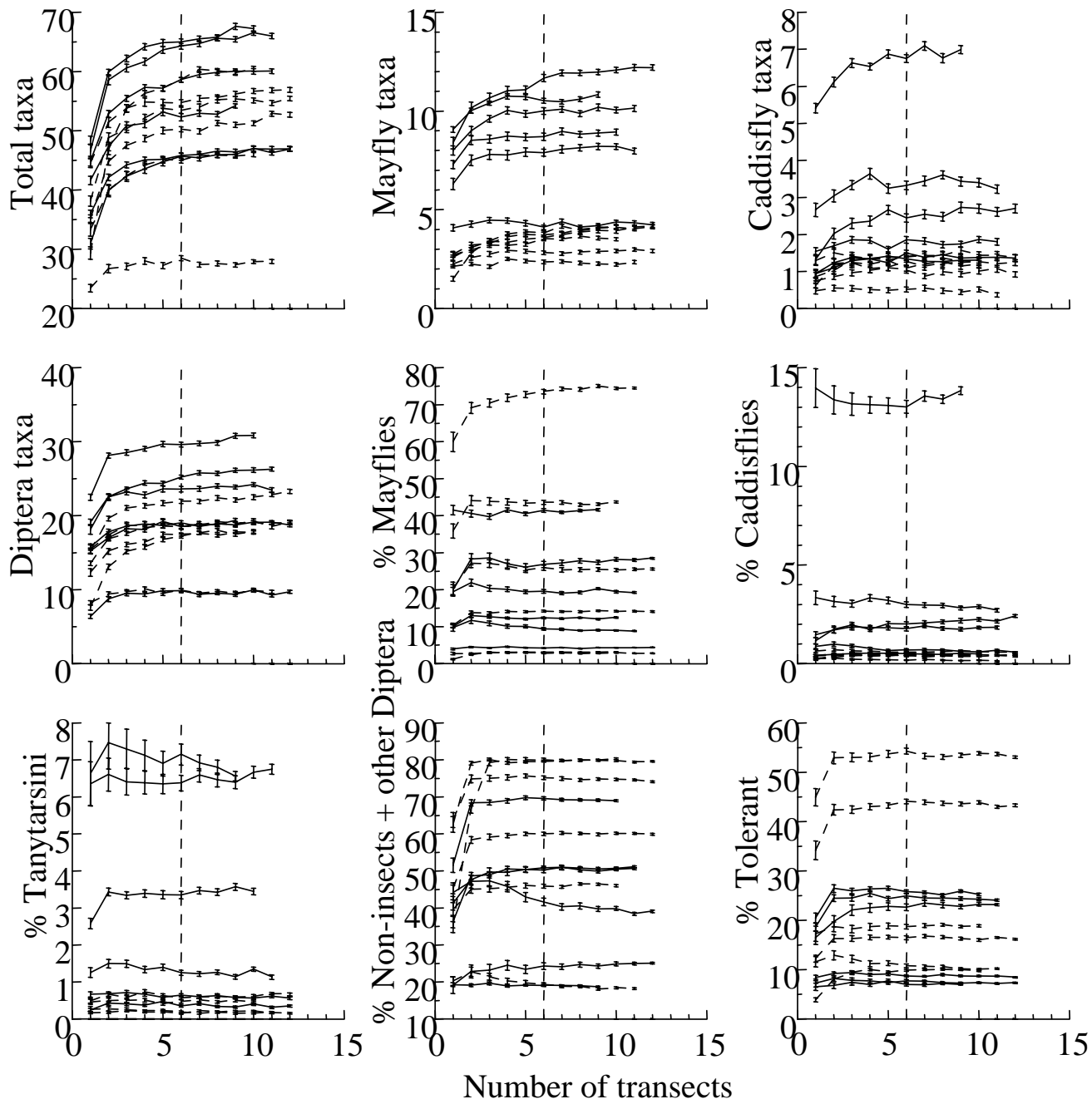
- Shorten the reach by 1/2 (i.e. 200 m) and sample both banks at all transects
- Establish the 500 m reach specified, then randomly select 3 of 6 transects to sample on both banks
- Establish the 500 m reach specified, then randomly select L or R bank and sample at all 6 transects
- Establish the 500 m reach specified, then randomly select L or R bank at lowermost reach and alternate banks for entire reach

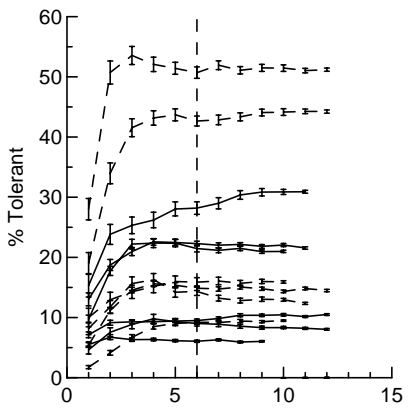
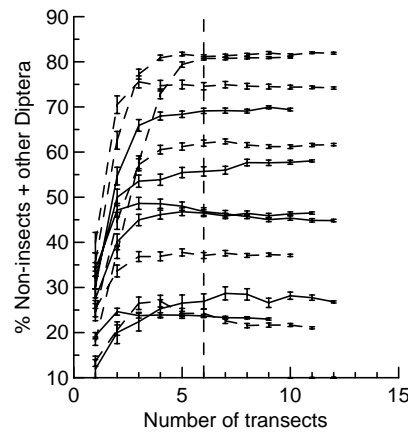
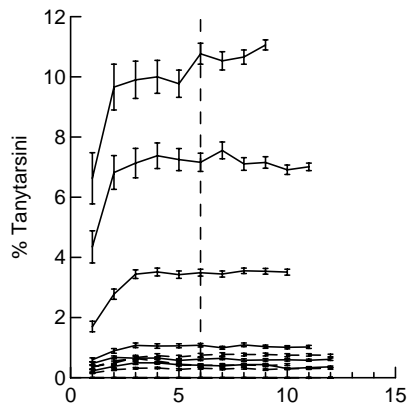
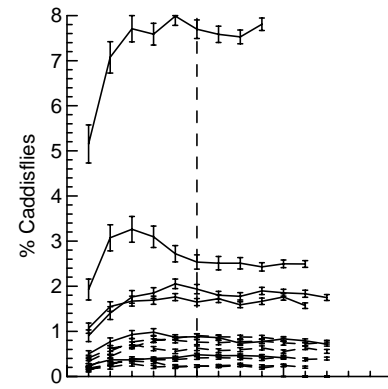
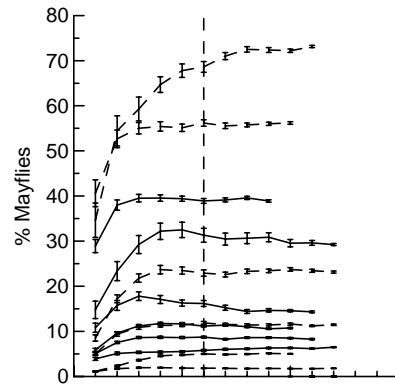
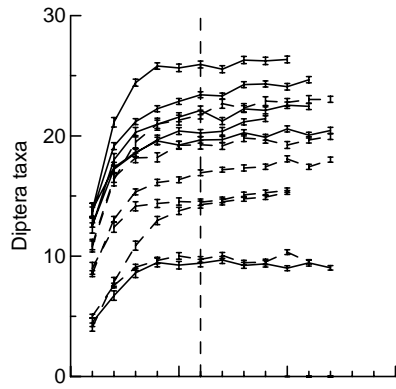
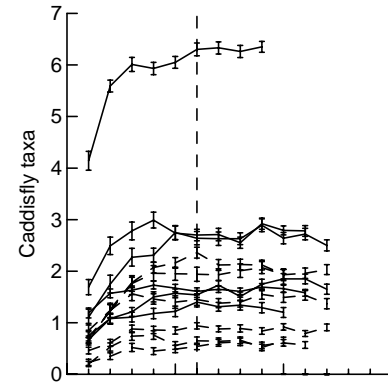
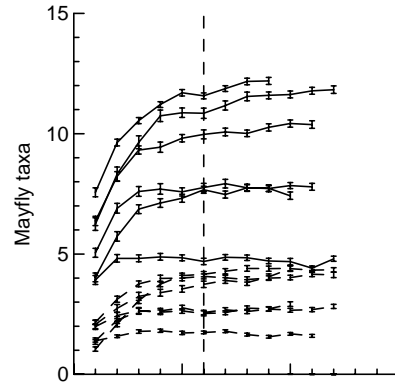
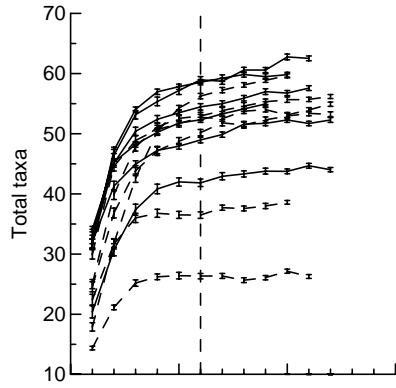
Number of Organisms

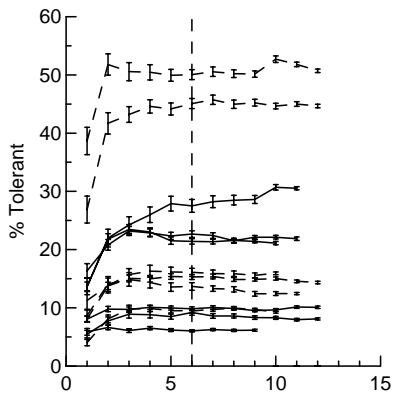
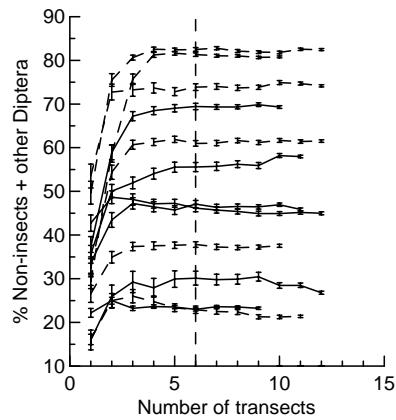
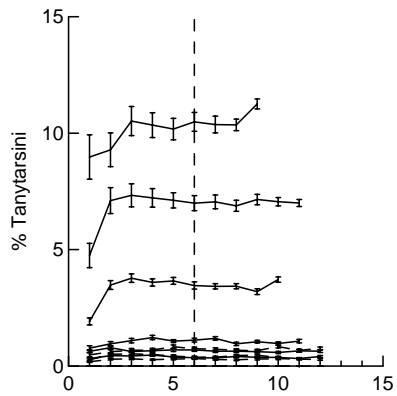
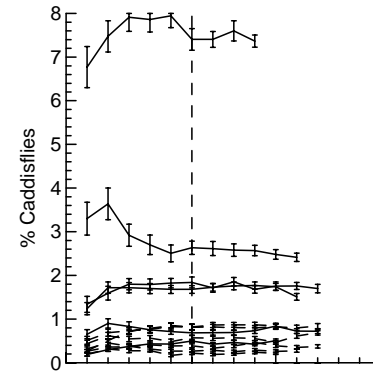
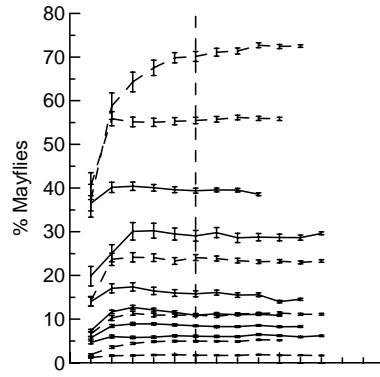
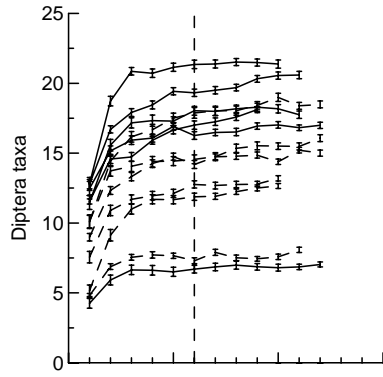
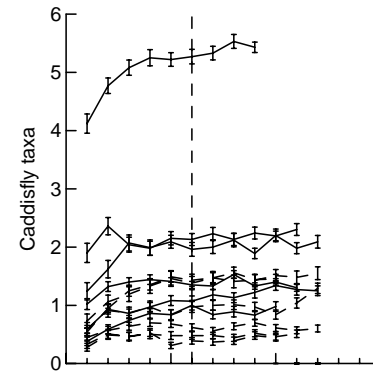
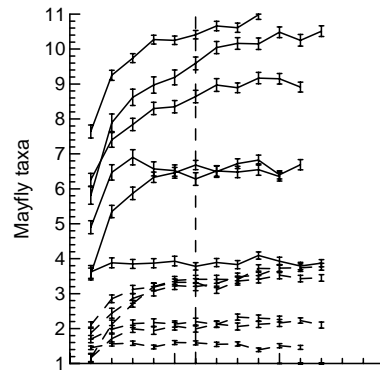
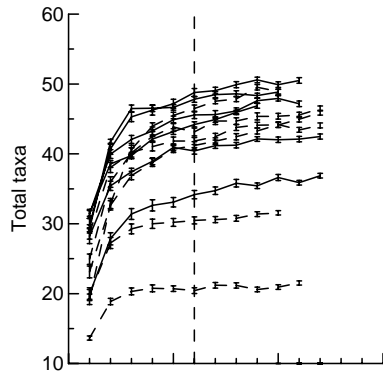
- 500 specified
- What if this is reduced from 500 to 300?
- What if this is reduced from 500 to 200?











Choices

6 transects/both banks/500 organisms



6 transects/ both banks/300 organisms



6 transects/ alternative banks/300 organisms



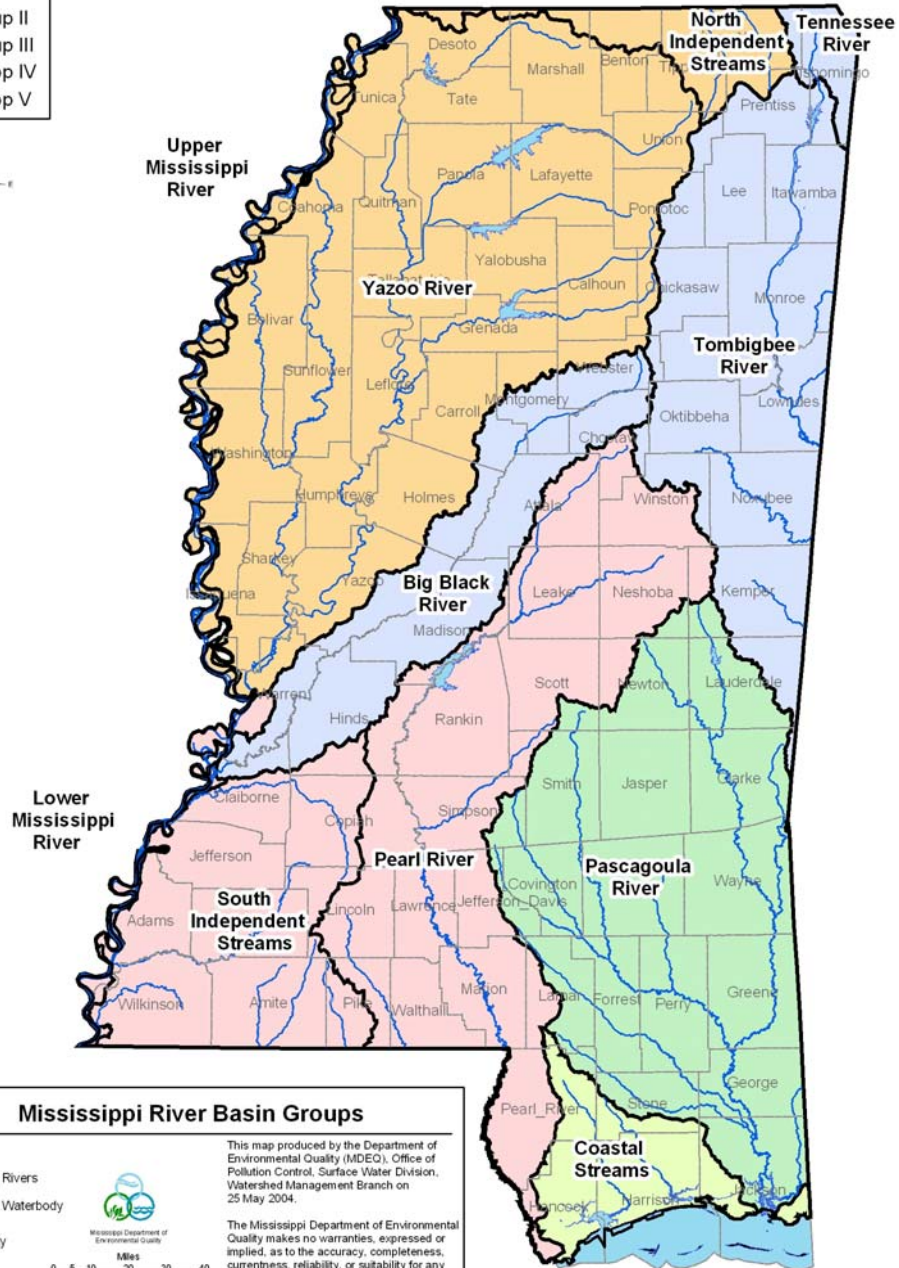
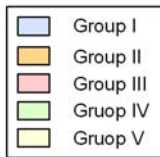
6 transects/ alternative banks/200 organisms

Summary of the MDEQ Methodology

- 500 meter reach
- 6 transects, randomly select L or R bank at lowermost reach, then alternate through entire reach
- 300 organism sub-sample
- Habitat assessment (as per Joe's methods)
- Depth composited samples for nutrient criteria development collected at the lower-most reach only (USGS recommendation)
- In-situ measurements at the lower-most reach only
- Particle size distribution
- Phytoplankton sample collection
- Begin sampling 2005 (August, September, October(?))

MDEQ Methodology continued

- **Data Generated to be used to develop an IBI (Biocriteria?)**
- **Data /IBI to be reported in states 305(b) report**



Mississippi River Basin Groups

Legend

- Major Rivers
- Large Waterbody
- County
- Basin



Miles
0 5 10 20 30 40

This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Watershed Management Branch on 25 May 2004.

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“Where are we now”

- Will sample the Pascagoula River(22 sites) in 2006
- Possibly another river within this basin
- Processing of samples from the other sites continues at our lab
 - All samples thus far have met the targeted number of organisms
 - Taxonomy to begin soon
 - Phytoplankton samples to be shipped to taxonomist’s lab for identification
- After all samples are processed and identified (late 2006/mid 2007) development of IBI’s and site assessments
- Sampling additional non-wadeable water bodies and using the IBI tool to assess (2007and beyond)

“Additional Issues”

- What about expanding the sampling zone from 10 to 20 or 30 meters to allow more woody debris to be sampled?
- Will this change the “answer”?
- What about allocating the 36 jabs throughout the entire reach proportionally as we now do for wadeable streams?
- What effect will this have on the data?