

# Congaree Swamp Survey

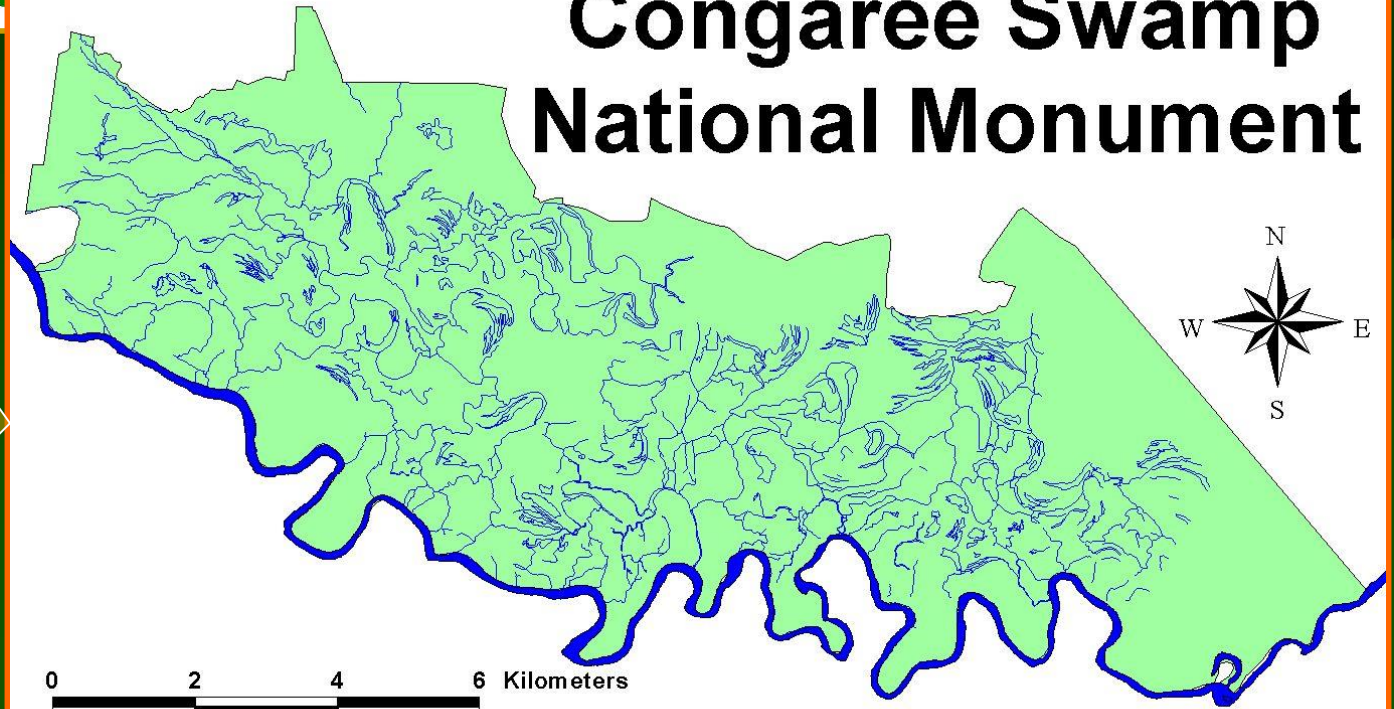
Species Diversity and Condition of  
the Fish Community in the Congaree  
Swamp National Monument

Leo Rose

COSW

South  
Carolina

# Congaree Swamp National Monument



# Project Goals

- Inventory the fish in the COSW
- Determine the relative health of the fish community
- Assemble a permanent collection of fish and link this to a public display
- Develop a GIS-based database



Buckhead Creek

# Electrofishing Gear



# Electrofishing Shank's Creek



# Fish Sorting



Sailfin shiner



Mud minnow



Coastal shiner



Seagreen darter



Swallowtail shiner



Whitefin shiner



Myers Creek

# Collected Species

- American eel
- Banded pygmy sunfish
- Banded sunfish
- Blackbanded sunfish
- Bluegill
- Bluehead chub
- Bluespotted sunfish
- Brook silverside
- Chain pickerel
- Coastal shiner
- Creek chubsucker
- Dollar sunfish
- Dusky shiner
- Eastern mudminnow
- Flier
- Golden shiner
- Green sunfish
- Largemouth bass
- Lined topminnow
- Longnose gar
- Margined madtom
- Mosquitofish
- Mud sunfish
- Pirate perch
- Redbreast sunfish
- Redear sunfish
- Redfin pickerel
- Sailfin shiner
- Sawcheek darter
- Seagreen darter
- Spotted sucker
- Spotted sunfish
- Swampfish
- Tadpole madtom
- Tessellated darter
- Warmouth
- Whitefin shiner
- Yellow bullhead
- Yellow perch
- Yellowfin shiner

# Determining Relative Health

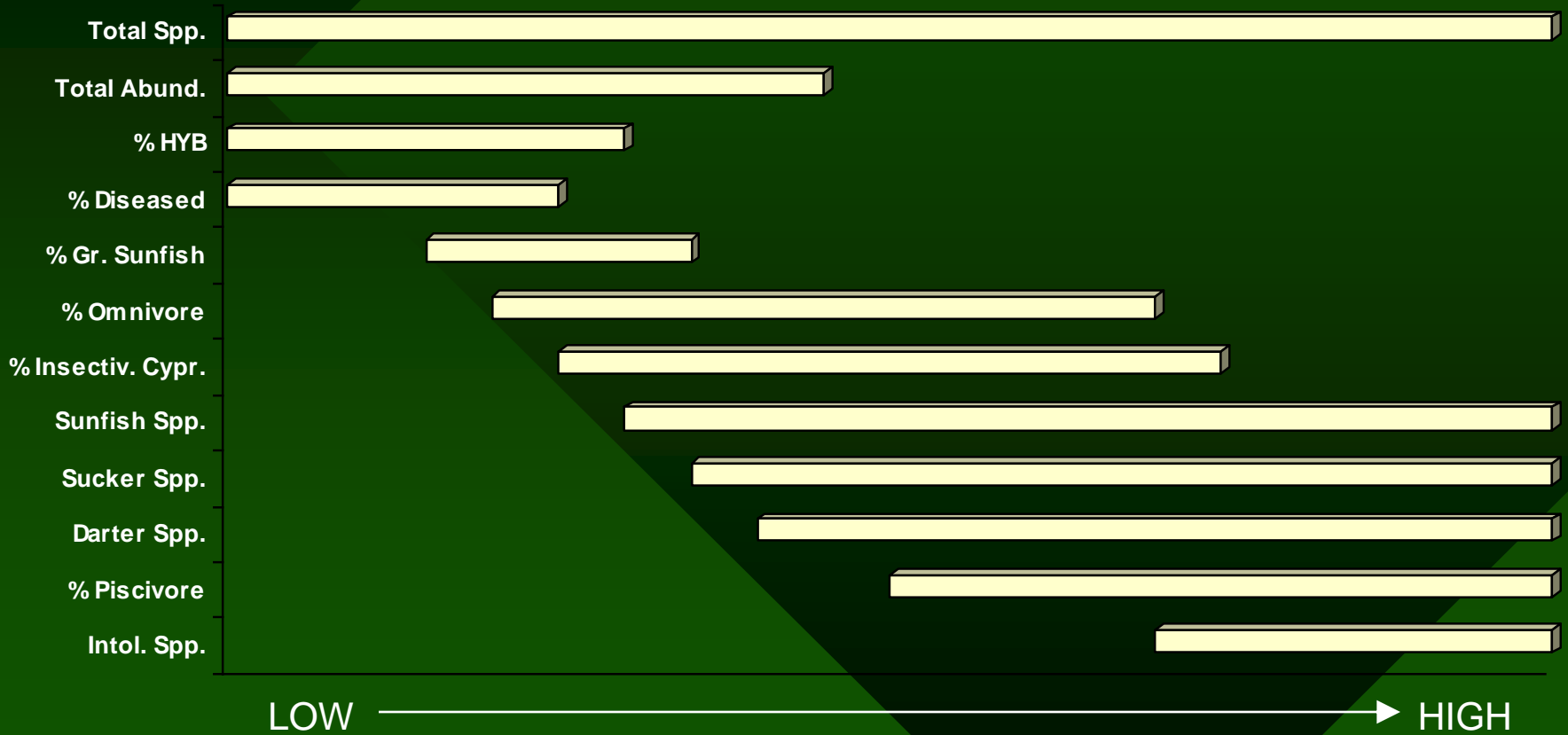
- Develop an Index of Biotic Integrity (IBI)
  - A method that uses key biological metrics to compare fish communities
  - Metrics need to be eco-region specific

## IBI Metrics

Number of Species  
Number of Darter Species  
Number of Sunfish Species  
Number of Sucker Species  
Number of Intolerant Species  
Number of Individuals  
Percent Green Sunfish  
Percent Omnivores  
Percent Insectivorous cyprinids  
Percent Piscivores  
Percent Hybrids  
Percent with Anomalies



# IBI Metric Sensitivity



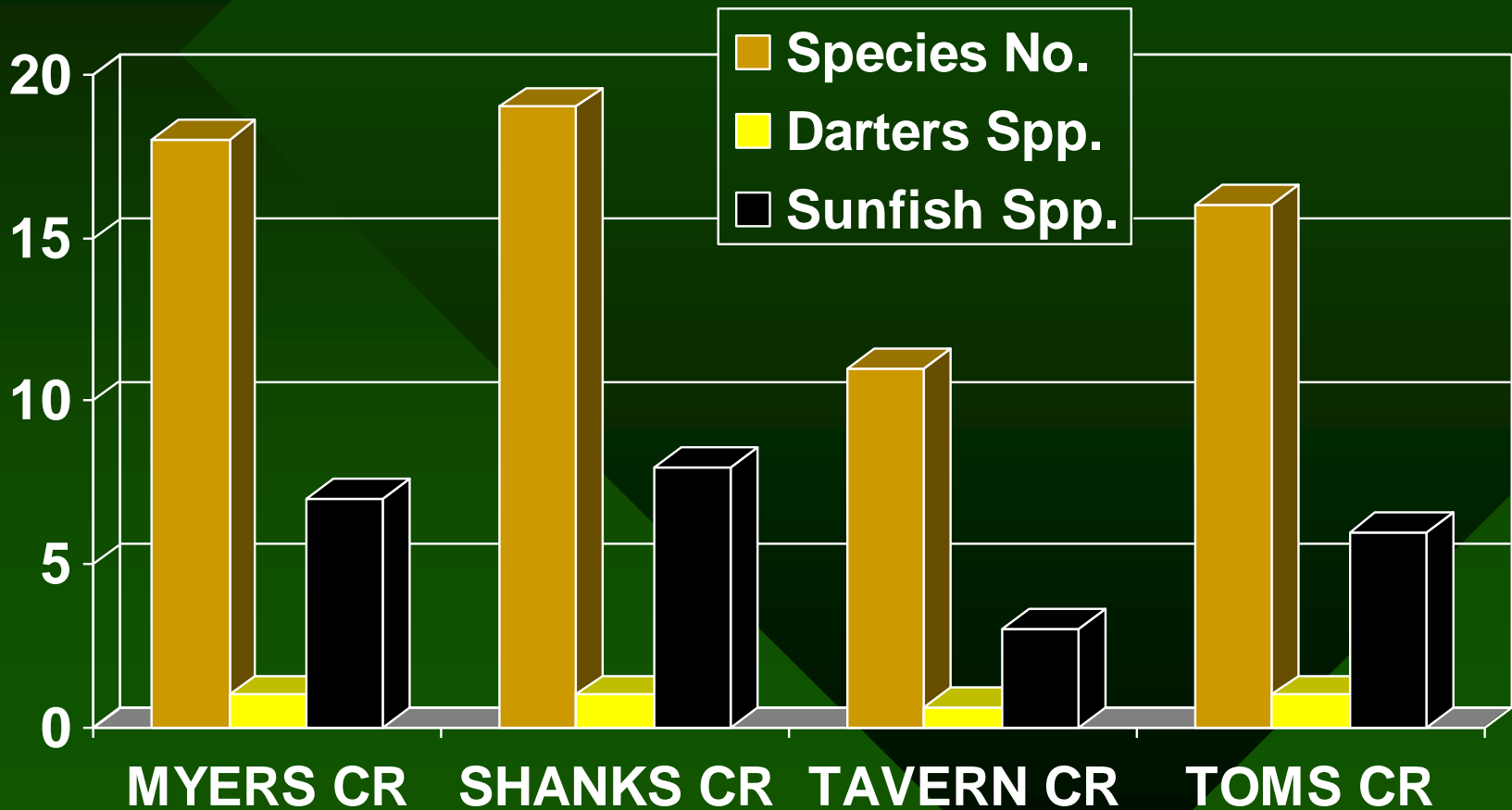
Hypothetical range of sensitivity to degradation  
for each metric included in the IBI

# Scoring The IBI

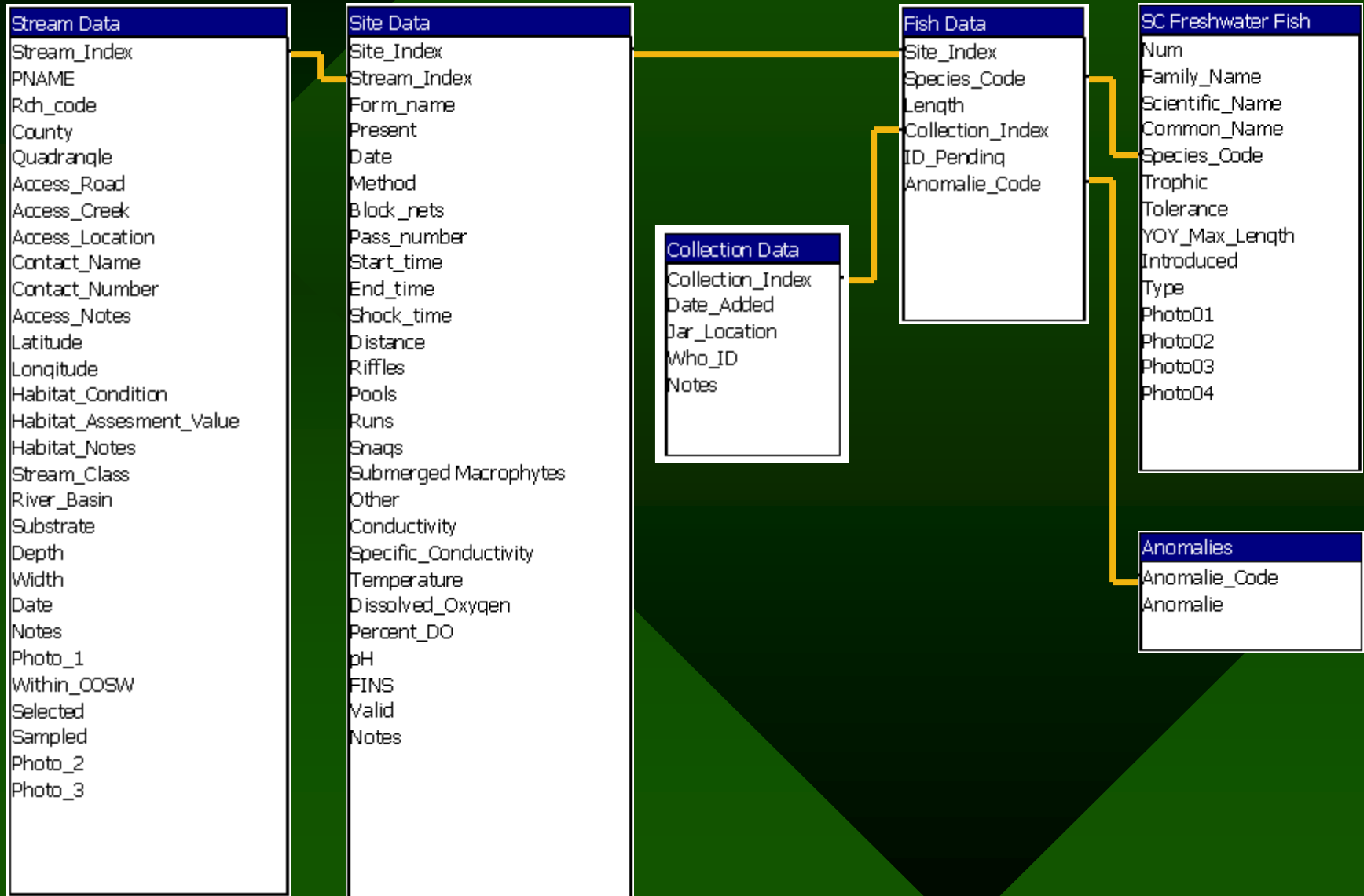
- 1, 3, or 5 for each metric
- Scores are totaled to give one index number for each stream (IBI)
- IBI relates to stream class

<b>Stream Class</b>	
Excellent	53 - 60
Good	45 - 52
Fair	36 - 44
Poor	23 - 35
Very Poor	12 - 23

# Species Richness Metric Data



# Database Relationships





Microsoft Access - [COSW Recorded Fish (Total Valid) : Select Query]

File Edit View Insert Query Tools Window Help

Stream Data Site Data Fish Data SC Freshwater...

Stream\_Index PNAME Rch\_code County

Dissolved\_Ox Percent\_DO pH FINS Valid

Site\_Index Species\_Code Length Collection\_Inc

Num Family\_Name Scientific\_Narr Common\_Narr

Field:	Name: Common_Na	Scientific name: Scie	Code: Species_Cod	Family: Family_Nam	Total
Table:	SC Freshwater Fish	SC Freshwater Fish	SC Freshwater Fish	SC Freshwater Fish	SC F
Total:	Group By	Group By	Group By		
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Criteria:					
or:					

# Database Queries

Microsoft Access - [COSW Recorded Fish (Total Valid) : Select Query]

File Edit View Insert Format Records Tools Window Help

Name	Scientific name	Code	Family	Total Collected	Toleranc
Sailfin shiner	Pteronotropis hypselopteru	SFS	Cyprinidae	402	M
Dusky shiner	Notropis cummingsae	DKS	Cyprinidae	244	M
Bluegill	Lepomis macrochirus	BLG	Centrarchidae	73	M
Dollar sunfish	Lepomis marginatus	DSF	Centrarchidae	71	M
Redbreast sunfish	Lepomis auritus	RBS	Centrarchidae	69	T
Yellow perch	Perca flavescens	YLP	Percidae	62	M
Pirate perch	Aphredoderus sayanus	PIP	Aphredoderidae	52	M
Spotted sunfish	Lepomis punctatus	SOS	Centrarchidae	43	M
Creek chubsucker	Erimyzon oblongus	CCS	Catostomidae	40	M
Margined madtom	Noturus insignis	MGM	Ictaluridae	28	M
Warmouth	Lepomis gulosus	WAR	Centrarchidae	26	M
Yellow bullhead	Ameiurus natalis	YBH	Ictaluridae	25	T
Mosquitofish	Gambusia affinis	MSQ	Poeciliidae	22	T
Redfin pickerel	Esox americanus	RFP	Esocidae	21	M
Whitefin shiner	Cyprinella nivea	WFS	Cyprinidae	20	M
Spotted sucker	Minytrema melanops	SPS	Catostomidae	20	M
Flier	Centrarchus macropterus	FLR	Centrarchidae	17	M
Largemouth bass	Micropterus salmoides	LMB	Centrarchidae	13	M
Redear sunfish	Lepomis microlophus	RES	Centrarchidae	13	M
Brook silverside	Labidesthes sicculus	BSS	Atherinidae	12	M
Golden shiner	Notemigonus crysoleucas	GLS	Cyprinidae	11	T
Common darter	Etheostoma thelopium	CCD	Percidae	11	M



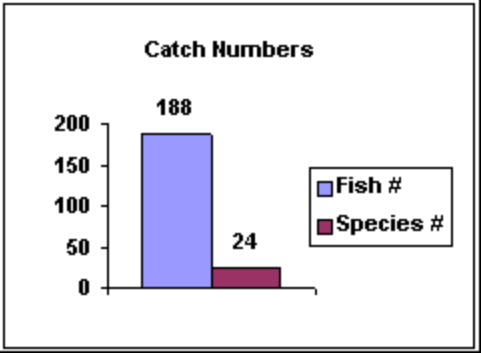
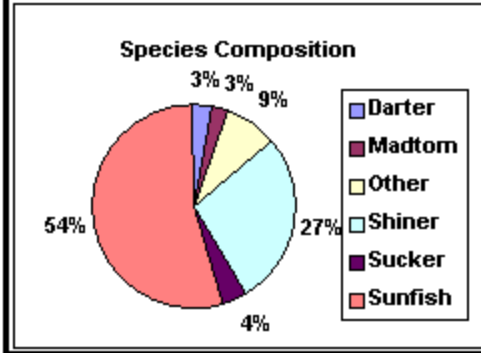
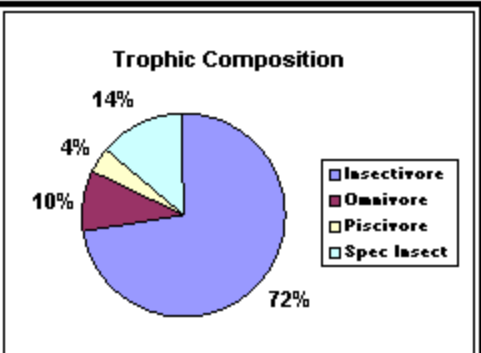
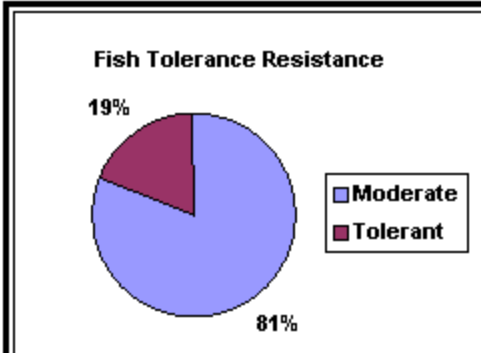
# Database Reports

Buckhead Creek

13<sup>th</sup> October 2000

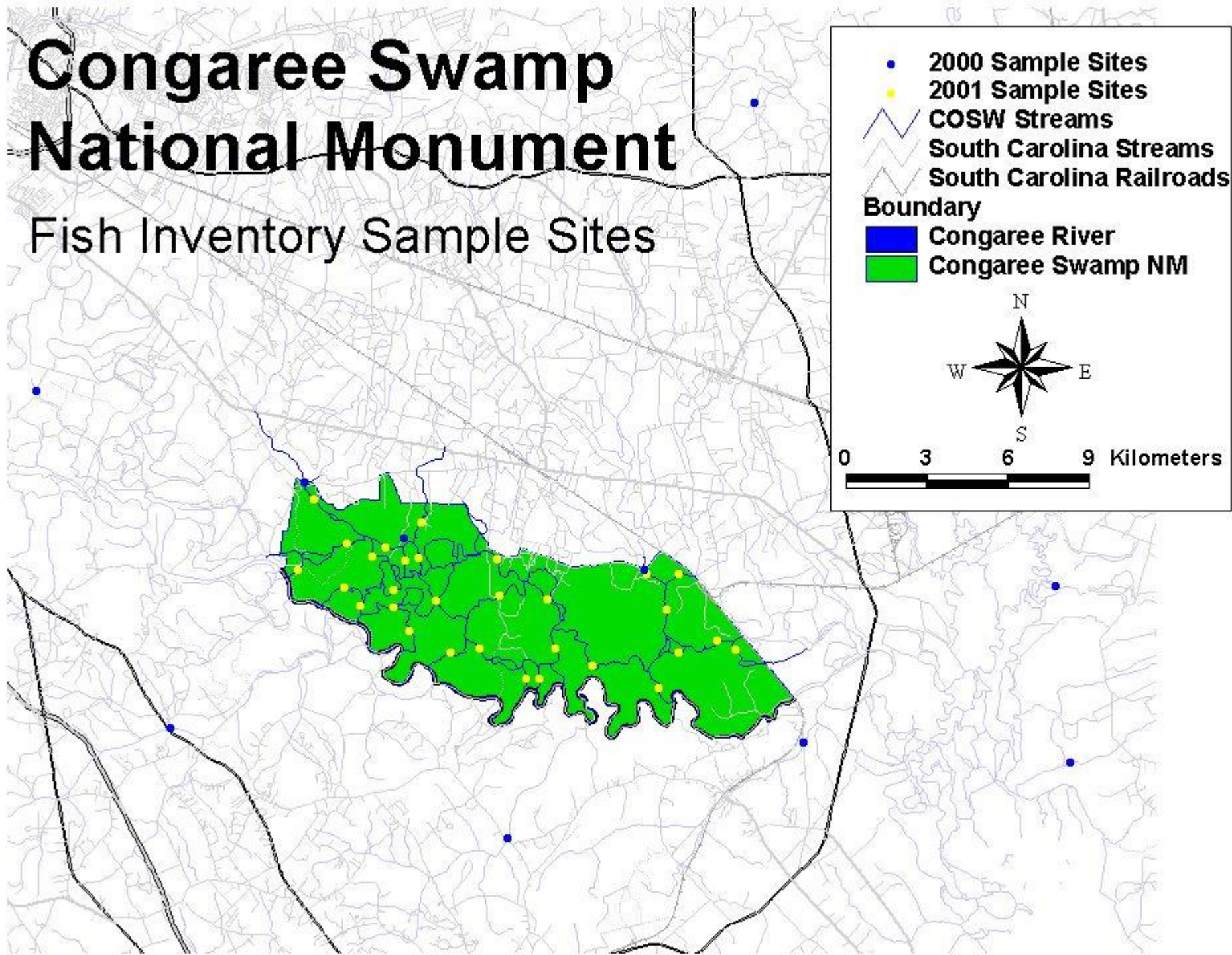
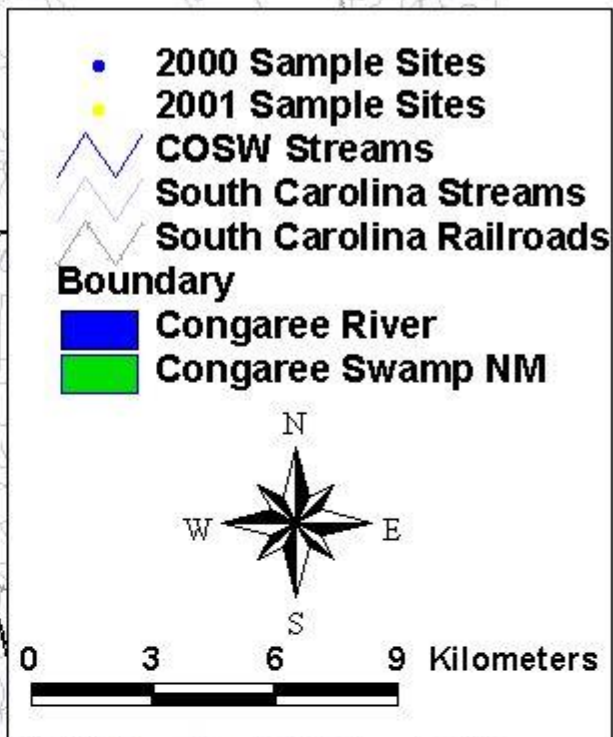
Fish #	188
Species #	24
% Catfish	2.66%
% Darters	3.19%
% Suckers	3.72%
% Sunfish	54.79%
% Centrarchidae	55.85%

% Piscivores	4.26%
% Omnivores	9.57%
% Insectivores	72.34%
% Spec Insec	13.83%
% Tolerant	19.15%
% Moderate	80.85%
% Intolerant	



# Congaree Swamp National Monument

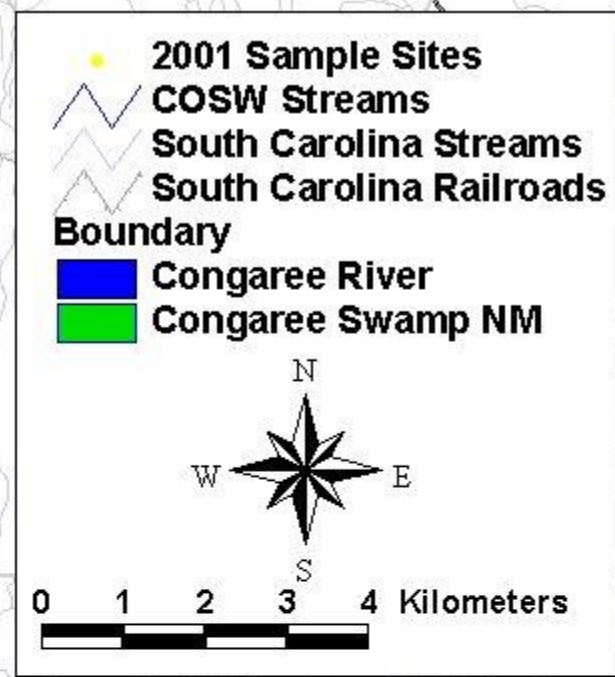
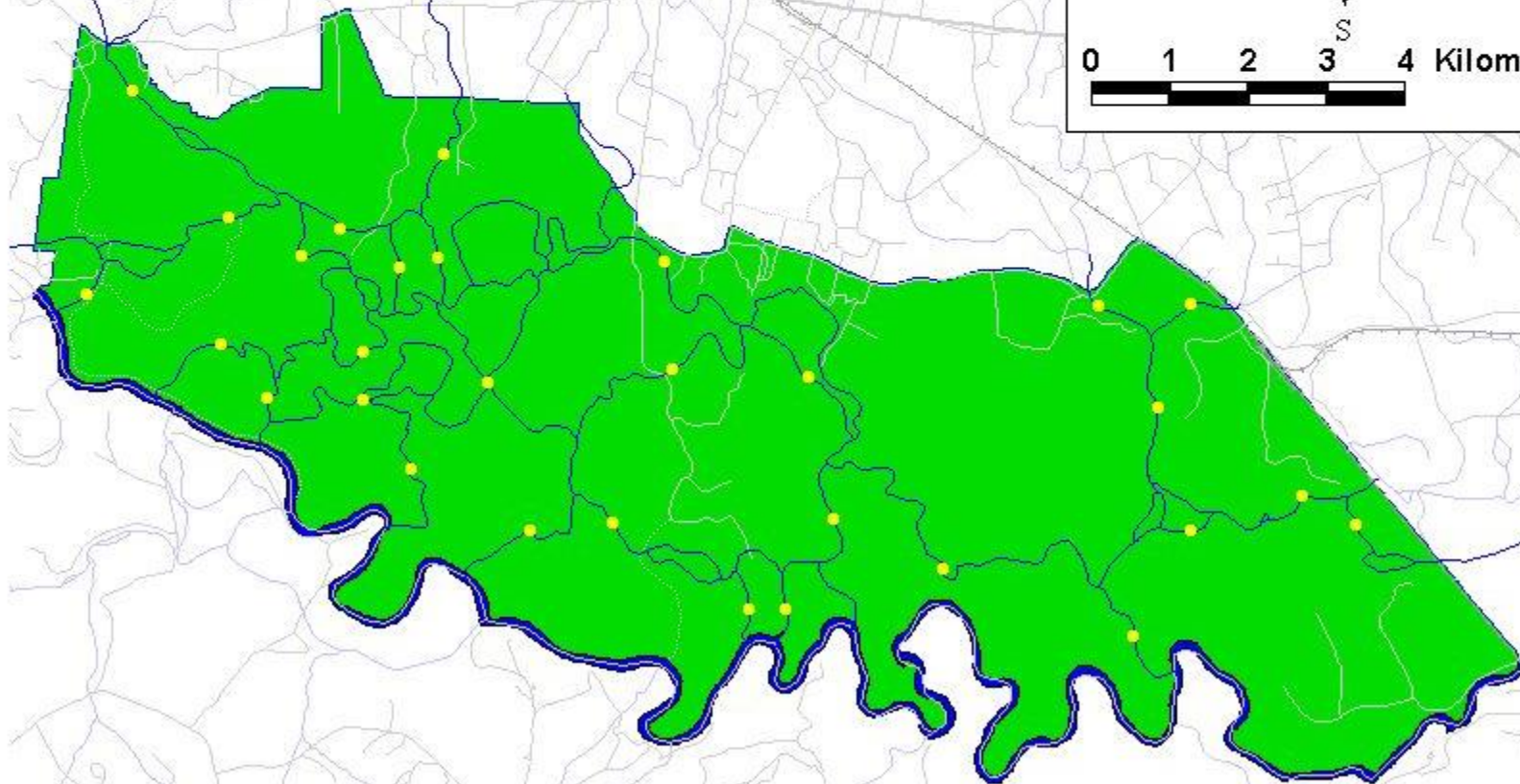
## Fish Inventory Sample Sites





# Congaree Swamp National Monument

## Fish Inventory Sample Sites



# 2001 Sampling Objectives

- Initiate sampling mid June
- Complete sampling in September (weather permitting)
- 30 sites have been selected
- Full-time summer assistant will be hired
- At least one public sampling day (Late July)
- Continue to develop database, GIS and fish reference collection

# 2001 Sampling Logistics

- 2001 Sampling Permit
- Access Concerns
- Possible sampling assistance from park staff

# Summary

- 2000 Sampling objectives met
  - Stream sampling successful
  - Database developed
  - GIS developed and sites geo-referenced to database
  - Reference collection developed and linked to database
- 2001 Sampling plan developed
  - Sites selected
  - Sampling will begin mid June

# Cedar Creek

