

*Fisheries Committee*



**Meeting Agenda  
Wednesday, February 26, 2020**

**2:00 – 3:00 pm  
Commission Room  
Centennial Campus, Raleigh**

<i>Welcome/Open Meeting .....</i>	<i>Tommy Fonville</i>
<i>John E. Pechmann Fishing Education Center Open House .....</i>	<i>John Stone</i>
<i>Black Bass Genetics .....</i>	<i>Scott Loftis</i>
<i>Year-round Catch and Release Stocked Trout .....</i>	<i>Doug Besler</i>
<i>Delineation of Waters Impact Assessment Phase Update .....</i>	<i>Gordon Myers Christian Waters</i>
<i>Additional Topics of Interest/Discussion .....</i>	<i>Tommy Fonville</i>
<i>Adjourn .....</i>	<i>Tommy Fonville</i>

# Black Bass Genetics

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# Goals and Objectives

## ***Goal.—***

- Perform a comprehensive statewide genetics inventory of black bass populations to inform future black bass management efforts

## ***Objectives.—***

- Determine the genetic identity of black bass in NC
- Describe the level of hybridization among populations
- Identify waterbodies with native pure-strain populations

## ***Expected Results and Benefits.—***

- Reveal Largemouth Bass, Florida Bass and intergrade populations
- Confirm species identity of angler introductions
- Understand the magnitude of hybridization
- Identify brood-stock sources





# Background

- Menhinick (1991) recognized 4 native *Micropterus* spp.



Largemouth Bass



Smallmouth Bass



Spotted Bass



Redeye Bass

Photo credit: Joseph R. Tomelleri



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# Coastal Region Samples

Region	District	Waterbody	Species	N	<sup>a</sup> Panel-A	<sup>b</sup> Panel-B	Year
Coastal	1	Roanoke - upper	LMB	50	X	X	1
	1	Phelps	LMB	41	X		1
	1	Chowan - upper	LMB	7	X	X	1
	1	Mattamuskeet	LMB	50	X		1
	2	Neuse	LMB	50	X		1
	2	Trent	LMB	50	X		1
	2	Pungo	LMB	50	X		1
	1	Little River	LMB	50	X		2
	1	Perquimans River	LMB	50	X		2
	1	Pasquotank River	LMB	50	X		2
Totals		10		448			

<sup>a</sup>Panel A (35 markers)-used to identify pure Florida Bass, pure Largemouth Bass, F1 hybrids and backcrosses

<sup>b</sup>Panel B (64 markers)-used to distinguish between 12 black bass species, assess purity and hybridization



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# Piedmont Region Samples

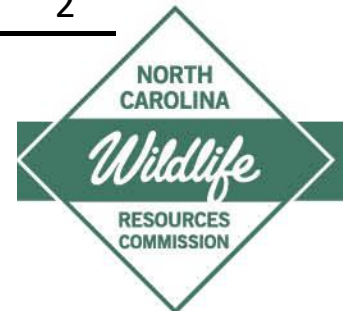
Region	District	Waterbody	Species	N	<sup>a</sup> Panel-A	<sup>b</sup> Panel-B	Year
Piedmont	3	Gaston	LMB	50	X	X	1
	3	Tar River Reservoir	LMB	50	X		1
	5	Hyco	LMB	50	X		1
	5	Graham-Mebane	LMB	50	X		1
	5	MacIntosh	LMB	50	X		1
	6	Tillery	LMB	50	X	X	1
	6	Mountain Island	LMB	50	X	X	1
	6	Mountain Island	ALB	50		X	1
	6	High Rock	LMB	50	X	X	1
	6	Norman (Tourny)	LMB	33	X	X	1
	6	Norman (Tourny)	ALB	9		X	1
	3	Falls of the Neuse	LMB	50	X		2
	5	Reidsville	LMB	50	X		2
	6	Norman	LMB	29	X	X	2
	6	Norman	ALB	25		X	2
		15		646			

<sup>a</sup>Panel A (35 markers)-used to identify pure Florida Bass, pure Largemouth Bass, F1 hybrids and backcrosses

<sup>b</sup>Panel B (64 markers)-used to distinguish between 12 black bass species, assess purity and hybridization



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# Mountain Region Samples

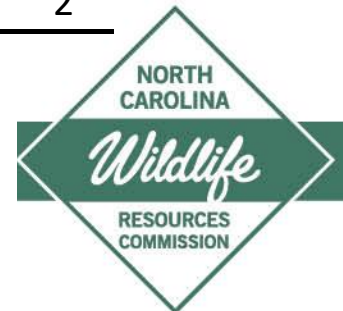
Region	District	Waterbody	Species	N	<sup>a</sup> Panel-A	<sup>b</sup> Panel-B	Year
Mountain	7	Belews	LMB	50	X	X	1
	7	WK Scott	SPB	50		X	1
	7	WK Scott	LMB	50	X	X	1
	7	Hampton	LMB	50	X		1
	8	James	LMB	50	X	X	1
	8	James	SMB	50		X	1
	8	Moss	SPB	50		X	1
	9	Fontana	LMB	50	X	X	1
	9	Fontana	SMB	50		X	1
	9	Glenville	LMB	50	X	X	1
	9	Hiwassee	LMB	50	X	X	1
	7	Norman	LMB	20	X	X	2
	7	Norman	ALB	25		X	2
	8	Rhodhiss	LMB	50	X	X	2
	9	Adger	LMB	50	X		2
				15			695

<sup>a</sup>Panel A (35 markers)-used to identify pure Florida Bass, pure Largemouth Bass, F1 hybrids and backcrosses

<sup>b</sup>Panel B (64 markers)-used to distinguish between 12 black bass species, assess purity and hybridization



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# Black Bass Genetics Methods

## Panel-A Largemouth Bass

Panel A (35 markers)-Identifies allele frequencies of Florida Bass, Largemouth Bass, F1 hybrids and backcrosses

ID	STATE	DISTRICT	WATERBODY	SPECIES	FL MARKERS	NB MARKERS	HE MARKERS	TS	FL %	NB %
JAMS18_001	NC	8	Lake James	LMB	2	28	5	35	12.86	87.14

## Panel-B Black Bass

Panel B (64 markers)-Distinguish between 12 black bass species, assess purity, and hybridization

Original_ID	Species	Waterbody	District	ALB	LMB	REB	SHB	SMB	SPB	Species (STRUCTURE)
JAMS18_015	SMB	James	8	0.242	0.001	0.001	0.001	0.753	0.001	ALB/SMB
JAMS18_016	SMB	James	8	0.000	0.001	0.000	0.002	0.996	0.001	SMB





# Management Questions

## Panel-A

1. Do we have Florida Bass in NC?
  - Where are they?

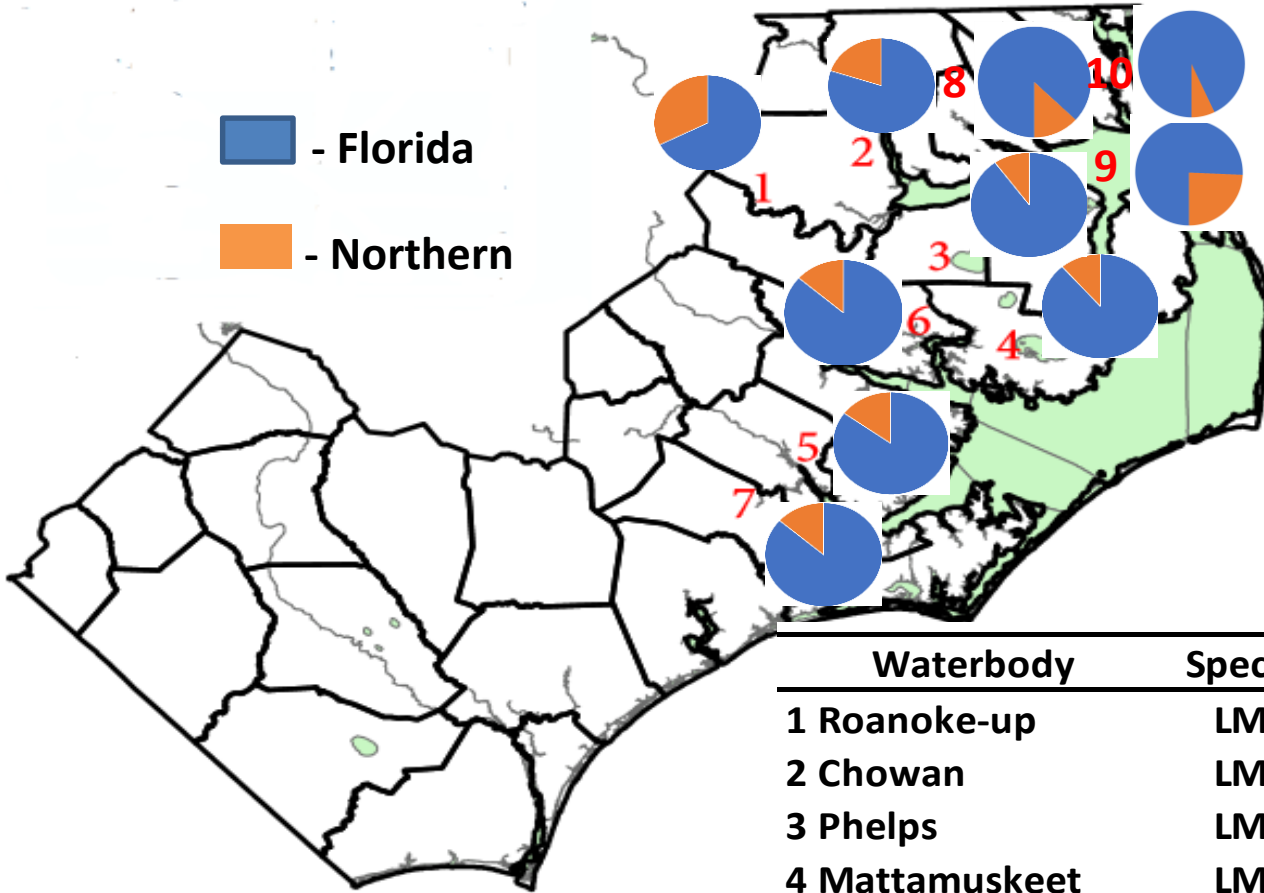
## Panel-B

2. Confirm species identity of angler introductions
  - Where are they?
  - Are they hybridizing?
  - What are other impacts?



# Coastal Region

- Florida  
 - Northern



## Panel-A Results

- All populations contain FB & LMB genes
- Several pure FB individuals

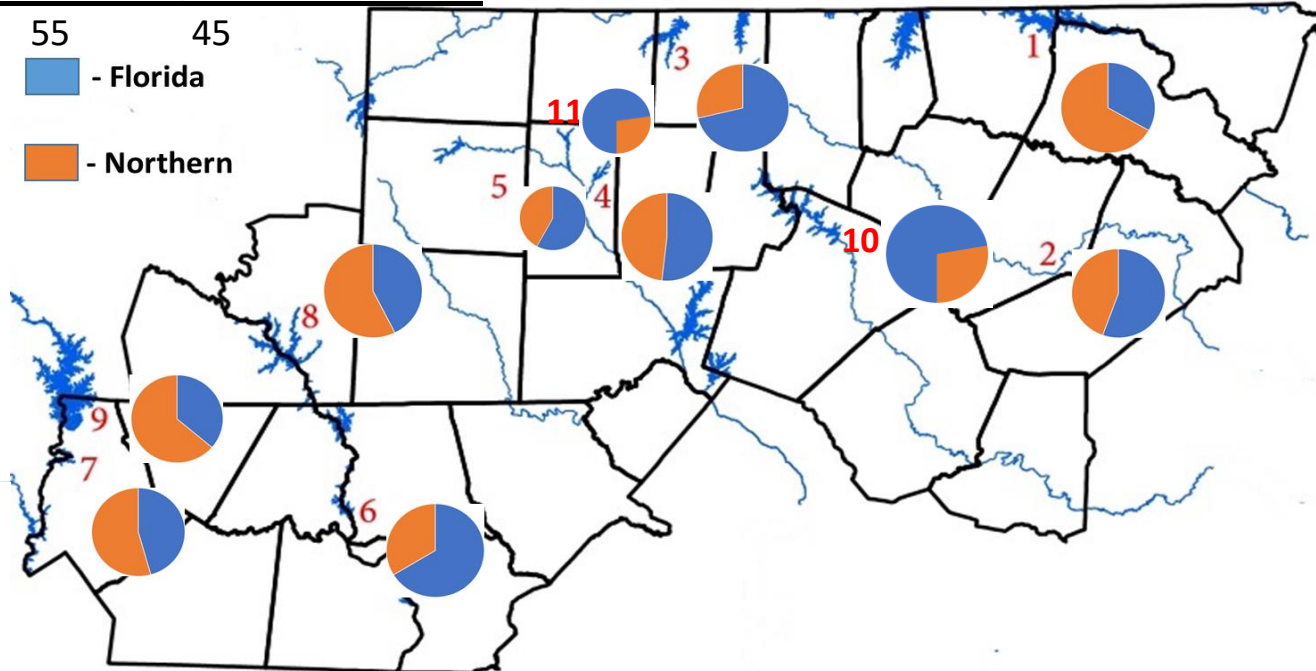
Waterbody	Species	FLMB%	LMB%	Pure FLMB
1 Roanoke-up	LMB	68	32	.
2 Chowan	LMB	80	20	.
3 Phelps	LMB	90	10	.
4 Mattamuskeet	LMB	89	11	2
5 Neuse	LMB	85	15	1
6 Pungo	LMB	90	10	1
7 Trent	LMB	86	14	1
8 Little River	LMB	87	13	6
9 Perquimans River	LMB	76	24	.
10 Pasquotank River	LMB	93	7	15
		84	16	

# Piedmont Region

Waterbody	Species	FLMB%	LMB%	Pure FLMB
1 Gaston	LMB	33	67	.
2 Tar River	LMB	55	45	.
3 Hyco	LMB	71	29	.
4 Graham-Mebane	LMB	52	48	.
5 MacIntosh	LMB	58	42	.
6 Tillery	LMB	66	34	.
7 Mountain Island	LMB	46	54	.
8 High Rock	LMB	43	57	.
9 Norman	LMB	32	68	.
10 Falls of the Neuse	LMB	72	28	.
11 Reidsville	LMB	73	27	.

## Panel-A Results

- All populations contain FB & LMB genes
- Reduced FB genetic influence compared to Coastal populations



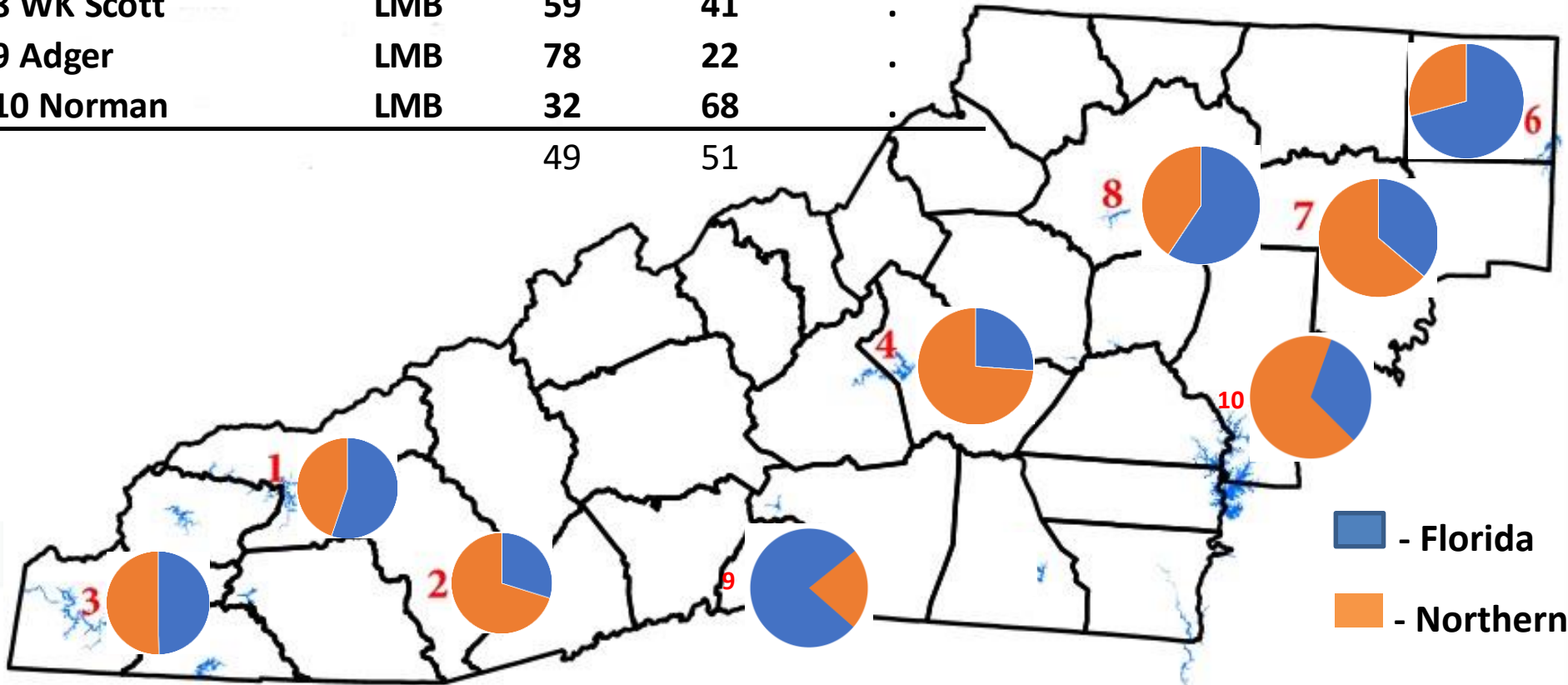
# Mountain Region

Waterbody	Species	FLMB%	LMB%	Pure FLMB
1 Fontana	LMB	55	45	.
2 Glenville	LMB	30	70	.
3 Hiwassee	LMB	50	50	.
4 James	LMB	26	74	.
6 Belews	LMB	71	29	.
7 Hampton	LMB	36	64	.
8 WK Scott	LMB	59	41	.
9 Adger	LMB	78	22	.
10 Norman	LMB	32	68	.

49 51

## Panel-A Results

- All populations contain FB & LMB genes
- Reduced FB genetic influence, similar to Piedmont populations



# Management Questions

## Panel-A

1. Do we have Florida Bass in NC?
  - Where are they?

## Panel-B

2. Confirm species identity of angler introductions
  - Where are they?
  - Are they hybridizing?
  - What are other impacts?





# Where Have Introductions Occurred & Identity

<b>Confirmed</b>	<b>Region</b>	<b>Expected</b>	<b>Region</b>
Norman	Piedmont	Tillery	Piedmont
Mountain Island	Piedmont	Apalachia	Mountians
WK scott	Mountians	Hiwassee	Mountians
Moss	Mountians	Glenville	Mountians
James	Mountians	Santeetlah	Mountians
Fontana	Mountians	Cheoah	Mountians
		Julian	Mountians
		Summit	Mountians
		Junaluska	Mountians
		Belews	Mountians
		Rhodhiss	Mountians
		Hickory	Mountians
		Lookoutshoals	Mountians



Alabama Bass

**Rivers ?**  
**Coastal Region?**

Photo credit: Joseph R. Tomelleri

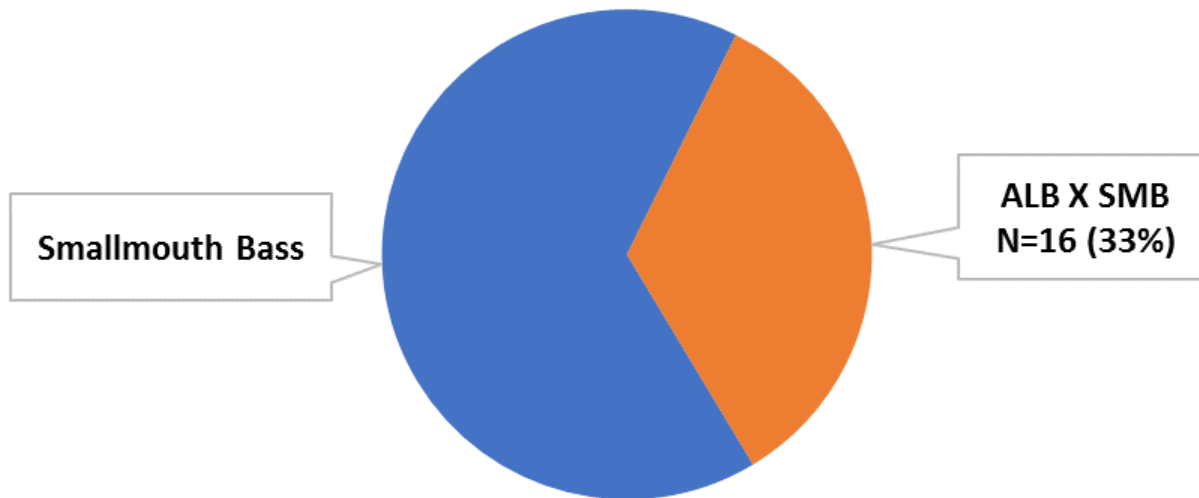
# Are ALB Hybridizing?

## Panel-B Results

### James

Smallmouth Bass Hybridization

N=49



■ Smallmouth Bass ■ ALB X SMB



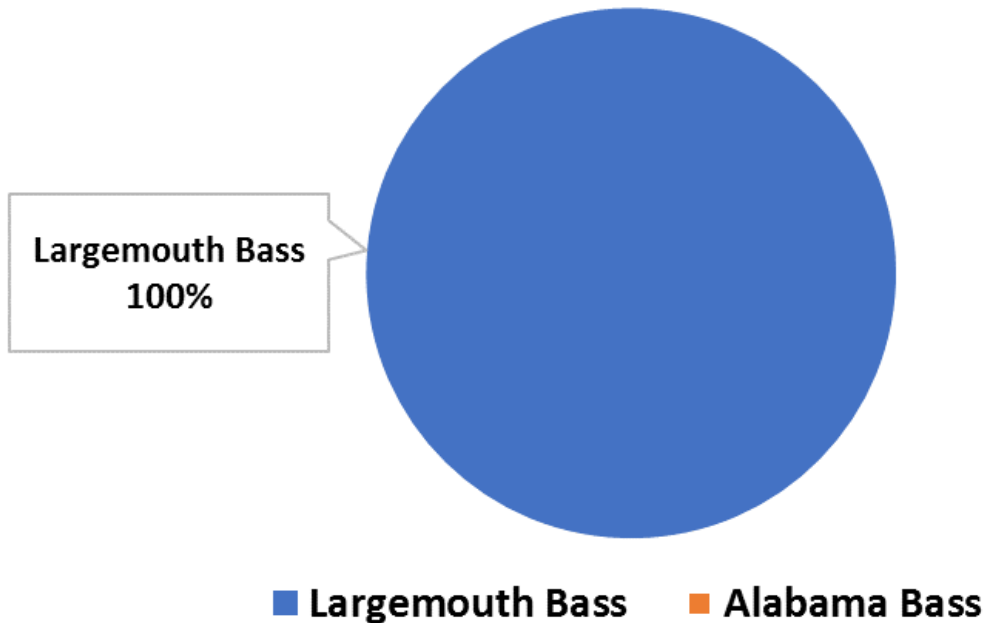
# Are ALB Hybridizing?

## Panel-B Results

### James

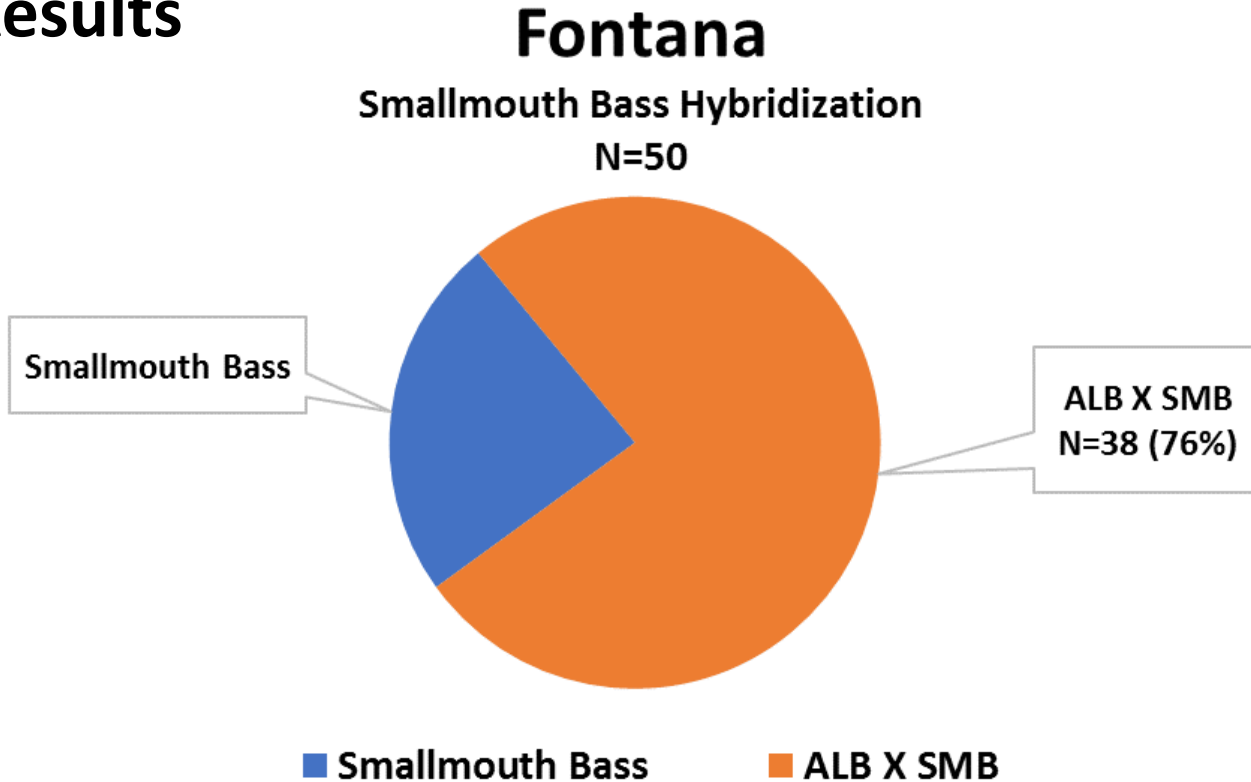
Largemouth Bass Hybridization

N=49



# Are ALB Hybridizing?

## Panel-B Results

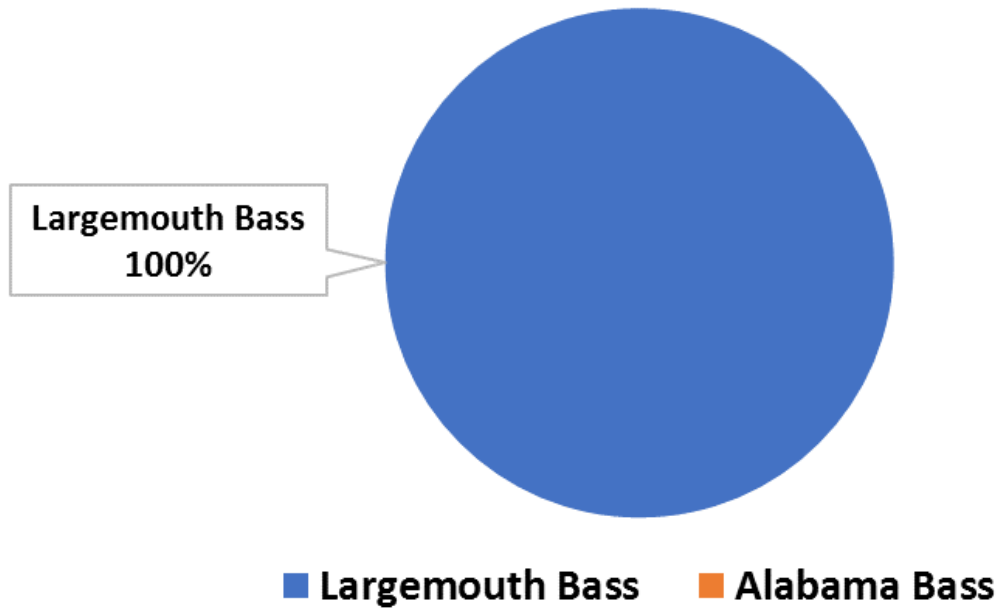


# Are ALB Hybridizing?

## Panel-B Results

### Fontana

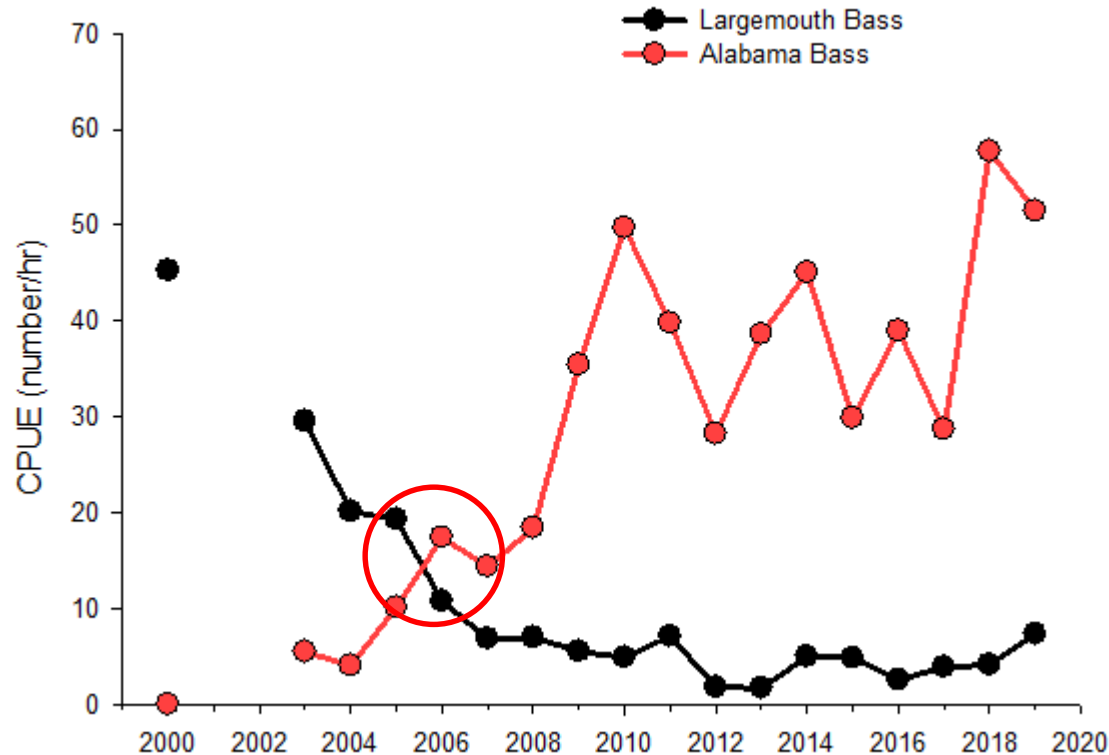
Largemouth Bass Hybridization  
N=49





# What Are Other Impacts?

Alabama Bass expanding in Lake Norman and overtook Largemouth Bass in 6 years



# Summary

## Panel-A

- All LMB Populations show a mix of both Florida Bass and Largemouth Bass genes
- Coastal populations reveal higher Florida Bass DNA, numerous pure Florida Bass have been collected

## Panel-B

- Alabama Bass have been introduced to numerous waterbodies
- Alabama Bass are not hybridizing with Largemouth Bass species
- Significant hybridization has occurred between introduced Alabama Bass and resident Smallmouth bass and Spotted Bass populations
- Surveys from Norman found that ALB do impact the relative abundance of LMB



# Management Options

## 1. Regulations

- **(2020-2021) Proposed Changes to the Alabama Bass and Spotted Bass Creel and Size rule)**
- **Possession Rule**

## 2. Supplemental Stockings

- **SMB – maintain pure strain SMB fisheries**
- **Hatchery limitations are problematic**

# Questions

## Contact Information

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828-558-6012



# Evaluating Year-Round, Stocked, Catch & Release Trout Fisheries





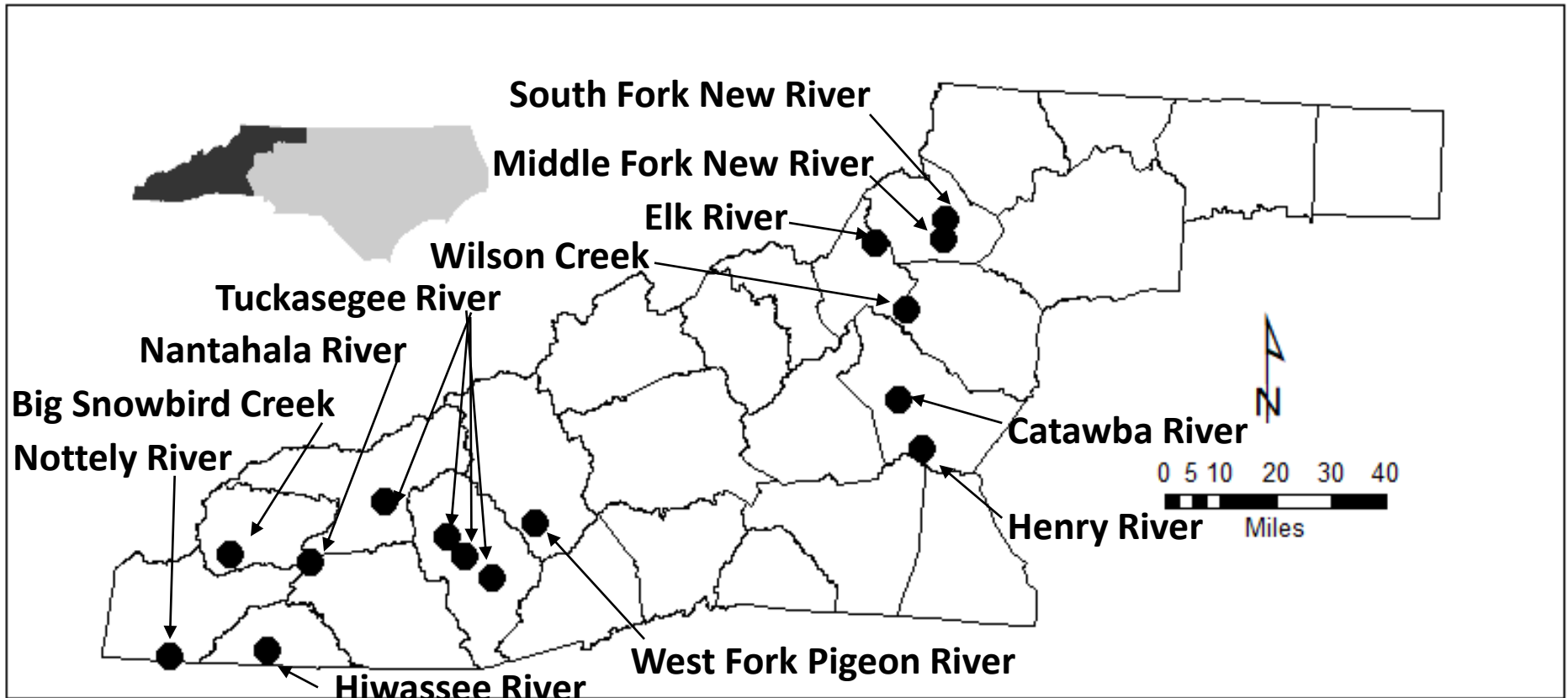
# Catch & Release Stocked Trout Evaluation



- Reached out to other state agencies (GA, KY, MD, SC, TN, VA, and WV)
- Reached out to Eastern Band of Cherokee Indians
- Identified 15 potential sites in D7, D8, & D9



# Evaluation Locations



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# Next Steps

