

MARKER-ASSISTED RESTORATION OF PRESUMPTIVE NATIVE NEW RIVER WALLEYE



Tony Duncan
14 lb 13 oz
Jan 31, 2016

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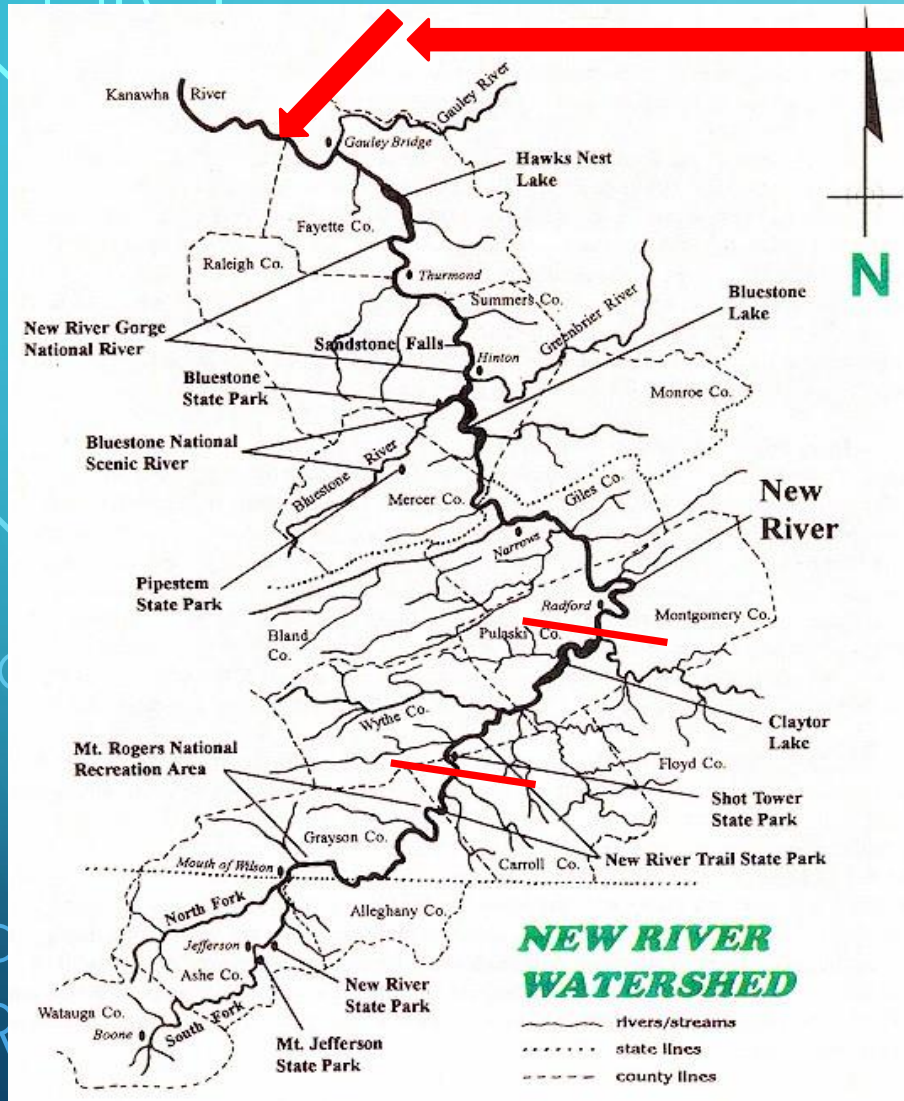
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HISTORY OF NEW RIVER WALLEYE



Kanawha Falls, WV

gowaterfalling.com

- Upper New River historically isolated by Kanawha Falls
- Unique fish fauna

wwwaterfalls.com



HISTORY OF NEW RIVER WALLEYE

Roy G. Barrett



Historic record: 22 lbs 8 oz (1973)

- Anglers love big fish!
- More fish
- Bigger fish

Tony Duncan



Current record: 15 lbs 15 oz (2000)



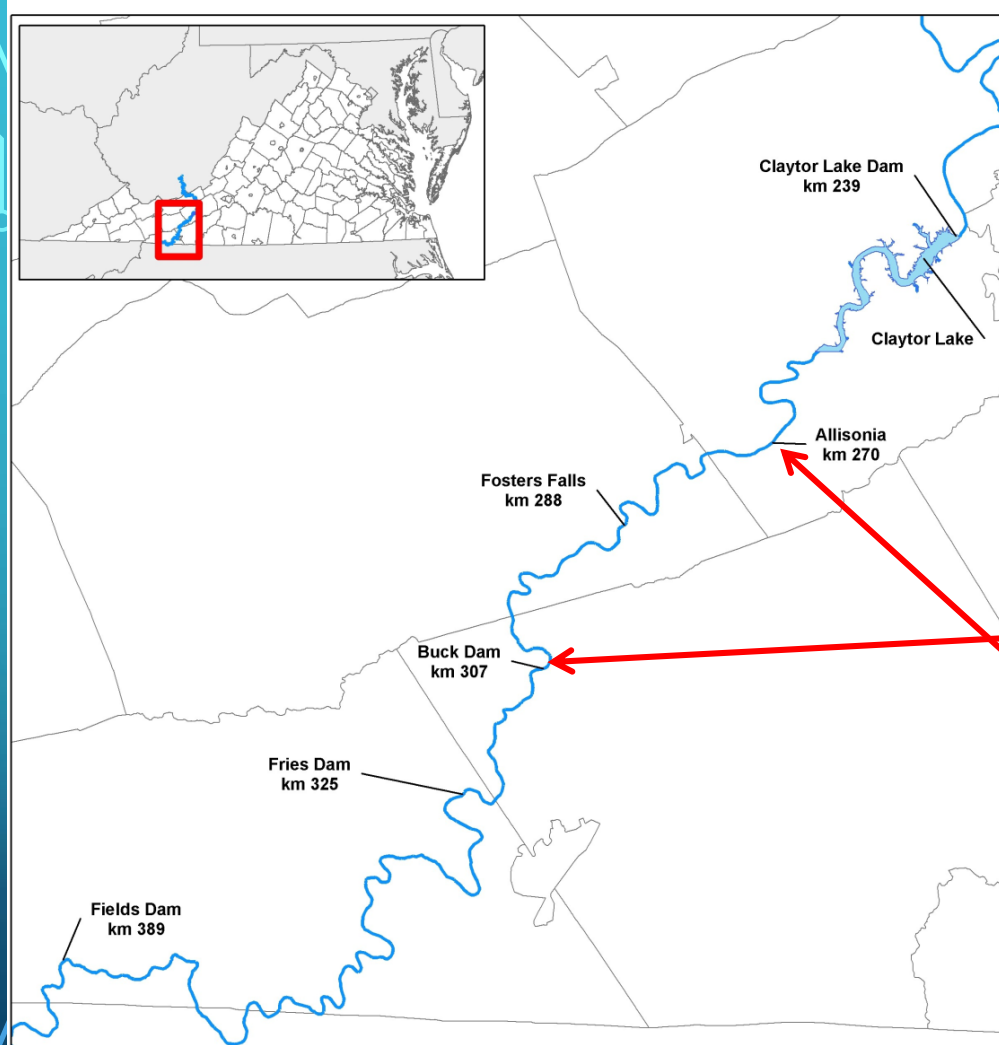
HISTORY OF NEW RIVER WALLEYE



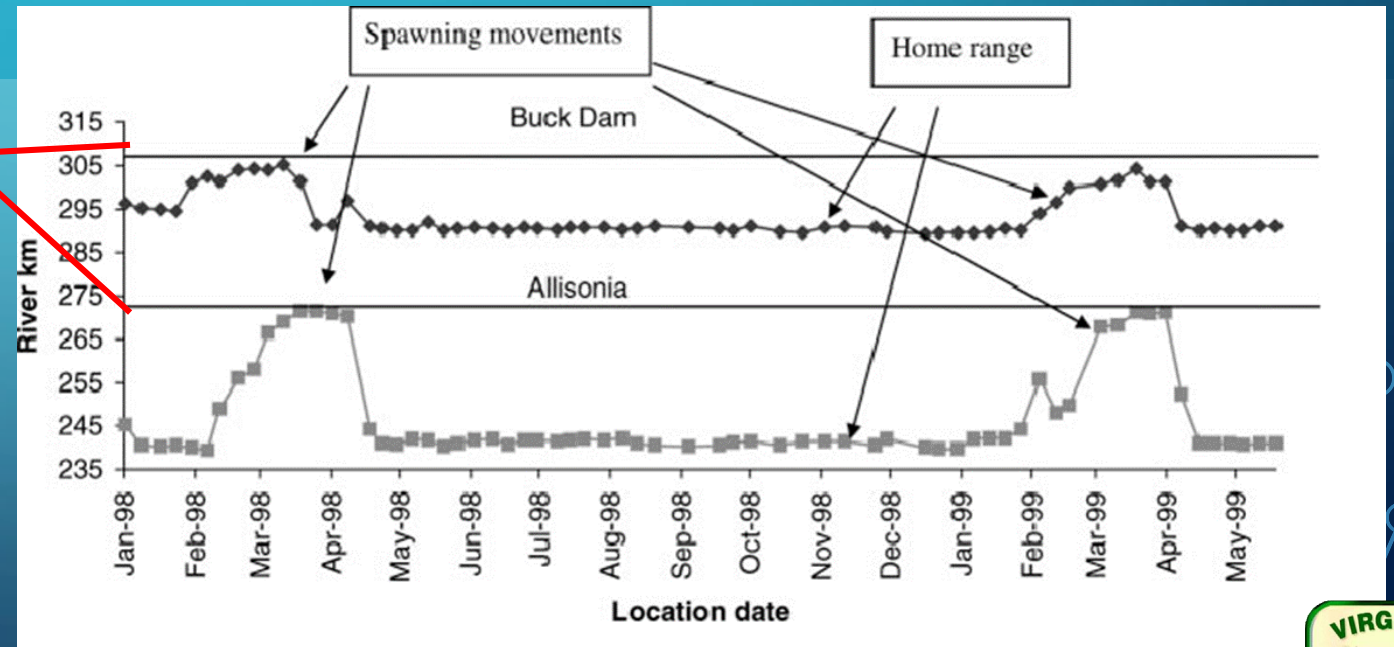
- Claytor Lake = Stocking from multiple sources (1939-1997)
- Murphy et al 1983 – Enzyme based analysis
- ID'ed Walleye from stocking sources
- Unique stock



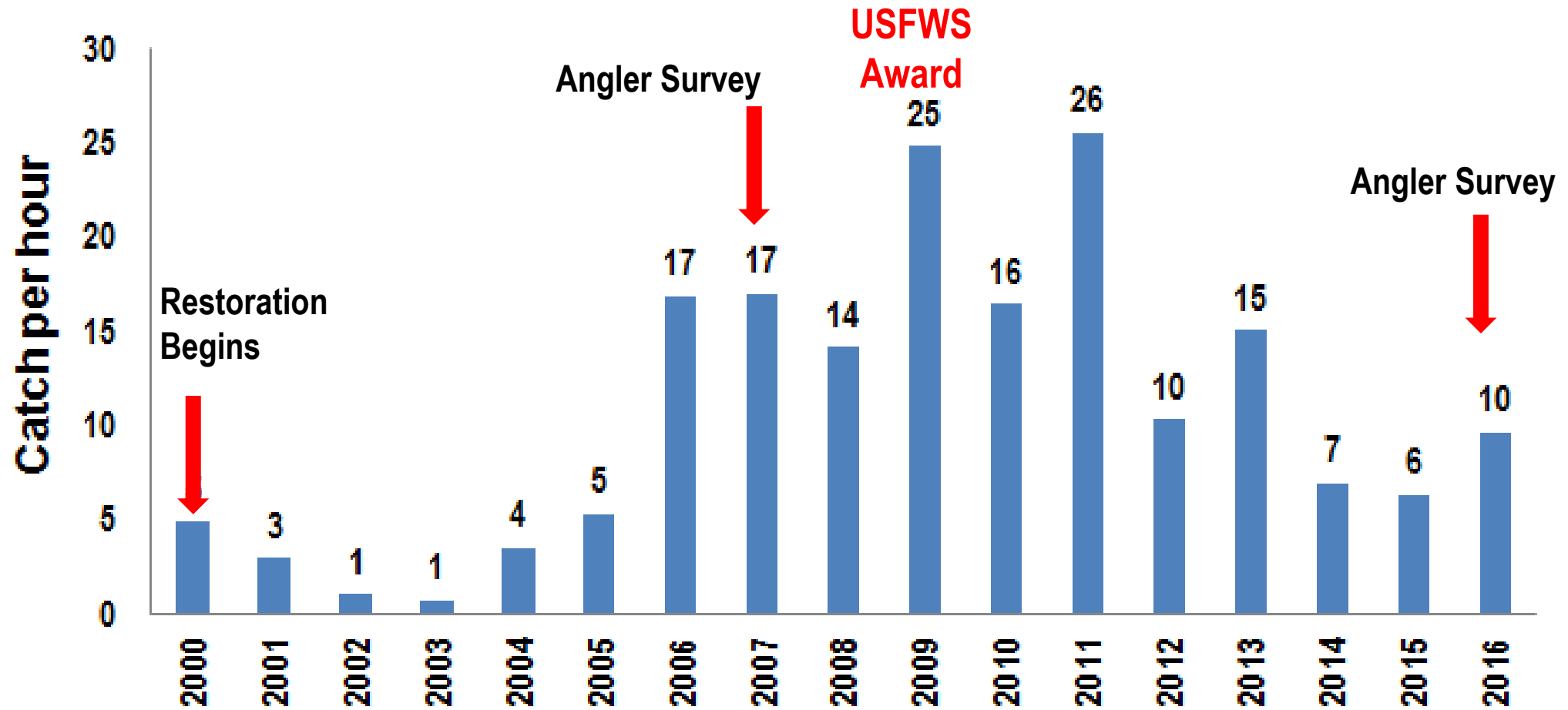
HISTORY OF NEW RIVER WALLEYE



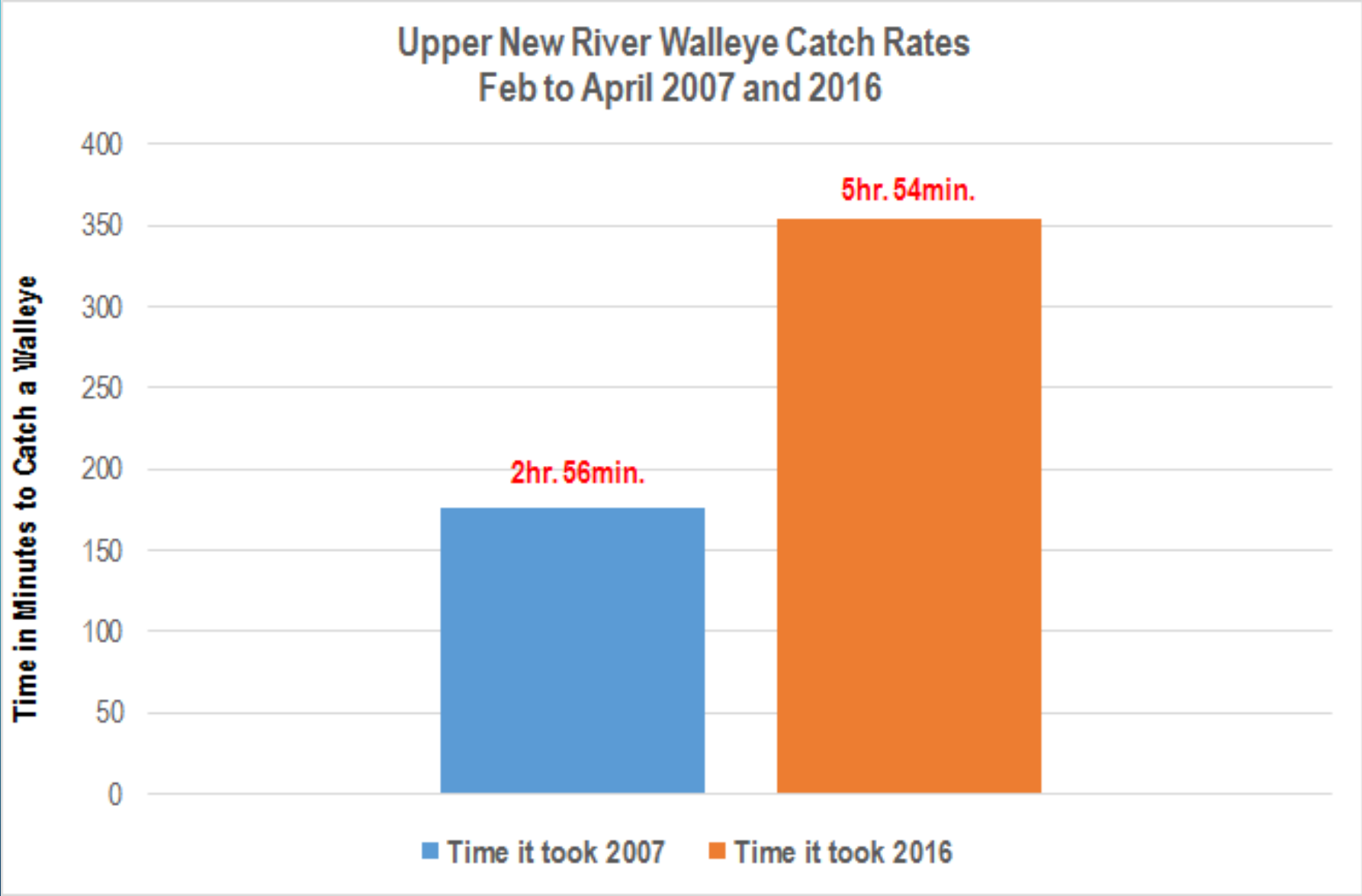
- Palmer 1997 – 1999
- Population genetic and movement study ID'ed spawning locations
- Palmer et al 2006
 - Allisonia, Foster Falls, Ivanhoe (Buck Dam)
 - Genetic differentiation between spawning grounds



Upper New River Walleye Electrofishing Catch per Hour 2000 to 2016 - Fries to Allisonia



UPPER NEW RIVER ANGLER SURVEY RESULTS



“What it takes to do a job will not be learned from management courses. It is principally a matter of experience, the proper attitude, and common sense – none of which can be taught in a classroom...”

Human experience shows that people, not organizations or management systems, get things done.”

~Admiral Rickover: Father of the Nuclear Navy – In 1982, in his 80's, after 63 years of service to his country, under 13 Presidents (Wilson through Reagan), Rickover was forced to retire from the Navy as a full admiral

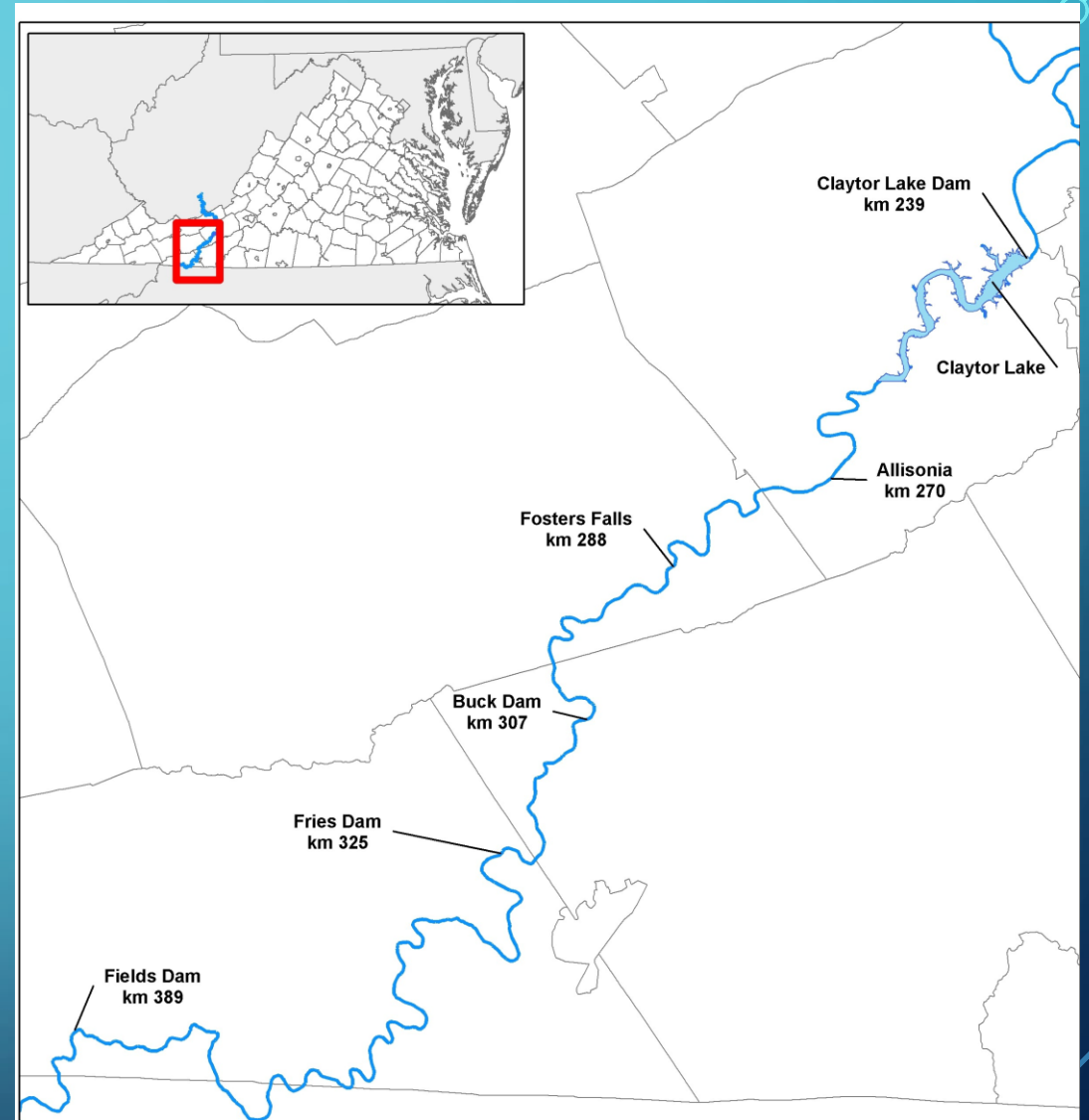


**Originated the
Grandmother Principle**



NEW RIVER WALLEYE

- Genetic markers identified and not seen in other walleye populations
 - Unique mitochondrial DNA haplotypes [43, 44, 45]
 - Haplotype 43 was most frequently observed among spawners collected at Foster Falls (90%) and Buck Dam (72%) in 1998 and Buck Dam (82%) in 1999
- Microsatellite loci linked to haplotype 43
 - 99bp allele predominates at *Svi17* and 78bp at *Svi33*
 - Quick ID of the unique stock



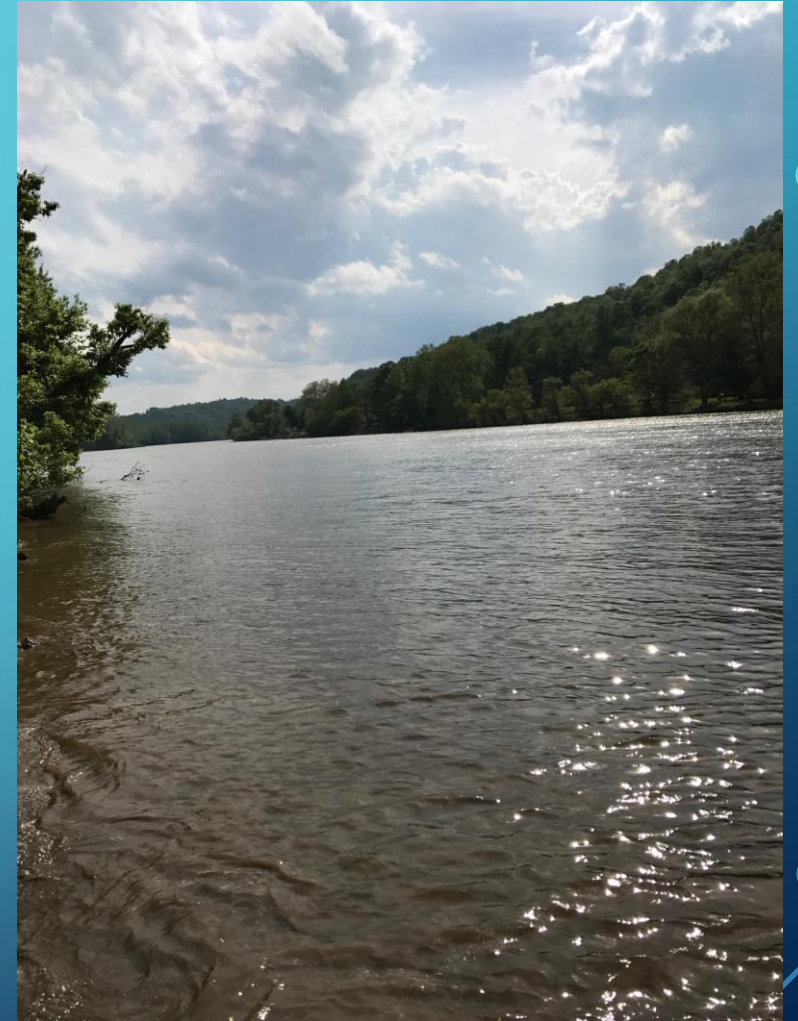
WHY MAINTAIN THE NEW RIVER WALLEYE STOCK?

- Genetic Diversity
- New River adaptations
 - River spawning not reef spawning
 - Larger eggs at time of spawning
- Population resilience
 - Dams and altered flow regimes
 - Stocking from outside genetic sources
 - Adapted to river environment
- Large growth potential

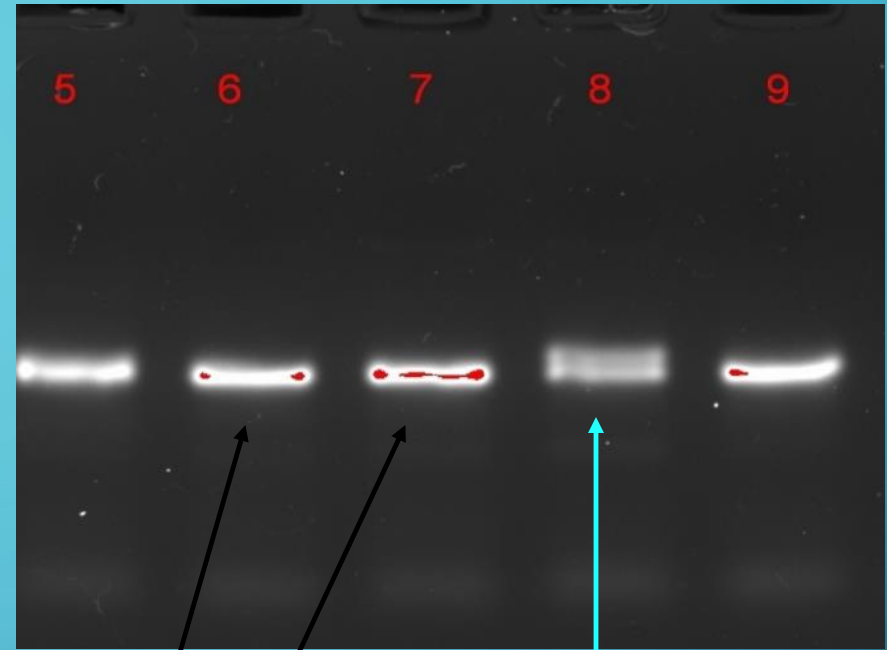
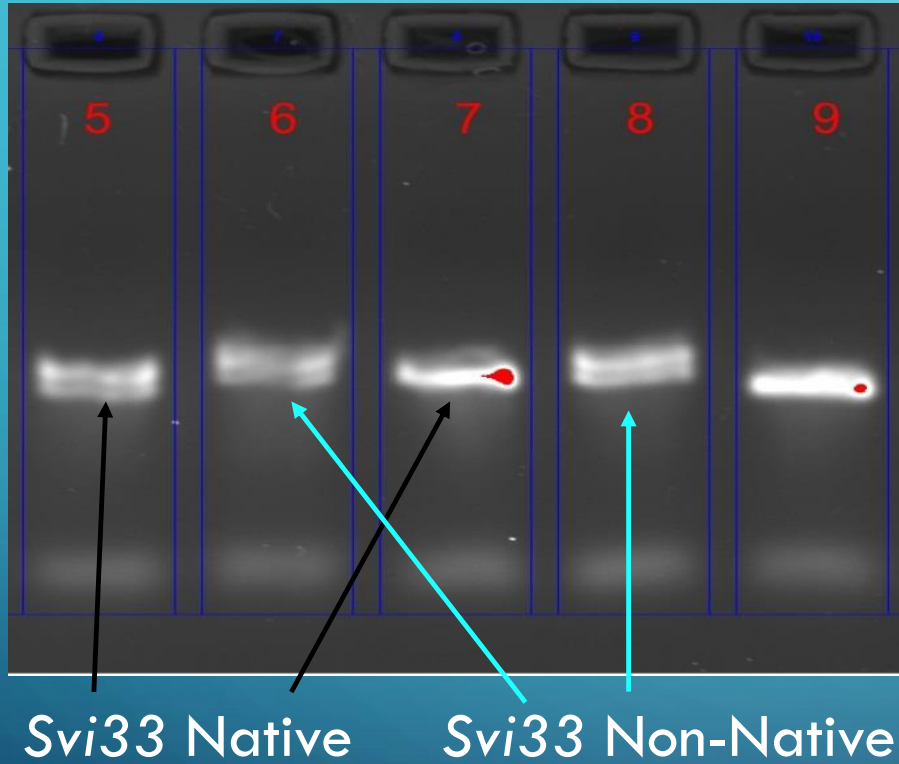


METHODS FOR RESTORATION

- Collect, tag and hold broodstock candidates from known spawning locations
 - Fin clips from collected individuals
 - Screen for microsatellite markers
- Spawn selected individuals bearing native alleles
 - Rear young and stock natives into the New River
- Claytor fall gill net surveys provide genetic assessment material



GENETIC METHODS



- Test for *Svi17* and *Svi33* markers

GENETIC GOALS

- Increase number of unique microsatellite markers
 - Increase likelihood of identifying native stock individuals
 - Drive New River walleye to dominate the walleye stock
- Use mitochondrial DNA to analyze haplotype frequencies
- Use these data to determine how New River walleye fit into the southeastern region



RESTORATION STRATEGIES

- Evaluate hatchery-based stocking success
- Genetics, aquaculture, and fisheries management to restore presumptive native New River walleye

