Presented by Joshua M Sprouse

Does Gene Flow Occur Between *Taxodium distichum* and *Taxodium ascendens*?

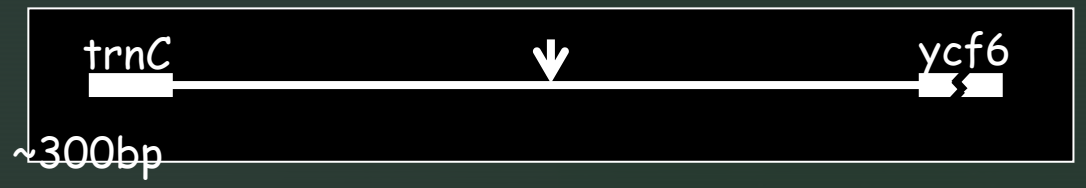
Introduction

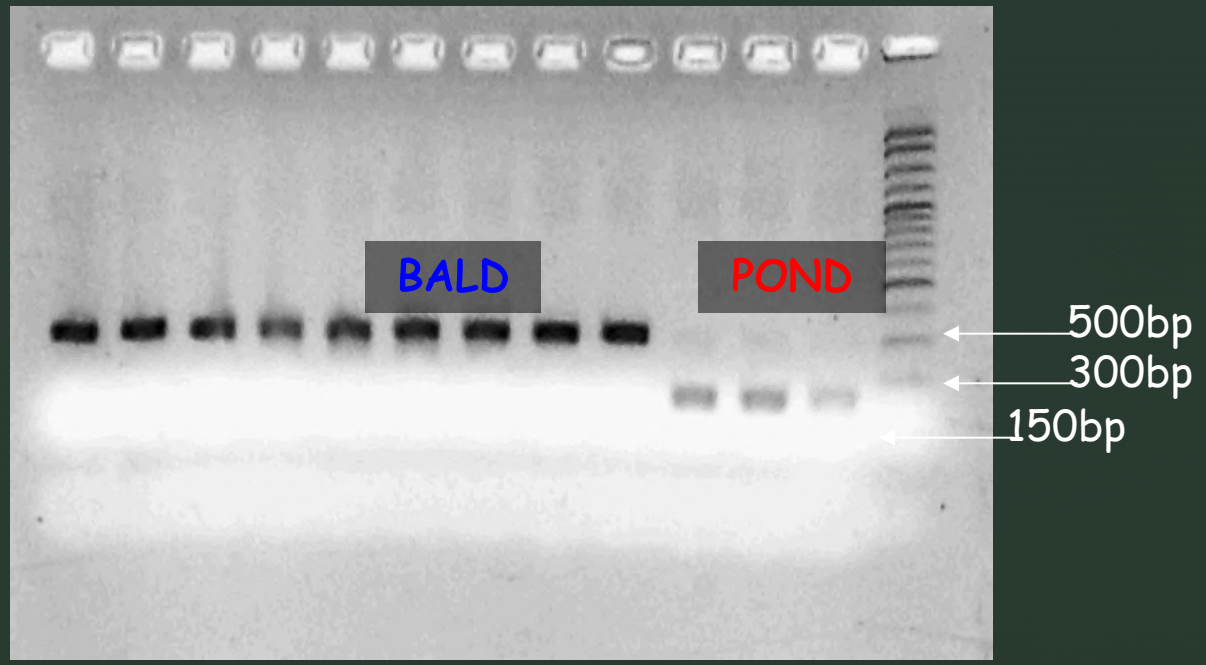
- *Taxodium ascendens* (Pondcypress)
- *Taxodium distichum* (Baldcypress)
- Intermediate phenotypes

Pondcypress

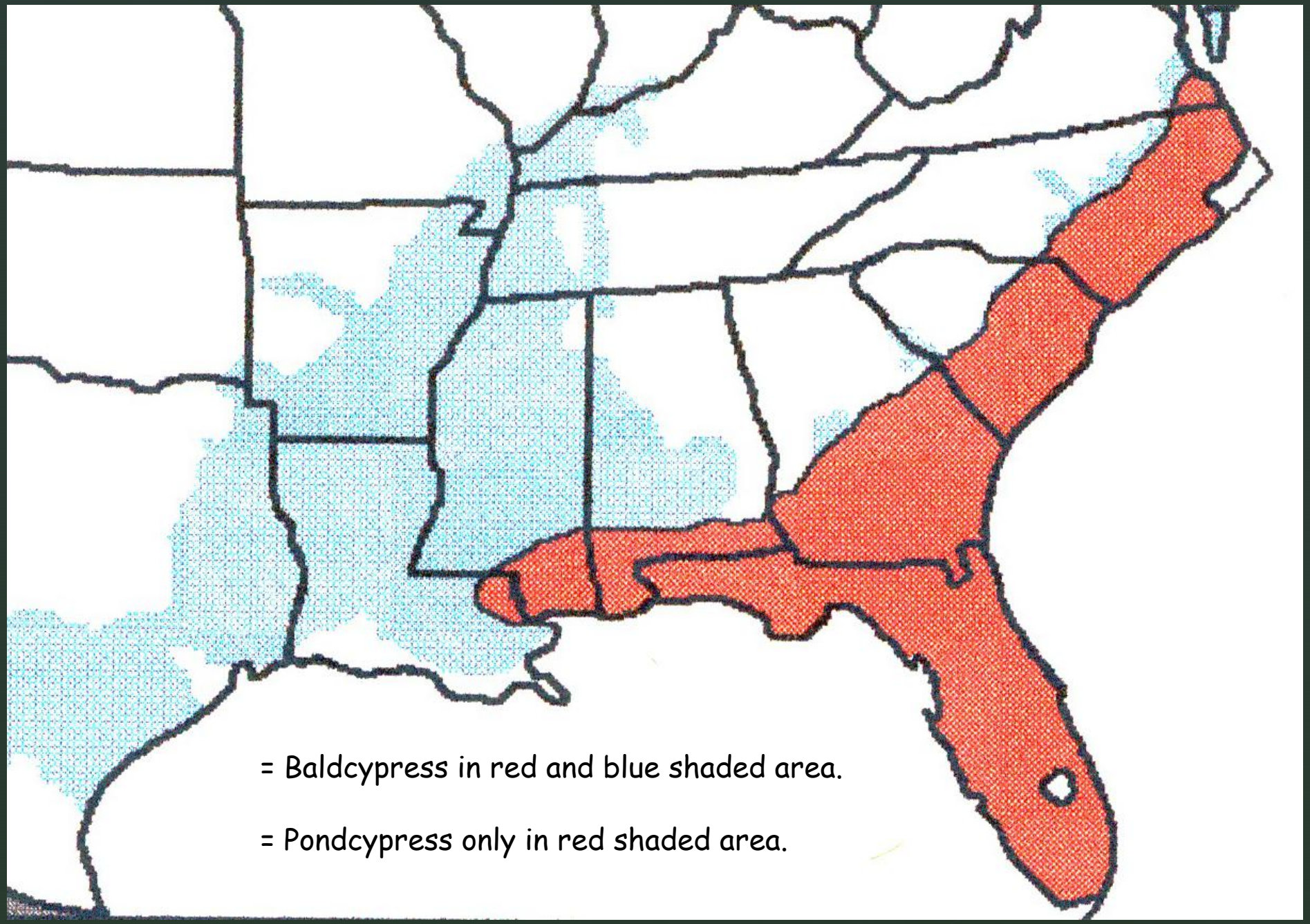
Bladcypress

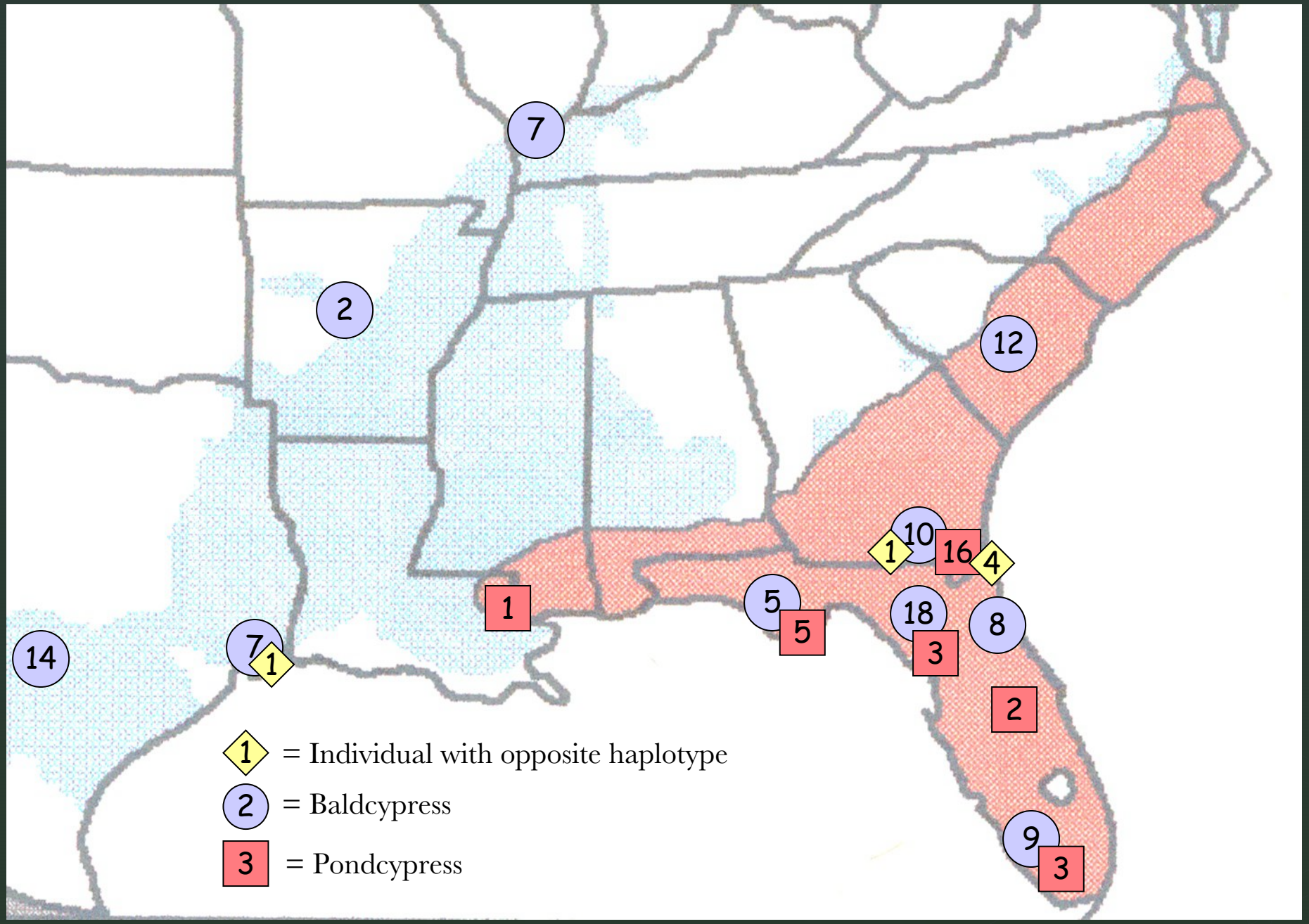
Previous Research





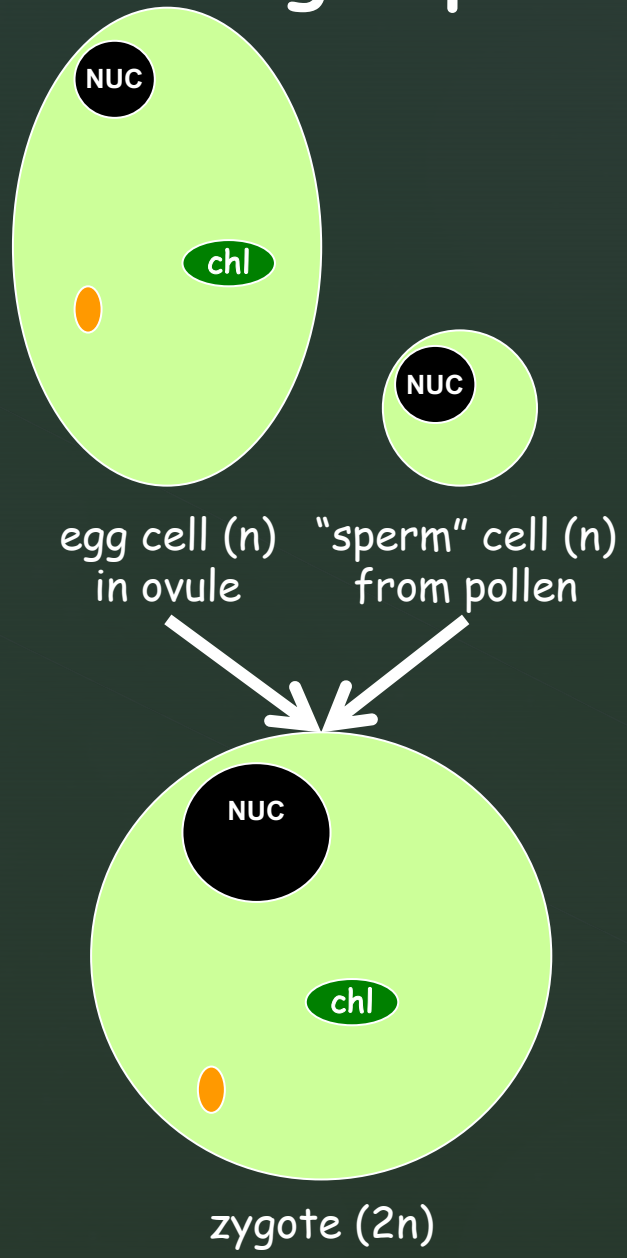
- *trnC-ycf6* spacer region in cpDNA
- PCR-RFLP allows sampling of individuals without sequencing
- This is unpublished data from Dr. Ed Lickey


= Baldcypress in red and blue shaded area.
= Pondcypress only in red shaded area.

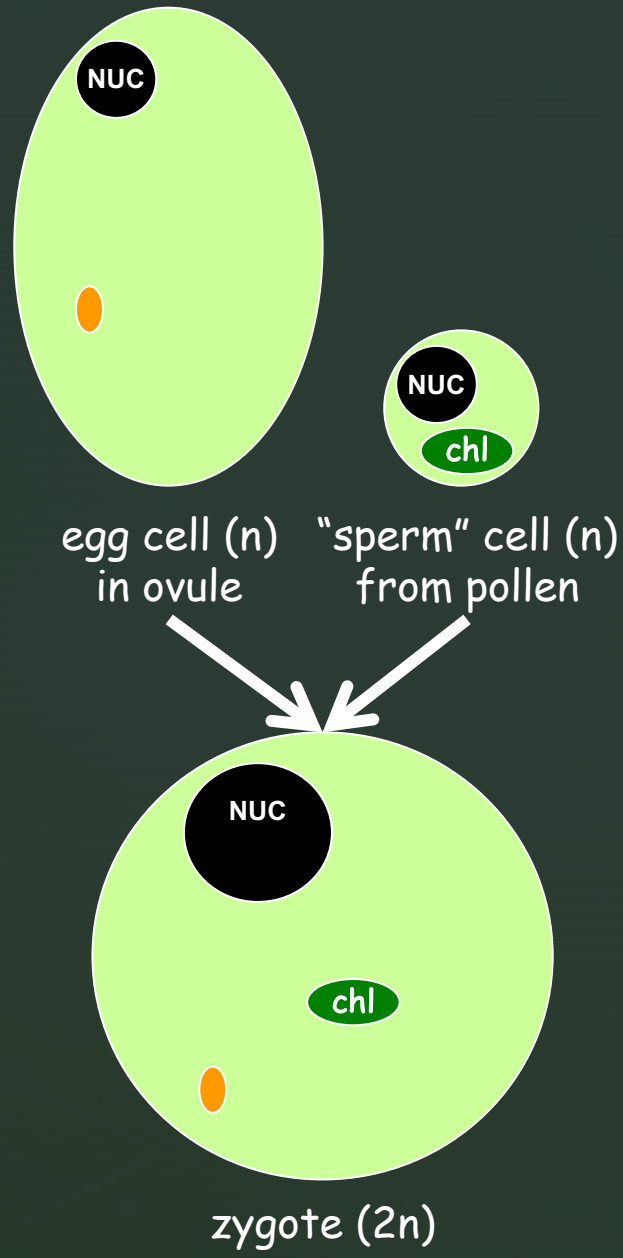

7
2
12
10
1
16
4
1
5
5
18
8
3
14
7
1
2
9
3
1 = Individual with opposite haplotype
2 = Baldcypress
3 = Pondcypress

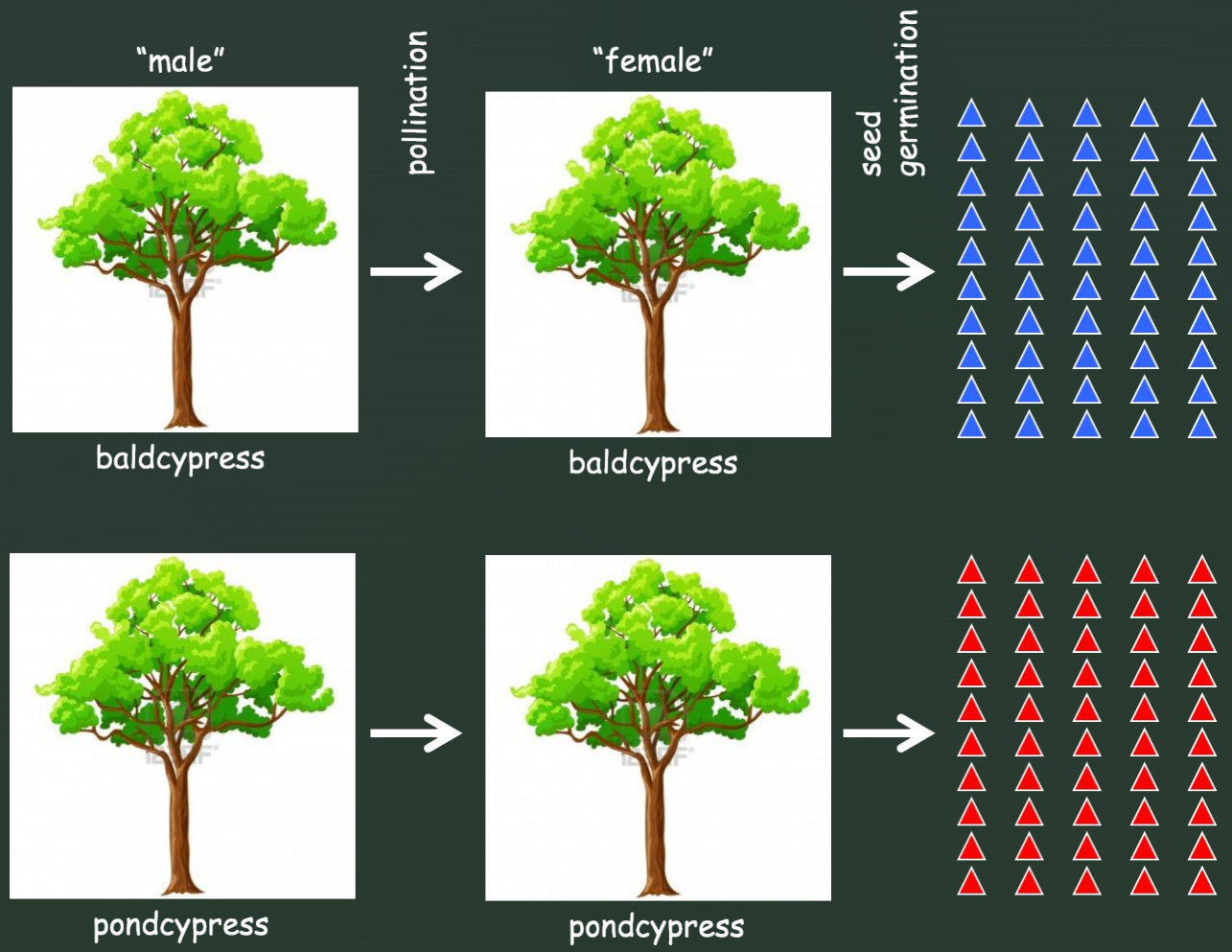
Organelle Inheritance

Most angiosperms



Some conifers



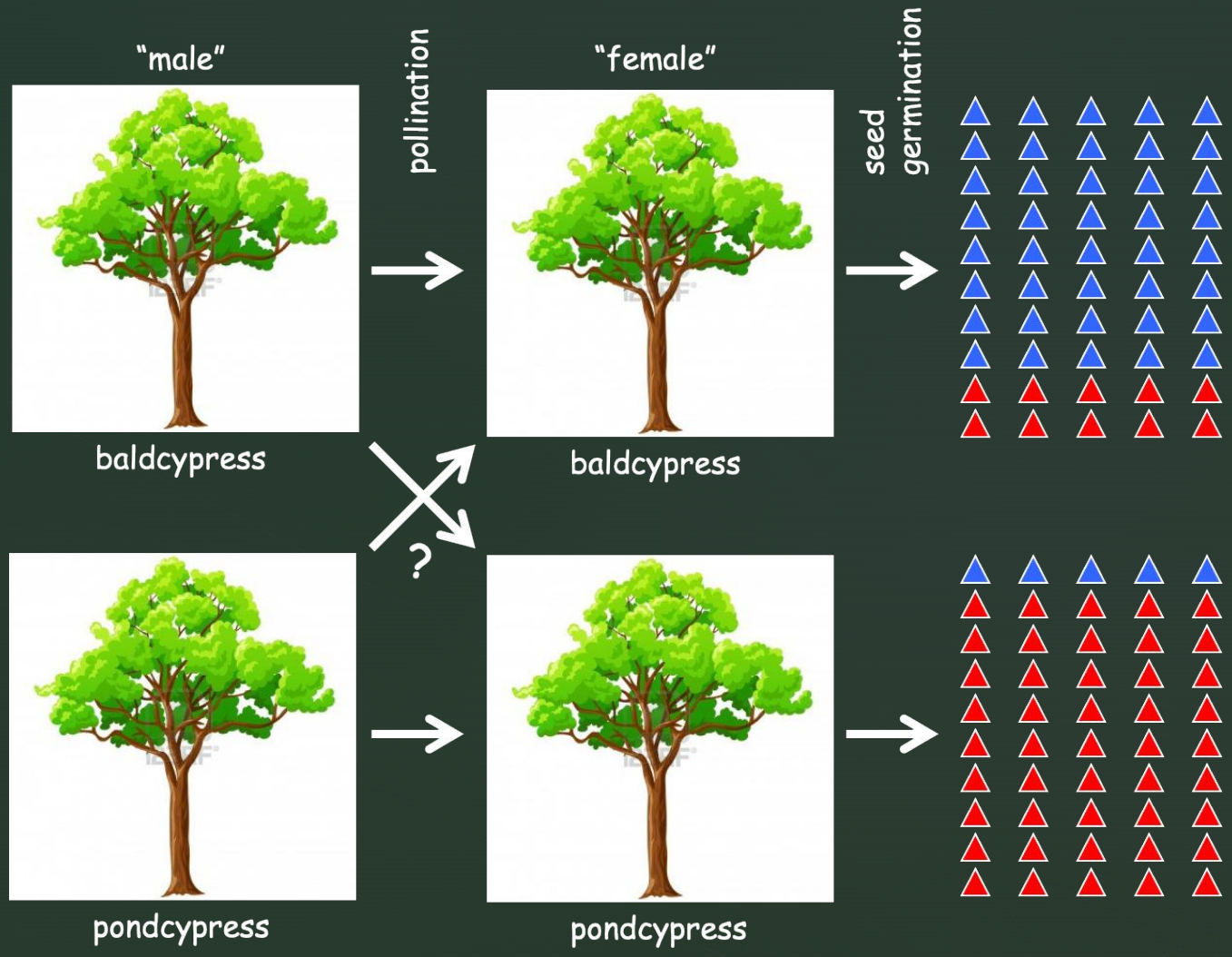


Null Hypothesis

Cross pollination will not occur between *T. ascendens* and *T. distichum*

Alternate Hypothesis

Cross pollination between *T. ascendens* and *T. distichum* will be evident based on chloroplast marker in *trnC-ycf6* spacer region identified.



Our Prediction

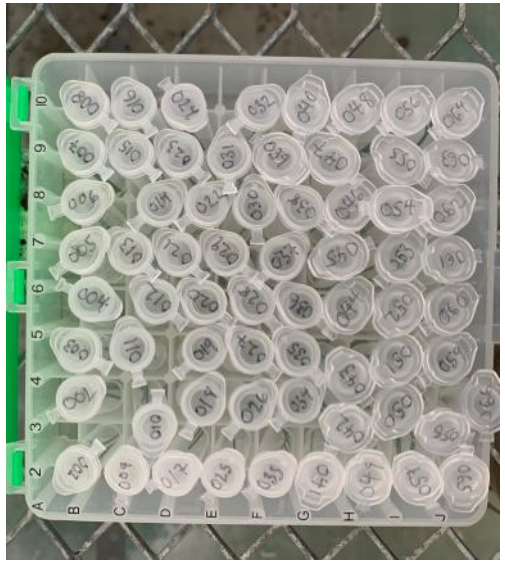
We predict that haplotypes of the *trnC-ycf6* region from *T. ascendens* will be present in some *T. distichum* and vice versa, showing that cross pollination between the two taxa is possible

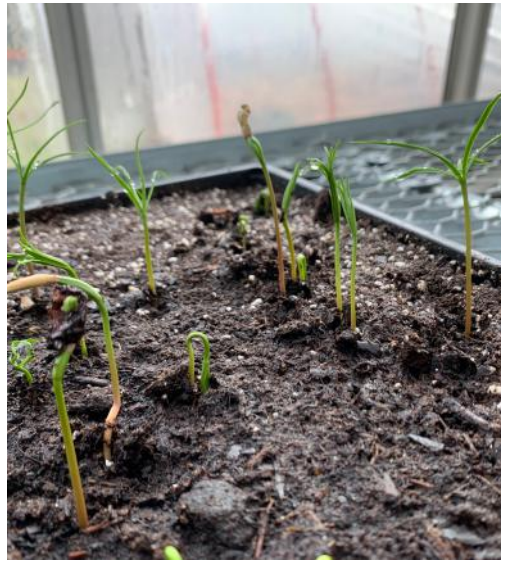
Methods

- Sample collection and preparation
- DNA extraction
- PCR and Restriction Fragment Length Polymorphism

Methods: Sample Collection

Samples collected by Eran Kilpatrick, USC, Salkahatchie

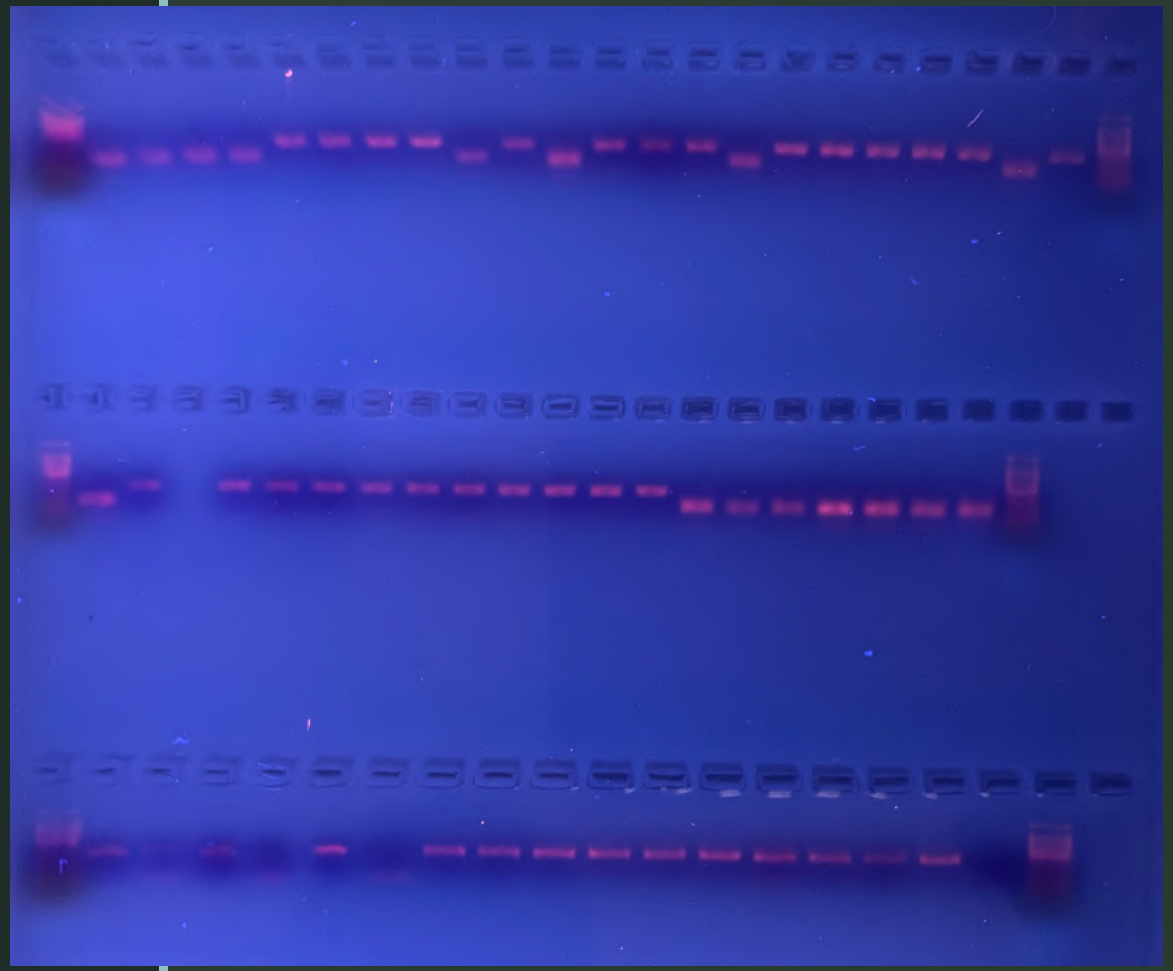


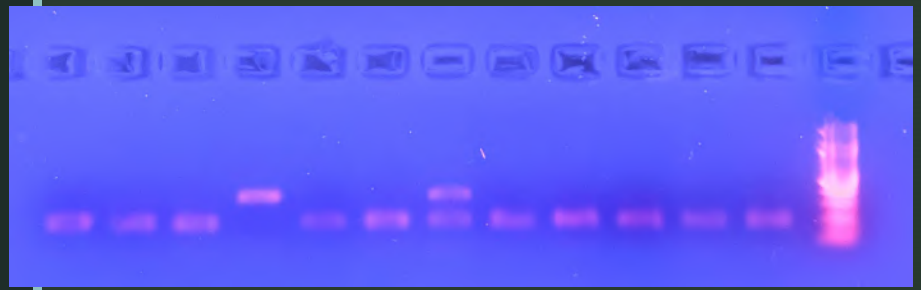


Methods: Sample Collection

Seeds germinated following protocol by Liu et al. (2009)

Methods: DNA Extraction and PCR





Data and Discussion

- 271 samples collected
  - 99.63% cpDNA PCR-RFLP success rate

			Number seedlings with haplotype		
			Bald	Pond	% opposite
Parent	Bald	T406	66	19	19.8
		T407	76	16	
	Pond	T408	8	47	9.6
		T409	1	34	

- Parent T408 showed a baldcypress haplotype
- 3 samples showed evidence of possible heteroplasmy

Conclusion and Next Steps

- Majority of seedlings from both baldcypress parents had baldcypress haplotypes
- Majority of seedling from both pondcypress parents had pondcypress haplotypes, even though one parent had the baldcypress haplotype
- "Opposite" haplotypes observed at a rate of 19.8 for baldcypress and 9.6% for pondcypress
- Analysis of haplotype frequencies of the adult trees in each population

Acknowledgements

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