

# Species diagnosis and geography both structure phylogeny in *Sarracenia*, a group experiencing frequent introgression

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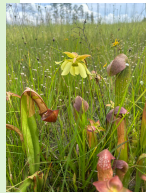


**Abstract:** *Sarracenia* species were sampled, extracted, and barcoded using the ITS region in order to create a model examining the influence of introgression on the phylogeny.

**Introduction:** North American pitcher plants (*Sarracenia*) are known for their pitcher-shaped leaves that attract and trap small animal prey to be digested for nutrients. *Sarracenia* hybridizes with ease (Bell & Case, 1956). This makes them a potential model to observe the influence of long term hybridization (introgression) in phylogenetic reconstructions.

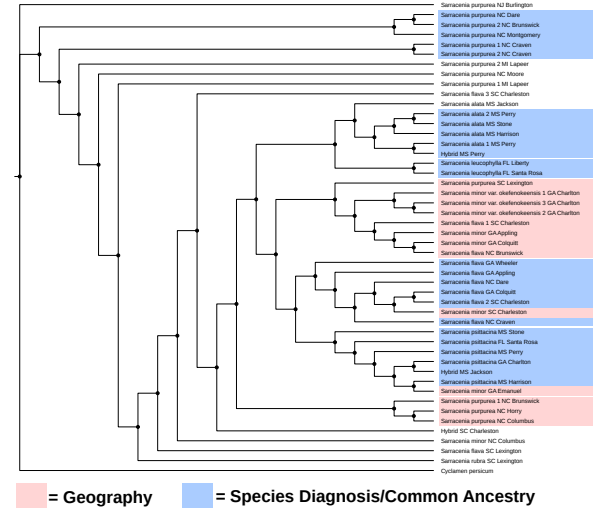
**Methods:** *Sarracenia* was collected in June, 2025 across the southeast. DNA was extracted from silica-dried plants using a modified CTAB method. The amplification of the ITS region was carried out using UBRP methods, and successful samples were Sanger sequenced. Finally, bioinformatic analysis was performed with the DNA Blue Line to pair, trim, and align sequences. The phylogeny was built using a maximum likelihood algorithm.

**Results and Discussion:** The phylogeny shows that when examining a single gene region, both shared common ancestry (species diagnosis) and geographic proximity (through facilitating introgression) play a role in structuring the phylogeny. This aligns with prior work that found rampant introgression in the *Sarracenia* plastome phylogeny (Baldwin et al., 2023), but was not yet confirmed with nuclear DNA. Results also showed that phylogenetic placement and SNP comparison could reveal potential parents of hybrids. Future projects may include a larger sample size for a wider distribution, a greater number of species and hybrids to be sequenced, and importantly, examining the coevolution of the pitcher plant's resident mites (*Sarraceniopus*). These remain largely undescribed despite being found in all taxa of the pitcher plant (Naczi, 2018). Through investigating *Sarracenia*'s symbionts, relationships between hybridization and coevolution may be elucidated.

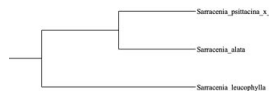


## 1) Monophyletic groups colored by species diagnosis versus geographic regions

Sampled states



## 2) Determining parents of hybrids with phylogenetic placement and SNPs



<i>Sarracenia psittacin</i>	C	A	T	A	C	C	C	A	G	C	C	G	C	G	A	G	G	C	A	A
<i>Sarracenia psittacin</i>	C	A	T	A	C	C	C	A	G	C	C	G	C	G	A	G	G	C	A	A
<i>Sarracenia psittacin</i>	C	A	T	A	C	C	C	A	G	C	C	G	C	G	A	G	G	C	A	A
<i>Sarracenia alata</i>	C	A	T	A	C	C	C	A	G	C	C	G	C	G	A	G	G	C	A	A
<i>Sarracenia leucophylla</i>	C	A	T	A	C	C	C	A	G	C	C	G	C	G	A	G	G	C	A	A

## References:

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