

The Ichauway Seed Bank: Prioritizing Species for Future Seed Collections

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Abstract

In 2019, the Plant Ecology lab at The Jones Center at Ichauway (a 29,000 acre ecological research center located in southwest Georgia) began a seed bank project focusing on the native flora of the longleaf pine ecosystem. The basis for this project began with the desire to further conserve and protect two federally endangered species located on Ichauway through germplasm efforts. We expanded the scope of the seed bank to also include a set of priority species which we defined as those listed as vulnerable, imperiled, or critically imperiled species in Georgia and are found on Ichauway. Through cross-referencing Ichauway and Georgia DNR data, we produced a list of 35 “Georgia rare” species as the foundation for the initial year. By the end of 2019, the lab had collected seed from 22 of the 35 priority species. Moving into the second year, the Plant Ecology lab would like to increase the plant species of interest for the seed bank. With more than 1,100 species known from Ichauway, it can be difficult to prioritize which species to add to our germplasm research. Here we lay out a system for ranking species of interest to include in our seed banking efforts by creating filters that give priority status based upon rarity and endemism, as well as species that are good candidates for future ecosystem restoration projects that are not currently commercially available from a local seed source.

Prioritization Process

- Cross-referenced endemic species of the Coastal Plain with species found on Ichauway to determine endemism of Ichauway vegetation
- Determined commercial seed availability of those endemic Coastal Plain species located on Ichauway
- Obtained global rank of endemic Ichauway species that did not have seed available
- Added species with a global rank of G3 or lower to the 2020 priority species list for the Ichauway seed bank.
- Mapped known and historical occurrences of globally rare Coastal Plain endemics found on Ichauway

Globally Rare Coastal Plain Endemics at Ichauway

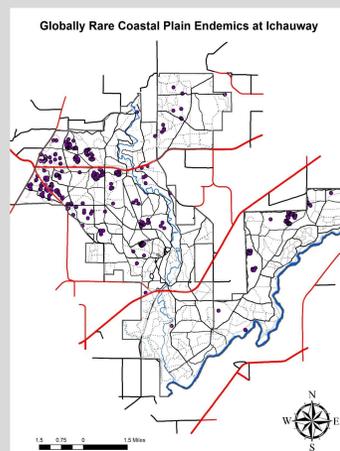
Scientific Name	Common Name	Global Rank
<i>Agrimonia incisa</i>	incised agrimony	G3
<i>Chasmanthium nitidum</i>	shiny wood oats	G3G4
<i>Coreopsis nudata</i>	Georgia tickseed	G3?
<i>Hypericum harperi</i>	Harper's St. John's wort	G3G4
<i>Lachnocaulon minus</i>	Small's bogbutton	G3G4
<i>Orbexilum lupinellus</i>	Piedmont leatherroot	G3G4
<i>Phlox floridana</i>	Florida phlox	G3
<i>Rhododendron austrinum</i>	Florida flame azalea	G3
<i>Rhynchosia michauxii</i>	Michaux's snoutbean	G3?
<i>Sisyrinchium xerophyllum</i>	jeweled blue-eyed grass	G3
<i>Solidago leavenworthii</i>	Leavenworth's solidago	G3G4
<i>Sporobolus floridanus</i>	Florida dropseed	G3
<i>Uvularia floridana</i>	Florida bellwort	G3



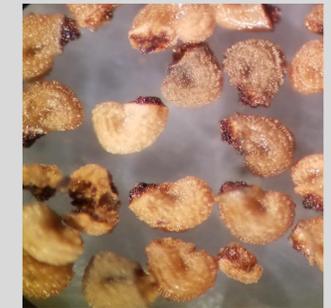
Uvularia floridana



Coreopsis nudata



Georgia Rare Seed Bank Species			
Scientific Name	Common Name	State Rank	Global Rank
<i>Agalinis harperi</i>	Harper's false foxglove	SH	GNRQ
<i>Asplenium heteroresiliens</i>	Morzenti's spleenwort	S1	G2
<i>Callirhoe papaver</i>	woodland poppymallow	S2S3	G5
<i>Carex dasycarpa</i>	velvet sedge	S3	G4?
<i>Carex godfreyi</i>	Godfrey's sedge	S2?	G3G4
<i>Croton elliotii</i>	pondshore croton	S2S3	G3
<i>Echinodorus tenellus</i>	dwarf burhead	S2?	G3Q
<i>Epidendrum conopseum</i>	greenfly orchid	S3	G4
<i>Eustachys floridana</i>	Florida finger grass	S1?	G2?
<i>Evolvulus sericeus</i> var. <i>sericeus</i>	creeping morning-glory	S1	G5T3T5
<i>Fimbristylis perpusilla</i>	Harper's fimbry	S1	G2
<i>Habenaria quinqueseta</i> var. <i>quinqueseta</i>	Michaux's orchid	S1	G4G5T4?
<i>Leitneria floridana</i>	corkwood	S1	G3
<i>Lindera melissifolia</i>	pondberry	S2	G3
<i>Lobelia boykinii</i>	Boykin's lobelia	S2?	G2G3
<i>Ludwigia spathulata</i>	creeping small-flower seedbox	S2?	G2
<i>Matelea flavidula</i>	yellow Carolina milkvine	S3?	G3?
<i>Oenothera curtissii</i>	Curtiss' evening primrose	S1?	G2G4
<i>Oldenlandia boscii</i>	Bosc's bluet	S2?	G5
<i>Paronychia rugelii</i>	Rugel's nailwort	S2?	G2?T2?
<i>Physalis carpenteri</i>	Carpenter's ground-cherry	S1	G3
<i>Polygala boykinii</i>	Boykin's milkwort	S3	G4
<i>Polygala chapmanii</i>	Chapman's milkwort	S1S2?	G3G5
<i>Pteroglossaspis ecristata</i>	wild coco	S2	G2G3
<i>Quercus arkansana</i>	Arkansas oak	S2S3	G3
<i>Quercus sinuata</i>	Durand oak	S1S2	G4G5
<i>Rhoxia aristosa</i>	awned meadowbeauty	S2	G3G4
<i>Rhynchospora pleiantha</i>	coastal beaksedge	SH	G2G3
<i>Schwalbea americana</i>	chaffseed	S1	G2G3
<i>Scutellaria incana</i> var. 1	hoary skullcap	S2?	G5TNR
<i>Sida elliotii</i>	Elliott's fanpetals	S2?	G4G5
<i>Sideroxylon thornei</i>	swamp buckthorn	S2	G3
<i>Spermacoce glabra</i>	smooth false buttonweed	S2?	G4G5
<i>Spiranthes longilabris</i>	giant spiral ladies-tresses	S1	G3
<i>Tridens carolinianus</i>	Carolina redtop	S2?	G3G4



Rhynchospora pleiantha

Rhoxia aristosa

Epidendrum conopseum

Plans for the 2020 Ichauway Seed Bank

- Continue to collect from Georgia rare species, particularly those that did not produce a large yield in 2019
- Try to locate as many globally rare Coastal Plain endemic species as possible, as well as Georgia rare species that were not located in 2019
- Assess progress at the end of 2020 to continue adding seed bank species for 2021
 - Newly listed Georgia rare
 - Newly listed globally rare Coastal Plain endemics
 - Ichauway rare
- Begin considerations for restoration necessities and possibilities
- Communicate locations of priority species with property land managers to help protect our populations, and continue best management practices to ensure our populations' survival and prosperity

References

- Lady Bird Johnson Wildflower Center. *Uvularia floridana*. Photo by: Alan Cressler https://www.wildflower.org/gallery/result.php?id_image=40883
- Southeastern Flora. *Coreopsis nudata*. Photo by: John R. Gwaltney http://www.southeasternflora.com/view_flora.php?plantid=1671#
- *Epidendrum conopseum* photo by: Steve Golladay
- Noss, R.F., Platt, W.J., Sorrie, B.A., Weakley, A.S., Means, D.B., Costanza, J. and Peet, R.K. (2015). How global biodiversity hotspots may go unrecognized: lessons from the North American Coastal Plain. *Diversity Distrib.*, 21: 236-244. doi:10.1111/ddi.12278

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