

## ***Quercus boyntonii* as a model for a multifaceted conservation effort**

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The Alabama sandstone oak, *Quercus boyntonii*, is a dwarf oak species endemic to central Alabama (Southeastern United States) that is listed as critically endangered by the IUCN. The narrow range, small population sizes, and preference for a particular niche (exposed rock) make it vulnerable to threats from extreme weather events, invasive species, climate change, and habitat loss. With recalcitrant seeds, the species can only be conserved *in situ* or *ex situ* via either living collections or tissue culture and cryopreservation. Limited survey work prior to 2010 estimated the total population was around 200 individuals. With such a small known total population and little understanding about its ecology, habitat and threats, it was clear that more targeted conservation efforts were needed for effective long-term conservation. Since the Alabama Plant Conservation Alliance (APCA) began its project in 2010, it has grown into what the Global Conservation Consortium for Oak (GCCO) has called the gold standard among species-level GCCO conservation efforts. Years of surveys have yielded new populations and mapped hundreds of individuals, expanding the known range of the species from just 3 counties to 11. Other *in situ* efforts include conservation acquisition of sites containing populations, invasive species management, and collection of acorns for *ex situ* conservation. *Ex situ* work has included expansion of living collections guided by: 1) molecular sampling and analysis, 2) embryo extraction and cryopreservation, and, 3) establishment of a conservation seed orchard in collaboration with the U.S. Forest Service. In addition, education and outreach efforts have grown, including a public awareness campaign, stakeholder meetings, conservation planning, and production of numerous publications. All these efforts are made possible by the networks that have grown through the work of the APCA and the GCCO.