

SILVICULTURE AT THE BOGGY SLOUGH CONSERVATION AREA: RESEARCH AND MANAGEMENT TO PROMOTE CONSERVATION

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EXTENDED ABSTRACT

The Boggy Slough Conservation Area (BSCA), located west of Lufkin, TX, is a 19,055-acre property in Houston and Trinity Counties. The property has a mix of upland and bottomland forested ecosystems and a long history of management for conservation values. Since the early 20th century the property has been under private ownership, with the Temple family and their forest products corporation as owners for most of this time. The T.L.L. Temple Foundation purchased the property in 2013 to honor the Temple family, the corporate history, and their combined legacy in east Texas, and to demonstrate and promote forest conservation in the region. In 2015, the entire property was placed under a conservation easement to prevent future development and preserve its conservation values. The property is divided into North Boggy Slough (approximately 7,000 acres) and South Boggy Slough (approximately 12,000 acres), with separate hunting leases managed for each area.

BSCA has a variety of forested habitats (fig. 1). The majority of the property is classified as uplands, some of which are bisected by intermittent drainages in rolling topography. Upland forest types compose approximately 73 percent of the forest at BSCA. Upland pine plantations are predominantly loblolly pine (*Pinus taeda*), ranging in age from 15 to >40 years old, though younger plantations (≤ 10 years old) were planted to shortleaf (*P. echinata*) and longleaf (*P. palustris*) pine on appropriate sites. Natural upland pine stands, many of which have not been actively managed in many years, have canopies dominated primarily by loblolly and shortleaf pines with scattered longleaf pine present in some stands. Upland hardwood-mixed pine stands have variable composition, with the hardwood component [e.g., southern red oak (*Quercus falcata*), post oak (*Q. stellata*), and sweetgum (*Liquidambar styraciflua*)] increasing at lower topographic positions and higher soil moisture. The bottomland hardwood forests are not pristine due to the history of harvests in the early 20th century, but they are relatively intact compared to other bottomland forests in the region. Common overstory species in the bottomland forests include water oak (*Q. nigra*), willow oak (*Q. phellos*), overcup oak (*Q. lyrata*), green ash (*Fraxinus pennsylvanica*), and American sycamore (*Platanus occidentalis*). Forty-eight different plant associations,

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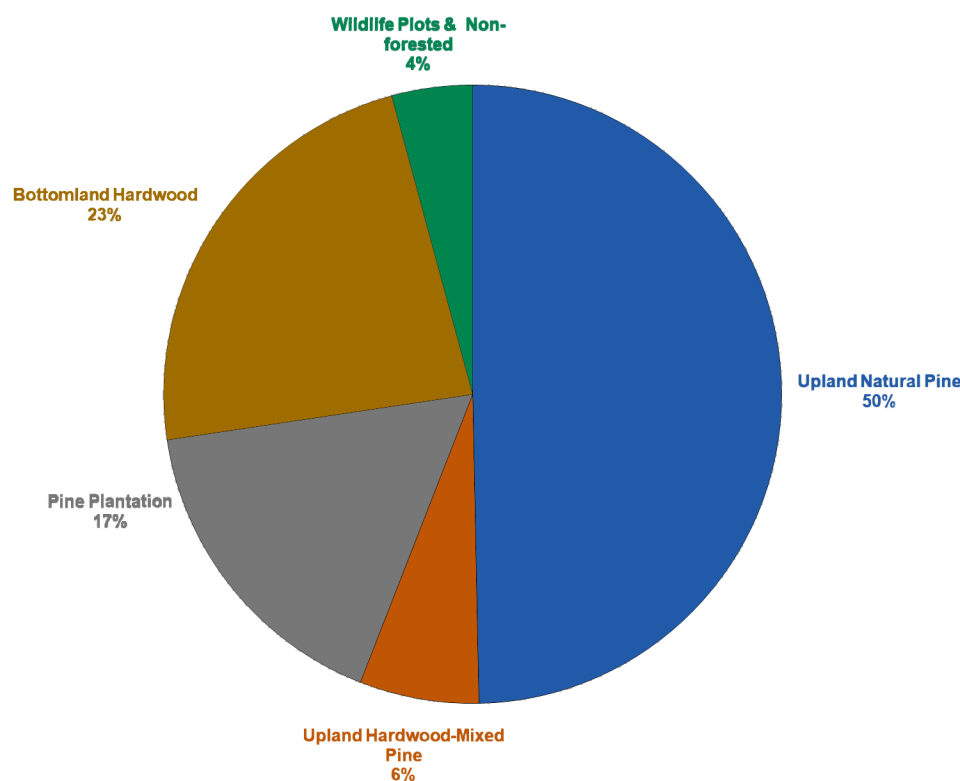


Figure 1—Percent composition of different forest types at the Boggy Slough Conservation Area in east Texas.

which are strongly related to soil characteristics, have been documented at BSCA, and several plant and animal species of conservation concern are found at the property.

The mission of BSCA is to “serve as a model of excellence for East Texas through ecological research and outreach to promote conservation, management, and stewardship of natural resources” (<https://www.boggy-slough-conservation.org/>). Within this mission, bottomland forest management focuses on regenerating desired species and controlling invasive species (e.g., Chinese tallow, *Triadica sibirica*). Active canopy manipulations are minimized in the bottomlands due to restrictions in the conservation easement. Upland forests are managed to restore and maintain an open pine or pine-hardwood canopy, to promote native ground cover species, and to favor shortleaf and longleaf pine on appropriate sites due to their fire tolerance. Primary silvicultural treatments in the uplands include selection-based harvests, frequent prescribed fire, and targeted use of herbicides (table 1). Through these management actions in upland forests, the open canopy forest condition is now more prevalent on the property (compared to conditions in 2013 when the property was purchased), and wildlife community responses to the changing habitat have been documented.

Research at BSCA is conducted through collaborations. Typical collaborations are initiated with academic and agency scientists and often utilize graduate student projects. The BSCA signature research program is achieved through the Buddy Temple Visiting Scholar and Graduate Fellow program. Under this program, regionally important research topics are identified, and eminent scholars are recruited to address the

Table 1—Acres harvested and burned with prescribed fire at the Boggy Slough Conservation Area, 2014–2023

Year	Acres harvested			Acres burned		
	South Boggy	North Boggy	Total	South Boggy	North Boggy	Total
2014	134	0	134	3,635	1,566	5,201
2015	94	202	296	807	834	1,641
2016	308	235	543	4,172	2,875	7,047
2017	905	448	1,353	3,407	1,874	5,281
2018	326	137	463	4,092	1,611	5,703
2019	430	166	596	3,192	212	3,404
2020	243	234	477	1,111	1,359	2,470
2021	212	354	566	3,652	2,822	6,474
2022	340	97	437	3,190	2,054	5,244
2023	123	268	391	3,477	2,361	5,838
Total	3,115	2,141	5,256	30,375	17,568	48,303

topics. Recent Buddy Temple Visiting Scholars have examined stand dynamics and regeneration in mixedwood forests and the effects of forest management on trophic structure of wildlife communities.

The property is frequently used for outreach events by BSCA and our partner organizations to show conservation-oriented alternatives to the dominant forest management regimes in east Texas. Sites at various stages in the restoration process provide case studies to highlight in outreach events, while monitoring of vegetation and wildlife responses to the management activities provides quantitative information to share with target outreach audiences.

While still a relatively new program, activities at the BSCA are bringing attention to conservation-oriented practices for managing forest resources in east Texas.