

North Carolina Department of Agriculture and Consumer Services' Study of State-Managed Properties

Executive Summary

Conserving North Carolina's natural heritage, which includes the State's natural beauty, its natural areas, and the wildlife and plants which call this state home, is an important focus for many state agencies. Much of this effort is conducted on over 1.1 million acres of state-managed lands, many of which were protected with state-appropriated conservation funding sources such as the Clean Water Management Trust Fund. Protecting natural areas is however not a once-and-done process—after acquisition, state-managed natural areas require consistent monitoring and management (which includes invasive species removal, prescribed burning, selective thinning, and native plant restoration) to fulfill their purpose. Moreover, because of an expanding human footprint on the natural environment, the role and value of natural lands in conserving natural areas, wildlife, and plants continues to grow. To meet these evolving and growing needs, most natural lands that require more intensive management to restore and maintain those healthy ecosystem functions to find the balance of the State's human growth and natural resource conservation. Collectively, North Carolina's State Agencies currently spend over \$3 million per year in support of natural areas management activities. Addressing the increasing costs of managing natural areas on state-owned land within standard operating budgets designed for other uses is becoming increasingly difficult—and in some cases, impossible—for state land managers. An additional \$2.3 million in funds each year and 47 additional positions are identified as necessary to support natural areas management activities on state-owned properties of North Carolina.

Introduction

North Carolina has over 1.1 million acres of state-owned lands managed as natural (and recreational) areas¹. These lands are managed by multiple state agencies (including the Department of Natural and Cultural Resources, the Wildlife Resources Commission, the Department of Environmental Quality, and the Department of Agriculture and Consumer Services), and support rich assemblages of wildlife and plants, including many species which are economically important and/or occur nowhere else on Earth. Consequently, conserving and protecting North Carolina's natural heritage—which includes the state's natural beauty, natural resources, ecological features, and the wildlife and plant species which call North Carolina home—is an important focus for many of the state's agencies.

Land protection, especially for ecosystem and natural resource conservation, is supported by state-appropriated conservation funding sources like the Clean Water Management Trust Fund and the Parks

¹ North Carolina Natural Heritage Program. (2020). Biotics Database. Division of Land and Water Stewardship. Department of Natural and Cultural Resources, Raleigh, North Carolina.

and Recreation Trust Fund. However, protecting natural areas is not a once-and-done process. After acquisition, state-managed natural areas require consistent monitoring and management to fulfil their objective. For example, many of the State's natural ecosystems have developed in the presence of natural disturbances such as periodic fires. In these ecosystems, maintaining these natural disturbance regimes is critical for preserving and restoring their unique character. Even so, natural disturbance regimes are regularly and increasingly constrained by human activities (e.g. fire suppression) and habitat fragmentation. This scenario is especially true for natural areas in close proximity to human habitation, areas which are also more vulnerable to invasions by harmful exotic species. Consequently, the conservation of North Carolina's unique ecosystems and natural resources increasingly relies on active management to maintain diverse and healthy habitats for wildlife and native plants. Activities such as prescribed burning, selective thinning, invasive species removal, and native plant restoration are examples of such active management strategies.

The need for active land management is multifaceted. For example, terrestrial ecosystems such as longleaf pine savannas, Piedmont woodlands, and oak-hickory forests are all maintained and enhanced with a carefully developed and appropriate fire management regime. But during this process, other benefits are also gained. For instance, prescribed burning is also a critical tool for mitigating wildfire risk² and for wildlife enhancement by promoting both forage and cover^{3,4}. It is worth noting that fire suppression (which leads to woody encroachment) is the second greatest threat to imperiled plant species across North Carolina⁵ and also negatively impacts many of the state's rare wildlife species, further emphasizing the broader societal benefits of this management technique on our state-managed natural lands. Each conservation tract benefits from consistent and site-specific management techniques in order to provide the benefit and value for our State's resources that other human impacted areas are no longer able to provide.

Managing invasive exotic species is also critical for maintaining and enhancing the State's natural ecosystems, and usually an identified need is sudden and unexpected. Many times effective management of invasive exotic species requires recurring, multi-year coordinated effort. Although some exotic species pose relatively minor impacts to the ecosystems they invade, a minority of species that become invasive have the potential to cause severe ecological and economical damage. Mitigating these negative impacts has become a resource-intensive management need, not just in North Carolina, but all over the world. For example, in the United States alone, more than \$120 billion are already spent each year to control populations of such detrimental species⁶. But as the footprint of human activities on the environment increases, so does the area of land negatively impacted by invasive exotic species. As a consequence, addressing the increasing costs of invasive species management within standard

² Long, A. and A. Oxarart. (2017). *What the Research Says: Prescribed Fire and Wildfire Risk Reduction*. Retrieved on February 25, 2020, from: http://southernfireexchange.org/SFE_Publications/factsheets/2017-1.pdf

³ Fill, J. and R. Crandall. (2018). *Quail, Turkey, and Deer: Fire Effects and Management Recommendations*. Retrieved on February 25, 2020, from: http://southernfireexchange.org/SFE_Publications/factsheets/2018-8.pdf

⁴ Moorman, C. and T. Sharpe. *Using Fire to Improve Wildlife Habitat*. NC Cooperative Extension Service, North Carolina State University. Retrieved on February 25, 2020, from: <http://www.ncprescribedfirecouncil.org/pdfs/ag630.pdf>

⁵ North Carolina Plant Conservation Program. (2010). Protected Plant Species List Threat Assessment. Plant Industry Division. Department of Agriculture and Consumer Services, Raleigh, North Carolina.

⁶ Pimental, D., R. Zuniga, and D. Morrison. (2005). Update on the environmental and economic costs associated with alien-invasive species in the United States. *Ecological Economics*. 52 (3): 273-288.

operating budgets planned annually and designed for other uses is becoming increasingly difficult—and sometimes impossible—for state land managers.

Despite the escalating demands that natural lands management places on agency budgets, North Carolina provides several examples where dedicated managers have successfully implemented land management plans that support the recovery of threatened and endangered species. One such example includes fire management to maintain longleaf pine savannas, which, together with cavity inserts, benefits populations of the Federally Endangered red-cockaded woodpeckers (*Leuconotopicus borealis*). Wildlife managers are also constantly refining their management techniques for increasing the ability of natural lands to support larger populations of economically important species, such as pollinators, white-tailed deer, and waterfowl. Similarly, state land managers have had much success with native plant restoration, increasing populations of imperiled species such as smooth purple coneflower (*Echinacea laevigata*) and Venus flytrap (*Dionaea muscipula*). State land managers have the ability to build on these demonstrated successes, but only if they have the resources and staffing necessary to conduct adequate land management.

In 2019, the North Carolina General Assembly mandated the Plant Industry Division of the Department of Agriculture and Consumer Services to study and report on wildlife enhancement, invasive species control, and native habitat restoration on properties managed by the State⁷. This document supplies summaries of current spending on state-managed lands, and addresses additional resources needed to meet the objectives of employing such techniques. This document does not address resources directed at aquatic invasive species that occur in state waters.

Study Sections

Current Spending

Currently, North Carolina's state agencies (including the Department of Natural and Cultural Resources, the Wildlife Resources Commission, the Department of Environmental Quality, and the Department of Agriculture and Consumer Services) are using over \$3 million in dedicated and additional funds and other resources to manage natural areas on their state-managed properties (Table 1). These management activities for wildlife enhancement include, but are not limited to, invasive species removal, prescribed burning, selective thinning, and native wildlife and plant restoration. Nevertheless, not all of North Carolina's land-managing agencies use, or have the capacity to use, all these various management techniques. This limitation is despite the fact that state agencies are already partnering together, and in some cases pooling scarce resources, to accomplish their management goals.

State Agencies by Department

1. Department of Agriculture and Consumer Services: combined land holding greater than 38,000 acres.
 - a. NC Forest Service
 - b. Research Stations
 - c. Plant Conservation Program
2. Department of Environmental Quality: combined land holding greater than 42,000 acres.
 - a. Division of Coastal Management

⁷ <https://www.ncleg.gov/EnactedLegislation/SessionLaws/PDF/2019-2020/SL2019-127.pdf>

- b. Division of Water Resources
- c. Stewardship Program
- 3. Department of Natural and Cultural Resources: combined land holding nearly 198,000 acres.
 - a. NC Zoological Park
 - b. Land and Water Stewardship
 - c. NC State Parks and State Natural Areas
- 4. Department of Transportation: combined land holding approximately 17,500 acres.
- 5. University of North Carolina system: combined land holding greater than 8,000 acres.
- 6. Wildlife Resources Commission: combined land holding greater than 533,000 acres.

Table 1. Current spending for wildlife enhancement and habitat management activities per year on state-managed properties of North Carolina. Data represent a five-year average (2014-2018).

Wildlife Enhancement Techniques/Tasks	State Agency						TOTAL
	DACS	DEQ	WRC	DOT	DNCR	UNC	
Invasive species removal							
<i>allocated funds</i>	\$40,150	\$479,010	\$52,407	\$246,956	\$5,737		\$824,260
<i>additional resources-grants</i>	\$25,365	\$500			\$2,819		\$28,684
<i>additional resources-receipts</i>	\$410					\$420	\$830
<i>Subtotal</i>							\$853,774
Prescribed burning							
<i>allocated funds</i>	\$43,445		\$535,074		\$1,556	\$7,440	587,516
<i>additional resources-grants</i>	\$26,799					\$3,500	30,299
<i>additional resources-receipts</i>	\$7,293					\$1,200	8,493
<i>Subtotal</i>							\$626,308
Selective thinning							
<i>allocated funds</i>	\$31,905		\$503,050		\$294		535,250
<i>additional resources-grants</i>	\$3,857						3,857
<i>additional resources-receipts</i>	\$11,522					\$1,330	12,852
<i>Subtotal</i>							\$551,958
Native plant restoration							
<i>allocated funds</i>	\$24,883	\$306	\$191,735	\$194,913	\$2,790		414,627
<i>additional resources-grants</i>	\$22,432				\$2,800		25,232
<i>additional resources-receipts</i>	\$126,763					\$1,900	128,663
<i>Subtotal</i>							\$568,522
Other							
<i>allocated funds</i>	\$24,418	\$8,345	\$84,600		\$52,600		169,963
<i>additional resources-grants</i>	\$689	\$2,200			\$179,258		182,147
<i>additional resources-receipts</i>	\$73,359						73,359
<i>Subtotal</i>							\$425,469
TOTAL	\$463,290	\$490,361	\$1,366,866	\$441,869	\$247,855	\$15,790	\$3,026,032

Future Need

In addition to current spending, each of the state agency land managers have identified needs for additional funding or positions to support ongoing and future habitat management activities. The identified needs vary among agencies but were highest for invasive species removal and prescribed burning. Together, a need for 47 additional positions and \$2,328,500 in annual funding has been estimated to manage and maintain the state-managed properties of North Carolina (Table 2). These

additional funds would expand the current capacity of these land managers to better meet their goals for restoring and preserving North Carolina’s most valuable natural areas.

Table 2. Additional funding and positions necessary to support habitat management activities per year on state-managed properties of North Carolina.

Wildlife Enhancement Techniques/Tasks	State Agency						TOTAL
	DACS	DEQ	WRC	DOT	DNCR	UNC	
Invasive species removal							
<i>additional funds</i>	300,000	91,000	30,000	280,000	15,000	23,000	739,000
<i>additional positions</i>	3	2		14	2	1	22
Prescribed burning							
<i>additional funds</i>	590,000		200,000		15,000	46,000	851,000
<i>additional positions</i>	10		2		2	1	15
Selective thinning							
<i>additional funds</i>	100,000		50,000			23,000	173,000
<i>additional positions</i>			2				2
Native plant restoration							
<i>additional funds</i>	85,000	41,500	30,000			23,000	179,500
<i>additional positions</i>			2				2
Other							
<i>additional funds</i>	160,000	6,000	20,000		50,000	150,000	386,000
<i>additional positions</i>	1	1	2		1	2	7
TOTAL Funds	1,235,000	138,500	330,000	280,000	80,000	265,000	2,328,500
TOTAL Positions	14	3	8	14	4	4	47

Additional Federal Funding Sources

In addition to state-appropriated and other funds, there are federal funding sources available for habitat management activities on state-owned properties. In some instances, there are opportunities for expanding the use of these funds and/or expanding the pool of state agencies eligible for these funds, but most of them require a specific percent of state match in order to secure the federal funds. One overarching fund which supports several federal funds available to state agencies for habitat preservation and management is the **Land and Water Conservation Fund**⁸ established in 1964 (54 U.S.C. 2003 et seq). This fund includes State and Tribal Wildlife Grants and multiple grants available through the Cooperative Endangered Species Conservation Fund as well as the Forest Legacy Program. In 2019, the Land and Water Conservation Fund was permanently authorized and permanently funded at no less than \$900 million each fiscal year. Below is a summary of these and several other opportunities for federal funding available to North Carolina’s state agencies for restoring and improving the condition of state-managed properties and natural areas.

State Wildlife Grant Program and Recovering America’s Wildlife Act

The State Wildlife Grant Program (CFDA⁹ 15.634) supports states in the conservation of non-game species and associated habitats. Funds are appropriated by the U.S. Congress on an annual basis and

⁸ Congressional Research Services. (2019). *Land and Water Conservation Fund: Overview, Funding History, and Issues*. Retrieved March 11, 2019, from: <https://fas.org/sgp/crs/misc/RL33531.pdf>.

⁹ Catalog of Federal Domestic Assistance: Reference Manual. [Washington, D.C.]: Federal Domestic Assistance Catalog Staff, General Services Administration. (hereinafter referred to as “CFDA”)

apportioned to the states and U.S. territories based on a formula that considers each State's population and total geographical area. Federal funds are matched 25% for planning activities and 35% for implementation activities by state funds. State match generally comes from the North Carolina Wildlife Resources Commission's Nongame and Endangered Wildlife Fund, which is supported by the North Carolina Tax Check-off for Nongame and Endangered Wildlife, Wildlife Conservation License Plate receipts, and donations. In-kind volunteer hours are also used for match. To be eligible for funding, each state must produce a multi-year, comprehensive strategy for the conservation of its native wildlife species and natural habitats known as a State Wildlife Action Plan. Among the eight required elements of a State Wildlife Action Plan, each state must determine the distribution and abundance of the "Species of Greatest Conservation Need" for their plan and update their plan at least once every ten years.

NC Wildlife Resources Commission is eligible to receive funding from the State Wildlife Grant Program to implement conservation of nongame species and associated habitats with the objective of preventing species from being listed as threatened or endangered under the Endangered Species Act. Since submitting its first Wildlife Action Plan in 2005, NC Wildlife Resources Commission has received an average of \$1.3 million annually¹⁰. Competitive State Wildlife Grants may be awarded in addition to annual apportionments. NC Wildlife Resources Commission was awarded four competitive grants (one in collaboration with South Carolina) since 2013.

It is possible to broaden opportunities for funding through this federal program dependent on the annual federal allocation and available state match which ranges from 25-35% depending on the grant type. North Carolina currently only includes animal species as "Species of Greatest Conservation Need" (SGCN) in its State Wildlife Action Plan. However, an increasing number of other states (currently 8 states and 2 territories out of the 15 state and 2 territory region: Southeast Region 4) have added native plant species in their plans to broaden the scope and use of their plan for protecting and conserving the natural heritage of their state¹¹. The State Wildlife Grant guidelines prohibit the use of these federal funds for plants directly, but states are not prohibited from addressing plant species of concern in their plans, and states are given considerable discretion in the implementation of allocated funds. For example, some states now also consider important plant species during the identification of priority wildlife habitats¹². If North Carolina were to incorporate native SGCN plants into the Wildlife Action Plan, the change would increase the number and scope of potential qualifying projects and partners willing to aid in implementing the Wildlife Action Plan. This change would could expand who could utilize these federal funds and the overall efforts on managing important habitats on state-managed lands for both wildlife and the native plants upon which they critically depend. At this time, adding native plants to the Wildlife Action Plan will not increase the amount of funding available to the State nor does it remove the state match requirement. This consideration is particularly important when the issue of matching funds is considered. State agencies which are managing for important plant species on

¹⁰ North Carolina Wildlife Resources Commission. (2015). *North Carolina Wildlife Action Plan*. Raleigh, NC.

Retrieved March 7, 2020, from: <http://www.ncwildlife.org/plan.aspx>.

¹¹ Oldham, K. (2015). *Plants are Vying for Light in State Wildlife Plans*. Retrieved March 11, 2020, from:

<https://www.natureserve.org/news-events/news/plants-are-vying-light-state-wildlife-plans>

¹² Stein, BA and K. Gravuer. (2008). *Hidden in Plain Sight: The Role of Plants in State Wildlife Action Plans*. Arlington, Virginia: NatureServe.

their lands may be able to expand the available resources and scope of effort for that crucial work if plants were added to the North Carolina State Wildlife Action Plan as Species of Greatest Conservation Need.

In July 2019, the Recovering America's Wildlife Act of 2019, was introduced in the U.S. House (H.R. 3742); this bill has very strong bipartisan support and is expected to be introduced in the Senate in 2020. This bill would amend the Pittman-Robertson Wildlife Restoration Act, allowing annual subaccount deposits of \$1.3 billion (\$26 million for each of the 50 states), with 10% of the funds apportioned through a competitive grant program available to state agencies. These funds would require state matching funds which would possibly exceed the capacity of the NC Wildlife Resources Commission to solely supply. By expanding the purview of the State Wildlife Action Plan to include plants, North Carolina would broaden the base of agencies eligible for receiving these habitat management funds, which, in turn, would enable the state to gain full benefit from this resource.

US Fish and Wildlife Service Wildlife Restoration Program

In North Carolina, funding through the Wildlife Restoration program is available to NC Wildlife Resources Commission as the state's fish and wildlife agency for restoring, conserving, managing, and enhancing wild birds and mammals and their habitats. Grants from this fund are administered by the US Fish and Wildlife Service. Matching funds of 25% are required and are generally provided through hunting license receipts. The Program is authorized by the Pittman-Robertson Wildlife Restoration Act of 1937 (16 U.S.C. 669 et. seq.), and funds are generated from excise taxes on firearms, ammunition, archery equipment, and related items. Federal funds are apportioned based on land area and number of licensed hunters in proportion to the national total.

US Fish and Wildlife Service Traditional Section 6 Funds

Under Section 6 of the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), funds are available to the Plant Conservation Program¹³ and Wildlife Resources Commission as state cooperators with the US Fish and Wildlife Service for proposed projects related to recovery of federally listed plants and wildlife, respectively (CFDA 15.615)^{14,15}. These funds are administered by the US Fish and Wildlife Service and are available from the Cooperative Endangered Species Conservation Fund of the Land and Water Conservation Fund. Such projects regularly involve habitat improvement and management activities. The US Congress must annually appropriate funds to the Endangered Species Act for this resource to be available to states. Federally listed species are assigned a set value, and the total grant funding available to each agency is calculated based on the number of federally listed species in that state. State cooperators who apply for Section 6 grants must provide a 25% match of funds and/or resources. When state agencies partner with agencies from other states to implement a joint project, the match

¹³ A state agency in the Plant Industry Division of the Department of Agriculture and Consumer Services.

¹⁴ US Fish and Wildlife Service. (2016). *Cooperative Endangered Species Conservation Grants (Section 6 of the Endangered Species Act)*. Retrieved March 7, 2020, from: <https://www.fws.gov/endangered/esa-library/pdf/section6.pdf>

¹⁵ *Revised Interagency Cooperative Policy Regarding the Role of State Agencies in Endangered Species Act Activities*. Federal Register, Vol. 81, No. 34: 8663-8665. (2016). Retrieved March 7, 2020, from: https://fws.gov/endangered/improving_ESA/pdf/2016-03541.pdf

requirement is reduced to 10% to encourage cooperation among states toward recovery of listed species.

US Fish and Wildlife Service Reverted Section 6 Funds

Grant funding awarded under Section 6 of the Endangered Species Act which is not spent during the performance period of the grant is returned to US Fish and Wildlife Service who may make the funds available as reverted funds grants. The Plant Conservation Program and Wildlife Resources Commission, as state cooperators under the Endangered Species Act, are eligible to apply for these grants to fund projects related to recovery of federally listed or at-risk plants and wildlife, respectively, including habitat management for the recovery and conservation of imperiled species. Funds are typically awarded as two-year grants, requiring a 25% match of state funds and/or resources. When state agencies partner with agencies from other states to implement a joint project, the match requirement is reduced to 10% to encourage cooperation among states toward recovery of listed species. Funding is variable and not available every year.

US Fish and Wildlife Service Discretionary Funds

Discretionary funding is periodically available for federally listed and at-risk species work which can include habitat improvement and management activities (CFDA 15.657). This funding is not available every year. State agencies are typically eligible to apply; however, the eligibility is determined separately for each grant program. Similarly, the length of grants and the requirement of matching funds varies by program. There are several discretionary funding programs available at different times including the Recovery Challenge Grant and Recovery Implementation Fund as examples.

US Fish and Wildlife Service Recovery Challenge Grant Program

The Recovery Challenge Grant Program (CFDA 15.657) was created in 2018 to provide federal financial assistance to state and other organizations to implement recovery actions for listed species (Consolidated Appropriations Act of 2018, HR 1625, Division G). The competitive grant program requires matching funds of 50% for new applicants, or a percentage determined by previous contribution for organizations with a previous five-year or longer partnership with US Fish and Wildlife Service. In North Carolina, the NC Plant Conservation Program and NC Wildlife Resources Commission qualify as long-term partners. Projects may be funded for up to three years, and funding availability varies each year.

US Fish and Wildlife Service Recovery Implementation Fund Program

The Recovery Implementation Program (CFDA 15.657) provides funds that reduce or eliminate threats to federally listed, at-risk, and other high priority species. Habitat management and restoration can be included in this scope. State agencies are eligible to apply for this funding and projects may be funded at 100% without state matching funds required; however, projects which include matching funds may be prioritized.

US Forest Service Community Wildfire Protection Grant Program

The Community Wildfire Protection Grant Program, also referred to as the Stevens Amendment (Amendment 4532 to HR 5093), provides funding for prescribed burning on lands within 15 miles of any National Forest boundary (whether proclamation or ownership) at no cost to landowners. The NC Forest Service has used these funds to conduct prescribed burns on state (including multiple agencies) and

private lands independently and in collaboration with US Forest Service. NC Forest Service coordinates and prioritizes tracts to be burned. This program can cover up to two prescribed burns per property.

State and Private Forest Landscape-Scale Restoration Program

The Landscape Scale Restoration Fund¹⁶ provides competitive grant funding administered by the US Forest Service via the Agriculture Improvement Act of 2018 (aka the Farm Bill; section 8104). These grants are available to NC Forest Service for promoting collaborative restoration of priority landscapes identified in State Forest Action plans. Funds are allocated to states both proportionally and through a competitive process. Grants are awarded for 1-3 years to projects which focus on landscape-scale issues including wildlife risk reduction, watershed protection and restoration, as well as controlling invasive species, insect infestations, and disease. Matching funds and in-kind resources are required but vary; requirements are reported each fiscal year.

US Forest Service Collaborative Forest Landscape Restoration Program

Competitive grant funding from the US Forest Service is available for forest restoration projects exceeding 50,000 acres. These grants are primarily dedicated towards forested National Forest System lands, but may also cover other ownership, such as state-owned lands. Under 16 U.S.C. 7303, Congress will appropriate \$80 million annually through 2023, with up to 10 proposals funded in any fiscal year and project length up to 10 years. Projects must contribute to restoration of old growth stands, reduce wildfire risk by removing woody biomass and small diameter trees, and utilize the removed wood material. A partner match of 50% is required.

North American Wetlands Conservation Act Small Grants

This competitive grant program supports public-private partnership projects for long-term protection, restoration, or enhancements of wetlands for the benefit of wetlands-associated migratory birds. Prescribed burning is considered an eligible activity if it contributes to wetland restoration. Proposals may request a maximum of \$100,000 and require at least 50% non-federal matching funds.

Western North Carolina Seasonal Fire Crew

The US Forest Service funds a seasonal fire crew operated through The Nature Conservancy in Western North Carolina. The crew is available to conduct or assist with prescribed burns for any partner of the Southern Blue Ridge Fire Learning Network free of charge, including NC State Parks, NC Forest Service, NC Plant Conservation Program, and NC Wildlife Resources Commission. Though grant funding is not guaranteed, it has been received for the past five consecutive years and has allowed for an increased number of controlled burns accomplished per season (A. Warwick, fire crew leader, pers. comm., 2019).

¹⁶ Fiscal Year 2020 Landscape Scale Restoration Competitive Process National Guidance. Retrieved March 11, 2020, from: <https://www.fs.usda.gov/sites/default/files/2019-06/lsr-fy2020-national-guidance-may2019.pdf>