



**N.C. Department of Agriculture  
and Consumer Services**  
**N.C. Forest Service**



**DuPont State Recreational Forest**  
**Annual Legislative Report**

Oct. 1, 2024

Steve Troxler, Commissioner  
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Pursuant to G.S. 106-887 (i), the North Carolina Forest Service, a division of the North Carolina Department of Agriculture and Consumer Services, respectfully submits this annual report on DuPont State Recreational Forest for fiscal year 2023-2024.

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## **Statutory requirement**

No later than Oct. 1 of each year, the department shall report to the Joint Legislative Commission on Governmental Operations, the House and Senate Appropriations Subcommittees on Natural and Economic Resources, the Fiscal Research Division and the Environmental Review Commission on the department's management activities at DuPont State Recreational Forest during the preceding fiscal year and plans for management of DuPont State Recreational Forest for the upcoming fiscal year (2011-145, s. 13.25(o)).



## Overview of DuPont State Recreational Forest

DuPont State Recreational Forest (DSRF) encompasses more than 12,400 acres in Transylvania and Henderson counties. The forest is managed for natural resource conservation, scenic enjoyment and recreational purposes including horseback riding, hiking, bicycling, hunting, fishing and other activities that are sustainable within the context of natural resource protection. DSRF strives to provide an exemplary model of scientifically sound, ecologically based natural resource management for the social and economic benefits of a diverse community of users. DSRF is also required to protect and restore natural areas to meet the intent of a grant agreement that designates most of the forest as a dedicated nature preserve.

DSRF has more than 20 miles of multiuse roads and nearly 60 miles of multiuse trails supporting the forest's recreational opportunities. In addition, DSRF features four waterfalls on the Little River, two waterfalls in the Grassy Creek watershed, six mountain lakes and unique low elevation granitic domes and slickrock formations.

DSRF's popularity stems from many sources. There are three waterfalls located within 3.5 miles of the visitor center and the forest's topography is not as steep or technical as other nearby public lands, making the forest accessible to a wider variety of visitors. The forest also has a unique limited mobility vehicle permit program that increases the diversity of visitors by allowing for individuals with disabilities to drive into the forest to view the High Falls area. In addition, DSRF receives significant visitation from local, regional, national and international guests who come to enjoy the forest's trails and experience the natural features that have been promoted in a variety of publications, movies, websites and social media outlets.

19 full-time employees and four temporary employees manage the DSRF work unit. FY23-24 staff included:

- Jason Guidry, DuPont State Recreational Forest supervisor
- Michael Santucci, assistant forest supervisor
- Kimberly Watson, office manager
- Greg Hall, administrative associate
- Jordan Luff, management forester
- Jeremy Waldrop, forestry technician
- Jane Dauster, recreational specialist
- Eric Folk, recreation technician
- Jimmy Patterson, firefighting equipment operator
- Nathan Sweat, facility maintenance supervisor
- Sammy Breeden, maintenance technician
- Jacob Robinson, vehicle and equipment repair technician
- Bob Twomey, maintenance technician (temporary)
- Mary Ann Hamilton, housekeeper (temporary)

- Kayla Cartwright, housekeeper (temporary)
- Andrew Warren, housekeeper (temporary)
- Katelyn Keller, education and outreach coordinator
- Kirsten McDonald, information and education supervisor
- John Helbling, visitor center coordinator (temporary)
- Susan Fay, Holmes Educational State Forest supervisor
- EJ Dwigans, educational ranger
- Andy Norman, law enforcement agent
- Daniel Britt, law enforcement agent
- Josh Kujawa, law enforcement agent

The DSRF forest supervisor also supports the operation and staff at Holmes Educational State Forest (HESF) in Henderson County. The DSRF supervisor reports to Mountain Division Director Michael Cheek, who is based in the N.C. Forest Service (NCFS) regional office in Asheville.

## **The Aleen Steinberg Visitor Center**

The visitor center is one the most important stops for a guest to DSRF. Visitors can acquire important information about:

- updated trail maps and map reading;
- safety and outdoor preparedness;
- DSRF rules and regulations;
- directions to waterfalls;
- recreational opportunities within the forest;
- multiuse trail etiquette;
- educational offerings;
- regional area information;
- permits for vehicles for disabled visitors; and
- picnic shelter reservations.

More than 1 million visitors have come to the visitor center since its opening in 2013. Its classroom serves as a meeting place for various community groups, educational programs, staff meetings, field trips and programs for volunteers. The visitor center also provides forest and local information through an outdoor self-service information station and an indoor information desk staffed by volunteers. Figure 1 provides the monthly visitor estimates to the visitor center for FY23-24.

<b>Fiscal Year 2023-2024</b>	
<b><i>Month</i></b>	<b><i>Visitors</i></b>
July 2023	10,612
Aug. 2023	7,401
Sept. 2023	6,773
Oct. 2023	9,310
Nov. 2023	4,642
Dec. 2023	3,367
Jan. 2024	758
Feb. 2024	1,365
March 2024	5,017
April 2024	6,030
May 2024	6,281
June 2024	7,735
<b>Total</b>	<b>69,291</b>

*Figure 1: FY23-24 monthly count of people entering the visitor center.*

## Public use of the forest

During FY23-24, more than 1 million people visited DSRF. This number represents a slight increase in visitation from the previous year, which is attributed to the Guion Farm Access Area being opened for all of FY23-24. July, October and June remain the most popular months for visiting DSRF, and only January and February see fewer than 60,000 visitors.



Figure 2: Visitors to DSRF per fiscal year since 2014.

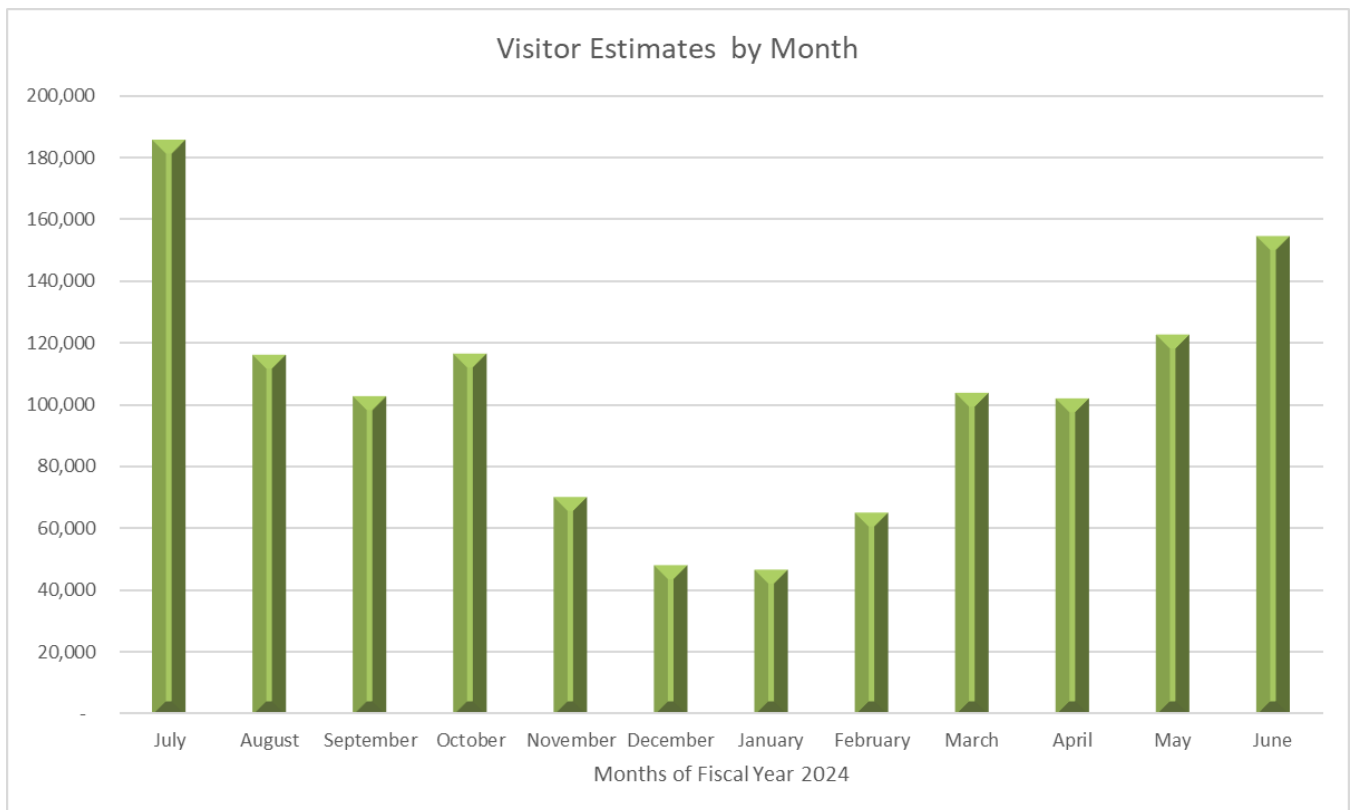


Figure 3: Visitors by month for FY23-24.

## Public safety enhancement

DSRF staff and county emergency personnel are dispatched to a variety of emergency incidents in the forest throughout the year. These incidents may involve trauma, illness, search and rescue or medical emergency evacuation. In general, emergencies are linked to visitors engaging in risky behaviors such as entering restricted areas, climbing on rocks, sliding on or jumping off waterfalls and using intoxicating substances. Despite high visitation numbers, incidents at DSRF have continued to decline.

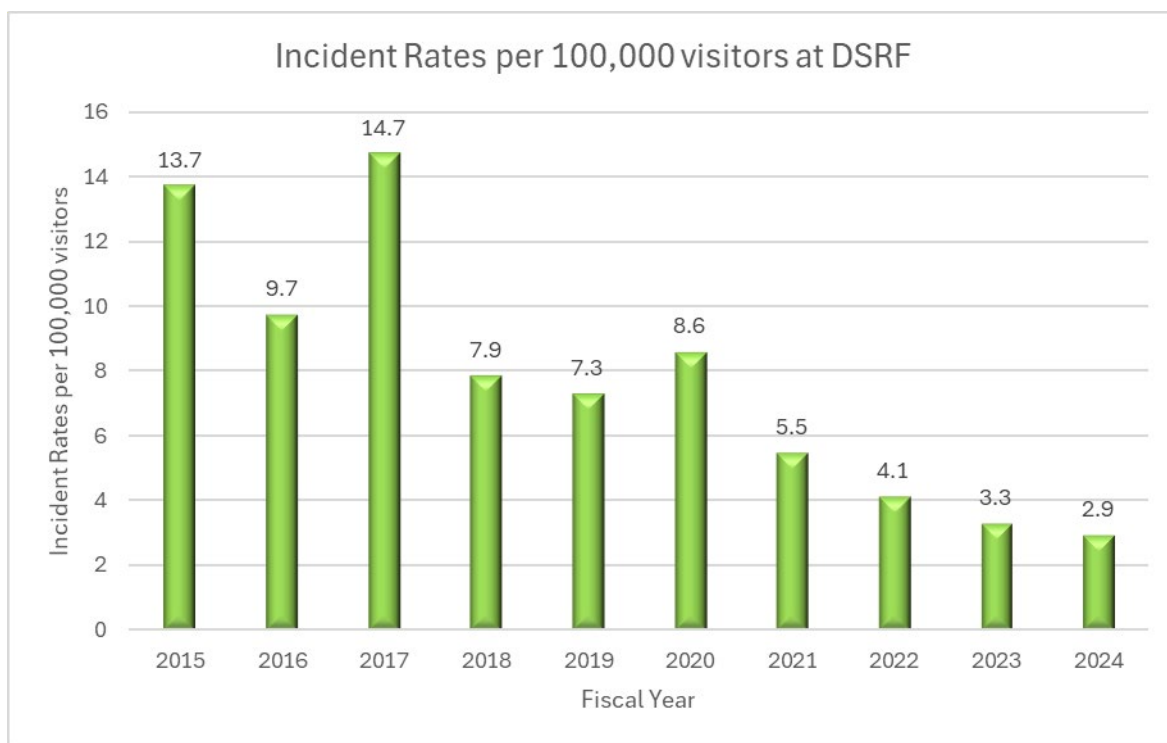
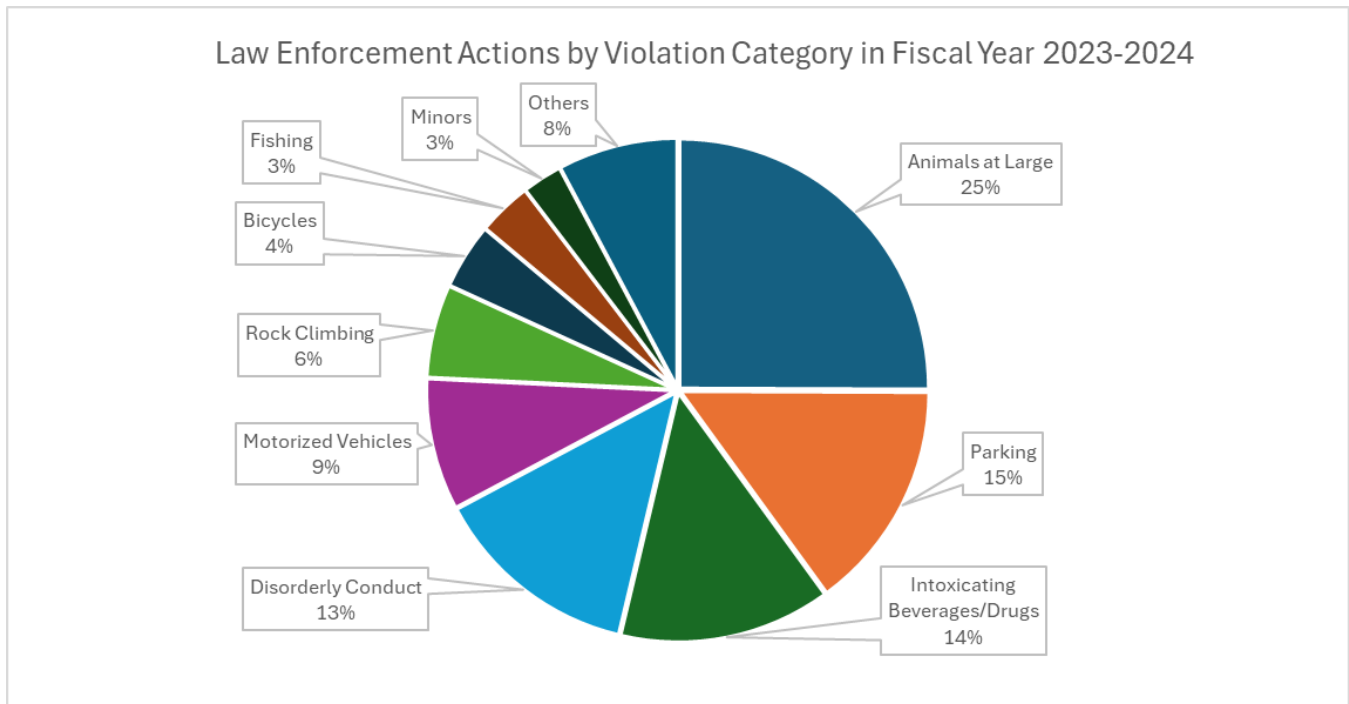


Figure 4: Visitor incident rates per fiscal year since 2015.

DSRF law enforcement agents and forest rangers provide routine patrols of the forest during normal operating hours and enforce forest rules when actionable violations are observed. Enforcement actions included issuing written and/or verbal warnings, citations and expulsions from the forest. Most of these actions occur at High Falls, Triple Falls, Fawn Lake and Hooker Falls, and primarily consisted of verbal warnings resulting in visitor compliance. The ability for the staff at DSRF to intervene and gain rule compliance has been made possible by having the staff trained to respond with effectiveness and efficiency. Improved kiosk, trailside and roadside signage as well as messaging through social media and the DSRF website are attributed to the relative decline in incidents.



*Figure 5: Categories of forest rule violations in FY23-24.*

## Permit programs and forest revenue

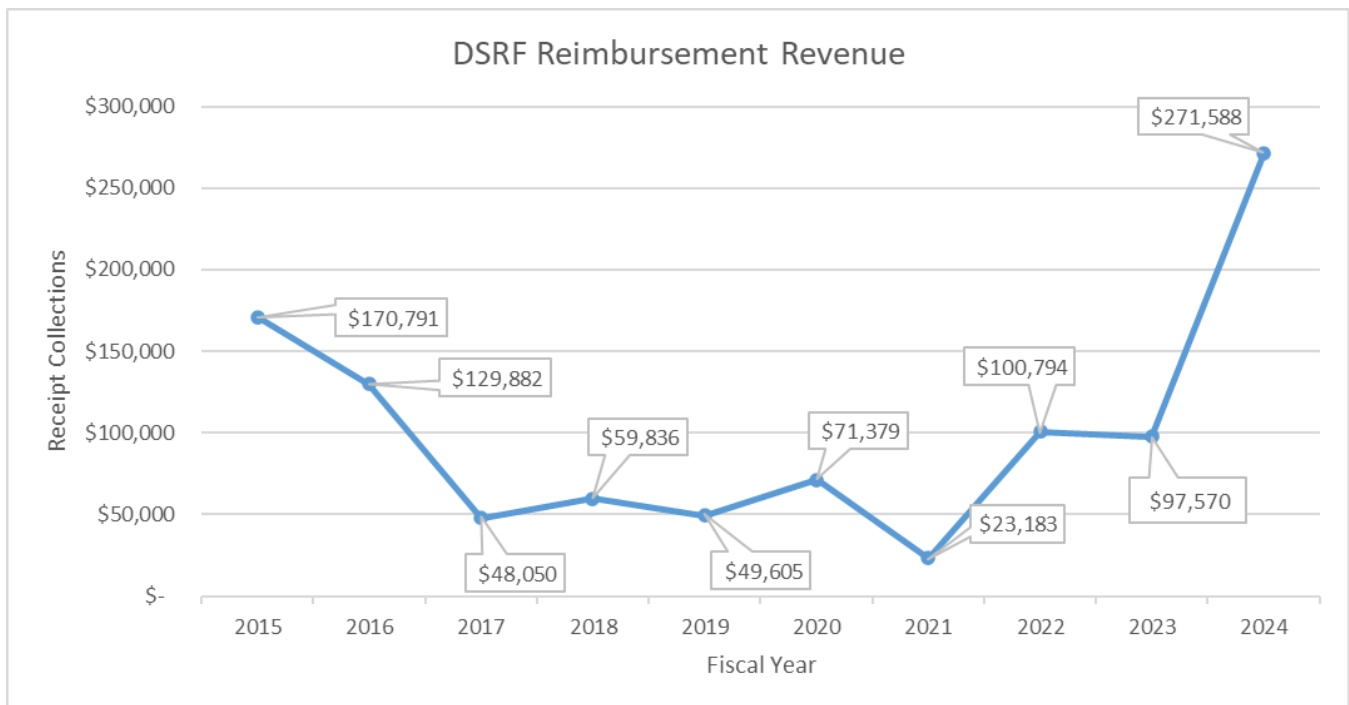
Staff at DSRF utilize permits to manage uses that are prohibited by administrative rules (02 NCAC 60B .1002-.1036). Each permit request is evaluated by a DSRF ranger to determine impacts to the forest's natural resources, road/trail system and the overall visitor experience. The number of permits issued during FY23-24 remained consistent with those issued in previous years. The one category to note is *After Hours* permits. This permit was phased out during FY23-24 due to lack of demand and to streamline forest operations. Figure 6 compares the type and number of permits issued during FY22-23 and FY23-24.

Permit Type	Permit Use	Permits in Fiscal Year 2022-2023	Permits in Fiscal Year 2023-2024	% Change
After Hours	Recreational trail use after 10 p.m. and before 5 a.m.	12	0	-100%
Commercial Use	Youth camps and businesses using DSRF as part of commercial enterprises	69	78	+13%

Film/Videography	Filming/videography for use in TV, internet and feature length films	7	0	-100%
Limited Mobility Anglers and Hunters	Vehicle access to select areas of DSRF for limited mobility anglers and hunters	30	30	0%
Limited Mobility Visitors	Provides vehicular access to High Falls and the covered bridge	34	26	-24%
Picnic Shelter	Picnic shelters at High Falls, Triple Falls, Lake Dense, Lake Imaging and Guion Farm	27	36	+34%
Special Use	Foot race events, equestrian facility rentals, firewood, research permits, etc.	42	54	+29%
	<b>Total</b>	<b>221</b>	<b>224</b>	

*Figure 6: Comparison of permits issued in FY22-23 and FY23-24.*

DSRF saw a large increase in revenue for FY23-24. This increase is due to the white pine timber harvests in the Flatwoods Unit and the Laurel Unit. Commercial use permits and picnic shelter reservations provided the remainder of the FY23-24 revenue. Figure 7 illustrates reimbursement revenue since 2015.



*Figure 7: Reimbursement revenue generated through DSRF programs since FY14-15.*

## Promoting forest resources

### Education and outreach opportunities at DSRF

During FY23-24, DSRF provided a variety of educational and outreach opportunities both on and off site. The information and education branch offered 25 onsite classes to school and community groups and participated in seven offsite educational programs such as Envirothons and STEAM expos. In addition, the information and education branch planned and coordinated the exhibits and shift signups for the 2023 Mountain State Fair. The recreation branch offered six education and outreach programs on topics such as building trails for equestrians, the DSRF master recreation plan and best practices for sustainable trails. The DSRF forest management branch offered 17 field tours and workshops to community groups, professional organizations and colleges and universities. These programs covered topics ranging from forest ecology to prescribed burning to environmental careers. DSRF law enforcement rangers provided five educational programs including overviews of forest rescues for local emergency service organizations, collaboration with the Transylvania County sheriff's office for K-9 training and local school visits to teach classes on forest and fire safety, drone use and NCFS careers. Finally, educational programming hosted at DSRF also increased during FY23-24 with additional programs offered by the Friends of DuPont Forest, offsetting the N.C Wildlife Resources Commission (NCWRC) discontinuing the types of programs previously hosted by DSRF. Figure 8 illustrates the increase in programs and participants since last fiscal year but does not include the N.C. Mountain State Fair (estimated attendance more than 147,00 people) and the Friends of DuPont Forest Festival (estimated attendance of 800).

Presenter	Educational Programs 2022-2023	Educational Programs 2023-2024	Change	Participants 2022-2023	Participants 2023-2024	Change
DSRF staff	63	65	+3%	3,081	2,475	-20%
NCWRC	12	0	-100%	168	0	-100%
Friends of DuPont Forest	23	43	+87%	1,100	1,500	+36%
Muddy Sneakers	23	20	-13%	1,526	1,312	-14%
<b>Total</b>	<b>191</b>	<b>128</b>		<b>9,190</b>	<b>5,287</b>	

*Figure 8: Educational offerings provided by DSRF in FY22-23 and FY23-24 – excluding the N.C. Mountain State Fair with an estimated attendance of 147,278 people in 2023 and the Friends of DuPont Forest Festival with an estimated attendance of 800.*





*A professional trail builder leads a class on sustainable trail building for the DSRF volunteer trail crew.*



*DSRF program participant uses water scope to collect data about water quality.*



*A DSRF ranger leads a hike focused on the history of the forest.*



*A DSRF ranger provides the Certified Burner Class participants with an overview before heading into the forest.*

Another major educational initiative for FY23-24 was the introduction of the Environmental Passport Hike program. Through this program, DSRF visitors are exposed to a variety of environmental and forestry topics such as the need for forest diversity, the benefits of prescribed burns and the reasons why visitors should stay on the trails. All visitors on the popular High Falls loop encounter the trailside signage associated with the Environmental Passport Hike, and visitors can pick up a free passport to collect rubbings from the tokens affixed to each of the program's trailside signs.





*DSRF rangers install a post for the Environmental Passport Hike trailside signs.*



*One of the Environmental Passport Hike trailside signs created by the DSRF Information and Education branch.*

## Managing forest resources at DSRF

The DSRF forest management program is guided by the forest's Land and Resource Management Plan, a document developed by a multidisciplinary group of natural resource agencies and citizen stakeholder groups. Protection and promotion of the long term integrity of the natural communities, in balance with outdoor recreation and aesthetic considerations, drive the forest management decisions at DSRF. Because of this foundational planning, DSRF has developed a renowned program of forest management demonstrations firmly rooted in the concepts of multiple use and sustainability. DuPont's forest management program actively manages natural resources using mechanical (harvesting), biological (prescribed fire) and chemical (pesticide application) methods that generations of forestry research have proven to be effective. The primary objectives of the program are to increase species and structural diversity, maintain or improve forest health, protect water quality and enhance land and water habitats. Figure 9 highlights the forestry practices across DSRF since 2011, which have created more than 500 acres of multiage forest and returned natural fire disturbance to more than 1,800 acres to the forest communities across DSRF.

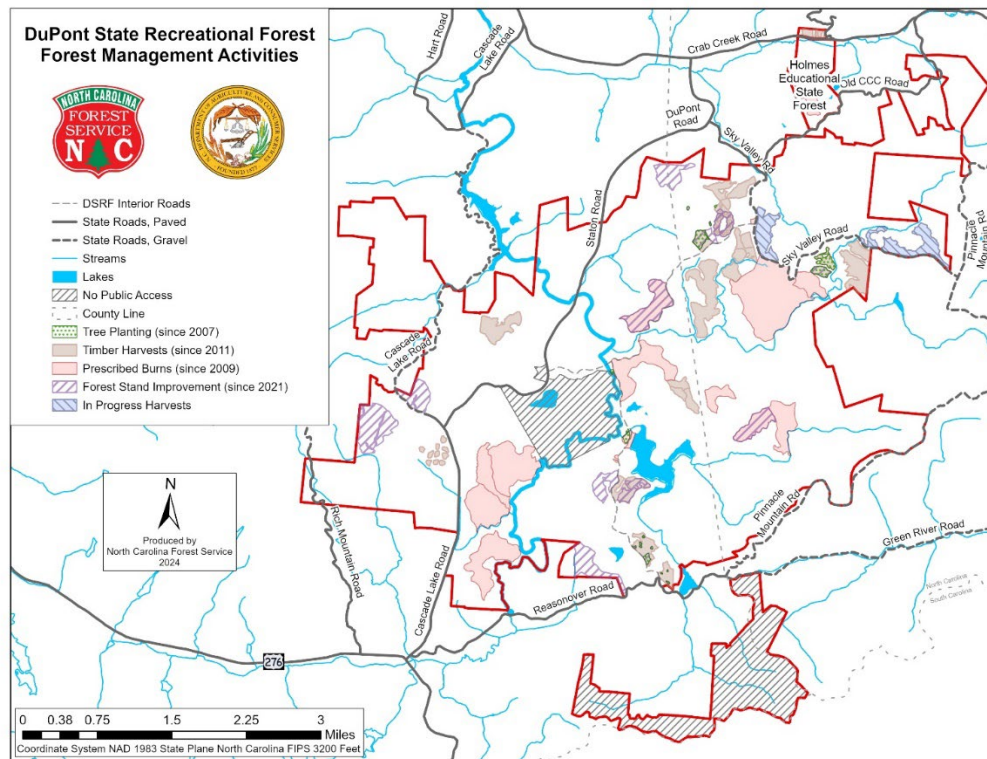


Figure 9: Forest management activities from 2011 to FY23-24.

## Forest stand improvements

FY23-24 marked the end of the second year and the beginning of the third year of the Wildlife Conservation Society grant-funded collaboration between DSRF, The Nature Conservancy (TNC) and Headwaters State Forest. Through this grant, midstory removal projects to improve oak and hickory regeneration were implemented across 194 acres in five forest stands. The grant also enabled the hiring of a private forestry contractor who used scientifically based methods to reduce the prevalence of fire intolerant species in established burn units and encourage the growth of fire adapted species in the understory.

## Timber harvests

During FY23-24, DSRF sold two stands (112 acres) of deteriorating white pine. The first area, known as the Flatwoods Unit (48 acres), saw harvest activity beginning in November 2023. The forest unit is located along Sky Valley Road, Flatwoods Trail,



Farmhouse Trail and Shoal Creek Trail and contains white pines that were planted in the late 1950s in what was at the time an open pasture landscape. These trees are overmatured and have become more susceptible to diseases, insect outbreaks and death, all of which were occurring in the Flatwoods Unit. Additionally, the white pines in this stand were experiencing a new insect and disease complex: white pine bast scale and a fungal pathogen called *Caliciopsis pinea*. The Flatwoods Unit harvest combined a shelterwood harvest interspersed with a series of small group selection cuts of varying size. The goals of this harvest technique were to regenerate the overmature monoculture of white pines into a different mix of species and create structural and age-class diversity within the Flatwoods Unit.

The second of the two white pine harvests (64 acres) is in the Laurel Unit, which is along Sky Valley Road between Frank Street and Pinnacle Mountain Road. This stand of predominantly white pines was planted in the mid to late 1960s in what was then an open pasture. The Laurel Unit timber harvest began during FY23-24 and is scheduled for completion in May 2025. Like the Flatwoods Unit, this stand was showing signs of disease, insect outbreak and excessive mortality, all of which were encouraged by the overcrowded condition of white pines that had been damaged in an ice storm. The Laurel Unit harvest has been prescribed a traditional thinning and salvage harvest to remove storm damaged white pines in an area with high value green salamander habitat. The thinning, called a variable density thinning, will remove about 50% of the white pines while retaining oaks and other hardwoods with a no-cut buffer and a 20-30% removal buffer around the green salamander habitat. The goals of the Laurel Unit timber harvest are to restore the overall health and vigor of the stand, enhance its structural diversity, increase the balance of hardwood species and improve wildlife habitat across the stand.



*The logging deck for the Flatwoods Unit timber harvest.*



*Harvested timber being loaded onto a transport truck.*

## Prescribed burning

One of the main goals of the DSRF forest management program is to reintroduce fire into fire adapted forest communities on the forest. Nine prescribed burns were conducted across a total of 543 total acres between February and April 2024. Those 543 acres are nearly double the number of acres treated during FY22-23 and are the most acres ever burned on DSRF in a 12-month period. This amount of prescribed fire was especially noteworthy because significant drought, high fire danger and numerous large wildfires in Fall 2023 eliminated the fall prescribed burning season. These burning operations were accomplished across a variety of fire adapted ecosystems, including wildflower and grass meadows, oak/hickory forests, pitch pine, oak mixed woods and low elevation granitic domes. TNC's Southern Blue Ridge burn crew assisted with nearly every prescribed burn as part of ongoing collaboration between organizations. The treated areas during FY23-24 include:

- Big Rock: 79 acres
- Bridal Veil Falls Road/Conservation Road fields: one acre
- Burnt Mountain: 95 acres
- Guion Farm north field: one acre
- Joanna Mountain NW: 89 acres
- Lake Julia dam and Spillway Field: eight acres
- Little Grassy Mountain/Grassy Dam: 269 acres

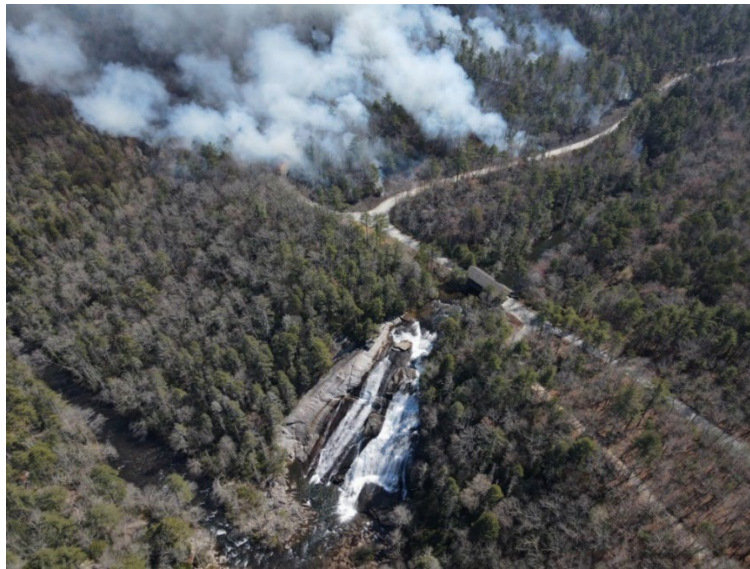


*A DSRF ranger uses a drip torch to light a prescribed burn along Conservation Road.*



*A DSRF ranger manages the spread of the prescribed burn along a fireline.*





*Aerial view of the prescribed burn on Joanna Mountain NW.*

## Forest meadow restorations

During FY23-24, the DSRF forest management program began converting approximately 12 acres of fields dominated by nonnative grass species, to meadows composed of native warm season grasses and pollinator friendly wildflowers. The meadows are located along the airstrip and in a portion of the open areas adjacent to the Guion Farm Access Area. The meadow restoration project promotes native pollinator species such as bees and butterflies as well as provides habitat for songbirds and various other animals. The plants and animals that will flourish in the restored meadows will, in turn, support a healthier and more biodiverse ecosystem in the adjacent woodlands. In addition, the meadow restoration projects will allow visitors to see a rarely observed suite of species and habitat in the mountains.



*Numerous native plants bloom in one of the restored meadows.*



*Pollinators taking advantage of native plants blooming in the restored meadow.*

## Trail planning and maintenance

During FY23-24, the DSRF recreation branch performed repairs, renovations and heavy maintenance on 18 forest trails to protect the forest resources and improve the visitor experience. A combination of small trail equipment and hand tools were used to complete the work which focused on trail sections with severe erosion, water quality concerns and safety issues. The trails and recreation features that received repairs and extensive maintenance during the past fiscal year included:

Base of Falls Trail  
Big Rock Trail  
Boundary Trail  
Corn Mill Shoals Trail  
Farmhouse Trail  
Fawn Lake Loop  
Flatwoods Trail  
High Falls Loop  
Hooker Creek Trail

Hooker Falls staircase  
Lake Imaging Road/Trail  
Mine Mountain Trail  
Reasonover Creek Trail  
Rifle Trail  
Ruffed Grouse Trail  
Shoal Creek Trail  
Three Lakes Trail  
Triple Falls Trail



*A DSRF ranger repairs severe erosion on Lake Imaging Road.*



*Two DSRF rangers use machines designed for narrow locations to work on trail.*

DSRF recreation branch also collaborated with the maintenance and forest management branches to design and build a gravel trail between the newly redesigned Guion Farm parking lot and the forest's trail and road system. This project repaired existing sections



of trail and replaced poorly aligned sections with new ones. The result of the collaborative work is a trail that is highly sustainable in terms of its trail surface, its alignment with the area's topography and its ability to direct visitors from the parking lot to the trail system.



*A DSRF ranger prepares the trail surface before the application of gravel to the new connector trail.*



*A DSRF ranger uses hand tools to clear debris from the prepared trail bed and adjacent meadow.*

During FY23-24, DSRF recreation staff collaborated with a regional equipment operator to make repairs to Triple Falls Trail. The collaborative project installed new drainage features and re-established old drainage features along this steep and popular trail. The project also included re-grading to restore the trail surface and the application of gravel to the trail so that it can sustainably accommodate the more than 700,000 visitors that walk it each year.



*NCFS equipment operator reshapes the surface of the Triple Falls Trail prior to the gravel application.*



*A DSRF ranger applies gravel to Triple Falls Trail.*



During FY23-24, the recreation branch also collaborated with other forest branches to repair a partial collapse of the airstrip. They repaired a section of embankment that had given way during heavy spring rains and turned a portion of the paved airstrip into a gravel trail. New fencing was installed at the scenic overlook to keep visitors away from the repaired area, and the surrounding fields were sown with native wildflower and grass seed as part of the forest meadow restoration project.



The airstrip after the removal of a section of asphalt.



DSRF rangers installing fencing at the end of the airstrip.

## Master Recreation Plan

In November 2021, the N.C. General Assembly's state budget allocated \$750,000 for the development and implementation of a master recreation plan for DSRF. During FY22-23, DSRF hired Mattern & Craig to develop a master recreation plan for the forest. The planning process continued for the duration of FY23-24 and included onsite evaluations of the trail system, visitor use trends, sensitive ecological areas and existing recreational facilities. The planning process also included approximately 11 months of public engagement consisting of online and in-person surveys, focus group meetings with traditional user groups, four public meetings and extensive stakeholder engagement.

The consultant for the project analyzed the data gleaned from the public input sessions and surveys and is using it to draft a master recreation plan. The plan will include recommendations for trail system management, interventions to lessen the impacts of high visitation, new and extended trail segments, trail improvements, trail sustainability

and trail consolidations and closures. When completed, the DSRF Master Recreation Plan will also include recommendations for the forest's recreational infrastructure based on trail density analyses, input from user groups, wildlife management and natural resource preservation objectives.



*More than 475 individuals attended the DSRF Master Recreation Plan Public Input sessions.*



*Participants at the DSRF Master Recreation Plan Public Information session review proposed recommendations for the forest.*

## **Promoting, protecting and managing forest resources at Holmes Educational State Forest**

Holmes Educational State Forest (HESF) has been providing North Carolina citizens a living outdoor classroom where visitors of all ages can learn about the local natural forest environment since 1977. The forest, which started out as a nursery developed by the Civilian Conservation Corps, has now become one of six educational state forests located throughout the state.

During FY23-24, more than 46,000 people came to HESF for individual or group visits. Two full-time employees manage HESF, which is part of the DSRF work unit. The FY23-24 staff at HESF included:

- Susan Fay – forest supervisor
- EJ Dwigans – educational ranger



The work of these two rangers was supplemented by help from seven volunteers who contributed a total of 88.25 hours of work for the forest. These volunteers completed a variety of tasks ranging from removing invasive plants to caring for bluebird boxes to data entry.

## Education and outreach opportunities at HESF

During FY23-24, HESF offered a variety of programs including guided hikes, curriculum related school field trips and day camp outings. A total of 1,863 people participated in onsite programming at HESF while HESF rangers provided offsite programming to an additional 1,395 individuals. Programs included subjects such as forestry, forest soils, fire weather, insects, mushrooms, birds, wildflowers and Smokey Bear. HESF also had a presence at community events such as the Henderson County Farm City Day and the Mountain Science Expo, and HESF hosted nine events and programs sponsored by organizations such as the North American Mycological Association, Riverlink and Muddy Sneakers.

Presenter	Educational Programs 2022-2023	Educational Programs 2023-2024	Change	Participants 2022-2023	Participants 2023-2024	Change
HESF staff	70	91	+30%	3,315	3,528	+6%

*Figure 10: Summary of onsite and offsite educational offerings provided by HESF during FY22-23 and FY23-24, excluding the N.C. Mountain State Fair with an estimated attendance of more than 140,000 people.*



*A HESF ranger working with middle school students at a STEAM Expo.*



*A HESF ranger teaches about parts of a flower prior to a wildflower hike.*

## Forestry center renovations at HESF

During FY23-24, HESF received grant funds from the Sustainable Forestry Initiative (\$20,000) and the Henderson County Tourism Development Authority (\$20,000). These funds were used to renovate the HESF Forestry Center. The renovation project included replacing the four barn doors with windows and patio doors. The interior and exterior were cleaned and painted and new gutters went up on four sides. In addition, drainage issues were addressed and new steps were installed on the trail leading to the forestry center. The project also included replacing former exhibits with new ones such as interactive features, a digital display and site information. The new space provides the HESF staff with a teaching space that is filled with light and sheltered from wind and rain.



*HESF Forestry Center interior before renovation.*



*HESF Forestry Center interior during renovation.*



*HESF Forestry Center interior after renovation.*

## Forest management at HESF

During FY23-24, the DSRF forest management program updated the forest stewardship management plan for HESF. This plan describes overall forest conditions and defines objectives for wildlife habitat and for the distinct north and south portions of the forest. The plan includes recommendations for managing the forest through activities such as prescribed burning and timber harvests. The plan also provides a discussion of and recommendation for issues such as nonnative invasive plant removal and hemlock woolly adelgid. HESF's updated forest stewardship management plan will serve as a guide for managing diverse aspects of the forest for years to come.



Throughout FY23-24, volunteers worked alongside HESF and DSRF rangers to remove nonnative invasive species such as multiflora rose, oriental bittersweet, Chinese privet and Japanese honeysuckle. Removal of these species is essential because they grow quicker than native species and rapidly crowd them out.



*A volunteer crew ready to remove nonnative invasive species from HESF.*



*A pile of nonnative, invasive species removed from HESF.*

FY23-24 also saw the return of fire to the HESF landscape. During the spring, 20 acres along the Shortcut Trail were burned by members of DSRF and HESF, the NCFS B.R.I.D.G.E. program and volunteers from TNC. In addition to returning fire to the landscape, the HESF prescribed burn served as a “Learn and Burn” session, which provides an opportunity for non-fire line certified individuals and private forest landowners to gain a safe and up-close look at how a prescribed burn is managed.



*Prescribed burn crew walks to the ignition zone.*



*A DSRF ranger uses a drip torch to ignite a prescribed fire at HESF.*



## Teamwork and collaboration

In accordance with the agency core value of teamwork and collaboration, DSRF staff came together with a variety of government, nonprofit and private agencies ranging from TNC to N.C. State University.

DSRF and HESF staff collaborated with national, state, regional and local resources to help suppress three local wildfires during FY23-24: the Poplar Drive Fire and the Pinnacle Mountain Road Fire in Henderson County and the Cascade Lake Road Fire in Transylvania County. The Poplar Drive Fire was a large fire that required an incident management team (IMT). The Cascade Lake Road Fire and the Pinnacle Mountain Road Fire both started on private property adjacent to DSRF and spread onto DSRF property. For these fires, DSRF and HESF staff served in both initial attack and incident command roles throughout the duration of the incidents.



*NCFS ranger operates the pump for firefighting efforts on the Cascade Lake Road Fire.*



*NCFS ranger applies water during mop-up operations for the Cascade Lake Road Fire.*

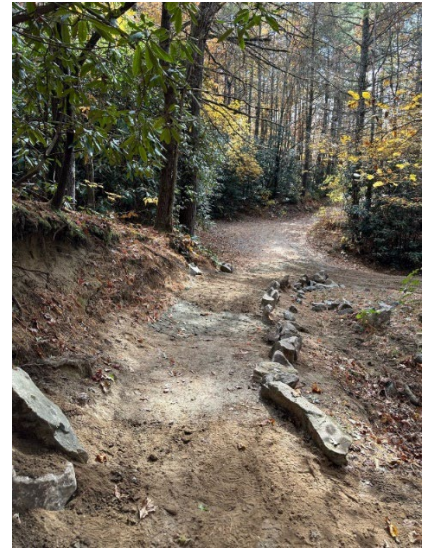
During FY23-24, the DSRF recreation branch focused on collaborating with volunteer crews and professional trail builders. This collaboration designated days for collaborative trail repairs and maintenance projects as well as several trail building workshops designed to further the volunteers' knowledge, skills and safety. One of these trail maintenance workshops focused specifically on trail repair with rock armoring completed with hand tools. The DSRF recreation staff coordinated the training opportunities, staged materials and provided the land management perspective and input to the trainings.



*Volunteers start the rock armoring workshop project on Big Rock Trail.*



*Volunteers midway through the rock armoring project.*



*The completed work on Big Rock Trail.*

The DSRF recreation branch also saw a significant increase in the number of equestrians collaborating with traditional volunteer trail crews in FY23-24. The equestrians participated in training about trail maintenance with hand tools as well as a collaborative trail maintenance day with the Friends of DuPont Forest trail crew and DSRF staff. The shared maintenance of the trail system by all user groups build relationships among diverse user groups while fostering a sense of stewardship of the trail system.

	<b>FY22-23</b>	<b>FY23-24</b>	<b>Change</b>
Volunteer hours	1,961	2,321	+18%
New volunteers	106	132	+25%
Trail drainage features repaired by volunteers	697	1,763	+153%
Miles of trail improved	19	65	+244%

*Figure 11: Growth in trail volunteers and their collaborative work*

During FY23-24, the DSRF recreation branch implemented a systematic approach to volunteer crew's trail maintenance. The result is a rotating trail maintenance strategy that is systematic rather than reactionary and allows for every mile of trail at DSRF to receive an inspection each year.

DSRF also collaborated with the Friends of DuPont Forest, Transylvania Always Committee and Henderson County Tourism Development Authority to secure grant funding for the purchase of a mini excavator. This unique piece of equipment has been used on more than fifty miles of multiuse trails for tasks such as repairing narrow trails,



restoring trail drainage, clearing small stream culverts and placing rocks for trail armoring and hardening.

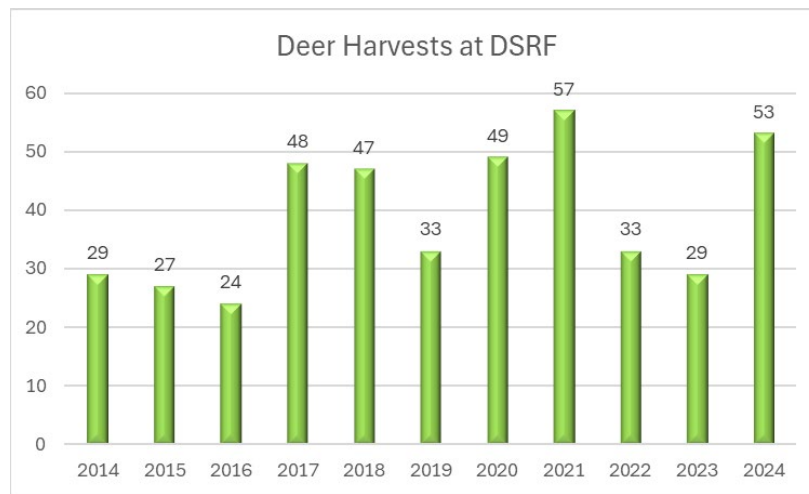


*A DSRF ranger uses the grant funded mini excavator to perform work on a narrow multiuse trail.*

In cooperation with the NCWRC Game Lands Program, during FY23-24 DSRF maintained wildlife food plots, assisted with wildlife law enforcement, supported the trout stocking of Little River and provided important hunting and fishing opportunities across the forest. The NCWRC also oversaw seasonal hunting permits at DSRF through a lottery system for various game species while DSRF staff provided limited mobility vehicle permits to assist disabled hunters and anglers with accessing the forest's interior.

Figure 12 reveals deer harvests almost doubled during the FY23-24. A variety of factors influence annual deer harvests such as weather, skill level of hunters, community interest in hunting and food and gas prices. While these factors are beyond DSRF's control, deer and other wildlife populations typically thrive in managed forest settings where the plant communities vary in structure and age. This diversity is a keystone objective in DSRF's Land and Resource Management Plan and the planning recommendations in the NCWRC's Wildlife Action Plan.





*Figure 12: Deer harvest levels at DSRF since 2014.*



*Stocking DSRF's Little River with brook, brown and rainbow trout in collaboration with the NCWRC.*

FY23-24 marked the third year of a highly impactful, collaborative effort at DSRF to control the spread of nonnative invasive species, which have the potential to displace native species and habitats. Access areas and the roads and trails that radiate from them are the most common entry points for nonnative invasive plants at DSRF, and were the areas targeted for collaborative work with the volunteer groups and DSRF staff. During FY23-24, more than 160 acres were treated for nonnative, invasive plant species such as Oriental bittersweet, multiflora rose, Japanese spirea, Japanese stiltgrass, shrubby lespedeza, kudzu and many others. The work was accomplished with assistance from the

Friends of DuPont Forest Invasive Plants Crew, which held 14 events that resulted in a total of 230 volunteer hours. The NCFS Forest Health Branch also helped treat invasive plants in one of the stands of white pine currently being harvested. Additional invasive species removal events included Haywood Community College forestry students treating dense infestations on Rock Quarry Road, and Gaia Herbs staff removing numerous invasive plants at the overflow parking area.



*DSRF rangers use chain saws and chemical treatments to eradicate Bradford pears, a nonnative invasive species.*



*Volunteers work to remove nonnative invasive species at DSRF.*

During FY23-24, the DSRF forest management program also partnered with NCFS Forest Health Branch and the Hemlock Restoration Initiative (HRI) to continue the Hemlock Woolly Adelgid (HWA) Mitigation Program. Collaboration with HRI included two volunteer events with forestry students from Haywood Community College and local volunteers with Friends of DuPont Forest. This group treated 2,713 trees representing 15,680 diameter inches across 202 acres. This includes a 31-acre hemlock treatment unit on the Continental Divide property that had never been treated for HWA. By targeting both new and previously treated areas, the group improved conditions for hemlock trees suffering from years of HWA infestation and at risk of death, as well as ensuring the continued survival and vigor of the hemlock trees that are crucial to maintaining the ecological integrity of DSRF.

Near the end of the fiscal year, NCFS Forest Health Branch and HRI assisted DSRF staff with a new project to enhance potential insectary sites for HWA predator beetles. This project included thinning overstory and midstory trees along with the near complete removal of understory trees and brush that were competing with hemlock regeneration. These activities improved the habitat for HWA predatory beetles, encouraged the spread of the beetles across the forest and increased sunlight to and growth rates of dense clusters of hemlock seedlings in the understory.



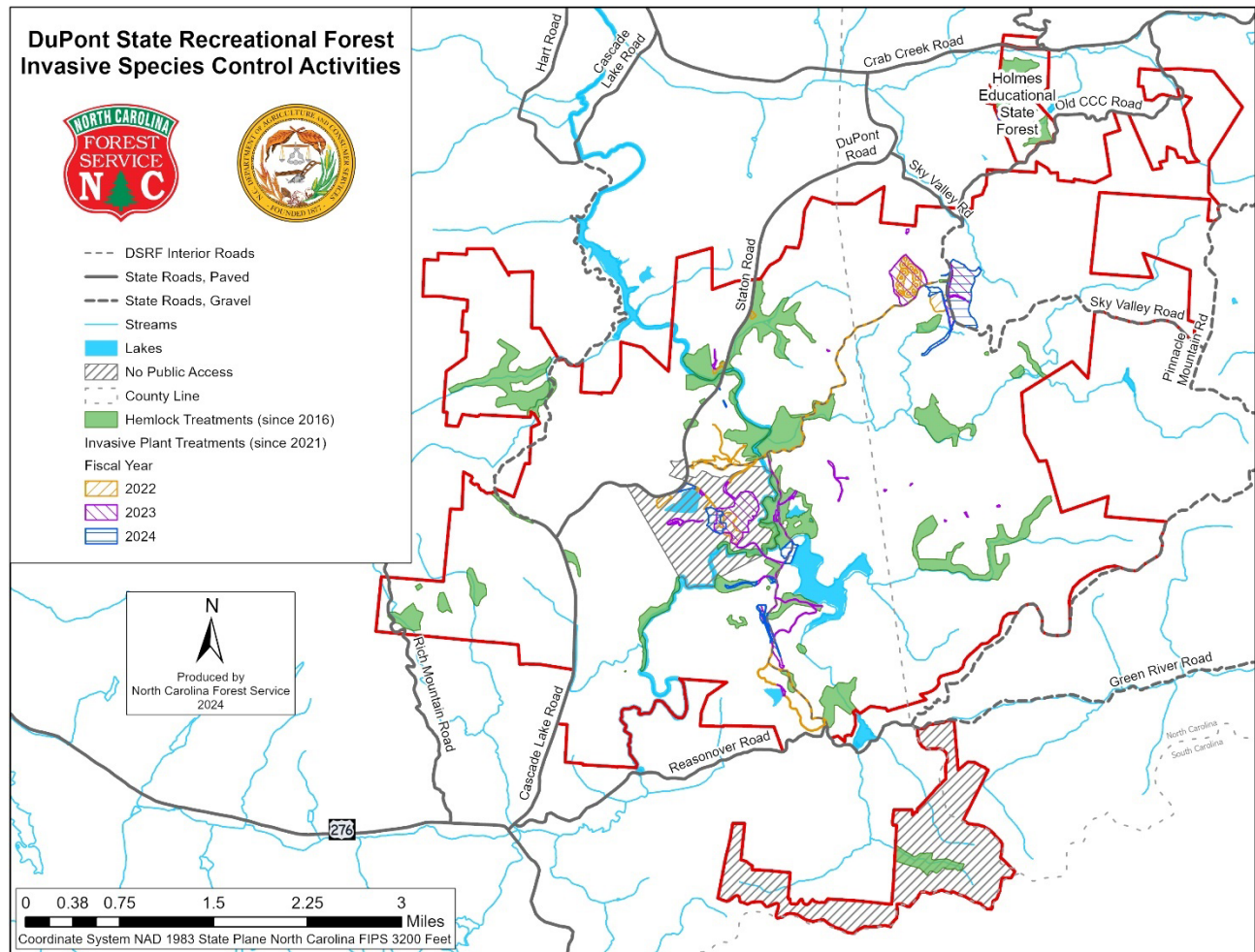


Figure 13: Areas that have been treated for invasive species or HWA between 2022 and 2024.

Lastly, DSRF continued facilitating multiple new and ongoing research projects on the forest for the UNC-Asheville Biology Department, U.S. Forest Service Southern Research Station, N.C. State University, Clemson University, George Washington University, NCWRC and the U.S. Geological Survey Wetland and Aquatic Research Center. All approved research projects on the forest assist with forest management decisions and support the DSRF mission.

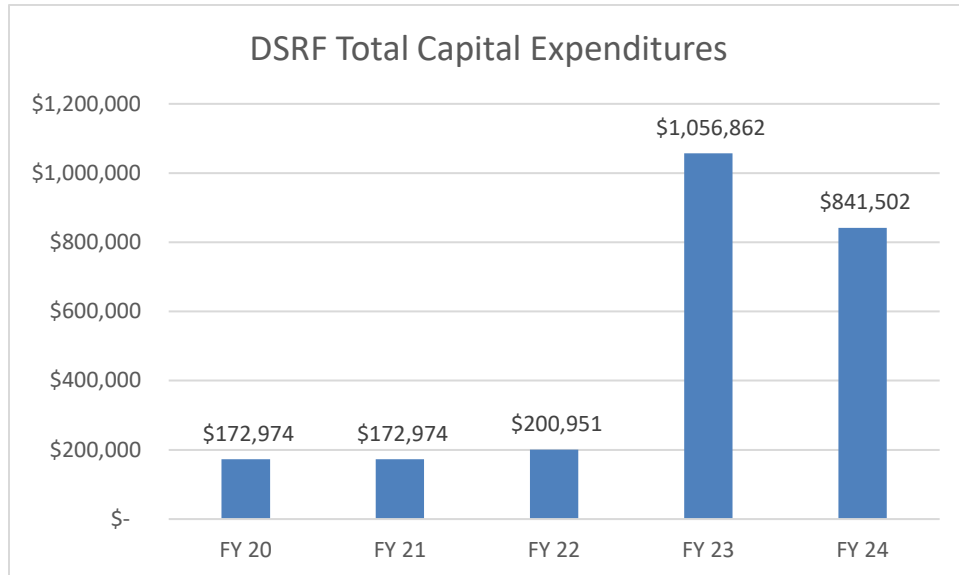
## Improving forest infrastructure: Capital projects

### N.C. Parks and Recreation Trust Fund (PARTF)

In 2017, the North Carolina General Assembly authorized DSRF access to the PARTF for the purposes of capital improvements, repair and renovation of facilities and land acquisition. Forest staff made progress on capital improvement projects supported by PARTF funds during FY23-24, expending \$452,314.00. Figure 14 provides a summary of expenditures, and figure 15 provides a comparison of total capital expenditures for the past five years.

Capital project	Expenditures
Briery Fork, Turkey Knob, Grassy Creek and Wintergreen Falls Trail renovation	\$117,942.30
Conservation Road renovation	\$167,181.70
Fiber internet installation	\$150,000.00
Law enforcement cabin chimney renovation	\$5,800.00
Lake DERA and Lake Julia dam engineering analyses	\$11,390.00
<b>Total</b>	<b>\$452,314.00</b>

*Figure 14: Summary of FY23-24 PARTF expenditures at DSRF.*



*Figure 15: Capital Expenditures for the most recent five fiscal years.*

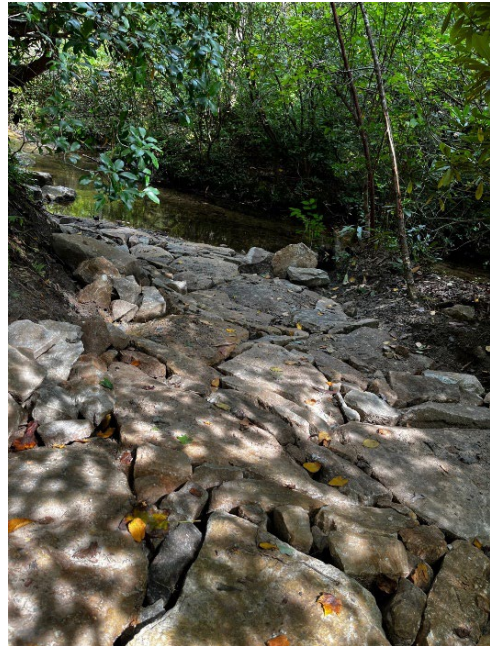
## **Briery Fork, Turkey Knob, Grassy Creek and Wintergreen Falls Trail renovation**

During FY23-24, DSRF hired a trail contractor to make significant repairs and renovations to Briery Fork Trail, Grassy Creek Trail, Turkey Knob Trail and Wintergreen Falls Trail. The contractor rerouted a section of Briery Fork Trail to improve its sustainability and reduce its impact on waterways and sensitive habitat in the area. The reroute also allowed the Briery Fork and Turkey Knob trails to be combined into a single continuous trail. The contractor provided surface reconstruction to Grassy Creek Trail by constructing turnpikes, installing sections of rock armoring to correct significant erosion and stabilizing the trail bed and other trail improvements. Lastly, the contractor repaired sections of Wintergreen Falls Trail where deep ruts had developed to improve visitor safety while simultaneously increasing the trail's sustainability and protecting trailside habitat.





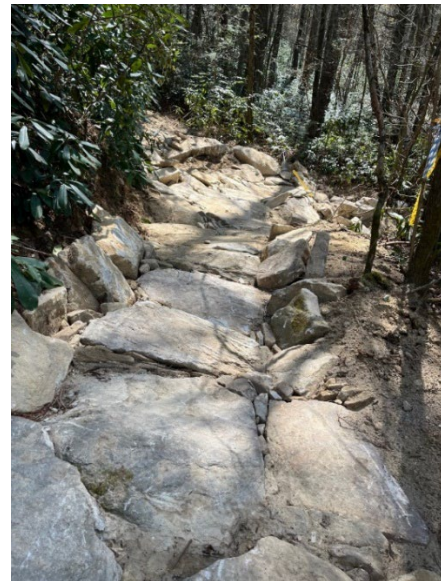
*Removal of protruding rocks and repair of the trail surface to promote safety and sustainability of Grassy Creek Trail.*



*Rock armoring installed at the Briery Fork creek crossing stabilizes the trail surface and protects water quality.*



*Construction of a turnpike along Grassy Creek Trail eliminates a chronically wet area and improves trail experience for visitors.*



*Rock armoring along a section of Grassy Creek Trail reduces erosion and increases trail stability.*



## Conservation Road renovation and gravel

During FY23-24, more than 8,000 tons of gravel was brought in for repairing and improving Conservation Road. Conservation Road is a primary 2.6-mile route that connects hikers, bikers and equestrians to a variety of popular locations within the forest such as Lake Dense, Lake Julia and Bridal Veil Falls. The work on Conservation Road will continue into FY24-25 and includes improvement of drainage structures, removal of invasive species, cutting back of encroaching plants and tree limbs and repairing and rebuilding the road's base, shoulders and surface.



*Erosion on Conservation Road creates potential impacts to visitor and vehicles.*



*Gravel stockpiled for repairing and improving Conservation Road.*

## Fiber internet installation

Before 2024, DSRF visitors and staff have relied on low-speed internet access for services such as office phone networks, internet access and mobile phone connectivity. With the installation of high-speed fiber cable at certain locations, visitors can easily download trail maps, access the DSRF website and use internet calling to coordinate travel needs. The upgrade to fiber internet access provides DSRF with a critical utility that benefits all administrative needs and allows DSRF staff to complete online tasks significantly faster by using cloud based and large data tools such as document storage and video conference calling.



*Fiber internet increases operational efficiencies at DSRF.*



*Visitors can more easily download trail maps and access information through the fiber powered internet access.*

## Law enforcement cabin chimney renovation

The law enforcement cabin was previously used as an educational space by the Summit Camps for Boys and Girls. Renovations completed in fiscal years 2021-2022 and 2022-2023 converted this space into a secure location for investigatory files, evidence and office space for law enforcement officers assigned to DSRF. The chimney repair completes the renovation of this facility so that it can be used to support the activities of the DSRF law enforcement officers.



*The chimney at the law enforcement cabin was repaired to eliminate leaks.*



*The chimney repair on the law enforcement cabin marks the final step in this building's renovation.*



## Lake DERA and Lake Julia dam engineering analyses

The two largest lakes at DSRF, Lake DERA (approximately seven acres) and Lake Julia (approximately 100 acres), were constructed by private landowners before state forest ownership. The Lake DERA dam was originally built in the early 1970s by the former DuPont Corporation and was repaired in 2017 by the Corteva Corporation, before a transfer of that property to the state. The Lake Julia dam was constructed in the late 1960s by the Summit Camps for Boys and Girls and has never been fully assessed by an engineer. The assessment reports for both dams include a thorough examination of the structural integrity and safety feature improvements needed to ensure the dams continue to comply with safety regulations. Renovation design is expected to begin in FY24-25 with construction to be scheduled in subsequent years.



*A portion of Lake DERA dam was last repaired and improved in 2017.*



*The Lake Julia dam has never been repaired or improved since its original construction in the late 1960s.*

## Plans for FY24-25

### Forest trails and roads

Forest trails and gravel roads at DSRF constitute one of the most extensive outdoor recreational systems in North Carolina. These natural surface pathways endure traffic from bicyclists, equestrians, hikers and forest ranger vehicles. In addition, these trails and roads are exposed to significant rainfall contributing to continuous erosion and sedimentation. Trail and road system maintenance is a year-round operation and requires a significant investment of materials and labor. During FY24-25, DSRF will use PARTF funds to purchase gravel, fencing and erosion control materials to repair, maintain

and improve access areas, trails and roads. In addition, DSRF will use PARTF funds to hire a professional trail builder to improve, repair and realign Reasonover Creek Trail and realign a section of Mine Mountain Trail that is currently not sustainable. This contracted trail work will help the trails withstand a high level of use, improve sustainability, protect water quality, reduce environmental impacts and improve visitor safety.

### **Forest facilities: Repair and renovation**

DSRF will continue work on several critical infrastructure improvement projects during FY24-25. The restroom facility at the Guion Farm Access Area, the largest capital building project on DSRF to date, is expected to be completed in early FY24-25. The Guion Farm Access Area parking lot portion of the project was completed in FY22-23 and has provided improved equestrian access to the Henderson County side of the forest, with pull through parking lanes that allow more space for animals during the unloading and loading into trailers. The restroom facility is part of a multi-year effort to provide basic sanitary services at DSRF access areas. Meeting this need will both accommodate visitor needs and protect the surrounding natural areas from the impacts of littering and waste disposal.

During FY24-25, the maintenance facility known as “the hangar” will be upgraded to include an employee restroom, improved exhaust system and an additional emergency exit. This facility provides office space for the maintenance staff, storage for cleaning and paper products and an area for maintaining and repairing equipment and vehicles that are essential for maintaining forest roads, trail and grounds.

Also, during FY24-25 DSRF will install a floating dock at Fawn Lake. The new dock will be configured in a t-shape to better meet the needs of anglers, swimmers and boaters and will replace an aging structure frequently used by DSRF’s visitors. The improvement goals are reducing visitor hazards while simultaneously reducing the maintenance needs in this popular area of the forest.

### **Forest management**

During FY24-25, the DSRF forest management branch will initiate a forest inventory in preparation of reviewing and updating the DSRF Land and Resource Management Plan. The branch will also prepare for potential 2025 timber harvests that will be focused on increasing stand diversity, improving forest health and creating wildlife habitat.

The forest management branch also plans to meet the annual objective of burning at least 200 acres. Four burns for 241 acres are planned for Fall 2024, and another seven burns totaling nearly 400 acres are slated for Spring 2025. Because elements such as staffing,

weather and forest conditions determine the viability of prescribed burns, the forest management branch may consider additional or alternative areas for burning.

Finally, the forest management branch will continue making strides against nonnative invasive species through retreatment of several areas of hemlocks for HWA, evaluation of two new areas for initial HWA treatment and continued focus on combatting invasive plants such as multiflora rose, kudzu and Japanese honeysuckle.

## **Information and education**

During FY24-25, the DSRF information and education branch will continue to offer onsite and offsite educational programming as well as continue to provide the leadership for the Mountain State Fair and the Friends of DuPont Forest Festival. In addition, the branch will produce a new Junior Forest Ranger booklet that includes activities aimed at children ages 5-10 and ties in with the Environmental Passport Hike signage on the High Falls Loop. The information and education branch will also refine plans for new exhibits for the visitor center and research vendors to implement those plans. During FY24-25, responsibility for the commercial use permit program will migrate from the recreation branch to the information and education branch. Finally, the information and education branch will research and coordinate the installation of a modern security system at the visitor center.

## **Recreation**

Throughout FY24-25, the DSRF recreation branch will continue to collaborate with the Friends of DuPont, Pisgah Trailblazers and other area organizations to support shared stewardship and maintenance of the multiuse trail system at DSRF. This collaborative trail maintenance will improve trail surfaces, repair drainage features, improve water quality and reroute trails to make them more sustainable. In addition, DSRF staff will support and further the work of volunteer hand crews by using small equipment such as compact utility loaders and the mini excavator. Additionally, the recreation branch will lead the initial stages of implementing the DSRF Master Recreation Plan throughout FY24-25. This will mark the beginning of the plan's 15-year vision for the forest's recreational needs.

## Contact information

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