



# 2020 SENTINEL LANDSCAPES ACCOMPLISHMENTS REPORT

**Cover photo credits: (clockwise)**

*U.S. Army paratroopers with the 82nd Airborne Division land on a drop zone in North Carolina. Credit: U.S. Army, Spc. Kevin Kim*

*Agricultural land in Highlands County, Florida, Credit: Chad Allison, Central Florida Regional Planning Council*

*U.S. Navy test pilots fly F-35C Lightning II aircraft during a formation flying qualities test in the Atlantic Test Ranges over the Atlantic Ocean. Credit: U.S. Department of Defense, Layne Laughter*

*Longleaf pine forest. Credit: U.S. Fish and Wildlife Service, Randy Browning*

*The Taylor's checkerspot butterfly with its primary nectaring plant, the Puget balsamroot. Credit: U.S. Fish and Wildlife Service, Aaron Varna*

**Chapter photo credits:**

*Page 1: Soldiers at the U.S. Army's Fort Huachuca. Credit: U.S. Army, Fort Huachuca*

*Page 3: Submarine at Naval Submarine Base Kings Bay. Credit: U.S. Navy*

*Page 7: Located in Central Florida, Arbuckle Creek flows southward to the 28,000-acre Lake Istokpoga. Credit: Chad Allison, Central Florida Regional Planning Council*

*Page 10: The Camp Ripley Sentinel Landscape straddles 50 miles of the Mississippi River and encompasses the watersheds of four major tributary rivers. Credit: Minnesota Department of Military Affairs*

*Page 13: U.S. Marines dock at Camp Lejeune before embarking upon an eight-month deployment. U.S. Marine Corps, Cpl. Michael Petersheim*

*Page 16: Land permanently protected through a conservation easement outside of Fort Huachuca. Credit: Arizona Land and Water Trust*

*Page 18: Naval Submarine Base Kings Bay. Credit: U.S. Navy*

*Page 22: Cattle grazing on native prairie at Colvin Ranch, a property enrolled in the Army Compatible Use Buffer Program. Credit: Sarah Hamman, Center for Natural Lands Management*

*Page 24: The CH-53K receives aerial refueling, demonstrating the long-range logistics support capabilities of the U.S. Marine Corps. Credit: U.S. Navy*

*Page 28: Caption: Cottonwood gallery in the San Pedro Riparian National Conservation Area. Credit: Bureau of Land Management*

## EXECUTIVE SUMMARY

1

Partnership Overview .....	3
Figure 1: Locations of Sentinel Landscapes .....	4
Federal Program Involvement .....	5
Figure 2: Funding Committed to Sentinel Landscapes Through FY 2019 in Millions .....	5
Figure 3: Federal Cost Savings from the Sentinel Landscapes Partnership .....	6
Fiscal Year 2019 Partnership Highlights .....	6
Figure 4: Acres Protected <sup>4</sup> and Enrolled <sup>5</sup> within each Sentinel Landscape through FY 2019 .....	7
Table 1: Federal Conservation Programs Active in Sentinel Landscapes .....	8
Avon Park Air Force Range Sentinel Landscape .....	9
Figure 5: Avon Park Air Force Range Sentinel Landscape Map .....	9
Table 2: APAFR Sentinel Landscape Footprint Details (acres) .....	9
Figure 6: Avon Park Air Force Range Sentinel Landscape Total Funding by Partner .....	10
Camp Ripley Sentinel Landscape .....	11
Figure 7: Camp Ripley Sentinel Landscape Map .....	11
Table 3: Camp Ripley Sentinel Landscape Footprint Details (acres) .....	11
Figure 8: Camp Ripley Sentinel Landscape Total Funding by Partner .....	12
Eastern North Carolina Sentinel Landscape .....	13
Figure 9: Eastern North Carolina Sentinel Landscape Map .....	13
Table 4: Eastern North Carolina Sentinel Landscape Footprint Details (acres) .....	13
Figure 10: Eastern North Carolina Sentinel Landscape Total Funding by Partner .....	14
Fort Huachuca Sentinel Landscape .....	16
Figure 11: Fort Huachuca Sentinel Landscape Map .....	16
Table 5: Fort Huachuca Sentinel Landscape Footprint Details (acres) .....	16
Figure 12: Fort Huachuca Sentinel Landscape Total Funding by Partner .....	17
Georgia Sentinel Landscape .....	18
Figure 13: Georgia Sentinel Landscape Map .....	18
Table 6: Georgia Sentinel Landscape Footprint Details (acres) .....	18
Figure 14: Georgia Sentinel Landscape Total Funding by Partner .....	19
Joint Base Lewis-McChord Sentinel Landscape .....	21
Figure 15: JBLM Sentinel Landscape Map .....	21
Table 7: JBLM Sentinel Landscape Footprint Details (acres) .....	21
Figure 16: JBLM Sentinel Landscape Total Funding by Partner .....	22
Middle Chesapeake Sentinel Landscape .....	24
Figure 17: Middle Chesapeake Sentinel Landscape Map .....	24
Table 8: Middle Chesapeake Sentinel Landscape Footprint Details (acres) .....	24
Figure 18: Middle Chesapeake Sentinel Landscape Total Funding by Partner .....	25
Partnership Outlook .....	27







# EXECUTIVE SUMMARY



In an era of increasingly complex threats—both natural and man-made—the definition of national security has evolved to recognize the significance of not only military capability and readiness, but also food security, water security, and environmental security. As a result, land-use challenges that defense, conservation, and agricultural actors once addressed unilaterally—such as land-use conversion or natural resource degradation—now call for more holistic, integrated solutions. To encourage strategic collaboration on these issues, the U.S. Department of Defense (DoD) partnered with the U.S. Department of Agriculture (USDA) and U.S. Department of the Interior (DOI) to form the Sentinel Landscapes Partnership.

Founded in 2013, the Sentinel Landscapes Partnership is a coalition of federal agencies, state and local governments, and non-governmental organizations that works to advance common land-use objectives in high priority areas known as sentinel landscapes. **The Partnership's overarching goals are to strengthen military readiness, bolster agricultural and forestry productivity, conserve natural resources, and increase access to recreation.** The Partnership carries out its mission by connecting private landowners around military installations or ranges with government assistance programs that offset the cost of implementing sustainable management practices and conservation projects.

This report outlines the accomplishments of the Sentinel Landscapes Partnership through fiscal year (FY) 2019. Its findings demonstrate that by aligning funding around mutually-beneficial land use goals, USDA, DoD, and DOI accomplish more on the ground with fewer resources. Through FY 2019, projects across sentinel landscapes have attracted over \$141 million in DoD funds, \$223 million in USDA funds, \$41 million in DOI funds, \$169 million in state funds, \$15 million in local

funds and \$80 million in private funds. These contributions have permanently protected over 467,000 acres of land and enrolled 2.3 million acres of land in technical assistance programs. Examples of exceptional projects through FY 2019 include:

**Building Coastal Resilience to Support Military Readiness:** Georgia Sentinel Landscape partners advanced priorities outlined in the National Defense Strategy by acquiring a conservation easement on an 11,000-acre parcel adjacent to Naval Submarine Base (NSB) Kings Bay known as Cabin Bluff. Prior to acquisition, the coastal property was zoned for 10,000 homes and 1 million square feet of commercial space. Therefore, permanently protecting Cabin Bluff will prevent incompatible development that would undermine the installation's ability to deploy nuclear submarines into the Atlantic Theatre. The project will also increase NSB Kings Bay's resilience to climate change by ensuring that the installation has access to a healthy shoreline. Cabin Bluff encompasses tidal marshes that defend against erosion by absorbing storm surge, flooding, and rising sea levels. Lastly, the project will reduce the likelihood that training restrictions triggered by the Endangered Species Act will encumber NSB Kings Bay's mission. Cabin Bluff is home to longleaf pine forests that support the gopher tortoise, an at-risk species in Georgia. With proper restoration, this property can contribute to existing efforts made by DoD to ensure that the gopher tortoise can thrive without regulatory protection.

**Protecting Ranchlands to Enhance Wildlife Habitat:** In September 2019, Avon Park Air Force Range Sentinel Landscape partners acquired an easement on the last unprotected portion of Rafter T Ranch, a working cattle ranch in Central Florida. Spanning 5,200 acres across the Everglades Watershed, the Rafter T Ranch stitches together a series of

<sup>1</sup>USDA total includes additional easement program funding that is not categorized by specific Fiscal Year.

conserved properties, creating a natural corridor in Highlands County that will support species including the Florida panther, Florida black bear, and the Florida scrub-jay. Contiguous land protection at this scale will also preclude development that may disrupt Avon Park Air Force Range's ability to effectively use its low-altitude airspace, which is necessary for the installation to carry out its national defense mission.

### **Strengthening Water Security in Southern**

**Arizona:** Fort Huachuca Sentinel Landscape partners enhanced water security in southern Arizona by conserving groundwater for the San Pedro River, a 141-mile waterway that supports a vibrant ecosystem, local human populations, and the U.S. Army's Fort Huachuca. For years, rapid development in the region has increased demand for water, leaving portions of the San Pedro dry. In response, sentinel landscape partners mobilized to acquire conservation easements on 6,000 acres of land along 25 miles of the desert river, which has avoided 1 billion gallons of potential groundwater pumping per year. The partners have also facilitated replenishment projects—such as the Palominas Stormwater Recharge and Flood Control Project—that capture an additional 1 billion gallons of stormwater and effluent annually and funnel it to an underground aquifer that feeds the San Pedro River.

**Increasing Access to Recreation:** Avon Park Air Force Range Sentinel Landscape partners increased public access to outdoor recreation in central Florida by permanently protecting 4,000 acres of the Triple Diamond Ranch. Situated in the heart of the Everglades Headwaters National Wildlife Refuge, the property joins a contiguous network of 200,000 acres of conserved land. The Triple Diamond Ranch will provide exceptional recreational opportunities, while also enhancing water quality for the immediate area and downstream into the country's largest subtropical wetland. The property provides natural filtration for water that flows directly into the Kissimmee River, feeding Lake Okeechobee and, ultimately, the Everglades.

### **Increasing Accessibility to Landowner**

**Assistance Programs:** The Sentinel Landscapes Partnership increased accessibility to government assistance programs that benefit private landowners by launching a new Interactive Landowner Resources Tool. The tool provides a single online source where landowners can find available benefits, assess their eligibility, and determine the necessary steps to pursue enrollment in the programs. Modeled after a standard e-commerce site, the tool aggregates data on over 300 landowner assistance programs and allows users to filter results by category, benefit type, and location.

## PARTNERSHIP OVERVIEW



The U.S. Department of Defense (DoD) owns and manages 25 million acres of land across the United States. This land allows the military to conduct realistic training and testing activities vital to preparing the warfighter for combat. However, starting in the late 1990s, DoD recognized that pressures from incompatible development outside of its facilities—such as light pollution, spectrum interference, and noise complaints—were affecting the military’s use of its land. Military units also faced increasing environmental restrictions on training, testing, and operational activities as imperiled species migrated on to DoD land in response to habitat loss. To mitigate these risks, Congress, at DoD’s request, enacted authorizing legislation in 2003, which DoD implemented as the Readiness and Environmental Protection Integration (REPI) Program. The REPI Program funds projects that promote compatible land-use, protect wildlife habitat, and restore critical natural resources outside the boundaries of military installations and ranges.

While the REPI Program has had considerable success in strengthening military readiness, DoD actions alone are insufficient to guarantee long-term mission sustainability and resilience. Land development and urban sprawl have continued to expand across the country, leading to increased habitat loss and natural resource degradation. These risks not only impact military readiness, but also threaten food security, water security, and environmental security, which are critically important to the national defense mission.

There are numerous opportunities for agricultural, conservation, and defense stakeholders to work together to address these land-use challenges. Agriculture and forestry make up a total of 74 percent of land use in the United States<sup>2</sup>. When these

properties are managed sustainably, they can preserve wildlife habitat and protect critical natural resources. Furthermore, conservation initiatives that occur on working lands tend to improve soil, air, and water health, which increases agricultural and forestry productivity. For DoD, farming, ranching, forestry, and open space buffer military installations and ranges from incompatible development. Likewise, conservation projects can reduce the likelihood that habitat loss and fragmentation will cause threatened, endangered, and other at-risk species to migrate on to DoD land.

To encourage strategic collaboration on these issues and develop comprehensive, integrated solutions, DoD partnered with U.S. Department of Agriculture (USDA) and U.S. Department of the Interior (DOI) in 2013 to form the Sentinel Landscapes Partnership. The Partnership is a coalition of federal agencies, state and local governments, and non-governmental organizations that works to advance mutually beneficial land-use objectives in areas known as sentinel landscapes. The Partnership’s overarching goals are to strengthen military readiness, bolster agricultural productivity, conserve natural resources, and increase access to recreation. The Partnership accomplishes this mission by connecting private landowners around military installations and ranges with voluntary government assistance programs that offset the cost of implementing sustainable management practices or conservation projects.

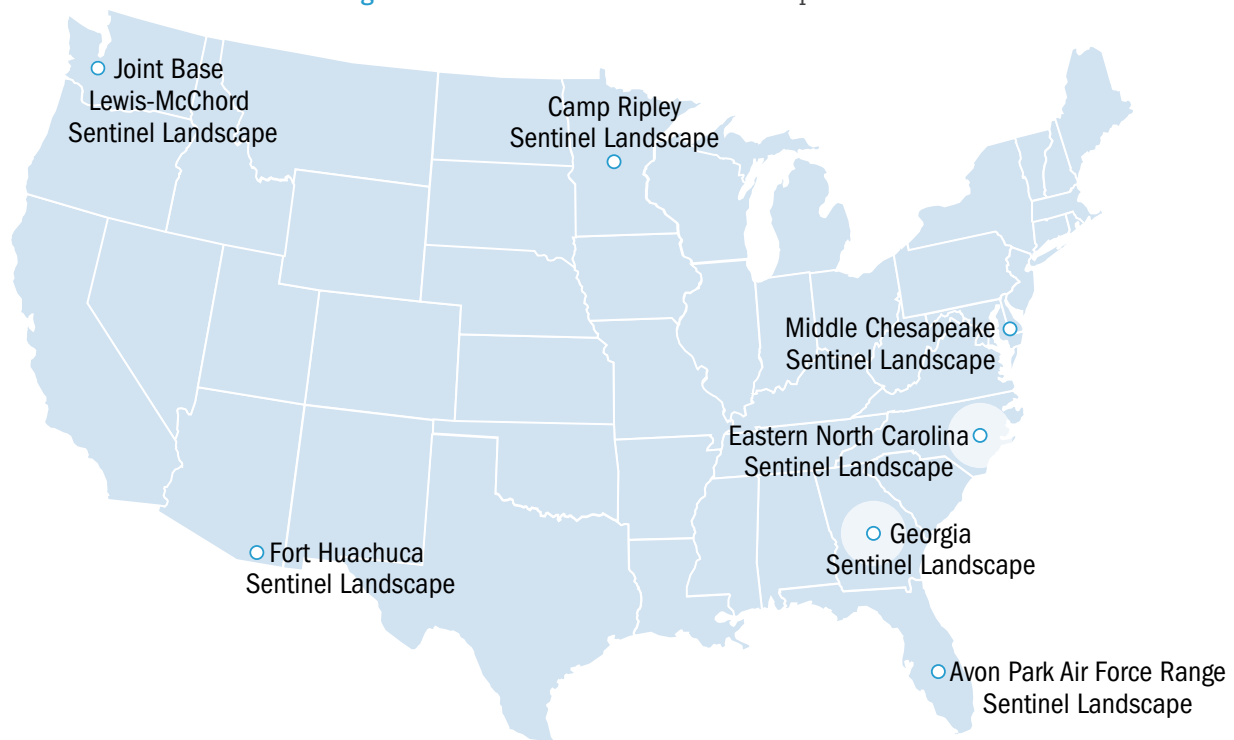
<sup>2</sup> Economic Research Service: “Major Uses of Land in the United States, 2012”: <https://www.ers.usda.gov/webdocs/publications/84880/eib-178.pdf?v=9562.2>



While USDA, DoD, and DOI maintain oversight of the Partnership, sentinel landscapes are predominantly local enterprises. Each sentinel landscape is unique in its land cover, economic drivers, cultural heritage, and natural resource challenges. Therefore, USDA, DoD, and DOI rely on networks of state agencies, local governments, and private organizations to inform land-use goals and carry out projects on the ground. This collaborative model saves partners time and money. But more importantly, it creates resilient communities that balance the needs of humans and the environment. To date, the Partnership has selected seven locations as sentinel landscapes:

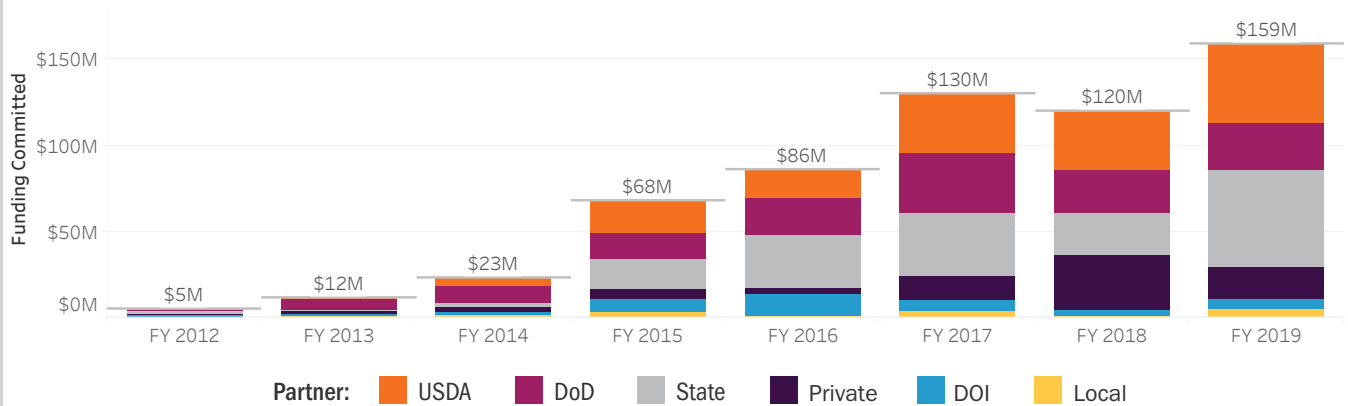
- ★ Avon Park Air Force Range, Florida
- ★ Camp Ripley, Minnesota
- ★ Eastern North Carolina
- ★ Fort Huachuca, Arizona
- ★ Georgia<sup>3</sup>
- ★ Joint Base Lewis-McChord (JBLM), Washington
- ★ Middle Chesapeake; Maryland, Delaware, and Virginia

Figure 1: Locations of Sentinel Landscapes



<sup>3</sup> The Georgia Sentinel Landscape includes natural and working lands around nine military installations and ranges and encompasses a large portion of central Georgia. The sentinel landscape does not cover the entire state.

**Figure 2: Funding Committed to Sentinel Landscapes Through FY 2019 in Millions**



Partner	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
USDA	\$0.6M	\$0.5M	\$4.8M	\$18.9M	\$16.5M	\$34.5M	\$34.8M	\$46.4M
DoD	\$1.5M	\$6.5M	\$9.6M	\$15.0M	\$21.7M	\$35.3M	\$25.0M	\$26.6M
DOI	\$1.2M	\$1.0M	\$1.5M	\$8.1M	\$13.0M	\$6.6M	\$4.0M	\$5.9M
Local	\$0.1M	\$1.0M	\$1.5M	\$2.8M	\$0.7M	\$3.4M	\$0.5M	\$4.8M
Private	\$1.2M	\$2.0M	\$2.8M	\$5.7M	\$3.7M	\$13.7M	\$31.6M	\$19.0M
State	\$0.8M	\$0.6M	\$2.6M	\$17.5M	\$30.1M	\$36.7M	\$24.3M	\$56.2M
<b>Total</b>	<b>\$5.4M</b>	<b>\$11.7M</b>	<b>\$22.8M</b>	<b>\$68.0M</b>	<b>\$85.7M</b>	<b>\$130.2M</b>	<b>\$120.2M</b>	<b>\$159.0M</b>

## FEDERAL PROGRAM INVOLVEMENT

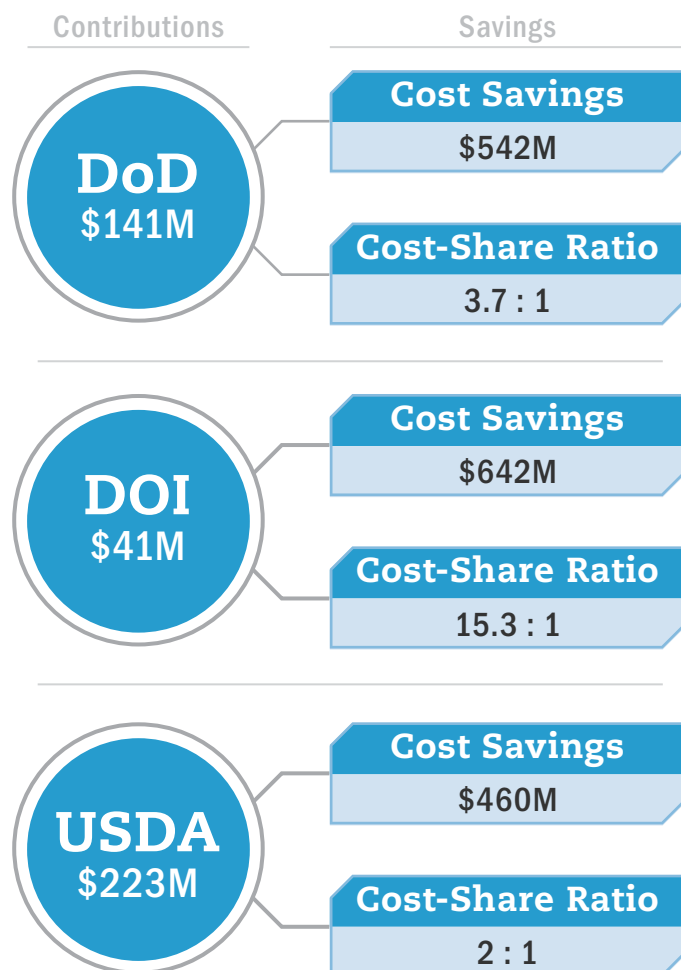
The Sentinel Landscapes Partnership was established in 2013 through a Memorandum of Understanding and later affirmed in statute under the 2018 National Defense Authorization Act<sup>4</sup>. Leadership from USDA, DoD, and DOI coordinate the Partnership at the national level through the Federal Coordinating Committee (FCC). The FCC currently consists of representatives from DoD, the Natural Resource Conservation Service, the U.S. Forest Service, the Farm Service Agency, the U.S. Fish and Wildlife Service, and the Bureau of Land Management. One of the FCC's primary responsibilities is to designate locations as sentinel landscapes. Sentinel landscapes share qualities that make them excellent sites for USDA, DoD, and DOI to collaborate on projects. Each sentinel landscape is anchored by at least one high-value military installation or range; encompasses agricultural and forestry lands; and is the appropriate scale to address restoration objectives such as water quality and quantity improvement and wildlife habitat enhancement.

Once a location is selected as a sentinel landscape, the FCC works with local partners to develop land use objectives that reflect USDA, DoD, and DOI priorities. Thereafter, the Partnership initiates efforts to connect private landowners whose properties are located inside the sentinel landscape with voluntary government assistance programs that support those goals. Landowner assistance programs across USDA, DoD, and DOI provide a range of complementary benefits, including tax reductions, agricultural loans, disaster relief, educational opportunities, technical aid, and funding for conservation easements. By aligning federal funding in targeted areas, USDA, DoD, and DOI accomplish more on the ground with fewer resources.

In total, through fiscal year (FY) 2019, over \$141 million in DoD funds, \$223<sup>5</sup> million in USDA funds, and \$41 million in DOI funds have supported projects in sentinel landscapes. The Partnership also attracts funding from participating states—Arizona, Florida, Georgia, Maryland, Delaware, Virginia, Minnesota,

<sup>4</sup> <https://www.congress.gov/bill/115th-congress/house-bill/2810/text>

**Figure 3:** Federal Cost Savings from the Sentinel Landscapes Partnership



North Carolina, and Washington—local governments, and private organizations. To date, Partnership efforts have received \$169 million in state funds, \$15 million in local funds and \$80 million in private funds. These contributions have permanently protected over 467,000 acres of land within sentinel landscapes and enrolled an additional 2.3 million acres of land in technical assistance programs.

## FISCAL YEAR 2019 PARTNERSHIP HIGHLIGHTS

### Interactive Landowner Resources Tool

The success of the Sentinel Landscapes Partnership depends on the participation and support of private landowners. Recognizing this, the FCC launched the [Interactive Landowner Resources Tool](#) in November 2019 as part of an effort to redesign the Partnership’s website. The goal of the tool is to simplify the search process for voluntary government assistance programs that benefit private

landowners. The tool accomplishes this objective by providing a single online source where individuals can find available benefits, assess their eligibility, and determine the necessary steps to pursue enrollment in the programs. Modeled after a standard e-commerce site, the tool aggregates data on over 300 landowner assistance programs and allows users to filter results by category, benefit type, and location. Since launching, the tool has increased accessibility to government benefits for thousands of users and received praise from private citizens and government personnel alike.

### Sentinel Landscapes Documentary

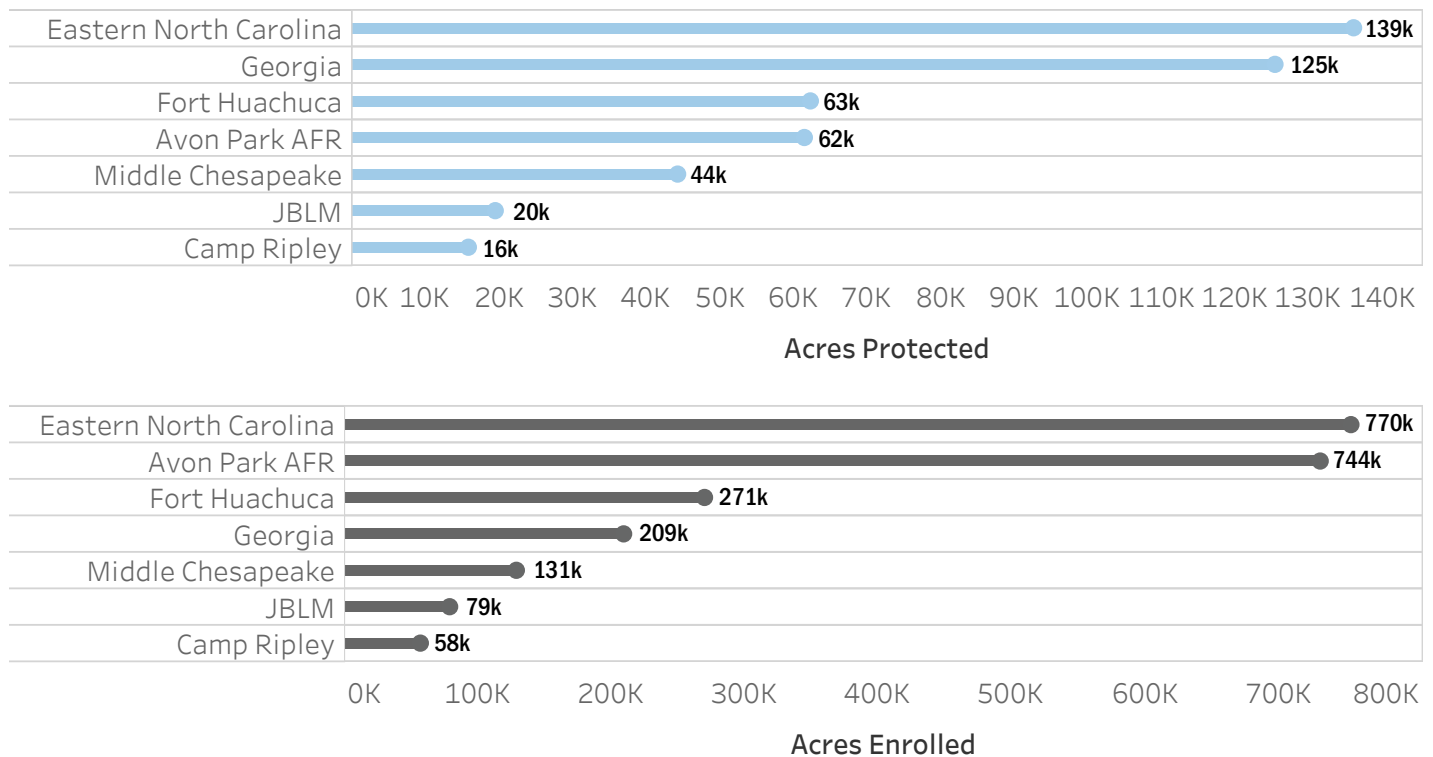
The Sentinel Landscapes Partnership celebrated a significant milestone in Spring 2020 when it released a documentary titled [Sentinel Landscapes](#). Directed by award-winning filmmakers, the documentary is the culmination of over two years of collaborative work among partners. The film tells the stories of three sentinel landscapes through a series of interviews with farmers, ranchers, scientists, and DoD civilian and military personnel who explain how and why they are working together to create a more sustainable future. The Partnership released the documentary online in April 2020. Among others, the Audubon Society, the Nature Conservancy, and the Defenders of Wildlife promoted the film nationwide through social media channels. Within four weeks of its release, the film had reached well over 1 million individuals and increased traffic to the Partnership’s website by 81 percent. A longer version of the documentary was selected to be featured in the 2020 D.C. Environmental Film Festival, which has been tentatively rescheduled for 2021.

### Sentinel Landscape Partnership Coordinators

The Sentinel Landscapes Partnership operates throughout all tiers of government and within the private sector. As a result, projects carried out in support of the Partnership often involve a diverse set of stakeholders with varying interests. To make project planning more efficient, the FCC collaborated with local partners to hire a coordinator for each sentinel landscape. These individuals serve as liaisons between local stakeholders and agency headquarters and strengthen relationships among defense, conservation, and agricultural communities. In addition, sentinel landscape coordinators build capacity at the local level by pursuing additional project funding within their landscape. To date, the FCC has committed \$800,000, matched by \$600,000 in funding from the U.S. Endowment for Forestry and Communities, to support the sentinel landscape coordinators. In addition, state agencies, local governments, and private organizations contribute funding to support these positions.



**Figure 4:** Acres Protected<sup>4</sup> and Enrolled<sup>5</sup> within each Sentinel Landscape through FY 2019



As the owner and operator of the Rafter T Ranch, Mr. James Wohl oversees a 5,200 working cattle ranch in Central Florida and has been a vocal advocate for the Sentinel Landscapes Partnership since its inception. Credit: Grizzly Creek Films

<sup>5</sup> USDA total includes additional easement program funding that is not categorized by specific Fiscal Year. 4

<sup>6</sup> Protected acres are recognized as land acquisitions—fee simple or easement—that have completed the due diligence and closing actions necessary to obtain a real estate interest.

<sup>7</sup> Land is considered enrolled if the property owner voluntarily participates in a federal or state land-management program that provides financial or technical assistance to promote sustainable agricultural practices, restore imperiled species and their habitat, or preserve critical natural resources; or if a landowner or an organization receives a federal or state grant to conduct a conservation project on said property.

**Table 1:** Federal Conservation Programs Active in Sentinel Landscapes

Federal Agency	Program	Mission
 DoD	Readiness and Environmental Protection Integration (REPI) Program	The REPI Program supports the National Defense Strategy by increasing the long-term sustainability of military installations and ranges. Specifically, the REPI Program funds projects that preserve and enhance military readiness by promoting compatible land use, alleviating regulatory restrictions on military activities, or increasing the resilience of military installations and ranges. REPI Program funds may be used to satisfy the non-federal match requirement of any USDA or DOI conservation program.
	Office of Economic Adjustment (OEA) Military Installation Sustainability Program	OEA's Military Installation Sustainability program provides technical and financial assistance to states and local governments to conduct Compatible Use Studies and Military Installation Resilience Reviews, which provide recommendations to help local jurisdictions guide community development and infrastructure investments that protect and preserve military readiness, while supporting continued economic development.
 USDA	Natural Resources Conservation Service (NRCS) Regional Conservation Partnership Program (RCPP)	RCPP promotes coordination between NRCS and its partners to deliver conservation technical and financial assistance to producers and landowners through partnership agreements, conservation program contracts, or easements. RCPP projects achieve regional natural resource goals while also meeting complementary local conservation priorities.
	NRCS Conservation Stewardship Program (CSP)	CSP provides technical and financial assistance to agricultural producers for implementing conservation management activities related to a variety of key resource concerns, including soil and water quality and wildlife habitat, on cropland, pasture, rangeland, and forestland, in 5-year long contracts.
	NRCS Environmental Quality Incentives Program (EQIP)	EQIP provides technical and financial assistance to agricultural producers for implementing conservation practices related to a variety of key resource concerns, including soil and water quality, watershed protection, and wildlife habitat, in contracts up to 10 years long.
	NRCS Agricultural Conservation Easement Program (ACEP)	NRCS' ACEP provides financial and technical assistance to help conserve agricultural lands, including cropland, rangeland, grassland, pastureland, wetlands, and nonindustrial private forestland.
	NRCS Conservation Technical Assistance	NRCS' CTA helps landowners develop conservation plans and implement conservation practices without additional Farm Bill program funding.
	U.S. Forest Service (USFS) Forest Legacy Program	The Forest Legacy Program targets ecologically and economically important private forestlands that states identify for protection.
 DOI	USFWS North American Wetlands Conservation Act (NAWCA) Grants	The U.S. Fish and Wildlife Service's (USFWS) NAWCA administers a competitive grant program to benefit bird populations and wetland habitat while supporting local economies and American traditions such as hunting, fishing, family farming, cattle ranching, and birdwatching.
	USFWS Partners for Fish and Wildlife Program (PFW)	USFWS' PFW provides technical and financial assistance to landowners interested in restoring and enhancing wildlife habitat on their land.
	USFWS Cooperative Endangered Species Conservation Fund (CESCF)	USFWS: CESCF (section 6 of the ESA) is a tool that provides grants to states and territories to participate in a wide array of voluntary conservation projects for candidate, proposed, and listed species. The program provides funding to states and territories for species and habitat conservation actions on non-federal lands. A non-federal match is required; however, DoD REPI funds are an exception and do count towards match.
	USFWS Recovery Planning and Implementation	USFWS' Recovery Planning and Implementation provides financial assistance to states, federal agencies, landowners, educators, non-profit organizations, researchers, and other partners to obtain information about endangered or threatened species that will aid in the recovery of these species or help conserve the ecosystems upon which these species depend.
Other programs that have the potential to support sentinel landscapes include: <ul style="list-style-type: none"> <li>★ USFWS Wildlife and Sport Fish Restoration Program</li> <li>★ USFWS Coastal Program</li> <li>★ USFWS National Coastal Wetland Conservation Grant Program</li> <li>★ USDA Farm Service Agency Incentives and Conservation Reserve Program</li> <li>★ National Oceanic and Atmospheric Administration Coastal Estuarine Land Conservation Program</li> <li>★ Department of Transportation Recreational Trails Program</li> <li>★ Environmental Protection Agency (EPA) Wetlands Program Development</li> <li>★ DoD Natural Resource Program</li> <li>★ DOI/USDA Land and Water Conservation Fund</li> <li>★ EPA Multipurpose Grants to States and Tribe</li> </ul>		

# AVON PARK AIR FORCE RANGE SENTINEL LANDSCAPE

Florida | est. 2015

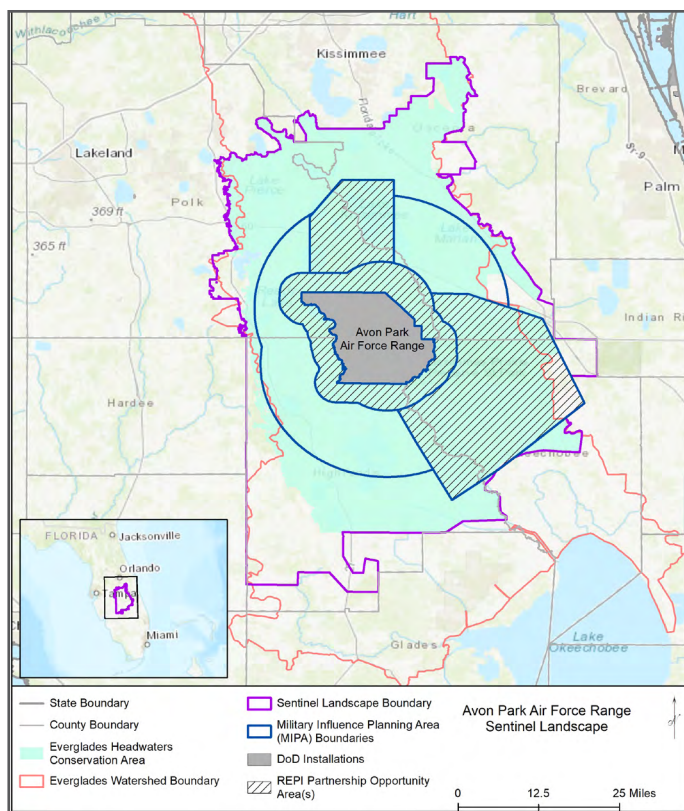


Located in south central Florida, the Avon Park Air Force Range Sentinel Landscape covers 1.7 million acres of land and is known for its rich biodiversity and abundance of private ranches. The sentinel landscape is anchored by the U.S. Air Force's largest primary air-to-ground training range east of the Mississippi River. The installation's restricted airspace and operating area—including a 106,000-acre bombing and gunnery range—is used by every branch of the Armed Forces and multiple federal, state, and local agencies. The sentinel landscape is also home to portions of the Everglades Headwaters National Wildlife Refuge and Conservation Area, one of the last remaining grassland and longleaf pine savanna landscapes in Eastern North America. In 2016, local partners formed the Avon Park Air Force Range Sentinel Landscape to preserve the region's ecological assets and strengthen military readiness by helping private landowners manage their properties sustainably.

## Historic Ranch Protection Strengthens Military Readiness

For over ten years, Avon Park Air Force Range Sentinel Landscape partners have worked together to protect the Rafter T Ranch. In September 2019, the U.S. Department of Defense's Readiness and Environmental Protection Integration Program, the Nature Conservancy, U.S. Department of Agriculture's Natural Resource Conservation Service, the Florida Defense Support Task Force, Highlands County, and the Central Florida Regional Planning Council (CFRPC) acquired an easement on the last unprotected portion of the property, marking the completion of one of the earliest collaborative efforts among partners. Spanning 5,200 acres across the Florida Heartland, the Rafter T Ranch stitches together a series of conserved properties around the Avon Park Air Force Range, creating a natural corridor for imperiled species such as the Florida panther, Florida black

**Figure 5:** Avon Park Air Force Range Sentinel Landscape Map



**Table 2:** APAFR Sentinel Landscape Footprint Details (acres)

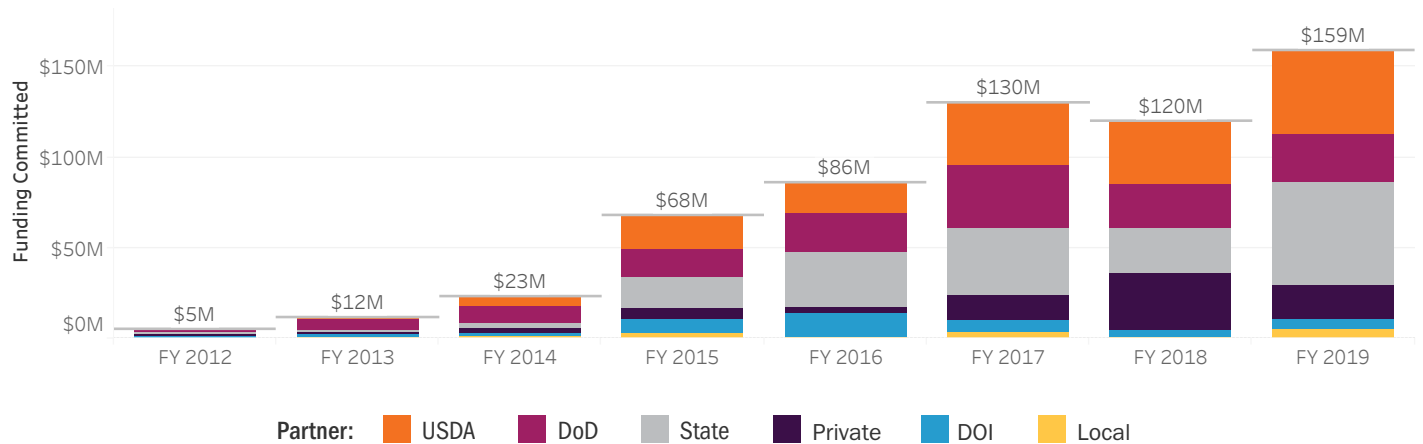
	<b>Total Protected Acres:<sup>6</sup></b>	61,781
	<b>Total Enrolled Acres:<sup>7</sup></b>	744,112
	<b>Active Base Area:</b>	108,213
	<b>Total Sentinel Landscape Area:</b>	1,672,814

<sup>6</sup> Represents total acres protected through projects administered by sentinel landscape partners since FY 2014

<sup>7</sup> Represents total acres enrolled in technical assistance programs administered by sentinel landscape partners since FY 2014



**Figure 6:** Avon Park Air Force Range Sentinel Landscape Total Funding by Partner



bear, Florida scrub-jay, and southern fox squirrel. Contiguous land protection at this scale precludes development that may disrupt the Range’s ability to effectively use its low-altitude airspace, which is necessary for the installation to carry out its national defense mission. It also supports water conservation efforts by buffering the Kissimmee River and other tributaries to Lake Okeechobee, while also precluding development in an area critical to aquifer recharge, thus augmenting groundwater supplies. Vocal support from Mr. James Wohl, owner and operator of the ranch, and his affiliates have been instrumental in building trust among other farmers and ranchers interested in taking part in the sentinel landscape. Since its beginning, Mr. Wohl has been an enthusiastic advocate of the sentinel landscape, going as far as to host outreach events on his property for local communities.

**“The Sentinel Landscapes [Partnership] provides a vehicle to expedite estate planning, provide liquidity for disinterested shareholders, and prevent fragmentation of a holistic landscape and cow/calve production unit. I see it as a blessing for all.”**

- Mr. James Wohl, Owner and Operator of Rafter T Ranch

### Protecting the Everglades Headwaters

In April 2019, the Open Space Institute, the Florida Department of Environmental Protection, and the U.S. Fish and Wildlife Service permanently protected 4,000 acres of the Triple Diamond Ranch, which will enhance biodiversity and water security in the region. Situated in the heart of the Everglades Headwaters National Wildlife Refuge, Triple Diamond Ranch joins a contiguous network

of 200,000 acres of protected land across central Florida. This land serves as an important wildlife corridor in one of the fastest growing regions in the country where accelerated development can disrupt migration patterns. The property itself is covered in dry prairie habitat—a globally imperiled natural community—that supports numerous at-risk species, including the Florida grasshopper sparrow, gopher tortoise, and the eastern indigo snake. Permanent protection of the Triple Diamond Ranch will also enhance water quality for the immediate area and downstream into the country’s largest subtropical wetland. The property provides natural filtration for water that flows directly into the Kissimmee River, feeding Lake Okeechobee and, ultimately, the Everglades.

### Partners Increase Accessibility to Landowner Benefits

All government assistance programs active in sentinel landscapes are voluntary. That means their success depends not only on landowner interest but also on landowner awareness. In June 2019, CFRPC hosted the first large-scale landowner assistance expo in central Florida, known as LAX 2019. The event gathered 17 organizations to present benefits related to wildlife restoration, alternative crops, farm loans, tax preparation, and conservation easements. To those that participated, LAX 2019 was an overwhelming success. Attendees came away with a better understanding of assistance programs in their region, while government organizations had the opportunity to participate in community-driven outreach. In October 2019, LAX 2019 received an Impact Award from the National Association of Development Organizations during its annual training conference. Given this positive feedback, CFRPC plans to host a second iteration of the event in the future.

# CAMP RIPLEY SENTINEL LANDSCAPE

Minnesota | est. 2016



Located along the northern stretch of the Mississippi River, Camp Ripley is the primary winter training site for the U.S. National Guard, supporting units from Minnesota and six neighboring states. Camp Ripley provides the largest block of controlled airspace in the Midwest, which services active and reserve components from every branch of the Armed Services and many state and federal agencies.

As a premier U.S. National Guard post, Camp Ripley supports ground vehicle maneuver training, as well as live-fire artillery and bombing training that ranges from small arms to large-caliber weaponry. About a third of land surrounding the base is in small private holdings of 60 to 100 acres. These properties, which are mainly used for agriculture or recreation, protect the quality of water entering the Mississippi River for local communities and downstream cities. They also contribute to the longevity of Camp Ripley by allowing the installation to conduct winter training activities with limited restrictions. However, development pressure from population growth is increasing. The goal of the Camp Ripley Sentinel Landscape—which Minnesota state law first recognized in 2015—is to combine conservation easements with sustainable management practices to protect Camp Ripley’s mission and enhance natural resources in the region.

## Sustainable Forestry Enhances Water Quality

Water health is a top priority for the Camp Ripley Sentinel Landscape. The landscape straddles 50 miles of the Mississippi River and encompasses the watersheds of four major tributary rivers. One way that partners enhance water quality is by ensuring that private landowners have the financial and technical means necessary to manage their woodlands sustainably. For Minnesotans, forests and water security are

Figure 7: Camp Ripley Sentinel Landscape Map

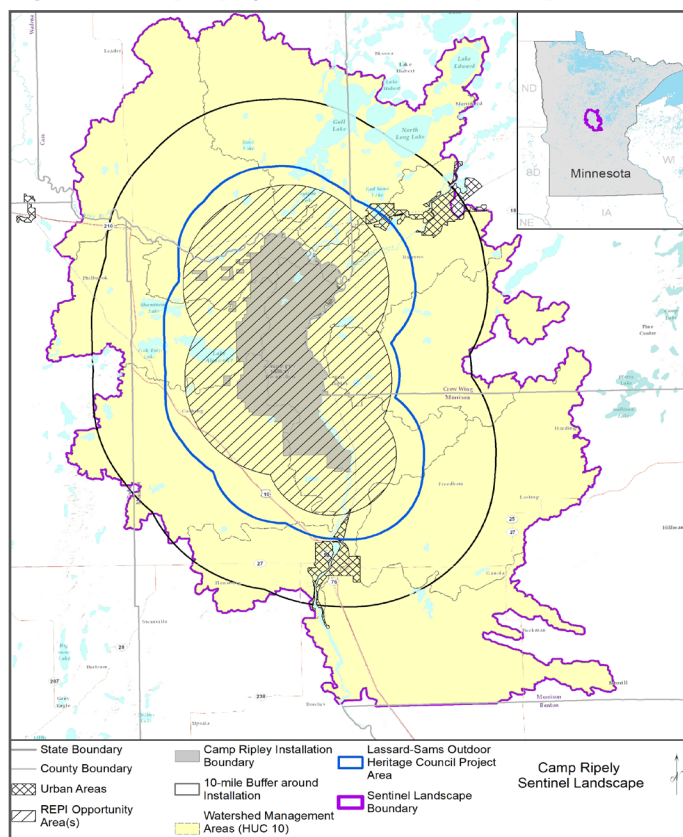






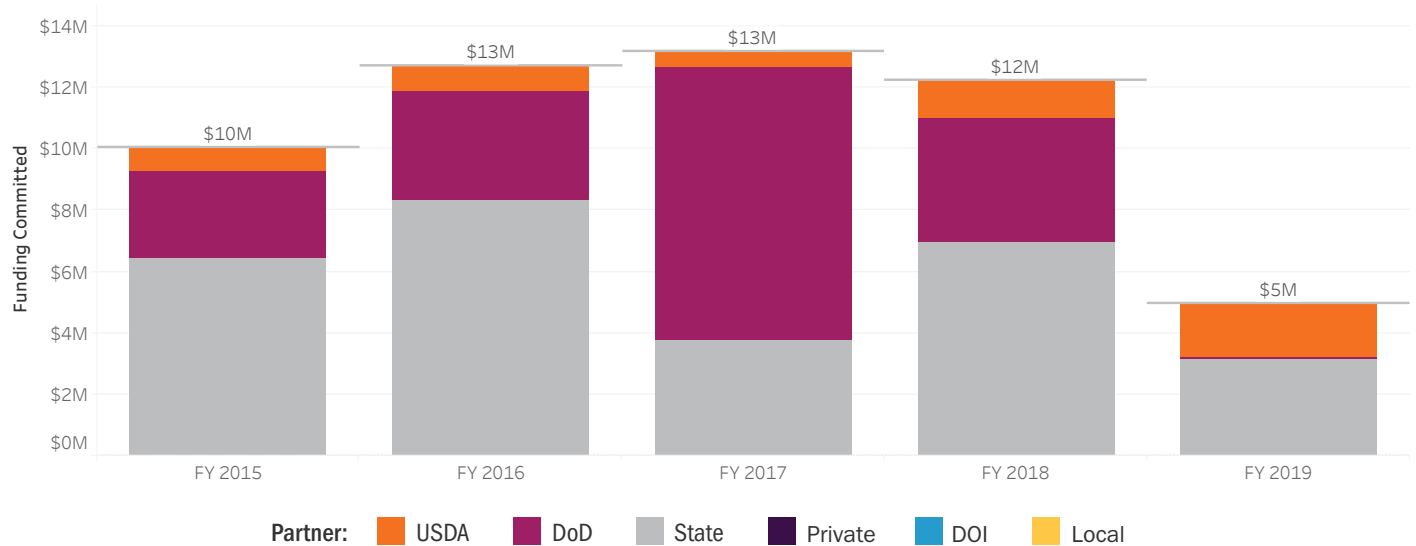
Table 3: Camp Ripley Sentinel Landscape Footprint Details (acres)

	Total Protected Acres: <sup>8</sup>	15,766
	Total Enrolled Acres: <sup>9</sup>	57,973
	Active Base Area:	52,758
	Total Sentinel Landscape Area:	719,829

<sup>8</sup> Represents total acres protected by projects administered by sentinel landscape partners since FY 2015

<sup>9</sup> Represents total acres enrolled in technical assistance programs administered by sentinel landscape partners since FY 2015

**Figure 8:** Camp Ripley Sentinel Landscape Total Funding by Partner



inextricably linked—75 percent of residents get their drinking water from forested parts of the State. Using funding from the Environment and Natural Resources Trust Fund, the Crow Wing Soil and Water Conservation District developed forest management plans for 70 private landowners across the sentinel landscape whose properties total 1,600 acres. Forest management plans are roadmaps that outline parcel-specific practices that help individuals meet restoration objectives. By creating these management plans, the conservation district enabled the landowners to qualify for incentive payments from the Minnesota Department of Revenue’s Sustainable Forest Incentive Act Program. Over its 19-year lifespan, the Sustainable Forest Incentive Act Program has had considerable success. More than 90 percent of participants decide to extend their contract with the State or place a conservation easement on their property. As a result, this effort will contribute to the longevity of working forests, enhance water quality for the Mississippi River, and increase the likelihood that the land surrounding Camp Ripley will be managed in a way that is compatible with the installation’s military mission.

### Partners Increase Protected Land Along the Mississippi River

The Mississippi River originates in northern Minnesota and flows south for over 2,000 miles. For decades, the Mississippi Headwaters Board has worked to preserve the first 400 miles of the river, stretching from Lake Itasca to the southern border of Morrison County. Representatives from eight Minnesota counties formed the Mississippi Headwaters Board in 1980 to



*As the primary winter training site for the U.S. National Guard, Camp Ripley provides habitat to many important species, including the gray wolf. Credit: Minnesota Department of Military Affairs*

protect the remarkable recreational, ecological, and scenic value of the river’s headwaters. The Board carries out its mission by administering an ordinance that restricts land use in the river corridor. In 2019, the Mississippi Headwaters Board voted to expand its geographic focus area within the Camp Ripley Sentinel Landscape. As a result, the Board approved three conservation easements along the Platte River—a tributary to the Mississippi—and within the Crane Meadows National Wildlife Refuge. This project will not only support water quality in the Mississippi River, but also safeguard habitat for waterfowl, shorebirds, sandhill cranes, and other species.



# EASTERN NORTH CAROLINA SENTINEL LANDSCAPE

est. 2017



The Eastern North Carolina Sentinel Landscape spans 11 million acres across a 33-county region in North Carolina's Coastal Plain and Sandhills. The sentinel landscape is home to five key military installations and ranges: Fort Bragg, Dare County Bombing Range, Marine Corps Base (MCB) Camp Lejeune, Marine Corps Air Stations (MCAS) Cherry Point and New River, and Seymour Johnson Air Force Base. Behind agriculture, military-related activity is the second largest economic driver in the state, making up about two percent of state GDP. For years, Eastern North Carolina Sentinel Landscape partners have worked together to support endangered species recovery, while simultaneously strengthening the military mission and stimulating local agricultural economies.

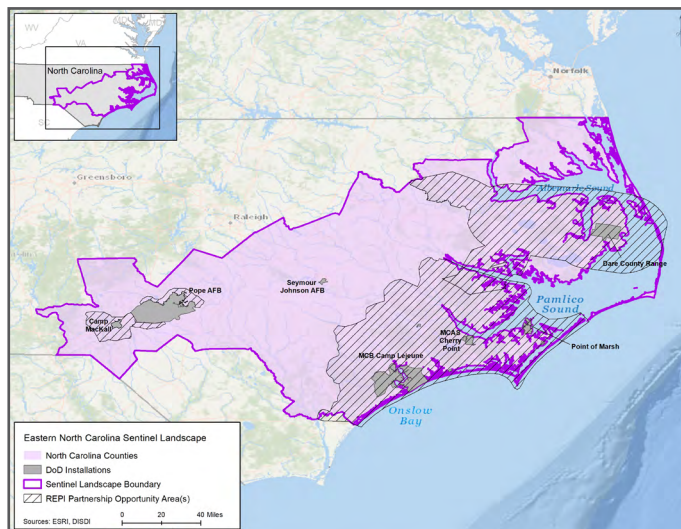
## The Intersection of Conservation and National Defense

In 2019, the North Carolina Coastal Land Trust used funds from the Department of Defense's Readiness and Environmental Protection Integration Program to acquire Salters Creek Landing, a 5,400-acre parcel adjacent to MCAS Cherry Point's Piney Island Bombing Range. This project supports national security by reducing the risk of incompatible development around MCAS Cherry Point that would compromise the installation's electronic and special warfare training mission.

**"Through [the U.S. Marine Corp's] partnership with the Coastal Land Trust and the State of North Carolina, we have shared the burden of protecting this strategic property which will help us sustain training capabilities at Piney Island for future generations."**

- Col. Todd Ferry, **Commanding Officer at MCAS Cherry Point**

**Figure 9:** Eastern North Carolina Sentinel Landscape Map



**Table 4:** Eastern North Carolina Sentinel Landscape Footprint Details (acres)

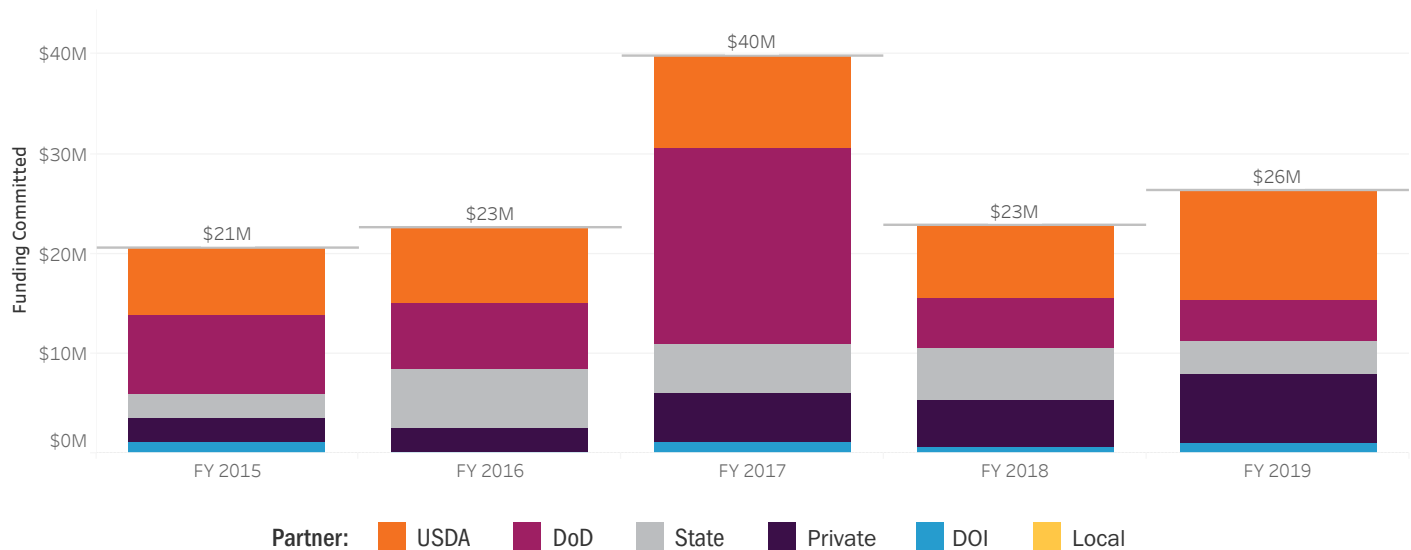
	<b>Total Protected Acres:<sup>10</sup></b>	138,633
	<b>Total Enrolled Acres:<sup>11</sup></b>	770,137
	<b>Active Base Area:</b>	267,913
	<b>Total Sentinel Landscape Area:</b>	10,990,233

<sup>10</sup> Represents total acres protected by projects administered by sentinel landscape partners since FY 2016

<sup>11</sup> Represents total acres enrolled in technical assistance programs administered by sentinel landscape partners since FY 2016

<sup>14</sup> Defense Spending By State Fiscal Year 2018": [https://www.oea.gov/sites/default/files/defense-spending-rpts/FY2018 Defense-Spending-by-State-Report\\_0\\_0.pdf](https://www.oea.gov/sites/default/files/defense-spending-rpts/FY2018%20Defense-Spending-by-State-Report_0_0.pdf)

**Figure 10:** Eastern North Carolina Sentinel Landscape Total Funding by Partner



This project also has significant ecological benefits. Located along the North Carolina coast, Salters Creek Landing is a crown jewel for conservationists. The tract is covered in estuarine marsh, tidal creeks, pocosin wetlands, and maritime forest. Year round, the property teems with wildlife, prompting the National Audubon Society to recognize Salters Creek as an Important Bird Area and the State of North Carolina to list it as a Natural Heritage Area. Specifically, Salters Creek provides habitat to 23 rare plant and animal species, including the black rail, a candidate for the Endangered Species Act (ESA). The parcel also shares a boundary with the 15,000-acre Cedar Island National Refuge, contributing to a landscape-scale conservation corridor in one of the country's fastest-growing regions. Moving forward, part of Salters Creek Landing will be managed as a wildlife refuge, while the remaining portion will be opened to the public for recreation.

### Sentinel Landscape Partners Improve Efficiency for Land Protection

The Sentinel Landscapes Partnership unites disparate stakeholders around common goals, which often leads to innovation. In 2018, the Eastern North Carolina Sentinel Landscape partners set out to simplify the process of securing a conservation easement. Conservation easements maintain the private ownership of a property while permanently prohibiting certain types of development. In recent years, government programs have begun to split the cost of purchasing easements on properties that benefit multiple federal and state agencies.

While this trend is something to be celebrated, the process can be cumbersome for private landowners. Despite sharing the cost of acquisition, government agencies typically record their easement restrictions separately, which means that property owners must consult multiple legal documents to understand their land management responsibilities. To remedy this, the North Carolina Department of Agriculture and Consumer Services (NCDA&CS) collaborated with the U.S. Department of Agriculture's (USDA) Natural Resource Conservation Service (NRCS) to develop an Eastern North Carolina Sentinel Landscape common easement template. This model consolidates agency requirements into a single deed, thus creating a more efficient process for landowners. Finalizing a conservation easement typically takes anywhere from three to four years. The NCDA&CS template is projected to cut that time in half. In 2019, NCDA&CS, the U.S. Air Force, and USDA NRCS piloted this new model by acquiring easements on five high priority parcels located beneath a flight path between Seymour Johnson Air Force Base and Dare County Bombing Range.

**"This project represents a new level of coordination... agriculture is North Carolina's biggest industry followed by the military, and it is more important than ever that we work to protect the farmland that produces our food and fiber and maintains our military readiness."**

Steve Troxler, *North Carolina Agriculture Commissioner*



## Species Recovery Efforts Strengthen Military Readiness

In 2015, the U.S. Navy and the U.S. Marine Corps partnered with the U.S. Fish and Wildlife Service (USFWS), the National Fish and Wildlife Foundation, and the North Carolina Wildlife Resources Commission to establish the Red-Cockaded Woodpecker (RCW) Recovery and Sustainment Program Partnership (RASP). The partnership's objective is to enhance training flexibility at MCB Camp Lejeune by alleviating environmental restrictions that were triggered when the RCW was listed under the ESA. To that end, the partners are helping the installation reach and maintain its recovery goal of 173 RCW clusters, as mandated by USFWS. In support of this goal, partners carry out innovative off-base restoration efforts using DoD funds that count towards the U.S. Marine Corps' recovery obligation. Through FY 2019, RASP has protected 130 RCW clusters. . To achieve its final goal, RASP will target its resources towards preserving an additional 60 RCW clusters across two protected properties in the coastal North Carolina region—the 13,000-acre Bear Garden tract and the 3,000-acre Stones Creek Game land. RASP is representative of the Sentinel Landscapes Partnership's mission because it increases the amount of land devoted to endangered species recovery, while simultaneously strengthening the military's mission.



Red-cockaded woodpecker at nest cavity in Pinehurst, North Carolina. Credit: Susan L. Miller

## Community-Driven Landowner Engagement

Embedded in the Eastern North Carolina Sentinel Landscape is an expansive network of farms, ranches, and working forests. In total, cropland and forestland make up 72 percent of land cover across the landscape. This composition is indicative of the industry's wider impact on the state. Agriculture and agribusiness contribute \$92 billion annually to North Carolina's GDP and employ 17 percent of the state's workforce. Farms, ranches, and working forests also support the state's national defense mission by reducing the risk of incompatible development around military installations and ranges. As a result, promoting sustainable management practices on North Carolina's working lands is a top priority for Eastern North Carolina Sentinel Landscape partners. In 2019, the NC Foundation for Soil and Water Conservation piloted a series of landowner engagement events and community leadership roundtables in five counties across the landscape. The goal of the series was to increase awareness among landowners on the government benefits available to them, educate local decision-makers on the value of the sentinel landscapes model, and seek input regarding future program development from local stakeholders. The Foundation coupled these events with a door-to-door outreach effort, which resulted in 41 letters of interest and 17 Options to Buy Contracts from private landowners.

---

**"Our success is attributed to your persistent and creative approach in reaching this demographic. Your work has been vital to the success of protecting MCIEAST's military mission."**

---

- Col. Michael Scalise, **Assistant Chief of Staff for Marine Corps Installations East**



Paratroopers from the 3rd Brigade Combat Team, 82nd Airborne Division move to an assembly area on Fort Bragg. Credit: U.S. Department of Defense



# FORT HUACHUCA SENTINEL LANDSCAPE

Arizona | est. 2015

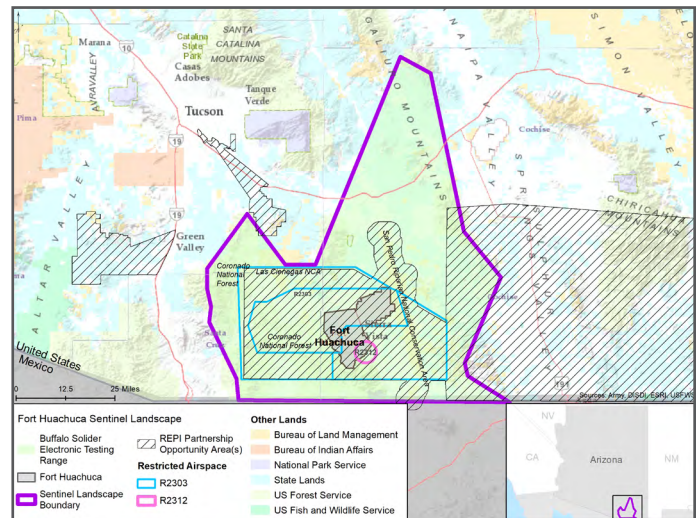


Located in southern Arizona's Sonoran Desert, Fort Huachuca is one of the largest unmanned aerial vehicle training facilities in the world, supporting operations for the U.S. Army, U.S. Air Force, U.S. Marine Corps, and U.S. Customs and Border Protection. The arid, remote landscape surrounding the post is predominantly made up of cattle ranches and native grasslands. This type of land use supports Fort Huachuca by ensuring low levels of electromagnetic interference on the installation's training activities. However, development pressure is increasing in the region due to urban sprawl and population growth. Land use conversion poses challenges to local communities by increasing competition for limited water resources, fragmenting important wildlife habitat, and encroaching upon Fort Huachuca's critical airspace. As a result, a group of partners came together to form the Fort Huachuca Sentinel Landscape in 2015. The primary goal of this landscape is to use collaborative, community-driven strategies to tackle issues such as water conservation, agricultural viability, wildlife habitat restoration, and military mission protection.





## Partners Enhance Water Quantity for the San Pedro River

Stretching from Mexico through Arizona, the San Pedro River supports a vibrant ecosystem, local human populations, and critical training operations at the U.S. Army's Fort Huachuca. The Fort Huachuca Sentinel Landscape is home to two-thirds of the waterway, which is one of the last free-flowing rivers in the Southwest. For years, rapid development in the region has increased demand for water, leaving portions of the San Pedro River dry. In response, Fort Huachuca Sentinel Landscape partners formed the Cochise Conservation and Recharge Network, an initiative dedicated to conserving groundwater and improving the health of riparian habitat in the Upper San Pedro Watershed. The network accomplishes its mission in two ways. First, partners acquire conservation easements to

**Figure 11:** Fort Huachuca Sentinel Landscape Map



**Table 5:** Fort Huachuca Sentinel Landscape Footprint Details (acres)

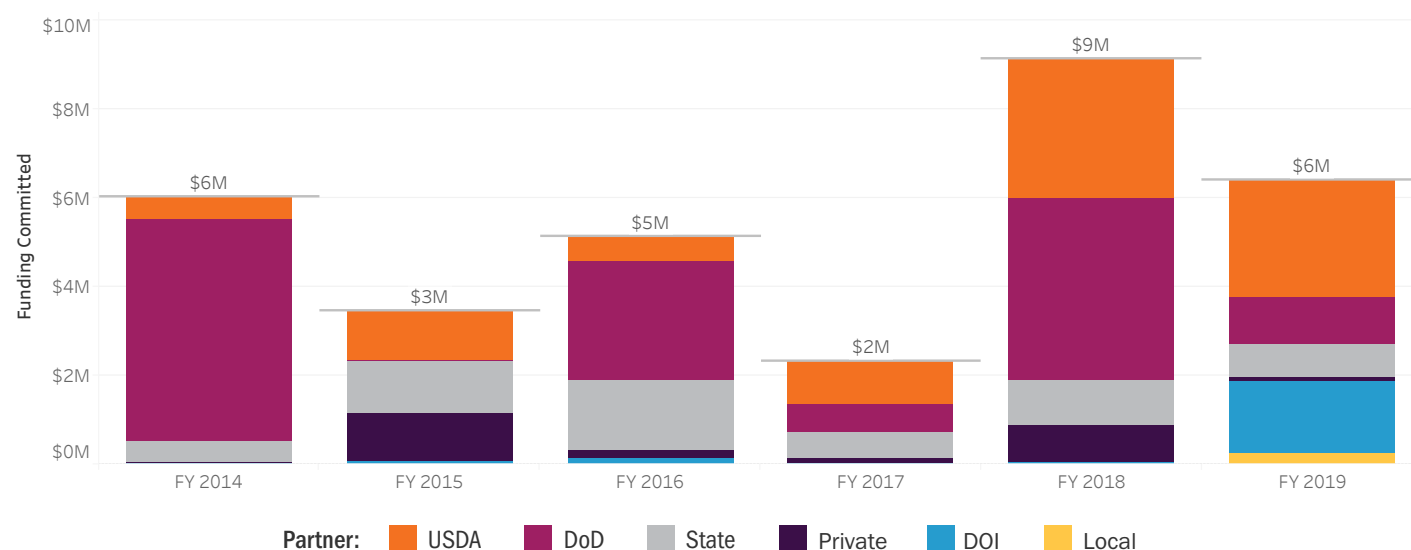
	<b>Total Protected Acres:<sup>12</sup></b>	62,633
	<b>Total Enrolled Acres:<sup>13</sup></b>	271,017
	<b>Active Base Area:</b>	80,912
	<b>Total Sentinel Landscape Area:</b>	1,680,895

preclude additional development in the area. Over its five-year lifespan, the Network has permanently protected over 6,000 acres of land along the desert river, which one estimate suggests avoids 1 billion gallons of potential groundwater pumping per year. Second, the Network facilitates replenishment projects that capture stormwater and effluent and funnel it to an

<sup>12</sup> Represents total acres protected by projects administered by sentinel landscape partners since FY 2014

<sup>13</sup> Represents total acres enrolled in technical assistance programs administered by sentinel landscape partners since FY 2014

**Figure 12:** Fort Huachuca Sentinel Landscape Total Funding by Partner



underground aquifer that feeds the San Pedro River. One such effort, the Palominas Stormwater Recharge and Flood Control Project, recharges 98 acre-feet per year using a large detention basin and 13 recharge cells. Through frequent monitoring, the partners gather data about the volume and rate at which the facility recharges water, which will be used to test similar innovative water conservation practices in the region.

### Federal-Tribal Partnership Reduces Risk of Wildfires

The Coronado National Forest blankets portions of the Fort Huachuca Sentinel Landscape. Having once been home to indigenous communities, the Coronado National Forest holds cultural significance for Native American Tribes in the region. As a result, the U.S. Forest Service integrates tribal perspectives into its management of the land. In 2018, the Coronado National Forest and the Bureau of Indian Affairs (BIA) identified an opportunity to build upon their existing relationship by forming a collaborative wildfire mitigation initiative. Funded through the Reserved Treaty Rights Land Program, the project enables the Fort Apache Agency to conduct thinning projects and prescribed burns on Coronado National Forest land. Fire is an important agent of renewal for the forest, and when introduced effectively, reduces the risk of wildfire in the region and improves habitat for over 570 species. In addition to providing restoration benefits, this project also allows the Fort Apache Agency to contribute to the management of the Chi'chil, an acorn from the Emory oak that is an important food source and cultural element for the Apache people. This initiative demonstrates that effective

stewardship is not bound by jurisdiction. In 2019, BIA, the Coronado National Forest, and Fort Apache Agency received the prestigious Pulaski Award, which recognizes outstanding performance in areas of interagency collaboration.

### Conservation Workshop Unites Partners

Funding acquired through the Department of Defense's Readiness and Environmental Protection Integration Program has helped Fort Huachuca conserve 13,857 acres within the Buffalo Soldier Electronic Test Range, precluding incompatible development within the range complex and beneath the installation's restricted airspace. One noteworthy project occurred in 2018 when Fort Huachuca partnered with Arizona Land and Water Trust and USDA's Natural Resource Conservation Service to permanently protect the Rose Tree Ranch. Totaling 1,150-acres, the ranch sits within the Babocomari River Watershed and the Sonoita Grassland Conservation Area. In May 2019, the Santa Cruz Natural Resource Conservation District hosted a workshop on the Rose Tree Ranch for the Fort Huachuca Sentinel Landscape partners focused on ecological sites, soils, and plant identification. During the workshop, a soil expert from the University of Arizona guided attendees through the history of erosion and deposition in the area. A Rangeland Management Specialist then explained how elevation, precipitation, percent slope, soil type, and vegetation contribute to an ecological site's classification. Lastly, a representative from Arizona Revegetation and Monitoring provided tutorials on plant identification. In all, the workshop was an effective means of information sharing and will be replicated by partners in the future.



# GEORGIA SENTINEL LANDSCAPE

est. 2018

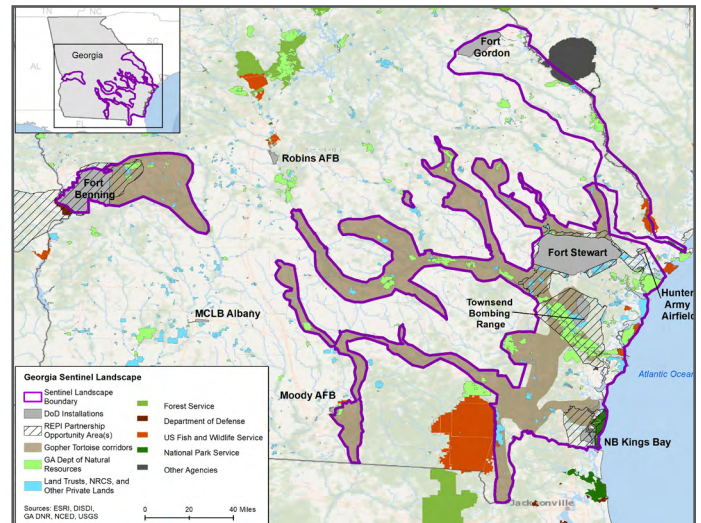


The Georgia Sentinel Landscape is home to several of the nation's most important military installations and ranges, including Fort Benning, Fort Stewart, Hunter Army Airfield, Townsend Bombing Range, Fort Gordon, Robins Air Force Base, Marine Corps Logistics Base-Albany, Moody Air Force Base and Naval Submarine Base (NSB) Kings Bay. Together, these defense facilities support heavy armor maneuver areas, unimpeded air-to-ground ranges, live fire training facilities, low-level flight routes, and ballistic missile submarine fleets, which are a key component of the nuclear triad identified in the National Defense Strategy. The military accounts for a significant portion of the state's economy, with an annual economic impact of over \$13 billion<sup>19</sup>. The Georgia Sentinel Landscape also encompasses a high concentration of prime timber land and large swaths of longleaf pine forests. Georgia Sentinel Landscape partners are committed to strengthening military readiness by supporting agricultural communities, sustaining working forests, promoting coastal resiliency, and improving water quality.





## The Gopher Tortoise Initiative

A central goal of the Georgia Sentinel Landscape partners is to conserve longleaf pine forests. Despite once blanketing the Southeast, longleaf pine forests have steadily disappeared in the region due to development, clear-cutting, and other factors. Today, only three percent of the original 90 million acres of longleaf pine remain intact. The degradation of this ecosystem threatens the gopher tortoise, an imperiled species whose burrows provide habitat for an additional 360 species. The Georgia Department of Natural Resources (DNR) recognized that listing the gopher tortoise under the Endangered Species Act (ESA) would impose challenges on the state's economy and

**Figure 13:** Georgia Sentinel Landscape Map



**Table 6:** Georgia Sentinel Landscape Footprint Details (acres)

	<b>Total Protected Acres:<sup>14</sup></b>	125,391
	<b>Total Enrolled Acres:<sup>15</sup></b>	209,419
	<b>Active Base Area:</b>	615,290
	<b>Total Sentinel Landscape Area:</b>	6,318,263

constrain military testing and training activities. In response, the agency partnered with U.S. Department of Defense's (DoD) Readiness and Environmental Protection Integration (REPI) Program, U.S. Department of Agriculture's (USDA) Natural

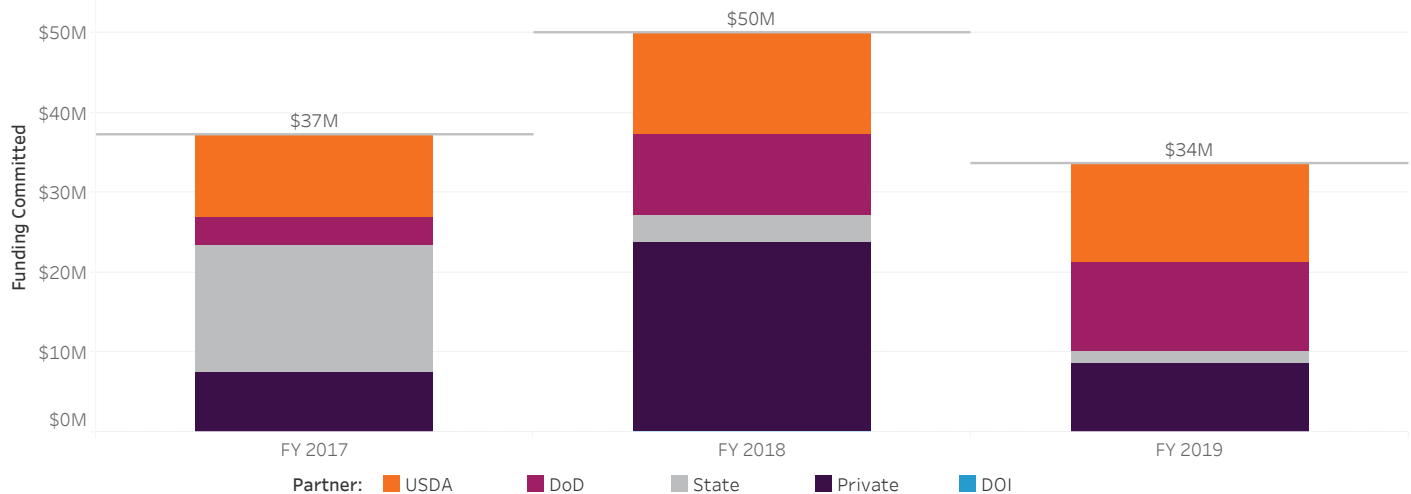
<sup>14</sup> Represents total acres protected by projects administered by sentinel landscape partners since FY 2017

<sup>15</sup> Represents total acres enrolled in technical assistance programs administered by sentinel landscape partners since FY 2017

<sup>19</sup> Office of Economic Adjustment: "Defense Spending By State Fiscal Year 2018": [https://www.oea.gov/sites/default/files/defense-spending-rpts/FY2018-Defense-Spending-by-State-Report\\_0\\_0.pdf](https://www.oea.gov/sites/default/files/defense-spending-rpts/FY2018-Defense-Spending-by-State-Report_0_0.pdf)



**Figure 14:** Georgia Sentinel Landscape Total Funding by Partner



*The gopher tortoise is an imperiled species in Georgia whose burrows provide habitat for an additional 360 species. Credit: Steve Friedman, Georgia Department of Natural Resources*

Resource Conservation Service, U.S. Fish and Wildlife Service (USFWS), and multiple non-profits to develop the Gopher Tortoise Initiative in 2015. The goal of the initiative is to protect 65 of the 122 viable gopher tortoise populations on 100,000 acres of habitat throughout the state. If partners meet this target, scientists from The Nature Conservancy have concluded that the species will not need regulatory protection in Georgia. To date, partners have protected 54 viable gopher tortoise

populations. With most of the targeted habitat extending across the Georgia Sentinel Landscape, the partnership has become a natural vehicle through which Gopher Tortoise Initiative projects are coordinated.

### Naval Station Kings Bay wins REPI Challenge

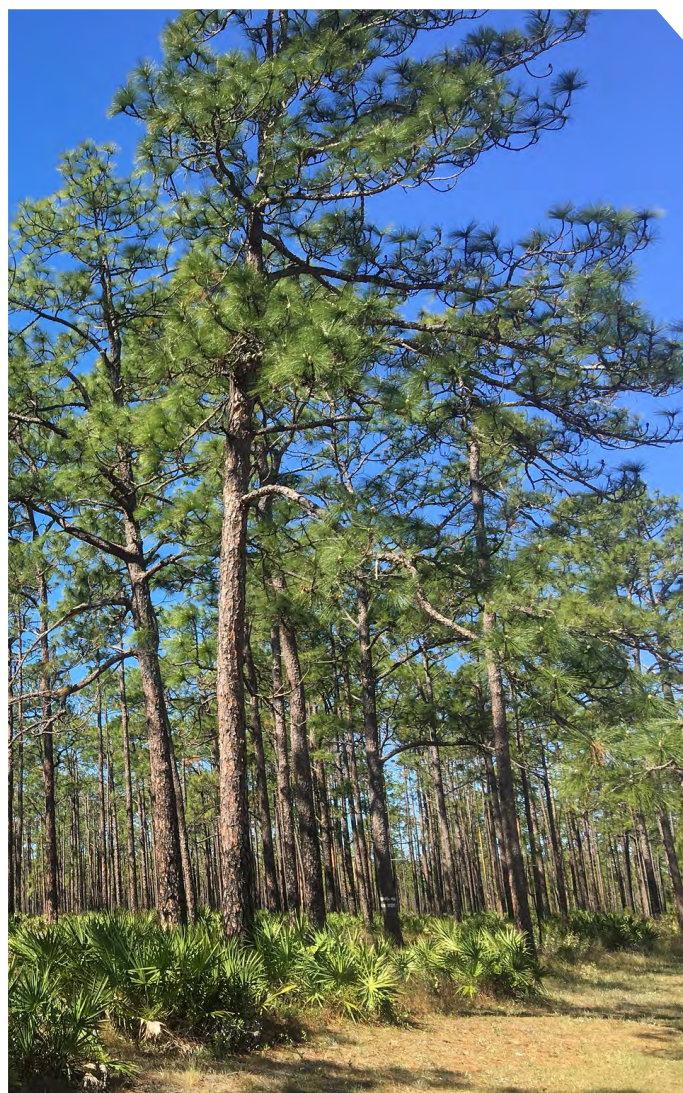
This year, the U.S. Navy, Georgia DNR, the Nature Conservancy, the Conservation Fund, USFWS, the U.S. Forest Service (USFS), and multiple philanthropic organizations won a competitive grant to protect Cabin Bluff, which will increase mission sustainability for NSB Kings Bay in three ways. First, the project will reduce the risk of incompatible development around the base. At 11,000-acres, Cabin Bluff is the largest undeveloped, unprotected property on Georgia's coastline. Its proximity to major highways and population centers made the property an attractive plot for development. Prior to acquisition, the parcel was zoned for 10,000 homes and 1 million square feet of commercial space. Permanently protecting Cabin Bluff will, therefore, prevent development that would complicate the installation's ability to deploy nuclear submarines into the Atlantic Theatre. Second, the project will increase NSB Kings Bay's resilience to climate change impacts by ensuring that the installation has access to a healthy shoreline. Waterfront properties such as Cabin Bluff encompass tidal marshes that defend against erosion by absorbing storm surge, flooding, and rising sea levels. Lastly, the project will reduce the likelihood that training restrictions triggered by the ESA will encumber NSB Kings Bay's mission. Cabin Bluff is home to 20 distinct habitat types, including longleaf pine forests that support viable gopher

<sup>22</sup> The credits apply if the gopher tortoise were to be listed under the ESA in its eastern range. USFWS has already listed the gopher tortoise under the ESA in parts of Louisiana, Mississippi, and Alabama.

tortoise populations. With proper restoration, this property can contribute to existing efforts made by DoD to ensure that the species can thrive without regulatory protection. The Cabin Bluff project demonstrates the advantages of strengthening national defense with the conservation of critical landscapes.

### Hilliard Plantation Opens for Public Use

In 2019, Georgia Sentinel Landscape partners opened the Hilliard Plantation for public use. Extending 8,100 acres across Marion County and Talbot County, the property lies within the Chattahoochee Fall Line Wildlife Management Area. This region of Georgia was previously thought of as a part of the state with limited recreation options. Now, the Hilliard Plantation will provide residents with exceptional hiking, fishing, hunting, and camping opportunities. The project also has ecological benefits. The Hilliard Plantation is replete with fire-managed longleaf pine, which provides habitat to the gopher tortoise, red cockaded woodpecker, southern hognose snake, and other imperiled species. The project's diverse funding sources reflect the myriad benefits that it provides to the region. State agencies, the Knobloch Family Foundation, USFWS, USFS, the Georgia Forestry Commission, Capital One, the World Wildlife Foundation, and the DoD REPI Program contributed resources to this effort.

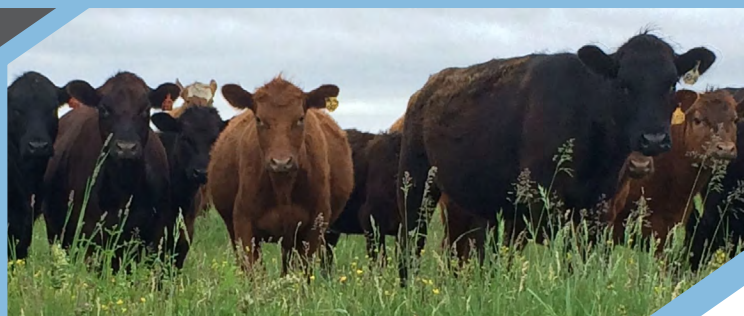


*As part of the Gopher Tortoise Initiative, sentinel landscape partners work to protect longleaf pine forests, which provide important habitat to many imperiled species. Credit: U.S. Fish and Wildlife Service, Randy Browning*



# JOINT BASE LEWIS-MCCHORD SENTINEL LANDSCAPE

Washington | est. 2013

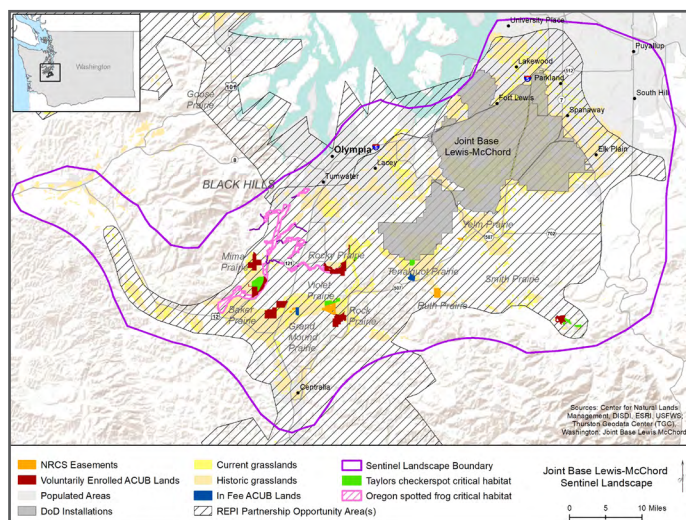


The Joint Base Lewis McChord (JBLM) Sentinel Landscape is anchored by the third largest installation in the U.S. Army, which is home to 43,000 soldiers and airmen. JBLM encompasses 63,000 acres of military training area, including over 7,000 acres of impact area, 86 ranges and mortar points, 13 drop zones, and two airfields. In addition, the sentinel landscape supports the majority of the remaining prairie habitat in the south Puget Sound. For decades, prairie lands in the region have deteriorated due to rapid development and increased demand on natural resources. Conversely, the ecosystem has thrived on JBLM where development is minimal and periodic fires caused by prescribed burning and military training activities have maintained healthy vegetation. JBLM Sentinel Landscape partners have worked together to enact conservation measures to strengthen military readiness through the recovery of threatened and endangered species.

## Endangered Species Work Continues Around JBLM

Despite once extending over 150,000 acres, prairie habitat native to Washington State's Puget Sound now covers only 23,000 acres, 90 percent of which is located on JBLM. As a result, multiple species listed under the Endangered Species Act (ESA) that depend on the habitat—such as the Taylor's checkerspot butterfly and the Mazama pocket gopher—seek refuge on the installation. Throughout 2019, JBLM continued to support the recovery of these species. Populations of Taylor's checkerspot butterfly expanded on JBLM due to relocation efforts and habitat management actions taken by the U.S. Army. In fact, in 2019, the Washington Department of Fish and Wildlife recorded the highest number of butterflies at the species' source site on JBLM to date. In recognition of Taylor's checkerspot butterflies' improving status on the installation, the U.S. Fish and Wildlife Service (USFWS) and JBLM amended their programmatic biological opinion to

**Figure 15:** JBLM Sentinel Landscape Map



**Table 7:** JBLM Sentinel Landscape Footprint Details (acres)

	<b>Total Protected Acres:<sup>16</sup></b>	19,758
	<b>Total Enrolled Acres:<sup>17</sup></b>	78,949
	<b>Active Base Area:</b>	91,322
	<b>Total Sentinel Landscape Area:</b>	196,526

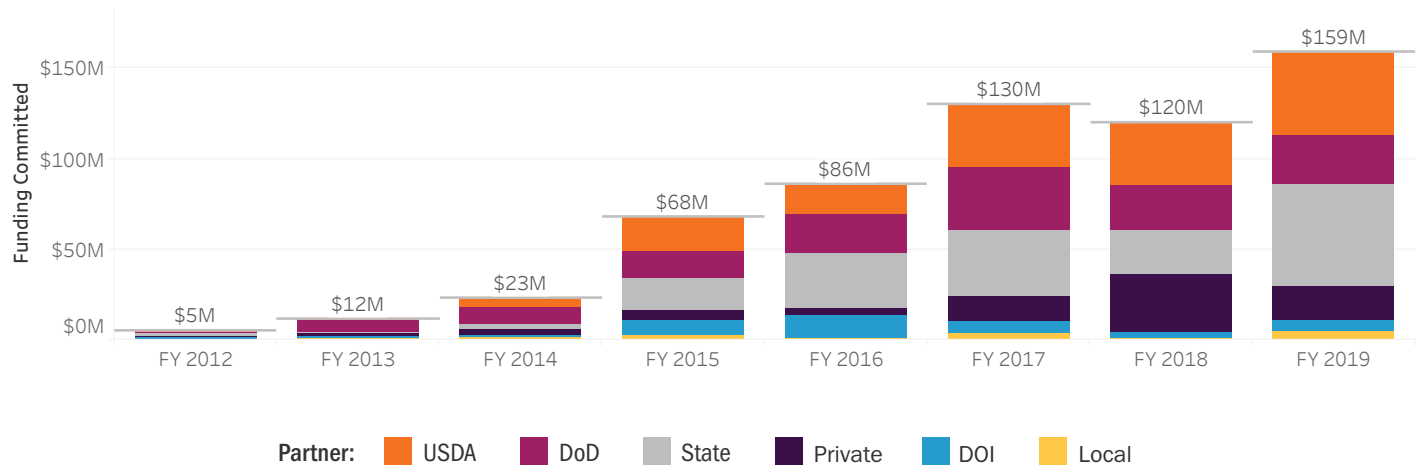
relax several of the restrictions on military training activities that were previously activated by the ESA. JBLM is also working to open a section of prairie habitat on the base that the U.S. Army will manage with prescribed fire and invasive plant control, which is expected to increase pocket gopher populations. Off base, partners conducted similar habitat improvement projects across the sentinel landscape. In 2019, USFWS restored 67.5 acres and

<sup>16</sup> Represents total acres protected by projects administered by sentinel landscape partners since FY 2012

<sup>17</sup> Represents total acres enrolled in technical assistance programs administered by sentinel landscape partners since FY 2012



**Figure 16:** JBLM Sentinel Landscape Total Funding by Partner



maintained 129 acres of prairie habitat through its Partners for Fish and Wildlife Program. Likewise, the Washington Department of Fish and Wildlife restored 373 acres of prairie habitat. Lastly, USFWS partnered with the U.S. Department of Agriculture's (USDA) Natural Resource Conservation Service (NRCS) to hire a full-time biologist to support species recovery across the landscape.

### Research Collaborative Searches for Conservation Solutions

In 2018, a group of farmers, ranchers, academics, and county governments formed a research collaborative to determine whether certain agricultural practices can help restore Washington State's rapidly deteriorating dry prairie habitat. Using a grant from the USDA's Western Sustainable Agriculture Research and Education Institution, the team evaluated the impacts of conservation grazing practices on native plant communities, federally threatened gophers, and rare butterflies on three ranches across the JBLM Sentinel Landscape. The team consists of representatives from the Center for Natural Lands Management, Washington State University, the University of Idaho, USDA NRCS, and Thurston County. Using the data collected from the effort, the partners hope to demonstrate the economic and ecological benefits of conservation grazing practices. If successful, this would expand the government

benefits available to working landowners for habitat management. The group has already begun to share findings with the local farming community through a well-attended workshop series.

### Stewardship Plans to Help Restore Important Habitat

Private landowners play a significant role in restoring prairie habitat in the JBLM Sentinel Landscape and are critical to sustaining military readiness at JBLM. Understanding this, partners work with private landowners to develop individual stewardship plans, which recommend parcel-specific conservation practices that will improve prairie health and align with the landowner's management goals. In 2019, Thurston Conservation District completed plans for properties within the Deschutes Watershed and the Chehalis Watershed. The parcels encompass over 100 acres of oak-conifer forest and multiple soil types preferred by the Mazama pocket gopher, a threatened species under the ESA. Introducing conservation practices on these properties will align with existing efforts at JBLM to restore habitat health and improve training access. By uniting a diverse group of partners from various government assistance programs, the JBLM Sentinel Landscape has enabled Thurston Conservation District to better explain the financial and technical benefits available to private landowners in the region.

## Organization Makes Farming Accessible for Veterans

A core tenet of the Sentinel Landscapes Partnership is to support the national defense mission. This pursuit extends beyond protecting current testing and training activities. This year, JBLM Sentinel Landscape partner Enterprise for Equity worked to ensure that veteran-owned businesses have the tools necessary to succeed in the agricultural sector. Enterprise for Equity is a non-profit that helps people with limited resources start small businesses. In 2019, the organization received a grant to provide training, technical assistance, and microloans to companies that focus on agriculture or conservation within the JBLM Sentinel Landscape. Since receiving its grant, Enterprise for Equity has serviced nine businesses, including Legends Harvest, a veteran-owned farm that produces mushrooms, microgreens, and market vegetables—all pesticide free.



*U.S. Fish and Wildlife Service is working with its partners to protect important habitat for the Mazama Pocket Gopher, a federally-listed threatened species. Credit: U.S. Fish and Wildlife Service, Kim Flotlin*



*Volunteers assist with native prairie restoration at Wolf Haven, a property enrolled in the Army Compatible Use Buffer Program. Credit: Sanders Freed, Center for Natural Lands Management*

# MIDDLE CHESAPEAKE SENTINEL LANDSCAPE

Delaware, Maryland, and Virginia | est. 2015

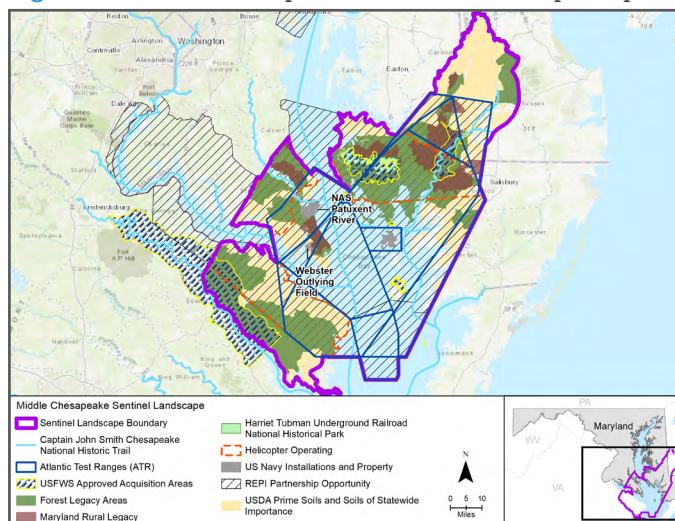


The Chesapeake Bay is one of America's treasures. The ecosystem is valued for its natural beauty, economic productivity, and ecological vitality. It is also home to one of the U.S. Navy's premier aircraft testing locations, Naval Air Station (NAS) Patuxent River-Atlantic Test Ranges (ATR). The U.S. Navy conducts over 150,000 annual testing and research flights within its 1.5 million-acre special use airspace in the region. This averages out to more than 410 aircraft operations occurring per day. In 2015, a diverse group of stakeholders came together to form the Middle Chesapeake Sentinel Landscape. Despite the landscape's historic agricultural and fishing traditions, it is less than two hours driving distance from Washington, D.C., and is a coveted location for weekend or summer homes. This dynamic presents a challenge for the partners within the sentinel landscape, whose individual missions can conflict with unfettered development. The primary goal of the Middle Chesapeake Sentinel Landscape is to protect land that supports wildlife, agricultural productivity, and the U.S. Navy's mission.

## Project Protects Military Readiness While Supporting Squirrel

In 2019, the U.S. Navy, Ducks Unlimited, the Eastern Shore Land Conservancy, and the U.S. Fish and Wildlife Service (USFWS) partnered to preserve a 414-acre parcel beneath the ATR restricted airspace. This project marks one of the first jointly funded easements between the Department of Defense's (DoD) Readiness and Environmental Protection Integration (REPI) Program and USFWS's North American Wetlands Conservation Act. Located on the Eastern Shore of Maryland, the parcel supports hardwood and pine forests that provide habitat for the Delmarva fox squirrel. The large, grey squirrel was delisted from the federal list of endangered species in 2015 after being one of the first species protected under the Endangered Species Act

**Figure 17:** Middle Chesapeake Sentinel Landscape Map



**Table 8:** Middle Chesapeake Sentinel Landscape Footprint Details (acres)

	<b>Total Protected Acres:<sup>18</sup></b>	43,569
	<b>Total Enrolled Acres:<sup>19</sup></b>	130,845
	<b>Active Base Area:</b>	7,640
	<b>Total Sentinel Landscape Area:</b>	2,232,563

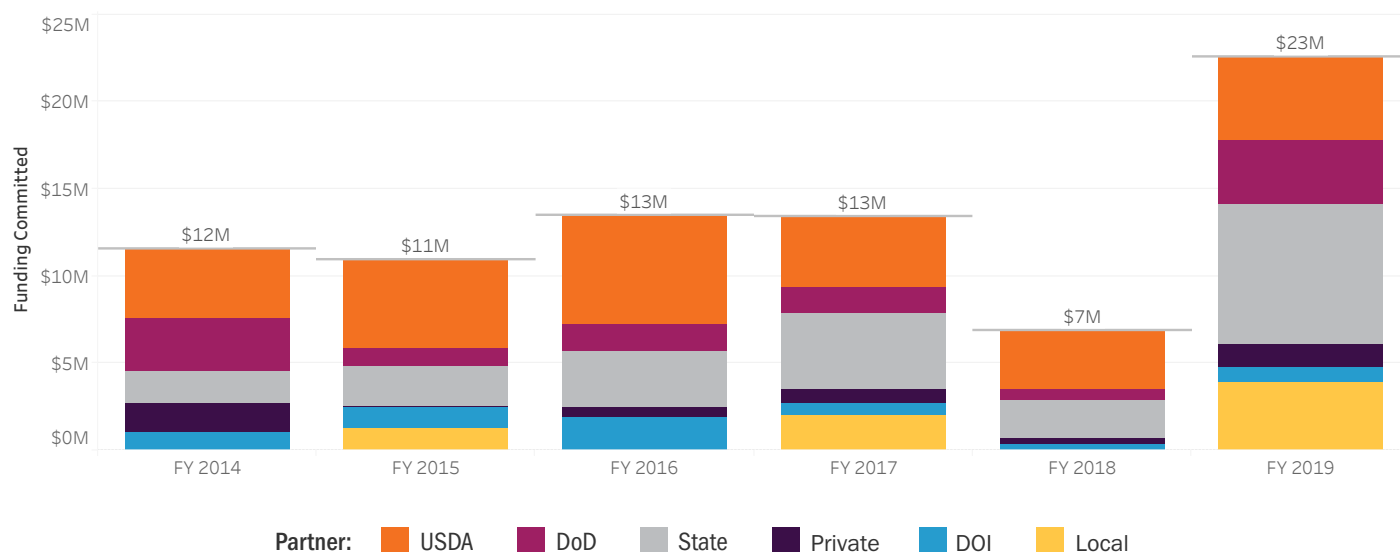
in 1967. The property connects with existing protected parcels, creating a 2,700-acre contiguous wildlife corridor for the squirrel that will contribute to its long-term sustainability.

<sup>18</sup> Represents total acres protected by projects administered by sentinel landscape partners since FY 2014

<sup>19</sup> Represents total acres enrolled in technical assistance programs administered by sentinel landscape partners since FY 2014



**Figure 18:** Middle Chesapeake Sentinel Landscape Total Funding by Partner



“By aligning and focusing our collective priorities through the Sentinel Landscapes Partnership, both the [U.S.] Navy and [U.S. Fish and Wildlife] Service have been able to accelerate the conservation gains made around the Chesapeake Bay. This type of collaborative effort is allowing us to...complete projects beyond our individual capacities.”

- Christina Ryder, *Biologist for USFWS*

### Increasing Access to the Nanticoke River

The Middle Chesapeake Sentinel Landscape encompasses portions of the Nanticoke River, which extends 64 miles from southern Delaware through Maryland’s Eastern Shore. A tributary to the Chesapeake Bay and rich with natural beauty, the Nanticoke River has long been a target for conservation efforts. In 2019, Middle Chesapeake Sentinel Landscape partners demonstrated that success in this arena could come in all sizes. With the support of the Mt. Cuba Center, the Chesapeake Conservancy permanently protected a one-acre parcel in Seaford, Delaware that will provide waterfront access to the river. While the project might be small in acreage, it has had a profound impact on local communities that take pride in the historically significant waterway. In the future, the Nanticoke River Watershed Conservancy—the organization set to manage the property—plans to convert the parcel into a public park with a kayak launch and other low-impact amenities.



Previously listed as an endangered species, the Delmarva fox squirrel was de-listed from the Endangered Species Act in 2015 after rigorous recovery efforts. Credit: U.S. Fish and Wildlife Service

## Significant Tree Community Protected

In 2019, the DoD REPI Program partnered with the Maryland Environmental Trust, Patuxent Tidewater Land Trust, and Cove Point Natural Heritage Trust to permanently protect Hemlock Preserve, a 67-acre parcel located along Hellen Creek in Calvert County, Maryland. The original owner named Hemlock Preserve after an isolated stand of eastern Canadian hemlock, a type of evergreen that extends across the property. The forest stand is thought to be a relict community left behind by glaciers roughly 15,000 years ago. By protecting Hemlock Preserve, partners have enhanced an ecosystem that supports over 50 distinct species of birds. This project marked the first partnership between the DoD REPI Program and the Maryland Environmental Trust. Established in 1967, the Maryland Environmental Trust is a quasi-public entity that conserves land across the state to preserve Maryland's ecological, cultural, and scenic value. The effort also enabled the U.S. Navy to expand its REPI project area within the State of Maryland.

---

**"The Hemlock Preserve is our first REPI project in Calvert County. We have used REPI successfully in St. Mary's County, and others – on the Eastern Shore for example – for many years to help prevent encroachment on our training areas and flying routes, and we look forward to expanding the use of this program with Calvert County."**

---

- Christopher Cox, **Commander Officer of NAS Patuxent River**

## Maryland Rural Legacy Program Reaches Critical Milestone

In 2019, Maryland's Rural Legacy Program celebrated a significant milestone. Over the past 20 years, the program has conserved 100,000 acres of land throughout the State of Maryland. The Rural Legacy Program provides funding to permanently protect large tracts of land that enhance natural resources while supporting agriculture and forestry. Enacted by the Maryland General Assembly in 1997, the Rural Legacy Program acquired its first conservation easement in 1999. The U.S. Navy has completed a majority of its REPI projects at NAS Patuxent River-ATR in partnership with the Maryland Department of Natural Resources in state-designated Rural Legacy Areas. Since 2010, the U.S. Navy has worked with the State to permanently protect more than 6,000 acres of land beneath military airspace to reduce the threat of incompatible development.



*Agricultural landowners play a critical role in protecting Naval Air Station Patuxent River from incompatible development. Credit: Natural Resource Conservation Service*

---

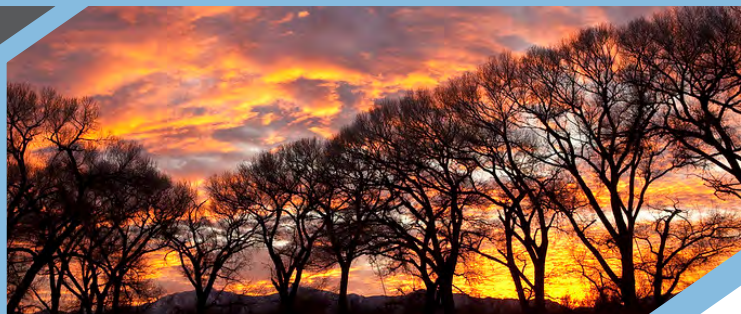
**"We have successfully worked with local partners, farmers and other landowners to conserve and maintain the rural character of our state for future generations."**

---

- Jeannie Haddaway-Riccio, **Maryland Natural Resources Secretary**



# PARTNERSHIP OUTLOOK



## Sentinel Landscape Application Process

Any entity whose mission aligns with or otherwise supports the Sentinel Landscape Partnership's goals is eligible to apply for a sentinel landscape designation. Examples of eligible entities include, but are not limited to, federal agencies; state and local governments; federally recognized American Indian tribes; for-profit and not-for-profit organizations or associations with conservation, agricultural, or silvicultural missions; municipal water treatment entities; water irrigation districts; and soil conservation districts. The application window is only open during periods selected by the FCC and will occur on a biennial basis. The FCC will officially announce future application windows prior to their start-dates. In the past, application windows have lasted approximately three to four months. Interested parties are encouraged to begin coordinating locally before submitting a proposal. Any questions about the application process can be directed to the FCC on the Contact Us page of the Partnership's website.

## Strategic Priorities

Over the next two years, the Sentinel Landscapes Partnership will work on several strategic priorities to advance its mission. First, the Partnership will focus on building resilience to climate change and extreme weather events within sentinel landscapes. Climate challenges—such as recurrent flooding, droughts, and extreme wildfires—are multifaceted and long term. Collaboration among government agencies and between public and private entities is critical to building resilience to these risks. The Sentinel Landscapes Partnership provides an excellent platform for stakeholders to plan and implement resilience projects collectively. In the coming years, partners will work to reduce the risk of extreme wildfires by implementing hazardous fuel treatments; mitigate the threat of coastal erosion and recurrent flooding by strengthening wetlands, beaches, and coral reefs; and reduce vulnerabilities to droughts through water conservation projects. In doing so, the Sentinel Landscapes Partnership will strengthen military readiness by

protecting against climate risks or extreme weather events that may negatively impact mission capabilities, such as nuclear submarine deployment at Naval Station Base Kings Bay or Unmanned Aerial Systems training at Fort Huachuca. These efforts will also support the long-term viability of agricultural and forestry operations and enhance wildlife habitat and public recreation opportunities. In addition to building resilience, the Partnership will also focus on expanding landowner engagement. The success of the Sentinel Landscapes Partnership depends on the participation and support of private landowners. Therefore, in the coming years, the Partnership will place a strong emphasis on educating and engaging landowners about the resources available to them through voluntary government assistance programs.





# 2020 SENTINEL LANDSCAPES ACCOMPLISHMENTS REPORT