



2022 SENTINEL LANDSCAPES ACCOMPLISHMENTS REPORT

Cover photo credits: (clockwise from top right)

Looking towards the Rain Valley Ranch in the Fort Huachuca (Pat Hartshorne); Scenic soybean field and red barn on the banks of the Patuxent River in Solomons, Maryland (USDAFPAC Photo by Preston Keres); Wapehani Park, Southern Indiana (Rachel Hartley Smith); Training at Joint Base San Antonio-Camp Bullis (Sarayuth Pinthong, 502nd Air Base Wing Public Affairs, Joint Base San Antonio-Camp Bullis); Gopher Tortoise (Justin Grubb, Running Wild Media); USS Georgia returns to homeport at Naval Submarine Base Kings Bay, Georgia (Chief Mass Communication Specialist Ashley Berumen, U.S. Navy photo)

Chapter photo credits:

Page 1 (top): Shadow UAS training, U.S. Army Fort Huachuca (Lara Poirrier/Fort Huachuca Public Affairs)

Page 3: Training at Joint Base San Antonio-Camp Bullis (Sarayuth Pinthong, 502nd Air Base Wing Public Affairs, Joint Base San Antonio-Camp Bullis)

Page 7 (top): Scrub Brush, Northwest Florida Sentinel Landscape (Justin Grubb/Running Wild Media)

Page 10 (top): Blue Water Maritime Logistics UAS demonstration flight at Naval Air Station Patuxent River (U.S. Navy photo)

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EXECUTIVE SUMMARY



The Sentinel Landscapes Partnership is a coalition of federal agencies, state and local governments, and non-governmental organizations that work with landowners and land managers to advance mutually beneficial land use goals in sentinel landscapes. The partnership was established through a Memorandum of Understanding (MOU) in 2013 (updated in 2022) by the U.S. Department of Agriculture (USDA), Department of Defense (DOD), and Department of the Interior (DOI) with the shared strategic goals of strengthening military readiness, conserving natural resources, bolstering agricultural and forestry economies, increasing public access to outdoor recreation, and enhancing resilience to climate change.¹

The partnership was affirmed in statute under the 2018 National Defense Authorization Act (NDAA), which authorizes the secretaries of the three departments to designate new sentinel landscapes and to coordinate actions among their departments or with other agencies and organizations to accomplish the goals of the partnership more efficiently.²

Through FY 2021, projects across sentinel landscapes have attracted roughly \$307 million in USDA funds, \$197 million in DOD funds, \$70 million in DOI funds, \$324 million in state funds, \$21 million in local funds, and \$135 million in private funds. These contributions have permanently protected nearly 610,000 acres of land and enrolled over 3.1 million acres of land in financial and technical assistance programs.

Sentinel landscapes are anchored by at least one high-value military installation or range and contain high priority lands for USDA, DOD, and DOI. They encompass agricultural and/or forestry lands and are the appropriate size and scale needed to address ecological restoration objectives such as water quality

and quantity improvement and wildlife habitat enhancement. As established by the Sentinel Landscapes Partnership MOU, the Federal Coordinating Committee (FCC) is comprised of representatives from the DOD REPI Program, the USDA Natural Resources Conservation Service (NRCS) and Forest Service (USFS), and the DOI U.S. Fish and Wildlife Service (USFWS).³



The Middle Chesapeake Resilience project will preserve 2,250 acres of land from development incompatible with the Navy's mission in region, including over 850 acres of declining wetland habitat that support such species as saltmarsh sparrow and the Delmarva fox squirrel. The U.S. Fish and Wildlife Service is currently evaluating whether to list saltmarsh sparrow as endangered. (credit: USFWS).

¹ 2022 Sentinel Landscapes Partnership MOU is available here: https://sentinellandscapes.org/media/3bppnif/2022_sl_mou_signed_02142022.pdf

² H.R.2810 - 115th Congress (2017-2018): National Defense Authorization Act for Fiscal Year 2018. (2017, December 12). <http://www.congress.gov/>

³ In line with the 2018 NDAA authorization, the FCC coordinates the Sentinel Landscapes Partnership at the national level and designates new sentinel landscapes that hold onsite benefits for the FCC member agencies to collaborate on natural resource conservation and management.

In FY 2021, the amount of funding committed to projects in sentinel landscapes increased by over \$32 million from FY 2020. The number of acres protected increased from the previous FY by over 94,000 acres, while the number of acres enrolled in financial and technical assistance programs increased by over 330,000 acres. These increases illustrate the sustained growth of the Sentinel Landscapes Partnership's impact.

This report outlines how the Sentinel Landscapes Partnership enables USDA, DOD, DOI, and their on-the-ground partners to collaboratively solve complex land-use challenges by combining resources and aligning funding around mutually beneficial goals across the ten sentinel landscapes. Case studies from Fort Huachuca Sentinel Landscape and Camp Ripley Sentinel Landscape illustrate how work through the Sentinel Landscape Partnership led to innovative outcomes for protecting and managing working lands.

Looking ahead, the FCC is undertaking several funding and capacity-building initiatives to generate new outcomes from the Sentinel Landscapes Partnership. By providing additional capacity across sentinel landscapes, the FCC will increase support for partners to develop robust implementation plans and accelerate regional climate resilience projects.

The FCC is also exploring the option to expand its membership to include additional federal agencies, specifically the National Oceanic and Atmospheric Administration (NOAA) and the Federal Emergency Management Agency (FEMA). These additional agencies could help accelerate the achievement of conservation and resilience goals in sentinel landscapes through additional funding opportunities, more effective data sharing and dissemination, and improved coordination.



National Guardsmen from the 121st Field Artillery Regiment drive HIMARS through a live fire range at Camp Ripley Training Center, MN. (credit: Sgt. Mahsima Alkamooneh/Minnesota National Guard photo)

PARTNERSHIP IMPACT



INCREASING THREATS TO OPEN SPACE

Natural open space and sustainably managed working lands⁴ provide vital ecological and recreational services to nearby communities and support the nation's economy through agriculture and forestry. However, a study released by the American Farmland Trust in 2022 illustrated that the loss of agricultural lands across the United States is increasing at an alarming rate.

From 2001 to 2016, the United States lost or compromised 2,000 acres of farmland and rangeland every day. If this trend continues, another 18.4 million acres could be converted away from agricultural use between 2016 and 2040—an area nearly the size of South Carolina.⁵ The accelerating pace of land conversion threatens rural economies, as farms struggle to remain profitable and manage land sustainably in the face of rising property values.

Similar losses are occurring for natural lands. From 2001 to 2017, the United States lost more than 24 million acres of natural area—the equivalent of nine Grand Canyon National Parks. Urban sprawl contributed to over half of this land loss.⁶ Development of natural lands results in habitat loss and fragmentation for threatened, endangered, and at-risk species. These impacts collectively lead to reduced air and water quality, increased flooding, excessive heat, biodiversity loss, drought, and lower soil fertility.⁷

Loss of open space also affects testing and training capabilities that are vital to military missions. Increased development

around military installations can result in noise and smoke complaints from nearby residents and light and sound disturbances that interfere with sensitive equipment testing. Habitat loss in landscapes surrounding military installations can cause threatened, endangered, and other at-risk species to migrate onto open space on DOD land, which can lead to restrictions on where testing and training activities can take place on a military installation.

The Sentinel Landscapes Partnership enables the DOD, DOI, and USDA to collaborate for greater impact in locations where significant agricultural and natural resources, species habitat, and military testing and training needs intersect. The FCC relies on collaboration with state, municipal, and tribal governments, nonprofit organizations, and private landowners to develop and implement projects on the ground within the sentinel landscapes. This enables the Sentinel Landscapes Partnership to consider the unique geography, economic drivers, cultural heritage, and natural resource challenges of each individual sentinel landscape.⁸

As of 2022, the FCC has designated ten sentinel landscapes across the United States: Avon Park Air Force Range (Florida), Camp Bullis (Texas), Camp Ripley (Minnesota), Eastern North Carolina, Georgia, Fort Huachuca (Arizona), Joint Base Lewis-McChord (Washington), Middle Chesapeake (Maryland, Delaware, and Virginia), Northwest Florida, and Southern Indiana. Camp Bullis, Northwest Florida, and Southern Indiana are the newest sentinel landscapes, having received official designation in February 2022.

⁴ For the purposes of this report, working lands are defined as land used for farming, ranching, and forestry.

⁵ Hunter, M., A. Sorensen, T. Nogeire-McRae, S. Beck, S. Shutts, R. Murphy. 2022. Farms Under Threat 2040: Choosing an Abundant Future. Washington, D.C.: American Farmland Trust. https://farmlandinfo.org/wp-content/uploads/sites/2/2022/08/AFT_FUT_Abundant-Future-7_29_22-WEB.pdf

⁶ Conservation Science Partners (CSP). 2019. Methods and approach used to estimate the loss and fragmentation of natural lands in the conterminous United States from 2001 to 2017. Technical Report. Truckee, CA. https://www.csp-inc.org/public/CSP_Disappearing_US_Tech_Report_v101719.pdf

⁷ University of California Museum of Paleontology. 2022. Urbanization. <https://ugc.berkeley.edu/background-content/urbanization/#:~:text=Urbanization%20often%20results%20in%20deforestation,alter%20species%20ranges%20and%20interactions>

⁸ A full list of partners working within each sentinel landscape can be found in the sentinel landscape profiles on the Sentinel Landscapes Partnership website at: <https://sentinellandscapes.org/landscapes>

Since founding the Sentinel Landscapes Partnership in 2013, USDA, DOD, and DOI further recognized that sustainable land management is critical to reducing the impact of threats exacerbated by climate change such as wildfires, hurricanes, sea level rise, and drought. The 2021 DOD Defense Climate Action Plan,⁹ 2021 DOI Climate Action Plan,¹⁰ and 2021 USDA Climate

Adaptation and Resilience Plan¹¹ each outline strategies for mitigating the impacts of climate change on natural resources, cultural resources, and communities. With these priorities in mind, in 2022 the federal agency partners updated the MOU to add climate resilience as another goal for sentinel landscapes.¹²

Figure 1: Locations of Sentinel Landscapes



⁹ Department of Defense, Office of the Undersecretary of Defense (Acquisition and Sustainment). 2021. Department of Defense Draft Climate Adaptation Plan. Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer. 1 September 2021. <https://www.sustainability.gov/pdfs/dod-2021-cap.pdf>

¹⁰ Department of the Interior. 2021. Department of the Interior Climate Action Plan. <https://www.doi.gov/sites/doi.gov/files/departments-of-interior-climate-action-plan-final-signed-508-9.14.21.pdf>

¹¹ U.S. Department of Agriculture. August 2021. Action Plan for Climate Adaptation and Resilience. <https://www.sustainability.gov/pdfs/usda-2021-cap.pdf>

¹² 2022 Sentinel Landscapes Partnership MOU is available here: https://sentinellandscapes.org/media/3bppnifl/2022_sl_mou_signed_02142022.pdf

2022 IMPACT BY THE NUMBERS

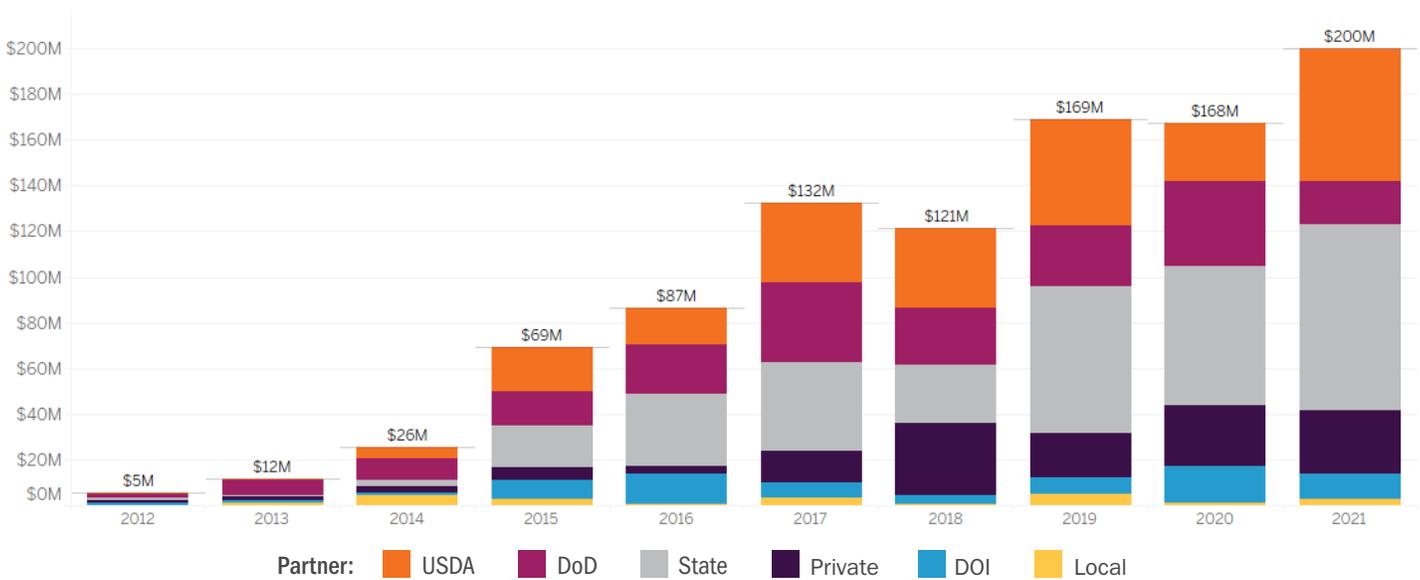
Through FY 2021, roughly \$307 million in USDA funds, \$197 million in DOD funds, and \$70 million in DOI funds have supported projects in sentinel landscapes. The partnership also attracts funding from participating states (Arizona, Florida, Georgia, Maryland, Delaware, Virginia, Minnesota, North Carolina, Texas, Indiana, and Washington), local governments, and private organizations.

To date, the partnership’s efforts have received \$324 million in state funds, \$21 million in local funds, and \$135 million in private funds. These contributions represent an 8-percent increase in federal, state, local, and private funding—about \$35

million in total—that went directly toward projects within sentinel landscapes in FY 2021 (as compared to FY 2020), as depicted in Figure 2.

Through FY 2021, the contributions and collaboration of federal, state, local, and private partners across eleven states have culminated in the protection¹³ of nearly 610,000 acres of land within sentinel landscapes and enrolled¹⁴ an additional 3.1 million acres of land in financial and technical assistance programs, as depicted in Figure 3.¹⁵ This represents an increase of over 94,000 acres protected and over 330,000 acres enrolled in FY 2021 alone.

Figure 2: Funding Committed to Sentinel Landscapes Through FY 2021 in Millions¹⁶



Partner	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY2021	Total
USDA	\$0.6M	\$0.5M	\$4.8M	\$18.9M	\$16.5M	\$34.5M	\$34.8M	\$46.4M	\$25.8M	\$58.4M	\$307.4M
DoD	\$1.5M	\$6.5M	\$9.6M	\$14.9M	\$21.7M	\$35.3M	\$25.0M	\$26.6M	\$37.2M	\$18.6M	\$196.9M
DOI	\$1.2M	\$1.0M	\$1.5M	\$8.1M	\$13.0M	\$6.6M	\$4.0M	\$7.4M	\$15.9M	\$10.7M	\$69.5M
Local	\$0.1M	\$1.0M	\$4.2M	\$2.8M	\$0.7M	\$3.4M	\$0.5M	\$4.8M	\$1.0M	\$2.9M	\$21.4M
Private	\$1.2M	\$2.0M	\$2.8M	\$5.7M	\$3.7M	\$13.7M	\$31.6M	\$19.0M	\$26.9M	\$28.0M	\$134.7M
State	\$0.8M	\$0.6M	\$2.6M	\$18.5M	\$31.1M	\$38.7M	\$25.3M	\$64.6M	\$60.6M	\$81.4M	\$324.4M
Total	\$5.4M	\$11.7M	\$25.5M	\$69.0M	\$86.7M	\$132.2M	\$121.2M	\$168.9M	\$167.6M	\$200.0M	\$1.1B

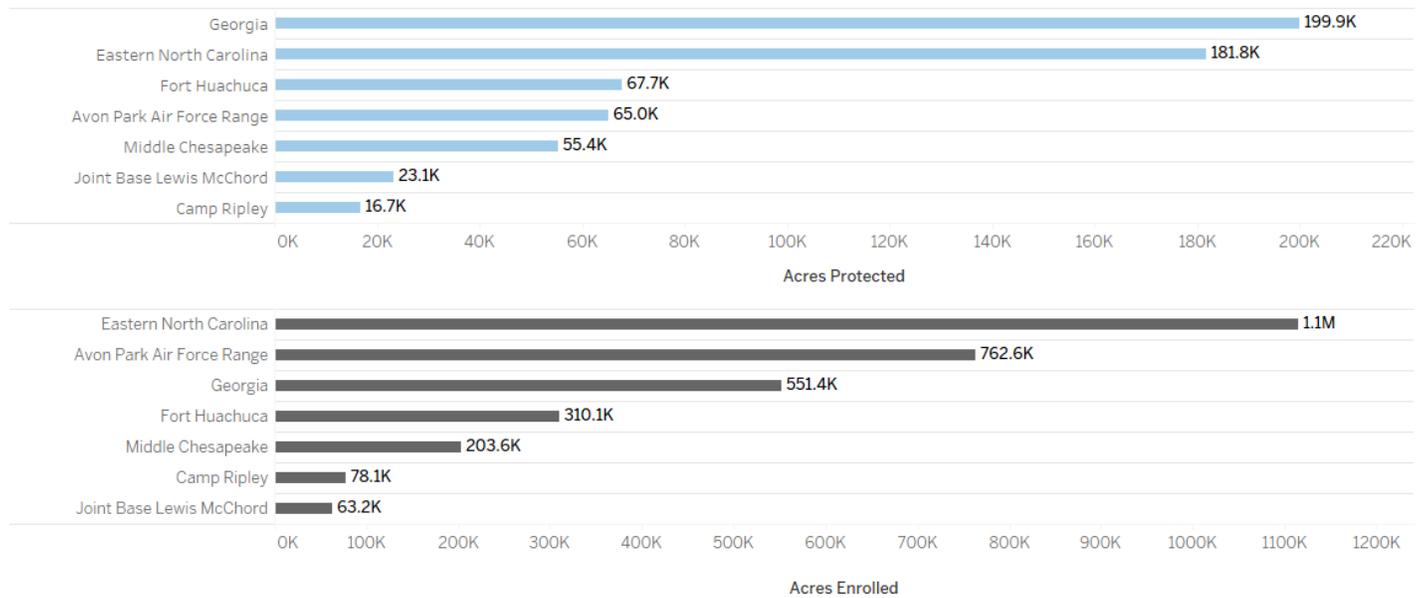
¹³ Protected acres are recognized as land acquisitions—fee simple or easement—that have completed the due diligence and closing actions necessary to obtain a real estate interest.

¹⁴ 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.

¹⁵ The values listed represent the acres protected and acres enrolled within the sentinel landscapes from the year of their federal designation through FY 2021. For that reason, within each sentinel landscape the total number of acres protected and enrolled may be higher than what is reported above.

¹⁶ USDA subtotals may not sum to combined total due to the addition of non-fiscal year funds contributed.

Figure 3: Acres Protected and Enrolled within Each Sentinel Landscape from their Establishment through FY 2021

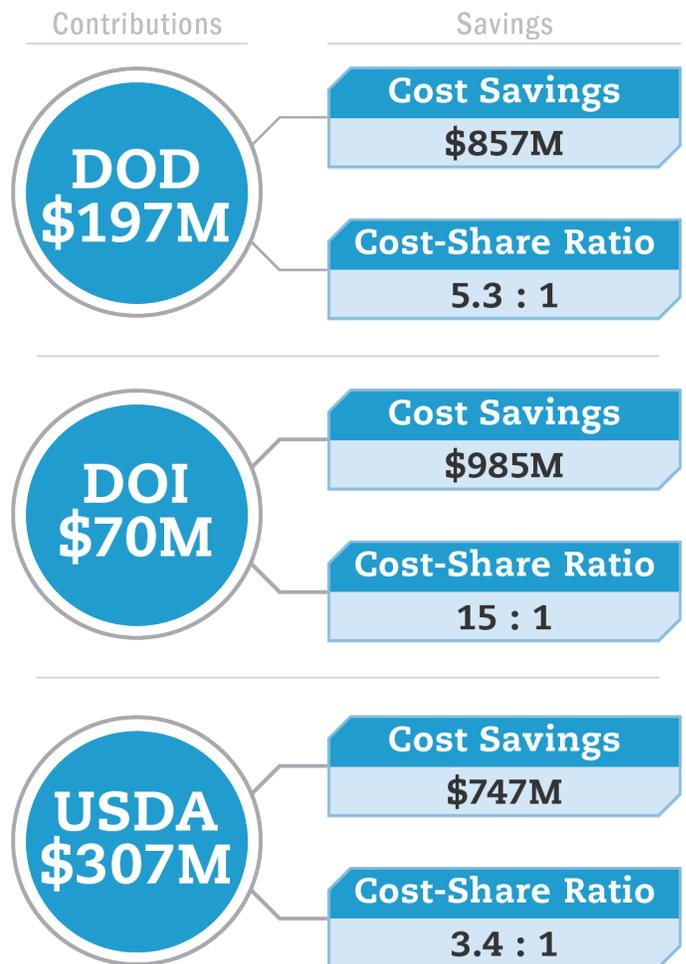


Participation in the Sentinel Landscape Partnership is an opportunity for the FCC’s members to collaborate on achieving their shared goals within the sentinel landscapes. Through funding projects that address the strategic goals of different sentinel landscapes, members contribute to landscape-level outcomes that are desirable for each agency in the partnership and that likely could not have been achieved independently.

To illustrate this shared benefit, Figure 4 represents the funding contributions of each FCC member as a ratio of overall funding committed to the Sentinel Landscapes Partnership. On top of their own individual contributions to projects in sentinel landscapes, in FY 2021 USDA, DOD, and DOI benefited from roughly \$747 million, \$857 million, and \$985 million, respectively, of funding from other federal agencies, states, and local and private organizations spent in sentinel landscapes.

The contribution ratios in Figure 4 illustrate how the cooperation established through the Sentinel Landscape Partnership enables the dollars spent by each agency partner to go further toward achieving their goals within the sentinel landscapes. For a list of supporting federal programs that can apply in sentinel landscapes, see Appendix B.

Figure 4: Federal Contribution Ratios in the Sentinel Landscapes Partnership



2022 PARTNERSHIP HIGHLIGHTS



The following section shares stories of the impact behind the Sentinel Landscape Partnership's funding and land management accomplishments. Specifically, it introduces the three new sentinel landscapes designated by the FCC in 2022. It also shares case studies from Fort Huachuca Sentinel Landscape and Camp Ripley Sentinel Landscape that illustrate how partners there are collaborating to advance federal, state, and local natural resource and land use goals.¹⁷

FCC DESIGNATES THREE NEW SENTINEL LANDSCAPES

The 2022 Sentinel Landscapes Designation Cycle was highly competitive and attracted numerous applicants representing a diverse array of partners, priorities, and geographies. From this process, the FCC designated three new sentinel landscapes: Camp Bullis (Texas), Northwest Florida, and Southern Indiana.

Following the designation of a new sentinel landscape, the FCC develops land-use objectives and implementation plans with local partners that reflect USDA, DOD, DOI, state, and



U.S. Air Force Airmen, Air Education and Training Command team, compete in a dismounted operation competition during Air Force Defender Challenge at Joint Base San Antonio-Camp Bullis, Texas. (Sarayuth Pinthong, 502nd Air Base Wing Public Affairs, Joint Base San Antonio-Camp Bullis)

local priorities. The local partners then work with the FCC to execute projects and coordinate landowner and land manager connections with voluntary state and federal assistance programs that provide tax reductions, agricultural loans, disaster relief, educational opportunities, technical aid, and funding for conservation easements and nature-based solutions.

Camp Bullis Sentinel Landscape

The Camp Bullis Sentinel Landscape, based in the Texas Hill Country near San Antonio, encompasses ranchlands, spring-fed creeks, local and state parks, and one of the fastest growing urban regions in the nation. Joint Base San Antonio's Camp Bullis provides training opportunities for 266 mission partners, supporting DOD enlisted and officer medical training, military intelligence, special forces, pre-deployment, and national and international training requirements.

The landscape boundary contains the Edwards and Trinity Aquifers that Camp Bullis, the city of San Antonio, and the surrounding communities depend on for clean drinking water. Through an Intergovernmental Support Agreement (IGSA), partners are focused on building community and installation resilience to drought, flood, and wildfire; improving water quality and quantity; maintaining and improving agricultural productivity; enhancing wildlife habitat; and expanding access to public recreation opportunities.

Northwest Florida Sentinel Landscape

The Northwest Florida Sentinel Landscape contains rural and agricultural lands, longleaf pine forests iconic to the region, threatened and endangered species habitat, and nine key DOD facilities. Not only are these facilities integral to Air Force training, weapons testing, and special operations; they also provide initial training to all Navy, Marine Corps, and Coast Guard aviators.

Partners will concentrate on retaining working agricultural and forest lands as compatible and sustainable land uses; conserving and restoring habitat and water resources; and

¹⁷ To learn more about other sentinel landscapes' accomplishments, visit their individual profiles at: <https://sentinellandscapes.org/landscapes>

identifying, implementing, and accelerating projects that improve the climate resilience of military installations and the landscapes with overlapping mission footprints—particularly in coastal areas.

Southern Indiana Sentinel Landscape

The Southern Indiana Sentinel Landscape is anchored by four critical DOD installations and ranges that provide a variety of testing and training opportunities for the Army, Navy, Air Force, Marine Corps, and National Guard, as well as federal and state partners. This vast landscape also contains six state parks, seven state forests, nine state fish and wildlife areas, thirty-nine state dedicated nature preserves, one national forest, and three national wildlife refuges.

With the primary objective of preserving and protecting military mission readiness, operations, and testing and training capabilities, the Southern Indiana Sentinel Landscape partners will also support agricultural and working lands; promote landscape resilience by protecting watershed and riparian corridors; sustain and restore forest lands through sustainable land management and protections; and ensure endangered, threatened, and at-risk species protection through habitat preservation and restoration.

CONSERVING WORKING RANGLAND IN ARIZONA

Located in southern Arizona's Sonoran Desert, the Fort Huachuca Sentinel Landscape covers an expansive, remote region that mainly consists of cattle ranches and native grasslands. However, as development pressure increases in the region from urban sprawl, land use conversion poses challenges by increasing competition for limited water resources and fragmenting important wildlife habitat. Urban development also threatens the viability of Fort Huachuca's unique mission of testing and training in signals intelligence, electromagnetic warfare, and unmanned aerial vehicles, all of which require open space with low levels of electromagnetic interference.

Ensuring that the natural lands and working cattle ranches that surround Fort Huachuca remain as open space is critical to meeting the Fort Huachuca Sentinel Landscape's triple mission of water resilience, habitat preservation, and support of national defense. The protection of the Pyeatt Ranch, which borders Fort Huachuca and the Coronado National Forest, provides an excellent case study in how the Sentinel Landscape Partnership enables the application of federal funding towards projects that simultaneously support defense, agriculture, and conservation outcomes.



Looking north across the Babacomari Ranch toward the Mustang Mountains. (credit: Arizona Land and Water Trust).

The 5,050-acre Pyeatt ranch is owned and operated by Manuel Murrietta, who is a member of the fifth generation of Pyeatts to have managed the beef cattle business on the ranch (established by Murrietta's great-great-grandfather, Henry Pyeatt). According to Murrietta, the family management philosophy is to "keep the land as good or better than it was before it was under our ownership."

Expanding the ranch had always been a dream of Murrietta's. To achieve this, he worked with the Arizona Land and Water Trust for over two years to obtain conservation easement funding supported by the REPI Program. The Arizona Land and Water Trust and the Arizona Association of Conservation Districts are longtime partners of the Fort Huachuca Sentinel Landscape and play a crucial role in connecting with private landowners to spread the word of the sentinel landscape's benefits.

In June 2021, the Arizona Land and Water Trust closed on a conservation easement to protect 800 acres of the Pyeatt Ranch. When the transaction was complete, Murrietta reinvested the funds he received from selling his development rights into purchasing the neighboring Sycamore Ranch. This doubled the size of his ranching operation. As the Pyeatt Ranch is within the R-2303 restricted military airspace boundary, helping Murrietta to protect his property from development and maintain it as open space is especially critical to Fort Huachuca's testing and training mission.

"Conservation easements, restoration cost-share options, and leaning into partnerships have expanded my view of management and are the most valuable lessons I have learned to make the ranch feasible and sustainable."

— Manuel Murrietta, Pyeatt Ranch owner

“Cows don’t care about drones and low-flying aircraft,” said Jeff Jennings, Deputy to the Commanding General at Fort Huachuca. “Good neighbors like Murrietta are just as critical to national defense as the people building planes and tanks, because they enable us to do the training we require for the betterment of national defense.”

Beyond ensuring that the land continues to remain in agricultural production as it has for the last century, the Pyeatt Ranch easement provides multiple environmental benefits. By protecting land within the Babocomari River Watershed (a tributary to the San Pedro River), the easement will help minimize future water resource challenges. The property also provides habitat for several threatened and endangered species like the southwestern willow flycatcher, yellow-billed cuckoo, and northern Mexican garter snake.

With the future of the Pyeatt Ranch secured, Murrietta and his family are proud to carry on the legacy of a multi-generational ranch to supply beef to the nation and support national defense. Murrietta is just one example of the many landowners that the Fort Huachuca Sentinel Landscape partners work with to ensure the sustainment of agriculture, natural resources, and military missions.

PROTECTING WATER QUALITY IN MINNESOTA

Protecting water quality for people and habitat is a core goal of the Camp Ripley Sentinel Landscape in northern Minnesota, particularly as the landscape encompasses 50 miles of the Mississippi River’s pristine headwaters. In addition, the sentinel landscape includes 40 minor watersheds, 49,000 acres of water bodies, the Crane Meadows National Wildlife Refuge, and 42,000 acres of public land.

One strategy the Camp Ripley Sentinel Landscape partners are pursuing is securing working lands easements to protect productive land use and promote management practices that maintain water quality. Preserving the rural character of the landscape also ensures that the Camp Ripley military installation can continue to support all branches of DOD in conducting year-round testing and training activities with limited restrictions.

In support of this effort, The Nature Conservancy in Minnesota recently led an initiative with the Minnesota Board of Water and Soil Resources to develop the new Working Lands Reinvest in Minnesota (RIM) Easement pilot program.¹⁸ The purpose of the pilot program is to protect and promote perennial vegetation land cover for the benefit of surface and groundwater through securing working lands easements—which are defined for this program as land used for haying or grazing.

The Minnesota Board of Soil and Water Resources approved the pilot program in January 2021, and over the following year partners within the Camp Ripley Sentinel Landscape and adjacent districts began soliciting landowners to participate. The sentinel landscape is an ideal location for the Working Lands RIM pilot due to connections the partnership has built with local grazing producers that operate within the landscape. Helping these producers keep their land in production while also implementing management practices that improve water quality aligns with Camp Ripley Sentinel Landscape’s goals to protect drinking water and prevent incompatible land use around Camp Ripley.

Landowners in the pilot program work with their local Soil and Water Conservation District to develop management plans for their working lands easements. Elements of these management plans can include a grazing plan that protects the form and function of grassland ecological values, groundwater and surface water hydrology management, adaptations for climate variability, and promotion of soil health. These plans can also allow for other compatible conservation practices to be implemented over time.

Through the innovative Working Lands RIM Easements pilot program, the Camp Ripley Sentinel Landscape partners achieve multiple complementary goals: keeping working lands in production, protecting the health of watersheds that feed into the Mississippi River, and ensuring the military mission of Camp Ripley.



North Mississippi Regional Park (credit: Joe Passe, Flickr).

¹⁸ More information on the RIM program can be found here: <https://bwsr.state.mn.us/RIM-Working-Lands>

PARTNERSHIP OUTLOOK



Over the next year, the FCC will focus on three key activities: supporting the sentinel landscapes as they develop implementation plans, continuing to build capacity for integrating climate resilience planning into sentinel landscape activities, and coordinating funding opportunities among federal agency partners.

GUIDING IMPACT THROUGH IMPLEMENTATION PLANS

The concept of sentinel landscapes succinctly illustrates how military testing and training are affected by competing land uses, species management, and climate change. Therefore, sentinel landscapes are uniquely positioned to highlight connections and community partnership opportunities that were previously missed among natural resources challenges, resilience threats, and military readiness. These connections and community partnership opportunities hold the potential to bring new collaborators and resources to the table for landscape-level conservation efforts.

Recognizing the unique convening role that sentinel landscapes play, the FCC is providing new capacity-building resources to sentinel landscape partners that will help them develop robust implementation plans to best target and leverage partner resources. These plans can evolve as the needs, goals, and threats to military and partners' missions change. To further support the evolving needs of the individual sentinel landscapes, the FCC is also instituting a process to help them adjust their geographical boundaries. This step will allow sentinel landscapes to grow or shrink as their goals are accomplished and new opportunities arise.

CAPACITY BUILDING FOR CLIMATE RESILIENCE

The FCC understands that climate-related impacts such as extreme weather events, sea level rise, flooding, excessive heat, and wildfire can jeopardize the Sentinel Landscapes Partnership's objectives of conservation, preservation of

working lands, and national defense. The FCC also recognizes that sentinel landscapes offer unique opportunities for piloting locally driven climate resilience efforts. However, finding nature-based solutions to address climate change challenges requires capacity building and the addition of new, climate resilience expertise across the Sentinel Landscape Partnership.

The updated 2022 Sentinel Landscapes MOU takes an important step toward addressing these climate resilience priorities by newly emphasizing the importance of building military installation resilience to climate impacts within sentinel landscapes. It also grants the FCC the new ability to add additional federal agencies to the Sentinel Landscapes Partnership. In particular, this update will enable the FCC to build its climate resilience expertise through the contributions of the additional members.

In line with the new capacity-building efforts outlined in the 2022 MOU, the Eastern North Carolina Sentinel Landscape recently appointed a new resilience and adaptation coordinator. This role is the first in a three-year pilot to add coordinators with expertise in addressing resilience and climate-related vulnerabilities. These new coordinators will help sentinel landscapes that are facing significant climate change and resilience threats in addition to land management challenges. The FCC expects that partners within the Eastern North Carolina Sentinel Landscape will work with the new resilience and adaptation coordinator to identify specific recommendations and lessons learned that can inform other sentinel landscapes.

FEDERAL FUNDING COORDINATION

FCC members are each contributing funding to the National Fish and Wildlife Foundation's new America the Beautiful Challenge, which streamlines grant-funding opportunities for new voluntary conservation and restoration projects across the United States. In November 2022, two projects in sentinel landscapes received grant awards from the inaugural round of America the Beautiful funding:



Wildfire adversely affects training, missions, aerial operations, UAS training, and many other activities within Fort Huachuca. With increased reduction of hazardous fuel completed on and off the Fort, the risk, frequency, and severity of wildfires can be reduced. (U.S. Army photo by Tanja Linton).

In the Georgia Sentinel Landscape, the Georgia Forestry Commission received \$532,000 in DOD REPI funding and \$523,000 in USFWS funding to build on the existing West Central Georgia Prescribed Fire Initiative. This effort seeks to improve forest health in areas neighboring Fort Benning. Specific activities include executing prescribed burns on 20,000 acres of private land and 5,000 acres of public land and installing new firebreaks for at least 50 landowners per year to reduce the risk of catastrophic wildfires across the region and the Georgia Sentinel Landscape.

In the Fort Huachuca Sentinel Landscape, the Borderlands Restoration Network received \$977,000 in DOD REPI funding to work with project partners including the Arizona Department of Forestry and Fire Management, University of Arizona, and Tucson Audubon Society to perform hazardous fuel reduction on over 70 acres, eradicate invasive species across 28,000 acres of riparian habitat, and repair over 700 acres of degraded waterways through erosion control and revegetation.

DOD plans to commit \$25 million to the America the Beautiful Challenge through the REPI Program over five years (beginning in 2023), subject to the availability of funds, to specifically support activities within sentinel landscapes that promote military installation resilience to climate change.

USDA and DOI are also making significant contributions to the America the Beautiful Challenge, which offers great potential to further the goals of the Sentinel Landscapes Partnership. Specifically, DOI is contributing \$375 million for ecosystem

restoration, USFS is contributing \$35 million for water quality improvements and invasive species management, and NRCS is contributing \$5 million to support private landowners' participation in priority conservation areas.

“The America the Beautiful Challenge meets a critical need as the Department of Defense is building diverse partnerships with local communities to sustainably manage landscapes and scale up climate resilience work. This increased access to federal funding will help our partners collaboratively advance conservation and climate adaptation goals that are key to sustaining military missions and national security imperatives.”

– Paul Cramer, Performing the Duties of the Assistant Secretary of Defense for Installations, Energy and Environment

The FCC’s coordination on funding through the America the Beautiful Challenge is laying the groundwork for future funding partnership efforts to benefit sentinel landscapes. Over the next year, the Sentinel Landscapes Partnership is working to identify further opportunities to coordinate funding across FCC member programs. This will ensure that federal funding from each FCC member is being fully realized and leveraged against other funding sources. Increasing coordination of different funding opportunities will allow FCC member programs to have greater reach and impact, enabling individual sentinel landscapes to pursue more comprehensive projects in support of the partnership goals.

¹⁹ The White House. “Biden-Harris Administration Launches \$1 Billion America the Beautiful Challenge to Support and Accelerate Locally Led Conservation and Restoration Projects.” April 11, 2022. <https://www.whitehouse.gov/ceq/news-updates/2022/04/11/biden-harris-administration-launches-1-billion-america-the-beautiful-challenge-to-support-and-accelerate-locally-led-conservation-and-restoration-projects/>

APPENDIX A: ACRONYMS

- BIA:** Bureau of Indian Affairs
- BLM:** Bureau of Land Management
- DOD:** U.S. Department of Defense
- DOI:** U.S. Department of the Interior
- EPA:** Environmental Protection Agency
- FCC:** Sentinel Landscapes Federal Coordinating Committee
- FEMA:** Federal Emergency Management Agency
- FSA:** Farm Service Agency
- FY:** Fiscal Year
- HMGP:** Hazard Mitigation Grant Program
- IGSA:** Intergovernmental Support Agreement
- MOU:** Memorandum of understanding
- NDAA:** National Defense Authorization Act
- NOAA:** National Oceanic and Atmospheric Administration
- NPS:** National Park Service
- NR:** Natural Resources
- NRCS:** Natural Resources Conservation Service
- OLDCC:** Office of Local Defense Community Cooperation
- REPI:** Readiness and Environmental Protection Integration
- USDA:** U.S. Department of Agriculture
- USFS:** U.S. Forest Service
- USFWS:** U.S. Fish and Wildlife Service

APPENDIX B: SUPPORTING FEDERAL PROGRAMS

FCC members administer many financial and technical assistance programs that sentinel landscapes partners use to meet their goals and objectives. Some examples include the NRCS Agricultural Conservation Easement Program, Regional Conservation Partnership Program, Environmental Quality Incentives Program, and Conservation Stewardship Program; the USFS Forest Legacy Program; the DOD Office of Local Defense Community Cooperation’s (OLDCC) Military Installation Sustainability Program; and the USFWS Cooperative Endangered Species Conservation Fund.

Aside from the services and programs represented by FCC members, many other federal departments, agencies, and programs have land use missions related to conservation, agriculture, forestry, defense, and resilience that could contribute to strategic goals for sentinel landscapes. A list of federal agency programs that have been or can be applied in sentinel landscapes to meet the partnership’s objectives is found in Table 1. These programs provide a range of complementary

benefits including tax reductions, agricultural loans, disaster relief, educational opportunities, technical aid, and funding for conservation easements and nature-based solutions.

This list is not comprehensive; however, it demonstrates the federal government’s broad commitment to conservation and resilience within and beyond USDA, DOD, and DOI. The diversity of federal government programs listed also represents a significant opportunity for interagency coordination and collaboration to align funding and more efficiently achieve greater outcomes within sentinel landscapes.

In addition to the programs listed in Table 1, there are many other landowner assistance opportunities administered by state and local government agencies that can help private landowners manage their land sustainably. A variety of landowner assistance programs can be explored through the Interactive Landowner Resources Tool on the Sentinel Landscapes Partnership website at: [HTTPS://SENTINELLANDSCAPES.ORG/LANDOWNER-RESOURCES/](https://sentinellandscapes.org/landowner-resources/).

Table 1: Federal Agencies and Programs Aligned with Sentinel Landscapes Goals and Objectives

Agency	Agencies/Programs	About	Relevant Programs
 DOD	Legacy Resource Management Program	The Legacy Resource Management Program assists DOD in protecting and enhancing resources while enabling military readiness through projects involving regional ecosystem management initiatives, habitat preservation efforts, etc.	
	Army, Air Force, Navy Community Partnership Programs	The use of Intergovernmental Support Agreements (IGSA) under 10 USC 2679, allows military services to create formal partnerships with local and state governments to for the provision, receipt, or sharing of installation and community support services, including land preservation and environmental stewardship.	Army, Air Force, Navy Community Partnership Programs
	Natural Resources (NR) Program	DOD’s NR Program supports the military’s testing and training mission by protecting its biological resources through policy, guidance, and oversight of management of natural resources on military land, air, and water resources owned or operated by DOD.	Integrated Natural Resource Management Plans
	Office of Local Defense Community Cooperation (OLDCC)	OLDCC furthers the priorities of the National Defense Strategy by supporting the readiness and resilience of military installations and defense communities across the nation.	Defense Community Infrastructure Program; Compatible Use Program; Military Installation Sustainability Program; Community Noise Mitigation Program; Intergovernmental and Stakeholder Engagement Program
	Readiness and Environmental Protection Integration Program (REPI)	The REPI Program protects these military missions by helping remove or avoid land-use conflicts near installations and addressing regulatory restrictions that inhibit military activities.	

(Continued on following page)

Table 1: Federal Agencies and Programs Aligned with Sentinel Landscapes Goals and Objectives (Continued)

Agency	Agencies/Programs	About	Relevant Programs
 DOI	Bureau of Indian Affairs (BIA)	BIA's mission is to enhance the quality of life, promote economic opportunity, and carry out the responsibility to protect and improve the trust assets of American Indians, Indian tribes, and Alaska Natives.	Agriculture and Range Program; Endangered Species Program; Water Program; Wildlife and Parks Program
	Bureau of Land Management (BLM)	The mission of BLM is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.	Rangeland Management Program; Riparian and Wetlands Program; Threatened and Endangered Species Program; Soil, Water, and Air Program; Wildlife Program
	National Park Service (NPS)	NPS cares for our national parks but also helps revitalize communities by preserving local history, celebrating local heritage, and creating close-to-home opportunities for kids and families to get outside.	Federal Lands to Parks Program; Land and Water Conservation Fund Program; Rivers, Trails, and Conservation Assistance Program
	U.S. Fish and Wildlife Service (USFWS)	USFWS is the premier government agency dedicated to the conservation, protection, and enhancement of fish, wildlife and plants, and their habitats.	Coastal Program; Cooperative Endangered Species Conservation Fund; National Coastal Wetland Conservation Grant Program; North American Wetlands Conservation Act Grants; Partners for Fish and Wildlife Program; Recovery Challenge Grants; Recovery Planning and Implementation; Wildlife and Sport Fish Restoration Program
 USDA	Farm Service Agency (FSA)	FSA equitably serves all farmers, ranchers, and agricultural partners through the delivery of effective, efficient agricultural programs for all Americans.	Emergency Conservation Program; Farmable Wetlands Program; Incentives and Conservation Reserve Program
	Natural Resources Conservation Service (NRCS)	NRCS provides America's farmers and ranchers with financial and technical assistance to voluntarily put conservation on the ground, not only helping the environment but agricultural operations, too.	Agricultural Conservation Easement Program; Agricultural Management Assistance Program; Conservation Stewardship Program; Environmental Quality Incentives Program; Healthy Forests Reserve Program; Regional Conservation Partnership Program
	U.S. Forest Service (USFS)	The mission of USFS is to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations.	Farm Bill Programs; Forest Legacy Program
Additional Agencies	Department of Commerce—National Oceanic and Atmospheric Administration (NOAA)	NOAA's mission is to understand and predict changes in climate, weather, oceans, and coasts; share that knowledge and information; and conserve and manage coastal and marine ecosystems and resources.	Coastal Estuarine Land Conservation Program; National Coastal Resilience Fund
	Department of Homeland Security—Federal Emergency Management Agency (FEMA)	FEMA provides on-the-ground support in response to a disaster, makes available experts in specialized fields, and awards funding and grants for preparedness, hazard mitigation, and resilience.	Building Resilient Infrastructure and Communities; Hazard Mitigation Grant Program (HMGP); Flood Mitigation Assistance Program; HMGP Post-Fire Grant
	Environmental Protection Agency (EPA)	The mission of EPA is to protect human health and the environment through the development and enforcement of regulations.	Wetlands Program Development; Multipurpose Grants to States and Tribes





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