



Department of Defense Legacy Resource Management Program

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National Public Lands Day 2018

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**DEPARTMENT OF DEFENSE
LEGACY RESOURCE MANAGEMENT PROGRAM (17-086)**

National Public Lands Day 2018

On September 22, 2018, the National Environmental Education Foundation (NEEF) celebrated National Public Lands Day (NPLD) along with 1,776 sites across the nation. As part of the 25th annual NPLD, approximately 113,055 volunteers visited public lands sites across the nation to contribute an estimated \$11.2 million in improvement projects. Events took place in all 50 states, the District of Columbia, and US territories. Many NPLD events included an environmental education component to teach volunteers about land stewardship. In 2018, NPLD focused on the importance of restoration and resilience. Sites were encouraged to include projects that would restore degraded habitats and promote the resilience of their public lands in the years to come.

The Department of Defense (DoD) provides funds to NEEF for NPLD projects on military lands open to the public for recreation. To date, NPLD has received nearly \$3 million through the Legacy Resource Management Program (Legacy). In 2018, a total of \$180,000 was distributed to installations for materials and supplies. These funds were used to enhance DoD lands through various cultural and natural resource improvement projects. Participating in NPLD provides natural and cultural resource managers the means and labor to complete small installation-specific projects that may not otherwise get done due to budget or staffing limitations. NPLD projects improve habitat and biodiversity for common and rare species alike, often reducing the need for intense management of these species.

NEEF received 28 applications for Legacy awards of up to \$9,500 each for 2018 NPLD projects. In September 2018, NEEF notified 26 sites that they were selected to receive an NPLD DoD Award.

Legacy funds were awarded by NEEF to sites via direct payments to the installation or reimbursing vendors for all items purchased that pertained to the awarded project. The branches awarded Legacy Resource Management Program funding consisted of two Air Force, eleven Army, eight Army/Air National Guard, and five Navy sites.

Approximately 1,296 volunteers took part in various natural and cultural resource improvement activities that were offered at the 26 funded Legacy installations. Many Legacy sites organized natural resource rehabilitation projects to improve habitat for pollinator species, remove invasive plants, reduce environmental degradation caused by human use, enhance sand dunes, reduce erosion, maintain trails, plant native trees and wildflowers, and more. The cultural resource activities included preserving burial sites, honoring war veterans, and holding educational programming around the history and culture of installations.

In addition to receiving funds, upon request, participating DoD installations also received 2018 Federal Fee Free Coupons to distribute to their volunteers. Each year, NEEF distributes these coupons to volunteers at NPLD sites on lands managed by five federal land management agencies (Bureau of Land Management, National Park Service, U.S. Army Corps of Engineers, US Fish and Wildlife Service and US Forest Service). While DoD installations technically are not open to the public, NEEF chose to honor the agency's continued partnership by offering this special incentive.

Legacy Sites 2018

United States Air Force

Eglin Air Force Base | Florida
Hurlburt Field Air Force Base | Florida

Amount Awarded

\$9,500.00
\$810.00

United States Army

Fort Belvoir | Virginia
Fort Belvoir Office of the Chief | Virginia
Fort Bragg | North Carolina
Fort Drum | New York
Fort George G. Meade | Maryland
Fort Hood Directorate of Public Works | Texas
Fort Leavenworth | Kansas
Joint Base Lewis-McChord | Washington
Redstone Arsenal | Alabama
Schofield Barracks West Range | Hawaii
White Sands Missile Range | Arizona

Amount Awarded

\$7,490.00
\$4,220.00
\$9,492.75
\$9,500.00
\$4,700.00
\$9,360.00
\$1,500.00
\$9,500.00
\$5,695.00
\$8,878.11
\$1,700.00

United States Army/Air National Guard

Biak Training Center | Oregon
Camp Mabry | Texas
Camp Mabry | Texas
Camp Navajo | Arizona
Camp Ripley | Minnesota
Fort Custer Training Center | Michigan
Marseilles Training Area | Illinois
Silverbell Army Heliport | Arizona

Amount Awarded

\$3,057.34
\$8,250.00
\$9,500.00
\$9,500.00
\$7,992.50
\$8,195.00
\$9,170.22
\$9,500.00

United States Navy

Joint Base Pearl Harbor-Hickam | Hawaii
Joint Base Pearl Harbor-Hickam NFEC | Hawaii
Naval Weapons Station Seal Beach | California
Naval Air Station Oceana | Virginia
Naval Support Activity Hampton Roads | Virginia

Amount Awarded

\$9,426.39
\$9,500.00
\$7,000.00
\$4,226.25
\$2,336.44

TOTAL

\$180,000

United States Air Force



Eglin Air Force Base | Florida

Natural Resource Management Project: Veterans Day Tree Dedication & Buck Pond Bog Frog Restoration

Project Date: October 31st, November 11th, November 12th, November 16th, December 7th, and January 15th-18th

Project Summary: Over the course of several work days, volunteers completed a variety of projects to help restore Buck Pond and honor the 100th anniversary of Armistice Day.

On October 31st, Eglin Air Force Base Natural Resources department and volunteers participated in native plant garden preparation. Volunteers from Master Gardeners-Okaloosa County removed 300 lbs. invasive vegetation, thinned/pruned native vegetation and transplanted native vegetation offsite. A second work day took place on November 11th in honor of Armistice Day. Two volunteers installed a monument by constructing the form, mixing/pouring concrete, and setting the 160 lb. engraved monument granite stone. In honor of both Armistice Day and Veterans Day, four volunteers installed a 30 gallon containerized dogwood tree with 60 lbs. sphagnum moss, and six bales of pine straw mulch. The remaining work days helped to restore Buck Pond. Volunteers installed 1,090 containerized grasses, sedges, and forbs, removed 160 lbs. trash and 37 invasive cattail plants. Contractors used mechanized equipment to cut/mow/mulch one acre of invasive vegetation and applied herbicide to cut stumps. They also helped to remove roadway surface, constructed earth water bars, and mulched/seeded swale areas.

The former Buck Pond restoration site was destroyed following Hurricane Nate and required a rapid restoration response since reconstruction of the spillway was cost prohibitive. Research biologists recognized that removal of the damaged earthen spillway from the Double Head Branch floodplain could expand critical habitat for the listed Florida bog frog from an adjacent, remnant population. Stabilization with grasses added diversity and facilitates long-term resilience. Supplemental planting and applied management practices provided by this award enabled the Florida bog frog habitat protection that otherwise would not have taken place. All of the restoration objectives were achieved in less than 15 months.

A total of 19 volunteers completed 13 hours of work. They restored 58,680 square feet of habitat, removed 2,500 square feet of invasive vegetation, and restored 20,400 square feet of riparian habitat. They also helped to restore one mile of trails, planted one tree, 1090 native plants, and removed 490 pounds of trash.

Habitat degradation from invasive vegetation, sediment accumulation in streams from roads and fragmentation from impounded watersheds are the main threats to the survivability of the bog frog. By the decommissioning Buck Pond and allowing the watershed to return to a natural stream, habitat fragmentation is reduced and will allow populations that are downstream to migrate and expand their range. Mechanized mowing reduced the amount of invasive vegetation encroachment and the earthen water bars and road rehabilitation will eliminate sediment smothering in the streams. Standard soil conservation practices employed in this restoration reduce overland runoff and allow surface water to recharge this groundwater spring-fed stream. All of this work combined will help Natural Resource personnel to continue to improve an existing bog frog habitat. The community also has a refreshed native garden that serves as an educational display of native landscaping and a poignant memorial monument.

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Hurlburt Field Air Force Base | Florida Natural Resource Management Project: Birdhouses on Hurlburt 2018

Project Dates: September 22nd, November 7th, November 20th

Project Summary: Hurlburt Field Air Force Base (HFAFB) implemented a natural resource project over the course of three separate work days. Volunteers built and installed birdhouses at Corvias housing and the Youth Center outdoor recreation area.



On September 22nd, military active duty, military family, youth, and scout volunteers built birdhouses to be installed in base housing. Volunteers will monitor these birdhouses in their yards during the spring and contribute nesting information to the NestWatch project at Cornell University. Artificial birdhouses provide safe nesting habitat for declining cavity nesting migratory birds. Natural Resources gave a presentation to celebrate the 100th Anniversary of the Migratory Bird Treaty Act, discussing the importance of migratory birds in

natural resources and ecosystem management, and the benefits of birdwatching and outdoor recreation. The volunteers installed the birdhouses at the Corvias housing area on November 7th.

A second birdhouse construction event occurred on November 20th. Students at the Youth Center on base built two birdhouses and installed them at the Youth Center's outdoor recreation area. The science teacher and student volunteers will monitor the birdhouses in the spring for the NestWatch project. Natural Resources gave a second presentation in celebration of the 100th Anniversary of the Migratory Bird Treaty Act.

Natural Resources planned to do an additional event (funds not provided by NEEF) to clean/repair/install new purple martin condos on the Hurlburt Golf Course, but they ran out of time. They plan to do the event in the spring of 2019 for Earth Day. All of the funding for that project will be provided by the US Air Force. All funds provided by NEEF for NPLD were spent on birdhouses from the Audubon Shop, and the project was completed as planned. The greater community benefits by enjoying birdwatching and outdoor recreation.

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United States Army



Fort Belvoir | Virginia Natural Resource Management Project: Pollinator and Migratory Bird Habitat Restoration at the Golf Course

Project Dates: September 21st, September 23rd and October 5th

Project Summary: Fort Belvoir Directorate of Public Works Environmental Division (DPWED) and volunteers restored habitat for pollinators and migratory birds by planting trees and wildflowers under the guidance of a Natural Resources Specialist. Improving and increasing viable habitat for these species on Fort Belvoir reduces

the risks of mission critical actions negatively impacting them, resulting in more resilient installation lands.



On September 20th, 121 native trees were delivered by Nature by Design to DPWED staff. The following day, Lake Ridge Nursery delivered 225 wildflowers. Shortly after the wildflowers were delivered, staff noticed that all of the common milkweed plants (45) were missing. After DPWED staff contacted Lake Ridge Nursery, it was discovered that these plants were not sent by their supplier. This error

delayed the plant delivery and they did not arrive in time for the planned NPLD event. Once the plants were delivered, it was discovered that swamp milkweed was ordered in place of common milkweed due to a lack of availability of the desired plant. While DPWED staff was not notified of this selection prior to delivery, they decided to keep the plants in order to get them in the ground in a timely manner.

Before the scheduled NPLD event, DPWED staff found native warm season grass and wildflower seed mixes in a storeroom left over from a previous project. Because one of the planting sites was located at the base of a bare

hillside, staff members decided to use this seed to help stabilize the site. Volunteers spread the seed during the event to accomplish this goal. Planting sites and individual plant locations for the wildflowers and trees were selected by Natural Resources Specialists to ensure the best chance of plant survival and quality wildlife habitat. After these preparations were made, 16 volunteers planted 225 wildflowers and 121 tree species at the staged areas with the assistance of three Natural Resource Specialists. Volunteers traveled between seven planting sites along the Fort Belvoir Golf Course using golf carts.

On October 5th, a second work day took place where volunteers from American Water, Fort Belvoir's private utility provider, planted 45 wildflowers at two of the planting locations assisted by a DPWED staff member. Volunteers helped in loading the plants into vehicles to transport them closer to the planting sites. Once closer, volunteers traveled between planting sites using golf carts.

In total, 28 people participated in these events over the course of five hours, and restored an estimated 161,685 square feet of habitat. Although 65 volunteers registered to participate in the event, poor weather conditions resulted in a lower than expected volunteer turnout. Due to the speed and great teamwork of the volunteers, all planting activities were completed by 12:30pm and the event was concluded early. Pollinator and migratory bird habitat was greatly improved by planting 121 trees and 270 wildflowers. Brochures were distributed to volunteers and partners explaining the significance of pollinator species and native plants, as well as describing each plant that was selected for the project and why. Common milkweed is listed in the brochure because staff was not aware of the swamp milkweed selection at the time of printing. Two educational articles were submitted to the installation's newspaper, The Belvoir Eagle focusing on the importance of native plants and pollinator species, but only one article was published by the newspaper.

Volunteers primarily consisted of a Boy Scout troop. Representatives from Dominion Energy and the Audubon Society of Northern Virginia were also present. Each brought snacks and refreshments for the volunteers. American Water volunteered nine employees to plant the 45 swamp milkweed plants during work hours. Without all of the volunteers and sponsors, this project would not have been a success. Not only was available habitat increased, working relationships between organizations and DPWED were greatly improved throughout this project. As a direct result of this NPLD event, future projects are in the development phase to complete pollinator surveys with the Audubon Society of Northern Virginia's help. This event also introduced different organization representatives to each other in a casual setting, fostering new relationships.

The completion of this project also benefitted the Fort Belvoir Golf Course by meeting requirements for the Audubon Cooperative Sanctuary Program for Golf certification that is currently being pursued by the facility. This project will contribute to the Wildlife and Habitat Management goal and will bring the golf course one step closer to gaining cooperative sanctuary status.

The volunteers helped to maximize available pollinator and migratory bird habitat by enhancing and, at some planting sites, creating habitat where it previously did not exist. All wildflowers were chosen for their long bloom period and trees were selected that provided quality pollen and fruit resources for wildlife. Adding these plants has increased plant species diversity in an area that typically exhibits monoculture. These actions will not only allow the planted species to thrive, but will provide more space for natural regeneration to occur in the future. Three planting areas were on the edges of Fort Belvoir's Forest and Wildlife Corridor, increasing its habitat area. This corridor provides a large tract of valuable wildlife habitat on Fort Belvoir that connects to other public lands outside of the installation. Increasing its habitat area provides more resources for installation wildlife and improves edge habitat conditions.

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Fort Belvoir Office of the Chief Natural Resource Management Project: U.S. Army Reserve Pollinator Garden

Project Dates: October 19th, October 21st, October 22nd, and December 11th

Project Summary: Over the course of several work days, volunteers restored the U.S. Army Reserve Pollinator Garden by removing shrubs and adding new plants. These improvements provide valuable habitat for pollinators in the area.

On October 19th, a team of approximately 20 volunteers removed 18 existing shrubs from the garden bed and replanted the shrubs around the building. They tilled the garden bed with additional soil, and planned placement of plants. Placement was selected to optimize habitat for migratory birds and pollinators. For example, the milkweed was planted together as a bunch rather than spaced out across the garden bed to optimize butterfly habitat. The team of volunteers began planting after the weed mat was laid across the garden bed. They were able to plant approximately half the plants throughout the course of the work day. The remaining plants were planted by a team of six volunteers on October 21st. The following day, a team of two volunteers mulched the



garden bed, and three volunteers placed edging in the garden bed on October 25th. This was done prior to the weekend rains to ensure the mulch stayed in place, and helped to create a complete look.

The Office of the Chief of the U.S. Army Reserve hosted a dedication ceremony on December 11th in which signs were placed in the garden beds. Community members were invited to attend. Three people from the Mount Vernon District Environmental Committee attended the event. During the ceremony Colonel Banks thanked the vendors and volunteers that made the event a success and Colonel Devine explained the importance of the gardens and the 100th Anniversary of the Migratory

Bird Treaty Act. The signs were made in the USA of recycled aluminum, further supporting the environment.

An estimated 20 volunteers participated in the events over the course of 14 hours. In this time they restored approximately 370 square feet of pollinator habitat. Volunteers planted three native trees, and 127 native plants. The Office of the Chief developed educational materials describing the Migratory Bird Treaty Act, and the plants that were planted in support of migratory birds. These materials were distributed to volunteers at the event.

This project was valuable because it provided habitat for both migratory birds and pollinator species. The pollinator garden will provide a necessary food source for native species. The pollinator garden will also restore habitat for migratory birds. Migratory birds serve key ecosystem functions to keep nature healthy, including pollination and seed dispersal of crops for human and livestock consumption and pest regulation. The project aligned with one of this year's themes, the 100th Anniversary of the Migratory Bird Treaty Act. Volunteers planted species that will be of benefit to both migratory birds and pollinators such as: little bluestem, low serviceberry,

white meadowsweet, and wintergreen. The plants also were shown to be habitat for migratory birds common to Fort Belvoir such as: Gray Catbird, White-eyed Vireo, Prairie Warbler, Blue-winged Warbler, Yellow-breasted Chat, Field Sparrow, and Grasshopper Sparrow. These species were identified through the Fort Belvoir bird count program, and are classified as migratory birds of high continental and/or regional priority. Handouts were developed for the event that explain the importance of the pollinator garden for migratory birds and the importance of migratory birds.

The U.S. Army Reserve Pollinator Garden project will benefit the larger community by providing valuable resources to both pollinator species and migratory birds. Fort Belvoir is home to Accotink Bay Wildlife Refuge and the Jackson Miles Abbott Wetland Refuge which are prime habitats for migratory birds. Accotink Bay comprises about one-third of the Installation acreage (about 1400 acres), and the Abbott Wetland Refuge is about 150 acres.

Office of the Chief of the Army Reserve personnel volunteered for all events associated with preparing the garden bed, planting, and placement of edging. The broader community was engaged in the project through awareness activities and during the dedication ceremony. Following planting of the garden bed, an article about the event was published in the Fort Belvoir Eagle. The article was also posted to the Army Reserve Installation Management Directorate Sustainability Facebook page and online to reach a broader audience. The article explained why the event was completed and how it supported the Migratory Bird Treaty Act. The broader community was invited to the dedication ceremony, including area officials, and environmental organizations. Three persons from the Mount Vernon District Environmental Committee were able to attend the event.

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Fort Bragg

Natural Resource Management Project: U.S. Army Reserve Command Migratory Bird Sanctuary

Project Dates: October 16th, October 23rd, November 1st, November 3rd, November 27th

Project Summary: The Army Reserve Command commemorated NPLD 2018 and the 100th anniversary of the Migratory Bird Treaty Act with the installation of over 400 native trees and shrubs in a Migratory Bird Sanctuary at Marshall Hall on Fort Bragg. The planted trees also helped to mitigate damages that Marshall Hall suffered during Hurricanes Florence and Michael in the fall of 2018.

This work took place over the course of four days from October through November. United States Army Reserve Command planned to complete the project in phases, but the date of the initial workday was pushed to late October due to inclement weather. Two consecutive hurricanes caused heavy rain and flooding on Fort Bragg. The timeline for completion of the entire project was pushed to later in the fall, and the majority of the work was completed by November 27, 2018. They initially planned to plant white dogwood trees as part of the Migratory Bird Sanctuary, but the trees were not available to order until spring 2019 and were replaced with crape myrtles.

An estimated 25 volunteers participated in the tree plantings over the course of 40 hours. Roughly 87,120 square feet of Fort Bragg were affected by the project. Volunteers planted 78 native trees, and 326 native plants. The landscape team at Fort Bragg selected trees and shrubs that are well-adapted to the climate of southeastern North Carolina, such as longleaf pine trees, blue point juniper trees, pink muhly grasses, and oak leaf holly shrubs. They provide shelter and stop over habitat for migratory birds. They are also food sources for birds because many of the plants are berry-producing varieties. Fort Bragg is home to a population of the endangered red cockaded woodpecker. Red cockaded woodpeckers nest exclusively in old-growth longleaf pines. The installation of the longleaf pines will eventually bolster habitat for the woodpecker and enhance habitat management efforts on the installation.

The strategic placement of the trees and shrubs improve the aesthetics of the gateways to the campus and improve low-impact development and erosion control in the parking lots. The landscape team directed the use of water-retaining mulch materials and river rocks in parking lot islands, and planted maple trees and hollies to effectively absorb rain water. Volunteers planted hedgerows with hollies and muhly grasses to reduce natural erosion from water run-off and to prevent people from walking on and damaging delicate grasses.

The Marshall Hall campus is a major focal point on Fort Bragg, and an important hub for many Army activities. Army Reserve Command and Forces Command team members use the campus as an "oasis" where they can commune with nature in the middle of a bustling military installation. The landscape team has received numerous comments regarding the project from Fort Bragg residents and personnel who work at the Army Reserve Command and Forces Command campus. They have complimented the work and remarked about the project's significant contributions to the aesthetic appeal and natural habitat of the area. The project also garnered attention from the Director of the Army Reserve Installation Management Directorate and from the Army Reserve Chief of Staff (Brigadier General Alberto Rosende). General Rosende offered special commendations to the volunteers to praise them for their tireless work on the NPLD project.

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Fort Drum | New York

Natural Resource Management and Cultural/Historical Preservation Project: LeRay Mansion Cultural and Natural Heritage District - Bird Habitat Community Area

Project Dates: October 13th and October 19th

Project Summary: Alexandria Bay Cub Scouts, Fort Drum Boy Scouts, Carthage Middle School Junior Honor Society students, Actus LendLease employees, Fort Drum residents, and local community members transformed a lawn in the LeRay Mansion Cultural and Natural Heritage District into bird friendly habitat in commemoration of the 100th anniversary of the Migratory Bird Treaty Act.

The first work day occurred on October 13th, and volunteers from on and off the installation created and planted most of the flower beds and trees. Excess rock from various projects was used to create raised flower beds. Volunteers then filled these with topsoil, seeds, plants and bulbs to create a three season garden. Flowering bulbs will attract insects in the spring, which is a crucial time for migratory birds. Flowers like bee balm, ox-eyed daisy, feverfew and milkweed will bloom in the summer, and sunflowers, black-eyed daisy, sedum, amaranth will bloom in the fall. These plants can provide food seed banks for fall and winter months. Bird feeders were also installed to be utilized in winter. On October 19th, 10 volunteers from Actus LendLease workforce cleaned trails, raked, cut branches, and hauled leaves and litter to create over 1,400 feet of new trail that connects existing trails throughout the installation. This new trail creates important historic and natural resources outreach opportunities in the district for the future.

Over the course of the two work days, 44 volunteers participated to complete nine work hours. Over 14,000 square feet of the LeRay Mansion District were transformed to include one mile of new trails, 16 native trees, and 74 native plants. Roughly 45 pounds of trash were removed during this process. The gardens were designed to be food sources for all 4 seasons while restoring aspects of the historic landscape. Creating gardens that will provide ample food sources for migratory birds in all seasons is crucial. The LeRay Mansion district has sufficient forests for birds to rest and roost and water sources for drinking, but very little in the way of plant life that provides food and shelter.

The LeRay Mansion District is now a cultural and natural education center. These gardens will provide unique places for the community to become involved as stewards and citizen scientists by creating opportunities for future volunteers to observe and record bird activity. The addition of bird friendly gardens will also restore the historic landscape to the gardens and walking trails it originally had when the mansion was built in 1826.



This opportunity allowed Junior Honor Society students to fulfill civic requirements by aiding their local community. They were able to plant trees with Foresters, create trails with the Natural Resources Division chief and had a historic interpretive tour of the LeRay Mansion District. Alex

Bay Boy Scouts not only planted pollinator plants and seeds, but also setup bird watching feeders. They were also given the task of completing interviews with local media, enhancing their public speaking skills. This project enhanced the lives of migratory birds and community members alike.

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Fort George G. Meade | Maryland

Natural Resource Management Project: Burba Lake Bank Stabilization

Project Date: October 18th

Project Summary: Boy Scouts, Cub Scouts, and members of the community came together to stabilize eroded sections of Burba Lake, the recreational center of Fort Meade.

All work occurred on October 18, 2018 and lasted about 3.5 hours. Seven Air Force members wrapped 60 feet of biologs and placed the matting prior to the event so that remaining activities could go smoothly. Volunteers placed logs and backfilled with topsoil to re-establish the Burba Lake bank in the eroded sections. Plant material was strategically placed based on hydrology. A wetland seed mix and an annual rye was spread over the exposed soil for further stabilization.

An estimated 40 volunteers participated in the event over the course of four hours. Over 300 square feet of Fort Meade was restored by planting 86 native plants and four native trees. The project planned to do 100 feet of bank restoration, but only around 60 feet of bank shoreline was restored. The remaining 40 feet will be completed in the spring of 2019 using the leftover supplies.

The project had youth participation through the Cub Scout group, as well as soldier support. Both groups learned about the impact of erosion and sediment runoff into waterways and subsequently, and the importance of erosion mitigation. The project's location is a highly trafficked portion of the post, which provided visibility to the project and ultimately sparked questions from the community. The community benefits from an improved recreational center, and local waterways are enhanced by reduced sediment runoff from the banks of Burba Lake.

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Fort Hood Directorate of Public Works | Texas

Natural Resource Management & Cultural/Historical Preservation Project: Maintaining Resilience through Environmental Education and Habitat Restoration

Project Dates: September 24th, October 26th, November 15th, and December 17th

Project Summary: The Fort Hood Directorate of Public Works Natural Resources Management Branch hosted four events to promote environmental education and habitat restoration on base. Volunteers from Dominion Energy, Killeen Independent School District, and Keep Copperas Cove Beautiful planted native species, and removed invasive species and trash.

A FRIENDS Youth Environmental Ambassadors leadership event was hosted on September 24th. Staff educated local youth about natural resources, wildlife, recycling programs, and responsible land stewardship. Following the environmental education portion of the event, volunteers planted 16 native plants/shrubs and five native trees. The next event took place on October 26th for NPLD/Make a Difference Day. Volunteers primarily from Dominion Energy were educated about the importance of using native plants and seeds to vegetate disturbed areas. The volunteers also removed invasive plant species, seeded a three acre area with native seeds to restore grassland area that was dominated by non-native introduced species, and conducted trail maintenance. For America Recycles Day on November 15th, staff educated local youth about Fort Hood's wildlife and environmental programs, and volunteers installed murals showcasing local natural resources with verbiage that explains the timeline of their environmental programs. On December 17th, the Natural Resources Management Branch held an outreach event involving local Audubon Society volunteers to celebrate the 100th anniversary of the Migratory Bird

Treaty Act. Participants counted over 5,000 individual birds, 104 different species, and observed rare species on the installation that had not been previously documented. Volunteers learned about Fort Hood's natural resources and sensitive habitat for declining avian species, and removed trash from the area.

A total of 42 volunteers attended the four events, and 24 hours of volunteer work/environmental education took place. Over 130,680 square feet of invasive vegetation were removed, one mile of trails was restored, 10



native trees and 16 native plants were installed. Two structures on the base were repaired, and 75 pounds of trash were removed from the premises.

The volunteers restored three acres of grassland habitat that will be utilized as a demonstration area for future visitors, and provide habitat for urban wildlife. Within this area lies a trail and a garden with interpretative signage that covers a variety of topics about varying habitat types and Monarch butterfly ecology. The trails were cleaned,

and invasive species growing in the walkways were removed. Trail maintenance was an important part of the project because it keeps the area safe for children to explore the path, and makes it more inviting for visitors to walk the path to observe urban wildlife, native grasses, forbs, and pollinator species.

These projects helped educate local partners and military families about natural and cultural resources. Educating youth is key to cultivating an early love, respect, and appreciation for the natural world that surrounds us. By doing this, future generations will have access to these resources well into the future. This project has helped Fort Hood to further establish their environmental education center, which will be a place for local families to learn about natural resources and environmental programs and engage in responsible land stewardship.

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Fort Leavenworth | Kansas

Natural Resource Management Project: Grassland Enhancement

Project Dates: October 9th, October 18th, and November 9th

Project Summary: Volunteers and staff at Fort Leavenworth conducted three work days to enhance the local grassland habitat. This improvements will provide valuable habitat for native pollinators and grassland birds.

On October 9th, Fort Leavenworth staff prepared for the Girl Scout workday by spraying areas with herbicide for native grass planting. This action killed the noxious weed Johnson Grass and started the process of preparing the seed bed to plant native warm season grasses and forbs. Forbs were planted from seeds and plugs. This enhanced the grasslands for native pollinators and for grassland birds.

The second work day occurred on October 18th. Girl scouts and post volunteers planted 217 native forb plugs into a 500 acre grassland. This planting further enhanced the grasslands for native pollinators and grassland birds. Short discussions enlightened the volunteers on the DoD's commitment to natural resources and the benefits of their actions on local wildlife. Before winter snows hit, staff broad cast grass and forb seed on four acres of dead noxious weeds on November 9th. Scheduling conflicts with the Girl Scout Troops pushed the events into October instead of the initial September date. Flooding and excessive rainfall also pushed the seed planting later into the fall.

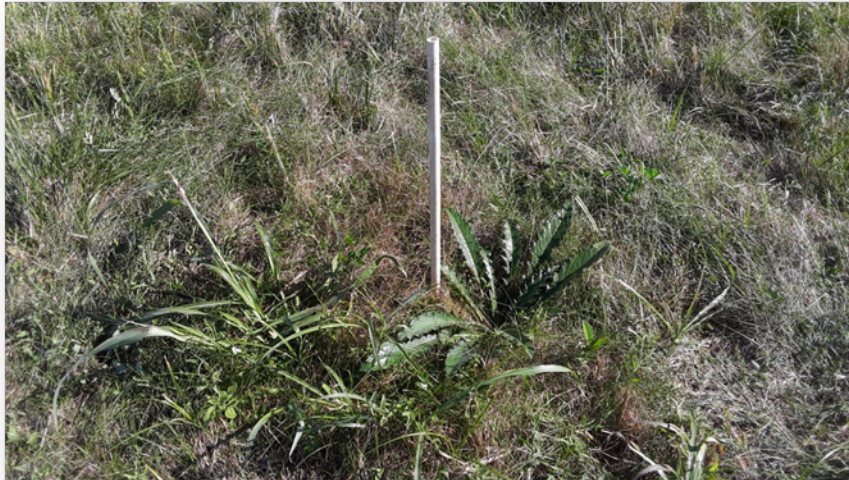
Over the course of the three work days, 22 volunteers completed nine hours of work and restored 174,500 square feet of grassland. Four acres of warm season grass and wildflowers were also planted from seed, and 217 native plants were planted. These plantings will benefit migratory pollinators, the Monarch Butterfly, and migratory grassland birds over thousands of miles. The community has a new appreciation for the importance of grassland habitat, which will promote volunteer stewardship in the years to come.

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Joint Base Lewis-McChord | Washington

Natural Resource Management Project: Habitat Restoration for Rare Birds and Bats at Hardhack Marsh

Project Dates: September 25th and September 26th



Project Summary:

Operation Wildlife interns, family members of Joint Base Lewis-McChord (JBLM) soldiers, and students from Evergreen State College, Tacoma Community College, University of Washington Tacoma, and Pacific Lutheran University helped to restore habitat for rare species of birds and bats at Hardhack Marsh in celebration of NPLD. The ecosystem-focused restoration approach provides long-term resilience. By investing in

both short-and long-term resources, they created habitat that will evolve smoothly toward a mature old-growth state without further intervention.

Purple martin and bat roost boxes were pre-cut and assembled from previously acquired lumber. Volunteers were be transported to Hardhack Marsh and split into teams to accomplish their tasks, led by working biologists. NPLD volunteers were paired with more experienced volunteers and active-duty service members to maximize productivity. Teams worked on a variety of restoration projects, including installation of the four new purple martin towers (six boxes per tower - 24 boxes total), girdling 8-10 mature Douglas fir trees to produce wildlife snags, installation of one new "rocket box" roosting tower for Townsend's big-eared bats, retrofitting an existing abandoned structure for additional bat roosting space, slashing trees and shrubs at the wetland edge to increase habitat connectivity, and clearing roads of fallen logs and debris. Participants also had the opportunity to take two-hour ecology tours with senior biologists. This introduced them to restoration projects and management activities on JBLM, as well as future volunteer opportunities.

Over the course of two days, 25 volunteers participated in nine hours of restoration work. An estimated 217,800 square feet of habitat was restored, and 600 square feet of invasive vegetation was removed. Volunteers also constructed 50 new structures to provide bird and bat habitat. This project had a large impact on the overall health of the ecosystem at Hardhack Marsh. Large amounts of invasive species were removed and housing for native endangered birds was updated. Invasive species outcompete native vegetation when it comes to water and nutrients in the soil; disrupting the ecosystem and limiting genetic diversity. New housing provided shelter for local species of concern in the absence of snags from old growth trees.

Hardhack Marsh represents a valuable three-way habitat interface (wetland, prairie, and oak/fir woodland). This project created both short-and long-term roosting space for multiple cavity-dependent bird and bat species, while also removing habitat barriers at the wetland edge to provide better access to foraging and shelter opportunities. Western purple martin and Townsend's big-eared bat are both Species of Concern in Washington and thus targeted for this project, but improved habitat will also benefit multiple other animal species and ecosystem function as a whole.

Benefits to the larger community include engagement in land stewardship and a sense of place-investment near their homes. By seeing JBLM as a refuge for native species and understanding all that JBLM is doing to care for the landscape, people not only feel more connected but will be more likely to engage in further efforts both on and off base. Additionally, this project helped preserve habitats and species for all to enjoy and learn from for decades to come. Lastly, the diverse participation group will increase overall community connections between individuals from a variety of backgrounds.

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Redstone Arsenal | Alabama

Natural Resource Management Project: Improving Resiliency of Migratory Birds at Redstone Arsenal's Path to Nature

Project Dates: March 27th, March 28th

Project Summary: Redstone Arsenal's (RSA) Path to Nature is an environmental outdoor education center, which began as a cooperative effort with the Huntsville City School System to provide wetland field trips. The DoD Legacy Program funded the design and construction of a Watchable Wildlife Site, which includes ecological and cultural concept signs along an interpretive trail with two wetland boardwalks. An outdoor classroom was later constructed, providing stewardship opportunities and is open to RSA personnel and families as well as local city and county schools for education functions.

Through the years, the Path to Nature has gained various additions and upgrades. In recent years, we have installed raised flowerbeds and planted pollinator friendly plants in the early successional grass areas. RSA prides itself on using the Path to Nature as a means to showcase various natural resources and wildlife habitats. Activities have been well received by the Redstone Arsenal community. The recent DoD Legacy award has further enhanced this perception.

While activities were initially supposed to occur in October 2018, the timeline was drastically altered due to delays by Resource Management in processing the awarded check, providing funds for expenditure, personal conflicts, and federal credit card procedural changes. Additional spending requirement changed procurement process and price estimates provided in the award application were different than actual. Finally, proposed installation of a rain barrel was not possible due to building's exterior structure incompatibility, so that also resulted in a budgetary difference. Despite all these set backs, in the end, RSA volunteers accomplished the following activities/projects:

- Existing landscape beds were weeded, shrubs were trimmed, dead vegetation/shrubs were pulled out, iris bulbs were split and redistributed, annual and perennial flowers were planted, and four new shrubs were planted in place of the existing nonnative ornamentals.
- The outdoor education pavilion was pressure washed, and wasp nests, mud dauber nests, and house sparrow nests were removed.
- A new maple tree was planted in place of dead oak.
- Raised pollinator flowerbeds were weeded, dead perennials were removed, existing soil was amended with fresh and planted replacement (and additional) perennial and annual flowers.
- Invasive Chinese privet and trifoliolate orange along the nature path were cleared. Utilized weed eater and blower to knock back poison ivy, greenbriar and various herbaceous plants that were encroaching on the path.
- A downed tree over the nature path was removed.
- Removed nearly 2000 lbs of trash from the storage closet at the Path to Nature (primarily (1800 lbs) dried quikrete and stucco material) to make room for organized supply storage.
- In honor of the 100th Anniversary of the Migratory Bird Act, volunteers also:
 - Installed hummingbird feeders, finch feeders, woodpecker feeders and generic songbird feeders on corners of building, in trees, shepherds hooks and posts.
 - Constructed new raised flowerbed with birdbath and associated bird feeding structures. Created structural diversity for native plants – those to attract hummingbirds as well as pollinators. Included host plants as well as flowers.
 - Maintained and repaired existing bird houses and predator guards
 - Installed bird houses and predator guards
 - Conducted prescribed bird of native warm season grass and pollinator habitat (planted with 2016 NPLD funds)

RSA had a very successful set of volunteer days, enhancing and improved the wildlife viewing area at the Path to Nature. Projects also contributed to the continued restoration of the land to benefit forage and cover for migratory birds, pollinators, and native terrestrial wildlife. The Path to Nature facility looks better than it has in years, largely due to the volunteers who contributed their time and energy at various work events. Those in the surrounding community, as well as the Huntsville City Fire Department, and local contractors, uses this facility and its grounds

for educational (primarily school age children) opportunities such as the annual Earth Day (this year's is scheduled for April 25th, 2019), city school events as well as field trips. Improvements and new installments will contribute to their learning experience.

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Schofield Barracks West Range | Hawaii Natural Resource Management Project: Ka'ala Cloud Forest Malama Day

Project Date: September 22nd

Project Summary: Veterans, retired DoD staff, teachers, and college students helped to address the threat of invasive species in the native Hawaiian cloud forest in celebration of NPLD. This year's NPLD project aligned with the 2018 Restoration and Resilience theme. The preservation and restoration of Ka'ala's native cloud forest, located on Schofield Barracks West Range, helps to mitigate any potential negative impact that Army training may have on endangered species. By controlling invasive weeds in the native cloud forest, volunteers and staff helped to protect existing habitat that is critical to the survival of endangered species that the Army is required to protect.

On September 22nd, volunteers were transported to the summit of Ka'ala in work vehicles, with stops along the way to appreciate views and to learn more about the Army's natural resource management of endangered species habitat. Volunteers then participated in a guided hike along the boardwalk through the cloud forest, to learn more about plant and animal species and the cloud forest's function as a critical watershed for the island's freshwater aquifers. Volunteers and Oahu Army Natural Resource Program staff spent a little over four hours clearing out invasive weed species such as blackberry, false pamakani, crocosmia, and juncus effusus within a restoration area of the Ka'ala cloud forest. The NPLD project helped to address the threat of invasive species in the native Hawaiian cloud forest. Invasive weed species out-compete native vegetation for water, sunlight, and nutrients, and grow far more aggressively. If left unchecked, the invasive weed species would replace the native vegetation, and degrade important habitat needs for native bird, snail and insect. In addition, if the invasive weeds are not controlled, their shallow root systems would lead to extreme erosion of topsoil, which would eventually degrade the watershed recharge ability of the forest. The weed control efforts on this NPLD project will prevent invasive weeds from taking over this very important native Hawaiian ecosystem.



A total of 10 volunteers helped to restore 4,241 square feet of habitat, and remove 2,000 square feet of invasive vegetation over the course of eight hours. The NPLD invasive weed control project helped to improve the high elevation cloud forest habitat of Ka'ala for the benefit of the multitude of native plant and animal species (many of which are endangered) that depend on this ecosystem and for the benefit of the thousands of Oahu residents that depend on this important forest for its watershed services and the recharging of drinking water aquifers. In addition, this invasive weed control project helped to ensure that the U.S. Army could continue to use the lower elevation areas of the Schofield Barracks West

Range land for training, but helping to meet the environmental requirements for endangered species management.

The volunteers that participated were actively engaged through the interpretive drive and hike, and the hands-on opportunity to control invasive weeds in one of Oahu's most pristine native forests. Access to this summit area is very difficult, so community members appreciated the opportunity to visit. In addition, community members enjoyed experiencing the old growth, native cloud forest and viewing the many plants and animals that live there. Many of the plants and animals that reside at the summit can only be viewed at this location and nowhere else in Hawaii or the world. By engaging community members in an invasive weed control project at the summit of Ka'ala, volunteers formed lasting connections to this special place and are encouraged to do more in their daily lives to preserve the natural environment.

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White Sands Missile Range | Arizona

Natural Resource Management Project: Pollinator Garden (Year 3)

Project Dates: September 20th, September 24th-27th, October 11th, October 18th, November 2nd, November 14th, November 28th, December 27th

Project Summary: From September to December 2018, White Sands Missile Range (WSMR) staff and volunteers tied to the Environmental Division, cared for the Pollinator Garden on the missile range to keep it healthy. This was the third year WSMR received funding to maintain the upkeep of the garden.

A series of events took place from September through December. In celebration of NPLD, volunteers participated in garden pruning, weeding, raking, and clean-up. This was necessary preparation for the 44 new plants received the following week. In late September, staff picked up plants from a local nursery, designed plant layout, planted new plants, and tested and repaired drip irrigation. After the plants were planted, staff regularly watered and maintained the garden. Garden supplies and new hummingbird feeders were purchased in preparation for spring/summer/fall when banding will occur in commemoration of the 100th Anniversary of the Migratory Bird Treaty Act. The final project took place on December 27th, when a garden bench was assembled and installed in the garden. Garden watering, maintenance, pollinator ID and photographs will be continued throughout the year.

Throughout the season, 20 volunteers restored 22,000 square feet of habitat and removed 100 square feet of invasive vegetation over the course of 38 hours. They also planted 44 native species, and removed 200 pounds of trash from the premises. Since this project began in the fall of 2015, WSMR has gone from zero plant/animal life in a barren dirt area to a thriving garden with over 50 butterfly species, hummingbirds, cottontails, deer, and robber flies. Bee life (solitary bees, bumble bees, and honey bees) is thriving, and in the future they hope to collect specimens for expert identification. Predators using the garden include toads, rattlesnakes, coyotes, and bobcats. WSMR has shared seeds with members of the Otero Native Plant Society. They have received many compliments about the garden from employees at the Missile Range. In the last year, 81 hummingbirds were banded in the garden. The garden area has gone from desolate to buzzing and thriving. The broader community benefits by having the garden as a place to visit and relax in, and as a source of pollinators and seeds for other gardens and natural sites nearby.

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United States Air/Army National Guard



Biak Training Center | Oregon Natural Resource Management Project: Pollinator Presentation, Bat House Building Workshop and Site Clean-Up

Project Date: September 28th

Project Summary: Youth Center Challenge Program cadets, local homeschoolers, a local airsoft club, and community members celebrated NPLD with a presentation on the importance of pollinators, a bat house building workshop, and cleanup of the Biak Training Center.

The day began with a presentation on bats, discussion of their ecology and threats that face them today. Following the presentation, volunteers participated in a bat house building workshop. Pairs worked together to construct bat houses that will be installed throughout the area. The homeschool group and the youth center challenge program spent several hours cleaning up trash on site.

This project served two purposes. The first was to provide educational outreach to volunteer participants on the importance of pollinator species with the emphasis on bats. The second was to complete acts of service, which were completed by building bat houses and cleaning up trash on public land. This project also aligned with the NPLD 2018 theme of Restoration & Resilience. Public lands are only resilient if we take care of them through building habitat for important species and cleaning up trash.

An estimated 73 volunteers attended the event for eight hours. Together they improved 172,240 square feet of land and removed 4,550 pounds of trash. Volunteers also constructed 16 new bat houses. This project improved the natural resources on site, and helped to provide habitat for vulnerable pollinator species.

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Camp Mabry | Texas

Natural Resource Management Project: Environmental Restoration and Educational Project

Project Dates: November 10th, November 17th, November 24th, December 8th

Project Summary: In line with the Texas Military Department's (TMD) Adjutant General's (TAG) stated goal to increase the TMD's involvement in Texas communities where it is present, the Environmental Branch of the TMD conducted an environmental restoration and educational awareness campaign starting on September 22nd 2018 and concluding on December 1st 2018. The campaign consisted of a native tree restoration day, construction of a Chimney Swift habitat (protected bird species by the Migratory Bird Treaty Act of 1918) education area, invasive species management and education area, and improved recreational fisheries and education area at Camp Mabry, Austin, TX.

The campaign successfully coordinated work between the TMD and local community organizations such as the Boy Scouts to conduct beautification, accessibility, and renovation work on Camp Mabry. The completed activities and projects on Camp Mabry support the grant objectives of improving and enhancing environmental restoration, supporting awareness and protection of the Chimney Swift bird, along with increasing the Camp's attractiveness to the surrounding community.

A total of 93 volunteers participated in the events and completed 17 hours of work. They restored 45,000 square feet of habitat and one mile of trails. Volunteers also planted 1,036 native trees, and 43 native plants. Eight new Chimney Swift boxes were built. By increasing environmental restoration through native tree planting, conservation by renovating existing facilities, and raising awareness about native trees and Chimney Swift through the educational project, the grant funded project had a positive impact on the natural and cultural resources of Camp Mabry. The native trees will require less water to grow, help purify the air, and support the local wildlife by providing shelter and food. The Chimney Swift towers will provide a habitat for the threatened Chimney Swift species. The renovation of trails and the surrounding pool area will provide useful for the surrounding community wishing to engage in hiking and fishing the premises of Camp Mabry, which will make Camp Mabry more accessible to the surrounding community.

The broader community will benefit from the projects by being able to use new amenities such as restored trails and picnic tables to engage in healthy and educational activities. The community will also be able to observe the threatened Chimney Swift birds in their natural habitat. The planting of native trees will benefit local wildlife by providing shelter and food, purifying air, and reducing stress on local water supplies. The removal of invasive species on the ground will also benefit the local wildlife as removing a parasitical entity will allow more room for native species of animals and trees to safely grow.

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Camp Mabry | Texas

Natural Resource Management Project: Installation Resiliency & Armistice Dedication Project

Project Dates: October 9th, November 13th, and December 21st

Project Summary: Volunteers and staff at Camp Mabry installed a rainwater harvesting system that supports the Restoration & Resilience NPLD 2018 theme by providing a sustainable and clean source of non-potable water to enhance their capabilities to remain operational and self-sustaining independently from the water grid during emergency situations.

On October 9th and November 13th, staff solicited and selected the vendor for the rainwater system. The system was then completed and installed on December 21st. Volunteers and staff installed a 70-foot gutter system with two down spouts on the roof of an existing structure near the community garden where the system will be utilized during non-emergency times. Due to inclement weather, the rainwater harvesting system has not been connected and piping has not been installed. Materials have been procured, and the Texas Military Department will be providing volunteers and equipment to trench a 180-foot long, 12-18 inch deep trench to connect piping from the gutter system to the rainwater harvesting system. A historical sign commemorating the 100th Anniversary of Armistice Day has been designed and installed near the rainwater harvesting system and community garden. An educational sign has also been installed near the rainwater harvesting system and community garden highlighting the benefits and uses of a rainwater harvesting system. Texas Military Department Leadership is coordinating a commemorative event for the spring time, during more amicable weather, to formally dedicate the rainwater harvesting system and community garden to Texas Military Veterans in honor of the 100th Anniversary of Armistice Day.

A total of seven volunteers worked for 40 hours to install the rainwater harvesting system. This project impacted an estimated 5,000 square feet of Camp Mabry, and five new structures were built. Approximately 38,760 gallons of rainwater will be collected by the system annually.

The rainwater harvesting system helps Camp Mabry to provide a sustainable source of non-potable water for mission requirements. The non-potable water will be utilized as a source of water to clean and restore solar panels on the installation to ensure maximum energy production. Showers and laundry facilities can be connected to the system during times of emergency to support mission requirements for the surrounding community and military service members. Additionally, the rainwater harvesting system reduces water consumption by diverting the water to non-potable uses, and will serve as a source of irrigation water for the community garden. The project also positively impacted the cultural resources of Camp Mabry by providing one historical sign dedicated to the memory of the Texans who fought during World War 1, and one educational sign detailing the operation of the rainwater harvesting system. By supporting the adjacent community garden, the system will also

help revitalize the area by providing incentive to people to spend time in this area of Camp Mabry.

Texas Military Department Military Service Members and Personnel were involved in the project. By providing an estimated 38,760 gallons of water yearly, the rainwater harvesting system will alleviate the strain on Austin Water resources. The rainwater harvesting system will also provide water for a



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community garden operated by Texas Military Department Service Members and Personnel. This system benefits the community by helping to fight food scarcity, and engaging residents in growing their own food.

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Camp Navajo | Arizona

Natural Resources Management Project: Native Plants Greenhouse and Garden Construction

Project Dates: October 20th, October 22nd, and November 12th

Project Summary: Base personnel and family members worked together to construct garden beds and a greenhouse at Camp Navajo. With this foundation, they hope to grow native plants and restore disturbed areas of the military base.

The work project occurred over the course of three days. On October 20th, volunteers constructed two raised garden beds. The beds measured 5' x 50'. Volunteers planted 200 native plants in the new beds after they were constructed. On October 22nd, they completed a third raised garden bed and planted more native plants. On November 12th, construction of the greenhouse took place.

A total of 24 volunteers helped to enhance roughly 2000 square feet of Camp Navajo over the course of 24 work hours. They planted a total of 200 native plants, and built four new structures. Camp Navajo will use the gardens and greenhouse to grow native plants and for educational purposes. This project was intended to setup the foundation for future large-scale restoration out plantings. They now have the ability to grow roughly 2,000 to 3,000 native plants per year. The new installations will also help to educate volunteers and coworkers on the importance of restoration plantings to create more resilient habitat for training and recreational purposes. The volunteers were exposed to the importance of native vegetation, and how growing native plants, collecting seed, and eventually transplanting native plants will benefit native vegetation, wildlife habitat, and create a more resilient base in the future.

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Camp Ripley | Minnesota

Natural Resource Management & Cultural/Historical Preservation Project: Camp Ripley Prairie Restoration (Phase II)/WWI Mural Dedication

Project Dates: September 22nd and October 18th

Project Summary: Volunteers from The University of Minnesota extension office, Minnesota Master Naturalists, The Minnesota Military Museum, and Camp Ripley training center completed phase two of a prairie restoration project, and unveiled a mural commemorating the 100th anniversary of Armistice Day.

Phase two of the prairie restoration project occurred on NPLD. Volunteers removed non-native invasive plant species on 13 acres near the Minnesota Military Museum. After invasive species were removed, 500 native prairie wildflowers and grasses were planted. Native prairie seed was also broadcast across 13 acres of the prairie. A second event occurred on October 18th in commemoration of the 100th anniversary of Armistice Day. A large mural funded by the Minnesota Military Museum was unveiled to the public, along with a screening of a PBS WWI documentary.

Over 145 volunteers attended both events and completed five work hours. They helped to restore roughly 566,280 square feet of prairie habitat, and planted around 500 native species of plants.

The state of Minnesota has lost more than 98% of its native tall grass prairies, and threats from land conversion and habitat degradation continue to increase across the landscape. One of the historical threats to prairies is the practice of gravel mining. Given that this area was historically a gravel pit that is being reclaimed, the project

provides restoration of a significantly impaired habitat for the migratory grassland bird species of Central Minnesota including the boblink, meadowlark and dickcissle.



Primary event partners included The University of Minnesota extension office, Minnesota Master Naturalists, The Minnesota Military Museum, and Camp Ripley training center. The University of Minnesota extension office advertised the event as one of 16 NPLD event sites across Minnesota for a total of 230 volunteers. All marketing materials and volunteer t-shirts were provided by the extension office. Camp Ripley leadership embraces a philosophy of a triple bottom line of mission, community, and environment. This event demonstrated the connectivity of the triple bottom

line and Camp Ripley's support for community engagement and natural resource protection and restoration.

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Fort Custer Training Center | Michigan Natural Resources Management: Freedom Hunt Veterans Appreciation

Project Dates: September 29th, September 30th, and October 27th

Project Summary: The Fort Custer Training Center hosted three separate NPLD events in 2018 to restore the site and show their appreciation for veterans.

The first events were held on the weekend of the 29th of September. The events coincided with another partner event on post: an all-age hunter's safety course. In total, this event garnered 15 volunteer hours with more than 40 people attending over three work days. During this event, Fort Custer worked with local Boy Scout troops planting trees in the cantonment area, maintaining trails to wildlife viewing platforms and constructing wildlife viewing platforms. Due in part to scheduling, the post held another NPLD event on October 27th where they completed construction of the wildlife viewing platforms.

A total of 45 volunteers attended the events and completed 15 hours of work. Together they helped to restore 196,000 square feet of habitat, remove 10,000 square feet of invasive vegetation, and 50 pounds of trash. The volunteers also restored one mile a trails, built 10 new structures, planted 15 native trees and 15,000 native plants.

The event at Fort Custer was able to enhance approximately 4.5 acres of land with a native pollinator mix as well as plant 15 native trees in the cantonment area. They spent time with the Boy Scout volunteers building wildlife viewing platforms that will aid disabled veterans' hunting activities. They were also able to observe Armistice Day by visiting the Fort Custer Historical Society's museum on the installation. A docent described the museum's content to the volunteers left them with a greater understanding of Armistice Day.

It should be noted that there were two changes to the original design of the NPLD events. The first change was a scheduling conflict with the volunteers tasked with constructing the viewing platforms. They graciously rescheduled their time to complete the construction on October 27th as detailed in the second paragraph. The second change occurred with the Fort Custer Historical Society which experienced a complete change in directorship. Consequently, they were unable to come together in time to support the Armistice Day related funding requirements. Fort Custer asked for a grant extension, which was supported, and they spent the remainder of the funding on native pollinator seed mix.

In April of 2019, the Environmental Office of the installation planted 6 acres of pollinator mix on Fort Custer lands in support of the extended NPLD obligations. NEEF funded 5 acres of the planting with additional funds coming from the Environmental Office to bring the total planting to 6 acres. The Environmental team will continue to monitor and evaluate the planting to ensure the health of the pollinator plot.

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Marseilles Training Area | Illinois Natural Resource Management Project: MTC Fishing Access Dock

Project Dates: January 22nd-25th, 2019

Project Summary: Due to weather challenges, the Marseilles Training Area had to delay NPLD volunteer activities to ensure volunteers from the full time staff were able to assist, as well as soldiers that were on site conducting training. This was necessary to ensure the safety of those participating in the project, which in the end was fully executed despite the setback.

Work was conducted on Dock #1 and Dock #2 for this project. Starting on 22 January, the maintenance team, along with Soldiers and volunteers from the Marseilles Training Center, began to fabricate floating dock structures for 1/2 Docks to be placed at 2 different ponds on-site. On 24 January, the volunteer team moved the first set of docks to their respected sites and began to assemble them into their desired size. On 25 January, the volunteers affixed the docks to each other and placed them in the first lake. Unfortunately, as mentioned in the first paragraph, due to weather constraints, as it was a particularly snowy winter, securing the first dock and fabricating the second dock had to wait until the spring 2019. Finally, on April 10, the dock was secured to the shoreline and the pond was treated to copper sulfate to reduce ground algae. Beginning in April and ending on May 28th, Dock #2 was completed. On May 29th, it was secured to the shoreline.

A total of 15 volunteers participated in the event and completed 6-7 work hours. They helped to restore 86,000 square feet of habitat, and removed 43,000 square feet of invasive vegetation. Finally, volunteers rebuilt two structures.

By tackling the listed activities, volunteers were able to address an issue that developed three years ago, when a culvert that fed surface waters into the first pond blew out due to a major rain event. Sediment managed to kill all the aquatic life and left the site as a bog for mosquitoes and invasive plant life to flourish. In order to re-establish a healthy ecosystem, the pond needed active management to include vegetation removal, aeration, and the restocking of fish. The second dock acts in concert with recreation and healthy fish populations (in order to maintain proper fish habitat, they need to be fished accordingly). Now that both docks are completed, monitoring and surveying can be completed. Dock construction, along with providing recreational opportunities for the public, increases active management.

This project was necessary as part of a multi-phase initiative to reintroduce aquatic species and allow for future recreational activities. It makes monitoring and surveillance more available as well as makes water-born operations and recreation more accessible.

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Silverbell Army Heliport | Arizona Natural Resource Management Project: National Public Lands Day

Project Dates: November 5th-November 8th

Project Summary: Volunteers from the Association of the United States Army, Choice Hotels, SkyTouch Technology, and community members completed several work projects to restore habitat for pollinators and wildlife. Silverbell Army Heliport sits in the middle of a major wildlife corridor, and wildlife is always seen in the buildings and on the installation. Their goal was to not only support the corridor by planting pollinator species and creating habitat, but also beautify the area.

Over the course of four days, volunteers participated in a variety of events. Soldiers, volunteers and employees attended an educational session on NPLD, NEEF, wildlife corridors and more. Following the presentation, several pollinator/wildlife gardens were created to enhance habitat at the heliport. Signage installation helped to educate people on specific plants and wildlife found in the gardens. Trellises were installed on surrounding buildings to add vines and feeders. Volunteers also helped to install drip line/irrigation systems to support the gardens and wildlife. The Arizona Branch of the Association of the United States Army provides lunch for all participants.

Fifty volunteers participated in the events and completed eight hours of work. They helped to restore 1,000 square feet of habitat, and 750 square feet of riparian habitat. In addition, they planted over 200 native plant species. Educational materials were distributed at the event to educate volunteers on local flora and fauna.

The project created not only the gardens, but areas where wildlife can hide or rest. They also created areas where soldiers can sit and learn about their surroundings and their impact on the area. A previously unattractive area was beautified, and will be enjoyed by the community. It gave residents pride in not only the gardens, but their building and the installation as a whole. This was not only a "project" but a learning tool as well. Several of the environmental staff worked on projects and educated volunteers at the same time.

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United States Navy



Joint Base Pearl Harbor-Hickam | Hawaii Natural Resource Management & Cultural/Historical Preservation: Loko Paaiau Restoration

Project Dates: September 29th

Project Summary: Volunteers from Alii Pauahi Hawaiian Civic Club, Pearl Harbor Hawaiian Civic Club, Oahu Council of Hawaiian Civic Clubs, Polynesian Voyaging Society, Kilohana school, Kamehameha Schools, Pearl Ridge mall staff, Aiea Community Association, Damien High School, Morale, Welfare and Recreation (MWR), McGrew Point Navy Housing, Naval Facilities Engineering Command (NAVFAC) Hawaii Leadership, Hickam Elementary school, and Naval and Air Force members and families restored Loko Paaiau fish pond in celebration of NPLD.

On September 29th, 2018 volunteers successfully installed a stepping stone trail that connects the entrance of the fishpond to the exterior fishpond wall. The trail allows safe access for children and elderly, especially during high tides when the area becomes muddy and slippery. Volunteers also helped to clear invasive vegetation from the fishpond, allowing birds and fish to return to the area for feeding and nesting. Migratory birds such as the Hawaiian stilt and coot have already returned to the fishpond. The Navy Natural Resources Program tagged several stilts and followed their migration around the island. The stilts use the available fishpond resources including fish and native plants to feed as they travel around the island. In addition to clearing invasive species, native plants were also planted to maximize available food and habitat for the birds.



Roughly 115 volunteers participated in the event and completed six work hours. They helped to restore 500 square feet of habitat, and removed 250 square feet of invasive vegetation. Volunteers also restored one mile of trails, removed two pounds of trash, and planted five native trees and 25 native plants. Educational materials about NPLD 2018 were distributed at the event.

The Loko Paaiau restoration project had a positive impact on both cultural and natural resources. Loko Paaiau is an ancient Hawaiian fishpond that dates over 400 years old. It is one of the three remaining fishponds around Pearl Harbor that has survived. Over 22 fishponds once existed at Pearl

Harbor, but development and neglect have reduced the number of fishponds to three. Pearl Harbor, traditionally

known as Puuloa, was once a main settlement on Oahu, and residence to many Alii, or chiefs. Many of the native Hawaiians who participate in the Loko Paaiau restoration are descendants of royalty who once resided in Puuloa. The NPLD project at Loko Paaiau is part of the restoration of this fishpond. It is imperative that the Navy and community maintains and restores this fishpond before it deteriorates. The goal of this project is to restore the fishpond to its original configuration and harvest fish. It will also be used as an educational center for local and base schools to learn about traditional Hawaiian aquaculture practices.

This project involves monthly maintenance events bringing both DoD and local community groups together. An ahu, or alter, was recently constructed along the outer edge of the wall. Access to this ahu is now available to native Hawaiians who request to conduct religious practices at this site. Bringing together Navy and community groups strengthens relationships between the Navy and native Hawaiian community. This relationship helps communication and ensures that future consultations regarding NAGPRA and Section 106 projects are conducted in a timely manner. The Loko Paaiau restoration project evolved from fishpond restoration to community/environment restoration. The Navy is part of this community and supports this effort to protect cultural and natural resources.

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Joint Base Pearl Harbor-Hickam NFEC | Hawaii Natural Resource Management Project: Malama Āhua Wetlands at JBPHH

Project Dates: September 21st, September 22nd, October 19th, October 20th, November 10th, and December 14th

Project Summary: Multiple volunteer projects from September to December restored 3,000 square feet of ecologically significant wetland habitat at Āhua Wetlands Reef on Joint Base Pearl Harbor-Hickam (JBPHH). The award funded native plants, supplies to remove trash, clear invasive plants and out-plant beneficial native Hawaiian flora at the wetlands. The wetlands and adjacent expanse of mud and reef flat habitat is fairly degraded by monotypic stands of invasive red mangrove (*Rhizophora mangle*) and pickleweed (*Batis maritima*). The wetlands support endangered Hawaiian water birds and other migratory birds, and the out-planted flora support pollinator species.



The planning phase for the events included the design/site selection, project promotion, and site preparation (cut/clear large vegetation). The main NPLD event day began with a Hawaiian 'oli (chant) and volunteers were given background information on the site's importance and their efforts for the day. There was a variety of work for all ages and degrees of difficulty for the volunteers to engage in. The foremost concern was safety, to have fun and work as a team. Safety equipment and tools were provided. Biologists taught wetland ecology and identified flora/fauna species. Participants were encouraged to clear invasive plants, help pick up trash and out-plant native plants. Water, donated snacks and a shade canopy were provided. Environmental managers answered questions and helped volunteers. Follow-up project maintenance included monitoring, maintenance and repair.

A total of 151 volunteers participated in the events from September to December, and completed 19 hours of work. They helped to restore 43,560 square feet of land, 1,500 square feet of riparian habitat, removed 2,000 square feet of invasive vegetation, and 500 pounds of trash. Volunteers also helped to plant 12 native trees and 1,500 native plants.

The out-planted wetlands filter storm water sediments/nutrients, increase native flora biodiversity, improve roosting, foraging and breeding habitat for endangered native Hawaiian water birds, reduce JBPHH bird airstrike hazard by diverting water birds away for runways to wetland habitat, and benefit service members and the public with hiking trail access to see native plants and endangered water birds up close.

The projects support a diverse group of community members to gather for a shared goal to take care of the 'āina (land). Volunteers had the opportunity to see themselves reflected through the in-service efforts and through the eyes of other volunteers. Once again, they showed how the power of hundreds of collective hands can transform a landscape overrun with invasive plants into a native flora cultural resource. The collective experience of the volunteers was expressed with sweat, smiles and laughter. Volunteers enjoyed "quality of life" benefits of fresh air, new friendships, new knowledge and the heart opening qualities that outdoor experiences support. The knowledge gained at this event will help guide future restoration projects. Volunteers were taught to plant native vegetation and identify native plant and native water birds. The Hawaiian ceremonial practice conducted before the start of each project emphasized the cultural and spiritual aspect of the planting event, and provided greater meaning to the project. "Ka wa ma mua, Ka wa ma hope" (The future is in the past). To move forward we need to look back to the past. It is important to restore native Hawaiian ecology in order to be able to preserve native Hawaiian habitats before invasive species eradicate the unique and fragile ecosystems of Hawaii, and at the

same time protect the military mission. As caretakers of the planet, we need to restore, preserve, and protect the 'āina we inhabit.

The positive impact cannot be overstated knowing JBPHH is located on historic Hawaiian Crown lands that the Hawaiian community has interest in. Interaction between the Navy and the local community volunteers during this wetlands restoration project created a positive working relationship that benefits both the environment and the Hawaiian community. The events helped to solidify very beneficial partnerships between the Navy and the local community. The corps volunteers are interested in volunteering at future natural resources projects. Community participation provided hands-on experience with an important Navy environmental stewardship/educational program.

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Naval Weapons Station Seal Beach | California Natural Resource Management Project: NPLD 2018

Project Dates: September 29th and October 4th

Project Summary: Naval Weapons Station and Seal Beach National Wildlife Refuge hosted volunteer events on 29 September and 4 October 2018 with the objective of restoring native vegetation to an upland area adjacent to salt marsh habitat. The



property at Seal Beach is unique in that the Department of the Navy, through the Naval Weapons Station Seal Beach, the Department of the Interior, through the U.S. Fish and Wildlife Service's Seal Beach National Wildlife Refuge, and the Friends of the Seal Beach National Wildlife Refuge are in a formal partnership aimed at promoting the conservation of natural resources on the public lands encompassed by the Naval Weapons Station Seal Beach.

This year's project included removal of invasive plants, preparing the land for restoration, and planting native plants. These upland restoration areas provide habitat and shelter for numerous species of migratory and resident bird species, including the federally-endangered light-footed Ridgway's rail and California state-endangered Belding's Savannah Sparrow. These areas also provide an important buffer between wetland habitat and agricultural lands.

The two work days brought a total of 160 volunteers and 72 work hours. They helped to restore 65,340 square feet of land, and planted 825 native plants. An additional work day was added on October 4th to accommodate volunteers from Los Angeles River Conservation Corps. Through the transformation from weedy, non-native habitat to native coastal sage scrub, the project provided additional habitat that is imperiled in the region. Threats of sea level rise and subsidence at Naval Weapons Station (NAVWPNSTA) Seal Beach threaten transition habitat for species that rely on the intertidal interface and its upland edge. This restoration provides additional area for the species that depend on this habitat. The event also provided valuable community engagement, with volunteers from Sunburst Youth Academy, Los Angeles River Conservation Corps, Boeing, Toyota, Trail Life and McGaugh Elementary School. The volunteers not only restored Seal Beach, but learned of the importance of habitat restoration and invasive vegetation removal.

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Naval Air Station Oceana | Virginia Natural Resource Management Project: Dam Neck Annex Dune Restoration

Project Dates: October 24th-October 28th

Project Summary: Active duty, retired, reservist, and civilian military, their spouses, community groups (Girl Scouts, Boy Scouts, Hewlett Packard, Virginia Aquarium & Marine Science Center, National Aquarium, college students, etc.) and members of the general public participated in a four-day dune restoration and stabilization project along the eastern coastline on Naval Air Station Oceana (NASO) Dam Neck Annex (DNA).



Navy personnel and community volunteers were recruited from September through October 27, 2018. Volunteer registration was organized through the National Aquarium and acquiring base access (when needed) was arranged by the Navy. The award funded 2,856 of the 37,856 (shrubs and grasses planted along the dune. Species included a variety of native shrubs and grasses: Easter Baccharis (*Baccharis halmifolia*), seaside goldenrod (*Solidago sempervirens*), wax myrtle (*Morella cerifera*), march elder (*Iva frutescens*), salt meadow hay (*Spartina patens*), rose mallow (*Hibiscus moscheutos*), and bitter panicrass (*Panicum amarum*). Volunteer planting days were held October 25 through October 28, 2018. Dune fencing and habitat restoration signs were also installed along the area of shoreline that were planted. These activities aligned with the planting October 25th through October 28th.

The National Aquarium (located in Baltimore, MD) led all aspects of the planting event from volunteer recruitment to carrying out daily tasks to complete the four-day event. With them, field trained volunteers or Aquarium Conservation Team (ACT!) members led episodic volunteers in planting activities. Navy personnel had a strong presence providing critical support to the event through acquiring base access for volunteers to use of vehicles capable of driving in sand. Navy vehicles

enabled staff to easily stage the planting site with plants, tools, and volunteer comfort items (first aid, water and snacks). Navy personnel also contributed to dune fence installation and grass planting. Community organizations and individuals were also present contributing significant assistance to the restoration. Staff from the VA Aquarium & Marine Science Center and Northrup Grumman volunteered their time planting native vegetation. Community volunteers were also recruited through public outlets including Volunteer Hampton Roads and through the Master Naturalists website. The volunteers ranged in age from 8 to senior citizens. Prior to the event, all registered volunteers received a briefing packet covering all aspects of the event from project background, the importance of dune habitat, and logistical information. During the event, volunteers received an introduction to the site and overall project description as well as safety briefing by National Aquarium staff. Once ready, each volunteer was then paired with an ACT! member, provided a planting demonstration, and led into the field.

A total of 105 volunteers attended the events and completed 24 hours of work. They helped to restore 291,416 square feet of land, build one new structure, remove 20 pounds of trash, and plant 37,856 native plants. As part of the project, each registered volunteer received a briefing packet that providing information on the importance of dune habitat and project background. They also received face to face educational briefings at the event.

This project supported the implementation of shoreline and dune stabilization and conservation/habitat restoration along the coastal region of NASO DNA. Impacts from storms and military training have resulted in dune

destabilization/erosion and wildlife habitat loss and/or degradation. This project helped to restore the dunes at NASO DNA by planting a native variety of vegetation on the installation's identified dune restoration sites. As the vegetation grows: the network of underground root systems help to bind and stabilize the sand, helping to minimize impacts to the dunes from storm and training erosion; and the above surface portions of the plants collect additional sand, keeping the sand from blowing away and thus help to "grow" the dune. Planting a variety of native plants helps to create a more natural dune habitat, increases biodiversity at the site and supports pollinator and endangered species protection efforts. This project also positively impacted the greater community by teaching people about the importance of dunes, how to take care of the dunes, and giving the community a vested interest in the Natural Resources on their DoD lands.

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Naval Support Activity Hampton Roads | Virginia

Natural Resource Management Project: Shoreline Buffer Rehabilitation and Pollinator Garden Revitalization

Project Dates: September 26th, September 27th, November 29th, and December 18th

Project Summary: On September 26th-27th the pollinator garden at Hampton Roads was revitalized by volunteers from the Regional Natural Resources program office. The Department of Defense has an initiative to support pollinator habitat and increase pollinator survival through incorporating pollinator gardens in urban settings. This project builds on one that has been ongoing for several years, and continues to provide a beautiful setting for residents and guests of the base to enjoy nature.

Shoreline buffer rehabilitation occurred on November 29th. Volunteers set out to clean up and re-stabilize a shoreline that has eroded over time. The project began with site preparation/clean up and educational training for volunteers. Gear for the cleanup and planting was provided. Volunteers helped to clean up trash and debris to reduce litter and ensure that the newly planted plants will prosper. After the cleanup, 250 native wetland plants

were planted along the shoreline area. Goose defense webbing was placed over the area to prevent geese from disturbing the plants.



The Elizabeth River is one of the most severely impaired rivers in the country. One of the goals of the Elizabeth River Project Team is to reach out to the community, local business, and federal facilities to help restore the health of the river. This project will improve the general water quality in the Elizabeth River, provide habitat for pollinator species and enhance partnerships with local organizations.

A total of 45 volunteers attended the events and completed six hours of work. Together they restored 800 square feet of habitat, 600 square feet of riparian habitat, and

removed 100 pounds of trash. Volunteers also planted 17 native trees and 250 native plants.

The projects impacted the natural resources of the DoD sites through revitalizing important pollinator habitat for species that are on the decline as well as providing a place for community engagement and recreation for guests and military stewards of the land. At Lafayette River Annex, the project helped to restore areas of shoreline that continue to erode and wash away during storm events. Following these efforts, the shoreline will be better stabilized to resist erosion in the future.

Volunteers that participated in this event were from the Regional Natural Resources program office and included the installations 1st Lieutenant's division who were instrumental in helping these projects move forward and get completed as required. The community outside of the installation benefits from this project through enhancement of the Elizabeth River.

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