



Department of Defense Legacy Resource Management Program

PROJECT 16-086

National Public Lands Day 2016

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**DEPARTMENT OF DEFENSE
LEGACY RESOURCE MANAGEMENT PROGRAM (16-086)**

National Public Lands Day 2016

On September 24, 2016, the National Environmental Education Foundation (NEEF) celebrated the largest National Public Lands Day (NPLD) to date with 2,949 sites across the nation. Events took place in all 50 states, the District of Columbia, and US territories. As part of the 23rd NPLD, 236,000 volunteers visited public lands sites across the nation to contribute an estimated \$22 million in improvement projects. Their combined efforts resulted in the removal of 75 tons of trash; the collection and removal of 30,000 pounds of invasive vegetation; the building and maintaining of 1,200 miles of trails and the planting of 85,000 trees, shrubs and additional native plants. Many NPLD events included an environmental education component to teach volunteers about land stewardship. In 2016, NPLD continued to focus on promoting the health benefits of outdoor recreation. Sites were encouraged to integrate recreational activities for adults and youth into their events, such as hiking, birding, biking and fishing.

The Department of Defense (DoD) provides funds to the National Environmental Education Foundation (NEEF) for NPLD projects on military lands open to the public for recreation. Since 1999, NPLD has received \$2,540,367.68 through the Legacy Resource Management Program (Legacy). In 2016, a total of \$133781.92 was distributed to installations for materials and supplies. The Legacy funds were used to enhance DoD lands through various cultural and natural resource improvement projects. Participating in NPLD provides the 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. These projects improve habitat and biodiversity for common and rare species alike, often reducing the need for intense management of these species.

NEEF received 37 applications for Legacy awards of up to \$6,500 each for 2016 NPLD projects. In September, NEEF notified 26 sites that they were selected to receive a Legacy Resource Management Program 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 five Air Force, nine Army, seven Army/Air National Guard, two Marine Corps and three Navy sites.

Approximately 1,233 volunteers took part in various natural and cultural resource improvement activities that were offered at the 26 funded Legacy installations. Many Legacy sites organized work projects to improve habitat for pollinator species including bees, birds, bats and insects. Other natural resource activities performed by volunteers included removal of invasive plants, reduction of environmental degradation caused by human use, enhancement of dunes, trail maintenance and planting of native trees and wildflowers. The cultural resource activities included preserving burial sites, making structures wheelchair-accessible, and holding educational programming around the history and culture of installations.

In addition to receiving funds, participating DoD installations received 2016 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, U.S. Fish and Wildlife Service and USDA 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 2016

<u>United States Air Force</u>	<u>Amount Awarded</u>
Avon Park Air Force Range Colorado	\$498.11
Bellows Air Force Station Hawaii	\$6,500.00
Dover Air Force Base Delaware	\$4,375.00
Eglin Air Force Base Florida	\$6,476.00
Malmstrom Air Force Base Montana	\$6,500.00
<u>United States Army</u>	
Fort Bragg, US Army North Carolina	\$3,325.00
Fort Leavenworth Kansas	\$1,000.00
Fort Stewart Georgia	\$1,546.00
Joint Readiness Training Center & Fort Polk Louisiana	\$5,203.10
Joint Base Lewis McChord Washington	\$6,500.00
Kaala/Schofield Barracks West Range Hawaii	\$5,759.47
Redstone Arsenal Alabama	\$5,755.88
Umatilla Chemical Depot Virginia	\$6,500.00
White Sands Missile Range New Mexico	\$2,560.00
<u>United States Army/Air National Guard</u>	
Biak Training Center Oregon	\$6,500.00
Camp Mabry Texas	\$5,885.00
Camp Murray Mississippi	\$6,250.00
Camp Shelby Joint Forces Training Site Mississippi	\$6,227.00
Diamond Head State Monument Hawaii	\$6,500.00
Fort Custer Training Center Mississippi	\$6,500.00
Fort McClellan Army National Guard Training Center South Carolina	\$2,564.00
<u>United State Marine Corps</u>	
Barry M. Goldwater Range Arizona	\$6,000.00

US Marine Corps Air Ground Combat Center California	\$4,785.86
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United States Navy

Joint Expeditionary Base Little Creek-Fort Story Virginia	\$3591.50
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Naval Air Station Oceana Dam Neck Annex Virginia	\$6,500.00
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Naval Station Norfolk Virginia	\$5,980.00
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United States Air Force



Avon Park Air Force Range | Colorado Natural Resource Project: Volunteer Village Native Planting

Pollinator Project

Project Date: September 24, 2016

Project Summary: FINAL REPORT NOT YET SUBMITTED

Contact: Brendan Myers, Invasive Species Coordinator | 863-452-4185 | brendan.myers.ctr@us.af.mil

Bellows Air Force Station | Hawaii Cultural and Natural Resource Project: Malama Bellows AFS Burial Vault with Native Hawaiian Plants

Pollinator Project

Project Date: August 20 and September 24, 2016

Project Summary: In honor of this year's NPLD, Bellows Air Force Station rehabilitated the base's Native Hawaiian burial vault. The burial vault is the focal point of cultural activities on BAFS. However, prior to this project, invasive shrubs and trees had overtaken it. Over the course of several workdays, members of the native Hawaiian community and a large group of volunteers removed invasive plants, spread mulch, out-planted native flora, and installed irrigation around the burial vault. They also lined the site's boundary with cut logs and installed an irrigation system. Ultimately, project participants succeeded in adding 4,206 plants and removing 300 pounds of trash from the burial vault.



Additional workdays were spent cutting trees, removing debris, propagating native plants, and assembling the irrigation system.

Apart from the habitat restoration project, educational and cultural components were also incorporated into NPLD activities. Volunteers learned about Hawaiian customs and the respectful conduct required when working on the vault. Interns updated the Integrated Cultural Resources Management Plan while Air Force environmental professionals provided critical feedback and mentoring.

"Once again, we 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. The NEEF funded projects support a diverse group of community members to gather for a shared goal to take care of the aina (land). The sense of community and shared

personal experiences reinforces what being human is all about. As volunteers, each one of us has the opportunity to see ourselves reflected through the in-service efforts and through the eyes of other volunteers. The felt sense for most participants during the service project was one of joy, gratitude, satisfaction and community.” – Project Manager, Craig Gorsuch

Contact: Craig Gorsuch, Environmental Program Manager | 808-927-1867 | craig.gorsuch.ctr@us.af.mil

Dover Air Force Base | Delaware

Natural Resource Project: Team Dover is Pollinator Friendly

Pollinator Project

Project Date: Sept. 23, Sept. 24, Oct. 1, Oct. 14, Oct. 15, Oct. 31, Nov. 1, Nov. 15, 2016

Project Summary: Eight archeological field surveys have been conducted on Dover Air Force Base over the course of the past 10 years. These surveys determined the presence of cultural remains of Native American people who inhabited the Delmarva Peninsula between 5000 BC and 1960 AD.

Unfortunately, some of Dover Air Force Base’s landscape features were lost or damaged during these surveys. To mitigate those losses, Dover AFB staff designed an NPLD project that would add more than 100 pollinator friendly trees, shrubs, and wild flowers within a strategically located pollinator garden. This garden will support the nation-wide effort to increase the dwindling Monarch Butterfly population and has the added benefit of attracting a host of other pollinator species. Dover AFB personnel enlisted twenty volunteers from Welch Elementary School and several local Boy Scout troops to assist with the project.



During the project preparation stage, project leaders purchased plants from the local garden nursery, dug 40 compost holes and placed trees and bushes in pre-determined locations.

After preparations were complete, volunteers tilled compost into the topsoil and planted 5 Crepe Myrtle trees, 50 potted plants and 250 bulbs in the main garden.

Strategic landscaping has immeasurable positive effects. Gardens such as this one can reduce a building’s energy requirements during all four seasons by blocking out the sun in the summer, generating warming solar radiation in winter, deflecting cold winds in the winter and channeling breezes for cooling in spring, summer and fall. The energy savings associated with proper landscaping is especially important for Dover AFB since new regulations stipulate that 25% of energy consumption in Federal buildings must be derived from renewable resources by 2025.

Since its inception, the new pollinator garden has attracted bees, humming birds and butterflies. Future additions to the pollinator garden will include tables, benches and a gazebo. It is located on the residential side of the base and it will provide a nice beautifully designed garden to enjoy for years to come.

Contact: Thomas Creaven, Natural Resource Manager | 302-677-3709 | Thomas.Creaven@us.af.mil

Eglin Air Force Base | Florida

Natural Resource Project: Timberlake Mountain Bike Trail & Habitat Diversity Improvements

Pollinator Project

Project Date: September 24, October 29, December 1-2, and December 6, 2016

Project Summary: In honor of NPLD, staff and volunteers at Eglin Air Force Base completed three projects:

- 1) Timberlake Mountain Bike Recreation Site
 - Trimming of low-hanging vegetation along trails and upgraded trail markings
 - Clean-up of trash and tire dumpsite
- 2) Bat House Construction & Installation
 - Assembly of 12 prefabricated bat house kits by fifth graders and high school students
 - Installation of pole-mounted bat boxes at three Eglin AFB recreational ponds
- 3) Moore Creek Native Plant Restoration
 - Installation of 895 native-flowering plants and trees at former stream crossing and land-use restoration area
 - Mulching and seeding of a 1-acre site

The Timberlake Mountain Bike Recreation Area Project aimed to make the Timberlake Trail safer and more accessible for users, particularly for novice cyclists. Volunteers conducted trail-marking maintenance along multiple serpentine-trail routes. The disposal of 600 pounds of trash and debris, as well as of 32 automobile and truck tires improved the safety and aesthetics of the trails.

The Bat House Project is a continuation of a previous NPLD project to enhance bat habitats on base while also providing education and engagement opportunities for younger students. Fifth grade and high school students learned about the benefits of bat ecology (including mosquito consumption) while working on the project. Moving forward, Eglin AFB Natural Resources personnel intend to monitor occupancy of the bat houses and document results.

Moore Creek restoration efforts significantly improved the wetlands of this former road-stream crossing by stabilizing the exposed sandy soils with native vegetation. Additional improvement to the upland area (which includes a rehabilitated, land-use control area) were achieved by installing longleaf pine and other native plants. During Moore Creek restoration, active-duty Air Force volunteers learned to recognize native plants in a longleaf pine forest setting.

NPLD is the single most important community activity at Eglin Air Force Base, during which project managers are able to directly engage the public. Another benefit of NPLD projects is that the public becomes aware of "their own backyard," including its varied landscape of forests, streams, and biota. Eglin personnel were pleased to report that after NPLD events, many volunteers inquired about how they could achieve careers in the field of natural resource preservation.

Contact: William Pizzolato, Soil Conservation Technician | 850-883-1190 | pizzolat@eglin.af.mil

Malmstrom Air Force Base | Montana

Cultural and Natural Resource Project: Harvestable Garden with Native Plants of Tribal Significance

Pollinator Project

Project Date: September 24, 2016

Project Summary: Various volunteer-based projects took place on Malmstrom Air Force Base during this year's NPLD. The ultimate goal of these endeavors was to overhaul and restore one of the base's underutilized assets: a neglected garden at the pond entrance. Noxious weeds had infested this area, deterring native wildlife from establishing homes there.



NPLD project activities involved planting of native trees and weeding, mulching and adding rock rings around 20 existing trees. Staff and volunteers also beautified the entire pond area by trimming the vegetation and removing trash and debris. Participants prepped a 7,400 ft. garden bed by removing non-native grass turf and old topsoil. The final stage of garden prep entailed removal of 500 square feet of rock mulch, matting of weed barriers, and addition of 1,063 native plants. Volunteers reused rock mulch to enhance the aesthetics of the garden's rock-lined border while others cleaned the garden area, and collected trash and debris. USFS experts led volunteer activities while also giving instruction on native plants of tribal significance.

Later events engaged volunteers in activities spanning from removal of grass around existing trees, trimming of 2,065ft of sidewalk borders, pulling of weeds and sweeping wind-blown debris and dirt. Volunteers moved 1,600 plants into winter storage, which will be re-planted in the spring.

By planting native species of Montana, base personnel reduced the need for herbicide applications in the area and reversed the encroachment of invasive weeds into both the garden bed, and its 2,065 ft. perimeter. The native trees and plants will contribute to restoring a natural ecosystem and increasing biodiversity. Over the coming years, these native plants and the herbicide-free environment will attract more pollinators – both insects and birds. This native plant garden will not only provide habitat and food for native animals and pollinators, but will also work to enhance the aesthetic quality of the bases recreational area for base residents and visitors.



Contact: Dr. Elin Pierce, Natural Resources Manager | 406-451-1803 | elin.pierce@us.af.mil

United States Army



Fort Bragg, Army Reserve Sustainability Programs | North Carolina Natural Resource Project: U.S. Army Reserve Command Marshall Hall Pollinator Gardens

Pollinator Project

Project Date: September 28 and October 5-7, 2016

Project Summary: Volunteers from the Army Reserve Installation Management Directorate (ARIMD) and the grounds maintenance team at U.S. Army Reserve Command at Fort Bragg removed invasive plants and installed pollinator gardens in three raised beds in a public area at Marshall Hall (home of U.S. Army Forces Command and U.S. Army Reserve Command). They placed nearly 200 drought tolerant and low maintenance plants in varieties including Achillea, Baptisia, Butterfly bush, Coneflower, Coral honeysuckle, Coreopsis, Delosperma, Dianthus, and many more.



The pollinator gardens have significantly enhanced the natural resources at Marshall Hall campus and have contributed to pollinator conservation efforts across Fort Bragg installation. ARIMD will continue to work with Fort Bragg Environmental Management to preserve pollinator habitats. Personnel have already noticed an increase in pollinators and birds since the completion of the gardens.

The project has also enhanced the aesthetics of the area as the gardens replaced various neglected areas of landscaping.

Project Contact, Jonelle Kimbrough commented, *“the Army Reserve Installation Management Directorate is very proud to be the first Army Reserve agency to receive a Department of Defense Legacy Grant and complete a National Public Lands Day project. ARIMD hopes to continue its relationship with the National Environmental Education Foundation and complete National Public Lands Day projects at other Army Reserve sites throughout the country in the coming years.”*

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Fort Bragg, US Army | North Carolina

Natural Resource Project: Pollinator Islands at US Army Forces Command and US Army Reserve Command, Fort Bragg

Pollinator Project

Project Date: September 30, October 3 and 5, 2016



Project Summary: A team of seven volunteers spent approximately 35 hours completing this year's NPLD Natural Resource Project at Fort Bragg. Project activities resulted in the planting of 10 trees and 254 plants at the headquarters of FORSCOM and US Army Reserve Command. This facility houses the headquarters command structure for numerous Generals and upper level staff of Fort Bragg. This high profile building will benefit from beautification efforts and the addition of a pollinator garden. The inclusion of trees with flowering trees as well as the planting of perennials will not only attract pollinators come spring, but will also add color to an otherwise stark landscape. Additionally, these plants will contribute to the preservation of the honeybee population, recently listed on the endangered

species list. This year's NPLD project is just one example of Fort Bragg's continued commitment to supporting pollinators.

In addition to the beautification and planting projects, volunteers also removed 10 pounds lespedeza and 100 pounds of asphalt from the planting area.

Although fewer community volunteers were able to attend than anticipated because of two unavoidable weather delays, those that attended benefitted from educational briefings on the benefits of chosen plants for the soil, water and temperature conditions on Fort Bragg and what would be necessary to ensure their continued viability. Two of the NPLD volunteers were on the maintenance facility staff for FORSCOM/USARC and will be responsible for maintaining the grounds at the facility.

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Fort Leavenworth | Kansas

Cultural and Natural Resource Project: Bush Honeysuckle Removal and Replacement with Pollinator Friendly Shrubs

Pollinator Project

Project Date: September 24 - November 1, 2016

Project Summary: NPLD Project activities spanned the course of four separate workdays and involved removal of bush honeysuckle and planting of pollinator shrubs. On November 1st, nine volunteers from Girl Scout Service Unit 661 volunteered and contributed to the removal of 240 pounds



of invasive vegetation and the addition of 600 flowering shrubs at Fort Leavenworth.

This project will benefit local nesting birds as well as local pollinators. It will also improve the aesthetics of the jogging path that follows the stream by providing beautiful, flowering vegetation. The work also complies with E.O. 13112 and the Presidential Memorandum issued by President Obama on June 20, 2014.

Volunteers learned about native shrubs and the importance of structural heterogeneity and of varying flowering dates. They also learned about plant diversity and its importance to plants, pollinators, and birds. Discussion centered on the impact of the project and how it will ultimately benefit local birds and pollinators.

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Fort Stewart | Georgia

Culture Resource Project: Pleasant Grove Cemetery Clean-Up and Restoration Project

Project Date: September 24, 2016

Project Summary: On September 24th, The Directorate of Public Works (DPW) at Fort Stewart collaborated with local members of the surrounding communities to clean and stabilize headstones at the Pleasant Grove Cemetery, a National Register of Historic Places eligible Traditional Cultural Property (one of four in the entire state of Georgia). The Chairman of the Liberty County Board of Commissioners joined Fort Stewart staff and nine other members of the community to clean and stabilize all 36 of the headstones.

DPW offered attendees an educational opportunity to learn about the former community of Taylor's Creek and its associated African American Methodist Episcopal Church, Pleasant Grove. Publicity for the event included direct contact with the Fort Stewart Cemetery Council, invitation to the Pleasant Grove Church, and Marne Blast (weekly email distribution to Installation units and families).

The event was an important public outreach opportunity that has enhanced the community's engagement with the cemeteries. As an active training facility, access to the cemeteries are somewhat limited and this event helps by providing an opportunity for guided visitation of these historic reminders of the installation's past.

"The NPLD experience has been a very positive one for the community members. Of the dozens of communities that were displaced during WWII for the formation of Fort Stewart, the only visual reminder of their past are the 60 historic cemeteries on post. By partnering with local community members to help preserve and maintain the headstones using proper preservation techniques will allow future generations to appreciate the sacrifices their families' made for the nation's defense during the acquisition of their former communities for training lands necessary for victory during WWII." –Project Leader, Brian Greer

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Joint Readiness Training Center and Fort Polk | Louisiana

Cultural and Natural Resource Project: Old Hunt Cemetery Reclamation

Pollinator Project

Project Date: September 24 and November 8, 2016

Project Summary: Volunteers worked over the course of several workdays to reclaim Old Hunt Cemetery. Two headstones saw sunshine for the first time in 30 years as a direct result of the dedication of over 40 NPLD volunteers.

Pre-event work was conducted by volunteers as well as Fort Polk Conservation employees. Matt Anderson, a local Eagle Scout, approached the Conservation office to assume responsibility for the volunteer effort as his Scout project and was approved at all levels. On the service day, volunteers used hand tools to clear shrubs, remove small trees, clear ground debris, and erect a fence. A donated auger was used to drill postholes and the dirt removed was sieved and evaluated for artifacts. An additional workday was held to install signage, bird boxes, recognize volunteers, and to dedicate the cemetery. The Eagle Scout candidate in charge of the project went several times to the work site between NPLD and the dedication on November 8th to ensure the project met his personal level of excellence!

Educational components were incorporated into workdays to teach the Eagle Scouts the value of habitat enhancement and the importance of the area's historical heritage. A dedication was held on Nov 8th, attended by Post Garrison Commander, at which volunteers were given certificates of appreciation.

Old Hunt Cemetery is a recognized cultural site by the State of Louisiana as Site Number 16VN3917. As such, care was taken to maintain and enhance cultural integrity. The restoration of the cemetery involved creating a firebreak, removing dead trees and vegetation, and constructing a fence. These improvements resulted in an opened clearing that enhanced habitat for several indigenous bird species and created a space in which bird boxes could be erected.

Because of this project, the Heritage Family Association has fielded many inquiries about helping with other cemeteries in the community.

"I have been volunteering with the Red Cross since I was in high school. After moving to Fort Polk last month, I saw an opportunity for community involvement with cultural resources. I made the decision to participate in The Hunt Cemetery cleanup because as an Army vet myself, I can recognize the importance of historical preservation and honoring those who served before me." Toloria Carroll, NPLD Volunteer

"Fort Polk Boy Scout Troop 124 was honored to assist with Old Hunt Reclamation project in conjunction with Matthew Anderson's Eagle Scout Project. Thanks to Matthew's great oversight and leadership, the Boy Scouts suffered zero injuries or hot weather related casualties." Scoutmaster Luke Dahlen



Contact: Jerrie LeDoux, Cultural Resources Liaison | 337-531-2093 | jerrie.ledoux@artemisadvantage.com

Joint Base Lewis McChord | Washington

Natural Resource Project: Habitat enhancement for Rare Birds, Bats, and Bees at JBLM

Pollinator Project

Project Date: October 18-19, 2016

Project Summary: Joint Base Lewis McChord (JBLM) held a two-day NPLD event on October 18th and 19th. Over the course of these two days, 20 volunteers worked to build 130 bluebird boxes, 65 of which were for the Purple Martin species. In addition, participants built several bee blocks and bat houses. Active-duty and volunteer interns will install all the boxes built during NPLD this winter. These will provide significant habitat improvement for cavity nesters (who have depressed populations due to the lack of remaining old growth forest).



Fish and Wildlife biologists led volunteers in prairie ecology tours and led experimental seed-raking planting method and an oak-woodland fire-effects survey.

Agency partners from the WA Department of Veterans Affairs supported this year's project by promoting the event through local conservation nonprofit, The Center for Natural Lands Management. "Wounded Warriors" and other active-

duty interns got a chance to work with community members, creating a positive interaction for both sides. The event was an effective way to leverage volunteer support to accomplish natural resource projects while simultaneously engaging the public and strengthening community partnerships.

As previously mentioned, active-duty interns and college students worked side-by-side with community members, creating a collaborative learning experience for both sides, as each shared insight from their unique standpoint. Moreover, community members were able to help restore military lands and gained firsthand experience with the Army's stewardship programs

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Kaala/Schofield Barracks West Range | Hawaii **Natural Resource Project: Ka'ala Ecosystem Restoration Project**

Pollinator Project

Project Date: September 24 and October 23, 2016

Project Summary: At 4020 ft., the summit of Kaala is the highest point on the island of Oahu and is home to one of the most well preserved native cloud forests in all of Hawaii. This landmark has become a popular hiking destination for the public as well as an area to which community members have contributed thousands of hours of volunteer work. This year's NPLD volunteers included retired community members from nearby Wahiawa and Mililani towns, enlisted personnel from the Airforce, college students, schoolteachers and members of a local nonprofit group, Loko Ea.

During the project's workdays, volunteers hiked to the work location where they removed Blackberry and firespike weeds, both of which are invasive species. Staff applied herbicide to the piles of invasive cuttings to ensure that the firespike would not re-sprout. A second volunteer day took place on October 23, which focused on controlling invasive weeds in the bog area. On this day, volunteers used the hand tools to control weeds over a 100-square meter area in the bog.

These two volunteer days helped to regulate some of the most invasive weeds that are present in the fragile native cloud forest and bog area of the Ka'ala summit. Invasive weeds can out-compete native vegetation for sunlight,



moisture, and nutrients. The volunteer effort for this National Public Lands Day project greatly improved the chances for the native forest to reclaim these cleared areas. Furthermore, as the forest regenerates, site personnel expect to see native honeycreeper birds and insect life return to these locations. There are many rare and endangered species

at Ka'ala and this year's volunteer efforts helped to improve habitat for present day and future populations of plants and wildlife.

On both workdays, volunteers participated in an interpretive hike through the Ka'ala forest and had a chance to observe and learn about the native plants, birds, and insect life that depend on a healthy cloud forest habitat. This allowed volunteers to appreciate the value of their weed control work. As volunteers descended the mountain, they had the opportunity to observe a small population of endangered kahuli tree snails firsthand. This location is an area where snail predators (rats) are actively managed. Volunteers witnessed the positive effects that active conservation has on one of the rarest snail species in the world.

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Redstone Arsenal | Alabama
Natural Resource Project: Redstone Arsenal Monarch Butterfly and Pollinator
Educational Plot
Pollinator Project

Project Date: November 5, 2016

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 to local students. 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 and educational opportunities to RSA personnel and families as well as local city and county schools.

The Path to Nature is the premier facility at Redstone Arsenal and highlights natural and cultural resources representative of northeastern Alabama as well as those unique to the installation. The Legacy award, along with the help of hard-working volunteers, has provided the resources for maintenance and adaptive management of this environmentally significant site. In particular, the Path to Nature gardens, which were installed in 2015, will greatly benefit from the fresh plant stock that was added during this year's NPLD project.

This year's project activities involved establishing a pollinator field within a 0.25-acre plot at the Path to Nature site. Other renovations to the site included preparation of a demonstration plot and the removal of invasive and weed species. Children, teachers, and parent volunteers from the pre-kindergarten program at Redstone Arsenal helped to sow the field. This project also served as an educational seminar about wildlife habitat, pollinator species, and types of plants that support such wildlife.

Establishment of the native seed mix for pollinator habitat will enhance the Path to Nature site. These enhancements will serve as an example for students about the importance of pollinators and the need to mitigate for loss. It will also improve the aesthetics of the site, as it will prevent the growth of weedy and invasive plants in this small area.

After discussing the field trip potential for the pre-kindergarten classes in the spring, the class teachers and curriculum planners are excited to involve youth in meaningful natural resource work. Redstone Arsenal staff paired the NPLD event with a potluck lunch and were able to connect with teachers and students.

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Umatilla Chemical Depot | Virginia Natural Resource Project: Burrowing Owl Science and Conservation

Project Date: September 23-28, 2016

Project Summary: Umatilla Chemical Depot has historically been home to Burrowing Owl populations, but in recent years, their numbers have dwindled. By 2008, only 3-4 pairs of Burrowing Owls remained on base. Since this time, personnel have worked to expand the population by installing artificial burrows. This endeavor has resulted in a resurgence of the population. A total of 66 nesting pairs were accounted for in 2016. This year's NPLD event focused on the installation and update of approximately 40 artificial burrows.

The NPLD event spanned six days in length, during which 12 volunteers installed four new burrows, as well as upgraded 21 existing burrows. They also upgraded pails and added corrugated tunnels to enable owls to access to the nest chambers. Wire mesh was placed directly under nest chamber (to eliminate access by Pocket Gophers which plug the nest chamber up with sand).



In addition to the fieldwork, the event also served as a conservation and education workshop. Volunteers learned about the ecology of and conservation techniques for Burrowing Owls. More specifically, it was a hands-on technical training program focused on the design, installation, and use of artificial burrows. Unexpectedly, project leaders were able to capture some owls during the event, so all attendees were able to help with the banding, examination, data collection, and release of live owls.

The Umatilla Depot now stands as the foremost demographic study area in the U.S. for Burrowing Owls. Trail cameras were installed this year, which will help staff investigate aspects of owl survey protocols and to document effects of weather on nesting success. While the Burrowing Owl is endangered in Canada, it is a Species of Special Concern in the US. Umatilla Chemical Depot's conservation work seeks to keep the species off the Endangered Species list. This year's NPLD work directly contributes to state-

based conservation efforts for Burrowing Owls, regional coordination efforts, range-wide research programs, and to the tri-national ecosystem conservation initiative.

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White Sands Missile Range | New Mexico

Natural Resource Project: Pollinator Garden at White Sands Missile Range (Year 2)

Pollinator Project

Project Date: 3 workdays during September 11- October 2016, including a main workday on September 24, 2016

Project Summary: This year's Legacy Award is the second investment in the White Sands Missile Range Pollinator Garden and is an example of the base's continued to commitment to maintaining the garden over the long-term. Pollinators are critical to the economy of the United States, and to the sustainability of military testing and training lands. Last year's funding established a pollinator garden at WSMR that is now thriving with flowering plants, bees (solitary, bumble, and honey), butterflies (15 species), and hummingbirds.

This year's award has enabled White Sands personnel to install additional plants in vacant areas of the existing garden and to purchase irrigation supplies, bee house materials, sugar for hummingbird feeders, a birdbath, small permanent plant signs, garden tools for child volunteers, and a 24x36" garden illustration (featured below).

There were multiple workdays associated with the event, during which participants installed drip irrigation, rock mulch, bee nest sites, and 88 new plants. Other additions include birdbath, garden bench, hummingbird feeders, seed/suet feeders, and bamboo stalks which will be used for nest bundles during the coming spring. White Sands Missile Range personnel also oversaw the creation of a poster that will be distributed to publicize the project.



Since the beginning of the project in 2016, a growing number of pollinators have inhabited the garden. Staff have documented over 30 species of butterflies, several species of bees (including solitary bees, bumblebees, and honeybees), hummingbirds, and other insects such as a robber flies. What was formerly a patch of bare dirt is now a garden that is buzzing with activity. Project leaders have noted the many compliments they have received from Missile Range employees since the garden's creation.

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United States Army/Air National Guard



Biak Training Center | Oregon Natural Resource Project: Training Area B restoration (North Unit Canal)

Project Date: several workdays: September 28 – early October, 2016

Project Summary: Biak Training Center's North Unit Canal is managed under a cooperative agreement between the Oregon National Guard and the Prineville Bureau of Land Management (BLM). The area is open to the public and given its close proximity to the city of Richmond, is utilized frequently by visitors. Prior to the 2016 NPLD projects, the canal area had been prone to garbage dumping, target shooting, and off-road activities. The access to the area was poor and the road severely deteriorated. Vehicles had created numerous paths and were doing damage to the native vegetation and creating erosion issues.

NPLD work projects aimed to clean up the area and reduce the environmental impacts caused by frequent use. Over 70 volunteers from the local community worked to collect and haul trash, improve the entrance road and close off inessential entrances to the area. In total, project participants collected over 4,100 pounds of trash and debris. After the trash pick-up, closed portions of the North Unit Canal were then graded and re-seeded with 125 pounds of native grass seed. Additional improvements were also made to fencing and cattle guards. The initial project plan aimed to target two primary areas, but because of the help from Oregon National Guard, staff were able to target and restore additional sites on BLM Land.

These improvements will enhance the public's access and enjoyment of the area and will limit future damage. The grading and improvement of the main access road fixed some severe erosion issues and narrowed the vehicle road, which had grown in width during the preceding months. NPLD project managers used native woody material and boulders to close many of the spur trails in the area that led to illegal dumpsites and party areas.

As part of the NPLD experience, staff from Biak Training Center's Environmental Services program did a short overview of the *Leave no Trace* program for volunteers. Staff also distributed *Leave no Trace* reference cards as well as volunteer appreciation certificates.

New information promoting "pack-it-in-pack-it-out" messaging will be posted in the area for the public. Biak personnel will work with BLM law enforcement to increase overall presence and regular patrols to the area. Both Biak and BLM personnel are committed to working toward solving these issues in the long-term and using engineering solutions to promote positive use.

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Camp Mabry | Texas Natural Resource Project: Rainwater Collection System and Native Plants Demonstration Area Improvements

Pollinator Project

Project Date: September 24, 2016 and October 22, 2016

Project Summary: FINAL REPORT NOT YET SUBMITTED

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Camp Murray | Mississippi Natural Resource Project: Camp Murray Riparian Areas Restoration

Pollinator Project

Project Date: October 1, 2016

Project Summary: Washington Department of Fish and Wildlife utilizes the Murray Creek for the rearing of landlocked sockeye salmon (kokanee) that will eventually be released in American Lake. This year's legacy-funded endeavor aimed to restore native plant species on the riparian areas of Murray Creek and American Lake while also enhancing the overall health of these areas. Additionally, project leaders worked to rehabilitate Murray Creek's nature trail, utilized by Camp Murray staff for nature walks and educational programming. Enhancing the riparian areas helps to provide a better learning environment for trail users and visitors. These restoration efforts include planting of native species to increase the riparian and shoreline buffer widths of the creek and lake, enhancement of the rearing environment for landlocked sockeye salmon, and removal of invasive weeds.

Members of the Stream Team's Washington Conservation Corps Crew, as well as 50 Washington Youth Academy cadets participated in a single volunteer workday. Volunteers planted approximately 300 trees while the Stream Team crew added the remaining 138 plants.

Planting those trees and shrubs in the riparian corridors of Murray Creek is expected to enhance the natural health and aesthetics of the site. These native plants will minimize the spread of invasive weeds and shrubs that commonly grow in the riparian areas. The native flowering plants and trees will attract birds and other types of pollinators, improve the wildlife habitat, and reclaim forest areas. Native plants installed along the banks of the creek will control erosion and the subsequent sedimentation of Murray Creek and American Lake. As for the trail that was worked on by Washington Youth Academy cadets, the removal of 75 pounds of invasive material opened up the formerly unusable walking/jogging trail and supports the growth of native plant species.



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Camp Shelby Joint Forces Training Site | Mississippi Cultural and Natural Resource Project: Tingle Family Cemetery Restoration and Clean-up

Pollinator Project

Project Date: September 24-25, 2016

Project Summary: Prior to this year's NPLD project, the abandoned Tingle Family Cemetery at Camp Shelby was in need of immediate rehabilitation before it was lost to the surrounding woods. The Cemetery clean-up project at Camp Shelby consisted of two workdays. The first workday involved

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the removal of very heavy and dense brush from around the edge of the cemetery. Volunteers from the MS National Guard's Environmental office performed this work. On the second workday, staff and volunteers cleared brush from inside the cemetery and planted blooming foliage and small flowering trees. The cemetery underwent a complete transformation because of these workdays. A new fence was placed around the perimeter, 6 trees were planted, 16 plants added and 10 pounds of invasive vegetation were removed. In addition, service flags were placed at the headstones to denote military veterans buried in the cemetery.

The project had a positive impact on the natural resources, as well as the aesthetics of the installation. The cemetery is located adjacent to a training village and military outpost. Soldiers frequent the area while conducting their annual training. The cemetery provides a small green-space park in the middle of an open field and includes a small tree canopy and now, flowering foliage. Additionally, now that the cemetery has been cleared, local historical societies can visit to conduct research on individuals buried there. Descendants have been notified and have shown interest in visiting the cemetery once again. Because the cemetery is associated with an archaeological site, future research will be conducted to document early settler life that occurred at the installation prior to military acquisition.

In addition to the work projects, volunteers learned the history of both the site and of the early occupants of the land. Ultimately, the event created the opportunity for future archaeological excavations at the archaeological site adjacent to the cemetery.

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Diamond Head State Monument | Hawaii

Cultural and Natural Resource Project: Fort Ruger Pathway Native Hawaiian Cultural Garden

Pollinator Project

Project Date: November 19, 2016

Project Summary: Hawaii Army National Guard's proposed project on Diamond Head State Monument was relocated to the Puuwehi wetlands at Bellows Air Force Station. The project took place on a single volunteer workday and involved 54 volunteers from the Hawaii National Guard Youth Challenge Academy and the Hawaii National Guard Child & Youth Program.

The project enhanced the area surrounding a burial vault, which contains the relocated remains of native Hawaiians. Volunteers cleared the area of 20 pounds of trash and 600 pounds of invasive plant species to prep the ground for mulch application. The young plants were easy to pull by hand, but the mature plants required shovels.



This work will help to preserve the sanctity of these grounds and will prevent vegetation from overtaking the area. The Puuwehi wetlands are also habitat for native birds and as the wetland is restored, the hope is that it will see a resurgence of the population.

There was also an educational component to the workday, as volunteers learned to identify invasive plant species and were able to observe the importance of controlling their growth.

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Fort Custer Training Center | Mississippi Natural Resource Project: Fort Custer Training Center NPLD

Pollinator Project

Project Date: September 17-18, 2016

Project Summary: NPLD is a longstanding tradition at Fort Custer Training Center (FCTC). FCTC was proud to participate in this year's NPLD for the 10th year in a row. This year's event was divided into three distinct projects:

- Construction of a new wheelchair accessible wildlife viewing area on base. Volunteers sorted and arranged the lumber load and began construction on two disabled veteran hunting blinds. These enclosed locations will allow individuals with disabilities to enjoy different aspects of FCTC like wildlife viewing, birding, hunting, etc.
- Rehabilitation of base wetlands degraded by heavy storms and erosion. The goal is to make the wetland habitat more hospitable for pollinator species and to prevent infiltration by invasive species. A total of 16 trees were planted and mulched during the volunteer workday.
- Reforestation of the cantonment area of FCTC, which is comprised of cleared agricultural lands. Reforestation of this urban setting will reduce energy consumption and will address wind/soil erosion concerns. Project leaders scouted an additional two-acre parcel where the pollinator seed mix will be planted. They also placed markers for the boundaries and corner posts. Boy Scout volunteers helped to service the seed drill by greasing all fittings and replacing a flat tire.



Because of the 2016 project, as well as previous years' tree plantings, trees shade several of the base's buildings, as well as its two main roads. The pollinator plots will take a couple years to take hold but in the meantime, they will benefit various wildlife species like bees, butterflies and birds. The disabled veteran hunting blinds are a key aspect of a developing culture of respect for the individuals who use them. It is important to provide comfortable structures in which disabled visitors will be able to hunt and relax. In sum, these projects will increase the availability of natural resources, improve the floristic quality of sensitive wetland habitats, and will promote energy conservation via urban forestry.

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Fort McClellan Army National Guard Training Center | South Carolina Natural Resource Project: Tree Planting for Wildlife

Pollinator Project

Project Date: October 29, 2016

Project Summary: Fort McClellan Army National Guard Training Center has numerous wildlife enhancement areas or food plots that benefit multiple species. This project will enhance those areas for pollinators and other wildlife by planting groups of native fruit and oak trees in eight food plot locations on the training center.

During the initial workday, staff selected locations for tree plantings, bush hogged the areas to reduce the vegetation, and drilled holes for each tree with a tractor. On October 29, twenty-seven members of a local Boy Scout Troop and affiliated Venture Crew, along with ten Scout leaders and five AL Army National Guard employees planted 70 oak and fruit trees on Pelham Range of the Ft McClellan Army National Guard Training Center. After participating in tree planting, the Scouts took tours of the National Guard facilities. Additionally,

instructors from the Officer Candidate School of the 200th Regiment conducted a land navigation workshop and field exercise to teach the Scouts about different methods of land navigation in the outdoors.

This project will enhance wildlife areas on Pelham Range while the specific locations of the tree plantings will enable base staff to document the many species of wildlife that frequent the trees.

Volunteers learned about wildlife habitat requirements, pollinator life cycles and proper tree planting techniques. Volunteers broke into teams with leaders, providing opportunity for older Scouts to use their leadership skills. National Guard Soldiers participated in different aspects of the event, including planting trees, providing transportation around the range, having lunch with participants, giving tours of facilities, and leading land navigation exercises. Volunteers were able to interact with soldiers throughout the day and learned about Army values and skills.



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United States Marine Corps



Barry M. Goldwater Range | Arizona **Cultural and Natural Resource Project: Historical Road Restoration on the Barry M. Goldwater Range West**

Project Date: November 14, 2016

Project Summary: One of the most culturally significant sites on Barry M. Goldwater Range (BMGRW) is El Camino del Diablo, a historic 250-mile road that once linked the northwestern frontier of Mexico with the colonies of California. It was listed on the National Register of Historic Places in 1978 and has been in use for 1,000 years by conquistadores, missionaries, settlers, miners and cartographers. Today, military personnel, Border Patrol, winter visitors, and off-highway vehicles (OHV) enthusiasts frequently use the portions of el Camino del Diablo (approximately 50 miles) that traverse the BMGRW.

This year's project focused on the rehabilitation of various sections of Camino del Diablo. Military personnel conducted work over four separate workdays to install exclusion fencing along two of El Camino's major intersections which will stop the widening of the road and restrict traffic to two lanes. Rehabilitation efforts will extend beyond NPLD and will involve installation of more exclusion fencing and the creation of barriers (e.g., placement of fallen vegetation, lumber, and rocks) along roadsides to promote the recovery of soil and native vegetation.

An important step towards managing and mitigating future effects of OHVs/anthropogenic disturbances on the range is to raise public awareness of the habitat degradation and to encourage public participation in restoration efforts. To this end, BMGRW personnel plan to install an informational kiosk along the road to raise public awareness of the degradation of the road and to publicize ways to mitigate impact.

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Marine Corps Air Ground Combat Center | California **Cultural and Natural Resource Project: Expansion and Enhancement of the Cultural Heritage Garden at MCAGCC, Twentynine Palms, CA**

Pollinator Project

Project Date: multiple work days leading up to December 1, 2016

Project Summary: The Natural Resources and Environmental Affairs Division of the Marine Corps Air Ground Combat Center (MCAGCC) carried out a 2016 Legacy project to enhance and expand the Cultural Heritage Garden at the Archeology and Paleontology Curation Center (APCC). In preparation for this project, Cultural Resources Management Program personnel consulted various Native American groups that have traditionally inhabited the MCAGCC landscape. These tribes include the Agua Caliente Cahuilla, Colorado River Indian Tribes, Morongo Band of Mission Indians, Ft. Mojave Indian Tribe, Chemehuevi Indian Tribe, San Manuel Band of Mission Indians, and the Twentynine Palms Band of Mission Indians. The goal was to incorporate information and inspiration from each tribe's Cultural Heritage programs and exhibits in the garden's design and interpretive program.

During the main NPLD event, 21 Single Marines Program volunteers and their Officer in Command, Sergeant Graves, built a raised bed garden and expanded the flagstone walking path around the gardens. On a separate workday, four local Boy Scout troops planted a tree and other desert vegetation in the new raised bed. Sixty Boy Scouts shoveled soil into the raised bed and then planted and watered new plants.

The project enhanced the existing Cultural Heritage garden by providing an expanded area for the cultivation of native Mojave Desert plants that were important to the Native Americans in this region during the late prehistoric/early historic period. The garden honors the importance of plants during this time, as they provided food, shelter, tools, medicine, basketry, fuel, and clothing to the people of the Mojave. In the future, the NREA at MCAGCC plans to use the Cultural Resources Gardens to educate the local Marines, their families, and visitors about the continued importance of these resources.

Plans for the Cultural Heritage Garden include planting of Desert Tortoise, Cactus, Monarch Butterfly and Nectar gardens and installation of a drip irrigation system into the existing water line. In addition, personnel will develop educational materials for existing on-site kiosks and a brochure to highlight Mojave Desert Botanical Diversity.

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United States Navy



Joint Expeditionary Base Little Creek-Fort Story | Virginia Natural Resource Project: Dune Restoration and Stabilization at Joint Expeditionary Base Little Creek-Fort Story



Project Date: October 28, November 8, November 21-22, and November 29-30, 2016

Project Summary: Military personnel at Joint Expeditionary Base Little Creek-Fort Story oversaw several NPLD workdays, culminating in completion of a dune restoration and stabilization project. Site selection for dune grass planting focused on damaged dune areas along the public beach area of JEB Little Creek and one training area of JEB Fort Story. In addition to dune grasses, volunteers and personnel also installed fencing and posts in proximity to outreach signs educating visitors about the JEB Little Creek public beach. Enhancement of areas adjacent to this signage will draw public awareness to these educational resources and increase their foot traffic.



Dune restoration literature dictates the planting of American beachgrass in dune environments as an effective method for stabilizing and enhancing dunes. Dunes are an important natural resource to JEB Little Creek-Fort Story as they protect critical training areas and infrastructure, as well as provide habitat for wildlife. The Enlisted "E" Public Beach at JEB Little Creek is a popular destination for active duty and retired military families. Enhancing the health of dunes around the beach not only protects this public area, but also provides an educational showcase about conservation for beach visitors. Dune environments planted at JEB Fort Story will ensure military readiness training can occur in this area, and protects multiple coastal ecosystems landward behind the planted dune.

In addition to planting 15,900 plants on site, project leaders also incorporated an educational component into NPLD programming. An informal briefing was provided to all volunteers explaining who NEEF is and the purpose of NPLD, as well as the importance of dune restoration and stabilization. Volunteers learned about the biology of beachgrass and how enhancing the dunes helps the base's ecosystem and protects its infrastructure.

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Naval Air Station Oceana Dam Neck Annex | Virginia

Natural Resource Project: NASO Dam Neck Annex Dune Restoration Project

Pollinator Project

Project Date: October 19-22, 2016

Project Summary: NASO Dam Neck Annex's Dune Restoration Project took place over a 4-day period and covered 2.2 acres of land. The number of participants varied each day ranging from 20 to 50, totaling approximately 100 event participants. Project activities supported the implementation of shoreline and dune stabilization and conservation/habitat restoration along the coastal region of NASO Dam Neck Annex (DNA). Impacts from storms and military training have resulted in dune destabilization and erosion as well as wildlife habitat loss and degradation. This project helped to restore



the dunes at NASO DNA by planting a variety of native 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. The plants that are above the surface then collect additional sand, keeping 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 impacts the greater community by teaching participants about the importance of dunes, how to take care of the dunes, and helping to develop a communal vested interest in the natural resources on their DoD lands.

During this event, staff and volunteers planted 32,300 plants from five different species including *Ammophila breviligulata*; *Uniola paniculata*; *Panicum amarum*; *Solidago sempervirens* and *Baccharis halimifolia*. Volunteers also removed storm debris/trash from the dunes and beach areas.

Educational components of the NPLD events examined the importance of dunes (to wildlife, to military training, to



shoreline protection, etc.), how to restore dunes in a manner that reduces erosion while protecting and creating habitat suitable for a variety of wildlife and how to properly plant dune vegetation. The project taught volunteers and staff that fertilizer is unnecessary in order for commercially purchased plants to thrive on the installation. No fertilizers were applied at the planting sites.

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Naval Station Norfolk | Virginia

Natural Resource Project: Native Tree Planting, Pollinator Improvement, and Wildlife Observation

Pollinator Project

Project Date: September 24, October 29, and November 18, 2016

Project Summary: The Native Tree Planting, Pollinator Improvement, and Wildlife Observation project was a successful venture conducted by Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic (MIDLANT) as it accomplished objectives defined in the installation's Integrated Natural Resources Management Plan for Naval Station Norfolk and Naval Weapons Station Yorktown. Ninety-seven volunteers from the base and the surrounding community participated in the NPLD workdays, including members of Boy Scout Troop 364, Boy Scout Troop 200, and Team Rubican.

Projects involved planting 16 native trees and memorial beautification at Naval Station Norfolk, constructing and installing a floating dock at Naval Weapons Station Yorktown, and building a dozen pollinator boxes for Naval Fuel Supply Craney Island. The completion of each project enhanced the natural and cultural resources of the installation while also raising awareness for NPLD.



The Native Tree Planting, Pollinator Improvement, and Wildlife Observation project will have many positive impacts for both natural resources areas and historically significant areas. Increasing the urban tree canopy footprint will enhance air quality, water quality, public health, energy savings, and community investment. Additionally, ceremonial native tree planting dedications will honor veterans and enhance historic memorial sites.

The new floating dock at Naval Weapons Station Yorktown will provide outdoor recreation opportunities while the pollinator boxes at Naval Fuel Supply Craney Island will serve as habitats for bees and bats. At Naval Station Norfolk, the native tree plantings provide air

quality, water quality, and habitat benefits to the Chesapeake Bay watershed. Beautification efforts at the USS Iowa and Cole memorials brought comradery and honor to both visiting and participating veterans.

All volunteers participated in a project safety briefing, discussion about NPLD, and a lesson about the importance of conservation. Moreover, Naval Station Norfolk staff hope that volunteers gained a better appreciation for natural and cultural resources and will become environmental stewards within the community.

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