



FY 2017 Secretary of Defense

Environmental Awards

Natural Resources Conservation – Large Installation
Eglin Air Force Base

Introduction

Situated along the Emerald Coast and extending into the heart of Florida’s panhandle, Eglin Air Force Base (AFB) is home to the 96th Test Wing. Encompassing 464,000 acres of land and 120,000 square miles of water test ranges, the installation is responsible for the development, acquisition, testing, deployment, and sustainment of all air-delivered conventional weapons. The 96th Test Wing and its 50 associate units prevent mission disruption through the maintenance of 34 distinct ecosystems, providing habitat for 106 rare and endangered plant and animal species. Eglin’s total economic impact to the area exceeds \$2.7 billion annually.



Eglin AFB

With over 464,000 acres of land and 120,000 square miles of water ranges, Eglin AFB provides refuge for a wide range of natural communities and 106 rare and endangered plant and animal species. It is also a center for the development, testing, and deployment of lethal air power to support essential DoD missions through the 96th Test Wing.

Background

Eglin’s Natural Resources Team (NRT) is comprised of three internationally recognized sections – Wildlife, Fire Management, and Forestry – all entrusted with conserving the ecological treasures found on the Department of Defense’s (DoD) largest forested installation.

At Eglin, the Installation Natural Resources Management Plan (INRMP) is a critical document used to guide and direct all activities related to natural resources management on the installation. The latest annual review and update of the Eglin INRMP concluded with the Wing Commander’s certification memo on 22 September 2016. Both the United States Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FWC) concurred with the updates earlier in September. The USFWS noted, “The Service would like to commend Eglin’s Natural Resources Section’s effort as a fine example of sensible resource management. Eglin’s INRMP is a comprehensive and detailed document incorporating a wide array of environmental and natural resources management challenges. The annual update to the INRMP has demonstrated timely and pertinent information to answer the continually changing needs of the base’s resources, species, and habitats.”

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The Air Force Civil Engineer Center used Eglin's web-based INRMP template as an example to develop the electronic standard INRMP template now implemented throughout the Air Force. By developing a web-based INRMP which allows for continual updates of new data, models, and regulator input, the Team created a truly adaptive and real-time management tool. Employing "hot-links" allows easy access to specific, detailed resource management topics with emphasis placed on natural resources found within installation boundaries.

Eglin's NRT is active in many committees including Eglin's Range Configuration and Control Committee, the Eglin Range Development Executive Steering Committee, the Eglin Environmental, Safety, and Occupational Health Council, and the Eglin Outdoor Recreation Committee. All are chaired by the 96th Test Wing Commander.

Eglin takes advantage of many cooperative arrangements established between the Air Force and other agencies to execute the most complex natural resources management program in the DoD. The cooperative agreements, memoranda, and interagency agreements span the spectrum from those related to funding and money transfer to those related to collaboration during implementation of management actions such as prescribed burns along common boundaries. Other agreements relate to law enforcement at particular recreation sites within a municipal jurisdiction. The Gulf Coast Plain Ecosystem Partnership Memorandum of Understanding is an excellent example of an agreement that has been instrumental for successful INRMP implementation. Originally signed in 1996, this Memorandum and the partnership it governs has now grown from seven original partners to 15, and from a land base of 840,000 acres to approximately 1.25 million acres. This partnership formed in 1996 as a voluntary and cooperative partnership with

the common goals of long-term sustainability of natural communities, enhancing the integrity of ecosystems, restoring degraded habitats, and balancing these values with the human dimensions found in the region.

Summary of Accomplishments

Overall Natural Resources Conservation Management

The NRT is responsible for providing long-range resource planning, program direction, coordination, and evaluation for Eglin's natural resources programs. They provide the expertise and supervision to manage all aspects of the program, as well as managerial planning for the diverse activities, such as interrelated forestry, timber sale, prescribed and wildland fire control, fish and wildlife management, invasive species management, erosion control, and outdoor recreation programs. The Team and support staff execute programs enabling the maximum use of 464,000 acres of land and 120,000 square miles of water ranges by Eglin's users to maintain mission readiness while ensuring compliance with regulatory requirements. More than 250,000 acres of Eglin's reservation are open for recreational use by the general public, the 11,000 military personnel, 9,500 civilian employees, and 57,000 family members and retirees.

Mission Enhancement

Eglin has successfully minimized natural resources impacts across its range, as demonstrated by the zero Notices of Violation from federal and state regulators on Eglin's 1,172 proposed actions executed among 45 user groups. Moreover, Eglin's NRT avoided delays of 695 days across 19 specific missions and proposed actions by working with the same regulators to develop new consultations and revise or enhance older processes.

For the past 26 years, the Eglin NRT has been working towards achieving the goal of maximum mission flexibility. Eglin AFB

personnel understand their responsibility in supporting the Endangered Species Act to conserve and manage the 12 federally endangered and threatened species on the installation. One species in particular, the red-cockaded woodpecker, occurs across the entire reservation and therefore represents a great potential for causing delays and incurring additional expenses to get approval for testing and training missions. The USFWS endangered species recovery plan goal of 350 potential breeding groups (PBGs) at Eglin was surpassed in 2009, with the most recent annual count (accurate estimate) indicating Eglin has surpassed its INRMP mission flexibility goal of 450 PBGs. Exceeding this goal has provided a 100 PBG buffer against potential population declines due to hurricanes or other uncontrollable events, which could dip Eglin below the mandated 350 PBG requirement.

Achieving the INRMP PBG milestone has also allowed Eglin to save time and money by reducing the requirement for protection of individual cavity trees during prescribed burning operations. Due to the healthy and growing red-cockaded woodpecker population, the USFWS has agreed that Eglin can forgo raking around every useable cavity tree and only protect those most vulnerable to fire. This alone has saved the Air Force an estimated \$20,000 annually and more than 400 man-hours of labor.

In addition to using population growth acceleration techniques like artificial cavities and translocation, the NRT has done an outstanding job managing habitat for future generations of red-cockaded woodpeckers. For example, Eglin converted slash and sand pine plantations to the preferred species, longleaf pine. In the last two years, the Team planted approximately 1.5 million longleaf pine seedlings, thus ensuring new cavity trees and foraging habitat for the species for many years to come.



Maintaining Mission Flexibility

Eglin has surpassed the 450 PBG mission flexibility goal as listed in the INRMP. Exceeding this goal has provided a 100 PBG buffer against potential population declines, due to hurricanes or other uncontrollable events.

Land Use Management

Record-setting rainfall in April 2015 led to the collapse of the defunct Eglin railroad trestle on Turkey Creek, a principle watershed for the federally threatened Okaloosa darter. Removal of the trestle had been identified as a priority project for recovery of the Okaloosa darter and was in the planning stages when approximately 20 inches of rain fell in a 24-hour period. The flooding in Turkey Creek caused the unstable railroad crossing to collapse and wash two 12 foot culverts and over 100 tons of railroad base material and other debris into the creek. Additionally, a mission-critical communications line for the Eglin test ranges was exposed and compromised during the collapse. Quick action and coordination among the Eglin AFB personnel, including the NRT, safety, communications, exterior electric, and operations staff, led to a successful restoration of Turkey Creek by removal of the culverts and other debris, stabilization of over 800 feet of stream bank, and restoration of nearly five acres of wetlands. Replacement of the communication and electric powerlines ensured that future flood events will not disrupt the military mission and led to completion of a restoration project essential to removal of the Okaloosa darter from the Endangered Species List.

Forest Management

In 2015, the Florida Department of Transportation initiated efforts to widen a vital hurricane evacuation route through Eglin AFB. In support of this project, Eglin foresters delineated, inventoried, and oversaw the removal of 4,500 tons of timber. NRT actions generated nearly \$50,000 by turning construction debris into profit for the Air Force. Rather than paying a contractor to remove the trees, Eglin Foresters marked the timber and marketed it to a local logger, thus turning a potentially costly situation into a profit. The new corridor doubles the capacity of the heavily travelled hurricane evacuation route.

A change in mission dynamics at Eglin AFB required quick action to accommodate new Test Area C-80B expansion and mission requirements. Prior to construction activities associated with the expansion, foresters were able to sell 3,000 tons of small trees from the site as fuel wood, thus avoiding \$330,000 in estimated land clearing and disposal costs. Foresters completed the sale two months ahead of schedule, ensuring the test area could adapt to new requirements without mission delay. Likewise, the NRT successfully coordinated and completed timber removal for the new 30 megawatt Eglin Solar Array, a 241-acre sustainable energy initiative on Eglin AFB.

The NRT successfully created 3,000 acres of new longleaf habitat by planting a DoD record 1.5 million longleaf pine seedlings in areas that were formerly degraded forest habitat. Through both longleaf and native grass planting, as well as mid-story control and timber harvests, over 4,000 acres of threatened and endangered species habitat was created or restored in an area deemed by *America's Longleaf Initiative* as a "Significant Longleaf Landscape." Forest management activities also increased the amount of available habitat for multiple federally-listed species including the red-cockaded woodpecker, the reticulated

Flatwoods salamander, and the Eastern indigo snake.

Fish and Wildlife



Tortoise Colonies

Through a partnership with the USFWS and FWC, Eglin established tortoise repatriation colonies within interstitial areas on the installation. Each colony has a minimum of 250 gopher tortoises from private lands being developed in central and south Florida.

The Eglin NRT is "digging in" to protect gopher tortoises through an active partnership with the USFWS and FWC. This partnership establishes tortoise repatriation colonies between existing populations on the installation, each with a minimum of 250 gopher tortoises. With two colony sites identified and more than 500 tortoises slated for relocation to Eglin from private lands being developed in central and south Florida, the goal of this partnership effort is to preclude the need for Endangered Species Act listing. The significance of this effort is massive and extends far beyond Eglin boundaries due to the presence or potential presence of gopher tortoises on 23 DoD installations across the southeastern United States. In the event that the tortoise does require federal protection in the future, each new colony or minimum viable population established will propel Eglin towards the installation's specific recovery goal to be identified in an upcoming programmatic assessment. To date, this proactive investment has involved a large volunteer labor force to construct 102 acres of enclosures to receive tortoises, relocate 99 tortoises, and obtain state certification needed to excavate tortoises with heavy equipment,

reducing capture time from 28 days to one. Acquiring the credentials necessary to excavate tortoises with heavy equipment has also proven beneficial to de-conflict potential gopher tortoise hazards within airfield environments, limiting risk to aircraft and reducing impacts to sensitive species. Additional benefits to both Eglin tortoises and the military mission will come from an ongoing study evaluating habitat suitability for tortoises and burrow commensals, which will lead to development of range maintenance best management practices.

Home to three species of federally threatened freshwater mussels, the Yellow River serves as the northern boundary for Eglin AFB and is used for a variety of military training scenarios. Freshwater mussels generally live embedded in the bottom and submerged banks of rivers where they siphon water into their shells to collect food, making them susceptible to toxic effluents, water quality degradation, and habitat modification from a number of activities. Reasonable prediction of potential mission impacts on freshwater mussels requires an understanding of both the available mussel habitat and the approximate number of mussels within areas used for military training and testing activities. Eglin has partnered with the USFWS to use emerging sonar technology to accurately define the total available mussel habitat in the Yellow River and couple that with scuba sampling techniques to produce an estimate of the total number of mussels.

The use of sonar mapping for mussel protection and management demonstrates a new scientific approach that will produce cutting edge decision support products for military mission planners and serve as a template for future mussel monitoring programs by the USFWS and other natural resource agencies.

The endangered reticulated Flatwoods salamander is a very rare amphibian which is found primarily on Eglin AFB property. The NRT is focusing efforts on balancing the

protection, conservation, and enhancement of Flatwoods salamander populations while maintaining mission sustainability. More than 7,000 linear feet of wire fence has been installed in response to feral hogs degrading wetlands and threatening vital salamander breeding habitat. An additional six potential breeding ponds have been or are being restored to encourage occupation and suitability for reproduction. Most noteworthy is the successful use of managed natural populations to rear salamanders for reintroduction or repatriation into unoccupied habitat. This head-starting program involves rearing salamander larvae in cattle tanks that contain all necessary natural elements needed for larvae survival while reducing or eliminating elements that tend to decrease larval success. Aggressive habitat management efforts coupled with continued refinement of the head-starting methodology has been a collaborative effort between the Eglin NRT, FWC, USFWS, and Virginia Tech University. Once again, the Team is paving the way for species recovery and reducing the likelihood of lengthy and costly consultations with regulators that can impact testing, training, and other mission readiness activities.



Endangered Species Management

The NRT is focusing efforts on balancing the protection, conservation, and enhancement of Flatwoods salamander populations while maintaining mission sustainability. Aggressive habitat management efforts coupled with continued refinement of the head-starting methodology is leading the way to speedy recovery of the species.

Other Natural Resources

The Eglin NRT possesses the largest and most ambitious prescribed fire program in the Air Force. Prescribed fire is a relatively cheap and effective forest management tool that benefits the Air Force mission by simultaneously reducing hazardous fuels and associated large wildfires within the context of fire-starting test and training missions while providing rapid habitat improvement for fire-dependent endangered species. The NRT conducted 177 prescribed burns across more than 170,000 acres of the Eglin reservation, eclipsing the INRMP goal of 90,000 acres of prescribed fire on a five-year rolling average and making Eglin one of the most productive prescribed fire programs in the continental United States across all federal agencies.

Through an aggressive prescribed fire program that removed more than 340,000 tons of hazardous fuel biomass, the Team reduced mission-caused wildfire starts on Eglin test areas by 25 percent over the five-year average and saved over 1,000 man-hours of wildfire suppression time. Concurrently, landscape-level prescribed fire application contributed to additional population expansion of the fire-dependent, federally endangered red-cockaded woodpecker while breaking new ground in wetland habitat restoration for the federally endangered reticulated salamander. By re-introducing fire into ten ephemeral wetland breeding ponds under dry conditions, an innovative approach applauded by the USFWS, the NRT repaired decades of degradation in reticulated salamander breeding habitat in just a short series of targeted prescribed burns.

The NRT is not just a leader in prescribed fire application. They also lead the way in wildland fire technology transfer and training by earning a \$900,000 DoD Environmental Security Technology Certification Program grant to partner with Los Alamos National Lab in validating and testing a physics-based fire

behavior model for prescribed fire applications in longleaf pine forests of the Southeast. When completed in 2017, results from this advanced modeling effort will be transferred to fire managers throughout the DoD and the fire community at large through all available forums, and will allow DoD and interagency wildland fire managers to better plan and more safely implement prescribed fire for natural resource benefit.



Prescribed Fire

The NRT conducted 177 prescribed burns across more than 170,000 acres of the Eglin reservation, eclipsing the INRMP goal of 90,000 acres of prescribed fire on a five-year rolling average. Eglin is one of the most productive US prescribed fire programs across all federal agencies.

Invasive Species Control and Pest Management

Faced with the massive responsibility of reducing and eliminating negative impacts associated with damaging wildlife, both native and non-native, the NRT and multiple state and federal partners proactively manage these ongoing threats on more than 464,000 acres. Of greatest concern is the continued invasion of globally significant rare and sensitive plant and animal communities by feral swine. Doubling trapping efforts and innovations such as remotely monitoring and triggering traps via wireless devices has led to the removal of 624 hogs, which is the largest number in program history. Securing recent leadership approval to employ aerial control methods has the potential to dramatically increase future removal success. Additional program achievements include saving substantial road and culvert maintenance

costs through the removal of 58 beavers, eliminating 48 predators directly preying on sea turtle and shorebird nests on Eglin-owned Santa Rosa Island, and the strategic removal of four coyotes that had developed a taste for costly wire insulation found on the C-52 automatic target complex. Invasive and exotic plant species surveys totaling more than 14,000 acres identified 1,500 acres infested with non-native species that were chemically treated and killed.

Conservation Education

Working with the Okaloosa County School system, which obtained a multimillion-dollar Department of Education grant for improving the science curriculum in the county, Eglin AFB helped to further the education of 500 students of all ages at 20 local schools. The NRT and volunteers from the Eglin community participated in several National Geographic BioBlitzes that were held at local schools and in the community. BioBlitzes allow scientists to team up with families, students, teachers, and other community members to find and identify as many species of plants, animals, and other organisms as possible. This program teaches the importance of biodiversity not just in the wild, but also in community members' own backyards. The NRT also participated in the eMammal Camera Trapping project by providing training sessions and assisting teams with camera deployment. During this project, students learned about valuable field monitoring and data collection techniques and gained understanding of the diversity of mammals in the local area.

Community Outreach

In the face of increased military training tempo and next generation weapons system research and development, the integration of volunteers into the Eglin NRT has proven instrumental as the force multiplier necessary to maintain conservation and mission support standards. Eglin's robust volunteer program resulted in more than 12,509 man-hours being donated in support of 12 major conservation projects, as

well as augmenting NRT field crews executing day-to-day direct mission support functions. Recent volunteer-aided efforts consistent with Endangered Species Act Biological Opinions, and completed under the supervision of the Eglin NRT, include red-cockaded woodpecker translocations, Gulf sturgeon monitoring, sea turtle nesting surveys, Okaloosa darter stream erosion control projects, and Santa Rosa beach mouse, burrowing owl, and bog frog population monitoring. In addition, six organized clean-ups managed almost exclusively with volunteer resources resulted in 22,450 pounds of illegally dumped tires and other solid waste being removed from the installation for disposal.



Volunteer Efforts

Eglin's robust volunteer program resulted in more than 12,509 man-hours being donated in support of 12 major conservation projects. Volunteer teams augment NRT field crews to execute day-to-day direct mission support functions.

Tasked with managing the DoD's largest and most complex outdoor recreation program, the Eglin NRT recently launched the premiere web-based permit sale and information exchange system. Developed and customized by the Team, this new application promotes continued public access to more than 250,000 acres of the installation by ensuring recreation program compatibility with the primary mission of national defense. This feat is accomplished by allowing an annual customer base of more than 18,000 users to access and download commander approved public use rules and regulations online, view real time area availability and/or temporary mission related closures, and purchase permits 24/7 via personal computer, tablet, or smartphone.