

FISCAL YEAR 2006

SECRETARY OF DEFENSE ENVIRONMENTAL AWARDS  
U.S. ARMY NOMINATION

**CAMP EDWARDS TRAINING SITE**  
**MASSACHUSETTS ARMY NATIONAL GUARD**  
**NATURAL RESOURCES CONSERVATION, LARGE INSTALLATION**



**SUSTAINING THE ENVIRONMENT FOR A SECURE FUTURE**



## INTRODUCTION

Camp Edwards is a critical year-round training area in the Northeast United States for Army air assault, war fighting simulation and engineering training. It is home to the Massachusetts Army National Guard (MAARNG) and host to other armed forces components, law enforcement agencies and civilian organizations. The Camp Edwards Training Site, located on the upper western portion of Cape Cod in Barnstable County, Mass., is a 15,500-acre area that makes up the lion's share of the 22,000-acre Massachusetts Military Reservation (MMR). The camp is subdivided into 23 designated training areas and 20 firing ranges dedicated to realistic multi-echelon combat training and lanes training. The camp supports a permanent military and civilian population of 320; however, more than 36,600 Soldiers and 17,200 civilians participated in training events at Camp Edwards over the past year.

Camp Edwards has the single largest tract of open space on Cape Cod. Since much of the Cape has been developed, the area provides the only habitat for many rare plant and animal species.



*The spotted salamander thrives in Camp Edwards' pine barren ecosystem, as do many Massachusetts threatened or endangered species, including the Chain-dotted Geometer, one of 20 rare Lepidopterans found in the area.*



*The Camp Edwards Training Site, located on the upper western portion of Cape Cod in Barnstable County, Mass., is a 15,500-acre area that makes up the lion's share of the 22,000-acre Massachusetts Military Reservation.*

While only one of these species is found on the federal list, there are 39 state-listed species at Camp Edwards identified by the Commonwealth of Massachusetts as threatened, endangered or of special concern. They occur in a rare pine barren ecosystem that is unique to Southeastern Massachusetts and Cape Cod.

Management of the natural resources on Camp Edwards is balanced, documented, implemented and coordinated through the Integrated Natural Resource Management Plan (INRMP) developed by the Environmental and Readiness Center. The INRMP covers 15,500 total acres, of which ~200 is improved, ~300 is semi-improved and the remainder is unimproved. These acres include 15,000 acres of managed pitch pine scrub-oak forest, the largest in New England.

## BACKGROUND

The natural resource office at Camp Edwards has the considerable challenge of managing seven natural communities while supporting its training mission. The INRMP at Camp Edwards has been in place as the foundation of the Environmental and Readiness Center's management efforts since October 2001. The INRMP is currently in its five-year revision and is going through the National Environmental Policy Act (NEPA) process. It will be complete by April 2007. Cooperative agreements

that support the INRMP and their dates of preparation and revision are listed in Table 1.

Table 1. Cooperative Agreements		
Agreements	Prepared	Revised
MA Department of Conservation and Recreation	November 2006	N/A
MA Chapter of The Nature Conservancy	January 2004	N/A
Cape and Islands Senior Environment Corps	September 2003	N/A
State of MA and the MMR MOA	March 2002	Codified into law, Chapter 47 of the Acts of 2002
State of MA and the DoA MOA	October 2001	N/A

The hands and feet of the INRMP is a natural resource office that is staffed by a natural and cultural resources manager, a natural resources planner, a Geographic Information Systems (GIS) manager, a GIS technician and seasonal field crews. This staff works closely, during regular meetings, with Camp Edwards facilities engineers, the Integrated Training Area Management (ITAM) team, range control personnel and the command staff as a means of truly integrating the environmental efforts on post. Collocation of the natural resources staff and facilities engineers fosters open communication and coordination of environmental activities with training needs.

The natural resource office of the Environmental and Readiness Center at Camp Edwards executes the goals of its INRMP in cooperation with a commission established by legislation in 2002 enacted to ensure the permanent protection of the drinking water supply and wildlife habitats at the MMR while allowing compatible military training. This Environmental Management Commission (EMC) is made up of the commissioners of the MA Department of Fish Wildlife and Environmental Law Enforcement, the MA Department of Environmental Protection, and the Department of Conservation and Recreation.

The EMC oversees compliance with and enforcement of specified Environmental Performance Standards and coordinates the actions of environmental agencies in the enforcement of environmental laws and regulations within Camp Edwards. The EMC is also supported by two advisory councils that assist the EMC by

providing advice on issues related to the protection of water and wildlife within Camp Edwards. These councils are the Community Advisory Council (CAC) and the Science Advisory Council (SAC). The Camp Edwards Environmental and Readiness Center works with EMC’s Environmental Officer to ensure the EMC and council members are up to date on environmental management programs and actions.

## PROGRAM SUMMARY

The importance of Camp Edwards as a significant northeast United States training area is carefully balanced by the MAARNG and the Camp Edwards natural resource office with its importance as an area of critical habitat for many state-listed rare species. The goals of the Camp Edwards INRMP are to aid in improving the training lands while benefiting the natural resources through reduced soil erosion; improvement to the flora, fauna and their habitats; protection of wetland ecosystems; and conservation of rare species. In FY 2006 the Camp Edwards natural resource office met these goals through the following successes:

- Completed Integrated Wildfire Management Plan and Wildfire Response Plan.
- Coordinated six environmental and training initiatives through improved communications between the natural resource office and training directorates.
- Placed an engineering equipment training area and upgraded small arms ranges through extensive use of GIS as a management tool.
- Completed an Eastern box turtle study and a floral survey that show training may actually benefit endangered species.
- Recovered and restored 175 acres of training area and biodiverse habitat due to prescribed burning.
- Removed approximately 6,000 invasive plants to aid in the recovery of usable training area.
- Received funding for and coordinated the purchase of 10 new pieces of land management equipment to aid the Camp in cost effectively (in house) maintaining training lands.
- Restored 18 miles of protective firebreaks.



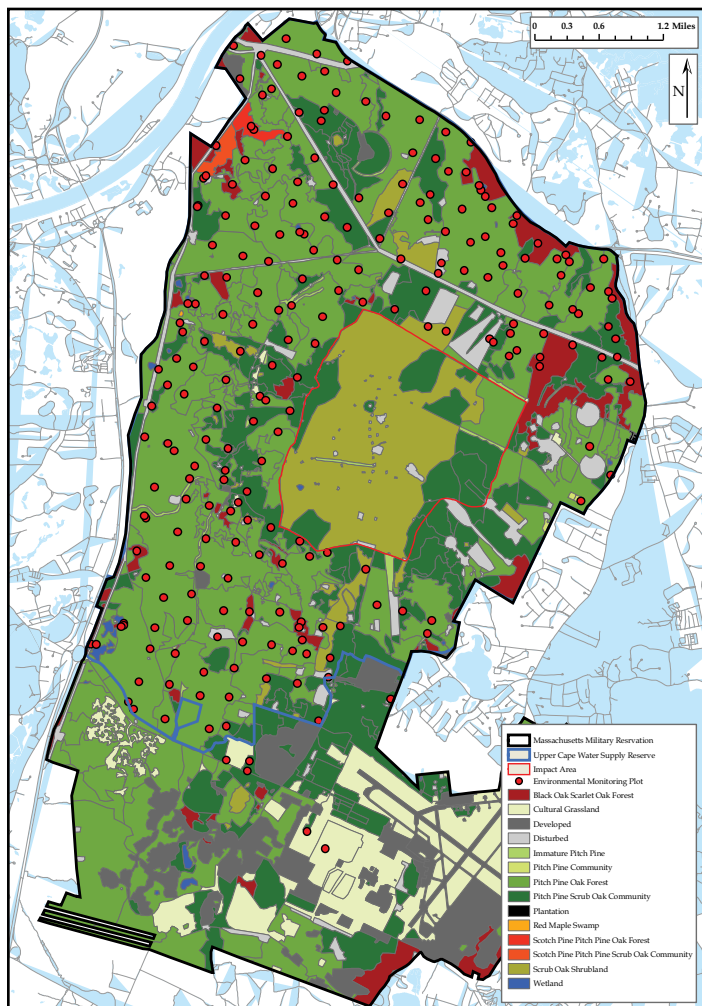
- Completed 20-acre wetland restoration.
- Repaired permanently one quarter mile of a chronically eroding combat trail.
- Aided Air National Guard in restoring 160-acre grassland by providing restoration advice and a prescribed burn team.
- Aiding in restoring the firing of lead by informing planners of natural resource concerns early in the process.
- Presented natural resource work in several public venues to instill public confidence in the use of the facilities land mass as a viable training site.

## ACCOMPLISHMENTS

### Overall Conservation Management

The amount of coordination among external and internal program partners it takes to execute and report on environmental successes at Camp Edwards places communication high on the list of priorities for the natural resource office. In FY 2006 the office focused its communication efforts on internal partners, particularly the range control division, the ITAM team, and facilities and engineering personnel, to ensure that environmental activities and training needs are aligned. Collocating itself in the same or near offices with these teams was a simple move that promoted integration of efforts through increased information sharing and planning, and resulted in greater coordination between trainers and environmental specialists.

Low-tech verbal communication and collaboration is matched on the opposite end of the spectrum with extensive use of a high-tech GIS to manage conservation and training activities at Camp Edwards. GIS is used in all directorates for environmental planning, spatial analysis of wildlife and creating a wildfire hazard model on the one side, and for developing land navigation and vehicle training courses, identifying restricted areas and producing Soldier cards and other map materials on the other. Making full use of this powerful management tool results in layers of data that can be used across the board to paint a comprehensive picture of what is happening and what is needed to ensure the success of Camp Edwards' environmental and training missions.



Camp Edwards uses GIS to map its many natural communities and monitoring plots.

The natural resource office at Camp Edwards relies on its collaborations to accomplish all that it needs to do. It also relies on sound financial management to preserve limited funds for costly initiatives. During the period of performance the office realized cost savings of over \$250,000 by conducting surveys, invasive species work, and the INRMP revision in house (see Figure 2, below).

Activity	Proposed Contract Cost	Actual In-House Cost	Cost Savings
INRMP Revision	\$75,000	\$5,500	\$69,500
2004 Surveys	\$115,000	\$59,000	\$56,000
2005 Surveys	\$120,000	\$58,000	\$62,000
2006 Surveys	\$120,000	\$60,000	\$55,000
Invasive Species	\$40,000	\$15,000	\$25,000
			<b>TOTAL: \$267,500</b>

## Threatened and Endangered Species Management

One effect on the environmental program at Camp Edwards resulting from greater communication and coordination between trainers and environmental specialists is that Soldier training actually is contributing to the support of threatened and endangered species, such as the Eastern box turtle. According to a survey concluded in FY 2006, the Eastern box turtle was found to be more prevalent in areas used for training as opposed to areas that were not. Similarly, a five-year whip-poor-will survey, now in its third year, is showing that training disturbance and prescribed burns are benefiting this species by providing improved nesting and foraging areas. This species is thriving on Camp Edwards but declining elsewhere in Massachusetts and across the USA.



*A whip-poor-will hen sits on a nest of chicks. Though they are declining elsewhere, these birds are thriving on Camp Edwards.*

Along with the Eastern box turtle and the whip-poor-will studies, there are a total of 230 environmental monitoring plots at Camp Edwards, with 60 sites surveyed annually for wildlife and vegetation. These plots help determine community type classification, health of the training area, early detection of invasive species, military impacts and subsequent recovery times.

Monitoring data and survey work informs the internal community at Camp Edwards so that conservation and training activities can be coordinated. It also informs the external community. Results from these activities are duly provided to state and local authorities and the public in partnership with them to ensure the health of the environment at Camp Edwards. The

benefit is that interested parties can be assured precious natural resources are being cared for, and that military training is both compatible with and supportive of even the sensitive environment found at Camp Edwards.



*One of Camp Edwards' 230 monitoring plots is surveyed to check its environmental health.*

## Land Use Management

The soil at Camp Edwards, which consists largely of sand and loam, has a high susceptibility to erosion. The natural resource office works hand-in-hand with the ITAM team to stabilize the soil and minimize negative impacts from training. Where erosion damage has occurred to tank trails and other vehicle pathways, the natural resources office staff used native soil materials to build them up and create a protective eight-foot bed. In addition, the staff used a bonded fiber matrix that naturally degrades over time to establish vegetation and prevent future erosion.

In addition to using combinations of native soil and bonded fiber matrix, another means employed to improve the quality of the land is fire. The pitch pine and scrub oak ecosystem at Camp Edwards is a fire adapted system that requires disturbance. The natural resources staff burns approximately 375 acres annually, with a goal of 600 acres, for forest health. Prescribed burning improves habitat and training areas by allowing for new growth and removing excessive cover that would otherwise impede training, thereby making more training land available to Soldiers.

## Pest Management

Natural methods are also employed by the natural resources staff to pest management challenges. The staff tested non-synthetic herbicides, such as vinegar and salt mixtures, and applied them





*Prescribed burns promote healthy grassland eco-communities.*

with great success to invasive plants including the spotted knapweed. Where herbicides are necessary, the staff has decreased the amount of chemical needed effectively to kill invasive plants by cutting it down and simply painting the “stump” with the herbicide. By using the stump and paint approach, chemical herbicide use has been reduced to less than a gallon per year. Even so, in FY 2006 these methods resulted in an overall reduction of nearly 2,000 invasive plants.

### **Community Relations**

The natural resource office prides itself on its efforts to reach out to stakeholders in the community interested in understanding the environmental initiatives at Camp Edwards. At the state level, it is conscientious to work within and be responsive to a public oversight structure established by state law, and annually publishes a report with regard to its activities with the goal of providing an extremely high degree of interaction and transparency. At the community level, the staff participates in many activities designed both to inform members of initiatives and share the rich environmental heritage of Camp Edwards:

- Publish annual updates and reports on training and environmental activities.
- Provide tours of Camp Edwards for interested community groups.
- Visit local towns to give natural resources program presentations.
- Teach students about the environment at local schools, K-12.

- Present special training at the local vocational technical school.
- Give annual presentations at the Cape Cod Natural History Conference and the Cape Cod Museum of Natural History.

### **TRANSFERABILITY**

Camp Edwards’ natural resources staff actively shares its research and management experience with the military and the greater environmental community. Camp Edwards’ natural resources staff shares its work within the military, presenting at the National Guard Bureau conservation workshop, Range and Training Land Program, and ITAM conferences. The natural resources and GIS managers also serve on the National Guard Bureau Conservation and GIS Committees. Data is shared with local, state and federal agencies, and has been used in state wildlife management plans.

### **CONCLUSION**

The Camp Edwards natural resources office has the considerable challenge of managing a globally threatened habitat while supporting an important training mission – all under the watchful eye of the community. This has resulted in a standard of excellence for Camp Edwards’ natural resources conservation program based on environmentally sound and innovative management practices, collaboration, training and awareness, and intentional community outreach. Proof of the program’s effectiveness is in the exceptional biological diversity at Camp Edwards – more rare state-listed species occur on Camp Edwards than on any other land mass in the state. Camp Edwards’ natural resources staff actively shares its research and management experience with the military and the greater environmental community; its data is shared with local, state and federal agencies, and has been used in state wildlife management plans. Camp Edwards works to maintain transparency to the community and regulators, and promote understanding of its efforts on behalf of the community and the nation.

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*On the cover: A Soldier assigned to Company C, 1st Battalion, 181st Infantry Regiment, 29th Infantry Division, Massachusetts Army National Guard scans the Caribbean Sea while on patrol in Guantanamo Bay, Cuba. (DoD photo)*