CONSERVATION

Introduction

Sound resource management is integral to maintaining military readiness. Whether deploying a tank brigade, conducting low-altitude flight maneuvers, or training for amphibious landings, U.S. Armed Forces must train in environments similar to those they may encounter in a conflict. By carefully planning and coordinating with installation trainers and Federal and state regulatory agencies, DoD maintains healthy resources that offer maximum opportunities to carry out mission activities. By doing this, the Department can avoid potential conflicts between mission activities and protecting resources.

DoD's Conservation Program has two primary goals—the first is to protect access to the land, sea, and airspace necessary for realistic testing and training exercises; the second is to protect valuable natural and cultural resources to benefit current and future generations. The lands DoD manages and trains on are home to important natural habitats for a variety of common, threatened, and endangered species.

Many elements of the Conservation Program directly support military readiness while saving funds and improving program efficiency. Each of the following aspects of the Conservation Program supports the military mission and reduces the impacts of encroachment—

- *Threatened and endangered species management*—Installation personnel identify and manage species and habitats at risk before they are formally listed as threatened or endangered, avoiding potential training restrictions. Personnel identify management options to reduce existing restrictions.

- *Migratory bird studies*—Researchers use radar, satellite telemetry, and standard bird monitoring techniques to predict the flight patterns of birds, reducing the threat of bird–aircraft strikes. New mobile radar units provide near real-time warnings to pilots.
- *Ecosystem management initiatives*—DoD works cooperatively with organizations to establish conservation priorities and implement projects. These efforts help improve community relations and encourage partnerships to share future management responsibilities beyond DoD's boundaries, reducing encroachment threats.
- *Land management*—Erosion control, vegetation rehabilitation, prescribed burning, and invasive species control all improve training realism, prevent costly training land degradation, and enhance safety.

RESPONSIBILITIES

DoD is the third largest Federal land manager in the United States—it manages 25 million acres of land on more than 425 major military installations. DoD requires continued access to these lands to maintain mission readiness, including munitions and weapon systems testing and combat training exercises. DoD needs the marine environment to conduct training exercises, test vessels and submarine tracking equipment, evaluate missile weapon systems, and conduct trials on new ships. DoD needs airspace to train pilots and to test fighter planes and air-based weapon systems.

Varied training routines and differing settings prepare troops to operate equipment and carry out operations under conditions they may encounter in combat or conflict situations. Conservation efforts ensure that these training environments are not degraded over time and that DoD has continued access to these areas to test, train, and maintain readiness.

DoD installations contain many rich and varied natural and cultural resources. These resources include archaeological and historical sites, threatened and endangered species, marine mammals, Native American burial and sacred

sites, historic buildings, and wetlands. DoD has an obligation both to protect these resources for future generations and to ensure the success of the mission.

The lands and waters located on DoD installations provide thousands of military and civilian personnel the opportunity to hunt, fish, hike, and enjoy other forms of outdoor recreation. Installations contain some of the finest remaining examples of rare native vegetation, including old-growth forests, tall-grass prairies, and vernal pool wetlands. More than 200 installations provide habitat for more than 300 plants and animals that are listed on or are being considered for listing on the Federal endangered species list. DoD lands also contain more than 100,000 archaeological sites, and at least 200 installations have properties that are listed on or eligible for the National Register of Historic Places. Approximately two percent of all military buildings and structures are considered historic.

GOALS

DoD's challenge is to balance the use of air, land, and water resources for current military readiness with requirements to protect and manage those resources for all desired long-term uses. The goals of the Conservation Program are to support the military mission by providing for the sustained use of land, sea, and air resources; protecting valuable natural and cultural resources for future generations; meeting all legal requirements; and promoting compatible uses of those resources.

STRATEGY

DoD meets its conservation goals by using a systematic approach to identify, evaluate, and manage natural and cultural resources on its installations. The basic steps in this process are to—

- Conduct needs assessments and detailed inventories of resources
- Analyze information about the resources
- Prepare integrated resource management plans
- Implement resource management plans.

HIGHLIGHTS OF ACTIVITIES IN FY 2001

Through its Conservation Program, DoD protects the health of its employees and their families; preserves land, water, and airspace needed for military training; and maximizes the use of funds provided for environmental protection. The Department is proud of its accomplishments in these areas.

NATURAL AND CULTURAL RESOURCES PLANNING

DoD has established specific goals and methods to monitor progress in reaching its Conservation Program goals. These goals are based on completing resource inventories and developing resource management plans to manage conservation efforts on installations. Each year, DoD tracks the number of inventories of biological resources, wetlands, historic buildings, and archaeological sites that installations have revised or completed. DoD also tracks the number of integrated resource management plans that installations have fully or partially developed or revised. Inventorying and assessing natural and cultural resources is a priority because they provide essential baseline planning information for resource managers and military trainers.

Installations conduct needs assessments to identify resources that require protection, enhancement, or management. Installations identify potential habitats of threatened or endangered species; areas likely to contain archaeological sites; and developed areas likely to contain historical buildings, objects, or structures. To identify these resources DoD conducts literature searches and remote sensing and views aerial photographs. Installations also use preliminary needs assessments to identify stakeholders, including planning and regulatory agencies, non-governmental organizations, Native American tribes, and private interests with whom to consult before undertaking an action.

Once an installation identifies an area of potential concern, it conducts detailed inventories to establish a comprehensive baseline of specific information about the resources. DoD uses plant surveys, population or endangered species counts, archaeological excavations, and studies of

historical context to identify, locate, and count resources that require protection. During the inventory process, installations also identify Native American tribes that have historical ties to military lands.

DoD analyzes inventory information to determine management needs and priorities, characteristics of the resources, and constraints related to military training and testing activities. Such analyses may include evaluating the effects of noise, vehicular traffic, fires, activities at bombing ranges, and aircraft on sensitive species. The Army's Integrated Training Area Management program analyzes trends in these activities to develop an understanding of plant and animal life, the effects of ground disturbances, soil characteristics, and the land's ability to withstand training activities. The Bird Air Strike Hazard Program aims to minimize the potential for collisions between aircraft and birds by carefully managing the land beneath the flights and analyzing bird migration within low-level aircraft routes.

DoD's analyses of cultural and natural resources provide a scientific basis for decisions affecting military readiness and resource management. These analyses help DoD determine the carrying capacity (the population that an area can support without deteriorating) of particular areas and balance resource management needs with the demands of training and testing activities.

Integrated planning encourages the sustained use of resources and facilitates efforts to minimize harmful effects of mission activities on the environment. Integrated plans include rotation schedules for training areas, specifying maintenance requirements for historic buildings, identifying management goals for resource use programs, and establishing provisions for access by different groups to DoD's natural and cultural resources. DoD recognizes that installations are part of larger regional ecosystems. Integrated resource management plans consider not only activities on installations, but also issues within the larger regional ecosystem.

One important part of implementing these plans is monitoring the effects of training and testing exercises and other military activities on the environment. DoD invests in systematic, timely, and integrated planning to

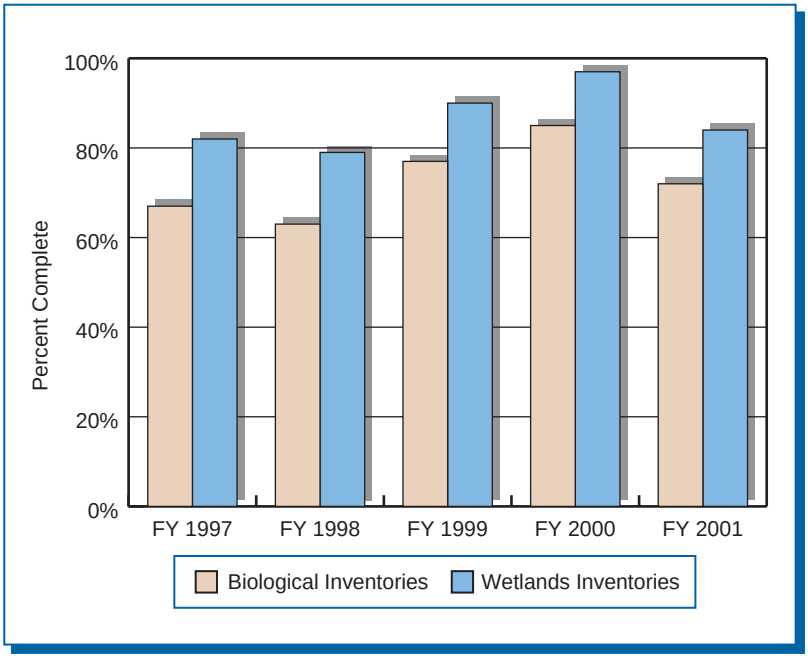
implement these plans. Such investments help avoid significant costs by minimizing repairs to damaged soil, vegetation, wildlife habitats, archaeological sites, or historic objects.

COMPLETING NATURAL RESOURCE INVENTORIES

Natural resources are the varieties of plants, animals, and their associated physical surroundings that make up a diverse landscape. Natural resources include both earth resources (nonliving things such as soil, minerals, fossils, air, and fresh and saltwater) and biological resources (all living organisms—plants and animals).

Figure 27 illustrates the progress DoD installations made in FY 2001 toward completing natural resource inventories. DoD has completed approximately 72 percent of biological resource inventories, and almost 88 percent of wetlands inventories. The decline in the number of natural resource inventories completed is largely due to an increase in the number of installations requiring these inventories. As each DoD Component reviews the data each year, it is not unusual to discover additional installations that require natural resource inventories. This may be because an installation discovered new resources, acquired land containing biological resources or wetlands, or the condition of these resources changed.

Figure 27
Natural Resouce Inventories Completed



Installations update their inventories periodically to ensure that environmental personnel have the most up-to-date information. DoD also reevaluates installations periodically, regardless of any actual changes to existing resources.

TEAMWORK EARNS HAMMER AWARD

An effort that brought together six Federal agencies to help the Army manage cultural and natural resources on its lands received the Vice President's Hammer Award in October 2001. The Hammer Award recognizes teams of Federal employees and their partners whose work makes government more efficient and cost-effective. The U.S. Army Environmental Center's (USAEC's) Conservation Team partnership program has saved the Federal government tens of millions of dollars since it was established in 1994.

USAEC integrates, coordinates, and oversees implementation of the Army's environmental programs. The Center provides a broad range of environmental products and services to Army staff, major commands, and commanders worldwide. Through USAEC's Conservation Team program, liaisons from the Forest Service, the Department of Agriculture's Natural Resources Conservation Service (NRCS), the Fish and Wildlife Service, the Bureau of Land Management, the U.S. Geological Survey, and the Advisory Council on Historic Preservation work together.

Helene Cleveland (left), USAEC Forest Service liaison, shows forest soil samples to USAEC Executive Officer Captain Keith Reed (middle) and USAEC Forest Service liaison Mark Cleveland (right).

Using liaisons helps the Army more effectively and efficiently manage natural and cultural resources. Interagency agreements and memorandums of understanding help the Conservation Team provide a broad range of services, such as delivering conservation services to the military that otherwise would be unavailable or prohibitively expensive. For example, soil surveys of 65 Army training areas would have cost $29 million had the Army relied on its own resources. Experts from NRCS were able to do the same work for less than $2.9 million.

SIKES ACT REQUIREMENTS

The Sikes Act of 1960 requires each DoD installation to develop a plan to maintain and coordinate wildlife, fish, and game conservation and rehabilitation. Each plan must include fish and wildlife habitat improvements or modifications; range rehabilitation, where necessary, to support wildlife; control of off-road vehicle traffic; and adequate protection for threatened or endangered species of fish, wildlife, and plants.

In 1997, Congress passed amendments (described in greater detail in Appendix B) to the original Sikes Act. These amendments require DoD to prepare and implement an integrated natural resource management plan (INRMP) for each installation within the United States. INRMPs help installations conserve and rehabilitate their natural resources. These amendments required that DoD prepare an INRMP for each installation by November 18, 2001.

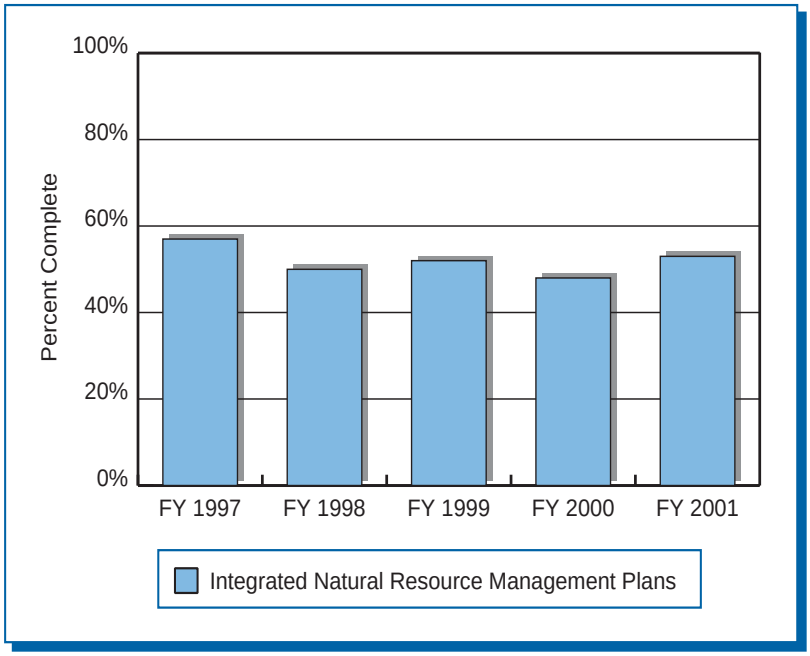
In preparing an INRMP, an installation must provide an opportunity for public comment, as well as consult with the U.S. Fish and Wildlife Service (FWS) and the appropriate state fish and wildlife agencies. Each plan also must ensure "no net loss" to the military mission.

REVISING INRMPS

An INRMP provides guidance and sets priorities for resource protection, improvement, and restoration. Installations use INRMPs to manage the often competing needs of natural resource management (e.g., fish and wildlife, forestry, land management, and outdoor recreation) and mission requirements.

Marine Corps Base (MCB) Camp Lejeune, North Carolina, is a leader in managing natural and cultural resources to support its mission. Developing the installation's INRMP was a cooperative process involving Camp Lejeune, the U.S. Army Environmental Center (USAEC), and the National Forests of North Carolina. MCB Camp Lejeune's process for developing the plan ensured continued integration among the military mission, facilities development, and natural resource management. The training community and the natural resource managers meet quarterly to ensure they continue to protect the mission and the resources.

Figure 28
INRMPs Revised

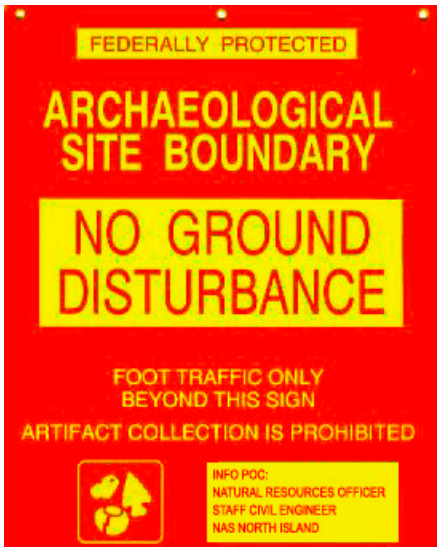


Installations must update INRMPs at least every five years, or sooner if there are significant mission or resource changes. In addition, installations should internally review INRMPs once each year. Figure 28 illustrates the progress that installations have made toward meeting the goals of the Sikes Act Amendments. DoD has completed revising 53 percent of its INRMPs.

For this report, the DoD Components provided data on the number of INRMPs completed as of September 30, 2001—the close of FY 2001. The DoD Components then provided updated data on or about November 18, 2001, the Sikes Act deadline. The updated data indicated that all but 39 plans (10 percent) were complete. Ninety percent of the remaining plans are complete but were in coordination with FWS or state fish and game officials when the November 18 deadline passed.

Completing Cultural Resource Inventories

The term "cultural resources" includes historic sites and districts, archeological sites, historic personal and related property, historic records, and sacred sites. Examples of cultural resources as described in DoD Instruction 4715.3, "Environmental Conservation Program, " include—



A sign warns against disturbing an important archaeological site being studied for clues to the past.

- Buildings, structures, sites, districts, and objects eligible for or included in the National Register of Historical Places
- Cultural items as defined under the Native American Graves Protection Act, including human remains, funerary objects, sacred objects, and cultural patrimony objects
- American Indian, Eskimo, Aleut, or Native Hawaiian sacred sites for which access is protected under the American Indian Religious Freedom Act
- Archaeological resources as defined under the Archaeological Resources Protection Act, including any material remains of past human life or activities that are of archaeological interest
- Archaeological artifacts and associated records, including artifacts and other physical evidence that are excavated or removed during a survey, excavation, or other study of a prehistoric or historic resource. Associated records include original records or copies that document efforts to locate, evaluate, record, study, preserve, or recover a prehistoric or historic resource.

To develop effective management strategies for cultural resources, DoD installations must understand the historic and cultural significance of these resources. The value of a resource to the public or to a particular group is a

key factor in determining its treatment and disposition. Another factor is DoD's ability to meet current mission requirements. For example, an installation is required to provide and operate living quarters for personnel. In some cases, these living quarters are located in historic structures. Preserving the drawings and records of these structures facilitates their repair and maintenance.

Often a cultural resource, such as a building or structure, can be adapted to meet new program requirements. In such cases, management strategies for the property include protecting those elements that constitute or contribute to the significance of the resource. In some instances, the best management approach is to leave the resource untouched, an appropriate method for many archaeological resources and Native American religious sites. Planning and forethought are critical to properly treating and protecting cultural resources.

Installations conduct cultural resource inventories to record historical and archaeological artifacts on installation properties. These inventories help installations manage their resources and protect important national treasures. They also help installation commanders comply with laws, such as the National Historic Preservation Act (NHPA) of 1966.

Figure 29
Cultural Resource Inventories Completed

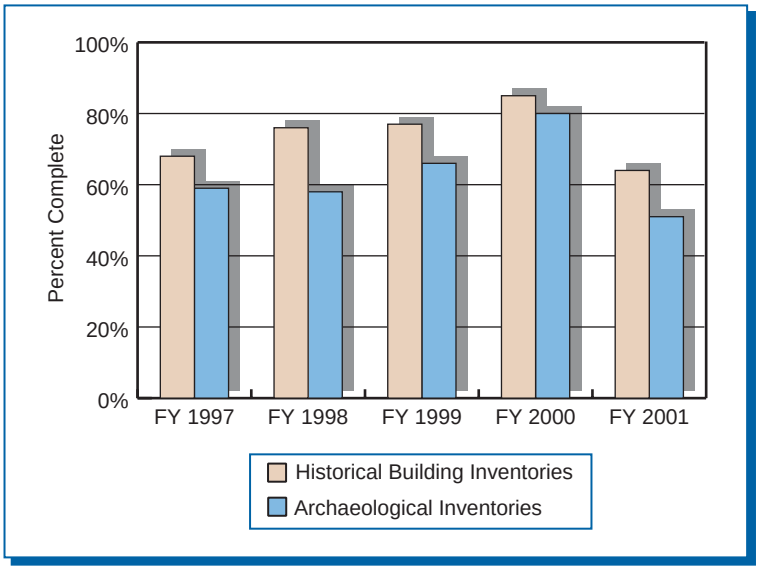


Figure 29 illustrates DoD's progress in completing cultural resource inventories. Almost 48 percent of the archaeological inventories are complete. Inventories of historic buildings are 64 percent complete. The reason for the decline in the number of complete cultural resource inventories is that, as with natural resources, installations update inventories periodically to ensure that environmental personnel have the most up-to-date information.

ARMY HONORED FOR HISTORIC PRESERVATION LEADERSHIP

The Army received the new Chairman's Award for Federal Leadership in Historic Preservation from the Advisory Council on Historic Preservation in November 2000. The award acknowledges the efforts of government leaders who, through personal example, have helped to institutionalize a preservation ethic in their agencies and set an example for employees that will have a lasting effect.

The Army manages one of the nation's largest portfolios of historic properties, including 12 National Historic Landmarks, districts, and approximately 15,000 Army properties that are listed on or eligible for the National Register of Historic Places. During the next 30 years, more than 70,000 other Army buildings will reach 50 years of age and will be evaluated for placement on the National Register of Historic Places. Additionally, there are 35,000 known archaeological sites and a large number of Native American sites. These properties cover a broad spectrum of historic eras, architectural styles, building types, and land uses.

According to the Advisory Council, a new focus in preservation through partnership evolved within the Army, with old partnerships being strengthened and new partnerships being developed—especially with the private sector. The Army also developed creative funding approaches to preserve irreplaceable resources as it worked to integrate historic property management into daily operations.

ARMY ALTERNATE PROCEDURES STREAMLINE COMPLIANCE WITH CONSERVATION INITIATIVES

To streamline compliance with Section 106 of the NHPA, the Army developed Army Alternate Procedures, or AAPs. AAPs build on the present management approach established in Army Regulation 200-4, "Cultural Resources Management," and leverage existing Army historic properties management policy, programs, and participants. Management under AAPs will aid overall compliance with Section 106 and help the Army be a more responsible steward of the historic properties entrusted to its care. The Army estimates that the new procedures could avoid costs of $1.5 to $4.2 million annually as installations choose AAPs over the current method. In addition, delays in projects for consultation will decrease.

Fort Monroe, Virginia, is one of the Army's premier National Historic Landmark districts. Built between 1819 and 1834, it was the first and largest coastal defense system of its time. Even today, it retains and displays the early and continuously evolving history of an Army fort.

Installations will implement AAPs by consulting with stakeholders in the historic properties component of the ICRMP, replacing project-by-project consultation. The new procedures will allow installations to resolve conflicts internally, avoiding delays associated with standard case-by-case reviews.

The Advisory Council on Historic Preservation approved the Army Alternate Procedures in a unanimous vote in 2001. When the AAPs were published in the Federal Register, they became a valid option for Army installations to comply with Section 106 of the NHPA. The Council also presented the first ever Chairman's Citation for Achievement in Historic Preservation to two Army civilians critical to the AAP initiative.

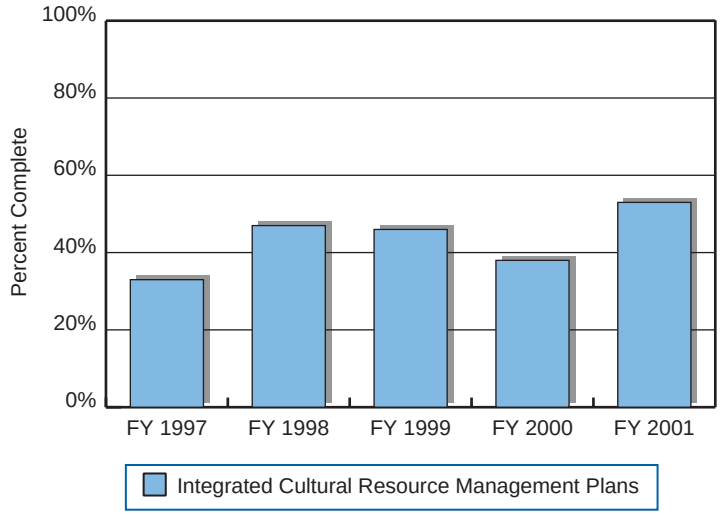
NEW TOOL FACILITATES ICRMP DEVELOPMENT

A new Web-based toolbox is helping DoD's Cultural Resource Managers tailor ICRMPs to unique needs at installations. This toolbox contains supporting documents and sample plans to assist in developing ICRMPs. It is organized to reflect the major components of the plans—management, integration, monitoring, and reporting. The main window in the toolbox provides general information about cultural resource legislation, planning level surveys, and installation context. A standardized menu on every page provides links to the governing DoD Instrucion as well as individual Military Service regulations and guidance. There is also a page that provides links to cultural resources Web sites, including the National Register of Historic Places, the Advisory Council on Historic Preservation, and sites relating to Native American consultation. Another window provides access to model ICRMPs developed for each of the Military Services. The Toolbox is located at *http://www.denix.osd.mil/ICRMP.*

REVISING ICRMPS

DoD Instruction 4715.3, "Environmental Conservation Program," defines an integrated cultural resource management plan (ICRMP) as the process for managing cultural resources on a DoD installation. Each installation revises its ICRMP based upon a risk assessment. Installation personnel coordinate the ICRMP revision with other installation management tools, such as master plans, work plans for operation and maintenance management, training and mobilization plans, and public affairs and community activities. An installation often uses ICRMPs in conjunction with INRMPs to manage installation resources. ICRMPs provide an effective method for measuring and monitoring the status of cultural resources on an installation.

Figure 30
ICRMPs Revised



As required by DoD Instruction 4715.3, each installation within the United States with significant cultural resources must prepare an ICRMP. DoD installations must review their ICRMPs at least every year, update the plans as mission or environmental changes warrant, or

review and approve the plans every five years. DoD has made significant progress since FY 2000 in completing its ICRMPs—53 percent are complete (Figure 30).

LEGACY RESOURCE MANAGEMENT PROGRAM

Congress created the Legacy Resource Management Program in 1990 to balance the intensive use of DoD lands for military training and testing with the need to protect natural and cultural resources. The Legacy Program's challenge is to develop methods to protect and enhance these resources while supporting military activities. The principles of the Legacy Program are—

- *Stewardship*—safeguarding the environment through ecosystem management and preserving historic properties, historic records, and the nation's cultural heritage
- *Leadership*—exploring new ideas and implementing new technologies for natural and cultural resource management
- *Partnership*—working with partners to conserve natural and cultural resources in a cost-effective and technically sound manner.

The Legacy Program helps DoD determine how to best conserve biological, cultural, and geophysical resources while maintaining the military mission. To achieve this goal, DoD places a high priority on inventorying, protecting, and restoring biological, cultural, and geophysical resources in a comprehensive, cost-effective manner in partnership with Federal, state, and local agencies, and private groups. By conserving resources proactively, DoD can better prevent resource degradation or destruction.

The Legacy Program strives to achieve sustainable use of DoD's land and water resources, address resource management needs, promote resource expertise, develop demonstration projects, facilitate application of data and expertise, support parallel efforts through the government and private sectors, and enhance biological diversity. Some examples of activities the Legacy Program supported during FY 2001 include—

FORT MCCOY UNEARTHS 19TH CENTURY MILL OWNED BY NAMESAKE

In May 2001, remnants of an almost forgotten settlement, believed to be partially owned by the family after which Fort McCoy, Wisconsin, is named, were unearthed. Tarr Creek saw and grist mill opened in 1856 but closed in 1876. Robert Bruce McCoy, the father of the man after whom Fort McCoy was named, once owned the land on which the mill was built.

McCoy was a prominent Wisconsin resident who served as a lawyer, district attorney, county judge, and mayor of Sparta, Wisconsin. He also had a distinguished 31-year Army career, rising to the rank of major general and serving in the Spanish-American War and World War I. Flooding destroyed the Tarr Creek mill in 1876 and information indicates that the mill was never rebuilt. The McCoy family moved to Sparta after the mill was destroyed. In the 1940s, DoD purchased the land. Using a map from 1858, installation personnel determined the approximate location of the mill and, in May, unearthed the mill near one of Fort McCoy's gates.

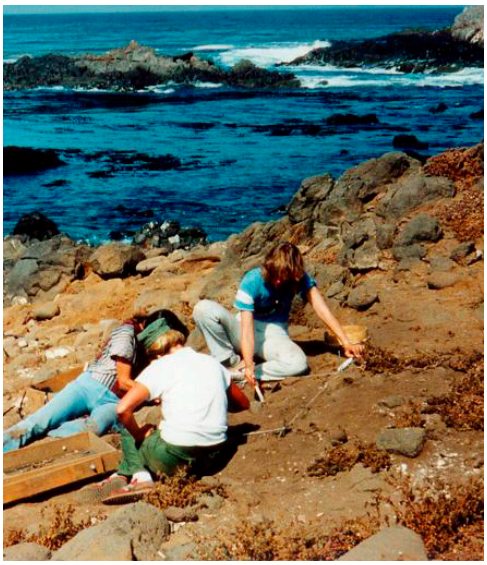
Andy Sewell (right), Fort McCoy staff archaeologist, helps volunteers excavate a saw and grist mill in operation from 1856 through 1876.

This project demonstrates Fort McCoy's commitment to cultural resource management. Fort McCoy volunteers did everything from excavating to meticulously charting where artifacts were found. Most of the findings were fragments of dishes, ceramics, nails, smoking pipes, and timber.

- *Commander's Guide to Stewardship of Cultural Resources*. The National Trust for Historic Preservation, in cooperation with Office of the Deputy Under Secretary of Defense (Installations and Environment), produced an interactive handbook as a guide for new installation commanders to understand their cultural resource management responsibilities. The guide provides a synopsis of cultural resource management history, procedures, and statutory and regulatory requirements, including Federal legislation and individual Military Service instructions.
- *Historic Buildings Conference*. The U.S. Army Corps of Engineers, Seattle District held a conference from June 12 to 14, 2001, to provide a forum for DoD personnel, facilities, housing, and cultural resources representatives to discuss critical issues. These issues included new policy, guidance, privatization, preservation partnerships, regulatory requirements, economic analysis, and other cultural resource management requirements.

U.S. Navy divers, working with archaeologists from the National Oceanic and Atmospheric Administration (NOAA), recovered the steam engine of the historic USS Monitor *from the waters within the Monitor National Marine Sanctuary.*

- *USS* Monitor *Stabilization and Recovery Project*. The USS *Monitor* was the first ironclad, steam-powered warship in the U.S. Navy. After a battle with a confederate ship, the *Monitor* sank off Cape Hatteras, North Carolina, in 1862. Discovered in 1973, the *Monitor* became America's first National Marine Sanctuary in 1975. The currents and weather off Cape Hatteras provide Navy divers the opportunity to work in a unique and challenging environment while recovering a valuable part of the nation's heritage. Dives to the USS *Monitor* prepare Navy salvage divers for work on modern naval wrecks, accidents, and disasters. Divers trained at this site were called upon to help salvage the USS *Cole* after a terrorist attack; the Japanese vessel *Ehime Maru* involved in a collision with the USS *Greenville*; and the LPT *LaMoure County*, which ran aground.
- *INRMP Implementation Framework*. This project provides a Web-based guide for resource personnel on how to best implement INRMPs. The guide acts as an implementation framework, providing information on effective communication, planning, budgeting, procuring services, obligating funds, partnering, and more.
- *Establishment of BIRDRAD Network at Military Air Bases*. The DoD Partners In Flight Program worked with Clemson University to establish small, mobile, high-resolution radar systems at several military airfields. Each radar provides access to real-time radar displays to detect bird and bat activity. The radar network will greatly reduce the threat of potentially deadly bird-aircraft collisions. This effort will enhance training operations and reduce costly equipment loss and personnel injuries.



An archaeological dig on San Clemente Island, California.

- *Improving Access to Information on Species of Conservation Concern*. The Association for Biodiversity Information (now Nature Serve) provided DoD with detailed spatial distribution data about species of conservation concern at regional, national, and international scales for six southwestern states. This information was critical in helping DoD justify land withdrawals in the region. DoD also uses the information to prepare various documents to comply with the National Environmental Policy Act.

THREATENED AND ENDANGERED SPECIES

When Congress passed the Endangered Species Act (ESA) in 1973, it represented America's concerns about the decline of many plant and animal species around the world. One of the major causes of the population decline of many species is habitat destruction through human activities, including pollution.

The purposes of the ESA are to protect endangered and threatened species and to conserve their habitats. Endangered status means that a species is in danger of extinction throughout all or a significant portion of its range. Threatened status indicates that a species is likely to become endangered within the foreseeable future. As of August 31, 2001, 1,802 species were listed as either threatened or endangered.

Under the ESA, all landowners, including DoD, must protect threatened and endangered species and preserve their habitats. Landowners must use their authority to conserve listed species and to ensure that their actions do not jeopardize the survival of these species. The FWS and the National Marine Fisheries Service work with Federal agencies to plan or modify projects so that they have minimal impact on listed species and their habitat.

Sailors from USS Thorn *(DD 988) use bolt cutters and knives to free the only surviving sea turtle in a group of four found tangled in some long-ago discarded netting.* Thorn *was headed in the general direction of the tangled turtles when a helicopter deployed with the ship spotted them from the air.*

Military installations have developed environmental programs that support the ESA. These programs monitor listed species at installations to protect species during military activities. The presence of endangered and threatened species on ranges can impact DoD's ability to train, so properly managing species is vital to both DoD's ability to conduct realistic training and to the species' ability to survive.

Currently, 47 Federally listed threatened and endangered species call approximately 1.3 million acres of Army National Guard training lands home. Hundreds of state-listed species considered threatened, endangered, or of special concern also

ABERDEEN PROVING GROUND COUNTS RECORD NUMBER OF BALD EAGLES

Flying in the predawn light of a late January morning, a helicopter followed the shoreline of the northern Chesapeake Bay, tracing the broad creeks and inlets slicing the forested ranges of Aberdeen Proving Ground (APG), Maryland. On board, APG fish and wildlife biologist Jim Pottie counted bald eagles.

The flight brought news about the eagles—they have returned to APG in record numbers. The last 25 years has been a period of rapid recovery for the bald eagle. Chosen as the nation's symbol in 1782, the bird had declined to the point that biologists counted only 800 nesting pairs in 1974. The previous year, Congress had passed the Endangered Species Act, with the bald eagle on its initial list. Protection, conservation, and the outright ban of the once-popular pesticide DDT helped bring the national bald eagle population back to 5,700 nesting pairs in 1998.

Twenty years ago, on his first flight, Pottie found five nesting pairs along the shore of the northern Chesapeake Bay. In 2001, he found 239—a record number. APG reported this number to the Maryland Department of Natural Resources, who then sent the data to the National Wildlife Federation, which monitors national figures. Like APG, other installations across the nation are creating habitats for eagles, building platforms for nests, establishing protection zones, and monitoring the birds' movements.

"The Aberdeen ranges are well suited for eagles, with plenty of fresh water and nesting places where human access is controlled. The best indicator is the number of nests. This number has been constantly increasing," Pottie said. The APG population has even expanded into neighborhoods around the installation.

make their homes on these lands. As a result, the Army National Guard had to find ways to coexist with rare wildlife. To balance the needs of 91 training sites with species conservation, the Guard implemented INRMPs at each installation. The plans help installations decide how to create better military training opportunities, while conserving resources.

In some instances, training lands are the reason some species survive. Training activities that result in frequent, low-intensity fires mimic the natural disturbance of fires creating habitats that are ideal for some plant and animal species. As a result, training areas are the last, best habitat for certain moths at Camp Edwards, Massachusetts, and Michaux's sumac at Fort Pickett, Virginia.

INVASIVE SPECIES

Invasive plants are plants that have been introduced into an environment in which they did not evolve and usually have no natural enemies to limit their reproduction. Whether plants are transported across an ocean to a new country or from an infested farm to a non-infested farm, the result is often the same. They grow and reproduce at high rates, allowing them to "invade" the new habitats. Invasive species can impact DoD's training areas, affecting mission readiness.

Although INRMPs usually focus on preserving land and species, sometimes a plan requires battling nature itself, particularly in the case of invasive plants. Hawaii's 11 Army Guard training sites host 33 Federal or state threatened and endangered species, including the *Schiedea adamantis*, an endangered shrub found at Fort Ruger Diamond Head Crater, the only place in the world where the shrub occurs naturally. Because Hawaii has the smallest landmass with the highest number of endangered species, alien species can easily invade habitats. Invasive species often spread by traveling on training gear. To prevent this, Fort Ruger's INRMP describes how to educate soldiers on properly cleaning their gear. By doing so, soldiers play a key role in preventing the spread of invasive species that threaten rare and fragile species.

Hawaii Army National Guard Environmental Assistant Molly Foley (left) and Melissa Ito, research and vegetation assistant, plant Scheidea adamantis *seedlings at historic Battery Harlow, Fort Ruger, Hawaii.*

CONTROL OF INVASIVE SPECIES AT NEW MEXICO'S WEEKEND TRAINING SITE

The New Mexico Army National Guard (NMANG) and Fort Bliss, Texas, are partnering to control noxious weed species in New Mexico's southern tactical training area. The 5,212-acre NMANG training area, known as the Weekend Training Site (WETS), has historically been used for field training exercises. Riparian areas (areas located on the bank of a water way) located on the site have become overrun by the invasive salt cedar shrub. To combat the shrub, in FY 2000, the NMANG and Fort Bliss initiated a salt cedar eradication program for the WETS.

The New Mexico Natural Heritage Program surveyed the WETS and identified six locations of salt cedars with a combined population of 375 shrubs. Once a thick stand of salt cedars becomes established, it can out-

compete the native vegetation, reducing both plant and animal diversity. Salt cedars hinder military training by blocking access. A thick stand of salt cedars can significantly lower the water table.

The eradication program involved cutting all salt cedar trunks to within one foot of the ground and painting the stumps with a highly concentrated herbicide. This increased the probability of killing the plant on the first try. All of the salt cedars that were cut down were burned.

The project removed access restrictions and future potential obstructions as a result of salt cedar expansion. The project benefits military training by increasing access to and use of the training area. The natural resource management benefit of the project was the recovery of native plants in the affected area.

Vegetation Mapping

Military land managers rely on vegetation maps and related information to maximize long-term land use and maintain readiness. Basic vegetation characteristics, landscape features, plant inventory, geographical distribution, species composition, and community descriptors are critical to maintaining and managing lands.

To help installation managers execute a vegetation mapping project, the U.S. Army Environmental Center developed *Guidelines for Mapping Vegetation on Army Installations*. The guidelines provide a systematic approach to the mapping process by establishing objectives, identifying available resources, determining specifications, and operating within budget restrictions.

Databases provide information to land managers on soil type, topography, form of training, and number of months since last use and last burn. Specialists working in land or vegetation management, fish and wildlife, threatened and endangered species, pest management, cultural resources, public relations, safety, emergency, and planning find it beneficial to share databases electronically and customize maps to meet individual mission objectives.

New Executive Orders

E.O. 13178, Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve

While U.S. waters contain only 3 percent of the world's coral reefs, approximately 70 percent of U.S. coral reefs are located in the Northwestern Hawaiian Islands. These reefs, which encompass 3.5 million acres, support more than 7,000 marine species, half of which are unique to the Hawaiian Islands. This diverse ecosystem is home to many endangered species of coral, fish, birds, marine mammals, and other flora and fauna. The reefs are also a valuable geological record of the volcanic and erosive power that has shaped the area, and have great significance to Native Hawaiians as well as linkages to early Polynesian culture.

E.O. 13178, "Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve," signed in December 2000, establishes a Coral Reef Ecosystem Reserve. This reserve is designed to protect the coral reef ecosystem and related marine resources of the Northwestern Hawaiian Islands.

In October 2000, DoD finalized its Coral Reef Implementation Plan. The plan outlines policies and actions for implementing the military's responsibilities. This plan demonstrates DoD's commitment to incorporating coral reef protection and conservation into military training and operational activities. Through sound environmental practices, DoD can continue its operations while fulfilling its stewardship responsibilities.

E.O. 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

Migratory birds are of great ecological and economic value. The United States has recognized the critical importance of these birds by ratifying international bilateral conventions for the conservation of migratory birds. E.O. 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds," signed in January 2001, directs Federal agencies whose activities have or are likely to have a negative impact on migratory birds to develop and implement an agreement with the FWS to protect these birds. Federal agencies must—

- Incorporate bird conservation principles, measures, and practices into agency activities

- Avoid or minimize adverse impacts on migratory birds when conducting activities
- Include migratory bird habitat and population conservation principles, measures, and practices in planning processes and efforts; coordinate with other agencies and non-Federal partners in these efforts
- Promote research and information exchanges to conserve migratory birds, including inventorying, monitoring, collecting, and assessing information on environmental contaminants and other physical or biological stressors
- Provide training and information on methods and means of avoiding or minimizing the death of or harm to migratory birds and conserving and restoring their habitat
- Promote migratory bird conservation in international activities.

IMPROVING CONDITIONS FOR MIGRATORY BIRDS: NAVY PARTNERSHIP WITH FISH AND WILDLIFE SERVICE CREATES THE RIGHT HABITAT

In Hawaii, the Navy has a strong partnership with the FWS. Sailors and family members often spend weekends working with FWS staff at the James Campbell and Honouliuli Unit of the Pearl Harbor National Wildlife Refuges to create new habitats, food sources, and nesting and foraging areas for hundreds of native and migratory waterbirds. Resident waterbirds include endangered species such as the Hawaiian Duck, Stilt, Coot, and Moorhe.

Recently, the Navy joined forces with the FWS to restore a pond at the Honouliuli Unit that provided little value to waterbirds because of an overgrowth of invasive vegetation. FWS staff cleared approximately five acres of vegetation at the national wildlife refuge. However, once the vegetation was removed, it was apparent that additional work was required before the pond would be suitable for waterbirds. Manipulating water levels creates favorable conditions for certain plants, insects, and other organisms that provide food for the birds. In August 2001, the Navy Seabees sculpted the bottom of the pond and constructed a drainage system.

The Navy's efforts created critical mudflats for birds to forage, islands for nesting stilts, and channels to easily direct water to all parts of the pond. With the pond restoration complete and fresh water pumped in, an ideal habitat is available for resident waterbirds and for the many migratory waterbirds returning to Hawaii for the winter. By ensuring that the waterbirds have a suitable habitat, they are less likely to make their nests on critical training ranges, which could prevent realistic training and testing exercises, as well as cause potential harm to the birds.

The Military Services are already actively involved in using radar ornithology (the use of weather surveillance radar) to track, monitor, and protect the habits of migrating birds. The project is funded through DoD's Legacy Resource Management Program in partnership with the Department of Biological Sciences at Clemson University. The Clemson University Radar Ornithology Laboratory has already established a network of high-resolution radars at participating military airfields. Between 1990 and 1997, Clemson installed almost 150 new surveillance radars around the country. DoD will connect each radar to a dedicated server providing real-time data on flocks of migrating birds within 60 nautical miles of each station. The system enables pilots to access real-time data on bird activity at their airfield or destination airfield, thereby allowing adjustments to flight patterns as necessary to avoid bird strike situations.

During peacetime, one of the greatest threats to pilot safety is from potentially deadly bird strikes. The radar network will greatly reduce this threat to military aircraft and personnel. Natural resource managers can use these remote sensing tools to locate important stopover, roosting, and feeding areas of threatened and endangered birds. This effort will enhance training operations and reduce costly equipment loss and personnel injury.

Water Resources

Water quality is important to DoD and the success of its mission—ensuring that water is of the highest quality ensures that DoD troops, their families, and other personnel are healthy and able to perform their important functions. Different types of waters (coastal, lakes, rivers, etc.) also provide areas for continuous ship and submarine maneuvers. Conservation efforts ensure that these training environments are not degraded over time and that DoD has continued access to all such areas to test, train, and develop readiness capabilities.

Carrier Homeporting Leads to Nature Preserve

Two additional nuclear-powered aircraft carriers will now call San Diego Bay home. In a unanimous vote, the California state regional water authorities approved the Navy's environmental impact statement to allow the Navy to station two more nuclear aircraft carriers at Naval Air Station (NAS) North

Island, California. In order to accommodate the additional carriers, Navy will have to dredge about 534,000 cubic yards of material from the San Diego Bay. Instead of dumping this material at sea, the Navy plans to create a 27-acre nature preserve. The preserve will be a shallow water habitat for birds and fish near Naval Amphibious Base Coronado. The Navy will screen the dredged sand and silt for objects larger than three inches in diameter in order to remove any possible ordnance. The nuclear-powered USS *John C. Stennis* is already homeported at NAS North Island; the next two aircraft carriers are scheduled to arrive in two and five years, respectively.

The aircraft carrier USS John C. Stennis *(CVN 74) executes a sharp turn to starboard. The carrier represents 4½ acres of U.S. sovereignty and delivers Naval air power where it is need, when it is needed, and for as long as it needed.* Stennis, *deployed two months prior to its scheduled departure date, and her battle group are operating in support of* Operation Enduring Freedom. *USS* John C. Stennis *is homeported at Naval Air Station North Island, San Diego, California.*

Artificial Reefs

One way that DoD saves money is by disposing of clean solid waste as artificial reefs. According to the South Carolina Department of Natural Resources, fish and other marine life flourish in more complex environments, as opposed to open water. Therefore, DoD is helping the environment while saving money by turning excess debris and waste into artificial wildlife habitat.

Charleston Air Force Base (AFB) joined forces with the South Carolina Department of Natural Resources, Coastal America, the South Carolina Army National Guard, and other agencies to construct an artificial reef just off of the coast of Charleston. Twelve thousand tons of concrete debris from Charleston AFB was dropped into the Atlantic Ocean 2.5 miles from shore to build the reef. This strategy is a safe way to dispose of scrap materials and construction debris, while making an important contribution to the environment by creating habitats in near-shore areas for fish and other marine life. Building reefs is also cost effective—Charleston AFB officials estimate they saved more than $350,000 in solid waste disposal costs by building the reef instead of disposing of the debris in a landfill.

The Charleston endeavor is the most recent in a series of reef-building projects the Air Force has participated in since the 1980s. The Air Force has successfully built reefs in the Atlantic Ocean near Cape Canaveral, Florida, and in the Pacific Ocean at Johnston Atoll, Wake Island, and Pearl Harbor.

Tyndall and Eglin AFBs in Florida have participated in building reefs in the Gulf of Mexico. The Navy has also built artificial reefs with old ships and the Army has done so with tanks.

CHESAPEAKE BAY

Fed by 150 rivers and streams and covering 2,500 square miles, the Chesapeake Bay is the largest estuary in the United States. Approximately 2,700 different plants and animals live in the Chesapeake Bay. Oyster, crab, and fish harvests and many recreational opportunities form a vital economic link between the Bay and the region's 13 million residents. With 65 major installations and 350,000 acres of land in the Chesapeake Bay watershed, DoD plays an important role in maintaining and conserving this vast water resource.

In 1984, DoD joined EPA and others in an effort to identify and control sources of pollution in the Bay. In 1990, DoD signed a cooperative agreement with EPA to expand efforts to protect and improve water quality in the Bay, and, in 1994, the two agencies agreed to use ecosystem-based planning principles to further improve the Bay's resources. DoD is studying portions of the Bay's shoreline to assess its ability to limit the amount of sediment entering the Bay and is also enhancing numerous tidal marshes to increase their natural cleansing ability.

In June 2000, the governors of Maryland, Virginia, and Pennsylvania; the mayor of the District of Columbia; and EPA officials approved a plan for the next decade of Chesapeake Bay watershed protection. The agreement is designed to improve the quality of water to maintain the health of the Chesapeake Bay's inhabitants and its tidal tributaries now and in the future.

CHESAPEAKE BAY RESTORATION ACT

The Chesapeake Bay Restoration Act of 2000 (CBRA) amends the existing Clean Water Act's Chesapeake Bay Program. Citing the Chesapeake Bay's diminished productivity and water quality, the amendment both expands and strengthens Federal cooperative efforts to restore and protect the Bay. The Region 3 Navy/DoD Regional Environmental Coordinator reviewed the CBRA to determine its impact on DoD facilities and activities within the

Chesapeake Bay watershed, and is preparing a draft implementation policy for DoD. The REC will coordinate with the Military Services to provide consistent guidance for affected activities.

A satellite image of the Chesapeake Bay.

Businesses for the Bay

NAS Patuxent River, Maryland, takes full advantage of the Bay's waters and surrounding environs as part of its day-to-day operations. Keeping the Bay clean and clear of pollutants is important to the installation. NAS Patuxent River is a member of Businesses for the Bay, a voluntary organization made up of local industries, commercial establishments, and small businesses dedicated to keeping the waters of the Chesapeake Bay free from pollution and reducing the amount of chemicals released.

As a participant in Businesses for the Bay, NAS Patuxent River has provided mentors to serve as peer-to-peer resources for business, industry, and others outside of the regulatory arena. Other DoD organizations taking part in Businesses for the Bay include the U.S. Naval Academy, the Naval Surface Warfare Center Indian Head Division, and Aberdeen Proving Ground.

Army Research Critical to Health of Chesapeake Bay

Army installations within the Chesapeake Bay are a vital component of the Army's training and readiness mission, and Army installations have long been involved in protecting and restoring the Bay. Army research into beds of submerged aquatic vegetation (SAV) at Aberdeen Proving Ground, Maryland, has directly linked these underwater grasses to the health of the Chesapeake Bay. SAV are vital to the Chesapeake Bay ecosystem because they provide oxygen to the Bay's waters, are important sources of food and shelter, and serve as nursery areas for fish and shellfish.

Julie Bortz (left), USAEC environmental scientist, examines the health of SAV grasses with Julia Brant, a Dartmouth student working at the Anita C. Leight Estuary Center in Maryland.

The Army's SAV program began in 1996 and is one of the most extensive water quality monitoring programs in the Chesapeake Bay. During 2001, USAEC studied the effects of different water quality characteristics on the growth of three native species of SAV. The Army

planted nearly 2,400 sub-aquatic plants to restore SAV grasses in the Bay. Local, state, and Federal environmental agencies will be able to use the findings to evaluate future action to preserve the health of the Bay.

Sustainability

Sustainable development implies two concepts. The first is development or practices that accommodate social, environmental, and economic needs using a balanced approach that strives to achieve vitality in all three. The second provides for the needs of the present generation without jeopardizing the ability of future generations to meet their own needs.

Sustainable Forest Management

Forests perform vital environmental, training, recreational, and economic functions at DoD installations. They protect stream banks and soil from erosion, contribute to clean air and water, maintain food and habitat for fish and wildlife, and provide a unique landscape for military training. Forests also provide opportunities for outdoor recreation and supply raw materials for economic benefit, which often fund the forest management programs that protect them.

Sustainable forest management is a process for managing a forest's ecosystem so that it can continue to provide benefits for both present and future generations. This concept is part of DoD's overall approach, which seeks to achieve sustainability of natural resources at DoD installations, while maintaining a varied training environment for the readiness of U.S. Armed Forces. DoD must find a balance among environmental, social, military, and economic needs so that forests can continue to provide benefits and withstand impacts from various activities. In order to achieve and maintain this balance, installations have adopted an ecosystem management philosophy that recognizes the fundamental links among the military, society, and regional ecosystems, while highlighting their associated needs and impacts.

MCB Camp Lejeune, North Carolina, recently celebrated 54 years of sustainable forest management. Its forest management approach consists of ensuring the use of forests for more than one activity at the same time; coordinating forestry activities among departments; reforestation;

improving timber stands; protecting forests from wildfire, insects, and disease; protecting unique forested areas; and providing outreach and commercial forestry programs. These activities enable MCB Camp Lejeune to design and implement a forest management program that meets its needs, and that can sustain both the forest and the installation into the future.

At Marine Corps Air Station (MCAS) Cherry Point, North Carolina, the forests not only accommodate ground training, but also serve as a barrier between the operation of aircraft and the surrounding community. Forests serve as excellent buffers by protecting the surrounding community from noise, visual, and other effects of aircraft training and mission-critical activities. MCAS Cherry Point faces the additional challenge of integrating a complex system of runway restrictions into their forest management programs.

In the case of Marine Corps Logistics Base (MCLB) Albany, Georgia, managers focus on ensuring that the forest ecosystem does not impact mission requirements. The mission at MCLB Albany, to provide supplies to Marine Corps and Navy forces, is different from that of an air station (MCAS Cherry Point) or ground training installation (MCB Camp Lejeune). The focus is on logistical support and does not impact the forest ecosystem as heavily. Still, the goal is to care for and maintain the forest for those who do conduct training.

FY 2001 Budget Execution

In FY 2001, DoD invested approximately $183 million in conservation efforts, the largest amount ever. Of this amount, DoD invested approximately $111 million, or 63 percent, in supporting nonrecurring, innovative conservation projects. Of the total Conservation Program nonrecurring budget, DoD invested approximately $68 million in natural resource initiatives and $43 million in historical and cultural resource initiatives (Figure 31).

Of the $68 million in natural resource protection, DoD invested $9 million in wetlands protection—an increase of 14 percent compared to FY 2000, allowing for inflation (Figure 32). DoD invested $17.1 million in managing

Figure 31
DoD Budget Summary:
Natural vs. Historical and Cultural Resources

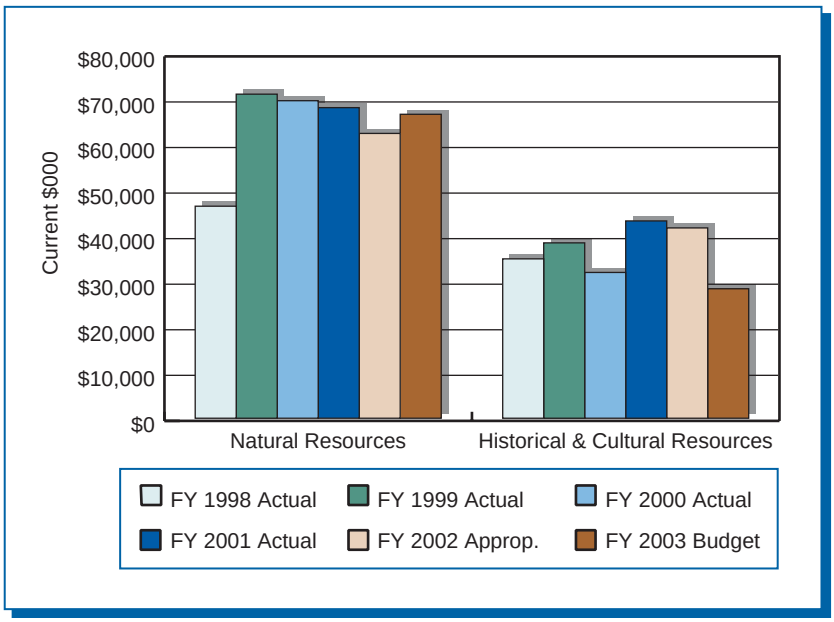
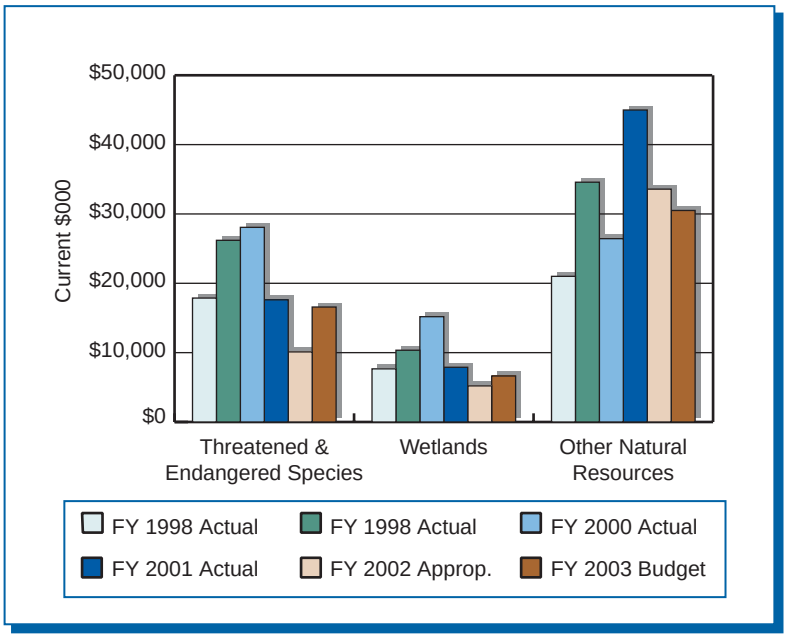


Figure 32
DoD Budget Summary:
Natural Resource Investment by Category



and protecting threatened and endangered species in FY 2001—a decrease of 5 percent compared with FY 2000, allowing for inflation. In addition, DoD invested $43.3 million in protecting other natural resources.

DoD invested approximately $71 million, or 39 percent, of the Conservation Program appropriations in recurring costs. These activities include preparing and updating integrated natural and cultural resource management plans, coordinating with other conservation regulatory agencies, and other management actions.

FY 2003 Budget Request

The President's FY 2003 Environmental Quality Program budget request includes $152 million for DoD conservation initiatives. This request is $12 million, or 7 percent, less than Congress appropriated in FY 2002. This decrease is due to the fact that DoD's budget request does not include the Legacy Resource Management Program.

DoD funds and invests in Conservation Program efforts to develop innovative processes and technologies to improve efficiency. In FY 2003, DoD will continue to lead stewardship efforts through collaborative planning, process improvements, and comprehensive resource management.