

## Summary

Camp Lejeune is committed to natural resource conservation in support of the Marine Corps mission. The 156,000 acre installation provides habitat for eight federally protected species, provides wildlife enthusiasts with opportunities for the challenging pursuit of game animals and fish, protects riparian areas adjacent to rich estuaries that support commercial fish stocks, and supports long-rotation production of high quality forest products. Marine Corps Base, Camp Lejeune's Integrated Natural Resources Management Plan (INRMP) was completed in January of 2007 and signed by the Base Commanding Officer, the US Fish and Wildlife Service, The NC Wildlife Resources Commission and the NC Division of Marine Fisheries. The revised INRMP improves military training opportunities while also providing a greater level of protection for sensitive species. Ninety-five percent of all INRMP action item goals were completed in each year. Camp Lejeune has a Conservation Working Group (CWG) that is a permanent committee given oversight responsibility for the successful revision and implementation of Camp Lejeune's INRMP. Established in FY2004, it continues to meet quarterly and address INRMP and EMS issues related to conservation. The CWG also serves as the Conservation Working Group for Camp Lejeune's Environmental Management System.

The Environmental Conservation Branch (ECON) at Camp Lejeune is charged with INRMP development, implementation and revision. With a combined staff of 40 professional and technical personnel (consisting of civilian employees, interns, and contract support) ECON and its mission is well supported by the base leadership. Forest management, fishing and hunting programs, endangered species management, and participation in regional cooperative conservation are important and active programs. Emphasis is placed on longleaf pine ecosystem restoration and habitat enhancement for endangered species. From FY07-08, Camp Lejeune restored longleaf pine on 521 acres and improved red-cockaded woodpecker (RCW) habitat on 626 acres of upland pine by removing undesirable hardwoods. Timber harvest to improve habitat was initiated on 4,527 acres. These areas that are managed and improved for conservation are also heavily used for military training.

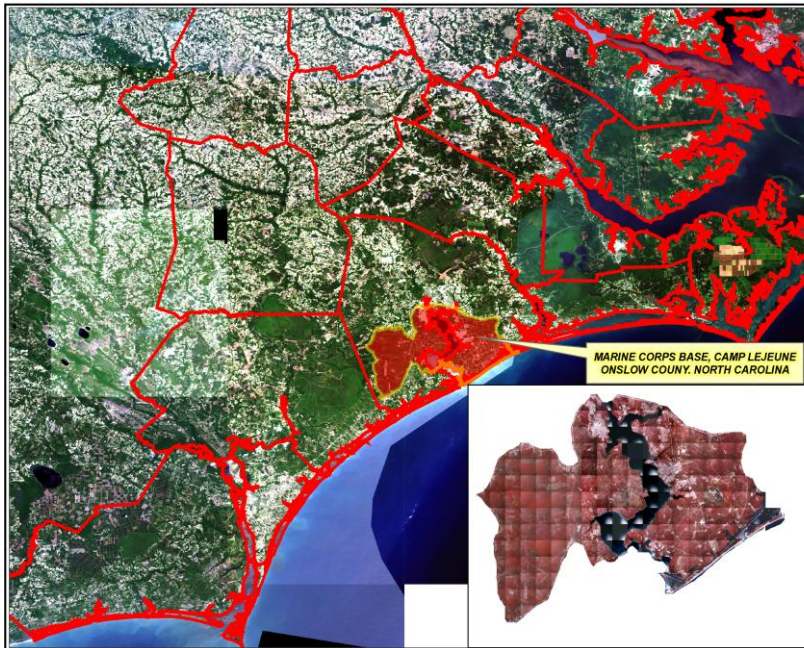
The conservation staff is constantly seeking new and better ways to accomplish the mission, and does not hesitate to lead the development of new tools and systems when necessary. Examples are the Burning Priority Model, the Ecosystem Management Model, the Electronic Fish and Wildlife Conservation Tracking System, and the Annual Habitat Enhancement and Sustainability Plan (AHESP) for red-cockaded woodpeckers (RCW).

Cooperation and partnership are important aspects of the natural resources program. The staff works on a daily basis with personnel from state and federal agencies and NGO's. Formal cooperative agreements and or MOU's have been established with the USDA Forest Service, the NC Division of Forest Resources, The Nature Conservancy, The NC Coastal Land Trust, The NC Wildlife Resources Commission and others.

Camp Lejeune was selected by the Strategic Environmental Research and Development Program (SERDP) to be the site of the Defense Coastal/Estuarine Research Program (DCERP). FY07-08 were the first two years of implementation for DCERP. This SERDP funded program is unique within the DoD, and consists of ecological monitoring and research. The program has over 40 scientists and researchers from universities and institutes around the country. The Decision Support Systems developed by the program will be exported to all DoD components.

## **Introduction**

Marine Corps Base, Camp Lejeune, located on the North Carolina coast is the nation's largest Marine Corps installation on the eastern seaboard. Camp Lejeune supports the Marine Corps's most complete expeditionary training program and is the home of the II Marine Expeditionary Force. The mission of Camp Lejeune is stated simply, to maintain combat ready units for expeditionary deployment. The complexity of this mission is clear when one considers the requirements for providing a sustainable training environment for approximately 41,000 active duty Marines, Sailors and other related military services. Directly contributing to this mission are approximately 4,500 civilian employees.



***Camp Lejeune's physical location along the Atlantic Seaboard creates training opportunities not found in other areas of the nation. The combination of ocean, beach, swamp, and upland environments provides a diverse platform for military training.***

areas. Of these sites, 11 are considered of state or national significance due to unique and sensitive plant communities. Two sites are officially entered on the NC Registry of Natural Heritage Areas. Of the 1244 officially recorded archaeological sites found on Camp Lejeune, 23 are eligible for National Register status, 1062 are not eligible, and 159 are currently unassessed.

Camp Lejeune supports the wildlife and plant associations typical of the southeastern coastal plain fire-maintained ecosystem. Recreational hunting takes place on approximately 102,000 acres and anglers have 71 acres of freshwater ponds and 26,000 acres of estuarine and brackish water associated with the New River to explore. Stocked fishing ponds, conveniently located marinas, and access to remote beach locations provide valuable fishing opportunities for properly licensed personnel extended this privilege.

Located entirely within Onslow County, Camp Lejeune occupies approximately 156,000 acres that includes dynamic beach and sand dune complex's along the Atlantic ocean, ecologically diverse embayments and estuaries of the New River, extensive bottomland hardwood forests and swamps, with majestic long leaf pine savannahs. The Marine Corps and the abundant wildlife on Camp Lejeune have co-existed in this coastal plain ecosystem for over 60 years.

The installation has an extensive natural and cultural resources program responsible for continued stewardship of this vast area. It includes active forest management of more than 92,000 acres, and management and protection of eight federally threatened and endangered species. Twenty nine significant natural areas have been identified by the North Carolina Natural Heritage Program in Camp Lejeune training

## **Background**

Marine Corps Base, Camp Lejeune's Integrated Natural Resources Management Plan (INRMP) was completed in January of 2007 and signed by the Base Commanding Officer, the US Fish and Wildlife Service, The NC Wildlife Resources Commission and the NC Division of Marine Fisheries. The revised INRMP improves military training opportunities while also providing a greater level of protection for sensitive species.

A number of cooperative agreements support the program. In 2003, Camp Lejeune signed the MOU that established The Onslow Bight Conservation Forum MOU, which was revised in 2006. In August 2007 a multi-party MOU with The Nature Conservancy, The NC Coastal Land Trust, the state of North Carolina, and the DoN for encroachment partnering in support of Camp Lejeune was completed. Camp Lejeune also has Cooperative Agreements with the US Forest Service (July 2008) and the the NC Division of Forest Resources for wildland fire management. During FY08, work began on a new multi-party MOU to create an Onslow Bight Stewardship Alliance with TNC, the NC Wildlife Resources Commission, and the USDA Forest Service for cooperative prescribed burning activities.

The Environmental Conservation Branch (ECON) at Camp Lejeune is charged with INRMP development, implementation and revision. With a combined staff of 40 professional and technical personnel (consisting of civilian employees, interns, and contract support) ECON and it's mission is well supported by the base leadership. ECON includes professional wildlife biologists, professional foresters, National Environmental Policy Act staff, an archeologist, and conservation law enforcement staff.

The Conservation Working Group (CWG) is a permanent committee given oversight responsibility for the successful revision and implementation of Camp Lejeune's INRMP. Established in FY2004, it continues to meet quarterly and address INRMP and EMS issues related to conservation. The key to the CWG's effectiveness is the participation and buy-in from Base and Tenant command staffs. The CWG also serves as the Conservation Working Group for Camp Lejeune's Environmental Management System. The base's Environmental Impact Working Group also supports the natural resources program by providing a venue for our natural resources professionals to interface with the trainers and developers on a regular basis.

The Forest Management Program provides a varied forested environment that meets the needs of the military mission while sustaining a flow of forest products on approximately 92,000 acres at Camp Lejeune. Silvicultural plans that fulfill ecosystem management goals while complying with applicable laws and regulations are developed annually through the prescription process and outlined in the annual Long Range Silvicultural Prescription Plan. As documented in the Integrated Natural Resources Management Plan, emphasis is placed on longleaf pine restoration and habitat enhancement. From FY07-08, Camp Lejeune restored longleaf pine on 521 acres and improved red-cockaded woodpecker (RCW) habitat on 2170 acres of upland pine by removing understory hardwoods and other vegetation. Thinning to improve ecosystem habitat was initiated on 4,527 acres which include 1,348 acres in the Greater Sandy Run Training Area.

Resource-based outdoor recreational activities are vital for many members of our military community, enhancing their quality of life through individual pursuits and providing important contact with family and friends. Recreational users at Camp Lejeune log 100,000 hours a year in hunting and fishing activities. Wildlife biologists at Camp Lejeune scientifically manage wildlife and fisheries resources to meet the demand of recreational users and to balance wildlife with habitat's conditions. In FY08, Camp Lejeune's

innovative Electronic Fish and Wildlife Conservation Tracking System (eFAWCTS) was chosen to be developed into a Marine Corps-wide system via the Marine Corps Environmental Applications Systems Enterprise (MCEASE) program.

## **Program Summary**

### **Camp Lejeune's INRMP**

**Cooperative Preparation.** The plan was prepared in cooperation with the US Fish and Wildlife Service and the state fish and wildlife agencies - NC Wildlife Resource Commission and NC Division of Marine Fisheries. The public was afforded an opportunity to comment. The Camp Lejeune Conservation Working Group, with representatives invited from all major stakeholder departments was formed in 2004 to help scope and coordinate the development of the INRMP.

**Mission Drivers.** Mission drivers were identified to serve as the basis for developing INRMP objectives and actions. The 6 mission drivers identified address the following subject areas: integrity of the amphibious maneuver areas, ensuring viability of its impact areas and associated training ranges, integration of the Land Use Master Plan and Range Transformation Plan, compliance with the Endangered Species Act, military training use of the New River and Onslow Bay and Clean Water Act compliance, and elimination of bird and wildlife strike hazards to aircraft at MCAS New River.

**Natural Resource Objectives.** Specific objectives were developed for each of the following natural resource management areas: Threatened and Endangered Species, Species at Risk and Natural Communities, Migratory Birds, Forest Management, Forest Protection, Wetlands Management, Soil Conservation/Land Management, Wildlife and Fisheries Management, Public Access, Outdoor Recreation and Law Enforcement, Regional Conservation, and Conservation Outreach/Education.

**Critical Habitat.** In accordance with recent Congressional authority, the INRMP places high priority on providing an exemption for Camp Lejeune. The FWS certified that Camp Lejeune's INRMP satisfies the US Fish and Wildlife Service criteria for an exemption from any threatened and endangered species critical habitat designation.

**Metrics and Measures of Success.** Of particular note are the 153 Actions and Measures of Success developed for the various natural resource management objectives and mission drivers. Actions were divided into two funding categories: class 0/1 –“must fund” to support requirements, subject to availability of funds; and class 2/3- not required but desirable if funding is available. All action items were tracked during the year, and reports submitted to the stakeholders on progress for each of FY07 and FY08.

**Ninety-five percent of all action item goals were completed in each year.** Comments were received from the stakeholders and meetings and site visits made to follow up and plan for improvement. Camp Lejeune and our INRMP stakeholders participated in the DoN INRMP Metrics Builder web-based INRMP reporting system in both FY07 and FY08. By all measure of success, Camp Lejeune is doing an outstanding job managing natural resources in support of the military mission.

## Accomplishments

**Conservation Working Group.** The diversity of this stakeholder group, with its broad connectivity to various mission components, provides vital INRMP integration and fosters focused communication among all aspects of the Camp Lejeune Community. The CWG and other installation stakeholders have creatively developed changes to natural and cultural resources related programs which have had and will continue to have a positive effect on military readiness, sensitive natural and cultural resources, and will not affect the installation's duty to conserve threatened and endangered species. During FY07-08, the CWG tackled a number of significant issues for Camp Lejeune to include bird/animal strike hazard (BASH) mitigation, minimizing impacts to training from archaeological resources, minimizing the threat to sea turtles from beach lighting, and minimizing threats to endangered species from off road recreational vehicle use at Onslow Beach. Camp Lejeune has effectively folded EMS Executive Order 13148 into a routine business practice by leveraging the CWGs' diverse membership to address EMS Natural Resources Objectives.



**Sea Turtle Friendly Lighting.** Artificial lighting on nesting beaches has been identified as a threat to sea turtles. It can deter females from nesting, and disorient hatchlings. In 2007 Camp Lejeune began implementing a plan to reduce artificial light on Onslow Beach. The first phase of this plan involved identifying all sources of artificial light on Onslow Beach, including roadway and parking lighting, outside lighting on buildings. The second phase consisted of installing “turtle friendly” canister-type lighting on all beachfront structures. These fixtures direct light down so walkways are illuminated, but light does not shine on the beach. As part of the plan, all new structures will have these turtle friendly fixtures, and all existing non-beachfront structures were retrofitted with these fixtures as they needed replacing. Any lights that could not be converted were fitted with timers and amber shields, which emit a more “turtle-friendly” wavelength of light. The final phase consisted of replacing beach roadway and parking area lighting with low-pressure sodium (LPS) fixtures. Low-pressure sodium fixtures emit a wavelength of light that is almost invisible to loggerhead sea turtles, the most common nesting species on Onslow Beach. Installation of the LPS roadway and parking lights, in conjunction with the canister lights, timers and amber shields should make Onslow Beach a much more attractive nesting beach for sea turtles, and a safer place for hatchlings. This success story is a great example of how the CWG and our EMS system was used to develop a plan and coordinate implementation by the conservation staff, Marine Corps Community Services and our Public Works Department.

**Red-cockaded Woodpecker Management.** The signing of the new INRMP marked the adoption of the US Army guidelines for RCW management, which are less restrictive to military training than previous management strategies. A system was created whereby RCW cluster buffer markings are removed as the population increases, and no new marked clusters will be established in high-use training areas. This

creates an innovative system that reduces restrictions on military training while Camp Lejeune meets its obligation to help in the recovery of this endangered species. In addition in 2008, the Camp Lejeune Threatened and Endangered Species Section developed the first Annual Habitat Enhancement and Sustainability Plan (AHESP) for red-cockaded woodpeckers (RCW). The plan uses a systematic approach to management priorities across the Base, and makes management decisions based primarily on current and future RCW habitat needs. Because of the complexities involved in coordinating habitat restoration, habitat improvement, and RCW recovery, a comprehensive plan was necessary to ensure sufficient quality habitat for the future. The RCW AHESP will allow Camp Lejeune to plan effectively for future growth while maintaining high quality in occupied habitat.

**Regional Conservation Initiatives - Addressing Encroachment with Conservation Partnerships.**

Camp Lejeune continues to make great strides in addressing encroachment on the training mission stemming from adjacent land use and ecological isolation. Installations and Environment at Camp Lejeune, together with other Base departments, pursued regional conservation initiatives with the aim of curbing encroachment on the training mission while fostering good land stewardship. During FY07-08, 730 acres within 4 tracts of land have been purchased in cooperation with Onslow Bight Conservation Forum partners. These tracts have been placed into permanent conservation and will protect rare ecosystems, sensitive watersheds, and will provide outdoor recreational opportunities for state and county residents. Through continued cooperative purchases of conservation easements or fee-simple title to adjacent lands, encroachment issues affecting training or the isolation of rare species can be minimized.

**Ecosystem Management Model (EMM).** Management decisions such as restoring longleaf pine while maintaining RCW habitat led foresters to develop a model which defines future effects of current and near term management decisions. The model is in the final stages of development. The EMM offers managers the ability to evaluate a given set of forest management prescriptions as they relate to two major outcomes: 1) the flow of revenue from the subject prescriptions and 2) the impact on the RCW habitat over the planning period. The model projects inventories and RCW habitat quality into the future based on growth and yield and habitat models. With the likelihood that revenue flow from the sale of forest products will be significantly less than in previous years and with the Base’s responsibility to increase RCW habitat to sustain 173 clusters, this tool enables managers to adequately define their tactical plans to maximize the synergy between revenue and habitat.



**Conservation Volunteer Program.**

**Volunteers** provide direct support to natural resources management efforts and INRMP implementation. Through volunteerism, Camp Lejeune was able to meet or exceed INRMP objectives during the reporting period. Volunteers were extremely active during FY07-08 and assisted in planting 20,000 sea oat plants for dune stabilization; participated in the Audubon Christmas Bird Count and assisted with archery skills testing for recreational hunters. The combined volunteer effort provided many hours of quality outdoor environmental education and hands on experience for volunteers interested in natural resource

management careers.

**Prescribed Burning Prioritization Model.** At Camp Lejeune, advances in GIS modeling opportunities have led to the development of a Prescribed Burning Prioritization Model. Base natural resources and GIS personnel collaborated to develop the model in-house. In its second year of use, this model is used in burn plan development and enables the environmental managers to allocate staff and equipment resources to achieve INRMP goals and objectives. In fiscal years 2007 and 2008 ECON staff accomplished over 27,000 acres of prescribed burning. The very nature of the training mission of Camp Lejeune results in a significant number of wildland fires each year. Uncontrolled wildfire is a threat to natural resources and a personal threat to Marines training in the field. Historically, forestry personnel have responded to an average of 150 wildland fires each year. In FY07-08, this number dropped significantly, due to an increase in the number of acres prescribed burned each year.

**Environmental M2R2 Program.** Camp Lejeune has very successfully utilized the HQMC centrally-managed M2R2 Environmental Program funding to support the INRMP, and environmental quality. During FY07-08 Camp Lejeune invested **\$2.75M** to implement four projects in wetland restoration, maintenance and repair of boat launching sites, and erosion control. The New River Estuarine Wetland Restoration project was designed to remove portions of an abandoned causeway in order to restore estuarine wetland habitat (0.60 acres of coastal low marsh, 0.16 acres of coastal high marsh, and 0.83 acres of maritime forest) on the installation, and create an aesthetically pleasing, scenic overlook/wildlife viewing area of the New River to be used by authorized personnel and guests. The Maintenance & Repair of Boat Launches has not only supported training, but facilitated outdoor recreational opportunities on the installation. Boat launches/piers and docking facilities at Courthouse Bay, Freemans Creek, Onslow Beach Bridge, Maple Landing, Henderson Pond, Orde Pond, and Mill Creek were rebuilt and repaired. These facilities are used to launch vessels used by Marines Corps, Navy, and Coast Guard vessels as well as authorized recreational boaters. Repair Erosion Sites NW Quadrant project included repair of Tactical Landing Zone Gull, and repairs to eroded tactical vehicle trails in several training areas. These repairs support training and natural resources management plans. The project resulted in a vegetated tactical landing zone, the protection of forested wildlife habitat and prevented wetland and water quality impacts due to erosion. Erosion Repair of Liars and Fisher Roads will stop erosion and the formation of entrenched road beds and subsequently prevent wetland and water quality impacts and protect forested wildlife habitat.

**Defense Coastal/Estuarine Research Program (DCERP).** **FY07-08 were the first two years of implementation for DCERP.** This SERDP funded program is unique within the DoD, and consists of ecological monitoring and research. The monitoring program gathers environmental data and supports research projects aimed at addressing installation management concerns, while the research program increases the understanding of installation relevant ecosystem functioning, stressors, and system responses to stresses and management actions. The program has over 40 scientists and researchers from universities and institutes around the country. The Decision Support Systems developed by the program will be exported to all DoD components.