

## **NATURAL RESOURCES CONSERVATION, SMALL INSTALLATION**

### **Marine Corps Recruit Depot Parris Island**

#### **Mission - "WE MAKE MARINES"**

Since 1915, Marine Corps Recruit Depot (MCRD) Parris Island has fulfilled a vital role in America's national security framework by executing its foundational mission: making United States Marines. Annually, approximately 14,000 young men and women enter the crucible of Parris Island, where they undergo a profound transformation. Through the rigors of basic training, an indoctrination into a shared legacy, and an unwavering commitment to the Corps' core values, these recruits leave MCRD Parris Island prepared to fight and win our nation's battles as United States Marines. In addition to this primary mission, MCRD Parris Island serves as the headquarters for the Eastern Recruiting Region and is home to numerous schools that certify Marines as drill instructors and provide advanced instruction on marksmanship and coaching techniques.

#### **Ecological Landscape**

Situated within Beaufort County, South Carolina, MCRD Parris Island occupies a position roughly six miles south of downtown Beaufort, where the Broad and Beaufort Rivers converge. The installation's 8,270 acres are characterized by a complex mosaic of coastal habitats, including hummock islands, upland forests, tidal ponds, and developed areas, all interwoven with an extensive network of tidal creeks and rivers. While the installation is called MCRD Parris Island, it is better thought of as a collection of small islands connected by bridges and causeways. Surrounding those islands are 5,040 acres of wetlands, tidal marshes, and creeks which provide important ecosystem services that are vulnerable to changing weather conditions. This dynamic coastal environment, while essential to MCRD Parris Island's identity, presents constant and significant challenges to installation infrastructure and operational continuity, requiring a proactive and innovative approach to natural resource management.

#### **Natural Resources Management & Summary of Accomplishments**

'We Make Marines' is the mission of the installation and accomplishing this requires the management of natural resources in a manner which promotes a healthy, robust, and realistic training environment. Additionally, as an area that is subject to significant tidal events, storms, and extreme weather, the resilience of the installation is greatly bolstered by the ecosystem services provided by the surrounding marsh habitat. MCRD Parris Island has progressed a variety of projects and initiatives that ensure mission success by preserving and enhancing the natural environment. Through a foundation of sound science and technical innovation, along with the development of partnerships with federal, state, non-profit and academic institutions, the local community, and regulatory agencies, MCRD Parris Island has been able to successfully identify challenges, internal and external funding sources, and both traditional and non-traditional contracting methods to bolster the military mission of the installation.

#### **Foundational Survey Efforts**

MCRD Parris Island utilizes a scientifically robust approach to manage natural resources and is continuously developing and refining the installation's understanding of the natural resources

and how they interact both on and off installation. During this period, MCRD Parris Island has completed a comprehensive vegetation study which established 57 vegetation monitoring plots. These plots provide an inventory of what is aboard the installation currently and through monitoring how it may change in the future. Cluster analysis and known associations result in the mapping of habitat types. This research was coordinated with a comprehensive herpetofauna and small mammal survey which determined the presence and distribution of reptile, amphibian and small mammal species across the installation via drift fence/camera trap arrays and cover boards. This is ongoing and resulted in nearly 400,000 detections of species across the sampling points, successfully cataloging eight lizard species, 12 amphibian species, seven snake species, four turtle species, and 12 small mammal species so far, including 17 threatened and endangered species. Along with ongoing southern fox squirrel monitoring and eastern diamondback rattlesnake monitoring, additional surveys have been undertaken to catalogue and inventory bat species, loggerhead sea turtle habitat and nesting behavior, and to determine the shorebird populations. By developing this foundational understanding of the Natural Resources aboard the installation and monitoring their changes over time, MCRD Parris Island is able to ensure that current training does not negatively impact any protected species, and can also develop long-range training plans which maximize the range of military training available while managing against possible adverse impacts.

### **Eastern Diamondback Rattlesnakes**

Monitoring of eastern diamondback rattlesnakes (EDBs) has been ongoing aboard the installation for the past 18 years, through close collaboration with universities and the South Carolina Department of Natural Resources. This species is of particular importance to the installation as they are widely distributed across MCRD Parris Island, are a species of concern in the southeast, and are under review for protection under the Endangered Species Act. Parris Island has significantly advanced the scientific understanding of this species, which has been otherwise sparsely studied and is poorly understood.

The Readiness and Environmental Protection Integration (REPI) program funded an EDB translocation project and assessment of acceptor property populations and habitat. This is a premier example of how proactive conservation directly enhances the military mission by reducing snake-recruit interactions and potentially provides additional habitat for the species of concern to populate with the hopes of avoiding the federally protected Threatened and Endangered Species List. By strategically relocating snakes from high-traffic training and residential areas, the program prevents interruptions to the tightly-choreographed recruit training schedule, where every hour is programmed and essential. This initiative is not simply academic research; it is rooted in a robust scientific foundation built over nearly two decades of intensive, mission-focused monitoring and data collection that meticulously tracked and analyzed the EDB population's behavior and movement patterns. Through partnering with the National Fish and Wildlife Foundation, local private land owners, Lowcountry Sentinel Landscape, university partners, and the South Carolina Department of Natural Resources, EDBs will be translocated off the installation onto suitable acceptor property habitats located in the Lowcountry Sentinel Landscape where they will ensure the success of the military mission and species. This science-based protocol will serve as a highly transferable model for other Department of War installations, ensuring its impact extends beyond Parris Island.

### **Nature-Based Solutions: A Coalition for Coastal Resilience**

### ***Living Shorelines – Leveraging Partnerships and External Funding***

Utilizing natural infrastructure and nature-based solutions has been one of most significant advancements which MCRD Parris Island has made during this period, and has been accomplished through partnership with numerous agencies and funding sourced from a variety of areas. Through partnership with the Coastal Conservation League and the South Carolina Department of Natural Resources, MCRD Parris Island has made significant progress on a living shoreline project funded through the National Fish and Wildlife Foundation (NFWF) – Coastal Resilience Fund, valued at over \$1.2 million. This project used volunteer driven production and installation of Manufactured Wire Reefs, which are constructed with galvanized wire and oyster shell, along with additional loose and bagged oyster shell, and strategically emplaced over 3.1 acres of waterway in vicinity of MCRD Parris Island to reduce erosion, dissipate wind and wave energy, improve water quality, and provide habitat for various species. MCRD Parris Island has supported these efforts through dozens of volunteer efforts both on- and off-installation as Marines have engaged with community partners to further this project.

Another living shoreline project was pursued through the South Carolina Department of Veterans Affairs Military Enhancement Grant valued at approximately \$5.5 million. This project is being conducted in cooperation with the Town of Port Royal, South Carolina Department of Natural Resources, Coastal Carolina University and Global ECO Adventures. There are two components to this project, one is similar to the previously described NFWF project and involves emplacing 8,930 linear feet of oyster-based living shoreline along the Parris Island shoreline. This is another project which is heavily driven by civilian and military volunteer efforts for both the construction and emplacement efforts. In addition to emplacing the living shoreline, the project also involves the evaluation of blue carbon stocks related to the installation of these living shorelines. The other component of the project involves studying and characterizing erosional forces and water quality measurement along Parris Island and then designing and installing “Smart Reefs” constructed from legacy cement anti-terrorism/force protection barriers which are no longer utilized by MCRD Parris Island. These barriers will use low voltage induced precipitation of calcium carbon to further enhance artificial reef habitat services and will be outfitted with various sensor platforms to provide continuous measurements of hydrologic data.

These projects were all funded from sources outside the Department of War. They provide tangible and substantial benefits to MCRD Parris Island, advanced technical knowledge, promote resiliency, and enhance the ecosystem. The technical expertise associated with these projects is sourced from a variety of community partners and is only possible due to the strong ties that the MCRD Parris Island Natural Resources staff has forged. These represent proactive approaches to preserve and promote the resiliency of the installation against forecasted future conditions.

### ***Advanced Resilience - Solving Current and Future Infrastructure Threats***

Natural Resources personnel have also observed changes in salt marsh habitat and significant shoreline erosion occurring at numerous points aboard the installation which is beyond the ability of oyster reefs to solve. Significant erosion is occurring along a section of shoreline adjacent to a stormwater retention pond that serves a nearby community and borders the down-range end of the installation’s pistol range. Protecting this shoreline is critical as continued erosion threatens the infrastructure valued in the millions of dollars and poses risks to training facilities that directly support military readiness and warfighter capability. Of similar importance, the changes in marsh habitat include marsh die-off occurring adjacent to the main ingress and egress route from the

installation. That marsh area serves as a significant buffer against wave action and tidal surge, and protects the main access route to the installation.

To address these two concerns, MCRD Parris Island convened an influential coalition of regional leaders, consisting of 54 attendees representing nine state agencies, three universities, two federal agencies and five conservation organizations to discuss the issues being observed and began to develop solutions. The result of this was a proposal submitted by the University of Georgia valued at approximately \$14 million to address these concerns through two main efforts.

First, there is a sediment placement project which aims to address the salt marsh die-off through the placement of sediment mounds which will raise the elevation of the marsh area in a manner similar to thin-layer placement. This is a relatively novel process, particularly in the state of South Carolina, and will serve to inform strategies for marsh restoration in areas where the elevation change required is too significant for thin-layer placement. During this period, a core prototype design has been developed and is scheduled for installation in the second and third quarter of fiscal year 2026, the results of which will be studied and used to inform the full-scale design which will be installed and monitored through 2029.

The other major project is addressing the aforementioned erosion occurring in the vicinity of the installation's pistol range and stormwater retention pond. The erosion in this area is so severe and dynamic, that a proposed solution will require more than the development of oyster habitat alone. Over the course of this reporting period there has been an extensive analysis of the site, including surveying the area, analyzing the soil composition, and measuring and modeling the hydrological conditions. Following this analysis, a comprehensive solution has been designed which consists of a combination of elements such as a reinforced dune, beach and dune renourishment, nearshore structures, groins, and both upland and marsh plantings. This project was also able to collaborate with the other living shoreline projects previously discussed and integrate components of them into the design. This ensures the separate projects work together synergistically, resulting in increased efficiency and likelihood of success for each project.

### ***Streamlining Innovation - A Model for the Region***

Recognizing that the regulatory environment surrounding projects such as these can be complex and lengthy, particularly when the projects are novel in nature, MCRD Parris Island has hosted on-site meetings with Federal and State regulatory agencies, the Army Corps of Engineers, and representatives from Marine Corps Installations Command and Naval Facilities Engineering Systems Command. The express purpose of these meetings was to determine ways to facilitate the timely review and approval of not just MCRD Parris Island's projects, but for similar efforts across the region.

### **Programmatic Innovation: Agile Planning and Funding**

To maximize the capability of MCRD Parris Island to conduct agile, responsive, and effective natural resources projects, proactive and new approaches to accomplishing National Environmental Policy Act (NEPA) requirements and new ways of funding have been developed. As a case in point, MCRD Parris Island has entered into Intergovernmental Service Agreements with agencies such as the South Carolina Department of Natural Resources and Marshall University. Not only does this allow MCRD Parris Island to increase its collaboration with these organizations and ensure consistently superior work is performed; it also provides a rapid means

of executing funding opportunities. It was through this funding mechanism that MCRD Parris Island was able to capitalize on \$196,000 of end-of-year funding towards natural resource surveys that would otherwise go unfunded.

Recognizing the cost and time that can be associated with conducting Environmental Assessments in accordance with NEPA, MCRD Parris Island has undergone a deliberative effort to expand the use of the Integrated Natural Resources Management Plan (INRMP) as a mechanism by which to develop projects that, through consultation with the South Carolina Department of Natural Resources and the United States Fish and Wildlife Service will satisfy NEPA review requirements. Via this effort, an additional eleven projects have been added to the MCRD Parris Island INRMP with goals of establishing marsh migration buffers, floodplain function enhancement using natural infrastructure, promoting green infrastructure for built floodplain areas, living shorelines, rain gardens, and bioswale installation. Not only will this facilitate future environmental review of these projects, thereby reducing costs, but it serves as a mechanism by which to ensure that MCRD Parris Island is managed holistically and that these varying projects are implemented in concert with their results used to inform each other to maximize efficiency. MCRD Parris Island has coordinated calls with Marine Corps Installations East environmental personnel to share lessons learned from this approach and inform actions across other installations.

### **Supporting the Warfighter: A Commitment to the Total Marine**

Through numerous outreach events, the Natural Resources Program promotes environmental education, awareness, and stewardship while encouraging use of the recreational opportunities available aboard the installation. As part of the management of the whitetail deer population, the Natural Resources personnel conduct an annual inventory of the population and use those results to determine if a deduction is necessary to support the health of the deer herd and the installation mission. Deer reduction hunts with hunters sourced from the local military and military retiree community.

The Drill Instructor is the centerpiece of the Depot's mission, and their well-being is paramount to training success. Recognizing this, MCRD Parris Island's natural resources staff prioritized providing these individuals opportunities to enjoy recreational opportunities by directly engaging with Recruit Training leadership to prioritize their ability to participate in hunting events. Natural Resources personnel also partnered with the Single Marine Program to pair experienced hunting mentors with new hunters from amongst the single Marines and provide them with an educational deer hunting experience. In addition to hunting opportunities, natural resources staff work closely with the Recruit Training Regiment to schedule fishing clinics during gaps in the recruit training schedule which provides opportunities for military personnel, and their families if desired, to learn to safely and effectively fish and hunt. The fishing clinics are hosted by the South Carolina Department of Natural Resources, which provides instructors along with all the equipment needed.

### **Proactive Field Management: Ensuring a Safe and Resilient Training Environment**

#### ***Invasive Species Rapid Response***

The recent arrival of the yellow-legged hornet (*Vespa velutina*) in the southeastern United States represents a significant and urgent threat to the region's ecological and agricultural stability. First

detected in Georgia in 2023 and subsequently confirmed in South Carolina, this aggressive, non-native predator poses a severe danger to vital native pollinators and, most critically, to honeybee populations that are the cornerstone of the state's agriculture. Establishing a foothold in South Carolina's temperate climate could lead to rapid population growth, disrupting local ecosystems and creating a new, widespread safety risk to both military personnel and the public. Its presence necessitates a swift and coordinated response to prevent a small incursion from becoming an uncontrollable, landscape-level infestation.

In September of 2024, Natural Resources personnel identified a yellow-legged hornet aboard MCRD Parris Island. Recognizing the importance of this, a robust system of traps was established to proactively monitor the presence and to potentially assist with locating nests of yellow-legged hornets. Since that time, two nests have been positively located and destroyed. MCRD Parris Island continues a partnership with Clemson University to monitor and track the presence of this species to help delay or prevent the species from establishing a foothold within the area.

### ***Wildfire and Hazard Mitigation***

To directly enhance the military readiness mission and protect the safety of the warfighter, MCRD Parris Island has implemented a strategic prescribed burn program, successfully treating over 300 acres of critical training area during this period. This program serves as a proactive mitigation measure against the mission-threatening risk of catastrophic wildfire, which could otherwise render training ranges unusable for extended periods. Furthermore, this initiative was executed in substantive coordination with the Recruit Training Regiment to target specific field training areas. By reducing dense undergrowth, these burns demonstrably improve airflow to mitigate heat risk injuries during peak training months and reduce the habitat for disease-carrying vectors, directly contributing to the health, safety, and operational readiness of every recruit and improves wildlife habitat as well.

In a direct effort to enhance the mission and ensure the safety of every recruit, MCRD Parris Island's program identified and mitigated a significant latent risk within key training areas. Through a systematic survey of the land navigation course and other general training areas, the program targeted and removed over 100 hazardous dead trees. Each of these trees represented a potential catastrophic failure that could lead to serious injury or death, triggering mission-halting safety stand-downs and investigations. By proactively eliminating these hazards, MCRD Parris Island has demonstrably improved the safety of the training environment, ensuring that the Recruit Training Regiment can execute their demanding field curriculum with reduced risk and maximum confidence. This preventative action is a clear example of how MCRD Parris Island's on-the-ground resource management directly contributes to a safer, more resilient, and mission-ready installation.

### ***Climate Resilience and Heat Studies***

In a final example of forward-looking, science-based management, MCRD Parris Island has partnered with the United States Geological Survey on a heat resilience study using microclimate sensor technology to model extreme heat exposure across the installation. This study will result in models showing how different types of landcover and shade structures influence the heat exposure an individual is exposed to. This research also collaborated with Marshall University to use their vegetation habitat map and appropriate survey plots to assist with the landcover

assessment, vegetation classifications, and heat measurements. This will not only enable training to be programmed to minimize heat injuries but will allow land management decisions to be made that optimize conditions most conducive to training. This directly supports the health and readiness of every recruit.

### **Conclusion: Leading the Way in Resilience and Innovation**

The MCRD Parris Island Natural Resources Program has moved beyond traditional conservation to become a center of excellence for coastal resilience and innovative, mission-focused environmental and natural resources management. By convening regional coalitions, pioneering new technologies like thin-layer mounds, and developing transferable models for everything from regulatory streamlining to species management, MCRD Parris Island has created a playbook for success that extends far beyond the fenceline. MCRD Parris Island's work demonstrates that investing in scientific partnerships, empowering community involvement, and prioritizing proactive solutions yields a profound return in enhanced operational readiness, long-term cost avoidance, a safer environment for installation personnel, and ecological health. The accomplishments of this period have established a new standard for stewardship, ensuring MCRD Parris Island remains a leader in supporting the warfighter through outstanding natural resources management.