

# THE COMBAT CENTER

Twentynine Palms,  
California

## COMMUNITY IMPACT REPORT







Produced by the Marine Air Ground Force Training Command, Marine Corps Air Ground Combat Center Government and External Affairs Office (GEA), Twentynine Palms, California

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Front cover, clockwise from top:

Marines with 3rd Reconnaissance Battalion, 3rd Marine Division, 3rd Marine Expeditionary Force, jump out of an MV-22 Osprey during Integrated Training Exercise 2-18, Jan. 18, 2018. (Pfc. William Chockey)

A Marine with Lima Company, 3rd Battalion, 3rd Marine Regiment, participates in a trench-clearing exercise on Range 410A during Integrated Training Exercise 2-19, Jan. 19, 2019. (Lance Cpl. Jacob Wilson)

Marines with Combat Logistics Battalion 8, 2nd Marine Logistics Group, move an M777 Howitzer to its firing position during Integrated Training Exercise 3-18, April 27, 2018. (Pfc. William Chockey)

A Marine with 2nd Battalion, 8th Marine Regiment, participates in a live-fire and maneuver exercise at Range 400, March 28, 2019. (Lance Cpl. Colton Brownlee)

This page:

Marines with 2nd Battalion, 8th Marine Regiment, participate in a live-fire and maneuver exercise at Range 400, March 28, 2019. (Lance Cpl. Colton Brownlee)

Inset: Lance Cpl. Jerard Jankowiak, 1st Battalion, 24th Marines, sights a 106-millimeter Recoilless Rifle during a training exercise in the 1970s. (Combat Center archives)

# MESSAGE FROM THE COMMANDING GENERAL

For nearly 70 years, the men and women of the Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center have enjoyed being part of the surrounding community while working tirelessly to provide realistic, live-fire combined-arms training, urban operations and Joint/Coalition-level integration training that ensure the operational readiness of the finest fighting force in the world.

Our 1,102 square miles of unique geography, climate and airspace allow the Marine Corps to conduct military training encompassing both land and air elements of warfighting that cannot be duplicated anywhere else. Based on historical trends and anticipated future commitments, the Combat Center continually updates its training ranges and programs to keep pace with the Marine Corps' role as America's premier Expeditionary Force in Readiness. Our training complexes, realistic ranges and maneuver areas are critical to Marine units preparing for complex operations they may face around the globe. This training provides Marines with the best tools to safely and successfully perform their missions.



The local area and the base have been partners in growth since 1952. Over time, the Combat Center has become intricately woven into the societal fabric of our surrounding communities. As you will see throughout these pages, the Combat Center makes important contributions that benefit the people and organizations of the Morongo Basin and the region economically, socially, environmentally and culturally.

The Combat Center has profound positive economic impacts as the largest employer in the Morongo Basin and one of the largest employers in San Bernardino County. It also drives local economic stability and benefits the region through numerous other mechanisms, creating demand for local housing, goods and services, and other economic activity related to base infrastructure and maintenance needs.

To ensure the military training mission is preserved and the base continues to benefit the surrounding region, civilian and military personnel have established and maintain strong partnerships with the city of Twentynine Palms, town of Yucca Valley and the county, as well as other communities in the Basin and the Coachella Valley. We also work closely with other federal agencies, including the National Park Service at Joshua Tree National Park and the U.S. Department of the Interior's Bureau of Land Management. We are committed to growing our relationships with our communities through new partnerships.

Work done at the Combat Center earns national recognition each year, including an unprecedented seven Commander-in-Chief's Annual Installation Excellence Awards presented by the President of the United States, and numerous awards for conservation and sustainability. The Combat Center is a model for responsible resource management and planning. Our energy and water conservation programs, environmental and cultural stewardship programs, innovation in waste management and commitment to improving efficiency in the way we do business, set a high standard of performance for other Marine Corps installations to emulate.

The Combat Center is highly invested in the success and vibrancy of our surrounding communities. Marine and Navy families live in local neighborhoods, attend local schools and churches, and volunteer in charitable activities. Their children enhance local schools' diversity, and family members contribute to the skilled workforce. The relationship between the base and the local community remains a mutually beneficial bond, based on a common history and shared goals and ambitions. As we have since the first Marines arrived here in August 1952, the Combat Center will continue to pursue excellence at all levels, and will continue to work with our local partners to strengthen our communities and our nation.

Brigadier General Roger B. Turner  
Commanding General



# Who We Are

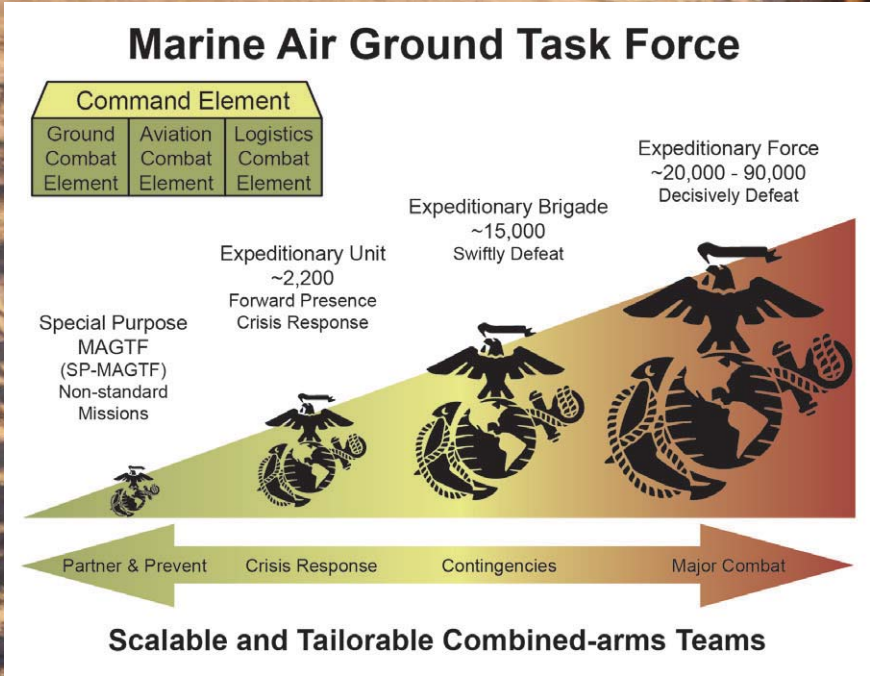
The Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center (Combat Center) is the premier service-level, live-fire and maneuver training base in the Marine Corps. Since 1952, Marines have relied on the Combat Center to prepare them for battle, with enough space to train as they must fight.

Because of the Combat Center’s sheer size, 1,102 square miles (roughly the size of Rhode Island), the training conducted here cannot be replicated anywhere else in the world. The vast expanse of rugged Mojave Desert terrain is the perfect venue for the realistic, combined-arms training required to prepare Marines to successfully complete combat missions across the globe. More than 50,000 active-duty and Reserve Marines and sailors, and other U.S. and allied forces train at the Combat Center 350 days a year.

The Marine Corps’ leading role as a modern expeditionary, rapid-response force requires Marines to be perpetually ready at a moment’s notice. When Marines are called into action, they form what is known as a Marine Air-Ground Task Force (MAGTF), bringing together under one commander the ground, air and logistics elements needed to ensure mission success.

The Marine Corps’ philosophy, “centralized planning, decentralized execution,” requires that every Marine participating in a mission, regardless of rank, know his or her role and responsibilities, and be prepared to make split-second decisions to carry out those responsibilities in an arena where failure is never an option.

The only way to ensure mission success is consistent, realistic training that prepares Marines for the real-world challenges they may face in an ever-changing landscape of opponents, battlegrounds, objectives, technologies and cultures.





# Who We Are



Additional training and educational opportunities at the Combat Center

Two organizations, Marine Corps Tactics and Operations Group (MCTOG) and Marine Corps Logistics Group (MCLOG), oversee training programs at the Combat Center. Each manages doctrine, training standards and tactics, with MCTOG focusing on the ground combat element and MCLOG focusing on the logistics element.

Both organizations provide advanced individual training for operations, intelligence and logistics officers and chiefs. They also conduct Battle Staff Training on base and at units' home stations.

The Combat Center also is home to two formal schools. The Marine Corps Communication-Electronics School is the largest Military Occupational Specialty school in the Marine Corps, training Marines to operate critical communications networks and assets. The Low Altitude Air Defense Gunner's Course moved from the U.S. Army base at Fort Bliss, Texas, to Twentynine Palms in 2012. Its basic gunner and officer courses train Marines in surface-to-air firing to defend a MAGTF, and to provide ground and air base security when they are not engaged in air defense.

Apart from its tenant schoolhouses, the Combat Center hosts numerous training exercises for warfighters. They include the three-week Infantry Officer Course final exercise that challenges students to conduct a live-fire, mechanized assault on urban terrain, and an exercise where Forward Air Control and Joint Terminal Attack Control students control air and artillery assets after completing the academic portion of their course in San Diego.

The Combat Center also is a premier venue for preparing Marines and America's Coalition Partners for joint deployments. Service members from Britain, Canada, Japan, the Netherlands, Singapore and the United Arab Emirates regularly participate in such annual bilateral training exercises as Black Alligator, Black Horse, Iron Fist, Striking Atlas and Valiant Mark.

Finally, the Combat Center is an ideal location for testing new equipment used by the Department of Defense. The Director of Operational Test and Evaluation uses tests conducted here to make decisions about equipment acquisitions and modifications, and to ensure that deployed equipment meets the needs of military operators before it is fielded to the fleet.

Marines with Lima Company, 3rd Battalion, 25th Marine Regiment, conduct a combat conditioning hike June 7, 2019, during Integrated Training Exercise 4-19. (Lance Cpl. Preston L. Morris)



An instructor with the Combat Center's Tactical Training Exercise Control Group observes as Marines of 3rd Battalion, 4th Marines, conduct an exercise at Range 400 during Integrated Training Exercise 3-18, May 7, 2018. (Lance Cpl. Isaac Cantrell)



Pfc. Joshua English participates in Low Altitude Air Defense training, Jan. 14, 2019. During the Marine Corps Communication-Electronics School exercise, Marines tested Stinger missiles. (Cpl. Rachel K. Young-Porter)



# Economic Highlights

**The Combat Center is a major economic catalyst for the Morongo Basin, generating an estimated \$1.1 billion in total economic benefit to the regional economy, both directly and indirectly.**

Base operations and sustainment require significant expenditures that are critical to maintaining the Combat Center's mission to provide realistic, world-class live-fire combined-arms training for tenant units as well as for Marine Corps and other military units from around the globe. As important as payroll and contract spending are to the base's military training mission, that spending also is critical to the region's economic stability.

As the Basin's most significant employer, the Combat Center directly employs approximately 11,497 service members and 1,905 civilians at the base. This represents an estimated 41 percent of the total employment, or four in 10 jobs available in Twentynine Palms, Yucca Valley, Joshua Tree and Morongo Valley. In addition to the direct creation of 13,402 jobs in the Basin, base operations, personnel spending and visitor spending stimulate an estimated additional 3,838 jobs in the area.

## Direct Economic Impacts

Combat Center spending directly improves the local economy through the millions of dollars spent annually on payroll, service and construction contracts, utilities and other expenditures.

With an annual military and civilian payroll of \$554 million, the Combat Center contributes mightily to a vibrant overall economy. It also creates substantive employment opportunities for local residents across a wide range of sectors. The economic benefit derived from the Combat Center also indirectly stimulates jobs off base as the demand for housing, services and goods is increased by military families who are stationed here. Direct spending also includes medical and dental benefits to service members, military retirees, civilian employees and family members in the Morongo Basin.

Active-duty and civilian employment at the Combat Center is only one component of the base's economic contributions to the surrounding communities. In 2018, the 11,497 Marines and sailors stationed here brought with them 7,430 family members. Marines and sailors, civilian personnel, military and civilian retirees, veterans and their families shop at local businesses, attend local schools and churches, and participate in local sports and other community events. They also contribute to the unique character of the Basin through their involvement with community organizations and civic groups.

The U.S. government is the world's largest buyer of products and services. The cost of keeping the Combat Center operating is expensive, and contracts are awarded through highly regulated federal processes that result in millions of dollars of private-sector contracts each fiscal year. The value of these contracts benefits both the Basin and the broader regional community. The Combat Center requires contract support for construction, utilities, supplies and equipment, telecommunications, janitorial services, maintenance and repair, and other services and supplies. In 2018, the Marine Corps spent approximately \$271 million on contracts at the Combat Center.

Construction activity on the base included 79 active or completed construction and renovation projects in 2018. Recent significant projects included construction of the 30,000-square-foot, state-of-the-art Wilburn gymnasium, new family housing units and a new temporary lodging facility on Mainside.

Although the base generates a majority of its own energy through two cogeneration plants and solar arrays, the Combat Center purchases additional energy from Southern California Edison through a multi-year contract that amounts to \$8 million a year. In total, the base spends about \$15 million annually on utilities.

## Indirect Economic Impacts

The Combat Center's local financial impact is much more than payroll, services and contracting. Personnel working on the base generally spend a large amount of their paychecks on housing, goods and services in the local communities. This creates a demand for these items, spurring additional economic stimulus for local businesses, including additional jobs in the area.

Construction, maintenance and other contract spending also stimulate additional indirect economic benefits locally. Companies located outside the Basin traditionally source some equipment, materials and other resources locally. Contractors from outside the local area spend money at area hotels and other lodging facilities, and at restaurants, gas stations, grocery stores and retail establishments during the duration of their projects here.

Completing the spending stream of the military's influence in the Basin, tourism injects funds into the area. While not primarily funded by the government, visits by family members and friends of military personnel and civilian workers employed at the Combat Center, and visits by business travelers and government officials, introduce additional money into the economy. In 2018, the base issued nearly 24,000 visitor passes. Visitors to the Combat Center are estimated to have spent approximately \$15,160,000 in the local communities.



Weekly farmers' markets in Joshua Tree and Twentynine Palms draw Combat Center families looking for fresh produce and other foods, as well as items created by local artisans. (Kelly O'Sullivan)

Blanca Bribiesca, who owns Habitat in Twentynine Palms with her husband, Gunnery Sgt. Paul Bribiesca, rings up a customer's purchase June 7, 2019. The couple opened the store Feb. 2, 2018, and plan to stay in Twentynine Palms after he retires from the Marine Corps. (Kelly O'Sullivan)



# Economic Highlights



Gretchen Grunt, owner of the 29 Palms Creative Center and Gallery, conducts a paint party for local Girl Scouts in her studio May 31, 2019. Most of the girls are the daughters of active-duty and retired Marines or Combat Center civilian employees. (Kelly O'Sullivan)

Protect the Mission,  
Protect the Economy  
Combat Center officials work with local, state and federal officials, as well as area residents to protect the Marine Corps' training mission and the Basin's economic health. By working together to avoid land-use decisions that could adversely impact training, such as siting a wind turbine energy project under a designated military aircraft training route, they also preserve the spectacular view sheds that fuel tourism, the Basin's second-largest economic driver. This synergistic approach of preserving air routes and view sheds provides a double economic benefit to the local communities.

Marine Corps' Contribution to  
Community Infrastructure  
Infrastructure – buildings, roads, water pipes, gas and electrical lines, telephone poles, cable lines and streetlights – are critical to a community's functionality. The placement of infrastructure like utilities is important for people to conveniently use and access public services. The Basin's utility infrastructure benefits greatly from the Combat Center's presence. When the base's permanent and visiting populations spend money locally, San Bernardino County and the local municipalities receive increased tax revenues that are allocated to infrastructure improvements.

In 2018, the Combat Center paid \$31 million in state and local taxes.



Christina Mintz, owner of Boardwalk Hair and Nail Parlor in Twentynine Palms, applies color to Janice Holbrook's hair May 29, 2019. Holbrook is a teacher whose husband, Ken, is a retired Marine employed at the Marine Corps Communication-Electronics School. (Kelly O'Sullivan)



Adobe Road is Twentynine Palms' main thoroughfare to the Combat Center. (Kelly O'Sullivan)

## Population

The Combat Center lies at the far eastern end of the Morongo Basin, a geographical region that includes Morongo Valley, Yucca Valley, Pioneertown and Homestead Valley in its west end; Joshua Tree in the center; and Twentynine Palms and Wonder Valley in the east end.

The area is a diverse mix of civilian and military. Population estimates from 2018 provide an insightful look at how the Combat Center fits into the local community. While the majority of San Bernardino County's population is concentrated in cities south of the San Bernardino Mountains, some areas in the Basin, particularly those closest to the Combat Center, have experienced growth rates that outpaced the nation, state and county. Twentynine Palms' population estimates include those living in on-base housing, since the installation's Mainside area was annexed into the city in 2000.

The low cost of living and the proximity to base amenities and services has made the Basin an attractive place for veterans from all branches of the U.S. Armed Forces, and the veteran population in the communities contiguous to the Combat Center are considerably higher than the county, state and nation.



Veterans with the Desert Cities Mitchell Paige Medal of Honor Chapter, 1st Marine Division Association, admire a tank during an Alumni Day event at the Combat Center, March 28, 2018. (Cpl. Rachel K. Young-Porter)

Change in resident populations between 2014 and 2018			
	2014	2018	Percent change
United States	318,386,421	327,167,434	2.76%
California	38,625,139	39,557,045	2.41%
San Bernardino County	2,100,776	2,171,603	3.37%
Twentynine Palms	25,048	26,418	5.47%
Yucca Valley	20,665	21,726	5.13%
Joshua Tree (CDP)**	7,414	7,020*	-5.31%
Morongo Valley (CDP)**	3,552	3,231*	-9.04%

Sources: U.S. Census Bureau, and American Community Survey Estimates  
\* indicates 2017 American Community Survey Estimates; 2018 information unavailable  
\*\* Census-designated place

Veteran Population Percentages			
	Total Population	Veteran Population	Percent of Total Population
United States	327,167,434	18,939,219	5.79%
California	39,557,045	1,6661,433	4.20%
San Bernardino County	2,171,603	100,236	4.62%
Twentynine Palms	26,418	2,651	10.03%
Yucca Valley	21,726	2,461	11.33%
Joshua Tree (CDP)**	7,020	682	9.72%
Morongo Valley (CDP)**	3,231	307	9.50%

Sources: U.S. Census Bureau, American Community Survey Estimates 2013-2017 and Measuring Communities 2018  
\* indicates Measuring Communities 2018  
\*\* Census-designated place



# Community Outreach

The Combat Center strives to be a good neighbor to surrounding communities by fostering lasting relationships with local governments, agencies, schools and organizations, and by participating in community events. Through a robust, multi-faceted outreach program, Government and External Affairs (GEA) staff tell the Combat Center story and work to educate the public on the importance of the base's military training mission.



Marines with Communication Strategy and Operations interview Combat Center Commanding General, Brig. Gen. Roger B. Turner, after a live-fire exercise in Johnson Valley, Aug. 24, 2018. (Kelly O'Sullivan)

## Communication Strategy and Operations

Communication Strategy and Operations (COMMSTRAT), formerly Public Affairs and Combat Camera, maintains relationships with local, national and international media outlets, and produces written and visual information products distributed via the Defense Visual Information Distribution Service and social media. These outreach efforts inform and build understanding with the public on the Combat Center's mission, capabilities and needs as an instrument of national defense.

## Community Engagement

The Community Engagement section works to foster a positive relationship between the base and the surrounding community. The section provides a direct link between the Combat Center and the public, supporting GEA outreach by establishing and maintaining long-lasting relationships and exploring potential mutually beneficial partnerships.

Community Engagement personnel work closely with elected officials on the local, county, state and Congressional levels to enhance the public's awareness of the base, its mission, and its contributions to both national security and the local area. They also work with municipal government staff in Twentynine Palms, Yucca Valley, San Bernardino and Riverside counties, and officials from Copper Mountain College, Morongo Unified School District, Joshua Tree National Park, local chambers of commerce, and nonprofit organizations including Armed Services YMCA, Basin Wide Foundation, Desert Regional Tourism Agency and Mojave Desert Land Trust.

Annually, the section coordinates participation by more than 1,200 Marines, sailors, civilian personnel and family members in more than 120 community events throughout the Morongo Basin, Coachella Valley, and other nearby desert and mountain communities.

Coordination for events such as Memorial Day and Veterans' Day observances, Earth Day, community clean-ups, Red Ribbon Week, career days and parades includes guest speakers, chaplains, color guards, military vehicles, military volunteers, Marine Corps color guards and marching units, Military Working Dog and Explosive Ordnance Disposal demonstrations, and visits by Combat Center Fire and Military Police, Daren the DARE Lion and McGruff the Crime Dog.

## Commanding General's Tours Program

Under the Commanding General's Tours Program, approximately 750 guests from the surrounding communities visit the Combat Center each year to see how Marines and sailors train, work and live on base.

Tour participants learn about the Combat Center's history and experience the command's commitment to being a good neighbor by seeing first-hand the base's dedication to preserving environmental, cultural and natural resources as they visit places like the range recycling operation and the Archaeology and Paleontology Curation Center. Participants also get to observe and explore sites like the Battle Simulation Center at Camp Wilson and urban training ranges.



The Combat Center color guard marches in the Pioneer Days Parade in Twentynine Palms, Oct. 20, 2018. (Lance Cpl. Dave Flores)



Loren Hutton, right, and Scott Wheeler, counter-IED instructors, walk visitors from the Palm Springs USO through the village at Range 800 during a tour March 5, 2019. (Kelly O'Sullivan)



# Community Outreach

Resource Management Group  
GEA co-chairs the inter-agency Resource Management Group (RMG) with the Bureau of Land Management (BLM). The two agencies develop coordinated but separate management strategies for the Johnson Valley Shared Use Area, established by passage of the 2014 National Defense Authorization Act. The legislation authorizes the Marine Corps to close the Shared Use Area to conduct military training for two 30-day periods each year, with BLM managing the land the remaining 10 months.

GEA's RMG responsibilities include communicating the base's new boundaries, Shared Use Area military training schedules, safety information and land-use changes to the public via meetings, educational briefings, mailings, website, social media pages, site visits, printed and electronic brochures and maps, and a free downloadable mobile Discover Johnson Valley app. The app provides both Android and Apple device users who recreate in the Shared Use Area with updated, accurate information on when the area is closed for military training as well as their proximity to the Combat Center boundary.

RMG staff collaborate with BLM and other federal, state, county and local agencies to help ensure the safety of more than 50,000 racers and spectators participating in the annual King of the Hammers off-road racing and rock-crawling event held each February in the Shared Use Area. Their efforts also help ensure that live-fire exercises conducted on nearby Combat Center training ranges proceed without interruption.

As an element of the land expansion, new Special Use Airspace (SUA) establishment and modifications to existing SUA are necessary to make full use of the new expanded range area.

As the Marine Corps collaborates with the Federal Aviation Administration to establish airspace that supports training requirements, the RMG conducts outreach to local aviators, pilot organizations, airports and other airspace stakeholders to ensure they are aware of changes to the Combat Center's airspace. Outreach includes public information briefs with local and regional airport officials; general aviation groups; instructional Mid-Air Collision Avoidance classes for general aviators; participation in aviation conferences; base tours; and distribution of informational outreach materials at aviation and community events. Office personnel have distributed outreach materials to aviation stakeholders and the general public in California, Arizona and Nevada.

Since 2015, RMG has distributed more than 90,000 printed outreach products and engaged thousands of stakeholders and visitors to Johnson Valley.



Government and External Affairs Range Sustainability Manager Jonell Kosa talks with a race-goer at the Combat Center's outreach booth during King of the Hammers race week, Feb. 7, 2018. (Kelly O'Sullivan)

## School Liaison Program

The Combat Center School Liaison Program helps reduce the impact of the mobile military lifestyle on military families with school-age children by identifying and providing resources to the command, parents, students and schools that can assist with relocations, life transitions and academic success.

The School Liaison represents the Combat Center at Morongo Basin Unified School District (MUSD) Board of Trustees meetings, and works with Community Engagement personnel to host local students at events on base that include the Battle Color Ceremony, Marine Corps Birthday Pageant, student tours and more.

Since 2002, the program has partnered with MUSD on the annual Job Shadowing Event, pairing local high school juniors and seniors with Combat Center military and civilian personnel working in each student's field of interest. As of February 2019, approximately 750 students have shadowed personnel in such career fields as law enforcement, firefighter/paramedics, welding, mechanics, engineering, cyber security, food services, archaeology, child development, public affairs, marketing, retail sales, utilities and maintenance, recycling, photographers, nurses, hospital corpsmen, dental technicians, computer experts, hospitality and food services, hair stylists, accountants, lawyers, retail managers, administrative services and Marine Corps classroom instructors.



Students and staff from Twentynine Palms Elementary School watch a performance by the Commandant's Own, the U.S. Marine Drum & Bugle Corps, during the annual Battle Color Ceremony at Felix Field, March 11, 2019. (Alicia K. Snell)



Supervisory UXO Specialist Palani Paahana explains to Yucca Valley High School senior Zack Lakes, left, and Twentynine Palms High School senior Kieran Rayl how the Range Sustainment Branch's 1,700-degree furnace is used to melt aluminum and zinc during the Combat Center School Liaison's 16th annual Job Shadowing Event, Feb. 6, 2019. (Kelly O'Sullivan)

## Combat Center Military Partnering/Volunteering

- |                              |                                          |                                                                     |
|------------------------------|------------------------------------------|---------------------------------------------------------------------|
| ✓ Adopt-a-Highway            | ✓ DARE (Drug Abuse Resistance Education) | ✓ Parades                                                           |
| ✓ Adopt-a-School             | ✓ Earth Day                              | ✓ Red Ribbon Week                                                   |
| ✓ American Red Cross         | ✓ Health fairs                           | ✓ Volunteerism: Local community park and recreation coaches/umpires |
| ✓ Blood drives               | ✓ Local chambers of commerce             | ✓ Young Marines Program                                             |
| ✓ Boy/Girl Scouts of America | ✓ Mojave Desert Land Trust               | ✓ Veterans' events                                                  |
| ✓ Career days                | ✓ Morongo Basin Dark Skies Alliance      |                                                                     |
| ✓ Copper Mountain College    |                                          |                                                                     |



# ENVIRONMENTAL STEWARDSHIP

The Combat Center is at the forefront of environmental stewardship and sustainability, implementing programs that have significantly reduced impacts in such areas as energy conservation, air quality, water conservation, recycling, and natural and cultural resource management.



## Energy Management

Combat Center energy programs and infrastructure initiatives save the Marine Corps \$10 million annually in energy costs, and have reduced impacts on Southern California's power and energy systems over the past 18 years. The base operates advanced energy systems, collectively referred to as a microgrid, that allow for flexibility in managing electrical distribution for maximum efficiency.

The Combat Center produces 90 percent of its own energy, primarily through two cogeneration plants that are the largest in the Marine Corps. The plants use natural gas and propane to produce 16.2 megawatts of power annually, and work in concert with ground and rooftop photovoltaic solar arrays that produce about 7 megawatts of power annually. These methods of power generation reduce the Combat Center's dependency on imported electricity, strengthening the base's security and resiliency.

Energy conservation measures implemented since Operation Dim the lights began in 2008 continue to result in energy savings while reducing the Combat Center's night-sky imprint. They include:

- Replacing more than 4,000 light fixtures throughout Mainside and Camp Wilson with night-sky-compliant fixtures
- Replacing old, champagne-colored streetlights and lights on building exteriors with white and LED lights that use half the energy
- Installing motion sensors in offices and on outdoor lighting fixtures
- Installing efficient chilled water plants for large areas
- Replacing inefficient chillers with high-efficiency units

Future improvements will include:

- Installing battery energy storage systems on existing solar systems to level out PV power generation and extend the production
- Upgrading all internal lighting to high-efficiency LED lights with motion sensors and light sensors



A crew member at one of the Combat Center's two cogeneration plants monitors the system. The plants are part of an extensive energy infrastructure system that saves the Marine Corps \$10 million annually in energy costs. (Kelly O'Sullivan)



Andres Fuentes, Range Safety deputy director, plugs in his Volt electric/gas hybrid vehicle at one of the charging stations at the Combat Center. (Kelly O'Sullivan)

## Air Quality

The Combat Center is a source of stationary greenhouse gas emissions, primarily from two cogeneration plants. These modern plants efficiently create electricity with clean-burning natural gas and propane, then utilize the waste heat for building heating and air-conditioning systems, as well as water heating and cooling.

While the cogeneration plants generate much lower emissions than similar facilities, the Combat Center continues to reduce target criteria air pollutants with ongoing improvements. Boilers and burners at Cogeneration Plant 1 have been upgraded, and the base is upgrading its diesel-fueled internal combustion engine inventory, which supports emergency electrical power needs, emergency water pump needs and training operations. The older engines are being replaced with newer EPA-certified Tier 4 engines capable of 85 to 90 percent reductions in target criteria pollutants.

In addition to installing electric vehicle charging stations for zero emission government vehicles, the Combat Center recently implemented a plug-in electric vehicle program that enables patrons to charge privately-owned vehicles at designated locations to further reduce greenhouse gas emissions.



The Combat Center uses solar arrays on rooftops and shade structures in addition to ground arrays to generate about 7 megawatts of power annually. (Diane Durden)



# ENVIRONMENTAL STEWARDSHIP

## Water Conservation

The Combat Center offers Marines matchless training opportunities and presents equally unique environmental challenges. The Mojave Desert's arid environment requires consideration and planning with regard to water and water conservation. The Combat Center is committed to carrying out its training mission while ensuring good management of the desert's most precious resource.

In 2015, the Commanding General took two major steps to reduce water consumption on base:

- Forming a Water Conservation Task Force comprised of representatives from Environmental Affairs (E.A.), Public Works, Lincoln Military Housing, Marine Corps Community Services, Family Housing and Bachelor Billeting to develop, implement, promote and enforce water conservation policies on base
- Ordering the Combat Center and tenant commands to immediately reduce unnecessary potable water usage while simultaneously planning longer-term conservation initiatives.

Through its policies and conservation measures, the Combat Center has:

- Achieved a per-capita usage goal of 69.6 gallons of water per day
- Implemented a specialized oil/water separator cleaning process saving 420,000 gallons of potable water annually
- Completed a green space reduction project resulting in removal of more than 15,000 square feet of grass, providing an annual water savings of 1.4 million gallons

Future projects include further reduction of grass and green space by replacing it with drought-resistant plants and xeriscape.

*Desert-wise landscaping on Mainside is one way the Combat Center conserves water. (Environmental Affairs)*

## Recycling

The Combat Center Qualified Recycling Program (QRP) is an exemplar model for the Department of Defense, spurring innovative practices that have been implemented at other military bases around the country.

QRP reissues or recycles 172 types of items, keeping more than 8,000 tons of materials out of the Combat Center's landfill annually. An average of \$1.2 million in revenue is generated by the program each year, offsetting program costs and providing quality-of-life improvements on base that benefit the Marines and sailors stationed here, and their families.

Since 2010, QRP programs have decreased landfill disposal of solid waste by 48 percent annually, and increased the volume of recycled goods by 48 percent. Items recycled in that period include:

- 48.2 million pounds of range residue and materials
- 27.3 million pounds of assorted metals
- 18.3 million pounds of assorted recyclables

## Natural Resources

Sustainable management of plant and animal species whose survival depends on the fragile desert ecosystem is critical for the Combat Center to maintain operability and readiness.

The Combat Center develops and implements strategies to comply with such federal laws as the Endangered Species Act, which requires federal agencies to protect and promote recovery of threatened and endangered species. The desert tortoise, a threatened species, is found throughout the Combat Center.

One of the program's most important management tools is the Integrated Natural Resources Management Plan developed in consultation with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. To develop effective natural resources management strategies, the Combat Center conducts and sponsors extensive studies on the tortoise, and sensitive animal and plant species. The base also works to maintain the health of training lands through desert restoration studies, land condition trend analysis, and basewide plant and soil surveys.

One of the Combat Center's most successful programs is the Tortoise Research and Captive Rearing Site (TRACRS), where vulnerable desert tortoise hatchlings are protected until they can resist most predators and survive in harsh conditions. The annual survival rate for TRACRS hatchlings is approximately 95 percent, with released tortoises surviving at rates consistent with wild tortoises.



*Batteries turned in to the Combat Center Qualified Recycling Program's Hazardous Waste Management Branch are recharged for reuse by military units. Those that cannot be recharged are processed and sold as scrap. (Kelly O'Sullivan)*

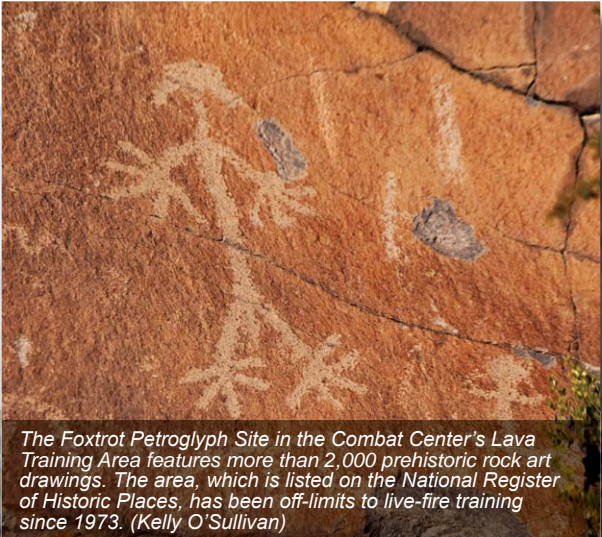


# ENVIRONMENTAL STEWARDSHIP

## Cultural Resources

The Combat Center is home to unique and significant prehistoric archaeological sites and paleontological deposits. The base ensures compliance with the National Historic Preservation Act and other laws and regulations governing cultural resources by conducting surveys and evaluations throughout the base. The Combat Center also implements protective measures that integrate preservation requirements with the Marine Corps' training mission.

Protected areas include the Foxtrot Petroglyph Site, Surprise Springs and Deadman Lake archaeological complexes, and the Gypsum Ridge paleontological complex. The paleontological complex has yielded fossils from the giant ground sloth, giant tortoise, horse, camel, llama, and mastodon — animals that lived in the Pleistocene Era between 1.8 million and 2 million years ago.



The Foxtrot Petroglyph Site in the Combat Center's Lava Training Area features more than 2,000 prehistoric rock art drawings. The area, which is listed on the National Register of Historic Places, has been off-limits to live-fire training since 1973. (Kelly O'Sullivan)

## Conservation Law Enforcement

Located in the Headquarters Element of the Environmental Affairs Division, the primary purpose of this branch is to protect the Combat Center's many natural and cultural resources. Conservation Law Enforcement Officers (CLEOs) investigate violations and arrest people suspected of violating the criminal laws of the United States pertaining to fish, wildlife and cultural resources. CLEOs conduct field patrols, criminal investigations and other law enforcement duties while enforcing the Endangered Species Act, Migratory Bird Treaty Act, National Historic Preservation Act, Archaeological Resources Protection Act, and other related laws and regulations.

CLEOs protect natural and cultural resources through proactive and reactive law enforcement techniques, report findings of patrols and investigations, apprehend suspects, collect evidence, write criminal investigation reports, and act as liaisons between the Marine Corps and various federal, state and local agencies.



Conservation Law Enforcement officers discuss patrol routes to prevent incursions onto the Combat Center during the King of the Hammers off-road racing and rock-crawling event, Feb. 7, 2018. (Lance Cpl. Dave Flores)



Archaeology field technicians Garnet Smith, left, and Joe Woods search for artifacts at a cultural site in the Combat Center's Lava Training Area, Jan. 13, 2015, to determine the site's cultural significance. The Environmental Affairs Division has identified hundreds of similar sites across the base. (Kelly O'Sullivan).

## Combat Center Environmental Awards

The Combat Center has won numerous awards for environmental stewardship. The most recent include:

**2019:** National Military Fish & Wildlife Resources Conservation Management Ecosystem, Conservation Partnerships, Model Programs/Projects and Enforcement Awards

**2018:** Wild Sheep Foundation Federal Statesman Award

**2017:** Secretary of Defense Natural Resources Conservation Individual/Team, Total Waste Management Program Team and Environmental Restoration Installation Awards

**2015-16:** Numerous Secretary of Defense and Secretary of the Navy Environmental Awards



# PRESERVING THE COMBAT CENTER TRAINING MISSION

The Combat Center’s primary mission is to conduct realistic, live-fire combined-arms training, urban operations and Joint/Coalition-level integration training that promotes the readiness of operational forces. Sustaining mission capabilities requires strong partnerships with federal, state and local governments, as well as strong partnerships with key stakeholders in surrounding communities and throughout the region to manage encroachment issues that could degrade mission capabilities.

Challenges facing the Combat Center

Challenges to sustaining military readiness and training at the Combat Center include population growth and development adjacent to the base. Any factor that could negatively impact the Marine Corps’ ability to conduct critical training, that reduces realism and safety, or limits the application of new technologies is carefully considered for mitigation to ensure the Marine Corps can continue to provide a world-class training environment that prepares Marines to succeed in combat.

Challenges include, but are not limited to:

 Protected natural resources	 Water supply and quality
 Land use	 Safety and security
 Noise	 Dark sky preservation
 Airspace use	 Cultural resources

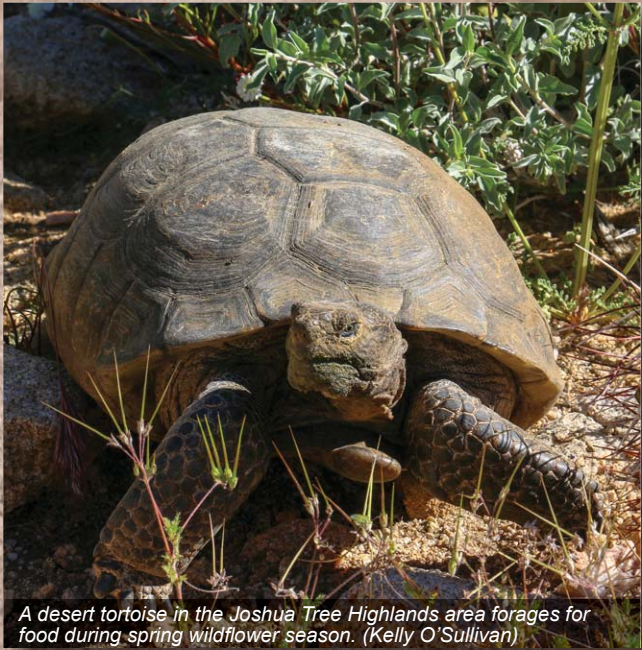


Compatible Development

Certain types of land use and development can impact the Combat Center’s ability to carry out its training mission by limiting access and use of ranges and airspace, driving threatened and endangered species into training areas, and causing competition for natural resources. For example, incompatible residential development near the base can result in residents experiencing unexpected dust or noise generated by military activities, while renewable energy projects can create obstructions that interfere with military airspace, radar or other technologies.

Conservation and Wildlife Management

The Combat Center is home to desert wildlife and fragile habitats. The base is committed to being a good steward of the Mojave Desert ecosystem, and partners with other agencies to preserve, protect and promote the visibility of these resources for generations to come — not only on the base, but on surrounding lands. These efforts benefit the local community by preserving the unique desert ecosystem, and prevent military training lands from becoming habitats of last resort for species, which could curtail critical training activities.

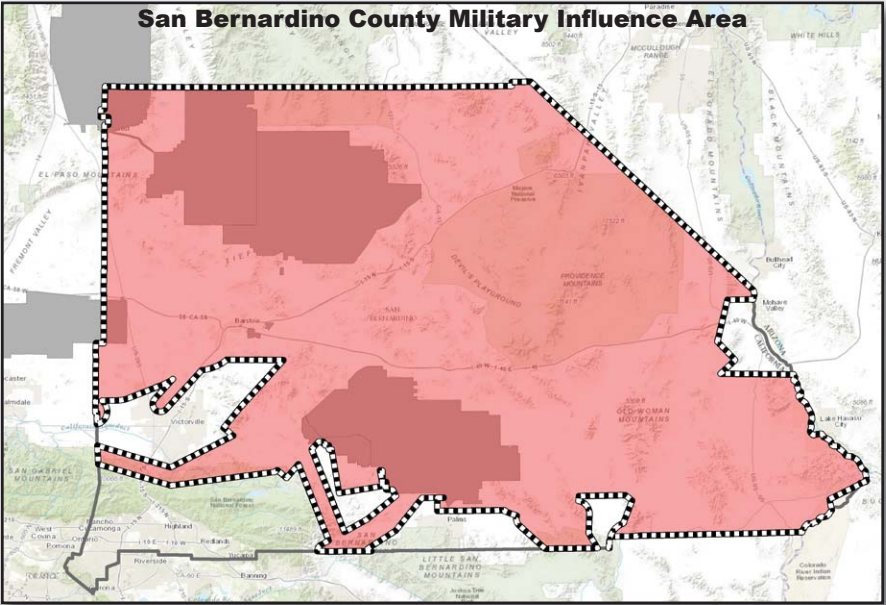


A desert tortoise in the Joshua Tree Highlands area forages for food during spring wildflower season. (Kelly O’Sullivan)

The Combat Center Range Sustainability Management Office works with internal and external partners, and engages on multiple ongoing projects to ensure the viability of the military training mission. Those projects include:

## San Bernardino Countywide Plan Update

The Combat Center Range Sustainability Management Office leads a working group with representation from the five military bases in San Bernardino County. The working group has collaborated with county leaders and planners to develop the first-ever base compatibility reference to be incorporated into the county General Plan update, known as the Countywide Plan. The compatibility reference is a set of policies and other tools that consider the roles and missions of each of the five bases. It seeks to support long-term military sustainability and compatible economic development through balanced and integrated approaches. In addition to specific policies, the compatibility reference provides guidance for developing collaborative partnerships among military and community stakeholders. Another component, the Military Influence Area map (above), is a comprehensive tool for land-use planning. The MIA assists planners and developers in understanding areas adjacent to military bases that are critical to each base’s ability to carry out its mission, including Special Use Airspace, low-level flight paths and military training routes. Successful integration of the compatibility reference will result in mutually beneficial policies, strategies and collaborative partnerships that protect residents’ health, safety and welfare from military operations, while also identifying policies to achieve mutual goals for conservation, infrastructure, research and other topics that support long-term military sustainability



## Governor’s Office of Personnel and Readiness

The Governor’s Office of Personnel and Readiness (OPR) serves California’s governor and cabinet as staff of long-range planning and research, and constitutes the comprehensive state planning agency. Range Sustainability personnel have participated in workshops that OPR held throughout the state to review existing state policies for compatible land use as defined in San Bernardino Countywide Plan.

## Western Mojave Route Network Project



Western Mojave Route Network trails are used by off-highway vehicle riders throughout the desert, including areas near the Combat Center. The Marine Corps monitors the trails to ensure that base ingress and egress, and military training routes remain intact. (Dave Prall) Inset: Marines with Combat Logistics Battalion 4 traverse the desert in a mounted convoy during Integrated Training Exercise 1-19. (Cpl. Joshua Pinkney)

The West Mojave Route Network Project (WMRNP) is an off-road vehicle and transportation plan that covers approximately 9.1 million acres of Bureau of Land Management (BLM) public land across San Bernardino, Los Angeles, Riverside, Inyo and Kern counties. The plan intends to amend and supplement the 2006 West Mojave Plan and the 2016 Desert Renewable Energy Conservation Plan. The Combat Center and other military bases in the Mojave Desert (Naval Air Weapons Station China Lake, National Training Center Fort Irwin, Edwards Air Force Base and Marine Corps Logistics Base Barstow) continue to coordinate with the Marine Corps Installations West and the BLM to ensure that critical base ingress, base egress and training routes remain intact. The bases also reviewed the WMRNP to inform the BLM on network trails that pose safety, security and natural resource management issues.

Opposite page: Marines with 6th Marine Regiment, Marine Air-Ground Task Force-6, conduct a Network on the Move suite convoy Feb. 16, 2019, after participating in a Regimental Assault Course during Integrated Training Exercise 2-19. (Sgt. Victor A. Mancilla)



# PRESERVING THE COMBAT CENTER TRAINING MISSION

## Desert Renewable Energy Conservation Plan

The Desert Renewable Energy Conservation Plan (DRECP) is a landscape-level renewable energy and conservation plan that seeks to balance protection and conservation of desert ecosystems while allowing for appropriate development of renewable energy projects. The plan created conservation, recreation and renewable energy zones across 10.8 million acres of California desert, and was established after thorough environmental review and stakeholder comment. The Department of Defense provided considerable input on the plan before its establishment and again when the plan was reopened for comment in 2018. The benefit of the DRECP is that it provides certainty on land-use planning for communities, industry and conservation goals, and supports certain military land-use compatibility needs.



Amboy Crater, just north of the Combat Center, is one of the most visited sites in Mojave Trails National Monument. (Bob Wick, BLM)

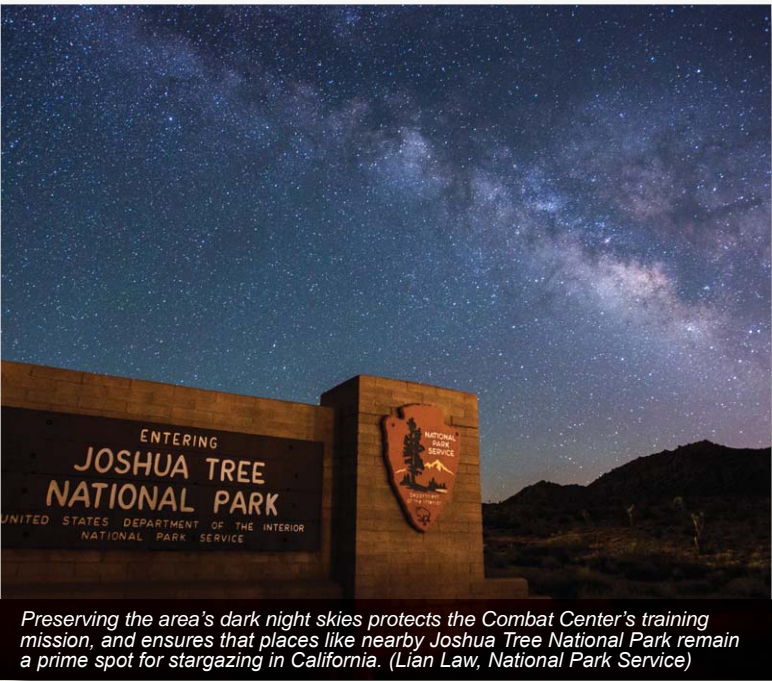
**Mojave Trails National Monument**  
The Combat Center and Department of Defense Working Group have worked with the BLM to ensure military mission requirements are fully considered in the development of the Resource Management Plan (RMP) for Mojave Trails National Monument. Managed by the BLM, the monument spans 1.6 million acres of federal lands between Barstow and Needles, California, including more than 350,000 acres previously dedicated by Congress as wilderness. Because the monument is contiguous to military bases, encompasses land used by the military for ground movement, lies under military airspace and training routes and affects regional natural resources, the RMP is a critical opportunity to address and mitigate military encroachment concerns. This partnership has been ongoing since the monument’s establishment in 2016.



Mojave Trails National Monument, north of the Combat Center, is a stunning mosaic of rugged mountain ranges, ancient lava flows and spectacular sand dunes. The 1.6-million-acre preserve also protects such irreplaceable historic resources as ancient Native American trading routes, World War II-era training camps and the longest remaining undeveloped stretch of Route 66. (Kyle Sullivan, BLM)

## Dark Sky Ordinance Committee

The Combat Center has a strong commitment to protecting natural resources that support its training mission, including the preservation of the area’s dark night skies. Range Sustainability personnel regularly attend local Dark Sky Ordinance Committee meetings to provide information on light pollution’s impacts to military training for incorporation and consideration into the local ordinance. Light pollution has the ability to limit effective nighttime training activities that are critical to simulate realistic combat situations, and to utilize night-vision equipment and technologies. Protection of the region’s dark skies is increasingly important as population growth, development and increasing light pollution occurs in the nearby communities of Yucca Valley and Twentynine Palms, as well as the Coachella Valley, Inland Empire, Los Angeles and Las Vegas regions. Light pollution not only adversely affects the military training mission, it also impacts local communities and wildlife. The base conducted a Night Sky Study in February 2017 to illustrate the base’s considerable investments in reducing its light pollution footprint, and those benefits to both the Combat Center and surrounding communities.



Preserving the area’s dark night skies protects the Combat Center’s training mission, and ensures that places like nearby Joshua Tree National Park remain a prime spot for stargazing in California. (Lian Law, National Park Service)

## Readiness and Environmental Protection Integration Program

Maintaining realistic training capability and military readiness is critical to achieving success on the battlefield. The Readiness and Environmental Protection Integration (REPI) Program is the Department of Defense’s core effort to protect military readiness by preventing incompatible development, increasing base resiliency, and preserving habitat through buffer projects, partnering, supportive education, engagement and regional planning.

As of 2019, the Combat Center has been able to protect 5,462 acres of land through the REPI program, providing important encroachment buffers to the base while contributing to the preservation of local natural habitat areas. The Combat Center’s current REPI partners include Mojave Desert Land Trust, Trust for Public Lands, The Conservation Fund, San Bernardino County Community Services Area 20 and California Parks and Recreation.

## COMBAT CENTER PARTNERSHIPS

### Key external stakeholders

- Bureau of Land Management
- California Department of Parks and Recreation
- Copper Mountain College
- Mojave Desert Land Trust
- National Park Service

### Additional external stakeholders

- Selected state officials
- Regional organizations’ leadership and selected departments
- Local elected government officials
- Local government management and selected departments
- Non-government organizations and special interests
- Business community
- Land owners
- Public

### Internal stakeholders

- Combat Center leadership
- Community Plans Liaison Officer and planners
- Range Control
- Airfield operations
- Air traffic control
- Environment
- Natural and cultural resources
- Public Affairs
- Public Works
- Tenant commands



Quail Mountain in the village of Joshua Tree was the first local property preserved under REPI. The 955-acre site was purchased in 2010 by Mojave Desert Land Trust in partnership with the Marine Corps and others after a high-density housing project planned for the area fell through. The property lies under a military helicopter route. It also provides critical habitat for desert tortoises and other wildlife, and is open to visitors on foot and horseback. (Kelly O’Sullivan)



# COMBAT CENTER'S COMMITMENT TO THE COMMUNITY

The men and women who live and work on board the Marine Corps Air Ground Combat Center are proud to be part of the Morongo Basin community. Active-duty personnel may come and go as duty calls, but while they are here, this is their home. Just like those who live here permanently, they want the community to prosper.

Since the first Marines came to Twentynine Palms in 1952, the communities surrounding the base have thrived by fostering an ongoing relationship with the base, active-duty and retired service members, civilian employees and their families. The Combat Center's presence in the Morongo Basin provides economic benefits through payroll and consumer spending, tax revenues, and infrastructure enhancements, as well as employment opportunities and mutual aid.

Understanding that a vibrant community is not based on a strong economy alone, Combat Center personnel provide community donations and thousands of hours of volunteer time each year, and work alongside members of the community through professional and personal partnerships. These efforts and initiatives result in a local community strengthened economically, socially and environmentally.

The Marine Corps' mission and the growing need for flexibility in training requirements make the Combat Center's partnerships with the surrounding communities critical to ensuring that the Corps can meet the needs of the nation as America's crisis-response force while remaining a good neighbor.



Brig. Gen. Roger B. Turner shakes hands with a Hammering Productions volunteer while touring Hammertown during the annual King of the Hammers off-road racing and rock-crawling event in Johnson Valley, Feb. 5, 2019. (Kelly O'Sullivan)



Marines from the Combat Center's Marine Corps Communication-Electronics School and Marine Corps Logistics Operations Group work with city of Twentynine Palms Public Works and Code Enforcement personnel during a community cleanup in the Hansen Tract, June 22, 2019. They filled a 40-cubic-yard Dumpster. (City of Twentynine Palms)



Staff Sgt. Joel T. Flores, left, a Marine Corps Communication-Electronics School student and volunteer docent at the Old Schoolhouse Museum in Twentynine Palms, talks with fellow docent Jeanne Miller and visitor Rod Smith, June 22, 2019. (Kelly O'Sullivan)



Earl Childs, left, a retired Marine who is a member of the 1st Class Miners prospecting group, shows Bekah Schmitt, a Combat Center family member, how to pan for gold during a demonstration Oct. 20, 2018, at the Old Schoolhouse Museum in Twentynine Palms. (Kelly O'Sullivan)



A participant in the Joshua Tree 55 bike ride makes his way toward Joshua Tree National Park in April 2018. Originally called Park-to-Park, the annual Earth Day event is a joint effort between the Combat Center and the local communities. (Cpl. Rachel Young-Porter)



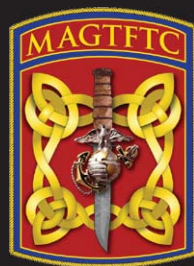
Sgt. Sergio Becerra, a Military Working Dog handler with the Combat Center Provost Marshal's Office, reads to Condor Elementary School students March 1, 2019, as part of Read Across America. (Alicia K. Snell)





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