INTRODUCTION

Commander Fleet Activities (COMFLEACT) Yokosuka is committed to maintaining and operating base facilities in order to serve and provide logistic, administrative, and recreation support services to the forward-deployed operating forces in the Western Pacific, which includes the United States Seventh Fleet, Commander Destroyer Squadron 15, and the only permanently forward-deployed aircraft carrier, USS RONALD REAGAN (CVN-76). The Yokosuka Naval Complex is an Area of Responsibility (AOR) that is comprised of 568 acres located on the Miura peninsula within the Kanto Plain region in Central Honshu, Japan, at the entrance of Tokyo Bay. It is 43 miles south of Tokyo with an area of responsibility that includes 1,700 acres spanning the Yokosuka Naval Complex, the Ikego and Negishi housing complexes, the Urago Ordnance Depot, Yokohama North Dock, the Nagai ULM-4 firing range, and 233 million gallons of Petroleum Oil and Lubricant (POL) storage facilities at the Hakozaki and Tsurumi Fuel Terminals. COMFLEACT Yokosuka services one of the largest, most diverse, and complex environmental programs among the Department of Defense (DoD) service components with roughly 30,000 U.S. military, civilian, Japanese support employees, U.S. contractors, and dependent personnel affiliated with over 80 tenant commands living or working out of over 1,500 buildings and along 8,200 feet of berth. Notable quality of life programs include the biggest Naval hospital in mainland Japan, the largest Morale, Welfare and Recreation (MWR) Program in the DoD, the largest revenue producing Navy Exchange Complex, the largest Command Religious Program in the Navy, four accredited Universities, a robust Department of Defense Education Activity (DoDEA) school system, three military service clubs, a base Galley, and a multitude of other restaurants and food establishments in support of the base population and guests. COMFLEACT Yokosuka (CFAY) is the largest overseas U.S. Naval installation in the world and is considered one of the most strategically important bases in the U.S. military.

The Yokosuka Naval Base was built in 1865 by the Tokugawa Shogunate and later set up by the Meiji government as a headquarters for the Imperial Japanese Navy. Throughout its storied past, including occupation by U.S. Forces after World War II, COMFLEACT Yokosuka has hosted a wealth of natural resources, including such “living” cultural Japanese icons as cherry trees and fireflies. Maintaining, tracking, and protecting terrestrial and marine resources in an increasingly densely populated urbanized area; provides a unique challenge to ensure mission readiness of U.S. forces operating in the Western Pacific, while at the same time providing essential support training and outdoor recreational opportunities.

BACKGROUND

The COMFLEACT Yokosuka natural resources management program is managed using the Integrated Natural Resources Management Plan (INRMP) which was approved on 7 September 2011. The INRMP is currently undergoing a 5-year update and is scheduled for completion September 2016. The revision is the result of a November 2014 internal natural resources self-assessment which revealed the need for additional surveys. On-going surveys include a bat colony survey, an invasive species control and endangered species monitoring survey, a flora and fauna survey, and a wildlife habitat survey.

The Natural Resources Program (NRP) is managed by the primary program manager, Ms. Hisako Mawatari and the backup program manager, Ms. Ryuoko Araki. Both women have over 15-years supporting the COMFLEACT Yokosuka's Public Work's Environmental Division and have successfully integrated the INRMP requirements in the Base's Environmental Management System (EMS). Successful integration can be seen through proactively programming natural resource surveys to address EMS audit findings. Program updates are briefed at the installation's advisory boards; the semi-annual Environmental Working Group and annual Executive Environmental Compliance Board directly reporting to the Installations Commanding Officer. Members identify conservation focus areas and help to prioritize projects related to NRP management.

SUMMARY OF ACCOMPLISHMENTS

OVERALL NATURAL RESOURCES MANAGEMENT: The primary objective of the CFAY INRMP is to provide natural resource management guidance that promotes compatible, sustainable outdoor recreation activities that enhance quality of life for military personnel and the public, while conserving natural resources and accomplishing the military mission. A supportive objective is to create an education program is recommended for all base personnel, aimed at enhancing appreciation of natural resources. Yokosuka continues to meet or exceed all strategically planned natural resource conservation management objectives by: 1) conserving environmentally beneficial landscapes while supporting the CFAY mission ; 2) sponsoring an environmental fair, a Science, Technology, Engineering and Math (STEM) tour, and Intern program with the focus of educating on natural resource conservation 3) taking measures to protect a near-threatened Firefly and Goshawk population; 4) maintaining nature, hiking, and watchable wildlife areas; 5) working with CFAY's MWR to promote outdoor recreation for sailors while balancing safety and security concerns; 6) employing non-toxic pest management procedures; 7) enhancing compliance efforts to include routine site inspections throughout the installation; and 8) involving the community in multiple natural resource activities including firefly viewing events, base beautification activities, and beach cleanup operations.

The age-old scenario of military reservations becoming natural area islands and refuge for flora and fauna surrounded by urbanized areas repeats itself even in Japan. The natural resources management program is meeting the challenge of protecting natural resources by partnering with local and prefectural governments to meet or exceed stringent U.S. and Japanese government environmental protection standards. This is made more complex due to international governmental relations and a cross cultural environment. To promote partnership between the host nation and COMFLEACT Yokosuka, the INRMP was translated into Japanese for non-English speaking local national employees and Japanese government agencies for their understanding of the installation's management goals. Thus, we emphasize the importance of the environmental stewardship while encouraging stakeholder interaction.

MISSION ENHANCEMENT: As previously stated, the mission of CFAY is to provide support services to the forward-deployed operating forces in the Western Pacific. CFAY provides shore side facility solutions to ensure fleet combat readiness in the Far East in support of COMFLEACT Yokosuka's mission. The natural resources management program aligns with ensuring facility sustainment by being protective of human health and the natural environment while supporting the missions of the installation and its tenants. Per the INRMP, the natural resources management team must conduct an early review of proposed facility development projects to ensure there are no natural resource conflicts to include the prevention of soil erosion and protection of listed species. The team reviewed over 300 hundred project proposals and special activities within the achievement period with zero instances of adverse impact to the environment and hindrance to the projects' progression. Projects include work orders for construction maintenance and repair work to full scale pier expansions. The program managers worked closely with the Facilities, Engineering, and Acquisition Division to improve construction manager's understanding of the natural resources management program requirements and focus areas. Identification of potential impacts to natural resources is a proactive approach to maintain a balance between CFAY's mission, long-range vision for optimal land-use, and facility requirements.

LAND USE MANAGEMENT: The natural erosion of COMFLEACT Yokosuka's rocky terrain weathers constantly. Exposed rock outcropping locations are identified throughout the installation that is potentially dangerous landslide zones. The hazards in the identified areas are attributed to erosion and stability concerns that have the potential for high property damage and/or personnel safety. Per the INRMP, an erosion evaluation survey project was conducted at Yokosuka Main Base, Ikego Housing Area, Urago Ammunition Storage Area, and Hakozaki Petroleum Oil and Lubricant (POL) storage facility. The survey helped identify priority focus areas where re-vegetation of native species would benefit wildlife, prevent property damage, and ensure public safety. CFAY Public Works Department's (PWD) Environmental Division developed an Erosion Prevention Management Plan (EPMP) for the installation. The EPMP promulgates the Japanese Environmental Governing Standards (JEGS) regulation identifying soil erosion and sediment control practices, with mitigation plans preventing further soil erosion.

URBAN LANDSCAPE MANAGEMENT: The natural resources management program is successful in the protection of urban forested areas which are set aside as open park space with a focus on the Negishi Housing area site. The INRMP recommends forest surveys be performed at five-year intervals; however NRP managers were proactive in conducting a Negishi Housing area hazardous tree analysis upon observation of a noticeable threat in the forested areas. The Negishi Officer-in-Charge requested the natural resources management team investigate potential hazardous trees that may cause public safety concerns and/or property damage. Tree surveys are conducted about every quarter to investigate spread of the pinewood nematode infection. The trees are suspected to be infected by the pine wilt disease caused by the pine tree nematode (*Bursaphelenchus xylophilus*), which is vectored by the Japanese pine sawyer beetle (*Monochamus alternatus*). Due to their mutualistic relationship, according to which the nematode weakens and makes trees available for beetle reproduction and the beetle in turn

carries and transmits the nematode to healthy pine trees, this disease has resulted in severe damage to pine trees in Japan in recent decades.

During the achievement period the NRP focused efforts in landscape management and reducing artificial lighting in and around the firefly habitat to minimize disturbance. Vegetation buffer zones and modified grass cutting areas were identified. Additionally, Ikego campground visitors were instructed to wash without soap or detergent to protect and maintain a healthy hydrological cycle important to firefly habitat. For its efforts, COMFLEACT Yokosuka received formal recognition from the Zushi City's Environment and Urban Greenery Planning Division.

FISH AND WILDLIFE: The Heike-firefly (*Luciola lateralis*) is designated as "near threatened" in the Kanagawa Prefecture. Fireflies are culturally and ecologically significant species in Japan. However, their population is decreasing due to the habitat loss. The Ikego Housing Area provides preferable habitats for both Genji Firefly (*L. cruciata*) and Heike Firefly. The NRP management participates captive breeding of Genji and Heike Fireflies through collecting adult fireflies, breeding/rearing the species in water tanks, and releasing firefly larvae to their preferable areas where population enhancement is required based on the research. In 2015 the natural resources program successfully protected the species which was evident in the hatching of 707 Genji and 95 Heike Fireflies. The program ensures the health of the species and habitat through restoration of the firefly habitat located in various streams in Ikego Housing Area. The team enhances the biodiverse ecosystem and critical habitat by performing on-site maintenance work including removal of unwanted algae to keep clean water in the streams to promote rich food sources for the Genji fireflies' only prey snail, Kawanina (*Semisulcospira libertina*) and maintaining trees to provide cover from the direct sunlight.

Another rewarding wildlife program includes the identification and protection of bat species. In the achievement period a bat survey was conducted within the CFAY's AOR. A bat colony was identified within a relatively deep cave at the Hakozaki POL storage facility on Azuma Island. The colony included approximately 200-300 individuals of Eastern Bent-winged Bat *(Miniopterus fuliginosus)*. The species is currently listed as Vulnerable (VU) at the prefectural level. Additionally, threatened and endangered bats were also identified in four locations at Ikego Housing Area through the use of Bat Detectors; however the exact species remains unknown. Bat calls of 20-25kHz (kilohertz audio frequencies) were identified during the field survey. In Kanto Area, 20-25kHz calls are made by only three species, all of which are listed in the Japan (nationally) and/or prefectural Red Data Books. The three species include: Oriental Free-tailed Bat (*Tadarida insignis*) (VU nationally, Data Deficiency [DD] prefecturally), Birdlike Noctule (*Nyctalus aviator*) (Near Threatened [NT] nationally, VU prefecturally) or Asian Parti-colored Bat (*Vespertilio sinensis*) (VU nationally and prefecturally). All three species fly in high altitudes (often above forest canopies) and manual capture is therefore very difficult. Now that the natural resources management program has successfully identified the species, program managers are currently discussing practical and innovative methods of identifying 20kHz bats and protecting the habitats.

Per mitigation efforts identified with the construction the Ikego Elementary School, the NRP has developed a strong monitoring and protection program to support the Goshawk (*Accipiter gentillis*), protection which is designated as "near threatened" in the Japan Red List and

"vulnerable" by the Kanagawa Prefecture. The conservation program includes video nest monitoring of a breeding pair of Goshawks, the maintenance of habitats and nest enhancement to ensure favorable conditions for reproduction. In 2015, the program confirmed a rare event of four chicks (usually two or three) and successful fledging of three chicks. This program is a successful partnership with the Japan Government's South Kanto Defense Bureau.

In an effort to protect and enhance migratory bird habitat the NRP conducts Avian Surveys at the Ikego Housing Area, containing a 622 acre (252 ha) natural area, per management implementation of INRMP. Avian surveys have been conducted in CFAY several times; however, methodologies and timing of these past surveys were not always consistent. Refinement of the program established 55 point-count stations for long-term avian monitoring programs that incorporate standard scientific methods utilizing the Variable Circular Plot methodology with the ability to conduct annual systematic surveys will allow for proper monitoring. The locations of each point count station were logged using a global positioning system unit and entered into the Navy geographical information system database. Recognition of trends, patterns and changes in avian populations and communities will enable CFAY to make decisions on proposed future land use for energy conservation and contribute to wise natural area stewardship while promoting the military mission.

INVASIVE SPECIES AND PEST MANAGEMENT: The installation incorporated a strict set of pest management controls via a formalized pest management plan, mandating the appropriate use of chemicals while ensuring minimal impact on natural resources and maximizing the impact on our targets.

In 1998 the Kanagawa Prefectural Government (KPG) identified the North American Raccoon (*Procyon lotor*) as its number one invasive species, responsible for widespread damage to residential structures, agricultural crops, and the habitats of endangered/threatened species. Invasive species compete with native mammalian wildlife, such as the raccoon dog (*Nyctereutes procyonoides*), in addition to predating native birds (eggs and chicks), fish, amphibians, and reptiles. Raccoons are also known carriers of the pathogens that cause rabies, leptospirosis, canine distemper, parvovirus, and tularemia. Undeveloped tracts of land such as those found in the Ikego Housing Area and campgrounds provide safe harborage to a statistically significant portion of the raccoon population.

As the Ikego housing area/campgrounds, Urago Ammunition Storage Area, and Hakozaki POL storage facility are outside the jurisdiction of the KPG, a cooperative effort was necessary. The installation partnered with the KPG to continuously monitor all natural vegetative areas and maintain strict compliance with Japanese law regarding this matter. The natural resources team ensured the availability of invasive species management funding and awarded for trapping efforts in FY15 and beyond. The program can successfully report the control is ongoing and proven to be effective capturing an average 5 raccoons a month.

Another invasive species, the Masked Palm Civet (*Paguma larvata*) is colonizing animal species introduced from South East Asia and is spreading throughout the Miura Peninsula. A Masked Palm Civet was captured on Yokosuka Main Base. Program managers work with the PWD Pest

Control Shop in conduct trapping and disposal of the species. Trapping procedures do not include pesticide or chemical applications thus protecting the natural environment.

In the 2012 Wildlife Habitat Survey at Ikego Ponds, the American bullfrog and red crayfish were detected at Ikego North Pond. The ecological impacts caused by these invasive species are of great concern of the Government of Japan. Natural algae growth is controlled by smaller animals and fishes which feed off of the algae. Population of these smaller species is greatly reduced these larger invasive species, commonly resulting in increased algae growth and reduced water quality. In 2015 a survey and trapping program was conducting eliminating over 2,000 bullfrogs and 4,000 crayfish, effectively knocking down the populations. The next step is to conduct surveys study recovery rates and pond ecosystem improvements.

CONSERVATION EDUCATION (on and off installation): Despite limited funds, the NRP found innovative approaches to educating the base community regarding the value of natural resources within the AOR. To make this happen, close working relationships and extensive networks with local and prefecture government entities and private organizations are done on a routine basis. These are stakeholders that willingly provide pro-bono advisement and expertise such as providing scopes of work, translations, personnel at events and coordination efforts for habitat enhancement.

Four educational signboards were installed at the Ikego Housing Complex campgrounds encouraging protection of natural and cultural resource such as the near-threatened, Goshawk, rare orchids (*Calanthe discolor*), and the Heike firefly. The signboards installation was done with minimum expense to the government, with in-house designing, printed in-house by the PWD sign shop, construction materials were purchased and installed by SEABEES as free labor. This effort resulted in formal recognition from the Mayor of Zushi City.

The program regularly coordinated with the Yokosuka Boy Scouts and Girl Scouts to preserve and maintain its natural resources. These efforts include monitoring bird watching areas, wildlife trails, and campsites used by more than 17,000 DoD military and civilian personnel each year. PWD Environmental Division staff treated the DoDEA's Science, Technology, Engineering and Math (STEM) program students to two natural resources tours. Over 50 students of Middle School 6th graders gathered at Campsite in Ikego Housing Area. Students enjoyed touching wild species in the streams and learning geological processes. Every year, STEM students from different classes participate.

Started in 2013, the Annual Earth Day Environmental Fair continues to grow and increase environmental awareness. Local companies and organizations share their environmental knowledge and experience with the local base population. These groups included the Miura Peninsula Biodiversity Conservation Network, Miura Peninsula Insect Study Group, and the Japanese Geotechnical Society. Children and students from base schools also learned about

natural resources as they were given opportunities to handle live animals, observe insect specimens collected from within the installation and get more information about geological processes and hazards. This past year's highlight was a first time Installation Commander/Skipper's recognition ceremony of 15 volunteer organizations and individuals, who contributed to the installation's aesthetics with clean-up projects, infrastructure improvements and outreach education efforts.

The installation also collaborated with the South Kanto Defense Bureau in developing bilingual brochures to educate Ikego Elementary School students. The brochure identified new environmentally-friendly features of the Ikego elementary school. 1500 copies of the brochure were presented to Ikego Elementary School. Weekly News of a breeding pair of Goshawks was translated into English and sent to Ikego Elementary School along with a video with English captions.

COMMUNITY PARTERSHIP OUTREACH: A portion of land in Ikego Housing Area was designated as joint use between the city of Zushi and the U.S. Navy. The COMFLEACT Yokosuka along with the Environmental Division played a valuable role in the creation of the Memorandum of Understanding as most of the joint use area is "green area" of recreational resources (track and field, tennis courts and camp grounds) and natural resources. COMFLEACT Yokosuka had been protecting the existing natural ecosystem, which included endangered fire-fly habitats around a pond and stream. NRP managers advised Zushi-city official for future development, protection of endangered species, land use strategies for wildlife corridors and keeping non-native animals in check. FLEACT Yokosuka regularly conducted NRP protection initiatives involving military and civilian personnel, base residents, and local Japanese nationals. Another example includes partnership agreements that enabled the hosting of firefly viewing events at Ikego open to all members of the local community as well as military families. This event proves an effective educational and awareness tool, reinforces our commitment with protection efforts for the endangered species, and receives high local community praise. All these combined efforts improved host nations relations and provided a sense of pride and ownership. Lastly, personnel new to installation are encouraged to participate in these programs during the Environmental portion of their mandatory local Area Orientation Brief.

The COMFLEACT Yokosuka sponsored over fifteen natural resource volunteer events, including insect surveys, on-base natural resource activities, off base beach clean-ups, and a flower planting project implemented at a local Japanese Nursing Home. These events were designed to promote awareness for environmental stewardship within the local and base community and improved the amount of cross-cultural communication for better understanding between U.S. personnel and Japanese nations. The NRP team takes a lead in cosponsoring the Annual Cherry Tree Maintenance Event at Ikego. Also, the NRP team coordinates the Annual River Run Clean Up by organizing volunteers who are members of the Adopt-A-Monument program to support the river run event from the Ikego Housing Area to Zushi City.