

## SCOPE OF WORK

### Development and Implementation of Eradication and Monitoring Methodologies of the Argentine Ant (*Linepithema Humile*) on Naval Base Coronado, Naval Auxiliary Landing Field San Clemente Island, CA PHASE III

#### I. BACKGROUND

Cooperative Agreement N62470-13-2-8022 was awarded in 2013 as a pilot study to 1) investigate the feasibility and initiate the development of methodologies to eradicate the Argentine Ant from San Clemente Island (SCI), and 2) develop a monitoring program to determine treatment efficacy and detect future infestations. Phases I and II of this project provided enough funds to develop an Operational Plan for the development and implementation of eradication and monitoring methodologies at the smaller sites of infestation. Phase III, for which this current scope covers, provides for the refinement and implementation of treatment methodologies for the largest of the island's sites: Wilson Cove, the Quarry, and the Missile Impact Range (Table 1). Figure 1 shows a map of these known locations. Phase III also provides for the development and implementation of a long-term monitoring protocol to detect Argentine ants at low densities in order to assess treatment efficacy, and to continue monitoring the effects of ant eradication on the SCI biota.

Table 1. Known Argentine ant infestation locations and sizes as of October 2014. The last column shows which sites have undergone initial treatment and which are anticipated to be treated under this Agreement (2015).

Argentine Ant Infestation Sites		
SITE	Acres	Treatment Year
Airfield (AF)	151.5	2014
Wall (WA)	4.3	2014
Dump(DU)	221.7	2014
VC3 (VC)	6.0	2014
BUDS (BU)	45.6	2014
Magazine (MA)	84.1	2015
Wilson Cove (WC)	490.0	2015
Quarry (QU)	18.5	2015
Missile Impact Range (MIR)	3.2	2015
<b>Total Invasion</b>	<b>1024.9</b>	
Acres Treated 2014	429.1	
Acres to Treat 2015	595.8	

#### II. PERIOD OF PERFORMANCE

The period covered by this Scope of Work (including report preparation, review, submittal of final invoice, invoice payment, etc.) will be 1 year from the date of original award. 3 Option

years may be exercised to conduct long-term monitoring of this invasive species threat, treatment application, and efficacy assessment.

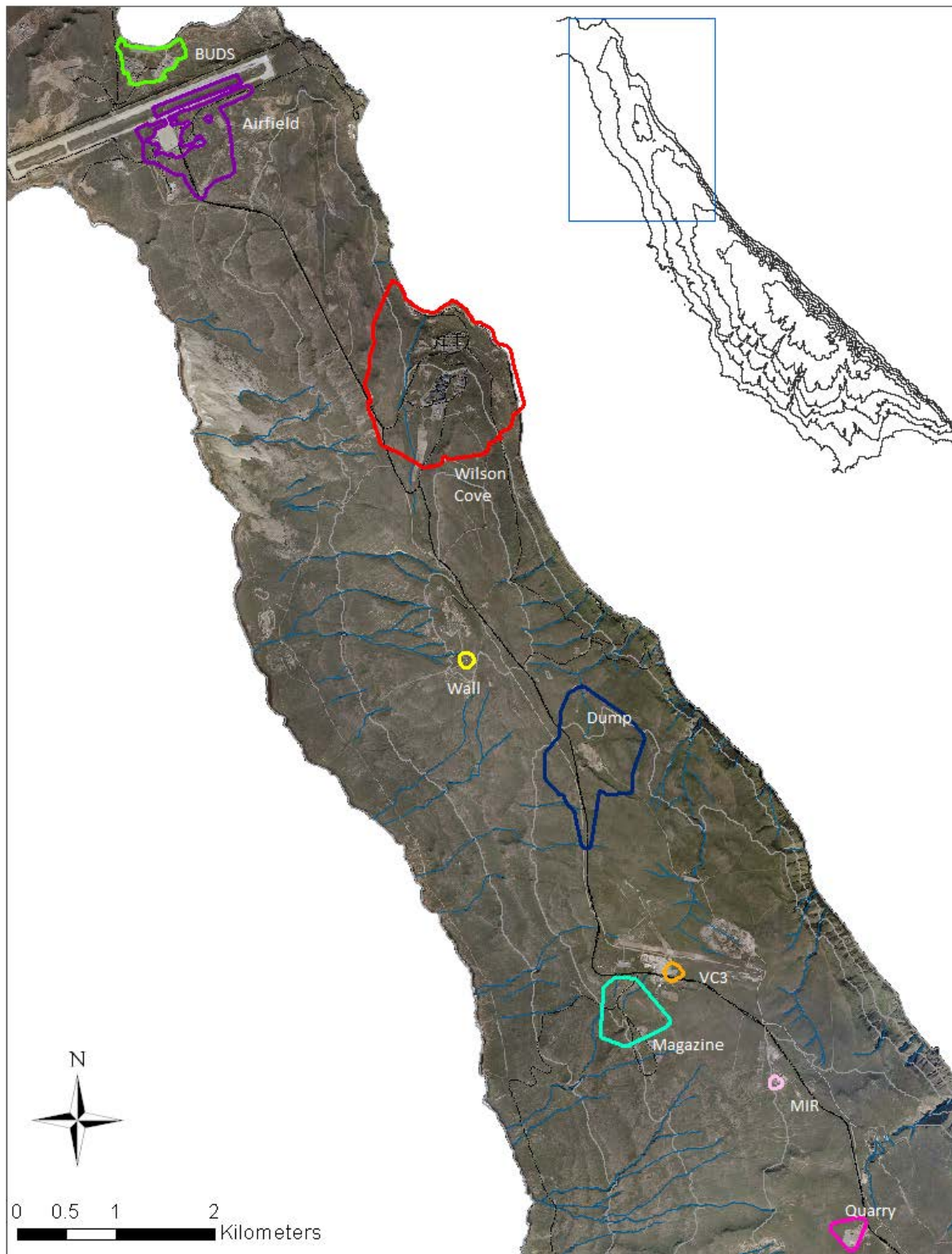


Figure 1. Known locations of Argentine ant infestations as of October 2014.

### III. PERFORMANCE OBJECTIVES AND REQUIREMENTS

The goal of this project is to develop and refine methodologies for the ultimate goal of eradicating Argentine ants from SCI. If funding allows and if the eradication appears successful, Option Years may be exercised to conduct post-eradication monitoring at the sites of infestation. A final report is to be delivered after the initial 1-year period of performance. Each exercised Option Year will likewise culminate in a final report documenting monitoring results.

The Navy (SCI Wildlife Biologist and/or Botanist) will be an active, cooperating participant throughout the project to advise and oversee progress as it relates to the objectives and requirements stated herein.

#### **Specific Requirements in support of the above objective include:**

1. Delineate any new ant population range or areas of current infestation. Delineation shall be documented through GIS coverage within a known projection system and including an attribute table or another form of metadata.
2. Implement the following components of the Operational Plan, which was developed in Phase I of the project, for Wilson Cove, the Quarry, the Missile Impact Area and any other newly identified sites.

A. Conduct treatment of the island's largest sites and follow-up treatment, as necessary of the smaller sites. Adaptively and prescriptively continue or adjust treatments (if necessary) within the parameters of the permits, plans, and agreement to meet project goals. The eradication effort is supported under an experimental use permit from the State of California. This experimental use permit allows for the Recipient to adjust the eradication protocol based on information gathered from the concurrent monitoring protocols (see B and C, below). The eradication protocol may be adjusted to increase application rates, application densities, timing of application, and means of delivery (aerial, hand, bait stations, etc.). The goal is to develop a series of easily modifiable steps to respond to the degree of treatment efficacy.

B. Assess Treatment efficacy. Non-toxic baits and visual searching shall be used to monitor Argentine ant activity (which is inversely related to treatment efficacy) during treatment. A 50 x 50 m monitoring grid outline, or other monitoring scheme, shall be superimposed over each treatment area. Monitoring shall occur 1-2 times prior to the first treatment, once during the treatment phase, and after the last treatment, or on a schedule mutually agreed upon between the Recipient and the Government.

C. Conduct Low-density monitoring. To validate confidence in site-eradication success on SCI, the Recipient shall conduct low-density monitoring research. The Recipient shall develop a monitoring scheme, such as a randomized, complete block design or similar design, at monitoring points at the infestation areas, and develop and implement a timeline for monitoring for Argentine ants at low densities. Certain variables that may be

considered in developing the design are bait attractant, bait deployment longevity, and habitat characteristics (i.e., vegetation, topography and human presence). The abundance and presence of the Argentine ant shall be recorded and analyzed for each monitoring point. The results shall be used to establish a long-term monitoring protocol that maximizes the detection probability across a heterogeneous landscape.

D. Monitor effects of Argentine ant invasions. Establishment of 16 monitoring plots to assess the effects of Argentine ant invasions on San Clemente Island was conducted in February 2014. These permanent monitoring plots were placed in and adjacent to the main areas of Argentine ant infestation on San Clemente Island. These plots were sampled again in June 2014 and will continue to be sampled annually throughout the period of performance. The purpose of this sampling effort is as follows: (1) to document the effects of the Argentine ant on native ants, (2) to quantify the recovery of native ant faunas after the anticipated Argentine ant eradication, and (3) to compare the results of the San Clemente Island Argentine ant eradication effort with the results of the eradication effort on Santa Cruz Island. The Recipient shall analyze the data collected in order to detect responses in ant abundances, other ecological aspects that may correlate with the data, and comparisons between ecological recovery parameters to Santa Cruz Island. The monitoring protocol shall be adjusted, by mutual consideration between the Recipient and the Government, if the analyses suggest additional parameters should be measured, if parameters should be measured in different time schedules, or other complexities are identified.

3. Document any unusual animal or plant species observed while conducting surveys in the field (e.g., species not known to occur at SCI) shall be immediately reported to the NBC Representative.

4. Option Years 1-3.

A. Conduct Low-Density Monitoring. Implement long-term monitoring protocol to detect Argentine ants in the field at low densities, if present. Monitoring is anticipated to be more intensive in Option Year 1 when the success of the eradication may not yet be confirmed.

B. Monitor Effects of Argentine Ant Invasions. Implement long-term monitoring of native ant faunas and other species that may have been affected but Argentine ants in order to gauge level of recovery post-eradication. Monitoring should be consistent across each Option year.

#### **IV. DELIVERABLES**

1. Mission Essential Requests: The NBC Representative may request updated data (presented on maps, figures and/or tables) whenever the Navy's requirement to secure this information cannot wait for the next quarterly progress report.
2. Quarterly Progress Reports: These reports shall be brief reports that outline accomplishments of past quarter and progress toward achievement of project objectives.
3. Draft and Final Report: Report shall detail methods, results, and discussion based on work accomplished. The Report shall be delivered at the end of the base period of performance. An

additional report will be delivered at the culmination of each Option Year, if exercised. Journal of Wildlife Management shall serve as the standard for format and style. The Recipient shall work cooperatively with the Navy to resolve all comments provided by Navy representatives. The final report shall respond to comments from the NBC Representative on the draft report within 30 days of receipt of government comments and shall be submitted in Word and PDF formats. All data collected under this and previous Agreements are the property of the U.S. Navy. Raw data and a copy of each reference cited in the Final Report Literature Cited section shall be submitted concurrent with the Final Report. Raw data should, at a minimum, be submitted in hardcopy format literature cited articles or sections may be submitted in hardcopy or electronic copy as convenient and/or efficient. A total of 4 bound copies are to be submitted with the report title, date and author clearly and permanently affixed to the spine of the binding. A PDF electronic copy is also required on CD.

4. GPS data collected shall be submitted as coordinate data. The format of data delivery shall be coordinated with the NBC Representative.
5. Photographs: All digital photographs taken for this study shall be submitted with the Final Report to the NBC Representative, and shall become US Navy property. All digital photo files will be labeled with at least the following information: 1) subject/activity, 2) location (specific place), 3) date, and 4) photographer.
6. Any publications produced from this work must be approved by NBC Representative prior to submission for publication.

## **V. STIPULATIONS AND RESTRICTIONS**

### **A. Stipulations:**

1. The Recipient shall provide all equipment (unless otherwise stated) and analyses necessary to complete the work described herein. All data (raw and associated files) and all photographs, and all equipment or supplies > \$5,000 per unit in value purchased with CESU Agreement funds (including computer software) shall become the property of the Department of the Navy (DoN) at the end of the Agreement.
2. The Recipient shall provide the NBC Representative the names and resumes of staff that will be conducting the surveys required in this Agreement. At the minimum, the Recipient shall have the qualifications described below, but may, on a case-to-case basis, be waived by the NBC Representative:
  - a. A Graduate degree (MA/MS/PhD) in ecology, biology, wildlife biology, zoology or a field related to the biological sciences from an accredited college or university.
  - b. The Recipient shall have demonstrated experience with invasive invertebrate species.
  - c. The Recipient shall be in possession of a Licensed Pesticide Applicators Certification and have any required Local Use Permit or other authorization for off label use as necessary.
3. Windy and/or foggy conditions with highly variable temperatures may be encountered at any time on SCI. Many roads are rough and unpaved, and if wet, should be negotiated using extreme caution and four wheel drive. Many places on the island have precipitous terrain and may be covered with cactus. The Recipient's transit through such terrain must be done with the highest concern for the safety of personnel and with strict

adherence to all Natural Resources Office Guidelines. The speed limit on unpaved roads shall not exceed 25 mph.

4. All work conducted in support of this Agreement shall comply with all federal laws applicable to CNRSW installations such as the Endangered Species Act and the Migratory Bird Treaty Act and applicable laws and regulations pertaining to the provision of safe and respectful workplace and to provide a work environment free of harassment and intimidation for such party's own employees and third parties.
5. The Recipient shall manage generated electronic waste (including alkaline batteries), bio-medical waste, hazardous material, hazardous waste, and hazardous waste residues in accordance with federal, state, and NBC regulations and policies.
6. It is the responsibility of the Recipient to obtain Installation Access through coordination with the SCI Natural Resources Operations Manager (619-524-9022). It is the responsibility of the Recipient to ensure that all project staff comply with NBC and SCI policies, regulations, and procedures while at SCI and NBC.
7. Prior to entering the field each day, the Recipient shall notify SCI Police by telephone as to the area or areas where work will be accomplished. Upon returning from the field, the Recipient shall check-in with SCI Police by telephone or in-person.
8. Staff working on this Agreement shall carry a functioning two-way radio while conducting fieldwork on SCI, to be provided by the Navy.
9. No ground disturbing activities may take place at SCI without approval from the NBC Representative and Unexploded Ordnance Technician escort. Additionally, to avoid impacts to federally listed, rare, or endemic plants the Recipient and/or their representatives must coordinate all vegetation disturbing activities with the CNRSW Botany Program Manager. Under no circumstances are any federally protected plants to be disturbed and/or destroyed when completing the work required in this Agreement.
10. Under no circumstances are the Recipient and/or his staff(s) to violate the Archeological Resources Protection Act. If any objects are found that appear to be cultural or archeological resources contact the CNRSW Cultural Resources Program Manager at (619) 532-2800.
11. No buildings will be modified without permission from the Naval Base Coronado Public Works Officer and the CNRSW Architectural Historian. The Recipient and/or his staff(s) shall not violate the National Historic Protection Act.
12. The NBC Representative and the SCI Police shall immediately be notified of any unusual activity observed while conducting surveys in the field (e.g., trespassers). Information should include location, date, time and any pertinent detailed facts regarding the activity.
13. All personnel must complete Unexploded Ordnance (avoidance) training prior to working on SCI. This can be arranged through the NR OM at (619) 524-9022.
14. Unexploded ordnance may be encountered while conducting fieldwork. Recipient shall not touch or attempt to pick-up any suspected ordnance. Recipient shall place flagging in the general area of the ordnance and notify the Southern California Offshore Range (SCORE) contact, Mr. Les Stone, of the location of the ordnance as soon as possible.

## **B. Restrictions:**

1. The primary use of SCI is for its military mission. Without prior notice, designated areas may become closed to the activities of the Recipient. In some cases, due to operations or

other circumstances, it may be necessary to deny the Recipient access to portions of SCI for short periods of time. In such cases, the Recipient will be provided notification of such as soon as possible. It is the responsibility of the Recipient to reschedule this work as feasible (if not precluded by long-term access restrictions)

2. The Shore Bombardment Area (SHOBA), Training and Range Areas (TARs) and Special Weapons and Tactics Areas (SWATs):
  - a. Access requests to mapped range areas (SHOBA, TARs and SWATs) must be made through SCORE. Access to SHOBA, SWATs, and TARs must be confirmed no more than 24 hours prior to access the area.
  - b. The Recipient is restricted from entering the SHOBA Impact Areas (I and II) and other areas designated by the SCI OIC as Exclusion Areas due to the presence of unexploded ordnance. At the time of this writing, the following areas are off-limits/exclusion areas: Lemon Tank-Nanny BLU-97 area, Eel Point 40mm Range, and Installation Restoration Site 14.
3. The SHOBA gate key may be obtained from the SCI Police at Building 60151. The Recipient shall call the Police from the SHOBA gate (if the phone is operational) if departure from SHOBA is within one hour of the end of scheduled access time to confirm departure and shall directly return the gate key to Security.
4. Naval Special Warfare Basic Underwater Demolition School (BUDS) and Maritime Operations (MAROPS) SWATS 1 & 2 shall not be accessed unless they are schedule for use by the Recipient, confirmed within 24-hours on the SCORE schedule, BUDS Camp/MAROPS personnel have confirmed that the area is not in use by NSW, and the Bravo Flag is not flying. The Recipient shall further comply with the Procedures for Restricted Area Access (prepared by Jennifer Turner) and the SC Sage Sparrow SWAT 1 & 2 Safety Compliance Form (prepared by Melissa Booker).
5. Due to the classified nature of the activities at SCI, only those areas directly associated with the specifications of this Agreement may be visited. Restricted areas will only be entered by special permission.
6. Gates have been installed on various roads. When closed or a road block has been placed, they are not to be ignored or circumvented for any reason. If Agreement work is required behind a locked gate, the Recipient will immediately contact the NR OM at (619) 524-9022 or the NBC Representative (619) 545-7188 or (619) 571-2503 so that appropriate arrangements with the US Navy can be made to gain access.
7. Photography is restricted on SCI. Only photographs of Agreement-related activities are permitted.
8. No smoking is allowed in the non-developed areas of SCI.

## **VI. GOVERNMENT-SUPPLIED SERVICES**

1. Air Transportation: The US Navy will provide the Recipient and/or his staffs with no-cost air transportation to and from SCI on a regularly scheduled air carrier.
2. Barge Transportation: Vehicles and other non-explosive equipment, supplies, and materials may be shipped to and from SCI on a regularly scheduled barge.
3. Unleaded gasoline and diesel fuel will be provided and can be obtained at Wilson Cove.
4. Medical Facilities: A Dispensary, Building 60126, staffed with a Navy Hospital Corpsman, is located at Wilson Cove, SCI. Service is limited and generally not available

to Recipient and/or his personnel except on an emergency basis. MEDIVAC to the mainland can be provided under appropriate circumstances, but the Recipient will incur the charges for this service.

5. Housing: The Navy may provide limited berthing space in the NALF SCI Combined Bachelor Housing (Bdlg 121 or elsewhere) on a space available basis at no cost. Navy Gateway housing is also available at a cost to the Recipient.
6. Vehicle: The Navy may permit the use of a Natural Resources Program vehicle for limited times as available, but the Recipient may be required to establish a Job Order Number (JON) through Navy Public Works Transportation and rent a vehicle at SCI as necessary or use a (JON) to support maintenance of a vehicle barged to SCI for the project. No vehicular transportation is provided off of SCI.
7. Work Space: Laboratory, workbench, office, and storage areas are available at the Natural Resources Facility on a space available basis.
8. Meals: Meals are available at the SCI Galley at a cost to the Recipient. Bulk food supplies are provided for the preparation of one meal/person/day at the Natural Resources Facility ready room.