ABSTRACT
Chromolaena odorata, an Asteraceae commonly known as Devil Weed or Siam Weed, is native to North America, from Florida and Texas to Mexico and the Caribbean, and is a documented agricultural and ecological pest in tropical Asia, West and South Africa, and parts of Australia. This species has been referred to as one of the 100 worst weeds in the world (SIVU). Chromolaena was first reported in Hawaii by Oahu Army Natural Resources Program (OANRP) (LAF) in 2013, when it was spotted on an annual road survey in the Army’s Kahuku Training Area. Since detection, OANRP has repeatedly swept over 370 hectares across the Kahuku Infestation, and spent nearly 2,000 person hours in this effort. Delimiting surveys were completed in Kahuku in 2013, and few populations outside the core infestation area were detected. However, smaller populations of Chromolaena have since been detected on Oahu at Aiea, Kahana, and two additional Army training ranges. OANRP current control strategy is to: 1.) survey and control across the defined infestation area every six months to a year; 2.) control with high densities of plants (hotspots) before the annual reproductive season (November - April); 3.) conduct annual aerial sprays of the core infestation (approximately 4 ha) before reproductive season; 4.) survey an 800 meter buffer around the infestation area and outlier populations, documenting and controlling new plants. Additional necessary but challenging efforts to eradicate this taxa from the island include surveying high-priority areas across the entire island of Oahu, securing funding and staff for control efforts, improving spray equipment, broadening public outreach efforts in high-use areas where Chromolaena is present, and supporting sanitation and inspection protocols within the Army. OANRP is dedicated to eradication of Chromolaena on Army lands, and supports eradication island-wide.

BACKGROUND
C. odorata not only an ecological threat but a toxic agricultural threat as it can cause diarrhea or in extreme cases, death to livestock through ingestion of the leaves. To humans it can cause skin reactions and asthma in allergy prone people. Ecologically, the species can tolerate a broad range of climates and soil conditions and can tolerate severe dry periods. It is very suitable for tropical climates and prefers open sunny areas to partial shaded areas. It rapidly colonizes disturbed or cleared areas and once established is allelopathic. The plant is also a known host for pests, pathogens, and fungal diseases.

REPRODUCTIVE BIOLOGY AND SEED BANK PERSISTENCE
C. odorata can mature in one year and begin producing seed which can reach a count of 800,000 per individual per year. A seed burial trial was conducted where seeds were sealed in polyester fabric bags and buried 6 inches below the soil surface near an existing population in Kahuku. Buried bags were retrieved at regular intervals.

• **Dark, Buried:** Seeds that had germinated in the buried bags were counted.
• **Light, After Buried:** Intact, non-germinated seeds were sown on agar and put in growth chambers, exposed to light, and all germinating seeds were counted.

Results: Chromolaena odorata initially had a 73% germination rate when exposed to light but after 2 years had dropped to a 36% germination rate. This is a substantial drop in viability after 2 years. This seed trial is still ongoing but we predict that the amount of germination will continue to drop, and anticipate this species will have a short-term (5 years) persistent seed bank.

METHOD:
The "Sweep" technique is used to reduce the number of plants that are sometimes missed during a survey by lining up by team and spacing each team member out evenly. Then the team moves a set compass bearing in search for outbreaks throughout the area. The Sweeps are done in an organized and to respond to any new plants found.

BUFFERS:
When outlier plants are first detected, 200 meter and sometimes 800 meter buffers are drawn around the point(s) and the entire buffer is swept. If more plants are found, the buffers will keep expanding until the population is delineated. See Surveys section to the right for an example of a buffer.

THE ROLE OF OUR PARTNERS:
OANRP pays the Oahu Invasive Species Committee to sweep half of the KTA infestation biannually.

DISCUSSION
It is clear that a much larger effort is needed if C. odorata is to be eliminated from Oahu. New finds at Schofield’s East Range and Aiea this year alone highlight the ease with which C. odorata moves on vehicles and humans. It seems likely that there are other, unknown infestations located off Army training facilities; surveys need to be conducted across the island to better understand the scope of the infestation and set realistic goals. Securing adequate funding for surveys and control is essential to the eradication goal. Furthermore, Biosecurity will play a vital role in preventing further establishment of C. odorata on Oahu from likely sources like Guam, where the species is widespread and can easily come over to Oahu via military vehicles, gear and personnel. In particular, quality inspections and enforcement of incoming troops and military shipments is key to ensuring that there are no further introductions of Devil Weed to all areas on the island of Hawaii. Since there is the Army’s Pohakulua Training Area, it would also be beneficial to explore and fund research for biocontrol since this species, once established, takes so much effort and resources to contain.

REFERENCES