Cal-IPC is working with six military installations to make their invasive plant management more strategic and effective. The military manages a large amount of land and its natural resource management must support the military mission while maintaining habitat for sensitive species. The National Wildlife Federation’s 2005 report “Under Siege: Invasive species on military bases” described the detrimental effects of invasive species to military activities and natural resources on bases two of the bases featured in that report were Fort Hunter Liggett and Camp Pendleton. Cal-IPC has a new project, funded by the Department of Defense’s Legacy Resource Management Program, to develop a process that can be applied to additional installations in the future. The project includes analyzing invasive plant management on the bases as well as connecting the bases to regional partners for the purpose of developing projects on lands near the bases.

### Participating Installations

These installations vary widely in size, habitat, and current invasive plant management. Some have extensive programs already while others have limited programs and little connection to regional partners. Each base contains habitat for endangered or threatened species as well as rare plants. Invasive plant management takes place in the context of the military mission for each site, which ranges from training troops to supporting space flight. Participating installations include:

- **Beale Air Force Base (Yuba Co.)**
- **Vandenberg Air Force Base (San Luis Obispo Co.)**
- **Fallon Naval Weapons Station (San Diego Co.)**
- **Vista Irrigation District (San Diego Co.)**
- **Remote Training Site Warner Springs (San Diego Co.)**
- **Fort Hunter Liggett (San Benito Co.)**
- **Camp Pendleton (San Diego Co.)**

### Current Invasive Plant Management

Invasive plant management programs vary widely by base. Camp Pendleton and Desert Training Center control many invasive plant species and have a High Detection/High Response program. The other bases have much more limited programs, focusing on a small number of species that affect the military mission or habitats sensitive species.

For example, Beale Air Force Base manages yellow starthistle because stands of the thistle near the runway attract birds that pose an aircraft strike hazard. Fort Hunter Liggett controls yellow starthistle because it reduces the ability of the base to provide training areas and damage parachute. BLM Vista Irrigation District in Yuma does not directly manage the land for the base, but uses it for training exercises through use agreements with Cleveland National Forest. Remote Training Site Warner Springs is a bureau of Land Management, and Vista Irrigation District.

Camp Pendleton staff participate in the San Diego Weed Management Area. Fort Hunter Liggett conducted a demonstration project on yellow starthistle in conjunction with the Southern Monterey County Rural Coalition. Fallon works with the Mission Resource Conservation District to approach landowners.

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### Regional Coordination

Working at a regional scale with multiple partners is important for combating invasive plants. Military bases work with adjacent state, federal, and local agencies.

This project connects to Cal-IPC’s other projects on landscape-level regional planning, where for the past two years we’ve been meeting with multi-county groups to decide on regional priorities and develop funding proposals. We are also working with State Parks on Early Detection guides. Land managers from Camp Pendleton and Fallon attended an Early Detection meeting with the San Diego District of State Parks.

One goal of this project is to develop a list of regional priorities, where bases and agencies can work together to improve overall effectiveness. Bases may be able to provide funding to other organizations if the work will benefit the base’s needs. Other organizations, such as Resource Conservation Districts, may be able to work with local landowners to encourage them to remove weeds populations adjacent to bases.

We engaged a wide range of partner organizations in workshops with base staff, including:

- **Federal**: Bureau of Land Management, Cleveland National Forest, State: California Dept. of Fish and Wildlife, California State Parks, California Army National Guard, CalTrans, UC Cooperative Extension
- **Local**: County Agriculture (Yuba, Sonoma, San Diego, Yuma Co.), Monterey County Parks, Southern Monterey County Rural Coalition, Friends of Spanish Creek Wildlife Area, Sonoma RCD, Calaveras RCD, Mission RCD, Center for Natural Lands Management, San Elizario Conservancy, Verde Irrigation District

### Prioritizing invasive plant management on military bases

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### Methods

To develop recommendations for an invasive plant management project on each base, Cal-IPC examined the current invasive plant program, researched invasive plant data, and met with base staff and regional partners. Each base has an INRMP (Integrated Natural Resource Management Plan) which describes natural resources, threatened or endangered species, and current invasive plant management. We examined invasive plant data for the bases and surveyed the surrounding area in the Cal-WeedMapper data warehouse (calweedmapper.cal-ipc.org) and the Cal-IPC Invasive Plant Inventory (www.cal-ipc.org). The Cal-IPC Inventory rates invasive plants as High, Moderate or Limited threat to wildlands based on a literature review and 13 criteria in categories of impacts. Invasiveness and Distribution. Cal-WeedMapper provides statewide maps for the 210 species on the Cal-IPC Inventory based on expert knowledge and GIS data.

We generated a summary from Cal-WeedMapper for the area around each base, listing species as potential targets for surveillance, eradication, and control. Surveillance refers to species that are not on the base but are nearby. Eradication targets are those species present on the base but that are not widespread in the surrounding area. Control targets are more widely-distributed species on the base. The Cal-IPC Invasive Plant Inventory was used to examine potential impacts, dispersal, and vegetation communities known to be invaded by each species. The initial species list from Cal-WeedMapper was reduced based on proximity to the base, ecological impacts, and potential vectors for spread. We focused on both abiotic vectors, such as creeks or roads, and biotic vectors such as cattle brought onto the base for grazing. Military personnel and vehicles driven onto the base for training or construction activities are also a major potential vector for invasive plants.

### Example Recommendations

We are providing recommendations for the base and recommendations for the base to work on with regional partners. Several of the bases do not currently have maps of their invasive plant habitats. We recommend that they start a program in order to track populations, identify vectors that could spread them (such as nearby roads), and communicate with off-base partners about actions to work on together.

### Next Steps

We are preparing recommendations for each base, listing species for control on the base and species that could be the subject of coordination with regional partners. Each base will also receive surveillance guides for several species. These guides can be provided to biologists conducting surveys on base, maintenance crews, or hunters to encourage reporting of high priority species.

We hope to expand this project to additional bases. As part of this project, we developed guidelines for transforming our approach to other locations, which could include bases outside of California.