

The spread and control of *Dittrichia graveolens*.

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Dittrichia graveolens is a highly invasive, Cal-IPC designated Red Alert species in California, which is known to route its resources into seed production, when stressed. We conducted an experiment to observe the effects of three control treatments on flowering *Dittrichia graveolens*, and assessed the viability of seeds produced after plants were treated with herbicide. We pulled *D. graveolens* plants with roots intact, cut plants at their base without their roots, and sprayed plants with Habitat® herbicide. We found that all treatment plants produced seeds after treatment, but that the seeds of the herbicide treated plants were not viable.

Introduction

Dittrichia graveolens will route its resources into producing seeds when stressed. Once flowering, *D. graveolens* will go to seed under most control regimes, including herbicide application and hand pulling. We conducted an experiment to observe the effects of three control treatments on flowering *Dittrichia graveolens*. In addition, we assessed seed viability of flowering *D. graveolens* treated with herbicide.

Methods

We conducted our experiment on the Mayhews Landing unit of the Don Edwards San Francisco Bay National Wildlife Refuge in Fremont, California. In November 2009, we hand-pulled seven *D. graveolens* plants with root intact, and cut seven more plants at their base (not including roots). We secured plants on the ground (with rocks and wire) at treatment sites, and flagged seven untreated *D. graveolens* plants within one meter of treatment plants, to use as a control group. We

also sprayed an approximately 50 m² infestation of *D. graveolens* with Habitat ® (active ingredient; imazapyr).

Results and Discussion

We returned one week after treatment and found that all plants in all three treatment groups had produced seeds. The cut plants and those sprayed with herbicide appeared to have produced seeds at approximately the same rate as the control plants. However, the plants pulled with their roots intact seeded to a much greater extent (not quantified) than the control plants.

We collected seeds from 14 *Dittrichia graveolens* plants that we had sprayed with Habitat ® (imazapyr) in the above experiment. We also collected seeds from 14 *D. graveolens* plants (control) that were not treated with herbicide, but allowed to seed out naturally. We planted seeds from the experimental and control groups in a controlled environment, and watered twice per week. Within two weeks of planting, the un-treated, control *D. graveolens* seeds began to germinate. The treated seeds did not germinate within two weeks, and showed no signs of germinating three months after planting. We concluded that the herbicide treated plant seeds were not viable.