EARLY DETECTION AND RAPID RESPONSE: RESTORATION OF HAWAII'S OFFSHORE ISLETS

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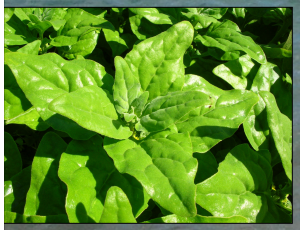
Ivy gourd
(*Coccinia grandis*)

Spiny achyranthes
(*Achyranthes aspera*)

Koa haole
(*Leucaena leucocephala*)

New Zealand spinach
(*Tetragonia tetragonioides*)



Golden crown-beard
(*Verbesina encelioides*)

Spanish needles
(*Bidens alba* var. *radiata*)

Ironwood
(*Casuarina equisetifolia*)

Sea grape
(*Coccoloba uvifera*)

INTRODUCTION

Offshore islets are discrete management units where methods for restoration can be tested and refined. Invasive plant species have the potential to alter the composition and structure of these islets and pose a severe threat to native biota. These islands are relatively small and so even the most widespread invader could be eradicated from the islands given considerable resources. However, most managers have limited resources. Early detection and rapid response is a cost effective tool for assisting in restoration. In many cases, invasive plant species can be found when restricted to a single individual or just a few plants. These species can then be removed at that time, or as soon as possible.

METHODS

Botanical surveys were done on the offshore islets of Oahu and Maui in the spring of 2005. Transportation to the islets by boat and helicopter was provided by the Department of Land and Natural Resources, Division of Forestry and Wildlife and the Offshore Island Restoration Committee. We did walk through surveys noting plant species present and their relative abundance. Invasive plants which were found in limited distribution were removed during the survey. Plants were hand pulled and put in plastic trash bags. For some of the more woody species, we used loppers and herbicide (a small spray bottle of Brush-B-Gon). Seeds were put in plastic trash bags.

RESULTS

Many invasive plant species were found in limited distribution and removed at the time of the survey. Some of the early detection successes include the following:

- Ivy gourd (*Coccinia grandis*): This rampant smothering vine and declared Hawaii state noxious weed, was somewhat widespread on Mokuauia, yet was limited in distribution on Mokolii, Popoia (treated during survey), and Manana.
- Buffel grass (*Cenchrus echinatus*): An invasive grass that forms monocultures and rapidly crowds out native vegetation was found along a trail near the coast on Manana and was removed.
- Chinese banyan (*Ficus microcarpa*): A widespread weed in the Hawaiian Islands with bird dispersed fruits was found sparingly (one tree) on Mokupipi islet. This tree could be removed before it engulfs surrounding vegetation and seabird nesting sites.
- Koa haole (*Leucaena leucocephala*): This quick spreading woody shrub was removed during surveys on Kaohikaipu and Popoia. One small plant was observed on Mokolii and could be removed in similar fashion.

Other species found in limited distribution during surveys include: spiny achyranthes (*Achyranthes aspera*), spiny amaranth (*Amaranthus spinosus*), Chinese violet (*Asystasia gangetica*), pickle weed (*Batis maritima*), Spanish needles (*Bidens alba* var. *radiata*), ironwood (*Casuarina equisetifolia*), sea grape (*Coccoloba uvifera*), button mangrove (*Conocarpus erectus*), Port Jackson fig (*Ficus* cf. *platypoda*), hairy morning glory (*Merremia aegyptia*), mangrove (*Rhizophora mangle*), coral berry (*Rivina humilis*), New Zealand spinach (*Tetragonia tetragonioides*), and beach heliotrope (*Tournefortia argentea*).

DISCUSSION

On offshore islets, detecting weeds early and removing them before they become widespread requires relatively little labor and materials, increases the probability of successful control, and results in minimum disturbance. Knowing which species to look out for and where they are likely to turn up can aid in detection success. Surveys should cover as much of the islet as possible, with emphasis on vulnerable sites, such as:

- High use areas: beaches, trails, lunch spots, campsites, and landing areas.
- Sides of islet facing main island: where weeds from the nearby main islands often first appear.
- Leeward sides of islets: often more sheltered from harsh salt spray and wind which tends to keep weeds at bay.
- Non-native tree groves: often harbor many weeds due to spread by fruit eating birds that perch in trees. Groves also provide shelter from salt so weeds establish more easily.

CONCLUSION

Offshore islets, particularly those that are relatively weed free, are high value conservation sites home to numerous native plant and animal species. To protect these high value sites, it is important to find new weeds early and remove them as soon as possible. Within high value sites, areas of high vulnerability require extra focus. Early detection and rapid response is an important tool in managing weeds on Hawaii's offshore islets and could be implemented in many of Hawaii's restoration efforts.

See website for more info. (www.hear.org/naturalareas).

Pickle weed
(*Batis maritima*)

Sandbur
(*Cenchrus echinatus*)

Buffel grass
(*Cenchrus ciliaris*)

Chinese violet
(*Asystasia gangetica*)

Sourbush
(*Pluchea carolinensis*)

Swollen fingergrass
(*Chloris barbata*)

Love-in-a-mist
(*Passiflora foetida*)