

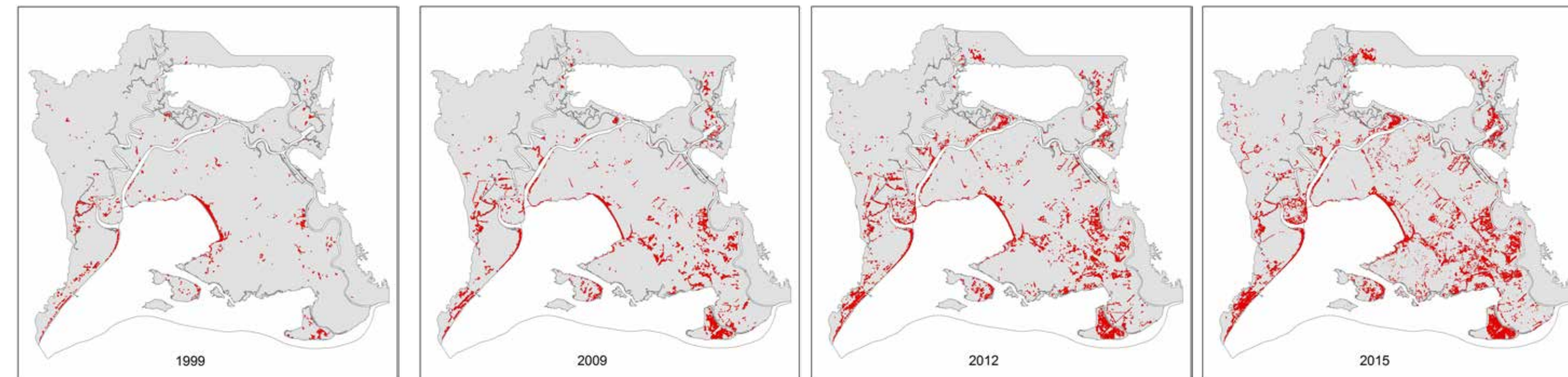
PROACTIVE PLANTING TO PRECLUDE PERSISTENT PEST PLANTS



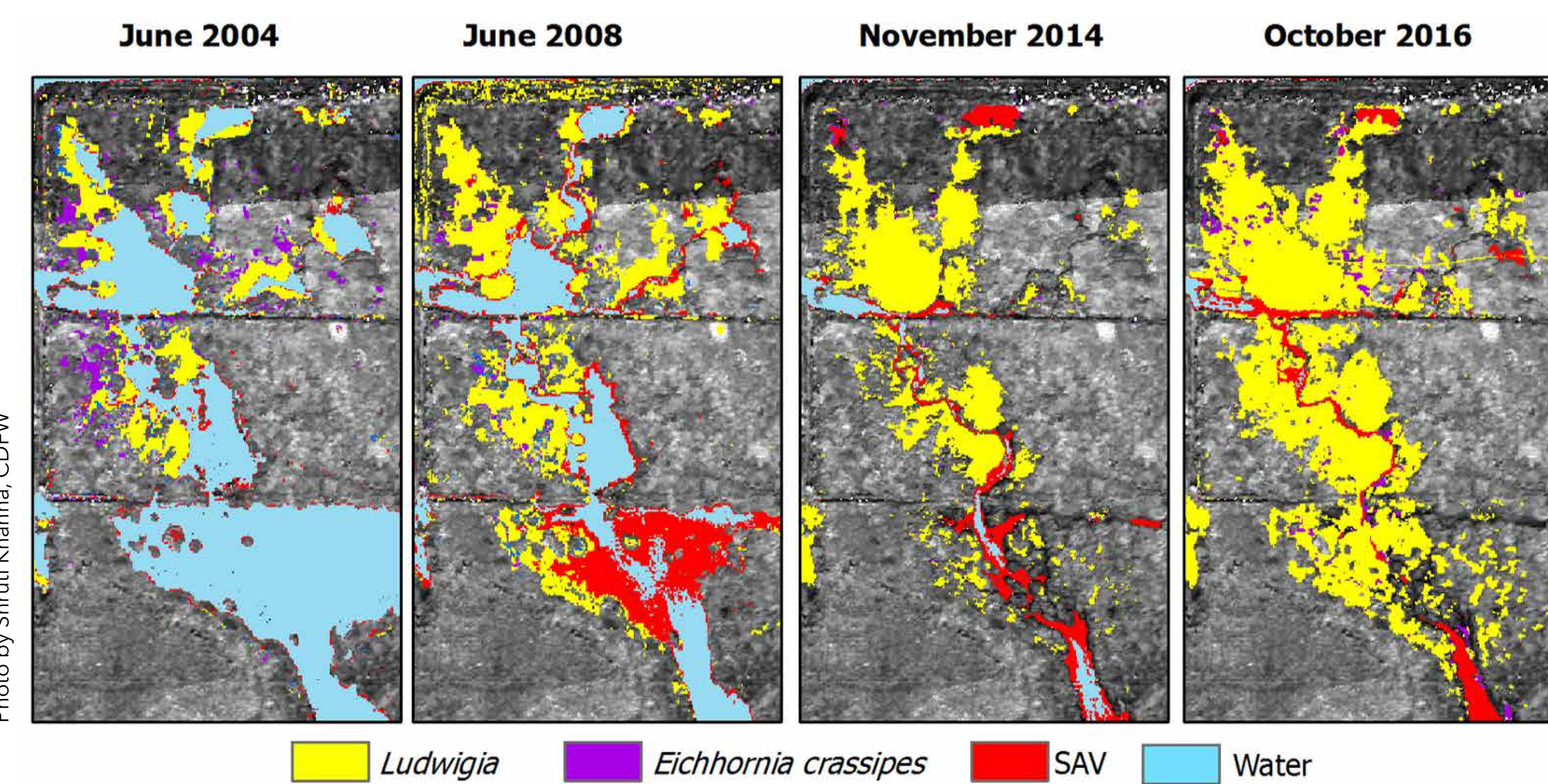
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Introduction

Dominant invasive plant establishment is a major stressor on tidal wetlands and may result in significant changes to native plant community structure and the potential decline of other organisms in these habitats. Typically, habitat restoration projects include initial invasive plant removal and rely on passive revegetation to facilitate native species recovery. Studies looking at active revegetation techniques to manage aquatic or semiaquatic invaders in the San Francisco Bay estuary are scarce. **Our hypothesis is using active revegetation with native plant species can effectively inhibit invasive plant species establishment.**



Phragmites australis temporal distribution throughout Suisun Marsh

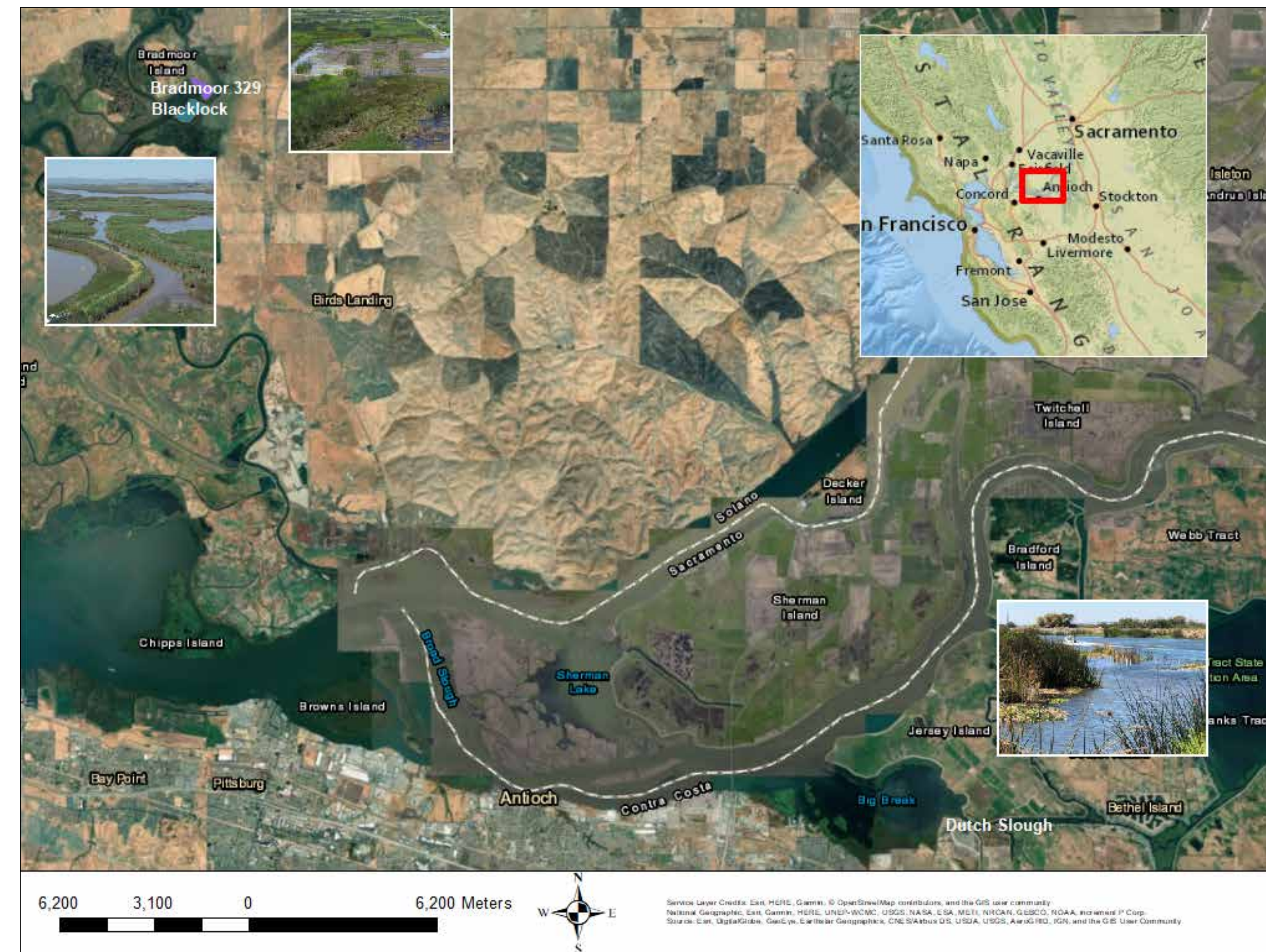


Ludwigia spp. temporal distribution throughout the Delta.

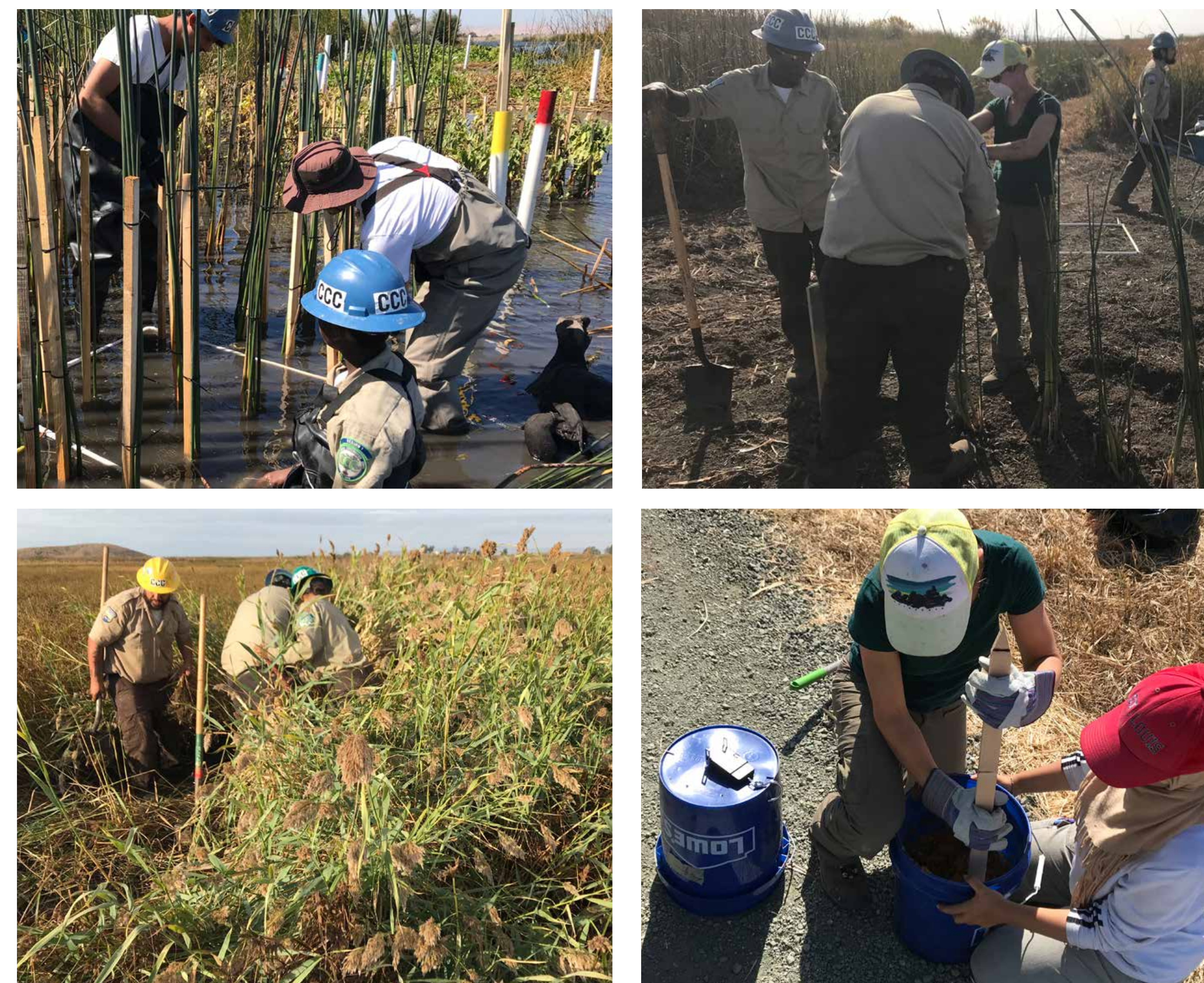
Invasive plant species can:

- » Decrease native plant biodiversity
- » Reduce habitat quality for wildlife
- » Disrupt biogeochemical cycles and other ecosystem functions and services
- » Causes increases in management costs

Methods



Overview map of the two study sites: Bradmoor Island is a managed wetland in Suisun Marsh and Dutch Slough is a tidal wetland in the Delta.

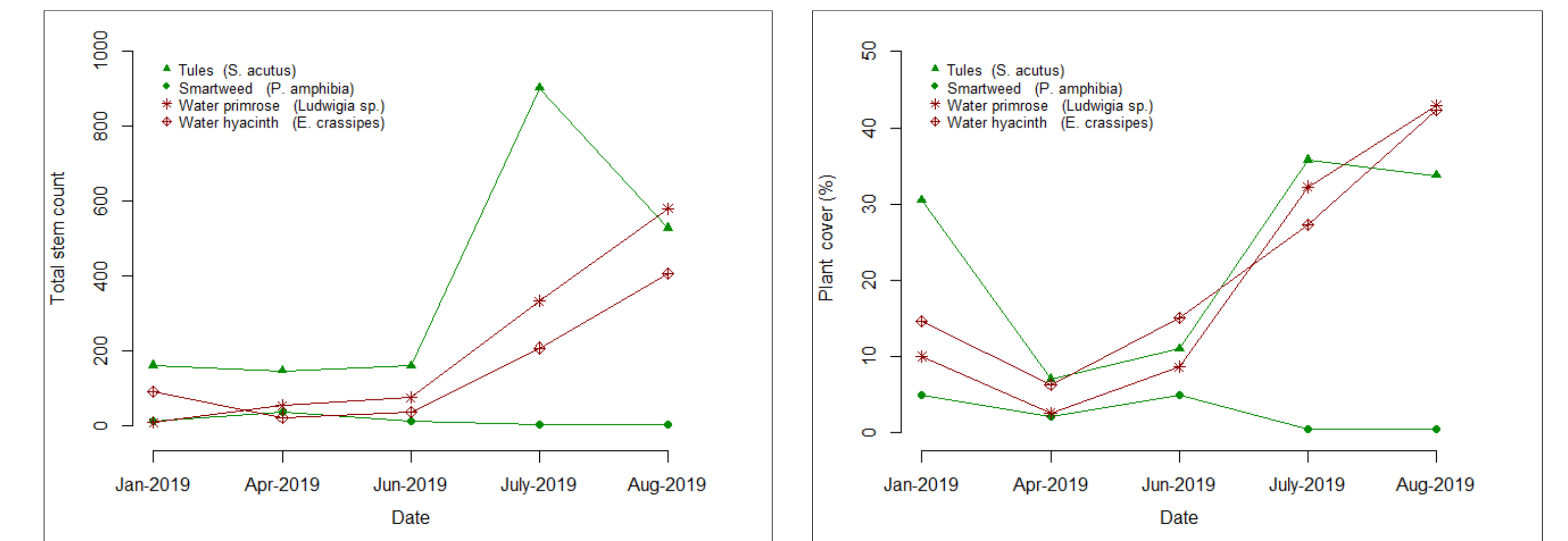


For Dutch Slough we used adult plants whereas for Bradmoor we used three plant stages: seeds, rhizomes and adults. Existing plants were mechanically removed and native species were planted in 4x4m treatments using randomized block design (3 replicates) and split plot block design (4 replicates) respectively.

Monitoring is conducted in two 1x1m quadrats within each 4x4m treatment. Data collected includes:

- » Species richness
- » Species abundance
- » Percent cover
- » Soil core samples
- » Sediment characteristics

Results and Discussion



Stem abundance and plant cover of key species at Dutch slough; native species (tules and smartweed) in green and exotic invasive species (water hyacinth and water primrose) in red.

We are in an early stage to be able to evaluate the difference between the revegetation treatments. Preliminary results show a good performance of the native tules; this species has been able to establish, reproduce, and colonize rapidly the areas where it was planted; on the other hand, the native smartweed has shown a low rate of survivorship. Water primrose and water hyacinth are quickly recolonizing cleared areas; however, the treatments comparison at the end of the study will provide more conclusive results about the potential use of these two native plant species to stop or reduce the establishment of invasive plant species in wetlands.

The project aims to provide restoration strategies that inhibit invasion of vulnerable tidal wetlands. These methods could be implemented by DWR in the planning of restoration projects and may spread to other agencies as well.

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