

California Department of Food and Agriculture

# Overview of the Integrated Pest Control Branch

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# Noxious Weeds Biocontrol

- Yellow starthistle
- Water hyacinth
- Cape ivy
- Canada thistle
- Knapweeds



Water Hyacinth in the San Joaquin Delta



Cape ivy (*Delania odorata*)



Cape ivy gall fly

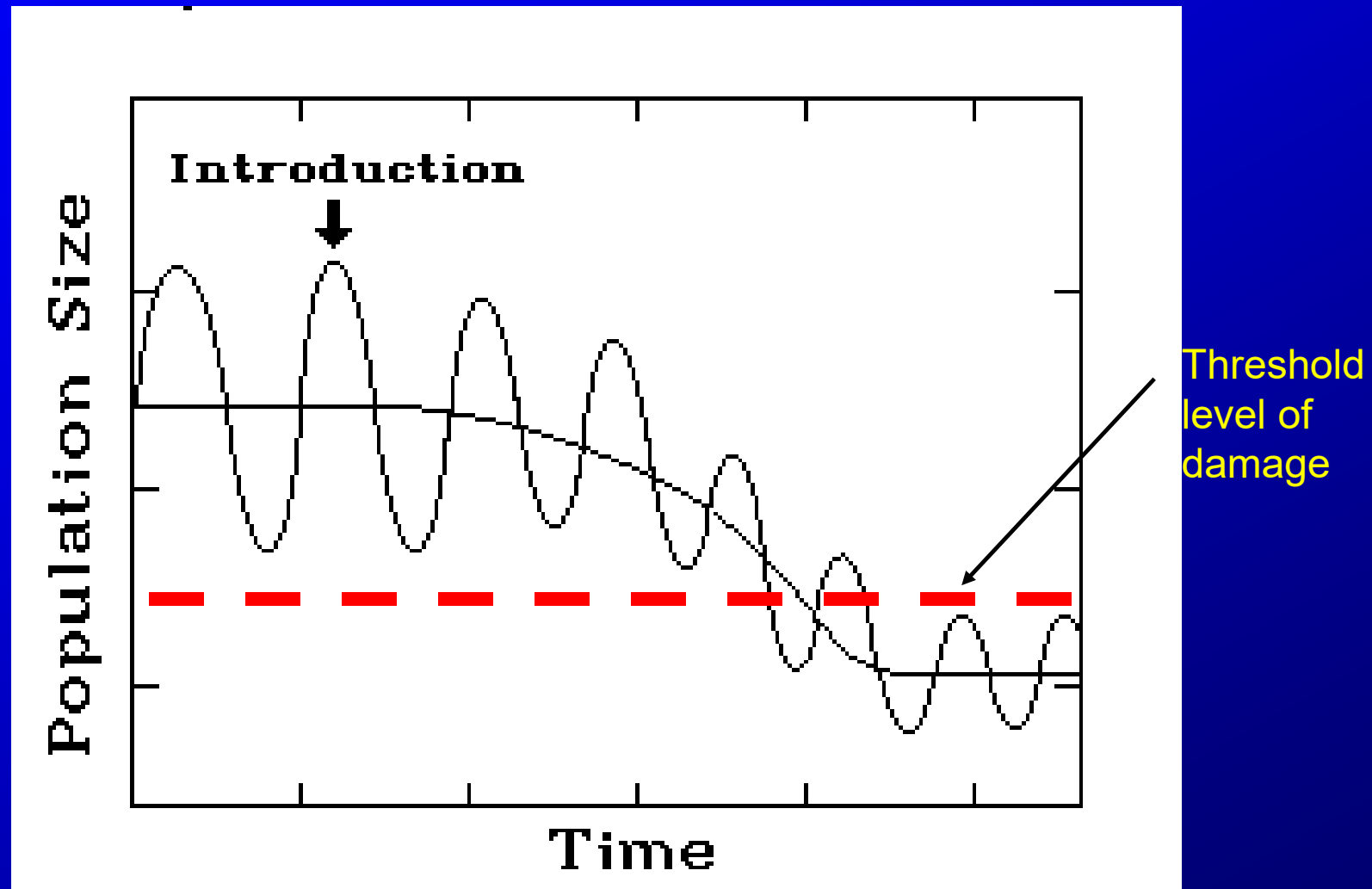
# Invasive plants can seriously impact California rangelands

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**Yellow starthistle** (*Centaurea solstitialis*)

# Goal of a Classical Biological Control Program: reunite natural enemy with host





# Musk Thistle (*Carduus nutans*) Siskiyou County



# Musk Thistle Control Agent

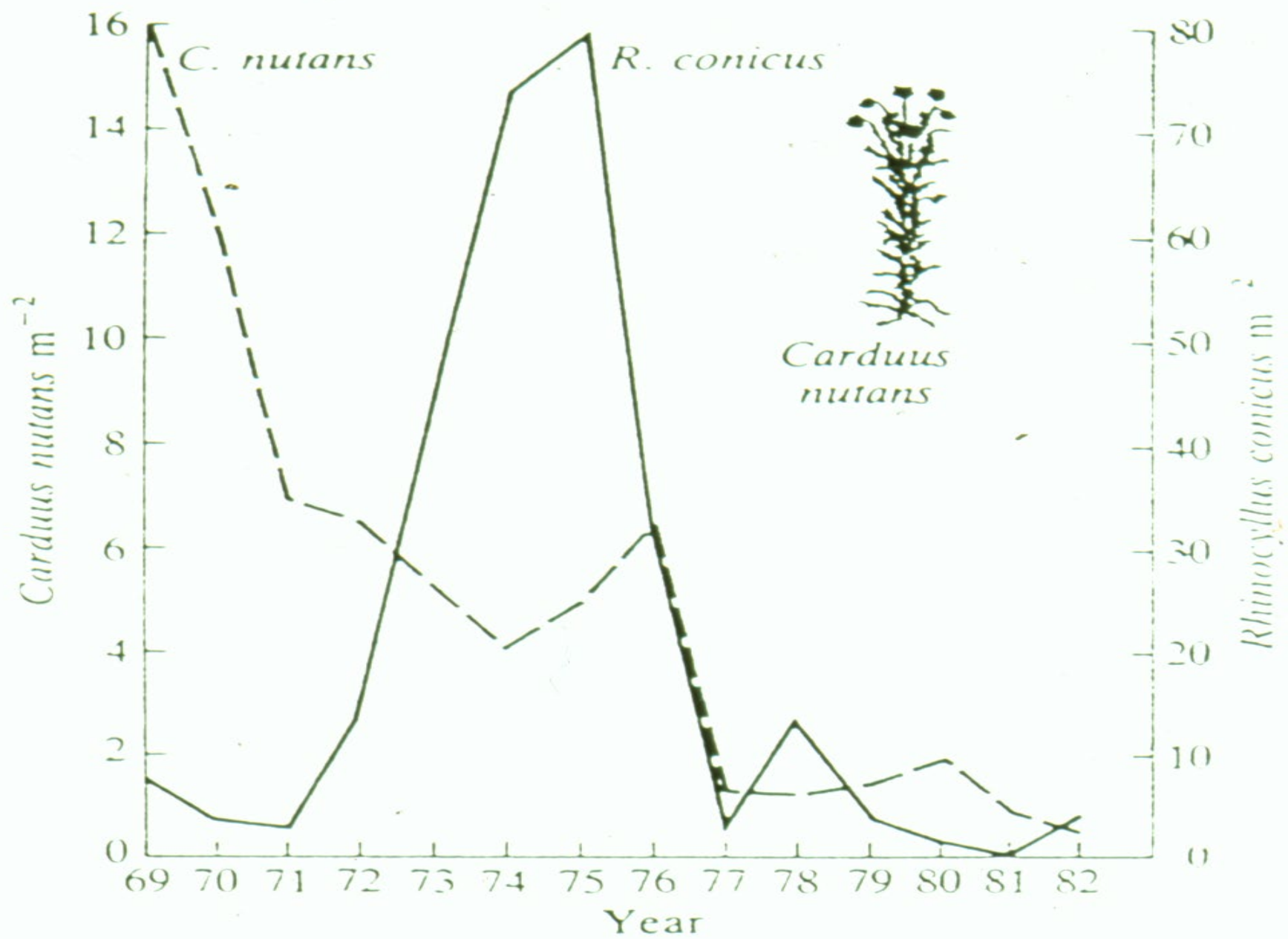
## Seed Head Weevil

Adult



Larval Damage







# Musk thistle in Montana





# 16 Key Invasive Plants, Area Invested, Average Annual Spread Rate

From: Duncan & Clark eds. (2005) Invasive Plants of Range and Wildlands and Their Environmental, Economic, and Societal Impacts.  
Weed Science Society of America, Lawrence, KS 222 p.

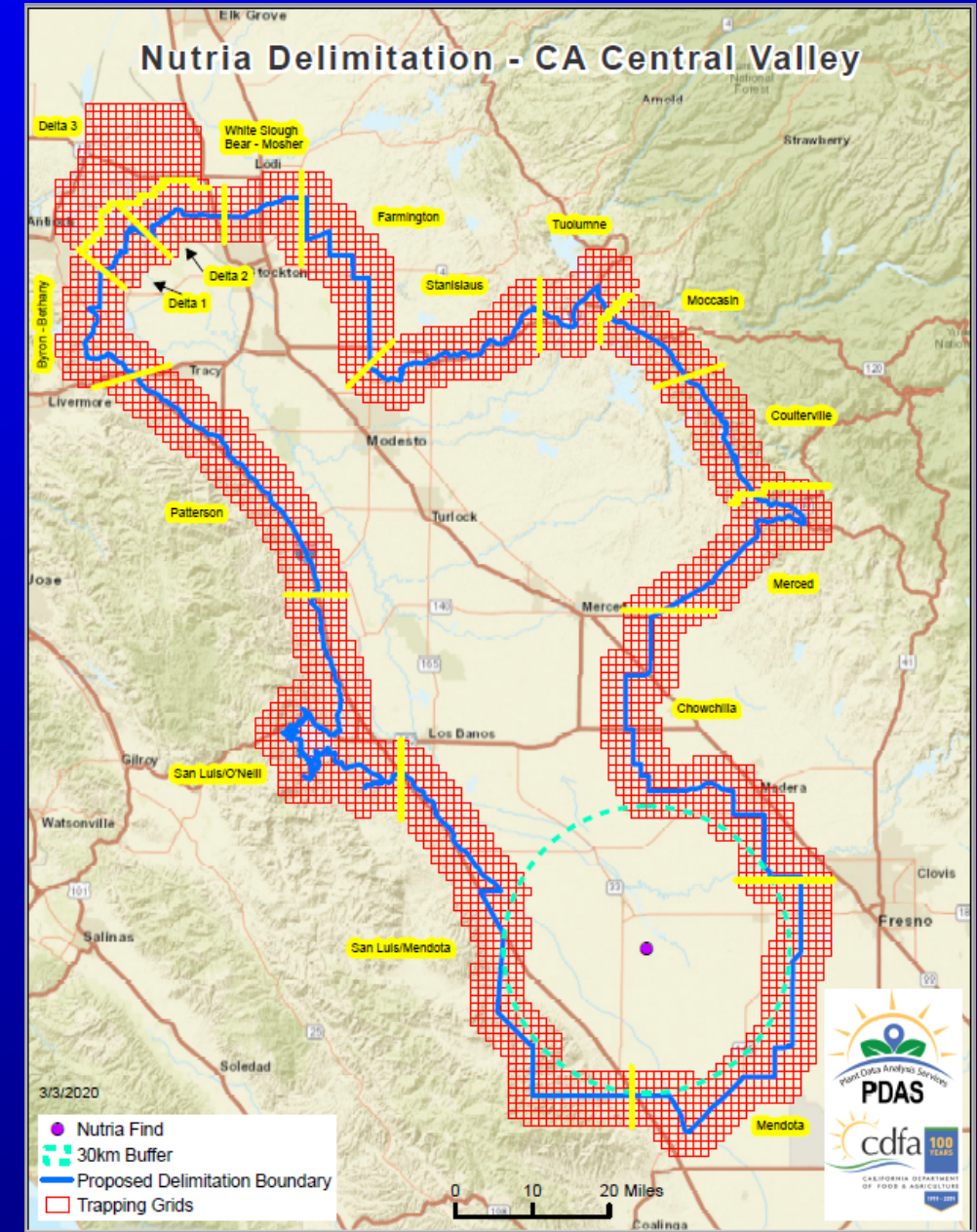
• Downy Brome ( <i>Bromus tectorum</i> )	56,549,220 Acres	14 %
• Musk Thistle ( <i>Carduus nutans</i> )	7,649,426 Acres	12-22 %
• Russian knapweed ( <i>Acroptilon repens</i> )	1,451,676 Acres	8-14 %
• Diffuse knapweed ( <i>Centaurea diffusa</i> )	1,846,306 Acres	16 %
• Spotted knapweed ( <i>Centaurea stoebe</i> )	6,946,107 Acres	10-24 %
• Yellow starthistle ( <i>Centaurea solstitialis</i> )	14,775,940 Acres	13-17 %
• Canada thistle ( <i>Cirsium arvense</i> )	12,709,983 Acres	10-12 %
• Leafy spurge ( <i>Euphorbia esula</i> )	4,601,968 Acres	12-16 %
• Hawkweeds ( <i>Hieracium</i> spp.)	1,191,187 Acres	11 %
• Perennial pepperweed ( <i>Lepidium latifolium</i> )	2,046,411 Acres	11-18 %
• Sericea lespedeza ( <i>Lespedeza cuneate</i> )	8,658,377 Acres	24 %
• Dalmatian toadflax ( <i>Linaria dalmatica</i> )	399,859 Acres	8-29 %
• Purple loosestrife ( <i>Lythrum salicaria</i> )	324,078 Acres	15 %
• Tropical soda apple ( <i>Solanum viarum</i> )	1,243,586 Acres	35 %
• Medusahead ( <i>Taeniatherum caput-medusae</i> )	2,403,500 Acres	12 %
• Salt cedar ( <i>Tamarix</i> spp.)	3,677,283 Acres	1-25 %

# Nutria Delimitation Program

- Survey and detection work to delimit the extent of the infestation
- Utilize game cameras and attractants placed in areas of habitat
- Assist CDFW's lead role in eradication



Nutria trapped in Merced County





# Pollinator Protection

- California Apiary Board
- Authorization for the Apiary Board is provided in the California Food and Agricultural Code, Division 13, Chapter 1, Sections 29020-29028.
- CDFA secured \$1.8 million in state general funds per year for 3 years to implement the Bee Safe Program
- \$1.5 million will go to the county agricultural commissioners' offices annually
- To reimburse efforts to develop, implement, and report on activities associated with the program
- First grant period was from November 15, 2018 – June 30, 2019



# Pollinator Protection

## Bee Safe Program

- To reduce honey bee stress through
  - Improved apiary theft prevention efforts
  - Decreased apiary pest pressure
  - Decreased apiary stress due to pesticide exposure
  - Increased apiary foraging opportunities

## Current Focus

- Encourage communication and education between county personnel and beekeepers
- Train county personnel on apiary health inspections
- Promote consistency in Bee Safe program activities throughout the state
  - Apiary Inspections
  - Notifications
  - Education
  - Markings

# Navel Orange Worm Program

- This project addresses the priority of developing new tools to detect, eradicate, and control pests and diseases.
- Navel Orange Worm is a pest of Almonds and Pistachios
- The NOW pilot project is a cooperative project between the U.S. Department of Agriculture, CDFA, and the California Pistachio Industry and will develop an integrated pest management program for NOW based on the success of the Pink Bollworm eradication program.
- Sterile insect release program to disrupt mating in pest population.
- Utilizing facilities, equipment and methods developed by the Pink Bollworm eradication program for releasing sterile insects.
- Trapping and monitoring to assess population.



# Vertebrate Pest Control Research Advisory Committee

## How is VPCRAC Funded?

County Agricultural Commissioners collect a fee or surcharge of 50 cents for each pound of vertebrate pest control material sold, distributed, or applied by the county.

## What does VPCRAC Fund?

The money generated by this surcharge is used to fund the research required by the EPA to maintain current registrations, payment of registration fees, to improve existing rodenticides, and to find new materials and methods to solve vertebrate pest problems.

## Current Research:

- “Investigation of the interaction between rodenticide secondary exposure and barn owls effective control of vertebrate pest population”
- “Efficacy testing of anticoagulant formulation with metabolic inhibitor as additive”
- “An assessment of secondary toxicity risk for 0.005% diphacinone treated grain via three application strategies for California ground squirrels”
- “An assessment of secondary impacts of anticoagulant rodenticides on predators”
- “Rangeland forage loss from California ground squirrels”
- “Efficacy and palatability testing of a novel rat specific toxicant”
- “An assessment of quantitative indexing tools and movement patterns in invasive roof rats in citrus orchards”



# Hydrilla, *Hydrilla verticillata*





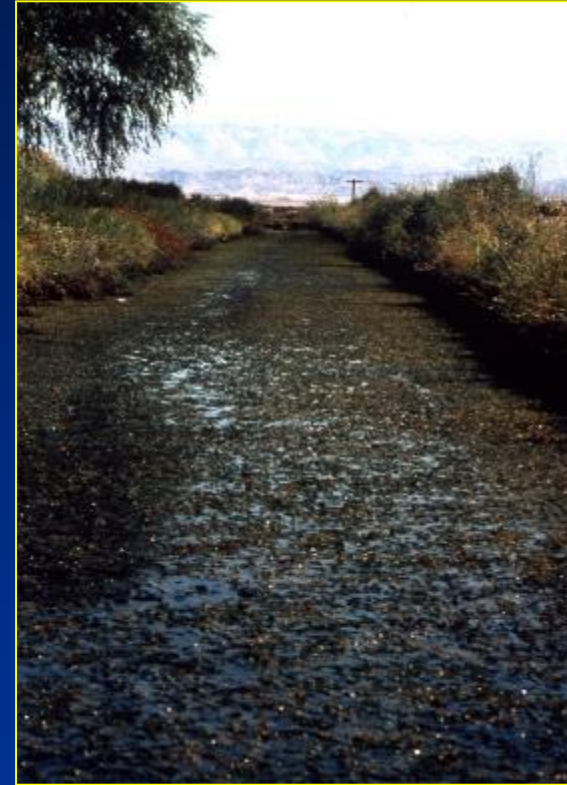
# Hydrilla, *Hydrilla verticillata*

Fills water  
column to  
depths of 20'

85% reduction  
in storage and  
conveyance



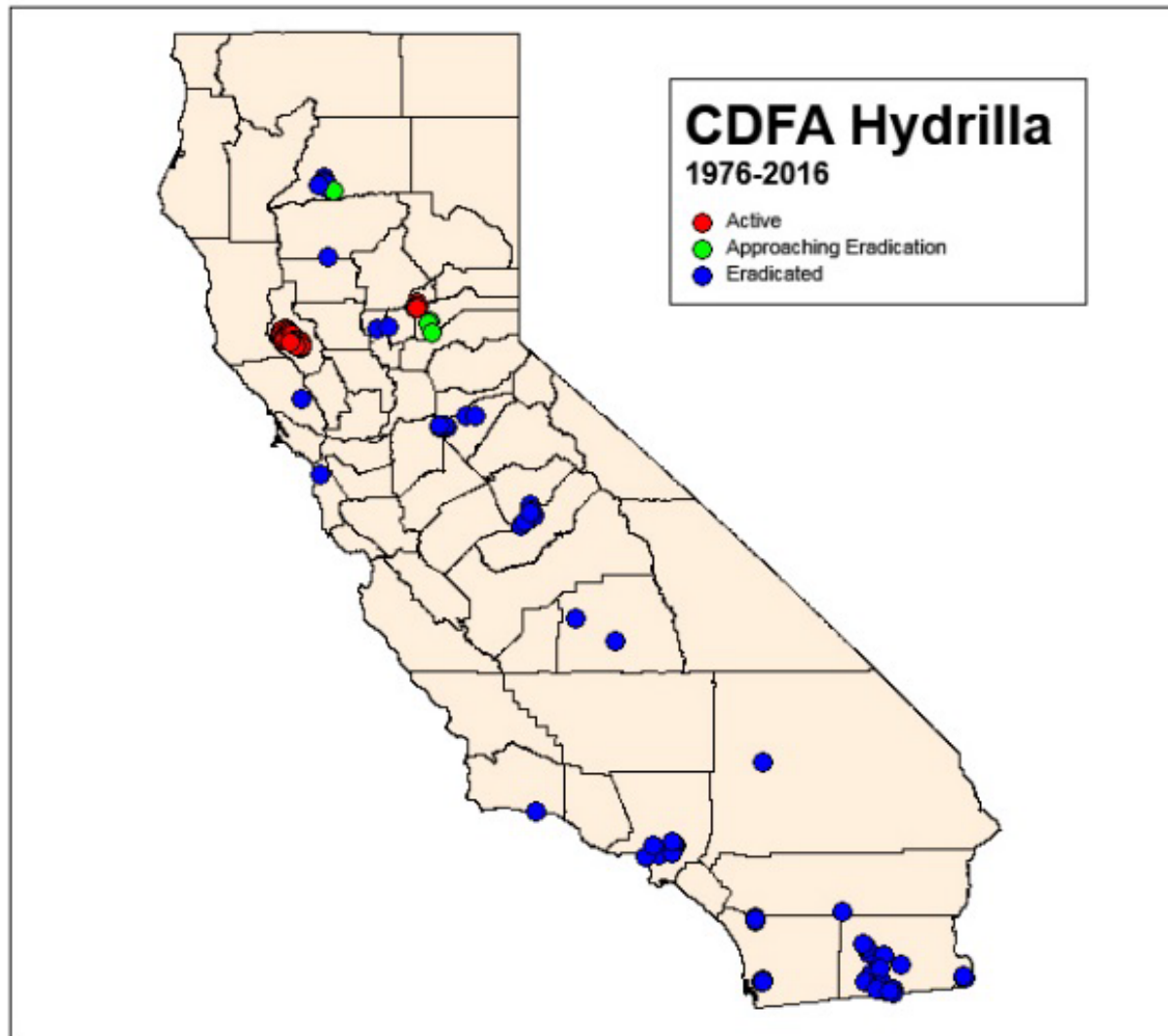
# Hydrilla in Irrigation Canal (CA)



85% reduction in water storage and conveyance



# Successful eradications!



Three active  
(Lake and Yuba  
Counties)

Four approaching  
eradication  
(Nevada and  
Shasta Counties)

# Hydrilla, *Hydrilla verticillata*

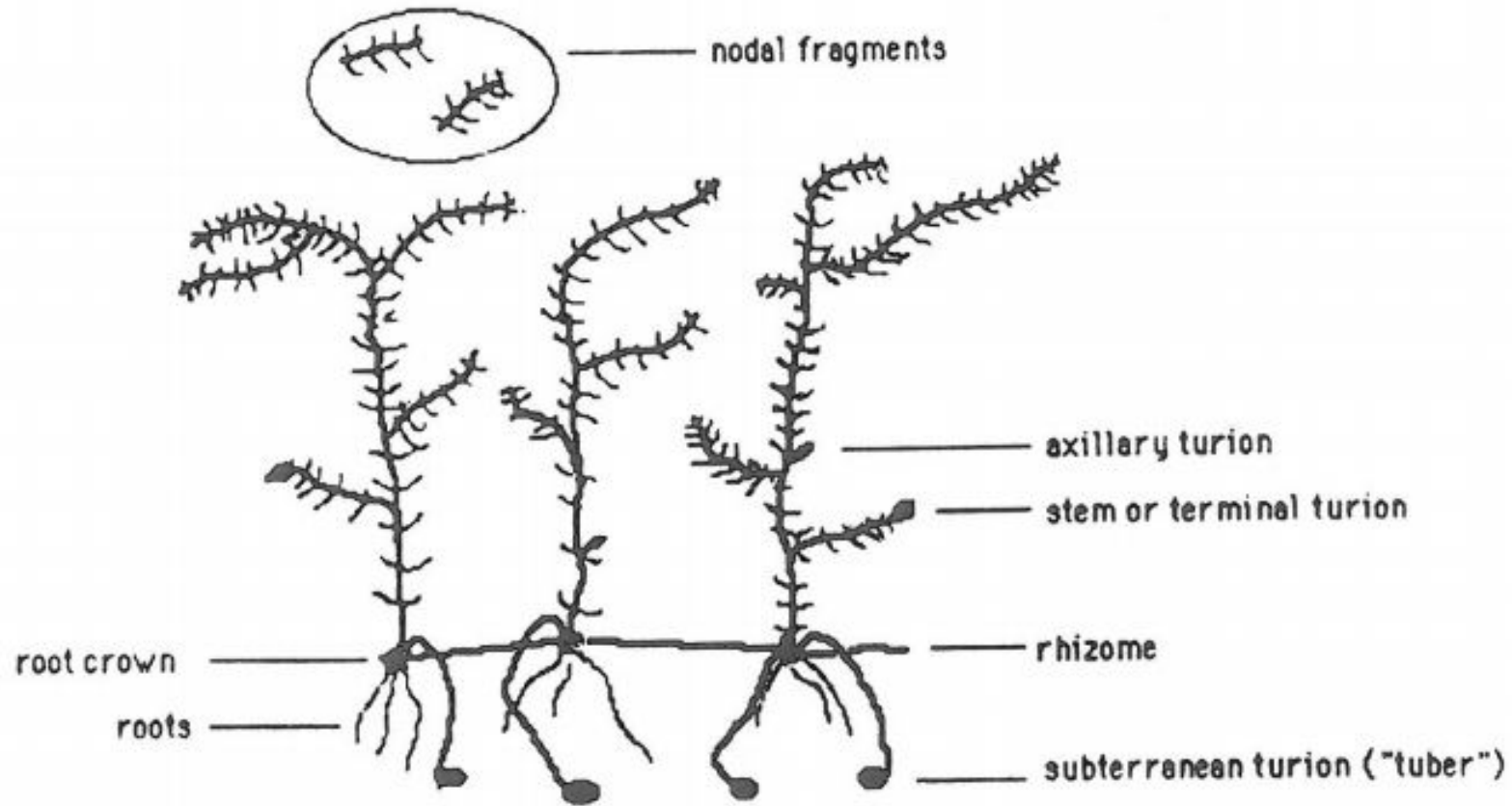


Figure 2. Position of various vegetative propagules on monoecious *Hydrilla verticillata*.