

# Invasive Plants in Bidwell Park

What are they?  
What is being done?

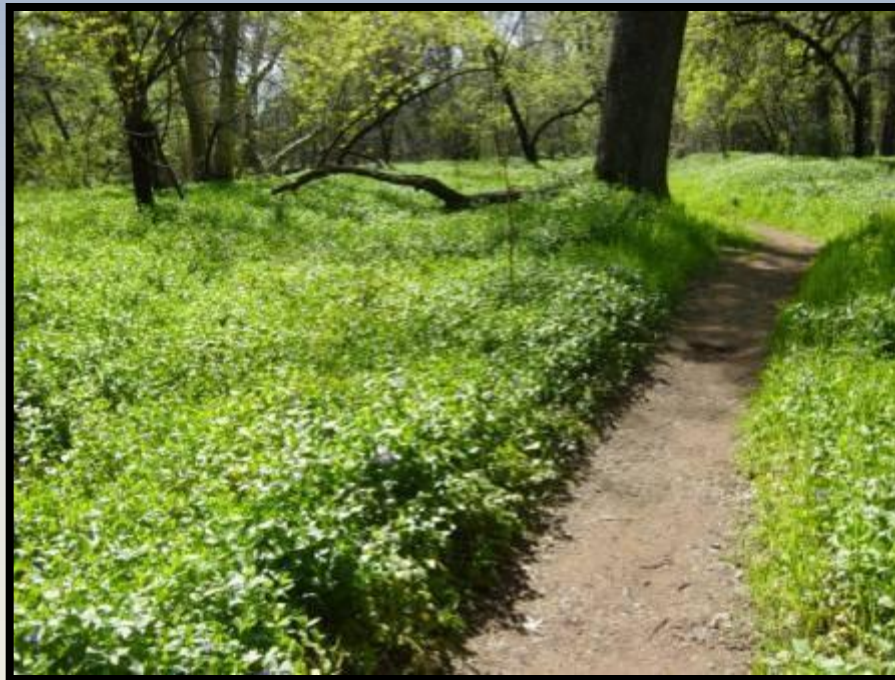
Friends of Bidwell Park  
April 2012

# What is an Invasive Plant?

- A plant with traits that allows it to invade, persist and dominate pre-existing biological communities
- Invasive plants are prolific, easily dispersed, and grow readily in a variety of conditions, especially where human activities occur

# Why is it Important to Control Invasive Plants?

- Weeds out-compete native plants reducing biodiversity and ecosystem function—can create a monoculture containing only a few plant species



# Why is it Important to Control Invasive Plants?

- They usually fail to meet food and shelter requirements for diverse native wildlife species



# Why is it Important to Control Invasive Plants?

- Weed-dominated communities have less aesthetic value—1939 photo taken in Middle Park





# Why is it Important to Control Invasive Plants?

- Weed-dominated communities tend to present an increased fire danger



# Why is it Important to Control Invasive Plants?

- Dense infestations can create a security problem-this solid wall of hackberries and privets in Lower Park...



# Why is it Important to Control Invasive Plants?

...hid this encampment, where an illegal campfire got out of control





## **Summary--**

### **Why It's Important to Control Invasive Plants**

- Weeds out-compete native plants reducing biodiversity and ecosystem function—can create a monoculture containing only a few plant species
- They usually fail to meet food and shelter requirements for diverse native wildlife species
- Weed-dominated communities have less aesthetic value
- Weed-dominated communities tend to present an increased fire danger
- Dense infestations can create a security problem

# What's the Source of Park's Weeds?

- Can be horticultural or dumped aquarium plants
- Spread by wildlife, wind, water, humans and vehicles
- Creep in from park neighbors' yards
- Planted in Experimental Forestry Station near Cedar Grove (1903-1959)

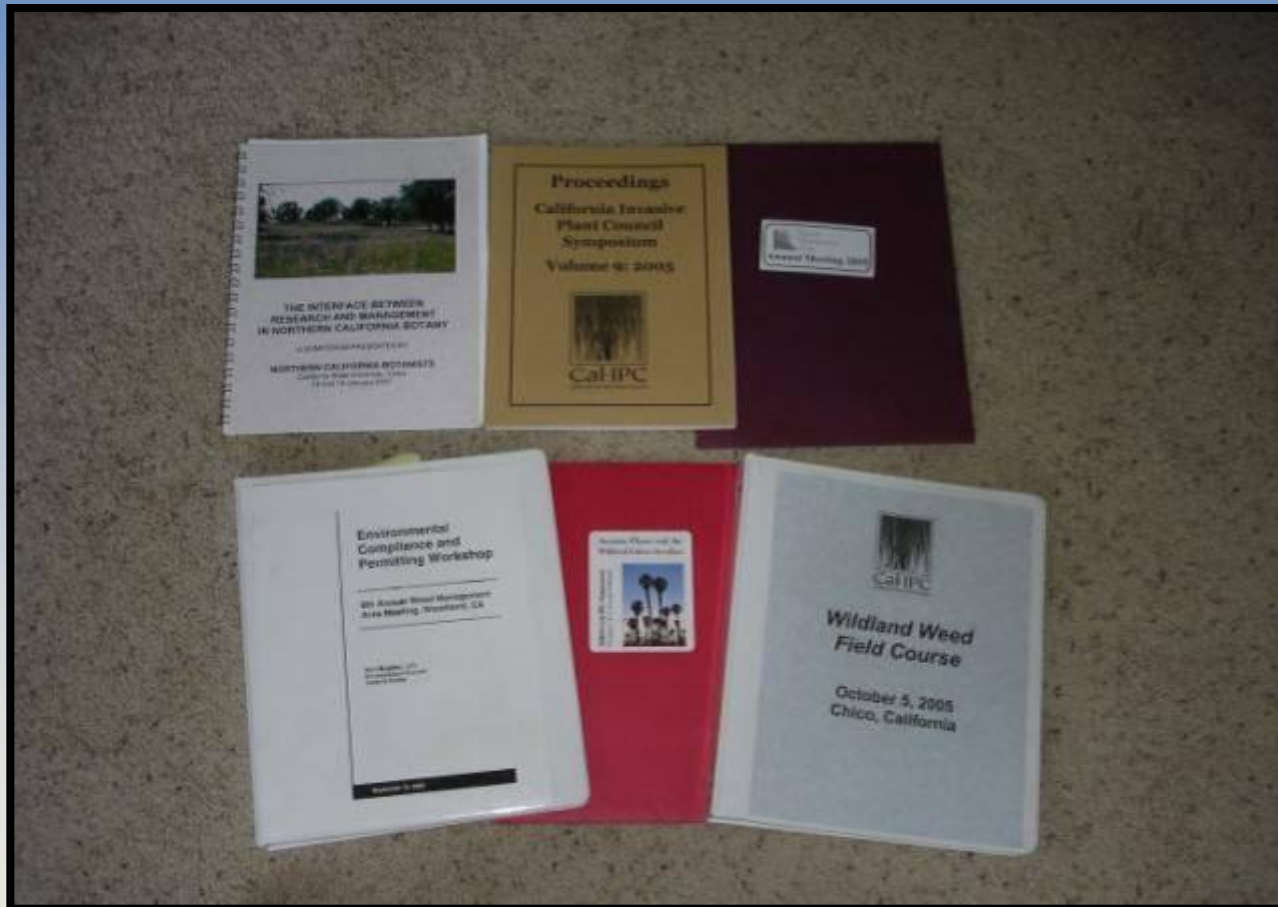
# How Do We Decide What's Invasive?

*Consult Reference Materials*



# How Do We Decide What's Invasive?

*Participate in Symposiums, Workshops, Field Trips*





# How Do We Decide What's Invasive?

*Seek Advice from Agencies, Universities & Organizations*

- California Invasive Plant Council
- California Native Plant Society, Mt. Lassen Chapter
- California State University, Chico faculty & Herbarium
- California State Parks
- Big Chico Creek Ecological Reserve
- Butte County Dept. of Agriculture
- Butte County Weed Management Area
- Dittes & Guardino Consulting
- Plumas National Forest
- River Partners
- The Nature Conservancy
- University of California, Davis

# Brief History of Invasive Plant Control in Bidwell Park



## 1994-1999

- Prescribed burns of YST & Himalayan blackberry

## 1998-2003

- Goat graze on YST & Himalayan blackberry
- Salt Creek Crew hand removal of blackberry

## 2003-present

- Volunteers hand removal of invasive plants
- Park staff focus on large-scale eradication projects
- Spot spraying of herbicide by park staff

# Vegetation Management Techniques

## *Species-based Approach*

- Easier for volunteers to learn to identify one plant species & the proper removal techniques for that plant
- Often requires fewer active restoration efforts and less future monitoring and maintenance activities
- Useful for small infestations, highly invasive plant species and species that haven't reached the "tipping point"
- Examples: Bladder senna, Broom, Bur-chervil, Giant reed, Ivy, Privet, Johnsongrass, Perennial pepperweed, Pokeweed, Puncturevine, Yellow starthistle, Olive, Hackberry

# Species-based Approach

Bladder Senna



Hackberry/Privet





# Vegetation Management Techniques

## *Site-based Approach*

- Remove all invasive species from a well-defined location and replant with appropriate native plants, as volunteer time and funding permits
- Can require large investment of volunteer time for initial removal and for monitoring & maintenance
- Examples: Annie's Glen, Caper Acres, Lost Park, Sycamore Restoration site, Five Mile Recreation Area, Lower Park north entrance, some picnic sites

# Sycamore Restoration Site

**Before**



**After**



# Disposal of Invasives Debris

- Disposal can be major project logistics problem & expense
- Burning-grasses, YST
- Chipping-efficient, but rarely used
- Bag & haul away
- Pile along roadway
- Pack into roller bin



# What Species are Being Controlled?

- Bidwell Park has about 600 native plant species & about 350 “introduced” species
- Limited number of invasive species targeted--about 20 of the 130 invasive species found in park
- Focus of control has changed over time
- Available resources dictate control choices
- Cost of debris disposal is a consideration
- Plantings in Experimental Forestry Station (1903-59) have led to unique invasive species



# Spanish & French Broom

*Spartium junceum*, *Genista monspessulana*

- Spanish broom is found along creek in Upper Bidwell Park, Lindo Channel & Sycamore Creek
- French broom found at Hooker Oak Park & 1-Mile
- CNPS Mt. Lassen Chapter has pulled out Spanish broom for 16 years
- Major broom eradication efforts underway upstream of Bidwell Park



# Yellow Starthistle

*Centaurea solstitialis*

- Dense infestations scattered throughout grasslands & oak woodlands
- Prescribed burns and goat grazing tried from 1999-2003
- Focused eradication efforts started in 2009 with major Middle Park restoration site
- Park users encouraged to hand-pull small infestations



C032-07



C032-09

# Himalayan Blackberry

## *Rubus armeniacus*

- Dense thickets are common in Lower Park, and scattered in riparian areas of Middle and Upper Park
- Dead canes under new growth are major fire hazard
- Prescribed burns started in 1994, goat grazing in 1999, volunteer hand-removal in 2003
- Although it provides some wildlife habitat, it excludes the germination and growth of plant species native to Bidwell Park



S52-03



S52-01



# Giant Reed

*Arundo donax*

- Highly flammable
- Found in about 230 locations in Upper Park & Lindo Channel, with 4 locations in Lower Park
- Park Division started park eradication efforts around 1996
- Eradication in Big Chico Creek & Lindo Channel 2006-2009 by Big Chico Creek Watershed Alliance





# Tree of Heaven

## *Ailanthus altissima*

- Found in about 200 locations between Lost Park and Horse Arena in Upper Park
- Spreads primarily by root sprouts that grow up to 70 feet from tree; seeds a lesser source of re-infestation
- Major volunteer eradication effort about 12 years ago, but no monitoring and follow-up
- Friends of Bidwell Park started eradication in 2005; about 10% remaining
- Needs long-term monitoring due to trees in neighboring yards



C241-01



C241-02

# English & Algerian Ivy

*Hedera helix, H. canariensis*

- Found primarily in Lower Park, covers at least 100 acres
- Toxic to humans and most wildlife; provides mosquito breeding areas
- Volunteer removal started at Five Mile in 2003
- Current volunteer efforts focused on cutting vines at base of trees
- Need to pull vines away from trees and target seed-producing ivy



# English & Algerian Ivy

*Hedera canariensis*

*Hedera helix*





# Bladder senna

*Colutea arborescens*

- 1 shrub planted in Experimental Forestry Station around 1903
- Spread to over 70 trail-side locations by “seed-pod-popping” park users between One Mile and Five Mile
- Not used by local wildlife for food or habitat
- About 500,000 plants removed so far by Friends of Bidwell Park, since starting in 2003
- Will need continued removal and monitoring for at least 10 more years



# Privet

*Ligustrum spp.*

- Approximately 275 locations between Lost Park and Bidwell Park Golf Course with an estimated 1M trees & seedlings
- Intentionally planted at golf course, Five Mile, Caper Acres and Hwy 99
- Extremely prolific, producing millions of seeds yearly; seeds germinate and grow readily
- Focused removal effort started in 2003 by Park Division and Friends of Bidwell Park; cleared between Lost Park & Five Mile



C115-03





# Puncturevine (a.k.a. Goathead)

## *Tribulus terrestris*

- Ouch! Found along roads and trails throughout Bidwell Park, Chico bike paths, roadways and Chico schoolyards
- CNPS volunteer removal in Lower Park for at least 10 years; Friends of Bidwell Park took over in 2004
- Pesticide contractor now spot spraying along Upper Park Road to control
- Need to control throughout county in order to be effective



C254-02

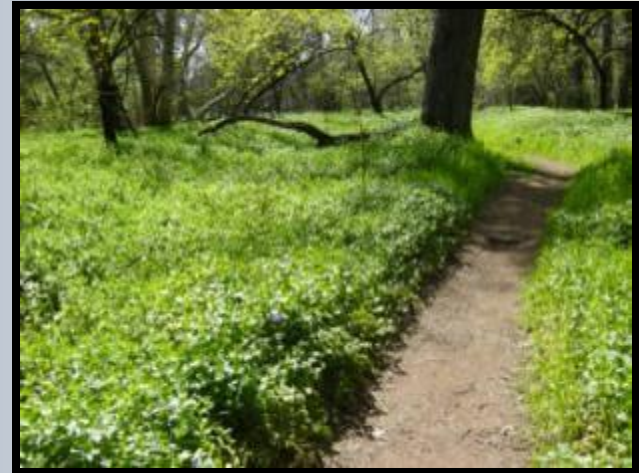


C254-03

# Big Periwinkle

*Vinca major*

- Forms dense ground cover, found mostly in Lower and Middle Park
- Planted by Boy Scouts in 1950s at request of Park Director
- Spreads primarily by root sprouts; difficult to eradicate
- Dense cover prevents oak tree and native plant germination and establishment
- Park volunteers removing it from specific sites



C013-02

# American Pokeweed

## *Phytolacca americana*

- First recognized as problem in 2005; spreading rapidly throughout Bidwell Park
- Spread by birds eating seeds
- Increasing problem throughout Central Valley riparian settings
- Large bulbous root makes removal difficult
- Mature plant leaves and seeds toxic to humans



C168-01



C168-03



# European Olive

## *Olea europaea*

- Olive orchard near former pistol range in Upper Park, spreading rapidly into areas of Upper Park
- Also prevalent in Cedar Grove & spreading throughout Lower and Middle Parks
- Dense growth & olive acidity changes soil chemistry, inhibiting other plants from growing
- Host for agricultural pest olive fruit fly
- Dense stands are fire hazards



C115-05



# Hackberry

*Celtis spp.*

- Planted in Experimental Forestry Station in early 1900s
- Major, dense infestations near Cedar Grove and east of Madrone Ave.
- Difficult and expensive to eradicate; many very large trees





# What Other Plants Need Control Soon?

## *Woody Species*

- Chinese tallowtree
- Catalpa
- Edible fig
- Hawthorn
- Pistache
- Cherry plum
- Winged elm



C228-06



# Chinese Tallowtree

*Triadica sebifera*

- Grows from seed and root sprouts
- Major invader on American River
- Planted as street trees in Chico
- Recently found in Bidwell Park and several open space areas



# Western Catalpa

## *Catalpa speciosa*

- Found between Lost Park and Five Mile
- Original planting in World of Trees
- Shading out species that are more desirable for wildlife
- FOBP mapped locations- about 300 found
- May need permits for effective control due to streamside locations





# Chinese Pistache

*Pistachia chinensis*

- One of Chico's most common street trees; only sterile cultivars being planted now
- Female and male trees
- Birds spread seeds to new locations
- Very prevalent in Lower Park



# Edible Fig

## *Ficus carica*

- Found throughout riparian areas in Bidwell Park and other creeks
- One very large tree in Deer Pen and one at former cabin site at Ten Mile
- Other areas in California are reporting sudden, massive increases in fig populations
- Requires herbicide for control & eradication; will require permits for control due to proximity to creek



C159-02



C159-01



# Cherry Plum & Related Taxa

*Prunus spp.*

- Common throughout Lower Park, especially on north side
- Birds and squirrels spread seeds
- Includes cherry plum, almond, flowering plum
- Major increase in last few years



# Hawthorn

*Crataegus spp.*

- Planted in Experimental Forestry Station in about 1903
- Major, dense infestations on north side of Lower Park and Cedar Grove
- Difficult and expensive to eradicate



C228-01



# What Other Plants Need Control Soon?

## *Grasses , Thistles & Vines*

- Barbed goatgrass
- Broomsedge bluestem
- Bur-chervil
- Japanese honeysuckle
- Johnsongrass
- Italian plumeless thistle
- Klamathweed
- Medusahead grass



C141-02

# Other Take-home Messages

- Some invasive species are well-established and others are just getting started
- Need to know something about plant's biology before removing it
- Volunteers are an essential component of invasive plant control but they need to be supervised to be effective
- Additional funding is needed to support volunteers' work
- Need to start removing invasives from other city-owned areas too