Cal-IPC 2014

Managing invasive plants and bringing back wildlife: The evolution of riparian restoration over 15 years with River Partners

Tom Griggs
River Partners


Sacramento River


Sacramento River
Highway 45
Glenn County


Cottonwood
Valley Oak


Stanislaus River


RED BLUFF


Stanislaus River

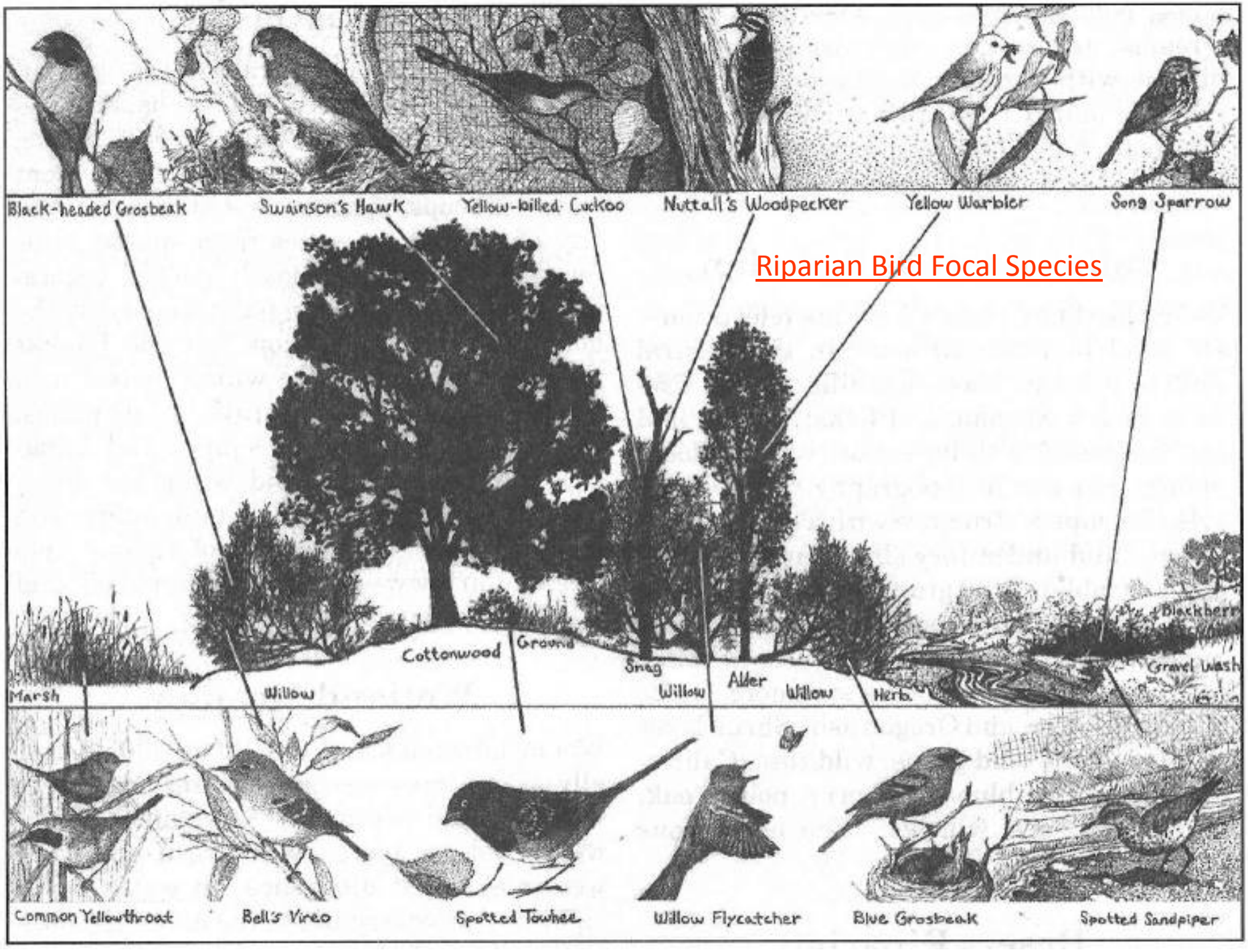

Riparian Restoration
Walnuts
Levee


Public Safety and Flood Management

Importance of Riparian Corridor to Wildlife Migration

Sacramento River Wildlife Corridor

Riparian Wildlife


Black-headed Grosbeak
Swainson's Hawk
Yellow-billed Cuckoo
Nuttall's Woodpecker
Yellow Warbler
Song Sparrow
Riparian Bird Focal Species
Marsh
Willow
Cottonwood
Ground
Snag
Willow
Alder
Willow
Herb.
Blackberry
Gravel Wash
Common Yellowthroat
Bell's Vireo
Spotted Towhee
Willow Flycatcher
Blue Grosbeak
Spotted Sandpiper

Bank Swallow

Constructs nest burrows in recent cut-banks

Breeding habitat for important species


Riparian Brush Rabbit


Valley Elderberry
Longhorn Beetle


Phragmites


Tree-of-Heaven

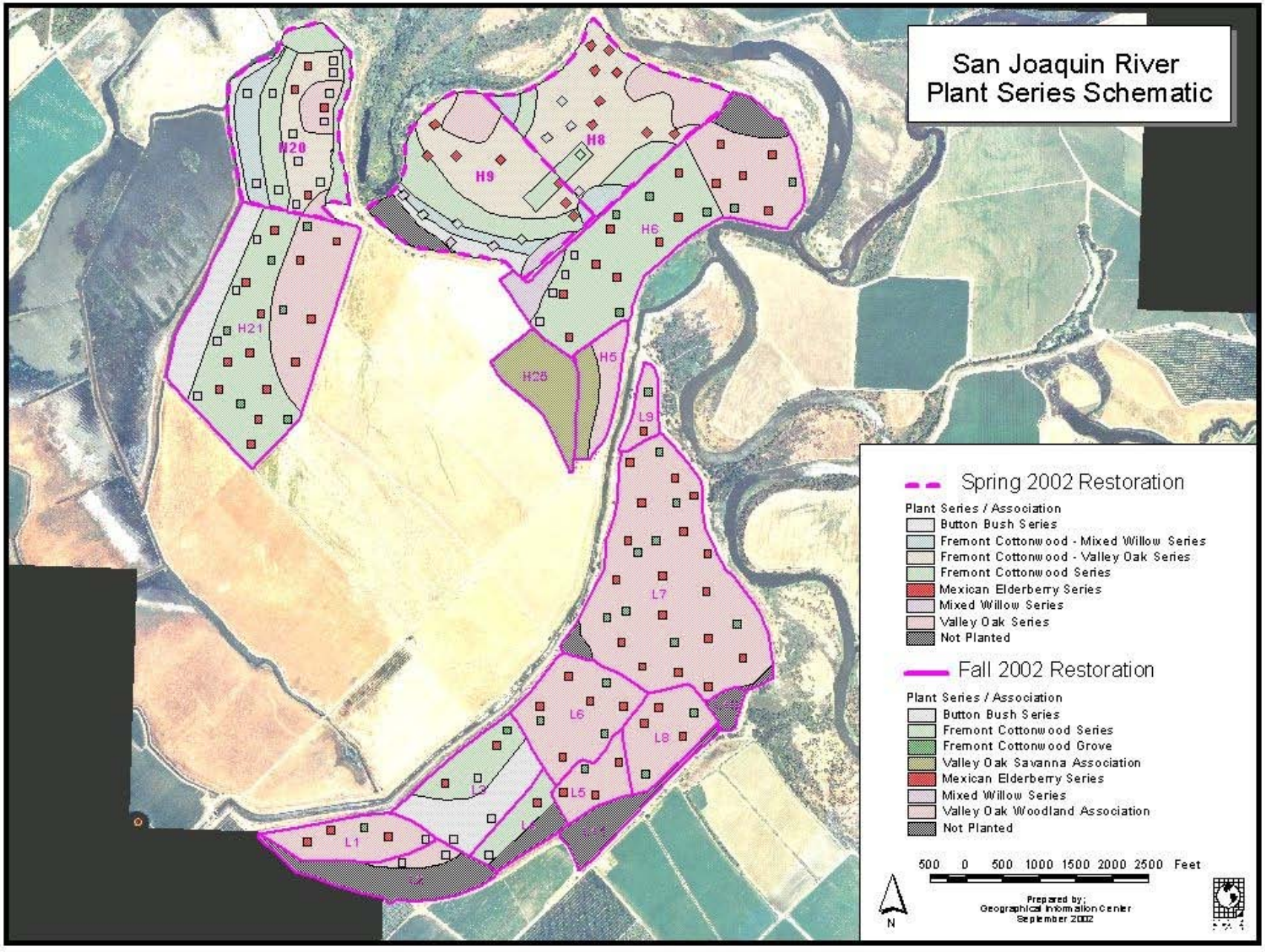
Arundo donax

Stony Creek – Glenn County

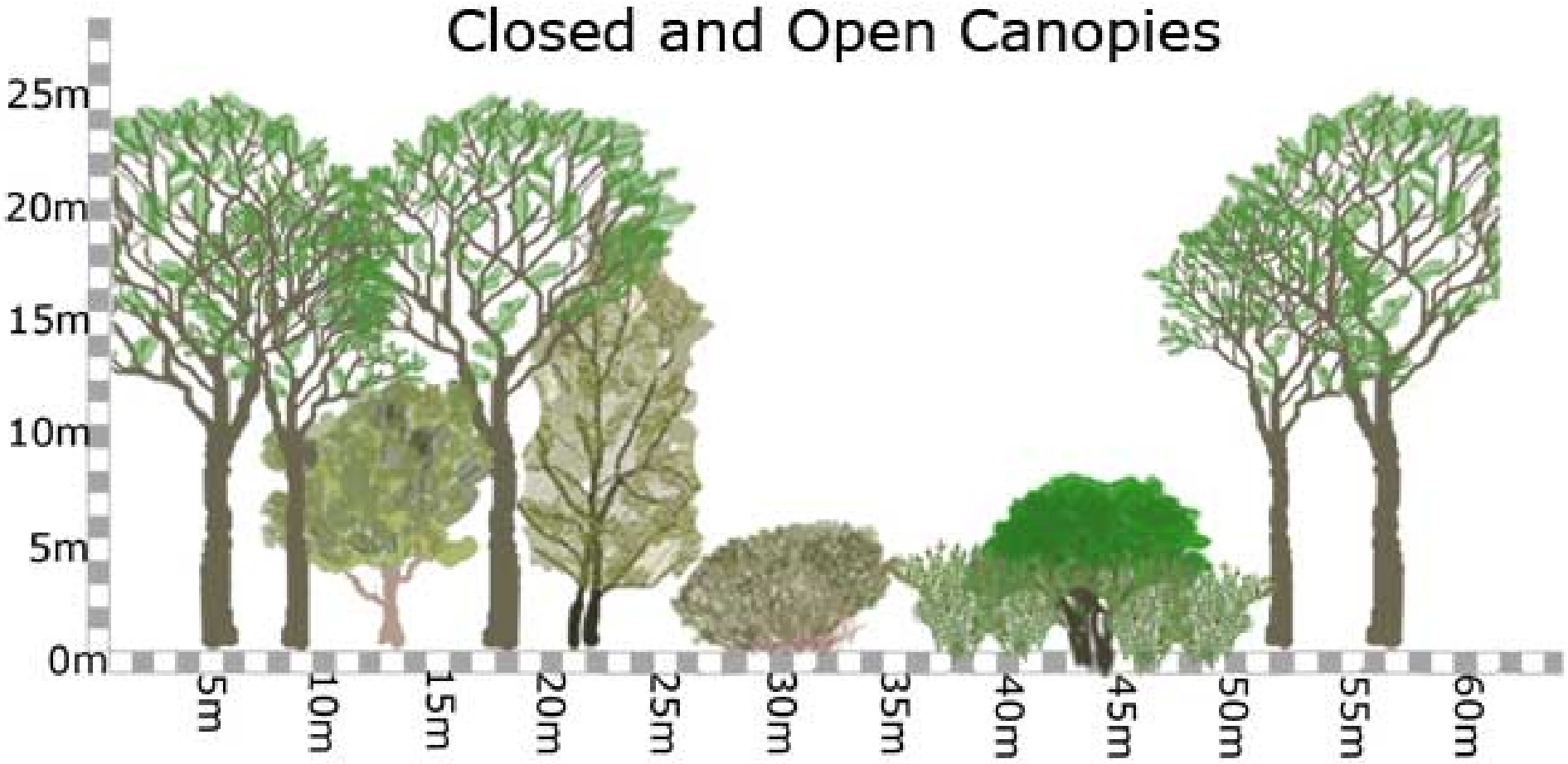

FLOODS HAPPEN!


CASE
5 2 '01

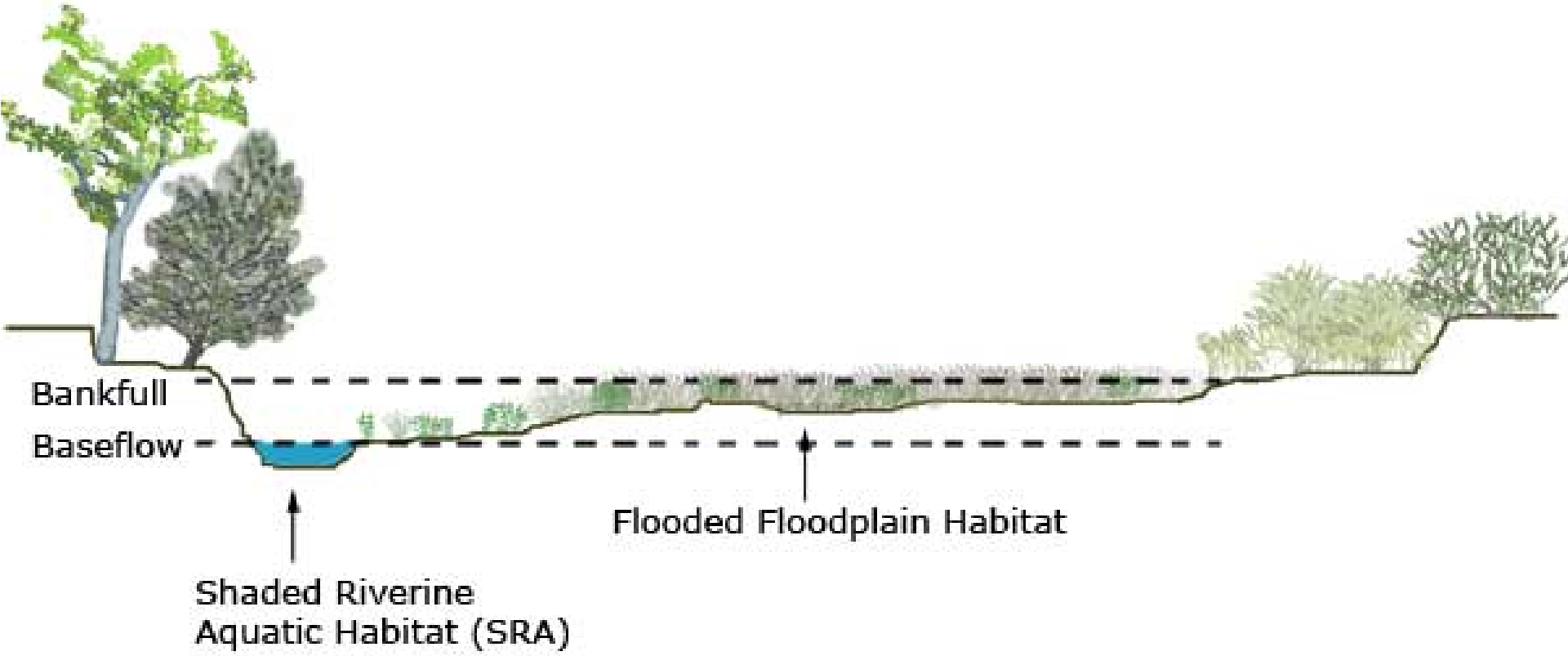
Irrigation Installation


San Joaquin River
Plant Series Schematic
H20
H9
H8
H6
H21
H5
H28
L9
L7
L6
L8
L5
L3
L4
L1
Spring 2002 Restoration
Plant Series / Association
Button Bush Series
Fremont Cottonwood - Mixed Willow Series
Fremont Cottonwood - Valley Oak Series
Fremont Cottonwood Series
Mexican Elderberry Series
Mixed Willow Series
Valley Oak Series
Not Planted
Fall 2002 Restoration
Plant Series / Association
Button Bush Series
Fremont Cottonwood Series
Fremont Cottonwood Grove
Valley Oak Savanna Association
Mexican Elderberry Series
Mixed Willow Series
Valley Oak Woodland Association
Not Planted
500 0 500 1000 1500 2000 2500 Feet
N
Prepared by:
Geographical Information Center
September 2002

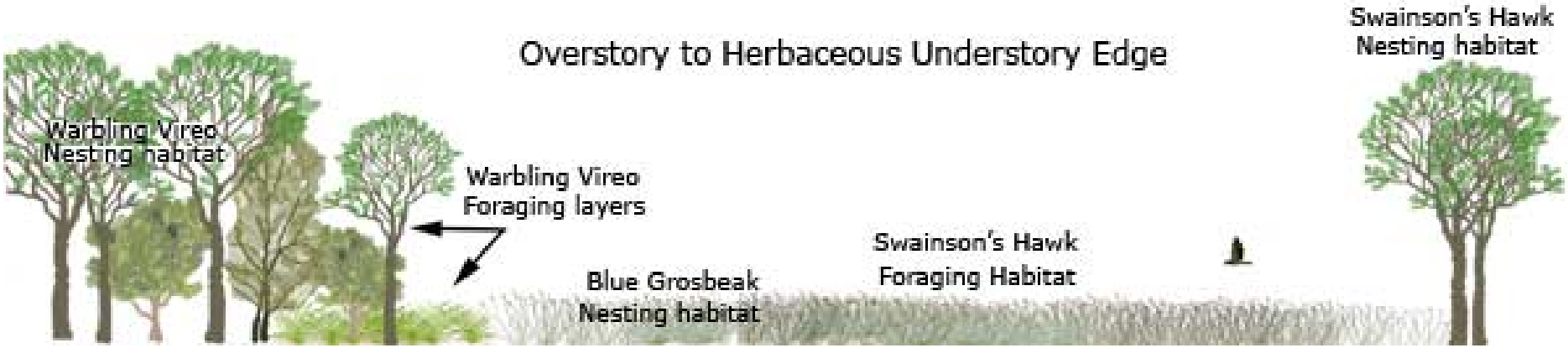
Wildlife and Vegetation Restoration Design



Wildlife and Vegetation Restoration Design



Wildlife and Vegetation Restoration Design



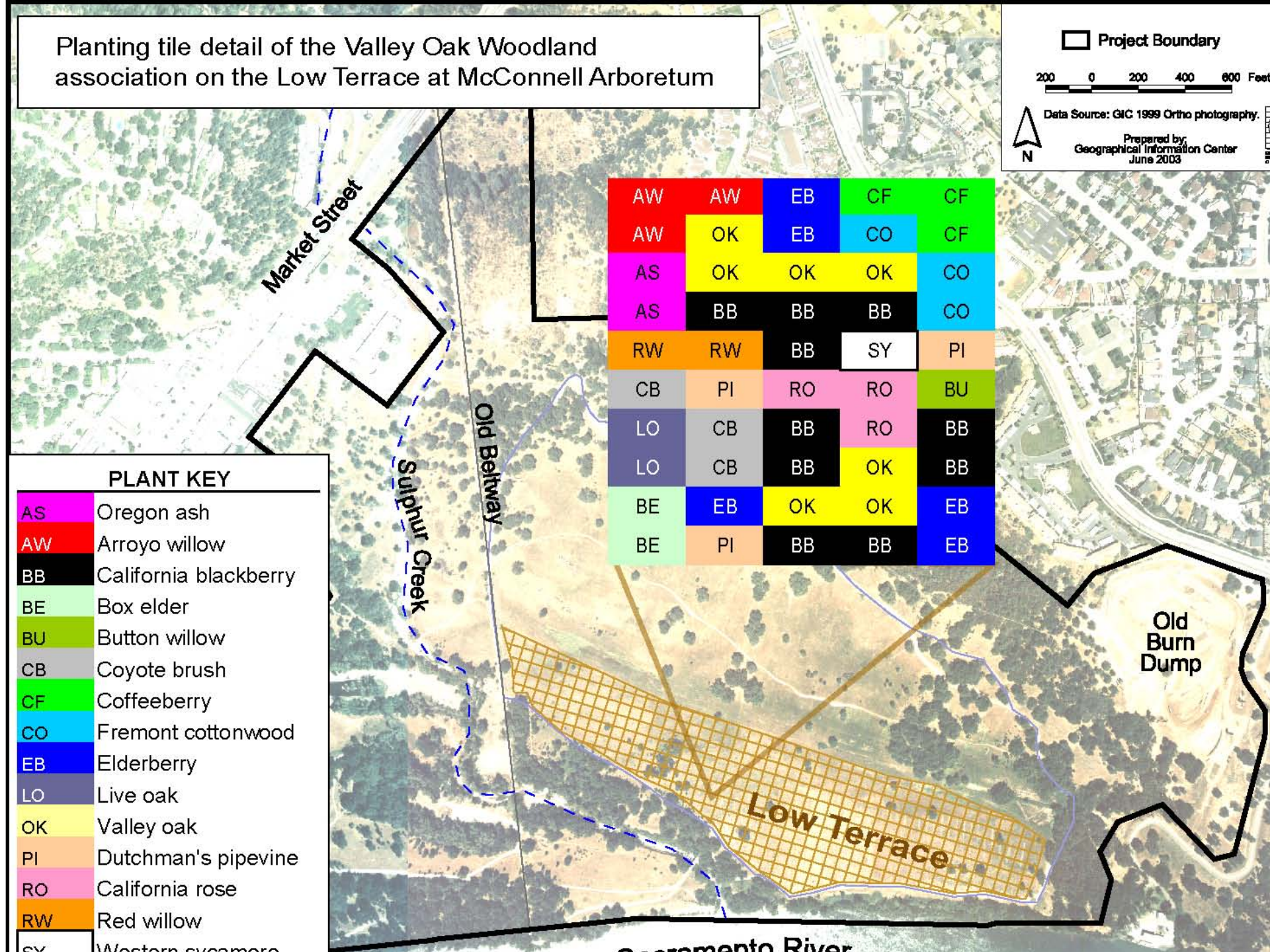
Wildlife and Vegetation Restoration Design

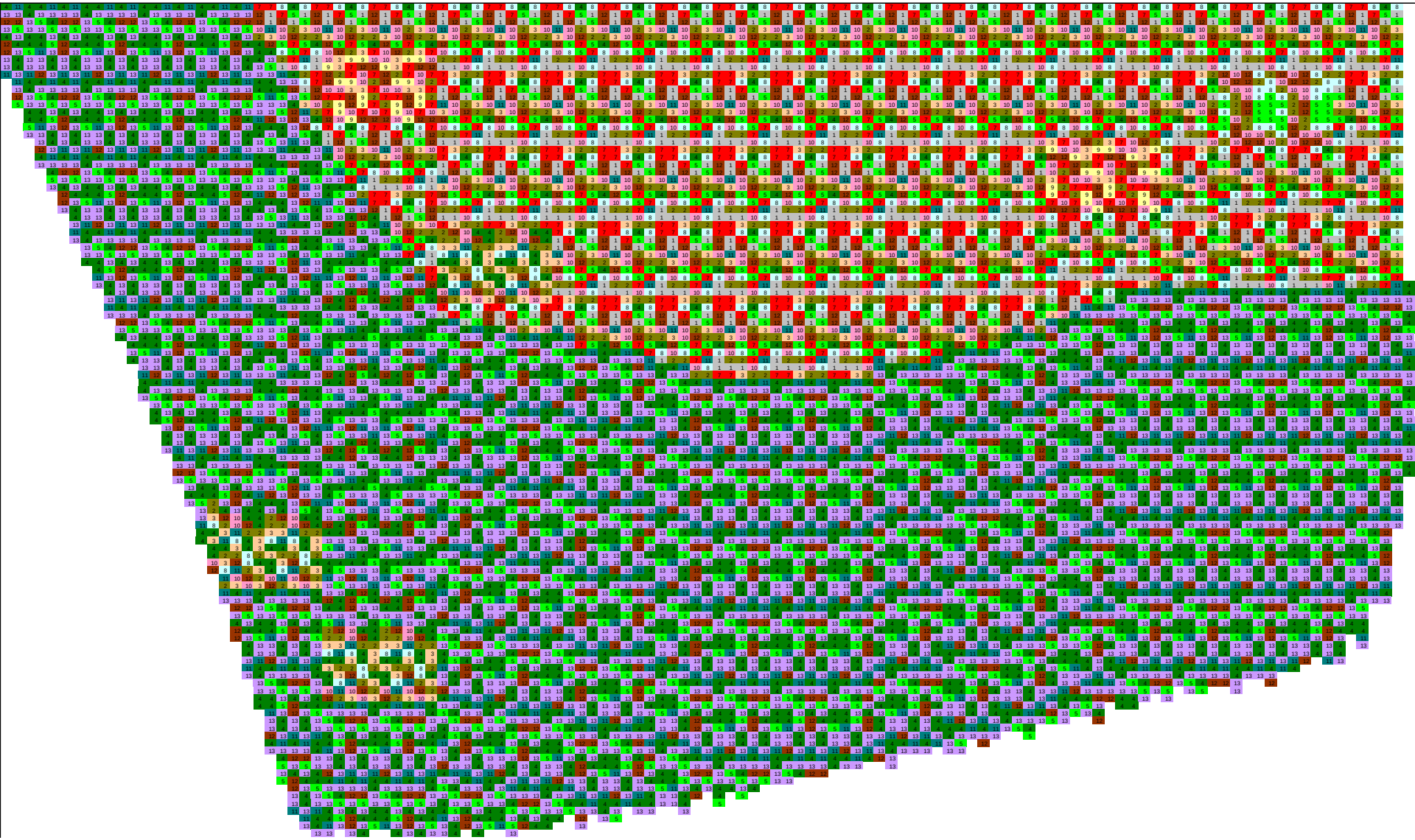
Cross-Section through Planting Design

SRA

Mixed Riparian

Shrub Clusters


Planting tile detail of the Valley Oak Woodland association on the Low Terrace at McConnell Arboretum
Project Boundary
200 0 200 400 600 Feet
Data Source: GIC 1999 Ortho photography.
Prepared by: Geographical Information Center June 2003
N
AW AW EB CF CF
AW OK EB CO CF
AS OK OK OK CO
AS BB BB BB CO
RW RW BB SY PI
CB PI RO RO BU
LO CB BB RO BB
LO CB BB OK BB
BE EB OK OK EB
BE PI BB BB EB
PLANT KEY
AS Oregon ash
AW Arroyo willow
BB California blackberry
BE Box elder
BU Button willow
CB Coyote brush
CF Coffeeberry
CO Fremont cottonwood
EB Elderberry
LO Live oak
OK Valley oak
PI Dutchman's pipevine
RO California rose
RW Red willow
SY Western sycamore
Market Street
Sulphur Creek
Old Beltway
Low Terrace
Old Burn Dump



Field L-3, 41 acres, San Joaquin River NWR

Planting


ROW:13
Milk

Planting


Planting
Year 1
Year 2
Year 3

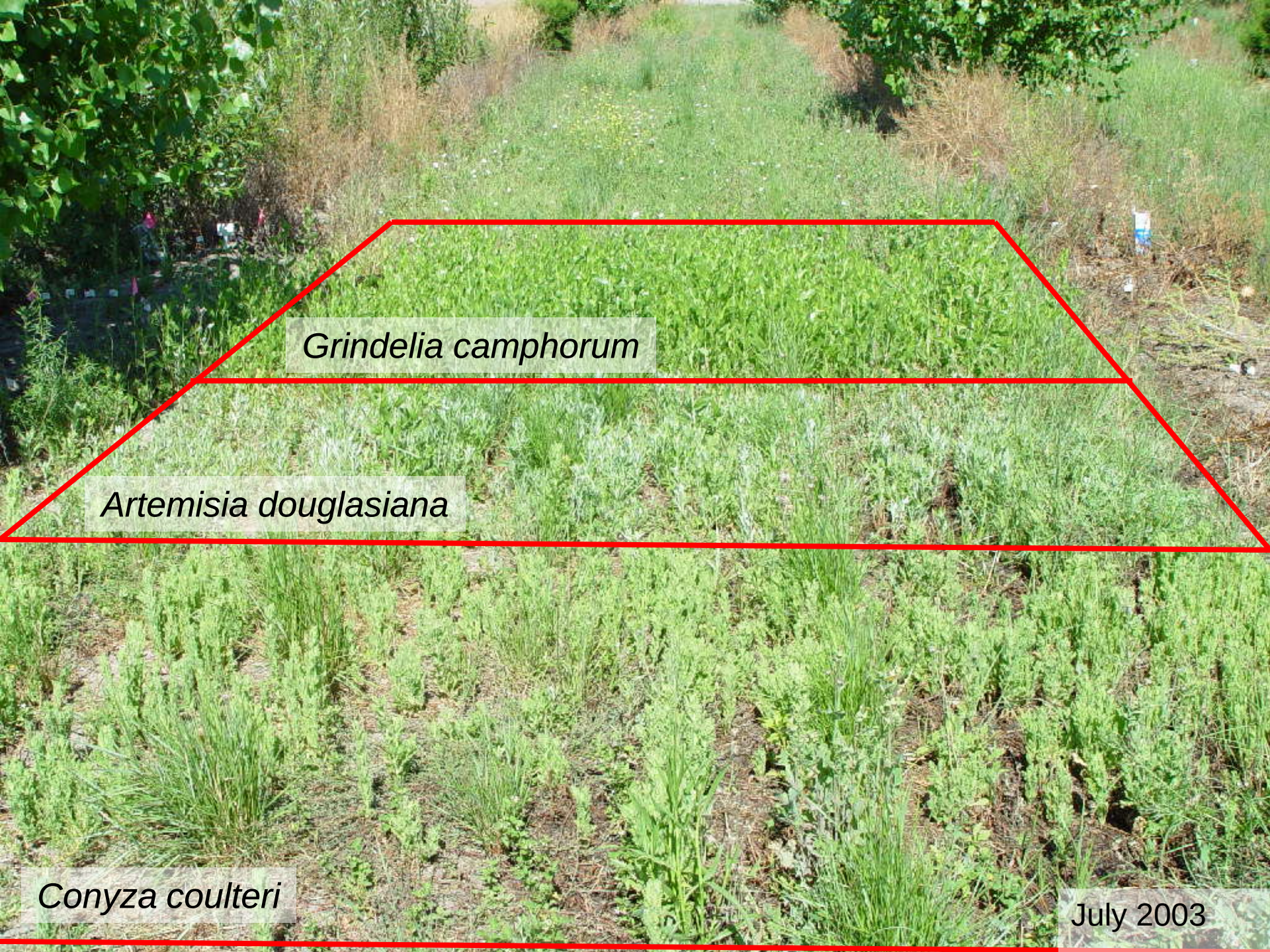

10-year old Restoration Planting


16-year old Restoration Planting

1) Can we get them to germinate and grow?

2) Will they tolerate our maintenance activities?

January 2003


Grindelia camphorum
Artemisia douglasiana
Conyza coulteri
July 2003


Herd
SURE-FEED
BROADCASTER


cm
1
3
12
IN CHINA


August 2004


June 2004


September 2004


September 2005

August 2004

August 2005

Parting the

Mugwort Sea…

August 2005

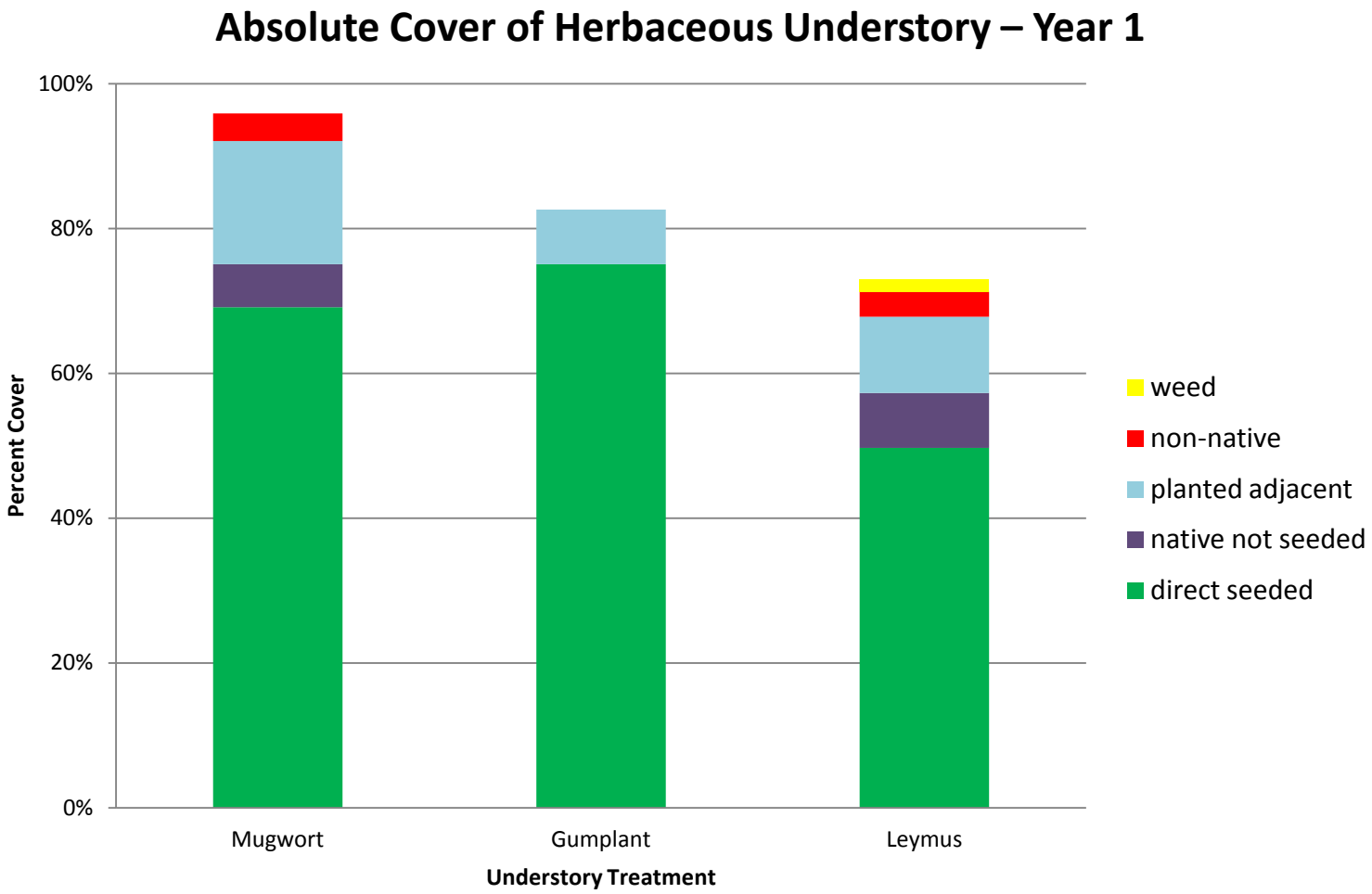

Creeping Rye Grass

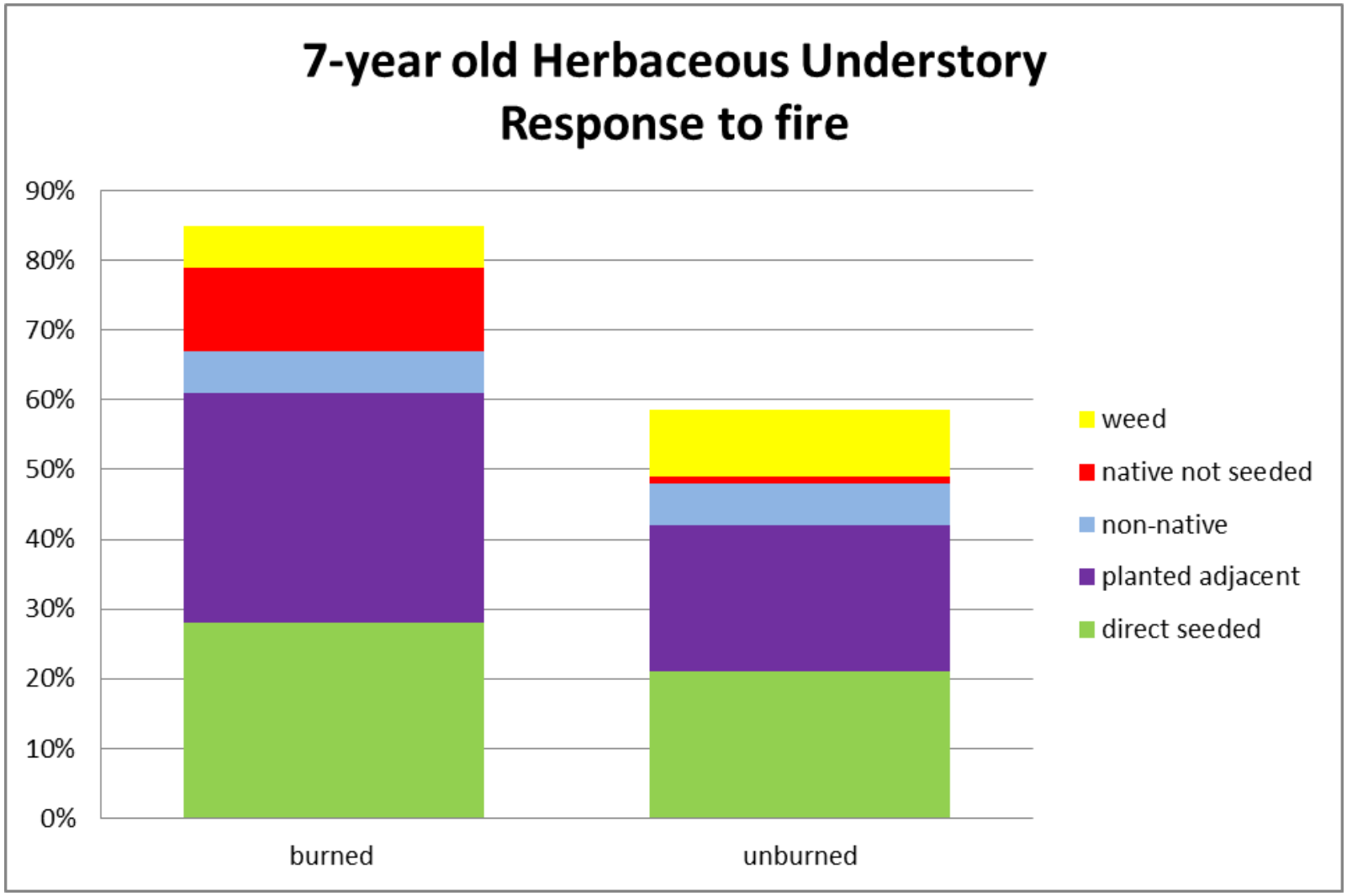

Buffington Unit SJRNWR

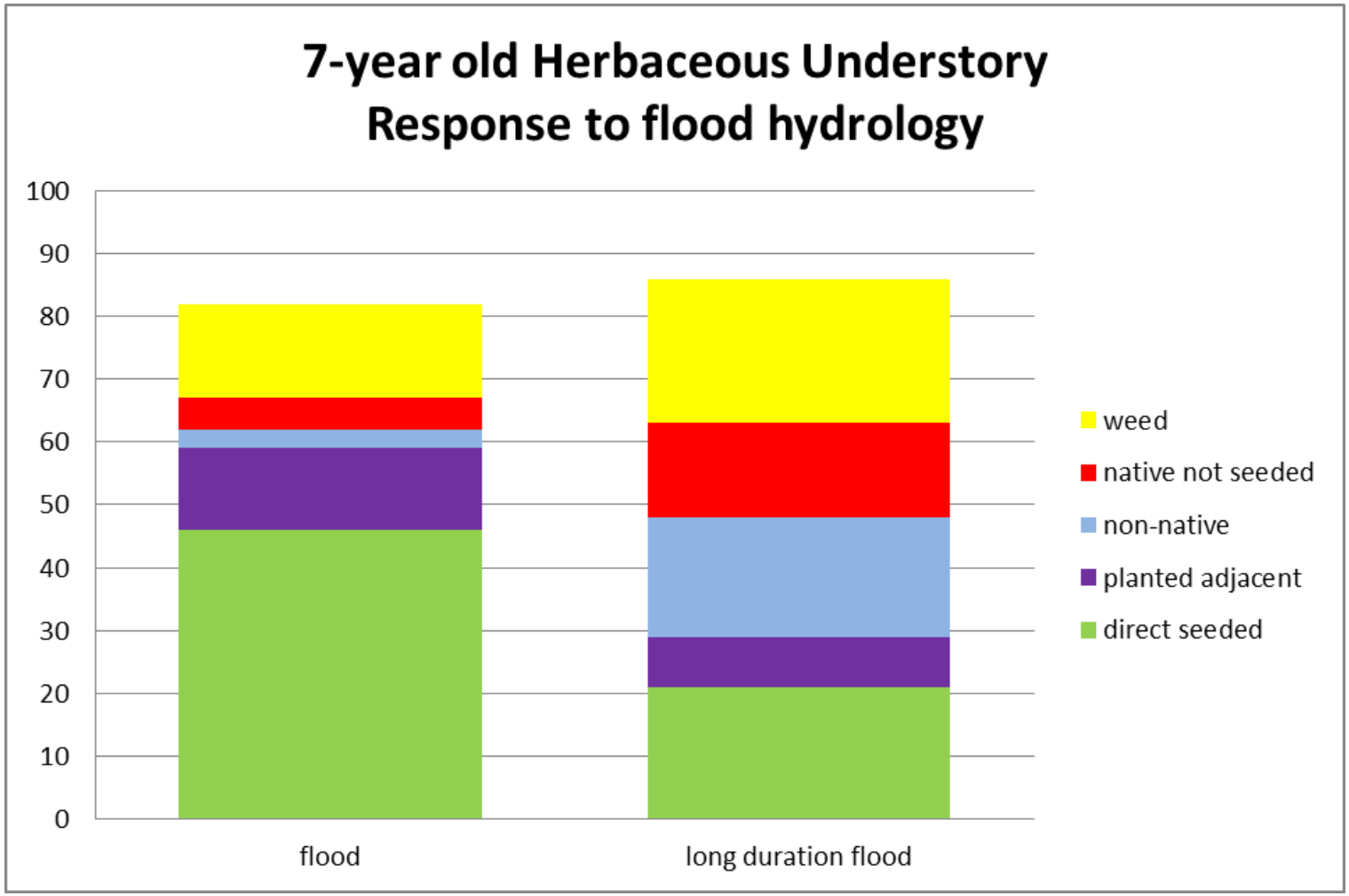
VOTE OF APPROVAL

Endangered least Bell's vireo

First nesting in Central Valley in 60 years


Absolute Cover of Herbaceous Understory – Year 1
100%
80%
60%
40%
20%
0%
Percent Cover
Mugwort
Gumplant
Leymus
Understory Treatment
weed
non-native
planted adjacent
native not seeded
direct seeded


7-year old Herbaceous Understory Response to fire
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
burned
unburned
weed
native not seeded
non-native
planted adjacent
direct seeded


7-year old Herbaceous Understory
Response to flood hydrology
100
90
80
70
60
50
40
30
20
10
0
flood
long duration flood
weed
native not seeded
non-native
planted adjacent
direct seeded

Number of mammal species captured in oak woodlands, riparian habitat, fallow fields, and non-native grasslands at Triad sites on San Joaquin River National Wildlife Refuge and acquisition properties, 1998.

Species	Oak Woodlands	Riparian	Fallow Fields	Non-native Grasslands
Microtus californicus	7	6	11	1
Peromyscus maniculatus	3	2	67	8
Mus musculus	20	4	44	2
Sorex ornatus	4	4	0	0

(from: San Joaquin River National Wildlife Refuge Riparian Habitat Protection and Flood Plain Restoration Project Biological Inventory and Monitoring 1998)


Stem girdled
By *Microtus*

CONCLUSIONS

Native plants can successfully replace Invasives –

with properly-timed

Land Management!

CONCLUSIONS

Populations of targeted wildlife species can be restored if careful attention is given to restoring vegetation structure.

FUTURE NEEDS:

Development of a riparian restoration model to accurately assess site potential for horticultural success and refinement of designs for wildlife use.

March 2013 – Vierra Unit SJRNWR

www.RiverPartners.org

California Riparian Habitat Restoration Handbook.

Published By

Riparian Habitat Joint Venture.

http://www.riverpartners.org/documents/Restoration_Handbook_Final_Dec09.pdf


Riparian Restoration
SJRNWR


Riparian Restoration on Flood-Prone Land