

Cal-IPC 2014

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

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River Partners





Sacramento River



Sacramento River

Highway 45
Glenn County



An aerial photograph of a dense forest. The trees are mostly green, with some brown trunks visible. The forest is thick and covers most of the area. There are some sandy patches and a road visible in the lower right corner. The text 'Cottonwood' is overlaid in the upper left, and 'Valley Oak' is overlaid in the lower center.

Cottonwood

Valley Oak



Stanislaus River








Stanislaus River



Riparian Restoration

Walnuts

Levee

An aerial photograph showing a residential neighborhood in the foreground, characterized by a grid of streets and numerous houses with brown roofs. To the right and slightly behind the neighborhood, a large body of water, likely a river or a flooded area, is visible. The water is dark blue and reflects the sky. In the background, there are green fields and some buildings, suggesting a rural or semi-rural setting. The overall scene illustrates the proximity of residential areas to water bodies, which is a key concern in flood management.

Public Safety and Flood Management

Importance of Riparian Corridor to Wildlife Migration

An aerial photograph showing a river meandering through a landscape of agricultural fields. The fields are in various stages of growth, with colors ranging from light brown to dark green. A white dashed line is drawn around a specific area on the riverbank, highlighting a section of the riparian corridor. The river itself is a dark blue-green color, and its path is clearly visible against the surrounding land.

Sacramento River Wildlife Corridor

Riparian Wildlife





Black-headed Grosbeak

Swainson's Hawk

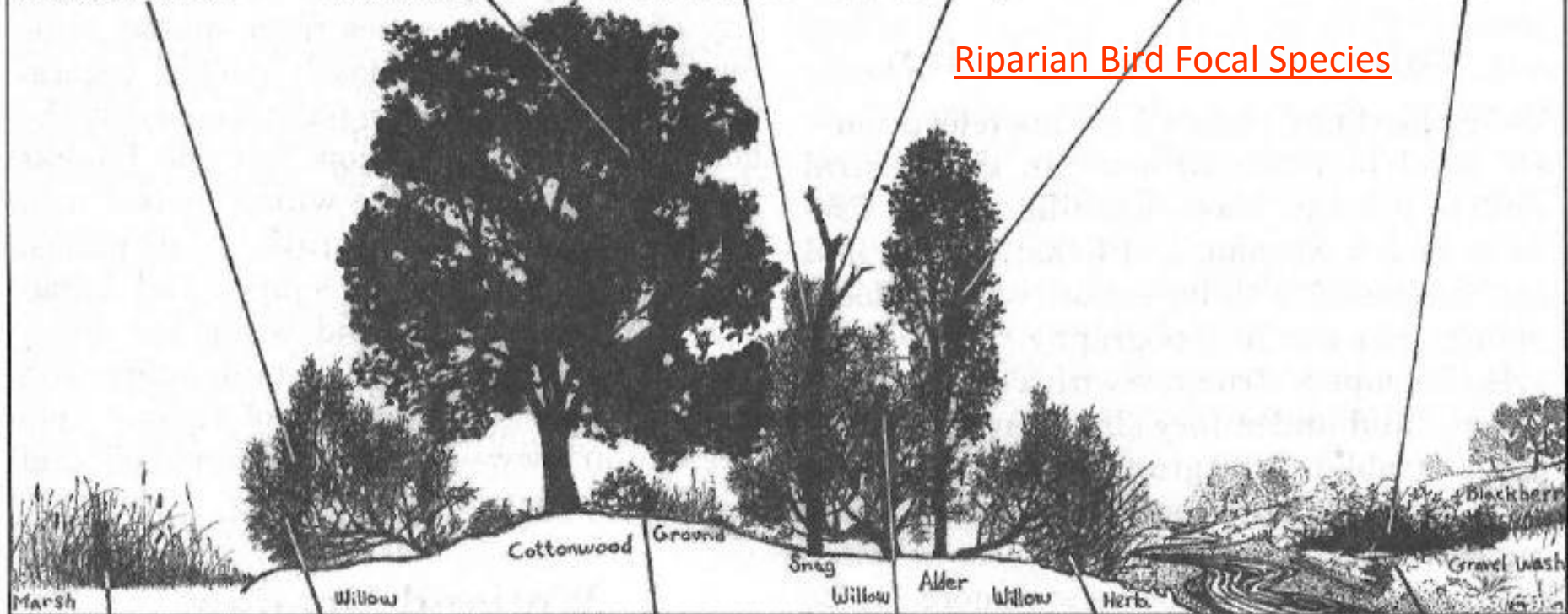
Yellow-billed Cuckoo

Nuttall's Woodpecker

Yellow Warbler

Song Sparrow

Riparian Bird Focal Species



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

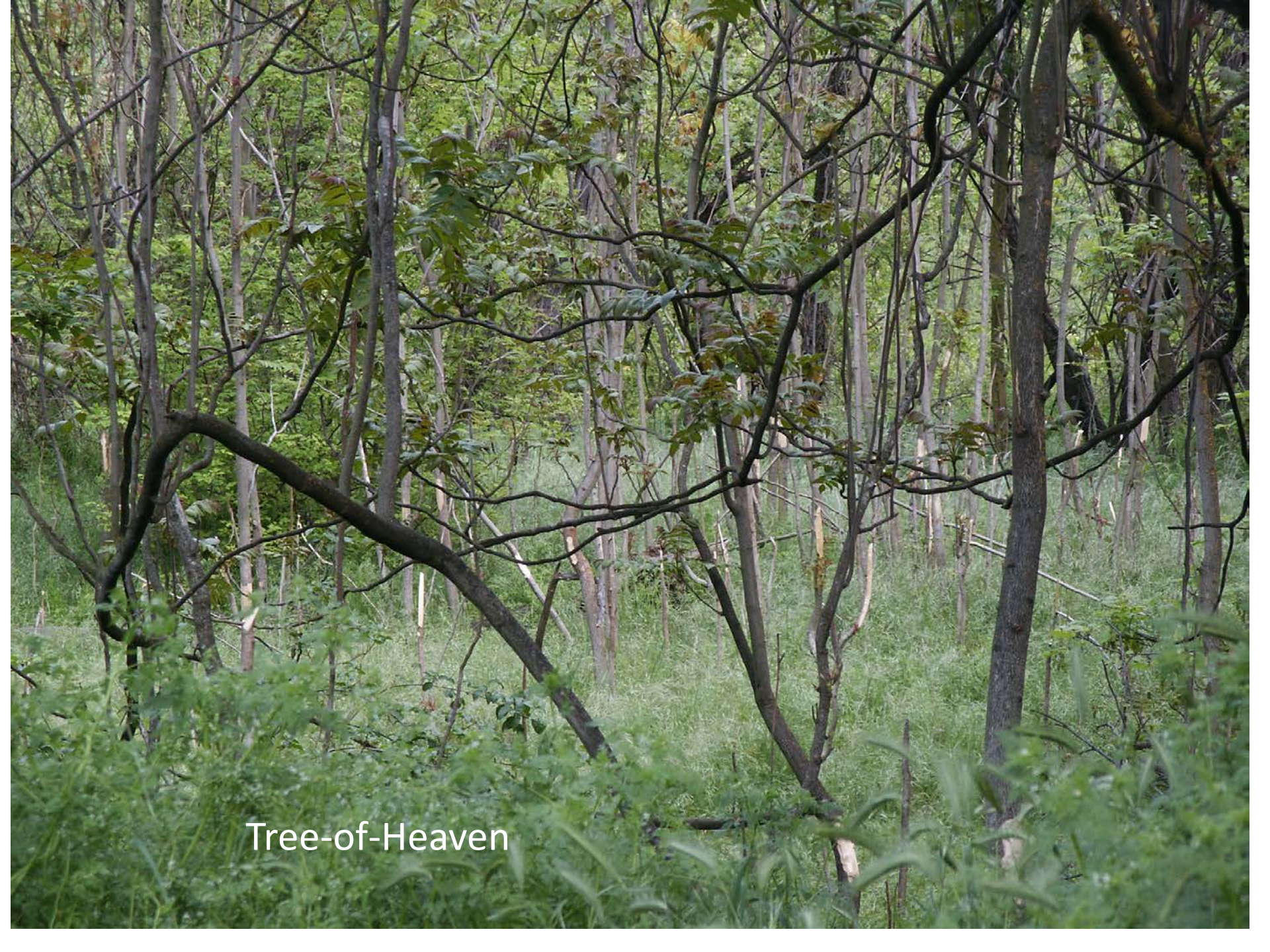


Valley Elderberry
Longhorn Beetle





Phragmites



Tree-of-Heaven

Arundo donax





Stony Creek – Glenn County



FLOODS HAPPEN!









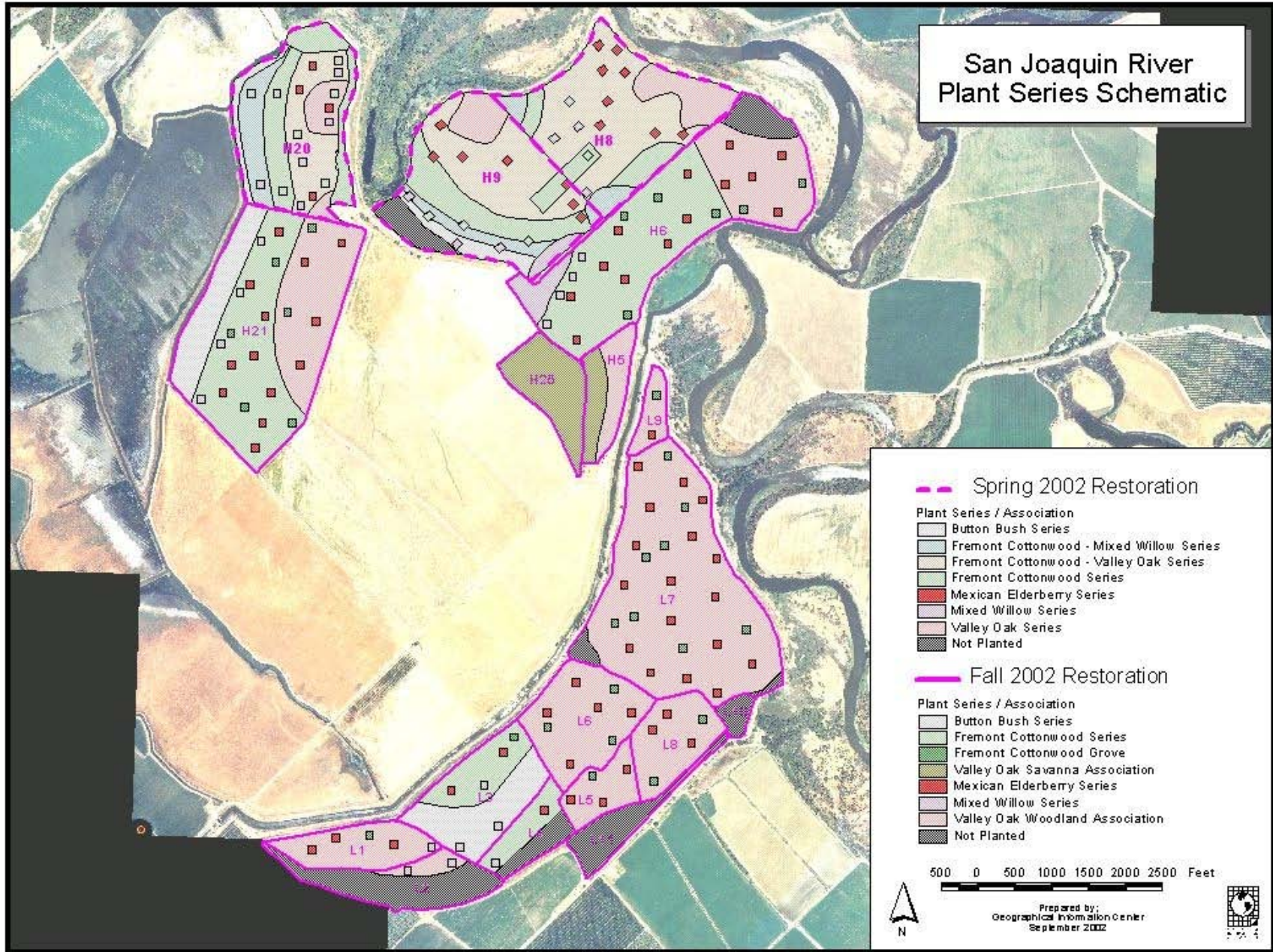


5/2/01

Irrigation Installation



San Joaquin River Plant Series Schematic



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

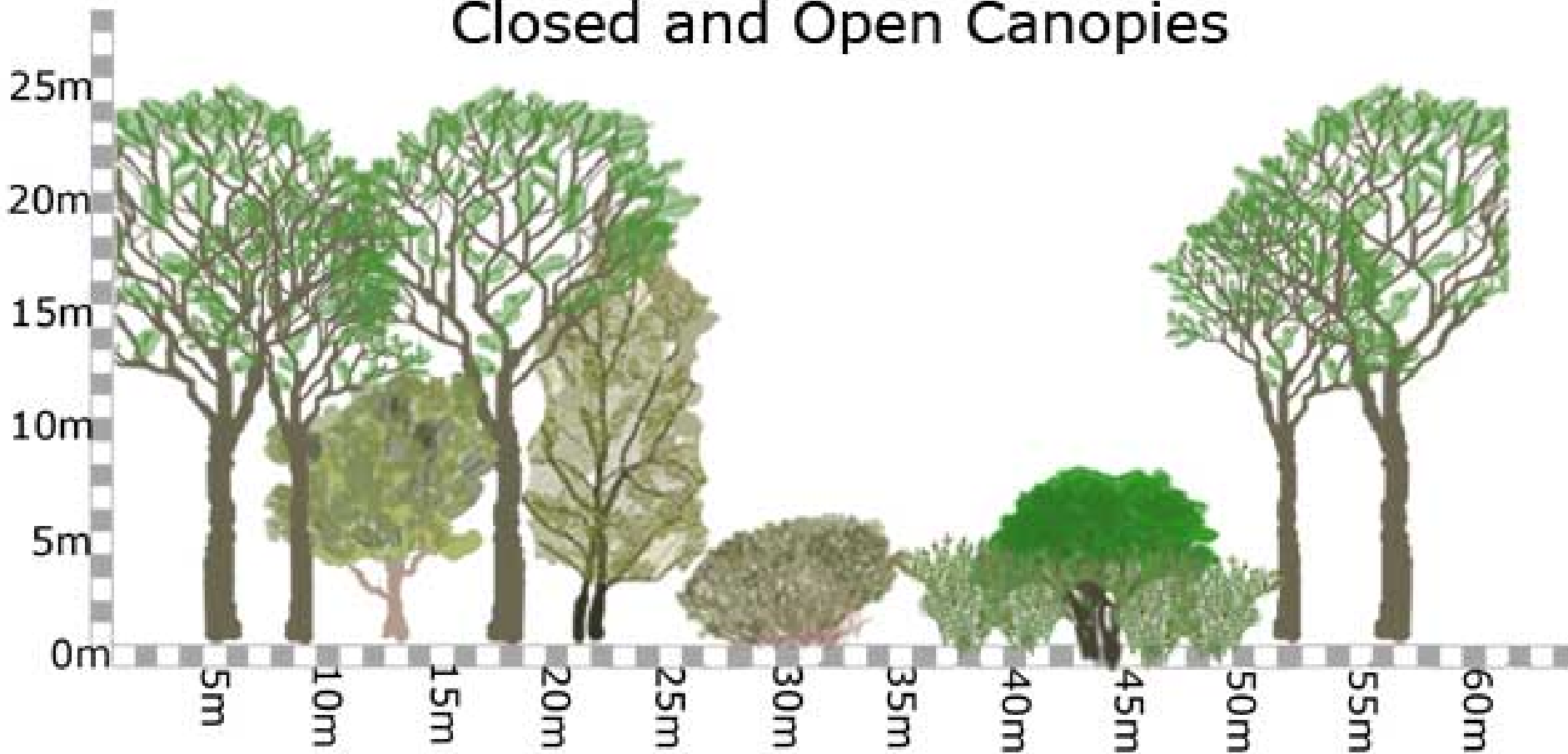


Prepared by:
Geographical Information Center
September 2002

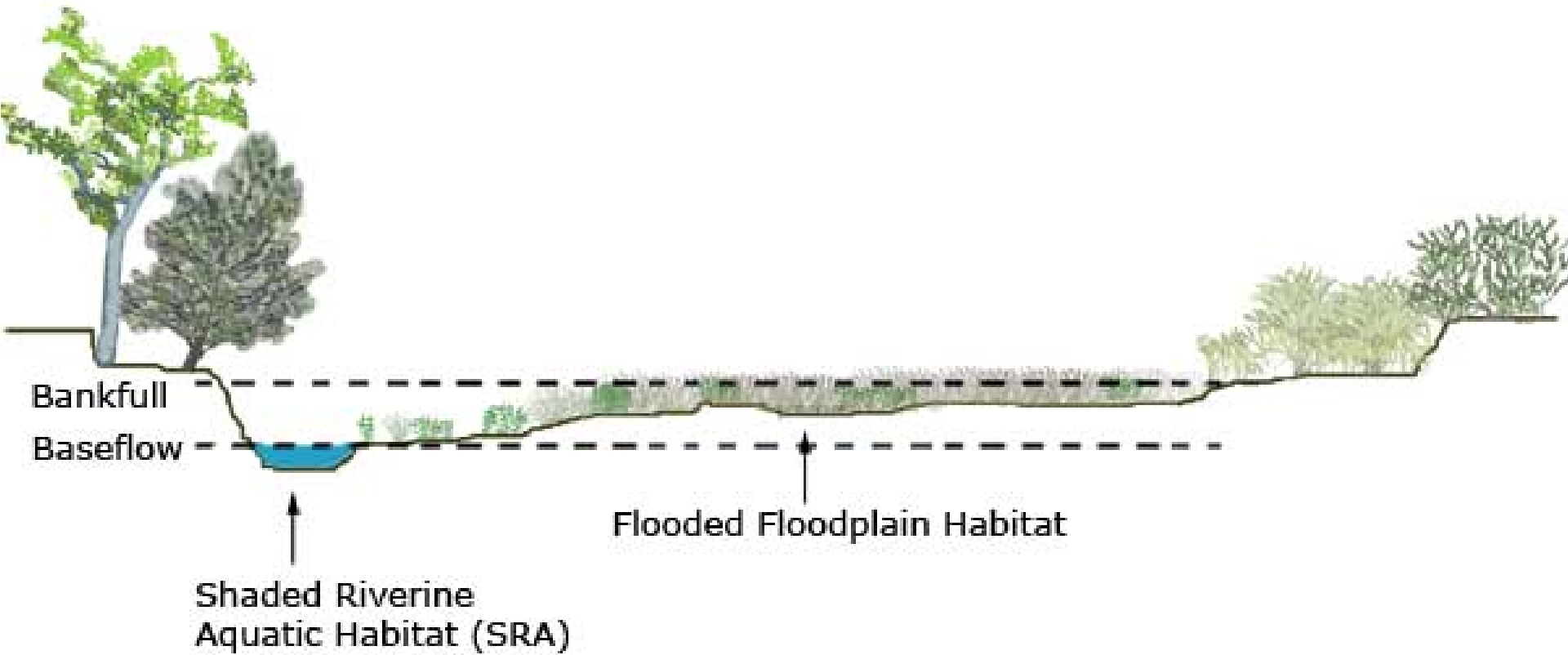


Wildlife and Vegetation Restoration Design

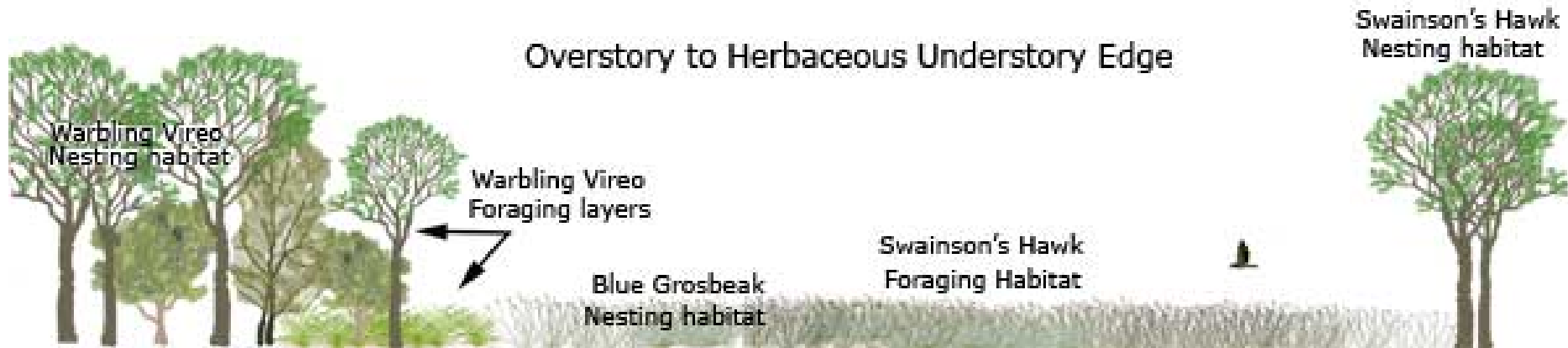
Closed and Open Canopies



Wildlife and Vegetation Restoration Design



Wildlife and Vegetation Restoration Design



Wildlife and Vegetation Restoration Design

Dense Willow Thicket with Widely Spaced Trees

Yellow-breasted Chat
Singing perch



Yellow-breasted Chat
Nesting habitat

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

Market Street

Old Beltway

Sulphur Creek

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

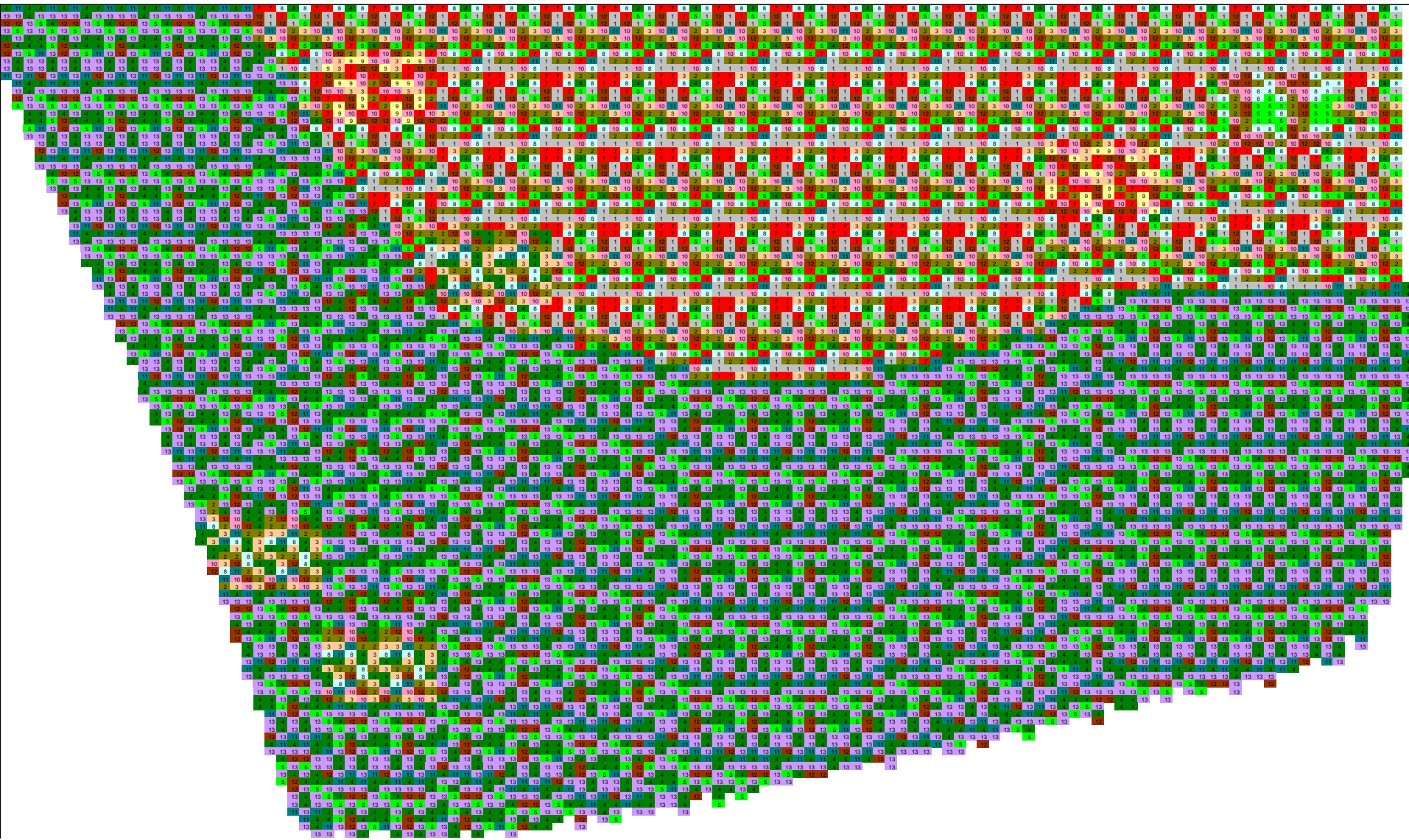
PLANT KEY

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

Low Terrace

Old Burn Dump

Sacramento River



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

Planting

10 - 10 - 10
ROSE ROSE
ROW 7
FIELD 01

1772
1772
1772

2





16-16-1
Del Rio
ROW 13
COMMUNITY: VRS
ROSE - ROSE - R

Low Fat 2% Homogenized Milk
Lactation
Low Fat 2% Homogenized Milk
Lactation
LACTATION OF CALVES
Lactation
Lactation

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









cm

1

2

3

IN CHINA

12







August 2004

June 2004



September 2004



September 2005



August 2004



August 2005



Parting the
Mugwort Sea...

August 2005





Creeping Rye Grass



Buffington Unit SJRNWR

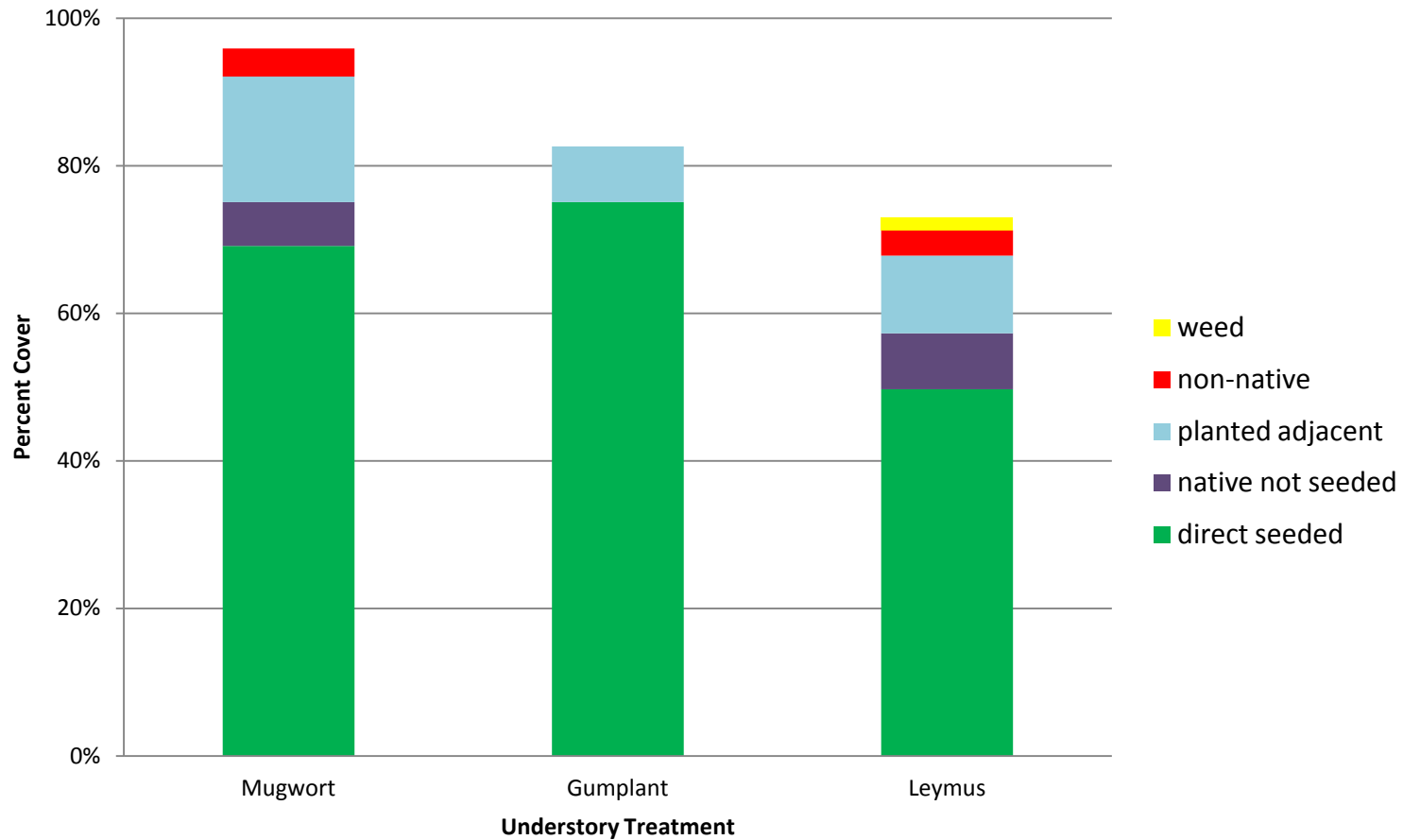
VOTE OF APPROVAL

A close-up photograph of a small bird, identified as a least Bell's vireo, perched on a thin, brown branch. The bird has a greyish-brown head and back with fine, dark streaks on its wings and tail. Its underparts are a lighter, mottled grey. The bird is facing right. The background is filled with out-of-focus green leaves and branches, suggesting a natural, wooded habitat.

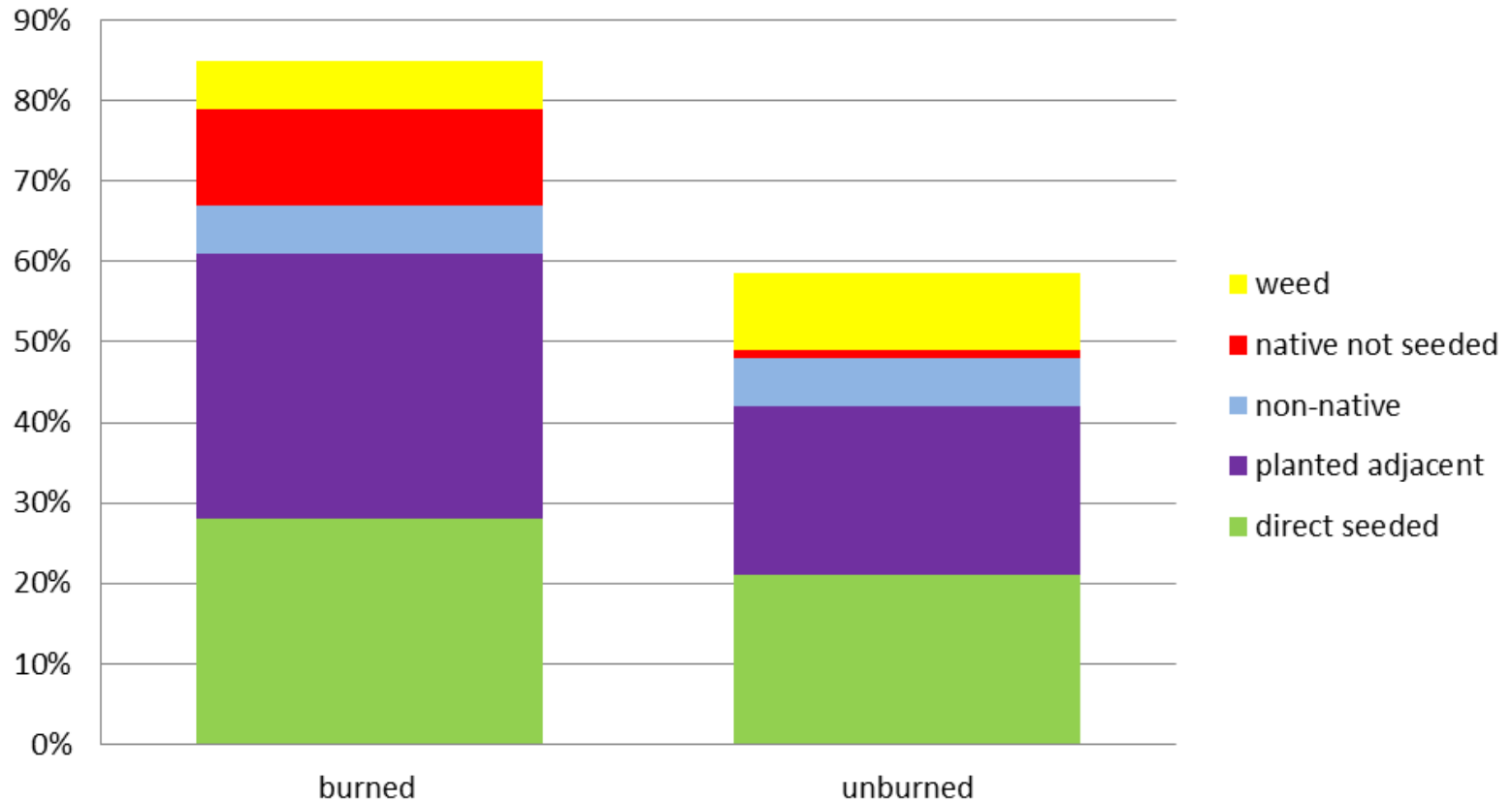
Endangered least Bell's vireo

First nesting in Central Valley in 60 years

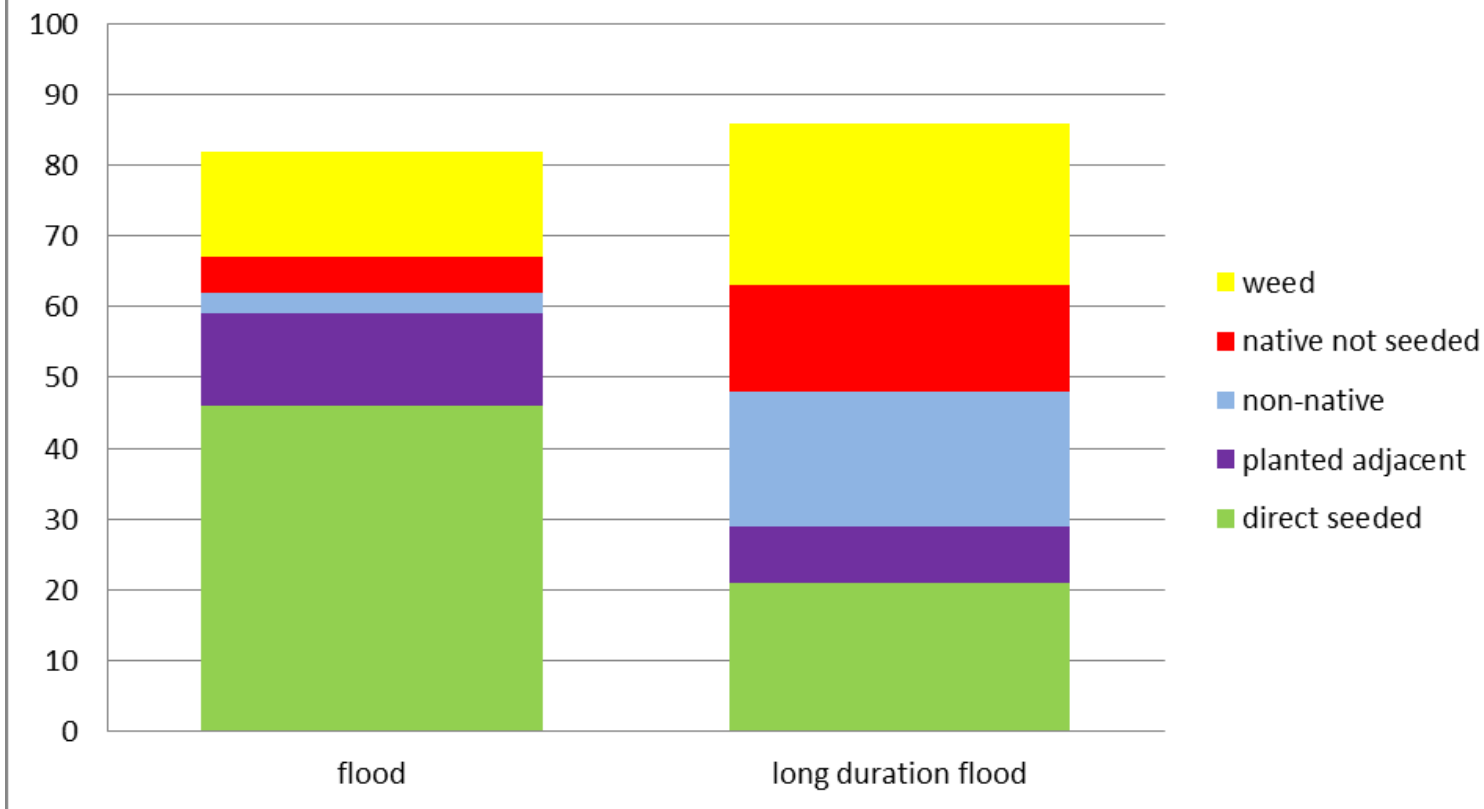
Absolute Cover of Herbaceous Understory – Year 1



7-year old Herbaceous Understory Response to fire



7-year old Herbaceous Understory Response to flood hydrology

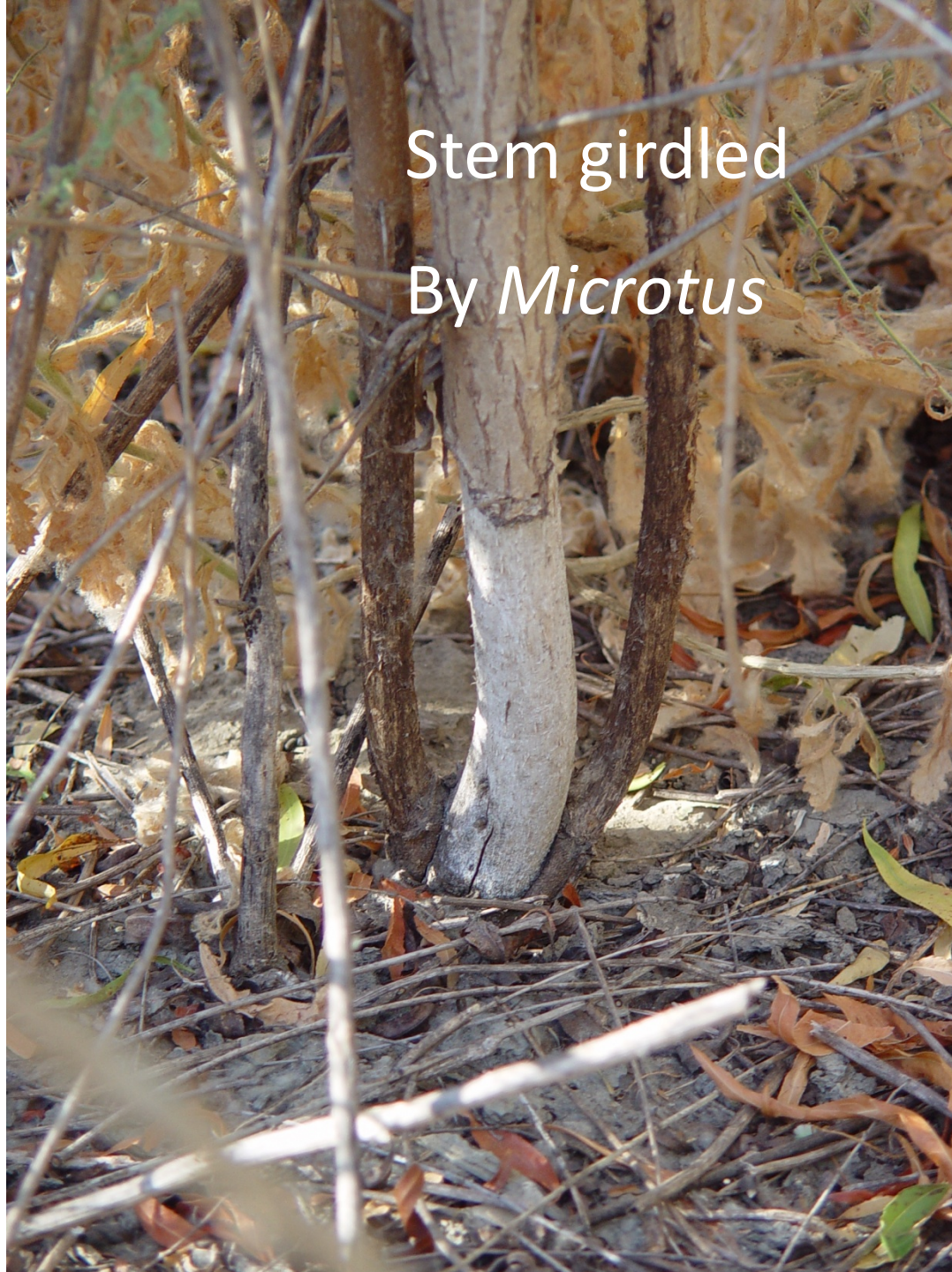


Number of mammal species captured in oak woodlands, riparian habitat, fallow fields, and non-native grasslands at Triad sites on San Joaquin River National Wildlife Refuge and acquisition properties, 1998.

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



Red Fox

Gray Fox

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](http://www.riverpartners.org/documents/Restoration%20Handbook%20Final%20Dec09.pdf)



Riparian Restoration
SJRNWR



Riparian Restoration on Flood-Prone Land