Sacramento River National Wildlife
Multiple Benefits Through Design and Management

Joe Silveira
Wildlife Refuge Manager
Sacramento River National Wildlife Refuge

Floodplain Management Association Annual Conference
September 7, 2017
Sacramento River National Wildlife Refuge
Est. 1989

- 10,355 acres along an 81-mile reach within the 100-year floodplain of the Sacramento River
- Currently 31 Units
- Restored & Natural Lands
  - Willow scrub & herb land,
  - CTW, MR & VO forests,
  - VO woodland,
  - VO & elderberry savannas,
  - grasses & wildflowers
Purpose of the Refuge

- Conserve endangered and threatened species (In 1989, winter-run Chinook salmon, Valley elderberry long-horned beetle, Least Bell’s Vireo, American Bald Eagle) and their habitats

- Provide riparian/floodplain wetland habitat for migratory bird conservation

- Manage for fish, wildlife and native plant resources
Sacramento River Reach 2 & 3

Sinuosity;
over-bank flooding,
erosion & deposition;
lateral channel migration,
floodplain re-working;
on-channel meander loops,
off-channel oxbow lakes,
floodplain sloughs
Sacramento River Winter 2017
Habitat Restoration Planting Design Planning

Soil Texture
Depth to Gravel & Water

2-D Hydraulic Modeling
Baseline & Restoration

Planting Design– Vegetation
Plant Spp. Comp., Freq & Density
Sacramento River National Wildlife Refuge
Riparian Vegetation Restoration

Site Preparation

Seed & Cuttings of Local Ecotypes

Nursery Propagation

Planting

and Maintenance
Sacramento River National Wildlife Refuge

Elderberry Savanna – Ord Bend Unit

1990 – 2012: 114,420 elderberry shrubs planted
Proposed Grass/Wildflower Restoration, 2014-15

Sacramento River National Wildlife Refuge
Nel Norte Unit

2004 TNC Project
14 acres native grass restoration

2008 NWTF/TNC/DFW Project
72 acres native grass restoration

Phase I - 1.5 acres
Phase II - 7.3 acres
Phase II - 15 acres
Phase II - 7.7 acres
Phase II - 31.8 acres
Phase II - 19 acres

2006 NWTF/TNC/DFW Project
8 acres native grass restoration

2014 TNC Project
43 acres native grass restoration

Phase IA - NWTF Project
1.5 acres

Phase IB - 7.3 acres

Phase II - 16 acres

Phase II - 3 acres

Phase II - 15 acres

Phase IA - NWTF Project
7.7 acres

Seeding

The Nature Conservancy
RIPARIAN & FLOODPLAIN RESTORATION BENEFITS TO A DIVERSITY OF TAXA

INSECTS
• Valley elderberry LB
• Ground-dwelling Beetles
• Bees

BIRDS
• Landbirds

SMALL MAMMALS
• Rodents
• Bats

Sacramento River NWR Monitoring & Research 1992-2014 ~ 81 Projects
Sacramento National Wildlife Refuge Public Use

Wildlife Observation – Photography – Hunting – Fishing – Environmental Interpretation - Education

Sacramento National Wildlife Refuge Complex Auto Counter Numbers

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<td>River</td>
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### Prescribed Fire

**Valley Oak Woodland Burn**

- **Treatments**: Burn, Mow/Chip, Disc/Grade, Rototill, Spray, Graze
- **Unit Cells** and **Acreages**:
  - Burn: 18 units, 22 cells, 220 acres
  - Mow/Chip: 12 units, 16 cells, 110 acres
  - Disc/Grade: 10 units, 10 cells, 48 acres
  - Rototill: 2 units, 2 cells, 12 acres
  - Spray: 24 units, 60 cells, 540 acres
  - Graze: 13 units, 32 cells, 3,130 acres
- **Total Acreage**: 4,060 acres

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**Prescribed Grazing enhances native grasses & wildflower**

**Arundo donax Control**

- **Treatment**: Burn or cut/spray
Facilities Maintenance — Gravel & Dirt Access Roads, Firebreaks, Hiking Trails, Gates, Fences, Culverts, Levees, Water Control Structures

Routine Maintenance Projects

FUELS MANAGEMENT: Rio Vista Unit
Sacramento River NWR

Deferred Maintenance Projects
Facilities Maintenance — Visitor Services Public Use Parking Lot, Kiosk, Restroom, Picnic Benches, Signage
U.S. Fish & Wildlife Service Levee Maintenance
Brush Removal Project Drumheller Unit 2007

BEFORE

DURING

AFTER
Annual Habitat Management Planning

Sacramento River NWR
31 Refuge Units – 128 Cells
81 River Miles

Refuge Management Team
• Management
• Biology
• Maintenance/ Field Ops
• Public Use
• Fire
• Law Enforcement
Sacramento River NWR Annual Habitat Management Plan
Unit Map & Unit Plan for Cell 3.2

UNIT MANAGEMENT PLAN

CELL PARAMETERS:

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<th>CROP</th>
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<th>BIOLOGICAL EXPANSION AREAS</th>
<th>RESTORATION TYPE</th>
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TOTAL CELL ACRES: 258

PLANNED HABITAT MANAGEMENT: ACTUAL

RESTORATION COOPERATION: TBD INURE LEGISLATION

REQUIRED HABITAT TREATMENTS:

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<th>PERCENT IMPROVEMENT</th>
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MOWING SCHEDULE:

- Mow: Yes / No / Partial / Unit
- Spray: Yes / No / Partial / Unit

SPECIAL RESOURCE ISSUES:

- Bird & wildlife nesting at parking lot

SPECIFIC PROJECTS:

1. Implement Grazing Plan
2. Mow openings through shrublands in Raccoon Slough to improve plant vegetation structure & hunter access
3. Habitat Disabled Access Trail & Hunt Blind & MODIFY BLIND for shorter hunters (YOGC)
4. Harvest riparian vegetation to move & store in housing, as needed
5. Monitor riparian vegetation with crisis, mustache, treat with 15% grass restoration & treat with 2.4-D (TNC)
6. Prep for 30 acres native grass restoration at 2G corners, treat meadow at 2.4-D (TNC)
7. Maintain Control Program for Grazing Study & burned out cattle (YOGC)
8. Evaluate wildlife bedrock to maintain open wooded habitat
9. Develop CVPW plans for native grasses & wildflowers (sand prairies) (YOGC)
10. Evaluate vegetation management monitoring program site, design, data, methods, data range (YOGC)

DRAINAGE: 241 LSR
Sacramento River NWR Annual Habitat Management Plan
Unit Map & Unit Plan for Cell 99 (Facilities)