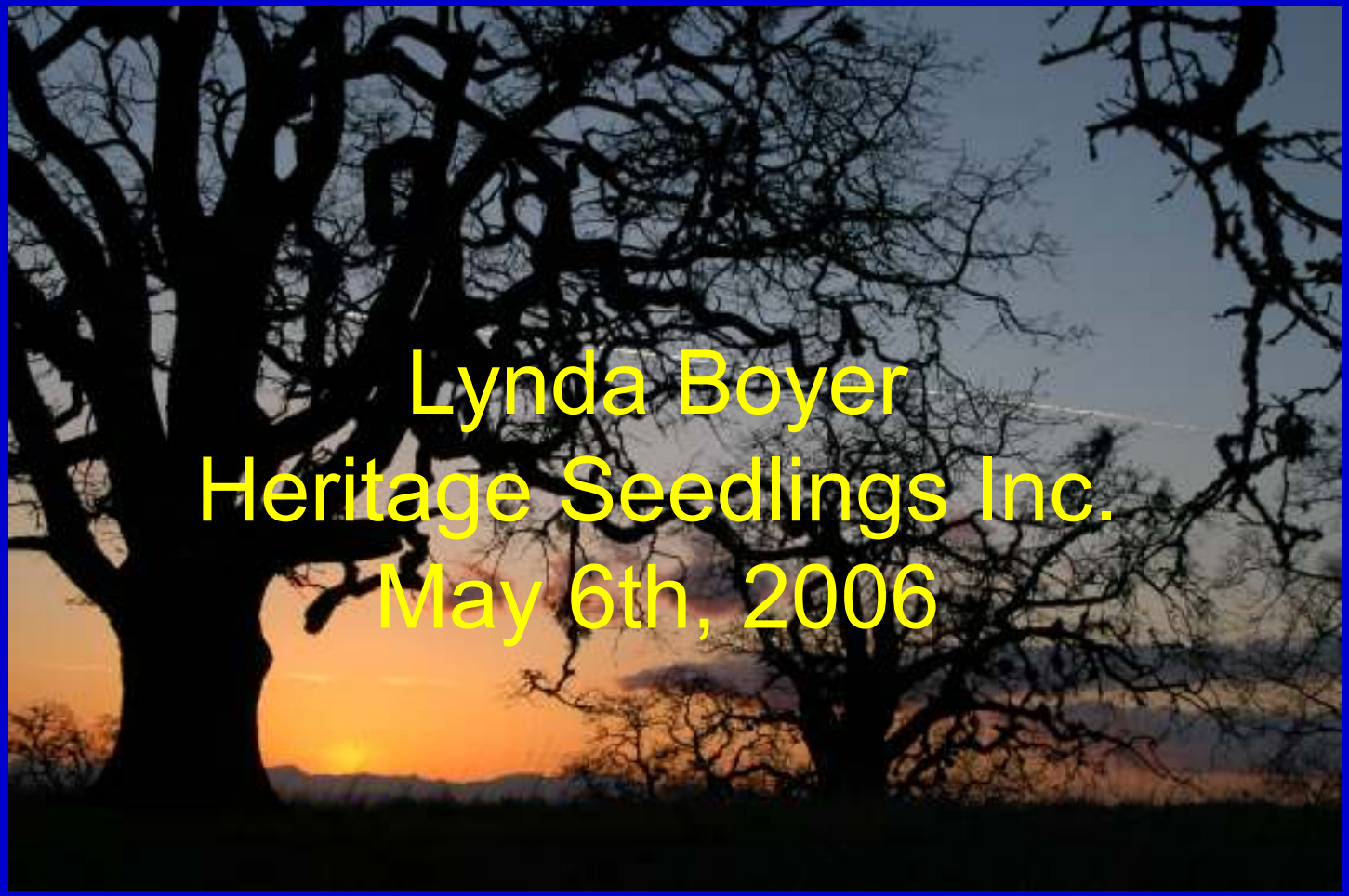
Oak Restoration & Maintenance



Lynda Boyer
Heritage Seedlings Inc.
May 6th, 2006

"In every deliberation, we must consider the impact on the seventh generation."

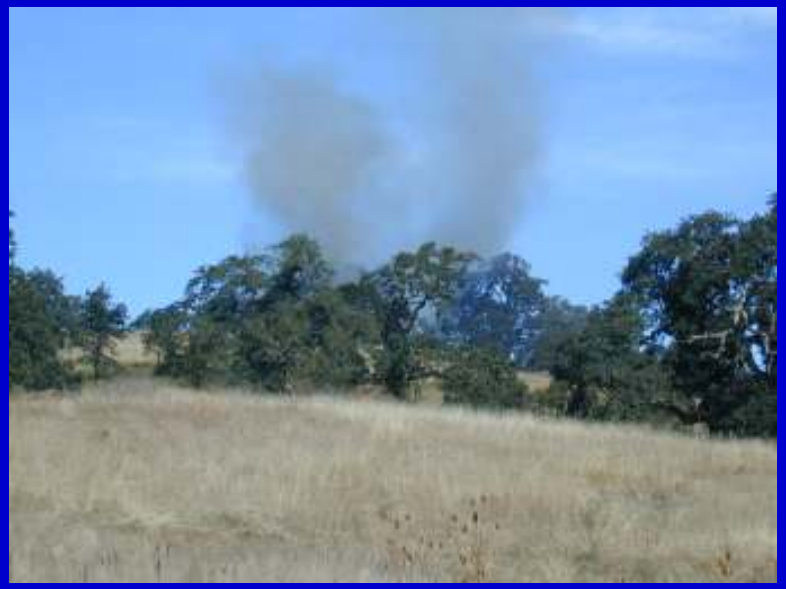
Great Law of Peace of the Haudenosaunee (Six Nations Iroquois Confederacy)

2 years old

40 years old

300 +

Definitions



- Oak Savanna
  - Grassland characterized by a scattered distribution of open-growth oak trees. Commonly found on drier sites with thinner soils.
- Upland Prairie
  - Grassland most commonly associated with oaks.

Vegetation of the Willamette Valley circa 1850 (ONHP 2004)

KEY

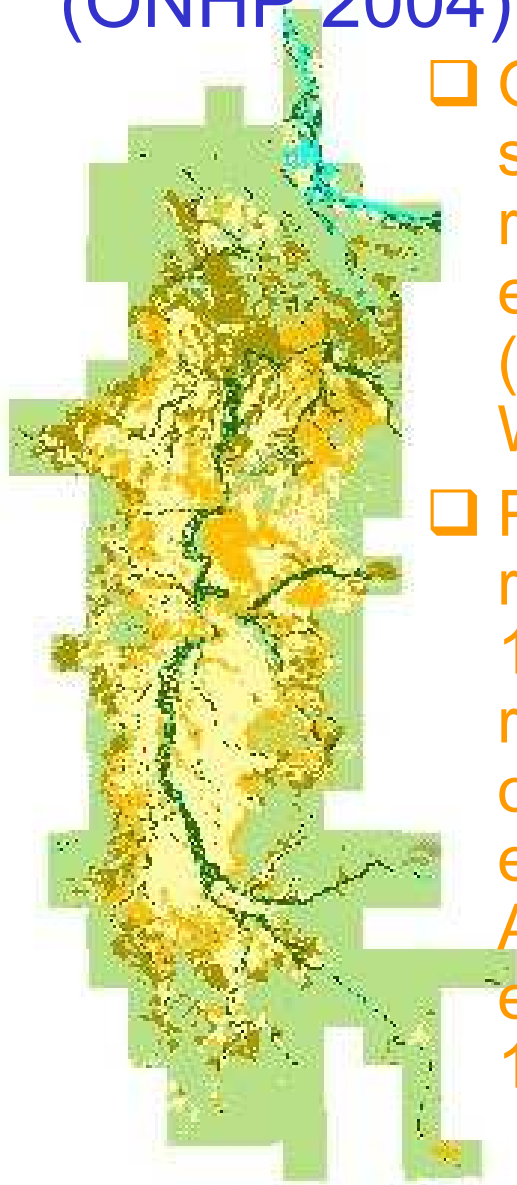
Orange – savanna

Yellow – prairie

Dark green – riparian forest

Olive – woodland

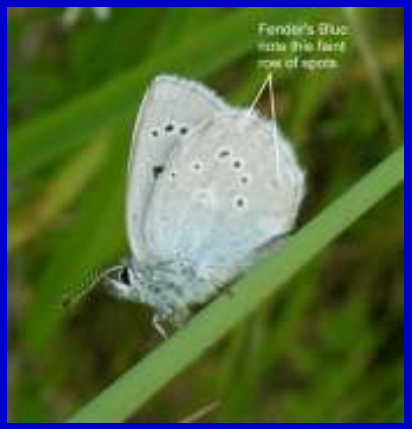
Light green – conifer



- Oak woodlands and savannas have been reduced by an estimated 80% (Defenders of Wildlife)
- Prairies have been reduced to less than 1% their historic range making them one of the most endangered of North American ecosystems (ONHP 1983)

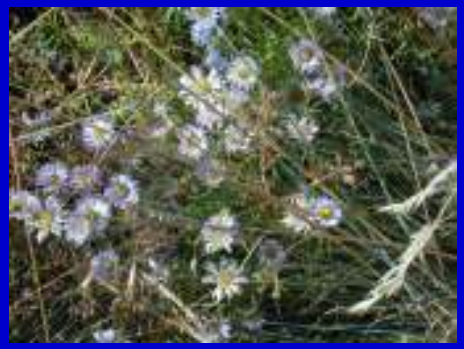
Result of Declining Habitat
Decline of Numerous Animal Species

- Species Listed as Threatened, Endangered, or of Concern
  - Acorn woodpecker
  - White-breasted nuthatch
  - Oregon vesper sparrow
  - Western meadowlark
  - Western bluebird
  - Western pond turtle
  - Fender's blue butterfly



Result of Declining Habitat
Decline of Numerous Plant Species

- Species Listed as Threatened, Endangered, or of Concern
  - Willamette daisy
  - White-topped aster
  - Kincaid's lupine
  - Willamette Valley larkspur
  - Golden paintbrush (extirpated in Oregon)
  - Nelson’s checkermallow
  - Bradshaw’s lomatium



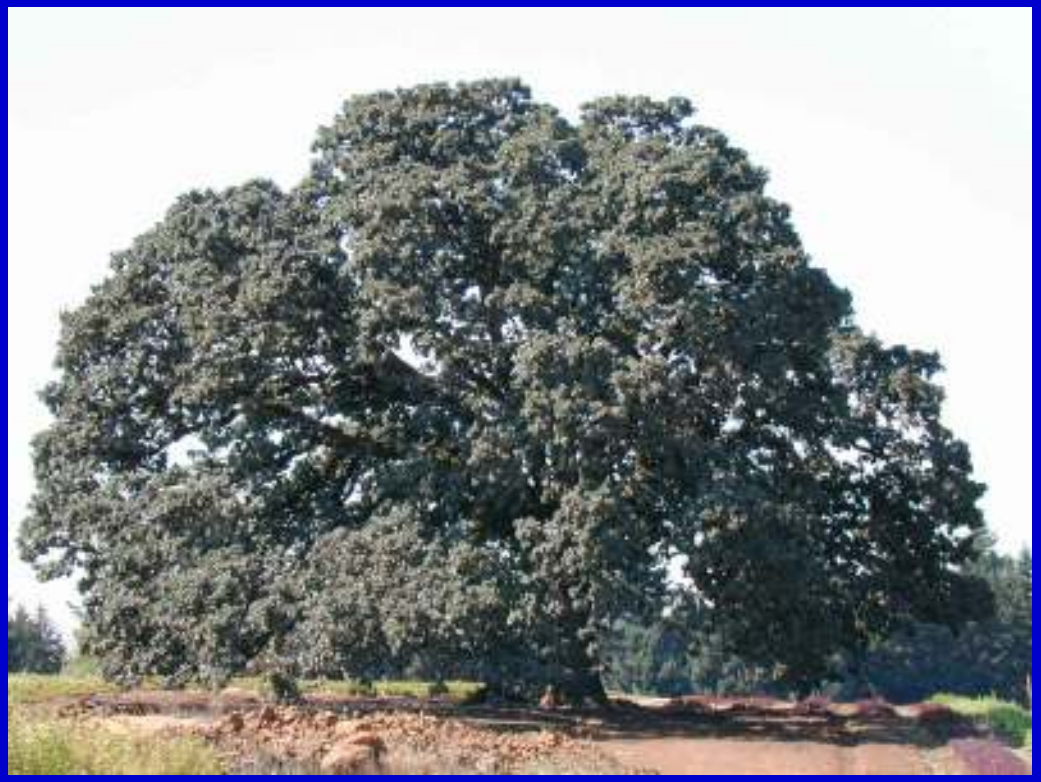
Priority Habitat for Restoration and Conservation

- Oregon Department of Forestry
- The Nature Conservancy of Oregon and Washington
- Bureau of Land Management
- US Fish and Wildlife and ODFW
- Natural Resource Conservation Service
- Natural Heritage Advisory Council
- Cities of Eugene and Corvallis
- Lane and Benton Counties
- The Governors Office

Private Landowner Help

- Publications/Videos
  - Restoring Rare Native Habitats in the Willamette Valley (*by Bruce H. Campbell*)
  - A Landowner's Guide for Restoring and Managing Oregon White Oak Habitats and Companion Video *(book by David Vesely and Gabe Tucker, video by Flora and Fauna Video Production)*
  - Conservation Strategies for Landbirds of Western Oregon and Washington (*by Bob Altman*)
- Programs/Grants
  - Land Owners Incentive Program (ODFW)
  - Partners for Fish and Wildlife Program (USFW)
  - Conservation Reserve Program (NRCS)
  - Private Stewardship Grant (USFW)
  - Nation Fish and Wildlife Foundation

Oak Restoration

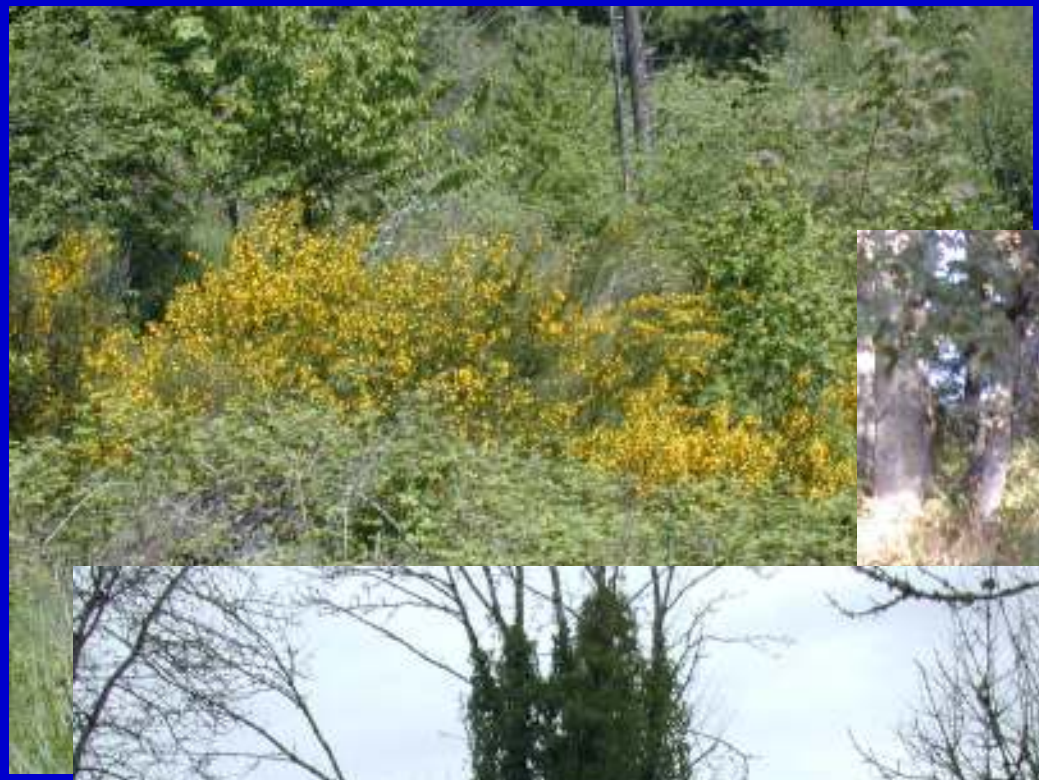


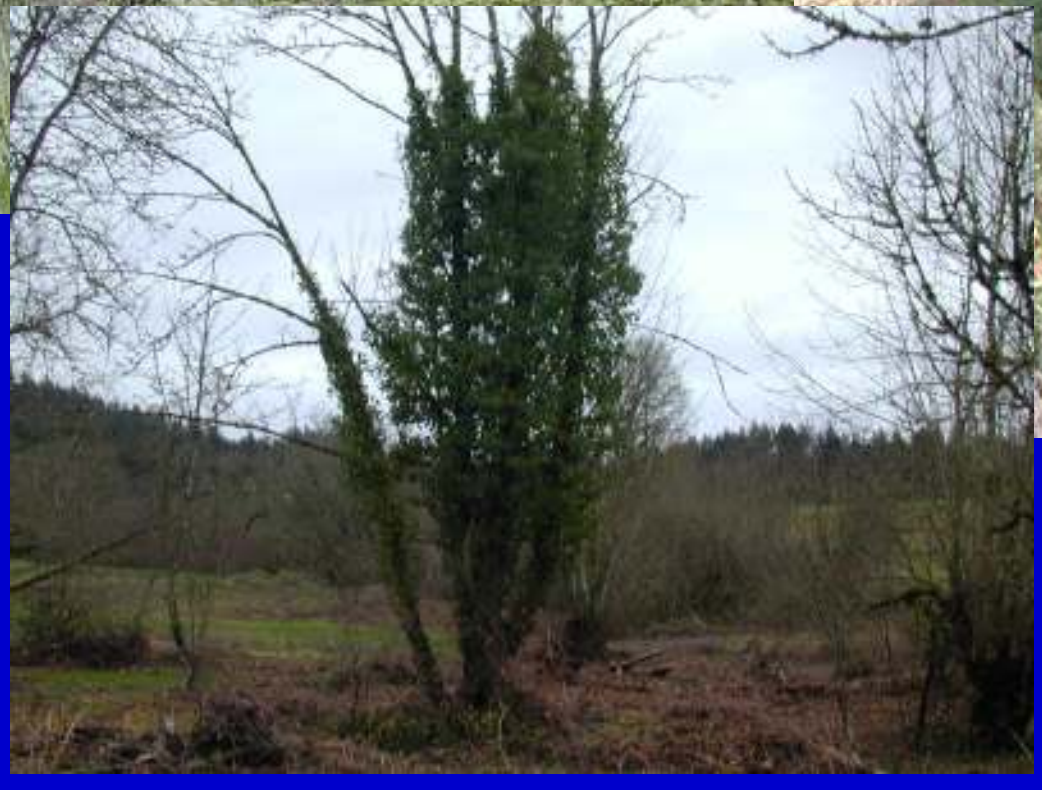
Typical starting conditions and associated problems

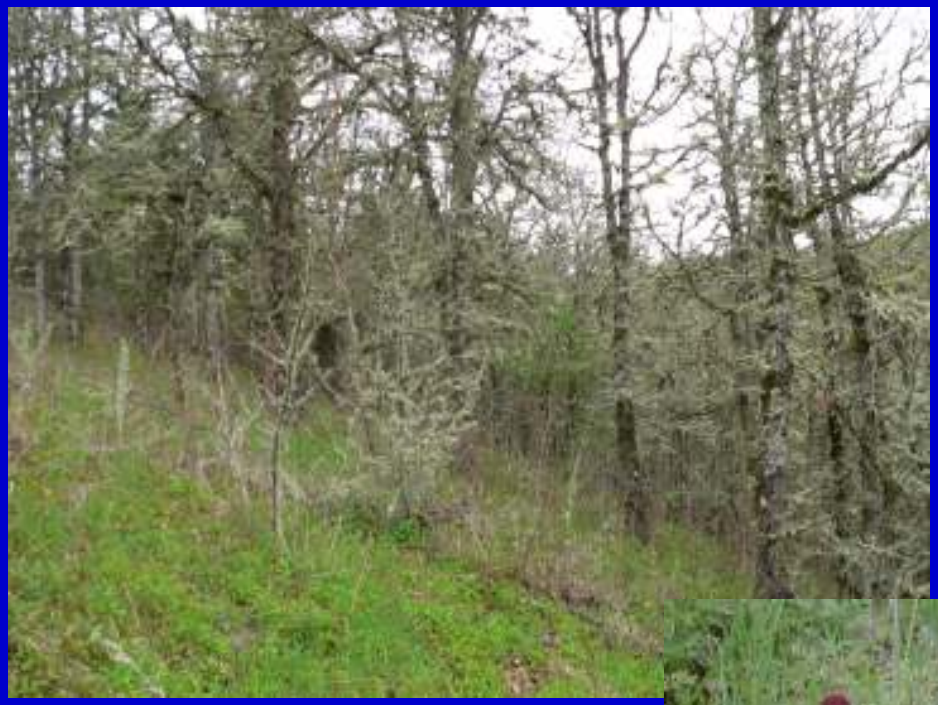
Dense oak with overtopping conifer

Young dense oak

Invasive Species



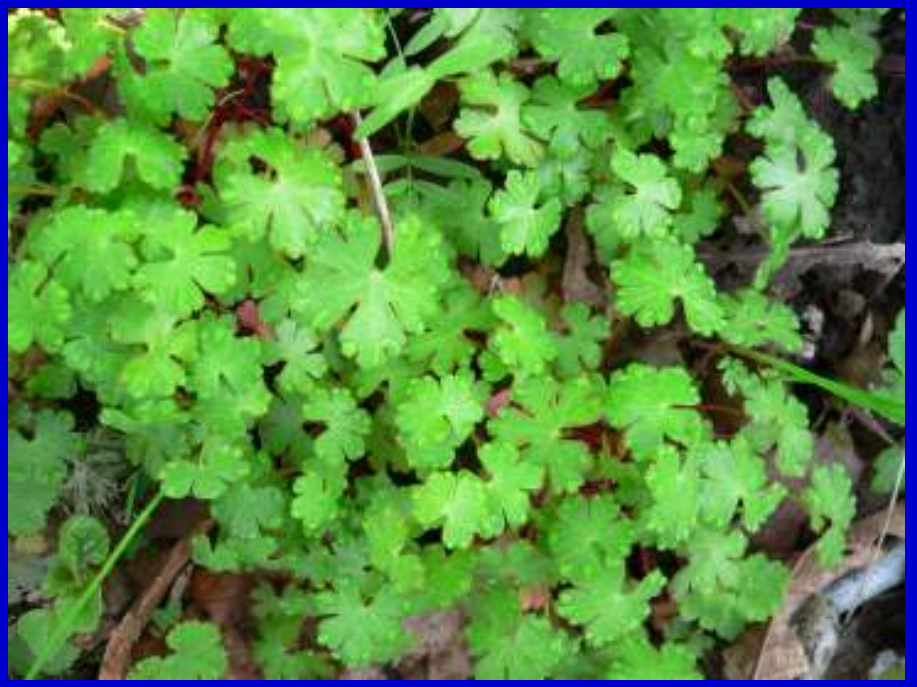




Dense shade **reduces** grasses and sun-loving native wildflowers

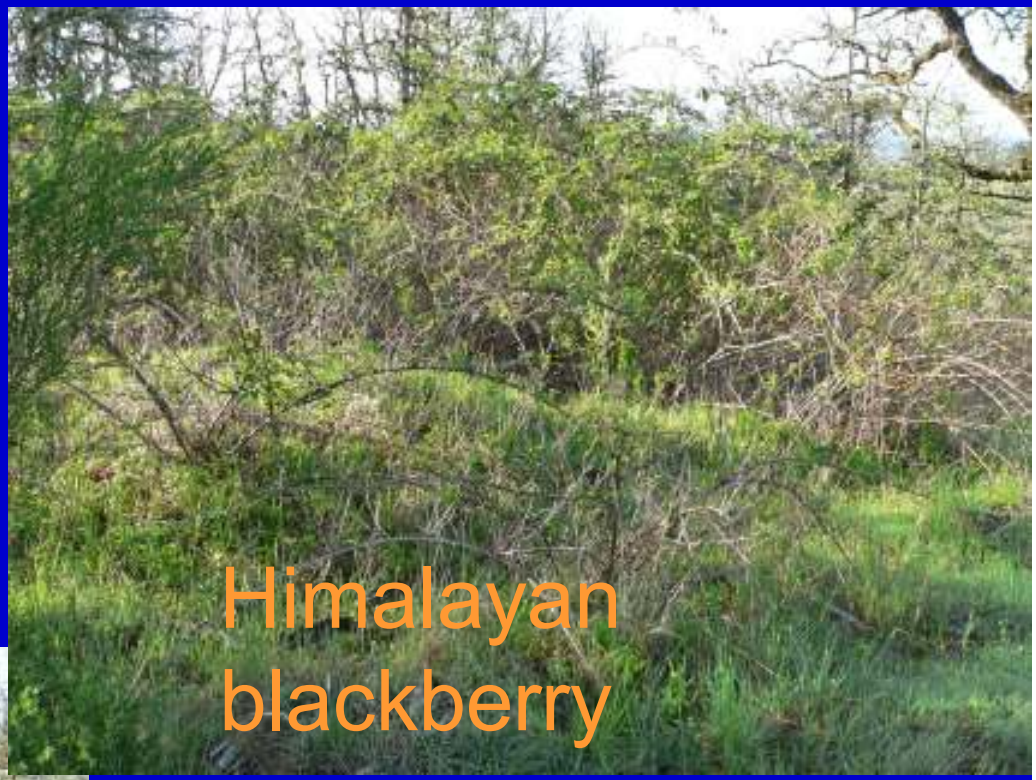
English ivy

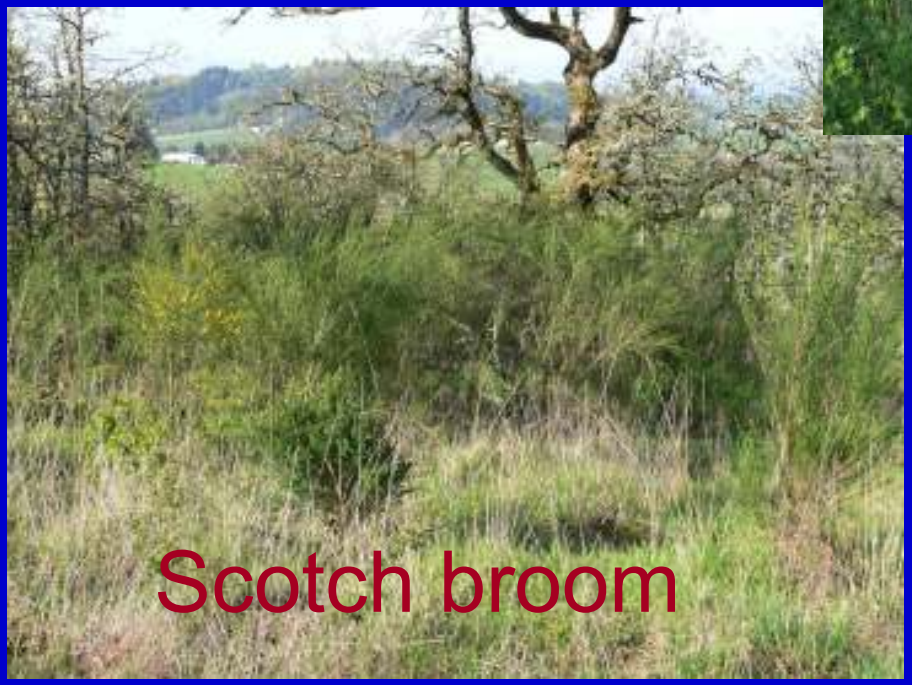
Shining cranesbill



Dense shade **<u>increases</u>** shade-tolerant invasive species

Disturbance **increases** invasive shrubs and forbs





Restoration Toolbox

Tree removal and thinning

Hand cutting

THIN OAK

Machine yarding

REMOVE/ SNAG CONIFER

Restoration Toolbox
Tree removal and thinning

- CAT 277 Skid Steer
  - Rotary mower
  - Hydraulic Tree Sheer (with spray attachment)
  - Grapple forks
- Takeuchi TL 150
  - Rotary mower
  - Grapple bucket

Treating cut oak stumps is crucial!

Restoration Toolbox

Invasive Control

Mowing

Spraying

Lopping

Oak Density

Savanna density –

3 to 5 stems/acre
(<30% tree cover)

Give them room to stretch their limbs!

Oak Density

Before

Woodland density –

30-50 stems/acre (30-60% tree cover)

Increase light to understory

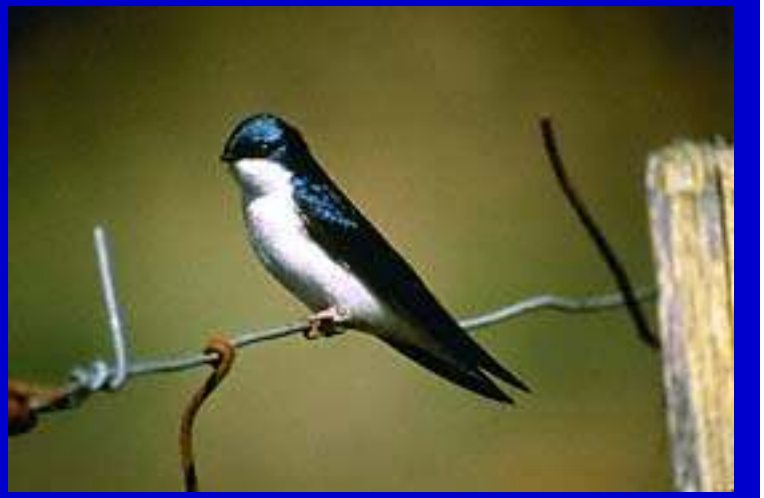
After

Screech owl

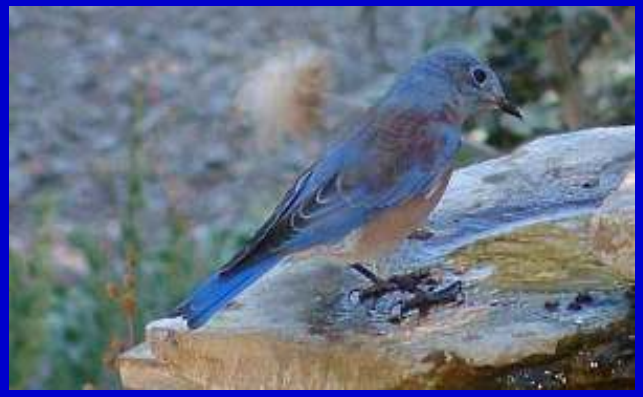
Install
nest
boxes

American
kestrel

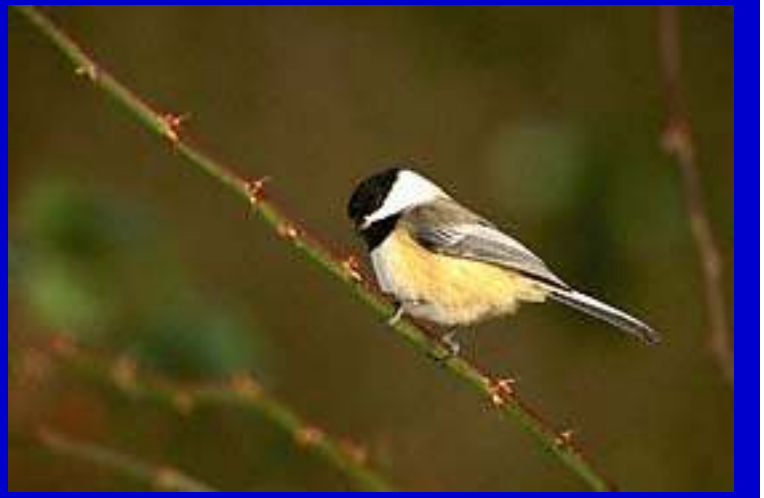
White breasted nuthatch



Tree swallow



Western bluebird



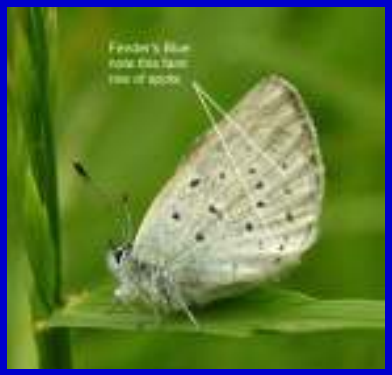
Black-capped chickadee

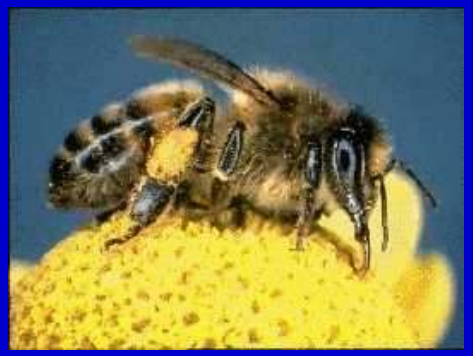
Oak Restoration Costs

based on contractor costs and caps set by NRCS

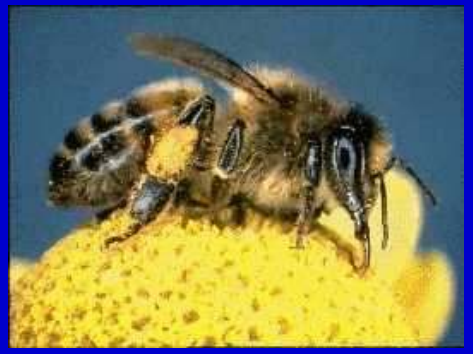
- Brush work $350-550/ac
- Brush and tree work low tree density $900-$1,400/ac
- Brush and tree work high tree density $1,400-$2,000/ac
- Mowing $150/ac

Grassland Restoration


Fender's Blue
note the faint
row of spots




Fender's Blue
male has faint
row of spots



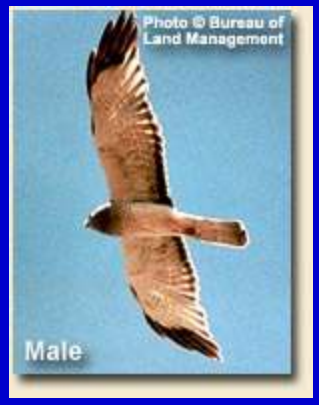
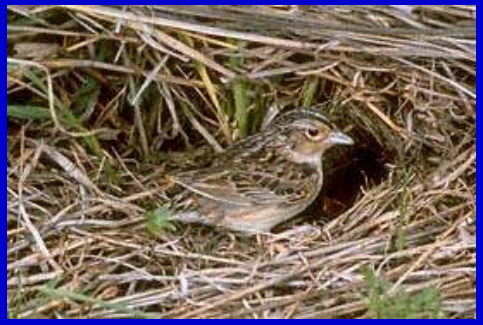


Photo © Bureau of
Land Management
Male




U.S. Fish and Wildlife

Grassland Restoration

Choice 1

Augmentation/Enhancement

Preparation -
Burning best

If you can’t burn - mow

Soil exposure crucial!!!

Seeding Methods

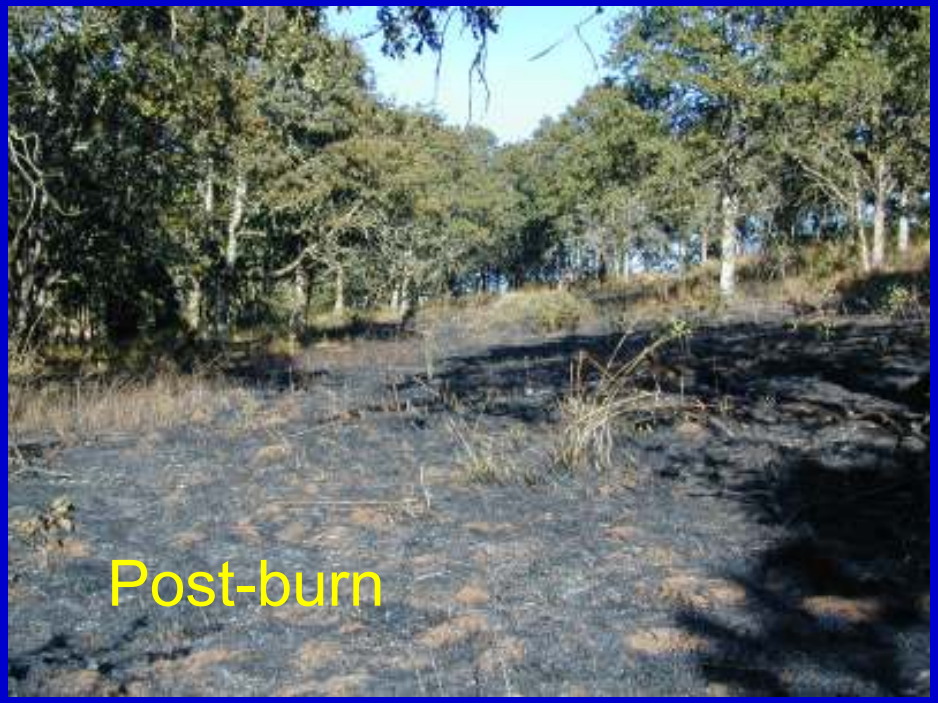
No-till drill

By hand

Spinner spreader

Vermiculite good cutting agent

Native Introduction



Plug planting

Drill seed

fall and early winter germinants only

Broadcasted seed

Grassland Restoration

Choice 2

Start from Scratch

Preparation – 1 to 2 seasons glyphosate

Why Herbicide?
Natives are teeny tiny!!!

winter germinants

spring germinant

Grow very slowly - so need low/no competition

Late winter early spring germinants

Seeding Options

Know your enemies – bad grass? bad broadleaves? both?

- Agricultural (crop) Fields
  - Native grass only; chemical broadleaf control; burn/mow and seed native forbs
- Old Fields and Pastures
  - Native forbs only; chemical grass control; burn/mow and seed native grasses

Summer Year One

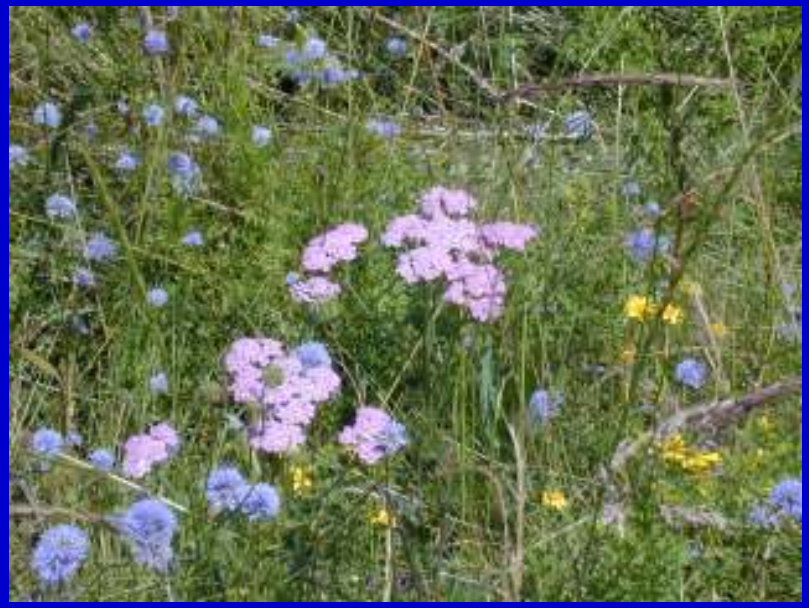
annuals show their stuff!!

perennials small statured

Summer Year Two

many perennials show their stuff!

some, 3-5 years to flower



Follow-up = Success

The non-native species are still in seed bank!

Maintenance

Burn 3-5 year rotation

Mow when don’t/can’t burn

Prairie Restoration Costs

based on contractor costs, caps set by NRCS, and our experience

- Burning Contractor (wild) $60-90/ac
- Burning Agency with Multiple Partners (wild) $700/ac
- Mowing $85-95/hr
- Broadcast spraying (chem, labor, equipment $33-35/ac
- Hand-spraying (labor) $65/hr
- Seed drill $50/ac + $100 mobilization(USFW cost share)
- Invasive control $350/day
- Native seed [grass and forbs] and plugs [$300-$1,120/acre]
  - Grass $8-40/lb
  - Forbs $60-$190/lb
  - Native plugs $1-3/plant

Native Seed Production

75 upland and wetland prairie species in production

www.heritageseedlings.com

Animal Photo Credits

- Screech Owl: Courtesy Western North Carolina Nature Center web site http://wildwnc.org/
- Tree Swallow: © Tim Zurowski
- Black-capped Chickadee: © Tom Vezo
- Western Bluebird: Courtesy Las Pilitas web site http://www.laspilitas.com/wildlife/california_wildlife.html
- Swallowtail Butterfly and Honey Bee: Courtesy University of Florida Best of Bugs web-site http://pests.ifas.ufl.edu/bestbugs/
- Fenders Blue Butterfly: Photos by Bruce Newhouse
- Grasshopper Sparrow: © Alvin E. Staffan
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