

Effective Weed Control Measures in Native Species Restoration Work

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Weeds!



Weeds! Weeds!



Weeds! Weeds! Weeds!



Weeds! Weeds!
Weeds!
Weeds!



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Weeds! Weeds!
Weeds! Weeds!



Your mission, should you decide to accept it....



Is to seek out new plants.....



And new ways of incorporation....



To boldly go



where no pesticide applicator has
gone before



Photos by: US Forest Service

Light peach
= prairie



Dark peach =
oak savanna
(large oaks in
open prairie)

Willamette Valley prairie and declined by over 99% of it's historic range

Willamette Valley Current Vegetation



What is left is degraded with lots of non-native species

In only 150 years we have gone
from this.....☺



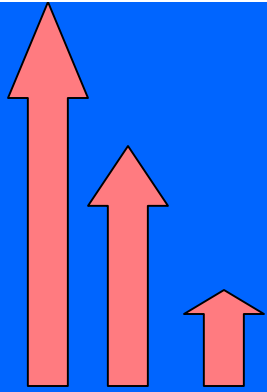
Native camas
and buttercup

To this 😞



Canadian thistle
infestation

UGA1929056

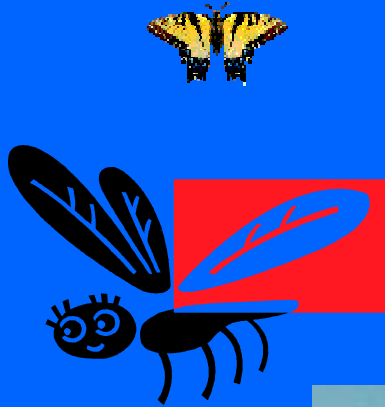


Bird Diversity

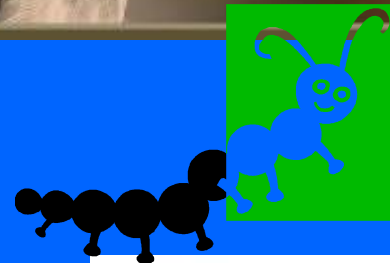
Insect Diversity

Native Plant Diversity

96% of terrestrial birds rear young on insects



U.S. Fish and Wildlife



Preparing and Maintaining a Site for Native Plants and Seed A Prairie Restoration Example

Herbicides are a vital tool in the
Restoration Toolbox

OUTLINE

- Herbicides labeled for restoration and non-crop use
- Starting Condition: pasture and agricultural fields
 - Adaptive management strategies
- Starting Condition: meadow with good native component
- Starting Condition: brush and young oak thinning
- What to plant and where?
 - Resources available

Herbicides listed for CRP and similar programs, wildlife openings, or non-crop land

- General
 - Glyphosate (broad spectrum war horse)
- Broadleaf
 - 2,4-D amine; Latigo (general weeds)
 - Clopyralid (thistles, vetch)
 - Garlon 3A [summer] and 4 [fall] (brush and stumps)
- Grass-specific
 - Poast, Fusilade
- Pre-emergents
 - Plateau , Diuron , Select , Pendulum

Areas with no/low presence of native plants (e.g. pasture/ag fields)

- starting from scratch



a. Burn or mow to improve herbicide contact



b. Broadcast/gun application of *glyphosate* in grassy areas

c. Broadcast/gun application of *Garlon 3A* poison oak and blackberry areas





Oops, missed

2-3 years to reduce
non-natives to allow
native seed to
establish





d. Drilled native
Roemer's fescue
in one area

Germ Nov, so no
more spray
windows ☹️

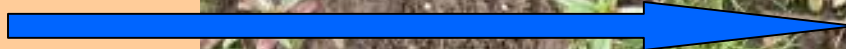
e. Drilled native
California oatgrass in
other area

Germ March,
Feb spray
window 😊





f. Used *2,4-D* to control broadleaf weeds one season



Dense stands of
Native & non-
native grasses


Poor establishment of
forbs in many areas
due to competition
from native and non-
native grasses! ☹️

g. Broadcast
seeded forbs
(wildflowers) in
fall



Adaptive Management

Non-native grass control



1. Fusilade: Post-emergent grass control in Roemer's fescue only

- Burn/mow fall to reduce thatch
- Apply *Fusilade* spring
- Repeat after fall green-up
- Repeat second year if necessary
- Burn and DRILL native forbs

Targets: tall oatgrass, velvet grass, tall fescue (ok), bentgrass (ok), and broadleaved annual grasses

Fusilade trial at Joseph St prairie seeded 2003





Fescue and forbs saying ahhhhh room!

2. Pre&young postemergents: All established grasses

- *Diuron* (upland sites only): farmer's favorite

- *Plateau* (imazapic) Label says safe for restoration use. **WARNING** - trials needed, label may be misleading



Control for 2 years before burning and drilling forbs

Targets: annual grasses such as RATAIL fescue (grrrr), annual rye, medusahead, bromes

3. Weed wiper with glyphosate foam



Worked well!

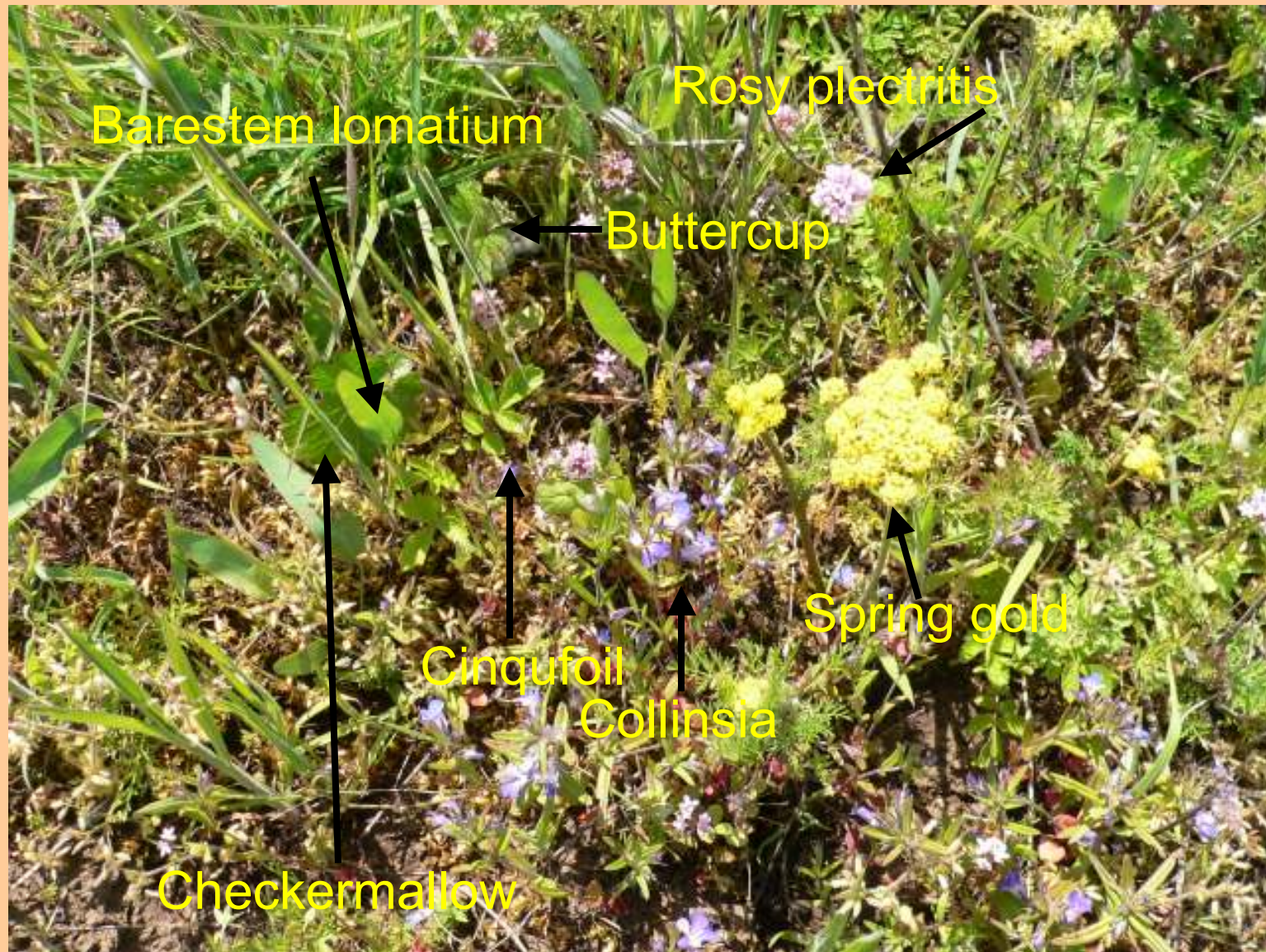


Tall non-natives in shorter natives year 1 or California oatgrass



Target: weak perennial tall oatgrass

Native forbs did best in bare areas
(and so did non-native forbs!)



Take Home Message

Respect the weed seed bank



It may “look” clean but it’s
bigger than you are!

Area just prior to third season of
glyphosate... pretty aint it?



Drilled grasses

**Best so far -
Sow grasses and
forbs after 3
treatment years**

& broadcast
seeded forbs



Every seed has
what it needs –
dirt and low
competition from
weed seed bank

Native annual forbs show off year 1



Areas with medium to high abundance of
native plants

Usually wildflower rich but
with non-native grasses







Treatment Options

- Maintain in current condition using mowing and/or burning to keep in open prairie condition
- Treat non-native grasses with grass-specific herbicide
 - Most native grasses susceptible
 - As site opens up – beware of non-native forb species increasing! – know what is on/around your site!
- Burn site and use glyphosate at green up if you know natives are dormant or green up later
 - Be careful, many natives do not go fall dormant
- Spot-spray invasive forbs with clopyralid or glyphosate
- Re-seed/plant with native grasses and forbs

Oak and Brush Treatment



Young oak and
brush choke
grassland habitat





I eat small oak (up to 9 inch at ground level) for lunch



I eat brush (yum)



CAT 277 Skid Steer

- Rotary mower
- Hydraulic Tree Sheer (with stump spray attachment)
- Grapple forks

Treatment Options

- Cut hardwood stumps & spray with a 25% sol of Garlon 3A within 20 min or a 50% concentration of glyphosate
Blackberry – mow, survey for natives, no chem option – mow 2-3x/year multiple years; if chem chosen: glyphosate in October (1%), repeat multiple years [WARNING – it kills grass too which makes other weeds]; or Garlon 3A (warm weather) or 4 (cool weather)
- Poison oak – cut from trees with linoleum scraper or saw & treat cut base. Shrubs use 2,4-D or Garlon 3A when leaves still green, or Glyphosate 2-5% in July

Treatment Options

- English hawthorn - mow &, if can, spray stumps with Garlon 3A or keep mowing/burning; treat small shrubs with 5% glyphosate w/extra surfactant mid-late summer
- Scotch broom - mow (does not resprout) or if chem chosen use Garlon 3A/4 or 5-10% glyphosate + surfactant when in early flower; warning – seed viable for a long, long time
- English ivy – cut from trees with bow saw & if chem chosen, apply 100% glyphosate to cut end & use 2% 2,4-D for plants on ground; if no chem, shovel/pull and pile onto plastic (do not leave on ground!)

What to Plant?

- Native plants do best since they evolved in the area & require lower input of water and pesticides once established
- Non-native plants, if put into natural settings, can often become invasive (too many unknowns)
- Non-native plants OK in landscapes but make sure they are not invasive
- Match the plant to the habitat/landscape setting
- Use plants rather than seed if site still has established vegetation or want a neat & tidy look
- Use seed if site is clean of existing vegetation and much of seed bank

Natives vs. Invasive Non-natives

- When a site becomes disturbed, make sure to occupy the site ASAP with native material if in a natural setting (or weeds will)
- Few species will compete with non-native shrub species – these must be controlled through mechanical/chemical means
 - Do replace with native shrub species when under control!
- Once established, some species will be able to compete well with some non-natives
- Prairie species evolved with fire so some sort of disturbance is required to allow them to persist on a site – however, this can also enhance non-native species composition
- You can NEVER just plant and walk away!

UPLAND PRAIRIE

Well drained sites
Drought tolerant species year round



A photograph of a wetland prairie landscape. The foreground is dominated by green grasses and small purple flowers. In the middle ground, there is a dense line of purple flowers. The background features a line of trees and a clear sky. A blue banner with white text is overlaid on the top right of the image.

WETLAND PRAIRIE

Poorly drained sites in winter, bone-dry
summer

Wet feet → drought tolerant species

A photograph of a riparian area. A stream flows through the center, surrounded by dense vegetation. On the left bank, many young trees are protected by blue plastic sleeves. The scene is framed by a thick orange border.

RIPARIAN

Never well-drained, seasonally flooded,
next to water bodies

Wet footed species only



FOREST

Varying degrees of light
Mixed tree, understory and ground cover
species

Site Clean of Weed
Seed Bank:
all species suited to
the habitat can be
used



Example: Park landscape
near native woodland:
weeds removed, mulched
heavily, planted and then
overseeded with annuals
year 2





Site not so clean: use species that...



1) germinate in fall/winter



2) Spread from root stock



3) flower the first year & reseed well



Best Competitors in Prairie Habitat

Perennial forbs

- Yarrow
- Buttercup
- Oregon sunshine
- Self-heal
- Riverside lupine
- Goldenrod

Grasses

- Slender wheatgrass
- Blue wildrye
- California brome (weedy though)
- Tufted hairgrass
- Spiked bentgrass

Annual forbs

- Large-flowered collomia
- Farewell to spring
- Western burnet
- Blue gilia
- Spanish clover
- Tarweed sp
- Rosy plectritis

Oregon sunshine and Self-heal go toe-to-toe
with white clover in restored meadow



Resources to Guide Plant Choices

- GardenSmart Oregon
 - A guide to *non-invasive* native and non-native plants
- Roadside Revegetation
 - Comprehensive guide to establishing native plants on roadsides – a MUST read!!!
- PlantNative.org
 - Comprehensive list of regional vendors of seed and plants
- Plants of the Pacific Northwest Coast
 - Awesome field guide (user friendly)
- Wetland Plants of Oregon and Washington
 - Good resource for plants of different hydrological needs

Native Seed Production at HSI





THANK
YOU!

?????'s