Rabbitbrush and Selected Brush Species

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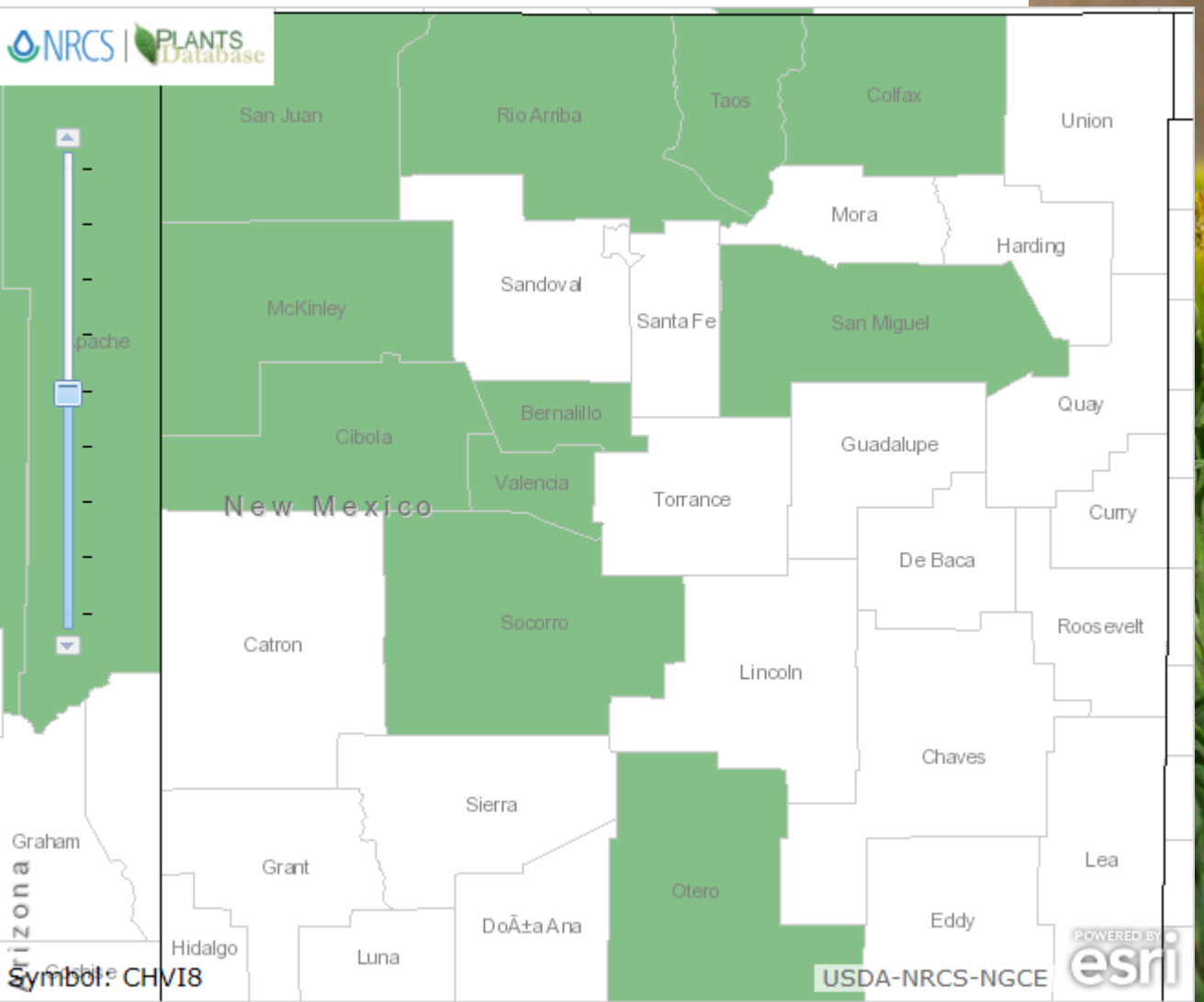
Green Rabbitbrush

- or - Douglas Rabbitbrush

(*Chrysothamnus viscidiflorus)*



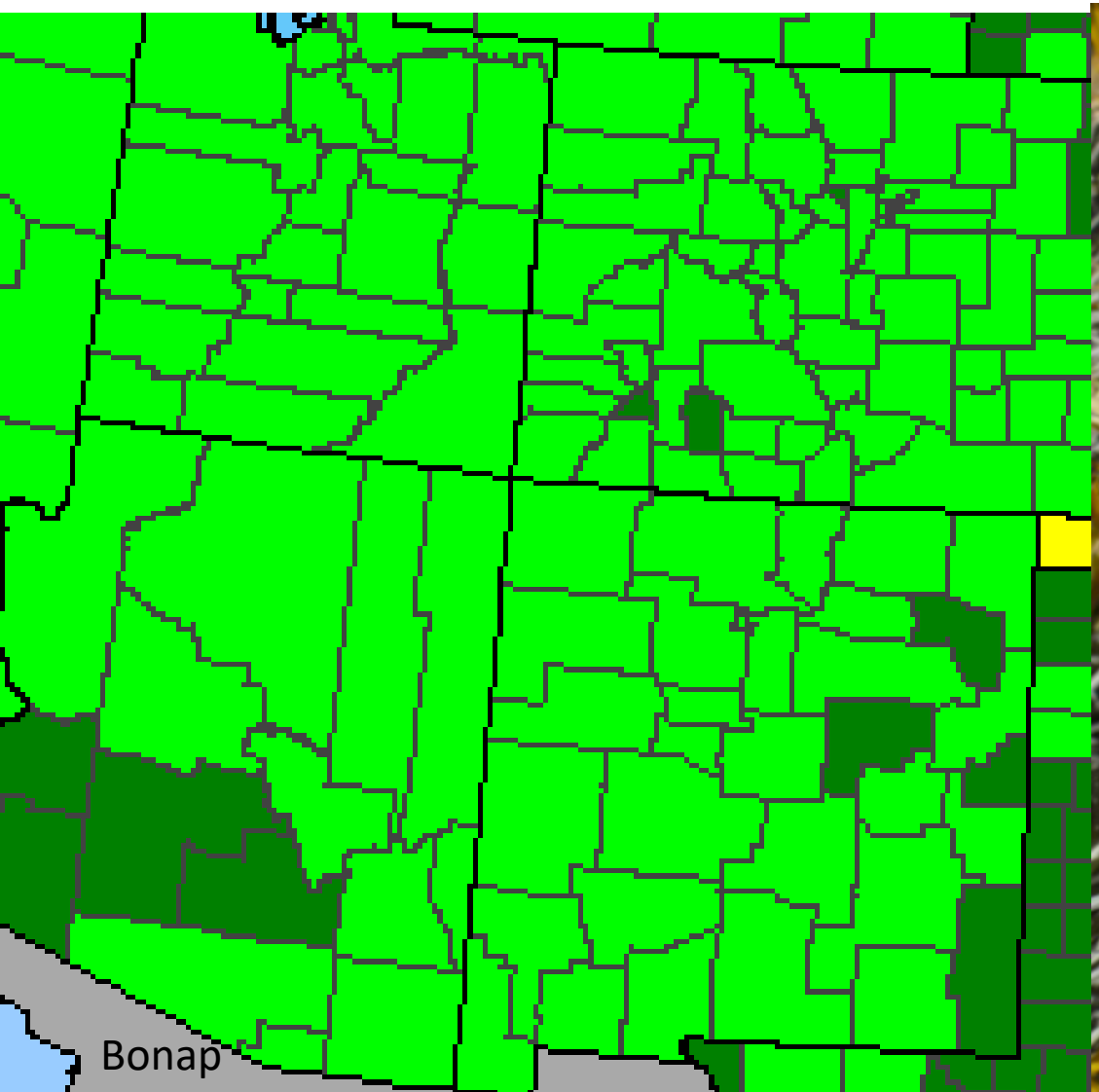
Seinet, Max Licher

Green Rabbitbrush

- Several species and subspecies
- Usually taller than grey rubber rabbitbrush
- Leaves not covered by felt-like layer of hairs
- Some upper leaves twist
- Base of flower clusters appear sticky

Grey or Rubber Rabbitbrush

(*Chrysothamnus nauseosus* or *Ericameria nauseosa*)



Grey Rubber Rabbitbrush

- Several species and subspecies
- Often shorter than green rabbitbrush
- Leaves covered with short felt-like layer of hairs

Grey Rubber Seinet, Max Licher

Green Rabbitbrush
Grey Rubber Rabbitbrush

- Deep taproot with some lateral roots
- Reproduce by
  - Seed
  - Vegetatively at base of stems or root crown
- Germinate in open areas
  - When moisture and temperature are good (spring or fall)
- Seed viability in the soil <3 years

Rabbitbrush

- The Bad
  - Can be invasive in disturbed or overused areas
  - Competes with more desirable plants for resources
  - Hard to control (resprouter)
  - Very little forage value to livestock (may be slightly toxic)

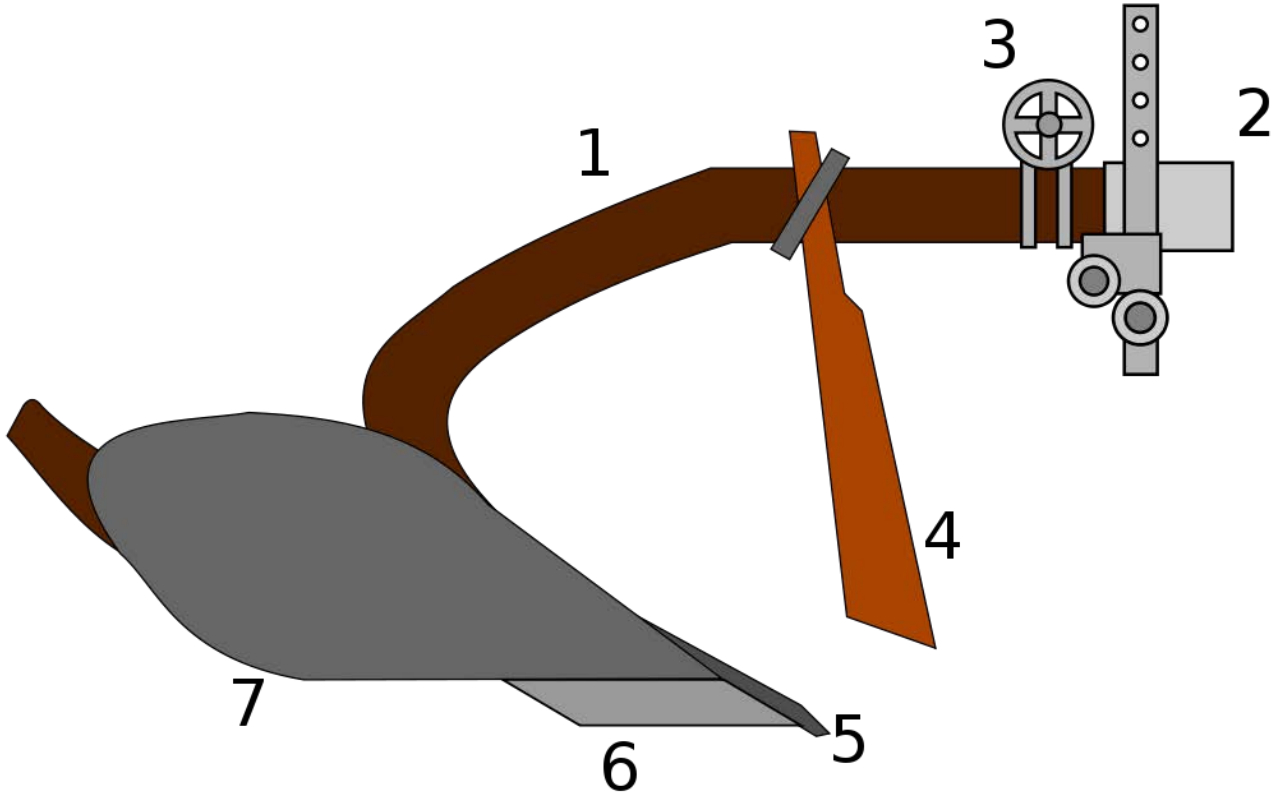
- The Good
  - Not highly invasive
  - Provides some browse for rabbits, pronghorn, deer, and elk (e.g., winter)
  - Planted for land rehabilitation after disturbance
    - Early colonizer following disturbance
    - Provides erosion control and soil stabilization
    - May improve growing conditions for other desirable plants

Rabbitbrush Dominance Prevention

- Limit disturbance
- Vigorous growth of desired plants
  - Example – sagebrush may outcompete rabbitbrush over long time periods without fire or severe disturbance

Rabbitbrush Control

- Mechanical or Fire
  - Not effective
    - Discing
    - Fire
    - Resprout from root crowns
  - Effective in deep soils with few rocks
    - Deep plowing



Rabbitbrush Chemical Application Method

- Green rabbitbrush
  - Individual plant treatments work
  - More studies are needed for broadcast application methods
    - Need to further evaluate herbicides, rates, timing, etc… over a wider range of conditions

Rabbitbrush Chemical Application Method

- Grey rubber rabbitbrush
  - Individual plant treatments work
  - Broadcast treatments work

Rabbitbrush Chemical Control Application Timing

- Fall - Best Time
  - Late September through October
  - Adjust timing for elevation induced weather patterns
  - After above-normal summer rain
    - Plants have to be in good condition
  - Before frost
  - During late to post-flower growth stage

Rabbitbrush Chemical Control Application Timing

- Fall herbicides
  - Picloram
  - Picloram + Fluroxypyr

Rabbitbrush Chemical Control Application Timing

- Spring
  - Late April through May
  - Adjust timing for elevation induced weather patterns
  - After above-normal winter rain
    - Plants have to be in good condition
    - Abundant leader (twig) and leaf growth
      - 2.5 – 4 inches of new growth

Rabbitbrush Chemical Control Application Timing

- Spring herbicides
  - Picloram + 2,4-D
  - Clopyralid + 2,4-D

Rabbitbrush Chemical Control
Individual plant treatments

- Other Herbicides for Grey Rubber and Green Rabbitbrush
  - Aminocyclopyrachlor + Mesulfuron
    - Can damage grass
    - Industrial, rights-of-way,
    - Non-crop, Non-agricultural, Non-grazing
  - Hexazinone
    - Soil applied
    - Kills grass
    - Application timing - Most times of year
      - Best just before summer rains
      - Not when soil is frozen

Broom Snakeweed (*Gutierrezia sarothrae*) / (*Xanthocephalum sarothrae*) Identification

www.wildflower.org Lady Bird Johnson UofTX; USU extension.usu.edu

- Native, perennial sub-shrub
- Live 3-10 years
- Height: 1-3 feet
- Stems: many, slender, flexible, green-brown, hairy-smooth
  - Stems die in winter but roots continue living
- Leaves: threadlike, alternate, folded, margins entire, resinous glands on leaves, slightly sticky
- Deep taproot with several shallow, lateral roots

Patrick Alexander swbiodiversity.org

Broom Snakeweed Identification

- Flowers
  - Small, yellow clusters in fall
  - Lower leaves may drop by flowering
- Reproduction
  - Seed
    - Wind dispersed
  - 15,000 seeds / plant / year
  - Potential for high germination rates
    - When spring moisture and temperatures are conducive
  - Potential for high seedling mortality
    - 25-100% seedling mortality in 1st year
- Resprouts weakly after disturbance like fire

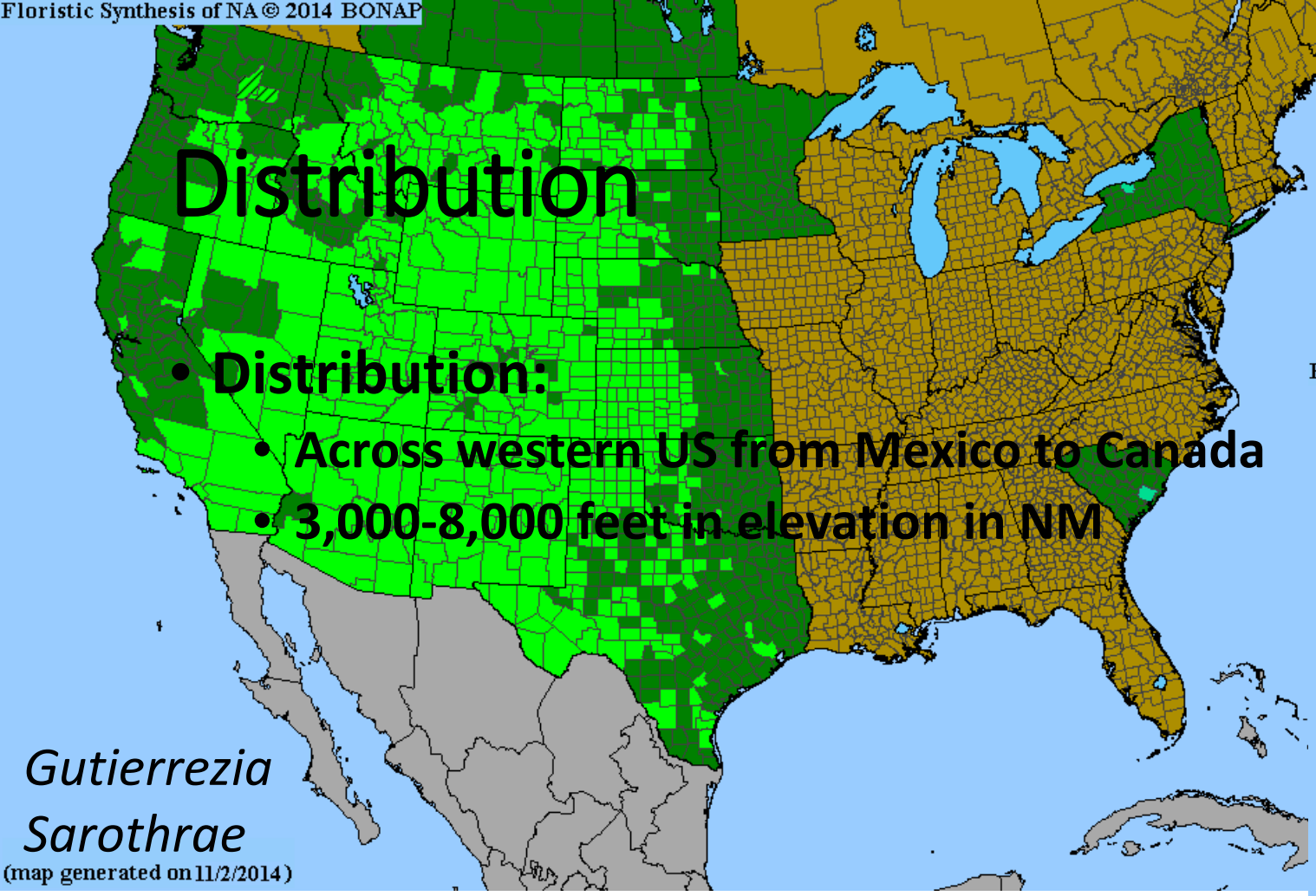
Max Licher swbiodiversity.org

Two major snakeweed species

- Snakeweeds
  - Turpentine weed
  - Rockweed
  - Matchweed
  - Yellow top
- *Gutierrezia sarothrae*
  - 3-8 disc flowers
  - 3-8 ray flowers
- *Gutierrezia microcephala*
  - 1-3 disk flowers
  - 1-3 ray flowers
  - Threadleaf snakeweed
  - Little-head snakeweed

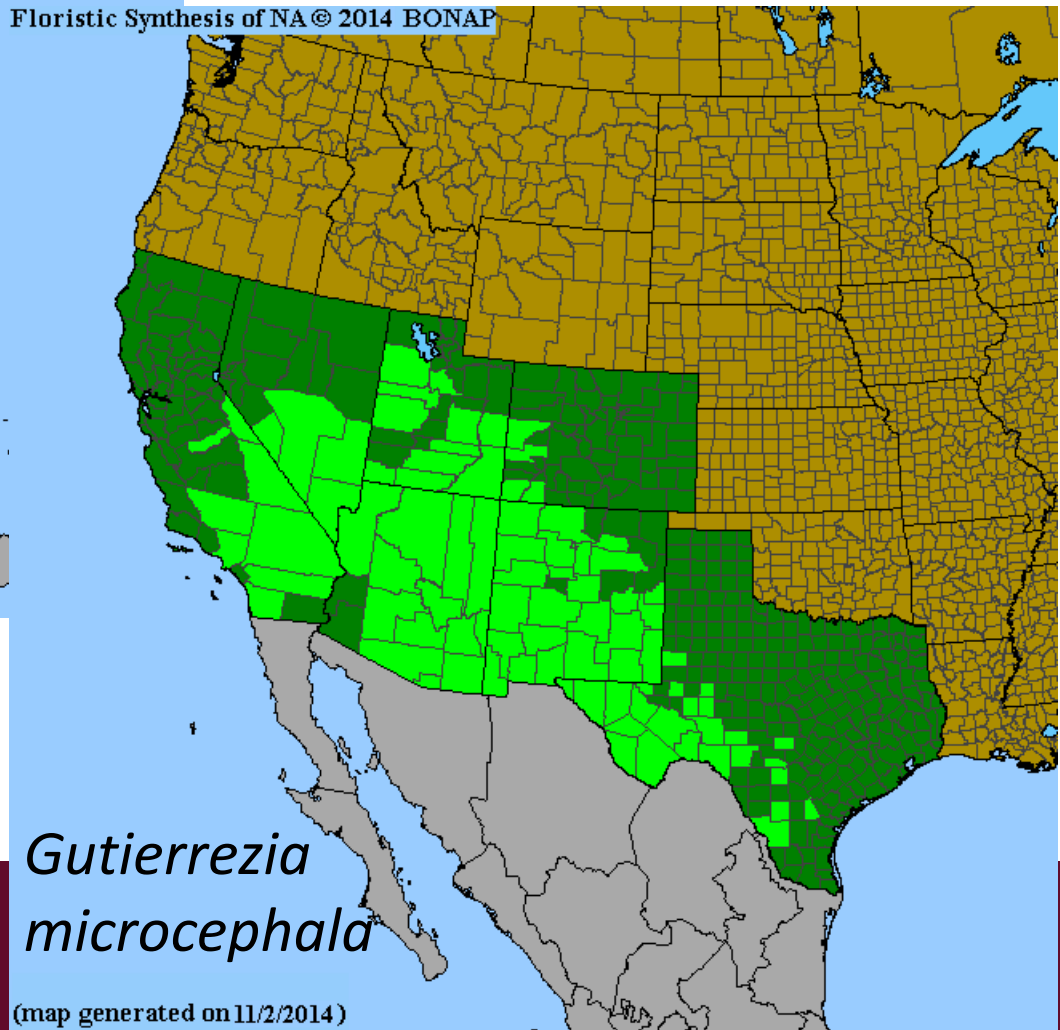
Distribution

- **Distribution:**
  - **Across western US from Mexico to Canada**
  - **3,000-8,000 feet in elevation in NM**



Gutierrezia Sarothrae

www.wildflower.org
Lady Bird Johnson
UofTX; USU
extension.usu.edu



Gutierrezia microcephala

Broom Snakeweed Ecological

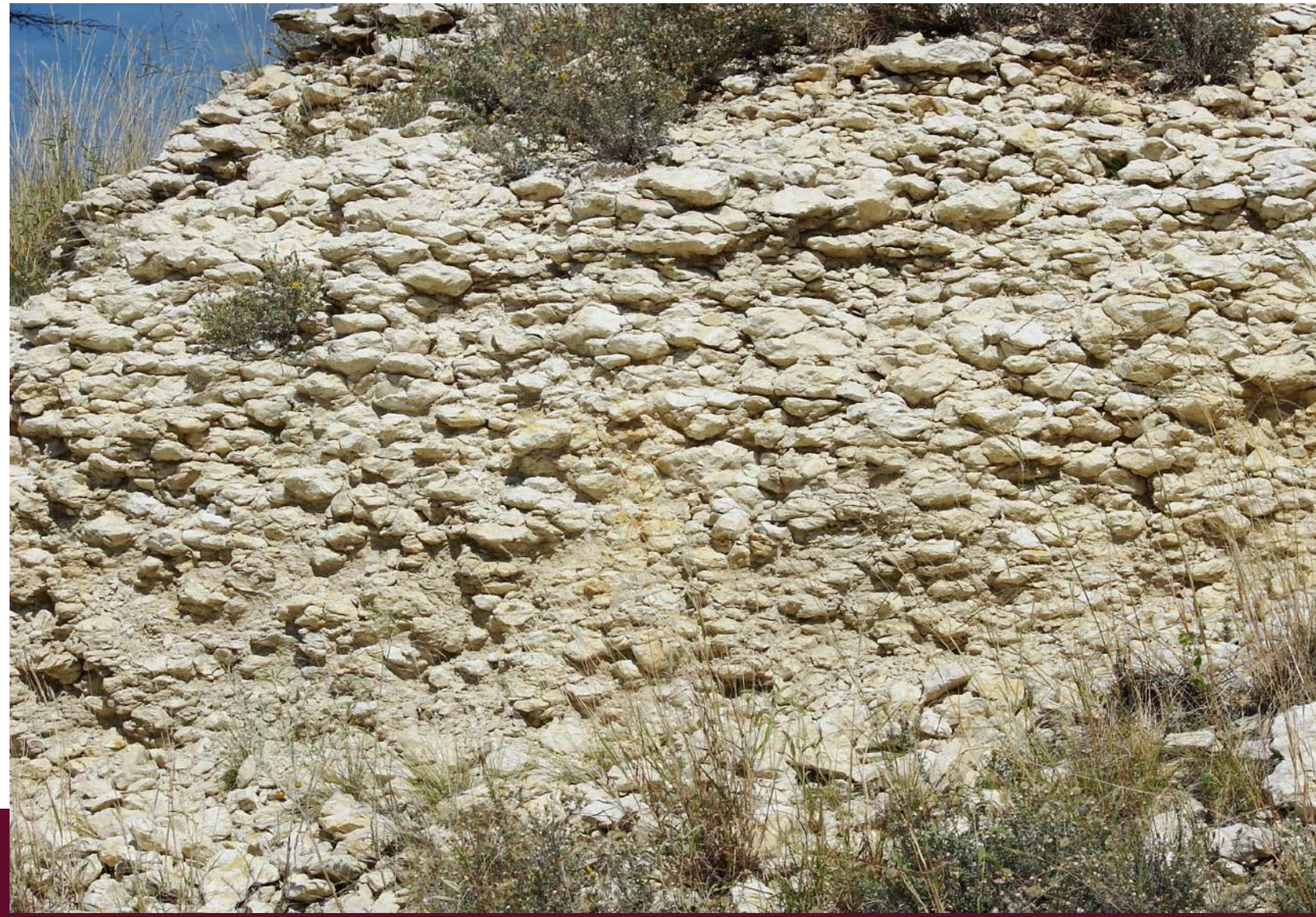
- Thick stands often indicate
  - Rangeland degradation
  - Disturbance
- Invaded or increased density on
  - Millions of acres in NM
  - Common to have 100,000 snakeweed plants per acre
  - Reduces grass / forage
  - Possibly allelopathic

Broom Snakeweed Ecological

- Some causes of increase
  - Long-term climate
  - Short-term weather patterns
  - Reduced fire frequency
    - When fire was part of the historic system
  - Soil disturbance
  - Reduced plant competition for resources
    - Over grazing of herbaceous plant species
    - Increased availability of soil water, nutrients, and sunlight

Broom Snakeweed Ecological

- Variable
  - Taxonomic characteristics
- Adaptable
  - To a wide range of changing environmental conditions
- Grows very well on
  - Western plateaus
  - Dry plains and slopes of deserts
- Soils
  - Shallow soil over caliche or limestone



Herbicides

- **Picloram**
  - **0.25-0.375 lbs of liquid picloram / acre**
- **Dicamba**
  - **0.75 lbs of dicamba**
  - **0.25 lbs of picloram + 0.25 lbs of dicamba**
- **Can add 2,4-D to control additional invasive plant species**
- **Treatment longevity varies**
  - **2 or more treatments over 5-10 are required for long-term suppression**

Herbicides

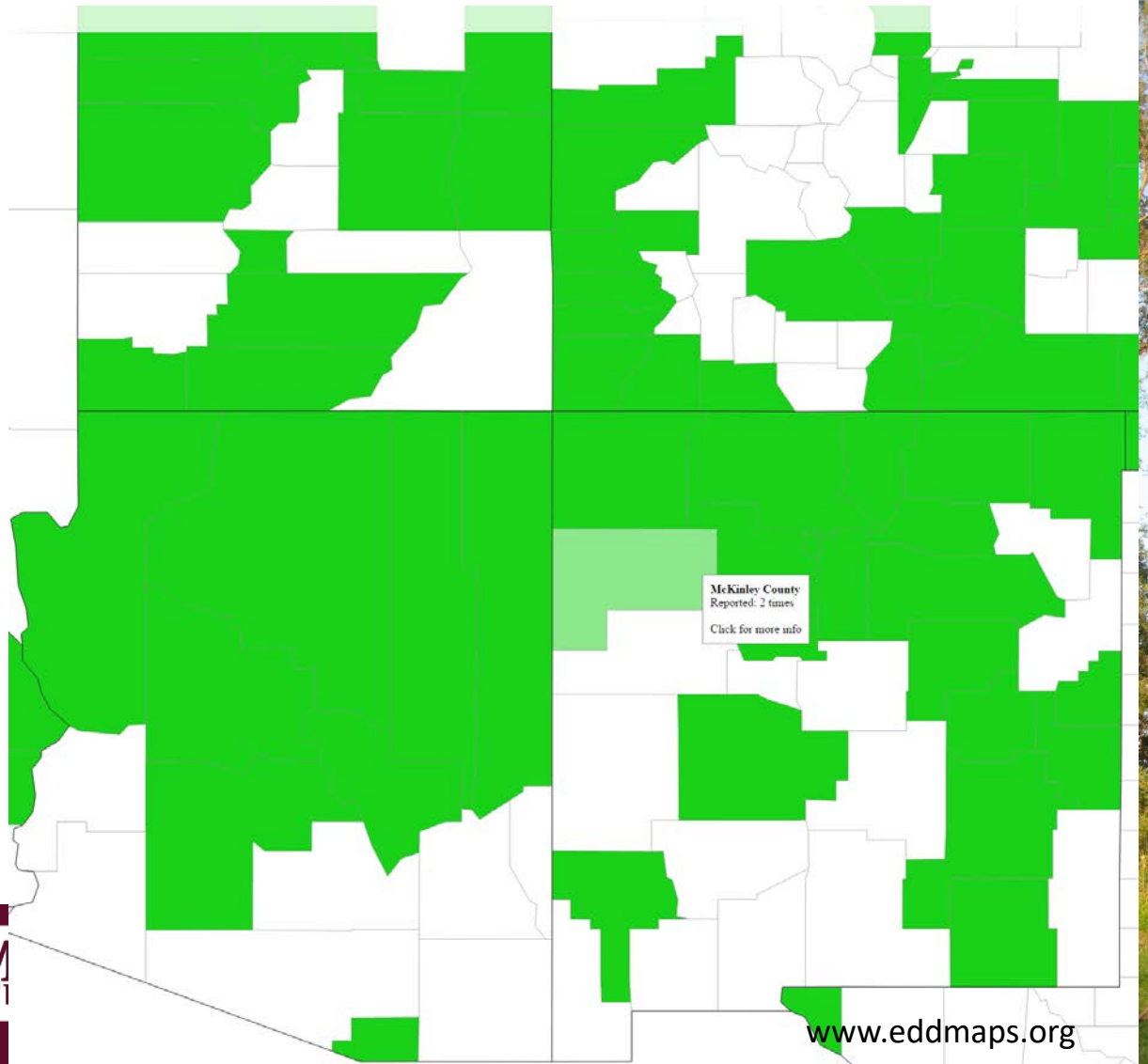
- **Ground broadcast spray (boom sprayers)**
  - **20 gallons / acre of total spray solution**
- **Aerial broadcast spray**
  - **2-4 gallons / acres of total spray solution**
- **Tebuthiuron granular**
  - **3.75-5 lbs of pellets / ac**
  - **Timing less critical but ideal just before rainy season**
  - **Only use on coarse soils (a lot of clay reduces herbicide activity)**

Snakeweed
When to Spray

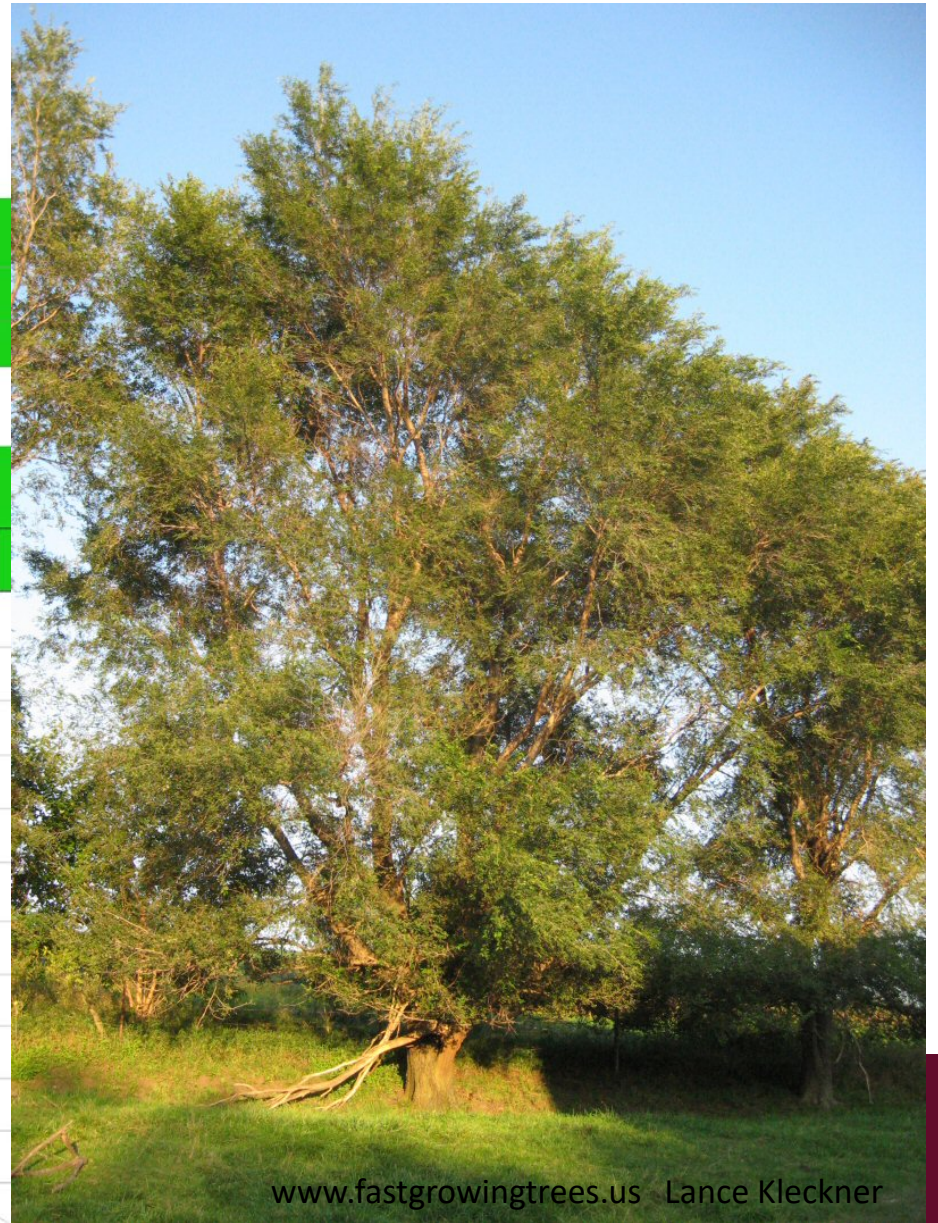
- Plant condition and growth stage
  - Above average precipitation
  - Good condition
    - Not stressed
    - Not damaged
  - Fall
    - Sept-Nov Herbicides
  - If plant is drought stressed or damaged
    - Wait until next year to spray

Siberian elm (Chinese elm, Asiatic elm, Dwarf elm, Manchurian elm)

Ulmus pumila



www.eddmaps.org



www.fastgrowingtrees.us Lance Kleckner

Siberian Elm, *Ulmus pumila*

- Non-native
- Perennial tree
- Disturbed areas
- Flowers
  - Small without petals
  - February – April , before leaves
- Seeds
  - Primary form of spread and reproduction
  - Smooth, circular single seeds
  - Highly germinable
  - Wind spread
  - April - May

Gary Fewless www.uwgb.edu

phytoimages.siu.edu

Siberian Elm

- Leaves
  - Deciduous, alternate
  - Leaf margins serrate to entire
- Trunk
  - Rough, grey to brown
- Root crown
  - Resprouter

Siberian Elm
Ulmus pumila

- Introduced 1860
  - For its hardiness, fast growth
  - Wide range of growing conditions
  - Dry to moist settings
  - Droughts and cold winters
- Why control?
  - Out compete desirable plants
  - Thick stands shade out shade-intolerant species
  - Decrease species diversity

Siberian Elm - Girdling

- Remove bark and phloem layer
  - 1-2 yrs to die
  - If girdle too deeply or cut off
    - Root resprouting
- Timing
  - Depends on reference source
    - Late winter, early spring during sap rise
    - Late spring to mid-summer
    - Summer if applying herbicide
  - Diffuse porous species are less susceptible to girdling

Wranglerstar youtube


M. H. Shour, ISU Extension

Siberian Elm

- Seedlings
  - Pull by hand
  - Shovel
  - Weed wrench

Kevin Kelly

TNC Global Invasive Species Team page

www.eclecticdesignchoices.blogspot.com

Siberian Elm

- Seedlings
  - < few years old
  - Fire

Hearth.com

Siberian Elm

- Combination approach
  - Cut
  - Stump grind - deep

Siberian Elm

- Combination approach
  - Cut + Herbicide
  - Hack + Herbicide
  - Girdle + Herbicide
  - Apply herbicide within a few minutes

greenshootsnews.wordpress.com

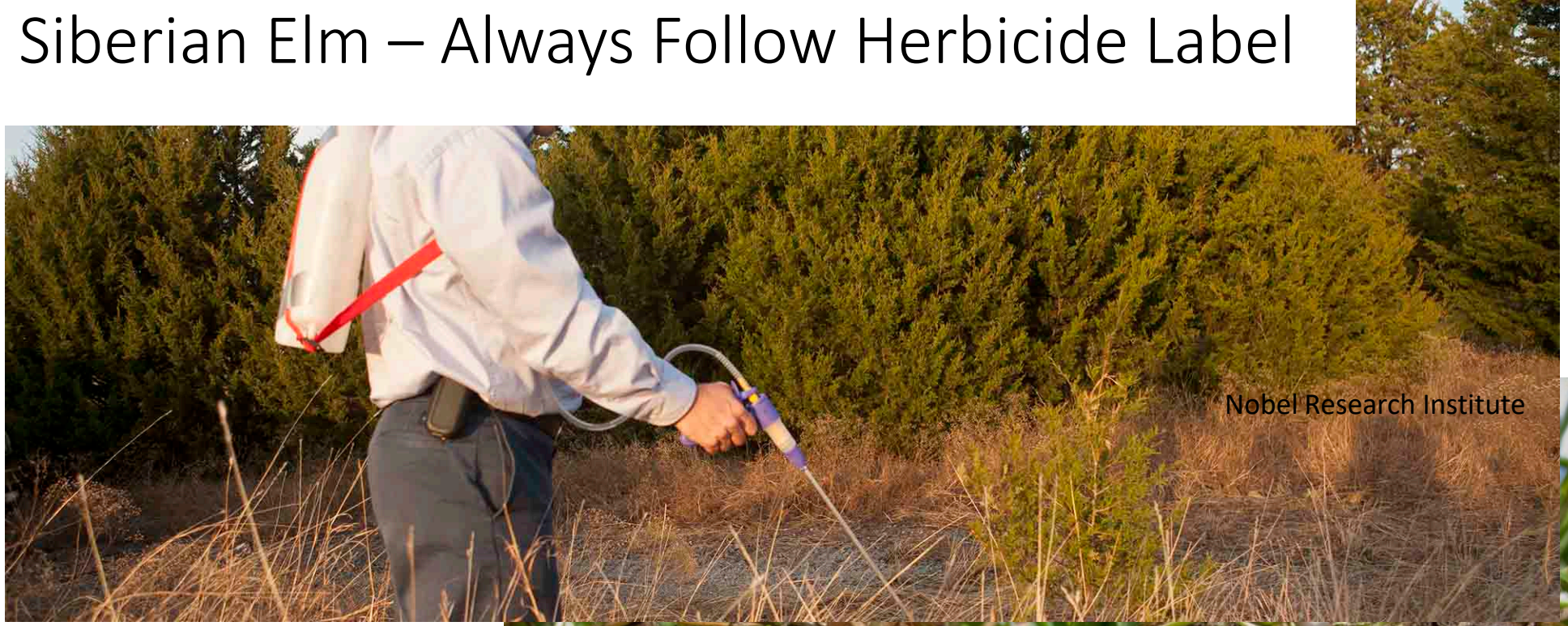
Andy Carmack, Missouri Depart Conservation

Siberian Elm – Always Follow Herbicide Label

- Herbicides on this slide
- Foliar application - <6 feet tall
- Cut stump
- Timing
  - Summer – early fall
  - Active growth
  - Fully leafed before fall color change

- Triclopyr
  - Basal bark – < 8 feet tall, < 3 inch trunk diameter
  - Girdle
  - Stem injection
- Glyphosate
  - Girdle
- Imazapyr
  - Basal bark – < 8 feet tall, < 3 inch trunk diameter
- Aminocyclopyrachlor + imazapyr + metsulfuron methyl

Siberian Elm – Always Follow Herbicide Label

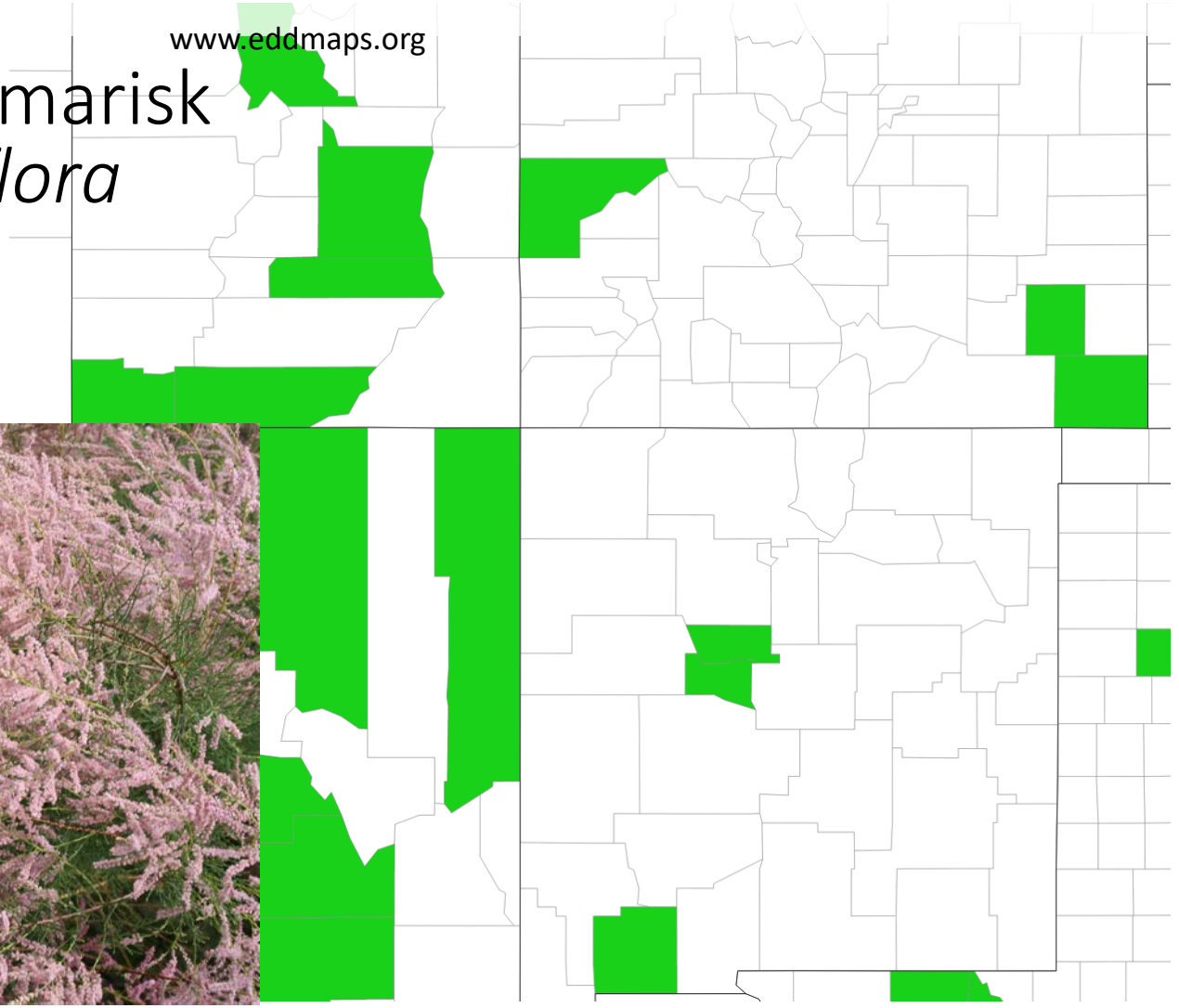


- Hexazinone
  - Soil applied
  - Spring

Saltcedar
Tamarix chinensis
Tamarix ramosissima


Wikipedia Jerzy Opioła

Smallflower tamarisk
Tamarix parviflora



Oregon State University Clinton Shock

Salt Cedar (*Tamarisk* spp.)

- Non-native, perennial shrubs
- Leaves
  - Deciduous, scalelike, salt-secreting glands
- Flowers
  - 4 petals, 4 sepals
- Capsule fruit
- Reproduction
  - Seeds
    - Rapid germination
  - Spreading roots
    - Resprouting

Saltcedar

- Reduce native vegetation
- Degrade wildlife habitat
- Reduce wildlife population numbers
  - Although used by a few species like southwestern willow flycather
- Increased flooding potential
- Increased wildfire potential

www.malag.aes.oregonstate.edu

www.columbia.edu

Saltcedar

- Exudes salt from leaves
- Increases salt concentration on top of soil
- A large tamarisk tree can transpire 11-16 gal of water per day
- Dense stands have high transpiration rates
  - Dense stands estimated to use about 1 meter of water per year
- Seeds
  - Float on water
  - Spread during high water

www.malag.aes.oregonstate.edu

www.columbia.edu

Salt Cedar

- Seedlings
  - Pull by hand
  - Shovel
  - Weed wrench

www.eclecticdesignchoices.blogspot.com

Shrub or Small Tree Popping

www.alamobrushcontrol.com

Mechanical – Root Popper

Browne Bros Inc.

Mechanical –Mastication

www.fieldandstream.com

Mechanical – Root Rake

Browne Bros Inc.

Browne Bros Inc.

Mechanical - Excavator

San Angelo & West Texas Brush Control Services
http://freshpasture.netbrush-control

Mechanical - Excavat

Browne Bros Inc.

Mechanical versus Herbicide

- Better forage production
  - After herbicide treatment than after grubbing treatment

TX A&M Ext Harts-Sendero-trial

San Angelo and West TX Brush Control Services

Salt Cedar

- Seedlings
  - < few years old
  - Fire

Hearth.com

Saltcedar control

- Biological control
  - 4 species of saltcedar beetles in NM
  - Goats

www.abqjournal.com by Dean Hanson

Salt Cedar

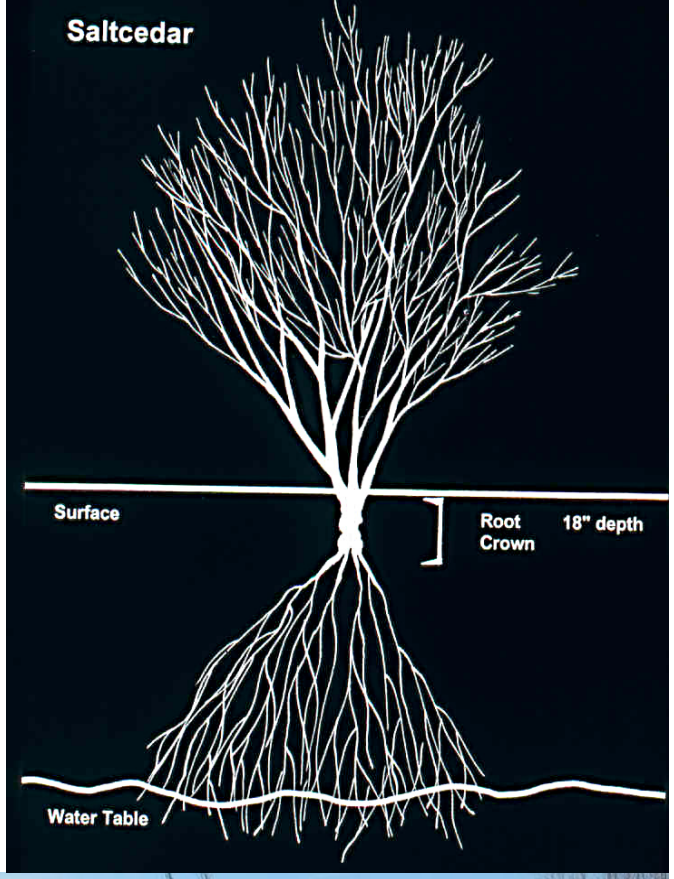
- Combination approach
  - Cut + Herbicide
  - Hack + Herbicide
  - Girdle + Herbicide
  - Apply herbicide within a few minutes


greenshootsnews.wordpress.com


Andy Carmack, Missouri Depart Conservation

Saltcedar control

- Foliar herbicide
  - Imazapyr w/ or w/out glyphosate
  - Aug – Sept
  - 60-80 F, 65-90% humidity, 2-7 mph wind
  - High volume of spray solution required
  - Thorough coverage of foliage required
- Stump or base of stem
  - Anytime appropriate weather
  - Summer recommended in Texas
  - Triclopyr (e.g., Garlon 3A)
  - Imazapyr



College of Agricultural, Consumer and Environmental Sciences

Max Licher

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ences is an engine for economic and community development through academic, research, and Extension programs.

Green
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