

Minimizing the threat of *Tamarix* spp. invasion in South Dakota

Michelle Ohrtman, Sharon Clay, and Sandy Smart
South Dakota State University



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Tamarix spp. (saltcedar, tamarisk)

- Introduced to South Dakota in mid 1900's from Eurasia
 - erosion control
 - ornamental
- Problematic in dense stands
 - High water use
 - Soil salinity
 - Wildfire risk
 - Reduced species diversity
 - Difficult to remove



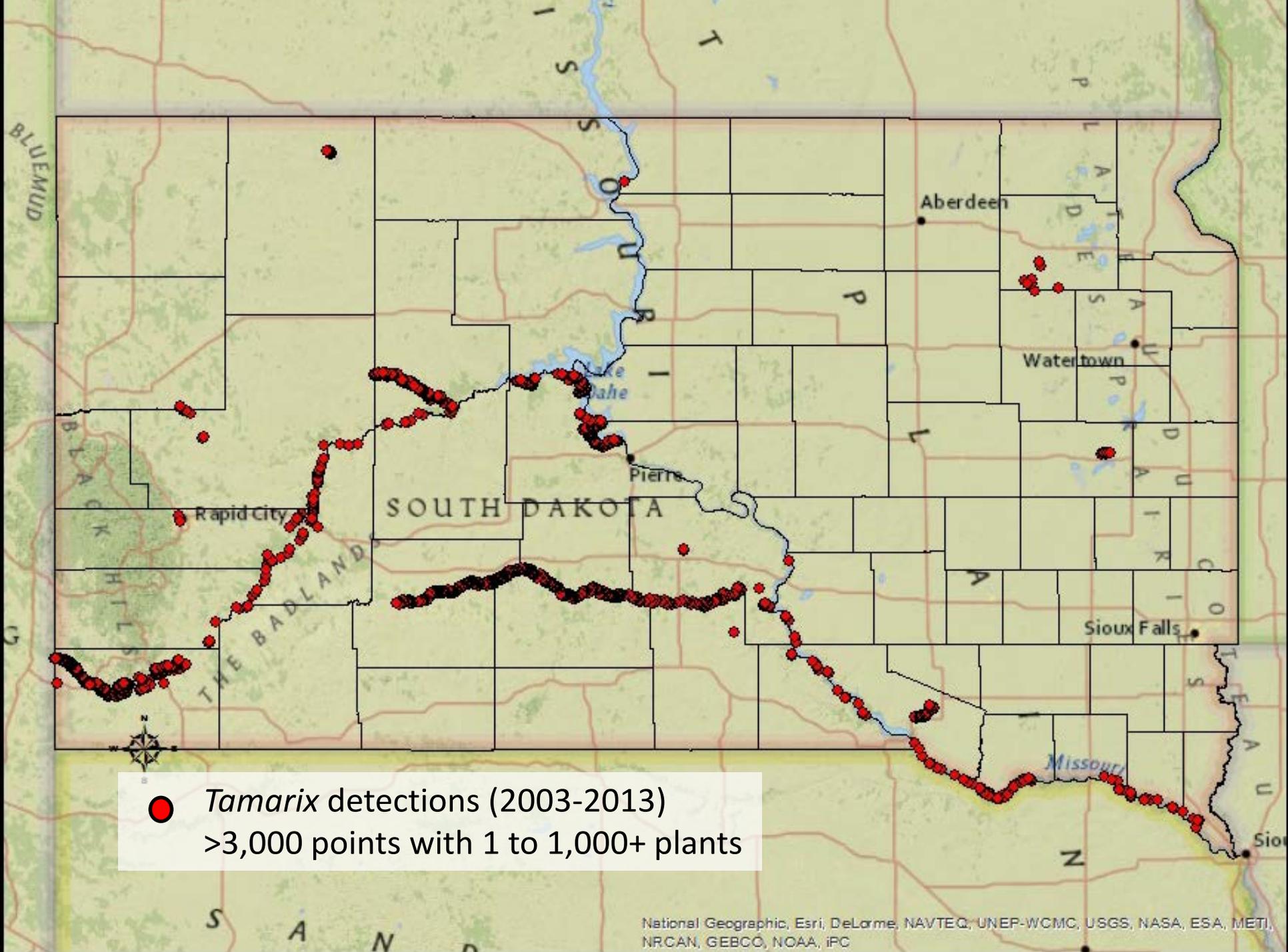






Credit: John Taylor NF&WS



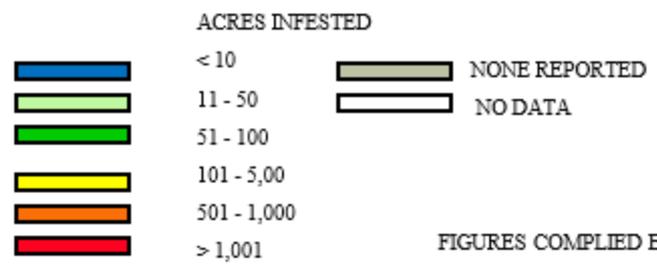
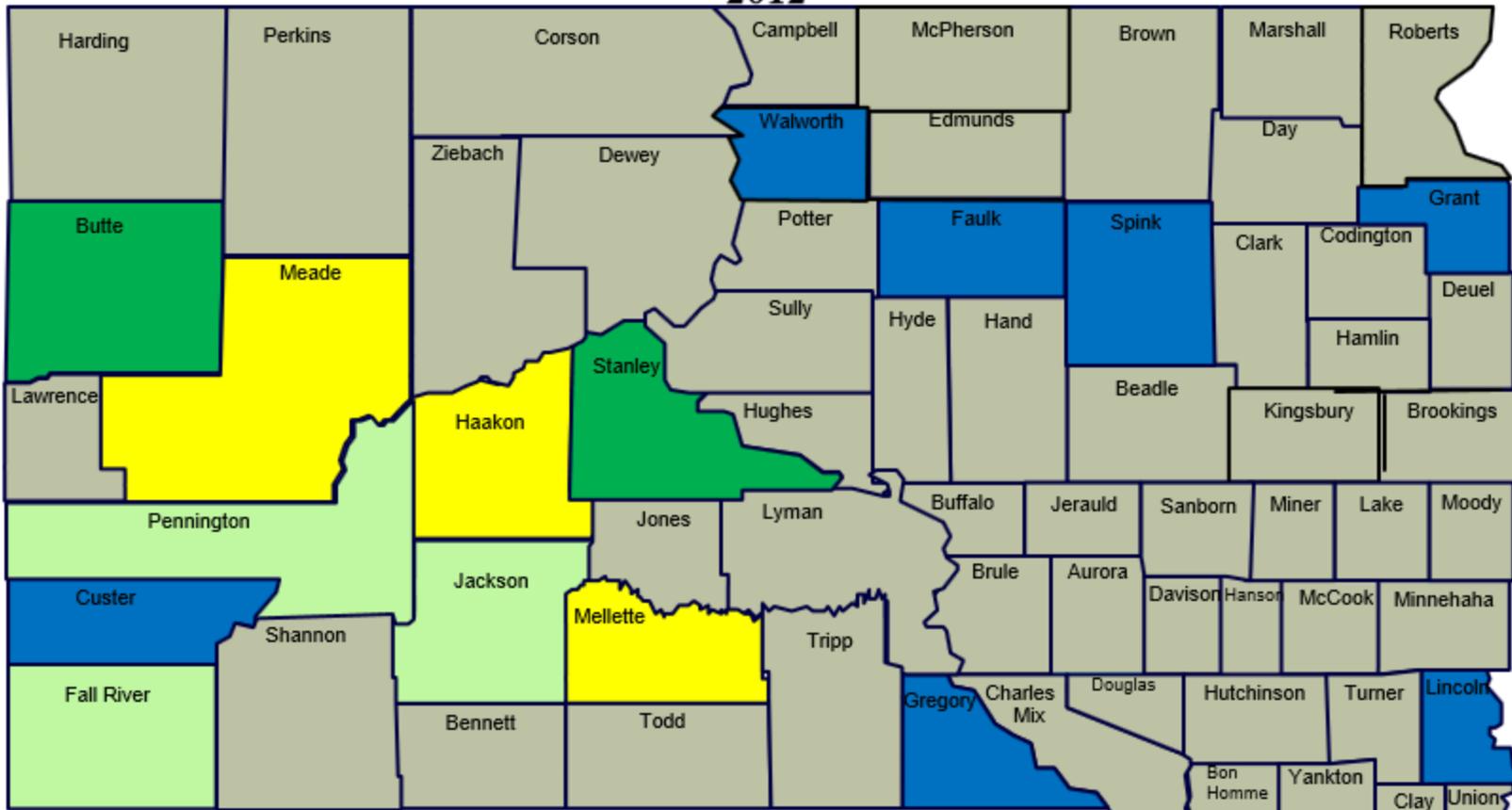


● *Tamarix* detections (2003-2013)
>3,000 points with 1 to 1,000+ plants

SOUTH DAKOTA

SALT CEDAR DISTRIBUTION

2012

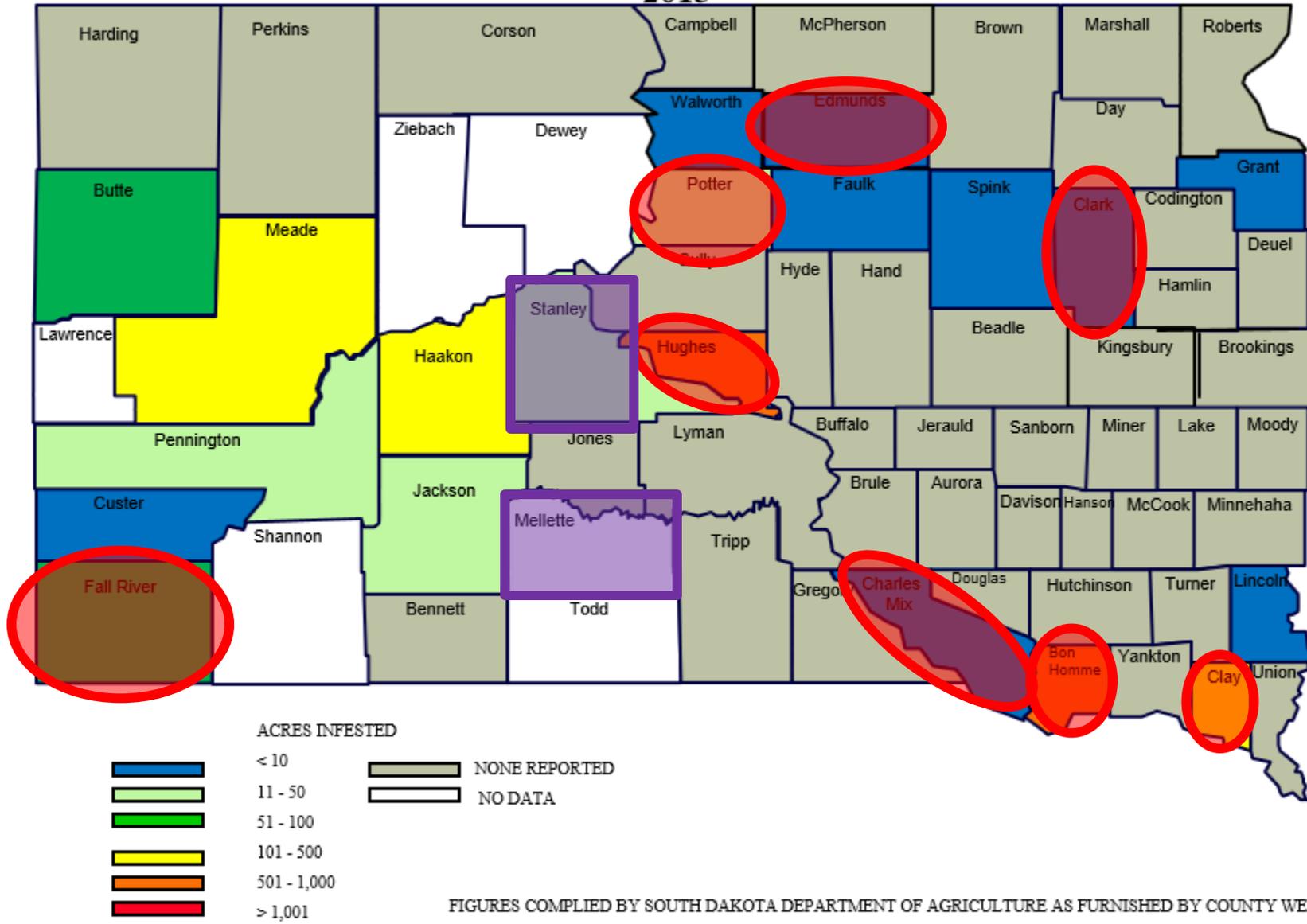


FIGURES COMPILED BY SOUTH DAKOTA DEPARTMENT OF AGRICULTURE AS FURNISHED BY COUNTY WEED BOARDS

SOUTH DAKOTA

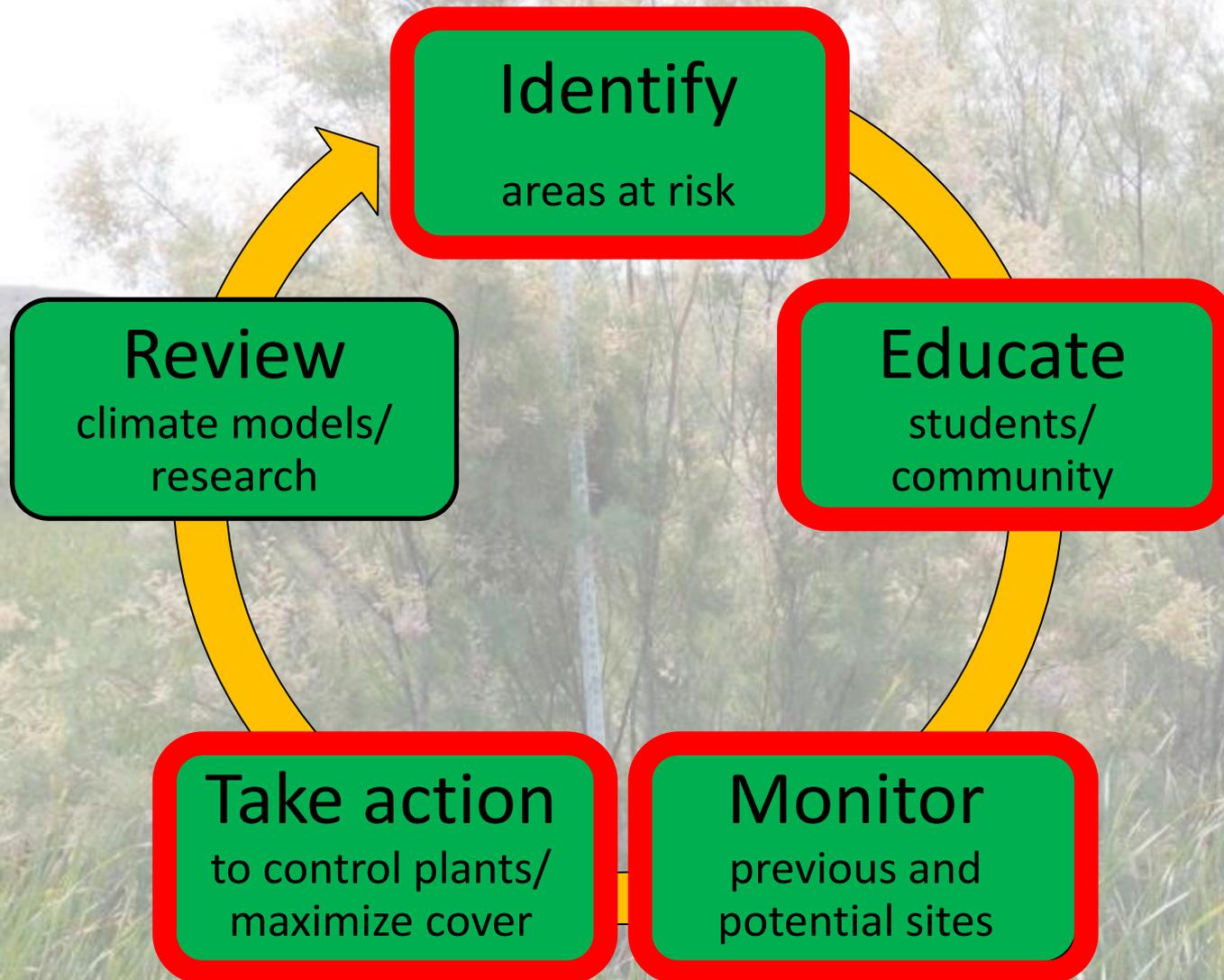
SALT CEDAR DISTRIBUTION

2013



FIGURES COMPILED BY SOUTH DAKOTA DEPARTMENT OF AGRICULTURE AS FURNISHED BY COUNTY WEED BOARDS

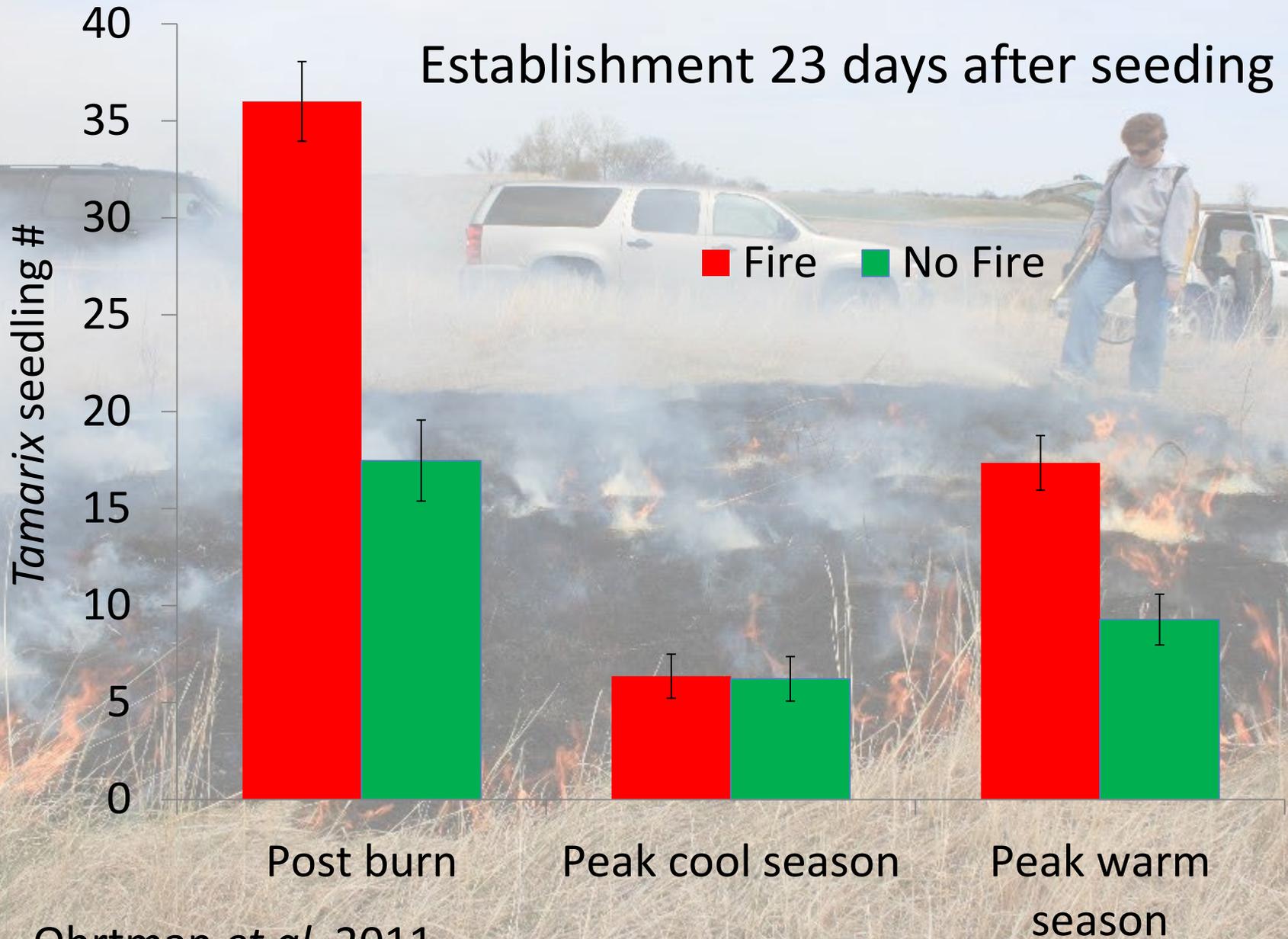
How do we minimize future invasion?





Does fire increase invasion potential?

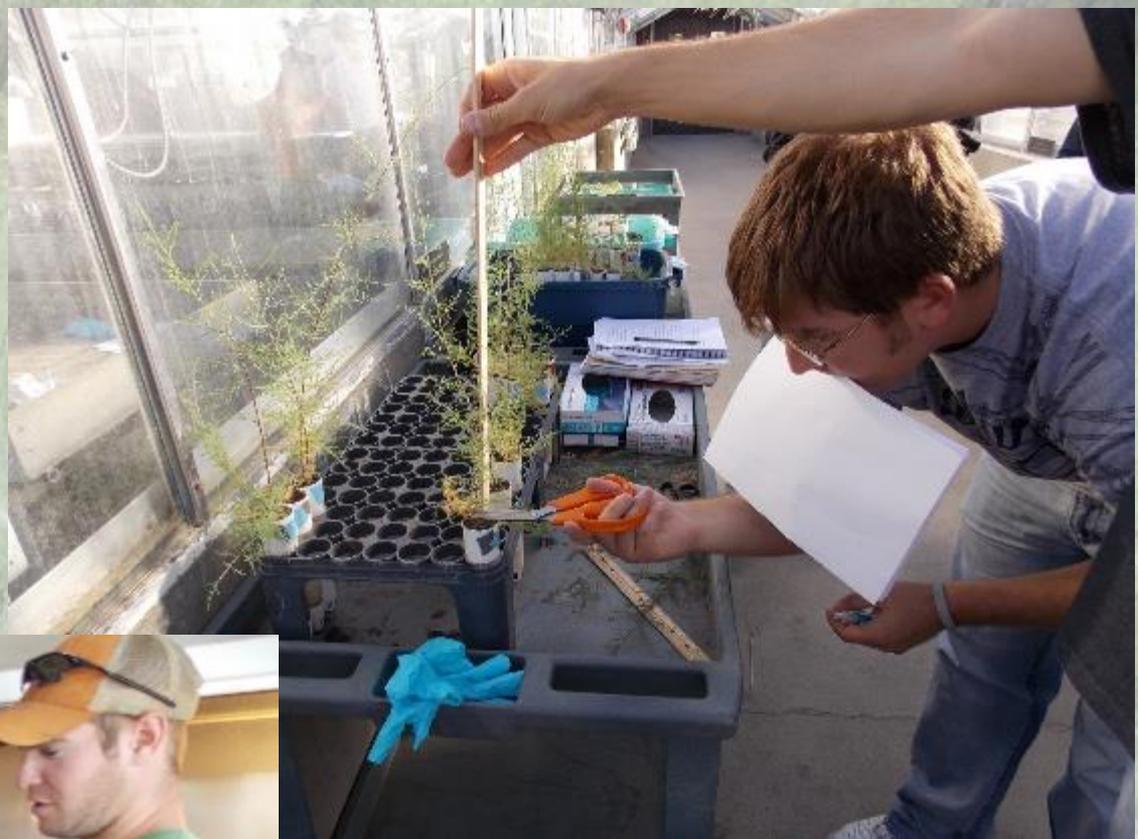
Establishment 23 days after seeding



Ohrman *et al.* 2011

Weed science education

1. Increase awareness



2. Best management practices for young *Tamarix*?



HIGHLIGHTS

- Sustaining the Legacy: Management and Wealth Transfer Planning for Ranches
- Saltcedar Research
- Risk in Dynamic Times



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PLANT SCIENCE

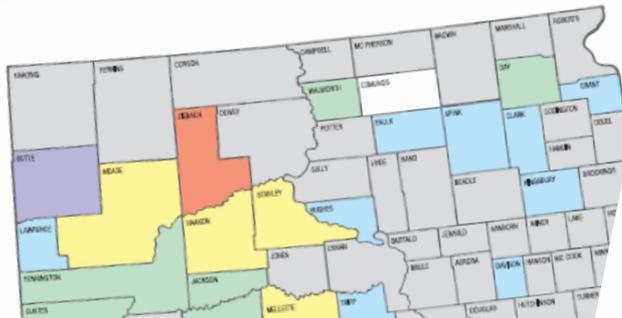
OCTOBER 2011

Do fire and grazing management provide opportunities for saltcedar invasion by allowing increased establishment from seed?

M. Ohrtman | Plant Science Postdoc Research Assistant, D.L. Denekle | Extension IPM Coordinator
S.A. Clay | Professor, Weed Science, A. Smart | Professor, Range Science

Saltcedar (*Tamarix* spp., a.k.a. tamarisk) was declared a South Dakota noxious weed in 2004. Today most of the infestations are in western SD, the Prairie Pothole region of eastern SD may be a prime area for future spread because potholes remain wet for several days to weeks during the growing season.

Controlled burns and grazing are being tested to manage invasive grasses in the Prairie Pothole region. How these practices may inadvertently promote saltcedar infestation by opening the vegetative canopy. The best control for saltcedar in the Prairie Pothole region of the northern Great Plains is **prevention**.



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PLANT SCIENCE

OCTOBER 2011

Can Fire Be Used to Control Saltcedar in Northern Grasslands?

M. Ohrtman | Plant Science Postdoc Research Assistant, D.L. Denekle | Extension IPM Coordinator
S.A. Clay | Professor, Weed Science, A. Smart | Professor, Range Science

Saltcedar (*Tamarix* spp., a.k.a. tamarisk) is a non-native shrub that has been purposefully introduced for tree breaks and ornamental purposes in the southwestern U.S. The plant is now recognized as an unwanted species due to its dominance of native habitats, excessive water use, ability to salinize soil, rapid expansion capabilities, and subsequent ecological and economic ramifications. Saltcedar is now invading suitable habitats in the Northern Great Plains and there is an **urgent need to prevent further invasion** of this plant in northern regions.

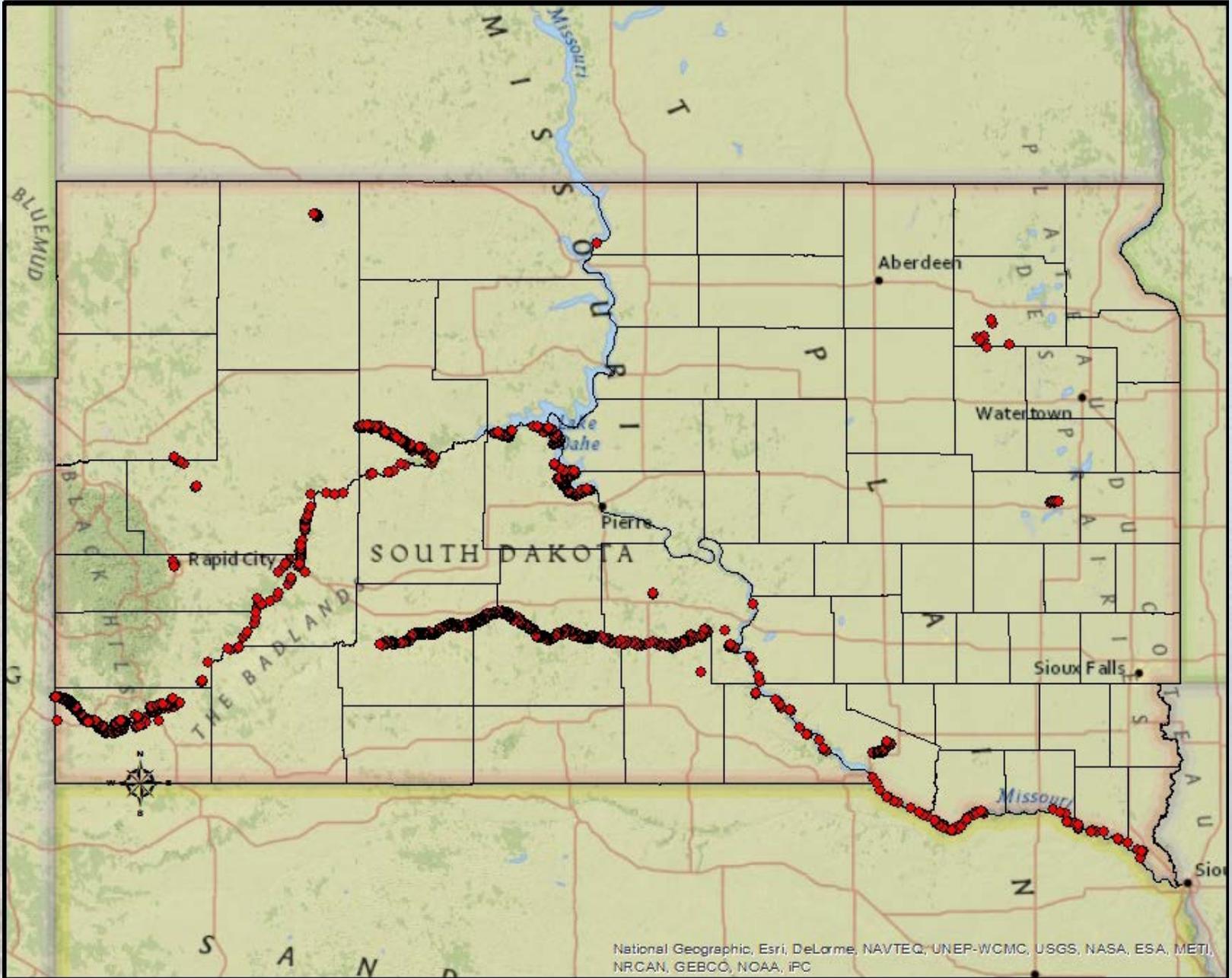
Fire has been used to control non-native grasses in northern grasslands and the strategic use of this practice could reduce the potential for invasion of saltcedar from seedlings produced from seed. Well-established saltcedar plants can recover rapidly from fire through vegetative propagation from buried tissues that are protected from exposure to lethal heat of >140° F. However, fire may disrupt seedling development or kill seeds or young plants that have not yet developed vegetative buds. Fire may therefore be an effective control for new saltcedar infestations.

grassland fire can be used to control this pervasive invader.



Controlled burn at Volga, SD in May 2010.

Study by...

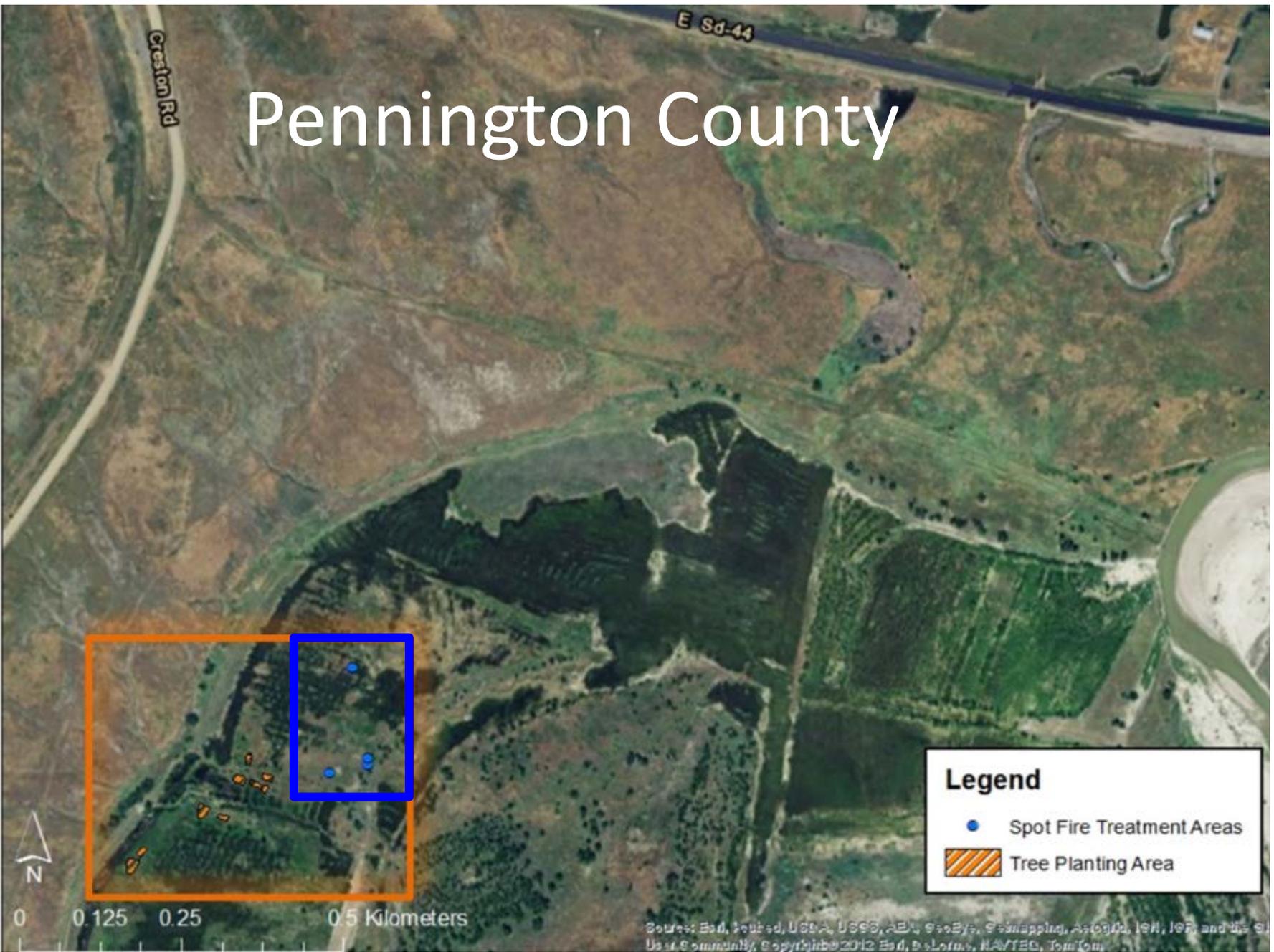


National Geographic, Esri, DeLorme, NAVTEQ, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, IPC

Take action

- Herbicide applications
- Maximize plant cover
- New methods for *Tamarix* control
 - Fire to treat young plants
 - Establish shade-tolerant trees as competitors

Pennington County



Spot fire treatment





Before Fire

After Fire



95 Days After Fire

Results

- 96% control
- *Tamarix* was 2 to 3 years of age
- Removed other vegetation



Spot fire for *Tamarix* control?

- Small populations
- Where herbicides are undesirable
- Integrated weed management
- Areas with prescribed burn program

Perhaps followed by seeding to establish cover

Large scale burns should not be implemented for the sole purpose of *Tamarix* control

Box elder (*Acer negundo*) establishment

- Bottom-up control – competition for resources (e.g. light)
- Native trees have other benefits
 - Minimize reinvasion
 - Provide wildlife habitat

- 320 bare root cuttings
- Under mature *Tamarix* or in open areas



Treatments



Monthly water (1 gal)



Mulch



6-ft protectors



Combined

Water * mulch * protector

Results

- Survival > 90% under *Tamarix* (shade 80 - 95%) and in open
- Greater survival and growth with protectors in open areas



Will the trees survive the winter?

We will find out this spring.

Can box elder shade out *Tamarix* in SD?

We may never know but,
potential for enhanced habitat

November 8, 2013



Summary

How do we minimize future *Tamarix* invasion?

- Identify at risk areas
- Find plants early (educate, monitor)
- Control with effective treatments
 - Spot fire can remove young plants in SD
 - Box elder will establish under *Tamarix* with minimal management in SD
- *Tamarix* management requires an integrated approach

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For more information

Website: Ohrtman and Clay. 2013. South Dakota Saltcedar. South Dakota Rangelands West. <http://globalrangelands.org/southdakota/south-dakota-saltcedar>

Journal publications: 1. Ohrtman, et al. 2014. Effectiveness of control treatments on young saltcedar. Invasive Plant Science and Management. In Press.

2. Ohrtman and Clay. 2013. Using a pervasive invader for weed science education. Weed Technology 27:395-400.

3. Ohrtman, et al. 2012. Fire as a tool for saltcedar control in northern grasslands. Invasive Plant Science and Management 5:139-147.

4. Ohrtman, et al. 2011. Preventing saltcedar establishment in northern prairie potholes. Invasive Plant Science and Management 4:427-436.

Extension Publications: 1. Ohrtman, et al. 2011. Can fire be used to control saltcedar in northern grasslands? SDSU Extension iGrow. Publication 07-2000-2011. 10/2011.

2. Ohrtman, et al. 2011. Do fire and grazing management provide opportunities for saltcedar invasion? SDSU Extension iGrow. Publication 07-2001-2011. October, 2011.

Contact: Michelle Ohrtman, SDSU, Plant Science Department, NPB 247, Box 2140C Brookings, SD 57007, Michelle.Ohrtman@sdstate.edu