Institutional Considerations in Deploying Biocontrol for Tamarisk in Colorado

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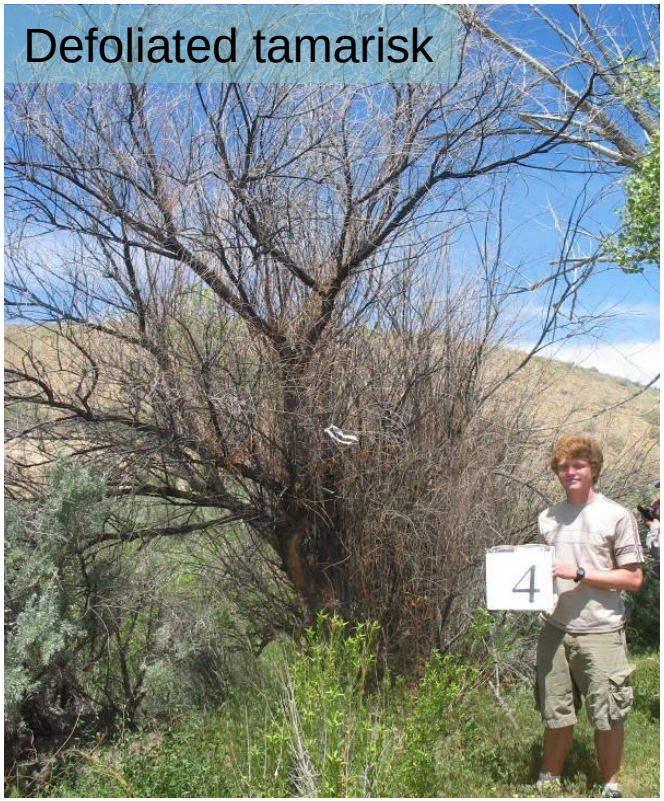
Colorado Department of Agriculture

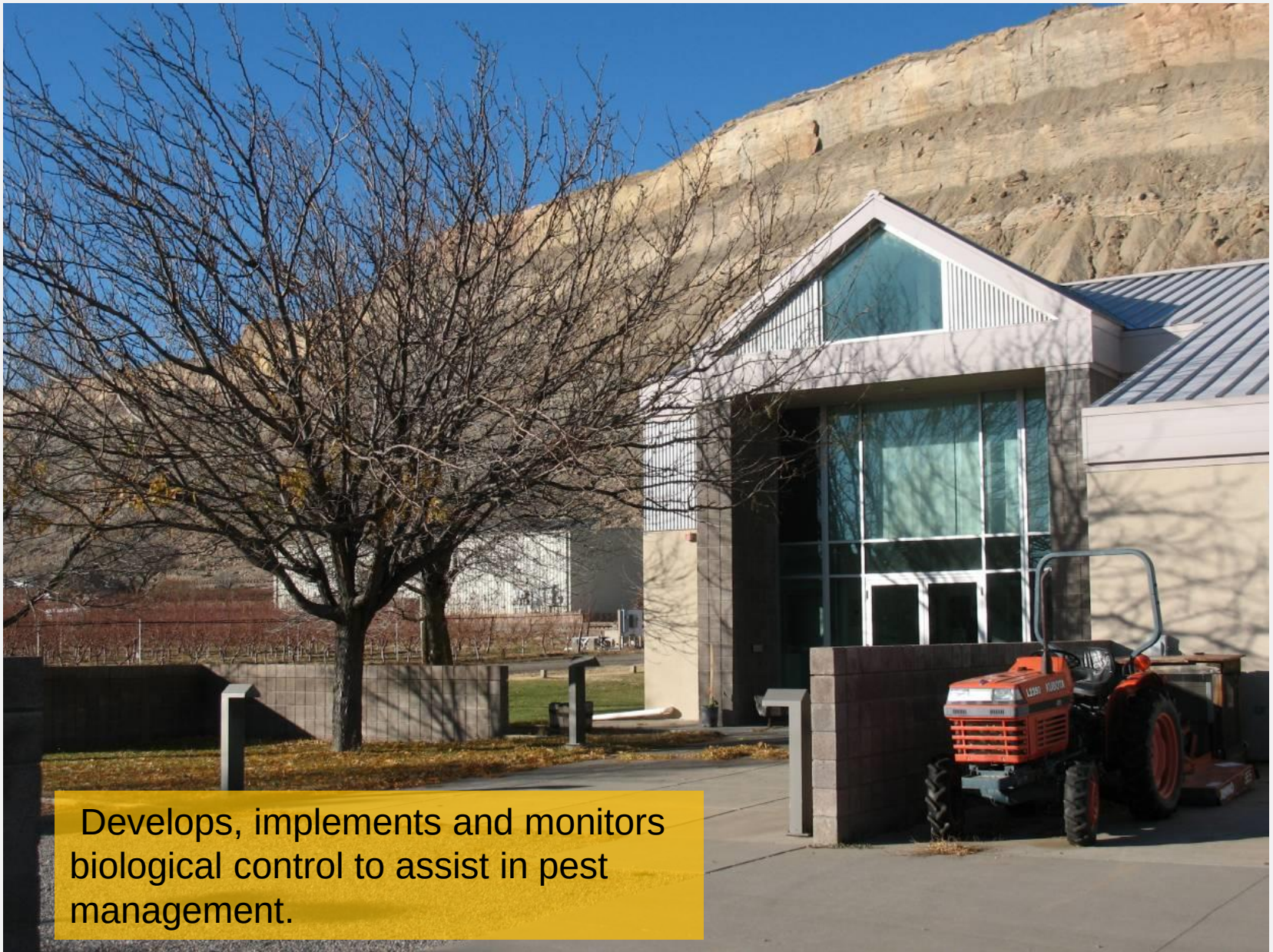
Continental Dialogue on Non-Native Forest Insects and Diseases
November 16-17, 2015
Denver, CO

Tamarisk leaf beetle

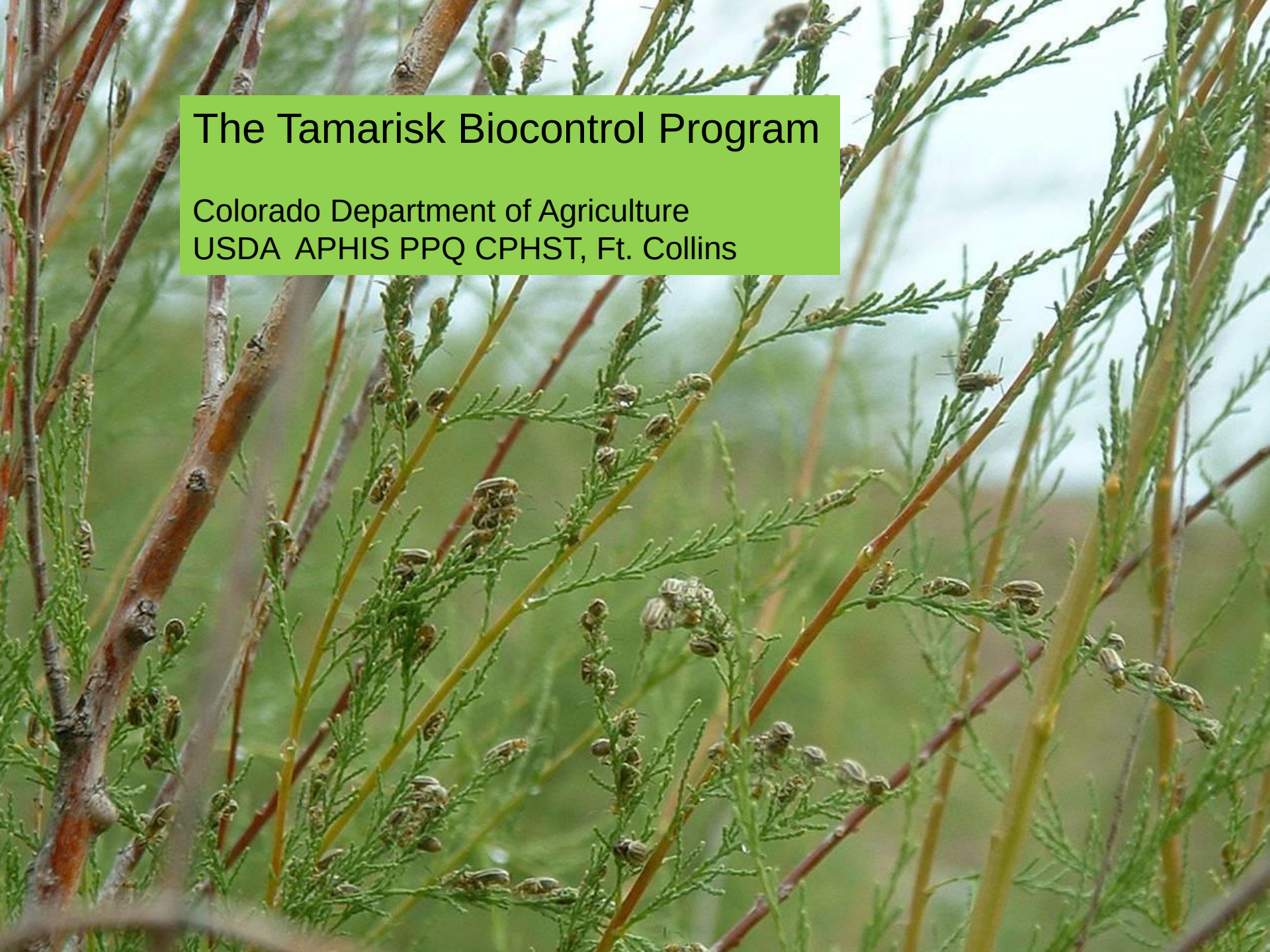
Defoliated tamarisk



Colorado Department of Agriculture
Palisade Insectary



Develops, implements and monitors biological control to assist in pest management.



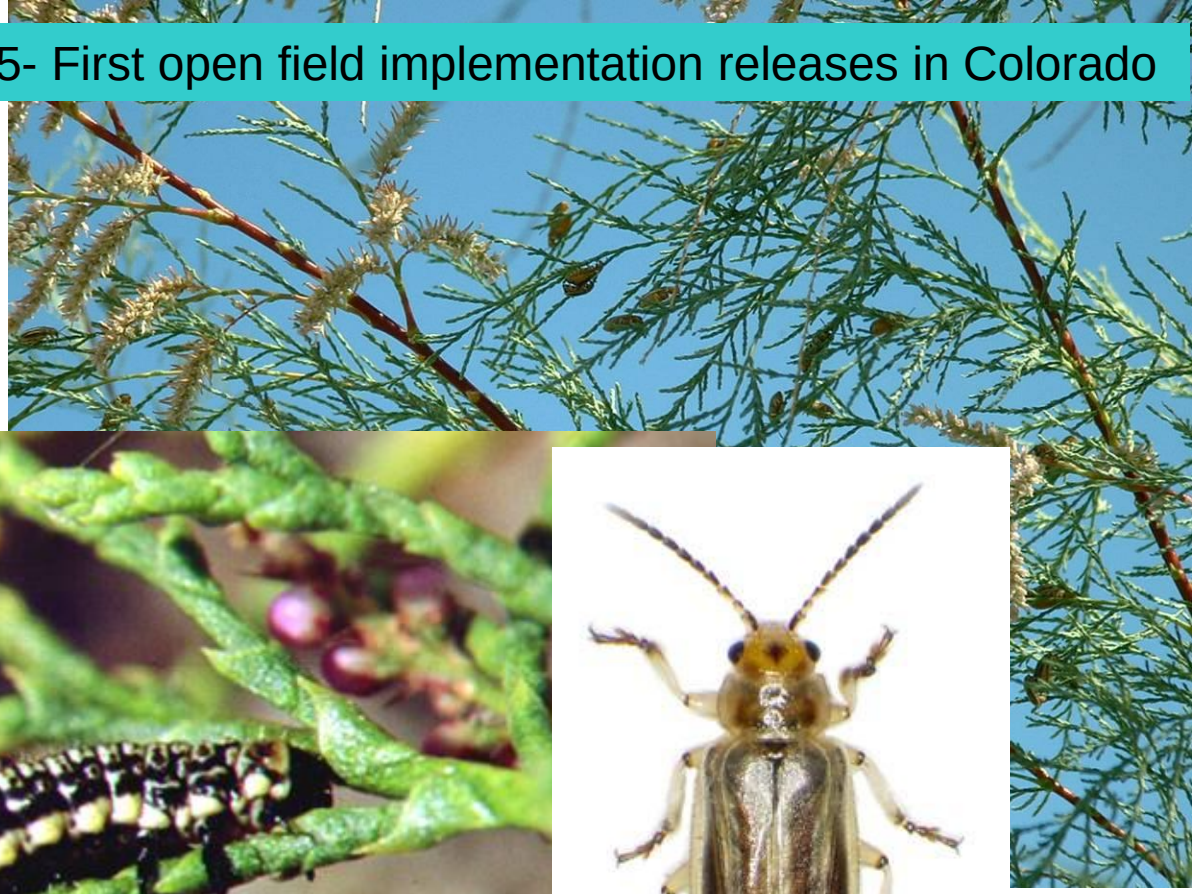
The Tamarisk Biocontrol Program

Colorado Department of Agriculture
USDA APHIS PPQ CPHST, Ft. Collins

Tamarisk (*Tamarix* spp.) is a noxious weed in Colorado, covering more than 100,000 acres of highly valued riparian lands

Biocontrol is an essential component of a long term control program.

2005- First open field implementation releases in Colorado



Adult

Diorhabda carinulata

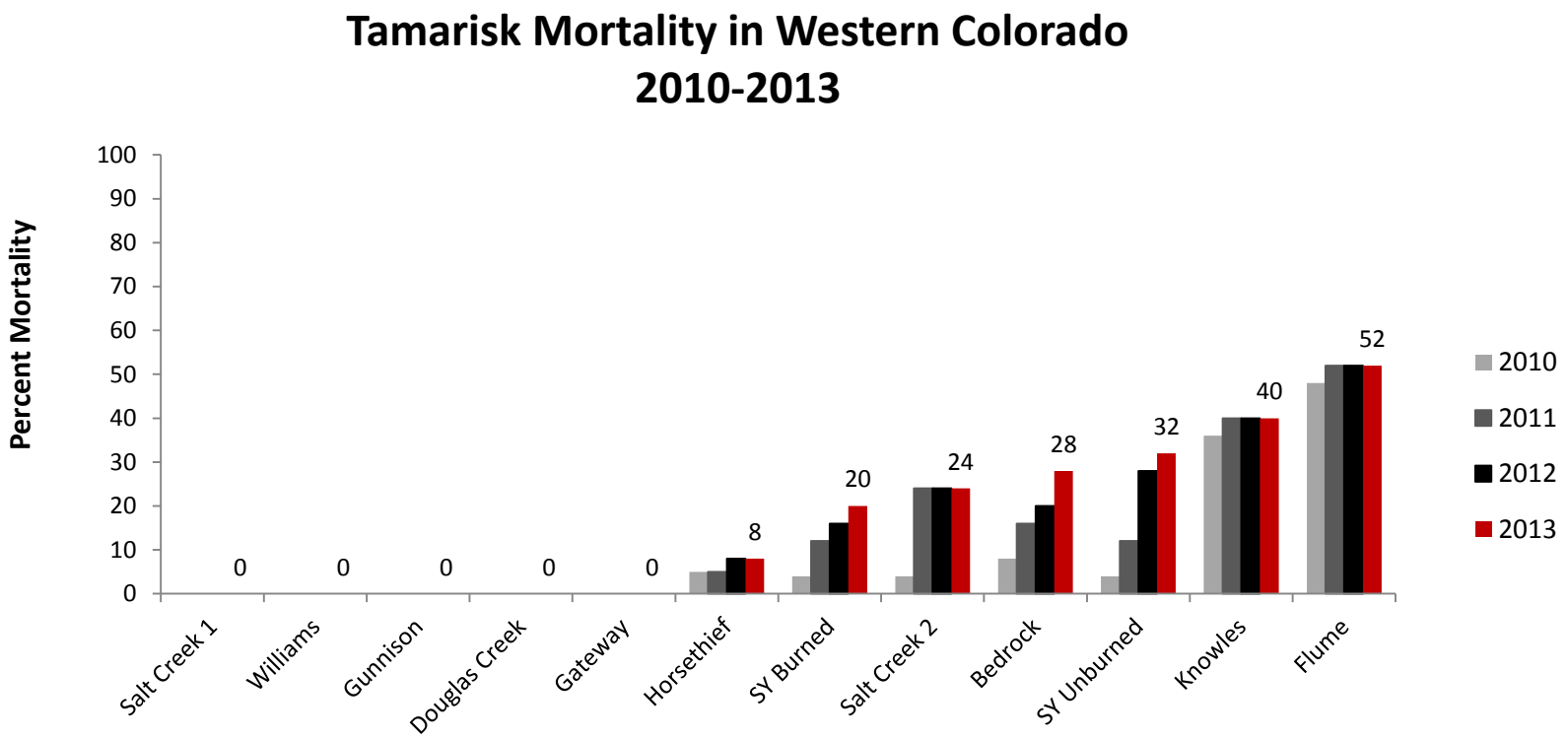
Collections made in Nevada

Palisade Insectary
(Biological Pest Control)

The Colorado Department of Agriculture's Palisade Insectary has sorted, packaged, shipped or released over 2,000,000 tamarisk beetles since 2005.

Counting and packaging tamarisk beetles at the Palisade Insectary

Tamarisk attempting to resprout, 2009

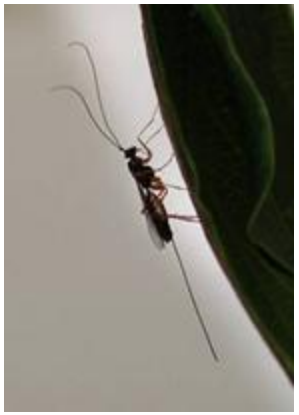

Tamarisk Mortality in Western Colorado
2010-2013
Percent Mortality
100
90
80
70
60
50
40
30
20
10
0
0
0
0
0
0
8
20
24
28
32
40
52
Salt Creek 1
Williams
Gunnison
Douglas Creek
Gateway
Horsethief
SY Burned
Salt Creek 2
Bedrock
SY Unburned
Knowles
Flume
2010
2011
2012
2013

Institutional Considerations for the Colorado Department of Agriculture

1. Should we initiate a noxious weed biocontrol program?

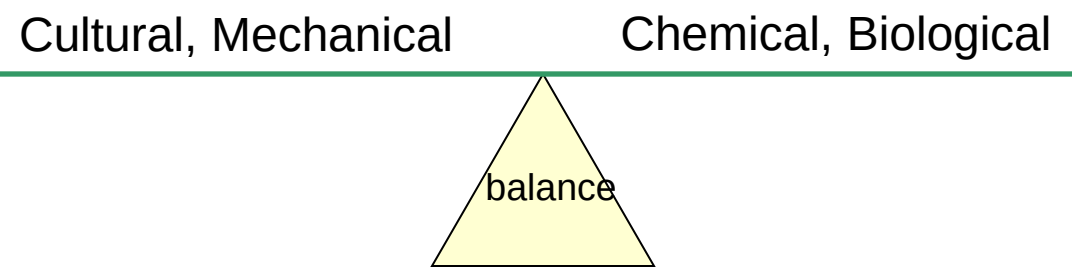
1. Biocontrol is a safe and effective option in integrated pest management (IPM)

Field bindweed gall mites



Macrocentrus parasitic wasp

Flea beetle on leafy spurge

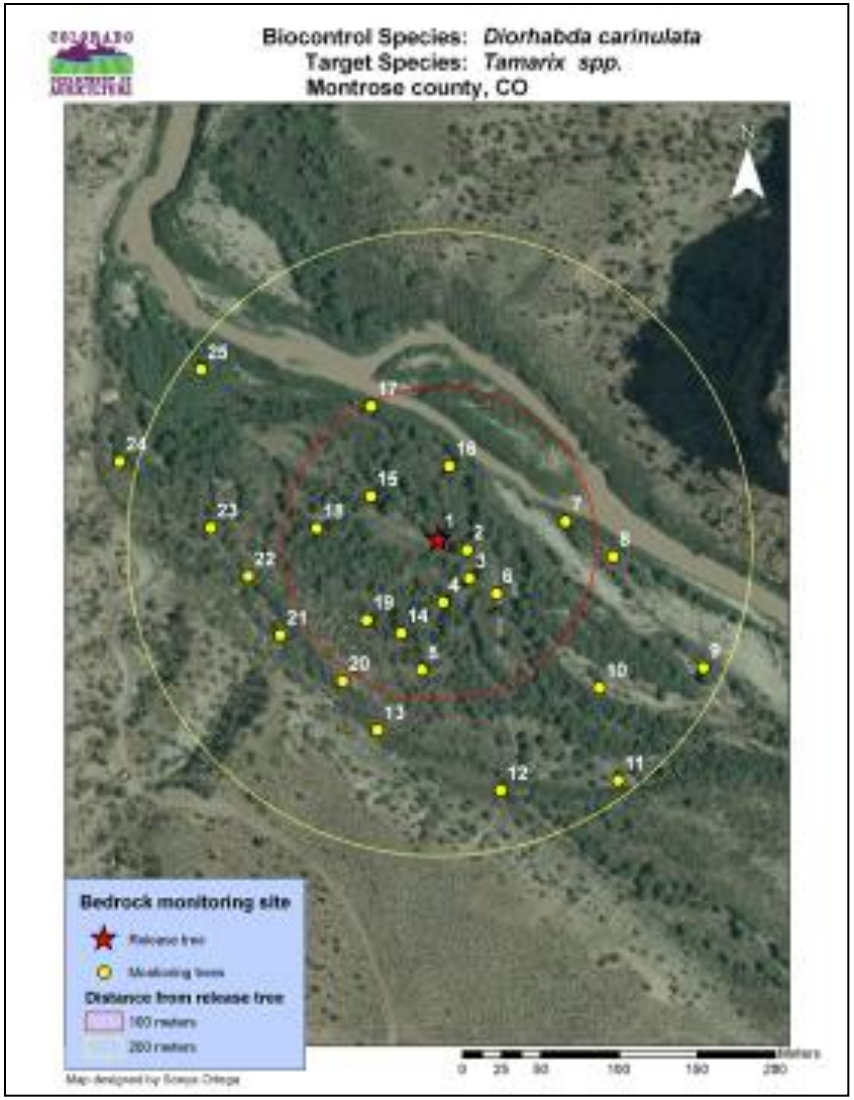


IPM uses a balance of available pest management tools combined with an understanding of the weed or pest and extensive monitoring of pest populations.

tamarisk leaf beetle collection

Institutional Considerations for the Colorado Department of Agriculture

1. Should we initiate a noxious weed biocontrol program?
2. Do we have the necessary cooperators?



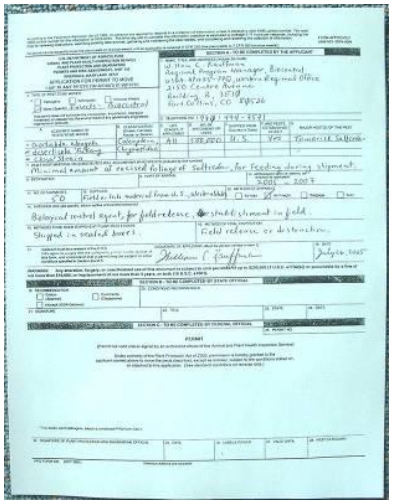
A large network of partners was established for release and particularly for monitoring efforts

Tamarisk biocontrol monitoring: health of trees, presence of beetles

Institutional Considerations for the Colorado Department of Agriculture

1. Should we initiate a noxious weed biocontrol program?
2. Do we have the necessary cooperators?
3. Do we have he necessary permits?

In 2005 a 526 permit was issued by the USDA APHIS which allowed the movement of beetles from sites in Nevada to sites in Colorado. Permitting delays effectively ended the potential for a successful field season in 2005.



Diorhabda collected from Nevada for release in Colorado

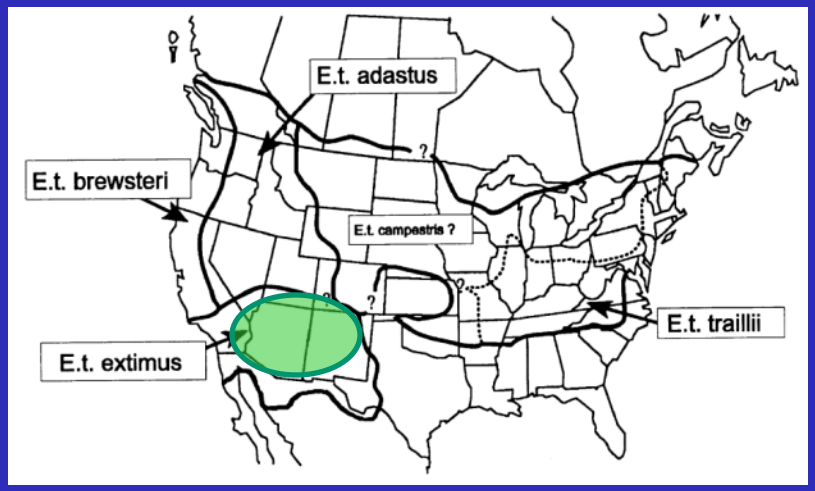
Southwestern Willow Flycatcher (SWFL) (*Empidonax traillii extimus*) listed as Endangered Species in 1995

Reasons: Loss of Cottonwood/Willow vegetation

Tamarix Invasion listed as major factor in decline

Nests in about 40 species of native trees and shrubs but can nest in *Tamarix*, mixed stands

(parts of Arizona, New Mexico, Nevada, Utah)



NOT WANTED IN ARIZONA:

TAMARISK LEAF BEETLES

Tamarisk beetles at St. George, Utah

Credit: Mary Ann McLeod, SWCA Assoc

Tamarisk beetle defoliation below St. George, Utah

Credit: Christiana Manville, U.S. Fish & Wildlife Service

Southwestern willow flycatcher nest in defoliated tamarisk on Virgin River, St. George, Utah

Credit: Pam Wheeler, Utah Division of Wildlife Resources

US Fish & Wildlife Service campaign poster

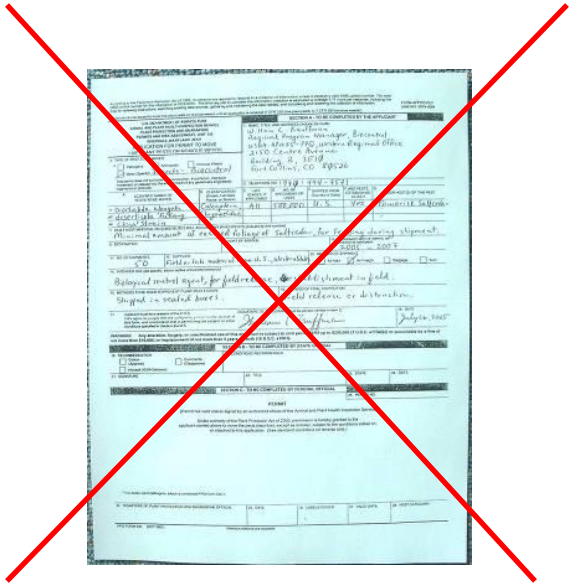
"Imported leaf-eating bug is chewing up scenery from Moab to Salt Lake City"

Salt Lake City Weekly

"Biological war wreaks havoc on endangered bird's habitat"

Associated Press

In 2009 all *Diorhabda* 526 permits were revoked by USDA APHIS PPQ, ending interstate movement of *Diorhabda* for open field releases and for most research

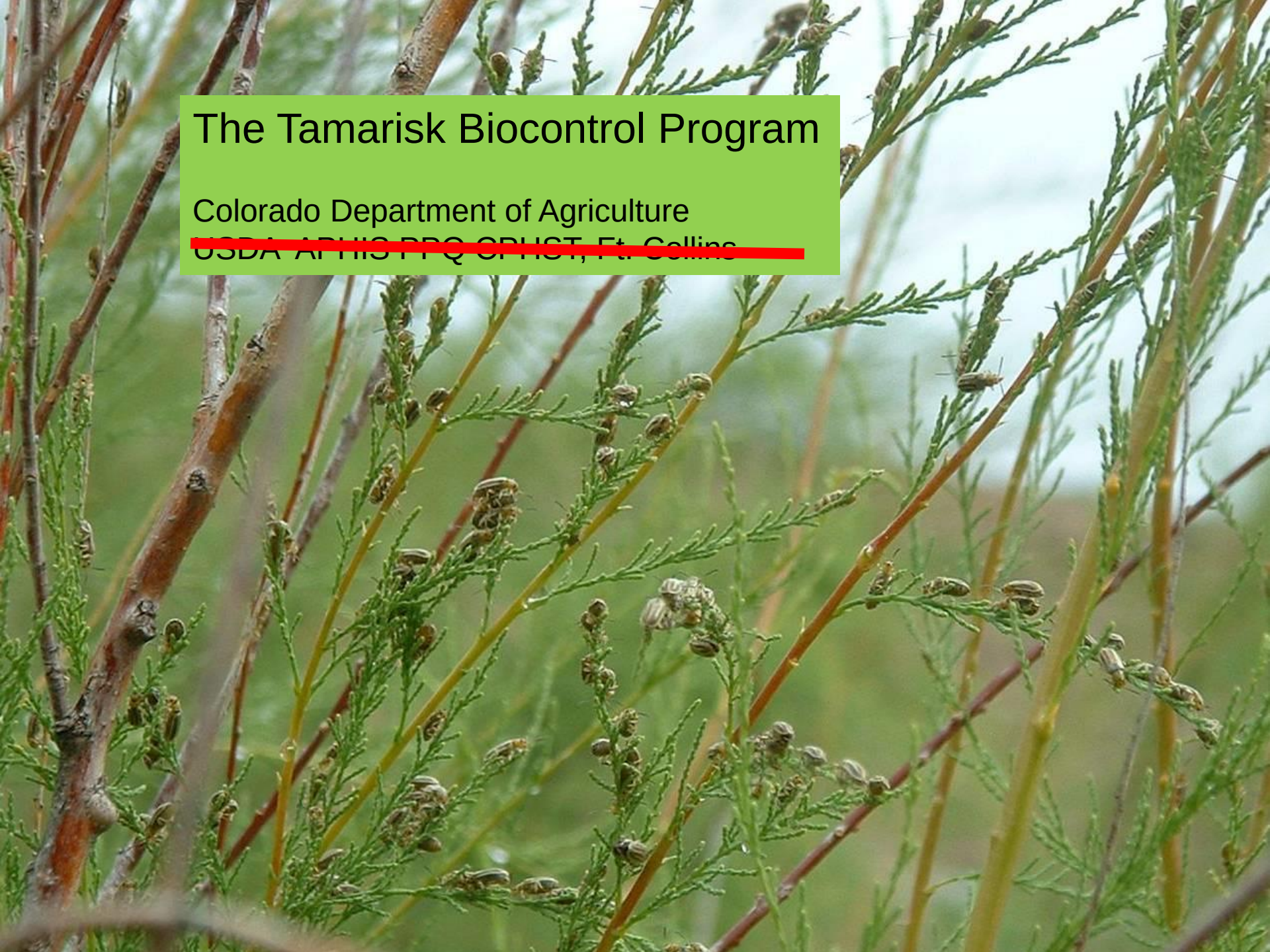


Practical Consequences:

- no movement of beetles across state lines
- ends a major implementation program
- no use of USDA APHIS funding for **<u>any</u>** activities related to tamarisk biocontrol implementation

The Future

- re-consultation between APHIS and USFWS



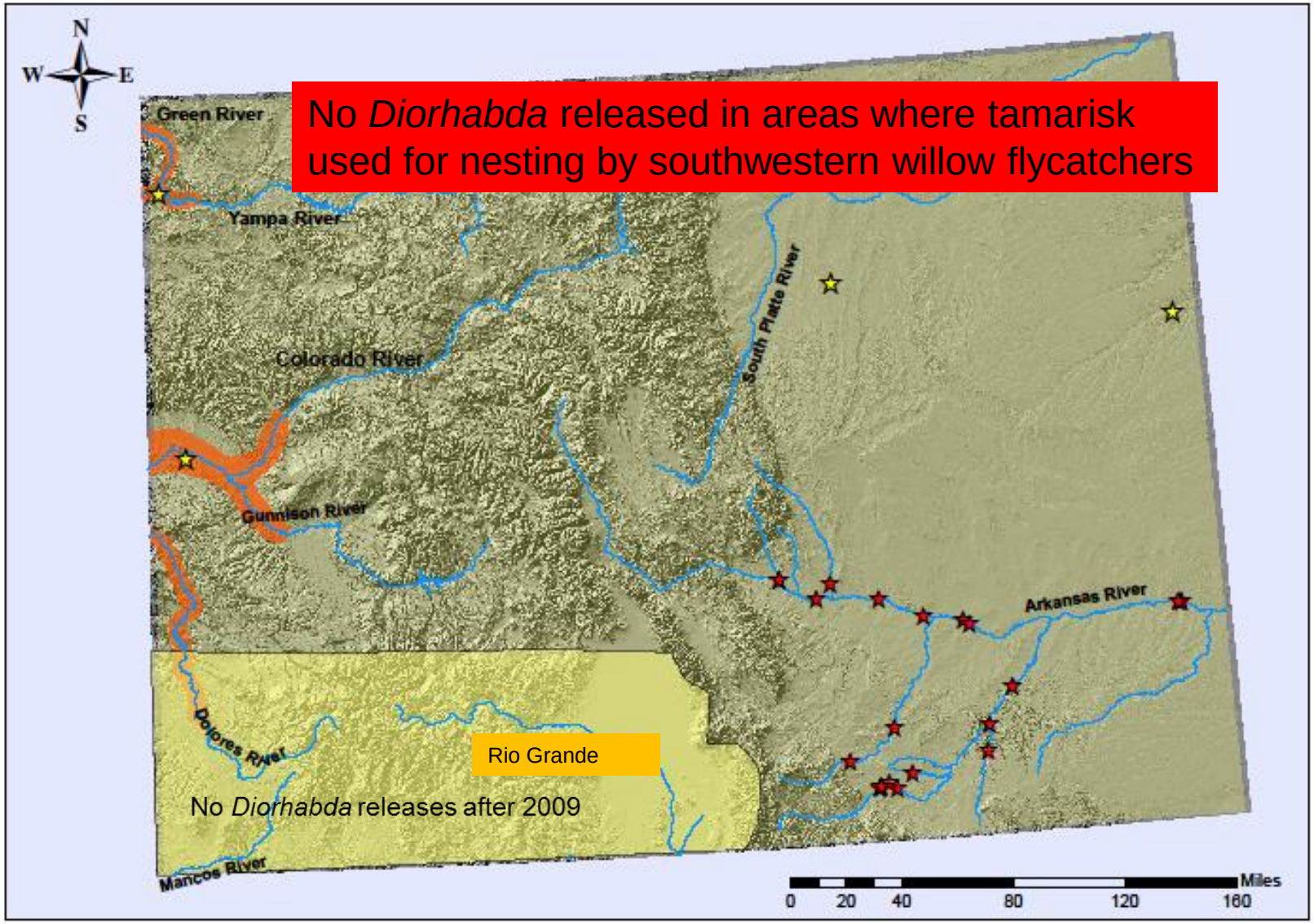
The Tamarisk Biocontrol Program

Colorado Department of Agriculture

~~USDA-APHIS-PPQ-CPHST, Ft. Collins~~

Institutional Considerations for the Colorado Department of Agriculture

1. Should we initiate a noxious weed biocontrol program?
2. Do we have the necessary cooperators?
3. Do we have he necessary permits?
4. Is there merit to objections to the program?

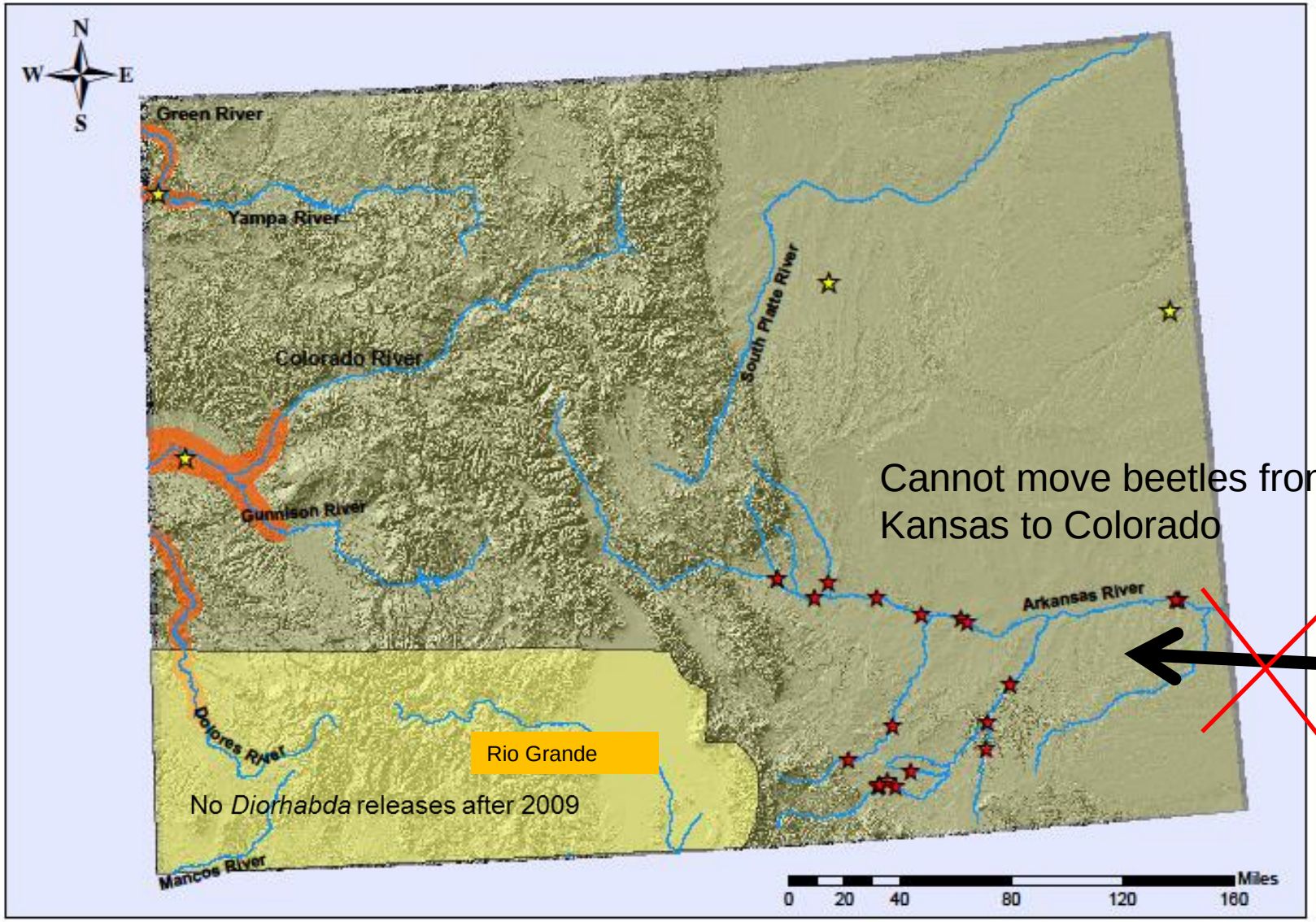


Biological control of tamarisk in Colorado

COLORADO DEPARTMENT OF AGRICULTURE

Designed by C. Jandreau and S.Ortega

Flume Creek tamarisk after several defoliation cycles



Cannot move beetles from Kansas to Colorado

Diorhabda carinulata in Colorado

- Tamarisk leaf beetle original release sites
- 2008 & 2009 tamarisk leaf beetle releases
- Established tamarisk leaf beetle populations
- No Release Zone

Biological control of tamarisk in Colorado

COLORADO DEPARTMENT OF AGRICULTURE

Designed by C. Jandreau and S.Ortega

Policy priorities we would like to emphasize

1. Streamline the permitting process; make it more responsive to underlying science and less risk averse

2. Strengthen scientific understanding of biological invasions and impact on ecosystems

3. Strengthen public education regarding control of invasive species including the use of biocontrol