



# What's Up With Saltcedar Beetles? -Two Adventures in 2015 & More-



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& State Entomologist, NM Dept. Agriculture**



# Saltcedar ---Familiar to All of You?

*Tamarix ramosissima et al.*

Ornamental  
Soil stabilizer  
Wind Break



Steve Dewey, UT State Univ, Bugwood.org



Tom Huetten, USDA-FS, Bugwood.org

Introduced to US-- early  
1800s; to Western US in  
late 1800s-early 1900s

Escaped cultivation by  
1920s in the West

--But--

Competitive  
Invasive exotic  
'Salting' soil  
Dense stands  
Not wildlife  
friendly  
Flammable  
Phreatophyte



Tom Huetten, USDA-FS, Bugwood.org



John M. Randall, The Nature Conservancy, Bugwood.org

Saltcedar can:

- grow to 25' tall
- roots down to 30'
- live 75 years
- produce 500,000  
seeds

# 'Tamarisk Coalition' Met in ABQ, February, 2015

- **Non-profit organization; 'Advance restoration of riparian lands through collaboration, education & technical assistance.'**
- **Met Bill Brandau, AZ-CES (Graham Co., Solomon); 'SC beetle interests'**
- **May, 2015 Field Trip to SW New Mexico, Virden Valley nr. Duncan, AZ**
  - **Bill Brandau, AZ-CES**
  - **John O'Loughlin, Noxious Weed Coordinator, Grant-Hidalgo Co., NM**
  - **NM CES: John Allen (Hidalgo Co. , CES); Marlee Runyan, Grant Co. CES; Carol Sutherland, NMSU-CES;**
- **Bush-whacked our way around 3 counties in 2 states with nets & dish pans (May 5)**





# 2014-New Mexico is the FIRST State in the U.S. to have ALL Four *Diorhabda* species established!

Background Info

Northern-2<sup>nd</sup>

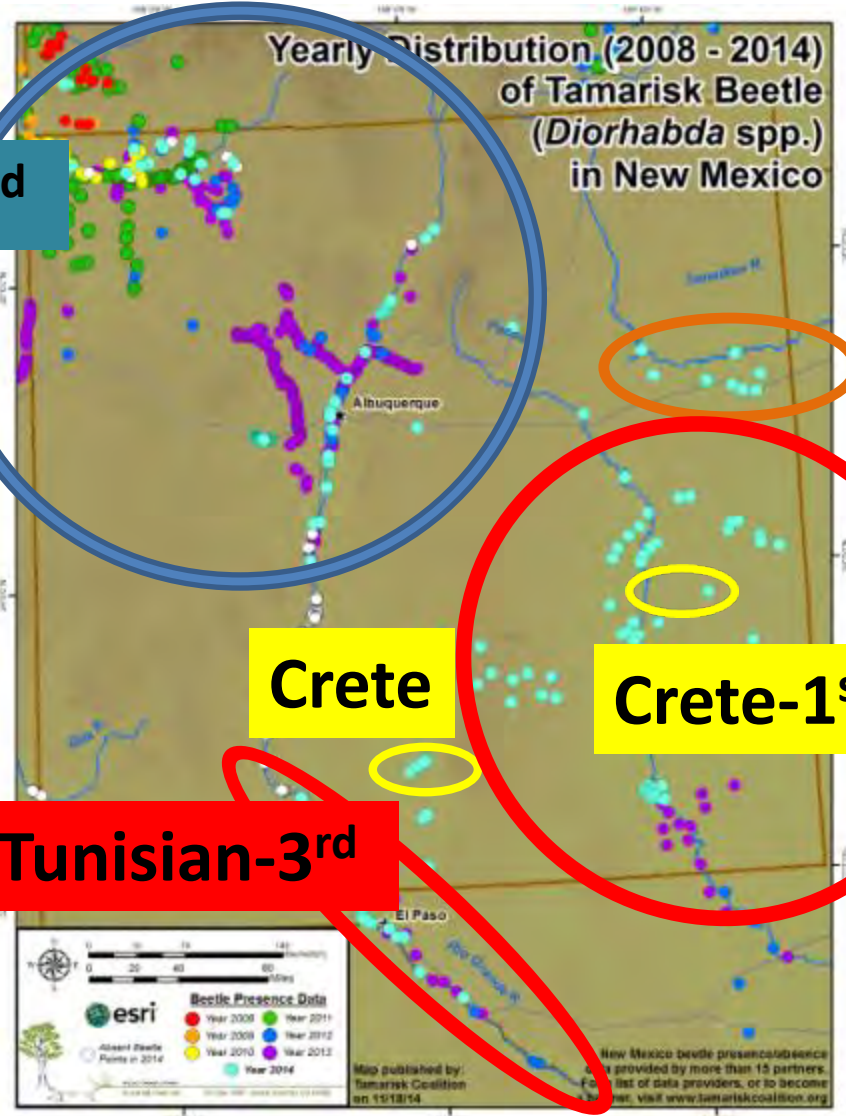
Larger-4<sup>th</sup>

Crete

Crete-1<sup>st</sup>

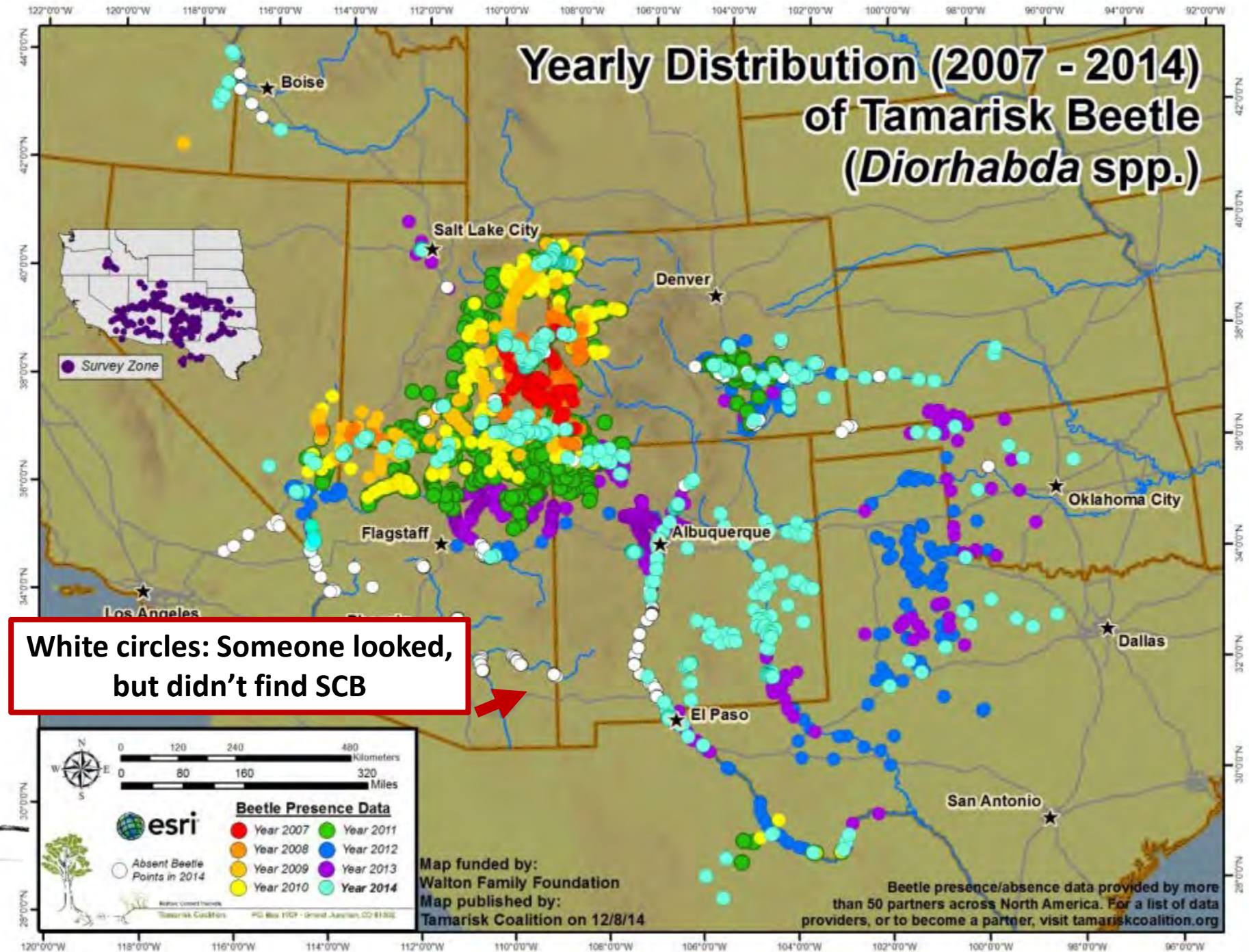
Tunisian

!!!  
Tunisian-3<sup>rd</sup>



# Beetle Monitoring Map-2014 (final)

More Background Info





# Results? No Saltcedar Beetles (not there? too early?)

## General *Diorhabda* Life Cycle



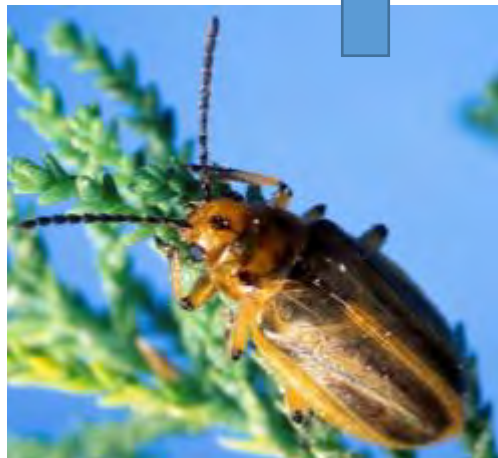
**Egg** – 2-20/mass;  
Females lay <280 eggs  
In 16-20 days



**Larva** – feeds 12-14 days  
In summer; mature at 1/2"



**Saltcedar** is most preferred host for food, reproduction & overwintering; second is athel.



**Adult** – overwinters nr host



**Pupa** – on ground, bare or covered

# Results? We DID find these...

## *Opsius stactogalus*

Saltcedar Leafhopper  
Accidental introduction;  
Now widespread from  
Canada into Mexico

High populations  
cause browning  
of foliage, but tree  
recovers rapidly, no  
death or die-back

## *Chionaspis etrusca*

Tamarix Armored Scale  
Accidental introduction;  
Widespread, also  
(Hemiptera, Diaspididae)





# Saw These: *Coniatus splendidulus*, Salt Cedar Bud Weevil



Reproducing everywhere  
2-3mm long, cute, but  
not effective biocontrol



Accidental introduction?  
First found in AZ; occurs  
in other SW states, NM  
Included

Hmmm. It reproduces in  
early May in SW-NM.



*Coniatus splendidulus*  
Photo by Jillian Cowles

'Net basket' holds the  
tiny pupa of this beetle





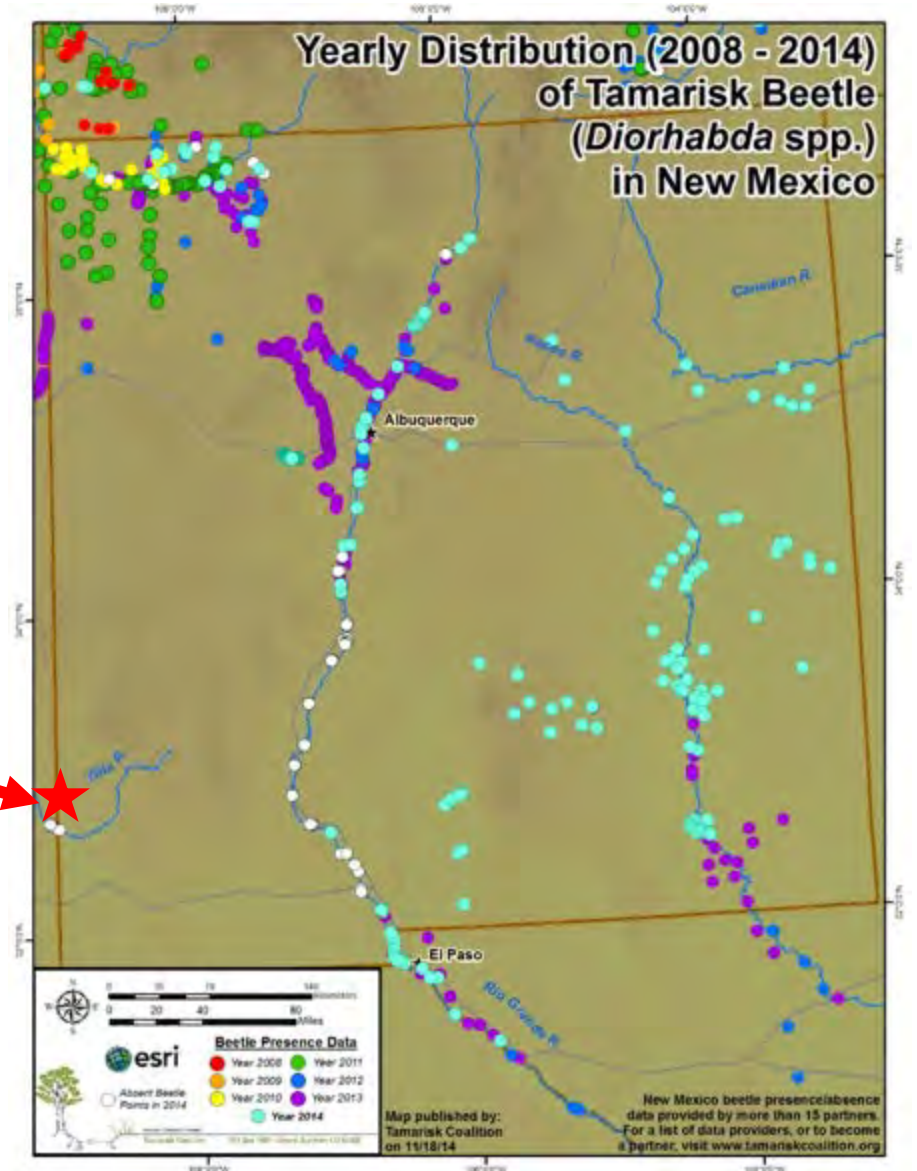
# August Field Trip to Virden Valley

- Still no signs of salt cedar beetles



This is the area where we looked twice in 2015

No obvious alternate pathways for beetles?



# Spring Turned to Summer...



- Another field trip scheduled for end of August, same area

- But then.....

– CEU Workshop in Sierra Co.---weed/brush control—'..call me...'

– August 3---Brent Tanzy calls (Bureau of Reclamation—Elephant Butte

**'B-E-E-T-L-E-S-!!! At Caballo!!!'**

– August 5---'WE are THERE!'—Brent, Bill Sallee (Noxious Weeds, Sierra), Leslie Beck, Jennifer Shaughney and me ....



**WOWSER!**



# B-E-E-T-L-E-S at Caballo, 80-100A?

Every saltcedar in this stand....



This was early August. Could we come back in a month and look again?

**YES!**



**September 7---2<sup>nd</sup> Visit**

**More Destruction! Salt Cedar Beetle Larvae were  
DENSE!**

**Area affected better than doubled! From water's edge west to 'old highway'**





**Welcome, Little  
Pals!**





**About 4 miles north,  
'The Next Big Thing?'**

**Saltcedar mowed, spring, 2015  
Head-high by September 7  
Adult SCBs invaded, mating**





# ...See What *Diorhabda* Can Do...

Caballo Reservoir, Sierra Co., 2015.....Same tree.....

Objective: SC beetle forages repeatedly, weakening SC, allowing more desirable (with luck & planning) plants to re-establish



August 5, 2015---



And again, September 8, 2015



# Also Exciting---Old Highway from Derry/Arrey South to Las Cruces---Also Chewed Up!

Along Rio Grande, in  
lots, fields, up arroyos...



Disclaimer: Not OUR  
Rio Grande—but you  
get the idea...

Foliage falls....



Regrowth happens later,  
Beetles return....





# Remember: Beetles Weaken Their Hosts....



Regrowth can occur after defoliation; and the beetles can return to defoliate again.

Die-back: A good thing when it happens (est. 40% & 100% below)



All photos: Tamarisk Coalition

# However, Our October 7 Visit.....

Windy....  
Heavy Rain...  
Lightning....

Season ender...



# We Went Indoors and Discussed Commonly Used Control Tactics for Saltcedar



Fire (not so much)

You have seen this several times....



\*Heavy Equipment



\*Combination



\*Herbicide

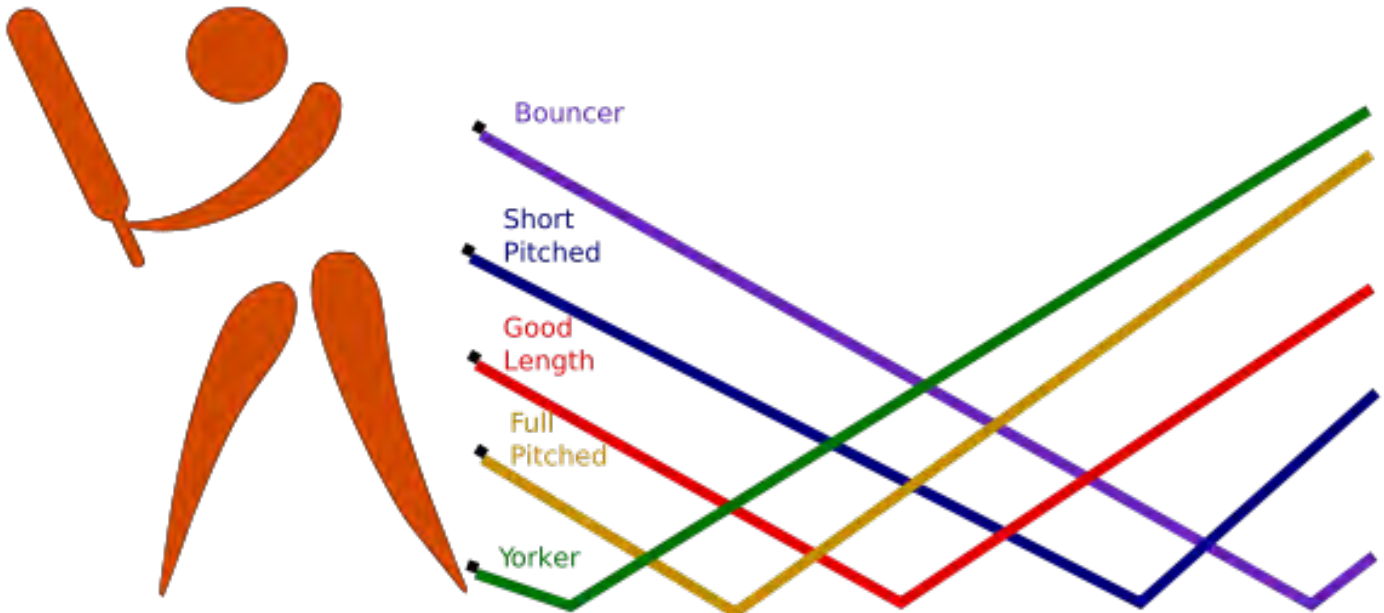
Will You  
Come Back Again?  
Help us? Or not?



Cooperative  
Project?



# Pitching Our Ideas for Project Funding?



**Erik Lehnhoff  
Brian Schutte  
Leslie Beck  
Carol Sutherland**





# Performances of *Diorhabda* in Other Parts of NM in 2015?

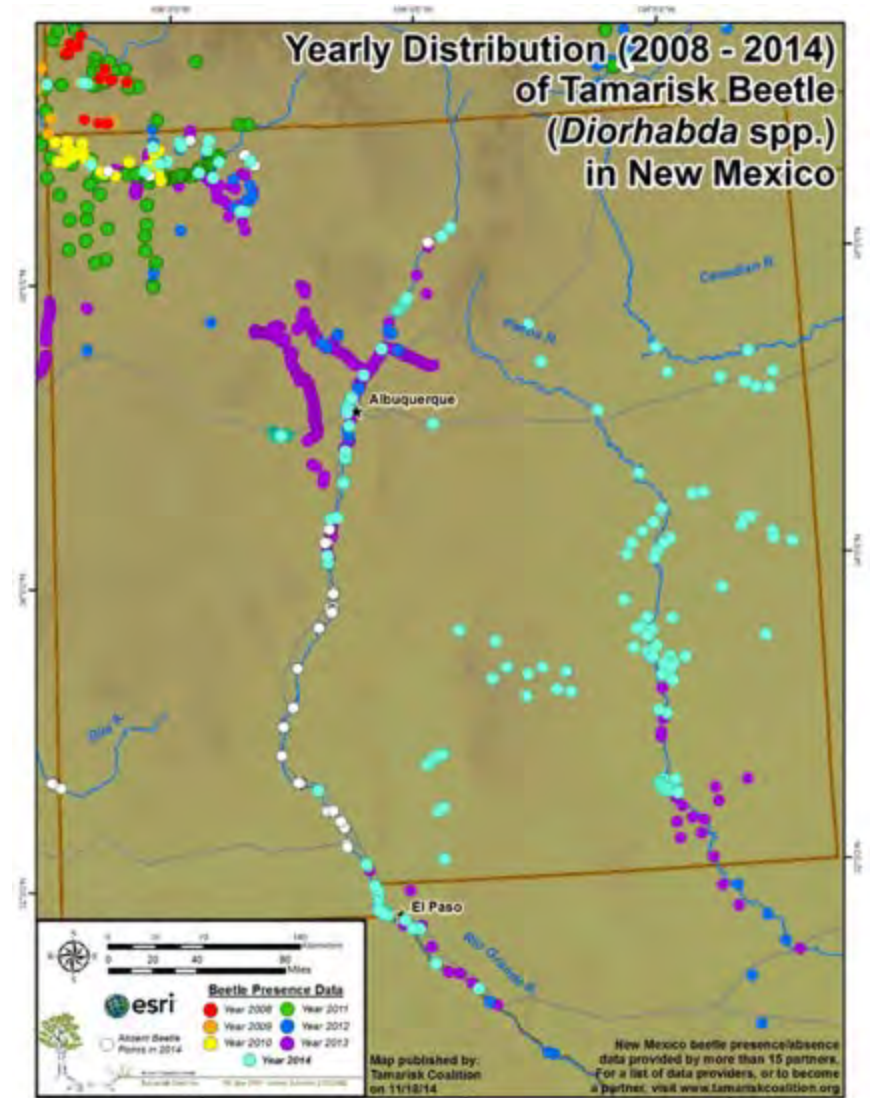
Beetles in most of NM have been  $\pm$  or 'lackluster' EXCEPT---

---Caballo Reservoir- **OUTSTANDING!**

---NOT showy around LCNM or along the Pecos

---Otero Co., from Tularosa NE into the Canyons  $\rightarrow$  Mescalero---best 'performance' to date

Why? Weather? Altitude? Just acclimating?



# Any Other 'Weed Eaters' of Note in 2015?

*Dactylotum bicolor*  
Range Forbs



*Aeoloplides turnbulli*  
Kochia, Salsola, Atriplex, more



*Hesperotettix viridis*  
'Snakeweed GH', composites



*Melanoplus cinereus*  
Artemesia, Rabbit brush



*Boottettix argentatum*  
'Creosote GH'



*Clematodes larreae*  
'Gray Creosote GH'



*Campylacantha olivaceae*  
Tarbush, Artemesia



*Melanoplus splendidus*  
*Juniperus* spp.



*Tropidolophus formosus*  
Globe mallows





# Pests of Sunflowers

## Sunflower Head Moth (*Homoeosoma electellum*)



Attack wild & cultivated sunflowers

Larvae about 3/8" long

Chew into disc flowers, destroy seeds

*Rhizopus* infection of plant follows



# Pests of Sunflowers

## Sunflower Stem Borer (*Dectes texanus*)



Larvae tunnel in stems; heads flop;  
plants 'lodge' = losses





# 'Red Banded Sunflower Moth'---*Cochylis hospes*

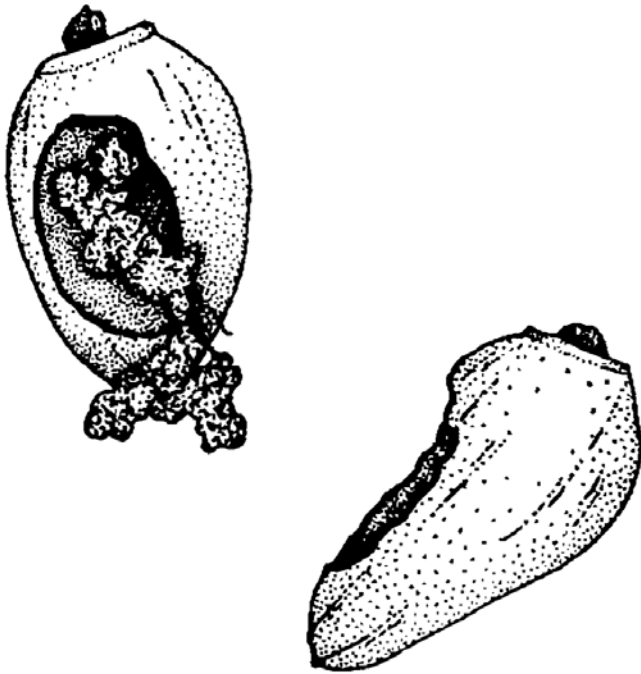
*C. hospes* (Tortricidae) – is known from NM, but from sunflower

*Cochylis* 'other species' = 'suspect' for red larvae in heads of 'Wavy Leaf Thistle'?(W. New Mexico)???



*Cirsium vulgare*: Study of insects in heads of 'spear thistles' by Margaret Redfern, Shropshire, England, 1965 (MS student?-Field Studies Journal, 49 pages.)

c



Achenes damaged by caterpillars

Studied several insects in thistle heads

Two caterpillars: *Eucosma cana*

*Metzneria neuropterella*

Fed in thistle heads, damaged seed

*Eucosma* caterpillars would consume *Urophora* fly larvae developing in the thistle heads.

Competition!



# *Urophora cardui* (Diptera, Tephritidae)

Present? in NM *Cirsium* heads.



*Urophora cardui*---Canada thistles?  
(only host or other *Cirsium*, too?)

I collected larvae like these from  
Wavy leaf thistle heads in 2014



*Urophora jaceana*---European,  
Introduced into Maritime Provinces  
& BC, Canada---for KNAPWEED

*Calligrapha serpentina* (Chrysomelidae)  
Larvae (Purple) Feed on Globe Mallow (*Sphaeralcea* sp.)

Collected near Belen, NM





# *Lema daturaphila*---Chrysomelidae

Larvae cover their backs with their wet poop; protection from enemies?



# *Datura metaloides* (Sacred Datura) = Native Host?



*Withania somnifera* = Ashwaghandha

Beetles will accept this exotic host---same family



# *Disonycha glabrata* → Pigweed Flea Beetle (just waiting for this to occur on quinoa)



Early spring nr Las Cruces. Abt. 4mm.



Palmer Amaranth = 'Pigweed'



**Quinoa for  
popping**

**Do Me A Favor, Please?**



**Ask Richard Lee.....**



# Richard Lee! Name This Weevil, Please?

Photos: Jennifer Shaughney, NMSU Arthropod Collection

Bus Trip-Noxious Weeds  
Workshop, July, 2015  
Farmington, NM

I collected 2 weevils from  
CO at the stop where  
there's a T-intersection  
for bus to turn around

Host: A knapweed?  
Not Musk Thistle?  
Another host?



*Cyphocleonus* 'something' maybe?

Wait! There's More!

4 mm

# Same Weevil--More Detail

Photos: Jennifer Shaughney, NMSU Arthropod Collection

Another clue?

You said you released these  
in south-central CO 3 or 4  
years ago....surprised to  
see them on road to  
Durango.....

Pressure's on....  
(email me.....)





# Wild guess---off the Internet...



← *Cyphocleonus achates*,  
Coll. In August from  
British Columbia, Canada.  
15mm long.



Montana State University

*Cyphocleonus achates* adult.



Another *achates* & larva.

Differences in color---explained by age? Light-colored scales could wear off, revealing more black. This species attacks spotted and diffuse knapweed.

## Knapweed Root Weevil

### *Cyphocleonus achates*

This insect can safely be considered "The King" of spotted knapweed biocontrol. A large, conspicuous insect, it lays its eggs on the top of the knapweed's root crown. After the eggs hatch, the larvae burrow into the root. This larval feeding destroys knapweed's vascular root tissue and prevents the plant from transporting water and nutrients. Roots become swollen and deformed as a result of this larval feeding. Death of the plant can occur within two years. Several larvae can attack the same root. Recent research by Montana State University has documented up to a 99% reduction in knapweed density as a result of the knapweed root weevil introduction.

# That Should Do It for Now....?

