

Basic Insect ID: Using 'Popular Examples' from 2013

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Are You Challenged by Insect ID?

Do You Squirm at the Sight of a Worm?



In the next hour, let's see if we can give you some tips & cover some common creatures submitted this year. Improve your confidence, interact more effectively with clients of all ages---including 4H and FFA---urban and rural....

Yes, I'll still be there to help you & provide backup. Future programs like this ???

**A Few
Non-
Insects**

Hard Ticks (Ixodidae)

Head, mouthparts visible from above



These are 'Brown Dog Ticks'

---most common tick problem for dogs & homes in NM

'No metamorphosis'

- egg
- larva (6 legs)
- nymph
- adult

Gravid female



Blood feeders; potential disease vectors

'Soft Ticks' (Argasidae)



Ventral



Head, Mouthparts NOT visible from above

Dorsal

'Poultry/chicken ticks': Bodies flattened, leathery; gray to tan (unfed) but dark red (fed). largest is abt 3/16". Sucking mps; no metamorphosis. Frequent blood feeders; disease vector for birds. Will bite humans. Another example: **Spinose ear tick** on livestock.

Red Velvet Mite

- Emerge from soil after heavy monsoon rains**
- Predators of termites, et al.**
- Harmless to humans, pets, livestock**
- Go underground again as soil dries**
- 'Angelitos' of local lore**



Common Garden Insects

Beet Leafhopper

Chile, Peppers, Spinach, Tomatoes, Beets, Beans, Cucurbits at Risk?



London Rocket (mustard)
=overwintering host



Beet Leafhopper---3mm long
Curlytop virus vector (only vector in NM)
(Curlytop ≠ only veggie disease in NM)

Wedge-shaped; spiny hind tibiae; powerful jumper/flyer; 'sucking mouthparts'; VERY wary; rarely seen



Grape Leafhoppers

Most will be found on undersides of leaves. Sucking mouthparts; stipple leaves → turn white. Nymphs run sideways, jump. Adults wary, jump & fly. Adults 3-4mm; yellowish white + red.



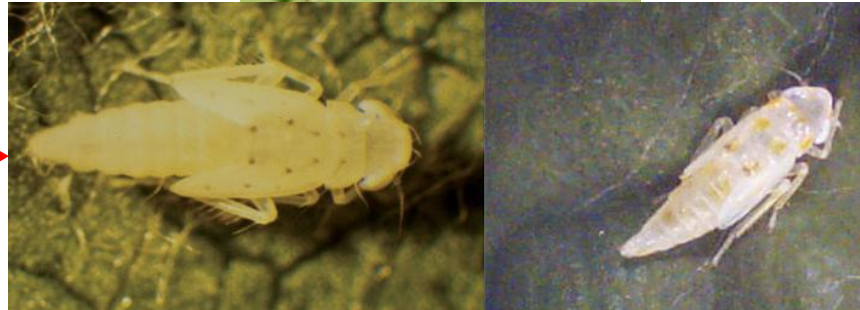
Nymph



5360758

Leafhoppers: 'Simple Metamorphosis'

Cast skin →



Cast skin →



Eggs-inserted into plant host stems, leaves

Series of Nymphs-wingless but look much like pale, spiny-legged adults

Adults-sizes range 3mm-12mm

Don't Confuse Leafhopper Skins for Whiteflies!!



Adult **Whiteflies**---1-2mm long; white
-fly/tumble short distances
-like 'living dandruff'
-old tomatoes, poinsettias, etc.
-nymphs—immobile; colorless to yellow; black on mulberry

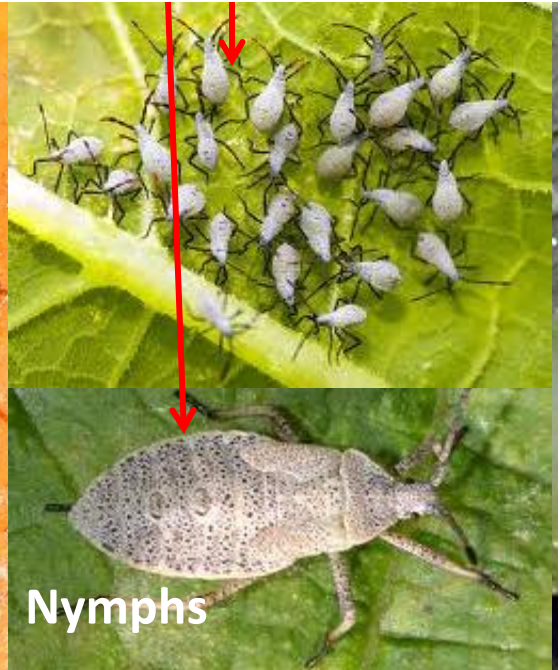
**Grape whiteflies ARE real, but NOT YET found
In NM**

Insecticides DON'T KILL leafhopper skins!

Squash Bug

Simple Metamorphosis, Also

Young squash bugs



Any squash might attract them;
love winter squash, incl. pumpkins

Pierce vines, inject toxins or micro-organisms(?) = dieback

Adults overwinter in debris
Excellent fliers, detectors

No good controls for these
Short season? Row covers?

Flea Beetles (Leaf Beetles)

Complete Metamorphosis

Egg-Series of Larvae-Pupa-Adult

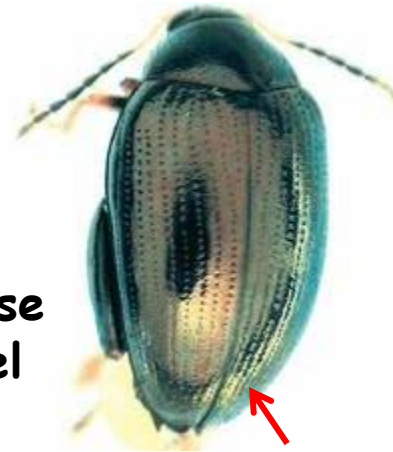


Adults size of "pin heads" to 3-4mm
Hind legs enlarged—jump! Very wary
Black, brown, some metallic

Adults overwinter in soil litter
Adults chew small holes in foliage; eggs at plant base
Larvae minute; underground in root zone, may tunnel
into stem base
Life cycle = 1 year

Plants can outgrow this, usually

Common Pest
in July



Altica
(green)





**Insects
Around
The Home**

Flying Ants or Flying Termites?



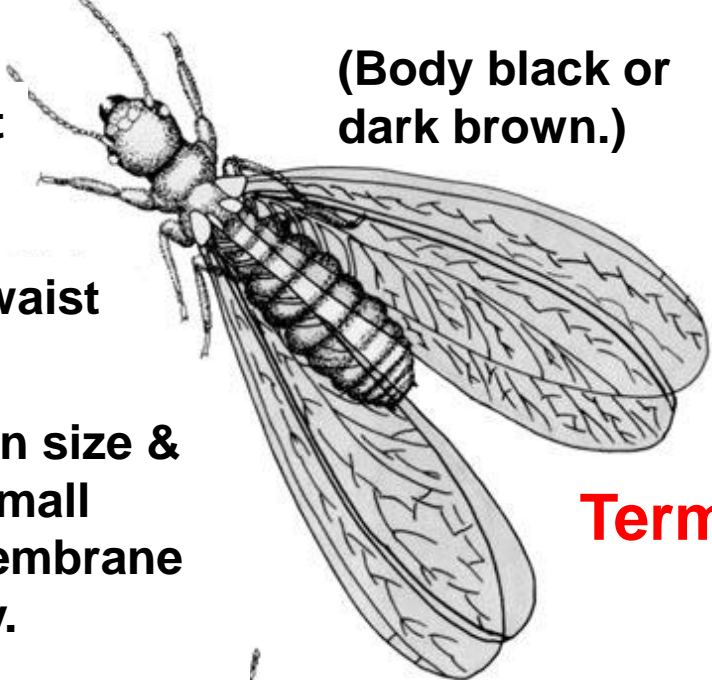
Antennae straight

(Body black or dark brown.)

Broad waist

Wings similar in size & shape; many small veins. Wing membrane often light gray.

Termite



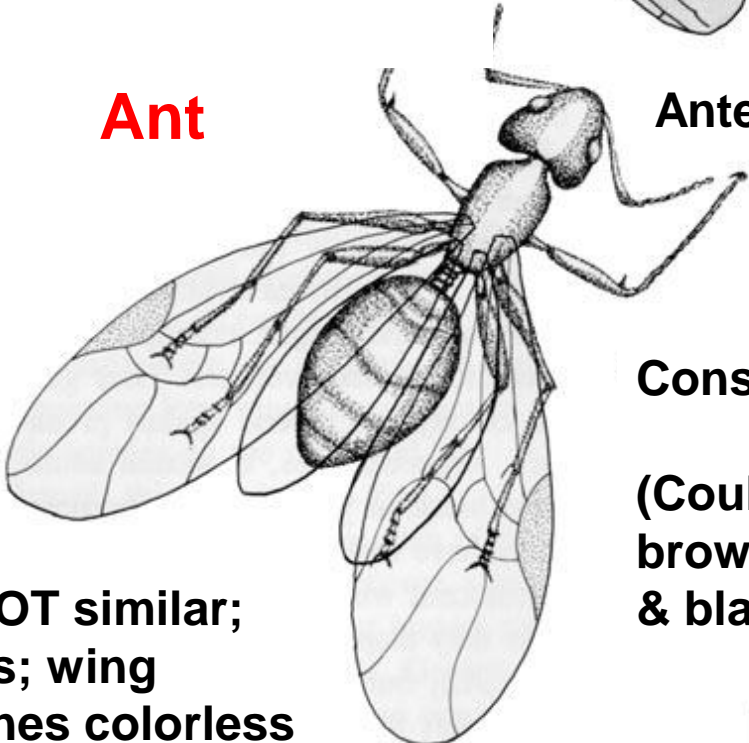
Ant

Antennae elbowed

Constricted waist

(Could be red, black, brown, yellow or red & black)

Wings NOT similar; few veins; wing membranes colorless



Worker Ants? Worker Termites?

Antennae elbowed



Constricted waist

Ants generally black, reddish brown
Or a combination of red/black

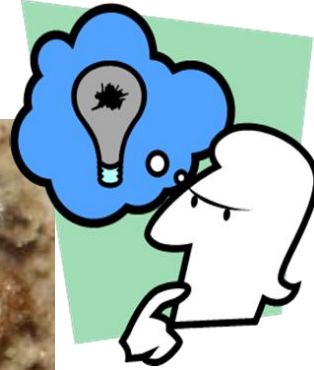


Broad waist

Antennae straight

vs

Termites are off white



Biters & More?

No-See-Ums = *Culicoides* **(Diptera, Ceratopogonidae)**



Females pesky on hot, humid days
Tickle upon landing, sneaky biters
Bite swells & **ITCHES!**



Larval *Culicoides*

Larvae = scavengers
in moist soil

Bluetongue vector → Certain sheep breeds



Females = blood feeders
Males = nectar feeders

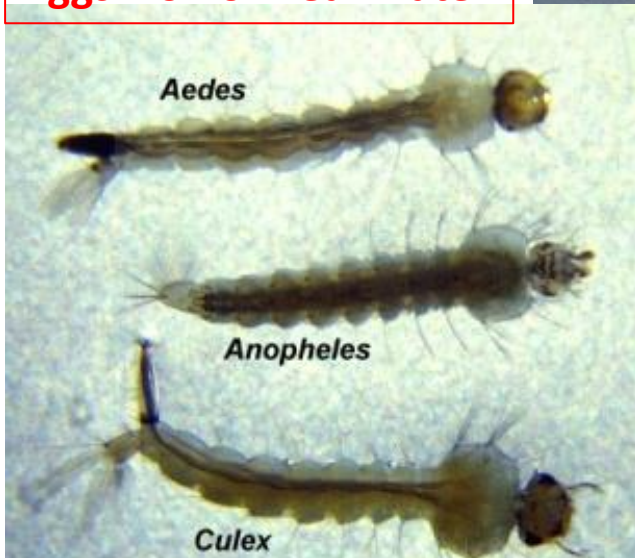
Mosquitoes

Adult females = blood feeders
Adult males = nectar only

Eliminate standing water

Mosquito Dunks =
Bt israelensis

Eggs---on or near water



Larvae---in calm fresh water



Pupa---also aquatic



Adult female

5402864

Mosquitoes are vectors for:

- Dog heartworm
- West Nile—horses, birds, man
- St. Louis Encephalitis
- Variety of other Encephalides
- Yellow Fever
- Dengue
- Malaria
- And more.....

**Home on the Range?
(or near)**

Range Caterpillar Life Cycle

Mature $\leq 2.5''$

Caterpillars eat grass from late spring-early fall. Spiny; 'sting' noses & mouths of cattle, horses—>leave pasture



Pupa—2-3 wks
In late fall



1 gen/year

Male

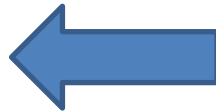


Female



Adults have no mouthparts!

Live <1mo.



Eggs on stems-
Overwinter



White-Lined Sphinx Moths (NOT Range Cats)



Hyles lineata

Larvae with single, fleshy 'spine' on rear end; variable color pattern: yellowish-green, black, some red

Feed on weeds: purslane mainly, some puncturevine, etc.

No control needed

Adults: wingspans 2 ½- 3"; fly like hummingbirds
Harmless; widespread; nectar feeders (pollinate)

2-3 generations/year; occasionally very numerous



'Purlane Caterpillar/Moth'

Euscirrhopterus gloveri (Noctuidae)



Adults fly in July---as we have rain

Caterpillars grow large in August

Adults are harmless, night fliers

Larvae love purslane!



Dysschema howardi

(Erebidae, tiger moth family, 'N Giant Flag Moth')

wingspan abt. 3"



Male

AZ, NM, northern Mexico

Female

Larvae- ≤ 3 "; harmless; hosts: Asteraceae



Eggs



Pupa < 1 1/2" ('stings')



Do I Have Blister Beetles?

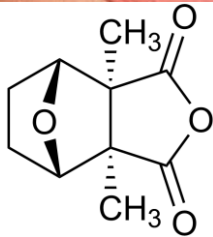
3 beetle families are shown here; but which is which?



Why is ID important? Because blister beetles are toxic to animals eating alfalfa hay!

One mg/kg of body weight can kill a horse (1ppm)

Why Are Blister Beetles Important?



Cantharadin: in blood & tissues of adult blister beetles; protectant & toxin, biologically stable; colorless & odorless



Mating swarms attracted to budding/flowering fields



Swather cuts alfalfa, beetles, Too; cantharadin contamination

Darkling Beetles

Chewing mps; complete metamorphosis

Most spp. brown or black

Tarsal Formula* = 5-5-4

Eyes usually notched

Antennae w/11 segments,
thread-like

5 visible ventral abdominal segments

Head narrower than pronotum

Numerous spp. in NM; many spp. common

Most feed on plant matter—both larvae & adults

Certain larvae = 'mealworms'

*tf = tarsal formula: # tarsi on 1st, 2nd, 3rd pair
of legs



Ground Beetles

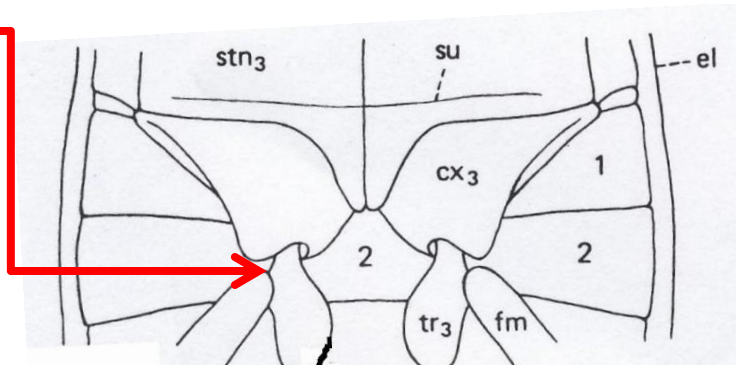
Most spp. dark, flattened, rather shiny, grooved elytra; $tf = 5-5-5$; head usually narrower than pronotum

Most spp. predators, chewing mps directed forward; bulbous eyes

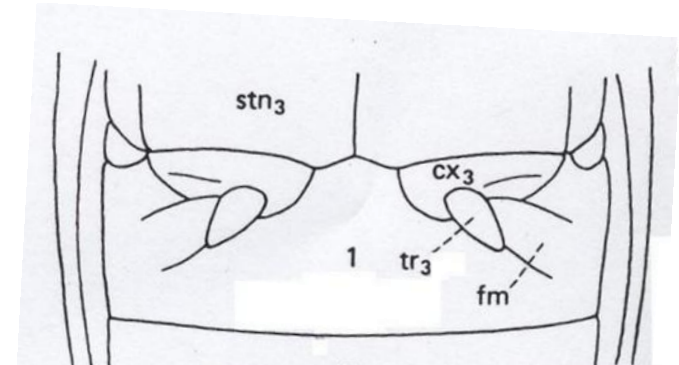


****‘Dangling trochanter’ on 3rd leg****

(true for ground & aquatic beetle families, too)



Ground Beetle



Darkling or Blister Beetle

Blister Beetles

Variable size (<1/2" to 1"+), elytra patterns (solid, striped, spotted); colors (black, gray, red, blue-gray, reddish-brown, yellow; some metallic)

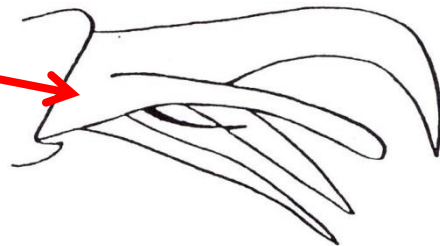
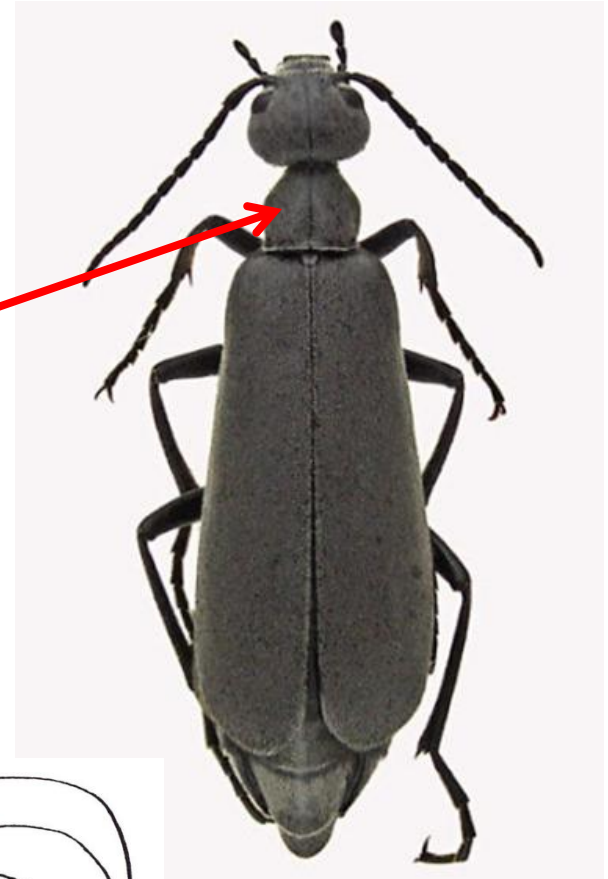
Pest species more cylindrical, bodies & elytra 'soft';
Can bleed from joints, regurgitate → cantharadin

*Pronotum narrower than head or elytra

Adults often feed on buds/flowers; mps may be visible from above on live specimens

TF = 5-5-4; tarsi split (appearance of 4 claws/leg; highly magnified)

Widely distributed in North America, 400 spp.
40+ spp likely in NM; highest spp. concentration is in SW



Blister Beetles

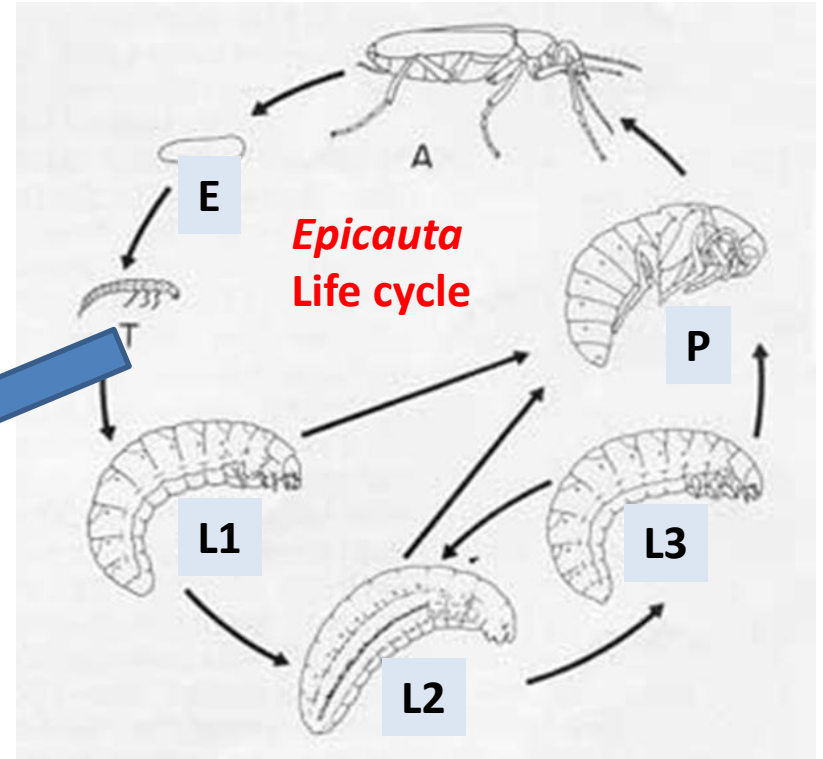
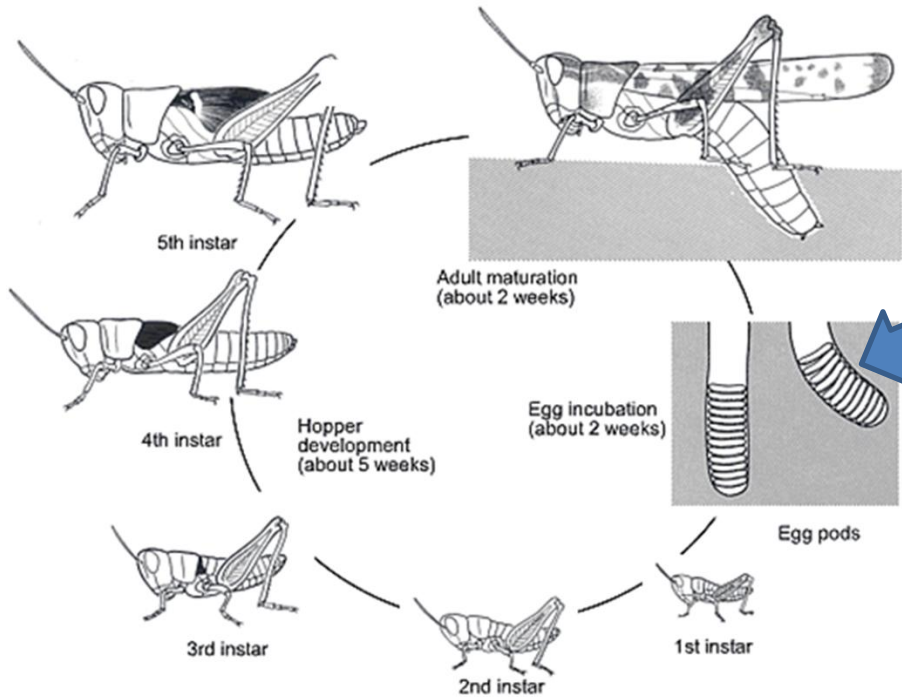
(Coleoptera, Meloidae—just 3 genera)

Epicauta



Epicauta spp. ---bodies cylindrical, 'soft,' pronotum narrower than head or rest of body; tarsal claws 'split'. Colors, patterns variable.

Epicauta spp. + Grasshoppers



Relationship between *Epicauta* spp. and grasshoppers: *Epicauta* triangulins feed and develop on grasshopper egg pods. But how do they find each other?

Alfalfa Hay & Blister Beetles---Be Aware

- If you grow alfalfa---



SCOUT FIELDS BEFORE & DURING EACH CUTTING!!

Beetles swarm budding or blooming fields---weeds included.

Let beetles escape before cutting or treat, then cut (**READ LABELS** if using an insecticide---application & PHI)

Disconnect crimper? Crimping smashes beetles; all parts are toxic, including blood. Toxicity lasts indefinitely.

- If you buy alfalfa---

BUY FROM A REPUTABLE SOURCE, SOMEONE WHO SCOUTS FIELDS FOR BLISTER BEETLES & TREATS THEM OR LETS THEM ESCAPE BEFORE CUTTING!!

Avoid sellers who state their hay is 'free of blister beetles'

Inspect hay before feeding

Keep records & receipts



Let's Shift Gears → Trees -Dying, Dead, Holey & Bored-



Examples of Bark Beetles in NM

(All native forest trees have their own bark beetles)



Hylesinus/ash



Phloesinus/cedar-juniper



Scolytus schevyrewi/elm



Scolytus rugulosus/fruit trees



Ips pini/pine



Pityophthorus juglandis/walnut

Damage Done by Bark Beetles



Beetles attack stressed host, bore thru bark



Beetle entry brings blue stain fungi
Fungi grow, clog vascular system



Mating, egg laying; larvae & adult feeding destroys inner bark



Stressed trees die one way
or the other---beetles/fungus

Buprestidae—Flat-headed Wood Borers, Metallic Wood Borers (oval tunnels)



(Usually finish off dead & dying trees)

larval tunnel



Cerambycidae: Round-headed Wood Borers, Long-horned Wood Boring Beetles

(All of our native trees have beetles associated with them)

(larval tunnel round)



What's New?

Bagrada hilaris: Bagrada Bug (**Stink Bug**)

(Adults 1/8"-3/16" long)



38-65 days/generation; females lay average of 95 eggs/ea.



Brassicas Bumped Out?

Early symptoms: irregular spots on foliage; distortion, death
Later symptoms: failure to head, major distortion, death



Lepidium-peppergrass
Winter annual weed
often on roadsides, edges
of fields --harborage



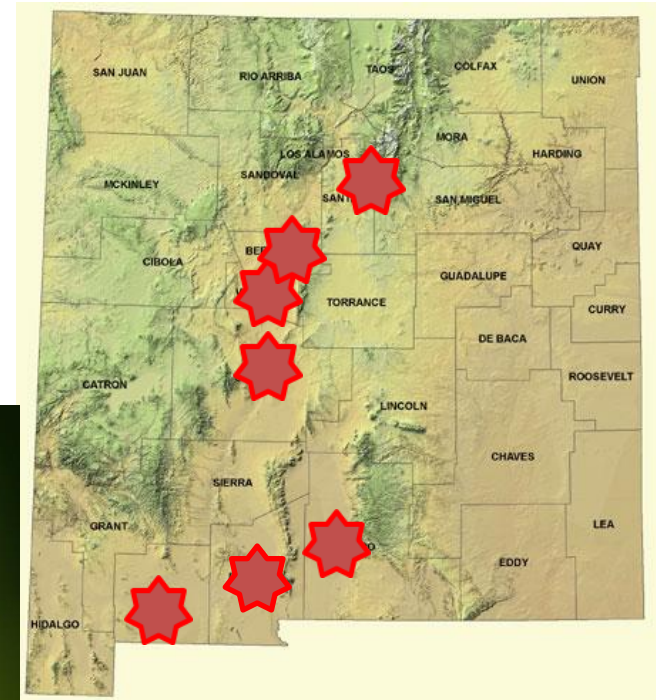
Damage to cabbage



Damage to kale

Bagrada Bug, A Little Exotic, Invasive Stink Bug

- Origin: South & East Africa, south & east Asia
- Entered southern California---2008
- In southwest AZ---fall, 2009
- In southern NM---spring, 2010
 - Dona Ana & Otero Cos.-'10
 - Valencia & Socorro Cos.-'11
 - Luna & Santa Fe Cos.- 2012
 - Bernalillo Co-'12



European Elm Flea Weevil

New, 2011!!

Orchestes alni---Eastern US, Midwest, CO---now us, too
Colfax (first), Taos, Union, San Miguel, Rio Arriba, Mora,
Santa Fe, McKinley, Torrance, Bernalillo, Valencia---more?

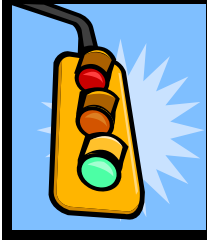
3mm



Legless larvae leaf mine in spring; adults present year 'round-new generation by summer. Adults chew tiny holes in foliage---stress, defoliate, kill elms?



SALTCEDAR BEETLES ON THE MOVE!



Saltcedar damaged by larvae and adults of the saltcedar beetle, *Diorhabda* sp.---'subtropical form.'

Location: Southern Eddy Co., along Roberson Road in Cass Draw; 8/5/13 by **Woods Houghton**, CES Co. Agent

Diorhabda elongata larva (l) and adult (r)



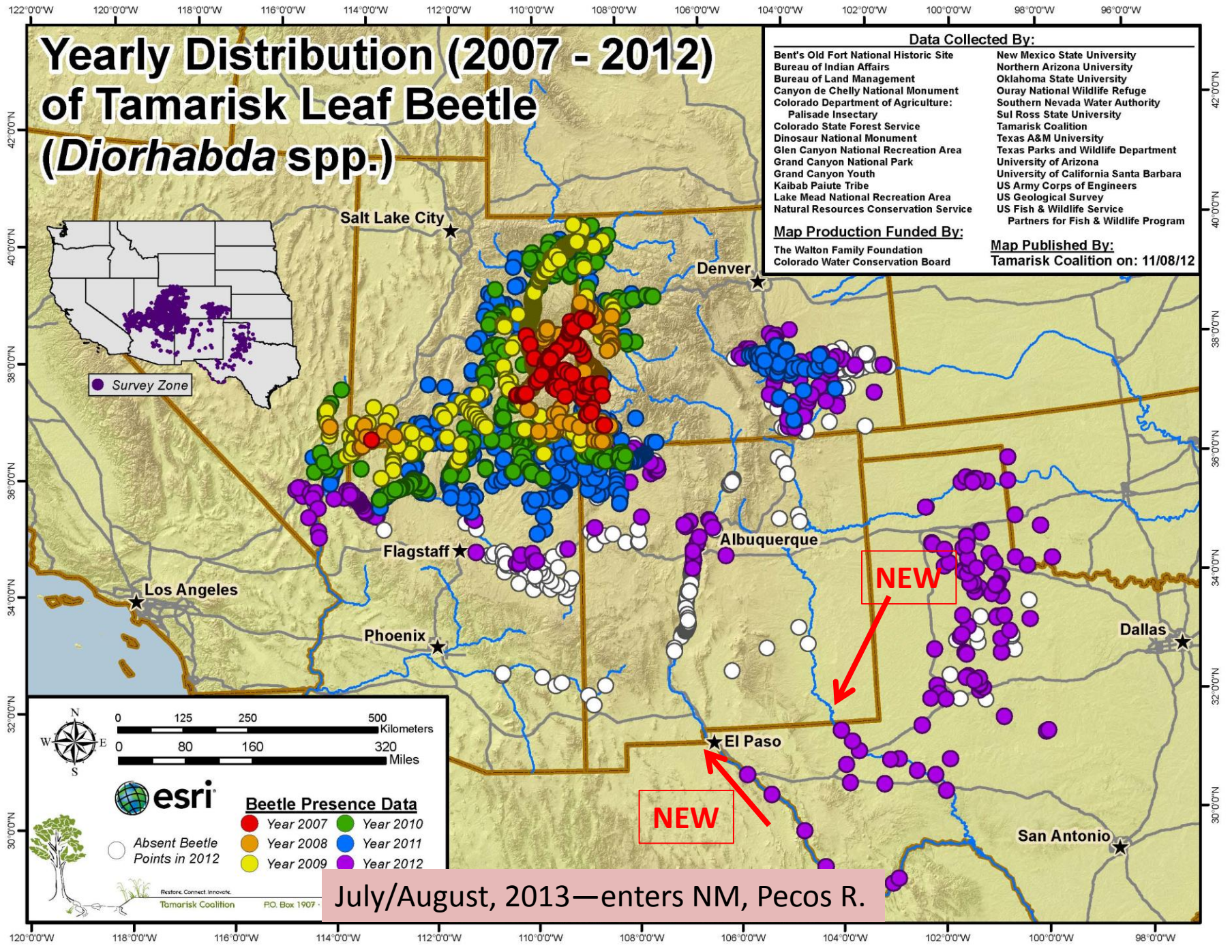
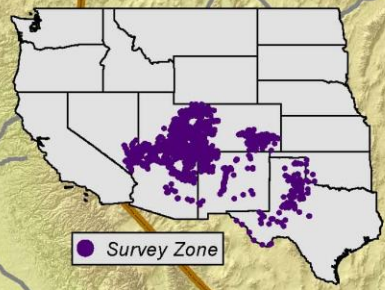
Yearly Distribution (2007 - 2012) of Tamarisk Leaf Beetle (*Diorhabda* spp.)

Data Collected By:

Bent's Old Fort National Historic Site	New Mexico State University
Bureau of Indian Affairs	Northern Arizona University
Bureau of Land Management	Oklahoma State University
Canyon de Chelly National Monument	Ouray National Wildlife Refuge
Colorado Department of Agriculture:	Southern Nevada Water Authority
Palisade Insectary	Sul Ross State University
Colorado State Forest Service	Tamarisk Coalition
Dinosaur National Monument	Texas A&M University
Glen Canyon National Recreation Area	Texas Parks and Wildlife Department
Grand Canyon National Park	University of Arizona
Grand Canyon Youth	University of California Santa Barbara
Kaibab Paiute Tribe	US Army Corps of Engineers
Lake Mead National Recreation Area	US Geological Survey
Natural Resources Conservation Service	US Fish & Wildlife Service
	Partners for Fish & Wildlife Program

Map Production Funded By:
The Walton Family Foundation
Colorado Water Conservation Board

Map Published By:
Tamarisk Coalition on: 11/08/12



0 125 250 500 Kilometers
0 80 160 320 Miles

Beetle Presence Data

● Year 2007	● Year 2010
● Year 2008	● Year 2011
● Year 2009	● Year 2012

○ Absent Beetle Points in 2012

Restore. Connect. Innovate.
Tamarisk Coalition P.O. Box 1907

July/August, 2013—enters NM, Pecos R.

Diorhabda-No Permits Are Being Issued for Interstate/Intrastate Movement of these Beetles!

Because



DO NOT 're-locate' these beetles! DO NOT even suggest 're-locating' these beetles!

**Southwestern Willow Flycatcher,
A Federally Listed Endangered Species (1995)**

- **Migrate annually from Latin America to riparian breeding sites in the Southwest
Arrive in May; breed & nest thru June; fledge in August; depart mid-Sept.**

Their CRITICAL HABITAT for REPRODUCTION is our SALT CEDAR-INFESTED riparian area.

Did This Cast Some Light on the Subject?

Entomology



Questions???

Comments???