Utah's Emergency Insect and Quarantine Pests Program

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2006 Pesticide Recertification Workshops

Background

- UT has a $1 billion Ag Industry
- UT has a $25 million Nursery Industry
- UDAF and USU monitor for invasive pests
- CAPS Program (Cooperative Ag Pest Survey)
  - Insects
  - Disease
  - Weeds

Utah's high priority insects

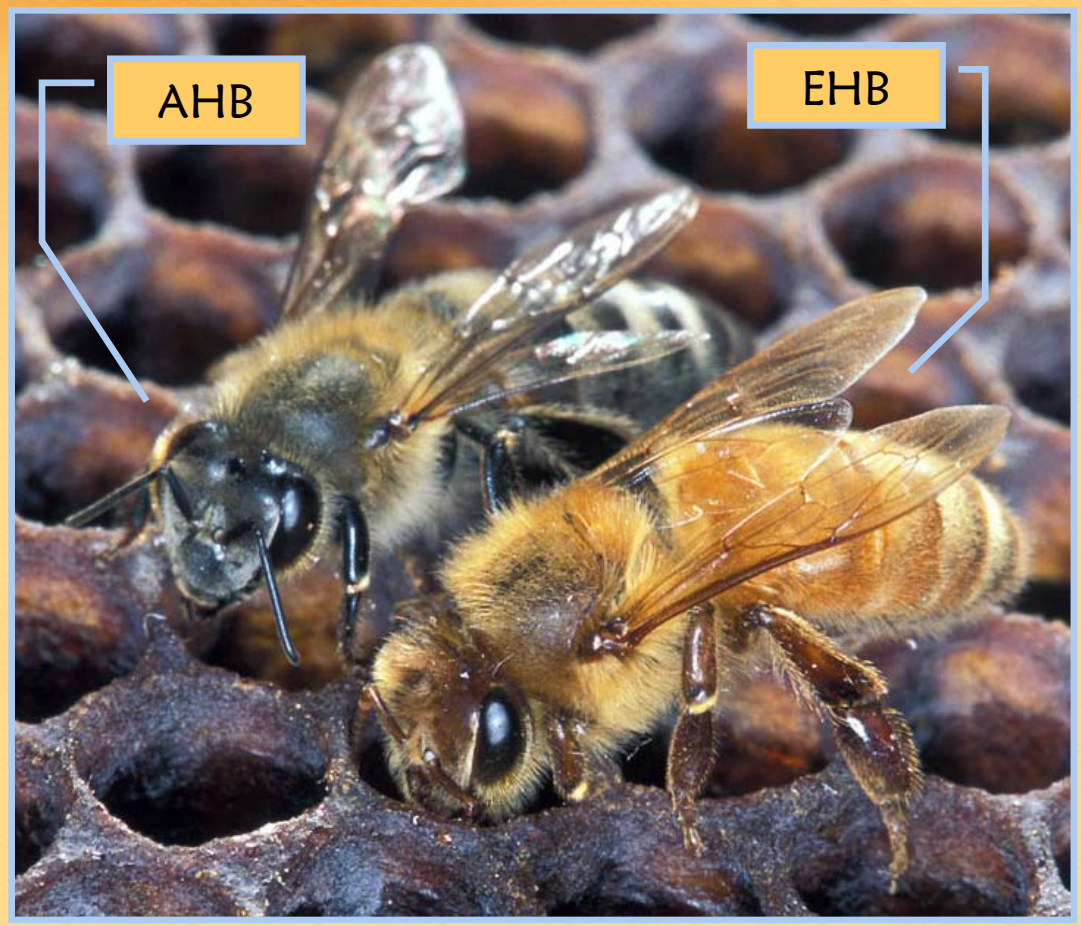
- African honey bee
- Apple maggot/ cherry fruit fly
- Cereal leaf beetle
- European corn borer
- Gypsy moth
- Imported fire ant
- Japanese beetle
- Mormon cricket/ grasshopper

African honey bee

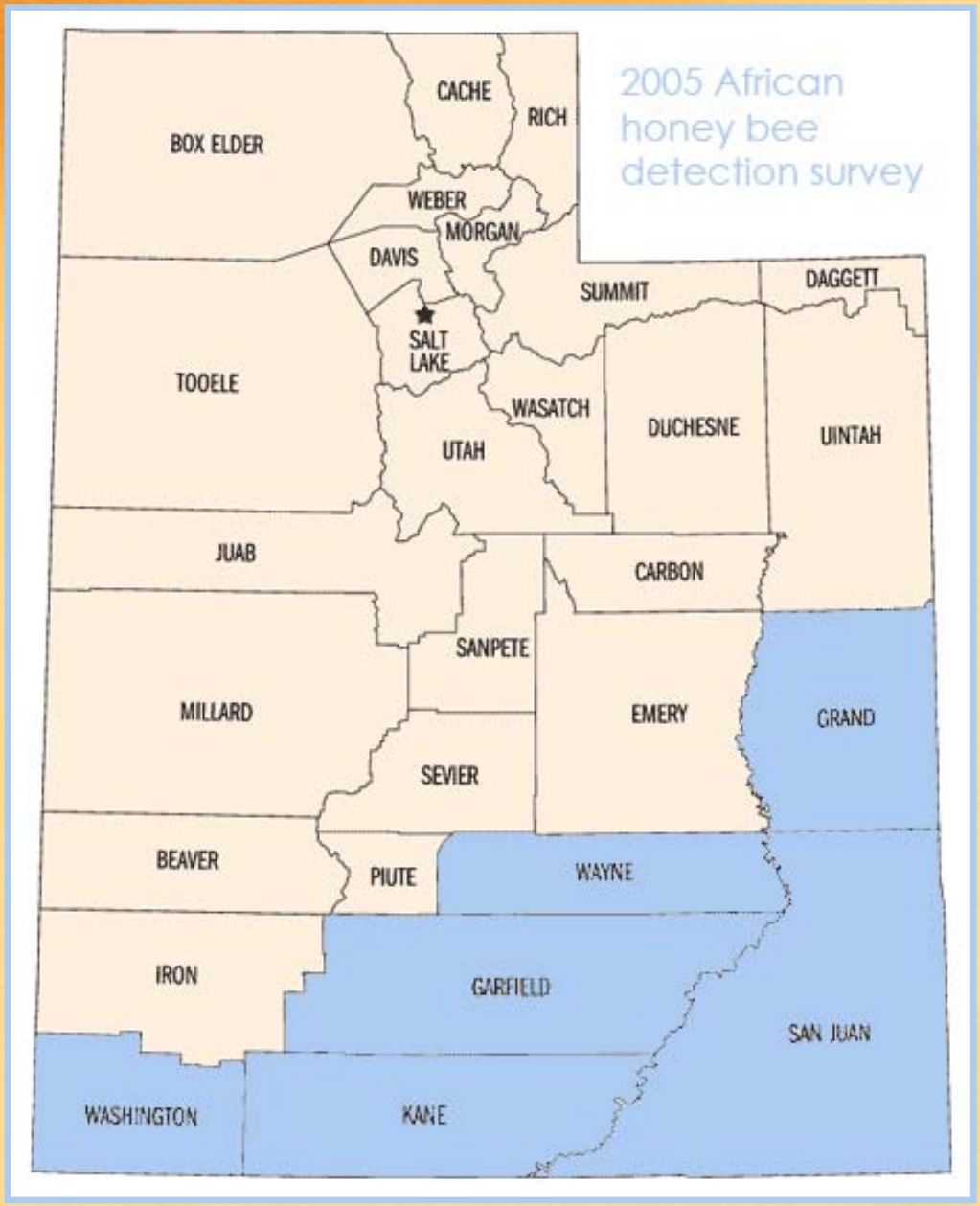
- Accidentally released in Brazil (1965)
- Moved north to U.S. (1990)
  - AZ, NV, NM, TX, CA
- Northern migration cannot be stopped
- Threatens $2.6 million honey industry
- Public health threat, aggressive

More about honey bees

- All honey bees will sting when their nest is threatened by invaders
- *A single African bee sting is no more venomous than a single European bee sting*
- African bees produce more offspring
- African bees defend their nests with less provocation, in greater numbers and for longer distances than their cousins



- Indistinguishable
- African honey bee has not been detected in UT…yet
- UDAF uses detection surveys each summer



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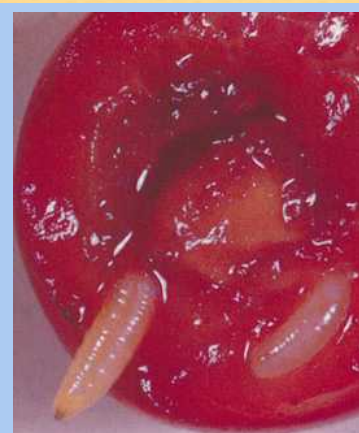
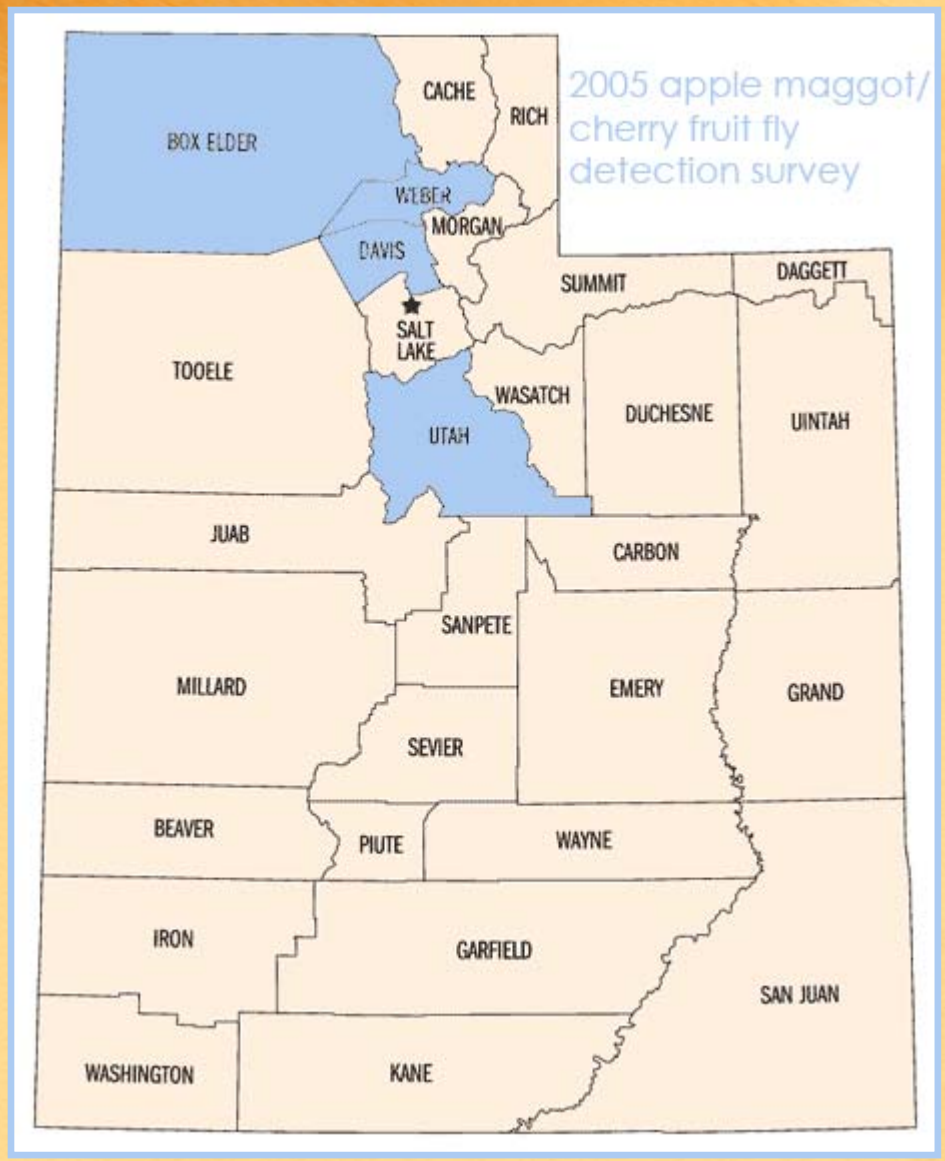
Apple maggot/cherry fruit fly

- Major pests of fruit trees in U.S./Canada
- Apple maggot detected in UT (1985)
- Threatens $27 million Fruit Industry
- Quarantined insects, restricts exporting



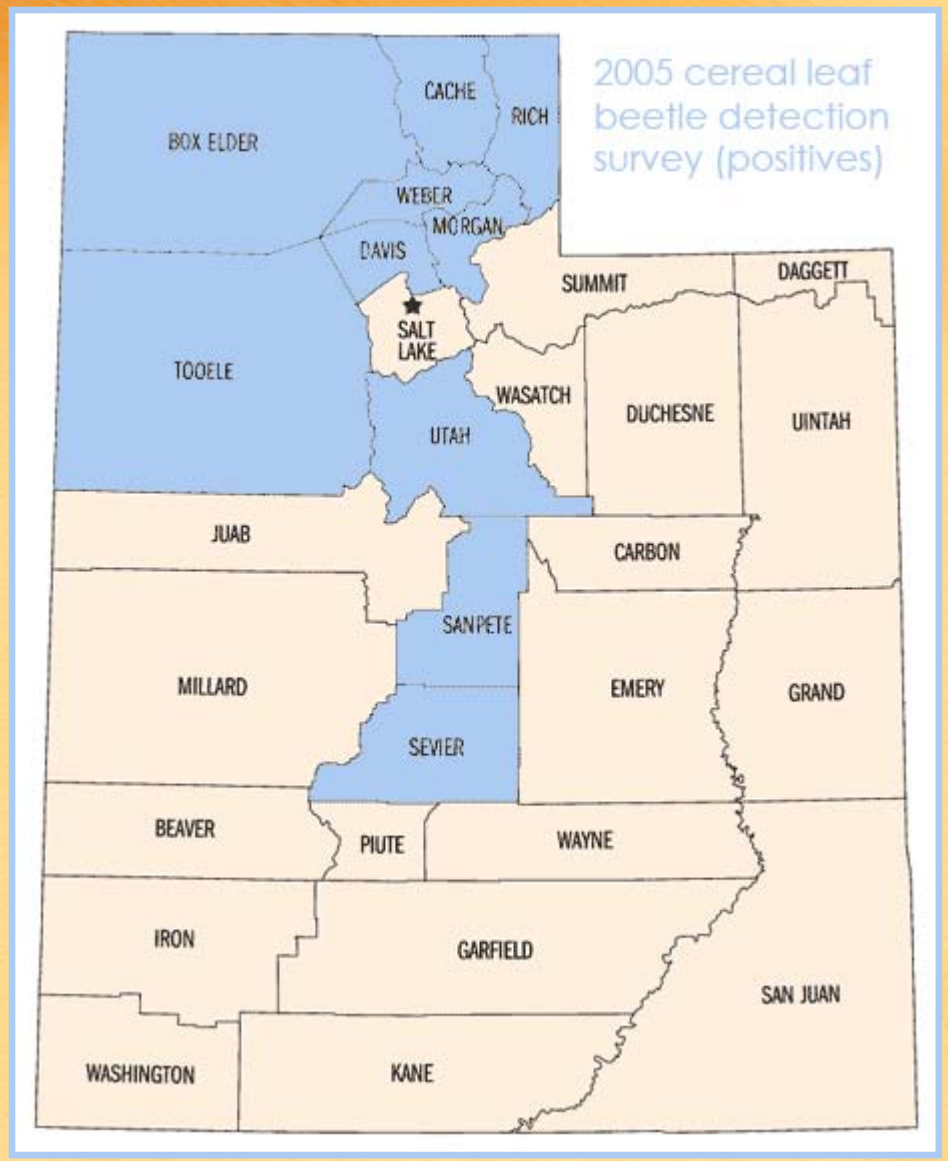


- Detection surveys in 4 counties (600 traps)
- Most catches are in abandoned orchards
- Apple maggot catches slowly decreasing

Cereal leaf beetle

- Detected in U.S. (1962), in UT (1984)
- Adults and larvae feed on small grains
- Can reduce yield by 75%
- Threatens $185 million Small Grain Industry
- Biological control can reduce beetles
  - Larval parasitic wasp is getting established

- All grain-growing counties are surveyed
- 9 counties infested
- Restricted export to other quarantined states



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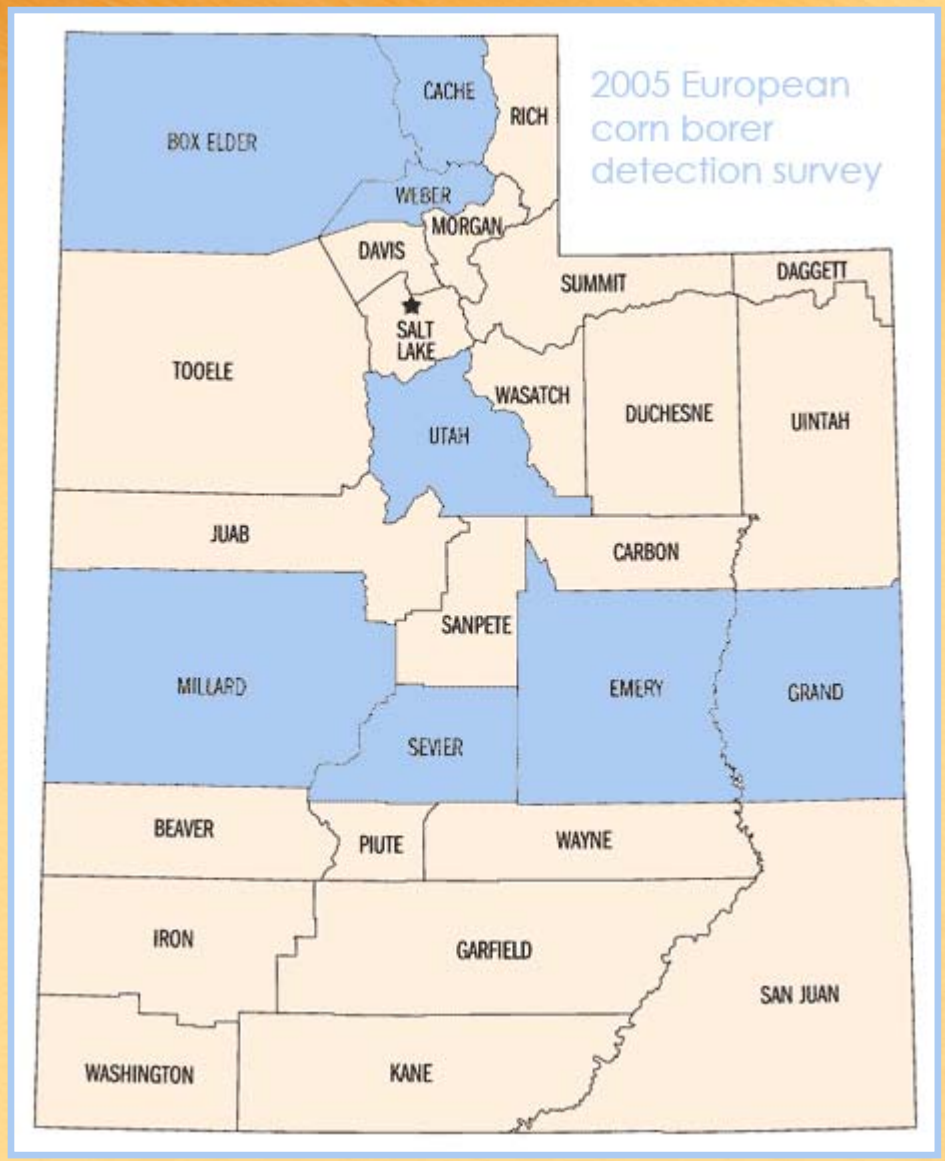
European corn borer

- Leaf feeding, midrib feeding, stalk tunneling, leaf sheath and ear damage
- Damage results in poor ear development, broken stalks, and dropped ears
- Plants are impaired, cannot produce normal amounts of grain

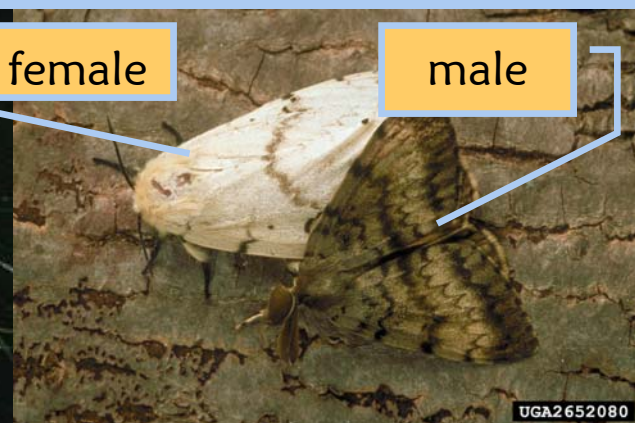


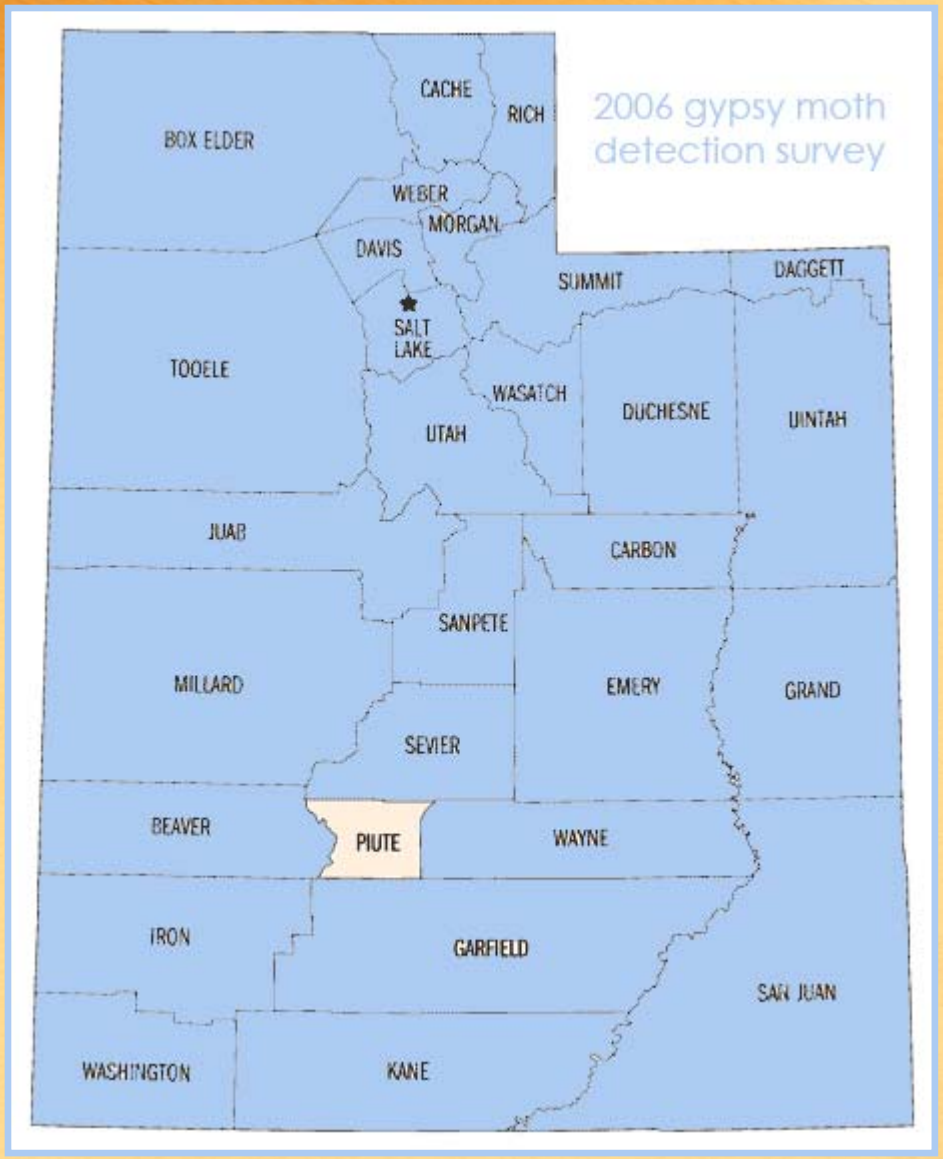


- Detection surveys in corn-producing counties (80 traps)
- Never detected in UT
- Can infest more than 200 species of plants

Gypsy moth

- Detected in U.S. (1869)
- Devastating forest pest
- Found in UT (1988)
- Several eradication programs





- Detection surveys in each county
- >3,500 traps
- 0 catches in 2006

Japanese beetle

- Detected in U.S. (1916), in Orem UT (2006)
- Threatens $25 million Nursery Industry
- Host range of >300 plants

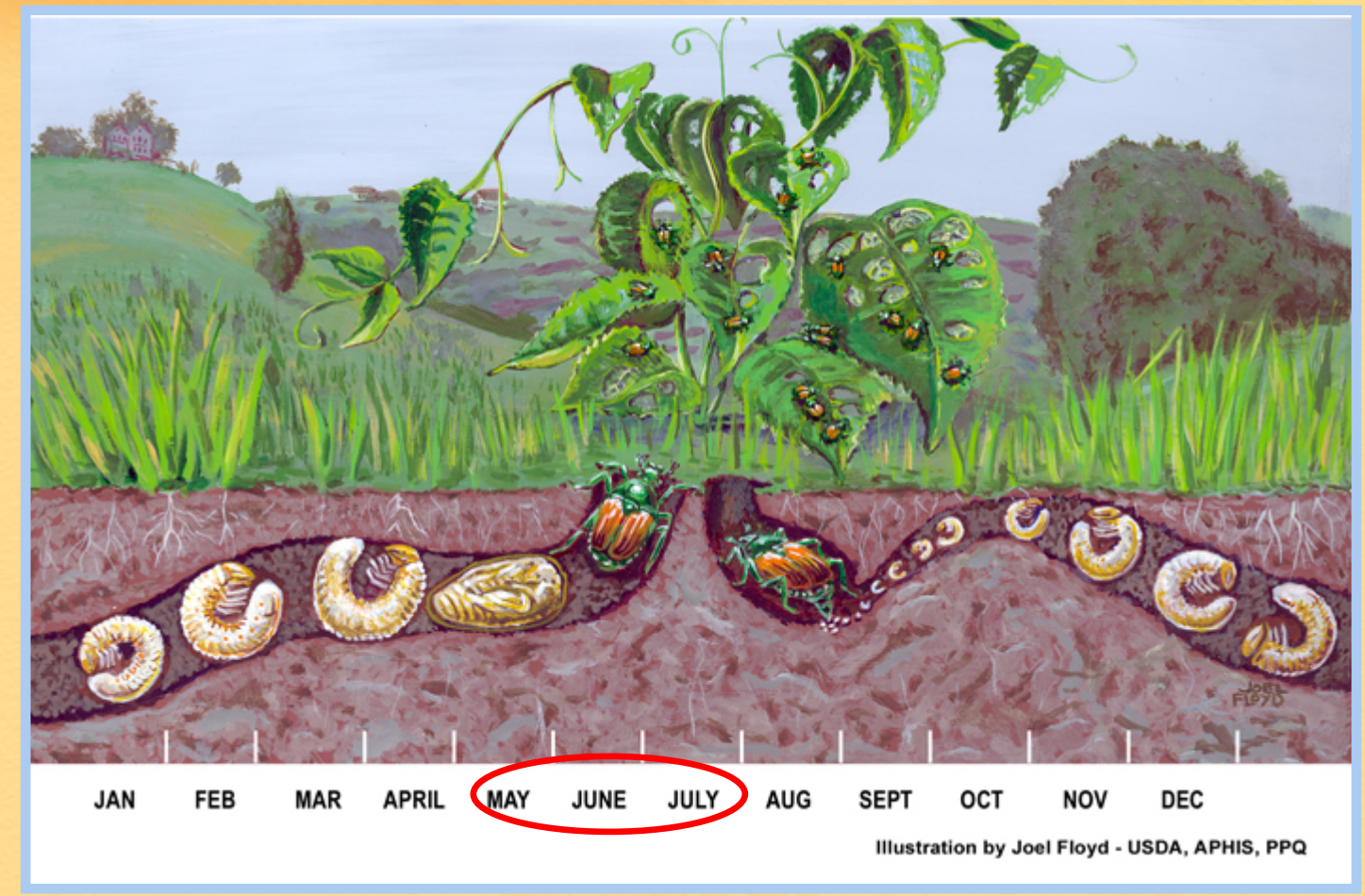
- Double lure (floral and pheromone)
- Detection surveys in 16 counties
- More than 600 adults trapped in Orem, 2006

JB biology

- Adults have a broad host range
  - Rose, apple, stonefruits, Virginia creeper, willow, elm, birch, maples, pin oak, sycamore
  - Strongly attracted to ripening fruit
  - Release a mating/feeding pheromone

- Grubs feed on turfgrass roots
  - Overwintering stage
  - Can weaken turf system

JB life cycle



JB adult damage

rose

blueberry

Virginia creeper

linden

JB grub damage

- Small patches of turf destroyed
- Patches coalesce, quickly
- Spongy turf, easily pulled back

JB adult control

- Adult control is difficult
  - Wide host range
  - Continuous feeding/mating movement
- Many insecticides are available
  - Bayer Advanced®, Baythroid®, Concern®, malathion 5, Merit 2.5 G ®, Orthene®, Pounce®, Proaxis®, Sevin 4F®, Warrior®
  - Insecticidal soap, Conserve®

JB grub control

- Grub control is difficult
  - Threshold is 8-10/ft^2 with *obvious damage*
  - Treat if persistent grub damage is visible
  - Pushing product down in the soil
- Insecticides are available
  - Merit 0.5G®, GrubEx® before egg hatch
  - Dylox 6.2G® for late summer grub outbreaks

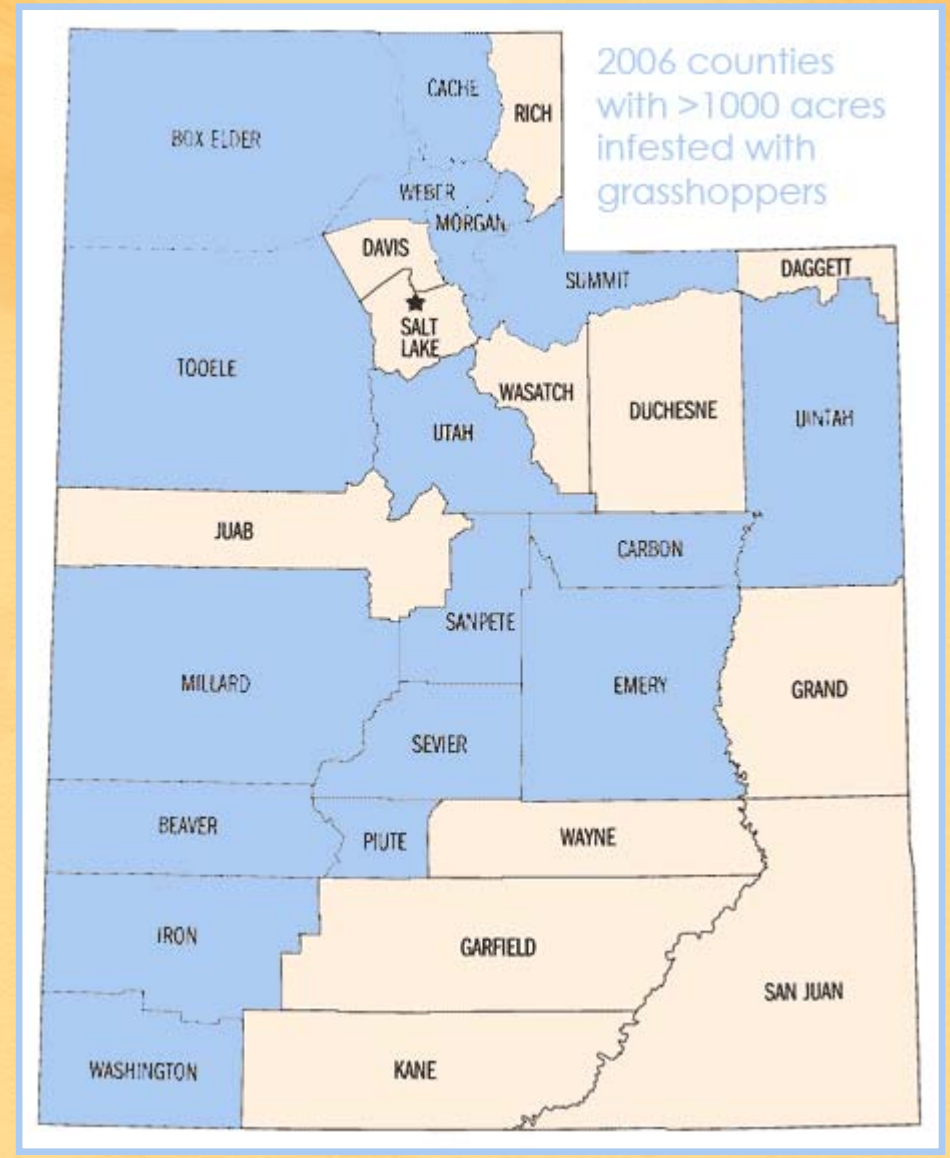
Mormon cricket/grasshopper

- All counties are surveyed each year
  - >1 million acres infested in 2006
  - 160,000 acres treated by aerial/ground bait
  - Projected 187,000 acres treated in 2007
- Mormon cricket infestation has increased
- Grasshopper infestation has decreased


2006 counties with <1000 acres infested with mormon cricket
BOX ELDER
CACHE
RICH
WEBER
MORGAN
DAVIS
SALT LAKE
TOOELE
SUMMIT
DAGGETT
WASATCH
UTAH
DUCHESNE
UINTAH
JUAB
CARBON
SANPETE
MILLARD
EMERY
GRAND
SEVIER
BEAVER
PIUTE
WAYNE
IRON
GARFIELD
SAN JUAN
WASHINGTON
KANE

twostriped grasshopper

red legged grasshopper



Imported fire ant

- Detected in southern U.S. (1940s)
- Caused >$5 billion damage so far
  - Will feed on anything
  - Aggressively defend colony
  - Fire ant mounds are common


2005 imported
fire ant survey
BOX ELDER
CACHE
RICH
WEBER
MORGAN
DAVIS
SALT
LAKE
SUMMIT
DAGGETT
TOOELE
WASATCH
UTAH
DUCHESNE
UINTAH
JUAB
CARBON
SANPETE
MILLARD
EMERY
GRAND
SEVIER
BEAVER
PIUTE
WAYNE
IRON
GARFIELD
SAN JUAN
WASHINGTON
KANE


Notice “double bump”
before abdomen
UGA2121038


2 mm

Summary

- UDAF and USU work together on insect detection surveys with the CAPS Program
- Prevent establishment in Utah
- Most high priority insects are devastating
  - Often can restrict exports to other states
  - Can potentially reduce ag and hort profits

More Information

- http://utahpests.usu.edu
  - factsheets, powerpoints, photo gallery
- http://www.ag.state.ut.us/
- http://www.aphis.usda.gov/
- *Garden Insects of North America*. 2004. W. Cranshaw. ISBN 0691095612.

Thank you!

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www.utahbugs.usu.edu