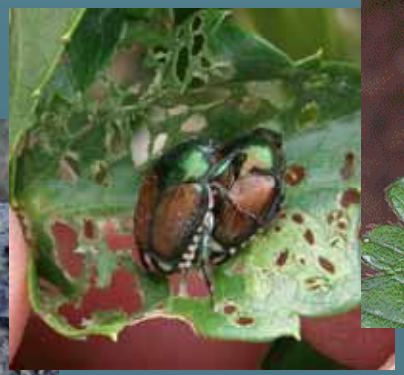
Management of Lawn and Tree Insect Pests

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Utah State University Extension

Utah Pest Control & Lawn Care Association

January 18, 2007

Topics

- Insect Diagnostics – recognizing common insects & plant injury
- NeW Pest – Japanese beetle
  - Turf and ornamental pest
- NeW Mealybug pest of shadetrees
- *Ips* and Banded elm bark beetles
- Lilac root weevil
- European earwig
- *Utah Pests* on-line information

Insect Diagnosis

Insect is present

Injury is present

What type of injury?

Friend or foe?
Which life stage is present?

Insect Feeding Types

Chewing

Piercing-Sucking

Borers

Gall Formers

Diagnosis

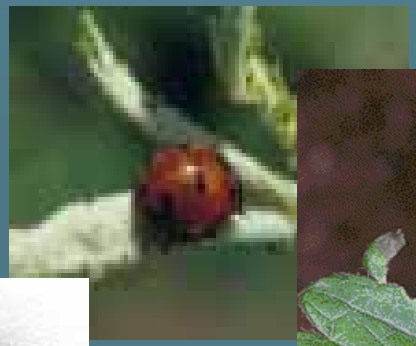
Scouting for Pests

- Look at the big picture
  - Pattern of plant decline/injury
    - Pest injury tends to be aggregated
    - Can injury be associated with irrigation or other pattern?
- Look at new growth
- Check for root/crown problems
- Hand lens for small insects and mites
- Scout every 1-2 weeks

Raspberry horntail injury to cane tips

Recognizing Common Insects
Beetles

Hard wing covering
Most diverse group: > 250,000 spp.
Chewing mouthparts





Larvae – grub-like
Chewing mouthparts

Beetle Injury

Leaves: holes, skeletonizing, notching

Trunks: tunnels, girdling

Roots/Crowns: tunnels, chew off fine roots

Recognizing Common Insects
Moths

Colored scales on wings
Adults feed on nectar
Good flyers
Most are active at night

Larvae – caterpillars
Chewing mouthparts

rworm, *Helicoverpa zea*, adult moth.

Caterpillar Injury

Tunnels in limbs and trunks

Holes chewed in leaves

Tunnels and holes in fruits

Recognizing Common Insects
Hemiptera - True Bugs

Half wing: front is leathery, back is membranous

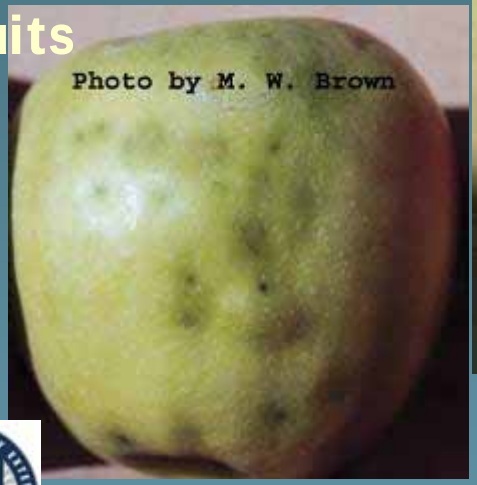
Inverted triangle on back

Piercing sucking mouthparts

Nymphs – mini adults without wings

True Bug Injury

Pitting and bumps:
Cells killed in older fruits



Cat facing:
Cells killed in young fruit

Squash bug injury

Toxin injected:
Plant stunting and death

Recognizing Common Insects

Homoptera: Aphid, Scale, Whitefly, Mealybug, Leafhopper

Small
Soft bodied
Wax or covering
Many produce honeydew
Piercing sucking mouthparts

Many feed in phloem
Nymphs

Aphid, Scale, Whitefly, and Mealybug, Leafhopper Injury

Leaf curling

Limb dieback

Leafhopper burn: Speckling

Honeydew

Leaf spots from dead cells

NeW Pest to Utah: Japanese Beetle

Popillia japonica

Scarab Beetle

Mating pair of adults

First found in U.S. in 1916

Orem, Utah: July 2006 >600 adults

Trap: Sex pheromone/ Floral lure

Adult feeding injury to Virginia Creeper

Japanese Beetle

Primarily a turf pest – Larvae or grubs feed on grass roots

Adults have a broad host range – Skeletonize leaves – rose, fruit trees, shade trees, grape, etc.

Injury to rose

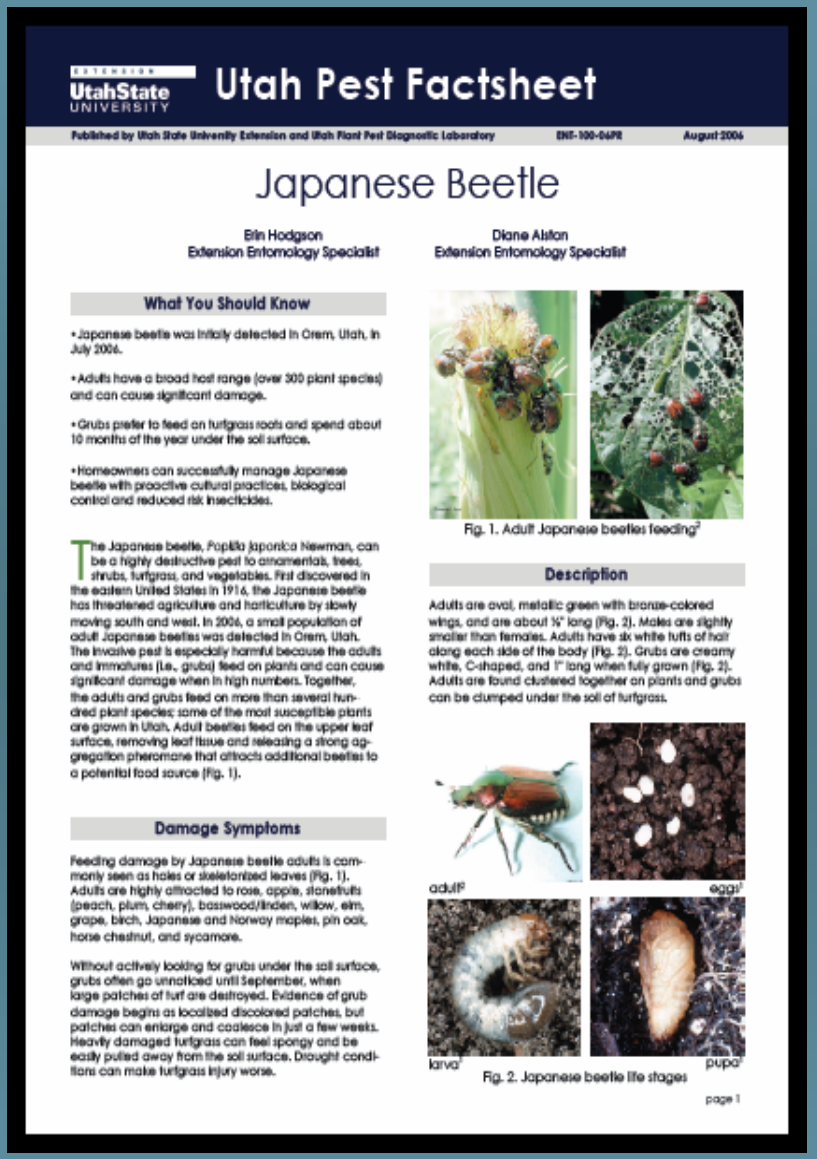
Injury to crabapple

Japanese Beetle Management

- Eradication is extremely difficult
- Don't panic – it's unlikely to have a large impact
- Keep plants healthy
- Plant non-attractive plants (lilac, forsythia, dogwood, magnolia, American holly)
- If detected in turf, control larvae with insecticides (imidacloprid, carbaryl, permethrin)
- Traps can provide some adult suppression (75% catch; but can attract them into an area)
- Contact local office of Utah Dept. of Agriculture and Food

Japanese Beetle Fact Sheet

on USU Extension Web Site



UtahState UNIVERSITY Extension

Utah Pest Factsheet

Published by Utah State University Extension and Utah Plant Pest Diagnostic Laboratory ENT-100-06PR August 2006

Japanese Beetle

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What You Should Know

- Japanese beetle was initially detected in Orem, Utah, in July 2006.
- Adults have a broad host range (over 300 plant species) and can cause significant damage.
- Grubs prefer to feed on turfgrass roots and spend about 10 months of the year under the soil surface.
- Homeowners can successfully manage Japanese beetle with proactive cultural practices, biological control and reduced risk insecticides.

The Japanese beetle, *Popilia japonica* Newman, can be a highly destructive pest to ornamentals, trees, shrubs, turfgrass, and vegetables. First discovered in the eastern United States in 1916, the Japanese beetle has threatened agriculture and horticulture by slowly moving south and west. In 2006, a small population of adult Japanese beetles was detected in Orem, Utah. The invasive pest is especially harmful because the adults and immatures (i.e., grubs) feed on plants and can cause significant damage when in high numbers. Together, the adults and grubs feed on more than several hundred plant species; some of the most susceptible plants are grown in Utah. Adult beetles feed on the upper leaf surface, removing leaf tissue and releasing a strong aggregation pheromone that attracts additional beetles to a potential food source (Fig. 1).

Damage Symptoms

Feeding damage by Japanese beetle adults is commonly seen as holes or skeletonized leaves (Fig. 1). Adults are highly attracted to rose, apple, stonefruits (peach, plum, cherry), basswood/linden, willow, elm, grape, birch, Japanese and Norway maples, pin oak, horse chestnut, and sycamore.

Without actively looking for grubs under the soil surface, grubs often go unnoticed until September, when large patches of turf are destroyed. Evidence of grub damage begins as localized discolored patches, but patches can enlarge and coalesce in just a few weeks. Heavily damaged turfgrass can feel spongy and be easily pulled away from the soil surface. Drought conditions can make turfgrass injury worse.

Fig. 1. Adult Japanese beetles feeding[2]

Description

Adults are oval, metallic green with bronze-colored wings, and are about ½" long (Fig. 2). Males are slightly smaller than females. Adults have six white tufts of hair along each side of the body (Fig. 2). Grubs are creamy white, C-shaped, and 1" long when fully grown (Fig. 2). Adults are found clustered together on plants and grubs can be clumped under the soil of turfgrass.

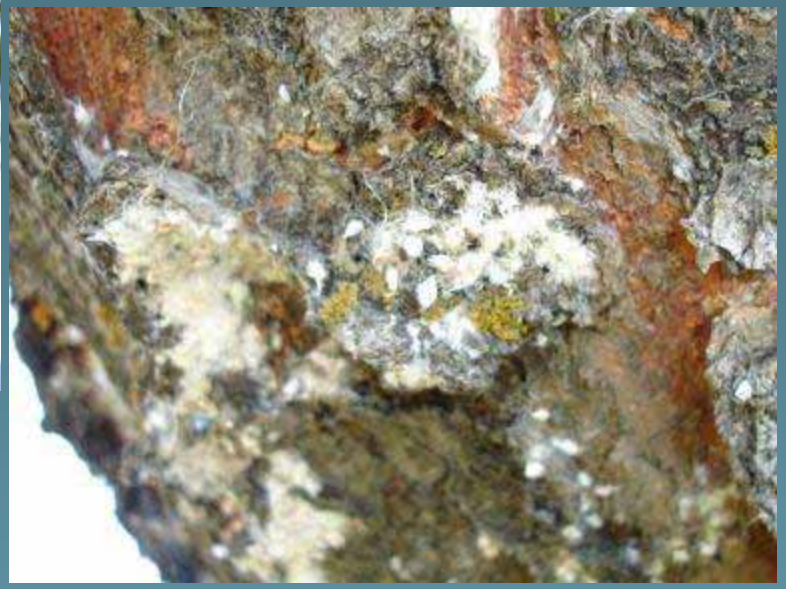
adult[2] eggs[1]

larva[2] pupa[2]

Fig. 2. Japanese beetle life stages

http://extension.usu.edu/files/publications/factsheet/ENT-100-06PR-A.pdf

"New" Mealybug to Utah



Honeylocust
Redbud

Davis and Utah Counties

Photos by JayDee Gunnell, USU Extension

Management of "New" Shadetree Mealybug

- Delayed dormant oil + insecticide
  - Delay until bud break
  - Suffocate over wintering stages
- Horticultural mineral oil
- Imidacloprid (Merit)
- Synthetic Pyrethroids (permethrin, bifenthrin, cyfluthrin, lambda-cyhalothrin)

Bark Beetles (Scolytidae)

Spruce
Pine
Fir
Prunus
Elm

Attack old or stressed trees & seemingly healthy trees

Ips Bark Beetles

- ***Ips pilifrons*** – spruce
- ***Ips pini*** – pine
- ***Ips confusus*** – pinyon pine
- ***Ips paraconfusus*** – pine, spruce

1/8-3/8" long
Spines on rear

Ips Facts

- Adults colonize & reproduce in conductive (cambial) tissues
- Construct tunnels (galleries) to lay eggs & feed
- 6-8 wk life cycle; up to 5 generations per year
- <u>Attack trees under stress</u>
- Attack smaller diameter limbs at tops of trees first

Trees at Risk for *Ips* Attack

- **Stressed trees:**
  - Drought-stressed, trees in dry sites
  - Newly transplanted
  - Root injuries from construction or other
  - Crowded trees
- **Trees surrounded by breeding populations of *Ips***
  - Slash (piles of prunings)
  - Stacks of green or infested wood
    - Freshly cut wood is a preferred breeding site

Management of *Ips* in the Landscape

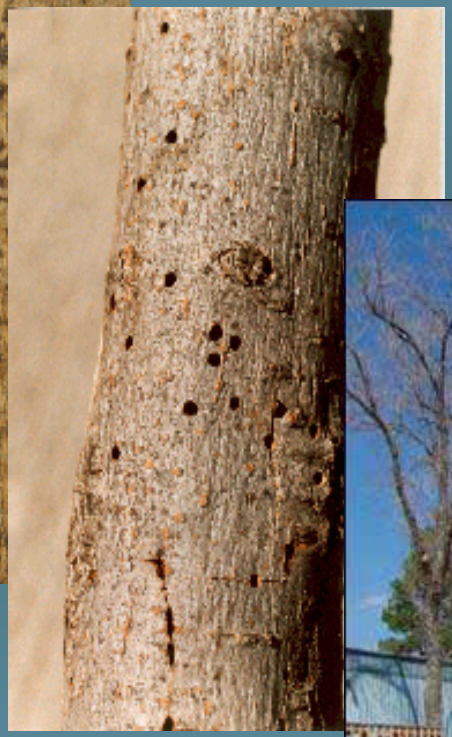
- Maintain tree vigor, avoid stress (proper watering, planting site, avoid injuries)
  - 2-4” water every 2-6 weeks
  - Avoid planting in very dry sites
- Remove & dispose of infested material
  - Dispose 2-3 miles away from hosts
- Remove and treat infested material
  - Chip and spread to dry
  - Burn
  - Remove all bark
  - Cover logs with ≥10 ml clear plastic & heat to lethal temperatures

Management of *Ips* in the Landscape

- **Apply preventive insecticide or apply to "lightly" infested trees:**
  - **Carbaryl (Sevin): flowable, 2% ai solution**
  - **Permethrin (Astro, Dragnet)**
  - **Treat in spring before beetle flight (April) or treat in fall (late Sep to Oct)**
  - **12-18 months protection (carbaryl)**
  - **High-pressure sprayer (≥250 psi) for large trees**
  - **Apply to entire bole & larger limbs**

Banded Elm Bark Beetle

Scolytus schevyrewi



Elm
Prunus
Willow
Russian Olive

Attacking American elm trees
May vector the Dutch Elm Disease fungus

Lilac Root Weevil

Drought related
Observed heavy injury
to shrubs & small trees

Lilac Root Weevil

Otiorhynchus meridionalis

- Common hosts: lilac, peony, dogwood, yew, privet, cotoneaster, arbovitae, spruce, others
- Adults chew irregular notches in leaf edges – target with foliar insecticide (Orthene, Merit, Sevin, Azadirachtin, Pyrethroids) – in late spring with first leaf notching
- Larvae feed on roots – target with soil insecticide (Merit), insect-attacking nematodes, *Beauveria* fungus – late spring or early fall

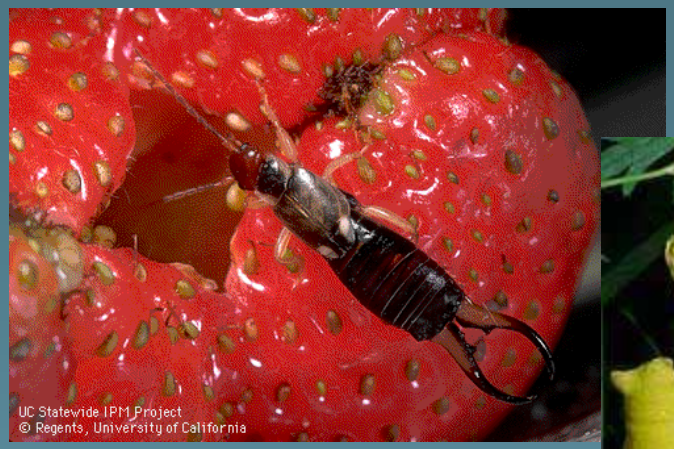
Adult & leaf notching

Needle notching on spruce

Larvae feeding on crown & roots

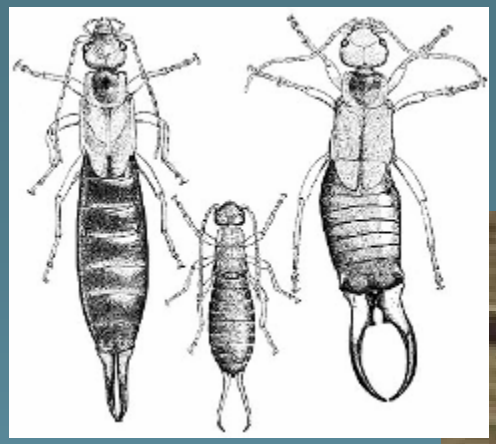
European Earwig

- Primarily feed on decaying organic matter (saprophytic)
- Feed on young, tender plants; chew holes in flower petals, fruits; nuisance pest
- Adults are also predators; nocturnal

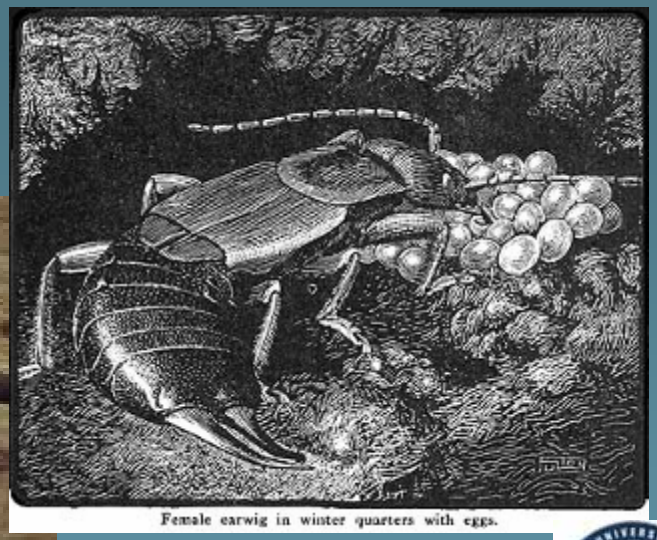


European Earwig

- Cultural & mechanical controls: avoid overuse of mulch and damp debris where they hide during the day; place and remove rolled newspaper; attractant traps: tuna can with bacon grease
- Chemicals: permethrin; target young in nests
- Tanglefoot on base of trunks, stems



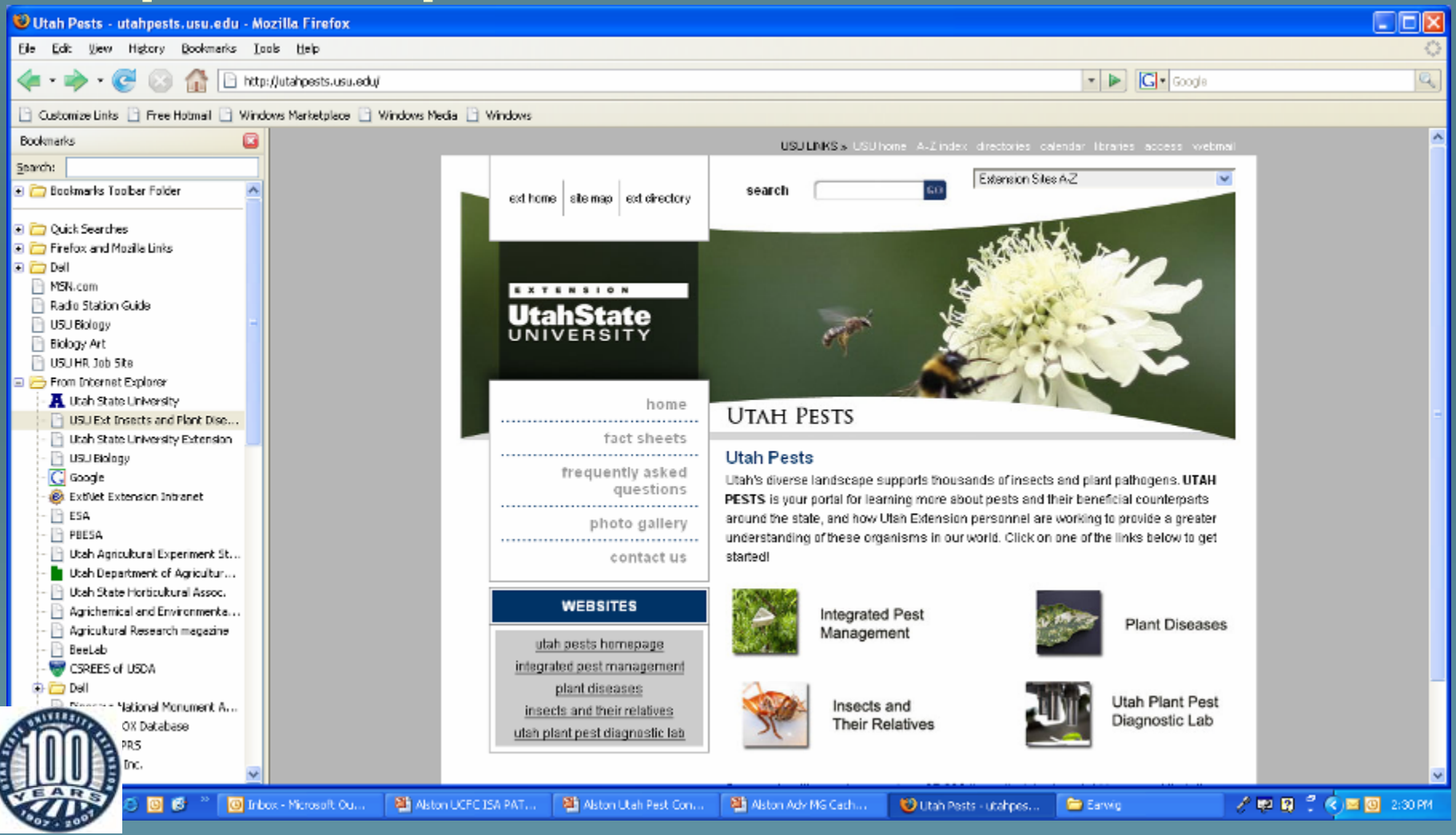
Tuna can trap with bacon grease



Female earwig in winter quarters with eggs.

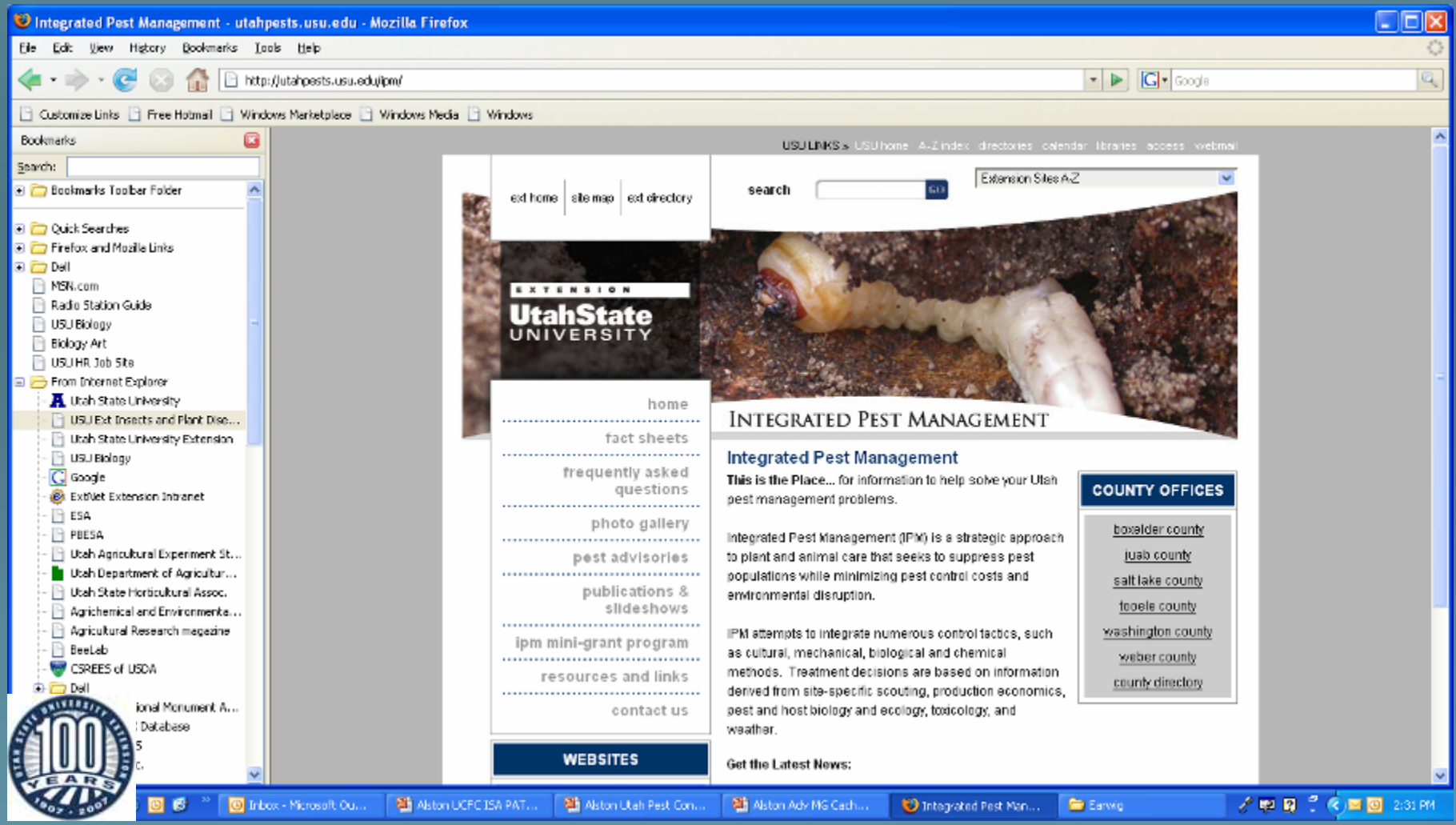
Utah Pests Web Page

http://utahpests.usu.edu

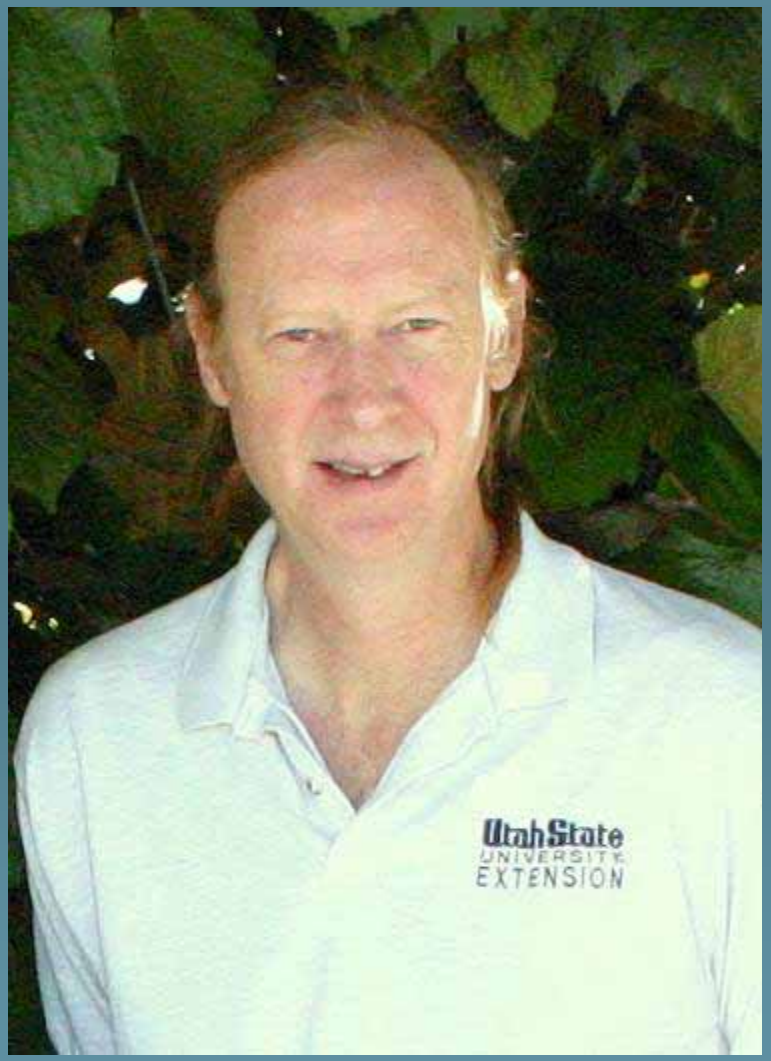


Utah IPM Web Page

http://utahpests.usu.edu/ipm



In Memory
Alan Hickman Roe



1954 – 2006

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Insect Diagnostician