Outdoor Mammal Management Revisited

USDA APHIS
Wildlife Services

Patrick Smith, District Supervisor
USDA Wildlife Services
Who is USDA Wildlife Services?

- Provide federal leadership in the area of wildlife damage management
- Specialize in Animal Damage Management
- Resolve human/wildlife conflict
- Technical assistance
- On-site response
- Not to be confused with Oregon Department of Fish and Wildlife or US Fish and Wildlife Service
What we do.

- Protect Agriculture
- Protect Property
- Protect Natural Resources
- Protect Health and Safety
Goals of this Presentation

- Identify Common Mammal Damage Problems
- Explore Basic Biology of Some of These Critters
- Discuss Damage Management Solutions
A few thoughts on management...

- Wildlife plays an important role
  - No “good” wildlife, no “bad” wildlife
  - Wildlife is often attracted to human environments
  - Can lead to conflicts
  - Laws in place to address conflicts
- No ‘Cure-All’
- Every situation is different. Use appropriate tool or combination of tools.
- Accumulation of multiple techniques add up to give you desired results.
- Pros and Cons.
- Cost-Benefit Analysis.
First Step

Identify The Problem!
Mounds are distinctly crescent-shaped - Closed
Burrows/chambers can be six feet below ground
~2 inch diameter burrows
A burrow can have up to 200 yards in lineal length
A single gopher may construct 300 soil mounds and move more than 4 tons of soil per year!!
Densities up to 20/acre
Herbivores
- Primarily feed on roots and occasionally above-ground succulent vegetation
- Eat up to 60% of body weight per day
- Do not hibernate-active year-round
- Not protected
Reproduction

- Three to Six young, one to two times/year
- Irrigated alfalfa fields
  - Not uncommon for gophers to have up to three litters per year.
  - 20 days gestation period
- Births occur from March through June
- Not social – one gopher per burrow system
  - Unless mating or female with young
The Gopher Tunnel Network
Option 1: Habitat Manipulation

- Flood Irrigation?
- **Deep Tilling**?
- Weed Control
  - Chemical or mechanical control of forbs, which frequently have large underground storage structures, can be an effective method of minimizing damage.
Option 2: Trapping Gophers
Option 2: Trapping Con’t
**Option 3: Pesticides**

- **Pesticide**: A substance that is used to kill, harm, or repel a pest; includes herbicides, insecticides, fungicides, rodenticides and others.

- **General-Use Pesticide**: May be bought over-the-counter without a license; includes household pesticides.

- **Restricted-use pesticide (RUP)**: May be bought only by someone with a pesticide license and may only be used by a licensed pesticide applicator or a person they supervise. These pesticides are typically more dangerous than general-use pesticides.

- Be sure to follow the label. The label is the law!
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The label is the law!
Same active ingredient

- Different labels
  - Signal words
  - Locations
  - Species
  - General use/ restricted use
Option 3: Rodenticide

- Strychnine
  - Restricted use pesticide
    - (depends on label)
    - RUP with burrow builder
Applicator Use

Photo by Glenn Shewmaker
The Burrow Builder

Remember
- Use the Burrow Builder when soil is moist
- Adjust the depth to the natural tunnels
- Spacing of 20-30 feet
- One to two pounds per acre
- Check to assure good burrow formation
- Harrow or scrape to monitor future activities
Burrow Builder in Use

Photo by Glenn Shewmaker
Option 4: Others

- Carbon Monoxide/Dioxide
- Rodenator
- Repellents and other fumigants
California Ground Squirrel (Grey Digger)
- Hibernator, emerge Feb./March
- Estivate at times during the summer
- Not protected species, although some species are
Ground Squirrel Facts

- One annual litter of 7-8 average
- Lifespan: 5-8 years
- Home range– 75 yard radius from the burrow
- Burrows always open
- Herbivores
  - CA Ground Squirrel - Green vegetation in spring, switch to seeds in the summer
Ground Squirrel Damage

- Burrowing
- Feeding on crop and ornamental plants
- Undermine roads, weaken levees/ditches/damns
- Disease transmission
  - Bubonic Plague
  - Rodent carried bacteria
  - Spread by fleas
  - 2 Crook Co. Cases 2012
  - Heppner 2015
  - 8 OR cases since 1995
Ground Squirrel Burrows, with mounds and without
Ground Squirrel Control Methods

- Exclusion
- Deep Tilling
- Flood Irrigation
- Habitat Manipulation (remove rock piles, structure that harbor squirrels)
- Shooting
Trapping

- California Ground Squirrel
  - Conibear
  - Cage trap
    - Sunflower seeds
Toxicants

- Acute
  - Single feeding
  - Fast acting (24 hrs)
- Anticoagulants
  - Multiple feedings
  - Slow acting
- Grain baits
- Acceptance?
- PREBAIT
Pesticides...Read the label

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

Acute Hazards: Fatal if inhaled. Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some people.

Hazard Avoidance: Do not get in eyes, on skin, or on clothing. Do not breathe dust. Wear protective clothing, eye wear, and respirator as listed under “Personal Protective Equipment.” Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Remove contaminated clothing and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT

Handers who mix packages containing 1 lb or more of this product must wear
- Coveralls or long-sleeved shirt and long pants
- Chemical-resistant gloves (such as waterproof or rubber gloves)
- Chemical-resistant footwear plus socks
- Protective eyewear (goggles or face shield)
- Respirator with a dust/mist filtering respirator
- MSHA/NIOSH-approved approval number prefix TC-21C or NIOSH-approved respirator with any N, P, R, or HE filter

Handers who mix packages containing less than 1 lb of this product must wear:
- Chemical-resistant gloves (such as waterproof or rubber gloves)
- Protective eyewear (goggles or face shield)

Applicators who handle bait must wear:
- Chemical-resistant gloves (such as waterproof or rubber gloves)

RESTRICTED USE PESTICID

Due to High Acute Inhalation Toxicity, Eye Irritation, and Skin Irritation to Humans; High Acute Toxicity to Non-target Species and Aquatic Invertebrates, and the Need for Highly Specialized Applicator Training.

For use only by U.S. Department of Agriculture Animal and Plant Health Inspection Service Certified Applicators. Insecticide in granular form is used in bed control, and certified and licensed in the category of Varied Pest Control by the Oregon Department of Agriculture.

SUPPLEMENTAL LABELING - OREGON COMPOUND DRC-1339 CONCENTRATE-STAGING AREAS FOR DISTRIBUTION AND USE ONLY IN UMATILLA COUNTY, OREGON

For the control of mosquitoes in apple orchards using elevated bait stations.

Active Ingredient:
- 3-micro-2chloroaniline hydrochloride ........................................ 97.0%
- Inert Ingredient ......................................................... 3.0%
- TOTAL ........................................................................ 100.0%

KEEP OUT OF REACH OF CHILDREN

DANGER-PELIGRO POISON

FIRST AID

If swallowed:
- Call doctor or poison center immediately
- Have person up a glass of water to swallow

If inhaled:
- Do not induce vomiting unless told to do so by the poison control center
- If exposed to dust, remove contaminated clothing
- Remove contaminated clothing
- After skin contact with water, for 15 to 20 minutes, call poison control center or doctor immediately for treatment advice
- If in eye:
  - Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye
  - Call poison control center or doctor immediately for advice

NOTE TO PHYSICIAN

Probable muscular damage may contrainde use of gastric lavage.

Copyright 2001. All rights reserved. Precautionary statements written on label.

User Safety Requirements

Follow manufacturer’s “instructions” for cleaning/maintaining PPE. If no such instructions are provided for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Users should remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users should remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is highly toxic to birds and aquatic invertebrates. Do not use in any manner that may endanger desirable and protected bird species. Runoff may be hazardous to aquatic organisms in neighboring areas. Do not apply when runoff is likely to occur. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water by the discharging of equipment or disposal of equipment washwater or rinse.

This label and the federal label must be in possession of the user at the time of pesticide application. Read the entire label and the entire federal label. Follow all applicable directions, restrictions and precautions found on either label.

EPA REG. NO. 160227-30
EPA SLN NO. OR-010024
24(c) Registrant
U.S. Department of Agriculture
Animal and Plant Health Inspection Service
4700 River Road, Unit 152
Riverdale, Maryland 20737-1237
Anticoagulants

- Chlorophacinone
- Diphacinone

- Use in bait stations
- Prebait!
- Multiple feedings over days or a week
Zinc phosphide

Restricted Use (Depends on label)
- Reacts with moisture
- Do not use bait stations
- Spot/broadcast baiting
- Avoid bait shyness (acute)
  - Only use once a year
- Low risk of non-target poisoning and secondary poisoning
- Not to be used in fields where “geese or other migratory birds have been within the last 14 days"
WARNING: Applying Zinc Phosphide above ground in grass seed fields from September 1st to May 7th* is illegal and could have deadly results...

...plus YOU could be fined $10,000 or more for violating state and federal laws!

Place every Zinc Phosphide pellet entirely below ground!

*Exact date is subject to change. Check at: http://www.oregon.gov/ODA/PEST/
Fumigants

- Aluminum Phosphide RUP
  - Expanded Regulations
    - Buffer - 100 feet from occupied building
    - Use in athletic fields or parks require signage
    - Not for use around residential areas
    - Fumigant Management Plans
- Gas Cartridges
- A Note on fumigation for Squirrels
  - Try to do when wet
  - Fumigating when squirrels are hibernating or estivating is inefficient because squirrels plug their burrows
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Vole (Meadow Mouse)

- Holes are always open, active year-round, at night and day
- “Runways” between holes
- Primarily herbivores
- One to Five litters per year, can be multiple litters
- Females mature in 35 – 40 days.
- Short lifespan – 2 to 16 months
- Cyclical but prolific species– up to 500/acre in Klamath Basin
- Not protected
Gnawing of seedlings by voles
Vole Control Methods

"Randy's goin' down!"
Encourage Raptor Predation

- Appropriate for most rodents
- Won’t solve problem on its own, but can help
- Short above ground vegetation where possible
- Install Perches and Nest Boxes
  - Nesting locations can be limiting factor in predator numbers

Photos courtesy of The Barn Owl Trust
To Control Voles

- Cultivation
- Mouse Traps
- Toxicants (Zinc Phosphide RUP and Anti-coagulants)
  - Some labels allow broadcasting bait, with restrictions
  - Use Bait Stations
Materials Needed:
3 - 2” PVC pipe cut to 8” lengths
3 – 2” PVC pipe end caps (two partially cut, see diagram)
1 – 2” T-connection for PVC pipe
1 – 12” metal stake (rebar works)
1 – Hose clamp
PVC pipe prep and cement
¼ sheet of plywood or smaller

Instructions:

Assemble all of the pieces as seen in the diagram below, making sure that you cement all of the pipes to the T-connection and the two partially cut end caps. Do not cement the end cap that will be used to fill the bait station. Drill or cut a hole larger than 2” in the middle of the plywood. The hole must accommodate the PVC pipe and the stake.

Place the bait station in a vole runway and secure to the ground using the stake and hose clamp. Place the plywood over the bait station making sure that the tube and stake fit through the hole. Fill the feed tube with bait and place end cap on top. Place weight such as bricks on top of the plywood to make sure larger animals cannot get access to the bait.
Moles
Mole Facts

- Mounds are volcanic, symmetrically round
- Prefer moist soil
- Moles are INSECTIVORES!!!
- Damage to “Roots” is either moles going after insects or worms, or gophers are to blame
- Eat 70% to 100% of their weight each day
- 3 to 5 young, once a year
- Not protected
Mole damage control methods

- Insect Control
- Trapping
  - Scissor trap
  - Harpoon trap
Setting the Victor Out-of-Sight Trap
**Pesticides for Moles**

- Insectivores - bait acceptance is a challenge
  - Zinc Phosphide - grain
  - Warfarin - gel
  - Bromethalin - worm shaped
Deer and Elk

- Exclusion – 8-foot fence
  - Electric fence
- Many repellents registered (limited effectiveness)
- Harassment techniques such as pyrotechnics or gas exploders for short term relief.
- Browsing-resistant varieties of plants
- Lure Crops
The Best Deer and Elk Control Method- a Fence!
Deer are repelled by the three-dimensional nature of the fence.
Raccoons and Skunks

- Pet food is the most common attraction.
- Feed pets inside or feed during the day.
- Eliminate access to house.
Raccoons are protected as furbearers and so require a permit to be “taken”

Broad types of damage seen (predation on poultry and pets to garden/landscape damage)
Raccoon
Exclusions (especially hot wire)

Mechanical Repellents (sprinkler, etc.)

Remove attractants!
- Garbage
- Pet food

Trapping
Now your in trouble!
Other Critters

- **Woodrat (packrat)**
  - Exclusion
  - Anticoagluants, ZP
  - Conibear, snap trap, live trap

- **Porcupine**
  - Find den site?
  - Snare, leghold, cage trap
  - Shooting

- **Nutria**
  - ZP
  - Leghold, cage trap, conibear
  - Shooting
In closing

- Identify problem species
- Use appropriate control techniques
- Be sure to follow regulations
- Persistence
- Cost – Benefit
Questions?
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