

Identifying and Managing Vertebrate Damage to Forest Resources

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Positive values provided by wildlife

- Physical utility
- Monetary
- Recreational
- Scientific
- Ecological
- Existence
- Historical



What is wildlife damage management?

- “...defined as the science and practice of increasing the value of the wildlife resource by reducing the negative values of wildlife.”
(Conover 2002)



Human-Wildlife Conflicts



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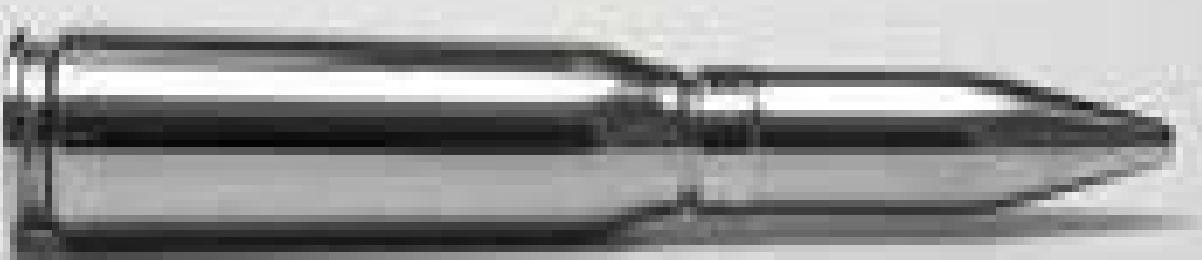


“Nuisance” Animals

- Nuisance: one that is annoying, unpleasant, or obnoxious: PEST
- Pest: a plant or animal detrimental to humans or human concerns (as agriculture or livestock production)



There is no silver bullet for controlling wildlife damage



General categories for reducing wildlife damage

- Physical barriers
- Repellents
- Toxicants
- Hunting/trapping
- Habitat manipulation



How do wildlife damage trees?

- Clipping
- Debarking
- Peeling
- Browsing
- Rubbing
- Root cutting
- Uprooting
- Trampling
- Flooding



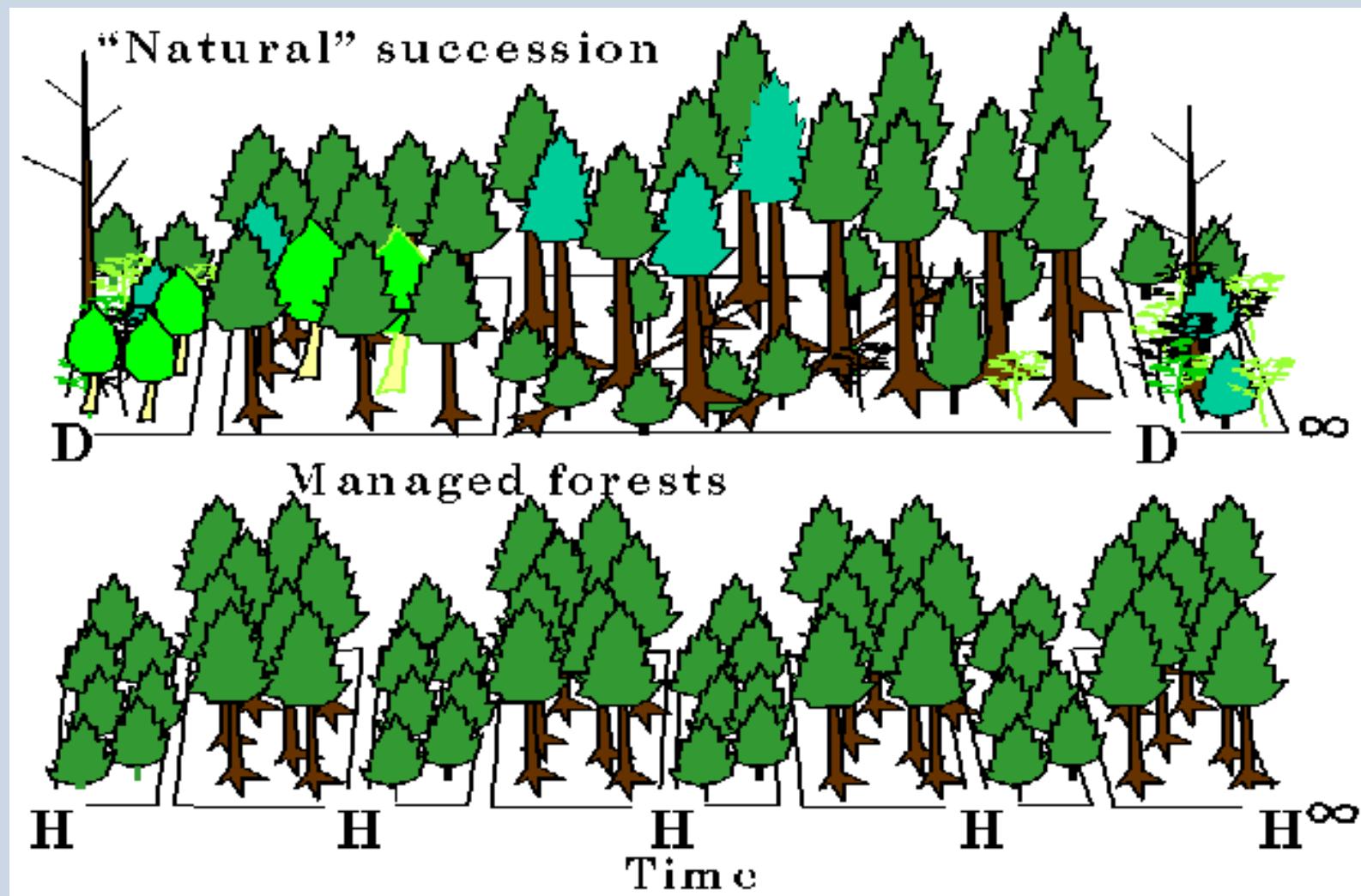
When are the critical periods?

Forest Succession

Succession is a natural pattern of change that takes place over time in a forest. When trees are removed – whether by natural causes such as fire or wind, or by human intervention – the forest regenerates in a predictable order. First come annual weeds, then perennial weeds and grasses. In later years, shrubs appear, then young pines followed by hardwood trees that mature over time.



When are the critical periods?



Who are the culprits?



Deer



Elk



Lateral browse



Lateral browse



Heavy lateral browse



Heavy lateral browse



Terminal browse



Heavy terminal and lateral browse



Bushy growth form



Seedling pulled by elk



Rubbing



Physical deterrents



Individual barriers



Vexar tubed seedling pulled by elk



Fencing



Quality matters



Quality also costs



Repellents



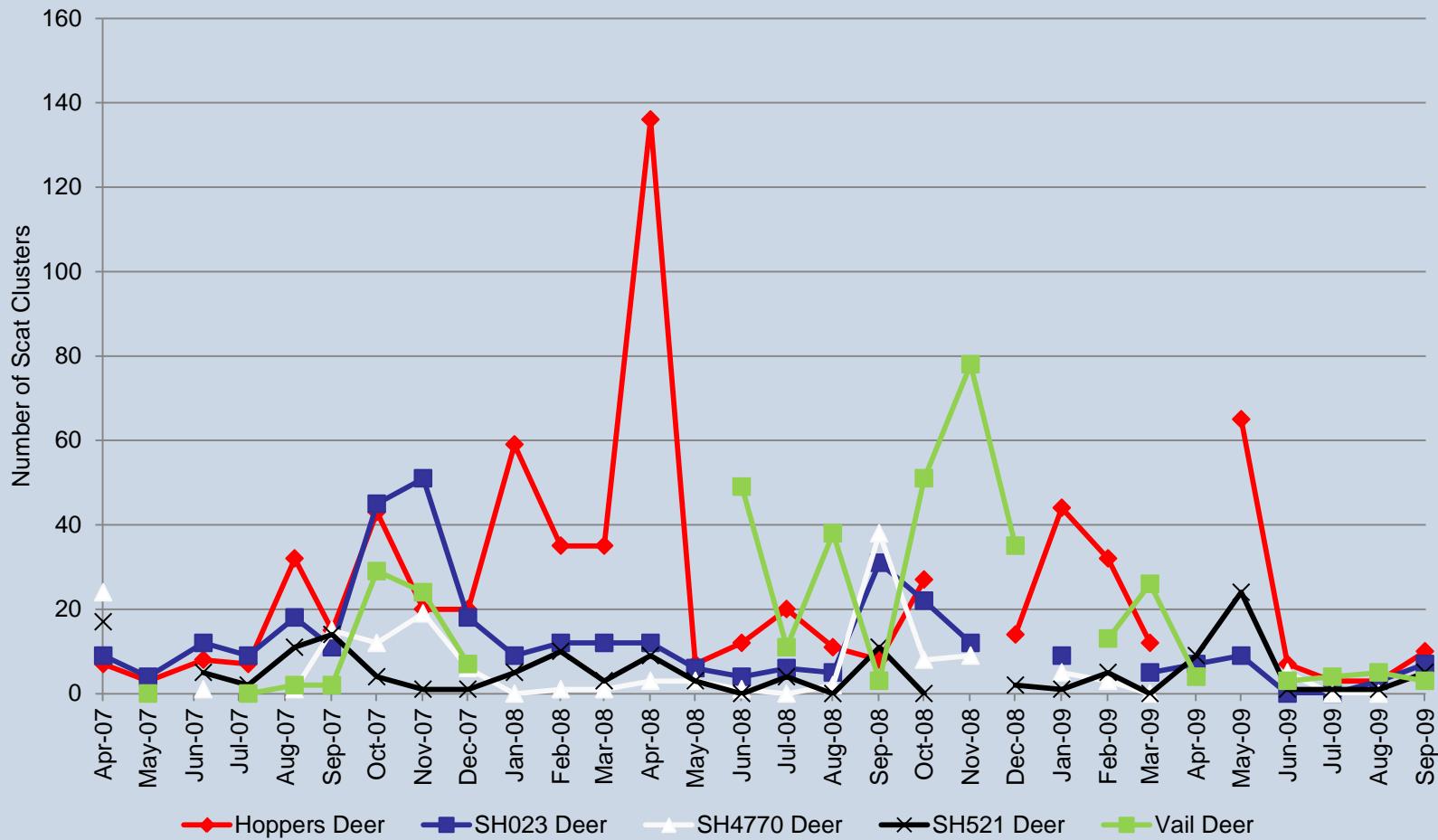
Repellent modes of action

- Neophobia
 - e.g., predator urine
- Irritation
 - e.g., capsaicin (Miller's Hot Sauce[®])
- Conditioned aversion
 - e.g., thiram (Chew-nott[®])
- Flavor modification
 - e.g., blood meal (Plantskydd[®])

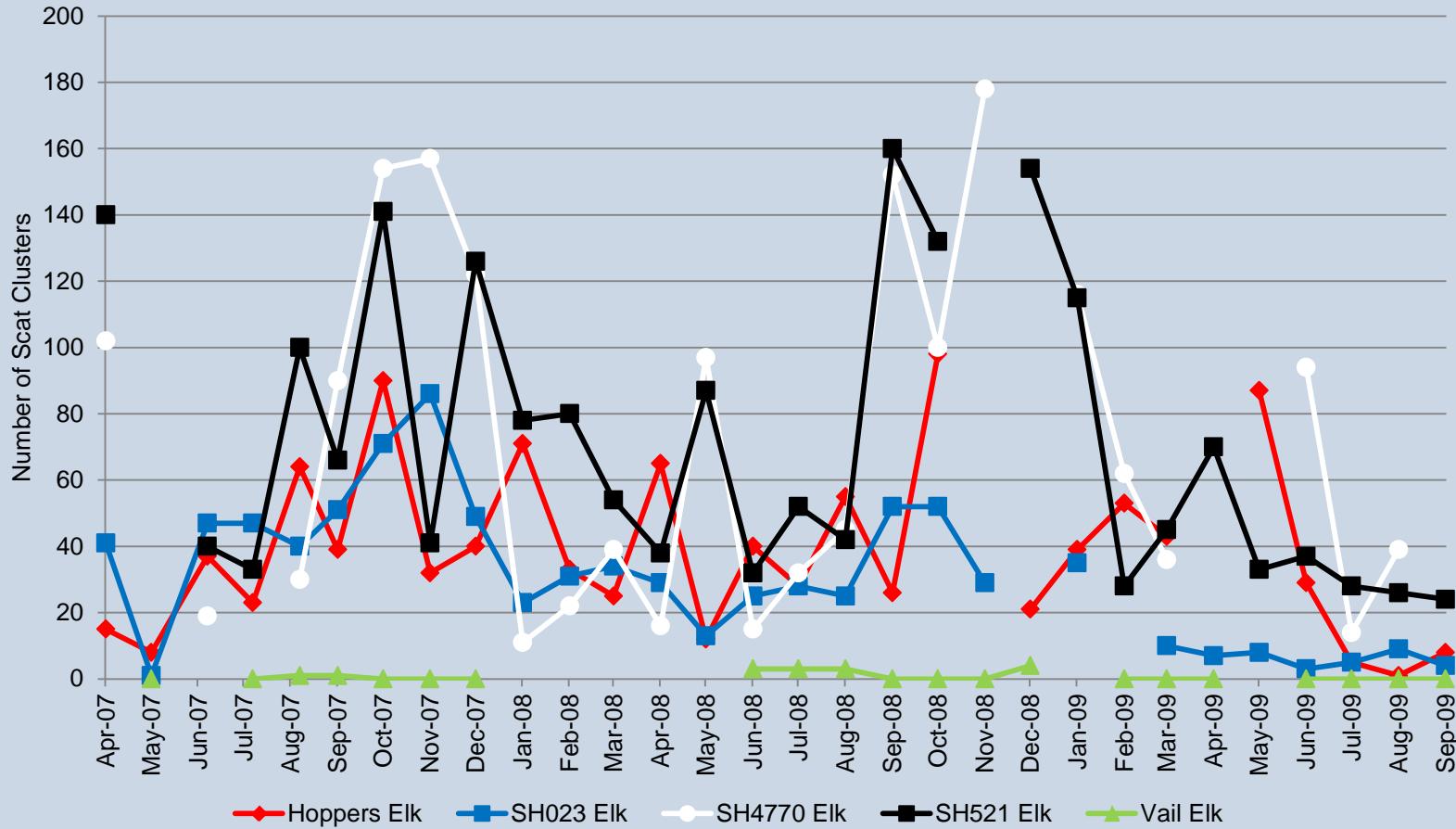
Hunting



Relative deer abundance in clearcuts



Relative elk abundance in clearcuts



Habitat Manipulation



Habitat Manipulation



Mountain Beaver



Mountain beaver clipping



Tree girdling by mountain beaver



Tree girdling by mountain beaver



Root damage by mountain beaver



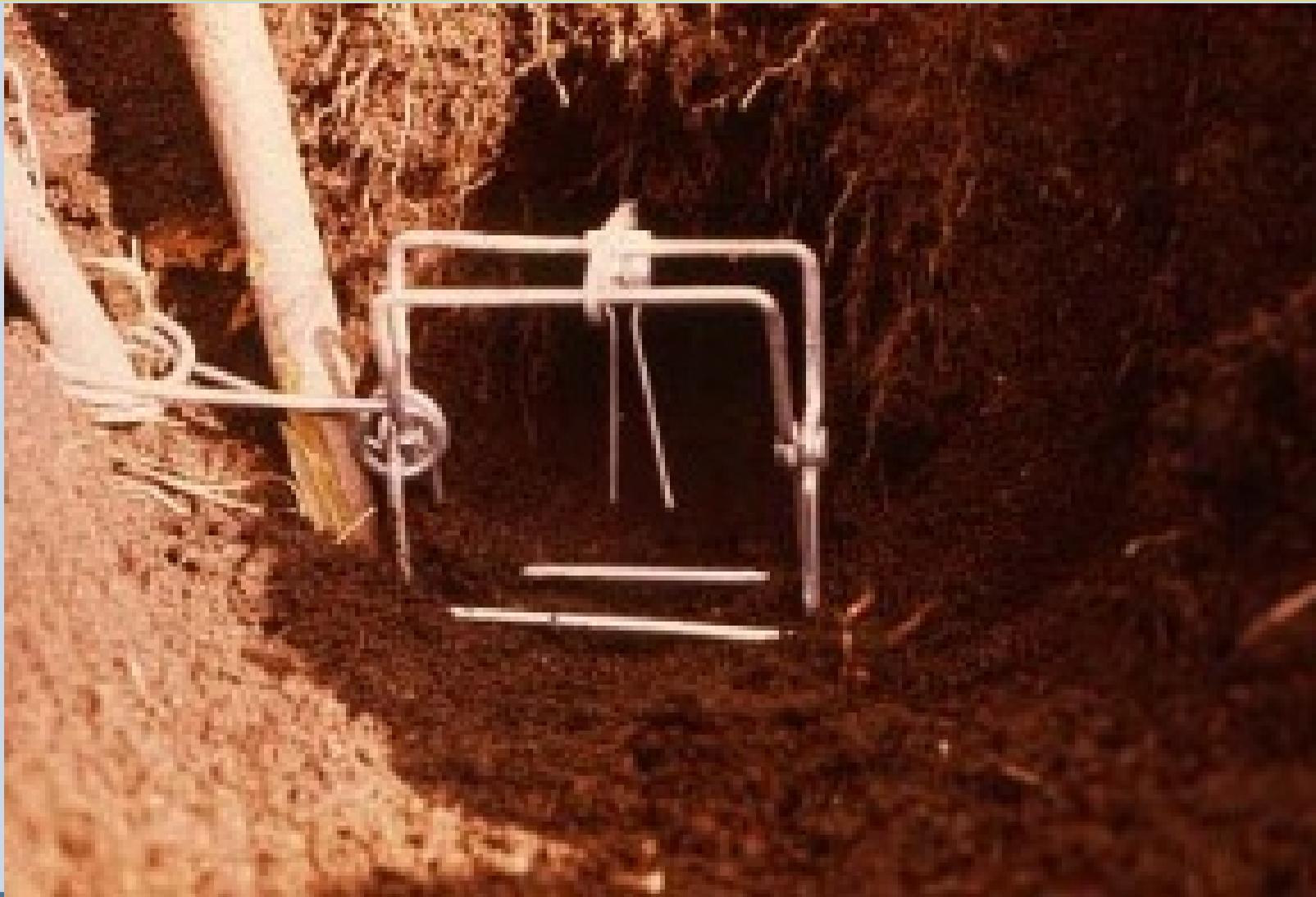
Mountain beaver feeder hole



Tools for mountain beaver control



Tools for mountain beaver control



Tools for mountain beaver control



Tools for mountain beaver control

Chemical Name and Structure of Active Ingredient (a.i.): Chlorophacinone (CPN)

2-((2-(4-chlorophenyl)-1-oxo-2-phenyl) ethyl) -1H-indene-1,3(2H)-dione

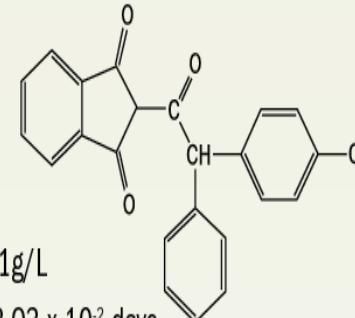
Molecule discovered by Liphatech and patented in 1973.

Chemical Class: indandione anticoagulant

CAS Number: 3691-35-8

Water Solubility: 0.013 g/L at 20° C (+/- 5)

pH 10 buffer: 0.459g/L, pH 7 buffer: 0.344g/L, pH 4 buffer: 0.001g/L



Environmental Fate (aerobic soil metabolism): Half-life is 23 days with a rate constant of 3.03×10^{-2} days.

In soil, 64% of CPN rapidly degraded to CO₂ within 70 days.

O-phthalic acid is a transitional product of the degradation.

Rozol® for the control of Mountain Beavers

% a.i.: 0.005% or 50 ppm Chlorophacinone

Bulk Density: 78.7 pounds/cubic foot (1.26g/ml)

Type/Appearance: Beige, 3/16" diameter (4.7mm) pellet. Limited dust.

Approximately 2,490 bait pellets per pound of product or 1,860 bait pellets per 12 oz. burrow pack.

Storage Recommendation:

Pocket Gophers



Pocket gopher peeling



Pocket gopher burrows



Pocket gopher root damage



Tools for pocket gopher control



Tools for pocket gopher control

- Strychnine-baited grain baits
- Zinc phosphide-baited pellets and grain baits
- Chlorophacinone pellets and grain baits
- Diphacinone bait bars



Voles



Vole peeling



Peeling by voles



Vole gnawing



Tools for vole control



- Zinc phosphide pellets and baited grain



Beavers



Damage to Timber



UGA0014032



UGA1238098

Damage to Roads



Repellents

- Chemical repellents
 - Commercial big game products
 - Plant extracts
- Textural repellents
 - Creosote and diesel fuel
 - Acrylic paint and sand
- Scent marking
 - Beaver castoreum
 - Predator urine
 - Bear skins



Tools for controlling flooding

- Water control devices
 - Clemson leveler
- Exclosure fencing
 - Deep water fence
- Dam removal
 - Explosives
 - Manual removal
- Trapping



Black bears



Peeling by bears



Peeling by Bears



Supplemental feeding



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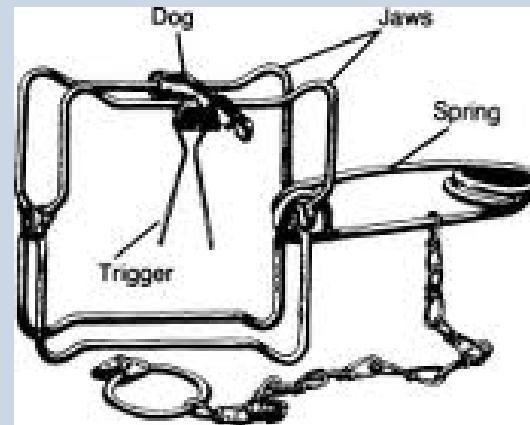
Porcupines



Porcupine damage



Tools for porcupine control



Questions?

