Rockbridge Extension Master Gardeners

Navigation Bar

Habitat Gardening for Wildlife

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This module was developed by Phyllis Turner, PhD,
Bedford Extension Master Gardener

Welcome to 'Habitat Gardening for Wildlife'

In this module you will learn about the interrelationship of plants, animals, and humans within systems and habitat; common wildlife problems faced by home gardeners; and recommendations for these problems. You will learn laws related to wildlife management in horticultural settings.

- Browse the Suggested Readings at the end of these slides. They contain online sources that will be helpful for your learning
- Read Chapter 18, Habitat Gardening for Wildlife in the Master Gardener Handbook
- The Test Your Knowledge section is for fun and review

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What Will I Learn in This Module (Objectives)

- Definition and structural components of wildlife habitat
- Contributing factors to the loss of wildlife habitat
- Steps to avoid wildlife conflicts
- How to systematically evaluate a wildlife conflict
- State and local laws related to wildlife management in horticultural settings
- Recommendations for home gardeners to reduce deer intrusion; reduce squirrel damage; and reduce vole and mole damage

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Plants, animals and humans interact in a very complex system, each existing in its own unique, yet often overlapping habitat.

What is a habitat?

an area where an animal is able to secure the food, water, cover and space it needs to survive and reproduce.

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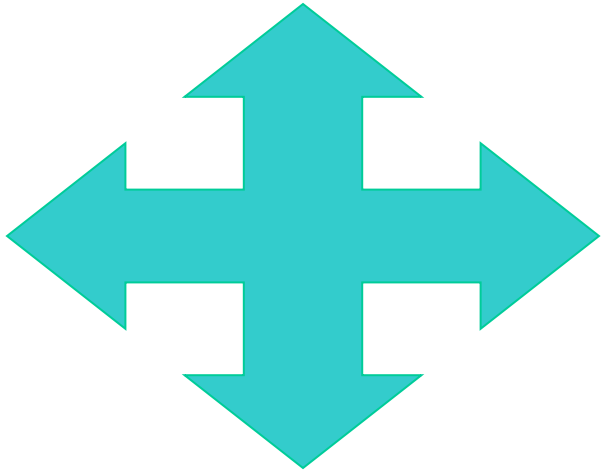
Elements of Habitat

Space

Food



Cover

Water

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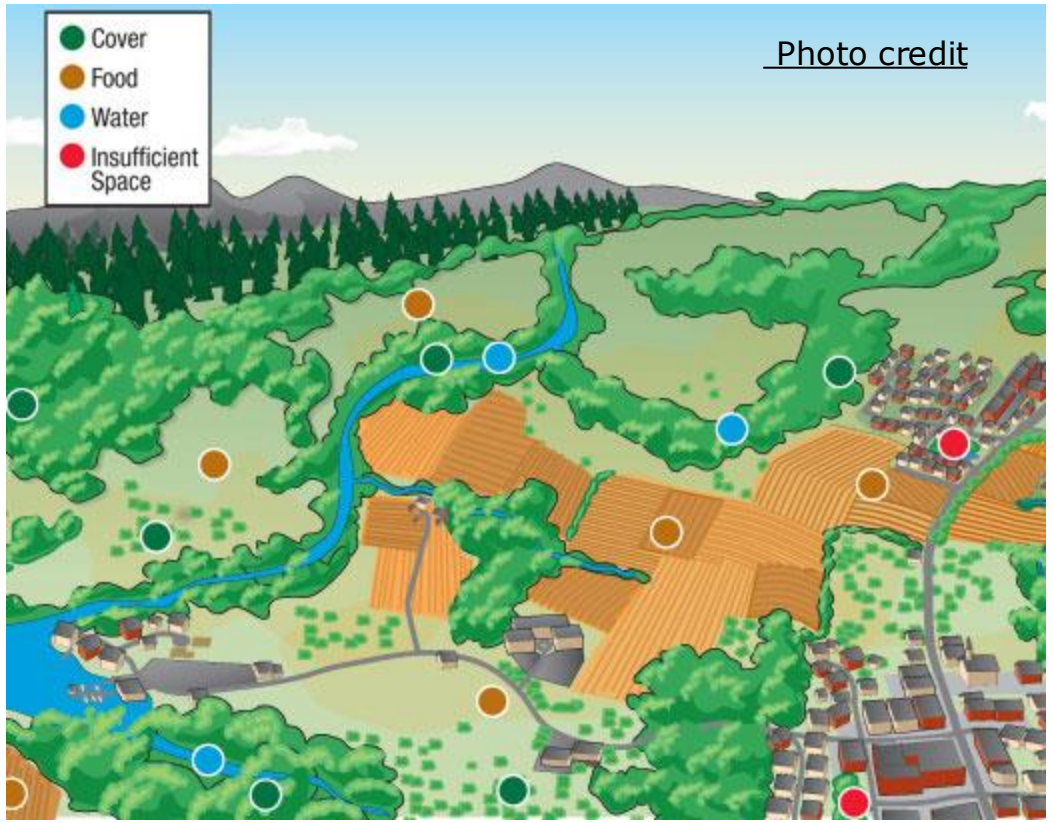
Structural components of wildlife habitat

- Brush piles and rock piles (shelter and protection)
- Dead trees (nesting; refuge)
- Nest boxes
- Bare soil (dust bath; nesting)
- Water features (ponds, streams)



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Loss of Habitat

The loss of habitat by one species increases the likelihood of negative interactions between that species and other species

For example, when wildlife habitat is reduced, they move into habitats populated by humans, increasing unwanted interactions

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What has contributed to the loss of wildlife habitat?

- Commercial and residential building
- Increased impervious surfaces leading to erosion
- Extensive use of lawn and non-native plants in the landscape
- Use of herbicides and pesticides
- Clean farming practices (removal of hedgerows)

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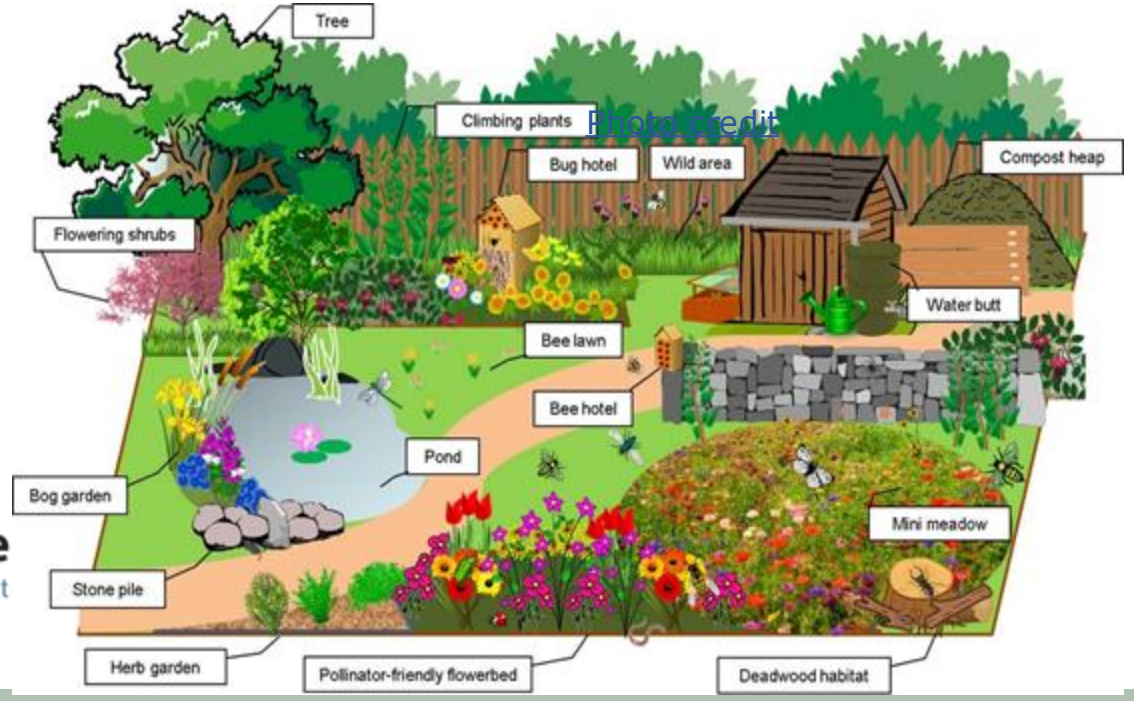
Habitat Gardening

Habitat gardening is a way to improve the available food, water and cover for wild creatures in our landscape. The first step when gardening for wildlife is to determine the priority species, then identify the food, water, shelter and other resources each animal requires. Your MG Handbook describes how to develop several types of habitat gardens.



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Improving habitat

- Food sources: The best source is a diverse selection of native plants
- Water: Shallow in-ground pools or ponds, water barrel or bird bath
- Cover: Trees, shrubs, thickets, grasses, man made house

Photo credit

While we garden to improve biodiversity, what can we do to decrease adverse interactions with wildlife?

Mole. Photo credit

Photo credit

Photo credit

Wildlife are part of the natural environment and most of us enjoy seeing them

However…

Groundhogs. Photo credit

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Image: computer mash: P. Turner, EMG

This is What Deer Look Like to Your Plants

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Photo credit

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What's the Problem?

- The most difficult task is assessing what the actual "problem" is.
- You must separate minor inconveniences from true economic damage or potential personal health and safety issues and resolve real problems.

Photo credit

The snake was after the "mouse"

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Defining the Problem

Photo credit

Many of today's residents of the suburbs have never had any true "connection to the land."

- No sense of what is "normal" or "expected" behavior in wildlife
- Very low tolerance
- Little sense of their role in or contribution to the situation

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Appropriate Approach to Take

- Don’t accept simple diagnoses - *in many cases, they will be wrong*
- Accurately determine species of offending animal(s)
- Determine true underlying causative factors

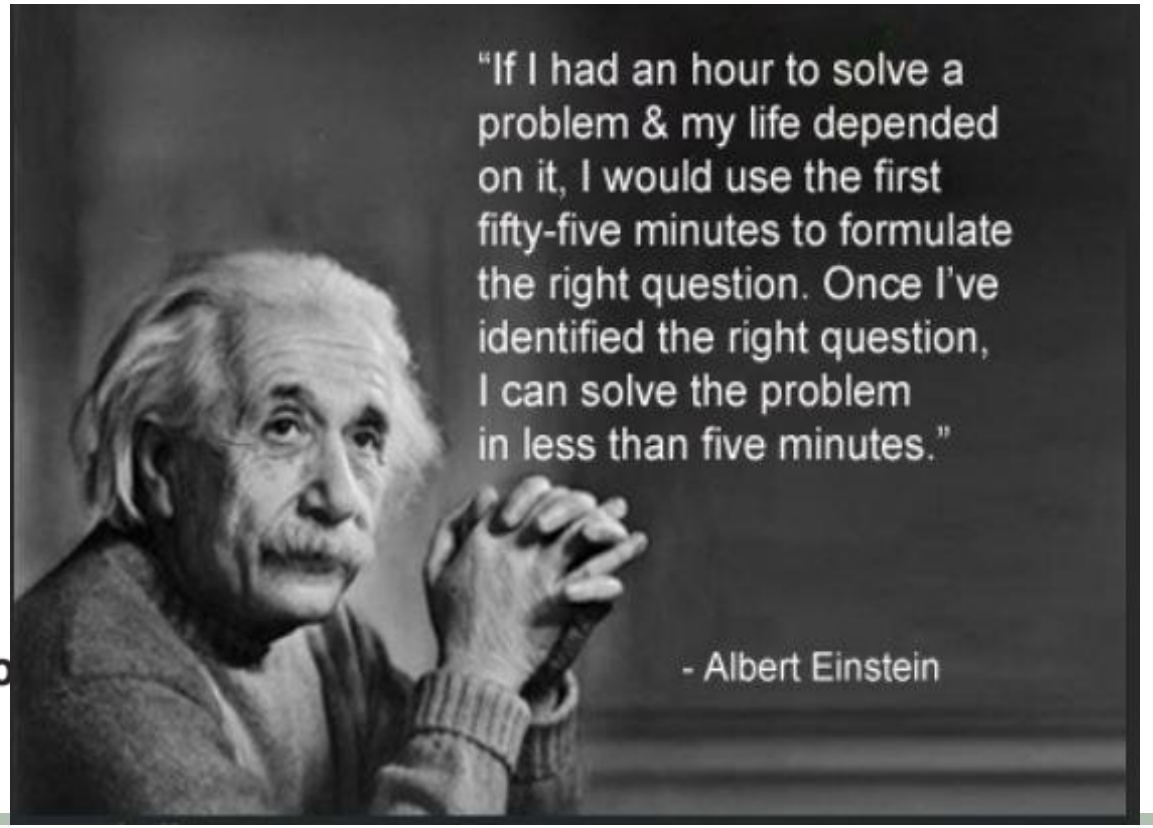

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Photo credit

"Voles eat Vegetation"

Photo credit

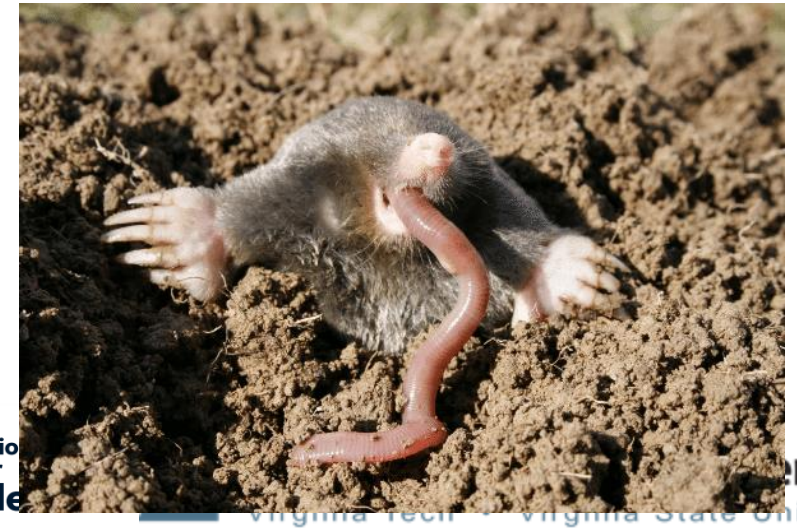

Photo credit

"*Moles eat Meat*"

Photo credit

Moles or Voles

Wrong Diagnosis = Wrong Treatment

Photo credit

- If you perform an inappropriate treatment, *YOU* are legally responsible for any illegality that may arise

- EXAMPLES:
  - Home remedies
  - Unregistered products
  - Unlawful actions for that species

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Concerns…

- Be certain of what you're dealing with
- Know the law(s)
- Know the option(s)
- Know who to contact for help or second opinions

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Appropriate Strategy

- Fully describe the situation / history
- Ask lots of follow-up questions that get to the heart of the issue
- Implement a V*ertebrate Integrated Pest Management* (VIPM) protocol

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What is VIPM?

". . . a hierarchical decision-making process that seeks to resolve conflicts using a level of response appropriate to the defined needs and circumstances"

- Start simple, cheap, easy
- Increase in intensity, labor, and cost
- Use only as much effort as truly required to resolve a situation don't start with last resort option first (e.g., lethal measures)

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Basics of a Vertebrate IPM Program

1) Husbandry options

1) Non-lethal options

1) Lethal options

Husbandry Options

Focus: concentrate your attention and potential solutions on aspects that relate to the habitat or operational practices within which the problem situation has arisen

Objective: make habitat less suitable or less attractive to offending animal or change the behaviors of client

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Urban / Suburban Husbandry Options That Lead to Problems

- Pet food dishes left outside
- Messy bird feeding stations
- Compost piles
- Firewood piled against or near home
- Refuse / debris stored close to residence
- “Heavy” landscaping / mulch
- Overhanging branches at residence

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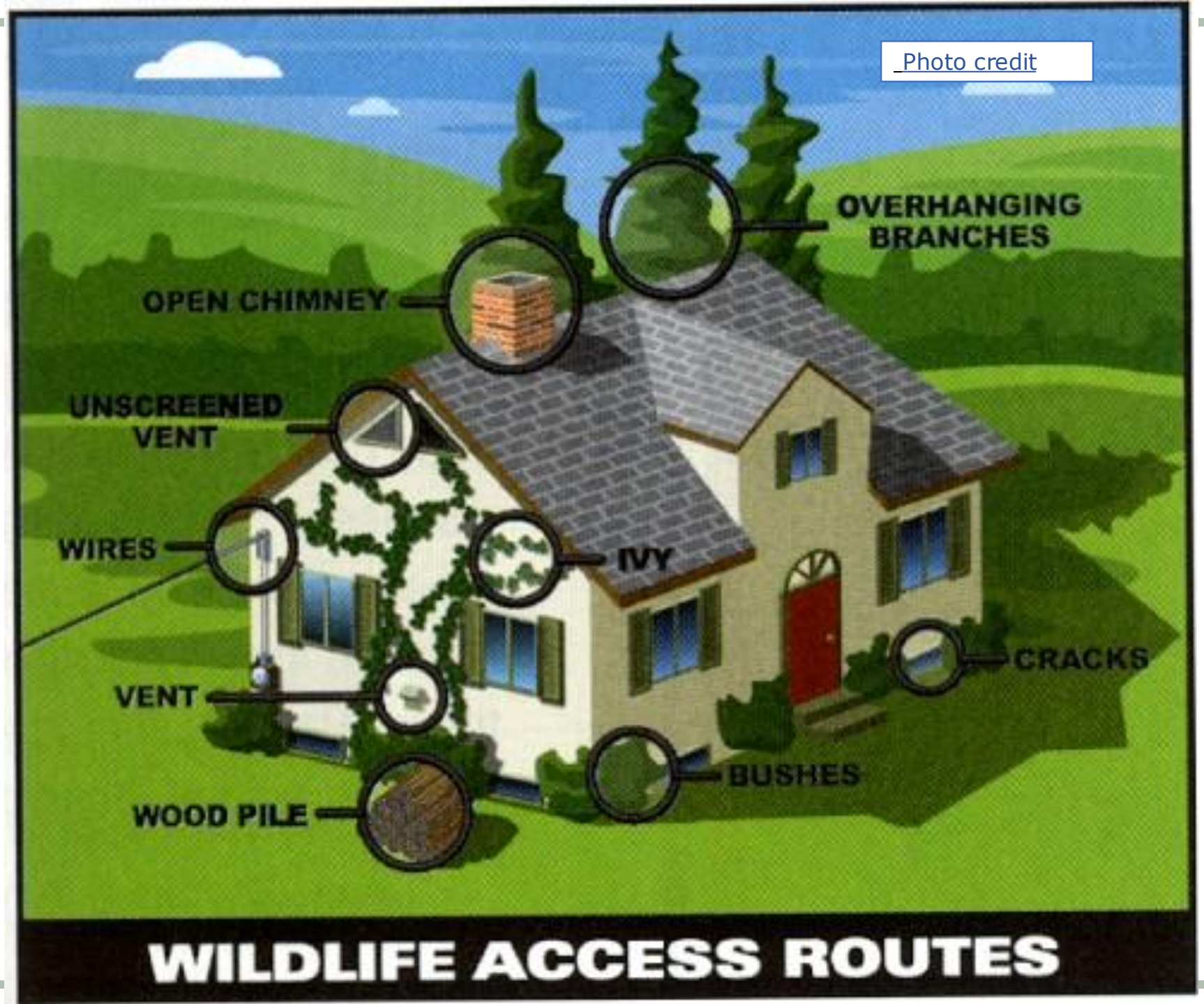

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Non-lethal Options

Focus: prevent access to or minimize the animal's interest in an item or area that you don't wish to have damaged

Objective:

1. Stimulate animal's innate reflexes and invoke natural fear/flight response

or

2. Implement a physical barrier/deterrent

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Urban / Suburban Non-lethal Options - Examples

- Exclusion
- Fencing
- Visual scare devices or barriers
- Noise deterrents
- Repellents (odor and taste aversion)

Non-lethal Exclusion Options

- Most reliable, long-lasting solution, *if done properly and completely*
- Timing is critical – don't trap animal in!
- In older homes, it may be impossible to exclude all animals

Recognize that animals are tenacious and will be persistent in trying to get back in.

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Non-lethal Fencing Options

- Check local ordinances
- Safety – electric fencing???
- Permanent vs. temporary?
- Assess cost-effectiveness
- Maintenance needs

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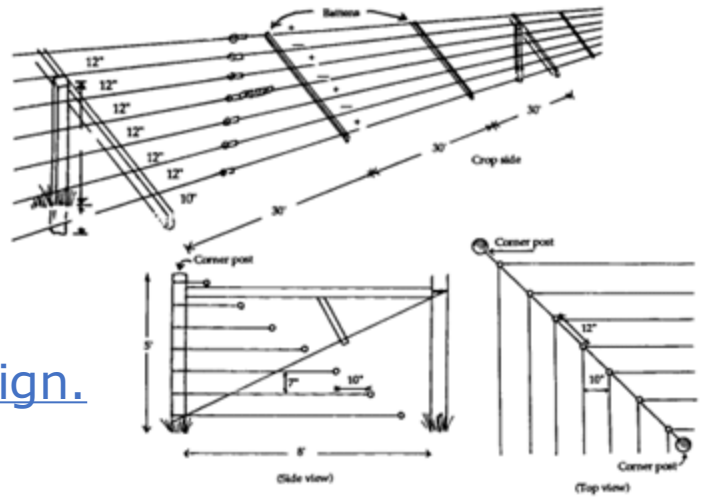
Dig fence. Photo credit

Fenced bed. Photo credit



Fence design.
Photo credit

Fence to protect bee hives from bear.
Photo credit: T. Harper, EMG

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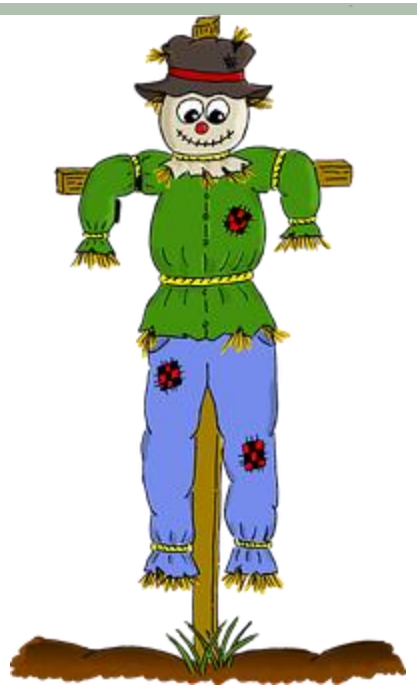
Non-lethal Visual Scare Options

Habituation is rapid, unless reinforcement with a perceived threat is provided.

- Predator effigies (owl, snake, eye-spot balloons, etc.)
- Scarecrow
- Lights / strobes
- Mylar reflecting tape
- Plastic garbage bag flags



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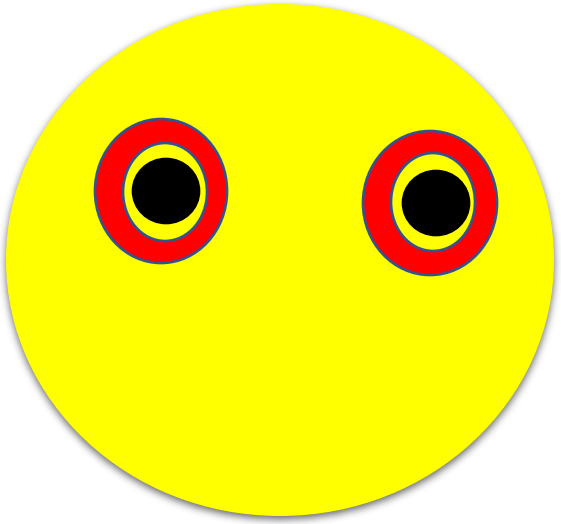

Computer generated image: P. Turner EMG

Photo credit

Scare Tape.
Photo credit

Non-lethal Noise Deterrent Options

As with visual techniques, anticipate that habituation to noise will be quick.

- Fear provoking stimuli (e.g., predator calls, distress call tapes)
- Human presence (e.g., bang on garbage can lid)
- Pyrotechnics

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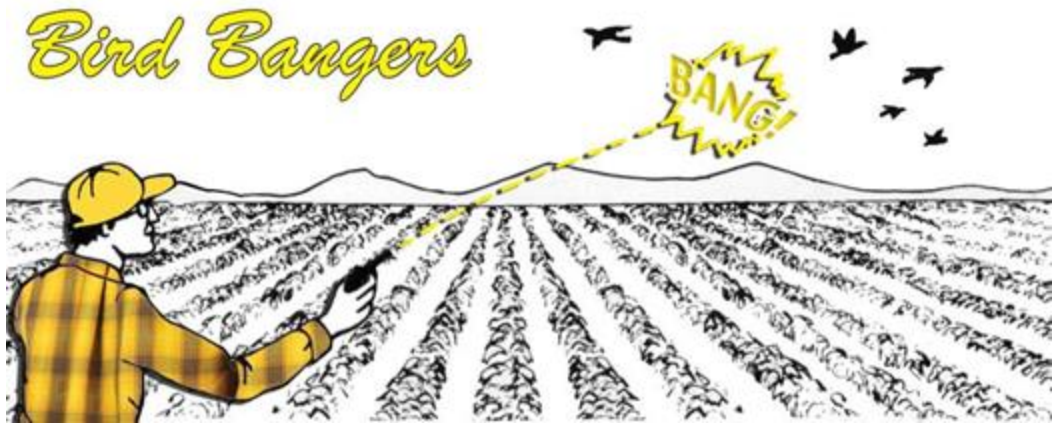

Pyrotechnic Devices

Photo credit

Wildlife biologist shoots pyrotechnics to scare birds from airfield in Tampa, Fla. Photo credit

Drone for bird control.
Photo credit

Non-lethal Repellent Options

- Most requested option by public
- Usually only effective for short periods or with repeated application
- Often can be quite expensive
- Limited selection of materials for most species (hence, high abuse)

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Repellents [1]

Registrations change over time. Always check for most recent lists of legal products and use accordingly

Species	Registered Product
Beavers	Denatonium saccharide (Ropel)
	Coyote Urine (Shake away granules)
	Fox urine (Shake away granules)
	Polybutene (J.T. Eaton 4the birds Bird Repellent Liquid)
Commensal Rodents	Thiram
Voles	Capsaicin
Muskrats	- None -
Woodchucks	Coyote and fox urine
Chipmunks	- None -
Tree Squirrels	Capsaicin; Napthalene; Denatonium saccharide

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[1] **Federal registration**

Repellents [1]

Species	Registered Product
Coyotes	- None -
Foxes	- None -
Skunks	- None -
Moles	Castor
Rabbits	Capsaicin; Thiram; Ziram; tobacco dust; higher fatty acids
Deer	Capsaicin; Thiram; egg solids; higher fatty acids; Denatonium saccharide

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[1] **Federal registration**

Repellents [1]

Species	Registered Product
Bats	Napthalene
Raccoon	Napthalene; tri-n-butylin chloride
Opossum	- None -
"Birds"	Avitrol®; Capsaicin; Denatonium saccharide; Napthalene; di/methyl anthranilate
Snakes	Sulphur; Napthalene

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[1] **Federal registration**

Photo credit

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Read the label carefully and know restrictions on use !!!

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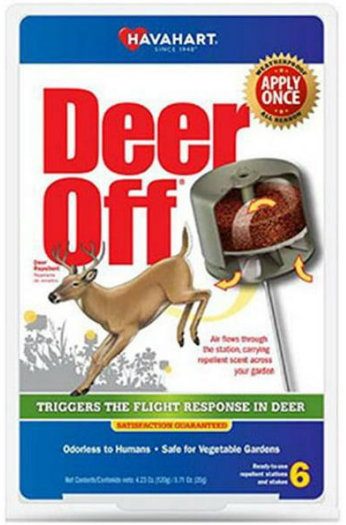

Types and Costs of Selected Repellents

- *Snake Away*® - ~$10/1.75# (requires 4-5 inch band)
- Critter Ridder - ~$12/1.5# (treats 50 sq. ft)
- Rabbit/Dog Repellent - $10/3# (requires 2” band)
- Hot Pepper Spray - $11/quart
- Bar soaps - variable (3 “hotel sized” bars / tree)
- *Deer Off*® - ~$18 / quart
- Mole Med - $15-20 treat 10,000 sq. ft (lasts up to 3 mo.)

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Plant Selection - A Natural Repellent?

Unfortunately, little concern given to issues of population density and energy demands of animal.

In short . . .

". . . when the number of mouths gets high enough, relative to the food supply, they will eat what they encounter to stay alive."

Lethal Options

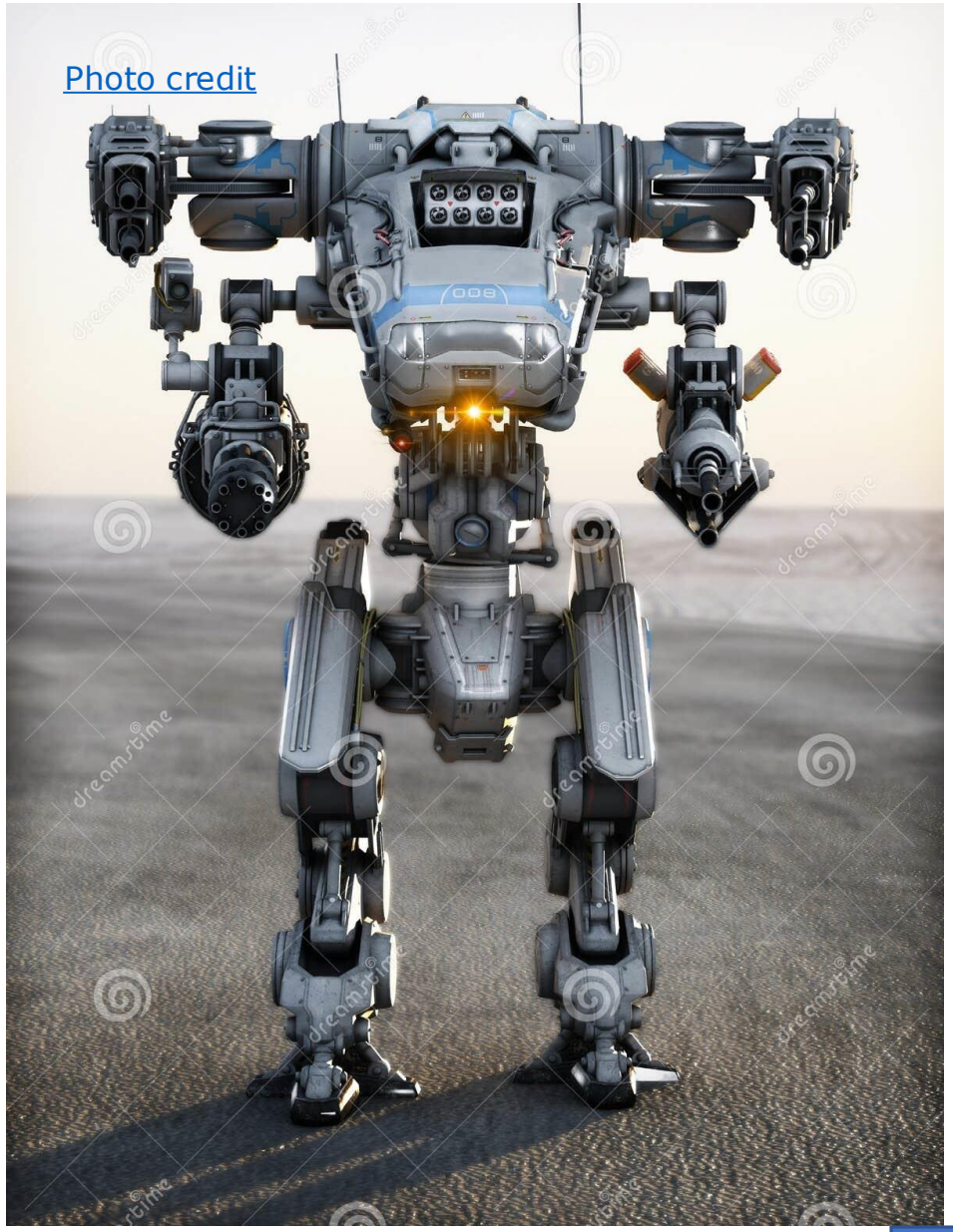
Should be viewed as a "*method of last resort.* "

Questions often exist as to:

- What is "acceptable" or legal method to kill offending animal(s)
- Disposition of any animal(s) taken
- Handling "out-of-season take" (for game species)

Lethal Options

- Toxicants
- Fumigants
- Shooting
- Trapping



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Lethal Options - Toxicants

- US EPA registered poisons used to kill an offending animal via oral ingestion of chemical compound
- Typically referred to as "*acute*" and "*chronic*" active ingredients
  - *acute* = single dose usually will kill
  - *chronic* = multiple small doses intended
- Many products are "restricted use" materials

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Lethal Options - Fumigants

- US EPA registered poisons used to kill an offending animal via inhalation of chemical product
- With few exceptions, generally a method best left to experts . . . . serious potential for danger from exposure
- Limited application for suburban client

Registered Lethal Materials [1]

Note: Not all products will be available locally and some are only for use by professionals. Always check labels for legal and proper use.

Species	Registered Active Ingredient
Beaver	- None –
Tree Squirrel	- None –
Bat	- None –
Deer	- None –
Rabbit	- None –
Snakes	- None –
Muskrat	Zinc phosphide
Woodchuck	Aluminum phosphide; potassium nitrate; sodium nitrate
Chipmunk	Aluminum phosphide; chlorophacinone
Coyote	- None -

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[1] Federal registration

Registered Lethal Materials [1]

Species	Registered Active Ingredient
Commensal rodents	Many products; refer to product labels
Voles	Chlorophacinone; zinc phosphide; diaphacinone; aluminum phosphide
Fox	Sodium cyanide (USDA only); sodium nitrate (red fox only)
Skunk	Sodium nitrate; potassium nitrate
Moles	Aluminum phosphide; sodium nitrate; warfarin; bromethalin; diaphacinone' potassium nitrate; zinc phosphide; Bifenthrin
Birds	DRC-1339 (USDA only)

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Photo credit

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Know your products, formulations, and restrictions on use!

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Lethal Options - Shooting

Safety must be your prominent concern !

- Many communities have local ordinance(s) prohibiting discharge of firearm
- Where acceptable, can be an effective tool for hard to treat animals
- Should be limited to small caliber weapons, short trajectory

Lethal Options - Shooting

- Landowner (tenant or lessee) not required to have hunting license to "take" offending animal on own property
- Must abide by established season(s) for game species or receive permit from local Conservation Police Officers (except for *nuisance species*)

Many exceptions and "gray areas"

Lethal Options - Capture

Landowner is allowed to capture most animals causing verifiable damage to property, but . . . .

- In some cases, prior notification of game warden is necessary
- For certain species (e.g., deer, bear), no capture is allowed (only VA Dept. of Wildlife Resources personnel)

Lethal Options - Trapping

Should be viewed as a *lethal option* due to existing state regulations.

Disposition of any animal captured alive is problematic because you *may not* . . .

- Possess a wild animal
- Transport a wild animal
- Liberate a wild animal . . .

without prior authorization (i.e., have a permit)

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Lethal Options - Trapping

Live trap. Photo credit

By VA law, allowable disposition means . .

1) Release at site of capture
2) Transport to rehab for treatment
3) Euthanization at site of capture

Coyote in trap. Photo credit

Know the Law

Not knowing the laws dealing with wildlife is not a justifiable excuse if what you do is illegal.

What are urban/suburban clients supposed to do? They should . . .

1) Learn more about what is natural and expected with wildlife
2) Don't expect to spray something or use any type of method to solve a "problem"
3) Accept some responsibility & fix it!
4) Participate in community-wide, cooperative efforts to resolve today's complex problems

Photo credit.

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Who can "urbanites" call?

- Assistance of federal agencies:
  - US Fish & Wildlife Service
  - US Environmental Protection Agency
  - US Department of Agriculture, Wildlife Services

- Assistance of state agencies:
  - Department of Wildlife Resources
  - Extension Office
  - Department of Health

- Private Sector Assistance:
  - Look for certified practitioners

Roanoke, VA. Photo credit

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Parting Shot

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We've lived with wildlife for many years, and likely will continue to do so in the future.

Although they can be a nuisance, they are only doing what nature taught them to do . . . . *survive* and *reproduce*.

Ideally, we need to make the necessary adjustments to avoid having the conflict in the first place, which includes ensuring that they remain . . . . ***wild***.

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Bees

While many species of wildlife are a nuisance to gardeners, some are beneficial. Honey bees are a good example of a species that gardeners want to recruit to the garden.

Many Master Gardeners also become beekeepers because of the important role that bees play in their gardens.

Why are honey bees so important?

- Honey bee pollination helps produce a third of the nation's diet
- More than 3.5 million acres of crops in the U.S. depend on honey bees for pollination
- Honey bee pollination is worth about $15 billion to the food supply
- The number of honey bees is in sharp decline

Why…….

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Why the concern about honey bees?

CCD, Colony Collapse Disorder, a phenomenon where adult honey bees disappear from the hive, has led to the loss of millions of honey bees in recent years.

While research continues on the cause of this disease /disorder, current theory is an interaction between biotic factors (mites, disease) and environmental factors (toxic chemicals).

This will continue to be an important issue and concern for gardeners.

Colony Collapse Disorder
Bee Colony Collapse Disorder

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End of Slide Set

You can continue to next slide: 'Suggested Readings'

OR

Click on the house below to return to the Navigation Page

Photo Credit: Bev Turner

Suggested Readings

- Wildlife Control (2 pages)
- Nuisance Wildlife (5 pages)
- Habitat Gardening for Wildlife

Test Your Knowledge

What do you know about Wildlife?

Deer Resistant Plants

Use the PMG

Match your Knowledge

Help Desk Quiz

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Which of these plants is deer resistant?

Answers on next slide

Hostas
Tomatoes
Aucuba
Boxwood
Redbud
Raspberry

Leyland Cypress
Sunflowers
Yarrow
Foxglove
Columbine
Apple Trees

Click to return to Tests of Knowledge

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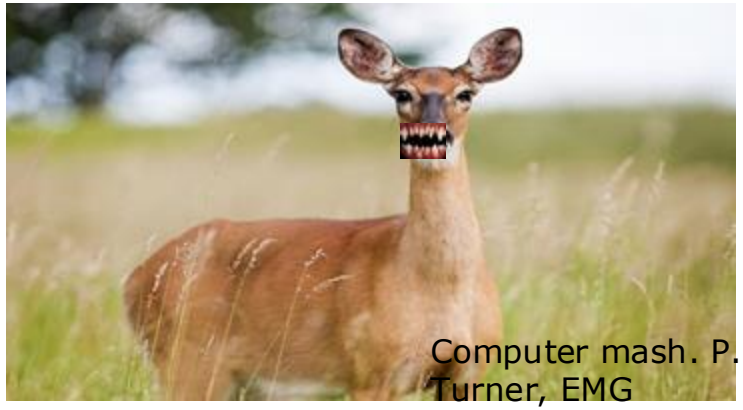
Which of these plants is deer resistant?



We love these

- Hostas
- Tomatoes
- Redbud
- Raspberry
- Leyland Cypress
- Apple Trees

Photo credit

We don't generally eat these

- Sunflowers
- Aucuba
- Yarrow
- Boxwood
- Foxglove
- Columbine

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Which of the following statements about wildlife are True?

1. Placing Permatil™ in the hole around where you are planting a bulb is a short term prevention for vole damage.
2. It is not illegal to shoot crows and starlings in Virginia.
3. Chronic wasting disease is a disease of squirrels.
4. Moles eat tulip bulbs.
5. It is possible to control wildlife in our gardens.

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Click to return to 'Tests of Knowledge'

Which of the following statements about wildlife are True?

- Placing Permatil™ in the hole around where you are planting a bulb is a short term prevention for vole damage. True
- It is not illegal to shoot crows and starlings in Virginia. True
- Chronic wasting disease is a disease of squirrels. False
- Moles eat tulip bulbs. False
- It is possible to control wildlife in our gardens. False

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Click to return to 'Tests of Knowledge'

Matching

Match the items on the right with the appropriate descriptions on the left
Answers on next slide

1. Husbandry, non-lethal, lethal options
2. Eats vegetation
3. Poisons used to kill via inhalation
4. Pet food dishes left outside
5. Single dose will usually kill
6. Fencing, noise deterrents
7. Toxicants, shooting
8. Multiple doses used
9. Eats meat
10. Space, food, cover, water

A. Fumigants
B. Acute
C. Non-lethal option
D. Chronic
E. Moles
F. VIPM
G. Elements of Habitat
H. Lethal option
I. Husbandry Option
J. Voles

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Click here to return to 'Tests of Knowledge'

Matching

Match the items on the right with the appropriate descriptions on the left (Click to show Answers)

1. Husbandry, non-lethal, lethal options
2. Eats vegetation
3. Poisons used to kill via inhalation
4. Pet food dishes left outside
5. Single dose will usually kill
6. Fencing, noise deterrents
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1. F
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6. C
7. H
8. D
9. E
10. G

A. Fumigants
B. Acute
C. Non-lethal option
D. Chronic
E. Moles
F. VIPM
G. Elements of Habitat
H. Lethal option
I. Husbandry Option
J. Voles

Click here to return to 'Tests of Knowledge'

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Help Desk Quiz Answers on next slide

1. Deer are eating all my plants. What can I do?
2. Moles, voles, or something is chewing all the bark off around the bottom of my young trees. What can I do about this?
3. What can I use to keep the voles from eating all my plant roots? I don't want to use poison.
4. Ground hogs are digging a hole into and underneath the house. Client wants someone to remove the groundhogs.

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Click here to return to 'Tests of Knowledge'

Help Desk Quiz

1. Deer are eating all my plants. What can I do?

Answer: The most effective resolution is a high fence. Deterrents such as movement, noise, and foul smells may be effective for a while, but eventually will lose their 'fear factor' for the deer. Deer deterrent products can be bought and may be effective, but need to be replenished often and are expensive.

2. Moles, voles, or something is chewing all the bark off around the bottom of my young trees. What can I do about this?

Answer: It is winter, there is 4-6 inches of pine straw piled tightly around the base of the trees. This is probably mice damage. Remove some of the mulch (leave a depth of 2-4 inches); remove all mulch within 6 inches of the tree base. You can buy tree base covers to wrap around the trunk. If none of these strategies solve the problem, you can buy traps to kill the mice.

3. What can I use to keep the voles from eating all my plant roots? I don't want to use poison.

Answer: Capsaicin is the only non-lethal deterrent approved for use for voles. Removing weeds and dense groundcover may help. Can use galvanized cloth below the surface around plants.

4. Ground hogs are digging a hole into and underneath the house. Client wants someone to remove the groundhogs.

Answer: dogs, gassing, trapping, flooding and repellant sprays are used to control them. If these aren't feasible contact a licensed professional commercial wildlife control company.

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Use the PMG

- Use the PMG to identify landscape plants that are less palatable to deer.

PMG: www.ext.vt.edu (type "PMG" in the search box). Scroll down to section on "other animals"; scroll down to 'planting selections'…

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Credits

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