Oregon State University Extension Service

ask an EXPERT

Managing challenges in shared habitat

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https://ask.extension.org/

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Habitat is the combination of factors (biotic and abiotic) necessary to allow members of a particular species to occupy a location, to survive, and to successfully reproduce.

>*Habitat quality* speaks to resource abundance, quality, accessibility, or even safety (predation risk)

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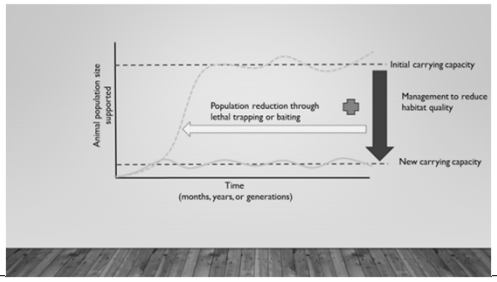
Reducing carrying capacity typically a vital part of breaking a conflict cycle



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Conflicts arise when:

- Animals get into & occupy structures
- Animals eat or damage our ____
- Animals cause structural damage or loss
- Animals pose a physical risk to humans
  - direct or indirect

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Pause for Assessment

- Are there health or safety concerns?
  - Direct or indirect?
- How serious is the problem?
  - insignificant, tolerable, beyond acceptable
- What is the context?
  - Scale (your yard, your neighborhood, focal path or resource)
  - Human dimensions (*e.g.,* Is somebody *feeding* the deer/rats/turkeys/etc.?)
- Is the conflict or problem likely to reoccur?

5

Core tactics on the human-wildlife interface

- Anticipate and manage to prevent a problem
  ⇨ *Accurate Species ID & learn species ecology*
- Modify habitat to reduce carrying capacity
  ⇩ Food (& cover) ⇧ Predation/mortality
- Block entry/exclude
- Attempt to "deter"
- Remove the animal(s)
- >>Coordinate with other humans!

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Reducing populations: **Why not just move them?**

- Low survival
  - Intra-specific aggression
  - Vulnerable to predation
  - Homing behavior => risks
  - Likely to starve
  - Humans unlikely to select sites that = habitat
- Disrupt resident population
- **Illegal in most cases**
- Disease transmission
- Ethical issue of "moving the problem"

>>>Increases immigration into the "vacancy"!

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Reducing populations via lethal removal

Species diagnosis is vital for:

- Trap selection
- Trap placement
- To bait or not to bait
- When to trap
  - Minding annual, seasonal, environmental conditions
    - ➢your effectiveness

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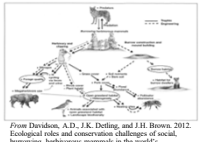
Ecological roles of burrowing animals

- Aid soil formation, aeration, and nutrient mixing
- Move nutrients from leach zone to root zone
- Aid water infiltration – reduce erosion
- Add soil nutrients, organic & inorganic matter
- Food for predator species
- Provide habitat for other species
- Promote fine- and landscape-scale vegetation and ecosystem diversity through eating some plant species and helping others compete
- Promote and enable animal biodiversity
- *Often play keystone roles as ecosystem engineers*



From Davidson, A.D., J.K. Detling, and J.H. Brown. 2012. Ecological roles and conservation challenges of social, burrowing, herbivorous mammals in the world's grasslands. Frontiers in Ecology and the Environment 10(9):477-486.

- mammals in

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Reducing habitat quality and accessibility via exclusion:

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Burrowing voles: Often the first suspect named

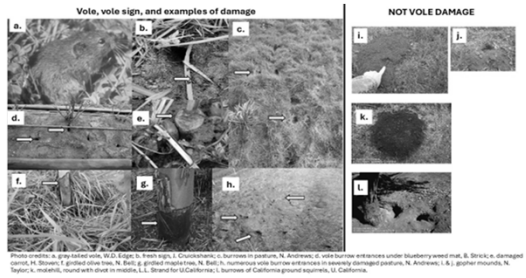

Photo credits: a, gray-tailed vole, W.D. Edge; b, fresh sign, J. Cruickshank; c, burrows in pasture, N. Andrews; d, vole burrow entrances under blueberry weed mat, B. Strick; e, damaged carrot, H. Stowe; f, girdled olive tree, N. Bell; g, girdled maple tree, N. Bell; h, numerous vole burrow entrances in severely damaged pasture, N. Andrews; i. & j., gopher mounds, N. Taylor; k. molehill, round with dirt in middle, L.L. Strand for U.California; l. burrows of California ground squirrels, U. California.

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ID your rodents, and critters that are NOT rodents!

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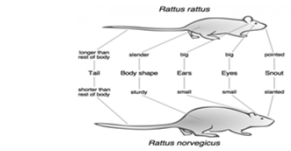
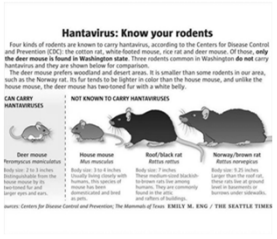
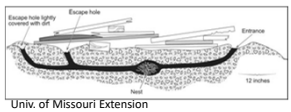
Animals which are rodents, some of which DO burrow, but are NOT wildlife! Oh, RATS!







Univ. of Missouri Extension

https://icwdm.org/wp-content/uploads/2023/03/rodent-proof-construction-structural.pdf

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Cats on "rat patrol"?

- Cats directly cause or significantly contributed to 14% of recent extinctions on island ecosystems (mammals, reptiles, birds)
- ***BUT, cats are <u>remarkably ineffective</u> in killing rats – They prefer smaller defenseless prey***
  Parsons et al. 2018. Temporal and space-use changes by rats in response to predation by feral cats in an urban ecosystem. Frontiers in Ecology and Evolution 6(106):doi 10.3389/levo.2018.00146
- In the contiguous U.S., cats kill 1.3-4.0 Billion birds annually. *Loss S.R. et al. The impact of free-ranging domestic cats on wildlife of the United States. Nat. Commun. 4:1396 doi: 10.1038/ncomms2380 (2012).*

<u>Humane Solutions for cats to "experience the wild"</u>

- https://abcbirds.org/program/cats-indoors/
- https://abcbirds.org/catio-solutions-cats/
  - Cat-proofing your yard's fence to keep cats IN
  - Catios and free-standing enclosures

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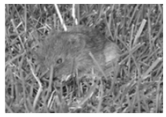
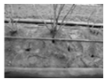
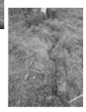
Gray-tailed vole: Endemic to the Willamette Valley







- Short lifespan: 2 to 16 months, but high reproductive potential (Mar-Oct/Nov/Dec?) Wolff et al. 1994
- Don't hibernate
- Many litters/year; 3 weeks to mature! Mean litter size 4.4 +/- 1.4 individuals
- (In)famous for achieving near-exponential population growth in some years

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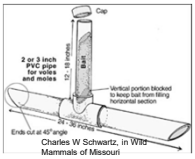
- Flood irrigation*
- Crop rotation
- Burning/remove cover
- Traps*
- Toxicants/rodenticides*
  - Retail
  - Restricted use
- Natural predation*



Charles W Schwartz, in Wild Mammals of Missouri

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Moles

- NOT RODENTS!
- Solitary predators –> Eat invertebrates
  - *Townsend's mole does eat bulbs, etc.
  - Don't hibernate
- Mole*hills* are the nuisance in many cases
  - "Disappear" when burrowing deep to follow prey species according to their soil habitat conditions
- Molehill – Plug in *middle* of dirt cone
  - When close to surface may push up ridges
- Little known about reproductive ecology –
  - Likely 1 litter/year, between Feb-Apr, 1-4 young
- Body-gripping traps or poison moleworms if must be removed

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Pocket gophers

- Herbivores that prefer roots, bulbs, tubers, corms
- Do not hibernate
- Solitary & strongly territorial: We don't share burrows!
- Young born Feb. to June; 1-2 litters/yr.; short lifespan
- Traps effective in small areas, otherwise tractor-drawn "burrow-builders" that distribute toxic bait in artificial burrows
- Owls and mammals as predators – little known

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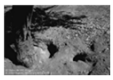
Tale of two ground squirrels, illustrating importance of species ID



California

- Green vegetation, fruits, seeds, crop grains
  - Noted for a significant **seasonal diet shift**
  - 15-20", 1.5 lbs, big black shoulder patch
- **Habitat generalist compared to others**
- Colonial burrow systems: Openings 4", multi-chamber, can be >1m deep
  - Propensity for climbing
- **Breeding season: Feb through March***
- Lifespan up to 3-6 yrs.
- Litter size estimate for Oregon is 3-7 (5)
- Hibernate, but some **young** active year-round
- Estivation by adults for up to 1 week/bout

Belding's

- Opportunistic herbivore, but also takes insects and animal material (9oz, 9-13")
  - Tends to shift from grasses to forbs
- Steppe and higher-drier elevation ecosystems
- **Spend *6-8* months in torpor: can emerge late Jan-early Feb, re-immerge in July**
- **Breeding season differs by altitude/seasonality**
- Lifespan 1-1.5 yrs.
- Litter size varies by elevation and dam age
- Juveniles go into torpor, too, only 2/3 emerge

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University of California at http://www.groundsquirrelbmp.com/

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Avoid creating problems via accidental "invitations" to a buffet

- Turf = habitat for some grassland species
- Remove lumber and junk piles
- Store garbage in tightly sealed cans
- Control grubs in lawn
- Restrict use of bird seed/manage spillage
- Never leave food out for wild animals
- Avoid leaving pets' leftovers accessible to visitors
- Remove downed fruit

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Toxicants as tools to lethally reduce population

READ THE LABEL. FOLLOW THE LABEL. LABEL IS THE LAW.

- Responsibility to prevent non-target kills – including humans
- Retail (on the shelf) products vs. Restricted use products (require ODA pesticide license to buy/use)
- Keep in mind secondary impacts of pesticides, **because chemicals have no knowledge of what has swallowed them**.
  - Improper application of zinc phosphide bait for voles kills 1000s to >10,000 geese per event – Usually 1-2 events per year in OR
  - If rodents are likely to have sub lethal doses of toxicants onboard, what other (living) tools might be affected? (Your dog? Owls? Hawks? Foxes?)

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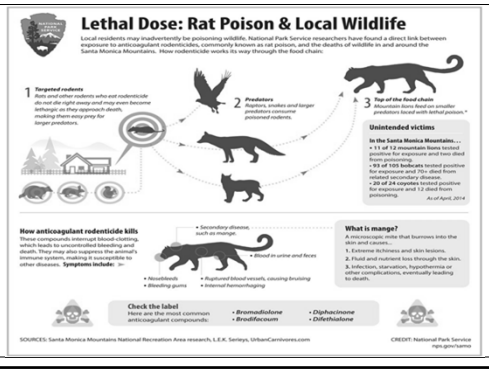

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Predators include the quiet ground force: Top 6 W. OR snakes that prey on rodents

- Rubber boa
- Gopher snake
- Western terrestrial garden snake (2 subspecies)
- Northwestern garter snake
- Common garter snake
- Western rattlesnake

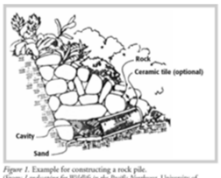

Figure 1. Example for constructing a rock pile. (From: *Landscaping for Wildlife in the Pacific Northwest*. University of Washington Press and Washington Department of Wildlife.)

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The air force(s)

- Herons!
- Raptors
  - Diurnal
    - Red-shouldered hawk Red-tailed hawk (open country, primarily mammals; soars and perches)
    - White-tailed kite (winter; rodents; hover "kite")
    - Rough-legged hawk (non-breeding range; voles, mice, shrews; hovers & **perches**)
    - American kestrel (mostly inverts but some small rodents; **perches**)
    - (Cooper's hawk will take some mammals)
    - (prairie falcon)
  - Nocturnal (*owls are cavity nesters)
    - Barn owl (open areas, nocturnal mammal hunter; cavity and box nester)
    - Short-eared owls (all hours, favor dusk & dawn; rodents; *ground-nesters)
    - Western screech owl (nocturnal, open woodlands, mammals, cavity + some box)
    - Great horned owl (generally nocturnal, up to treeline, mammals)

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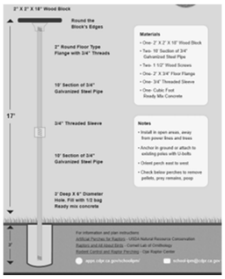
Habitat additions for raptors



https://nestwatch.org/learn/all-about-birdhouses/

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Mammalian predators, in brief

• Coyote	Ubiquitous & omnivorous
• Bobcat	Widespread, less in highly cultivated; pure carnivores
• red fox	Many habitat types; *lots of voles*,
• grey fox	Brushy, "old fields" some urban; seasonal omnivory
• Weasels	Predom. carnivorous
• Spotted skunks	likely heavily depend on rodents in winter
• raccoon	Ubiquitous & omnivorous

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When you need help: Wildlife Control Operators vs general Pest Control companies

- WCOs are trained and licensed by OR Dept. of Fish and Wildlife
- Private individuals/companies that charge for services
- Check for locale, specialties, estimates, whether a WCO or "pest control" company
- http://www.dfw.state.or.us/wildlife/license_permits_apps/wildlife_control_operator_contacts.asp

- But: Moles, house mice, rats, are often handled by general pest control companies

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Habituation and/or food conditioning set the stage for conflict AVOID CONTRIBUTING TO THESE DEADLY PROBLEMS!

- **Habituation:** behavioral "acclimation" to human presence
  - Decreased fear of humans
  - Increased aggressiveness for food or space
  - Competition with/elimination of domestic "competitors"
  - Disease or waste products near homes
  - Habituated individuals particularly vulnerable to food conditioning

- **Food conditioning:** Essentially training animal to associate a behavior (e.g., approaching humans) with a food reward
- "Fed bears are dead bears"
- A wild animal is always a wild animal, even if it seems "tame"

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In search of the "deer-proof" plant

- Choose plants according to what protections you can provide or their own "armor"
- In deer-accessible areas:
  - Choose plants (native likely best) that are less preferred by deer (in your area)
  - Sometimes possible to "protect" a preferred plant by sheltering it among non-preferred species
- Great local resources -Extension Master Gardeners
- *Well-fed, succulent plants provide excellent nutrition!

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Exclusion:
Effective height, slope location, size of area being protected & materials matter



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Diversity in fences is driven by function

- **Total exclusion is most feasible at limited scales (size of area)**
- Bigger projects?
  - ➢Good guides online, such as *How to build fence with wildlife in mind*, by Montana Fish, Wildlife & Parks
    - ✓Consider slope
    - ✓Consider visibility
    - ✓Consider a rolling (pvc) top "rail" on wire fence
    - ✓Gateways for trapped animals to escape

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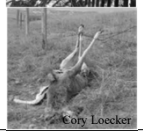
Avoid creating a problem fence

- Winter-stressed, pregnant, and young most vulnerable
  - Juveniles blocked from moving with doe
- Entrapment in top wires & between top barbed wire + woven wire below
- Impalement on decorative fences
- Many other species can be at risk



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Deterrence:
The challenge of convincing animals to not want ____

Hazing: Deter with shock and awe

- Water scarecrows
- Rubber bullets (permit from ODFW)
- Bangers, screamers, shell-crackers, propane cannons.
- Need a permit from State Fire Marshal, signed by ODFW biologists.
- Call Oregon State Fire Marshal at: (503) 373-1871, x272 or x274

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Scarecrows – localized deterrence

- ➢Motion activated water deterrent
- ➢Element of surprise
- ➢May need multiple scarecrows to cover your area
- ➢Assess foot traffic and wind…
- ➢Must maintain battery or solar panel

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Deter by taste or smell

- Commercial products are available
- Most need reapplication after rain
- Vary in effectiveness
- Most lack replicated tests of effectiveness
- Need to rotate products to avoid habituation
  - "a 6-week wonder"

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Turkey
(*Meleagris gallopavo*)

- Non-native, introduced, but managed (protected) as game species
- Introduced to Oregon in 1960s
  - Merriam's (ssp. *merriami*) and Rio Grande (ssp. *intermedia*) subspecies
  - Rio Grande are most numerous & widespread in OR
- Breed Mar-Aug, avg. 10-12 hatchlings
- Omnivorous
- Conflicts
  - Scratching (foraging) and eliminating
  - Roosting
  - Aggression AND Habituation

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Living with turkeys

- **Discontinue intentional & unintentional feeding**

- Coordinate with neighbors
- Get a free hazing permit from ODFW
  - Haze when feeding, resting, or as they begin roosting
  - Water scarecrows, bright lights, noise, "scare tape", "wind walkers"
- Be in communication with your ODFW regional biologist
- Some cities have no-feeding ordinances

- **ODFW Main Phone (503) 947-6000 or (800) 720-ODFW [6339]**

https://www.dfw.state.or.us/wildlife/living_with/docs/2024_LivingWithTurkeys_brochure.pdf

https://www.dfw.state.or.us/wildlife/living_with/docs/Considerations_For_Coexisting_With_Wild_Turkey_2014.pdf

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Oh deer!

- ➢Deer in yard
- ➢Hoof prints
- ➢Deer scat or pellets
- ➢Deer "beds" on ground
- ➢Jagged or torn surfaces on leaves or stems
- ➢"Horning" to trees, usually at waist level
- ➢Damage from the ground to 6' high (higher indicates elk)

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Deer: Key ecological characteristics

- Ruminant herbivores
  - Require forage with high-quality, highly-digestible nutrients
- Fall breeding season with spring births
- Lifespan can reach 10-14 yrs., but closer to 2-3 in heavily harvested populations
- Social structure: Social segregation of sexes
  - Female "clans" share geographic ranges; Males disperse

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"Conflict bears"

"a bear that acts on its learnt behaviour to such an extent that it produces a threat to human safety and property when seeking human food and/or garbage"

Ciarniello, L.M., and B. Westworth. 1997. Reducing human-bear conflicts: Solutions through better management of non-natural foods. Westworth, Brusnyk & Associates

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BEAR SMART

www.bearsmart.com

Get Bear Smart Society, British Columbia

"Communities can be porous to bear activity, so that bears can pass through, but are not tempted to stop and get into trouble with people and their non-natural attractants."

- Great resources!
- Information
- Best practices
- Community planning & dialogue tools

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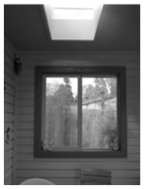
Reduce window-collision hazards

Many great tips and product guidance:
https://abcbirds.org/get-involved/bird-smart-glass/





- Reduce reflectance
- Create a barrier to collision
- Carefully site attractants
  - <3' or >30' guidance for feeder: window distance

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More on managing indoor and outdoor spaces in subtle, but bird-friendly ways

- Reducing our use of pesticides
  - https://abcbirds.org/article/birds-bees-and-aquatic-life-threatened-by-gross-underestimate-of-toxicity-of-worlds-most-widely-used-pesticide-2/
  - Increases food availability for birds
  - Reduces bird exposures to and ingestion of products and by-products
  - Reduces your input costs, exposures, and infiltration to domestic waters
- Reduce light pollution, esp. **March-May** and **August-October**
  - Homes and communities of homes
  - Great tips on effective outdoor lighting at the **Dark Sky** assoc's site: https://www.darksky.org/our-work/lighting/lighting-for-citizens/residentialbusiness-lighting/
  - Help educate and advocate entities with multi-story buildings because they have the biggest effects

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