## Welcome! Contending with Vertebrate Pests Around Schools



- Check your speaker settings if you don't hear music now
- Participants' mics will remain muted
- Download the presentation from the Files Pod
- Use the Chat and Q&A Pods to enter comments/questions
- Questions will be addressed during the Q&A or later by email





### **IPM Refresher**



- Integrated Pest Management (IPM) is a smarter, usually less costly option for effective pest management in the school community.
- A school IPM program employs common sense strategies to reduce sources of food, water and shelter for pests in your school buildings and grounds.
- IPM programs take advantage of all pest management strategies, including the judicious use of pesticides.





#### Pesticides

Physical & Mechanical Control

**Cultural & Sanitation Practices** 

Education & Communication



### School IPM Key Concepts

- Inspection, monitoring and identification of pests
- Pest prevention and avoidance through exclusion and sanitation
- Treatments minimize impacts on health and the environment
- Everyone has a role custodians, teachers, students, principals, and pest management professionals









### Benefits of School IPM

Smart: addresses the root cause of pest problems
 Sensible: provides a healthier learning environment
 Sustainable: better long-term control of pests
 Savings: may reduce energy and pest management costs over time





### Most Common Vertebrate Pests

#### What we will cover today:

- Squirrels,
- Raccoons, Foxes,
- Feral Cats
- Deer, Black Bears











What was covered in a past webinar:

Rodents (Mice and Rats)

What will be covered in future webinars:

- Bats
- Moles, Voles and Gophers in Turf Pest Webinar









### Presenters





- Author, Consultant, Expert on Wildlife Damage Mgmt.
- Former coordinator Internet Center for Wildlife Damage, UNL School of Natural Resources
- Program Coordinator for One Health Nebraska
- Ph.D. dissertation on humans' relationship with animals
- Widely published magazine and journal articles, and two books, The Wildlife Removal Handbook and the Wildlife Damage Inspection Handbook

#### Mark Hardin

- IPM Specialist, Howard Co. (MD) Public School System
- Previously Entomologist and IPM Coordinator, Smithsonian Institution
- Co-author of numerous scientific publications
   Marcia Anderson
  - EPA's Center of Expertise for School IPM
  - PhD in Environmental Management
  - Landscape Architect,



# Control of Tree Squirrels

### STEPHEN M. VANTASSEL CWCP™ WILDLIFE CONTROL CONSULTANT, LLC



### Tree Squirrels

Gray/Fox Squirrels
Red Squirrels
Flying Squirrels









## Gray/Fox Squirrels

- Gray squirrel has white-tipped hairs
- Fox squirrel has orange- tipped hairs
- Albino squirrels uncommon
- Black fox squirrels occur throughout the U.S.









## Red Squirrels & Flying Squirrels

½ size of gray/fox
Evergreen trees
Aggressive/vocal





- Smaller than reds
- Skin flaps & Flat tail
- Gregarious
- Mature woods
- Typhus



## Tree Squirrel Biology

#### Fox/Grays 1 year of age.

- Mate Jan and June.
- Gestation ~45 days.
- About 3 to 6 young occur in each litter.

#### Fliers & Reds have similar biology

- Mate spring (southern squirrels may mate 2x year)
- Gestation ~33 days
- 1 to 7 young



Gray squirrel pinkies



### Tree Squirrel Diet

- ► Gray/Fox
  - Scatter cache
  - Mast

#### Red

- Hoard cache
- Will feed on eggs & small animals



- Flier
  - Don't store
  - Fungi





## Gray/Fox Squirrel Abilities





### Middens

enher







Wildlife Control Consultant, LLC

Photo: Stephen M. Vantassel



## Hole Sizes

Gray/Fox squirrel
 2 to 3 inches

Red squirrel
 >1-inch









Photo: Stephen M. Vantassel



### Inspecting for Holes









### Gray/Fox Holes



### Flying Squirrel Sign

Photo: Stephen M. Vantassel

#### Reds Can enter at ground level





## Habitat Modification

#### Cut back branches 10' from roof



Secure trash cans





### **Resource on Proofing Feeders**

#### http://ianrpubs.unl.edu/epublic /live/ec1783/build/ec1783.pdf

Or search terms "UNL NebGuide Selective Bird Feeding"



Know how. Know now.

EC1783

#### Selective Bird Feeding: Deterring Nuisance Wildlife from Bird Feeders

Lisa Pennisi, Assistant Professor of Practice, School of Natural Resources Stephen M. Vantassel, Project Coordinator – Wildlife Damage Management

Feeding birds is a facinating activity and a wonderful way to connect families and children with nature. Attracting songbirds, for example, allows us to watch their behavior, listen to their songs and calls, appreciate their beauty, develop observation skills, and enjoy nature in our backyards.

Unfortunately, bird feeders often attract unwanted guests that can cause a great deal of expense by consuming seed, damaging feeders, and even invading your home. This Extension Circular offers practical solutions to attract the birds you want while keeping out squirrels (*Pignes 1*), mice, rats, chipmunks, raccoons, deer, opossums, insects, and non-native and undesirable birds such as starlings, House Sparrows, and pigeons.

#### Strategies for Deterring Unwanted Wildlife

For best results, implement as many of the following strategies as possible, and continuously monitor for effectiveness. While these strategies are effective, some animals are more persistent and may require additional effort.







### Secure Vents & Chimneys



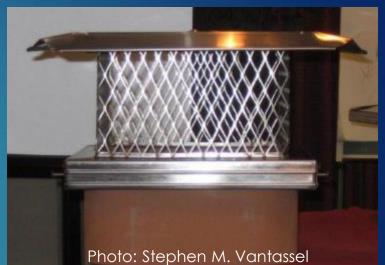




Photo: Stephen M. Vantassel



## Secure Openings

#### Stink Pipes

- Squirrels become trapped in these.
- A.K.A. Roof Vent Pipe Covers
- Use caution in northern climates

- Ridge-vents
  - Frequently not secured.







### Baffles





CritterGuard<sup>™</sup> and homemade devices. Only utility professionals should work on power lines



### Tree & Post Guards

#### Flashing

- 3ft wide
- At least 4 ft. above ground
- 1/4-inch shives between tree & flashing
- Overlap for growth





### Frightening Devices

Photo: Stephen M. Vantassel

Photo: Stephen M. Vantassel







Photo: Stephen M. Vantassel

Photo: Stephen M. Vantassel



## Hazing—Being Unwelcoming

May work at a den site

- Be persistent. Success may take weeks.
  - Pole rattling at hole
  - Lights, i.e. strobes



Strobe lights are touted but no scientific research to back them



## Repellents—limited use

Predator Urine

Fox & Coyote--

#### Taste Repellents

- Use where squirrels gnaw
- E.g. Havahart Critter Ridder
  - Capsaicin, Black pepper, Piperidine
- ► E.g Ropel®
  - Denatonium saccharide







## NO MOTHBALLS

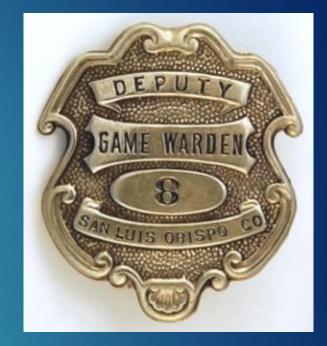


- Naphthalene-anticipated carcinogen
- Paradicholorobenzene-possible carcinogen
- Injurious to animals
  - Abdominal pain, vomiting, seizures, & tremors
  - Kidney damage
  - Liver damage



## Legalities

- Tree squirrels are typically protected by state game laws.
- Some communities ban the use of certain devices to control wildlife.
- Check laws carefully before initiating control.





### Toxic Baits & Fumigants

- None registered for tree squirrels
- Unclear how many squirrels killed by toxicants due to improper claims of "mice".





# Trapping Safety

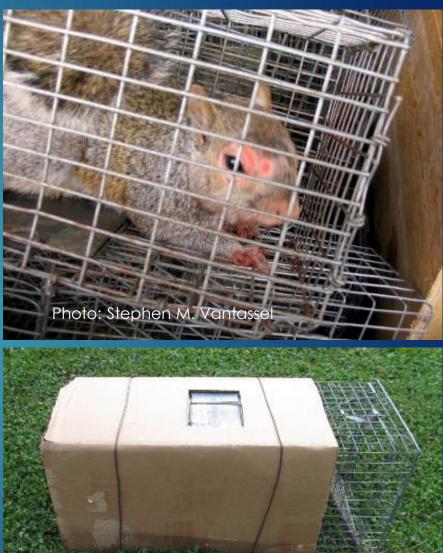
- Wear appropriate safety equipment, e.g. gloves when handling traps and animals
- Avoid setting traps in areas with high human/pet traffic
- Check traps daily. Don't set them if you can't check them the next day





## Humane Cage Trapping

- Use smallest size cage traps
- 5x5x18" spring-loaded door
- Cover 50% of cage
- Consider weather conditions





Wildlife Control Consultant, LLC

Photo: Stephen M. Vantassel

## Trapping Gray/Fox

- Location, location
- Off the ground is best (be sure they are secure!)
- Set traps along travel route







## Trapping-Grays/Fox

Kania Trap
 Tunnel Traps (UK Humane standard)





Photo: Stephen M. Vantassel

# Set lethal traps out of reach and public view.



## Trapping (Reds/Fliers)

#### Use enough rat traps.

Set traps inside protective container when trapping outside.

Pre-bait

- Baited with peanut butter and seeds.
- Keep out of view of birds.







## **One-way Doors**



- Outside nesting season
- Harden the house
- Good to use in conjunction with traps
  - **Excellent** on flyers





Wildlife Control Consultant, LLC

Photo: Stephen M. Vantassel

## **Trapping-Positive**



Good to use in conjunction with baited traps Guaranteed to catch "guilty" squirrels



## Knowing You're Finished







#### Avoid powerlines

Monitor paper for at least 3 days during good weather



## Disposition

Relocation-not practical unless rescue









## Disposition

#### Never kill squirrels in public view

- Euthanasia
  - ► CO<sub>2</sub>
- Humane Killing
  - Drowning

#### Carcass Disposal

- Trash (3mm bags; ask trash company)
- Cremation







## Questions?



Stephen M. Vantassel

stephenvantassel@hotmail.com
 http://wildlifecontrolconsultant.com

The Practical Guide to the Control of Feral Cats



by Stephen M. Vantassel



#### The Wildlife Damage Inspection Handbook

3rd edition Stephen M. Vantassel





#### HOWARD COUNTY PUBLIC SCHOOL SYSTEM





Mark R. Hardin IPM Specialist Howard County Public School System



## Vertebrate Pests and School IPM

#### ► DO WE NEED TO CONTROL THEM?

A number of factors will determine whether we will use control tactics to control Vertebrate Pests and School IPM - QUESTIONS

What animals frequent your school properties?

What is their Biology?

Range?

► Food?

Nesting/Denning locations?

Are there safety risks involved in their presence?

Do their dens or burrows create a safety risk?

Do they potentially pose a health hazard?

Why are they on School property? (food issue?, neighborhood sanitation issues, Denning or living there?)

## Will we try to control or remove them from school property?

#### MAYBE!

- If they, or their activities, are a risk to students, staff, or visitors to schools – YES
- If they are part of the normal environment and pose no direct risks – NO
- If regulatory restrictions prohibit control (bats during certain times of year) – NO
- If they can humanely be caught and removed and they are potentially a risk – YES? MAYBE?

Knowing normal and evaluating the health of wildlife



If Rabies is suspected, not only move to trap or control wildlife, but also contact local Wildlife Control Offices

Know behavior: Ex. Raccoons have in some areas become acclimated to being active during day when our trash and food is available

Recognize issues such as mange – not human health issue, but dangerous for wildlife

#### Common issue: Mange



#### HEALTHY FOX

Fox with Mange are often reported as Rabid or as another animal including legendary Cryptid creatures like a Chupacabra

#### FOX WITH ADVANCED MANG



#### Examples

- Groundhogs who dig burrows under classrooms, or in places where the dens are tripping hazards require removal, those on field edges do not
- Healthy Fox, Skunk or other animals whose dens are on our property or are not in a risky place often require no control effort.
- Even some unhealthy animals (i.e. Fox with Mange who are not denning on our property) are often not subject to trapping – it would be ineffective on our property and there is no direct human health risk. This is subject to the behavior of the animals – are they shy around people?, etc.
- Deer who feed and move through school property are not always subject to control measures (but see Dr. Anderson's presentation in this program)

## Other Factors

#### Trash and trash receptacle management



## A Nuisance wildlife story

# A deck an entomologist A Principal Two Pest control technicians

#### One QA officer/Expert



The Problem? Fox scat on the ramps and decks of portable classrooms, every morning requiring staff to clean the ramps before school opens

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## A Nuisance wildlife story

#### A family of fox

#### Dogs and their owners









#### Solution



#### Involved:

School staff – Principal/Custodial
Facility staff – IPM Specialist
Contracted staff – PC Technicians/QA officer
Community involvement (Dog walkers)
Technology – truthCam
Investigation – biology of fox and territories

## Another Nuisance wildlife story

The Science hallway had a visitor

Before, the media center had a visitor that was trapped and removed

The school was under construction and had many entry points and trash issues.

Just in case: ANY wildlife in the school NEEDS removal



### The Science hallway had a visitor





Inside classroom was evidence of entry by the raccoons and even footprints on the wall – some bloody where they had injured themselves getting in and out





## Ceiling tile material had dropped down into some of the classroom supplies











Wildlife and Schools



- Wildlife are part of the environment surrounding our schools/our schools are part of their environment
- Not all need trapping or control
- Understanding their biology and behavior is essential to determining when control is necessary

When wildlife pose a real health risk they need removal or we may need to alter our environment or the wildlife's behavior to assure a safe school environment

## Control of Feral Cats



#### STEPHEN M. VANTASSEL CWCP™ WILDLIFE CONTROL CONSULTANT, LLC



## Problem #1-The Law

#### Domestic

- Animal Control
- None •
- Cruelty laws

## Wild/Feral

- Div. of Wildlife
- Hunting seasons •
- Wanton waste laws •



Photo: Stephen M. Vantasse





### Problem of Identification

#### Indoor Cat

#### Owned

Free Range Cat Feral Cat

#### Not Owned



#### Gap in the Law

# Animal Control? Division of Wildlife?

#### Who controls Feral Cats?

#### Bottom line-Make sure you find out before ANY LETHAL CONTROL OF FERAL CATS!!!



## Problem #2-Public Relations

### Feral Cat Lobby

#### Vocal

#### Relentless

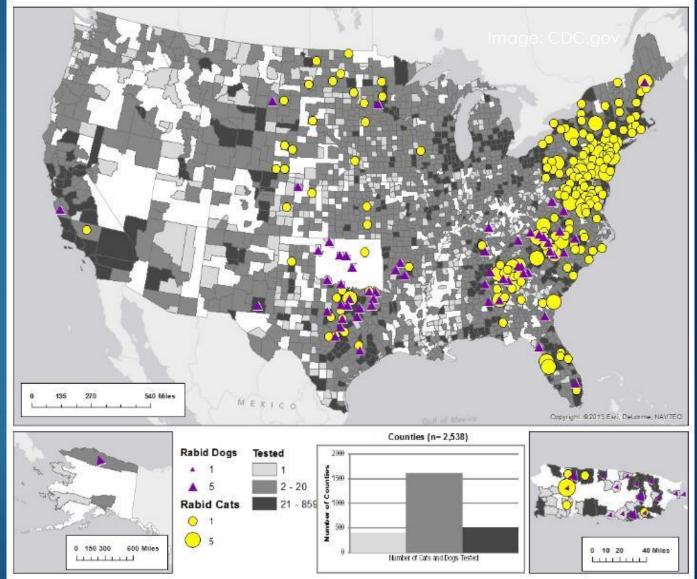


## Key Groups

- Alley Cat Allies
- HSUS
- Host of local groups
- Self-appointed crusaders

## Why Control Free-range Cats?

Disease
 Rabies
 2012





## Why Control Free-range Cats?

#### Disease

Toxoplasmosis
 Survives in soil up to 18 months<sup>1</sup>
 Children exposure increases risk of skizophrenia<sup>2</sup>
 Significant risks for immunocompromised





### Exclusion

Secure hiding places
 Cover sand boxes
 Stop feeders

Photo: Stephen M. Vantassel





## Trapping Safety

- Wear appropriate safety equipment, e.g. gloves when handling traps and animals
- Avoid setting traps in areas with high human/pet traffic
- Check traps daily. Don't set them if you can't check them the next day.
- Ideally, check two or more times a day





## Cage Trapping

#### Estimate pop. size

- Use 10x12x30 cage traps or larger for each cat
- Cover 50% of cage
- Consider weather conditions
- Pre-bait for several days prior to trapping!



Photo: Stephen M. Vantassel





## Baiting



Dry Cat Food
Catnip
Chicken skin
Moist cat food

# BE PREPARED to catch skunks!!!



### Trapping Tips

Location, location
Set traps along travel route
Soil or padding on cage floor
Hide traps
Use two-door traps (8x8x30) at pinch points







### Knowing You're Finished

- Cork holes with
   newspaper
- Stick test
- Monitor paper for at least 3 days during good weather





### Disposition Never kill cats in public view

- Euthanasia
  - ► CO<sub>2</sub>
  - Humane Society
    - Adoption
    - Lethal injection

#### Carcass Disposal

- Trash (3mm bags; ask trash company)
- Cremation



Photo: Stephen M. Vantassel





### Resource on Cat Control

http://ianrpubs.unl.edu/epublic/liv e/ec1781/build/ec1781.pdf

Or search terms "UNL NebGuide Feral Cats"



EC1781

#### Feral Cats and Their Management

Aaron M. Hildreth, Project Technician—School of Natural Resources Stephen M. Vantassel, Wildlife Damage Project Coordinator Scott E. Hygnstrom, Vertebrate Pest Specialist

#### Introduction

Ford citisare domestic catsifier time gene wild (Pgore 1). They cause significant losses to populations of native blocks and manufact reprises and amplitudes can transmit several diseases such as native and toxylations; and may be a general minnee. However, many people are sympothetic to lead cats and provide food and care for them. Managing from cat googulinton is is controver sink before choosing a management strategy. It is important to understand guidk in interest and research-based information wighting management options. This Extension Circular provides research-based information on the management of ford cats.



Figure 1. Femi cats roum freely across or bon and rural areas. (Photo Credit, Auste a Hill)

What are Feral Cats?

used to reduce the number of runs and mise that resided around settlements. Over time, the process of dismetiustion changed the wild entited a separate species called the domestic or house cat (feith amid).

Table L. Chroification of the house or domestic cat.

Class (Scatton	towned	More .	Allowed Ownak
Indoor	¥es.	Жs	No
Limiled- ange	¥2.0	¥e.	We shut confined to owner's or neigh- boring property
Free-range	Ves	No.	Yes
Feral	No	No	Yes

Today, domestic critican be classified into four categeries (indices, limited-maps, free samps, or ferst), hand on whether they are owned torue to acclimated to human contact, and allowed to room extensively outside (*Table 1*).

Owned outs are under the direct care of an owner, likely tolues access to incidence, and scalar modes care and vaccinations. Indoor causare time and confined to their ownof himse or other buildings. Limited-range cats are tame and allowed outside builtypically do not level the owner's or neighboring properties. Proc-mag cats, such as born cats are not confined by their owner. Food and water are often provided daily built the cats are allowed to ream fixedy on and off of the property, Same free-samg cats are time, while others





### Questions?

Stephen M. Vantassel

stephenvantassel@hotmail.com
 http://wildlifecontrolconsultant.com

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### Exclude Deer

Deer are hungriest in Spring
Deer are primary hosts of ticks



### Exclude Deer with Fencing

- Exclude deer to control ticks
- 8-10' fencing is most effective
- Tall, deer-resistant shrubs near fence
- Irregular fence top
- Double fence
- Angled fence
- Exclusion wire atop 8' fence
- Slanted, 7-wire fence
- Fishing line





### More on Deer Exclusion

Hungry deer are persistent Protect trees from browsing Discourage feeding deer



### Plant Selection Impacts Deer Attraction

Deer eat 6-10 lbs. / day

- Use deer resistant plants
  Try pungent plants
- Landscape plant selection can impact habitat attractiveness to deer
- Make school plant menu less appetizing to deer



### Deer Resistant Plants

### Life of the Valley Liriope Sage

Myrtle

Lambs Ear

#### Pachysandra



Daffodil Lavender

Yarrow

### Deer Resistant Shrubs



UNITED STATES

### Plants Susceptible to Deer Browsing

Impatiens

Hosto

### Tulips Shaste Daisy

### Sunflower



### Plants Susceptible to Deer Browsing



### **Deer Repellents**

Most need reapplication after rain

Rotate through the growing season to avoid acclimation Some target the sense of smell Some deterred by taste Many are EPA and state regulated Check your state regulations





### Non-Chemical Deterrents

Sewage fertilizer or mulch product Aluminum pie pans Flashing lights Motion activated lights Motion activated sprinklers



### Habitat Modification



Trim trees and brush allowing sunlight to penetrate

- Reduce moisture to reduce tick habitat
  - Keep grass mowed
  - Remove leaf litter at lawn edge

Keep playground equipment away from woodland edges
Trim trees and shrubs at woodland edges to for less deer browsing
Create 3' wood chip or gravel border between turf and woods



### Please Don't Feed the Bears

- Garbage is the #1 bear attractant
- As populations increase more people live and recreate in areas occupied by bears
- Human-bear conflicts are increasing
- Bears can smell food from over a mile away
- Normally bears are shy
- Their need to find food overwhelms fear





### **Bear Characteristics**

Black Bears – males 600+lbs Omnivores Color: Black, brown, reddish Range 10-50 miles Not typically aggressive Breed at 2-3 years in NJ; 5-6 years in MT (Suburbia v/s wilderness)

Cubs stay with mom 2 winters





### Garbage: Recipe for Damage and Disaster





- Bears easily become dependent of food source
- Dependency on un-natural food = disaster and damage
  - Takes weeks to reacclimate
  - Bear /Human conflicts caused by ignorance



### Use Bear Resistant Dumpsters



Secure garbage

- Bear resistant containers, shed, caddy, dumpsters
  - Reduces bear incidents
- Never overload dumpsters
- Tie bags, keep lids closed tight to reduce smells
- Place do not throw
- Heavy fencing electric



### Have a Bear Plan



- Everyone is in a safe place
- Bear has clear escape route
- Scare the bear: loud noise
- Scan for what attracted the bear
- Secure food source
- Plan for event days



### Educate: Be Bear Aware

Educate surrounding neighborhood School distribute bear awareness fliers home PTA / HAS; Youth: 4-H / Scouts Feeding bears is illegal in many states Meet with local wildlife agency for more information





### Surrounding Neighborhood

More on Education: Bears will eat anything Compost attracts Birdfeeders and seed attract Pet food attracts Outdoor grills, fire pits Fruiting trees and dropped fruit attract







### Steps to Prevent Most Pests



Place Garbage containers away from building entrances
Dumpsters should have close-fitting lids and be kept closed
Report holes or breaks to waste management vendor to replace
Keep area around dumpsters clean and free of debris
Clean garbage cans & dumpsters frequently- prevent waste build-up
Keep dumpsters on a hard impermeable surface





Photo: Thurner Hoff

# **Questions**?

Center of Expertise for School IPM <u>school.ipm@epa.gov</u> 844-EPA-SIPM