

Urban Vertebrate Pest Management - ENY 3228  
Graduate Survey of Urban Vertebrate Pest Management - ENY5332  
Spring 2022

This is a companion course designed to complement ENY-3225, Principles of Urban Pest Management. It covers vertebrate pests and their control in the Urban Environment, principally structural and landscape pests. Much of the information is also applicable to nursery settings. (2 credits)

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Ft. Lauderdale Research & Education Center, 3205 College Ave., Davie, FL 33314

Prerequisites: None, however ENY-3222, Biology and ID of Urban Pests, and ENY-3225, Principles of Urban Pest Management are recommended companion courses.

**Student Learning Objectives**

Students will be able to identify the common species of wildlife, commensal birds and rodents, and invasive vertebrate species that can cause nuisance situations in residential, suburban, commercial, and rural interface properties.

Students will learn some of the basic natural history of these common species, such as food habits, nesting/roosting /denning habits, characteristic home range size, and reproductive season.

They will be able to recognize the likely species causing identifiable types of damage using tracks, droppings, marks, structural damage, and other signs.

Students will be able to use or recommend legal control options (lethal and nonlethal) to manage the property or livestock damage caused by nuisance vertebrate species.

Lectures and discussions will be conducted via Zoom or Microsoft Teams on Wednesday evenings 7:00-10:00 p.m. unless changed by mutual consent of the entire class. Recorded classes will be available for review or if lecture missed..

Topics to be covered: (Additional material may be added throughout the semester.)

**Commensal rodents and their control.**

**Class Period 1 January 5, 2022**

Lecture 1 Biology and Natural History of Exotic Commensal (*Rattus* and *Mus*) and Structure-invading Native Rodents.

Lecture 2 Urban Scatology – Identification of animal droppings and sign.

**Class Period 2 January 12 2022**

- Lecture 3 Rodent IPM –  
Rodent proofing / exclusion techniques.  
Rodenticide and trapping methods.  
Commercial rodent control.  
Household/ Residential rodent control.
- Lecture 4 Rodenticides
- Lecture 5 Health risks associated with rodents

**Structure roosting bats.**

**Class Period 3 January 19 2022**

- Lecture 6 Biology and Natural History of structure roosting bats  
(Vespertilionidae and Molossidae).
- Lecture 7 Bats of Florida
- Lecture 8 Bat Exclusion techniques.

**Class Period 4 February 2 2022**

- Lecture 9 Health risks associated with Mammals.

**January 26 2022 No Class**

**Structure Roosting and Damaging Birds**

**Class Period 4 February 9 2022**

- Lecture 10 Biology and ID of native and exotic structure nesting birds.  
Exotic pest birds – Pigeons, English sparrows, European Starlings.  
Native birds – Chimney swifts, swallows, Carolina wrens.  
Woodpeckers damaging structures. Vultures roosting on buildings.  
Parasites associated with birds – mites, pigeon flies, etc.

**Class Period 5 February 9 2022**

- Lecture 11 Exclusion techniques for birds.  
Avacide use for exotic bird control.

**Videotape - Pyrotechnics for bird management field demonstration at Ft. Lauderdale REC.**

**Structure Invading Wildlife**

**Class Period 6 February 16 2022**

- Lecture 12 Reptiles and Amphibians in Structures.
- Lecture 13 Biology and natural history of Structure-invading Wildlife.  
Raccoons, Fox, Skunks, Opossums and Squirrels, .  
Exclusion techniques.

**No Class February 23 2022 UF School of Structural Fumigation**

### **Landscape damaging wildlife.**

#### **Class Period 7 March 2 2022**

Lecture 14 Hole-diggers – moles, gophers, armadillos, raccoons, tortoises, etc.  
Armadillos and termites.  
Feral Swine damage to crops, landscapes, and native habitats.

#### **Spring Break March 7-12 2022**

#### **Class Period 8 March 16, 2022**

Lecture 15 Deer and Rabbits browsing foliage and woody fruit and  
ornamentals.  
Damage caused by exotic parrots.  
Grazing by peafowl and waterfowl.

#### **Lecture Make up Day March 23 2022**

#### **Student Presentations of Management Plans March 30 , April 6-13 2022**

**Practical Identification Notebook** – Identification of droppings, specimens, damage, and control methods and materials (labels and other pertinent literature). Because it is not feasible to have a practical ID exam for all our distant education students, each student will produce an Identification Notebook. If you take the pictures yourself with a card in the frame with identification, your name and ENY 3228 /5332, it is worth 1 point. If you do drawings that show useful characters, signs, and control methods, you will get 1 point for each drawing. If you use pictures from magazines or the Internet, **they must have a complete citation** and are only worth 0.5 points. Grades for the notebooks are based on the highest score for ENY 3228 or ENY5332. 90% of the top score is an A, 89-80% is a B, etc. Undergraduates will be judged against Undergraduates and Graduate students will be judged against their peers.

Think of the notebook as your personal field guide. You can take your own pictures (a preferred choice) or draw your own diagrams (a preferred choice) of tracks, damage, animals, and droppings. You can use pictures from the internet as long as they are cited fully as to the source. Figure titles are placed under each picture or drawing. I did not specify a number of entries because it depends on the quality rather than quantity. Twenty excellent species accounts are better than fifty incomplete or shoddy accounts. If your fellow students include 30-35 species accounts and you only do 10, your grade will reflect that. Two hours each week during the semester should allow you to produce a useful and educational personal field guide.

It is due on Monday, April 20, 2022

### **Vertebrate Pest Control Management Plan.**

ENY 5332 Graduate students will deliver a management plan for a selected pest situation including, statement of the situation, a diagram of the site, a materials list, budget for labor and materials, timetable, and justification for your choice of control options and your rationale for rejecting other options. This latter point is perhaps the most important. Presented to the class for comment and discussion.

ENY 3228 Undergraduate students will deliver a management plan for a selected pest situation including, statement of the situation, a diagram of the site, a materials list, and timetable. Presented to the class for comment and discussion.

### **Open-book Final Examination**

You will receive the Open-book Final Examination on Friday, March 13, 2020 via e-mail. It must be turned in by 5:00 pm, Monday, April 25, 2022 to Dr. Kern at the Ft. Lauderdale Research & Education Center, 3205 College Ave., Davie, FL 33314, e-mailed to [whk@ufl.edu](mailto:whk@ufl.edu), or FAXED to 954-475-4125.

These are the performance expectations for a take-home, open-book examination. All questions are to be answered fully and completely. Outside resources are expected to be used and citations given in order to fully answer each question. Since a dictionary is allowed, misspelled terms and names are not acceptable. Properly labeled drawings often are very helpful; you may not copy figures or tables directly from the WEB, class presentations, or scanned from the text. If you find figures or tables that help you answer questions **you must re-draw them**. Budget one to four hours per question for research and writing. No question should require more than six hours.

### **Suggested Text Books:**

Corrigan, Robert. 2002. Rodent Control: A practical guide for the pest management professional. GIE Inc., ISBN-10: 1883751160 ISBN-13: 978-1883751166

Additional references will be drawn from the Prevention and Control of Wildlife Damage Manual produced by the Cooperative Extension Service of the University of Nebraska, the Great Plains Agricultural Council, and the USDA.

This publication is available on the web at.

<http://icwdm.org/handbook/allPDF/Complete%20Handbook.pdf>

### **Additional Resources:**

Adams, Clark E. and Kieran J. Lindsey. 2009. Urban Wildlife Management, Second Edition. CRC Press. 432 pp. ISBN-10: 1439804605 ISBN-13: 978-1439804605

Conover, Michael R. 2001. Resolving Human-Wildlife Conflicts: The Science of Wildlife Damage Management. CRC Press. 440 pp. ISBN-10: 156670538X  
ISBN-13: 978-1566705387

Curtis, Paul D., Scott E. Hygnstrom, Stephen M. Vantassel and Technical Editor Raj Smith. 2012. National Wildlife Control Training Program: Core principles and Information Description: 254 pp, The National Wildlife Control Training Program (NWCTP) is a cooperative venture of Cornell University, the University of Nebraska-Lincoln, WCO Core Principles and Wildlife Species Information ISBN-10: 1561610194 ISBN-13: 978-1561610198

Vantassel, S. M. 2012. The Wildlife Damage Inspection Handbook; A guide to identifying vertebrate damage to structures, landscapes, and livestock. 3<sup>rd</sup> Edition. Wildlife Control Consultant, Lincoln, Nebraska. 180 pp. ISBN 978-0-9668582-5-9.

**Grade Determination:**

**There are three requirements; ID Notebook, a Management Plan, and Final Exam.**

Practical Identification Notebook of local pest or nuisance species  
35 %

Urban Vertebrate Pest Control Management Plan  
15 %

Open-book Final Examination Due in Ft. Lauderdale on Monday, April 25, 2022  
50 %

**Grading scale:**

A = 93-100 %	A- = 90-92 %	B+ = 87-89 %	B = 83-86 %
B- = 80-82 %	C+ = 77-79 %	C = 73-76 %	C- = 70-72 %
D+ = 67-69 %	D = 63-66 %	D- = 60-62 %	E < 60 %

**Academic Honesty:** As a result of completing the registration form at the University of Florida, every student has signed the following statement: I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University.

*We, the members of the University of Florida, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.*

## Plagiarism

Plagiarism is a serious problem in academia today, especially with the ease of obtaining information from the World Wide Web. Plagiarism is defined as representing the words or ideas of another person as one's own, without attribution to the source. All words and ideas must be attributed to a source unless they are considered common knowledge (i.e., widely known by many people and found in many different sources). There are many kinds of plagiarism, as you will read on the Guide to Plagiarism website referenced below.

Plagiarism is unethical, unacceptable in science, and prohibited by the UF Student Honor Code (<http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php>). The consequences for plagiarism while at the University of Florida range from receiving a grade of zero for the plagiarized assignment or a failing grade for the course, to, for repeated offenses, expulsion from the university. Plagiarism after graduate training calls into question one's scientific integrity and can lead to banning of publication in journals and the loss of jobs/careers.

In some countries, it is an acceptable practice to write in a manner that faculty members at the University of Florida consider to be plagiarism. Students studying in our university and with plans to publish their research in the English language need to know what plagiarism is and how to avoid it.

**Students who plagiarize will be caught and consequences will be applied. Many faculty in our department check all written assignments using an anti-plagiarism software called Turnitin® (<http://www.at.ufl.edu/~turnitin/about.html>).**

For further information and examples of plagiarism, I strongly suggest that you please read the George Smathers' Library Guide to Plagiarism at [http://www.uflib.ufl.edu/msl/services/tutorials/plagiarism/student\\_intro.html](http://www.uflib.ufl.edu/msl/services/tutorials/plagiarism/student_intro.html)

**Please understand that our purpose in bringing to your attention the matter of plagiarism is to help train you to be ethical scientists, not to impugn your character.**

**Copyrighted Materials and Software Use:** All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are against University policies and rules, disciplinary action will be taken, as appropriate.

**Accommodations for Students with Disabilities:** Students requesting classroom accommodation must first register with the Dean of Students' Office. The Dean of Students will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

**UF Counseling Services:** Resources are available on campus for students having personal problems or lacking clear career and academic goals that interfere with their academic performance. These resources include:

1. University Counseling Center, 302 Peabody Hall, (352) 392-1575, personal and career counseling
2. Student Mental Health, Student Health Care Center, (352) 392-1171, personal counseling.
3. Sexual Assault Recovery Services, Student Health Care Center, (352) 392-1161, sexual counseling.
4. Career Resource Center, Reitz Union, (352) 392-1601, career development assistance and counseling.

## Personal Handbook Template

*Genus species*

**Family:**

**Common Name:**

**Identification:** Photo (give citation if the picture is not yours.)

**Range:** map or description

**Reproduction:** mating season, birthing season, nest or den locations, litters/clutches per year, and young per litter/clutch.

**Evidence:** tracks, scat, marks, damage.

**Food Habits:**

**Control Options:** traps, exclusion materials and methods, repellents, toxicants, labels, etc.

### Required Species

Northern raccoon

At least 2 nuisance reptile or amphibian species

Virginia opossum

Eastern gray squirrel

Fox squirrel

Southern flying squirrel

Nine-banded armadillo

Marsh rabbit

Eastern cottontail rabbit

Southeastern pocket gopher

Eastern mole

House mouse

Roof rat

Norway rat

Hispid cotton rat

Eastern wood rat

Cotton mouse

Hispid cotton rat

English sparrow / house sparrow

European Starling

Feral rock dove / feral pigeon

Carolina wren

Woodpeckers numerous species

Vultures turkey and or black



## Example

*Geomys bursarius* (means “earth-mouse” and “purse-hiding place”)

**Family:** Geomyidae

**Common Name:** Plains Pocket Gopher

**Identification:** Photo (give citation if the picture is not yours.)



Plains Pocket Gopher . From [www.ku.edu/~mammals/geomys-burs.html](http://www.ku.edu/~mammals/geomys-burs.html)

**Range:**



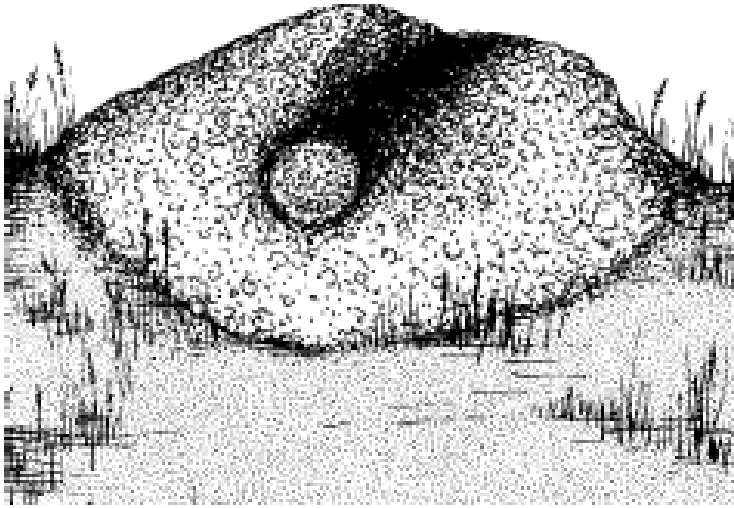
Range of the Plains pocket gopher. From [dnr.state.il.us/.../education/mammals/gopher.htm](http://dnr.state.il.us/.../education/mammals/gopher.htm)

**Reproduction:** mating season, birthing season is from February to June, nest or den is located in a deep chamber in the burrow system, 1 litter per year, and 1-7 young per litter.

**Evidence:** tracks, scat, marks, damage.



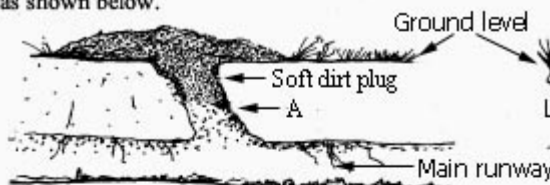
Tracks of Plains pocket gopher. From [www.ku.edu/~mammals/geomys-burs.html](http://www.ku.edu/~mammals/geomys-burs.html)



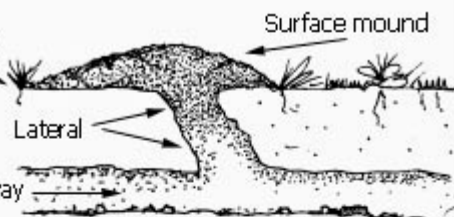
Pocket gopher mound showing the plug for the excavated soil. From [eesc.orst.edu/html/EC/EC1117/EC1117.html](http://eesc.orst.edu/html/EC/EC1117/EC1117.html)

**Control Options:** traps, exclusion methods, repellents, etc.

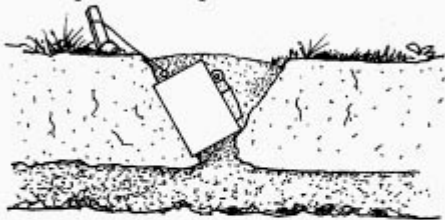
1. Dig out lateral runway to point "A" and clear away soil so trap can be placed as shown below.



1. Locate main runway with shovel or probe.



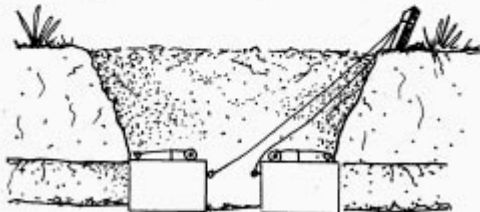
2. Set trap in lateral if possible.



2. Cut through runway digging away soil sufficiently to allow placing of traps in open ends of runway.



3. If unable to set trap in lateral, set two traps in main runway.



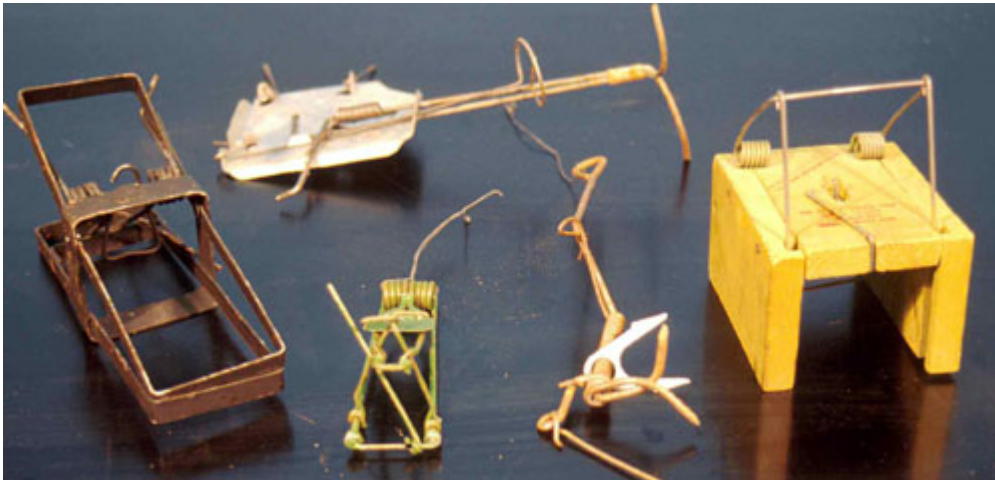
3. Use large spoon to enlarge hole enough to receive traps. Place traps well back in runway and press down firmly.



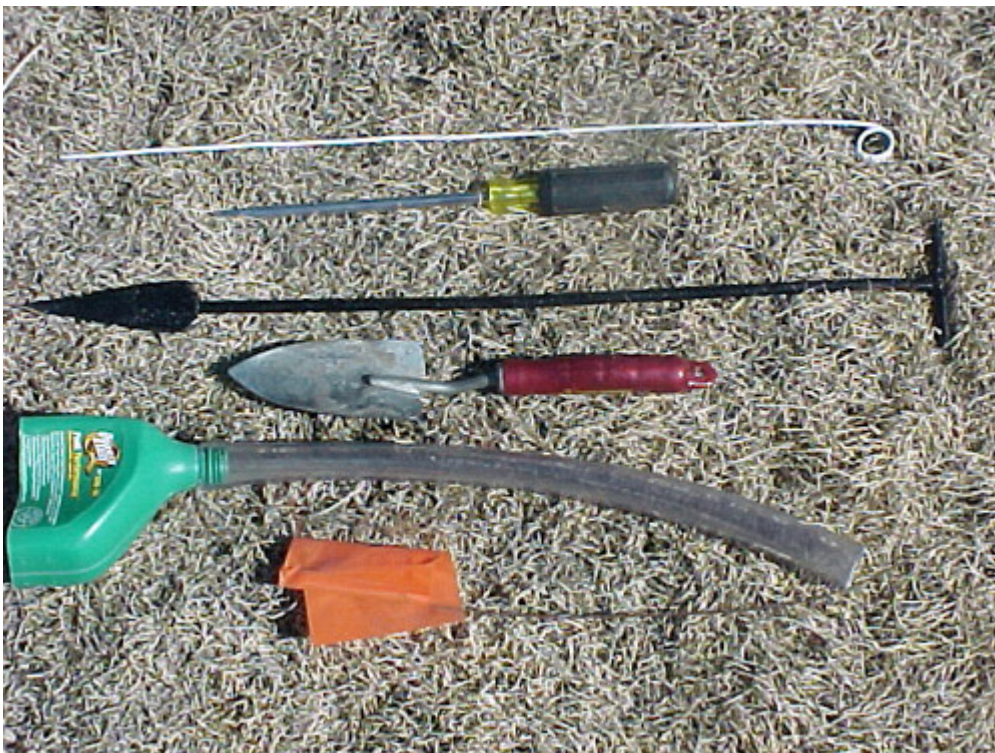
4. After placing one or two traps as shown, cover completely with soil but not more than 1 inch deep on top.

4. After placing trap as shown, close open ends of runway with clod or clump of grass and cover with soil to shut out light.

Methods of setting gopher traps. From [cals.arizona.edu/rodents/pocketgophers.html](http://cals.arizona.edu/rodents/pocketgophers.html)



Selection of gopher traps. From [ianrpubs.unl.edu/wildlife/g1509.htm](http://ianrpubs.unl.edu/wildlife/g1509.htm)



Hand baiting tools for plains pocket gophers. From [ianrpubs.unl.edu/wildlife/g1509.htm](http://ianrpubs.unl.edu/wildlife/g1509.htm)



## **Urban Vertebrate Pest Management Pest Management Plan Assignment**

Due in by Thursday, April 25, 2019.

You will choose a real life vertebrate pest situation. It can be one you are dealing with at work, a problem in your neighborhood, or even a problem you read about in the local newspaper. Your plan must contain the following sections:

- 1) An introduction to the situation including pest or pests involved, extent of the problem, photos of the site if possible.
- 2) Diagram of the area to be treated or managed, including entry points and locations of trap, bait, or exclusion placements and locations or description of suspected sources of pests.
- 3) Description of proposed treatments and an itemized budget of materials. Estimated prices can be obtained from class resources or from the web. Indicate the name of the supplier for each type of material used. If you choose to use a rodenticide or avicide, justify your choice of active ingredient. Assume that your client / customer is willing to pay for any reasonable and justifiable method to deal with this problem, in other words, don't choose the cheapest and easiest solution if better solutions are available

If you have questions about what to include, call me or e-mail me to discuss your ideas. My phone number is (954) 577-6329 and my e-mail is [whk@ufl.edu](mailto:whk@ufl.edu).