

BIO 375 - Spring 2004  
Field Zoology  
Thursdays 6:00 – 9:00pm  
Peterson Hall, Room 107

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“One touch of Nature makes the whole world kin.” - William Shakespeare

Welcome! This course is designed to introduce you to the ecology and identification of many of the common animal species in our region.

The lecture/discussion portion of the course will consider the diversity, macrohabitats, and microhabitats of these organisms, physical and chemical factors affecting their abundance and distribution, population dynamics, and interactions between them. In addition, methods of field study and observation will be examined.

A weeknight laboratory component will be devoted primarily to classification and identification of preserved specimens. In addition, three Saturday field trips will focus on observation and identification of organisms in a variety of local habitats.

## OBJECTIVES

After completing this course, you should be able to

- ⌚ Appreciate the wide diversity of animal species common to our region
- ⌚ Identify several representatives of each of the major animal taxa
- ⌚ Increase your powers of observation of animals in their natural settings
- ⌚ Focus on the importance of microhabitats and macrohabitats in the abundance and distribution of animal species
- ⌚ Understand the myriad of life history patterns as adaptations to specific environments
- ⌚ Describe the variety and complexity of interactions between and within species
- ⌚ Comprehend basic principles of population dynamics, including population size, density, dispersion, and age structure

## PARTLY PERSONAL

If you detect a slight accent, you're right! No, I'm not a native Oregonian - I've only been here since 1972. That's when I came out here from a suburb of New York City (30 miles east – still much too close!) to go to Oregon State University. I graduated from there in 1977 with two B.S. degrees (zoology and fisheries) and 2 years later with an M.S. degree (fisheries). Then it was down to the University of California at Davis for 4 more years and a Ph.D. (ecology) in 1985, where the summers were way too hot and I couldn't wait to get back up here!

Since 1986 I've been teaching introductory biology laboratories at Reed College, covering a range of subjects each year.

I started teaching at Linfield on the McMinnville campus in 1992. I've been teaching environmental science there, and from one class initially, it's now three sections and over 150 students each year!

The DCE program advertised for an instructor here at the Portland campus for the summer of 1994, and after filling that role, it's built up to five-six courses a year, one-two each term and two travel ones each summer. So far, I've taught Human Ecosystems, General Ecology, Environmental Issues and the Physical Sciences, Human Ecology, Field Zoology, Environmental Problem Solving Seminar, Global Issues (online), and Shoreline Ecology, at the Portland, Salem, and McMinnville campuses, plus the wonderful Oregon coast in the summer!

### TEXTBOOKS

The primary textbook for the course is Elements of Ecology (5<sup>th</sup> edition) by Robert Leo Smith and Thomas M. Smith (S&S below). In addition, we'll be using a recent and fairly comprehensive local field guide, the National Audubon Society Field Guide to the Pacific Northwest by Peter Alden and Dennis Paulson (A&P below). Both books contain a lot more information than we'll have time to cover, so specific pages corresponding to the in-class topics are given next.

### TENTATIVE SCHEDULE

Date	Topics	Pages in Text	Assignment Due	Laboratory Topics
Thurs Feb 19	Introduction Basic Ecology I	S&S: 4-7, 9-10		
Thurs Feb 26	Basic Ecology II Abiotic Factors	S&S: 65-75	Presentation Topics	Sampling Techniques
Thurs Mar 4	Scientific Methods Classification	S&S: 8-9, 21 A&P: 77	Ch. 1 (p. 10)	Microbes
Thurs Mar 11	Diversity I – Invertebrates	A&P: 166-171	Ch. 2 (p. 30)	Invertebrates I
Thurs Mar 18	Diversity II – Invertebrates	A&P: 172-188	Ch. 4 (p. 77)	Invertebrates II
Thurs Mar 25	Diversity III – Invertebrates	A&P: 189-219	Ch. 5 (p. 95)	Invertebrates III
Sat Mar 27	FIELD DAY I			
Thurs Apr 1	Diversity IV – Vertebrates	A&P: 220-221, 238-361!	Ch. 7 (p. 135)	Insects
Thurs Apr 8	Adaptations	S&S: 138-144, 147-153, 155-163	Bird Search I **	Reptiles and Amphibians
Sat Apr 10	FIELD DAY II			
Thurs Apr 15	Life History Patterns	S&S: 220-233	Ch. 8 (p. 165)	Fish
Thurs Apr 22	Population Traits	S&S: 172-183	Ch. 12 (p. 234)	Birds I

Date	Topics	Pages In Text	Assignment Due	Laboratory Topics
Thurs Apr 29	Population Growth and Regulation	S&S: 189-191, 194-200, 204-210	Ch. 9 (p. 184)	Birds II
Sat May 1	FIELD DAY III			
Thurs May 6	Interactions I – Competition	S&S: 270, 274-287	Bird Search II **	Birds III
Thurs May 13	Interactions II – Predation	S&S: 290, 292-303	Presentations Ch. 11(p. 217)	Mammals I
Thurs May 20	Interactions III – Symbiosis Bioinvasions	S&S: 310-326, 357-360	Presentations	Mammals II
Thurs May 20	Community Structure	S&S: 242-246, 261-266	Final Exam	Community Structure

\*\* Bird Search handouts available Apr 1 and Apr 29 (the week before they're due)

### LABORATORY WORK

The last one-third of each evening will be a laboratory component to the course. It will consist primarily of examination and identification of many local species of invertebrates and vertebrates. A combination of preserved specimens, skins, etc. will be available for your scrutiny. Each evening I'll have worksheets for you to fill out and turn in at the end (worth 5 pts each), which will help you organize the traits and identifying features of each species. In addition, there will be two somewhat longer simulation labs (Sampling Techniques – Feb 26; Community Structure – May 27), worth 15 pts each.

### FIELD DAYS

There is no true substitute for seeing and appreciating these animals in their natural habitat, so we will be spending three mandatory but enjoyable Saturdays in a variety of habitats.

Sat Mar 27 (8am-5pm) - First stop will be Ridgefield National Wildlife Refuge, above Vancouver, WA. Late fall through early spring there typically has an impressive variety and abundance of migratory and resident waterfowl. Then after lunch we'll go to Macleay Park in NW Portland. Among other species we should hopefully see some amphibians and reptiles.

Sat Apr 10 (8am-5pm) - Time to head to the coast! There's a good "minus" tide at 11am - a decent time of day for a change! We'll go to Haystack Rock at Cannon Beach, a popular spot, but there is still an amazing variety of rocky intertidal invertebrates to see. After the tide comes in, we'll travel a few miles up the coast to observe several species of shorebirds.

Sat May 1 (8am – 5pm) - First stop will be Oaks Bottom Wildlife Refuge in SE Portland, a somewhat undisturbed habitat of wetlands and hardwood forest. Then after lunch we'll cross the river to the Tualatin Hills Nature Park in Beaverton - an oasis in suburbia!

For each trip, we'll be traveling in one of the school vans. You should bring a lunch and binoculars, dress warmly, and wear comfortable walking/hiking shoes. Also, for these outings, you'll need a...

### FIELD NOTEBOOK

What is it? Any notebook (but not 3-ring) that can hold up for three days in the field without falling apart!

What size? Minimum 5" x 8", but even 9" x 12" is fine.

What goes in it? For each field site...

1. Date
2. Location
3. Time of observations (start and end)
4. General weather (sunny, foggy, cloudy, etc.)
5. Type of habitat (forest, beach, rocky intertidal, wetland, etc.)
6. ID and sketch of organisms seen, with approximate sizes (so bring a small ruler)  
P.S. Don't worry about your artistic ability or inability!
7. Along with each sketch, label an identifying feature or two.
8. Other observations as you see fit
9. Your overall impression of the site (Be honest!)

Notes:

- a. Use a pencil - much more waterproof than ink!
- b. Be as complete as possible – it will never be too detailed!
- c. Keep it neat and organized as you go – it's not worth the time copying it over later!

When is it due? Right after the last field trip site (Sat May 1) and worth 50 pts.

### CHAPTER ASSIGNMENTS

At the end of each chapter in the textbook are several Study Questions. Many of them are rather mechanical, but several are more interpretive in nature. I've chosen four of the more interpretive ones from each chapter and listed them below. There is a total of eight chapter assignments to do (see the schedule above, with the page of questions given for each, and due dates). For each one, read the corresponding chapter (the topics will be introduced the previous week in class) a choose one (1) of the four questions below to answer, in a maximum of one page, if possible (worth 10 pts each). No outside research is needed on these, but substantiation with information from the chapter would be very helpful.

Chapter	Page	Questions	Chapter	Page	Questions
1	10	2, 3, 5, 8	8	165	2, 7, 15, 26
2	30	7, 9, 11, 14	12	234	9, 10, 13, 15
4	77	5, 7, 9, 11	9	184	3, 4, 6, 8
5	95	3, 4, 10, 13	11	217	2, 6, 8, 10
7	135	3, 4, 7, 12			

Note: For the last assignment (Ch. 11), it will be due either May 13 or 20, in the alternate week that your presentation is not scheduled.

## PRESENTATION + PAPER

Each of you will have a chance to do some research and reporting on a local native animal species that interests you. This will involve an in-class presentation and submission of a paper on your findings, due at the beginning of one of two classes (either May 13 or May 20 – order and time of presentation TBA). Your paper (and presentation) should include the following information (where available):

1. Basic ecology - size, longevity, food, habitat, life cycle, etc.
2. Adaptations - morphological, physiological, and/or behavioral traits that enable the species to survive in this area
3. Population status - any population estimates, and if so, any changes recently? Any human impacts on the species?

The paper should be a maximum of six (6) pages long, and include a minimum of four (4) outside references (that is, beyond the two course books). Though you're welcome to use our books as extra sources, if helpful. Use in-text citations (author, year) and include a complete reference section at the end. Refer to the Citations and References section (at the end of this Syllabus) for details.

Now, to decide which species to investigate, look over the following list, and choose five (5) in your order of preference. A handwritten sheet for this is fine, and due the beginning of the second class (Thurs Feb 16). I will get them back to you by the end of the same evening, with a circled one for you to research.

Earthworm	Banana Slug	Millipede
Western Yellow Jacket	Monarch Butterfly	Pacific Giant Salamander
Red-Legged Frog	Western Pond Turtle	Northwestern Garter Snake
Common Loon	Western Grebe	Brown Pelican
Great Blue Heron	Wood Duck	Osprey
Red-Tailed Hawk	Killdeer	Western Sandpiper
Barn Owl	Pileated Woodpecker	Townsend's Chipmunk
Deer Mouse	Western Gray Squirrel	Coyote
River Otter	Common Gray Fox	White-Tailed Deer
Common Porcupine	Roosevelt Elk	California Sea Lion

The entire presentation will be worth 100 pts, split into 30 pts oral and 70 pts written.

## FINAL EXAM

A take-home final exam (worth 50 pts) will be available Thursday May 20, and due in the beginning of class Thursday May 27.

## OUTCOMES

The course will be worth a total of 400 pts, derived from the following: laboratory worksheets (12 x 5pts each = 60 pts), two simulation labs (30 pts), chapter assignments (9 x 10pts each = 90 pts), two bird searches (20 pts), field notebook (50 pts), presentation (100 pts), and final exam (50 pts). At this point, I anticipate the typical 90%, 80%, and 70% as cut-offs for A, B, and C, but if everyone's totals end up on the low side, I have no problem in lowering those percentages!

## SPECIAL NEEDS?

If you have any documented disabilities that may need accommodations, any medical information I should know of, or need special arrangements in the event of an evacuation, please see me at your earliest convenience. Thanks!

## ACADEMIC HONESTY

It's unfortunate that a section on this is needed at all, and this should be abundantly clear, but cheating and/or plagiarism in any portion of the course (including buying a research paper) will not be tolerated and will seriously jeopardize your grade. A very simple way to avoid this is to write your assignments and papers in your own words and cite your sources (see below) after specific details or examples.

## CITATIONS AND REFERENCES - The Science Way

(adapted from the CBE Style Manual)

### In-Text Citations

These could be direct citations:

*Smith and Wesson (1991) lobbied against gun control.*

or indirect citations:

*There was an active lobby against gun control (Smith and Wesson, 1991).*

## General Rules:

1. Cite your source for specific details, examples, etc. and for any direct quotes (though direct quotes are seldom used in scientific papers).
2. General format: (author, year)

- a. No author? Use (Anonymous, year)

*The Forest Dragons have been drawing small crowds to the Coliseum (Anonymous, 1999).*

- b. If two (or more) articles by the same author in the same year, use a and b after the year in the text and reference listing at the end, to keep them distinct

*Last year's movies are back again for the Oscars (Mahar, 2002b).*

- c. Internet source? Use (author, year the site was last updated), or if no author, use (Anonymous, year updated)

*Methyl chloroform levels have declined in the stratosphere (Anonymous, 2001).*

**Important Exception:** If your Internet source is from a published format (newspaper, magazine, etc.), cite the published source instead, using the year of publication.

- d. Multiple authors? If two, cite both names; if more, use "and others" after the first author

*Mexico City has had the worst air pollution in the last decade (Talbot and others, 2000).*

- e. Personal interview (or communication). Format: (Person. year date. position, city. Personal communication)

*According to DW Anderson (1998 Oct 28. Architect, Knob Hill Designers, Beaverton, OR. Personal communication), the 30-ft high sculpture was an appropriate entrance to the Silicon Forest.*

Note: These go in your text only, not in the reference listing at the end.

## References (or Bibliography)

This should appear at the end of your paper, and should be a complete listing of every source cited in your text (except any personal communication).

### A. General Formats:

1. Journal or magazine articles: Author(s). Year. Title. Source. Volume:Pages.

*Smith IM, Wesson UR. 1991. Gun control is not for everyone. Rifleman 54:32-36.*

2. Books: Author(s). Year. Title. City published: Publisher.

*Brown LR. 1997. Tough choices: facing the challenge of food scarcity. Washington, D.C.: Worldwatch Institute.*

3. Article within a book: Author(s). Year. Title. Pages in Book ed. Title. City published: Publisher

*Wilson EO. 2003. What is nature worth? Pages 121-130 in Allen JL, ed. Annual editions: environment 03/04. Guilford, CT: McGraw-Hill/Dushkin.*

4. Newspaper articles: Author(s). Year date. Title. Newspaper; Section pages.

*Eggers K, Jaynes D. 1998 Mar 29. Trailblazers have a decent season after all. Oregonian; Section E1-E2.*

5. Internet: Author(s). Year date last updated. Title. <Web site address> Date you accessed.

*Papadopoulos G. 2001 Mar 15. Aquaculture in Greece expands rapidly.  
< <http://www.grfishaq.html> > Accessed 2003 Aug 29.*

**Important Exception:** Again, if it's a published source, use that information here instead of the web address. That is, don't assume every reader has Internet access.

B. Multiple authors? List them all, in the same order they appear in the source.

*Talbot GM, Svoboda PR, Payne SW, Enfield KS. 2000. Mexico City: air pollution nightmare. Environmental Science and Toxicology 17:433-440.*

C. No authors? Start with [Anonymous]

*[Anonymous]. 1999 May 28. Forest Dragons vie for recognition in Portland. Oregonian; Section E3.*

D. Same author with two or more articles in the same year? Use a, b, c, etc. after the year, to correspond with your in-text citations

*Mahar T. 2002a Apr 1. Oscars yield few surprises. Oregonian; Section D1-D2.*

*Mahar T. 2002b Apr 4. Oscar winner movies see attendance rise. Oregonian; Section D5.*

E. Let's put it all together:

### References

- [Anonymous]. 1999 May 28. *Forest Dragons vie for recognition in Portland. Oregonian; Section E3.*
- Brown LR. 1997. *Tough choices: facing the challenges of food scarcity. Washington, D.C.: Worldwatch Institute.*
- Eggers K, Jaynes D. 1998 Mar 29. *Trailblazers have a decent season after all. Oregonian; Section E1-E2.*
- Mahar T. 2002a Apr 1. *Oscars yield few surprises. Oregonian; Section D1-D2.*
- Mahar T. 2002b Apr 4. *Oscar winner movies see attendance rise. Oregonian; Section D5.*
- Papadopoulos G. 2001 Mar 15. *Aquaculture in Greece expands rapidly. < [HTTP://www.grfishaq.html](http://www.grfishaq.html) > Accessed 2003 Aug 29.*
- Smith IM, Wesson UR. 1991. *Gun control is not for everyone. Rifleman 54:32-36.*
- Talbot GM, Svoboda PR, Payne SW, Enfield KS. 2000. *Mexico City: air pollution nightmare. Environmental Science and Toxicology 17:433-440.*
- Wilson EO. 2003. *What is nature worth? Pages 121-130 in Allen JL, ed. Annual editions: environment 03/04. Guilford, CT: McGraw-Hill/Dushkin.*

Notice the listing is alphabetized, by the first author's last name (or word).

F. Now that you have all the "Do's", just a few brief "Don'ts":

1. Don't use footnotes in your text for sources.
2. Don't cite more than (author year) in your text (except personal communications).
3. Don't include complete references at the end for sources not cited in your text.
4. Don't cite sources in your text without giving the complete listing at the end (again, except personal communications).

Note: The *Italics* used above are just for clarity - they're not needed in your papers.

