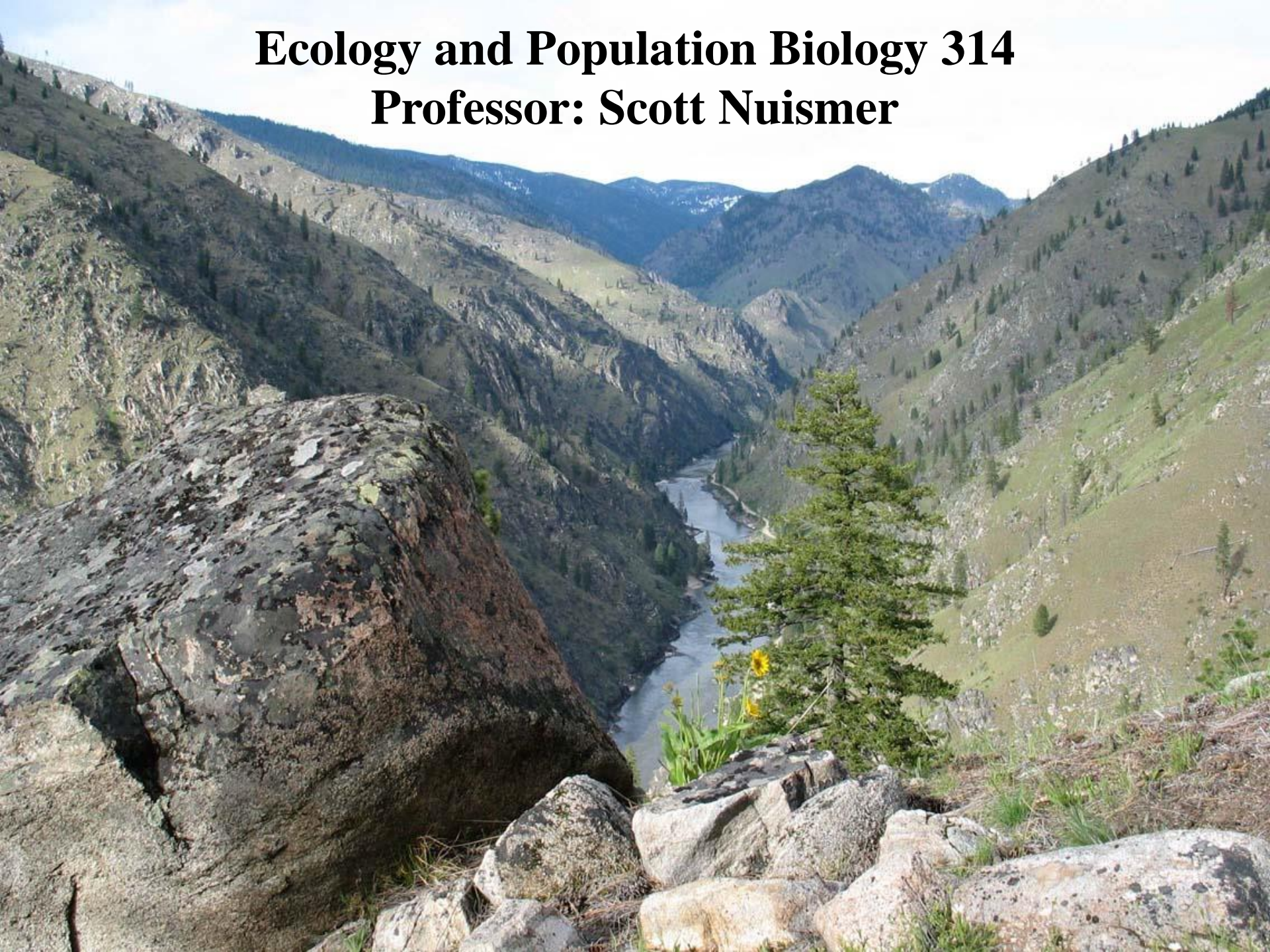


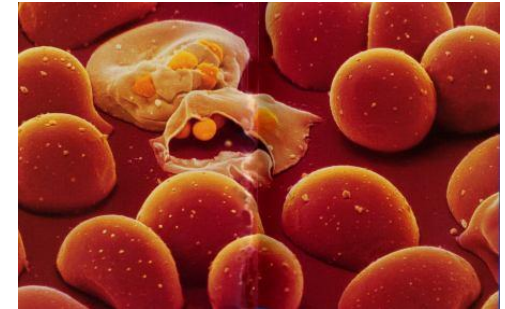
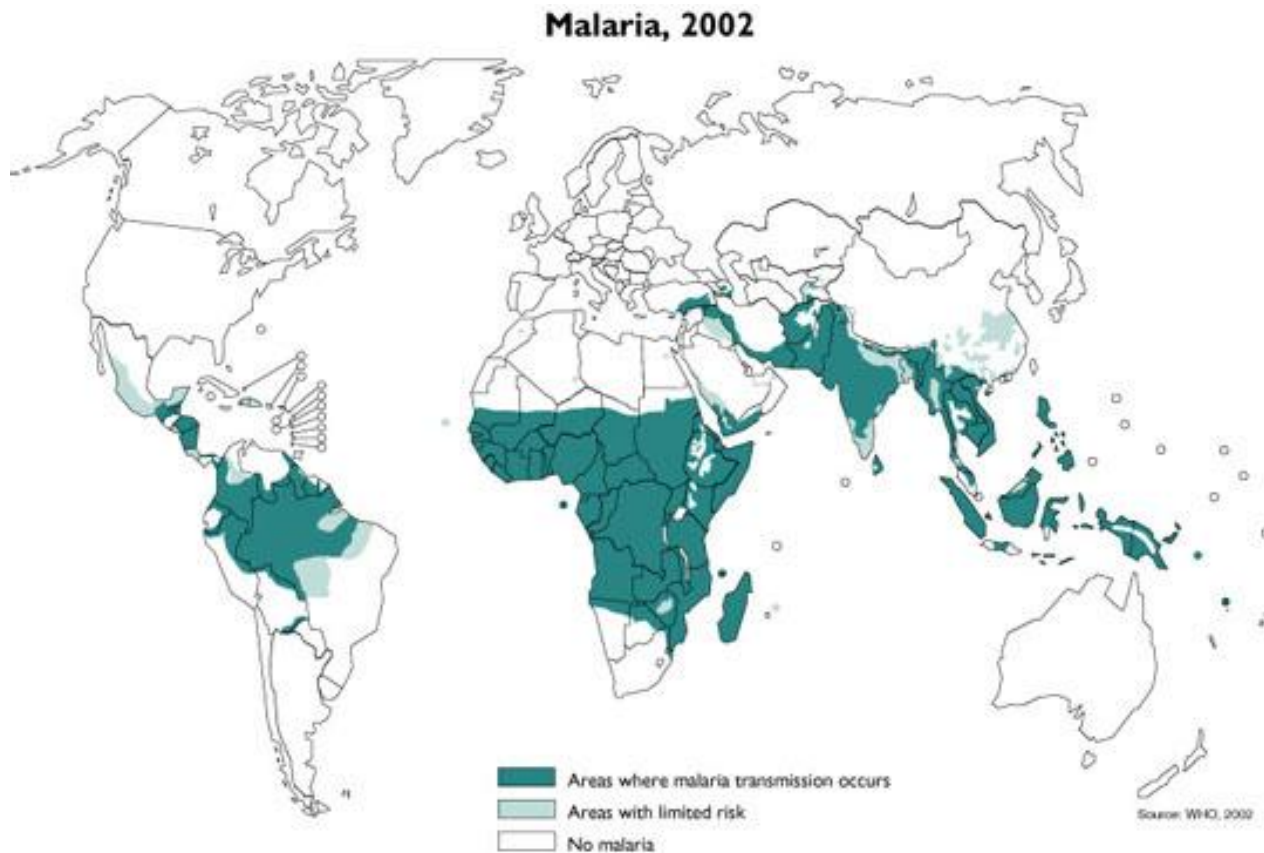
# **Ecology and Population Biology 314**

## **Professor: Scott Nuismer**



# **What is population biology?**

# What factors determine a species geographic range?



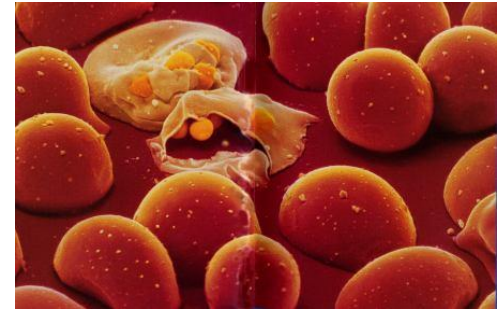
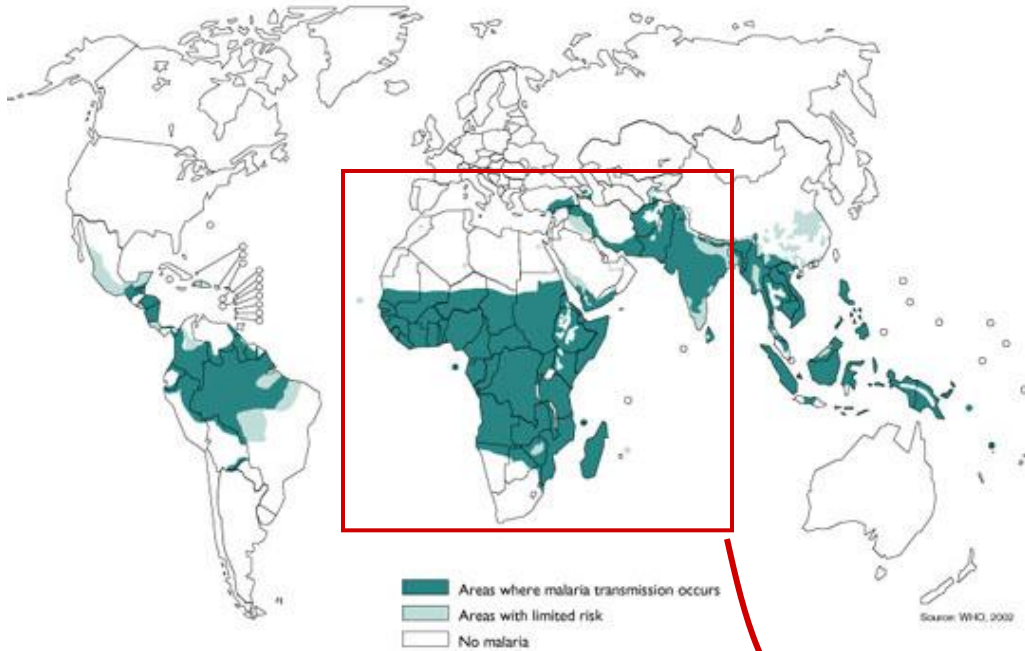
*Plasmodium*



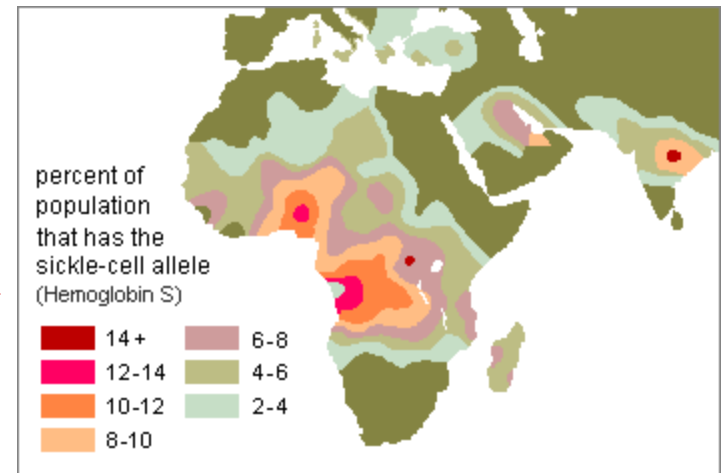
*Anopheles*

# Why does genetic structure exist?

Malaria, 2002

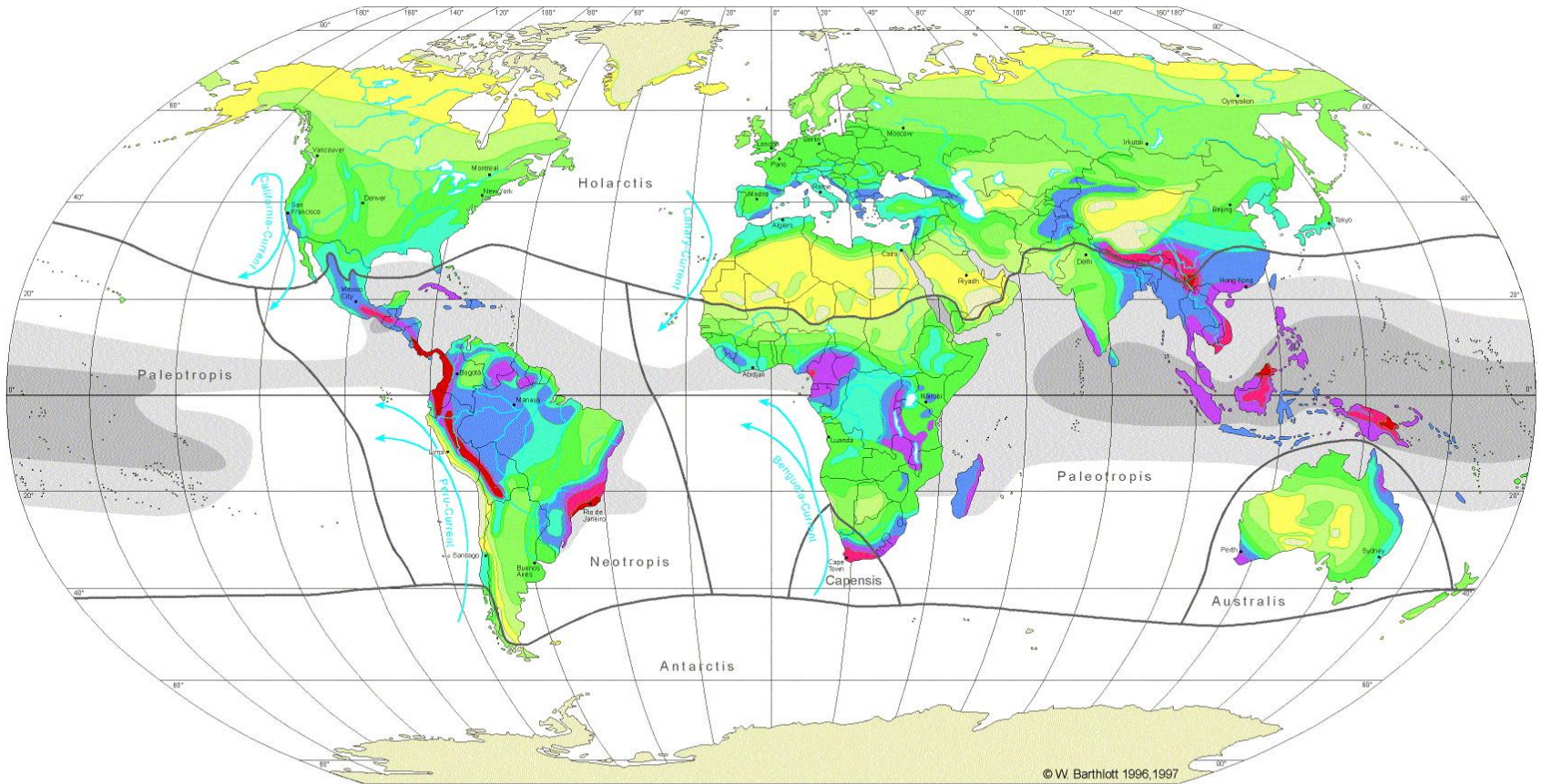


*Plasmodium*



# What explains geographic variation in biodiversity?

## GLOBAL BIODIVERSITY: SPECIES NUMBERS OF VASCULAR PLANTS

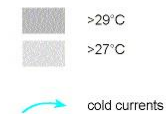


Robinson Projection  
Standard Parallels 38°N und 38°S  
Scale 1: 130 000 000

### Diversity Zones (DZ): Number of species per 10.000km<sup>2</sup>

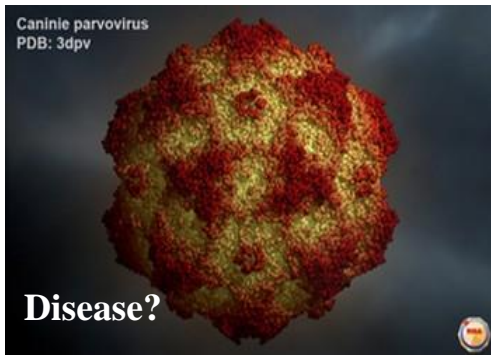
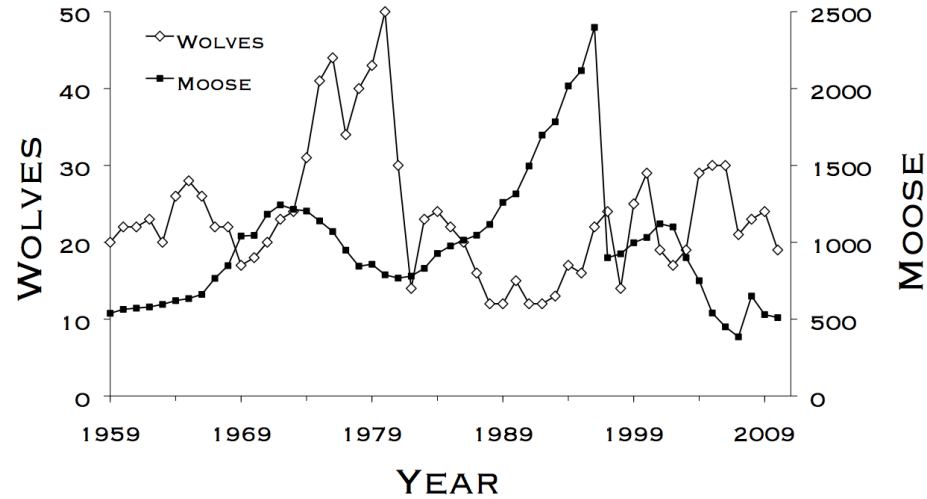


sea surface temperature



W. Barthlott, N. Biedinger, G. Braun  
F. Feig, G. Kier, W. Lauer & J. Mutke 1997  
modified after  
W. Barthlott, W. Lauer & A. Placke 1996  
Department of Botany and Geography  
University of Bonn  
German Aerospace Research Establishment, Cologne  
Cartography: M. Gref  
Department of Geography  
University of Bonn

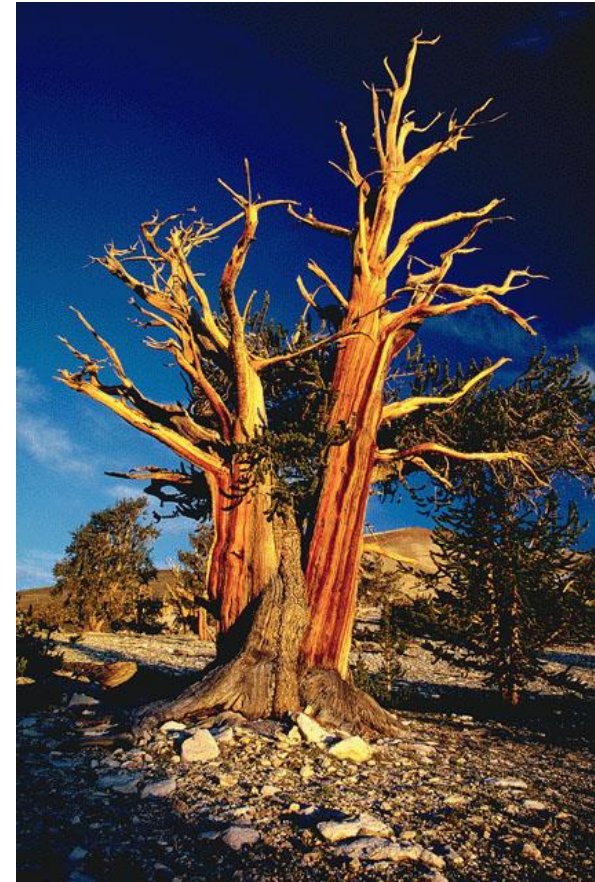
# What regulates population sizes?



# Why do some organisms live longer than others?



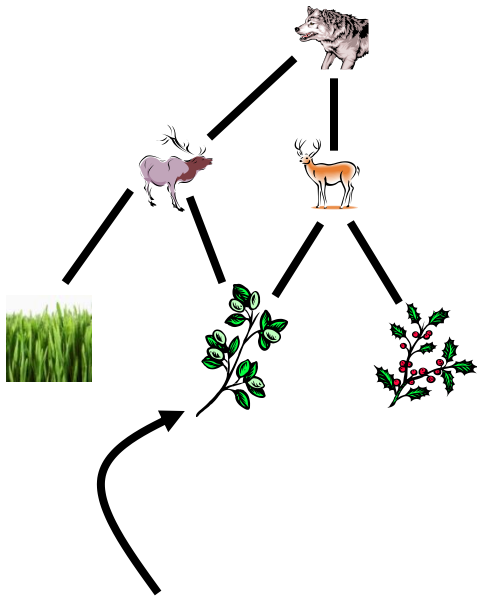
**The official world record for the oldest human:  
122 years, 164 days -- Jeanne Calment of France  
113'th birthday party**



**Semi-official world record for oldest  
organism: "Methuselah" at 4,767  
years.**

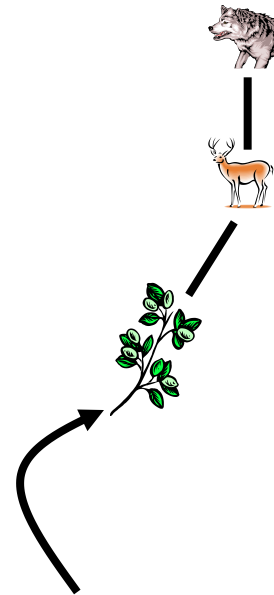
# What are the consequences of community structure?

Many trophic links



What would happen if we removed this species?

Few trophic links



What would happen if we removed this species?



# Course logistics

- **People**

- **Components**

- **Grading**

# Professor: Dr. Scott Nuismer

**Office:** 266C Life Sciences South

**Office Hours:** W 12:00-2:00pm or by appointment (preferred)



$$\Delta \bar{z} = \mathbf{G} \frac{1}{\bar{W}} \frac{\partial \bar{W}}{\partial \bar{z}} - m(\bar{z} - \bar{Z}) + \varepsilon$$

# Teaching Assistant for the Monday Labs: Savannah Patterson



**e-mail:** *spatterson@uidaho.edu*  
**Office:** Gibb 244  
**Office Hours:** T 12:30-2:00

# Teaching Assistant for the Wednesday Lab: Mathew Singer



**e-mail:** *msinger@uidaho.edu*  
**Office:** Gibb 229  
**Office Hours:** M 10:00-12:00

# **Biology 314 course information**

**[http://www.webpages.uidaho.edu/~snuismer/Nuismer\\_Lab/314.htm](http://www.webpages.uidaho.edu/~snuismer/Nuismer_Lab/314.htm)**

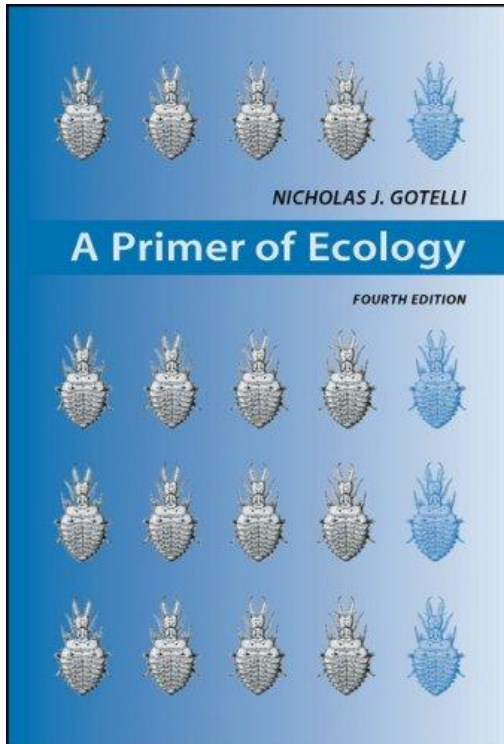
- **Syllabus**
- **Lectures (posted  $\approx$  the night before class)**
- **Laboratories (posted the week before)**
- **Exam practice questions (posted  $\approx$  1 week in advance)**

# Lectures

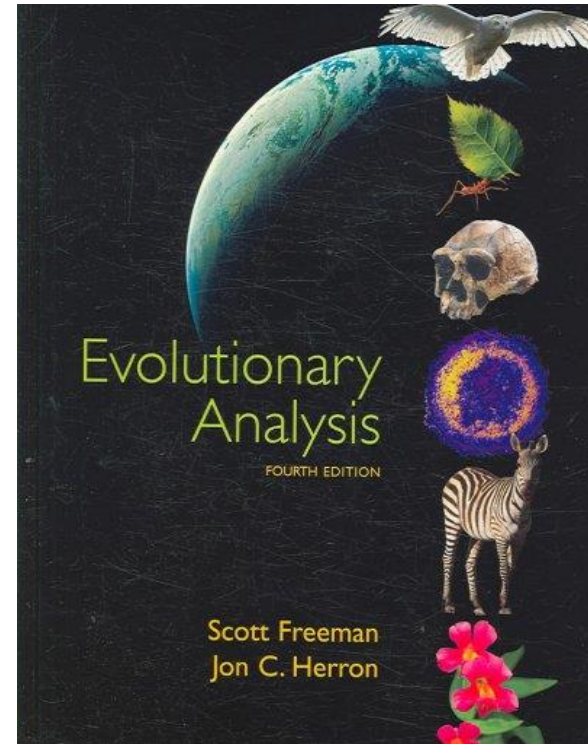
- **Will be posted the night before**
- **Focus on major principles, concepts, and examples**
- **Include student driven solutions to practice problems/questions**
- **Attending lectures is \*\*\*NOT\*\*\* required**
- **Questions are encouraged**

# Supplementary texts

*A Primer of Ecology*  
4'th edition  
N. J. Gotelli



*Evolutionary Analysis*  
4'th edition  
S. A. Freeman & J. C. Herron



**Provide additional background, detail, and alternative explanation for topics covered in the course**

# Laboratories (Begin January 26 or 28)

- **Location: MCCL 214A**
- **Focus on the analysis of ecological and evolutionary data**
- **Divided into three multi-week modules, each of which includes:**
  1. **An introductory lecture**
  2. **A problem set**
  3. **Analysis of real (or re-synthesized) data**
  4. **A concise report**
- **Laboratory grade will be based on three problem sets and three reports**



# Exams

- **Five 1 hour exams. Your grade is determined by the best four**
- **All exams are **cumulative****
- **Laboratory material will be covered**
- **Exams will be based on exam practice questions (no surprises!)**
- \* **No make up exams without a written, university approved excuse**
- \* **Re-grades will only be considered within 5 days**

# Grading

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Exams (4)	640
Problem Sets (3)	60
Laboratory Reports (3)	300
Total:	1000

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**> 90% is an A**

**> 80% is an B**

**> 70% is an C**

**Grades are NOT rounded or curved. 89.999999% is a B, not an A...**