Course Introduction

Michael Noonan

Biol 417: Evolutionary Ecology

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Course Overview

About Me

Name: Michael Noonan

Office: SCI 379

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Office Hours: Wed 14h00-15h00; or by appointment arranged via email.

Course Website: https://noonanm.github.io/Biol417/index.html

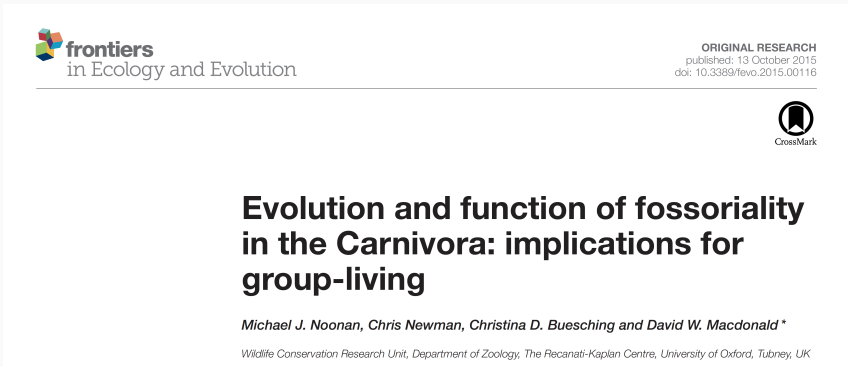
Multi-access

All lectures can be attended in-person, or over zoom.

If you choose to attend via zoom, there is always a risk of technical failures, and I may miss your question.

All lectures will be recorded and posted online, in the event of any technical failures, lectures from a previous year will be posted.

Why Me?


frontiers in Ecology and Evolution

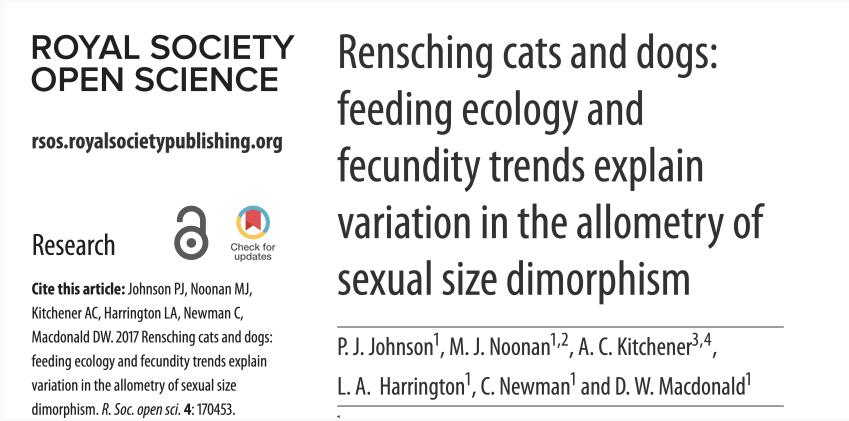
ORIGINAL RESEARCH
published: 13 October 2015
doi: 10.3389/fevo.2015.00116

CrossMark

Evolution and function of fossoriality in the Carnivora: implications for group-living

*Michael J. Noonan, Chris Newman, Christina D. Buesching and David W. Macdonald **

Wildlife Conservation Research Unit, Department of Zoology, The Recanati-Kaplan Centre, University of Oxford, Tubney, UK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Research

Check for updates

Cite this article: Johnson PJ, Noonan MJ, Kitchener AC, Harrington LA, Newman C, Macdonald DW. 2017 Rensching cats and dogs: feeding ecology and fecundity trends explain variation in the allometry of sexual size dimorphism. *R. Soc. open sci.* **4**: 170453.

Rensching cats and dogs: feeding ecology and fecundity trends explain variation in the allometry of sexual size dimorphism

P. J. Johnson[1], M. J. Noonan[1,2], A. C. Kitchener[3,4], L. A. Harrington[1], C. Newman[1] and D. W. Macdonald[1]


Received: 22 July 2016 | Revised: 17 August 2016 | Accepted: 18 August 2016

DOI: 10.1002/ece3.2480

ORIGINAL RESEARCH

WILEY Ecology and Evolution Open Access

Sexual size dimorphism in musteloids: An anomalous allometric pattern is explained by feeding ecology

Michael J. Noonan[1] | Paul J. Johnson[1] | Andrew C. Kitchener[2,3] | Lauren A. Harrington[1] | Chris Newman[1] | David W. Macdonald[1]


Received: 21 May 2021 | Accepted: 27 October 2021

DOI: 10.1111/2041-210X.13763

RESEARCH ARTICLE

Methods in Ecology and Evolution BRITISH ECOLOGICAL SOCIETY

A semi-variance approach to visualising phylogenetic autocorrelation

Michael J. Noonan[1] | William F. Fagan[2] | Christen H. Fleming[2,3]

What this course is about

- Focus is on the ecological basis for the evolution of life histories.
- We will explore how the way that organisms interact with the environment and community they live in can shape evolutionary trajectories in rich, interconnected ways.
- We will also explore how plants and animals can shape the environment they live in, resulting in complex dynamics that unfold over evolutionary timescales.
- We will learn about the tools that ecologists use to study evolutionary processes.
- We will put evolutionary ecology into the context of current human induced environmental change.

What this course is not about

- Genetics (you should be familiar with basic concepts of genetics, including Mendelian inheritance, mutations, genetic drift, etc.)
- Evolution (we will not be focusing on evolution *per se*).
- Ecology (you should have a working knowledge of ecological concepts, population and community ecology, etc.).
- Palaeoecology. We will not be focusing much on fossil plants and animals.
- Basic statistics (concepts like means, medians, variances, probability distributions, regression should be familiar to you).

Course Evaluation

Paper Summaries (6 of 8)	30%	Due on ∼weekly basis
Essays (3)	48%	Every ∼3 weeks
Research proposal	22%	Week 14
Total	100%	

Paper summaries (30%)

Beginning in week 2 you will be asked to write 1-page summaries of research papers that focuses on an area of evolutionary ecology.

Papers will be assigned by the me and provided to you in advance.

The following points should be covered:

1. What is/are the issue(s) addressed by the paper?
2. What is the underlying research approach taken by the paper?
3. What are the main results and what conclusions are expected to be drawn from the paper?
4. How much confidence in the obtained results are implied by the author(s)?
5. Is this confidence justified in your opinion?

Grading: Each will be marked on composition, comprehension, clarity, and coverage of points 1-5, and will be worth 5% of your final grade.

Essays (48%)

You will be asked to complete three written essay assignments throughout the course.

For each of these essays, you will be given a topic or question. You will then be expected to write an essay addressing the topic or question.

The essays should be a *minimum* of five pages in length (double spaced using a 12-point font).

Include references to all necessary literature in a format of your choosing. References must be included, but do not count towards the total length.

Grading: Each essay will be graded out of 100, and will be worth 16% of your final grade.

Essays

If you haven't written many essays before, you're encouraged to read the following resources:

https://weblearn.ox.ac.uk/access/content/group/159bc1ca-0c7b-454c-8aad-c6c711affc04/Documents/acadwrit2013.pdf

https://www.oxbridgeessays.com/blog/how-to-structure-an-essay/

https://www.scribbr.com/category/academic-essay/

https://www.grammarly.com/blog/essay-writing/

Research proposal (22%)

Students will work in groups (minimum 2 maximum 4) to prepare a research proposal that outlines a plan to address a research question that would advance the field of evolutionary ecology.

Proposals have a *maximum* length of 10 pages, comprised of:

1. **Introduction**. Explain the big picture question, what work has been done to date, and why you have chosen a particular system.
2. **Objectives**. Outline of the key objective(s) of the proposed research.
3. **Team**. Describe the research team and how each person's strengths will contribute to achieving the research goal.
4. **Methods**. Describe the experimental and data collection protocols.
5. **Significance**. Describe the significance to the field of evol. ecol.
6. **Project timeline**. A visual depiction of the project timeline.
7. **References**. Include references to all necessary literature.

Research proposal (22%) cont.

You will also have to prepare a budget (maximum: $500,000 CAD).

The budget should be prepared using a pre-provided spreadsheet, and include (but is not limited to):

1. The cost of personnel.
2. The cost of Equipment.
3. The cost of publishing manuscripts.
4. Conference and fieldwork travel to collect data and share findings.
5. University overhead (the university will take 25% of your total budget as overhead to cover operational costs).

Grading: The proposals will be graded out of 100 and will be worth a total of 22% of your final grade.

Late Policy

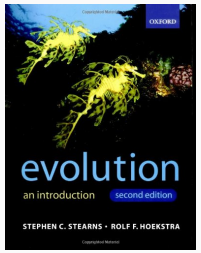
Late assignments will have 5% deducted per day that they are overdue and will receive a grade of zero if more than 20 days late without a valid reason.

Everyone can submit **1** assignment late without penalty.

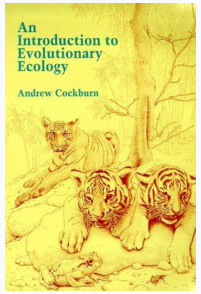
Optional Material

There is no textbook for this course, but, if you are interested, the following are recommended:

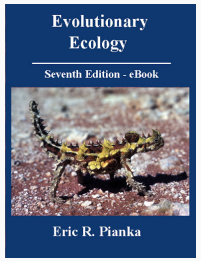
- Stearns, S. C., & Hoekstra, R. F. (2000). Evolution, an introduction. Oxford University Press. $\sim$ \$100 on Amazon or through UBC libraries.



- Cockburn, A. (1991). An introduction to evolutionary ecology. Wiley–Blackwell. ISBN 0632027290. Available through UBC libraries.



- Pianka, E. R. (1999). Evolutionary ecology. Benjamin Cummings. ISBN 0321042883. $\sim$ \$60 on Amazon or through UBC libraries.



Lecture outline

Week	Lecture Topics
1	Course intro; Scope of Evol. Ecol; Selection and Adaptation
2	Studying Evol. Ecol.: Experimentation; Comparative Methods; Models
3	Meteorology; The Habitat Template; Biogeography
4	The Ecological Niche; Competition; Specialists vs. Generalists
5	Specialising on Environmental Change: Migration, Dormancy, Energetics
6	Burrowing, Correlative Effects; Stochasticity and Space Use
7	The Ecology of Sex: Costs and Benefits; Males and Females
8	The Ecology of Sex: Sex Ratios; Sexual Selection, Mating Systems
9	Inclusive fitness & sociality
10	Information; signaling; learning Metabolic theory of ecology
11	Biodiversity and community stability
12	Evolution and Human Induced Rapid Environmental Change (HIREC)
13	Scope of evolutionary ecology revisited