

FOUNDATIONS OF ECOLOGY syllabus 2018

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Date	Discussion topic	Readings for Class Discussion*	Assignments due
5-Sep-2018	Course introduction Pretest		
12-Sep-18	Writing grant proposals and papers	Four selections from Schimel 2012, Writing Science: How to write papers that get cited and proposals that get funded, Oxford University Press: Ch 7 'The challenge,' Ch 8 'Action,' Ch 11 'Paragraphs,' and Ch 16 'Condensing'; NSF grant proposal guide for GRFP (online) and recommended web links OR find analogous info for an alternative grant program; 2 examples of funded NSF GRF proposals	Fill out the evaluation form for 2 funded NSF GRF proposals; 3-sentence summary of each reading**
19-Sep-2018	Dealing with data I: study design, p values, effect size	Selections from Gotelli & Ellison 2004, A primer of ecological statistics, Sinaeur p 137-161, Designing successful field studies, p 212-223, Managing and checking data; selection on what a p-value is not from Greenland et al 2016, Statistical tests, P values, confidence intervals, and power: a guide to misinterpretations, Eur J Epidemiol 31: 337-350;	3-sentence summary on each reading
26-Sep-2018	Dealing with data II: confidence intervals, log graphs	Nakagawa & Cuthill 2007, Effect size, confidence interval and statistical significance: a practical guide for biologists, Biological Reviews 82: 591; Menge et al 2018, Logarithmic scales in ecological data presentation may cause misinterpretation, Nature Ecology & Evolution	3-sentence summary on each reading
3-Oct-2018	class cancelled	class cancelled	Draft of grant proposal /paper due to classmate Your comments on a classmate's paper are due back to him/her by end of the day Friday 5 Oct.
10-Oct-18	Biogeography and macroecology	Brown 1971, Mammals on mountaintops: nonequilibrium insular biogeography, American Naturalist 105: 467-478; Hoekstra et al 2005, Confronting a biome crisis: global disparities of habitat loss and protection, Ecology Letters 8: 23-29	Grant proposal or paper 3-sentence summary on each reading
17-Oct-2018	Biodiversity	Barnosky et al 2011, Has the earth's sixth mass extinction already arrived? Nature 471: 51-57; Wilson 1999, pages 131-162 'The unexplored biosphere' in The Diversity of Life, W W Norton; Vellend 2018, pages 27-31 'Are local losses of biodiversity causing degraded ecosystem function?' in Kareiva et al, Effective Conservation Science, Oxford.	3-sentence summary on each reading
24-Oct-2018	IN CLASS MIDTERM - short answer and essay, closed book/notes/laptop/phone		
31-Oct-2018	Community ecology Dr Mark Genung guest lecture	Adler et al 2007, A niche for neutrality, Ecology Letters 10: 95-104; Lohbeck et al 2016, The importance of biodiversity and dominance for ecosystem functions in a human-modified tropical landscape, Ecology 97: 2772-2779	3-sentence summary on each reading

7-Nov-18	Species interactions	Agrawal & Kotanen 2003, Herbivores and the success of exotic plants: a phylogenetically controlled experiment, <i>Ecology Letters</i> 6: 712-715; Finke & Denno 2004, Predator diversity dampens trophic cascades, <i>Nature</i> 429: 407-410; Finke & Snyder 2008, Niche partitioning increases resource exploitation by diverse communities, <i>Science</i> 5895: 1488-1490; selection from Bronstein 2015 <i>Mutualism</i> (Oxford Press).	3-sentence summary on each reading
14-Nov-2018	Organismal biology and life histories	Crone et al 2009, How do plants know when other plants are flowering? Resource depletion, pollination limitation, and mast seeding in a perennial wildflower, <i>Ecology Letters</i> 12: 1119-1126; Buston 2004, Size and growth modification on clownfish, <i>Nature</i> 424: 145-146	3-sentence summary on each reading
21-Nov-2018	no class, Thanksgiving break (and Wednesday is Friday)		
28-Nov-2018	Global change and conservation biology	Loarie et al 2009, The velocity of climate change, <i>Nature</i> 462: 1052-1057; Kleijn et al 2015, Delivery of crop pollination services is an insufficient argument for wild pollinator conservation, <i>Nat Comm</i> 6: 7414, Terborgh et al 2001, Ecological meltdown in tropical forest fragments, <i>Science</i> 294: 1923	3-sentence summary on each reading
5-Dec-18	Student presentations		Bring your 10-minute presentation file (keynote, powerpoint, or pdf) to class 10 minutes early on a thumb drive or email to me before class.
12-Dec-2018	IN CLASS FINAL short answer and essay, cumulative, closed book/notes/laptop/phone		

*Readings are discussed on the day they are listed. All readings are available on the course Sakai site.

**A typed/printed 3-sentence summary of each reading is due at at each class meeting

Grading criteria

20% In-class contribution	includes contribution to class discussion, in-class exercises, summaries submitted on each reading
20% Midterm	short answer / essay, closed book
20% Final exam	short answer / essay, closed book; cumulative
20% Grant proposal	grant proposal in required format for submission
20% In-class presentation	10 minutes, powerpoint/keynote format

Course learning goals

Student learning objectives, knowledge: discuss factual & natural history of ecology; discuss basic elements of ecological theory; identify important ecologists and their contribution to the field

Student learning objectives, intellectual skills: analyze and discuss the primary scientific literature; interpret and critique statistical methods, inference, graphs, and experimental design

Student learning objectives, professional skills: develop and revise a grant proposal; give a professional presentation

Assessment: Assessment methods include: observation of in-class discussion and in-class exercises; written evaluation of the student's grant proposal;

written and quantitative evaluation of the student's in-class presentation; and written and quantitative evaluation of two short answer/essay exams.

Academic integrity: this course follows Rutgers University Academic Integrity Policy, which will be provided to students by the first day of class