

Zoology 725, Ecosystem Concepts

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Date	Topic	Reading assignments	Questions	
23 January	Introductions Overview of goals	None	What do we know about basic ecosystem ideas? What do we want to get out of the class?	
30 January	Origins	Forbes 1887; Lindeman 1942; Odum 1969; Tansley 1935	Why are these papers considered classics? What ideas from these papers are reflected in modern ecology?	
6 February	How to read and write a scientific paper	Team-read Day & Gastel 2011 (see separate sheet for reading plan)	What is a scientific paper? How do you write one?	
13 February	What is stability?	Binkley et al. 2006; Hirota et al. 2011; Ives & Carpenter 2007; Mullon et al. 2005	What do ecologists mean by stability? How can stability be determined for ecosystems?	
			Short description of term project due 3 pm on Friday 17 Feb.	
20 February	Ecosystem metabolism	Falkowski et al. 2000; Tranvik et al. 2009; Beer et al. 2009; Mahecha et al. 2009	Which ecosystems store carbon, and when do they do it?	
27 February	Nutrient limitation	Harpole et al. 2011; Holtgrieve et al. 2011; Paerl et al. 2011; Schindler 2008	How is ecosystem metabolism constrained by nutrients?	
5 March	Resource flows	Adams et al. 2010; Marcarelli et al. 2011; Semmens et al. 2011	How are ecosystems connected on landscapes?	
12 March	Food webs	Berger 2007; Beschta & Ripple in press; Estes et al. 2011; Frank et al. 2011	How do food webs affect ecosystem processes?	
19 March	Invasions	Evans et al. 2011; Kilpatrick 2011; Simberloff 2011	How are ecosystem processes affected by invasions of exotic species?	
26 March	Discussion of project plans		Be prepared to present your project plan in class.	
			Project proposals are due Friday	

			30 March at 3 pm	
2 April	Spring Break			
9 April	Climate change	Kousky et al. 2009, Min et al. 2011, Oppenheimer et al. 2007, Roe and Baker 2007	Uncertainty and extreme events: what do these mean for ecologists trying to address effects of climate change?	
16 April	Land Use change	Burney et al. 2010; Ellis & Ramankutty 2008; Foley et al. 2011	What drives land use change, and what does this mean for ecosystem processes?	
23 April	Nutrient mobilization	Elser & Bennett 2011, Galloway et al. 2008, MacDonald et al. 2011	What are the patterns and consequences of global mobilization of N and P?	
30 April	Ecosystem services	Jack et al. 2008, Naidoo et al. 2008, Nelson et al. 2008, Raudsepp-Hearne et al. 2008	Why is it so difficult to create policies and practices for managing ecosystem services?	
7 May	Project presentations		Be prepared to present your project in class. Written projects are due Friday 11 May at 3 pm.	

Reading List

Adams, L. G., S. D. Farley, C. A. Stricker, D. J. Demma, G. H. Roffler, D. C. Miller, and R. O. Rye. 2010. Are inland wolf-ungulate systems influenced by marine subsidies of Pacific salmon? *Ecological Applications* **20**:251-262.

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Foley, J. A., N. Ramankutty, K. A. Brauman, E. S. Cassidy, J. S. Gerber, M. Johnston, N. D. Mueller, C. O'Connell, D. K. Ray, P. C. West, C. Balzer, E. M. Bennett, S. R. Carpenter, J. Hill, C. Monfreda, S. Polasky, J. Rockstrom, J. Sheehan, S. Siebert, D. Tilman, and D. P. M. Zaks, Solutions for a cultivated planet, *Nature*, 478(7369), 337-342, 2011.

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