

ESM 215 – Landscape Ecology Winter 2017

1/9-11 Introduction to Landscape Ecology

Required readings

McGarigal, K. [Introduction to landscape ecology](#). Duke University misc. report.

Lindenmayer et al. 2008. [A checklist for ecological management of landscapes for conservation](#). *Ecology Letters* 11:78-91.

Further reading

Turner, M. G. 2006. [Landscape Ecology: What is the state of the science?](#) *Ann. Rev. Ecol. Evol. Syst.* 2005. 36:319–44.

1/16-18 Pattern and Process in Ecological Systems

Required Readings

Delcourt, H. and P. Delcourt. 1990. [Quaternary landscape ecology: Relevant scales in space and time](#). *Landscape Ecology* 1: 23-44.

Fischer, J. and D. Lindenmayer. 2007. [Landscape modification and habitat fragmentation: a synthesis](#). *Global Ecology and Biogeography*. DOI: 10.1111/j.1466-8238.2007.00287.x

Further Readings

Reiners, W.A. and K.L. Driese. 2001. [The propagation of ecological influences through heterogeneous environmental space](#). *Bioscience* 51:939.

1/23-25 Disturbance Regimes

Required Reading

White, P. S. 2006. [Disturbance, the flux of nature, and environmental ethics at the multipatch scale](#). Pages 176-198 in D. Lodge and C. Hamlin (eds.), *Religion and the New Ecology: Environmental Responsibility in a World in Flux*. University of Notre Dame Press.

Turner, M.G. [Disturbance and landscape dynamics in a changing world](#). *Ecology*, 91(10), 2010, pp. 2833–2849

Further reading

Perry, G.L.W. and J. Milington. 2008. Spatial modelling of succession-disturbance dynamics in forest ecosystems: Concepts and examples. *Perspectives in Plant Ecology, Evolution and Systematics* 9 (2008) 191–210.

1/30-2/1 Edge effects

Required Reading

Ries, L. R. J. Fletcher, J. Battin and T. D. Sisk. 2004. [Ecological responses to habitat edges: Mechanisms, Models, and Variability Explained](#). *Annu. Rev. Ecol. Evol. Syst.* 2004. 35:491–522.

Further Reading

Laurance WF et al. 2007. [Habitat fragmentation, variable edge effects, and the landscape-divergence hypothesis](#). *PLoS ONE* 2(10): e1017.

Chen JQ, J.F. Franklin, T.A. Spies. 1995. [Growing season microclimate gradients from clear-cut edges into old-growth douglas-fir forests](#). *Ecological Applications* 5: 74.

2/6-8 Road systems

Required Reading

Coffin, A.W. 2007. [From roadkill to road ecology: A review of the ecological effects of roads](#). *Journal of Transport Geography* 15:396–406.

Fahrig, L. and T. Rytwinski. 2009. [Effects of roads on animal abundance: an empirical review and synthesis](#). *Ecology and Society* 14(1): 21.

Further Reading

Frair, J. et al. 2008. [Thresholds in landscape connectivity and mortality risks in response to growing road networks](#). *Journal of Applied Ecology* 45: 1504–1513.

2/13-15 Ecosystem processes and services

Required Reading

Turner, M.G. [Ecosystem processes in heterogeneous landscapes](#). Chapter 8 in *Landscape Ecology in Theory and Practice*. Springer.

Wu, J. 2013 [Landscape sustainability science: ecosystem services and human well-being in changing landscapes](#). *Landscape Ecology* 28: 999-1023.

2/20-22 Populations, metapopulations and metacommunities

Required reading

Fahrig, L. 2003. Habitat fragmentation and biodiversity. *Annu. Rev. Ecol. Evol. Syst.* 34:487–515

Baguette et al. 2013. [Individual dispersal, landscape connectivity and ecological networks](#). *Biological Reviews* 88; 310–326.

Further Reading

Tscharntke et al. 2012. [Landscape moderation of biodiversity patterns and processes - eight hypotheses](#). *Biological Reviews* 87:661-685.

• 2/27-3/1 Land use/land cover dynamics

Required reading

Perry, G. and N. Enwright. 2006. Spatial modelling of vegetation change in dynamic landscapes: a review of methods and applications. *Progress in Physical Geography* 30: 47–72.

Verburg, P. et al. 2004. Land use change modelling: current practice and research priorities. *GeoJournal* 61: 309–324.

Further reading

Jenerette, G.D. and J. Wu. 2001. Analysis and simulation of land-use change in the central Arizona –Phoenix region, USA. *Landscape Ecology* 16: 611–626.

• 3/6-8 Landscapes under climate change

Required Reading

Opdam, P. and D. Wascher. 2004. [Climate change meets habitat fragmentation: linking landscape and biogeographical scale levels in research and conservation](#). *Biological Conservation* 117: 285–297.

Klausmeyer et al. 2011. [Landscape-scale indicators of biodiversity's vulnerability to climate change](#). *Ecosphere* 2(8):art88. doi:10.1890/ES11-00044.1.

Further Reading

Keane, R. et al. 2015. Representing climate, disturbance, and vegetation interactions in landscape models. *Ecological Modelling* 309–310: 33–47

- **3/13-15 Landscape restoration**

Required Reading

Bell, S. et al. 1997. Linking restoration and landscape ecology. *Restoration Ecology* 5: 318–323.

Matthews, J.W. et al. 2009. Relative influence of landscape vs. local factors on plant community assembly in restored wetlands. *Ecological Applications* 19: 2108–2123.

Further Reading

Tambosi, L.R. et al. 2014. A framework to optimize biodiversity restoration efforts based on habitat amount and landscape connectivity. *Restoration Ecology* 22: 169–177.