

## **E555 Urban Ecology – Topics/Readings, Sp 2017, B.C. Fischer, Final**

All papers are located in Canvas Assignments Weekly Folders

**Week #1 January 10 – Welcome to the Workshop & Urban Ecology; Course introduction & all that stuff  
Topics – What is Urban; Urban Ecology Themes handout – discussion; Review “The Anthropocene” as needed.  
Discussion - Fischer prepared introductory handout and PPT on urban ecosystems**

### **Assignment Readings: Before class readings**

Read following article from Atlantic Cities “The Rise of Urban Ecology (see Resources Week 1 for article, many citations to other articles is really the good stuff. <http://www.citylab.com/weather/2012/11/rise-urban-ecology/4032/>

Check out and register to receive the Nature of Cities blog at <http://www.thenatureofcities.com/>

The Economist. 2011 (May 26). Welcome to the Anthropocene: Humans have changed the way the world works. Now they have to change the way they think about it, too. 11p

Pickett et al. 2016. Evolution and future of urban ecological science: ecology in, of, and for the city. *Ecosystem Health and Sustainability* 2(7):e01229. doi:10.1002/ehs2.1229

**Week #2 January 17 – Clean-up lingering course format questions; Decide on topics for weeks 3-8 and think about weeks 9-14 including guest discussants. Discuss reading assignments**

**Topics - Finalizing class definitions of urban, urban ecology, etc.; First class discussion of assigned articles; See model briefing paper; Review where’s urban ecology been and headed towards.**

**Team Assignments (3 students/team) Weeks 3-8; Introduction of Book Review & Research Paper**

### **Assigned readings:**

Pickett, S.T.A., J.M. Grove. 2009. Urban Ecosystems: What would Tansley Do? *Urban Ecosystems* 12: 1-8.

Pickett et al. 2008. Beyond Urban Legends: An Emerging Framework of Urban Ecology, as Illustrated by the Baltimore Ecosystem Study. *Bioscience* 58(2): 139-150.

Grove, J.M. 2009. Cities: Managing Densely Settled Social-Ecological Systems, p281-294. In Chapin, F.S, et.al. *Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World*. Springer. 402p. ISBN 978-0-387-73032-5 – see model briefing paper by S.K. Mincey

Mchale, M.R., et.al. 2013. Urban Ecology in a developing world: why advanced socioecological theory needs Africa. *Frontiers in Ecology and the Environment* 11(10): 556-564.

Strauss et al. 2015. Cities and the Environment: Eight Years of Urban Ecology Research and Practice. *Cities and the Environment (CATE): Vol. 8: Iss. 2, Article 23*. Available at: <http://digitalcommons.lmu.edu/cate/vol8/iss2/23>

Tanner, C.J., et.al. 2014. Urban ecology: advancing science and society. *Front Ecol & Environ* 12(10): 574-581

### **Week #3 January 24 - Urban Patch Dynamics from the Baltimore School of Ecology**

Grove JM et al. 2015. *The Baltimore School of Urban Ecology: Space, Scale and Time for the Study of Cities*. Yale Press, Chapter 3, 38-76.

Marshall V. 2013. Patch Reflection. *The Nature of Cities*. [www.thenatureofcities.com/2013/04/14/aerial-reflection-for-urban-ecology/](http://www.thenatureofcities.com/2013/04/14/aerial-reflection-for-urban-ecology/). Accessed 19 Jan. 2017.

Cadenasso M, Pickett STA, Schwarz K. 2007. Spatial heterogeneity in urban ecosystems: reconceptualizing land cover and a framework for classification. *Frontiers in Ecology and the Environment* 5: 80-88.

Brady, R.F., et al. 1979. A typology for the urban ecosystem and its relationship to larger biogeographical landscape units. *Urban Ecol.*, 4: 11-28.

Wu M, Che Y, Lv Y, Yang K. 2017. Neighbourhood-scale urban riparian ecosystem classification. *Ecological Indicators* 72:330–339. Elsevier Ltd. Available from <http://dx.doi.org/10.1016/j.ecolind.2016.08.025>.

#### **Week #4 January 31 - Urban SES Patch Dynamics**

Alberti, M et al. 2003. Integrating Humans into Ecology: Opportunities and Challenges for Studying Urban Ecosystems. *BioScience* 53.12: 1169.

Romolini, M., Bixler, R., Grove, J. 2016. A social-ecological framework for urban stewardship network research to promote sustainable and resilient cities. *Sustainability (Switzerland)*, 8(9), doi:10.3390/su8090956

Greg Cooper's study on Durham's Urban Forest (interview)

Friend, E. "Depression-Era Redlining Leaves Parts of Durham Less Green." WUNC. 10 June 2016. Web access- 23 January 2017 and other news stories

#### **Week #5 February 7 - Urban Continuum & Edges**

Marzluff, JM. 2002. Fringe conservation: A call to action. *Conservation Biology*, Vol. 16(5): 1175-1176

Ramahlo, C.E. and Hobbs R.J. 2012. Time for a change: dynamic urban ecology. *Trends in Ecology and Evolution* 27: 179-186

Theobald, David M. "Placing exurban land-use change in a human modification framework" *Frontiers in Ecology and the Environment*, Vol. 2, No. 3 (Apr., 2004), pp.139-144. Wiley. <http://www.jstor.org/stable/3868239>. Web access: 2 February 2017

Hansen, A. J., Knight, R. L., Marzluff, J. M., Powell, S., Brown, K., Gude, P. H. and Jones, K. (2005), EFFECTS OF EXURBAN DEVELOPMENT ON BIODIVERSITY: PATTERNS, MECHANISMS, AND RESEARCH NEEDS. *Ecological Applications*, 15: 1893–1905. doi:10.1890/05-5221

#### **Week #6 February 14 – Urban Plants (1)**

Lowenstein, D. M., & Minor, E. S. (2016). Diversity in flowering plants and their characteristics: integrating humans as a driver of urban floral resources. *Urban Ecosystems*, (4), 1735. doi:10.1007/s11252-016-0563-z

Del Tredici, Peter. "The Flora of the Future" *Places*, The Journal of Public Scholarship on Architecture, Landscape, and Urbanism, (Apr., 2014), placesjournal.org. Actar. Web access: 10 February 2017.

Pennington, D.N., Hansel, J.R., Gorchoy, D.L. 2010. Urbanization and riparian forest woody communities: Diversity, composition, and structure within a metropolitan landscape. *Biological Conservation* 143. 182-194.

#### **Week #7 February 21 – Urban Wildlife (1)**

Soulsbury, C.D., White, P.C.L. 2015. Human-wildlife interactions in urban ecosystems. *Wildlife Research* 42: 3-5.

Belaire, J.A., Westphal, L.M., Whelan, C.J., Minor, E.S. 2015. Urban residents' perceptions of birds in the neighborhood: Biodiversity, cultural ecosystem services, and disservices. *The Condor*: 117(2): 192-202.

Faeth, S. H., et al. 2005. Trophic Dynamics in Urban Communities. *BioScience*, 55(5), 399.

Paker Y, Yom-Tov Y, Alon-Mozes T, Barnea A. 2014. The effect of plant richness and urban garden structure on bird species richness, diversity and community structure. *Landscape and Urban Planning* 122:186–195. Elsevier B.V. Available from <http://dx.doi.org/10.1016/j.landurbplan.2013.10.005>.

#### **Week #8 February 28 –Urban Wildlife (2)**

Luniak, M. (2004). Synurbanization—adaptation of animal wildlife to urban development. In *Proceedings of the 4th international symposium on urban wildlife conservation*. (eds. Shaw, W. W., Harris, L. K. and Vandruuff, L.), pp. 50-55. Tucson.

S., L., K., & L. (2004). Linking Optimal Foraging Behavior to Bird Community Structure in an Urban-Desert Landscape: Field Experiments with Artificial Food Patches. *The American Naturalist*, 164(2), 232.

Isaksson, C. (2015) Urbanization, oxidative stress and inflammation: a question of evolving, acclimatizing or coping with urban environmental stress. *Functional Ecology: Ecology of Organisms in Urban Environments*. 29: 913-913.

Bates AJ, Sadler JP, Fairbrass AJ, Falk SJ, Hale JD, Matthews TJ (2011) Changing Bee and Hoverfly Pollinator Assemblages along an Urban-Rural Gradient. *PLoS ONE* 6(8): e23459. doi:10.1371/journal.pone.0023459

### **Week #9 March 7 - Book review presentations**

#### **March 13-17 Spring Break**

### **Week #10 March 21 – Urban Plants (2)**

Calfapietra, Carlo, Josep Penuelas, and Ulo Niinemets. "Urban Plant Physiology: Adaptation-Mitigation Strategies Under Permanent Stress". *Trends in Plant Science* 20.2 (2015): 72-75.

Dolan, R.W., Moore M.E., & Stephens J.D. 2011. Documenting effects of urbanization on flora using herbarium records. <i>Journal of Ecology</i> , <b>99</b> , 1055-1062.
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Johnson, M. J., Thompson, K. A., & Saini, H. S. (2015). Plant evolution in the urban jungle. *American Journal of Botany*, 102(12), 1951-1953. doi:10.3732/ajb.1500386

Williams, Nicholas S.g., Amy K. Hahs, and Peter A. Vesik. "Urbanisation, Plant Traits and the Composition of Urban Floras." *Perspectives in Plant Ecology, Evolution and Systematics* 17.1 (2015): 78-86.

### **Week #11 March 28 – Urban Water**

Timothy Carter, et. al. "Beyond the urban gradient: barriers and opportunities for timely studies of urbanization effects on aquatic ecosystems" *Journal of the North American Benthological Society*, Vol. 28, No. 4 (Dec., 2009), pp. 1038-1050.

Hassall, C. (2014). The ecology and biodiversity of urban ponds: Ecology and biodiversity of urban ponds. *Wiley Interdisciplinary Reviews: Water*, 1(2), 187–206. <https://doi.org/10.1002/wat2.1014>

Walsh C. J., et al., 2005. The urban stream syndrome: current knowledge and the search for a cure. *Journal on the North American Benthological Society*. 24.3: 706-723

### **Week #12 April 4 – Green Infrastructure**

Derkzen, M. L., Teeffelen, A. J., & Verburg, P. H. (2017). Green infrastructure for urban climate adaptation: How do residents' views on climate impacts and green infrastructure shape adaptation preferences? *Landscape and Urban Planning*, 157, 106-130.

Tayouga J. S., Gagne A. S. (2016). The socio- ecological factors that influence the adoption of green infrastructure. *Sustainability*, 8(12).

Xing, Y., P. Jones and I. Donnison. 2017. *Characterisation of Nature-Based Solutions for the Built Environment*. *Sustainability* 9, 149.

### **Week #13 April 11 – Insects - Pollinators**

Dale, A. G., & Frank, S. D. (2017). Warming and drought combine to increase pest insect fitness on urban trees. *Plos ONE*, 12(3), 1-14. doi:10.1371/journal.pone.0173844

Fukase, J. and Simons, A.M. (2016). Increased Pollinator Activity in Urban Gardens with More Native Flora. *Applied Ecology and Environmental Research* 14(1): 297-310.

Raupp, Michael J., Paula M. Shrewsbury, and Daniel A. Herms. "Ecology of Herbivorous Arthropods in Urban Landscapes." *Annual Review of Entomology* 55.1 (2010): 19-38.

Blogs (2) - Why Indianapolis Is Counting Its Bees and Cleveland's Surprising Climate Buffers

**Week #14 April 18 –Where’s the E in UE; Themes Updates for 2018**

Rissman AR, Gillon S. 2016. Where are ecology and biodiversity in social-ecological systems research? A review of research methods and applied recommendations. *Conservation Letters* 10(1): 86-93.

Vogt JM, Epstein GB, Mincey SK, Fischer BC, Mccord P. 2015. Putting the “E” in SES: unpacking the ecology in the Ostrom social-ecological system framework. *Ecology and Society* 20.

UE Themes for 2017; Course Reflection, etc

**Week #15 April 25 - Research Paper Presentations, discuss final Reflections to Burney after Semester.**