

**E555 Urban Ecology – A Readings Course, Topics/Readings, F 2011, B.C. Fischer  
Indiana University-Bloomington, School of Public and Environmental Affairs**

**Topic 1 - The Urban Ecosystem: An introduction**

Cities as Human and Ecological Systems  
Larger Context of Social Ecological Systems  
What is Urban?

Alberti et. al. (2003) Integrating humans into ecology: Opportunities and challenges for studying urban ecosystems. *Bioscience*, 53(12):1169-1179.

Grove, J.M. (2009). "Cities: Managing densely settled social-ecological systems," 281-294. In: Chapin, F.S., et. al. *Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World*. Springer. 402pp. ISBN: 9780387730325.

Pickett, S.T.A. & J.M. Grove. (2009). Urban ecosystems: What would Tansley do? *Urban Ecosystems*, 12:1-8.

Pickett, S.T.A., M.L. Cadenasso, J.M. Grove, P.M. Groffman, L.E. Band, C.G. Boone, W.R. Burch Jr., C.S.B. Grimmond, J. Hom, J.C. Jenkins, N.L. Law, C.H. Nilon, R.V. Pouyat, K. Szlavecz, P.S. Warren, & M.A. Wilson. (2008). Beyond urban legends: An emerging framework of urban ecology as illustrated by the Baltimore Ecosystem Study. *Bioscience*, 58(2):139-150.

**Topic 2 - Humans as a Component of Ecosystems**

Public Health and Education  
Social Justice  
Influence of Culture on the Landscape

Agyeman, J. & T. Evans. (2003). Toward Just Sustainability in Urban Communities: Building Equity Rights with Sustainable Solutions. *Annals of the American Academy of Political and Social Science*, 590:35-53.

Casagrande, D.G. (Undated). The Human Component of Urban Wetland Restoration. *Yale School of Forestry and Environmental Studies Bulletin*, 100:254-270.

Downey, L. (2007). US Metropolitan-area Variation in Environmental Inequality Outcomes. *Urban Studies* 44(5/6):953-977.

Satterthwaite, D. (2003). Links between Poverty and the Environment in Urban Areas of Africa, Asia, and Latin America. *Annals of the American Academy of Political and Social Science*, 590:73-92.

**Topic 3 - Urban Patterns and Ecosystem Functions**

Biodiversity, Nutrient Cycling  
Pests and Natural Predators

James, P., D. Norman, & J.J. Clarke. (2010). Avian population dynamics and human induced change in an urban environment. *Urban Ecosystems*, 9 July 2010. [Online]. 17pp.

Kinsig, A.P., P. Warren, C. Martin, D. Hope, & M. Katti. (2005). The Effects of Human Socioeconomic Status and Cultural Characteristics on Urban Patterns of Biodiversity. *Ecology and Society*, 10(1):23. 13pp. [Online]. URL: <http://www.ecologyandsociety.org/vol10/iss1/art23/>.

Maclvor, J.S. & J. Lundholm. (2010). Insect species composition and diversity on intensive green roofs and adjacent level-ground habitats. *Urban Ecosystems*, 9 Sept 2010. [Online]. 17pp.

McKinney, M.L. (2002, Oct). Urbanization, Biodiversity, and Conservation. *BioScience*, 52(10):883-840.

Thompson, K., K.C. Austin, R.M. Smith, P.H. Warren, P.G. Angold, & K.J. Gaston. (2003). Urban Domestic Gardens (I); Putting Small-Scale Plant Diversity in Context. *Journal of Vegetation Science*, 14(1):71-78.

#### **Topic 4 - Landscape Signatures**

##### Landscape Patterns

##### Case Studies

Alberti, M. (2007). Ecological Signatures: The Science of Sustainable Urban Forms. *Places*, 19(3):56-60.

Buyantuyev, A. J. Wu, & C. Gries. (2010). Multiscale analysis of the urbanization pattern of the Phoenix metropolitan landscape of USA: Time, space, and thematic resolution. *Landscape and Urban Planning*, 94:206-217.

Ellis, C. (Undated). "History of Cities and City Planning." 9pp. [Online.] URL: <http://www.art.net/%7Ehopkins/Don/simcity/manual/history.html>. Accessed 24 Sept 2010.

Flores, A., S.T.A. Pickett, W.C. Zipperer, R.V. Pouyat, & R. Pirani. (1998). Adopting a modern ecological view of the metropolitan landscape: the case of a greenspace system for the New York City region. *Landscape and Urban Planning*, 39:295-308.

Litman, T. (2010). Evaluating Transportation Land Use Impacts: Considering the Impacts, Benefits and Costs of Different Land Use Development Patterns. Victoria Transport Policy Institute, 10 Sept 2010. [Online.] URL: <http://www.vtpi.org>.

#### **Guest Lecturer, Tim Carter from Butler University's Center for Urban Ecology**

Carter, T. & A. Keeler. (2008). Life-cycle cost-benefit analysis of extensive vegetative roof systems. *Journal of Environmental Management*, 87:350-363.

Ryan, T.J., C.A. Conner, B.A. Douthitt, S.C. Sterrett, & C. M. Aalsbury. (2008). Movement and habitat use of two aquatic turtles (*Graptemys geographica* and

Trachemys scripta) in an urban landscape. *Urban Ecosystems*, 11(2):213-225. [PDF version, 13pp].

### **Topic 5 - Hydrological Processes**

Riparian Corridors / Urban Waterways

Wetland & Riparian Corridor Restoration

Groffman, P.M., D.J. Bain, L.E. Band, K.T. Belt, G.S. Brush, J.M. Grove, R.V. Pouyat, I.C. Yesilonis, & W.C. Zipperer. (2003). Down by the riverside: urban riparian ecology. *Frontiers in Ecology and Environment*, 1(6):315-321.

Nakamura, K., K. Tochner, & K. Amano. (2006). River and Wetland Restoration: Lessons from Japan. *BioScience*, 56(5):419-429.

Paul, M.J. & J.L Meyer. (2001). Streams in the Urban Landscape. *Annual Review of Ecology and Systematics*, 32:333-365.

Varis, O. (2006). Megacities, Development and Water. *Water Resources Development*, 22(2):199-255.

### **Topic 6 - Biogeochemical Processes**

Brown Fields / Used Spaces

Bioremediation

Harrison, C. & G. Davies. (2002). Conserving biodiversity that matters: practitioner's perspectives on brownfield development in urban nature conservation in London. *Journal of Environmental Management*, 65:95-108.

Hough, R.L., N. Breward, S.D. Young, N.M.J. Crout, & I. Thornton. (2004). Assessing Potential Risk of Heavy Metal Exposure from Consumption of Home-Produced Vegetables by Urban Populations. *Environmental Health Perspectives*, 112(2):215-221.

Kaye, J.P., P.M. Groffman, N.B. Grimm, L.A. Baker, & R.V. Pouyat. (2006). A distinct urban biogeochemistry? *TRENDS in Ecology and Evolution*, 21(4):192-199.

Pataki, D.E., R. J. Alig, A.S. Fung, N.E. Golubiewski, C.A. Kennedy, E.G. McPherson, D.J. Nowak, R.V. Pouyat, & P. Romero Lankao. (2006). Urban ecosystems and the North American carbon cycle. *Global Change Biology*, 12:2092-2102.

### **Topic 7 - Atmospheric Processes**

Urban Heat Island Effect

Urban Air Quality

Transportation Design

Alcoforado, M.J. & H. Andrade. (2008). Global Warming and the Urban Heat Island, In: Marzluff, J.M., et al., *Urban Ecology*, Springer, 249-262.

Arnfield, A.J. (2002). Two Decades of Urban Climate Research: A Review of Turbulence, Exchanges of Energy and Water, and the Urban Heat Island. *International Journal of Climatology*, 23:1-26.

Gurney, K.R., D.L. Mendoza, Y. Zhou, M.L. Fischer, C.C. Miller, S. Geethakumar, & S. De La Rue Du Can. (2009). High Resolution Fossil Fuel Combustion CO<sub>2</sub> Emission Fluxes for the United States. *Environment Science and Technology*, 43:5535-5541.

Jacobson, M.Z. (2010). Enhancement of Local Air Pollution by Urban CO<sub>2</sub> Domes. *Environmental Science and Technology*, 44:2497-2502.

Mage, D., D. Ozolins, P. Peterson, A. Webster, R. Orthofer, V. Vanderweerd, & M. Gwynne. (1996). Urban Air Pollution in Megacities of the World. *Atmospheric Environment*, 30(5):681-686.

### **Topic 8 - Population and Community Dynamics**

Urban Ecosystems Processes and Dynamics

Urban Patch Dynamics

Corridors

Bryant, M.M. (2006). Urban landscape conservation and the role of ecological greenways at local and metropolitan scales. *Landscape and Urban Planning*, 76:23-44.

Godefroid, S. & N. Koedam. (2003). How Important are large vs. small forest remnants for the conservation of the woodland flora in an urban context? *Global Ecology & Biogeography*, 12:287-298.

Kark, S., A. Iwaniuk, A. Schalimtzek, & E. Banker. (2007). Living in the city: can anyone become an 'urban exploiter'? *Journal of Biogeography*, 34:638-651.

Shochat, E., P.S. Warren, S.H. Faeth, N.E. McIntyre, & D. Hope. (2006). From patterns to emerging processes in mechanistic urban ecology. *TRENDS in Ecology and Evolution*, 21(4):186-191.

### **Topic 9 – Futures of Urban Ecosystems**

Scenario Planning and Adaptive Management

Emerging trends and technologies

Holling, C.S. (2001). Understanding the Complexity of Economic, Ecological, and Social Systems. *Ecosystems*, 4:390-405.

Ong, B.L. (2003). Green plot ratio: an ecological measure for architecture and urban planning. *Landscape and Urban Planning*, 63:197-211.

Peterson, G.P., G.S. Cumming, & S.R. Carpenter. (2003). Scenario Planning: a Tool for Conservation in an Uncertain World. *Conservation Biology*, 17(2):358-366.

Swenson, J.J. & J. Franklin. (2000). The effects of future urban development on habitat fragmentation in the Santa Monica Mountains. *Landscape Ecology*, 15:713-730.

### **Topic 10 - Urban Ecology: A Synthesis**

Ecological Design

Building Integrated Models

Policy Management Implications

Jackson, L.E. (2003). The relationship of urban design to human health and condition. *Landscape and Urban Planning*, 64:191-200.

Liu, J., T. Dietz, S.R. Carpenter, C. Folke, M. Alberti, C.L. Redman, S.H. Schneider, E. Ostrom, A.N. Pell, J. Lubchenco, W.W. Taylor, Z. Ouyang, P. Deadman, T. Kratz, & W. Provencher. (2007). Coupled Human and Natural Systems. *Ambio*, 36(8):639-649.

McIntyre, N.E., K. Knowles-Yanez, & D. Hope. (2000). Urban Ecology as an Interdisciplinary Field: Differences in the use of "Urban" Between the Social and Natural Sciences. In: Marzluff, J.M. et al., *Urban Ecology*, New York, Springer: 49-65.

Rebele, F. (1994). Urban ecology and special features of urban ecosystems. *Global Ecology and Biogeography Letters*, 4:173-187.