ARCH 599 – Urban Nature

Fall 2012 – Thursdays, 4:00–6:50 P.M.

Instructor: Travis Longcore, Ph.D.
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Office Hours: Wednesday 2:00–6:00 P.M., specific time by appointment
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Introduction and Purposes

Nature is frequently thought to be found only "out there" beyond the city. However, "in here" conservation of many species requires protection of their habitats in urban areas, as does maintenance of the quality of life in cities. This course explores the many issues that arise from the recognition that cities too have natural values that can be protected, restored, or even created. The course is divided into three parts. First is an introduction to the ecology of cities and our knowledge about the factors that affect the distribution and persistence of plants and animals in urban landscapes and the role they play in human experience. Second is an exploration of the major threats to urban biodiversity and their interaction with human attitudes. Third is the review of controversies and successes of urban nature restoration and conservation projects in the Los Angeles basin, with a concentration on design at local to regional scales.

Course Requirements and Grades

Texts

No texts are required for the class. The reading lists are extensive and students will be expected to obtain and read articles in concentrated areas of interest in response to exercise assignments.

Grading

Grades will be assigned according to performance in class exercises (50%), three quizzes (30%), and a final (20%).

The class exercises will be assigned at regular intervals throughout the semester. These assignments involve interpretation and application of the material presented in lecture and the text. Students must also be in class to discuss these exercises.

The quizzes are spaced throughout the semester and cover material from lecture and readings.

Letter grading

A+	97.0–100 %
A	93.0–96.9 %
A–	90.0–92.9 %
B+	87.0–89.9 %
B	83.0–86.9 %
B–	80.0–82.9 %
C+	77.0–79.9 %
C	73.0–76.9 %
C–	70.0–72.9 %
D+	67.0–69.9 %
D	60.0–66.9 %
F	<600 %

Pass/Fail grading

Pass:	≥73.0 %
Fail:	<73.0 %

Course Readings/Class Sessions

Topic
August 30 – Ecology of Cities
September 6 – Ecology in Cities
September 13 – Urban Birds/Mammals
September 20 – Urban Butterflies/Invertebrates
September 27 – Urban Forestry
October 4 – Urban Climate
October 11 – Air Pollution and Landscape/Midterm Exam
October 18 – Light/Noise Pollution and Landscape
October 25 – Soil Pollution and Landscape
November 1 – Water Pollution and Landscape
November 8 – Ecosystem Services
November 15 – Restoration Ecology
Thanksgiving
November 29 – Restorative Landscapes
November 6 – Landscape and Environmental Justice
TBD – Final Exam

Readings

General

Keller, S., J. H. Heerwagen, M. L. Mador. 2008. *Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life*. Wiley.

Beatley, T. 2010. *Biophilic Cities: Integrating Nature into Urban Design and Planning*. Island Press.

Hostetler, M. E. 2012. *The Green Leap: A Primer for Conserving Biodiversity in Subdivision Development*. UC Press.

McDonnell, M. J., A. K. Hahs, and J. H. Breuste, eds. 2009. *Ecology of Cities and Towns*. Cambridge.

Calkins, M. 2012. *The Sustainable Sites Handbook: A Complete Guide to the Principles, Strategies and Best Practices for Sustainable Landscapes*. Wiley.

Ecosystem Services

Bolund, P., and S. Hunhammar. 1999. Ecosystem services in urban areas. Ecological Economics **29**:293–301.

Adams, L. W. 2005. Urban wildlife ecology and conservation: a brief history of the discipline. *Urban Ecosystems* 8:139–156.

Luck, M. A., G. D. Jenerette, J. Wu, and N. B. Grimm. 2001. The urban funnel model and the spatially heterogeneous ecological footprint. *Ecosystems* 4(8):782–796.

Pickett, S. T. A., M. L. Cadenasso, J. M. Grove, C. H. Nilon, R. V. Pouyat, W. C. Zipperer, and R. Costanza. 2004. Urban ecological systems: linking terrestrial ecological, physical, and socioeconomic components of metropolitan areas. *Annual Review of Ecology and Systematics* 32:127–157.

McKinney, M. L. 2002. Urbanization, biodiversity, and conservation. *Bioscience*. 52:883–890.

Island Biogeography

Marzluff, J. M. 2005. Island biogeography for an urbanizing world: how extinction and colonization may determine biological diversity in human-dominated landscapes. *Urban Ecosystems* 8(2):1573–1642.

Laurance, W. F. 2008. Theory meets reality: How habitat fragmentation research has transcended island biogeographic theory. *Biological Conservation* in press.

Walter, H. S. 2004. The mismeasure of islands: implications for biogeographical theory and the conservation of nature. *Journal of Biogeography* 31:177–197.

McFrederick, Q. S., and G. LeBuhn. 2006. Are urban parks refuges for bumble bees *Bombus* spp. (Hymenoptera: Apidae)?. *Biological Conservation* 129(3):372–382.

Human-Nature Relationship

Fuller, R. A., K. N. Irvine, P. Devine-Wright, P. H. Warren, and K. J. Gaston. 2007. Psychological benefits of greenspace increase with biodiversity. Biology Letters **3**:390–394.

Kaplan, R. 1993. The role of nature in the context of the workplace. Landscape and Urban Planning **26**:193–201.

Kaplan, R. 2001. The Nature of the View from Home: Psychological Benefits. Environment and Behavior **33**:507–542.

Lohr, V., C. Pearson-Mims, and G. Goodwin. 1996. Interior plants may improve worker productivity and reduce stress in a windowless environment. Journal of Environmental Horticulture **14**:97–100.

Luck, G. W., P. Davidson, D. Boxall, and L. Smallbone. 2011. Relations between Urban Bird and Plant Communities and Human Well-Being and Connection to Nature. Conservation Biology.

Ohrstrom, E., A. Skanberg, H. Svensson, and A. Gidlofgunnarsson. 2006. Effects of road traffic noise and the benefit of access to quietness. Journal of Sound and Vibration **295**:40–59.

Tzoulas, K. 2007. Promoting ecosystem and human health in urban areas using Green Infrastructure: a literature review. Landscape and Urban Planning **81**:167–178.
Ulrich, R. 1984. View through a window may influence recovery from surgery. Science **224**:420.

van den Berg, A. E., T. Hartig, and H. Staats. 2007. Preference for nature in urbanized societies: stress, restoration, and the pursuit of sustainability. Journal of Social Issues **53**:79–96.

Urban Birds

Carbó-Ramírez, P., and I. Zuria. 2011. The value of small urban greenspaces for birds in a Mexican city. Landscape and Urban Planning.

Chace, J. F., and J. J. Walsh. 2006. Urban effects on native avifauna: a review. Landscape and Urban Planning **74**:46–69.

Croci, S., A. Butet, A. Georges, R. Aguejdad, and P. Clergeau. 2008. Small urban woodlands as biodiversity conservation hot-spot: a multi-taxon approach. Landscape Ecology **23**:1171–1186.

Farmer, M. C., M. C. Wallace, and M. Shiroya. 2011. Bird diversity indicates ecological value in urban home prices. Urban Ecosystems.

Fontana, S., T. Sattler, F. Bontadina, and M. Moretti. 2011. How to manage the urban green to improve bird diversity and community structure. Landscape and Urban Planning:1–8.
Imai, H., and T. Nakashizuka. 2010. Environmental factors affecting the composition and diversity of avian community in mid- to late breeding season in urban parks and green spaces. Landscape and Urban Planning.
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Kohut, S. M., G. R. Hess, and C. E. Moorman. 2009. Avian use of suburban greenways as stopover habitat. Urban Ecosystems.

New York City Audubon, and American Bird Conservancy. 2011. Bird-friendly building design.

Lights and Noise

Longcore, T., and C. Rich. 2004. Ecological light pollution. *Frontiers in Ecology and the Environmen*t 2(4):191–198.

Reijnen, R., R. Foppen, and G. Veenbaas. 1997. Disturbance by traffic of breeding birds: evaluation of the effect and considerations in planning and managing road corridors. *Biodiversity and Conservation* 6:567–581.

Fuller, R. A., P. H. Warren, and K. J. Gaston. 2007. Daytime noise predicts nocturnal singing in urban robins. *Biology Letters* 3:368–370.

Slabbekoorn, H., and E. A. P. Ripmeester. 2008. Birdsong and anthropogenic noise: implications and applications for conservation. *Molecular Ecology* 17:72–83.

Warren, P. S., M. Katti, M. Ermann, and A. Brazel. 2006. Urban bioacoustics: it's not just noise. *Animal Behaviour* 71:491–502.

Forman, R. T. T., and L. E. Alexander. 1998. Roads and their major ecological effects. *Annual Review of Ecology and Systematics* 29:207–231.

Trombulak, S. C., and C. A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology* 14:18–30.

Eigenbrod, F., S. J. Hecnar, and L. Fahrig. 2007. The relative effects of road traffic and forest cover on anuran populations. *Biological Conservation*.

Mcgregor, R. L., D. J. Bender, and L. Fahrig. 2007. Do small mammals avoid roads because of traffic? *Journal of Applied Ecology*.

Urban Climate

Bonan, G. 2000. The microclimates of a suburban Colorado (USA) landscape and implications for planning and design. Landscape and Urban Planning **49**:97–114.

Chiesura, A. 2004. The role of urban parks for the sustainable city. Landscape and Urban Planning **68**:129–138.

Dousset, B., and F. Gourmelon. 2003. Satellite multi-sensor data analysis of urban surface temperatures and landcover. ISPRS Journal of Photogrammetry and Remote Sensing **58**:43–54.

Grimm, N. B., S. H. Faeth, N. E. Golubiewski, C. L. Redman, J. Wu, X. Bai, and J. M. Briggs. 2008. Global Change and the Ecology of Cities. Science **319**:756–760.

Jenerette, G. D., S. L. Harlan, W. L. Stefanov, and C. A. Martin. 2011. Ecosystem services and urban heat riskscape moderation: water, green spaces, and social inequality in Phoenix, USA. Ecological Applications **21**:2637–2651.

Tratalos, J., R. A. Fuller, P. H. Warren, R. Davies, and K. J. Gaston. 2007. Urban form, biodiversity potential and ecosystem services. Landscape and Urban Planning.

Soil and Air Pollution

Chronopoulos, J., C. Haidouti, A. Chronopoulou-Sereli, and I. Massas. 1997. Variations in plant and soil lead and cadmium content in urban parks in Athens, Greece. *Science of the Total Environment* 196:91–98.

Allen, E. B., A. G. Sirulnik, L. Egerton-Warburton, S. N. Kee, A. Butnerowicz, P. E. Padgett, P. J. Temple, M. E. Fenn, M. A. Poth, and T. Meixner. 2000. Air pollution and vegetation change in southern California shrublands. Pp. 79–95 in *Planning for Biodiversity in Southern California: Bringing Research and Management Together* (J. L. Beyers, Ed.). USDA Forest Service Pacific Southwest Research Station, Pomona.

Weiss, S. B. 1999. Cars, cows, and checkerspot butterflies: nitrogen deposition and management of nutrient-poor grasslands for a threatened species. *Conservation Biology* 13:1476–1486.

Ecological Restoration

Allen, A. O., and J. J. Feddema. 1996. Wetlands loss and substitution by the Section 404 permit program in southern California, USA. Environmental Management 20:263–274.

Bright, A. D. S. C. Barro, and R. T. Burtz. 2002. Public attitudes toward ecological restoration in the Chicago metropolitan region. *Society and Natural Resources* 15:763–785.

Longcore, T. 2003. Terrestrial arthropods as indicators of restoration success in coastal sage scrub (California, U.S.A.). Restoration Ecology 11(4):397–409.

Longcore, T., R. Mattoni, G. Pratt, and C. Rich. 2000. On the perils of ecological restoration: lessons from the El Segundo blue butterfly. Pp. 281–286 in Keeley, J., M. Baer-Keeley, and C. J. Fotheringham, eds. 2nd Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62, Sacramento, CA.

Environmental Justice

Wolch, J., J.P. Wilson, and J. Fehrenbach. 2005. Parks and park funding in Los Angeles: an equity-mapping analysis. *Urban Geography* 26(1): 595–613.

Hutchinson, R. 1987. Ethnicity and urban recreation: whites, blacks and Hispanics in Chicago's public parks. *Journal of Leisure Research* 19:205-222.

Attendance Policy

The School of Architecture's general attendance policy is to allow a student to miss the equivalent of one week of class sessions (three classes if the course meets three times/week, etc.) without directly affecting the student's grade and ability to complete the course. If additional absences are required for a personal illness/family emergency, pre-approved academic reason/religious observance, the situation should be discussed and evaluated with the faculty member and appropriate Chair on a case-by-case basis. For each absence over that allowed number, the student's letter grade will be lowered 1/3 of a letter grade (e.g., A to A–).

Any student not in class within the first 10 minutes is considered tardy, and any student absent (in any form including sleep, technological distraction, or by leaving mid class for a long break) for more than 1/3 of the class time can be considered fully absent. If arriving late, a student must be respectful of a class in session and do everything possible to minimize the disruption caused by a late arrival. It is always the student's responsibility to seek means (if possible) to make up work missed due to absences, not the instructor's, although such recourse is not always an option due to the nature of the material covered.

Being absent on the day a project, quiz, paper or exam is due can lead to an "F" for that project, quiz, paper or exam or portfolio (unless the faculty concedes the reason is due to

an excusable absence for personal illness/family emergency/religious observance). A mid term or final review is to be treated the same as a final exam as outlined and expected by the University.

See full attendance statement at:
http://arch.usc.edu/People/SchoolGovernanceDocuments

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 A.M.–5:00 P.M., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *SCampus,* the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS/gov/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/. The USC summary of how to avoid plagiarism: http://www.usc.edu/student-affairs/student-conduct/ug_plag.htm and specific advice for grad students: http://www.usc.edu/student-affairs/student-conduct/grad_ai.htm may also be useful.

Accreditation

The Master of Landscape Architecture degree program includes three curricula. Curriculum +3 for students with no prior design education and Curriculum +2 for students admitted with advanced standing have full accreditation by the Landscape Architecture Accreditation Board. Curriculum +1.5 for students with advanced placement is a post-professional study and is not subject to accreditation. Information about landscape architecture education and accreditation in the United States may be found on-line at http://www.asla.org/Education.aspx.