

## **E422/E522 Urban Forest Management (Sp 2015) – Course Calendar – draft 1-10-15 Topics, Readings & Homework Assignments**

**Highlighted items are helpful reading guides from Burney**

**Week 1 – Introduction to Urban Forestry** - Pretest & review; Course/Instructor introduction; Review Syllabus & Course Calendar; Introduction to urban forests, arboriculture & urban forestry; Defining the urban forest – Guest lecture - Dr. Sarah Mincey (Day 2); Brief historical review of urban forestry; Urban land use trends; Debrief guest lecture – standard class operating practice!

### **Reading assignments:**

History of Urban Forestry (Focus on early urban tree mgmt history, particularly in the Northeast)

Ricard, R. M. 2005. Shade Trees and Tree Wardens: Revising the History of Urban Forestry. *J. For.* 103 (5): 230-233. *Ricard – Shade Trees and Tree Wardens*

Gerhold, H. D. 2005. The Origins of Urban Forestry, Letter to the Editor. *J. For.* 103(7): 369-370. *Origins of Urban Forestry, Gerhold letter*

Defining Urban Forests and Urban Forestry (two themes here – USA history, Europe comparison)

Konijnendijk, C., et.al. 2006. Defining urban forestry – A Comparative Perspective of North America and Europe. *Urban Forestry & Urban Greening* 4:93-103. *Defining urban forestry ....*

Miller, P. 2009. Before New York. *National Geographic* (Sept 2009). pp 122-137. *Before New York, National Geographic, 2009*

Current Trends in Land Use (themes – land use change research; urbanization/Anthropocene)

Rudel, T.K., et. al. 2005. Forest transitions: towards a global understanding of land use change. *Global Environmental Change* 15: 23-31. *Forest Transitions – Rudel*

Nowak, D.J., et. al. 2010. Sustaining America's Urban Trees and Forests. USDA FS General Technical Report NRS-62, 28p. *Nowak, Sustaining America's Urban Trees & Forests*

Ehrenhalt, A. 2001 (June). Why We Don't Have It Made in the Shade. *Governing Magazine*, 4p. *Why We Don't Have It Made In The Shade*

Tolson, J. 2006. A Call to Rethink Sprawl. *US News & World Report*. January 30, 2006. 3p. *A Call to Rethink Sprawl, US News & World Report*

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. *Anthropocene*

### **Discussion Paper #1**

Benefits of trees in your neighborhood or campus, writing assignment – Five page maximum which should include a map, drawing, or pictures of the location (hint: Google Earth). Describe the benefits (ecological, environmental and/or social) of the trees in the neighborhood/city block/pocket park/campus area where you live (dorm, apartment complex, rental house) or recreate. To enhance your written presentation use the National Tree Benefit Calculator ([www.treebenefits.com](http://www.treebenefits.com)) to evaluate trees in your neighborhood to learn more about the environmental and economic benefits of urban trees. Give an accurate description (building(s) name, address) of the site you are writing about so I can find it. You are writing as a technical paper to the instructor. Due start of class Thursday, January 22, 25 pts.

**Week 2 – Sustainable Urban Forests as SES's** - Sustainable urban forests and social-ecological systems; Introduction to institutions, resilience, robustness thinking and simple UF sustainability metrics; Urban trees/forests as public goods or common pool resources; Living memorials, etc.

### Reading Assignments:

Sustainable Urban Forests and SES's (course theme is urban forest sustainability within SES's, Clark, et.al. is important reading, a benchmark UFM publication!)

Clark, J.R., et.al. 1997. A Model of Urban Forest Sustainability. *J. Arboriculture* 23(1):17-30. *Urban Forest Sustainability*

See about the Bloomington Urban Forestry Research Group (2 pages) website at [http://iu.edu/~cipec/research/bufrg\\_about.php](http://iu.edu/~cipec/research/bufrg_about.php)

Kenney, W.A., et.al. 2011. Criteria and Indicators for Strategic Urban Forest Planning and Management. *J. Arboriculture & Urban Forestry* 37(3): 108-117. (*Kenney et al 2011) Criteria and Indicators for Urban Forest Management and Planning*

Ostrom, E. 2009. A General Framework for Analyzing Sustainability of Social- Ecological Systems. *Science* 325: 419-422. *Ostrom 2009 Science*

Grimm, N.B. 2008. Global Change and the Ecology of Cities. *Science* 319: 756-760. *Global Change and the Ecology of Cities*

Intro to Sustainability & Urban Forestry (a mixture of simple urban forest sustainability "metrics")  
American Forests - Setting Urban Tree Canopy Goals, 2p. *Urban Tree Canopy Goals*; also see <http://hpi-green.com/tag/american-forest/>.

Cray, D. 2007. Why Cities are Uprooting Trees. *Time Magazine*, June 21, 2007, 2p. *Why Cities Are Uprooting Trees - Time 6-21-07*

Louks, P. 2009. The Urban Forest and Community Sustainability. *CitiesGoGreen.com* p 19-22. *Louks-CitiesGoGreen.com, 2009*

National Arbor Day Foundation - Tree City USA Standards, 2p. *Tree City Standards*; also see <http://www.arborday.org/programs/treeCityUSA/standards.cfm>

Urban Trees/Forests - Public Goods or Common Pool Resources? (Are public spaces/right-of-ways (ROW's) commons? Are urban trees public goods or CPR's?)  
Hardin, G. 1968. The Tragedy of the Commons. *Science* 162: 1243-1248. *Hardin's Tragedy of the Commons*

### Discussion Paper #2

What's in the News – find a current (2015) urban forests/forestry theme in the media and construct a discussion paper around the topic (i.e. you are reviewing more than a single media story!). Four page maximum which may include figures/tables if appropriate. The idea is that through your growing awareness of urban forestry ideas and issues, you will find (citations are necessary) something that interests you and develop a discussion paper. See the guidelines for Discussion Papers and use that as a framework. Expect to be called upon in class to briefly talk about your paper on the due day. Due start of class Thursday, February 5, 35 pts.

**Weeks 3 & 4 - The Benefits/Cost of Urban Trees/Urban Forests – Perceptions & reality, correlations & causation;** See Human Dimensions of Urban Forestry & Urban Greening at [www.naturewithin.info](http://www.naturewithin.info) (K. Wolf's U. Washington website); Introduction to National Tree Benefits Calculator <http://www.treebenefits.com/calculator/>; i-Tree software <http://www.itreetools.org/>

**Reading Assignments** (Selected reading, many more available and some extras are in the folder, a vibrant field of research that continues to grow!)

Burden, D. 2006. Urban Street Trees: 22 Benefits – Specific Applications. Accessed 1/19/08 at [http://www.walkable.org/download/22\\_benefits.pdf](http://www.walkable.org/download/22_benefits.pdf). *Urban Street Trees 22 benefits*

ACTrees. 2010. Benefits of Tree and Urban Forests. 19p. *tree benefits resource list*.

Donovan, G.H., et.al. 2012. Comment on “Green Space, health inequity, and pregnancy”. Environmental International (Correspondence) 39:133. *donovan, et.al. EI correspondence*

Donovan, Geoffrey H., Jeffrey P. Prestemon. 2012. The effect of trees on crime in Portland, Oregon. *Environment and Behavior*. 44(1):3-30. *Donovan, 2012, Portland crime and trees*

Donovan, G.H., M. Oliver. 2015. Exploring Connections Between Trees and Human Health. U.S.D.A. Forest Service, Pacific Northwest Research Station. Science Findings 158. 6p. *scifi 158*

Hauer, R.J., J.M. Vogt, B.C. Fischer. 2015 (Feb). What is the cost of not maintaining the urban forest? *Arborist News* 24(1): ... *Cost of Not Maintaining Urban Trees – Final, Arborist News 2015*

Kuo, F.E. 2003. The Role of Arboriculture in a Healthy Social Ecology. *J. Arboriculture* 20(3):148-155. *Kuo, 2003., The role of arboriculture in a healthy social ecology.*

McPherson, G., et.al.. 2005. Municipal Forest Benefits and Cost of Five US Cities. *J. Forestry* 103(12):411-416. *McPherson et.al., 2005, Municipal Forest Benefits and Costs for 5 US Cities.*

Nowak, D.J., et.al. 2007. Oxygen Production by Urban Trees in the United States. *J. Arboriculture and Urban Forestry* 33(3): 220-226. *Oxygen Production by Urban Trees*

Peper, P.J., et.al. 2009. Lower Midwest Community Tree Guide: Benefits, Costs and Strategic Planting. USDA FS PSW-GTR-219. 115p. *PSWS\_GTR219\_Lower\_Midwest\_CTG. (Read Chapter 2 in depth and Chapter 3 for an overview.*

Wolf, K.L. 2005. Business District Streetscapes, Trees, and Consumer Response. *J. Forestry* 103(8):396-400. *Wolf, 2005, Business District Streetscapes, Trees and Consumer Response.*

**Week 5 – National-State-Local Players in Urban Forestry (general overview)** - State & National perspectives - summarization of the players, the setting & how things operate for urban forestry funding for programs & research beyond the local level; Guest Lecture - Bill Kinicus, Indianapolis City Forester

#### **Reading Assignments:**

Indiana State Urban Forestry Programs Outputs/Outcomes (Unique IN statewide assessment to give you a local perspective)

See CUF SUSI (Indiana Sample Urban Statewide Inventory) & Indiana Canopy Project, Publications

State U&CF Case Stories (2014 compilation of 1-page state U&CF stories, review for themes)  
Urban and Community Forest State Case Stories – Building Resilience. 2014. 46p.  
*State+UCF+Stories-10-28-14*

State Urban Forestry Program Assessments (Academic assessments of state programs)

Wolf, K. L. 2007. Urban Forestry in Washington’s Cities and Towns: Programs and Progress. Washington Department of Natural Resources Community Forestry Program, No. 20, 3p. *WA CitiesTreelink*

Hauer, R.J., C.J. Casey and R.W. Miller. 2008. Advancement in State Government Involvement in Urban and Community Forestry in the 50 United States: Changes in Program Status from 1986 to 2002. *Arboriculture & Urban Forestry* 34(1):5-12. *State Govt Involvement in U&CF, 1986-2002*

Hauer, R.J. and G.R. Johnson. 2008. Approaches within the 50 United States to Meeting Federal Requirements for Urban and Community Forestry Assistance Programs. *Arboriculture & Urban Forestry* 34(2): 74-83. *Meeting Federal Requirements for State U&CF Programs (2)*

National perspectives on urban forestry (read both items for general overview only)

Vibrant Cities & Urban Forests Task Force. 2011. Vibrant Cities & Urban Forests – A National Call to Action. New York Restoration Project, First Ed. 42p. (vibrantcities.org) *Vibrant Cities & Urban Forests TF Report, 2011* & SUFC Policy Principles (Aug. 2010), 5p. *SUFC Principles Final*

**Week 6 – Municipal Urban Forestry & Tree Law** - Tree ordinances/boards/planning; Urban forest disturbance planning; Institutions “governing” urban trees; Tree law talk - Scott Breen

### **Reading Assignments:**

Municipal Urban Forestry (see Municipal Forestry Folder)

Four Phases of an UCF Program, 1p. *Four Phases of an U&CF Program*

National Arbor Day Foundation. 2007. Sample City Tree Ordinance. 1p. *Sample Ordinance*

Mincey, S.K., B.C. Fischer. 2013 (April). Solutions for Sustainable Urban Forest Governance and Management. IUB SPEA Insights, 4p. *fischer\_mincey\_solutions\_urban\_forest\_gov\_mgmt*

Mincey, S.K., et.al. 2013. Structuring Institutional Analysis for Urban Ecosystems: A key to sustainable urban forest management. *Urban Ecosystems* 16:443-571. *Structuring institutional analysis for urban ecosystems,,,,, Mincey, et.al. Urban Ecosystems 2013 – optional reading*

Orndorff, R. 2005. Master Street Tree Plan. City of Rockville Md. 1p. *Master Street Tree Plan for City of Rockville, MD* (note: compare to B'ton Street Tree Plan Draft 4 for class discussion)

Abbey, B. 2008. Greening Tree Ordinances: Building Sustainability into Local Green Laws. Partners in Community Forestry National Conference, 25p. *On-line version Green Tree OrdinancesV4 – optional reading*

Hauer, R. J., et. al. 2006. Tree and Ice Storms: The Development of Ice Storm-Resistant Urban Tree Populations, Second Edition. Joint Publication 06-1, College of Natural Resources, University of Wisconsin-Steven-Point, and the Dept. of Natural Resources and Environmental Sciences and the Office of Continuing Education, University of Illinois at Urban-Champaign, 20p. *TreesIceStorms2ed – optional reading – we will address during Tree Biology in Week 11*

Trees and the Law (Review prior to Scott Breen presentation – See Tree Law Folder)

Beering, P.S. and J.R. Scott. 2006. Premise Liability and Your Trees. 13p. *Premise\_ Liability\_4-09-07*

Macey, S.L. and J.R. Scott. 2008. Why do I Need to Understand Alternative Dispute Resolution. 12p. *2008 ADR Final*

Lewis, M. 'Arborcide' and 4 other nasty tree fights. MSN Real Estate, 5p. *Arborcide and 4 other nasty tree fights*

May v. George, 910 N.E.2d 818 (2009). From WestlawNext 2012. 7p. *May v George*

Ortiz v. Jesus People, U.S.A., 405 Ill.App.3d 967 (2010). From WestlawNext 2012. 9p. *Ortiz v Jesus People, USA*

Parr, et.al. 2010. Boundary Line Trees – Who Owns Them? 1p. *Frandsen 2010 Boundary Trees*

Stackhouse v. Royce Realty and Management Corp., 2012 IL App (2d) 110602 (2012). From WestlawNext 2012, 10p. *Stackhouse v Royce Realty and Management*

Stephenson, C.E. 2004. Tree Law: More complicated And Plentiful than Many Lawyers Think. *Lawyers Weekly USA*. 8p. *Tree Law: More complicated And Plentiful than Many Lawyers*

Light Staff. 2007. Trees: what's your liability? *Point Reyes Light*, 3p. *Trees: what's your liability?*

**Week 7 – Tree Planting &/or Canopy Cover Campaigns** (Survey of selected regional/city greening initiatives); NGO's – tree planting & otherwise; Keep Indianapolis Beautiful (KIB) presentation – Nate Faris & Molly Wilson, review <http://www.kibi.org/programs/overview/>, click on Planting Trees & Youth Programming

### Reading Assignments:

NASF Urban & Community Forestry Committee. 2009. Assessing Urban Forest Canopy Cover: A Primer for State Foresters. Briefing Paper, Posted on Monday, December 7, 2009 by S. McCreary, NASF website. 4p. *NASF Briefing Paper on Assessing UTCC*

USFS. 2009. Understanding and Caring for New York City's Urban Forest. USFS NRS Research Review, USFS No. 8 (Autumn 2009), 6p. *USFS NRS Research Review, NYC's Urban Forest, No. 8*

### A listing of some websites to checkout for getting an idea of how urban greening initiatives are progressing around the USA – this is merely a sample and optional listing.

The Urban Ecology Collaborative <http://www.urbanecologycollaborative.org/uec/>  
Chicago Wilderness <http://www.chicagowilderness.org/index.cfm>  
Sacramento Tree Foundation <http://www.sactree.com/>  
Trees Atlanta <http://www.treesatlanta.org/>  
Casey Trees, Washington DC <http://www.caseytrees.org/>  
Greening of Detroit <http://www.greeningofdetroit.com/>  
New York City <http://www.nyc.gov/html/planyc2030/html/home/home.shtml>  
Pennsylvania Horticultural Society, Philadelphia <http://phsonline.org/greening/plant-one-million> &  
<http://cityofphiladelphia.wordpress.com/2010/04/26/mayor-nutter-launches-tree-planting-campaign-green-philly-grow-philly/>  
The Mile High Million (Denver) <http://www.milehighmillion.org/>  
Tree People, Los Angeles <http://www.treepeople.org/>  
Forest Releaf of Missouri <http://www.moreleaf.org/>  
Friends of Grand Rapids Parks, Grand Rapids MI <http://www.friendsofgrparks.org/>  
Trees Inc, Terre Haute IN <http://www.treesinc.org/>  
American Forests <http://www.americanforests.org/our-programs/urbanforests/>

### Discussion Paper #3

The assignment is to conduct a brief SWOT (Strengths, Weakness, Opportunities and Threats; Google SWOT for references and helpful aids, if you are unaware of this analysis technique) analysis of city or regional tree planting or tree canopy campaign. You will select a location of your choice (**KIB is not allowed!**) and do an on-line review and analysis of the campaign. The discussion paper, 4 page maximum, should clearly describe the initiative and its purposes, the key stakeholders, etc., and then you will construct a brief SWOT to analyze the campaign, not the whole organization conducting the campaign. Finally, you should end the paper with a succinct prediction on the possible success of the initiative. Due date is Tuesday, Feb 24, 40 pts

### Week 8 – Midterm Exam Week. Catch-up day on Tuesday and Exam on Thursday

**Week 9 & 10 Tree Inventory and Assessment – field trip for class exercise; Guest lecture by Erin Flint on Davey Resource Group TreeKeeper software.**

## Spring Break – March 16-20!!!!

**Reading Assignments** - See Week 9 & 10 folder for handouts, etc., for field exercise, etc.

Mincey, S.K., B.C. Fischer. 2009. The Woodland Campus: A Historic Walking Tour of Indiana University – Bloomington. IU-B SPEA Publication. 20p. *IUB Campus – Woodland Campus* or <http://www.indiana.edu/~spea/pubs/woodland.pdf>.

See Oncourse resources – i-Tree and Tree Inventory Folder for tree inventory insights

See Oncourse resources - IU-B Campus Folder for campus tree management insights

Tree Campus USA – <http://www.arboday.org/index.cfm> click Tree Campus USA

IUB Master Plan – *IUB Campus – IUB Master Plan 2009* <http://masterplan.indiana.edu/iub/iub.cfm>

### **Discussion Paper #4 To Be Discussed, Possibly Changed Further!**

**Undergraduate Student Assignment Only – 3-4 person teams.** The IUB Campus Master Plan state's that for the core campus (South and west of SR 45/46 Bypass) only 20% of the land is covered by tree canopy. The first Campus Landscape and Open Space Recommendation is to "Increase the tree (canopy) cover from 20% to 40% on campus..." (p. 140). Following this are nine additional recommendations that provide additional direction. Then, on page 141 there is a visual presentation of the existing and proposed tree canopy cover. The team's task in this small project is 3-fold. First, sort out and describe some key challenges to doubling the existing tree canopy given the other key goals of the Master Plan. Remember, this is much more than an attempt to "sustain" the campus canopy cover; rather the goal is to double it. Second, develop a brief methodology and then implement it to estimate the number of trees to be annually planted and the approximate timeline to achieve an approximate 40% tree canopy cover. Finally, identify and briefly describe possible, important threats to this timeline based upon other goals of the master plan. This discussion paper has a 10 page maximum with additional pages allowed for figures, tables, etc. **Due start of class Thursday, April 2, 50 pts**

**Weeks 11 – Introduction to Tree Biology** (Understanding basic tree biology); Guest Lecture Robert Neary, KIB Geographer

### **Reading Assignments:**

Chaney, W.R. 1993. *Acer saccharinum* – Silver Maple: the "Coyote of Trees." *Arbor Age* 13(4):31. *Silver Maple – the coyote tree*

USDA. 2006. How a Tree Grows. FS-32, 8p. *How a Tree Grows, USFS pub*

### **Case Study** (Review before PowerPoint lecture in class)

Culley, T.M. and N.A. Hardiman. 2007. The Beginning of New Invasive Plant: A History of the Ornamental Callery Pear in the United States. *BioScience* 57(11); 956-964. *Culley and Hardiman – BioScience 2007*

**Week 12 - Tree Care and Management** – Pruning, risk rating, etc.; Urban tree health management; EAB and other pest case studies

### **Reading Assignments:**

#### **Pruning** (Major management activity by city foresters)

Clark, J.R., N. Matheny. 2010. What does research tell us about the practice of pruning in arboriculture? *Arborist News* Feb 2010: 41-44. *Pruning review by Clark & Matheny, 2010*

Gilman, E.F., S.J. Lilly 2008. Best Management Practices: Tree Pruning (Revised 2008). ISA 43p. *Tree Pruning BMP's, ISA*

ISA. 2006. Urban Forestry Tree Care Myths, 2p. *Urban forestry tree care myths*

Johnson, J., et.al. 2008. Tree Owner's Manual for the Northeastern and Midwestern U.S. USDA FS NA S&PF, NA-FR-04-07, 36p. *Tree Owners Manual for NE-MW 2008*.

Emerald Ash Borer, etc. (EAB will be our thematic pest species for urban forest health mgmt.)

See National EAB website <http://www.emeraldashborer.info/#sthash.YuuWNhA.dpbs>

See EAB Research <http://www.emeraldashborer.info/research.cfm#sthash.lhxprHYO.dpbs>

See Indiana EAB <http://extension.entm.purdue.edu/EAB/>

Aukema, et. al. 2011. Economic Impacts of Non-Native Forest Insects in the Continental United States. PLOS ONE 6(9): e24587. doi:101371/journal.pone.0024587. *Aukema\_etal\_2011. Economic Impact of Non-Native...*

Vannatta, A.R., et.al. 2012. Economic Analysis of Emerald Ash Borer (Coleoptera: Buprestidae) Management Options. *Econ. Entomology* 105(1):196–206. *Economic Analysis of EAB Mgmt Options*

**Weeks 13 - Tree Planting** – Tree selection (including invasive spp.); Diversity, rules-of-thumb; Right Tree, Right Place; **Planting & care demonstrations (field trip), B'ton City Forester Lee Huss**

#### **Reading Assignments:**

See - Bloomington Folder for Bloomington Urban Forestry

Louks, P (ed). Indiana Community Tree Selection Guide: Recommendations by Indiana's City Foresters & IDNR, Community & Urban Forestry. IN DNR, 16p. *Tree Selection Guide for Indiana*

Purcell, L. 2011. Tree Installation: Process and Practices. Purdue Extension FNR-433-W, 7p. *FNR-433-W*

Roman, L.A., F.N. Scatena. 2011. Street Tree Survival Rates: Meta-Analysis of Previous Studies and Application to a Field Study in Philadelphia, PA, USA. *Urban Forestry & Urban Greening* 10: 269-274. *Roman 2011 Street Tree Mortality, UF&UG*

Struve, D.K. 2009. Tree Establishment: A Review of Some of the Factors Affecting Transplant Survival and Establishment. *Arboriculture & Urban Forestry* 35(1): 10-13. *Struve – Tree Establishment Review A&UF 2009*

**Week 14 - Tree Industry Review** - Economic impacts, job opportunities; **Field Day with Davey Tree Expert Company/Davey Resource Group – Mark Noark, Aren Flint, etc.**

#### **Reading Assignments:**

Hall, C.R., et.al. 2005. Economic Impacts of the Green Industry in the United States. Final Report to the National Urban and Community Forestry Advisory Committee, p 1-20. (Read Exec Summary + Background) *EconomicImpactoftheUSGreenIndustry(NUCFACfinalreport*

Schmidlin, T. W. 2008. Human fatalities from wind-related tree failures in the United States, 1995-2007. *Nat. Hazards, Original Paper*. DOI 0.1007/s11069-008-9314-7, 13p. *Deaths from wind-related tree failures*

**Week 15 – Graduate Research Paper Presentations, Team Case Study Presentation(s), Course closure & Course/Instructor evaluation; Final Exam for UG's, Graduate Research Papers Submitted**