



Urban Ecosystem Research Consortium

First Friday Brown Bag Series

August – October 2009

The speakers below will be giving more in-depth presentations on the topics they highlighted at the Urban Ecology and Conservation Symposium in January 2009. All presentations will be at the time and location below on the dates listed.

Location: Metro, 600 NE Grand Avenue, Portland, Oregon 97232 in room 370

Time: 12:15 to 1:00 p.m.

August 7, 2009 - Friday

Rainfall Interception by Open-Grown Urban Tree Canopy

by Mitch Bixby and J. Alan Yeakley

Speaker: Mitchell Bixby, Portland State University - Environmental Sciences

We hypothesized that Douglas-fir trees (*Pseudotsuga menziesii*) standing apart from other trees ('open-grown') will intercept and evaporate a larger volume of water than Douglas-fir trees standing near other trees ('closed-canopy'). Existing literature suggests Douglas-fir in Northwest forests intercept approximately 25% of incident rainfall annually, but says little about open-grown, urban trees. We collected throughfall under four open-grown and two closed-canopy Douglas-firs and compared to the incident rainfall totals from local, open-field collectors at the Hoyt Arboretum, Portland, Oregon. Gross interception was measured without regard to storm regime from 12 Nov 2007 to 31 Mar 2008. For context, comparison of rainfall during that period with an analysis of storms at Portland International Airport between 1950 and 2005 showed rainfall to be more intense than the long-term average. Interception values for closed-canopy trees averaged 26% while values for open-grown trees averaged 37%. External factors thought to have influenced 'per tree' interception in this study included overall storm direction, slope aspect, and degree of exposure. Our results suggest that, for Douglas-firs, open-grown trees have higher interception rates than closed-canopy trees. Published interception rates for Douglas fir based on closed canopy measurements might underestimate their value in urban stormwater management.



September 4, 2009 - Friday

Amphibian surveys in Gresham, Oregon show the importance of urban stormwater facilities as critical aquatic habitat for listed and non-listed species

Speaker: Laura Guderyahn, City of Gresham - Dept. of Environmental Services

In 2006, the City of Gresham incorporated into its biodiversity surveys an annual survey of aquatic amphibian and turtle species in an effort to understand which species utilize Gresham's aquatic habitats and to inform our management of these areas. Of the 189 known public and privately owned wetlands, ponds, and swales in Gresham, 138 (73.0%) were surveyed for egg masses and larvae in each of two survey seasons. In addition, each site was surveyed for basking turtles on 4 separate occasions each summer. Six amphibian and turtle species were found, including state listed *Rana aurora* (sensitive) and *Chrysemys picta bellii* (critical). Of the 138 sites surveyed, 52 (37.7%) of the sites were found to host breeding amphibians and 3 (2.2%) to host turtles. Of the sites surveyed, the majority (29 sites; 55.8%) providing amphibian and turtle habitat were ponds and swales constructed as part of our stormwater infrastructure system, demonstrating that urban stormwater facilities are integral components of urban amphibian habitat. Based on our survey findings, Gresham is now incorporating more habitat considerations into the maintenance of public vegetated stormwater facilities. In addition, survey protocols are being taught to community volunteers and educational information regarding habitat needs are being developed and distributed for private stormwater facilities. These findings are likely representative of other urban areas in our region and every effort to survey for and consider our aquatic amphibians and turtles during the design and maintenance of stormwater facilities across the region should be taken.

October 2, 2009 - Friday

Using adaptive outreach techniques to improve watershed stewardship: responding to demographic and behavior data

Speaker: Jamie Stamberger, City of Gresham - Dept. of Environmental Services

Since 2006, the City of Gresham's Watershed Management Division has implemented the Streamside Property Outreach Program (SPOP), offering technical expertise and restoration to stream-side neighborhoods and aiming to achieve behavior change related to improved riparian stewardship. Staff has observed variable response to the program among individuals and communities, demonstrating a range in willingness to participate and commit to behavior change. U.S. intra-census demographic data and behavior data collected from the outreach program were analyzed in an attempt to explain such trends. Assuming our correlations demonstrate real relationships affecting the value placed on natural areas and stewardship, review and creative use of demographic and behavior data is a necessary attribute of effective stewardship programs. For example, the adaptive outreach strategy used by the city's SPOP can easily assimilate and respond to localized descriptive data. The program offers a wide variety of locally relevant materials and information adapted over time to reflect watershed-related interests observed in the field. Tools and incentives offered and areas of outreach focus can be adjusted preemptively if data on local interests and concerns is available, or as needed to adapt to the needs of individual residents during an outreach visit. Tying watershed stewardship messages to personalized needs and wants is effective in increasing participation quantity and quality and garnering behavior change among a variety of residents from demographically diverse communities.