

Field Trip to the Washington Park Arboretum

Background

- 230 acres
- Jointly managed by City of Seattle (Department of Parks and Recreation) and the University of Washington (UW Botanic Gardens in the School of Environmental and Forest Sciences) with financial and political support from the Arboretum Foundation
- One of the most important tree collections in North America with 10,190 species representing 4,348 distinct taxa. Of these, 1082 species (17.3%) accessioned and 1711 species of wild origin. Value is ~\$85,000,000.
- The Washington Park Arboretum has been called a "200-acre art museum," and a "symphony of plants." It is dedicated to growing, studying, conserving, and displaying some 40,000 specimens of trees, shrubs, vines, and other plants (Wott 1998). Its management is a coordinated partnership between the City of Seattle's Department of Parks and Recreation and the University of Washington. This public land trust is one of the oldest public gardens west of the Mississippi River.

Directions

Leave campus and head south across Montlake Bridge. If driving, get in left turn lane after crossing 520, take Lake WA Blvd, go about 100 m beyond stop sign exit to 520, get in left lane and turn into E. Foster Island Road, turn right on Arboretum Drive, in 50 m turn left into parking area. WALKING or BIKING – Unfortunately, due to the construction, you need to follow essentially the same route. But take a left on E. Lynn and enter arboretum on path, cross the Wilcox Bridge, stay on trails that generally head east to the GRAHAM VISITOR's Center. Be there at 1:30 (group 1, led by Prof. Doty) or by 1:50 (group 2, led by Robert and Shyam)- you choose the time; Doty will start with the first 15 students.

Outline of the field trip

1. Across Arboretum Drive to the beginning of Azalea Way –compare mature Douglas-fir, western hemlock, western redcedar. Discuss adaptations
2. Down the trail slightly are *Pinus contorta* (var. *contorta*) and *Pinus ponderosa*. Discussion of adaptive traits.
3. Walk along Arboretum Drive to the Magnolia Family, stopping along the way at *Acer macrophyllum* and *Sequoiadendron giganteum*. Compare leaves of oak and magnolia and discuss the different investment strategies of these trees.
4. Examine different *Picea* trees (foliage, bark, cones).
5. Side trail to collection of *Abies* (*A. amabilis*, *A. lasiocarpa*, *A. procera*, *A. grandis*)
6. At the *Arbutus menziesii*, discuss pathogens
7. Walk to Pacific Connections Gardens. Compare understory species. Also see *Picea engelmannii*
8. End of field trip. Walk back to Graham Visitor's Center (at own pace).

Study Guide for Arboretum Field Trip

1. Draw and describe the bark, foliage, and cones of *Thuja plicata*, *Tsuga heterophylla*, and *Pseudotsuga menziesii*. Include enough detail such that a friend using your answers could find those species at the Arboretum.
2. We discussed two varieties (i.e. subspecies) of *Pinus contorta*; one of which is found west of the Cascades (shore pine, var. *contorta*), and the other on the east side (lodgepole pine, var. *latifolia*). This pine represents an excellent example how genetic variation found within a species can allow it to adapt to a wide range of environments. Describe the adaptation that each variety has to its environment.
3. We observed *Abies amabilis*, *Abies lasiocarpa*, *Abies procera*, and *Abies grandis*. How can they be differentiated from one another? Think about the different environments in which these species dominate. What traits does each species have that helps it to do well in those environments?
4. We examined fallen leaves of oak and magnolia. Describe the differences in decay rate and speculate on the reasons for those differences. What are the advantages of the different investments these types of trees made?
5. *Acer macrophyllum* can be easily identified from other features besides its leaves. What were these other characteristics?
6. The coast redwood (*Sequoia sempervirens*) and giant sequoia (*Sequoiadendron giganteum*) are closely related yet have very different foliage and overall growth form. From looking at the foliage, which one do you think is more drought tolerant? From the body form, which is more adapted to heavy snow? Give explanations for your answers.
7. *Mahonia nervosa* and *Gaultheria shallon* are two common understory plants adapted to grow in low light conditions. On the other hand, *Symphoricarpos albus* and *Ribes sanguineum* are species that prefer habitats with high sun exposure. Using these species as examples, compare and contrast the differences in leaf morphology and phenology (i.e. deciduous vs. evergreen) between sun and shade adapted plants, and how those differences relate to photosynthesis under different light conditions.
8. *Oemleria cerasiformis* leafs out and produces flowers very early in the season. What are possible advantages of this phenology?