Proceedings

Field Botany Excursions

Spring Quarter 2011

Mary Minerva McCroskey State Park, Idaho

Participants (left to right standing to sitting): Robby Gisselberg, Katherine Farrell, Stephen Marsh, Alec Wynd, Holly O’Connor, Natalie Scott, Aaron Clausen, Morgan Fish, Brandy Reynecke, Michael Vaughan, Molly Tiemeyer, Chris Marsh, Chantilly Higbee, Jeff Glinski, Nathan Doneen, Shenelle Simonson, Paul Reilly. Not pictured: Rebecca Brown (photographer), Ashley Crowley, David Duffey
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March 30, 2011
Murphy Pond
Robby Gisselberg and Shenelle Simonson

Directions: Right on Washington Street from Science Building parking lot. Round the corner at Eagle Point Apartments and continue on Betz Road. Take a left on Murphy Road at the intersection of Betz, 6th Street, and Murphy Road. Follow Murphy Road for 1 Kilometer. Site on the right side of road.

Habitats: Pond, Wetland, Pandora Pine Woodland, Slope and Rocks there were also Mima mounds
Disturbance: Cow pies and mangled shrubs that looked like they had gone through a long winter in the tundra and experienced a lot of indicated grazing as a disturbance of this site.

Narrative: This being the first field trip the van ride to the sight was really quiet, the weather was cool, slightly windy and cloudy, but on an upside there was no rain. The area was surrounded by barbed wire, everyone had to climb over, some people held the wire down for others to crawl over it and someone stood on one of the boards so everyone could walk over, getting back over the wire was also an adventure because the wire was tilted towards the pond. There was cow and elk scat, we all had to watch our step. We had to walk down a hill to get to the pond and wetland habitat, Holly fell and rolled her ankle and hit her head, but she was okay. We collected buttercups and some people found grass widow. The van ride back we stopped and looked along the side walk for little white flowers that we did not find and there was a little more talking as we were getting to know our classmates.

As we approached the pond we spooked some ducks out of the pond. To the south of the pond, iris capsules were found on the skeletons from last summer's growth. While examining the moss on one of the rock outcrops, the splash cups on the moss were pointed out and their purpose was described. As we descended to the bottom of the flood channel. In the flood channel, more wetland plants were present, but there was either a very large shrub or a somewhat small tree that was unidentifiable.

Species:
- *Achillea millefolium*
- *Amelanchier alnifolia*
- *Arctostaphylos uva-ursi*
- *Balsamorhiza sagittata*
- Borage, Genus species
- *Cirsium vulgare*
- *Crataegus douglassi*
- *Eriogonum niveum*
- *Eriogonum sphaerocephalum*
Fragaria virginiana
Geum trifolium
Heuchera richardsonii
Lewisia rediviva
Linaria dalmatica
Lithophragma glabrum
Mahonia aquifolium
Mahonia repens
Olsynium douglassii
Phalaris arundinacea
Physocarpus opulifolius
Pinus ponderosa
Populus tremuloides
Ranunculus glaberrimus
Ranunculus glaberrimus var.
glaberrimus
Rosa woodsii
Sedum sp.
Symphoricarpos albus
Verbascum thapsus L.
Habitat of Palisades Park

Basalt outcrop and cliff face.  
Shallow basalt pools and Ponderosa woodlands.
Basalt outcrop/cliff face

Bitterroot *Lewisia redivia*
Elderberry *Sambucus cruela*
Stonecrop *Sedum spp.*

Wet Meadow
Camas *Camassia quamash ssp. quamash*
Death camas *Toxicoscordion venenosum var. gramineum*
Wild onion *Allium* sp.

Ponderosa pine woodlands
Bedstraw *Galium* sp.
Buttercup *Ranunculus glaberrimus var. glaberrimus*
Blue Bunch Wheat Grass *Pseudoroegneria spicata*
Cheat grass *Bromus tectorum*
Choke cherry *Prunus virginiana*
Cinquefoil *Potentilla simplex*
Black hawthorn *Crataegus douglasii*
Golden Currant *Ribes aureum*
Grass widow *Olsynium douglasii var. douglasii*
Narrow leaved montia *Montia linearis*
Prairie smoke *Geum triflorum var. triflorum*
Prairie star *Lithophragma parviflora*
Service berry *Amelanchier alnifolia*
Snowberry *Symphoricarpos albus*
Spotted knapweed *Centaurea maculosa*
Woods rose *Rosa woodsii*
Yarrow *Achillea millefolium*

Shallow basalt pools
Duck weed *Lemna minor*
Hog Canyon
April 11, 2011
Recorder: Katherine Farrell

It was just after 1:00 pm on a mostly sunny day. A crisp wind was blowing as 16 of us set off on our hike up Washington Avenue to retrieve our vans for our trip. Next stop, Hog Canyon, located southwest of Cheney off of I-90. Comfy in our rides, we headed out, travelling west on Highway 904 until we merged onto I-90 west. We took the Fishtrap Lake Exit 254 and turned right coming back over the freeway on Sprague Highway. We took the second left onto the first gravel road and followed it to the limited use area on BLM land, marveling at the Mima mounds we discovered along the way. This was part of the Channeled Scablands, a remnant of the Missoula floods which tore through this part of the world during the Pleistocene. The canyon we had come to see was carved out of the basalt by these waters and I felt rumble of anticipation as we passed the entrance. A parking lot soon greeted us, along with a gate and some fellow visitors, but there wasn’t much else to behold- yet.

Through a small gate we trod into a Ponderosa pine forest, following a trail which would lead us on a 2 mile hike around Hog Canyon on a quest to discover what flora we could. We were greeted first by buttercups (Ranunculus glaberrimus- Ranunculaceae) and yellow bells (Fritillaria pudica- Liliaceae), followed by Bluebunch wheatgrass (Pseudoroegneria spicata- Poaceae) and widow grass (Olsynium douglasii- Iridaceae). Around the bend we entered moist habits, encountering snowberry (Symphoricarpos albus- Caprifoliaceae), quaking aspen (Populus tremuloides- Salicaceae), dogwood (Cornus sericea- Cornaceae), an unknown species of cinquefoil (Potantilla- Rosaceae), prairie smoke not yet in bloom (Geum triflorum- Rosaceae), and naked wild roses (Rosa- Rosaceae). Much of this flora had yet to bloom making any identification to species impossible for us students, and we all were prodding Dr. Brown to share with us her wealth of knowledge. Out into the moist uplands we passed Columbia Basin Wild Rye (Elymus cinerus- Poaceae) and came out into a meadow where it was obvious cattle had roamed. Careful not to step in anything squishy, we paused and noted some unknown Saxifragaceae, baby shooting stars (Dodecatheon pulchellum v. pulchellum- Primulaceae), and tons of Draba verna- Brassicaceae along with another white Apiaceae which many of us have yet to be able to key, although we feel it may be from the genus Lomatium (a little birdy whispered it into the recorder).
After a quick stop to do what light harvesting we could from the meadow, our patrol moved downhill, marveling as we went at the beauty of the waterfall which had come into view. A small stream trickled down from our side of the canyon to the base of the falls which roared on the other side, pushing more water through the falls than Dr. Brown had seen before. The riparian wetlands were coming upon us and we noted some flora along the way; choke cherry (Prunus virginiana v. melanocarpa- Rosaceae), camas (Camassia quamash- Liliaceae), more snowberry and wild roses, an invasive species called teasle (Dipsacus sylvestris- Dipsacaceae), dock (Rumex crispus- Polygonaceae), bulrush (Schoenoplectus tabernaemontani- Cyperaceae), and irises (family Iridaceae). In the rocky wash below the falls we found remnants of a blue elderberry (Sambucus cerulean- Caprifoliaceae), golden currant (Ribes aureum- Grossularaceae), and the invasive reed canary grass (Phalaris arundinacea- Poaceae). Again, no jewels of bloom to help us identify any species, but the waterfall was amazing and the moon was in view just above it.

Reluctantly we knew we had to push on. So we made our way up the slope, away from the wetlands and up the hillside where one lucky lady found the day’s prize. There, sitting majestically in the sun, was a small purple bloom- a shooting star (Dodecatheon pulchellum v. pulchellum- Primulaceae). Feeling more hopeful then envious, we scanned the hillside but found only some unknown Polypodiaceae, biscuit root ((Lomatium gormanii- Apiaceae), bitterroot (Lewisia redivivia- Portulaceae), and some sage (Artemisia rigida- Asteraceae). Soon we came upon what Dr. Brown
informed us was a confluence of biomes; where Ponderosa pine forest, desert, and grasslands all meet. But our journey wasn't over yet.

The group descends into the canyon.

The hillside we descended to reach the falls.

Dr. Brown in front of the waterfall, the rushing water taunting her inner kayaking spirit.

The pond atop the crest just outside of "Mima Mound Country."
As we crested the rise we came to a pond rich with as yet un-bloomed vegetation: wild roses, currant, aspen, willow, and reed canary grass. A short ways onward and we reached what Dr. Brown referred to as “Mima Mound Country.” Mima mounds are a natural occurrence in the northwestern United States and are comprised of loose sediment. They are basically over-developed A horizons and the vegetation growing upon them is usually more dense than that at their bases. The Mima mounds out here held mostly yellow bells and yarrow, and onward we trod. The wind had now found us so we walked in a silence broken only by sniffling noses until we reached the parking lot. Our exploration of Hog Canyon had come to an end and we piled back into the vans and headed back to the university to key out what wonders we had found.
Location: Hog Canyon, Spokane County  
Date: April 11, 2011  
Recorder: Morgan Fish

Directions:
- Head south on Washington street to WA-904 W
- Turn right on WA-904 W
- Turn left to merge on I-90 W toward Seattle
- Take Exit 254 toward Fishtrap
- Turn left at Sprague Hwy Rd E
- Turn left at Lake Valley Loop Rd
- Turn left on Jack Brown Rd N
- Continue on Jack Brown Rd, over two cattle guards, about 0.7 miles until you reach a gravel parking area.

Narrative:

Our trip to Hog Canyon started in the typical manner with the class meeting in the botany lab and then Dr. Brown sending everybody out to the back of the science building to see if Brandy, our T.A., was there with the vans. When we reached the loading area there wasn’t any sign of Brandy or the vans, and when Dr. Brown arrived she related that Brandy was in Oregon and we would need to go up to the carpool vehicle area so she and Holly could get keys to the vans we would be taking on the trip. So we walked, against the strong winds common to Cheney, up to the vans and eventually we were all seated within one of the two vans and making our way to Hog Canyon.

Hog Canyon is owned by the Bureau of Land Management and is used for grazing resulting in some disturbance of the area by humans and cows. A recent fire in the area also had a violent impact on the flora. Hog Canyon is part of an interesting area known as the channeled scablands which were carved out by flood waters, leaving a variety of landforms like the canyon and the waterfalls which feed Hog Lake. While at Hog Canyon we came across three significant habitats, the desert, grasslands, and forest. Within the main habitats there where areas of uplands, ponderosa pine forest, ponds, stream sides, wetlands, shallow rock outcrops, and mima mounds, with a vast array of flora.

We started our trip on a sheltered trail surrounded by towering ponderosa pines (Pinus ponderosa) with sunny grass meadows interspersed. In the meadows we observed the now familiar buttercups (Ranunculus glaberrimus), spring whitlow grass (Draba verna), and widow grass (Olsynium douglasii) along with new flowering species of yellow Apiaceae and white and pink Saxifragaceae, bulbous woodlandstar (Lithophragma glabrum). As we traveled on we left the trail and marched up a several small hills crested with shallow rock outcrops and other spices of Apiaceae, Gorman’s biscuitroot (Lomatium gormanii). At the top of the hills there were extreme winds, making it very hard to hear Dr. Brown’s explanations of the habitats and flora, causing some confusion among the students about which plants we were to pick and it was not uncommon to look up from collecting a specimen and find the majority of the class had already moved on to a new location. As we continued on toward Hog Lake, we found shoots of several other plants like Iridaceae, Liliaceae, and Primulaceae however none of it was blooming enough to key out and so we made our way down the canyon to enjoy the falls and then back up the canyon in hopes of finding something we could identify for our collections. Finally, on our way
up from the canyon, on a rocky hillside, sheltered from the wind, we found one blooming shooting star (*Dodecatheon pulchellum var. pulchellum*). As we hiked back to the vans we noticed some sagebrush (*Artemesia rigida*) and a brown haze over the canyon from all the dirt being blown around, nevertheless we all made it back to the vans and eventually campus with hope for warmer days and blooming flowers.

Species List:

*Please note that due to the late arrival of springtime conditions to the area, many of the flora discovered on this trip were immature and therefore could not be identified to species.*

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<tr>
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<th>FAMILY</th>
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<td>Upland Forest</td>
<td>Bluebunch</td>
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<td>Wheatgrass</td>
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<td>Camas</td>
<td>Liliaceae</td>
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Choke Cherry | Rosaceae | *Prunus virginiana v. melanocarpa*
Currant | Grossulariaceae | *Ribes cereum*
Dock | Polygonaceae | *Rumex crispus*
Iris | Iridaceae | *Iris species (unknown)*
Snowberry | Caprifoliaceae | *Symphoricarpus albus*
Teasle | Dipsacaceae | *Dipsacus fullonum v. sylvestris*
Wild Rose | Rosaceae | *Rosa species (unknown)*

**Rocky Outcrop**
Alum Root | Saxifragaceae | *Heuchera cylindrica*
Gorman’s Biscuit Root | Apiaceae | *Lomatium gormanii*
Bitterroot | Portulacaceae | *Lewisia rediviva*
Fern | Polypodiaceae | *Fern species (unknown)*
Sagebrush | Asteraceae | *Artemisia rigida*
Shooting Star | Primulaceae | *Dodecatheon pulchellum v. pulchellum*
Woolly Plantain | Plantaginaceae | *Plantago patagonica*

**Upland Pond**
Currant | Grossulariaceae | *Ribes cereum*
Quaking Aspen | Salicaceae | *Populus tremuloides*
Reed Canary Grass | Poaceae | *Phalaris arundinacea*
Wild Rose | Rosaceae | *Rosa species (unknown)*
Willow | Salicaceae | *Salix species (unknown)*

**Mima Mounds**
Yarrow | Asteraceae | *Achillea millefolium*
Yellow Bell | Liliaceae | *Fritillaria pudica*

The habitats of pine forest and meadow often merge at Hog Canyon
Riverside State Park: Bowl and Pitcher
Visited April 18, 2011
Report Compiled by Nathan Doneen and David Duffey

Driving Directions
From Cheney, drive northeast on highway 904/1st St. At Four Lakes, stay right and merge onto I-90 E. Take exit 277A toward Garden Springs merging onto W Garden Springs Rd. Turn right onto W Sunset Boulevard. At the bottom of the hill turn left onto S Government Way. At the next light, turn right onto W Fort George Wright Drive. After crossing the Spokane River, veer right onto the off ramp and turn right onto W Downriver Drive/N Riverside State Park Drive. After approximately 3.5 miles, turn left into the park parking lot.

The purpose of our trip to Riverside State Park was to measure and identify plant species of different riparian zones along the Spokane River. We measured linear distances with tape measures and vertical distances with a stadia rod and clinometer. Me determined where plant community structure changed by visual inspection. Community structure varied due to moisture availability and flood frequency.

Community Types
Riparian:
The first community we observed and actively measured (Figure 2) was the riparian zone at 4 different locations on the south side of the river. Because the Spokane R. is constrained by bedrock, it has very small or nonexistent flood plains along this stretch of the river. This makes the riparian also very narrow due to the quickly rising banks flanking the river.
Within the riparian zone, we observed different division of species. Willows were growing in the water up to about 10 meters from the water’s edge. On the lower sandbar we saw Oregon Grape and Reed Canary Grass. Also, in some locations on the lower sand bar, thick deposits of heavy metals were apparent, an indicator of pollution in the river and Lake Coeur d’Alene (Figure 3). On the upper bar we saw Kinnikinnik, Choke Cherry, Red Osier Dogwood, and Ponderosa Pine. On the first incline of the slope leading away from the river we found Ninebark, Service Berry, and Cinquefoil in addition to the Ponderosa Pine. On the steeper hillside further from the river we found Ponderosa Pine, Douglas Fir, Prairie Star, Widow Grass, Lomatium, Yarrow, and Balsam Root. Moving to the top of the slope and onto the flat we encountered a different community.

Upper Flat/Ponderosa Forest
This area was above the banks of the river meaning it bordered the riparian community. In this Ponderosa Forest we encountered Ponderosa Pine, Douglas Fir, Service Berry, Prairie Star, Balsam Root, Buttercups, and Yellow Bells.

As mentioned previously, the river is constrained by bedrock. Because of this constriction there are several rock outcrops flanking the river, which serve a slightly different community. Here, lichens and moss dominate the rock surface but also serve as a substrate to other plants. Cheat grass and Prairie Star grew from the mosses as well as Buttercups, Ferns, Coral Bells, and a native Thistle.

Where these outcrops extend into the river, there is no opportunity for plants typical of the riparian zone to establish. Along one such outcrop, erosion created an extremely rocky bank or a talus pile. Here we encountered Silver Maple growing near the river. Moving upwards and out of the river channel, we encountered another Ponderosa Forest; however, this particular landscape had experience a fire some years previous.

Burnt Uplands/Ponderosa Forest
This landscape was clearly different from the Ponderosa Pine Forest in the river channel (Figure 4). Most of the Ponderosa Pine was killed by the fire, which opened the canopy and exposed the ground to more thermal radiation. Here, we encountered Idaho Fescue Grass, Flax, Strawberry, Dalmatian Toad Flax, and Bull Thistle, an invasive species.
Weather
The weather for the day was as interesting and diverse as the plant species we encountered. On the commute to the park we had sunshine and clear skies, which turned to hail, which morphed to snow by the time we set out from the parking lot. As the trip progressed we encountered rain and eventually sunshine. The difference between the start and end of our field trip can be seen in Figure 1.

Other Encounters
Apart from the plant species we observed, we also had some other encounters (Figure 5).
Riparian Vegetation and Topography Survey
Four different transects were measured for the survey. Five different plant communities were apparent among all transects.

Zone 1: This zone extended from the shoreline out into the river approximately 7m and consisted of willow trees, *Salix spp.*

Zone 2: This zone extended from the shoreline up the bank, experiencing a rise between 1.1m and 2.2m. With varying slopes, the linear distance of this zone ranged from 3m to 8m. Species encountered here included willow (*Salix spp.*), Oregon grape (*Mahonia repens*), reed canary grass (*Phalaris arundinacea*), blue-eyed mary (*Collinsia parviflora*), red-osier dogwood (*Cornus sericea*), golden currant (*Ribes aureum*), wood’s rose (*Rosa woodsii*), and ninebark (*Physocarpus capitatus*).

Zone 3: This zone elevation ranged from 1.1m and 2.2m above the shoreline to 2.5 to 5m above the shoreline and ranged between 4m and 8m long. This is the first zone in which we saw Ponderosa pine (*Pinus ponderosa*) in addition to red-osier dogwood (*Cornus sericea*), choke cherry (*Prunus spp.*), kinnikinnik (*Arctostaphylos uva-ursi*), balsam root (*Balsamorhiza sagittata*), Oregon grape (*Mahonia repens*), cinquefoil (*Potentilla spp.*), buckwheat (*Eriogonium spp.*), and yellow bells (*Fritillaria pudica*).

Zone 4: This zone showed the greatest variation, ranging vertically from 2.5m to 11m, extending anywhere from 8m from the shoreline up to 30m. Here we saw Douglas fir (*Pseudotsuga menziessi*), Ponderosa Pine (*Pinus ponderosa*), Widow Grass (*Olsynium douglasii*), desert parsley (*Lomatium triternatum*), balsam root (*Balsamorhiza sagittata*), and Yarrow (*Achillea spp.*).

Zone 5: This was the terminal zone where the ground became flat anywhere from 20m to 30m from the shoreline. Here we encountered *Pinus ponderosa, Pseudotsuga menziessi, Balsamorhiza sagittata, Ranunculus glaberrimus, Fritillaria pudica,* and *Lithophragma parviflora*.

Generally speaking, willows were the only vegetation below the shoreline, likely due to the specie’s ability to anchor itself well and withstand the strong river current. Moving from the shoreline we first encountered herbaceous plants and small shrubs. Further up the bank we saw a higher density of shrubs and sparse trees. Further up the hill we experience more shrubs and Ponderosa Pine, until we emerged out of the river channel and onto the flat where we encountered mostly Ponderosa Pine and Douglas Fir with a variety of small herbaceous and weedy plants inhabiting the forest floor.
### Species Encountered

**Riparian Habitat:**
- Balsam Root: *Balsamorhiza sagittata*
- Blue-eyed Mary: *Collinsia parviflora*
- Buckwheat: *Eriogonum sp.*
- Buttercup: *Ranunculus glaberrimus*
- Choke Cherry: *Prunus sp.*
- Cinquefoil: *Potentilla sp.*
- Douglas Fir: *Pseudotsuga menziesii*
- Ninebark: *Physocarpus capitatus*
- Oregon Grape: *Mahonia repens*
- Ponderosa Pine: *Pinus ponderosa*
- Red-osier Dogwood: *Cornus sericea*
- Reed Canary Grass: *Phalaris arundinacea*
- Widow Grass: *Olsynium douglasii*
- Willow: *Salix sp.*
- Yarrow: *Achillea sp.*
- Yellow Bell: *Fritillaria pudica*

**Flat Lowland Ponderosa Pine Habitat:**
- Douglas Fir: *Pseudotsuga menziesii*
- Ponderosa Pine: *Pinus ponderosa*
- Prairie Star: *Lithophragma parviflorum*
- Service Berry: *Amelanchier alnifolia*

**Cliff Side Habitat:**
- Buttercup: *Ranunculus glaberrimus*
- Cheat Grass: *Bromus tectorum*
- Coralbells: *Heuchera sp.*
- Ferns: *Lithophragma parviflorum*
- Lichens: *Acer saccharinum*
- Moss: *Sedum sp.*

**Upland Ponderosa Pine, Recently Burned:**
- Idaho Fescue: *Festuca idahoensis*
- Phlox: *Phlox sp.*
- Dalmation Toad Flax: *Linaria dalmatica*
- Strawberry: *Fragaria vesca*
- Bull Thistle: *Cirsium vulgare*
- Ponderosa Pine: *Pinus ponderosa*
Liberty Lake
May 9th, 2011
Reported by: Christopher Marsh, Stephen Marsh, and Molly Tiemeyer
Driving Directions from EWU Cheney Campus:
- 904 E towards Spokane
- Merge onto I-90 E towards Idaho
- Take Exit 296 to Liberty Lake
- Turn right onto Liberty Lake Road at the Safeway
- Turn right onto Sprague
- Enter Liberty Lake County Park

Weather Conditions: Sunny, slight wind, lower 70’s at river wetlands, lower 60’s in upper forest.
Time: Departure 1:15 PM, Return 5:45 PM
Report: Instead of having lecture, we all made our way to our vehicles to make the drive out to Liberty Lake. There was relatively little traffic and the weather was great. We arrived at Liberty Lake County Park around 2:00 PM. After parking the cars, Dr. Brown informed us that we would beginning a 4 mile endeavor along a trail that would take us from wetlands to upper coniferous forests. The initial 1/4 mile was along a gravel trail that took us past campsites and picnic areas. This area was mostly dominated by cultivated grass as well as scattered Ponderosa pine, providing decent shade to the relatively groomed understory. We eventually arrived at the beginning of the trail that was blocked by chain. This was when we started to really get a glimpse of the species we would encounter on our hike.

At the trailhead, we followed the wetlands that feed into the larger body of Liberty Lake. One of the prominent species along the water’s edge was skunk cabbage (Lysichiton americanus). The stench was apparent though not overpowering. Reed canary grass (Phalaris arundinacea) was present in strong numbers. There were some Aspens (Populus tremuloides) lining the water’s edge, along with ponderosa pines (Pinus ponderosa) dominating the upper hillside above the trail. There were other plant species just off of the trail that prefer wet soils, including horsetails (Equisetum arvense) as well as cow parsnip (Heracleum maximum). As we walked along the trail, we began to hear the sound of running water off in the distance. A denser overstory of ponderosa pine began to develop, and in this new habitat, we encountered our first defining species that demonstrated this habitat change, a Grand Fir (Abies grandis). The open river edge was soon enclosed by the shade of still large ponderosa pines (Pinus ponderosa), but the grand firs (Abies grandis) began showing up more and more. It was in this habitat that we discovered the source of the running water sound. Starting small and growing larger farther and farther up the trail, we began noticing natural dams built by beavers that were backing up the river flow. At one point along the trail, a relatively large dam had killed at least 50 ponderosa pines (Pinus ponderosa) upstream of the dam. This really emphasized how much of an impact one species can have on a single habitat. In this more dense overstory, we found some flowering species such as wild roses (Rosa nutkana var. hispida) as well as snowberries (Symphoricarpos albus) and glacier lilies (Erythronium grandiflorum). The most memorable part of this habitat was the droves of lady bugs that were mating. There were literally thousands of these small insects huddled together, completely covering the lower portions of the trunks of ponderosa pines (Pinus ponderosa). These lady bugs were present along the entire trail until the
temperature dropped off towards the top of the hike. As we continued to gain elevation, we found ourselves trekking over cones. This hinted to us that we had arrived at the upper coniferous forest. This habitat was dominated by Douglas firs (*Pseudotsuga menziesii*), Western Red cedars (*Thuja plicata*), Grand firs (*Abies grandis*), and Hemlocks (*Tsuga heterophylla*). We even encountered a larch tree (*Larix occidentalis*) that was beginning to re-grow its needles. The temperature began to drop dramatically as the shade of the trees, and the flowing river cooled the air around us. We eventually reached a clearing in the understory and a bench accompanied by a sign that read “Caution: The trail ahead is severely damaged by erosion”. This is the point in our hike where we regrouped and debriefed about what we had encountered on our trip. Another 2 miles up the trial would have revealed a waterfall, however due to time constraints; we were unable to continue further up the trail. In the dense shade of the pine trees, we found various species of fungi growing on some of the dead logs. Some even looked like orange jelly beans.

After taking a break and taking some pictures along the river’s edge, we began our descent back down the trail. On our way back down, we didn’t notice any new plant species, however there were quite a few more *Homo erectus* and *Canine* organisms. People seemed to be getting off work and were enjoying a post-work hike. The weather was really quite perfect for a hike. We arrived back at the cars around 5 PM and it seemed everyone was beat after the 4 mile hike. We all returned back to EWU with bags of plants to key out on the following lab day.

Species List:

**Delta Wetland Habitat**

*Abies grandis* (Grand Fir)
--- Beaver dams have pooled water to the point that it is killing the trees in the area

*Alnus incana* (Alder)

*Crataegus douglasii* (Douglas Hawthorn)

*Cynoglossum officinale* (Houndstongue)
--- big injured garder snake slithering across the trail with a little bit of its intestines hanging out

--- insect balls

*Equisetum arvense* Horsetail

*Heracleum maximum* (Cow Parsnip)

*Phalaris arundinacea* (Reed Canary Grass)

*Populus deltoides* (Cottonwood)

*Populus tremuloides* (Quaking Aspen)

*Pseudotsuga menziesii* (Douglas Fir)

*Rosa nutkana var. hispida* (Wild Roses)

*Typha latifolia* (Cattail)

**Upper Wetland Habitat**

*Abies grandis* (Grand Fir)
--- insect balls

*Betula higra* (Birch)
Rosa nutkana var. hispida (Wild Roses)
Erythronium grandiflorum (Glacier Lilly)
Holodiscus discolor (Ocean Spray)
Larix occidentalis (Tamarack)
Physocarpus opulifolius (Ninebark)
Pinus ponderosa (Ponderosa Pine)
Pteridium aquilinum (Bracken Fern)
Smilacina stellata (Starry False Solomon's Seal)
Symphoricarpos albus (Snowberry)
---huge groups of ladybugs everywhere on vegetation during mating

Upland Forest Riparian Habitat

Abies grandis (Grand Fir)
Anemone piperi (Anemone)
Arnica cordifolia (Arnica)
Goodyera pubescens (Rattlesnake Orchid)
Lysichiton americanus (Skunk Cabbage)
Philadelphus lewisii (Syringa)
Pinus strobes (White Pine)
Physocarpus opulifolius (Ninebark)
Symphoricarpos albus (Snowberry)
Thuja plicata (Red Cedar)
Trillium ovatum (Trillium)
Tsuga heterophylla (Hemlock)
Veratrum viride (False Hellebore)
---Morel Mushroom
1. Dr. Brown explaining the different levels of habitats we will encounter.

2. A small hike to the trail head through a kept up ponderosa pine (Pinus ponderosa) lowlands.

3. The class as we begin on the trail.

4. Ponderosa Pines (Pinus ponderosa) that have been killed off due to the change in the ecosystem due to the beavers.
5. A downed tree due to beavers

6. Nathan hugging a large tree he had found just off the trail to show how big it is.

7. The class at the top of the trail under the cedar grove.

8. A view of the upland riparian habitat stream.

9. Another view of the upland riparian habitat under the cedar grove. As you can see the flow from the stream is quite high this year.
Fossils of Clarkia, ID

Field Botany Class May 20, 2011

Recorders: Aaron Clausen, Chantilly Higbee, Paul Reilly, Michael Vaughan

Directions:

From Cheney, take I-90 east to exit 289, WA-27. Stay on this road until you merge on US-95 south. In Plummer, Idaho, take ID-5 E through St. Maries where you will get on ID-3 S which will take you to Clarkia, Idaho.

Morning Fossil Dig:

On this amazing field trip we explored an ancient lake bed that formed when pillow basalt dammed the St. Maries River about 15 million years ago. An assortment of trees, not seen today in our local ecology, inhabited the former lake and existed in a Mississippian-like climate. The sediment now houses a diverse array of these 14.5-15 million year old plant fossils similar to species seen in parts of northern Florida today. The fossils were found in between layers of clay stone, mud and shale. The surrounding stratigraphy included layers of volcanic ash and evidence of turbulence currents from the ancient lake bed. Every layer of sediment yielded new and exciting evidence of preexisting life. Wonderfully detailed Maple, Chestnut, and Ceridiphyllum crenatum (Katsura Tree) fossils were seen early in our excursion in a demonstration by our guide, Bill Rember on how to find and examine the delicate specimens. In between layers of non oxidized bedding, the physical leaf often remained.

As the morning advanced, everyone in the group was discovering an assortment of species such as Liquidambar pachyphyllum (Sweet Gum), Acer bendirei (Maple), Betula vera (Birch), Pseudofagus idahoensis (False Beech), Persea pseudocarolinesis (Avacado, Sweet Bay), Lithocarpus simulata (Tan Oak), Castanea spokanensis (Chestnut), Halesia/Symplocos (Silver Bell), Metasequoia occidentalis (Dawn Redwood), and Taxodium dubium (Bald Cypress). Dr. Brown found a nice Persea borbonia specimen and someone even discovered an oak acorn from the species Quercus payetensis.
Red fossils found in the second site.

Fossils both found in the initial fossil site

*Acer bendirei* leaf
### Common Name | Species Name
---|---
Bay | *Persea borbonia*
Bald Cypress | *Taxodium dubium*
Birch | *Betula vera*
Chestnut | *Castanea spokanensis*
Dawn Redwood | *Metasequoia occidentalis*
False Beech | *Pseudofagus idahoensis*
Katsura Tree | *Cericidiphyllum crenatum*
Oak | *Quercus payettensis*
Silver Bell | *Halesia/Symplocos*
Sweet Bay | *Persea pseudocarolinesis*
Sweet Gum | *Liquidambar pachyphyllum*
Tan Oak | *Lithocarpus simulata*

Some of the fossils found during our morning dig.

### Afternoon Hike:

After the fossil expedition we went on a tour around Bill Rember's property. The area was absolutely gorgeous. The mountainous area near the fossil site is unique in that it has a relatively high representation of species in the genus *Pinaceae*. These included Engelmann Spruce, White Fir, Grand Fir, Douglas Fir, Alpine Fir, Lodgepole Pine, Western Hemlock, and Larch. The Larch, also known as Tamarack, is unique in that its needles have a rubbery texture and are collected in dense fascicles. Also dominating the canopy in some areas was Western Red Cedar. In some areas there were also *Salix* and *Alnus* species, particularly in disturbed areas next to roads and pathways. The forested areas also had...
populations of herbs and shrubs, including such species as *Trillium petiolatum* and *Anemone piperi*. Also of note in the forests were species of *Rosaceae* and *Lonicera* in areas where the canopy was less dense. Intermixed with the forested regions were herbaceous meadows. There were many different families in this area, including *Rosaceae*, *Liliaceae*, *Portulacaceae*, *Asteraceae*, and *Caryophyllaceae*. There were also some sedges (*Cyperaceae*), rushes (*Juncaceae*) and grasses (*Poaceae*).

Some events during the nature walk stand out more memorably. While walking down the trail we found some interesting footprints. They were too large to be a dog's, plus they had an extra toe. We deduced the footprints must have belonged to a small to medium sized bear. While walking through the trees we also spotted some false morels (*Gyromitra esculenta*), which we did not consume. Another memorable moment was finding a very interesting (and quite useful) tree. The common name of this tree is Pacific Yew or Western Yew, scientifically it is known as *Taxus brevifolia*. What is so special about this tree is that taxol, a drug commonly used in chemotherapy treatments to combat certain cancers, was originally derived from its bark. The drug is now synthesized in labs, and harvesting the trees to obtain it is no longer necessary.
After making it through the woods we were back on the driveway. At this point we started noticing some ferns (Polypodiaceae), and it started raining quite a bit. While walking back we saw some water lilies (Nymphaeaceae) in the ponds near the fossil site. We went down to get a closer look and saw that they weren’t very far off shore. Holly decided that she had to have one so she kicked off her shoes and went for a nice wet walk. She came back with the water lily in hand for everyone to examine. It was surprising how wide the pistil was, it was “as thick as an apple core,” as Dr. Brown described it. In this area notable herbaceous species included Carex scirpoidea, Frageria vesca, and Trifolium repens. Some species of Asteraceae were also present. After the ponds we made our way back to the fossil site, getting eaten alive by mosquitoes the whole way, and had lunch by the vans.

After lunch, Bill took us to a different fossil site too look for “red” fossils. The fossils were red, Bill told us, because of the iron oxide that seeped down into the soil and oxidized the soil. Compared to the first fossil site, more Pinaceae species were found, including Metasequoia. Also at this site the soil was of such a consistency that it could be molded into various shapes and the surface could be hand polished, making ornaments of sorts. Also a couple fossil flowers were found here, and it was thought they resembled those of Polemoniaceae species. Bill also enriched us with a bit of geologic history at this point. He told us that the eruption of Mt. St. Helens left an inch of ash in the stratigraphy, while the historic Mazama eruption (which created Crater Lake) left behind a 4 foot ash layer. He also told us that the Chief Joseph Dyke Swarm was responsible for the creation of the Columbia Plateau.

Examples of “red” fossils on left, and Bill shows us the “red” fossil site on right.
SPECIES LIST – NATURE WALK

Dominant Species (Trees)

*Larix sp.* (Tamarack)
*Picea engelmannii* (Engelmann Spruce)
*Pinus monticola* (White Pine)
*Abies lasiocarpa* (Subalpine Fir)
*Abies grandis* (Grand Fir)
*Tsuga heterophylla* (Western Hemlock)
*Thuja plicata* (Western Red Cedar)
*Pseudotsuga menziesii* (Douglas Fir)
*Acer glabrum* (Maple)
*Taxus brevifolia* (Yew)
*Pinus contorta* (Lodgepole Pine)

Understory Shrubs/Herbs

*Frageria vesca*
*Trillium petiolatum*
*Trillium ovatum*
*Trifolium repens*
*Viola sp.*
*Asteraceae*
*Caryophyllaceae*
*Cyperaceae*
*Luzula sp.*
*Portulacaceae*
*Plantago sp.*
*Achillea millefolia*
*Anemone piperi*
*Lupinus sp.*
*Alnus incana* (Thin-leaf alder)
*Potentilla sp.* (Cinquefoil)
*Lonicera involucrate* (Twinberry)
*Rosa sp.*
*Polypodiaceae*
*Nuphar sp.*
*Salix sp.*
Mary Minerva McCroskey State Park: May 21, 2011, Holly O’Connor
Idaho State Park located in Plummer city, Latah and Benewah counties.

Direction: Head south on US-195, take WA-271 S, Continue onto 1st ST, Turn L onto Steptoe Ave, Right onto WA-27S, Turn onto Farmington, Washington, Turn onto Evergreen Rd, Turn R onto Simmon, Left Pine Creek Rd, Turn left onto Skyline and destination is on the left

At an elevation spanning 3030ft to 4324ft, this 18 mile drive across 5300 acres of ridgeline was dedicated to pioneer women, Mary McCroskey. We drove along the Skyline Ridge that span across the Palouse region covering Cedar grove and Ponderosa pine forest and over looking the Steptoe Butte. Throughout the trek there was evidence of spraying, a fire; probably the Huckberry fire of 1997 and wood collecting.

Upon entering the area our merry vans of field botanist unloaded. There was evidence of spraying and fire wood collecting.

We drove through the Cedar grove area, there were a few Ponderosa pine in the area. Mile 4 we came up on Korth trial and Rich land drive, in this area we saw Larch and pine as the main inhabitances as well as sedges, clematis and climbing night shade. The area showed evidence of clear-cutting which over looked the area below and was perfect for our group picture. Mile 5 to Mile 10 we saw evidence of a fire that happened in 1997, there was a great scenic view of the Palouse and Steptoe Butte in Washington. At mile 12 we drove pass the only restroom we’ve seen for awhile and continued on through King Valley road and headed toward Iron Mt. camp ground where we saw a stand of Douglas fir with Indian paintbrush, and Cherry trees. We took another group picture and peed before descending out of the park.
Species List

Abies grandis
Asarum canadense
Balsamorhiza sagittata
Castilleja sp.
Clematis sp.
Collinsia parviflora
Crataegus douglasii
Festuca idahoensis
Fragaria vesca
Fritillaria affinis
Delphinium nuttalianum
Geum trifolium
Holodiscus discolor
Holodiscus discolor
Larix laricina
Linnaea borealis
Lithophragma parviflora
Mertensia longiflora
Pinus ponderosa
Populus deltoides
Prosartes hookeri
Pseudotsuga menziesii
Ranunculus glaberrimus var. glaberrimus
Rosa nutkana
Symphoricarpos albus
Thuja plicata
Trillium ovatum
Waterlilies (*Nuphar* sp. *Nymphaeaceae*) near Bill Rember’s Place

*Clematis* growing in Mary Minerva McCrosley State Park.
Directions:
Driving directions to Turnbull National Wildlife Refuge
Cheney, WA

1. Head **southwest** on **1st St** toward **F St**

2. Turn left onto **Mound**

3. Continue onto **S Badger Lake Rd/S Cheney Plaza Rd**

Turnbull National Wildlife Refuge
26010 South Smith Road
Cheney, WA 99004

Our final trip of the year was a voluntary one to the Turnbull Wildlife Refuge to see the
difference in vegetation on the mima mounds and learn more about Brandy’s work. A small
group of us attended and the weather was actually sunny. By the end of the field trip many of us
had lost any extra layers that we had. It was interesting to see the different kinds of flowers that
grew on the mounds, full species list and areas visited can be found further on in the report. The
mounds themselves were surrounded by a rock necklace, or surrounded by specific species of
flowers. Some had more invasive grass species then others, the more native flowers there are
tends to prevent that. There were also areas of biotic crust with lichens to prevent invasions.

Among the mima mounds were also areas of wetland, which was really interesting to see
among the grassland type plants. The vegetation of course varied here having larger shrubs and
different angiosperm species. There was also a pond and large section of ponderosa pine forest
on the hike. Those were some of the largest ponderosa pines that I have ever seen. There were of
course more bugs in this forested area then out on the mounds. Dr. Brown had a tick on her foot,
and then found another bug on her foot after we got out of the grove. When I got home, I found
two ticks in my hair. Beyond the trees the environment began to shift to grasslands. Overall it
was beautiful to see all of the yellow and purple flowers around us and we even got to see some
bitter root growing as well. The bitter root was magnificent.

Brandy’s work is interesting, very time consuming. She has 280 plots throughout the
refuge on all on mima mounds. She has one-meter plots where she is conducting her research.
She has treated the mounds to see what can be done to restore the native vegetation and decrease
the invasive grasses. I am not sure how Brandy and Dr. Brown are able to find the 280 mounds
throughout the refuge, let alone where the plots are on the mounds. We had to be careful as we
were walking on the mounds so that we would not disturb the plots, which would provide an
optimal environment for the inavisive grasses.

Just off of the path we saw a rubber boa snake. It was good sized. A few of us were
trying to get pictures of it. I think it was camera shy because as soon as we all got out our
cameras it took off. It came at me, and no one saw this, or maybe they did and didn’t say
anything, but I almost poked my eye out with my pencil. I am not sure how it happened, since I
was wearing sunglasses, but I had a pretty good cut. We also saw a flower that Brandy and Dr.
Brown hadn’t seen before. They thought that it might be a parasitic plant since there were no
leaves, and wasn’t green. There was just one and it was in between rocks, and almost got
stepped on, but the keen of a classmate saved it!

The prairie was beautiful. Flowers were blooming everywhere. The colors were vibrant.
I wish that my back yard looked like that. Those who didn’t join us missed out. I hope that
everyone has a chance to see Turnbull in full bloom. We should be thankful that we have such a
rare jewel so close to home.
Mima Mounds

- Allium geyeri
- Antennaria sp.
- Camassia quamash
- Lewisia rediviva
- Lithophragma parviflora
- Lomatium macrocarpum
- Lomatium triternatum
- Myosotis stricta
- Poa Pratensis
- Sedum leibergii
- Sisymbrium altissimum
- Ventenata dubia

Wetlands
- *Amelanche alnifolia*
- *Antennaria sp.*
- *Arnica cordifolia*
- *Balsomorhiza saggitata*
- *Besseya rubra*
- *Crataegus douglasia*
- *Draba verna*
- *Festuca idahoensis*
- *Heracleum maximum*
- *Hyepricum perforatum*
- *Montia perfoliata*
- *Phalaris arundinacea*
- *Potentilla sp.*
- *Saxifraga integrifolia*
- *Symphoricarpos albus*
- *Urtica dioica*
Pond/Aspen Forest

- *Alopecurus geniculatus*
- *Artemisia rigida*
- *Cirsium arvense*
- *Maianthumum stellata*
- *Osmorhiza* sp.
- *Pinus Ponderosa*
- *Populus tremuloides*
- *Rosa woodsii*