

A Vegetation and Streambank Survey of the Riparian Corridor along Wychus Creek at Rimrock Ranch

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Introduction

A legacy of livestock grazing in the semi arid Western United States has left many of the riparian ecosystems environmentally degraded (Armour 1994). It is this degradation that has lead many ecologically responsible landowners to seek the assistance of a conservation organization in an effort to reverse the environmental damage and prevent future damage to this immensely important part of the western landscape. Waterways and their protected riparian buffers bring water to arid landscapes and by virtue of that water they expand species richness and biodiversity (Dobkin 1998). It is for that reason that this study attempted to catalogue the vegetative species and streambank along the proposed conservation easement on Wychus Creek located at Rimrock Ranch outside of Sisters, Oregon. In order to gather baseline data we surveyed areas of similar vegetation and recorded their relative make up, as well as documented streambank structure, presence of large woody debris, and location of revetments.

Methods

The complete survey was done on June 29, 2006, starting at the southern end (downstream) of the Rimrock Ranch property and ending in the north (upstream). This is important because the numbering of the vegetation polygons and stream reach sections begin and end in a similar south to north numbering pattern.

Vegetation Survey: For the survey of riparian vegetation we walked the left bank of Wychus Creek or along the western side of the left riparian buffer for the length of the Rimrock Ranch property. We designated polygons around similarly comprised vegetation based on visible changes on the ground and natural breaks in the photos. If the aeriels showed a contiguous clump of similarly colored and textured vegetation and visual verification also identified it as containing a distinct set of species compared to neighboring areas, than a polygon was drawn around it on the aerial photo. Not all polygons border the stream, but some part of every polygon falls within the contiguous riparian buffer as identified on the aerial photos. Polygons that were too large or the vegetation was too thick to visually survey the entire area were estimated based on similar color and texture in the aerial photo to what could be seen. Some part of every polygon was visually classified and that data was used to estimate inaccessible areas of the rest of the polygon. Some sections of riparian buffer were not classified into polygons because visual identification of plant species make up was impossible due to flooding, terrain, or thickness of vegetation.

Polygons were broken up into four height classes and dominant species were recorded for each class. Height class one was 1-10 feet, height class two was 11-20 feet, height class three was 21-50 feet, and height class 4 was 50 or more feet. Plant height was estimated by comparing human surveyors for reference. Height class ranges were made wider for taller plants due to the difficulty of estimating distant height accurately.

Only the well represented dominant shrub and tree species were noted in an effort to get a general survey of major vegetation, not a comprehensive list of every species present. Species were recorded with the most dominant listed first then the second dominant, and so on, until all major species were listed within each height class, and was

done for every height class. The basis for dominance was established by visual estimation.

Bank Structure Survey: The left and right bank of Wychus Creek was surveyed by visually noting continuous bank structure types and marking them on the aerial photos. Both right and left banks were given separate section reaches, marked as R or L for right or left. Bank structure types needed to occur over a continuous section of at least 30 feet, measured by pacing or visual estimation, in order to count as a unique section or warrant creating a new section type. Sections were classified as sloped if they had less than a 45 degree angle, near vertical if the bank angle was between 45 and 70 degrees, and vertical if the angle was between 70 and 90 degrees. Angles were estimated visually. Because of the high flow event and flooding on the day of the survey banks that were inundated were marked BNV for bank not visible. In addition to measuring banks angles, banks were classified as vegetated if they had more than 80% vegetative cover on them, or non vegetated if they were less than 30% covered, with in between values labeled. The presence of large woody debris or manmade revetments was noted for each individual section and numbered in a callout on the aerial photo that is associated with descriptive data. Bank reach section length was measured based off the aerial photos.

Results

Vegetation: All of the polygons had some sort of vegetation on them, but vegetative cover diminished with height class (i.e. height class 1 had the most vegetation, and height class 4 had the least (Figure 1)). Vegetation between 0 and 20 feet accounted for 65% of the instances in which a particular height class was present. Height class 1 (Figure 2) had the highest species richness, with 8 species present. Both height class 1 and 2 were dominated by mountain alder (*Alnus incana*) (Figures 2 and 3). Cottonwood

(*Populus trichocarpa*) makes up over 50% of height class 3 (Figure 4), and a healthy percentage of height class 4 (Figure 5), only to be beat out by ponderosa pine (*Pinus ponderosa*) in the tallest class. Overall the four species of *A. incana*, *P. trichocarpa*, *B. glandulosa*, and *P. ponderosa* made up the large majority (80%) of primary dominant species, and as a whole reflect the overall vegetative cover composition (Figure 6). The polygons were mapped and numbered 1 through 40 from south to north.

Bank Structure Survey: We surveyed roughly 10, 520 ft of stream bank, which included both sides of the creek, of which 7,077ft were visible. Vegetation covered 6,070ft of visible bank, making the Rimrock Ranch reach of Wychus creek 85% vegetated. There was a three way split between sloped, vertical and not visible for bank type (Figure 7), with large woody debris being present in 7 of the 36 bank reaches, and man made revetments also being present in 7 of the 36 bank reaches. The various reaches are mapped and numbered, with revetments and large woody debris marked.

Discussion

The purpose of the riparian survey for the Rimrock Ranch reach of Wychus Creek was to give a general indication of vegetation presence and bank structure. Given the time and resource limitations, the vegetation survey was largely successful, and the results have good implications for the riparian community along this reach. We were able to give a broad view of the various successional communities, without losing the including pockets of diversity in the data. Mountain alder and birch may have dominated overall, but individual polygons are still unique, and able to be tracked via the aerial photos. Due to the high floodwater on the day of the survey, the eastern riparian corridor is more poorly catalogued, with either less detailed polygons, or none at all. The same high floodwaters that kept us from crossing the creek also obscured much of the bank

structure, making the bank survey cursory at best. Future surveys might benefit from focusing on either the vegetation or the bank structure, instead of trying to combine both into one package. They might also collect and sort their data in a way to allow for statistical analysis so that the final product could be more applicable and representative to specific areas and easier to manipulate. The data we collected is sortable within given height classes and overall picture, but unsortable by individual species without recollection or at the very least serious reworking. I would also allow for more time and resources for data and map manipulation, in order to do the fieldwork data justice. Ideally the mapping and data collection would have been done in a manner to allow for polygon area to be accurately represented in order to allow for easier calculation of dominant species by total coverage.

Acknowledgements

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References

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- Dobkin, D.S., Pyle, W.H., Rich, A.C. 1998. Habitat and Avifaunal Recovery from Livestock Grazing in a Riparian Meadow System of the Northwestern Great Basin. *Conservation Biology* 12:1 209-221

Appendices

Figure 1. The number of times that plants were present in each height class across all polygons.

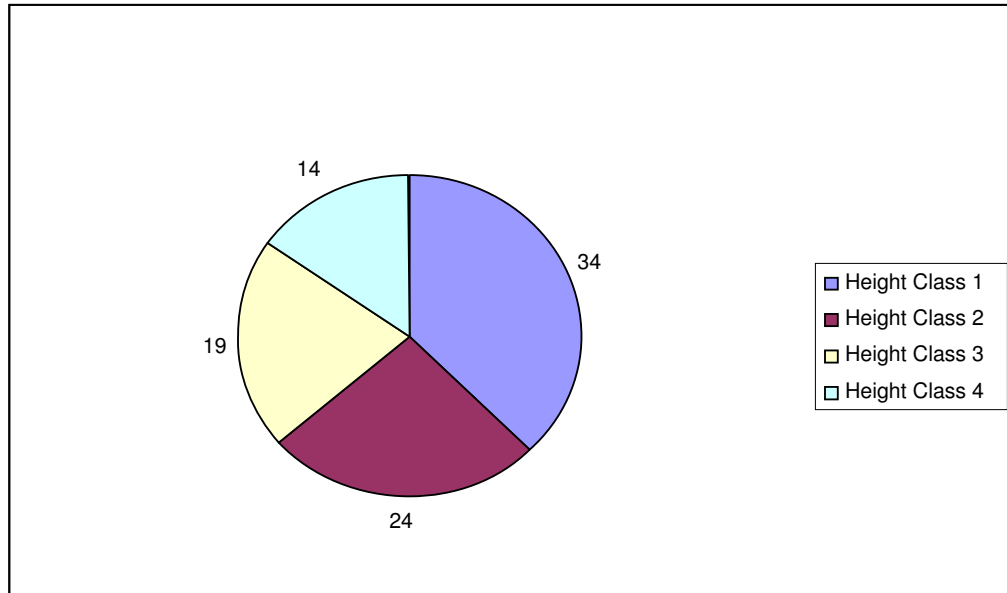


Figure 2. The number of times that each species was the most dominant (abundant) species in Height Class 1.

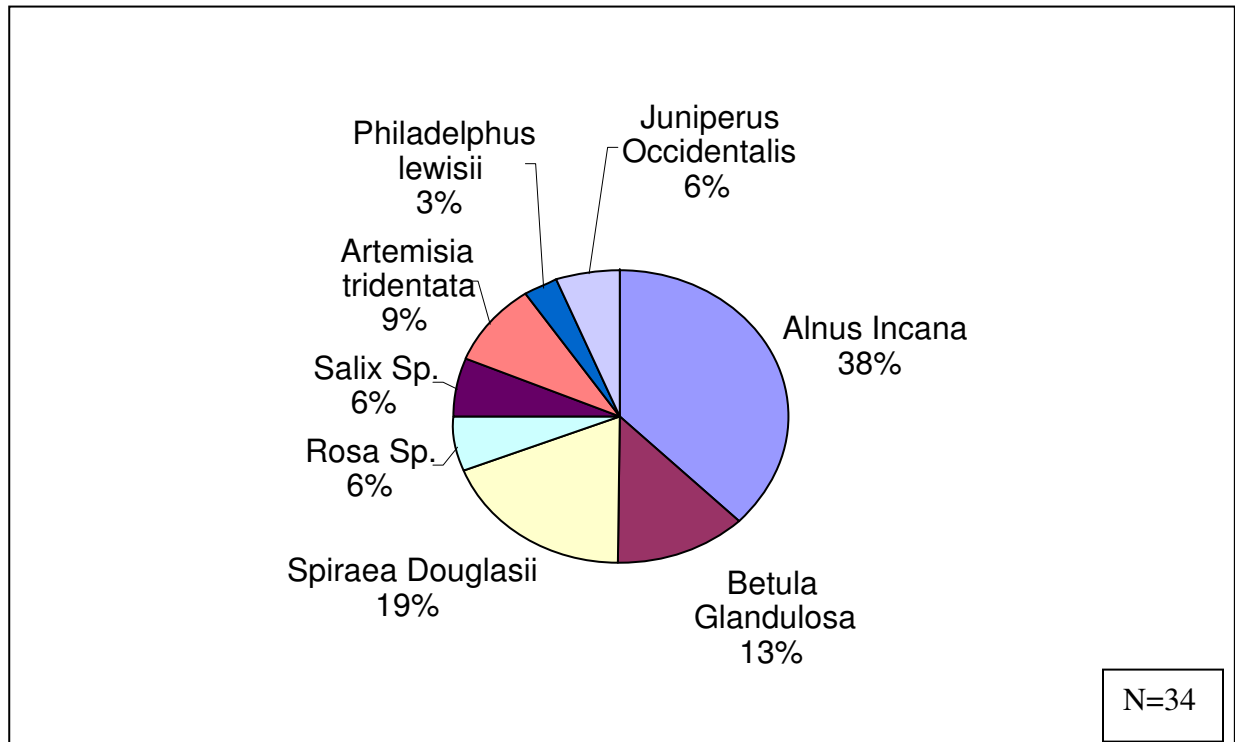


Figure 3. The number of times that each species was the most dominant (abundant) species in Height Class 2.

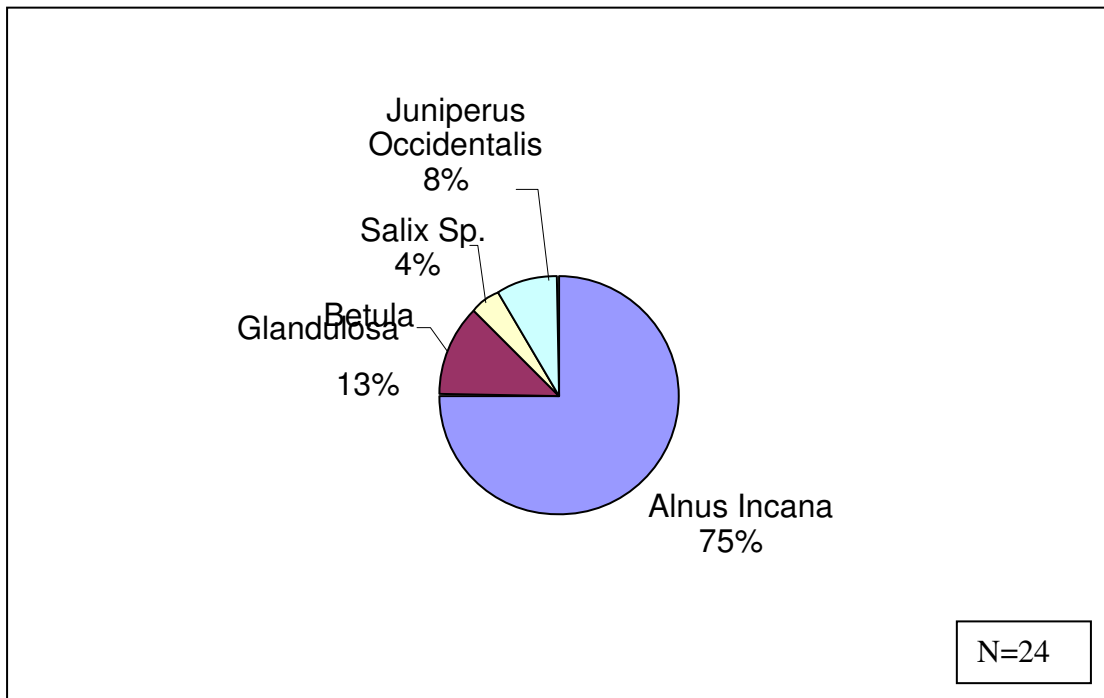


Figure 4. The number of times that each species was the most dominant (abundant) species in Height Class 3.

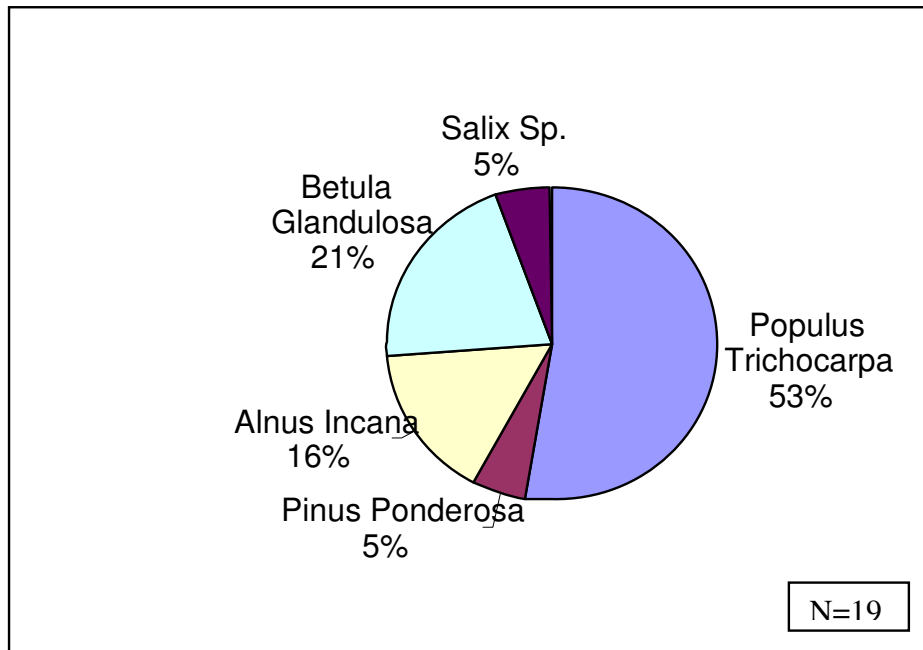


Figure 5. The number of times that each species was the most dominant (abundant) species in Height Class 4.

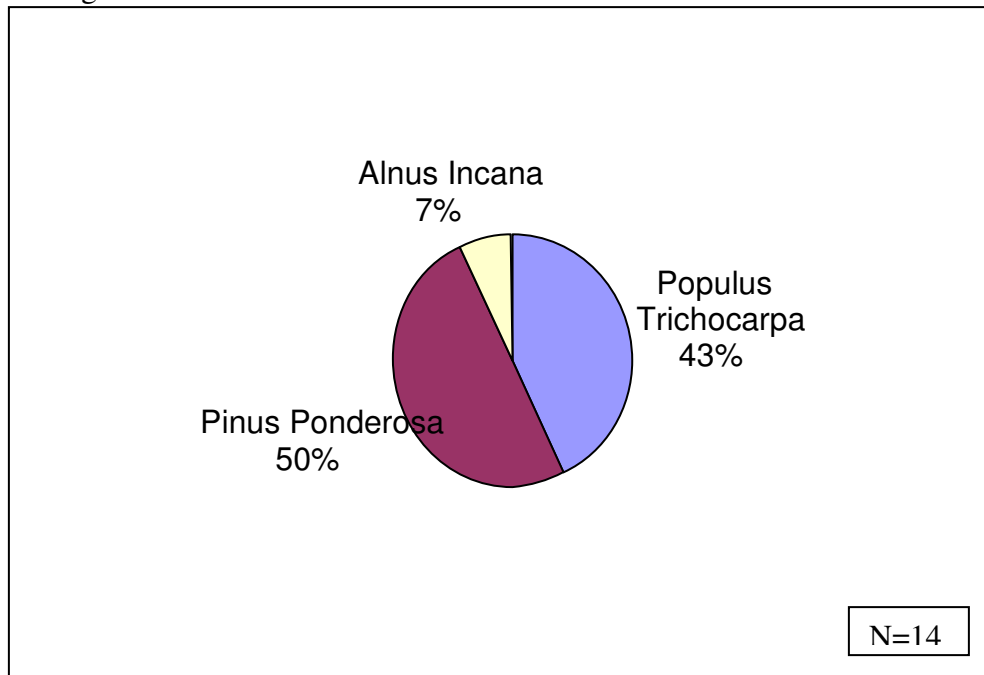


Figure 6. The number of times that each species was the most dominant (abundant) species overall.

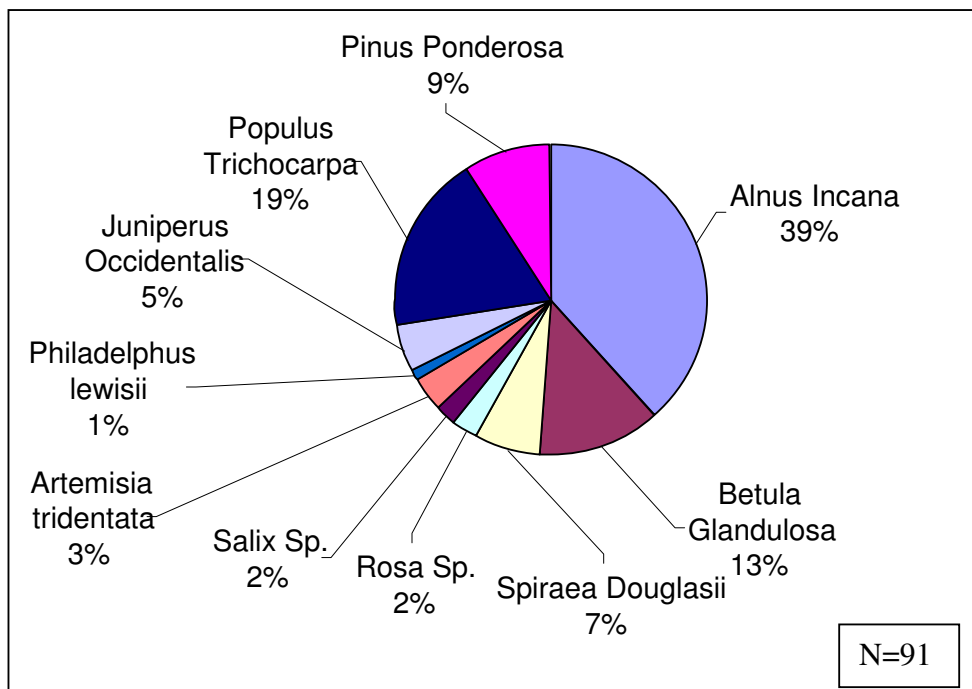


Figure 7. The number of times a particular reach type was found along the entire corridor.

