JANUARY 2003

PLANT MONITORING REPORT
METRO GREENSPACES SITES
PORTLAND, OREGON

Prepared for:

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EXECUTIVE SUMMARY

Adolfson Associates, Inc. (Adolfson) was contracted by Metro Regional Parks and Greenspaces (Metro) to perform botanical monitoring of four Metro greenspaces: Cooper Mountain (190th and Kemmer Rd.), Multnomah Channel (Along Multnomah Channel, HWY 30, just north of Logie Trail Rd.), Coffee Lake Bottoms/Tonquin Geologic Area (Along south edge of Grahams Ferry Rd.), and Banks (Along HWY 6 west of Banks, OR).

At Cooper Mountain, 30 diagnostic species were identified by Metro for monitoring. Five macroplots were selected and marked in the field by Metro, and 80 transects within these macroplots were sampled using the nested frequency approach. Monitoring occurred in 2002 on six days in May and June. Data indicate that burning may increase species diversity.

At Multnomah Channel, 30 diagnostic species were identified by Metro for monitoring and additional species encountered were recorded on data sheets. Metro selected sixteen 50-meter transects within each of three flood zones and marked them in the field. Monitoring occurred on July 25 and August 16, 2002, allowing for water levels to be drawn down in the deeper flooded areas. The point-intercept approach was used to estimate aerial herbaceous cover along the permanent plant transects. Transects were largely dominated by reed canarygrass (*Phalaris arundinacea*). Transects that were flooded later in the growing season had higher species diversity, indicating that flooding may decrease the presence of reed canarygrass and allow other species to establish. More data are needed to establish this or any other trend.

At Coffee Lake Bottoms, 15 diagnostic species were identified by Metro for monitoring and additional species encountered were recorded on data sheets. Metro selected eight 50-meter transects in the Texas Oil macroplot and four 50-meter transects in the Wetland Conservancy macroplot and marked them in the field. Monitoring occurred on July 5, 2002. The point-intercept approach was used to estimate aerial herbaceous cover along the permanent plant transects. The Texas Oil transects at Coffee Lake Bottoms were largely dominated by reed canarygrass. The Wetland Conservancy transects at Coffee Lake Bottoms were largely dominated by meadow foxtail (*Alopecurus pratensis*). Management in these areas should focus on reducing these dominant non-native species to allow others to establish.

A combination of methods was used to sample the vegetation at the Banks site. Point-intercept sampling was conducted along 4 transects within a 20 acre wetland north of Cedar Canyon Rd. (Cedar Canyon transects). These transects all revealed monocultures of reed canarygrass. In addition, two types of vegetative cover sampling focused on targeted native and exotic vegetation occurring within a flooded scrub-shrub wetland, in two 50m x 50m macroplots located along HWY 6. One area was dominated by Geyer willow (*Salix geyeranii*) (Willow Plot), and another area was dominated by reed canarygrass and other emergent vegetation (Herbaceous Plot).

In the Willow Plot, the data did not reveal a specific trend. More data are needed to establish any correlation. The Herbaceous transects (0.7 to 0.8 meters average water depth) were dominated by reed canarygrass.

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PROJECT AUTHORIZATION AND SCOPE OF WORK

Adolfson Associates, Inc. (Adolfson) was contracted by Metro Parks, Trails, and Greenspaces (Metro) to perform botanical monitoring of four Metro greenspaces:

1. Cooper Mountain (190th and Kemmer Rd.);
2. Coffee Lake Bottoms/Tonquin Geologic Area (Along south edge of Grahams Ferry Rd.);
3. Multnomah Channel (Along Multnomah Channel, HWY 30, just north of Logie Trail Rd.); and
4. Banks (Along HWY 6 west of Banks, OR).

The project was conducted in two phases as described below.

Phase I

During Phase I, Adolfson worked collaboratively with Metro to refine sampling protocols (e.g., diagnostic species lists, transect locations, sampling methodology) for the project. Phase I was conducted from March 19, 2002 through April 1, 2002. Deliverables included the following:

1. Diagnostic Species Lists for each site. The Diagnostic Species List contained a list of plant species, typically including both desirable and invasive species, which Metro chose to monitor in order to evaluate the effects of management strategies and other variables on the plant community at each site. At sites with low species diversity, all species encountered were recorded instead of establishing a Diagnostic Species List. The final Diagnostic Species Lists for each site were developed by Metro. Adolfson contributed species recommendations for Multnomah Channel and Cooper Mountain.
2. Metro developed and provided to Adolfson a written plan describing detailed sampling methods (e.g., sampling approach, number of samples/sampling unit, sampling unit dimension (e.g., macroplot size, transect length) to be used at each site/sampling unit (Appendix A: Phase II Scope of Work).
3. Metro developed and provided to Adolfson maps of all sites identifying locations of sampling units.

Phase II

Phase II consisted of implementing the monitoring protocols for each Metro site tabulating the data and writing this report. All details of Phase II are included in Appendix A: Phase II Scope of Work, and are summarized in the methods section below. Phase II began in May 2002. Plant monitoring occurred by September 2002 at all locations except Banks, which was a late addition to the project. Monitoring at Banks finished at the end of October 2002. Report writing continued through December 2002. Deliverables for Phase II include the following:

1. Digital database files linked to GIS shapefiles. Metro agrees to provide the Contractor with either geographic coordinates of the transects or a shapefile containing the transect endpoints.
2. One Draft Plant Monitoring Report describing the fieldwork and the data collected.
3. One Final Plant Monitoring Report

PROJECT DESCRIPTION

The purpose of this monitoring project is to establish baseline data on the vegetation present at the selected sites. As the sites are managed in the future, Metro can collect additional data to compare to the baseline data. Comparisons between years will allow Metro to assess the effects of the management techniques that were employed.

In most cases, the data presented in this report provide baseline information that can be compared with subsequent years of sampling. In addition to the species diversity and percent cover analyses presented in this report, comparisons between the relative cover of native versus invasive species may further assist Metro's planning.

Cooper Mountain

Portions of the Cooper Mountain site have been burned to manage plant communities. One area was burned in 1997 and a different, but overlapping area was burned in 2001 (Figure 1). Metro has specified monitoring vegetation within prairie habitats that had the following burn histories: 1) burned in 1997; 2) burned in 2001; 3) burned in both 1997 and 2001; and 4) areas that had not been burned in recent history. This plant monitoring will establish baseline data within the areas with different burn histories. These data can be compared to future monitoring data to evaluate the effects of past and future burning on prairie plant communities at the Cooper Mountain site.

Multnomah Channel

Metro is managing seasonal water levels within specific areas of the Multnomah Channel site (Figure 2). Baseline vegetation monitoring data are needed and can be compared to future monitoring data to evaluate the effects of different draw down timing on wetland plant communities.

Coffee Lake Bottoms

Baseline vegetation monitoring data are needed within wetland areas at Coffee Lake Bottoms (Figure 3). These data can be compared to future monitoring data to assess the effectiveness of future strategies for invasive species management.

Banks

Metro requested baseline vegetation monitoring data within two palustrine emergent plant communities and one Geyer willow (*Salix geyeranii*) dominated scrub-shrub wetland plant community (Figure 4). Future management strategies and the effects of variation in the depth and duration of flooding at the Banks site may be evaluated when the baseline data is compared to future monitoring data. In addition, unidentified stresses appear to be affecting the health and survival of Geyer willows at the site. Baseline data can be compared to future monitoring data to evaluate changes in the health and survival of Geyer willows. Baseline water depth information can be compared to future data to determine the effects of varying water levels on Geyer willow growth.

METHODS

Sampling began in May 2002. Plant monitoring continued through October 2002. The following outlines the sampling approaches used at each site.

Cooper Mountain

Thirty diagnostic species were selected by Metro for monitoring this site (Appendix B). Eight macroplots were identified and permanently marked in the field by Metro for plant monitoring. These plots have different burn histories (Table 1, Figure 1). Monitoring occurred on May 14, 23, 24, 27, 30, 31 and June 6, 2002. Adolfson staff visited the Cooper Mountain transects on these dates in order to coincide with the period when pale larkspur (*Delphinium leucophaeum*) is most visible.

Ten 25-meter transects were randomly located and permanently marked by Metro in each of 8 macroplots, totaling 80 transects. Adolfson collected nested-frequency data using a 1-meter nested frequency frame provided by Metro. The nested frequency frame consisted of three square plots measuring $0.01m^2$, $0.1m^2$, and $1.0m^2$ (Figure 5). If a species was present in the smallest square it was scored as 1, the middle square was scored as 2, and if a species was only in the largest square it was scored as 3 (Figure 5). Data were recorded for the thirty diagnostic species as well as microhabitat categories (e.g., dry prairie, wet prairie, shallow soil/rocky substrate) for each frame (Appendix C).

Adolfson collected data for five nested frequency frames along each transect. A transect tape was stretched between the permanent markers, and the frames were sampled in a random/ systematic fashion. Random numbers were selected using an online random number generator (Haahr, 1999). After randomly selecting a starting position between 0 and 4, frames were placed in a systematic fashion every 5 meters. Thus, if 1 was randomly selected for transect #1, the first frame was placed at position 1 followed by 4 more frames along the same transect at positions 6, 11, 16, and 21.

In the Upper Prairie macroplot, transects were sampled from west to east. In all other macroplots, transects were sampled from the end nearest to Larkspur Lane toward the outer edge of the macroplot (i.e., macroplots on the east side of Larkspur Lane were sampled from east to west, and macroplots on the west side of Larkspur Lane were sampled from west to east). For all

transects, the nested frequency square was placed to the right of the transect tape, with the nested corner at the sampling position (e.g., if the starting position was at 3 meters, the nested corner of the square was placed at 3 meters, adjacent to the right edge of the tape) (Figure 5).

One of the five positions along each transect was randomly selected for future photo monitoring and two corners were marked with pin flags.

Many of the permanent markers used to locate the transects were not obviously marked with the correct transect number and were often difficult to locate in the dense vegetation. This lack of markings led to an error in sampling the 2001 macroplot. Transects 1, 2, 7, 8, 9, and 10 were sampled using the correct methods. Transects 3, 4, 5, and 6 were slightly skewed. These four transects were included in the data analysis for this report, but should be excluded when these data are compared to future monitoring results unless this transect layout is duplicated.

For each macroplot, Adolfson calculated frequency estimates of each target species as they occurred within each of the three nested plot sizes. The size of the plot influences the frequencies of target species detected. The larger the plot, the greater the probability that a target species will occur within the plot. If the frequency value for a given frame size is large, there is limited sensitivity to track increases in species frequency over time. If the frequency value for a given frame size is small, there is limited sensitivity to track decreases in species frequency over time. Nested frequency counts provide the flexibility of selecting the plot size that is most useful in analyzing changes over time. The way frequencies change between sampling periods may determine the appropriate frame size to analyze. If a species experiences a substantial decline, a large plot size with an initially high frequency estimate may be the appropriate one to analyze. Characteristics of a target species, such as size, also influence selection of a particular plot size for analysis. A plot size that is appropriate for one species may not be appropriate for another. The frequency estimate for each plot size is equal to the percentage of plots sampled in which the target species occurred (number of occurrences divided by number of plots sampled, multiplied by 100).

Adolfson also summarized the data for each transect by averaging the three frequency estimates corresponding to the three plot sizes. The summarized data were used in calculations of species diversity rather than choosing one plot size to represent all of the target species. The Shannon Index (H) of species diversity was calculated for all transects at Cooper Mountain (Rosenzweig, 1995). The frequency estimates for each plot size and the average frequency estimates are linked to the GIS database and presented in Appendix C.

Multnomah Channel

At this site, 30 diagnostic species were selected during Phase I for monitoring and additional species encountered were recorded on data sheets (Appendix B). Metro located sixteen 50-meter transects and marked them in the field (Figure 2). There were 6 transects in Flood Zone I (shallow flooding – areas of the floodplain between 10 and 12 ft AMSL), 6 transects in Flood Zone II (deep flooding – areas of the floodplain between 8 and 10 ft AMSL) and four transects within Flood Zones III (deepest flooding – areas of the floodplain below 8 ft AMSL). The flood zones are distinguished by the depth of flooding and the length of time standing water remains.

Monitoring occurred on July 25, 2002 in Flood Zones I and II and August 16, 2002 in Flood Zone III. The time between site visits allowed for water levels to naturally draw down in Flood Zone III, which was flooded until early August. The point-intercept approach was used to estimate aerial herbaceous cover along the permanent transects.

A starting point was randomly-determined between 0 and 4 meters for each transect as requested by Metro. Twenty regularly spaced point-intercept samples (1 sample every 2 meters) were recorded from each transect. The point-intercept sampling apparatus was provided by Metro and was a pole that approximately 2 meters long and 1.5 centimeters in diameter, with a surface area of 0.094 square meters. It was placed directly to the right of the transect tape. The apparatus was held perpendicular to the ground and any plant touching the device's tip as it was slowly dropped to the ground surface was recorded on data sheets (Appendix C).

Coffee Lake Bottoms

At this site, 15 diagnostic species were selected during Phase I for monitoring (Appendix B). Metro marked the location of twelve 50-meter transects in the field (Figure 3). There were 8 transects established within two flood zones in the Texas Oil macroplot. Transects 1 - 4 were established in lower portions of the floodplain below 140 ft AMSL. Transects 5 – 8 were established in portions of the floodplain between 140 and 142 ft AMSL. Four transects were also established and monitored in the Wetland Conservancy macroplot. Monitoring occurred on July 5, 2002. The point-intercept approach was used to estimate aerial herbaceous cover along the permanent plant transects.

A starting point was randomly-determined between 0 and 4 meters for each transect. Twenty regularly spaced point-intercept samples (1 sample every 2 meters) were recorded from each transect. The point-intercept sampling apparatus provided by Metro was used and was placed directly to the right of the transect tape as described under Multnomah Channel above. (Data sheets are located in Appendix C).

Banks

A combination of methods was used to sample the vegetation at the Banks site. Point-intercept sampling was conducted along 4 transects within a 20 acre wetland north of Cedar Canyon Rd. (Figure 4). Within a flooded willow wetland, two types of vegetative cover sampling focused on targeted native and exotic vegetation. Sampling was confined to two 50-meter by 50-meter macroplots located within areas dominated by Geyer willow (Figure 4) and reed canarygrass (*Phalaris arundinacea*) and other emergent vegetation (Figure 4) along HWY 6.

Cedar Canyon Transects

The Cedar Canyon transects were surveyed on August 20, 2002 using point-intercept sampling along 50-meter transects. No diagnostic species were selected for monitoring. Instead, all species encountered were recorded on data sheets (Appendix C). Metro marked four 50-meter transects in the field.

Point-intercept sampling methods follow those described above for Multnomah Channel. Data sheets are located in Appendix C.

Willow Plot

The Willow Plot was sampled on October 22 and 23, 2002, using the line-intercept approach. Because of the difficulty of moving through this plot, sampling was limited to four 50-meter transects. The transects began along the south boundary of the plot and ran north. The first transect, was located by randomly selecting a number between 1 and 20 (2) and starting the transect that many meters east of the SW corner post (2 meters). The other 3 transects were located 15, 30, and 45 meters east of the 1st transect.

At Metro's request, the transects were sampled in 10-meter segments, and PVC posts were installed every 10-meters as sampling proceeded, using tape measure and compass to lay the line.

All live vegetation visible above the water surface was measured along the transects (i.e., submerged aquatic vegetation was not sampled). A pole, or pole and optical device, was used to accurately determine the extent of canopy intercept along the transects. Intercept information was collected for shrubs and herbaceous vegetation that intercepted the line for more than five contiguous centimeters. Water depth was measured along the transect every 2 meters, beginning at 0 meters.

Herbaceous Plot

The Herbaceous Plot was sampled on October 24, 2002, using the point-intercept approach. Samples were collected along four 50-meter transects. The transects began along the south boundary of the plot and ran north. The first transect was located by randomly selecting a number between 1 and 10 (6) and starting the transect that many meters east of the SW plot post (6 meters). The other 3 transects were located 10, 20, and 30 meters east of the 1st transect.

Because of the difficulty moving through the plot, transects were sampled in two 20-meter sections followed by one 10-meter section. PVC posts were installed every 20 meters as sampling proceeded, and one was installed at the end of the transect.

All live vegetation visible above the water surface was measured along the four transects (i.e., submerged aquatic vegetation was not sampled). Intercept information was collected for all vegetation. Samples began along each transect with a random start within the first 3m of the beginning of the transect (e.g., 0m, 1m, 2m, or 3m from segment posts) and then every 2 meters after until 20 samples were collected from that transect. This yielded a total of 20 samples per 50-meter transect. Water depth was measured along the transects at the point-intercept sample locations.

RESULTS

The following reports the results of data analysis for all sites. Species diversity (H) was calculated for Cooper Mountain and Multnomah Channel transects. Species diversity was not calculated for other transects due to the low number of species present (often less than five).

Cooper Mountain

The average species diversity (H) of macroplots at Cooper Mountain was calculated (Table 2, Figure 6). Average H of the 1997/01-I macroplot was significantly greater ($p<0.001$) than the averages of all other macroplots (ANOVA; Minitab Release 13.32). Average H of the 1997/01-II macroplot was significantly lower than the averages of all other macroplots (ANOVA; Minitab Release 13.32). An analysis of variance for all plots against each other is shown in Table 3.

California oatgrass (*Danthonia californica*) was included on the diagnostic species list. Hitchcock and Chase (1971) describe the species as having glabrous leaf sheaths. However, Hickman (1993) identifies two varieties of California oatgrass, one of which (*Danthonia californica var. americana*) has densely hairy leaf sheaths. Adolfson followed the convention established by Hitchcock and Chase (1971) for identification of the species and thus did not record the presence of California oatgrass within the Cooper Mountian nested frequency counts. It was later discovered that *Danthonia californica var. americana* as described by Hickman (1993) was present within the Cooper Mountain macroplots. If *Danthonia californica var. americana* is included on future diagnostic species lists, it should be considered to have been omitted from the 2002 list.

Multnomah Channel

The Multnomah Channel transects were largely dominated by reed canarygrass (Table 4). Other common species included common spikerush (*Eleocharis palustris*) and Columbia sedge (*Carex aperta*). Transects 1, 14, and 16 had the highest species diversity (H) (Table 4, Figure 7). Transects 9 and 12 had species diversities less than 0.2. Transects 2 and 7 had species diversities of 0; these two transects were monocultures of reed canarygrass.

Coffee Lake Bottoms

Seven of the 15 diagnostic species were found while sampling the Texas Oil transects at Coffee Lake Bottoms. The Texas Oil transects were largely dominated by reed canarygrass (Table 5). Other common species from the diagnostic species list included meadow foxtail and sedges (*Carex spp.*). Transects 1, 2, 4, and 5 were monocultures of reed canarygrass.

Four of the 15 diagnostic species were found on the Wetland Conservancy transects at Coffee Lake Bottoms. The transects were largely dominated by meadow foxtail (Table 6). Other common species included reed canarygrass, soft rush (*Juncus effusus*), and sedges.

Banks

All four Cedar Canyon transects contained 100 percent reed canarygrass (Appendix C). The Willow transects were characterized by Geyer willow, reed canarygrass, Douglas spiraea (*Spiraea dougalsii*), simple stem bur-reed (*Sparganium emersum*), nodding beggar ticks (*Bidens cernua*), and swamp smartweed (*Polygonum hydropiperoidies*). In the Willow macroplot, transect W2 had the highest species diversity, and transect W4 had the lowest (Table 7). Average water depth ranged from 0.5 meters to 0.7 meters (Table 7).

The herbaceous transects were characterized by reed canarygrass, Douglas spiraea, simple stem bur-reed, nodding beggar ticks, swamp smartweed, and slough sedge (*Carex obnupta*), with some mature Geyer willow (taller than 1 meter). Average water depth ranged from 0.7 meters to 0.8 meters (Table 8).

CONCLUSIONS

Cooper Mountain

The preliminary baseline data do not suggest that burning increases species diversity (Table 2). Additional data are needed to illustrate a correlation if present. Additional analysis of native versus non-native species may provide further information over time related to the success of burning as a management practice for this site. It should be noted that the benefits of burning can be equivocal since fire actually favors certain invasive plant species (Fuchs, 2001). It is recommended that future monitoring at Cooper Mountain analyze trends in native versus non-native species cover in relation to burning frequency over time.

Multnomah Channel

Reed canarygrass dominates many of the Multnomah Channel transects. However, species diversity was higher for the transects that remain flooded longer into the growing season (Transects 13, 14, 15, and 16) (Table 4). Flooding may reduce the occurrence of reed canarygrass and allow other species to establish.

Coffee Lake Bottoms

The Texas Oil transects at Coffee Lake Bottoms were largely dominated by reed canarygrass, except for Transect 8 which was dominated by meadow foxtail. The Wetland Conservancy transects at Coffee Lake Bottoms were largely dominated by meadow foxtail. Management in these areas should focus on reducing these dominant non-native species to allow native species to establish.

Banks

There does not appear to be a relationship between water depth and species diversity (Figure 8) or water depth and willow percent cover (Figure 9). More data are needed to detect a correlation between water depth and species diversity at the Banks site. It is unknown whether the absence of herbaceous species, such as reed canarygrass, will change the coverage of Geyer willow in the Willow Plot.

The Herbaceous transects were dominated by reed canarygrass and were deep (0.7 to 0.8 meters average water depth).

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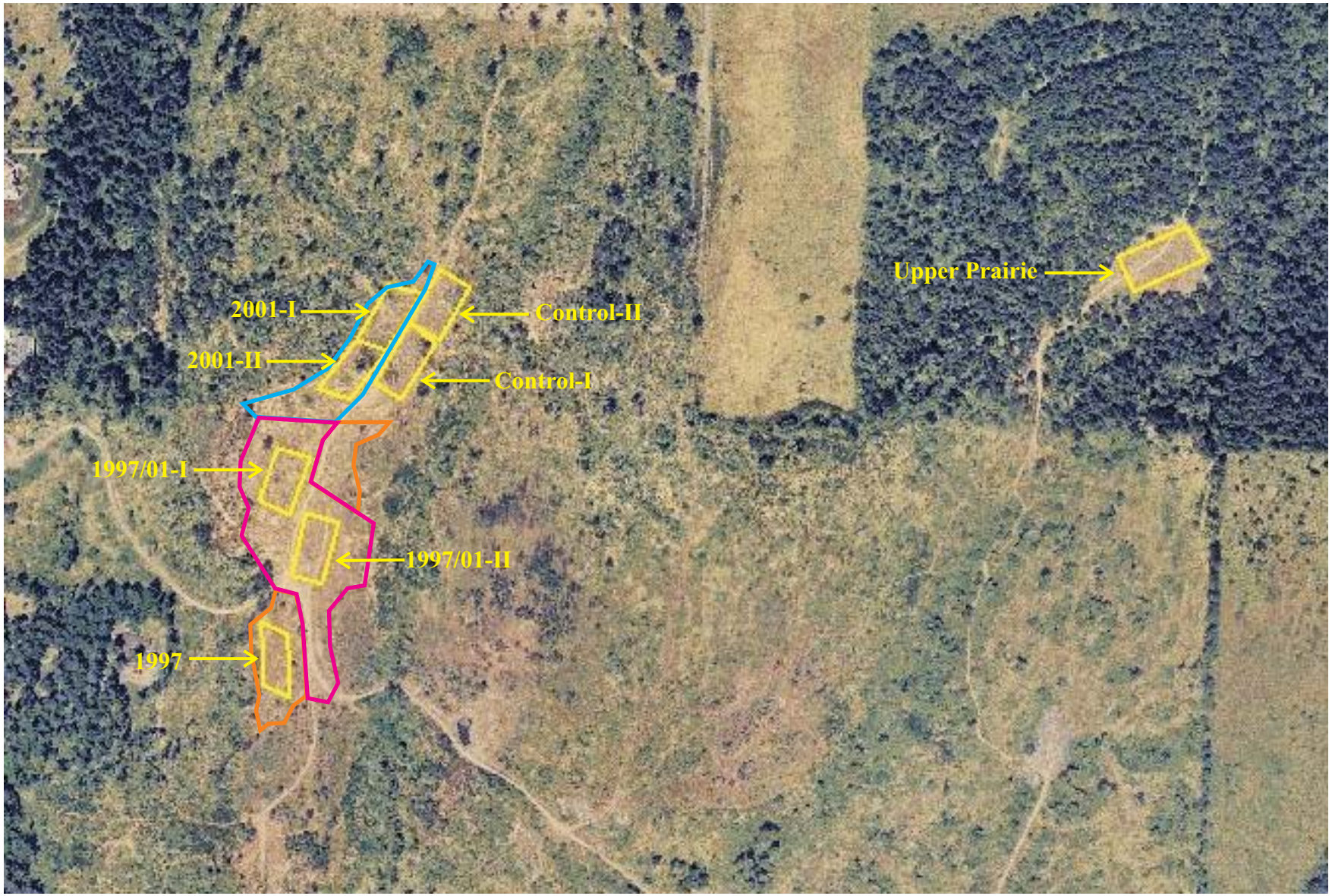
FIGURES AND TABLES



ADOLFSON

NORTH
No Scale

Original graphic by: Metro Regional Parks and Greenspaces

- Macroplot
- Burned 1997 only (approximate)
- Burned 2001 only (approximate)
- Burned both 1997 and 2001 (approximate)

FIGURE 1.
Cooper Mountain Macroplots
METRO PLANT MONITORING
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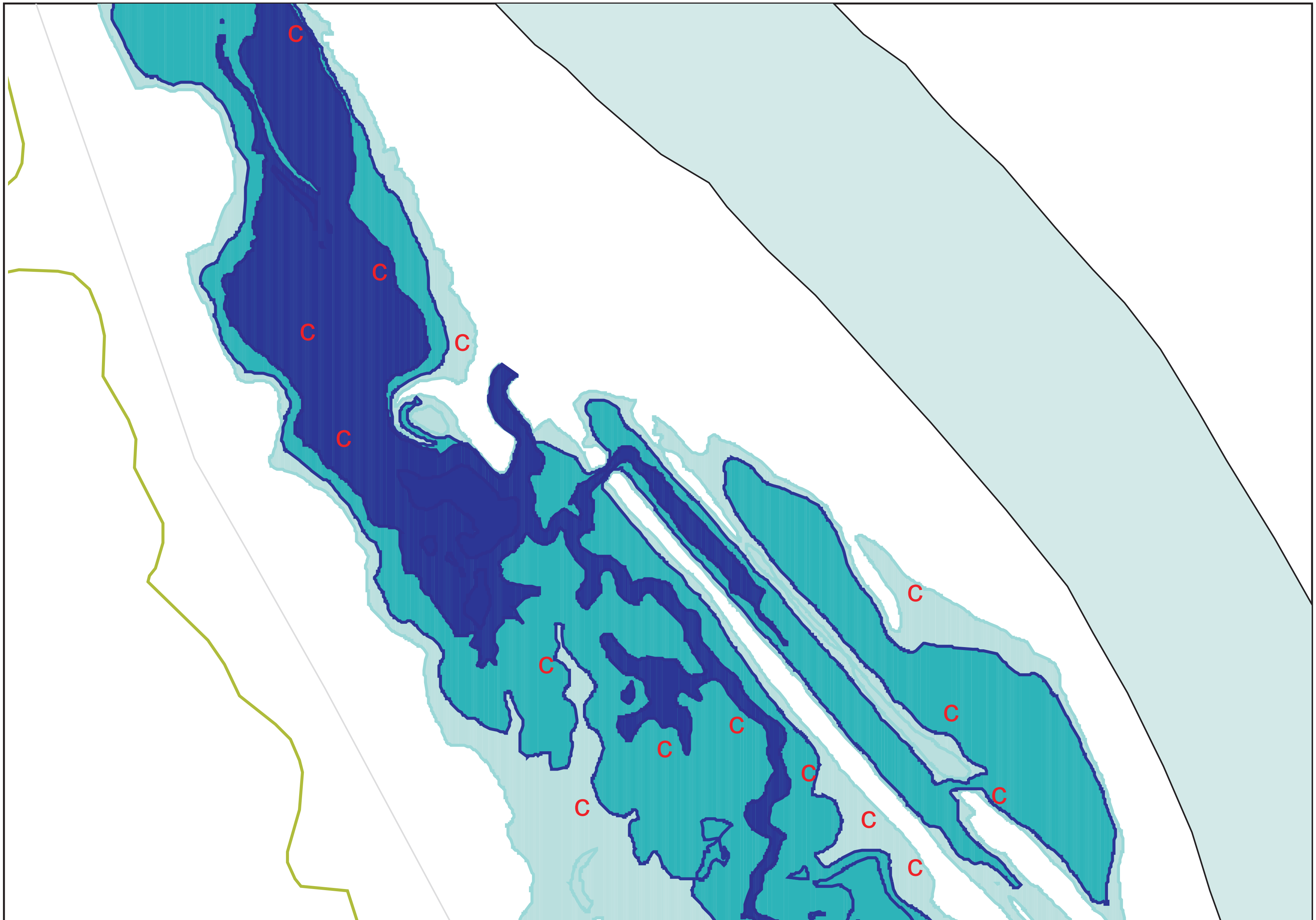

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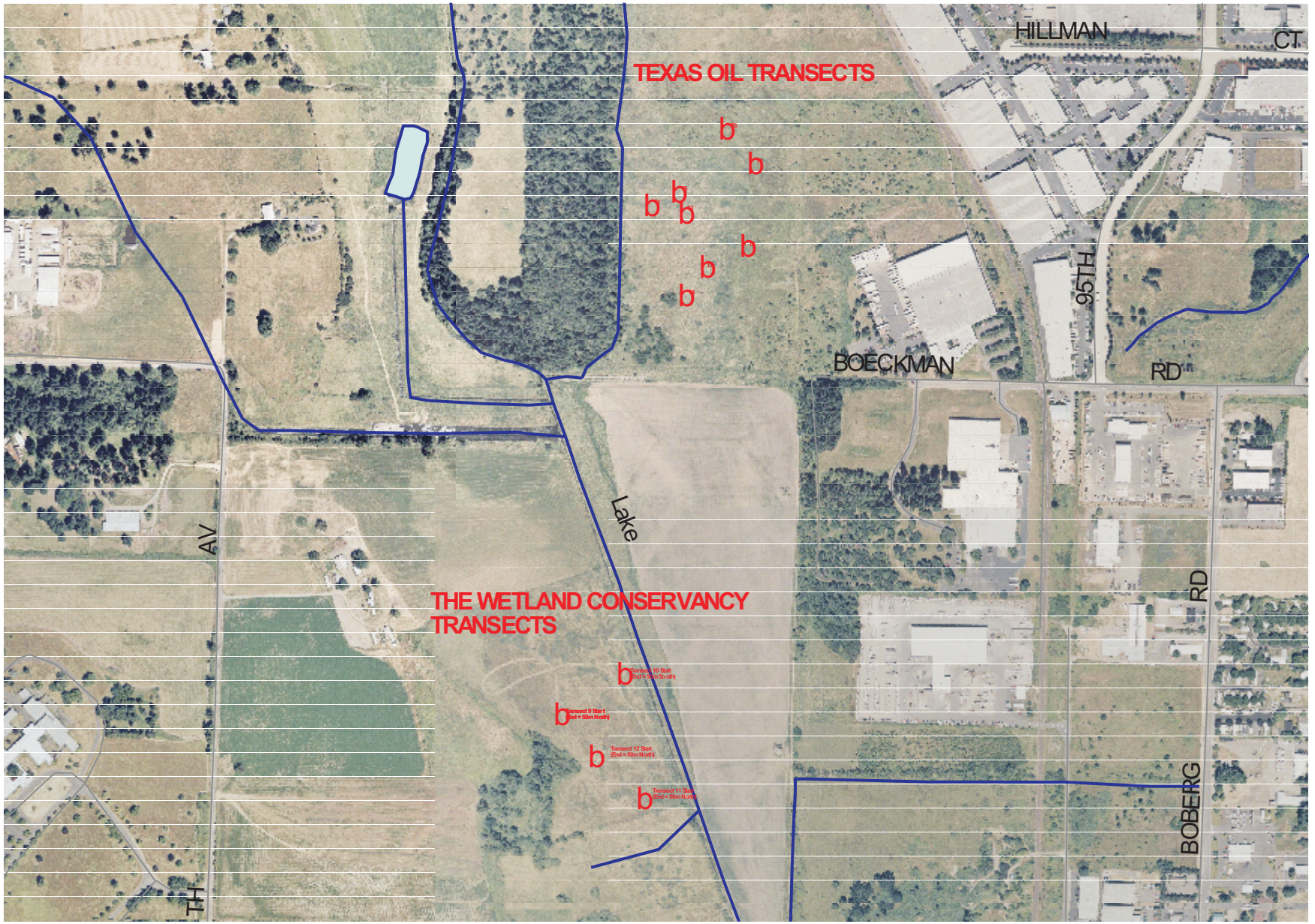
C Transect starting point
Flood Zone I (shallow)
Flood Zone II (deep)
Flood Zone III (deepest)

FIGURE 2.

Multnomah Channel Flood Zones and Transects

METRO PLANT MONITORING

PORTLAND, OR AND VICINITY



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b Transect starting point

FIGURE 3.
Coffee Lake Transects
METRO PLANT MONITORING
PORTLAND, OR AND VICINITY

ADOLFSON

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FIGURE 4.
Banks Study Areas
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Figure 5. Nested Frequency Square Diagram

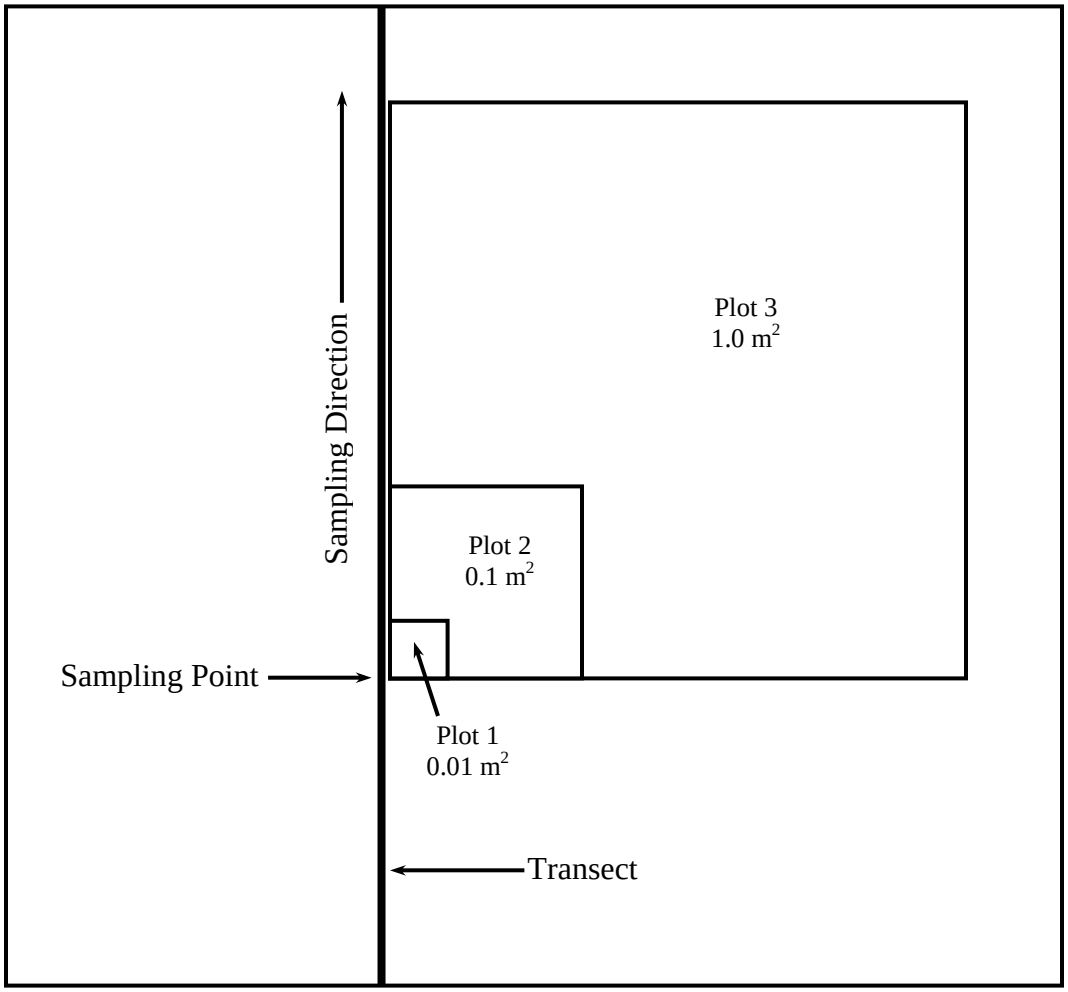
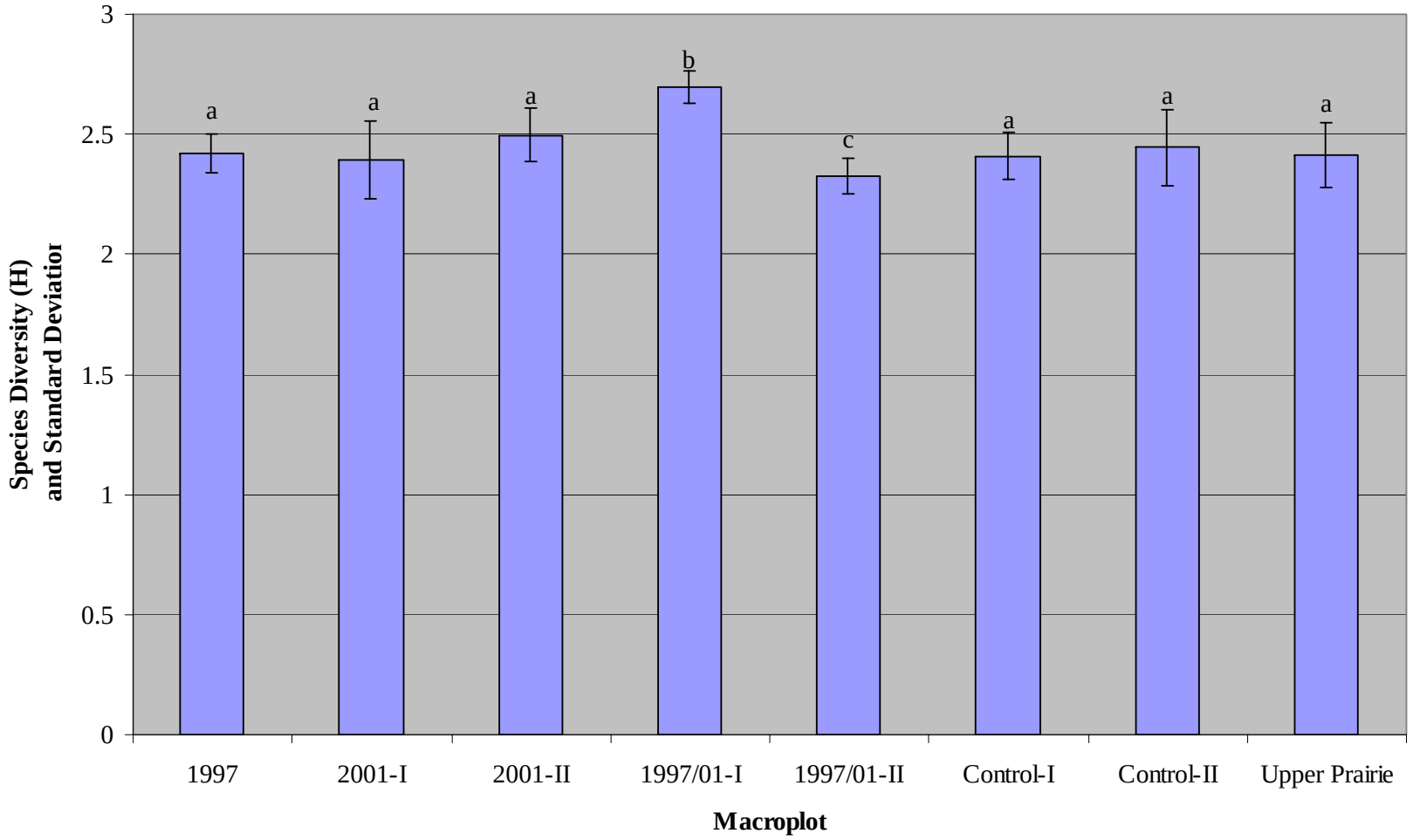


Figure 6. Cooper Mountain Species Diversity



a, b, and c designate significantly different ($p<0.001$) means (Table 3)

Figure 7. Multnomah Channel Species Diversity

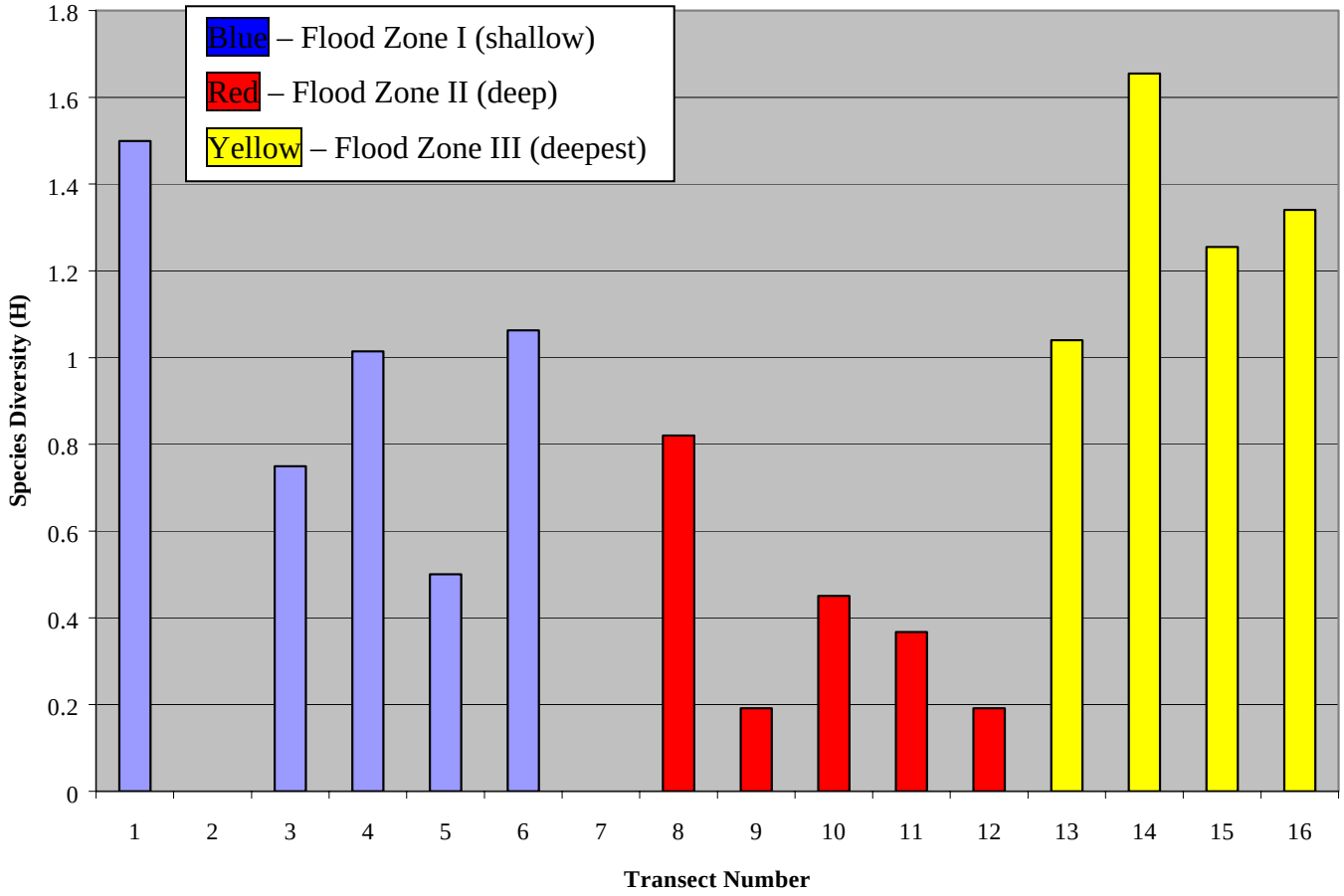


Figure 8. Average Water Depth vs. Species Diversity

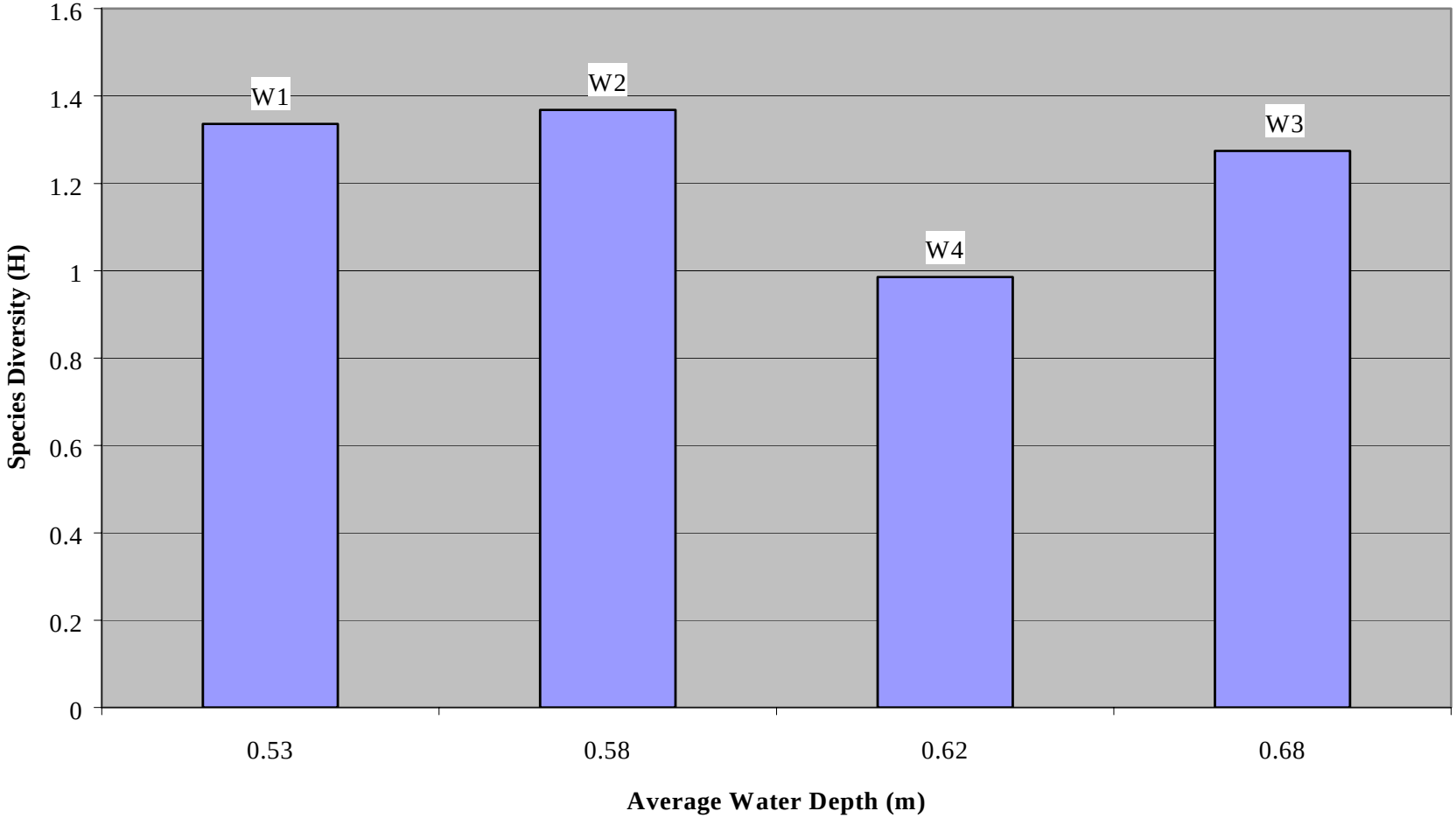


Figure 9. Willow Cover vs. Average Water Depth

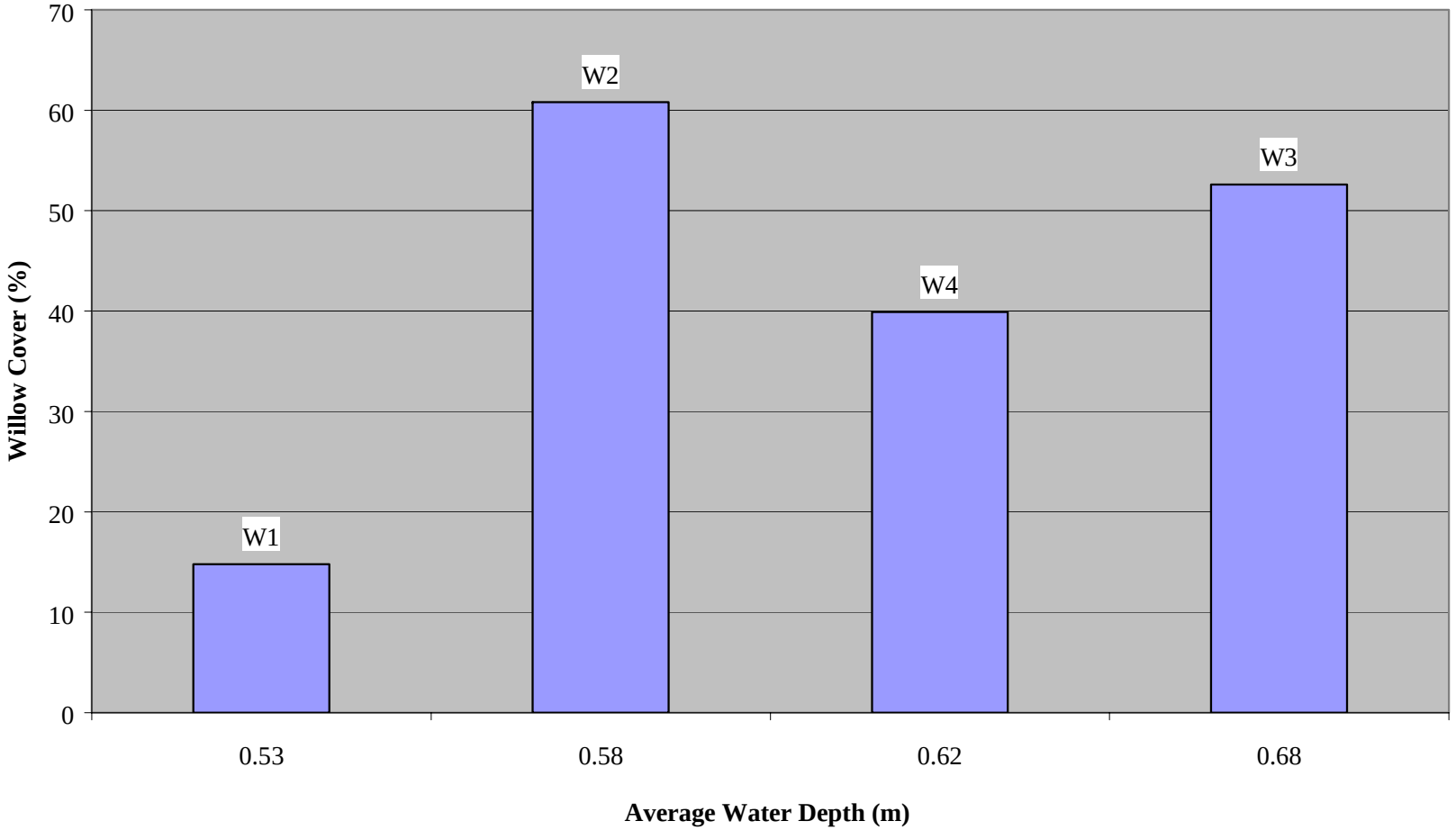


Table 1. Cooper Mountain Macroplots

Habitat Type	Number of Macroplots	Macroplot Names	Burn History
Upper Prairie	1	Upper Prairie	Not burned
Control	2	Control-I, Control-II	Not burned
1997 Burn	1	1997	Burned in 1997
1997/2001 Burns	2	1997/01-I, 1997/01-II	Burned in 1997 and 2001
2001 Burn	2	2001-I, 2001-II	Burned in 2001

Table 2. Cooper Mountain Average Species Diversity (H)

Burn History	Burned Once			Burned Twice		Not Burned		
Macroplot	1997 (a)	2001-I (a)	2001-II (a)	1997/01-I (b)	1997/01-II (c)	Control-I (a)	Control-II (a)	Upper Prairie (a)
Average H	2.417	2.396	2.497	2.695	2.327	2.409	2.444	2.413
Standard Deviation	0.081	0.162	0.111	0.068	0.076	0.097	0.157	0.138

a, b, and c designate significantly different ($p<0.001$) means (Table 3).

Table 3. One-way Analysis of Variance (Minitab Release 13.32)

Source	Degrees of freedom	Sum of squares	Mean squares	F-statistic	P-value
Factor	7	0.8445	0.1206	8.90	0.000
Error	72	0.9759	0.0136		
Total	79	1.8204			

ANOVA for all plots against each other, resulting in only one P-value.

Table 4. Percent Cover and Species Diversity for Multnomah Channel Transects

	Flood Zone I (shallow)						Flood Zone II (deep)						Flood Zone III (deepest)			
Species*	**Transect 1**	**Transect 2**	**Transect 3**	**Transect 4**	**Transect 5**	**Transect 6**	**Transect 7**	**Transect 8**	**Transect 9**	**Transect 10**	**Transect 11**	**Transect 12**	**Transect 13**	**Transect 14**	**Transect 15**	**Transect 16**
PHAR	95	100	100	100	100	100	100	100	100	100	100	100	40	55	55	35
AGGI	15	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0
ELPA	5	0	15	0	0	20	0	20	0	0	5	0	5	20	30	15
HOJU	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASP	15	0	0	10	0	5	0	0	0	0	5	5	0	0	0	0
BRSP	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOMU	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOCO	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAAP	0	0	20	0	25	25	0	0	5	20	0	0	0	0	0	0
CIAR	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0
RUDI	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0
POHY	0	0	0	0	0	0	0	5	0	0	0	0	0	5	0	5
SASP	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0
JUEF	0	0	0	0	0	0	0	0	0	0	0	0	20	5	0	0
SALA	0	0	0	0	0	0	0	0	0	0	0	0	90	15	90	75
SCSP	0	0	0	0	0	0	0	0	0	0	0	0	0	15	10	35
LUPA	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0
EQSP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
H	1.499	0	0.749	1.014	0.500	1.063	0	0.820	0.191	0.451	0.368	0.191	1.040	1.655	1.255	1.340

* PHAR *Phalaris arundinacea*
CASP *Carex sp.*
CAAP *Carex aperta*
POHY *Polyganum hydropiperoidies*
LUPA *Ludwigia palustris*
AGGI *Agrostis gigantea*
BRSP *Bromus sp.*
CIAR *Cirsium arvense*
JUEF *Juncus effusus*
EQSP *Equisetum sp.*
ELPA *Eleocharis palustris*
LOMU *Lolium multiflorum*
RUDI *Rubus discolor*
SALA *Sagittaria latifolia*
HOJU *Hordeum jubatum*
LOCO *Lotus corniculatus*
SASP *Salix sp.*
SCSP *Scirpus sp.*

Table 5. Percent Cover of Diagnostic Species on Texas Oil Transects, Coffee Lake Bottoms

Transect Number	1	2	3	4	5	6	7	8
Phalaris arundinacea	100	100	100	100	100	50	85	
Spiraea douglasii			10					
Rubus spp.						15		
Rosa spp.						45		
Alopecurus pratensis						15	25	100
Carex spp.							30	30
Typha latifolia							10	

Table 6. Percent Cover of Diagnostic Species on Wetland Conservancy Transects, Coffee Lake Bottoms

Transect Number	9	10	11	12
Phalaris arundinacea	50	30	50	
Alopecurus pratensis	60	90	80	100
Juncus effusus	5		5	
Carex spp.			15	5

Table 7. Percent Cover, Species Diversity, and Water Depth of Willow Transects, Banks

Species	W1	W2	W3	W4
Spiraea dougalsii	21.2	11.7	12.4	6.2
Phalaris arundinacea	51.8	39.1	74.9	86.2
Polygonum hydropiperoidies	2	0.8	2.3	0.3
Salix geyeriana	14.8	60.8	52.6	39.9
Sparganium emersum	7.7	10.5	7.8	0.1
Bidens cernua	3.2	11.2	7.4	8.7
Species Diversity (H)	1.336	1.368	1.274	0.986
Average water depth (m)	0.5	0.6	0.7	0.6
Water depth standard deviation	0.0897	0.1818	0.1377	0.2327

Table 8. Percent Cover, Species Diversity, and Average Water Depth of Herbaceous Transects, Banks

Species	H1	H2	H3	H4
Phalaris arundinacea	70	35	80	65
Carex obnupta	5			
Bidens cernua	5	10	5	10
Polygonum hydropiperoidies	10	25	10	5
Spiraea dougalsii	20	10	5	5
Sparganium emersum		25		10
Salix geyeriana			15	10
Average water depth (m)	0.8	0.8	0.7	0.7
Water depth standard deviation	0.1387	0.1838	0.2441	0.2954

APPENDIX A: SCOPE OF WORK

APPENDIX B: DIAGNOSTIC SPECIES LISTS

Adolfson's Recommendations for Cooper Mountain and Multnomah Channel Diagnostic Species Lists

Table 1. Plant Species Recommended for Monitoring at Cooper Mountain

Scientific Name	Common Name	Comment
Achillea millefolium	Yarrow	Increases with fire
*Bromus vulgaris**	Columbia brome	Decreases with burning, native species
Cirsium arvense	Canada thistle	Fire-adapted invasive species
*Cynosurus echinatus**	Hedgehog dogtail	Common grass species at the site
Cytisus scoparius	Scot's broom	Common invasive species at the site
Delphinium leucophaeum	Pale larkspur	Rare species
*Deschampsia elongata**	Slender hairgrass	Responds to fire, but occurs mostly in wet areas
Erodium cicutarium	Filaree	Increases with file, non-native species
Plantago lanceolata	English plantain	Common, non-native species at the site

*Since many grass species respond to fire, other native or non-native grasses that commonly occur in burn units would be interesting to monitor. We did not have sufficient data to recommend additional grass species.

Table 2. Plant Species Recommended for Monitoring at Multnomah Channel

Scientific Name	Common Name	Comment
Bidens cernua	Nodding beggars-tick	FACW+, native, shallow inundated areas
Bidens frondosa	Devil's beggars-tick	FACW+, native, shallow inundated
Carex obnupta	Slough sedge	OBL, native
Carex vesocara var. major	Inflated sedge	OBL, native, margins of inundated areas
Festuca arundinacea	Tall fescue	FAC-, invasive, flooding may control
Iris pseudocorus	Yellow iris	OBL, invasive
Juncus articulatis	Jointed rush	OBL, native
Juncus effusus	Soft rush	FACW, native
Lythrum salicaria	Purple loosestrife	FACW+, invasive
Phalaris arundinacea	Reed canary grass	FACW, invasive, common
Sagitaria latifolia	Wapato	OBL, native
Scirpus microcarpus	Small-fruit bullrush	OBL, native
Sparganium emersum	Narrow-leaf burreed	OBL, native

Cooper Mountain Diagnostic Species List

Common Name	Botanical Name
1. Scot's broom	*Cytisus scoparius*
2. Rose	*Rosa eglanteria*
3. Farewell-to-spring	*Clarkia amoena*
4. Wooly sunflower	*Eriophyllum lanatum*
5. Prairie star flower	*Lithophragma parviflora*
6. Oregon saxifrage	*Saxifragia integrifolia*
7. English plantain	*Plantago lanceolata*
8. Subclover	*Trifolium subterraneum*
9. Native Clovers	(*Trifolium bifidum, T. microcephalum, T. microdon, T. oliganthum, T. tridentatum,and T. variegatum)*
10. Vetch	*Vicia spp.*
11. Exotic thistles	*Cirsium arvense and C. vulgare*
12. Common cryptantha	*Cryptantha intermedia*
13. Lilies	*Family Liliaceae*
14. Bachelor button	*Centaurea cyanus*
15. Yarrow	*Achillea millefolium*
16. Pale larkspur	*Delphinium leucophaeum*
17. Silver hairgrass	*Aira caryophyllea*
18. Alaska brome	*Bromus sitchensis*
19. Cheat grass	*Bromus tectorum*
20. Soft brome	*Bromus mollis*
21. Barren brome	*Bromus sterilis*
22. Hedgehog dogtail	*Cynocurus echinatus*
23. California oatgrass	*Danthonia californica*
24. Arrhenatherum oatgrass	*Arrhenatherum elatius*
25. Blue wild rye	*Elymus glaucus*
26. Barren fescue	*Festuca bromoides*
27. Koeler's grass	*Koeleria cristata*
28. Velvetgrass	*Holcus lanatus*
29. Kentucky bluegrass	*Poa pratensis*
30. Rushes	Juncus spp.

Multnomah Channel Diagnostic Species List

Common Name	Botanical Name
1. Reed canarygrass	*Phalaris arundinacea*
2. Tufted hairgrass	*Deschampsia cespitosa*
3. Perennial rye	*Lolium perenne*
4. Common velvetgrass	*Holcus lanatus*
5. Redtop	*Agrostis gigantea*
6. Inflated sedge	*Carex vesicara*
7. Stalk-grain sedge	*Carex stipata*
8. Slough sedge	*Carex obnupta*
9. Columbia sedge	*Carex aperta*
10. Tule	*Scirpus* spp.
11. Cattail	*Typha latifolia*
12. Common rush	*Juncus effusus*
13. Creeping spikerush	*Eleocharis palustris*
14. Creeping buttercup	*Ranunculus repens*
15. Pennyroyal	*Mentha pulegium*
16. Beggar-ticks	*Bidens spp.*
17. Canada thistle	*Cirsium arvense*
18. Bull thistle	*Cirsium vulgare*
19. Purple loosestrife	*Lythrum salicaria*
20. Wapato	*Sagittaria latifolia*
21. Swamp smartweed	*Polygonum hydropiperoides*
22. Smartweed	*Potamogeton natans*
23. Himalayan blackberry	*Rubus discolor*
24. Douglas spiraea	*Spiraea douglasii*
25. Rose	*Rosa spp.*
26. Willow	*Salix* spp.
27. Open	
28. Open	
29. Open	
30. Open	

Coffee Lake Bottoms Diagnostic Species List

Common Name	Botanical Name
1. Douglas spiraea	*Spiraea douglasii*
2. Blackberry	*Rubus spp.*
3. Willow	*Salix spp.*
4. Rose	*Rosa spp.*
5. Reed canarygrass	*Phalaris arundinacea*
6. Meadow foxtail	*Alopecurus pratensis*
7. Common rush	*Juncus effusus*
8. Spikerush	*Eleocharis spp.*
9. Sedge	*Carex spp.*
10. Thistle	*Cirsium spp.*
11. Purple loosestrife	*Lythrum salicaria*
12. Cattail	*Typha latifolia*
13. Swamp smartweed	*Polygonum hydropiperoides*
14. Bird's-foot trefoil	*Lotus corniculatus*
15. Water pennywort	*Hydrocotyle ranunculoides*

APPENDIX C: DATA SHEETS

Banks - Cedar Canyon

Date: 20-Aug-02

Macroplot: Cedar Canyon

Field Personnel: EQ, PH

Transect #: 1

Starting point (m): 5

	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover		
1	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100		
2																								
3																								
4																								
5																								

Banks - Cedar Canyon

Date: 20-Aug-02

Macroplot: Cedar Canyon

Field Personnel: EQ, PH

Transect #: 2

Starting point (m): 3

	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover		
1	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100		
2																								
3																								
4																								
5																								

Banks - Cedar Canyon

Date: 20-Aug-02

Macroplot: Cedar Canyon

Field Personnel: EQ, PH

Transect #: 3

Starting point (m): 0

	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover		
1	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100		
2																								
3																								
4																								
5																								

Banks - Cedar Canyon

Date: 20-Aug-02

Macroplot: Cedar Canyon

Field Personnel: EQ, PH

Transect #: 4

Starting point (m): 1

	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover		
1	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100		
2																								
3																								
4																								
5																								

Banks - Point Intercept (Herbaceous) Data from Geyer Willow Site Date: 24-Oct-02

Transect #: BH1 Starting point (m): 0

Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Percent cover
Phalaris arundinacea	1	1			1	1	1	1	1	1		1	1	1	1		1	1			70
Deschampsia cespitosa																					0
Lolium perenne																					0
Holcus lanatus																					0
Agrostis gigantea																					0
Carex vesicara																					0
Carex stipata																					0
Carex obnupta																				1	5
Carex aperta																					0
Scirpus spp.																					0
Typha latifolia																					0
Juncus effusus																					0
Eleocharis palustris																					0
Ranunculus repens																					0
Mentha pulegium																					0
Bidens spp. (cernua)																1					5
Cirsium arvense																					0
Cirsium vulgare																					0
Lythrum salicaria																					0
Sagittaria latifolia																					0
Polygonum hydropiperoides				1	1																10
Potamogeton natans																					0
Rubus discolor																					0
Spiraea douglasii					1				1			1	1								20
Rosa spp.																					0
Salix spp.																					0
Hordeum jubatum																					0
Carex sp.																					0
Bromus sp.																					0
Lolium multiflorum																					0
Lotus corniculatus																					0
Sparganium emersum																					0

Water Depth (meters)	0.8	0.7	0.9	0.7	0.4	0.7	0.6	0.8	0.8	0.9	0.8	0.5	0.9	0.7	0.8	0.9	0.8	0.8	0.9	0.9
Average Depth	0.8																			
Standard Deviation	0.1387																			

Banks - Point Intercept (Herbaceous) Data from Geyer Willow Site Date: 24-Oct-02

Transect #: BH2 Starting point (m): 3

Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Percent cover
Phalaris arundinacea												1	1	1	1	1	1		1		35
Deschampsia cespitosa																					0
Lolium perenne																					0
Holcus lanatus																					0
Agrostis gigantea																					0
Carex vesicara																					0
Carex stipata																					0
Carex obnupta																					0
Carex aperta																					0
Scirpus spp.																					0
Typha latifolia																					0
Juncus effusus																					0
Eleocharis palustris																					0
Ranunculus repens																					0
Mentha pulegium																					0
Bidens spp. (cernua)				1										1							10
Cirsium arvense																					0
Cirsium vulgare																					0
Lythrum salicaria																					0
Sagittaria latifolia																					0
Polygonum hydropiperoides		1				1	1		1		1										25
Potamogeton natans																					0
Rubus discolor																					0
Spiraea douglasii											1	1									10
Rosa spp.																					0
Salix spp.																					0
Hordeum jubatum																					0
Carex sp.																					0
Bromus sp.																					0
Lolium multiflorum																					0
Lotus corniculatus																					0
Sparganium emersum	1		1	1	1			1													25

Water Depth (meters)	0.9	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.8	0.9	0.9	0.5	0.8	0.2	0.9	0.6	0.5	0.8	0.9	0.9
Average Depth	0.8																			
Standard Deviation	0.1838																			

Banks - Point Intercept (Herbaceous) Data from Geyer Willow Site Date: 24-Oct-02

Transect #: BH3 Starting point (m): 1

Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Percent cover
Phalaris arundinacea	1		1	1			1	1	1		1	1	1	1	1	1	1	1	1	1	80
Deschampsia cespitosa																					0
Lolium perenne																					0
Holcus lanatus																					0
Agrostis gigantea																					0
Carex vesicara																					0
Carex stipata																					0
Carex obnupta																					0
Carex aperta																					0
Scirpus spp.																					0
Typha latifolia																					0
Juncus effusus																					0
Eleocharis palustris																					0
Ranunculus repens																					0
Mentha pulegium																					0
Bidens spp. (cernua)														1							5
Cirsium arvense																					0
Cirsium vulgare																					0
Lythrum salicaria																					0
Sagittaria latifolia																					0
Polygonum hydropiperoides					1	1															10
Potamogeton natans																					0
Rubus discolor																					0
Spiraea douglasii																1					5
Rosa spp.																					0
Salix spp. (geyeriana)						1	1	1													15
Hordeum jubatum																					0
Carex sp.																					0
Bromus sp.																					0
Lolium multiflorum																					0
Lotus corniculatus																					0
Sparganium emersum																					0

Water Depth (meters)	0.1	0.9	0.8	0.9	0.9	0.8	0.8	0.8	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.8	0.7
Average Depth	0.7																			
Standard Deviation	0.2441																			

Banks - Point Intercept (Herbaceous) Data from Geyer Willow Site Date: 24-Oct-02

Transect #: BH4 Starting point (m): 2

Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Percent cover
Phalaris arundinacea	1			1			1	1	1			1		1	1	1	1	1	1	1	65
Deschampsia cespitosa																					0
Lolium perenne																					0
Holcus lanatus																					0
Agrostis gigantea																					0
Carex vesicara																					0
Carex stipata																					0
Carex obnupta																					0
Carex aperta																					0
Scirpus spp.																					0
Typha latifolia																					0
Juncus effusus																					0
Eleocharis palustris																					0
Ranunculus repens																					0
Mentha pulegium																					0
Bidens spp. (cernua)	1																		1		10
Cirsium arvense																					0
Cirsium vulgare																					0
Lythrum salicaria																					0
Sagittaria latifolia																					0
Polygonum hydropiperoides			1																		5
Potamogeton natans																					0
Rubus discolor																					0
Spiraea douglasii									1												5
Rosa spp.																					0
Salix spp. (geyeriana)														1		1					10
Hordeum jubatum																					0
Carex sp.																					0
Bromus sp.																					0
Lolium multiflorum																					0
Lotus corniculatus																					0
Sparganium emersum			1	1																	10

Water Depth (meters)	0.9	0.9	0.9	0.8	1.0	0.9	0.8	0.9	0.1	0.9	0.9	0.2	0.8	0.1	0.8	0.8	0.7	0.8	0.8	0.2
Average Depth	0.7																			
Standard Deviation	0.2954																			

Banks - Line Intercept (Willow) Data from Geyer Willow Site

Date: 22-Oct-02

Field Personnel: Erin Questad, Patrick Hendrix

Transect #: W 1

			W1-1			W1-2			W1-3			W1-4			W1-5			Total Dist.	% Cover
1	*Spirea*	Start	0	90	720							495			0	850			
	douglasii	Stop	50	240	800							530			595	1000			
	SPDO	Distance	50	150	80							35			595	150		1060	21.2
2	*Phalaris*	Start	0	240		240	725		110	370		0	330	915	0	475	805		
	arundinacea	Stop	50	500		390	920		285	1000		205	765	1000	115	570	1000		
	PHAR	Distance	50	260		150	195		175	630		205	435	85	115	95	195	2590	51.8
3	*Polyganum*	Start	100	540															
	hydropiperoides	Stop	130	610															
	POHY	Distance	30	70														100	2
4	*Salix*	Start	240	830		0	475					605							
	geyeranii	Stop	450	1000		190	495					755							
	SAGE	Distance	210	170		190	20					150						740	14.8
5	*Sparganium*	Start				900			0			530			150				
	emersum	Stop				1000			110			585			270				
	SPEM	Distance				100			110			55			120			385	7.7
6	*Bidens*	Start							255			310			780	830			
	cernua	Stop							310			380			795	850			
	BICE	Distance							55			70			15	20		160	3.2

Banks - Line Intercept (Willow) Data from Geyer Willow Site

Date: 22-Oct-02

Field Personnel: Erin Questad, Patrick Hendrix

Transect #: W2

			W2-1				W2-2		W2-3				W2-4		W2-5			Total Dist.	% Cover
1	*Spirea*	Start	285	825			230								310				
	douglasii	Stop	600	945			325								365				
	SPDO	Distance	315	120			95								55			585	11.7
2	*Phalaris*	Start	35	270	500	970	0		320	375	545				250	510			
	arundinacea	Stop	200	360	870	1000	625		330	505	640				435	765			
	PHAR	Distance	165	90	370	30	625		10	130	95				185	255		1955	39.1
3	*Polyganum*	Start							325										
	hydropiperoides	Stop							365										
	POHY	Distance							40									40	0.8
4	*Salix*	Start	655	955			0		0				250		0	580			
	geyeranii	Stop	790	1000			1000		630				1000		60	1000			
	SAGE	Distance	135	45			1000		630				750		60	420		3040	60.8
5	*Sparganium*	Start					910		0	370	535	810							
	emersum	Stop					1000		65	450	675	960							
	SPEM?	Distance					90		65	80	140	150						525	10.5
6	*Bidens*	Start	60	300	535		490												
	cernua	Stop	220	340	840		545												
	BICE	Distance	160	40	305		55											560	11.2

Banks - Line Intercept (Willow) Data from Geyer Willow Site

Date: 23-Oct-02

Field Personnel: Erin Questad, Sarah Hartung

Transect #: W3

			W3-1			W3-2			W3-3			W3-4			W3-5			Total Dist.	% Cover
1	*Spirea*	Start	910						780			185	625	850	10				
	douglasii	Stop	980						1000			240	675	1000	85				
	SPDO	Distance	70						220			55	50	150	75			620	12.4
2	*Phalaris*	Start	20	390	865	190	790		0	350		0	710		0				
	arundinacea	Stop	230	785	915	230	1000		300	1000		600	1000		1000				
	PHAR	Distance	210	395	50	40	210		300	650		600	290		1000			3745	74.9
3	*Polyganum*	Start	360			100													
	hydropiperoides	Stop	455			120													
	POHY	Distance	95			20												115	2.3
4	*Salix*	Start	660			0	290	785	0			275			330	920			
	geyeranii	Stop	1000			225	595	1000	690			595			785	1000			
	SAGE	Distance	340			225	305	215	690			320			455	80		2630	52.6
5	*Sparganium*	Start	265	820								520			960				
	emersum	Stop	500	945								530			980				
	SPEM?	Distance	235	125								10			20			390	7.8
6	*Bidens*	Start	30	175	430				210			140	245	945	470				
	cernua	Stop	50	210	550				285			160	320	960	480				
	BICE	Distance	20	35	120				75			20	75	15	10			370	7.4

Banks - Line Intercept (Willow) Data from Geyer Willow Site

Date: 23-Oct-02

Field Personnel: Erin Questad, Sarah Hartung

Transect #: W4

			W4-1				W4-2		W4-3		W4-4						W-5	Total Dist.	% Cover
1	*Spirea*	Start	110	330					860		40	770							
	douglasii	Stop	140	380					940		170	790							
	SPDO	Distance	30	50					80		130	20						310	6.2
2	*Phalaris*	Start	80	920			105	630	0	530	0	425					0		
	arundinacea	Stop	735	985			580	1000	360	1000	340	1000					1000		
	PHAR	Distance	655	65			475	370	360	470	340	575					1000	4310	86.2
3	*Polyganum*	Start					75		40										
	hydropiperoides	Stop					80		50										
	POHY	Distance					5		10									15	0.3
4	*Salix*	Start					795		0		870						0		
	geyeranii	Stop					1000		660		1000						1000		
	SAGE	Distance					205		660		130						1000	1995	39.9
5	*Sparganium*	Start							15										
	emersum	Stop							20										
	SPEM?	Distance							5									5	0.1
6	*Bidens*	Start	220	390	510	710	675		740		40	205	270	435	520	710			
	cernua	Stop	275	445	520	735	685		770		45	220	380	460	565	760			
	BICE	Distance	55	55	10	25	10		30		5	15	110	25	45	50		435	8.7

Coffee Lake Macroplot: Texas Oil Date: 5-Jul-02

	Transect #	CL1; Start at 0 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
ALPR	*Alopecurus pratensis*																					
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*																					
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Texas Oil Date: 5-Jul-02

	Transect #	CL2, Start at 0 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
ALPR	*Alopecurus pratensis*																					
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*																					
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Texas Oil Date: 5-Jul-02

	Transect #	CL3; Start at 2 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																1	1				10
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
ALPR	*Alopecurus pratensis*																					
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*																					
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Texas Oil Date: 5-Jul-02

	Transect #	CL4; Start at 1 meter																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
ALPR	*Alopecurus pratensis*																					
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*																					
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Texas Oil Date: 5-Jul-02

	Transect #	CL5; Start at 4 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
ALPR	*Alopecurus pratensis*																					
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*																					
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Texas Oil Date: 5-Jul-02

	Transect #	CL6; Start at 0 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*							1	1			1										15
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*				1	1	1	1	1	1	1	1	1									45
PHAR	*Phalaris arundinacea*	1											1	1	1	1	1	1	1	1	1	50
ALPR	*Alopecurus pratensis*	1	1	1																		15
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*																					
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Texas Oil Date: 5-Jul-02

	Transect #	CL7; Start at 4 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*	1		1		1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	85
ALPR	*Alopecurus pratensis*	1	1		1			1	1													25
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*	1		1	1	1	1	1														30
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*					1	1															10
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Texas Oil Date: 5-Jul-02

	Transect #	CL8; Start at 0 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*																					
ALPR	*Alopecurus pratensis*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*	1	1			1		1	1							1						30
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Wetland Conservancy Date: 5-Jul-02

	Transect #	CL9; Start at 1 meter																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*	1				1	1	1	1	1	1	1	1	1								50
ALPR	*Alopecurus pratensis*	1	1	1	1									1	1	1	1	1	1	1	1	60
JUEF	*Juncus effusus*									1												5
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*																					
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Wetland Conservancy Date: 5-Jul-02

	Transect #	CL10; Start at 3 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*		1	1	1													1	1	1		30
ALPR	*Alopecurus pratensis*	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	90
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*																					
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Wetland Conservancy Date: 5-Jul-02

	Transect #	CL11; Start at 3 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*					1	1	1	1	1	1	1		1					1		1	50
ALPR	*Alopecurus pratensis*	1	1	1	1	1				1		1	1	1	1	1	1	1	1	1	1	80
JUEF	*Juncus effusus*					1																5
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*		1											1	1							15
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Coffee Lake Macroplot: Wetland Conservancy Date: 5-Jul-02

	Transect #	CL12; Start at 5 meters																				
	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
SPDO	*Spiraea douglasii*																					
RUSP	*Rubus spp.*																					
SASP	*Salix spp.*																					
ROSP	*Rosa spp.*																					
PHAR	*Phalaris arundinacea*																					
ALPR	*Alopecurus pratensis*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
JUEF	*Juncus effusus*																					
ELSP	*Eleocharis spp.*																					
CASP	*Carex spp.*											1										5
CISP	*Cirsium spp.*																					
LYSA	*Lythrum salicaria*																					
TYLA	*Typha latifolia*																					
POHY	*Polygonum hydropiperoides*																					
LOCO	*Lotus corniculatus*																					
HYRA	*Hydrocotyle ranunculoides*																					

Cooper Mountain

Macroplot: 1997

Date: 5/14/02 and 5/23/02

Note: Surveyed transect from east to west. Placed frame with nested corner at the transect point (bottom, left corner).

S = starting meter, F = frame flagged

		Transect #	1: S4, F1					2: S4, F5					3: S4, F3					4: S1, F2					5: S1, F3					6: S0, F2					7: S3, F4					8: S4, F3					9: S0, F1					10: S0, F1					Frequency			
		Frame #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Plot Size:	1	2	3
	Shrubs																																																								
CYSC	*Cytisus scoparius*		3					3					2					3	3				1					1					1	1									2	1					1	3				12	16	26
ROEG	*Rosa eglanteria*																																																					0	0	0
	Forbs																																																				0	0	0
ACMI	*Achillea millefolium*																								3	2					3					3					3					3	3							0	2	14
CECY	*Centaurea cyanus*		2	2			2	3	3	2		1								3														3	1		3			2	3			3					2		4	16	30
CISP	*Cirsium sp.*									3																																											0	0	2
CLAM	*Clarkia amoena*									3																																											0	0	2
CRIN	*Cryptantha intermedia*																																																			0	0	0
DELE	*Delphinium leucophaeum*	3	3				2	3					3	3					3							2								3	3							3							3	3			0	4	26
ERLA	*Eriophyllum lanatum*								2													3				1					2		1	3	1			3		2											6	12	18
LILY	Family Liliaceae																																																			0	0	0
LIPA	*Lithophragma parviflora*																																																			0	0	0
PLLA	*Plantago lanceolata*		3					2					1	2	1	3	3					3								2													3									4	10	20
SAIN	*Saxifragia integrifolia*																					2																															2	4	4
TRSU	*Trifolium subterraneum*																																																			0	0	0
NC	Native Clovers														2	1						3				3	3						3				3		3	3	3					3	3					2	6	26
VISP	*Vicia spp.*	1	1	3	1	1	1	2	1	1	1	1	2	1	2	1	1	1	2	1	3	2	1	1	1	2	1	2	1	1	1	1	1	1	1	2	1	2	2	3	2	3	1	1	1	1	3	3	2	2		60	86	96
	Grasses/Rushes																																																			0	0	0
AICA	*Aira caryophyllea*		1						3							3				2		3							1										3					2	3					1		6	10	20
AREL	*Arrhenatherum elatius*																																																			0	0	0
BRMO	*Bromus mollis*	1	1		3	1	2	1	1		2	1	3	2	2	2	1	1	3	2	1	1	1	1	1	3	3		1	1	1	2	3	3	1	1	2		1	1	2	2	2	1	3	2	1	1	1	2	2	2	3		48	76	94
BRSI	*Bromus sitchensis*																																																			0	0	0
BRST	*Bromus sterilis*		3	2		2					2								3	3		3	2	2	3		1	2	2	3		2	3	3	2	2	2	2	3	1		3	3		3	2	1			1	3	1		10	36	60
BRTE	*Bromus tectorum*	1	3	1	3		3		1	3	3	1	2		1	1	2		1	3	3	3	1	3		3	1	1	1	2		3	2	3	3		2	3	1	1			3	2		2		3	3			26	40	74
CYEC	*Cynocurus echinatus*		1						2	3				3	3	2				2	1	3			3	1	2		3		2	3	2	1		1	2	1	1	1	3	3		1	1	2			2		2		20	40	58
DACA	*Danthonia californica*																																																			0	0	0
ELGL	*Elymus glaucus*	3			3	2		1		1	2						2		1	2	3			3	3			1		2				1	1							3								12	22	34
FEBR	*Festuca bromoides*																																																			0	0	0
HOLA	*Holcus lanatus*	3	3		3	2	3			3					3	3			3	3		3	3		1		3			3	3		3	3	3		2	3	2	3	1	1		1	3		3		3	3		1	10	16	62
KOCR	*Koeleria cristata*																																																			0	0	0
POPR	*Poa pratensis*	3	1				3	3			3	2	3	2					1										3		1				2								2								6	16	28
JUSP	*Juncus spp.*					3				1						2	1					2				3			3		3	2			1	1	3			2	3				3				3			8	16	32
	Microhabitat		MP	DP	VS (rootwad	MP	MP	MP	MP	MP	MP	MP	MP	MP	DP	SS	SS	MP	MP	SS	MP	SS	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	SS	MP	DP	DP, SS	SS	SS	MP	MP	MP	SS	SS	SS	SS	SS	SS	VS			

DP=Dry Prairie, WP=Wet Prairie, MP=Moist Prairie, SS=Shallow Soils, VS=Very Shallow Soils

Cooper Mountain

Macroplot: 1997/01-I

Date: 6/6/2002

Note: Surveyed transect from east to west. Placed frame with nested corner at the transect point (bottom, left corner).

S = starting meter, F = frame flagged

Transect #		1: S4, F4					2: S4, F5					3: S1, F3					4: S1, F5					5: S0, F3					6: S0, F5					7: S0, F5					8: S4, F5					9: S1, F4					10: S3, F4					Frequency			
Frame #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Plot Size:	1	2	3
	Shrubs																																																							
CYSC	*Cytisus scoparius*	1	2	2			3	2	2				2	3		3	3		3	3		1	3	3	3				3		2	2		3	3			3		3			2	2	2			2	3					4	26	56
ROEG	*Rosa eglanteria*																																																				0	0	0
	Forbs																																																				0	0	0
ACMI	*Achillea millefolium*			3		1					1			1		2											3				3	3			1				3						3	1				3	1				12	14	28
CECY	*Centaurea cyanus*	1	3	2	2	3	2	2	3	3	1		3	2	2	3		3	1	2	1		2	1	1	1	3	1	1	2	2	1	1	3	1	1	2	1	3	3	3	3	3	2	2		2	2	2		3		28	60	90
CISP	*Cirsium sp.*	3		2																	3									2						1																2	6	10
CLAM	*Clarkia amoena*																																																			0	0	0
CRIN	*Cryptantha intermedia*																																						2						1			3					3		2	4	8
DELE	*Delphinium leucophaeum*		3	1	2	2		3	1	1	2		2	1	2	3	3	3	3	2	3			1	3	3	3		1		3	3	2	1	2	3		2		3		3	2	2			3	3	3	2			14	38	74
ERLA	*Eriophyllum lanatum*			1		1	3	1		2	1			2	3																			2						3				3	2			1				10	18	26
LILY	Family Liliaceae			3	2	1	1			2	3				3		2	3			3				3	2	1		1		1								3			2			3	3			3			10	20	40
LIPA	*Lithophragma parviflora*																																																			0	0	0
PLLA	*Plantago lanceolata*		3			3	3		3	3	2		3	3	3	3	2	3	2		3	3					1		3		3			2					3				3	2	2	3	3		3		1	2		4	18	56
SAIN	*Saxifragia integrifolia*																																																			0	0	0
TRSU	*Trifolium subterraneum*																																																			0	0	0
NC	Native Clovers														1							2				3					3		2	3						2					3						2	8	16
VISP	*Vicia spp.*	3	1	2	3	1	1	1		1	1	1	1	1	1	2	1	1			2	1	1	1	1	2	1	2	2	2	3	1	2	1		1	1	1		1	1		1	1		1	2	2	1	1	1		60	80	86
	Grasses/Rushes																																																			0	0	0
AICA	*Aira caryophyllea*	3	1	1	1	1	2	1	1	1	2	1	1	1	1	1	1	2	1	1	1	1	1	2	1	1	1	2	1	3	1	1	2	1	1	1		1	1	2	1	1	1	1	1	1	3	2	1	1	2		74	92	98
AREL	*Arrhenatherum elatius*	3					1	2				1	1	3	1	3	1	1				1	1	1			1	2				1			2															1		24	30	36
BRMO	*Bromus mollis*		3	3	1	1			3	2				1	1	2	3	2	3	1	3	2	1	2	3	1	2	3		3	3	3	3	1	1	3	2	1	3	1	2	3	1	1	2	1			1	2	1		32	52	82
BRSI	*Bromus sitchensis*																																																			0	0	0
BRST	*Bromus sterilis*				2	1			3	1	3		2		1	1	1	1	1		1			3	2	2	3	3	1	1		1		2	1			1		3	3	2	2	2	3			2	3			26	44	62
BRTE	*Bromus tectorum*	1	1	2	2	1	2	1	1	1		2	2		1		1	3	1	1	1	2	1	2	2	1	1	2	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1	3	1	1	1	1	3	3		62	84	92
CYEC	*Cynocurus echinatus*		1	3	1	3		1	2	1	2		1	2	1	1		1	2	3	1	2	2	3	3	2			3	2	3		1	3	3	2			3	1	3	3	2		1	2		3	2	2	2		24	52	76
DACA	*Danthonia californica*																																																			0	0	0
ELGL	*Elymus glaucus*			1	3		2					1				3	2	1				3	2	2			3	1	3	3		2	2	1	3	1	2	2		1	1	1	3	1		3	1	1	3	1	3		26	42	64
FEBR	*Festuca bromoides*													3				3																																			0	0	4
HOLA	*Holcus lanatus*		3					2				2					3		2	2	3	3	3	3	2	3	3	1					3	3	1	3	1	2	1	1	2	2	3		3	1	1	2	2	3		14	34	62
KOCR	*Koeleria cristata*														3			3													3	1		3		3			3						1							4	4	16
POPR	*Poa pratensis*	3				3	3					2	3		3		2						3				3									3					3	3		2						3			0	6	28
JUSP	*Juncus spp.*																2																																		2			3		0	2	4
Microhabitat		SS	SS	SS	DP	DP	SS	SS	SS	DP	DP	MP	SS	SS	SS	SS	MP	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	AT BASE OF DEAD OA	SS	SS	SHRUBBY	SS	SS	SS	SHRUBBY	SS	VS	SS	MP	SS	SS	SS	VS	SS	SS	SS	SS	SS				

DP=Dry Prairie, WP=Wet Prairie, MP=Moist Prairie, SS=Shallow Soils, VS=Very Shallow Soils

Cooper Mountain

Macroplot: 1997/01-II
Date: 5/24/2002
Note: Surveyed transect from west to east. Placed frame with nested corner at the transect point (bottom, left corner).
S = starting meter, F = frame flagged

		Transect #	1: S3, F4					2: S1, F4					3: S4, F5					4: S0, F5					5: S0, F5					6: S0, F3					7: S1, F5					8: S1, F3					9: S4, F5					10: S4, F4					Frequency			
		Frame #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Plot Size:	1	2	3
	Shrubs																																																									
CYSC	*Cytisus scoparius*			3		2			3	3			2	2	3					3																																			0	8	20
ROEG	*Rosa eglanteria*																																																					0	0	0
	Forbs																																																					0	0	0
ACMI	*Achillea millefolium*																		2					3																		3					3										0	2	8
CECY	*Centaurea cyanus*	1	1	3	2	2	3	1	3		3	2	3	2	2	3	3	1				3	2			2	3	3		2		2				3				3	3				3	3		2		1	1		12	32	62
CISP	*Cirsium sp.*					2																					1					1	3							3									1			6	8	12
CLAM	*Clarkia amoena*																																																				0	0	0
CRIN	*Cryptantha intermedia*																																																				0	0	0
DELE	*Delphinium leucophaeum*																3																																					3	0	0	4
ERLA	*Eriophyllum lanatum*			2		1											3			3		3																																	2	4	10
LILY	Family Liliaceae																																																				0	0	0
LIPA	*Lithophragma parviflora*																																																				0	0	0
PLLA	*Plantago lanceolata*	2	1	1	1		1	3	2	2	1	1	2	2	2	1	2	3	3	2	1	1	2	2	3	1		2	1	3	2		2	1	3	1	2	2	2	1	3	2	2	1	1	2	3	3	2	1	2		34	76	94
SAIN	*Saxifragia integrifolia*																																																				0	0	0
TRSU	*Trifolium subterraneum*																																																				0	0	0
NC	Native Clovers			2		3	2	3		2			3	2	2	3	3	3			2	3		3	1	3	3			3		1			1	2	2	1	1	3		1	1	1	1		2	1	1	3		24	42	68
VISP	*Vicia spp.*	2	1			2	2		3	3	3	2	1		3	3	2	1	3	3	2	1	2		1	1	1	3	3		3	1	2			3				3	1				2	2				1	1		22	42	66
	Grasses/Rushes																																																				0	0	0
AICA	*Aira caryophyllea*	1	1	1	1		1	1	2	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	1	3	2	3	2	1	1	1	3	3	1	1	1	1	1	1	1	2	1	1	1	1	3	2	1	1	3		70	84	96
AREL	*Arrhenatherum elatius*																												3													1					1						4	4	6
BRMO	*Bromus mollis*	1	3	1	1	2	1	1	2	1	3	1	1	1	1	1	1	1	1	1	2	1	1	1	2	2	2	1	2	2	2	2	1	1	3	2	2	3	1	1	2		1		1	2	3		3	1	2		52	82	94
BRSI	*Bromus sitchensis*																																																				0	0	0
BRST	*Bromus sterilis*					1						2	3				2	2	3		2				1		2	3	3	2		1	2											1							8	22	30
BRTE	*Bromus tectorum*	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1		1	1	1	2	3	1	1	2	1	1		88	96	98
CYEC	*Cynocurus echinatus*	2	1	3	2	2	2	2	1	1	2	3	3	1	3	3	1	2	2	2	2	1	1	1	1	3	2	2	2	1	3	2	1	3	2	3	3	1	1	1	2	2	1	2	1	1	3	3	2	1	1	2		38	76	100
DACA	*Danthonia californica*																																																			0	0	0
ELGL	*Elymus glaucus*	3	3					2	2				3					3					3					3																				1						2	6	18
FEBR	*Festuca bromoides*																																																			0	0	0
HOLA	*Holcus lanatus*	2	1	3	3	2	2	2	2		1	3	2					2		3	3	3	3			3	1	3	3	2	3		3	1	2						3				3				2	3		8	28	58
KOCR	*Koeleria cristata*																																																			0	0	0
POPR	*Poa pratensis*																																																			0	0	0
JUSP	*Juncus spp.*																																3																			0	0	2
	Microhabitat		SS	SS	VS	SS	DP	VS	VS	VS	VS	VS	SS	SS	VS	VS	SS	SS	SS	SS	VS	SS	SS	SS	VS	VS-ROCKY SLOPE	SS-SLOPE	SS	SS	VS	VS-rocky slope	SS	SS	SS	VS	VS	VS	VS	VS	SS	VS	VS	VS	SS	SS	VS	VS	VS	SS	SS				

DP=Dry Prairie, WP=Wet Prairie, MP=Moist Prairie, SS=Shallow Soils, VS=Very Shallow Soils

Cooper Mountain

Macroplot: 2001-I

Date: 5/14/02, 5/23/02, and 5/24/02

Note: Surveyed transect from east to west. Placed frame with nested corner at the transect point (bottom, left corner). This macroplot was missing numbers on 5 transect markers, see notes for surveyed transects.

S = starting meter, F = frame flagged

		1: S0, F2					2: S1, F2					3: S1, F5					4: S2, F3					5: S4, F4					6: S4, F2					7: S3, F5					8: S2, F4					9: S3, F2					10: S2, F1					Frequency			
Transect #		1: S0, F2					2: S1, F2					3: S1, F5					4: S2, F3					5: S4, F4					6: S4, F2					7: S3, F5					8: S2, F4					9: S3, F2					10: S2, F1					Frequency			
Frame #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Plot Size:	1	2	3
	Shrubs																																																								
CYSC	*Cytisus scoparius*																																			2							3				2					0	4	6
ROEG	*Rosa eglanteria*																																																			0	0	0
	Forbs																																																			0	0	0
ACMI	*Achillea millefolium*													3									3		3					3								3		3												0	2	14
CECY	*Centaurea cyanus*			2		2		3	2	3		2		3		2		1				3	3			3		1		2			1	2	2		3	1	2	1	2	1	3	2	2	3	3		1	3	3		14	38	62
CISP	*Cirsium sp.*	3		3		2	3		2	3	3				2	3											3	3	1	3	2	3	3	3		3		1			3				3			3				4	12	52
CLAM	*Clarkia amoena*																																																			0	0	0
CRIN	*Cryptantha intermedia*																																																			0	0	0
DELE	*Delphinium leucophaeum*																																					3							3					3				0	0	6
ERLA	*Eriophyllum lanatum*																																												1									2	2	2
LILY	Family Liliaceae																																																			0	0	0
LIPA	*Lithophragma parviflora*																																																			0	0	0
PLLA	*Plantago lanceolata*		3			3	3					3	3	3			3		3	3				3			3		2					3			3		3							3					2			0	4	34
SAIN	*Saxifragia integrifolia*																																																			0	0	0
TRSU	*Trifolium subterraneum*											3									2				3													3												1			2	4	10
NC	Native Clovers	2	3									1	3				1	3				3	3	3						3	1										3				3		1	3				8	10	30
VISP	*Vicia spp.*	3	1	2	1	1	2	2	1	1		3	1	1		1	1	2	3	2	1	1	3	1	1	1	1	3	1	1	1	1	1	2	2	3	1	2	1	1	2	1	1	2	1	1	1	1	3	1		62	82	96
	Grasses/Rushes																																																			0	0	0
AICA	*Aira caryophyllea*											1					3						3	3			3	2								2				3				2				2				2	10	20
AREL	*Arrhenatherum elatius*																																																			0	0	0
BRMO	*Bromus mollis*	2			2		1	1				2	2	1		3	2	3	2	2	1	1		2	3	3	1	3	2			3		1	1		1	1	2	3	3	3	2		2			2	2		20	48	66
BRSI	*Bromus sitchensis*																																																			0	0	0
BRST	*Bromus sterilis*		3	2	3	2	3	2	3	2			3	2			3		1	3	2	3	3	3			1	2	2			2	1	1			1	1	2	1		1	1				1			3		20	40	62
BRTE	*Bromus tectorum*	3						2				2	2	2				3	2	3	1		3	2			1		1			2		2			1	1	1	3	2		3		2		3		1	2		14	36	50
CYEC	*Cynocurus echinatus*											1	1			1	2	2	1	1	2	3	2	1			2	2	2			2	3		3		1	2	2	1	2		1		2				3	2		18	44	52
DACA	*Danthonia californica*																																																			0	0	0
ELGL	*Elymus glaucus*																													3	3					2				3												0	2	8
FEBR	*Festuca bromoides*													3				3	1																																	2	2	6
HOLA	*Holcus lanatus*	3	2	1	2	1	2	2	3		3		2		1		1	2	1	2			1		1			3	1					3				3	3			3				3	3	2	3		3		16	32	56
KOCR	*Koeleria cristata*																																																			0	0	0
POPR	*Poa pratensis*		3		3	2	3									1				3					3	1		3	2	2	1			3	2	1		3			3	3		3		1				1	12	20	40
JUSP	*Juncus spp.*	3	2		3		2	3				3	3				1	1			3	1	1		1				1		2																			12	18	30
Microhabitat		SS, WP	WP	WP	WP	WP	WP	SS, WP	SS, WP	SS	SS	VS	WP	WP	MP	MP	SS	SS	WP	MP	MP	SS	SS	SS	MP	MP	SS	VS	SS	MP	MP	DP	SS	SS	SS	MP	DP	MP	MP	VS	MP	VS	SS	VS	MP	MP	SS	SS (WET)	SS	SS	SS (DRY)			

DP=Dry Prairie, WP=Wet Prairie, MP=Moist Prairie, SS=Shallow Soils, VS=Very Shallow Soils

Cooper Mountain

Macroplot: 2001-II
Date: 5/31/2002
Note: Surveyed transect from east to west. Placed frame with nested corner at the transect point (bottom, left corner).
S = starting meter, F = frame flagged

		Transect #	11: S4, F5					12: S0, F2					13: S1, F5					14: S2, F3					15: S4, F4					16: S4, F2					17: S3, F5					18: S2, F4					19: S3, F2					20: S2, F1					Frequency			
		Frame #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Plot Size:	1	2	3
	Shrubs																																																								
CYSC	*Cytisus scoparius*				2				2	3			3	3				1	1															1					3	2			2	1					3	3				8	16	28
ROEG	*Rosa eglanteria*																																																				0	0	0
	Forbs																																																				0	0	0
ACMI	*Achillea millefolium*					2						1			3									3		3													3															2	4	12
CECY	*Centaurea cyanus*			3	1	3	1	3	2		2	2	2	3		1	3	1			3	2	2	1			1	1	3		3	2	3					3	2	1	3	3	1	1	1	3		3	2		2		22	42	70
CISP	*Cirsium sp.*	3		1			3	2		1			3	1				2	1	3		3	2	3		3			3	2		3	3					3		3			3	1	3			3	3	3		10	18	52
CLAM	*Clarkia amoena*																																																				0	0	0
CRIN	*Cryptantha intermedia*																																																			0	0	0
DELE	*Delphinium leucophaeum*					3								2				3								3		2	3	3			2	3				2							3		3	3				0	8	26
ERLA	*Eriophyllum lanatum*														2						3																																0	2	4
LILY	Family Liliaceae					3	1																																													2	2	4
LIPA	*Lithophragma parviflora*																																																			0	0	0
PLLA	*Plantago lanceolata*																						3			3												2																0	2	8
SAIN	*Saxifragia integrifolia*																3					3																															0	0	4
TRSU	*Trifolium subterraneum*																									3																											0	0	2
NC	Native Clovers																1		3	1			3				2				2	3				3					1		3			1						8	12	22
VISP	*Vicia spp.*		3	1	1	1	1	3	2	1	3	2	2	2	1	1	3	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1	2	1	1	3	1	1	1	1	1	66	82	96
	Grasses/Rushes																																																			0	0	0
AICA	*Aira caryophyllea*				2						2						3	3				1	3			3	2					2		3	1	3	1	1	1			2	1				1	2	2				14	28	40
AREL	*Arrhenatherum elatius*																																																			0	0	0
BRMO	*Bromus mollis*	1		3	2		2	2	2	2	1	2	3		1	1		2		2	3	2	3	1		3	2	2	2			2	1			2	1	1	1		3	1	1	1		3	1	1	1	3	1		32	60	76
BRSI	*Bromus sitchensis*																																																			0	0	0
BRST	*Bromus sterilis*	2			2		3			3		3			2						3		2			1	3	2	2			1	2				3			3		1			2						6	22	36
BRTE	*Bromus tectorum*		3	3	3	3	1	1	2	3	1	1	1		3	3		2		2		2	1	1		3	1	1	1	2		1	1	1	2	3	1	1	1	1	2	1	1	1	3	1	1	1		1	3		50	64	86
CYEC	*Cynocurus echinatus*				1		2				1					3				3	3	3			3	1			3		3					1												3		10	12	30
DACA	*Danthonia californica*																																																			0	0	0
ELGL	*Elymus glaucus*					2							3						1	1	3			3				2	1				1				2														8	14	20
FEBR	*Festuca bromoides*																																																			0	0	0
HOLA	*Holcus lanatus*	2	3		1	2	2	2	2		3	1	1			1		2			1	1	2			3	3	2		2	1		3	3	1	1	2	1	1	1	2	2	2	1	1	2	1	1	1	1	1	1		40	68	80
KOCR	*Koeleria cristata*																																																			0	0	0
POPR	*Poa pratensis*			1		1		1	1	1		1	2	2				2	1		3	3	2				2	3	2	3	1		2	3	1	2		2		2	3				2	2		3	3	1		2		20	46	62
JUSP	*Juncus spp.*				2					1					2	3					3	2				3	1				2					3										2	3	2			1		6	18	28
	Microhabitat		MP	DP	DP	DP	DP	DP	DP	DP	MP	SS	DP	DP	DP	DP	MP	DP	DP	MP	DP	DP	DP	MP	MP - SHRUBBY	DP	DP	DP	DP	DP	DP	VS	DP	DP	MP	DP	SS	DP	DP	MP	DP	DP	SS	DP	DP	MP	DP	DP	DP	DP	DP	MP			

DP=Dry Prairie, WP=Wet Prairie, MP=Moist Prairie, SS=Shallow Soils, VS=Very Shallow Soils

Cooper Mountain

Macroplot: Upper Prairie
Date: 5/30/2002
Note: Surveyed transect from west to east. Placed frame with nested corner at the transect point (bottom, left corner).
S = starting meter, F = frame flagged

		Transect #	1: S3, F1					2: S1, F4					3: S2, F5					4: S3, F3					5: S2, F1					6: S1, F4					7: S3, F2					8: S2, F5					9: S2, F1					10: S2, F5					Frequency			
		Frame #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Plot Size:	1	2	3
	Shrubs																																																								
CYSC	*Cytisus scoparius*																														2																							0	2	2
ROEG	*Rosa eglanteria*																																																					0	0	0
	Forbs																																																					0	0	0
ACMI	*Achillea millefolium*			2	2																																																	2	6	8
CECY	*Centaurea cyanus*	2	3	2	2		2	1	1	2		1	2	3	1	2	3	2	1	3	2		1	3	1	3	3	3	2	3	3			3	1	3			2	3				3			2				1	18	42	70
CISP	*Cirsium sp.*																																																				0	0	0
CLAM	*Clarkia amoena*																																																				0	0	0
CRIN	*Cryptantha intermedia*																																																				0	0	0
DELE	*Delphinium leucophaeum*	3	2	2	2		3	2	3	2	3		3	3	3	2		3	3	2	3			3	1			3	2	2					3									2									2	22	48
ERLA	*Eriophyllum lanatum*	2			3	3	3	3	3		2	3	3			2	3	3				3	2				3			3																						0	8	34
LILY	Family Liliaceae			2	2	1				3		3			3	3	1	3	3	2	1	3	3	3	3	2	3	3	3	3	3	1	3	3	3		3		3		1		3			1	2	3			12	22	66
LIPA	*Lithophragma parviflora*																																																				0	0	0
PLLA	*Plantago lanceolata*	1	1	1	2	1	1	1	1	1	1	1	2	1	2	1	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	2	1	1	1	2		2	3			2	3	1	1	3	2		3	1	1	66	88	96
SAIN	*Saxifragia integrifolia*				2											2					2	3					3					3											2					3	2			3	0	10	20
TRSU	*Trifolium subterraneum*																																																			0	0	0
NC	Native Clovers	3	3	3	2		3	3	2	3	3	3	1	2	2	3	3	2	1	2	3		2	3	3	3	3	2	2	2	3		1	3	3	3	3		3	3	2	1				2	2	3		3	8	34	82
VISP	*Vicia spp.*	1	1	1	1	2	1	3	3	2	2	1	1	3	3	3	1	1	2	2	3		3	1	1	1		3	2	1	2	2	2	3	3	2	3		1		3	3		2		1	1		2	1	1	36	60	86
	Grasses/Rushes																																																			0	0	0
AICA	*Aira caryophyllea*	3	2	2	2	2	2	2	1	1	1		1	1	1	2	3	2	1	1	1	2	1	1	2	2	1	2	3	3	2	2		1	2	2	1	1	1	1	1	2	3	3	1	2		3		2	2	38	78	92
AREL	*Arrhenatherum elatius*																																																			0	0	0
BRMO	*Bromus mollis*	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	3	1	92	98	100
BRSI	*Bromus sitchensis*																																																			0	0	0
BRST	*Bromus sterilis*	2	2	1	2		3	1				3	1	3	2			1	1	1			3	3	1	2			3	1				1					3					3			3		1	20	30	48
BRTE	*Bromus tectorum*											2					1	1	3									1	1	2			3										3	1				2			10	16	22
CYEC	*Cynocurus echinatus*	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	2	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1	1	1	1	3	2	1	1	2	1	3	1	1	2	1	78	96	100
DACA	*Danthonia californica*																																																			0	0	0
ELGL	*Elymus glaucus*																																																			0	0	0
FEBR	*Festuca bromoides*																																																			0	0	0
HOLA	*Holcus lanatus*																								1								1											3					1			3		6	6	10
KOCR	*Koeleria cristata*																																																			0	0	0
POPR	*Poa pratensis*																																																			2	2	2
JUSP	*Juncus spp.*					3				2							3	1	2		2	3	1	2	3	1	1	3		1			1		2	2	2	2	3	2	2		2	1		3		1	1			16	38	52
	Microhabitat		MP	MP	MP	MP	MP	MP	MP	MP	SS	SS	MP	MP	MP	SS	SS	MP	MP	SS	SS	MP	VS - EDGE OF ROAD	SS	MP	MP	MP	SS	VS-EDGE OF ROAD	SS	SS	SS	SS	SS - EDGE OF ROAD	SS	SS	SS	SS	VS - MIDDLE OF ROAD	SS	SS	SS	SS	SS/VS - EDGE OF ROA	SS	SS	SS	MP	MP	MP	SS	SS			

DP=Dry Prairie, WP=Wet Prairie, MP=Moist Prairie, SS=Shallow Soils, VS=Very Shallow Soils

Cooper Mountain

Macroplot: Control-I
Date: 5/30/2002
Note: Surveyed transect from west to east. Placed frame with nested corner at the transect point (bottom, left corner).
S = starting meter, F = frame flagged

	Transect #	1: S3, F1					2: S4, F2					3: S1, F1					4: S0, F2					5: S3, F4					6: S2, F4					7: S3, F1					8: S1, F4					9: S0, F3					10: S1, F2					Frequency		
	Frame #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Plot Size: 1	2	3
	Shrubs																																																					
CYSC	*Cytisus scoparius*		3	1					2	1	3					3						3		2	3			3	2	3			3				3				2			3	3							4	12	34
ROEG	*Rosa eglanteria*																																																			0	0	0
	Forbs																																																			0	0	0
ACMI	*Achillea millefolium*					1				3	3																															3								3		2	2	10
CECY	*Centaurea cyanus*	3	2	2	3	1	2	3	3	1	3		3		2	2				2	1	1		2	3	3	3		3			3		1	3	3	2	3		3	2	3	2	3	1	1	3	3	1	2	2	16	40	78
CISP	*Cirsium sp.*	3					2	3							3	3			3	3	2	2	1	2			1					1	3			1																8	16	30
CLAM	*Clarkia amoena*																																																			0	0	0
CRIN	*Cryptantha intermedia*																																																			0	0	0
DELE	*Delphinium leucophaeum*		3	3	3	2			3		2													3	2	3			3	3			3				3				3										3	0	6	30
ERLA	*Eriophyllum lanatum*								3							3																												3				3	3	2		0	2	12
LILY	Family Liliaceae							3																																												0	0	2
LIPA	*Lithophragma parviflora*																																																			0	0	0
PLLA	*Plantago lanceolata*					3	3	1	3			2		1		3	1	2			2	2		3	3	2				2	3			2	2		1			1		1	2	3	3	1	2	2	3	1		16	38	58
SAIN	*Saxifragia integrifolia*																																																			0	0	0
TRSU	*Trifolium subterraneum*																																																			0	0	0
NC	Native Clovers											3		2			3																										3								3	0	2	10
VISP	*Vicia spp.*	1	1	2	2	1	1	3	3	1	1		3	2	1	1		2	1	1	1	3	1	1	2	1	2	2	2	2	1	2	3		3	1	3	3	1		1	1	1	2	3	1	2	3		3	1	44	68	90
	Grasses/Rushes																																																			0	0	0
AICA	*Aira caryophyllea*						3	1		3		1	1	1	2		1	1	3			1			2				3	2				2	1	2	2	3	3	1		1	3	3	1	1	1	1	1	1	1	34	46	62
AREL	*Arrhenatherum elatius*																																																			0	0	0
BRMO	*Bromus mollis*	1	2	3		2	1	1	1	1	1	2	1	1	2	1	2	1	1	1	1	1	2	1	1	1	1	3	2	1	2	1	1	2	1	1	1	3	1	3	1	1	1	1	3	2	1	1	1	2	2	66	88	98
BRSI	*Bromus sitchensis*																																																			0	0	0
BRST	*Bromus sterilis*	2	3	1	1	1	2			1	3					1		3				2	1	3	3	1	3				2	3	2					3	1		3		3	1		3			1			20	30	52
BRTE	*Bromus tectorum*	2		2		2	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1	2	1	1	1	2	1	3	2	2	1	2	1	3	1	2	2	3	1	2	2	2	1	1	3	2	3	2	2	1	1	50	86	96
CYEC	*Cynocurus echinatus*	1	1	1	3	1	1	1	1	3	1	1	1	1	1	2	1	1	2	1	2	1		2	2	2	2	1	2	1	1			2	1	2	1			2	1	1	2	3	2	1	1	1	3	2	1	54	82	90
DACA	*Danthonia californica*																																																			0	0	0
ELGL	*Elymus glaucus*	2	1	3							2												2		2	1	3				1		3					2	2		1				2	1		3	2		1	12	28	36
FEBR	*Festuca bromoides*																																																			0	0	0
HOLA	*Holcus lanatus*	1	3	3		3	2	3	1	2	2				1	3		2	1	2	1	3	1	1	2	2	1	1	1	1	3	1	1		3	1		3	2			3		2	3				3	3	1	30	48	74
KOCR	*Koeleria cristata*																																																			0	0	0
POPR	*Poa pratensis*	3	3								1														2				2																							2	6	10
JUSP	*Juncus spp.*						3						2								2																															0	4	6
	Microhabitat	MP	DP	DP	UNDER OAK CANOP	DP	DP	SS	DP	DP	DP	VS	VS	VS	DP	DP	VS	VS	DP	DP	DP	DP	DP	DP	SS	DP	DP	DP	DP	DP	DP	DP	DP	VS	SS	DP	SS	UNDER OAK CANOP	SS	VS	DP	SS	SS	SS	SS	DP	SS	SS	SS	VS	VS			

DP=Dry Prairie, WP=Wet Prairie, MP=Moist Prairie, SS=Shallow Soils, VS=Very Shallow Soils

Cooper Mountain

Macroplot: Control II
Date: 5/31/2002
Note: Surveyed transect from west to east. Placed frame with nested corner at the transect point (bottom, left corner).
S = starting meter, F = frame flagged

		Transect #	1: S0, F1					2: S0, F3					3: S1, F3					4: S0, F1					5: S4, F3					6: S3, F4					7: S0, F2					8: S1, F3					9: S1, F2					10: S4, F3					Frequency			
		Frame #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Plot Size:	1	2	3
	Shrubs																																																								
CYSC	*Cytisus scoparius*								1																		3																											2	2	6
ROEG	*Rosa eglanteria*																1													1						2			2		2			1								6	12	12
	Forbs																																																				0	0	0
ACMI	*Achillea millefolium*						3																								3							1	2	1						3	3					4	6	14
CECY	*Centaurea cyanus*		3						1												1				2	3				2	2	2		2			2	3	3			3	2			3	3	3			4	18	34
CISP	*Cirsium sp.*			2	1	1		3	3	3	2		3	1		3			1	2						3	3	1										3					3				3	3	2			10	18	40
CLAM	*Clarkia amoena*																																																			0	0	0
CRIN	*Cryptantha intermedia*																																																			0	0	0
DELE	*Delphinium leucophaeum*																				3					3					3						3																0	0	8
ERLA	*Eriophyllum lanatum*																									2				1																							2	4	4
LILY	Family Liliaceae																																					3									3						0	0	4
LIPA	*Lithophragma parviflora*																																																			0	0	0
PLLA	*Plantago lanceolata*	2						3						3					3					3	3	3			2	3	1			3	2	2		2	2	3	1	2	3	3	3		3					4	18	44
SAIN	*Saxifragia integrifolia*																																																			0	0	0
TRSU	*Trifolium subterraneum*						3	3				3						3					1	3				1					3					2														4	6	18
NC	Native Clovers																						1	2				1					2					1					3										6	10	12
VISP	*Vicia spp.*	2	2	1	2	1	2	3	3			1	1	3	1	3	3	1	2	2	2	1	2	1	3	1		1	2	1	1		1	1	1	1	3	1	1	1	1	2	1	2	1	1	1	2	1	1	1	54	78	92
	Grasses/Rushes																																																			0	0	0
AICA	*Aira caryophyllea*							3				1											3	2	3	3	3	1			2	3	3		3	3		1	3		1	2	1								10	16	36
AREL	*Arrhenatherum elatius*																																																		0	0	0
BRMO	*Bromus mollis*	1	1	2	2		1	1		3		1	2		1	1	1	2	1	1	1	2	1	1	1	2		1	1	2	1	2	3	1	2	1	1	1	1	1	1	2	1	1	1		3	1	1	2	3	2	56	80	88
BRSI	*Bromus sitchensis*																																																		0	0	0
BRST	*Bromus sterilis*		1	2	3	1		3	1	1	2		2	3	1	1		1	2	1	1				1	2	3		3	2	2	3		3	1	1				1	3	1		1	1	1	2	3	2	1	1	1	40	58	76
BRTE	*Bromus tectorum*	2					1	1		3		1	1					2	3	2			1	2	2	1	3	1	2	2	1	3	2	1	1	1	2	1	2	1	2	1	2	1	1		3	2	1	1	2		36	64	74
CYEC	*Cynocurus echinatus*	1	1	1	3	1	1	1				1	1		2	2		1	2	1	2		2	1	2	2	3	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1	2	2	1	1	1	1	2		58	84	88
DACA	*Danthonia californica*																																																		0	0	0
ELGL	*Elymus glaucus*		2					3					2	3							2				3	2					1					3		3	1	1	1			3		2					1	10	20	32
FEBR	*Festuca bromoides*																																																		0	0	0
HOLA	*Holcus lanatus*	2	1	1		2		1	1	2	3	3	1	1	1	2			1	2	1	1	1	1	1	2	1	1	3	1		1	2	3	3		3		3	3	3	3	3	1	1	1	1	3	2	2		44	62	86
KOCR	*Koeleria cristata*																																																		0	0	0
POPR	*Poa pratensis*	3		1		1		3			2					3	3					1				3	3						3			1			1					3	3		1		3		3	3		12	14	38
JUSP	*Juncus spp.*						3					1						1					2	2				1																										6	10	12
	Microhabitat		MP	MP	MP	MP - SHRUBBY, SYAL	MP - SHRUBBY, SYAL	MP	MP	MP	MP - AREA OF RED SO	MP - SHRUBBY	MP	MP	SS/MP	MP	MP - SHRUBBY	MP	MP	MP	MP	SEMI-SHRUBBY	SS	SS	MP	MP - SEMI-SHRUBBY	MP - SEMI-SHRUBBY	SS	MP	SS	VS	SEMI-SHRUBBY	VS - EDGE OF ROAD	SS	SS	SS	SS	SS	SS	MP	MP	MP	SS	MP	MP	MP	MP	MP	MP	DP	MP	MP				

DP=Dry Prairie, WP=Wet Prairie, MP=Moist Prairie, SS=Shallow Soils, VS=Very Shallow Soils

Cooper Mountian Nested Frequency Data

Macroplot	Transect	Direction	Start	Flagged	CYSC	ROEG	ACMI	CECY	CISP	CLAM	CRIN	DELE	ERLA	LILY	LIPA	PLLA	SAIN	TRSU	NC	VISP	AICA	AREL	BRMO	BRSI	BRST	BRTE	CYEC	ELGL	FEBR	HOLA	KOCR	POPR	JUSP	VS	SS	WP	MP	DP
	1	EW	4	1	6.7	0.0	0.0	26.7	0.0	0.0	0.0	13.3	0.0	0.0	0.0	6.7	0.0	0.0	0.0	86.7	20.0	0.0	66.7	0.0	33.3	53.3	20.0	26.7	0.0	33.3	0.0	26.7	6.7	20%			60%	20%
1997	2	EW	4	5	6.7	0.0	0.0	40.0	6.7	6.7	0.0	20.0	13.3	0.0	0.0	13.3	0.0	0.0	0.0	93.3	6.7	0.0	66.7	0.0	13.3	40.0	20.0	53.3	0.0	13.3	0.0	33.3	20.0				100%	
	3	EW	4	3	13.3	0.0	0.0	20.0	0.0	0.0	0.0	13.3	0.0	0.0	0.0	66.7	0.0	0.0	33.3	86.7	6.7	0.0	73.3	0.0	0.0	73.3	26.7	13.3	0.0	13.3	0.0	20.0	33.3		40%		40%	20%
Average	4	EW	1	2	13.3	0.0	0.0	6.7	0.0	0.0	0.0	6.7	6.7	0.0	0.0	6.7	13.3	0.0	6.7	80.0	20.0	0.0	80.0	0.0	20.0	46.7	33.3	40.0	0.0	20.0	0.0	20.0	13.3		40%		60%	
Frequency	5	EW	1	3	20.0	0.0	20.0	0.0	0.0	0.0	0.0	13.3	20.0	0.0	0.0	0.0	0.0	0.0	13.3	86.7	0.0	0.0	73.3	0.0	53.3	40.0	33.3	13.3	0.0	33.3	0.0	0.0	6.7				100%	
	6	EW	0	2	20.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	13.3	0.0	0.0	0.0	93.3	20.0	0.0	73.3	0.0	46.7	73.3	33.3	33.3	0.0	13.3	0.0	26.7	26.7				100%	
	7	EW	3	4	40.0	0.0	6.7	26.7	0.0	0.0	0.0	13.3	46.7	0.0	0.0	0.0	0.0	0.0	13.3	93.3	0.0	0.0	66.7	0.0	53.3	33.3	60.0	40.0	0.0	33.3	0.0	13.3	46.7		20%		80%	
	8	EW	4	3	0.0	0.0	6.7	20.0	0.0	0.0	0.0	6.7	20.0	0.0	0.0	0.0	0.0	0.0	20.0	66.7	6.7	0.0	80.0	0.0	46.7	60.0	80.0	0.0	0.0	66.7	0.0	0.0	20.0		40%		20%	40%
	9	EW	0	1	33.3	0.0	13.3	13.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	13.3	86.7	20.0	0.0	80.0	0.0	40.0	33.3	60.0	6.7	0.0	33.3	0.0	13.3	6.7		40%		60%	
	10	EW	0	1	26.7	0.0	0.0	13.3	0.0	0.0	0.0	13.3	0.0	0.0	0.0	0.0	20.0	0.0	13.3	40.0	20.0	0.0	66.7	0.0	46.7	13.3	26.7	0.0	0.0	33.3	0.0	13.3	6.7	20%	80%			
1997 Macroplot		Plot Size:		1	12	0	0	4	0	0	0	0	6	0	0	4	2	0	2	60	6	0	48	0	10	26	20	12	0	10	0	6	8					
Frequency by		Plot Size:		2	16	0	2	16	0	0	0	4	12	0	0	10	4	0	6	86	10	0	76	0	36	40	40	22	0	16	0	16	16					
Plot Size		Plot Size:		3	26	0	14	30	2	2	0	26	18	0	0	20	4	0	26	96	20	0	94	0	60	74	58	34	0	62	0	28	32					
	1	EW	4	4	46.7	0.0	26.7	60.0	20.0	0.0	0.0	53.3	40.0	40.0	0.0	13.3	0.0	0.0	0.0	66.7	86.7	6.7	53.3	0.0	33.3	86.7	53.3	26.7	0.0	6.7	0.0	13.3	0.0		60%			40%
1997/01-I	2	EW	4	5	33.3	0.0	20.0	60.0	0.0	0.0	0.0	60.0	60.0	40.0	0.0	33.3	0.0	0.0	0.0	80.0	86.7	33.3	20.0	0.0	33.3	73.3	66.7	13.3	0.0	13.3	0.0	6.7	0.0		60%			40%
	3	EW	1	3	26.7	0.0	33.3	40.0	0.0	0.0	0.0	53.3	20.0	6.7	0.0	26.7	0.0	0.0	20.0	93.3	100.0	73.3	53.3	0.0	53.3	46.7	73.3	26.7	6.7	13.3	6.7	26.7	0.0		80%		20%	
Average	4	EW	1	5	20.0	0.0	0.0	60.0	6.7	0.0	0.0	40.0	0.0	26.7	0.0	40.0	0.0	0.0	0.0	53.3	93.3	40.0	53.3	0.0	80.0	86.7	60.0	33.3	6.7	40.0	6.7	13.3	0.0		80%		20%	
Frequency	5	EW	0	3	40.0	0.0	0.0	73.3	0.0	0.0	0.0	33.3	0.0	20.0	0.0	6.7	0.0	0.0	20.0	93.3	93.3	60.0	73.3	0.0	33.3	80.0	53.3	33.3	0.0	40.0	0.0	6.7	0.0		100%			
	6	EW	0	5	20.0	0.0	13.3	73.3	0.0	0.0	0.0	33.3	0.0	60.0	0.0	33.3	0.0	0.0	0.0	66.7	80.0	33.3	33.3	0.0	53.3	86.7	26.7	40.0	0.0	26.7	6.7	6.7	0.0		100%			
	7	EW	0	5	26.7	0.0	26.7	86.7	13.3	0.0	0.0	60.0	13.3	0.0	0.0	13.3	0.0	0.0	26.7	73.3	93.3	33.3	60.0	0.0	53.3	100.0	46.7	73.3	0.0	33.3	33.3	0.0	0.0		100%			
	8	EW	4	5	13.3	0.0	6.7	53.3	20.0	0.0	13.3	20.0	6.7	6.7	0.0	6.7	0.0	0.0	13.3	80.0	73.3	0.0	73.3	0.0	33.3	93.3	33.3	66.7	0.0	80.0	6.7	13.3	0.0	20%	60%		20%	
	9	EW	1	4	40.0	0.0	26.7	40.0	0.0	0.0	26.7	33.3	20.0	20.0	0.0	46.7	0.0	0.0	6.7	60.0	100.0	0.0	80.0	0.0	46.7	86.7	53.3	53.3	0.0	40.0	20.0	20.0	13.3	20%	80%			
	10	EW	3	4	20.0	0.0	26.7	46.7	0.0	0.0	6.7	33.3	20.0	13.3	0.0	40.0	0.0	0.0	0.0	86.7	73.3	20.0	53.3	0.0	20.0	73.3	46.7	73.3	0.0	73.3	0.0	6.7	6.7		100%			
1997/01-I Macroplot		Plot Size:		1	4	0	12	28	2	0	2	14	10	10	0	4	0	0	2	60	74	24	32	0	26	62	24	26	0	14	4	0	0					
Frequency by		Plot Size:		2	26	0	14	60	6	0	4	38	18	20	0	18	0	0	8	80	92	30	52	0	44	84	52	42	0	34	4	6	2					
Plot Size		Plot Size:		3	56	0	28	90	10	0	8	74	26	40	0	56	0	0	16	86	98	36	82	0	62	92	76	64	4	62	16	28	4					
	1	WE	3	4	20.0	0.0	0.0	73.3	13.3	0.0	0.0	0.0	33.3	0.0	0.0	73.3	0.0	0.0	20.0	46.7	80.0	0.0	80.0	0.0	20.0	100.0	66.7	13.3	0.0	60.0	0.0	0.0	0.0	20%	60%			20%
1997/01-II	2	WE	1	4	13.3	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.3	0.0	0.0	33.3	33.3	93.3	0.0	80.0	0.0	0.0	93.3	80.0	26.7	0.0	60.0	0.0	0.0	0.0	100%				
	3	WE	4	5	33.3	0.0	0.0	53.3	0.0	0.0	0.0	6.7	6.7	0.0	0.0	80.0	0.0	0.0	46.7	46.7	93.3	0.0	100.0	0.0	20.0	100.0	46.7	6.7	0.0	20.0	0.0	0.0	0.0	40%	60%			
Average	4	WE	0	5	6.7	0.0	13.3	26.7	0.0	0.0	0.0	0.0	13.3	0.0	0.0	60.0	0.0	0.0	26.7	60.0	100.0	0.0	93.3	0.0	46.7	100.0	73.3	6.7	0.0	33.3	0.0	0.0	0.0	20%	80%			
Frequency	5	WE	0	5	0.0	0.0	6.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.3	0.0	0.0	40.0	73.3	73.3	0.0	86.7	0.0	20.0	100.0	86.7	6.7	0.0	33.3	0.0	0.0	0.0	40%	60%			
	6	WE	0	3	0.0	0.0	0.0	26.7	20.0	0.0	0.0	0.0	0.0	0.0	0.0	53.3	0.0	0.0	26.7	40.0	80.0	6.7	73.3	0.0	40.0	100.0	66.7	6.7	0.0	33.3	0.0	0.0	0.0	40%	60%			
	7	WE	1	5	0.0	0.0	0.0	20.0	26.7	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	46.7	40.0	73.3	0.0	73.3	0.0	33.3	100.0	53.3	0.0	0.0	40.0	0.0	0.0	6.7	60%	40%			
	8	WE	1	3	0.0	0.0	6.7	13.3	6.7	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	66.7	26.7	93.3	20.0	73.3	0.0	0.0	73.3	86.7	0.0	0.0	6.7	0.0	0.0	0.0	80%	20%			
	9	WE	4	5	6.7	0.0	6.7	13.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	80.0	26.7	86.7	20.0	53.3	0.0	20.0	80.0	80.0	20.0	0.0	6.7	0.0	0.0	0.0	60%	40%			
	10	WE	4	4	13.3	0.0	0.0	53.3	20.0	0.0	0.0	6.7	0.0	0.0	0.0	60.0	0.0	0.0	60.0	40.0	60.0	0.0	46.7	0.0	0.0	93.3	73.3	0.0	0.0	20.0	0.0	0.0	0.0	60%	40%			
1997/01-II Macroplot		Plot Size:		1	0	0	0	12	6	0	0	0	2	0	0	34	0	0	24	22	70	4	52	0	8	88	38	2	0	8	0	0	0					
Frequency by		Plot Size:		2	8	0	2	32	8	0	0	0	4	0	0	76	0	0	42	42	84	4	82	0	22	96	76	6	0	28	0	0	0					
Plot Size		Plot Size:		3	20	0	8	62	12	0	0	4	10	0	0	94	0	0	68	66	96	6	94	0	30	98	100	18	0	58	0	0	2					
	1	EW	0	2	0.0	0.0	0.0	26.7	26.7	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	20.0	80.0	0.0	0.0	26.7	0.0	40.0	66.7	0.0	0.0	0.0	73.3	0.0	26.7	26.7		20%	80%		
2001-I	2	EW	1	2	0.0	0.0	0.0	26.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	66.7	0.0	0.0	40.0	0.0	40.0	13.3	0.0	0.0	0.0	40.0	0.0	6.7	20.0		80%	20%		
	3	EW	1	5	0.0	0.0	6.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	6.7	26.7	66.7	20.0	0.0	53.3	0.0	20.0	40.0	60.0	0.0	26.7	66.7	0.0	6.7	46.7		20%	40%	40%	
Average	4	EW	2	3	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	13.3	26.7	73.3	6.7	0.0	66.7	0.0	46.7	46.7	80.0	0.0	26.7	66.7	0.0	6.7	46.7		40%	20%	40%	
Frequency	5	EW	4	4	0.0	0.0	13.3	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	6.7	20.0	86.7	13.3	0.0	46.7	0.0	20.0	20.0	40.0	0.0	0.0	40.0	0.0	26.7	60.0		60%		40%	
	6	EW	4	2	0.0	0.0	6.7	33.3	53.3	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	26.7	86.7	20.0	0.0	40.0	0.0	46.7	40.0	40.0	13.3	0.0	26.7	0.0	53.3	20.0	20%	40%		40%	
	7	EW	3	5	0.0	0.0	0.0	46.7	26.7	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	86.7	0.0	0.0	46.7	0.0	53.3	26.7	26.7	13.3	0.0	6.7	0.0	40.0	13.3		60%		20%	20%
	8	EW	2	4	13.3	0.0	13.3	73.3	26.7	0.0	0.0	6.7	0.0	0.0	0.0	13.3	0.0	6.7	0.0	80.0	20.0	0.0	66.7	0.0	73.3	80.0	80.0	6.7	0.0	13.3	0.0	13.3	0.0	20%			60%	20%
	9	EW	3	2	6.7	0.0	0.0	60.0	13.3	0.0	0.0	6.7	20.0	0.0	0.0	6.7	0.0	0.0	13.3	86.7	13.3	0.0	33.3	0.0	40.0	20.0	33.3	0.0	0.0	13.3	0.0	33.3	0.0	40%	20%		40%	
	10	EW	2	1	13.3	0.0	13.3	40.0	26.7	0.0	0.0	6.7	0.0	0.0	0.0	13.3	0.0	20.0	26.7	86.7	13.3	0.0	26.7	0.0	26.7	40.0	20.0	0.0	0.0	33.3	0.0	20.0	0.0		100%			
2001-I Macroplot		Plot Size:		1	0	0	0	14	4	0	0	0	2	0	0	0	0	2	8	62	2	0	20	0	20	14	18	0	2	16	0	12	12					
Frequency by		Plot Size:		2	4	0	2	38	12	0	0	0	2	0	0	4	0	4	10	82	10	0	48	0	40	36	44	2	2	32	0	20	18					
Plot Size		Plot Size:		3	6	0	14	62	52	0	0	6	2	0	0	34	0	10	30	96	20	0	66	0	62	50	52	8	6	56	0	40	30					

The average of the three nested plot size frequency values are shown for each transect. Actual frequency values for each nested plot size are also shown for each macroplot.

Cooper Mountian Nested Frequency Data

Macroplot	Transect	Direction	Start	Flagged	CYSC	ROEG	ACMI	CECY	CISP	CLAM	CRIN	DELE	ERLA	LILY	LIPA	PLLA	SAIN	TRSU	NC	VISP	AICA	AREL	BRMO	BRSI	BRST	BRTE	CYEC	ELGL	FEBR	HOLA	KOCR	POPR	JUSP	VS	SS	WP	MP	DP
	11	EW	4	5	13.3	0.0	13.3	33.3	26.7	0.0	0.0	6.7	0.0	6.7	0.0	0.0	0.0	0.0	0.0	66.7	13.3	0.0	40.0	0.0	26.7	26.7	20.0	13.3	0.0	53.3	0.0	40.0	13.3				20%	80%
2001-II	12	EW	0	2	20.0	0.0	0.0	53.3	40.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	66.7	13.3	0.0	73.3	0.0	13.3	80.0	33.3	0.0	0.0	46.7	0.0	60.0	20.0		20%		20%	60%
	13	EW	1	5	13.3	0.0	26.7	53.3	26.7	0.0	0.0	13.3	13.3	0.0	0.0	0.0	6.7	0.0	20.0	80.0	6.7	0.0	60.0	0.0	20.0	53.3	6.7	6.7	0.0	60.0	0.0	46.7	20.0				20%	80%
Average	14	EW	2	3	40.0	0.0	0.0	33.3	40.0	0.0	0.0	6.7	6.7	0.0	0.0	0.0	6.7	0.0	26.7	53.3	26.7	0.0	46.7	0.0	6.7	40.0	13.3	46.7	0.0	53.3	0.0	46.7	20.0				20%	80%
Frequency	15	EW	4	4	0.0	0.0	13.3	46.7	33.3	0.0	0.0	6.7	0.0	0.0	0.0	13.3	0.0	6.7	20.0	100.0	26.7	0.0	46.7	0.0	40.0	66.7	33.3	6.7	0.0	26.7	0.0	26.7	26.7				40%	60%
	16	EW	4	2	0.0	0.0	0.0	53.3	20.0	0.0	0.0	26.7	0.0	0.0	0.0	0.0	0.0	0.0	20.0	80.0	13.3	0.0	40.0	0.0	26.7	73.3	13.3	33.3	0.0	46.7	0.0	46.7	13.3	20%				80%
	17	EW	3	5	20.0	0.0	0.0	20.0	13.3	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	100.0	53.3	0.0	53.3	0.0	33.3	80.0	20.0	20.0	0.0	66.7	0.0	53.3	6.7		20%		20%	60%
	18	EW	2	4	20.0	0.0	6.7	53.3	13.3	0.0	0.0	13.3	0.0	0.0	0.0	13.3	0.0	0.0	20.0	86.7	53.3	0.0	66.7	0.0	13.3	93.3	6.7	13.3	0.0	86.7	0.0	33.3	0.0				20%	80%
	19	EW	3	2	33.3	0.0	0.0	66.7	33.3	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	26.7	80.0	40.0	0.0	66.7	0.0	33.3	86.7	20.0	0.0	0.0	86.7	0.0	26.7	13.3		20%		20%	60%
	20	EW	2	1	13.3	0.0	0.0	33.3	20.0	0.0	0.0	13.3	0.0	0.0	0.0	6.7	0.0	0.0	0.0	100.0	26.7	0.0	66.7	0.0	0.0	66.7	6.7	0.0	0.0	100.0	0.0	46.7	40.0				20%	80%
2001-II Macroplot		Plot Size:		1	8	0	2	22	10	0	0	0	0	2	0	0	0	0	8	66	14	0	32	0	6	50	10	8	0	40	0	20	6					
Frequency by		Plot Size:		2	16	0	4	42	18	0	0	8	2	2	0	2	0	0	12	82	28	0	60	0	22	64	12	14	0	68	0	46	18					
Plot Size		Plot Size:		3	28	0	12	70	52	0	0	26	4	4	0	8	4	2	22	96	40	0	76	0	36	86	30	20	0	80	0	62	28					
	1	WE	3	1	0.0	0.0	26.7	46.7	0.0	0.0	0.0	46.7	26.7	46.7	0.0	93.3	13.3	0.0	33.3	93.3	60.0	0.0	93.3	0.0	60.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	6.7				100%	
Upper Prairie	2	WE	1	4	0.0	0.0	0.0	66.7	0.0	0.0	0.0	46.7	33.3	6.7	0.0	100.0	0.0	0.0	40.0	60.0	86.7	0.0	93.3	0.0	26.7	0.0	100.0	0.0	0.0	0.0	0.0	0.0	13.3		40%		60%	
	3	WE	2	5	0.0	0.0	0.0	73.3	0.0	0.0	0.0	33.3	26.7	20.0	0.0	86.7	13.3	0.0	60.0	60.0	73.3	0.0	100.0	0.0	46.7	13.3	86.7	0.0	0.0	0.0	0.0	0.0	6.7		40%		60%	
Average	4	WE	3	3	0.0	0.0	0.0	60.0	0.0	0.0	0.0	33.3	13.3	66.7	0.0	93.3	20.0	0.0	60.0	73.3	80.0	0.0	100.0	0.0	60.0	46.7	86.7	0.0	0.0	0.0	0.0	0.0	53.3		40%		60%	
Frequency	5	WE	2	1	0.0	0.0	0.0	53.3	0.0	0.0	0.0	26.7	20.0	40.0	0.0	93.3	0.0	0.0	33.3	66.7	80.0	0.0	100.0	0.0	46.7	0.0	100.0	0.0	0.0	20.0	0.0	0.0	80.0	20%	20%		60%	
	6	WE	1	4	13.3	0.0	0.0	40.0	0.0	0.0	0.0	33.3	13.3	33.3	0.0	100.0	6.7	0.0	53.3	53.3	60.0	0.0	100.0	0.0	26.7	53.3	93.3	0.0	0.0	0.0	0.0	0.0	26.7	20%	80%			
	7	WE	3	2	0.0	0.0	0.0	33.3	0.0	0.0	0.0	6.7	0.0	40.0	0.0	86.7	6.7	0.0	40.0	53.3	60.0	0.0	100.0	0.0	20.0	6.7	93.3	0.0	0.0	20.0	0.0	0.0	60.0		100%			
	8	WE	2	5	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	53.3	0.0	0.0	33.3	33.3	100.0	0.0	93.3	0.0	6.7	0.0	86.7	0.0	0.0	0.0	0.0	0.0	46.7	20%	80%			
	9	WE	2	1	0.0	0.0	0.0	6.7	0.0	0.0	0.0	13.3	0.0	26.7	0.0	66.7	13.3	0.0	33.3	40.0	60.0	0.0	100.0	0.0	6.7	26.7	86.7	0.0	0.0	6.7	0.0	0.0	40.0		100%			
	10	WE	2	5	0.0	0.0	26.7	33.3	0.0	0.0	0.0	0.0	6.7	20.0	0.0	60.0	26.7	0.0	26.7	73.3	33.3	0.0	86.7	0.0	26.7	13.3	80.0	0.0	0.0	26.7	0.0	20.0	40.0		40%		60%	
Upper Prairie Macroplot		Plot Size:		1	0	0	2	18	0	0	0	2	0	12	0	66	0	0	8	36	38	0	92	0	20	10	78	0	0	6	0	2	16					
Frequency by		Plot Size:		2	2	0	6	42	0	0	0	22	8	22	0	88	10	0	34	60	78	0	98	0	30	16	96	0	0	6	0	2	38					
Plot Size		Plot Size:		3	2	0	8	70	0	0	0	48	34	66	0	96	20	0	82	86	92	0	100	0	48	22	100	0	0	10	0	2	52					
	1	WE	3	1	26.7	0.0	20.0	60.0	6.7	0.0	0.0	33.3	0.0	0.0	0.0	6.7	0.0	0.0	0.0	86.7	0.0	0.0	53.3	0.0	80.0	40.0	86.7	40.0	0.0	40.0	0.0	13.3	0.0				20%	80%
Control-I	2	WE	4	2	40.0	0.0	13.3	53.3	20.0	0.0	0.0	20.0	6.7	6.7	0.0	33.3	0.0	0.0	0.0	73.3	33.3	0.0	100.0	0.0	40.0	100.0	86.7	13.3	0.0	66.7	0.0	20.0	6.7				20%	80%
	3	WE	1	1	6.7	0.0	0.0	33.3	13.3	0.0	0.0	0.0	6.7	0.0	0.0	40.0	0.0	0.0	20.0	60.0	73.3	0.0	86.7	0.0	20.0	86.7	93.3	0.0	0.0	26.7	0.0	0.0	13.3	60%				40%
Average	4	WE	0	2	0.0	0.0	0.0	33.3	26.7	0.0	0.0	0.0	0.0	0.0	0.0	46.7	0.0	0.0	6.7	73.3	46.7	0.0	93.3	0.0	6.7	100.0	86.7	0.0	0.0	66.7	0.0	0.0	13.3	40%				60%
Frequency	5	WE	3	4	26.7	0.0	0.0	46.7	46.7	0.0	0.0	26.7	0.0	0.0	0.0	40.0	0.0	0.0	0.0	80.0	33.3	0.0	93.3	0.0	66.7	86.7	60.0	46.7	0.0	73.3	0.0	13.3	0.0		20%			80%
	6	WE	2	4	26.7	0.0	0.0	13.3	20.0	0.0	0.0	13.3	0.0	0.0	0.0	20.0	0.0	0.0	0.0	73.3	20.0	0.0	73.3	0.0	20.0	73.3	86.7	26.7	0.0	86.7	0.0	13.3	0.0					100%
	7	WE	3	1	6.7	0.0	0.0	40.0	46.7	0.0	0.0	6.7	0.0	0.0	0.0	26.7	0.0	0.0	0.0	46.7	46.7	0.0	93.3	0.0	20.0	73.3	46.7	6.7	0.0	66.7	0.0	0.0	0.0	20%	20%			60%
	8	WE	1	4	20.0	0.0	0.0	40.0	0.0	0.0	0.0	13.3	0.0	0.0	0.0	40.0	0.0	0.0	0.0	53.3	46.7	0.0	73.3	0.0	33.3	66.7	53.3	46.7	0.0	20.0	0.0	0.0	0.0	20%	60%			20%
	9	WE	0	3	13.3	0.0	6.7	66.7	0.0	0.0	0.0	0.0	6.7	0.0	0.0	66.7	0.0	0.0	6.7	80.0	73.3	0.0	80.0	0.0	33.3	73.3	73.3	33.3	0.0	26.7	0.0	0.0	0.0		80%			20%
	10	WE	1	2	0.0	0.0	6.7	60.0	0.0	0.0	0.0	6.7	26.7	0.0	0.0	53.3	0.0	0.0	6.7	46.7	100.0	0.0	86.7	0.0	20.0	73.3	80.0	40.0	0.0	33.3	0.0	0.0	0.0	40%	60%			
Control-I Macroplot		Plot Size:		1	4	0	2	16	8	0	0	0	0	0	0	16	0	0	0	44	34	0	66	0	20	50	54	12	0	30	0	2	0					
Frequency by		Plot Size:		2	12	0	2	40	16	0	0	6	2	0	0	38	0	0	2	68	46	0	88	0	30	86	82	28	0	48	0	6	4					
Plot Size		Plot Size:		3	34	0	10	78	30	0	0	30	12	2	0	58	0	0	10	90	62	0	98	0	52	96	90	36	0	74	0	10	6					
	1	WE	0	1	0.0	0.0	0.0	6.7	53.3	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	0.0	80.0	0.0	0.0	66.7	0.0	60.0	13.3	86.7	13.3	0.0	66.7	0.0	46.7	0.0				100%	
Control-II	2	WE	0	3	20.0	0.0	6.7	20.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	13.3	0.0	26.7	6.7	0.0	46.7	0.0	60.0	46.7	40.0	6.7	0.0	60.0	0.0	20.0	6.7				100%	
	3	WE	1	3	0.0	20.0	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	6.7	0.0	73.3	20.0	0.0	73.3	0.0	60.0	40.0	66.7	20.0	0.0	80.0	0.0	13.3	20.0		20%		80%	
Average	4	WE	0	1	0.0	0.0	0.0	20.0	33.3	0.0	0.0	6.7	0.0	0.0	0.0	6.7	0.0	6.7	0.0	66.7	0.0	0.0	86.7	0.0	73.3	33.3	66.7	13.3	0.0	73.3	0.0	20.0	20.0				100%	
Frequency	5	WE	4	3	6.7	0.0	0.0	20.0	6.7	0.0	0.0	6.7	13.3	0.0	0.0	20.0	0.0	26.7	33.3	80.0	40.0	0.0	73.3	0.0	40.0	73.3	66.7	20.0	0.0	93.3	0.0	13.3	26.7		40%		60%	
	6	WE	3	4	0.0	20.0	6.7	26.7	26.7	0.0	0.0	6.7	20.0	0.0	0.0	40.0	0.0	20.0	20.0	73.3	40.0	0.0	86.7	0.0	40.0	73.3	93.3	20.0	0.0	66.7	0.0	0.0	20.0	20%	40%		20%	
	7	WE	0	2	0.0	13.3	0.0	26.7	0.0	0.0	0.0	6.7	0.0	0.0	0.0	33.3	0.0	6.7	13.3	80.0	20.0	0.0	80.0	0.0	46.7	86.7	93.3	6.7	0.0	46.7	0.0	26.7	0.0	20%	80%			
	8	WE	1	3	0.0	26.7	53.3	26.7	6.7	0.0	0.0	0.0	0.0	6.7	0.0	66.7	0.0	13.3	20.0	86.7	60.0	0.0	93.3	0.0	46.7	86.7	93.3	66.7	0.0	20.0	0.0	20.0	0.0		40%		60%	
	9	WE	1	2	0.0	20.0	6.7	20.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	26.7	0.0	0.0	6.7	86.7	20.0	0.0	66.7	0.0	73.3	60.0	86.7	20.0	0.0	60.0	0.0	33.3	0.0		20%		80%	
	10	WE	4	3	6.7	0.0	6.7	20.0	26.7	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	93.3	0.0	0.0	73.3	0.0	80.0	66.7	73.3	20.0	0.0	73.3	0.0	20.0	0.0				80%	20%
Control-II Macroplot		Plot Size:		1	2	6	4	4	10	0	0	0	2	0	0	4	0	4	6	54	10	0	56	0	40	36	58	10	0	44	0	12	6					
Frequency by		Plot Size:		2	2	12	6	18	18	0	0	0	4	0	0	18	0	6	10	78	16	0	80	0	58	64	84	20	0	62	0	14	10					
Plot Size		Plot Size:		3	6	12	14	34	40	0	0	8	4	4	0	44	0	18	12	92	36	0	88	0	76	74	88	32	0	86	0	38	12					

The average of the three nested plot size frequency values are shown for each transect. Actual frequency values for each nested plot size are also shown for each macroplot.

Multnomah Channel Date: 25-Jul-02

Transect #: MC12 Starting point (m): 1

	Point Intercept #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% Cover
1	*Phalaris arundinacea*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100
2	*Deschampsia cespitosa*																					0
3	*Lolium perenne*																					0
4	*Holcus lanatus*																					0
5	*Agrostis gigantea*																					0
6	*Carex vesicara*																					0
7	*Carex stipata*																					0
8	*Carex obnupta*																					0
9	*Carex aperta*																					0
10	*Scirpus spp.*																					0
11	*Typha latifolia*																					0
12	*Juncus effusus*																					0
13	*Eleocharis palustris*																					0
14	*Ranunculus repens*																					0
15	*Mentha pulegium*																					0
16	*Bidens spp.*																					0
17	*Cirsium arvense*																					0
18	*Cirsium vulgare*																					0
19	*Lythrum salicaria*																					0
20	*Sagittaria latifolia*																					0
21	*Polygonum hydropiperoides*																					0
22	*Potamogeton natans*																					0
23	*Rubus discolor*																					0
24	*Spiraea douglasii*																					0
25	*Rosa spp.*																					0
26	*Salix spp.*																					0
27	*Carex sp.*																			1		5
28																						0