

2022 PRRIP GRASSLAND VEGETATION ASSESSMENT REPORT

36 Sites in Nebraska



Prepared for Platte River Recovery Implementation Program



Prairie Legacy Inc.
GRASSLAND VEGETATION ASSESSMENT

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1.0 INTRODUCTION AND BACKGROUND

The Platte River Recovery Implementation Program (Program) has acquired or secured management agreements for parcels of grassland along the Platte River Valley between Lexington and Chapman, Nebraska, with the long-term goal of improvement and maintenance of migration and reproductive habitat for least terns, piping plovers, and whooping cranes. This is the third cycle of vegetation surveys on native and restored grassland areas used to monitor potential shifts in vegetation communities and/or plant species composition over time.

PURPOSE

- 1) Provide an inventory of vegetation communities and plant species composition on Program owned or managed grassland, wet meadow habitat and cropland areas that have been converted to grassland. Established plots will be assessed for changes in vegetation composition and density.
- 2) Monitor sites for problem areas or colonies of invasive and noxious plant species and program species of concern. Identify any rare or threatened plant species which may appear.
- 3) Determine species composition in each sample area to track potential shifts in dominant species and changes in cool and warm season cover. Data collected will be used in comparative analyses in future years to determine changes from previous surveys in vegetative composition and dominance.

LOCATIONS

The area of interest consists of Program owned or managed grassland areas along the Platte River beginning at the junction of U.S. Highway 283 and Interstate 80 near Lexington, Nebraska and extending eastward to Chapman, Nebraska. This survey includes sites first analyzed in 2013 and 2014, with additional sites in 2016. Several areas which had been followed over the last two cycles were removed from survey in 2019 with most added back in 2022 in addition to three new sites.

A total of nearly 4,518 grassland acres on 36 sites, serving as buffer and habitat between agricultural land and built infrastructure and the Platte River were surveyed. These sites are managed in a variety of ways, including grazing, burning, and haying. Some sites had multiple management practices applied in the same year. A few of the sites were formerly in agricultural production or were disturbed in other ways and were thus replanted to a native seed mix prior to the 2016 and 2019 surveys. All sites and their acreage are listed in Table 1A – 1G along with the date of seeding, number of plots that were placed at each site and the management from the time of the first survey in June of 2013 through 2022.

METHODS

Data were collected during the three weeks beginning the last full week of June in 2013 and again in 2016. Two sites, Fox and Blessing were surveyed for the first time in 2014 and four other sites, CWR North 3, NGPC, Speidell North and Speidell South were surveyed for the first time in 2016. Dippel was added for survey in 2019. The 2019 data were collected during the last week of June and the first week of July. 2022 data were collected again in late June and early July. Some older sites that had been eliminated from survey in previous years were added back and three new sites, Bergren Meadow, Bergren Accretion and Meyers Trust Meadow, were also included. The survey protocol as used for all years is attached as Appendix A. Scientific nomenclature for species was taken from the Natural Heritage Database (Steinauer and Rolfsmeier, 2013). The identification key was *Flora of Nebraska* Vol. 2 (Kaul et.al., 2012).

PLOTS & TRANSECTS

Cover data were collected in microplots along a transect within a larger macroplot. These transect locations were marked by GPS using UTM NAD 83. New sites were marked by Prairie Legacy staff with magnetic spikes provided by Program staff. A temporary white fencepost was placed at each end of the transect. Macro plot locations were compared with soil maps and moved if necessary to provide an appropriate number of sites distributed among these soil types in order to provide sampling locations from a majority of potential community types. Final locations are listed in Appendix B. Transect endpoints of plots marked from 2013 through 2019 were marked with rebar. Program staff buried these rebar stakes in 2013 and 2014 after data were taken. Plots were relocated for the 2016 and 2019 surveys and additional plots were established in the Dippel site in 2019. All sites located for survey in 2022 were marked with magnetic spikes at one end to aid in relocation. Transect endpoint locations for each macro plot within each site are shown in Figures 1 through 11.

FINDINGS

PLANT SPECIES OF CONCERN

No threatened or endangered plant species were encountered during the 2022 surveys. There were a few infestations of musk thistle, leafy spurge, Canada thistle, reed canarygrass, and purple loosestrife. The plots in which these species were located are listed in Table 2. Musk thistle was more prominent and located in more sites than in 2019. Chemical control of musk thistle was underway in late June when this species was past full bloom. While many chemical applicators prefer to do applications when plants are in full bloom and more visible, treatment is more effective in late May or early June before the blooms reach maturity. Additionally, any full blooms must be removed as herbicide does not stop mature heads from producing seed. Chemical application to the rosette stage of musk thistle in late fall is the most effective time to treat this species. In addition, we observed improper spraying technique which allowed most forbs to be targeted or drifted upon by applicators. In areas observed the day following application desirable forbs showed signs of chemical stress. Purple loosestrife was found in fewer plots at Binfield West Hay

Meadow and Johns North Wet Meadow, but was found in more plots at Binfield East, West, and Dippel than in 2019. Reed canary grass is in all plots at the two Bergren sites.

PLANT SPECIES, DOMINANCE, AND ABUNDANCE

All scientific and common names of plant species found within the plots for all survey years and sites are listed in Appendix C along with their value of conservatism and wetness indicator status as assigned by Nebraska Natural Heritage Program and the national wetland plant list (Steinhauer and Rolfsmeier, 2013; Lichvar, 2013). This list also includes the plant symbol (P-Symbol) assigned by the Natural Resource Conservation Service (NRCS National Plant Database, 2013). Plant community classification follows Steinhauer and Rolfsmeier (2010).

Plant species were assessed by percent cover at each site. Cover is a measure of the visual obstruction of each plant species in a 20x50 cm frame. Absolute cover can exceed 100 percent for the frame as some species overlap each other. Tables 3 through 7 summarize the percent cover of each species by site. The tables are separated by west (A) and east regions (B). The species are categorized as cool and warm season grasses (Tables 3A-B and 4A-B), grass-like species (Tables 5A-B), exotic and native forb species (Tables 6A-B & 7A-B). Absolute coverage of cool season species and warm season species also are depicted graphically in Figures 10 and 11. Percent cover for litter and bare ground are also presented (Tables 8A-B). Trees are included with forbs species as these were rarely more than seedlings in the plots. These percentages are a summary of the conditions found in 2019, which can be compared to similar measures from 2013, 2016 and in subsequent years.

FQI

Evaluations based on plant species richness and diversity can be supplemented by weighting or rating species based on their tolerance of disturbance beyond historically normal natural disturbances. This is the idea on which Swink and Wilhelm based their Floristic Quality Index (FQI) (Swink and Wilhelm, 1979, 1994). Plant species are assigned a coefficient of conservatism (C) by experts in each state. C is a value from 0 to 10 placed on native plant species, which describes adaptations of each plant species to disturbance. Exotic plant species are not assigned a value. A value of 0-3 indicates the species are adapted to disturbance and can be found in a wide variety of conditions. Plants which are consistently found in the native community matrix are given a value of 4-6. Values of 7-10 are reserved for late seral species which are less adapted to disturbance, have a high degree of preference for specific ecological conditions and as such are usually found in intact plant communities. These values are listed in Appendix A for all species found at those PRRIP sites which have been sampled.

An average C value can be calculated to get a quick idea of the vegetative condition of an area. It is calculated by taking the average of all the C values for a list of species within an area. It can be calculated using only native species or with both native and exotic (introduced) species. The latter is a more accurate look at the conditions at a site. The former, however, allows one to judge the condition of the native component. The floristic quality index (FQI) is calculated by the following formula: $FQI = (C/N) * (\sqrt{N})$, where C is the coefficient of conservatism and N is the total number of species found in an area. Using (\sqrt{N}) adjusts for differences in the area being evaluated. These FQI

values were calculated for each site. Taft et al. (1997) promote the use of both exotic and native species in the index computations to provide a measure of structural integrity (the self-correcting potential) of a native area. Non-native species are assigned a value of 0 for computational purposes.

The cover percentages of plants found among the sampled plots was used to weight the C values to provide an additional dimension of floristic quality (FQIw), that of overall dominance or abundance of the plant. The cover of each species multiplied by its C value gives greater weight to abundant species and less weight to the less abundant species. Non-natives are included in the number of species present. Since they are not given C values, those weights are not included.

The average C value and the FQI were calculated for each site using only native species first, then using both native and exotic species, and finally for the weighted average of both native and exotic species. These are presented in Figure 12 and Table 9. When exotic species are added to the FQI calculation we see a more complete picture of the overall condition of a prairie. The best use of these results is as a comparison of species richness and abundance in successive years.

The best measure of overall change in warm season and native abundance is weighted floristic quality. However, it should be emphasized that each measure of floristic quality provides insight into the potential causes for the change. Each of the parameters of the floristic quality index should be examined as they each account for a different perspective on quality. The number of species detected (N) will affect all calculations of floristic quality. In sites with higher average C values, it is not unusual for average C values to decrease in subsequent years as more species are added to the total. A decrease of 0.2 or 0.3 in the average C value over 3 to 5 years can indicate detrimental effects and suggest a change is needed in management regimen, while a stable or increasing average C value can be a measure of effective management (Wilhelm and Masters 1995).

Changes in weighted FQI show changes in the abundance of higher or lower value species. Each of these measures applied to this second set of data will be used to compare with previous years, allowing analysis of changes in vegetation diversity and dominance. Baseline values collected in 2013 are presented and compared with 2016 and 2019 values in Figure 13 and Table 10.

At each sampling date, floristic quality analysis (FQA) indicated that some sites remained at levels of disturbance for which native species may not be able to adapt or compete (Table 9). A measure of such an instance would be an FQI below 20 with very little diversity and very little or no warm season grass components. Other sites may have many native species at the site, but these may not have been abundant. Weighted FQI will help us determine the impact of changes in the abundance of native taxa.

Non-native taxa can reduce the restoration potential and integrity of the natural community (Taft et al., 1997). Changes in the presence or absence of non-native taxa influence floristic quality measures, however, since they are not given a numeric value, changes in the abundance of these species are less apparent than that of native taxa. All FQI values in 2022 will help us to speculate if

over the last 9 years, some change has taken place and whether that change may have been influenced by further invasion of non-native taxa or an increase in the abundance of native taxa.

CONDITION ASSESSMENT

Analysis of the native and exotic plant species composition of each site (Tables 9A and 9B) revealed that all Binfield sites have greater than 80 percent native species. Morse Hay South, a restored site, also has 85% native species. Hostettler Crop and Dyer Grassland, also restored sites, now have the highest percentage of exotic species, 46 and 43 percent, respectively. Twelve sites have one third or more exotic species. Exotic species include smooth brome, which is the most abundant exotic species overall.

Sites with Native average C values above 3 and Native FQI above 30 have been considered desirable from a conservation standpoint (Swink and Wilhelm, 1979, 1994). All Binfield sites as well as the Meyers site have C values above 3. Binfield West Meadow remains the only site which has an FQI above 30 (Figure 12; Tables 9 and 10). FQI was designed to allow comparison or ranking among sites.

When FQI is weighted for cover, when considering all cover of a site, the FQI(w) will be lower than FQI if there are a greater abundance of exotic species or greater if there is a greater abundance of high quality native species. Speidell North is one site that improves when abundance of native species is considered. Binfield West Meadow is the only site that has a weighted FQI above 30. It is important to note that these changes in weighted FQI should be used to assess one site against itself and should also be analyzed against other FQA parameters and against the species abundance data to determine the potential causes for the change. Comparing the weighted FQI_w of individual sites over time can show increasing or decreasing native species abundance. These measures across all sites over the two survey dates indicate a decrease in most sites (Figure 15A & 15B; Table 10). Binfield West has decreased in weighted FQI, but is still above 30. The change is chiefly because of heavy grazing reducing cover. The ability to discover the source of these changes is what makes the Floristic Quality Assessments valuable. Changes in grazing management, rainfall, chemical applications, seeding, or tree and shrub removal are possible activities which might affect cover. Factors such as the amount of cool vs warm season cover, non-weighted FQI, C values and abundance of species must be considered as well. In 2019, Cook and Dyer showed improvement in all categories of floristic quality. In 2022, the reverse was true. Native species are becoming more dominant and have increased in cover. Hostettler, which had been increasing in floristic quality has lost all of its previous gains over the last 3 years. Looking at the changes over the last 9 years will help explain what is happening there. Figures 12A-12B show coverage of cool and warm season species in 2022 and Figures 13A-13D show relative cover of cool and warm for each of the sites across all three sampling years. Figures 15A-B show absolute cover for 2019. Sedges and other grass-like plants have been separated into their own category so that cool season species can be assessed for native vs. non-native composition. While warm season graphs include exotic warm season species, these are not abundant in most cases and therefore do not present a problem when looking at warm season species as desirable overall.

Sites with FQI below 20 require intervention. For simplicity, further references to FQI for each of these sites will mean FQI using native and exotic species combined. Only one site, Speidell South, with FQI originally above 20 has fallen below that mark and now has an FQI of 10. Roughly half of all sites sampled in 2022 have an FQI below 20.

SITE ASSESSMENTS

This section describes the results for the 2022 assessment for each site. Management and notable vegetation removal or chemical treatments at each site is mentioned in the descriptions to help bring context to evaluations. Annual weather cycles including flooding are also influential. It should be noted that precipitation was below normal in half the months between the 2019 survey and the 2022 survey, including the spring of 2022. All these factors would have a bearing on the amount of cover at different sites.

Locations of transects are shown on the maps in Figures 1 through 11. Absolute coverage of cool and warm season grass species is indicated under the name of each site below, as is the current dominant species. Comparison of cool and warm species cover is presented in Figure 12A and B. Relative cover of all species types both grass, and forbs is found in Figures 13A-D. Figure 14 has comparison of native vs. exotic. Floristic quality is presented for each site and is shown in comparison in Figures 15A-B. Floristic quality analysis is presented in Table 9-9B, and Table 10 is a yearly comparison of FQI scores.

PLUM CREEK COMPLEX SITES

This complex is on the western edge of the properties. References in the following discussion for coverages at these sites can be found in the figures and tables named above. Dominant species listed have 5% or more coverage. In general, Figure 13A indicates that both Cook and Dyer have decreasing relative cover of native species and increasing cover of cool season grasses.

COOK

Absolute Coverage: cool 55%, warm 1%; Dominant: smooth brome

Cook Hay Meadow has been hayed yearly in mid to late July and was burned and rested. Smooth brome has increased in dominance from 22% in 2019 to 55% in 2022. Burning activity in 2015 and 2019 has not been frequent enough to control the spread of brome. Figure 13A shows the comparison of relative cover from the first year of survey to the 9th year. You see an increase in warm season coverage after the 2019 burn, however that improvement quickly faded over the subsequent years and is nearly non-existent in 2022. When we include forb cover (Figure 14A) overall relative cover of native is still less than 30 percent. The average C value increased in 2016 after the 2015 burn and decreased slightly in 2019 and has decreased again in 2022 back to the 2013 values (1.44) indicating there are a few suppressed native forbs and grasses, but not an extraordinary number of them. Neither the average C value or the FQI has been anywhere near the suggested values (3.5 and 35 respectively (Wilhelm and Masters, 1995)) in any of the last 9 years, that would indicate even marginal native value. Weighted FQI value had dropped precipitously.

This value adjusts FQI for the abundance of species and has decreased because the most abundant species are of low value for native lands. Warm season grasses are present, however, are less abundant than in past years. Any lasting improvement to Cook Hay Meadow would require very intense management potentially including overseeding or reseeding with native warm-season species. The following management practices were suggested in 2019 and remain relevant. Encouraging warm season grasses necessitates creating conditions unfavorable to smooth brome. This might include intensive grazing for a couple of weeks after growth resumes from an early spring burn, haying in June to prevent seed set, or herbicide applied after growth resumes or in the fall. More frequent burning in early spring may be an option if herbicide and grazing are not viable options. Mowing earlier to prevent brome from seeding may be helpful in preventing sexual reproduction but will not discourage tillering. Frequent mowing beginning in late May has also been shown to be effective in reducing brome coverage (Lawrence and Ashford, 1964).

DYER

Absolute Cover: cool 50%, warm 20%; Dominant: Downy brome

Dyer was planted prior to the 2016 sampling. Dyer had the lowest percentage of relative native cover in 2022 in 9 years (Fig 13A) despite a lower grazing rate and two years of resting (Table 1E). Cool season annual brome had the largest percentage of cover. Exotic forb species had a large increase from 16% to 48% absolute cover. The dominant species is now annual brome, which was increasing in 2019 as well. Native cool season coverage was reduced relative to exotic cool season species, and this was the worst survey year for Dyer in 9 years, with the lowest Floristic Quality parameters, including species diversity and exotic vs native cover. Downy brome was dominant. Downy brome is likely to increase after flooding or in the event of other disturbances such as increased grazing pressure. Annual bromes are likely to increase in the sandy soil with grazing pressure. The reduced grazing and resting that occurred in the last three years should be helpful, however annual brome may continue to dominate without prescribed fire or chemical treatment. Species diversity decreased by over 25% from 2019 to 2022. Sedge species have decreased to less than 4% absolute cover in 2022, compared with 32% in 2019, 22% in 2016 and 19% in 2013.

COTTONWOOD RANCH (CWR) COMPLEX SITES

This complex is on the west side of the properties. Several of these sites were not surveyed in 2019. Figure 13A show that East Lloyd Island, and Morse Hay North have decreasing cover of native species and increasing cover of cool season grasses. The opposite is true at CWR3.

CWR NORTH 1

Absolute Cover: cool 27%, warm 15%; Dominant: Kentucky bluegrass, smooth brome

Cover of cool season exotic grass species was just under 50% in 2013 and was 26.35% in 2022. Smooth brome and bluegrass were the dominant species. Warm season cover was 15% in 2022, back to its 2013 and 2016 levels after increasing to 25% in 2019. Annual witchgrass was the most dominant warm season grass. Relative cover of native species decreased overall. The number of

species encountered decreased in CWR N1 in 2022, but not significantly. Average C value and FQI remained steady from the previous survey but when weighted for native cover, there was an obvious drop in quality (Fig 14). In fact, weighted FQI was at its lowest level since surveys began. This site is grazed from May to Oct most years, leaving little chance for perennial species to increase. Prairie Dogs inhabit the eastern edge of the meadow. They have kept the brome low enough that other species adaptable to the disturbance are able to emerge.

CWR NORTH 2

Absolute Cover: cool 42%, warm 10% and 40% open water; Dominant: Downy brome

Downy brome was the dominant species in CWR N2. Big bluestem, which was present in 2013, was not recorded in the plots in 2016 and was less than 1% in 2019 and was not found in the plots in 2022. There was 13% cover of exotic forbs. Native forb cover increased from 40% in 2016 to 58% in 2019 and was back down to 31% in 2022. There was a slight increase in the number of species recorded but still less than half the 2013 species count.

CWR NORTH 3

Absolute Cover: cool 11%, warm 28%; Dominant: cordgrass, and Sand dropseed, Japanese brome

This site was first sampled in 2016. It is a more mesic site than North 1 and 2 with swales running east and west through this site. CWR N1 and CWR N2 have increased in FQI while N3 continues to decrease. Musk thistle was the dominant forb species (8%), followed by black medic (3.3%) and giant ragweed. Dominant grasses are cordgrass and sand dropseed. Weighted FQI indicates that the cover of native species has dropped to less than half that of the previous survey. Floristic quality is only slightly better than CWR N1 and N2. The cover of native vs exotic forbs was 50% and 60% respectively in 2019 and in 2022 is now 21% and 17% respectively. This site was grazed in 2022, which could be one reason for the precipitous drop in forb cover. Chemical application has not been effective at reducing muck thistle but given the timing and method of application as observed in 2022, may have reduced other species.

CWR EAST LLOYD ISLAND

Absolute Cover: cool 44%, warm 15%; Dominant: Smooth brome, Japanese brome, cordgrass, Kentucky bluegrass

This site was grazed all season long in 2013, 2014 and 2015. In 2016 it was burned in the spring and there was a decrease in cover of warm season grasses along with a decrease in cover of sedges which resulted in a drop in the weighted floristic quality. Management after 2016 was rotational grazing from May to October. The only rest since has been in 2022. This rest, however, was not enough to counteract the extreme drop in floristic quality. All parameters of floristic quality have dropped below the original 2013 levels. Weighted FQI is at its lowest point since the study began. The cover of musk thistle and black medic increased to 10% each. Together they represent two-thirds of the cover of all exotic forb species. These data suggest that both noxious weed control and

management will need to be adjusted. Early spring burns 2 or 3 years consecutively and resting would reduce musk thistle as well as increase warm season grasses and forb species.

CWR EAST (MARSHALL CALVING)

Absolute Cover: cool 41%, warm 7%; Dominant: Japanese brome, Foxtail barley, Cordgrass

This site was used for calving from 2019 through 2022. Grass cover overall is down from 99% to 48%. The 2022 relative cover of cool and warm season grasses is similar to 2019 data. The dominant forbs are hemp, western ragweed and dogwood. Here it is useful to note that small woody species make up relatively little of the species in plots at these sites overall, therefore, woody species have been included with herbaceous flora. Floristic quality had increased in 2016. No survey was done in 2019. Average C value and floristic quality have decreased to below 2013 levels.

MORSE NORTH

Absolute Cover: cool 53%, warm 13%; Dominant: Smooth brome, Big bluestem

Cool season and warm season grasses exchanged roles since 2019 with cool seasons becoming dominant. Heavy rotational grazing prior to 2019 may have helped inhibit the cool season grasses. Season long grazing after 2019 with fewer animals may have allowed recovery of cool season grasses. Black medic, white and yellow sweet clover, and musk thistle are dominant forbs. Black medic is an annual adventive species that spreads quickly in disturbed areas and does well on nutrient-poor soils. Native forb cover is now 39% down again for another survey season. There was little change in species diversity. Most floristic quality parameters remain steady; however, the cover-weighted floristic quality is drastically reduced. These data indicate a reduced abundance of high-quality native species.

MORSE HAY NORTH

Absolute Cover: cool 68%, warm 0.5%; Dominant: Smooth brome, Kentucky bluegrass

This field is dominated by cool season exotic grasses. All parameters of floristic quality have consistently declined here since 2013. We have observed a similar decline in other grasslands in which haying occurs consistently after July 15 each year. Haying as early as mid-June is desirable to reduce smooth brome, as is prescribed fire in late April or chemical applications in late October. Resting hay fields is not effective in reducing cool-season dominance unless it is followed by a spring burn.

MORSE MIDDLE

Absolute Cover: cool 68%, warm 11%; Dominant: Smooth brome, Tall fescue, Big bluestem

Cool season exotic grasses had 60% cover. Native warm season grass cover decreased from 30% in 2016 to just over 10% in 2022. Black medic was the dominant forb species. Native forb species cover was 40% but chiefly of low-quality species. Cover-weighted FQI was the lowest it has been since 2013.

MORSE HAY SOUTH

Absolute Cover: cool 41%, warm 5%, sedges 9%; Dominant: Smooth brome, Reed canary grass, Foxtail barley

This meadow was rested in 2019 and 2022 and hayed after July 15 in the years in between. Native sedges make up 9% of the cool season cover. Most forb species are native with a few of higher quality. The species count is below the 2013 level. There has been a slight increase in floristic quality. An average increase in C value from 1.6 to 2.78 and an accompanying rise in weighted FQI indicate the persistence of higher quality species and a decrease in lower quality or exotic species.

MORSE CROP

Absolute Cover: cool 22%, warm 61%; Dominant: Big bluestem, tall fescue, indiangrass

This site was seeded in 2012. Cool-season exotic grasses continue to increase from 1% in 2013 to 16% in 2022. Exotic forbs included musk thistle and black medic. Sedges were absent in the plots in 2022 as they were in 2016. Warm season grasses have increased from 16% in 2013 and 2016 to 61% in 2022. Morse Crop is one of only a handful of sites surveyed which showed an increase in cover-weighted floristic quality. Rosinweed and sunflowers were dominant forbs. Average C value increased only slightly, but the cover of these species has made an impact on weighted FQI. This site has been rested for three years excluding haying the north half in 2021.

MORSE SOUTHWEST

Absolute Cover: cool 58%, warm 6%; Dominant: tall wheatgrass, smooth brome, foxtail barley

Tall wheatgrass is still the dominant species in this site. The northern portion of this site is nearly a monoculture of tall wheatgrass except in swales which support a variety of forbs (16% cover, 11% native cover). Notes in 2016 indicate improvements in species diversity and floristic quality at this site following a spring burn. In 2022, species diversity has declined but remains higher than in 2013. Floristic quality is unchanged, but cover-weighted quality is much lower. This site had been rested for three years prior to survey but grazed in 2022.

CWR SOUTHWEST

Absolute Cover: cool 40%, warm 3%; Dominant: Tall wheatgrass, Smooth brome

CWRSW was rested for three years and then grazed in 2022. Tall wheatgrass is dominant at this site. Marsh spikerush and three-square bulrush are common in the wetland and provide 18% cover. Species diversity continues to decline at this site, with a count of 55 in 2013 and just 35 now. Average C value increased, however, allowing floristic quality to remain about the same. Cover-weighted FQI declined, indicating that there was less cover of high-quality species.

CWR NORTHWEST

Absolute Cover: cool 45%, warm 14%; Dominant: Tall wheatgrass, Tall fescue, Switchgrass, Smooth brome

CWRNW was also rested for three years and grazed in 2022. Grazing has consistently taken place prior to sampling each year that sampling has taken place. Tall wheatgrass accounted for 28% of

the cover. The cover of forb species overall declined by half from 2016. Average C value was slightly higher but floristic quality declined, indicating a greater impact of exotic species on the overall quality.

CWR NORTHEAST

Absolute Cover: cool 52%, warm 8%; Dominant: Smooth brome, tall wheatgrass

CWRNE was rested for three years and grazed in 2022. Smooth brome and tall wheatgrass accounted for nearly all grass cover. Switchgrass dominated the warm season species with 3.3% cover. Species diversity decreased while average C value increased. The increase in cover by exotic cool-season grasses and the decline of forb cover negated the increase in C value, thereby causing a decrease in floristic quality overall.

ELM CREEK COMPLEX SITES

This complex is included in the western section of the properties.

JOHNS NORTH

Absolute Cover: cool 41%, warm 31%; Dominant: Sand dropseed, Kentucky bluegrass, downy brome, reed canarygrass, switchgrass

Species diversity rebounded slightly from 2019. Average C values and floristic quality remain relatively similar to prior values. Leafy spurge and purple loosestrife are both present on this site. Plot 75 was flooded prior to the 2019 survey and was covered with a heavy layer of sand. Program staff excluded this plot from survey in 2019. In 2022, this plot is still mostly bare sand. Species which did appear there in 2022 are cordgrass from the southern edge, Japanese brome (2%), sand dropseed (2%), scouring rush (4%). Annual grass such as Japanese brome can be expected to increase after disturbances such as flooding.

NEBRASKA GAME AND PARKS COMMISSION (NGPC)

Absolute Cover: cool 69%, warm 3%; Dominant: Smooth brome

This site was added to the survey in 2016 and had 92% cool coverage. It was removed from survey in 2019 and added back in 2022. Cover is still dominated by smooth brome with a very small component of warm season grasses. This site was burned in 2020 and hayed after July 15 in 2020 and 2021. Haying in mid-June is preferable on sites with brome dominance. Despite resting in 2022, the cover of cool season species declined. Low rainfall may have reduced overall growth. Floristic quality parameters remain as they were in 2016. Yearly spring burns or haying early are options to decrease cool-season dominance. A more drastic approach of vegetation removal and reseeding may be necessary if improved habitat is desired here.

SULLWALD

Absolute Cover: cool 58% (all exotic), warm 17%; Dominant: Smooth brome, Kentucky bluegrass, windmill grass

Sullwald meadow was also burned in spring of 2020 and hayed after July 15 in 2020 and 2021. It was rested in 2022. It has been dominated by smooth brome and bluegrass in all surveys. Sullwald is one of the few sites with an increase in species diversity, C value and FQI. A very significant increase in diversity from 24 to 83 species also helped to increase the weighted floristic quality. One plot on the eastern edge of this site is largely responsible for diversity here.

MCCORMICK NORTH ISLAND

Absolute Cover: cool 15%, warm 48%; Dominant: Big bluestem, little bluestem, indiagrass, sand dropseed

McCormick North has been rested since 2016. A spring burn was conducted in 2020. Species diversity had been dropping since 2013, but the 2022 survey showed a 50% increase in species richness from 48 to 104. This resulted in an increase in floristic quality but was accompanied by a slight decline in FQI weighted for cover. Both the warm and cool season grass cover have increased slightly since 2019. Native forb cover has increased from a low of 30% in 2019 to 91% in 2022. Most of these are of low conservation value. Exotic forb cover was also at an all-time high of 40%. Purple loosestrife is the main species of concern here.

MCCORMICK SOUTH MEADOW

Absolute Cover: cool 9%, warm 24%; Dominant: Sand dropseed, sand lovegrass

This parcel still has several areas dominated by mature woody species: chiefly cottonwood and green ash. Warm and cool season grass cover were both lower than in 2019. This site had been grazed from April through June 1 with 70 cow/calf pairs. The survey was conducted after just a few weeks of recovery, which would account for a decline in cover. Three-awn was the dominant species in 2019 but that has been replaced by sand dropseed. Heath aster and hoary vervain have replaced western ragweed as the dominant forb species. Species diversity and floristic quality peaked in 2016 and are again approaching those values; cover weighted FQI is more than double 2013 levels.

FORT KEARNEY COMPLEX SITES

This complex is listed with the eastern section of the properties.

BLESSING

Absolute Cover: cool 24%, warm 40%; Dominant: Little bluestem, smooth brome, big bluestem, downy brome

Eastern red cedars had been cleared from this former CRP land just prior to survey in 2014. Rotational grazing alternating with spring burns have been the primary management practices at Blessing. In 2019 a spring burn was conducted, followed by rest. The site was managed with rotational grazing with 2 weeks on and 2 weeks off through mid-August for the past three years. Warm season grasses dominate this site. Species richness in this already low-diversity site dropped by nearly one-third in 2022. Native warm-season grasses have been increasing yearly at this site

(Fig 13C), but very few forbs are found here. Despite the decrease in species richness, the increase in native grass cover allowed weighted floristic quality to remain relatively unchanged.

WYOMING SOUTH

Absolute Coverage: cool 82%, warm 2%; Dominant: Tall fescue, downy brome, smooth brome

This site was burned in the spring of 2020 and was hayed after July 15 in both 2021 and 2022. In 2019, data were collected at only 3 of the original 4 plots. Minimal changes were noted from 2019 overall. Species richness decreased in 2022 to only 36 species from 43 in 2019. This site had been grazed in 2019, reducing cover of all species, but in 2022 cool season cover increased. This change might be explained by the lack of grazing prior to survey and by the addition of the 4th plot into the survey regime. Tall fescue, smooth brome and downy brome continue to be the dominant species. Cover of fescue is 38%, compared to 40% in 2016 and to 49% in 2019. Average C value and FQI decreased very slightly and cover weighted FQI remains very low.

SPEIDELL NORTH

Absolute Cover: cool 16%, warm 62%; Dominant: Big bluestem switchgrass

Speidell North has had one? spring burns since it was last surveyed. It was grazed from April through September for the last two years and rested in 2022. Dominant species are big bluestem (43%) and switchgrass (9%). Floristic quality parameters were not significantly different from the last survey. Cover of exotic forbs declined to 20% from 36%. There was also a 25% reduction in the cover of native forb species since 2019. Cover-weighted FQI increased slightly, despite a slight decrease in species richness. It is possible that grazing in 2020 and 2021 reduced the number of forb species despite resting in 2022. It is also possible that forb cover has been reduced due to chemical applications in recent years. We do not have chemical treatment information on the management schedules provided by the agency; however, we did witness application of herbicide while on site in 2022. From those observations, it was apparent that little care was taken to avoid affecting desirable natives and that certain areas were unnecessarily sprayed without regard to species composition. For instance, we witnessed the entire perimeter of the pond just west of the picnic shelter being sprayed even though we saw no evidence of noxious weeds.

SPEIDELL SOUTH

Absolute Cover: cool 18%, warm 38%; Dominant: Big bluestem, switchgrass, smooth brome

There has been an increase in the cover of cool season species, chiefly due to an increase in smooth brome, despite being grazed for two months prior to sampling. This site, first sampled in 2016, had been grazed all season long for 4 years prior to the 2019 survey. There were only slight decreases in all floristic quality values including diversity, average C value, FQI, and weighted FQI in 2019. Over the current cycle, Speidell South has been rested for the last two years and was being grazed in 2022. The number of species at this site has declined by half that in 2019. Resting may have led to the increase in smooth brome cover from 1.5% in 2019 to 8% in 2022, and warm season grasses from 1.8 to 38%, but it is doubtful that these changes would have caused such a drastic change in the diversity of flora in just two years. There may be some effect from chemical application practices there as well.

FOX

Absolute Cover: cool 9%, warm 36%; Dominant: Sideoats grama, switchgrass, big bluestem

This is one of two sites which were first sampled in 2014 and again in 2016. It was seeded with three mixes in 2012, and the seed mix included yellow sweet clover which remains the dominant exotic forb species (7% cover in 2022). It was grazed in 2017 then given a fall burn and was overseeded with a high diversity seed mix. It was grazed in 2018, burned in the fall, then rested in 2019. Fox had been rested in the 2019 sampling year, burned in spring of 2020 then rested for the rest of the year and rested again in 2021 and for the next two years. Grazing resumed in 2022 prior to sampling in late June. Only four of the original six transects were sampled in 2016 due to flooding, but five of the six were sampled in 2019 and 2022. Despite forb seeding in 2017, the 2022 species richness remains stable compared to the most recent surveys, at only half the species found in 2014. Fox has 11% cover of exotic forb species, down from 39% in 2019, indicating that some of the change in diversity is due to a reduction in exotic species. There was some decrease but no significant change in any of the floristic quality values. Cover of exotic cool season grasses decreased by half, while warm season grass cover increased. Exotic forb species are still more prevalent than native forbs, however only slightly so and native cover-weighted FQI increased slightly. That is an improvement over 2019 when the exotics were 3 times more prevalent than native forbs.

HOSTETLER

Absolute Cover: cool 15%, warm 35%; Dominant: Indiangrass, switchgrass, western wheatgrass

This site was seeded in 2011 and was dramatically different in appearance in 2016 and in following years than in 2013 (Figure 16). Twelve of 16 originally seeded species were recorded in the sampled plots. Species richness decreased in 2022 to its lowest level since sampling began, to just 50 species. Fifty-six percent of those were native, compared with seventy percent in 2019. This indicates that most of the species' diversity lost was that of native species. Indiangrass (warm season) replaced western wheatgrass, a cool season grass, as the dominant grass species. We found 20% cover of exotic forbs and 17% cover of native forbs, which represents a small increase in exotic and a large decrease in native forb cover. There had been 82% cover of native forbs in 2013; many of those annuals, which positively influenced weighted floristic quality. Some decreases in annual species and in wild-rye (*Elymus*) species are expected changes as new plantings age. Spring burns had been conducted on the western one-third in 2017, the eastern one-third in 2018 and in the middle one-third in 2019. Grazing occurred after the burns in each of those years. Hostetler was allowed to rest in 2020 and was grazed all season in 2021. It was also being grazed in 2022. In past survey years warm season grasses responded with increased growth immediately after spring burns. Season-long grazing may be reducing the seed bank for native forbs. The status and effect of any chemical applications is unknown.

DIPPEL

Absolute Cover: cool 50%, warm 12%, Sedges 4%; Dominant: Smooth brome, reed canarygrass

This is the second sampling year at Dippel. Dominant species are smooth brome (13% cover) and reed canarygrass (13%). This site was grazed from May through September in 2019, 2020, and 2021 and rested in 2022. Dippel is still the most diverse site with 112 species identified in 2022; 78% are native. All parameters of floristic quality improved in 2022. The highest diversity is in the accretion area. Smooth brome is prevalent in the rises and brings down the average quality overall. Purple loosestrife is found in four of the plots at this site. The high-water table in the accretion area allows for rapid recovery from stressors and disturbances such as drought and grazing.

SHOEMAKER ISLAND COMPLEX SITES

This complex is on the eastern edge of the properties. These grassland sites are characterized by frequently and occasionally flooded Northern Cordgrass Wet Prairie plant community on Binfield East and West Meadow, South Hay and West Hay sites with some inclusions of Western Alkali Meadow plant community characterized by saltgrass, alkali arrowgrass and foxtail barley in Binfield West Meadow.

BINFIELD SOUTH HAY

Absolute Cover: cool 20%, warm 40%; Dominant: Big bluestem, cordgrass, smooth brome

This site has been hayed after July 15 each year since the prior survey. Cover of both warm and cool season grasses is reduced from 2019. There was a slight decrease in every parameter of floristic quality in 2022 including forb diversity. Native grass like species had 20% cover. Exotic forbs had only 3% cover. Native forb cover was 20% in 2022, down from 38% in 2019, resulting in a decline in cover-weighted floristic quality. Low rainfall may be a factor in reduced cover, however changing the date of haying to earlier in the season and more frequent spring burns would help keep smooth brome under control and help prevent further degradation of the site. Late season haying will not control brome but would allow more native forb species to set seed.

BINFIELD EAST MEADOW

Absolute Cover: cool 15%, warm 9%, grass-like 18%; Dominant: Sedges, Kentucky bluegrass, foxtail barley, saltgrass

Since 2019, management consisted of rotational burning and grazing on one-third of the site for two years, then season-long grazing with a lower stocking rate. Floristic quality parameters remained relatively steady except for cover-weighted floristic quality. A reduction in cover has affected this measure in each sampling cycle. In 2022 this site had been heavily grazed, and there was virtually no ground cover. Exotic forbs had 9% coverage, dominated by red clover, which is common on heavily grazed areas. Native forb coverage was 40% with western ragweed the dominant forb (9% cover). The presence of a high-water table may be one factor that buffers floristic quality against grazing pressure. Most of the cover on this prairie is from cool season native species.

BINFIELD SOUTH MEADOW

Absolute Cover: cool 23%, warm 22%; Dominant: Big bluestem, western wheatgrass, redtop

Cover of both cool and warm species decreased in 2022 as compared to 2019. Despite an increase in plant diversity, floristic quality was reduced from the previous survey, indicating the additional species may be of low quality or contribute very little cover. This site has had season-long grazing for most years but was rested in 2022. We had attributed a drop in weighted FQI in 2019 to grazing prior to survey, however; despite the rest phase in 2022, the cover-weighted native floristic quality decreased again. Low rainfall and/or chemical applications are possible causes of lower cover.

BINFIELD WEST MEADOW

Absolute Coverage: cool 23%, warm 17%, grass-like 15%; Dominant: Sedges, switchgrass, foxtail barley, big bluestem.

Dominant species across this site are sedges (9% cover), switchgrass (7%), foxtail barley (5%) and big bluestem (5%). Cover has been reduced to nearly one-tenth the previous survey cover. It had season-long grazing with twice the number of cattle for this survey cycle than grazed it prior to 2019. There was above average rainfall in 2019, but drought in 2022. Forb cover was reduced. Dominant forbs are white sweet clover and western wild rose. Parameters of floristic quality were relatively unchanged with the exception of native cover weighted FQI, which dropped drastically. This was caused by heavy grazing which reduced almost all vegetation to less than ½ inch tall in the southern parts of this site. Nothing was left ungrazed; calves chewed on our measuring tape as we recorded data. This site remains the site of highest floristic quality. A high-quality wetland in the northern section, are resilient and recover quickly from drought and grazing pressure. This wetland, coupled with and a dryer southern section, allow for high species richness and contribute to floristic quality

BINFIELD WEST HAY MEADOW

Absolute Cover: cool 17%, warm 35%; Dominant: Indiangrass, big bluestem, smooth brome, switchgrass

Cover of warm season grasses has increased. Cover of grass-like species decreased from 13% to 3%. Binfield West hay meadow has been hayed each year after July 15. The most dominant forb is the exotic black medic. No native forbs are abundant enough to be described as dominant. In fact, there was only 16% cover of native forbs. The decline in number and in cover of native forbs and sedges is the most noticeable change at this site. Some of this may be attributed to the reduced rainfall this spring. The high-water table here should mitigate much of that. Other reasons for the reduction are the reduction in seed set by haying at the same time each year or the possibility of chemical applications drifting to or targeting native plant species.

BERGREN MEADOW

Absolute Cover: cool 51%, warm 6%, grass-like 9% Dominant: Reed canarygrass, smooth brome, switchgrass

Management at this site include season-long, grazing at a low rate and tree removal. Eighty-two species were found during the first year of survey at this site in 2022. Average C value was 2.24 with relatively low but higher than average floristic quality for all sites. Weighted floristic quality was lower than average.

BERGREN ACCRETION

Absolute Cover: cool 23%, warm 4%, 54% bare ground; Dominant: reed canarygrass, white sweet clover

Management at this site included tree removal and planting of a high diversity local ecotype native seed mix in 2021. This is a very sandy site with low vegetation cover. First surveyed in 2022, it is also one of the seven most diverse sites with 95 species found. Average C value was less than average across all sites at 2.04. It was one of the eight sites with lowest weighted FQI.

MEYERS

Absolute Coverage: cool 36%, warm 3%, grass-like 18%; Dominant: Tall fescue, white clover, sedges

This site was first sampled in 2022. It was being grazed at the time and had been rested the previous year. Tall fescue accounts for two-thirds of the cool-season grass cover and white clover makes up all but 2% of the exotic forb cover. There was a total of 44 species identified here. Despite this low species diversity, the C value was 3.25. The average C value is due chiefly to the presence of several species with C values of 6 including leadplant, sneezeweed, smartweed species, flowering rush (*Juncus*) and other wetland species.

SUMMARY AND GENERAL RECOMMENDATIONS

These 36 sites provide habitat for insects, invertebrates, small mammals, and seed which are all important parts of the diet of migrating Whooping Cranes. Providing this habitat is desirable for a diet which produces fat and energy storage that will allow for long flights and healthy chicks once the Whooping Cranes reach nesting sites. As such, the move toward natural, seed producing wetlands and healthy upland habitat in the Central Platte River floodplain is desirable to augment the high carbohydrate food supplies of corn fields. In addition, the native grassland buffer guards against erosion and runoff from farmland and the sandy banks of many sites enhances the nesting success of the least tern and piping plover and supports pallid sturgeon and all other inhabitants of the Platte floodplain ecosystem.

2022 is the fourth assessment of most of these sites on a three-year sampling cycle. The longevity of this study allows us to evaluate changes in cover of warm season and cool season species and discern any trends that the data suggest (Figures 13A-D). Recognizing trends is useful in making future management decisions. Variables such as annual weather fluctuations, flooding, and different management practices within individual sites affect ecological conditions. For example, flooding locations and frequency should be considered when increases in exotic adventive (mostly annual) species are abundant. We have tried to account for most of those issues in the description of each of the sites.

In addition, it is wise to evaluate multiple factors to inform management practices. Individual metrics have limitations. We must be careful when using cool and warm-season comparisons that we do not disregard the potentially large number of cool season native species in wetland areas. We also must consider that some native cool season species such as reed canary grass can be invasive. Average C value indicates the makeup of species present and their conservation value. FQI gives a means to compare one site with another. Weighted FQI can suggest changes in abundance of quality species in a location but only when factors such as grazing, flooding and rainfall are known from each sampling interval. Therefore, it is important to take all these measures into consideration when analyzing changes at a site.

Three factors stand out in the analysis of vegetation at these sites in this sampling cycle: precipitation, grazing patterns, and chemical treatments. Over the last 9 years, we see that the presence of moisture in the form of rainfall or high-water table has a large impact on the degree of change produced by disturbances. Moisture seems to have a very large impact on floristic quality. Sites with a higher water table and the greatest number of wetland species have had the best overall floristic quality and resilience across years. Binfield sites are a case in point.

Sites with early season grazing fared better than sites with season-long or intermittent grazing. Root growth of grasses is negatively affected by grazing lower than 4 inches (6 inches for warm-season grasses). Sites like the southern section of Binfield West Meadow would have had no root growth at the time of observation. This heavy grazing can be used to help slow the growth of undesirable grass species or to reduce the population of forb species. It may also drastically reduce floristic quality by using up the root reserves of desirable species, by reducing root growth, soil water penetration, and soil moisture holding capacity and by changing the overall soil biochemistry (USDA NRCS 2017).

Chemical applications affecting non-target species was a common observation at several sites. Herbicide treatment to control broad leaf weeds can easily reduce populations of all forb species if not applied judiciously. In areas having an intact seed bank species will re-emerge over a few years. Native grasslands where season-long grazing is practiced in most years may have a depleted seed bank and will recover more slowly. These areas will tend to show increases in forbs that can take advantage of stressful situations, such as those which were avoided by cattle or are rhizomatous. Species richness and diversity may suffer long term impacts in those areas.

The species composition at several sites, e.g., Cook, NGPC, Morse North, Morse Hay North, and Wyoming South, is almost entirely cool season exotics. These sites are unlikely to shift to warm season species dominance without intentional or drastic changes in management strategy. Multiple prescribed burns may be required, or recovery may not be possible with burning alone (Wilson and Stubbendieck, 2000). When fire is not possible at the correct stage or when community structure has shifted too far from warm season grasses, other treatments such as mowing may be necessary. Mowing brome 3 or 4 times per year at particular stages in its growth cycle, beginning in late May, has been used successfully (Lawrence and Ashford, 1964).

Improvements in warm-season cover over the last 9 years area occurred at a number of sites, such as CWR N3, Morse Crop, and the McCormick sites. Johns North Wet Meadow is slowly showing an

increase in warm season grasses but has a very good population of native cool-season species as well. In Binfield East and Binfield West, warm season grasses have been grazed regularly at the time of our vegetation surveys and the relative cover of the native sedge component is proportionally greater. Other Binfield sites i.e., South Hay and West Hay, show an increase in warm season species. Baseline survey data for the three new sites, Bergren Meadow, Bergren Accretion, and Meyers, indicate high percentages of cool season cover, including cool season native grasses and sedges.

When we include forb cover with the grasses (Fig 14), it becomes evident that all of the Shoemaker Island Sites have more than 50% native species. Morse Hay North, Wyoming South and NGPC have very little native species cover and consequently have extremely low floristic quality (Fig 15). All measures of floristic quality for these sites are trending downward (Fig.16A and 16B).

Sites that were restored with the addition of native seed mixes have a good native component and increasing cover of native warm season grasses. Hostetler, however, is showing some stress on forb species, with decreasing species richness, Ave C value and floristic quality this year. In photos from the same plot since the initial seeding (Fig 17), one can see evidence toward fewer annual species as well as the impact of grazing in reducing forb species. Hostetler, Fox, Morse Crop are all showing increasing warm-season grass cover. Dyer did have that trend in prior years, but warm season cover fell in 2022.

Management of these sites is diverse and shows increases in warm season cover on several sites despite low rainfall in recent months. This assessment will be helpful with any necessary adjustments in management based on wildlife habitat enhancement goals of the project. Additional periods of rest on season-long grazed acres especially in drought years, additional spring burns, when possible, to decrease perennial and annual brome species and musk thistle, varying haying times to reduce brome seeding, and careful monitoring of chemical applications will be helpful in moving toward more native cover and greater species richness. These adjustments will also provide additional available food sources for wildlife and a more diverse the seed bank allowing for better recovery from drought, flooding, heavy grazing, or other stresses.

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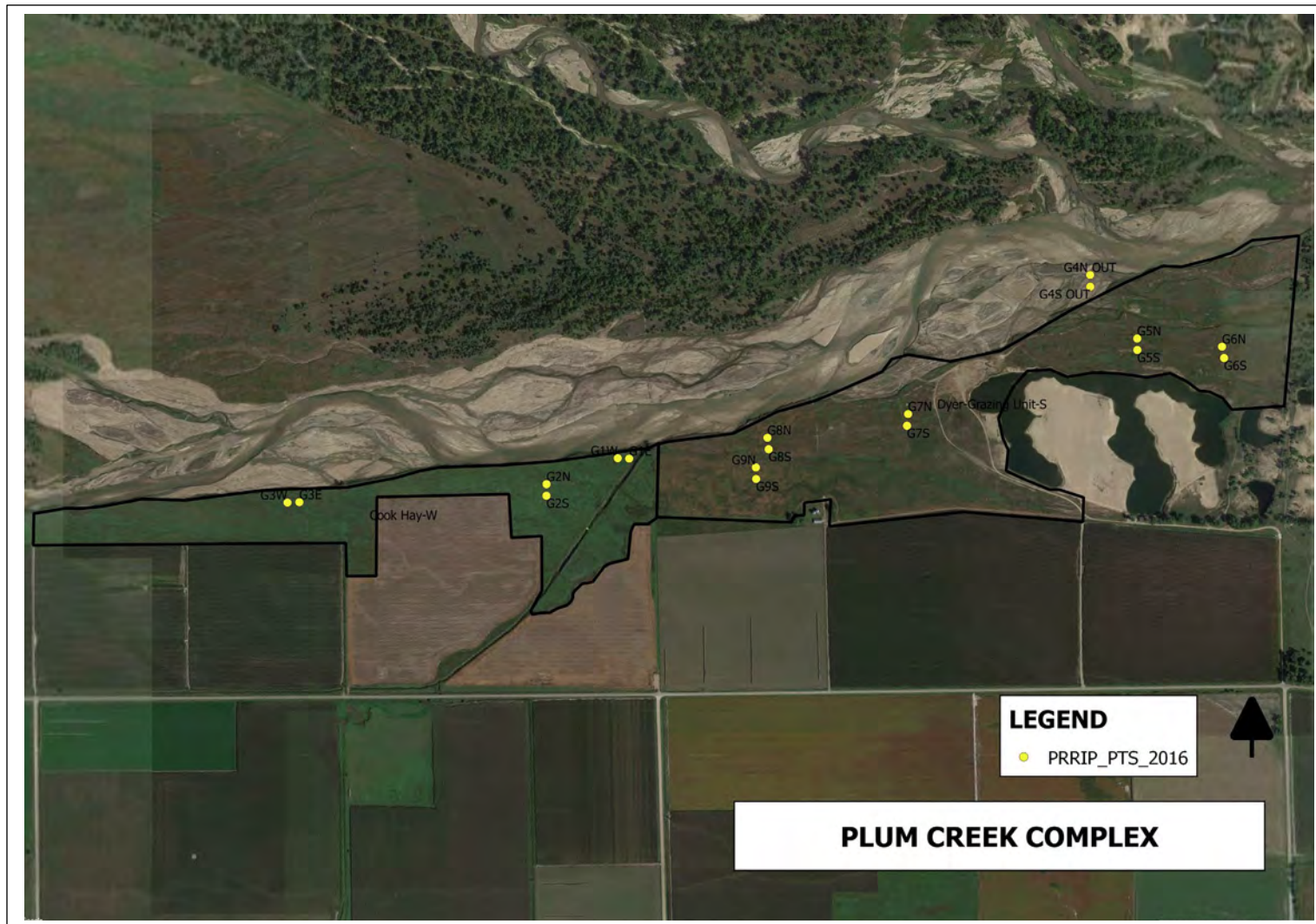
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FIGURES

Figure 1. Plum Creek Complex Transects



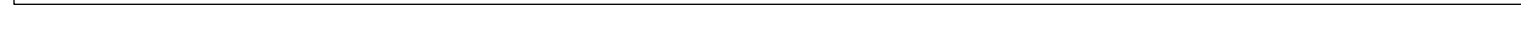


Figure 3. Fort Kearney Complex – West Transects

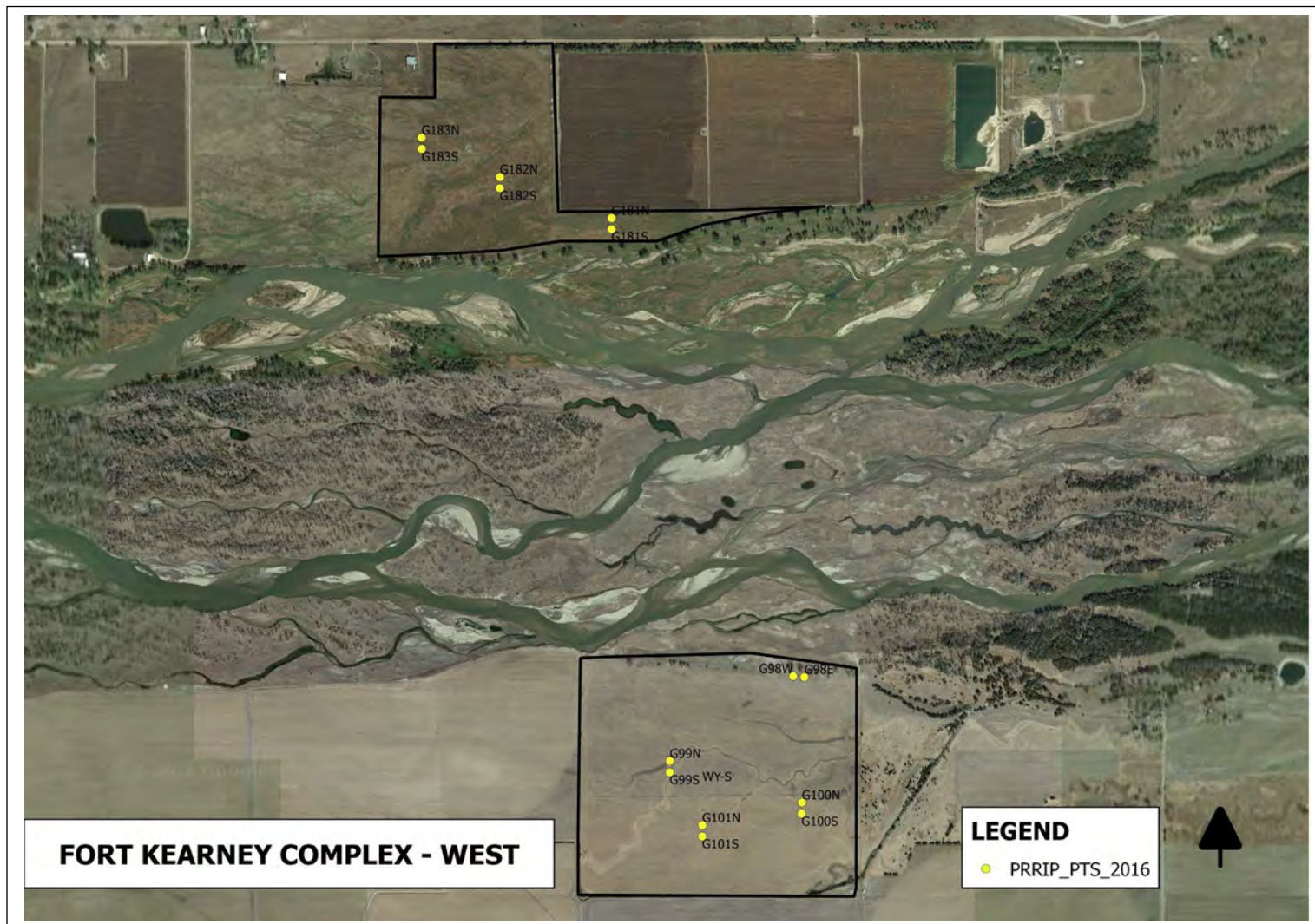


Figure 4. Fort Kearney Complex – East Transects

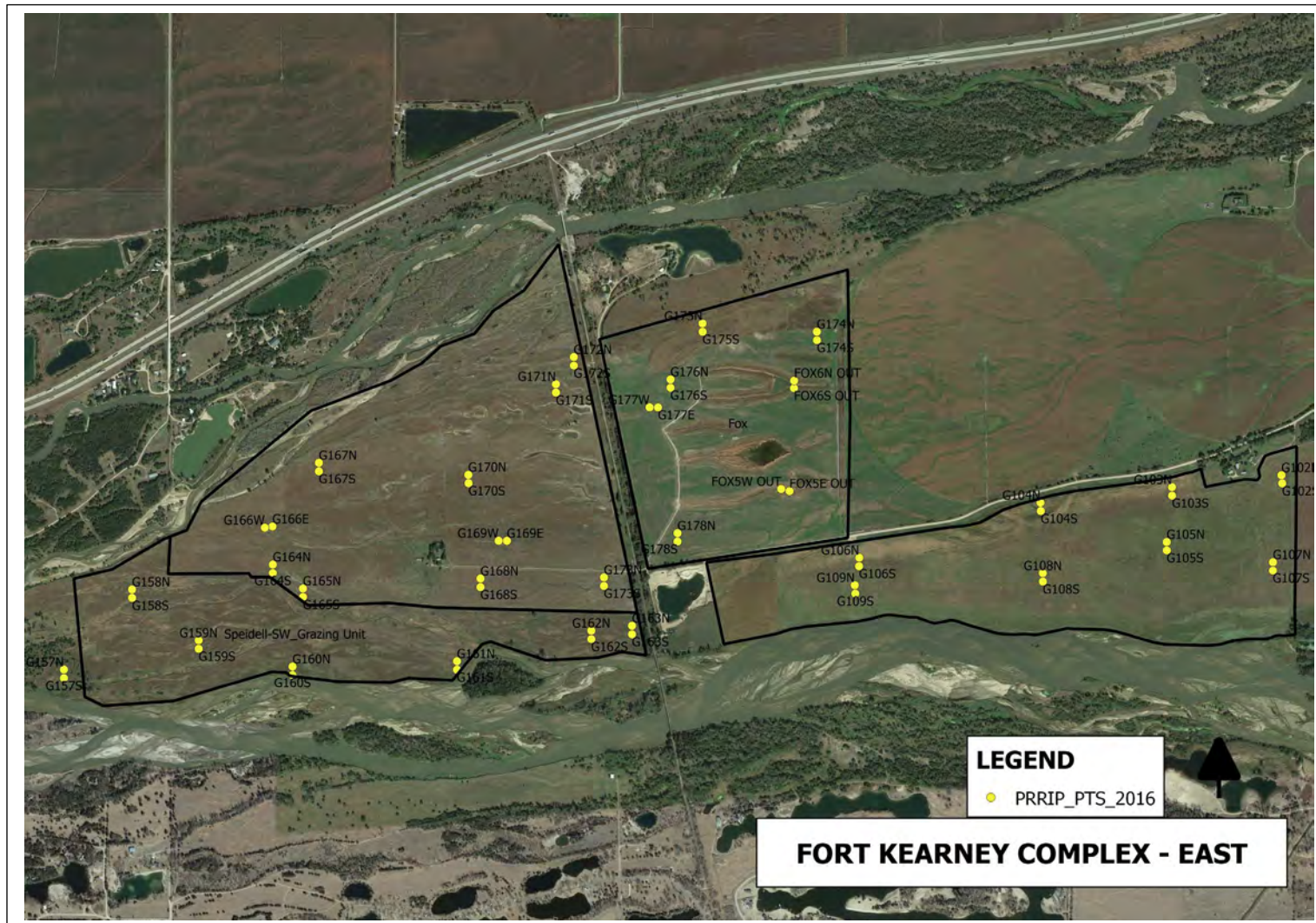


Figure 5. Cottonwood Ranch Complex – North Transects

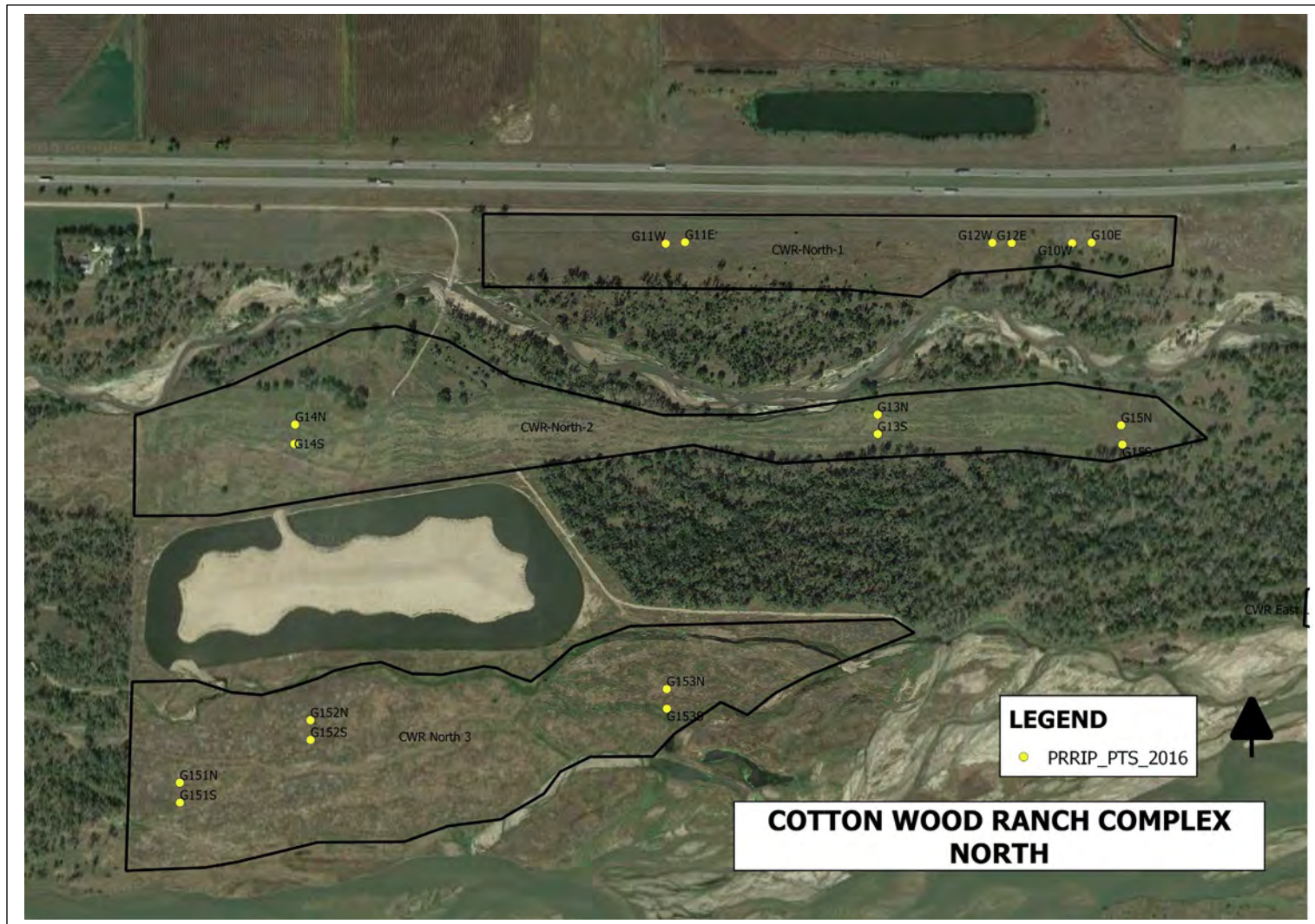


Figure 6. Cottonwood Ranch Complex – East Lloyd Island Transects

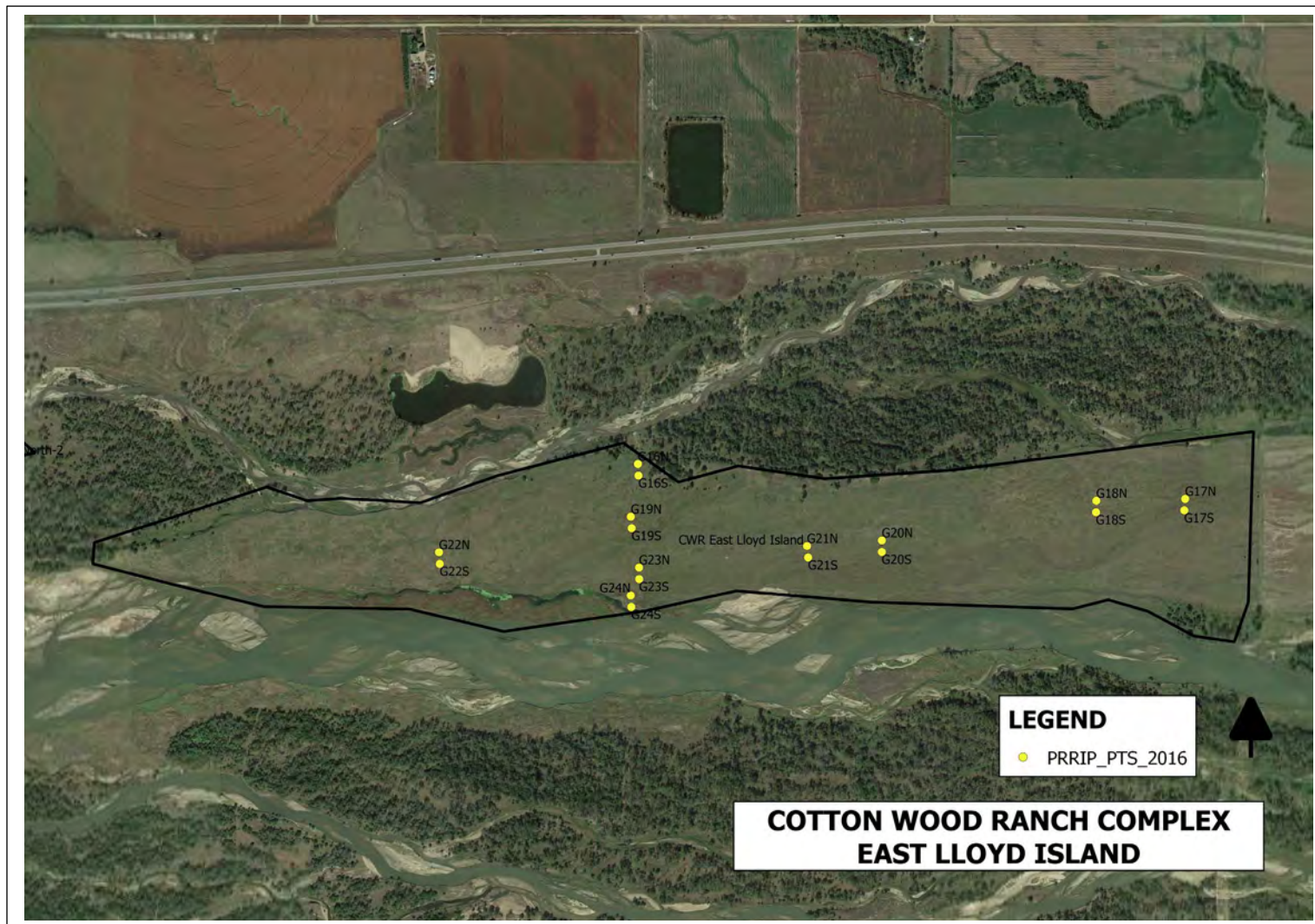


Figure 7. Cottonwood Ranch Complex – South Transects

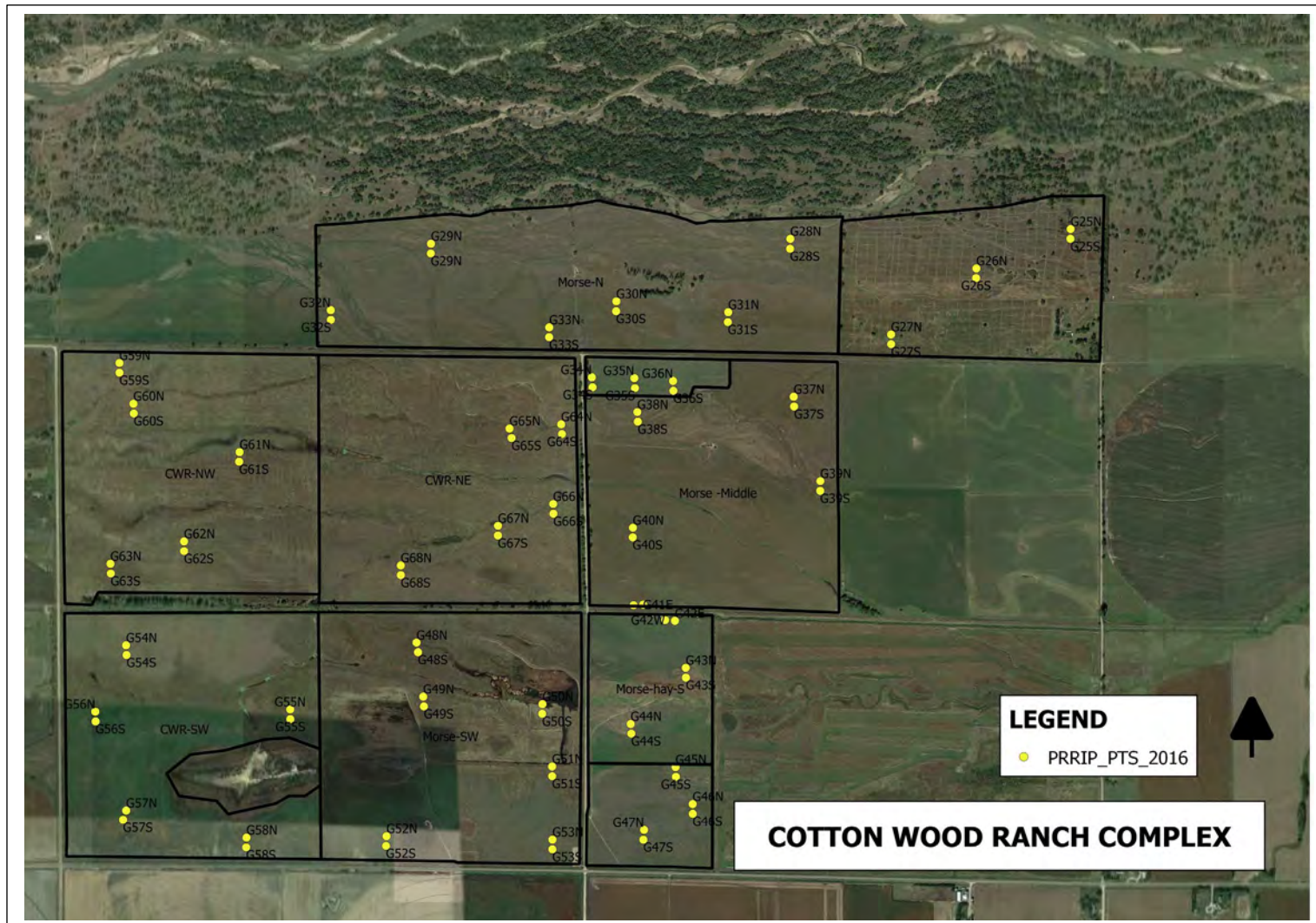


Figure 8. Shoemaker Island Complex – Transects

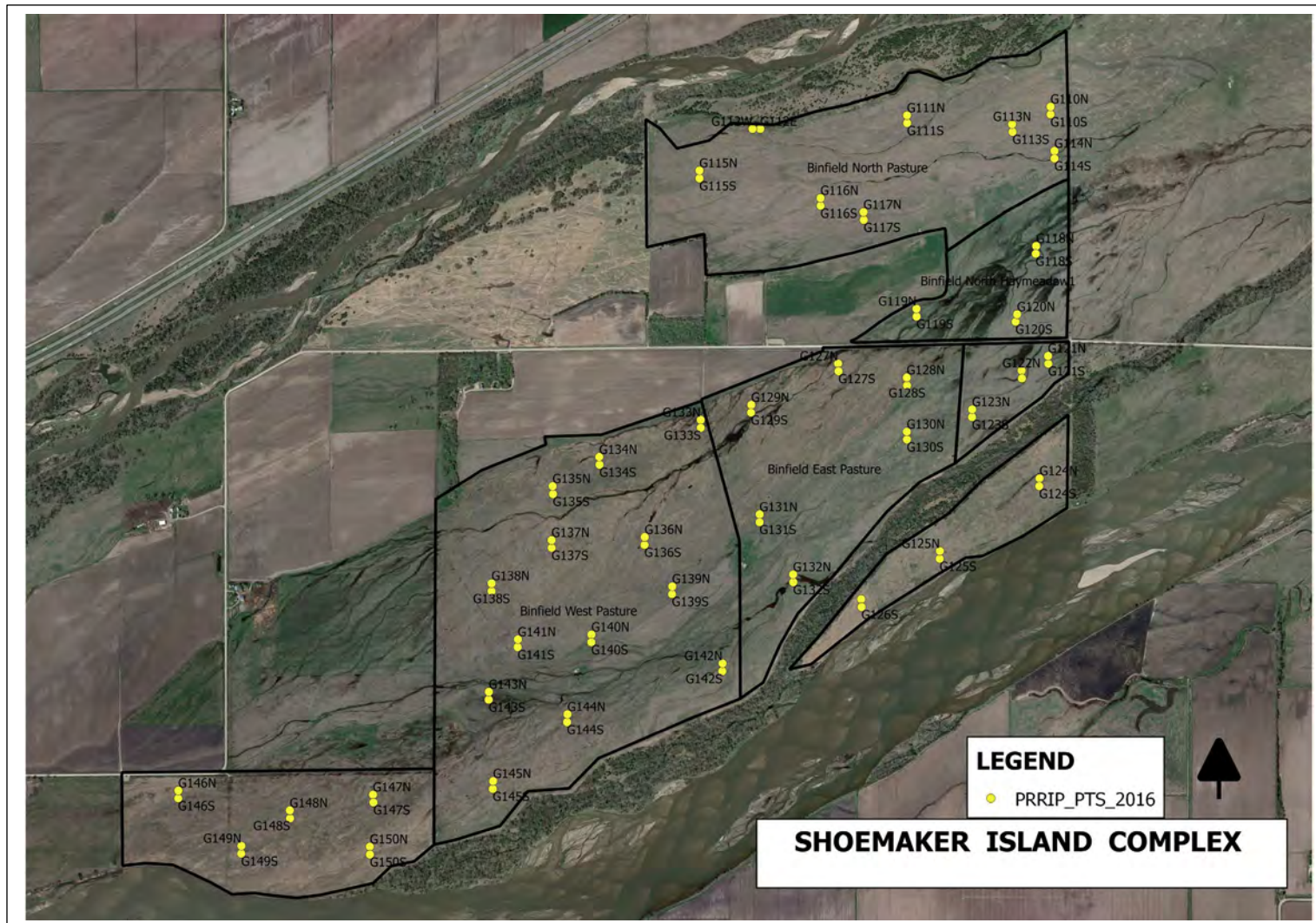
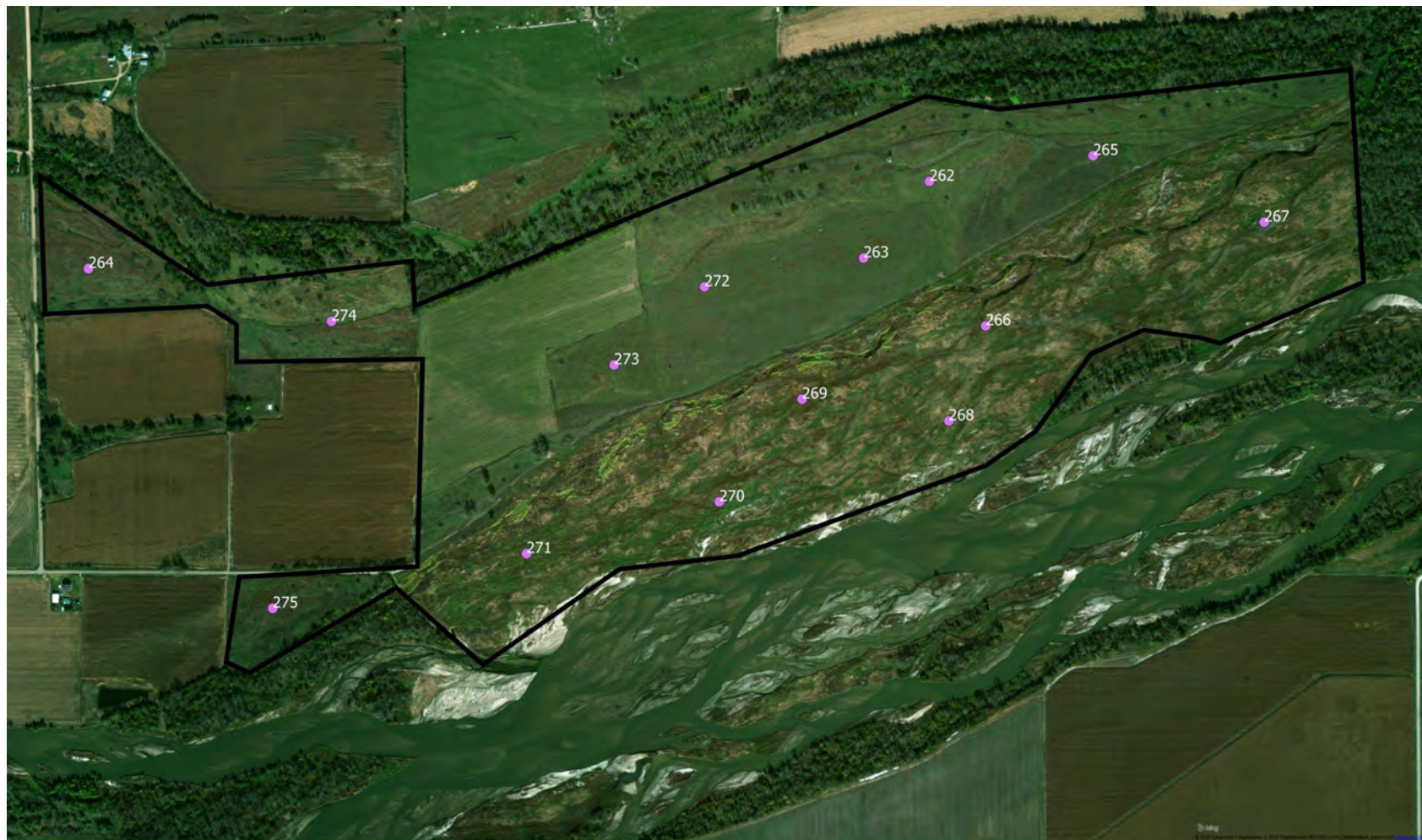


Figure 9. Dippel – Transects



250 0 250 500 750 1000 m



DIPPEL

Figure 10. Meyers Trust Meadow – Transects



Figure 11. Bergren Accretion and Meadow – Transects

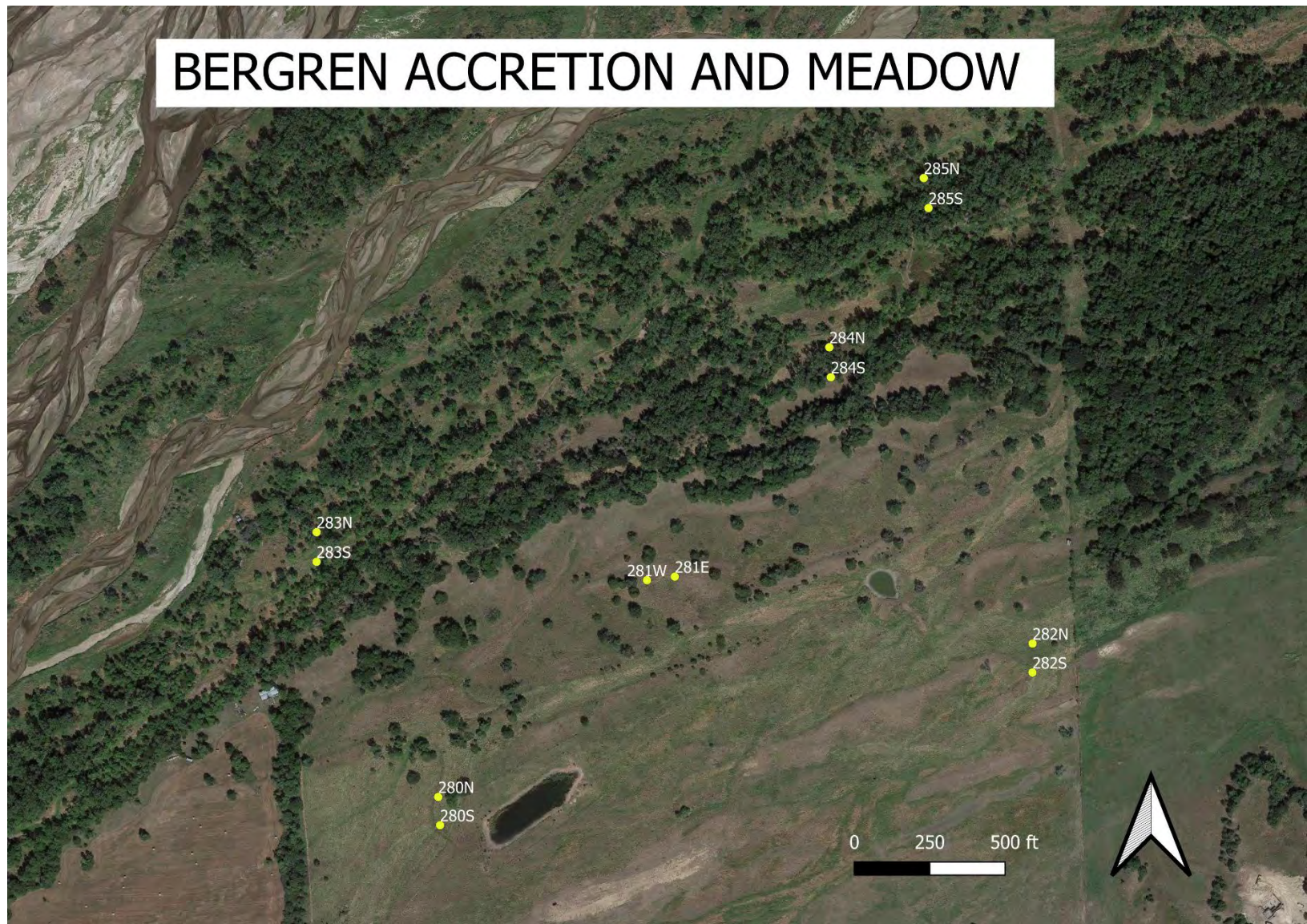


Figure 12A: Absolute cover of cool and warm- season species of Western Sites for 2022. These charts each combine exotic cool season grasses, native cool-season grasses and sedge coverage in the first stack and warm-season native and exotic species in a second stack for each site to compare cool and warm-season cover for each site. Natives are in shades of blue and exotic species are in tan.

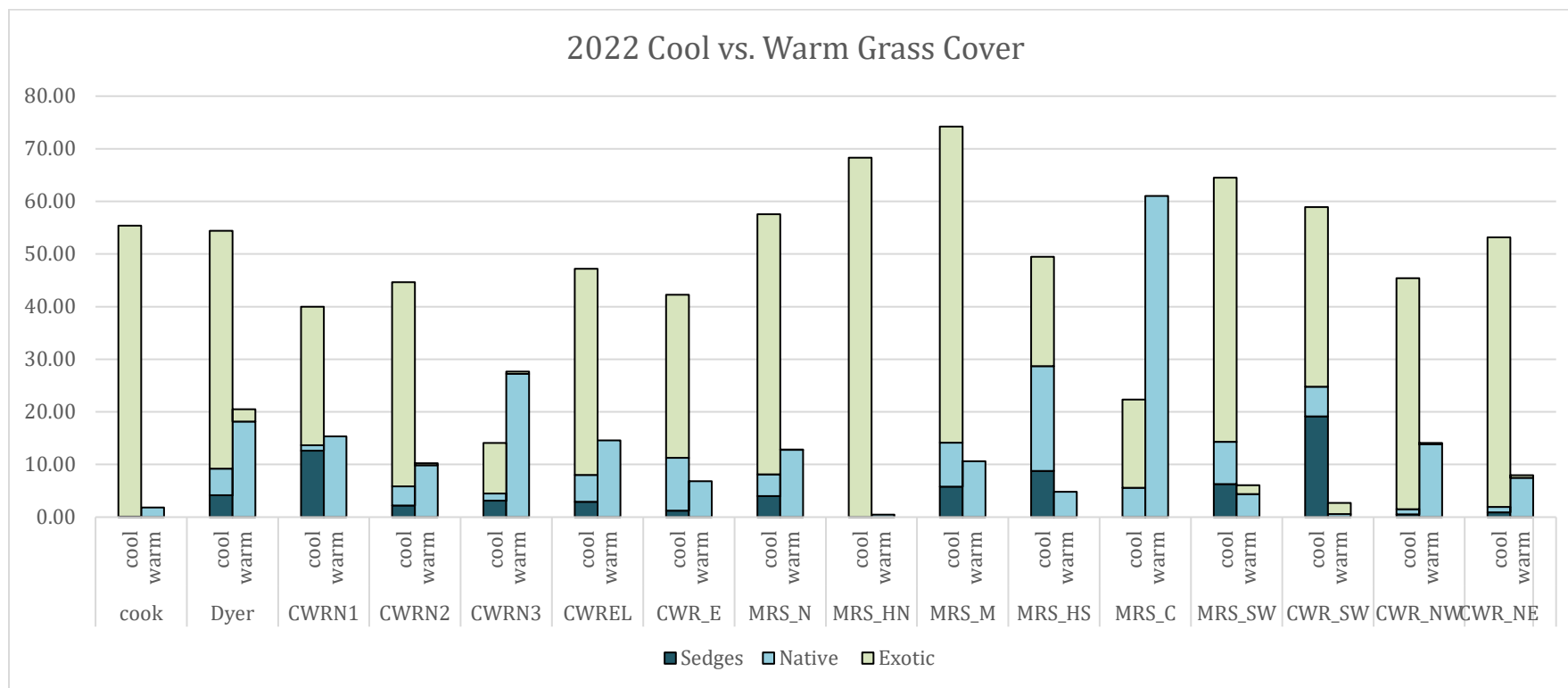


Figure 12B: Absolute cover of cool and warm- season species of Eastern Sites for 2022. These charts each combine exotic cool season grasses, native cool-season grasses and sedge coverage in the first stack and warm-season native and exotic species in a second stack for each site to compare cool and warm-season cover for each site. Natives are in shades of blue and exotic species are in tan.

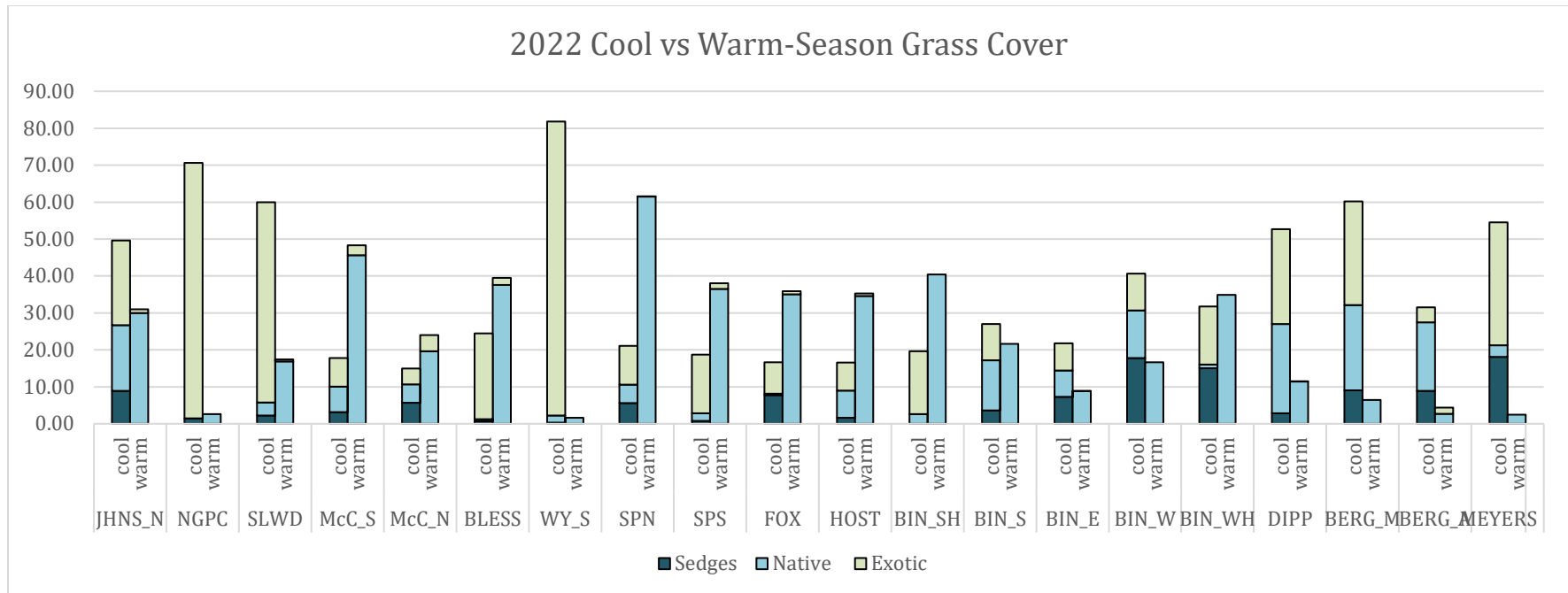


Figure 13A: Comparison of Relative cover at Plum and Cottonwood Creek Sites across sampling years. This chart compares all cool and warm season native and exotic grasses and sedges against each other as if they represented 100 percent of cover for each site and across all sampling years. Increases or decreases represent proportional changes to other species types, not actual changes in cover. Native species are represented in color while exotic species are in black and white. Cool-season species have diagonal hash marks. Warm-season species are in solid colors. The sampling years are represented by the last two digits of the year (ex. 2019 =19).

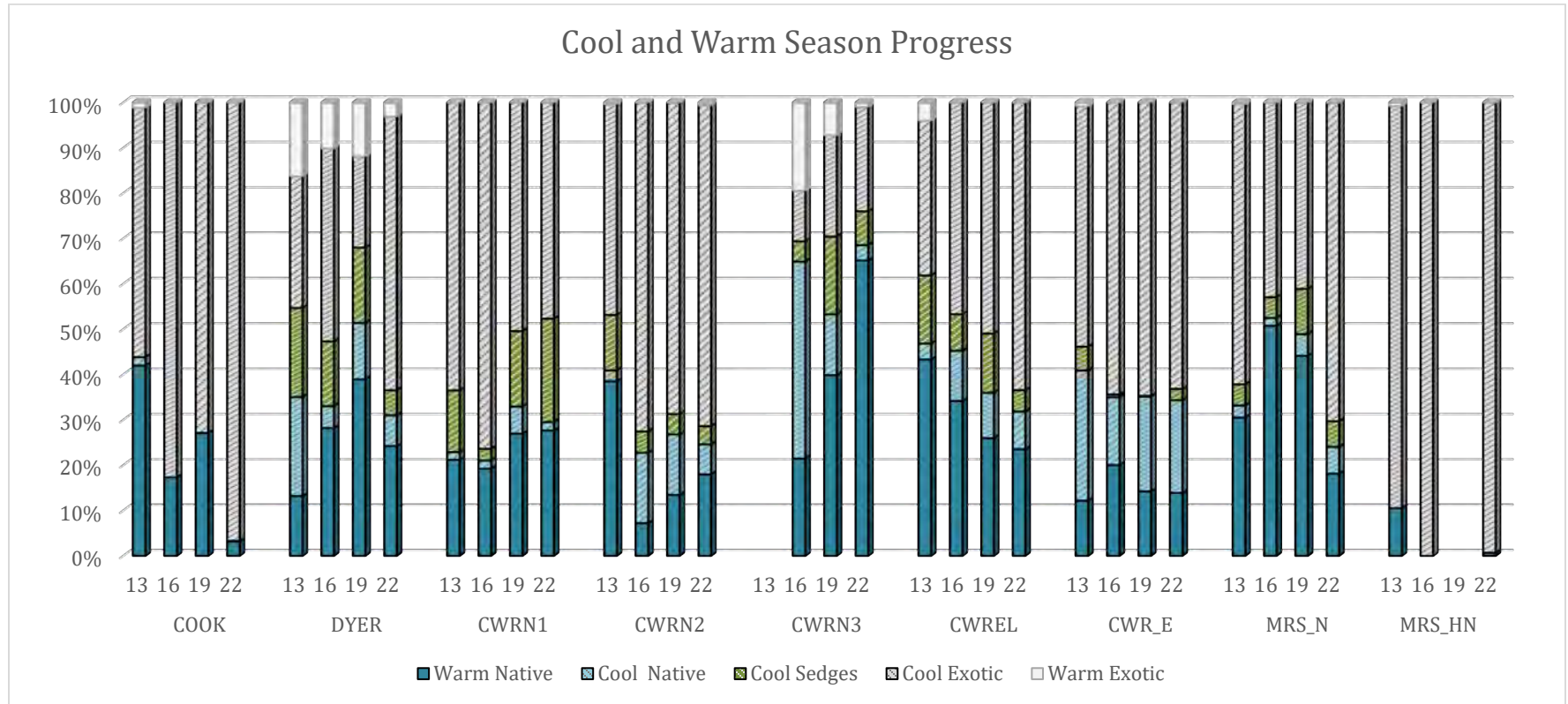


Figure 13B: Comparison of relative cover at Cottonwood Creek Complex Sites and Johns Meadow across sampling years.

This chart compares all cool and warm season native and exotic grasses and sedges against each other as if they represented 100 percent of cover for each site and across all sampling years. Increases or decreases represent proportional changes to other species types, not actual changes in cover. Native species are represented in color while exotic species are in black and white. Cool-season species have diagonal hash marks. Warm-season species are in solid colors. The sampling years are represented by the last two digits of the year (ex. 2019 =19).

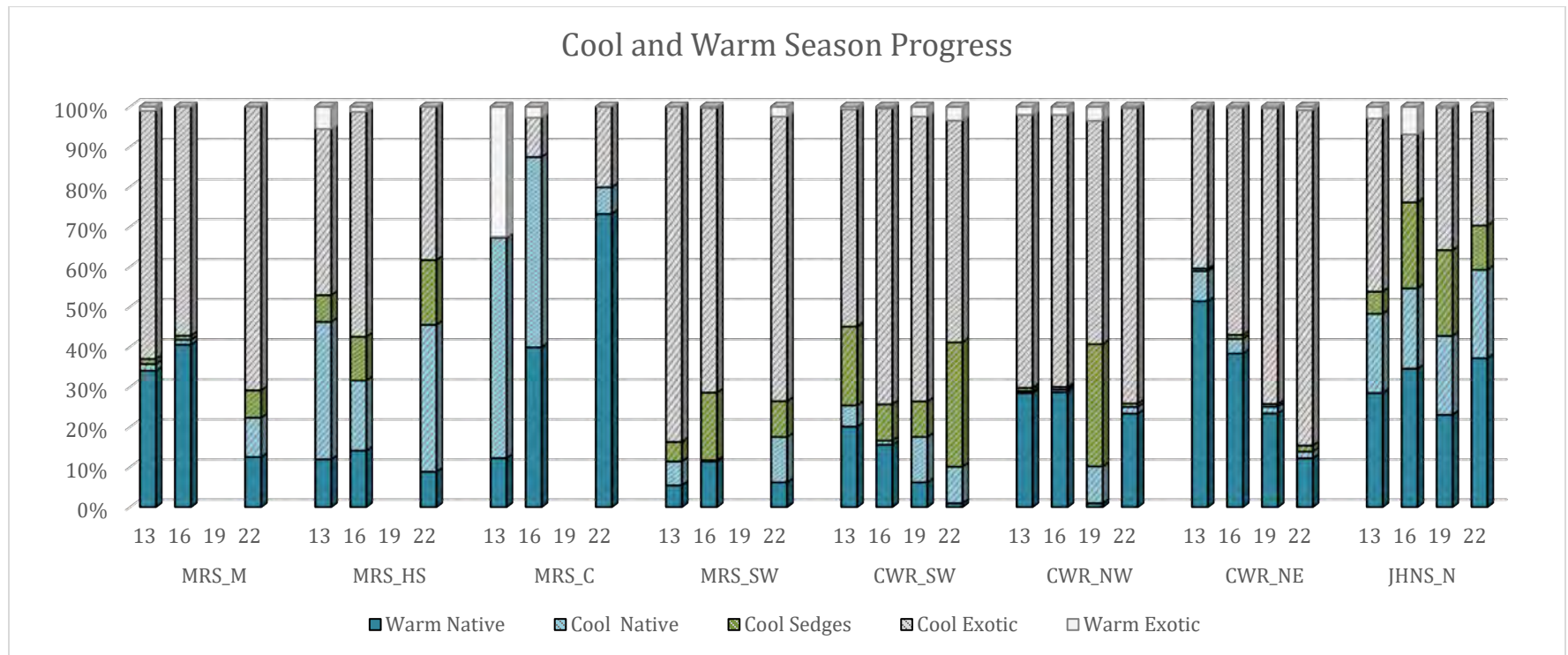


Figure 13C: Comparison of relative cover at Elm Creek Sites and Fort Kearney Complex. This chart compares all cool and warm season native and exotic grasses and sedges against each other as if they represented 100 percent of cover for each site and across all sampling years. Increases or decreases represent proportional changes to other species types, not actual changes in cover. Native species are represented in color while exotic species are in black and white. Cool-season species have diagonal hash marks. Warm-season species are in solid colors. The sampling years are represented by the last two digits of the year (ex. 2019 =19).

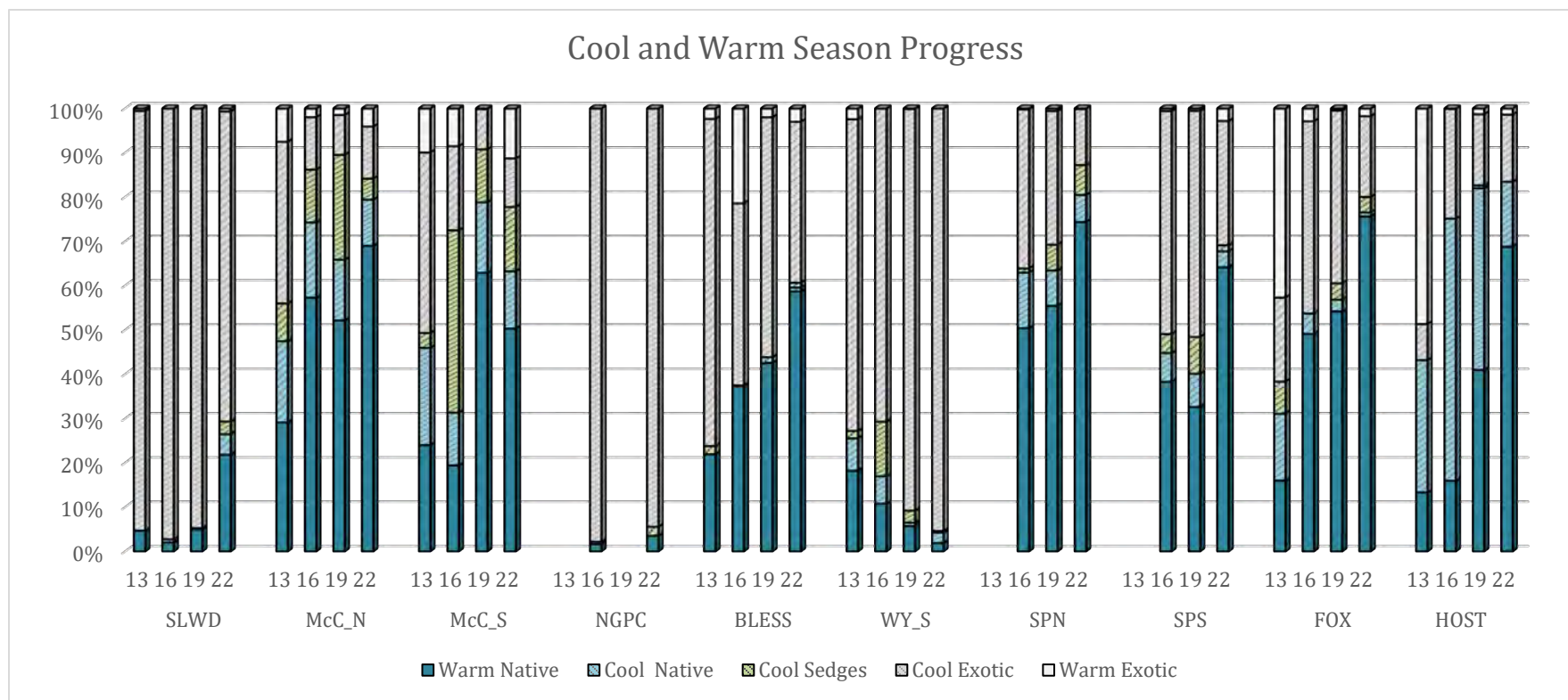


Figure 13D: Comparison of relative cover at Dippel, Shoemaker Island Complex, Bergren and Meyers Sites. This chart compares all cool and warm season native and exotic grasses and sedges against each other as if they represented 100 percent of cover for each site and across all sampling years. Increases or decreases represent proportional changes to other species types, not actual changes in cover. Native species are represented in color while exotic species are in black and white. Cool-season species have diagonal hash marks. Warm-season species are in solid colors. The sampling years are represented by the last two digits of the year (ex. 2019 =19).

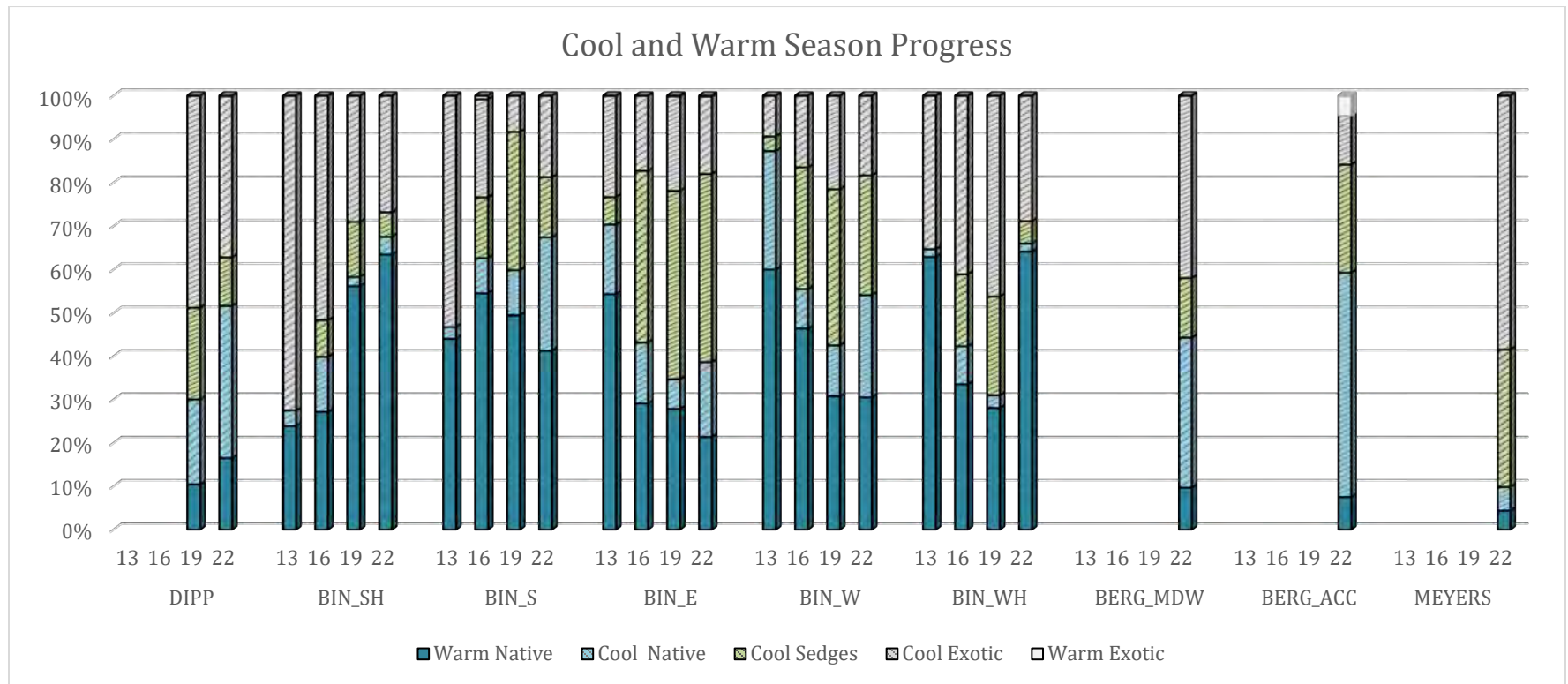


Figure 14: Percent cover of Native and Exotic species at each site. This graph includes forbs and compares all relative cover of all native and non-native species against each other as if they represented 100 percent of cover for each site in 2022. Native species are represented in color while exotic species are in black and white. Cool-season species have diagonal hash marks. Warm-season species are in solid colors

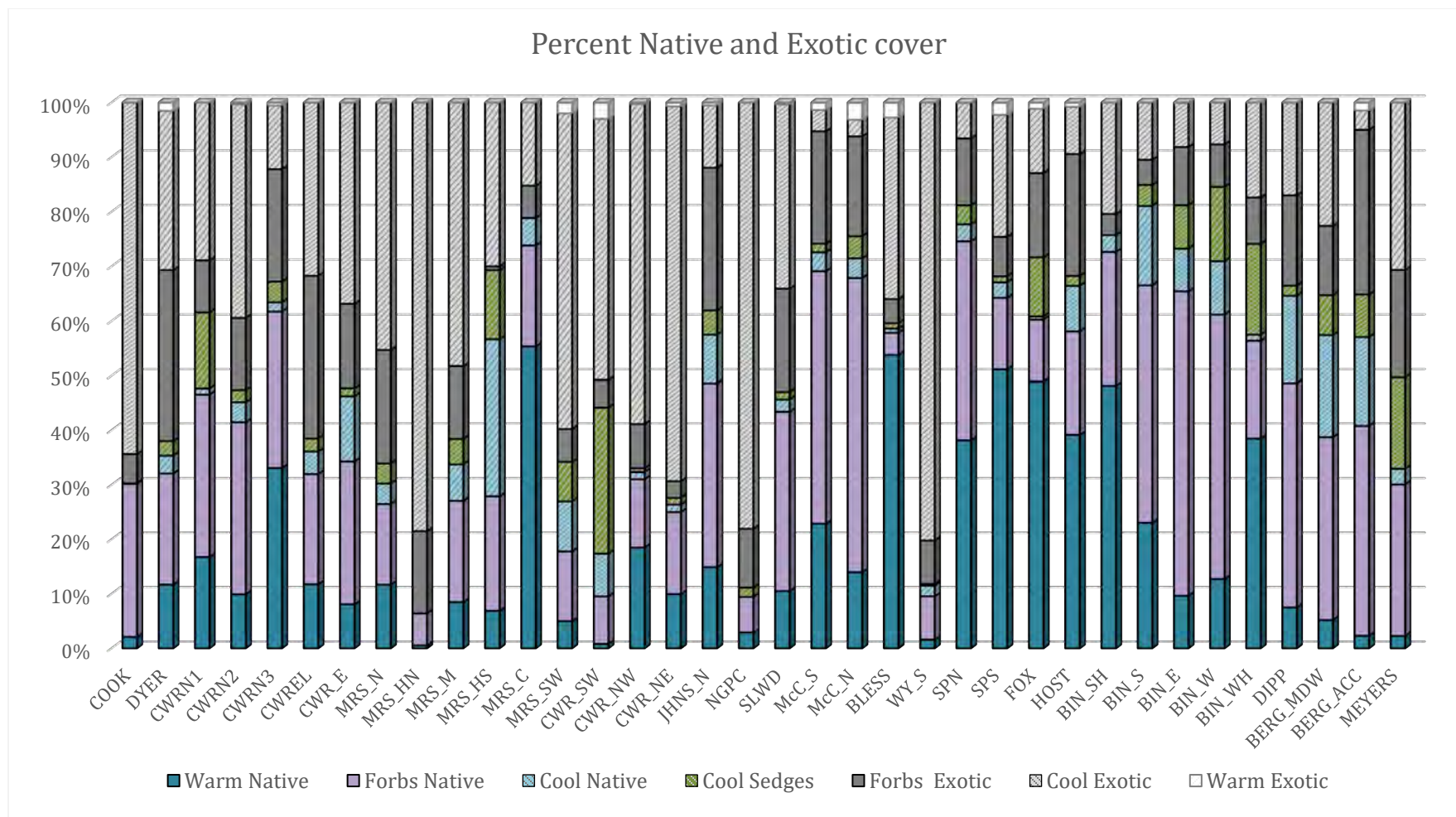


Figure 15: Comparison of FQI native, FQI native and introduced and FQI weighted. This chart compares weighted Floristic Quality Index values for 2022 comparing floristic quality using native only species then adding introduced species in FQIni and finally FQI weighted for cover data in FQIniw. The normal trend is that floristic quality is reduced when introduced species are added to the equation and reduced even further if the abundance of introduced species is greater than that of high quality native species.

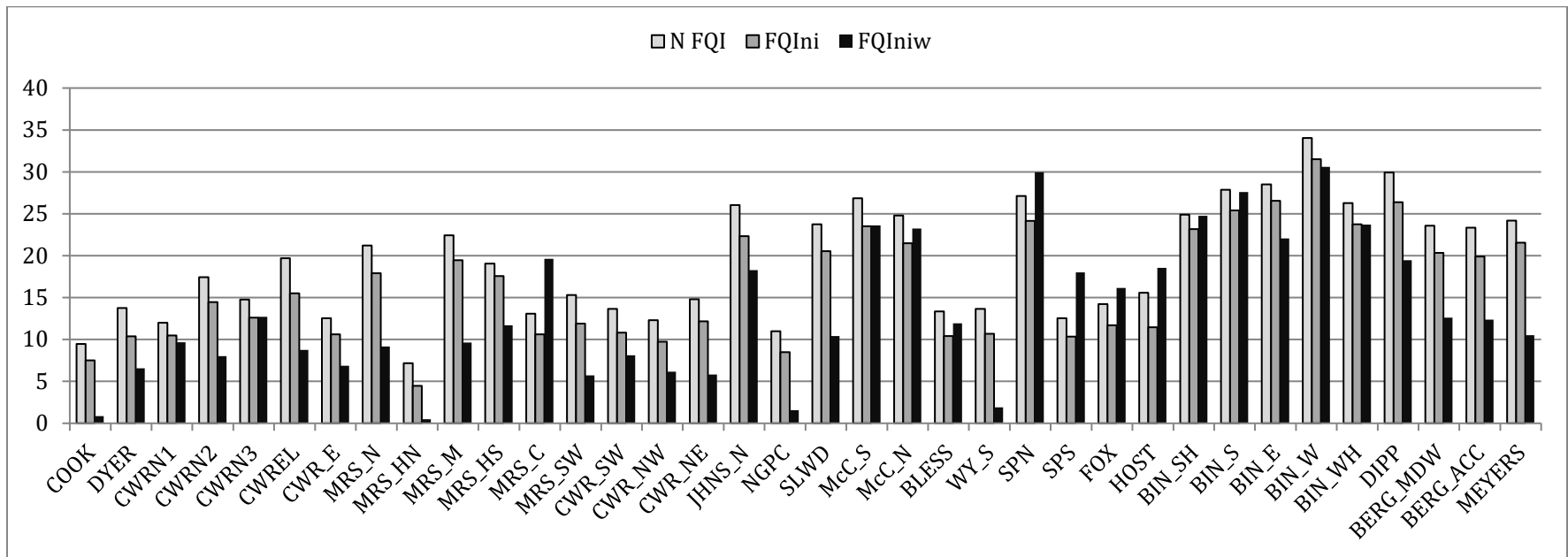


Figure 15A: Comparison of weighted FQI values across sampling years on west sites. This chart compares weighted Floristic Quality Index values for 2013, 2016, and 2019. Fox and Blessing sites were first surveyed in 2014 and those values are included in the 2013 data on this graph. Higher values indicate greater cover of higher quality native species or reduced cover of lower quality species or a combination of both.

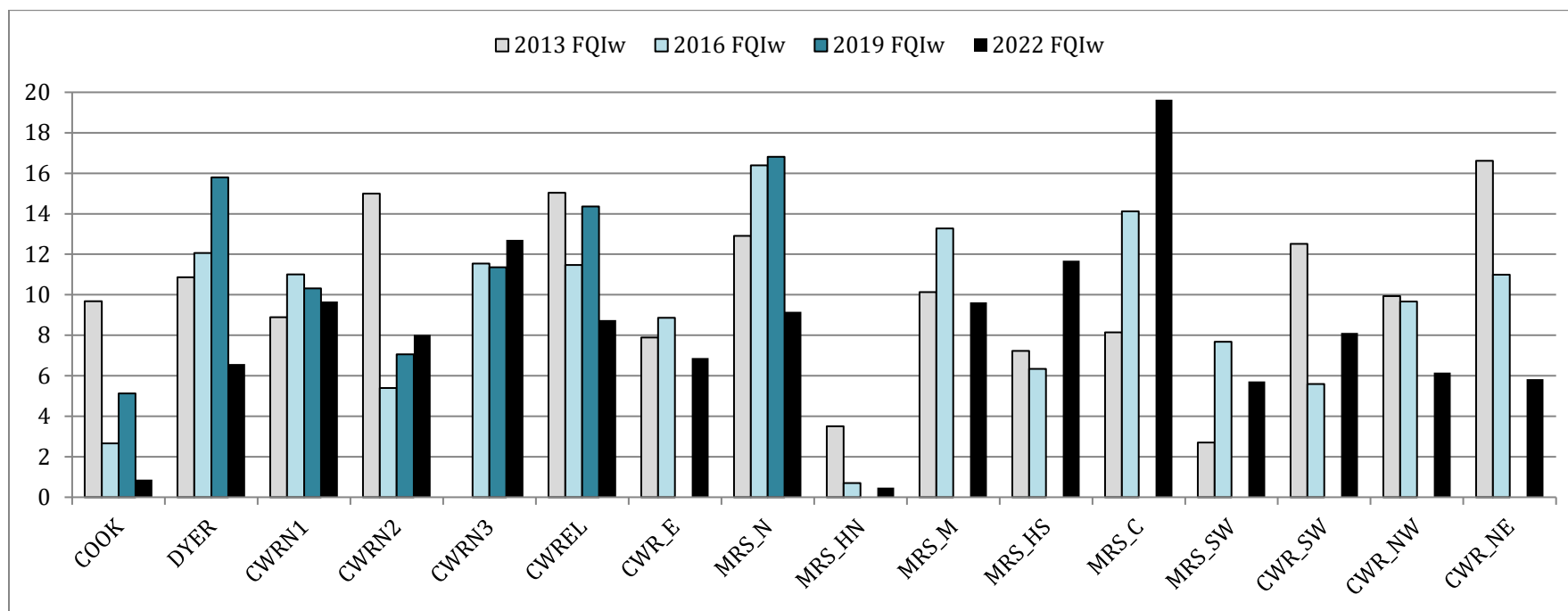


Figure 15B: Comparison of weighted FQI values across years on east sites. This chart compares weighted Floristic Quality Index values for 2013, 2016, and 2019. Fox and Blessing sites were first surveyed in 2014 and those values are included in the 2013 data on this graph. Higher values indicate greater cover of higher quality native species or reduced cover of lower quality species or a combination of both.

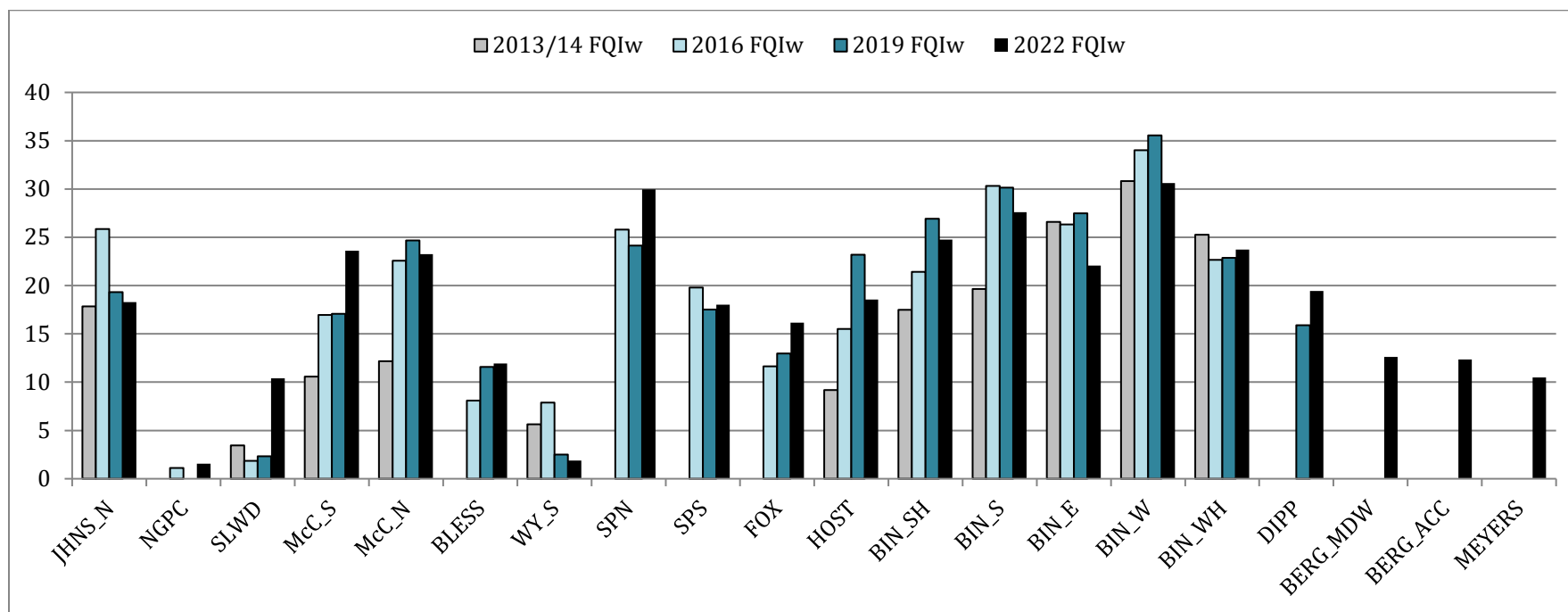


Figure 16: Hostetler crop site in 2013, 2016, 2019 and 2022 at the same transect. These photos clearly show the transition from a dominance of annual adventive species to dominance by more permanent perennial species.



2013



2016



2019



2022

TABLES

Table 1A. Site Management west of Kearney 2013-2016. Acres, seeding and management since the date of the 2013 survey through 2016 and the number of plots placed at each location.

SITE NAME	ACRES	MGMT 2013 Survey <July15	MGMT 2014	MGMT 2015	MGMT 2016	# PLOTS
Cook Hay Meadow	61	Hay	Rest	Burn/Rest	Hay	3
Dyer Grassland	125	Seeded 2010	Graze May 1-July 31 38 pair & 1 bull (1 AU/4 acres)	Spring burn Graze May 1-July 31 38 pair & 1 bull (1 AU/4 acres)	Grazed May 1-July 31 38 pair & 1 bull (1 AU/4 acres)	6
CWR North 1 & 2	81	Grazed	Graze 75 pair May-Oct July 1 rest ELI	Graze 100 pair May-Oct July 1 rest ELI	Grazed	6
CWR East Lloyd Island	252	Grazed			Grazed	9
CWR North 3			N/A	N/A	Spr Burn/Rest	
Morse North	166	Hay	Graze 100 pair 4/15 to 5/15 & 7/1 to 8/1	Spr Burn/Graze 109 pair first 2 wks June, Aug, Oct	Rest	6
Johns North Wet Meadow	381	Grazed	Graze May 1-July 15 with 40 pair	Graze May 15-June 15, Aug 1- Sep 1, Sep 15- Oct 15 w/ 40 pair	Graze 85 pair First 2 wks June, Aug, Oct	13
Sullwald Hay Meadow	36	Hay July 15	Spr burn/ Rest	Hay July 15	Spring burn North 1/2 & Graze May 1-Oct 15 with 36 pair	3
McCormick North Island	34	Grazed	Graze April 1-May 1	Burned	Hay	3
McCormick South Meadow	42	Grazed	188 pair (1 AU/.56 acres)	Graze April 1-May 1 with 101 pair (1 AU/1.1 acres)	Rest	4
					Spring burned & Rested & Grazed	

Table 1B. Site Management east of Kearney 2013-2016. Acres and management since the date of the 2013 survey through 2016 and the number of plots placed at each location.

SITE NAME	ACRES	MGMT 2013 Survey <July15	MGMT 2014	MGMT 2015	MGMT 2016	# PLOTS
Blessing	68	Former CRP	Cedars Cleared/Graze May 1-15, June 1-15, July 1-15, & Aug 1-15 with 10 pair	Graze May 1-15, June 1-15, July 1-15, & Aug 1-15 with 9 pair	Spr Burn/Rest	4
WY South Meadow	118	Grazed	Graze May 1-Sept 30 with 15 pair (1 AU/8 acres) & hay S. 1/2 after July 15	Burned south 1/2 in spring & Graze May 1-Sept 30 with 15 pair (1 AU/8 acres)	Graze May 1-Sept 30 with 15 pair (1 AU/8 acres) & hay NE 1/4 & S 1/2 after July 15	4
Speidell North	298		N/A	Graze April 1-Sept 30 with 70 pair (1 AU/4.3 acres)	Rested & hayed south 1/3 after July 15	5
Speidell South	148		N/A	Rest	Graze May 1-Sept 30 with 70 pair (1 AU/3 acres)	5
Fox	181	Seeded 2012	Hayed after July 15	Hayed after July 15	Graze May 1-Sept 30 with 26 pair & 1 bull (1 AU/6.4 acres)	5
Hostetler Crop	222	Seeded	Hayed July 15	Burned whole tract & hayed east 1/2 after July 15	Graze May 1-Sept 30 with 22 pair & 1 bull (1 AU/9.6 acres)	8
Binfield South Hay Meadow	30	Hay	Rest	Burned & Hayed after July 15	Hay July 15	3
Binfield South Meadow	57	Grazed	Graze May 1- Sep 12 26 pair (1 AU/5 acres)	Graze May 1- Sep 12 with 26 pair (1 AU/5 acres)	Spring Burn/ Rest	3
Binfield East Meadow	179	Grazed	Graze May 1- Sep 30 23 pair (1 AU/8 acres)	Spring burn North 1/2 & Graze May 1- Sep 30 with 31 pair (1 AU/6 acres)	Spring burn south 1/3 & Graze May 1- Sep 30 with 23 pair (1 AU/8 acres)	6
Binfield West Meadow	361	Grazed	Graze May 1- Sep 30 with 26 pair (1 AU/9 acres)	Spring burn North 1/2 & Graze May 1- Sep 30 with 47 pair (1 AU/8 acres)	Spring burn South 1/2 & Graze May 1- Sep 30 with 37 pair (1 AU/ 10 acres)	13
Binfield West Hay Meadow	124	Hay	Hay July 15	Spr Burn/Rest	Hay July 15	5

Table 1C. Site Management west of Kearney 2016-2019. Acres and management after the 2016 survey date through 2019 and the number of plots placed at each location. Activities July 15, 2019, and later were completed after this survey.

SITE NAME	ACRES	MGMT 2016 Survey >July15	MGMT 2017	MGMT 2018	MGMT 2019 Survey <July15	# PLOTS
Cook Hay Meadow	61	Hayed after July 15	Hayed after July 15	Hayed after July 15	Spring burn & rested	3
Dyer Grassland	125	Grazed May 1-July 31 with 38 pair & 1 bull (1 AU/4 acres)	Grazed May 1-July 31 with 38 pair & 1 bull	Grazed May 1-July 31 with 33 pair & 1 bull	Spring burn & rested	6
		Spring burn & rested	Graze May 1-Oct 15 with 80 pair	Graze May 1-Oct 15 with 80 pair	Graze May 1-Oct 15 with 80 pair	
CWR North 1 & 2	81					6
CWR East Lloyd Island	252					9
CWR North 3						3
Morse North	166	Rotational graze June 1-15, Aug 1-15, & Oct 1-15 with 85 pair	Rotational graze June 1-15, Aug 1-15, & Oct 1-15 with 85 pair	Rotational graze June 1-15, Aug 1-15, & Oct 1-15 with 120 pair	Graze April 15-Oct 15 with 30 pair	6
Johns North Wet Meadow	381	Spring burn North 1/2 & Graze May 1-Oct 15 with 36 pair	Graze May 1-July 15 with 40 pair	Graze May 1-Oct 15 with 40 pair	Spring burn south 1/2 & Graze May 1-Oct 15 with 40 pair	12 13-1
Sullwald Hay Meadow	36	Hayed after July 15	Hayed after July 15	Rested	Rested	3
McCormick North Island	34	Rested	Rested	Rested	Rested	3
McCormick South Meadow	42	Spring burned & Rested	Graze April 1-May 1 with 109 pair	Graze April 1-May 1 with 72 pair	Graze April 1-June 1 with 70 pair	4

Table 1D. Site Management east of Kearney 2016-2019. Acres and management after the 2016 survey date through 2019 and the number of plots placed at each location. Activities July 15, 2019, and later were completed after this survey.

SITE NAME	ACRES	MGMT 2016 Survey >July15	MGMT 2017	MGMT 2018	MGMT 2019 Survey <July15	# PLOTS
Blessing	68	Spring burned & Rested	Rotational graze May 1-15, June 1-15, July 1-15, & Aug 1-15 with 22 pair	Rotational graze May 1-15, June 1-15, July 1-15, & Aug 1-15 with 22 pair	Spring burned & Rested	3 4-1
WY South Meadow	118	Graze May 1-Sept 30 with 15 pair (1 AU/8 acres) & hay NE 1/4 & S 1/2 after July 15	Hayed after July 15th	Hayed after July 15th	Graze April 15-Sept 30 with 20 pair & hay NW 1/4 after July 15	4
Speidell North	298	Rested & hayed south 1/3 after July 15	Rested & Hayed after July 15 Spring burned, South portion not hayed	Rested	Spring burned & Rested	10
Speidell South	148	Graze May 1-Sept 30 with 70 pair (1 AU/3 acres)	Graze May 1-Sept 30 with 35 pair	Spring burn & Graze May 1-Sept 30 with 60 pair	Graze May 1-Sept 30 with 43 pair	5
Fox	181	Graze May 1-Sept 30 with 26 pair & 1 bull (1 AU/6.4 acres)	Grazed May 1-September 30 with 27 pair & 1 bull & Fall burn - overseed with HD forb mix	Grazed May 1-September 30 with 25 pair & 1 bull & Fall burn	Rested	6 5+1
Hostetler Crop	222	Graze May 1-Sept 30 with 22 pair & 1 bull (1 AU/9.6 acres)	Spring burned west 1/3 - Graze May 1-Sept 30 with 35 pair & 1 bull	Spring burned east 1/3 - Graze May 1-Sept 30 with 42 pair & 2 bull	Spring burned middle 1/3 - Graze May 1-Sept 30 with 43 pair & 2 bull	8
Binfield South Hay Meadow	30	Hayed after July 15	Hayed after July 15	Rested	Spring burned & Rested	3
Binfield South Meadow	57	Spring burned & Rested	Spring burned & Graze May 1- Sep 30 with 12 pair	Graze May 1- Sep 13 with 26 pair	Spring burned & Graze May 1- Sep 30 with 14 pair	3
Binfield East Meadow	179	Spring burn South 1/3 & Graze May 1- Sep 30 with 23 pair (1 AU/8 acres)	Graze May 1- Sep 30 with 37 pair	Graze May 1- Sep 30 with 37 pair & Rest NE 31 acres	Spring burn North 1/2 & Graze May 1- Sep 30 with 73 pair & rest SE 87 acres	6
Binfield West Meadow	361	Hayed after July 15	Hayed after July 15	Hayed after July 15	Spring burned & Rested	13
Binfield West Hay Meadow	124	Spring burn South 1/2 & Graze May 1- Sep 30 with 37 pair (1 AU/ 10 acres)	Graze May 1- Sep 30 with 70 pair	Graze May 1- Sep 30 with 70 pair & rest NW 95 acres	Spring burn North 1/2 & Graze May 1- Sep 30 with 38 pair & rest SW 42 acres	5
Dippel	376	N/A	N/A	Graze May 1-Sept 30 with 26 pair	Graze May 1-Sept 30 with 26 pair	14

Table 1E. Site Management Plum Creek and Cottonwood Ranch 2019-2022. Acres and management after the 2019 survey date through 2022 and the number of plots placed at each location. Activities July 15, 2022, and later were completed after this survey.

SITE NAME	ACRES	MGMT 2019 Survey >July15	MGMT 2020	MGMT 2021	MGMT 2022 Survey <July15	# PLOTS
Cook Hay Meadow	61	Spring burn & rested	Hayed after July 15	Hayed after July 15	Hayed after July 15	3
Dyer Grassland	125	Spring burn & rested	Grazed April 15-July15 with 20 pair	Rest	Rest	5
CWR North 1 & 2	81		Grazed	Grazed	Grazed	6
CWR East Lloyd Island	252	Graze May 1-Oct 15 with 80 pair	Graze May 1-Oct 15 with 80 pair	Graze May 1-Oct 15 with 80 pair	Rest	9
CWR North 3		Rest	Spring Burn- Rest	Rest	Grazed	3
CWR Marshall Calving	166	Fall calving area	Fall calving area	Fall calving area	Fall calving area	3
CWR-NE	166	Rested - BSR project	Rested - BSR project	Rested - BSR project	Rotational graze April 15 - Sept 30 with CWR NW with 70 pair	5
CWR-NW	166	Rested - BSR project	Rested - BSR project	Rested - BSR project	Rotational graze April 15 - Sept 30 with CWR SW with 70 pair	5
CWR-SW	166	Rested - BSR project	Rested - BSR project	Rested - BSR project	Graze April 15 - Sept 15 with 30 pair	5
Morse North	166	Graze April 15-Oct 15 with 30 pair	Graze April 15-Oct 15 with 30 pair	Rotational graze Morse middle April 15- Sept 30 with 38 pair	Rest	6
Morse Crop	30	Hayed for BSR mulch after July 15	Rest	Hayed North 1/3 after July 15	Rest	3
Morse -Middle	135	Hayed for BSR mulch after July 15	Rested - BSR project	Rotational graze Morse north April 15- Sept 30 with 38 pair	Rest	5
Morse-hay-N	12	Rested	Hayed after July 15	Hayed after July 15	Rest	3
Morse-SHay	44	Rested	Hayed after July 15	Hayed after July 15	Rest	3
Morse-SW	153	Rested - BSR project	Rested - BSR project	Rested - BSR project	Graze May 1 - Sept 30 with 20 pair	6

Table 1F. Elm Creek and Fort Kearney Site Management 2019-2022. Acres and management after the 2019 survey date through 2022 and the number of plots placed at each location. Activities July 15, 2019, and later were completed after this survey.

SITE NAME	ACRES	MGMT 2019 Survey >July15	MGMT 2020	MGMT 2021	MGMT 2022 Survey <July15	# PLOTS
Johns North Wet Meadow	381	Spring burn south 1/2 & Graze May 1-Oct 15 with 40 pair	Spring burn north 1/2 & Graze May 1-Oct 15 with 40 pair	Graze May 1-Sept 30 with 30 pair	Graze May 1-Sept 30 with 30 pair	13
Sullwald Hay Meadow	36	Rested	Spring Burn & Hayed after July 15	Hayed after July 15	Rest	3
McCormick North Island	34	Rested	Spring burn & Rested	Rest	Rest	3
McCormick South Meadow	42	Graze April 1-June 1 with 70 pair	Spring burn & Graze April 1-June 1 with 70 pair	Graze April 1-June 1 with 70 pair	Graze April 1-June 1 with 70 pair	3
Sullwald Hay Meadow	36	Rested	Spring Burn & Hayed after July 15	Hayed after July 15	Rest	3
NGPC	11	Rest	Spring Burn & Hayed after July 15	Hayed after July 15	Rest	3
Blessing	68	Spring burned & Rested	Rotational graze May 1-15, June 1-15, July 1-15, & Aug 1-15 with 26 pair	Rotational graze May 1-15, June 1-15, July 1-15, & Aug 1-15 with 26 pair	Rotational graze May 1-15, June 1-15, July 1-15, & Aug 1-15 with 26 pair	3
WY South Meadow	118	Graze April 15-Sept 30 with 20 pair & hay NW 1/4 after July 15	Spring burn & Hayed after July 15th	Hayed after July 15th	Hayed after July 15th	4
Speidell North	298	Spring burned & Rested	Spring burn west patch & Graze April 15-Sept 30 with 46 pair	Graze April 15-Sept 30 with 46 pair	Rest	10
Speidell South	148	Graze May 1-Sept 30 with 43 pair	Rest	Rest	Graze April 15-Sept 30 with 45 pair	7
Fox	181	Rested	Spring burn & Rested	Rest	Graze April 15 -Sept 30 with 32 pair	5
Hostetler Crop	222	Spring burned middle 1/3 - Graze May 1-Sept 30 with 43 pair & 2 bull	Rest	Graze May 1-Sept 30 with 41	Graze April 15 -Sept 30 with 58 pair	8
Dippel	376	Graze May 15-Sept 30 with 42 pair ACC/ 26 pr grass	Graze May 1-Sept 30 with 42 pair ACC/ 26 pr grass	Graze May 1-Sept 30 with 42 pair ACC/ 26 pr grass	Rest	14

Table 1G. Shoemaker Island and Chapman Site Management 2019-2022. Acres and management after the 2019 survey date through 2022 and the number of plots placed at each location. Activities July 15, 2022, and later were completed after this survey.

SITE NAME	ACRES	MGMT 2019 Survey >July15	MGMT 2020	MGMT 2021	MGMT 2022 Survey <July15	# PLOTS
Binfield South Hay Meadow	30	Spring burned & Rested	Hayed after July 15	Hayed after July 15	Hayed after July 15th	3
Binfield South Meadow	57	Spring burned & Graze May 1- Sep 30 with 14 pair	Graze May 1- Sep 30 with 14 pair	Graze May 1- Sep 30 with 11 pair	Rest	3
Binfield East Meadow	179	Spring burn North 1/2 & Graze May 1- Sep 30 with 73 pair & rest SE 87 acres	Spring burn South 1/3 & Graze May 1- Sep 30 with 47 pair	Graze May 1- Sep 30 with 37 pair	Graze May 1- Sep 30 with 37 pair	4
Binfield West Meadow	361	Spring burn North 1/2 & Graze May 1- Sep 30 with 38 pair & rest SW 42 acres	Spring burn South 1/2 & Graze May 1- Sep 30 with 94 pair	Graze May 1- Sep 30 with 74 pair	Graze May 1- Sep 30 with 74 pair	13
Binfield West Hay Meadow	124	Spring burned & Rested	Hayed after July 15	Hayed after July 15	Hayed after July 15th	5
Bergren Meadow	70		Graze May 1-Sept 30 with 14 pair	Aboveground Tree removal of trees- Graze May 1-Sept 30 with 14 pair	Graze May 1-Sept 30 with 12 pair	3
Bergren Accretion	63		Rest	Cleared Trees & Planted High-diversity local ecotype native seed mix	Rest	3
Meyers	86			Rest	Graze May 1-Sept 30 with 32 pair	3

Table 2. Noxious Weeds. Plots containing noxious weeds.

<u>MUSK THISTLE</u>	<u>MUSK THISTLE (CONT.)</u>	<u>LEAFY SPURGE</u>	<u>REED CANARYGRASS</u>	<u>PURPLE LOOSESTRIFE</u>
BLESS_22_G182	MORSE CROP_22_G45	DYER_22_G8	BERG_ACC_22_G283	BIN_E_22_G132
COOKHM_22_G1	MORSE CROP_22_G46	JOHNS_NWM_22_G70	BERG_ACC_22_G284	BIN_W_22_G133
CWR_NW_22_G59	MORSE CROP_22_G46	JOHNS_NWM_22_G71	BERG_ACC_22_G285	BIN_W_22_G135
CWR_NW_22_G60	MORSE HAY N_22_G34	JOHNS_NWM_22_G72	BERG_MDW_22_G280	BIN_WH_22_G147
CWREL_22_G19	MORSE HAY N_22_G35	JOHNS_NWM_22_G74	BERG_MDW_22_G281	DIPP_22_G266
CWREL_22_G20	MORSE HAY N_22_G36	JOHNS_NWM_22_G77	BERG_MDW_22_G282	DIPP_22_G268
CWREL_22_G21	MORSE MID_22_G37	JOHNS_NWM_22_G81	BIN_S_22_G125	DIPP_22_G270
CWREL_22_G22	MORSE MID_22_G38	NGPC_22_G370	BIN_WH_22_G149	DIPP_22_G271
CWREL_22_G23	MORSE MID_22_G39	SLWD_HM_22_G88	CWR_E_22_G27	JOHNS_NWM_22_G71
CWREL_22_G24	MORSE MID_22_G42	SLWD_HM_22_G90	CWREL_22_G22	
CWRN1_22_G10	MORSE SW_22_G49		CWREL_22_G24	
CWRN1_22_G11	MORSE SW_22_G52		CWRN3_22_G151	
CWRN1_22_G12	MORSE SW_22_G53		CWRN3_22_G153	
CWRN2_22_G13	MORSEN_22_G28		DIPP_22_G267	
CWRN2_22_G14	MORSEN_22_G29		DIPP_22_G268	
CWRN3_22_G151	MORSEN_22_G30		DIPP_22_G269	
CWRN3_22_G152	MORSEN_22_G31		DIPP_22_G270	
DIPP_22_G263	MORSEN_22_G32		DIPP_22_G271	
DIPP_22_G273	MORSEN_22_G33		DIPP_22_G274	
DYER_22_G5	NGPC_22_G365		JOHNS_NWM_22_G71	
DYER_22_G6	NGPC_22_G370		JOHNS_NWM_22_G73	
DYER_22_G9	SLWD_HM_22_G90		JOHNS_NWM_22_G75	
HOST_C_22_G104	SP_N_22_G165		JOHNS_NWM_22_G76	
JOHNS_NWM_22_G70	SP_N_22_G168		JOHNS_NWM_22_G77	
JOHNS_NWM_22_G71	SP_N_22_G170		JOHNS_NWM_22_G80	
JOHNS_NWM_22_G72	SP_S_22_G157		JOHNS_NWM_22_G81	
JOHNS_NWM_22_G79	SP_S_22_G158		McC_NI_22_G91	
McC_NI_22_G92	SP_S_22_G159		MORSE HAY S_22_G42	
McC_SM_22_G97	SP_S_22_G160		MORSE HAY S_22_G43	
	SP_S_22_G161		MORSE MID_22_G44	
	SP_S_22_G163		SP_N_22_G173	

Table 3A. Cool season grass cover of the Plum Creek, Cottonwood Ranch North and East Lloyd Island Sites. Cover of individual cool season grass species listed by site. Exotic cool season grasses are listed first with a total cover followed by natives and a total of all cool season cover. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

EXOTIC COOL SEASON SPECIES	COMMON NAME	COOK	DYER	CWRN1	CWRN2	CWRN3	CWREL
AGROSTIS GIGANTEA	redtop						0.18
ALOPECURUS ARUNDINACEUS	Garrison creeping-foxtail						
BROMUS INERMIS	smooth brome	55.33	5.18	8.88	3.50	0.08	19.33
BROMUS JAPONICUS	Japanese brome		1.89	0.33	4.32	5.68	7.19
BROMUS TECTORUM	downy brome		33.50	4.12	28.83	1.98	1.58
DACTYLIS GLOMERATA	orchard grass						
PHLEUM PRATENSE	timothy						
POA COMPRESSA	Canada bluegrass		0.46			0.08	3.14
POA PRATENSIS	Kentucky bluegrass		4.15	10.02	1.68	1.77	6.32
POLYPOGON MONSPELIENSIS	rabbitfoot grass						
SCHEDONORUS ARUNDINACEUS	tall fescue						
THINOPYRUM PONTICUM	tall wheatgrass			3.00	0.50		1.44
TOTAL EXOTIC COOL SEASON		55.33	45.18	26.35	38.83	9.60	39.18
NATIVE COOL SEASON SPECIES							
Calamagrostis stricta	northern reedgrass				0.50		
Dichanthelium acuminatum	western spring-panicum						
Dichanthelium oligosanthos	Scribner's spring-panicum		0.50	0.08		0.70	1.21
Dichanthelium villosissimum	white-hair spring-panicum				3.13		
Elymus canadensis	Canada wild-rye		4.56				
Elymus trachycaulus	slender wheatgrass						
Elymus virginicus	Virginia wild-rye						
Hesperostipa comata	needle-and-thread						
Hordeum jubatum	foxtail barley			0.08			2.12
Hordeum pusillum	little barley			0.25			
Koeleria macrantha	Junegrass						
Leersia oryzoides	rice cutgrass						
Muhlenbergia racemosa	marsh muhly						
Nassella viridula	green needle grass						
Panicum dichotomiflorum	fall panicum						
Pascopyrum smithii	western wheatgrass			0.62		0.08	0.14
Phalaris arundinacea	reed canary grass					0.62	1.64
Phragmites australis	common reed						
Sphenopholis obtusata	prairie wedge grass						
TOTAL NATIVE COOL-SEASON		0.00	5.06	1.03	3.63	1.40	5.11
TOTAL ALL COOL-SEASON		55.33	50.24	27.38	42.47	11.00	44.29

Table 3B. Cool season grass cover of the Cottonwood Ranch Phelps Co. Sites. Cover of individual cool season grass species listed by site. Exotic cool season grasses are listed first with a total cover followed by natives and a total of all cool season cover. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

COOL SEASON EXOTIC		CWR_E	MRS_N	MRS_HN	MRS_M	MRS_HS	MRS_C	MRS_SW	CWR_SW	CWR_NW	CWR_NE
AGROSTIS GIGANTEA	redtop										
ALOPECURUS											
ARUNDINACEUS	Garrison creeping-foxtail										
BROMUS INERMIS	smooth brome	6.08	44.51	50.12	47.71	15.60		10.35	10.02	6.48	27.21
BROMUS JAPONICUS	Japenese brome	15.23			0.50	0.08	3.58		2.77		
BROMUS TECTORUM	downy brome	7.82	0.27				0.08		0.57	0.06	0.05
DACTYLIS GLOMERATA	orchard grass			0.50				0.66			
PHLEUM PRATENSE	timothy										
POA COMPRESSA	Canada bluegrass	0.58	0.08	0.67	0.55		0.87	0.04			0.05
POA PRATENSIS	Kentucky bluegrass	1.28	4.55	17.02	4.04	0.75	0.33	1.09	3.59	1.09	0.30
POLYPOGON											
MONSPELIENSIS	rabbitfoot grass										
SCHEDONORUS											
ARUNDINACEUS	tall fescue				7.29	1.40	9.78			8.55	1.85
THINOPYRUM PONTICUM	tall wheatgrass					2.95	2.12	38.05	17.21	27.73	21.78
TOTAL EXOTIC COOL-SEASON		31.00	49.41	68.30	60.09	20.78	16.77	50.19	34.16	43.90	51.24
Calamagrostis stricta	northern reedgrass					0.50					
Dichanthelium acuminatum	western spring-panicum										
Dichanthelium oligosanthos	Scribner's spring-panicum	0.25	1.08		1.15						
	white-hair spring-panicum										
Dichanthelium villosissimum											
Elymus canadensis	Canada wild-rye	1.07					5.47		0.32		
Elymus trachycaulus	slender wheatgrass										
Elymus virginicus	Virginia wild-rye	0.50									
Hesperostipa comata	needle-and-thread		3.00								
Hordeum jubatum	foxtail barley	4.68			2.69	6.13	0.08	8.00	4.48	0.06	0.20
Hordeum pusillum	little barley	0.25									
Koeleria macrantha	Junegrass										
Leersia oryzoides	rice cutgrass										
Muhlenbergia racemosa	marsh muhly				0.50						
Nassella viridula	green needle grass										
Panicum dichotomiflorum	fall panicum										
Pascopyrum smithii	western wheatgrass		0.04		0.50	0.70			0.82	0.93	0.32
Phalaris arundinacea	reed canary grass	3.28			0.50	12.07					
Phragmites australis	common reed				3.00						0.50
Sphenopholis obtusata	prairie wedge grass					0.50					
TOTAL NATIVE COOL-SEASON		10.03	4.13	0.00	8.34	19.90	5.55	8.00	5.62	0.99	1.02
TOTAL ALL COOL- SEASON		41.03	53.53	68.30	68.43	40.68	22.32	58.19	39.78	44.89	52.26

Table 3C. Cool season grass cover of the Elm Creek and Fort Kearney Sites. Cover of individual cool season grass species listed by site. Exotic cool season grasses are listed first with a total cover followed by natives and a total of all cool season cover. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

EXOTIC COOL SEASON	COMMON NAME	JHNS_N	NGPC	SLWD	Mc_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
AGROSTIS GIGANTEA	redtop												0.69
ALOPECURUS ARUNDINACEUS	Garrison creeping-foxtail												0.02
BROMUS INERMIS	smooth brome	3.08	67.72	44.83	0.70		9.57	18.39	2.19	8.56	2.10	0.36	13.41
BROMUS JAPONICUS	Japenese brome	2.45			2.77	0.78	0.42	0.31	0.97	1.84	1.90	3.05	0.61
BROMUS TECTORUM	downy brome	6.72				0.67	7.22	18.36	1.33	0.54	2.30	1.49	0.02
DACTYLIS GLOMERATA	orchard grass												0.50
PHLEUM PRATENSE	timothy												
POA COMPRESSA	Canada bluegrass	2.48				1.32	3.53		1.86	0.04		0.43	1.95
POA PRATENSIS	Kentucky bluegrass	7.15	1.40	8.32	3.80	1.00	2.52	0.63	4.11	4.96	2.15	2.28	3.80
POLYPOGON MONSPELIENSIS	rabbitfoot grass	0.54											
SCHEDONORUS ARUNDINACEUS	tall fescue	0.50		1.00	0.50	0.50		37.59	0.03				4.69
THINOPYRUM PONTICUM	tall wheatgrass							4.31					
TOTAL EXOTIC COOL-SEASON		22.92	69.12	54.15	7.77	4.27	23.25	79.59	10.48	15.94	8.45	7.61	25.68
NATIVE COOL-SEASON													
Calamagrostis stricta	northern reedgrass												0.05
Dichanthelium acuminatum	western spring-panicum	0.50				0.08							0.57
Dichanthelium oligosanthos	Scribner's spring-panicum	1.38		0.08	2.55	0.17		0.06	0.60	1.96		0.03	1.28
Dichanthelium villosissimum	white-hair spring-panicum												
Elymus canadensis	Canada wild-rye	3.00		0.50		0.50			1.26			0.09	3.02
Elymus trachycaulus	slender wheatgrass						0.53						
Elymus virginicus	Virginia wild-rye												
Hesperostipa comata	needle-and-thread								0.42				
Hordeum jubatum	foxtail barley	4.54		1.50	3.00	1.50		0.56					
Hordeum pusillum	little barley	0.82		0.50	0.33	0.50							
Koeleria macrantha	Junegrass								0.50				
Leersia oryzoides	rice cutgrass												
Muhlenbergia racemosa	marsh muhly												0.55
Nassella viridula	green needle grass								0.74		0.42		
Panicum dichotomiflorum	fall panicum												
Pascopyrum smithii	western wheatgrass				0.50	0.50		1.33		0.07		7.23	1.95
Phalaris arundinacea	reed canary grass	5.44				0.78			0.50				12.77
Phragmites australis	common reed												3.55
Sphenopholis obtusata	prairie wedge grass	2.10		1.00	0.50	1.00			1.03				0.47
TOTAL NATIVE COOL-SEASON		17.78	0.00	3.58	6.88	5.03	0.53	1.95	5.05	2.03	0.42	7.35	24.21
TOTAL ALL COOL- SEASON		40.70	69.12	57.73	14.65	9.30	23.78	81.54	15.52	17.96	8.87	14.96	49.89

Table 3C. Cool season grass cover of the Shoemaker Island and Chapman Sites. Cover of individual cool season grass species listed by site. Exotic cool season grasses are listed first with a total cover followed by natives and a total of all cool season cover. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

EXOTIC COOL SEASON	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	DIPP	BERG_MDW	BERG_ACC	MEYERS
AGROSTIS GIGANTEA	redtop	2.60	6.08	2.29	2.90	2.62	0.69	2.00	2.00	0.75
ALOPECURUS										
ARUNDINACEUS	Garrison creeping-foxtail						0.02			4.16
BROMUS INERMIS	smooth brome	13.12	1.85	0.65	3.30	8.28	13.41	11.35		
BROMUS JAPONICUS	Japenese brome		0.08		0.93		0.61	0.50	0.50	
BROMUS TECTORUM	downy brome						0.02			
DACTYLIS GLOMERATA	orchard grass						0.50			
PHLEUM PRATENSE	timothy									
POA COMPRESSA	Canada bluegrass	0.17	0.17		0.50	0.62	1.95	9.62		
POA PRATENSIS	Kentucky bluegrass	0.50	1.12	4.36	2.00	1.42	3.80	4.03	1.03	1.80
POLYPOGON										
MONSPELIENSIS	rabbitfoot grass									
SCHEDONORUS										
ARUNDINACEUS	tall fescue	0.70	0.50	0.06	0.39	2.79	4.69	0.50	0.50	26.58
THINOPYRUM PONTICUM	tall wheatgrass									
TOTAL EXOTIC COOL-SEASON		17.08	9.80	7.36	10.00	15.73	25.68	28.00	4.03	33.29
NATIVE COOL-SEASON										
Calamagrostis stricta	northern reedgrass	0.75	1.00	0.99	4.34	0.05	0.05			0.80
Dichanthelium acuminatum	western spring-panicum	0.08		0.63	1.58	0.15	0.57	0.50	0.50	
Dichanthelium oligosanthos	Scribner's spring-panicum	0.08		0.19	0.71	0.30	1.28	0.50	0.75	
Dichanthelium villosissimum	white-hair spring-panicum									
Elymus canadensis	Canada wild-rye		0.50				3.02			
Elymus trachycaulus	slender wheatgrass	0.17								
Elymus virginicus	Virginia wild-rye									
Hesperostipa comata	needle-and-thread									
Hordeum jubatum	foxtail barley	1.00	0.50	3.58	4.93			3.07	2.00	0.56
Hordeum pusillum	little barley									
Koeleria macrantha	Junegrass									
Leersia oryzoides	rice cutgrass			0.06						0.19
Muhlenbergia racemosa	marsh muhly			0.13	0.06		0.55		0.08	
Nassella viridula	green needle grass									
Panicum dichotomiflorum	fall panicum									
Pascopyrum smithii	western wheatgrass		11.53	1.18	1.07		1.95			1.58
Phalaris arundinacea	reed canary grass		0.08			0.50	12.77	18.03	14.20	
Phragmites australis	common reed						3.55			
Sphenopholis obtusata	prairie wedge grass	0.50		0.40	0.12		0.47	1.00	1.00	
TOTAL NATIVE COOL-SEASON		2.58	13.62	7.14	12.82	1.00	24.21	23.10	18.53	3.13
TOTAL ALL COOL- SEASON		19.67	23.42	14.50	22.82	16.73	49.89	51.10	22.57	36.41

Table 4A. Warm season grass cover of the Plum Creek, Cottonwood Ranch North and East Lloyd Island Sites. Cover of individual warm season grass species listed by site. Exotic warm season grasses are listed first with a total cover followed by natives and a total of all warm season cover. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

SPECIES	COMMON NAME	COOK	DYER	CWRN1	CWRN2	CWRN3	CWREL
EXOTIC WARM-SEASON							
SETARIA FABERI	Chinese foxtail		0.53				
SETARIA ITALICA	foxtail millet						
SETARIA PUMILA	yellow foxtail		1.79				
SETARIA VERTICILLATA	bristly foxtail				0.33		
SETARIA VIRIDIS	green foxtail					0.42	
TOTAL EXOTIC WARM-SEASON		0.00	2.31	0.00	0.33	0.42	0.00
NATIVE WARM SEASON							
Andropogon gerardii	big bluestem	0.25	0.90				0.50
Aristida oligantha	old-field three-awn				0.50		
Aristida purpurea	Long-awned three-awn			0.50			
Bouteloua curtipendula	sideoats grama	0.50					
Bouteloua dactyloides	buffalo grass		3.00	0.53			
Bouteloua gracilis	blue grama			3.00			
Bouteloua hirsuta	hairy grama			0.62			
Calamovilfa longifolia	prairie sandreed						
Cenchrus longispinus	field sandbur						
Chloris verticillata	tumble windmill grass		0.13	1.03		0.67	
Digitaria cognata	fall witchgrass						
Distichlis spicata	saltgrass	0.08		0.08			
Eragrostis trichodes	sand lovegrass					0.53	
Festuca octoflora	six-weeks fescue						
Leersia virginica	whitegrass						
Panicum capillare	common witchgrass			4.32			
Panicum virgatum	switchgrass			0.53	3.50	1.32	0.79
Paspalum setaceum	yellow sand paspalum				0.53		
Schedonnardus paniculatus	tumblegrass			0.50			
Schizachyrium scoparium	little bluestem						
Sorghastrum nutans	Indian grass				3.00		0.38
Spartina pectinata	prairie cordgrass	0.50	3.00	3.00		12.92	10.17
Sporobolus airoides	alkali sacaton						
Sporobolus compositus	tall dropseed	0.50				0.53	1.00
Sporobolus cryptandrus	sand dropseed		11.15	1.20	0.08	11.28	1.73
Sporobolus heterolepis	prairie dropseed				2.27		
Tridens flavus	purpletop						
TOTAL NATIVE WARM-SEASON		1.83	18.18	15.32	9.88	27.25	14.58
TOTAL WARM-SEASON		1.83	20.49	15.32	10.22	27.67	14.58

Table 4B. Warm-season grass cover of the Cottonwood Ranch Phelps Co. Sites. Cover of individual warm season grass species listed by site. Exotic warm season grasses are listed first with a total cover followed by natives and a total of all warm season cover. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

SPECIES	COMMON NAME	CWR_E	MRS_N	MRS_HN	MRS_M	MRS_HS	MRS_C	MRS_SW	CWR_SW	CWR_NW	CWR_NE
EXOTIC WARM-SEASON											
SETARIA PUMILA	yellow foxtail		0.04					1.72	2.12	0.19	0.50
SETARIA VERTICILLATA	bristly foxtail										
SETARIA VIRIDIS	green foxtail										
TOTAL EXOTIC WARM-SEASON		0.00	0.04	0.00	0.00	0.00	0.00	1.72	2.12	0.19	0.50
Andropogon gerardii	big bluestem	0.50	8.35		7.75	0.53	45.18	0.08		3.56	1.78
Aristida oligantha	old-field three-awn										
Bouteloua curtipendula	sideoats grama				0.37			0.08			0.32
	tumble windmill										
Chloris verticillata	grass	0.62									
Digitaria cognata	fall witchgrass							0.21			
Distichlis spicata	saltgrass	0.08				0.87	0.08	1.05	0.05		0.32
Eragrostis pectinacea	tufted lovegrass										
Panicum capillare	common witchgrass	0.08									
Panicum virgatum	switchgrass		1.12	0.50	0.50	3.40	3.97	2.14	0.55	9.69	3.31
	yellow sand										
Paspalum setaceum	paspalum	0.53	0.62								
Schedonnardus paniculatus	tumblegrass										
Schizachyrium scoparium	little bluestem		0.04		0.15		2.38			0.40	0.10
Sorghastrum nutans	Indian grass		0.58		0.42		8.10			0.25	1.63
Spartina pectinata	prairie cordgrass	4.77			1.16		1.32	0.80			
Sporobolus airoides	alkali sacaton										
Sporobolus compositus	tall dropseed		1.54		0.15						
Sporobolus cryptandrus	sand dropseed	0.25	0.54		0.10						
Sporobolus heterolepis	prairie dropseed										
Tridens flavus	purpletop										
TOTAL NATIVE WARM-SEASON		6.83	12.79	0.50	10.60	4.80	61.03	4.37	0.60	13.90	7.46
TOTAL WARM SEASON		6.83	12.83	0.50	10.60	4.80	61.03	6.08	2.72	14.09	7.96

Table 4C. Warm-season grass cover for Elm Creek and Fort Kearny Sites. Cover of individual warm season grass species listed by site. Exotic warm season grasses are listed first with a total cover followed by natives and a total of all warm season cover. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

EXOTIC WARM-SEASON	COMMON NAME	JHNS_N	JHNS_S	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	DIPP
SETARIA FABERI	Chinese foxtail	0.50			0.50	0.50	0.50					
SETARIA ITALICA	foxtail millet											
SETARIA PUMILA	yellow foxtail					2.18	2.88	1.90		0.08	0.83	
SETARIA VERTICILLATA	bristly foxtail											
SETARIA VIRIDIS	green foxtail	0.50					1.00				0.76	0.05
TOTAL EXOTIC WARM-SEASON		1.00	0.00	0.00	0.50	2.68	4.38	1.90	0.00	0.08	1.59	0.05
NATIVE WARM-SEASON												
Andropogon gerardii	big bluestem				1.00	10.43		9.22		42.60	19.16	2.45
Aristida oligantha	old-field three-awn											
Aristida purpurea	Long-awned three-awn	3.64										
Bouteloua curtipendula	sideoats grama					1.57		0.08		4.08	0.34	0.05
Bouteloua dactyloides	buffalo grass					0.08						
Bouteloua gracilis	blue grama					0.67						
Bouteloua hirsuta	hairy grama											
Chloris verticillata	tumble windmill grass	0.02			7.37					0.16	0.30	0.02
Digitaria cognata	fall witchgrass										0.04	0.04
Distichlis spicata	saltgrass											0.02
Eragrostis pectinacea	tufted lovegrass											
Eragrostis spectabilis	purple lovegrass	0.02										
Eragrostis trichodes	sand lovegrass				0.50		6.15			0.53		
Festuca octoflora	six-weeks fescue				0.50		0.50			0.68		
Leersia virginica	whitegrass											
Panicum capillare	common witchgrass											
Panicum virgatum	switchgrass	5.73		0.08	1.50	3.93	0.67	4.82		8.57	11.64	3.71
Paspalum setaceum	yellow sand paspalum	0.06								0.16	0.04	
Schedonnardus paniculatus	tumblegrass											
Schizachyrium scoparium	little bluestem	0.50			0.50	9.85	0.50	14.80		1.08	0.64	0.28
Sorghastrum nutans	Indian grass					8.47		0.25		0.03	1.85	0.60
Spartina pectinata	prairie cordgrass	6.36		2.52	2.32	1.50	2.27			0.50		4.15
Sporobolus airoides	alkali sacaton											
Sporobolus compositus	tall dropseed	1.50			1.50	0.67	1.03	4.20	0.06	0.69		0.11
Sporobolus cryptandrus	sand dropseed	12.16			1.73	7.95	8.50	4.22	1.55	2.48	2.49	0.02
Sporobolus heterolepis	prairie dropseed											
Tridens flavus	purpletop					0.50						
TOTAL NATIVE WARM-SEASON		29.99	0.00	2.60	16.92	45.62	19.62	37.58	1.61	61.52	36.48	11.45
TOTAL WARM SEASON		30.99	0.00	2.60	17.42	48.30	24.00	39.48	1.61	61.60	38.07	11.50

Table 4D. Warm-season grass cover for Shoemaker Island and Chapman Sites. Cover of individual warm season grass species listed by site. Exotic warm season grasses are listed first with a total cover followed by natives and a total of all warm season cover. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

EXOTIC WARM-SEASON	COMMON NAME	FOX	HOST	BIN_NM	BIN_NH	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
SETARIA FABERI	Chinese foxtail		0.50										
SETARIA ITALICA	foxtail millet												
SETARIA PUMILA	yellow foxtail	0.10	0.03					0.06				0.42	
SETARIA VERTICILLATA	bristly foxtail												
SETARIA VIRIDIS	green foxtail	0.70	0.16									1.15	
TOTAL EXOTIC WARM-SEASON		0.80	0.69	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	1.65	0.00
NATIVE WARM-SEASON													
Andropogon gerardii	big bluestem	5.49	2.58			21.72	19.85	1.91	4.83	10.79	0.08	0.08	
Aristida oligantha	old-field three-awn												
Aristida purpurea	Long-awned three-awn												
Bouteloua curtipendula	sideoats grama	10.19	4.69					0.06		0.37			
Bouteloua dactyloides	buffalo grass												
Bouteloua gracilis	blue grama	0.89	2.29										
Bouteloua hirsuta	hairy grama												
Calamovilfa longifolia	prairie sandreed												
Cenchrus longispinus	field sandbur												
Chloris verticillata	tumble windmill grass						0.08		0.02				
Digitaria cognata	fall witchgrass						0.25	0.06	0.52				
Distichlis spicata	saltgrass							3.49	2.09	0.10		0.08	0.99
Eragrostis trichodes	sand lovegrass	0.10											
Festuca octoflora	six-weeks fescue	0.10											
Leersia virginica	whitegrass												
Panicum capillare	common witchgrass												
Panicum virgatum	switchgrass	7.95	7.80			0.87	0.87	2.81	6.63	7.92	4.65		1.33
Paspalum setaceum	yellow sand paspalum								0.02		0.50	0.50	
Schedonnardus paniculatus	tumblegrass												
Schizachyrium scoparium	little bluestem	2.42	3.59							0.05	0.50	0.50	
Sorghastrum nutans	Indian grass	0.15	11.03			1.12	0.50	0.19	0.72	13.72			
Spartina pectinata	prairie cordgrass					16.60	0.08	0.25	1.20	1.91	0.75	0.58	0.19
Sporobolus airoides	alkali sacaton												
Sporobolus compositus	tall dropseed	3.92	1.91			0.08		0.06	0.61	0.05			
Sporobolus cryptandrus	sand dropseed	3.85	0.70						0.04			0.95	
Sporobolus heterolepis	prairie dropseed												
Tridens flavus	purpletop												
TOTAL NATIVE WARM-SEASON		35.06	34.59	0.00	0.00	40.38	21.63	8.84	16.68	34.91	6.48	2.70	2.50
TOTAL WARM SEASON		35.86	35.28	0.00	0.00	40.38	21.63	8.90	16.68	34.91	6.48	4.35	2.50

Table 5A. Grass-like species cover of the Plum Creek, Cottonwood Ranch North and East Lloyd Island Sites. . These species are predominantly cool season and may influence overall management decisions if they are large components of any one site. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

SPECIES	COMMON NAME	COOK	DYER	CWRN1	CWRN2	CWRN3	CWREL
<i>Bolboschoenus fluviatilis</i>	river bulrush						0.50
<i>Bolboschoenus maritimus</i>	salt-marsh bulrush						
<i>Carex bicknellii</i>	Bicknell's sedge				1.20	0.08	0.36
<i>Carex blanda</i>	woodland sedge						
<i>Carex brachyglossa</i>	yellow-fruit sedge						
<i>Carex brevior</i>	short-beak sedge		0.19	0.50		0.58	0.88
<i>Carex crawei</i>	Crawe's sedge						
<i>Carex eleocharis</i>	needle-leaf sedge		3.96	0.33		0.08	
<i>Carex emoryi</i>	Emory's sedge				0.08		
<i>Carex granularis</i>	Hale's meadow sedge						
<i>Carex gravida</i>	heavy-fruit sedge						
<i>Carex grisea</i>	gray wood sedge						
<i>Carex hallii</i>	deer sedge						
<i>Carex heliophila</i>	sun sedge						
<i>Carex meadii</i>	Mead's sedge						
<i>Carex mesochorea</i>	midland sedge						
<i>Carex molesta</i>	troublesome sedge						
<i>Carex pellita</i>	woolly sedge						
<i>Carex praegracilis</i>	clustered field sedge						0.56
<i>Carex stipata</i>	saw-beak sedge				0.50		
<i>Carex vulpinoidea</i>	fox sedge						
<i>Cyperus acuminatus</i>	short-point flatsedge						
<i>Cyperus esculentus</i>	yellow nut-sedge						
<i>Cyperus lupulinus</i>	Great Plains flatsedge			0.17			
<i>Cyperus schweinitzii</i>	sand flatsedge						
<i>Cyperus squarrosus</i>	awned flatsedge						
<i>Cyperus strigosus</i>	straw-colored flatsedge						
<i>Eleocharis compressa</i>	flat-stem spikerush						0.03
<i>Eleocharis palustris</i>	marsh spikerush						
<i>Fimbristylis puberula</i>	hairy fimbry						
<i>Schoenoplectus pungens</i>	three-square bulrush	0.08					0.03
<i>Schoenoplectus tabernaemontani</i>	soft-stem bulrush						
<i>Scirpus pallidus</i>	pale-green bulrush						0.50
<i>Carex</i> spp.				11.62	0.42	2.37	0.08
TOTAL GRASS-LIKE		0.08	4.15	12.62	2.20	3.12	2.93

Table 5B. Grass-like cover of the Cottonwood Ranch Phelps Co. Sites.

These species are predominantly cool season and may influence overall management decisions if they are large components of any one site. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

SPECIES	COMMON NAME	CWR_E	MRS_N	MRS_HN	MRS_M	MRS_HS	MRS_C	MRS_SW	CWR_SW	CWR_NW	CWR_NE
Bolboschoenus fluviatilis	river bulrush								0.32		
Bolboschoenus maritimus	salt-marsh bulrush				0.50						
Carex bicknellii	Bicknell's sedge										
Carex blanda	woodland sedge										
Carex brachyglossa	yellow-fruit sedge										
Carex brevior	short-beak sedge	0.08	0.50		0.50						
Carex crawei	Crawe's sedge				0.05						
Carex eleocharis	needle-leaf sedge										
Carex emoryi	Emory's sedge										
Carex granularis	Hale's meadow sedge										
Carex grvida	heavy-fruit sedge										
Carex grisea	gray wood sedge										
Carex hallii	deer sedge										
Carex heliophila	sun sedge										
Carex meadii	Mead's sedge										
Carex mesochorea	midland sedge										
Carex molesta	troublesome sedge										
Carex pellita	woolly sedge					0.08					
Carex praegracilis	clustered field sedge		3.00		0.50			0.39			
Carex stipata	saw-beak sedge										
Carex vulpinoidea	fox sedge				0.50	0.50					
Cyperus acuminatus	short-point flatsedge										
Cyperus esculentus	yellow nut-sedge										
Cyperus lupulinus	Great Plains flatsedge								0.50		
Cyperus schweinitzii	sand flatsedge										
Cyperus squarrosus	awned flatsedge										
Cyperus strigosus	straw-colored flatsedge										
Eleocharis compressa	flat-stem spikerush		0.31		2.54	3.18					
Eleocharis palustris	marsh spikerush		0.04			3.08		5.00	13.04		0.50
Fimbristylis puberula	hairy fimbry										
Schoenoplectus pungens	three-square bulrush					1.93		0.87	4.74	0.40	0.10
Schoenoplectus tabernaemontani	soft-stem bulrush								0.05		
Scirpus pallidus	pale-green bulrush										
Carex spp.		1.15	0.17		0.70			0.04		0.13	0.32
TOTAL GRASS-LIKE		1.23	4.02	0.00	5.79	8.78	0.00	6.30	19.15	0.53	0.92

Table 5C. Grass-like cover of the Elm Creek and Fort Kearny Sites.

These species are predominantly cool season and may influence overall management decisions if they are large components of any one site. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	DIPP
<i>Bolboschoenus fluviatilis</i>	river bulrush										0.30
<i>Bolboschoenus maritimus</i>	salt-marsh bulrush										0.50
<i>Carex bicknellii</i>	Bicknell's sedge	0.50									
<i>Carex blanda</i>	woodland sedge										
<i>Carex brachyglossa</i>	yellow-fruit sedge										
<i>Carex brevior</i>	short-beak sedge	0.02		0.70	0.17	0.50	0.62	0.06	1.60	0.57	0.95
<i>Carex crawei</i>	Crawe's sedge										
<i>Carex eleocharis</i>	needle-leaf sedge										
<i>Carex emoryi</i>	Emory's sedge	0.02									
<i>Carex granularis</i>	Hale's meadow sedge										
<i>Carex grvida</i>	heavy-fruit sedge										
<i>Carex grisea</i>	gray wood sedge										
<i>Carex hallii</i>	deer sedge										
<i>Carex heliophila</i>	sun sedge										
<i>Carex meadii</i>	Mead's sedge										
<i>Carex mesochorea</i>	midland sedge										0.02
<i>Carex molesta</i>	troublesome sedge										
<i>Carex pellita</i>	woolly sedge	3.50									
<i>Carex praegracilis</i>	clustered field sedge	0.25							0.40		0.52
<i>Carex stipata</i>	saw-beak sedge										
<i>Carex vulpinoidea</i>	fox sedge										0.50
<i>Cyperus acuminatus</i>	short-point flatsedge										
<i>Cyperus esculentus</i>	yellow nut-sedge										
<i>Cyperus lupulinus</i>	Great Plains flatsedge	0.02			0.08					0.11	
<i>Cyperus schweinitzii</i>	sand flatsedge	0.54			0.50	0.50			0.50		
<i>Cyperus squarrosus</i>	awned flatsedge										
<i>Cyperus strigosus</i>	straw-colored flatsedge										
<i>Eleocharis compressa</i>	flat-stem spikerush										
<i>Eleocharis palustris</i>	marsh spikerush	0.75				0.17		0.06	0.50		0.34
<i>Fimbristylis puberula</i>	hairy fimbry										
<i>Schoenoplectus pungens</i>	three-square bulrush	1.77		1.00	0.50	0.83		0.06			0.68
<i>Schoenoplectus tabernaemontani</i>	soft-stem bulrush										
<i>Scirpus pallidus</i>	pale-green bulrush								0.50		
<i>Carex</i> spp.		0.90	1.00		1.40	3.67	0.08	0.13	0.64	0.11	2.954
TOTAL GRASS-LIKE		8.93	1.50	2.20	3.15	5.67	0.70	0.31	5.58	0.79	7.74

Table 5D. Grass-like cover of the Shoemaker Island and Chapman Sites.

These species are predominantly cool season and may influence overall management decisions if they are large components of any one site. Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

SPECIES	COMMON NAME	FOX	HOST	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
<i>Bolboschoenus fluviatilis</i>	river bulrush										
<i>Bolboschoenus maritimus</i>	salt-marsh bulrush										
<i>Carex bicknellii</i>	Bicknell's sedge										
<i>Carex blanda</i>	woodland sedge										
<i>Carex brachyglossa</i>	yellow-fruit sedge										
<i>Carex brevior</i>	short-beak sedge	1.19		0.08	0.50	0.50	1.27		2.70	2.00	
<i>Carex crawei</i>	Crawe's sedge				0.08		0.08				0.06
<i>Carex eleocharis</i>	needle-leaf sedge										
<i>Carex emoryi</i>	Emory's sedge										
<i>Carex granularis</i>	Hale's meadow sedge			0.08							
<i>Carex grvida</i>	heavy-fruit sedge			0.08							
<i>Carex grisea</i>	gray wood sedge										
<i>Carex hallii</i>	deer sedge						0.02				
<i>Carex heliophila</i>	sun sedge										
<i>Carex meadii</i>	Mead's sedge										
<i>Carex mesochorea</i>	midland sedge										
<i>Carex molesta</i>	troublesome sedge										
<i>Carex pellita</i>	woolly sedge					1.51	0.30				0.06
<i>Carex praegracilis</i>	clustered field sedge			0.08	0.50	0.59	0.06		0.58	0.50	
<i>Carex stipata</i>	saw-beak sedge										
<i>Carex vulpinoidea</i>	fox sedge			0.50	0.50	0.50	0.12		1.00	2.85	
<i>Cyperus acuminatus</i>	short-point flatsedge										
<i>Cyperus esculentus</i>	yellow nut-sedge										
<i>Cyperus lupulinus</i>	Great Plains flatsedge										
<i>Cyperus schweinitzii</i>	sand flatsedge										
<i>Cyperus squarrosus</i>	awned flatsedge										
<i>Cyperus strigosus</i>	straw-colored flatsedge										
<i>Eleocharis compressa</i>	flat-stem spikerush			0.08	0.25		0.29	0.50	0.08		
<i>Eleocharis palustris</i>	marsh spikerush			0.08	0.17	2.96	1.37	0.40	0.42	0.08	1.83
<i>Fimbristylis puberula</i>	hairy fimbry										
<i>Schoenoplectus pungens</i>	three-square bulrush				0.08	1.13	1.06	0.30			4.14
<i>Schoenoplectus tabernaemontani</i>	soft-stem bulrush										
<i>Scirpus pallidus</i>	pale-green bulrush										0.40
<i>Carex spp.</i>		0.42		2.6	5.18	10.15	8.65	1.57	1.28	0.417	11.06
TOTAL GRASS-LIKE		1.61	0.00	3.60	7.27	17.84	15.05	2.82	9.07	8.93	18.11

Table 6A. Cover of exotic forb species Plum Creek, Cottonwood Ranch North and East Lloyd Island Sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

EXOTIC FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR _NE
ABUTILON THEOPHRASTI	velvet-leaf																
ASPARAGUS OFFICINALIS	garden asparagus common																
ATRIPLEX PATULA	sparscale																
ATRIPLEX PROSTATA	thin-leaf sparscale																
BASSIA SCOPARIA	kochia								0.08								
CANNABIS SATIVA	hemp		4.00		4.48	1.85	1.96	7.70	0.08					0.50			
CARDUUS NUTANS	musk thistle	0.50	9.00	1.50		8.00	10.00		3.20	4.00	2.00		1.08	1.13		1.00	
CHENOPODIUM ALBUM	lamb's-quarters		0.50		0.50			0.50									
CHENOPODIUM GLAUCUM	oak-leaf goosefoot																
CIRSIIUM ARVENSE	Canada thistle													0.35			
CIRSIIUM VULGARE	bull thistle			0.08		0.50	1.00	3.00	0.50					0.50			
CONIUM MACULATUM	poison-hemlock														0.50		
CONVOLVULUS ARVENSIS	field bindweed	0.53								1.42				0.04			0.50
	flix-weed tansy																
DESCURAINIA SOPHIA	mustard																
ELAEAGNUS																	
ANGUSTIFOLIA	Russian-olive						0.50										
ELAEAGNUS																	
ANGUSTIFOLIA	Russian-olive						0.50										
EUPHORBIA																	
×PSEUDOVIRGATA	hybrid leafy spurge																
EUPHORBIA VIRGATA	leafy spurge		3.00														
	prickly Russian-																
KALI TRAGUS	thistle																
LACTUCA SERRIOLA	prickly lettuce	0.50	0.50			1.23	0.50										
	common																
LEONURUS CARDIACA	motherwort						0.50										
	broad-leaf pepper-																
LEPIDIUM LATIFOLIUM	grass				0.42												
LOTUS CORNICULATUS	bird-foot trefoil																
LYTHRUM SALICARIA	purple loosestrife																
MEDICAGO LUPULINA	black medick	0.50	0.19	1.82		3.33	9.62	0.08	9.36	2.68	6.37		2.20	0.08		0.44	0.25
MEDICAGO SATIVA	alfalfa		0.50		5.02		0.62										

SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR _NE
MELILOTUS ALBUS	white sweet-clover					0.50	3.00	0.08	3.58	3.17	4.11	0.50					
MELILOTUS OFFICINALIS	yellow sweet-clover	1.00	6.00				4.00	1.00	3.71	0.25	0.97		0.58	0.13	1.44	2.14	0.55
MOLLUGO VERTICILLATA	green carpet-weed																
MORUS ALBA	white mulberry		5.96											0.04		1.00	0.50
NEPETA CATARIA	catnip		3.00		1.00		1.00	0.50									
	lady's-thumb																
PERSICARIA MACULOSA	smartweed																
PLANTAGO LANCEOLATA	English plantain																
POLYGONUM AVICULARE	yard knotweed			2.72											0.05		
ROBINIA PSUEDOACIA	black locust																
RUMEX CRISPUS	curly dock										0.50				1.00		
RUMEX STENOPHYLLUS	narrow-leaf dock																
SILENE VULGARIS	bladder campion																
SISYMBRIUM LOESELII	tall hedge mustard	0.50	4.06				0.50				0.50						
SONCHUS ASPER	prickly sow-thistle													0.04			
SONCHUS OLERACEUS	store-front sow-thistle																
	common																
TARAXACUM OFFICINALE	dandelion	0.50	0.13	0.08		0.50	0.50	0.08	0.50		0.60		1.17	1.43	0.05	0.50	0.50
THLASPI ARVENSE	field penny cress		0.50				0.36		0.08					1.00			
	yellow goat's-beard	0.50	5.00	1.00	1.00	1.00	0.50		1.50	1.17	1.00		1.50				
TRIBULUS TERRESTRIS	puncture-vine	0.08			0.17												
TRIFOLIUM FRAGIFERUM	strawberry clover																
TRIFOLIUM HYBRIDUM	Alsike clover																
TRIFOLIUM PRATENSE	red clover																
TRIFOLIUM REPENS	white clover																
TYPHA ANGUSTIFOLIA	narrow-leaf cattail														0.50		
Ukn Forb																	
ULMUS PUMILA	Siberian elm						0.50										
VERBASCUM THAPSUS	common mullein		6.00	1.50	0.50		1.18			0.50	0.50			0.05	1.00		
VERONICA ANAGALLIS-AQUATICA	water speedwell																
TOTAL EXOTIC FORBS		4.62	48.34	8.70	13.08	16.92	36.72	12.95	22.59	13.18	16.55	0.50	6.53	5.23	3.59	6.08	2.30

Table 6B. Cover of exotic forb species on Elm Creek and For Kearny Sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
ABUTILON THEOPHRASTI	velvet-leaf		1.00										
ASPARAGUS OFFICINALIS	garden asparagus												
ATRIPLEX PATULA	common spearscale												
ATRIPLEX PROSTATA	thin-leaf spearscale												
BASSIA SCOPARIA	kochia				0.50			0.50					
CANNABIS SATIVA	hemp	4.52				1.00	0.08	0.25	1.00	1.47	0.05		
CARDUUS NUTANS	musk thistle	5.00	1.00	1.00	1.00	0.50	0.50		1.00			0.50	7.50
CHENOPODIUM ALBUM	lamb's-quarters		0.50			0.08			1.50	0.50	0.55		
CHENOPODIUM GLAUCUM	oak-leaf goosefoot												
CIRSIIUM ARVENSE	Canada thistle												
CIRSIIUM VULGARE	bull thistle				0.50							1.09	
CONIUM MACULATUM	poison-hemlock			0.50		0.50							
CONVOLVULUS ARVENSIS	field bindweed						0.50				1.21		0.02
	flix-weed tansy												
DESCURAINIA SOPHIA	mustard									0.50	0.50		
ELAEAGNUS ANGUSTIFOLIA	Russian-olive	2.00											0.50
ELAEAGNUS ANGUSTIFOLIA	Russian-olive	2.00											0.50
EUPHORBIA													
xPSEUDOVIRGATA	hybrid leafy spurge			0.08									
EUPHORBIA VIRGATA	leafy spurge	2.72	0.08	3.00									
KALI TRAGUS	prickly Russian-thistle								0.03	0.04			
LACTUCA SERRIOLA	prickly lettuce				0.50	0.08						0.33	0.02
LEONURUS CARDIACA	common motherwort												
	broad-leaf pepper-grass												
LEPIDIUM LATIFOLIUM													
LOTUS CORNICULATUS	bird-foot trefoil												
LYTHRUM SALICARIA	purple loosestrife	3.00			1.50								1.53
MEDICAGO LUPULINA	black medick	2.12		2.67	6.38	1.08		1.09	0.61	0.14		2.96	1.10
MEDICAGO SATIVA	alfalfa												
MELILOTUS ALBUS	white sweet-clover	0.52	5.50	2.50	2.50	2.53		1.00	2.27			0.20	6.54
MELILOTUS OFFICINALIS	yellow sweet-clover	9.00		4.00	3.00	4.00		2.46	4.10	1.00	7.24	2.53	0.55
MOLLUGO VERTICILLATA	green carpet-weed												
MORUS ALBA	white mulberry	2.50		1.50	1.00	2.00			0.50				0.50
NEPETA CATARIA	catnip	0.50		1.00	0.50	1.17				0.50	0.50	0.50	
	lady's-thumb												
PERSICARIA MACULOSA	smartweed												
PLANTAGO LANCEOLATA	English plantain												

SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
POLYGONUM AVICULARE	yard knotweed											0.03	
ROBINIA PSUEDOACIA	black locust												
RUMEX CRISPUS	curly dock	1.00		1.00	1.50	1.00		0.50					0.52
RUMEX STENOPHYLLUS	narrow-leaf dock												
SILENE VULGARIS	bladder campion												
SISYMBRIUM LOESELII	tall hedge mustard	0.50		1.50	1.50	1.00			1.00			1.53	0.50
SONCHUS ASPER	prickly sow-thistle												
SONCHUS OLERACEUS	store-front sow-thistle												
TARAXACUM OFFICINALE	common dandelion	3.00		3.50	3.00	3.50		1.00	0.05			1.28	0.52
THLASPI ARVENSE	field penny cress	1.00		1.00		1.00							
TRAGOPOGON DUBIUS	yellow goat's-beard	2.50		2.50	2.00	1.50	0.50		4.50			1.03	3.00
TRIBULUS TERRESTRIS	puncture-vine												
TRIFOLIUM FRAGIFERUM	strawberry clover												
TRIFOLIUM HYBRIDUM	Alsike clover												
TRIFOLIUM PRATENSE	red clover	0.50		1.00	1.00	0.50		1.11				0.50	
TRIFOLIUM REPENS	white clover											0.20	
TYPHA ANGUSTIFOLIA	narrow-leaf cattail												
Ukn Forb													
ULMUS PUMILA	Siberian elm	3.00		1.00	1.08	1.00			0.50			5.50	
VERBASCUM THAPSUS	common mullein	6.56	1.50	2.50	13.50	3.15	1.50		2.66	1.00	1.00	1.50	1.78
VERONICA ANAGALLIS-AQUATICA	water speedwell	0.50											
TOTAL EXOTIC FORBS		52.43	9.58	30.25	40.97	25.60	3.08	7.91	19.71	5.15	11.05	19.68	25.07

Table 6C. Cover of exotic forb species on Shoemaker Island and Chapman Sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
ABUTILON THEOPHRASTI	velvet-leaf								
ASPARAGUS OFFICINALIS	garden asparagus								
ATRIPLEX PATULA	common sparscale								
ATRIPLEX PROSTATA	thin-leaf sparscale								
BASSIA SCOPARIA	kochia								
CANNABIS SATIVA	hemp								
CARDUUS NUTANS	musk thistle						1	1	
CHENOPODIUM ALBUM	lamb's-quarters							0.0833	
CHENOPODIUM GLAUCUM	oak-leaf goosefoot								
CIRSIIUM ARVENSE	Canada thistle								
CIRSIIUM VULGARE	bull thistle				0.50		1.5833	1.5833	1
CONIUM MACULATUM	poison-hemlock								
CONVOLVULUS ARVENSIS	field bindweed								
	flix-weed tansy								
DESCURAINIA SOPHIA	mustard								
ELAEAGNUS ANGUSTIFOLIA	Russian-olive						0.5	0.5	
ELAEAGNUS ANGUSTIFOLIA	Russian-olive						0.5	0.5	
EUPHORBIA									
×PSEUDOVIRGATA	hybrid leafy spurge								
EUPHORBIA VIRGATA	leafy spurge								
KALI TRAGUS	prickly Russian-thistle								
LACTUCA SERRIOLA	prickly lettuce		0.50						
LEONURUS CARDIACA	common motherwort							0.0833	
	broad-leaf pepper-								
	grass								
LEPIDIUM LATIFOLIUM									
LOTUS CORNICULATUS	bird-foot trefoil								0.5
LYTHRUM SALICARIA	purple loosestrife			0.90	1.00	0.05	1	1	
MEDICAGO LUPULINA	black medick	2.73	1.82	2.08	2.97	4.01	0.0833	1.85	0.5
MEDICAGO SATIVA	alfalfa								
MELILOTUS ALBUS	white sweet-clover	0.50	0.50		5.00	1.84	3.5	13.85	
MELILOTUS OFFICINALIS	yellow sweet-clover				0.06			4.05	
MOLLUGO VERTICILLATA	green carpet-weed							1.15	
MORUS ALBA	white mulberry		0.50				1.5	1.5	
NEPETA CATARIA	catnip								
SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS

SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
PERSICARIA MACULOSA	lady's-thumb smartweed								0.5
PLANTAGO LANCEOLATA	English plantain					0.50			
POLYGONUM AVICULARE	yard knotweed				0.02				
ROBINIA PSUEDOACIA	black locust								
RUMEX CRISPUS	curly dock		0.50		0.50		1	1	
RUMEX STENOPHYLLUS	narrow-leaf dock								
SILENE VULGARIS	bladder campion								
SISYMBRIUM LOESELII	tall hedge mustard								
SONCHUS ASPER	prickly sow-thistle store-front sow- thistle								
SONCHUS OLERACEUS									
TARAXACUM OFFICINALE	common dandelion		0.50	0.13	0.13	0.05	0.5	0.5833	
THLASPI ARVENSE	field penny cress						0.5833	1.2833	
TRAGOPOGON DUBIUS	yellow goat's-beard						0.5	0.5	
TRIBULUS TERRESTRIS	puncture-vine								
TRIFOLIUM FRAGIFERUM	strawberry clover								
TRIFOLIUM HYBRIDUM	Alsike clover								
TRIFOLIUM PRATENSE	red clover			6.63		1.26	0.5	0.5	
TRIFOLIUM REPENS	white clover								18.863
TYPHA ANGUSTIFOLIA	narrow-leaf cattail						0.5	0.5	
Ukn Forb									
ULMUS PUMILA	Siberian elm								
VERBASCUM THAPSUS	common mullein						2.5	3.0333	
VERONICA ANAGALLIS- AQUATICA	water speedwell								
TOTAL EXOTIC FORBS		3.23	4.32	9.73	10.18	7.71	15.75	34.55	21.36

Table 7A. Native forb cover for Plum Creek, Cottonwood Ranch North and East Lloyd Island Sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

NATIVE FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR_ NE
Acer negundo	box-elder																
Achillea millefolium	western yarrow								0.50				0.50	0.50			
Acmispon americanus	prairie trefoil																
Allium canadense	meadow garlic																
Allium canadense	prairie wild onion																
Amaranthus retroflexus	redroot pigweed																
Ambrosia artemisiifolia	common ragweed	0.17		0.58								0.08		0.50			0.85
Ambrosia psilostachya	western ragweed	1.00	5.60	1.65		4.08	8.26	4.65	3.22		4.12			0.75	2.43	1.00	
Ambrosia trifida	giant ragweed				11.07			0.50									
Amorpha canescens	leadplant																
Amorpha fruticosa	false indigo-bush																
Antennaria neglecta	field pussytoes																
Apocynum cannabinum	hemp dogbane	0.50	0.50			0.25			0.50		1.50	0.50	0.08	0.98		2.00	1.05
Arabis pycnocarpa	hairy rock cress											0.50					
Argemone polyanthemus	plains prickly-poppy																
Arnoglossum plantagineum	tuberous Indian-plantain				0.62												
Artemisia filifolia	sandsage																
Artemisia ludoviciana	white sage																
Asclepias incarnata	swamp milkweed										0.50			0.50			
Asclepias sp.																	
Asclepias speciosa	showy milkweed		3.56		0.50	1.03		1.00	0.50		0.50	1.00	3.50	0.54			0.05
	common																
Asclepias syriaca	milkweed					1.32	1.50		0.50	1.00		0.50	0.50		0.50	1.00	
Asclepias verticillata	whorled milkweed	0.08	0.06	0.08	0.50				0.13	0.75	3.50					0.50	
Asclepias viridiflora	green milkweed																
Brickellia eupatorioides	false-boneset																
	pale poppy-mallow																
Callirhoe alcaeoides	purple poppy-mallow										0.50						
Callirhoe involucrata	purple poppy-mallow	1.08	7.95	0.53			2.97	1.77	1.43		2.04	0.50					
Celtis occidentalis	hackberry																
Chenopodium berlandieri	pitseed goosefoot																
Chenopodium pratericola	desert goosefoot																

NATIVE FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR_ NE
Chenopodium subglabrum	smooth goosefoot																
Cicuta maculata	spotted water- hemlock				0.62												
Cirsium altissimum	tall thistle					0.67											
Cirsium canescens	Platte thistle																
Cirsium flodmanii	Flodman's thistle						0.50		1.00		1.50						0.50
Cirsium undulatum	wavy-leaf thistle								1.00	1.00							
Conyza canadensis	horseweed	0.50	0.50	0.17		1.98				2.18	0.15		0.25		0.10		0.05
Conyza ramosissima	spreading fleabane				0.50												
Coreopsis tinctoria	plains coreopsis																
Cornus drummondii	rough-leaf dogwood						1.00	5.00									
Coryphantha vivipara	purple pincushion cactus																
Croton texensis	Texas croton			0.50		0.08											
Cyclachaena xanthiifolia	giant marsh-elder																
Cycloloma atriplicifolium	winged-pigweed																
Dalea candida	eastern white prairie-clover																
Dalea purpurea	purple prairie- clover						0.50										
Dalea villosa	silky prairie-clover																
Descurainia pinnata	pinnate tansy mustard																
Desmanthus illinoensis	Illinois bundleflower					0.50	0.50		0.50			1.00			0.50	1.06	1.00
Desmodium illinoense	Illinois tick-clover																
Echinacea angustifolia	narrow-leaf purple coneflower				1.23												
Eleocharis sp.																	
Elymus sp.																	
Equisetum arvense	field horsetail																
Equisetum hyemale	common scouring- rush																
Equisetum laevigatum	smooth scouring- rush					0.87	0.11	0.67	0.13		1.17	0.25					
Erechtites hieraciifolius	burnweed																
Ericameria nauseosa	rubber rabbit- brush																
Erigeron philadelphicus	marsh fleabane																
Erigeron strigosus	daisy fleabane								0.50			1.00					
Eupatorium altissimum	tall boneset																

NATIVE FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR_ NE
Euphorbia davidii	western toothed spurge																
Euphorbia dentata	eastern toothed spurge																
Euphorbia geeyeri	Geyer's spurge																
Euphorbia glyptosperma	ridge-seed spurge					0.08											
Euphorbia maculata	spotted spurge																
Euphorbia marginata	snow-on-the- mountain			0.67		1.08											
Euphorbia nutans	eyebane		0.13	1.57													
Euphorbia serpyllifolia	thyme-leaf spurge																
Euphorbia sp.																	
Euphorbia spathulata	warty spurge																
Eustoma russellianum	prairie-gentian																
Euthamia gymnospermoides	viscid goldentop climbing false- buckwheat																
Fallopia scandens	green ash																
Fraxinus pennsylvanica	slender snake- cotton																
Froelichia gracilis	catch-weed																
Galium aparine	bedstraw						0.50										
Geum canadense	white avens																
Gleditsia triacanthos	honey-locust																
Glycyrrhiza lepidota	wild licorice													0.93			
Grindelia squarrosa	curly-top gumweed		2.05	1.40		3.00	1.18										
Hackelia virginiana	Virginia stickseed				1.48												
Hedeoma hispida	rough false- pennyroyal		0.06	0.50		0.62											
Helenium autumnale	sneezeweed																
Helianthus annuus	common sunflower							0.50									
Helianthus grosseserratus	sawtooth sunflower																0.50
Helianthus maximiliani	Maximilian's sunflower											0.50	3.55			0.13	4.00
Helianthus pauciflorus	stiff sunflower		0.50										0.17				
Helianthus petiolaris	plains sunflower		1.31			1.20							3.00		0.50		
Heliopsis helianthoides	false-sunflower																
Heterotheca latifolia	camphor-weed					0.50											
Heterotheca villosa	hairy golden-aster																

NATIVE FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR_ NE
Hibiscus laevis	halberd-leaf rose-mallow																
Hypoxis hirsuta	yellow star-grass																
Iva annua	annual marsh-elder							0.50				0.08		1.23	0.05	0.06	0.55
Juncus balticus	Baltic rush																
Juncus dudleyi	Dudley's rush										0.50						
Juncus nodosus	knotted rush																
Juncus sp.															0.50		
Juncus torreyi	Torrey's rush														0.50		
Juniperus virginiana	eastern red-cedar						0.50			0.08							
	western wild																
Lactuca ludoviciana	lettuce																
	common																
Lemna minor	duckweed																
Lepidium densiflorum	prairie pepper-grass		1.86	1.40		0.75											
Lespedeza capitata	round-head bush-clover																
Liatris glabrata	plains gayfeather																
	lance-leaf																
Liatris lancifolia	gayfeather										0.05						
Liatris punctata	dotted gayfeather																
	thick-spike																
Liatris pycnostachya	gayfeather																
Linum sulcatum	grooved flax																
Lithospermum canescens	hoary puccoon																
Lithospermum caroliniense	Carolina puccoon																
Lithospermum incisum	fringed puccoon																
Lithospermum occidentale	marble-seed				0.08						2.14						
Lobelia spicata	pale-spike lobelia											3.50					
	American water-horehound																
Lycopus americanus	rough bugleweed													0.50			
Lysimachia ciliata	fringed loosestrife																
Lythrum alatum	winged loosestrife											0.50					
	starry false																
Maianthemum stellatum	Solomon's-seal																
	western water-clover														0.50		
Marsilea vestita																	
Mentha canadensis	Canada mint	0.17															
Mimosa nuttallii	sensitive brier																

NATIVE FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR_ NE
Mirabilis hirsuta	hairy four-o'clock																
Mirabilis linearis	narrow-leaf four-o'clock																
Mirabilis nyctaginea	wild four-o'clock																
Monarda fistulosa	wild-bergamot																
MUHLENBERGIA SP.																	
Oenothera biennis	eastern evening-primrose						0.06										
Oenothera curtiflora	velvet butterfly-plant				0.50		0.50	0.08	0.50		0.50					0.50	
Oenothera filiformis	long-flower butterfly-plant																
Oenothera laciniata	cut-leaf evening-primrose																
Oenothera rhombipetala	fourpoint evening-primrose																
Oenothera serrulata	plains yellow-primrose																
Oenothera suffrutescens	scarlet butterfly-plant																
Opuntia fragilis	brittle prickly-pear		0.50														
Opuntia humifusa	eastern prickly-pear		3.50														
Oxalis dillenii	gray-green wood-sorrel			0.53								0.50					
Oxalis stricta	yellow wood-sorrel				0.62												
Oxalis violacea	violet wood-sorrel																
Packera plattensis	prairie ragwort										0.50						
Parietaria pensylvanica	Pennsylvania pellitory	0.53						0.08									
Parthenocissus quinquefolia	Virginia creeper																
Penstemon grandiflorus	shell-leaf penstemon		0.50				0.50										
Persicaria amphibia	water smartweed																
Persicaria coccinea	swamp smartweed																
Persicaria hydropiperoides	smartweed																
Persicaria lapathifolia	mild water-pepper																
Persicaria punctata	nodding smartweed																
Phyla lanceolata	smartweed																
	dotted smartweed																
	northern fogfruit													1.16	0.05		0.05

NATIVE FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR_ NE
Physalis heterophylla	clammy ground-cherry					0.08	1.14		0.04								
Physalis longifolia	common ground-cherry	1.50	0.75		0.50	0.58	0.50	0.50			0.50	1.00	0.17			1.50	0.50
Physalis virginiana	Virginia ground-cherry		0.50			0.42		0.25	1.08	0.08							
Plantago eriopoda	alkali plantain																
Plantago patagonica	woolly plantain			0.50		0.17											
Plantago rugelii	black-seed plantain				0.87												
Plantago virginica	pale-seed plantain																
	sandy-seed																
Polanisia dodecandra	clammy-weed	18.17			5.53												
Polygala verticillata	whorled milkwort																
Polygonum ramosissimum	bushy knotweed			2.47													
Populus deltoides	plains cottonwood																
Portulaca oleracea	garden purslane																
Potentilla norvegica	Norwegian cinquefoil																
Potentilla paradoxa	bushy cinquefoil																
Potentilla pensylvanica	Pennsylvania cinquefoil																
Prunella vulgaris	self-heal																
Pycnanthemum virginianum	Virginia mountain-mint											1.00					
	upright prairie-coneflower																
Ratibida columnifera	gray-head prairie-coneflower																
Ratibida pinnata	buffalo currant																
Ribes odoratum	dwarf prairie rose																
Rosa arkansana	western wild rose		0.50	0.25			0.50	0.50									
Rosa woodsii	black-eyed Susan				3.27				0.54			0.50					
Rudbeckia hirta	pale dock																
Rumex altissimus	peach-leaf willow																
Salix amygdaloides	sandbar willow																
Salix interior	Pitcher's sage								0.50								
Salvia azurea	Canada sanicle																
Sanicula canadensis	blue skullcap																
Scutellaria lateriflora	sleepy catchfly																
Silene antirrhina	rosinweed					0.50						8.00					
Silphium integrifolium																	

NATIVE FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR_ NE
Sisyrinchium campestre	prairie blue-eyed-grass																
Sisyrinchium montanum	strict blue-eyed-grass																
Solanum carolinense	horse-nettle																
Solanum interius	plains black nightshade																
Solanum ptychanthum	black nightshade			0.08													
Solanum rostratum	buffalo-bur																
Solidago canadensis	Canada goldenrod											0.08				0.13	
Solidago gigantea	late goldenrod						0.50										
Solidago missouriensis	Missouri goldenrod																
Solidago mollis	ashy goldenrod																
Solidago rigida	stiff goldenrod												0.08				
Solidago sp.																	
Sparganium eurycarpum	large-fruit bur-reed																
Strophostyles leiosperma	slick-seed wild bean					0.08			0.04								
Suaeda calceoliformis	western sea-blite														0.10		
Symphoricarpos occidentalis	wolfberry																
Symphoricarpos orbiculatus	coralberry																
Symphyotrichum ericoides	heath aster			1.93			0.50				0.05	0.58	0.08				0.20
Symphyotrichum falcatum	prairie white aster											0.50		0.50			
Symphyotrichum lanceolatum	tall white aster							0.08							1.00		
Symphyotrichum praealtum	willow-leaf aster																
Teucrium canadense	American germander							0.50				0.50					
Tomostima reptans	white whitlow-wort																
Toxicodendron radicans	eastern poison ivy		0.50														
Tradescantia bracteata	long-bract spiderwort																
Tradescantia occidentalis	western spiderwort								0.50		0.05						
Triglochin maritima	shore arrow-grass																
Ulmus americana	American elm																
Ulmus rubra	slippery elm																

NATIVE FORB SPECIES	COMMON NAME	COOK	DYER	CWR N1	CWR N2	CWR N3	CWRE L	CWR _E	MRS_ N	MRS_ HN	MRS_ M	MRS_ HS	MRS_ C	MRS_ SW	CWR _SW	CWR _NW	CWR_ NE
Urtica gracilis	stinging nettle							3.00									
Verbena bracteata	prostrate vervain			0.08	1.57		0.50	0.50									
Verbena hastata	blue vervain				0.08		0.68										
Verbena stricta	hoary vervain	0.50	0.75	0.67		0.67	1.53	0.83	2.13		1.37		0.50	1.00	0.50	1.36	1.65
Vernonia baldwinii	western ironweed				0.95	0.50	0.50		0.50		1.00			0.50		0.06	
Vernonia fasciculata	prairie ironweed				0.50												
	purslane																
Veronica peregrina	speedwell										0.05						
Vicia americana	American vetch																
Viola pedatifida	prairie violet																
Viola praticola	meadow violet																
	downy wood																
Viola sororia	violet					0.08			0.27		0.30						
Vitis riparia	riverbank grape																
Xanthium strumarium	cocklebur													0.50			
TOTAL NATIVE FORBS		24.20	31.59	15.57	30.98	21.10	24.93	20.92	16.00	5.10	22.49	14.58	20.38	11.09	6.23	9.30	10.95
TOTAL ALL FORBS		28.82	79.93	24.27	44.07	38.02	61.65	33.87	38.59	18.28	39.04	15.08	26.92	16.33	9.82	15.38	13.25

Table 7B. Native forb cover for Elm Creek and Fort Kearny Sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

NATIVE FORB SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
Acer negundo	box-elder												0.50
Achillea millefolium	western yarrow								1.03				0.52
Acmispon americanus	prairie trefoil	0.04											
Allium canadense	meadow garlic												
Allium canadense	prairie wild onion												
Amaranthus retroflexus	redroot pigweed									0.50	0.50		
Ambrosia artemisiifolia	common ragweed	0.64				1.32						0.03	
Ambrosia psilostachya	western ragweed	3.93			7.65	4.00	0.33	0.06	7.49	3.33	2.27	0.79	5.73
Ambrosia trifida	giant ragweed												
Amorpha canescens	leadplant												
Amorpha fruticosa	false indigo-bush												
Antennaria neglecta	field pussytoes												
Apocynum cannabinum	hemp dogbane	0.02	0.78	0.58	1.00	2.03			1.00				1.55
Arabis pycnocarpa	hairy rock cress						0.08						
Argemone polyanthemus	plains prickly-poppy												
Arnoglossum plantagineum	tuberous Indian-plantain												
Artemisia filifolia	sandsage												
Artemisia ludoviciana	white sage												0.13
Asclepias incarnata	swamp milkweed					1.00							0.50
Asclepias sp.													
Asclepias speciosa	showy milkweed			1.00	1.50	1.00			0.50				5.52
Asclepias syriaca	common milkweed				1.00	0.50	0.08	0.50				1.00	2.04
Asclepias verticillata	whorled milkweed			0.33	1.82	0.50	0.50	1.55	0.03				4.15
Asclepias viridiflora	green milkweed												
Brickellia eupatorioides	false-boneset												
Callirhoe alcaeoides	pale poppy-mallow												0.50
Callirhoe involucrata	purple poppy-mallow	0.02	0.50		0.83		0.67		5.05	0.71	0.50	0.03	1.76
Celtis occidentalis	hackberry												
Chenopodium berlandieri	pitseed goosefoot												
Chenopodium pratericola	desert goosefoot					0.08			0.03				0.02
Chenopodium subglabrum	smooth goosefoot												
Cicuta maculata	spotted water-hemlock	0.50											
Cirsium altissimum	tall thistle	3.50		1.00		1.00			1.00	0.04			0.54
Cirsium canescens	Platte thistle												

NATIVE FORB SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
Cirsium flodmanii	Flodman's thistle												1.50
Cirsium undulatum	wavy-leaf thistle												1.00
Conyza canadensis	horseweed	3.02			2.97	0.42			1.03		0.25	0.59	
Conyza ramosissima	spreading fleabane												
Coreopsis tinctoria	plains coreopsis												
Cornus drummondii	rough-leaf dogwood	0.12											
Coryphantha vivipara	purple pincushion cactus								0.03				
Croton texensis	Texas croton												
Cyclachaena xanthiifolia	giant marsh-elder												
Cycloloma atriplicifolium	winged-pigweed												
Dalea candida	eastern white prairie-clover				0.50				0.53			0.50	
Dalea purpurea	purple prairie-clover				2.50	5.00			1.53			2.70	
Dalea villosa	silky prairie-clover												
Descurainia pinnata	pinnate tansy mustard												
Desmanthus illinoensis	Illinois bundleflower	1.02		1.50	3.00	2.50			0.81			1.66	4.19
Desmodium illinoense	Illinois tick-clover												
Echinacea angustifolia	narrow-leaf purple coneflower												
Eleocharis sp.									0.03				
Elymus sp.													
Equisetum arvense	field horsetail												0.51
Equisetum hyemale	common scouring-rush	0.39	0.08					0.65					0.14
Equisetum laevigatum	smooth scouring-rush	1.85	0.70		0.17	0.08		0.65					0.61
Erechtites hieraciifolius	burnweed												
Ericameria nauseosa	rubber rabbit-brush										0.32		
Erigeron philadelphicus	marsh fleabane												0.50
Erigeron strigosus	daisy fleabane			1.58	1.50	1.50							0.04
Eupatorium altissimum	tall boneset								0.50				
Euphorbia davidii	western toothed spurge	0.50				0.08			0.05	0.07			
Euphorbia dentata	eastern toothed spurge												
Euphorbia geyeri	Geyer's spurge												
Euphorbia glyptosperma	ridge-seed spurge												
Euphorbia maculata	spotted spurge					0.08			0.03	0.04			0.02
Euphorbia marginata	snow-on-the-mountain								0.50	0.21			
Euphorbia nutans	eyebane	0.18					0.58		0.26	0.04			
Euphorbia serpyllifolia	thyme-leaf spurge												
Euphorbia sp.													
Euphorbia spathulata	warty spurge				0.50								
Eustoma russellianum	prairie-gentian												

NATIVE FORB SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
Euthamia gymnospermoides	viscid goldentop								0.50				
Fallopia scandens	climbing false-buckwheat												
Fraxinus pennsylvanica	green ash	3.00											
Froelichia gracilis	slender snake-cotton												
Galium aparine	catch-weed bedstraw												
Geum canadense	white avens												
Gleditsia triacanthos	honey-locust												
Glycyrrhiza lepidota	wild licorice	0.14	1.15	0.50	3.23	0.50			0.50				0.05
Grindelia squarrosa	curly-top gumweed	0.50		0.50									0.50
Hackelia virginiana	Virginia stickseed												
Hedeoma hispida	rough false-pennyroyal			0.17	1.12	0.08							
Helenium autumnale	sneezeweed	1.00											
Helianthus annuus	common sunflower								1.50	0.04			
Helianthus grosseserratus	sawtooth sunflower												
Helianthus maximiliani	Maximilian's sunflower				1.00	0.50			1.00				1.00
Helianthus pauciflorus	stiff sunflower								5.00				
Helianthus petiolaris	plains sunflower	0.02		0.50		1.12			1.50	0.04	0.05		3.00
Heliopsis helianthoides	false-sunflower			1.00	1.00	1.00						1.29	
Heterotheca latifolia	camphor-weed	2.50		0.50	0.50	0.50			2.16	0.50	0.50	3.00	0.02
Heterotheca villosa	hairy golden-aster												
Hibiscus laevis	halberd-leaf rose-mallow												
Hypoxis hirsuta	yellow star-grass												
Iva annua	annual marsh-elder												0.26
Juncus balticus	Baltic rush		0.50										
Juncus dudleyi	Dudley's rush	0.66		0.50	0.50				1.45				0.98
Juncus nodosus	knotted rush												
Juncus sp.													
Juncus torreyi	Torrey's rush												0.02
Juniperus virginiana	eastern red-cedar				0.50								
Lactuca ludoviciana	western wild lettuce												
Lemna minor	common duckweed												
Lepidium densiflorum	prairie pepper-grass	0.04		0.50	0.83	1.17			0.55			0.78	0.52
Lespedeza capitata	round-head bush-clover								0.50				
Liatris glabrata	plains gayfeather												
Liatris lancifolia	lance-leaf gayfeather												
Liatris punctata	dotted gayfeather												
Liatris pycnostachya	thick-spike gayfeather												
Linum sulcatum	grooved flax												0.02

NATIVE FORB SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
Lithospermum canescens	hoary puccoon				0.50								
Lithospermum caroliniense	Carolina puccoon								0.50				
Lithospermum incisum	fringed puccoon												0.15
Lithospermum occidentale	marble-seed				0.50	0.50			4.50				0.50
Lobelia spicata	pale-spike lobelia			1.00	1.50	1.50							
Lycopus americanus	American water-horehound	4.02		0.50									0.05
Lycopus asper	rough bugleweed				1.00								
Lysimachia ciliata	fringed loosestrife												
Lythrum alatum	winged loosestrife			0.50	1.00	0.58							
Maianthemum stellatum	starry false Solomon's-seal												
Marsilea vestita	western water-clover												
Mentha canadensis	Canada mint	0.50				0.17							0.02
Mimosa nuttallii	sensitive brier								1.00				
Mirabilis hirsuta	hairy four-o'clock												
Mirabilis linearis	narrow-leaf four-o'clock												
Mirabilis nyctaginea	wild four-o'clock			1.00					0.50				
Monarda fistulosa	wild-bergamot								0.42				
MUHLENBERGIA SP.													
Oenothera biennis	eastern evening-primrose					0.62			0.50				
Oenothera curtiflora	velvet butterfly-plant				0.50	0.50			0.50				0.50
Oenothera filiformis	long-flower butterfly-plant												
Oenothera laciniata	cut-leaf evening-primrose												
Oenothera rhombipetala	fourpoint evening-primrose												
Oenothera serrulata	plains yellow-primrose												
Oenothera suffrutescens	scarlet butterfly-plant												
Opuntia fragilis	brittle prickly-pear												
Opuntia humifusa	eastern prickly-pear	1.82		0.50	0.50								
Oxalis dillenii	gray-green wood-sorrel	1.00		1.00	2.43	1.25			0.53	0.07	0.05		0.02
Oxalis stricta	yellow wood-sorrel	0.50			0.17								
Oxalis violacea	violet wood-sorrel												
Packera plattensis	prairie ragwort												0.50
Parietaria pensylvanica	Pennsylvania pellitory												
Parthenocissus quinquefolia	Virginia creeper												0.02
Penstemon grandiflorus	shell-leaf penstemon												
Persicaria amphibia	water smartweed	1.00		1.00				0.40					
Persicaria coccinea	swamp smartweed												
Persicaria hydropiperoides	mild water-pepper												

NATIVE FORB SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
Persicaria lapathifolia	nodding smartweed												
Persicaria punctata	dotted smartweed												
Phyla lanceolata	northern fogfruit	2.78		0.50	0.50	0.08		0.50					0.05
Physalis heterophylla	clammy ground-cherry	1.52							1.50	0.50	0.50		
Physalis longifolia	common ground-cherry	5.02	0.50	9.00	2.58	2.67		0.50	1.03		0.05	0.53	1.11
Physalis virginiana	Virginia ground-cherry												
Plantago eriopoda	alkali plantain												
Plantago patagonica	woolly plantain	0.50			0.62				0.63				
Plantago rugelii	black-seed plantain												
Plantago virginica	pale-seed plantain												
Polanisia dodecandra	sandy-seed clammy-weed												
Polygala verticillata	whorled milkwort												
Polygonum ramosissimum	bushy knotweed												
Populus deltoides	plains cottonwood	1.00		1.00		0.50			0.50				
Portulaca oleracea	garden purslane	0.54				0.25					0.05		
Potentilla norvegica	Norwegian cinquefoil			0.50	0.50	0.50							0.50
Potentilla paradoxa	bushy cinquefoil												
Potentilla pensylvanica	Pennsylvania cinquefoil												
Prunella vulgaris	self-heal			0.50	2.00	1.00							
Pycnanthemum virginianum	Virginia mountain-mint			1.00	2.00	1.50							
Ratibida columnifera	upright prairie-coneflower	0.50		1.00	3.50	1.50			1.50			0.56	
Ratibida pinnata	gray-head prairie-coneflower												
Ribes odoratum	buffalo currant												
Rosa arkansana	dwarf prairie rose	0.50			0.50	0.50							
Rosa woodsii	western wild rose	1.00		1.00	1.50	2.00			0.50				0.52
Rudbeckia hirta	black-eyed Susan	0.50		2.50	6.50	3.00			0.50	0.50	0.55	1.62	0.50
Rumex altissimus	pale dock												
Salix amygdaloides	peach-leaf willow	1.00											
Salix interior	sandbar willow												
Salvia azurea	Pitcher's sage												
Sanicula canadensis	Canada sanicle			0.50	0.50	0.50							
Scutellaria lateriflora	blue skullcap												
Silene antirrhina	sleepy catchfly	1.00		1.00		1.00							
Silphium integrifolium	rosinweed				0.50				1.00				8.00
Sisyrinchium campestre	prairie blue-eyed-grass												
Sisyrinchium montanum	strict blue-eyed-grass												
Solanum carolinense	horse-nettle	1.00		1.00	1.50	1.00		1.00		0.26			0.05
Solanum interius	plains black nightshade												

NATIVE FORB SPECIES	COMMON NAME	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
Solanum ptychanthum	black nightshade	0.50		0.50		0.50							
Solanum rostratum	buffalo-bur		0.50						1.00				
Solidago canadensis	Canada goldenrod												3.08
Solidago gigantea	late goldenrod	1.00		1.00		0.50			1.00				1.69
Solidago missouriensis	Missouri goldenrod												
Solidago mollis	ashy goldenrod												
Solidago rigida	stiff goldenrod			0.50	0.50	0.50			0.76		0.05		0.02
Solidago sp.													
Sparganium eurycarpum	large-fruit bur-reed												
Strophostyles leiosperma	slick-seed wild bean								0.03				
Suaeda calceoliformis	western sea-blite												
Symphoricarpos occidentalis	wolfberry			1.00	2.00	1.00				0.04			
Symphoricarpos orbiculatus	coralberry				0.50								
Symphyotrichum ericoides	heath aster	1.50	0.08	2.62	2.70	6.50		1.00	1.18	0.04			
Symphyotrichum falcatum	prairie white aster	0.50		0.50	0.50	0.50							
Symphyotrichum lanceolatum	tall white aster	1.00						0.06					0.07
Symphyotrichum praealtum	willow-leaf aster												
Teucrium canadense	American germander	1.58		1.00	0.50	1.08							0.17
Tomostima reptans	white whitlow-wort												
Toxicodendron radicans	eastern poison ivy	0.50		0.50	1.00	0.50							
Tradescantia bracteata	long-bract spiderwort												
Tradescantia occidentalis	western spiderwort	1.02							0.50				
Triglochin maritima	shore arrow-grass												
Ulmus americana	American elm	0.02											
Urtica gracilis	stinging nettle												
Verbena bracteata	prostrate vervain	0.50		0.50	0.50	0.50						0.50	
Verbena hastata	blue vervain	1.72		0.50		2.65							0.70
Verbena stricta	hoary vervain	6.02		6.00	13.50	6.40	0.50	0.50	1.78	2.30	2.05	1.03	1.67
Vernonia baldwinii	western ironweed			1.00	1.00	1.00							1.00
Vernonia fasciculata	prairie ironweed	1.52		2.00	3.00	2.50		0.40					0.04
Viola pedatifida	prairie violet												0.05
Viola pratensis	meadow violet												
Viola sororia	downy wood violet				0.50	0.50							0.04
Vitis riparia	riverbank grape												
Xanthium strumarium	cocklebur												
TOTAL NATIVE FORBS		66.67	4.80	52.78	90.62	71.72	2.75	7.78	57.86	9.21	7.69	16.63	59.34
TOTAL ALL FORBS		119.10	14.38	83.03	131.58	97.32	5.83	15.69	77.57	14.36	18.74	36.31	84.41

Table 7C. Native forb cover for Shoemaker Island and Chapman Sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

NATIVE FORB SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
Acer negundo	box-elder						0.5	0.5	
Achillea millefolium	western yarrow								
Acmispon americanus	prairie trefoil								
Allium canadense	meadow garlic	0.08	1.00				0.0833		
Allium canadense	prairie wild onion		0.08			0.50			
Amaranthus retroflexus	redroot pigweed								
Ambrosia artemisiifolia	common ragweed			0.19	0.50			8.1833	0.0625
Ambrosia psilostachya	western ragweed		2.85	8.98	3.23		1.45	0.5	2.375
Ambrosia trifida	giant ragweed								
Amorpha canescens	leadplant								0.0625
Amorpha fruticosa	false indigo-bush								
Antennaria neglecta	field pussytoes								
Apocynum cannabinum	hemp dogbane	0.92	0.42		0.12	1.72	0.5	0.6667	
Arabis pycnocarpa	hairy rock cress	0.50							
Argemone polyanthemus	plains prickly-poppy								
Arnoglossum plantagineum	tuberous Indian-plantain								
Artemisia filifolia	sandsage								
Artemisia ludoviciana	white sage		0.08				0.1667		
Asclepias incarnata	swamp milkweed								
Asclepias sp.									
Asclepias speciosa	showy milkweed	1.00				0.60	1	1	
Asclepias syriaca	common milkweed	0.50					1	1	
Asclepias verticillata	whorled milkweed	0.17	0.58		0.52	0.35			
Asclepias viridiflora	green milkweed								
Brickellia eupatorioides	false-boneset								
Callirhoe alcaeoides	pale poppy-mallow					0.05			
Callirhoe involucrata	purple poppy-mallow	0.50		0.50	0.12	0.15	0.5	0.5	
Celtis occidentalis	hackberry								
Chenopodium berlandieri	pitseed goosefoot								
Chenopodium pratericola	desert goosefoot							0.0833	
Chenopodium subglabrum	smooth goosefoot								
Cicuta maculata	spotted water-hemlock						0.5	0.5	
Cirsium altissimum	tall thistle		0.50				1.5833	1.5	
Cirsium canescens	Platte thistle								

NATIVE FORB SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
Cirsium flodmanii	Flodman's thistle		0.08	0.50	0.50				
Cirsium undulatum	wavy-leaf thistle		0.50	0.90	0.50				
Conyza canadensis	horseweed						0.5	0.5	
Conyza ramosissima	spreading fleabane								
Coreopsis tinctoria	plains coreopsis								
Cornus drummondii	rough-leaf dogwood		1.00					0.0833	
Coryphantha vivipara	purple pincushion cactus								
Croton texensis	Texas croton							0.0833	
Cyclachaena xanthiifolia	giant marsh-elder								
Cycloloma atriplicifolium	winged-pigweed								
Dalea candida	eastern white prairie-clover		0.50			0.05			
Dalea purpurea	purple prairie-clover		1.00		0.64				
Dalea villosa	silky prairie-clover								
Descurainia pinnata	pinnate tansy mustard								
Desmanthus illinoensis	Illinois bundleflower	1.17	1.00	3.00	1.02	0.60	0.5	0.6667	
Desmodium illinoense	Illinois tick-clover								
Echinacea angustifolia	narrow-leaf purple coneflower								
Eleocharis sp.									
Elymus sp.									
Equisetum arvense	field horsetail								
Equisetum hyemale	common scouring-rush				0.06	0.10		0.25	0.125
Equisetum laevigatum	smooth scouring-rush	0.92	0.58	1.09	0.69	0.60	0.9167	0.5	0.1875
Erechtites hieraciifolius	burnweed							0.0833	
Ericameria nauseosa	rubber rabbit-brush								
Erigeron philadelphicus	marsh fleabane				0.54		0.5	0.5	
Erigeron strigosus	daisy fleabane	1.08	0.50		1.52	1.60	1.5	1.5	
Eupatorium altissimum	tall boneset								
Euphorbia davidii	western toothed spurge								
Euphorbia dentata	eastern toothed spurge								
Euphorbia geyeri	Geyer's spurge								
Euphorbia glyptosperma	ridge-seed spurge								
Euphorbia maculata	spotted spurge								
Euphorbia marginata	snow-on-the-mountain								
Euphorbia nutans	eyebane	0.08				0.05			
Euphorbia serpyllifolia	thyme-leaf spurge								
Euphorbia sp.									
Euphorbia spathulata	warty spurge		1.03						
Eustoma russellianum	prairie-gentian				0.02				

NATIVE FORB SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
Euthamia gymnospermoides	viscid goldentop			1.00	2.75				
Fallopia scandens	climbing false-buckwheat								
Fraxinus pennsylvanica	green ash							0.7833	
Froelichia gracilis	slender snake-cotton								
Galium aparine	catch-weed bedstraw								
Geum canadense	white avens								
Gleditsia triacanthos	honey-locust								
Glycyrrhiza lepidota	wild licorice	0.62	1.60	1.09					
Grindelia squarrosa	curly-top gumweed			0.40	0.50		1	1	
Hackelia virginiana	Virginia stickseed							0.25	
Hedeoma hispida	rough false-pennyroyal								
Helenium autumnale	sneezeweed				0.59				0.0625
Helianthus annuus	common sunflower								
Helianthus grosseserratus	sawtooth sunflower						0.5	0.5	
Helianthus maximiliani	Maximilian's sunflower	0.50	1.00			0.87	1.5	1.6667	
Helianthus pauciflorus	stiff sunflower								
Helianthus petiolaris	plains sunflower							0.6167	
Heliopsis helianthoides	false-sunflower								
Heterotheca latifolia	camphor-weed				0.50				
Heterotheca villosa	hairy golden-aster								
Hibiscus laevis	halberd-leaf rose-mallow							0.0833	
Hypoxis hirsuta	yellow star-grass								
Iva annua	annual marsh-elder			2.96	0.80		0.0833		
Juncus balticus	Baltic rush				0.04				
Juncus dudleyi	Dudley's rush			0.50	1.75	0.05	1.5	1.5	0.5625
Juncus nodosus	knotted rush				0.04				
Juncus sp.									0.5
Juncus torreyi	Torrey's rush						1.5	1.5833	
Juniperus virginiana	eastern red-cedar			0.50					
Lactuca ludoviciana	western wild lettuce		0.08						
Lemna minor	common duckweed								
Lepidium densiflorum	prairie pepper-grass				0.02		1	1	
Lespedeza capitata	round-head bush-clover								
Liatris glabrata	plains gayfeather								
Liatris lancifolia	lance-leaf gayfeather								
Liatris punctata	dotted gayfeather								
Liatris pycnostachya	thick-spike gayfeather								
Linum sulcatum	grooved flax			0.75	0.49	0.60			
Lithospermum canescens	hoary puccoon		0.50	0.25					

NATIVE FORB SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
Lithospermum caroliniense	Carolina puccoon								
Lithospermum incisum	fringed puccoon				0.50				
Lithospermum occidentale	marble-seed		0.50	0.46	0.50		0.5	0.5	
Lobelia spicata	pale-spike lobelia	3.75	0.50			2.00			
Lycopus americanus	American water-horehound			0.46	0.22		0.5833	0.5	1.3625
Lycopus asper	rough bugleweed				1.61				0.7125
Lysimachia ciliata	fringed loosestrife								
Lythrum alatum	winged loosestrife	0.50	0.08	0.50	0.50				
Maianthemum stellatum	starry false Solomon's-seal					0.15			
Marsilea vestita	western water-clover								
Mentha canadensis	Canada mint			0.06	0.14				0.8625
Mimosa nuttallii	sensitive brier								
Mirabilis hirsuta	hairy four-o'clock								
Mirabilis linearis	narrow-leaf four-o'clock								
Mirabilis nyctaginea	wild four-o'clock								
Monarda fistulosa	wild-bergamot								
MUHLENBERGIA SP.									
Oenothera biennis	eastern evening-primrose								
Oenothera curtiflora	velvet butterfly-plant		0.50	0.06	0.50				
Oenothera filiformis	long-flower butterfly-plant		0.17						
Oenothera laciniata	cut-leaf evening-primrose								
Oenothera rhombipetala	fourpoint evening-primrose						1	1	
Oenothera serrulata	plains yellow-primrose								
Oenothera suffrutescens	scarlet butterfly-plant								
Opuntia fragilis	brittle prickly-pear								
Opuntia humifusa	eastern prickly-pear								
Oxalis dillenii	gray-green wood-sorrel	0.50							
Oxalis stricta	yellow wood-sorrel	0.08	0.25			0.05			
Oxalis violacea	violet wood-sorrel		0.08						
Packera plattensis	prairie ragwort					0.20			
Parietaria pensylvanica	Pennsylvania pellitory								
Parthenocissus quinquefolia	Virginia creeper								
Penstemon grandiflorus	shell-leaf penstemon								
Persicaria amphibia	water smartweed								0.5
Persicaria coccinea	swamp smartweed								
Persicaria hydropiperoides	mild water-pepper								0.125
Persicaria lapathifolia	nodding smartweed								

NATIVE FORB SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
Persicaria punctata	dotted smartweed			0.13					
Phyla lanceolata	northern fogfruit			3.76	3.78	0.05	0.5833	0.75	7.65
Physalis heterophylla	clammy ground-cherry								
Physalis longifolia	common ground-cherry	1.00				0.20	0.5	0.5833	
Physalis virginiana	Virginia ground-cherry								
Plantago eriopoda	alkali plantain			3.18	0.72	0.05			
Plantago patagonica	woolly plantain						0.5	0.5	
Plantago rugelii	black-seed plantain								
Plantago virginica	pale-seed plantain								
Polanisia dodecandra	sandy-seed clammy-weed								
Polygala verticillata	whorled milkwort								
Polygonum ramosissimum	bushy knotweed								
Populus deltoides	plains cottonwood						1.5	1.5	
Portulaca oleracea	garden purslane								
Potentilla norvegica	Norwegian cinquefoil				0.50		0.5	0.5	
Potentilla paradoxa	bushy cinquefoil								
Potentilla pensylvanica	Pennsylvania cinquefoil								
Prunella vulgaris	self-heal			0.50	1.56				
Pycnanthemum virginianum	Virginia mountain-mint	1.00	0.70	0.81	0.62	0.50			
Ratibida columnifera	upright prairie-coneflower			0.50	2.50				
Ratibida pinnata	gray-head prairie-coneflower								
Ribes odoratum	buffalo currant								
Rosa arkansana	dwarf prairie rose					0.05	0.5	0.5	
Rosa woodsii	western wild rose		8.17	0.96	7.69		0.5	0.5	
Rudbeckia hirta	black-eyed Susan	0.67	3.58	0.06	2.56	1.65	1	1	
Rumex altissimus	pale dock								
Salix amygdaloides	peach-leaf willow								
Salix interior	sandbar willow								
Salvia azurea	Pitcher's sage								
Sanicula canadensis	Canada sanicle		0.50					0.25	
Scutellaria lateriflora	blue skullcap								0.0625
Silene antirrhina	sleepy catchfly								
Silphium integrifolium	rosinweed								
Sisyrinchium campestre	prairie blue-eyed-grass					0.05			
Sisyrinchium montanum	strict blue-eyed-grass	0.08			0.08				
Solanum carolinense	horse-nettle					0.50	2.7667	0.5833	
Solanum interius	plains black nightshade								
Solanum ptychanthum	black nightshade								

NATIVE FORB SPECIES	COMMON NAME	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
Solanum rostratum	buffalo-bur								
Solidago canadensis	Canada goldenrod	0.62	1.90	2.38	0.76	0.05			
Solidago gigantea	late goldenrod		0.33		0.50		0.5	0.5	
Solidago missouriensis	Missouri goldenrod								
Solidago mollis	ashy goldenrod								
Solidago rigida	stiff goldenrod		0.58						
Solidago sp.					0.02				
Sparganium eurycarpum	large-fruit bur-reed								0.5
Symphoricarpos occidentalis	wolfberry				1.02		1.2	0.5	
Symphoricarpos orbiculatus	coralberry		0.17						
Symphyotrichum ericoides	heath aster	0.50	0.58	0.13	2.20	0.15			
Symphyotrichum falcatum	prairie white aster	0.50	0.25	1.11	0.96		0.0833		
Symphyotrichum lanceolatum	tall white aster		0.17	1.28	1.62		2.9667	0.5	0.9
Symphyotrichum praealtum	willow-leaf aster				0.14				
Teucrium canadense	American germander	0.58		0.06	0.06	0.05	0.5833	1.0333	0.1875
Tomostima reptans	white whitlow-wort								
Toxicodendron radicans	eastern poison ivy						1.4833		
Tradescantia bracteata	long-bract spiderwort								
Tradescantia occidentalis	western spiderwort								
Triglochin maritima	shore arrow-grass				1.48				0.0625
Ulmus americana	American elm								
Ulmus rubra	slippery elm						0.5	0.5833	
Verbena hastata	blue vervain				0.06		1.5	1.6667	1.0625
Verbena stricta	hoary vervain		1.00	1.06	1.04		1.5	1.5	0.5
Vernonia baldwinii	western ironweed				0.48	0.50	0.5	0.5	
Vernonia fasciculata	prairie ironweed		0.58	0.56	2.40		0.8333	0.5	0.75
Veronica peregrina	purslane speedwell								
Vicia americana	American vetch								
Viola pedatifida	prairie violet	0.08			0.04				
Viola pratensis	meadow violet				0.02	0.25			
Viola sororia	downy wood violet			0.13	0.50	0.25		0.1667	
Vitis riparia	riverbank grape								
Xanthium strumarium	cocklebur								
TOTAL NATIVE FORBS		17.90	35.50	40.75	54.72	14.59	40.37	43.70	19.18
TOTAL ALL FORBS		21.13	39.82	50.48	64.90	22.30	56.12	78.25	40.54

Table 8A. Bare ground and litter for Plum Creek, Cottonwood Ranch North and East Lloyd Island Sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

	COOK	DYER	CWRN1	CWRN2	CWRN3	CWREL	CWR_E
BAREGROUND	5.28	18.70	21.85		41.93	2.13	8.48
LITTER	66.80	89.28	51.07	24.45	30.78	62.33	67.30
OPEN WATER				40.08			

Table 8B. Bare ground and litter for Cottonwood Ranch Sites in Phelps County.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

	MRS_N	MRS_HN	MRS_M	MRS_HS	MRS_C	MRS_SW	CWR_SW	CWR_NW	CWR_NE
BAREGROUND	8.54	16.45	3.99	18.38	7.95	7.01	27.53	16.73	6.17
LITTER	67.60			3.53	68.65	79.91	54.25	89.00	85.32
OPEN WATER									

Table 8C. Bare ground and litter Elm Creek and Fort Kearny sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

	JHNS_N	NGPC	SLWD	McC_N	McC_S	BLESS	WY_S	SPN	SPS	FOX	HOST	DIPP
BAREGROUND	35.99	7.63	19.60	19.67	36.48	8.23	7.63	9.94	9.44	18.24	25.08	9.30
LITTER	38.82	77.67	60.33	37.55	50.75		61.73	53.01	59.91		45.86	77.48
OPEN WATER												

Table D. Bare ground and litter for Shoemaker Island and Chapman sites.

Cover is given as absolute canopy cover and therefore the total cover may exceed 100%.

	BIN_SH	BIN_S	BIN_E	BIN_W	BIN_WH	BERG_MDW	BERG_ACC	MEYERS
BAREGROUND	5.08	2.95	12.34	12.15	5.74	1.42	54.03	6.40
LITTER	60.35	68.20	51.19	65.37	78.63	83.33	10.68	50.16
OPEN WATER								

Table 9. Floristic Quality Assessment Scores for West Sites.

Species composition is presented as the percent of exotic (non-native) species and the percent of native species. N= total number of species in the plots. Average C is the average of the conservatism value assigned to each native species. Non-native species have no value and are assigned a value of 0 in calculations. Weighted scores include abundance as an additional parameter in calculations.

Code	Site Name	Species Composition		Native only			Both Native and Exotic				
		% Exotic	% Native	N	Ave. C	FQI n	N	Ave. C	FQI ni	Weighted Ave. C	Weighted FQI ni
COOK	Cook Hay Meadow	37	63	17	2.29	9.46	27	1.44	7.51	0.17	0.87
DYER	Dyer Grassland	43	57	29	2.55	13.74	51	1.45	10.36	0.92	6.58
CWRN1	CWR North 1	24	76	38	1.89	11.68	50	1.44	10.18	1.35	9.67
CWRN2	CWR North 2	31	69	31	3.13	17.42	45	2.16	14.46	1.20	8.02
CWRN3	CWR North 3	27	73	38	2.39	14.76	52	1.75	12.62	1.76	12.71
CWREL	CWR East Lloyd Island	38	62	41	3.07	19.68	66	1.91	15.51	1.08	8.75
CWR_E	CWR East	28	72	33	2.18	12.53	46	1.57	10.62	1.01	6.88
MRS_N	Morse North	29	71	37	3.49	21.21	52	2.48	17.89	1.27	9.16
MRS_HN	Morse Hay North	61	39	7	2.71	7.18	18	1.06	4.48	0.11	0.48
MRS_M	Morse Middle	25	75	43	3.42	22.42	57	2.58	19.47	1.28	9.63
MRS_HS	Morse Hay South	15	85	34	3.26	19.04	40	2.78	17.55	1.85	11.68
MRS_C	Morse Crop	34	66	21	2.86	13.09	32	1.88	10.61	3.47	19.64
MRS_SW	Morse SW	40	60	26	3.00	15.30	43	1.81	11.89	0.87	5.72
CWR_SW	CWR SW	37	63	22	2.91	13.64	35	1.83	10.82	1.37	8.12
CWR_NW	CWR NW	38	63	20	2.75	12.30	32	1.72	9.72	1.09	6.15
CWR_NE	CWR NE	32	68	25	2.96	14.80	37	2.00	12.17	0.96	5.83

Table 9B. Floristic Quality Assessment Scores for east sites.

Species composition is presented as the percent of exotic (non-native) species and the percent of native species. N= total number of species in the plots. Average C is the average of the conservatism value assigned to each native species. Non-native species have no value and are assigned a value of 0 in calculations. Weighted scores include abundance as an additional parameter in calculations.

Code	Site Name	Species Composition		Native only			Both Native and Exotic			Weighted	Weighted
		% Exotic	% Native	N	Ave. C	FQI n	N	Ave. C	FQI ni	Ave. C	FQI ni
JHNS_N	Johns North Wet Meadow	27	73	80	2.89	25.80	109	2.13	22.13	1.71	18.29
NGPC	NE Game and Parks Com	40	60	12	3.17	10.97	20	1.90	8.50	0.35	1.56
SLWD	Sullwald Hay Meadow	25	75	62	3.02	23.75	83	2.25	20.53	1.14	10.41
McC_S	McCormick South Meadow	23	77	76	3.08	26.84	99	2.36	23.52	2.37	23.61
McC_N	McCormick North Island	25	75	78	2.81	24.80	104	2.11	21.47	2.28	23.25
BLESS	Blessing	39	61	17	3.24	13.34	28	1.96	10.39	2.25	11.93
WY_S	WY South Meadow	39	61	22	2.91	13.64	36	1.78	10.67	0.32	1.90
SPN	Speidell North	21	79	77	3.09	27.12	97	2.45	24.17	3.04	29.95
SPS	Speidell South	32	68	32	2.22	12.55	47	1.51	10.36	2.63	18.01
FOX	Fox	33	68	27	2.74	14.24	40	1.85	11.70	2.56	16.16
HOST	Hostetler Crop	46	54	27	3.00	15.59	50	1.62	11.46	2.62	18.54
BIN_SH	Binfield South Hay Meadow	13	87	45	3.71	24.89	52	3.21	23.16	3.43	24.76
BIN_S	Binfield South Meadow	17	83	59	3.63	27.86	71	3.01	25.40	3.27	27.58
BIN_E	Binfield East Meadow	13	87	59	3.71	28.51	68	3.22	26.56	2.68	22.06
BIN_W	Binfield West Meadow	14	86	84	3.71	34.04	98	3.18	31.52	3.09	30.61
BIN_WH	Binfield West Hay Meadow	18	82	49	3.76	26.29	60	3.07	23.75	3.06	23.71
DIPP	DIPPEL	22	78	87	3.21	29.91	112	2.49	26.36	1.84	19.45
BERG_MDW	Bergren Meadow	26	74	61	3.02	23.56	82	2.24	20.32	1.39	12.62
BERG_ACC	Bergren Accretion	27	73	69	2.81	23.35	95	2.04	19.90	1.27	12.36
MEYERS	Meyers Trust Meadow	20	80	35	4.09	24.17	44	3.25	21.56	1.58	10.50

Table 10A. Comparison of Floristic Quality Scores 2013 to 2022A in west sites.

Differences in each measure of floristic quality can be used to determine factors that produced changes in weighted floristic quality. Two of the sites were first surveyed in 2014 rather than 2013. Those values are in red in the table.

Site	2013/14 N	2016 N	2019 N	2022 N	2013/14 Ave. C	2016 Ave. C	2019 Ave. C	2022 Ave. C	2013/14 FQI	2016 FQI	2019 FQI	2022 FQI	2013/14 FQIw	2016 FQIw	2019 FQIw	2022 FQIw
COOK	39	10	25	27	1.38	2	1.76	1.44	8.65	6.32	8.8	7.51	9.68	2.65	5.12	0.87
DYER	69	54	62	51	1.28	1.46	1.81	1.45	10.59	10.75	14.22	10.36	10.86	12.07	15.80	6.58
CWRN1	40	48	53	50	1.83	2.21	1.43	1.44	11.54	15.29	10.03	10.18	8.89	11.00	10.31	9.67
CWRN2	79	32	42	45	2.09	1.59	1.69	2.16	18.56	9.02	10.96	14.46	14.99	5.40	7.05	8.02
CWRN3		59	56	52		1.98	1.84	1.75		15.23	13.76	12.62		11.54	11.36	12.71
CWREL	71	64	79	66	1.9	1.66	1.96	1.91	16.02	13.25	17.44	15.51	15.03	11.47	14.36	8.75
CWR_E	45	39		46	1.84	2.23		1.57	12.37	13.93		10.62	7.89	8.86		6.88
MRS_N	74	57	58	52	2.09	2.33	2.5	2.48	18.02	17.62	19.04	17.89	12.90	16.39	16.81	9.16
MRS_HN	31	20		18	1.1	1.35		1.06	6.11	6.04		4.48	3.51	0.71		0.48
MRS_M	58	60		57	2.09	2.07		2.58	15.89	16.01		19.47	10.13	13.28		9.63
MRS_HS	50	31		40	1.6	1.61		2.78	11.31	8.98		17.55	7.22	6.33		11.68
MRS_C	28	33		32	1.64	1.58		1.88	8.69	9.05		10.61	8.14	14.12		19.64
MRS_SW	24	57		43	1.67	1.47		1.81	8.16	11.13		11.89	2.70	7.68		5.72
CWR_SW	55	44		35	1.45	1.32		1.83	10.79	8.74		10.82	12.51	5.59		8.12
CWR_NW	54	54		32	1.41	1.48		1.72	10.34	10.89		9.72	9.93	9.66		6.15
CWR_NE	60	63		37	1.82	1.68		2.00	14.07	13.35		12.17	16.62	10.99		5.83

Table 10B. Comparison of Floristic Quality Scores 2013 to 2022 in east sites.

Differences in each measure of floristic quality can be used to determine factors that produced changes in weighted floristic quality. Two of the sites were first surveyed in 2014 rather than 2013. Those values are in red in the table.

Site	2013/14 N	2016 N	2019 N	2022 N	2013/14 Ave. C	2016 Ave. C	2019 Ave. C	2022 Ave. C	2013/14 FQI	2016 FQI	2019 FQI	2022 FQI	2013/14 FQIw	2016 FQIw	2019 FQIw	2022 FQIw
JHNS_N	112	131	99	109	1.95	2.09	2.16	2.13	20.60	23.61	21.09	22.13	17.84	25.86	19.33	18.29
NGPC		19		20		2.05		1.90		8.95		8.50		1.12		1.56
SLWD	37	27	24	83	1.81	1.89	2.08	2.25	11.01	9.81	10.21	20.53	3.45	1.84	2.34	10.41
McC_S	77	103	68	99	1.82	2.46	2.22	2.36	15.95	24.93	18.31	23.52	10.57	16.96	17.07	23.61
McC_N	83	57	48	104	1.83	1.89	2.08	2.11	16.68	14.3	14.43	21.47	12.18	22.58	24.68	23.25
BLESS	37	37	37	28	1.7	1.32	1.27	1.96	10.36	8.06	7.73	10.39		8.08	11.57	11.93
WY_S	57	57	43	36	1.51	1.81	2	1.78	11.39	11.89	13.11	10.67	5.65	7.89	2.51	1.90
SPN		104	91	97		2.5	2.41	2.45		25.5	22.96	24.17		25.79	24.14	29.95
SPS		88	85	47		2.61	2.2	1.51		24.52	20.28	10.36		19.79	17.53	18.01
FOX	81	42	42	40	1.9	1.95	1.9	1.85	17.11	12.65	12.34	11.70		11.63	12.98	16.16
HOST	52	54	70	50	1.29	1.65	1.9	1.62	9.29	12.11	15.9	11.46	9.19	15.50	23.20	18.54
BIN_SH	49	55	64	52	3.35	3.1	3.53	3.21	23.43	25.41	27.63	23.16	17.49	21.43	26.91	24.76
BIN_S	47	71	64	71	2.89	2.87	3.34	3.01	19.84	24.21	26.75	25.40	19.65	30.32	30.15	27.58
BIN_E	63	64	70	68	3.13	3.23	3.13	3.22	24.82	25.88	26.18	26.56	26.60	26.32	27.48	22.06
BIN_W	74	93	105	98	3.18	3.09	3.09	3.18	27.32	29.76	31.62	31.52	30.82	34.02	35.56	30.61
BIN_WH	56	62	77	60	3.34	3.31	3.18	3.07	24.99	26.04	27.92	23.75	25.27	22.65	22.86	23.71
DIPP			95	112			2.33	2.49			22.67	26.36			15.90	19.45
BERG_MDW				82				2.24				20.32				12.62
BERG_ACC				95				2.04				19.90				12.36
MEYERS				44				3.25				21.56				10.50

APPENDICES

APPENDIX A: SAMPLING PROTOCOL

See attached PDF document

APPENDIX B: PLOT LOCATIONS

Site Location	Number	Latitude	Longitude	y_proj	x_proj	Orientation
Binfield East Meadow	G127N	40.771403	-98.5220535	4513490	540335.4	n
Binfield East Meadow	G127S	40.771134	-98.5220325	4513460	540337.3	s
Binfield East Meadow	G128N	40.770918	-98.518924	4513438	540599.8	n
Binfield East Meadow	G128S	40.770647	-98.5189119	4513408	540601	s
Binfield East Meadow	G129N	40.769975	-98.5260089	4513330	540002.4	n
Binfield East Meadow	G129S	40.769707	-98.5260221	4513300	540001.5	s
Binfield East Meadow	G130N	40.769048	-98.5189208	4513230	540601.2	n
Binfield East Meadow	G130S	40.768778	-98.5189178	4513200	540601.6	s
Binfield East Meadow	G131N	40.766191	-98.5256282	4512910	540036.8	n
Binfield East Meadow	G131S	40.765921	-98.5256293	4512880	540036.9	s
Binfield East Meadow	G132N	40.764116	-98.5241031	4512680	540166.8	n
Binfield East Meadow	G132S	40.763847	-98.5240959	4512650	540167.6	s
Binfield East Meadow	G135S	40.766893	-98.5350464	4512984	539241.5	s
Binfield South Hay Meadow	G121N	40.771665	-98.5124856	4513524	541142.7	n
Binfield South Hay Meadow	G121S	40.771395	-98.5124755	4513494	541143.7	s
Binfield South Hay Meadow	G122N	40.771159	-98.5136904	4513467	541041.3	n
Binfield South Hay Meadow	G122S	40.770889	-98.5136769	4513437	541042.6	s
Binfield South Hay Meadow	G123N	40.769818	-98.5159429	4513317	540852	n
Binfield South Hay Meadow	G123S	40.769548	-98.5159492	4513287	540851.7	s
Binfield South Meadow	G124N	40.767435	-98.5128739	4513054	541112.5	N
Binfield South Meadow	G124S	40.767166	-98.5128874	4513024	541111.5	s
Binfield South Meadow	G125N	40.764925	-98.517416	4512773	540730.7	N
Binfield South Meadow	G125S	40.764656	-98.5174244	4512743	540730.2	s
Binfield South Meadow	G126N	40.763258	-98.5209989	4512587	540429.3	N
Binfield South Meadow	G126S	40.762988	-98.5209851	4512557	540430.6	s
Binfield South Meadow	G134S	40.767905	-98.5329249	4513097	539420	s
Binfield West Hay Meadow	G146N	40.756645	-98.552117	4511839	537806.6	n
Binfield West Hay Meadow	G146S	40.756376	-98.5521241	4511809	537806.2	s
Binfield West Hay Meadow	G147N	40.756505	-98.5432484	4511827	538555.3	n
Binfield West Hay Meadow	G147S	40.756235	-98.5432283	4511797	538557.2	s
Binfield West Hay Meadow	G148N	40.755959	-98.5470381	4511765	538235.7	n
Binfield West Hay Meadow	G148S	40.755689	-98.5470285	4511735	538236.7	s
Binfield West Hay Meadow	G149N	40.754736	-98.5492443	4511628	538050.2	n
Binfield West Hay Meadow	G149S	40.754467	-98.5492498	4511598	538049.9	s
Binfield West Hay Meadow	G150N	40.754708	-98.5433907	4511627	538544.3	n
Binfield West Hay Meadow	G150S	40.754437	-98.5433864	4511597	538544.9	n
Binfield West Meadow	G133N	40.769453	-98.5283126	4513271	539808.3	n
Binfield West Meadow	G133S	40.769183	-98.5283139	4513241	539808.4	s
Binfield West Meadow	G134N	40.768175	-98.5329378	4513127	539418.7	n
Binfield West Meadow	G135N	40.767163	-98.5350617	4513014	539240.1	n
Binfield West Meadow	G136N	40.765406	-98.5308649	4512821	539595.3	n
Binfield West Meadow	G136S	40.765137	-98.5308734	4512791	539594.8	s
Binfield West Meadow	G137N	40.765303	-98.5351095	4512807	539237.2	n
Binfield West Meadow	G137S	40.765033	-98.5351057	4512777	539237.6	s
Binfield West Meadow	G138N	40.763809	-98.5378423	4512640	539007.4	n
Binfield West Meadow	G138S	40.763538	-98.5378459	4512610	539007.2	s

Site Location	Number	Latitude	Longitude	y_proj	x_proj	Orientation
Binfield West Meadow	G139N	40.763702	-98.5296096	4512632	539702.3	n
Binfield West Meadow	G139S	40.763433	-98.5296228	4512602	539701.3	s
Binfield West Meadow	G140N	40.762039	-98.533293	4512446	539392.4	n
Binfield West Meadow	G140S	40.76177	-98.5332981	4512416	539392.1	s
Binfield West Meadow	G141N	40.761872	-98.5366433	4512426	539109.7	n
Binfield West Meadow	G141S	40.761602	-98.5366545	4512396	539108.9	s
Binfield West Meadow	G142N	40.761041	-98.5273172	4512338	539897.4	n
Binfield West Meadow	G142S	40.760771	-98.5273281	4512308	539896.6	s
Binfield West Meadow	G143N	40.760057	-98.5379688	4512224	538998.9	n
Binfield West Meadow	G143S	40.759788	-98.5379759	4512194	538998.4	s
Binfield West Meadow	G144N	40.759281	-98.5343848	4512139	539301.9	n
Binfield West Meadow	G144S	40.759011	-98.5344035	4512109	539300.4	s
Binfield West Meadow	G145N	40.756972	-98.5377719	4511881	539017.3	n
Binfield West Meadow	G145S	40.756703	-98.5377861	4511851	539016.3	s
Blessing	G181N	40.664495	-99.044955	4501514	496200.8	n
Blessing	G181S	40.664226	-99.044956	4501484	496200.7	s
Blessing	G182N	40.665486	-99.048504	4501624	495900.9	n
Blessing	G182S	40.665215	-99.048506	4501594	495900.7	s
Blessing	G183N	40.666434	-99.050993	4501730	495690.6	n
Blessing	G183S	40.66616	-99.050991	4501699	495690.7	s
Cook Hay Meadow	G1E	40.676722	-99.5681442	4503026	451986.1	e
Cook Hay Meadow	G1W	40.676732	-99.5684943	4503027	451956.5	w
Cook Hay Meadow	G2N	40.676123	-99.5706905	4502960	451770.5	n
Cook Hay Meadow	G2S	40.675853	-99.5706941	4502931	451770	s
Cook Hay Meadow	G3E	40.675702	-99.5783088	4502918	451126.3	e
Cook Hay Meadow	G3W	40.675693	-99.5786743	4502917	451095.5	w
CWR East	G25N	40.67425	-99.456435	4502696	461425.4	n
CWR East	G25S	40.67398	-99.4564431	4502666	461424.6	s
CWR East	G26N	40.67316	-99.4598805	4502577	461133.6	n
CWR East	G26S	40.67289	-99.459891	4502547	461132.6	s
CWR East	G27N	40.671324	-99.4630002	4502374	460868.9	n
CWR East	G27S	40.671056	-99.4629959	4502344	460869.1	s
CWR East Lloyd Island	G16N	40.689478	-99.4545935	4504386	461589.8	n
CWR East Lloyd Island	G16S	40.689208	-99.4545772	4504356	461591	s
CWR East Lloyd Island	G17N	40.688663	-99.437738	4504288	463013.6	n
CWR East Lloyd Island	G17S	40.688394	-99.4377651	4504258	463011.1	s
CWR East Lloyd Island	G18N	40.688619	-99.4404746	4504284	462782.3	n
CWR East Lloyd Island	G18S	40.68835	-99.4404839	4504254	462781.4	s
CWR East Lloyd Island	G19N	40.688245	-99.4548132	4504249	461570.5	n
CWR East Lloyd Island	G19S	40.687978	-99.4547854	4504219	461572.7	s
CWR East Lloyd Island	G20N	40.687691	-99.4470796	4504184	462223.7	n
CWR East Lloyd Island	G20S	40.687421	-99.4470813	4504154	462223.4	s
CWR East Lloyd Island	G21N	40.687561	-99.4493844	4504171	462028.9	n
CWR East Lloyd Island	G21S	40.687292	-99.4493511	4504141	462031.5	s
CWR East Lloyd Island	G22N	40.687414	-99.4607196	4504159	461071	n
CWR East Lloyd Island	G22S	40.687144	-99.4606973	4504129	461072.7	s
CWR East Lloyd Island	G23N	40.687058	-99.4545593	4504117	461591.3	n
CWR East Lloyd Island	G23S	40.686787	-99.4545546	4504087	461591.5	s
CWR East Lloyd Island	G24N	40.686404	-99.4548149	4504045	461569.3	n

Site Location	Number	Latitude	Longitude	y_proj	x_proj	Orientation
CWR East Lloyd Island	G24S	40.686134	-99.4547976	4504015	461570.6	s
CWR North 1	G10E	40.692475	-99.4752825	4504728	459843.5	e
CWR North 1	G10W	40.692467	-99.4756372	4504727	459813.5	w
CWR North 1	G11E	40.692479	-99.4827381	4504732	459213.5	e
CWR North 1	G11W	40.692459	-99.4830925	4504729	459183.6	w
CWR North 1	G12E	40.692468	-99.4767472	4504727	459719.7	e
CWR North 1	G12W	40.692471	-99.4771021	4504728	459689.7	w
CWR North 2	G13N	40.690079	-99.4792047	4504463	459510.6	n
CWR North 2	G13S	40.689808	-99.4792046	4504433	459510.5	s
CWR North 2	G14N	40.689942	-99.4898906	4504453	458607.6	n
CWR North 2	G14S	40.689671	-99.489904	4504423	458606.3	s
CWR North 2	G15N	40.689931	-99.4747405	4504445	459887.7	n
CWR North 3	G151N	40.684954	-99.4920062	4503900	458425.8	n
CWR North 3	G151S	40.684678	-99.4920028	4503870	458425.9	s
CWR North 3	G152N	40.685826	-99.4896096	4503996	458628.8	n
CWR North 3	G152S	40.685551	-99.4896072	4503966	458628.9	s
CWR North 3	G153N	40.68626	-99.4830742	4504041	459181.3	n
CWR North 3	G153S	40.685985	-99.4830716	4504011	459181.4	s
CWR North 3	G15S	40.689662	-99.4747165	4504415	459889.6	s
DIPPEL	G262	40.7066008	-98.7941733	4506208	517387	n
DIPPEL	G263	40.7051140	-98.7958614	4506043	517245	n
DIPPEL	G264	40.7049091	-98.8157116	4506016	515568	n
DIPPEL	G265	40.7070997	-98.7899825	4506264	517741	n
DIPPEL	G266	40.7037975	-98.7927334	4505897	517509	n
DIPPEL	G267	40.7058105	-98.7856016	4506122	518111	n
DIPPEL	G268	40.7019520	-98.7936787	4505692	517430	n
DIPPEL	G269	40.7023757	-98.7974357	4505739	517112	n
DIPPEL	G270	40.7003832	-98.7995558	4505517	516934	n
DIPPEL	G271	40.6993787	-98.8044914	4505404	516517	n
DIPPEL	G272	40.7045551	-98.7999348	4505980	516901	n
DIPPEL	G273	40.7030396	-98.8022492	4505811	516706	n
DIPPEL	G274	40.7038860	-98.8094895	4505904	516094	n
DIPPEL	G275	40.6983169	-98.8109929	4505285	515968	n
Dyer Grassland	G4N	40.681018	-99.5539384	4503495	453189.7	n
Dyer Grassland	G4S	40.680745	-99.5539339	4503464	453189.9	s
Dyer Grassland	G5N	40.679532	-99.5524859	4503329	453311.4	n
Dyer Grassland	G5S	40.679263	-99.5524827	4503299	453311.5	s
Dyer Grassland	G6N	40.679341	-99.5498718	4503306	453532.2	n
Dyer Grassland	G6S	40.679076	-99.5498085	4503277	453537.3	s
Dyer Grassland	G7N	40.677765	-99.5595477	4503137	452713.4	n
Dyer Grassland	G7S	40.677492	-99.5595812	4503106	452710.3	s
Dyer Grassland	G8N	40.67721	-99.5638815	4503077	452346.7	n
Dyer Grassland	G8S	40.676941	-99.5638458	4503048	452349.6	s
Dyer Grassland	G9N	40.676515	-99.5642396	4503000	452316	n
Dyer Grassland	G9S	40.676246	-99.5642311	4502971	452316.5	s
Fox	FOX5E	40.667797	-98.982233	4501880	501502.4	e
Fox	FOX5W	40.667864	-98.982584	4501887	501472.8	w
Fox	FOX6N	40.671353	-98.982036	4502275	501519	n
Fox	FOX6S	40.67111	-98.982044	4502248	501518.3	s

Site Location	Number	Latitude	Longitude	y_proj	x_proj	Orientation
Fox	G174N	40.67293	-98.981074	4502450	501600.3	n
Fox	G174S	40.672656	-98.981069	4502419	501600.7	s
Fox	G175N	40.673195	-98.985923	4502479	501190.5	n
Fox	G175S	40.672927	-98.98592	4502449	501190.7	s
Fox	G176N	40.671393	-98.98728	4502279	501075.8	n
Fox	G176S	40.671126	-98.987281	4502249	501075.7	s
Fox	G177E	40.670492	-98.987812	4502179	501030.8	e
Fox	G177W	40.670495	-98.988168	4502179	501000.8	w
Fox	G178N	40.66644	-98.986985	4501729	501100.8	n
Fox	G178S	40.666171	-98.986986	4501699	501100.7	s
Hostetler Crop	G102N	40.668309	-98.961361	4501937	503266.6	n
Hostetler Crop	G102S	40.668042	-98.9613326	4501908	503269	s
Hostetler Crop	G103N	40.667921	-98.9660062	4501894	502874	n
Hostetler Crop	G103S	40.667651	-98.9660034	4501864	502874.2	s
Hostetler Crop	G104N	40.667421	-98.9715862	4501838	502402.3	n
Hostetler Crop	G104S	40.667152	-98.9715715	4501809	502403.6	s
Hostetler Crop	G105N	40.666156	-98.9662305	4501698	502855.1	n
Hostetler Crop	G105S	40.665885	-98.9662274	4501668	502855.4	s
Hostetler Crop	G106N	40.665648	-98.9792739	4501641	501752.6	n
Hostetler Crop	G106S	40.665378	-98.9792831	4501611	501751.8	s
Hostetler Crop	G107N	40.665503	-98.9617226	4501626	503236.1	n
Hostetler Crop	G107S	40.665234	-98.961727	4501596	503235.8	s
Hostetler Crop	G108N	40.665151	-98.9714864	4501586	502410.9	n
Hostetler Crop	G108S	40.66488	-98.9714838	4501556	502411.1	s
Hostetler Crop	G109N	40.664763	-98.9794654	4501543	501736.4	n
Hostetler Crop	G109S	40.664493	-98.9794417	4501513	501738.5	s
Johns North Wet Meadow	G69N	40.682611	-99.3378664	4503579	471449.8	n
Johns North Wet Meadow	G69S	40.682341	-99.3378699	4503549	471449.4	s
Johns North Wet Meadow	G70N	40.682508	-99.3349014	4503567	471700.3	n
Johns North Wet Meadow	G70S	40.682239	-99.3348748	4503537	471702.4	s
Johns North Wet Meadow	G71E	40.681378	-99.3317644	4503440	471964.9	e
Johns North Wet Meadow	G71W	40.68137	-99.3321183	4503439	471935	w
Johns North Wet Meadow	G72N	40.680947	-99.3339277	4503393	471781.9	n
Johns North Wet Meadow	G72S	40.680678	-99.3339157	4503363	471782.8	s
Johns North Wet Meadow	G73N	40.680384	-99.3386388	4503332	471383.5	n
Johns North Wet Meadow	G73S	40.680113	-99.3386328	4503302	471383.9	s
Johns North Wet Meadow	G74N	40.679867	-99.3313122	4503272	472002.5	n
Johns North Wet Meadow	G74S	40.679597	-99.3312892	4503242	472004.3	s
Johns North Wet Meadow	G75N	40.678292	-99.3235992	4503095	472653.6	n
Johns North Wet Meadow	G75S	40.678024	-99.3236131	4503065	472652.3	s
Johns North Wet Meadow	G76N	40.677856	-99.3395892	4503052	471302.1	n
Johns North Wet Meadow	G76S	40.677586	-99.3395823	4503022	471302.6	s
Johns North Wet Meadow	G77N	40.677665	-99.3311949	4503028	472011.5	n
Johns North Wet Meadow	G77S	40.677399	-99.3311875	4502998	472012	s
Johns North Wet Meadow	G78N	40.677304	-99.3364037	4502989	471571.1	n
Johns North Wet Meadow	G78S	40.677034	-99.3364098	4502959	471570.5	s
Johns North Wet Meadow	G79N	40.677133	-99.3388797	4502971	471361.8	n
Johns North Wet Meadow	G79S	40.676863	-99.3388776	4502941	471361.9	s
Johns North Wet Meadow	G80E	40.676025	-99.3255233	4502844	472490.1	e

Site Location	Number	Latitude	Longitude	y_proj	x_proj	Orientation
Johns North Wet Meadow	G80W	40.676038	-99.325877	4502845	472460.2	w
Johns North Wet Meadow	G81E	40.673271	-99.3257247	4502538	472471.9	e
Johns North Wet Meadow	G81W	40.673274	-99.326078	4502539	472442.1	w
McCormick North Island	G91N	40.679512	-99.3201228	4503229	472947.9	n
McCormick North Island	G91S	40.679241	-99.3201153	4503199	472948.4	s
McCormick North Island	G92N	40.678296	-99.3135642	4503092	473501.7	n
McCormick North Island	G92S	40.678026	-99.3135651	4503062	473501.5	s
McCormick North Island	G93N	40.678025	-99.3150099	4503063	473379.4	n
McCormick North Island	G93S	40.677755	-99.3150093	4503033	473379.3	s
McCormick South Island	G94N	40.672709	-99.31968	4502474	472982.6	n
McCormick South Island	G94S	40.67244	-99.3196812	4502444	472982.4	s
McCormick South Island	G95E	40.674526	-99.3131409	4502674	473536	e
McCormick South Island	G95W	40.674535	-99.3135025	4502675	473505.4	w
McCormick South Island	G96N	40.673368	-99.3173339	4502547	473181.1	n
McCormick South Island	G96S	40.673093	-99.3173505	4502516	473179.6	s
McCormick South Island	G97N	40.672769	-99.3141052	4502479	473453.8	n
McCormick South Island	G97S	40.6725	-99.314105	4502449	473453.7	s
Morse North	G28N	40.673978	-99.4666822	4502670	460559.2	n
Morse North	G28S	40.673705	-99.4666905	4502640	460558.4	s
Morse North	G29N	40.673575	-99.4798232	4502632	459448.4	s
Morse North	G29N	40.673844	-99.4798171	4502662	459449.1	n
Morse North	G30N	40.672245	-99.4730419	4502481	460020.7	n
Morse North	G30S	40.67197	-99.4730479	4502450	460020	s
Morse North	G31N	40.671943	-99.4689516	4502446	460366.2	n
Morse North	G31S	40.671668	-99.4689645	4502415	460365	s
Morse North	G32N	40.672	-99.4834819	4502459	459138.2	n
Morse North	G32S	40.67173	-99.4834778	4502429	459138.4	s
Morse North	G33N	40.67152	-99.4754946	4502402	459813	n
Morse North	G33S	40.671251	-99.4754985	4502372	459812.5	s
Speidell North	G164N	40.665428	-99.0041538	4501617	499649.6	n
Speidell North	G164S	40.665154	-99.0041534	4501586	499649.7	s
Speidell North	G165N	40.664657	-99.0028757	4501531	499757.7	n
Speidell North	G165S	40.664382	-99.0028748	4501501	499757.7	s
Speidell North	G166E	40.666655	-99.004169	4501753	499648.4	e
Speidell North	G166W	40.666618	-99.004493	4501749	499621	w
Speidell North	G167N	40.668707	-99.0021983	4501981	499814.9	n
Speidell North	G167S	40.668432	-99.0021992	4501950	499814.8	s
Speidell North	G168N	40.664977	-98.9953437	4501567	500394.3	n
Speidell North	G168S	40.664702	-98.995344	4501536	500394.3	s
Speidell North	G169E	40.666194	-98.994223	4501702	500489	e
Speidell North	G169W	40.666197	-98.994573	4501702	500459.4	w
Speidell North	G170N	40.668321	-98.99586	4501938	500350.7	s
Speidell North	G170S	40.668049	-98.99585	4501908	500351.5	n
Speidell North	G171N	40.671243	-98.9921437	4502262	500664.7	n
Speidell North	G171S	40.670968	-98.9921433	4502232	500664.8	s
Speidell North	G172N	40.672113	-98.9913843	4502359	500728.9	n
Speidell North	G172S	40.671838	-98.9913833	4502328	500729	s
Speidell North	G173N	40.665013	-98.9901045	4501571	500837.2	n
Speidell North	G173S	40.66474	-98.9901055	4501540	500837.1	s

Site Location	Number	Latitude	Longitude	y_proj	x_proj	Orientation
SpeidelIII South	G157N	40.662044	-99.0130183	4501241	498900.3	n
SpeidelIII South	G157S	40.661768	-99.0130167	4501211	498900.4	s
SpeidelIII South	G158N	40.664627	-99.0101251	4501528	499144.9	n
SpeidelIII South	G158S	40.664352	-99.0101248	4501497	499144.9	s
SpeidelIII South	G159N	40.662987	-99.0073002	4501346	499383.7	n
SpeidelIII South	G159S	40.662713	-99.0072994	4501315	499383.7	s
SpeidelIII South	G160N	40.66214	-99.0033171	4501252	499720.3	n
SpeidelIII South	G160S	40.661866	-99.0033185	4501221	499720.2	s
SpeidelIII South	G161N	40.662314	-98.9963409	4501271	500310	n
SpeidelIII South	G161S	40.662039	-98.996341	4501241	500310	s
SpeidelIII South	G162N	40.6633	-98.9906429	4501380	500791.7	n
SpeidelIII South	G162S	40.663026	-98.9906432	4501350	500791.6	s
SpeidelIII South	G163N	40.663457	-98.9889148	4501398	500937.7	n
SpeidelIII South	G163S	40.663182	-98.9889149	4501368	500937.7	s
Sullwald Hay Meadow	G88N	40.685239	-99.3219395	4503866	472796.7	n
Sullwald Hay Meadow	G88S	40.684971	-99.3219565	4503836	472795.2	s
Sullwald Hay Meadow	G89N	40.684984	-99.3208586	4503837	472887.9	n
Sullwald Hay Meadow	G89S	40.684713	-99.3208556	4503807	472888.1	s
Sullwald Hay Meadow	G90N	40.683996	-99.3166506	4503726	473243.1	n
Sullwald Hay Meadow	G90S	40.683729	-99.3166639	4503696	473241.9	s
Wyoming South Meadow	G100N	40.650389	-99.0389055	4499948	496711.5	n
Wyoming South Meadow	G100S	40.650118	-99.0389187	4499918	496710.4	s
Wyoming South Meadow	G101N	40.649841	-99.0420702	4499887	496443.9	n
Wyoming South Meadow	G101S	40.649571	-99.0420772	4499857	496443.3	s
Wyoming South Meadow	G98E	40.653419	-99.0388314	4500284	496717.9	e
Wyoming South Meadow	G98W	40.653438	-99.0391843	4500287	496688.1	w
Wyoming South Meadow	G99N	40.65139	-99.0431056	4500059	496356.4	n
Wyoming South Meadow	G99S	40.651119	-99.0431067	4500029	496356.3	s
Meyers Trust Meadow	G276N	40.924239	-98.2351065	402348.125	2127970.81	n
Meyers Trust Meadow	G276S	40.9239663	-98.2351308	402248.669	2127966.12	s
Meyers Trust Meadow	G277N	40.9220104	-98.2363599	401529.492	2127641.16	n
Meyers Trust Meadow	G277S	40.9217405	-98.236313	401431.451	2127656.12	s
Meyers Trust Meadow	G278N	40.9205831	-98.2399441	400989.544	2126661.71	n
Meyers Trust Meadow	G278S	40.9203143	-98.239933	400891.726	2126666.79	s
Meyers Trust Meadow	G279N	40.9188891	-98.242911	400355.973	2125854.71	n
Meyers Trust Meadow	G279S	40.9186329	-98.2429176	400262.638	2125854.79	s
Bergren Meadow	G280N	40.9326219	-98.2053625	405570.001	2136123.05	n
Bergren Meadow	G280S	40.9323652	-98.205347	405476.597	2136129.26	s
Bergren Meadow	G281E	40.9345795	-98.2024688	406299.478	2136907.37	e
Bergren Meadow	G281W	40.934552	-98.2028038	406287.553	2136815.08	w
Bergren Meadow	G282N	40.9339035	-98.1981928	406077.903	2138093.4	n
Bergren Meadow	G282S	40.9336404	-98.1982016	405982.011	2138092.97	s
Bergren Accretion	G283N	40.9350513	-98.2067561	406446.711	2135719.8	n
Bergren Accretion	G283S	40.9347823	-98.2067638	406348.677	2135719.72	s
Bergren Accretion	G284N	40.9366344	-98.2005572	407058.786	2137419.71	n
Bergren Accretion	G284S	40.9363614	-98.2005464	406959.414	2137424.78	s
Bergren Accretion	G285N	40.9381541	-98.1993822	407618.956	2137732.68	n
Bergren Accretion	G285S	40.937881	-98.1993326	407519.783	2137748.46	s

APPENDIX C: LIST OF VASCULAR PLANTS

P- SYMBOL	SPECIES	COMMON NAME	FAMILY	PHYSIO	WETNESS	C
	ABUTILON					
ABTH	THEOPHRASTI	velvet-leaf	MALVACEAE	A-HERB	UPL/FACU	
ACNEN	Acer negundo	box-elder	ACERACEAE	TREE	FAC	1
ACMIO	Achillea millefolium	western yarrow	ASTERACEAE	P-HERB	FACU	2
ACAM4	Acmispon americanus	prairie trefoil	FABACEAE	A-HERB	FACU	3
AGGI2	AGROSTIS GIGANTEA AGROSTIS	redtop	POACEAE	P-HERB	FACW	
AGSTP	STOLONIFERA	creeping bentgrass	POACEAE	P-HERB	FACW	
ALCAC	Allium canadense	meadow garlic	AMARYLLIDACEAE	P-HERB	FACU	3
ALCAL	Allium canadense	prairie wild onion	AMARYLLIDACEAE	P-HERB	FACU	7
	ALOPECURUS					
ALAR	ARUNDINACEUS	Garrison creeping-foxtail	POACEAE	P-HERB	FACW	
	Amaranthus					
AMRE	retroflexus	redroot pigweed	AMARANTHACEAE	A-HERB	FACU	0
AMAR2	Ambrosia artemisiifolia	common ragweed	ASTERACEAE	A-HERB	FACU	0
AMPS	Ambrosia psilostachya	western ragweed	ASTERACEAE	P-HERB	FACU	1
AMTR	Ambrosia trifida	giant ragweed	ASTERACEAE	A-HERB	FAC	0
AMCA6	Amorpha canescens	leadplant	FABACEAE	SHRUB	UPL	6
AMFR	Amorpha fruticosa	false indigo-bush	FABACEAE	SHRUB	FACW	5
ANGE	Andropogon gerardii	big bluestem	POACEAE	P-HERB	FACU/FAC	5
ANNE	Antennaria neglecta	field pussytoes	ASTERACEAE	P-HERB	FACU/UPL	3
	Apocynum					
APCA	cannabinum	hemp dogbane	APOCYNACEAE	P-HERB	FAC	2
ARPY4	Arabis pycnocarpa	hairy rock cress	BRASSICACEAE	B-HERB	FACU	5
	Argemone					
ARPO2	polyanthemus	plains prickly-poppy	PAPAVERACEAE	P-HERB	UPL	1
AROL	Aristida oligantha	old-field three-awn	POACEAE	A-HERB	UPL	2
ARPUL	Aristida purpurea	Long-awned three-awn	POACEAE	P-HERB	UPL/FACU	5
	Arnoglossum					
ARPL4	plantagineum	tuberous Indian-plantain	ASTERACEAE	P-HERB	FAC	7
ARFI2	Artemisia filifolia	sandsage	ASTERACEAE	P-SHRUB	UPL	4
ARLUL2	Artemisia ludoviciana	white sage	ASTERACEAE	P-HERB	UPL	4
ASINI	Asclepias incarnata	swamp milkweed	APOCYNACEAE	P-HERB	FACW/OBL	4
ASSP	Asclepias speciosa	showy milkweed	APOCYNACEAE	P-HERB	FAC	
ASSY	Asclepias syriaca	common milkweed	APOCYNACEAE	P-HERB	UPL/FACU	1
ASVE	Asclepias verticillata	whorled milkweed	APOCYNACEAE	P-HERB	FACU	3
ASVI	Asclepias viridiflora	green milkweed	APOCYNACEAE	P-HERB	UPL	6
	ASPARAGUS					
ASOF	OFFICINALIS	garden asparagus	ASPARAGACEAE	P-HERB	FACU	
ATPA4	ATRIPLEX PATULA	common spearscale	CHENOPODIACEAE	A-HERB	FACW/FAC	
ATPR	ATRIPLEX PROSTATATA	thin-leaf spearcale	CHENOPODIACEAE	A-HERB	FACW	
BASC5	BASSIA SCOPARIA	kochia	CHENOPODIACEAE	A-HERB	FACU	

P- SYMBOL	SPECIES	COMMON NAME	FAMILY	PHYSIO	WETNESS	C
BOFL3	Bolboschoenus fluviatilis	river bulrush	CYPERACEAE	P-HERB	OBL	3
BOMAP2	Bolboschoenus maritimus	salt-marsh bulrush	CYPERACEAE	P-HERB	OBL	
BOCUC2	Bouteloua curtipendula	sideoats grama	POACEAE	P-HERB	UPL	5
BODA2	Bouteloua dactyloides	buffalo grass	POACEAE	P-HERB	FACU	2
BOGR2	Bouteloua gracilis	blue grama	POACEAE	P-HERB	UPL	4
BOHIH	Bouteloua hirsuta	hairy grama	POACEAE	P-HERB	UPL	6
BREUC	Brickellia eupatorioides	false-boneset	ASTERACEAE	P-HERB	UPL	4
BRIN2	BROMUS INERMIS	smooth brome	POACEAE	P-HERB	UPL/FACU	
BRJA	BROMUS JAPONICUS	Japenese brome	POACEAE	A-HERB	UPL	
BRTE	BROMUS TECTORUM	downy brome	POACEAE	A-HERB	UPL	
CAST36	Calamagrostis stricta	northern reedgrass	POACEAE	P-HERB	FACW	6
CALOL2	Calamovilfa longifolia	prairie sandreed	POACEAE	P-HERB	UPL	5
CAAL	Callirhoe alcaeoides	pale poppy-mallow	MALVACEAE	A-HERB	UPL	5
CAINI4	Callirhoe involucrata	purple poppy-mallow	MALVACEAE	P-HERB	UPL	2
CASA3	CANNABIS SATIVA	hemp	CANNABACEAE	A-HERB	FACU	
CANU4	CARDUUS NUTANS	musk thistle	ASTERACEAE	B-HERB	FACU	
CABI3	Carex bicknellii	Bicknell's sedge	CYPERACEAE	P-HERB	FACW/FACU	
CABL	Carex blanda	woodland sedge	CYPERACEAE	P-HERB	FAC	2
CABR28	Carex brachyglossa	yellow-fruit sedge	CYPERACEAE	P-HERB	FACW	7
CABR10	Carex brevior	short-beak sedge	CYPERACEAE	P-HERB	FAC	4
CACR3	Carex crawei	Crawe's sedge	CYPERACEAE	P-HERB	FACW	6
CAEL2	Carex eleocharis	needle-leaf sedge	CYPERACEAE	P-SEDGE	UPL	2
CAEM2	Carex emoryi	Emory's sedge	CYPERACEAE	P-SEDGE	OBL	5
CAGR4	Carex granularis	Hale's meadow sedge	CYPERACEAE	P-HERB	OBL	6
CAGR4	Carex gravida	heavy-fruit sedge	CYPERACEAE	P-HERB	FACW/FAC U	4
CAGR24	Carex grisea	gray wood sedge	CYPERACEAE	P-HERB	FACW/FAC	3
CAHA3	Carex hallii	deer sedge	CYPERACEAE	P-HERB	FAC/FACW	7
CAHE5	Carex heliophila	sun sedge	CYPERACEAE	P-HERB	UPL	5
CAME2	Carex meadii	Mead's sedge	CYPERACEAE	P-HERB	FAC	6
CAME13	Carex mesochorea	midland sedge	CYPERACEAE	P-HERB	UPL	2
CAMO11	Carex molesta	troublesome sedge	CYPERACEAE	P-SEDGE	FACW/FAC	3
CAPE42	Carex pellita	woolly sedge	CYPERACEAE	P-HERB	OBL	4
CAPR5	Carex praegracilis	clustered field sedge	CYPERACEAE	P-HERB	FACW	
CASTS3	Carex stipata	saw-beak sedge	CYPERACEAE	P-HERB	OBL	5
CAVU2	Carex vulpinoidea	fox sedge	CYPERACEAE	P-HERB	FACW	4
CEOC	Celtis occidentalis	hackberry	CANNABACEAE	TREE	FACU/FAC	4
CELO3	Cenchrus longispinus	field sandbur	POACEAE	A-HERB	UPL	0

P- SYMBOL	SPECIES	COMMON NAME	FAMILY	PHYSIO	WETNESS	C
CHAL7	CHENOPODIUM ALBUM	lamb's-quarters	CHENOPODIACEAE	A-HERB	FACU	
CHBEZ	Chenopodium berlandieri	pitseed goosefoot	CHENOPODIACEAE	A-HERB	UPL	0
CHGL3	CHENOPODIUM GLAUCUM	oak-leaf goosefoot	CHENOPODIACEAE	A-HERB	FAC/FACW	
CHPR5	Chenopodium pratericola	desert goosefoot	CHENOPODIACEAE	A-HERB	UPL	1
CHSU2	Chenopodium subglabrum	smooth goosefoot	CHENOPODIACEAE	A-HERB	UPL	6
CHVE2	Chloris verticillata	tumble windmill grass	POACEAE	P-HERB	UPL	0
CIMAM	Cicuta maculata	spotted water-hemlock	APIACEAE	P-HERB	OBL	5
CIAL2	Cirsium altissimum	tall thistle	ASTERACEAE	P-HERB	UPL	1
CIAR4	CIRSIIUM ARVENSE	Canada thistle	ASTERACEAE	P-HERB	FACU	
CICA11	Cirsium canescens	Platte thistle	ASTERACEAE	B-HERB	UPL	4
CIFL	Cirsium flodmanii	Flodman's thistle	ASTERACEAE	P-HERB	FAC	4
CIUN	Cirsium undulatum	wavy-leaf thistle	ASTERACEAE	P-HERB	UPL/FACU	4
CIVU	CIRSIIUM VULGARE	bull thistle	ASTERACEAE	B-HERB	FACU	
COMA2	CONIUM MACULATUM CONVOLVULUS	poison-hemlock	APIACEAE	B-HERB	FACW	
COAR4	ARVENSIS	field bindweed	CONVOLVULACEAE	P-HERB	UPL	
COCA5	Conyza canadensis	horseweed	ASTERACEAE	A-HERB	FACU	0
CORA4	Conyza ramosissima	spreading fleabane	ASTERACEAE	A-HERB	UPL	0
COTI3	Coreopsis tinctoria	plains coreopsis	ASTERACEAE	A-HERB	FAC/FACU	1
CODR	Cornus drummondii	rough-leaf dogwood	CORNACEAE	SHRUB	FAC	3
COVI9	Coryphantha vivipara	purple pincushion cactus	CACTACEAE	P-HERB	UPL	6
CRTET	Croton texensis	Texas croton	EUPHORBIACEAE	A-HERB	UPL	1
CYXA	Cyclachaena xanthiifolia	giant marsh-elder	ASTERACEAE	A-HERB	FAC	0
CYAT	Cycloloma atriplicifolium	winged-pigweed	CHENOPODIACEAE	A-HERB	FACU	2
CYAC2	Cyperus acuminatus	short-point flatsedge	CYPERACEAE	A-HERB	OBL	3
CYESL	Cyperus esculentus	yellow nut-sedge	CYPERACEAE	P-HERB	FACW	0
CYLUL	Cyperus lupulinus	Great Plains flatsedge	CYPERACEAE	P-HERB	FACU	1
CYSC3	Cyperus schweinitzii	sand flatsedge	CYPERACEAE	P-HERB	FACU	4
CYSQ	Cyperus squarrosus	awned flatsedge	CYPERACEAE	A-HERB	OBL	2
CYST	Cyperus strigosus	straw-colored flatsedge	CYPERACEAE	P-HERB	FACW	4
DAGL	DACTYLIS GLOMERATA	orchard grass	POACEAE	P-HERB	FACU	
DACA7	Dalea candida	eastern white prairie- clover	FABACEAE	P-HERB	UPL	6
DAPUP	Dalea purpurea	purple prairie-clover	FABACEAE	P-HERB	UPL	6
DAVI	Dalea villosa	silky prairie-clover	FABACEAE	P-HERB	UPL	5
DEPIO6	Descurainia pinnata	pinnate tansy mustard	BRASSICACEAE	A-HERB	UPL	4
DESO2	DESCURAINIA SOPHIA	flix-weed tansy mustard	BRASSICACEAE	A-HERB	UPL	
DEIL	Desmanthus illinoensis	Illinois bundleflower	FABACEAE	P-HERB	FACU	

P- SYMBOL	SPECIES	COMMON NAME	FAMILY	PHYSIO	WETNESS	C
DEIL2	Desmodium illinoense	Illinois tick-clover	FABACEAE	P-HERB	UPL	6
DIACF	Dichanthelium acuminatum	western spring-panicum	POACEAE	P-HERB	FAC	6
DIOLS	Dichanthelium oligosanthes	Scribner's spring-panicum	POACEAE	P-HERB	FACU	4
DIVIP	Dichanthelium villosissimum	white-hair spring-panicum	POACEAE		UPL	6
DICO6	Digitaria cognata	fall witchgrass	POACEAE	P-HERB	UPL	4
DISP	Distichlis spicata	saltgrass	POACEAE	P-HERB	FACW	3
ECANA	Echinacea angustifolia	narrow-leaf purple coneflower	ASTERACEAE	P-HERB	UPL	5
ECCR	ECHINOCHLOA CRUS- GALLI	barnyard grass	POACEAE	A-HERB	FAC/FACW	
ELAN	ELAEAGNUS ANGUSTIFOLIA	Russian-olive	ELAEAGNACEAE	TREE	FACU	
ELAN	ELAEAGNUS ANGUSTIFOLIA	Russian-olive	ELAEAGNACEAE	TREE	FACU	
ELCOC2	Eleocharis compressa	flat-stem spikerush	CYPERACEAE	P-HERB	FACW	6
ELPA3	Eleocharis palustris	marsh spikerush	CYPERACEAE	P-HERB	OBL	4
ELCA4	Elymus canadensis	Canada wild-rye	POACEAE	P-HERB	FACU	5
ELRE4	ELYMUS REPENS	quackgrass	POACEAE	P-HERB	FACU	
ELTRT	Elymus trachycaulus	slender wheatgrass	POACEAE	P-HERB	FACU	5
ELVIV	Elymus virginicus	Virginia wild-rye	POACEAE	P-HERB	FAC/FACW	4
EQAR	Equisetum arvense	field horsetail	EQUISETACEAE	P-HERB	FAC	4
EQHYR	Equisetum hyemale	common scouring-rush	EQUISETACEAE	P-HERB	FACW	4
EQLA	Equisetum laevigatum	smooth scouring-rush	EQUISETACEAE	P-HERB	FAC/FACW	4
ERCI	ERAGROSTIS CILIANENSIS	stinkgrass	POACEAE	A-HERB	FACU	
ERPEP2	Eragrostis pectinacea	tufted lovegrass	POACEAE	A-HERB	FAC	0
ERSP	Eragrostis spectabilis	purple lovegrass	POACEAE	P-HERB	UPL	3
ERTR3	Eragrostis trichodes	sand lovegrass	POACEAE	P-HERB	UPL	5
ERHIH	Erechtites hieraciifolius	burnweed	ASTERACEAE	SHRUB	FACU/FAC	1
ERNAG3	Ericameria nauseosa	rubber rabbit-brush	ASTERACEAE	SHRUB	UPL	3
ERPHP	Erigeron philadelphicus	marsh fleabane	ASTERACEAE	B-HERB	FAC/FACW	3
ERSTS2	Erigeron strigosus	daisy fleabane	ASTERACEAE	A-HERB	FACU	2
EUAL3	Eupatorium altissimum	tall boneset	ASTERACEAE	P-HERB	UPL	3
EUPS2	EUPHORBIA xPSEUDOVIRGATA	hybrid leafy spurge	EUPHORBIACEAE	P-HERB	UPL	
EUDA5	Euphorbia davidii	western toothed spurge	EUPHORBIACEAE	A-HERB	UPL	0
EUDE4	Euphorbia dentata	eastern toothed spurge	EUPHORBIACEAE	A-HERB	UPL	0
CHGEG	Euphorbia geyeri	Geyer's spurge	EUPHORBIACEAE	A-HERB	UPL	5
EUGL3	Euphorbia glyptosperma	ridge-seed spurge	EUPHORBIACEAE	A-HERB	UPL	0
EUMA7	Euphorbia maculata	spotted spurge	EUPHORBIACEAE	A-HERB	FACU	0
EUMA8	Euphorbia marginata	snow-on-the-mountain	EUPHORBIACEAE	A-HERB	FACU	0

P- SYMBOL	SPECIES	COMMON NAME	FAMILY	PHYSIO	WETNESS	C
EUNU	<i>Euphorbia nutans</i>	eyebane	EUPHORBIACEAE	A-HERB	UPL	0
CHSE5	<i>Euphorbia serpyllifolia</i>	thyme-leaf spurge	EUPHORBIACEAE	A-HERB	UPL	2
EUSP	<i>Euphorbia spathulata</i>	warty spurge	EUPHORBIACEAE	A-HERB	FACU	2
EUVI7	EUPHORBIA VIRGATA	leafy spurge	EUPHORBIACEAE	P-HERB	UPL	
EURU4	<i>Eustoma russellianum</i> <i>Euthamia</i>	prairie-gentian	GENTIANACEAE	A-HERB	FACW	4
EUGY	<i>gymnospermoides</i>	viscid goldentop	ASTERACEAE	P-HERB	FAC/FACW	4
FASC	<i>Fallopia scandens</i>	climbing false-buckwheat	POLYGONACEAE	P-VINE	FACU/FAC	1
FEOC3	<i>Festuca octoflora</i>	six-weeks fescue	POACEAE	A-HERB	FACU	3
FIPUI	<i>Fimbristylis puberula</i>	hairy fimbry	CYPERACEAE	P-HERB	OBL	7
FRPE	<i>Fraxinus pennsylvanica</i>	green ash	OLEACEAE	TREE	FAC/FACW	2
FRGR3	<i>Froelichia gracilis</i>	slender snake-cotton	AMARANTHACEAE	A-HERB	UPL	3
GAAP2	<i>Galium aparine</i>	catch-weed bedstraw	RUBIACEAE	A-HERB	FACU	0
GECA7	<i>Geum canadense</i>	white avens	ROSACEAE	P-HERB	FAC	3
GLTR	<i>Gleditsia triacanthos</i>	honey-locust	FABACEAE	TREE	FACU	1
GLLE3	<i>Glycyrrhiza lepidota</i>	wild licorice	FABACEAE	P-HERB	FACU	4
GRSQ	<i>Grindelia squarrosa</i>	curly-top gumweed	ASTERACEAE	B-HERB	UPL/FACU	1
HAVI2	<i>Hackelia virginiana</i>	Virginia stickseed	BORAGINACEAE	B-HERB	FACU	2
HEHI	<i>Hedeoma hispida</i>	rough false-pennyroyal	LAMIACEAE	A-HERB	UPL	2
HEAU	<i>Helenium autumnale</i>	sneezeweed	ASTERACEAE	P-HERB	FACW	6
HEAN3	<i>Helianthus annuus</i> <i>Helianthus</i>	common sunflower	ASTERACEAE	A-HERB	FACU	0
HEGR4	<i>grosseserratus</i>	sawtooth sunflower	ASTERACEAE	P-HERB	FACW	4
HEMA2	<i>Helianthus maximiliani</i>	Maximilian's sunflower	ASTERACEAE	P-HERB	FACU/UPL	4
HEPAS2	<i>Helianthus pauciflorus</i>	stiff sunflower	ASTERACEAE	P-HERB	UPL	5
HEPEP	<i>Helianthus petiolaris</i>	plains sunflower	ASTERACEAE	A-HERB	UPL	1
HEHEO	<i>Heliopsis helianthoides</i>	false-sunflower	ASTERACEAE	P-HERB	FACU	4
HECOC9	<i>Hesperostipa comata</i>	needle-and-thread	POACEAE	P-HERB	UPL	6
HELA5	<i>Heterotheca latifolia</i>	camphor-weed	ASTERACEAE	A-HERB	UPL	2
HEVIV	<i>Heterotheca villosa</i>	hairy golden-aster	ASTERACEAE	P-HERB	UPL	4
HILA2	<i>Hibiscus laevis</i>	halberd-leaf rose-mallow	MALVACEAE	P-HERB	OBL	4
HOJUJ	<i>Hordeum jubatum</i>	foxtail barley	POACEAE	P-HERB	FACW/FAC	1
HOPU	<i>Hordeum pusillum</i>	little barley	POACEAE	A-HERB	FACU/FAC	
HYHI2	<i>Hypoxis hirsuta</i>	yellow star-grass	HYPOXIDACEAE	P-HERB	FACW/FAC	7
IVAN2	<i>Iva annua</i>	annual marsh-elder	ASTERACEAE	A-HERB	FAC	1
JUBAL	<i>Juncus balticus</i>	Baltic rush	JUNCACEAE	P-HERB	FACW/OBL	6
JUDU2	<i>Juncus dudleyi</i>	Dudley's rush	JUNCACEAE	P-HERB	FACW	5
JUNON	<i>Juncus nodosus</i>	knotted rush	JUNCACEAE	P-HERB	OBL	6
JUTO	<i>Juncus torreyi</i>	Torrey's rush	JUNCACEAE	P-HERB	FACW	4
JUVIV	<i>Juniperus virginiana</i>	eastern red-cedar	CUPRESSACEAE	TREE	UPL/FACU	1
SATR12	KALI TRAGUS	prickly Russian-thistle	CHENOPODIACEAE	A-HERB	FACU	

P- SYMBOL	SPECIES	COMMON NAME	FAMILY	PHYSIO	WETNESS	C
KOMA	Koeleria macrantha	Junegrass	POACEAE	P-HERB	UPL	6
LALU	Lactuca ludoviciana	western wild lettuce	ASTERACEAE	B-HERB	FACU	3
LASE	LACTUCA SERRIOLA	prickly lettuce	ASTERACEAE	A-HERB	FAC/FACU	
LEOR	Leersia oryzoides	rice cutgrass	POACEAE	P-HERB	OBL	4
LEVI2	Leersia virginica	whitegrass	POACEAE	P-HERB	FACW	4
LEMI3	Lemna minor	common duckweed	ARACEAE	P-HERB	OBL	5
LECA2	LEONURUS CARDIACA	common motherwort	LAMIACEAE	P-HERB	UPL	
LEDE	Lepidium densiflorum	prairie pepper-grass	BRASSICACEAE	A-HERB	FAC	0
LELA2	LEPIDIUM LATIFOLIUM	broad-leaf pepper-grass	BRASSICACEAE	P-HERB	FACW	
LECA8	Lespedeza capitata	round-head bush-clover	FABACEAE	P-HERB	UPL/FACU	5
LIGL4	Liatris glabrata	plains gayfeather	ASTERACEAE	P-HERB	UPL	5
LILA	Liatris lancifolia	lance-leaf gayfeather	ASTERACEAE	P-HERB	FAC/FACW	8
LIPUP	Liatris punctata	dotted gayfeather	ASTERACEAE	P-HERB	UPL	
LIPYP	Liatris pycnostachya	thick-spike gayfeather	ASTERACEAE	P-HERB	FAC	7
LISU4	Linum sulcatum	grooved flax	LINACEAE	A-HERB	UPL	6
LICA12	Lithospermum canescens	hoary puccoon	BORAGINACEAE	P-HERB	UPL	5
LICAC9	Lithospermum caroliniense	Carolina puccoon	BORAGINACEAE	P-HERB	UPL	6
LIIN2	Lithospermum incisum	fringed puccoon	BORAGINACEAE	P-HERB	UPL	5
ONOC	Lithospermum occidentale	marble-seed	BORAGINACEAE	P-HERB	UPL	4
LOSP	Lobelia spicata	pale-spike lobelia	CAMPANULACEAE	P-HERB	FAC	6
LOCO6	LOTUS CORNICULATUS	bird-foot trefoil	FABACEAE	P-HERB	FACU	
LYAM	Lycopus americanus	American water- horehound	LAMIACEAE	P-HERB	OBL	
LYAS	Lycopus asper	rough bugleweed	LAMIACEAE	P-HERB	OBL	5
LYCI	Lysimachia ciliata	fringed loosestrife	PRIMULACEAE	P-HERB	FACW	
LYALA4	Lythrum alatum	winged loosestrife	LYTHRACEAE	P-HERB	OBL	6
LYSA2	LYTHRUM SALICARIA	purple loosestrife	LYTHRACEAE	P-HERB	OBL	
MAST4	Maianthemum stellatum	starry false Solomon's- seal	RUSCACEAE	P-HERB	FACU/FAC	4
[MAVEV]	Marsilea vestita	western water-clover	MARSILEACEAE	P-HERB	OBL	3
MELU	MEDICAGO LUPULINA	black medick	FABACEAE	A-HERB	FACU	
MESAS	MEDICAGO SATIVA	alfalfa	FABACEAE	P-HERB	UPL/VACU	
MEAL2	MELILOTUS ALBUS	white sweet-clover	FABACEAE	B-HERB	FACU	
MEOF	MELILOTUS OFFICINALIS	yellow sweet-clover	FABACEAE	B-HERB	FACU	
MECA7	Mentha canadensis	Canada mint	LAMIACEAE	P-HERB	FACW	4
MINU6	Mimosa nuttallii	sensitive brier	FABACEAE	P-HERB	UPL	6
MIHI	Mirabilis hirsuta	hairy four-o'clock	NYCTAGINACEAE	P-HERB	UPL	5
MILIL	Mirabilis linearis	narrow-leaf four-o'clock	NYCTAGINACEAE	P-HERB	UPL	4
MINY	Mirabilis nyctaginea	wild four-o'clock	NYCTAGINACEAE	P-HERB	UPL	1

P- SYMBOL	SPECIES	COMMON NAME	FAMILY	PHYSIO	WETNESS	C
MOVE	MOLLUGO VERTICILLATA	green carpet-weed	MOLLUGINACEAE	A-HERB	FAC	
MOFIM3	Monarda fistulosa	wild-bergamot	LAMIACEAE	P-HERB	UPL/FACU	4
MOAL	MORUS ALBA Muhlenbergia racemosa	white mulberry	MORACEAE	TREE	FACU/FAC	
MURA		marsh muhly	POACEAE	P-HERB	FACW	4
NAVI4	Nassella viridula	green needle grass	POACEAE	P-HERB	UPL	4
NECA2	NEPETA CATARIA	catnip	LAMIACEAE	P-HERB	FACU	
OEBI	Oenothera biennis	eastern evening-primrose	ONAGRACEAE	B-HERB	FACU	1
GAPA6	Oenothera curtiflora	velvet butterfly-plant	ONAGRACEAE	A-HERB	UPL	1
GALO3	Oenothera filiformis	long-flower butterfly-plant	ONAGRACEAE	B-HERB	UPL	3
OELA	Oenothera laciniata	cut-leaf evening-primrose	ONAGRACEAE	A-HERB	FACU	1
OERH	Oenothera rhombipetala	fourpoint evening-primrose	ONAGRACEAE	B-HERB	FACU	2
OESE3	Oenothera serrulata	plains yellow-primrose	ONAGRACEAE	P-HERB	UPL	5
GACO5	Oenothera suffrutescens	scarlet butterfly-plant	ONAGRACEAE	P-HERB	UPL	4
OPFR	Opuntia fragilis	brittle prickly-pear	CACTACEAE	P-HERB	UPL	3
OPHUH	Opuntia humifusa	eastern prickly-pear	CACTACEAE	P-HERB	UPL	5
OXDI2	Oxalis dillenii	gray-green wood-sorrel	OXALIDACEAE	A-HERB	FACU	0
OXST	Oxalis stricta	yellow wood-sorrel	OXALIDACEAE	A-HERB	FACU	0
OXVI	Oxalis violacea	violet wood-sorrel	OXALIDACEAE	P-HERB	UPL	5
PAPL12	Packera plattensis	prairie ragwort	ASTERACEAE	B-HERB	FACU	5
PACA6	Panicum capillare Panicum	common witchgrass	POACEAE	A-HERB	FAC	0
PADID	dichotomiflorum	fall panicum	POACEAE	A-HERB	FAC/FACW	0
PAVI2	Panicum virgatum	switchgrass	POACEAE	P-HERB	FAC	4
PAPE5	Parietaria pensylvanica Parthenocissus	Pennsylvania pellitory	URTICACEAE	A-HERB	FAC/FACU	0
PAQU2	quinquefolia	Virginia creeper	VITACEAE	W-VINE	FACU	5
PASM	Pascopyrum smithii	western wheatgrass	POACEAE	P-HERB	FACU	3
PASE5	Paspalum setaceum Penstemon	yellow sand paspalum	POACEAE	A-HERB	FAC/FACU	2
PEGR7	grandiflorus	shell-leaf penstemon	PLANTAGINACEAE	P-HERB	UPL	5
PEAM8	Persicaria amphibia	water smartweed	POLYGONACEAE	P-HERB	OBL	6
PECO23	Persicaria coccinea Persicaria	swamp smartweed	POLYGONACEAE	P-HERB	OBL	2
PEHY7	hydropiperoides	mild water-pepper	POLYGONACEAE	P-HERB	OBL	6
PELA22	Persicaria lapathifolia PERSICARIA	nodding smartweed	POLYGONACEAE	A-HERB	OBL/FACW	2
PEMA24	MACULOSA	lady's-thumb smartweed	POLYGONACEAE	A-HERB	FACW	
PEPU18	Persicaria punctata	dotted smartweed	POLYGONACEAE	P-HERB	OBL	4
PHAR3	Phalaris arundinacea	reed canary grass	POACEAE	P-HERB	FACW	0
PHPR3	PHLEUM PRATENSE	timothy	POACEAE	P-HERB	FACU	

P- SYMBOL	SPECIES	COMMON NAME	FAMILY	PHYSIO	WETNESS	C
PHAU7	Phragmites australis	common reed	POACEAE	P-HERB	FACW	3
PHLA3	Phyla lanceolata	northern fogfruit	VERBENACEAE	P-HERB	FACW/OBL	3
PHHE5	Physalis heterophylla	clammy ground-cherry	SOLANACEAE	P-HERB	UPL	4
PHLO4	Physalis longifolia	common ground-cherry	SOLANACEAE	P-HERB	UPL	0
PHVI5	Physalis virginiana	Virginia ground-cherry	SOLANACEAE	P-HERB	UPL	6
PLER	Plantago eriopoda	alkali plantain	PLANTAGINACEAE	P-HERB	FAC	5
PLLA	PLANTAGO LANCEOLATA	English plantain	PLANTAGINACEAE	P-HERB	FAC/FACU	
PLPA2	Plantago patagonica	woolly plantain	PLANTAGINACEAE	A-HERB	UPL	1
PLRU	Plantago rugelii	black-seed plantain	PLANTAGINACEAE	P-HERB	FACU/FAC	0
PLVI	Plantago virginica	pale-seed plantain	PLANTAGINACEAE	A-HERB	FACU	2
POCO	POA COMPRESSA	Canada bluegrass	POACEAE	P-HERB	FACU	
POPR	POA PRATENSIS	Kentucky bluegrass	POACEAE	P-HERB	FACU	
PODOT2	Polanisia dodecandra	sandy-seed clammy-weed	CLEOMACEAE	A-HERB	FACU/UPL	0
POVEI	Polygala verticillata	whorled milkwort	POLYGALACEAE		FACU/UP	4
POAV	POLYGONUM AVICULARE	yard knotweed	POLYGONACEAE	A-HERB	FACU	
PORA3	Polygonum ramosissimum	bushy knotweed	POLYGONACEAE	A-HERB	FACW/FAC U	1
POMO5	POLYPOGON MONSPELIENSIS	rabbitfoot grass	POACEAE	A-HERB	FACW/OBL	
PODEO	Populus deltoides	plains cottonwood	SALICACEAE	TREE	FAC	3
POOL	Portulaca oleracea	garden purslane	PORTULACACEAE	A-HERB	FAC/FACU	0
PONO3	Potentilla norvegica	Norwegian cinquefoil	ROSACEAE	P-HERB	FAC	2
POPA15	Potentilla paradoxa	bushy cinquefoil	ROSACEAE	A-HERB	FACW	4
POPE8	Potentilla pensylvanica	Pennsylvania cinquefoil	ROSACEAE	P-HERB	FACU	6
PRVUL3	Prunella vulgaris	self-heal	LAMIACEAE	P-HERB	FAC	4
PYVI	Pycnanthemum virginianum	Virginia mountain-mint	LAMIACEAE	P-HERB	FAC/FACW	6
RACO3	Ratibida columnifera	upright prairie- coneflower	ASTERACEAE	P-HERB	UPL	4
RAPI	Ratibida pinnata	gray-head prairie- coneflower	ASTERACEAE	P-HERB	UPL	4
RIOD	Ribes odoratum	buffalo currant	GROSSULARIACEAE	SHRUB	FACU/FAC	4
ROPS	ROBINIA PSUEDOACAIA	black locust	FABACEAE	TREE	UPL/FACU	
ROAR3	Rosa arkansana	dwarf prairie rose	ROSACEAE	SHRUB	FACU	4
ROWOW	Rosa woodsii	western wild rose	ROSACEAE	SHRUB	FACU	4
RUHIP	Rudbeckia hirta	black-eyed Susan	ASTERACEAE	B-HERB	FACU	4
RUAL4	Rumex altissimus	pale dock	POLYGONACEAE	P-HERB	FAC	0
RUCR	RUMEX CRISPUS RUMEX	curly dock	POLYGONACEAE	P-HERB	FACW	
RUST4	STENOPHYLLUS	narrow-leaf dock	POLYGONACEAE	P-HERB	FACW	
SAAM2	Salix amygdaloides	peach-leaf willow	SALICACEAE	TREE	FACW	4

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SAIN3	Salix interior	sandbar willow	SALACACEAE	SHRUB	FACW	3
SAAZG	Salvia azurea	Pitcher's sage	LAMIACEAE	P-HERB	UPL	6
SACAC2	Sanicula canadensis	Canada sanicle	APIACEAE	B-HERB	FACU	3
SCPA	Schedonnardus paniculatus	tumblegrass	POACEAE	P-HERB	UPL	0
SCAR7	SCHEDONORUS ARUNDINACEUS	tall fescue	POACEAE	P-HERB	FACU	
SCPR4	SCHEDONORUS PRATENSIS	meadow fescue	POACEAE	P-GRASS	FACU	
SCSCS	Schizachyrium scoparium	little bluestem	POACEAE	P-HERB	FACU	4
SCPU10	Schoenoplectus pungens	three-square bulrush	CYPERACEAE	P-HERB	OBL	4
SCTA2	Schoenoplectus tabernaemontani	soft-stem bulrush	CYPERACEAE	P-HERB	OBL	5
SCPA8	Scirpus pallidus	pale-green bulrush	CYPERACEAE	P-HERB	OBL	5
SCLA2	Scutellaria lateriflora	blue skullcap	LAMIACEAE	P-HERB	FACW/OBL	5
SEFA	SETARIA FABERI	Chinese foxtail	POACEAE	A-HERB	UPL/FACU	
SEIT	SETARIA ITALICA	foxtail millet	POACEAE	A-HERB	FACU	
SEPUP2	SETARIA PUMILA	yellow foxtail	POACEAE	A-HERB	FACU/FAC	
SEVE3	SETARIA VERTICILLATA	bristly foxtail	POACEAE	A-HERB	FAC	
SEVIV	SETARIA VIRIDIS	green foxtail	POACEAE	A-HERB	UPL	
SIAN2	Silene antirrhina	sleepy catchfly	CARYOPHYLLACEA E	A-HERB	UPL	2
SIVU	SILENE VULGARIS	bladder campion	CARYOPHYLLACEA E	P-HERB	UPL	
SIINI	Silphium integrifolium	rosinweed	ASTERACEAE	P-HERB	UPL	4
SILO3	SISYMBRIUM LOESELII	tall hedge mustard	BRASSICACEAE	A-HERB	UPL	
SICA9	Sisyrinchium campestre	prairie blue-eyed-grass	IRIDACEAE	P-HERB	UPL	5
SIMOM	Sisyrinchium montanum	strict blue-eyed-grass	IRIDACEAE	P-HERB	FAC	5
SOCAC4	Solanum carolinense	horse-nettle	SOLANACEAE	P-HERB	UPL/FACU	2
SOIN2	Solanum interius	plains black nightshade	SOLANACEAE	P-HERB	UPL	1
SOPT7	Solanum ptychanthum	black nightshade	SOLANACEAE	A-HERB	FACU	0
SORO	Solanum rostratum	buffalo-bur	SOLANACEAE	A-HERB	UPL	0
SOCAH	Solidago canadensis	Canada goldenrod	ASTERACEAE	P-HERB	FACU	2
SOGI	Solidago gigantea	late goldenrod	ASTERACEAE	P-HERB	FAC/FACW	3
SOMI2	Solidago missouriensis	Missouri goldenrod	ASTERACEAE	P-HERB	UPL	5
SOMO	Solidago mollis	ashy goldenrod	ASTERACEAE	P-HERB	UPL	4
SORIH	Solidago rigida	stiff goldenrod	ASTERACEAE	P-HERB	FACU	3
SOAS	SONCHUS ASPER	prickly sow-thistle	ASTERACEAE	A-HERB	FAC/FACU	
SOOL	SONCHUS OLERACEUS	store-front sow-thistle	ASTERACEAE	A-HERB	UPL/FACU	
SONU2	Sorghastrum nutans	Indian grass	POACEAE	P-HERB	FACU	5
SOHA	SORGHUM HALEPENSE	Johnson grass	POACEAE	P-HERB	FACU	

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SPEU	Sparganium eurycarpum	large-fruit bur-reed	SPARGANIACEAE	P-HERB	OBL	5
SPPE	Spartina pectinata	prairie cordgrass	POACEAE	P-HERB	FACW	5
SPOB	Sphenopholis obtusata	prairie wedge grass	POACEAE	P-HERB	FACW	5
SPAI	Sporobolus airoides	alkali sacaton	POACEAE	P-HERB	FAC	5
SPCOC2	Sporobolus compositus	tall dropseed	POACEAE	P-HERB	FACU	3
SPCR	Sporobolus cryptandrus	sand dropseed	POACEAE	P-HERB	FACU	2
SPHE	Sporobolus heterolepis	prairie dropseed	POACEAE	P-HERB	UPL/FACU	7
STLE6	Strophostyles leiosperma	slick-seed wild bean	FABACEAE	A-VINE	UPL	4
SUCA2	Suaeda calceoliformis	western sea-blite	CHENOPODIACEAE	A-HERB	FACW	5
SYOC	Symphoricarpos occidentalis	wolfberry	CAPRIFOLIACEAE	SHRUB	UPL	2
SYOR	Symphoricarpos orbiculatus	coralberry	CAPRIFOLIACEAE	SHRUB	FACU	2
SYERE	Symphyotrichum ericoides	heath aster	ASTERACEAE	P-HERB	FACU	3
SYFAC	Symphyotrichum falcatum	prairie white aster	ASTERACEAE	P-HERB	FACU/FAC	4
SYLAL4	Symphyotrichum lanceolatum	tall white aster	ASTERACEAE	P-HERB	FACW/FAC	2
SYPRN	Symphyotrichum praealtum	willow-leaf aster	ASTERACEAE	P-HERB	FACW	5
TAOF	TARAXACUM OFFICINALE	common dandelion	ASTERACEAE	P-HERB	FACU	
TECAC	Teucrium canadense	American germander	LAMIACEAE	P-HERB	FACW	4
THPO7	THINOPYRUM PONTICUM	tall wheatgrass	POACEAE	P-HERB	UPL	
THAR5	THLASPI ARVENSE	field penny cress	BRASSICACEAE	A-HERB	FACU	
DRRE2	Tomostima reptans	white whitlow-wort	BRASSICACEAE	A-HERB	UPL	3
TORAN2	Toxicodendron radicans	eastern poison ivy	ANACARDIACEAE	W-VINE	FACU	
TRBR	Tradescantia bracteata	long-bract spiderwort	COMMELINACEAE	P-HERB	FACU	5
TROCO	Tradescantia occidentalis	western spiderwort	COMMELINACEAE	P-HERB	UPL	5
TRDU	TRAGOPOGON DUBIUS	yellow goat's-beard	ASTERACEAE	B-HERB	UPL	
TRTE	TRIBULUS TERRESTRIS	puncture-vine	ZYGOPHYLLACEAE	A-HERB	UPL	
TRFLF	Tridens flavus	purpletop	POACEAE	P-HERB	UPL	2
TRFR2	TRIFOLIUM FRAGIFERUM	strawberry clover	FABACEAE	P-HERB	FAC/FACU	
TRHY	TRIFOLIUM HYBRIDUM	Alsike clover	FABACEAE	P-HERB	FACU	
TRPR2	TRIFOLIUM PRATENSE	red clover	FABACEAE	P-HERB	FACU	
TRRE3	TRIFOLIUM REPENS	white clover	FABACEAE	P-HERB	FACU	
TRMA20	Triglochin maritima	shore arrow-grass	JUNCAGINACEAE	P-HERB	OBL	5
TRAE	TRITICUM AESTIVUM	bread wheat	POACEAE	A-HERB	UPL	
TYAN	TYPHA ANGUSTIFOLIA	narrow-leaf cattail	TYPHACEAE	P-HERB	OBL	

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ULAM	Ulmus americana	American elm	ULMACEAE	TREE	FAC/FACW	3
ULPU	ULMUS PUMILA	Siberian elm	ULMACEAE	TREE	UPL	
ULRU	Ulmus rubra	slippery elm	ULMACEAE	TREE	FACU/FAC	5
[URGR3]	Urtica gracilis	stinging nettle	URTICACEAE	P-HERB	FAC/FACW	1
			SCROPHULARIACEAE			
VETH	VERBASCUM THAPSUS	common mullein	AE	B-HERB	UPL	
VEBR	Verbena bracteata	prostrate vervain	VERBENACEAE	A-HERB	FACU	0
VEHA2	Verbena hastata	blue vervain	VERBENACEAE	P-HERB	FACW	4
VEST	Verbena stricta	hoary vervain	VERBENACEAE	P-HERB	UPL	2
VEBAI2	Vernonia baldwinii	western ironweed	ASTERACEAE	P-HERB	FACU/UPL	3
VEFAF	Vernonia fasciculata	prairie ironweed	ASTERACEAE	P-HERB	FAC/FACW	4
	VERONICA ANAGALLIS-					
VEAN2	AQUATICA	water speedwell	PLANTAGINACEAE	P-HERB	OBL	
VEPEP	Veronica peregrina	purslane speedwell	PLANTAGINACEAE	A-HERB	FACW	1
VIAMM	Vicia americana	American vetch	FABACEAE	P-HERB	FACU	6
VIPE2	Viola pedatifida	prairie violet	VIOLACEAE	P-HERB	FACU	6
VIPR5	Viola pratincola	meadow violet	VIOLACEAE	P-HERB	FACW	1
VISO	Viola sororia	downy wood violet	VIOLACEAE	P-HERB	FAC	
VIRI	Vitis riparia	riverbank grape	VITACEAE	W-VINE	FAC/FACW	3
XASTC	Xanthium strumarium	cocklebur	ASTERACEAE	A-HERB	FAC	