Plains Rough Fescue (*Festuca hallii*) Grassland Mapping - Central Parkland Natural Subregion of Alberta

Prepared for

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1.0 INTRODUCTION

Fescue grasslands are found almost entirely within Canada and are substantially responsible for the development of the fertile black soil zone. They are found within the transition zones of the drier mixed grassland to the south and the cordilleran vegetation to the west. It is estimated that fescue grasslands now cover less than 5% of the area in which they were once found, yet there has been no comprehensive inventory of remnant fescue grasslands.

Of particular concern are the plains rough fescue (*Festuca hallii*) grasslands, found primarily in Alberta and Saskatchewan. These were once the predominant grasslands of the Northern Fescue Grassland Natural Subregion, and were interspersed with aspen stands in the Central Parkland Natural Subregion. Land clearing and cultivation have reduced the cover of native vegetation communities, including native grasslands. The maintenance of representatives of native vegetation communities is essential in preserving the biodiversity of species and ecosystems.

Through the Native Prairie Baseline, remnant grassland areas have been identified in the Northern Fescue Grassland Natural Subregion. From 1999 to 2003, the Resource Data Branch of Alberta Sustainable Resource Development contracted Biota Consultants to conduct a comprehensive review of rough fescue grasslands and other native vegetation within the Central Parkland Natural Subregion. This subregion extends north from Cremona to Edmonton, and east to Lloydminster (Alberta Environmental Protection 1994). The purpose of this project was to document the location, size, relative condition and structure of plains rough fescue grassland communities. This was the second phase of a project initiated by the Alberta Natural Heritage Information Centre (ANHIC) to document remnant fescue grasslands within this subregion. The first phase was the preliminary classification of plains rough fescue community types in the Central Parkland Natural Subregion of Alberta (Weerstra and Holcroft-Weerstra 1998).

2.0 PROJECT OBJECTIVES

The project objectives were as follows:

- to inventory and map plains rough fescue grassland remnants within the Central Parkland Natural Subregion;
- to document the condition of each plains rough fescue grassland remnant using field-checks;
- to characterise each plains rough fescue grassland remnant according to the preliminary classification, noting those that do not fit into the preliminary classification;
- to provide digital coverages to be used in the development of a comprehensive inventory of native vegetation in the Central Parkland Natural Subregion.

Essentially, this inventory provides resource managers with hierarchical data with respect to:

- the extent and distribution of native vegetation in the Central Parkland,
- the extent and distribution of native grasslands, and
- the extent and distribution of rough fescue grasslands.

This baseline data contributes to our understanding of the temporal dynamics of native grasslands in the Central Parkland and provides support for potential conservation initiatives. It will provide baseline data for further analysis and will provide background information to support future resource management initiatives in the subregion.

3.0 METHODS

3.1 Mapping

Air photo interpretation was employed in order to identify and map remnant plains rough fescue grasslands. The most recent aerial photography as possible was used. The majority was from 1998, however photography from 1995 to 2000 was used to fill in the gaps. These were black and white images at a scale of generally 1:30,000.

Two classes of vegetation were mapped: potential plains rough fescue grasslands, and all other native vegetation communities. The latter included lowland grasslands (e.g., riparian, saline), wetlands, badlands, rock bluffs, shrubland and forest. During the initial interpretations, some lowland grasslands were mapped as potential plains rough fescue grasslands. Following ground-truthing, more knowledge was gained regarding when these were more likely to be plains rough fescue grasslands versus moister grasslands. Often an area of native vegetation included both potential plains rough fescue grassland as well as other native vegetation types. As a rule, if there was significant plains rough fescue grassland, then the polygon was coded as such, which would ensure that it would be among the polygons to be field-checked. A “?” was placed in the centre of some of the mapped polygons to denote that it was doubtful that the area was dominated by native vegetation, due to obvious disturbance or an indication that grazing may have caused a shift in species dominance from native to non-native.

Mylar copies of NTS 1:50,000 base maps were used as the mapping medium. In 1998 and 1999, planimetric base maps were used, containing roads, water courses, water bodies, and the township, range, section and quarter section grid. From 2000 to 2003, Indian Resource Satellite (IRS) images were used as the base maps, with the township and range indicated along the margins. The mapping was less accurate on the planimetric maps unless the boundaries of a polygon followed a quarter section boundary or other line work already printed on the base map.

Otherwise, judgements were made regarding where to draw an irregular line within a quarter section block. The perimeter of native vegetation was generally easily seen in the photo image of the IRS base maps. Therefore, mapping was not only more accurate, but also easier and faster. It was also possible to include more detail when an area of native vegetation included both potential plains rough fescue grassland as well as other native vegetation types. These tended to be differentiated more on the IRS base maps. Often if an area of non-grassland occurred along the edge of a grassland polygon, it would be differentiated, whereas small non-grassland areas within the polygon would not. Differentiation of potential plains rough fescue grassland and other native vegetation was considered too time-consuming in the case of knob and kettle topography even on the IRS base maps.

The minimum polygon size to be mapped was set at approximately 65 ha (the size of a quarter section). Smaller areas were often delineated since it was easy interpret to a smaller size. Once we began to use the IRS images, it was easier to map smaller areas of native vegetation since it was easier to accurately mark the perimeter within a quarter section. As a result, smaller areas were mapped as mapping progressed, generally down to approximately 12 ha. Even smaller areas were mapped if “islands” of native areas were within close proximity, or were close to a larger polygon.

In order to mark how much of the base map had been mapped, and to aid in the ground-truthing, the air photos used were marked on the base maps. The north-south coverage width was marked along the side of the base map for each flight line of images. For each line of photographs, the photograph numbers were recorded in a line along the top of the base map. The air photo number was written directly above the centre of the air photo. This enabled anyone looking at the base map to determine in which air photo each mapped polygon was located.

If an omission in the mapping was noted in the field, e.g., a cleared area that still harboured native species, the polygon was added to the base map at that time.

3.2 Field Checking

3.2.1 Field Work

Field checking was accomplished with the aid of the original mapped mylar base maps, rural municipality maps and CD ROMs containing the air photo coverage. The locations of the potential plains rough fescue polygons were marked on the rural municipality maps. This created an easy navigational tool. Roads and trails were travelled by truck to reach the sites to be field-checked. Sometimes it was necessary to park and walk to the site. If it was necessary to cross private land, permission was sought from the landowner.

The large number of polygons to check and the difficulty of access in some cases caused time constraints. Whenever possible, a site was checked from or just within the fence line along the road or trail. Very occasionally it was convenient or necessary to walk further into the site. When there was clearly more than one grassland type, such as on different aspects, then an effort was made to record as many as possible within a reasonable time frame. Sites were omitted from field checking if they were very small and/or access would be very difficult or time-consuming.

It was not considered adequate to check a single polygon at only one location if there were different landowners or if there was different land management within the same polygon. Therefore an attempt was made to check at least one area per landowner and per land management practice, depending on ease of access and time frame.

Only a very small portion of each property was viewed in the majority of cases, therefore not all of the grassland communities on each quarter section may have been recorded.

The following information was recorded at each field check site:

- Legal land description (quarter section, half section, section),
- Survey date,
- NTS mapsheet,
- Municipality,
- Land ownership (private, crown, municipality, Indian reservation),
- Land management for the quarter section(s) (grazed, idle, cultivated, hay field, forest, petroleum development),
- Dominant vegetation (grassland, shrubland, willow shrubland, wetland, riparian, aspen, poplar (=balsam poplar), spruce, mixed forest, hay field),
- Estimated range condition class (1 = excellent, 2 = good, 3 = fair, 4 = poor, 5 = non-fescue community)
- Dominant species,
- Major exotic species,
- Comments (e.g., additional species within the communities, percent plains rough fescue cover),
- Potential for monitoring transect establishment.

Plant species were recorded using seven letter codes, using the first four letters of the genus and the first three letters of the species.

3.2.2 Data Entry

All data were entered into an Excel spreadsheet using the twelve fields listed in section 3.2.1 representing the information collected during each field check. The legal land description was divided into four fields to record the applicable portion of the section(s), the township, the range and the meridian. Generally there was one record per quarter section, however when information applied to more than one quarter section, a record could apply to as many as 7 quarter sections. In addition, the following fields were inserted:

- Air photo number,
- Remnant area in ha,
- Percent plains rough fescue grassland,
- Plains rough fescue community type.

The area covered by the native grassland remnant(s) was estimated by viewing the air photos or IRS base map. Percent plains rough fescue grassland was often an educated guess since the entire quarter section was not searched. The plains rough fescue community type was based on the preliminary classification report (Weerstra and Holcroft-Weerstra 1998), unless it was felt that the type did not match any of those in the report. In such cases, the dominant species were listed, e.g., Bromine-Poa_pra-Festhal, along with a description in the comments section.

The dominant vegetation identified was based on observations in the field and interpretations from the mylar maps. The lists under "Dominant Vegetation" are approximately in order of abundance on the quarter section(s). Since the entire area of each quarter section was not field-checked and the mylar map images are not as clear as air photos, the list of dominant vegetation may not be complete. Slashes (/) in the lists under "Dominant Species" and "Comments" serve to break the plant type (grass, forb, shrub) and in the case of Dominant Species, the species are listed approximately in order of cover. Commas between the species names indicate that it was not possible to suggest dominance of one species over another.

The term "aspen" was used for aspen (*Populus tremuloides*) forest and "aspen-poplar" for aspen-balsam poplar (*P. balsamifera*) forest. Balsam poplar may have been present in some cases when only aspen was listed. Dominant shrub species in shrublands were often listed in the "Comments" section, but may not be complete.

A data sub-set was created for areas that have the potential for transect establishment. These were sites on crown land that harboured good examples of plains rough fescue community types. Those that were considered to have the greatest potential, based on the range condition and size of the area, were highlighted.

3.3 Transect Establishment

In 1999, the establishment of monitoring transects on crown land was part of the field component. A 100 m transect was to be established within the best representative of each of the preliminary plains rough fescue community types described in Weerstra and Holcroft-Weerstra (1998). It was difficult to find many plains rough fescue community types, and even more difficult to find these communities in areas that were large enough to accommodate a 100 m transect.

Two transects were established. Transect 1 was established on July 21st , representing a Plains Rough Fescue Community Type. It was located along a road allowance where the road allowance went up over a steep hill but the road had been developed around the hill, leaving a small area of native prairie undisturbed on the hillside. This area was too small to have been mapped. It was not large enough to accommodate a 100 m transect, therefore a 90 m transect was established. Daubenmire frames (20 cm x 50 cm, or 0.1 m^2) were placed every 5 m starting at the 1 metre mark and ending at the 70 metre mark, for a total of 15 microplots. The percent canopy cover of each species was estimated within each frame, as well as the percent cover of litter, wood, bare ground/rock and moss/lichen. The transect data were entered into an Excel spreadsheet and average percent cover, percent composition, prominence value and percent prominence value were calculated for each species.

Transect 2 was established on July 31st. It was located in an ungrazed, open meadow surrounded by aspen on a crown quarter owned by Fish and Wildlife and purchased in 1990 through Buck for Wildlife. A 100 m transect was established approximately 6 m from the east fence. 15 microplots were placed every 6 m from the 6 metre mark to the 90 metre mark. Data were recorded as for transect 1. The community type appeared to lie somewhere between a Plains Rough Fescue Community Type and a Plains Rough Fescue-Western Porcupine Grass Community Type. The cover of western porcupine grass was less than that reported for the Plains Rough Fescue-Western Porcupine Grass Community Type in Weerstra and Holcroft-Weerstra (1998), but the species diversity and cover of other species was higher than in the Plains Rough Fescue Community Type.

4.0 MAPPING ISSUES

Potential native grassland was differentiated based on lack of evidence of disturbance through ploughing or seeding, resulting in a rough-looking texture with no striations, and often with groves of trees and/or shrubs and dark patches suggesting low shrubs. It was not possible to differentiate between plains rough fescue grasslands and other upland native grasslands, therefore ground-truthing was required.

The interpretation was refined after spending time in the field checking the mapped polygons. Some areas that appeared to have been cleared but were clearly not cultivated or striated were interpreted as potential grasslands initially, but were later recognised as having been seeded in the past.

It was often difficult to interpret areas that had been cleared when a mosaic of grassland and woody species had existed, such as knob and kettle topography. When there was no evidence of seeding or significant disturbance, these areas often were found to still be comprised of native species.

Smoother textures were found generally to represent communities that have converted from a native mix to a non-native mix due to heavy grazing. The presence of a shrub component was often used in differentiating sites that might still contain native grasses versus sites that were largely non-native. Even so, similar signatures were sometimes found to represent either native grassland, or Kentucky bluegrass (*Poa pratensis*)- or awnless brome (*Bromus inermis* spp. *inermis*)-dominated grassland.

Over time, we recognised that disturbed wetlands still tended to harbour native species. Dried sloughs and margins of ponds and lakes were then coded as such.

5.0 FIELD OBSERVATIONS

It is clear that very few remnant plains rough fescue communities exist. This can be attributed to clearing for crops or tame forages, or to over-grazing, causing a shift from fescue-dominated grasslands to western porcupine grass (*Stipa curtiseta*)- or needle-and-thread (*S. comata*)-dominated grasslands, or from native grassland communities toward non-native types.

In the limited conversations with land owners, it appeared that many cannot recognise the different grass species. If they cannot identify plains rough fescue, they will not be able to manage their pastures in a manner that favours it. In one case, the farmer insisted that rough fescue was not a native grass but had spread from the U.S.A. When shown a specimen of rough fescue, it was confirmed that we were talking about the same species. He considered rough fescue more of a weed, especially because the tussocks are so hard to plough up. It may be that the abundance of rough fescue has been so low for so long that this farmer did not recognise it as once co-existing with *Stipa* spp., which he did recognise as being native.

Not all of the plains rough fescue community types identified in the preliminary classification (Weerstra and Holcroft-Weerstra 1998) were encountered in the field. Those that were observed include:

- Plains Rough Fescue (*Festuca hallii*),
- Plains Rough Fescue-Western Porcupine Grass (*Festuca hallii-Stipa curtiseta*),
- Plains Rough Fescue-Western Porcupine Grass-Sedge (*Festuca hallii-Stipa curtiseta-Carex* spp.),
- Plains Rough Fescue-Sedge-Western Porcupine Grass (*Festuca hallii-Carex* spp.-*Stipa curtiseta*),
- Plains Rough Fescue-Sand Grass (*Festuca hallii-Calamovilfa longifolia*),
- Western Porcupine Grass-Plains Rough Fescue (Western Porcupine Grass-Plains Rough Fescue/Forbs) (*Stipa curtiseta-Festuca hallii*).

Communities encountered that were not described in the preliminary classification were largely modified by grazing, causing the introduction and dominance of non-native species, or a shift in dominance of native species. The additional communities observed include:

- Plains rough fescue-Kentucky bluegrass (*Festuca hallii-Poa pratensis*)
- Kentucky bluegrass-plains rough fescue (*Poa pratensis-Festuca hallii*)
- Plains rough fescue-Kentucky bluegrass-western porcupine grass (*Festuca hallii-Poa pratensis-Stipa curtiseta*)
- Western porcupine grass-Kentucky bluegrass-plains rough fescue (*Stipa curtiseta-Poa pratensis-Festuca hallii*)
- Kentucky bluegrass-plains rough fescue-western porcupine grass (*Poa pratensis-Festuca hallii-Stipa curtiseta*)
- Kentucky bluegrass-western porcupine grass-plains rough fescue (*Poa pratensis-Stipa curtiseta-Festuca hallii*)
- Needle grass-Kentucky bluegrass-plains rough fescue (*Stipa curtiseta-Stipa comata-Poa pratensis-Festuca hallii*)
- Needle-and-thread-Kentucky bluegrass-plains rough fescue (*Stipa comata-Poa pratensis-Festuca hallii*)
- Kentucky bluegrass-plains rough fescue-needle-and-thread (*Poa pratensis-Festuca hallii-Stipa comata*)
- Awnless brome-Kentucky bluegrass-plains rough fescue (*Bromus inermis* spp. *inermis-Poa pratensis-Festuca hallii*)
- Plains rough fescue-needle-and-thread (*Festuca hallii-Stipa comata*)
- Needle-and-thread-plains rough fescue (*Stipa comata-Festuca hallii*)

- Plains rough fescue-needle-and-thread-sedge (*Festuca hallii-Stipa comata-Carex* spp.)
- Plains rough fescue-sedge-needle-and-thread (*Festuca hallii-Carex* spp.-*Stipa comata*)
- Plains rough fescue-timber oat grass (*Festuca hallii-Danthonia intermedia*)
- Timber oat grass-plains rough fescue (*Danthonia intermedia-Festuca hallii*)
- Buckbrush/plains rough fescue (*Symporicarpos occidentalis*/*Festuca hallii*)
- Silverberry/plains rough fescue (*Elaeagnus commutata*/*Festuca hallii*)

Communities with needle-and-thread as a co-dominant tended to occur in the southeastern portion of the Central Parkland. Other dominant or prominent species often included low sedge (*Carex stenophylla*), sun-loving sedge (*C. pensylvanica*), June grass (*Koeleria macrantha*), slender wheat grass (*Agropyron trachycaulum*), pasture sagewort (*Artemisia frigida*), low goldenrod (*Solidago missouriensis*), prairie crocus (*Anemone patens*) and three-flowered avens (*Geum triflorum*). Twenty-three of the 39 records of the Plains Rough Fescue Community Type in the database had needle-and-thread in the community as opposed to western porcupine grass, and may have represented a different community type.

The Plains Rough Fescue-Timber Oat Grass Community Type was suggested as a potential community type in Weerstra and Holcroft-Weerstra (1998). There were eleven records of communities with these two species as the dominants, the majority of which were found in the County of Beaver. Often timber oat grass appeared to be dominant over plains rough fescue. Western porcupine grass and sedges were occasionally co-dominant, along with such species as low goldenrod, creeping white prairie aster (*Aster falcatus*), bastard toadflax (*Comandra umbellata*) and common yarrow (*Achillea millefolium*). This was typically a lowland grassland that was part of a mosaic of willow shrubland, buckbrush-rose shrubland and aspen, with occasional wetlands.

The buckbrush/plains rough fescue and silverberry/plains rough fescue communities were part of a mosaic of western porcupine grass-dominated grassland and shrubland. Heavy grazing had caused the disappearance of plains rough fescue within the grassland, but it persisted in and around the shrubs where it was somewhat protected from grazing.

Plains rough fescue communities were recorded in only 211 (12.5%) of the 1,686 records in Biota Consultants' database (Table 1, Figure 1). However, plains rough fescue plants were found at an additional 338 sites, or 32.7% of all 1,686 records. The proportion of the different plains rough fescue communities observed is listed in Table 1 and displayed in Figure 2.

Table 1. Community type and species statistics based on Biota Consultants' database.

	No. of Records	% of Total Records
Festuca hallii community types	211	12.5
Festuca hallii CT	39	2.3
Festuca hallii-Stipa curtiseta CT	14	0.8
Festuca hallii-Stipa curtiseta-Carex spp. CT	7	0.4
Festuca hallii-Carex spp.-*Stipa curtiseta* CT	2	0.1
Festuca hallii-Calamovilfa longifolia CT	38	2.3
Stipa curtiseta-Festuca hallii CT	46	2.7
Festuca hallii-Stipa comata CT	15	0.9
Festuca hallii-Stipa comata-Carex spp. CT	8	0.5
Festuca hallii-Carex spp.-*Stipa comata* CT	4	0.2
Stipa comata-Festuca hallii CT	4	0.2
Festuca hallii-Danthonia intermedia/ *Danthonia intermedia-Festuca hallii* CT	11	0.7
shrub/*Festuca hallii* CT	6	0.4
Festuca hallii - non-native species CT	29	1.7
Records with more than one *Festuca hallii* community type	11	0.7
Festuca hallii grasslands in good or excellent condition*	65	3.8
Festuca hallii grasslands in fair or good to fair condition*	98	5.8
Festuca hallii grasslands in poor or fair to poor condition*	62	3.7
Records with *Festuca hallii* plants present	549	32.6
Records with only non-fescue native grasslands	849	50.4
Total number with non-fescue native grasslands	937	55.6
Records with only non-native dominated grasslands	582	34.5
Records with only shrublands and/or forests	33	2.0
Cultivated/hay field	11	0.7

* Some records list more than one *Festuca hallii* community, therefore these numbers total 225 instead of 211.

Only 65 (28.9%) of the plains rough fescue communities were estimated to be in good or excellent condition, whereas 98 (43.6%) were estimated to be in fair or fair to good condition, and 62 (27.6%) were estimated to be in fair to poor or poor condition (Table 1). Invasive non-native plants were observed in 23 (35.4%) of the 65 sites in good or excellent condition. Similarly, such plants were observed in 35 (35.7%) of the 98 sites in fair or fair to good

condition. A higher percentage, 58.1% (36 records), of invasive non-native species was observed at the 62 sites that were in fair to poor or poor condition. In total, these plants were found in 41.8% of the plains rough fescue communities. Often invasive non-native plants occurred in adjacent plant communities but had not spread into the plains rough fescue communities, therefore these grasslands may still be at risk.

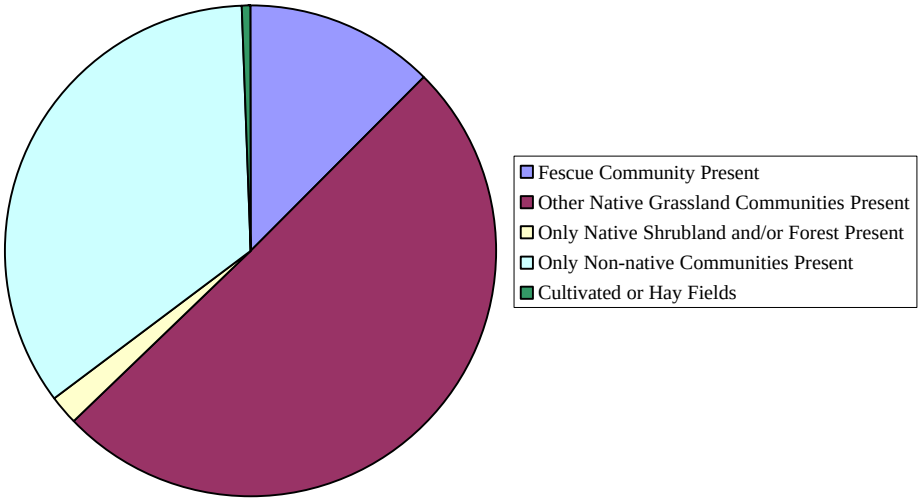

Figure 1. Proportion of database records listing different vegetation types.

A wide range of non-fescue native grasslands were recorded, varying in species dominance based on current and past management practices. Those that appeared to be the least disturbed were dominated by native species such as western porcupine grass, needle-and-thread, blue grama (*Bouteloua gracilis*) and sand grass. In over-grazed areas, sedge species and/or intermediate oat grass dominated or were co-dominant. Invasive species (primarily Kentucky bluegrass but also awnless brome) often had invaded and become co-dominant. Non-fescue native grasslands were recorded in association with 88 (41.7%) of the plains rough fescue communities, as well as in an additional 849 (50.4%) of the database records (Figure 1), totalling 937 (55.6%) of the records (Table 1).

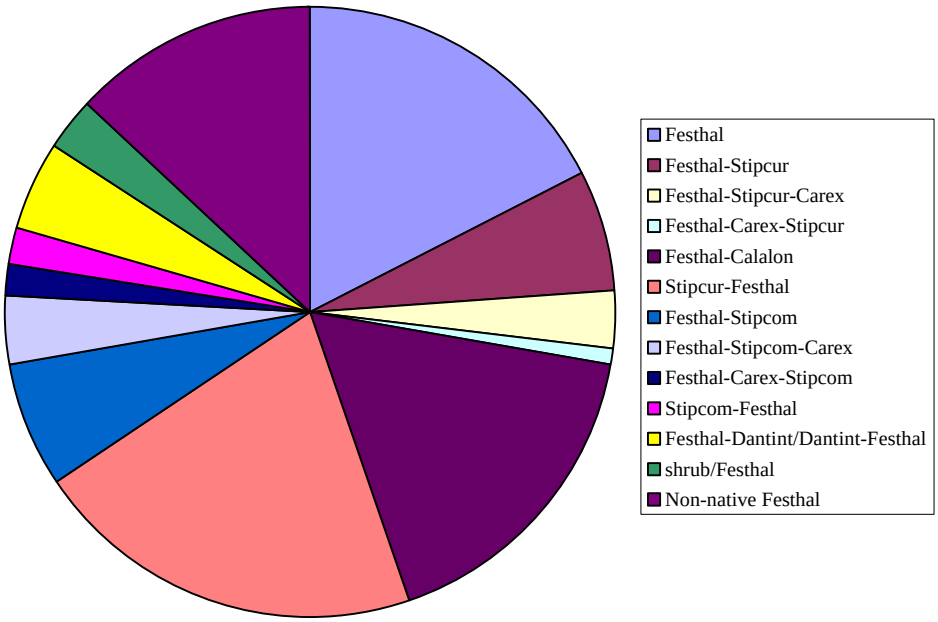

Figure 2. Proportion of plains rough fescue (Festhal) communities observed.

Many of the sites contained both native-dominated and non-native-dominated grasslands, however 582 (34.5%) of the records had only non-native-dominated grasslands or pastures (Table 1, Figure 1). Native species, primarily forbs, were present at many of these sites, but the overall character of the site was non-native. There were no grasslands identified in 44 of the 1,686 records. Thirty-three of these (2.0% of total records) listed only shrublands and/or forests, whereas 11 (0.7% of total records) were cultivated or hay fields (Table 1, Figure 1). In some cases, the clearing and cultivation had taken place after the date of the air photos used in the interpretation of potential grasslands. This highlights the fact that the disappearance of native grasslands and other native plant communities is on-going.

There were major limitations to the field checking methods since only a very small area of each quarter section was checked. There were very likely more grassland communities within each than was reported, especially in the larger mapped polygons. This was a function of time and budget constraints. It would have been a major undertaking to conduct thorough surveys of each polygon. The limited information collected did at least provide an indication of the level of native vegetation on the property.

The mapping exercise highlights how few remaining areas of native grassland exist in the Central Parkland. Considering the number of streams, creeks, rivers and sloughs, it was also striking how much riparian and wetland areas have been modified and how few still contained native

vegetation along their shores. The amount of clearing of woody vegetation was also dramatic. In the more arable areas, native vegetation was reduced to small islands too small to map for the purposes of this project.

6.0 RECOMMENDATIONS

The information obtained during this project may be used to provide statistics on the percent of plains rough fescue grassland, or native grassland in general, that is remaining in the Central Parkland. Although not all potential grasslands were field-checked, an estimate of these figures could still be made. The information also serves as a baseline for future inventories to determine the amount and rate of loss of native vegetation.

The establishment of monitoring transects is a valuable tool for recording the current plant community and monitoring it over time in relation to management (e.g., grazing) and abiotic factors (e.g., weather fluctuations, fire regimes). This program should be continued with the establishment of further monitoring transects on as many of the potential sites as possible. It is important to place transects within representatives of each of the plains rough fescue community types in order to record the diversity. Due to the rarity of these communities, it is also important to monitor as much of the crown land as possible so that grazing practices can be adjusted if it is demonstrated that they are having a negative impact on the community. It was alarming how many of the crown lands surveyed have been degraded, resulting in communities dominated by non-native species.

The only community type listed as potential in Weerstra and Holcroft-Weerstra (1998) and found in the field was the Plains Rough Fescue-Timber Oat Grass Community Type. Based on the cursory field observations, this type should be added to the preliminary tracking list of rare plains rough fescue community types in the ANHIC database. However, further study is recommended to provide a better description of the community and physical site characteristics, as well as analysis regarding its relationship to grazing regimes. Unfortunately, all of the sites where this community was found were on private land.

No plains rough fescue communities with needle-and-thread as a co-dominant were found in the literature during the summary of preliminary plains rough fescue community types. However, such communities were found to be prevalent in the drier and sandier portions of the Central Parkland, particularly in Provost County. Further study is recommended to establish the make-up of the community or communities, and whether some of those identified are simply variants of others. The Plains Rough Fescue Community Type in this area having needle-and-thread but no

western porcupine grass should also be studied to determine if it is substantially different from the Plains Rough Fescue Community Type described in Weerstra and Holcroft-Weerstra (1998).

Very few of the landowners spoken to could differentiate grass species and none understood the significance of rough fescue grasslands. An educational program designed to explain the value of native grassland would be beneficial. This should include a discussion of the different native grass species, their identification and grazing response. Recommendations on range management practices would logically follow. An incentive program for landowners to maintain their native vegetation could stem the loss of native grasslands, riparian habitats, woodlands, etc., all of which are under threat in the Central Parkland.

The Nature Conservancy of Canada protects land from development and poor management practices by acquiring land or establishing conservation easements on private land. They often target specific regions in the province that are at most risk of losing their natural features. The Resource Data Branch could combine efforts by sharing their database with the Nature Conservancy of Canada in order to preserve as much as possible of the plains rough fescue grassland that remains.

7.0 LITERATURE CITED

Alberta Environmental Protection. 1994. Natural regions and subregions of Alberta: summary. Publication No.: I/531, Edmonton. 18 pp.

Weerstra, B.G. and A.C. Holcroft Weerstra. 1998. Preliminary Classification of Plains Rough Fescue (*Festuca hallii*) Community Types within the Central Parkland Subregion of Alberta. Unpublished report prepared for Alberta Natural Heritage Information Centre, Edmonton, Alberta. 19 pp.