



Cows and Fish Report

**Linking Riparian Health Parameters to
Forage and Biodiversity:
Data Analysis and Compilation**

Cows and Fish

Alberta Riparian Habitat Management Society

Report No. 034

Acknowledgements

Research funding for this project was provided by the Alberta Riparian Habitat Management Society (Cows and Fish), with considerable support from Greencover Canada Technical Assistance Component funding (PFRA-Agriculture and Agri-Food Canada) and additional support from Alberta Environmentally Sustainable Agriculture (AESAs) Farm-Based Funding Program. This report forms a portion of a Cows and Fish multi-part project called the Biodiversity Benchmarks—Identifying Indicators and Trend Analysis Project.

About Cows and Fish

Riparian areas are those areas along rivers, streams, lakes, wetlands, springs, and ponds that are strongly influenced by water and are recognized by water-loving vegetation. Cows and Fish is striving to foster a better understanding of how riparian areas function and how improvements in management strategies in riparian areas can enhance landscape health and productivity for the benefit of livestock producers, their communities and others who value these landscapes.

Cows and Fish Supporters and Members: Producers and community groups, Alberta Beef Producers, Trout Unlimited Canada, Canadian Cattlemen’s Association, Alberta Agriculture and Food, Alberta Sustainable Resource Development, Alberta Environment, Department of Fisheries and Oceans, Prairie Farm Rehabilitation Administration- Agriculture and Agri-Food Canada, Alberta Conservation Association

Funding Associates: Alberta Environmentally Sustainable Agriculture

Working with producers and communities on riparian awareness

Cows and Fish
YPM Place, 2nd Floor
530-8th Street South,
Lethbridge, Alberta
T1J 2J8 Canada

Program Manager (403) 381-5538
E-mail: riparian@cowsandfish.org

Web site: <http://www.cowsandfish.org>



**Linking Riparian Health Parameters to
Forage and Biodiversity:
Data Analysis and Compilation**

**Prepared for:
Alberta Riparian Habitat Management Society**

**Prepared by:
Palliser Environmental Services Ltd.**

January 2008

Table of Contents

1.0	Background	vi
1.1	Project Objectives	1
2.0	Methods	2
2.1	Study Site and Design	2
2.2	Riparian Health Assessment and Inventory	3
2.3	Forage Data	5
2.4	Bird Surveys	6
2.5	Statistical Analysis	7
2.5.1	Health Score Categories	7
2.5.2	Qualitative Observations	7
2.5.3	Normality	7
2.5.4	ANOVA and MANOVA	7
2.5.5	Pearson Correlation Matrix	8
2.5.6	Cluster Analysis	8
2.5.7	Discriminant Analysis	8
3.0	Results	8
3.1	Health Scores	8
3.2	Vegetation	9
3.2.1	Overall Canopy Cover	9
3.2.2	Trees and Shrubs	11
3.2.2.1	Tree and Shrub Utilization and Regeneration	13
3.2.3	Graminoids	14
3.2.4	Forbs	17
3.2.5	Forage Production	20
3.3	Structural Alterations	21
3.4	Bird Diversity	23
3.5	Discriminant Analysis	28
4.0	Discussion	29
5.0	Conclusions and Future Study	31
6.0	Literature Cited	32

List of Figures

Figure 1. Study site locations in the Foothills (Sites 1-3) and Parkland Natural Regions (Sites 4-6). .2

Figure 2. Schematic showing location of forage cage in relation to the biodiversity plot..... 6

Figure 3. Comparison of health categories and actual scores used to derive the riparian health categories. Health categories sharing common letters are not statistically different ($P > 0.05$, ANOVA)..... 9

Figure 4. Comparison of canopy cover (%) for various types of vegetation among the three riparian health categories. Health categories sharing common letters are not statistically different ($n=5$ for H, $n=8$ for HwP and $n=5$ for UH; $P > 0.05$, MANOVA). 10

Figure 5. Comparison of trees and utilization among the riparian health categories. Health categories sharing common letters are not statistically different ($n=5$ for H, $n=8$ for HwP and $n=5$ for UH; $P > 0.05$, MANOVA)..... 11

Figure 6. Dendrogram cluster of vegetation (shrubs) by riparian health category..... 12

Figure 7. Comparison of area covered by shrubs among the riparian health categories. Health categories sharing common letters are not statistically different ($n=5$ for H, $n=8$ for HwP and $n=5$ for UH; $P > 0.05$, MANOVA)..... 13

Figure 8. Tree and shrub establishment and regeneration (%) and degree of utilization (%) among the riparian health categories ($n=5$ for H, $n=8$ for HwP and $n=5$ for UH; $P > 0.05$, MANOVA)..... 14

Figure 9. Dendrogram cluster of vegetation (graminoids) by riparian health category. 15

Figure 10. Dendrogram cluster of vegetation (graminoids) by type. 16

Figure 11. Comparison of grass coverage among the three riparian health categories. Health categories sharing common letters are not statistically different ($n=5$ for H, $n=8$ for HwP and $n=5$ for UH; $P > 0.05$, MANOVA)..... 17

Figure 12. Dendrogram cluster of vegetation (forbs) by riparian health category..... 18

Figure 13. Dendrogram cluster of vegetation (forbs) by type..... 19

Figure 14. Comparison of forb coverage among the three riparian health categories. Health categories sharing common letters are not statistically different ($n=5$ for H, $n=8$ for HwP and $n=5$ for UH; $P > 0.05$, MANOVA)..... 20

Figure 15. Comparison of forage biomass (kg ha^{-1}) among the riparian health categories. Health categories sharing common letters are not statistically different ($n=5$ for H, $n=8$ for HwP and $n=5$ for UH; $P > 0.05$, MANOVA)..... 21

Figure 16. Comparison of structural alterations and soil-hydrology metrics among riparian health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).....22

Figure 17. Dendrogram cluster of bird species observed in each of the riparian health categories.23

Figure 18. Comparison of confirmed breeding birds in riparian areas and birds using riparian areas among the health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).25

Figure 19. Dendrogram cluster of bird species by nesting preference.26

Figure 20. Dendrogram cluster of bird species by habitat preference.....27

Figure 21. Scatter plot of the discriminant analysis of healthy, healthy with problems and unhealthy riparian sites.28

List of Tables

Table 1. Summary of the riparian biodiversity project design..... 3

Table 2. Summary of Riparian Health Inventory (RHI) and Riparian Health Assessment (RHA) parameters collected in 2006..... 4

Table 3. Summary of riparian health scores for each of the three health categories assessed on the six creeks in the study..... 5

Table 4. Number of confirmed breeding bird species identified at the six study sites.24

Appendix

Appendix A. Raw data set used in the study.....36

Appendix B. Vegetation Species list and percent cover (as a decimal) for each study site.....41

Appendix C. Summary of bird species observed (presence/absence) during the study by habitat category.....47

Appendix D. Summary of bird species by habitat type.49

Appendix E. Summary of vegetation by category.51

Appendix F. Normality56

Appendix G. Box Plots68

Appendix H. MANOVA Report78

Appendix I. Correlation Report145

Appendix J. Discriminant Analysis Report – Variable Selection158

Appendix K. Discriminant Analysis Report160

1.0 Background

Riparian areas are transition zones between the terrestrial and aquatic environment. They are characterized by wet soils and a diversity of vegetation that thrives in water-saturated environments. Moving water, especially in times of high flow, deposits nutrient-rich sediment that provides essential nutrients for plants. Some vegetation species even require floods to begin their lifecycle. Riparian vegetation is the key component of riparian biodiversity as it provides food and shelter for mammals, birds, reptiles, amphibians, invertebrates and even fish.

There are several definitions for biodiversity that have been used by resource managers and ecologists. Biodiversity can be defined as the range of organisms present in a particular ecological community or system. In the broadest sense it is the variety and variability among living organisms and the ecological complexes in which they occur, encompassing different ecosystems, species and genetic variation (Angermeier 1997).

Parks Canada (2007) defines biodiversity as “the variety of plant and animal species and the variety of characteristics within those species”. In Alberta, biodiversity refers to the variety of species and ecosystems and the ecological processes of which they are a part (Alberta Environmental Protection 1995). Generally, all definitions state that biodiversity includes species diversity, genetic variation and a diversity of ecological interactions (Krohne 2001).

Noss (1990) characterized biodiversity in terms of composition, structure and function. Composition is defined by the identity and variety of elements in a collection, including species lists and measures of species diversity and genetic diversity. Structure is the physical organization of a system, from habitat complexity to the patterns of patches and other elements at a landscape level. Function involves the ecological and evolutionary processes, including gene flow, disturbances and nutrient cycling.

Alberta is a province rich in biodiversity, containing more than 24 000 species of flora and fauna, including 370 species of birds (Alberta Environment 1999). About 80% of Alberta’s wildlife relies on riparian areas for escape cover, shelter and food (Fitch et al. 2003). Saunders (2000a) found that of the 46 endangered, threatened or vulnerable bird species in Alberta, 50% used riparian areas for part or most of their life cycle. Biodiversity, in terms of vegetation, structure, diversity and abundance, make riparian areas unique and highly valuable for many species.

1.1 Project Objectives

The objective of this project was to identify correlations and links among riparian health as an indicator of function, breeding birds and riparian forage production to assess the use of riparian health components as a predictor or indicator for biodiversity and forage productivity. Essentially the project attempts to determine the riparian health assessment components that could be used as surrogates (indicators) for biological biodiversity (e.g., bird diversity and abundance) and productivity (e.g., forage production).

This project forms part of a larger project that will identify key messages regarding biodiversity in Alberta and assist landowners and producers to draw linkages between well-managed, healthy riparian areas that contribute to biodiversity and primary productivity. These applied research findings will help build new and updated extension messages for producers and rural extension staff (the extension component and new messages are supported by other partners, in 2007-08). This

project will help identify the principles of managing for biodiversity based on physical and/or vegetative characteristics of small stream riparian areas.

2.0 Methods

2.1 Study Site and Design

Three study sites in each of the Foothills and Parkland Natural Regions were selected for analysis of riparian health, survey of breeding birds and quantification of riparian forage production (Figure 1). In the Foothills Natural Region the study sites were located on Beaver Creek, Todd Creek and Lyndon Creek. In the Parkland Natural Region, the study sites were located on Ribstone Creek, Iron Creek and Amisk Creek (Table 1). Sites were selected for similar potential sedge/willow and graminoid/shrub communities among all six sites.

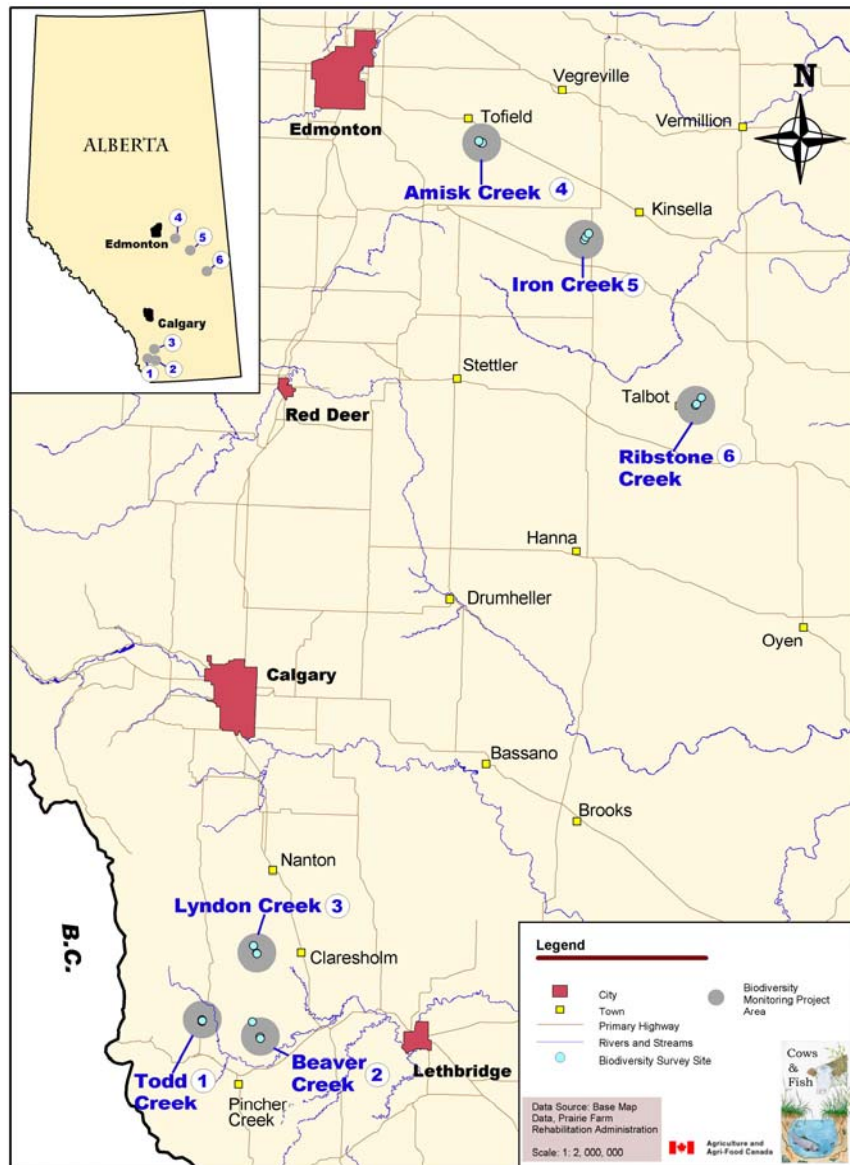


Figure 1. Study site locations in the Foothills (Sites 1-3) and Parkland Natural Regions (Sites 4-6).

Table 1. Summary of the riparian biodiversity project design.

Natural Region	Creeks	Treatments	Breeding Bird Survey	Riparian Forage Production Assessment	Riparian Health Assessment & Inventory
Foothills	Beaver, Todd and Lyndon	Three treatments: one riparian area study site in each of a healthy, healthy but with problems and unhealthy category on each Creek (3 sites per creek).	4 plots per site that were each visited 2 times.	4 to 5 forage sample plots per riparian area study site.	1 per riparian study area overlapping the bird and forage sampling areas.
Parkland	Ribstone, Iron and Amisk				

2.2 Riparian Health Assessment and Inventory

The Riparian Health Assessment for Streams and Small Rivers – Field Workbook (Fitch et al. 2001) evaluates riparian health using a variety of criteria related to ecological status, community structure and site stability. Parameters that are considered in an assessment include vegetative cover, disturbance-caused species, undesirable species, invasive plant species, trees and shrubs (establishment, regeneration and utilization), human disturbance, streambank rootmass protection and stream channel incisement, to name a few. Parameters are intended to indirectly evaluate the ability of a site to perform ecological functions. For example, the presence of bare soil and absence of vegetative cover reduces the ability of a site to trap sediment and filter water.

A score is allocated to each parameter and an overall riparian health score is generated for a particular site. A score of 80% or above denotes a “healthy” site where all key functions are present. A score of 60 to 79% denotes a site that is “healthy but with problems” since most but not all key functions are present or some functions are impaired. This indicates that more attention should be given to management strategies on the site. A score of less than 60% denotes that a site is “unhealthy” and riparian functions are severely impaired.

Riparian health inventories were conducted in 2006 using the methods described in the Alberta Lotic Wetland Health Assessment for Streams and Small Rivers (Survey) User Manual (Cows and Fish 2006). Table 2 summarizes the riparian health inventory and riparian health assessment parameters collected. Some of the parameters in the riparian health inventory are used to derive the riparian health assessment score (i.e., preferred tree and shrub establishment and regeneration and utilization).

Actual riparian health assessment scores were used as treatments at each study site location. Based on these actual scores, the sites were designated as either healthy (3), healthy with problems (2) or unhealthy (1). Only four of the six riparian areas assessed scored a healthy rating in 2006. To increase the sample size to five for the healthy category, one site that scored 79 was designated healthy (Table 3). Only one of the six riparian areas assessed scored an unhealthy rating, so four sites scoring 61 to 63 were designated as unhealthy to increase sample size from one to five. The healthy with problems category contained a sample size of eight.

Table 2. Summary of Riparian Health Inventory (RHI) and Riparian Health Assessment (RHA) parameters collected in 2006.

Riparian Health Inventory Parameters	Units
Size	Hectares
Trees	Presence/absence
Trees greater than 6 ft	% of project area
Trees greater than 1.5 ft	% of project area
Trees less than 1.5 ft	% of project area
Shrubs greater than 6 ft	% of project area
Shrubs greater than 1.5 ft	% of project area
Shrubs less than 1.5 ft	% of project area
Grass greater than 6 ft	% of project area
Grass greater than 1.5 ft	% of project area
Grass less than 1.5 ft	% of project area
Forbs greater than 6 ft	% of project area
Forbs greater than 1.5 ft	% of project area
Forbs less than 1.5 ft	% of project area
Canopy Cover - Trees	% as a decimal
Canopy Cover - Shrubs	% as a decimal
Canopy Cover - Grams	% as a decimal
Canopy Cover - Forbs	% as a decimal
Canopy Cover - Wood	% as a decimal
Canopy Cover - Weeds	% as a decimal
Canopy Cover - All	% as a decimal
Altered Banks	% of altered bank
Hoof Shear	% of altered bank
Trails	% of altered bank
Bareground	% of altered bank
Riparian Health Assessment Parameters	
Vegetative Cover of Floodplain and Streambanks	% Score
Invasive Plant Species	% Score
Disturbance-increaser Undesirable Herbaceous Species	% Score
Preferred Tree and Shrub Establishment and Regeneration	% Score
Utilization of Preferred Trees and Shrubs	% Score
Standing Decadent and Dead Woody Material	% Score
Streambank Root Mass Protection	% Score
Human-caused Bareground	% Score
Pugging and/or Hummocking	% Score
Human-caused Alterations to the Polygon	% Score
Stream Channel Incisement (vertical stability)	% Score
Total Score - Vegetation	% Score
Total Score – Soil and Hydrology	% Score
Overall Score	% Score

Table 3. Summary of riparian health scores for each of the three health categories assessed on the six creeks in the study.

Natural Region	Creek Name	Healthy (Rating 3)	Healthy with Problems (Rating 2)	Unhealthy (Rating 1)
Foothills	Beaver Creek	82	65	63
	Todd Creek	81	74, 68	-
	Lyndon Creek	82	68	61
Parkland	Amisk Creek	84	68	44
	Iron Creek	-	71, 71	61
	Ribstone Creek	79	72	63

2.3 Forage Data

Eighteen forage plots were established between May 7 and June 6, 2006. At each study location, four to five forage cages were established on the three riparian health designations (i.e., healthy, healthy with problems and unhealthy) (Figure 2). The Beaver Creek healthy but with problems and unhealthy treatment sites were relatively small, thus only three forage plots were established.

Forage cages were placed in the center of the biodiversity plot, approximately 5 to 15 m from the creek, depending on the terrain, in an area where the vegetation would provide forage value, e.g. shrubs and graminoids (Figure 2).

The forage production cages were clipped between July 20 and August 20, 2006 to coincide with peak forage production. All forage within the cages was clipped within a 0.5 m² sample. Graminoids and forbs were clipped to ground level and sorted into separate bags. Current annual growth was clipped on all shrubs rooted within the frames.

Plant species composition sampling was not conducted with transects due to the size of the biodiversity plot, e.g. 20 x 100 m. Instead, the percent cover graminoids, forbs and shrubs inside the cages were estimated, and the canopy cover of trees and taller shrubs was estimated for the whole biodiversity plot.

After clipping all forage cages were recovered and replaced to their original location. Forage production samples were dried, weighed and processed according to Alberta Sustainable Resource Development methods at the Agriculture Canada Research Stations in Lethbridge and Lacombe, Alberta. The data were summarized by site, natural subregions, riparian health and species class. For a complete review of methods used in the biodiversity forage study, refer to Desserud (2006).

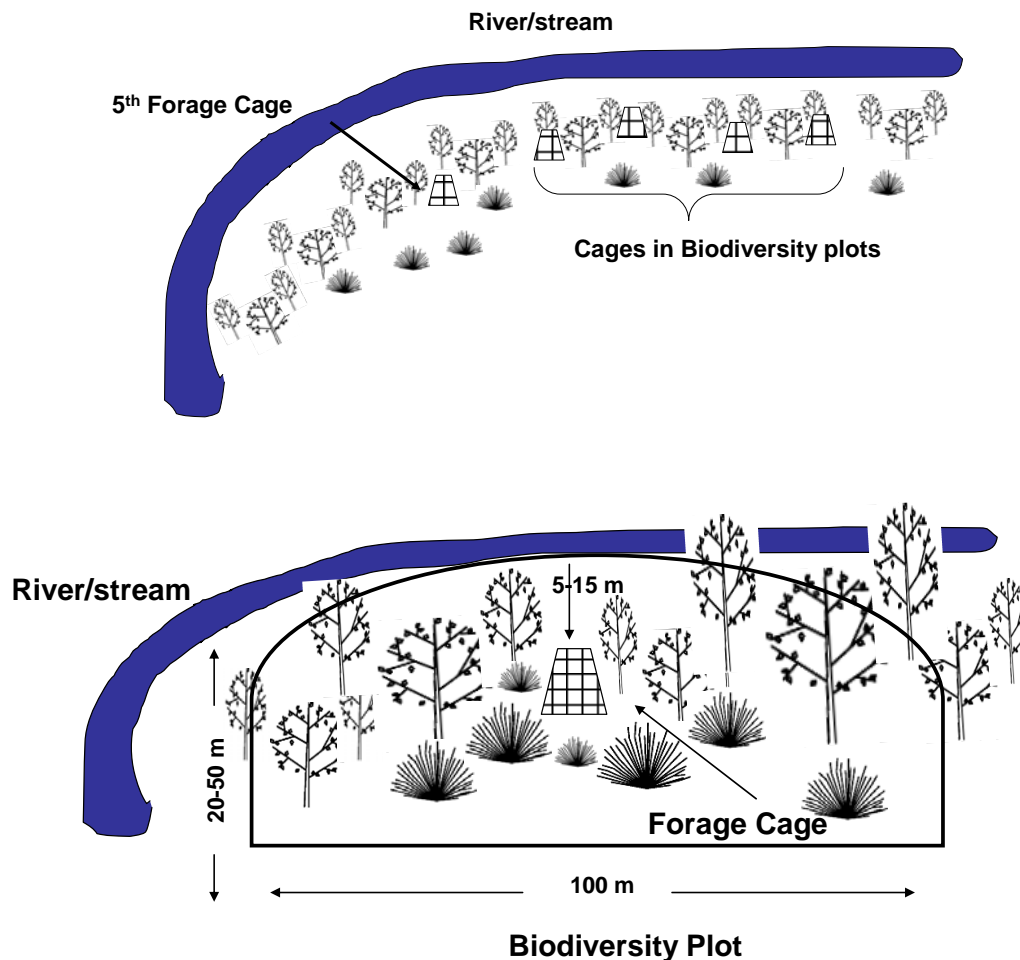


Figure 2. Schematic showing location of forage cage in relation to the biodiversity plot (Desserud 2006).

2.4 Bird Surveys

Four survey plots were established along each of the riparian areas designated healthy, healthy but with problems and unhealthy on the six creeks. To complete the breeding bird surveys, each site was sampled twice during June 2006. Each survey was conducted from one half hour before sunrise to within six hours after sunrise. The sites were sampled at a different time during the second visit. All birds observed and heard within the sample plot within ten minutes were recorded on a data sheet.

A modified point count, having a semi-circle with an approximate radius of 25 metres was used to conduct the bird survey. At some of the study sites, the riparian areas were narrower than 25 m and the semi-circle included upland habitat. The observer stood approximately 10 to 15 m from the edge of the circle to reduce the possibility of additional disturbance by the observer's movements. Each sample plot was separated by 25 to 50 m to avoid overlap. A 50 m tape and a Garmin GPS unit were used to identify the observation point. For a complete summary of methods used in the bird survey, refer to Cerney (2006).

2.5 Statistical Analysis

All statistics were performed using NCSS Statistical System 2006 (Hintze 2006). For statistical analysis, the factor channel incisement was removed from the list of input variables because the variance among all sites was zero.

2.5.1 Health Score Categories

Each site was given a rating to associate with the health category (i.e. Rate 3 if healthy, Rate 2 if healthy but with problems and Rate 1 if unhealthy) according to actual health scores provided by Cows and Fish. Note that the sample size (n) was not equal among the health categories. Sites typically receive a healthy designation when scores are greater than 80, however, only four of the six sites scored greater than 80, thus one site scoring 79 was designated healthy to increase sample size. Only one site scored in the unhealthy category, therefore three sites scoring 61 to 63 were designated unhealthy to increase sample size.

2.5.2 Qualitative Observations

Presence/absence and yes/no qualitative observations made in carrying out the riparian health assessment were assigned a 1 for yes/present and 0 for no/not present.

Box plots were created to compare riparian health assessment ratings, forage production data and bird survey data among the three health categories (i.e. healthy, healthy but with problems and unhealthy).

2.5.3 Normality

Normality tests were conducted to test the hypothesis that the data are normally distributed. The normality test was limited by a small sample size ($n < 100$), thus it was analysed for normality using Martinez-Iglewicz distribution, known for robustness. It has been shown that this test is very powerful for heavy-tailed symmetric distribution as well as a variety of other situations. A value of the test statistic that is close to 1 indicates that the distribution is normal.

2.5.4 ANOVA and MANOVA

Data was grouped according to treatments of healthy (n=5), healthy but with problems (n=8) and unhealthy (n=5). An ANOVA was performed on the Parkland and Foothills region health scores to support the grouping of the data. No statistical difference in the three health score categories was found between regions ($P > 0.05$). Thus, it was assumed that a healthy score in the Parkland region was equal to a healthy score in the Foothills region.

MANOVA was used to determine significance of difference among the health categories and the riparian health assessment criteria, forage data and bird data for normally distributed data. For those parameters where the health categories were significantly different, the Tukey Kramer Multiple Comparison Test was used to determine which categories were different. If data were not normally distributed, the Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test) was used to determine the differences among categories.

2.5.5 Pearson Correlation Matrix

A correlation matrix was created using the Pearson Correlation (Hintze 2006). In general, correlation cannot be inferred from populations having correlation coefficients between -0.5 and 0.5 unless the sample size is large (e.g. $n = 500$) (Sokal and Rohlf 1995). If correlation analyses indicated metrics were moderately correlated ($-0.6 \geq r \geq 0.6$), a regression analysis was performed to further define the significance of the relationship. Relationships were considered strong if the coefficient of determination (r^2) was ≥ 0.50 .

2.5.6 Cluster Analysis

Cluster analysis is used to group data. Bird species data was clustered using dendograms by health category, nesting site preference (i.e., ground, ground-understorey, shrubs, mid-story to canopy, trees) and habitat preference (i.e., open-agricultural, dense shrub and closed forest).

Vegetation data was clustered using dendograms by health category and type (i.e. native, disturbance, poisonous, invasive, unknown and introduced) for each of shrubs, graminoids and forbs. A dendogram was not generated for shrubs by type because all shrubs were native. Dendograms were not generated for trees because there were only 5 species of trees identified in the 18 plots.

2.5.7 Discriminant Analysis

Discriminant analysis was used to better understand the relationships that exist among variables. Discriminant analysis is similar to multiple regression but discriminant analysis has a discrete dependent variable (e.g., healthy, healthy but with problems and unhealthy).

The results of this discriminant analysis test must be interpreted cautiously. Discriminant analysis does not make strong normality assumptions. However, a sample size of at least twenty observations in the smallest group is preferred to ensure robustness of any inferential tests that are made. Further, unequal sample sizes (i.e., $n = 5$ for healthy, $n = 8$ for healthy but with problems and $n = 5$ for unhealthy) does not influence the discriminant analysis problem, however it may cause subtle changes during the classification phase (Hintze 2006).

The automatic variable selection process was used to identify the discriminant variables. NCSS discriminant analysis conducts a stepwise variable selection by finding the best discriminant and then the second best. After two are found, NCSS automatically runs a further test to determine whether the discrimination would be almost as good if one were removed. This stepping process of adding the best remaining variable and then checking if one of the active variables could be removed continues until no new variable can be found whose F-value has a probability smaller than the Probability Enter value (Hintze 2006).

3.0 Results

3.1 Health Scores

The Foothills health score categories of healthy, healthy with problems and unhealthy were not significantly different from the same Parkland health score categories (ANOVA; $P > 0.05$), thus grouping the data together was possible. There was significant variation among the health categories

when the Foothills and Parkland data were combined (ANOVA; $P < 0.05$) indicating that there was a treatment effect (Figure 3).

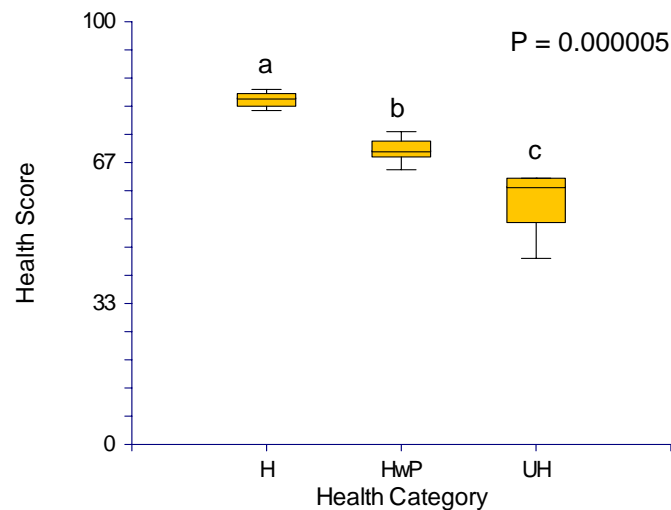


Figure 3. Comparison of health categories and actual scores used to derive the riparian health categories. Health categories sharing common letters are not statistically different ($P > 0.05$, ANOVA).

Health scores were positively correlated to a number of the riparian health assessment criteria, including:

- Grass greater than 1.5 ft (Pearson Correlation, $r = 0.60$; Regression, $r^2 = 0.35$)
- Canopy Cover of Graminoids (Pearson Correlation, $r = 0.61$; Regression, $r^2 = 0.38$),
- Canopy Cover all (Pearson Correlation, $r = 0.67$, Regression, $r^2 = 0.45$),
- Bareground (Pearson Correlation; $r = -0.69$, Regression, $r^2 = 0.48$),
- Veg Cover (Pearson Correlation, $r = 0.65$, Regression, $r^2 = 0.42$),
- Human-caused Bareground (Pearson Correlation, $r = 0.67$; Regression, $r^2 = 0.44$),
- Structural alterations of banks (Pearson Correlation, $r = 0.72$, Regression, $r^2 = 0.52$),
- Soil-Hydrology Scores (Pearson Correlation, $r = 0.86$; Regression, $r^2 = 0.73$),

Although the health score itself was only weakly correlated to confirmed breeding birds (Pearson Correlation; $r = 0.55$), the health categories (i.e., healthy, healthy but with problems, unhealthy) were more strongly correlated (Pearson Correlation; $r = 0.63$).

3.2 Vegetation

Riparian health assessment vegetation metrics were compared to identify significant differences in vegetation structure among the three health categories. Vegetation assessments are described using two different measurements (i.e., % canopy cover and % project area). Forage production (kg ha^{-1} biomass) is not part of the riparian health assessment but is presented as one component of this study.

3.2.1 Overall Canopy Cover

Canopy cover provided by trees, shrubs, graminoids and woody vegetation tended to be greatest in the healthy sites, while forbs and weeds tended to have greater canopy cover in unhealthy sites

(Figure 4). Although the general trend observed was greater canopy cover provided by trees, shrubs and graminoids, the only significant differences among the health categories was in relation to woody species ($P = 0.05$). Healthy sites had significantly more area covered by woody vegetation (i.e., trees and shrubs) compared to riparian areas rated healthy but with problems or unhealthy.

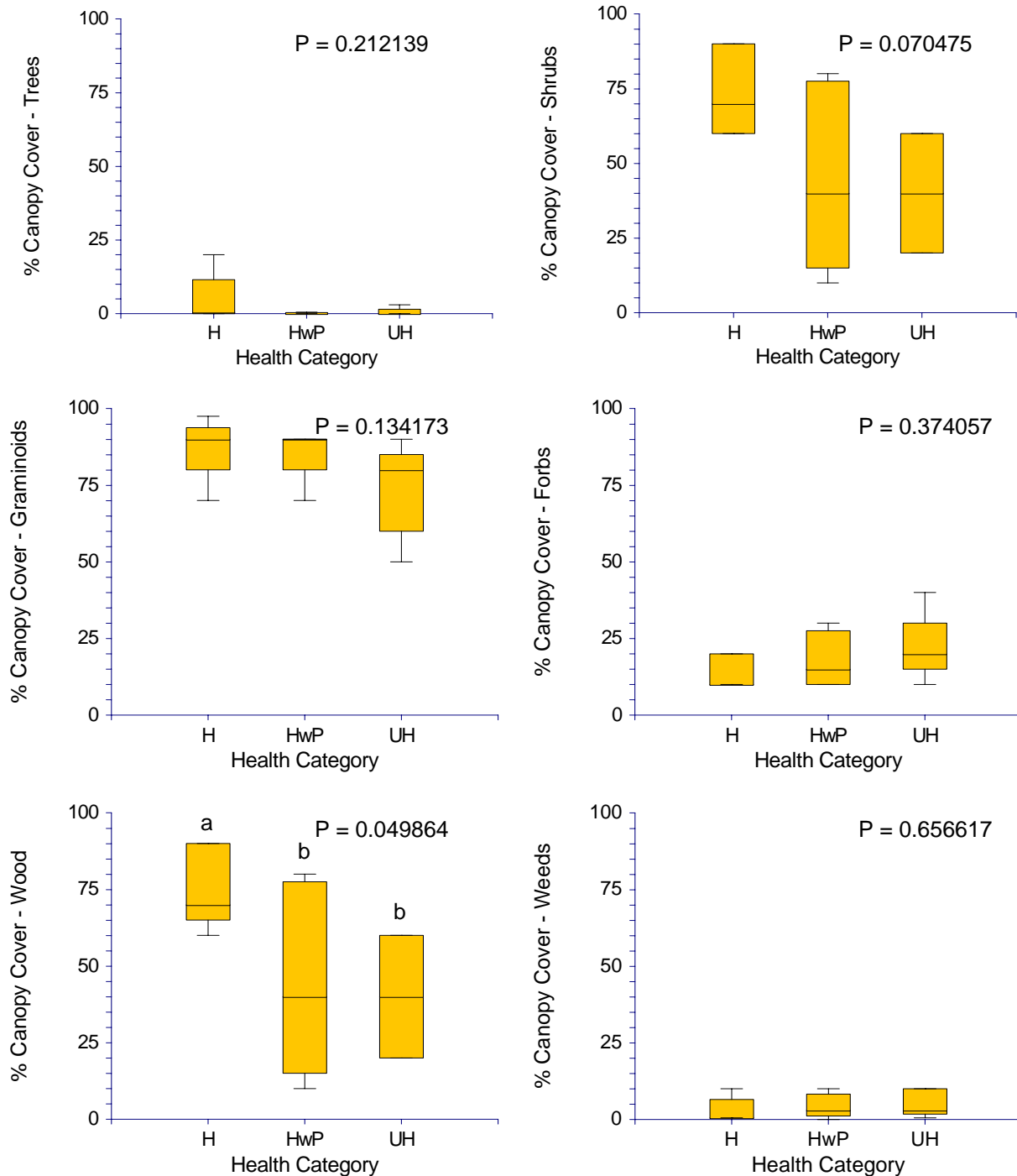


Figure 4. Comparison of canopy cover (%) for various types of vegetation among the three riparian health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).

3.2.2 Trees and Shrubs

Trees were not present at any site on Lyndon Creek, Beaver Creek or Iron Creek. Riparian sites rated healthy or healthy but with problems sites on Todd Creek and Ribstone Creek contained trees, as well as the healthy and unhealthy sites on Amisk Creek.

There were four species of native trees identified among the study sites plus one unidentified cottonwood (*Populus spp.*). The four identified species were balsam poplar (*Populus balsamifera*), narrow-leaved cottonwood (*Populus angustifolia*), Manitoba maple (*Acer negundo*) and white birch (*Betula papyrifera*). Healthy riparian areas contained the greatest diversity of trees which included balsam poplar, Manitoba maple, cottonwoods and narrow-leaved cottonwood. Riparian areas rated healthy but with problems contained cottonwoods and Manitoba maple while white birch was only present in the unhealthy riparian areas on Amisk Creek.

There was no statistical difference in the presence or absence of mature trees among the health categories ($P > 0.05$), although there appears to be a greater area covered by trees greater than 1.5 ft and 6 ft at the healthy sites (Figure 5). The cover of trees less than 1.5 ft was significantly less in healthy but with problems sites compared to healthy and unhealthy riparian areas ($P < 0.05$).

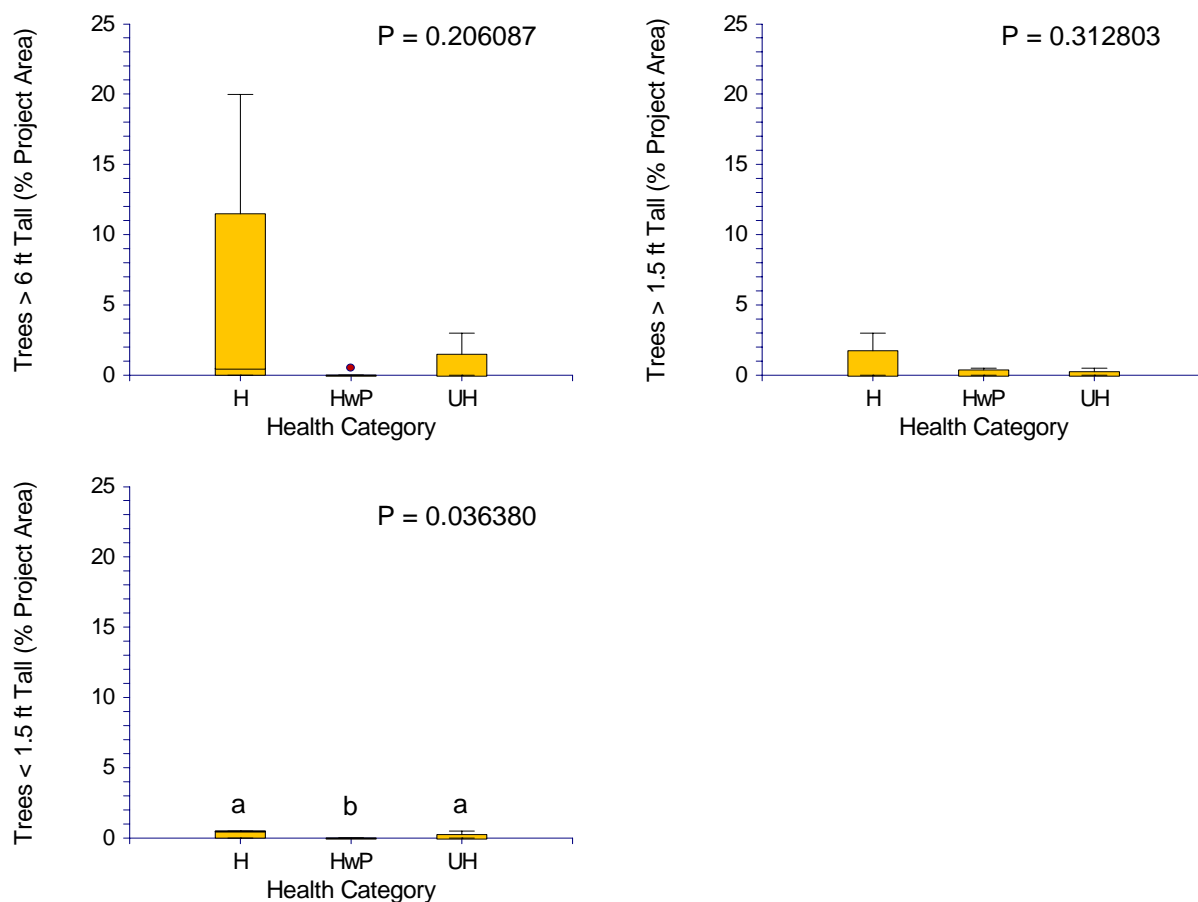


Figure 5. Comparison of trees and utilization among the riparian health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).

Twenty-two species of shrubs were identified during the riparian health inventory. Thirteen or 59% of the shrubs identified were common to all of the health categories (Figure 6). Flat-leaved willow (*Salix planifolia*) was unique to the healthy riparian area category. Riparian areas rated unhealthy contained four unique species (i.e., low-bush cranberry (*Viburnum edule*), shrubby cinquefoil (*Potentilla fruticosa*), Canada buffaloberry (*Shepherdia Canadensis*) and false mountain willow (*Salix pseudomonticola*). The riparian areas rated healthy but with problems did not contain unique species. All of the shrubs identified were native to Alberta.

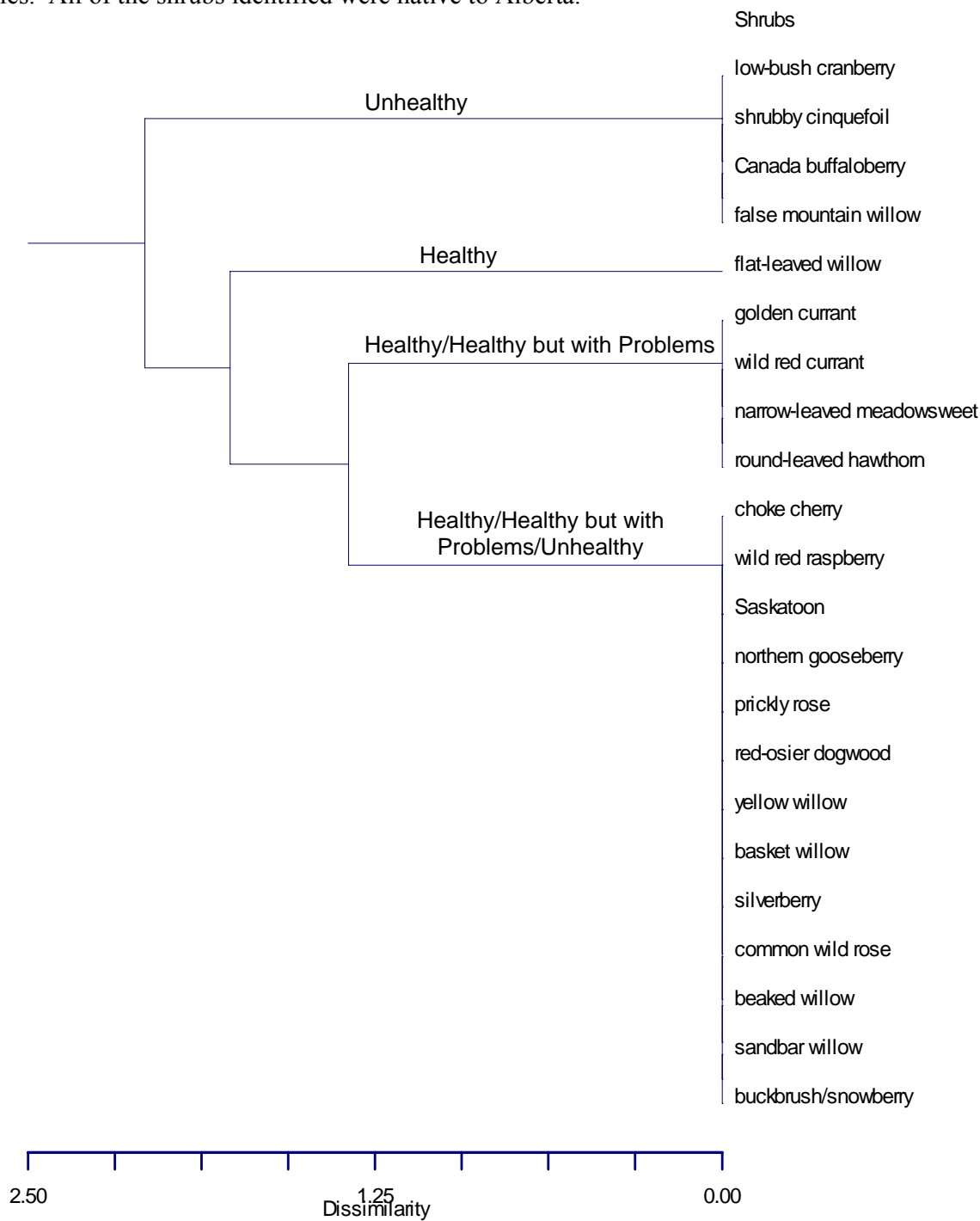


Figure 6. Dendrogram cluster of vegetation (shrubs) by riparian health category.

A significantly greater area of healthy sites were covered by shrubs greater than 6ft ($P < 0.05$), compared to healthy but with problems and unhealthy sites (Figure 7). All three riparian health categories tended to have similar cover of shrubs greater and less than 1.5 ft.

Shrubs greater than 6ft were positively correlated to the structural alteration of banks ($r = 0.64$), meaning that riparian sites that had fewer structural alterations to streambanks also tended to have a greater area covered by mature shrubs (i.e., greater than 6 ft).

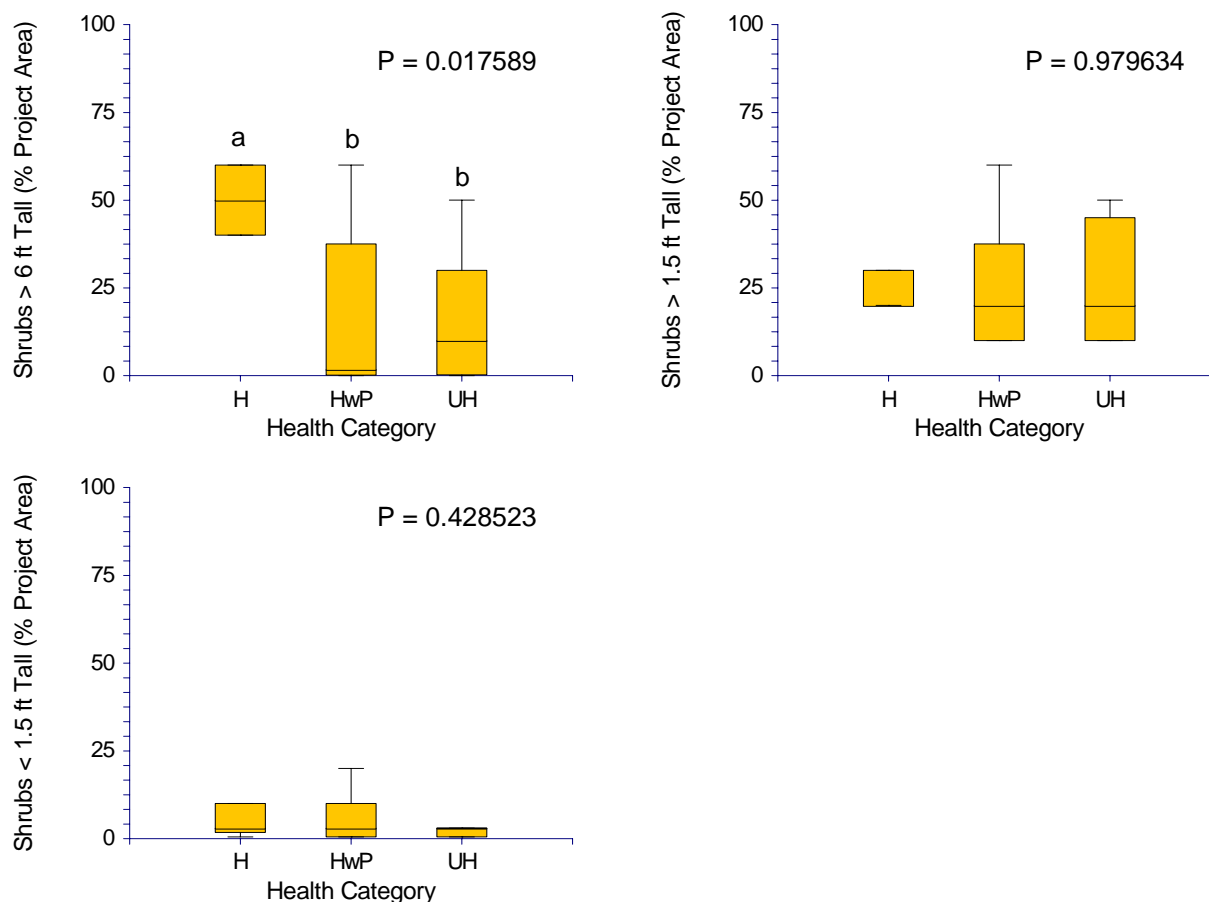


Figure 7. Comparison of area covered by shrubs among the riparian health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).

3.2.2.1 Tree and Shrub Utilization and Regeneration

There was no significant difference in the utilization of tree and shrub establishment and regeneration or utilization of trees and shrubs among the health categories (Figure 8). However, there was generally a greater percent of tree and shrub establishment in the healthy riparian areas. A strong positive correlation between tree and shrub regeneration and presence or absence of trees (Pearson Coefficient, $r = 0.89$; Regression, $r^2 = 0.80$) and trees less than 1.5 ft (Pearson Coefficient, $r = 0.71$; Regression, $r^2 = 0.76$) suggests that if trees are present, there was also regeneration occurring in the

riparian area. There was a strong negative correlation between tree and shrub utilization and presence or absence of trees (Pearson Coefficient, $r = -0.88$; Regression, $r^2 = 0.77$) and trees less than 1.5 ft suggesting that as the occurrence of trees increased in a riparian area, the likelihood of utilization also increased.

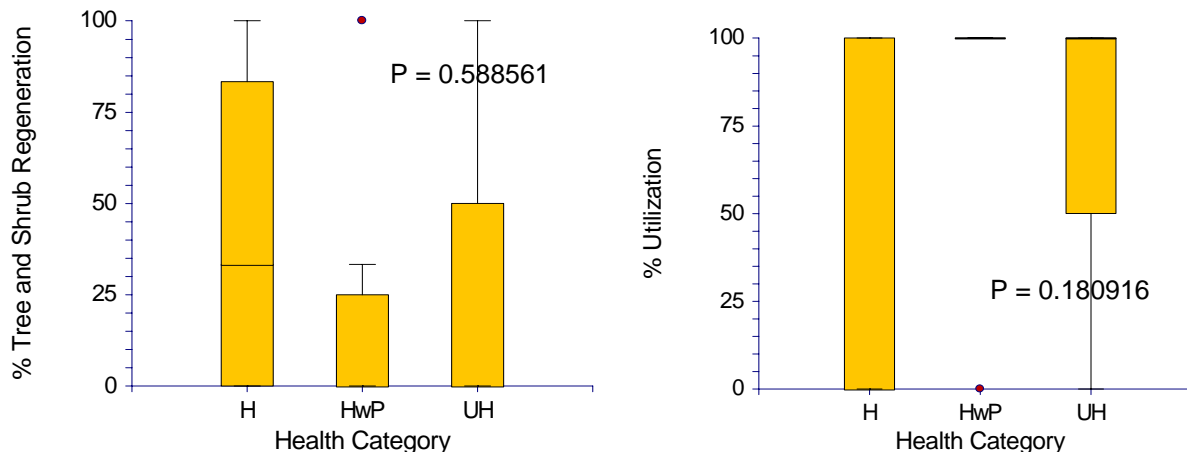


Figure 8. Tree and shrub establishment and regeneration (%) and degree of utilization (%) among the riparian health categories (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).

3.2.3 Graminoids

Forty-three species of graminoids were identified in the riparian health inventory. Cluster analysis showed that riparian areas rated healthy but with problems contained the greatest diversity of graminoids, having 86% of all graminoids identified, and also had the highest number of unique species (Figure 9). Healthy riparian areas contained only 58% of graminoid species, while 72% of the graminoid species identified were found in unhealthy riparian areas.

The majority (77%) of all graminoid species identified were native species (Figure 10). Disturbance species only comprised 14% of the total. The disturbance species crested wheat grass (*Agropyron pectiniforme*) was only found in the unhealthy riparian areas.

The area of graminoids greater than 1.5 ft was significantly greater in the healthy sites compared to the unhealthy sites ($P < 0.05$) (Figure 11). The area covered by graminoids less than 1.5 ft tended to be greatest in the unhealthy sites, although the difference was not significant ($P > 0.05$).

The area of graminoids less than 1.5 ft was positively correlated to forbs less than 1.5 ft (Pearson Coefficient, $r = 0.65$; Regression, $r^2 = 0.42$) and canopy cover of forbs (Pearson Coefficient, $r = 0.64$; Regression, $r^2 = 0.41$), suggesting that areas dominated by shorter grasses may have a greater coverage of forb species.

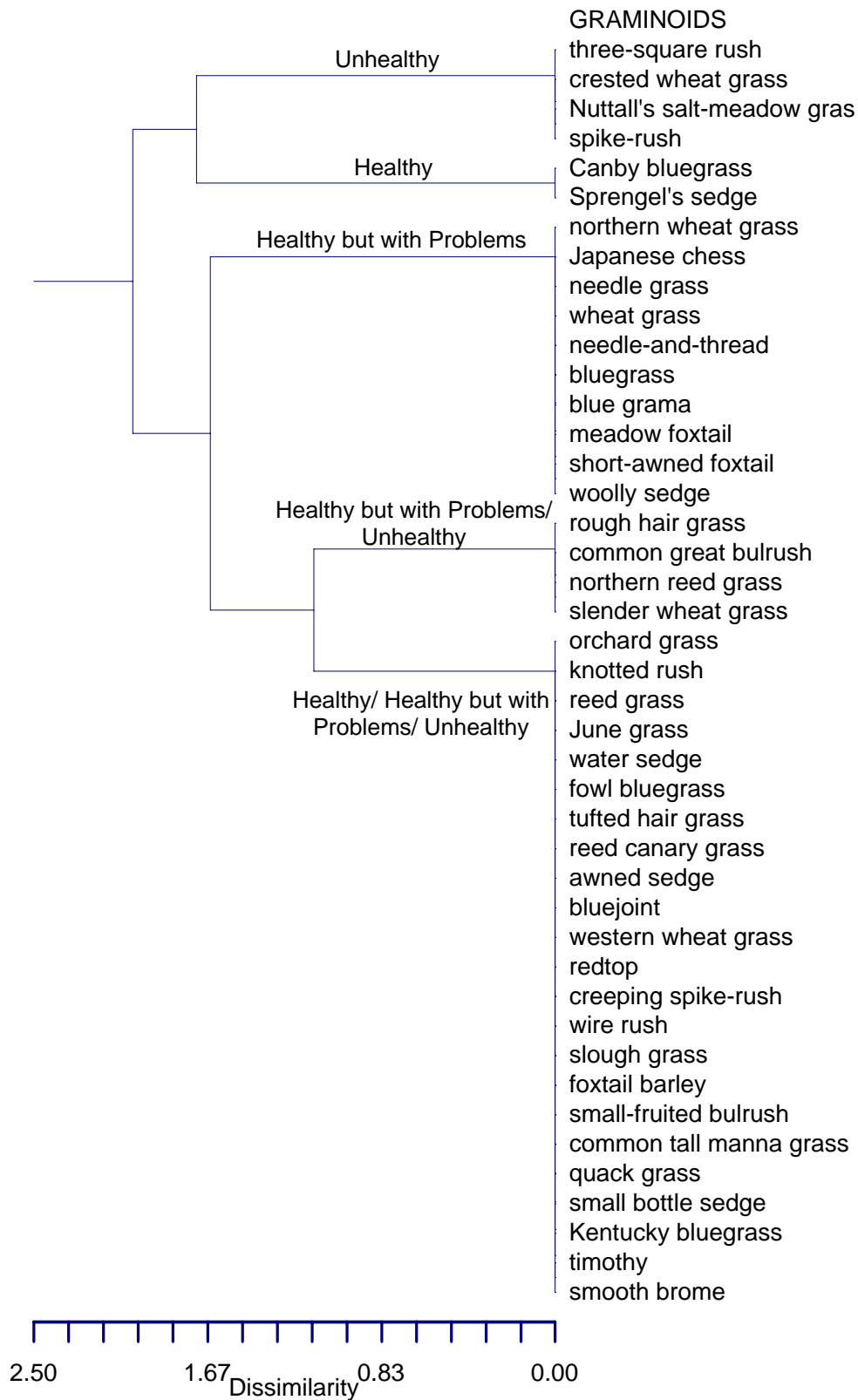


Figure 9. Dendrogram cluster of vegetation (graminoids) by riparian health category.

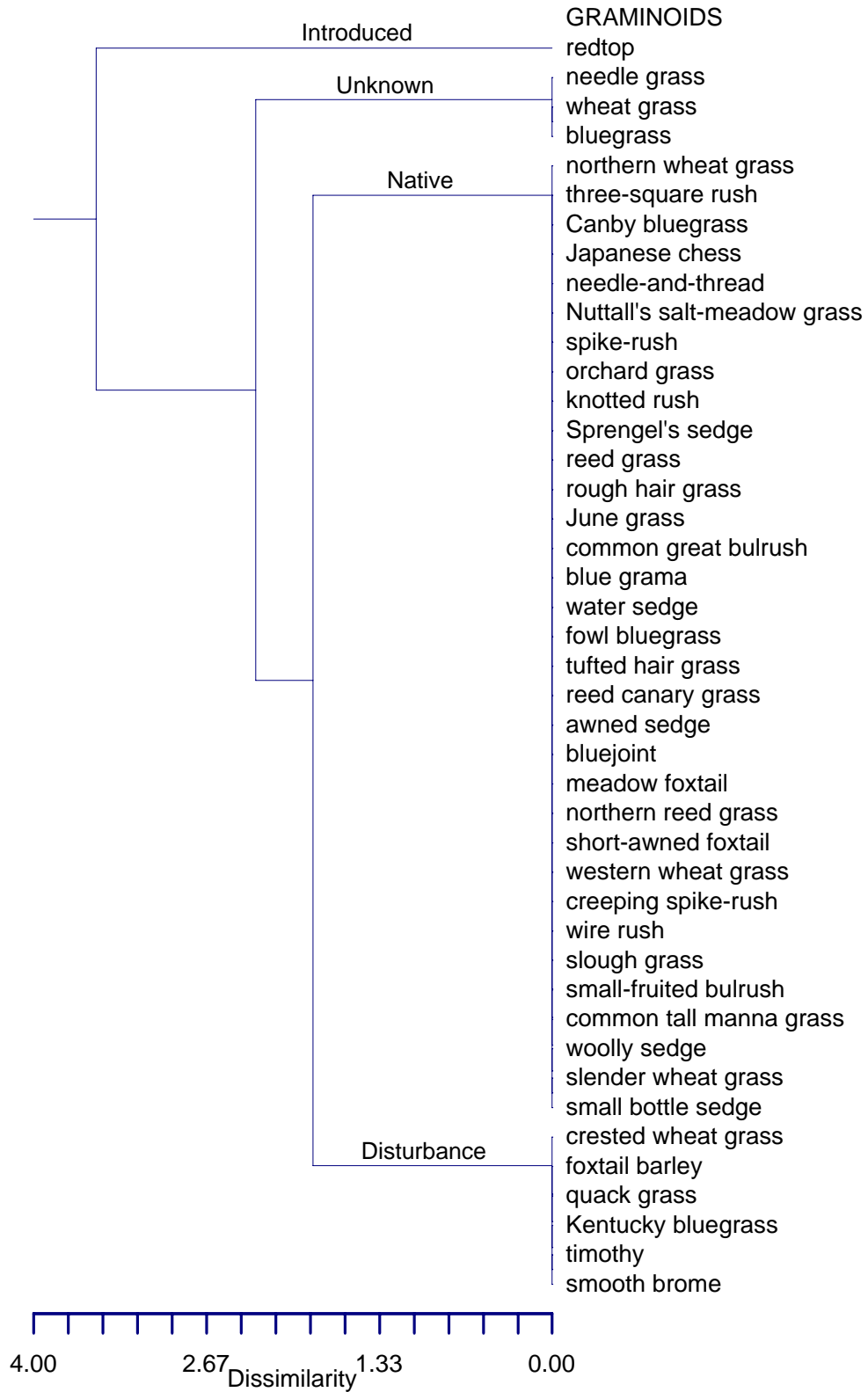


Figure 10. Dendrogram cluster of vegetation (graminoids) by type.

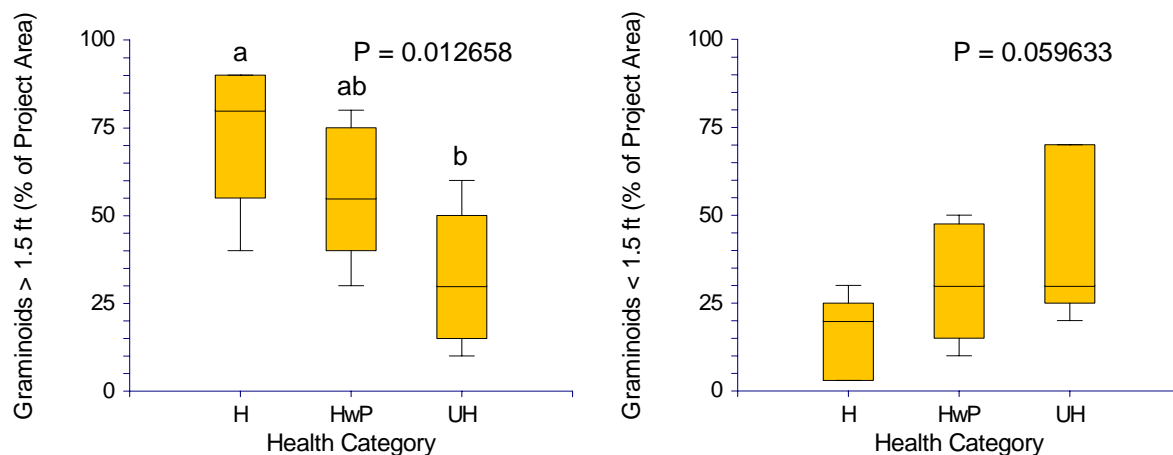


Figure 11. Comparison of grass coverage among the three riparian health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).

3.2.4 Forbs

One hundred species of forbs were identified during the riparian health inventory. Cluster analysis showed that five forbs were unique to the healthy riparian areas and 17 forbs were unique to riparian areas rated as healthy but with problems and unhealthy (Figure 12). Forty percent of forb species identified were observed in all three riparian health categories. Riparian areas rated as unhealthy contained the greatest diversity of forbs.

Sixty-three of the 100 forbs identified were native species (Figure 13). There were 17 disturbance-caused forbs, seven introduced species and six noxious weeds identified in the riparian areas. Noxious weeds were associated with all of the health categories. Hound's tongue (*Cynoglossum officinale*), perennial sow thistle (*Sonchus arvensis*) and Canada thistle (*Cirsium arvense*) were found in all three of the riparian health categories. Butter-and-eggs (*Linaria vulgaris*) was found in the healthy and healthy but with problem sites and scentless chamomile was only found in the healthy but with problem sites. Tall buttercup was observed in riparian areas rated as healthy and unhealthy.

The area covered by forb species was not significantly different among health categories ($P > 0.05$), although the area covered by forbs greater and less than 1.5 ft was generally higher in unhealthy riparian areas compared to the other two health categories (Figure 14).

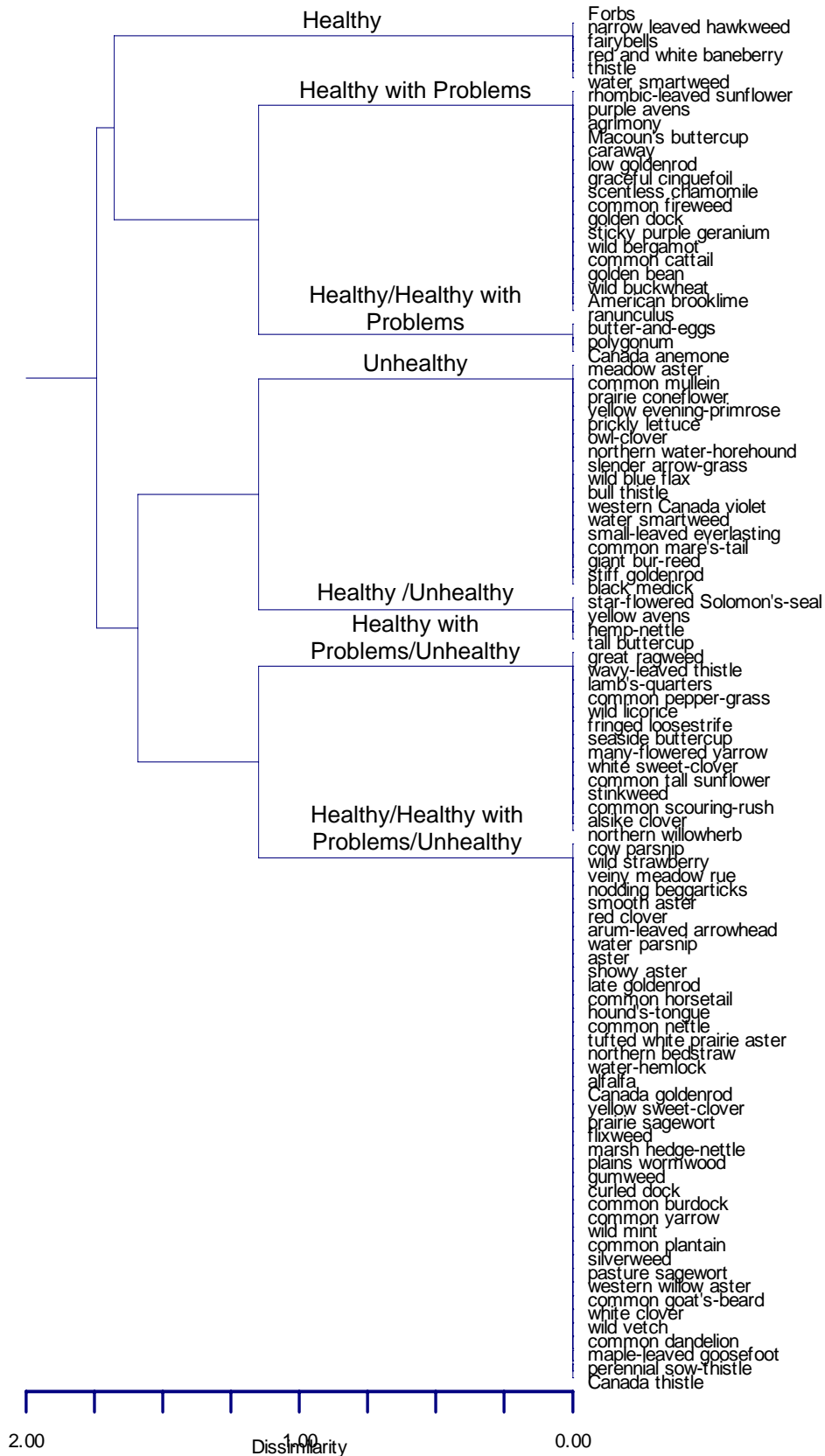


Figure 12. Dendrogram cluster of vegetation (forbs) by riparian health category.

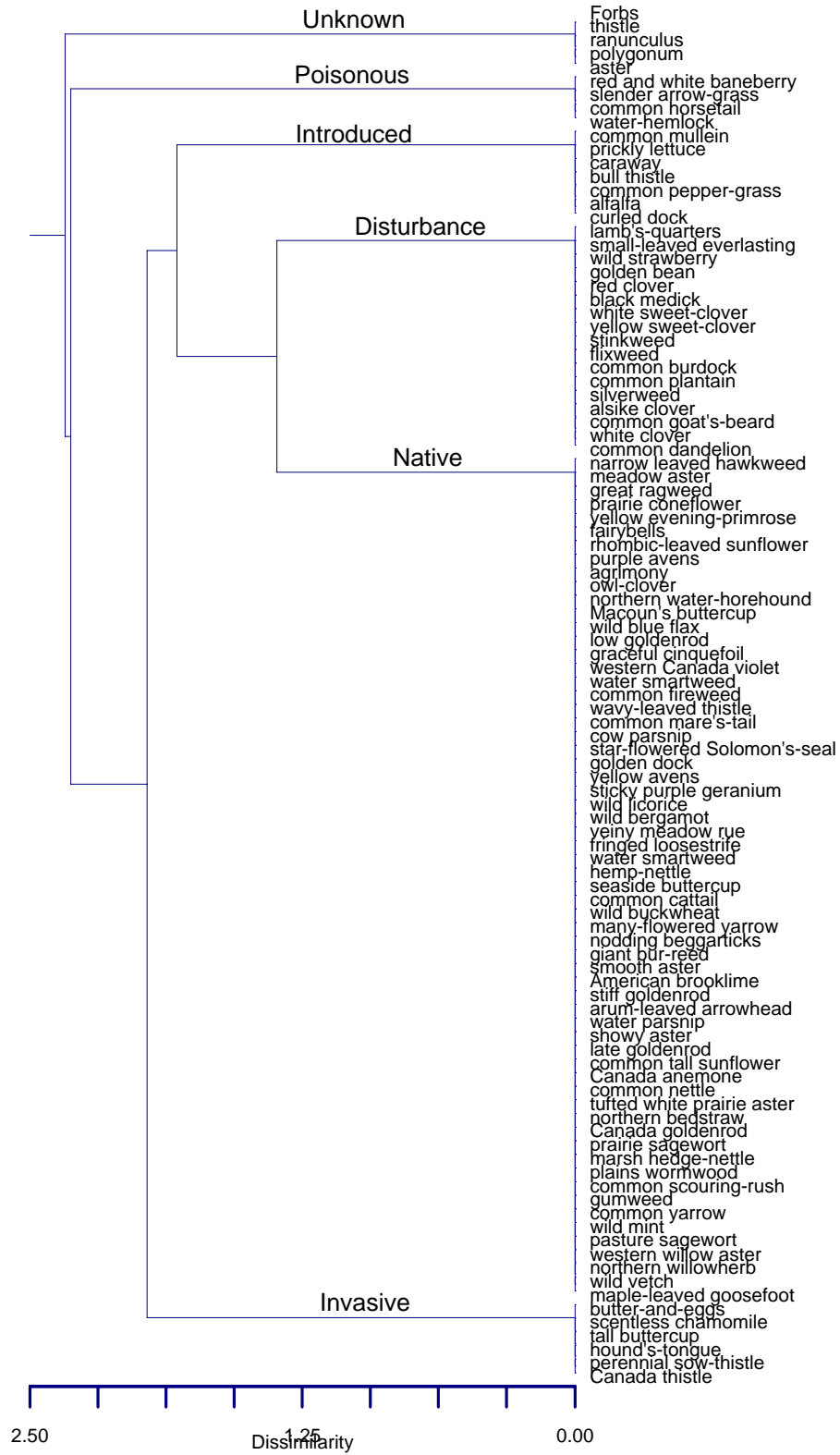


Figure 13. Dendrogram cluster of vegetation (forbs) by type.

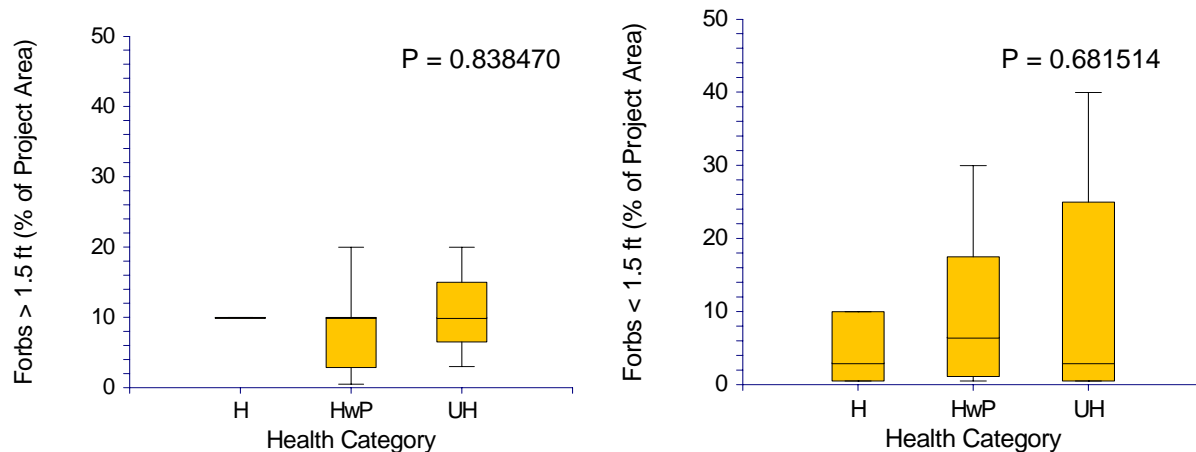


Figure 14. Comparison of forb coverage among the three riparian health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).

3.2.5 Forage Production

Forage biomass was not significantly different among the health categories. The mean graminoid biomass tended to be greater in the healthy and healthy but with problem sites as opposed to the unhealthy sites, whereas the mean forb biomass was greater in the unhealthy sites (Figure 15). Generally, mean shrub biomass was greatest in the healthy sites compared to the healthy but with problems and the unhealthy sites. Mean litter was greater in riparian areas rated healthy but with problems, while the unhealthy sites contained the least amount of litter. Graminoids were highly correlated with total forage production (Pearson Correlation; $r = 0.97$; Regression, $r^2 = 0.92$) and graminoids > 1.5 ft was correlated with litter (Pearson Correlation; $r = 0.65$; Regression $r^2 = 0.42$).

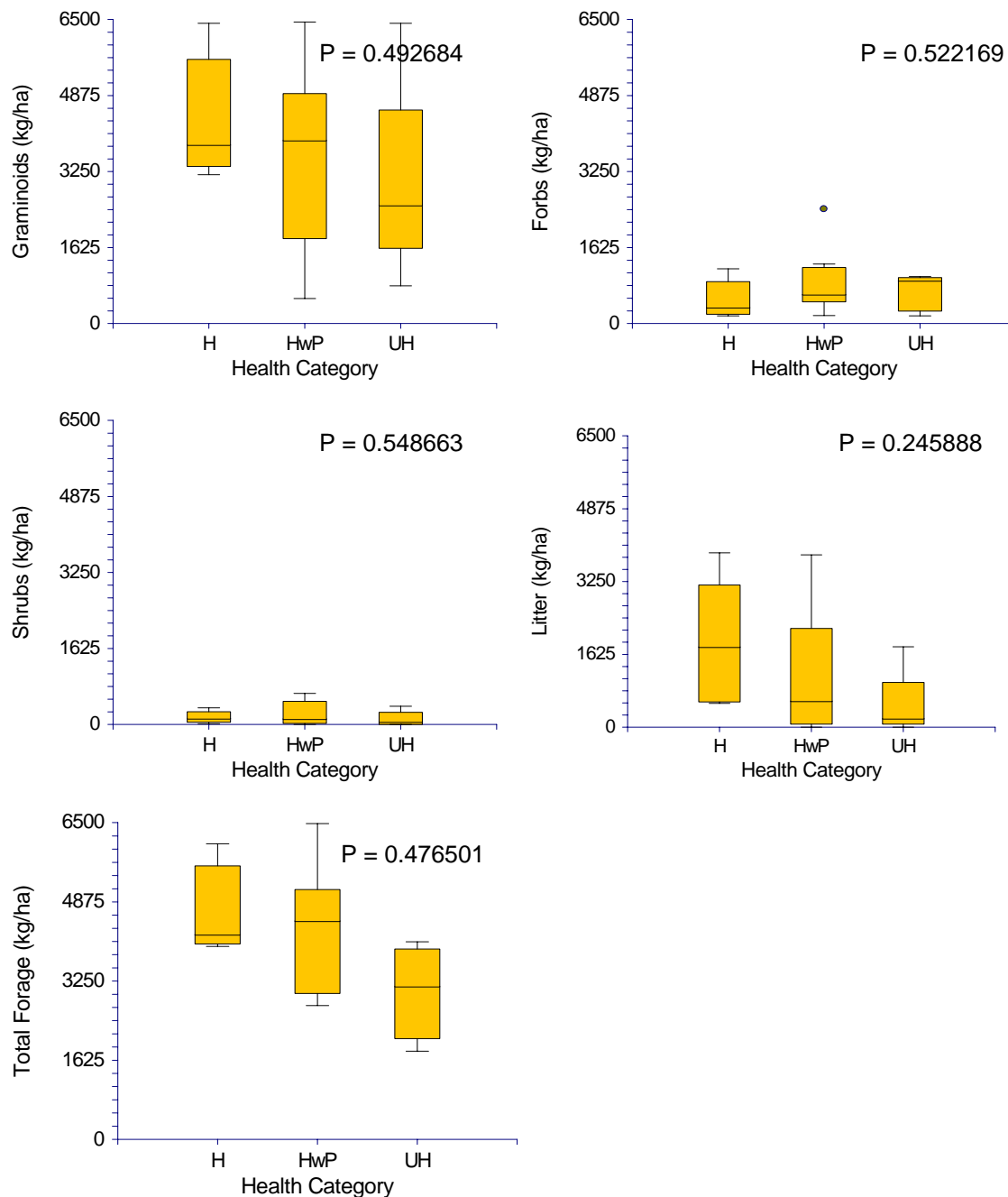


Figure 15. Comparison of forage biomass (kg ha⁻¹) among the riparian health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; P > 0.05, MANOVA).

3.3 Structural Alterations

Structural alterations tended to be greatest in the unhealthy riparian areas compared to the healthy and healthy but with problem sites (Figure 16). Unhealthy sites had significantly greater area of

altered banks compared to the healthier sites (MANOVA; $P < 0.05$) (Figure 16). The area impacted by hoof shear and bareground was also greater in the unhealthy sites, although the difference was not significant (MANOVA; $P > 0.05$). The area covered by trails was not significantly different among the three health categories. Overall scores for structural alterations were significantly different among the health categories with healthy sites receiving greater scores (i.e., better health) than unhealthy sites (MANOVA; $P = 0.003$) (Figure 16).

The soil-hydrology score is the sum of root mass protection, human-caused bare ground, structural alterations to the streambank, human physical alterations to the rest of the polygon and channel incisement. The soil-hydrology score was strongly and positively correlated to riparian health scores (Pearson Correlation; $r = 0.83$), suggesting that soil-hydrology scores increase with improved riparian health. Soil-hydrology scores were significantly greater in the healthy and healthy but with problems sites (MANOVA; $P < 0.05$) compared to the unhealthy sites. Hoof shear and trails were not correlated to the other indicators.

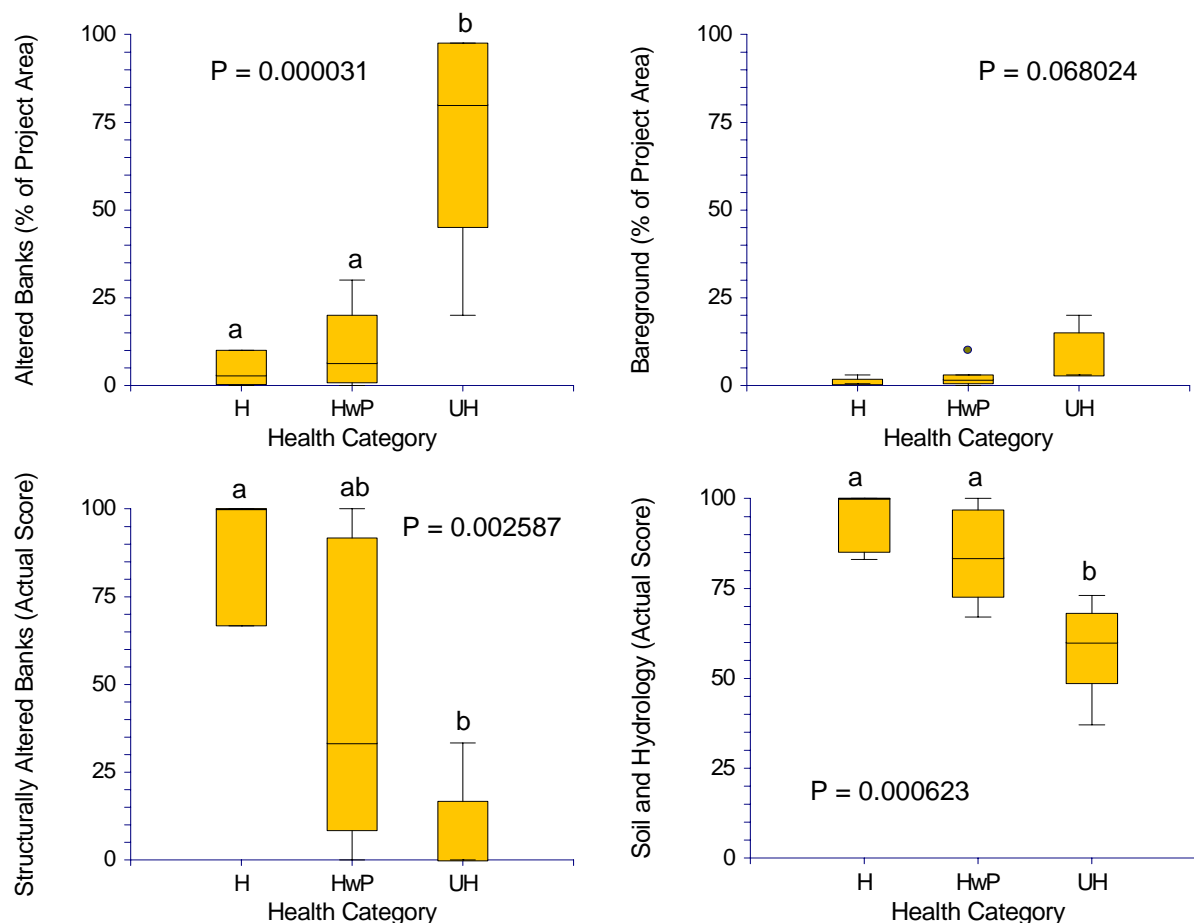


Figure 16. Comparison of structural alterations and soil-hydrology metrics among riparian health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).

3.4 Bird Diversity

Sixty-three species of birds were observed during the bird surveys. Nearly half (46%) of all bird species observed were found in all three riparian health categories. Eight bird species were unique to healthy riparian areas, six bird species were unique to riparian areas that were healthy but with problems, and three bird species were only observed in unhealthy riparian sites (Figure 17).

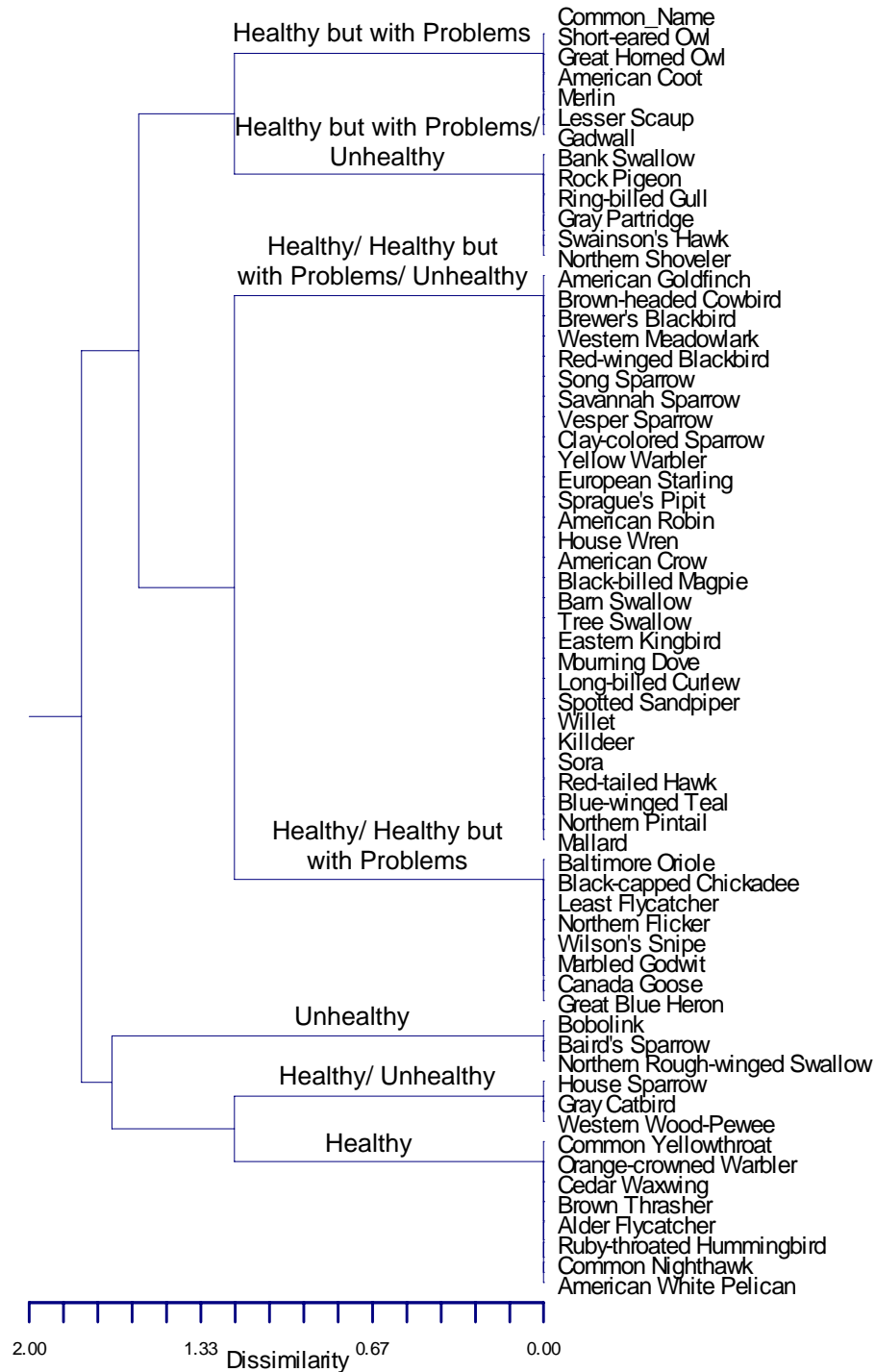


Figure 17. Dendrogram cluster of bird species observed in each of the riparian health categories.

Riparian areas considered healthy but with problems contained the greatest diversity of bird species observed during the study. Seventy-eight percent of bird species identified were observed in healthy but with problems sites. Seventy-six percent of the bird species identified were found in healthy riparian areas and only 65% of the bird species identified were found in unhealthy sites (Figure 17).

The numbers of confirmed breeding birds was significantly greater in healthy sites compared to riparian areas that were healthy but with problems or unhealthy ($P < 0.05$) (Figure 18). However, only three different bird species were confirmed breeding in healthy riparian areas compared to five different species breeding in riparian areas that were healthy but with problems (Table 4).

Table 4. Number of confirmed breeding bird species identified at the six study sites.

Species Confirmed Breeding	Health Category		
	Healthy	Healthy but with Problems	Unhealthy
American Robin	0	0	1
Brewer's Blackbird	1	2	0
Brown Thrasher	1	0	0
Clay-coloured Sparrow	3	5	0
Gray Catbird	1	0	0
Red-winged Blackbird	1	0	0
Savannah Sparrow	0	0	1
Song Sparrow	1	0	0
Yellow Warbler	4	1	0
Total Number of Species	7	3	2
Total Number of Breeding Pairs	12	8	2

The number of confirmed breeding birds was positively correlated with riparian health categories (Pearson Correlation; $r = 0.64$; Regression $r^2 = 0.40$), suggesting that more birds may be observed breeding in healthy riparian areas compared to riparian areas that are healthy but with problems or unhealthy. The number of species using riparian areas was also moderately and positively correlated to shrubs greater than 6 ft (Pearson Correlation; $r = 0.75$; Regression $r^2 = 0.57$).

The results of the cluster analysis showed that the majority of bird species (57%) identified during the bird survey prefer to nest on the ground or low to the ground, and prefer open (agricultural) habitat (69%) (Figure 19).

Four bird species were confirmed breeding in only healthy riparian areas. These species were Brown Thrasher (*Toxostoma rufum*), Gray Catbird (*Dumetella carolinensis*), Red-winged Blackbird (*Agelaius phoeniceus*) and the Song Sparrow (*Melospiza melodia*). Except for the Red-winged Blackbird which prefers open/agricultural ecosystems, all of these species share the same habitat requirements, preferring shrub ecosystems and nesting sites on the ground or in the understory (Figure 20).

Three bird species were confirmed breeding in riparian areas rated as both healthy and healthy but with problems (i.e., Yellow Warbler (*Dendroica petechia*), Brewer's Blackbird (*Euphagus cyanocephalus*) and Clay-Coloured Sparrow (*Spizella pallida*). The Yellow Warbler was confirmed

breeding in all healthy and healthy but with problem riparian areas that contained trees (i.e. Todd Creek, Amisk Creek and Ribstone Creek) (Table 4). Yellow Warblers prefer shrub ecosystems and nest in the mid-storey or in the canopy (Figure 20). Brewer's Blackbird and the Clay-Coloured Sparrow also prefer to nest on the ground or in the understorey low to the ground, but Brewer's Blackbird prefers open/agricultural/grassland ecosystems rather than the shrub ecosystems preferred by the Yellow Warbler and Clay-Coloured Sparrow (Figure 20).

The American Robin (*Turdus migratorius*) and Savannah Sparrow (*Passerculus sandwichensis*) were the only two bird species confirmed breeding in unhealthy riparian areas. The American Robin and Savannah Sparrow prefer open/agricultural/grassland ecosystems, however the former prefers to nest in trees while the latter prefers to nest on the ground.

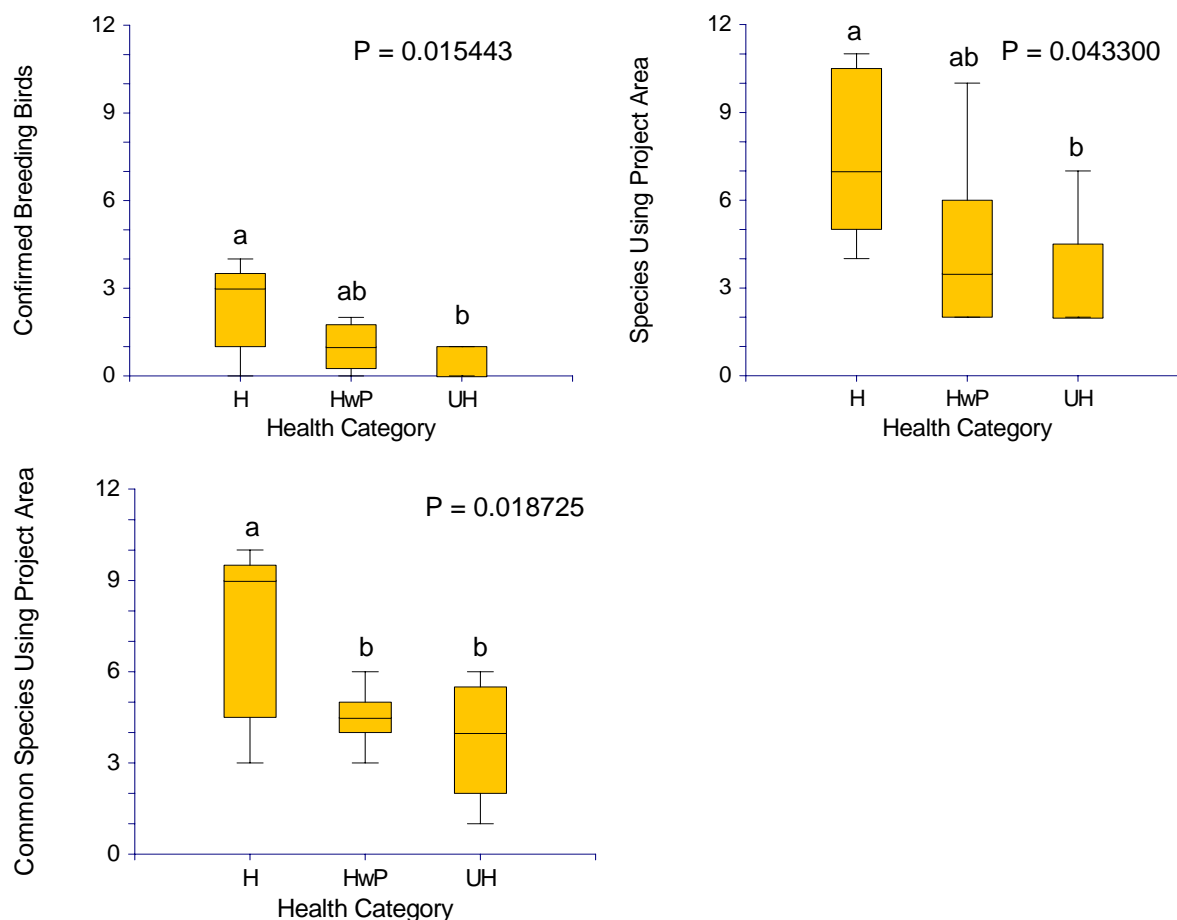


Figure 18. Comparison of confirmed breeding birds in riparian areas and birds using riparian areas among the health categories. Health categories sharing common letters are not statistically different (n=5 for H, n=8 for HwP and n=5 for UH; $P > 0.05$, MANOVA).

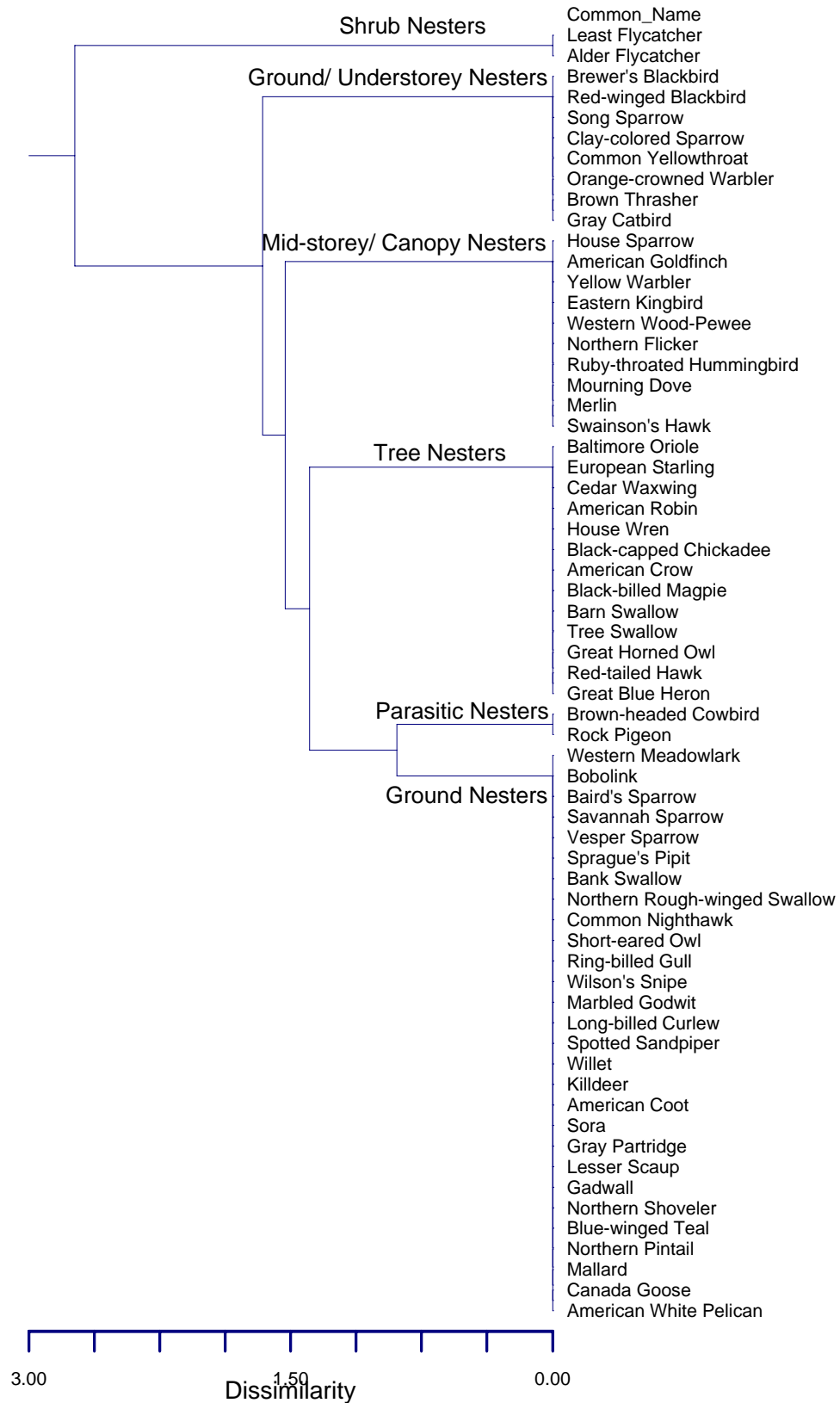


Figure 19. Dendrogram cluster of bird species by nesting preference. (Data collected from Federation of Alberta Naturalists 1993; Fisher and Acorn 1998).

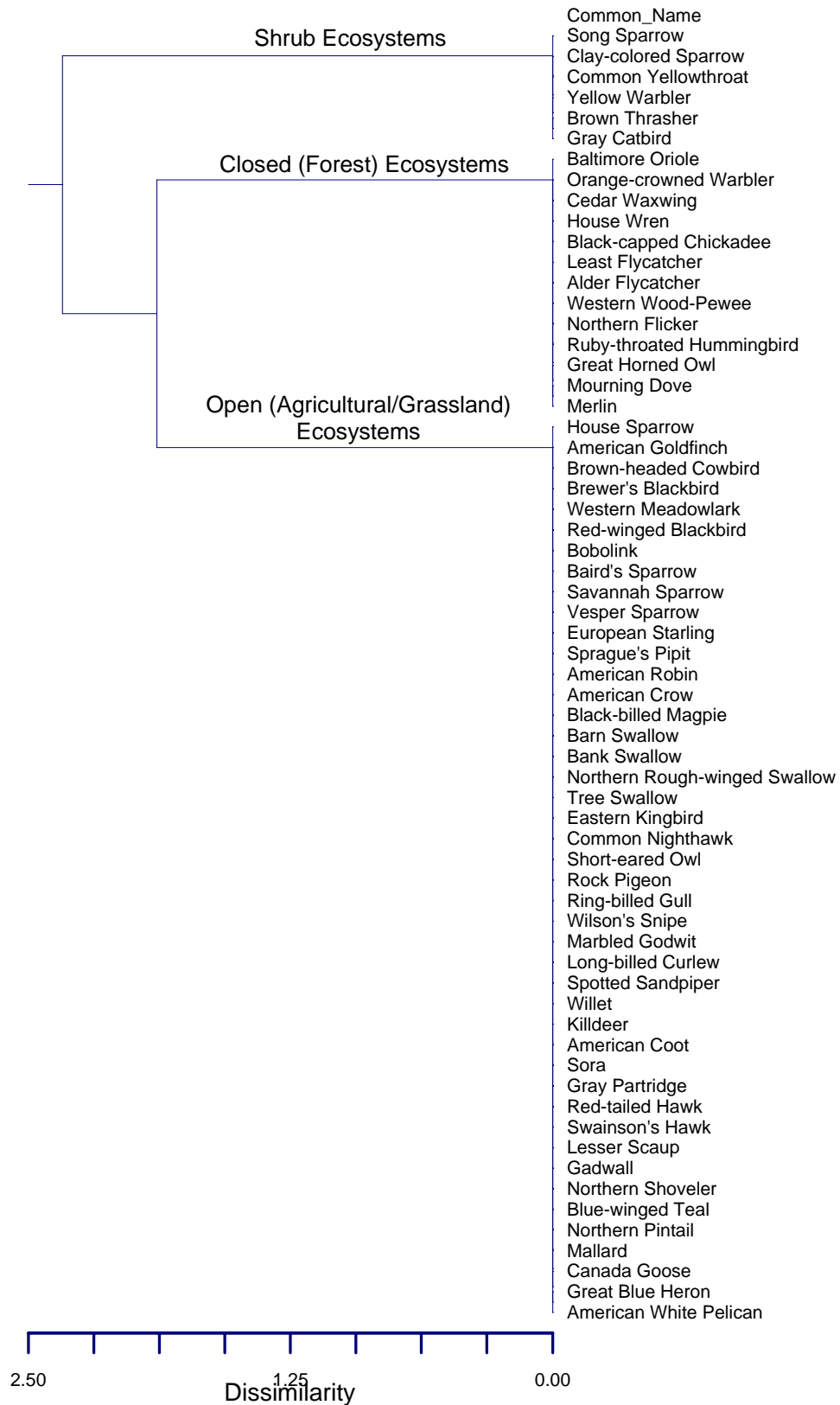


Figure 20. Dendrogram cluster of bird species by habitat preference. (Data collected from Federation of Alberta Naturalists 1993; Fisher and Acorn 1998).

3.5 Discriminant Analysis

The results of the discriminant analysis suggested that the health categories are best explained by seven riparian health parameters. The discriminating factors include physical elements of a site and vegetative structural components. The parameters explaining the health categories are:

- Structurally Altered Banks
- Rootmass Protection
- Grass less than 1.5ft
- Dead and Decadent
- Forbs
- Shrubs
- Shrubs greater than 6ft

Structurally altered banks was the variable of highest influence (Alone F-Value 22.49; $P = 0.000031$), followed by shrubs greater than 6 ft (Alone F-Value 5.35; $P = 0.017589$). The first discriminant function, with an eigenvalue of 17.95, gives almost three times as much discriminating power as does the second function (eigenvalue = 6.62). The first function accounts for 73% of the between-group variance (i.e., separation). The second function accounts for 27% of the total separation achieved. The first function is largely represented altered banks. The second function is equally represented by rootmass protection, dead and decadent woody vegetation and shrubs greater than 6 ft, which together represent vegetation characteristics (Figure 21).

Figure 21 is a scatter plot of the canonical-variate scores. The plot indicates that only the first canonical function (% altered banks) is required to discriminate between the riparian health scores with the lowest percentage of altered banks occurring at healthy sites and the highest percentage of altered banks occurring at unhealthy sites. The second canonical function (vegetation characteristics) provides some ability to discriminate healthy with problem sites from healthy and unhealthy sites. However, the second canonical function cannot separate healthy and unhealthy sites and therefore has limited discriminating power.

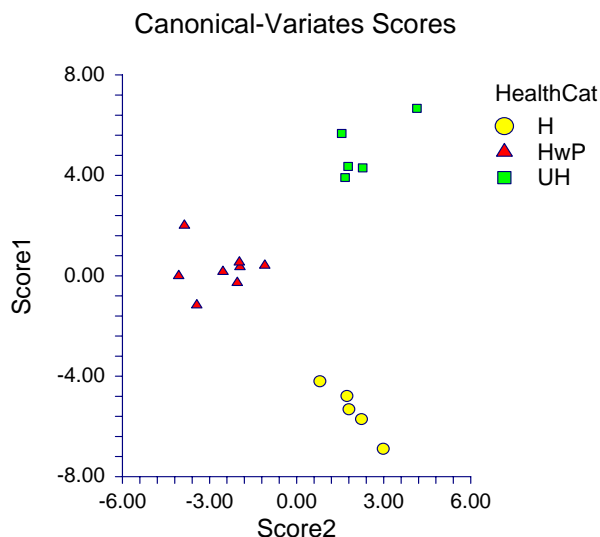


Figure 21. Scatter plot of the discriminant analysis of healthy, healthy with problems and unhealthy riparian sites.

4.0 Discussion

This study was undertaken to identify correlations and links among riparian health as an indicator of ecosystem function, breeding birds and riparian forage production. Ultimately, the study aims to identify riparian health components that can be used as indicators of biodiversity and forage productivity.

The riparian health categories (i.e., healthy, healthy but with problems and unhealthy) are best described by structural alterations to the streambanks and vegetation characteristics. Results of the discriminant analysis showed that altered banks accounted for 73% of the between group variance. The degree of structural alterations to the streambanks was also most strongly correlated with the health scores and moderately correlated to shrubs greater than 6 ft. This suggests that streambanks that have fewer structural alterations also have a greater area covered by shrubs greater than 6 ft.

Structurally altered banks may be used to provide a rapid assessment of riparian health that can be linked to biodiversity by association with shrubs greater than 6 ft, but the measurement taken in isolation does not provide a great deal of insight into biodiversity. Rather, vegetation structure and composition is a better indicator of biodiversity in terms of bird diversity and abundance.

In terms of vegetation composition, healthy riparian areas contained a greater diversity of tree species, compared to sites rated healthy but with problems and unhealthy, respectively. All three health categories contained similar species of shrubs, graminoids and forbs. Riparian areas rated healthy and healthy but with problem sites shared the same shrub species composition (77% of the shrub species identified). However, riparian areas rated healthy but with problems contained a greater diversity of graminoid species and forb species compared to healthy sites.

The main difference among the health categories was in the overall structure and the percent area covered by tree and shrub species rather than in vegetation composition. Healthy riparian areas generally contained a greater variety of trees and shrubs of various age-classes (i.e., seedlings, saplings and mature vegetation) compared to unhealthier sites. Healthy riparian areas were also characterized as having a greater percent area covered by trees, grasses taller than 1.5 ft, shrubs greater than 6 ft and number of woody species compared to unhealthy riparian areas. Unhealthy riparian areas tended to have a greater percent area covered by forbs, weeds and bareground.

Similar to the present study, many authors have found differences in vegetation structure among riparian areas that have been exposed to different grazing intensities. Saunders and Hurly (2000a) reported that a number of shrub species decreased significantly with increased grazing intensity. According to Kauffman and Krueger (1984) grazing impacts can be divided into two categories according to vegetation structure: (1) utilization of herbaceous vegetation and subsequent impacts on species composition, species diversity and biomass produced and, (2) utilization of woody vegetation and subsequent impacts on foliage cover, structural height diversity and stand reproduction.

Vegetation structure and composition is important to biodiversity, particularly in terms of bird diversity and abundance. Different bird species tend to utilize various strata of vegetation depending on their life strategies. The presence or absence of bird species is generally dependent on the complexity and density of vegetation structure, especially shrub and herbaceous layers (Taylor 1986; Scott et al. 2003; Martin and Possingham 2006). This was true in the present study, where the diversity and abundance of confirmed breeding birds increased significantly in healthy riparian areas that provided a denser and varied vegetation structure. The number of confirmed breeding birds

abundance was positively correlated with riparian health categories. A significantly greater diversity and abundance of birds were confirmed breeding in healthy riparian areas compared to healthy but with problems and unhealthy sites. A positive correlation between shrubs greater than 6 ft and healthy riparian areas and between healthy riparian areas and breeding birds suggests that these three metrics are linked and that better nesting habitat was available in healthy riparian areas. Vegetation structure and its alteration influences nesting opportunities and the ultimate longevity of certain bird species. Saab et al. (1995) found that ground nesting species were most affected by cattle grazing, followed by shrub nesting and canopy nesting species. Indeed in this study, all of the breeding bird species observed in the healthy or healthy but with problem sites were classified as ground/understorey nesters (six species) or mid-storey/canopy nesters (one species). This suggests that ground nesters may have better breeding success in areas with shrubs/trees and taller grasses due to reduced predation rates and reduced trampling by cattle.

In this study, the Brown Thrasher, Clay-coloured Sparrow, Song Sparrow, Gray Catbird and Yellow Warbler were only confirmed breeding in riparian areas that were healthy or healthy but with problem. These five species share a similar habitat preference for dense tree and shrub ecosystems and are known riparian obligates (Bureau of Land Management n.d.). They prefer nesting sites near the ground or in the understorey. The Bureau of Land Management (n.d.) defines riparian obligate species as those that place >90% of their nests in riparian vegetation or for which >90% of their abundance occurs in riparian vegetation during the breeding season. Riparian obligates may forage outside riparian vegetation, however without riparian vegetation in good ecological condition, these species will not occur. Saunders and Hurly (2000b) found that the Yellow Warbler was sensitive to disturbance and decreased with increasing grazing intensity. It has been noted that bird species that tend to be negatively affected by cattle grazing are those that rely on understory plants for resources and nesting (Mosconi and Hutto 1981; Saab et al. 1995; Joyce 2000). Nest predation has been found to be one of the potential causal links between long-term grazing regimes and population declines in western riparian birds (Ammon and Stacey 1997). Differences in macrohabitat structure may lead to higher incidental predation, changes in the position of predator assemblages, or changes in predator search strategies (Ammon and Stacey 1997).

Although more birds were confirmed breeding in healthy riparian areas in the present study, a greater species richness of non-breeding birds was observed in riparian areas that were rated healthy but with problems. Riparian areas rated healthy but with problems contained a greater diversity of graminoid species and a larger area covered by short grasses and bareground compared to the healthy sites. This suggests that riparian areas with moderate disturbance (i.e., healthy but with problems) may not provide the required opportune nesting habitat, but may provide increased structural complexity (e.g., short grasses, shrubs and bareground) that allows a greater diversity of bird species to utilize the riparian area to complete at least part of their life strategies. The concept of habitat patches within ecosystems is supported by Jehl (1994) and Ohmart (1994), who suggest that species richness increases with habitats that contain both tree and shrub communities as well as open grassland and bareground areas.

In Alberta, Holgate (2001) found that birds show a decline in species density and species richness as grazing intensity increases. Mosconi and Hutto (1982) found no significant differences in total bird densities between heavily grazed and lightly grazed riparian communities, but did find significant differences in bird species composition and foraging guild. It is likely that bird species richness and abundance are dependent on factors related to vegetation structure and species behaviour in terms of life strategies (e.g., feeding, nesting and migration patterns).

Birds that respond positively to grazing include aerial foragers associated with open habitats and ground foragers associated with open habitats (Joyce 2000). In this study, the American Robin and the Savannah Sparrow were the only two species confirmed breeding in unhealthy riparian areas. These two bird species prefer open/agricultural or grassland ecosystems and the Savannah Sparrow prefers to nest on the ground. The American Robin was likely nesting in one of the few trees observed in the unhealthy sites as this finding is contrary to Saunders and Hurley (2000b) who found that the American Robin seemed to decrease in abundance with greater disturbance.

We can conclude that the riparian health assessment parameters that may be used as indicators for biodiversity (e.g. bird diversity and abundance) are the canopy cover of trees and shrubs and the presence of shrubs greater than 6 ft. These are particularly important when managing for riparian obligate species such as the Brown Thrasher and Yellow Warbler. In this study, nine species of birds, considered common in Alberta and preferring shrub and closed (forest) ecosystems, were observed only in healthy and/or healthy but with problem riparian sites. These species were the Common Yellow Throat, Brown Thrasher, Baltimore Oriole, Orange-crowned Warbler, Cedar Waxwing, Black-capped Chickadee, Least Flycatcher, Alder Flycatcher and Northern Flicker. We suggest that these nine species could be used to form a preliminary shrub/forest guild of birds that could be used as indicator species of healthy or relatively healthy riparian areas.

Riparian health assessment components were not correlated with forage productivity. Riparian areas rated healthy, healthy but with problems and unhealthy can all produce large amounts of forage, although not all forage may contribute to biodiversity (e.g., forbs and weeds). When properly managed, the grazing of domestic livestock is generally compatible with birds, and may even increase the numbers of some species with moderate disturbance (Tubbs 1980). Diversified riparian strip habitats that include trees and tall shrubs can contribute to the preservation of avian diversity in agricultural landscapes (Deschenes et al. 2003).

Study Limitations

Few statistically significant observations were identified in this study, likely due to the deviation from the health category definitions (i.e., designating scores ranging from 61 to 63 as unhealthy rather than healthy but with problems), small bird sample sites due to limitations with actual size of riparian area and natural variability. A small and unequal sample size was also a limitation that may have contributed to only a few significant statistical observations. Finally, there was a high degree of multicollinearity within the data set, indicating many of the parameters are directly related to each other and are not independent.

Although birds show much promise as a taxonomic group of indicators of ecosystem health, their limitations include the high mobility of birds and the regional specificity of bird populations (Noson and Hutto 2005). A final limitation to this study may have been the broad geographic context of the study area (i.e., spanning two different natural regions) in combination with the small sample size.

5.0 Conclusions and Future Study

The riparian health categories (i.e., healthy, healthy but with problems and unhealthy) are best described by structural alterations to the streambanks and vegetation characteristics. Results of the discriminant analysis showed that altered banks accounted for 73% of the between group variance. Healthy riparian areas generally contained a greater variety of trees and shrubs of various age-classes (i.e., seedlings, saplings and mature vegetation) compared to unhealthier sites. Healthy riparian areas

were also characterized as having a greater percent area covered by trees, grasses taller than 1.5 ft, and shrubs greater than 6 ft compared to unhealthy riparian areas. Unhealthy riparian areas tended to have a greater percent area covered by forbs, weeds and bareground. Observing the structural alterations to streambanks and the structure and composition of vegetation in riparian areas will provide land managers with insight into biodiversity in terms of bird diversity and abundance.

Bird communities have been proposed as indicators of ecosystem health because they reflect an integration of a broad array of ecological conditions, including water quality, productivity, vegetation structure and composition, and landscape integrity (Bock and Webb 1984). A study in Australia proposed that bird species sensitive to grazing could be used to monitor the effects of habitat alterations (Jansen and Robertson 2001). The authors suggested that the most sensitive species could be used as 'umbrella' species for monitoring the effects of altered grazing regimes. In assessing the utility of birds as indicators of biodiversity, Noson and Hutto (2005) suggest that an assessment of species groups rather than individuals may be more promising.

Experience on the San Pedro River in Arizona demonstrates that the Common Yellowthroat, among other species, is an excellent indicator of ecosystem recovery following the cessation of livestock grazing (Bureau of Land Management n.d.). This may be true for the present study as well, as this species was only observed in healthy riparian areas. In addition to Common Yellowthroat, we suggest an additional eight species of birds (Brown Thrasher, Baltimore Oriole (*Icterus galbula*), Orange-crowned Warbler (*Vermivora celata*), Cedar Waxwing (*Bombycilla cedrorum*), Black-capped Chickadee (*Poecile atricapillus*), Least Flycatcher (*Empidonax minimus*), Alder Flycatcher (*Empidonax anorum*) and Northern Flicker (*Colaptes auratus*) could be used as a shrub/forest guild to indicate healthy or relatively healthy riparian areas. Additional monitoring should be conducted to assess the occurrence of riparian obligate or dependent bird species to provide a more complete understanding of ecosystem health. Until such time, riparian health assessments and ratings will continue to be an important tool in our understanding of biodiversity.

6.0 Literature Cited

Alberta Environment. 1999. State of the Environment Report: Wildlife. Alberta Environment, Edmonton, Alberta. 60 pp.

Alberta Environmental Protection. 1995. Sustaining Alberta's Biodiversity: An Overview of Government of Alberta Initiatives Supporting the Canadian Biodiversity Strategy. 51 pp.

Ammon, E.S. and P.B. Stacey. 1997. Avian nest success in relation to past grazing regimes in a montane riparian system. *The Condor*. 99: 7-13.

Angermeier, P.L. 1997. Conceptual roles of biological integrity and diversity. Pages 49-65 in J.E. Williams, C.A. Wood and M.P. Dombeck, editors. *Watershed restoration, principles and practices*. American Fisheries Society, Bethesda, Maryland.

Bock, C.E. and B. Webb. 1984. Birds as a grazing indicator species in Southeastern Arizona. *Journal of Wildlife Management*. 48: 1045-1049.

Bureau of Land Management. No date. Birds as indicators of riparian vegetation condition in the western U.S. Bureau of Land Management, Partners in Flight, Boise, Idaho. BLM/ID/PT-

98/004+6635. Jamestown, ND: Northern Prairie Wildlife Research Center Online.
<http://www.npwrc.usgs.gov/resource/birds/ripveg/index.htm> (Version 15DEC98).

Cerney, Linda D. 2006. Breeding bird surveys at select riparian sites in central and southern Alberta. Cows and Fish Report No. 029. Prepared for Cows and Fish, Lethbridge, Alberta. 74 pp.

Cows and Fish. 2006. Alberta Lotic Wetland Health Assessment for Streams and Small Rivers (Survey) User Manual. Online Resource Accessed January 28, 2008.
<http://www.cowsandfish.org/health.html> . Note this resource is updated as new information becomes available.

Deschenes, M., L. Belanger and J. Giroux. 2003. Use of farmland riparian strips by declining and crop damaging birds. Agriculture Ecosystems and Environment. 95: 567-577.

Desserud, P., M. Wood and D. Warner. 2006. Forage Production Survey of Riparian Areas in the Grassland and Parkland Natural Regions of Alberta. Cows and Fish Report No. 028. Prepared for Cows and Fish, Lethbridge, Alberta. 143 pp.

Federation of Alberta Naturalists. 1998. The Atlas of Breeding Birds of Alberta. G. Semenchuk (Ed.), Edmonton, Alberta. 391 pp.

Fisher, C. and J. Acorn. 1998. Birds of Alberta. Lone Pine Publishing. Edmonton, AB. 384 pp.

Fitch, L., B. Adams and G. Hale. 2001. Riparian Health Assessment for Streams and Small Rivers – Field Workbook. Cows and Fish Program, Lethbridge, AB. 86 pp. Adapted from Riparian and Wetland Research Program, School of Forestry. 2001. Lotic health assessments: Riparian Health Assessment for Streams and Small Rivers (Survey) User Guide. University of Montana, Missoula, Montana, January 2001.

Fitch, L., B. Adams, and K. O'Shaughnessy. 2003. Caring for the Green Zone: Riparian Areas and Grazing Management - Third Edition. Cows and Fish Program, Lethbridge, Alberta. 51 pp.

Hintze, J. 2006. NCSS Statistical System User's Guide I – V. Kaysville, Utah.

Holgate, K. 2001. The Effects of Cattle Grazing on the Reproductive Success of Riparian Forest Birds. M.Sc. Thesis. University of Lethbridge, Lethbridge, Alberta. 121 pp.

Martin, T.G. and H.P. Possingham. 2005. Predicting the impact of livestock grazing on birds using foraging height data. Journal of Applied Ecology. 42: 400-408.

Jansen, A. and A. Robertson. 2001. Riparian bird communities in relations to land management practices in floodplain woodlands of south-eastern Australia. Biological Conservation. 100: 173-185.

Jehl, J.R., Jr. 1994. Studies in Avian Biology. 15: 274-284.

Joyce, S. 2000. Habitat Associations of Pembina Valley Birds: Responses to Grazing. M.N.R.M. Thesis. University of Manitoba, Manitoba. 128 pp.

Kauffman, J.B. and W.C. Krueger. 1984. Livestock impacts on riparian ecosystems and streamside management implications...A review. *Journal of Range Management*. 37: 430-438.

Krohne, D. T. 2001. Species Diversity in General Ecology. Brooks/Cole Thomson Learning. pp. 295-322.

Martin, T.G., S. McIntyre, C.P. Catterall and H.P. Possingham. 2006. Is landscape context important for riparian conservation? Birds in grassy woodland. *Biological Conservation*. 127: 201-214.

Morgan, K.H. and S.P. Wetmore. 1986. A study of riparian bird communities from the dry interior of British Columbia. Series Display Technical Report Series / Pacific and Yukon Region, Canadian Wildlife Service no. 11 ISSN 0831-6481.

Mosconi, S.L. and R.L. Hutto. 1981. The Effect of Grazing on the Land Birds of a Western Montana Riparian Habitat. Pages 221-223 in Symposium: Wildlife-Livestock Relationships. Department of Wildlife Management, College of Forestry, University of Idaho, Moscow, Idaho.

Noson, A.C. and R.L. Hutto. 2005. Using Bird Indices of Biotic Integrity to Assess the Condition of Wetlands in Montana. Avian Science Centre, Missoula, Montana. 53 pp.

Noss, R. 1990. Indicators for monitoring biodiversity: A hierarchical approach. *Conservation Biology* 4:355-364.

Ohmart, R.D. 1994. The effects of human-induced changes on the avifauna of western riparian habitats. Pages 273-285 in J.R. Jehl, Jr. and N.K. Johnson, (eds.) A Century of Avifaunal Change in Western North America. Studies in Avian Biology No. 15.

Parks Canada. 2007. Parks Canada and Ecological Integrity. Online Resource. Accessed February 2, 2008. http://www.pc.gc.ca/apprendre-learn/prof/sub/edukit/activities/index_2_e.asp

Saab, V.A., C.E. Bock, T.D. Rich and D.S. Dobkin. 1995. Livestock Grazing Effects in Western North America. Pages 311-352 in T. Martin and D.M. Finch, (eds.) Ecology and Management of Neotropical Migratory Birds. New York: Oxford University Press.

Saunders, E.J. and T.A. Hurlly. 2000a. Birds, Creeks & Cows: The Influence of Cattle Grazing on Birds and Vegetation in Cottonwood Forests Along the Oldman River. In, Proceedings of the Western Range Science Seminar - The Range: Progress and Potential. January 23-25, 2000, Lethbridge, Alberta. Agriculture, Food and Rural Development and Agriculture and Agri-Food Canada.

Saunders, E.J. and T.A. Hurlly. 2000b. The Influence of Grazing on Bird Populations along a Prairie Creek in Southern Alberta. Alberta Environment, Lethbridge, AB. 15 pp.

Scott, M.L., S.K. Skagen and M.F. Merigliano. 2003. Relating geomorphic change and grazing to avian communities in riparian forests. *Conservation Biology*. 17:284-296.

Sokal, R.R. and F.J. Rohlf. 1995. *Biometry*, 3rd Edition. W.H. Freeman and Company, New York. 887 pp.

Stauffer, D.F. and L.B. Best. 1980. Habitat selection by birds of riparian communities. Evaluation of effects of habitat alterations. *Journal of Wildlife Management*. 44(1): 1.

Taylor, D.M. 1986. Effects of cattle grazing on passerine birds nesting in riparian habitat. *Journal of Range Management*. 39(3): 254-258.

Tubbs, A.A. 1980. Riparian Bird Communities of the Great Plains. *in* R.M. DeGrass and N.G. Tilgham, (eds.) *Management of Western Forests and Grasslands for Non-game Birds*. Technical Report INT-86. United States Department of Agriculture Forest Service.

Appendix A. Raw data set used in the study.

Riparian Area	Health Score	Health Category	Health Rating	Size	Trees	Treesgr6ft	Treesgr1.5ft
	%		#	ha	P/A	%	%
LYN26	82	H	3	0.53	0	0	0
LYN25	68	HwP	2	3.25	0	0	0
LYN23	61	UH	1	20.13	0	0	0
BVR39	82	H	3	19.47	0	0	0
BVR36	65	HwP	2	0.42	0	0	0
BVR35	63	UH	1	0.34	0	0	0
TOD4	81	H	3	0.4	1	0.005	0
TOD6	74	HwP	2	0.73	1	0	0.005
TOD5	68	HwP	2	1.02	0	0	0
AMI4	84	H	3	1.18	1	0.2	0.03
AMI3	68	HwP	2	13.13	0	0	0
AMI5	44	UH	1	0.71	1	0.03	0.005
IRO31	71	HwP	2	0.7	0	0	0
IRO33	71	HwP	2	1.14	0	0	0
IRO35	61	UH	1	1.15	0	0	0
RIB19	79	H	3	0.81	1	0.03	0.005
RIB18	72	HwP	2	0.57	1	0.005	0.005
RIB17	63	UH	1	0.71	0	0	0

Riparian Area	Treesle1.5ft	Shrubsgr6ft	Shrubsgr1.5ft	Shrubsle1.5ft	Grassgr6ft	Grassgr1.5ft	Grassle1.5ft
	%	%	%	%	%	%	%
LYN26	0	0.6	0.3	0.1	0	0.9	0.03
LYN25	0	0.03	0.6	0.2	0	0.4	0.4
LYN23	0	0.005	0.4	0.005	0	0.6	0.3
BVR39	0	0.6	0.2	0.03	0.005	0.9	0.03
BVR36	0	0.6	0.2	0.03	0	0.8	0.1
BVR35	0	0.5	0.1	0.03	0	0.1	0.7
TOD4	0.005	0.4	0.2	0.1	0.005	0.4	0.3
TOD6	0	0.3	0.1	0.005	0.005	0.8	0.1
TOD5	0	0.4	0.2	0.1	0	0.5	0.3
AMI4	0.005	0.4	0.2	0.005	0.005	0.8	0.2
AMI3	0	0.005	0.1	0.005	0.005	0.6	0.3
AMI5	0.005	0.1	0.1	0.005	0	0.3	0.2
IRO31	0	0.005	0.4	0.03	0	0.4	0.5
IRO33	0	0	0.3	0.1	0	0.6	0.3
IRO35	0	0	0.2	0.03	0	0.2	0.7
RIB19	0.005	0.5	0.3	0.03	0	0.7	0.2
RIB18	0	0	0.1	0.005	0	0.3	0.5
RIB17	0	0.1	0.5	0.03	0	0.4	0.3

Riparian Area	Forbsgr6ft	Forbsgr1.5ft	Forbsle1.5ft	CC_Trees	CC_Shrubs	CC_Grams	CC_Forbs	CC_Wood
	%	%	%	%	%	%	%	%
LYN26	0.005	0.1	0.1	0	0.9	0.9	0.2	0.9
LYN25	0	0.1	0.005	0	0.8	0.8	0.1	0.8
LYN23	0	0.1	0.03	0	0.4	0.9	0.2	0.4
BVR39	0	0.1	0.03	0	0.7	0.9	0.1	0.7
BVR36	0	0.1	0.03	0	0.8	0.9	0.1	0.8
BVR35	0	0.1	0.1	0	0.6	0.8	0.2	0.6
TOD4	0.005	0.1	0.005	0.005	0.6	0.7	0.1	0.6
TOD6	0	0.1	0.005	0.005	0.4	0.9	0.1	0.4
TOD5	0	0.005	0.1	0	0.7	0.8	0.1	0.7
AMI4	0	0.1	0.1	0.2	0.6	0.975	0.2	0.7
AMI3	0	0.1	0.1	0	0.1	0.9	0.2	0.1
AMI5	0	0.2	0.005	0.03	0.2	0.5	0.2	0.2
IRO31	0	0.1	0.2	0	0.4	0.9	0.3	0.4
IRO33	0	0.2	0.03	0	0.3	0.9	0.2	0.3
IRO35	0	0.03	0.4	0	0.2	0.8	0.4	0.2
RIB19	0	0.1	0.005	0.03	0.9	0.9	0.1	0.9
RIB18	0	0.005	0.3	0.005	0.1	0.7	0.3	0.1
RIB17	0	0.1	0.005	0	0.6	0.7	0.1	0.6

Riparian Area	CC_Weeds	CC_All	AltBanks	HoofShear	Trails	Bareground	VegCover	CC_Invasiveveg
	%	%					%	%
LYN26	0.03	0.975	0.005	0.3	0.7	0.005	100.00	33.33
LYN25	0.1	0.975	0.3	0.975	0	0.005	100.00	33.33
LYN23	0.1	0.975	0.7	0.975	0.005	0.03	100.00	33.33
BVR39	0.005	0.975	0.1	0.7	0.2	0.005	100.00	66.67
BVR36	0.005	0.975	0.2	0.8	0.2	0.03	100.00	66.67
BVR35	0.1	0.9	0.2	0.6	0.005	0.03	66.67	33.33
TOD4	0.005	0.975	0	0	0	0.005	100.00	66.67
TOD6	0.03	0.975	0.03	0.2	0.2	0.03	100.00	33.33
TOD5	0.03	0.975	0.03	0.9	0.1	0.03	100.00	33.33
AMI4	0.1	0.975	0.03	0.975	0	0.005	100.00	33.33
AMI3	0.1	0.975	0.2	0.975	0	0	100.00	33.33
AMI5	0.03	0.8	0.8	0.7	0.3	0.2	33.33	33.33
IRO31	0.03	0.975	0	0	0	0.005	100.00	33.33
IRO33	0.03	0.975	0	0	0	0.005	100.00	33.33
IRO35	0.03	0.975	0.975	0.9	0.1	0.03	100.00	33.33
RIB19	0.005	0.975	0.1	0.9	0.1	0.03	100.00	66.67
RIB18	0	0.9	0.1	0.8	0.2	0.1	66.67	100.00
RIB17	0.005	0.9	0.975	0.975	0	0.1	66.67	66.67

Riparian Area	DD_Invasiveveg %	Dist_Undesveg %	Tree_Shrub_EstReg %	Utilization %	Dead and Dec %	Rootmass Prot. %
LYN26	0.00	0.00	0.00	100.00	100.00	100.00
LYN25	0.00	33.33	0.00	100.00	100.00	66.67
LYN23	0.00	0.00	0.00	100.00	100.00	33.33
BVR39	33.33	66.67	0.00	100.00	100.00	100.00
BVR36	33.33	0.00	0.00	100.00	100.00	33.33
BVR35	0.00	0.00	0.00	100.00	100.00	33.33
TOD4	33.33	0.00	33.33	0.00	100.00	100.00
TOD6	0.00	0.00	100.00	0.00	66.67	66.67
TOD5	0.00	0.00	0.00	100.00	100.00	33.33
AMI4	0.00	0.00	66.67	0.00	100.00	100.00
AMI3	0.00	33.33	0.00	100.00	66.67	100.00
AMI5	0.00	33.33	100.00	0.00	100.00	33.33
IRO31	0.00	0.00	0.00	100.00	100.00	0.00
IRO33	0.00	0.00	0.00	100.00	100.00	0.00
IRO35	0.00	0.00	0.00	100.00	100.00	100.00
RIB19	33.33	0.00	100.00	0.00	100.00	100.00
RIB18	100.00	66.67	33.33	100.00	100.00	100.00
RIB17	33.33	33.33	0.00	100.00	100.00	100.00

Riparian Area	HC Bareground %	Structaltbanks %	HC_Altpolygon %	Channel Incisement %	Veg %	Soil/ Hydro %	Overall %
LYN26	100.00	100.00	100.00	100.00	48.00	100.00	75.00
LYN25	100.00	33.33	100.00	100.00	52.00	80.00	67.00
LYN23	66.67	0.00	100.00	100.00	48.00	60.00	54.00
BVR39	100.00	66.67	0.00	100.00	63.00	83.00	74.00
BVR36	66.67	33.33	100.00	100.00	56.00	67.00	61.00
BVR35	100.00	33.33	100.00	100.00	41.00	73.00	58.00
TOD4	100.00	100.00	100.00	100.00	52.00	100.00	77.00
TOD6	100.00	100.00	33.33	100.00	56.00	87.00	72.00
TOD5	66.67	100.00	100.00	100.00	48.00	80.00	65.00
AMI4	100.00	100.00	100.00	100.00	52.00	100.00	77.00
AMI3	100.00	33.33	100.00	100.00	48.00	87.00	68.00
AMI5	0.00	0.00	0.00	100.00	48.00	37.00	42.00
IRO31	100.00	0.00	100.00	100.00	48.00	100.00	69.00
IRO33	100.00	0.00	100.00	100.00	48.00	100.00	69.00
IRO35	66.67	0.00	0.00	100.00	48.00	63.00	56.00
RIB19	66.67	66.67	100.00	100.00	67.00	87.00	77.00
RIB18	33.33	66.67	0.00	100.00	74.00	70.00	72.00
RIB17	33.33	0.00	33.33	100.00	52.00	60.00	56.00

Riparian Area	Medium Boulders	Small Boulders	Large Cobble	Small Cobble	Coarse Gravel	Fine Gravel	Sand	Silt and Clay	Graminoids	Forbs
	%	%	%	%	%	%	%	%	kg ha ⁻¹	kg ha ⁻¹
LYN26	0.5	0.5	3	3	0.5	0.5	30	70	6415.64	163.44
LYN25	0.5	0.5	10	3	10	3	30	50	3984.10	477.25
LYN23	0	0	0.5	0.5	3	10	30	60	6415.64	163.44
BVR39	0.5	0.5	0.5	0.5	0.5	0.5	20	80	4878.75	1169.55
BVR36	3	3	3	0.5	0.5	0.5	30	60	1709.16	531.44
BVR35	0.5	0.5	0.5	0.5	3	10	40	50	2405.90	368.25
TOD4	0.5	0.5	0.5	3	3	3	60	30	3823.84	236.32
TOD6	0.5	0	0.5	0.5	3	3	30	70	3855.28	461.56
TOD5	0.5	0.5	3	30	20	10	0.5	40	5130.16	1270.80
AMI4	0	0	0	0	0.5	0.5	20	80	3529.92	348.16
AMI3	0	0	0	0	0	0	0	0	6445.20	978.80
AMI5	0	0	0	0	0.5	0.5	20	80	2531.2	920.48
IRO31	0	0	0	0	0	0	0	0	2136.48	719.28
IRO33	0	0	0	0	0	0	0	0	4270.00	172.40
IRO35	0.5	0.5	0.5	0.5	0.5	0.5	10	90	807.20	1002.80
RIB19	0	0	0	0	0	0	30	70	3182.12	624.68
RIB18	0	0	0	0	0	0.5	30	70	533.72	2443.52
RIB17	0	0	0	0	0	0	30	70	2708.84	958.24

Riparian Area	Shrubs	Total forage	Litter	Confirmbreed	Possiblebreed	Breed+Poss_Birds	Speciesusing
	kg ha ⁻¹	kg ha ⁻¹	kg ha ⁻¹	#	#	#	#
LYN26	133.96	6713.04	1794.40	0	4	4	11
LYN25	665.70	5127.05	593.90	2	0	2	2
LYN23	133.96	6713.04	1794.40	1	2	3	2
BVR39	16.80	6065.10	3888.20	3	1	4	7
BVR36	503.84	2744.44	2574.16	2	4	6	10
BVR35	61.10	2835.25	197.15	1	3	4	7
TOD4	190.76	4250.92	596.32	2	2	4	4
TOD6	460.72	4777.56	0.00	1	3	4	6
TOD5	79.64	6480.60	1082.48	0	0	0	2
AMI4	81.40	3959.48	2452.64	3	3	6	10
AMI3	0.00	7424.00	577.60	1	4	5	4
AMI5	0.00	3451.68	134	0	0	0	2
IRO31	167.60	3023.36	272.40	1	6	7	6
IRO33	44.40	4486.80	3844.80	1	2	3	3
IRO35	0.00	1810.00	0.00	0	2	2	2
RIB19	355.64	4162.44	530.80	4	2	6	6
RIB18	17.56	2994.8	0.00	0	2	2	2
RIB17	388.80	4055.88	203.92	0	3	3	2

Riparian Area	Commspeciesusing	Totalspeciesobs.
	#	#
LYN26	9	18
LYN25	6	14
LYN23	3	13
BVR39	6	17
BVR36	5	13
BVR35	5	21
TOD4	3	10
TOD6	5	16
TOD5	5	16
AMI4	9	26
AMI3	4	15
AMI5	6	17
IRO31	3	15
IRO33	4	16
IRO35	1	10
RIB19	10	18
RIB18	4	12
RIB17	4	14

Appendix B. Vegetation Species list and percent cover (as a decimal) for each study site.

Common Name	Scientific Name	Lyndon Creek			Beaver Creek			Todd Creek			Amisk Creek			Iron Creek			Ribstone Creek		
		H	HWP	UH	H	HWP	UH	H	HWP	HWP	H	HWP	UH	HWP	HWP	UH	H	HWP	UH
TREES																			
balsam poplar	<i>Populus balsamifera</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
cottonwood	<i>Populus spp.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Manitoba maple	<i>Acer negundo</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.005	0.000
narrow-leaf cottonwood	<i>Populus angustifolia</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
white birch	<i>Betula papyrifera</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000
SHRUBS																			
basket willow	<i>Salix petiolaris</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.100	0.005	0.000	0.000	0.005	0.000	0.000	0.000
beaked willow	<i>Salix bebbiana</i>	0.005	0.005	0.005	0.200	0.030	0.000	0.200	0.300	0.030	0.300	0.005	0.100	0.005	0.005	0.000	0.030	0.000	0.005
buckbrush/snowberry	<i>Symphoricarpos occidentalis</i>	0.200	0.200	0.300	0.030	0.200	0.005	0.005	0.005	0.030	0.100	0.030	0.100	0.300	0.300	0.200	0.200	0.100	0.200
Canada buffaloberry	<i>Shepherdia canadensis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
choke cherry	<i>Prunus virginiana</i>	0.000	0.000	0.000	0.000	0.100	0.030	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000
common wild rose	<i>Rosa woodsii</i>	0.400	0.400	0.100	0.030	0.300	0.100	0.000	0.000	0.000	0.030	0.000	0.030	0.000	0.000	0.000	0.000	0.005	0.300
false mountain willow	<i>Salix pseudomonticola</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
flat-leaved willow	<i>Salix planifolia</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
golden currant	<i>Ribes aureum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000
low-bush cranberry	<i>Viburnum edule</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
narrow-leaved meadowsweet	<i>Spiraea alba</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000
northern gooseberry	<i>Ribes oxycanthoides</i>	0.005	0.005	0.005	0.005	0.030	0.030	0.005	0.005	0.030	0.000	0.000	0.005	0.005	0.005	0.000	0.005	0.000	0.005
prickly rose	<i>Rosa acicularis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.005	0.100	0.000	0.000	0.000	0.100	0.100	0.030	0.200	0.000	0.000
red-osier dogwood	<i>Cornus stolonifera</i>	0.030	0.030	0.000	0.030	0.100	0.030	0.100	0.005	0.200	0.030	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000
round-leaved hawthorn	<i>Crataegus rotundifolia</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.005	0.000
sandbar willow	<i>Salix exigua</i>	0.100	0.100	0.005	0.300	0.200	0.005	0.030	0.005	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.005
Saskatoon	<i>Amelanchier alnifolia</i>	0.005	0.005	0.000	0.000	0.000	0.005	0.030	0.005	0.000	0.100	0.000	0.000	0.000	0.005	0.000	0.030	0.000	0.000
scarlet mallow	<i>Sphaeralcea coccinea</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
shrubby cinquefoil	<i>Potentilla fruticosa</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
silverberry	<i>Elaeagnus commutata</i>	0.200	0.200	0.005	0.100	0.030	0.000	0.030	0.005	0.005	0.005	0.000	0.005	0.005	0.000	0.000	0.100	0.005	0.100
water birch	<i>Betula occidentalis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
wild red currant	<i>Ribes triste</i>	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000
wild red raspberry	<i>Rubus idaeus</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.030	0.000	0.005	0.005	0.005	0.000	0.005	0.000	0.000
willow	<i>Salix spp.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
yellow willow	<i>Salix lutea</i>	0.005	0.005	0.005	0.300	0.100	0.300	0.400	0.100	0.300	0.000	0.000	0.000	0.000	0.000	0.005	0.030	0.000	0.005
GRAMINOIDS																			

ARHMS – Cows and Fish

Common Name	Scientific Name	Lyndon Creek			Beaver Creek			Todd Creek			Amisk Creek			Iron Creek			Ribstone Creek		
		H	HWP	UH	H	HWP	UH	H	HWP	HWP	H	HWP	UH	HWP	HWP	UH	H	HWP	UH
awned sedge	<i>Carex atherodes</i>	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.005	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
blue grama	<i>Bouteloua gracilis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000
bluegrass	<i>Poa spp.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000
bluejoint	<i>Calamagrostis canadensis</i>	0.005	0.005	0.005	0.005	0.000	0.005	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000
Canby bluegrass	<i>Poa canbyi</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
common great bulrush	<i>Scirpus validus</i>	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.005	0.000	0.000	0.000
common tall manna grass	<i>Glyceria grandis</i>	0.000	0.000	0.005	0.100	0.005	0.005	0.005	0.005	0.005	0.030	0.100	0.100	0.005	0.000	0.100	0.030	0.005	0.005
creeping spike-rush	<i>Eleocharis palustris</i>	0.000	0.000	0.005	0.030	0.005	0.005	0.005	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.030	0.000	0.005	0.005
crested wheat grass	<i>Agropyron pectiniforme</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
fowl bluegrass	<i>Poa palustris</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.005	0.005	0.000	0.000	0.000	0.005	0.000	0.005
foxtail barley	<i>Hordeum jubatum</i>	0.000	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.100	0.200	0.030	0.005	0.100	0.030	0.030	0.005
Japanese chess	<i>Bromus japonicus</i>	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
June grass	<i>Koeleria macrantha</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.005	0.030	0.030
Kentucky bluegrass	<i>Poa pratensis</i>	0.100	0.100	0.300	0.100	0.300	0.100	0.100	0.300	0.100	0.030	0.100	0.100	0.300	0.400	0.400	0.000	0.005	0.300
knotted rush	<i>Juncus nodosus</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
meadow foxtail	<i>Alopecurus pratensis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
needle grass	<i>Stipa spp.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
needle-and-thread	<i>Stipa comata</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000
northern reed grass	<i>Calamagrostis inexpansa</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.030	0.000	0.005	0.000	0.000	0.000	0.000	0.005
northern wheat grss	<i>Agropyron dasystachyum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
Nuttall's salt-meadow grass	<i>Puccinellia nuttalliana</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000
orchard grass	<i>Dactylis glomerata</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
quack grass	<i>Agropyron repens</i>	0.500	0.005	0.005	0.005	0.100	0.030	0.030	0.100	0.030	0.030	0.300	0.005	0.000	0.000	0.000	0.030	0.005	0.005
redtop	<i>Agrostis stolonifera</i>	0.005	0.005	0.005	0.000	0.030	0.030	0.100	0.030	0.030	0.000	0.030	0.000	0.005	0.005	0.000	0.005	0.000	0.000
reed canary grass	<i>Phalaris arundinacea</i>	0.005	0.005	0.005	0.000	0.000	0.005	0.005	0.005	0.005	0.030	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000
reed grass	<i>Calamagrostis spp.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
rough hair grass	<i>Agrostis scabra</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.030	0.005	0.000	0.005	0.005
short-awned foxtail	<i>Alopecurus aequalis</i>	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
slender wheat grass	<i>Agropyron trachycaulum</i>	0.005	0.005	0.300	0.000	0.005	0.030	0.000	0.000	0.000	0.000	0.300	0.000	0.100	0.000	0.005	0.000	0.000	0.000
slough grass	<i>Beckmannia syzigachne</i>	0.005	0.005	0.000	0.005	0.000	0.000	0.005	0.005	0.000	0.005	0.100	0.100	0.000	0.000	0.005	0.030	0.005	0.005
small bottle sedge	<i>Carex utriculata</i>	0.300	0.030	0.005	0.300	0.000	0.000	0.030	0.005	0.030	0.000	0.005	0.005	0.000	0.000	0.030	0.000	0.000	0.000
small-fruited bulrush	<i>Scirpus microcarpus</i>	0.005	0.005	0.005	0.100	0.005	0.005	0.005	0.030	0.030	0.000	0.005	0.005	0.000	0.000	0.030	0.000	0.005	0.000

Common Name	Scientific Name	Lyndon Creek			Beaver Creek			Todd Creek			Amisk Creek			Iron Creek			Ribstone Creek		
		H	HWP	UH	H	HWP	UH	H	HWP	HWP	H	HWP	UH	HWP	HWP	UH	H	HWP	UH
smooth brome	<i>Bromus inermis</i>	0.400	0.400	0.600	0.005	0.300	0.500	0.100	0.400	0.400	0.600	0.030	0.000	0.400	0.200	0.030	0.400	0.200	0.100
spike-rush	<i>Eleocharis spp.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000
Sprengel's sedge	<i>Carex sprengeii</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000
three-square rush	<i>Scirpus pungens</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
timothy	<i>Phleum pratense</i>	0.300	0.300	0.300	0.030	0.005	0.100	0.300	0.030	0.200	0.000	0.000	0.005	0.000	0.000	0.000	0.100	0.000	0.005
tufted hair grass	<i>Deschampsia cespitosa</i>	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.005	0.000	0.030	0.030	0.000	0.000
water sedge	<i>Carex aquatilis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.005	0.100	0.005	0.100
western wheat grass	<i>Agropyron smithii</i>	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.100	0.100	0.100	0.300	0.200
wheat grass	<i>Agropyron spp.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
wire rush	<i>Juncus balticus</i>	0.000	0.000	0.000	0.030	0.200	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.030	0.000	0.005	0.030
woolly sedge	<i>Carex lanuginosa</i>	0.000	0.000	0.000	0.200	0.030	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000
FORBS																			
agrimony	<i>Agrimonia striata</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000
alfalfa	<i>Medicago sativa</i>	0.000	0.000	0.005	0.000	0.000	0.000	0.005	0.005	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000
alsike clover	<i>Trifolium hybridum</i>	0.005	0.005	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.005	0.005	0.000	0.000	0.005
American brooklime	<i>Veronica americana</i>	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
arum-leaved arrowhead	<i>Sagittaria cuneata</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.030	0.000	0.000	0.005	0.005	0.000	0.005
aster	<i>Aster spp.</i>	0.000	0.000	0.005	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
black medick	<i>Medicago lupulina</i>	0.000	0.000	0.005	0.000	0.000	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
bull thistle	<i>Cirsium vulgare</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
butter-and-eggs	<i>Linaria vulgaris</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Canada anemone	<i>Anemone canadensis</i>	0.005	0.005	0.000	0.005	0.000	0.000	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Canada goldenrod	<i>Solidago canadensis</i>	0.005	0.005	0.000	0.005	0.005	0.005	0.005	0.005	0.030	0.005	0.000	0.000	0.000	0.005	0.000	0.005	0.000	0.005
Canada thistle	<i>Cirsium arvense</i>	0.100	0.100	0.100	0.005	0.005	0.100	0.005	0.030	0.030	0.030	0.005	0.030	0.005	0.005	0.030	0.005	0.000	0.005
caraway	<i>Carum carvi</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
common burdock	<i>Arctium minus</i>	0.005	0.000	0.005	0.005	0.005	0.030	0.030	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
common cattail	<i>Typha latifolia</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000
common dandelion	<i>Taraxacum officinale</i>	0.300	0.000	0.030	0.000	0.000	0.005	0.005	0.005	0.005	0.000	0.005	0.005	0.100	0.005	0.100	0.005	0.000	0.005
common fireweed	<i>Epilobium angustifolium</i>	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000
common goat's-beard	<i>Tragopogon dubius</i>	0.000	0.000	0.030	0.005	0.005	0.005	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
common horsetail	<i>Equisetum arvense</i>	0.000	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
common mare's-tail	<i>Hippuris vulgaris</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005
common mullein	<i>Verbascum thapsus</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
common nettle	<i>Urtica dioica</i>	0.000	0.000	0.000	0.000	0.005	0.030	0.005	0.005	0.000	0.030	0.005	0.005	0.000	0.000	0.005	0.005	0.000	0.000
common pepper-grass	<i>Lepidium densiflorum</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.005
common plantain	<i>Plantago major</i>	0.000	0.000	0.005	0.005	0.005	0.005	0.000	0.000	0.005	0.000	0.005	0.005	0.000	0.000	0.030	0.005	0.000	0.005
common scouring-rush	<i>Equisetum hyemale</i>	0.005	0.000	0.005	0.005	0.000	0.005	0.000	0.005	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000

ARHMS – Cows and Fish

Common Name	Scientific Name	Lyndon Creek			Beaver Creek			Todd Creek			Amisk Creek			Iron Creek			Ribstone Creek		
		H	HWP	UH	H	HWP	UH	H	HWP	HWP	H	HWP	UH	HWP	HWP	UH	H	HWP	UH
common tall sunflower	<i>Helianthus nuttallii</i>	0.005	0.000	0.000	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000
common yarrow	<i>Achillea millefolium</i>	0.000	0.000	0.005	0.005	0.005	0.000	0.005	0.000	0.005	0.005	0.000	0.005	0.030	0.005	0.030	0.005	0.000	0.005
cow parsnip	<i>Heracleum lanatum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
curled dock	<i>Rumex crispus</i>	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.000	0.005	0.005	0.005	0.000	0.005	0.005	0.005
fairybells	<i>Disporum trachycarpum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
flixweed	<i>Descurainia sophia</i>	0.000	0.000	0.005	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.005	0.000	0.000
fringed loosestrife	<i>Lysimachia ciliata</i>	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
giant bur-reed	<i>Sparganium eurycarpum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.005	0.000	0.000	0.000
golden bean	<i>Thermopsis rhombifolia</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000
golden dock	<i>Rumex maritimus</i>	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
graceful cinquefoil	<i>Potentilla gracilis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000
great ragweed	<i>Ambrosia trifida</i>	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
gumweed	<i>Grindelia squarrosa</i>	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.100	0.005	0.005	0.005	0.005
harebell	<i>Campanula rotundifolia</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
hemp-nettle	<i>Galeopsis tetrahit</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
hound's-tongue	<i>Cynoglossum officinale</i>	0.000	0.000	0.005	0.000	0.005	0.000	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
lamb's-quarters	<i>Chenopodium album</i>	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
late goldenrod	<i>Solidago gigantea</i>	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005
leafy spurge	<i>Euphorbia esula</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
low goldenrod	<i>Solidago missouriensis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000
Macoun's buttercup	<i>Ranunculus macounii</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
many-flowered yarrow	<i>Achillea sibirica</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000
maple-leaved goosefoot	<i>Chenopodium gigantospermum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.005	0.000	0.000	0.000	0.005	0.000	0.005
marsh hedge-nettle	<i>Stachys palustris</i>	0.005	0.000	0.000	0.005	0.005	0.005	0.000	0.005	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.005	0.000	0.005
meadow aster	<i>Aster campestris</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
narrow leaved hawkweed	<i>Hieracium umbellatum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
nodding beggarticks	<i>Bidens cernua</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.005
northern bedstraw	<i>Galium boreale</i>	0.000	0.000	0.000	0.005	0.000	0.000	0.005	0.005	0.005	0.005	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.005
northern water-horehound	<i>Lycopus uniflorus</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
northern willowherb	<i>Epilobium ciliatum</i>	0.005	0.000	0.005	0.030	0.005	0.005	0.000	0.005	0.000	0.000	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.005
owl-clover	<i>Orthocarpus luteus</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
ox-eye daisy	<i>Chrysanthemum leucanthemum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pasture sagewort	<i>Artemisia frigida</i>	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.005	0.030	0.300	0.030

Common Name	Scientific Name	Lyndon Creek			Beaver Creek			Todd Creek			Amisk Creek			Iron Creek			Ribstone Creek		
		H	HWP	UH	H	HWP	UH	H	HWP	HWP	H	HWP	UH	HWP	HWP	UH	H	HWP	UH
perennial sow-thistle	<i>Sonchus arvensis</i>	0.005	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.100	0.100	0.030	0.030	0.030	0.030	0.000	0.000	0.005
plains wormwood	<i>Artemisia campestris</i>	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.030	0.000	0.000	0.000	0.005	0.005	0.000
polygonum	<i>Polygonum spp.</i>	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
prairie coneflower	<i>Ratibida columnifera</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
prairie sagewort	<i>Artemisia ludoviciana</i>	0.005	0.000	0.000	0.005	0.005	0.005	0.000	0.000	0.000	0.005	0.000	0.005	0.300	0.030	0.005	0.005	0.005	0.005
prickly lettuce	<i>Lactuca serriola</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
purple avens	<i>Geum rivale</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000
ranunculus	<i>Ranunculus spp.</i>	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
red and white baneberry	<i>Actaea rubra</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
red clover	<i>Trifolium pratense</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.005	0.005	0.000	0.005	0.005	0.000	0.000	0.000
rhombic-leaved sunflower	<i>Helianthus subrhomboideus</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
scentless chamomile	<i>Matricaria perforata</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000
seaside buttercup	<i>Ranunculus cymbalaria</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.005	0.005
showy aster	<i>Aster conspicuus</i>	0.000	0.000	0.000	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005
silverweed	<i>Potentilla anserina</i>	0.005	0.000	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.030	0.000	0.030	0.005	0.005	0.005
slender arrow-grass	<i>Triglochin palustris</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
small-leaved everlasting	<i>Antennaria parvifolia</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.005	0.000	0.000	0.000
smooth aster	<i>Aster laevis</i>	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.005	0.005	0.030	0.005	0.005	0.000	0.000
star-flowered Solomon's-seal	<i>Smilacina stellata</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005
sticky purple geranium	<i>Geranium viscosissimum</i>	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
stiff goldenrod	<i>Solidago rigida</i>	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
stinkweed	<i>Thlaspi arvense</i>	0.000	0.000	0.005	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
tall buttercup	<i>Ranunculus acris</i>	0.000	0.000	0.005	0.000	0.000	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
thistle	<i>Cirsium spp.</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000
tufted white prairie aster	<i>Aster ericoides</i>	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.005	0.005	0.000	0.005	0.005	0.000	0.005	0.005	0.005	0.005
veiny meadow rue	<i>Thalictrum venulosum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005	0.000	0.000	0.005	0.005	0.005	0.000	0.005	0.000	0.005
water parsnip	<i>Sium suave</i>	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.000	0.000	0.005	0.000	0.005	0.005
water smartweed	<i>Polygonum coccineum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
water smartweed	<i>Polygonum amphibium</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000
water-hemlock	<i>Cicuta maculata</i>	0.000	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000
wavy-leaved thistle	<i>Cirsium undulatum</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000
western Canada violet	<i>Viola canadensis</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000
western willow aster	<i>Aster hesperius</i>	0.005	0.000	0.000	0.005	0.005	0.005	0.000	0.005	0.005	0.005	0.030	0.000	0.000	0.030	0.005	0.005	0.000	0.005

Common Name	Scientific Name	Lyndon Creek			Beaver Creek			Todd Creek			Amisk Creek			Iron Creek			Ribstone Creek		
		H	HWP	UH	H	HWP	UH	H	HWP	HWP	H	HWP	UH	HWP	HWP	UH	H	HWP	UH
white clover	<i>Trifolium repens</i>	0.000	0.000	0.030	0.005	0.005	0.005	0.000	0.000	0.000	0.005	0.000	0.030	0.000	0.000	0.030	0.000	0.000	0.005
white sweet-clover	<i>Melilotus alba</i>	0.000	0.000	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005	0.005
wild bergamot	<i>Monarda fistulosa</i>	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
wild blue flax	<i>Linum lewisii</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
wild buckwheat	<i>Polygonum convolvulus</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000
wild licorice	<i>Glycyrrhiza lepidota</i>	0.005	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
wild mint	<i>Mentha arvensis</i>	0.000	0.000	0.005	0.005	0.005	0.005	0.005	0.000	0.000	0.005	0.005	0.005	0.005	0.000	0.005	0.000	0.000	0.000
wild strawberry	<i>Fragaria virginiana</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.000	0.005	0.000	0.005
wild vetch	<i>Vicia americana</i>	0.005	0.000	0.030	0.005	0.000	0.005	0.005	0.005	0.000	0.005	0.005	0.000	0.005	0.000	0.005	0.005	0.000	0.000
yellow avens	<i>Geum aleppicum</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.005	0.000	0.000	0.000	0.005	0.000	0.000
yellow evening-primrose	<i>Oenothera biennis</i>	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
yellow sweet-clover	<i>Melilotus officinalis</i>	0.005	0.000	0.000	0.005	0.005	0.005	0.000	0.005	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.005	0.000	0.000

**Appendix C. Summary of bird species observed (presence/absence) during the study by habitat category
(i.e., healthy, healthy but with problems and unhealthy).**

Common Name	Scientific Name	Foothills Natural Region									Parkland Natural Region									
		Lyndon			Beaver			Todd			Amisk			Iron			Ribstone			
		H	HWP	UH	H	HWP	UH	H	HWP	HWP	H	HWP	UH	HWP	HWP	UH	H	HWP	UH	
American White Pelican	<i>Pelecanus erythrorhynchos</i>	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great Blue Heron	<i>Ardea herodias</i>	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Canada Goose	<i>Branta canadensis</i>	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
Mallard	<i>Anas platyrhynchos</i>	1	1	1	1	1	0	0	0	0	1	0	0	1	1	0	0	1	1	1
Northern Pintail	<i>Anas acuta</i>	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0
Blue-winged Teal	<i>Anas discors</i>	0	0	0	1	0	0	0	0	0	1	1	0	1	1	1	1	0	1	1
Northern Shoveler	<i>Anas clypeata</i>	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Gadwall	<i>Anas strepera</i>	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Lesser Scaup	<i>Aythya affinis</i>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Swainson's Hawk	<i>Buteo swainsoni</i>	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1
Merlin	<i>Falco columbarius</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Gray Partridge	<i>Perdix perdix</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
Sora	<i>Porzana carolina</i>	0	0	0	1	0	0	0	0	0	1	1	0	1	1	1	0	0	0	0
American Coot	<i>Fulica americana</i>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Killdeer	<i>Charadrius vociferus</i>	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0
Willet	<i>Catoptrophorus semipalmatus</i>	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1	1
Spotted Sandpiper	<i>Actitis macularia</i>	0	0	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1
Long-billed Curlew	<i>Numenius americanus</i>	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0
Marbled Godwit	<i>Limosa fedoa</i>	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Wilson's Snipe	<i>Gallinago delicata</i>	1	1	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0
Ring-billed Gull	<i>Larus delawarensis</i>	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Rock Pigeon	<i>Columba livia</i>	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0
Mourning Dove	<i>Zenaida macroura</i>	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0
Great Horned Owl	<i>Bubo virginianus</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Short-eared Owl	<i>Asio flammeus</i>	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common Nighthawk	<i>Chordeiles minor</i>	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Northern Flicker	<i>Colaptes auratus</i>	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0
Western Wood-Pewee	<i>Contopus sordidulus</i>	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Alder Flycatcher	<i>Empidonax alnorum</i>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Least Flycatcher	<i>Empidonax minimus</i>	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0

Common Name	Scientific Name	Foothills Natural Region									Parkland Natural Region								
		Lyndon			Beaver			Todd			Amisk			Iron			Ribstone		
		H	HWP	UH	H	HWP	UH	H	HWP	HWP	H	HWP	UH	HWP	HWP	UH	H	HWP	UH
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0	1	1	0	1	1	0	0	0	1	0	0	0	0	0	1	1	1
Tree Swallow	<i>Tachycineta bicolor</i>	0	1	0	1	0	1	0	0	1	0	0	1	0	0	1	0	0	0
Northern Rough-winged Swallow	<i>Stelgdopteryx serripennis</i>	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank Swallow	<i>Riparia riparia</i>	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Barn Swallow	<i>Hirundo rustica</i>	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
Black-billed Magpie	<i>Pica pica</i>	1	0	0	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1
American Crow	<i>Corvus brachyrhynchos</i>	1	0	0	0	0	0	0	1	1	0	1	1	1	1	1	1	1	0
Black-capped Chickadee	<i>Poecile atricapillus</i>	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
House Wren	<i>Troglodytes aedon</i>	1	0	0	0	0	1	0	1	1	1	0	1	1	1	0	1	0	0
American Robin	<i>Turdus migratorius</i>	1	1	1	1	1	1	1	1	0	1	0	0	0	1	0	0	0	0
Gray Catbird	<i>Dumetella carolinensis</i>	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Brown Thrasher	<i>Toxostoma rufum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Sprague's Pipit	<i>Anthus spragueii</i>	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1	1	1
Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
European Starling	<i>Sturnus vulgaris</i>	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	0	0	0
Orange-crowned Warbler	<i>Vermivora celata</i>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Warbler	<i>Dendroica petechia</i>	1	1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0
Common Yellowthroat	<i>Geothlypis trichas</i>	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clay-colored Sparrow	<i>Spizella pallida</i>	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
Vesper Sparrow	<i>Poocetes gramineus</i>	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	1
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0	1	1	0	0	0	1	1	0	1	1	1	1	1	1	0	1	1
Baird's Sparrow	<i>Ammodramus bairdii</i>	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Song Sparrow	<i>Melospiza melodia</i>	1	0	0	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1
Bobolink	<i>Dolichonyx oryzivorus</i>	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	1	0	0	1	0	0	0	0	1	1	1	1	0	1	1	0	1	0
Western Meadowlark	<i>Sturnella neglecta</i>	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	1	1	1
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	1	1	0
Brown-headed Cowbird	<i>Molothrus ater</i>	1	1	1	1	0	1	0	1	0	1	1	1	1	0	1	0	0	1
Baltimore Oriole	<i>Icterus galbula</i>	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
American Goldfinch	<i>Carduelis tristis</i>	1	0	0	0	1	1	0	0	0	1	0	1	1	1	0	0	1	0
House Sparrow	<i>Passer domesticus</i>	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0

Appendix D. Summary of bird species by habitat type.
(Data collected from Federation of Alberta Naturalists 1993; Fisher and Acorn 1998).

Common Name	Nesting Preference						Habitat Preference				
	Ground	Ground-Low	Shrubs	MidStory/Canopy	Trees	Cliffs	Terretorial	Parasitic	Open (Agricultural)	Dense Shrub	Closed (Forest)
American White Pelican	1	0	0	0	0				1	0	0
Great Blue Heron	0	0	0	0	1				1	0	0
Canada Goose	1	0	0	0	0				1	0	0
Mallard	1	0	0	0	0				1	0	0
Northern Pintail	1	0	0	0	0				1	0	0
Blue-winged Teal	1	0	0	0	0				1	0	0
Northern Shoveler	1	0	0	0	0				1	0	0
Gadwall	1	0	0	0	0				1	0	0
Lesser Scaup	1	0	0	0	0				1	0	0
Swainson's Hawk	0	0	0	0	1				1	0	0
Red-tailed Hawk	0	0	0	0	1				1	0	0
Merlin	0	0	0	0	1				0	0	1
Gray Partridge	1	0	0	0	0				1	0	0
Sora	1	0	0	0	0				1	0	0
American Coot	1	0	0	0	0				1	0	0
Killdeer	1	0	0	0	0				1	0	0
Willet	1	0	0	0	0				1	0	0
Spotted Sandpiper	1	0	0	0	0				1	0	0
Long-billed Curlew	1	0	0	0	0				1	0	0
Marbled Godwit	1	0	0	0	0				1	0	0
Wilson's Snipe	1	0	0	0	0				1	0	0
Ring-billed Gull	1	0	0	0	0				1	0	0
Rock Pigeon	0	0	0	0	0	1		1	1	0	0
Mourning Dove	0	0	0	1	0				1	0	0
Great Horned Owl	0	0	0	0	1				0	0	1
! Short-eared Owl	1	0	0	0	0				1	0	0
Common Nighthawk	1	0	0	0	0				1	0	0
Ruby-throated Hummingbird	0	0	0	0	1		1		0	0	1
Northern Flicker	0	0	0	0	1				0	0	1

	<u>Nesting Preference</u>						<u>Habitat Preference</u>				
	Ground	Ground-Low	Shrubs	MidStory/Canopy	Trees	Cliffs	Terretorial	Parasitic	Open (Agricultural)	Dense Shrub	Closed (Forest)
Western Wood-Pewee	0	0	0	0	1				0	0	1
Alder Flycatcher	0	0	1	0	0				0	0	1
Least Flycatcher	0	0	1	0	0				0	0	1
Eastern Kingbird	0	0	0	1	0		1		1	0	0
Tree Swallow	0	0	0	0	1				1	0	0
Northern Rough-winged Swallow	1	0	0	0	0		0		1	0	0
Bank Swallow	1	0	0	0	0		0		1	0	0
Barn Swallow	0	0	0	0	1				1	0	0
Black-billed Magpie	0	0	0	0	1				1	0	0
American Crow	0	0	0	0	1		1		1	0	0
Black-capped Chickadee	0	0	0	0	1				0	0	1
House Wren	0	0	0	0	1		1		0	0	1
American Robin	0	0	0	0	1				1	0	0
Gray Catbird	0	1	0	0	0		0		0	1	0
Brown Thrasher	0	1	0	0	0				0	1	0
Sprague's Pipit	1	0	0	0	0				1	0	0
Cedar Waxwing	0	0	0	0	1				0	0	1
European Starling	0	0	0	0	1				1	0	0
Orange-crowned Warbler	0	1	0	0	0				0	0	1
Yellow Warbler	0	0	0	1	0				0	1	0
Common Yellowthroat	0	1	0	0	0				0	1	0
Clay-colored Sparrow	0	1	0	0	0				0	1	0
Vesper Sparrow	1	0	0	0	0				1	0	0
Savannah Sparrow	1	0	0	0	0				0	0	0
Baird's Sparrow	1	0	0	0	0				1	0	0
Song Sparrow	0	1	0	0	0				0	1	0
Bobolink	1	0	0	0	0				1	0	0
Red-winged Blackbird	0	1	0	0	0				1	0	0
Western Meadowlark	1	0	0	0	0				1	0	0
Brewer's Blackbird	0	1	0	0	0				1	0	0
Brown-headed Cowbird	0	0	0	0	0			1	1	0	0
Baltimore Oriole	0	0	0	0	1				0	0	1
American Goldfinch	0	0	0	1	0				1	0	0
House Sparrow	0	0	0	1	0				1	0	0

Appendix E. Summary of vegetation by category.

Common_Name	Scientific_Name	Abbreviation	Native	Disturbance	Category			
					Unknown	Poisonous	Invasive	Introduced
balsam poplar	<i>Populus balsamifera</i>	POPUBAL	1	0	0	0	0	0
Manitoba maple	<i>Acer negundo</i>	ACERNEG	1	0	0	0	0	0
white birch	<i>Betula papyrifera</i>	BETUPAP	1	0	0	0	0	0
cottonwood	<i>Populus spp.</i>	POPULUX	1	0	0	0	0	0
narrow-leaf cottonwood	<i>Populus angustifolia</i>	POPUANG	1	0	0	0	0	0
buckbrush/snowberry	<i>Symphoricarpos occidentalis</i>	SYMPOCC	1	0	0	0	0	0
sandbar willow	<i>Salix exigua</i>	SALIEXI	1	0	0	0	0	0
beaked willow	<i>Salix bebbiana</i>	SALIBEB	1	0	0	0	0	0
common wild rose	<i>Rosa woodsii</i>	ROSAWOO	1	0	0	0	0	0
silverberry	<i>Elaeagnus commutata</i>	ELAECOM	1	0	0	0	0	0
basket willow	<i>Salix petiolaris</i>	SALIPET	1	0	0	0	0	0
yellow willow	<i>Salix lutea</i>	SALILUT	1	0	0	0	0	0
red-osier dogwood	<i>Cornus stolonifera</i>	CORNSTO	1	0	0	0	0	0
prickly rose	<i>Rosa acicularis</i>	ROSAACI	1	0	0	0	0	0
northern gooseberry	<i>Ribes oxycanthoides</i>	RIBEOXY	1	0	0	0	0	0
Saskatoon	<i>Amelanchier alnifolia</i>	AMELALN	1	0	0	0	0	0
round-leaved hawthorn	<i>Crataegus rotundifolia</i>	CRATROT	1	0	0	0	0	0
narrow-leaved meadowsweet	<i>Spiraea alba</i>	SPIRALB	1	0	0	0	0	0
false mountain willow	<i>Salix pseudomonticola</i>	SALIPSE	1	0	0	0	0	0
wild red currant	<i>Ribes triste</i>	RIBETRI	1	0	0	0	0	0
golden currant	<i>Ribes aureum</i>	RIBEAUR	1	0	0	0	0	0
wild red raspberry	<i>Rubus idaeus</i>	RUBUIDA	1	0	0	0	0	0
choke cherry	<i>Prunus virginiana</i>	PRUNVIR	1	0	0	0	0	0
Canada buffaloberry	<i>Shepherdia canadensis</i>	SHEPCAN	1	0	0	0	0	0
flat-leaved willow	<i>Salix planifolia</i>	SALIPLA	1	0	0	0	0	0
shrubby cinquefoil	<i>Potentilla fruticosa</i>	POTEFRU	1	0	0	0	0	0
willow	<i>Salix spp.</i>	SALIXXX	1	0	0	0	0	0
low-bush cranberry	<i>Viburnum edule</i>	VIBUEDU	1	0	0	0	0	0
scarlet mallow	<i>Sphaeralcea coccinea</i>	SPHACOC	1	0	0	0	0	0
water birch	<i>Betula occidentalis</i>	BETUOCC	1	0	0	0	0	0
smooth brome	<i>Bromus inermis</i>	BROMINE	0	1	0	0	0	0
timothy	<i>Phleum pratense</i>	PHLEPRA	0	1	0	0	0	0
Kentucky bluegrass	<i>Poa pratensis</i>	POAPRAT	0	1	0	0	0	0

Common Name	Scientific Name	Abbreviation	Native	Disturbance	Category			
					Unknown	Poisonous	Invasive	Introduced
small bottle sedge	<i>Carex utriculata</i>	CAREUTR	1	0	0	0	0	0
slender wheat grass	<i>Agropyron trachycaulum</i>	AGROTRA	1	0	0	0	0	0
quack grass	<i>Agropyron repens</i>	AGROREP	0	1	0	0	0	0
woolly sedge	<i>Carex lanuginosa</i>	CARELAN	1	0	0	0	0	0
common tall manna grass	<i>Glyceria grandis</i>	GLYCGRA	1	0	0	0	0	0
small-fruited bulrush	<i>Scirpus microcarpus</i>	SCIRMIC	1	0	0	0	0	0
foxtail barley	<i>Hordeum jubatum</i>	HORDJUB	0	1	0	0	0	0
slough grass	<i>Beckmannia syzigachne</i>	BECKSYZ	1	0	0	0	0	0
wire rush	<i>Juncus balticus</i>	JUNCBAL	1	0	0	0	0	0
creeping spike-rush	<i>Eleocharis palustris</i>	ELEOPAL	1	0	0	0	0	0
redtop	<i>Agrostis stolonifera</i>	AGROSTO	0	0	0	0	0	1
western wheat grass	<i>Agropyron smithii</i>	AGROSMI	1	0	0	0	0	0
short-awned foxtail	<i>Alopecurus aequalis</i>	ALOPAEQ	1	0	0	0	0	0
northern reed grass	<i>Calamagrostis inexpansa</i>	CALAIN	1	0	0	0	0	0
meadow foxtail	<i>Alopecurus pratensis</i>	ALOPPRA	1	0	0	0	0	0
bluejoint	<i>Calamagrostis canadensis</i>	CALACAN	1	0	0	0	0	0
awned sedge	<i>Carex atherodes</i>	CAREATH	1	0	0	0	0	0
reed canary grass	<i>Phalaris arundinacea</i>	PHALARU	1	0	0	0	0	0
tufted hair grass	<i>Deschampsia cespitosa</i>	DESCCES	1	0	0	0	0	0
fowl bluegrass	<i>Poa palustris</i>	POAPALU	1	0	0	0	0	0
water sedge	<i>Carex aquatilis</i>	CAREAQU	1	0	0	0	0	0
blue grama	<i>Bouteloua gracilis</i>	BOUTGRA	1	0	0	0	0	0
common great bulrush	<i>Scirpus validus</i>	SCIRVAL	1	0	0	0	0	0
June grass	<i>Koeleria macrantha</i>	KOELMAC	1	0	0	0	0	0
rough hair grass	<i>Agrostis scabra</i>	AGROSCA	1	0	0	0	0	0
reed grass	<i>Calamagrostis spp.</i>	CALAMAX	1	0	0	0	0	0
Sprengel's sedge	<i>Carex sprengelii</i>	CARESPPR	1	0	0	0	0	0
knotted rush	<i>Juncus nodosus</i>	JUNCNOD	1	0	0	0	0	0
orchard grass	<i>Dactylis glomerata</i>	DACTGLO	1	0	0	0	0	0
spike-rush	<i>Eleocharis spp.</i>	ELEOCHX	1	0	0	0	0	0
Nuttall's salt-meadow grass	<i>Puccinellia nuttalliana</i>	PUCCNUT	1	0	0	0	0	0
bluegrass	<i>Poa spp.</i>	POAXXXX	0	0	1	0	0	0
needle-and-thread	<i>Stipa comata</i>	STIPCOM	1	0	0	0	0	0
crested wheat grass	<i>Agropyron pectiniforme</i>	AGROPEC	0	1	0	0	0	0
wheat grass	<i>Agropyron spp.</i>	AGROPYX	0	0	1	0	0	0
needle grass	<i>Stipa spp.</i>	STIPAXX	0	0	1	0	0	0
Japanese chess	<i>Bromus japonicus</i>	BROMJAP	1	0	0	0	0	0

Common Name	Scientific Name	Abbreviation	Native	Disturbance	Category			
					Unknown	Poisonous	Invasive	Introduced
Canby bluegrass	<i>Poa canbyi</i>	POACANB	1	0	0	0	0	0
three-square rush	<i>Scirpus pungens</i>	SCIRPUN	1	0	0	0	0	0
Canada thistle	<i>Cirsium arvense</i>	CIRSARV	0	0	0	0	1	0
perennial sow-thistle	<i>Sonchus arvensis</i>	SONCARV	0	0	0	0	1	0
maple-leaved goosefoot	<i>Chenopodium gigantospermum</i>	CHENGIG	1	0	0	0	0	0
common dandelion	<i>Taraxacum officinale</i>	TARAOFF	0	1	0	0	0	0
wild vetch	<i>Vicia americana</i>	VICIAME	1	0	0	0	0	0
northern willowherb	<i>Epilobium ciliatum</i>	EPILCIL	1	0	0	0	0	0
white clover	<i>Trifolium repens</i>	TRIFREP	0	1	0	0	0	0
common goat's-beard	<i>Tragopogon dubius</i>	TRAGDUB	0	1	0	0	0	0
alsike clover	<i>Trifolium hybridum</i>	TRIFHYB	0	1	0	0	0	0
western willow aster	<i>Aster hesperius</i>	ASTEHEH	1	0	0	0	0	0
pasture sagewort	<i>Artemisia frigida</i>	ARTEFRI	1	0	0	0	0	0
silverweed	<i>Potentilla anserina</i>	POTEANS	0	1	0	0	0	0
common plantain	<i>Plantago major</i>	PLANMAJ	0	1	0	0	0	0
wild mint	<i>Mentha arvensis</i>	MENTARV	1	0	0	0	0	0
common yarrow	<i>Achillea millefolium</i>	ACHIMIL	1	0	0	0	0	0
common burdock	<i>Arctium minus</i>	ARCTMIN	0	1	0	0	0	0
curled dock	<i>Rumex crispus</i>	RUMECRI	0	0	0	0	0	1
gumweed	<i>Grindelia squarrosa</i>	GRINSQU	1	0	0	0	0	0
common scouring-rush	<i>Equisetum hyemale</i>	EQUIHYE	1	0	0	0	0	0
plains wormwood	<i>Artemisia campestris</i>	ARTECAM	1	0	0	0	0	0
marsh hedge-nettle	<i>Stachys palustris</i>	STACPAL	1	0	0	0	0	0
flixweed	<i>Descurainia sophia</i>	DESCSOP	0	1	0	0	0	0
stinkweed	<i>Thlaspi arvense</i>	THLAARV	0	1	0	0	0	0
prairie sagewort	<i>Artemisia ludoviciana</i>	ARTELUD	1	0	0	0	0	0
yellow sweet-clover	<i>Melilotus officinalis</i>	MELIOFF	0	1	0	0	0	0
Canada goldenrod	<i>Solidago canadensis</i>	SOLICAN	1	0	0	0	0	0
alfalfa	<i>Medicago sativa</i>	MEDISAT	0	0	0	0	0	1
water-hemlock	<i>Cicuta maculata</i>	CICUMAC	0	0	0	1	0	0
northern bedstraw	<i>Galium boreale</i>	GALIBOR	1	0	0	0	0	0
tufted white prairie aster	<i>Aster ericoides</i>	ASTEERI	1	0	0	0	0	0
common nettle	<i>Urtica dioica</i>	URTIDIO	1	0	0	0	0	0
Canada anemone	<i>Anemone canadensis</i>	ANEMCAN	1	0	0	0	0	0
common tall sunflower	<i>Helianthus nuttallii</i>	HELINUT	1	0	0	0	0	0
white sweet-clover	<i>Melilotus alba</i>	MELIALB	0	1	0	0	0	0
hound's-tongue	<i>Cynoglossum officinale</i>	CYNOOFF	0	0	0	0	1	0

Common Name	Scientific Name	Abbreviation	Category					
			Native	Disturbance	Unknown	Poisonous	Invasive	Introduced
common horsetail	<i>Equisetum arvense</i>	EQUIARV	0	0	0	1	0	0
late goldenrod	<i>Solidago gigantea</i>	SOLIGIG	1	0	0	0	0	0
tall buttercup	<i>Ranunculus acris</i>	RANUACR	0	0	0	0	1	0
black medick	<i>Medicago lupulina</i>	MEDILUP	0	1	0	0	0	0
showy aster	<i>Aster conspicuus</i>	ASTECON	1	0	0	0	0	0
aster	<i>Aster spp.</i>	ASTERXX	0	0	1	0	0	0
polygonum	<i>Polygonum spp.</i>	POLYGOX	0	0	1	0	0	0
water parsnip	<i>Sium suave</i>	SIUMSUA	1	0	0	0	0	0
arum-leaved arrowhead	<i>Sagittaria cuneata</i>	SAGICUN	1	0	0	0	0	0
stiff goldenrod	<i>Solidago rigida</i>	SOLIRIG	1	0	0	0	0	0
ranunculus	<i>Ranunculus spp.</i>	RANUNCX	0	0	1	0	0	0
American brooklime	<i>Veronica americana</i>	VEROAME	1	0	0	0	0	0
red clover	<i>Trifolium pratense</i>	TRIFPRA	0	1	0	0	0	0
smooth aster	<i>Aster laevis</i>	ASTELAE	1	0	0	0	0	0
giant bur-reed	<i>Sparganium eurycarpum</i>	SPAREUR	1	0	0	0	0	0
nodding beggarticks	<i>Bidens cernua</i>	BIDECER	1	0	0	0	0	0
many-flowered yarrow	<i>Achillea sibirica</i>	ACHISIB	1	0	0	0	0	0
wild buckwheat	<i>Polygonum convolvulus</i>	POLYCON	1	0	0	0	0	0
golden bean	<i>Thermopsis rhombifolia</i>	THERRHO	0	1	0	0	0	0
common cattail	<i>Typha latifolia</i>	TYPHLAT	1	0	0	0	0	0
seaside buttercup	<i>Ranunculus cymbalaria</i>	RANUCYM	1	0	0	0	0	0
hemp-nettle	<i>Galeopsis tetrahit</i>	GALETET	1	0	0	0	0	0
water smartweed	<i>Polygonum coccineum</i>	POLYCOC	1	0	0	0	0	0
fringed loosestrife	<i>Lysimachia ciliata</i>	LYSICIL	1	0	0	0	0	0
veiny meadow rue	<i>Thalictrum venulosum</i>	THALVEN	1	0	0	0	0	0
wild strawberry	<i>Fragaria virginiana</i>	FRAGVIR	0	1	0	0	0	0
wild bergamot	<i>Monarda fistulosa</i>	MONAFIS	1	0	0	0	0	0
wild licorice	<i>Glycyrrhiza lepidota</i>	GLYCLEP	1	0	0	0	0	0
sticky purple geranium	<i>Geranium viscosissimum</i>	GERAVIS	1	0	0	0	0	0
yellow avens	<i>Geum aleppicum</i>	GEUMALE	1	0	0	0	0	0
golden dock	<i>Rumex maritimus</i>	RUMEMAR	1	0	0	0	0	0
leafy spurge	<i>Euphorbia esula</i>	EUPHESU	0	0	0	0	1	0
star-flowered Solomon's-seal	<i>Smilacina stellata</i>	SMILSTE	1	0	0	0	0	0
common pepper-grass	<i>Lepidium densiflorum</i>	LEPIDEN	0	0	0	0	0	1
cow parsnip	<i>Heracleum lanatum</i>	JERALAN	1	0	0	0	0	0
common mare's-tail	<i>Hippuris vulgaris</i>	HIPPVUL	1	0	0	0	0	0
small-leaved everlasting	<i>Antennaria parvifolia</i>	ANTEPAR	0	1	0	0	0	0

Common_Name	Scientific_Name	Abbreviation	Native	Disturbance	Category			
					Unknown	Poisonous	Invasive	Introduced
lamb's-quarters	<i>Chenopodium album</i>	CHENALB	0	1	0	0	0	0
wavy-leaved thistle	<i>Cirsium undulatum</i>	CIRSUND	1	0	0	0	0	0
common fireweed	<i>Epilobium angustifolium</i>	EPILANG	1	0	0	0	0	0
water smartweed	<i>Polygonum amphibium</i>	POLYAMP	1	0	0	0	0	0
western Canada violet	<i>Viola canadensis</i>	VIOLCAN	1	0	0	0	0	0
scentless chamomile	<i>Matricaria perforata</i>	MATRPER	0	0	0	0	1	0
graceful cinquefoil	<i>Potentilla gracilis</i>	POTEGRA	1	0	0	0	0	0
low goldenrod	<i>Solidago missouriensis</i>	SOLIMIS	1	0	0	0	0	0
butter-and-eggs	<i>Linaria vulgaris</i>	LINAVUL	0	0	0	0	1	0
bull thistle	<i>Cirsium vulgare</i>	CIRSVUL	0	0	0	0	0	1
wild blue flax	<i>Linum lewisii</i>	LINULEW	1	0	0	0	0	0
slender arrow-grass	<i>Triglochin palustris</i>	TRIGPAL	0	0	0	1	0	0
thistle	<i>Cirsium spp.</i>	CIRSIUX	0	0	1	0	0	0
caraway	<i>Carum carvi</i>	CARUCAR	0	0	0	0	0	1
Macoun's buttercup	<i>Ranunculus macounii</i>	RANUMAC	1	0	0	0	0	0
northern water-horehound	<i>Lycopus uniflorus</i>	LYCOUNI	1	0	0	0	0	0
owl-clover	<i>Orthocarpus luteus</i>	ORTHLUT	1	0	0	0	0	0
agrimony	<i>Agrimonia striata</i>	AGRISTR	1	0	0	0	0	0
purple avens	<i>Geum rivale</i>	GEUMRIV	1	0	0	0	0	0
rhombic-leaved sunflower	<i>Helianthus subrhomboides</i>	HELISUB	1	0	0	0	0	0
harebell	<i>Campanula rotundifolia</i>	CAMPROT	1	0	0	0	0	0
ox-eye daisy	<i>Chrysanthemum leucanthemum</i>	CHRYLEU	0	0	0	0	1	0
red and white baneberry	<i>Actaea rubra</i>	ACTARUB	0	0	0	1	0	0
fairybells	<i>Disporum trachycarpum</i>	DISPTRA	1	0	0	0	0	0
prickly lettuce	<i>Lactuca serriola</i>	LACTSER	0	0	0	0	0	1
yellow evening-primrose	<i>Oenothera biennis</i>	OENOBIE	1	0	0	0	0	0
prairie coneflower	<i>Ratibida columnifera</i>	RATICOL	1	0	0	0	0	0
common mullein	<i>Verbascum thapsus</i>	VERBTHA	0	0	0	0	0	1
great ragweed	<i>Ambrosia trifida</i>	AMBRTRI	1	0	0	0	0	0
meadow aster	<i>Aster campestris</i>	ASTECAM	1	0	0	0	0	0

Appendix F. Normality

Page/Date/Time
Database1 14/10/2007 3:44:23 PM
C:\DOCUMENTS AND SETTINGS\SA ... NCSS_OCTOBER_2007\RAWDATA.S0

Normality Test Section of HealthScore

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9297771	0.1924446			Can't reject normality
Anderson-Darling	0.3954456	0.3714978			Can't reject normality
Martinez-Igiewicz	1.101728		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	8.041234E-02		0.185	0.202	Can't reject normality
D'Agostino Skewness	-1.374299	0.1693489	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	1.2645	0.206063	1.645	1.960	Can't reject normality
D'Agostino Omnibus	3.4876	0.174857	4.605	5.991	Can't reject normality

Normality Test Section of HealthRating

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8182758	2.784957E-03			Reject normality
Anderson-Darling	1.34585	1.736186E-03			Reject normality
Martinez-Igiewicz	1.023968		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2222222		0.185	0.202	Reject normality
D'Agostino Skewness	0	1	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-1.5506	0.121004	1.645	1.960	Can't reject normality
D'Agostino Omnibus	2.4043	0.300550	4.605	5.991	Can't reject normality

Normality Test Section of Size

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5400033	1.819254E-06			Reject normality
Anderson-Darling	3.992512	6.189083E-10			Reject normality
Martinez-Igiewicz	383.4727		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.4267206		0.185	0.202	Reject normality
D'Agostino Skewness	3.334613	8.541811E-04	1.645	1.960	Reject normality
D'Agostino Kurtosis	2.0955	0.036129	1.645	1.960	Reject normality
D'Agostino Omnibus	15.5106	0.000428	4.605	5.991	Reject normality

Normality Test Section of Trees

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6007442	6.88274E-06			Reject normality
Anderson-Darling	3.584883	5.988873E-09			Reject normality
Martinez-Igiewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.4206834		0.185	0.202	Reject normality
D'Agostino Skewness	1.467878	0.1421373	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-2.6190	0.008818	1.645	1.960	Reject normality
D'Agostino Omnibus	9.0140	0.011031	4.605	5.991	Reject normality

Normality Test Section of Treesgr6ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.3616531	6.220974E-08			Reject normality
Anderson-Darling	4.922798	3.565196E-12			Reject normality
Martinez-Igiewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.417307		0.185	0.202	Reject normality
D'Agostino Skewness	5.008723	5.479228E-07	1.645	1.960	Reject normality
D'Agostino Kurtosis	4.3875	0.000011	1.645	1.960	Reject normality
D'Agostino Omnibus	44.3374	0.000000	4.605	5.991	Reject normality

Normality Test Section of Treesgr1_5ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
-----------	------------	------------	--------------------	-------------------	---------------

Shapiro-Wilk W	0.4354615	2.316284E-07			Reject normality
Anderson-Darling	4.036704	4.840882E-10			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.3740628		0.185	0.202	Reject normality
D'Agostino Skewness	4.786534	1.696859E-06	1.645	1.960	Reject normality
D'Agostino Kurtosis	4.2218	0.000024	1.645	1.960	Reject normality
D'Agostino Omnibus	40.7342	0.000000	4.605	5.991	Reject normality

Normality Test Section of Treesle1_5ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5195964	1.191374E-06			Reject normality
Anderson-Darling	4.465633	4.476122E-11			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.4760586		0.185	0.202	Reject normality
D'Agostino Skewness	2.553455	0.010666	1.645	1.960	Reject normality
D'Agostino Kurtosis	0.3699	0.711420	1.645	1.960	Can't reject normality
D'Agostino Omnibus	6.6570	0.035847	4.605	5.991	Reject normality

Normality Test Section of Shrubsgr6ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8213027	3.08637E-03			Reject normality
Anderson-Darling	1.254038	2.919478E-03			Reject normality
Martinez-Iglewicz	0.9550509		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2328827		0.185	0.202	Reject normality
D'Agostino Skewness	0.4774401	0.6330488	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-3.2479	0.001163	1.645	1.960	Reject normality
D'Agostino Omnibus	10.7766	0.004570	4.605	5.991	Reject normality

Normality Test Section of Shrubsgr1_5ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8710674	1.852876E-02			Reject normality
Anderson-Darling	0.8721908	0.0254386			Reject normality
Martinez-Iglewicz	1.180413		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2446461		0.185	0.202	Reject normality
D'Agostino Skewness	1.868534	6.168764E-02	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.6842	0.493822	1.645	1.960	Can't reject normality
D'Agostino Omnibus	3.9596	0.138096	4.605	5.991	Can't reject normality

Normality Test Section of Shrubsle1_5ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.745837	2.870215E-04			Reject normality
Anderson-Darling	1.814286	1.230606E-04			Reject normality
Martinez-Iglewicz	1.802832		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.3462721		0.185	0.202	Reject normality
D'Agostino Skewness	2.865099	4.16879E-03	1.645	1.960	Reject normality
D'Agostino Kurtosis	2.1032	0.035451	1.645	1.960	Reject normality
D'Agostino Omnibus	12.6321	0.001807	4.605	5.991	Reject normality

Normality Test Section of Grassgr6ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5664986	3.206627E-06			Reject normality
Anderson-Darling	3.969806	7.022028E-10			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.4488682		0.185	0.202	Reject normality
D'Agostino Skewness	1.989852	4.660721E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	-1.0565	0.290754	1.645	1.960	Can't reject normality
D'Agostino Omnibus	5.0756	0.079039	4.605	5.991	Can't reject normality

Normality Test Section of Grassgr1_5ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9485609	0.4028902			Can't reject normality
Anderson-Darling	0.3684357	0.4290574			Can't reject normality
Martinez-Iglewicz	0.9784497		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.160736		0.185	0.202	Can't reject normality
D'Agostino Skewness	-8.275528E-02	0.9340461	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-1.2325	0.217770	1.645	1.960	Can't reject normality
D'Agostino Omnibus	1.5259	0.466299	4.605	5.991	Can't reject normality

Normality Test Section of Grassle1_5ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9154584	0.1074211			Can't reject normality
Anderson-Darling	0.596626	0.119255			Can't reject normality
Martinez-Iglewicz	1.001282		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2289425		0.185	0.202	Reject normality
D'Agostino Skewness	1.308296	0.190773	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.3130	0.754248	1.645	1.960	Can't reject normality
D'Agostino Omnibus	1.8096	0.404616	4.605	5.991	Can't reject normality

Normality Test Section of Forbsgr6ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.3730532	7.571515E-08			Reject normality
Anderson-Darling	5.743605	3.869969E-14			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.5233124		0.185	0.202	Reject normality
D'Agostino Skewness	3.98978	6.613471E-05	1.645	1.960	Reject normality
D'Agostino Kurtosis	3.0178	0.002546	1.645	1.960	Reject normality
D'Agostino Omnibus	25.0257	0.000004	4.605	5.991	Reject normality

Normality Test Section of Forbsgr1_5ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7296584	1.80469E-04			Reject normality
Anderson-Darling	2.660035	1.056204E-06			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.3623901		0.185	0.202	Reject normality
D'Agostino Skewness	0.3837732	0.7011465	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	1.4294	0.152899	1.645	1.960	Can't reject normality
D'Agostino Omnibus	2.1904	0.334479	4.605	5.991	Can't reject normality

Normality Test Section of Forbsle1_5ft

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7374336	2.251515E-04			Reject normality
Anderson-Darling	1.799159	1.340244E-04			Reject normality
Martinez-Iglewicz	5.149654		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.2836424		0.185	0.202	Reject normality
D'Agostino Skewness	3.055999	2.243123E-03	1.645	1.960	Reject normality
D'Agostino Kurtosis	2.1703	0.029986	1.645	1.960	Reject normality
D'Agostino Omnibus	14.0492	0.000890	4.605	5.991	Reject normality

Normality Test Section of CC_Trees

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.3665964	6.772282E-08			Reject normality
Anderson-Darling	4.839479	5.650572E-12			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.4197457		0.185	0.202	Reject normality
D'Agostino Skewness	5.00982	5.44809E-07	1.645	1.960	Reject normality

D'Agostino Kurtosis	4.3886	0.000011	1.645	1.960	Reject normality
D'Agostino Omnibus	44.3582	0.000000	4.605	5.991	Reject normality

Normality Test Section of CC_Shrubs

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9338177	0.2265352			Can't reject normality
Anderson-Darling	0.4133766	0.3372424			Can't reject normality
Martinez-Iglewicz	0.978077		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1238599		0.185	0.202	Can't reject normality
D'Agostino Skewness	-0.3574641	0.7207444	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-1.5035	0.132705	1.645	1.960	Can't reject normality
D'Agostino Omnibus	2.3884	0.302953	4.605	5.991	Can't reject normality

Normality Test Section of CC_Grams

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.810092	2.116528E-03			Reject normality
Anderson-Darling	1.453064	9.466589E-04			Reject normality
Martinez-Iglewicz	2.104529		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.2374483		0.185	0.202	Reject normality
D'Agostino Skewness	-2.536534	1.119559E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	1.8623	0.062565	1.645	1.960	Can't reject normality
D'Agostino Omnibus	9.9021	0.007076	4.605	5.991	Reject normality

Normality Test Section of CC_Forbs

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8011739	1.578071E-03			Reject normality
Anderson-Darling	1.460146	9.094969E-04			Reject normality
Martinez-Iglewicz	1.032367		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2565403		0.185	0.202	Reject normality
D'Agostino Skewness	1.964067	4.952239E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	0.9887	0.322810	1.645	1.960	Can't reject normality
D'Agostino Omnibus	4.8351	0.089140	4.605	5.991	Can't reject normality

Normality Test Section of CC_Wood

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9283111	0.1813373			Can't reject normality
Anderson-Darling	0.4544552	0.2693013			Can't reject normality
Martinez-Iglewicz	0.9742721		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1209368		0.185	0.202	Can't reject normality
D'Agostino Skewness	-0.4457341	0.6557894	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-1.6501	0.098932	1.645	1.960	Can't reject normality
D'Agostino Omnibus	2.9214	0.232078	4.605	5.991	Can't reject normality

Normality Test Section of CC_Weeds

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.756087	3.88028E-04			Reject normality
Anderson-Darling	1.93309	6.297285E-05			Reject normality
Martinez-Iglewicz	1.023126		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.3305031		0.185	0.202	Reject normality
D'Agostino Skewness	1.492758	0.1355006	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-1.3576	0.174576	1.645	1.960	Can't reject normality
D'Agostino Omnibus	4.0715	0.130581	4.605	5.991	Can't reject normality

Normality Test Section of CC_All

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.538608	1.766719E-06			Reject normality
Anderson-Darling	3.853688	1.339757E-09			Reject normality

Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.4017181		0.185	0.202	Reject normality
D'Agostino Skewness	-3.641144	2.714297E-04	1.645	1.960	Reject normality
D'Agostino Kurtosis	2.9471	0.003208	1.645	1.960	Reject normality
D'Agostino Omnibus	21.9434	0.000017	4.605	5.991	Reject normality

Normality Test Section of AltBanks

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7367437	2.207465E-04			Reject normality
Anderson-Darling	2.016179	3.94272E-05			Reject normality
Martinez-Iglewicz	6.475797		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.2953697		0.185	0.202	Reject normality
D'Agostino Skewness	2.384079	1.712193E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	0.5265	0.598572	1.645	1.960	Can't reject normality
D'Agostino Omnibus	5.9610	0.050768	4.605	5.991	Can't reject normality

Normality Test Section of HoofShear

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7939528	1.249291E-03			Reject normality
Anderson-Darling	1.460015	9.101718E-04			Reject normality
Martinez-Iglewicz	1.200999		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1905449		0.185	0.202	Can't reject normality
D'Agostino Skewness	-1.727113	8.414747E-02	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-0.7489	0.453924	1.645	1.960	Can't reject normality
D'Agostino Omnibus	3.5438	0.170014	4.605	5.991	Can't reject normality

Normality Test Section of Trails

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6922647	6.500845E-05			Reject normality
Anderson-Darling	1.816373	1.216201E-04			Reject normality
Martinez-Iglewicz	3.066006		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.2389101		0.185	0.202	Reject normality
D'Agostino Skewness	3.644305	2.681151E-04	1.645	1.960	Reject normality
D'Agostino Kurtosis	3.2101	0.001327	1.645	1.960	Reject normality
D'Agostino Omnibus	23.5859	0.000008	4.605	5.991	Reject normality

Normality Test Section of Bareground

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6524742	2.35248E-05			Reject normality
Anderson-Darling	2.450484	3.424957E-06			Reject normality
Martinez-Iglewicz	2.422724		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.3793091		0.185	0.202	Reject normality
D'Agostino Skewness	3.702089	2.138316E-04	1.645	1.960	Reject normality
D'Agostino Kurtosis	3.0867	0.002024	1.645	1.960	Reject normality
D'Agostino Omnibus	23.2330	0.000009	4.605	5.991	Reject normality

Normality Test Section of VegCover

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5520045	2.345915E-06			Reject normality
Anderson-Darling	3.907395	9.936485E-10			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.4078467		0.185	0.202	Reject normality
D'Agostino Skewness	-3.33045	8.670562E-04	1.645	1.960	Reject normality
D'Agostino Kurtosis	2.4353	0.014879	1.645	1.960	Reject normality
D'Agostino Omnibus	17.0227	0.000201	4.605	5.991	Reject normality

Normality Test Section of CC_Invasiveveg

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6620559	2.986716E-05			Reject normality
Anderson-Darling	2.893878	2.84742E-07			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.4055717		0.185	0.202	Reject normality
D'Agostino Skewness	2.411002	1.590875E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	1.1680	0.242787	1.645	1.960	Can't reject normality
D'Agostino Omnibus	7.1773	0.027636	4.605	5.991	Reject normality

Normality Test Section of DD_Invasiveveg

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6114761	8.812547E-06			Reject normality
Anderson-Darling	2.828464	4.107846E-07			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.3813098		0.185	0.202	Reject normality
D'Agostino Skewness	3.546402	3.905295E-04	1.645	1.960	Reject normality
D'Agostino Kurtosis	3.0391	0.002373	1.645	1.960	Reject normality
D'Agostino Omnibus	21.8133	0.000018	4.605	5.991	Reject normality

Normality Test Section of Dist_Undesveg

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6620818	2.988663E-05			Reject normality
Anderson-Darling	2.821907	4.26159E-07			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.4025095		0.185	0.202	Reject normality
D'Agostino Skewness	2.399934	1.639801E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	0.8268	0.408348	1.645	1.960	Can't reject normality
D'Agostino Omnibus	6.4433	0.039889	4.605	5.991	Reject normality

Normality Test Section of Tr_Shr_EstReg

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6410183	1.776808E-05			Reject normality
Anderson-Darling	3.008628	1.497656E-07			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.3966688		0.185	0.202	Reject normality
D'Agostino Skewness	2.375045	1.754683E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	0.3878	0.698149	1.645	1.960	Can't reject normality
D'Agostino Omnibus	5.7912	0.055265	4.605	5.991	Can't reject normality

Normality Test Section of Utilization

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5664986	3.206627E-06			Reject normality
Anderson-Darling	3.969806	7.022028E-10			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.3933127		0.185	0.202	Reject normality
D'Agostino Skewness	-1.989852	4.660721E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	-1.0565	0.290754	1.645	1.960	Can't reject normality
D'Agostino Omnibus	5.0756	0.079039	4.605	5.991	Can't reject normality

Normality Test Section of Dead_Dec

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.3730532	7.571515E-08			Reject normality
Anderson-Darling	5.743605	3.869969E-14			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality

Kolmogorov-Smirnov	0.4677568		0.185	0.202	Reject normality
D'Agostino Skewness	-3.98978	6.613471E-05	1.645	1.960	Reject normality
D'Agostino Kurtosis	3.0178	0.002546	1.645	1.960	Reject normality
D'Agostino Omnibus	25.0257	0.000004	4.605	5.991	Reject normality

Normality Test Section of Rootmass_Prot

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7822737	8.625896E-04			Reject normality
Anderson-Darling	1.708712	2.232924E-04			Reject normality
Martinez-Iglewicz	0.9034442		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2547557		0.185	0.202	Reject normality
D'Agostino Skewness	-1.045451	0.2958144	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-1.8279	0.067566	1.645	1.960	Can't reject normality
D'Agostino Omnibus	4.4341	0.108927	4.605	5.991	Can't reject normality

Normality Test Section of HC_Bareground

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7502934	3.269836E-04			Reject normality
Anderson-Darling	1.901068	7.543217E-05			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2687106		0.185	0.202	Reject normality
D'Agostino Skewness	-2.319178	2.038536E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	1.1408	0.253942	1.645	1.960	Can't reject normality
D'Agostino Omnibus	6.6801	0.035436	4.605	5.991	Reject normality

Normality Test Section of Structaltbanks

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8278359	3.861897E-03			Reject normality
Anderson-Darling	1.118905	6.277118E-03			Reject normality
Martinez-Iglewicz	0.9647236		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2013566		0.185	0.202	Can't reject normality
D'Agostino Skewness	0.359377	0.7193131	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-2.7367	0.006206	1.645	1.960	Reject normality
D'Agostino Omnibus	7.6187	0.022162	4.605	5.991	Reject normality

Normality Test Section of HC_Altpolygon

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6418211	1.811804E-05			Reject normality
Anderson-Darling	3.114353	8.289135E-08			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.3602004		0.185	0.202	Reject normality
D'Agostino Skewness	-1.706624	0.0878919	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-1.4729	0.140771	1.645	1.960	Can't reject normality
D'Agostino Omnibus	5.0821	0.078785	4.605	5.991	Can't reject normality

Normality Test Section of Chann_Incisement

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	1	1			Can't reject normality
Anderson-Darling					
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0		0.185	0.202	
D'Agostino Skewness	0		1.645	1.960	
D'Agostino Kurtosis		1.000000	1.645	1.960	
D'Agostino Omnibus			4.605	5.991	

Normality Test Section of Veg

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8224536	3.209937E-03			Reject normality
Anderson-Darling	1.454174	9.407376E-04			Reject normality
Martinez-Iglewicz	3.609942		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.2579667		0.185	0.202	Reject normality
D'Agostino Skewness	2.504874	1.224949E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	1.6744	0.094053	1.645	1.960	Can't reject normality
D'Agostino Omnibus	9.0780	0.010684	4.605	5.991	Reject normality

Normality Test Section of Soil__Hydro

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9144529	0.1031103			Can't reject normality
Anderson-Darling	0.4810616	0.2322078			Can't reject normality
Martinez-Iglewicz	1.057758		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1271817		0.185	0.202	Can't reject normality
D'Agostino Skewness	-1.284959	0.1988065	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.4188	0.675371	1.645	1.960	Can't reject normality
D'Agostino Omnibus	1.8265	0.401217	4.605	5.991	Can't reject normality

Normality Test Section of Overall

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9117688	0.0924426			Can't reject normality
Anderson-Darling	0.5165247	0.1900078			Can't reject normality
Martinez-Iglewicz	1.121306		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1305932		0.185	0.202	Can't reject normality
D'Agostino Skewness	-1.705796	8.804601E-02	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.6665	0.505078	1.645	1.960	Can't reject normality
D'Agostino Omnibus	3.3540	0.186935	4.605	5.991	Can't reject normality

Normality Test Section of Med_Boulders

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5183225	1.160725E-06			Reject normality
Anderson-Darling	3.042274	1.240611E-07			Reject normality
Martinez-Iglewicz	6.919167		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.3811882		0.185	0.202	Reject normality
D'Agostino Skewness	4.561699	5.074136E-06	1.645	1.960	Reject normality
D'Agostino Kurtosis	4.0768	0.000046	1.645	1.960	Reject normality
D'Agostino Omnibus	37.4297	0.000000	4.605	5.991	Reject normality

Normality Test Section of Small_Boulders

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5065653	9.143609E-07			Reject normality
Anderson-Darling	3.163124	6.310436E-08			Reject normality
Martinez-Iglewicz	0		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.3661424		0.185	0.202	Reject normality
D'Agostino Skewness	4.598869	4.247902E-06	1.645	1.960	Reject normality
D'Agostino Kurtosis	4.0967	0.000042	1.645	1.960	Reject normality
D'Agostino Omnibus	37.9326	0.000000	4.605	5.991	Reject normality

Normality Test Section of Large_Cobble

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.544767	2.011469E-06			Reject normality
Anderson-Darling	3.146346	6.931108E-08			Reject normality
Martinez-Iglewicz	8.851644		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.3939373		0.185	0.202	Reject normality
D'Agostino Skewness	4.311339	1.62269E-05	1.645	1.960	Reject normality
D'Agostino Kurtosis	3.7869	0.000153	1.645	1.960	Reject normality

D'Agostino Omnibus	32.9284	0.000000	4.605	5.991	Reject normality
--------------------	---------	----------	-------	-------	------------------

Normality Test Section of Small_Cobble

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.3566535	5.711471E-08			Reject normality
Anderson-Darling	4.863233	4.955187E-12			Reject normality
Martinez-Iglewicz	71.05238		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.4064504		0.185	0.202	Reject normality
D'Agostino Skewness	5.080849	3.757511E-07	1.645	1.960	Reject normality
D'Agostino Kurtosis	4.4443	0.000009	1.645	1.960	Reject normality
D'Agostino Omnibus	45.5664	0.000000	4.605	5.991	Reject normality

Normality Test Section of Coarse_Gravel

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.546223	2.074439E-06			Reject normality
Anderson-Darling	3.250013	3.882657E-08			Reject normality
Martinez-Iglewicz	23.01576		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.349061		0.185	0.202	Reject normality
D'Agostino Skewness	4.244717	2.188696E-05	1.645	1.960	Reject normality
D'Agostino Kurtosis	3.6481	0.000264	1.645	1.960	Reject normality
D'Agostino Omnibus	31.3264	0.000000	4.605	5.991	Reject normality

Normality Test Section of Fine_Gravel

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6380907	1.655173E-05			Reject normality
Anderson-Darling	2.90702	2.645349E-07			Reject normality
Martinez-Iglewicz	19.16498		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.3608508		0.185	0.202	Reject normality
D'Agostino Skewness	2.809348	4.964201E-03	1.645	1.960	Reject normality
D'Agostino Kurtosis	1.2450	0.213131	1.645	1.960	Can't reject normality
D'Agostino Omnibus	9.4425	0.008904	4.605	5.991	Reject normality

Normality Test Section of Sand

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8765047	2.281027E-02			Reject normality
Anderson-Darling	1.026224	1.061568E-02			Reject normality
Martinez-Iglewicz	1.020602		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2151186		0.185	0.202	Reject normality
D'Agostino Skewness	0.3421719	0.7322215	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.6042	0.545684	1.645	1.960	Can't reject normality
D'Agostino Omnibus	0.4822	0.785768	4.605	5.991	Can't reject normality

Normality Test Section of Silt_and_Clay

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8508028	8.719409E-03			Reject normality
Anderson-Darling	1.068145	8.369841E-03			Reject normality
Martinez-Iglewicz	1.263487		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1556484		0.185	0.202	Can't reject normality
D'Agostino Skewness	-1.844558	6.510182E-02	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.0905	0.927912	1.645	1.960	Can't reject normality
D'Agostino Omnibus	3.4106	0.181720	4.605	5.991	Can't reject normality

Normality Test Section of Graminoids

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
-----------	------------	------------	--------------------	-------------------	---------------

Shapiro-Wilk W	0.9581585	0.5665035			Can't reject normality
Anderson-Darling	0.2267209	0.8166223			Can't reject normality
Martinez-Iglewicz	0.9700337		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	8.175015E-02		0.185	0.202	Can't reject normality
D'Agostino Skewness	0.2212293	0.8249139	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-0.5899	0.555224	1.645	1.960	Can't reject normality
D'Agostino Omnibus	0.3970	0.819967	4.605	5.991	Can't reject normality

Normality Test Section of Forbs

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8365059	5.226301E-03			Reject normality
Anderson-Darling	0.7719624	0.0449435			Reject normality
Martinez-Iglewicz	1.61358		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.1414446		0.185	0.202	Can't reject normality
D'Agostino Skewness	2.953903	3.137821E-03	1.645	1.960	Reject normality
D'Agostino Kurtosis	2.6052	0.009181	1.645	1.960	Reject normality
D'Agostino Omnibus	15.5128	0.000428	4.605	5.991	Reject normality

Normality Test Section of Shrubs

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8365959	5.242905E-03			Reject normality
Anderson-Darling	1.162111	4.913968E-03			Reject normality
Martinez-Iglewicz	1.401946		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2078387		0.185	0.202	Reject normality
D'Agostino Skewness	2.092803	3.636674E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	0.5079	0.611536	1.645	1.960	Can't reject normality
D'Agostino Omnibus	4.6378	0.098383	4.605	5.991	Can't reject normality

Normality Test Section of Total_forage

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9509259	0.4397268			Can't reject normality
Anderson-Darling	0.3807311	0.4019258			Can't reject normality
Martinez-Iglewicz	0.9899988		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1177614		0.185	0.202	Can't reject normality
D'Agostino Skewness	0.6271111	0.5305864	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-0.9516	0.341325	1.645	1.960	Can't reject normality
D'Agostino Omnibus	1.2987	0.522381	4.605	5.991	Can't reject normality

Normality Test Section of Litter

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8140846	2.418292E-03			Reject normality
Anderson-Darling	1.298674	2.267543E-03			Reject normality
Martinez-Iglewicz	1.58119		1.23901	1.407478	Reject normality
Kolmogorov-Smirnov	0.2748656		0.185	0.202	Reject normality
D'Agostino Skewness	2.120043	3.400242E-02	1.645	1.960	Reject normality
D'Agostino Kurtosis	0.4689	0.639161	1.645	1.960	Can't reject normality
D'Agostino Omnibus	4.7144	0.094684	4.605	5.991	Can't reject normality

Normality Test Section of Confirmbreed

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.863913	1.414556E-02			Reject normality
Anderson-Darling	0.9457448	1.675731E-02			Reject normality
Martinez-Iglewicz	1.072064		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2392062		0.185	0.202	Reject normality
D'Agostino Skewness	1.601422	0.1092835	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.2307	0.817522	1.645	1.960	Can't reject normality

D'Agostino Omnibus	2.6178	0.270118	4.605	5.991	Can't reject normality
--------------------	--------	----------	-------	-------	------------------------

Normality Test Section of Possiblebreed

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9305843	0.1988373			Can't reject normality
Anderson-Darling	0.5405833	0.1655083			Can't reject normality
Martinez-Iglewicz	1.05895		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1529468		0.185	0.202	Can't reject normality
D'Agostino Skewness	0.5518775	0.5810323	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.5702	0.568562	1.645	1.960	Can't reject normality
D'Agostino Omnibus	0.6297	0.729912	4.605	5.991	Can't reject normality

Normality Test Section of Breed_Pos_Birds

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9495081	0.4173521			Can't reject normality
Anderson-Darling	0.3865848	0.3895612			Can't reject normality
Martinez-Iglewicz	1.020639		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1441538		0.185	0.202	Can't reject normality
D'Agostino Skewness	-0.4175861	0.6762498	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-0.1514	0.879622	1.645	1.960	Can't reject normality
D'Agostino Omnibus	0.1973	0.906053	4.605	5.991	Can't reject normality

Normality Test Section of Speciesusing

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8413924	6.214058E-03			Reject normality
Anderson-Darling	1.062299	8.651899E-03			Reject normality
Martinez-Iglewicz	1.043286		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.2114339		0.185	0.202	Reject normality
D'Agostino Skewness	1.412549	0.1577883	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	-0.6523	0.514237	1.645	1.960	Can't reject normality
D'Agostino Omnibus	2.4207	0.298088	4.605	5.991	Can't reject normality

Normality Test Section of Commspecusing

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9176859	0.1176308			Can't reject normality
Anderson-Darling	0.7062513	6.528381E-02			Can't reject normality
Martinez-Iglewicz	1.079042		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.185737		0.185	0.202	Can't reject normality
D'Agostino Skewness	1.345034	0.1786143	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	0.5807	0.561448	1.645	1.960	Can't reject normality
D'Agostino Omnibus	2.1463	0.341926	4.605	5.991	Can't reject normality

Normality Test Section of Totalspeciesobs

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.9268165	0.1706543			Can't reject normality
Anderson-Darling	0.4342998	0.3009055			Can't reject normality
Martinez-Iglewicz	1.287405		1.23901	1.407478	Can't reject normality
Kolmogorov-Smirnov	0.1548407		0.185	0.202	Can't reject normality
D'Agostino Skewness	1.895894	0.0579741	1.645	1.960	Can't reject normality
D'Agostino Kurtosis	1.7840	0.074430	1.645	1.960	Can't reject normality
D'Agostino Omnibus	6.7769	0.033760	4.605	5.991	Reject normality

Martinez-Iglewicz Test

Based on the median & robust estimator of dispersion.

Very powerful test.

Works well with small sample sizes.

Particularly useful for symmetrically skewed samples.

A value close to 1.0 indicates normality.

Strongly recommended during EDA.

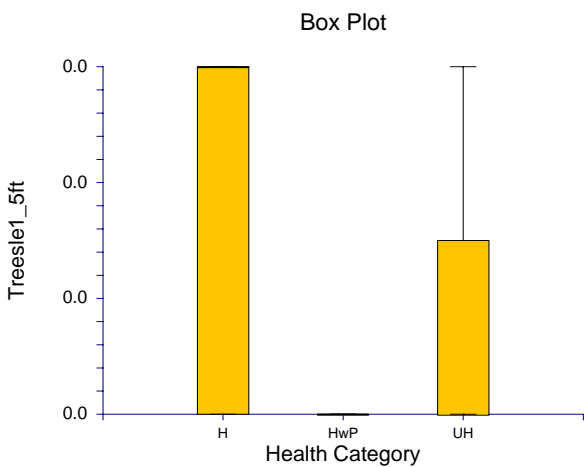
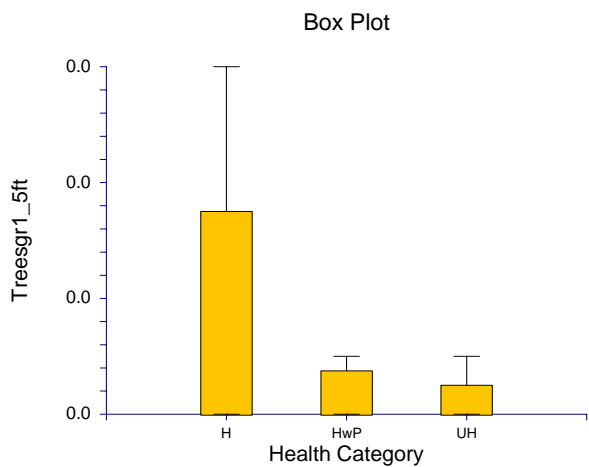
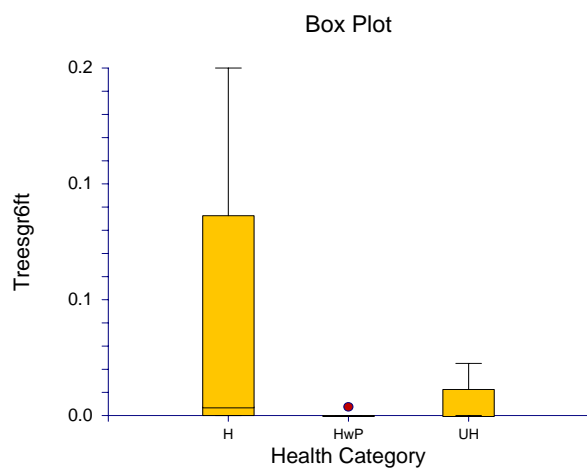
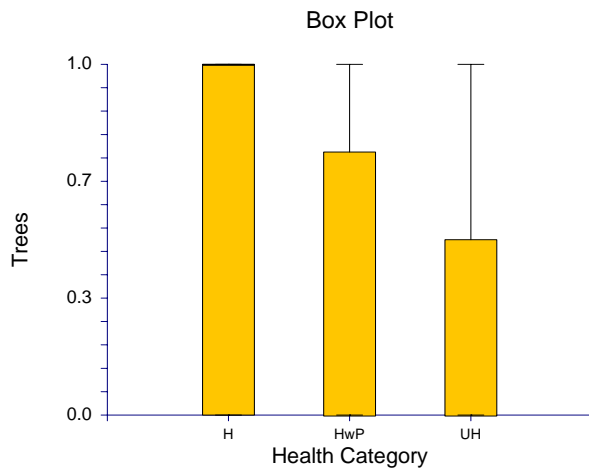
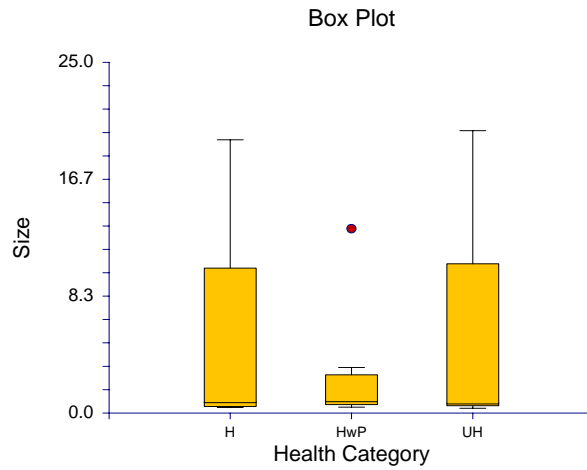
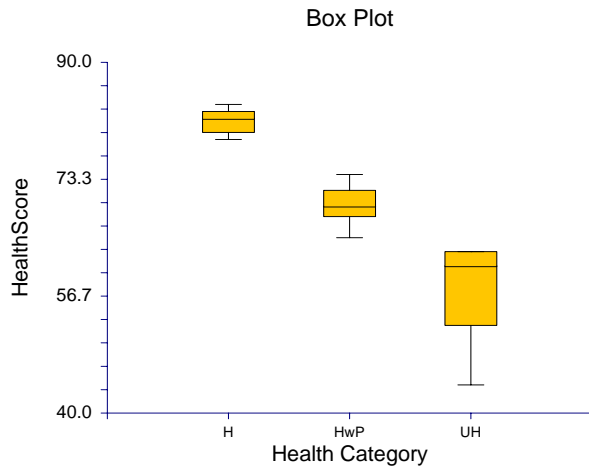
Appendix G. Box Plots

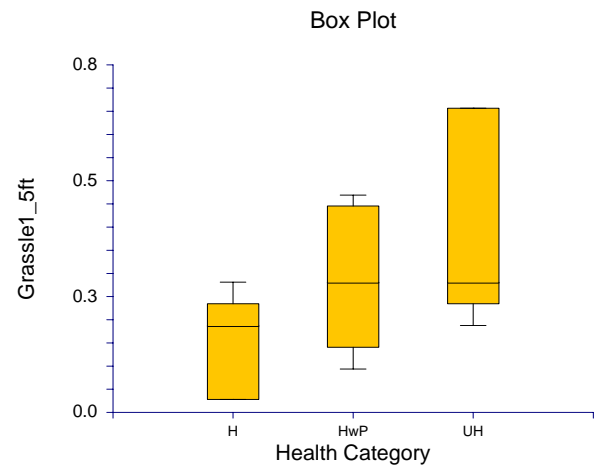
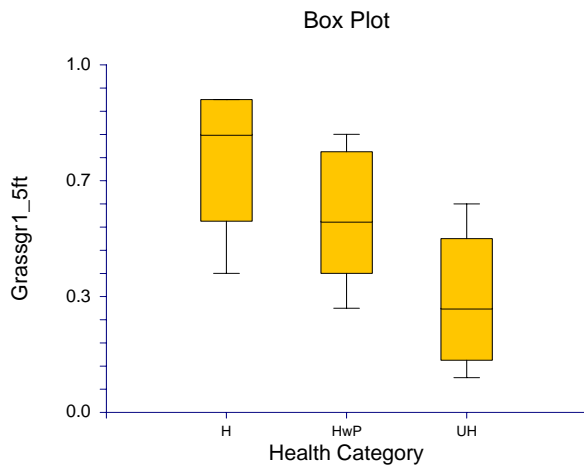
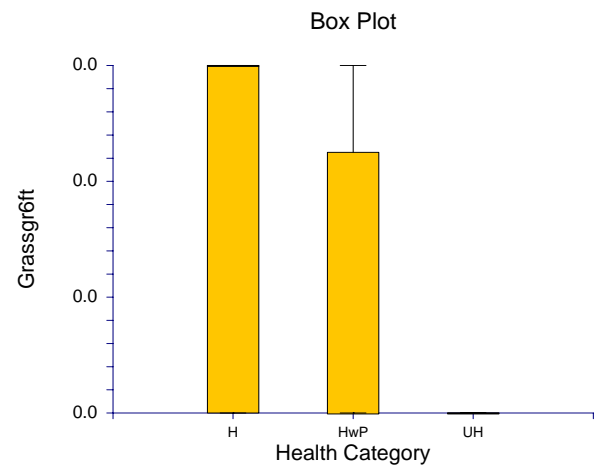
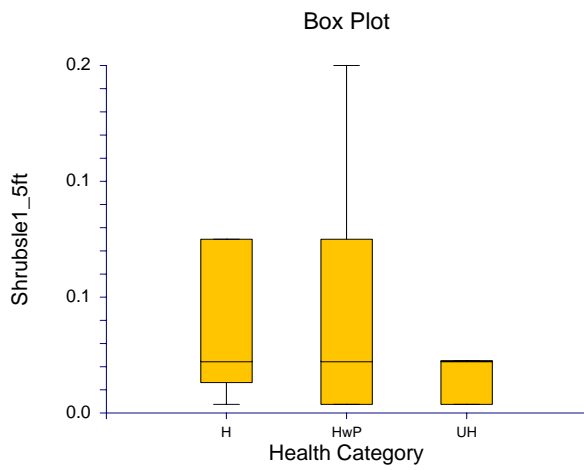
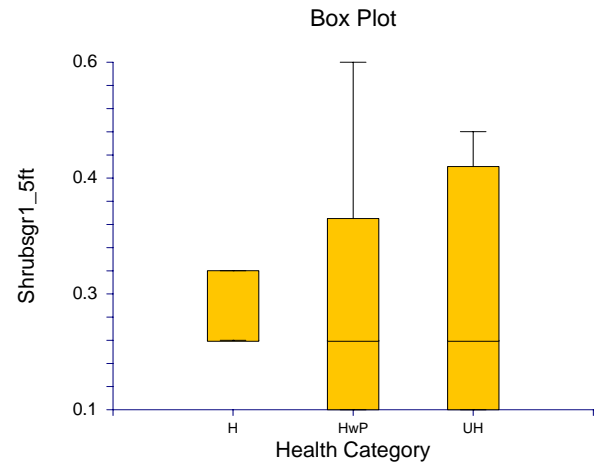
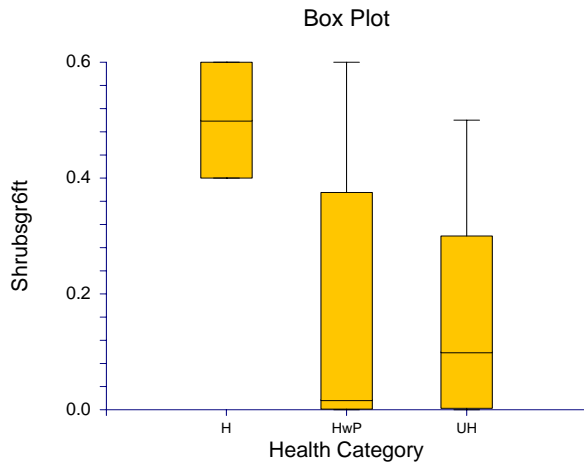
(Refer to Appendix A Raw Data for units.)

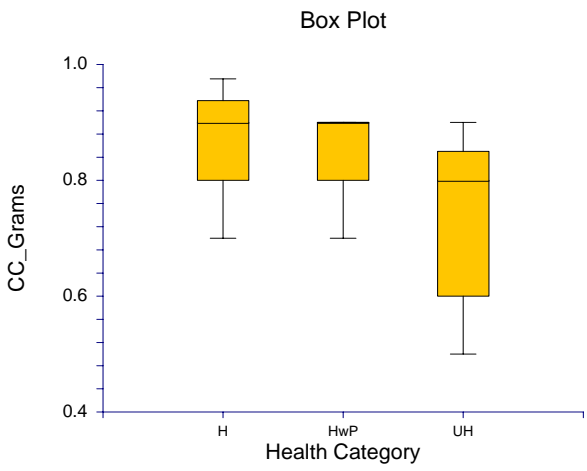
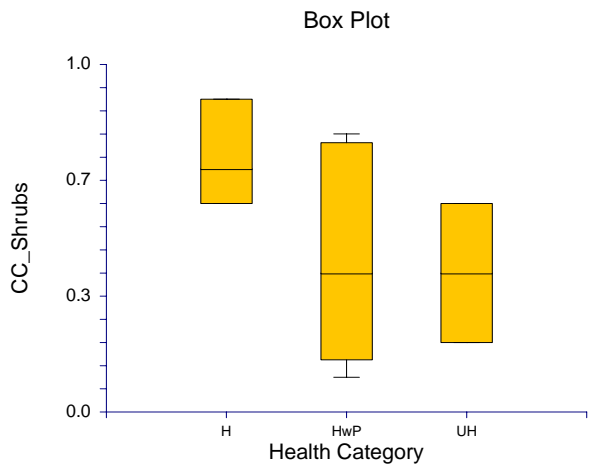
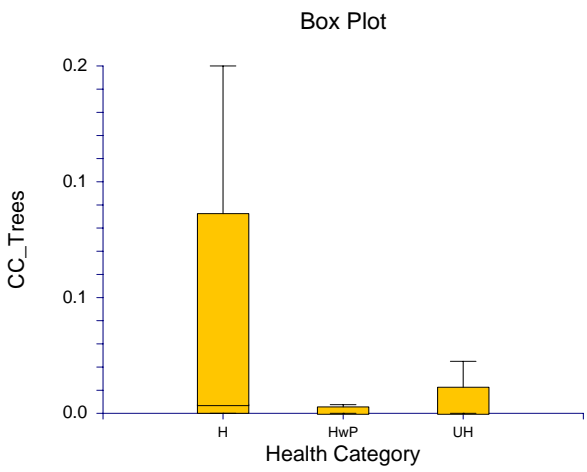
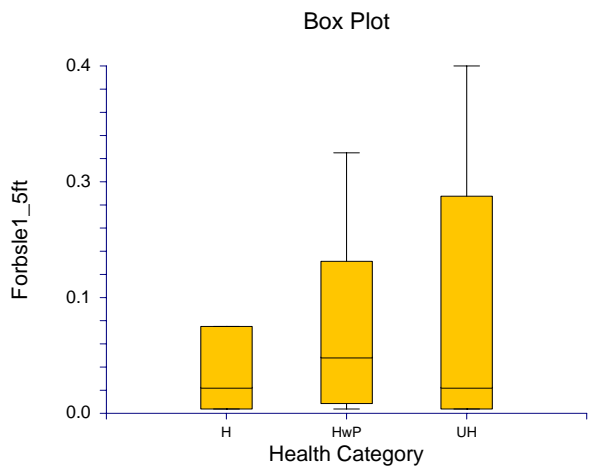
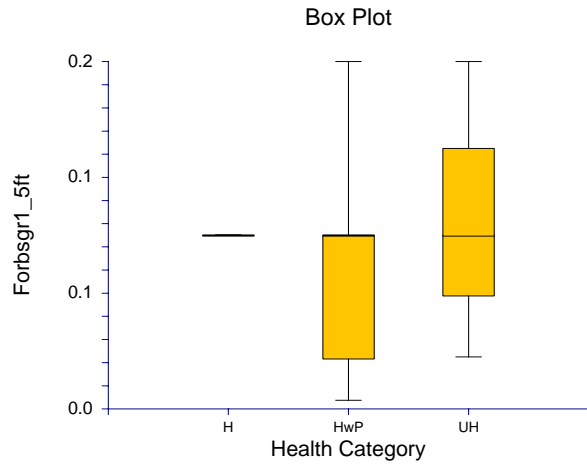
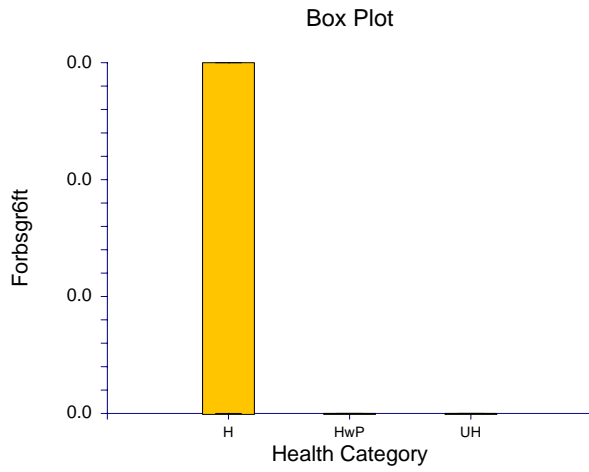
Page/Date/Time 1 14/10/2007 4:06:06 PM

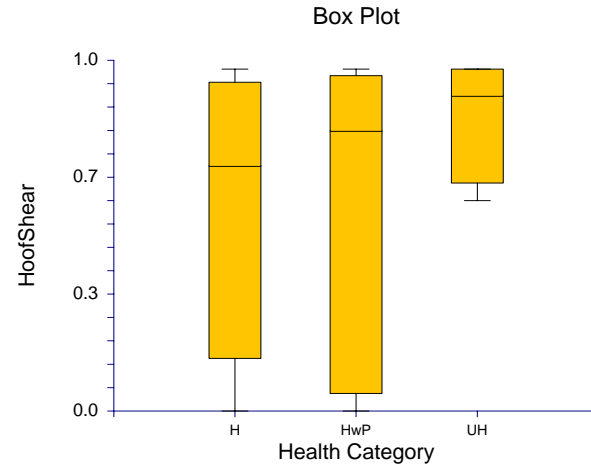
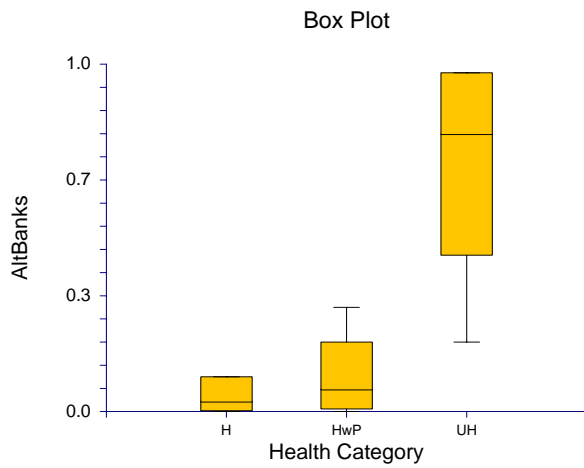
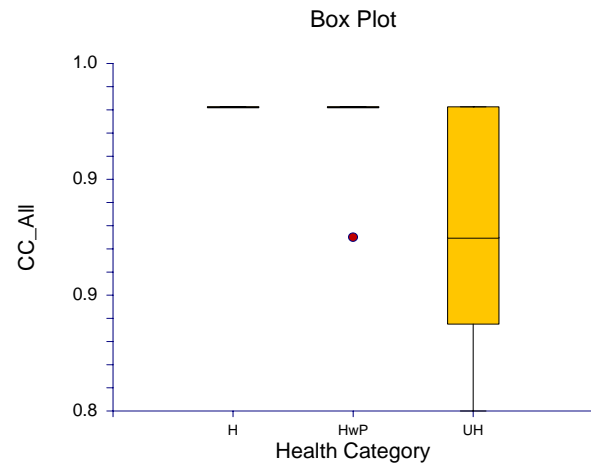
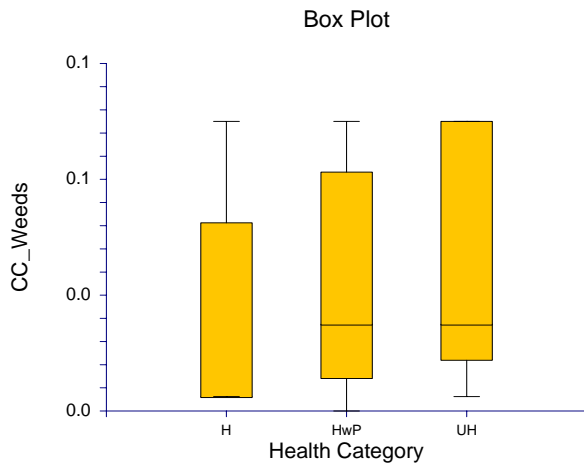
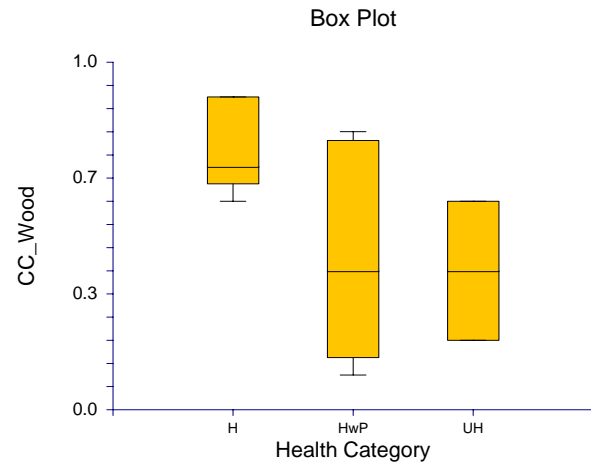
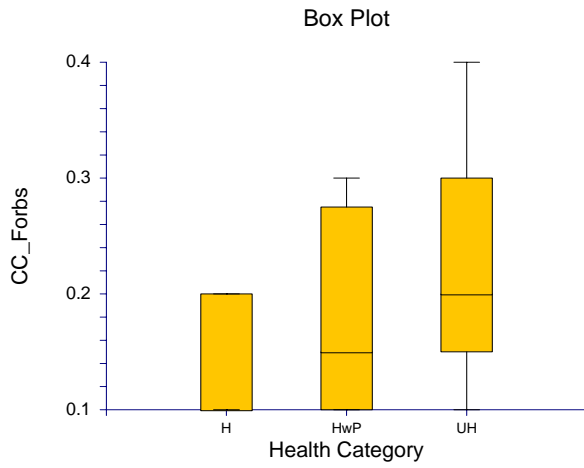
Database C:\DOCUMENTS AND SETTINGS\SA ... NCSS_OCTOBER_2007\RAWDATA.S0

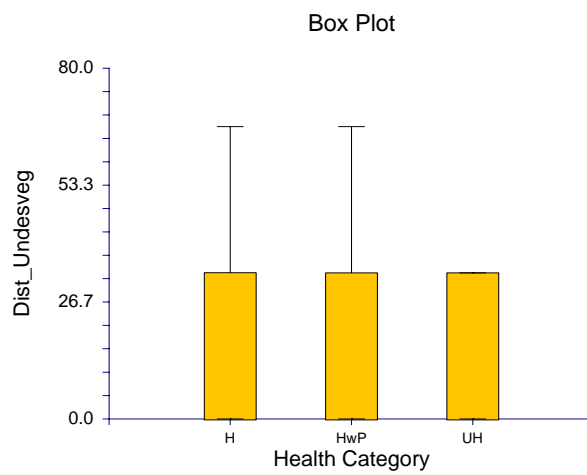
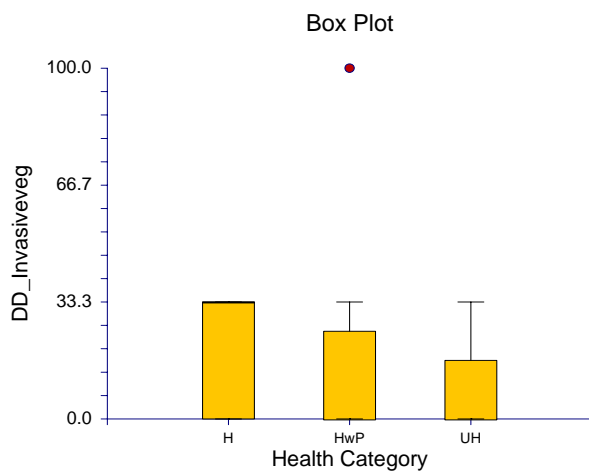
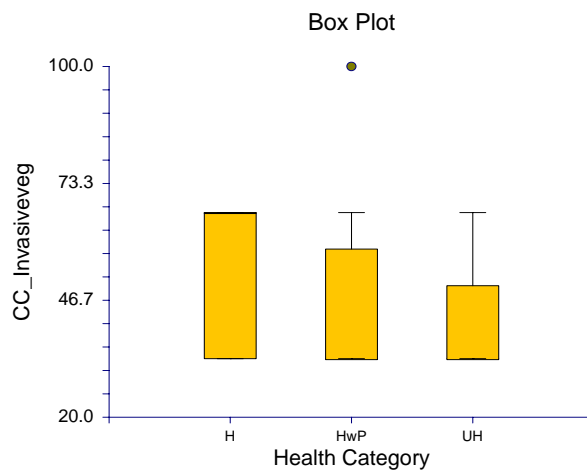
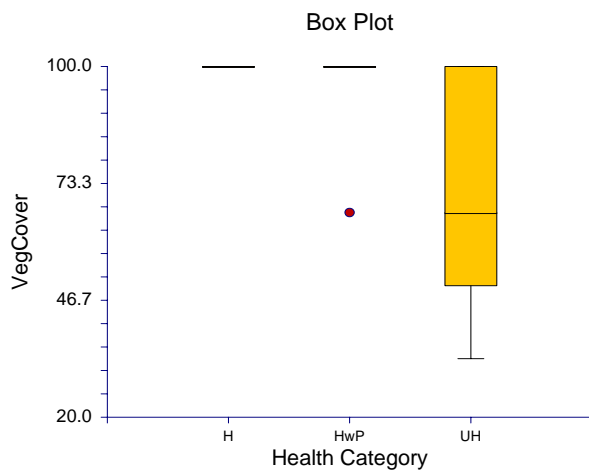
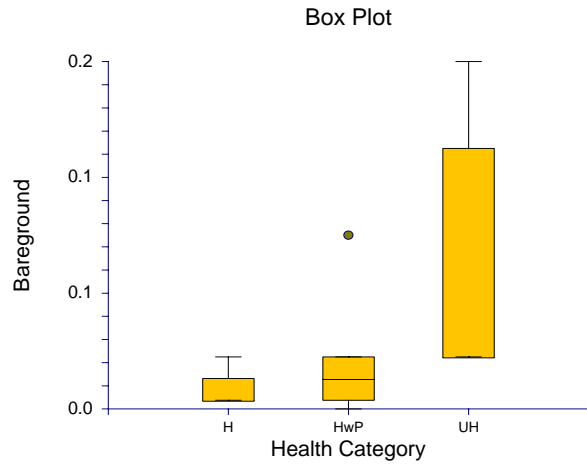
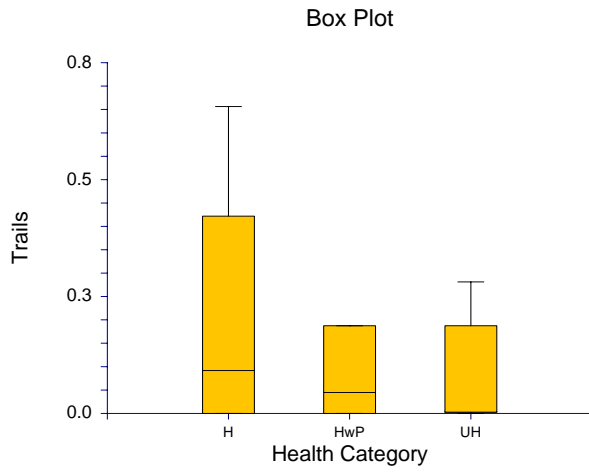
Box Plot Section

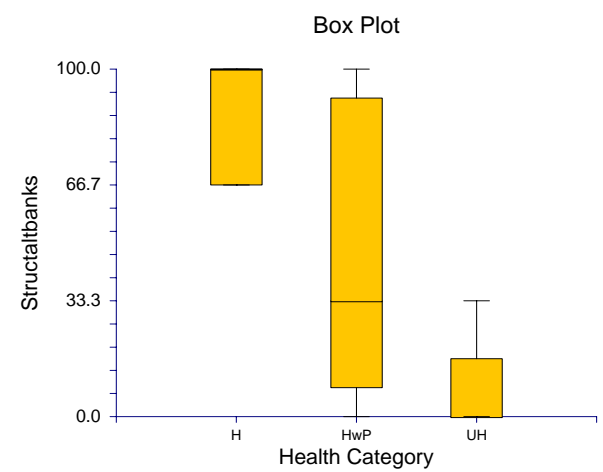
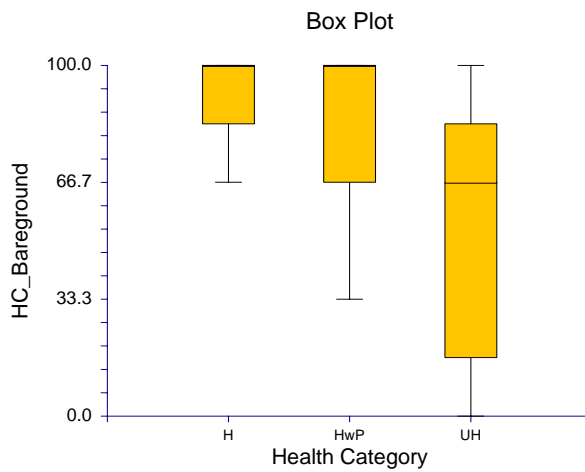
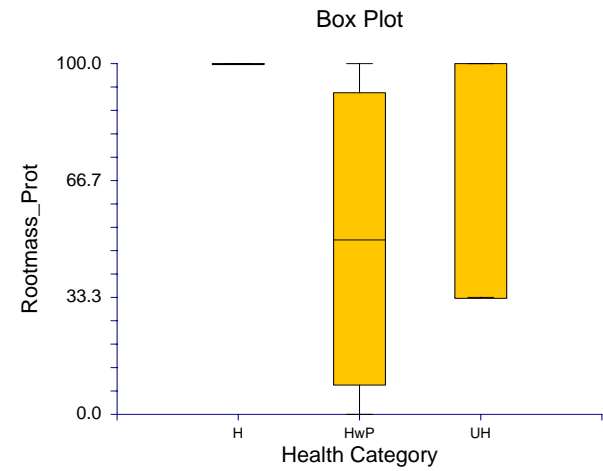
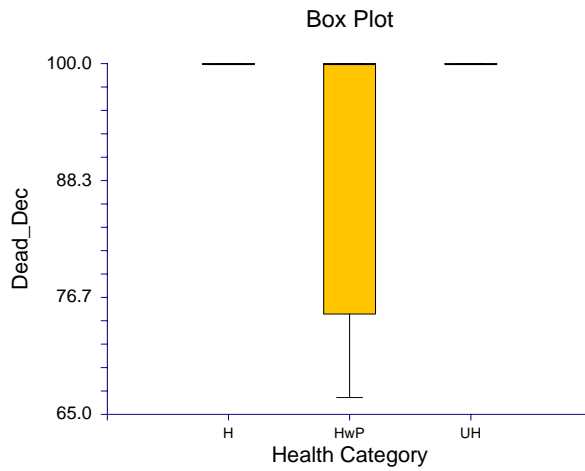
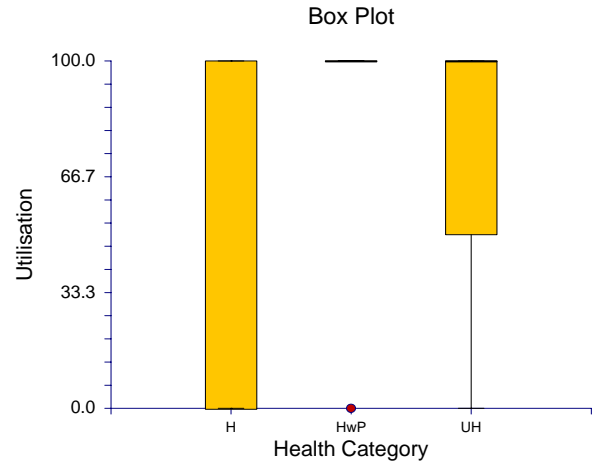
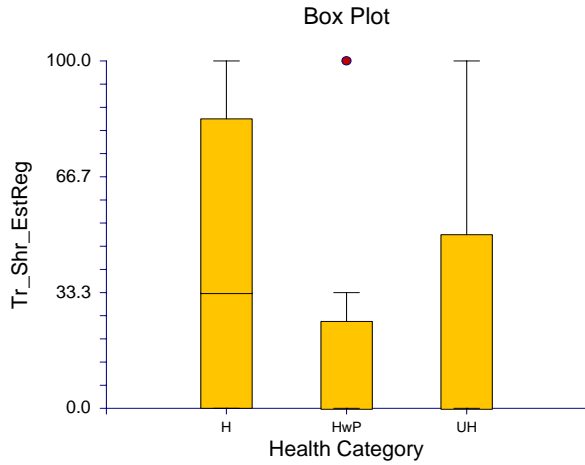


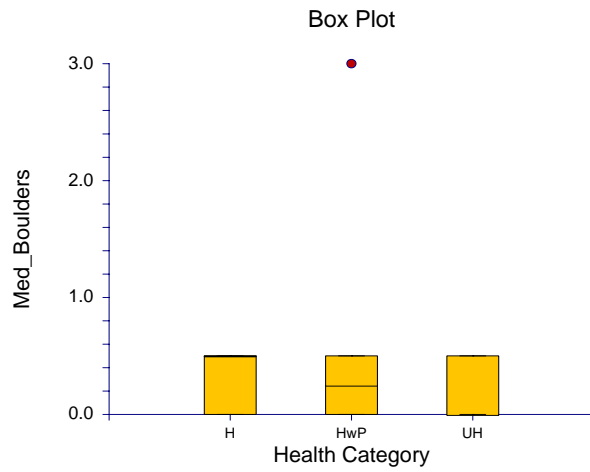
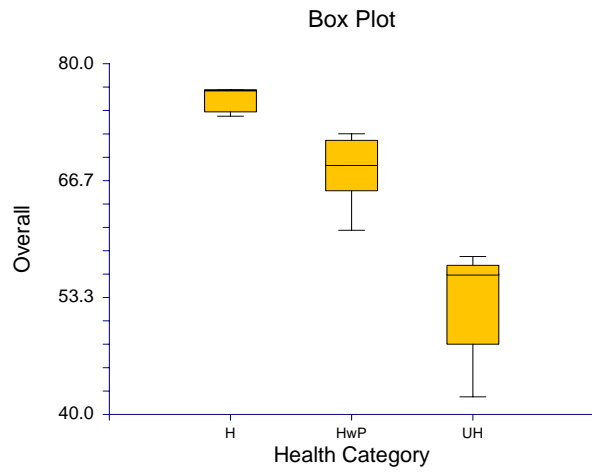
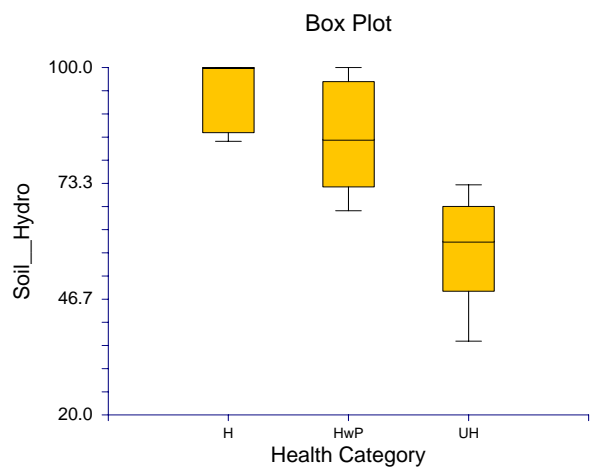
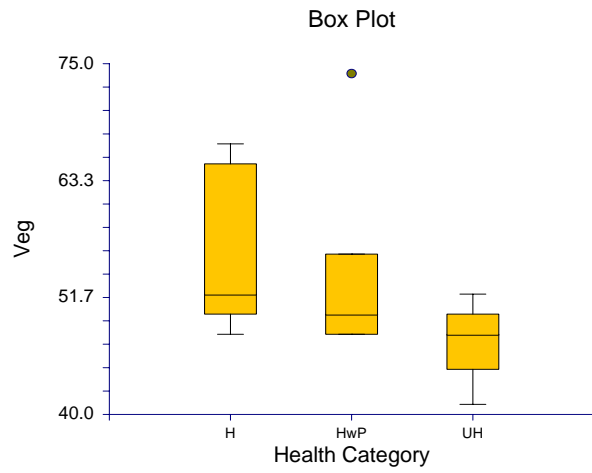
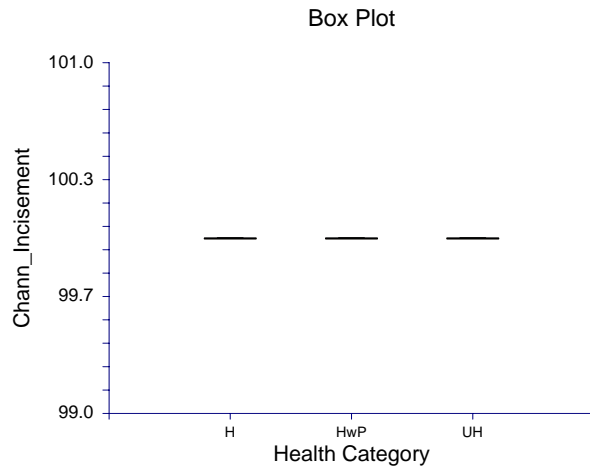
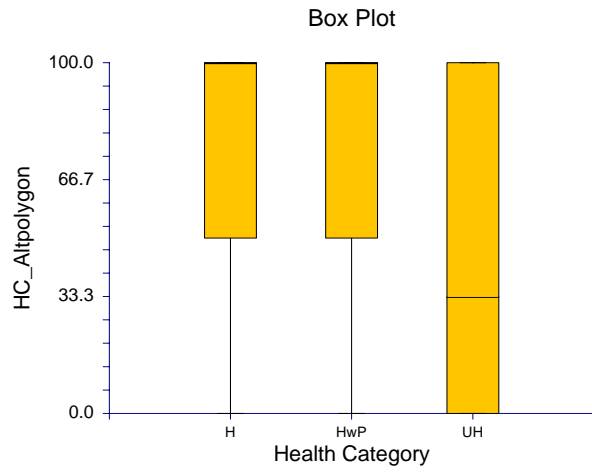


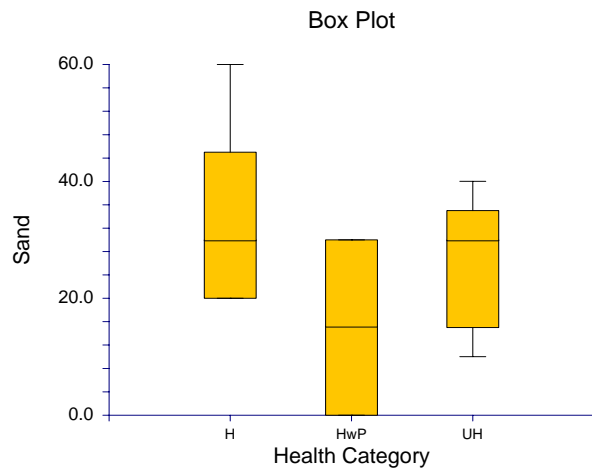
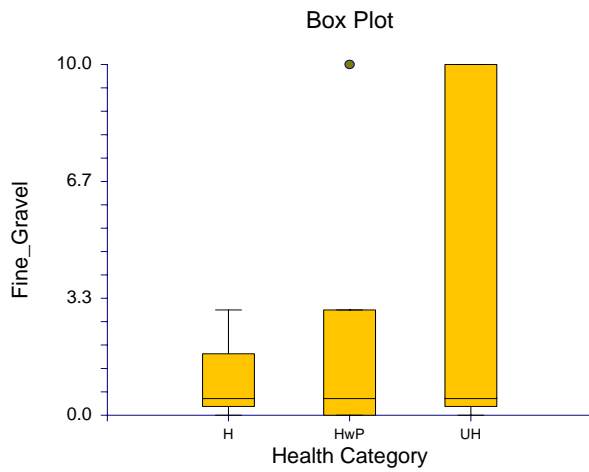
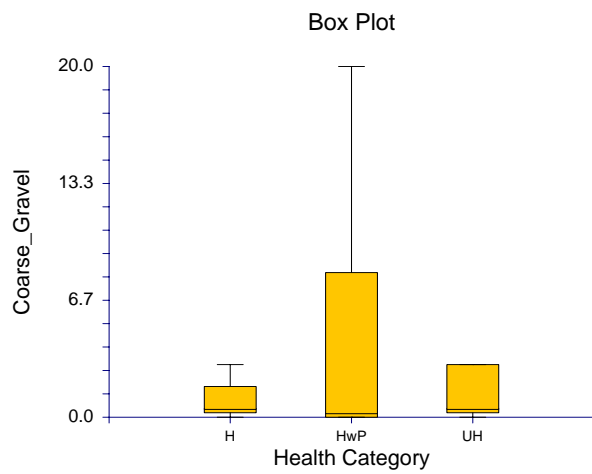
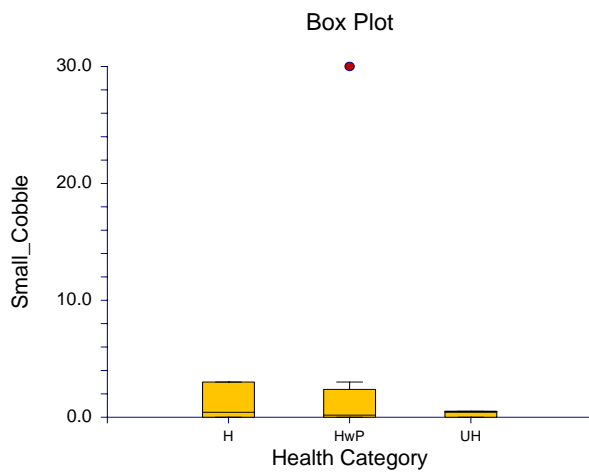
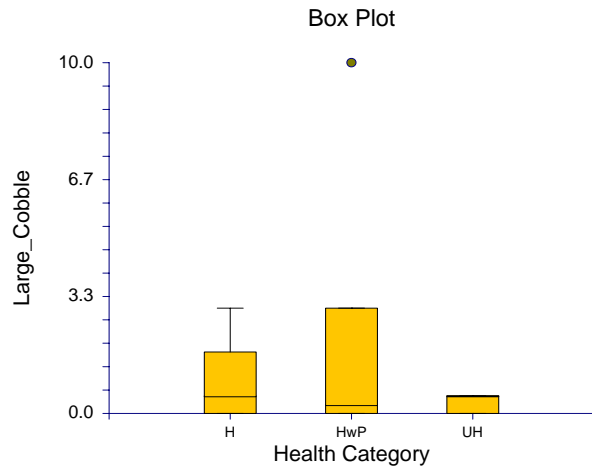
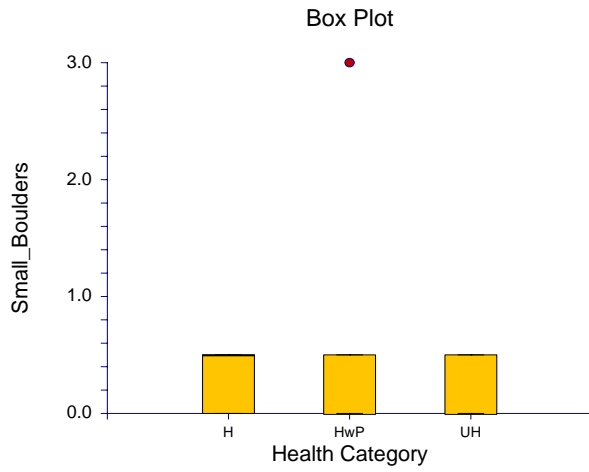


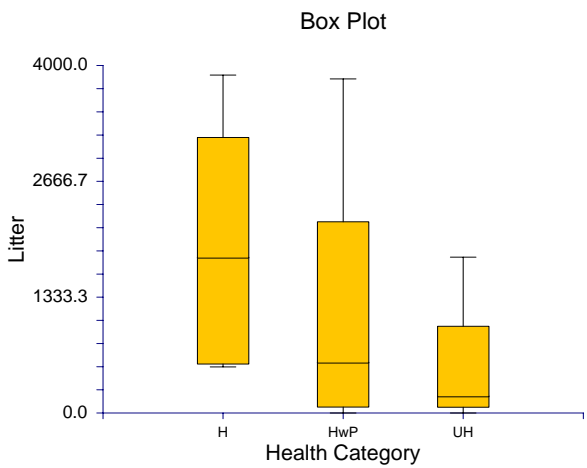
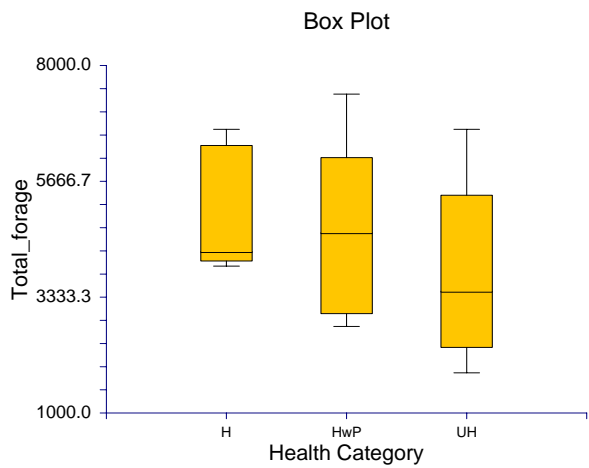
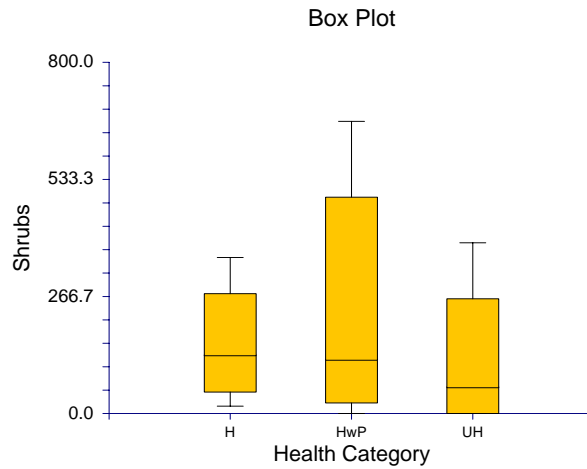
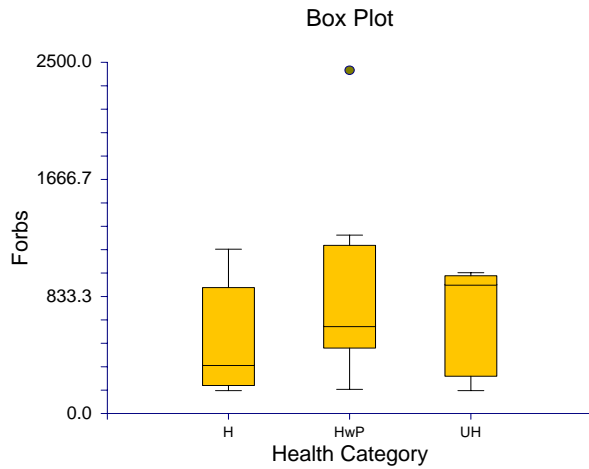
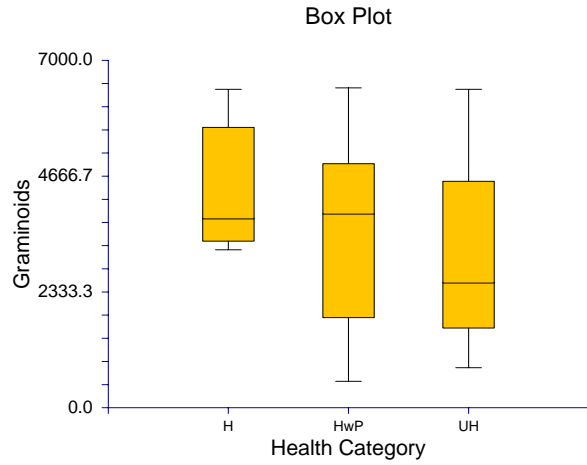
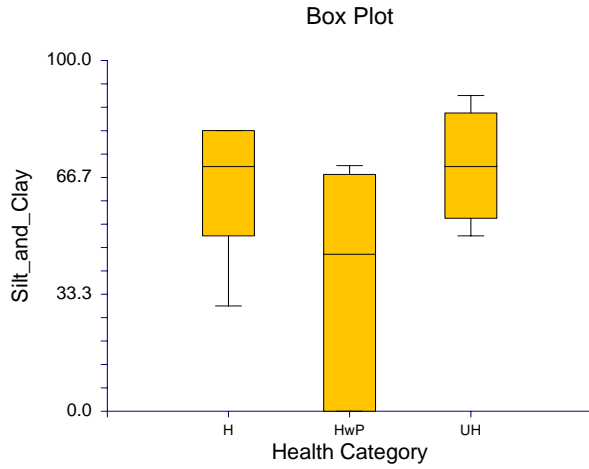


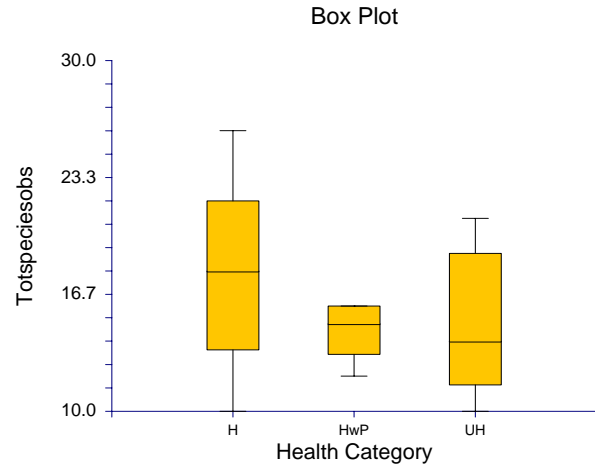
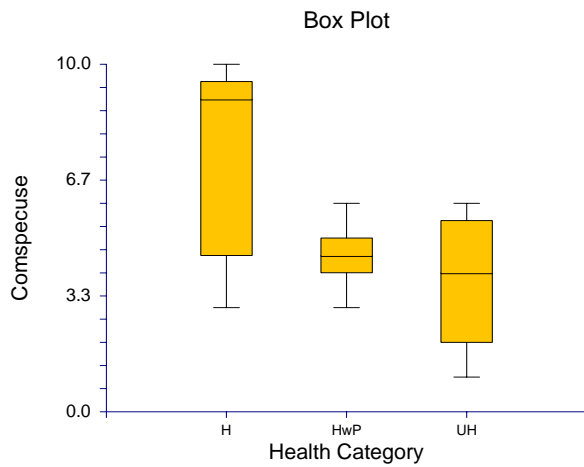
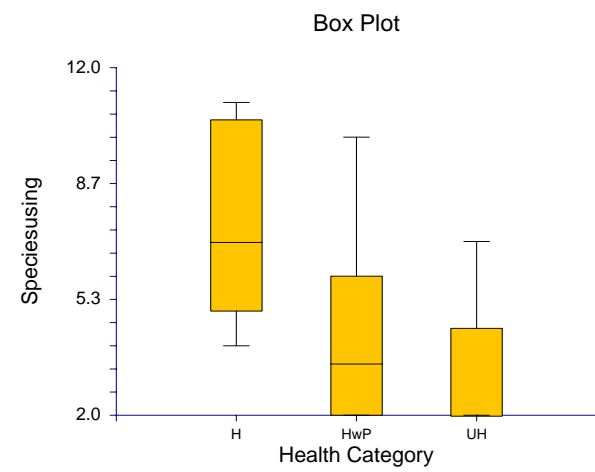
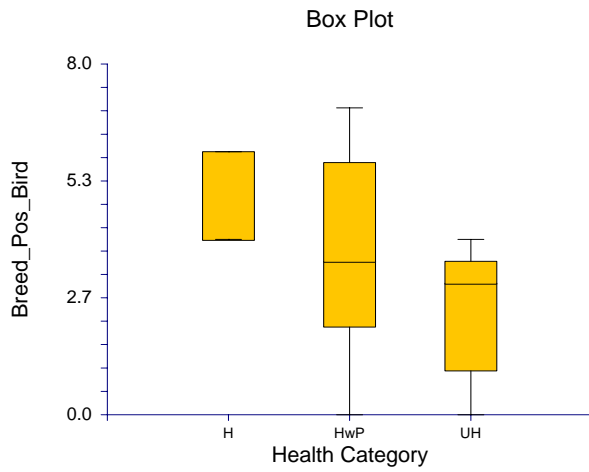
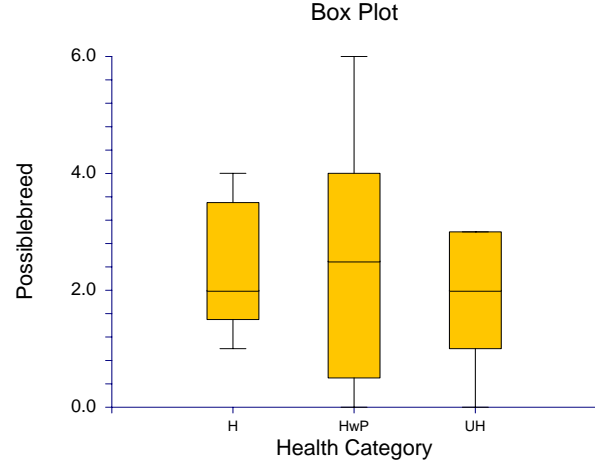
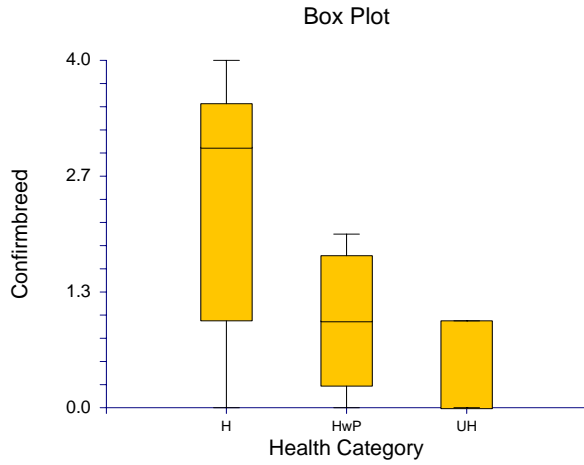












Appendix H. MANOVA Report

MANOVA Report

Page/Date/Time 1 14/10/2007 3:36:15 PM
 Database C:\Documents and Settings\Sa ... NCSS_October_2007\RawData.S0
 Response

HealthScore, Size, Trees, Treesgr6ft, Treesgr1_5ft, Treesle1_5ft, Shrubsgr6ft, Shrubsgr1_5ft, Shrubsle1_5ft, Grassgr6ft, Grassgr1_5ft, Grassle1_5ft, Forbsgr6ft, Forbsgr1_5ft, Forbsle1_5ft, CC_Trees, CC_Shrubs, CC_Grams, CC_Forbs, CC_Wood, CC>Weeds, CC_All, AltBanks, HoofShear, Trails, Bareground, VegCover, CC_Invasiveveg, DD_Invasiveveg, Dist_Undesveg, Tr_Shr_EstReg, Utilization, Dead_Dec, Rootmass_Prot, HC_Bareground, Structaltbanks, HC_Altpolygon, Chann_Incisement, Veg, Soil__Hydro, Overall, Med_Boulders, Small_Boulders, Large_Cobble, Small_Cobble, Coarse_Gravel, Fine_Gravel, Sand, Silt_and_Clay, Graminoids, Forbs, Shrubs, Total_forage, Litter, Confirmbreed, Possiblebreed, Breed_Pos_Birds, Speciesusing, Commspecusing, Totalspeciesobs

Expected Mean Squares Section

Source	DF	Term Fixed?	Denominator Term	Expected Square
A: HealthCat	2	Yes	S(A)	S+sA
S(A)	15	No		S

Note: Expected Mean Squares are for the balanced cell-frequency case.

MANOVA Tests Section

Term(DF)	Test Value	DF1	DF2	F-Ratio	Prob Level	Decision (0.05)
A(2):HealthCat						
Wilks' Lambda	0.000000	120	-88	0.00		
Hotelling-Lawley Trace	9999999999.999900	120	-90	0.00		
Pillai's Trace	3.736123	120	-86	1.54		
Roy's Largest Root	9999999999.999900	60	-43	0.00		
HealthScore	673.112500	2	15	30.20	0.000005	Reject
Size	8.238745	2	15	0.17	0.842866	Accept
Trees	0.250000	2	15	1.07	0.367333	Accept
Treesgr6ft	0.003589	2	15	1.76	0.206087	Accept
Treesgr1_5ft	0.000062	2	15	1.26	0.312803	Accept
Treesle1_5ft	0.000014	2	15	4.17	0.036380	Reject
Shrubsgr6ft	0.213121	2	15	5.35	0.017589	Reject
Shrubsgr1_5ft	0.000500	2	15	0.02	0.979634	Accept
Shrubsle1_5ft	0.002524	2	15	0.90	0.428523	Accept
Grassgr6ft	0.000011	2	15	2.53	0.112959	Accept
Grassgr1_5ft	0.221389	2	15	5.93	0.012658	Reject
Grassle1_5ft	0.104285	2	15	3.42	0.059633	Accept
Forbsgr6ft	0.000007	2	15	3.61	0.052454	Accept
Forbsgr1_5ft	0.000496	2	15	0.18	0.838470	Accept
Forbsle1_5ft	0.005240	2	15	0.39	0.681514	Accept
CC_Trees	0.003518	2	15	1.72	0.212139	Accept
CC_Shrubs	0.176500	2	15	3.18	0.070475	Accept
CC_Grams	0.026795	2	15	2.30	0.134173	Accept
CC_Forbs	0.008056	2	15	1.05	0.374057	Accept
CC_Wood	0.199556	2	15	3.69	0.049864	Reject
CC>Weeds	0.000720	2	15	0.43	0.656617	Accept
CC_All	0.006470	2	15	3.78	0.046837	Reject
AltBanks	0.758580	2	15	22.49	0.000031	Reject
HoofShear	0.113951	2	15	0.80	0.466981	Accept
Trails	0.023766	2	15	0.75	0.489185	Accept
Bareground	0.006530	2	15	3.23	0.068024	Accept
VegCover	1075.576235	2	15	3.95	0.041841	Reject
CC_Invasiveveg	223.859581	2	15	0.51	0.608101	Accept
DD_Invasiveveg	246.882720	2	15	0.33	0.721723	Accept

Dist_Undesveg	24.690128	2	15	0.04	0.961198	Accept
Tr_Shr_EstReg	895.086420	2	15	0.55	0.588561	Accept
Utilization	3680.555556	2	15	1.92	0.180916	Accept
Dead_Dec	154.290125	2	15	1.39	0.279643	Accept
Rootmass_Prot	4000.066674	2	15	3.65	0.051149	Accept
HC_Bareground	2222.211111	2	15	3.00	0.080180	Accept
Structaltbanks	8001.947539	2	15	9.10	0.002587	Reject
HC_Altpolygon	1946.037346	2	15	1.00	0.391177	Accept
Chann_Incisement	0.000000	2	15	0.00	1.000000	Accept
Veg	108.855556	2	15	1.85	0.191783	Accept
Soil__Hydro	1693.962500	2	15	12.57	0.000623	Reject
Overall	673.634722	2	15	38.03	0.000001	Reject
Med_Boulders	0.229514	2	15	0.44	0.651894	Accept
Small_Boulders	0.151389	2	15	0.28	0.759392	Accept
Large_Cobble	5.396181	2	15	0.89	0.430782	Accept
Small_Cobble	27.700000	2	15	0.54	0.595848	Accept
Coarse_Gravel	20.815625	2	15	0.81	0.461539	Accept
Fine_Gravel	14.013889	2	15	1.05	0.374599	Accept
Sand	476.675347	2	15	2.11	0.155525	Accept
Silt_and_Clay	2260.138889	2	15	3.49	0.056856	Accept
Graminoids	2481359.776686	2	15	0.74	0.492684	Accept
Forbs	220145.281063	2	15	0.68	0.522169	Accept
Shrubs	26954.120701	2	15	0.62	0.548663	Accept
Total_forage	2093356.975335	2	15	0.78	0.476501	Accept
Litter	2406986.568139	2	15	1.54	0.245888	Accept
Confirmbreed	5.355556	2	15	5.58	0.015443	Reject
Possiblebreed	0.601389	2	15	0.22	0.805361	Accept
Breed_Pos_Birds	7.201389	2	15	2.08	0.159194	Accept
Speciesusing	28.351389	2	15	3.90	0.043300	Reject
Commspecusing	18.888889	2	15	5.25	0.018725	Reject
Totalspeciesobs	16.801389	2	15	1.17	0.335991	Accept

Within Correlations\Covariances

	HealthScore	Size	Trees	Treesgr6ft	Treesgr1_5ft	Treesle1_5ft
HealthScore	22.285	2.352	-0.5633333	-1.408333E-03	1.383333E-03	-5.066667E-03
Size	7.217908E-02	47.64741	-1.2588	-0.061148	-1.043133E-02	-4.980667E-03
Trees	-0.247042	-0.3775276	0.2333333	8.116666E-03	0.0017	6.666667E-04
Treesgr6ft	-6.602811E-03	-0.1960615	0.3718939	2.041458E-03	3.095833E-04	3.933333E-05
Treesgr1_5ft	4.179123E-02	-0.2155186	0.5019092	0.977174	4.916667E-05	0.000006
Treesle1_5ft	-0.5878637	-0.3952105	0.7559289	0.4768163	0.4686801	3.333333E-06
Shrubsgr6ft	-6.579103E-02	-0.1674449	-0.1909169	-0.1668925	-0.1610664	-0.2205318
Shrubsgr1_5ft	0.1731533	6.528485E-02	-0.4252619	-0.1131882	-0.1953072	-0.2109632
Shrubsle1_5ft	-5.348205E-02	-0.1898613	-0.3844391	-0.2997858	-0.3896393	-0.1342406
Grassgr6ft	0.1647674	0.3695999	0.22771	0.2182308	0.2577122	0.0860663
Grassgr1_5ft	6.578041E-03	0.4390493	-0.2428571	5.536408E-02	7.381018E-02	-0.3212698
Grassle1_5ft	0.3852295	-0.2710561	-1.660401E-02	4.663952E-02	1.933637E-02	4.183817E-03
Forbsgr6ft	-9.985905E-03	-0.2740585	-9.759001E-02	-0.4642838	-0.4706048	-0.1290994
Forbsgr1_5ft	-0.4164095	9.337332E-03	5.623895E-02	6.715127E-02	1.937136E-02	0.3252712
Forbsle1_5ft	0.2916847	-0.1608053	-2.929794E-02	0.0872393	0.1147147	-0.2167258
CC_Trees	2.343596E-04	-0.198031	0.3832508	0.999643	0.9808694	0.4766947
CC_Shrubs	1.379159E-02	-0.182307	-0.4219265	-0.1982879	-0.2583672	-0.2480695
CC_Grass	0.5590855	0.3748898	-0.4990371	0.1631341	0.1256135	-0.4908912
CC_Forbs	0.1717706	-0.1011916	1.576221E-02	0.1790458	0.1900239	-8.340576E-02
CC_Wood	2.852777E-02	-0.1982287	-0.4033638	-0.1036869	-0.1675424	-0.2197177
CC_Weeds	0.1536325	0.3241735	-0.1733542	0.4508335	0.3818617	0
CC_All	0.5638927	0.3381267	-0.5546242	-0.129401	-0.1910389	-0.4854549
AltBanks	-0.2555507	0.119702	-1.953766E-02	1.405903E-04	-1.656541E-02	5.865031E-02
HoofShear	-0.1167123	0.2911898	-5.215755E-02	0.3289691	0.3066749	9.683925E-03

Trails	-0.2905213	-0.1616464	-4.419893E-02	-0.3058806	-0.2288973	-0.2892711
Bareground	-0.6297064	-0.3044383	0.6471409	0.1184078	0.2017524	0.5361968
VegCover	0.4915243	0.351442	-0.5437294	-0.1203657	-0.1872862	-0.4426718
CC_Invasiveveg	4.342603E-02	-4.555045E-02	0.2756322	-0.2449248	-0.1633447	0
DD_Invasiveveg	7.437995E-02	-5.916968E-02	0.3380744	-0.1797914	-8.149194E-02	0
Dist_Undesveg	-0.1415055	0.3772279	7.377125E-02	-0.1350728	-7.623477E-02	-0.1464127
Tr_Shr_EstReg	-0.3649885	-0.3277002	0.8888819	0.3502986	0.4710608	0.7236256
Utilization	0.3491862	0.3713227	-0.8669214	-0.3955859	-0.472345	-0.8340576
Dead_Dec	-0.1228104	-0.263267	-0.2182179	5.832416E-03	-0.0751646	0
Rootmass_Prot	0.2260714	4.227001E-02	0.1667344	-2.451071E-02	5.743124E-02	-0.1470459
HC_Bareground	0.5690169	0.2246831	-0.5071047	-6.957807E-02	-0.1280983	-0.4472042
Structaltbanks	0.1892793	-0.230354	0.349029	0.1013562	0.2056993	0
HC_Altpolygon	9.735627E-02	-3.781023E-02	-0.3493362	9.713057E-02	-3.412428E-02	5.518136E-02
Chann_Incisement	0	0	0	0	0	0
Veg	5.979018E-03	7.104533E-02	0.4476759	-8.933095E-02	4.520748E-02	5.708141E-02
Soil_Hydro	0.6524668	-0.1180737	-0.3251058	3.845832E-02	-1.371624E-02	-0.2610324
Overall	0.9134835	-4.974834E-02	1.639686E-03	-2.817927E-02	4.574764E-02	-0.3557325
Med_Boulders	-0.1880251	-0.1125025	-0.2341712	-0.1569811	-0.1925955	-0.1517286
Small_Boulders	-0.226771	-9.811197E-02	-0.3004993	-0.1536042	-0.2134816	-0.1490712
Large_Cobble	-0.1538855	-3.349651E-02	-0.3267188	-0.1228154	-0.1840205	-0.1632375
Small_Cobble	-9.675545E-02	-8.174062E-02	-0.1766343	-6.583729E-02	-0.1150693	-3.047806E-02
Coarse_Gravel	-6.267786E-02	-2.053117E-02	-0.1494658	-4.215564E-02	-9.003667E-02	-3.611409E-03
Fine_Gravel	0.2193731	0.207689	-0.1378279	-8.704853E-02	-0.1008019	-0.1448642
Sand	9.982242E-02	-0.2185335	0.3479567	-0.2382092	-0.1586171	9.722582E-02
Silt_and_Clay	-0.0606479	-0.1284121	0.3227968	0.1861085	0.3092668	-5.741446E-02
Graminoids	1.571165E-02	0.6047752	-0.4251459	-0.1885317	-0.2410481	-0.3000724
Forbs	-5.847911E-02	4.285958E-02	0.2576092	-3.881999E-02	4.455614E-02	-2.509887E-02
Shrubs	3.004238E-02	-0.2062769	2.479244E-02	-9.461246E-02	-0.0845342	3.858632E-02
Total_forage	1.012356E-03	0.6633132	-0.3815537	-0.235761	-0.264091	-0.3385279

Within Correlations\Covariances

	Shrubsgr6ft	Shrubsgr1_5ft	Shrubsle1_5ft	Grassgr6ft	Grassgr1_5ft	Grassle1_5ft
HealthScore	-6.196667E-02	0.1273333	-1.339167E-02	0.00165	0.006	0.3174333
Size	-0.2306093	0.0702	-6.951467E-02	0.005412	0.5855733	-0.326592
Trees	-0.0184	-0.032	-0.00985	2.333333E-04	-2.266667E-02	-0.0014
Treesgr6ft	-0.0015045	-7.966667E-04	-7.184583E-04	2.091667E-05	4.833333E-04	3.678333E-04
Treesgr1_5ft	-2.253333E-04	-2.133333E-04	-1.449167E-04	3.833333E-06	0.0001	2.366667E-05
Treesle1_5ft	-8.033333E-05	-0.00006	-0.000013	3.333333E-07	-1.133333E-04	1.333333E-06
Shrubsgr6ft	0.039808	-0.00972	-4.641667E-04	-4.333333E-05	1.049333E-02	-9.696667E-03
Shrubsgr1_5ft	-0.3127347	2.426667E-02	0.00491	-0.00014	1.733333E-03	-2.933333E-04
Shrubsle1_5ft	-4.385999E-02	0.5942322	2.813458E-03	-4.425E-05	-3.156667E-03	1.612167E-03
Grassgr6ft	-0.1023837	-0.4236593	-0.3932664	0.0000045	0.00006	-5.033333E-05
Grassgr1_5ft	0.2721949	5.758756E-02	-0.3080066	0.146385	3.733333E-02	-2.782667E-02
Grassle1_5ft	-0.2784265	-1.078772E-02	0.1741257	-0.1359323	-0.825061	3.046867E-02
Forbsgr6ft	0	3.026138E-02	0.4177066	-0.1111111	-0.2195775	3.510835E-02
Forbsgr1_5ft	-0.1086407	9.895594E-02	7.548399E-02	6.700904E-02	0.2609226	-0.4348647
Forbsle1_5ft	-0.2614774	-0.2540065	-0.2062483	-0.1313864	-0.3943263	0.6542268
CC_Trees	-0.1619518	-0.1202614	-0.3072703	0.2312135	6.489306E-02	3.764859E-02
CC_Shrubs	0.629218	0.5124326	0.5077866	-0.4803845	0.193383	-0.193629
CC_Grams	0.1217486	0.1706161	-0.2126666	7.284343E-02	0.5390241	3.541033E-03
CC_Forbs	-0.4697625	-0.2150567	-0.2472546	-0.1256224	-0.3152442	0.571849
CC_Wood	0.6225587	0.5113475	0.4880724	-0.4592499	0.2046478	-0.1881197
CC>Weeds	-0.1404659	0.1054119	0.1360964	0.2763214	5.200625E-02	0.171743
CC_All	-3.321592E-02	0.3439634	0.1580773	7.121813E-02	0.273142	0.1748322
AltBanks	-0.3987889	0.3695607	8.747486E-02	3.422248E-03	0.2021397	-0.2793198
HoofShear	3.985444E-02	8.342054E-02	-9.031079E-02	-1.562737E-02	0.1711134	-8.470327E-02
Trails	0.3143867	-0.2142387	-7.679524E-03	-0.3310704	0.3243193	-0.4273452
Bareground	-0.0371896	-0.2727968	-0.2348103	-0.1267335	-0.0886652	-0.3608265
VegCover	-4.622858E-02	0.3372067	0.1634596	0.0793573	0.2997155	0.1331456
CC_Invasiveveg	3.019505E-02	-8.887394E-02	-0.2552945	-0.1380873	-0.2149905	5.886185E-02
DD_Invasiveveg	-4.544187E-02	-0.1467725	-0.2793941	-0.153963	-0.2704608	0.1328616
Dist_Undesveg	-0.2308283	-5.721489E-02	-0.1234727	0.1679751	-0.1014365	-0.0887851

Tr_Shr_EstReg	-5.324471E-02	-0.3604382	-0.3948945	0.1816526	0.0285086	-0.2466255
Utilization	8.280947E-02	0.3225851	0.2680685	-0.3409752	7.092994E-02	0.1818925
Dead_Dec	3.169895E-02	0.405999	0.4322329	-0.745356	-0.3273268	0.2717469
Rootmass_Prot	-0.2351557	-0.1033784	-0.1296803	0.3163924	-9.726173E-02	0.1115103
HC_Bareground	6.222693E-02	0.1362729	0.2316721	0.3079004	0.0338265	0.3190073
Structaltbanks	0.4324104	-0.4473238	-5.246628E-02	0.2560644	-0.0349029	-4.442791E-02
HC_Altpolygon	0.1427646	0.3395163	0.3189652	-0.2315235	7.812229E-03	0.1294345
Chann_Incisement	0	0	0	0	0	0
Veg	-0.1028129	-0.1003507	-0.3826817	-0.1166787	-3.236211E-02	-3.428036E-02
Soil_Hydro	-0.2092353	0.1979361	0.1715116	9.811999E-02	-0.1667133	0.4586376
Overall	-0.2376693	8.033431E-02	-7.335527E-02	0.1586835	-0.2516918	0.5701443
Med_Boulders	0.7267237	-0.1155887	3.623178E-02	-0.1142638	0.2843507	-0.2614602
Small_Boulders	0.6838715	-6.988566E-02	8.209805E-02	-0.1924501	0.2206792	-0.2016587
Large_Cobble	0.1394947	0.5609075	0.8010857	-0.3208976	-5.819241E-02	-0.1074879E-02
Small_Cobble	0.3224033	-3.274411E-02	0.3272677	-0.1836194	-0.1051166	-6.269469E-03
Coarse_Gravel	0.2787011	0.146026	0.5351263	-0.1266594	-0.1600444	4.512066E-02
Fine_Gravel	0.3959914	-5.152052E-02	0.2405901	2.149643E-03	-4.720133E-02	0.1090431
Sand	0.2610389	2.207789E-02	0.189526	4.053185E-02	-0.2072812	1.204435E-02
Silt_and_Clay	0.2741839	-0.1463575	-0.1634724	-6.485653E-02	0.2753267	-0.2745168
Graminoids	-4.524565E-02	0.1773924	0.2004021	0.2078924	0.4806131	-0.4325486
Forbs	-0.1330993	-0.3197608	-0.3406127	-2.611848E-02	-0.3129742	0.1951962
Shrubs	0.2316205	0.5760592	0.3522327	-0.1530813	0.1912006	-0.2575314
Total_forage	-6.736509E-02	0.1597473	0.1498078	0.2034096	0.4515511	-0.4472669

Within Correlations\Covariances

	Forbsgr6ft	Forbsgr1_5ft	Forbsle1_5ft	CC_Trees	CC_Shrubs	CC_Grams
HealthScore	-6.666667E-05	-0.1037167	0.1589167	0.00005	1.533333E-02	0.2846667
Size	-2.675333E-03	3.400667E-03	-0.128106	-0.061778	-0.2963733	0.27911
Trees	-6.666667E-05	1.433333E-03	-1.633333E-03	8.366667E-03	-0.048	-0.026
Treesgr6ft	-2.966667E-05	1.600833E-04	4.549167E-04	2.04125E-03	-0.00211	0.000795
Treesgr1_5ft	-4.666667E-06	7.166667E-06	9.283333E-05	3.108333E-04	-4.266667E-04	0.000095
Treesle1_5ft	-3.333333E-07	3.133333E-05	-4.566667E-05	3.933333E-05	-1.066667E-04	-9.666667E-05
Shrubsgr6ft	0	-1.143667E-03	-0.006021	-1.460333E-03	2.956667E-02	0.00262
Shrubsgr1_5ft	6.666667E-06	8.133333E-04	-4.566667E-03	-8.466667E-04	0.0188	2.866667E-03
Shrubsle1_5ft	3.133333E-05	2.1125E-04	-1.262583E-03	-7.365833E-04	6.343334E-03	-1.216667E-03
Grassgr6ft	-3.333333E-07	0.0000075	-3.216667E-05	2.216667E-05	-0.00024	1.666667E-05
Grassgr1_5ft	-0.00006	0.00266	-8.793334E-03	5.666667E-04	0.0088	1.123333E-02
Grassle1_5ft	8.666667E-06	-0.004005	1.317967E-02	0.000297	-0.00796	6.666667E-05
Forbsgr6ft	0.000002	0	0.000003	-2.966667E-05	6.666667E-06	-0.00005
Forbsgr1_5ft	0	2.783833E-03	-3.805167E-03	1.638333E-04	-7.666667E-04	-0.00028
Forbsle1_5ft	1.838048E-02	-0.6248887	1.331983E-02	0.0004245	-1.177333E-02	9.266667E-04
CC_Trees	-0.4641654	6.870678E-02	8.138555E-02	0.0020425	-2.126667E-03	8.116667E-04
CC_Shrubs	2.001602E-02	-0.0616977	-0.4331457	-0.1998032	5.546667E-02	0.0045
CC_Grams	-0.3277954	-4.920218E-02	7.444269E-02	0.1665116	0.1771513	1.163333E-02
CC_Forbs	5.383819E-02	-0.2431553	0.8863265	0.1726825	-0.6077812	0.1305946
CC_Wood	-2.026102E-02	-0.0624529	-0.4255374	-0.1052455	0.9952075	0.2058856
CC>Weeds	-0.1328653	0.0965027	-0.110232	0.4487979	0.0100596	0.4510539
CC_All	0	-0.2830904	0.154552	-0.1276966	0.2138255	0.7731857
AltBanks	-0.1142175	-8.823146E-02	6.060661E-02	-2.971723E-03	-5.456007E-02	-0.1695316
HoofShear	-0.5313304	-0.425865	5.244975E-02	0.3214278	0.1782947	0.1131065
Trails	0.3972844	-6.03424E-04	0.1168202	-0.3011407	0.089063	-0.1906538
Bareground	-5.244144E-02	0.1691313	-0.1323915	0.1190956	-0.212558	-0.7732092
VegCover	0	-0.2355378	0.1321875	-0.1184726	0.2001749	0.7617494
CC_Invasiveveg	-7.533061E-02	-0.3275535	0.1238664	-0.2492817	-7.685128E-02	-0.4098599
DD_Invasiveveg	-0.0577307	-0.3806972	0.2391485	-0.1842622	-0.1803004	-0.4277133
Dist_Undesveg	-0.2519862	-0.0962745	6.024514E-02	-0.1399662	-0.29506	-0.437745
Tr_Shr_EstReg	-0.2724935	0.2420606	-0.2132116	0.3654348	-0.2430775	-0.3164112
Utilization	0.1076764	-0.3037637	0.3011597	-0.4102262	0.239233	0.3388399
Dead_Dec	0	-8.990206E-02	0.1598333	-1.166186E-02	0.3580574	-0.1954594
Rootmass_Prot	-3.161237E-16	-0.5202486	0.3332123	-2.079119E-02	-0.2564788	-0.1617814
HC_Bareground	0.1154572	8.045948E-02	-7.069089E-04	-6.504387E-02	0.1178971	0.6472704
Structaltbanks	0.2119044	-0.5073441	2.874757E-02	0.114801	0.1049624	-0.1667384

HC_Altpolygon	0.2137058	0.1782863	-0.3211068	8.944278E-02	0.4427221	0.4179752
Chann_Incisement	0	0	0	0	0	0
Veg	-0.3930228	-0.3184197	0.1704777	-8.714632E-02	-0.1688893	-0.2681297
Soil__Hydro	0.2436083	9.040751E-02	0.1476252	4.043367E-02	-0.0646079	0.4940281
Overall	0	-0.3969822	0.3518201	-2.094286E-02	-0.1580632	0.3796536
Med_Boulders	0.1305872	-6.628522E-02	-0.1205129	-0.1575795	0.5155792	0.1048745
Small_Boulders	0.1283001	-7.479619E-02	-8.253758E-02	-0.1585835	0.5161793	8.200955E-02
Large_Cobble	0.1820016	-7.362384E-02	-0.2153009	-0.1274676	0.6517041	-8.415101E-02
Small_Cobble	0.1114832	-0.4414556	-9.562535E-03	-6.966814E-02	0.3441683	-0.1631568
Coarse_Gravel	7.925925E-02	-0.3874281	-0.159265	-4.387737E-02	0.4756564	-0.1473265
Fine_Gravel	0.1096318	-0.3171018	-0.2043138	-8.526058E-02	0.3694324	0.1877169
Sand	0.4079335	-8.594827E-02	-0.30254	-0.2308146	0.2774599	-0.3178391
Silt_and_Clay	-0.296487	-0.376858	0.1657011	0.1958461	0.1591185	-0.1032613
Graminoids	0.1943344	0.2156677	-0.4528401	-0.1870827	0.0865048	0.3158413
Forbs	-0.2553975	-0.5654803	0.5079259	-4.425357E-02	-0.364747	-0.4549472
Shrubs	1.509014E-02	8.226765E-02	-0.5046198	-8.683595E-02	0.7013658	4.729692E-02
Total_forage	0.1299317	5.449949E-02	-0.3925481	-0.2350474	5.861871E-02	0.2002056

Within Correlations\Covariances

	CC_Forbs	CC_Wood	CC>Weeds	CC_All	AltBanks	HoofShear
HealthScore	0.071	3.133333E-02	2.959167E-02	0.110125	-0.2215667	-0.20775
Size	-0.06116	-0.31836	9.130134E-02	9.655666E-02	0.1517547	0.7579033
Trees	6.666667E-04	-4.533333E-02	-3.416667E-03	-1.108333E-02	-1.733333E-03	-0.0095
Treesgr6ft	7.083333E-04	-0.00109	8.31125E-04	-2.41875E-04	1.166667E-06	5.604583E-03
Treesgr1_5ft	1.166667E-04	-2.733333E-04	1.0925E-04	-5.541667E-05	-2.133333E-05	8.108334E-04
Treesle1_5ft	-1.333333E-05	-9.333334E-05	0	-3.666667E-05	1.966667E-05	6.666667E-06
Shrubsgr6ft	-8.206666E-03	0.0289	-0.0011435	-2.741667E-04	-1.461333E-02	2.998333E-03
Shrubsgr1_5ft	-2.933333E-03	1.853333E-02	0.00067	2.216667E-03	1.057333E-02	0.0049
Shrubsle1_5ft	-1.148333E-03	6.023333E-03	2.945417E-04	3.46875E-04	8.521667E-04	-1.80625E-03
Grassgr6ft	-2.333333E-05	-2.266667E-04	2.391667E-05	6.25E-06	1.333333E-06	-0.0000125
Grassgr1_5ft	-5.333333E-03	0.0092	0.00041	2.183333E-03	7.173333E-03	1.246667E-02
Grassle1_5ft	0.00874	-0.00764	1.223167E-03	0.0012625	-8.954667E-03	-0.005575
Forbsgr6ft	6.666667E-06	-6.666667E-06	-7.666667E-06	0	-2.966667E-05	-2.833333E-04
Forbsgr1_5ft	-1.123333E-03	-7.666667E-04	2.0775E-04	-6.179166E-04	-0.000855	-0.0084725
Forbsle1_5ft	8.956667E-03	-1.142667E-02	-5.190833E-04	7.379167E-04	1.284667E-03	0.0022825
CC_Trees	6.833333E-04	-1.106667E-03	8.275833E-04	-2.3875E-04	-2.466667E-05	0.0054775
CC_Shrubs	-1.253333E-02	5.453333E-02	9.666667E-05	2.083333E-03	-0.00236	1.583333E-02
CC_Grams	1.233333E-03	5.166667E-03	0.001985	0.00345	-3.358333E-03	0.0046
CC_Forbs	7.666667E-03	-1.213333E-02	0.000135	3.083333E-04	-3.933333E-04	-5.283333E-03
CC_Wood	-0.5955859	5.413333E-02	0.00057	2.083333E-03	-2.473333E-03	0.0185
CC>Weeds	3.778771E-02	6.004302E-02	1.664792E-03	4.764583E-04	-0.0020085	4.309583E-03
CC_All	8.512047E-02	0.2164408	0.2822681	1.711458E-03	6.458333E-04	8.479166E-04
AltBanks	-2.445887E-02	-5.788009E-02	-0.2680222	8.499947E-02	0.033732	0.031825
HoofShear	-0.1600246	0.2108732	0.2801156	5.435657E-02	0.4595464	0.1421792
Trails	0.12534	0.0579556	-0.3090695	-0.3138355	4.680443E-02	-0.1234748
Bareground	-0.1130753	-0.2183473	-0.488879	-0.8955633	0.2232016	7.432241E-02
VegCover	8.460381E-02	0.2026251	0.2892447	0.995029	0.1118078	4.510562E-02
CC_Invasiveveg	-7.913106E-02	-0.1052649	-0.6184483	-0.3395478	0.2212904	0.1910441
DD_Invasiveveg	5.598106E-02	-0.2035617	-0.552952	-0.3898064	0.1662531	0.1938022
Dist_Undesveg	-2.032073E-02	-0.3139881	-0.1779703	-0.5006604	0.3351446	0.3520181
Tr_Shr_EstReg	-0.1257402	-0.2271227	-0.1288261	-0.4889995	1.438786E-02	-1.677785E-02
Utilization	0.2	0.2159817	3.965377E-02	0.3703891	1.533861E-02	0.1458899
Dead_Dec	0.1203859	0.3624402	-0.2518857	-9.554915E-02	-1.721785E-02	-6.98877E-03
Rootmass_Prot	9.198357E-02	-0.2596183	-5.674395E-02	-4.046793E-03	0.5408397	0.5037027
HC_Bareground	0.0745963	0.1263581	0.5853314	0.6562773	-0.4303302	-0.3063841
Structaltbanks	-0.2267514	0.1191274	6.078935E-02	-0.1030245	-0.3012681	0.1145047
HC_Altpolygon	-0.1984592	0.4611309	0.5544636	0.4056059	-0.3884908	-5.059268E-02
Chann_Incisement	0	0	0	0	0	0
Veg	1.289415E-02	-0.1873804	-0.4975892	-0.3125298	0.3277386	0.3570562
Soil__Hydro	0.2829653	-5.059146E-02	0.3625993	0.5046051	-0.458867	-0.5228282
Overall	0.263232	-0.1531896	0.1504911	0.4137813	-0.2775086	-0.1448848
Med_Boulders	-0.282102	0.5099839	-0.2247552	0.1555455	6.825029E-02	9.290443E-02

Small_Boulders	-0.2383068	0.5107999	-0.2090065	0.1425417	8.619583E-02	0.1371415
Large_Cobble	-0.31794	0.6503654	0.3082337	0.1406016	0.2435156	0.3091053
Small_Cobble	-0.2584414	0.3431992	-0.0475621	8.490729E-02	-0.1079598	0.2008846
Coarse_Gravel	-0.3964707	0.4792115	0.1753541	0.1455335	-0.1061026	0.2585569
Fine_Gravel	-0.3281027	0.3708185	0.3893216	0.2863156	-0.5933033	4.662072E-02
Sand	-0.4073603	0.257968	-9.357014E-02	-0.1523568	-0.1620995	-0.132292
Silt_and_Clay	-5.836225E-02	0.1768349	-0.247356	-0.1761804	0.3547873	0.4565259
Graminoids	-0.3268036	7.445923E-02	0.4939877	0.3199414	-7.520704E-02	6.082324E-02
Forbs	0.2733946	-0.3772752	-0.4266732	-0.4409486	0.254399	0.3945879
Shrubs	-0.6018078	0.6996979	-3.326842E-02	0.1635226	0.3016219	0.1431521
Total_forage	-0.3457707	4.061902E-02	0.3985235	0.2243686	4.272221E-02	0.2230787

Within Correlations\Covariances

	Trails	Bareground	VegCover	CC_Invasiveveg	DD_Invasiveveg	Dist_Undesveg
HealthScore	-0.2441	-0.1336083	38.28355	4.27705	9.556183	-16.66315
Size	-0.1985953	-9.445133E-02	40.02526	-6.559945	-11.11581	64.95325
Trees	-0.0038	0.01405	-4.333433	2.777833	4.4445	0.8889
Treesgr6ft	-2.459833E-03	2.404583E-04	-8.972925E-02	-0.2308824	-0.2210861	-0.1522354
Treesgr1_5ft	-2.856667E-04	6.358333E-05	-2.166717E-02	-2.389617E-02	-0.0155515	-1.333417E-02
Treesle1_5ft	-0.000094	0.000044	-1.333467E-02	0	0	-0.006668
Shrubsgr6ft	1.116433E-02	-0.0003335	-0.1521797	0.1256923	-0.2467537	-1.148819
Shrubsgr1_5ft	-0.00594	-0.00191	0.8666866	-0.2888467	-0.62226	-0.2223267
Shrubsle1_5ft	-0.0000725	-5.597917E-04	0.1430513	-0.2825203	-0.4033293	-0.1633686
Grassgr6ft	-0.000125	-1.208333E-05	0.0027775	-0.0061115	-8.888833E-03	0.0088885
Grassgr1_5ft	1.115333E-02	-0.00077	0.9554733	-0.8666734	-1.422247	-0.4889
Grassle1_5ft	-1.327667E-02	-2.830833E-03	0.383455	0.2143623	0.631173	-0.3865843
Forbsgr6ft	0.0001	-3.333333E-06	0	-2.222667E-03	-0.002222	-8.889333E-03
Forbsgr1_5ft	-5.666667E-06	4.010833E-04	-0.2050422	-0.3605718	-0.5466678	-0.1267098
Forbsle1_5ft	2.399667E-03	-6.8675E-04	0.2517102	0.2982572	0.7511718	0.1734398
CC_Trees	-2.422333E-03	2.419167E-04	-0.0883405	-0.2350495	-0.2266415	-0.1577908
CC_Shrubs	3.733333E-03	-0.00225	0.7778333	-0.37762	-1.155673	-1.73342
CC_Grass	-0.00366	-3.748333E-03	1.35558	-0.9223067	-1.25553	-1.177743
CC_Forbs	1.953333E-03	-0.000445	0.1222233	-0.1445567	0.1334033	-4.438333E-02
CC_Wood	0.0024	-2.283333E-03	0.7778333	-0.51098	-1.288993	-1.822313
CC>Weeds	-0.0022445	-8.965417E-04	0.1947181	-0.5264671	-0.6166321	-0.1811361
CC_All	-2.310833E-03	-1.665208E-03	0.6791721	-0.2930704	-0.4388888	-0.5166587
AltBanks	0.00153	0.0018425	0.3388083	0.8479523	0.831023	1.535432
HoofShear	-8.286667E-03	1.259583E-03	0.2806142	1.502933	1.988836	3.311009
Trails	3.167867E-02	3.058833E-03	-0.8656144	-9.898367E-02	0.151171	0.413367
Bareground	0.3823695	2.020125E-03	-0.6497386	0.4114216	0.5766586	0.5255492
VegCover	-0.2947678	-0.8761705	272.2211	-135.1748	-199.975	-214.8046
CC_Invasiveveg	-2.665583E-02	0.4387429	-0.3926874	435.287	555.5917	288.9294
DD_Invasiveveg	3.120777E-02	0.4714193	-0.4453409	0.9784657	740.7037	400.0178
Dist_Undesveg	9.310541E-02	0.468756	-0.5219216	0.5551707	0.5892229	622.2355
Tr_Shr_EstReg	6.309062E-02	0.6105365	-0.4560026	2.635382E-02	5.391834E-02	-4.415824E-02
Utilization	0.1450179	-0.4620416	0.3307618	0.0912433	9.325048E-02	0.2238576
Dead_Dec	-2.961183E-02	9.967323E-02	-0.106469	0.2526413	0.2581989	2.112863E-05
Rootmass_Prot	0.0459969	0.1052638	-4.063233E-02	0.3967642	0.4274263	0.4842929
HC_Bareground	-0.3124046	-0.892891	0.6433905	-0.5871072	-0.6000264	-0.414653
Structaltbanks	0.2359622	0.116932	-0.1248793	-1.495623E-02	4.593372E-02	-0.110099
HC_Altpolygon	-0.3131477	-0.5411629	0.4045185	-0.4607682	-0.4997099	-0.679863
Chann_Incissement	0	0	0	0	0	0
Veg	5.299064E-02	0.504366	-0.3447416	0.8346844	0.8551745	0.5965432
Soil_Hydro	-0.3411073	-0.7056204	0.4788345	-0.5066832	-0.4859292	-0.542474
Overall	-0.3617451	-0.5048317	0.3417102	0.1056537	0.1610404	-0.1036995
Med_Boulders	0.2473392	-9.925584E-02	0.1608976	0.1789393	7.348511E-02	-0.2159278
Small_Boulders	0.2143357	-0.1019328	0.1466253	0.2029851	9.997583E-02	-0.181839
Large_Cobble	0.135213	-0.1626446	0.151202	-0.2115807	-0.2306233	1.988507E-02
Small_Cobble	5.507659E-02	-6.344998E-03	9.273913E-02	-0.1919023	-0.1953661	-0.2007655
Coarse_Gravel	-7.596129E-02	-0.1105926	0.1541813	-0.2668088	-0.2721394	-0.1735805
Fine_Gravel	-0.1598213	-0.3697613	0.2736329	-0.2411864	-0.2211578	-0.3217247
Sand	4.893135E-03	0.1073436	-0.1876821	0.4454037	0.4225708	2.224089E-02

Silt_and_Clay	0.4339813	0.3917419	-0.1786847	0.3067086	0.3434303	0.2906776
Graminoids	7.392804E-02	-0.3377931	0.345649	-0.5375444	-0.5448569	-0.1080734
Forbs	0.1306324	0.5233799	-0.472612	0.6646709	0.7333865	0.7276042
Shrubs	-6.354345E-02	-5.741738E-02	0.1569924	9.224392E-02	-1.776353E-02	-0.1679592
Total_forage	0.1197955	-0.2021956	0.2412137	-0.3569413	-0.3551604	0.1109823

Within Correlations\Covariances

	Tr_Shr_EstReg	Utilization	Dead_Dec	Rootmass_Prot	HC_Bareground	Structaltbanks
HealthScore	-69.55542	72.16666	-6.1105	35.33693	73.10875	26.50077
Size	-91.31493	112.2133	-19.15364	9.661152	42.21123	-47.15898
Trees	17.33317	-18.33333	-1.111	2.6668	-6.6669	5.000333
Treesgr6ft	0.6389313	-0.7825	0.0027775	-3.666933E-02	-8.556192E-02	0.1358218
Treesgr1_5ft	0.1333392	-0.145	-0.005555	0.013334	-0.0244465	4.277766E-02
Treesle1_5ft	5.333333E-02	-6.666667E-02	0	-8.889333E-03	-0.022222	0
Shrubsgr6ft	-0.4288517	0.7233334	0.06666	-1.553523	0.3379103	2.558765
Shrubsgr1_5ft	-2.266633	2.2	0.6666	-0.5332267	0.5777667	-2.066693
Shrubsle1_5ft	-0.8455646	0.6225	0.2416425	-0.2277567	0.3344506	-8.253717E-02
Grassgr6ft	1.555583E-02	-3.166667E-02	-0.016665	2.222333E-02	1.777683E-02	1.611033E-02
Grassgr1_5ft	0.2223667	0.6	-0.6666	-0.6222534	0.1778867	-0.2000133
Grassle1_5ft	-1.737842	1.39	0.49995	0.6444933	1.515532	-0.230002
Forbsgr6ft	-1.555667E-02	6.666667E-03	0	-1.480297E-17	0.004444	0.008888
Forbsgr1_5ft	0.5155742	-0.7016667	-0.049995	-0.908886	0.1155412	-0.7939137
Forbsle1_5ft	-0.9933575	1.521667	0.194425	1.273349	-0.0022205	0.098401
CC_Trees	0.6667092	-0.8116667	-0.005555	-3.111267E-02	-0.0800065	0.1538777
CC_Shrubs	-2.311033	2.466667	0.8888	-2.000067	0.7557133	0.73316
CC_Grams	-1.377683	1.6	-0.2222	-0.5777733	1.900097	-0.53338
CC_Forbs	-0.44445	0.7666667	0.1111	0.26668	0.17777	-0.5888467
CC_Wood	-2.133233	2.2	0.8888	-2.000067	0.8001533	0.82204
CC>Weeds	-0.2121921	7.083333E-02	-0.1083225	-7.666133E-02	0.6500094	0.0735625
CC_All	-0.8166521	0.6708333	-0.0416625	-5.543333E-03	0.7389387	-0.1264075
AltBanks	0.106675	0.1233333	-0.03333	3.28902	-2.151101	-1.641055
HoofShear	-0.2553875	2.408333	-0.027775	6.28882	-3.144286	1.280532
Trails	0.4533083	1.13	-0.05555	0.2710747	-1.513348	1.245589
Bareground	1.107761	-0.9091667	0.0472175	0.1566553	-1.092259	0.1558732
VegCover	-303.7202	238.9183	-18.51481	-22.19778	288.9172	-61.10833
CC_Invasiveveg	22.19611	83.34167	55.55555	274.0926	-333.3828	-9.254628
DD_Invasiveveg	59.23852	111.1083	74.06481	385.177	-444.4578	37.07685
Dist_Undesveg	-44.46667	244.4683	0.005555	400.0022	-281.5141	-81.45351
Tr_Shr_EstReg	1629.637	-1622.225	-148.1352	44.44667	-488.88	318.5376
Utilization	-0.9178936	1916.667	166.65	66.65334	333.3317	-361.1167
Dead_Dec	-0.3481589	0.3611576	111.0889	-148.1407	-74.06481	-92.57963
Rootmass_Prot	3.325193E-02	4.598029E-02	-0.424485	1096.361	-177.7889	274.077
HC_Bareground	-0.4449579	0.279747	-0.2581896	-0.1972831	740.757	-37.06796
Structaltbanks	0.2660518	-0.2781155	-0.2961632	0.2790916	-4.592105E-02	879.6259
HC_Altpolygon	-0.2953036	0.1121867	0.1194771	-0.4614765	0.4750501	-9.770737E-02
Chann_Incisement	0	0	0	0	0	0
Veg	0.3398959	-0.0922428	9.612157E-02	0.4493922	-0.6360729	1.127277E-02
Soil__Hydro	-0.3427828	0.1767304	-0.1134843	-0.2479641	0.7854998	-0.0982708
Overall	-0.1451949	0.1474461	-0.2128962	0.330134	0.4830568	0.1811626
Med_Boulders	-0.2020523	0.1397328	0.1825012	-9.762839E-02	-5.62131E-03	7.391475E-02
Small_Boulders	-0.2921526	0.2279456	0.2868876	-0.1187556	-3.329963E-02	-1.022585E-02
Large_Cobble	-0.2673389	0.2328466	0.3105808	5.592623E-02	0.1377196	6.429598E-02
Small_Cobble	-0.1623462	0.1048594	0.2346202	-0.1279334	-0.1260489	0.5269006
Coarse_Gravel	-0.1290302	3.878108E-02	0.2241426	-0.1108627	3.152182E-02	0.5385485
Fine_Gravel	-0.1732076	8.436928E-02	7.210122E-02	-0.317696	0.341824	0.5581114
Sand	0.1456369	-0.2325058	1.754167E-03	0.1597203	-3.398663E-02	0.3681326
Silt_and_Clay	0.3656999	-0.1541362	2.071766E-02	0.4089267	-0.4461223	0.4219358
Graminoids	-0.2717761	0.2213532	-0.3787369	-0.128644	0.352441	6.872835E-02
Forbs	7.444086E-02	0.1333204	0.1197153	0.5368661	-0.6227629	0.1683338
Shrubs	0.149998	-0.1922396	2.451007E-02	9.384336E-02	0.0224336	1.523931E-02
Total_forage	-0.2582656	0.2688593	-0.3777369	5.493694E-02	0.1795704	0.1370771

Within Correlations\Covariances

	HC_Altpolygon Med_Boulders	Chann_Incisement	Veg	Soil__Hydro	Overall	
HealthScore	20.27578	0	0.2166667	35.76167	18.14833	-0.6408333
Size	-11.51427	0	3.764533	-9.462934	-1.4452	-0.5606667
Trees	-7.444567	0	1.66	-1.823333	3.333333E-03	-8.166666E-02
Treesgr6ft	0.1936126	0	-3.098333E-02	0.020175	-5.358333E-03	-5.120833E-03
Treesgr1_5ft	-1.055617E-02	0	2.433333E-03	-1.116667E-03	0.00135	-0.000975
Treesle1_5ft	4.444667E-03	0	0.0008	-5.533333E-03	-2.733333E-03	-0.0002
Shrubsgr6ft	1.256646	0	-0.1574667	-0.4847	-0.1995667	0.1046833
Shrubsgr1_5ft	2.333313	0	-0.12	0.358	5.266667E-02	-0.013
Shrubsle1_5ft	0.7463987	0	-0.1558167	0.105625	-0.016375	0.0013875
Grassgr6ft	-0.0216675	0	-0.0019	2.416667E-03	1.416667E-03	-0.000175
Grassgr1_5ft	6.659333E-02	0	-0.048	-0.374	-0.2046667	3.966667E-02
Grassle1_5ft	0.996745	0	-4.593333E-02	0.9295	0.4188333	-0.03295
Forbsgr6ft	1.333333E-02	0	-4.266667E-03	0.004	0	1.333333E-04
Forbsgr1_5ft	0.4149988	0	-0.1289667	5.538333E-02	-0.08815	-0.002525
Forbsle1_5ft	-1.634957	0	0.1510333	0.1978167	0.1708833	-1.004167E-02
CC_Trees	0.1783338	0	-3.023333E-02	2.121667E-02	-3.983333E-03	-5.141667E-03
CC_Shrubs	4.599967	0	-0.3053333	-0.1766667	-0.1566667	8.766667E-02
CC_Grams	1.988887	0	-0.222	0.6186666	0.1723333	3.178333E-03
CC_Forbs	-0.7666233	0	8.666666E-03	0.2876667	0.097	-1.783333E-02
CC_Wood	4.7333	0	-0.3346667	-0.1366667	-0.15	8.566666E-02
CC_Weeds	0.9980686	0	-0.15585	0.171775	2.584167E-02	-6.620833E-03
CC_All	0.7402779	0	-0.09925	0.242375	7.204167E-02	4.645833E-03
AltBanks	-3.147815	0	0.4620667	-0.9785	-0.2145	0.00905
HoofShear	-0.8416142	0	1.0335	-2.288917	-0.2299167	2.529167E-02
Trails	-2.458896	0	0.0724	-0.7049	-0.2709667	3.178333E-02
Bareground	-1.073061	0	0.1740167	-0.368225	-9.549167E-02	-3.220833E-03
VegCover	294.4467	0	-43.6627	91.72745	23.72732	1.916608
CC_Invasiveveg	-424.1093	0	133.6799	-122.7375	9.276883	2.695358
DD_Invasiveveg	-599.995	0	178.6623	-153.5495	18.44535	1.443925
Dist_Undesveg	-748.1802	0	114.2287	-157.112	-10.88638	-3.888742
Tr_Shr_EstReg	-525.9224	0	105.3288	-160.6636	-24.66758	-5.888875
Utilization	216.6817	0	-31	89.83334	27.16667	4.416667
Dead_Dec	55.55555	0	7.777	-13.8875	-9.4435	1.38875
Rootmass_Prot	-674.1148	0	114.2243	-95.3276	46.00414	-2.333867
HC_Bareground	570.4069	0	-132.8926	248.2201	55.33065	-0.1104583
Structaltbanks	-127.845	0	2.566467	-33.8397	22.61243	1.582717
HC_Altpolygon	1946.323	0	-217.446	260.3879	11.05402	2.916725
Chann_Incisement	0	0	0	0	0	0
Veg	-0.6420783	0	58.92667	-55.43	3.756667	-0.125
Soil__Hydro	0.5083471	0	-0.621922	134.805	31.485	-2.869167
Overall	5.953646E-02	0	0.1162832	0.6443487	17.71167	-1.175833
Med_Boulders	9.157249E-02	0	-2.255439E-02	-0.3422786	-0.386984	0.52125
Small_Boulders	0.1370971	0	-3.545497E-02	-0.3484927	-0.4246669	0.9864123
Large_Cobble	0.2274872	0	-0.1890919	-0.1723021	-0.2268517	0.2802796
Small_Cobble	0.1650233	0	-0.2575768	-7.520433E-02	-0.1918291	8.028464E-03
Coarse_Gravel	0.2424923	0	-0.2709509	-6.588925E-02	-0.1338355	2.853928E-03
Fine_Gravel	0.4813317	0	-0.2814568	0.1752072	0.1448686	4.137051E-02
Sand	6.474828E-02	0	0.2607966	-0.1700619	0.1661438	0.3593865
Silt_and_Clay	-0.595501	0	0.5907671	-0.6396011	-0.1268728	0.318965
Graminoids	0.4145792	0	-0.4961292	0.2101122	-9.816179E-02	-0.228846
Forbs	-0.7122371	0	0.7093545	-0.5254142	3.256169E-02	-0.2017715
Shrubs	0.1967764	0	0.1137301	-0.1493476	-8.742712E-03	0.3888577
Total_forage	0.2398802	0	-0.2924998	3.287802E-02	-9.928233E-02	-0.2760881

Within Correlations\Covariances

	Small_Boulders	Large_Cobble	Small_Cobble	Coarse_Gravel	Fine_Gravel	Sand
HealthScore	-0.7866667	-1.7875	-3.283333	-1.495833	3.785	7.079167
Size	-0.4976667	-0.5689333	-4.055933	-0.7164667	5.239733	-22.66133

Trees	-0.106667	-0.3883333	-0.6133333	-0.365	-0.2433333	2.525
Treesgr6ft	-0.0051	-1.365417E-02	-2.138333E-02	-9.629167E-03	-0.014375	-0.1616875
Treesgr1_5ft	-0.0011	-0.003175	-0.0058	-3.191667E-03	-2.583333E-03	-1.670833E-02
Treesle1_5ft	-0.0002	-7.333333E-04	-0.0004	-3.333333E-05	-9.666667E-04	2.666667E-03
Shrubsgr6ft	0.1002667	6.848333E-02	0.4624	0.2811167	0.2887667	0.7824166
Shrubsgr1_5ft	-0.008	0.215	-3.666667E-02	0.115	-2.933333E-02	5.166667E-02
Shrubsle1_5ft	0.0032	0.1045542	0.1247833	0.1434958	4.664167E-02	0.1510208
Grassgr6ft	-0.0003	-0.001675	-0.0028	-1.358333E-03	1.666667E-05	1.291667E-03
Grassgr1_5ft	3.133333E-02	-2.766667E-02	-0.146	-0.1563333	-3.333334E-02	-0.6016667
Grassle1_5ft	-2.586667E-02	-4.616667E-03	-7.866667E-03	3.981667E-02	6.956667E-02	3.158333E-02
Forbsgr6ft	1.333333E-04	6.333333E-04	1.133333E-03	5.666667E-04	5.666667E-04	8.666666E-03
Forbsgr1_5ft	-0.0029	-9.558333E-03	-0.1674333	-0.1033417	-0.06115	-0.068125
Forbsle1_5ft	-0.007	-6.114167E-02	-7.933334E-03	-0.092925	-8.618333E-02	-0.5245417
CC_Trees	-5.266667E-03	-0.014175	-2.263333E-02	-0.010025	-1.408333E-02	-0.1502083
CC_Shrubs	8.933333E-02	0.3776667	0.5826667	0.5663334	0.318	0.9816667
CC_Grams	0.0065	-2.233333E-02	-0.1265	-8.033333E-02	0.074	-0.515
CC_Forbs	-1.533333E-02	-0.0685	-0.1626667	-0.1755	-0.105	-0.5358334
CC_Wood	8.733334E-02	0.3723333	0.574	0.5636666	0.3153333	0.9016666
CC>Weeds	-6.266667E-03	3.094583E-02	-0.01395	3.617083E-02	5.805833E-02	-5.735417E-02
CC_All	4.333333E-03	0.0143125	0.02525	0.0304375	4.329167E-02	-0.0946875
AltBanks	1.163333E-02	0.11005	-0.1425333	-9.851667E-02	-0.3982667	-0.44725
HoofShear	0.038	0.2867917	0.5445	0.492875	0.06425	-0.749375
Trails	2.803333E-02	5.921667E-02	7.046667E-02	-0.06835	-0.1039667	1.308333E-02
Bareground	-3.366667E-03	-0.0179875	-0.00205	-2.512917E-02	-6.074167E-02	7.247917E-02
VegCover	1.777733	6.138475	10.9991	12.86042	16.50082	-46.51913
CC_Invasiveveg	3.112067	-10.86191	-28.7807	-28.14173	-18.39148	139.6013
DD_Invasiveveg	1.999467	-15.44427	-38.22123	-37.44349	-21.99888	172.7705
Dist_Undesveg	-3.3332	1.220525	-35.99977	-21.88976	-29.33175	8.334458
Tr_Shr_EstReg	-8.666667	-26.55521	-47.11083	-26.33296	-25.55575	88.32112
Utilization	7.333333	25.08333	33	8.583333	13.5	-152.9167
Dead_Dec	2.222	8.05475	17.776	11.94325	2.7775	0.27775
Rootmass_Prot	-2.889533	4.556533	-30.45047	-18.55773	-38.4472	79.44833
HC_Bareground	-0.666	9.223075	-24.66097	4.337225	34.00295	-13.89612
Structaltbanks	-0.2228667	4.692183	112.3339	80.74889	60.4987	164.0216
HC_Altpolygon	4.4446	24.69486	52.33423	54.08391	77.61185	42.91246
Chann_Incisement	0	0	0	0	0	0
Veg	-0.2	-3.571667	-14.21333	-10.515	-7.896667	30.075
Soil__Hydro	-2.973333	-4.9225	-6.276667	-3.8675	7.435	-29.6625
Overall	-1.313333	-2.349167	-5.803333	-2.8475	2.228333	10.50417
Med_Boulders	0.5233333	0.4979167	4.166667E-02	1.041667E-02	0.1091667	3.897917
Small_Boulders	0.54	0.55	0.1666667	0.05	0.08	3.4
Large_Cobble	0.3041751	6.054584	3.831667	6.31375	2.1025	10.73125
Small_Cobble	0.0315514	0.2166269	51.67333	33.02833	16.49	-20.275
Coarse_Gravel	1.345893E-02	0.5075543	0.9088469	25.55792	13.6575	1.627083
Fine_Gravel	2.978633E-02	0.2337856	0.627641	0.7391496	13.35833	13.2625
Sand	0.3079883	0.290309	-0.18775	2.142394E-02	0.2415469	225.6812
Silt_and_Clay	0.2531991	0.248017	3.226344E-02	8.222608E-02	-0.1206367	0.1904697
Graminoids	-0.233454	0.1614154	0.2764588	0.3166487	0.428781	-0.215149
Forbs	-0.1647594	-0.2492	0.1350115	-1.538195E-02	-0.217003	-0.1037562
Shrubs	0.3343689	0.579611	-0.1554634	9.637754E-02	-1.747358E-02	0.5639394
Total_forage	-0.2752718	0.1668932	0.3355704	0.360052	0.4006442	-0.2045722

Within Correlations\Covariances

	Silt_and_Clay	Graminoids	Forbs	Shrubs	Total_forage	Litter
HealthScore	-7.283333	135.6009	-157.2207	29.45317	7.833384	73.0139
Size	-22.54933	7632.17	168.4884	-295.7071	7504.952	3818.024
Trees	3.966667	-375.4575	70.86837	2.487133	-302.102	-303.059
Treesgr6ft	0.2139167	-15.5736	-0.9989144	-0.8877895	-17.46031	3.903668
Treesgr1_5ft	5.516667E-02	-3.090106	0.1779285	-0.1231003	-3.035278	-9.629767E-02
Treesle1_5ft	-2.666667E-03	-1.001613	-2.609733E-02	1.463067E-02	-1.013079	-0.76985
Shrubsgr6ft	1.391667	-16.50428	-15.12389	9.5974	-22.03077	38.49722
Shrubsgr1_5ft	-0.58	50.52129	-28.36827	18.63647	40.78949	18.71276

ARHMS – Cows and Fish

Shrubsle1_5ft	-0.2205833	19.43376	-10.28925	3.880085	13.0246	2.449871
Grassgr6ft	-0.0035	0.8062677	-3.155417E-02	-6.744033E-02	0.7072732	-0.092997
Grassgr1_5ft	1.353333	169.7768	-34.43971	7.67236	143.0095	132.3785
Grassle1_5ft	-1.219	-138.0372	19.40442	-9.335732	-127.9685	-82.35075
Forbsgr6ft	-1.066667E-02	0.5024573	-0.2057	0.004432	0.3011893	-0.4380747
Forbsgr1_5ft	-0.5058333	20.80372	-16.99189	0.901451	4.713284	25.44684
Forbsle1_5ft	0.4865	-95.54956	33.38507	-12.09498	-74.25947	-34.59443
CC_Trees	0.2251667	-15.45785	-1.139022	-0.815027	-17.4119	3.530946
CC_Shrubs	0.9533333	37.24695	-48.9227	34.30457	22.62882	28.66697
CC_Grams	-0.2833333	62.28097	-27.94574	1.05944	35.39466	55.63255
CC_Forbs	-0.13	-52.31479	13.63314	-10.94341	-49.62506	-12.46349
CC_Wood	1.046667	31.67272	-49.99117	33.80916	15.49071	32.66809
CC>Weeds	-0.25675	36.84941	-9.914662	-0.2819055	26.65284	3.926908
CC_All	-0.1854167	24.19847	-10.389	1.404922	15.2144	12.11652
AltBanks	1.657667	-25.25306	26.60964	11.5047	12.86128	-8.699231
HoofShear	4.379167	41.92971	84.73529	11.21004	137.875	0.4355017
Trails	1.965	24.0562	13.24149	-2.348798	34.94889	-4.411202
Bareground	0.4479167	-27.75711	13.39704	-0.5359495	-14.89602	-13.58477
VegCover	-74.99917	10426.31	-4440.872	537.9363	6523.376	5138.982
CC_Invasiveveg	162.7878	-20503.91	7897.637	399.6843	-12206.59	-3520.875
DD_Invasiveveg	237.7765	-27110.6	11367.31	-100.4021	-15843.69	-6005.878
Dist_Undesveg	184.4578	-4928.682	10336.54	-870.1066	4537.751	392.6125
Tr_Shr_EstReg	375.5592	-20058.16	1711.431	1257.541	-17089.19	-21086.41
Utilization	-171.6667	17717.14	3324.088	-1747.863	19293.36	22851.45
Dead_Dec	5.555	-7298.059	718.6003	53.65019	-6525.809	3685.709
Rootmass_Prot	344.4533	-7787.549	10123.84	645.3151	2981.611	-18437.52
HC_Bareground	-308.8872	17537.14	-9653.021	126.8026	8010.918	6211.009
Structaltbanks	318.349	3726.656	2843.301	93.86546	6663.823	-13976.88
HC_Altpolygon	-668.3408	33438.7	-17895.12	1802.901	17346.48	5335.786
Chann_Incisement	0	0	0	0	0	0
Veg	115.3667	-6962.82	3101.143	181.3105	-3680.367	-1655.553
Soil__Hydro	-188.9167	4460.04	-3474.22	-360.1162	625.7031	238.433
Overall	-13.58333	-755.2776	78.04395	-7.6413	-684.8749	-1410.941
Med_Boulders	5.858333	-302.0652	-82.96317	58.30492	-326.7235	234.8233
Small_Boulders	4.733333	-313.6408	-68.95247	51.02867	-331.5646	272.0955
Large_Cobble	15.525	726.1419	-349.2149	296.1898	673.1169	-68.55585
Small_Cobble	5.9	3633.273	552.722	-232.0881	3953.907	-340.1593
Coarse_Gravel	10.575	2926.677	-44.28706	101.1882	2983.579	-552.1389
Fine_Gravel	-11.21667	2865.142	-451.6942	-13.26323	2400.184	173.5943
Sand	72.79166	-5909.103	-887.6967	1759.428	-5037.372	-6216.686
Silt_and_Clay	647.1667	-17033.12	6023.016	1585.294	-9424.813	-2717.782
Graminoids	-0.3662282	3342480	-430644	-35631.98	2876204	685356.1
Forbs	0.4157223	-0.4136008	324343.5	-45350.97	-151651.5	-192348.4
Shrubs	0.3000616	-9.384565E-02	-0.3834357	43130.33	-37852.62	-49896.17
Total_forage	-0.2260243	0.9597889	-0.1624555	-0.1111975	2686700	443111.4

Within Correlations\Covariances

	Confirmbreed	Possiblebreed	Breed_Pos_Birds	Speciesusing	Commspecusing	Totalspeciesobs
HealthScore	-0.2	2.978333	2.778333	1.355	-2.753333	0.4983333
Size	1.705867	-1.171067	0.5348	-2.9616	-2.926533	-3.137467
Trees	2.666667E-02	-0.1633333	-0.1366667	-0.3033333	0.1333333	0.09
Treesgr6ft	9.933333E-03	2.858333E-03	1.279167E-02	2.480833E-02	0.0293	0.1102583
Treesgr1_5ft	1.266667E-03	3.166667E-04	1.583333E-03	3.683333E-03	0.0048	1.671667E-02
Treesle1_5ft	4.666667E-04	-7.333333E-04	-2.666667E-04	-1.266667E-03	6.666667E-04	8.666667E-04
Shrubsgr6ft	1.686667E-02	0.0155	3.236667E-02	0.3361667	0.1214	0.1975
Shrubsgr1_5ft	2.666667E-02	-0.002	2.466667E-02	-8.466667E-02	1.866667E-02	-0.094
Shrubsle1_5ft	-6.066666E-03	-3.885833E-02	-0.044925	-4.414167E-02	-2.333333E-04	-0.041925
Grassgr6ft	2.666667E-04	1.833333E-04	0.00045	-1.833333E-04	-0.0014	0.00045
Grassgr1_5ft	1.866667E-02	5.133333E-02	0.07	0.222	0.1093333	0.1526667
Grassle1_5ft	5.733334E-03	0.0309	3.663334E-02	-9.156667E-02	-0.1189333	-0.0627
Forbsgr6ft	-9.333334E-04	0.0004	-5.333333E-04	-6.666667E-05	-9.333334E-04	-2.533333E-03
Forbsgr1_5ft	1.186667E-02	3.083333E-03	0.01495	1.891667E-02	0.0244	0.05375

Forbsle1_5ft	-4.046667E-02	0.04285	2.383333E-03	-0.00285	-7.886667E-02	-8.121666E-02
CC_Trees	9.933333E-03	2.983333E-03	1.291667E-02	0.02535	2.946667E-02	0.1107167
CC_Shrebs	5.466667E-02	-2.866667E-02	0.026	0.202	0.188	0.1126667
CC_Grams	3.633333E-02	0.085	0.1213333	0.1433333	9.333333E-03	0.1283333
CC_Forbs	-0.028	4.966667E-02	2.166667E-02	1.033333E-02	-5.066667E-02	-2.233333E-02
CC_Wood	5.866667E-02	-2.466667E-02	0.034	0.218	0.1986667	0.1673333
CC>Weeds	1.106667E-02	2.591667E-03	1.365833E-02	0.019075	1.916667E-02	7.939167E-02
CC_All	8.666666E-03	1.645833E-02	0.025125	8.541667E-03	-3.016667E-02	-3.520833E-02
AltBanks	0.0024	-0.0631	-0.0607	-0.1802333	-0.0326	-0.3253667
HoofShear	0.1143333	-0.2004167	-8.608333E-02	-0.1029167	0.272	0.2079167
Trails	-0.1102667	1.116667E-02	-0.0991	0.1635	0.1088	-2.116667E-02
Bareground	-1.006667E-02	-2.454167E-02	-3.460833E-02	-2.545833E-02	0.0297	3.458333E-03
VegCover	3.555467	5.834084	9.38955	3.055917	-11.77807	-14.16658
CC_Invasiveveg	0.8897333	0.8897333	-1.499217	-13.16772	-7.779	-36.17215
DD_Invasiveveg	-1.333867	-3.777817	-5.111683	-18.44418	-8.888333	-41.99755
Dist_Undesveg	-1.333467	-13.99995	-15.33342	-23.77738	-0.8900667	-13.55648
Tr_Shr_EstReg	7.556	-13.11075	-5.55475	-9.10925	31.557	37.11525
Utilization	-9.333333	12.16667	2.833333	14.5	-16.66667	-26.5
Dead_Dec	-2.131628E-15	-3.8885	-3.8885	-2.7775	4.736952E-16	-3.8885
Rootmass_Prot	-5.777733	-3.333333	-9.111067	-23.33467	-7.111467	-38.89
HC_Bareground	4.8896	15.33288	20.22248	22.44512	-13.33327	18.44368
Structaltbanks	-10.22253	-11.27857	-21.5011	4.608567	7.777333	17.16503
HC_Altpolygon	9.777866	20.72192	30.49978	30.38875	13.5554	41.16658
Chann_Incisement	0	0	0	0	0	0
Veg	1.36	-2.903333	-1.543333	-5.963333	0.7066666	-8.356667
Soil_Hydro	-1.213333	9.575	8.361667	4.491667	-6.326667	8.175
Overall	-2.666667E-02	2.241667	2.215	-0.9083334	-2.286667	-0.3583333
Med_Boulders	0.1333333	0.1391667	0.2725	1.094167	-0.01	-0.5008333
Small_Boulders	0.1333333	0.1266667	0.26	1.04	-2.666667E-02	-0.5466667
Large_Cobble	0.22	-1.694167	-1.474167	-0.2725	1.263333	-0.7008333
Small_Cobble	-2.28	-5.49	-7.77	-4.976666	0.6466666	1.036667
Coarse_Gravel	-0.54	-5.049167	-5.589167	-4.250834	1.023333	1.030833
Fine_Gravel	0.1866667	-1.628333	-1.441667	-0.2383333	0.16	2.185
Sand	1.566667	-1.354167	0.2125	1.1875	-1.85	-18.15417
Silt_and_Clay	-0.1333333	-13.55	-13.68333	8.883333	16.86667	2.983333
Graminoids	-259.138	-283.732	-542.8701	-412.6853	308.6899	788.9014
Forbs	-141.0596	-238.1458	-379.2054	-558.9009	-102.8629	-422.3564
Shrebs	84.26614	-6.2031	78.06303	72.5871	112.5705	-96.00603
Total_forage	-315.9315	-528.0809	-844.0123	-898.9991	318.3975	270.539

Within Correlations\Covariances

	HealthScore	Size	Trees	Treesgr6ft	Treesgr1_5ft	Treesle1_5ft
Litter	1.238221E-02	0.4428104	-0.5022704	0.0691674	-1.099459E-02	-0.3375713
Confirmbreed	-4.324024E-02	0.252226	5.634362E-02	0.2243826	0.1843705	0.2608746
Possiblebreed	0.3812623	-0.1025224	-0.2043352	3.822957E-02	2.729127E-02	-0.2427275
Breed_Pos_Birds	0.3164788	4.166183E-02	-0.1521391	0.1522381	0.1214237	-7.854091E-02
Speciesusing	0.1064427	-0.1591072	-0.2328707	0.2036153	0.1947999	-0.25728
Commspecusing	-0.3073981	-0.2234511	0.1454786	0.3417796	0.3607901	0.1924501
Totalspeciesobs	2.790413E-02	-0.1201474	4.925032E-02	0.645054	0.6301866	0.125478

Within Correlations\Covariances

	Shrebsgr6ft	Shrebsgr1_5ft	Shrebsle1_5ft	Grassgr6ft	Grassgr1_5ft	Grassle1_5ft
Litter	0.1544696	9.616822E-02	3.697615E-02	-3.509631E-02	0.5484889	-0.3776936
Confirmbreed	8.627967E-02	0.1747141	-0.1167332	0.1283001	9.860133E-02	3.352315E-02
Possiblebreed	4.694651E-02	-7.758572E-03	-0.4427115	5.222663E-02	0.1605491	0.1069766
Breed_Pos_Birds	8.723271E-02	8.514751E-02	-0.4554434	0.1140704	0.1948122	0.1128538
Speciesusing	0.6248165	-0.2015535	-0.3086111	-3.204927E-02	0.4260765	-0.1945332
Commspecusing	0.3206877	0.0631554	-2.31849E-03	-0.3478328	0.2982311	-0.3591084
Totalspeciesobs	0.2616597	-0.1595062	-0.2089333	5.607395E-02	0.2088578	-9.495016E-02

Within Correlations\Covariances

	Forbsgr6ft	Forbsgr1_5ft	Forbsle1_5ft	CC_Trees	CC_Shrebs	CC_Grams
Litter	-0.2479887	0.3861101	-0.2399693	6.254733E-02	9.744614E-02	0.4129293
Confirmbreed	-0.6735753	0.2295469	-0.3578594	0.2243254	0.2369032	0.3438092
Possiblebreed	0.1709235	3.531472E-02	0.2243666	3.989125E-02	-7.355598E-02	0.4762376
Breed_Pos_Birds	-0.2027918	0.1523653	1.110458E-02	0.1536866	0.0593641	0.6049154
Speciesusing	-1.748142E-02	0.1329554	-9.157533E-03	0.208008	0.3180668	0.4928084
Commspecusing	-0.3478328	0.2437345	-0.3601578	0.3436361	0.4207175	0.0456072
Totalspeciesobs	-0.4735134	0.2692848	-0.1860162	0.6475702	0.1264545	0.3145157

Within Correlations\Covariances

	CC_Forbs	CC_Wood	CC_Weeds	CC_All	AltBanks	HoofShear
Litter	-0.1139554	0.1124062	7.704945E-02	0.2344735	-3.791915E-02	9.246357E-04
Confirmbreed	-0.3263767	0.2573496	0.2768224	0.2138126	1.333689E-02	0.3094705
Possiblebreed	0.3427824	-6.406708E-02	3.838451E-02	0.2404139	-0.2076181	-0.3211979
Breed_Pos_Birds	0.1330624	7.858019E-02	0.1800049	0.3265799	-0.1777191	-0.1227631
Speciesusing	4.376432E-02	0.3474618	0.1733675	7.656715E-02	-0.3639126	-0.1012164
Commspecusing	-0.3049775	0.4500299	0.2475799	-0.3843199	-9.355032E-02	0.3801891
Totalspeciesobs	-6.742255E-02	0.19011	0.5143395	-0.2249662	-0.4682814	0.1457559

Within Correlations\Covariances

	Trails	Bareground	VegCover	CC_Invasiveveg	DD_Invasiveveg	Dist_Undesveg
Litter	-0.0198414	-0.2419703	0.2493532	-0.1351019	-0.176666	1.260043E-02
Confirmbreed	-0.6323029	-0.228592	0.2199379	4.352476E-02	-5.002125E-02	-5.455934E-02
Possiblebreed	3.791377E-02	-0.329968	0.2136823	-6.919521E-02	-8.388329E-02	-0.339161
Breed_Pos_Birds	-0.2994034	-0.4140551	0.3060204	-3.864053E-02	-0.1009969	-0.3305431
Speciesusing	0.340657	-0.2100506	6.868527E-02	-0.2340484	-0.251316	-0.3534839
Commspecusing	0.3221768	0.34827	-0.3762373	-0.19651	-0.1721261	-1.880589E-02
Totalspeciesobs	-3.143576E-02	2.033914E-02	-0.2269651	-0.458291	-0.4079027	-0.1436563

Within Correlations\Covariances

	Tr_Shr_EstReg	Utilization	Dead_Dec	Rootmass_Prot	HC_Bareground	Structaltbanks
Litter	-0.4181731	0.4178681	0.2799526	-0.445784	0.1826935	-0.3772767
Confirmbreed	0.1910341	-0.2175845	-2.064147E-16	-0.1780922	0.183358	-0.3517822
Possiblebreed	-0.1962632	0.1679404	-0.222948	-6.083573E-02	0.3404417	-0.2298062
Breed_Pos_Birds	-7.399215E-02	3.480094E-02	-0.1983871	-0.147965	0.3995427	-0.3898327
Speciesusing	-8.367971E-02	0.1228224	-9.772412E-02	-0.2613411	0.3058208	5.762353E-02
Commspecusing	0.4120017	-0.2006431	2.368713E-17	-0.113196	-0.2581947	0.1382071
Totalspeciesobs	0.2430311	-0.1600028	-0.0975218	-0.3104674	0.1791285	0.1529856

Within Correlations\Covariances

	HC_Altpolygon Med_Boulders	Chann_Incisement	Veg	Soil_Hydro	Overall	
Litter	0.0968255	0	-0.1726577	1.644039E-02	-0.2683972	0.2603856
Confirmbreed	0.2262044	0	0.1808204	-0.1066575	-6.467008E-03	0.1884864
Possiblebreed	0.2838438	0	-0.2285587	0.4983594	0.3218831	0.1164847
Breed_Pos_Birds	0.3717542	0	-0.1081111	0.3872634	0.2830157	0.2029598
Speciesusing	0.2554397	0	-0.288082	0.1434622	-8.003843E-02	0.5620093
Commspecusing	0.1619398	0	0.0485185	-0.2871909	-0.2863663	-7.300048E-03
Totalspeciesobs	0.2466564	0	-0.2877611	0.1861185	-2.250673E-02	-0.1833687

Within Correlations\Covariances

	Small_Boulders	Large_Cobble	Small_Cobble	Coarse_Gravel	Fine_Gravel	Sand
Litter	0.2964308	-2.230495E-02	-3.788331E-02	-8.743482E-02	3.802403E-02	-0.3312913
Confirmbreed	0.1851852	9.125254E-02	-0.3237174	-0.1090173	5.212607E-02	0.1064372
Possiblebreed	0.1041651	-0.4160742	-0.4615258	-0.6035508	-0.2692304	-5.447299E-02
Breed_Pos_Birds	0.1902581	-0.3221596	-0.5812384	-0.5944987	-0.2121071	7.606375E-03

Speciesusing	0.524831	-4.106836E-02	-0.2567369	-0.3118131	-2.418197E-02	2.931358E-02
Commspecusing	-1.912584E-02	0.270598	4.741284E-02	0.1066849	2.307239E-02	-6.490419E-02
Totalspeciesobs	-0.196644	-0.0752883	3.812069E-02	5.389899E-02	0.1580266	-0.3194357

Within Correlations\Covariances

	Silt_and_Clay	Graminoids	Forbs	Shrubs	Total_forage	Litter
Litter	-8.552743E-02	0.3001101	-0.2703864	-0.1923422	0.2164224	1560280
Confirmbreed	-5.349277E-03	-0.1446642	-0.2527927	0.4141198	-0.1967196	0.1772534
Possiblebreed	-0.3218756	-9.378444E-02	-0.2526953	-1.804988E-02	-0.1946918	-9.576149E-02
Breed_Pos_Birds	-0.2892347	-0.1596717	-0.3580457	0.2021253	-0.2768891	8.177244E-03
Speciesusing	0.1294944	-8.370812E-02	-0.3639278	0.1296137	-0.2033914	0.2128104
Commspecusing	0.3494378	8.898908E-02	-9.519295E-02	0.2856815	0.1023785	-1.845074E-02
Totalspeciesobs	3.099907E-02	0.1140626	-0.196034	-0.1221974	4.362899E-02	0.1835801

Within Correlations\Covariances

	Confirmbreed	Possiblebreed	Breed_Pos_Birds	Speciesusing	Commspecusing	Totalspeciesobs
Litter	216.9359	-197.9408	18.9951	716.8214	-43.72867	867.5049
Confirmbreed	0.96	-0.12	0.84	0.1866667	0.3066667	0.6933333
Possiblebreed	-7.401206E-02	2.738333	2.618333	2.861667	-0.42	0.6183333
Breed_Pos_Birds	0.4610099	0.8508409	3.458333	3.048333	-0.1133333	1.311667
Speciesusing	7.065032E-02	0.6412966	0.6078719	7.271667	1.753333	4.981667
Commspecusing	0.1649604	-0.1337688	-3.211981E-02	0.3426859	3.6	5.06
Totalspeciesobs	0.1870516	9.877212E-02	0.1864425	0.4883291	0.7049432	14.31167

Within-Cell Correlations Analysis

Variable	R-Squared Other Y's	Canonical Variate	Eigenvalue	Percent of Total	Cumulative Total
HealthScore	1.000000	1	11.277690	18.80	18.80
Size	1.000000	2	7.769792	12.95	31.75
Trees	1.000000	3	6.986332	11.64	43.39
Treesgr6ft	1.000000	4	5.311420	8.85	52.24
Treesgr1_5ft	1.000000	5	4.911924	8.19	60.43
Treesle1_5ft	1.000000	6	4.583165	7.64	68.07
Shrubsgr6ft	1.000000	7	3.948944	6.58	74.65
Shrubsgr1_5ft	1.000000	8	3.623537	6.04	80.69
Shrubsle1_5ft	1.000000	9	2.532305	4.22	84.91
Grassgr6ft	1.000000	10	2.259283	3.77	88.67
Grassgr1_5ft	1.000000	11	1.696945	2.83	91.50
Grassle1_5ft	1.000000	12	1.375290	2.29	93.79
Forbsgr6ft	1.000000	13	1.205106	2.01	95.80
Forbsgr1_5ft	1.000000	14	1.026795	1.71	97.51
Forbsle1_5ft	1.000000	15	0.491472	0.82	98.33
CC_Trees	1.000000	16	0.000000	0.00	98.33
CC_Shrubs	1.000000	17	0.000000	0.00	98.33
CC_Grass	1.000000	18	0.000000	0.00	98.33
CC_Forbs	1.000000	19	0.000000	0.00	98.33
CC_Wood	1.000000	20	0.000000	0.00	98.33
CC>Weeds	1.000000	21	0.000000	0.00	98.33
CC_All	1.000000	22	0.000000	0.00	98.33
AltBanks	1.000000	23	0.000000	0.00	98.33
HoofShear	1.000000	24	0.000000	0.00	98.33
Trails	1.000000	25	0.000000	0.00	98.33
Bareground	1.000000	26	0.000000	0.00	98.33
VegCover	1.000000	27	0.000000	0.00	98.33
CC_Invasiveveg	1.000000	28	0.000000	0.00	98.33
DD_Invasiveveg	1.000000	29	0.000000	0.00	98.33
Dist_Undesveg	1.000000	30	0.000000	0.00	98.33

Tr_Shr_EstReg	1.000000	31	0.000000	0.00	98.33
Utilization	1.000000	32	0.000000	0.00	98.33
Dead_Dec	1.000000	33	0.000000	0.00	98.33
Rootmass_Prot	1.000000	34	0.000000	0.00	98.33
HC_Bareground	1.000000	35	0.000000	0.00	98.33
Structaltbanks	1.000000	36	0.000000	0.00	98.33
HC_Altpolygon	1.000000	37	0.000000	0.00	98.33
Chann_Incisement	1.000000	38	0.000000	0.00	98.33
Veg	1.000000	39	0.000000	0.00	98.33
Soil__Hydro	1.000000	40	0.000000	0.00	98.33
Overall	1.000000	41	0.000000	0.00	98.33
Med_Boulders	1.000000	42	0.000000	0.00	98.33
Small_Boulders	1.000000	43	0.000000	0.00	98.33
Large_Cobble	1.000000	44	0.000000	0.00	98.33
Small_Cobble	1.000000	45	0.000000	0.00	98.33
Coarse_Gravel	1.000000	46	0.000000	0.00	98.33
Fine_Gravel	1.000000	47	0.000000	0.00	98.33
Sand	1.000000	48	0.000000	0.00	98.33
Silt_and_Clay	1.000000	49	0.000000	0.00	98.33
Graminoids	1.000000	50	0.000000	0.00	98.33
Forbs	1.000000	51	0.000000	0.00	98.33
Shrubs	1.000000	52	0.000000	0.00	98.33
Total_forage	1.000000	53	0.000000	0.00	98.33

Within-Cell Correlations Analysis

Variable	R-Squared Other Y's	Canonical Variate	Eigenvalue	Percent of Total	Cumulative Total
Litter	1.000000	54	0.000000	0.00	98.33
Confirmbreed	1.000000	55	0.000000	0.00	98.33
Possiblebreed	1.000000	56	0.000000	0.00	98.33
Breed_Pos_Birds	1.000000	57	0.000000	0.00	98.33
Speciesusing	1.000000	58	0.000000	0.00	98.33
Commspecusing	1.000000	59	0.000000	0.00	98.33
Totalspeciesobs	1.000000	60	0.000000	0.00	98.33

Analysis of Variance Table for HealthScore

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1346.225	673.1125	30.20	0.000005*	0.999998
S	15	334.275	22.285			
Total (Adjusted)	17	1680.5				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Size

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	16.47749	8.238745	0.17	0.842866	0.072054
S	15	714.7112	47.64741			
Total (Adjusted)	17	731.1887				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Trees

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.5	0.25	1.07	0.367333	0.202657

S	15	3.5	0.2333333
Total (Adjusted)	17	4	
Total	18		

* Term significant at alpha = 0.05

Analysis of Variance Table for Treesgr6ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	7.178125E-03	3.589062E-03	1.76	0.206087	0.310123
S	15	3.062188E-02	2.041458E-03			
Total (Adjusted)	17	0.0378				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Treesgr1_5ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1.236111E-04	6.180556E-05	1.26	0.312803	0.231535
S	15	0.0007375	4.916667E-05			
Total (Adjusted)	17	8.611111E-04				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Treesle1_5ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	2.777778E-05	1.388889E-05	4.17	0.036380*	0.641565
S	15	0.00005	3.333333E-06			
Total (Adjusted)	17	7.777778E-05				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Shrubsgr6ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.4262425	0.2131213	5.35	0.017589*	0.756424
S	15	0.59712	0.039808			
Total (Adjusted)	17	1.023363				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Shrubsgr1_5ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.001	0.0005	0.02	0.979634	0.052555
S	15	0.364	2.426667E-02			
Total (Adjusted)	17	0.365				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Shrubsle1_5ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	5.048125E-03	2.524063E-03	0.90	0.428523	0.175896
S	15	4.220188E-02	2.813458E-03			
Total (Adjusted)	17	0.04725				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Grassgr6ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	2.277778E-05	1.138889E-05	2.53	0.112959	0.428184
S	15	0.0000675	0.0000045			
Total (Adjusted)	17	9.027778E-05				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Grassgr1_5ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.4427778	0.2213889	5.93	0.012658*	0.800454
S	15	0.56	3.733333E-02			
Total (Adjusted)	17	1.002778				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Grassle1_5ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.20857	0.104285	3.42	0.059633	0.552055
S	15	0.45703	3.046867E-02			
Total (Adjusted)	17	0.6656				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Forbsgr6ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1.444444E-05	7.222222E-06	3.61	0.052454	0.575989
S	15	0.00003	0.000002			
Total (Adjusted)	17	4.444444E-05				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Forbsgr1_5ft

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.0009925	4.9625E-04	0.18	0.838470	0.072758
S	15	0.0417575	2.783833E-03			
Total (Adjusted)	17	0.04275				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Forbsle1_5ft

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	1.048028E-02	5.240139E-03	0.39	0.681514	0.101984
S	15	0.1997975	1.331983E-02			
Total (Adjusted)	17	0.2102778				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for CC_Trees

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	7.036111E-03	3.518056E-03	1.72	0.212139	0.304540
S	15	0.0306375	0.0020425			
Total (Adjusted)	17	3.767361E-02				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for CC_Shrubs

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	0.353	0.1765	3.18	0.070475	0.520295
S	15	0.832	5.546667E-02			
Total (Adjusted)	17	1.185				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for CC_Grams

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	5.359028E-02	2.679514E-02	2.30	0.134173	0.394188
S	15	0.1745	1.163333E-02			
Total (Adjusted)	17	0.2280903				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for CC_Forbs

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	1.611111E-02	8.055556E-03	1.05	0.374057	0.199457
S	15	0.115	7.666667E-03			
Total (Adjusted)	17	0.1311111				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for CC_Wood

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	0.3991111	0.1995556	3.69	0.049864*	0.585313
S	15	0.812	5.413333E-02			
Total (Adjusted)	17	1.211111				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for CC>Weeds

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)

A: HealthCat	2	1.440625E-03	7.203125E-04	0.43	0.656617	0.107497
S	15	2.497187E-02	1.664792E-03			
Total (Adjusted)	17	0.0264125				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for CC_All

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1.293924E-02	6.469618E-03	3.78	0.046837*	0.596743
S	15	2.567188E-02	1.711458E-03			
Total (Adjusted)	17	3.861111E-02				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for AltBanks

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1.51716	0.7585801	22.49	0.000031*	0.999884
S	15	0.50598	0.033732			
Total (Adjusted)	17	2.02314				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for HoofShear

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.2279028	0.1139514	0.80	0.466981	0.161409
S	15	2.132688	0.1421792			
Total (Adjusted)	17	2.36059				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Trails

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	4.753111E-02	2.376555E-02	0.75	0.489185	0.153720
S	15	0.47518	3.167867E-02			
Total (Adjusted)	17	0.5227111				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Bareground

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1.306062E-02	6.530312E-03	3.23	0.068024	0.527074
S	15	3.030187E-02	2.020125E-03			
Total (Adjusted)	17	0.0433625				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for VegCover

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	2151.153	1075.576	3.95	0.041841*	0.617020
S	15	4083.317	272.2211			
Total (Adjusted)	17	6234.469				

Total 18

* Term significant at alpha = 0.05

Analysis of Variance Table for CC_Invasiveveg

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	447.7192	223.8596	0.51	0.608101	0.119112
S	15	6529.306	435.287			
Total (Adjusted)	17	6977.025				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for DD_Invasiveveg

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	493.7654	246.8827	0.33	0.721723	0.093646
S	15	11110.56	740.7037			
Total (Adjusted)	17	11604.32				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Dist_Undesveg

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	49.38026	24.69013	0.04	0.961198	0.054938
S	15	9333.533	622.2355			
Total (Adjusted)	17	9382.914				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Tr_Shr_EstReg

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	1790.173	895.0864	0.55	0.588561	0.124151
S	15	24444.55	1629.637			
Total (Adjusted)	17	26234.73				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Utilization

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	7361.111	3680.556	1.92	0.180916	0.335421
S	15	28750	1916.667			
Total (Adjusted)	17	36111.11				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Dead_Dec

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	308.5803	154.2901	1.39	0.279643	0.252184
S	15	1666.333	111.0889			
Total (Adjusted)	17	1974.914				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Rootmass_Prot Source

Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	8000.133	4000.067	3.65	0.051149	0.580637
S	15	16445.42	1096.361			
Total (Adjusted)	17	24445.55				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for HC_Bareground Source

Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	4444.422	2222.211	3.00	0.080180	0.495391
S	15	11111.36	740.757			
Total (Adjusted)	17	15555.78				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Structaltbanks Source

Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	16003.9	8001.948	9.10	0.002587*	0.940173
S	15	13194.39	879.6259			
Total (Adjusted)	17	29198.28				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for HC_Altpolygon Source

Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	3892.075	1946.037	1.00	0.391177	0.191617
S	15	29194.84	1946.323			
Total (Adjusted)	17	33086.91				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Chann_Incisement Source

Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0	0			
S	15	0	0			
Total (Adjusted)	17	0				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Veg Source

Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	217.7111	108.8556	1.85	0.191783	0.324060
S	15	883.9	58.92667			
Total (Adjusted)	17	1101.611				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Soil_Hydro

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	3387.925	1693.963	12.57	0.000623*	0.986347
S	15	2022.075	134.805			
Total (Adjusted)	17	5410				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Overall

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1347.269	673.6347	38.03	0.000001*	1.000000
S	15	265.675	17.71167			
Total (Adjusted)	17	1612.944				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Med_Boulders

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.4590278	0.2295139	0.44	0.651894	0.108576
S	15	7.81875	0.52125			
Total (Adjusted)	17	8.277778				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Small_Boulders

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.3027778	0.1513889	0.28	0.759392	0.086407
S	15	8.1	0.54			
Total (Adjusted)	17	8.402778				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Large_Cobble

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	10.79236	5.396181	0.89	0.430782	0.175001
S	15	90.81875	6.054584			
Total (Adjusted)	17	101.6111				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Small_Cobble

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	55.4	27.7	0.54	0.595848	0.122246
S	15	775.1	51.67333			
Total (Adjusted)	17	830.5				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Coarse_Gravel

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2					
S	15					
Total (Adjusted)	17					
Total	18					

A: HealthCat	2	41.63125	20.81562	0.81	0.461539	0.163366
S	15	383.3687	25.55792			
Total (Adjusted)	17	425				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Fine_Gravel

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	28.02778	14.01389	1.05	0.374599	0.199202
S	15	200.375	13.35833			
Total (Adjusted)	17	228.4028				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Sand

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	953.3507	476.6754	2.11	0.155525	0.365066
S	15	3385.219	225.6812			
Total (Adjusted)	17	4338.569				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Silt_and_Clay

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	4520.278	2260.139	3.49	0.056856	0.561002
S	15	9707.5	647.1667			
Total (Adjusted)	17	14227.78				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Graminoids

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	4962720	2481360	0.74	0.492684	0.152549
S	15	5.01372E+07	3342480			
Total (Adjusted)	17	5.509992E+07				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Forbs

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	440290.6	220145.3	0.68	0.522169	0.143092
S	15	4865153	324343.5			
Total (Adjusted)	17	5305443				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Shrubs

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	53908.24	26954.12	0.62	0.548663	0.135170
S	15	646955	43130.33			
Total (Adjusted)	17	700863.3				

Total 18

* Term significant at alpha = 0.05

Analysis of Variance Table for Total_forage

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	4186714	2093357	0.78	0.476501	0.158056
S	15	4.03005E+07	2686700			
Total (Adjusted)	17	4.448722E+07				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Litter

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	4813973	2406987	1.54	0.245888	0.276333
S	15	2.340419E+07	1560280			
Total (Adjusted)	17	2.821817E+07				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Confirmbreed

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	10.71111	5.355556	5.58	0.015443*	0.774471
S	15	14.4	0.96			
Total (Adjusted)	17	25.11111				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Possiblebreed

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	1.202778	0.6013889	0.22	0.805361	0.078237
S	15	41.075	2.738333			
Total (Adjusted)	17	42.27778				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Breed_Pos_Birds

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	14.40278	7.201389	2.08	0.159194	0.360481
S	15	51.875	3.458333			
Total (Adjusted)	17	66.27778				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Speciesusing

Source		Sum of	Mean	F-Ratio	Prob	Power
Term	DF	Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	56.70278	28.35139	3.90	0.043300*	0.610900
S	15	109.075	7.271667			
Total (Adjusted)	17	165.7778				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Commspecusing

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	37.77778	18.88889	5.25	0.018725*	0.747457
S	15	54	3.6			
Total (Adjusted)	17	91.77778				
Total	18					

* Term significant at alpha = 0.05

Analysis of Variance Table for Totalspeciesobs

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	33.60278	16.80139	1.17	0.335991	0.218571
S	15	214.675	14.31167			
Total (Adjusted)	17	248.2778				
Total	18					

* Term significant at alpha = 0.05

Means and Standard Errors of HealthScore

Term	Count	Mean	Standard Error
All	18	69.875	
A: HealthCat			
H	5	81.6	1.691843
HwP	8	69.625	1.33752
UH	5	58.4	1.691843

Means and Standard Errors of Size

Term	Count	Mean	Standard Error
All	18	3.902	
A: HealthCat			
H	5	4.478	1.691843
HwP	8	2.62	1.33752
UH	5	4.608	1.691843

Means and Standard Errors of Trees

Term	Count	Mean	Standard Error
All	18	0.35	
A: HealthCat			
H	5	0.6	1.691843
HwP	8	0.25	1.33752
UH	5	0.2	1.691843

Means and Standard Errors of Treesgr6ft

Term	Count	Mean	Standard Error
All	18	0.017875	
A: HealthCat			
H	5	0.047	1.691843
HwP	8	0.000625	1.33752
UH	5	0.006	1.691843

Means and Standard Errors of Treesgr1_5ft

Term	Count	Mean	Standard Error
All	18	3.083333E-03	
A: HealthCat			
H	5	0.007	1.691843

HwP	8	0.00125	1.33752
UH	5	0.001	1.691843

Means and Standard Errors of Treesle1_5ft

Term	Count	Mean	Standard Error
All	18	1.333333E-03	
A: HealthCat			
H	5	0.003	1.691843
HwP	8	0	1.33752
UH	5	0.001	1.691843

Means and Standard Errors of Shrubsgr6ft

Term	Count	Mean	Standard Error
All	18	0.2695	
A: HealthCat			
H	5	0.5	1.691843
HwP	8	0.1675	1.33752
UH	5	0.141	1.691843

Means and Standard Errors of Shrubsgr1_5ft

Term	Count	Mean	Standard Error
All	18	0.25	
A: HealthCat			
H	5	0.24	1.691843
HwP	8	0.25	1.33752
UH	5	0.26	1.691843

Means and Standard Errors of Shrubsle1_5ft

Term	Count	Mean	Standard Error
All	18	0.044125	
A: HealthCat			
H	5	0.053	1.691843
HwP	8	0.059375	1.33752
UH	5	0.02	1.691843

Means and Standard Errors of Grassgr6ft

Term	Count	Mean	Standard Error
All	18	1.416667E-03	
A: HealthCat			
H	5	0.003	1.691843
HwP	8	0.00125	1.33752
UH	5	3.523657E-19	1.691843

Means and Standard Errors of Grassgr1_5ft

Term	Count	Mean	Standard Error
All	18	0.5366667	
A: HealthCat			
H	5	0.74	1.691843
HwP	8	0.55	1.33752
UH	5	0.32	1.691843

Means and Standard Errors of Grassle1_5ft

Term	Count	Mean	Standard Error
All	18	0.3015	
A: HealthCat			
H	5	0.152	1.691843

HwP	8	0.3125	1.33752
UH	5	0.44	1.691843

Means and Standard Errors of Forbsgr6ft

Term	Count	Mean	Standard Error
All	18	6.666667E-04	
A: HealthCat			
H	5	0.002	1.691843
HwP	8	0	1.33752
UH	5	0	1.691843

Means and Standard Errors of Forbsgr1_5ft

Term	Count	Mean	Standard Error
All	18	0.09825	
A: HealthCat			
H	5	0.1	1.691843
HwP	8	0.08875	1.33752
UH	5	0.106	1.691843

Means and Standard Errors of Forbsle1_5ft

Term	Count	Mean	Standard Error
All	18	8.408333E-02	
A: HealthCat			
H	5	0.048	1.691843
HwP	8	0.09625	1.33752
UH	5	0.108	1.691843

Means and Standard Errors of CC_Trees

Term	Count	Mean	Standard Error
All	18	1.808333E-02	
A: HealthCat			
H	5	0.047	1.691843
HwP	8	0.00125	1.33752
UH	5	0.006	1.691843

Means and Standard Errors of CC_Shrubs

Term	Count	Mean	Standard Error
All	18	0.53	
A: HealthCat			
H	5	0.74	1.691843
HwP	8	0.45	1.33752
UH	5	0.4	1.691843

Means and Standard Errors of CC_Grams

Term	Count	Mean	Standard Error
All	18	0.8216667	
A: HealthCat			
H	5	0.875	1.691843
HwP	8	0.85	1.33752
UH	5	0.74	1.691843

Means and Standard Errors of CC_Forbs

Term	Count	Mean	Standard Error
All	18	0.1783333	
A: HealthCat			
H	5	0.14	1.691843

HwP	8	0.175	1.33752
UH	5	0.22	1.691843

Means and Standard Errors of CC_Wood

Term	Count	Mean	Standard Error
All	18	0.5366667	
A: HealthCat			
H	5	0.76	1.691843
HwP	8	0.45	1.33752
UH	5	0.4	1.691843

Means and Standard Errors of CC_Weeds

Term	Count	Mean	Standard Error
All	18	0.040875	
A: HealthCat			
H	5	0.029	1.691843
HwP	8	0.040625	1.33752
UH	5	0.053	1.691843

Means and Standard Errors of CC_All

Term	Count	Mean	Standard Error
All	18	0.9502083	
A: HealthCat			
H	5	0.975	1.691843
HwP	8	0.965625	1.33752
UH	5	0.91	1.691843

Means and Standard Errors of AltBanks

Term	Count	Mean	Standard Error
All	18	0.2948333	
A: HealthCat			
H	5	0.047	1.691843
HwP	8	0.1075	1.33752
UH	5	0.73	1.691843

Means and Standard Errors of HoofShear

Term	Count	Mean	Standard Error
All	18	0.6620833	
A: HealthCat			
H	5	0.575	1.691843
HwP	8	0.58125	1.33752
UH	5	0.83	1.691843

Means and Standard Errors of Trails

Term	Count	Mean	Standard Error
All	18	0.1231667	
A: HealthCat			
H	5	0.2	1.691843
HwP	8	0.0875	1.33752
UH	5	0.082	1.691843

Means and Standard Errors of Bareground

Term	Count	Mean	Standard Error
All	18	0.037875	
A: HealthCat			

H	5	0.01	1.691843
HwP	8	0.025625	1.33752
UH	5	0.078	1.691843

Means and Standard Errors of VegCover

Term	Count	Mean	Standard Error
All	18	89.72258	
A: HealthCat			
H	5	100	1.691843
HwP	8	95.83375	1.33752
UH	5	73.334	1.691843

Means and Standard Errors of CC_Invasiveveg

Term	Count	Mean	Standard Error
All	18	46.38775	
A: HealthCat			
H	5	53.334	1.691843
HwP	8	45.83125	1.33752
UH	5	39.998	1.691843

Means and Standard Errors of DD_Invasiveveg

Term	Count	Mean	Standard Error
All	18	14.44342	
A: HealthCat			
H	5	19.998	1.691843
HwP	8	16.66625	1.33752
UH	5	6.666	1.691843

Means and Standard Errors of Dist_Undesveg

Term	Count	Mean	Standard Error
All	18	14.44408	
A: HealthCat			
H	5	13.334	1.691843
HwP	8	16.66625	1.33752
UH	5	13.332	1.691843

Means and Standard Errors of Tr_Shr_EstReg

Term	Count	Mean	Standard Error
All	18	25.55542	
A: HealthCat			
H	5	40	1.691843
HwP	8	16.66625	1.33752
UH	5	20	1.691843

Means and Standard Errors of Utilization

Term	Count	Mean	Standard Error
All	18	69.16666	
A: HealthCat			
H	5	40	1.691843
HwP	8	87.5	1.33752
UH	5	80	1.691843

Means and Standard Errors of Dead_Dec

Term	Count	Mean	Standard Error
All	18	97.2225	
A: HealthCat			

H	5	100	1.691843
HwP	8	91.6675	1.33752
UH	5	100	1.691843

Means and Standard Errors of Rootmass_Prot

Term	Count	Mean	Standard Error
All	18	69.99934	
A: HealthCat			
H	5	100	1.691843
HwP	8	50	1.33752
UH	5	59.998	1.691843

Means and Standard Errors of HC_Bareground

Term	Count	Mean	Standard Error
All	18	76.66725	
A: HealthCat			
H	5	93.334	1.691843
HwP	8	83.33375	1.33752
UH	5	53.334	1.691843

Means and Standard Errors of Structaltbanks

Term	Count	Mean	Standard Error
All	18	46.38883	
A: HealthCat			
H	5	86.668	1.691843
HwP	8	45.8325	1.33752
UH	5	6.666	1.691843

Means and Standard Errors of HC_Altpolygon

Term	Count	Mean	Standard Error
All	18	68.61075	
A: HealthCat			
H	5	80	1.691843
HwP	8	79.16625	1.33752
UH	5	46.666	1.691843

Means and Standard Errors of Chann_Incisement

Term	Count	Mean	Standard Error
All	18	100	
A: HealthCat			
H	5	100	1.691843
HwP	8	100	1.33752
UH	5	100	1.691843

Means and Standard Errors of Veg

Term	Count	Mean	Standard Error
All	18	52.51667	
A: HealthCat			
H	5	56.4	1.691843
HwP	8	53.75	1.33752
UH	5	47.4	1.691843

Means and Standard Errors of Soil__Hydro

Term	Count	Mean	Standard Error
All	18	78.825	
A: HealthCat			
H	5	94	1.691843
HwP	8	83.875	1.33752
UH	5	58.6	1.691843

Means and Standard Errors of Overall

Term	Count	Mean	Standard Error
All	18	65.69167	
A: HealthCat			
H	5	76	1.691843
HwP	8	67.875	1.33752
UH	5	53.2	1.691843

Means and Standard Errors of Med_Boulders

Term	Count	Mean	Standard Error
All	18	0.3541667	
A: HealthCat			
H	5	0.3	1.691843
HwP	8	0.5625	1.33752
UH	5	0.2	1.691843

Means and Standard Errors of Small_Boulders

Term	Count	Mean	Standard Error
All	18	0.3333333	
A: HealthCat			
H	5	0.3	1.691843
HwP	8	0.5	1.33752
UH	5	0.2	1.691843

Means and Standard Errors of Large_Cobble

Term	Count	Mean	Standard Error
All	18	1.054167	
A: HealthCat			
H	5	0.8	1.691843
HwP	8	2.0625	1.33752
UH	5	0.3	1.691843

Means and Standard Errors of Small_Cobble

Term	Count	Mean	Standard Error
All	18	1.95	
A: HealthCat			
H	5	1.3	1.691843
HwP	8	4.25	1.33752
UH	5	0.3	1.691843

Means and Standard Errors of Coarse_Gravel

Term	Count	Mean	Standard Error
All	18	2.1625	
A: HealthCat			
H	5	0.9	1.691843
HwP	8	4.1875	1.33752
UH	5	1.4	1.691843

Means and Standard Errors of Fine_Gravel

Term	Count	Mean	Standard Error
All	18	2.408333	
A: HealthCat			
H	5	0.9	1.691843
HwP	8	2.125	1.33752
UH	5	4.2	1.691843

Means and Standard Errors of Sand

Term	Count	Mean	Standard Error
All	18	24.35417	
A: HealthCat			
H	5	32	1.691843
HwP	8	15.0625	1.33752
UH	5	26	1.691843

Means and Standard Errors of Silt_and_Clay

Term	Count	Mean	Standard Error
All	18	57.41667	
A: HealthCat			
H	5	66	1.691843
HwP	8	36.25	1.33752
UH	5	70	1.691843

Means and Standard Errors of Graminoids

Term	Count	Mean	Standard Error
All	18	3615.941	
A: HealthCat			
H	5	4366.054	1.691843
HwP	8	3508.012	1.33752
UH	5	2973.756	1.691843

Means and Standard Errors of Forbs

Term	Count	Mean	Standard Error
All	18	690.9844	
A: HealthCat			
H	5	508.43	1.691843
HwP	8	881.8812	1.33752
UH	5	682.642	1.691843

Means and Standard Errors of Shrubs

Term	Count	Mean	Standard Error
All	18	171.6388	
A: HealthCat			
H	5	155.712	1.691843
HwP	8	242.4325	1.33752
UH	5	116.772	1.691843

Means and Standard Errors of Total_forage

Term	Count	Mean	Standard Error
All	18	4478.564	
A: HealthCat			
H	5	5030.196	1.691843
HwP	8	4632.326	1.33752
UH	5	3773.17	1.691843

Means and Standard Errors of Litter

Term	Count	Mean	Standard Error
All	18	1145.511	
A: HealthCat			
H	5	1852.472	1.691843
HwP	8	1118.167	1.33752
UH	5	465.894	1.691843

Means and Standard Errors of Confirmbreed

Term	Count	Mean	Standard Error
All	18	1.266667	
A: HealthCat			
H	5	2.4	1.691843
HwP	8	1	1.33752
UH	5	0.4	1.691843

Means and Standard Errors of Possiblebreed

Term	Count	Mean	Standard Error
All	18	2.341667	
A: HealthCat			
H	5	2.4	1.691843
HwP	8	2.625	1.33752
UH	5	2	1.691843

Means and Standard Errors of Breed_Pos_Birds

Term	Count	Mean	Standard Error
All	18	3.608333	
A: HealthCat			
H	5	4.8	1.691843
HwP	8	3.625	1.33752
UH	5	2.4	1.691843

Means and Standard Errors of Speciesusing

Term	Count	Mean	Standard Error
All	18	4.991667	
A: HealthCat			
H	5	7.6	1.691843
HwP	8	4.375	1.33752
UH	5	3	1.691843

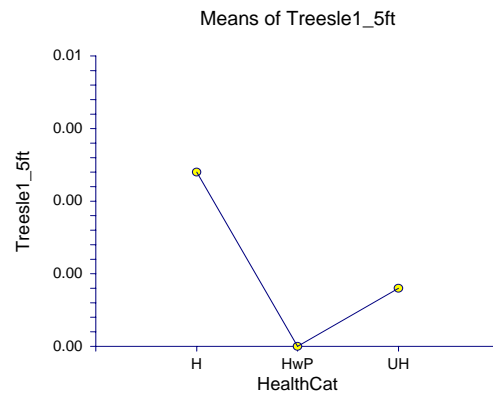
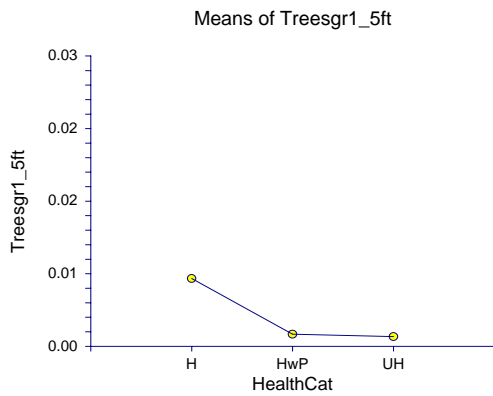
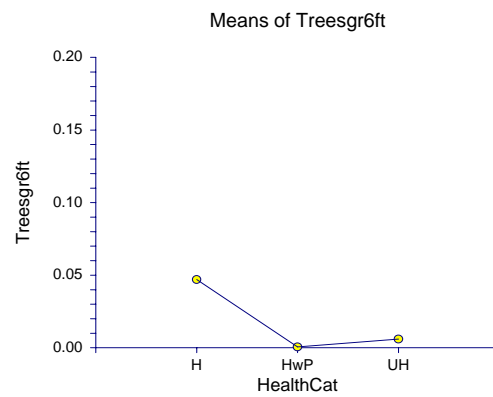
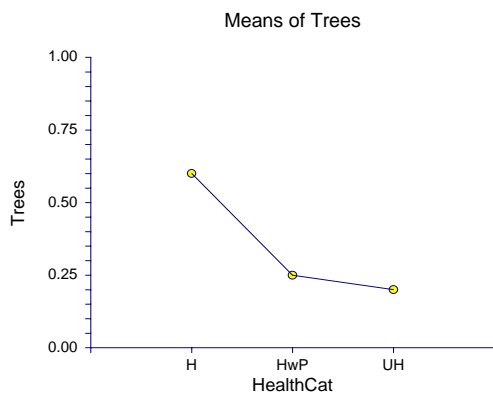
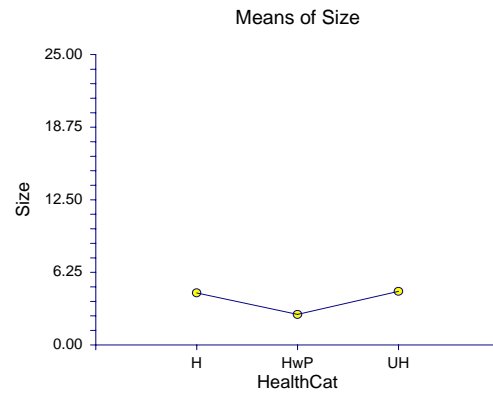
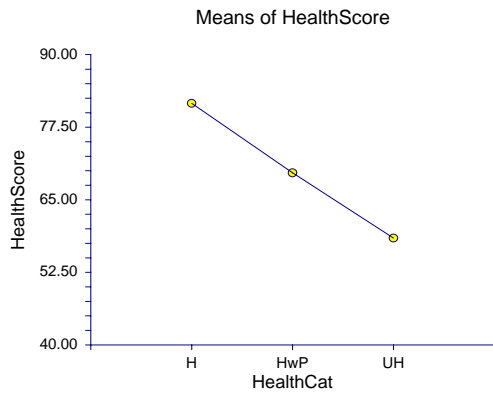
Means and Standard Errors of Commspecusing

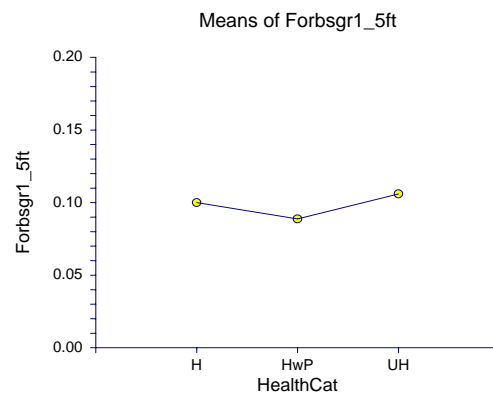
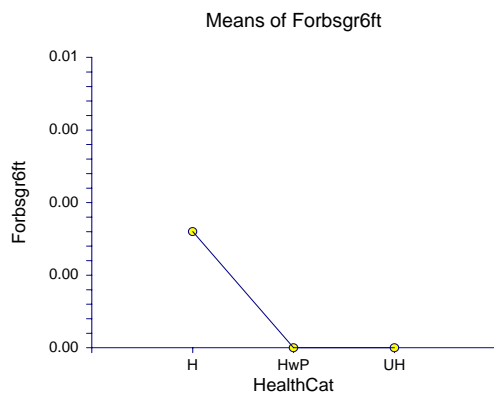
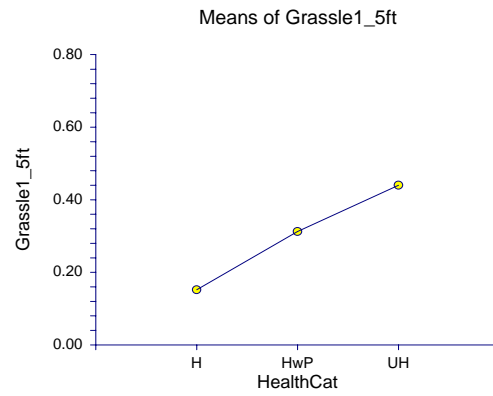
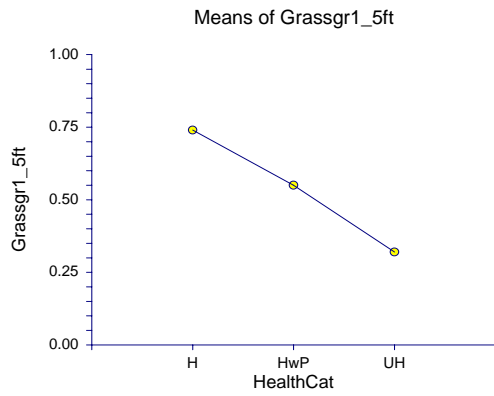
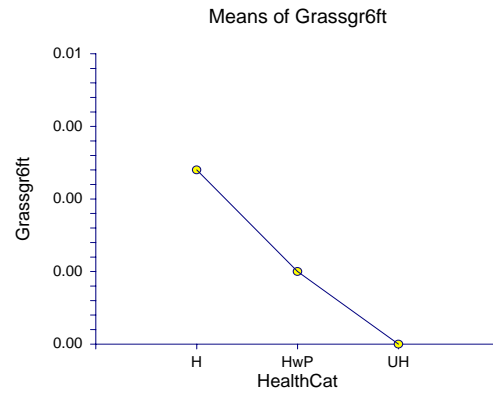
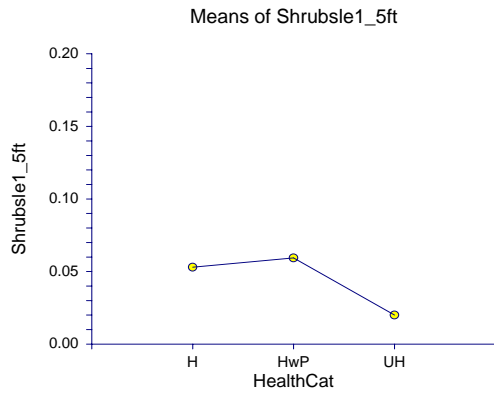
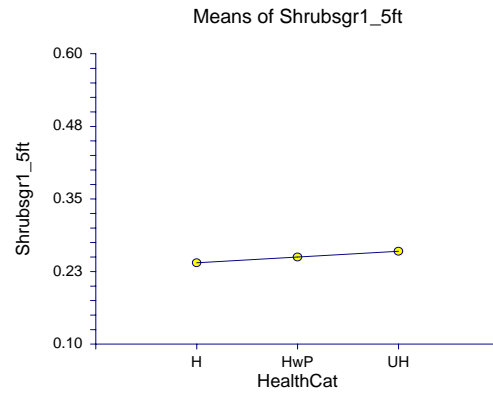
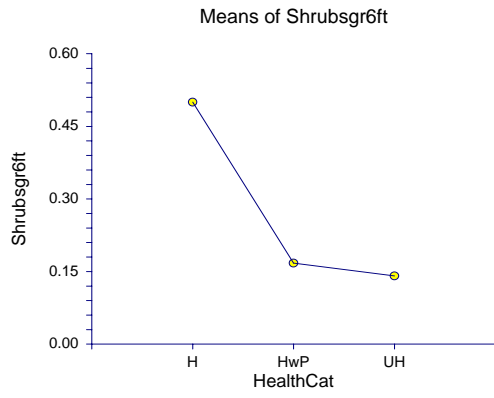
Term	Count	Mean	Standard Error
All	18	5.233333	
A: HealthCat			
H	5	7.4	1.691843
HwP	8	4.5	1.33752
UH	5	3.8	1.691843

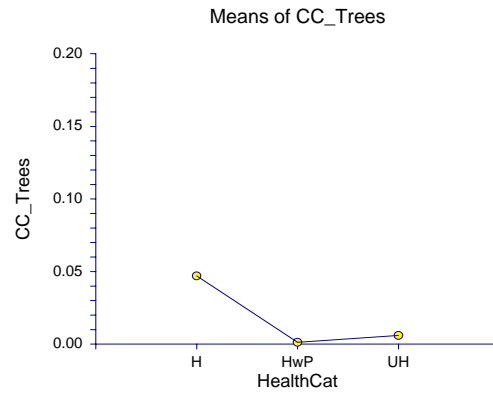
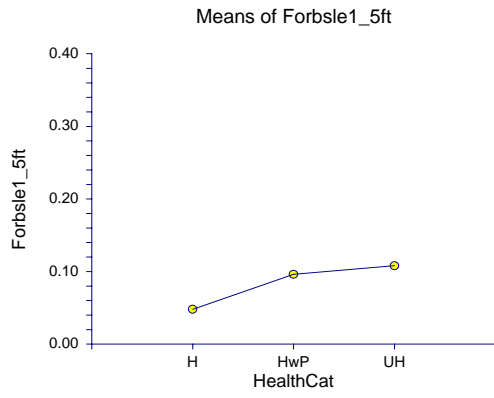
Means and Standard Errors of Totalspeciesobs

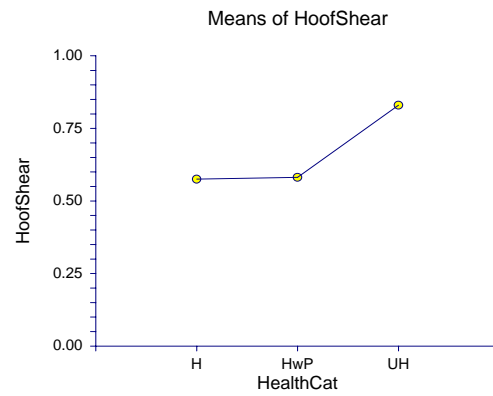
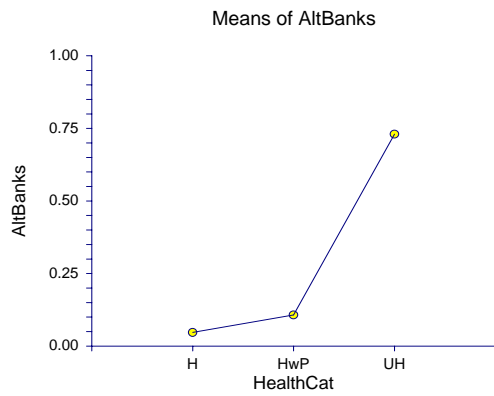
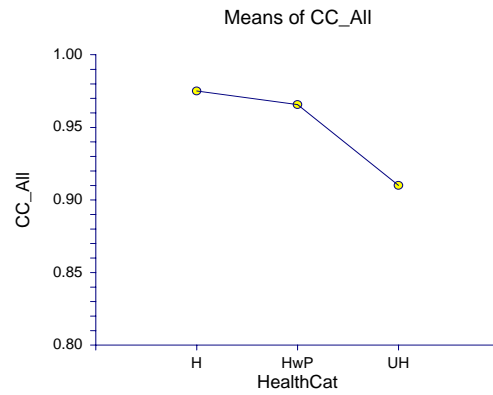
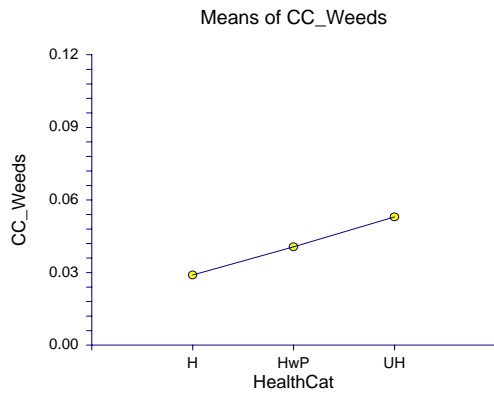
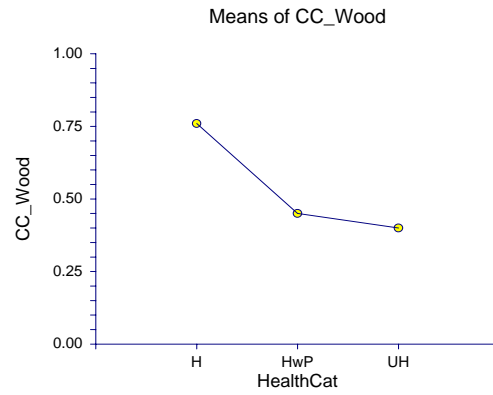
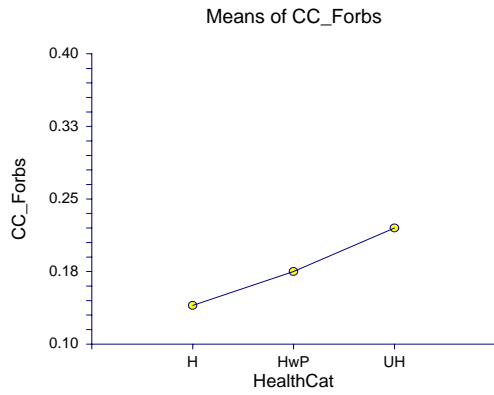
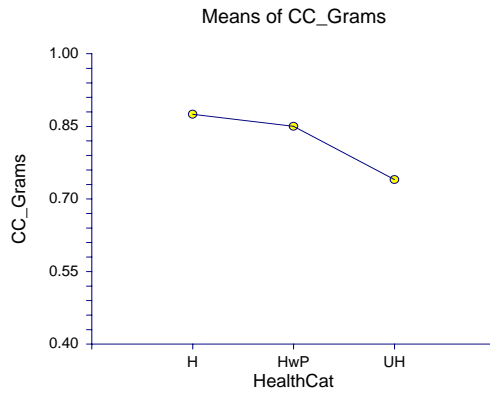
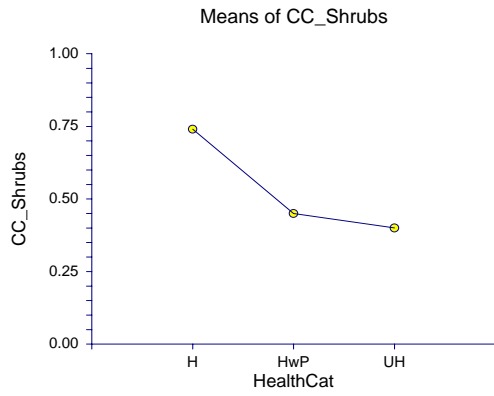
Term	Count	Mean	Standard Error
All	18	15.80833	
A: HealthCat			
H	5	17.8	1.691843
HwP	8	14.625	1.33752

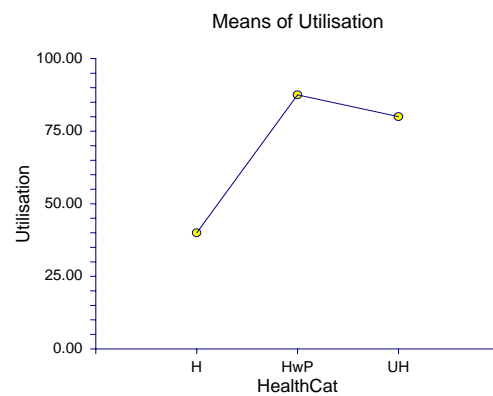
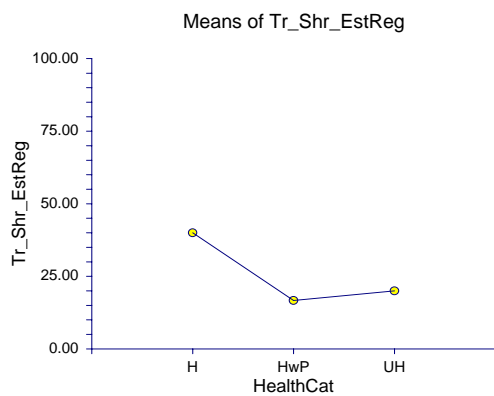
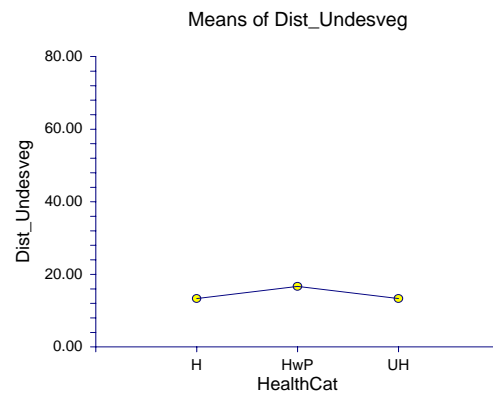
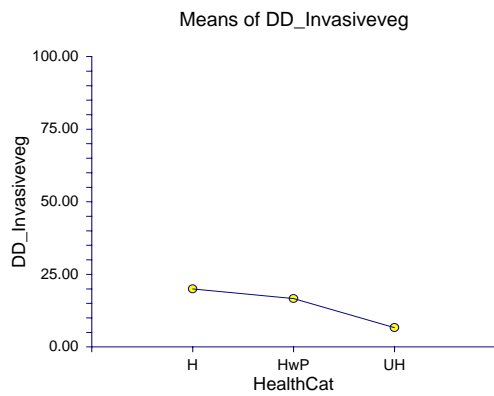
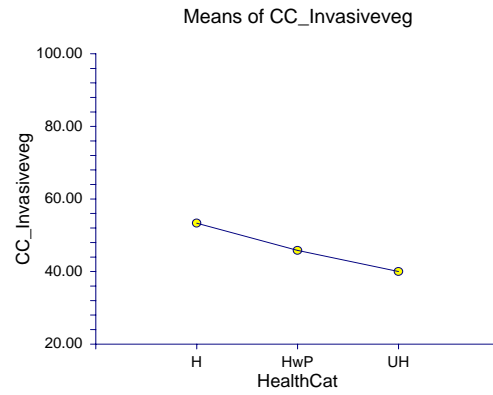
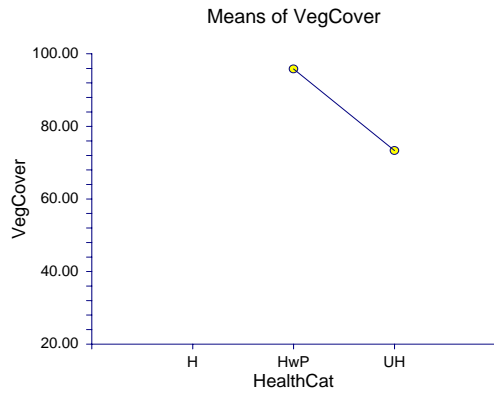
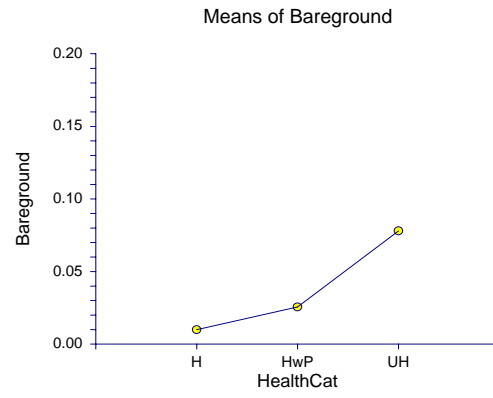
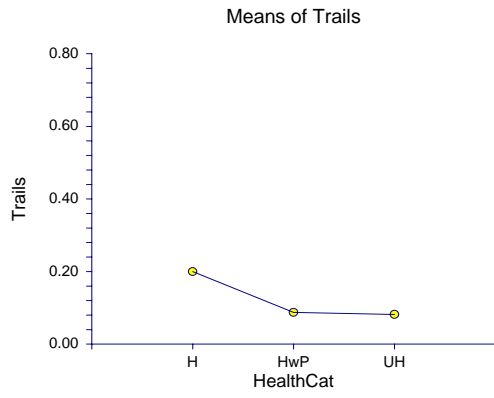
Plots Section

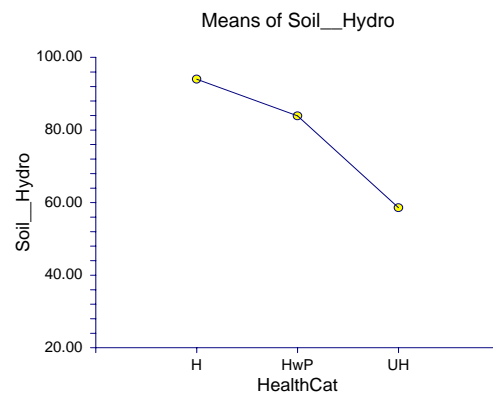
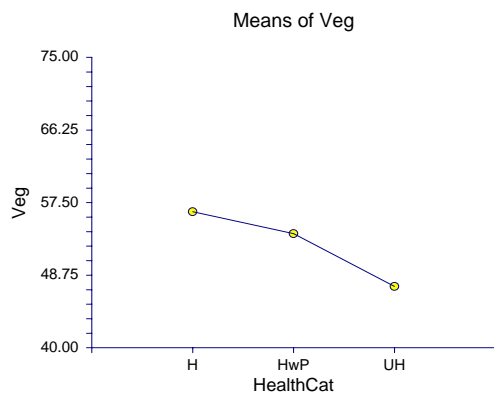
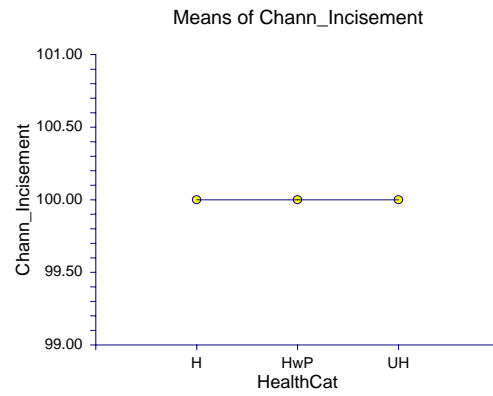
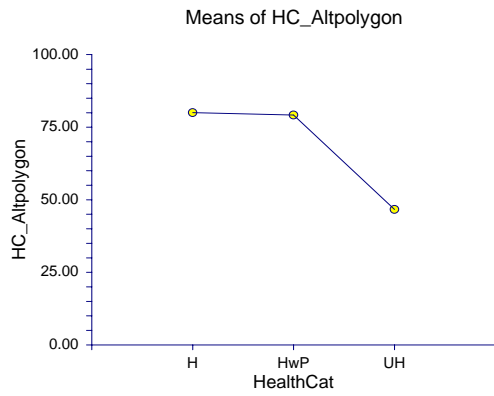
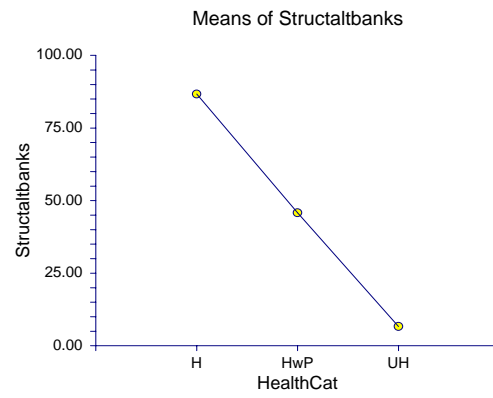
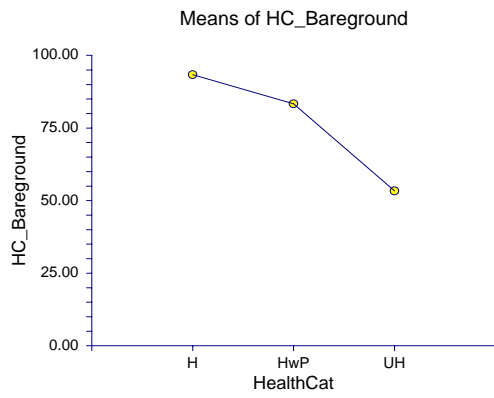
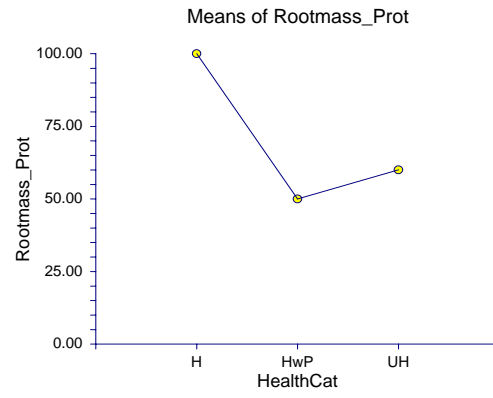
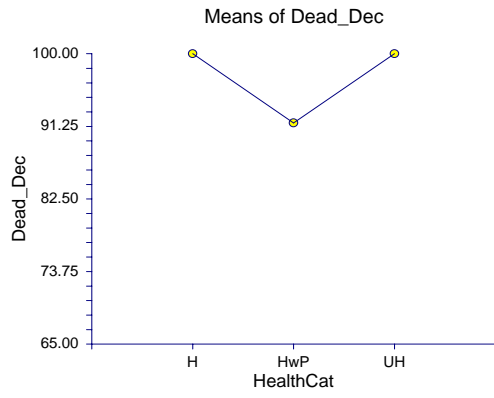


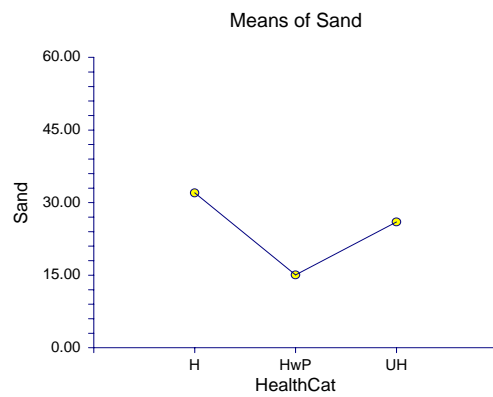
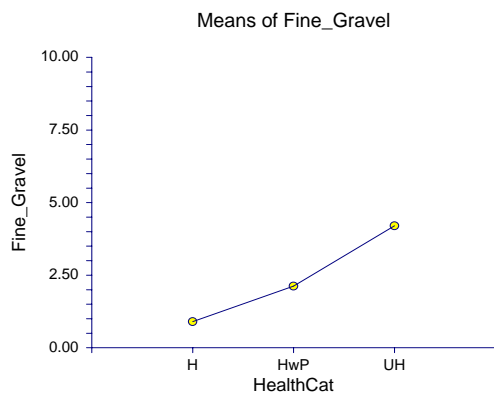
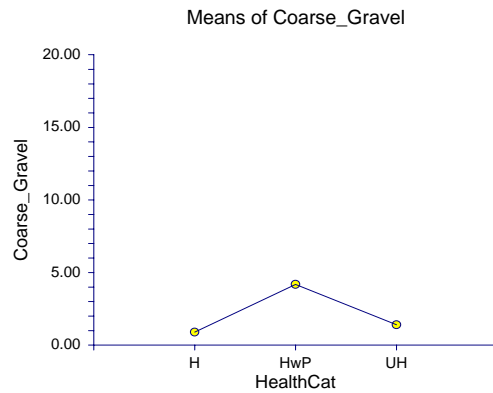
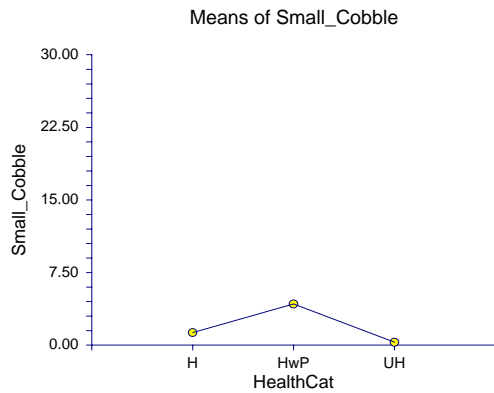
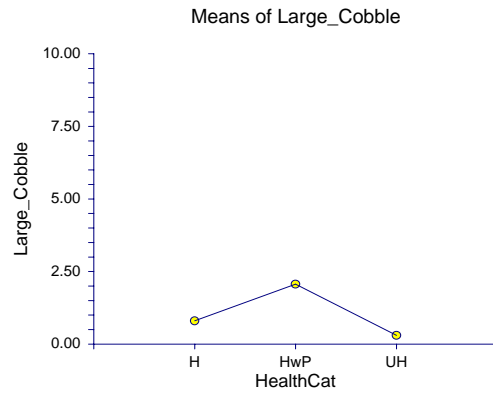
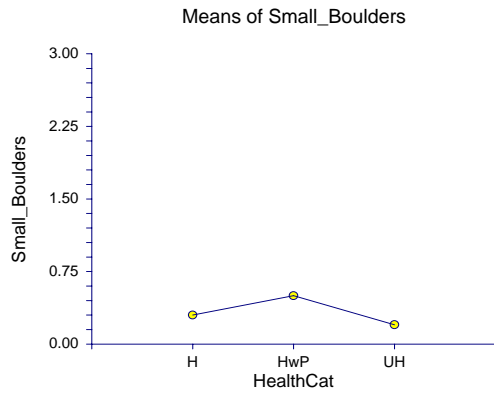
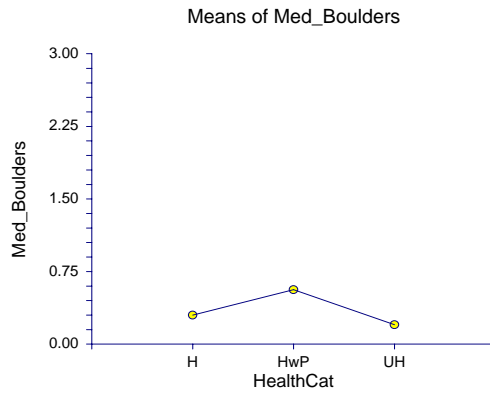
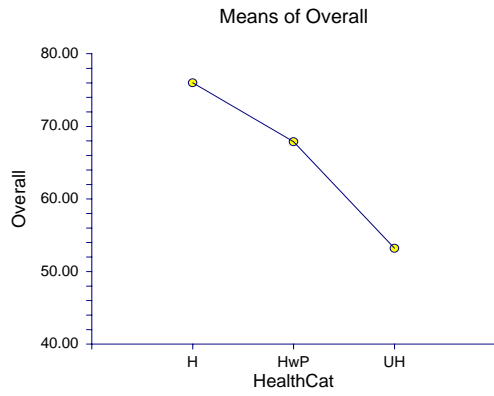


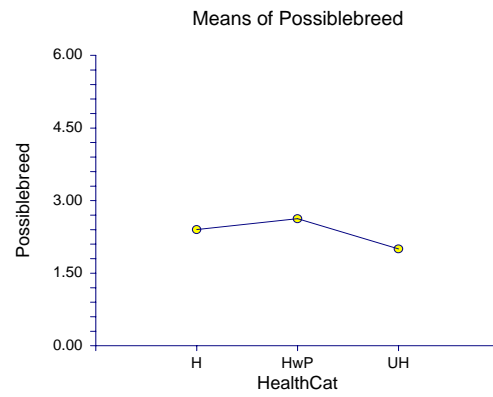
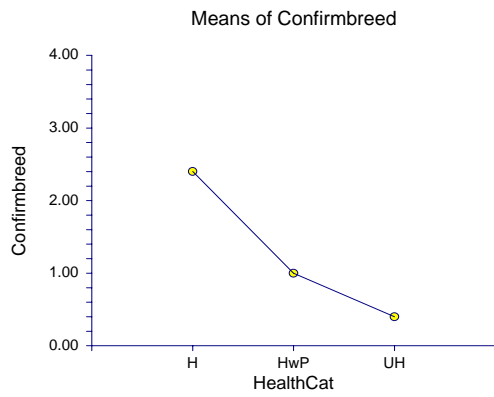
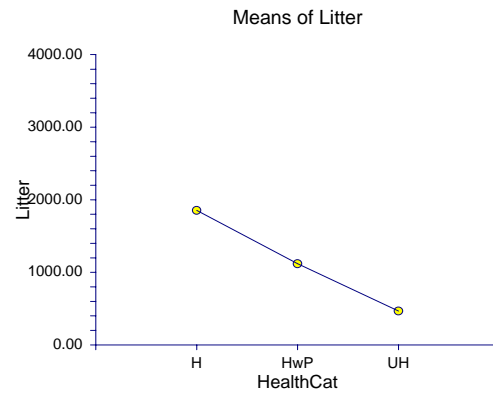
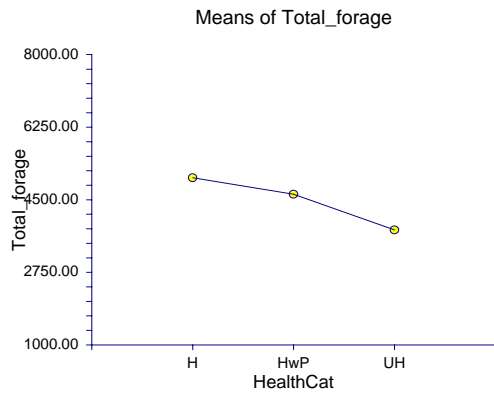
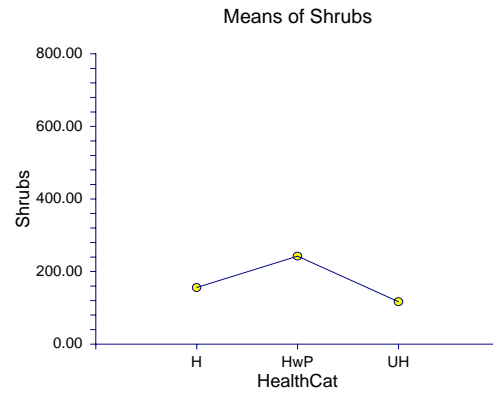
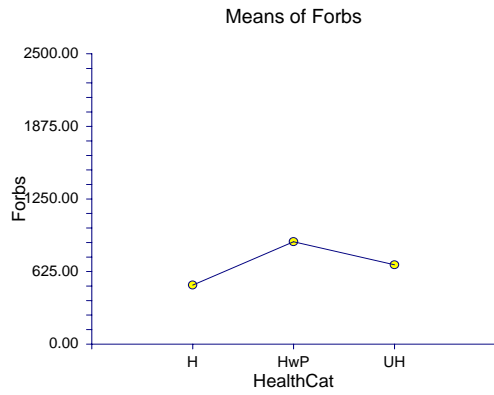
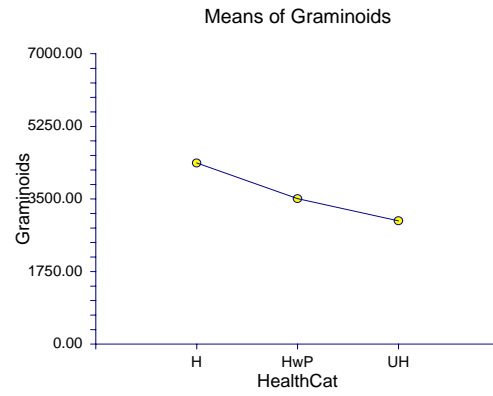
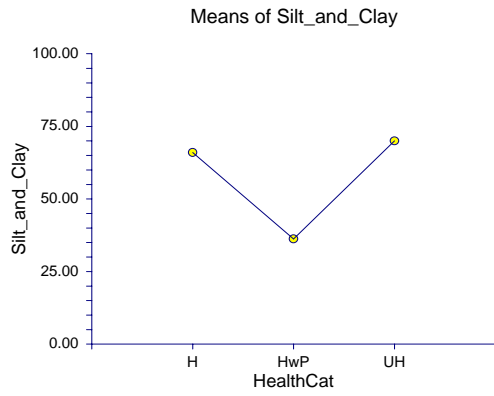


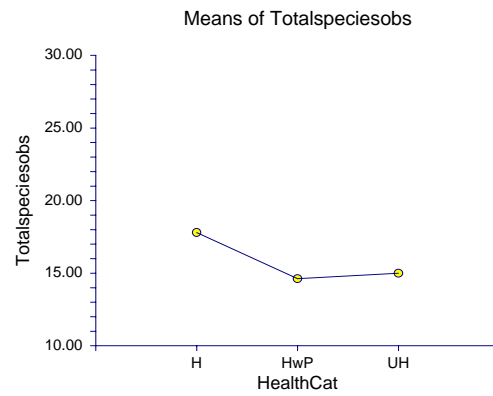
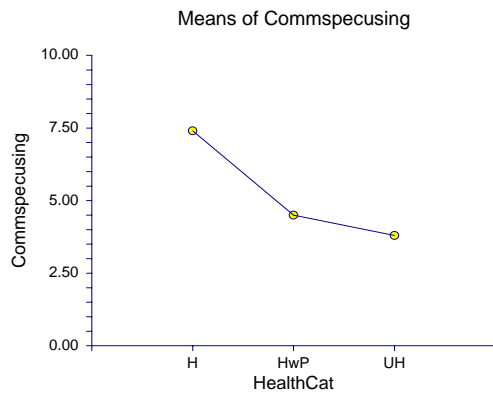
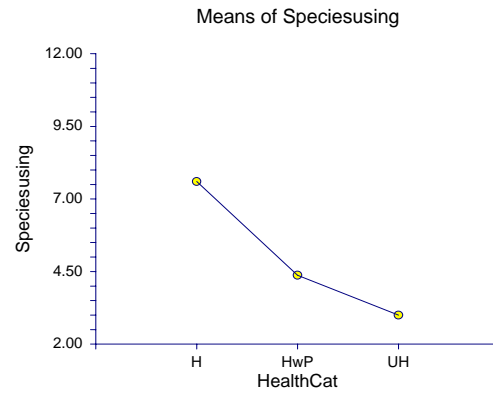
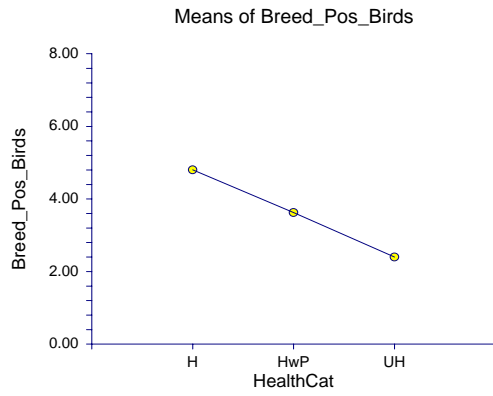












TUKEY-KRAMER

Analysis of Variance Report

Page/Date/Time 1 29/10/2007 12:45:03 PM
 Database C:\DOCUMENTS AND SETTINGS\SA ... NCSS_OCTOBER_2007\RAWDATA.S0
 Response HealthScore

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1346.225	673.1125	30.20	0.000005*	0.999998
S(A)	15	334.275	22.285			
Total (Adjusted)	17	1680.5				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: HealthScore
 Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=22.285 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	58.4	HwP, H
HwP	8	69.625	UH, H

H 5 81.6 UH, HwP

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Treesle1_5ft

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	2.777778E-05	1.388889E-05	4.17	0.036380*	0.641565
S(A)	15	0.00005	3.333333E-06			
Total (Adjusted)	17	7.777778E-05				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Treesle1_5ft
Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=3.333333E-06 Critical Value=3.6734

Group	Count	Mean	Different From Groups
HwP	8	0	H
UH	5	0.001	
H	5	0.003	HwP

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Shrubsgr6ft

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.4262425	0.2131213	5.35	0.017589*	0.756424
S(A)	15	0.59712	0.039808			
Total (Adjusted)	17	1.023363				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Shrubsgr6ft
Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=0.039808 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	0.141	H
HwP	8	0.1675	H
H	5	0.5	UH, HwP

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Grassgr1_5ft

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.4427778	0.2213889	5.93	0.012658*	0.800454
S(A)	15	0.56	3.733333E-02			
Total (Adjusted)	17	1.002778				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Grassgr1_5ft

Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=3.733333E-02 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	0.32	H
HwP	8	0.55	
H	5	0.74	UH

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response CC_Wood

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	0.3991111	0.1995556	3.69	0.049864*	0.585313
S(A)	15	0.812	5.413333E-02			
Total (Adjusted)	17	1.211111				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: CC_Wood

Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=5.413333E-02 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	0.4	
HwP	8	0.45	
H	5	0.76	

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response CC_All

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1.293924E-02	6.469618E-03	3.78	0.046837*	0.596743
S(A)	15	2.567188E-02	1.711458E-03			
Total (Adjusted)	17	3.861111E-02				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: CC_All

Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=1.711458E-03 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	0.91	
HwP	8	0.965625	
H	5	0.975	

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response AltBanks

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1.51716	0.7585801	22.49	0.000031*	0.999884
S(A)	15	0.50598	0.033732			
Total (Adjusted)	17	2.02314				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: AltBanks

Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=0.033732 Critical Value=3.6734

Group	Count	Mean	Different From Groups
H	5	0.047	UH
HwP	8	0.1075	UH
UH	5	0.73	H, HwP

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response VegCover

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	2151.153	1075.576	3.95	0.041841*	0.617020
S(A)	15	4083.317	272.2211			
Total (Adjusted)	17	6234.469				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: VegCover
Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=272.2211 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	73.334	
HwP	8	95.83375	
H	5	100	

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Structaltbanks

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	16003.9	8001.948	9.10	0.002587*	0.940173
S(A)	15	13194.39	879.6259			
Total (Adjusted)	17	29198.28				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Structaltbanks
Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=879.6259 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	6.666	H
HwP	8	45.8325	
H	5	86.668	UH

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Soil__Hydro

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
--------	----	----------------	-------------	---------	------------	--------------------

A: HealthCat	2	3387.925	1693.963	12.57	0.000623*	0.986347
S(A)	15	2022.075	134.805			
Total (Adjusted)	17	5410				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Soil__Hydro
Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=134.805 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	58.6	HwP, H
HwP	8	83.875	UH
H	5	94	UH

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Overall

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1347.269	673.6347	38.03	0.000001*	1.000000
S(A)	15	265.675	17.71167			
Total (Adjusted)	17	1612.944				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Overall
Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=17.71167 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	53.2	HwP, H
HwP	8	67.875	UH, H
H	5	76	UH, HwP

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Confirmbreed

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	10.71111	5.355556	5.58	0.015443*	0.774471
S(A)	15	14.4	0.96			

Total (Adjusted) 17 25.11111
 Total 18
 * Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Confirmbreed
 Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=0.96 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	0.4	H
HwP	8	1	
H	5	2.4	UH

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Speciesusing

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	56.70278	28.35139	3.90	0.043300*	0.610900
S(A)	15	109.075	7.271667			
Total (Adjusted)	17	165.7778				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Speciesusing
 Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=7.271667 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	3	H
HwP	8	4.375	
H	5	7.6	UH

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Response Commspecusing

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	37.77778	18.88889	5.25	0.018725*	0.747457
S(A)	15	54	3.6			
Total (Adjusted)	17	91.77778				
Total	18					

* Term significant at alpha = 0.05

Tukey-Kramer Multiple-Comparison Test

Response: Commspecusing
 Term A: HealthCat

Alpha=0.050 Error Term=S(A) DF=15 MSE=3.6 Critical Value=3.6734

Group	Count	Mean	Different From Groups
UH	5	3.8	H
HwP	8	4.5	H
H	5	7.4	UH, HwP

Notes: This report provides multiple comparison tests for all pairwise differences between the means.

Kruskal - Wallis

Analysis of Variance Report

Page/Date/Time 1 29/10/2007 9:56:02 AM
 Database C:\DOCUMENTS AND SETTINGS\SA ... NCSS_OCTOBER_2007\RAWDATA.S0
 Response Size

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	3.1126	0.001855	Reject
Kurtosis Normality of Residuals	1.7784	0.075333	Accept
Omnibus Normality of Residuals	12.8509	0.001620	Reject
Modified-Levene Equal-Variance Test	0.1896	0.829228	Accept

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes	S(A)	S+sA
S(A)		15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat		2	16.47749	8.238745	0.17	0.842866	0.072054
S(A)		15	714.7112	47.64741			
Total (Adjusted)		17	731.1887				
Total		18					

* Term significant at alpha = 0.05

Response Size

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.
 Ha: At least two medians are different.

Test Results

Chi-Square Prob

Method	DF	(H)	Level	Decision(0.05)
Not Corrected for Ties	2	7.894737E-03	0.996060	Accept H0
Corrected for Ties	2	7.902892E-03	0.996056	Accept H0
Number Sets of Ties	1			
Multiplicity Factor	6			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	47.00	9.40	-0.0493	0.81
HwP	8	77.00	9.63	0.0889	0.875
UH	5	47.00	9.40	-0.0493	0.71

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	3.688333		3.902
A: HealthCat				
H	5	4.478	3.086986	0.576
HwP	8	2.62	2.440477	-1.282
UH	5	4.608	3.086986	0.706

Response Size

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Size	H	HwP	UH
H	0.0000	0.0740	0.0000
HwP	0.0740	0.0000	0.0740
UH	0.0000	0.0740	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Shrubsle1_5ft

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	2.3377	0.019402	Reject
Kurtosis Normality of Residuals	1.8589	0.063035	Accept
Omnibus Normality of Residuals	8.9206	0.011559	Reject
Modified-Levene Equal-Variance Test	1.2078	0.326327	Accept

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes	S(A)	S+sA
S(A)		15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat		2	5.048125E-03	2.524063E-03	0.90	0.428523	0.175896
S(A)		15	4.220188E-02	2.813458E-03			

Total (Adjusted) 17 0.04725
 Total 18
 * Term significant at alpha = 0.05

Response Shrubsle1_5ft

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.
 Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	1.171272	0.556752	Accept H0
Corrected for Ties	2	1.30756	0.520076	Accept H0
Number Sets of Ties	3			
Multiplicity Factor	606			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	54.50	10.90	0.6900	0.03
HwP	8	79.50	9.94	0.3110	0.03
UH	5	37.00	7.40	-1.0350	0.03

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	4.666667E-02		0.044125
A: HealthCat				
H	5	0.053	2.372112E-02	0.008875
HwP	8	0.059375	1.875319E-02	0.01525
UH	5	0.02	2.372112E-02	-0.024125

Response Shrubsle1_5ft

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Shrubsle1_5ft	H	HwP	UH
H	0.0000	0.3341	1.0953
HwP	0.3341	0.0000	0.8809
UH	1.0953	0.8809	0.0000

Regular Test: Medians significantly different if z-value > 1.9600
 Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Forbsle1_5ft

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	2.6756	0.007460	Reject
Kurtosis Normality of Residuals	1.7752	0.075862	Accept
Omnibus Normality of Residuals	10.3101	0.005770	Reject
Modified-Levene Equal-Variance Test	0.5293	0.599605	Accept

Expected Mean Squares Section

Source	Term	DF	Term	Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes		S(A)	S+sA
S(A)		15	No			S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat		2	1.048028E-02	5.240139E-03	0.39	0.681514	0.101984
S(A)		15	0.1997975	1.331983E-02			
Total (Adjusted)		17	0.2102778				
Total		18					

* Term significant at alpha = 0.05

Response Forbsle1_5ft

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	0.4745614	0.788770	Accept H0
Corrected for Ties	2	0.5086836	0.775427	Accept H0
Number Sets of Ties	3			
Multiplicity Factor	390			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	41.50	8.30	-0.5914	0.03
HwP	8	83.00	10.38	0.6220	0.065
UH	5	46.50	9.30	-0.0986	0.03

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	8.611111E-02		8.408333E-02
A: HealthCat				
H	5	0.048	5.161363E-02	-3.608333E-02
HwP	8	0.09625	4.080416E-02	1.216667E-02
UH	5	0.108	5.161363E-02	2.391667E-02

Response Forbsle1_5ft

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Forbsle1_5ft	H	HwP	UH
H	0.0000	0.7059	0.3066
HwP	0.7059	0.0000	0.3657

UH 0.3066 0.3657 0.0000
 Regular Test: Medians significantly different if z-value > 1.9600
 Bonferroni Test: Medians significantly different if z-value > 2.3940

Response CC_Grams

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	-1.9516	0.050992	Accept
Kurtosis Normality of Residuals	0.9645	0.334773	Accept
Omnibus Normality of Residuals	4.7389	0.093532	Accept
Modified-Levene Equal-Variance Test	0.4841	0.625545	Accept

Expected Mean Squares Section

Source	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat	2	Yes	S(A)	S+sA
S(A)	15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	5.359028E-02	2.679514E-02	2.30	0.134173	0.394188
S(A)	15	0.1745	1.163333E-02			
Total (Adjusted)	17	0.2280903				
Total	18					

* Term significant at alpha = 0.05

Response CC_Grams

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.
 Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	3.355263	0.186816	Accept H0
Corrected for Ties	2	3.893713	0.142722	Accept H0
Number Sets of Ties	3			
Multiplicity Factor	804			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	60.00	12.00	1.2322	0.9
HwP	8	81.00	10.13	0.4443	0.9
UH	5	30.00	6.00	-1.7250	0.8

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	0.8263889		0.8216667

A: HealthCat					
H	5	0.875	4.823553E-02	5.333333E-02	
HwP	8	0.85	3.813354E-02	2.833333E-02	
UH	5	0.74	4.823553E-02	-8.166666E-02	

Response CC_Grams

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

CC_Grams	H	HwP	UH
H	0.0000	0.6637	1.9143
HwP	0.6637	0.0000	1.4601
UH	1.9143	1.4601	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response AltBanks

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	-2.5602	0.010462	Reject
Kurtosis Normality of Residuals	2.6989	0.006956	Reject
Omnibus Normality of Residuals	13.8387	0.000988	Reject
Modified-Levene Equal-Variance Test	2.3313	0.131335	Accept

Expected Mean Squares Section

Source Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat	2	Yes	S(A)	S+sA
S(A)	15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	1.51716	0.7585801	22.49	0.000031*	0.999884
S(A)	15	0.50598	0.033732			
Total (Adjusted)	17	2.02314				
Total	18					

* Term significant at alpha = 0.05

Response AltBanks

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	9.418421	0.009012	Reject H0
Corrected for Ties	2	9.586607	0.008285	Reject H0
Number Sets of Ties	5			

Multiplicity Factor 102

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	30.00	6.00	-1.7250	0.03
HwP	8	63.00	7.88	-1.1551	0.065
UH	5	78.00	15.60	3.0065	0.8

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	0.2636111		0.2948333
A: HealthCat				
H	5	0.047	8.213647E-02	-0.2478333
HwP	8	0.1075	6.493458E-02	-0.1873333
UH	5	0.73	8.213647E-02	0.4351667

Plots of Means Section

Response AltBanks

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

AltBanks	H	HwP	UH
H	0.0000	0.6216	2.8685
HwP	0.6216	0.0000	2.5608
UH	2.8685	2.5608	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Trails

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	2.8475	0.004406	Reject
Kurtosis Normality of Residuals	2.4114	0.015892	Reject
Omnibus Normality of Residuals	13.9230	0.000948	Reject
Modified-Levene Equal-Variance Test	0.8025	0.466553	Accept

Expected Mean Squares Section

Source	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat	2	Yes	S(A)	S+sA
S(A)	15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	4.753111E-02	2.376555E-02	0.75	0.489185	0.153720
S(A)	15	0.47518	3.167867E-02			

Total (Adjusted) 17 0.5227111
 Total 18
 * Term significant at alpha = 0.05

Response Trails

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.
 Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	0.2607456	0.877768	Accept H0
Corrected for Ties	2	0.2813614	0.868767	Accept H0
Number Sets of Ties	4			
Multiplicity Factor	426			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	51.50	10.30	0.3943	0.1
HwP	8	70.50	8.81	-0.4887	0.05
UH	5	49.00	9.80	0.1479	0.005

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	0.1172222		0.1231667
A: HealthCat				
H	5	0.2	7.959732E-02	7.683333E-02
HwP	8	0.0875	6.292721E-02	-3.566667E-02
UH	5	0.082	7.959732E-02	-4.116667E-02

Response Trails

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Trails	H	HwP	UH
H	0.0000	0.5077	0.1538
HwP	0.5077	0.0000	0.3371
UH	0.1538	0.3371	0.0000

Regular Test: Medians significantly different if z-value > 1.9600
 Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Bareground

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	2.8043	0.005043	Reject
Kurtosis Normality of Residuals	2.3138	0.020677	Reject
Omnibus Normality of Residuals	13.2177	0.001348	Reject
Modified-Levene Equal-Variance Test	1.3103	0.298891	Accept

Expected Mean Squares Section

Source	DF	Term	Denominator	Expected
Term		Fixed?	Term	Mean Square
A: HealthCat	2	Yes	S(A)	S+sA
S(A)	15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	DF	Sum of	Mean	F-Ratio	Prob	Power
Term		Squares	Square		Level	(Alpha=0.05)
A: HealthCat	2	1.306062E-02	6.530312E-03	3.23	0.068024	0.527074
S(A)	15	3.030187E-02	2.020125E-03			
Total (Adjusted)	17	0.0433625				
Total	18					

* Term significant at alpha = 0.05

Response Bareground

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	5.644956	0.059458	Accept H0
Corrected for Ties	2	6.390143	0.040964	Reject H0
Number Sets of Ties	3			
Multiplicity Factor	678			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	32.00	6.40	-1.5279	0.005
HwP	8	68.50	8.56	-0.6664	0.0175
UH	5	70.50	14.10	2.2672	0.03

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	3.583333E-02		0.037875
A: HealthCat				
H	5	0.01	2.010037E-02	-0.027875
HwP	8	0.025625	1.589074E-02	-0.01225
UH	5	0.078	2.010037E-02	0.040125

Response Bareground

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Bareground	H	HwP	UH
H	0.0000	0.7560	2.4264
HwP	0.7560	0.0000	1.9359
UH	2.4264	1.9359	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Veg

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	2.5123	0.011994	Reject
Kurtosis Normality of Residuals	1.8867	0.059205	Accept
Omnibus Normality of Residuals	9.8713	0.007186	Reject
Modified-Levene Equal-Variance Test	0.5772	0.573460	Accept

Expected Mean Squares Section

Source Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
-------------	----	-------------	------------------	----------------------

A: HealthCat 2 Yes S(A) S+sA
 S(A) 15 No S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	217.7111	108.8556	1.85	0.191783	0.324060
S(A)	15	883.9	58.92667			
Total (Adjusted)	17	1101.611				
Total	18					

* Term significant at alpha = 0.05

Response Veg

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	3.866009	0.144713	Accept H0
Corrected for Ties	2	4.286227	0.117289	Accept H0
Number Sets of Ties	3			
Multiplicity Factor	570			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	61.50	12.30	1.3800	52
HwP	8	80.50	10.06	0.3998	50
UH	5	29.00	5.80	-1.8236	48

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	52.72222		52.51667
A: HealthCat				
H	5	56.4	3.432977	3.883333
HwP	8	53.75	2.714007	1.233333
UH	5	47.4	3.432977	-5.116667

Response Veg

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Veg	H	HwP	UH
H	0.0000	0.7741	2.0271
HwP	0.7741	0.0000	1.4747
UH	2.0271	1.4747	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Med_Boulders

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	4.1878	0.000028	Reject
Kurtosis Normality of Residuals	3.8025	0.000143	Reject
Omnibus Normality of Residuals	31.9963	0.000000	Reject
Modified-Levene Equal-Variance Test	0.7218	0.502021	Accept

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes	S(A)	S+sA
S(A)		15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat		2	0.4590278	0.2295139	0.44	0.651894	0.108576
S(A)		15	7.81875	0.52125			
Total (Adjusted)		17	8.277778				
Total		18					

* Term significant at alpha = 0.05

Response Med_Boulders

Kruskal-Wallis One-Way ANOVA on Ranks**Hypotheses**

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	0.3028509	0.859482	Accept H0
Corrected for Ties	2	0.3836111	0.825467	Accept H0
Number Sets of Ties	2			
Multiplicity Factor	1224			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	50.50	10.10	0.2957	0.5
HwP	8	78.50	9.81	0.2221	0.25
UH	5	42.00	8.40	-0.5422	0

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	0.3888889		0.3541667
A: HealthCat				
H	5	0.3	0.3228777	-5.416667E-02
HwP	8	0.5625	0.2552572	0.2083333
UH	5	0.2	0.3228777	-0.1541667

Response Med_Boulders

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Med_Boulders	H	HwP	UH
H	0.0000	0.1063	0.5667
HwP	0.1063	0.0000	0.5223
UH	0.5667	0.5223	0.0000

Regular Test: Medians significantly different if z-value > 1.9600
 Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Large_Cobble

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	3.8207	0.000133	Reject
Kurtosis Normality of Residuals	3.4793	0.000503	Reject
Omnibus Normality of Residuals	26.7033	0.000002	Reject
Modified-Levene Equal-Variance Test	1.1269	0.349973	Accept

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes	S(A)	S+sA
S(A)		15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat		2	10.79236	5.396181	0.89	0.430782	0.175001
S(A)		15	90.81875	6.054584			
Total (Adjusted)		17	101.6111				
Total		18					

* Term significant at alpha = 0.05

Response Large_Cobble

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.
 Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	0.1677632	0.919540	Accept H0
Corrected for Ties	2	0.1921543	0.908394	Accept H0
Number Sets of Ties	3			
Multiplicity Factor	738			

Group Detail

Sum of Mean

Group	Count	Ranks	Rank	Z-Value	Median
H	5	48.00	9.60	0.0493	0.5
HwP	8	79.50	9.94	0.3110	0.25
UH	5	43.50	8.70	-0.3943	0.5

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	1.222222		1.054167
A: HealthCat				
H	5	0.8	1.100417	-0.2541667
HwP	8	2.0625	0.8699557	1.008333
UH	5	0.3	1.100417	-0.7541667

Response Large_Cobble

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Large_Cobble	H	HwP	UH
H	0.0000	0.1187	0.2853
HwP	0.1187	0.0000	0.4352
UH	0.2853	0.4352	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Small_Cobble

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	4.7284	0.000002	Reject
Kurtosis Normality of Residuals	4.2056	0.000026	Reject
Omnibus Normality of Residuals	40.0450	0.000000	Reject
Modified-Levene Equal-Variance Test	0.5815	0.571152	Accept

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes	S(A)	S+sA
S(A)		15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat		2	55.4	27.7	0.54	0.595848	0.122246
S(A)		15	775.1	51.67333			
Total (Adjusted)		17	830.5				
Total		18					

* Term significant at alpha = 0.05

Response Small_Cobble

Kruskal-Wallis One-Way ANOVA on Ranks Hypotheses

H0: All medians are equal.
 Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	0.2921053	0.864112	Accept H0
Corrected for Ties	2	0.3345745	0.845957	Accept H0
Number Sets of Ties	3			
Multiplicity Factor	738			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	52.50	10.50	0.4929	0.5
HwP	8	75.00	9.38	-0.0889	0.25
UH	5	43.50	8.70	-0.3943	0.5

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	2.333333		1.95
A: HealthCat				
H	5	1.3	3.214758	-0.65
HwP	8	4.25	2.541489	2.3
UH	5	0.3	3.214758	-1.65

Response Small_Cobble

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Small_Cobble	H	HwP	UH
H	0.0000	0.3956	0.5706
HwP	0.3956	0.0000	0.2374
UH	0.5706	0.2374	0.0000

Regular Test: Medians significantly different if z-value > 1.9600
 Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Coarse_Gravel

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	3.6440	0.000268	Reject
Kurtosis Normality of Residuals	3.2584	0.001121	Reject
Omnibus Normality of Residuals	23.8959	0.000006	Reject
Modified-Levene Equal-Variance Test	1.0326	0.380062	Accept

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes	S(A)	S+sA
S(A)		15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	41.63125	20.81562	0.81	0.461539	0.163366
S(A)	15	383.3687	25.55792			
Total (Adjusted)	17	425				
Total	18					

* Term significant at alpha = 0.05

Response Coarse_Gravel

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	0.1587719	0.923683	Accept H0
Corrected for Ties	2	0.1730596	0.917108	Accept H0
Number Sets of Ties	3			
Multiplicity Factor	480			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	46.50	9.30	-0.0986	0.5
HwP	8	73.00	9.13	-0.2666	0.25
UH	5	51.50	10.30	0.3943	0.5

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	2.5		2.1625
A: HealthCat				
H	5	0.9	2.260881	-1.2625
HwP	8	4.1875	1.787383	2.025
UH	5	1.4	2.260881	-0.7625

Response Coarse_Gravel

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Coarse_Gravel	H	HwP	UH
H	0.0000	0.0600	0.3092
HwP	0.0600	0.0000	0.4031
UH	0.3092	0.4031	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Fine_Gravel

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	2.0214	0.043240	Reject
Kurtosis Normality of Residuals	0.7383	0.460322	Accept
Omnibus Normality of Residuals	4.6311	0.098712	Accept
Modified-Levene Equal-Variance Test	1.1402	0.345950	Accept

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes	S(A)	S+sA
S(A)		15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	28.02778	14.01389	1.05	0.374599	0.199202
S(A)	15	200.375	13.35833			
Total (Adjusted)	17	228.4028				
Total	18					

* Term significant at alpha = 0.05

Response Fine_Gravel

Kruskal-Wallis One-Way ANOVA on Ranks**Hypotheses**

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	0.5508772	0.759239	Accept H0
Corrected for Ties	2	0.6031638	0.739647	Accept H0
Number Sets of Ties	4			
Multiplicity Factor	504			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	44.00	8.80	-0.3450	0.5
HwP	8	72.00	9.00	-0.3554	0.5
UH	5	55.00	11.00	0.7393	0.5

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	2.361111		2.408333
A: HealthCat				
H	5	0.9	1.634523	-1.508333
HwP	8	2.125	1.292204	-0.2833333
UH	5	4.2	1.634523	1.791667

Response Fine_Gravel

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Fine_Gravel	H	HwP	UH
H	0.0000	0.0688	0.6818
HwP	0.0688	0.0000	0.6876
UH	0.6818	0.6876	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Forbs

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	2.5925	0.009529	Reject
Kurtosis Normality of Residuals	2.1875	0.028708	Reject
Omnibus Normality of Residuals	11.5060	0.003173	Reject
Modified-Levene Equal-Variance Test	0.3684	0.697927	Accept

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A: HealthCat		2	Yes	S(A)	S+sA
S(A)		15	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat		2	440290.6	220145.3	0.68	0.522169	0.143092
S(A)		15	4865153	324343.5			
Total (Adjusted)		17	5305443				
Total		18					

* Term significant at alpha = 0.05

Response Forbs

Kruskal-Wallis One-Way ANOVA on Ranks**Hypotheses**

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	1.379825	0.501620	Accept H0
Corrected for Ties	2	1.38125	0.501263	Accept H0
Number Sets of Ties	1			
Multiplicity Factor	6			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	36.50	7.30	-1.0843	348.16
HwP	8	87.00	10.88	0.9774	625.36
UH	5	47.50	9.50	0.0000	920.48

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	722.8005		690.9844
A: HealthCat				
H	5	508.43	254.6933	-182.5544
HwP	8	881.8812	201.3528	190.8968
UH	5	682.642	254.6933	-8.342417

Response Forbs

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Forbs	H	HwP	UH
H	0.0000	1.1753	0.6519
HwP	1.1753	0.0000	0.4520
UH	0.6519	0.4520	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Response Litter

Tests of Assumptions Section

Assumption	Test Value	Prob Level	Decision (0.05)
Skewness Normality of Residuals	1.9705	0.048778	Reject
Kurtosis Normality of Residuals	0.5700	0.568686	Accept
Omnibus Normality of Residuals	4.2079	0.121976	Accept
Modified-Levene Equal-Variance Test	0.7277	0.499330	Accept

Expected Mean Squares Section

Source Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
-------------	----	-------------	------------------	----------------------

A: HealthCat 2 Yes S(A) S+sA
 S(A) 15 No S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A: HealthCat	2	4813973	2406987	1.54	0.245888	0.276333
S(A)	15	2.340419E+07	1560280			
Total (Adjusted)	17	2.821817E+07				
Total	18					

* Term significant at alpha = 0.05

Response Litter

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

H0: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties	2	4.30614	0.116127	Accept H0
Corrected for Ties	2	4.328475	0.114837	Accept H0
Number Sets of Ties	2			
Multiplicity Factor	30			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
H	5	65.50	13.10	1.7743	1794.4
HwP	8	75.00	9.38	-0.0889	585.75
UH	5	30.50	6.10	-1.6757	197.15

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	18	1140.954		1145.511
A: HealthCat				
H	5	1852.472	558.6196	706.9608
HwP	8	1118.167	441.6276	-27.34367
UH	5	465.894	558.6196	-679.6172

Response Litter

Kruskal-Wallis Multiple-Comparison Z-Value Test (Dunn's Test)

Litter	H	HwP	UH
H	0.0000	1.2271	2.0786
HwP	1.2271	0.0000	1.0789
UH	2.0786	1.0789	0.0000

Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Appendix I. Correlation Report

Correlation Report

Page/Date/Time
Database1 14/10/2007 4:00:23 PM
C:\DOCUMENTS AND SETTINGS\SA ... NCSS_OCTOBER_2007\RAWDATA.S0

Pearson Correlations Section (Row-Wise Deletion)

	HealthScore	HealthRating	Size	Trees	Treesgr6ft	Treesgr1_5ft
HealthScore	1.000000	0.894826	0.027916	0.182954	0.301124	0.310347
HealthRating	0.894826	1.000000	-0.007601	0.316228	0.333433	0.323290
Size	0.027916	-0.007601	1.000000	-0.327842	-0.134937	-0.170028
Trees	0.182954	0.316228	-0.327842	1.000000	0.462910	0.567962
Treesgr6ft	0.301124	0.333433	-0.134937	0.462910	1.000000	0.977168
Treesgr1_5ft	0.310347	0.323290	-0.170028	0.567962	0.977168	1.000000
Treesle1_5ft	0.119860	0.358569	-0.244331	0.755929	0.597792	0.558140
Shrubsg6ft	0.485833	0.561112	-0.082918	0.091438	0.161811	0.130535
Shrubsg1_5ft	0.030283	-0.052342	0.064854	-0.413803	-0.119189	-0.197420
Shrubsl1_5ft	0.187973	0.240040	-0.212486	-0.299028	-0.237213	-0.307013
Grassgr6ft	0.511337	0.499230	0.320490	0.350823	0.351866	0.378583
Grassgr1_5ft	0.594792	0.663158	0.313027	0.033287	0.246543	0.257119
Grassle1_5ft	-0.357905	-0.558156	-0.224212	-0.196116	-0.163285	-0.174041
Forbsgr6ft	0.426893	0.474342	-0.178806	0.125000	-0.096440	-0.141990
Forbsgr1_5ft	-0.221805	-0.045883	0.031256	0.060456	0.085201	0.031590
Forbsle1_5ft	-0.059935	-0.206883	-0.165977	-0.105402	-0.015984	0.020024
CC_Trees	0.304247	0.333991	-0.137981	0.472273	0.999689	0.980757
CC_Shrebs	0.451540	0.493844	-0.119940	-0.137795	0.080324	0.005217
CC_Grams	0.614417	0.446941	0.292665	-0.296629	0.224816	0.209106
CC_Forbs	-0.240283	-0.349334	-0.086677	-0.092057	0.042614	0.057514
CC_Wood	0.478048	0.517226	-0.127069	-0.106012	0.165917	0.089456
CC_Weeds	-0.142218	-0.233494	0.314141	-0.230742	0.318065	0.269095
CC_All	0.668307	0.523031	0.231413	-0.296866	0.009816	-0.024087
AltBanks	-0.728352	-0.759238	0.127397	-0.183379	-0.136237	-0.170837
HoofShear	-0.281090	-0.262422	0.300578	-0.103053	0.240614	0.217795
Trails	0.110387	0.258060	-0.130948	0.066852	-0.132679	-0.087723
Bareground	-0.693205	-0.516323	-0.219795	0.372173	-0.030875	0.025911
VegCover	0.650515	0.533984	0.240444	-0.281455	0.021702	-0.015993
CC_Invasiveveg	0.245034	0.252441	-0.042326	0.332581	-0.123173	-0.060462
DD_Invasiveveg	0.206305	0.195684	-0.068512	0.361002	-0.111403	-0.023424
Dist_Undesveg	-0.064315	0.000033	0.361094	0.057365	-0.141596	-0.084687
Tr_Shr_EstReg	0.020918	0.195237	-0.288202	0.891783	0.418133	0.518211
Utilization	-0.164740	-0.332820	0.284357	-0.877058	-0.514265	-0.557912
Dead_Dec	-0.042689	0.000000	-0.179823	-0.125000	0.115728	0.014199
Rootmass_Prot	0.452485	0.404531	0.091846	0.319804	0.230280	0.254289
HC_Bareground	0.664981	0.507089	0.158545	-0.267273	0.068729	0.030351
Structaltbanks	0.719363	0.740273	-0.157179	0.455196	0.311045	0.369324
HC_Altpolygon	0.296527	0.289754	-0.064829	-0.244340	0.127247	0.027755
Chann_Incissement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.383774	0.428744	0.042041	0.492108	0.037967	0.152869
Soil__Hydro	0.854666	0.760982	-0.109704	0.020394	0.213982	0.195362
Overall	0.965251	0.897625	-0.052559	0.257295	0.240770	0.273411
Med_Boulders	-0.036741	0.054956	-0.142848	-0.231714	-0.183240	-0.200697
Small_Boulders	-0.053998	0.054545	-0.122910	-0.287480	-0.168565	-0.212261
Large_Cobble	-0.000807	0.078428	-0.079330	-0.314146	-0.167107	-0.198143
Small_Cobble	0.002539	0.054866	-0.116328	-0.182175	-0.109764	-0.135002
Coarse_Gravel	-0.066855	-0.038348	-0.065557	-0.194029	-0.135974	-0.152904
Fine_Gravel	-0.216155	-0.345250	0.203837	-0.220561	-0.171868	-0.187279
Sand	0.176809	0.144028	-0.125064	0.403586	-0.016203	0.005030
Silt_and_Clay	-0.058967	-0.053023	-0.020333	0.321372	0.278128	0.330136
Graminoids	0.272949	0.296570	0.574999	-0.278302	-0.050081	-0.107832
Forbs	-0.137041	-0.119588	0.002194	0.151500	-0.146866	-0.050954

Shrubs 0.073526 0.073544 -0.236590 0.003257 -0.132322 -0.104218
 Cronbachs Alpha = 0.485907 Standardized Cronbachs Alpha = 0.784063

Pearson Correlations Section (Row-Wise Deletion)

	Treesle1_5ft	Shrubsgr6ft	Shrubsgr1_5ft	Shrubsle1_5ft	Grassgr6ft	Grassgr1_5ft
HealthScore	0.119860	0.485833	0.030283	0.187973	0.511337	0.594792
HealthRating	0.358569	0.561112	-0.052342	0.240040	0.499230	0.663158
Size	-0.244331	-0.082918	0.064854	-0.212486	0.320490	0.313027
Trees	0.755929	0.091438	-0.413803	-0.299028	0.350823	0.033287
Treesgr6ft	0.597792	0.161811	-0.119189	-0.237213	0.351866	0.246543
Treesgr1_5ft	0.558140	0.130535	-0.197420	-0.307013	0.378583	0.257119
Treesle1_5ft	1.000000	0.218571	-0.187683	-0.121716	0.265197	0.025163
Shrubsgr6ft	0.218571	1.000000	-0.267929	0.032288	0.230186	0.514058
Shrubsgr1_5ft	-0.187683	-0.267929	1.000000	0.548258	-0.391964	0.008265
Shrubsle1_5ft	-0.121716	0.032288	0.548258	1.000000	-0.213847	-0.049003
Grassgr6ft	0.265197	0.230186	-0.391964	-0.213847	1.000000	0.423324
Grassgr1_5ft	0.025163	0.514058	0.008265	-0.049003	0.423324	1.000000
Grassle1_5ft	-0.217742	-0.503018	0.020288	0.011842	-0.378412	-0.879259
Forbsgr6ft	0.236228	0.366988	0.000000	0.368035	0.175412	0.166436
Forbsgr1_5ft	0.310765	-0.061436	0.100068	0.027256	0.042419	0.156164
Forbsle1_5ft	-0.283676	-0.337529	-0.236428	-0.221046	-0.218678	-0.420904
CC_Trees	0.595549	0.163292	-0.125784	-0.242548	0.362246	0.253673
CC_Shrubs	0.121523	0.753937	0.402940	0.469097	-0.088626	0.438803
CC_Grams	-0.273693	0.272310	0.125634	-0.026891	0.267813	0.656617
CC_Forbs	-0.173972	-0.522798	-0.182850	-0.309158	-0.274515	-0.453521
CC_Wood	0.160275	0.759014	0.391052	0.446595	-0.053131	0.457740
CC_Weeds	-0.081398	-0.233795	0.114578	0.067937	0.116028	-0.117259
CC_All	-0.248454	0.193682	0.252708	0.302408	0.297564	0.523737
AltBanks	-0.049603	-0.445560	0.224303	-0.233304	-0.354452	-0.445487
HoofShear	-0.007175	-0.065264	0.092919	-0.181028	-0.134624	-0.059489
Trails	-0.054021	0.423512	-0.217494	0.020415	-0.135463	0.395646
Bareground	0.263185	-0.254148	-0.200705	-0.350716	-0.339053	-0.405626
VegCover	-0.212784	0.193008	0.244576	0.307497	0.308538	0.545683
CC_Invasiveveg	0.100590	0.170678	-0.099071	-0.177480	0.011687	0.011101
DD_Invasiveveg	0.038970	0.055030	-0.153662	-0.196920	-0.036196	-0.065250
Dist_Undesveg	-0.151753	-0.198969	-0.056988	-0.100281	0.140856	-0.072527
Tr_Shr_EstReg	0.713025	0.125626	-0.357666	-0.351884	0.258715	0.142730
Utilization	-0.861892	-0.227585	0.304861	0.213847	-0.446154	-0.160571
Dead_Dec	0.188982	0.148278	0.372423	0.287527	-0.570088	-0.241332
Rootmass_Prot	0.241737	0.208630	-0.105849	-0.093158	0.448785	0.191621
HC_Bareground	-0.202024	0.270813	0.088472	0.344265	0.468792	0.364761
Structaltbanks	0.270361	0.640698	-0.339039	0.142079	0.518980	0.472951
HC_Altpolygon	0.057724	0.206512	0.303319	0.393425	-0.053579	0.205363
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.138551	0.132759	-0.112208	-0.194974	0.117151	0.267610
Soil_Hydro	0.041110	0.260056	0.081014	0.329931	0.419732	0.437627
Overall	0.123913	0.375173	-0.014425	0.225470	0.494273	0.526170
Med_Boulders	-0.208001	0.497333	-0.115061	0.097271	-0.081291	0.252604
Small_Boulders	-0.184717	0.485520	-0.071376	0.129608	-0.146239	0.205742
Large_Cobble	-0.246846	0.043884	0.525452	0.804754	-0.240721	0.024216
Small_Cobble	-0.124596	0.188230	-0.034462	0.367960	-0.139996	-0.028877
Coarse_Gravel	-0.165006	0.081635	0.140507	0.540033	-0.140394	-0.125944
Fine_Gravel	-0.204242	0.108496	-0.030119	0.116941	-0.167329	-0.264490
Sand	0.333774	0.399184	0.011936	0.093823	0.127606	-0.060096
Silt_and_Clay	0.211247	0.322171	-0.117952	-0.264836	-0.041667	0.111162
Graminoids	-0.101180	0.148101	0.153460	0.241652	0.322083	0.537340
Forbs	-0.187451	-0.248027	-0.299526	-0.278819	-0.095867	-0.292239
Shrubs	-0.071752	0.125989	0.548853	0.396807	-0.105293	0.197309

Cronbachs Alpha = 0.485907 Standardized Cronbachs Alpha = 0.784063

Pearson Correlations Section (Row-Wise Deletion)

	Grassle1_5ft	Forbsgr6ft	Forbsgr1_5ft	Forbsle1_5ft	CC_Trees	CC_Shrebs
HealthScore	-0.357905	0.426893	-0.221805	-0.059935	0.304247	0.451540
HealthRating	-0.558156	0.474342	-0.045883	-0.206883	0.333991	0.493844
Size	-0.224212	-0.178806	0.031256	-0.165977	-0.137981	-0.119940
Trees	-0.196116	0.125000	0.060456	-0.105402	0.472273	-0.137795
Treesgr6ft	-0.163285	-0.096440	0.085201	-0.015984	0.999689	0.080324
Treesgr1_5ft	-0.174041	-0.141990	0.031590	0.020024	0.980757	0.005217
Treesle1_5ft	-0.217742	0.236228	0.310765	-0.283676	0.595549	0.121523
Shrubsgr6ft	-0.503018	0.366988	-0.061436	-0.337529	0.163292	0.753937
Shrubsgr1_5ft	0.020288	0.000000	0.100068	-0.236428	-0.125784	0.402940
Shrubsle1_5ft	0.011842	0.368035	0.027256	-0.221046	-0.242548	0.469097
Grassgr6ft	-0.378412	0.175412	0.042419	-0.218678	0.362246	-0.088626
Grassgr1_5ft	-0.879259	0.166436	0.156164	-0.420904	0.253673	0.438803
Grassle1_5ft	1.000000	-0.254338	-0.336724	0.647486	-0.169979	-0.419994
Forbsgr6ft	-0.254338	1.000000	0.024183	-0.109945	-0.098748	0.321521
Forbsgr1_5ft	-0.336724	0.024183	1.000000	-0.604703	0.085759	-0.039987
Forbsle1_5ft	0.647486	-0.109945	-0.604703	1.000000	-0.020567	-0.475448
CC_Trees	-0.169979	-0.098748	0.085759	-0.020567	1.000000	0.077698
CC_Shrebs	-0.419994	0.321521	-0.039987	-0.475448	0.077698	1.000000
CC_Grams	-0.238898	-0.082882	-0.090299	-0.013255	0.229163	0.306955
CC_Forbs	0.637530	-0.115072	-0.204809	0.878964	0.037152	-0.642708
CC_Wood	-0.426951	0.310464	-0.038088	-0.467542	0.163334	0.996118
CC>Weeds	0.268496	-0.215359	0.104159	-0.056581	0.316881	-0.105983
CC_All	-0.163225	0.169638	-0.288185	0.035452	0.012746	0.346732
AltBanks	0.290265	-0.275362	0.051741	0.151673	-0.140696	-0.301017
HoofShear	0.072664	-0.486791	-0.363845	0.088927	0.233496	0.051071
Trails	-0.488321	0.482950	0.010257	0.042094	-0.129952	0.234850
Bareground	0.030314	-0.222103	0.190453	-0.016669	-0.031648	-0.360638
VegCover	-0.198322	0.175894	-0.248456	0.014342	0.024759	0.342569
CC_Invasiveveg	-0.094616	0.066534	-0.321691	0.062809	-0.127377	0.067268
DD_Invasiveveg	0.001287	0.025776	-0.386620	0.193090	-0.115132	-0.066355
Dist_Undesveg	-0.070302	-0.229408	-0.105442	0.064650	-0.145773	-0.263428
Tr_Shr_EstReg	-0.313640	-0.068613	0.247186	-0.255567	0.430909	-0.059859
Utilization	0.333260	-0.175412	-0.296933	0.356387	-0.524918	-0.056398
Dead_Dec	0.189988	0.125000	-0.024183	0.109945	0.098748	0.367452
Rootmass_Prot	-0.167250	0.319799	-0.381517	0.148776	0.230666	0.117510
HC_Bareground	-0.052417	0.267253	0.019381	-0.091309	0.073434	0.294633
Structaltbanks	-0.438375	0.471431	-0.369538	-0.135177	0.319662	0.427095
HC_Altpolygon	-0.053155	0.244340	0.125559	-0.338566	0.122215	0.448911
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	-0.259741	-0.123027	-0.318640	0.070011	0.040575	0.057661
Soil_Hydro	-0.183144	0.414669	-0.011836	-0.051243	0.216909	0.292252
Overall	-0.301944	0.371417	-0.225398	-0.032097	0.244986	0.349582
Med_Boulders	-0.231474	0.057928	-0.099461	-0.106325	-0.182553	0.393790
Small_Boulders	-0.186757	0.071870	-0.101499	-0.075021	-0.172056	0.409336
Large_Cobble	-0.038708	0.078537	-0.118351	-0.188094	-0.169233	0.481480
Small_Cobble	-0.024882	0.034700	-0.460685	0.000820	-0.111587	0.247043
Coarse_Gravel	0.070159	-0.054571	-0.407040	-0.113450	-0.135577	0.287413
Fine_Gravel	0.274808	-0.060654	-0.269086	-0.120086	-0.171067	0.133219
Sand	-0.090594	0.505431	-0.016827	-0.327721	-0.013417	0.380160
Silt_and_Clay	-0.182228	-0.048904	-0.223687	0.097303	0.282074	0.214357
Graminoids	-0.509397	0.307517	0.196397	-0.486277	-0.049272	0.226287
Forbs	0.232814	-0.340538	-0.567778	0.520848	-0.150034	-0.412637
Shrubs	-0.234677	-0.037766	0.035889	-0.465367	-0.124011	0.538809

Cronbachs Alpha = 0.485907 Standardized Cronbachs Alpha = 0.784063

Pearson Correlations Section (Row-Wise Deletion)

	CC_Grams	CC_Forbs	CC_Wood	CC>Weeds	CC_All	AltBanks
HealthScore	0.614417	-0.240283	0.478048	-0.142218	0.668307	-0.728352
HealthRating	0.446941	-0.349334	0.517226	-0.233494	0.523031	-0.759238
Size	0.292665	-0.086677	-0.127069	0.314141	0.231413	0.127397
Trees	-0.296629	-0.092057	-0.106012	-0.230742	-0.296866	-0.183379

Treesgr6ft	0.224816	0.042614	0.165917	0.318065	0.009816	-0.136237
Treesgr1_5ft	0.209106	0.057514	0.089456	0.269095	-0.024087	-0.170837
Treesle1_5ft	-0.273693	-0.173972	0.160275	-0.081398	-0.248454	-0.049603
Shrubsgr6ft	0.272310	-0.522798	0.759014	-0.233795	0.193682	-0.445560
Shrubsgr1_5ft	0.125634	-0.182850	0.391052	0.114578	0.252708	0.224303
Shrubsle1_5ft	-0.026891	-0.309158	0.446595	0.067937	0.302408	-0.233304
Grassgr6ft	0.267813	-0.274515	-0.053131	0.116028	0.297564	-0.354452
Grassgr1_5ft	0.656617	-0.453521	0.457740	-0.117259	0.523737	-0.445487
Grassle1_5ft	-0.238898	0.637530	-0.426951	0.268496	-0.163225	0.290265
Forbsgr6ft	-0.082882	-0.115072	0.310464	-0.215359	0.169638	-0.275362
Forbsgr1_5ft	-0.090299	-0.204809	-0.038088	0.104159	-0.288185	0.051741
Forbsle1_5ft	-0.013255	0.878964	-0.467542	-0.056581	0.035452	0.151673
CC_Trees	0.229163	0.037152	0.163334	0.316881	0.012746	-0.140696
CC_Shrebs	0.306955	-0.642708	0.996118	-0.105983	0.346732	-0.301017
CC_Grass	1.000000	-0.054614	0.331903	0.278342	0.831753	-0.491626
CC_Forbs	-0.054614	1.000000	-0.630165	0.116120	-0.124931	0.265896
CC_Wood	0.331903	-0.630165	1.000000	-0.071753	0.353250	-0.312679
CC_Weeds	0.278342	0.116120	-0.071753	1.000000	0.100466	0.048973
CC_All	0.831753	-0.124931	0.353250	0.100466	1.000000	-0.465776
AltBanks	-0.491626	0.265896	-0.312679	0.048973	-0.465776	1.000000
HoofShear	-0.054465	-0.045936	0.069821	0.320971	-0.136404	0.486974
Trails	-0.072926	0.026315	0.217572	-0.346030	-0.147722	-0.108639
Bareground	-0.831018	0.097258	-0.370184	-0.275911	-0.926652	0.562801
VegCover	0.823793	-0.129539	0.349511	0.101738	0.996635	-0.462105
CC_Invasiveveg	-0.237925	-0.159266	0.052435	-0.640573	-0.141030	-0.075831
DD_Invasiveveg	-0.266361	-0.018957	-0.078132	-0.574335	-0.192476	-0.094393
Dist_Undesveg	-0.368249	-0.021104	-0.274470	-0.172953	-0.389149	0.136924
Tr_Shr_EstReg	-0.212446	-0.176823	-0.035313	-0.165657	-0.325831	-0.069005
Utilization	0.172931	0.274515	-0.090322	0.110631	0.171100	0.132470
Dead_Dec	-0.231196	0.115072	0.371042	-0.223051	-0.169638	0.156722
Rootmass_Prot	-0.011148	-0.058883	0.135609	-0.137743	0.108518	0.083176
HC_Bareground	0.736833	-0.123019	0.307630	0.361792	0.759429	-0.637281
Structaltbanks	0.230889	-0.401059	0.451024	-0.133065	0.328160	-0.659035
HC_Altpolygon	0.507345	-0.281155	0.458848	0.437881	0.507751	-0.478919
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.003592	-0.142378	0.055059	-0.534071	0.025129	-0.227645
Soil_Hydro	0.645024	-0.110139	0.314205	0.036809	0.703435	-0.808487
Overall	0.568209	-0.218521	0.370556	-0.151039	0.649072	-0.809435
Med_Boulders	0.156671	-0.282636	0.377239	-0.226340	0.208821	-0.103921
Small_Boulders	0.128916	-0.243475	0.393580	-0.213152	0.187755	-0.074816
Large_Cobble	0.024811	-0.318114	0.465244	0.263495	0.227889	-0.076158
Small_Cobble	-0.065997	-0.260344	0.237008	-0.058716	0.158198	-0.198928
Coarse_Gravel	-0.081254	-0.348305	0.275482	0.169382	0.169716	-0.150650
Fine_Gravel	-0.011642	-0.165480	0.120585	0.435471	0.023385	0.008910
Sand	-0.264884	-0.374326	0.372170	-0.111827	-0.145082	0.004831
Silt_and_Clay	-0.203579	-0.010290	0.231925	-0.183558	-0.285621	0.420529
Graminoids	0.387446	-0.394221	0.223002	0.389162	0.392563	-0.241894
Forbs	-0.385340	0.279339	-0.422944	-0.370638	-0.341833	0.103472
Shrubs	0.122784	-0.574987	0.521894	-0.049552	0.232918	-0.022288
Cronbachs Alpha = 0.485907		Standardized Cronbachs Alpha = 0.784063				

Pearson Correlations Section (Row-Wise Deletion)

	HoofShear	Trails	Bareground	VegCover	CC_Invasiveveg	DD_Invasiveveg
HealthScore	-0.281090	0.110387	-0.693205	0.650515	0.245034	0.206305
HealthRating	-0.262422	0.258060	-0.516323	0.533984	0.252441	0.195684
Size	0.300578	-0.130948	-0.219795	0.240444	-0.042326	-0.068512
Trees	-0.103053	0.066852	0.372173	-0.281455	0.332581	0.361002
Treesgr6ft	0.240614	-0.132679	-0.030875	0.021702	-0.123173	-0.111403
Treesgr1_5ft	0.217795	-0.087723	0.025911	-0.015993	-0.060462	-0.023424
Treesle1_5ft	-0.007175	-0.054021	0.263185	-0.212784	0.100590	0.038970
Shrubsgr6ft	-0.065264	0.423512	-0.254148	0.193008	0.170678	0.055030
Shrubsgr1_5ft	0.092919	-0.217494	-0.200705	0.244576	-0.099071	-0.153662

Shrubsle1_5ft	-0.181028	0.020415	-0.350716	0.307497	-0.177480	-0.196920
Grassgr6ft	-0.134624	-0.135463	-0.339053	0.308538	0.011687	-0.036196
Grassgr1_5ft	-0.059489	0.395646	-0.405626	0.545683	0.011101	-0.065250
Grassle1_5ft	0.072664	-0.488321	0.030314	-0.198322	-0.094616	0.001287
Forbsgr6ft	-0.486791	0.482950	-0.222103	0.175894	0.066534	0.025776
Forbsgr1_5ft	-0.363845	0.010257	0.190453	-0.248456	-0.321691	-0.386620
Forbsle1_5ft	0.088927	0.042094	-0.016669	0.014342	0.062809	0.193090
CC_Trees	0.233496	-0.129952	-0.031648	0.024759	-0.127377	-0.115132
CC_Shrebs	0.051071	0.234850	-0.360638	0.342569	0.067268	-0.066355
CC_Grams	-0.054465	-0.072926	-0.831018	0.823793	-0.237925	-0.266361
CC_Forbs	-0.045936	0.026315	0.097258	-0.129539	-0.159266	-0.018957
CC_Wood	0.069821	0.217572	-0.370184	0.349511	0.052435	-0.078132
CC>Weeds	0.320971	-0.346030	-0.275911	0.101738	-0.640573	-0.574335
CC_All	-0.136404	-0.147722	-0.926652	0.996635	-0.141030	-0.192476
AltBanks	0.486974	-0.108639	0.562801	-0.462105	-0.075831	-0.094393
HoofShear	1.000000	-0.153666	0.225499	-0.146152	0.112924	0.118040
Trails	-0.153666	1.000000	0.200539	-0.127831	0.043846	0.069434
Bareground	0.225499	0.200539	1.000000	-0.913991	0.228380	0.272430
VegCover	-0.146152	-0.127831	-0.913991	1.000000	-0.177791	-0.232198
CC_Invasiveveg	0.112924	0.043846	0.228380	-0.177791	1.000000	0.974218
DD_Invasiveveg	0.118040	0.069434	0.272430	-0.232198	0.974218	1.000000
Dist_Undesveg	0.321634	0.077229	0.377309	-0.403503	0.534127	0.579772
Tr_Shr_EstReg	-0.037754	0.135522	0.424134	-0.294450	0.077551	0.077807
Utilization	0.160312	-0.010109	-0.229545	0.135797	-0.011687	0.036196
Dead_Dec	0.059662	0.035731	0.150070	-0.175894	0.232824	0.206277
Rootmass_Prot	0.353830	0.203467	-0.061447	0.090041	0.425456	0.395803
HC_Bareground	-0.407318	-0.147249	-0.924097	0.752214	-0.355564	-0.385952
Structaltbanks	-0.119388	0.343878	-0.314596	0.324836	0.177366	0.174402
HC_Altpolygon	-0.151740	-0.234314	-0.608687	0.507155	-0.349423	-0.390630
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.171941	0.137567	0.134438	0.007790	0.829040	0.841115
Soil__Hydro	-0.539638	-0.036325	-0.793922	0.696407	-0.112135	-0.127611
Overall	-0.320049	0.064842	-0.666719	0.633629	0.264457	0.250821
Med_Boulders	0.033305	0.207654	-0.151611	0.211941	0.177284	0.095578
Small_Boulders	0.083420	0.186355	-0.145647	0.190132	0.202733	0.118585
Large_Cobble	0.204556	0.092772	-0.227878	0.234986	-0.180371	-0.177355
Small_Cobble	0.128076	0.025518	-0.080403	0.163575	-0.170811	-0.157474
Coarse_Gravel	0.191797	-0.127140	-0.125789	0.174057	-0.261364	-0.240144
Fine_Gravel	0.141970	-0.222573	-0.100225	0.008550	-0.304442	-0.274118
Sand	-0.074652	0.110880	0.087883	-0.166440	0.426360	0.364315
Silt_and_Clay	0.465705	0.415645	0.402265	-0.285105	0.243518	0.230583
Graminoids	-0.015029	0.150943	-0.413932	0.413947	-0.420206	-0.453530
Forbs	0.346936	0.047525	0.431960	-0.365981	0.580022	0.680892
Shrebs	0.066940	-0.080947	-0.133833	0.226789	0.098666	0.015141
Cronbachs Alpha = 0.485907	Standardized Cronbachs Alpha = 0.784063					

Pearson Correlations Section (Row-Wise Deletion)

	Dist_Undesveg	Tr_Shr_EstReg	Utilization	Dead_Dec	Rootmass_Prot	HC_Bareground
HealthScore	-0.064315	0.020918	-0.164740	-0.042689	0.452485	0.664981
HealthRating	0.000033	0.195237	-0.332820	0.000000	0.404531	0.507089
Size	0.361094	-0.288202	0.284357	-0.179823	0.091846	0.158545
Trees	0.057365	0.891783	-0.877058	-0.125000	0.319804	-0.267273
Treesgr6ft	-0.141596	0.418133	-0.514265	0.115728	0.230280	0.068729
Treesgr1_5ft	-0.084687	0.518211	-0.557912	0.014199	0.254289	0.030351
Treesle1_5ft	-0.151753	0.713025	-0.861892	0.188982	0.241737	-0.202024
Shrebsgr6ft	-0.198969	0.125626	-0.227585	0.148278	0.208630	0.270813
Shrebsgr1_5ft	-0.056988	-0.357666	0.304861	0.372423	-0.105849	0.088472
Shrebsle1_5ft	-0.100281	-0.351884	0.213847	0.287527	-0.093158	0.344265
Grassgr6ft	0.140856	0.258715	-0.446154	-0.570088	0.448785	0.468792
Grassgr1_5ft	-0.072527	0.142730	-0.160571	-0.241332	0.191621	0.364761
Grassle1_5ft	-0.070302	-0.313640	0.333260	0.189988	-0.167250	-0.052417
Forbsgr6ft	-0.229408	-0.068613	-0.175412	0.125000	0.319799	0.267253

Forbsgr1_5ft	-0.105442	0.247186	-0.296933	-0.024183	-0.381517	0.019381
Forbsle1_5ft	0.064650	-0.255567	0.356387	0.109945	0.148776	-0.091309
CC_Trees	-0.145773	0.430909	-0.524918	0.098748	0.230666	0.073434
CC_Shrebs	-0.263428	-0.059859	-0.056398	0.367452	0.117510	0.294633
CC_Grams	-0.368249	-0.212446	0.172931	-0.231196	-0.011148	0.736833
CC_Forbs	-0.021104	-0.176823	0.274515	0.115072	-0.058883	-0.123019
CC_Wood	-0.274470	-0.035313	-0.090322	0.371042	0.135609	0.307630
CC>Weeds	-0.172953	-0.165657	0.110631	-0.223051	-0.137743	0.361792
CC_All	-0.389149	-0.325831	0.171100	-0.169638	0.108518	0.759429
AltBanks	0.136924	-0.069005	0.132470	0.156722	0.083176	-0.637281
HoofShear	0.321634	-0.037754	0.160312	0.059662	0.353830	-0.407318
Trails	0.077229	0.135522	-0.010109	0.035731	0.203467	-0.147249
Bareground	0.377309	0.424134	-0.229545	0.150070	-0.061447	-0.924097
VegCover	-0.403503	-0.294450	0.135797	-0.175894	0.090041	0.752214
CC_Invasiveveg	0.534127	0.077551	-0.011687	0.232824	0.425456	-0.355564
DD_Invasiveveg	0.579772	0.077807	0.036196	0.206277	0.395803	-0.385952
Dist_Undesveg	1.000000	-0.055096	0.221338	-0.028657	0.366842	-0.337245
Tr_Shr_EstReg	-0.055096	1.000000	-0.908502	-0.240099	0.175506	-0.293334
Utilization	0.221338	-0.908502	1.000000	0.175412	-0.224392	0.093758
Dead_Dec	-0.028657	-0.240099	0.175412	1.000000	-0.159918	-0.267253
Rootmass_Prot	0.366842	0.175506	-0.224392	-0.159918	1.000000	0.000006
HC_Bareground	-0.337245	-0.293334	0.093758	-0.267253	0.000006	1.000000
Structaltbanks	-0.074539	0.318953	-0.416336	-0.178805	0.457509	0.347555
HC_Altpolygon	-0.623621	-0.243037	0.053579	0.030553	-0.312560	0.555088
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.541485	0.357204	-0.180570	0.032640	0.456077	-0.244266
Soil_Hydro	-0.315000	-0.091397	-0.090624	-0.149553	0.095678	0.828451
Overall	-0.029475	0.088533	-0.192905	-0.147322	0.403474	0.649926
Med_Boulders	-0.192689	-0.218562	0.172742	0.072411	-0.148215	0.061954
Small_Boulders	-0.164871	-0.297786	0.237008	0.186862	-0.147113	0.030760
Large_Cobble	0.041700	-0.283554	0.266824	0.144673	-0.052860	0.203277
Small_Cobble	-0.175132	-0.184481	0.149126	0.108438	-0.181264	-0.032436
Coarse_Gravel	-0.141893	-0.179688	0.140394	0.072761	-0.227520	0.058359
Fine_Gravel	-0.304857	-0.213716	0.167329	0.085467	-0.359748	0.085497
Sand	-0.012763	0.229716	-0.367284	0.177755	0.354424	-0.027738
Silt_and_Clay	0.198759	0.378620	-0.267156	0.237536	0.482584	-0.433179
Graminoids	-0.106146	-0.184366	0.075672	-0.313681	0.037919	0.426753
Forbs	0.713932	-0.000022	0.233674	0.001707	0.267285	-0.520363
Shrebs	-0.141544	0.107060	-0.107696	-0.084072	-0.004464	0.100709

Cronbachs Alpha = 0.485907 Standardized Cronbachs Alpha = 0.784063

Pearson Correlations Section (Row-Wise Deletion)

	Structaltbanks	HC_Altpolygon	Chann_Incisement	Veg	Soil_Hydro	Overall
HealthScore	0.719363	0.296527	0.000000	0.383774	0.854666	0.965251
HealthRating	0.740273	0.289754	0.000000	0.428744	0.760982	0.897625
Size	-0.157179	-0.064829	0.000000	0.042041	-0.109704	-0.052559
Trees	0.455196	-0.244340	0.000000	0.492108	0.020394	0.257295
Treesgr6ft	0.311045	0.127247	0.000000	0.037967	0.213982	0.240770
Treesgr1_5ft	0.369324	0.027755	0.000000	0.152869	0.195362	0.273411
Treesle1_5ft	0.270361	0.057724	0.000000	0.138551	0.041110	0.123913
Shrebsgr6ft	0.640698	0.206512	0.000000	0.132759	0.260056	0.375173
Shrebsgr1_5ft	-0.339039	0.303319	0.000000	-0.112208	0.081014	-0.014425
Shrebsle1_5ft	0.142079	0.393425	0.000000	-0.194974	0.329931	0.225470
Grassgr6ft	0.518980	-0.053579	0.000000	0.117151	0.419732	0.494273
Grassgr1_5ft	0.472951	0.205363	0.000000	0.267610	0.437627	0.526170
Grassle1_5ft	-0.438375	-0.053155	0.000000	-0.259741	-0.183144	-0.301944
Forbsgr6ft	0.471431	0.244340	0.000000	-0.123027	0.414669	0.371417
Forbsgr1_5ft	-0.369538	0.125559	0.000000	-0.318640	-0.011836	-0.225398
Forbsle1_5ft	-0.135177	-0.338566	0.000000	0.070011	-0.051243	-0.032097
CC_Trees	0.319662	0.122215	0.000000	0.040575	0.216909	0.244986
CC_Shrebs	0.427095	0.448911	0.000000	0.057661	0.292252	0.349582
CC_Grams	0.230889	0.507345	0.000000	0.003592	0.645024	0.568209

CC_Forbs	-0.401059	-0.281155	0.000000	-0.142378	-0.110139	-0.218521
CC_Wood	0.451024	0.458848	0.000000	0.055059	0.314205	0.370556
CC_Weeds	-0.133065	0.437881	0.000000	-0.534071	0.036809	-0.151039
CC_All	0.328160	0.507751	0.000000	0.025129	0.703435	0.649072
AltBanks	-0.659035	-0.478919	0.000000	-0.227645	-0.808487	-0.809435
HoofShear	-0.119388	-0.151740	0.000000	0.171941	-0.539638	-0.320049
Trails	0.343878	-0.234314	0.000000	0.137567	-0.036325	0.064842
Bareground	-0.314596	-0.608687	0.000000	0.134438	-0.793922	-0.666719
VegCover	0.324836	0.507155	0.000000	0.007790	0.696407	0.633629
CC_Invasiveveg	0.177366	-0.349423	0.000000	0.829040	-0.112135	0.264457
DD_Invasiveveg	0.174402	-0.390630	0.000000	0.841115	-0.127611	0.250821
Dist_Undesveg	-0.074539	-0.623621	0.000000	0.541485	-0.315000	-0.029475
Tr_Shr_EstReg	0.318953	-0.243037	0.000000	0.357204	-0.091397	0.088533
Utilization	-0.416336	0.053579	0.000000	-0.180570	-0.090624	-0.192905
Dead_Dec	-0.178805	0.030553	0.000000	0.032640	-0.149553	-0.147322
Rootmass_Prot	0.457509	-0.312560	0.000000	0.456077	0.095678	0.403474
HC_Bareground	0.347555	0.555088	0.000000	-0.244266	0.828451	0.649926
Structaltbanks	1.000000	0.150910	0.000000	0.322966	0.520713	0.712144
HC_Altpolygon	0.150910	1.000000	0.000000	-0.394463	0.552274	0.314335
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.322966	-0.394463	0.000000	1.000000	0.011196	0.447327
Soil_Hydro	0.520713	0.552274	0.000000	0.011196	1.000000	0.880280
Overall	0.712144	0.314335	0.000000	0.447327	0.880280	1.000000
Med_Boulders	0.086615	0.141542	0.000000	0.030834	-0.111836	-0.063946
Small_Boulders	0.031757	0.175609	0.000000	0.013570	-0.128198	-0.088999
Large_Cobble	0.095663	0.282795	0.000000	-0.089336	0.028773	0.037738
Small_Cobble	0.380196	0.211965	0.000000	-0.169716	0.052131	0.017424
Coarse_Gravel	0.312252	0.262229	0.000000	-0.210452	0.000000	-0.032611
Fine_Gravel	0.096436	0.312571	0.000000	-0.391131	-0.175273	-0.265027
Sand	0.329808	0.013598	0.000000	0.215685	-0.079089	0.112157
Silt_and_Clay	0.200813	-0.580393	0.000000	0.348435	-0.485180	-0.186597
Graminoids	0.264087	0.448976	0.000000	-0.302173	0.338235	0.220301
Forbs	0.017135	-0.627231	0.000000	0.587993	-0.341704	-0.049635
Shrubs	0.061532	0.247971	0.000000	0.160832	0.026301	0.108578
Cronbachs Alpha = 0.485907	Standardized Cronbachs Alpha = 0.784063					

Pearson Correlations Section (Row-Wise Deletion)

	Med_Boulders	Small_Boulders	Large_Cobble	Small_Cobble	Coarse_Gravel	Fine_Gravel
HealthScore	-0.036741	-0.053998	-0.000807	0.002539	-0.066855	-0.216155
HealthRating	0.054956	0.054545	0.078428	0.054866	-0.038348	-0.345250
Size	-0.142848	-0.122910	-0.079330	-0.116328	-0.065557	0.203837
Trees	-0.231714	-0.287480	-0.314146	-0.182175	-0.194029	-0.220561
Treesgr6ft	-0.183240	-0.168565	-0.167107	-0.109764	-0.135974	-0.171868
Treesgr1_5ft	-0.200697	-0.212261	-0.198143	-0.135002	-0.152904	-0.187279
Treesle1_5ft	-0.208001	-0.184717	-0.246846	-0.124596	-0.165006	-0.204242
Shrubsgr6ft	0.497333	0.485520	0.043884	0.188230	0.081635	0.108496
Shrubsgr1_5ft	-0.115061	-0.071376	0.525452	-0.034462	0.140507	-0.030119
Shrubsle1_5ft	0.097271	0.129608	0.804754	0.367960	0.540033	0.116941
Grassgr6ft	-0.081291	-0.146239	-0.240721	-0.139996	-0.140394	-0.167329
Grassgr1_5ft	0.252604	0.205742	0.024216	-0.028877	-0.125944	-0.264490
Grassle1_5ft	-0.231474	-0.186757	-0.038708	-0.024882	0.070159	0.274808
Forbsgr6ft	0.057928	0.071870	0.078537	0.034700	-0.054571	-0.060654
Forbsgr1_5ft	-0.099461	-0.101499	-0.118351	-0.460685	-0.407040	-0.269086
Forbsle1_5ft	-0.106325	-0.075021	-0.188094	0.000820	-0.113450	-0.120086
CC_Trees	-0.182553	-0.172056	-0.169233	-0.111587	-0.135577	-0.171067
CC_Shrubs	0.393790	0.409336	0.481480	0.247043	0.287413	0.133219
CC_Grass	0.156671	0.128916	0.024811	-0.065997	-0.081254	-0.011642
CC_Forbs	-0.282636	-0.243475	-0.318114	-0.260344	-0.348305	-0.165480
CC_Wood	0.377239	0.393580	0.465244	0.237008	0.275482	0.120585
CC_Weeds	-0.226340	-0.213152	0.263495	-0.058716	0.169382	0.435471
CC_All	0.208821	0.187755	0.227889	0.158198	0.169716	0.023385
AltBanks	-0.103921	-0.074816	-0.076158	-0.198928	-0.150650	0.008910

HoofShear	0.033305	0.083420	0.204556	0.128076	0.191797	0.141970
Trails	0.207654	0.186355	0.092772	0.025518	-0.127140	-0.222573
Bareground	-0.151611	-0.145647	-0.227878	-0.080403	-0.125789	-0.100225
VegCover	0.211941	0.190132	0.234986	0.163575	0.174057	0.008550
CC_Invasiveveg	0.177284	0.202733	-0.180371	-0.170811	-0.261364	-0.304442
DD_Invasiveveg	0.095578	0.118585	-0.177355	-0.157474	-0.240144	-0.274118
Dist_Undesveg	-0.192689	-0.164871	0.041700	-0.175132	-0.141893	-0.304857
Tr_Shr_EstReg	-0.218562	-0.297786	-0.283554	-0.184481	-0.179688	-0.213716
Utilization	0.172742	0.237008	0.266824	0.149126	0.140394	0.167329
Dead_Dec	0.072411	0.186862	0.144673	0.108438	0.072761	0.085467
Rootmass_Prot	-0.148215	-0.147113	-0.052860	-0.181264	-0.227520	-0.359748
HC_Bareground	0.061954	0.030760	0.203277	-0.032436	0.058359	0.085497
Structaltbanks	0.086615	0.031757	0.095663	0.380196	0.312252	0.096436
HC_Altpolygon	0.141542	0.175609	0.282795	0.211965	0.262229	0.312571
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.030834	0.013570	-0.089336	-0.169716	-0.210452	-0.391131
Soil_Hydro	-0.111836	-0.128198	0.028773	0.052131	0.000000	-0.175273
Overall	-0.063946	-0.088999	0.037738	0.017424	-0.032611	-0.265027
Med_Boulders	1.000000	0.985873	0.334268	0.068344	0.071654	0.005111
Small_Boulders	0.985873	1.000000	0.344131	0.078807	0.066935	-0.002219
Large_Cobble	0.334268	0.344131	1.000000	0.281989	0.550986	0.161186
Small_Cobble	0.068344	0.078807	0.281989	1.000000	0.910190	0.534021
Coarse_Gravel	0.071654	0.066935	0.550986	0.910190	1.000000	0.652357
Fine_Gravel	0.005111	-0.002219	0.161186	0.534021	0.652357	1.000000
Sand	0.214296	0.193856	0.112623	-0.264899	-0.126114	0.176565
Silt_and_Clay	0.124650	0.100422	0.012013	-0.118789	-0.107766	-0.041759
Graminoids	-0.206388	-0.210827	0.154283	0.259435	0.261222	0.283434
Forbs	-0.134344	-0.113778	-0.152083	0.184485	0.072004	-0.168886
Shrubs	0.428371	0.368043	0.616827	-0.072773	0.168188	-0.056969
Cronbachs Alpha = 0.485907	Standardized Cronbachs Alpha = 0.784063					

Pearson Correlations Section (Row-Wise Deletion)

	Sand	Silt_and_Clay	Graminoids	Forbs	Shrubs	Total_forage
HealthScore	0.176809	-0.058967	0.272949	-0.137041	0.073526	0.265670
HealthRating	0.144028	-0.053023	0.296570	-0.119588	0.073544	0.297987
Size	-0.125064	-0.020333	0.574999	0.002194	-0.236590	0.610981
Trees	0.403586	0.321372	-0.278302	0.151500	0.003257	-0.256996
Treesgr6ft	-0.016203	0.278128	-0.050081	-0.146866	-0.132322	-0.123062
Treesgr1_5ft	0.005030	0.330136	-0.107832	-0.050954	-0.104218	-0.150684
Treesle1_5ft	0.333774	0.211247	-0.101180	-0.187451	-0.071752	-0.186343
Shrubsgr6ft	0.399184	0.322171	0.148101	-0.248027	0.125989	0.094983
Shrubsgr1_5ft	0.011936	-0.117952	0.153460	-0.299526	0.548853	0.136239
Shrubsle1_5ft	0.093823	-0.264836	0.241652	-0.278819	0.396807	0.222455
Grassgr6ft	0.127606	-0.041667	0.322083	-0.095867	-0.105293	0.312126
Grassgr1_5ft	-0.060096	0.111162	0.537340	-0.292239	0.197309	0.521853
Grassle1_5ft	-0.090594	-0.182228	-0.509397	0.232814	-0.234677	-0.515967
Forbsgr6ft	0.505431	-0.048904	0.307517	-0.340538	-0.037766	0.219897
Forbsgr1_5ft	-0.016827	-0.223687	0.196397	-0.567778	0.035889	0.027001
Forbsle1_5ft	-0.327721	0.097303	-0.486277	0.520848	-0.465367	-0.419722
CC_Trees	-0.013417	0.282074	-0.049272	-0.150034	-0.124011	-0.122213
CC_Shrubs	0.380160	0.214357	0.226287	-0.412637	0.538809	0.176966
CC_Grams	-0.264884	-0.203579	0.387446	-0.385340	0.122784	0.313529
CC_Forbs	-0.374326	-0.010290	-0.394221	0.279339	-0.574987	-0.414435
CC_Wood	0.372170	0.231925	0.223002	-0.422944	0.521894	0.167627
CC>Weeds	-0.111827	-0.183558	0.389162	-0.370638	-0.049552	0.298885
CC_All	-0.145082	-0.285621	0.392563	-0.341833	0.232918	0.348073
AltBanks	0.004831	0.420529	-0.241894	0.103472	-0.022288	-0.236270
HoofShear	-0.074652	0.465705	-0.015029	0.346936	0.066940	0.111486
Trails	0.110880	0.415645	0.150943	0.047525	-0.080947	0.174237
Bareground	0.087883	0.402265	-0.413932	0.431960	-0.133833	-0.328293
VegCover	-0.166440	-0.285105	0.413947	-0.365981	0.226789	0.362763
CC_Invasiveveg	0.426360	0.243518	-0.420206	0.580022	0.098666	-0.254961

DD_Invasiveveg	0.364315	0.230583	-0.453530	0.680892	0.015141	-0.267697
Dist_Undesveg	-0.012763	0.198759	-0.106146	0.713932	-0.141544	0.110651
Tr_Shr_EstReg	0.229716	0.378620	-0.184366	-0.000022	0.107060	-0.191752
Utilization	-0.367284	-0.267156	0.075672	0.233674	-0.107696	0.151394
Dead_Dec	0.177755	0.237536	-0.313681	0.001707	-0.084072	-0.359060
Rootmass_Prot	0.354424	0.482584	0.037919	0.267285	-0.004464	0.133944
HC_Bareground	-0.027738	-0.433179	0.426753	-0.520363	0.100709	0.307875
Structaltbanks	0.329808	0.200813	0.264087	0.017135	0.061532	0.307545
HC_Altpolygon	0.013598	-0.580393	0.448976	-0.627231	0.247971	0.314186
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.215685	0.348435	-0.302173	0.587993	0.160832	-0.113047
Soil_Hydro	-0.079089	-0.485180	0.338235	-0.341704	0.026301	0.261722
Overall	0.112157	-0.186597	0.220301	-0.049635	0.108578	0.241662
Med_Boulders	0.214296	0.124650	-0.206388	-0.134344	0.428371	-0.222317
Small_Boulders	0.193856	0.100422	-0.210827	-0.113778	0.368043	-0.227727
Large_Cobble	0.112623	0.012013	0.154283	-0.152083	0.616827	0.196604
Small_Cobble	-0.264899	-0.118789	0.259435	0.184485	-0.072773	0.343301
Coarse_Gravel	-0.126114	-0.107766	0.261222	0.072004	0.168188	0.336691
Fine_Gravel	0.176565	-0.041759	0.283434	-0.168886	-0.056969	0.249962
Sand	1.000000	0.381661	-0.118061	-0.221901	0.369904	-0.161592
Silt_and_Clay	0.381661	1.000000	-0.278487	0.188105	0.084173	-0.234405
Graminoids	-0.118061	-0.278487	1.000000	-0.425326	-0.076492	0.956422
Forbs	-0.221901	0.188105	-0.425326	1.000000	-0.291489	-0.164597
Shrubs	0.369904	0.084173	-0.076492	-0.291489	1.000000	-0.060274
Cronbachs Alpha = 0.485907	Standardized Cronbachs Alpha = 0.784063					

Pearson Correlations Section (Row-Wise Deletion)

	Litter	Confirmbreed	Possiblebreed	Breed_Pos_Bird	Speciesusing	Comspecuse
HealthScore	0.374651	0.553326	0.251987	0.541845	0.546908	0.431176
HealthRating	0.412715	0.631055	0.097269	0.466120	0.564891	0.594160
Size	0.398007	0.209270	-0.121307	0.031927	-0.109184	-0.137683
Trees	-0.294796	0.266076	-0.179428	0.020472	0.025889	0.330547
Treesgr6ft	0.198876	0.410564	0.027686	0.274827	0.379502	0.501992
Treesgr1_5ft	0.127376	0.366469	0.029117	0.248827	0.358777	0.496024
Treesle1_5ft	-0.090725	0.465124	-0.222829	0.108329	0.107636	0.447136
Shrubsgr6ft	0.344228	0.457657	0.045989	0.318432	0.752399	0.598473
Shrubsgr1_5ft	0.065859	0.099093	-0.012728	0.050829	-0.192833	0.017278
Shrubsle1_5ft	0.127282	0.030602	-0.358480	-0.267474	-0.134584	0.087238
Grassgr6ft	0.179305	0.408387	0.085429	0.319605	0.267933	0.079344
Grassgr1_5ft	0.646296	0.467202	0.188565	0.438180	0.626508	0.554781
Grassle1_5ft	-0.516082	-0.338366	0.038959	-0.177159	-0.452510	-0.570210
Forbsgr6ft	0.015363	-0.066519	0.140979	0.071653	0.304196	0.139178
Forbsgr1_5ft	0.330959	0.167294	0.009918	0.110896	0.102674	0.192685
Forbsle1_5ft	-0.299777	-0.408829	0.207009	-0.086313	-0.136814	-0.412521
CC_Trees	0.193676	0.410110	0.030154	0.276518	0.382362	0.502535
CC_Shrubs	0.281961	0.501072	-0.044739	0.272693	0.530348	0.620087
CC_Grass	0.510335	0.478199	0.479908	0.677638	0.573700	0.250741
CC_Forbs	-0.240897	-0.447021	0.278441	-0.052769	-0.159680	-0.419605
CC_Wood	0.301343	0.527878	-0.035714	0.296401	0.560671	0.650252
CC_Weeds	-0.028058	0.057302	0.013406	0.045978	0.005575	0.047101
CC_All	0.385944	0.420334	0.278288	0.480991	0.308521	0.010329
AltBanks	-0.323839	-0.403983	-0.233583	-0.435221	-0.513429	-0.386178
HoofShear	-0.104797	0.085146	-0.349376	-0.226629	-0.201079	0.161545
Trails	0.091816	-0.267430	0.039235	-0.133275	0.432864	0.426717
Bareground	-0.394280	-0.439229	-0.347739	-0.548091	-0.405921	-0.038431
VegCover	0.400182	0.430575	0.256120	0.469590	0.309663	0.024467
CC_Invasiveveg	-0.014497	0.194734	-0.044328	0.084461	-0.037863	0.009273
DD_Invasiveveg	-0.077733	0.075442	-0.052878	0.004204	-0.098813	-0.028719
Dist_Undesveg	0.010278	-0.053394	-0.323421	-0.291175	-0.296941	-0.031928
Tr_Shr_EstReg	-0.284211	0.292051	-0.191659	0.026692	0.071053	0.463068
Utilization	0.197237	-0.408387	0.157369	-0.125687	-0.145319	-0.408924
Dead_Dec	0.240627	0.066519	-0.256326	-0.163778	-0.012945	0.095685

Rootmass_Prot	-0.159449	0.212735	-0.065573	0.078573	0.115908	0.267054
HC_Bareground	0.347150	0.408908	0.356220	0.536200	0.470504	0.092993
Structaltbanks	0.074718	0.289809	-0.081682	0.113149	0.451154	0.513598
HC_Altpolygon	0.199430	0.312877	0.316278	0.445189	0.330518	0.244423
Chann_Incisement	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Veg	0.034187	0.373441	-0.143903	0.114932	0.015080	0.259635
Soil_Hydro	0.319688	0.394306	0.404252	0.565575	0.468132	0.264911
Overall	0.268462	0.535533	0.239765	0.521132	0.454674	0.402570
Med_Boulders	0.249422	0.134867	0.148486	0.201607	0.439415	-0.028218
Small_Boulders	0.284608	0.141509	0.131166	0.191862	0.421249	-0.026007
Large_Cobble	0.008015	0.061590	-0.336505	-0.230849	-0.035100	0.166259
Small_Cobble	-0.014795	-0.244671	-0.399364	-0.469566	-0.208417	0.006641
Coarse_Gravel	-0.096511	-0.154879	-0.525943	-0.515392	-0.308927	-0.020253
Fine_Gravel	-0.109090	-0.170923	-0.290309	-0.337072	-0.204422	-0.174206
Sand	-0.199805	0.237155	-0.094888	0.070191	0.169926	0.149582
Silt_and_Clay	-0.077088	0.057626	-0.344547	-0.239712	0.141802	0.325735
Graminoids	0.383863	0.090390	-0.065668	0.003190	0.109724	0.252453
Forbs	-0.289428	-0.302886	-0.214034	-0.357379	-0.389933	-0.204419
Shrubs	-0.142297	0.302707	0.026909	0.207817	0.102055	0.189504
Cronbachs Alpha = 0.485907 Standardized Cronbachs Alpha = 0.784063						

Pearson Correlations Section (Row-Wise Deletion)

	Totspeciesobs
HealthScore	0.267571
HealthRating	0.280969
Size	-0.076986
Trees	0.169239
Treesgr6ft	0.700184
Treesgr1_5ft	0.680057
Treesle1_5ft	0.307838
Shrubsgr6ft	0.419233
Shrubsgr1_5ft	-0.162823
Shrubsle1_5ft	-0.168853
Grassgr6ft	0.198528
Grassgr1_5ft	0.321460
Grassle1_5ft	-0.240112
Forbsgr6ft	-0.153373
Forbsgr1_5ft	0.269090
Forbsle1_5ft	-0.246659
CC_Trees	0.701994
CC_Shrubs	0.292474
CC_Grass	0.336828
CC_Forbs	-0.149955
CC_Wood	0.349215
CC>Weeds	0.400593
CC_All	-0.082539
AltBanks	-0.332175
HoofShear	0.094604
Trails	0.081685
Bareground	-0.085082
VegCover	-0.078892
CC_Invasiveveg	-0.336319
DD_Invasiveveg	-0.331654
Dist_Undesveg	-0.150449
Tr_Shr_EstReg	0.314212
Utilization	-0.298720
Dead_Dec	0.010577
Rootmass_Prot	-0.027065
HC_Bareground	0.243110
Structaltbanks	0.306068
HC_Altpolygon	0.253278
Chann_Incisement	0.000000

Veg	-0.147128
Soil__Hydro	0.268057
Overall	0.202884
Med_Boulders	-0.204653
Small_Boulders	-0.207382
Large_Cobble	-0.119273
Small_Cobble	-0.010277
Coarse_Gravel	-0.036942
Fine_Gravel	0.054708
Sand	-0.115970
Silt_and_Clay	0.142179
Graminoids	0.195421
Forbs	-0.270400
Shrubs	-0.152013
Cronbachs Alpha = 0.485907	Standardized Cronbachs Alpha = 0.784063

Pearson Correlations Section (Row-Wise Deletion)

	HealthScore	HealthRating	Size	Trees	Treesgr6ft	Treesgr1_5ft
Total_forage	0.265670	0.297987	0.610981	-0.256996	-0.123062	-0.150684
Litter	0.374651	0.412715	0.398007	-0.294796	0.198876	0.127376
Confirmbreed	0.553326	0.631055	0.209270	0.266076	0.410564	0.366469
Possiblebreed	0.251987	0.097269	-0.121307	-0.179428	0.027686	0.029117
Breed_Pos_Bird	0.541845	0.466120	0.031927	0.020472	0.274827	0.248827
Speciesusing	0.546908	0.564891	-0.109184	0.025889	0.379502	0.358777
Comspecuse	0.431176	0.594160	-0.137683	0.330547	0.501992	0.496024
Totspeciesobs	0.267571	0.280969	-0.076986	0.169239	0.700184	0.680057
Cronbachs Alpha = 0.485907	Standardized Cronbachs Alpha = 0.784063					

Pearson Correlations Section (Row-Wise Deletion)

	Treesle1_5ft	Shrubsgr6ft	Shrubsgr1_5ft	Shrubsle1_5ft	Grassgr6ft	Grassgr1_5ft
Total_forage	-0.186343	0.094983	0.136239	0.222455	0.312126	0.521853
Litter	-0.090725	0.344228	0.065859	0.127282	0.179305	0.646296
Confirmbreed	0.465124	0.457657	0.099093	0.030602	0.408387	0.467202
Possiblebreed	-0.222829	0.045989	-0.012728	-0.358480	0.085429	0.188565
Breed_Pos_Bird	0.108329	0.318432	0.050829	-0.267474	0.319605	0.438180
Speciesusing	0.107636	0.752399	-0.192833	-0.134584	0.267933	0.626508
Comspecuse	0.447136	0.598473	0.017278	0.087238	0.079344	0.554781
Totspeciesobs	0.307838	0.419233	-0.162823	-0.168853	0.198528	0.321460
Cronbachs Alpha = 0.485907	Standardized Cronbachs Alpha = 0.784063					

Pearson Correlations Section (Row-Wise Deletion)

	Grassle1_5ft	Forbsgr6ft	Forbsgr1_5ft	Forbsle1_5ft	CC_Trees	CC_Shrubs
Total_forage	-0.515967	0.219897	0.027001	-0.419722	-0.122213	0.176966
Litter	-0.516082	0.015363	0.330959	-0.299777	0.193676	0.281961
Confirmbreed	-0.338366	-0.066519	0.167294	-0.408829	0.410110	0.501072
Possiblebreed	0.038959	0.140979	0.009918	0.207009	0.030154	-0.044739
Breed_Pos_Bird	-0.177159	0.071653	0.110896	-0.086313	0.276518	0.272693
Speciesusing	-0.452510	0.304196	0.102674	-0.136814	0.382362	0.530348
Comspecuse	-0.570210	0.139178	0.192685	-0.412521	0.502535	0.620087
Totspeciesobs	-0.240112	-0.153373	0.269090	-0.246659	0.701994	0.292474
Cronbachs Alpha = 0.485907	Standardized Cronbachs Alpha = 0.784063					

Pearson Correlations Section (Row-Wise Deletion)

	CC_Grams	CC_Forbs	CC_Wood	CC>Weeds	CC_All	AltBanks
Total_forage	0.313529	-0.414435	0.167627	0.298885	0.348073	-0.236270
Litter	0.510335	-0.240897	0.301343	-0.028058	0.385944	-0.323839
Confirmbreed	0.478199	-0.447021	0.527878	0.057302	0.420334	-0.403983
Possiblebreed	0.479908	0.278441	-0.035714	0.013406	0.278288	-0.233583
Breed_Pos_Bird	0.677638	-0.052769	0.296401	0.045978	0.480991	-0.435221

Speciesusing	0.573700	-0.159680	0.560671	0.005575	0.308521	-0.513429
Comspecuse	0.250741	-0.419605	0.650252	0.047101	0.010329	-0.386178
Totspeciesobs	0.336828	-0.149955	0.349215	0.400593	-0.082539	-0.332175
Cronbachs Alpha = 0.485907		Standardized Cronbachs Alpha = 0.784063				

Pearson Correlations Section (Row-Wise Deletion)

	HoofShear	Trails	Bareground	VegCover	CC_Invasiveveg	DD_Invasiveveg
Total_forage	0.111486	0.174237	-0.328293	0.362763	-0.254961	-0.267697
Litter	-0.104797	0.091816	-0.394280	0.400182	-0.014497	-0.077733
Confirmbreed	0.085146	-0.267430	-0.439229	0.430575	0.194734	0.075442
Possiblebreed	-0.349376	0.039235	-0.347739	0.256120	-0.044328	-0.052878
Breed_Pos_Bird	-0.226629	-0.133275	-0.548091	0.469590	0.084461	0.004204
Speciesusing	-0.201079	0.432864	-0.405921	0.309663	-0.037863	-0.098813
Comspecuse	0.161545	0.426717	-0.038431	0.024467	0.009273	-0.028719
Totspeciesobs	0.094604	0.081685	-0.085082	-0.078892	-0.336319	-0.331654
Cronbachs Alpha = 0.485907		Standardized Cronbachs Alpha = 0.784063				

Pearson Correlations Section (Row-Wise Deletion)

	Dist_Undesveg	Tr_Shr_EstReg	Utilization	Dead_Dec	Rootmass_Prot	HC_Bareground
Total_forage	0.110651	-0.191752	0.151394	-0.359060	0.133944	0.307875
Litter	0.010278	-0.284211	0.197237	0.240627	-0.159449	0.347150
Confirmbreed	-0.053394	0.292051	-0.408387	0.066519	0.212735	0.408908
Possiblebreed	-0.323421	-0.191659	0.157369	-0.256326	-0.065573	0.356220
Breed_Pos_Bird	-0.291175	0.026692	-0.125687	-0.163778	0.078573	0.536200
Speciesusing	-0.296941	0.071053	-0.145319	-0.012945	0.115908	0.470504
Comspecuse	-0.031928	0.463068	-0.408924	0.095685	0.267054	0.092993
Totspeciesobs	-0.150449	0.314212	-0.298720	0.010577	-0.027065	0.243110
Cronbachs Alpha = 0.485907		Standardized Cronbachs Alpha = 0.784063				

Pearson Correlations Section (Row-Wise Deletion)

	Structaltbanks	HC_Altpolygon	Chann_Incisement	Veg	Soil_Hydro	Overall
Total_forage	0.307545	0.314186	0.000000	-0.113047	0.261722	0.241662
Litter	0.074718	0.199430	0.000000	0.034187	0.319688	0.268462
Confirmbreed	0.289809	0.312877	0.000000	0.373441	0.394306	0.535533
Possiblebreed	-0.081682	0.316278	0.000000	-0.143903	0.404252	0.239765
Breed_Pos_Bird	0.113149	0.445189	0.000000	0.114932	0.565575	0.521132
Speciesusing	0.451154	0.330518	0.000000	0.015080	0.468132	0.454674
Comspecuse	0.513598	0.244423	0.000000	0.259635	0.264911	0.402570
Totspeciesobs	0.306068	0.253278	0.000000	-0.147128	0.268057	0.202884
Cronbachs Alpha = 0.485907		Standardized Cronbachs Alpha = 0.784063				

Pearson Correlations Section (Row-Wise Deletion)

	Med_Boulders	Small_Boulders	Large_Cobble	Small_Cobble	Coarse_Gravel	Fine_Gravel
Total_forage	-0.222317	-0.227727	0.196604	0.343301	0.336691	0.249962
Litter	0.249422	0.284608	0.008015	-0.014795	-0.096511	-0.109090
Confirmbreed	0.134867	0.141509	0.061590	-0.244671	-0.154879	-0.170923
Possiblebreed	0.148486	0.131166	-0.336505	-0.399364	-0.525943	-0.290309
Breed_Pos_Bird	0.201607	0.191862	-0.230849	-0.469566	-0.515392	-0.337072
Speciesusing	0.439415	0.421249	-0.035100	-0.208417	-0.308927	-0.204422
Comspecuse	-0.028218	-0.026007	0.166259	0.006641	-0.020253	-0.174206
Totspeciesobs	-0.204653	-0.207382	-0.119273	-0.010277	-0.036942	0.054708
Cronbachs Alpha = 0.485907		Standardized Cronbachs Alpha = 0.784063				

Pearson Correlations Section (Row-Wise Deletion)

	Sand	Silt_and_Clay	Graminoids	Forbs	Shrubs	Total_forage
Total_forage	-0.161592	-0.234405	0.956422	-0.164597	-0.060274	1.000000
Litter	-0.199805	-0.077088	0.383863	-0.289428	-0.142297	0.309392
Confirmbreed	0.237155	0.057626	0.090390	-0.302886	0.302707	0.033992

ARHMS – Cows and Fish

Possiblebreed	-0.094888	-0.344547	-0.065668	-0.214034	0.026909	-0.143619
Breed_Pos_Bird	0.070191	-0.239712	0.003190	-0.357379	0.207817	-0.093782
Speciesusing	0.169926	0.141802	0.109724	-0.389933	0.102055	0.000263
Comspecuse	0.149582	0.325735	0.252453	-0.204419	0.189504	0.234149
Totspeciesobs	-0.115970	0.142179	0.195421	-0.270400	-0.152013	0.105025
Cronbachs Alpha = 0.485907		Standardized Cronbachs Alpha = 0.784063				

Pearson Correlations Section (Row-Wise Deletion)

	Litter	Confirmbreed	Possiblebreed	Breed_Pos_Bird	Speciesusing	Comspecuse
Total_forage	0.309392	0.033992	-0.143619	-0.093782	0.000263	0.234149
Litter	1.000000	0.385428	-0.048061	0.198857	0.392812	0.236270
Confirmbreed	0.385428	1.000000	-0.017051	0.601912	0.425362	0.511503
Possiblebreed	-0.048061	-0.017051	1.000000	0.788184	0.546809	-0.076701
Breed_Pos_Bird	0.198857	0.601912	0.788184	1.000000	0.698547	0.253586
Speciesusing	0.392812	0.425362	0.546809	0.698547	1.000000	0.585516
Comspecuse	0.236270	0.511503	-0.076701	0.253586	0.585516	1.000000
Totspeciesobs	0.275290	0.348985	0.085134	0.282805	0.563013	0.727238
Cronbachs Alpha = 0.485907		Standardized Cronbachs Alpha = 0.784063				

Pearson Correlations Section (Row-Wise Deletion)

	Totspeciesobs
Total_forage	0.105025
Litter	0.275290
Confirmbreed	0.348985
Possiblebreed	0.085134
Breed_Pos_Bird	0.282805
Speciesusing	0.563013
Comspecuse	0.727238
Totspeciesobs	1.000000
Cronbachs Alpha = 0.485907 Standardized Cronbachs Alpha = 0.784063	

Appendix J. Discriminant Analysis Report – Variable Selection

Discriminant Analysis Report

Page/Date/Time 1 28/01/2008 4:10:12 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Variable-Selection Summary Section

Iteration	Action This Step	Independent Variable	Pct Chg In Lambda	F-Value	Prob Level	Wilks' Lambda
0	None					1.000000
1	Entered	AltBanks	74.99	22.49	0.000031	0.250096
2	Entered	Rootmass_Prot	52.07	7.61	0.005809	0.119864
3	Entered	Grassle1_5ft	35.58	3.59	0.057360	0.077216
4	Entered	Dead_Dec	50.98	6.24	0.013882	0.037854
5	Entered	Forbs	42.90	4.13	0.045849	0.021613
6	Entered	Shrubs	46.46	4.34	0.044013	0.011573
7	Entered	Shrubsgr6ft	40.17	3.02	0.099100	0.006924

Variable-Selection Detail Section - Step 7

Status	Independent Variable	Pct Chg In Lambda	F-Value	Prob Level	R-Squared Other X's
In	Shrubsgr6ft	40.17	3.02	0.099100	0.513241
In	Grassle1_5ft	58.92	6.46	0.018247	0.352783
In	AltBanks	90.49	42.81	0.000025	0.315428
In	Dead_Dec	65.86	8.68	0.007933	0.226987
In	Rootmass_Prot	84.42	24.38	0.000233	0.265649
In	Forbs	62.44	7.48	0.012192	0.253081
In	Shrubs	53.11	5.10	0.033093	0.121433
Out	Size	1.18	0.05	0.953760	0.231216
Out	Trees	33.16	1.98	0.199628	0.178277
Out	Treesgr6ft	1.44	0.06	0.943475	0.212836
Out	Treesgr1_5ft	2.82	0.12	0.892016	0.164268
Out	Treesle1_5ft	33.00	1.97	0.201482	0.241244
Out	Shrubsgr1_5ft	0.21	0.01	0.991705	0.751910
Out	Shrubsle1_5ft	22.28	1.15	0.364808	0.452438
Out	Grassgr6ft	10.62	0.48	0.638168	0.647162
Out	Grassgr1_5ft	13.36	0.62	0.563556	0.833372
Out	Forbsgr6ft	5.59	0.24	0.794316	0.460625
Out	Forbsgr1_5ft	10.48	0.47	0.642253	0.588707
Out	Forbsle1_5ft	27.80	1.54	0.271692	0.648084
Out	CC_Trees	1.56	0.06	0.938932	0.206868
Out	CC_Shrubs	1.13	0.05	0.955388	0.892848
Out	CC_Grams	11.16	0.50	0.622967	0.390206
Out	CC_Forbs	8.08	0.35	0.713998	0.659404
Out	CC_Wood	1.18	0.05	0.953680	0.897937
Out	CC>Weeds	9.16	0.40	0.680887	0.388475
Out	CC_All	37.93	2.44	0.148418	0.412402
Out	HoofShear	4.74	0.20	0.823346	0.435607
Out	Trails	8.13	0.35	0.712460	0.364180
Out	Bareground	32.99	1.97	0.201612	0.598813
Out	VegCover	42.70	2.98	0.107780	0.411300
Out	CC_Invasiveveg	8.44	0.37	0.702722	0.634200
Out	DD_Invasiveveg	17.43	0.84	0.464799	0.680265
Out	Dist_Undesveg	9.59	0.42	0.668204	0.630339

Out	Tr_Shr_EstReg	41.13	2.79	0.120127	0.146669
Out	Utilization	38.77	2.53	0.140592	0.203595
Out	HC_Bareground	15.13	0.71	0.518824	0.772381
Out	Structaltbanks	6.29	0.27	0.771001	0.773390
Out	HC_Altpolygon	10.37	0.46	0.645293	0.641788
Out	Chann_Incisement	0.00	0.00	1.000000	0.000000
Out	Graminoids	7.90	0.34	0.719578	0.540350
Out	Total_forage	7.90	0.34	0.719578	0.430697
Out	Litter	25.20	1.35	0.313118	0.564899
Out	Confirmbreed	38.69	2.52	0.141318	0.430766
Out	Possiblebreed	0.50	0.02	0.980328	0.181521
Out	Breed_Pos_Birds	14.36	0.67	0.537829	0.355253
Out	Speciesusing	2.25	0.09	0.912854	0.662176
Out	Commspecusing	8.90	0.39	0.688776	0.534686
Out	Totalspeciesobs	10.60	0.47	0.638723	0.301102

Overall Wilks' Lambda = 0.006924

Action this step: None

Appendix K. Discriminant Analysis Report

Discriminant Analysis Report

Page/Date/Time 1 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Group Means

Variable	HealthCat			Overall
	H	HwP	UH	
Shrubsgr6ft	0.5	0.1675	0.141	0.2525
Grassle1_5ft	0.152	0.3125	0.44	0.3033333
AltBanks	0.047	0.1075	0.73	0.2636111
Dead_Dec	100	91.6675	100	96.29667
Rootmass_Prot	100	50	59.998	66.66611
Forbs	508.43	881.8812	682.642	722.8005
Shrubs	155.712	242.4325	116.772	183.4378
Count	5	8	5	18

Group Standard Deviations

Variable	HealthCat			Overall
	H	HwP	UH	
Shrubsgr6ft	0.1	0.2349772	0.2065309	0.2453524
Grassle1_5ft	0.118617	0.1552648	0.2408319	0.197871
AltBanks	4.969909E-02	0.1129791	0.3188848	0.3449757
Dead_Dec	0	15.42879	0	10.77828
Rootmass_Prot	0	39.84175	36.51666	37.92063
Forbs	409.0667	716.3773	388.4055	558.6456
Shrubs	128.9298	260.7128	161.7602	203.0449
Count	5	8	5	18

Total Correlation\Covariance

Variable	Variable				
	Shrubsgr6ft	Grassle1_5ft	AltBanks	Dead_Dec	Rootmass_Prot
Shrubsgr6ft	6.019779E-02	-2.442059E-02	-0.0377125	0.3921176	1.941075
Grassle1_5ft	-0.503018	3.915294E-02	1.981373E-02	0.4051882	-1.254939
AltBanks	-0.445560	0.290265	0.1190083	0.5827304	1.088077
Dead_Dec	0.148278	0.189988	0.156722	116.1714	-65.36166
Rootmass_Prot	0.208630	-0.167250	0.083176	-0.159918	1437.974
Forbs	-0.248027	0.232814	0.103472	0.001707	0.267285
Shrubs	0.125989	-0.234677	-0.022288	-0.084072	-0.004464

Discriminant Analysis Report

Page/Date/Time 2 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Total Correlation\Covariance

Variable	Variable	
	Forbs	Shrubs
Shrubsgr6ft	-33.99579	6.276476
Grassle1_5ft	25.73516	-9.428556
AltBanks	19.94107	-1.561156
Dead_Dec	10.27566	-183.9903
Rootmass_Prot	5662.207	-34.3729
Forbs	312084.9	-33063.6
Shrubs	-0.291489	41227.25

Between-Group Correlation\Covariance

Variable	Variable				
	Shrubsgr6ft	Grassle1_5ft	AltBanks	Dead_Dec	Rootmass_Prot
Shrubsgr6ft	0.2131213	-0.13485	-0.2109562	2.83305	28.15056
Grassle1_5ft	-0.904538	0.104285	0.2355767	-0.305525	-15.50068
AltBanks	-0.524660	0.837569	0.7585801	5.203183	-15.419
Dead_Dec	0.494051	-0.076167	0.480949	154.2901	555.4815
Rootmass_Prot	0.964140	-0.758938	-0.279912	0.707077	4000.067
Forbs	-0.810393	0.483213	-0.073591	-0.909765	-0.936824
Shrubs	-0.245809	-0.190968	-0.696226	-0.964199	-0.494246

Variable	Variable	
	Forbs	Shrubs
Shrubsgr6ft	-175.535	-18.63045
Grassle1_5ft	73.21564	-10.12475
AltBanks	-30.07321	-99.55509
Dead_Dec	-5302.16	-1966.294
Rootmass_Prot	-27800.08	-5132.033
Forbs	220145.3	59091.66
Shrubs	0.767112	26954.12

Discriminant Analysis Report

Page/Date/Time 3 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Within-Group Correlation\Covariance

Variable	Variable	Shrubsgr6ft	Grassle1_5ft	AltBanks	Dead_Dec	Rootmass_Prot
Shrubsgr6ft		0.039808	-9.696667E-03	-1.461333E-02	0.06666	-1.553523
Grassle1_5ft		-0.278426	3.046867E-02	-8.954667E-03	0.49995	0.6444933
AltBanks		-0.398789	-0.279320	0.033732	-0.03333	3.28902
Dead_Dec		0.031699	0.271747	-0.017218	111.0889	-148.1407
Rootmass_Prot		-0.235156	0.111510	0.540840	-0.424485	1096.361
Forbs		-0.133099	0.195196	0.254399	0.119715	0.536866
Shrubs		0.231620	-0.257531	0.301622	0.024510	0.093843

Variable	Variable	Forbs	Shrubs
Shrubsgr6ft		-15.12389	9.5974
Grassle1_5ft		19.40442	-9.335732
AltBanks		26.60964	11.5047
Dead_Dec		718.6003	53.65019
Rootmass_Prot		10123.84	645.3151
Forbs		324343.5	-45350.97
Shrubs		-0.383436	43130.33

Variable Influence Section

Variable	Removed Lambda	Removed F-Value	Removed F-Prob	Alone Lambda	Alone F-Value	Alone F-Prob	R-Squared Other X's
Shrubsgr6ft	0.598281	3.02	0.099100	0.583488	5.35	0.017589	0.513241
Grassle1_5ft	0.410771	6.46	0.018247	0.686644	3.42	0.059633	0.352783
AltBanks	0.095117	42.81	0.000025	0.250096	22.49	0.000031	0.315428
Dead_Dec	0.341360	8.68	0.007933	0.843750	1.39	0.279643	0.226987
Rootmass_Prot	0.155801	24.38	0.000233	0.672737	3.65	0.051149	0.265649
Forbs	0.375561	7.48	0.012192	0.917012	0.68	0.522169	0.253081
Shrubs	0.468869	5.10	0.033093	0.923083	0.62	0.548663	0.121433

Discriminant Analysis Report

Page/Date/Time 4 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Linear Discriminant Functions

Variable	HealthCat		
	H	HwP	UH
Constant	-206.2313	-99.27538	-108.3325
Shrubsgr6ft	-4.864355	-10.05299	21.49532
Grassle1_5ft	-99.64478	-61.38369	-24.42027
AltBanks	-99.40551	-66.98384	0.2252207
Dead_Dec	3.341626	2.318735	2.089215
Rootmass_Prot	1.298502	0.8048059	0.6664023
Forbs	-4.036033E-02	-2.249494E-02	-0.0277559
Shrubs	-5.638331E-02	-2.614028E-02	-4.917613E-02

Regression Coefficients

Variable	HealthCat		
	H	HwP	UH
Constant	-1.36878	2.123431	0.2453493
Shrubsgr6ft	0.1179093	-0.739416	0.6215068
Grassle1_5ft	-0.6386238	-5.159587E-02	0.6902197
AltBanks	-0.5104293	-0.776375	1.286804
Dead_Dec	1.772289E-02	-1.410947E-02	-3.613423E-03
Rootmass_Prot	8.530265E-03	-6.245902E-03	-2.284363E-03
Forbs	-3.174776E-04	4.356753E-04	-1.181978E-04
Shrubs	-5.495336E-04	1.025995E-03	-4.76461E-04

Classification Count Table for HealthCat

Actual	Predicted			Total
	H	HwP	UH	
H	5	0	0	5
HwP	0	8	0	8
UH	0	0	5	5
Total	5	8	5	18

Reduction in classification error due to X's = 100.0%

Discriminant Analysis Report

Page/Date/Time 5 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Predicted Classification Section

Row	Actual	Predicted	Percent Chance of Each Group		
			Pcnt1	Pcnt2	Pcnt3
1	H	H	118.0	-15.3	-2.8
2	HwP	HwP	5.0	91.1	3.9
3	UH	UH	1.4	15.0	83.6
4	H	H	87.7	9.2	3.2
5	HwP	HwP	14.7	64.9	20.4
6	UH	UH	4.7	16.6	78.6
7	H	H	93.2	7.5	-0.8
8	HwP	HwP	-6.2	119.0	-12.8
9	HwP	HwP	8.1	80.5	11.4
10	H	H	100.5	-0.6	0.1
11	HwP	HwP	6.2	81.0	12.8
12	UH	UH	-12.9	20.0	92.9
13	HwP	HwP	-23.6	116.8	6.7
14	HwP	HwP	13.3	81.8	5.0
15	UH	UH	-0.7	-26.8	127.5
16	H	H	74.3	26.7	-1.0
17	HwP	HwP	10.1	106.7	-16.8
18	UH	UH	6.1	5.8	88.1

Canonical Variate Analysis Section

Fn	Inv(W)B	Ind'l	Total	Canon	Canon	Numer	Denom	Prob	
	Wilks'								Level
	Eigenvalue	Pcnt	Pcnt	Corr	Corr2	F-Value	DF	DF	
	Lambda								
1	17.947274	73.0	73.0	0.9733	0.9472	14.2	14.0	18.0	0.0000
	0.006924								
2	6.622718	27.0	100.0	0.9321	0.8688	11.0	6.0	10.0	0.0006
	0.131187								

The F-value tests whether this function and those below it are significant.

Canonical Coefficients

Variable	Canonical Variate	
	Variate1	Variate2
Constant	9.635718	-8.777141
Shrubsg6ft	2.397346	4.123875
Grassle1_5ft	7.241512	0.563100
AltBanks	9.453392	4.599971
Dead_Dec	-0.123473	0.072105
Rootmass_Prot	-0.062147	0.031628
Forbs	0.001300	-0.002324
Shrubs	0.000894	-0.005558

Discriminant Analysis Report

Page/Date/Time 6 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Canonical Variates at Group Means

HealthCat	Canonical Function	
	Function1	Function2
H	-5.382532	1.912696
HwP	0.2536648	-2.622007
UH	4.976668	2.282516

Std. Canonical Coefficients

Variable	Canonical Variate	
	Variate1	Variate2
Shrubsgr6ft	0.478317	0.822793
Grassle1_5ft	1.264026	0.098291
AltBanks	1.736236	0.844843
Dead_Dec	-1.301385	0.759979
Rootmass_Prot	-2.057782	1.047234
Forbs	0.740202	-1.323708
Shrubs	0.185694	-1.154258

Variable-Variate Correlations

Variable	Canonical Variate	
	Variate1	Variate2
Shrubsgr6ft	-0.178876	0.145175
Grassle1_5ft	0.159436	-0.004604
AltBanks	0.346214	0.357669
Dead_Dec	-0.005959	0.166931
Rootmass_Prot	-0.123050	0.180061
Forbs	0.033217	-0.103319
Shrubs	-0.014183	-0.109712

Discriminant Analysis Report

Page/Date/Time 7 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Linear Discriminant Scores

Row	HealthCat	Score1	Score2	Score3
1	H	237.2269	197.6921	168.2709
2	HwP	87.88058	113.167	89.97936
3	UH	57.55914	86.8899	104.6152
4	H	193.7823	171.7589	146.1283
5	HwP	88.5889	108.7301	93.77296
6	UH	60.83802	88.14951	103.273
7	H	205.6487	180.3399	152.5612
8	HwP	44.11445	75.38118	43.93044
9	HwP	80.60873	104.3081	84.89046
10	H	214.2832	184.8116	157.2837
11	HwP	57.10157	81.91507	63.25471
12	UH	34.11968	71.84703	94.69714
13	HwP	39.60434	81.29472	60.28021
14	HwP	88.5763	109.1442	86.29443
15	UH	50.63644	82.24294	122.5211
16	H	180.2154	165.7284	138.2879
17	HwP	98.4072	120.2626	86.35604
18	UH	69.88454	96.63015	116.5558

Regression Scores

Row	HealthCat	Score1	Score2	Score3
1	H	1.180066	-0.152536	-0.027530
2	HwP	0.049840	0.911267	0.038893
3	UH	0.014020	0.150319	0.835661
4	H	0.876541	0.091840	0.031619
5	HwP	0.147023	0.648697	0.204281
6	UH	0.047167	0.166334	0.786499
7	H	0.932256	0.075326	-0.007583
8	HwP	-0.062001	1.189849	-0.127848
9	HwP	0.080871	0.805138	0.113991
10	H	1.005396	-0.006282	0.000886
11	HwP	0.062001	0.810151	0.127848
12	UH	-0.128687	0.199978	0.928709
13	HwP	-0.235671	1.168318	0.067352
14	HwP	0.132789	0.817670	0.049541
15	UH	-0.006536	-0.268293	1.274830
16	H	0.742964	0.267272	-0.010236
17	HwP	0.100768	1.067056	-0.167824
18	UH	0.061192	0.057896	0.880912

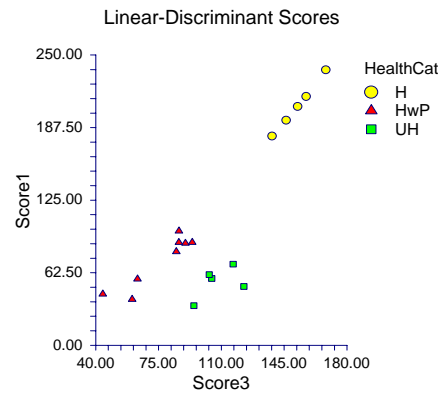
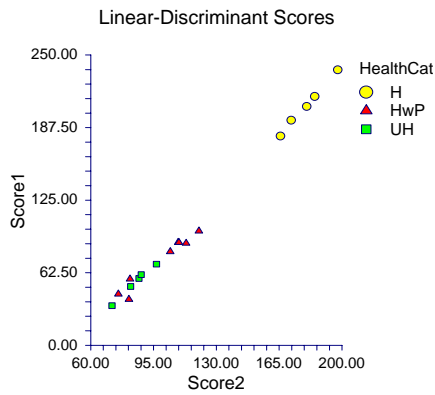
Discriminant Analysis Report

Page/Date/Time 8 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

Canonical Scores

Row	HealthCat	Score1	Score2
1	H	-6.891142	2.985937
2	HwP	0.165166	-2.538229
3	UH	4.351115	1.772634
4	H	-4.790172	1.735612
5	HwP	0.411558	-1.097362
6	UH	3.908757	1.668119
7	H	-5.317159	1.805116
8	HwP	-0.000754	-4.063242
9	HwP	0.354975	-1.952331
10	H	-5.710132	2.234670
11	HwP	0.536352	-1.972594
12	UH	5.664206	1.553050
13	HwP	2.005925	-3.867774
14	HwP	-0.275310	-2.045173
15	UH	6.663202	4.144486
16	H	-4.204053	0.802143
17	HwP	-1.168593	-3.439350
18	UH	4.296060	2.274289

Plots Section



Discriminant Analysis Report

Page/Date/Time 9 28/01/2008 4:13:06 PM
 Database C:\Documents and Settings\Sa ... Final\NCSS_Final\RawData.S0
 Dependent HealthCat
 Prior Prob's Equal

