

The Effect of Wetland Restoration on Arthropod Communities

by

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A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Honors Bachelor of Science in Biological Sciences with Distinction

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ABSTRACT

The objectives of this project were to study how restoration of a wetland affected the biodiversity of terrestrial arthropods. The wetland restoration site was originally filled with invasive reed canary grass. Terrestrial invertebrates at this site were compared to those in a meadow dominated by native plants, and a non-restored site dominated by reed canary grass. Each week during the summers of 2010 and 2011, samples were collected of terrestrial invertebrates in three sites by sweeping along fixed transects. Arthropods were identified to species units, counted, and weighed. The plants in each site were identified as well. A total of 38,241 arthropods were sampled in this study. From April to early June 2010, the meadow and wetland restoration sites were similar with few significant differences in abundance, species richness, species diversity, or arthropod biomass. Following the herbicide and mowing treatments required to restore the wetland in early June, invertebrates declined in abundance, diversity and biomass in the wetland restoration site. In the following year, the wetland restoration site recovered in terms of both plant and arthropod diversity and abundance. From July 2011 onward, arthropods at the wetland restoration site generally showed an increase in terms of abundance, species richness, species diversity, and biomass to levels greater than the reed canary grass site, and equal to or greater than the meadow site. I conclude that removal of reed canary grass

and reseeded with native plants leads to rapid recovery of arthropod herbivores, predator and parasitoids.

Chapter 1

BACKGROUND

The restoration of a 1.15 acre wetland near Route 72 near the University of Delaware campus began in spring 2010. The area was originally part of a larger cow pasture, but was bisected by construction of Route 72 in the 1940s, which caused it to capture water and become wetter. At some point this site was invaded by reed canary grass (*Phalaris arundinacea* L.), an invasive species from Europe, and native wetland plant species were lost on the site. As part of wetlands mitigation, this site was chosen for restoration and steps were taken to remove reed canary grass and restore appropriate native species during the spring and summer 2010. In order to eradicate the reed canary grass and other non-native plant species, the site was sprayed with the herbicide Rodeo and mowed several times, beginning in early June. Rodeo is a 51.2% glyphosate solution manufactured by Dow AgroSciences. The area was then reseeded with a wet tolerant warm season grass mix.

Research was needed to study the effect this wetland restoration had on terrestrial biodiversity. The abundance and diversity of invertebrates has been shown to be reduced by introduced plant species (Olckers & Hulley 1991, Samways et al. 1996, Burghardt et al. 2010). It was predicted that introduced plants do not support local insect herbivores because they lack co-evolutionary relationships required to

circumvent novel plant defenses (Tallamy 2004). The complexity, and thus stability and productivity, of ecosystems and their food webs is determined by diversity and biomass of their plant communities, as well as by the ability of herbivores in the system to extract energy from the available plants (Tilman et al. 2006, Duffy 2009, Haddad et al. 2011).

Phalaris arundinacea is an invasive species that grows well on poor soils and suppresses native vegetation, and it is difficult to eradicate once established (Batzner & Sharitz 2006). When it invades a wetland, reed canary grass effectively excludes all other plant species, greatly decreasing biological diversity in wetland communities. Reed canary grass is a cool-season grass that grows 3-8 feet tall in dense, monospecific stands and is tolerant of flooding. It spreads by seed and rhizome, and has erect green stems and leaves that are about ½ inch wide (Rhoads & Block 2000). Native genotypes of reed canary grass do exist, but the introduction of a European genotype has led to an aggressive and invasive strain in North America. Unfortunately, reed canary grass continues to be recommended by many sources to improve soil quality, and can be found all over Delaware.

Chapter 2

OBJECTIVES

This study investigated how restoration of the wetland near Route 72 in Newark Delaware, originally filled with invasive reed canary grass, affected the biodiversity of terrestrial arthropods compared to a control meadow filled with diverse native plants, and an unrestored meadow invaded by reed canary grass. This study assessed the impact of removing non-native plants on habitat quality as indicated by changes in the invertebrate community. I observed effects of reed canary grass removal on invertebrate diversity over time, to test the hypothesis that the abundance and diversity of invertebrates increased as native vegetation increased. Physical characteristics of the wetland and biological data were monitored to provide insight into the effectiveness of wetland restorations in terms of restoring food web complexity and thus ecosystem function.

Chapter 3

METHODS

To remove reed canary grass and other non-native plant species, the target site was sprayed with the herbicide Rodeo in early June 2010 and mowed near the end of June. Arthropod samples were collected by sweep net along fixed transects before, during, and after these treatments occurred, each week from April to September in 2010 and 2011, in three different sites: the wetland restoration area (treatment site), a nearby diverse, native meadow (control site), and a non-restored site dominated with invasive reed canary grass (reed canary grass site) (Fig 1). Unfortunately, in 2011 the control site was mowed and an alternative native meadow control site was chosen on June 20th. That second control site was also mowed, and a third site was chosen on July 25th. There were four transects, each separated by 10 m, at each site, and I swung the sweep net 25 times while walking in a straight line down each transect. Then I immobilized the invertebrates from each transect with ethyl acetate, put them in jars containing 80% ethanol, and examined the contents of each jar under the microscope. Arthropods were identified to species units and trophic groups, counted, and weighed (Appendix E). When identifying arthropods, I first identified them to family, next separated them by morphospecies, and then designated them as sp1, sp2, sp3, etc. I also identified the plants along each transect in each site and recorded their abundance on August 17, 2011. USDA GRIN (Germplasm Resources Information Network)

Taxonomy for Plants was used for plant nomenclature. A time series analysis was conducted on the data to demonstrate changes in the arthropod community over time. Species diversity was calculated using Simpson's Index of Diversity. In 2010, a t-test was performed between the control and treatment sites at each sampling date to determine if the values obtained from the transect samples were significantly different. In 2011, a one-way ANOVA was used to determine significant differences between arthropods in the control, treatment, and reed canary grass sites. For each sampling date, the values from the four transects from each site were averaged for arthropod abundance, species richness, species diversity, and biomass, and these means were plotted on graphs.

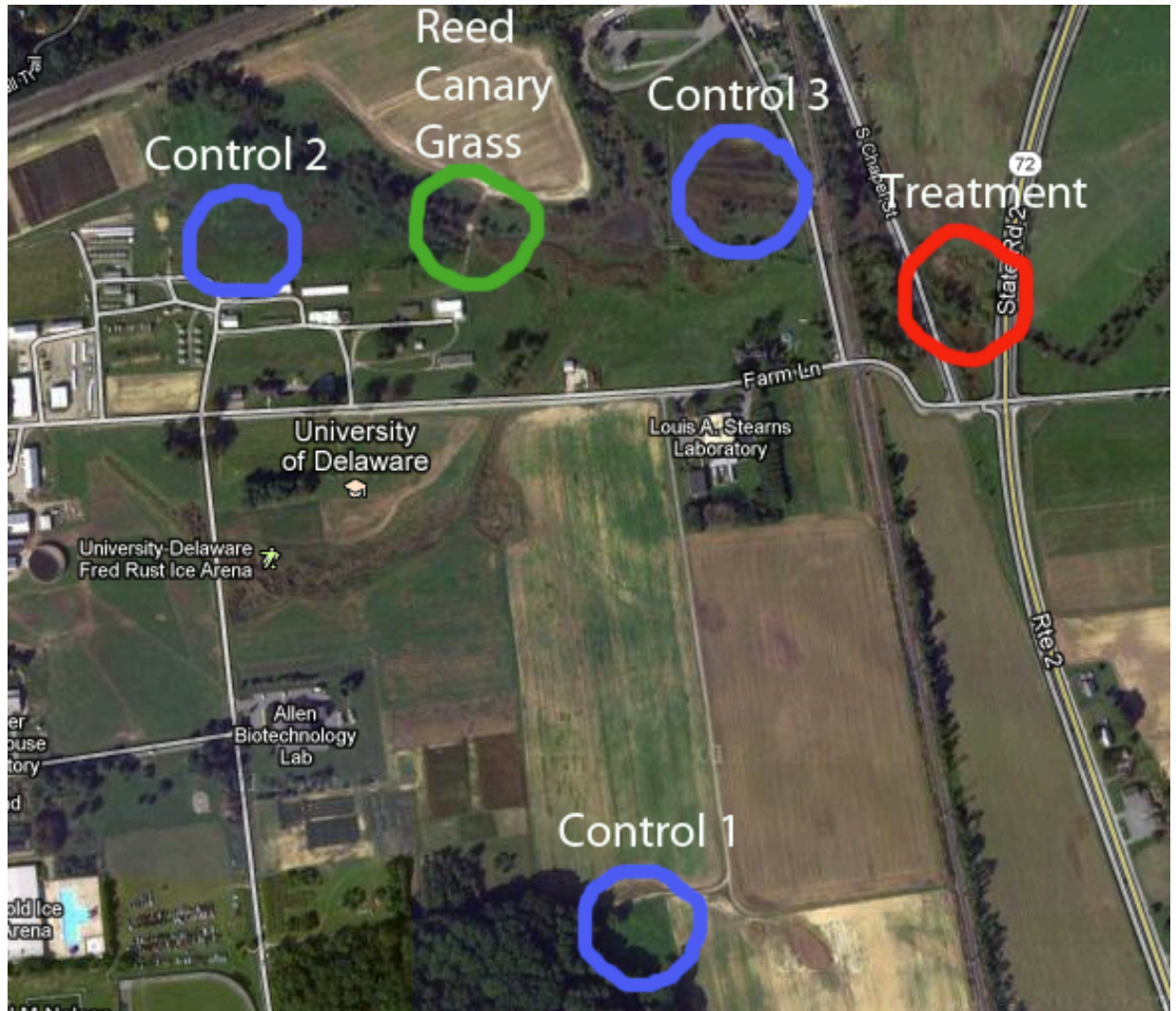


Figure 1: Map showing locations of control (blue), treatment (red), and reed canary grass (green) sites. Control 1 was used from April 2010 - June 14, 2011, Control 2 was used from June 20 - July 25, 2011, and Control 3 was used from July 26 - September 2011.

Chapter 4

RESULTS

Plant surveys

A total of 59 species of plants were observed in the three sites (Appendix A).

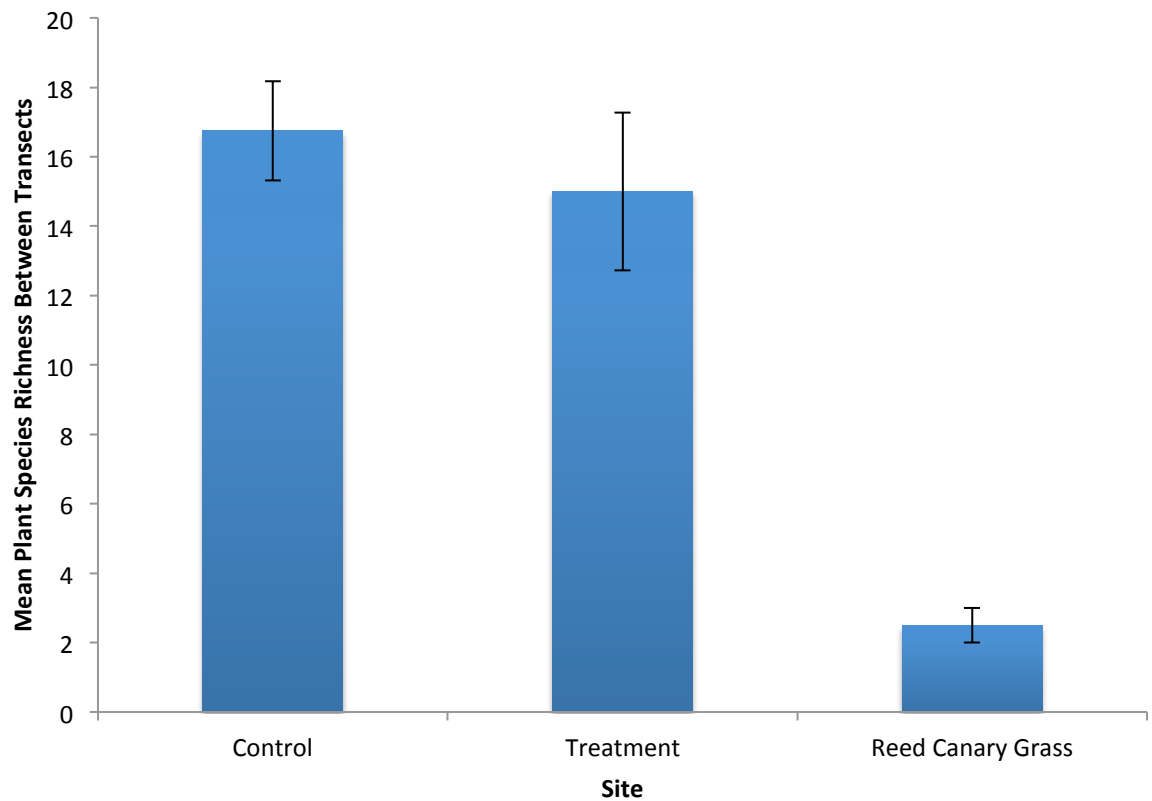


Figure 2: Mean species richness of plants between transects at the control, treatment, and reed canary grass sites. Statistical intervals = standard errors of the mean.

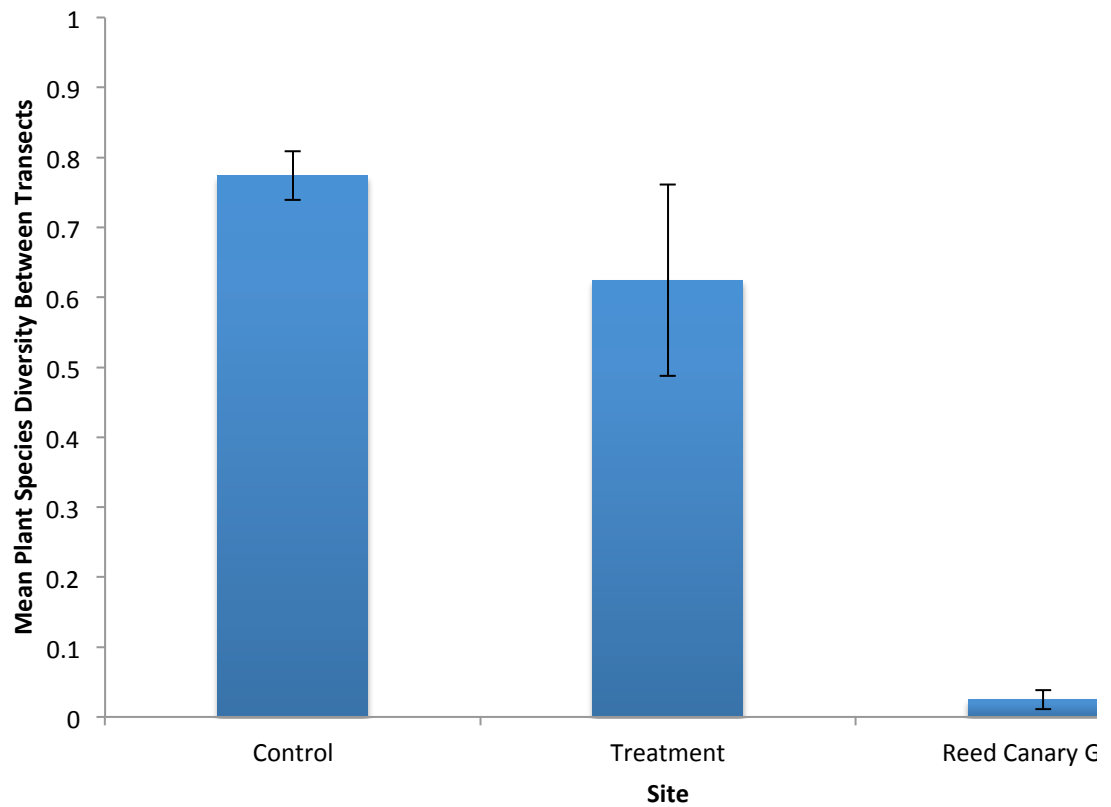


Figure 3: Mean species diversity of plants between transects (Simpson's Index) at the control, treatment, and reed canary grass sites in 2011. Statistical intervals = standard errors of the mean.

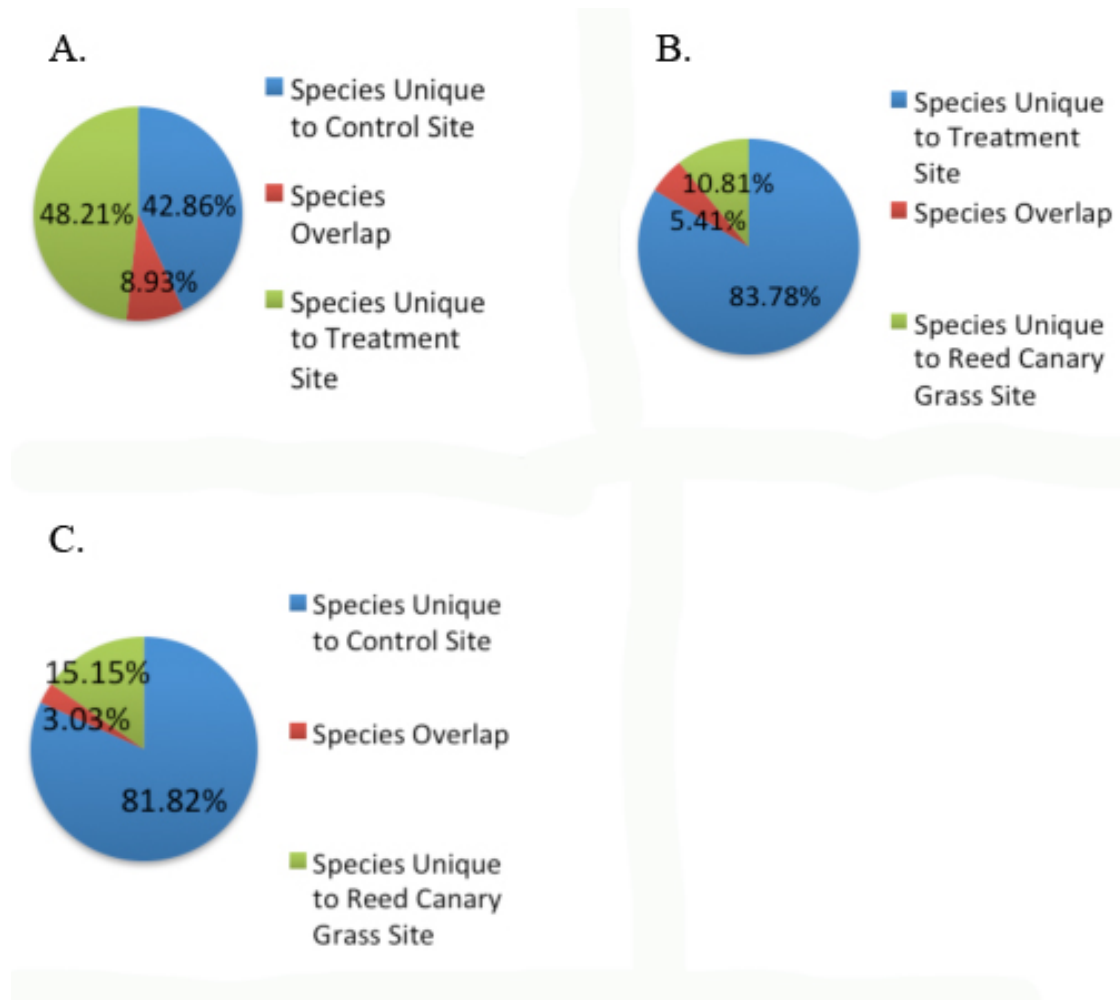


Figure 4: Species overlap of plants between the different sites.

The mean species richness was much lower at the reed canary grass site than at the control or treatment sites (Fig 2). A one-way ANOVA indicated that there was a significant difference in species richness between the sites ($F_{2,9} = 24.226$; $P = .000238$).

The mean species diversity of plants was much lower at the reed canary grass site than at the control or treatment sites, and the value at the treatment appeared to be slightly lower than at the control (Fig 3).

There was little plant species overlap between the restored site and the native control (Fig 4A). That is, even though the diversity of plant species was similar between the control, and the restored site, the restored site did not have the same plant species as the control meadow. As expected, there was even less overlap in plant species between the control and the reed canary grass site and between the treatment and the reed canary grass site (Fig 4B, 4C). The reed canary grass site had the fewest species unique to it.

Arthropods

In this study, a total of 13,241 arthropods were sampled in 2010 and 25,000 arthropods in 2011, totaling 38,241 (Appendix B). Data on terrestrial arthropods from 2010 and 2011 was organized in terms of abundance, trophic groups, species richness, species diversity, and biomass, with the meadow as “Control,” the wetland restoration site as “Treatment,” and the reed canary grass-dominated field as “Reed Canary Grass” (Figs 5-12) (Appendix D).

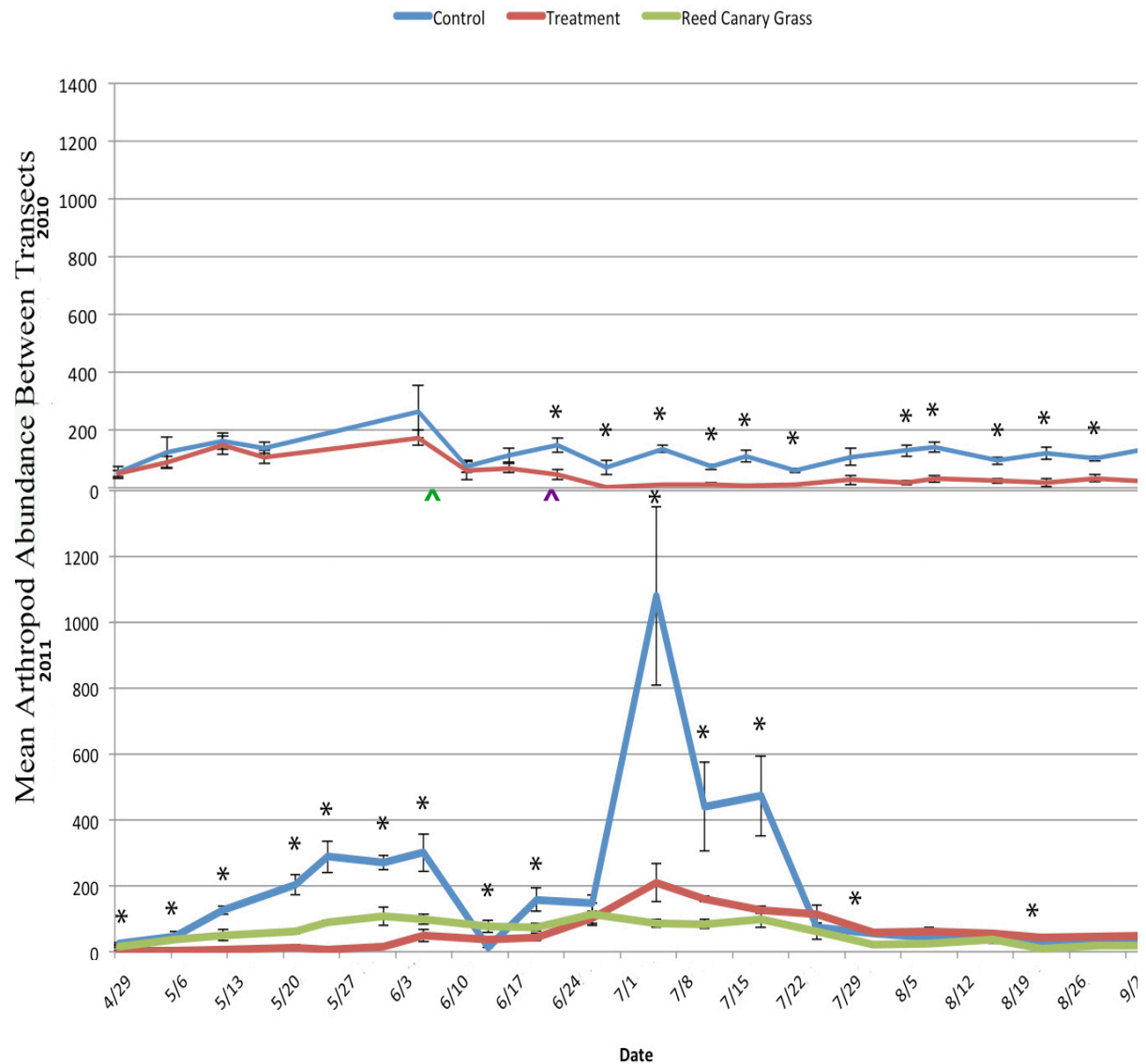


Figure 5: Mean abundance of terrestrial invertebrates at the control, treatment, and reed canary grass sites over time. * (2010)= Significant difference (t-test) at $p \leq 0.05$. * (2011)= Significant difference (one-way ANOVA, Appendix C) at $p \leq 0.05$. Statistical intervals = standard errors of the mean. \wedge denotes the timing of the herbicide application to the Treatment site, and \wedge denotes when the Treatment site was mowed.

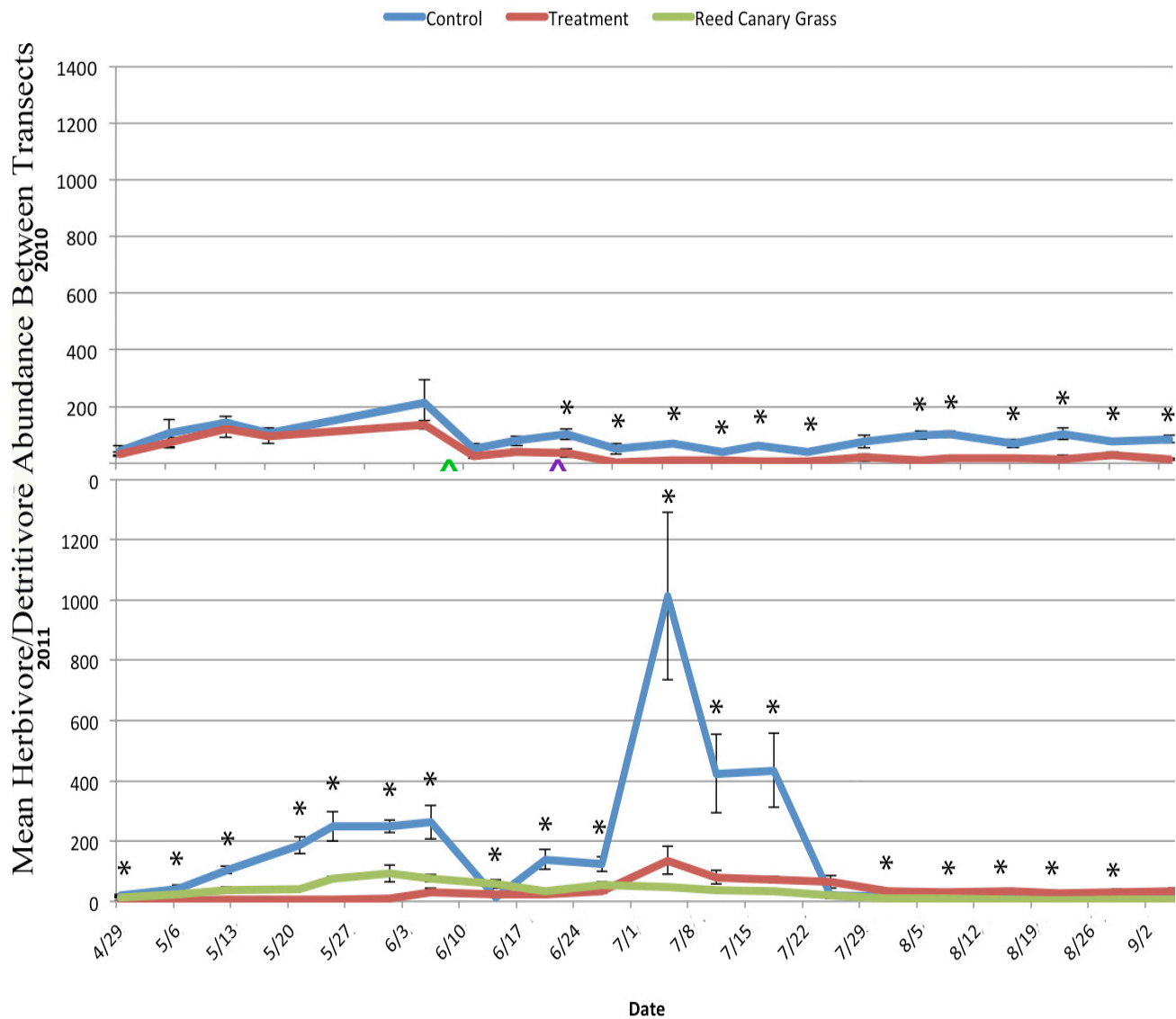


Figure 6: Mean abundance of herbivores and detritivores at the control, treatment, and reed canary grass sites over time. * (2010)= Significant difference (t-test) at $p \leq 0.05$. * (2011)= Significant difference (one-way ANOVA, Appendix C) at $p \leq 0.05$. Statistical intervals = standard errors of the mean. ^ denotes the timing of the herbicide application to the Treatment site, and ^ denotes when the Treatment site was mowed.

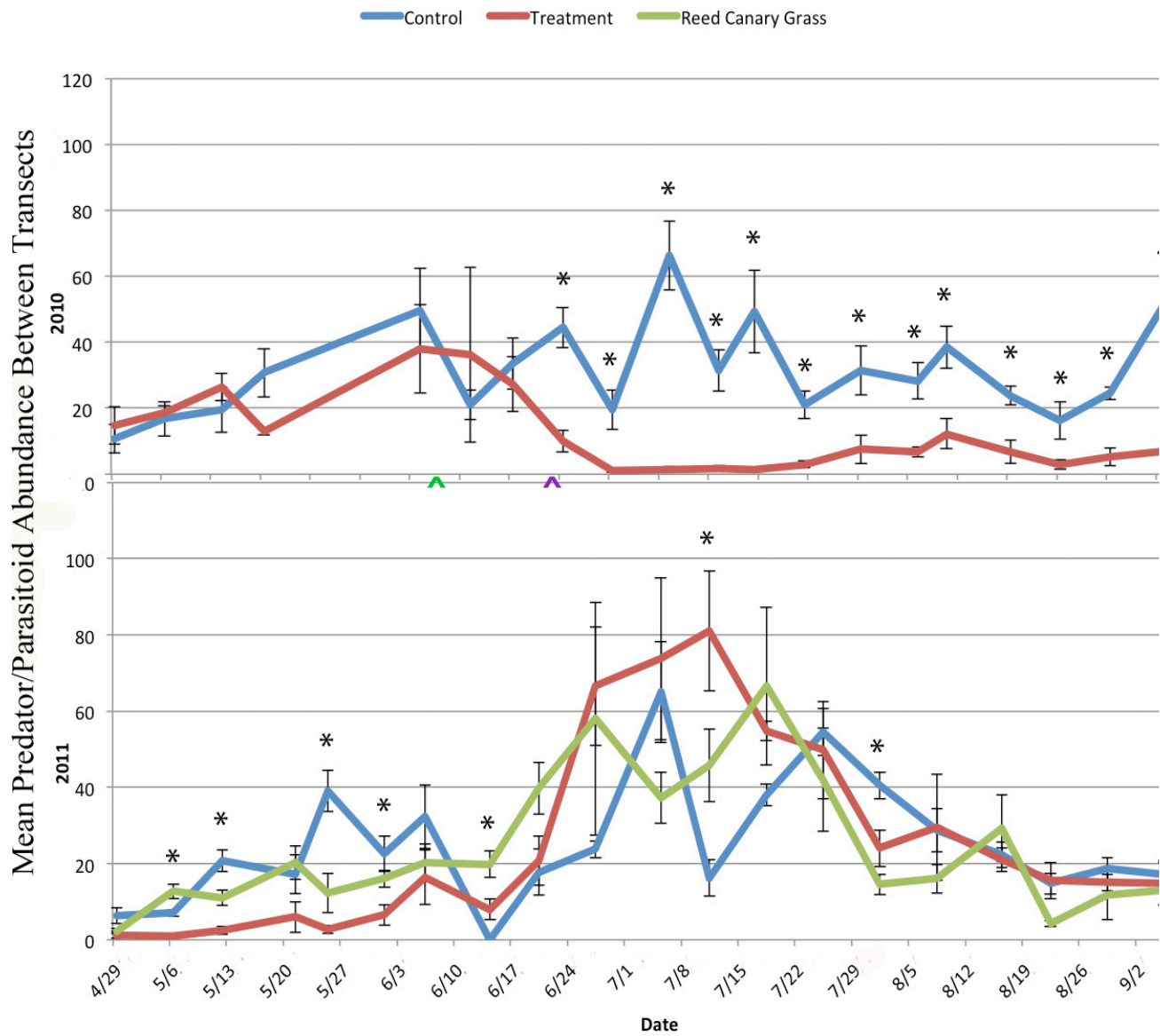


Figure 7: Mean abundance of predators and parasitoids at the control, treatment, and reed canary grass sites over time. * (2010)= Significant difference (t-test) at $p \leq 0.05$. * (2011)= Significant difference (one-way ANOVA, Appendix C) at $p \leq 0.05$. Statistical intervals = standard errors of the mean. ^ denotes the timing of the herbicide application to the Treatment site, and ^ denotes when the Treatment site was mowed.

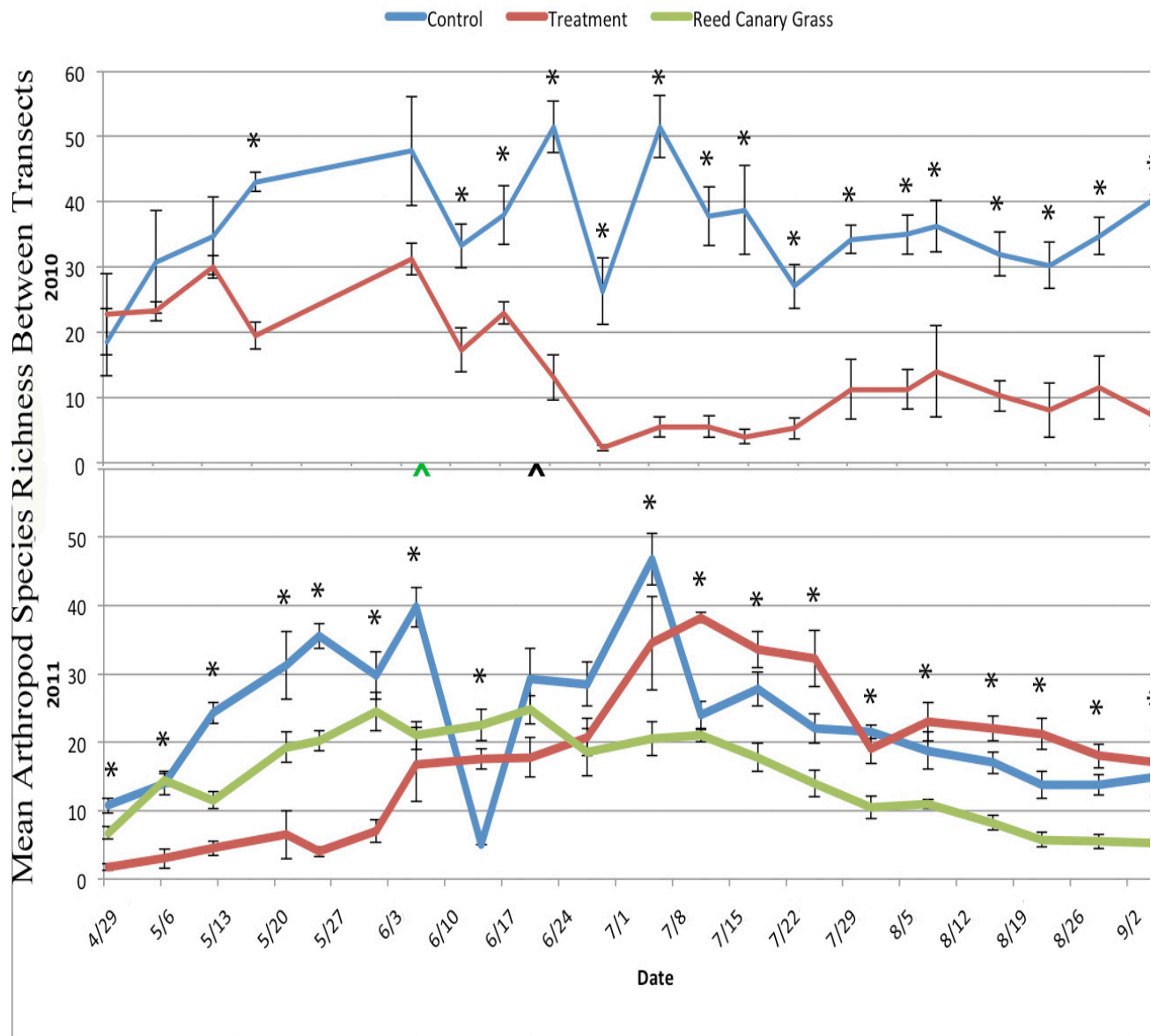


Figure 8: Mean species richness of terrestrial invertebrates at the control, treatment, and reed canary grass sites over time. * (2010)= Significant difference (t-test) at $p \leq 0.05$. * (2011)= Significant difference (one-way ANOVA, Appendix C) at $p \leq 0.05$. Statistical intervals = standard errors of the mean. ^ denotes the timing of the herbicide application to the Treatment site, and ^ denotes when the Treatment site was mowed.

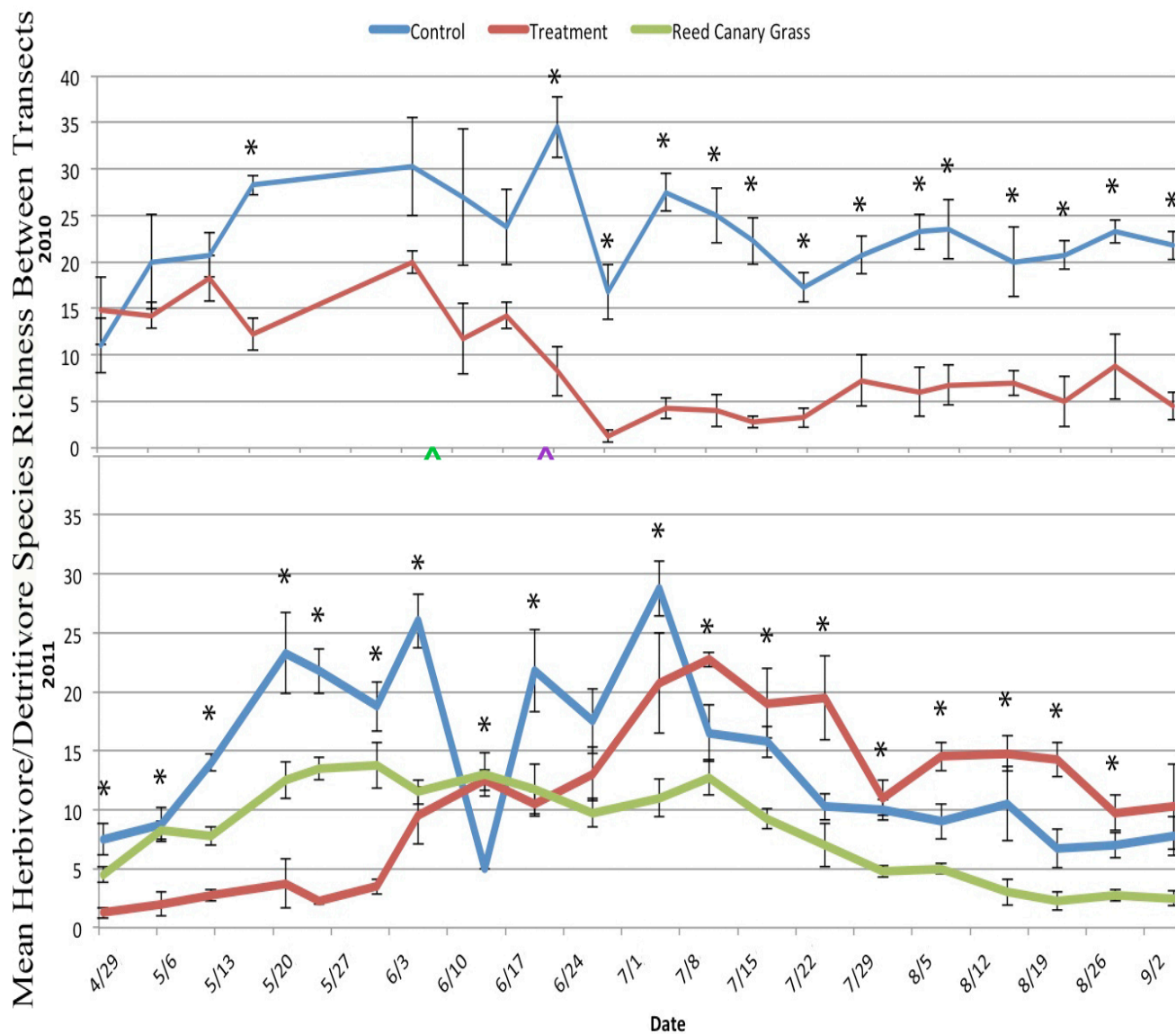


Figure 9: Mean species richness of herbivores and detritivores at the control, treatment, and reed canary grass sites over time. * (2010)= Significant difference (t-test) at $p \leq 0.05$. * (2011)= Significant difference (one-way ANOVA, Appendix C) at $p \leq 0.05$. Statistical intervals = standard errors of the mean. ^ denotes the timing of the herbicide application to the Treatment site, and ^ denotes when the Treatment site was mowed.

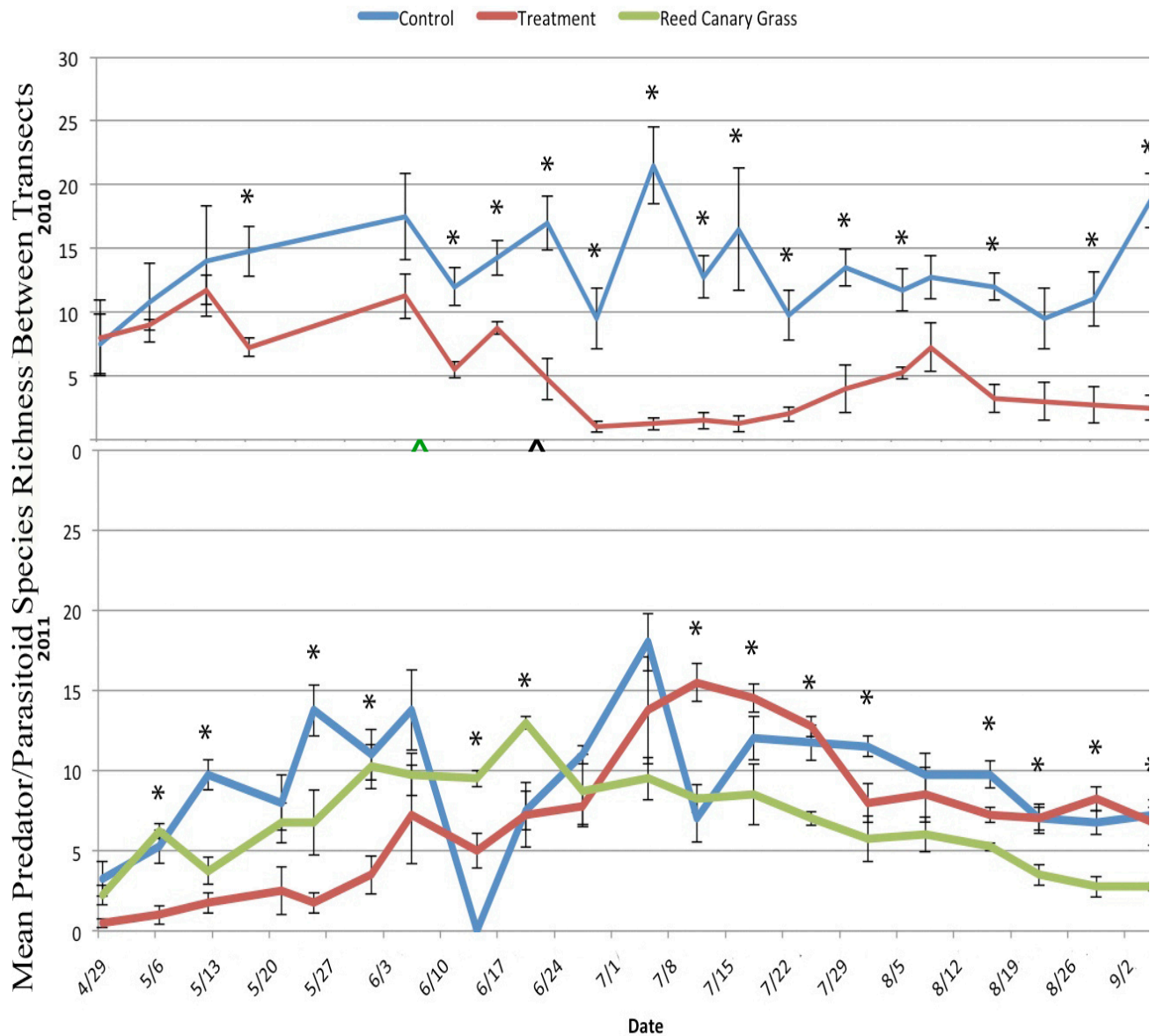


Figure 10: Mean species richness of predators and parasitoids at the control, treatment, and reed canary grass sites over time. * (2010)= Significant difference (t-test) at $p \leq 0.05$. * (2011)= Significant difference (one-way ANOVA, Appendix C) at $p \leq 0.05$. Statistical intervals = standard errors of the mean. \wedge denotes the timing of the herbicide application to the Treatment site, and \blacktriangle denotes when the Treatment site was mowed.

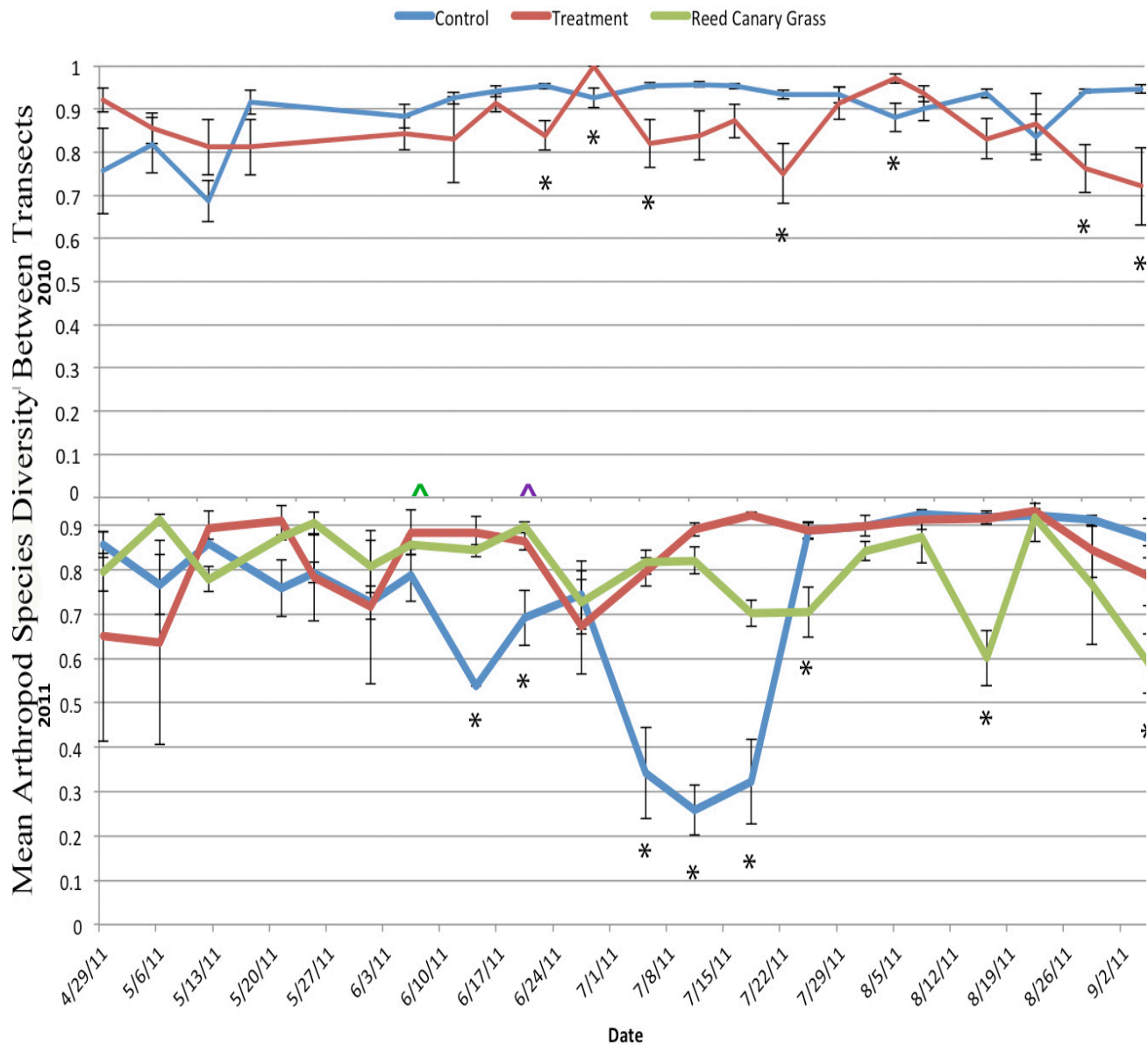


Figure 11: Mean species diversity of terrestrial invertebrates at the control, treatment, and reed canary grass sites over time. * (2010)= Significant difference (t-test) at $p \leq 0.05$. * (2011)= Significant difference (one-way ANOVA, Appendix C) at $p \leq 0.05$. Statistical intervals = standard errors of the mean. \wedge denotes the timing of the herbicide application to the Treatment site, and \wedge denotes when the Treatment site was mowed.

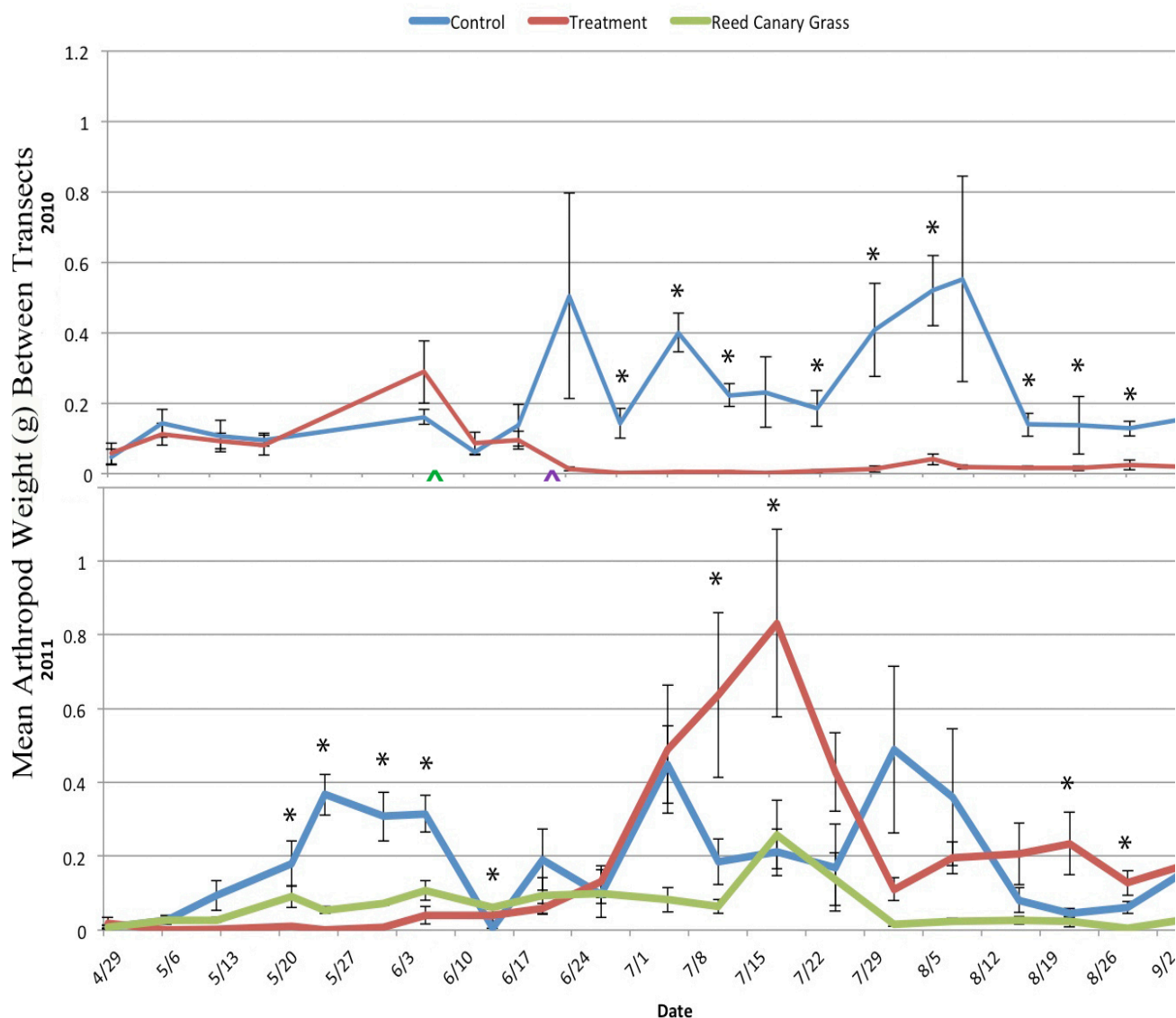


Figure 12: Mean biomass of terrestrial invertebrates at the control, treatment, and reed canary grass sites over time. * (2010)= Significant difference (t-test) at $p \leq 0.05$. * (2011)= Significant difference (one-way ANOVA, Appendix C) at $p \leq 0.05$. Statistical intervals = standard errors of the mean. ^ denotes the timing of the herbicide application to the Treatment site, and ^ denotes when the Treatment site was mowed.

The mean invertebrate abundance, or the average number of individual arthropods, was not significantly different between the sites from April to the end of June, before the herbicide and mowing treatments (Fig 5). However, after the treatments, from 6/30/10 through September, the mean abundance at the treatment site was significantly less than at the control site, with one exception. In 2011, invertebrate abundance was significantly different from April through the end of July, with two exceptions. Abundance was highest in the control site for most of April to mid-July, peaking in early July. From the end of July onward, abundance was not significantly different between sites, with two exceptions in which it was highest at the treatment site.

The abundance of herbivores and detritivores was not significantly different between the sites before 6/30/10, but herbivore abundance was significantly higher at the control site from then onwards, with one exception (Fig 6). In 2011, herbivore/detritivore abundance was significantly greater at the control site for most of April to the end of July, peaking in early July. From August onward, the treatment site was significantly greater than both the control and reed canary grass in terms of herbivore/detritivore abundance. The graphs of herbivore/detritivore abundance are almost identical in shape to those of overall invertebrate abundance.

In 2010, the abundance of predators and parasitoids was significantly greater at the control site from 6/30/10 onwards (Fig 7). In 2011, the abundance of predators at all three sites fluctuated for the entire season. Predator abundance was significantly greater at the control site twice in May and once in the beginning of August. It was significantly greater at the reed canary grass site once in early May and once in mid

June. Predator abundance peaked and was significantly greater at the treatment site only once, in early July.

From May through September 2010, the mean species richness, or the average number of different species, was significantly higher at the control site than at the treatment site only once before 6/16/10 (Fig 8). From then onward, the species richness at the treatment site was significantly less than at the control site, except in one instance. In April through early June 2011, species richness was significantly greater at the control. In early July, species richness at the treatment site increased and was significantly greater than both the control and reed canary grass sites for the rest of the season, with one exception.

From May through September 2010, the mean species richness of herbivores and detritivores was significantly greater at the control than at the treatment site only once before 6/30/10, but from then onwards, the mean number of herbivores was significantly less at the treatment than at the control site (Fig 9). From April through mid June 2011, herbivore species richness was significantly greatest at the control site, with one exception. In early July, herbivore species richness at the treatment site increased and was significantly greater than both the control and reed canary grass sites for the rest of the season, with one exception. The graphs of herbivore/detritivore species richness are very similar in shape to those of overall invertebrate species richness.

The mean species richness of predators and parasitoids was significantly greater at the control site only once before 6/16/10, and from then onwards, the species richness of predators at the treatment site was significantly less than at the control site, with two exceptions (Fig 10). For most of May 2011, predator species

richness was significantly higher at the control site. Predator richness was significantly greater at the reed canary grass site twice in June. From early July onward, predator richness was significantly lower at the reed canary grass site, with two exceptions.

The mean species diversity was not significantly different before 6/30/10, and there was considerable variance (Fig 11). From 6/30/10 onwards, the mean species diversity was significantly greater at the control site five times, and it was significantly greater at the treatment site two times. In 2011, there were no significant differences before mid-June. The control site had the significantly lower species diversity twice in June and three times in mid-July, when it reached the lowest point out of all the sites in both years. From late July onward, the reed canary grass site had the significantly lower species diversity three times.

The mean biomass of arthropods was significantly less at the treatment than at the control site after 6/30/10, with only one exception (Fig 12). In 2011, biomass was significantly higher at the control site from mid May to early June. Biomass was significantly greater at the treatment site twice in mid-July and twice in late August.

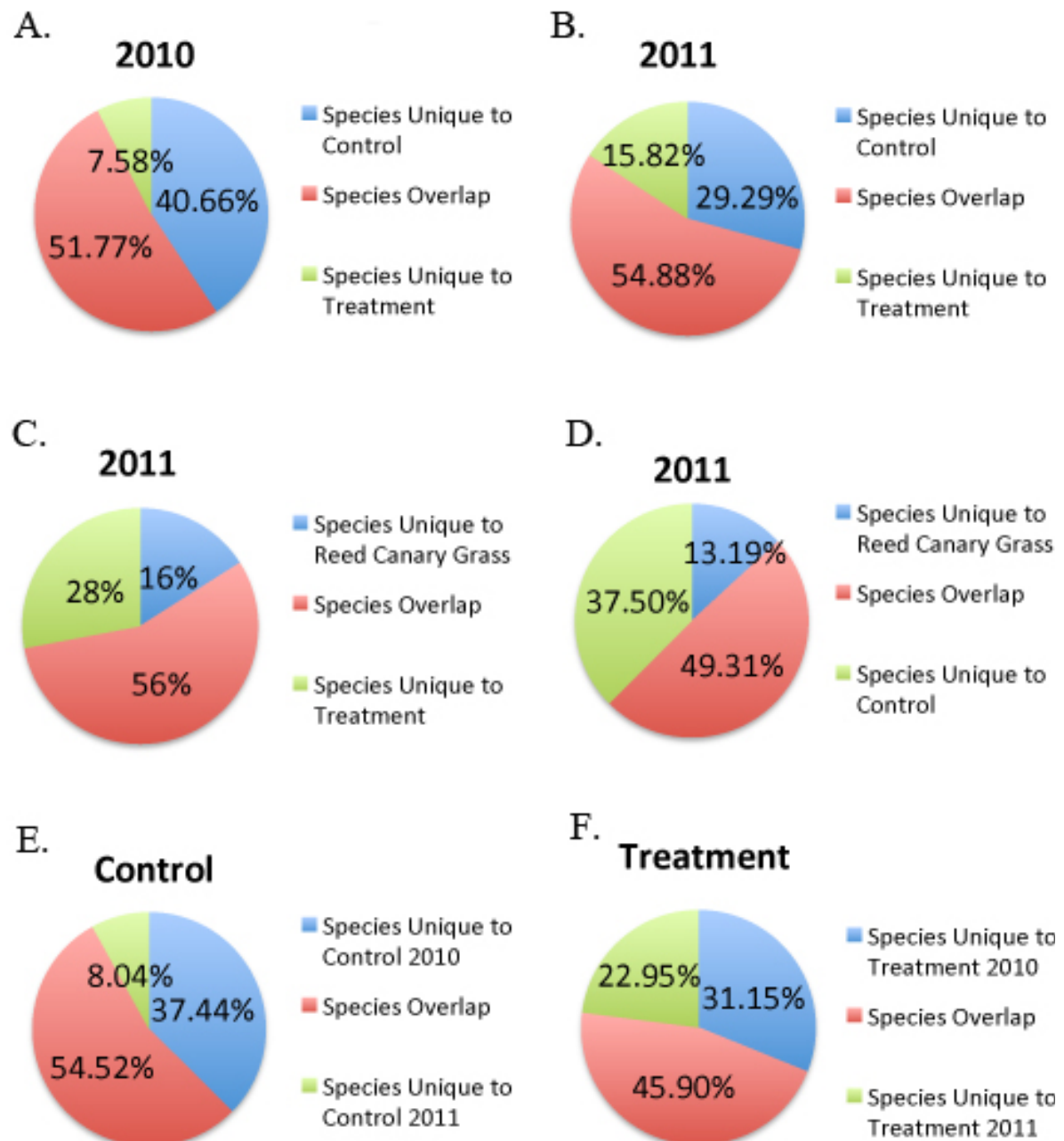


Figure 13: Species overlap of arthropods at the different sites in 2010 and 2011.

In 2010, there was approximately 50% arthropod species overlap between the control and treatment sites, and there were many more species unique to the control site (Fig 13A). In 2011, there was slightly more species overlap between the control and treatment sites than in 2010 (Fig 13B). More species were unique to the control site than the treatment site in 2011, but there were more species unique to the treatment site than in 2010.

In 2011, there was slightly more than 50% arthropod species overlap between the reed canary grass and treatment sites, and there were more species unique to the treatment site (Fig 13C). There was approximately 50% species overlap between the reed canary grass and the control sites, and there were more species unique to the control site (Fig 13D).

There was slightly more than 50% arthropod species overlap between the 2010 and 2011 control sites, and there were more species unique to the 2010 control site (Fig 13E). There was slightly less than 50% species overlap between the 2010 and 2011 treatment sites, with more species unique to the 2010 treatment site (Fig 13F).

Chapter 5

DISCUSSION

From April to early June 2010, arthropods in the meadow control and wetland restoration treatment sites were similar in abundance, richness and diversity, with few significant differences. Following the herbicide and mowing treatments in mid and late June, these results generally showed a reduction in invertebrates in the wetland restoration site and many statistically significant differences between the two sites. This suggests that the removal of most plant material at the treatment site led to significantly decreased arthropod abundance, species richness, species diversity, and biomass.

In 2011, the year following the eradication of the invasive reed canary grass, the treatment site began to recover in terms of both plant and arthropod diversity and abundance. The plant species richness and diversity at the treatment site, which in 2010 was similar to the low values at the reed canary grass site, was not significantly different than the control site in 2011. The treatment site also had more plant species in common with the control site than with the reed canary grass site, which is a good indication of the success of the wetland restoration. Since the treatment site was a wetter area than the control site, the wetland restoration introduced different plant

species than were at the control. This surely accounted for many of the novel arthropods at the restoration site.

The dramatic increase in arthropod abundance and the accompanying dip in species diversity at the control site during 7/5/11-7/18/11 was caused by an influx of several thousand lace bugs (*Corythucha marmorata*) in the samples during this time. A factor that affected sampling was rain, because sweeping was not possible when the vegetation was wet. This caused some irregularities in when samples were collected, which could have had affected the data. Variations in climate, such as wind or extreme heat could also have had an effect. The changed location of the control site in 2011 was a source of error in this study, since the new control site probably had a slightly different plant community and therefore different arthropods. The mowing of the control site caused the significant decrease in arthropod abundance, species richness, species diversity, and biomass on 6/14/11.

From July 2011 onward, arthropods at the treatment site generally showed an increase in terms of abundance, species richness, species diversity, and biomass to levels greater than the reed canary grass site, and equal to or greater than the control site. The low values of arthropod abundance, richness, diversity, and biomass at the reed canary grass site, and the similarity of arthropod levels at the treatment to the control site supports the hypothesis that abundance and diversity of invertebrates would increase as native vegetation increased. Diversity of plant communities determines the complexity of the arthropod food webs that thrive on them, with more complex ecosystems being more stable and productive. Even though it has only been

one year since the wetland mitigation, and further monitoring of the area would be beneficial, these results from the terrestrial arthropod data are a positive indication for the future of the ecosystem.

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Appendix A

PLANTS OBSERVED

*= non-native to Delaware

Control 1

Pycnanthemum tenuifolium Schrad. (Slender mountain mint)
Toxicodendron radicans (L.) Kuntze (Poison ivy)
Juncus effusus L. (Soft rush)
Helenium autumnale L. (Common sneezeweed)
Solidago canadensis L. (Canadian goldenrod)
Eupatorium hyssopifolium L. (Hyssop-leaf thoroughwort)
Euthamia graminifolia (L.) Nutt. (was *Solidago graminifolium*) (Common flat-topped goldenrod)
Euthamia caroliniana (L.) Greene ex Porter & Britt. (flat-top goldenrod) (was *Solidago tenuifolium*, and *Euthamia tenuifolia* (Coastal plain flat-topped goldenrod)
**Daucus carota* L. (Queen Anne's lace)
Erigeron annuus (L.) Pers. (Daisy fleabane)
Vernonia noveboracensis (L.) Michx. (New York ironweed)
Rubus sp. (Blackberry)
**Rosa multiflora* Thunb. (Multiflora rose)

Control 2

Helenium autumnale L. (Common sneezeweed)
**Lythrum salicaria* L. (Purple loosestrife)
Eupatorium hyssopifolium L. (Hyssop-leaf thoroughwort)
Juncus effusus L. (Soft rush)
Solidago canadensis L. (Canadian goldenrod)
Ambrosia artemisiifolia L. (Ragweed)
Ludwigia alternifolia L. (Seedbox)
Eupatorium perfoliatum L. (Boneset)
**Setaria pumila* (Poir.) Roem. & Schult. (was *Setaria glauca*) (Yellow foxtail grass)
Euthamia caroliniana (L.) Greene ex Porter & Britt. (flat-top goldenrod) (was *Solidago tenuifolium*, and *Euthamia tenuifolia* (Coastal plain flat-topped goldenrod)
**Daucus carota* L. (Queen Anne's lace)
Grass

**Solanum carolinense* L. (Horse-nettle)
Andropogon sp. (Bluestem grass)
Euthamia graminifolia (L.) Nutt. (was *Solidago graminifolium*) (Common flat-topped goldenrod)
 **Trifolium repens* L. (White clover)
Pycnanthemum tenuifolium Schrad. (Slender mountain mint)

Control 3

Juncus effusus L. (Soft rush)
Euthamia graminifolia (L.) Nutt. (was *Solidago graminifolium*) (Common flat-topped goldenrod)
 **Trifolium repens* L. (White clover)
Eupatorium hyssopifolium L. (Hyssop-leaf thoroughwort)
Euthamia caroliniana (L.) Greene ex Porter & Britt. (flat-top goldenrod) (was *Solidago tenuifolium*, and *Euthamia tenuifolia* (Coastal plain flat-topped goldenrod)
Ambrosia artemisiifolia L. (Ragweed)
 Grass 2
 Grass
Pycnanthemum tenuifolium Schrad. (Slender mountain mint)
Andropogon sp. (Bluestem grass)
 **Daucus carota* L. (Queen Anne's lace)
Solidago canadensis L. (Canadian goldenrod)
 **Elaeagnus umbellata* Thunb. (Autumn-olive)
Rubus sp. (Blackberry)
Verbena hastata L. (Blue vervain)
 **Setaria pumila* (Poir.) Roem. & Schult. (was *Setaria glauca*) (Yellow foxtail grass)

Control 4

Vernonia noveboracensis (L.) Michx. (New York ironweed)
Andropogon sp. (Bluestem grass)
Eupatorium perfoliatum L. (Boneset)
Eupatorium hyssopifolium L. (Hyssop-leaf thoroughwort)
Pycnanthemum tenuifolium Schrad. (Slender mountain mint)
Juncus effusus L. (Soft rush)
Sabatia angularis (L.) Pursh (Common marsh-pink)
Euthamia graminifolia (L.) Nutt. (was *Solidago graminifolium*) (Common flat-topped goldenrod)
Solidago canadensis L. (Canadian goldenrod)
Euthamia caroliniana (L.) Greene ex Porter & Britt. (flat-top goldenrod) (was *Solidago tenuifolium*, and *Euthamia tenuifolia* (Coastal plain flat-topped goldenrod)
 **Setaria pumila* (Poir.) Roem. & Schult. (was *Setaria glauca*) (Yellow foxtail grass)

Rubus sp. (Blackberry)

Grass

Toxicodendron radicans (L.) Kuntze (Poison-ivy)

Ambrosia artemisiifolia L. (Ragweed)

**Centaurea stoebe* L. (was *Centaurea maculosa*, and *Centaurea biebersteinii*) (Spotted knapweed)

**Daucus carota* L. (Queen Anne's lace)

**Lythrum salicaria* L. (Purple loosestrife)

Cyperus sp. (Sedge)

Ludwigia alternifolia L. (Seedbox)

Treatment 1

**Setaria pumila* (Poir.) Roem. & Schult. (was *Setaria glauca*) (Yellow foxtail grass)

**Echinochloa crusgalli* (L.) Beauv. (Barnyard grass)

Persicaria amphibia (L.) Delarbre (was *Polygonum coccineum* Muhl. ex Willd.) (Water smartweed)

Lactuca sp.

Verbena hastata L. (Blue vervain)

Cyperus sp. (Sedge)

Erechtites hieraciifolius (L.) Raf. ex DC. (Pilewort)

Solidago canadensis L. (Canadian goldenrod)

Lycopus americanus Muhl. ex W. P. C. Barton (American water horehound)

Treatment 2

Verbena urticifolia L. (White vervain)

Solidago canadensis L. (Canadian goldenrod)

Juncus sp. (rush)

Persicaria amphibia (L.) Delarbre (was *Polygonum coccineum*) (Water smartweed)

Acalypha virginica L. (Virginia copperleaf)

Conyza canadensis (L.) Cronquist (Mare's tail)

Grass

**Echinochloa crusgalli* (L.) Beauv. (Barnyard grass)

Lactuca sp

Verbena hastata L. (Blue vervain)

**Setaria pumila* (Poir.) Roem. & Schult. (was *Setaria glauca*) (Yellow foxtail grass)

Fallopia scandens (L.) Holub (was *Polygonum scandens* L.) (Climbing false buckwheat)

Persicaria sagittata (L.) H. Gross (was *Polygonum sagittatum* L.) (Arrow-leaved tearthumb)

Cirsium sp. (Thistle)

Phytolacca americana L. (Pokeweed)

Chamaesyce nutans (Lag.) Small (was *Euphorbia nutans* Lag.) (Eyebane spurge)
Erechtites hieraciifolius (L.) Raf. ex DC. (Pilewort)
Asclepias syriaca L. (Common milkweed)
Cyperus sp. (Sedge)
Asclepias incarnata L. (Swamp milkweed)

Treatment 3

Fallopia scandens (L.) Holub (was *Polygonum scandens* L.) (Climbing false buckwheat)
Persicaria sagittata (L.) H. Gross (was *Polygonum sagittatum* L.) (Arrow-leaved tearthumb)
Persicaria arifolia (L.) Haraldson (was *Polygonum arifolium*) (Halberdleaf tearthumb)
Cyperus sp. (Sedge)
Bidens vulgata Greene (Tall beggar-ticks) - Conservation Concern in DE
**Eclipta prostrata* (L.) L. (False daisy / Yerba de tajo)
Juncus sp. (Rush)
Sedge
Solidago canadensis L. (Canadian goldenrod)
Grass
Mimulus ringens L. (Monkey flower)
Verbena hastata L. (Blue vervain)
Persicaria amphibia (L.) Delarbre (was *Polygonum coccineum* Muhl. ex Willd.) (Water smartweed)
Small wetland plant
Lycopus americanus Muhl. ex W. P. C. Barton (American water horehound)

Treatment 4

Rhynchospora sp. (Beakrush sedge)
Oenothera biennis L. (Evening-primrose)
Bidens vulgata Greene (Tall beggar-ticks) - Conservation Concern in DE
Conyza canadensis (L.) Cronquist (Mare's tail)
**Dipsacus fullonum* L. (Teasel)
**Lactuca serriola* L. (was *Lactuca scariola*) (Prickly lettuce)
Fallopia scandens (L.) Holub (was *Polygonum scandens* L.) (climbing false buckwheat)
Erechtites hieraciifolius (L.) Raf. ex DC. (Pilewort))
Persicaria sagittata (L.) H. Gross (was *Polygonum sagittatum* L.)
Cyperus sp. (Sedge)
Solidago sp. (Goldenrod)
Moss
Verbena hastata L. (Blue vervain)

Acalypha virginica L. (Copperleaf)
Juncus sp. (Rush)
Solidago canadensis L. (Canadian goldenrod)

Reed Canary Grass 1

**Phalaris arundinacea* L. (Reed canary grass)
Rubus sp. (Blackberry)
**Lonicera japonica* Thunb. (Japanese honeysuckle)

Reed Canary Grass 2

**Phalaris arundinacea* L. (Reed canary grass)
Impatiens capensis Meerb. (Touch-me-not)
Rubus sp. (Blackberry)

Reed Canary Grass 3

**Phalaris arundinacea* L. (Reed canary grass)
Persicaria sagittata (L.) H. Gross (was *Polygonum sagittatum* L.)
**Lactuca serriola* L. (was *Lactuca scariola*) (Prickly lettuce)

Reed Canary Grass 4

**Phalaris arundinacea* L. (Reed canary grass)

Appendix B

ARTHROPODS OBSERVED

Acalyptrate sp1
Acalyptrate sp2
Acanaloniid sp1
Acanaloniid sp2
Acarina sp1
Acarina sp2
Acridid sp1
Acridid sp2
Acridid sp3
Agromyzid sp1
Agromyzid sp2
Agromyzid sp3
Agromyzid sp4
Aleyrodid sp1
Aleyrodid sp2
Andrenid sp1
Andrenid sp2
Anobiid sp1
Anobiid sp2
Anthicid sp1
Anthicid sp2
Anthocorid sp1
Anthocorid sp2
Anthomyiid sp1
Anthomyiid sp2
Anthomyiid sp3
Anthomyiid sp4
Aphelinid sp1
Aphid sp1
Aphid sp2
Apid sp1
Apid sp2

Apid sp3
Armadillidiid sp1
Asilid sp1
Asilid sp2
Berytid sp1
Berytid sp2
Bethylid sp1
Bethylid sp2
Bombyliid sp1
Bombyliid sp2
Brachanid sp1
Brachanid sp2
Brachanid sp3
Bruchid sp1
Bruchid sp2
Buprestid sp1
Buprestid sp2
Caliphorid sp1
Caliphorid sp2
Cantharid sp1
Cantharid sp2
Cantharid sp3
Cantharid sp4
Carabid (larva) sp1
Carabid (larva) sp2
Carabid sp1
Carabid sp2
Carabid sp3
Carabid sp4
Carabid sp6
Cecidomyiid sp1
Cecidomyiid sp2
Cercopid sp1
Cercopid sp2
Chalcidid sp1
Chalcidid sp2
Chalcidid sp3
Chalcidid sp4
Chaoborid sp1

Chaoborid sp2
Chloropid sp1
Chloropid sp2
Chloropid sp3
Chloropid sp4
Chloropid sp5
Chloropid sp6
Chrysomelid sp1
Chrysomelid sp2
Chrysomelid sp3
Chrysomelid sp4
Chrysomelid sp5
Chrysomelid sp6
Chrysomelid sp7
Chrysomelid sp8
Chrysomelid sp9
Chrysomelid sp10
Chrysomelid sp11
Chrysomelid sp12
Chrysomelid sp13
Chrysomelid sp14
Chrysomelid sp15
Chrysomelid sp16
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Chrysomelid sp19
Chrysomelid sp20
Chrysomelid sp21
Chrysomelid sp22
Chrysomelid sp23
Chrysomelid sp24
Chrysomelid sp25
Chrysomelid sp26
Chrysomelid sp27
Chrysomelid sp28
Chrysopid (immature) sp1
Chrysopid (immature) sp2
Chrysopid sp1
Chrysopid sp2

Cicadellid (nymph) sp1
Cicadellid (nymph) sp2
Cicadellid (nymph) sp3
Cicadellid (nymph) sp4
Cicadellid (nymph) sp5
Cicadellid (nymph) sp6
Cicadellid (nymph) sp7
Cicadellid (nymph) sp8
Cicadellid (nymph) sp9
Cicadellid (nymph) sp10
Cicadellid (nymph) sp11
Cicadellid (nymph) sp12
Cicadellid (nymph) sp13
Cicadellid (nymph) sp14
Cicadellid sp1
Cicadellid sp2
Cicadellid sp3
Cicadellid sp4
Cicadellid sp5
Cicadellid sp6
Cicadellid sp7
Cicadellid sp8
Cicadellid sp9
Cicadellid sp10
Cicadellid sp11
Cicadellid sp12
Cicadellid sp13
Cicadellid sp14
Cixiid sp1
Cixiid sp2
Clerid sp1
Clusiid sp1
Clusiid sp2
Coccinellid (immature) sp1
Coccinellid (immature) sp2
Coccinellid sp1
Coccinellid sp2
Coccinellid sp3
Coccinellid sp4

Coccinellid sp5
Coccinellid sp6
Coenagrionid sp1
Coenagrionid sp2
Coreid sp1
Coreid sp2
Corilemalaenid sp1
Corilemalaenid sp2
Corylophid sp1
Corylophid sp2
Cryptophagid sp1
Cryptophagid sp2
Curculionid Scolytine sp1
Curculionid sp1
Curculionid sp2
Curculionid sp3
Curculionid sp4
Curculionid sp5
Cydnid sp1
Cydnid sp2
Cynipid sp1
Cynipid sp2
Delphacid sp1
Delphacid sp2
Derbid sp1
Derbid sp2
Dictyopharid sp1
Dictyopharid sp2
Dolichopodid sp1
Dolichopodid sp2
Dolichopodid sp3
Drosophilid sp1
Drosophilid sp2
Dryenid sp1
Dryenid sp2
Elaterid sp1
Elaterid sp2
Elaterid sp3
Empidid sp1

Empidid sp2
Encyrtid sp1
Encyrtid sp2
Entomobryid sp1
Entomobryid sp2
Eucnemid sp1
Eulophid sp1
Eulophid sp2
Eumenid sp1
Eumenid sp2
Eurytomid sp1
Eurytomid sp2
Eurytomid sp3
Eurytomid sp4
Figitid sp1
Figitid sp2
Flatid sp1
Flatid sp2
Forficulid sp1
Forficulid sp2
Formicid sp1
Formicid sp2
Formicid sp3
Formicid sp4
Formicid sp5
Formicid sp6
Formicid sp7
Geocoris sp1
Geocoris sp2
Gryllid sp1
Halictid sp1
Halictid sp2
Halictid sp3
Heleomyzid sp1
Heleomyzid sp2
Ichneumonid sp1
Ichneumonid sp2
Isopod sp1
Lampyrid sp1

Lampyrid sp2
Languriid sp1
Languriid sp2
Lathridiid sp1
Lathridiid sp2
Lauxaniid sp1
Lauxaniid sp2
Leps (immature) Pyralid sp1
Leps (immature) Pyralid sp2
Leps (immature) Arctiid sp1
Leps (immature) Arctiid sp2
Leps (immature) Ecophorid sp1
Leps (immature) Ecophorid sp2
Leps (immature) Geometrid sp1
Leps (immature) Geometrid sp2
Leps (immature) Hesperiid sp1
Leps (immature) Lycaenid sp1
Leps (immature) Lycaenid sp2
Leps (immature) Lymantriid sp1
Leps (immature) moth sp1
Leps (immature) Noctuid sp1
Leps (immature) Noctuid sp2
Leps (immature) Noctuid sp3
Leps (immature) Noctuid sp4
Leps (immature) Noctuid sp5
Leps (immature) Nolid sp1
Leps (immature) Nymphalid sp1
Leps (immature) Nymphalid sp2
Leps (immature) Oecophorid
sp1
Leps (immature) Oecophorid
sp2
Leps (immature) Pyralid sp1
Leps (immature) sp1
Leps (immature) sp2
Leps (immature) sp3
Leps (immature) Tortricid sp1
Leps (immature) Tortricid sp2
Leps (mature) Crambid sp1
Leps (mature) Crambid sp2

Leps (mature) Pierid sp1
Leps (mature) Pierid sp2
Leps (mature) Pterophorid sp1
Leps (mature) Pterophorid sp2
Leps (mature) Pyralid sp1
Leps (mature) Pyralid sp2
Leps (mature) Microleps sp1
Leps (mature) Microleps sp2
Leps (mature) Nymphalid sp1
Leps (mature) Nymphalid sp2
Leps (mature) sp1
Leps (mature) sp2
Lonchopterid sp1
Lonchopterid sp2
Lygaeid sp1
Lygaeid sp2
Lygaeid sp3
Lygaeid sp4
Lygaeid sp5
Lygaeid sp6
Lygaeid sp7
Lygaeid sp8
Mantid sp1
Mantid sp2
Megaspilid sp1
Megaspilid sp2
Melyrid sp1
Melyrid sp2
Membracid sp1
Membracid sp2
Membracid sp3
Membracid sp4
Membracid sp5
Microhymanop sp1
Microhymanop sp2
Microhymanop sp3
Micropezid sp1
Micropezid sp2
Microphalid sp1

Microphalid sp2
Mirid sp1
Mirid sp2
Mirid sp3
Mirid sp4
Mirid sp5
Mirid sp6
Mirid sp7
Mirid sp8
Mirid sp9
Mirid sp10
Mirid sp11
Mirid sp12
Mirid sp13
Mirid sp14
Mirid sp15
Mirid sp16
Mordellid sp1
Mordellid sp2
Muscid sp1
Muscid sp2
Mycetophilid sp1
Mycetophilid sp2
Mymarid sp1
Mymarid sp2
Nabid sp1
Nabid sp2
Nitidulid sp1
Nitidulid sp2
Oecophorid sp1
Otitid sp1
Otitid sp2
Otitid sp3
Otitid sp4
Pachygronthid sp1
Pachygronthid sp2
Paralanthid sp1
Paralanthid sp2
Parasitoids other sp1

Parasitoids other sp2
Parasitoids other sp3
Parasitoids other sp4
Parasitoids other sp5
Parasitoids other sp6
Pentatomid sp1
Pentatomid sp2
Pentatomid sp3
Pentatomid sp4
Pentatomid sp5
Pentatomid sp6
Perilampid sp1
Perilampid sp2
Phaeothripid sp1
Phaeothripid sp2
Phalacrid sp1
Phalacrid sp2
Phorid sp1
Phorid sp2
Piophilid sp1
Piophilid sp2
Pipunculid sp1
Platygastrid sp1
Platygastrid sp2
Platypezid sp1
Platypezid sp2
Platystomatid sp1
Platystomatid sp2
Psocopteran sp1
Psocopteran sp2
Psycodid sp1
Psycodid sp2
Psyllid sp1
Psyllid sp2
Pteromalid sp1
Pteromalid sp2
Pyrochroid sp1
Reduviid sp1
Reduviid sp2

Reduviid sp3
Rhagionid sp1
Rhagionid sp2
Rhopalid sp1
Rhopalid sp2
Saldid sp1
Sawflies (immature) sp1
Sawflies (immature) sp2
Sawflies (mature) sp1
Sawflies (mature) sp2
Scarab sp1
Scarabaeid sp1
Scarabaeid sp2
Scathophagid sp1
Scathophagid sp2
Scatopsid sp1
Scatopsid sp2
Scelionid sp1
Scelionid sp2
Sciarid sp1
Sciarid sp2
Sciomyzid sp1
Sciomyzid sp2
Scraptiid sp1
Scraptiid sp2
Sepsid sp1
Sepsid sp2
Sminthurid sp1
Sminthurid sp2
Snail sp1
Snail sp2
Sphaerocerid sp1
Sphaerocerid sp2
Sphecid sp1
Sphecid sp2
Spiders sp1
Spiders sp2
Spiders sp3
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Spiders sp61
Spiders sp62
Spiders sp63
Spiders sp64
Spiders sp65
Staphylinid sp1
Staphylinid sp2
Stratiomyiid sp1
Stratiomyiid sp2
Syrphid sp1
Syrphid sp2
Syrphid sp3
Tabanid sp 1
Tabanid sp2
Tachinid sp1
Tachinid sp2
Tettigoniid sp1
Tettigoniid sp2
Tettigoniid sp3
Tettigoniid sp4
Tettigoniid sp5
Tettigoniid sp6

Tettigoniid sp7
Tettigoniid sp8
Tettigoniid sp9
Thripid sp1
Thripid sp2
Thripid sp3
Thyreocorid sp1
Thyreocorid sp2
Tick sp1
Tick sp2
Tingid sp1
Tingid sp2
Tipulid sp1
Tipulid sp2
Tischerid sp1
Tischerid sp2
Torymid sp1
Torymid sp2
Torymid sp3
Torymid sp4
Trichogrammatid sp1
Trichogrammatid sp2
Trichogrammatid sp3
Ulidiid sp1
Ulidiid sp2

Appendix C

ONE-WAY ANOVA P VALUES

Abundance

Date	$F_{2,9}$	P value	Significance
4/29/11	18.593	0.000636	yes
5/6/11	7.057	0.014	yes
5/12/11	42.6	0.000026	yes
5/21/11	29.503	0.000112	yes
5/25/11	26.671	0.000165	yes
6/1/11	38.901	0.000037	yes
6/6/11	14.164	0.001659	yes
6/14/11	8.457	0.008573	yes
6/20/11	6.912	0.015	yes
6/27/11	0.813	0.474	no
7/5/11	11.42	0.003394	yes
7/11/11	5.744	0.025	yes
7/18/11	8.422	0.008678	yes
7/25/11	1.722	0.233	no
8/1/11	11.911	0.00296	yes
8/8/11	3.26	0.086	no
8/16/11	1.79	0.222	no
8/22/11	8.052	0.009891	yes
8/29/11	3.02	0.099	no
9/5/11	2.253	0.161	no

Herbivore/Detritivore Abundance

Date	$F_{2,9}$	P value	Significance
4/29/11	10.27	0.004755	yes
5/6/11	5.229	0.031	yes
5/12/11	34.585	0.00006	yes
5/21/11	32.558	0.000076	yes
5/25/11	18.889	0.000601	yes
6/1/11	37.679	0.000042	yeses

6/6/11	13.414	0.001996	yes
6/14/11	6.944	0.015	yes
6/20/11	10.857	0.003991	yes
6/27/11	8.636	0.008062	yes
7/5/11	10.766	0.0041	yes
7/11/11	7.629	0.012	yes
7/18/11	9.821	0.005466	yes
7/25/11	3.852	0.062	no
8/1/11	22.103	0.000337	yes
8/8/11	15.231	0.001292	yes
8/16/11	8.618	0.00811	yes
8/22/11	11.664	0.003169	yes
8/29/11	4.885	0.037	yes
9/5/11	4.06	0.055	no

Predators/Parasitoids Abundance

Date	$F_{2,9}$	P value	Significance
4/29/11	3.804	0.063	no
5/6/11	21.899	0.000349	yes
5/12/11	19.032	0.000585	yes
5/21/11	2.733	0.118	no
5/25/11	18.998	0.000589	yes
6/1/11	5.741	0.025	yes
6/6/11	1.4	0.296	no
6/14/11	14.881	0.001401	yes
6/20/11	3.429	0.078	no
6/27/11	1.301	0.319	no
7/5/11	1.621	0.25	no
7/11/11	8.682	0.007935	yes
7/18/11	1.397	0.296	no
7/25/11	0.311	0.74	no
8/1/11	12.218	0.002724	yes
8/8/11	0.716	0.515	no
8/16/11	0.613	0.563	no
8/22/11	3.886	0.061	no
8/29/11	0.68	0.531	no
9/5/11	0.235	0.795	no

Species Richness

Date	$F_{2,9}$	P value	Significance
4/29/11	25.912	0.000184	yes
5/6/11	22.043	0.00034	yes
5/12/11	61.443	0.00000567	yes
5/21/11	10.803	0.004055	yes
5/25/11	121.129	0.000000312	yes
6/1/11	18.392	0.000662	yes
6/6/11	10.709	0.004169	yes
6/14/11	33.239	0.00007	yes
6/20/11	3.146	0.092	no
6/27/11	2.762	0.116	no
7/5/11	7.718	0.011	yes
7/11/11	45.809	0.000019	yes
7/18/11	10.863	0.003983	yes
7/25/11	9.886	0.005355	yes
8/1/11	11.97	0.002913	yes
8/8/11	6.843	0.016	yes
8/16/11	21.073	0.000402	yes
8/22/11	17.408	0.000807	yes
8/29/11	18.704	0.000623	yes
9/5/11	4.354	0.048	yes

Herbivore/Detritivore Species Richness

Date	$F_{2,9}$	P value	Significance
4/29/11	13.15	0.002134	yes
5/6/11	11.707	0.003132	yes
5/12/11	73.79	0.00000262	yes
5/21/11	15.435	0.001234	yes
5/25/11	63.289	0.000005	yes
6/1/11	21.227	0.000391	yes
6/6/11	20.271	0.000464	yes
6/14/11	14.176	0.001654	yes
6/20/11	6.502	0.018	yes
6/27/11	3.212	0.089	no
7/5/11	9.132	0.006821	yes
7/11/11	9.142	0.0068	yes
7/18/11	6.646	0.017	yes

7/25/11	7.289	0.013	yes
8/1/11	10.471	0.004475	yes
8/8/11	18.2	0.000688	yes
8/16/11	8.078	0.009801	yes
8/22/11	20.591	0.000438	yes
8/29/11	10.293	0.004723	yes
9/5/11	2.926	0.105	no

Predators/Parasitoids Species Richness

Date	$F_{2,9}$	P value	Significance
4/29/11	3.402	0.079	no
5/6/11	14.346	0.001588	yes
5/12/11	25.732	0.000189	yes
5/21/11	3.661	0.069	no
5/25/11	15.525	0.001209	yes
6/1/11	8.806	0.007606	yes
6/6/11	1.858	0.211	no
6/14/11	47.824	0.000016	yes
6/20/11	5.613	0.026	yes
6/27/11	1.255	0.331	no
7/5/11	3.391	0.08	no
7/11/11	14.652	0.001477	yes
7/18/11	4.419	0.046	yes
7/25/11	15.802	0.001136	yes
8/1/11	6.33	0.019	yes
8/8/11	1.882	0.208	no
8/16/11	14.939	0.001382	yes
8/22/11	7	0.015	yes
8/29/11	15.945	0.001101	yes
9/5/11	7.752	0.011	yes

Species Diversity

Date	$F_{2,9}$	P value	Significance
4/29/11	0.576	0.581	no
5/6/11	1.004	0.404	no
5/12/11	4.128	0.053	no
5/21/11	3.665	0.069	no
5/25/11	1.331	0.312	no

6/1/11	0.214	0.812	no
6/6/11	1.137	0.363	no
6/14/11	71.044	0.00000307	yes
6/20/11	8.768	0.007705	yes
6/27/11	0.187	0.833	no
7/5/11	17.481	0.000795	yes
7/11/11	85.089	0.00000143	yes
7/18/11	28.071	0.000135	yes
7/25/11	8.734	0.007795	yes
8/1/11	2.94	0.104	no
8/8/11	0.571	0.584	no
8/16/11	23.339	0.000274	yes
8/22/11	0.036	0.965	no
8/29/11	0.754	0.498	no
9/5/11	5.749	0.025	yes

Weight			
Date	$F_{2,9}$	P value	Significance
4/29/11	0.234	0.796	no
5/6/11	2.724	0.119	no
5/12/11	4.064	0.055	no
5/21/11	4.638	0.041	yes
5/25/11	37.072	0.000045	yes
6/1/11	16.839	0.000908	yes
6/6/11	16.164	0.001049	yes
6/14/11	7.911	0.01	yes
6/20/11	1.521	0.27	no
6/27/11	0.18	0.838	no
7/5/11	3.582	0.072	no
7/11/11	5.075	0.033	yes
7/18/11	4.618	0.042	yes
7/25/11	2.504	0.137	no
8/1/11	3.622	0.07	no
8/8/11	2.326	0.153	no
8/16/11	3.09	0.095	no
8/22/11	5.381	0.029	yes
8/29/11	8.296	0.009072	yes
9/5/11	1.344	0.309	no

Appendix D

ARTHROPOD DATA

Date	Plot	Transect #	Abundance	Herbivores/ Detritivores Abundance	Predators/ Parasitoids Abundance	Species Richness	Herbivores/ Detritivores Species Richness	Predators/ Parasitoids Species Richness	Species diversity (Simpsons Index)	Weight (g)
4/28/10	Control	1	103	92	11	23	15	8	0.588	0.0444
4/28/10	Control	2	72	49	23	31	17	14	0.911	0.111
4/28/10	Control	3	26	22	4	10	6	4	0.582	0.0153
4/28/10	Control	4	14	9	5	10	6	4	0.945	0.0167
4/28/10	Treatment	1	20	20	0	9	9	0	0.858	0.004
4/28/10	Treatment	2	48	36	12	17	10	7	0.893	0.0238
4/28/10	Treatment	3	67	43	24	38	25	13	0.98	0.1392
4/28/10	Treatment	4	60	37	23	27	15	12	0.953	0.0618
5/5/10	Control	1	49	32	17	25	14	11	0.918	0.0523
5/5/10	Control	2	25	23	2	11	9	2	0.813	0.1624
5/5/10	Control	3	250	226	24	44	30	14	0.634	0.1118
5/5/10	Control	4	164	140	24	43	27	16	0.902	0.2423
5/5/10	Treatment	1	148	125	23	27	17	10	0.781	0.1383
5/5/10	Treatment	2	75	65	20	22	13	9	0.901	0.0442
5/5/10	Treatment	3	79	61	18	24	16	8	0.932	0.1848
5/5/10	Treatment	4	52	38	14	20	11	9	0.808	0.0773
5/13/10	Control	1	241	202	39	50	24	26	0.569	0.055
5/13/10	Control	2	162	155	7	27	21	6	0.654	0.2427
5/13/10	Control	3	104	90	14	24	14	10	0.749	0.0688
5/13/10	Control	4	141	123	18	38	24	14	0.773	0.0627
5/13/10	Treatment	1	104	79	25	25	13	12	0.834	0.0429
5/13/10	Treatment	2	157	121	36	30	15	15	0.862	0.0907
5/13/10	Treatment	3	95	79	16	33	23	10	0.923	0.1518
5/13/10	Treatment	4	233	204	29	32	22	10	0.627	0.0855
5/19/10	Control	1	143	93	50	46	30	16	0.957	0.0678
5/19/10	Control	2	189	155	34	43	27	16	0.834	0.1525
5/19/10	Control	3	122	100	22	44	26	18	0.926	0.0757
5/19/10	Control	4	101	84	17	39	30	9	0.943	0.0873
5/19/10	Treatment	1	161	147	14	22	14	8	0.666	0.1227
5/19/10	Treatment	2	81	68	13	16	11	5	0.744	0.0399
5/19/10	Treatment	3	56	41	15	24	16	8	0.927	0.1376
5/19/10	Treatment	4	131	121	10	16	8	8	0.908	0.0245
6/10/10	Control	1	273	204	69	53	34	19	0.947	0.1635
6/10/10	Control	2	515	441	74	69	43	26	0.829	0.1019

6/10/10	Control	3	161	133	28	34	19	15	0.852	0.169
6/10/10	Control	4	108	80	28	35	25	10	0.904	0.209
6/10/10	Treatment	1	174	152	22	27	17	10	0.863	0.4884
6/10/10	Treatment	2	193	142	51	35	20	15	0.931	0.3071
6/10/10	Treatment	3	100	90	10	27	20	7	0.755	0.0608
6/10/10	Treatment	4	227	158	69	36	23	13	0.821	0.296
6/17/10	Control	1	126	96	30	40	26	14	0.886	0.0742
6/17/10	Control	2	58	48	10	35	48	10	0.924	0.0674
6/17/10	Control	3	70	44	26	34	19	15	0.942	0.0417
6/17/10	Control	4	38	20	18	24	15	9	0.95	0.0573
6/17/10	Treatment	1	18	9	9	13	6	7	0.967	0.0764
6/17/10	Treatment	2	27	19	8	11	6	5	0.883	0.0163
6/17/10	Treatment	3	39	27	12	19	13	6	0.934	0.1656
6/17/10	Treatment	4	163	47	116	26	22	4	0.534	0.0888
6/23/10	Control	1	175	119	56	50	33	17	0.952	0.1061
6/23/10	Control	2	114	86	28	40	27	13	0.942	0.0833
6/23/10	Control	3	102	73	29	30	14	16	0.904	0.0456
6/23/10	Control	4	60	39	21	32	21	11	0.966	0.3131
6/23/10	Treatment	1	47	37	10	22	14	8	0.95	0.0442
6/23/10	Treatment	2	43	22	21	20	11	9	0.947	0.1496
6/23/10	Treatment	3	76	47	29	22	14	8	0.901	0.0582
6/23/10	Treatment	4	110	61	49	28	18	10	0.86	0.1281
6/30/10	Control	1	127	76	51	48	27	21	0.97	0.1208
6/30/10	Control	2	169	128	41	58	40	18	0.942	1.338
6/30/10	Control	3	201	144	57	58	40	18	0.942	0.4705
6/30/10	Control	4	92	63	29	42	31	11	0.957	0.0879
6/30/10	Treatment	1	42	25	17	19	14	5	0.912	0.0226
6/30/10	Treatment	2	52	40	12	15	6	9	0.857	0.0118
6/30/10	Treatment	3	85	75	10	15	11	4	0.75	0.0171
6/30/10	Treatment	4	4	3	1	3	2	1	0.833	0.0019
7/7/10	Control	1	124	91	33	34	19	15	0.866	0.1305
7/7/10	Control	2	27	18	9	17	12	5	0.952	0.1681
7/7/10	Control	3	102	76	26	36	24	12	0.913	0.234
7/7/10	Control	4	27	17	10	18	12	6	0.972	0.0346
7/7/10	Treatment	1	2	1	1	2	1	1	1	0.0015
7/7/10	Treatment	2	3	1	2	3	1	2	1	0.0018
7/7/10	Treatment	3	1	0	1	1	0	1	0/0	0.0032
7/7/10	Treatment	4	3	3	0	3	3	0	1	0.001
7/15/10	Control	1	132	74	58	59	24	25	0.972	0.3341
7/15/10	Control	2	165	68	97	59	31	28	0.949	0.417
7/15/10	Control	3	108	58	50	39	24	15	0.94	0.3006
7/15/10	Control	4	134	74	60	49	31	18	0.957	0.5482
7/15/10	Treatment	1	10	9	1	6	5	1	0.844	0.0002
7/15/10	Treatment	2	1	1	0	1	1	0	0/0	0.0002
7/15/10	Treatment	3	16	13	3	7	5	2	0.75	0.0027
7/15/10	Treatment	4	14	12	2	8	6	2	0.868	0.0121

7/22/10	Control	1	93	55	38	49	33	16	0.974	0.298
7/22/10	Control	2	78	32	46	40	25	15	0.941	0.2593
7/22/10	Control	3	49	29	20	28	19	9	0.95	0.1734
7/22/10	Control	4	72	50	22	34	23	11	0.964	0.1618
7/22/10	Treatment	1	3	3	0	3	3	0	1	0.0002
7/22/10	Treatment	2	4	2	2	3	1	2	0.833	0.0007
7/22/10	Treatment	3	24	23	1	10	9	1	0.775	0.016
7/22/10	Treatment	4	18	14	4	6	3	3	0.745	0.0015
7/27/10	Control	1	169	86	83	55	26	29	0.96	0.5208
7/27/10	Control	2	106	54	52	44	25	19	0.963	0.2072
7/27/10	Control	3	92	55	37	32	23	9	0.951	0.0938
7/27/10	Control	4	75	50	25	24	15	9	0.938	0.1014
7/27/10	Treatment	1	5	4	1	4	3	1	0.9	0.0005
7/27/10	Treatment	2	1	1	0	1	1	0	0/0	0.0002
7/27/10	Treatment	3	6	5	1	5	4	1	0.933	0.0011
7/27/10	Treatment	4	18	15	3	6	3	3	0.784	0.0031
8/3/10	Control	1	66	40	26	30	17	13	0.915	0.3217
8/3/10	Control	2	72	43	29	30	19	11	0.948	0.1714
8/3/10	Control	3	57	38	19	31	20	11	0.95	0.165
8/3/10	Control	4	42	32	10	17	13	4	0.918	0.0785
8/3/10	Treatment	1	6	5	1	3	2	1	0.6	0.0006
8/3/10	Treatment	2	3	1	2	2	1	1	0.667	0.0002
8/3/10	Treatment	3	13	10	3	8	5	3	0.859	0.0151
8/3/10	Treatment	4	16	10	6	8	5	3	0.875	0.0105
8/11/10	Control	1	191	138	53	35	18	17	0.881	0.7629
8/11/10	Control	2	102	77	25	40	26	14	0.931	0.1639
8/11/10	Control	3	68	49	19	32	22	10	0.957	0.2589
8/11/10	Control	4	69	40	29	30	17	13	0.964	0.4459
8/11/10	Treatment	1	14	9	5	8	5	3	0.89	0.004
8/11/10	Treatment	2	2	1	1	2	2	0	1	0.0005
8/11/10	Treatment	3	16	12	4	11	7	4	0.942	0.0082
8/11/10	Treatment	4	77	57	20	24	15	9	0.824	0.0387
8/19/10	Control	1	167	135	32	31	19	12	0.807	0.508
8/19/10	Control	2	158	116	42	44	28	16	0.928	0.7311
8/19/10	Control	3	102	80	22	33	22	11	0.841	0.2564
8/19/10	Control	4	88	71	17	32	24	8	0.943	0.5799
8/19/10	Treatment	1	16	9	7	13	7	6	0.975	0.0553
8/19/10	Treatment	2	5	1	4	5	1	4	1	0.0308
8/19/10	Treatment	3	10	5	5	8	3	5	0.956	0.0036
8/19/10	Treatment	4	37	26	11	19	13	6	0.952	0.0714
8/23/10	Control	1	175	126	49	38	21	17	0.834	1.4158
8/23/10	Control	2	158	114	44	45	31	14	0.95	0.3573
8/23/10	Control	3	93	73	20	26	16	10	0.874	0.156
8/23/10	Control	4	141	100	41	36	26	10	0.944	0.2801
8/23/10	Treatment	1	21	11	10	12	6	6	0.929	0.0214
8/23/10	Treatment	2	5	1	4	4	1	3	0.9	0.0106

8/23/10	Treatment	3	44	34	10	17	9	8	0.986	0.0093
8/23/10	Treatment	4	54	29	25	23	11	12	0.925	0.0348
9/1/10	Control	1	126	105	21	41	30	11	0.942	0.1253
9/1/10	Control	2	67	42	25	26	16	10	0.962	0.0905
9/1/10	Control	3	104	86	18	33	21	12	0.929	0.1055
9/1/10	Control	4	81	50	31	28	13	15	0.912	0.2335
9/1/10	Treatment	1	20	18	2	8	6	2	0.695	0.0252
9/1/10	Treatment	2	20	12	8	10	6	4	0.863	0.0146
9/1/10	Treatment	3	10	9	1	6	5	1	0.867	0.0058
9/1/10	Treatment	4	46	30	16	17	11	6	0.898	0.0222
9/8/10	Control	1	98	70	28	31	19	12	0.953	0.1191
9/8/10	Control	2	73	67	6	24	18	6	0.755	0.0997
9/8/10	Control	3	164	140	24	40	25	15	0.896	0.1836
9/8/10	Control	4	146	139	7	26	21	5	0.737	0.1441
9/8/10	Treatment	1	9	6	3	7	4	3	0.917	0.023
9/8/10	Treatment	2	3	3	0	2	2	0	0.667	0.0006
9/8/10	Treatment	3	3	1	2	3	1	2	1	0.0104
9/8/10	Treatment	4	58	51	7	20	13	7	0.875	0.0301
9/15/10	Control	1	115	91	24	28	20	6	0.931	0.1668
9/15/10	Control	2	97	68	29	39	24	15	0.948	0.1277
9/15/10	Control	3	115	90	25	40	26	14	0.952	0.1464
9/15/10	Control	4	80	60	20	32	23	9	0.937	0.0708
9/15/10	Treatment	1	19	17	2	5	3	2	0.667	0.0158
9/15/10	Treatment	2	26	21	5	8	7	1	0.686	0.0147
9/15/10	Treatment	3	19	18	1	7	6	1	0.789	0.0033
9/15/10	Treatment	4	72	59	13	26	19	7	0.908	0.0665
9/23/10	Control	1	184	124	60	41	21	20	0.92	0.2012
9/23/10	Control	2	117	70	47	40	23	17	0.951	0.1039
9/23/10	Control	3	139	77	62	42	18	24	0.955	0.2398
9/23/10	Control	4	111	68	43	39	25	14	0.958	0.0877
9/23/10	Treatment	1	31	23	8	6	2	4	0.525	0.0079
9/23/10	Treatment	2	37	19	18	10	6	4	0.77	0.0131
9/23/10	Treatment	3	8	6	2	4	2	2	0.643	0.0154
9/23/10	Treatment	4	11	11	0	8	8	0	0.945	0.0357

Date	Plot	Transect #	Abundance	Herbivore/ Detritivore Abundance	Predator/ Parasitoid Abundance	Species Richness	Herbivore/ Detritivore Richness	Predator/ Parasitoid Richness	Species diversity (Simpsons Index of Diversity)	Weight (g)
4/29/11	Control	1	22	21	1	10	9	1	0.225	0.0029
4/29/11	Control	2	18	7	11	8	4	4	0.118	0.006
4/29/11	Control	3	27	20	7	13	7	6	0.094	0.0192
4/29/11	Control	4	34	28	6	12	10	2	0.137	0.0065
4/29/11	Treatment	1	1	1	0	1	1	0	0	0.0001

4/29/11	Treatment	2	2	1	1	2	1	1	0	0.0004
4/29/11	Treatment	3	2	1	0	1	1	0	1	0.0006
4/29/11	Treatment	4	6	2	4	3	2	1	0.4	0.0685
4/29/11	Reed Canary	1	12	11	1	4	3	1	0.288	0.0062
4/29/11	Grass	2	16	14	2	8	6	2	0.242	0.0217
4/29/11	Reed Canary	3	23	19	4	8	4	4	0.202	0.0046
4/29/11	Grass	4	11	9	2	7	5	2	0.091	0.0027
5/6/11	Control	1	20	13	7	12	5	7	0.189	0.0102
5/6/11	Control	2	28	21	7	13	9	4	0.114	0.0292
5/6/11	Control	3	60	55	5	12	9	3	0.428	0.012
5/6/11	Control	4	78	69	9	19	12	7	0.204	0.051
5/6/11	Treatment	1	6	4	2	3	1	2	0.4	0.0004
5/6/11	Treatment	2	1	1	0	1	1	0	0	0.0005
5/6/11	Treatment	3	2	1	0	1	1	0	1	0.0003
5/6/11	Treatment	4	9	7	2	7	5	2	0.056	0.0026
5/6/11	Reed Canary	1	33	24	9	12	7	5	0.117	0.0065
5/6/11	Grass	2	31	21	10	14	7	7	0.08	0.0627
5/6/11	Reed Canary	3	49	32	17	16	10	6	0.095	0.0178
5/6/11	Grass	4	34	19	15	16	9	7	0.055	0.0225
5/12/11	Control	1	98	84	14	21	13	7	0.136	0.0319
5/12/11	Control	2	128	102	26	25	14	11	0.154	0.0509
5/12/11	Control	3	116	91	25	23	13	10	0.155	0.0824
5/12/11	Control	4	160	142	18	28	16	11	0.115	0.2116
5/12/11	Treatment	1	7	4	3	4	2	2	0.19	0.003
5/12/11	Treatment	2	2	2	0	2	2	0	0	0.0002
5/12/11	Treatment	3	7	5	2	5	3	2	0.095	0.0012
5/12/11	Treatment	4	14	9	5	7	4	3	0.143	0.0031
5/12/11	Reed Canary	1	48	41	7	11	7	4	0.265	0.0113
5/12/11	Grass	2	74	58	16	15	9	6	0.218	0.0426
5/12/11	Reed Canary	3	33	24	9	11	9	2	0.144	0.0287
5/12/11	Grass	4	44	32	12	9	6	3	0.257	0.0256
5/21/11	Control	1	118	108	10	20	15	5	0.34	0.0783
5/21/11	Control	2	231	223	8	28	21	7	0.362	0.1147
5/21/11	Control	3	253	232	21	33	26	7	0.148	0.1744
5/21/11	Control	4	208	178	30	44	31	13	0.118	0.3548
5/21/11	Treatment	1	5	1	4	4	2	1	0.1	0.0015
5/21/11	Treatment	2	2	1	1	2	1	1	0	0.0001

5/21/11	Treatment	3	4	3	1	3	2	1	0.167	0.0058
5/21/11	Treatment	4	40	22	18	17	10	7	0.087	0.0305
5/21/11	Reed Canary									
5/21/11	Grass	1	68	43	25	16	9	7	0.139	0.0651
5/21/11	Reed Canary									
5/21/11	Grass	2	70	41	29	24	14	10	0.113	0.0993
5/21/11	Reed Canary									
5/21/11	Grass	3	57	39	18	22	16	6	0.12	0.1713
5/21/11	Reed Canary									
5/21/11	Grass	4	46	37	9	15	11	4	0.134	0.029
5/25/11	Control	1	145	100	45	34	19	15	0.204	0.2139
5/25/11	Control	2	351	300	51	33	18	15	0.269	0.4353
5/25/11	Control	3	333	303	30	34	25	9	0.19	0.4602
5/25/11	Control	4	324	294	30	41	25	16	0.161	0.358
5/25/11	Treatment	1	8	6	2	5	3	2	0.083	0.001
5/25/11	Treatment	2	9	5	4	4	2	2	0.194	0.0002
5/25/11	Treatment	3	4	4	0	2	2	0	0.5	0.0001
5/25/11	Treatment	4	7	2	5	5	2	3	0.095	0.0013
5/25/11	Reed Canary									
5/25/11	Grass	1	81	76	5	21	16	5	0.098	0.0278
5/25/11	Reed Canary									
5/25/11	Grass	2	81	59	22	23	12	11	0.061	0.0741
5/25/11	Reed Canary									
5/25/11	Grass	3	108	88	20	21	12	9	0.162	0.0541
5/25/11	Reed Canary									
5/25/11	Grass	4	84	82	2	16	14	2	0.054	0.0602
6/1/11	Control	1	276	242	34	36	23	13	0.238	0.1763
6/1/11	Control	2	241	225	16	30	20	10	0.234	0.3382
6/1/11	Control	3	234	220	14	20	13	7	0.386	0.4797
6/1/11	Control	4	332	306	26	33	19	14	0.238	0.2361
6/1/11	Treatment	1	17	10	7	9	5	4	0.14	0.0078
6/1/11	Treatment	2	19	6	13	8	3	5	0.135	0.0124
6/1/11	Treatment	3	10	10	0	2	2	0	0.8	0.0003
6/1/11	Treatment	4	12	6	6	9	4	5	0.061	0.0089
6/1/11	Reed Canary									
6/1/11	Grass	1	102	83	19	29	16	13	0.136	0.0805
6/1/11	Reed Canary									
6/1/11	Grass	2	64	54	10	17	10	7	0.153	0.0626
6/1/11	Reed Canary									
6/1/11	Grass	3	189	174	15	29	18	9	0.368	0.083
6/1/11	Reed Canary									
6/1/11	Grass	4	77	57	20	23	11	12	0.116	0.063
6/6/11	Control	1	221	198	23	42	32	10	0.258	0.3555
6/6/11	Control	2	405	348	57	47	26	21	0.112	0.4286
6/6/11	Control	3	389	366	23	34	21	13	0.357	0.276
6/6/11	Control	4	186	140	26	36	25	11	0.122	0.1975
6/6/11	Treatment	1	83	54	29	29	14	15	0.1	0.1051
6/6/11	Treatment	2	20	16	4	5	4	1	0.258	0.002
6/6/11	Treatment	3	12	8	4	11	7	4	0.015	0.009

6/6/11	Treatment	4	76	47	29	22	13	9	0.088	0.0453
6/6/11	Reed Canary									
6/6/11	Grass	1	57	46	11	15	9	6	0.211	0.0613
6/6/11	Reed Canary									
6/6/11	Grass	2	132	98	34	22	11	12	0.117	0.0623
6/6/11	Reed Canary									
6/6/11	Grass	3	98	68	20	23	12	11	0.117	0.1439
6/6/11	Reed Canary									
6/6/11	Grass	4	110	94	16	24	14	10	0.129	0.1652
6/14/11	Control	1								
6/14/11	Control	2								
6/14/11	Control	3								
6/14/11	Control	4	13	13	0	5	5	0	0.462	0.0051
6/14/11	Treatment	1	32	29	3	14	11	3	0.171	0.0671
6/14/11	Treatment	2	51	26	6	20	15	5	0.18	0.0143
6/14/11	Treatment	3	22	15	7	16	12	4	0.03	0.0083
6/14/11	Treatment	4	43	27	16	20	12	8	0.08	0.0717
6/14/11	Reed Canary									
6/14/11	Grass	1	128	98	30	28	18	10	0.17	0.0644
6/14/11	Reed Canary									
6/14/11	Grass	2	73	55	18	23	13	10	0.18	0.0501
6/14/11	Reed Canary									
6/14/11	Grass	3	62	46	16	22	12	10	0.159	0.062
6/14/11	Reed Canary									
6/14/11	Grass	4	44	29	15	17	9	8	0.116	0.0643
6/20/11	Control	1	216	206	10	31	25	6	0.481	0.1581
6/20/11	Control	2	210	180	30	38	28	10	0.239	0.4278
6/20/11	Control	3	136	110	26	31	22	9	0.204	0.1357
6/20/11	Control	4	67	62	5	17	12	5	0.311	0.0425
6/20/11	Treatment	1	59	36	23	22	13	9	0.087	0.1003
6/20/11	Treatment	2	65	28	37	23	11	12	0.161	0.048
6/20/11	Treatment	3	29	12	17	15	10	5	0.17	0.0336
6/20/11	Treatment	4	21	15	6	11	8	3	0.127	0.0489
6/20/11	Reed Canary									
6/20/11	Grass	1	108	50	58	29	16	13	0.116	0.2346
6/20/11	Reed Canary									
6/20/11	Grass	2	63	32	31	25	13	12	0.072	0.0756
6/20/11	Reed Canary									
6/20/11	Grass	3	52	24	28	19	6	13	0.107	0.0292
6/20/11	Reed Canary									
6/20/11	Grass	4	75	33	42	26	12	14	0.107	0.0346
6/27/11	Control	1	204	181	23	37	25	12	0.381	0.1559
6/27/11	Control	2	169	146	23	24	14	10	0.388	0.0419
6/27/11	Control	3	113	94	19	23	13	10	0.181	0.0866
6/27/11	Control	4	102	72	30	30	18	12	0.076	0.099
6/27/11	Treatment	1	61	36	25	21	14	7	0.066	0.2215
6/27/11	Treatment	2	135	35	100	25	18	7	0.429	0.1198
6/27/11	Treatment	3	90	17	73	13	7	6	0.559	0.0174
6/27/11	Treatment	4	121	53	68	24	13	11	0.258	0.1691

6/27/11	Reed Canary	1	216	67	149	27	13	14	0.331	0.2905
6/27/11	Grass	2	68	33	35	18	9	9	0.139	0.0672
6/27/11	Reed Canary	3	87	70	17	10	7	3	0.446	0.0064
6/27/11	Grass	4	84	53	31	19	10	9	0.178	0.0312
7/5/11	Reed Canary	1	1816	1760	56	51	33	18	0.832	0.755
7/5/11	Grass	2	1147	1102	45	39	23	16	0.83	0.423
7/5/11	Reed Canary	3	720	665	55	42	27	15	0.544	0.3098
7/5/11	Grass	4	629	525	104	55	32	23	0.426	0.309
7/5/11	Reed Canary	1	301	166	135	47	29	18	0.161	0.9149
7/5/11	Grass	2	317	252	65	45	27	18	0.301	0.3737
7/5/11	Reed Canary	3	96	59	37	19	15	4	0.176	0.0917
7/5/11	Grass	4	125	67	58	27	12	15	0.179	0.5772
7/5/11	Reed Canary	1	109	54	55	20	10	10	0.198	0.0385
7/5/11	Grass	2	103	63	40	27	14	13	0.25	0.1131
7/5/11	Reed Canary	3	58	30	28	15	7	8	0.162	0.0181
7/5/11	Grass	4	75	49	26	20	13	7	0.121	0.1586
7/11/11	Reed Canary	1	655	639	16	30	23	7	0.831	0.3561
7/11/11	Grass	2	683	653	30	23	12	11	0.832	0.1944
7/11/11	Reed Canary	3	267	258	9	21	17	4	0.705	0.094
7/11/11	Grass	4	155	145	10	22	14	6	0.6	0.0964
7/11/11	Reed Canary	1	161	98	63	40	23	17	0.088	1.2633
7/11/11	Grass	2	159	88	71	39	21	18	0.084	0.3752
7/11/11	Reed Canary	3	184	122	62	37	23	14	0.147	0.6396
7/11/11	Grass	4	140	12	128	37	24	13	0.119	0.2688
7/11/11	Reed Canary	1	118	48	70	22	12	10	0.192	0.0338
7/11/11	Grass	2	93	42	51	23	17	6	0.219	0.0671
7/11/11	Reed Canary	3	75	40	35	19	10	9	0.214	0.0402
7/11/11	Grass	4	50	23	27	20	12	8	0.091	0.1153
7/18/11	Reed Canary	1	766	725	41	32	18	14	0.805	0.3984
7/18/11	Grass	2	556	525	31	27	14	13	0.796	0.165
7/18/11	Reed Canary	3	362	326	36	21	13	8	0.711	0.1125
7/18/11	Grass	4	206	162	44	31	18	13	0.401	0.1699
7/18/11	Reed Canary	1	130	72	58	33	21	12	0.085	1.4527
7/18/11	Grass	2	149	90	59	40	25	15	0.063	0.8868
7/18/11	Reed Canary	3	128	80	48	34	19	15	0.069	0.2144
7/18/11	Grass	4	100	46	54	27	11	16	0.088	0.7689
7/18/11	Reed Canary	1	169	43	126	23	9	14	0.377	0.5149

	Grass									
7/18/11	Reed Canary									
7/18/11	Grass	2	96	35	61	17	11	6	0.238	0.2639
7/18/11	Reed Canary									
7/18/11	Grass	3	52	19	33	18	10	8	0.273	0.1736
7/18/11	Reed Canary									
7/18/11	Grass	4	79	33	46	13	7	6	0.306	0.083
7/25/11	Control	1	80	24	56	28	13	15	0.074	0.0387
7/25/11	Control	2	59	20	39	22	11	11	0.09	0.5217
7/25/11	Control	3	87	18	69	20	9	11	0.132	0.0276
7/25/11	Control	4	74	20	54	18	8	10	0.154	0.0915
7/25/11	Treatment	1	89	37	52	28	15	13	0.14	0.614
7/25/11	Treatment	2	164	119	45	41	27	14	0.084	0.4383
7/25/11	Treatment	3	152	70	82	37	24	13	0.146	0.5304
7/25/11	Treatment	4	51	31	20	23	12	11	0.071	0.1285
7/25/11	Reed Canary									
7/25/11	Grass	1	58	15	43	16	9	7	0.318	0.0596
7/25/11	Reed Canary									
7/25/11	Grass	2	129	49	80	18	11	7	0.382	0.0896
7/25/11	Reed Canary									
7/25/11	Grass	3	27	4	23	9	3	6	0.353	0.0527
7/25/11	Reed Canary									
7/25/11	Grass	4	31	9	22	13	5	8	0.131	0.3502
8/1/11	Control	1	59	14	45	19	8	11	0.112	0.0926
8/1/11	Control	2	51	16	35	21	9	12	0.089	1.1313
8/1/11	Control	3	61	13	48	24	11	13	0.106	0.278
8/1/11	Control	4	55	21	34	22	12	10	0.098	0.4569
8/1/11	Treatment	1	53	32	21	18	8	10	0.091	0.0672
8/1/11	Treatment	2	55	31	24	25	15	10	0.041	0.0805
8/1/11	Treatment	3	83	46	37	18	11	7	0.115	0.2035
8/1/11	Treatment	4	40	26	14	15	10	5	0.155	0.092
8/1/11	Reed Canary									
8/1/11	Grass	1	18	6	12	11	6	5	0.183	0.0207
8/1/11	Reed Canary									
8/1/11	Grass	2	34	12	22	15	5	10	0.116	0.0204
8/1/11	Reed Canary									
8/1/11	Grass	3	19	5	14	8	4	4	0.205	0.0035
8/1/11	Reed Canary									
8/1/11	Grass	4	18	8	10	8	4	4	0.124	0.0137
8/8/11	Control	1	25	9	16	14	6	8	0.05	0.3909
8/8/11	Control	2	55	14	41	23	11	12	0.096	0.1052
8/8/11	Control	3	32	9	23	14	7	7	0.095	0.072
8/8/11	Control	4	56	21	35	24	12	12	0.062	0.8725
8/8/11	Treatment	1	37	26	11	17	12	5	0.071	0.1566
8/8/11	Treatment	2	55	38	17	25	16	9	0.044	0.2067
8/8/11	Treatment	3	98	27	71	30	17	13	0.149	0.1075
8/8/11	Treatment	4	52	33	19	20	13	7	0.082	0.3084
8/8/11	Reed Canary									
8/8/11	Grass	1	16	7	9	10	6	4	0.067	0.0466

8/8/11	Reed Canary	2	46	19	27	10	5	5	0.295	0.0115
8/8/11	Grass	3	20	6	14	11	5	6	0.1	0.0269
8/8/11	Reed Canary	4	20	6	14	13	4	9	0.047	0.0154
8/8/11	Grass	1	53	36	17	21	9	12	0.091	0.1775
8/16/11	Control	2	34	14	20	18	10	8	0.064	0.0675
8/16/11	Control	3	46	14	32	14	4	10	0.118	0.0556
8/16/11	Control	4	28	8	20	15	19	9	0.056	0.0247
8/16/11	Treatment	1	63	46	17	24	16	8	0.065	0.1752
8/16/11	Treatment	2	45	29	16	22	14	8	0.062	0.0888
8/16/11	Treatment	3	65	35	30	25	18	7	0.11	0.4527
8/16/11	Treatment	4	46	25	21	17	11	6	0.104	0.1105
8/16/11	Reed Canary	1	37	12	25	10	5	5	0.281	0.0519
8/16/11	Grass	2	60	8	52	9	4	5	0.567	0.0305
8/16/11	Reed Canary	3	36	6	30	9	3	6	0.414	0.024
8/16/11	Grass	4	10	0	10	5	0	5	0.333	0.0005
8/22/11	Control	1	19	12	7	12	7	5	0.076	0.0412
8/22/11	Control	2	37	17	20	17	9	8	0.074	0.0493
8/22/11	Control	3	26	11	15	17	9	8	0.046	0.0756
8/22/11	Control	4	20	3	17	9	2	7	0.111	0.0167
8/22/11	Treatment	1	30	23	7	16	11	5	0.12	0.1302
8/22/11	Treatment	2	37	24	13	20	14	6	0.053	0.1022
8/22/11	Treatment	3	70	41	29	27	18	9	0.057	0.2292
8/22/11	Treatment	4	31	18	13	22	14	8	0.043	0.4736
8/22/11	Reed Canary	1	10	4	6	8	3	5	0.044	0.0602
8/22/11	Grass	2	10	7	3	5	3	2	0.244	0.0278
8/22/11	Reed Canary	3	3	0	3	3	0	3	0	0.0015
8/22/11	Grass	4	8	3	5	7	3	4	0.036	0.0018
8/29/11	Control	1	26	13	13	13	7	6	0.074	0.0307
8/29/11	Control	2	32	10	22	13	5	8	0.095	0.1057
8/29/11	Control	3	26	9	15	11	6	5	0.114	0.0449
8/29/11	Control	4	38	13	25	18	10	8	0.067	0.0632
8/29/11	Treatment	1	66	52	14	15	9	6	0.34	0.1221
8/29/11	Treatment	2	24	13	11	16	7	9	0.087	0.0674
8/29/11	Treatment	3	61	40	21	23	14	9	0.125	0.1
8/29/11	Treatment	4	29	15	14	18	9	9	0.067	0.2204
8/29/11	Reed Canary	1	13	9	4	6	3	3	0.09	0.0019
8/29/11	Grass	2	40	9	31	3	2	1	0.632	0.0023

	Grass									
	Reed Canary									
8/29/11	Grass	3	8	3	5	5	2	3	0.143	0.001
8/29/11	Reed Canary									
8/29/11	Grass	4	12	5	7	8	4	4	0.076	0.0145
9/5/11	Control	1	52	27	25	18	10	8	0.11	0.4041
9/5/11	Control	2	53	34	19	13	6	7	0.26	0.0598
9/5/11	Control	3	47	30	17	19	11	8	0.078	0.1444
9/5/11	Control	4	15	7	8	10	4	6	0.067	0.0325
9/5/11	Treatment	1	26	23	3	10	7	3	0.292	0.0999
9/5/11	Treatment	2	45	35	10	13	6	7	0.362	0.0254
9/5/11	Treatment	3	93	64	29	31	21	10	0.119	0.4067
9/5/11	Treatment	4	32	15	17	14	7	7	0.083	0.1754
9/5/11	Reed Canary									
9/5/11	Grass	1	26	7	19	6	4	2	0.489	0.0035
9/5/11	Reed Canary									
9/5/11	Grass	2	25	5	20	4	1	3	0.543	0.0023
9/5/11	Reed Canary									
9/5/11	Grass	3	13	4	9	5	2	3	0.372	0.1069
9/5/11	Reed Canary									
9/5/11	Grass	4	12	8	4	6	3	3	0.242	0.0029

Mean Abundance

Date	Control	Treatment	Control Standard Error	Treatment Standard Error	t-test p- value	significant?
4/28/10	53.75	48.75	20.633	10.355	0.8357	n
5/5/10	122	88.5	52.35	20.706	0.5735	n
5/13/10	162	147.25	28.934	31.687	0.7428	n
5/19/10	138.75	107.25	18.817	23.75	0.3386	n
6/10/10	264.25	173.5	90.382	26.841	0.373	n
6/17/10	73	61.75	18.859	34.023	0.7822	n
6/23/10	112.75	69	23.761	15.519	0.1741	n
6/30/10	147.25	45.75	23.848	16.675	0.013	y
7/7/10	70	2.25	25.229	0.479	0.0363	y
7/15/10	134.75	10.25	11.686	3.326	<.0001	y
7/22/10	73	12.25	9.138	5.202	0.0012	y
7/27/10	110.5	7.5	20.504	3.663	0.0026	y
8/3/10	59.25	9.5	6.524	3.014	0.0004	y
8/11/10	107.5	27.25	28.932	16.869	0.0536	n
8/19/10	128.75	17	19.78	7.036	0.0018	y
8/23/10	141.75	31	17.67	11.083	0.0018	y
9/1/10	94.5	24	12.978	7.703	0.0034	y
9/8/10	120.25	18.25	21.025	13.325	0.0064	y
9/15/10	101.75	34	8.4	12.774	0.0044	y
9/23/10	137.75	21.75	16.55	7.204	0.0007	y

Mean Herbivore/Detritivore Abundance

Date	Control	Treatment	Control Standard Error	Treatment Standard Error	t-test p- value	significant?
4/28/10	43	34	18.33484842	4.915960401	0.6522	n
5/5/10	105.25	72.25	48.23445345	18.56239478	0.5467	n
5/13/10	142.5	120.75	23.86245307	29.4629004	0.587	n
5/19/10	108	94.25	16.00520749	24.19151022	0.6522	n
6/10/10	214.5	135.5	79.65812367	15.52149048	0.3679	n
6/17/10	52	25.5	15.91644852	8.057087977	0.188	n
6/23/10	79.25	41.75	16.54476251	8.219641111	0.0887	n
6/30/10	102.75	35.75	19.65271398	15.1293038	0.0355	y
7/7/10	50.5	1.25	19.29810008	0.62915287	0.0434	y
7/15/10	68.5	8.75	3.774917218	2.719528145	0.0001	y
7/22/10	41.5	10.5	6.461423992	4.974937186	0.009	y
7/27/10	61.25	6.25	8.320406641	3.037954356	0.0008	y
8/3/10	38.25	6.5	2.322893311	2.179449472	0.0001	y
8/11/10	76	19.75	22.11711253	12.6318051	0.0693	n
8/19/10	100.5	10.25	15.05822035	5.498105734	0.0013	y
8/23/10	103.25	18.75	11.39718533	7.70686923	0.0009	y
9/1/10	70.75	17.25	14.89616841	4.643543905	0.014	y
9/8/10	104	15.25	20.50609665	11.96087371	0.0096	y
9/15/10	77.25	28.75	7.824906815	10.11908263	0.0091	y
9/23/10	84.75	14.75	13.22481884	3.837859647	0.0023	y

Mean Predator/Parasitoid Abundance

Date	Control	Treatment	Control Standard Error	Treatment Standard Error	t-test p- value	significant?
4/28/10	10.75	14.75	4.366062299	5.618051264	0.5944	n
5/5/10	16.75	18.75	5.186119294	1.887458609	0.7295	n
5/13/10	19.5	26.5	6.885976087	4.173328009	0.4181	n
5/19/10	30.75	13	7.341378163	1.08012345	0.0539	n
6/10/10	49.75	38	12.5987764	13.4474285	0.5473	n
6/17/10	21	36.25	4.434711565	26.59691398	0.5922	n
6/23/10	33.5	27.25	7.70822072	8.229773184	0.5994	n
6/30/10	44.5	10	6.130524719	3.341656276	0.0026	y
7/7/10	19.5	1	5.951190357	0.40824829	0.0211	y
7/15/10	66.25	1.5	10.47516905	0.645497224	0.0008	y
7/22/10	31.5	1.75	6.291528696	0.853912564	0.0034	y
7/27/10	49.25	1.25	12.53245786	0.62915287	0.0087	y
8/3/10	21	3	4.222953153	1.08012345	0.0062	y
8/11/10	31.5	7.5	7.455423082	4.252450274	0.0313	y
8/19/10	28.25	6.75	5.543389457	1.547847968	0.0097	y

8/23/10	38.5	12.25	6.383572667	4.479118217	0.0151	y
9/1/10	23.75	6.75	2.80995255	3.449033681	0.0087	y
9/8/10	16.25	3	5.691733772	1.471960144	0.0651	y
9/15/10	24.5	5.25	1.848422751	2.719528145	0.0011	y
9/23/10	53	7	4.708148964	4.041451884	0.0003	y

Mean Species Richness

Date	Control	Treatment	Control Standard Error	Treatment Standard Error	t-test p- value	significant?
4/28/10	18.5	22.75	5.172	6.277	0.62	n
5/5/10	30.75	23.25	7.899	1.493	0.3868	n
5/13/10	34.75	30	5.907	1.78	0.4706	n
5/19/10	43	19.5	1.472	2.062	0.0001	y
6/10/10	47.75	31.25	8.321	2.462	0.1059	n
6/17/10	33.25	17.25	3.351	3.376	0.0152	y
6/23/10	38	23	4.546	1.732	0.0216	y
6/30/10	51.5	13	3.948	3.464	0.0003	y
7/7/10	26.25	2.25	5.072	0.479	0.0033	y
7/15/10	51.5	5.5	4.787	1.555	0.0001	y
7/22/10	37.75	5.5	4.479	1.658	0.0005	y
7/27/10	38.75	4	6.799	1.08	0.0023	y
8/3/10	27	5.25	3.342	1.601	0.0011	y
8/11/10	34.25	11.25	2.175	4.644	0.0042	y
8/19/10	35	11.25	3.028	3.065	0.0015	y
8/23/10	36.25	14	3.924	6.97	0.0074	y
9/1/10	32	10.25	3.342	2.394	0.0018	y
9/8/10	30.25	8	3.568	4.143	0.0066	y
9/15/10	34.75	11.5	2.869	4.873	0.0063	y
9/23/10	40.5	7	0.646	1.291	0.0001	y

Mean Herbivores/Detritivores Richness

Date	Control	Treatment	Control Standard Error	Treatment Standard Error	t-test p- value	significant?
4/28/10	11	14.75	2.916	3.66	0.4535	n
5/5/10	20	14.25	5.05	1.377	0.3141	n
5/13/10	20.75	18.25	2.359	2.496	0.494	n
5/19/10	28.25	12.25	1.031	1.75	0.0002	y
6/10/10	30.25	20	5.25	1.225	0.106	n
6/17/10	27	11.75	7.36	3.794	0.1151	n
6/23/10	23.75	14.25	4.07	1.436	0.07	n
6/30/10	34.5	8.25	3.279	2.658	0.0008	y

7/7/10	16.75	1.25	2.926	0.629	0.0021	y
7/15/10	27.5	4.25	2.021	1.109	0.0001	y
7/22/10	25	4	2.944	1.732	0.0008	y
7/27/10	22.25	2.75	2.496	0.629	0.0003	y
8/3/10	17.25	3.25	1.548	1.031	0.0003	y
8/11/10	20.75	7.25	2.057	2.78	0.0079	y
8/19/10	23.25	6	1.888	2.646	0.0018	y
8/23/10	23.5	6.75	3.228	2.175	0.0051	y
9/1/10	20	7	3.72	1.354	0.0167	y
9/8/10	20.75	5	1.548	2.739	0.0024	y
9/15/10	23.25	8.75	1.25	3.521	0.0082	y
9/23/10	21.75	4.5	1.493	1.5	0.0002	y

Mean Predators/Parasitoids Richness

Date	Control	Treatment	Control Standard Error	Treatment Standard Error	t-test p- value	significant?
4/28/10	7.5	8	2.363	2.972	0.8995	n
5/5/10	10.75	9	3.093	0.408	0.5951	n
5/13/10	14	11.75	4.32	1.182	0.6333	n
5/19/10	14.75	7.25	1.974	0.75	0.012	y
6/10/10	17.5	11.25	3.379	1.75	0.1516	n
6/17/10	12	5.5	1.472	0.646	0.0068	y
6/23/10	14.25	8.75	1.377	0.479	0.0093	y
6/30/10	17	4.75	2.122	1.652	0.0039	y
7/7/10	9.5	1	2.398	0.408	0.0129	y
7/15/10	21.5	1.25	3.014	0.479	0.0006	y
7/22/10	12.75	1.5	1.652	0.646	0.0007	y
7/27/10	16.5	1.25	4.787	0.629	0.0196	y
8/3/10	9.75	2	1.974	0.578	0.0093	y
8/11/10	13.5	4	1.444	1.871	0.007	y
8/19/10	11.75	5.25	1.652	0.479	0.0092	y
8/23/10	12.75	7.25	1.702	1.888	0.0736	n
9/1/10	12	3.25	1.08	1.109	0.0013	y
9/8/10	9.5	3	2.398	1.472	0.0603	n
9/15/10	11	2.75	2.122	1.436	0.0181	y
9/23/10	18.75	2.5	2.136	0.958	0.0004	y

Mean Species Diversity

Date	Control	Treatment	Control Standard Error	Treatment Standard Error	t-test p- value	significant?
4/28/10	0.7565	0.921	0.099	0.028	0.1616	n

5/5/10	0.8168	0.8555	0.065	0.036	0.6217	n
5/13/10	0.6863	0.8115	0.047	0.064	0.1661	n
5/19/10	0.915	0.8113	0.028	0.064	0.1849	n
6/10/10	0.883	0.8425	0.027	0.037	0.4072	n
6/17/10	0.9255	0.8295	0.014	0.1	0.3786	n
6/23/10	0.941	0.9145	0.013	0.021	0.3324	n
6/30/10	0.9528	0.838	0.006	0.034	0.0156	y
7/7/10	0.9258	1	0.023	0	0.0436	y
7/15/10	0.9545	0.8207	0.007	0.056	0.0078	y
7/22/10	0.9573	0.8383	0.007	0.057	0.0835	n
7/27/10	0.953	0.8723	0.006	0.039	0.0896	n
8/3/10	0.9328	0.7503	0.01	0.069	0.0393	y
8/11/10	0.9333	0.914	0.019	0.038	0.6623	n
8/19/10	0.8798	0.9708	0.033	0.011	0.04	y
8/23/10	0.9005	0.935	0.028	0.018	0.3422	n
9/1/10	0.9363	0.8308	0.011	0.046	0.0664	n
9/8/10	0.8353	0.8648	0.053	0.071	0.7501	n
9/15/10	0.942	0.7625	0.005	0.056	0.018	y
9/23/10	0.946	0.7208	0.009	0.09	0.047	y

Mean Weight

Date	Control	Treatment	Control Standard Error	Treatment Standard Error	t-test p- value	significant?
4/28/10	0.0469	0.0572	0.022	0.03	0.7909	n
5/5/10	0.1422	0.1112	0.04	0.031	0.565	n
5/13/10	0.1073	0.0927	0.045	0.022	0.7825	n
5/19/10	0.0958	0.0812	0.019	0.029	0.6861	n
6/10/10	0.1609	0.2881	0.022	0.088	0.209	n
6/17/10	0.0602	0.0868	0.007	0.031	0.4301	n
6/23/10	0.137	0.095	0.06	0.026	0.5441	n
6/30/10	0.5043	0.0134	0.291	0.005	0.1427	n
7/7/10	0.1418	0.0019	0.042	0.0005	0.0152	y
7/15/10	0.4	0.0038	0.055	0.003	0.0004	y
7/22/10	0.2231	0.0046	0.033	0.004	0.0006	y
7/27/10	0.2308	0.0012	0.1	0.0005	0.0616	n
8/3/10	0.1842	0.0066	0.051	0.004	0.0127	y
8/11/10	0.4079	0.0129	0.132	0.009	0.0245	y
8/19/10	0.5189	0.0403	0.099	0.015	0.0031	y
8/23/10	0.5523	0.019	0.291	0.006	0.1164	n
9/1/10	0.1387	0.017	0.033	0.004	0.0098	y
9/8/10	0.1366	0.016	0.081	0.007	0.0008	y
9/15/10	0.1279	0.0251	0.021	0.014	0.0063	y

9/23/10 0.1582 0.018 0.037 0.006 0.0097 y

Mean Abundance

Date	Control	Treatment	Reed Canary Grass	Control Standard Error	Treatment Standard Error	Reed Canary Grass Standard Error
4/29/11	25.25	2.75	15.5	3.449033681	1.108677891	2.723355773
5/6/11	46.5	4.5	36.75	13.59840677	1.848422751	4.13067791
5/12/11	125.5	7.5	49.75	13.04798835	2.466441431	17.01323015
5/21/11	202.5	12.75	60.25	29.62684593	9.104714896	5.543389457
5/25/11	288.25	7	88.5	48.07871151	1.08012345	6.538348415
6/1/11	270.75	14.5	108	22.38814791	2.101586702	28.12768506
6/6/11	300.25	47.75	99.25	56.40829578	18.45885063	15.74470811
6/14/11	13	37	76.75		6.337717781	18.0986878
6/20/11	157.25	43.5	74.5	35.15531017	10.87428159	12.11404144
6/27/11	147	101.75	113.75	24.00347197	16.51955911	34.33747952
7/5/11	1078	209.75	86.25	270.6735426	57.69947285	11.98175697
7/11/11	440	161	84	134.2969347	9.009254501	14.35850503
7/18/11	472.5	126.75	99	121.2253411	10.0943466	25.02998202
7/25/11	75	114	61.25	5.958187644	26.67395734	23.60923195
8/1/11	56.5	57.75	22.25	2.217355783	9.049631668	3.923752456
8/8/11	42	60.5	25.5	7.926747967	13.10534242	6.898067362
8/16/11	40.25	54.75	35.75	5.662375826	5.359959577	10.21742792
8/22/11	25.5	42	7.75	4.133198923	9.460443964	1.652018967
8/29/11	30.5	45	18.25	2.872281323	10.77806414	7.33001819
9/5/11	41.75	49	19	9.012722489	15.19320023	3.763863264

Mean Herbivore/Detritivore Abundance

Date	Control	Treatment	Reed Canary Grass	Control Standard Error	Treatment Standard Error	Reed Canary Grass Standard Error
4/29/11	19	1.25	13.25	4.377975179	0.25	2.174664725
5/6/11	39.5	3.25	24	13.40087062	1.436140662	2.857738033
5/12/11	104.75	5	38.75	12.95746246	1.471960144	7.295832144
5/21/11	185.25	6.75	40	28.32953406	5.105144464	1.290994449
5/25/11	249.25	4.25	76.25	49.78516345	0.853912564	6.25
6/1/11	248.25	8	92	19.81739556	1.154700538	28.09804264
6/6/11	263	31.25	76.5	55.66866264	11.3238318	12.1483881
6/14/11	13	24.25	57		3.708099244	14.69126725

6/20/11	139.5	22.75	34.75	32.83671725	5.618051264	5.467708234
6/27/11	123.25	35.25	55.75	24.7230493	7.352720585	8.439737358
7/5/11	1013	136	49	277.6655662	45.68551922	6.964194139
7/11/11	423.75	80	38.25	130.4040995	23.76271589	5.359959577
7/18/11	434.5	72	32.5	122.0003415	9.416297928	4.991659711
7/25/11	20.5	64.25	19.25	1.258305739	20.16339505	10.16837417
8/1/11	16	33.75	7.75	1.779513042	4.289036411	1.547847968
8/8/11	13.25	31	9.5	2.839454173	2.798809271	3.175426481
8/16/11	18	33.75	6.5	6.164414003	4.571196051	2.5
8/22/11	10.75	26.5	3.5	2.897556442	5.0083264	1.443375673
8/29/11	11.25	30	6.5	1.030776406	9.565563235	1.5
9/5/11	24.5	34.25	6	6.00694043	10.73448493	0.912870929

Mean Predators/Parasitoids Abundance

Date	Control	Treatment	Reed Canary Grass	Control Standard Error	Treatment Standard Error	Reed Canary Grass Standard Error
4/29/11	6.25	1.25	2.25	2.05649378	0.946484724	0.62915287
5/6/11	7	1	12.75	0.816496581	0.577350269	1.931105038
5/12/11	20.75	2.5	11	2.868652413	1.040833	1.957890021
5/21/11	17.25	6	20.25	5.121441854	4.062019202	4.385107372
5/25/11	39	2.75	12.25	5.338539126	1.108677891	5.105144464
6/1/11	22.5	6.5	16	4.645786622	2.661453237	2.273030283
6/6/11	32.25	16.5	20.25	8.280247581	7.216878365	4.939213838
6/14/11	0	8	19.75		2.798809271	3.473110997
6/20/11	17.75	20.75	39.75	6.060459279	6.459811659	6.78693598
6/27/11	23.75	66.5	58	2.286737122	15.51612065	30.5777697
7/5/11	65	73.75	37.25	13.23505446	21.26568049	6.675514961
7/11/11	16.25	81	45.75	4.836923954	15.795569	9.498903445
7/18/11	38	54.75	66.5	2.857738033	2.495829855	20.6417861
7/25/11	54.5	49.75	42	6.144102864	12.75653427	13.55851516
8/1/11	40.5	24	14.5	3.523729085	4.813176359	2.62995564
8/8/11	28.75	29.5	16	5.662375826	13.93735986	3.851406669
8/16/11	22.25	21	29.25	3.326033674	3.188521078	8.692669325
8/22/11	14.75	15.5	4.25	2.780137886	4.716990566	0.75
8/29/11	18.75	15	11.75	2.839454173	2.121320344	6.446898479
9/5/11	17.25	14.75	13	3.520771696	5.543389457	3.894440482

Mean Species Richness

Date	Control	Treatment	Reed Canary Grass	Control Standard Error	Treatment Standard Error	Reed Canary Grass Standard Error
4/29/11	10.75	1.75	6.75	1.108677891	0.478713554	0.946484724
5/6/11	14	3	14.5	1.683250823	1.414213562	0.957427108
5/12/11	24.25	4.5	11.5	1.493039406	1.040833	1.258305739
5/21/11	31.25	6.5	19.25	5.022864389	3.523729085	2.212653008
5/25/11	35.5	4	20.25	1.848422751	0.707106781	1.493039406
6/1/11	29.75	7	24.5	3.473110997	1.683250823	2.872281323
6/6/11	39.75	16.75	21	2.954516317	5.390964663	2.041241452
6/14/11	5	17.5	22.5		1.5	2.254624876
6/20/11	29.25	17.75	24.75	4.404070087	2.868652413	2.096624271
6/27/11	28.5	20.75	18.5	3.227486122	2.719528145	3.476108936
7/5/11	46.75	34.5	20.5	3.75	6.849574196	2.466441431
7/11/11	24	38.25	21	2.041241452	0.75	0.912870929
7/18/11	27.75	33.5	17.75	2.495829855	2.661453237	2.05649378
7/25/11	22	32.25	14	2.160246899	4.110454152	1.957890021
8/1/11	21.5	19	10.5	1.040833	2.121320344	1.658312395
8/8/11	18.75	23	11	2.75	2.857738033	0.707106781
8/16/11	17	22	8.25	1.58113883	1.779513042	1.108677891
8/22/11	13.75	21.25	5.75	1.973786547	2.286737122	1.108677891
8/29/11	13.75	18	5.5	1.493039406	1.779513042	1.040833
9/5/11	15	17	5.25	2.121320344	4.74341649	0.478713554

Mean Herbivore/Detritivore Species Richness

Date	Control	Treatment	Reed Canary Grass	Control Standard Error	Treatment Standard Error	Reed Canary Grass Standard Error
4/29/11	7.5	1.25	4.5	1.322875656	0.478713554	0.645497224
5/6/11	8.75	2	8.25	1.436140662	1	0.75
5/12/11	14	2.75	7.75	0.707106781	0.478713554	0.75
5/21/11	23.25	3.75	12.5	3.424787098	2.096624271	1.554563176
5/25/11	21.75	2.25	13.5	1.887458609	0.25	0.957427108
6/1/11	18.75	3.5	13.75	2.096624271	0.645497224	1.931105038
6/6/11	26	9.5	11.5	2.273030283	2.397915762	1.040833
6/14/11	5	12.5	13	?????	0.866025404	1.870828693
6/20/11	21.75	10.5	11.75	3.473110997	1.040833	2.096624271
6/27/11	17.5	13	9.75	2.723355773	2.273030283	1.25
7/5/11	28.75	20.75	11	2.322893311	4.25	1.58113883
7/11/11	16.5	22.75	12.75	2.397915762	0.62915287	1.493039406

7/18/11	15.75	19	9.25	1.31497782	2.943920289	0.853912564
7/25/11	10.25	19.5	7	1.108677891	3.570714214	1.825741858
8/1/11	10	11	4.75	0.912870929	1.471960144	0.478713554
8/8/11	9	14.5	5	1.471960144	1.190238071	0.40824829
8/16/11	10.5	14.75	3	3.122498999	1.493039406	1.08012345
8/22/11	6.75	14.25	2.25	1.652018967	1.436140662	0.75
8/29/11	7	9.75	2.75	1.08012345	1.493039406	0.478713554
9/5/11	7.75	10.25	2.5	1.652018967	3.591076904	0.645497224

Mean Predators/Parasitoids Species Richness

Date	Control	Treatment	Reed Canary Grass	Control Standard Error	Treatment Standard Error	Reed Canary Grass Standard Error
4/29/11	3.25	0.5	2.25	1.108677891	0.288675135	0.62915287
5/6/11	5.25	1	6.25	1.030776406	0.577350269	0.478713554
5/12/11	9.75	1.75	3.75	0.946484724	0.62915287	0.853912564
5/21/11	8	2.5	6.75	1.732050808	1.5	1.25
5/25/11	13.75	1.75	6.75	1.600781059	0.62915287	2.015564437
6/1/11	11	3.5	10.25	1.58113883	1.190238071	1.376892637
6/6/11	13.75	7.25	9.75	2.495829855	3.06526236	1.31497782
6/14/11	0	5	9.5		1.08012345	0.5
6/20/11	7.5	7.25	13	1.190238071	2.015564437	0.40824829
6/27/11	11	7.75	8.75	0.577350269	1.108677891	2.25
7/5/11	18	13.75	9.5	1.779513042	3.326033674	1.322875656
7/11/11	7	15.5	8.25	1.471960144	1.190238071	0.853912564
7/18/11	12	14.5	8.5	1.354006401	0.866025404	1.892969449
7/25/11	11.75	12.75	7	1.108677891	0.62915287	0.40824829
8/1/11	11.5	8	5.75	0.645497224	1.224744871	1.436140662
8/8/11	9.75	8.5	6	1.31497782	1.707825128	1.08012345
8/16/11	9.75	7.25	5.25	0.853912564	0.478713554	0.25
8/22/11	7	7	3.5	0.707106781	0.912870929	0.645497224
8/29/11	6.75	8.25	2.75	0.75	0.75	0.62915287
9/5/11	7.25	6.75	2.75	0.478713554	1.436140662	0.25

Mean Species Diversity (Simpson's Diversity Index)

Date	Control	Treatment	Reed Canary Grass	Control Standard Error	Treatment Standard Error	Reed Canary Grass Standard Error
4/29/11	0.8565	0.65	0.7943	0.028555502	0.236290781	0.042091913
5/6/11	0.7663	0.636	0.9133	0.067676159	0.229701255	0.013028015

5/12/11	0.86	0.893	0.779	0.009407444	0.040597619	0.027643565
5/21/11	0.758	0.9115	0.8735	0.063387696	0.034313506	0.006034622
5/25/11	0.794	0.782	0.9063	0.022829075	0.097234253	0.024712935
6/1/11	0.726	0.716	0.8068	0.037345236	0.172945556	0.058738651
6/6/11	0.7878	0.8848	0.8565	0.058623623	0.051155604	0.022677081
6/14/11	0.538	0.8848	0.8438		0.036298244	0.014085306
6/20/11	0.6913	0.8638	0.8995	0.061585138	0.018847524	0.009733961
6/27/11	0.7435	0.672	0.7265	0.076959405	0.106890131	0.070871362
7/5/11	0.342	0.7958	0.8173	0.102745641	0.032489421	0.027384226
7/11/11	0.258	0.8905	0.821	0.055941934	0.014745056	0.029913765
7/18/11	0.3218	0.9238	0.7015	0.094811546	0.006074194	0.02962122
7/25/11	0.8875	0.8898	0.704	0.018463929	0.01913276	0.05653465
8/1/11	0.8988	0.8995	0.843	0.004989572	0.023824007	0.021889876
8/8/11	0.9243	0.9135	0.8728	0.011664583	0.022310312	0.056974227
8/16/11	0.9178	0.9148	0.6013	0.014073468	0.012631805	0.062402424
8/22/11	0.9233	0.9318	0.919	0.013312745	0.017499405	0.055169436
8/29/11	0.9125	0.8453	0.7648	0.010649726	0.062910485	0.133034692
9/5/11	0.8713	0.786	0.5885	0.04469037	0.067190029	0.066826267

Mean Weight

Date	Control	Treatment	Reed Canary Grass	Control Standard Error	Treatment Standard Error	Reed Canary Grass Standard Error
4/29/11	0.0086	0.0174	0.0088	0.003605667	0.017033643	0.00435909
5/6/11	0.0256	0.0009	0.0273	0.009487887	0.000551513	0.012244276
5/12/11	0.0942	0.0018	0.027	0.040495041	0.000708725	0.006420605
5/21/11	0.1805	0.0094	0.0911	0.061367859	0.007112474	0.030320053
5/25/11	0.3668	0.0006	0.054	0.055431376	0.000295804	0.009699184
6/1/11	0.3075	0.0073	0.0722	0.06639949	0.002546403	0.005494751
6/6/11	0.3144	0.0403	0.1081	0.049892401	0.023577196	0.027126106
6/14/11	0.0051	0.0403	0.0602		0.016842877	0.003411989
6/20/11	0.191	0.0577	0.0935	0.082798444	0.014626175	0.048160599
6/27/11	0.0958	0.1319	0.0988	0.023473549	0.043463251	0.065099262
7/5/11	0.4492	0.4893	0.082	0.105391524	0.173279848	0.032672883
7/11/11	0.1852	0.6367	0.0641	0.061572672	0.222929104	0.018528671
7/18/11	0.2114	0.8307	0.2588	0.063656245	0.253915363	0.09299547
7/25/11	0.1698	0.4278	0.138	0.118100426	0.106021987	0.071177037
8/1/11	0.4897	0.1108	0.0145	0.226427269	0.031312644	0.004029759
8/8/11	0.3601	0.1948	0.0251	0.185175145	0.042940948	0.007876865
8/16/11	0.0813	0.2068	0.0267	0.033302812	0.083995565	0.010579885

8/22/11	0.0457	0.2338	0.0228	0.012138849	0.084447577	0.013899783
8/29/11	0.0611	0.1274	0.0049	0.016279249	0.032949238	0.003203221
9/5/11	0.1602	0.1768	0.0289	0.084717324	0.082508348	0.026001154