

Influences of Forest Characteristics on the Frequency of Wildlife Sign



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Introduction: Wildlife communities in New England are rapidly changing and population surges have been seen in species such as deer, beaver and coyote over the last several decades. These species are experiencing such rapid growth that they are quickly becoming “pests” to their human neighbors (Bernardos et al. 2004). The relationship between wildlife and changing forest dynamics is important to understand; as urbanization seeps into these woodland area and brings wildlife into closer proximity to human habitation, opportunity for conflict increases. Wildlife populations may be increasing as a result of human influences on the landscape, forest age and land use history. As our local forests mature with time since agricultural abandonment, we hypothesize that the frequency of physical signs of forest wildlife will increase with forest age, with distance from human habitation and with less historical land use disturbance.

Methods: Six plots were selected on the Franklin Pierce University Campus of varying age, land use history and distance from campus. At each site, four 50 meter transects were run, starting 10 meters apart and following the slope of the hillside. Along each transect, 10 plots were laid 20 meters across, alternating start points at 5 and 10 meters. Each plot was 2 meters across by two meters long, centered around the line marker. Within each plot, animal sign was evaluated by frequency within the plot using the following guidelines: Scat, Browse, scratches on bark, digs, tunneling, sightings and miscellaneous sign as found. Data was evaluated using statistical T-test analysis comparing the total counts of sign by forest age and by ANOVA testing to compare all forest types for significant differences in wildlife sign frequency by habitat type.



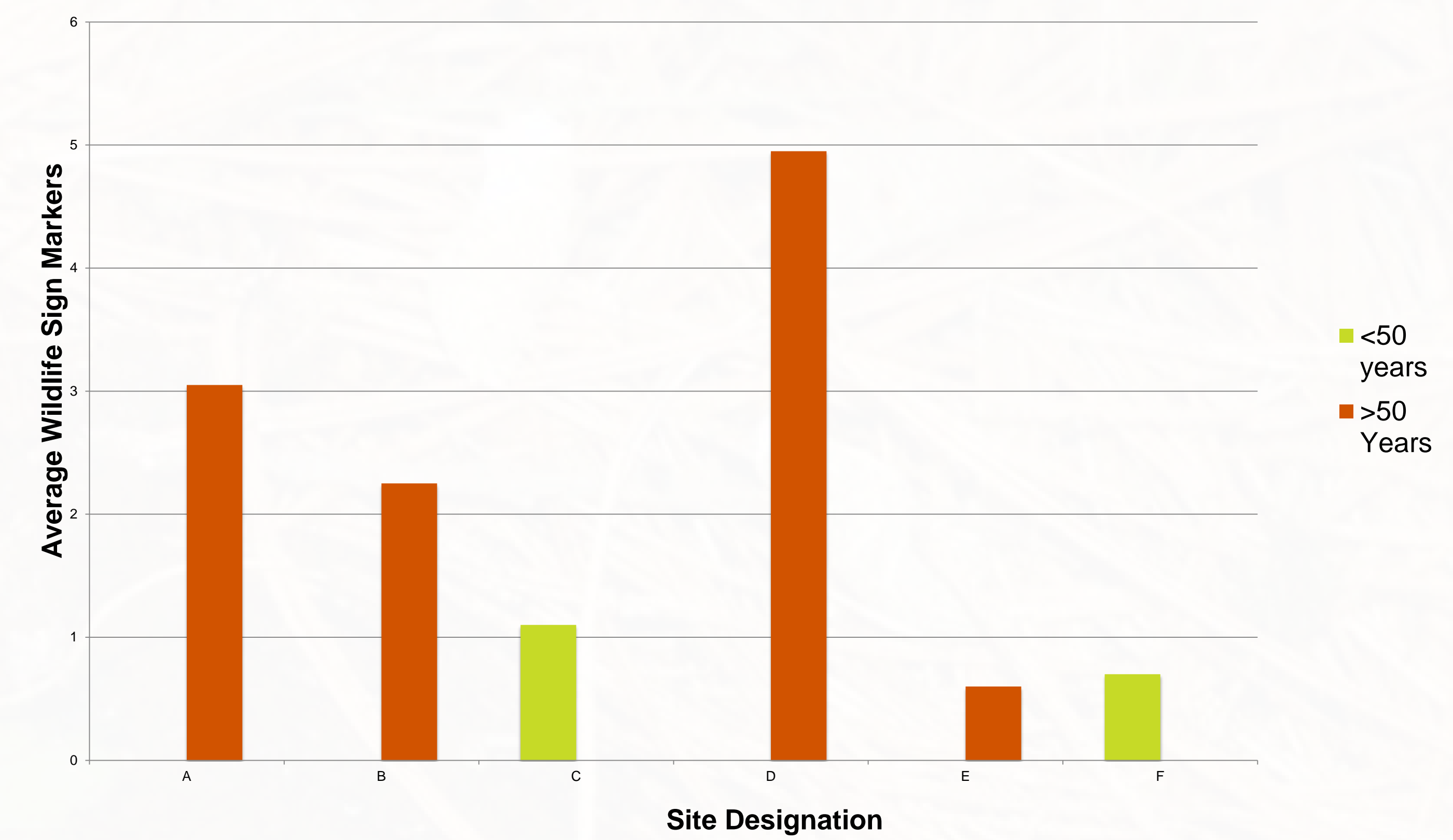
North American Porcupine seen during the study at Plot A. This porcupine was observed chewing hemlock branches both early in the morning and at dusk. A very high density of porcupine sign was seen during the study, especially at older, never-plowed habitat types.



Red Squirrel cache, seen at Plot E. Red squirrels often hang mushrooms from tree branches to dry for storage. Red Squirrel nests were also seen at this site, high in the canopy.

Other Information and Photography

Figure 3. Average Positive Wildlife Sign Markers per 100m Transect and to Forest Age.



Results:

Figure 1. Average Wildlife Sign Markers Per 100m Transect by Distance from Campus Center

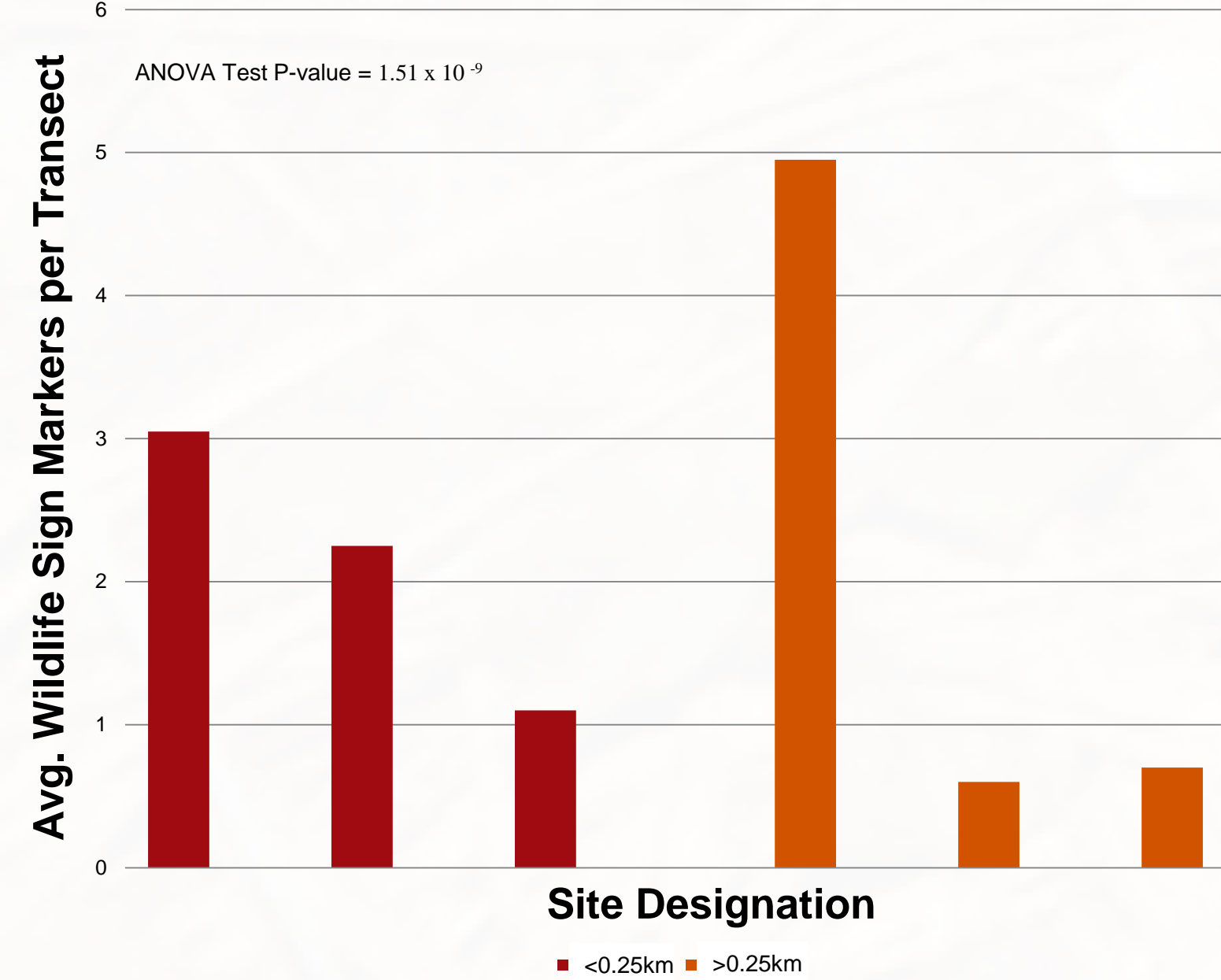
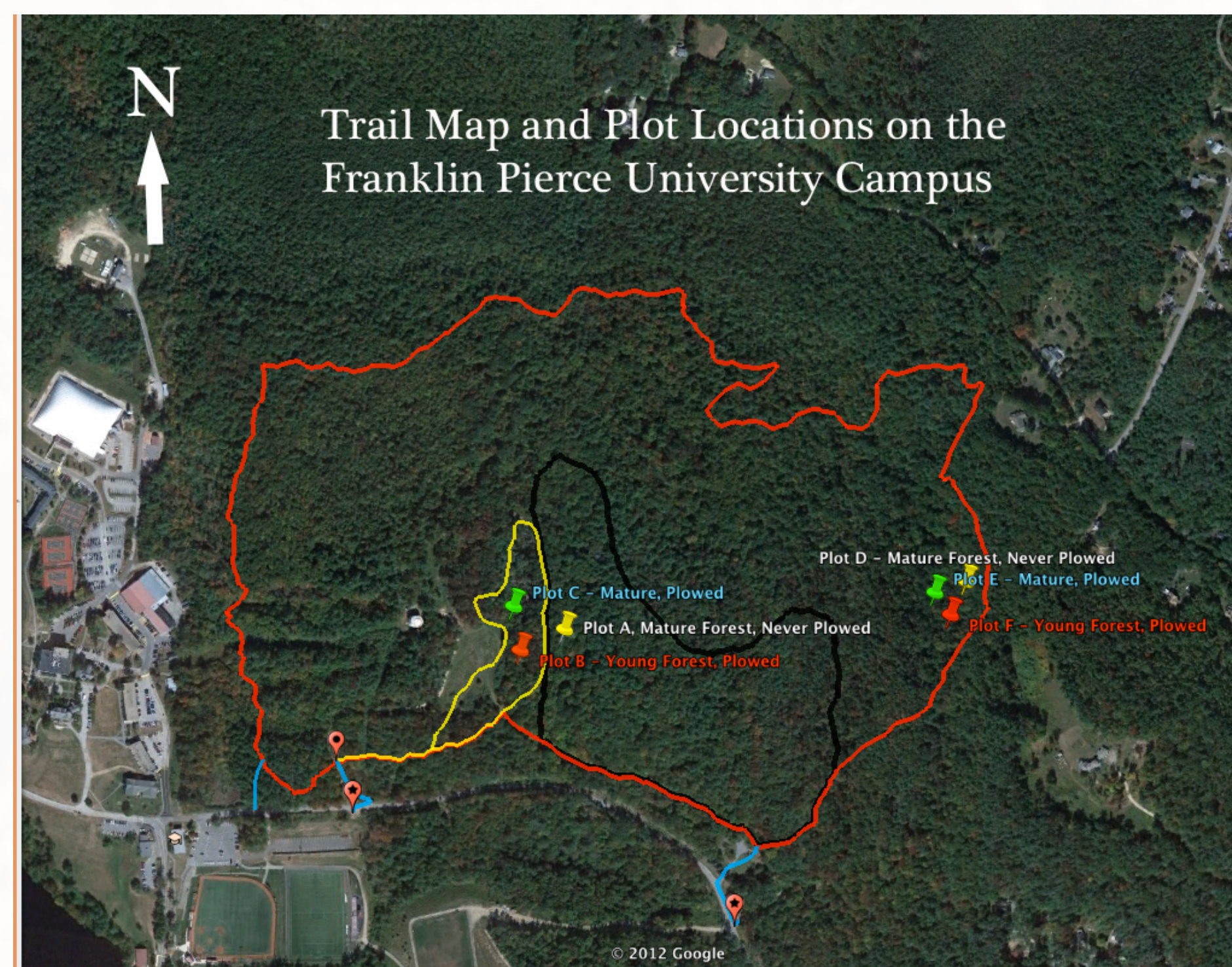
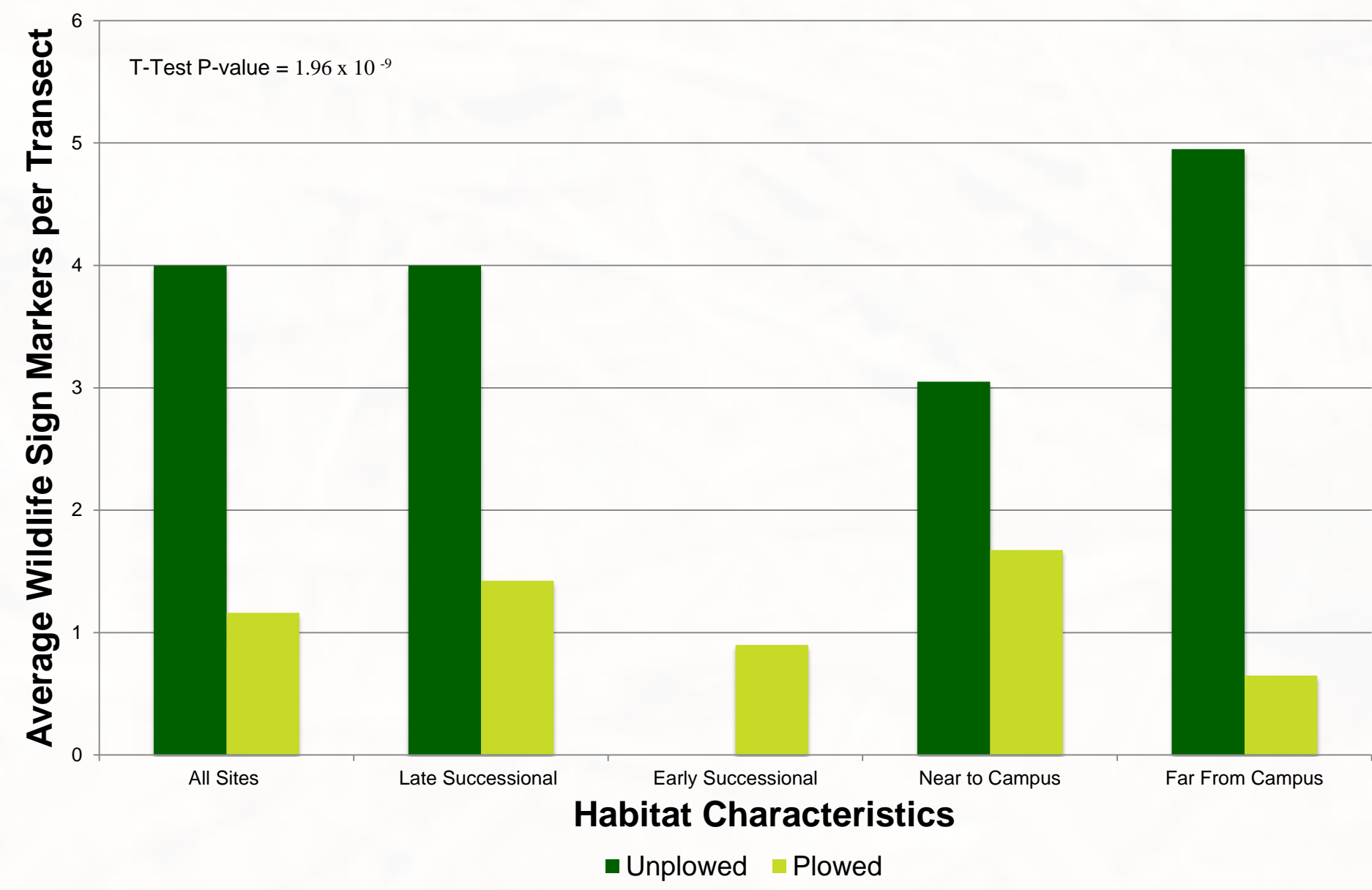


Figure 2. Average Wildlife Sign Markers per 100m Transect by Habitat Type.



Discussion: Comparing the density of wildlife sign markers to the relative distance of each plot from the Franklin Pierce University campus revealed a p-value of 0.92, indicating there was no significant relationship between those plots that were closest to human habitation and those furthest away. However, ANOVA testing revealed that there was a significant difference among habitat types (P-value of 1.51×10^{-9}) and further T-test analysis revealed that there were significant differences between sites that had historical heavy soil disturbance from plowing as compared to sites that had been used for livestock grazing and never had been disturbed by plowing (P-value of 1.96×10^{-9}). Data comparing forest age was less conclusive with a p-value of 0.11 revealing that there is no significant relationship between successional stages and the frequency of wildlife sign. These findings show that historical land use should be considered when evaluating habitat for wildlife density and future projections.



Above: Porcupines have debarked this hemlock tree due to scarcity of food at site D.

Left: White tail deer stripped bark from this sugar maple sapling at Site A. The height of these marks indicates that they were made during a time of deep snow.

Observed Sign, Species List:

- | | | |
|--------------------|------------------|-----------------|
| Black Bear | Chipmunk | Crow |
| Eastern Cottontail | Downy Woodpecker | Grey Squirrel |
| Red Squirrel | Porcupine | White Tail Deer |
| Shrew | Skunk | Raccoon |
| Grey Fox | Grouse | Turkey |
| Red Back Vole | | |