First Year Report to Keep Indianapolis Beautiful on I-70 Exit Plantings - Habitat for Plants and Animals

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We located study sites at four I-70 exits and numbered them 1 = East Street northeast, 2 = Harding Street northwest, 3 = Sam Jones northeast, 4 = Meridian Street southwest. The East Street site was not part of the KIB planting and serves as a control site.

Butler staff and students inventoried all sites for birds, mammals, reptiles and amphibians, insects and plants during the summer of 2011. These data will serve as baseline data against which to track future change as the plantings mature. We are continuing to modify our sampling techniques to match the challenges of urban ecology filed work.

Reptiles and Amphibians – Travis Ryan

In June, we deployed cover boards for sampling reptiles and amphibians at the I-70 sites. By July each of the cover boards had disappeared. We redeployed the cover boards in August, having marked the boards to identify them as part of a Butler University research project and this seems have to be adequate, as only one cover board could not be located during the September survey. To date, no amphibians or reptile have been located using this technique, although a short-tailed shrew (*Blarina brevicauda*) was espied under a cover board at the Harding Street site in September. Generally, cover boards need time to "season" before animals readily use them, and we will continue to monitor them through the fall, and begin again in the spring once temperatures have risen to the level that cue amphibian and reptile activity.

Birds – Marjorie Hennessy

Study sites were sampled using 50 meter, fixed-radius points incorporating five minute point counts (Ralph et. al., 1993). Sampling visits were conducted on the morning of July 6, 2011 between 6:24 and 7:25 A.M. Due to the size and shape of the study plots, only one sample point was incorporated at each site, and points were located in the center of the parcels. All birds observed within the sample point as well as those heard, or observed moving through the site, and birds located just off site (i.e. across access ramps) were noted. Conditions were partly cloudy and calm with temperatures ranging from 70° at the beginning of sampling to 78° F at the end. Traffic noise from exit ramps was at a moderate level, making it sometimes difficult to hear bird calls.

The following bird species were observed at each site:

1. East Street: European Starling (5), Common Grackle (1), Calling across exit ramp NW of site: Northern Cardinal (1), Gray Catbird (1)
2. Harding: Red-winged Blackbird (4), Northern Robin (1)
3. Sam Jones: European Starlings (3), Mourning Dove (3- 2 were flyovers)
4. Meridian: Tree Swallows (8), European Starlings (3 flyovers, 1 offsite), Rock Pigeon (1, offsite)

Ralph, C.J., Geupel, G.R., Tyle, P., Martin, T.E., Sante, D.F., 1993. Handbook of Field Methods for Monitoring Landbirds. USDA Forest Service General Technical Report PSW-GTR-144.

Mammals - Carmen Salsbury (csalsbur@butler.edu)

Summary for all sites combined:

A total of two species of small mammals were captured at 3 of the 4 sites. Prairie voles (*M. ochrogaster*) were most commonly captured; they appear to be the most common and most abundant species found among the sites surveyed. It is possible that the deer mouse (*P. maniculatus*) captured at the Sam Jones site was the same individual as it was captured in the same location each time. Signs of other mammal activity were observed at the Sam Jones site – this site was most secluded from traffic as the site sat up on a hill some distance from the roadways surrounding it. The use of track boards was abandoned after the beginning of the study due to weather issues, excessive heat, and risk of human tampering at the study sites.

Total trap nights: 606
Total captures: 28
Total species: 2 *M. ochrogaster* and *P. maniculatus*

Methods

Sherman live traps were set at all sites in linear transects of varying lengths. Traps were placed roughly 5m apart at each transect and were baited with peanut butter, rolled oats, and safflower seeds. Traps were set in the evening between 6:30 and 8:30 pm and were checked the following morning at 7 am and closed for the day. Trap dates and captures are listed below for each site.

Harding Street Exit - Traps were set in 8 transects of 5 traps (totaling 40 traps) or 7 transects of 5 and 1 transect of 3 (totaling 38 traps). Two transects were placed among the planted trees and the remaining were located in the "prairie" area.

22 - 23 June – no captures (40 traps)
23 – 24 June – no captures (38 traps)
26 – 27 July – 11 captures of *Microtus ochrogaster* (38 traps)
27 – 28 July – 9 captures of *M. ochrogaster* (38 traps)

Site total: 154 trap nights / 20 captures / 1 species

Sam Jones Exit – Traps were set in 3 transects of 10 among the planted trees and grasses and 1 transect of 8 in the unplanted grassy area near large bushes (totaling 38 traps) OR in 4 transects of 10 among the planted trees and grasses (totaling 40 traps).

28 – 29 July – 1 capture, *Peromyscus maniculatus* (?) Also, set 2 track boards and found signs of raccoons and dogs on the board near the bushes. Rabbit scat also observed along the transects among the trees. (38 traps)
29 – 30 July – no captures (38 traps)
9 – 10 August – 1 capture, *P. maniculatus* (40 traps)
10 – 11 August – 1 capture, *P. maniculatus* (40 traps)

Site total: 156 traps nights / 3 captures / 1 species

Meridian St. Exit – Traps were set in 3 transects of 10 and 1 transect of 8 (totaling 38 traps). Two transects were placed on each side of the central drainage ditch. Site consisted mostly of mulch beds planted with cone flowers, black-eyed Susans, etc.

12 – 13 July – no captures
13 – 14 July – no captures
9 – 10 August – no captures
10 -11 August – no captures

Site total: 152 trap nights / no captures

East Street (control) – Traps were set in 3 transects of 12 (totaling 36 traps) in grassy area.

20 – 21 July – no captures
21 – 22 July – no captures
7 – 8 August – 3 captures of *Microtus ochrogaster*
8 – 9 August – 2 captures of *M. ochrogaster*

Site total: 144 trap nights / 5 captures / 1 species

Insects – Tim Carter (tcarter@butler.edu) and student Shelby Johnson (sdjohns2@butler.edu)

On July 7, 2011, we first went to all four sites and took GPS coordinates of each site to use to get random points for the insect collections. We then generated random coordinates using a computer program, three points at East Street and Meridian Street and six at the Harding Street exit and Sam Jones, depending on the type of landscape present. Lastly on July 15, we went out to all of the sites and took samples at the random coordinate points. Now we are sorting through all of the 18 summer

samples to count individual insects and identify them to group, and planning for a trip to take fall samples shortly.

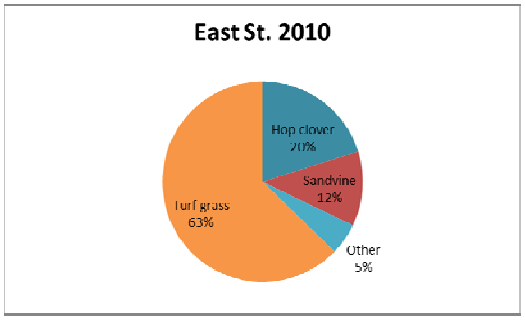
For the sampling we used a leaf blower with pantyhose and pvc pipe inside to collect the sample. We laid down a one-meter square, made out of piping, at the random GPS points and sucked with the leaf blower for one minute at each point.

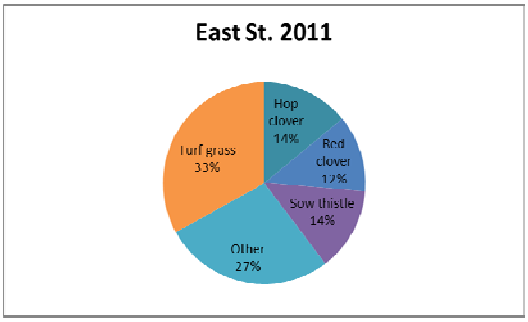
Plants – Rebecca Dolan (rdolan@butler.edu)

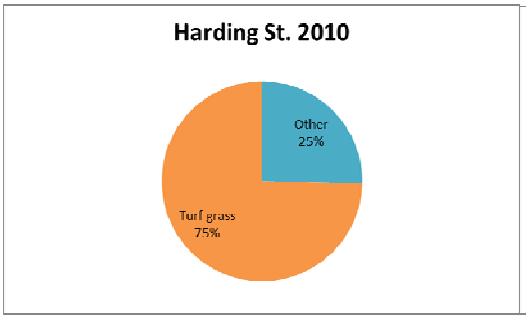
All sites were visited during October of 2010 before the plantings do gather "before" data. Each site was revisited in June of 2011. Future surveys will also be done in June. During visits, entire exit areas were scouted and all species present were recorded. In addition, 10 m^2 quadrats were selected haphazardly by tossing a PVC pipe square on to the vegetation. In each square, all species present were identified and scored for percent cover as follows, using equal angular (arcsine square root) classes: 1-7%, 8-25%, 26-50%, 51-75%, 76-93% and 94-100%. We report summaries from the quadrat data here, along with whether species are native or non-native and their Coefficient of Conservatism score, a ranking system from 0 -10 for native species with higher numbers indicating greater fidelity to high-quality habitat. Low scoring species are plants that are not picky and can grow in very disturbed habitat.

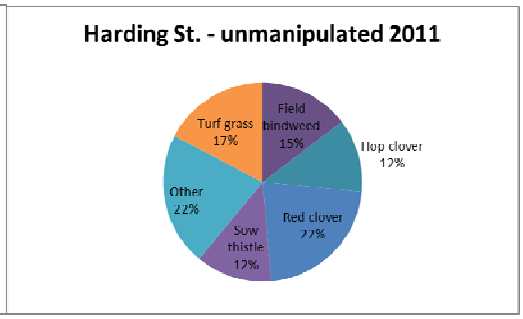
Scientific Name	Common Name	2010	2011	Native	C-value	Planted by KIB
Alopecurus pratensis	Shortawn foxtail	**x**				
Apocynum cannabinum	Indian hemp	**x**		x	2	
Asclepias syriaca	Common milkweed		**x**	x	1	
Avena sativa	Annual oats		**x**			x
Bromus inermis	Smooth Brome		**x**			
Chenopodium album	Lamb's quarters		**x**			
Convolvulus arvensis	Field bindweed	**x**	**x**			
Conyza canadensis	Canadian horseweed		**x**	x	0	
Coronilla varia	Crown vetch	**x**				
Cynanchum laeve	Sandvine	**x**	**x**	x	1	
Daucus carota	Queen Anne's lace	**x**	**x**			
Echinacea purpurea	Purple coneflower		**x**	x	6	x
Festuca rubra	Red fescue	**x**	**x**			
Geranium aequale	Cranesbill		**x**			
Hordeum jubatum	Squirrel-tail grass		**x**			
Lactuca serriola	Prickly lettuce		**x**			
Lepidium campestre	Field pepperweed		**x**	x	0	
Lolium multiflorum	Annual ryegrass		**x**			x
Lolium perenne	Perennial ryegrass	**x**	**x**			
Lotus corniculatus	Bird's-foot trefoil	**x**	**x**			
Melilotus officinalis	Sweetclover	**x**	**x**			
Morus alba	White mulberry	**x**				
Panicum virgatum	Switch grass		**x**	x	4	x
Phleum partense	Timothy grass		**x**			
Plantago lanceolata	Narrowleaf plantain	**x**	**x**			
Rudbeckia hirta	Black-eyed Susans		**x**	x	2	x
Schedonorus arundinaceus	Tall fescue	**x**	**x**			
Schedonorus pratensis	Meadow fescue		**x**			
Solanum carolinense	Carolina horsenettle	**x**		x	0	
Sonchus arvensis	Field sowthistle	**x**	**x**			
Taraxacum officinale	Common dandelion		**x**			
Tragopogon pratensis	Common goat's beard		**x**			
Trifolium camprestre	Low hop clover		**x**			
Trifolium pratense	Red clover	**x**	**x**			
Ulmus pumila	Siberian elm		**x**			
Veronica peregrina	Speedwell		**x**	x	0	

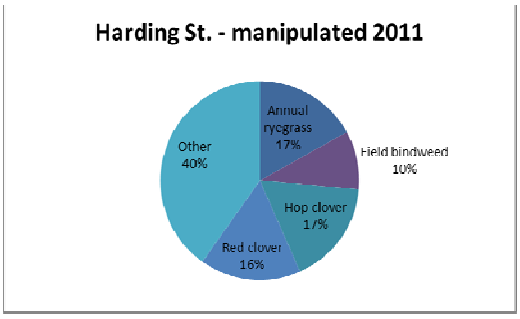
The pie charts below present Relative Importance Values (derived from frequency and cover-class) for plants found during the sample years. For Harding Street and Sam Jones, we surveyed both areas that had been planted (=manipulated) and areas that had not been planted (=unmanipulated). Turf grass refers to all cool season grasses. Annual ryegrass is a cover crop for native grass seed. The data clearly show site quality in terms of plants has been greatly improved by the plantings. Changes include less non-native turf grass, more native plants, and plants of higher quality based on C-value.

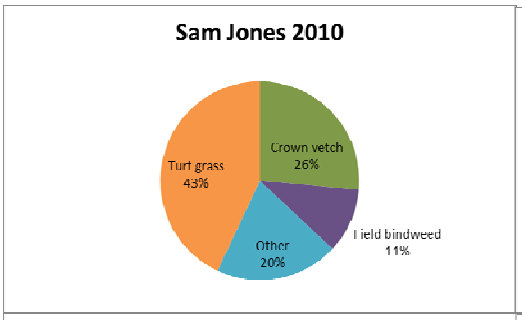


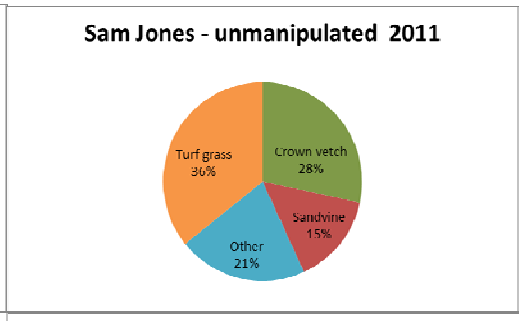


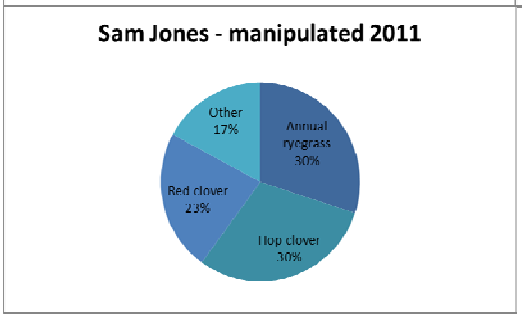


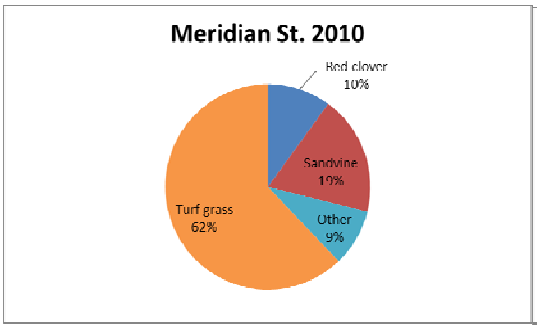


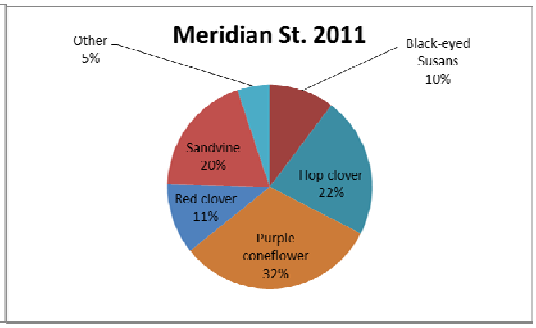



Sam Jones 2010
Crown vetch 26%
Field bindweed 11%
Other 20%
Turf grass 43%


Sam Jones - unmanipulated 2011
Turf grass 36%
Crown vetch 28%
Sandvine 15%
Other 21%


Sam Jones - manipulated 2011
Other 17%
Annual ryegrass 30%
Red clover 23%
Hop clover 30%


Meridian St. 2010
Red clover 10%
Sandvine 19%
Other 9%
Turf grass 62%


Meridian St. 2011
Other 5%
Black-eyed Susans 10%
Sandvine 20%
Hop clover 22%
Red clover 11%
Purple coneflower 32%