

BISHOP DUNNE HIGH SCHOOL FIRE ANT PROJECT

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Cooperators: Dr. Charles Barr and Brad Baker

Summary: In the ongoing battle to control the red imported fire ant many debates arise. One such controversy is the effect of broadcast baits used for red imported fire ant (*Solenopsis invicta* Buren) control on non-target (native) ant species. Recent evidence suggests that fire ants are affected considerably more than native ants, which allows the native ants to regain territory and/or increase in diversity and abundance in the absence of fire ant competition. The Texas Cooperative Extension together with Bishop Dunne High School set out to look at this question. The site for this test was selected in the formal gardens at Kiest Park, southwest of downtown Dallas. Students identified and marked off each individual ant mound in the test site. Each mound was then mapped and digitized as to its location, relative to surrounding features in the site. Mounds were then treated with Amdro Fire Ant Bait (0.73% hydramethylnon) and after a period of time mound sites and ant populations were recorded again. The students were able to take the data from this test and create G.P.S. based maps showing ant intensities, and movement throughout the test site project allowed the students of Bishop Dunne High School to apply their computer skills to a very real problem facing the residents of Dallas.

Problem: Mr. Brad Baker and his High School G.P.S. course (8th grade -12th grade) needed a way to incorporate the knowledge they had gained in their G.P.S. course, and the Texas Red Imported Fire Ant Project needed a way to map out the spatial dynamics of fireant:native ant interactions.

Objective: To map out the specified area of Kiest Park and observe the Fire Ant activity in said region.

Materials and Methods

The site was mapped out and or/digitized, including the locations of man-made features, locations of trees, and shrubs. Prior to treatment, these areas were surveyed by the students of Bishop Dunne High School for active fire ant mounds and then their locations were plotted using the G.P.S. system. Ten permanent sample sites were established for the purpose of monitoring forage ants. The sites were designated with nails and paint to ensure there permanence. Foraging ants were sampled and monitored using baited condiment cups. One bait cup was placed at each sample site. The bait cups contained a proteinaceous/fatty bait such as Vienna sausages. Bait cups were left open for ½ to one hour, depending on recruitment pressure, then capped and frozen for later identification.

Evaluations (both mound counts and bait cups) took place immediately prior to treatment and several weeks post treatment. Treatment was made using Amdro® Fire Ant Bait (0.73% hydramethylnon) applied at 1.5 lbs./acre using a hand-held broadcast spreader on 1-May-01.

Results and Discussion

The ten permanent sample sites were monitored and bait cups were placed out 4 days after the initial treatments. After the first surveys were completed, the ten transects were reduced to eight. This was done in order to add the students in the arrangement of their maps. Results of the surveys are detailed in Table 1, 2 and 3. Unfortunately, there were no native ants found in the treated areas. However, in the untreated areas the tables show the pressure which the fire ants place on the native ants. Fire ants that were present in the treated area were significantly reduced. The G.P.S. maps created by the Bishop Dunne High School students that detail the positions of the mounds, and the mound densities are under the headings Figures 1, 2 and 3. To view the graphs created by the students of Bishop Dunne High School in full color go to the fire ant web site: fireant.tamu.edu.

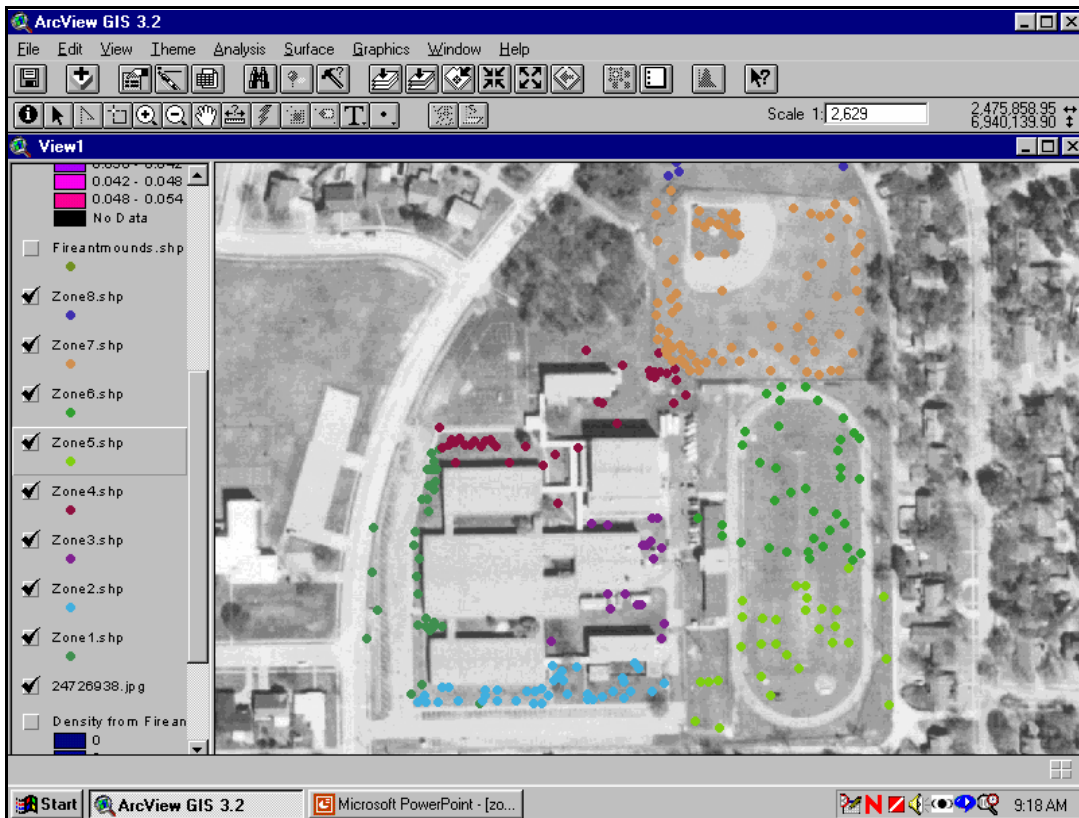


Table 1. Kiest Park bait cup survey results, May 4 - 8, 2001.

Transects 6-10 Checked 8-May-01
9:00am / 71°F

Transects 1-5 Checked 4-May-01
10:30am / 63°F

bait cups #1 close to road
bait cups #5 runs along tree line

Transect 1	Transect 2	Transect 3	Transect 4	Transect 5	Transect 6	Transect 7	Transect 8	Transect 9	Transect 10
1	x	x	x	x	x	pd	mm	x	si
2	x	x	x	x	si	ts	mp	si	dp
3	x	x	x	x	ts	pd	pi	si	pi
4	x	x	x	x	x	c	si	x	dp
5	x	x	x	x	/	/	/	/	/

* *Highlighted square denotes treatment with Amdro*
X - no ants trapped
/ - no trap set

Ant Identification Key

- si - *Solenopsis invicta*
- mm - *Monomorium minimum*
- c - *Crematogaster* species
- pi - *Prenolepis imparis*
- pd - *Pheidole denata*
- ts - *Tapinoma sessile*
- mp - *Monomorium pharaonis*
- dp - *Dorymyrex pyramicus*

Table 2. Kiest Park bait cup survey results, June 8, 2001.

Partly Cloudy
81 Degrees

bait cups- #1 close to road
bait cups - #4 runs along tree line

bait cup	Transect T1	Transect T2	Transect T3	Transect T4	Transect C5	Transect C6	Transect C7	Transect C8	Transect C9
1	X	X	X	X	si	si	si	dp	mm
2	X	X	X	X	si	si	dp	mm	mm
3	X	X	X	X	si	si	dp	/	/
4	si	X	X	X	/	/	/	/	/

* Highlighted square denotes treatment with Amdro
X - no ants trapped
/- no trap set

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Table 3. Kiest Park bait cup survey results, July 8, 2001.

Sunny
 91 Degrees

bait cups- #1 close to road
 bait cups - #4 runs along tree line

bait cup	Transect T1	Transect T2	Transect T3	Transect T4	Transect C5	Transect C6	Transect C7	Transect C8	Transect C9
1	X	X	X	X	si	si	si	dp	mm
2	X	X	X	X	si	si	dp	mm	mm
3	X	X	X	X	si	si	dp	/	/
4	si	X	X	X	/	/	/	/	/

* Highlighted square denotes treatment with Amdro
 X - no ants trapped
 / - no trap set

Figure 1. Transects in Kiest Park.

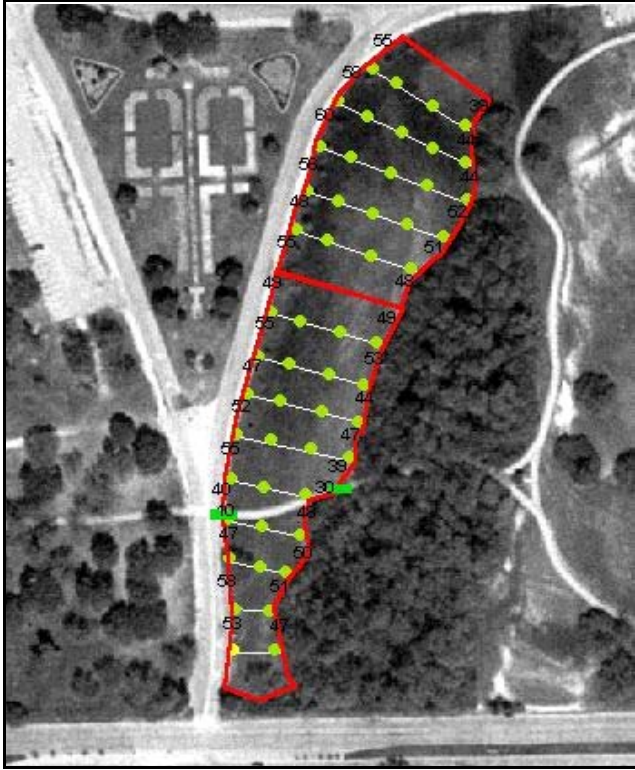
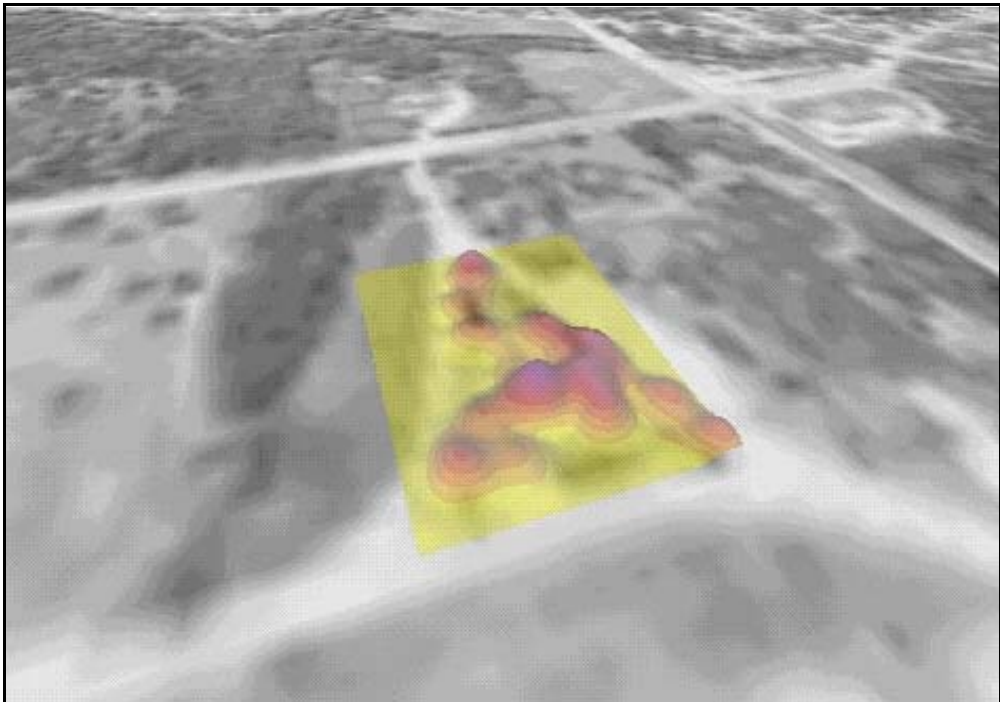


Figure 2. Density of fire ant mounds in Kiest Park.



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fire ant mounds as well as density of mounds in Kiest Park.

