



# Soil Chemistry in The Big Thicket National Preserve



James Aaron Wood, NSF Big Thicket Summer Institute Research Team, Eastfield College, DCCCD

## Abstract

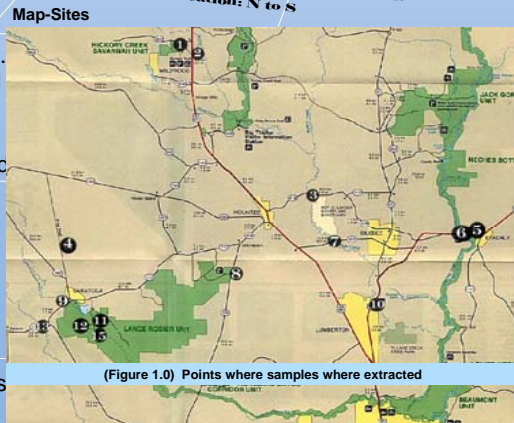
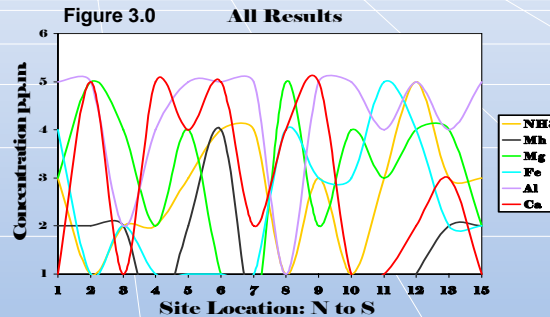
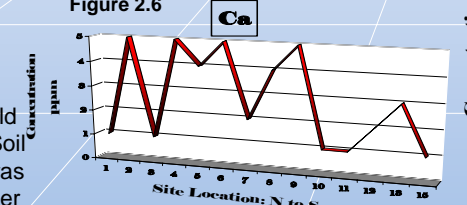
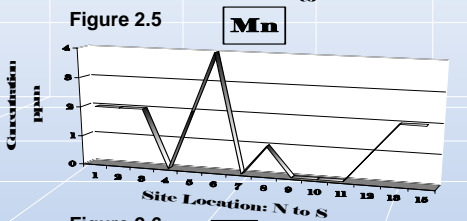
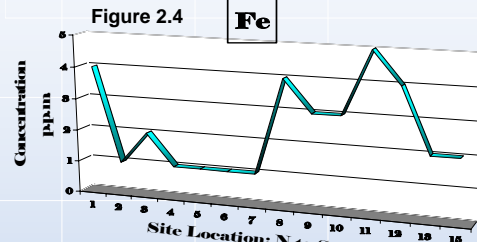
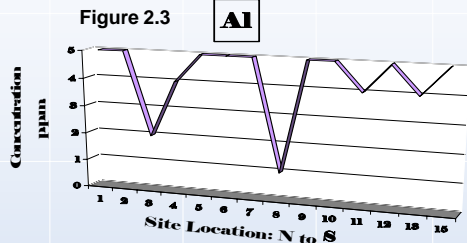
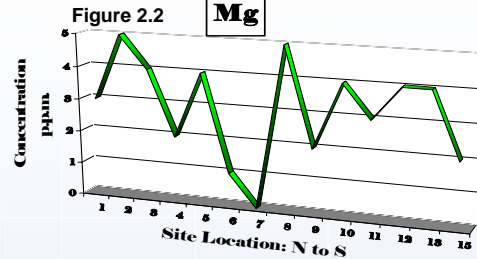
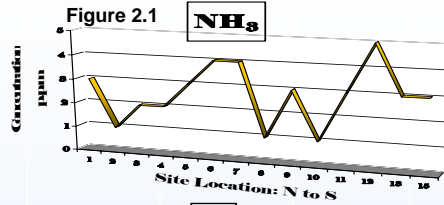
The purpose of this experiment was to determine differences in the macronutrients, micronutrients, and trace elements between the northern and southern units of The Big Thicket National Preserve, in Hardin County, Texas. Samples were collected and tested by using standard chemical tests. Results of these preliminary tests suggest there was no northern to southern difference in the chemical makeup of the soil in the Big Thicket.

## Introduction

The hypothesis of this experiment was to determine differences in mineral and nutrient levels found in the units of the Big Thicket National Preserve from north to south. Samples were collected from fourteen different sites. Eight tests were to be conducted: Nitrogen, Nitrate-Nitrogen, Magnesium, Manganese, Iron, Aluminum, Calcium, Sulfur. The results from these tests were to be used to determine if there was a difference in the macronutrients, micronutrients, and trace elements between the northern and southern units of the Big Thicket National Preserve.

## Methods

Samples were collected in the Big Thicket in June of 2007. Tests on the samples were conducted at Eastfield College, in Mesquite, Texas. The testing kit, LaMotte Soil Micronutrient Test Kit Model AM-32 Code# 5938-01, was used to test the soil samples. The LaMotte Soil Sampler Model EP was used to collect the samples. Sample locations were documented using a Garmin ETrex G.P.S. locator. See (Fig. 1.0 ,Table 1.0). Sample sites are listed from north to south, and concentration level being classified from very low being #1 to very high being #5 (table 1.0) Eight standard chemical tests were conducted using Soil Micronutrient Test Kit. Chemical tests were conducted for, Nitrogen (N), Nitrate-Nitrogen (NH<sub>3</sub>), Magnesium (Mg), Manganese (Mn), Iron (Fe), Aluminum (Al), Calcium (Ca), Sulfur (S). Soil samples #2 through #13 were collected 10 feet from the river bank. Samples from #1,#8, #15, were collected by other research team members. Sample # 6 was collected from the bottom of the Neches River. Samples were stored in sampling bags until the time of testing.



Site	Location Site	G.P.S		
1	Sundew Trail*	N30 30.545 W94 24.655	8	Little Rock Rd* N30 18.446 W94 22.428
2	V.C Sundew Trail	N30 28.319 W94 23.163	9	L.P.I.Bayou at 770 N30 24.059 W94 33.655
3	Village Creek at 418	N30 23.887 W94 15.884	10	Village Creek at 96 N30 17.135 W94 11.503
4	Ghost Rd Slough	N30 18.544 W94 32.522	11	L.R.U Kinky Creek N30 16.122 W94 30.292
5	Neches at 96	N30 21.478 W94 06.069	12	L.R.U Cypress Slough N30 15.840 W94 30.777
6	Neches at 96 (MB)	N30 21.267 W94 05.863	13	P.I.Bayou at 105 N30 15.436 W94 34.072
7	Village Creek at 327	N30 20.825 W94 14.381	15	L.R.U Cotton Rd* N30 14.598 W94 29.098

## Results

The Nitrate-Nitrogen had a low reading at site #2, #8, #10, and a very high reading at site #12 (Figure 2.1). Magnesium had a very low reading at site # 6, and results were negative at site #7. The highest readings came from sites #2, and #8. (Figure 2.2). The Manganese tests had minimal readings, with the exception of samples taken at site #6 (Figure 2.3). Iron was very low except at site #11 (Figure 2.4). Aluminum was very low in site #8, but, very high at the other sites (Figure 2.5). The Calcium test results varied greatly between sites (Figure 2.6). Results were negative for nitrogen and sulfur at all sites.

## Discussion

Based on the test results, no differences were observed among the macronutrients, micronutrients, and trace elements from the northern to the southern units of The Big Thicket National Preserve. The Aluminum and Calcium tests were inversely proportional to each other. The Magnesium and Calcium test results were parallel (Figure 3.0).

## Conclusion

No differences in macronutrients, micronutrients, or other trace elements were found in the Big Thicket National Preserve from north to south. Further studies are needed to determine soil nutrient differences between units.

## Acknowledgments

Dr. Carl Knight: Principal Investigator, Dr. Jill DeVito: Lab Coordinator, Don Hellstern: Geologist, Jeff Hughes: Biologist, Melanie Gill-Shaw: NSF Project Coordinator, Daymi Pardo: NSF Step Case Manager, Mario Coleman: Lab Technical, Marcial Diaz: Upward Bound Intern, Eastfield College Project Pathways Summer Institute, National Science Foundation Science Expansion Program, The National Park Service, The Big Thicket Association, Grant # DUE-0525536