

A Survey of Snakes in Steele Creek Park

In completion of Mrs. Dickerson's Special Problems Class

Conducted from September, 2002 to April, 2003

by Patrick Gentry

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Abstract

The purpose of this project was to take a survey of snakes in Steele Creek Park. Such a survey has not been conducted since a 1972 wildlife survey by Brent Rowell. The recent survey was conducted using observational, drift fence/pitfall, and funnel trapping methods. During the survey, 4 Garter snakes (*Thamnophis s. sirtalis*), 2 Ringneck snakes (*Diadophis punctatus edwardsii*), 2 Northern Water snakes (*Nerodia s. sipedon*), a Black Rat snake (*Elaphe o. obsoleta*), a Copperhead (*Agkistrodon contortrix*), a Queensnake (*Regina Septemvitta*), and 2 unknowns were documented. All of these snakes were documented through observational methods; traps caught no snakes. All of these findings agreed with snakes already thought to be in the park, as well as Brent Rowell's 1972 study.

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Introduction

The purpose of this project is to take a survey of snakes in the Steele Creek Park area of Bristol, TN in Sullivan County. There is a need for this survey because Steele Creek Park has no definitive records of the snakes in the park. In 1972, Brent Rowell did a study of life in Steele Creek, including some reptiles (Rowell, 1972); however, no work has been done since. My mentor Kevin Hamed, Steele Creek Park Nature Center Manager, suggested this survey to me because I have a fascination with snakes and that such a study would be beneficial to the park's records.

Snakes are members of the order Squamata and the suborder Serpentes (Peterson, 1998). Most snakes are members of the family Colubridae, but most poisonous snakes are members of the family Viperidae. The Northern Water (*Nerodia s. sipedon*), Queen (*Regina septemvitta*), Eastern Garter, Eastern Hognose (*Heterodon platirhinos*), Eastern Ringneck (*Diadophis punctatus edwardsii*), Eastern Worm (*Carphophis a. amoenus*), Corn (*Elphae guttata emoryi*), Black Rat (*Elphae o. obseleta*), E. Milk (*Lampropeltis t. triangulum*), N. Copperhead (*Agkistrodon contortrix mokasen*), Timber Rattler (*Crotalus horridus*), N. Black Racer (*Coluber c. constrictor*), and N. Redbelly (*Storeria o. occipitomaculata*) snakes (Tennessee, 2002) are snakes that should be found in this area. These snakes have been documented before in Sullivan County, not necessarily Steele Creek Park.

Many researchers have captured snakes alive through several different methods. The first and simplest is basic observation. They would walk the trails and would look and listen for any movement. If they saw a snake they would capture it (Prior, 2001). Another method is a pitfall trap, which is simply a hole in the ground that a snake would

just wonder into; however, this method is not very effective by itself (Enge, 2001). In order to effectively use the pitfall trap they should be used in tandem with a drift fence mechanism. A drift fence is a fence made of common plastic or metal material available at many hardware stores. The mechanism consists of several yards of the drift fence arranged in any form of crosses or straight lines with pitfall traps buried at the ends of the fence posts. This mechanism tricks a snake, which has poor eyesight, into using the fencing as a path to feel its way along, and eventually fall, into the pitfall trap (Enge, 2001). This method is best for marsh areas, such as the wetlands area of Steele Creek Park (Enge, 1997). Finally, the funnel trap is known to be one of the most effective traps for snakes. A funnel trap is basically a modified minnow trap (Casazza, 2000). A mesh cylinder is made with inward-pointing funnels at one or both ends. This way, a snake may easily get in, but is rarely able to find its way out. All of these methods were used in my inventory of Steele Creek Park's snakes.

Methods and Materials

Sampling was conducted in the Steele Creek Park area of Bristol, TN in Sullivan County. Steele Creek Park is a 2,214-acre park consisting of forest, grassland, lake, and marshland environments. Traps were established in 2 randomly selected sites in the park. One of the sites was located in the Trinkle Hollow area of the park and one was located in the Slagle Hollow area of the park. Trapping sites included lightly and heavily forested environments. Trapping arrays consisted of 61 meters of black plastic drift fence divided into three 20-meter sections. Three sections were arranged in a box-U formation at the site 1 and one section in a straight line at site 2. The drift fences were also buried 1-2.5 centimeters into the ground for support and to prevent specimens from breaching the fence. Small drainage holes were drilled in the bottom of a total of four five-gallon buckets buried flush with the ground at the ends and intersections of the fences. These traps were not baited.

Funnel traps were also used at the trapping sites. They consisted of a piece of window screen rolled into a 20x61cm cylinder and stapled, with an inward-pointing funnel folded into both ends. Three funnel traps were placed randomly along each of the drift fence lines. These traps were not baited.

The traps, once completed, were left open, weather willing, for approximately 5 24-hour periods. The traps were checked every day for specimens. All specimens caught were documented, but non-snake specimens were not included in final data set. On days when the traps could not be checked, they would be closed the night before by placing plywood boards over the pitfalls and stuffing sponges into the funnel trap openings.

Specimens were also sampled in a non-trapping fashion. Observational sampling techniques were employed repeatedly. Observational sampling consisted of walking the trails of the park, looking for snakes. When a snake was found, some type of probe would be used to pin the snake so that the head could be grabbed. Once the snake was under control, it would either be placed into a pillowcase for transport, or measured on the spot.

In order to organize the locations where specimens were captured, 5 trapping areas were mapped out. The 1st trapping area encompassed the entire lakeside trail up to the dam. The 2nd trapping area encompassed the entire northern shore of the lake. The 3rd trapping area encompassed the Rooster Front dam and the small area surrounding it. The 4th trapping area encompassed the 1st pitfall trap area. The 5th trapping area encompassed the 2nd pitfall trap area.

All snakes that were caught were measured by full body length in centimeters. Also documented were species, any apparent injuries, time of day it was caught, and any other noteworthy observations. All snakes were generally documented without supervision, but in the case of finding a poisonous snake, Kevin Hamed would be called to assist.

Results

From a total of 41 field days at Steele Creek Park, 13 snakes were captured. Of these 13 there were 6 different species: the black rat snake (*Elaphe o. obsoleta*), the queensnake (*Regina septemvitta*), the copperhead (*Agkistrodon contortix*), the ringneck snake (*Diadophis punctatus edwardsii*), the northern water snake (*Nerodia s. sipedon*), and the eastern garter snake (*Thamnophis s. sirtalis*). Of the 3 different trapping methods used, observational methods captured all of the snakes found in this study. The drift fence and funnel traps captured no snakes, but 10 toads were trapped. Heavy complications were encountered with the drift fence traps because they often flooded with water, rendering them useless. Another downfall of drift fence traps was the time consuming installation. It took almost a week and a half to install one drift fence; however, it would have taken longer if Dr. Richard Gentry had not graciously volunteered 6 hours to help install the trap with heavy machinery.

Two unknowns were found in Area 3. They were crawling around the dam's base and quickly hid before they could be identified. One seemed to have the coloration of a black rat snake, but confirmation was not made. The other seemed to have the golden markings of a copperhead, but confirmation was not made.

One black rat snake was captured by hand in Area 2. It was the largest snake that was seen the entire study. A direct measurement of the snake was abandoned because the head could not be placed under control. Thus, holding the snake against a tree and measuring its furthest reaching point created an accurate, indirect measurement.

One queensnake was captured by hand in Area 3. It was basking by the side of the lake in some brush. It was found shortly after a rainy period in the park. It is likely that

the snake was preparing or in the process of searching for food since the snake was probably under shelter for the preceding days. A direct measurement was made.

One copperhead was spotted in area 5. This was the only snake found in Area 5, a trapped area. However, the copperhead was not found in the trap, but rather was found along the trail in front of the trap. An attempt to capture the poisonous snake was not made due to safety procedures laid out by Kevin Hamed. An indirect measurement was made.

Two eastern ringneck snakes were captured by hand in Areas 4 and 5. Though both of these areas were trapping areas, neither of the snakes were found in the traps. The ringneck snake found in Area 4 was located on the outskirts of the area, at the base of a tree, in some mulch. A direct measurement was taken. The ringneck snake found in Area 5 was the only snake that was found in Area 5. It was found on a very cold morning and appeared to be almost frozen. After measurement, the snake was placed under a rock shelter to warm.

Two northern water snakes were captured by hand in Areas 1 and 3. The water snake that was captured in Area 1 was a baby that a jogger spotted. The snake was extremely aggressive and bit the author while measurements were being taken. The Water snake that was found in Area 3 was a full-grown and basking on the shore near the dam. This Water snake was also very aggressive and bit the author while measurements were being taken. These were the only 2 bites that occurred during the entire study.

Of 4 eastern garter snakes found in the park, 3 were captured by hand in Area 1 and 1 was captured by hand in Area 2. Two garter snakes captured in Area 1 appeared traveling together. The third was captured under normal circumstances. Cory Brown

pointed out the garter snake that was captured in Area 2. Once the garter snake was captured, a direct measurement was taken.

Figure 1

Overview Data Sheet				
Date	Approx. T.O.C.	Name	Species	Full Length (cm)
9/14/2002	9:00 AM	Unknown	<i>Unknown</i>	Unknown
9/14/2002	9:05 AM	Unknown	<i>Unknown</i>	Unknown
9/18/2002	4:30 PM	Garter	<i>Thamnophis s. sirtalis</i>	62
9/18/2002	4:30 PM	Garter	<i>Thamnophis s. sirtalis</i>	59.3
9/18/2002	4:45 PM	N. Water	<i>Nerodia s. sipedon</i>	16
9/21/2002	9:30 AM	B. Rat	<i>Elphae o. obsoleta</i>	103
9/21/2002	11:00 AM	Garter	<i>Thamnophis s. sirtalis</i>	54.5
9/25/2002	4:00 PM	N. Water	<i>Nerodia s. sipedon</i>	55
3/1/2003	1:00 PM	Copperhd.	<i>Agkistrodon contortrix</i>	46
3/28/2003	8:00 AM	Ringneck	<i>Diadophis punctatus edwardsii</i>	25.3
4/12/2003	11:15 AM	Ringneck	<i>Diadophis punctatus edwardsii</i>	10.5
4/12/2003	12:15 PM	Queensnk	<i>Regina septemvitta</i>	45.7
4/14/2003	5:00 PM	Garter	<i>Thamnophis s. sirtalis</i>	26

Figure 2
Snakes Captured

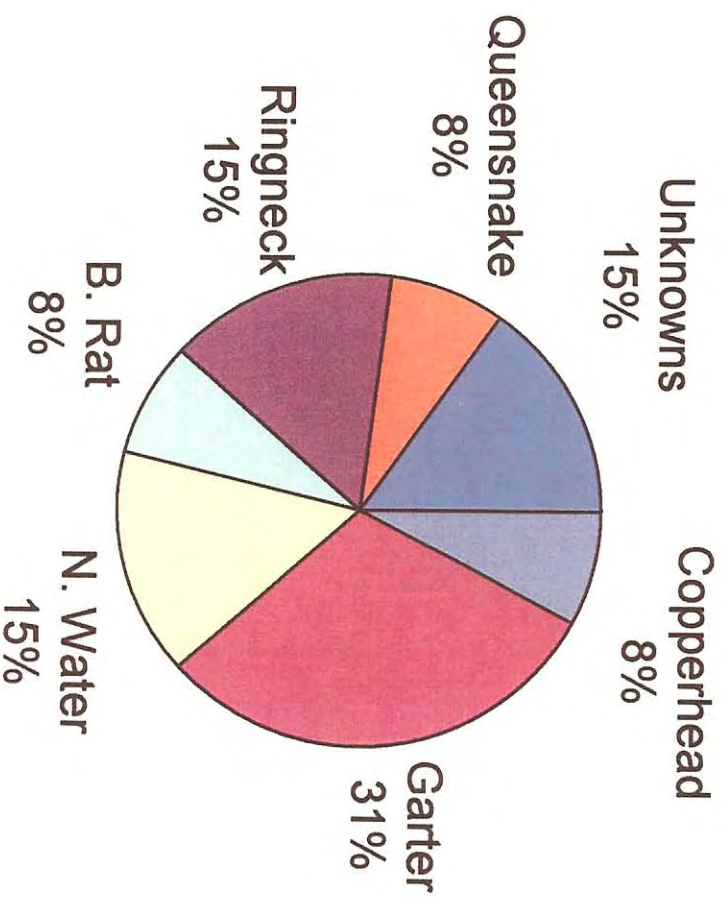


Figure 3
Average Precipitation v. Precipitation
(Almanac 2003)

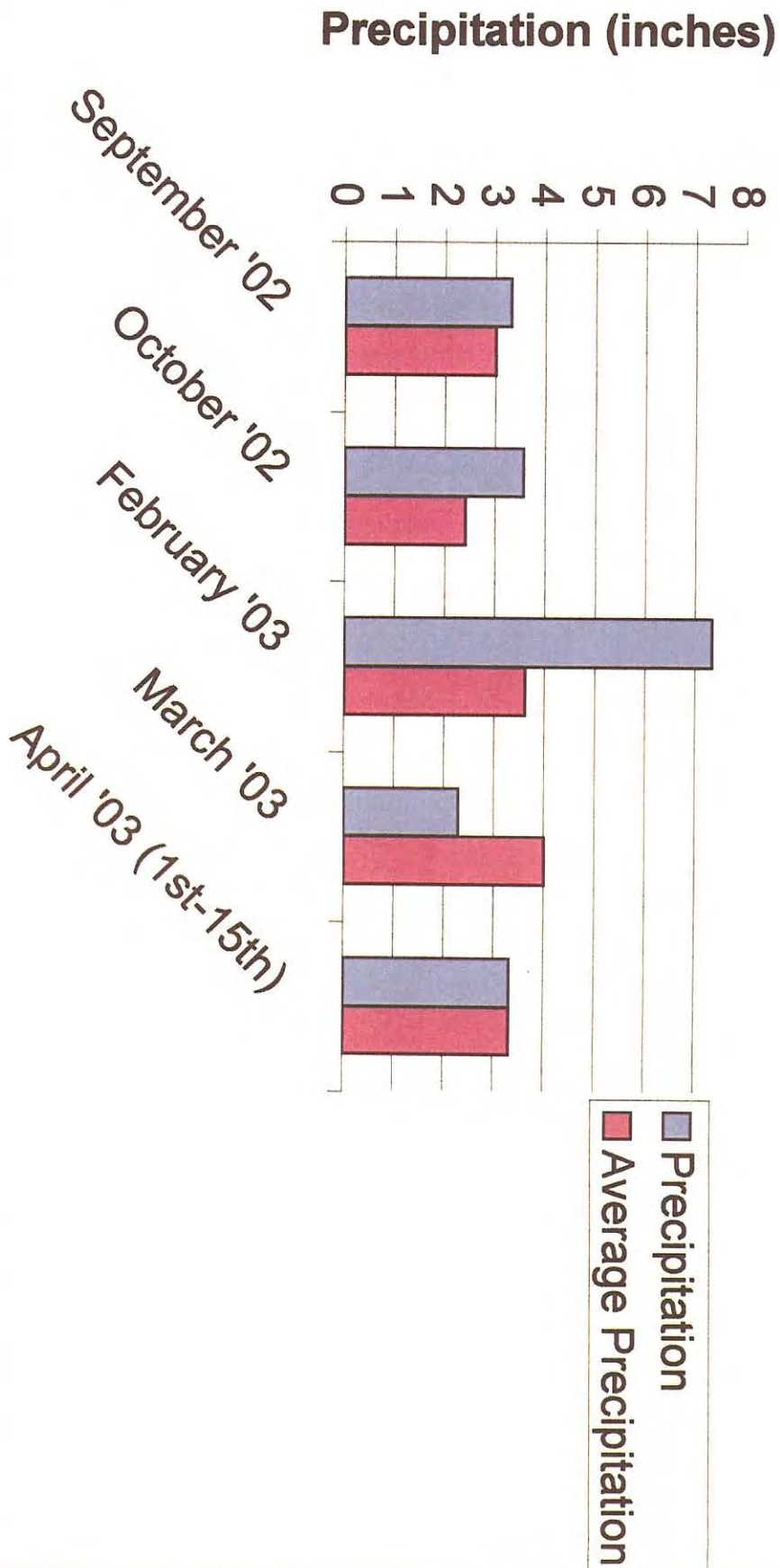


Figure 4
September 2002 Highs and Lows

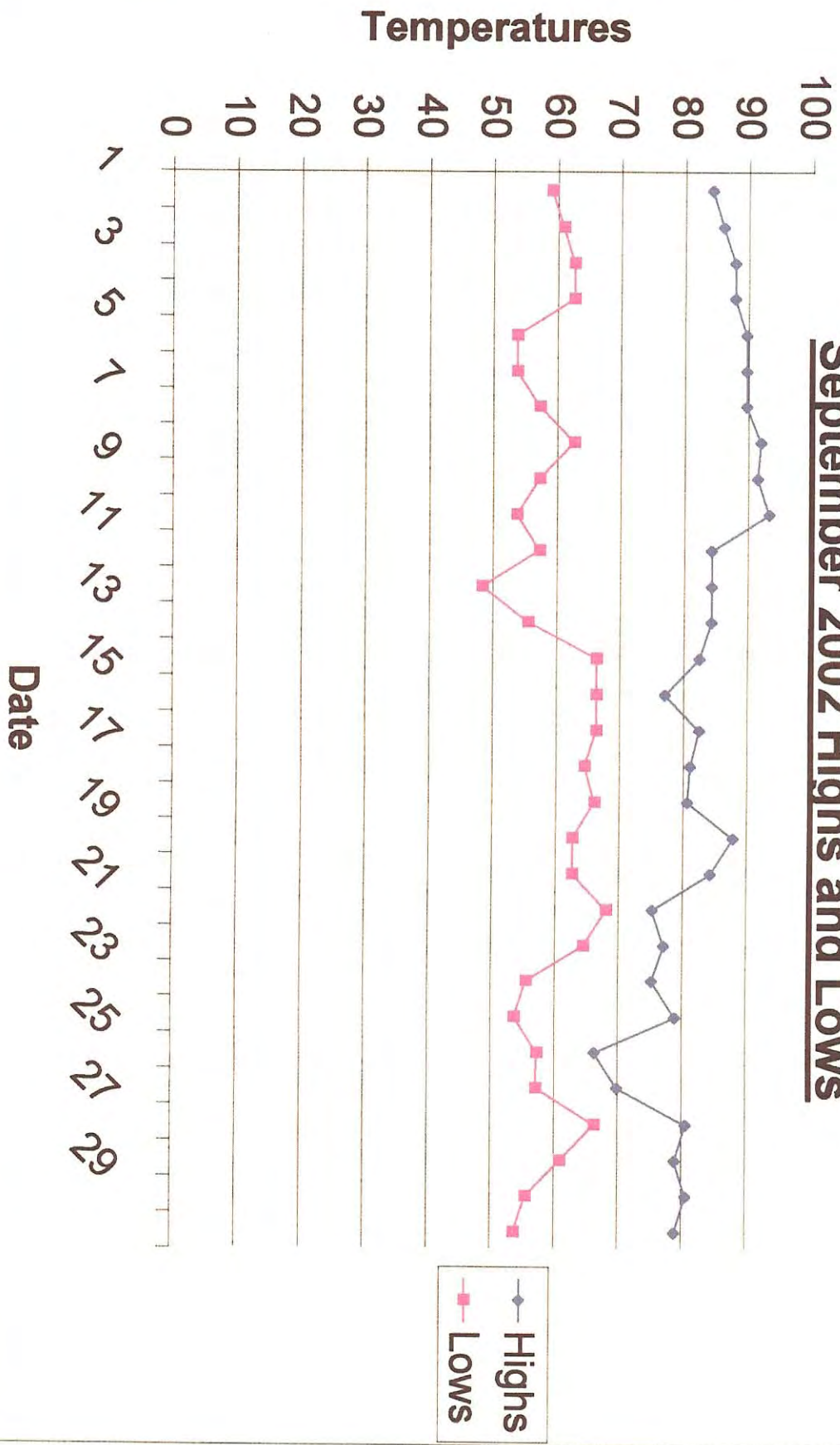


Figure 5
October 2002 Highs and Lows (Partially Non-field)

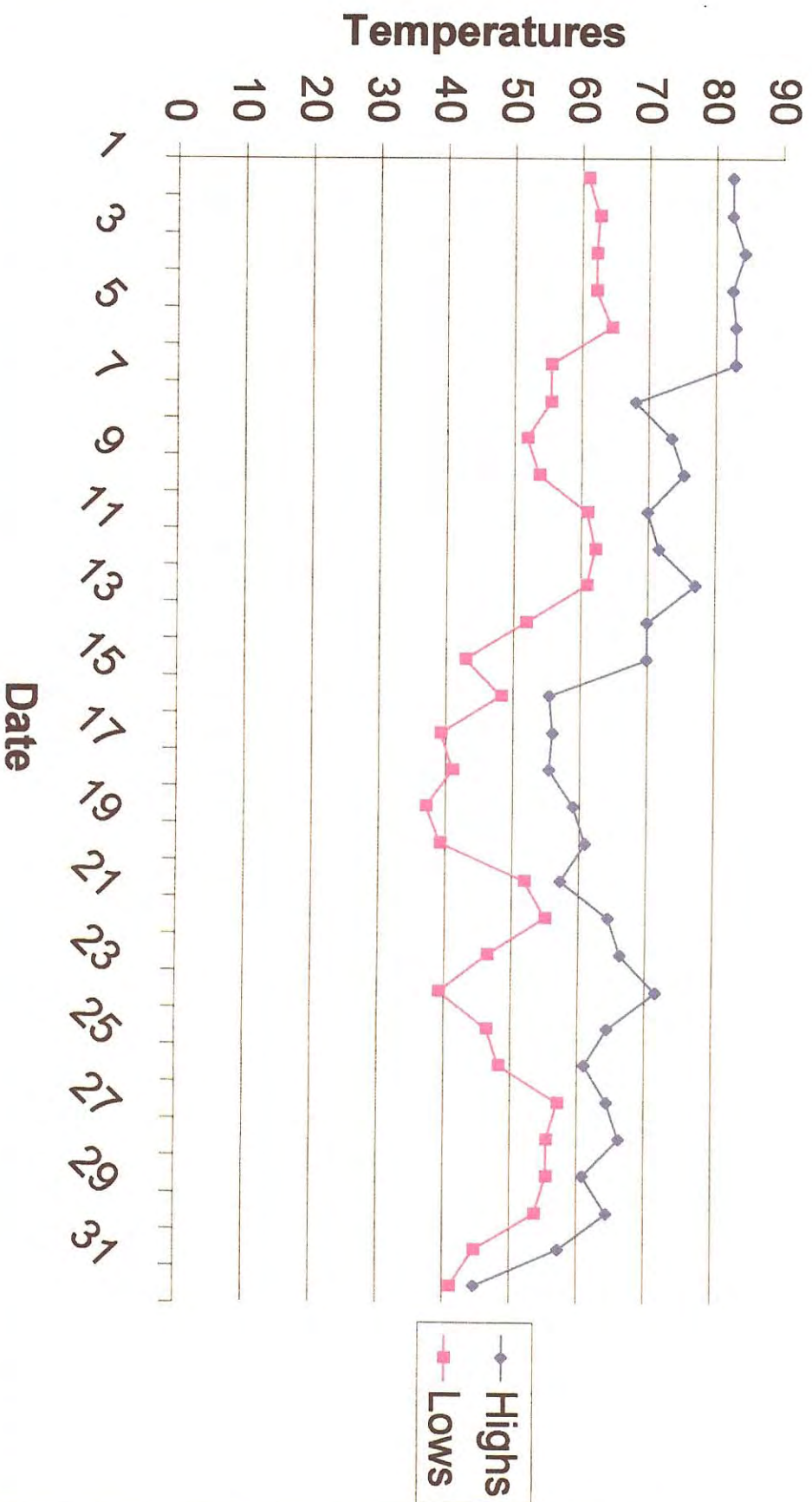


Figure 6
February 2003 Highs and Lows

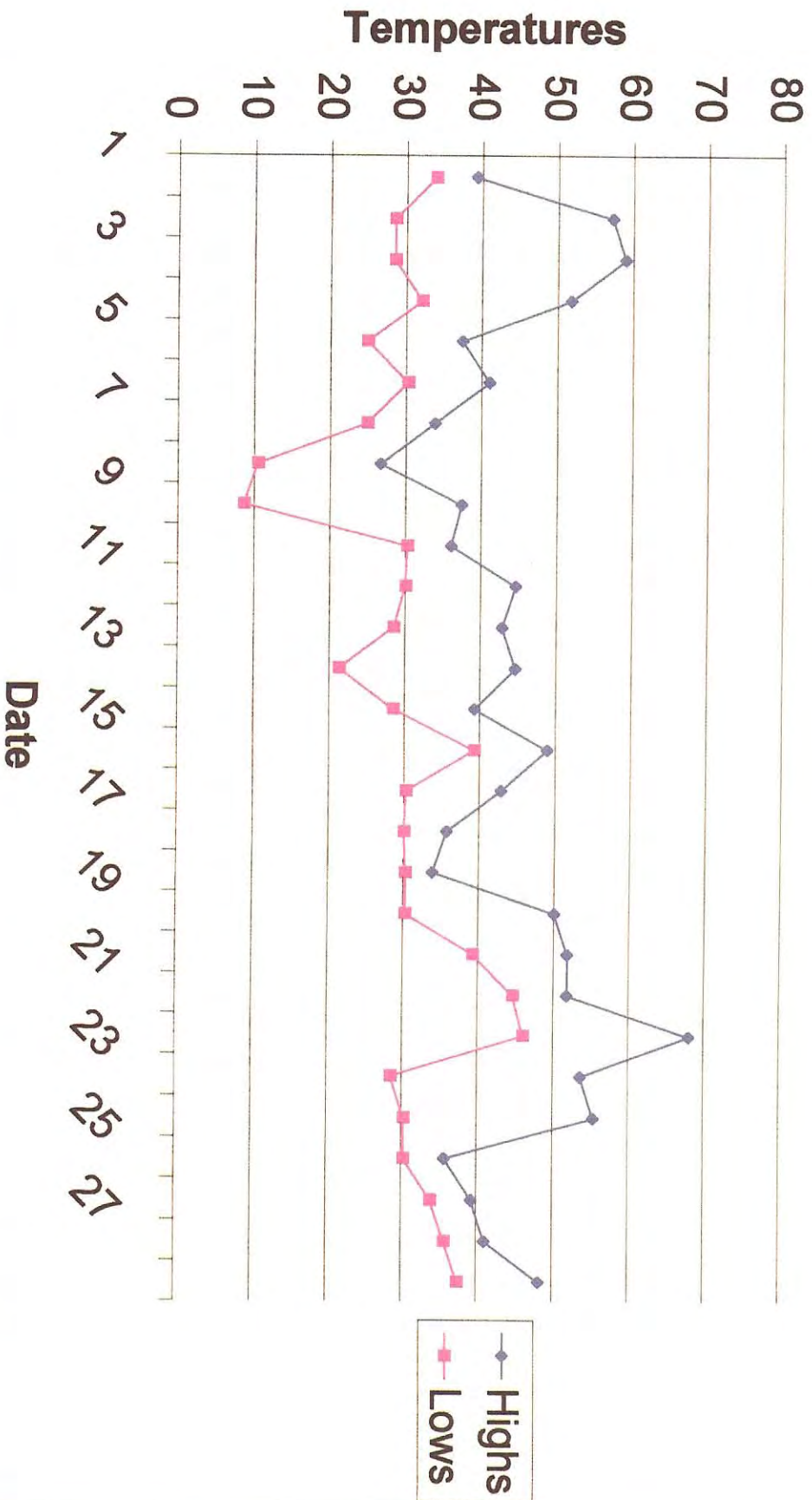


Figure 7
March 2003 Highs and Lows

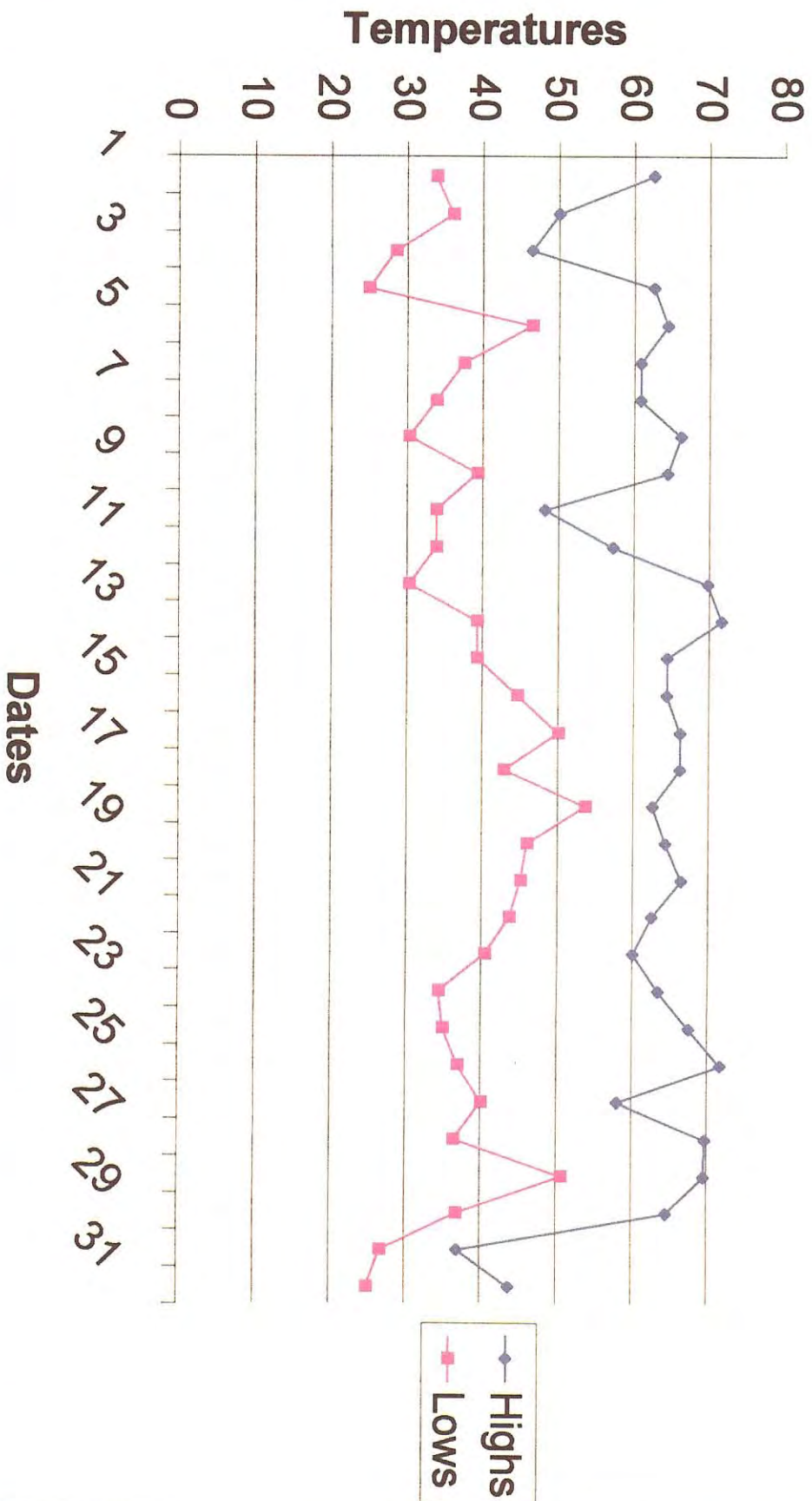
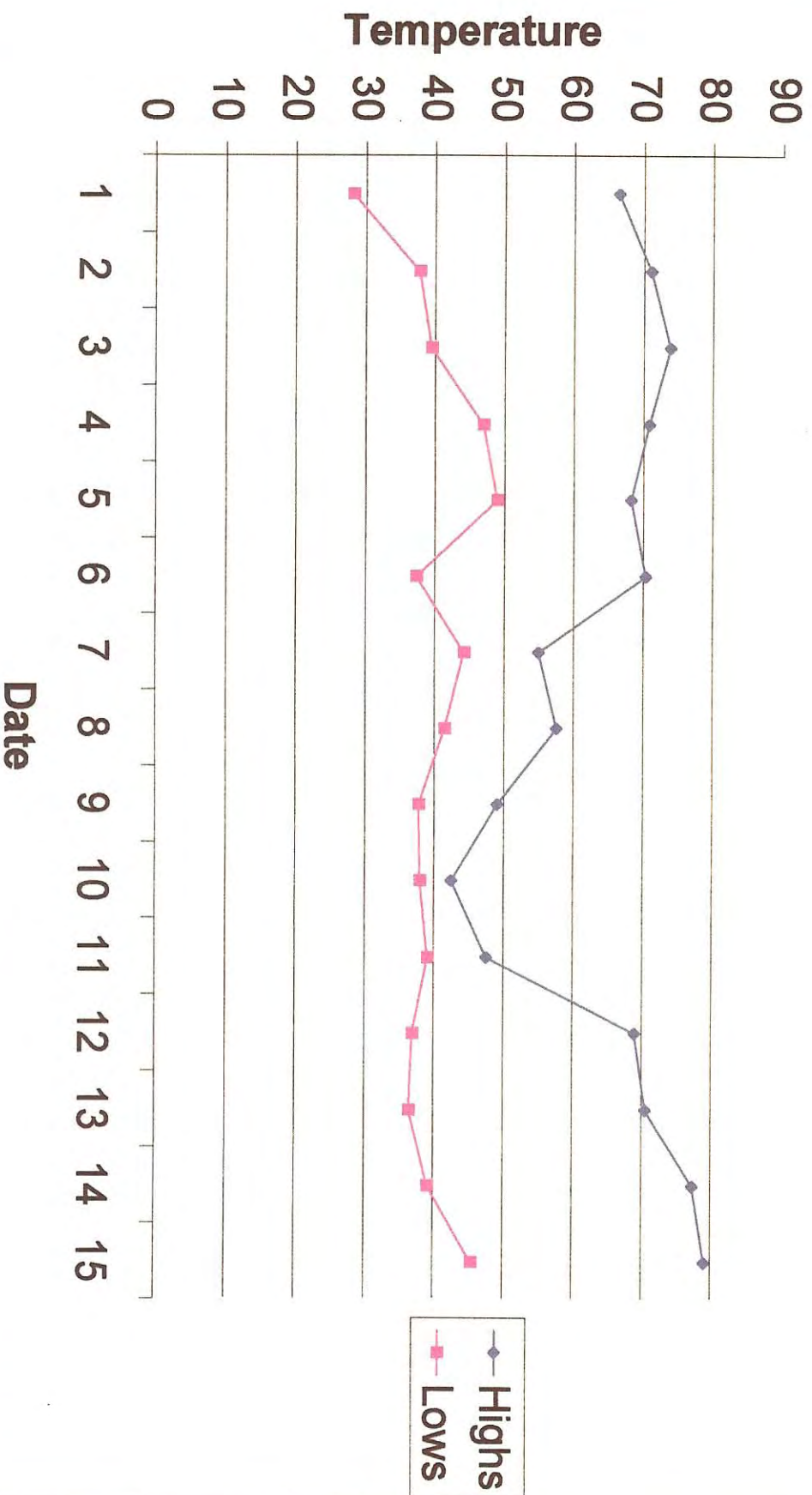
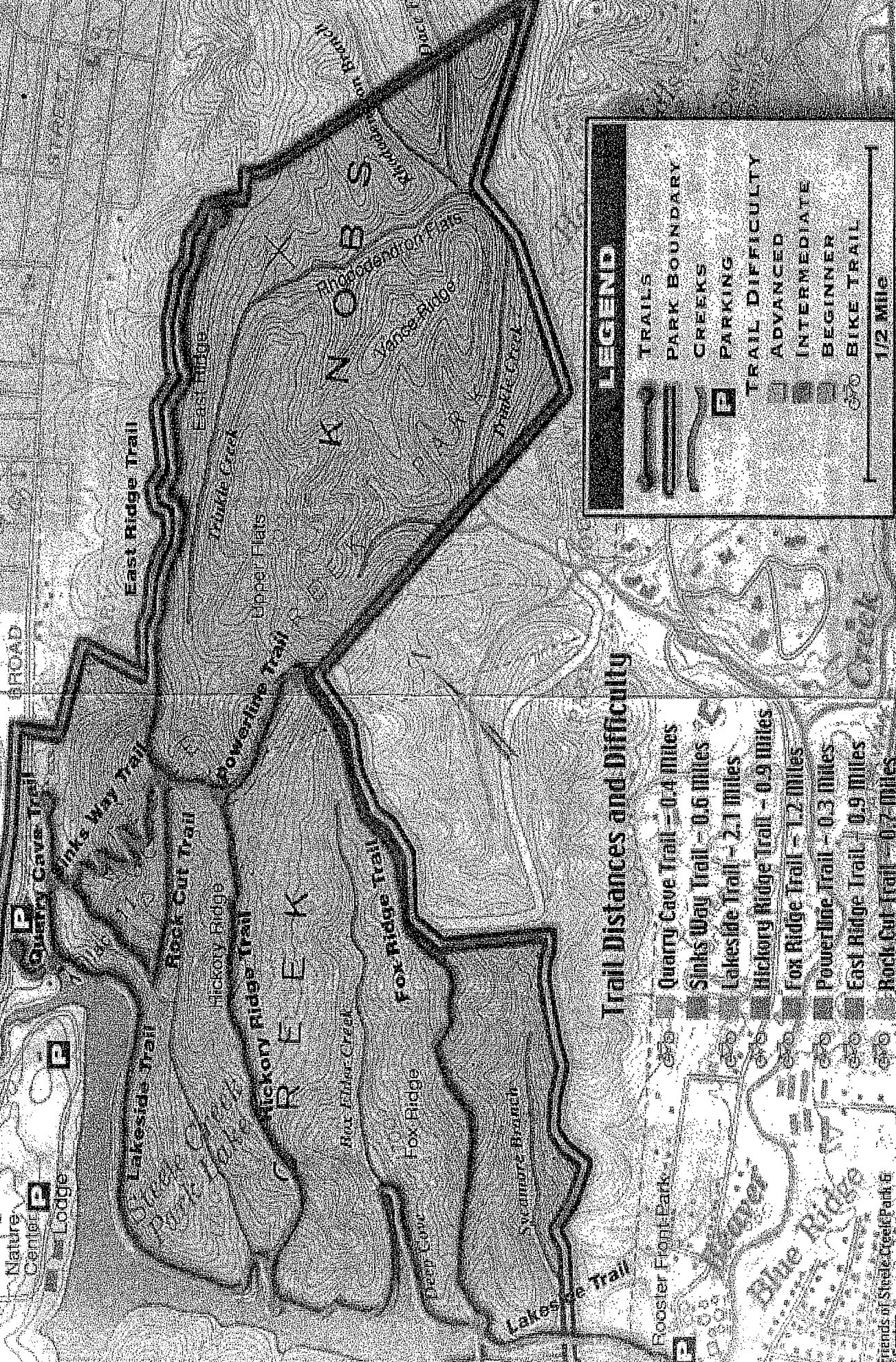


Figure 8
April 2003 Highs and Lows (through end of study)




Trinkle Hollow Trails



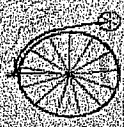
Trail Distances and Difficulty

- Rooster Front Park
- Quarry Cave Trail - 0.4 miles
- Sinks Way Trail - 0.6 miles
- Lakeside Trail - 2.1 miles
- Hickory Ridge Trail - 0.9 miles
- Fox Ridge Trail - 1.2 miles
- Powerline Trail - 0.3 miles
- East Ridge Trail - 0.9 miles
- Rock Cut Trail - 0.7 miles

BOOK



**Pinney
Flats
BICYCLES
& FITNESS**





Boyd's Bicycle Shop

ordinances

UNRECORDED
NOT RECORDED

PERMITTED
PERMITTED
ARE NOT ALLOWED ON TRAILS
LIFE AND PLANTS IS NOT PERMITTED
PERMITTED

Trail Distances and Difficulty

-  **Slagle Hollow Trail** - 2.5 Miles   **High Ridge Trail** - 0.3 Miles
  **South Ridge Trail** - 2.1 Miles   **Overlook Trail** - 0.2 Miles
 **Tulp Tree Trail** - 0.6 Miles
  **North Ridge Trail** - 2.4 Miles   **Logging Road Trail** - 1.3 Miles
  **Cross Ridge Trail** - 0.8 Miles   **Hemlock Trail** - 0.7 Miles
  **Lake Ridge Trail** - 1.5 Miles
- Note to bikers-**
- Mountain bikers should be aware of constantly changing trail conditions and their own abilities.

Mountain bikers should be aware of constantly changing trail conditions and their own abilities.

Data Sheet 1

General:

Date: 9/4/02

Time Out: 3:00pm

Time In: 5:30pm

Total Hours: 2.5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches): .01

Temperature High (°F): 87.8

Temperature Low (°F): 62.6

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Hiked Lakeside Trail with Kevin. I am learning snake-capturing techniques.

Data Sheet 2

General:

Date: 9/5/02

Time Out: 3:00pm

Time In: 5:00pm

Total Hours: 2

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 89.6

Temperature Low (°F): 53.6

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Spent most of the time talking with Kevin's friend, Wallace Coffee. Kevin and I walked some of the Slagle Hollow trails looking for snakes, but to no avail.

Data Sheet 3

General:

Date: 9/11/02

Time Out: 3:00pm

Time In: 4:00pm

Total Hours: 1

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 84.2

Temperature Low (°F): 57.2

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Went out on the lake with Kevin. We scanned the shores for snakes. We also
looked for snakes at Rooster Front.

Data Sheet 4

General:

Date: 9/14/02

Time Out: 8:45am

Time In: 9:15am

Total Hours: .5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches): .01

Temperature High (°F): 82.4

Temperature Low (°F): 66.2

Specimen:

Method Sampled: Observation

Species: 2 Unknowns

Scientific Name:

Full Length:

Area Sampled: 3

GPS Coordinates: Unknowns: 36.5632N, 82.2254W

Notes: Looked around base of dam. Saw two snakes, but both slithered under rocks before they could be identified. One seemed to be a copperhead.

Data Sheet 5

General:

Date: 9/18/02

Time Out: 3:00pm

Time In: 4:45pm

Total Hours: 1.75

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 80.6

Temperature Low (°F): 66

Specimen:

Method Sampled: Observation

Species: 2 garters, 1 northern water snake

Scientific Name: 2 *Thamnophis s. sirtalis*, 1 *Nerodia s. sipedon*

Full Length: Garter 1: 62cm

Garter 2: 59.3cm

Water snake: 16cm

Area Sampled: 1

GPS Coordinates: Garters: 36.5726N, 82.2301W

Water snake: 36.5738N, 82.2278W

Notes: Walked Lakeside Trail. Saw two garters together. A jogger pointed out a water snake on the trail. All of them were fully sampled.

Data Sheet 6

General:

Date: 9/21/02

Time Out: 9:00am

Time In: 12:00pm

Total Hours: 3

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches): .14

Temperature High (°F): 75.2

Temperature Low (°F): 68

Specimen:

Method Sampled: Observation

Species: 1 black rat snake, 1 garter

Scientific Name: 1 *Elphae o. obsoleta*, 1 *Thamnophis s. sirtalis*

Full Length: Rat snake: 103cm
Garter: 54.5cm

Area Sampled: 2

GPS Coordinates: Rat snake: 36.5706N, 82.2364W
Garter: 36.5747N, 82.2303W

Notes: Walked Slagle Hollow trails. Saw black rat snake on the land causeway to Slagle Hollow. Park employee pointed out a garter while we were helping clean Butterfly Garden. This was the 3rd field day in a row seeing snakes.

Data Sheet 7

General:

Date: 9/25/02

Time Out: 3:00pm

Time In: 4:30pm

Total Hours: 1.5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches): .26

Temperature High (°F): 66.2

Temperature Low (°F): 57.2

Specimen:

Method Sampled: Observation

Species: 1 northern water snake

Scientific Name: 1 *Nerodia s. sipedon*

Full Length: 55cm

Area Sampled: 2

GPS Coordinates: 36.5626N, 82.2260W

Notes: Walked Lakeside Trail. Saw a northern water snake by the lodge. It's starting to get cold. There's a lot less movement.

Data Sheet 8

General:

Date: 10/1/02

Time Out: 4:00pm

Time In: 5:00pm

Total Hours: 1

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 82.4

Temperature Low (°F): 60.8

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Walked the Lakeside Trail again. No snakes.

Data Sheet 9

General:

Date: 10/10/02

Time Out: 6:00pm

Time In: 7:00pm

Total Hours: 1

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches): .18

Temperature High (°F): 69.8

Temperature Low (°F): 60.8

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: I walked the dam in the evening. No snakes.

Data Sheet 10

General:

Date: 2/28/03

Time Out: 3:00pm

Time In: 4:00pm

Total Hours: 1

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches): .03

Temperature High (°F): 48.2

Temperature Low (°F): 37.4

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: First time in the field since winter started. Kevin and I walked the Rooster Front area. He showed me where I should put my first pitfall trap.

Data Sheet 11

General:

Date: 3/1/03

Time Out: 9:30am

Time In: 1:00pm

Total Hours: 3.5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 62.6

Temperature Low (°F): 33.8

Specimen:

Method Sampled: observation

Species: 1 Copperhead

Scientific Name: 1 Agkistrodon contortrix mokasen

Full Length: 46cm

Area Sampled: 4

GPS Coordinates: 36.5614N, 82.2231W

Notes: Began digging traps. Looked around for snakes while I was digging, but didnt see any until I left. There was a copperhead basking on the trail. I measured its length using the trail as it stretched out.

Data Sheet 12

General:

Date: 3/3/03

Time Out: 7:00am

Time In: 8:20am

Total Hours: 1.3

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 46.4

Temperature Low (°F): 28.4

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: 1st morning going out before school. Continued work on 1st trap. No snakes.

Data Sheet 13

General:

Date: 3/4/03

Time Out: 7:00am

Time In: 8:20am

Total Hours: 1.3

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 62.6

Temperature Low (°F): 24.8

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Finished 2nd trap trench. Ground was frozen today. Work's going slowly. No
snakes in the area.

Data Sheet 14

General:

Date: 3/4/03

Time Out: 3:00pm

Time In: 4:30pm

Total Hours: 1.5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 62.6

Temperature Low (°F): 24.8

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Measured out third trap trench and began digging it. Ground thawed out during the day. No snakes in the area.

Data Sheet 15

General:

Date: 3/7/03

Time Out: 10:30am

Time In: 12:00pm

Total Hours: 1.5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 60.8

Temperature Low (°F): 33.8

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Finished third trap trench. I've begun putting up drift fence.

Data Sheet 16

General:

Date: 3/12/03

Time Out: 7:00am

Time In: 8:00am

Total Hours: 1

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 69.8

Temperature Low (°F): 30.2

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Began to dig pitfall trap holes and discovered a thick layer of rock under the soil.

Data Sheet 17

General:

Date: 3/12/03

Time Out: 3:30pm

Time In: 5:00pm

Total Hours: 1.5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 69.8

Temperature Low (°F): 30.2

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Kevin and I met at the trap site and deviated the line to bypass the rock bed.

Data Sheet 18

General:

Date: 3/13/03

Time Out: 3:30pm

Time In: 4:30pm

Total Hours: 1

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches): .48

Temperature High (°F): 71.6

Temperature Low (°F): 39.2

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Began sinking buckets at trap site 1. One bucket was sunk. Had to leave because of a thunderstorm.

Data Sheet 19

General:

Date: 3/14/03

Time Out: 7:00am

Time In: 8:20am

Total Hours: 1.3

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 64.4

Temperature Low (°F): 39.2

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Continued excavation on the trap site. Looked around for snakes, but to no avail.

Data Sheet 20

General:

Date: 3/14/03

Time Out: 2:30pm

Time In: 3:30pm

Total Hours: 1

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 64.4

Temperature Low (°F): 39.2

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Picked up funnel traps at nature center. Showed my dad the site. He and I looked around for snakes and planned high powered excavation to finish the trap.

Data Sheet 21

General:

Date: 3/15/03

Time Out: 9:30am

Time In: 3:30pm

Total Hours: 6

Time Pitfall/Funnel Traps were open: 3:30pm 3/15/03 (site 1)

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 64.4

Temperature Low (°F): 44.6

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Dad and I brought gas tools and worked hard to finally complete the trap. I left
the trap open.

Data Sheet 22

General:

Date: 3/16/03

Time Out: 11:00am

Time In: 12:00pm

Total Hours: 1

Time Pitfall/Funnel Traps were open: 3:30 pm 3/15/03 (site 1)

Time Pitfall/Funnel Traps were closed: 12:00pm 3/16/03 (site 1)

Total Pitfall/Funnel Trap Time: 21.5 hours

Weather:

Precipitation (inches):

Temperature High (°F): 66.2

Temperature Low (°F): 50

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Checked traps. All of them were flooded. No snakes. I did however catch 6 toads in the buckets. I also captured two toads in the funnel traps.

Data Sheet 23

General:

Date: 3/17/03

Time Out: 3:00pm

Time In: 4:15pm

Total Hours: 1.25

Time Pitfall/Funnel Traps were open: 4:15pm 3/17/03 (site 1)

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 64.2

Temperature Low (°F): 42.8

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: My cousin R.D. and I went out and opened the traps at the second site. We also
walked with Kevin to where I'll be putting in the second trap to look for snakes. No
snakes.

Data Sheet 24

General:

Date: 3/18/03

Time Out: 7:00am

Time In: 8:20am

Total Hours: 1.3

Time Pitfall/Funnel Traps were open: 4:15pm 3/17/03 (site 1)

Time Pitfall/Funnel Traps were closed: 8:15am 3/18/03 (site 1)

Total Pitfall/Funnel Trap Time: 16 hours

Weather:

Precipitation (inches): .7

Temperature High (°F): 62.6

Temperature Low (°F): 53.6

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Checked traps. Flooded again. Closed them and went to clear brush at 2nd trap site.

Data Sheet 25

General:

Date: 3/19/03

Time Out: 7:00am

Time In: 8:20am

Total Hours: 1.3

Time Pitfall/Funnel Traps were open: 8:30am 3/19/03 (site 1)

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 64.3

Temperature Low (°F): 45.9

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Tried to work on 2nd site, but park was closed. Walked dam for snakes instead
and opened traps. They were still flooded.

Data Sheet 26

General:

Date: 3/19/03

Time Out: 3:00pm

Time In: 4:30pm

Total Hours: 1.5

Time Pitfall/Funnel Traps were open: 8:30am 3/19/03 (site 1)

Time Pitfall/Funnel Traps were closed: 4:30 pm 3/19/03

Total Pitfall/Funnel Trap Time: 8 hours

Weather:

Precipitation (inches): .11

Temperature High (°F): 64.3

Temperature Low (°F): 45.9

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Closed traps because of rain. Began digging trench and holes at 2nd site. Left 2
funnel traps at 2nd site.

Data Sheet 27

General:

Date: 3/20/03

Time Out: 3:00pm

Time In: 4:45pm

Total Hours: 1.75

Time Funnel Traps were open: 3:00pm 3/20/03 (site 2)

Time Funnel Traps were closed: 4:45pm 3/21/03 (site 2)

Total Funnel Trap Time: 25.75 hours

Weather:

Precipitation (inches): .18

Temperature High (°F): 66.4

Temperature Low (°F): 46.1

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Checked and closed funnel traps at 2nd site. No snakes.

Data Sheet 28

General:

Date: 3/21/03

Time Out: 7:00am

Time In: 8:45am

Total Hours: 1.75

Time Pitfall Traps were open: 8:45am 3/21/03 (1st site)

Time Pitfall Traps were closed:

Total Pitfall Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 62.5

Temperature Low (°F): 43.6

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Continued work on 2nd trap. Opened 1st site traps.

Data Sheet 29

General:

Date: 3/22/03

Time Out: 3:00pm

Time In: 3:45am

Total Hours: .75

Time Pitfall Traps were open: 8:45am 3/21/03 (site 1)

Time Pitfall Traps were checked: 8:45am 3/22/03 (site 1)

Total Pitfall Trap Time: 24 hours

Weather:

Precipitation (inches):

Temperature High (°F): 60

Temperature Low (°F): 40.4

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Checked 1st site traps and walked around the dam. Caught one toad (dead) in the trap. No snakes.

Data Sheet 30

General:

Date: 3/23/03

Time Out: 3:00pm

Time In: 3:45pm

Total Hours: .75

Time Pitfall Traps were open: 8:45am 3/22/03 (site 1)

Time Pitfall Traps were closed: 3:00pm 3/23/03

Total Pitfall Trap Time: 30.25 hours

Weather:

Precipitation (inches):

Temperature High (°F): 63.4

Temperature Low (°F): 34.3

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Checked 1st site traps and looked around some for snakes. No snakes in the traps
and no snakes in the area. Last time using 1st site trap.

Data Sheet 31

General:

Date: 3/24/03

Time Out: 7:00am

Time In: 8:20am

Total Hours: 1.3

Time Pitfall/Funnel Traps were open: 8:30am 3/24/03 (site 2)

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 67.5

Temperature Low (°F): 34.9

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Finished the single fence of 2nd site. Left open. Saw no snakes in the area.

Data Sheet 32

General:

Date: 3/24/03

Time Out: 3:00pm

Time In: 3:45pm

Total Hours: .75

Time Pitfall/Funnel Traps were open: 8:30am 3/24/03 (site 2)

Time Pitfall/Funnel Traps were closed: 3:45pm 3/24/03 (site 2)

Total Pitfall/Funnel Trap Time: 7.25

Weather:

Precipitation (inches):

Temperature High (°F): 67.5

Temperature Low (°F): 34.9

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Closed 2nd site trap because it looked like rain. No snakes in the area.

Data Sheet 33

General:

Date: 3/26/03

Time Out: 7:00am

Time In: 8:00am

Total Hours: 1

Time Pitfall/Funnel Traps were open: 8:00am 3/26/03 (site 2)

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches): .14

Temperature High (°F): 58

Temperature Low (°F): 40

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Walked from the dam area to the 2nd trap. No snakes. Opened 2nd trap site again.

Data Sheet 34

General:

Date: 3/28/03

Time Out: 7:00am

Time In: 8:20am

Total Hours: 1.3

Time Pitfall/Funnel Traps were open: 8:00am 3/26/03 (site 2)

Time Pitfall/Funnel Traps were closed: 8:30 am 3/28/03 (site 2)

Total Pitfall/Funnel Trap Time: 48.5 hours

Weather:

Precipitation (inches):

Temperature High (°F): 69.6

Temperature Low (°F): 50.6

Specimen:

Method Sampled: Observation

Species: 1 Ringneck

Scientific Name: 1 *Diadophis punctatus edwardsii*

Full Length: 25.3cm

Area Sampled: 5

GPS Coordinates: 36.5682N, 82.2370W

Notes: Walked to 2nd site and posted a no trespassing sign. Closed the traps. Traps are really good at catching spiders. Actually saw a snake! A ringneck was almost frozen on the trail by the trap.

Data Sheet 35

General:

Date: 4/2/03

Time Out: 7:00am

Time In: 8:15am

Total Hours: 1.25

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 71

Temperature Low (°F): 37.7

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Kevin told me to focus more on walking the trails. I walked the lakeside trail from Rooster front. No snakes.

Data Sheet 36

General:

Date: 4/12/03

Time Out: 11:00am

Time In: 12:30pm

Total Hours: 1.5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 68.9

Temperature Low (°F): 38.9

Specimen:

Method Sampled: Observation

Species: 1 Ringneck, 1 Queensnake

Scientific Name: 1 *Diadophis punctatus edwardsii*, 1 *Regina septemvitta*

Full Length: Ringneck: 10.5cm
Queensnake: 45.7cm

Area Sampled: 1

GPS Coordinates: Ringneck: 36.5606N, 82.2224W
Queensnake: 36.5643N, 82.2258W

Notes: Walked lakeside trail from Rooster front. Saw 2 snakes. One ringneck and one queensnake.

Data Sheet 37

General:

Date: 4/13/03

Time Out: 11:00am

Time In: 12:00pm

Total Hours: 1

Time Pitfall/Funnel Traps were open: 12:00pm 4/13/03 (site 2)

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 70.5

Temperature Low (°F): 36.4

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Walked to 2nd trap and repaired fence post. Left trap open. Walked around Slagle Hollow- No snakes.

Data Sheet 38

General:

Date: 4/14/03

Time Out: 7:00am

Time In: 8:20am

Total Hours: 1.3

Time Pitfall/Funnel Traps were open: 12:00pm 4/13/03 (site 2)

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 77.3

Temperature Low (°F): 39.1

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Walked around Lakeside Trail. Too cold for snakes.

Data Sheet 39

General:

Date: 4/14/03

Time Out: 4:00pm

Time In: 5:45pm

Total Hours: 1.75

Time Pitfall/Funnel Traps were open: 12:00pm 4/13/03 (site 2)

Time Pitfall/Funnel Traps were closed: 4:00pm 4/14/03 (site 2)

Total Pitfall/Funnel Trap Time: 28 hours

Weather:

Precipitation (inches):

Temperature High (°F): 77.3

Temperature Low (°F): 39.1

Specimen:

Method Sampled: Observation

Species: 1 Garter

Scientific Name: 1 *Thamnophis s. sirtalis*

Full Length: 26cm

Area Sampled: 1

GPS Coordinates: 36.5749N, 82.2258W

Notes: Checked traps and then walked around the N. Shore and the Lakeside Trail. Saw a baby snapping turtle. More importantly I saw a garter on the way out.

Data Sheet 40

General:

Date: 4/15/03

Time Out: 7:00am

Time In: 8:30am

Total Hours: 1.5

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 79

Temperature Low (°F): 45.4

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Walked the grassland area with Jon. Out of my normal boundaries, but I thought I would look around. Still too cold in the mornings for snakes.

Data Sheet 41

General:

Date: 4/15/03

Time Out: 3:30pm

Time In: 4:30pm

Total Hours: 1

Time Pitfall/Funnel Traps were open:

Time Pitfall/Funnel Traps were closed:

Total Pitfall/Funnel Trap Time:

Weather:

Precipitation (inches):

Temperature High (°F): 79

Temperature Low (°F): 45.4

Specimen:

Method Sampled:

Species:

Scientific Name:

Full Length:

Area Sampled:

GPS Coordinates:

Notes: Walked mainly around dam area. I was surprised not to see any snakes because the weather is perfect.

Survey Log

2002

Tuesday, Jul.2- 11:00am-2:00pm- Met with Kevin Hamed at Steele Creek Park. We looked at past Special Projects reports. We decided that a project involving a survey of a species would be the best choice. Kevin suggested that a snake survey would be interesting and beneficial to the park.

Friday, Jul.5- 1:00pm-1:10pm- Called Kevin and confirmed that I would like to proceed with a snake inventory of Steele Creek Park

Wednesday, Jul.10- 3:00pm-4:30pm- Met with Kevin to work on a timeline and a to-do list for the project. We also synchronized our calendars to avoid any confusion on future dates. Kevin recommended that I buy Peterson's Field Guide to Reptiles and Amphibians to make a list of snakes that might be in Steele Creek Park. Kevin also set a date that we should meet at East Tennessee State University's library to research herpetology journals.

Saturday, Jul.15- 3:00pm-5:00pm- Met with Kevin at ETSU. We looked up several sources and articles on pit and funnel traps, as well as past herpetological surveys. I'll be sifting through the articles later.

Monday, Jul.29- 1:00pm-2:00pm- Finished reading through all of the articles. I've found that almost all of the papers recommended funnel traps, while a few recommended pitfall traps aided by drift fences.

Wednesday, Aug.28- 3:00pm-4:30pm- Met with Kevin after several failed appointments. We worked on getting the trapping permits from the state and ETSU professor/herpetologist Jim Stewart, Kevin's friend, recommended that we go ahead and do observational searches for the snakes.

Wednesday, Sept.4- 3:00pm-5:30pm- Kevin and I went out on the Lakeside Trail looking for snakes. We did not find any, but we talked about snake searching techniques.

Thursday, Sept.5- 3:00pm-5:00pm- Talked most of the time with Kevin's friend Wallace Coffee. He gave me some interesting theories on snakes such as if they migrate throughout the year. Kevin and I also walked some of the dryer trails in Slagle Hollow.

Wednesday, Sept.11- 3:00pm-4:00pm- Went out on a boat with Kevin to search along the shorelines for snakes. We also looked at the Rooster Front area. Kevin suggested that I come out and look for snakes at the dam a lot.

Saturday, Sept.14- 8:45am-9:15am- Went out to the dam and searched for about thirty minutes and caught a glimpse of two snakes almost simultaneously. One was golden-brown and I'm guessing that it was a copperhead, but I'm going to put it down as

an unknown since it ducked under the rocks before I could identify it. The other one also ran away before I could catch it and it remained unidentified.

Wednesday, Sept. 18- 3:00pm-4:45pm- Walked the Lakeside Trails with no success until I was almost off of the trail coming back. At that point I saw two garters in the brush along side the trail. I was able to directly measure one of them and measured the other against a log. A little further down the trail, a jogger pointed out a baby water snake.

Saturday, Sept. 21- 9:00am-12:00pm- Walked to the dam and saw a black rat snake near the land causeway. I worked with Kevin to clean up the Butterfly Garden the rest of the day until a park employee pointed out a garter snake by the train tunnel. This makes the third field day in a row that I've seen snakes.

Wednesday, Sept. 25- 3:00pm-4:30pm- It's starting to get cold. There was not much movement. However, I did see a slow-moving northern watersnake on top of the dam.

Tuesday, Oct. 1- 4:00pm-5:00pm- Walked along the Lakeside Trail yet again. I didn't see any snakes, but I did see a five-lined skink basking on the rocks. It was fairly nice today, I'm surprised I didn't see any snake movement.

Thursday, Oct. 10- 6:00pm-7:00pm- I tried going to the dam in the evening in hopes that snakes would be trying to get warmth from the heat-retaining rocks. Unfortunately, there was no such luck. It was very cold while I was out.

2003

Monday, Jan. 6- Beginning of Special Problems class with Mrs. Dickerson at Tennessee High.

Tuesday, Feb. 11- 8:00pm-9:30pm- Worked on the introduction to my research paper.

Thursday, Feb. 12- Turned in a rough draft of the project introduction to Mrs. Dickerson.

Friday, Feb. 21- I called Kevin today, we decided to meet this Wednesday to talk about the 2003 part of the survey.

Thursday, Feb. 26- 3:00pm-4:30pm- I met with Kevin today at the Nature Center. We confirmed that I would be doing early morning collections every week on Mondays, Wednesdays, and Fridays. We also mapped out the 5 zones where I will be putting in traps. We also helped Jonathan Luttrell with his grasslands project by setting up a deer cam.

Friday, Feb. 28- 3:00pm-4:00pm- I met with Kevin at Rooster Front to look at the first spot that we would be placing a trap. It's right across from the swampland in an area of pines. After confirming the trap placement, Kevin and I hiked up to the dam and were amazed at how much water the recent rains were moving over the dam.

Saturday, Mar. 1- 9:30am-1:00pm- I began digging my traps today. It's a whole lot harder than I thought that it would be. Most of my time was spent clearing away underbrush. I ended up only getting about half of the first fence ditch completed.

Monday, Mar. 3- 7:00am-8:20am- This was my first early morning exploit. I finished the first trench, unfortunately, I could only fit the first 50 of the 60 or so feet Kevin wanted. On both of my perpendicular trails I believe I will be able to fit the complete length. I also occasionally looked around the area for snakes, but no luck.

Tuesday, Mar. 4- 7:00am-8:20am- Finished digging the second trench. I brought a machete today to begin clearing the trench path for the third trench. The machete makes clearing brush go a lot faster. I began digging the third trench, but I was unable to get much done because the ground was frozen.

Tuesday, Mar. 4- 7:00am-8:20am- I went back out to the first trap site and mainly looked around for snakes. I didn't find any. I also almost have completed the third trench.

Friday, Mar. 7- 10:30am-12pm- Finished third and final trench. I hope we have a few days of sun so that the ground will dry out from all of the rain we have been having. I also began putting up drift fence, but I think I will need a post hole digger to get them in deep enough.

Tuesday, Mar. 11- 7:30am-8:00am- Worked a little bit in class on my third funnel trap.

Wednesday, Mar. 12- 7:00am-8:00am- Went out to the first trap site again and began to dig holes with the post hole digger. I was extremely dismayed to find that a very hard layer of rock is right below the surface of the earth in one area. Because I could not do much in the way of digging, I did a little observation for snakes, but with no success.

Wednesday, Mar. 12- 3:30pm-5:00pm- Kevin and I met at the site, diverted a few fences, and solved the rock bed problem. I began to actually make some progress at digging the holes. I'm happy too that my dad has volunteered to help me install this trap once and for all with some of his power tools.

Thursday, Mar. 13- 3:30pm-4:30pm- Went out to continue the holes. I had gotten one bucket sunk when it started pouring rain. I had just ignored the rain until lightning hit the swamplands just a few hundred yards from me. It was at that point that I decided it would be in my best interests to leave for the day.

Friday, Mar. 14- 7:00am-8:20am- I put up some more drift fence and continued to dig in my second hole. The second hole has been tough because it is filled with hard slate.

Friday, Mar. 14- 2:30pm-3:30pm- I went by the Nature Center and picked up my other funnel trap and my other pitfall buckets. I then went to check on the 2nd site to cover the bucket I had sunk.

Saturday, Mar. 15- 9:30am-3:30pm- My dad and I went out to the site with a power tiller and a power auger. This greatly sped up the speed at which we installed the fences; however, it still took several hours to complete the trap. I left the trap open.

Sunday, Mar. 16- 11:00am-12:00pm- I went out to check and see if the traps had captured anything. All of the traps were flooded because the water table is so high. There were no snakes; however, I captured 6 toads in the pitfalls and 2 toads in the funnel traps.

Monday, Mar. 17- 7:45am-8:15am- Worked in class to finish the third funnel trap.

Monday, Mar. 17- 3:00pm-4:15pm- I took my cousin R.D. out to the park. We opened the traps up again in hopes that it won't rain again. We looked around a bit for snakes, but found none. We also met with Kevin so that he could show us where the second trap site is going to be located in Slagle Hollow.

Tuesday, Mar. 18- 7:00am-8:20am- Checked the traps. They were flooded AGAIN. I closed them again and drove to the second trap site. I began clearing brush and looked around for any snakes. I did not find any.

Wednesday, Mar. 19- 7:00am-8:20am- I tried to go out to the second trap site, but the park was locked. I went over to the dam from Rooster Front and made a few repairs to the trap, as the drift fence had been knocked over by something in the parallel fence.

Wednesday, Mar. 19- 3:00pm-4:30pm- I reconfigured the single-fence layout of the second site to face a different direction. I also lugged the leftover fence from the first site over to the second site. I also opened the funnel traps at the second site.

Thursday, Mar. 20- 3:00pm-4:45pm- Completed the single trench of the second site and put in all of the drift fence except for the buckets. Nothing was captured in the funnel traps, so I closed them for now.

Friday, Mar. 21- 7:00am-8:45am- I tweaked the second site fence a little more and then went over and opened the first site traps at Rooster Front. They were still flooded when I opened them.

Saturday, Mar. 22- 3:00pm-3:45pm- I went out to check the Rooster Front traps. I caught nothing but one dead toad. I left the traps open. I also looked around for any snakes by the traps and up by the dam, but no luck.

Sunday, Mar. 23- 3:00pm-3:45pm- Basically the same routine as yesterday. No snakes anywhere. I closed the traps this time.

Monday, Mar. 24- 7:00am-8:20am- I dug the two bucket holes for the second trap. I got the buckets sunk and left the trap open. Unfortunately, they were beginning to fill with water as I left.

Monday, Mar. 24- 3:00pm-3:45pm- I checked and closed the Slagle Hollow traps that I opened this morning because it looks like rain tonight. I have noticed in both of the trap sites that the traps are very good at catching spiders.

Wednesday, Mar. 26- 7:00am-8:00am- I went out and walked all over the dam. I could not find any snakes. It is still pretty cold, hopefully April will warm us up a bit. I also walked a bit down the Slagle Hollow trails behind the dam to my 2nd trap site. I opened the traps up.

Friday, Mar. 28- 7:00am-8:20am- Went out to the second site traps and checked them. I did not catch anything. By the trail today I found a ringneck snake that was almost dead from the cold. I recorded him and placed him under a rock in hopes that the sun will warm him up later. I also posted a no trespassing sign on the trap to keep hikers away.

Wednesday, Apr. 2- 7:00am-8:15am- Kevin has emphasized to me that I need to walk the trails more and observe more now that the weather will be getting warmer. I walked the Lakeside Trail from the Rooster Front end the whole morning, but I did not find any snakes.

Apr. 3-Apr. 11- Could not go out for collections because of nasal surgery and recovery.

Saturday, Apr. 12- 11:00am-12:30pm- I again walked the Lakeside Trail. I saw two snakes today! One was a very small ringneck in the mulch of a tree. The other was a good sized Queensnake that was basking along the edge of the lake.

Sunday, Apr. 13- 11:00am-12:00pm- I walked to the second trap site and repaired a fence post that was somehow broken. I opened up the traps again since the weather has been fairly nice. I walked around the area a bit, but no snakes.

Monday, Apr. 14- 7:00am-8:20am- I walked along the N. Shore of the park for a bit. I checked under some boards by the water as well as other places for snakes, but I could not find any.

Monday, Apr. 14- 4:00pm-5:45pm- Walked over to the second trap site and closed the traps-they were empty. I then walked the Lakeside Trail for a while. It was a beautiful day today. I saw a baby snapping turtle and a garter snake!

Tuesday, Apr. 15- 7:00am-8:30am- I got together with Jon Luttrell over in the grassland. While he was going about his business, I followed him, looking around for snakes. Unfortunately, the mornings are still too cold.

Tuesday, Apr. 15- 3:30-4:30pm- Walked from Rooster Front to the dam. I did not see any snakes the whole time I was out there. I was disappointed today, the weather was perfect for snakes to be out moving.

Tuesday, Apr. 22- 6:00pm-8:00pm- The field work is over. I've begun work on my results section for my paper. I've also started work on my charts. The charts will include a precipitation history, temperatures, and percentages of snakes I've captured.

Wednesday, Apr. 23- 5:00pm-6:00pm- I've finished the results section of my paper. I emailed it to Kevin for proofreading.

Thursday, Apr. 24- 4:00pm-5:30pm- I picked up my results from Kevin earlier today. I came home and corrected it. I also have begun on the discussion portion of my paper. I hope to have the paper complete by the end of the month.

Friday, Apr. 25- 8:00pm-9:00pm- I finally finished my discussion after much revision. I also emailed it to Kevin with my prototype data sheet for proofreading.

Monday, Apr. 28- 8:00pm-10:30pm- I picked up my revised copy of the discussion today. I came home and corrected it first thing. I then began the painstaking task of filling out all of my data sheets.

Wednesday, Apr. 30- 3:00pm-4:30pm- Jon and I met with Kevin today to talk about how our Power Point presentations should be assembled. We also have agreed to meet for practice next Wednesday.

Thursday, May 1- 7:30am-9:00am- Worked in class on data sheets.

Thursday, May 1- 4:30pm-9:00pm - Finished up my data sheets and my survey log. I also finished work on my map depicting where I captured the snakes.

Total Work Hours: 83.65 hours

Discussion

Trap Effectiveness- Drift fence and pitfall traps captured 10 toads and 32 spiders over a period of 10, 24-hour periods. While they were very effective at capturing these amphibians and arachnids, they came short of helping the study because no snakes were captured. The 19-liter buckets easily contained many small animals, but several larger animals were witnessed escaping. Another complication I encountered was the constant fight to keep the buckets at the ends of the fences dry. Small amounts of rain or a high water table would flood the buckets. When the buckets were flooded, this increased the probability that snakes were avoiding or escaping the trap. Kevin Enge also encountered flooding and escape problems during his study. Though he did manage to capture snakes, there was a high mortality rate because of exposure and drowning (Enge 2001).

The funnel traps had even less success than the drift fence and pitfall traps experienced. The homemade wire funnel traps were placed out along the drift fences for 10, 24-hour periods. Throughout the entire study the funnel traps only captured 2 toads. This data contrasts sharply with many similar studies done using funnel traps. In those studies, the funnel trap was the most effective trap at capturing target species (Greenberg 1994)(Enge 2001).

Observation was by far the most effective way of studying snakes. During the study, 13 snakes were captured once they were observed. Two five-lined skinks and a baby snapping turtle were also seen. This is most likely due to the human ability to search patiently in areas where snakes are likely to be found. In some cases these areas include places where conventional traps cannot be set.

Effects of Weather on Trapping- Weather had an extreme influence on whether or not snakes would be moving on any given day. Snakes are ectothermic animals, thus if it is too warm, they overheat, if it is too cold, they freeze. On days when there is precipitation snakes tend to stay inactive. If there is any emergence at all it is very short. During the winter months snakes hibernate. For instance, I was checking the trap in area 5 on the cold morning of March 28th when I came upon a ringneck snake on the trail. It was obvious what a toll the temperature took on the snake which had been caught in the cold. It was stiff and almost unresponsive. In the end I placed it under a rock in hopes that the sun would soon warm it. In essence, the temperatures of the day dictate whether or not snakes might be seen (see Fig. 4-8). The time period that this study was restricted to had an abnormal amount of precipitation during many months (see Fig. 3). There was a long winter in 2003, reaching all the way to mid-February. Just as temperatures began to rise, a late snow of about 2.5cm fell on March 30th. These are all more reasons why data was so scarce. Even on days where there was no precipitation, the aftereffects of a previous day's weather can still be keeping the temperature low.

Comparing 2002-2003 with 1972- This study was the second survey of snakes in Steele Creek Park. Brent Rowell did a complete wildlife survey in 1972 that included snakes. I conducted my survey in 5 randomly chosen areas. Mr. Rowell conducted his survey in Slagle Hollow. While I used drift fences with pitfall traps and funnel traps as well as observation to capture snakes, Mr. Rowell's only method for snakes was observation. At the end of the summer of 1972, he had documented 9 snakes; one of which he credited to a local whom described the snake to him. From the end of the

summer of 2002 to the beginning of the spring of 2003, I documented 13 snakes, all of which I observed. Snake spottings by locals were not factored into this report. Mr. Rowell documented seeing 2 copperheads in a Slagle Hollow swamp. My copperhead was found near the Rooster Front wetlands. Mr. Rowell found his black rat snake lying in the trail, basking. I too found my black rat snake on the Slagle Hollow lake causway, basking. Mr. Rowell found 1 northern water snake swimming in a small pool near Jackson's camp. The 2 water snakes I found were both not in any water; however, they had not strayed far from a water source. Mr. Rowell found 4 queensnakes throughout his survey, all observed in Slagle Hollow (Rowell 1975). I observed a queensnakes on the Lakeside Trail. I also captured 2 ringneck snakes and 4 garter snakes. These were two species that Mr. Rowell did not come upon. I credit him not coming upon any garters during the summer because garters are generally more active in the spring and fall. The fact that Mr. Rowell did not see any ringnecks is most probably just bad luck. The fact that a local had spotted one proves that they were around the park, but he just was not fortunate enough to spot one. All in all, the data from 2002-2003 and 1972 agrees fairly well, and no new species were documented.

Future Studies- Future snake and herpetological surveys should most definitely be conducted in Steele Creek Park. First, when conducting a snake survey, make sure that the time period chosen for the study will be good for finding snakes. That is, do not look for snakes during the winter. The summer and spring months are best for finding snakes. If using the drift fence and pitfall trap methods, one needs to make sure that there is plenty of time to install the fence. It would also be wise to dig deeper than the bucket needs to be buried and place a good amount of sand in to help keep the traps flood-free.

One might also want to try corrugated steel coverboards. Many reptiles will flock onto or under such a coverboard for warmth.

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