

A SURVEY OF OWL POPULATIONS IN TRINKLE HOLLOW OF STEELE CREEK PARK, SULLIVAN COUNTY, TENNESSEE

In completion of the proposed survey submitted to
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By
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Abstract

Trinkle Hollow, located in Steele Creek Park, Sullivan County Tennessee, comprises 740 acres. Within this range, three possible species of owls have the potential to exist. Past studies have shown the presence of two species of owls. The Eastern Screech Owl (*Otus asio*) and the Great Horned Owl (*Bubo virginianus*) have been recorded. Through thirty-three observation periods, areas in which these owls vocalize, nest, and feed were documented. It was found that Screech Owls prefer to eat small mammals, nest in creek bottoms, and are most active from 5:00am to 7:15am. Great Horned Owls were found to inhabit the North west side of ridges, nest in pine trees, and were most active from 4:30am to 7:15am. Stable populations of both owl species were found to exist in the park.

Introduction

Owls are members of the class Aves, and compose the order Strigiformes, which is subdivided into the families Tytonidae and Strigidae. Most owls are members of the family Strigidae; the only extant species of the family Tytonidae in southeastern United States is the Barn Owl (*Tyto alba*). In the southeastern US, a total of seven owls have been identified. All owls with the exception of (*Tyto alba*) are true owls and of the family Strigidae (Pettingill, 1970). These are the Eastern Screech Owl (*Otus asio*), Barred Owl (*Strix varia*), Saw-Whet Owl (*Aegolius acadicus*), Long-eared Owl (*Aiso otus*), Short-eared Owl (*Asio flammeus*), and the Great Horned Owl (*Bubo virginianus*) (Farrand and Bull, 1992).

The research project "A Survey of Owl Populations in Steele Creek Park" was conducted in the Trinkle Hollow area of Steele Creek Park. Steele Creek Park is located in Sullivan County, Tennessee, and is the third largest municipal park in the state. It covers 2,196 acres and contains a 54 acre lake. The Trinkle Hollow area in Steele Creek Park has a 4.5-mile boundary and covers 740 acres. Trinkle Hollow contains two major watersheds, and has total of 3.75 miles of wet-weather creeks and streams within the boundary. Elevation within Trinkle Hollow ranges from 1560 to 2060 feet (Hamed, 1999).

The Park was the ideal location for observation because of accessibility and the past owl studies completed in the area. The previous knowledge of the natural history of the Park also aided in the carrying out of the project. Owls were located by listening for their calls. Notes on the location, temperature, and possible nesting sites for each owl were documented. Regurgitate pellets were also collected, weighed, and examined.

Owl studies have been completed in the past in Steele Creek Park. *A Natural History Inventory and Limnological Studies* (Jackson, 1971) *Natural History Inventory* (Rowell, 1972) Joe Jackson's survey was carried out over a 10 week period from 1 June 1971 to 12 August 1971, with 26 days of observation. He recorded 3 Great Horned Owls and 2 Screech Owls. Brent Rowell had similar results in the following year, with 2 recorded Screech Owls, from 8 June

1972 to 11 August 1972 on 11 survey days. In an avian specie count estimate by Wallace Coffey in 1992, three species of Owls were thought to exist in the Park. These were the Great Horned Owl, the Barred Owl and the Eastern Screech Owl. (Coffey, 1992)

The Great Horned Owl (*Bubo virginianus*) is one of the largest eared owls in North America. A typical Great Horned Owl has a height of more than two feet and a wingspan of more than five feet (Raptor Center, 1998). For the majority of the year these owls are solitary hunters, living in the tops of large pine trees, or in abandoned or commandeered squirrel and hawk nests (Cowan, 1999). Their diet consists mainly of small to medium sized birds and mammals, including skunks, rabbits, squirrels, songbirds, other smaller owls, and small domestic animals. Although not preferentially, these owls have been known to eat fish, crayfish, and herptiles, sometimes wading into streams and creeks to hunt (Encarta, 1995). Breeding in Great Horned Owls begins as early in the winter as late November. From this time until mid January, these owls will call for mating and territory.

The Barred Owl (*Strix varia*) is one of the more uncommon species of owls. Due to the fact that these owls are cavity nesters, hearing or seeing them is becoming a rare experience (Encarta, 1995). As more and more of the habitat is lost to old growth logging, this owl's range has been significantly reduced. These owls are stocky and medium sized, some are as tall as 20 inches with wingspans between 3.5 and 4 feet. They are not eared owls, but their hearing does not suffer. Barred Owls are generally reclusive, but very vocal in mating season and around other owls.

Screech Owls (*Otus asio*) are common owls in Eastern Tennessee. Screech owls are one of the smallest eared owls, only standing 8 inches tall and having a wingspan of usually less than two feet. There are color divisions within the Screech Owl specie that vary in proportion geographically. Red phase and gray phase owls are the most common. A brown phase, which is very similar to the red phase has also been described (Robbins, 1966). All of these owls interbreed, not isolating any single phase. The gray phase outnumberes the brown and red phase by 6:1 (Raptor Center, 1998). Because of the smaller size, screech owls have a completely different diet than that of larger owls. Insects, small crayfish, small birds and rodents are the

staples in their diet (Wetmore, 1965). Breeding in Screech Owls begins in early January. They become extremely territorial and angrily call back and forth to other owls nearby. Screech Owls are cavity nesters, normally finding broken hollow trees, large open knotholes or abandoned woodpecker holes to raise young (Raptor Center, 1998).

Owls inhabit a crucial ecological niche. Owls and their prey keep each of the populations in check. Owls promote the survival of healthy prey by feeding on the slow, weak, and sick members of prey populations. By keeping breeding populations in most areas, owls increase the diversity of species, and in the same process, contribute to the stability of the ecosystem.

The diet of an owl can be determined by inspecting the regurgitate pellets (Encarta, 1995). These contain undigested fur, bones, claws, teeth, and chitinous Arthropod remains. By analyzing the contents, the specie of owl can be determined, as well as the dietary proportions of mammals, birds, insects, and crayfish.

Anatomically, owls are a group of superior hunters. From the sound-gathering ears and face to their needle sharp talons, all parts of the owl are adapted to silent flight, seeing in near total darkness, and capturing prey. The owl's skull structure and facial discs direct sound toward their ears, resulting in the best hearing of all birds. Unlike most other birds, owls' feathers have a down-feather edge, which muffles the sound of air flowing across their wings in flight. Owls can not move their eyes, but can swivel their heads a full 270°. Most owls are nocturnal and hunt by sight and sound. Their large eyes occupy most of the room in the skull, gather all possible light, and can be dilated independently (Walker, 1974). Their talons evolved as the main device for capturing and carrying large prey. Each talon is capable of forcing 300 pounds per square inch. Prey that is too large to swallow whole is crushed in the pads of the owls' talons. Their beaks can be used for carrying smaller prey. Captured prey that cannot be swallowed is picked apart with the beak (Walker, 1974: Encarta, 1995).

Each owl has a unique and easily distinguishable call, usually hoots or whistles. In the male Great Horned Owl, a series of 5-8 low hoots is the owl's trademark. The common call is several short, stuttered hoots, followed by two louder long hoots. The female's call is

significantly higher pitched, and carries a much shorter distance (Pettingill, 1947; Walker, 1974). Screech Owls have two audible calls. The most common is a "decrecendo tremulo", which is a territorial and mating call. The same call is also produced in a monotone, as an unaggressive call (Peterson, 1947). As uncommon as Barred Owls are, they have one of the most memorable calls. The call is a loud barking crescendo- "*who hoots for you, who hoots for you all.*"

During the course of any given night, there is an important distribution of owl calls. From 30 minutes before sunset until two or three hours afterward, only about a fourth of owls will begin calling. Most will call very sparingly, only to verify the location of other owls in the specie. Until about 5 a.m, very few or no owls will call. During the middle of the night, most owls are quiet for hunting purposes. Nocturnal prey such as shrews, moles, and mice are awake at this time of night. After 4 or 5 am, most owls have finished hunting and eating, and territorial and mating calls begin. There is a significant increase in the number of calls from this time on, making it the most successful time to listen and locate them.

Methods and Materials

"A Survey of Owl Populations in Steele Creek Park" was carried out over a 20-week period from 1 Dec 1998 to 18 April 1999. A total of 33 evenings and mornings were spent observing and documenting the various owl species in the Trinkle Hollow Area. Weather was recorded for each survey date from the weather pages of the *Bristol Herald Courier*. Hypotheses were formed from this information concerning the number of calls as they relate to temperature, precipitation, and geography.

The 740-acre study area was divided into 14 separate sections, and labeled A-N. Geographic divisions such as valleys, creeks, and ridge tops were used as the section boundaries.

On a typical day of observation, the author would begin hiking into the predetermined study area no later than 4:20 am. Time spent from this time until dawn was used to cover the entire study area and note all calling owls in the area. On several days, two or more sections were observed. Many different points of entry in the Park were used. Sky Line Drive on the South East side of Trinkle Hollow, which is less than 1/8 mile from the Park boundaries, was used. An abandoned logging road provided access into the extreme North East side of the study area. The road led well into section N. Inside Park property, the Broad Street parking lot on the North West side of the study area, and the Rooster Front parking lot in the southernmost corner were also used. Another accessible entry point was in the exact middle of the study area. The access point is a gate on the boundary of sections C, D, and H. This site, dubbed the *Fox Ridge Gate* after the neighborhood nearby, was the most used entry point.

The most effective method to identify owls in the field was to hike to the study area, sit and listen. Most owls were not scared out of the territory by the noise of walking, and some continued calling with noisy footsteps directly under their roost. The general location of an owl was determined by sound, and in the following days, the location was found again, and nesting sites and regurgitate pellets were collected and recorded.

Several pieces of equipment were also employed. A pair of 8 x 40 field binoculars was the most useful instrument in locating nesting sites. The sound amplification device was used to hear faint, distant calls. Both of these pieces of equipment were financed through the Tennessee Junior Academy of Science Research Grant. By listening to the pitch, direction, and terrain from which each call was heard, the typical nesting site, territory size, and species distribution was determined.

A cassette tape player was used to attract some species of owls. A territorial or mating call of the Eastern Screech Owls was the most effective call. This mating call of a male owl caused other male owls to call back in competition, and caused female owls to call back in the prospects of a mate.

A single reed Great Horned Owl call was also used. The call imitates an injured cottontail rabbit. The call not only attracts larger owls, but foxes and coyotes as well. Once the Great Horned Owls heard the call, and were in search of a meal, they flew down to the exact location of the caller, and swooped through in hopes of catching prey. Seeing the owl only lasted for an instant, but after the owls were hunting in the area, they could be called back to the same location several times.

The final method of research was collecting and dissecting the regurgitate pellets. Information was recorded on each of the five pellets found. The weight and percentage weight of its contents was determined in the lab using a stereoscope, dissecting kit and digital scale. After the pellets were dissected and analyzed, the bones, chitin, and fur were sealed in plastic bags and frozen to prevent further decay.

Results

The study of Owls in Trinkle Hollow of Steele Creek Park was developed as a project to be beneficial to the Park natural history. As a continuation research project to the studies performed by Joe Jackson and Brent Rowell in 1971 and 1972, the results were consistent with the results of the each past study. There are stable breeding populations of both the Great Horned Owl and the Eastern Screech Owl. However, as a result of this survey, we now have a more thorough understanding of the distribution of these owl species in Trinkle Hollow, and a greater appreciation for these nocturnal raptors.

A total of 67 individual sets of owl calls and two different species were documented from December 1, 1998 (data sheet 1) to April 18, 1999 (data sheet 33) in the Trinkle Hollow area of Steele Creek Park (See Table 1). Nineteen Great Horned Owls calls were documented, along with 48 Eastern Screech Owls calls (See Figure 1). The owls were observed in the evening and morning of survey days. 26.3% of Great Horned Owls calls and 10.5% of Screech Owl calls were heard in the evening hours (See Table 2). No Barred Owls were observed during the ten weeks of survey.

The highest concentration of Screech owls was found in and around section J (See Figure 2). On the morning Jan 30, 1999 (data sheet 17), in forty-five minutes of observation, eight separate and simultaneous calls were documented. Great Horned Owls were most abundant in section N and section A. Three sets of calls were documented in section N from Dec 5 to Dec 6, 1998 (data sheet 2). A pair of Great Horned Owls were heard several times in section A over the course of March 8 to March 21.

During the hours of observation, regurgitate pellets were collected when available. Only one pellet was found during the 20-week survey, but four other pellets were collected in Trinkle Hollow by the author during the late summer and fall months (See Figure 3). All pellets found were from Screech Owls. Upon analyzing pellets for content and mass, the Screech Owls were found to have eaten small mammals, insects, birds, and crayfish. The pellets ranged in weight

Table 1- Owl Distribution by Section

Section	Screech Owls	% Screech Owls	Great Horned Owls	% Great Horned Owls
A	1	2.1%	4	21%
B	0	0%	1	5.3%
C	0	0%	2	10.5%
D	3	6.25%	0	0%
E	4	8.3%	0	0%
F	1	2.1%	1	5.3%
G	3	6.25%	2	10.5%
H	5	10.4%	0	0%
I	4	8.3%	1	5.3%
J	8	16.7%	1	5.3%
K	7	14.6%	2	10.5%
L	4	8.3%	1	5.3%
M	4	8.3%	1	5.3%
N	4	8.3%	3	15.9%

Figure 1

**Owl Percentages
by Specie**

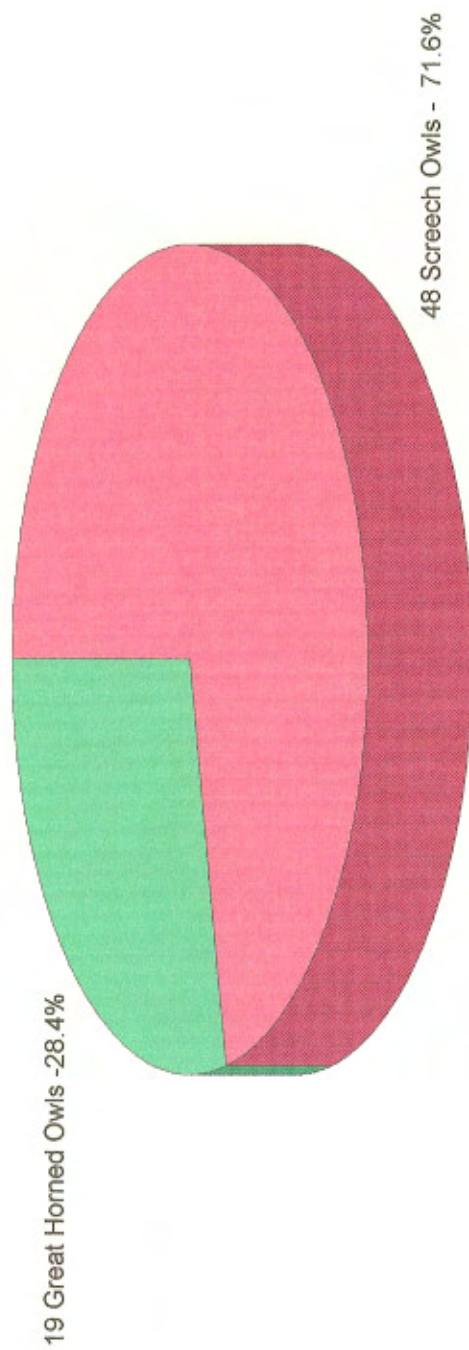


Table 2- Number of calls in the evening versus calls in the morning by specie

	Morning calls	Evening calls
Great Horned Owls	14	5
Screech Owls	43	5

Figure 2

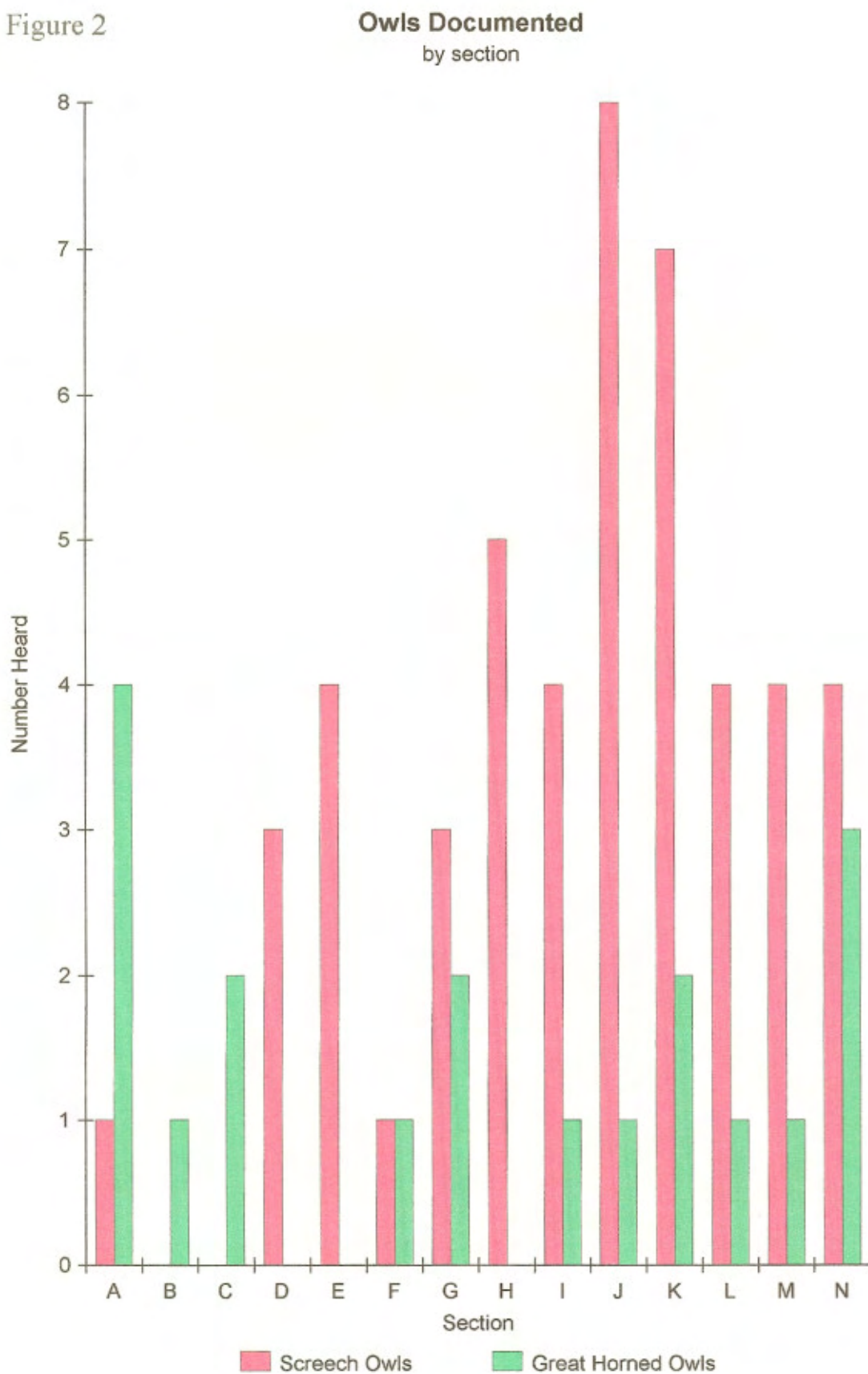
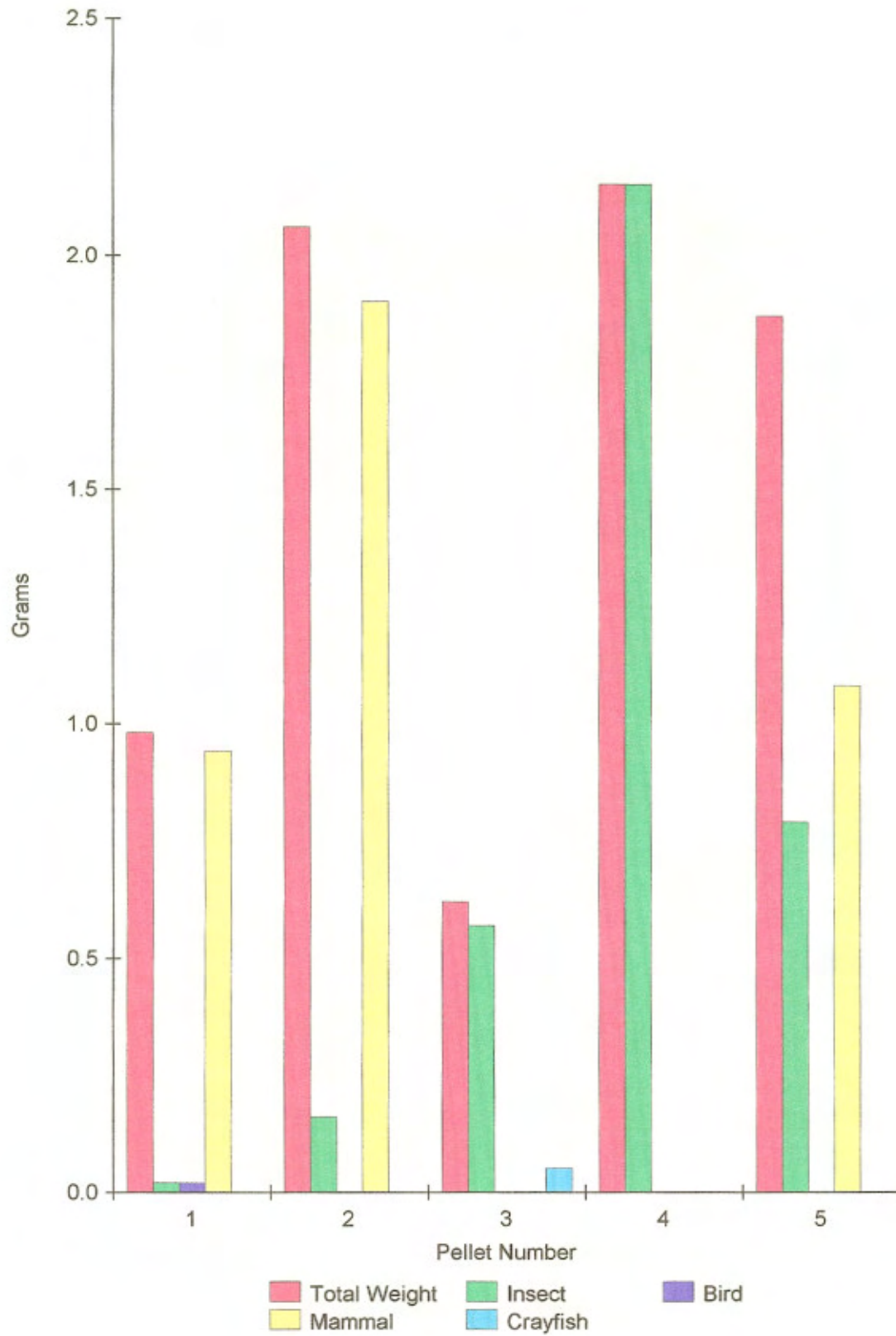


Figure 3

Owl Pellets Contents
by Weight



from .62 grams to 2.15 grams. Mammals comprised 51.1% of the pellets, which was the largest percentage by weight. Insect comprised 48.1%, birds 0.6%, and crayfish 0.2%.

After identifying mandibles of the small mammals the following results were found: white-footed mice comprised the majority of the weight, while the remainder of the bones were from shrews. Mammal bones and fur were found in pellet numbers 1, 2, and 5 (See Figure 3). At least one mammal skull was found in each of the three pellets. One white-footed mouse (*Peromyscus leucopus*) skull was found in pellet 2, two white-footed mice skulls were found in pellet 5, and pellet number 1 contained a shrew skull. The mice were identified by the large incisors and skull structure. The shrew, probably a short-tailed shrew (*Blarina brevicauda*) was identified by the red coloration on the tips of the teeth. (Slesnick, 1988) Other mammal remains included hair and various bones such as ribs, scapula, hips, skulls, and vertebral bodies.

All identifiable insects were beetles (order Coleoptera), and moths (order Lepidoptera). The beetles were mostly common ground beetles and stag beetles (*Pseudolucanus capreolus*) (Milne, 1989). They were identified by the chitinous remains of their exoskeleton. Elytron, mandibles, and legs were most easily found in the pellets. The moths were only recognizable by their wing remains, which were not intact enough to determine the species. Insect chitin was found in every pellet collected.

Only one pellet (pellet 1) contained bird remains. Four light-blue downy feathers were extracted along with two extremely hollow and lightweight bones. The specie was not determined.

Crayfish remains were only found in one pellet also (pellet 3). A claw less than 8mm in length weighing .03 grams and .02 grams of crushed chitin were found.

Discussion

Several different variables were determined to effect the specie distribution.

Terrain and Dominant Vegetation

The geography and vegetation of the region greatly effects the dispersal of species. The slope of the ground, direction the ridge is facing, and the dominant type of tree changes the number of each owl specie the area can support. The carrying capacity of the region is the most important factor for each owl specie found in survey area.

Great Horned Owls were found to prefer tops of ridges and more gently sloping terrain for their calling sites. This may be due to the trees that are common in these types of terrain, or to the hunting preferences of this owl. The Great Horned Owl nest was found on the Northwest slope of the ridge in section A. (Data Sheet 28) After several nights of localized calling the author found the nest while hiking during the day. The owls commandeered hawk and squirrel nests in the tops of the trees. Section N provides an excellent example of this. Sections A, C, and D were also found to have numerous pine trees, and multiple Great Horned Owls were observed in these sections. Sections F, G, I, and J also contain many white pines, and four sets of Great Horned Owls were documented in these sections. These owls were observed to hunt strictly from the tops of ridges. All Great Horned Owls observed during typical hunting hours (~9:00pm to ~4:00am) were determined to be on the ridge tops (Dec 5-6, 1998, Feb 6, 1999). They called very sparsely, usually only once or twice every 10-30 minutes. During these prime hunting hours the calling is infrequent, and the owls fly to the ridge tops. The tops of the ridge may be preferred because of hunting advantages. With the ability to hear prey on both sides of a ridge, more hunting area could be covered from one perch. The December 23, 1998 Great Horned Owl sighting is an excellent example of the hunting behavior of these owls. The owl was seen flying from the pine tree roost on the ridge top bordering sections B and C down the ridge into section B.

Eastern Screech Owls were more commonly found in steep terrain and creek bottoms. Most calls heard from Screech owls were not from nests, but from hunting habitat. The nesting

habitat was found to be in the cavities of Sycamore and mature Beech and Oak trees. Most of the trees in the sections with mature trees were found to be Beech and Oak. In the creek bottoms, more nests were found to be in Sycamore trees (Data Sheet 11). Sycamore trees tend to grow in the swampy edges of creeks and lakes (Little, 1992). The Screech Owls' diet consists of small rodents and crayfish, found more typically in creek bottoms. From the owl pellets collected, it was concluded that Screech Owls in the winter feed more on mammals, and feed on insects and crayfish more in the summer and fall months. The seasonal changes in the abundance of each class of prey also produced changes in the Screech Owls' diet.

Screech Owls were found more often in the mature, second growth deciduous forests, nesting in the cavity of broken branches or hollow tree trunks. The most numerous concentrations of Screech Owls was found in sections H, J, K, L, M, and N. These sections contain the most mature deciduous trees in Trinkle Hollow, and the most inaccessible to people. Section J was found to have the most concentrated population of Screech Owls. This may be due the permanent creek, Trinkle Creek, flowing along its border. The high numbers heard on Jan 30, 1999 (data sheet 17) were observed because of the time of the observation. Most of the owls were in the section for hunting purposes or in response to the owl call tape. The owls were more active by reason of the temperature, which in turn improved hunting conditions of the entire region.

Several other factors effect the owls calling.

Temperature

During the evenings and mornings of observation, a wide range of temperatures were recorded. These range from 20 degrees Fahrenheit to 68 degrees Fahrenheit. The majority of observations were made between 40 degrees and 55 degrees, but there is a significant increase in the number of calls of Screech Owls between these temperatures. Cold temperatures after long periods of warm weather caused significant drops in the number of calling owls. The Screech Owls had experienced relatively warm weather for several weeks before Feb 12, 1999, and the extreme change in weather made most owls remain quiet. With the successful weeks of hunting before Feb 12, 1999, the owls were not hungry enough to hunt, warm enough to act territorially,

or mate. After several days of quiet mornings the Screech Owls began to call again around Feb 14, 1999. Great Horned Owls showed the same preference to temperature, as their calling was distributed in nearly the same curve as the Screech Owls throughout the range of temperatures (See Table 3).

Time of Day

Evenings of observation began about 30 minutes before sunset (~6:30 pm) and continued until around 8:30 pm. Most owls stopped calling by 7:30 pm, about the time the sun had set, and it actually got dark.

Most mornings of observations were begun around 3:30 am to 4:15 am. With only a few exceptions were Great Horned Owl calls recorded before 5:00 am, or Screech Owls before 5:30 am. Most owls of both species at this time of night were assumed to be hunting because it is the most active time of night for their prey. Calling during this time of night would greatly diminish hunting success. Past this time of morning, most hunting had been finished and the owls of either specie would begin calling for mates and territory. The morning set of calls normally ended about sunrise.

Date

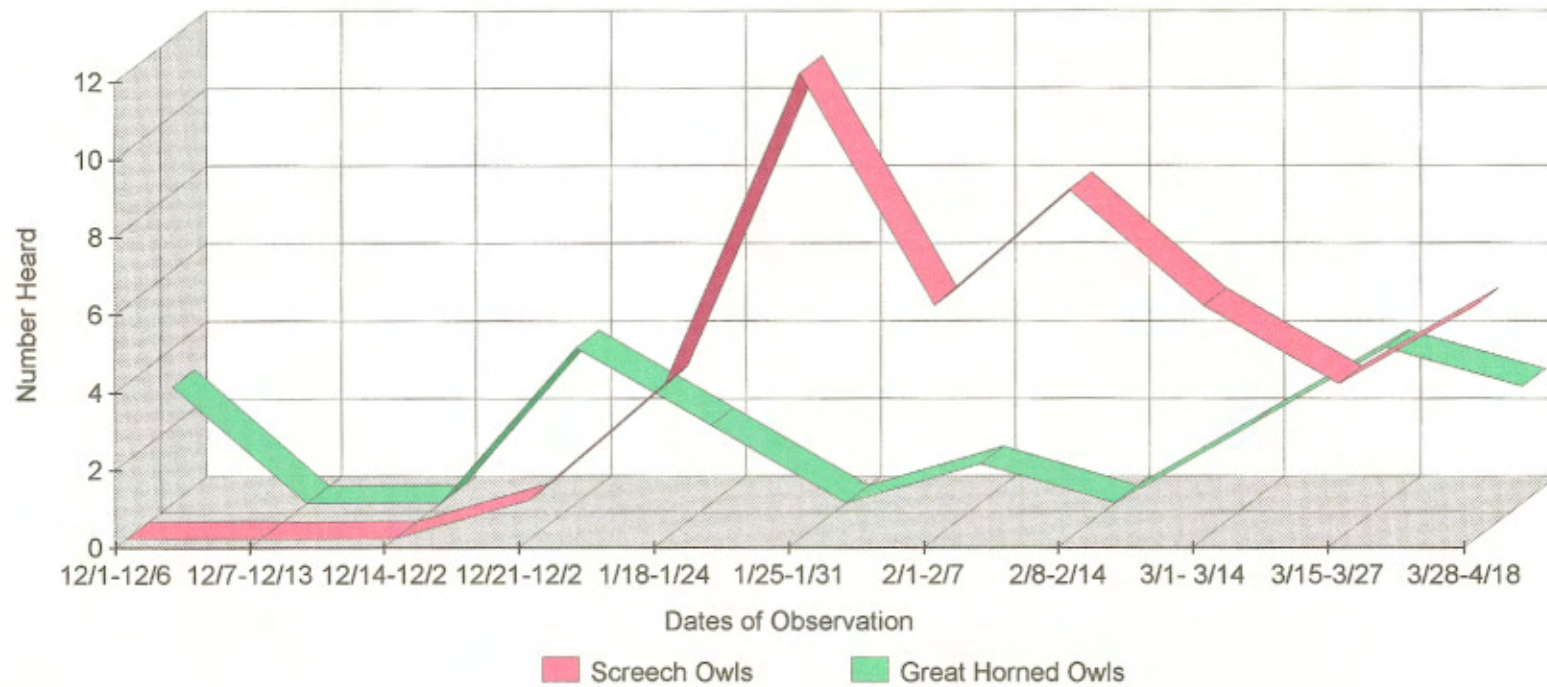
Another trend in the number of calls occurred over the weeks of observation. In the beginning of the survey period, Great Horned Owls were in their prime breeding, and most territorial time. Compared to the numbers of Screech Owls, Great Horned Owls were considerably fewer in numbers. The first few weeks of observation was the most active time for the Great Horned Owls. As the time went on, and the prime time for the owl passed, the number of owls calls gradually decreased. At the same time of the decrease in Great Horned Owl calls diminished, the Screech Owl steadily increased. At the beginning, no Screech Owls were heard. Not until the end of December 1998 did Screech Owls start their breeding season (Walker, 1974). The average increase in the number of calls was attributed to the later peak of breeding season in Screech Owls (See Figure 4). As the weeks passed, both species of owls and the number of their calls leveled off.

Table 3- Temperature vs. number of calls.

	Screech Owls	Great Horned Owls
20° F - 32° F	4	2
33° F - 45° F	24	11
46° F - 58° F	17	4
59° F - 70° F	3	2

Number of Owls Observed Over Time
by specie

Figure 4



Hunting and Eating Preferences

Of the five owl pellets, four were collected during the summer and fall of 1998. The study of the pellet contents was concentrated on the mammals. In a study completed in 1997 on the populations of small mammals in Trinkle Hollow, a total of twenty mammals were captured (Buckles, 1997). 95% of the animals caught were white-footed mice and 5% of the mammals caught were short-tailed shrews. These percentages are relatively consistent to the Screech Owl's diet estimated by the pellet examinations.

Appendix A
Data Sheets 1-33

Time Out 4:08 pm
 Time In 6:15 pm
 Total Time 2 hrs: 7 min
 Date 12/2/98

Cloud Cover -10 %
 Day High Temp -66° F
 Day Low Temp -28° F
 Temp of Observation -60° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: _____ or Between _____ C and _____ G

Species:	Number	Seen	Number Seen	Location
___ Screech Owl	_____	Y N	_____	_____
___ Screech Owl	_____	Y N	_____	_____
___ Screech Owl	_____	Y N	_____	_____
___ Screech Owl	_____	Y N	_____	_____
___ Screech Owl	_____	Y N	_____	_____
___ Screech Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Barred Owl	_____	Y N	_____	_____
___ Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Hiked from Fox Ridge Gate to the first clearing under the power line cut- saw 2 grouse and several bats- no calls

Time Out 3:30 pm Sat
 Time In 9:40 am Sun
 Total Time 18 hrs: 10 min
 Date 12/5-6/98

Cloud Cover -75 %
 Day High Temp -61° F
 Day Low Temp -42° F
 Temp of Observation -50° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: N or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
<u>X</u> Great Horned Owl 1	_____	<u>Y</u> N	_____	north ridge of N
<u>X</u> Great Horned Owl 2	_____	<u>Y</u> N	_____	simultaneous calling SE and NE Ridges in N
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Barred Owl	_____	Y N	_____	_____
_ Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Hiked From Sky Line Drive in Afternoon- found Trails in woods. Set camp on trail in section N

9:30 pm heard one Great Horned Owl

4:00 am to 5:30 am two Great Horned Owls calling- one owl less than 50 yards from center ridge, other east across valley- owls called back and forth for hour and a half

Time Out 4:20 pm
Time In 7:55 pm
Total Time 3 hrs: 35 min
Date 12/11/98

Cloud Cover -75 %
Day High Temp -50° F
Day Low Temp -39° F
Temp of Observation -50° F

Weather: Clear Fog Rain Cloudy Snow
Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind

Area Survey: _____ or Between _____ B and C

Species:	Number	Seen	Number	Seen	Location
_ Screech Owl	_____	Y N	_____	_____	_____
_ Screech Owl	_____	Y N	_____	_____	_____
_ Screech Owl	_____	Y N	_____	_____	_____
_ Screech Owl	_____	Y N	_____	_____	_____
_ Screech Owl	_____	Y N	_____	_____	_____
_ Screech Owl	_____	Y N	_____	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____	_____
_ Barred Owl	_____	Y N	_____	_____	_____
_ Other	_____	Y N	_____	_____	_____

Other Participants: _____

Comments: Wind is a problem with PSA. Too windy to hear anything with or without PSA
tonight. Hiked left at trail intersection from Fox Ridge Gate

Time Out 3:40 am
Time In 7:10 am
Total Time 3 hrs: 30 min
Date 12/20/98

Cloud Cover -100 %
Day High Temp -57° F
Day Low Temp -45° F
Temp of Observation -45° F

Weather: Clear Fog Rain Cloudy Snow
Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Rain

Area Survey: _____ or Between _____ C and _____ D

Species:	Number	Seen	Number Seen	Location
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Barred Owl	_____	Y N	_____	_____
_ Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Excellent survey area. bad weather conditions.

Hiked from Rooster Front to Deep Cove along lake shore trail

Time Out 3:25 am
 Time In 7:30 am
 Total Time 4 hrs: 05 min
 Date 12/21/98

Cloud Cover -15 %
 Day High Temp -65° F
 Day Low Temp -36° F
 Temp of Observation -48° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind

Area Survey: _____ or Between _____ B and C

Species:	Number	Seen	Number Seen	Location
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
<u>X</u> Great Horned Owl 1	_____	<u>Y</u> <u>N</u>	_____	<u>Section B-300 yds North of Ridge top</u>
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Barred Owl	_____	Y N	_____	_____
_ Other	_____	Y N	_____	_____

Other Participants: Reid Cowan

Comments: @ 6:15 one set of three calls from Great Horned Owl

Hiked left at T intersection in trail from Fox Ridge Gate

Time Out 3:25 am
 Time In 7:15 am
 Total Time 3 hrs: 50 min
 Date 12/23/98

Cloud Cover -25 %
 Day High Temp -34° F
 Day Low Temp -25° F
 Temp of Observation -27° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind

Area Survey: A, B, C, F or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u> </u> Screech Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u> </u> Screech Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u> </u> Screech Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u> </u> Screech Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u> </u> Screech Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u> </u> Screech Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u>X</u> Great Horned Owl 1	<u> </u>	<u>Y</u> <u>N</u>	<u> </u>	<u>200 yds from trail in F</u>
<u>X</u> Great Horned Owl 1	<u> </u>	<u>Y</u> <u>N</u>	<u>1</u>	<u>Mid Lake Trail in section B</u>
<u> </u> Great Horned Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u> </u> Great Horned Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u> </u> Barred Owl	<u> </u>	Y N	<u> </u>	<u> </u>
<u> </u> Other	<u> </u>	Y N	<u> </u>	<u> </u>

Other Participants: Reid Cowan

Comments: Hiked from Broad Street Parking lot to Fox Ridge Power cut continued to Mid Lake trail

First half mile up ridge- one Great Horned Owl in F- ~3:35 am

Half way down Mid Lake Trail from Fox Ridge intersection- Great Horned Owl flew into section B ~5:15 am silent flight- five foot wings- possible nest 400 yds past roost where owl flew in section B about 10 yds off right of trail

Time Out 3:25 am
 Time In 7:05 am
 Total Time 3 hrs: 40 min
 Date 12/24/98

Cloud Cover -75 %
 Day High Temp -45° F
 Day Low Temp -33° F
 Temp of Observation -40° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: _____ or Between C and D

Species:	Number	Seen	Number Seen	Location
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
<u>X</u> Great Horned Owl 1	_____	<u>Y N</u>	_____	<u>~150vrds up ridge in section C</u>
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Barred Owl	_____	Y N	_____	_____
_ Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Hiked from Rooster Front to Deep Cove
heard one Great Horned Owl at 5:05 am

Time Out 3:50 am
 Time In 6:35 am
 Total Time 2 hrs: 45 min
 Date 12/25/98

Cloud Cover -75 %
 Day High Temp -39° F
 Day Low Temp -19° F
 Temp of Observation -25° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: A or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Screech Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Great Horned Owl	_____	Y N	_____	_____
_ Barred Owl	_____	Y N	_____	_____
_ Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Christmas morning- hiked from Broad Street to Lake Trail below section A
no responses to tape

Time Out 3:35 am
 Time In 6:40 am
 Total Time 3 hrs: 05 min
 Date 12/27/98

Cloud Cover -10 %
 Day High Temp -46° F
 Day Low Temp -21° F
 Temp of Observation -40° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: B, C, D, E or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>1/3 of the way up ridge in E</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: Ben Cowan _____

Comments: recent rain- hiked from Rooster Front- immediately heard one Screech Owl from section E

Hiked to Mid Lake Trail to the site of the 12/23/98 Great Horned Owl sighting

Time Out 4:45 am
 Time In 6:15 am
 Total Time 1 hrs: 30 min
 Date 1/20/99

Cloud Cover -20 %
 Day High Temp -58° F
 Day Low Temp -30° F
 Temp of Observation -40° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: A or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>1/2 of the way up ridge in A</u> <u>At the turn in the Lake</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: _____

Comments: Listening from Lake trail on edge of section A Hiked from Broad Street
Parking Lot

Time Out 4:15 pm
Time In 6:00 pm
Total Time 1 hrs: 45min
Date 1/21/99

Cloud Cover -100 %
Day High Temp -64° F
Day Low Temp -36° F
Temp of Observation -45° F

Weather: Clear Fog Rain Cloudy Snow
Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: E or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
__ Screech Owl	_____	Y N	_____	_____
__ Screech Owl	_____	Y N	_____	_____
__ Screech Owl	_____	Y N	_____	_____
__ Screech Owl	_____	Y N	_____	_____
__ Screech Owl	_____	Y N	_____	_____
__ Screech Owl	_____	Y N	_____	_____
__ Great Horned Owl	_____	Y N	_____	_____
__ Great Horned Owl	_____	Y N	_____	_____
__ Great Horned Owl	_____	Y N	_____	_____
__ Great Horned Owl	_____	Y N	_____	_____
__ Barred Owl	_____	Y N	_____	_____
__ Other	_____	Y N	_____	_____

Other Participants: Reid Cowan

Comments: playing tape every 10 yards walking up creek in section E - no calls this evening

Time Out 3:38 am
 Time In 6:35 am
 Total Time 2 hrs: 57min
 Date 1/23/99

Cloud Cover -25 %
 Day High Temp -67° F
 Day Low Temp -55° F
 Temp of Observation -65° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind

Area Survey: G, F, I or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>W side of 3rd ridge in I</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>extreme SW end of section G</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u>X</u> Great Horned Owl	1	<u>Y</u> <u>N</u>		<u>section G west of largest peak</u>
<u>X</u> Great Horned Owl	1	<u>Y</u> <u>N</u>		<u>North side of 3rd ridge in I</u>
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: Reid Cowan

Comments: Hiked from Fox Ridge Gate to power cut- trail along ridge tops to East ridges in I
Screech Owl heard at 4:30 am Great Horned Owl heard at 5:55am hiking out
Great Horned Owl in section I was original thought to be a Saw-Whet owl- but after
further listening it was found to be a female Great Horned Owl

Time Out 4:35 am
 Time In 6:25 am
 Total Time 1 hrs: 50 min
 Date 1/24/99

Cloud Cover -100 %
 Day High Temp -54° F
 Day Low Temp -46° F
 Temp of Observation -52° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Rain

Area Survey: M + N or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>North Corner of section M</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: _____

Comments: Hiked in from the private drive in section N- to center ridge in section M
Rain stopped earlier this morning, but water dripping down from trees is loud enough to
muffle most calls

Time Out 2:20 pm
 Time In 3:40 pm
 Total Time 1 hrs: 20 min
 Date 1/27/99

Cloud Cover -20 %
 Day High Temp -67° F
 Day Low Temp -30° F
 Temp of Observation -65° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: A or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Barred Owl	_____	Y N	_____	_____
<u> </u> Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Hiked up bicycle trail to top of ridge in section A above lake- good site for
Screech Owls- no responses in mid afternoon to tape

Time Out 1:00 pm
Time In 2:35 pm
Total Time 1 hrs: 35 min
Date 1/28/99

Cloud Cover -15 %
Day High Temp -65° F
Day Low Temp -38° F
Temp of Observation -65° F

Weather: Clear Fog Rain Cloudy Snow
Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind and Creek

Area Survey: C and D or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Barred Owl</u>	_____	Y N	_____	_____
<u>Other</u>	_____	Y N	_____	_____

Other Participants: Kevin Hamed

Comments: Hiked from Rooster Front to section C and D in the Deep Cove- up left side of
valley in section C- no responses to tape

Time Out 1:00 pm
 Time In 2:15 pm
 Total Time 1 hrs: 15 min
 Date 1/29/99

Cloud Cover -100 %
 Day High Temp -56° F
 Day Low Temp -42° F
 Temp of Observation -55° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: H and J or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Barred Owl</u>	_____	Y N	_____	_____
<u>Other</u>	_____	Y N	_____	_____

Other Participants: _____

Comments: Hiked from Fox Ridge north to tallest Ridge - down through sections H and J -
good old growth woods for Screech Owls. Hiked down through valley into swamp at
border of Park where Trinkle Creek ends-heard wood frogs

Time Out 4:00 am
Time In 7:20 am
Total Time 3 hrs: 20 min
Date 1/30/99

Cloud Cover -100 %
Day High Temp -63° F
Day Low Temp -45° F
Temp of Observation -48° F

Weather: Clear Fog Rain Cloudy Snow
Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind

Area Survey: H and J or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	2	<u>Y</u> <u>N</u>		<u>Border of H + J- lower half of ridge 50 yds apart</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>1/2 down east side of east ridge in section J</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>Bottom of ridge bordering section H and J</u>
<u>X</u> Screech Owl	2	<u>Y</u> <u>N</u>		<u>North and East side of East ridge in H</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>SW side of lower ridge in J, near section H</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>Bottom of ridge. North of border of H and J</u>
<u> </u> Great Horned Owl		<u>Y</u> <u>N</u>		
<u> </u> Great Horned Owl		<u>Y</u> <u>N</u>		
<u> </u> Great Horned Owl		<u>Y</u> <u>N</u>		
<u> </u> Great Horned Owl		<u>Y</u> <u>N</u>		
<u> </u> Barred Owl		<u>Y</u> <u>N</u>		
<u> </u> Other		<u>Y</u> <u>N</u>		

Other Participants: Reid Cowan

Comments: Good Day- Hiked same route as 1/29/99 into old growth woods- playing tape- more calls than we could count- picked out 8 separate owls. Possibly up to 10 or 12.

Time Out 3:45 am Cloud Cover -100 %
 Time In 7:05 am Day High Temp -46° F
 Total Time 3 hrs: 20 min Day Low Temp -37° F
 Date 1/31/99 Temp of Observation -40° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y ☒ N Description: _____

Area Survey: D or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	2	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	_____	Border D, E, and Fox
<u>X</u> Screech Owl	1	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	_____	Ridge ~50 yds apart
<u>X</u> Screech Owl	1	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	_____	1/2 way down ridge in
___ Screech Owl	_____	Y N	_____	middle of section D
___ Screech Owl	_____	Y N	_____	200 yds up ridge from
___ Screech Owl	_____	Y N	_____	Lake trail
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Barred Owl	_____	Y N	_____	_____
___ Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Hiking from Rooster Front to the Deep Cove and up side of valley in section D
Playing tape- several responses- The two owls together were less than 200 yds apart

Time Out 6:45 pm Cloud Cover -100 %
 Time In 8:10 pm Day High Temp -56° F
 Total Time 1 hrs: 25 min Day Low Temp -30° F
 Date 1/31/99 Temp of Observation -49° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y ☒ N Description: _____

Area Survey: K and J or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	Y <input checked="" type="radio"/> N		<u>Middle valley in SE of section K</u>
<u>X</u> Screech Owl	2	Y <input checked="" type="radio"/> N		<u>NW ridge in section K one near summit</u>
<u>X</u> Screech Owl	1	Y <input checked="" type="radio"/> N		<u>2/3 way down SE ridge in section J</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: _____

Comments: Hiked in from where Trinkle Creek and Park border cross up the right side of valley and into SE of section K. playing tape heard one call- I sat on the top of the saddle on the border of section K and L- Heard two Screech Owls from this point. Proceeded to the SE ridge in section J- heard one Screech Owl down the ridge from the border of J and K

Time Out 4:40 am
 Time In 7:10 pm
 Total Time 2 hrs: 30 min
 Date 2/6/99

Cloud Cover -50 %
 Day High Temp -53° F
 Day Low Temp -30° F
 Temp of Observation -33° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: _____ or Between (K and L) and (M and J)

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>South side of NW valley</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>in L</u>
<u> </u> Screech Owl		Y N		<u>Head of Valley- western L</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u>X</u> Great Horned Owl	1	<u>Y</u> <u>N</u>		<u>West Ridge on border of</u>
<u> </u> Great Horned Owl		Y N		<u>J and L- 1/2 way up ridge</u>
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: Ben Cowan

Comments: Hiked from Sky Line Drive. Skirted left ridge- top of Trinkle Hollow to the
saddle of ridges. Heard a distant Great Horned Owl. Continued to largest saddle on border
of J and L. Great Horned Owl called from 4:50am to 6:25am- In the meantime- heard 1
screech owl in two separate locations. First at 5:15 am and second at 5:40 am.

Time Out 3:30 am
 Time In 6:05 am
 Total Time 2 hrs: 35 min
 Date 2/12/99

Cloud Cover -100 %
 Day High Temp -63° F
 Day Low Temp -28° F
 Temp of Observation -44° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind

Area Survey: M and N or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>½ way down ridge in NW</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>of section N</u>
<u>X</u> Screech Owl	2	<u>Y</u> <u>N</u>		<u>Bottom of valley near creek</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>NW side of valley of border</u>
<u> </u> Screech Owl		<u>Y</u> <u>N</u>		<u>of M and N</u>
<u> </u> Screech Owl		<u>Y</u> <u>N</u>		<u>Flat top of ridge in M</u>
<u> </u> Great Horned Owl		<u>Y</u> <u>N</u>		
<u> </u> Great Horned Owl		<u>Y</u> <u>N</u>		
<u> </u> Great Horned Owl		<u>Y</u> <u>N</u>		
<u> </u> Great Horned Owl		<u>Y</u> <u>N</u>		
<u> </u> Barred Owl		<u>Y</u> <u>N</u>		
<u> </u> Other		<u>Y</u> <u>N</u>		

Other Participants: _____

Comments: Significant change in weather- past warm weeks are changing into cold winter weather.
hiked in Private drive and into section M.

Time Out 5:20 pm Cloud Cover -85 %
Time In 7:05 pm Day High Temp -63° F
Total Time 1 hrs: 45 min Day Low Temp -28° F
Date 2/12/99 Temp of Observation -29° F

Weather: Clear Fog Rain Cloudy Snow
Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: L and K or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Barred Owl</u>	_____	Y N	_____	_____
<u>Other</u>	_____	Y N	_____	_____

Other Participants: _____

Comments: From Fox Ridge Gate to ridge peak and down through L and K- playing tape with
no responses

Time Out 3:50 am
 Time In 6:25 am
 Total Time 2 hrs: 35 min
 Date 2/13/99

Cloud Cover -100 %
 Day High Temp -36° F
 Day Low Temp -19° F
 Temp of Observation -27° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y ☒ N Description: _____

Area Survey: F and G or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Barred Owl	_____	Y N	_____	_____
<u> </u> Other	_____	Y N	_____	_____

Other Participants: _____

Comments: From Broad Street Parking Lot to Power cut and out ridge top trail- playing tape.
Walked into middle of Section G- no calls.

Time Out 4:00 am Cloud Cover -85 %
 Time In 7:20 am Day High Temp -38° F
 Total Time 3 hrs: 20 min Day Low Temp -15° F
 Date 2/14/99 Temp of Observation -22° F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: G, I, and F or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>	_____	<u>middle of section G</u>
<u>X</u> Screech Owl	2	<u>Y</u> <u>N</u>	_____	<u>East of 1st ridge in I</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>	_____	<u>NE ridge top in section F</u>
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Barred Owl	_____	Y N	_____	_____
<u> </u> Other	_____	Y N	_____	_____

Other Participants: Reid Cowan

Comments: Broad Street Parking Lot to Power cut played tape heard first owl at 4:35- SW of
tallest peak in section G. Hiked out ridge top trail to section I and played tape- called in 3
owls ~5:05am- blew rabbit call-0 no responses

Time Out 3:45 am
 Time In 6:00 am
 Total Time 2 hrs: 15 min
 Date 3/6/99

Cloud Cover -100 %
 Day High Temp -?
 Day Low Temp -?
 Temp of Observation -48°F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: G and I or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1 _____	Y <u>N</u>	_____	<u>Border of sections along creek</u>
<u>X</u> Screech Owl	1 _____	Y <u>N</u>	_____	<u>250 yrds down creek</u>
___ Screech Owl	_____	Y N	_____	_____
___ Screech Owl	_____	Y N	_____	_____
___ Screech Owl	_____	Y N	_____	_____
___ Screech Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Great Horned Owl	_____	Y N	_____	_____
___ Barred Owl	_____	Y N	_____	_____
___ Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Hiked from Broad Street parking lot to power cut- playing tape. No calls

Time Out 8:00 am
 Time In 8:15 am
 Total Time 0 hrs: 15 min
 Date 3/8/99

Cloud Cover -100 %
 Day High Temp -49°F
 Day Low Temp -20°F
 Temp of Observation -38°F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: A or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>X Great Horned Owl</u> 2	_____	<u>Y N</u>	_____	<u>Section A- across lake</u>
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Barred Owl</u>	_____	Y N	_____	_____
<u>Other</u>	_____	Y N	_____	_____

Other Participants: Kevin Hamed

Comments: Two Great Horned owls male and female- calling back and forth in section A
Identified by Kevin Hamed

Time Out 4:25 am
 Time In 7:05 am
 Total Time 2 hrs: 40 min
 Date 3/13/99

Cloud Cover -75 %
 Day High Temp -41°F
 Day Low Temp -27°F
 Temp of Observation -34°F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: H and J or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>creek bottom in J</u>
<u>X</u> Screech Owl	2	<u>Y</u> <u>N</u>		<u>½ way up ridge in H</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>20 yrds away from above</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: _____

Comments: Hiked from Fox Ridge Gate to ridge top and down ridge into the sections

Time Out 8:50 pm
 Time In 9:00 pm
 Total Time 0 hrs: 10 min
 Date 3/15/99

Cloud Cover -100 %
 Day High Temp -42°F
 Day Low Temp -33°F
 Temp of Observation -39°F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: A or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>Screech Owl</u>	_____	Y N	_____	_____
<u>X Great Horned Owl</u> 2	_____	<u>Y</u> N	_____	<u>section A along lake side</u>
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Great Horned Owl</u>	_____	Y N	_____	_____
<u>Barred Owl</u>	_____	Y N	_____	_____
<u>Other</u>	_____	Y N	_____	_____

Other Participants: Kevin Hamed

Comments: author not present- observed by Kevin Hamed. Assumed to be the same pair as heard 1 week earlier

Time Out 4:25 am
 Time In 6:00 am
 Total Time 1 hrs: 35 min
 Date 3/19/99

Cloud Cover - 100 %
 Day High Temp -58°F
 Day Low Temp -32°F
 Temp of Observation -40°F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind

Area Survey: M and N or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>border of M and N</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>		<u>section N near tower</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u>X</u> Great Horned Owl		<u>Y</u> <u>N</u>		<u>far corner of M from point of observation</u>
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: Reid Cowan

Comments: Drove in the private drive- hiked out road- chilly with wind-

Time Out 4:35 am
 Time In 6:30 am
 Total Time 1 hrs: 55min
 Date 3/27/99

Cloud Cover -75%
 Day High Temp -55°F
 Day Low Temp -37°F
 Temp of Observation -45°F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y ☒ N Description: _____

Area Survey: K and L or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<input checked="" type="radio"/> N		<u>Mid- center of section K</u>
<u>X</u> Screech Owl	1	<input checked="" type="radio"/> N		<u>100yds SW of 1st owl</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u>X</u> Great Horned Owl	1	<input checked="" type="radio"/> N		<u>NW of section L</u>
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: Reid Cowan

Comments: Hiked in from Trinkle Creek and Park Boundary- to ridge top

Time Out 4:15 am
 Time In 7:00 am
 Total Time 2 hrs: 45 min
 Date 4/3/99

Cloud Cover -100%
 Day High Temp - 80°F
 Day Low Temp - 46°F
 Temp of Observation - 54°F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: Wind

Area Survey: E or Between _____ and _____

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>	_____	<u>1st 50 feet in woods from trail in section E</u>
<u>X</u> Screech Owl	1	<u>Y</u> <u>N</u>	_____	<u>section E- farthest point from lake</u>
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Screech Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Great Horned Owl	_____	Y N	_____	_____
<u> </u> Barred Owl	_____	Y N	_____	_____
<u> </u> Other	_____	Y N	_____	_____

Other Participants: _____

Comments: Hiked from Rooster Front to section E and up into woods- crossed over ridge top- flushed grouse from roost- heard two Screech Owls

Blair Cowan

1999 Owl Survey Sheet # 32

Time Out 7:45 pm
Time In 9:25 am
Total Time 1 hrs: 40 min
Date 4/17/99

Cloud Cover - 75%
Day High Temp - 54°F
Day Low Temp - 36°F
Temp of Observation - 35°F

Weather: Clear Fog Rain Cloudy Snow
Wind: Calm Light Moderate Strong

Noise Interference: Y ☒ N Description: _____

Area Survey: _____ or Between L and K

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<input checked="" type="radio"/> N		<u>section L- 50 yds from creek bottom</u>
<u>X</u> Screech Owl	1	<input checked="" type="radio"/> N		<u>section L- near first</u>
<u>X</u> Screech Owl	1	<input checked="" type="radio"/> N		<u>section K- top of ridge</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u>X</u> Great Horned Owl	1	<input checked="" type="radio"/> N		<u>section K- 300yds from second</u>
<u>X</u> Great Horned Owl	1	<input checked="" type="radio"/> N		<u>section L- near border of K</u>
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: _____

Comments: Hiked into Trinkle Creek- up ridge- cold! evening

Time Out 7:50 pm
 Time In 9:15 am
 Total Time 1 hr: 25 min
 Date 4/18/99

Cloud Cover - 50%
 Day High Temp - 54°F
 Day Low Temp - 41°F
 Temp of Observation - 44°F

Weather: Clear Fog Rain Cloudy Snow
 Wind: Calm Light Moderate Strong

Noise Interference: Y N Description: _____

Area Survey: _____ or Between E and H

Species:	Number	Seen	Number Seen	Location
<u>X</u> Screech Owl	1	<u>N</u>		<u>section G- near power cut</u>
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u> </u> Screech Owl		Y N		
<u>X</u> Great Horned Owl	1	<u>N</u>		<u>section H- on the ridge top</u>
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Great Horned Owl		Y N		
<u> </u> Barred Owl		Y N		
<u> </u> Other		Y N		

Other Participants: _____

Comments: Hiked into park from same place as previous night- heard one Great Horned owl call two times- Screech call about 50 times.

Appendix B
Research Log

Research Log

Thursday, October 15, 1998- 2:45- 3:10 Discussed project possibilities with Kevin Hamed. Talked about owls in general, identified techniques to carry out survey. Explained grant and how I would use finances.

Thursday, October 15, 1998- November 1, 1998- preparing grant proposal for Dr. Jack Rhoton at the TN Junior Academy of Sciences, and writing final copy.

Tuesday, Dec 1- 2:40pm- 5:45pm- My proposal was approved and I received 300 dollars to spend on the equipment. I looked up information on habitat and breeding habits of owls, and began composing literature review. Obtained tape player from Nature Center, and owl call tape from Mr. Gentry earlier in school.

Wednesday Dec 2- 3:15pm-3:30pm- Equipment ordered from various catalogs. Binoculars and PSA were ordered.

Wednesday, Dec 2- 4:08pm- 6:15pm- First observation time in power cut from Fox Ridge Gate. Heard nothing sitting under power lines in clearing.

Friday Dec 4- 3:00pm- 6:40pm- Obtained maps from Nature Center and discussed previous evening of observation. Went to library to research more on subject- learned feeding habits and times of best listening.

3:30pm Saturday, Dec 5- 9:40am to Sunday, Dec 6- Over night camping for observation. Heard three Great Horned Owls total. Data sheet 2.

Friday, Dec 11- 4:00pm- 8:30pm- Received PSA in mail- field testing in Park listening for calls. Nothing was heard in the evening. Wind is a problem for the amplifier.

Saturday, Dec 12- 11:20am- 2:45pm- Hiking in Park from Fox Ridge to site of previous nights observation.

Sunday, Dec 20- 3:00am- 7:30am- Christmas vacation. Recent rain, continuing through observation. Hiked into Deep Cove. Heard frogs. I need to hike to this point from the Fox Ridge Gate. No responses to Eastern Screech Owl tape.

Monday, Dec 21- 3:00am- 7:35am- Hiked to Mid Lake Trail with Reid Cowan. Heard 1 Great Horned Owl. Organizing data from notebook at home after hike.

Wednesday, Dec 23- 3:00am- 7:10am- Hiked from Broad Street parking lot and around all of section A. Heard one Great Horned Owl in first half mile of walking. On Mid Lake Trail, saw one Great Horned Owl fly. Analysis of roost- no owl pellets were found, roost was assumed to be a hunting site. Owl was flushed out as we walked under it. Found a possible nesting site 400 yards past owl sighting on right side of trail.

Thursday, Dec 24- 3:00am- 7:05am- Hiked from Rooster Front Park to section C along lake trail. At 5:05am I heard one Great Horned Owl. Still no screech owls calling back to tape.

Friday, Dec 25- 3:30am- 6:35am- Christmas morning- hiked from Broad Street Parking lot—saw one muskrat in the Lake

Saturday, Dec 26- 2:15pm- 4:45pm- organizing information on owls recorded over Christmas vacation.

Sunday, Dec 27- 3:00am- 6:40am- Hiked from Rooster Front Park with Ben Cowan. Immediately had one Screech Owl call back to tape from section E. Hiked to sight of the 12/23/98 Great Horned owl sighting.

No data collection or work on project until 2nd Semester of school due to vacation and sickness

Monday, Jan 18- 10:55am- 12:25pm- 2nd semester Biology class project Workday.
Research more information in Library at Tennessee School.

Tuesday, Jan 19- 10:55am- 12:25pm- Biology class- worked on details for Mrs. Nancy Dickerson.

Wednesday, Jan 20- 1:00pm- 3:10pm- I rearranged school schedule to work on project during all fourth periods at the Nature Center with Kevin Hamed. First day at Nature Center- I worked on maps- wrote out the study area descriptions and organized past research.

Wednesday, Jan 20- 4:40pm- 6:25pm- Hiked around lake trail in the evening while playing tape- called in one Screech Owl.

Thursday, Jan 21- 1:00pm- 3:05pm- worked at Nature Center for the afternoon. Discussed project deadlines and presentation ideas.

Thursday, Jan 21- 4:00pm- 6:05pm- Hiked from Rooster Front Park to section E with Reid Cowan. Played tape- found one Screech Owl cavity in a Beech tree. White wash and an owl pellet on the ground.

Saturday, Jan 23- 3:38am- 6:50am- Hiked with Reid Cowan from the Broad Street Parking Lot to the Power cut. Found trail out ridge tops through section F and section I. Heard first female Great Horned Owl. At first call I thought it might be a Saw- Whet Owl. After going home and listening to tape, I found that the call was the same as the Great Horned owls', but very high pitched. Saw-Whet Owl was research and found to sound not unlike a Spring Peeper.

Sunday, Jan 24- 4:00am- 6:35am- Hiked into section N and M from private road found yesterday. Recent rain dripping from trees made listening impossible.

Monday, Jan 25- 10:55am- 12:25pm- Biology class research project work day. Rewriting research notebook into data sheets.

Monday, Jan 25- 1:00pm- 3:05pm- Working at Nature Center- I finished consolidating research notebook into data sheets.

Tuesday, Jan 26- 10:55am- 12:25pm- Biology work day- work with new section map- organized past week worth of data.

Tuesday, Jan 26- 1:00pm- 5:45- Finished with section maps and other work started in class. Borrowed camera and entire photography setup from Charlie Sewell. 1000mm lens. Learned to use camera and spent time field testing telephoto lens.

Wednesday, Jan 27- 1:00pm- 3:20pm- setup tripods and took pictures of park to adjust camera for different settings. Also hiked up bike trail into section A- found several great trees for Screech Owls. Also found unidentifiable scat, possibly possum, coyote, or skunk. No responses to tape.

Thursday, Jan 28- 1:00pm- 2:45pm- Hiked with Kevin Hamed from Rooster Front Park into section C and D. playing tape with no responses.

Friday, Jan 29- 11:15pm- 12:05pm- discussed Nature Center and Nashville presentations with Mrs. Dickerson.

Friday, Jan 29- 12:30pm- 2:45pm- Drove by Nature Center and picked up tape player. Hiked through Fox Ridge Gate down ridges to the point where Trinkle Creek crosses out of Park boundaries. Found good habitat along ridges- oldest growth in Trinkle Hollow. Heard dozens of Wood Frogs in one pond area of the plowed-under wetland.

Saturday, Jan 30- 4:00am- 7:35am- Best day so far for listening. Heard at least 8-10 Screech Owls in section H and J. This is the same area I hiked yesterday. Reid Cowan and I picked out at least 8 individual owls calling in response to the tape. Call index 4. One intact Screech Owl Pellet was found on a rotten stump.

Saturday, Jan 30- 12:30pm-1:10pm- Organized all Owl pellets I have found over the years from Trinkle Hollow plus pellets from the project.

Sunday, Jan 31- 3:30am- 7:15am- Hiked from Rooster Front to the Deep Cove and up east side of the valley- playing tape called in 4 Screech Owls.

Monday, Feb 1- 1:05pm- 3:00pm Worked at Steele Creek Park on maps and foam board of all species of owls heard and recorded. Placed order for map pins through Tri-City BluePrint Company.

Tuesday, Feb 2- 1:00pm- 3:35pm- Hiking in section of park behind Sky Line Drive- took Slide Photos of several things- Park sign, ridges, equipment, etc.

Wednesday, Feb 3- 1:00pm- 2:35pm- Worked on presentation, e-mailed Dr. Jack Rhoton for final dates of Science meeting in Nashville.

Wednesday, Feb 3- 6:30pm- 8:15pm- Hiked from Park boundary at Trinkle Creek valley up valley of sections J and K. Playing tape- I heard four Screech Owls.

Thursday, Feb 4- 1:00pm- 2:30pm- cut out heavy-duty map for pins. Map shows survey section and distribution of owls by specie.

Friday, Feb 5- 1:00pm- 3:25pm- Bought pins ordered and started pinning each location for all observation days. Set date for Nature Center presentation.

Saturday, Feb 6- 4:15am- 7:25am- Hiked with Ben Cowan from Skyline Drive to top of ridges. Heard a Great Horned Owl call for nearly 1 hour and 45 minutes straight. Heard 2 other Screech Owls in the meantime.

Monday, Feb 8- 1:00pm- 3:55pm- Photographed more sites with slide film- Hiked into Trinkle Hollow and shot pictures of nesting sites, and owl pellets.

Tuesday, Feb 9- 1:00pm- 2:40pm- Finished typing Final copy of Literature Review for Biology Class.

Wednesday, Feb 10- bought film and took roll of film to store for development. Finished compiling Works Cited page for Biology class.

Thursday, Feb 11- 10:55am-12:15pm Final revisions to Literature Review due Monday Feb 15.

Friday, Feb 12- 3:10am- 5:55am- No school- Hiked into section M- heard 5 screech owls- change in weather from warm to bitter cold today.

Friday, Feb 12- 5:00pm- 7:10pm- Hiked from Fox Ridge Gate to ridge top down through sections L and K- played tape with no responses.

Saturday, Feb 13- 3:30am- 6:25am- Hiked from Broad Street Parking Lot to power cut found trail used on 1/23/99 – Played tape- no responses.

Sunday, Feb 14- 3:45am- 7:20am- Hiked with Reid Cowan to same trail as 2/13/99- used Screech Owl tape and Great Horned call. Four Screech Owls called back to the tape- no Great Horned Owls.

Monday, Feb 15- 1:00pm- 3:25pm- Afternoon at the Nature Center- organized all data sheets and information from past weekends of observation. Set last of the pins on foam board map. Began analyzing data with Kevin Hamed.

Tuesday, Feb 16- 1:00pm- 2:45pm- Started compiling data sheets into graphable information- graphs on owls pellets, calling numbers, and species were started

Wednesday, Feb 17- 1:00pm- 2:30pm- Finished typing all data into computer for graph print ups.

Friday, Feb 19- 1:00pm- 4:15pm Began writing first draft of Methods and Materials page- and finished combining Literature review with Introduction page.

Saturday, Feb 20- 8:30am- 9:20am- Started Results page, made revisions on Methods and Materials page.

Monday, Feb 22- 1:00pm- 2:30pm- Began typing out all data sheets for final publication due March 1.

Tuesday 23- 1:00pm- 4:45pm- Continued typing final copies of the log, data sheets, and results pages. Went by AB Dick and pickup large paper for maps in final publication

Wednesday, Feb 24- 1:00pm- 4:00pm- Writing and revising more results. Typed tables 1 and 2.

Thursday, Feb 25- 1:00pm- 3:45pm- Typed table 3- Finished typing log- more analyzing data for graphs and discussion.

Friday, Feb 26- 1:00pm- 3:35pm- Typed Acknowledgment page and Title Page- revised graphs, figures and tables.

Monday, March 1- 1:00pm- 3:25pm- printed copies of write-up- got 11x17 inch maps for final presentation at AB Dick.

Tuesday, March 2- 1:25pm- 5:00pm and 6:15pm- 7:55pm- Printed a final draft of paper and made revisions to all. Organized all sections of paper into final copy. Went to Walmart and picked up pictures. Fixed graphs and number pages, tables, and figures.

Wednesday, March 3- 11:45am- 12-25pm- edited final copy and printed it in biology class.

Thursday, March 4- 1:40pm- 3:45pm- printed final draft and went to AB Dick to have copies bound

Friday, March 5- Drove to Johnson City and hand deliverd final copy to the Tennessee Junior Academy of Science

Saturday, March 6- 3:15am- 6:00am- Hiked from Broad Street to power cut playing tape- listening for calls.

Wednesday, March 10- Hiked in the afternoon in sections J, K, and L looking for owl roosts.

Saturday, March 13- hiked from Fox Ridge Gate to ridge top- playing tape and heard four owls

Tuesday, March 16- hiking in sections A, B, C, and D looking for more Owl roosts

Thursday, March 18- Went to Nature Center and got binoculars- went hiking in sections G and F. Flushed 2 grouse, but found no owl roosts.

Friday, March 19- 4:00am- 6:00am- Hiked with Reid Cowan into section M and N- heard one Great Horned owl and two Screech Owls.

Thursday, March 25- Hiked into Fox Ridge area- from Trinkle Creek end- found one possible nesting site- whitewash, but no owl pellets.

Saturday, March 27- 4:35am- 6:30am- Hiked with Reid Cowan from the Trinkle Creek end up the ridge. Heard 2 Screech Owls and one Great Horned Owl.

Wednesday, March 31- Found one definite Screech Owl nest in section G. no pellets- saw grating phase in tree.

Thursday, April 1- Hiked back to site of roost found on Wed, March 31- more whitewash- no pellets

Sunday, April 4- 4:15- 7:00- Hiked in from Rooster Front up trail into section E- Heard two Screech Owls.

Wednesday, April 7- Hiking near wetlands- no evidence of Screech Owls nest

Friday, April 9- found squirrel carcass- probably a Great Horned Owl kill- on Fox Ridge trail

Friday, April 16- bought slides and started finishing final work for publication- plan on spending two more nights out for 33 total data sheets. Editing presentation for Nashville presentation on April 23.

Saturday, April 17- Hiked in woods in evening- heard 3 Screech Owls and two Great Horned Owls

Sunday, April 18- Hiked last evening heard one Screech Owl and one Great Horned Owl. Worked on finishing the results pages from the continued research.

Monday, April 19- finished final copy of research. Bought more slide film for presentation in Nashville. Took last of the film with Kevin Hamed.

Tuesday, April 20- finished data sheets in class and completed tables and graphs for the final paper. Picked up slides from store and worked on presentation..

Wednesday, April 21- went over presentation for Nashville. Finished final copy for Biology class. Gave it to Kevin for proofing, copies, and binding.

Thursday, April 22- left for Nashville to give presentation to the TJAS.

Friday, April 23- Gave presentation to TJAS

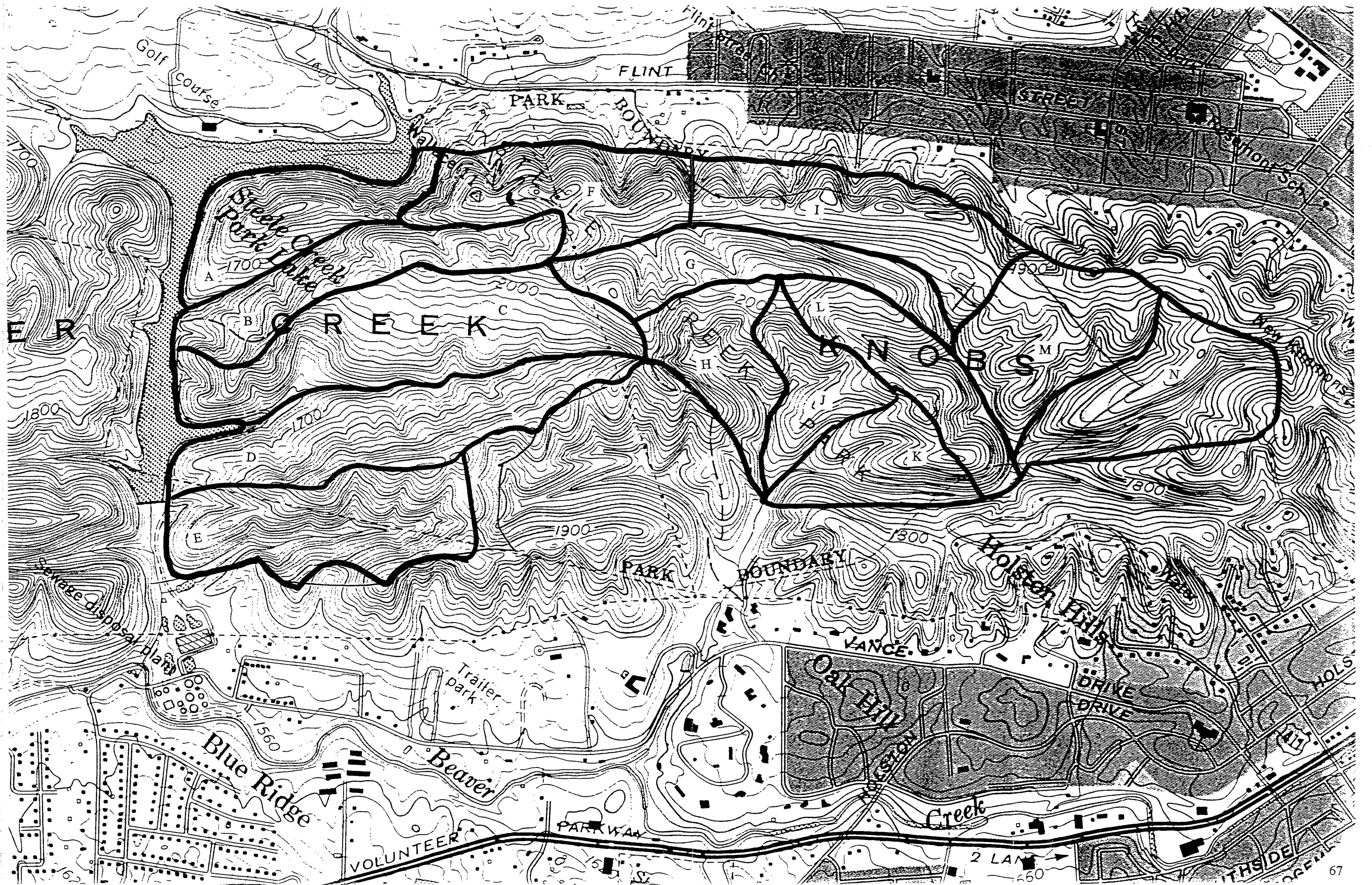
Sunday, April 25- got back from Nashville

Friday, April 30- turned in paper to Mrs. Dickerson in Biology Class. Planned class presentation.

Monday, May 3- Wednesday, May 12- Worked on presentation for Nature Center and class.

Thursday, May 13- Gave final presentation at Steele Creek Park.

Appendix C
Study Area Map



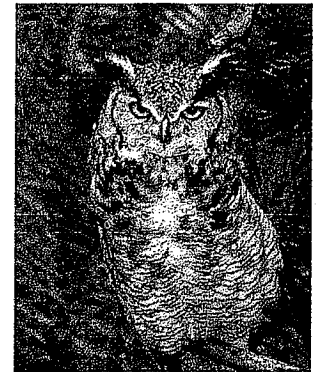
Appendix D
TJAS Research Grant Proposal

Proposal for Tennessee Junior Academy of Science

Biology Research Grant

Since 1995, Steele Creek Park in Bristol, TN has not only served the public with a well-managed Nature Center, but also has overseen ongoing natural and ecology studies. The Park covers a total of 2,196 acres plus a lake of 52 acres. Since 1970, Brent Rowell, Steve Tester, Anna Hess, Gray Buckles, many others, and myself have carried out studies in the park. The natural history, for the most part, has been carefully documented. Studies ranging from trees, fishes, reptiles, insects, amphibians, mammals, birds, and fungi have been completed. One specific area that has not been extensively researched

is the area of owls. Owls compose the order Strigiformes. In Steele Creek Park, there are three main species of owls: the Great Horned Owl (*Bubo virginianus*), red and gray phase Screech Owls (*Otus asio*), Barred Owls (*Strix varia*), and possibly a fourth, Barn Owls (*Tyto alba*). A study would determine what species live the Park, how many, and the location of the nesting sites. By locating the trees in which the owls are living, the owls' behavior and feeding habits can be monitored.



Great Horned Owl

Two necessary tools for locating and observing owls are a parabolic sound amplifier (PSA) and binoculars. The amplifier acts as a directional antennae, and by triangulation on a map, the owl's exact location can be calculated. The PSA can be ordered out of supply catalogs such as *Edmund Scientific*, for about \$300. At night, when the exact direction of the owl is difficult to determine, the amplifier is useful to use. A decent pair of binoculars (~\$100) is useful in observing owls that are farther away, or high in a tree. Binoculars show amazing detail that ordinarily would not be seen.

A project to research owl populations in the Park would be beneficial to the vast pool of information in the Park's natural history. Knowing the location of each owl would provide information on the local populations of rodents, small birds, and insects. Owl pellets can be collected below the nests and the diet of each owl specie can be recorded. Owls play an important role in the ecology of the Park, and knowledge of their population, behavior, feeding habits, and nesting locations would provide valuable information concerning the stability of owl populations in, and separate from, Steele Creek Park.

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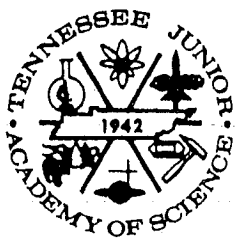
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Tennessee Junior Academy of Science

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Supported by
Tennessee Department of Education

Dr. Jack Rhoton, Director
Associate Professor of Science Education
East Tennessee State University
Box 70684
Johnson City, Tennessee 37614-0684

April 30, 1999

Mr. Blair Cowan
108 Stonecroft Circle
Bristol, TN 37620

Dear Blair:

Congratulations! I am happy to inform you that you were selected as the top male presenter at the Forty-Seventh Annual Meeting of the Tennessee Junior Academy of Science on April 24, 1999. Your paper (presentation) was most impressive, and you certainly should be proud of this accomplishment. In addition to your paper being published in the Proceedings of the Tennessee Junior Academy of Science (with editing), you will receive a cash award of \$150. This will be mailed to you within the next two to three weeks. Also, the Tennessee Academy of Science (TAS) will provide you up to \$500 to attend the American Junior Academy of Science (AJAS) which will be held in Washington, D.C. early 2000. As soon as I receive AJAS program information, I will forward it on to you. I hope you will seriously consider attending the AJAS meeting and presenting your research paper.

Again, thank you and congratulations. Let me know if I can be of help to you in the future.

Sincerely,

Jack Rhoton, Director
Tennessee Junior Academy of Science

JR: lc

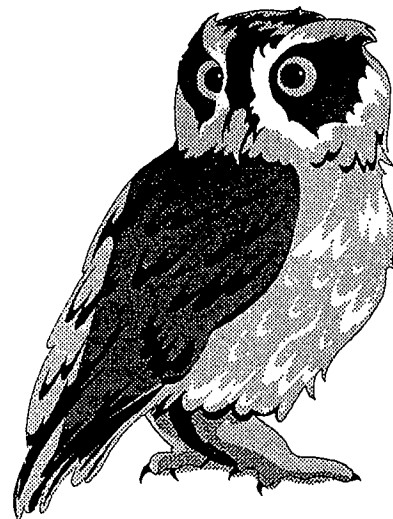


OWL STUDIES

At Steele Creek Park

May 13, 1999 7:00 PM

Presented by.... **Blair Cowan**, Tennessee High School
Steele Creek Park Nature Center Bristol, Tennessee



A Free and Informative Seminar
on Owl Populations in Steele
Creek Park.

For All Ages!

**Have you ever wondered what owls occupy the nighttime sky of
Steele Creek Park?**

Have you ever wondered what these silent birds eat to survive?

Now is the time to find out!!

This semester long project discovered new information about the lives of owls in Steele Creek Park. Blair spent more than 30 nights surveying owls in Steele Creek Park. He has identified several nesting sites of both Great Horned and Eastern Screech Owl. Through the examination of pellets, Blair has determined what the diets of these unique animals consist of.

The research was conducted as a special research course at Tennessee High School and supervised by Tennessee High School faculty, park staff, and volunteers. The project was funded by a grant from the Tennessee Junior Academy of Science.

About

Blair Cowan

Blair is a senior at Tennessee High School, and plans to major in Biology at Davidson College. Blair was accepted into the Student Conservation Association's Conservation Work Crew Program, and will spend five weeks this summer at Devils Tower National Monument.

Blair is an active Eagle Scout in Troop 3 in Bristol, and has been a member of the Japan Karate Organization for five years. He is a member of the Beta Club, Environmental Awareness Club, and National Honor Society at his High School. He is the son of Anne and Ben Cowan.



Sponsored by Friends of Steele Creek Park Nature Center and Park

**For more information, please call Steele Creek Park Nature
Center (423-989-5616) or Department of Leisure Services (423-
764-4023)**