

Coyote Ecology and Behavior in the Cuyahoga Valley Region Annual Report 2013

Prepared by:

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In Partnership with:



Project Statement

Coyote populations in the Cuyahoga Valley Region and surrounding natural areas have continued to increase over the last decade. To develop management plans and minimize the potential for increased human conflicts with coyotes, it is necessary to understand several aspects of coyote ecology and population dynamics across the urban-rural gradient present in our region. In partnership with Cleveland Metroparks, Cuyahoga Valley National Park, Ohio Division of Wildlife, The University of Akron, The Ohio State University and Wild4Ever, Metro Parks, Serving Summit County is conducting a 3-year project utilizing VHF and GPS telemetry to study coyote distribution, home range size, habitat use, health assessment and diet. This study will shed light on the secretive life of our top predator, allowing our organizations to educate the public and spread awareness about this important species.

Project Objectives:

1. Distribution of coyotes in the Cuyahoga Valley Region including Cleveland Metro Parks, Cuyahoga Valley National Park and Metro Parks, Serving Summit County.
2. Health of population through medical assessments.
3. Seasonal changes of diet through scat analysis.
4. Two graduate students at the University of Akron will fulfill master's thesis requirements and investigate the following questions in detail (a-b). In addition an honors student project will examine question c:
 - a. Coyote spatial and temporal use of recreational parklands within the Cuyahoga Valley as a function of human activity.
 - b. Space use by coyotes (*Canis latrans*) in an urbanizing landscape, and implications for management.
 - c. The geographic origin of coyote populations in northeast Ohio: a genetic case study

Methods

Capture

Trapping was conducted by a professional wildlife trapper using a combination of soft-catch foot hold traps and cable restraints. Trap locations were determined by the Natural Resource Management Department of Metro Parks, Serving Summit County in collaboration with a professional wildlife trapper and were selected to minimize the potential for catching non-target individuals such as deer, domestic animals and raccoons. Trapping occurred from October through March on Metro Parks, Serving Summit County, Cuyahoga Valley National Park, and Cleveland Metropark properties.

Captured coyotes were placed into a kennel and moved to a safe and secure location to be processed. Captured coyotes were selectively fitted with either a GPS or a VHF collar. Adults were weighed, and gender and breeding condition were assessed. Samples were collected for a host of tests including complete blood counts (CBC), chemistry profile, parvovirus, distemper

and rabies titers, heartworm tests and a fecal sample for parasites. Blood work was also collected to assess genetic relatedness among individuals captured. Each individual was ear tagged and micro-chipped for later identification in the field. These tests, including sedation of the animal, were performed by a licensed Wild4Ever veterinarian, with the assistance of park personnel.

Telemetry

VHF data was collected by staff and volunteers on a weekly basis, consisting of day and nighttime tracking. Sequential nocturnal locations were recorded at 15-30 minute intervals during approximately 12 hour tracking shifts between 1800h and 0600h once per month from November 2009-May 2011. Multiple observers simultaneously recorded azimuths from different locations at the same time to negate the effects of the coyotes movement on the accuracy of the location obtained. Diurnal sequential locations were recorded hourly by a single observer from May 2011 to May 2012 during 12 hour tracking shifts between 0600h and 1700h.

Coyotes were also located an additional 1-2 times per week to keep track of the animals on a regular basis. We programmed GPS collars to maximize the number of locations collected over the duration of the collars deployment and battery life. GPS location intervals were recorded every 90 minutes from 2000h – 0800h, and every five hours from 0800h-2000h. At random three day intervals once per week GPS locations were collected every 90 minutes from 0500h-2000h, and every five hours from 2000h-0500h. During the second year of data collection, diurnal data were collected every three hours instead of five hours to increase diurnal datasets.

Scat Transects

Cleveland Metroparks is leading this portion of the project and staff and volunteers from Cleveland Metroparks are analyzing the samples collected from both park districts. Prey species are being determined by examining bone fragments in washed and prepared samples of scat. Bones are identified to genus, and species whenever possible. Staff and volunteers from Metro Parks, Serving Summit County collected scat from two transects within Summit County. Coyote scat samples were collected over the course of a year in 2010. Volunteers were assigned a 1-2 mile transect/ trail to survey once every two weeks on the same day for one full year. While walking the transect in one direction on one side, all coyote scat on the transect and within 1 meter of the transect edge was collected and the same was done on the opposite side of the transect on the way back. Once a scat was found, the GPS the location was recorded and the sample was collected with its own baggie. To prevent contamination of scat samples, gloves or shovels were not used to handle multiple samples. Once collected each scat was placed in a nylon bag and washed under running tap water until hair, bones, plant parts and other particles are all that remained. If more than half of the sample disintegrated upon washing, it was discarded and assumed to have originated from a domestic dog. Washed samples were then removed from the nylon bag and placed on a paper plate labeled with the unique identifying code used on the baggie and allowed to air dry for approximately 24 hours. Dried

samples were then transferred to a business envelope labeled with the same unique code as the baggie and stored for later examination by Cleveland Metroparks staff.

2009-2013 Project Update and Preliminary Results:

All trapping has been completed as of February 2013. Data are currently being analyzed.

Study Animals

We captured a total of 41 coyotes and equipped 8 coyotes with VHF collars and 29 coyotes with GPS collars. Four coyotes were not selected for a collar because they were either sick or too small to wear a collar (Table 1). Un-collared individuals were still processed for blood work and marked with an ear tag and released near the capture site. Of the VHF collared animals, there were 4 total females and 4 males. We triangulated a total of 2,414 combined diurnal and nocturnal VHF locations over 27 months of tracking. There were a total of 13 female coyotes and 16 male coyotes fitted with GPS collars. In 2013, one female coyote was captured on Metro Parks, Serving Summit County property and fitted with a GPS collar (collar property of Cleveland Metroparks). We currently have over 80,000 GPS locations over the duration of the study. There are no remaining active GPS collars in the field. One animal with a VHF collar has not been located since early 2010. Three additional animals with VHF collars are alive and their collars still function correctly.

In 2011 (and 2013), 18 GPS collars were deployed in the field. Three collars malfunctioned and were not retrieved from the field. Seven collars were retrieved from the field after the drop-off mechanism was deployed. Seven additional collars were collected from mortalities.

Table 1. Number of study animals, 2009-2013 trapping initiatives.

	2009	2010	2011	2013
Collared Males	3	8	9	0
Collared Females	2	6	8	1
Un-Collared Males	0	1	3	0
Un-Collared Females	0	0	0	0

Mortality

Of the known mortalities for the study animals (n=19), the primary cause of death was vehicle collision (9) and hunting or trapping (6). Two mortalities were caused by parvo virus. The status of some coyotes that previously wore GPS collars which had dropped off prior to the animal's death is unknown. Reported dead coyotes, or collars that emitted a mortality signal, were retrieved from the field and a necropsy was performed by the project veterinarian.

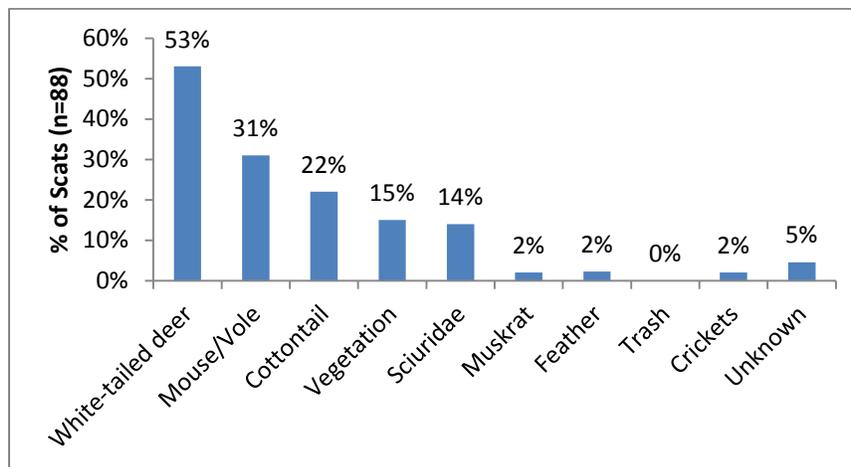
Table 2. Mortalities of study animals, 2009-2013.

	2009	2010	2011	2013
Males	1	4	4	
Females	1	4	4	1

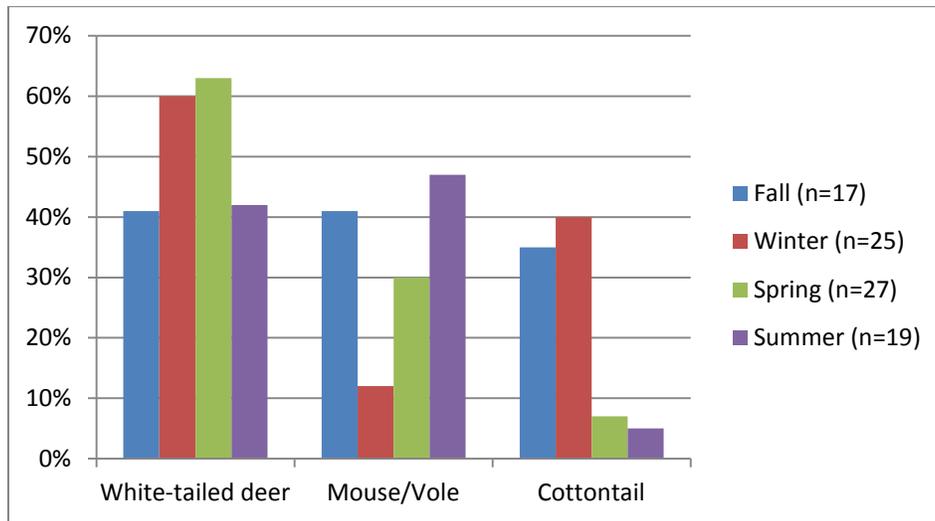
Diet Analysis

Cleveland Metroparks processed scat samples from two transects in Metro Parks, Serving Summit County. Cursory results demonstrate a varied diet with seasonal trends as expected. Once completed, results will be more closely evaluated and compared with data collected in Cleveland Metroparks. Refer to Graph 1 and 2 for preliminary results from the MPSSC transects.

Graph 1. Preliminary Overall Diet Analysis of Scat Samples From Two Transects in Metro Parks, Serving Summit County.



Graph 2. Preliminary Seasonal Variation in Diet from Scat Samples in Metro Parks, Serving Summit County.



Health Assessments

While study animals were under anesthesia, samples were collected for a variety of health related studies. Table 3 gives a brief overview of results from 2009-2013. Many have had exposure to diseases that are common and threaten all canid species such as parvovirus and distemper virus, as well as fecal parasites. A few of our project animals had small areas affected with mange. Genetic relatedness between study animals will be determined with blood samples. Data will be provided in a future report. The genetic assessment by University of Akron is using stored blood samples from study animals to determine if wolf DNA exists in the sample population. The 2009 and 2010 results produced three individuals with wolf markers in their DNA. The results from the 2011 trapping season are still being processed.

Table 3. Summary of Health Data Collected on Study Animals, 2009-2013.

Health Assessment	Number of Animals Affected
Parasites	2 fecal; 4 mites
Heart Worm	14
Parvovirus Titer	23
Distemper Virus Titer	22
Rabies Titer	8
CBC & Chemistry Profile	All Within Normal Limits
Genetic Relatedness	TBD
Wolf DNA present	3

General Observations

Coyotes studied in this project are highly adaptable and utilize a variety of habitat types. Our study includes animals of various age cohorts and social status. We have a number of resident animals which maintain home ranges of various sizes. Their home ranges have natural and man-made borders such as the Cuyahoga River and I-271 which both dominate the landscape within the Cuyahoga Valley.

The data collected during this project will assist interested parties with resource management planning and education regarding coyote ecology and behavior. The information gained from the comprehensive study will be used by resource managers to understand and manage coyotes and people utilizing the parks and other natural areas. Interpretive programming will be developed with resulting data to educate the public about the role coyotes play in our ecosystem. A comprehensive final report will be written and distributed at a later date.