

Canine Heartworms in Coyotes in Illinois Summary

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Biology-1615-Sp17

Introduction

Canine heartworm is a debilitating disease that affects both wild and domestic canines. Canines commonly contract heartworm when they are bitten by an affected mosquito. This transfers parasite into the blood stream, the adult parasites usually reside in the right area of the heart and the pulmonary arteries. The parasites created obstructions in the valves of the heart and cause pulmonary hypertension and heart failure. Causing mobility and mortality in coyote populations.

Coyotes are easily prone to contracting the disease, and are also carriers of the disease and transfer it to domestic dogs. Studies have shown that heartworm in Coyotes has less severe pathological effects than domesticated dogs affected with heartworm. There have been many studies on the local effects of heartworm on coyotes, but there have never been samples taken over multiple years that show the effect of the disease on population and reproduction.

This study was initiated to conclude what the effects heartworm disease had on the ecology and population dynamics of Illinois' coyotes, both regional and statewide. The objectives of the study were to 1) include a survey of regional prevalence and intensity of heartworm in coyotes. 2) determine whether heartworm correlates with the physical conditions in relation to body weight and winter fat levels. 3) To evaluate the relationship between heartworm disease and the reproductive success of female coyotes.

Materials and Methods

Information was collected between 1995-1997 on 920 coyote carcasses. The carcasses were collected from fur buyers, hunters, and trappers throughout Illinois, during hunting and trapping season that ranges from March to November. The date and county of harvest, sex, weight was recorded for each sample. The body weight was determined and calculated after the animal was skinned. The fur was scored by experience fur buyers as excellent, good, fair, and poor.

Necropsies were performed to determine if heartworms were present, they were examined and weighted. Heartworms were collected primary from the right side of the heart, while the lungs and ventricles were flushed to extract any remaining parasites for an accurate rate. The parasites were preserved for further studies.

The reproductive performance of females was determined by the number of placental scars. 184 yearling and adult females were examined. The females were divided into two groups, breeding females who had two or more scars and non-breeders who had no placental scarring.

Only 637 coyotes were complete in their examinations due to damage to the organ and tissue damage. The coyotes were harvested from nine regions of Illinois. Data was entered a Statistical program that analyzed and separated into regions, different intensities of affliction, and differences between males and females.

Results

Most heartworms were collected from the right ventricle of the heart and pulmonary arteritis, and had lesser prevalence in the right atrium and jugular. The ages of the coyotes ranged from 0.5 years to 13.5 years of age. Prevalence of heartworms was lowest among juveniles and most prevalent among adults. Prevalence increased with increasing latitude, and decreased heading south.

The average number of heartworms per individual 8.7 with a range of 1 to 111 worms. Male coyotes averaged 9.2 worms, while females averaged 8.1 worms per individual. Whether the individual was infected or not had no effect on the weight of the coyote. Fur condition was affected by worms. Uninfected individuals had greater pelts while those who suffered scored lower on pelt quality. Heartworms were also shown to affect reproductive capabilities of the females. Diseased females had fewer placental scarring, while those who were disease free had many scars.

Discussion

Even though heartworm disease is prevalent in Illinois coyotes, the rates have had minor change over the last 20 years. A survey conducted from 1977 to 1980 show very similar rates of infection as the 1995-1997 study. The disease has stabilized in populations in Northern and Central Illinois. The reason may be that Northern and Central Illinois may not be prime breeding ground for mosquitoes, like Southern Illinois.

There is a high prevalence of disease found in older coyotes. Research suggests that this may be due to the increased exposure over their lifetime. Male coyotes are at a greater risk of disease because of their movement patterns. During the spring and summer when mosquito numbers are at their highest males roam more than females searching for food. Females tend to stay with their pups and cover less area.

Breeding may be affected by the physical traits of the individual. Those individuals who are infected have poor physical appearance, this can affect how they are chosen by a potential mate. Mates will choose coyotes who appear in optimal health to further their offspring. However, these effects were small and it was concluded that heartworm has a small effect on coyote population. This should not dismiss the need for development of heartworm control programs, because they still are carriers and transmitters of the disease.