

PRELIMINARY REPORT ON THE VERTEBRATE
TYPE LOCALITY OF CITA CANYON, AND THE
DESCRIPTION OF AN ANCESTRAL COYOTE.

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ABSTRACT.

A new species of the genus *Canis* is described and its phylogenetic relationships brought out. A preliminary report is presented on the Upper Pliocene type locality of Cita Canyon in Randall County, Texas. Attention is called to the faunal relationship between these beds and those of the Mount Blanco Upper Pliocene, and the Lower Pleistocene of Rock Creek.

INTRODUCTION.

In this preliminary report on the new vertebrate fossil locality of Cita Canyon, the writer desires to call attention to an assemblage of animals related to the Mount Blanco fauna on the one hand and the Lower Pleistocene of Rock Creek on the other. These beds were discovered in the fall of 1935 by the author and his wife, Mrs. Margaret Johnston. The exposures are in the steep-sided hills and gorges on the north side of North Cita Canyon, which is a branch of the Palo Duro Canyon.

A complete discussion of the Cita Canyon fauna will appear in a forthcoming publication. Appreciation should be expressed to Mr. Newton Harold, and Mr. R. H. Roach for permission to work the locality. The writer feels also that he is especially indebted to Mr. Floyd V. Studer of Amarillo who first pointed out this region as a likely field for investigation. Attention should also be called to the fact that the work of excavating this locality was made possible through the coöperation of the Works Progress Administration.

Canis lepophagus (n. sp.)

Pl. I-III.

Etymology: Latin, *lepus*, a hare, and Greek, *phagous*, φαγεῖν, to eat; i.e., rabbit eater.

Holotype: Skull, lacking mandible W. T. No. 881, found at the type locality of the Cita Canyon Beds in stratum No. 2.

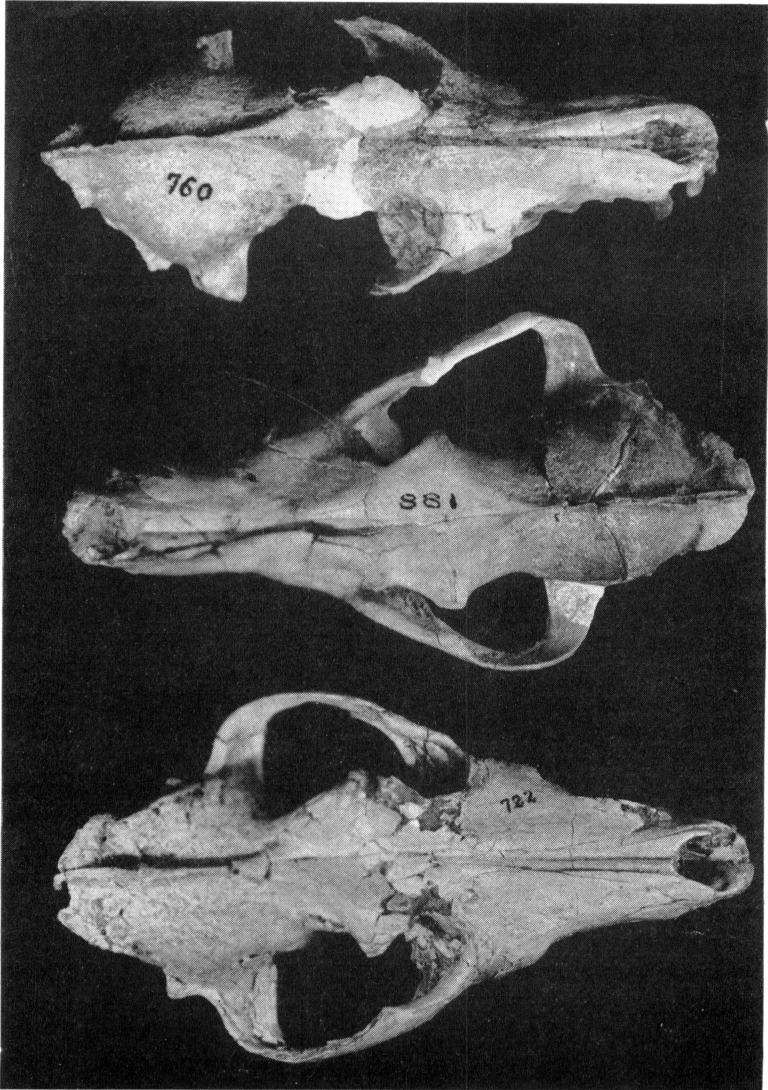


Plate I. Dorsal view of the skulls. (x .49)

Type locality: Center of the West half of Sec. 164, Block 6, Randall County, Texas, on the Harold Ranch in North Cita Canyon. Ogallala Formation.

Age: Upper Pliocene, Cita Canyon fauna.

Geology of the Cita Canyon Beds: The section here described briefly from the type locality of the Cita Canyon fauna is approximately 35 feet in thickness. It is a part of the Ogallala formation, and rests horizontally and unconformably upon Mesozoic strata, which as pointed out by Gould (1907) belongs to the Dockum series of the Upper Triassic. The material constituting these beds is of fluvial origin, and semiconsolidated. In general, it may be said that lithologically they are similar to other deposits of this type described by Gidley (1903). The stratification is well marked throughout by differences of texture, color, and composition. The two lowermost beds consist of fine, gray, argillaceous sand. Above this is a stratum of coarse, brown, water-worn sand, which is followed by a bed of intermixed lenses of sand and shale. Above this lies a layer of green shale, which gives place above to a bed of caliche that extends to the level of the plains. All of these strata are fossil bearing. Beds No. 2 and 4, however, have been the most prolific. There is some difference in the fauna from the different stratigraphic levels with a total representation of thirteen families of the class Mammalia.

Material: The material consists of three skulls and one complete mandible found associated with skull W. T. No. 722. Found scattered throughout Bed No. 2 were also numerous skull fragments and lower jaws. The holotype is complete in every detail. Unfortunately, however, it is slightly distorted anteriorly in the sagittal plane. Skull W. T. No. 722 is somewhat compressed in the region of the frontals which tends to make it broader and flatter than it would normally appear. Skull W. T. No. 760 is lacking the zygomatic arches and the right tympanic bulla. Also it was broken through in the region of the frontals. Otherwise its condition is perfect.

Diagnosis: *Canis lephagus* is more slender in its general proportion than the modern coyote. The sagittal and lambdoidal crests are more prominently developed. The brain case is not expanded, and the postorbital processes are prominent. The lower jaws are strong in proportion to the size of the skull, and the teeth relatively long antero-posteriorly so that the spaces between them are reduced. Furthermore, the *C. lephagus* is somewhat smaller than *C. latrans* as figured by

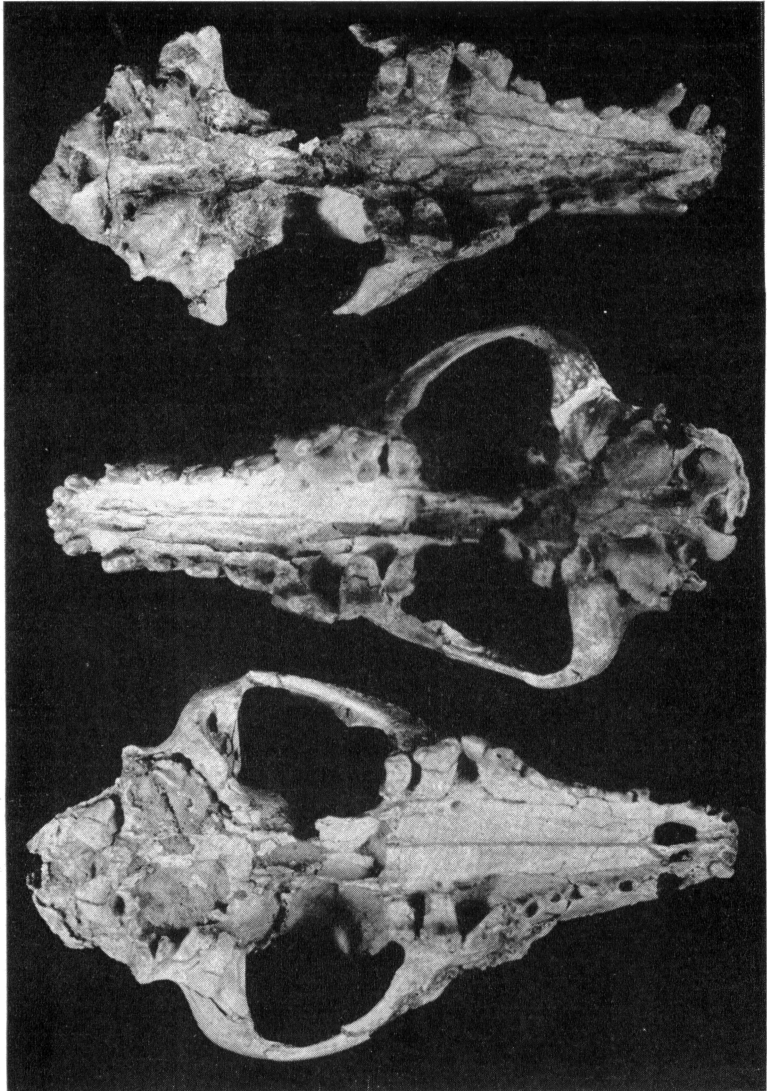


Plate II. Ventral view of the skulls. (x .49)

Elliot (1901) in which the length of the skull is 201 mm., while in the Cita Canyon specimen the average length for the three skulls is 190 mm. Breadth across the zygomatic arches in the *C. latrans* is 111 mm. and in the *C. lepophagus* 101 mm. However, the ratio of the width to the length is approximately the same in both instances.

<i>Cranial measurements:</i>	W. T. No.	W. T. No.	W. T. No.
	881	722	760
	Holotype	Paratype	mm.
	mm.	mm.	mm.
Length of skull	189	194	187
Greatest breadth across zygomatic arches	99	103	...
Breadth across postorbital processes	47	53	...
Length of sagittal crest	64	62	57
Distance from intersection of temporal impres- sion to posterior margin of nasals	41	48	50
Distance from line through postorbital proc- esses to posterior dorsal extremity of skull..	86	83	...
Vertical diameter of orbit	25	25	25
Width across occipital condyles	30	34	31
Transverse diameter of foramen magnum	17	...	15
Vertical diameter of foramen magnum	7	...	9
Length of palate from median incisive border to anterior edge of postpalatal notch	93	95	93
Width of palate between canines	18	20	19
Width of palate between anterior margin of P ¹	26	31	30
Width of palate between posterior inner margins of P ⁴	42	46	45
Width of palate between inner margins of M ¹	18	25	23
Width of postpalatal notch	11	14	14
Length of postpalatal notch	29	...	25
Vertical diameter of external auditory meatus	6	...	6
Anteroposterior diameter of tympanic bulla ...	18	...	20
Length of paraoccipital processes	12.5
Breadth of skull at anterior ventral margins of orbits	50	57	53
Height of skull at intersection of temporal impressions	53	...	57
Length of nasals	74	78	70
Height of lambdoidal crest above foramen magnum	26	26	28
Breadth of skull at external alveolar borders of canines	29	...	28
		W. T. No. 722	
		Paratype	
<i>The Lower Jaws:</i>		139 mm.	
Length of mandible		24	
Depth of jaw below M ₁			
Height of ascending ramus above angular process		56	
Depth of jaw below P ₂		18	
Length of condyle		23	
Breadth of jaw at symphysis between canines and first premolars		16	

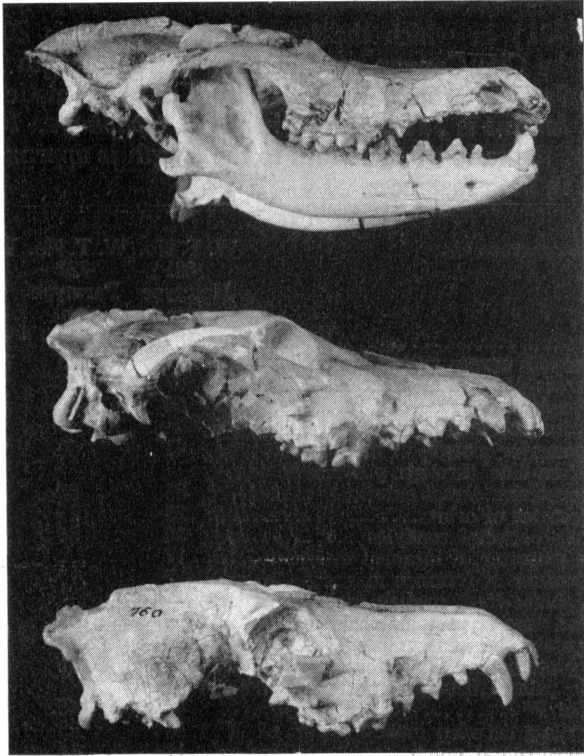


Plate III, Figure 1. Lateral view of the skulls. (x .36)

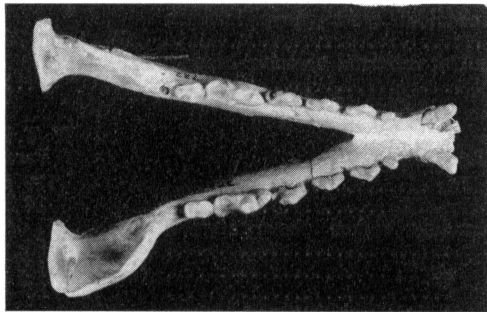


Plate III, Figure 2. Dorsal view of the mandible. (x .40)

As compared further to three recent skulls of *Canis latrans* there are several notable differences as well as similarities. In *C. lepophagus* the sagittal and lambdoidal crests are very prominent and well developed; and the brain case is much less expanded than that of the *C. latrans*. In these characteristics the Cita Canyon specimen, except for its much smaller size, is very similar to the *C. occidentalis*. Furthermore, the mandibles are deeper and stronger, and the premolars tend to have a greater anteroposterior diameter with a corresponding reduction in the spaces between them than is true of modern coyotes.

Relationships: In view of the great abundance of the genus *Canis* throughout the Pleistocene it is not surprising that it should also occur in the Pliocene. As a matter of fact, in the Cita Canyon Beds it stands next to the Equidae in relative number of representative specimens.

VanderHoof (1933) calls attention to a first lower molar tooth of the genus *Canis* from the Tehama Upper Pliocene of California which is about the size of a corresponding tooth in the modern coyote. Also Merriam (1906) questionably refers two upper molar teeth, resembling those of a coyote, to the genus *Canis* from the Mascall Formation of the Upper Miocene. He points out the fact, however, that the specimens were not in the original matrix and may belong to the Rattlesnake Formation of the Pliocene which overlies the Mascall.

Many characteristics of the genus *Canis* seem to be foreshadowed in the Upper Miocene *Tephrocyon* as described by Merriam (1913), in which the skull is broader and shorter, accompanied by a posterior extension of the premaxillaries to a point posterior to the anterior ends of the nasal processes of the frontals. *Canis lepophagus* differs still further from *Tephrocyon* in that there is no trace of a paracone on any of the premolars.

CONCLUSION.

In view of the above relationships it is the writer's opinion that *C. lepophagus* may be thought of as the forerunner of the modern coyote. It also seems definite that this Upper Pliocene canid embodies a number of characteristics that one would expect to find in a type that was ancestral to *Canis occidentalis*. *Canis lepophagus* thus appears to stand in the direct phylogenetic line of the Pleistocene members of the genus *Canis*. The bed in which it occurs is approximately con-

temporaneous with the Mount Blanco Upper Pliocene of Crosby County, Texas. Furthermore, it is worthy of note that associated with the *C. lephagus* in the same bed are abundant remains of *Borophagus diversidens* Cope, the type of which was recently discussed by VanderHoof (1936).

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CANYON, TEXAS.