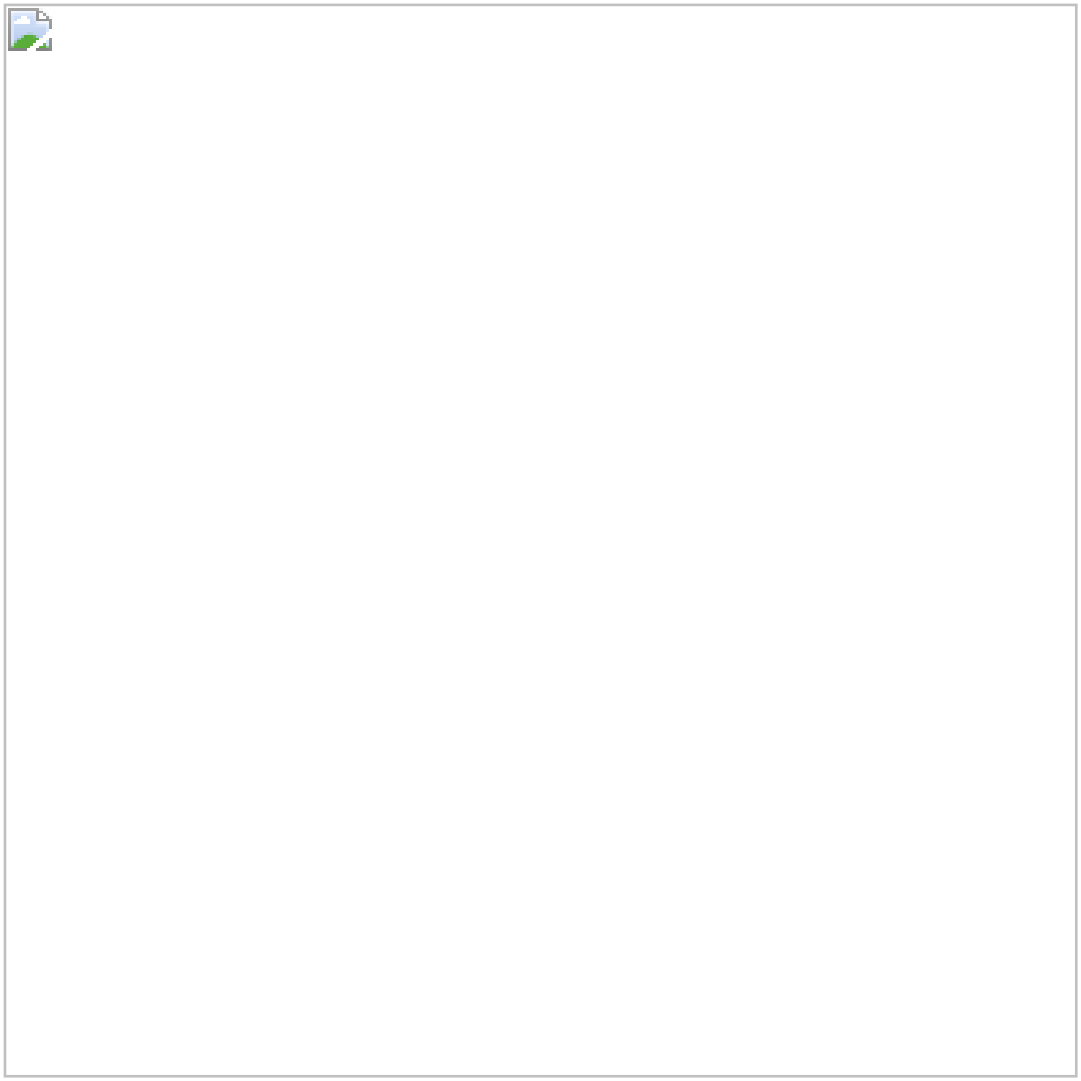

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NOTOEDRIC MANGE IN THE BOBCAT, *Felis rufus*, FROM SOUTH TEXAS[1]

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Abstract: A fatal case of notoedric mange is described in an adult male bobcat, *Felis rufus*, from south Texas. This cat was extremely weak and emaciated. Skin lesions consisted of greatly thickened, gray encrustations and alopecia of the muzzle, eyes, crown, ears and parietal scalp extending down the neck to the midscapular region of the shoulders. Histologically, there was partial to complete excoriation of the stratum corneum with erosions into the stratum germinativum to the level of the dermis in some areas. Numerous specimens of *Notoedres cati* (Hering, 1838) were noted, usually in the stratum corneum, sometimes burrowing into the stratum germinativum. A mild dermal inflammatory response consisting principally of neutrophils and round cells was observed. Confirmed notoedric mange with clinical signs similar to the above was also observed by a local veterinarian in three bobcat kittens from the same area. These were treated with a sulfurated lime shampoo followed by VIP dip. Subsequently, they recovered without consequence. These cases emphasize the possibility of notoedric mange as a potential epizootic disease in wild felid populations.

INTRODUCTION

Although notoedric mange is a severe and sometimes fatal mite infection caused by *Notoedres cati* (Hering, 1838) in domestic cats,[5] it is rarely reported in wild felids.[3,6,7] The present study describes the clinical manifestations and pathology of a fatal case of notoedric mange in an adult bobcat, *Felis rufus*, and documents its occurrence in a treated case of three bobcat kittens from south Texas.

CASE HISTORY

On 7 April 1980, an adult (estimated age greater than 2 years) male bobcat was found resting near a watering station on the Killam Ranch, Webb County, 16 km north of Laredo, Texas. On approaching the animal, it was found to be very emaciated (estimated weight of 4.6 to 5.5 kg). It was apathetic and listless to the point of being barely able to crawl and was apparently moribund. Extensive encrusted gray lesions were noted on the skin of the head, neck and shoulders. The animal failed to take water and succumbed within an hour. An approximately 10 by 20 cm section of skin was excised from the neck and preserved in 10% buffered formalin for later histologic examination. The remaining carcass was not saved for necropsy.

Thickened and wrinkled skin with extensive dense gray encrustations accompanied by alopecia involved the entire muzzle, eyes, crown, parietal scalp and ears extending dorsally and laterally down the neck to the midpoint of the

[1] This study was supported in part by the Institute of Museum Research, Texas Tech University and the Department of Pathology, Texas Tech, University Health Sciences Centers.

scapulae on the shoulders. There was little evidence of a serous exudate or surface excoriation of the affected areas. The feet, legs, and or inguinal regions were not involved.

Histologically, *Notoedres cati* was observed in the stratum corneum, especially in the extensively honeycombed hyperplastic, cornified surface layer (Fig. 2). Occasionally, mites were observed in the stratum germinativum to the level of the dermis and in hair follicles and or sebaceous glands. Erythrocytes were sometimes observed in sections of the mites. Epidermal responses consisted of extensive hyperkeratosis and parakeratosis or partial to complete excoriation of the stratum corneum with mites invading the stratum germinativum to the level of the dermis (Fig. 1). Acanthosis was not marked. Although hyperplasia of the stratum germinativum was not pronounced, rete ridges were prominent in some sections. The inflammatory response was usually limited to lymphocytes and macrophages in the papillary layer of the dermis. Generally the reticular layer of the dermis was unaffected, other than mild hyperplasia of the sebaceous glands and hair follicles. Aside from a few isolated pockets of neutrophils, there was little evidence of secondary infection and or an acute inflammatory response. In general, the reaction in this host was confined to the epidermis and upper dermis and consisted of mechanical destruction and a chronic inflammatory response.

FIGURE 1. Section of skin from shoulder illustrating hyperkeratosis with surface exudate and adult mites and eggs to level of dermis in a Texas bobcat. H & E.

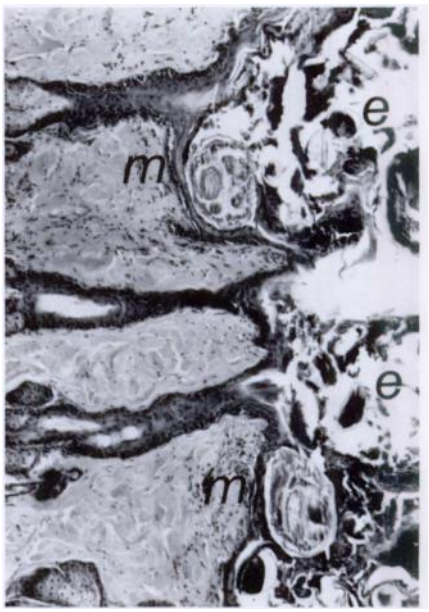

FIGURE 2. Adult *Notoedres cati* in stratum germinativum of bobcat. Note adult mites (M) and eggs (E). H & E.

In March, 1980, three approximately two-month-old kittens just captured on the De Spain Ranch, Webb County, about 56 km northeast of Laredo, Texas, were brought to a local veterinarian for treat-

ment. These three kittens were littermates and all had extensive dry, gray encrusted lesions on the face, head, and neck with accompanying alopecia. Clinically, they appeared in fairly good condition and there was no apparent pruritis associated with the infections. Skin scrapings were examined microscopically, and specimens of mites identified as *N. cati* confirmed notoedric mange. These three kittens were treated with an initial sulfurated lime soap shampoo followed by dipping in VIP (2,1 methyl-ethoxyphenol methylcarbamate). They recovered without consequence and presently remain in captivity without recurrence of the infection.

DISCUSSION

The genus *Notoedres* is comprised of numerous species affecting rodents, insectivores and carnivores.[1] Certain species are responsible for mange epizootics, especially in rodents.[3] While *N. cati* is a fairly common parasite in domestic cats,[3] it is infrequently reported from wild felids. It was first noted in the bobcat from Massachusetts[7] and shortly thereafter from the same host in Connecticut.[6] Both animals were described as severely infected with emaciation and/or thick encrusted lesions about the head, neck and shoulders. There is a single report of *N. cati* from the bobcat in California, but lesions were not described.[4]

The area of localization on the host, pathology and clinical manifestations described herein appear very similar to those reported for notoedric mange in domestic cats.[5] However, the intense pruritis associated with the infection in the latter host was not evident in these bobcat infections. Likewise, the bobcat kittens were treated with the same commercial acaricide used for domestic cats and responded satisfactorily. In a recent outbreak of notoedric mange in snow leopard, *Uncia uncia*, kittens in the San Antonio Zoological Gardens, only the nontoxic lime-sulfur solution with no acaricide was used as a satisfactory treatment without recurrence of the infection.[2]

It has been suggested that notoedric mange possibly could result in high mortality in bobcats.[6,8] The fatal case and recently acquired infections in bobcat kittens from the same area emphasize the importance of notoedric mange as a potential epizootic disease of bobcats. Additionally, according to local veterinarians notoedric mange in domestic cats is very rare in the area. Thus, the present study on Texas bobcats and previous records of cases from California and New England indicate a wide occurrence of this mite in bobcat populations.

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