BioOne COMPLETE

Oral Papillomatosis in Canada Lynx (Lynx canadensis)

Authors: Wolfe, Lisa L., and Spraker, Terry R.

Source: Journal of Wildlife Diseases, 43(4) : 731-733

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-43.4.731

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

Journal of Wildlife Diseases, 43(4), 2007, pp. 731–733
© Wildlife Disease Association 2007

Oral Papillomatosis in Canada Lynx (*Lynx canadensis*)

Lisa L. Wolfe[1,3] **and Terry R. Spraker**[2] [1]Colorado Division of Wildlife, Wildlife Research Center, 317 W. Prospect Rd., Fort Collins, Colorado 80526-2097, USA; [2]Colorado State University Diagnostic Laboratory, Department of Microbiology, Immunology, and Pathology, College of Veterinary Medicine, Colorado State University, Fort Collins, Colorado 80526, USA; [3]Corresponding author (email: lisa.wolfe@state.co.us)

ABSTRACT: We observed 11 cases of oral papillomatosis among 48 free-ranging Canada lynx (*Lynx canadensis*) that had been shipped to Colorado for translocation purposes. Lesions were 1–3 mm, multifocal, nonpigmented sessile masses and occurred on the ventral lingual surface. Adverse clinical signs were not observed. Six of the 11 cases resolved and the remainder appeared to be self-limiting when affected animals were examined ≤4 mo later. New cases did not develop in previously unaffected lynx while in captivity. Histopathologic lesions included marked hyperplasia of the mucosal epithelium causing thickening of the stratum spinosum and corneum. Ballooning degeneration of epithelial cells with intracytoplasmic inclusions were observed. Papilloma virus was found on negative contrast electron microscopy. Papillomatosis was seen in lynx from three geographically distant sources (British Columbia, five of 21 individuals; Quebec, five of 17; Yukon, one of four) suggesting the causative virus may be widespread among North American lynx populations.

Key words: Canada lynx, case report, *Lynx canadensis*, papilloma virus, papillomatosis.

Papillomas are mucous membrane and skin tumors commonly found in a wide range of host species (Sundberg et at., 2001). These tumors are generally caused by papillomavirus (PV), a double-stranded DNA virus. Among wild carnivores, oral papillomatosis has been reported in coyotes (*Canis latrans*) (Samuel et al., 1978; Sundberg et al., 1991; Fitzgerald et al., 2000), wolves (*Canis lupus*) (Samuel et al., 1978), and Asian lions (*Panthera leo persica*) (Sundberg et al., 1996). There are relatively few reports of PV infections in the felid family (Sundberg et al., 2001). Here we report cases of oral papillomatosis in free-ranging lynx (*Lynx canadensis*).

Free-ranging lynx captured in British Columbia, Quebec, and the Yukon Territory, Canada, during December 2003–February 2006 were translocated to southwestern Colorado, USA, as part of a lynx recovery project (Colorado Division of Wildlife, 2002). Eleven of 48 lynx received in Colorado presented with oral papillomatosis during their entry examination. Lynx from all three sources were affected (British Columbia, five of 21; Quebec, five of 17; Yukon, one of four). Lesions were 1–3 mm, multifocal, nonpigmented sessile masses located on the ventral lingual surface (Fig. 1A). No adverse clinical signs of oral papillomatosis were observed during the ≤4 mo period that lynx were held for preconditioning. At the prerelease examination, six of the 11 cases had resolved, and the remainder appeared to be self-limiting, but had not completely resolved. New cases did not develop in previously unaffected lynx during their time in captivity.

Selected representative masses from affected lynx were excised and fixed in 10% neutral buffered formalin or placed in virus transport media (Minimum Essential Medium [Irving Scientific, Santa Ana, California, USA]) with 1% HEPES buffer (Irving Scientific), 2% fetal bovine serum (Hyclone, Inc., Logan, Utah, USA), 100,000 units of penicillin G (Sigma Chemical Company, St. Louis, Missouri, USA), 40 mg/ml gentamicin (Sigma Chemical), 50 mg/ml kanamycin (Sigma Chemical), 8 mg/ml tylosin (Sigma Chemical), 5 mg/ml amphotericin B (Sigma Chemical). Fixed tissues were processed for histopathology by standard methods and stained with hematoxylin and eosin for light microscopic examination. Histopathologic lesions included marked hyperplasia of the mucosal epithelium causing

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

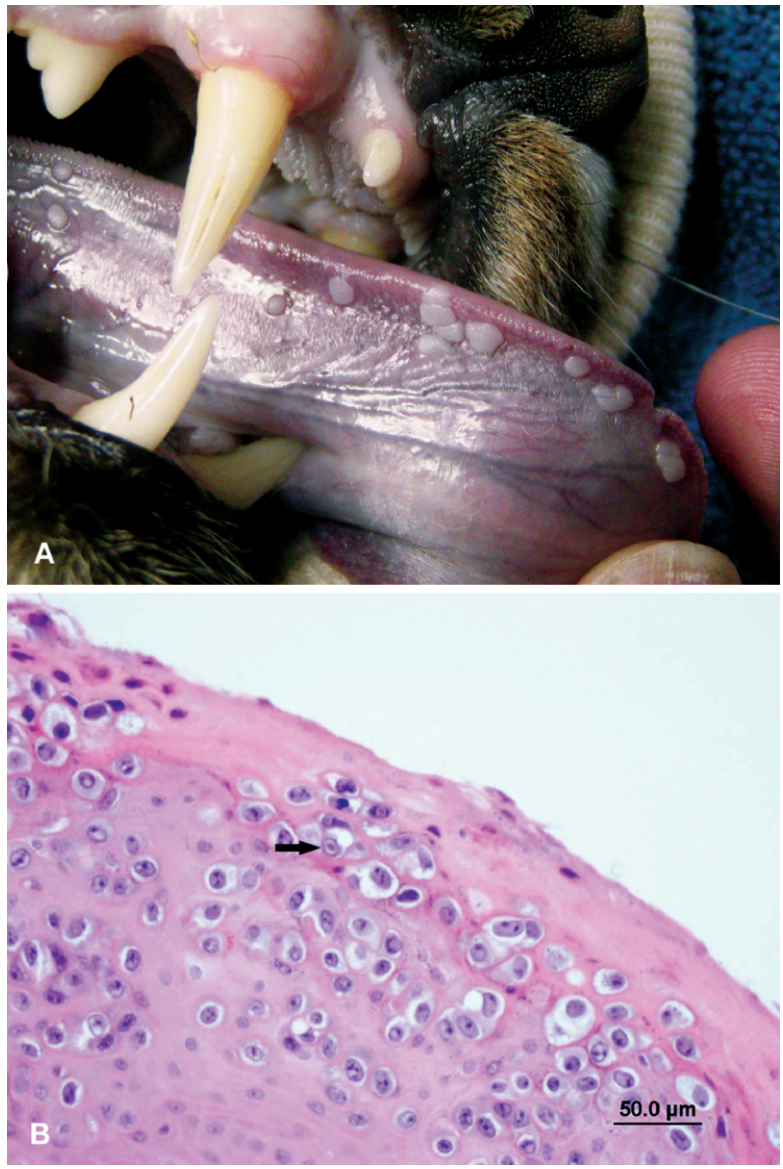


FIGURE 1. Oral papillomatosis in Canada lynx. A. Gross lesions were multifocal, nonpigmented sessile masses located on the ventral lingual surface. B. Microscopic lesions included marked hyperplasia of the mucosal epithelium with ballooning degeneration of epithelial cell and intranuclear inclusion bodies (arrow).

thickening of the stratum spinosum and corneum. Multifocal areas of cellular swelling within the stratum corneum with ballooning degeneration were consistent features. Epithelial cells in the superficial layers of the spinosum contained pale basophilic intranuclear inclusions with marginated chromatin. Multifocal mild epithelial erosion was occasionally observed. In the underlying mucosal propria, there were a few perivascular lymphocytes, plasma cells, and macrophages. Papilloma virus was observed on negative contrast electron microscopy (EM) of fresh tissues preserved in virus transport media (Fig. 2).

The lesions observed in the lynx are similar to those described in the Asian lion

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

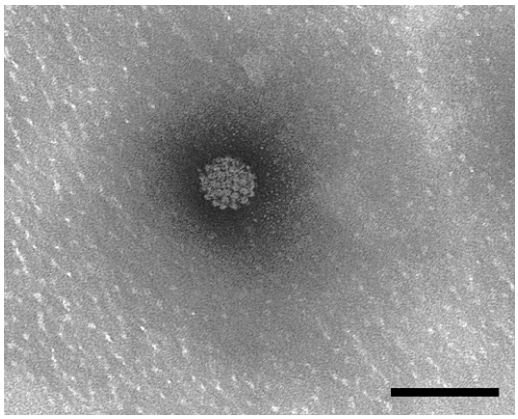


FIGURE 2. Negative contrast electron micrograph of affected tissue showing papilloma virus particle. Bar=100 nm.

(Sundberg et al., 1996). In contrast, lesions in coyotes with papillomatosis are often pedunculated or cauliflower-like masses involving the tongue, lips, and oral mucosa (Trainer et al., 1968). Oral papillomatosis in coyotes is characterized as a mild to severe disease (Samuel et al., 1978), and in some cases can interfere with feeding (Trainer et al., 1968). In the lynx papillomatosis cases, the lesions were mild and were completely self-limiting in six of the animals. Cases of papillomatosis were seen in lynx from British Columbia, Quebec, and the Yukon, suggesting the causative virus might be widespread among North American lynx populations.

We would like to thank Todd Cornish and Jackie Cavander, Wyoming State Veterinary Laboratory, Laramie, Wyoming, USA for histopathologic examination and electron microscopy of initial samples. We would also like to thank S. Dietrich, T. Shenk, S. Wait, C. Wagner, and others who assisted with handling and examining lynx.

LITERATURE CITED

COLORADO DIVISION OF WILDLIFE. 2006. Colorado Lynx Reintroduction and Augmentation Program. http://wildlife.state.co.us/NR/rdonlyres/432BB4E3-271F-4A10-904F-E6288B9CF1E1/0/LynxUpdateMar12206.pdf. Accessed 22 May 2006.

FITZGERALD, S. D., D. TAYLOR, J. A. RAMOS, AND T. M. COOLEY. 2000. Clinical Challenge. Journal of Zoo and Wildlife Medicine 31: 581–584.

SAMUEL, W. M., G. A. CHALMERS, AND J. R. GUNSON. 1978. Oral papillomatosis in coyotes (*Canis Iatrans*) and wolves (*Canis lupus*) of Alberta. Journal of Wildlife Diseases 14: 165–169.

SUNDBERG, J. P., A. A. RESZKA, E. S. WILLIAMS, AND M. E. REICHMANN. 1991. An oral papillomavirus that infected one coyote and three dogs. Veterinary Pathology 28: 87–88.

———, L. G. PHILLIPS, S. J. O'BRIEN, A. B. JENSON, R. D. BURK, AND M. V. RANST. 1996. Papillomavirus-associated focal oral hyperplasia in wild and captive Asian lions (*Panthera leo persica*). Journal of Zoo and Wildlife Medicine 27: 61–70.

———, M. VAN RANST, AND A. BENNETT JENSON. 2001. Papillomavirus infection. *In* Infectious diseases of wild mammals, 3rd Edition, E. S. Williams and I. K. Barker (eds.). Iowa State University Press, Ames, Iowa, pp. 223–231.

TRAINER, D. O., F. F. KNOWLTON, AND L. KARSTAD. 1968. Oral papillomatosis in the coyote. Bulletin of the Wildlife Disease Association 4: 52–54.

Received for publication 13 June 2006.

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use