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Human-coyote (*Canis latrans*) interaction in Canadian urban parks and green space: Preliminary findings from a media-content analysis

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## Abstract

The coyote (*Canis latrans*) is a highly adaptable apex carnivore that provides a critical ecological function in urban ecosystems. Habituation of coyotes results in behavioural changes which can lead to human-wildlife conflict. Understanding human awareness, values and attitudes towards coyotes, and the potential for human-coyote conflict, is essential to managing for effective ecological function of urban protected areas. A highly charged debate over coyotes and urban park management often plays out in the media, especially after a public report of a negative encounter. We conducted a content analysis of 215 primary articles from the print media (1995 - 2008) that focused on coyotes in urban parks and green space. We identified the types (i.e., coyote versus human or pet) and frequency of interactions, we summarized wound descriptions for pets versus humans, and we compared the type and frequency of incidents by human demographic. We also detailed the relative positive versus negative content of articles, the common descriptors of coyotes, the dominant concerns or effects arising from the reported conflict, and the various management responses to the interaction. The paper presents preliminary results of the analysis within a human-wildlife conflict framework and provides recommendations for urban park management.

keywords: coyotes, human-wildlife conflict, media content analysis, urban parks

## Introduction

Coyotes (*Canis latrans*), ubiquitous North American large carnivores, display significant behavioural plasticity, including the ability to thrive in urban environments (Bekoff and Gese 2003). Habituation of coyotes can lead to conflicts with people and pets (Gehrt 2004). The presence of coyotes in and around urban parks presents significant management challenges especially with respect to providing public safety and maintaining critical ecological function. Studying the interface between humans and coyotes in urban settings is essential to determine what factors contribute to the incidence of human-wildlife conflict and how best to manage people and coyotes in urban park settings (Baker and Timm 1998).

North American research has demonstrated that large urban carnivores have a critical role in maintaining critical ecosystem function (Crooks and Soule 1999, Bekoff and Gese 2003). For example, the meso-predator hypothesis suggests the presence of coyotes in urban ecosystems helps to maintain breeding bird populations through the suppression of smaller carnivores such as feral cats and mustelids (Crooks and Soule 1999). Coyotes may also provide a population regulation role for such species as white-tail deer and Canada geese (Gehrt 2004, Piccolo 2002). The ecological benefits of coyotes in urban ecosystems highlight the importance of striving for human-coyote coexistence (Baker and Timm 1998).

Understanding the human dimensions (e.g., attitudes, values, beliefs) of wildlife issues is at least as important as understanding the ecology of the species (Clark et al. 2005, Decker et al. 2001). One window into understanding the human dimensions of human-coyote interaction is the

popular media. Media content analysis provides a systematic approach to analyzing and drawing conclusions from communication content (Stempel 2003; Krippendorf 2004) and has proven very useful in understanding many natural resource and environment issues (e.g., Bissionault et al. 2005, Gore et al. 2005, Bengston et al. 1999, Miller 1997).

A highly charged debate over coyotes in urban parks and adjacent residential areas often plays out in the media, especially after a public report of a negative encounter. Our purpose was to analyze recent (1995-2008) content of print media coverage related to coyotes in and around Canadian urban parks as a way of elucidating critical human dimensions issues. The findings reported herein are the preliminary components of a long-term research program to better understand and manage urban human-wildlife conflict.

## **METHODS**

We searched on-line Canadian newspaper archives for articles mentioning coyotes between January 1, 1995 and March 1, 2008. A preliminary screening of all Canadian newspaper sources was conducted using document title and the search condition “coyote”, which yielded approximately 30,000 articles. Screening to remove non-target topics (e.g., Phoenix Coyotes hockey team, stories referring to events in the United States, etc.) eventually yielded 786 articles. No articles referring to a coyote interaction were found dating earlier than 1998. Of these, 215 were classified as ‘primary new articles’, the first articles reporting a particular incident or story, and these constitute the data for the current paper. Secondary new articles, letters to the editor and other opinion columns will be analyzed through subsequent research.

Full text articles numbered in chronological order of publication date, individually saved, and imported in the content analysis software, NVivo 7. We were not able to differentiate urban versus rural coyote articles during any of the searches. Thus, we coded an article “agricultural issue” during our analysis in order to separate out these two phenomena during analysis.

## **RESULTS AND DISCUSSION**

The content of 215 primary news articles was coded using the following 8 categories that emerged from the analysis:

- A. Description of Interaction
- B. Perception or Human Experience
- C. Common Descriptors of Coyotes (Single Words)
- D. Description of Coyotes Other (Phrases)
- E. Perception or Statement of Cause of Interaction
- F. Management Consequences of Interaction
- G. Experts Advice and Identity
- H. Solutions Proposed by Experts
- I. Other topics.

Of the 215 Primary news articles, 169 articles (78.6%) detailed urban coyote interactions, while 46 (21.4%) dealt with agricultural or rural interactions with coyotes. In the following sections, the term incident refers to a broad range of encounters with coyotes, from an aggressive encounter where a coyote attacked a child, to a threatening gesture towards a pet or person, to an observation of a coyote in an urban or rural setting (e.g., coyote walking on road, coyote on airplane runway). In this preliminary analysis, we deal with items A-F above.

## Summary of Incidents

There were 169 articles relating to urban coyotes in Canada between 1998 and 2008. We determined that only 94 articles depicted an actual human-coyote or pet-coyote interaction. The remainder tended to be discussions arising from sightings of coyotes or general interest in coyotes that would arise without a coyote incident. Below, we first describe the frequency of coyote interactions for humans and pets, and then summarize the description of injury sustained in a separate section.

### Human and Pet Coyote Interactions in Canada between 1998-2008.

We identified 24 human-coyote interactions that resulted in human injury over 10 years (14.2% of all reported coyote incidents). Within those, we found no cases where the interaction resulted in death or substantial injury of a human; scratches or puncture wounds were the dominant injury. Sixteen reported human-coyote interactions involved children, while 8 involved adults (Table 1).

Table 1. Summary of human-coyote interactions resulting in human injury identified in the Canadian print media (1998-2008)

Date	Age/Type	Location
Nov 17, 1998	Adult jogger	St. Catherine's, ON
Aug 4, 2000	Adult biker	Calgary *
Sept 20, 2000	Toddler – 18 months	Vancouver, BC
May 29, 2000	Child - 4 yrs	Vancouver, BC
May 5, 2000	Child – 13 yrs	Vancouver, BC
Dec 19, 2000	Child – 4 yrs,	Vancouver, BC
July 10, 2001	Toddler	Vancouver, BC
May 22, 2001	Older	Sarnia, ON *
May 30, 2001	Toddler in pram circled	Vancouver, BC
July 3, 2001	Child – 6 yrs	Coquitlam, BC
July 10, 2001	Toddler	Vancouver, BC
June 5, 2003	Adults (4 incidents, 1 report)	Toronto, ON
April 20, 2005	Toddler (3 yrs)	Calgary, AB
May 2, 2005	Adult biker	Kamloops, BC *
Dec 22, 2005	Child – 6 yrs	White City, SK
Feb 24, 2006	Adult	North Cobalt, ON
Apr 3, 2006	Adult biker	Edmonton, AB *
May 4, 2006 (circa)	Child – 12 years	Downeyville, ON
Nov 20, 2006	Child – 10 yrs	Edmonton, AB
July 27, 2007	Adult biker	Cambridge, ON
Dec 14, 2007	Child – 10 yrs	Canmore, AB
Dec 14, 2007	Toddler – 2 yrs	Canmore, AB
Dec 14, 2007	Child – 13 yrs	Canmore, AB

\* indicates the coyote charged or chased the human but there was limited to no contact between human-coyote

There were 70 pet-coyote interactions reported (41.4% of all articles). Of these, there were no lethal cases involving large dog interactions with coyotes, except in the case where a dog was

ethanized for concern it had been infected with rabies from the coyote. However, virtually all reported interactions between coyotes and small dogs or coyotes and cats were lethal.

### **Additional Descriptions in the Interaction**

The words “attack, attacks or attacked” were used 176 times in 90 articles to describe the interaction between human or pets and coyotes. Yet, there were 74 interactions where a person or pet might be considered to have been “attacked”. In the 70 incidents involving pets, the reader can infer that the pet was not on a leash in almost all cases. However, only 11 articles directly refer to the animal being off leash. Only 2 news articles made reference to an animal being eaten “off of the leash”. The second reference represented a case where the “eaten off leash” incident was being used by an expert as a case example of what coyotes will/can do to pets.

In almost all cases where a pet was involved in an interaction with a coyote, a description of the pet and the pet’s names (and the names of other pets present) were reported. For example, in 43 articles there were 59 references to the pet(s) by name.

In 28 (13%) of 215 incidents, attractants (i.e. garbage, hand feeding coyotes, presence of disposed carcasses) were cited as a possible issue in the coyote incident. Of these, only one article (0.4%) cited the active removal of an attractant that was thought to have caused the incident.

### **Description of Coyotes**

We found positive comments (phrases or sentences) in 15 (6.9%) of 215 and negative comments (phrases or sentences) in 93 (43%) of 215 coyote articles. In the 15 articles with positive comments there were 19 references to positive attributes of coyotes, whereas in the articles with 93 articles with negative comments there were 155 negative references.

In 57/215 (26.5%) of our articles, the importance of coyotes to the urban or rural ecosystem are cited. These include a variety of ecological roles including, geese control, rodent control, rat control, reduction of foxes that carry rabies, and others (to be reviewed in more detail in subsequent reports).

The most common negative words used to describe coyotes or the interactions between coyotes and people or pets follow, and the frequency of use indicated in the brackets following the word: brazen (15/215 articles), crazed (1/215 articles), bold or boldness (14/215 articles), killer(s) (5/215 articles), mangy (8/215 articles), and wiley (10/215 articles).

### **Human Perceptions**

As a consequence of the observed interactions, members of the public and experts raise a concern for the safety of children, pets or property in 57/215 (26.5%) articles. In 21/215 (9.8%) articles people cite a fear to let pets off leash or out in yard.

In 14/70 (20%) of urban cases, pet owners describe their response to the killing or coyote-pet interactions as “traumatic”, or to have created symptoms similar to or diagnoses of Post Traumatic Stress Disorder (PTSD). Under these conditions, the lack of response by authorities may be a key issue that exacerbates contempt for coyotes. For instance, in 11/169 (6.5%) of articles Canadian citizens indicate they have been or feel ignored by governing agencies, or have attempted to contact and find solutions with no response.

In response to interactions with coyotes, 6/169 (3.5%) urban interaction articles reflect that people have the view that coyotes are not natural in the city. Expert responses did not address the issue of historic distribution, reasons for existence in the city, and the lack of population census does not allow inference as to whether numbers are actually increasing.

Coyotes are also perceived to be a disease vector in many articles. The potential or concern for rabies or mange was cited in 31/215 (14.4%) of articles. Rabies and mange is also mentioned frequently as a possible antecedent condition to the interaction with people or pets.

In Eastern Canada, there is a greater concern for the potential for hybridization amongst canid species that has not yet been raised in Western Canada. In 11/215 (5.1%) articles, there is reference to the issue of *coydogs* or coyote-wolf hybrids as potential reason for observed aggression or boldness or behavioural changes (these references were in eastern Canada).

### **Response to Coyote Incident**

There were 55/215 (25.5%) articles that detailed an attempt at or successful trapping or shooting (removal) of the suspected coyote(s). There was a request for government agencies or authorities to take lethal action against coyotes in 28/215 (13%) articles and 4/215 (1.8%) requested a coyote population census.

### **Expert/Government recommendations**

A variety of explanations of coyote ecology, rationale for behaviour and importance for coexistence were provided by experts. Firstly, 57/215 (26.5%) of articles cited the importance of coyotes in the ecosystem. These included their importance in the urban and rural systems.

In response to requests to cull or eradicate coyotes, 17/215 (7.9%) articles explicitly state we must learn to live with coyotes. A common response to the urban coyote dilemma is that “coyotes are here to stay for the long term” and we “must learn to live with them”. Evidence regarding the long-term lack of effectiveness of culling or trapping is provided in 33/215 (15.3%) of the articles. Education was cited as an alternative to eradication in 3/215 (1.4%) articles.

More recently (2004), articles began to cite the notion of “human encroachment” into coyote habitat. This is a point of debate not examined in this paper and is a more recent expression of how the coyote-conflict has arisen. We observed that 12/169 (7.1%) urban articles stated that housing is displacing coyotes. This has been cited as a reason for their dependence on human food and ultimate conflicts with pets and people.

Experts attempt to provide context to the coyote “problem” in a variety of ways. In 8/215 (3.7%) articles the example of the significantly higher risk of dog bites to humans is cited.

### **Characterization of Human killing coyote versus Coyote killing or attacking pet/child**

The way in which humans characterize the act of a coyote killing a pet or “attacking” a human varies from the way humans describe their action of killing coyotes. Words used to describe a human killing a coyotes included: “shot and killed”, “put him down”, “coyote was caught”, “were shot”, “culled”, “will have to shoot a few”, “killed”, “destroyed”, “euthanized”, “removed”, “eradication”, “culls”, “put down.” Words used to describe a coyote killing a pet included:

“marauding”, “killers”, “brazen attacks”, “tore a cat to pieces”, “unprovoked attack”, “attacking everything that moves”, “guts hanging out, necks ripped open, ribs picked clean”, “a death machine”, “snatched”, “ripping at her throat and internal organs”, “attack”, “savaged a cat”, “an unreported plague”, “brutal.”

## **FUTURE RESEARCH**

The findings reported in this paper are from a preliminary analysis of a more comprehensive research program. Future research will include secondary and other articles focusing on coyotes in the print media. Detailed analyses will focus on explication of values, attitudes and beliefs expressed in media content. We plan to identify other sources of data (e.g., incident reports to animal services agencies or fish and wildlife agencies) to compare incidents to those reported in the media. Patterns or changes in the tone, frequency and content of articles will form a substantial portion of future analyses.

## **CONCLUSIONS AND RECOMMENDATIONS**

The initial findings reported herein illustrate the highly charged nature of the human-coyote relationship as it appears in the popular print media over the past two decades. Direct interaction between coyotes, people and pets draws considerable attention in the popular media and provides one window into understanding the complex nature of human-wildlife conflicts in urban protected areas. Future research will provide qualitative and quantitative analyses that will help to guide the management of urban protected areas and surrounding green spaces. The complex social-ecological systems that define urban ecosystems will continue to include the highly adaptable coyote. Education and proactive management intervention will be required to ensure an acceptable level of coexistence between people and coyotes. In particular, an emphasis on preventing negative interactions between small children and pets seems particularly important. The potential for interactions causing significant injury or fatalities results in real fears amongst the public. The control and supervision of pets and children in urban protected areas requires active intervention by park managers and greater awareness and knowledge from park users. Finally, although it is obvious that the loss of a pet would cause distress, the fact that 20% of pet owners report symptoms of PTSD, raises some important management implications surrounding the response or handling of these incidents. Humans now view pets as family members and thereby the loss of the animal (regardless of how small – e.g. Chihuahua) has the significance of a loss of a child to some individuals. As a result, response by agencies should reflect a level of concern for these losses and address the issue with regard appropriate. Despite the difficulty in relating to this condition for all involved, the loss is real for the individual.

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