Outline:

Intro

* Urban wildlife
  + Some species are
* Urban coyotes 🡪 urban exploiters who frequently interact with humans
* Conflict between humans and coyotes 🡪 defined by negative interactions, or a perception of negative interactions
  + Coyote boldness towards humans
  + Human perceptions of coyotes (TOLERANCE)
  + The goal of managers is to limit human-coyote conflict in cities by increasing human tolerance of coyotes but also by reducing bold coyote behaviour
* Public reporting databases are an immensely valuable source of information for evaluating the state of human-coyote conflict
* Enter our study – lay out objectives and hypotheses
  + 1 Objective: Determine if human-coyote interactions indicate increased human-coyote conflict as indicated by trends in reporting
    - Look at spatial trends in reporting over time (habitat types)
      * Hypothesis A: Reports will occur more in developed areas over time because coyotes are losing wariness of people
        + Test – use RSF models comparing report locations across years

Encounter/Sighting ~ Year + random(season) + Habitats + Year\*Habitats

* + - Look at temporal trends in reporting over time (time of day)
      * Hypothesis B: Reports will occur more often during the day than the night because coyotes are becoming less wary of people
    - Look at contextual trends over time (vulnerable individuals, human activity, number of coyotes)
      * Hypothesis: Reports will occur
  + Determine if human-coyote interactions have become characterized by more bold coyotes and more tolerant humans over time
    - Look at spatial trends in reporting over time (habitat types)
    - Look at temporal trends in reporting over time (time of day, seasons)
    - Look at contextual trends over time (vulnerable individuals, human activity, number of coyotes)

Methods

* Study area/background
* Reporting database information/report collection
* Report classification process
* Statistics
  + First, compare sightings vs encounters in three seasons using logistic

Results

* Map of reports over the duration of the study
  + MESSAGE: show extent of reports and diversity of locations
  + Consideration – worth trying to visualize boldness or human perceptions?
* Map of land cover types across Edmonton with accompanying figure that shows distribution of reports across areas
  + MESSAGE – show the vast green spaces
  + MESSAGE – show how coyote reports vary across space
* Stacked bar chart with reports from 2011-2022 – Two panel with perceptions & responses?
  + Message: shows changes in reporting over time and also seasonal patterns
* Find a way to visualize the contextual variables – I think not modelling those is likely the best approach
  + Stacked bar charts – 1 for vulnerable individuals, 1 for human activity, 1 for number of coyotes, 1 for coyote health
    - Two panels – One for boldness and 1 for perception
    - Show how the contextual variable varies across coyote and human perceptions
* Coefficient plots with model results
  + Big model = 2 plots with 3 panels (for seasons)

Chart, bar chart, histogram

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PIECES OF THE COYOTE STORY THAT NEED TO BE PUT TOGETHER

**Broad pattern description trends 🡪 # REPORTS**

* + How does reporting vary over time
    - Diurnal
    - Seasonal
    - Annual
  + How does reporting vary over space
    - Habitat types, distance to roads, building density
  + How does reporting vary with context
    - Human activity
    - Vulnerable individuals
    - Number of coyotes
    - Coyote health

**Conflict specific patterns 🡪 encounter/sightings, coyote boldness, human perception**

* + How does conflict vary over time
    - Diurnal
    - Seasonal
    - Annual
  + How does conflict vary over space
    - Habitat types, distance to roads, building density
  + How does conflict vary with context
    - Human activity
    - Vulnerable individuals
    - Number of coyotes
    - Coyote health

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Response Variables** | | | |
| **Variable Category** | **Independent Variables** | **# Reports** | **Encounters VS sightings (binomial)** | **Coyote boldness (ordinal)** | **Human Perception (ordinal)** |
| Temporal | Diurnal |  |  |  |  |
|  | Seasonal |  |  |  |  |
|  | Annual |  |  |  |  |
| Spatial | Habitat types x 5 |  |  |  |  |
|  | Distance to roads |  |  |  |  |
|  | Building density |  |  |  |  |
| Contextual | Vulnerable Individuals |  |  |  |  |
|  | Human Activity |  |  |  |  |
|  | Number of coyotes |  |  |  |  |
|  | Coyote Health |  |  |  |  |

Jonathan’s proposition:

Proposed theme: I think the most interesting and novel parts of this story are the two response variables – **coyote boldness & human perceptions**. I think that focusing in on describing the spatial, temporal and contextual trends ONLY in those two variables will help focus the manuscript to tell a clean, crisp story. Emphasizing changes in these response variables over time, and potentially over time\*space will likely be the most compelling piece of this story. Talking about the similarities & differences will be key

Proposed outline of results:

Summary Stuff:

* YEARS & SEASONS Easy to understand stacked bar plots with coyote boldness & human perceptions over time 🡪 1 figure, 2 panels
* DAY Easy to understand stacked bar plots with coyote boldness & human perceptions over time 🡪 1 figure, 2 panels
* SPACE easy to understand stacked bar plots 🡪 OR ALTERNATIVELY a nice lineplot with reports ~ building density, road distance, % habitat types
  + I’m struggling to figure out how best to illustrate spatial trends in the data when all of our spatial variables are continuous
* CONTEXT stacked bar plots? Other kinds of plots? Some fun way of illustrating changes in reports with vulnerable individuals, activities, # coyotes, and coyote health? Perhaps just a table?
* Plot showing correlation between boldness & human perception 🡪 test significance with spearman’s correlation coefficient for ordinal data

Modelling stuff:

* Model each response variable (boldness & perception) for coyote seasons separately
  + Response ~ Year + Habitats + Year\*Habitats
  + Talk to Scott to try and avoid breaking major math rules
* Two 3-panel plots 🡪 one for each of the response variables to show effect sizes & confidence intervals
* Avoid modelling contextual variables?
  + Talk to Scott to see if he has any good ideas on how to model this
    - Previously modelled using univariate ordinal regression models

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