## INFO ENTRY - QUESTION INFO

ENTRY NOTES:

* green = does not need to be editted
* yellow = info for the inputter
* ref\_id = “refs\_glossary\_2024-08-09.xls > “references” tab
  + if the reference not present, either add it (if you’re confident that you can follow the format), or add a comment in this doc with the info and I will adjust
* **images – file name in** “refs\_glossary\_2024-08-09.xls > “references” tab
* Ignore everything in the “POPULATE MARKDOWN” section
* Size of columns in tables and text format do not matter; see note on bold and italize below
* Any content with “glue}`` prefix or surrounded by “{{ “ / “ }}” indicates where text will be inserted from the keys
* You may see “<br>” throughout, you can ignore these
* additional formatting notes (optional)
  + \*\***bold**\*\*
  + \**italics*\*

## Topic Info

If the topic is NOT related to a question, you can leave “question” as NULL

“question” here is more for your reference

|  |  |
| --- | --- |
| **info\_id** | sp\_behav |
| **question** | **Question:** Is the Target Species known or likely to investigate the camera (e.g., moose, coyote) or be camera shy (e.g., lynx)?  # \*\*Target Species – Behaviour\*\*  need more info here to help user choose  + why this matter- include as warning / info-- correction factors down the road  Examples of comparable species users can refer to in order to select the most appropriate option |

## Overview

<br>

It's important to consider how your Target Species may react to the camera being placed.<br>

<br>

While remote cameras are fairly non-invasive survey method, their presence on the landscape, in and of itself, can alter the behaviour of the species you aim to measure (potential attraction to, or avoidance of, the camera), ultimately interfering with detection rates / detection probability ({{ ref\_intext\_meek\_et\_al\_2014) (e.g., “trap-shy” tigers are thought to avoid cameras due to the white flash emitted [{{ ref\_intext\_wegge\_et\_al\_2004 }}; {{ ref\_intext\_sharma\_et\_al\_2010 }}).

Examples of comparable species that can be used to select the most appropriate option:

**- \*\*Exploratory\*\*:** (e.g., moose, coyote)

**-** \*\*Neutral\*\*: [INSERT HERE]

**-** \*\*Avoidant\*\*: (e.g., lynx)

**-** \*\*I'm not sure\*\*: select this option if you’re not sure of the investigative behaviour of your Target Species (single or multiple species)

**-** \*\*Variable\*\*: select this option if you’re targetting multiple species and you expect that the investigative behaviour of these species is variable (e.g., you’re targetting coyote and lynx).

## Advanced

If the topic doesn’t warrant inclusion, you can leave as NULL

**Notes for later**

- How much sound and illumination (or flash) is emitted will depend on the users’ settings, and the camera make and model (type of flash available; xenon light, white LED or infrared LED illumination). However, the extent to which the camera interferes with behaviour will also depend upon the physical and behavioural characteristics of the species (e.g., perceptive range of hearing, boldness, etc.).

-Many modelling approaches need to incorporate aspects oftime as it relates to the animals’ presence at the camera location (e.g., the amount of time spent in the camera’s field-of-view), and thus, you might imagine the bias in the resulting estimates (e.g., density) becomes increasingly problematic for species that are particularly avoidant or exploratory (e.g., moose spend considerable time investigating, which affects effective detection distance in TIFC models; {{ ref\_intext\_becker\_et\_al\_2022 }}). Such models usually have the assumption that animals’ behaviour is unbiased by the camera.

## Figures

Placeholders here as “filename” can leave in if not <5 images

|  |  |  |  |
| --- | --- | --- | --- |
| **Image** | **file\_name** | **Caption (if applicable)** | **ref\_id** |
| A graph of a frequency  Description automatically generated | meek\_et\_al\_2014\_fig11.png | \*\*Meek et al. (2014b) - Fig. 11.\*\* Comparison of the predicted hearing range of the red fox in relation to the outputs of HC600 camera traps and as a function of frequency | meek\_et\_al\_2014b |
|  | becker\_et\_al\_2022\_fig4.png | \*\*Becker et al. (2022) - Fig 4.\*\*Proportion of time in front of the camera that moose spend investigating the camera and pole (a; Behavior 1), and time spent investigating plus associated behaviors (b; Behaviors 1 and 2). Density factor is the corresponding increase to downstream density estimates, based on the additional time spent in the behaviors. Error bars represent 90% Cis. | becker\_et\_al\_2022 |
|  | figure3\_filename.png | figure4\_caption | figure3\_ref\_id |
|  | figure4\_filename.png | figure4\_caption | figure4\_ref\_id |
|  | figure5\_filename.png | figure5\_caption | figure5\_ref\_id |
|  | figure6\_filename.png | figure6\_caption | figure6\_ref\_id |

## Video

no “<” before the URL text and a “>” after URL in this case

ref\_id in this example is not correct, just for illustrative purposes

|  |  |  |
| --- | --- | --- |
| **caption** | **URL (no < / > before/after URL** | **ref\_id** |
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| vid2\_caption | vid2\_url | vid2\_ref\_id |
| vid3\_caption | vid3\_url | vid3\_ref\_id |
| vid4\_caption | vid4\_url | vid4\_ref\_id |
| vid5\_caption | vid5\_url | vid5\_ref\_id |
| vid6\_caption | vid6\_url | vid6\_ref\_id |

## Analytical tools & resources

The ref\_id should be included in the reference column (and the full text reference in the master reference file). If you aren’t sure if the reference is in the master doc, add the full text ref as a comment.

Please add a “<” before the URL text and a “>” after (e.g., <http://www.somesitelink.com>)

Type can be something similar to: Article, App/Program, R package

|  |  |  |  |  |
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| **Type** | **Name** | **Note** | **URL** | **ref\_id** |
| Correction factors (Marcus) | resource1\_name | resource1\_note | resource1\_url | resource1\_ref\_id |
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## References / Glossary

items in-text above (IGNORE FOR NOW)

|  |  |
| --- | --- |
| **ref\_id** | **glossary\_keys** |
| {{ ref\_bib\_caravaggi\_et\_al\_2017 }}  {{ ref\_bib\_caravaggi\_et\_al\_2020 }}  {{ ref\_bib\_meek\_et\_al\_2014b }}  {{ ref\_bib\_sharma\_et\_al\_2010 }}  {{ ref\_bib\_wegge\_et\_al\_2004 }} | keys\_here |

## Notes

(future ref / not included in markdown conversion)

* NOTE: Unbiased behaviour in assumptions for = ("mod\_scr\_secr","mod\_ds","mod\_2flankspim","mod\_rem","mod\_rest","mod\_tifc")

Meek et al., 2014

Observations of responses to mensurative devices strongly imply that learning can occur as a consequence of exposure to the devices. For examples, camera traps could be detected by animals for the following reasons:

1. Auditory – by the emission of sounds from the electronic and mechanical components of the device: these could be in the infra, audible and ultra-sound ranges.

2. Olfactory – metal, plastic and human scents on the device [6,9], 3. Learned association – avoidance of the camera trap through wariness of human presence at a site [6] or attraction to the camera trap through lures and food baits,

4. Visual (day) – neophobia towards foreign objects introduced into their environment; regular-shaped objects (essentially rectangular prisms) attached to trees or posts [12,13],

5. Visual (night) – the flash of xenon light, white LED or infrared LED illumination [7].

### For example, the bold or exploratory behaviour of one species may result in more frequent detections than the number of animals of that species that would have passed through the detection zone if no camera was present (e.g., coyotes; Caravaggi et al., 2020; Rowcliffe et al., 2011).