## Topic Info

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| **info\_id** | study\_area  **02\_01\_study\_area**  **02\_02\_camera\_arrangement** |
| **question** |  |

## Note banner

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## # Study area

## Overview

A {{ study\_area\_tl }} is a unique area(s) within a {{ project\_tl }}. There may be multiple {{ study\_area\_tl\_pl }} within a larger {{ study\_area\_tl }}. Aspects to consider when identifying the {{ study\_area\_tl }} include the spatial extent (and method of delineation), shape ({{ rtxt\_foster\_harmsen\_2012 }}), and composition and configuration of features within it (including habitat types, land uses and disturbances).

Several factors influence the size (spatial extent) of the study area, including the {{ survey\_tl\_objectives\_abrv }}, ecosystem, the biology of the {{ target\_species\_tu }} (e.g., dispersal ability, habitat preferences, etc.) and/or [modelling approach](#mods\_modelling\_approach).

For example, {{ density\_tl }} models using the [capture-recapture (CR)](#mods\_cr\_cmr) [modelling approach](#mods\_modelling\_approach) requires that the {{ study\_area\_tl }} encompasses the entire area in which individuals can move during the {{ survey\_tl }} and that each individual can be detected by a camera ({{ rtxt\_karanth\_nichols\_1998 }}). In this case, the animal’s home range size could be used (e.g., four times the home range size [{{ rtxt\_maffei\_noss\_2008 }}]) ({{ rtxt\_wearn\_gloverkapfer\_2017 }}) in combination with a finite number of cameras available (e.g., 20 cameras are available; ideally, they should be [paired](#sampledesign\_paired) and there should be \> 4 cameras in each home range [{{ rtxt\_wearn\_gloverkapfer\_2017 }}]) to define the {{ project\_tl }}’s spatial extent.

Methods to delineate the appropriate spatial extent include, for example, minimum convex polygons (i.e., a polygon surrounding the locations of previous detections) or [kernel density estimators](#kernel\_density\_estimator) (e.g., via the probability of “utilization” \[{{ rtxt\_jennrich\_turner\_1969 }}\]). Geographic Information Systems (GIS, e.g., ESRI software) or programming languages (e.g., R) contain useful tools for these delineation methods.

## In-depth

```{include} include/00\_coming\_soon.md

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## Figures

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| **Image** | **file\_name** | **Caption (if applicable)** | **ref\_id** |
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## Video

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## Analytical tools & Resources

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## References / Glossary

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## Notes