# INFO ENTRY

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
* Assumptions, Pros, Cons
  + Only for modelling approaches; can ignore otherwise (leave table here)
  + [WILL BE HERE, BUT INSERTED DIRECTLY FROM CSV FILE (THUS NO INPUT NEEDED)]
* Advanced
  + If the topic doesn’t warrant inclusion, you can leave as NULL
* Figures
  + Placeholders here as “filename” can leave in if not <5 images
* 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
* 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
* References / Glossary
  + items in-text above (IGNORE FOR NOW)
* Notes
  + (future ref / not included in markdown conversion)

## Topic Info

|  |  |
| --- | --- |
| info\_id | mod\_smr |
| question | Headers:  \*\*<font size="4"><span style="color:#2F5496">How does this relate to study design?</font></span>\*\*  \*\*<font size="4"><span style="color:#2F5496">How does that work?</font></span>\*\*  \*\*<font size="4"><span style="color:#2F5496">Why do we care?</font></span>\*\*  > \*\*Select “Unknown” if you’re not sure.\*\*  :::{note}  \*\*This content was adapted from\*\*: The Density Handbook, "[Using Camera Traps to Estimate Medium and Large Mammal Density: Comparison of Methods and Recommendations for Wildlife Managers](https://www.researchgate.net/publication/368601884\_Using\_Camera\_Traps\_to\_Estimate\_Medium\_and\_Large\_Mammal\_Density\_Comparison\_of\_Methods\_and\_Recommendations\_for\_Wildlife\_Managers)" (Clarke et al., 2024)  :::  \[in Clarke et al. 2023\]  {bdg-link-primary-line}`Spatial count<https://ab-rcsc.github.io/rc-decision-support-tool\_concept-library/02\_dialog-boxes/03\_14\_mod\_sc.html>`  *2.1.1 Capture-Recapture* --> {bdg-link-primary-line}`Capture-recapture (CR) / Capture-mark-recapture (CMR)<https://ab-rcsc.github.io/rc-decision-support-tool\_concept-library/02\_dialog-boxes/03\_10\_mod\_cr\_cmr.html>`  *2.1.2 Spatial Capture-Recapture* --> {bdg-link-primary-line}`Spatial capture-recapture (SCR) / Spatially explicit capture recapture (SECR)<https://ab-rcsc.github.io/rc-decision-support-tool\_concept-library/02\_dialog-boxes/03\_11\_mod\_scr\_secr.html>` |

## Assumptions, Pros, Cons – if modelling approach

|  |  |  |
| --- | --- | --- |
| Assumptions | Pros | Cons |
| - {{ mod\_smr\_assump\_01 }}  - {{ mod\_smr\_assump\_02 }}  - {{ mod\_smr\_assump\_03 }}  - {{ mod\_smr\_assump\_04 }}  - {{ mod\_smr\_assump\_05 }}  - {{ mod\_smr\_assump\_06 }}  - {{ mod\_smr\_assump\_07 }}  - {{ mod\_smr\_assump\_08 }}  - {{ mod\_smr\_assump\_09 }}  - {{ mod\_smr\_assump\_10 }}  - {{ mod\_smr\_assump\_11 }}  - {{ mod\_smr\_assump\_12 }}  - {{ mod\_smr\_assump\_13 }}  - {{ mod\_smr\_assump\_14 }}  - {{ mod\_smr\_assump\_15 }}  - {{ mod\_smr\_assump\_16 }}  - {{ mod\_smr\_assump\_17 }} | - {{ mod\_smr\_pro\_01 }}  - {{ mod\_smr\_pro\_02 }}  - {{ mod\_smr\_pro\_03 }}  - {{ mod\_smr\_pro\_04 }} | - {{ mod\_smr\_con\_01 }}  - {{ mod\_smr\_con\_02 }}  - {{ mod\_smr\_con\_03 }}  - {{ mod\_smr\_con\_04 }}  - {{ mod\_smr\_con\_05 }}  - {{ mod\_smr\_con\_06 }} |

## Overview

This section will be available soon! In the meantime, check out the information in the other tabs!

```{figure} ../03\_images/03\_image\_files/00\_coming\_soon.png

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:align: center

```

## Advanced

:::{note}

\*\*This content was adapted from\*\*: The Density Handbook, "[Using Camera Traps to Estimate Medium and Large Mammal Density: Comparison of Methods and Recommendations for Wildlife Managers](https://www.researchgate.net/publication/368601884\_Using\_Camera\_Traps\_to\_Estimate\_Medium\_and\_Large\_Mammal\_Density\_Comparison\_of\_Methods\_and\_Recommendations\_for\_Wildlife\_Managers)" (Clarke et al., 2024)

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:::{figure} ../03\_images/03\_image\_files/clarke\_et\_al\_2023\_eqn\_smr1.png

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:::

where \*𝑚\* is the number of marked animals, \*𝑢\* is the number of unmarked animals and \*𝑝\* is detection probability – the latter of which is determined using data from marked individuals only ({{ ref\_intext\_chandler\_royle\_2013 }}). Dividing \*𝑁\* by the area of the sampling frame \*𝐴\* produces an estimate of total population density.

SMR models integrate spatial information into the mark-resight framework. The result is a hybrid model that combines data from the detection histories of marked individuals, as per SCR, with site-specific counts of unmarked individuals, as per SC ({{ ref\_intext\_royle\_et\_al\_2014 }}). For the remainder of this section, we will discuss camera trap SMR, for which animals are resighted using camera trap arrays.

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## Figures

|  |  |  |  |
| --- | --- | --- | --- |
| Image | file\_name | Caption (if applicable) | ref\_id |
|  | whittington\_et\_al\_2018\_fig1\_clipped.png | \*\*Whittington et al. (2018) - Fig. 1\*\* Differences in the distributions of marked and unmarked animals lead to bias in conventional SMR models but not generalized SMR models. (a) Animals (blue triangles) in the state-space are subject to trapping (+) and marking. (b) The expected distributions of marked and unmarked animals are assumed to be identical for conventional SMR models but depend on trap distribution for generalized SMR. (c) Marked and unmarked animals are observed during resight surveys. (d) The expected distribution of marked animals not resighted is incorrectly assumed to be highest near the edge of the state-space for conventional SMR, whereas generalized SMR models correctly assume it is highest closest to traps. | whittington\_et\_al\_2018 |
| A screenshot of a map  Description automatically generated | SECR\_creemmural.org\_secr.png | figure2\_caption | figure2\_ref\_id |
|  | clarke\_et\_al\_2023\_eqn\_smr1.png | figure3\_caption | clarke\_et\_al\_2023 |
|  | figure4\_filename.png | figure4\_caption | figure4\_ref\_id |
|  | figure5\_filename.png | figure5\_caption | figure5\_ref\_id |
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|  | figure12\_filename.png | figure12\_caption | figure12\_ref\_id |
|  |  |  |  |
|  |  |  |  |

Shorten long captions (example)

\*\*Gotelli & Colwell (2011) - Fig. 4.1\*\* Species accumulation and rarefaction curves.

:::{dropdown}

The jagged line is the species accumulation curve for one of many possible orderings of 121 soil seedbank samples, yielding a total of 952 ......

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## Video

|  |  |  |
| --- | --- | --- |
| caption | URL (no < / > before/after URL | ref\_id |
| vid1\_caption | vid1\_url | vid1\_ref\_id |
| vid2\_caption | vid2\_url | vid2\_ref\_id |
| vid3\_caption | vid3\_url | vid3\_ref\_id |
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| vid7\_caption | vid7\_url | vid7\_ref\_id |
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| vid14\_caption | vid14\_url | vid14\_ref\_id |
| vid15\_caption | vid15\_url | vid15\_ref\_id |
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## Shiny

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Shiny name = shiny\_name2

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Shiny URL = shiny\_url2

## Analytical tools & resources

|  |  |  |  |  |
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| Type | Name | Note | URL | ref\_id |
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| resource2\_type | resource2\_name | resource2\_note | resource2\_url | resource2\_ref\_id |
| resource3\_type | resource3\_name | resource3\_note | resource3\_url | resource3\_ref\_id |
| resource4\_type | resource4\_name | resource4\_note | resource4\_url | resource4\_ref\_id |
| resource5\_type | resource5\_name | resource5\_note | resource5\_url | resource5\_ref\_id |
| resource6\_type | resource6\_name | resource6\_note | resource6\_url | resource6\_ref\_id |
| resource7\_type | resource7\_name | resource7\_note | resource7\_url | resource7\_ref\_id |
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| resource15\_type | resource15\_name | resource15\_note | resource15\_url | resource15\_ref\_id |

## References / Glossary

|  |  |
| --- | --- |
| ref\_id |  |
| {{ ref\_bib\_chandler\_royle\_2013 }}  {{ ref\_bib\_clarke\_et\_al\_2023 }}  {{ ref\_bib\_jimenez\_et\_al\_2021 }}  {{ ref\_bib\_sollmann\_et\_al\_2013a }}  {{ ref\_bib\_rich\_et\_al\_2014 }}  {{ ref\_bib\_royle\_et\_al\_2014 }}  {{ ref\_bib\_whittington\_et\_al\_2018 }}  {{ ref\_bib\_williams\_et\_al\_2002 }} |  |

## Notes

# POPULATE MARKDOWN \_2024-09-20 - MODS

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jupytext:

formats: md:myst

text\_representation:

extension: .md

format\_name: myst

format\_version: 0.17.2 <!--0.13-->

jupytext\_version: 6.5.4 <!-- 1.16.4-->

kernelspec:

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name: python3

editor\_options:

markdown:

wrap: none

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(i\_)=

# {{ name\_mod\_smr }}

\*\*{{ term\_ }}\*\*: {{ term\_def\_ }}

::::::{dropdown} Assumptions, Pros, Cons

:::::{grid}

::::{grid-item-card} Assumptions

- {{ mod\_smr\_assump\_01 }}

- {{ mod\_smr\_assump\_02 }}

- {{ mod\_smr\_assump\_03 }}

- {{ mod\_smr\_assump\_04 }}

- {{ mod\_smr\_assump\_05 }}

- {{ mod\_smr\_assump\_06 }}

- {{ mod\_smr\_assump\_07 }}

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- {{ mod\_smr\_assump\_10 }}

- {{ mod\_smr\_assump\_11 }}

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- {{ mod\_smr\_assump\_14 }}

- {{ mod\_smr\_assump\_15 }}

- {{ mod\_smr\_assump\_16 }}

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::::{grid-item-card} Pros

- {{ mod\_smr\_pro\_01 }}

- {{ mod\_smr\_pro\_02 }}

- {{ mod\_smr\_pro\_03 }}

- {{ mod\_smr\_pro\_04 }}

- {{ mod\_smr\_pro\_05 }}

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::::{grid-item-card} Cons

- {{ mod\_smr\_con\_01 }}

- {{ mod\_smr\_con\_02 }}

- {{ mod\_smr\_con\_03 }}

- {{ mod\_smr\_con\_04 }}

- {{ mod\_smr\_con\_05 }}

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- {{ mod\_smr\_con\_09 }}

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### :::::::{tab-set}

#### ::::::{tab-item} Overview

This section will be available soon! In the meantime, check out the information in the other tabs!

```{figure} ../03\_images/03\_image\_files/00\_coming\_soon.png

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#### ::::::

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:::{note}

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```{figure} ../03\_images/03\_image\_files/clarke\_et\_al\_2023\_eqn\_smr1.png

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#### ::::::

#### ::::::{tab-item} Visual resources

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```{figure} ../03\_images/03\_image\_files/whittington\_et\_al\_2018\_fig1\_clipped.png

:class: img\_grid

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\*\*Whittington et al. (2018) - Fig. 1\*\* Differences in the distributions of marked and unmarked animals lead to bias in conventional SMR models but not generalized SMR models. (a) Animals (blue triangles) in the state-space are subject to trapping (+) and marking. (b) The expected distributions of marked and unmarked animals are assumed to be identical for conventional SMR models but depend on trap distribution for generalized SMR. (c) Marked and unmarked animals are observed during resight surveys. (d) The expected distribution of marked animals not resighted is incorrectly assumed to be highest near the edge of the state-space for conventional SMR, whereas generalized SMR models correctly assume it is highest closest to traps.

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figure2\_caption

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figure3\_caption

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figure4\_caption

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figure5\_caption

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figure7\_caption

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figure8\_caption

###### ::::

###### ::::{grid-item-card} {{ ref\_intext\_figure9\_ref\_id }}

```{figure} ../03\_images/03\_image\_files/figure9\_filename.png

:class: img\_grid

```

figure9\_caption

###### ::::

##### :::::

##### :::::{grid} 3

:gutter: 1

:padding: 0

:margin: 0

###### ::::{grid-item-card} {{ ref\_intext\_figure10\_ref\_id }}

```{figure} ../03\_images/03\_image\_files/figure10\_filename.png

:class: img\_grid

```

figure10\_caption

###### ::::

###### ::::{grid-item-card} {{ ref\_intext\_figure11\_ref\_id }}

```{figure} ../03\_images/03\_image\_files/figure11\_filename.png

:class: img\_grid

```

figure11\_caption

###### ::::

###### ::::{grid-item-card} {{ ref\_intext\_figure12\_ref\_id }}

```{figure} ../03\_images/03\_image\_files/figure12\_filename.png

:class: img\_grid

```

figure12\_caption

###### ::::

##### :::::

##### :::::{grid} 3

:gutter: 1

:padding: 0

:margin: 0

###### ::::{grid-item-card} {{ ref\_intext\_vid1\_ref\_id }}

<iframe

width="100%"

height="300"

src="vid1\_url"

frameborder="0"

allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture"

allowfullscreen>

</iframe>

vid1\_caption

###### ::::

###### ::::{grid-item-card} {{ ref\_intext\_vid2\_ref\_id }}

<iframe

width="100%"

height="300"

src="vid2\_url"

frameborder="0"

allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture"

allowfullscreen>

</iframe>

vid2\_caption

###### ::::

###### ::::{grid-item-card} {{ ref\_intext\_vid3\_ref\_id }}

<iframe

width="100%"

height="300"

src="vid3\_url"

frameborder="0"

allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture"

allowfullscreen>

</iframe>

vid3\_caption

###### ::::

##### :::::

##### :::::{grid} 3

:gutter: 1

:padding: 0

:margin: 0

###### ::::{grid-item-card} {{ ref\_intext\_vid4\_ref\_id }}

<iframe

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height="300"

src="vid4\_url"

frameborder="0"

allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture"

allowfullscreen>

</iframe>

vid4\_caption

###### ::::

###### ::::{grid-item-card} {{ ref\_intext\_vid5\_ref\_id }}

<iframe

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height="300"

src="vid5\_url"

frameborder="0"

allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture"

allowfullscreen>

</iframe>

vid5\_caption

###### ::::

###### ::::{grid-item-card} {{ ref\_intext\_vid6\_ref\_id }}

<iframe

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height="300"

src="vid6\_url"

frameborder="0"

allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture"

allowfullscreen>

</iframe>

vid6\_caption

###### ::::

##### :::::

#### ::::::

#### ::::::{tab-item} Shiny apps/Widgets

Check back in the future!

##### :::::{card}

::::{dropdown} shiny\_name

shiny\_caption

<iframe

width="100%"

height="900"

src="shiny\_url"

frameborder="0"

allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture"

allowfullscreen>

</iframe>

::::

::::{dropdown} shiny\_name2

shiny\_caption2

<iframe shiny\_url2

width="100%"

height="900"

src=""

frameborder="0"

allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture"

allowfullscreen>

</iframe>

::::

##### :::::

#### ::::::

#### ::::::{tab-item} Analytical tools & resources

| Type | Name | Note | URL |Reference |

|:----------------|:---------------------------------------|:----------------------------------------------------------------|:----------------------------------------------------------------|:----------------------------------------------------------------|

| resource1\_type | resource1\_name | resource1\_note | resource1\_url | {{ ref\_bib\_resource1\_ref\_id }} |

| resource2\_type | resource2\_name | resource2\_note | resource2\_url | {{ ref\_bib\_resource2\_ref\_id }} |

| resource3\_type | resource3\_name | resource3\_note | resource3\_url | {{ ref\_bib\_resource3\_ref\_id }} |

| resource4\_type | resource4\_name | resource4\_note | resource4\_url | {{ ref\_bib\_resource4\_ref\_id }} |

| resource5\_type | resource5\_name | resource5\_note | resource5\_url | {{ ref\_bib\_resource5\_ref\_id }} |

| resource6\_type | resource6\_name | resource6\_note | resource6\_url | {{ ref\_bib\_resource6\_ref\_id }} |

| resource7\_type | resource7\_name | resource7\_note | resource7\_url | {{ ref\_bib\_resource7\_ref\_id }} |

| resource8\_type | resource8\_name | resource8\_note | resource8\_url| {{ ref\_bib\_resource8\_ref\_id}} |

| resource9\_type | resource9\_name | resource9\_note | resource9\_url | {{ ref\_bib\_resource9\_ref\_id }} |

| resource10\_type | resource10\_name | resource10\_note | resource10\_url | {{ ref\_bib\_resource10\_ref\_id }} |

| resource11\_type | resource11\_name | resource11\_note | resource11\_url | {{ ref\_bib\_resource11\_ref\_id }} |

| resource12\_type | resource12\_name | resource12\_note | resource12\_url | {{ ref\_bib\_resource12\_ref\_id }} |

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#### ::::::{tab-item} References

{{ ref\_intext\_chandler\_royle\_2013 }}

{{ ref\_intext\_clarke\_et\_al\_2023 }}

{{ ref\_intext\_jimenez\_et\_al\_2021 }}

{{ ref\_intext\_sollmann\_et\_al\_2013a }}

{{ ref\_intext\_rich\_et\_al\_2014 }}

{{ ref\_intext\_royle\_et\_al\_2014 }}

{{ ref\_intext\_whittington\_et\_al\_2018 }}

{{ ref\_intext\_williams\_et\_al\_2002 }}

#### ::::::

### :::::::