# 99\_other-resources

| **Type** | **Name** | **LURL** | **Embed URL** | **Reference** | **Additional\_info** |
| --- | --- | --- | --- | --- | --- |
|  | ConservationInternational/Wildlife-Insights----Data-Migration | <<https://github.com/ConservationInternational/Wildlife-Insights----Data-Migration>> |  |  |  |
|  | camtrapR is a package for camera trap data management in R | <<https://github.com/jniedballa/camtrapR>> |  |  |  |
|  | WildlifeDatasets/wildlife-datasets | <<https://github.com/WildlifeDatasets/wildlife-datasets>> |  |  |  |
|  | brouwern/wildlifeR | <<https://github.com/brouwern/wildlifeR>  https://brouwern.github.io/wildlifeR/> |  |  | Datasets and tutorials for the analysis of ecological data. |
|  | erikseulean/wildlife | <https://github.com/erikseulean/wildlife |  |  | Modelling **wildlife** **population** dynamics |
|  | connort2/wildlife\_population\_modeling | <https://github.com/connort2/wildlife\_population\_modeling> |  |  | A collection of code to model and estimate **wildlife** **populations** through marked and/or unmarked data |
|  | percy-batten/MT5767-Wildlife-population-dynamics.- | <https://github.com/percy-batten/MT5767-Wildlife-population-dynamics.- |  |  |  |
|  | A-Technical-Guide-for-Monitoring-Wildlife-Populations | <https://github.com/lukmannhaqeem/A-Technical-Guide-for-Monitoring-Wildlife-Populations> |  |  |  |
| R package | SiMRiv | <<https://cran.r-project.org/web/packages/SiMRiv/vignettes/SiMRiv.pdf>>  https://github.com/miguel-porto/SiMRiv> |  | Quaglietta, L., & Porto, M. (2019). SiMRiv: An R package for mechanistic simulation of individual, spatially-explicit multistate movements in rivers, heterogeneous and homogeneous spaces incorporating landscape bias. *Movement Ecology*, *7*(1), 11. <https://doi.org/10.1186/s40462-019-0154-8> | SiMRiv: an R package for mechanistic simulation of individual, spatially-explicitmultistate movements in rivers,heterogeneous and homogeneous spaces incorporating landscape bias |
| Data/Database | Movebank | <https://www.movebank.org/cms/webapp?gwt\_fragment=page=studies> |  |  | Movebank for animal tracking data  Might be useful to feed into HR size shiny |
|  | Point count data analysis: How to violate assumptions and get away with it | <http://peter.solymos.org/qpad-book/> |  |  | Analysis of point-count data in the presence of variable survey methodologies and detection error  This book provides material for the workshop *Analysis of point-count data in the presence of variable survey methodologies and detection error* at the [AOS 2019 conference](https://amornithmeeting.org/) by [Peter Solymos](http://peter.solymos.org/).  The book and related materials in this repository is the basis of a full day workshop (8 hours long with 3 breaks).  Prior exposure to [R](https://www.r-project.org/) language is necessary (i.e. basic R object types and their manipulation, such as arrays, data frames, indexing) because this is not covered as part of the course. Check [this](https://github.com/psolymos/qpad-book/blob/master/_etc/R-basics.pdf) intro. |
| Shiny | Power Analysis Shiny App [Lionel Leston] |  |  |  |  |
| Shiny | Simulated Occupancy Model Shiny App [Lionel Leston] |  |  |  | --- could incorporate mammal data fairly easily to provide information on occupancy and detection probability  (Guillera-Arroita, 2012) |
| Shiny | ‘WildLift’: An Open-Source Tool to Guide Decisions for Wildlife Conservation | <<https://abbiodiversity.shinyapps.io/WildLift/>> |  |  | **WildLift** can be used to quantitatively compare the **costs** and demographic **benefits** of recovery actions for an iconic threatened species, woodland caribou (*Rangifer tarandus caribou*). While we use caribou as a case study, our approach to developing this management tool is transferable to other threatened taxa.  The tool consists of a generalized matrix population model that is parametrized based on information from the published literature or ongoing experiments. Users can input population parameters (e.g., population size and survival rates) or choose from pre-set caribou subpopulations to estimate changes to populations from implementing recovery actions as described in Nagy-Reis et al. (2020). |
|  | bSims: Bird Point Count Simulator | <https://peter.solymos.org/bSims/> |  |  | “The goal of the package is to:  test statistical assumptions,  aid survey design,  and have fun while doing it!  Design objectives:  small (point count) scale implementation,  habitat is considered homogeneous except for edge effects,  realistic but efficient implementation of biological mechanisms and observation process,  defaults chosen to reflect common practice and assumptions,  extensible (PRs are welcome).” |
| Data/Database | Ecological Data Wiki | <https://ecologicaldata.org/find-data> |  |  | The site is a source for finding ecological datasets and quickly figuring out the best ways to use them. The idea is to use the collaborative knowledge and effort of the entire ecological community to compile this information rather than relying on each scientist to contribute information for their own studies. Just think of it as the Wikipedia of ecology data. |
| Shiny for Python | Location distance calculator | <https://shiny.posit.co/py/templates/map-distance/> |  |  |  |
|  | Animal Home Range Estimation in R | <https://www.youtube.com/watch?v=dsPsRPZiOC0> |  | Ecological Applications in R, Apr 14, 2021 | Minimum convex polygon (MCP) and kernel density estimation (KDE) methods for calculating animal home range in R. |
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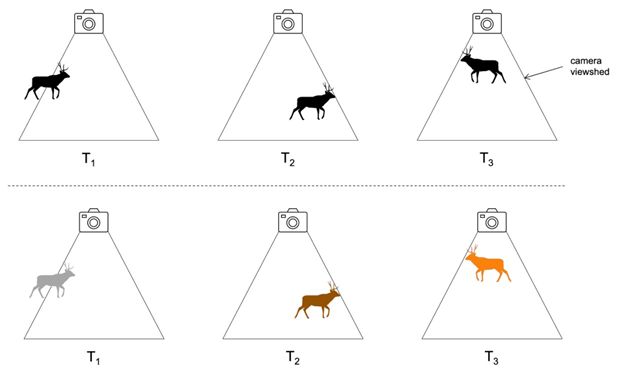
**notes**

* Capture-recapture technique (HIGHER) (<https://www.youtube.com/watch?v=Diq4A7QGknM>)

## (#i\_viewshed\_dens\_est)=

# Viewshed density estimators

**Viewshed density estimators:** Methods used to estimate the abundance of unmarked populations from observations of animals that relate animal observations to the space directly sampled by each camera’s viewshed (Moeller\_et\_al\_2023); they result in viewshed density estimates that can be extrapolated to abundance within broader sampling frames (Gilbert\_et\_al\_2020; Moeller\_et\_al\_2023).



gilbert\_et\_al\_2019\_fig3.png

## # STE/TTE/IS

**notes**

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

are distributed following a Poisson distribution at the camera level. For elk on a small spatial and temporal scale, this is a relatively realistic approximation of movement, but it may not apply to all species. It is worth noting that the REM and SC models make explicit assumptions about animal movement as well ({{ ref\_intext\_rowcliffe\_et\_al\_2008 }}, Royle\_et\_al\_2014). Further simulations would be useful in determining how robust these methods are to violations of this assumption, especially by social or

* {{ ref\_intext\_moeller\_et\_al\_2018 }} – TTE / STE / IS -- Animals should be neither attracted to nor repelled by the cameras, so sites should be unbaited and minimally disturbed.

## (#i\_mod\_c\_autocorr)=

# Pseudoreplication + Spatial autocorrelation

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| --- | --- | --- | --- | --- |
| Question: | | | | |
| **Overview** | | | | |
| **Advanced**  Spatial autocorrelation (i.e., the tendency for sites that are close together to be more similar) may occur when multiple cameras are placed nearby (such as in clustered, paired or array sampling). Spatial autocorrelation is a form of pseudoreplication (Hurlbert, 1984; when observations are not statistically independent but are treated as if they are) and can be problematic because it can artificially inflate or diminish ecological effects. The degree to which this is a problem will depend on the Target Species (i.e., how far they can travel may dictate the distance at which another camera is too near) and the modelling approach. In these cases, users should consider an analytical framework that accommodates autocorrelation to avoid issues of spatial pseudoreplication (Hurlbert, 1984) and false conclusions (Ramage et al., 2013) (e.g., using random effects [Wearn & Glover-Kapfer, 2017] or spatial autoregressive models [Kelejian & Prucha, 1998]).  Note that pseudoreplication (Hurlbert, 1984) can also occur over time (e.g., if camera locations are sampled repeatedly to obtain detection rates as repeated counts, or if the inter-detection interval is too short for a subsequent detection to be truly independent of the first detection). | | | | |
| **Figures & Videos** | | | | |
| A diagram of a diagram  Description automatically generated with medium confidence  ```{figure} ./images/Zuckerberg-et-al\_2020\_Fig1.png  :align: center  `````` | | | A screenshot of a computer screen  Description automatically generated ```{figure} ./images/zuckerberg-et-al\_2020\_fig3.png  :align: center  ``` | |
|  | | |  | |
| **Analytical tools & resources** | | | | |
| **Name** | **Link** | **Reference** | | **Additional\_info** |
|  |  |  | |  |
|  |  |  | |  |
| **References**  (Van Dooren 2016)  Ramage et al., 2013  (Zuckerberg et al., 2020)  (Wearn & Glover-Kapfer, 2017) | | | | |

**notes**

## (#i\_mod\_approach\_assumpt)=

# Analysis overview - Modelling approach + Model assumption

|  |  |  |  |
| --- | --- | --- | --- |
| **Overview**  **Model assumption:** Explicitly stated (or implicitly premised) conventions, choices and other specifications (e.g., about the data, wildlife ecology/behaviour, the relationships between variables, etc.) on which a particular modelling approach is based that allows the model to provide valid inference.  **Modelling approach:** The method used to analyze the camera data, which should depend on the state variable, e.g., occupancy models [MacKenzie et al., 2002], spatially explicit capture recapture (SECR) for density estimation [Chandler and Royle, 2013], etc. and the target species. | | | |
| **Advanced** | | | |
| **Figures & Videos** | | | |
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| **Analytical tools & resources** | | | |
| **Name** | **Link** | **Reference** | **Additional\_info** |
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| **References** | | | |