Remote Camera Decision Support Tool – Recommendation Report

**Version:** v0.1 (Demo)

**Date obtained:**

## Question summary

(note, this is just example layout --- will pull full list of questions; will want to keep list of all questions even if not posed. This is from perspective of versioning)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Level of design** | **Question** | **Potential options** | **Field** | **Question posed\*** | **User answer** |
| Objectives & Resources | Are you looking to design a new remote camera project, or analyze data that was already collected? | - Design a new remote camera project  - Analyze data that was already collected | Entry point | TRUE | Design a new remote camera project |
| Objectives & Resources | What state variable do you hope to measure? Select "Unknown" if you're not sure. | - Species inventory  - Species diversity & richness  - Occupancy  - Relative abundance  - Absolute abundance  - Density  - Vital rates  - Behaviour  - Unknown | State variable | TRUE | Occupancy |
| Objectives & Resources | Do you have a limited number of cameras?  If so, how many? | - YES; [numeric]  - NO | Number of cameras | TRUE | 40 |
| Study area & Site selection constraints | Do you plan to use data from multiple study areas? | - YES  - NO | Single vs multiple study areas | TRUE | Multiple |
| Study area & Site selection constraints | Will you place Camera Locations across a known density gradient? | - YES  - NO | Cameras placed on density gradient | FALSE | - |
| Study area & Site selection constraints | Do you plan to strategically place camera locations to include multiple habitats or otherwise differing categories (e.g., different land cover types, or near vs. far from a disturbance)  If so, how many covariates? (e.g., 5 different habitat types would be 5 covariates) | YES; [numeric]  NO | Stratification by chosen number of covariates | TRUE | Stratified by 4 covariates |
| Duration & Timing | Is there a minimum number of months you can sample in total?  If so, how many? | - YES  - NO | Minimum survey months | TRUE | NO |
| .... | ..... |  |  |  |  |

**\* Question posed:** whether the question was posed to the user based on their previous selections

## Appropriate modelling approaches

(why a model was/was not appropriate)

|  |  |  |  |
| --- | --- | --- | --- |
| Occupancy |  |  |  |
| num\_cams | num\_cams\_avail>=40 |  | >= 40 (minumum) |
| cam\_independent | cam\_independent | TRUE |  |

**Model assumptions (not sure where to put this but think its important to include somewhere in the report)**

* Occupancy is constant[3](abundance is constant)4
* Camera locations are independent4
* Detections are independent4
* The probability of occupancy and detection are constant across all camera locations within a stratum or can be modelled using covariates4
* Species are not misidentified4

## Sampling design recommendations

### Modelling approach – Occupancy

#### Recommendations

(simplified view of recommendations)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Camera arrangement | Camera spacing | Number of cameras | Camera days per camera location | Total number of camera days | Survey duration | References |
| **Ideally random** | ≥ 1 km is typical | ≤ 30 | **≥ 30** | Species-dependent | Species-dependent |  |
| Targeted |  |  |  |  | **Ideally < 6 months** |  |
| Clustered |  |  |  |  |  |  |
| Stratified random |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

#### Rationale

(some of these would never be shown together)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Row Labels | Camera arrangement | Camera spacing | Number of cameras | Camera days per camera location | Total number of camera days | Survey duration |
| NULL | Ideally random | 3 | Ideally ≥ 100 |  | Species-dependent | Species-dependent |
|  | Targeted |  | > 60; species-dependent |  | > 1200 | Ideally < 6 months |
|  | Clustered |  |  |  | > 1000 |  |
|  | Stratified random |  |  |  |  |  |
|  | Species-dependent |  |  |  |  |  |
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|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| data\_hr=="FALSE" |  | ≥ 1 km is typical |  |  |  |  |
| **data\_hr=="TRUE"** |  | **> [numeric entry; home range diameter]** |  |  |  |  |
| **sp\_detprob\_cat %in% c("med", "high")** |  |  |  | **≥ 30** |  |  |
| sp\_detprob\_cat=="low" |  |  |  | 80-100 |  |  |
| sp\_detprob\_cat=="low" OR sp\_rarity="rare" |  |  |  |  | > 5000 |  |
| sp\_rarity=="common" |  |  | ≤ 30 |  |  |  |
| sp\_rarity=="less common" |  |  | 30-60 |  |  |  |
| sp\_rarity=="rare" |  |  | > 150 |  |  |  |
|  |  |  |  |  |  |  |

## Analysis considerations

|  |  |
| --- | --- |
| **Because you chose…** | **Consider the following in your analysis** |
| Multiple study areas | include latitude, topography, temp, and or NVDI as covariates in analysis (Hofmeester et al., 2019). |
| Multiples study seasons | correct for multiple seasons by including season or temperature as covariates (Hofmeester et al., 2019). |
| Bait/lure placed at a subset of cameras | if placing bait/lure at a subset of cameras, correct for variability in bait/lure effects by including bait/lure presence as a covariate. |
| Variable camera settings | include each setting that differs as a covariate. |
| Targetting multiple features | correct for variable placement on detection probability by including FOV Target Feature "type" as a covariate. |