ReadMe - V_rodents_snaptrapping_individuals_regional

Dataset responsible: Dorothee Ehrich
(dorothee.ehrich@uit.no)

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1   Protocol

Snap trapping of small rodents has been conducted using the small quadrat method following the COAT protocol 'protocol_snap_trapping_of_rodents'.

1.1   Timing of sampling and changes in that

The trapping is conducted over two trapnights (i.e. two checks) twice a year (spring and fall).

In 2004, spring trapping was conducted in the last week of June for Bekkarfjord, Ifjordfjellet and Nordkynn and the first week of July for Stjernevann, Vestre Jakobselv and Komagdalen; and fall trapping was carried out in the second half of September.

From 2005 onwards, spring trapping was in general carried out in the last decade of June, and fall trapping in the first half of September. Between 2008 and 2016, spring trapping in Ifjordfjellet was carried out in the first week of July. In 2017, due to very late snow melt, spring trapping was carried out from 12 to 17 July.

1.2   Spatial layout of sampling and changes in that

The trapping is carried out along altitudinal gradients following roads or ATV tracks. Plots are placed in groups of 2 or 3. All plots are placed in sites with structuring micro-topography making them attractive to small rodents.

There have been some changes in plots over the years. In 2009, several plots in Nordkynn, Bekkarfjord and Ifjodfjellet were excluded. Several plots had to be moved because of road construction and were replaced by a plot with the same name extended by a b (hog6, hog6b).

Since 2017 3 plots from the intensive snap trapping design from Ifjodfjellet were included into the regional trapping series: st2h, st3h and st3k. In spring 2018, by mistake trapping was carried out on the plots st4h and st4k instead of st2h and st3h.

More detailed information about which sites were included in the study design can be found in the auxialiary file 'V_rodents_snaptrapping_individuals_regional_aux.txt'.

2   Description of the dataset

The dataset includes three different types of files and all files are saved as ;-separated txt-files:

- One data file per year (`_YEAR.txt`)
- One coordinate file with coordinates of all sites (`_coordinates.txt`)
- One auxiliary file with information about which sites are included in the study design (`_aux.txt`)

2.1 V_rodents_snaptrapping_individuals_regional_YEAR.txt

These files contain individual based snap trapping data, meaning that each row represents one trapped individual. The following species and species groups are included in the dataset:

```
 [1] "Aves"
 [2] "Cricetidae"
 [3] "Lemmus lemmus (Norwegian lemming)"
 [4] "Microtus oeconomus (Tundra vole)"
 [5] "Mus erm"
 [6] "Myodes rufocanus (Grey-sided vole)"
 [7] "Myodes rutilus (Northern-red-backed vole)"
 [8] "NANA"
 [9] "Neomys fodiens (Pygmy shrew)"
[10] "Ranidae"
[11] "Sorex araneus (Common shrew)"
[12] "Sorex caecutiens (Masked shrew)"
[13] "Sorex minutus (Water shrew)"
[14] "Sorex sp (Shrew)"
```

Example of the first rows of the data files:

```
  sn_region sn_locality sn_site sc_type_of_sites_ecological t_year      t_date
1  varanger bekkarfjord    bfg1                   greysided   2004 2004-09-18
2  varanger bekkarfjord    bfg3                   greysided   2004 2004-09-18
3  varanger bekkarfjord    bfg5                   greysided   2004 2004-09-18
  t_season t_session v_species v_individual_id  v_sex v_reproductive_status
1    fall         1   myo_ruf            <NA>   male                scrotal
2    fall         1   myo_ruf            <NA> female                   open
3    fall         1   myo_ruf            <NA> female          nonperforated
  v_lactation_status v_embryos v_weight v_samples v_observer v_comment
1               <NA>        NA       29      <NA>       <NA>      <NA>
2          lactating        NA       28      <NA>       <NA>      <NA>
3               <NA>        NA       15      <NA>       <NA>      <NA>
```

Description of the columns included in the data files:

Column name	Description	Possible values
sn_region	Study region	varanger
sn_locality	Locality (within region)	bekkarfjord, ifjordfjellet, komagdalen, nordkynn, stjernevann, vestre_jakobselv
sn_site	Unique Site ID	e.g. bfg1, bfl10, bfl9, ifg2, ifg8, ifl8, k12, k8, hog3, hog9
sc_type_of_sites_ecological	Habitat type	greysided, lemming, NA
t_year	Sampling year	e.g. 2005
t_date	Sampling date	YYYY-MM-DD
t_season	Sampling season	fall, spring, NA
t_session	Trapping night	1, 2, NA, 3
v_species	Species (or larger taxa if species cannot be identified)	myo_ruf, sor_sp, aves, mic_oec, lem_lem, cricetidae, sor_ara, NA, myo_rut, neo_fod, sor_cae, ranidae, sor_min, mus_erm
v_individual_id	ID of the individual (e.g. if a sample was taken)	[character]
v_sex	Sex of rodent species (not registered for shrews and birds)	male, female
v_reproductive_status	Reproductive satuts of rodents (not registered for shrews and birds)	scrotal, open, nonperforated, pregnant, closed, abdominal, perforated, postscrotal
v_lactation_status	Lactation status of female rodents	lactating, nonlactating, postlactating
v_embryos	Number of embryos of pregnant female rodents	[numeric]
v_weight	Weight of rodents (not registered for shrews and birds)	[numeric]
v_samples	Sample type (if a sample was taken)	stomach, isotope, faeces, jaw (or a combination of several sample types)
v_observer	Initials of observer	e.g. es (Eeva Soininen)
v_comment	Comments	[character]

2.2 V_rodents_snaptrapping_individuals_regional_coordinates.txt

This file contains the coordinates of all sites included in the study desgin. Coordinates are given in decimal degrees and UTM 33 (WGS 84).

Example of the first rows of coordinate files:

```
  sn_site     e_dd     n_dd  e_utm33 n_utm33
1    bfg1 27.27579 70.61200 952095.3 7880023
2    bfg2 27.27662 70.61322 952097.8 7880164
3    bfg3 27.27468 70.61378 952014.8 7880210
```

2.3 V_rodents_snaptrapping_individuals_regional_aux.txt

This file contains further information about the dataset such as the years when sites were first included in the study design and when sites were excluded from the study design.

Example of the first rows of auxiliary files:

```
  sn_region sn_locality sn_site sn_site_old year_first year_last v_comment
1  varanger bekkarfjord    bfg1          NA       2004        NA      <NA>
2  varanger bekkarfjord    bfg2          NA       2004        NA      <NA>
3  varanger bekkarfjord    bfg3          NA       2004        NA      <NA>
```
* year_last is NA if the site is still included in the study design

3 Data cleaning and formatting

Rawdata from 2004 to 2018 has been cleaned and formatted according to the requirements of the COAT dataportal by Ragnhild Bjørkås and Dorothee Ehrich. From 2019 onwards, rawdata is cleaned and formatted in two steps.

1. Data cleaning: Rawdata (individual data and trapping dates) are entered in excel-templates and are quality checked using the script `01_check_raw_data_snap_trapping_regional_COAT.R` . The script checks that all entries are correct (e.g. site_id, species names), possible errors are corrected in the script and the cleaned data is saved as a txt-file.

In particular the script checks for:

- Correct spelling of all variables.
- **t_date:** Correct format (yyyy-mm-dd), dates in other formats are reformatted.
- **v_embryos** and **v_weight:** Outliers in number of embryos and weight.
- **v_observer:** Correct format (initials and lowercase letters), observer is reformatted e.g. if full names were used.
- **v_comment:** Correct spelling and format (lowercase letters and english). Comments are edited or translated if necessary.
- Matching number of observations in the different columns.
- The columns are renamed according to the the requirements of the COAT dataportal.

All corrections that go beyond simple typing mistakes and lead to differences between rawdata and cleaned data are double-checked in the fieldbooks and a comment is added.

2. Data formatting: The script `02_produce_reformatted_snap_trapping_data_files_regional_COAT.R` is used to produce the three datasets that are derived from snaptrapping data. The files will be formatted according to the requirements of the COAT data portal, will be saved as ;-separated txt-files and will be uploaded to the COAT data portal:

- `V_rodents_snaptrapping_individuals_regional_YEAR.txt`
- `V_rodents_snaptrapping_abundance_regional_YEAR.txt`
- `V_rodents_snaptrapping_trapstatus_regional_YEAR.txt`