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Bird point counts associated with willow thickets

Motivation

The community of passerine birds constitute an important component of the vertebrate biodiversity associated with willow thickets in tundra. The community composition and diversity of passerine birds is a target in the tall-shrub module of COAT.

State variables:

Bird point counts are used to estimate the following state variables:

Community composition and diversity of birds in tundra (V36)

Reference to method:

Manual bird censuses are conducted by a single observer and are based on both visual detections and bird song activity during the breeding season. The method is described in detail in Henden et al. 2013 (PlosOne).

Spatial study design

The bird point counts are conducted as part of the Varanger intensive design, which comprises a total of 48 sampling sites along willow thickets and some in meadows where willows have disappeared (section Sandfjorddalen). These are nested in thirteen river valley sections, where each river valley section has 1-5 sites (see table below).

Design within site:

Sampling at all sites is conducted at a fixed observation point which is the same GPS point as the GPS point for the intensive sites. Locating the points is done by using a handheld GPS, for which an accuracy of a few meters is sufficient. All coordinates can be found in the coordinate file included in the dataset

The complete list of siteIDs included in the current data collection is:

sn_locality	sn_section	sn_site
komagdalen	komagdalen_ovre	ko_ko_m_a, ko_ko_m_b, ko_ko_m_c, ko_ko_m_d, ko_ko_m_e
komagdalen	komagdalen_midtre	ko_km_m_a, ko_km_m_b, ko_km_m_c, ko_km_m_d ko_km_m_e
komagdalen	komagdalen_nedre	ko_kn_m_a, ko_kn_m_b
komagdalen	sandfjorddalen	ko_sa_m_a, ko_sa_m_b, ko_sa_m_c, ko_sa_m_d, ko_sa_m_e, ko_sa_m_f
vestre_jakobselv	torvhaugdalen	vj_to_m_a, vj_to_m_b, vj_to_m_c, vj_to_m_d
vestre_jakobselv	bearaveaijohka	vj_be_m_a, vj_be_m_b, vj_be_m_c, vj_be_m_d, vj_be_m_e
vestre_jakobselv	jakobselv	vj_vj_m_a, vj_vj_m_b, vj_vj_m_c, vj_vj_m_d1
ifjordfjellet	eastordalen	if_ea_m_a, if_ea_m_b, if_ea_m_c, if_ea_m_d, if_ea_m_e
ifjordfjellet	storelva	if_st_m_a, if_st_m_b, if_st_m_c, if_st_m_d
ifjordfjellet	gurrojohka	if_gu_m_a
ifjordfjellet	suolojavri	if_su_m_a, if_su_m_b
ifjordfjellet	giksjoehka	if_gi_m_a, if_gi_m_b
ifjordfjellet	iesjohka	if_ie_m_b, if_ie_m_c, if_ie_m_d

NB: See also the corresponding coordinates file attached with the bird point count data files.

Temporal study design

The point counts started in 2005 in the original 37 intensive sites at Ifjordfjellet, Komagdalen and Vestre Jakobselv. In 2009 and onwards, sections komagdalen_nedre, jakobselv, suolojavri and gurrojohka was removed from the design. In 2010 and 2011, giksjoeka and iesjoeka and sandfjorddalen was sampled as part of a separate study (Ims and Henden 2012), but not sampled either before or after. In 2016, locality Ifjordfjellet was removed entirely. Hence, the bird counts was performed each year from 2005-2008, a few points in 2009, then in 2010 and 2011 and finally in 2016.

The plan is to conduct point counts every 5 years. The censuses are conducted during the early to middle part of the bird breeding season in Tundra, when song activity is at its peak. This is during the first week of July. At this time, all sites are visited at least three times within a 3-day period, to conduct at least three repeated censuses with the exact same methodology. Up to two visits are allowed per site per day, if the visits to a given site are separated by at least three hours. Visits should ideally take place between 19:00 and 23:00 in the evening and between 05:00 and 09:00 in the morning, as birds sing most actively during these periods. The timing of visits should be alternated between sites, to avoid that some sites are consistently visited earlier or later in the day than others.

Procedure

To conduct a bird count census, the observer walks to the observation point and waits inactively for 5 minutes, to allow the local bird community to settle down after the disturbance. Subsequently, there is a 15-minute observation period, when all unique individual birds that can be seen or heard from the sampling point should be recorded. Different individuals of the same species should be recorded separately, to obtain an individual count for each species. Observations should be grouped into the following distance categories: 0-50 m, 50-100 m and >100 m from the observer. Distances are judged subjectively. Hence, the observer has to calibrate the perception of distance in advance of the sampling. Note, that during heavy rain, strong winds and/or low fog, bird observations should not be conducted

Equipment needed

Handheld GPS with GPS locations for all sampling sites, waterproof notebook, pencil and binoculars.

Information recorded in the field

For each site and session, record the following:

- Date
- Name of observer
- Location and site name
- The time of the start of the observation period. Use 24h time scale.
- General weather conditions (intensity of rain, degree of clouds, sun, intensity of wind)

Number of individuals recorded per bird species per distance category and habitat (w= water, e=meadow, k=thicket, h=heath, t=transport/flying over).

Data processing

Each field worker is responsible for typing the data unless otherwise agreed with the data responsible. A template datasheet is available from John-Andre Henden. Follow the datasheet exactly; use exactly the same column names, large/small letters, factorial values. Do not add new variables or categories etc, but rather write/elaborate in the comment section. After completing a data file in excel, it should be saved as txt-file. Thereafter (unless otherwise agreed), data files are sent to the dataset responsible John-Andre Henden, who will quality-check them and store them in the COAT data portal.

If data cannot be typed continuously during the fieldwork, fieldworkers should take photos of filled pages in their notebooks at the end of each day (e.g. with a smartphone or camera) and store the photos in a safe place.

Notebooks with data that has not been typed or photocopied should not be brought back into the field due to the risk of losing the data.

Training requirements and specialized skills

The observer must be able to reliably identify all passerine bird species that normally occur in the Tundra areas of Varanger (see appendix), based on their song and appearance. This specialized skill requires substantial independent training by the observer in advance of the field season, and hence cannot be taught by COAT personnel during fieldwork.

References

Henden, J.-A., Yoccoz, N. G., Ims, R. A. & Langeland, K. (2013) How Spatial Variation in Areal Extent and Configuration of Labile Vegetation States Affect the Riparian Bird Community in Arctic Tundra. PLoS ONE, 8, e63312.

Appendices

See survey site coordinates in separate file.