Template for a writing a data collection protocol

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Long-tailed skua monitoring in 2 by 2 km sampling areas

Motivation

The Long-tailed skua is the main avian predator in the study system. It is regarded as a small rodent specialist during the breeding season in the study area, but may utilize different prey species (e.g. bird chicks, insects). Hence, as part of the small rodents module, we want to monitor the number of skua pairs that defend territories and attempt breeding as well as their investment in offspring (number of chicks reared). The numerical response and density in relation to prey density, predominantly small rodents will be recorded. Prediction: as the density of prey species increase the amount of territorial pairs that invest in offspring will increase.

State variables: Used to assess number of territorial pairs and breeding density and production of Long-tailed skua. As a rodent-dependent predator during the reproductive months, skua breeding numbers may be used as indirect evidence of small rodent abundance and change during the summer.

Reference to method: the method is based on a parallel sweep method, based on a design of 9 2 km long transect lines with distances of 250 meters, covering a sampling area of 2 by 2 km (see figure 1).

Spatial study design

Monitoring of long-tailed skua will be conducted after a parallel sweep method, within a sampling area of 2 by 2 km, with 9 transect lines with distances of 250 meters, each with a length of 2 km (Figure 1). We conduct the monitoring of each sampling area 2-4 times (i.e. sessions) during the breeding season to monitor development in breeding performance and for robust assessment of territories. To increase detection of territories we walk the transect-areas in the opposite direction at each consecutive session.

The intensive design includes originally nine (2 by 2 km) sampling areas, with three in each of the localities; Ifjordfjellet, Komagdalen and Vestre Jakobselv. In 2009, one sampling quadrat was removed from each locality, resulting in a remaining six sampling quadrats, two in each locality. Locality Ifjordfjellet was ended in 2016, while for the two remaining localities monitoring was conducted until 2018. Note that the sampling quadrats are connected to the different sections in the three localities.

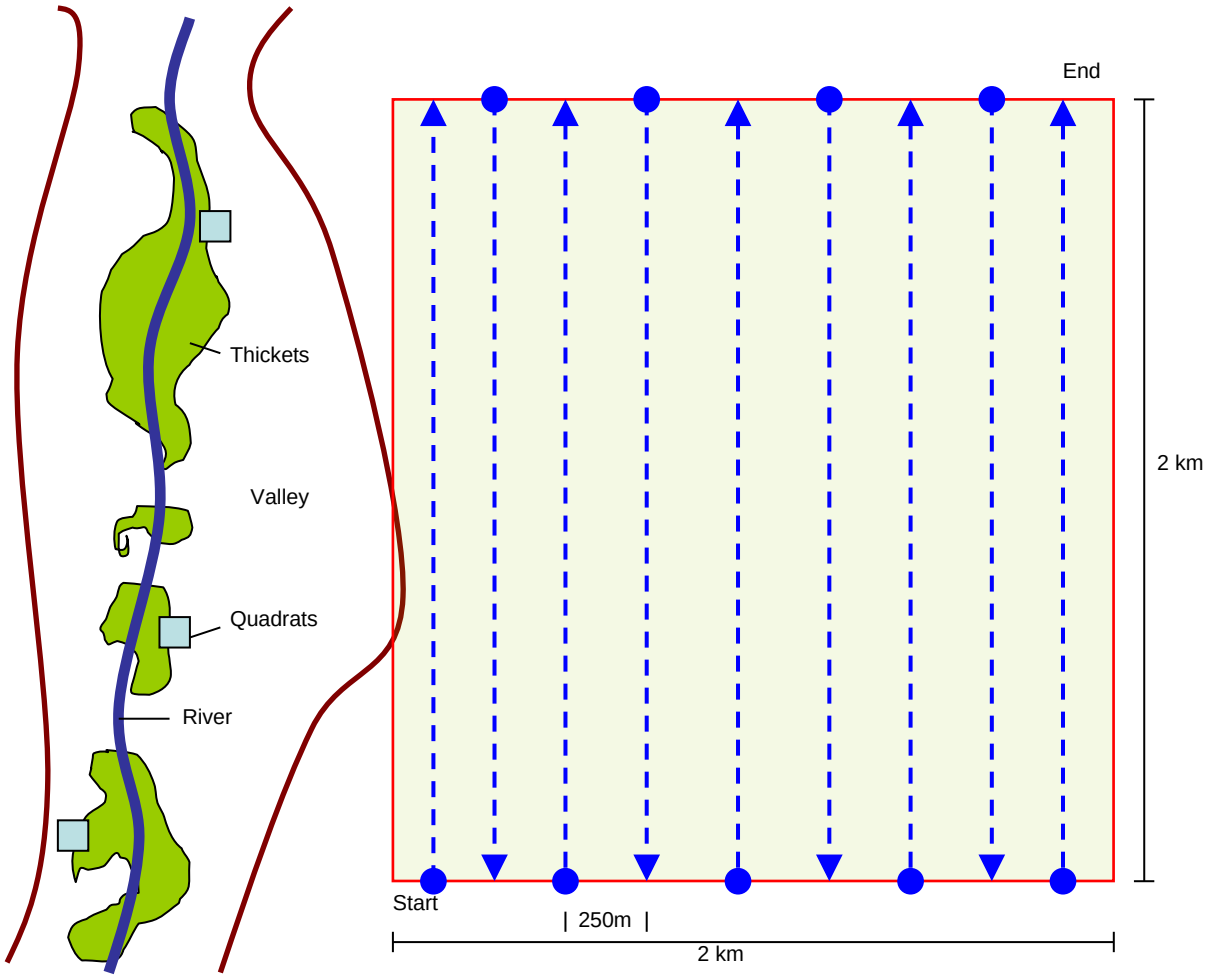

Figure 1 Design for the monitoring of long-tailed skua at each transect area.

Temporal study design

Data sampling happens during early summer at more or less fixed dates. Sampling is conducted at 3-4 sampling occasions (i.e. sessions) each year.

Procedure

The total number of defended skua territories and the number of eggs/chicks are recorded at every sampling occasion, Binoculars are used to look ahead for increased detection of pairs or of the location of potential nest or chicks. A GPS coordinate is taken and written down at the nest or where chicks are found, or at the center of the territory (most intensively defended by the skuas) if nest or chicks are not found. If the pair seems territorial, the observer may spend up to 30 minutes searching for any eggs or chicks (however, if the weather is bad (i.e. strong rain), the search is delayed until next session.

Equipment needed

Binoculars, Field journal and pencil, GPS

Information recorded in the field

For each sampling session, note “skua transect”, the date, locality and weather conditions (e.g. rain, wind etc.)

For each detection of territorial skuas record and write the GPS location in the field journal, together with an assessment of territoriality (i.e. territorial or not territorial), number of eggs and or chicks found. If possible look for colour rings (yellow with black imprint) on the adults and note the code is any.

Data processing

All field observers are in charge of typing their data into digital format (unless otherwise agreed with the data set responsible).

Template datasheet is available from John-Andre Henden. Follow the datasheet exactly; use exactly the same column names, large/small letters, for factorial values do not add new categories etc.

After completing a data file in excel (one datafile per year and locality), it should be saved as txt-file. Thereafter (unless otherwise agreed), data files are sent to dataset responsible (John-Andre Henden) who will quality-check them and store them in COAT data portal.

Training requirements and specialized skills

Field workers must be able to reliably identify long-tailed skuas from other bids species, such as the Arctic skua. New field observers must work in teams with more experienced observers until this skill has been duly acquired.

Appendix: Long-tailed skua identification

Figure 2 Long-tailed skua laying on a small mound. Note the long tailfeathers and the white chest.

Figure 3 Long-tailed skua flying. Note the long narrow tail feathers and the white chest.

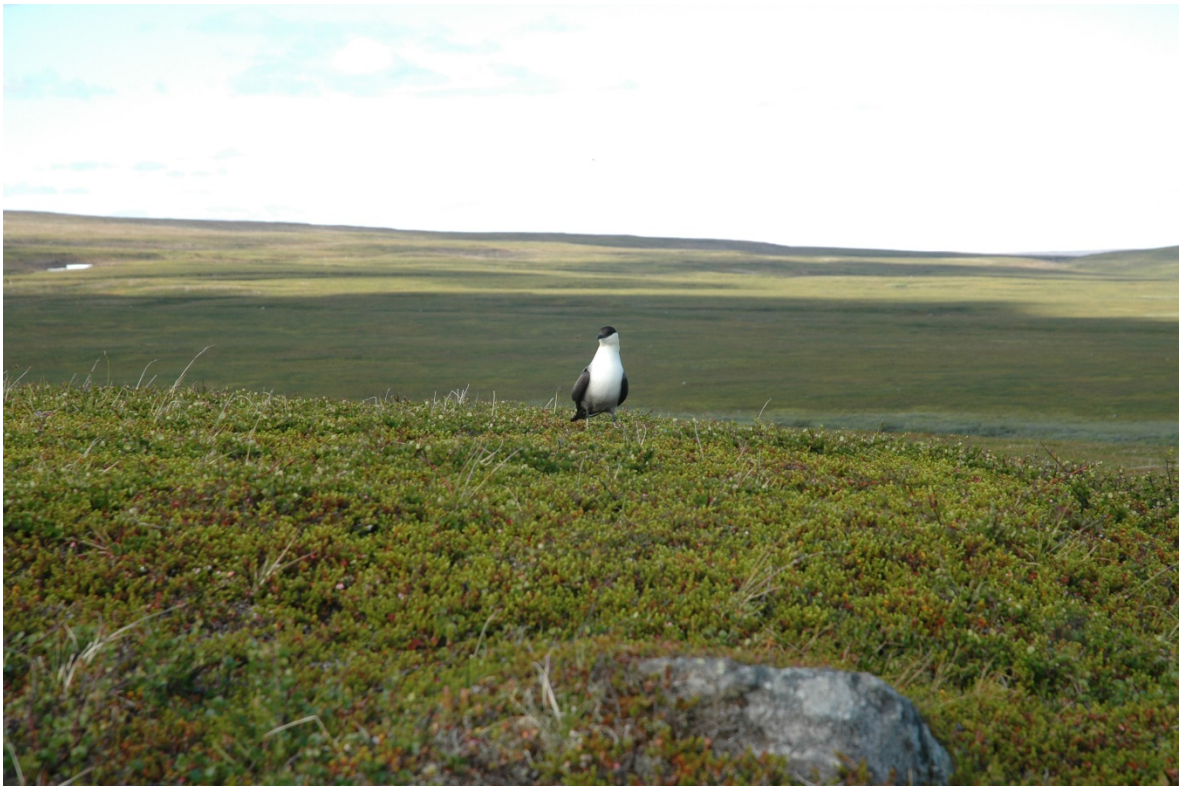

Figure 4 Long-tailed skua standing. Note the white chest with no brown bands across

General notes