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Point transect sampling of Svalbard rock ptarmigan males in spring

State variables:

Point-transects sampling data of the Svalbard rock ptarmigan male in spring within the intensive study design is used for the state variable: Svalbard rock ptarmigan yearly occupancy and abundance of territorial males in spring (state variable S13).

The state variable is central for the ptarmigan Svalbard module, but also used by the arctic fox module (ptarmigans are prey for arctic foxes) and geese module (competition for food).

Reference to method: We collect data using a point transect sampling design (Buckland et al 2001; Rosenstock et al. 2002), adjusted to the Svalbard rock ptarmigan data (Pedersen et al. 2012).

Spatial study design

Point-transect sampling of territorial Svalbard rock ptarmigan males is carried out in the COAT Svalbard intensive localities on Nordenskiöld Land, and includes Hanaskogdalen, Adventdalen with side valleys, DeGeerdalen, Eskerdalen and Sassendalen. Up to 150 non-random and random survey points, separated by a minimum distance > 500 m are visited.

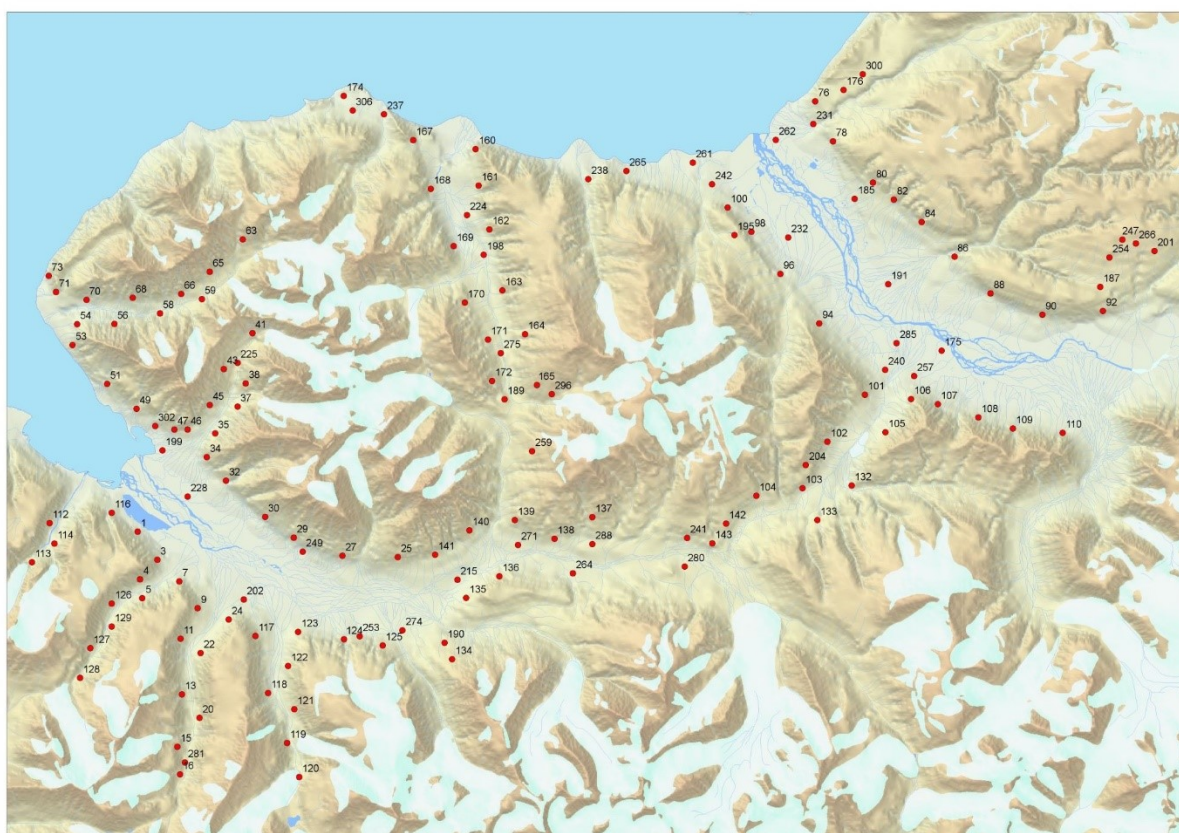


Figure 1. Map showing the Svalbard rock ptarmigan study area, non-random and random survey points on Nordenskiöld Land (2000-onwards).

All coordinates can be found in the coordinate-file: S_ptarmigan_counts_coordinates.txt on the COAT data portal.

Temporal study design

Four fieldworkers on 4 snowmobiles survey up to 150 previously set survey points preferably three times during 4 weeks in April every year.

Procedure

1. Drive or walk to the fixed point. Start the observation after settling down and be concentrated to observe the males.
2. Observation period is 15 minutes.
3. Use the binoculars in an active way during the observation. When you have discovered a rock ptarmigan with the binoculars – keep an eye on it until all data is recorded.
4. Fill in the field in the field sheet prior to starting the observation and during the entire observation period.
5. Count all ptarmigan males and females, filling in information on each observation to the field sheet. For males, record distance to the point/area where the individual was first spotted on the ground (at ease, grazing, or various activity). If the male arrived flying, this is the first point where it landed. Do this using the distance-binoculars.
6. If the distance is not possible to measure do the following:
 - After the observation period is over, you may walk or drive to the point where you observed the male and measure the distance back to the point.
 - The GPS is used to determine where the male sat/was grazing when you first spotted it. Mark the position on the display of the GPS and you will see the distance in the GPS. NB GPS datum needs to be UTM WGS 84.

Equipment needed

GPS, binoculars with laser distance measurement device, field sheet with hard cardboard under, pencil, watch, compass, snowmobile/skis, avalanche beacon, shovel, probe, rifle, flare gun

Information recorded in the field

Fill in the field registration sheet (appendix) for each point where ptarmigans are seen and/or heard.

Data processing

Data from each ptarmigan point recorded on the sheets is entered in the excel template “Datasheet for Svalbard rock ptarmigan point count.xlsx” (available from Eva Fuglei). Each ptarmigan point sheet is delivered to the field leader at the end of each field day and controlled.

Send all filled point count files to Eva Fuglei (eva.fuglei@npolar.no) and Åshild Ø. Pedersen

(aashild.pedersen@npolar.no). Also deliver all field registrations sheets to the same persons.

Training requirements and specialized skills

Observers need to be familiar with using binoculars and some experience with driving a snow mobile is good. To be red colour blind is not optimal. Field workers need to conduct the first observations together with an experienced observer.

References

Buckland, S. T., D. R. Anderson, K. P. Burnham, J. L. Laake, D. L. Borchers, and L. Thomas. 2001. Introduction to distance sampling. Oxford University Press, Oxford, United Kingdom

Rosenstock, S. S., D. R. Anderson, K. M. Giesen, T. Leukering, and M. F. Carter. 2002. Landbird counting techniques: Current practices and an alternative. Auk 119:46–53.

Pedersen ÅØ, Bårdsen BJ, Lecomte N, Yoccoz NG, Fuglei E. 2012. Monitoring low density Rock Ptarmigan Populations: Distance Sampling and Occupancy Modeling. Journal of Wildlife Management 76(2): 308-316. DOI: 10.1002/jwmg.276.

Field sheet – rock ptarmigan registration (write the year surveyed)						
Point no.		Date		Observer		Counting/reg. no
UTM E		UTM N		Start		End
Shadow	Sun	Clouded	Varying winds		Mild wind	No Wind

ID#	Time	H	S	Dist (meter)	R	F	Direction (Only males on the ground)	♀	OBS. point UTM E	OBS. point UTM N	Comment
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Tot. # male	Tot. # female	
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Comments

NB! **A)** Co-feeding ptarmigan & reindeer.

NB! **B)** Arctic fox call or sighting, write down the distance and angle.

NB! **C)** Reindeer carcass position. Take with you samples of fur, tissue (flesh/skin) from e.g. ear) in a plastic bag. Mark your name, date, place, UTM-coordinates, sex, age of animal, take a photo of carcass.

We have written the following explanation for the ptarmigan form:

EXPLANATION FOR THE PTARMIGAN FORM

Point no..	The number of the observation point
Date	Actual date the observation is made
Observer	Your initials
Registration	Write the actual number of visits at the site, 1,2 or three
UTM E	NB! GPS date must be WGS 84 6 digits
UTM N	7 digits
Start	Observation time start.
End	Observation time ended
Shadow	Most of your observation sectors are in shadows. Please note that we are normally not able to see further away than 450 meters in such conditions
Sun	Most of your observation sectors are lit by the sun
Clouded	The sky is covered by clouds
Varying winds	Here the winds are changing from no wind up to gale, please note in the comment field of the sheet
Mild wind	Almost no wind, gentle shush in your ears
NO wind	No wind, totally quiet, sound may be heard up to one kilometer
ID #	Consecutive ID-numbering of the males. Each male gets its own number. For instance; if you see four males, you should differentiate them by using no 1 to 4. You do not need to write down each time a male makes a movement. If there are 4 males observed you write down "4" in the sheet.
Time	The actual time of day you observed the male no 1. In addition you need to write down the time of day <u>each</u> time you observe or hear <u>a new male</u> you have not heard/seen before.
S	Mark an «X» for each male you see
H	Mark an «X» for each male you have heard. If you can see AND hear the male please mark an "X" in both S and H columns
Dist. (meter)	Distance measured in meters between the observer and the observed male. Use the distance binoculars

R	R means the male was resting or grazing at one point when you first observed it, Mark with an X . NB! Really important to remember
F	F means the male came flying and landed when you first observed it. Mark with an X . NB! Important to remember
Direction	Measure compass heading to the male on the ground. Use 360 degrees compass, and make sure that deviation is not added to the compass
♀	Write the number of females observed together with the male..
Obs. point UTM	<ol style="list-style-type: none"> 1. UTM position where the male rested or grazed when you first observed it. 2. UTM position where the male flew in and landed when you first observed it. <p>This only if you are not able to measure the distance with the distance binoculars. If this is because the male was so far away that the binoculars could not measure the distance you do not do this. If it is because of lack of contrast or other things, you just drive/walk to the position. Not often needed to do so.</p>
Tot. # male	At the end, Note the total number of male(s) you have heard end/or seen
Tot. # høne	At the end, Note the total number of females you have seen and/or heard
Comments	<p>For instance, the main activity of the males and females during the observation period, continuous noise from snowmobiles or other factors influencing the activity.</p> <p>Write down situations where ptarmigans and reindeers graze together and a short note about snow conditions on the ground.</p> <p>Remember to write down if the observation point is moved due to risk of avalanche (write down the new position)</p>