Large Mammal Census: Distance sampling

1. Census of larger mammals in Kuzikus is done by walking line transects for distance sampling. This method uses probability to estimate density. It assumes that animals we see directly on the line that we are walking are always detected with a 100% probability. The further away from the walking line, the less likely we are to see animals.

2. The assumptions of distance sampling are A) Animals on the line are always detected, B) Animals are detected in their initial location, prior to any movement in response to the observer and C) distances are measured correctly.

3. Maximum four observers walk at a constant pace (3.5 km/h) along the line transect (1.2km), in tandem, with one just behind the other. The front observer carries the GPS and a compass and ensures to always walk on the line. The middle observer records the angle to any large mammal observed. The rear observer uses a range finder to measure the distance to the animal observed. The project leader assists with species and sex identification.

4. If an animal is detected, its distance to the observer and the angle to the line is measured. If possible, sex and age of the individuals, number of individuals in a herd, herd structure and special features of individuals are recorded. This enables observers to distinguish between groups and animals that are seen already and avoids double-counting.

5. It is important that a measurement is made for each individual, even when they appear in groups. This is due the loose aggregations of antelopes. However, a group code to the individual is still given in order to place individuals into clusters in the analysis later if necessary.

6. In Distance, we use the perpendicular distance to the line (calculated by angle and direct distance to the animal) for the detection probability function.

Buckland, S.T. *et al.* (2001) *Introduction to Distance Sampling. Estimating abundance of biological populations*. Oxford University Press, Oxford UK.
Marques, F. *et al.* (2001) Estimating deer abundance from line transect surveys of dung: Sika Deer in Southern Scotland. *The Journal of Applied Ecology*. **38(2)**, 349-363.
Plumptre, A. (2000) Monitoring mammal populations with line transect techniques in African forests. *The Journal of Applied Ecology*. **37(2)**, 356-368.