

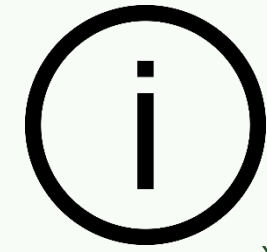
HABITAT SELECTION MODELING TO ASSESS DRIVERS OF HABITAT LOSS IN WILD REINDEER



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INTRODUCTION



Norway is home to the **last herds of wild reindeer** (*Rangifer tarandus tarandus*) in Europe. Following the rapid expansion of human infrastructure, **habitat loss and fragmentation** have become primary threats to the long term persistence of that species. Ensuring ecologically functional and suitable habitats for these herds is therefore a management priority.¹

Our study aimed to:



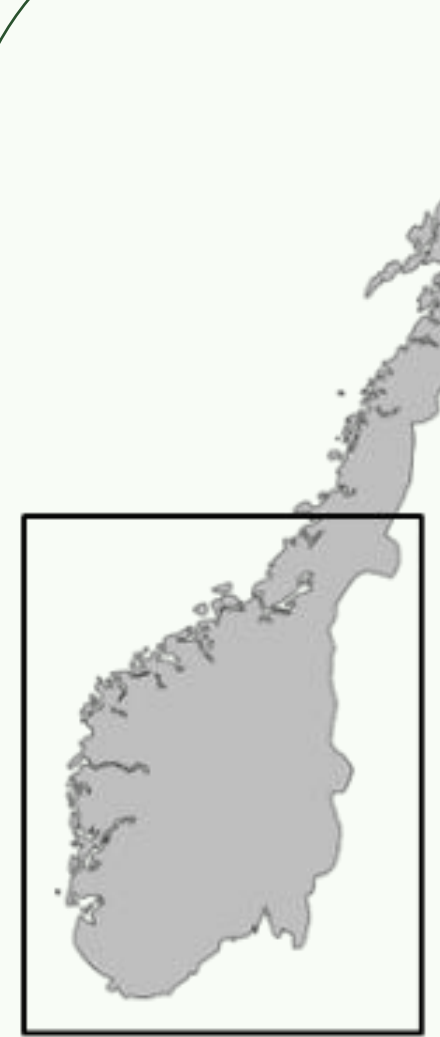
- 1 Quantify the amount of habitat loss
- 2 Assess remaining habitat quality
- 3 Identify major drivers of habitat loss

METHODS



We used **resource selection functions (RSFs)** developed for wild reindeer based on locations from **257 radio-collared females** and **25 GIS layers** representing natural and anthropogenic variables.²

We predicted reindeer habitat use in **southern Norway** and measured changes in the probability of reindeer occurrence to assess habitat loss.



Reindeer GPS data

Natural and anthropogenic variables



RSFs
Panzacchi et al., 2015



CONCLUSION



Our recommendations point out the need for prioritized and targeted mitigation of habitat loss for wild reindeer in southern Norway. More widely, we show that RSFs can deliver timely information to support land planning and conservation strategies. Our approach provides a valuable **framework for quantitative habitat loss assessment**.

RESULTS & APPLICATIONS

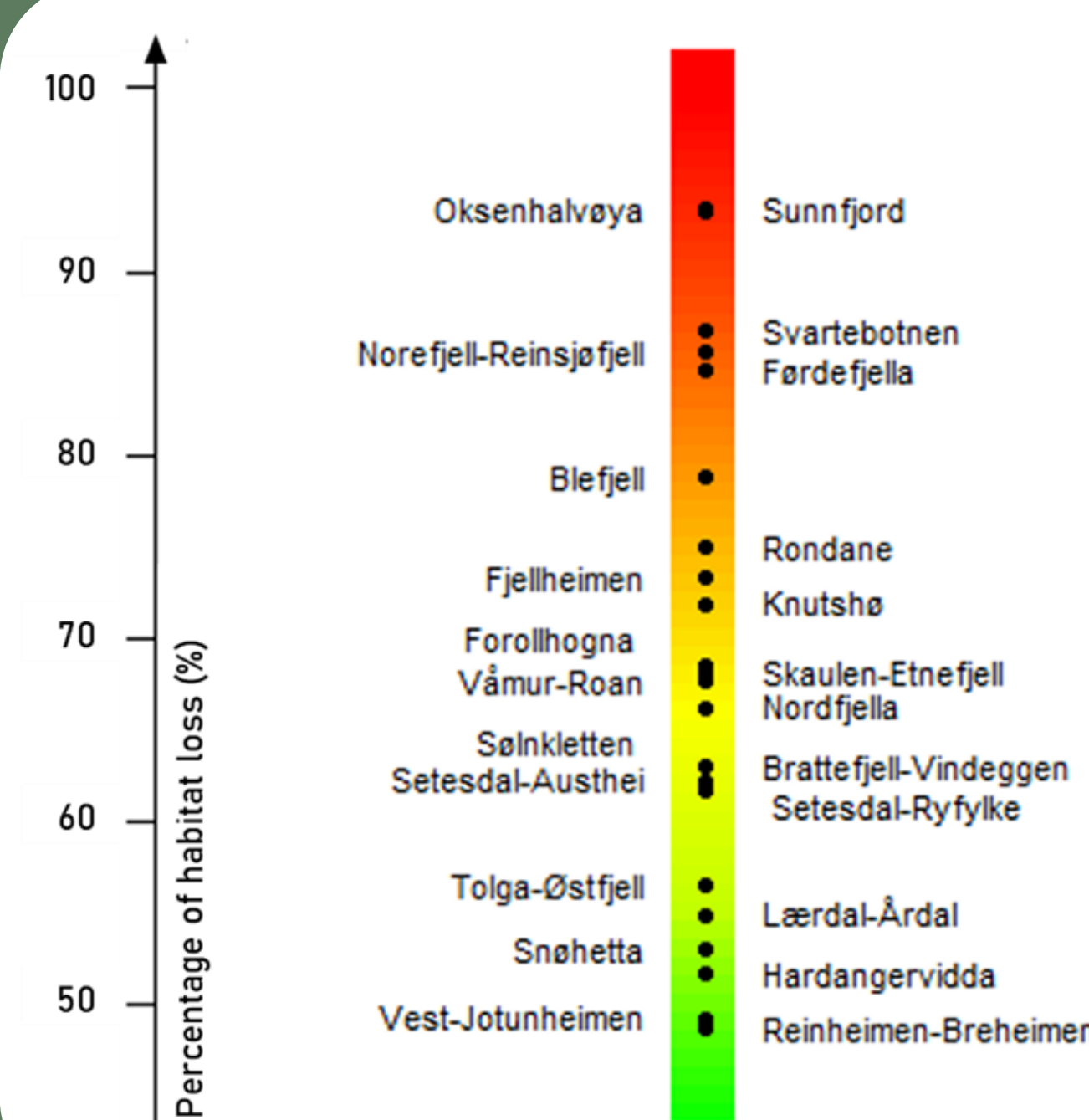


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Where to act?

Quantifying habitat loss in each herd enables to determine the level of threat they are facing and their need for management. Herds can then be ranked according to the percentage of habitat loss to allow **prioritization of mitigation actions**.

Fig. 1: Percentage of habitat loss in wild reindeer herds.

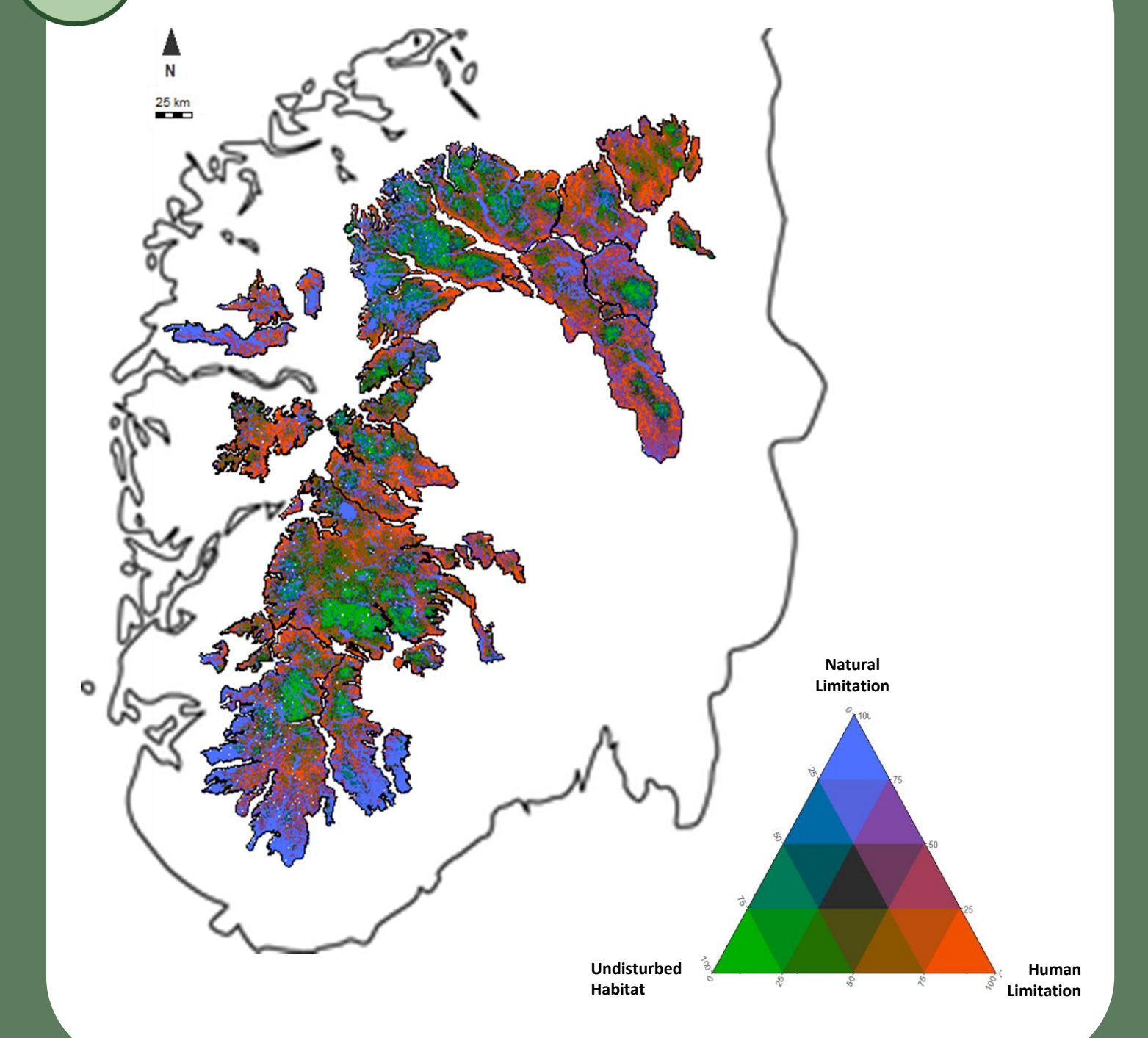


How to act?

Knowing how habitat quality is spatially distributed and rather it is limited by natural or anthropogenic causes can **guide habitat management** towards an adapted strategy, i.e. rather focused on the conservation of good habitats or the restoration of disturbed ones.

Fig. 2: Spatial distribution of habitat quality and its limiting factors in wild reindeer habitat.

2



What to act on?

3

4

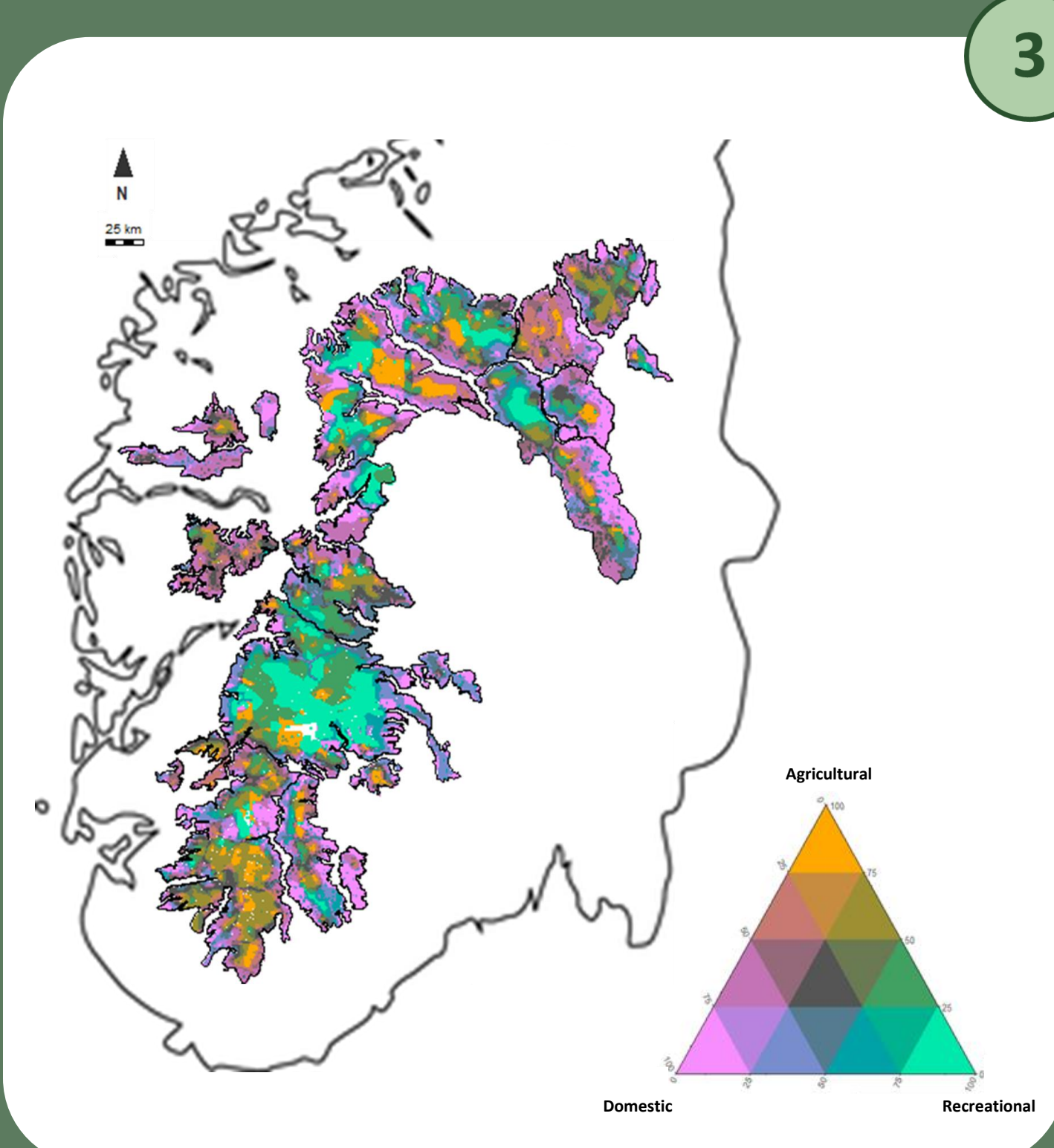


Fig. 3: Spatial distribution of major sectors of human activity driving habitat loss in wild reindeer habitat.

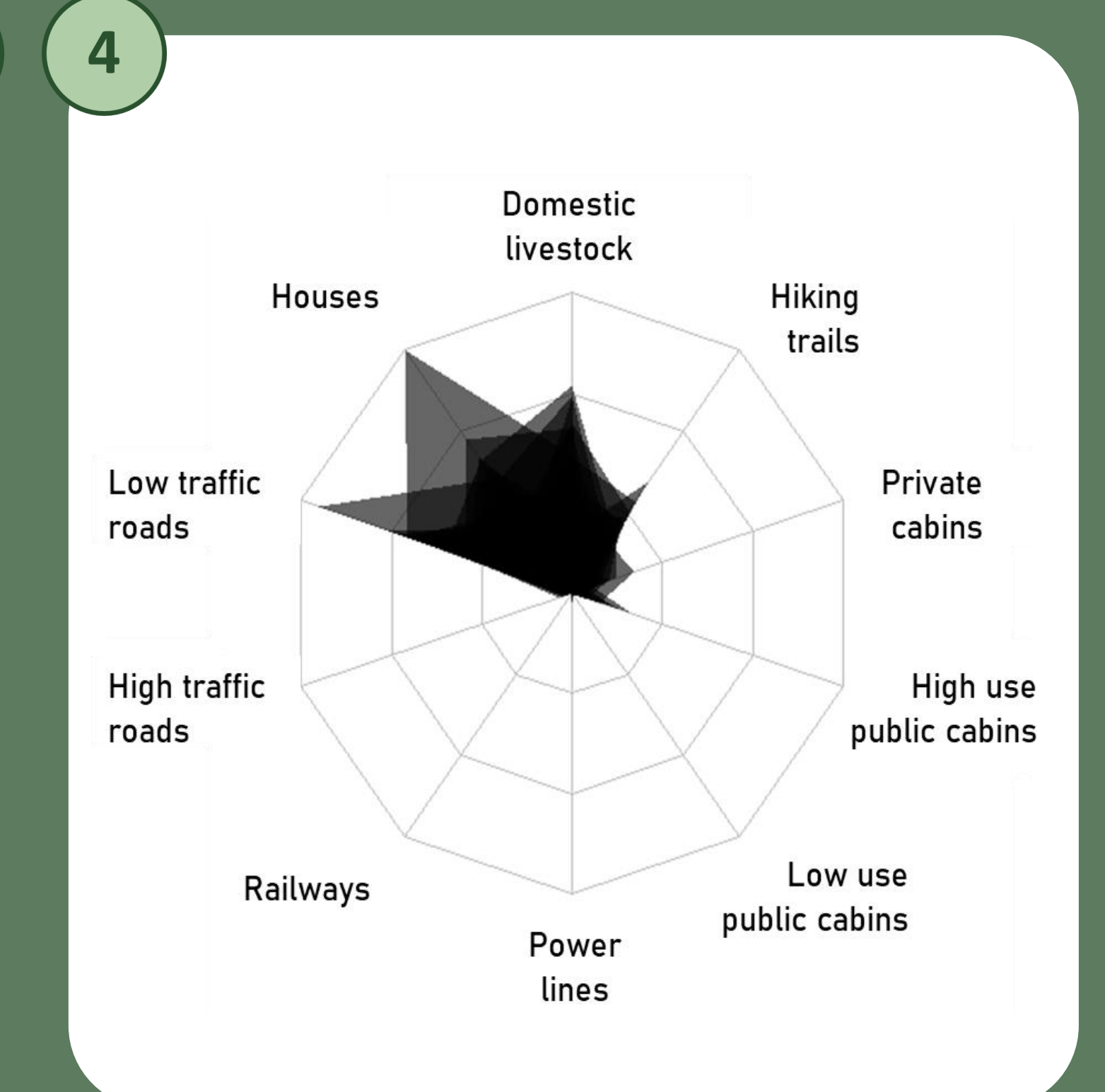


Fig. 4: Significance of each disturbance source included in the study as a driver of habitat loss for wild reindeer.

Identifying major drivers of habitat loss in the different herds supports **targeted mitigation** of disturbance sources in wild reindeer.

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¹ Kjørstad, M., Bøthun, S. W., Gundersen, V., Holand, Ø., Madslien, K., Mysterud, A., Myren, I. N., Punsvik, T., Røed, K. H., Strand, O., Tveraa, T., Tømmervik, H., & Yttrup, B. (2017). Miljøkvalitetsnorm for villrein. Forslag fra en ekspertgruppe. Norsk institutt for naturforskning (NINA). ² Panzacchi, M., Moorter, B., Strand, O., Loe, L., & Reimers, E. (2015). Searching for the fundamental niche using individual-based habitat selection modelling across populations.