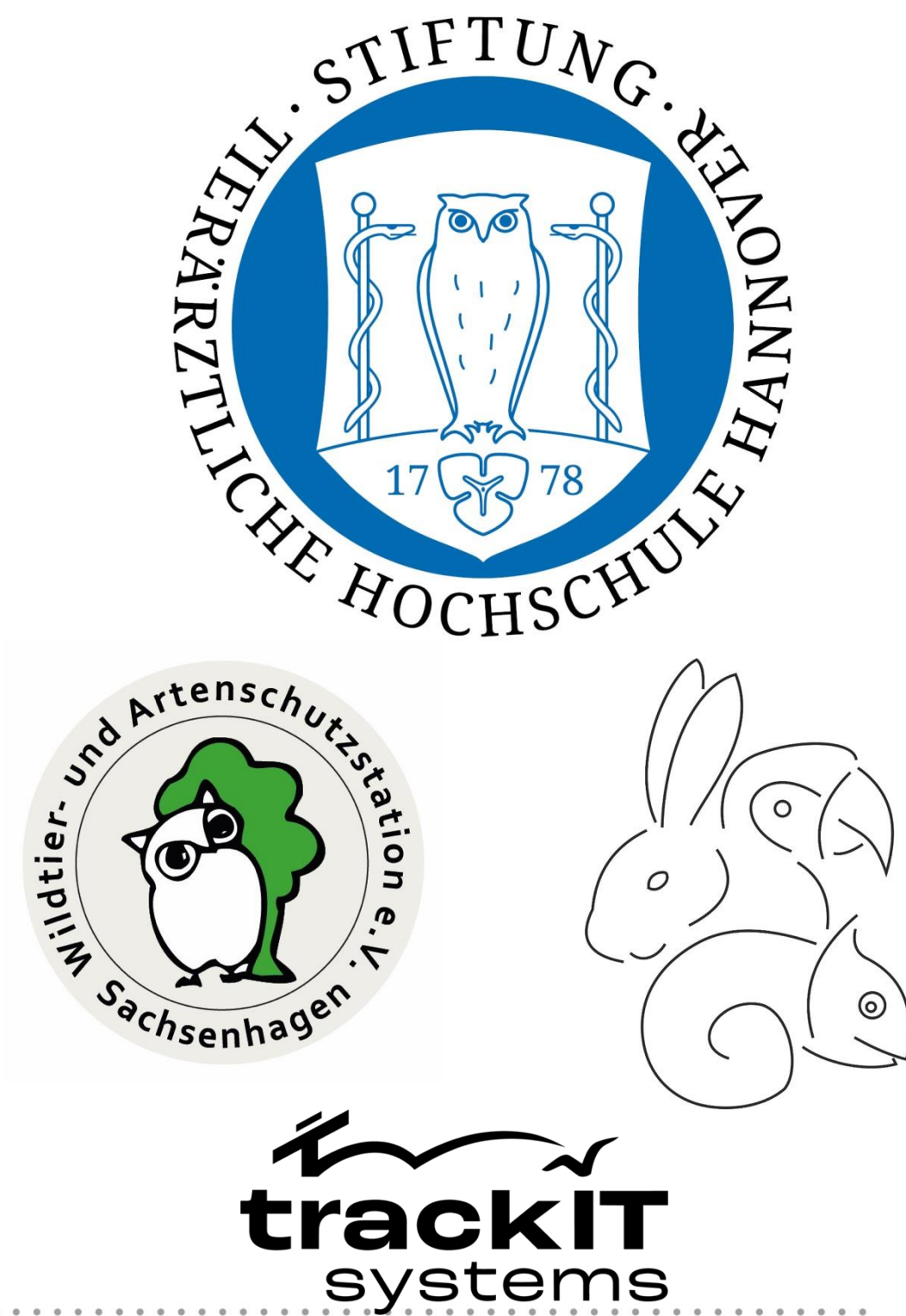


Post-release monitoring in rehabilitated wildlife: Insights from a multi-species telemetry pilot study in Germany

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BACKGROUND

- Rehabilitation centres admit growing numbers of wild animals — demanding substantial personnel and financial resources.
- Animals often spend prolonged periods in human care, yet post-release outcomes — survival and species-specific behaviour — usually remain unknown.
- Evaluating release success is essential to improve rehabilitation protocols and to assess their contribution to wildlife conservation and health.

AIM

Test whether telemetry-based monitoring can reliably assess post-release adaptation and survival across multiple species commonly admitted to German wildlife rehabilitation centres.

MATERIAL AND METHODS

Study site

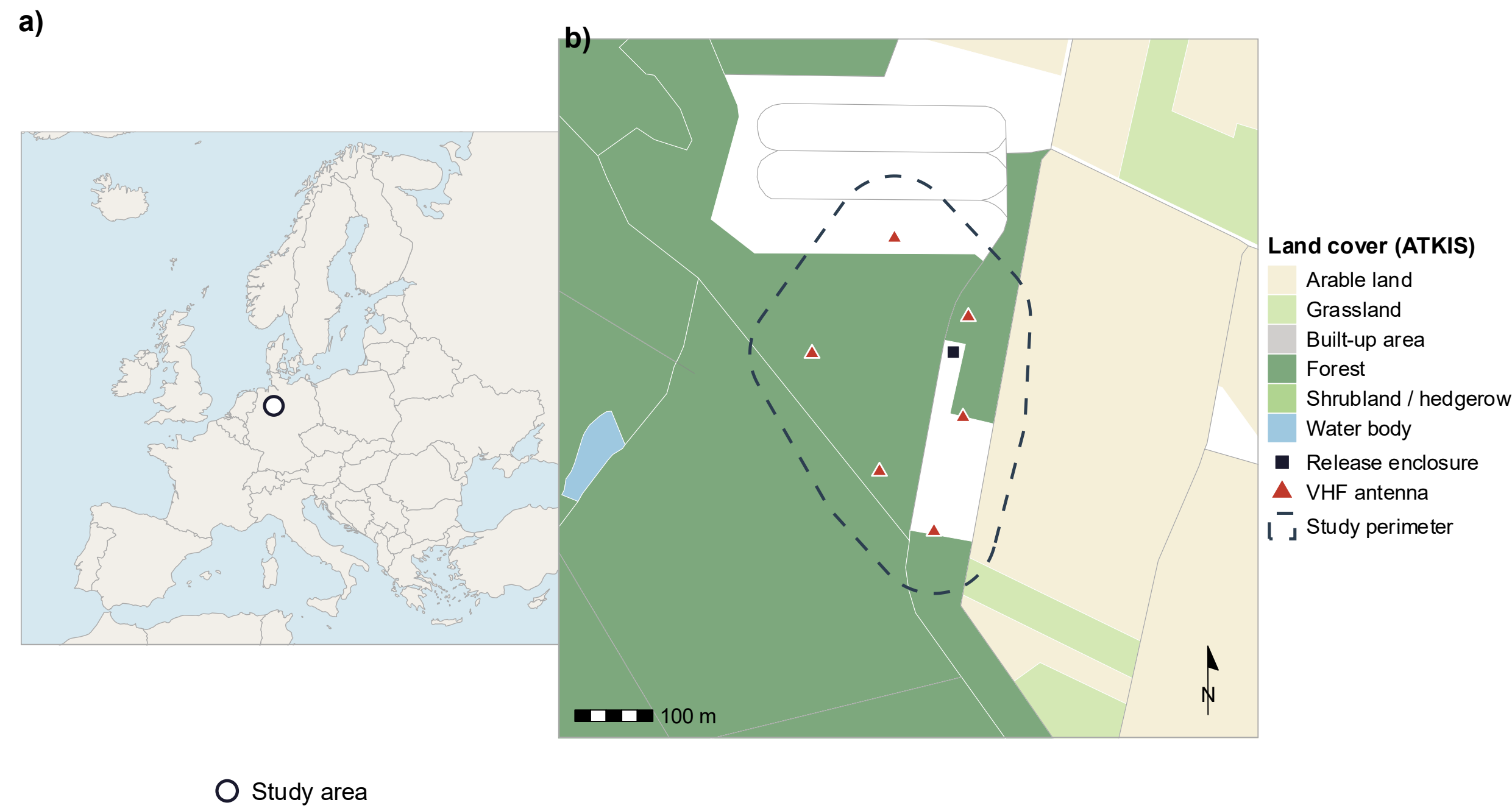
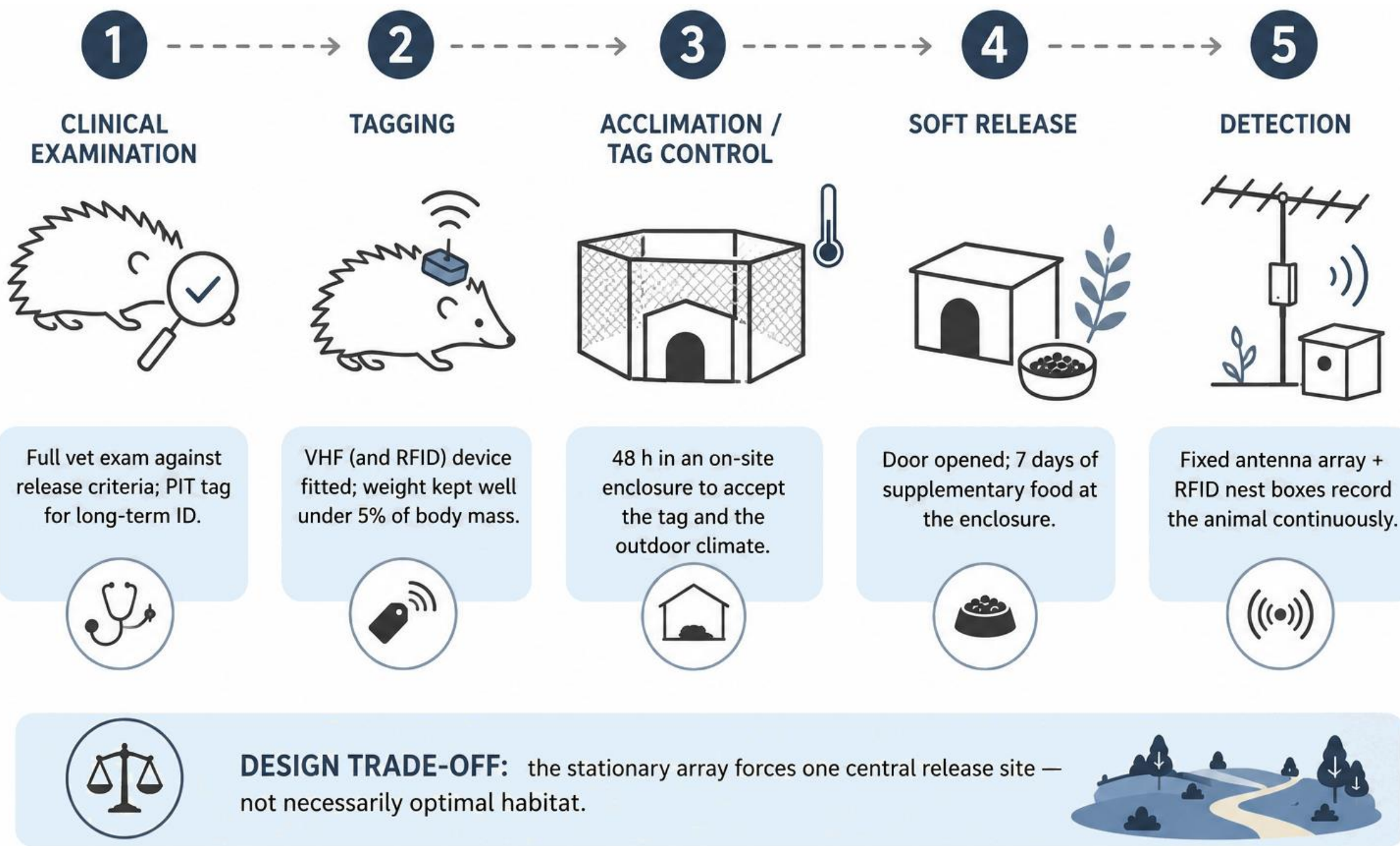


Fig. 1 Study site with set up of automated VHF array. a) showing the study site on a European level, b) closer details of the antenna setup used for the European hedgehogs, songbirds and edible dormice.

Release Protocol



Data Analysis

- Activity & circadian rhythm – random forest classification, Rayleigh & cosinor
- Space use – autocorrelation – corrected kernel home ranges (aKDE)
- Habitat selection – Jacobs' D electivity
- Survival – Kaplan Meier & Cox Regression

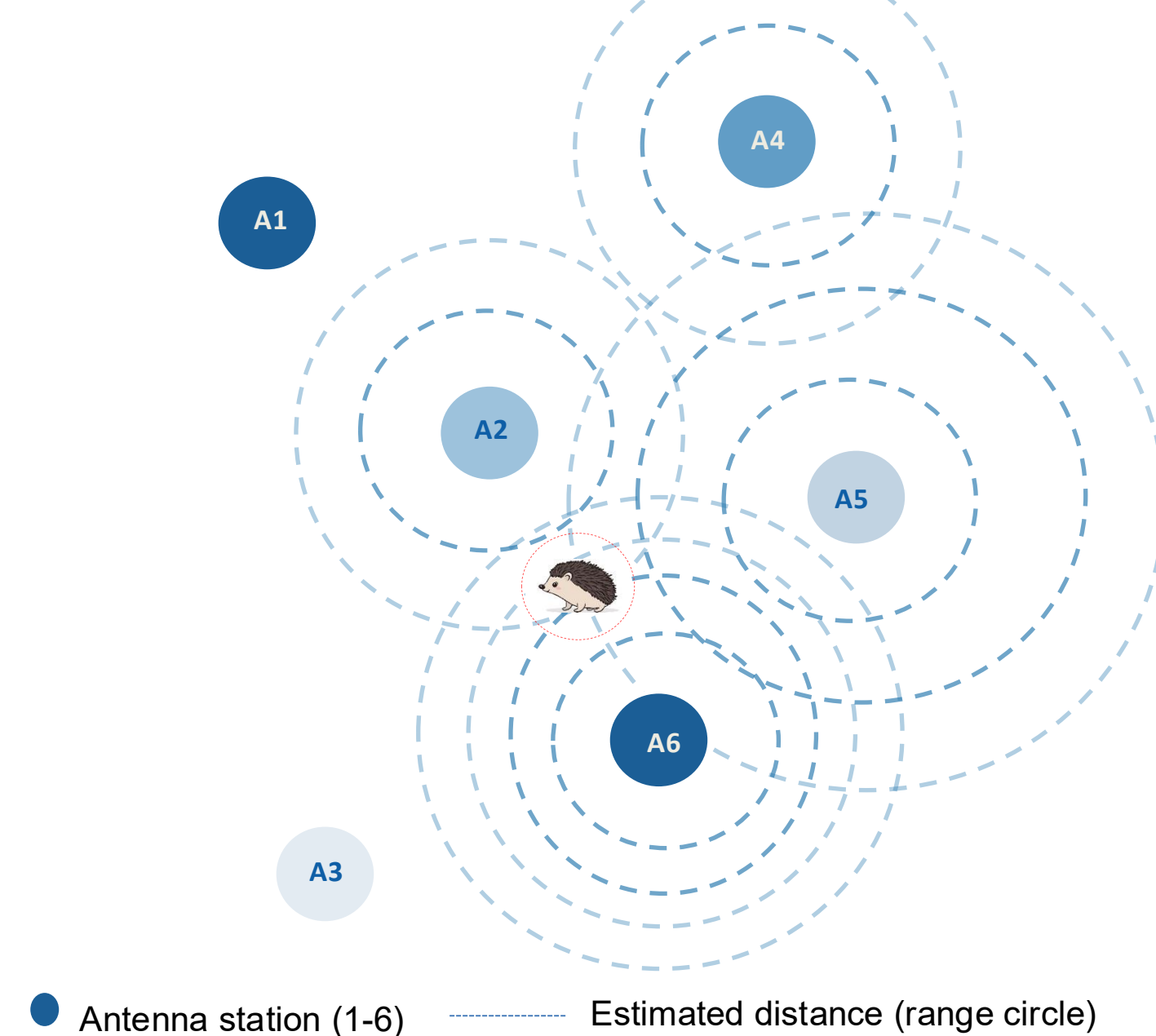
Multi-species Telemetry

96 individuals tagged over two years (2024–2025), across five species groups.

Common Buzzard <i>Buteo buteo</i>	GPS		n = 14
European hedgehogs <i>Erinaceus europaeus</i>	VHF		n = 26
Edible dormice <i>Glis glis</i>	VHF, RFID		n = 20
House sparrow <i>Passer domesticus</i>	VHF		n = 18
Thrush species <i>Turdus spp.</i>	VHF		n = 18

GPS for raptors; smaller species via VHF tags + automated antenna array with complementary manual tracking; RFID nest boxes for post-hibernation survival in dormice. Numbers on the right: numbers of animal tagged (n = No. animals)

AUTOMATED ARRAY SYSTEM - MULTILATERATION



How it works

Transmitter pulses

The animals VHF tag emits a radio signal in a constant interval

Multiple stations detect

two or more stations detect the signal at different signal levels

Distance estimation

The distance is estimated based on the signal strength of the tag to the receiving station

Position finding by error optimization

Initial position by using inverse distance weighted station positions - then minimization of the summed error by optimization

FIRST RESULTS

European hedgehogs - *Erinaceus europaeus*

Circadian activity returns from the first night
Within-night structure reorganizes

- Number of activity bouts decreased significantly
- While mean bout duration stayed constant

Side fidelity: Animals stayed close to release site (approx. 150m)
Space use: Edge habitat was strongly selected
Visual impairment significantly disrupts rhythmicity (Fig. 2 and 3)

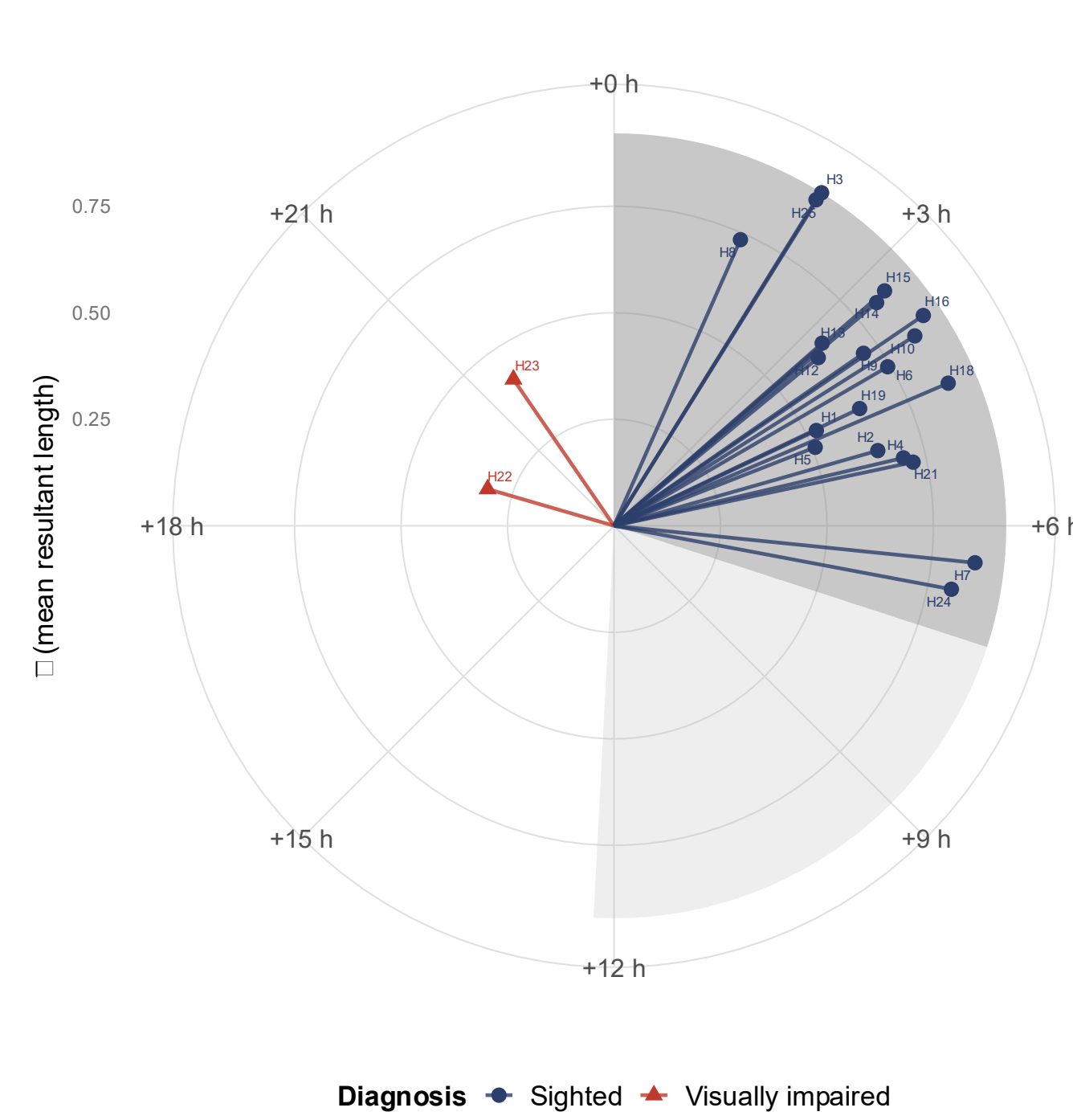


Fig. 2 Rayleigh plot of mean activity time relative to sunset; arrows = individual mean vectors, colour = visual status.

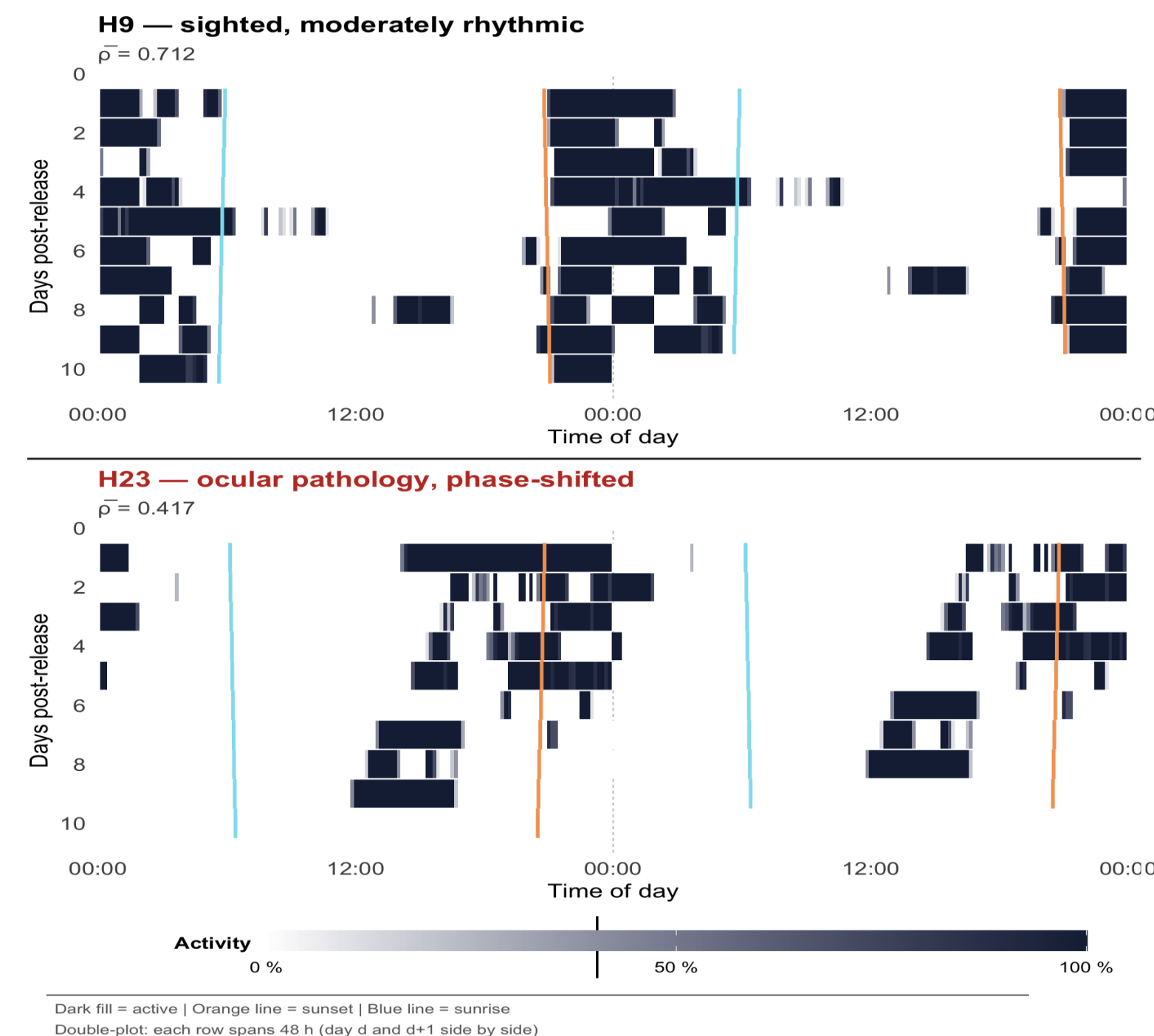


Fig. 3 Double-plotted actograms of a sighted (H9) and a visually impaired (H23) hedgehog over days post-release; darker = higher activity.

Common Buzzards – *Buteo buteo*

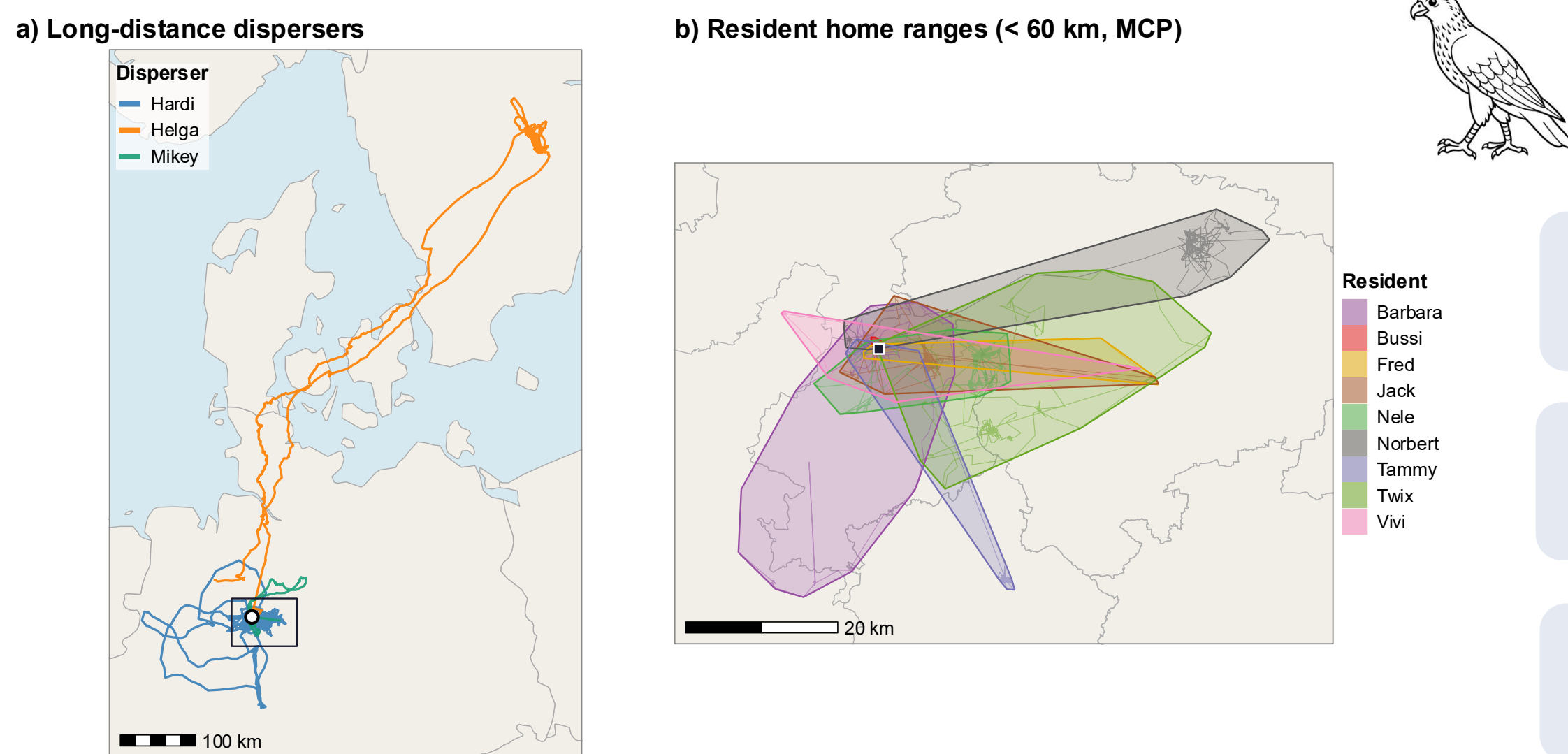


Fig. 4 Distribution patterns of tagged common buzzards. (a) Dispersing individuals exhibiting large movement distances. Black square indicating area of graph b). (b) Resident individuals with restricted home ranges.

CONCLUSION & OUTLOOK

High-resolution automated VHF telemetry reveals fine scale behavior with implications for wildlife rehabilitation.

Rehabilitation success should be defined behaviourally, integrated with welfare – One welfare approach.

Species-specific protocols, pre-release screening, refined telemetry attachment and release-mechanism, as well as networking needed.

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