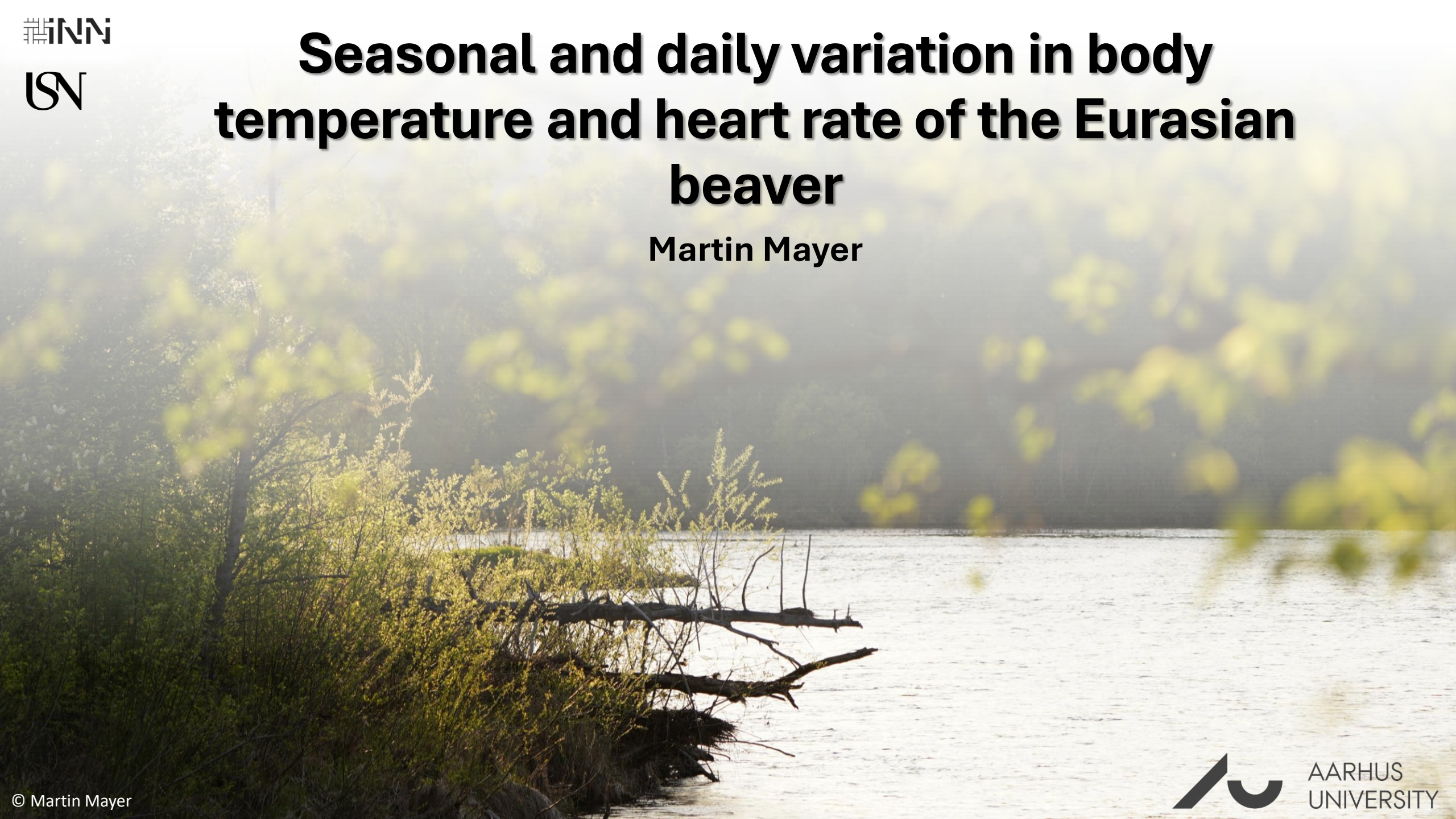
Seasonal and daily variation in body temperature and heart rate of the Eurasian beaver

Martin Mayer



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Background

- Animals have various strategies to deal with cold temperatures and food scarcity
- Beavers at higher latitudes build food caches to pass periods of resource scarcity
- Little else is known about the winter ecology of beavers
- We do not exactly know when beavers give birth

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Study aims

1. Describe diel and seasonal patterns of beaver heart rate and body temperature.
2. Can we use body temperature to estimate the timing of parturition?
3. Can we quantify stress/capture effects?

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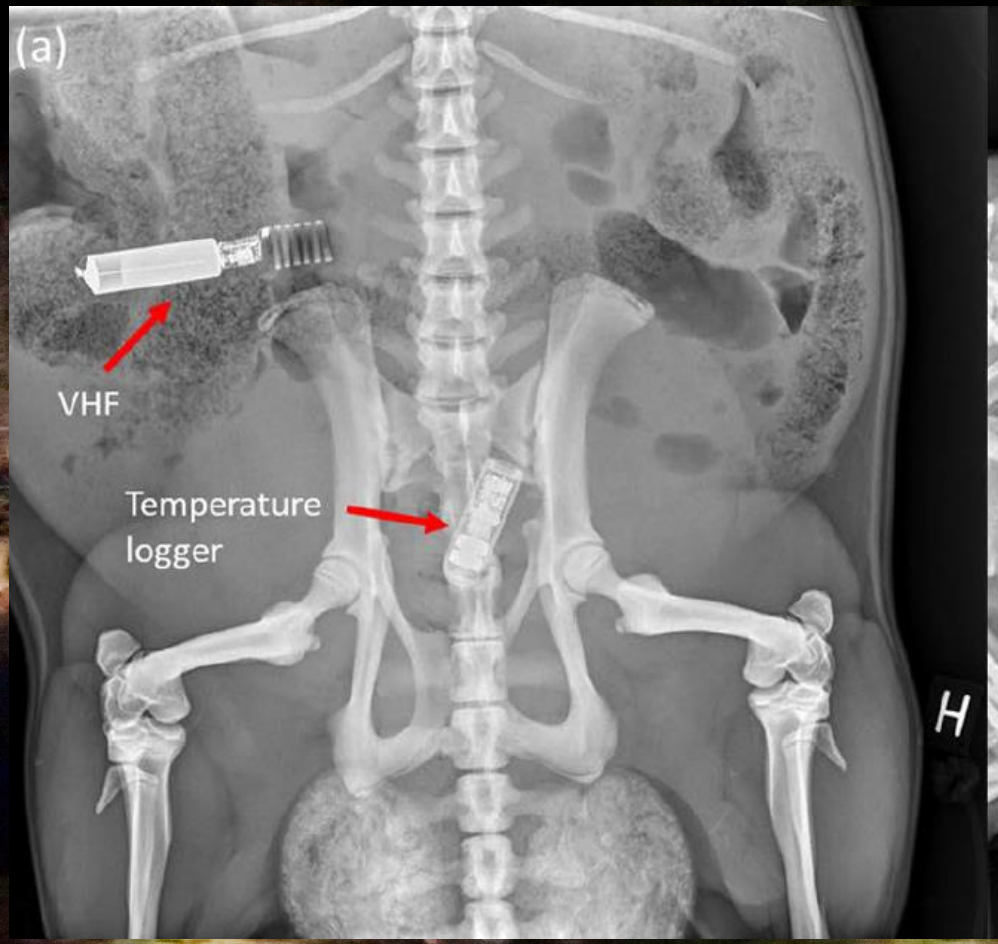

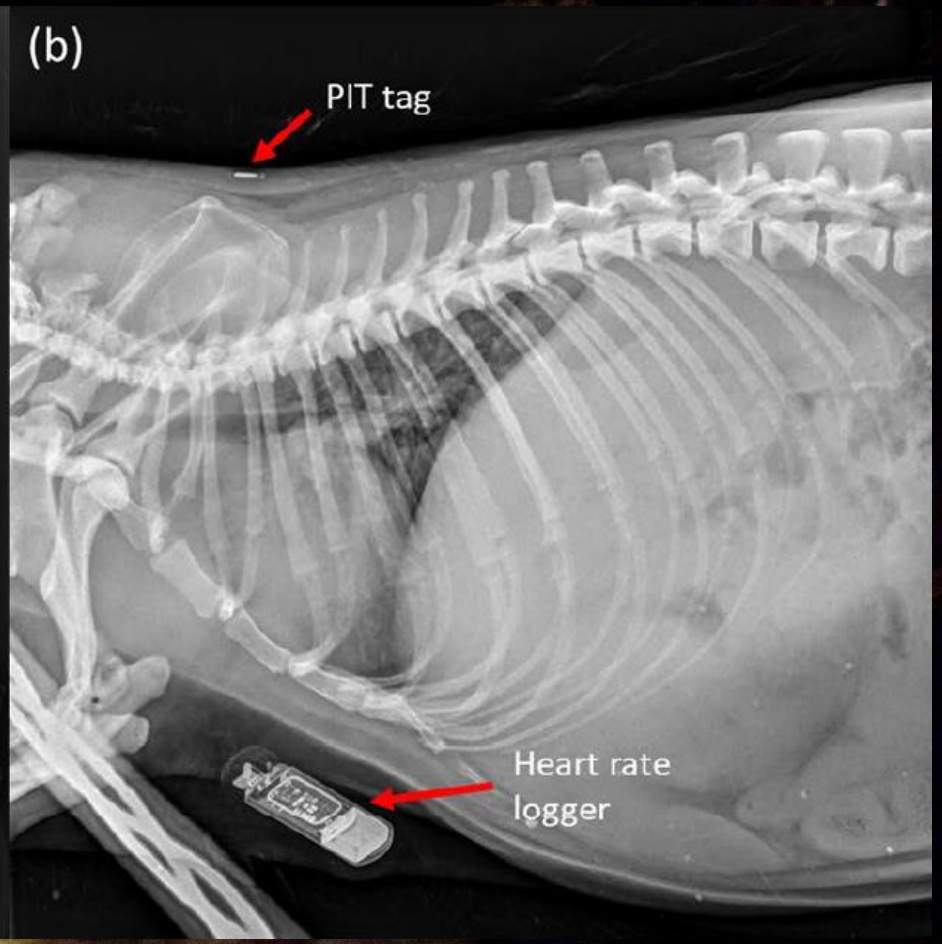

Methods

- Life capture of beavers using a land nets from a boat
- Implantation of temperature loggers (n = 36, 14 recovered), heart rate loggers (n = 21, 8 recovered), and VHF units (Evenstad only)

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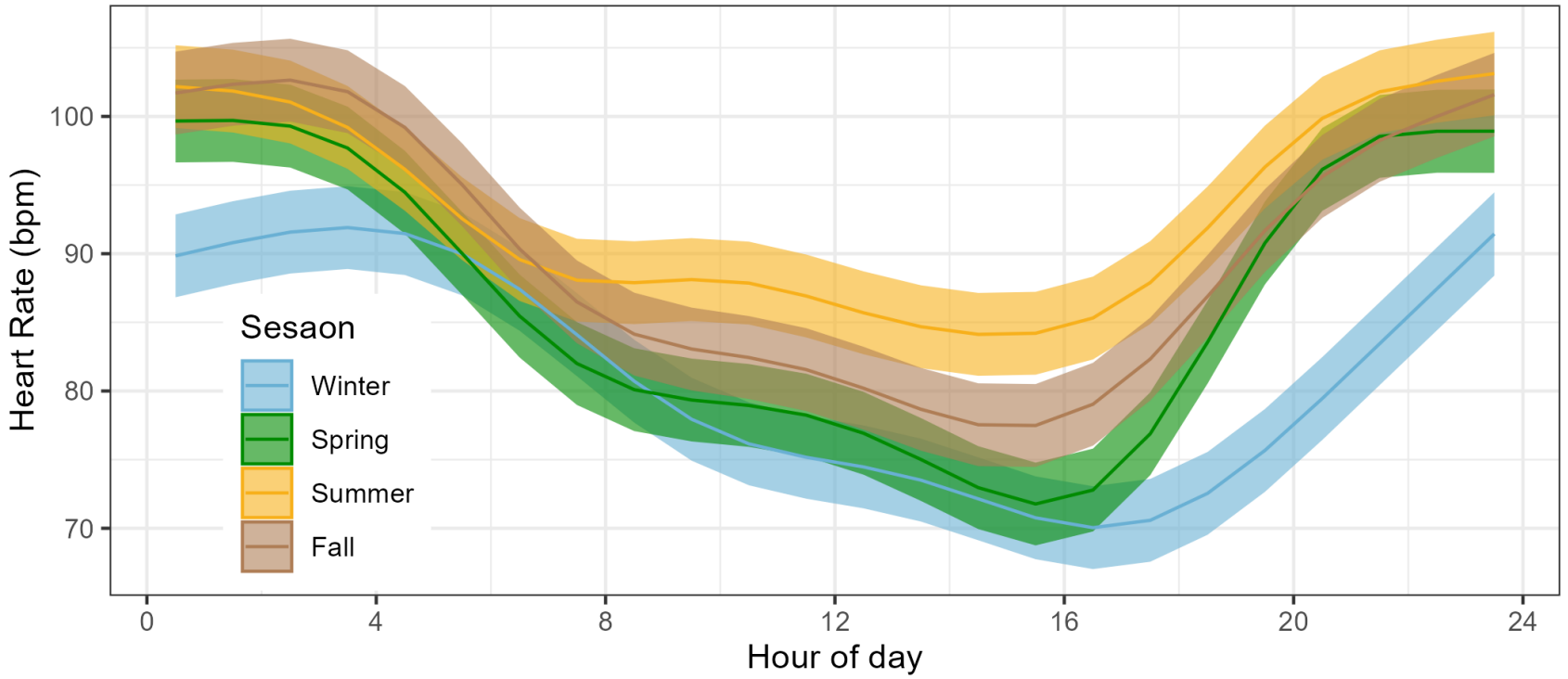
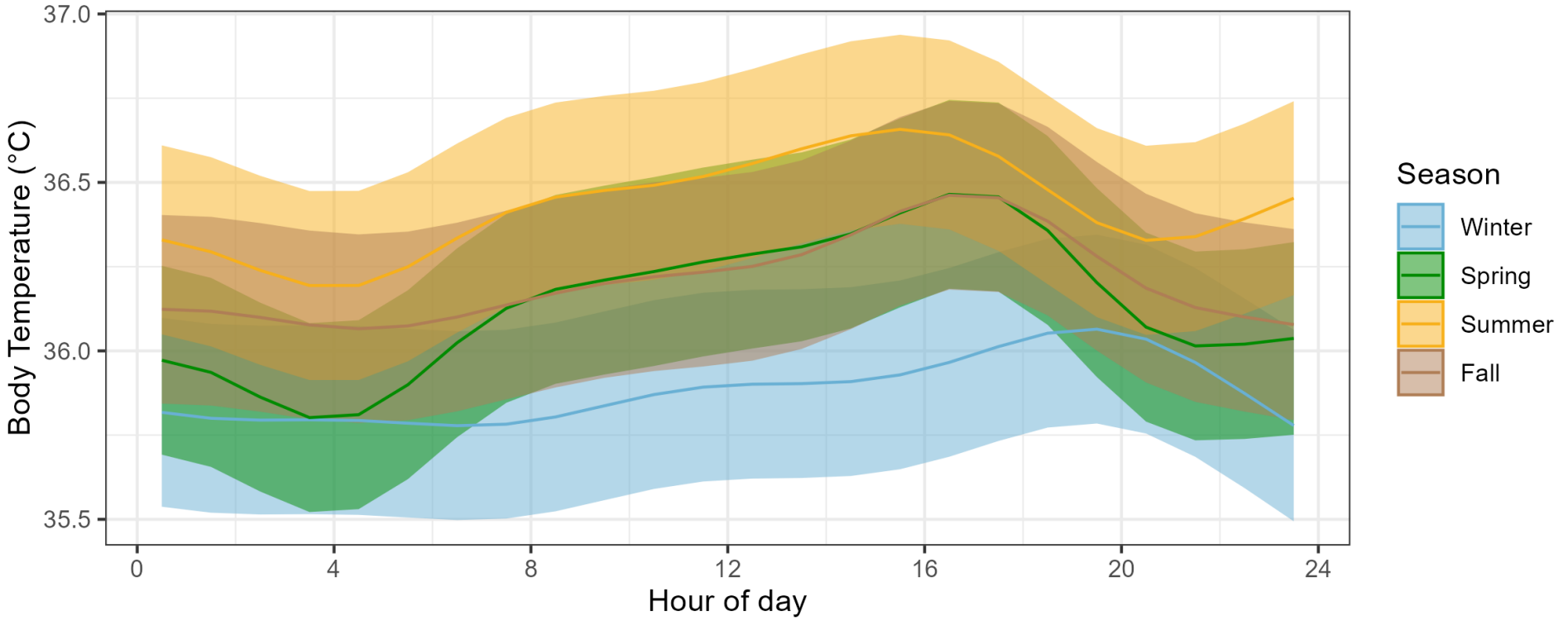
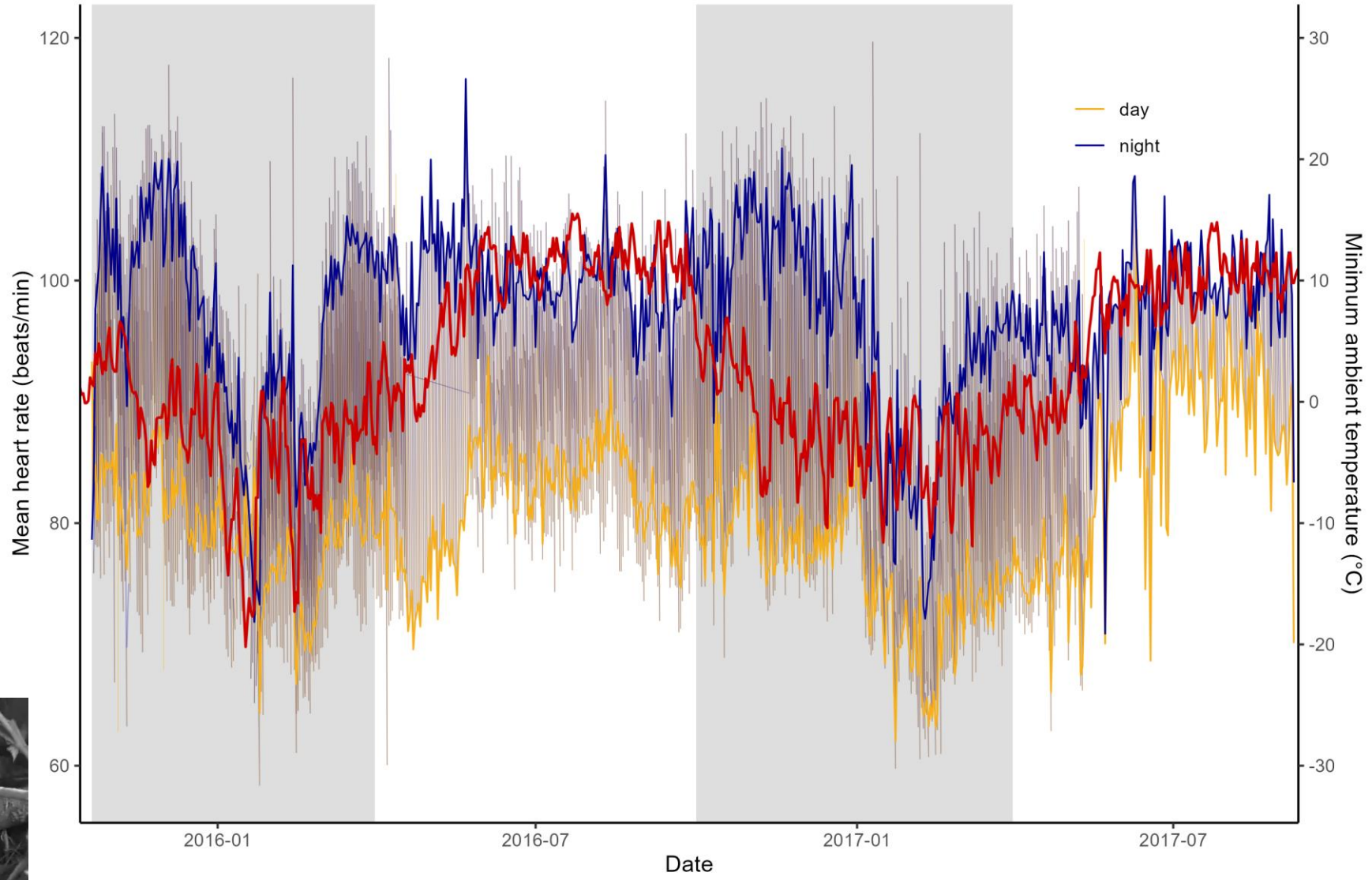
Diel variation in heart rate



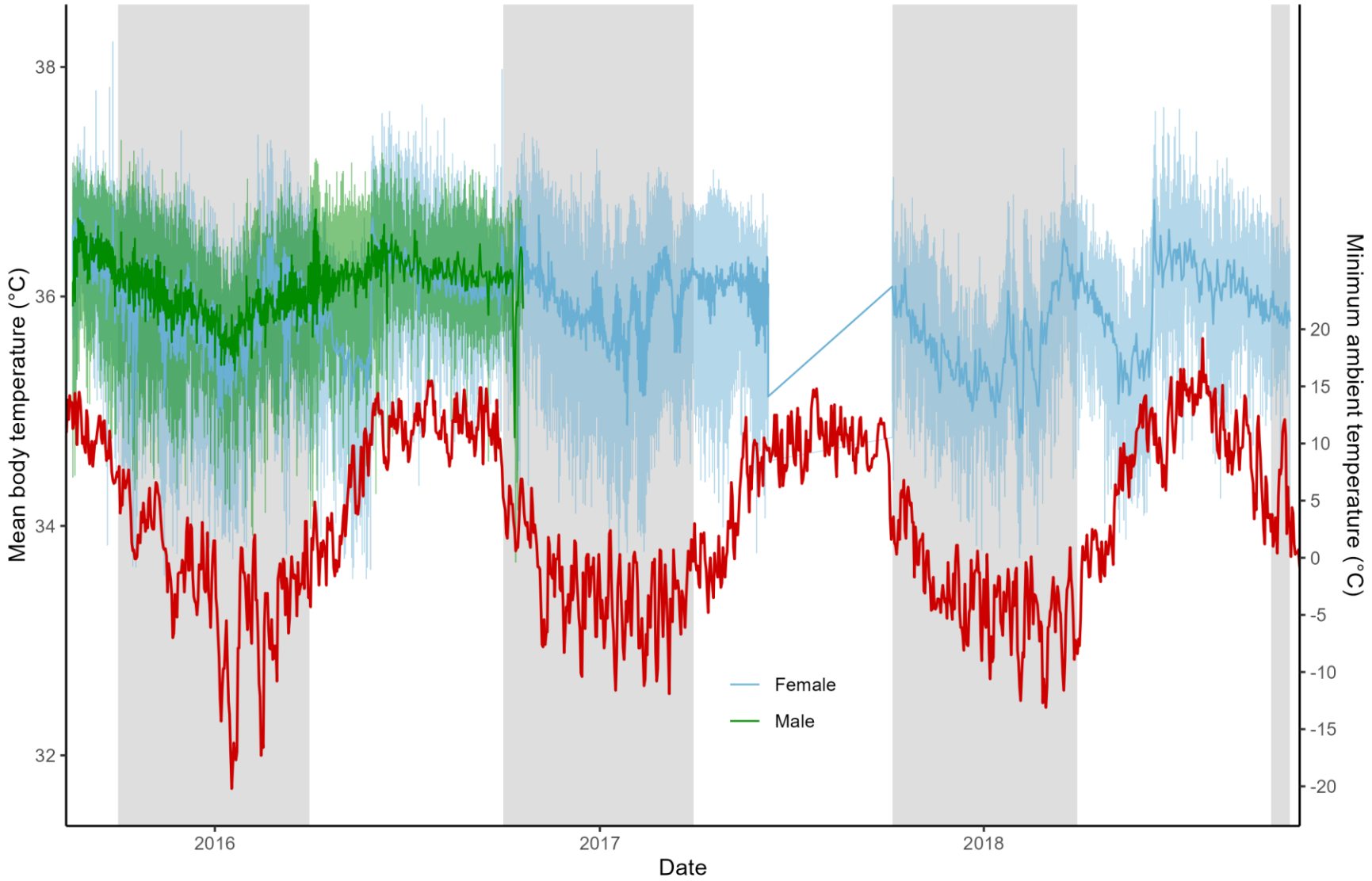
Diel variation in body temperature



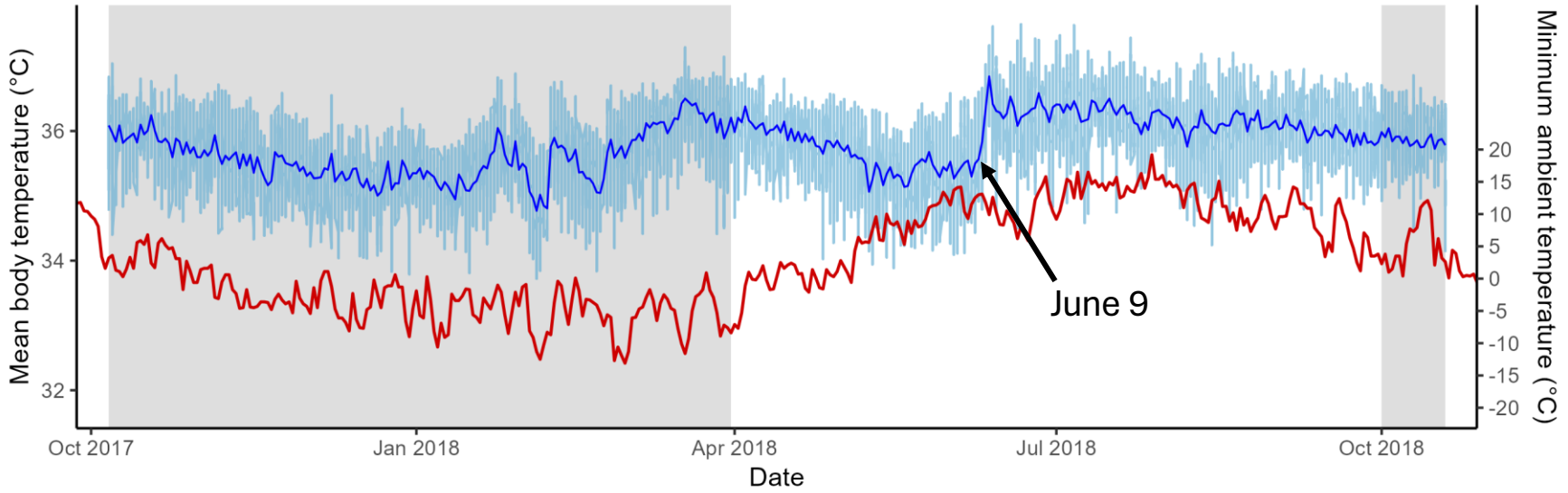
Seasonal variation in heart rate

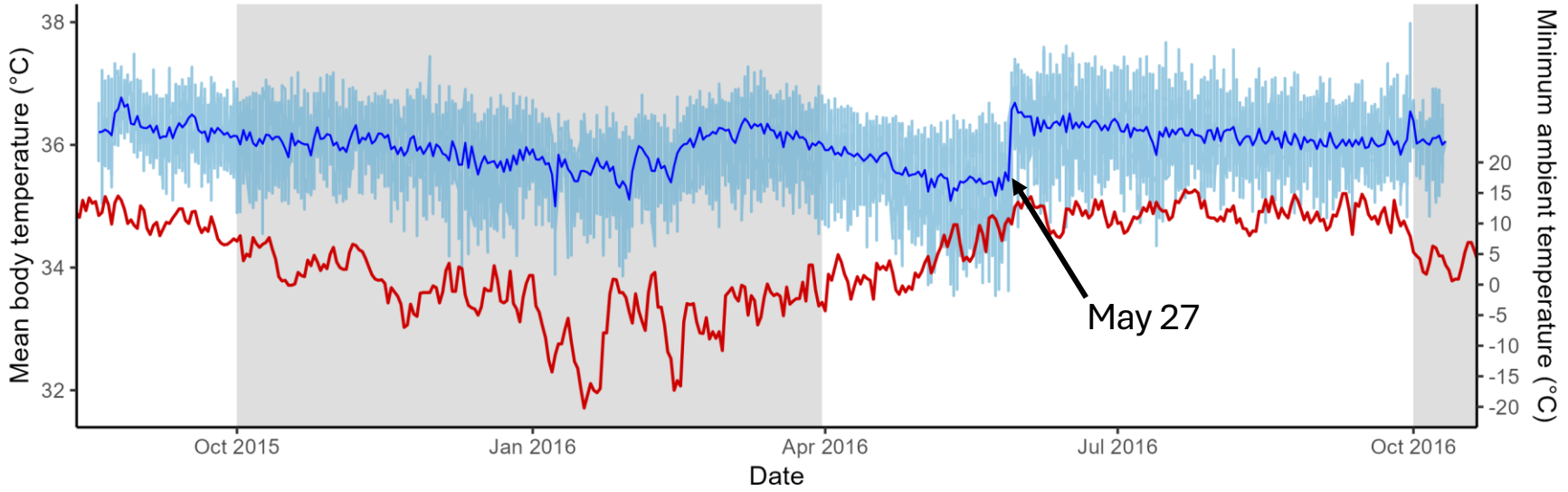


Seasonal variation in body temperature

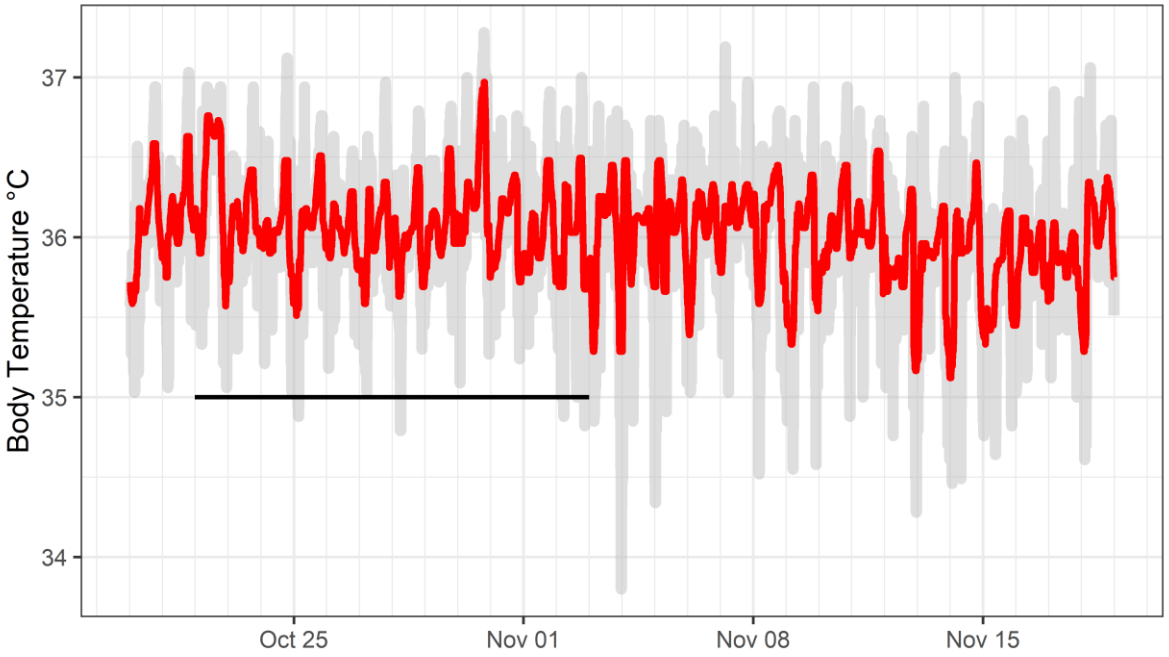


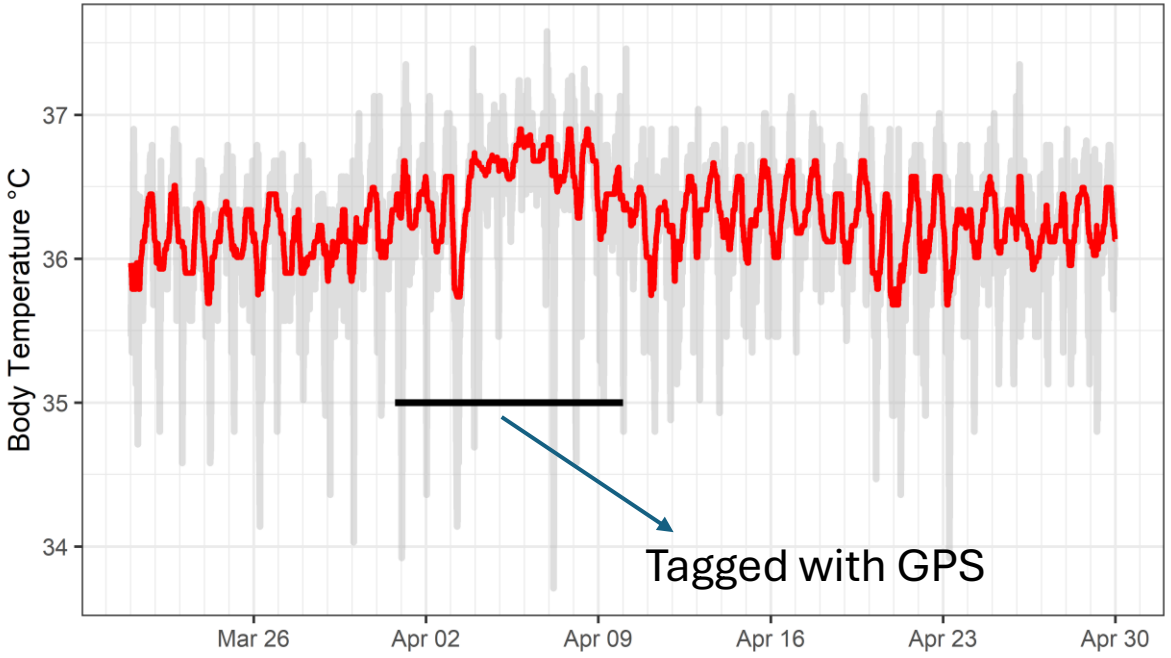
Parturition

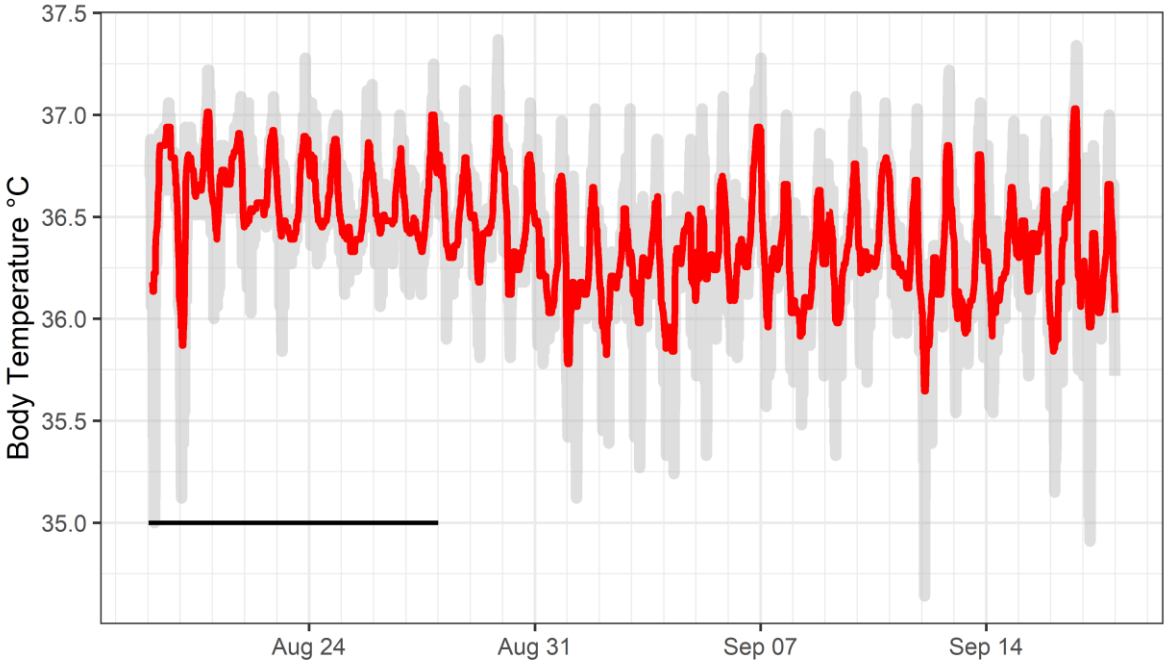




Effects of GPS tagging







Conclusions

1. Beavers reduce heart rate and body temperature when ambient temperatures drop under -5°C or colder
   - ➢ Reduced activity and state of regulated hypothermia, representing an adaptive energy-saving strategy
2. Body temperature allows the accurate estimation of parturition timing
3. Many issues: stressful procedures and low tag recovery rates

Questions?

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- Christian Robstad
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- Marianne Lian
- Kathryn Perrin
- Eva Greunz
- Timothy Laske
- Jon Martin Arnemo
- Frank Rosell

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References

Mayer, M., M. Lian, B. Fuchs, C. A. Robstad, A. L. Evans, K. L. Perrin, E. M. Greunz, T. G. Laske, J. M. Arnemo, and F. Rosell. 2022. Retention and loss of PIT tags and surgically implanted devices in the Eurasian beaver. BMC Veterinary Research **18**:1-9.

Mayer, M., B. Fuchs, C. A. Robstad, A. L. Evans, J. M. Arnemo, and F. Rosell. Seasonal and daily variation in body temperature and heart rate of the Eurasian beaver. *In preparation*.

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