



Do climate change induced weather conditions elicit behavioural changes in woodlice?

Niamh Tapper

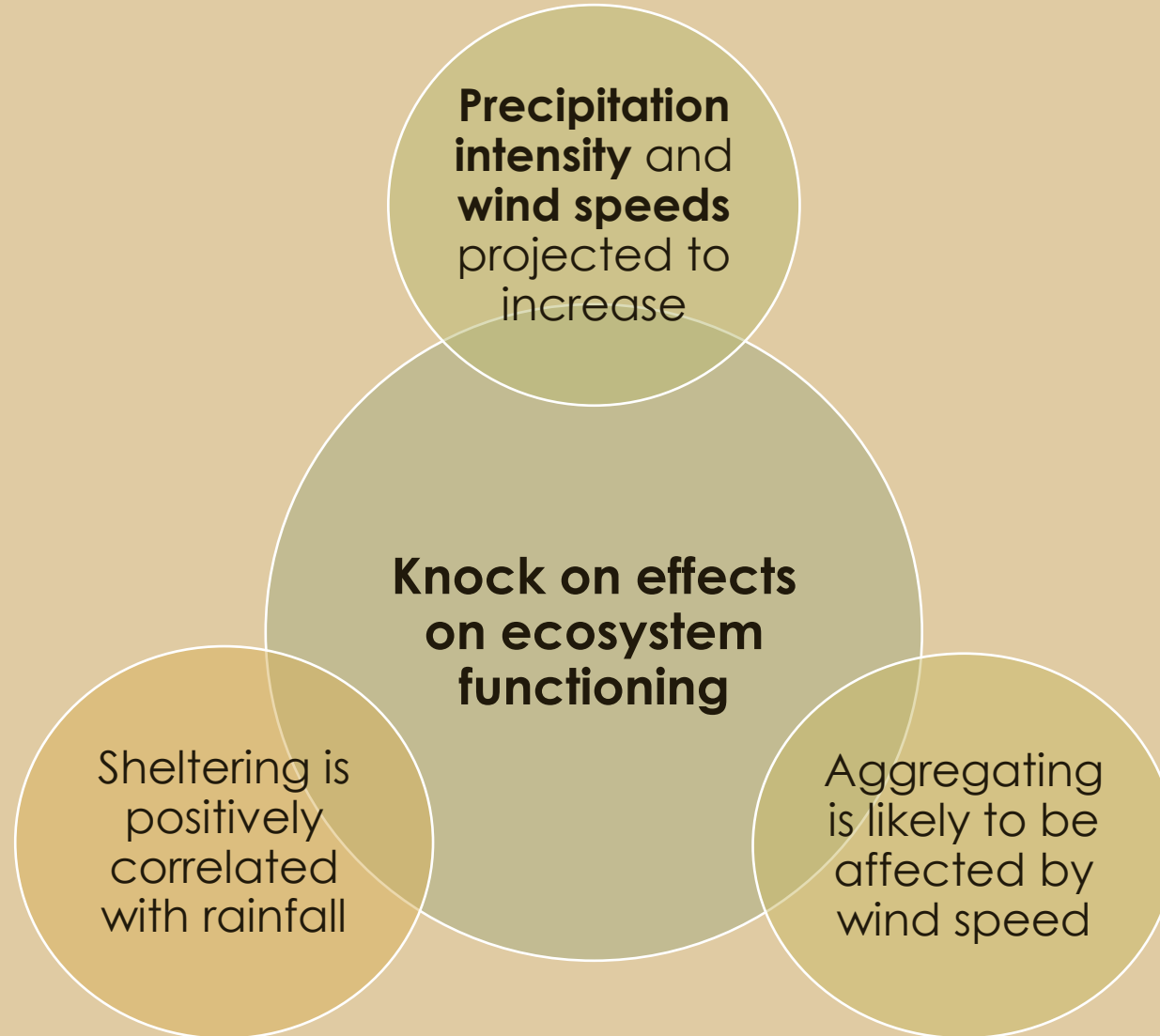


Why are woodlice important?

- Decomposition and nutrient recycling
- Globally widespread



How is climate change involved?





Hypothesis

- Time spent sheltering would increase with increasing precipitation intensity
- Time spent aggregating would increase with increasing wind speed.

Methods

Experimental set up



Data collection

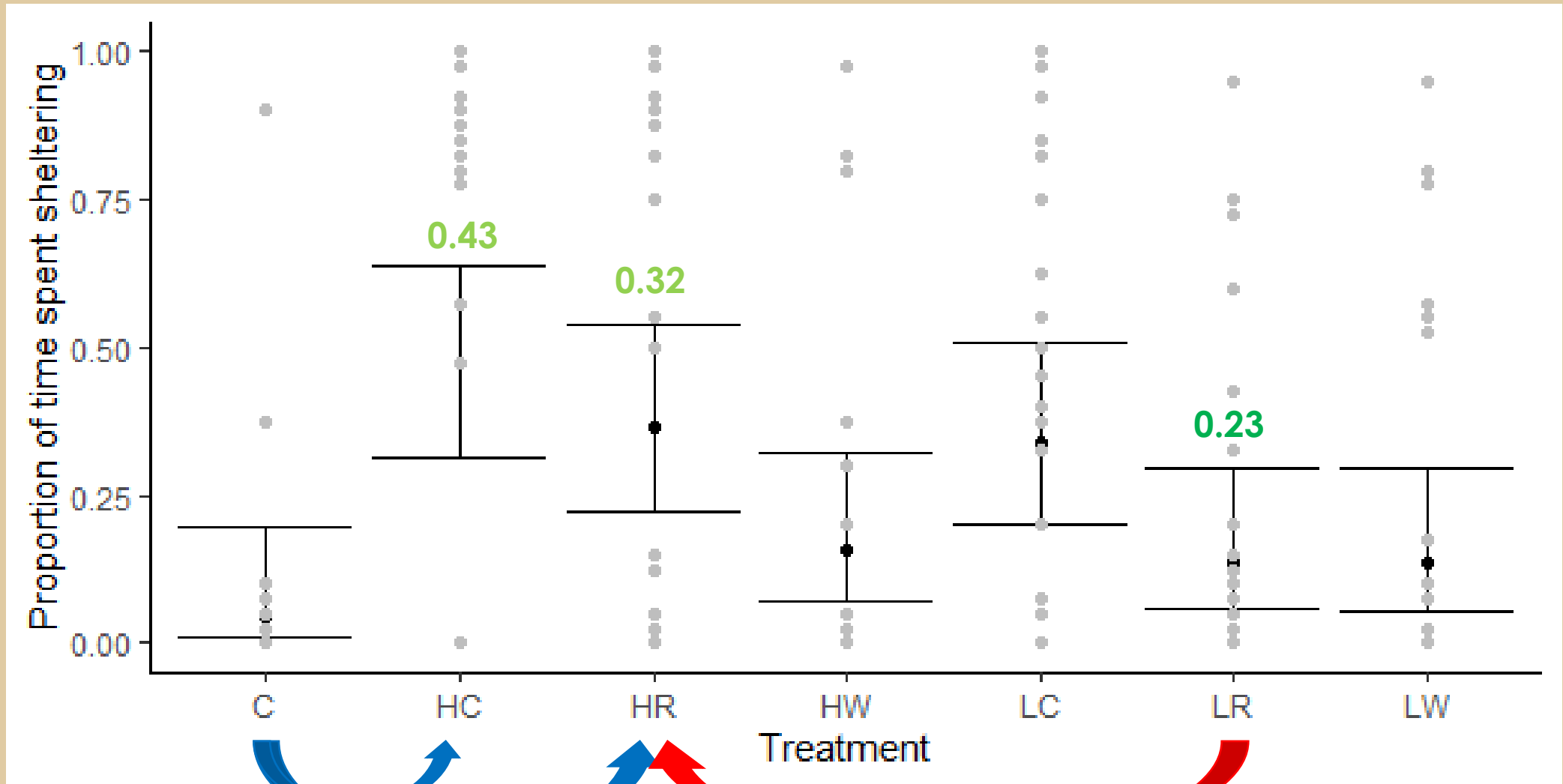
- **7 treatments**
 - Control
 - Light and heavy rain
 - Light and heavy wind
- **Behaviour** recorded every 15 seconds

Statistical analysis

- **GLM**
- **Response** = Proportion of time spent sheltering OR aggregating
- **Explanatory** = Treatment
- **Pairwise comparisons**

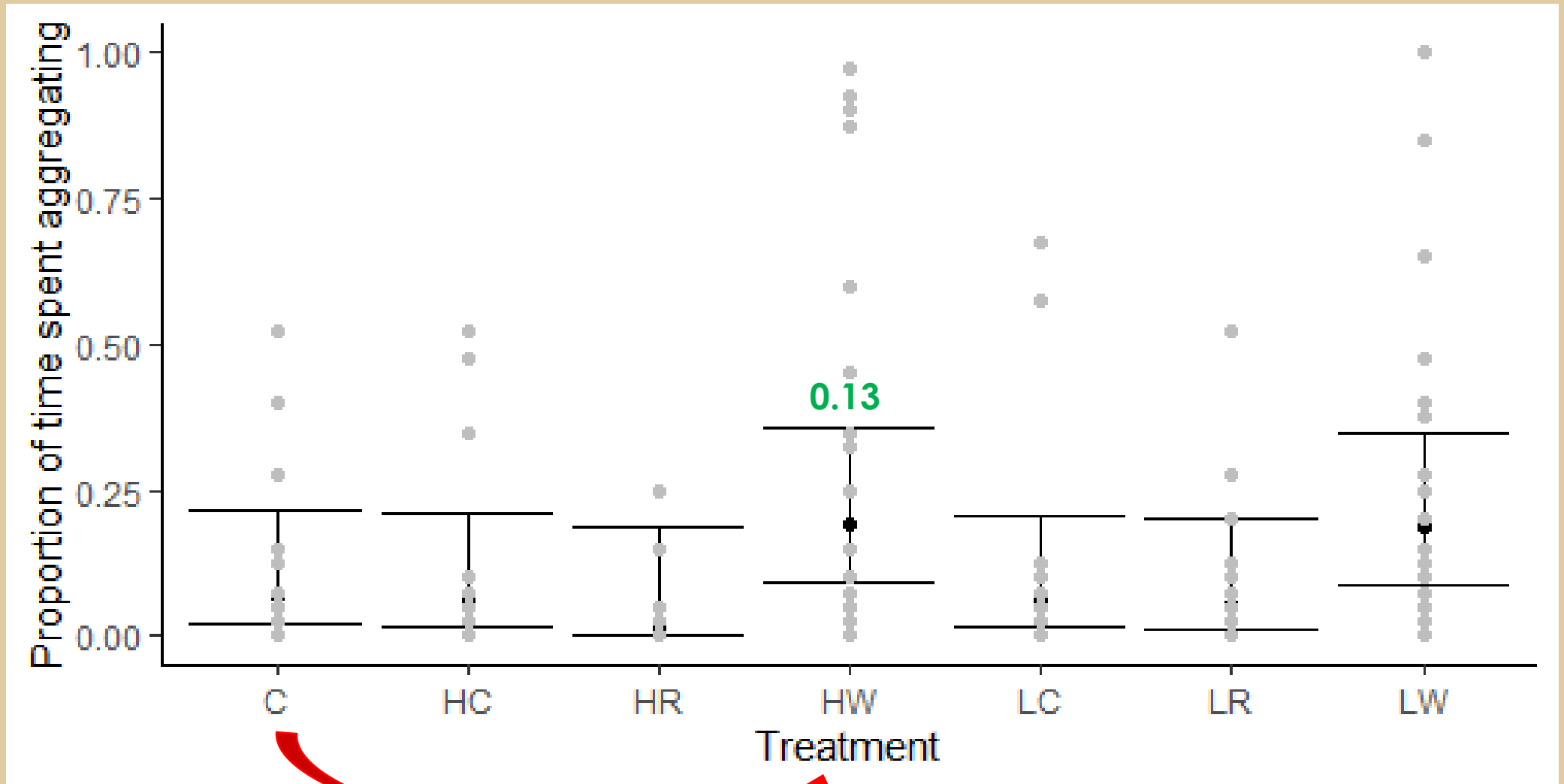
Results - Sheltering

n = 34

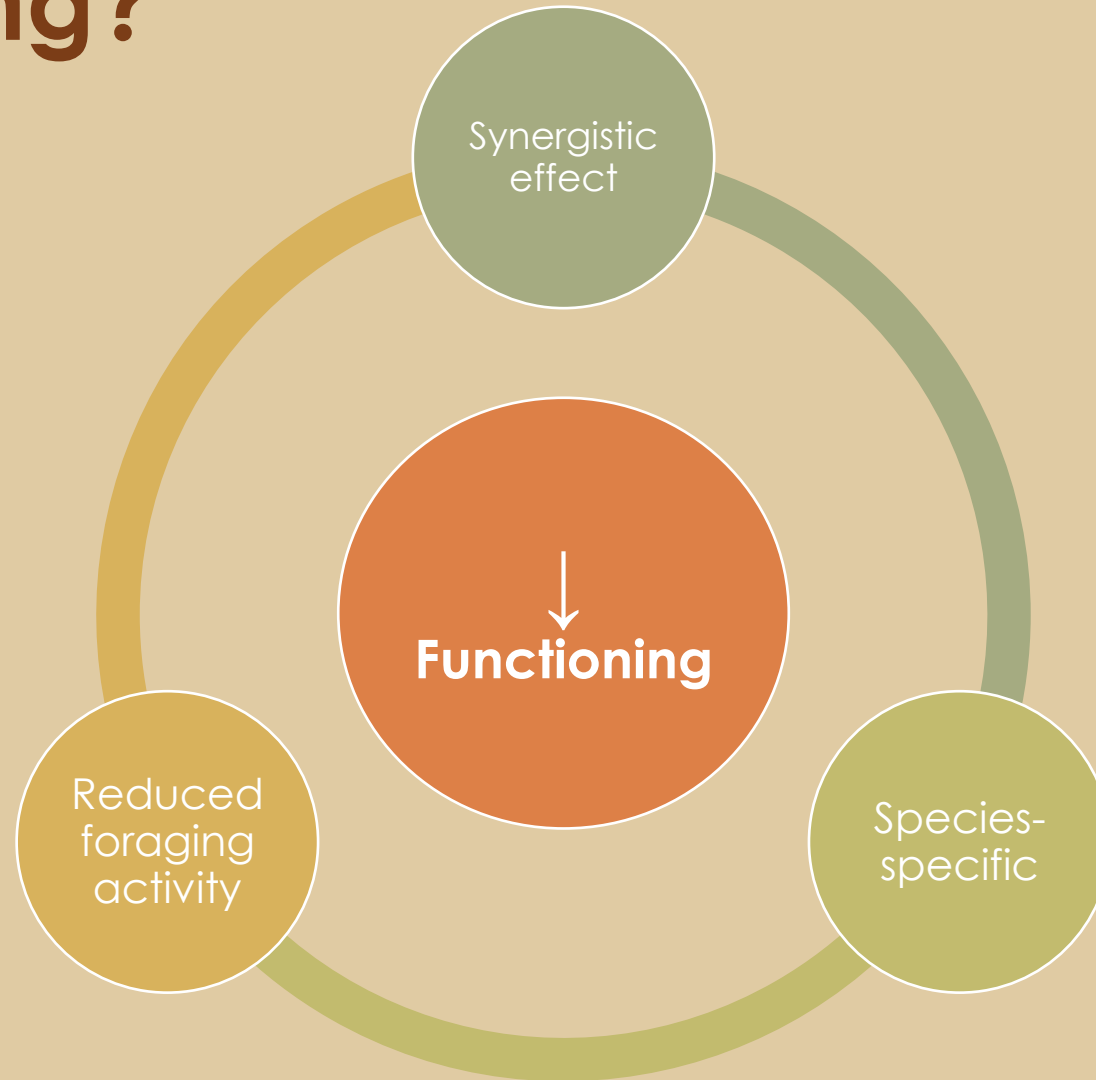


Results - Aggregating

n = 34



What are the implications for ecosystem functioning?





Going forward...

- Further investigate the relationship between increasing precipitation intensity and sheltering
 - Larger sample size
 - Greater magnitudes
 - Species-specific
 - Link to ecosystem functioning



References

- Csonka, D., Halasy, K., Buczkó, K. and Hornung, E., 2018. Morphological traits – desiccation resistance – habitat characteristics: a possible key for distribution in woodlice (Isopoda, Oniscidea). *ZooKeys*, 801, pp.481-499.
- Hassall, M. and Tuck, J., 2007. Sheltering behavior of terrestrial isopods in grasslands. *Invertebrate Biology*, 126(1), pp.46-56.
- Joly, F., Weibel, A., Coulis, M. and Throop, H., 2019. Rainfall frequency, not quantity, controls isopod effect on litter decomposition. *Soil Biology and Biochemistry*, 135, pp.154-162.
- Koh, I., Kim, S. and Lee, D., 2010. Effects of bibosop plantation on wind speed, humidity, and evaporation in a traditional agricultural landscape of Korea: Field measurements and modeling. *Agriculture, Ecosystems & Environment*, 135(4), pp.294-303.
- Min, S.K., Zhang, X., Zwiers, F.W. and Hegerl, G.C., 2011. Human contribution to more-intense precipitation extremes. *Nature*, 470(7334), pp.378-381.
- Rahim, M., Yoshino, J., Doi, Y. and Yasuda, T., 2012. Effects of global warming on the average wind speed field in central Japan. *J. Sustain. Energy Environ*, 3, pp.165-171.
- Yang, X., Shao, M. and Li, T., 2020. Effects of terrestrial isopods on soil nutrients during litter decomposition. *Geoderma*, 376, p.114546.
- Zimmer, M., Kautz, G. and Topp, W., 2005. Do woodlice and earthworms interact synergistically in leaf litter decomposition?. *Functional Ecology*, 19(1), pp.7-16.



Questions?