

EFFECTS OF STREAM DISTANCE ON NON-RIPARIAN ARTHROPODS



- At greater distances is less likely that arthropods from non-riparian habitats use riverine habitats and vice versa
- The closer to streams, forest microclimate is expected to be cooler and more moist and humid
- Resources provided by streams and riparian areas (e.g. nutrients, water) to adjacent forests may increase their primary productivity

HUMAN ACTION ALSO AFFECTS FOREST ARTHROPODS BY ALTERING VEGETATION STRUCTURE AND MICROCLIMATIC CONDITIONS



MANAGED WOODLANDS → CLOSED FORESTS

<b>Tree density</b>	Decrease	Increase
<b>Tree species richness</b>	Decrease	Increase
<b>Understory species richness</b>	Increase	Decrease
<b>Understory biomass</b>	Decrease	Increase
<b>Humidity/Moisture</b>	Decrease	Increase
<b>Lighting</b>	Increase	Decrease
<b>Deadwood</b>	Decrease	Increase

Fig. 1. Expected effects of stream distance and human actions on vegetation structure and environmental conditions in forests with implications for the abundance and diversity of arthropods. Woodlands are pertinent to explore these effects because rural abandonment has resulted in stands differing in structural development of vegetation (e.g. Miklín and Čížek, 2014; Conedera et al., 2016; Gilliam, 2016). Weaker effects of local conditions are expected for the more mobile groups and for those with the wide trophic spectrum. See the on-line version for a color figure.

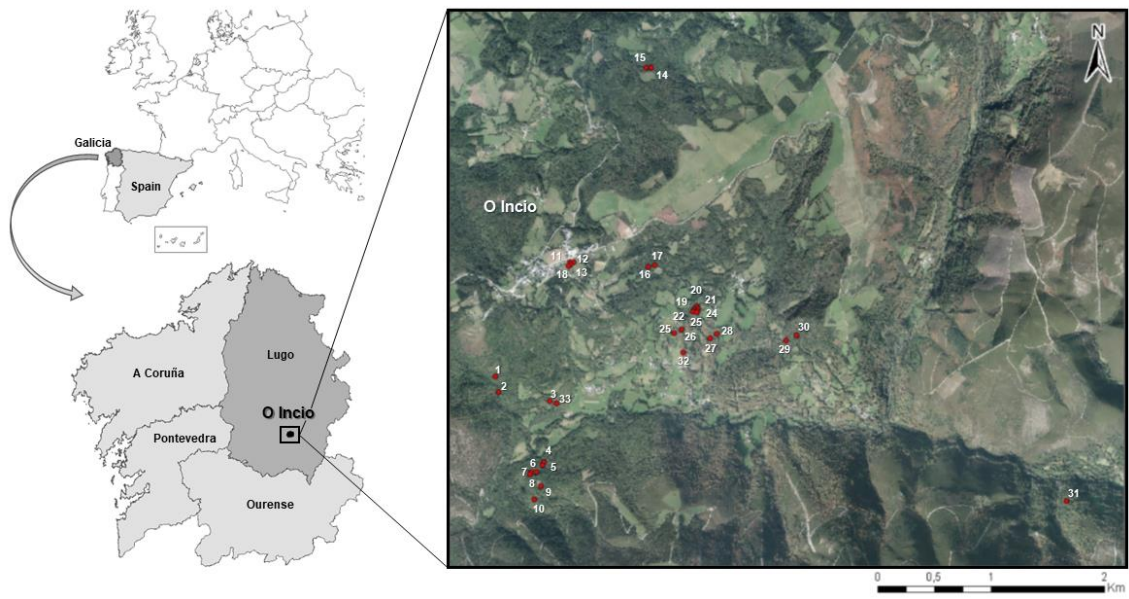


Fig. 2. Locations of the 32 small chestnut-forest private properties in the municipality of O Incio in northwestern Spain (Galicia) near several small streams. Aerial photograph extracted from Google Earth®.

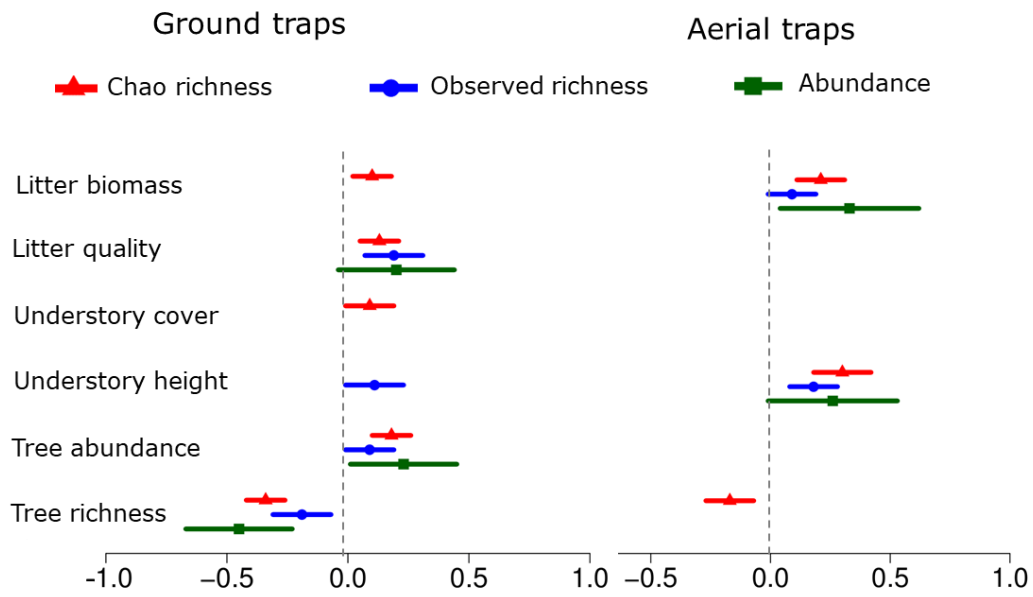


Fig. 3. Standardized regression coefficients ( $\pm$  95% confidence intervals) showing associations between measures of structural vegetation development and arthropods (square, *abundance*; dot, *observed richness*; triangle, *estimated richness*). See Table 3 for the full list of predictors and covariates retained in final models and figures 4 and 5 for interactive effects plots.

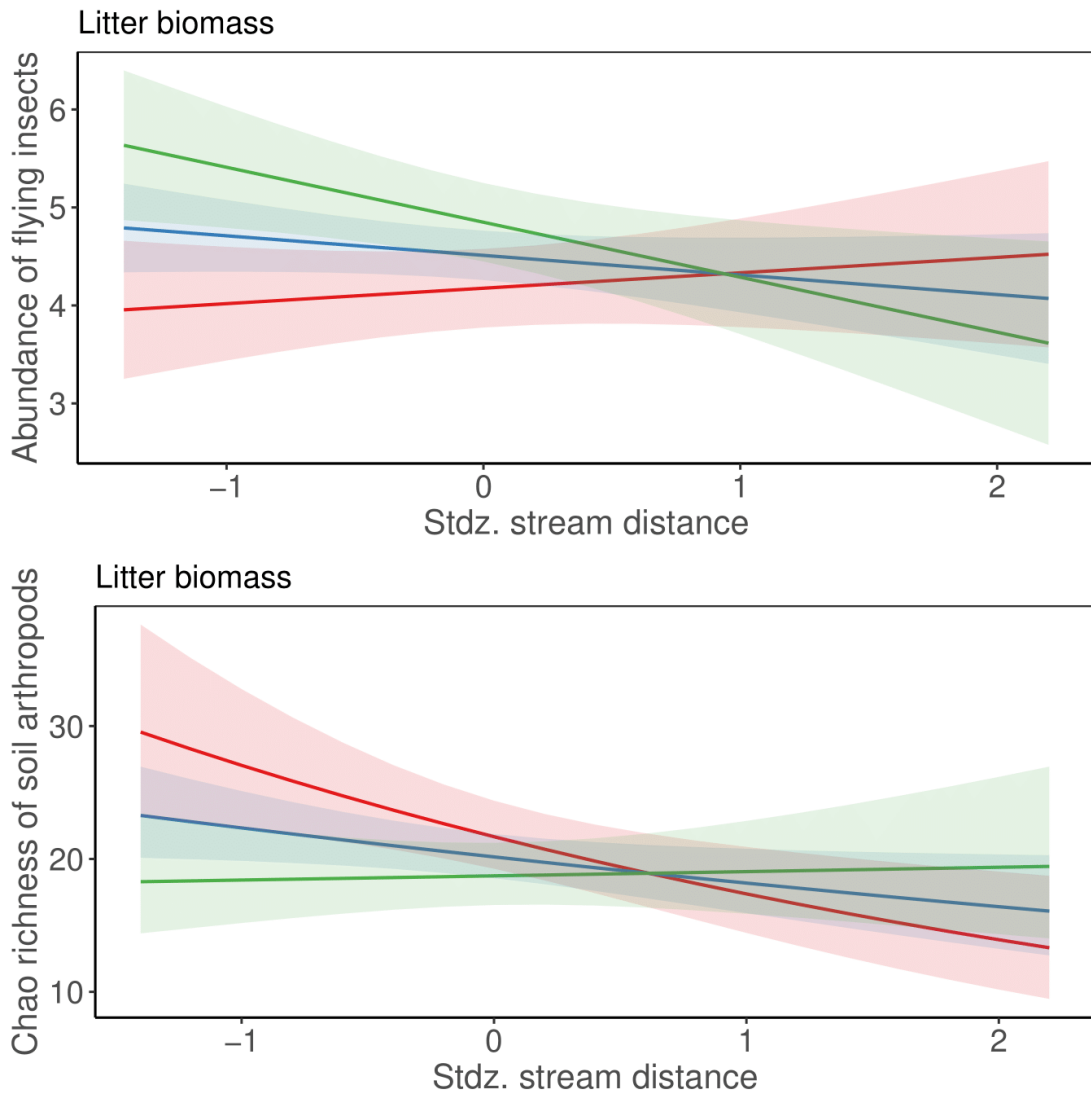


Fig. 4. Predicted responses and corresponding 95% confidence bands for the interactions between litter biomass and stream distance on the log-abundance of aerial captures and the Chao richness of ground captures (from Table 3). Litter biomass was classified in three levels (low, red; medium, blue; high, green) from range in Appendix S6.

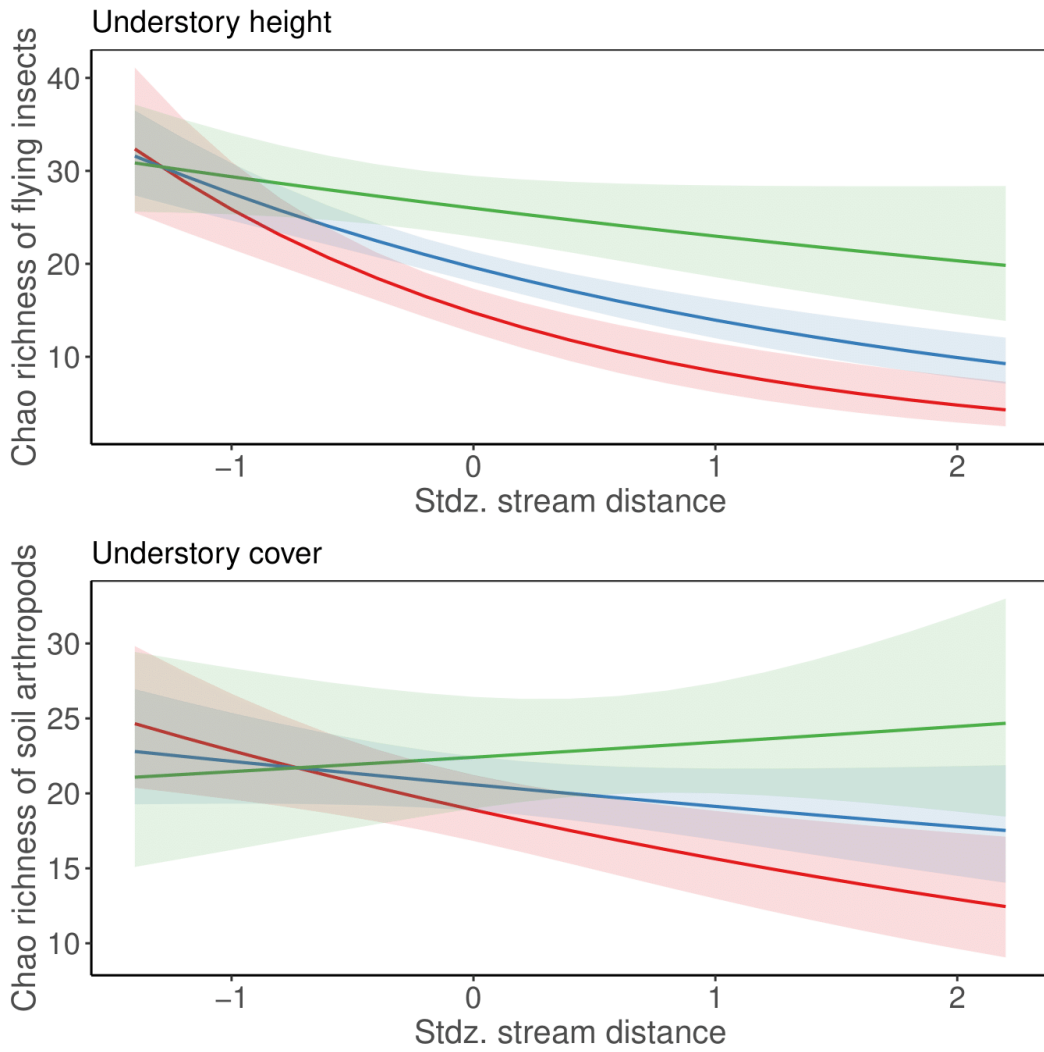


Fig. 5. Predicted responses and corresponding 95% confidence bands for the interactions between understory height or cover and stream distance on the Chao richness of arthropods (from Table 3). Understory height or cover were recoded to three levels (low–red; medium–blue; high–green) from the ranges reported in Appendix S6.