Foraging results

Juliana Balluffi-Fry

27/02/2025

Averaged by week, individual snowshoe hare foraging rates varied greatly, ranging from 2 to 14.9 hours per day (9.5 ± 1.7). Food supplementation reduced foraging effort by 0.9 hours (p = 0, t = -9.43, df = 1339, R2 = 0.062; Figure 2A). As daylight hours became longer from January to March, hares decreased their foraging rate by 9.1 ± 1.2 minutes per hour decrease in night length (p = 0, t = 7.77, df = 1495, R2 = 0.039).

The most parsimonious model for explaining foraging effort by control hares (delta AIC < 2) was that which included twig biomass and temperature as fixed effects (Table 1, model D2). This model found that hares foraged 28.8 ± 5.4 minutes more per day for every 10 kg per hectare increase in available twig biomass (t = 5.2, β = 0.048 ± 0.009, CI = ). This meant that as twig biomass increased from 5 to 40 kg/ha, hares foraging effort increased from 8.4 to 10.1 hr/day (Figure 3A). Additionally, the same model showed that for every 10 °C increase in ambient temperature, hares foraged 48 ± 3.6 minutes more per day (t = 12.81, β = 0.08 ± 0.006, CI = ). Meaning that as weekly temperatures increased from the coldest of -40 °C to the warmest of 5 °C, hare foraging rate increased from 7.6 to 11.2 hours per day (Figure 3B). While temperature and biomass explained a lot of variance within the model (Marginal R2 = 0.15), more variance was explained by individual differences (Conditional R2 - Marginal R2 = 0.52).

After testing this model (D2) on the food treatment data set, we found no effect of available twig biomass overall (t = 1.61), but there was a interaction between food treatment and twig biomass on foraging rates (β = -0.03 ± 0.01, t = -2.27, CI = ). When twigs were least available (16 kg/ha), foraging rates were similar between control and food supplemented individuals, but when twigs were most available (36 kg/ha), controls foraged hours more than food supplemented individuals (Figure 3C). Similar to the control model, this model showed foraging effort increased with warmer temperatures (β = 57 ± 4.2, t = 14.6, CI = ). There was also a significant interaction between food treatment and temperature (β = -0.03 ± 0.01, t = -3.34); control and food supplemented hares foraged for similar lengths of time at the coldest temperatures, but during the warmest weeks, as both groups foraged more, control hares foraged 1.4 hours more per day than food supplemented hares (Figure 3D).