

Figure S1. Individuals chosen for diet analyses were selected to cover a variety of biomass combinations of *Monoporeia* and *Saduria*. The graph is showing the biomass combinations experienced by *Saduria* for the individuals that were analyzed for diet. When analyzing the effect of *Saduria* and *Monoporeia* biomass on the degree of diet specialization we excluded individuals from intermediate biomass combinations (shaded area) to create groups of 1) low *Monoporeia* and high *Saduria* biomass, 2) low *Monoporeia* and low *Saduria* biomass, 3) high *Monoporeia* and low *Saduria* biomass, and 4) high *Monoporeia* and high *Saduria* biomass. The qualitative results are robust to the size of the excluded part (grey area). The chosen division was thus set to create four different density combinations. Note that there may be several individuals for each density combination.

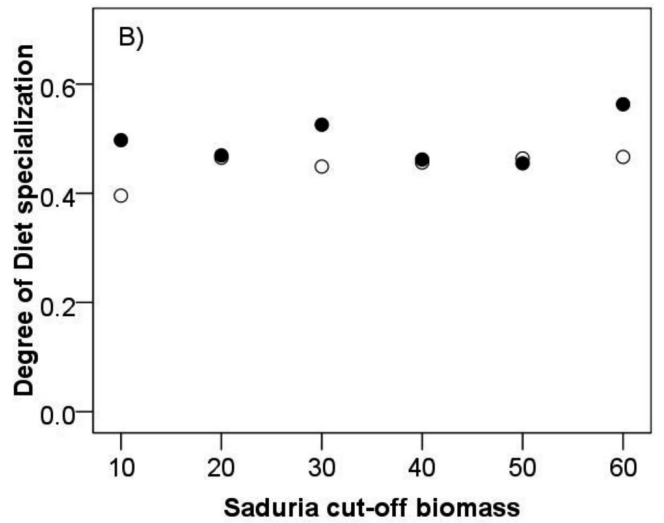
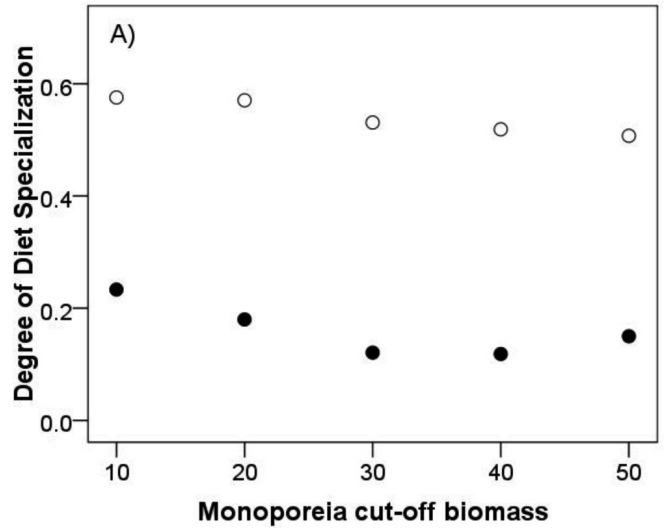


Figure S2. The figure is showing the degree of diet specialization in *Saduria* depending on low biomass (open circles) or high biomass (filled circles) combinations for (A) *Monoporeia* biomass and (B) *Saduria* biomass (Fig. S1). The data points for the low biomass combinations pools all individuals from zero biomass to the cut-off biomass whereas the data points for the high biomass combination pools all individuals from the highest biomass down to the cut-off biomass. The results show that our qualitative results (Fig. 1A) are robust to the size of the excluded part, i.e. diet specialization in *Saduria* depends on *Monoporeia* biomass and not on *Saduria* biomass.

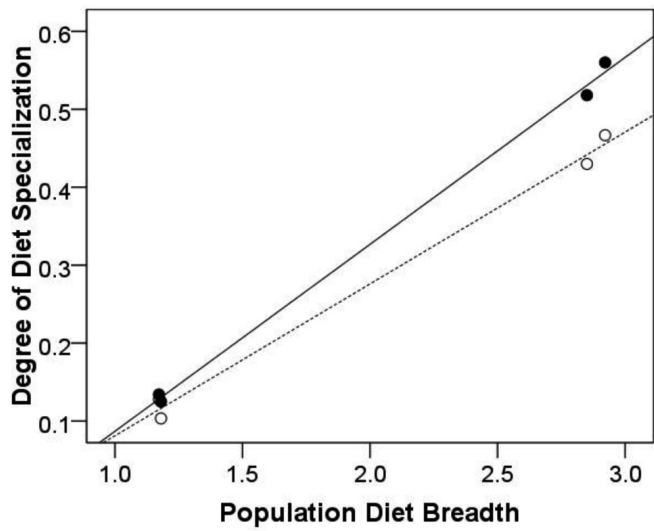


Figure S3. Correlation between degree of diet specialization (V) and the total niche width (population diet breadth) of the density combination groups (Fig. S1). The empirical results are shown with filled symbols and full drawn line. Open symbols and dotted regression line indicate the expected trend under a null model in which diet arises solely by individuals randomly sampling from a limited set of prey from a shared prey distribution.