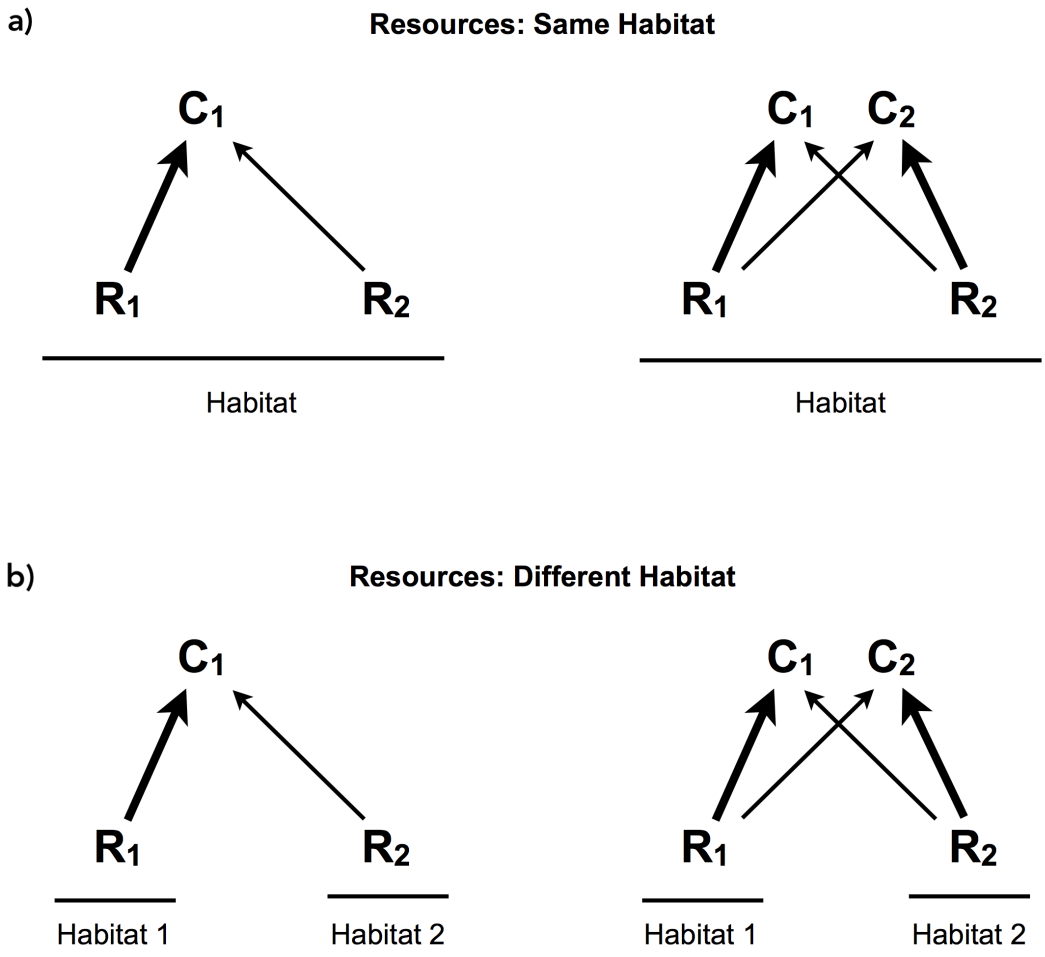

Figure 1: **Ecological foraging scenarios.** I examined whether the effect of ecological character displacement on food-web dynamics depended on whether consumers competed for resources that occurred in the same (a) vs. different habitats (b). Note that inferences about character displacement can only be made by comparing food webs with (right) and without (left) a competing consumer, so I arbitrarily set $C_2 = 0$ for these comparisons. The width of each arrow corresponds to the initial attack rate (a_{ij}) of consumer j on resource i. Note that C_1 was pre-adapted to R_1 ($a_{11} > a_{21}$), while C_2 was a mirror image, being pre-adapted to R_2 ($a_{22} = a_{11}$; $a_{12} = a_{21}$). In each scenario, I assumed consumer feeding rates increased linearly with resource abundance. I also relax this assumption and consider a more realistic functional response when resources occurred in different habitats (b).

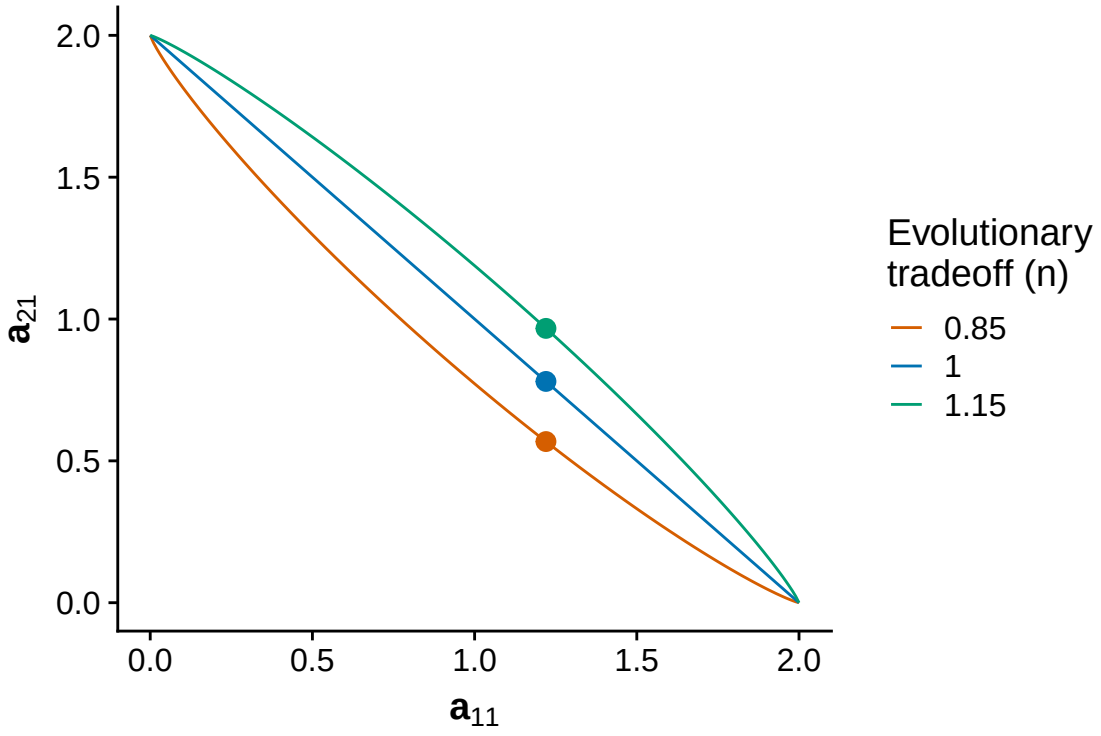

Figure 2: **Evolutionary tradeoffs in consumer attack rates.** In each foraging scenario, I explored the effects of three different tradeoffs: intermediate combinations of attack rates ($a_{1,j}$, $a_{2,j}$) are higher than the extremes (green line, $n > 1$); extreme combinations of attack rates are higher than intermediate investments (orange line, $n < 1$); and all combinations of attack rates have the same total attack rate (blue line, $n = 1$). Points corresponding to attack rates at the beginning of the simulation for C_1, which was pre-adapted to R_1 ($a_{11} > a_{12}$). Note that C_2 was a mirror image of C_1, being pre-adapted to R_2 ($a_{22} = a_{11}$; $a_{12} = a_{21}$).

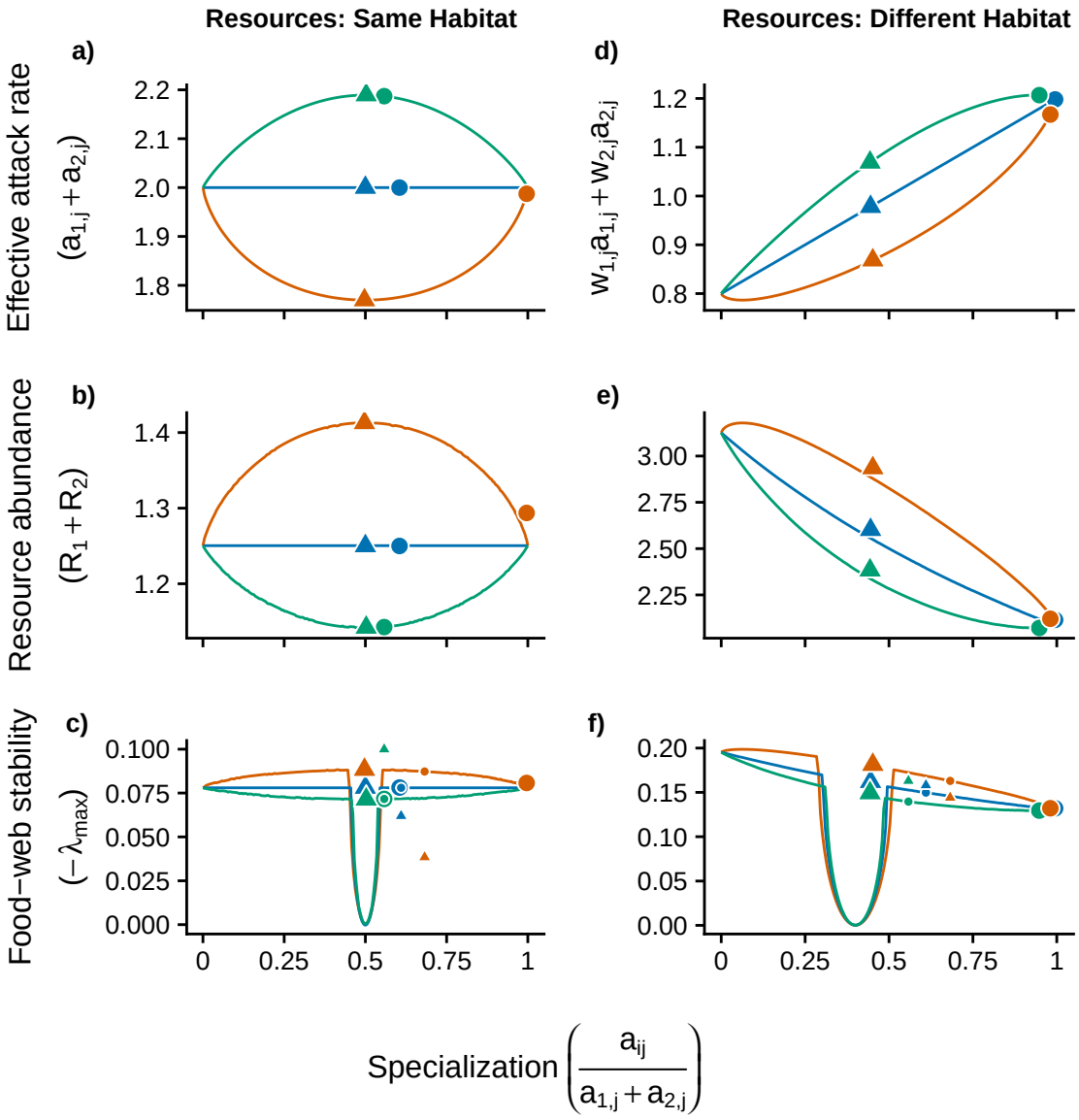

Figure 3: **Effect of character displacement on food-web dynamics under different evolutionary tradeoffs and foraging scenarios.** Lines show predicted values when both consumers and resources are present. Different line colors correspond to different tradeoffs in attack rates (green, n = 1.15; blue, n = 1; orange, n = 0.85). Large circles (two consumers) and triangles (one consumer) correspond to the end points of the eco-evolutionary simulation for C_1 (the choice to display C_1 was arbitrary), whereas as small shapes correspond to the starting points (only in stability panels). In both foraging scenarios, feeding rates increase linearly with resource abundance, but the equation for the effective attack rate is different.

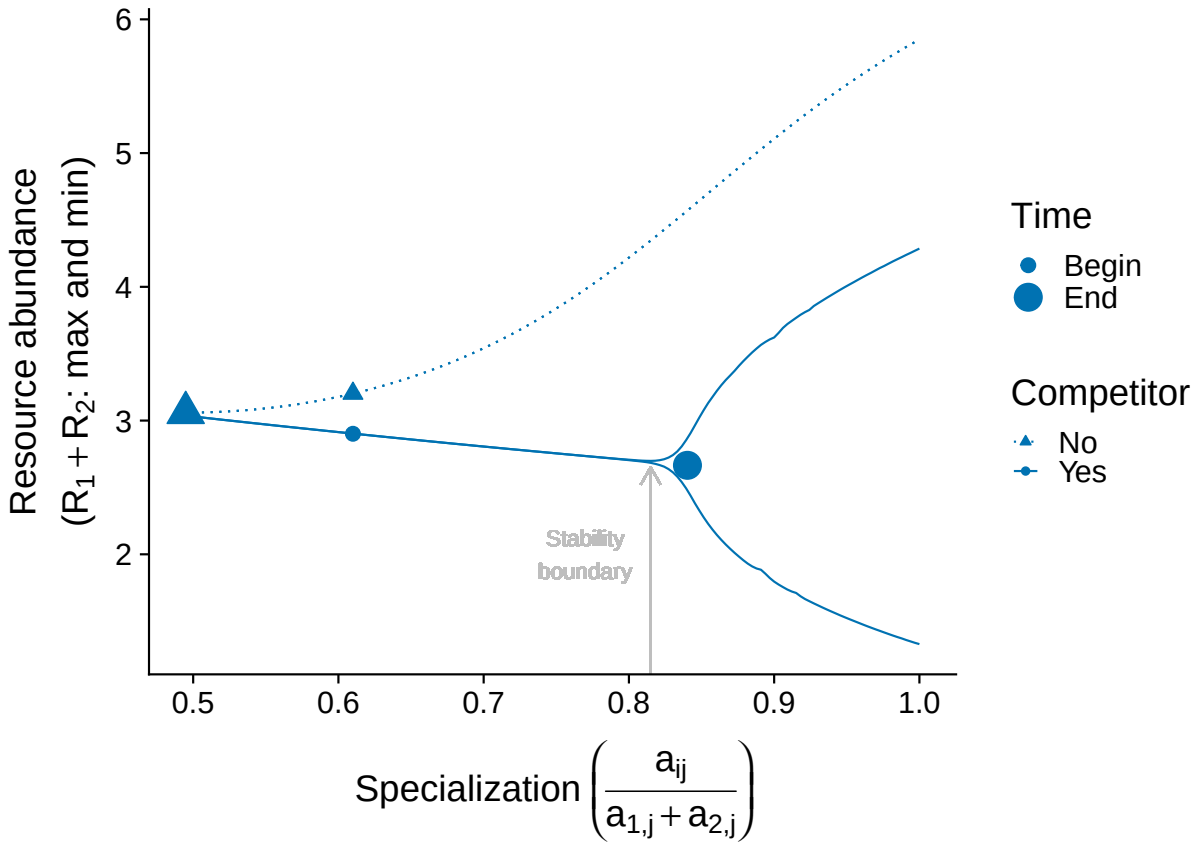

Figure 4: **Character displacement creates an unstable food web**. Lines illustrate the effect of character displacement across the range of specialization for C_1 (the choice to display C_1 was arbitrary), while the points are the results of an eco-evolutionary simulation. Note that I increased the total investment in attack rates (A = 3.3) to create a scenario that could result in an unstable food web. Although I specified a linear tradeoff in attack rates for this simulation, different tradeoff shapes do not qualitatively alter these results (see Appendix S4, Fig. S1).