

Chapter 58

Evolutionary Aside 58.1--Evolutionary Divergence in Microclimate Facilitates Coexistence of Sympatric Species

In previous chapters, we discussed how species diverge in resource use to minimize competitive pressures and then adapt to become more specialized to particular ecological niches. This is the process of character displacement, which underlies the process of adaptive radiation (see chapters 22 and 55). Most of the previous discussion of these phenomena has focused on traits such as body size, which affects the size of food an animal can eat, or other morphological features related to adaptation to different niches.

However, an alternative means of dividing niches is to evolve physiological adaptations to use different microclimates, as discussed in chapter 55. By adapting to different microclimates, sympatric species will encounter each other less frequently, minimizing competition for both space and food. It is just this sort of divergence that underlies the classic case of coexistence between intertidal barnacles (see figure 56.4), and similar divergent adaptation is involved in coexistence and evolutionary radiation in many groups of animals—such as lizards and salamanders—and plants. For example, in Hawaii, many types of plants have experienced adaptive radiation, and many species are able to co-occur by utilizing different microclimates.