



FIGURE 5.5. A phylogram (shown) is a phylogenetic tree that indicates the amount of evolution in addition to the branching order. The amount of evolution is represented by the branch lengths along the time axis (in this example, the vertical axis). In this tree, Tip 2 and Tip 3 share a common ancestor to the exclusion of Tip 1. However, during the time since they diverged from their common ancestor, Tip 2 has undergone more change. If Tip 2 and Tip 3 are modern organisms, this means that the rate of evolution in the lineage leading up to Tip 2 was greater than that leading up to Tip 3. Differences in rates of evolution are common and can be due to many factors such as different mutation rates, different population sizes, and different selective forces. Regardless of the cause, it is frequently very useful to incorporate such differences into evolutionary trees. In phylograms, a scale bar defines how much change is represented per unit length.