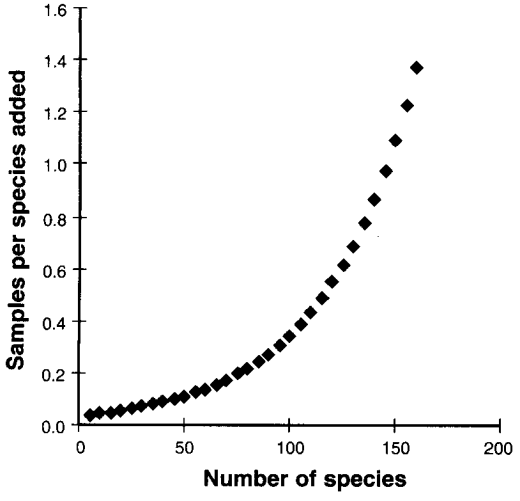

Figure 13.2. Cost in samples of adding an additional species to an inventory. As the number of species already captured in the inventory increases, the cost of adding additional species increases exponentially. This "cost" curve is derived from a logarithmic curve (see text) fitted to the species-accumulation curve from the Berlese samples (Fig. 13.1). The observed species-accumulation curve reaches 107 species after 16 samples. The cost curve predicts that adding a 17th sample to the inventory would add about two species.

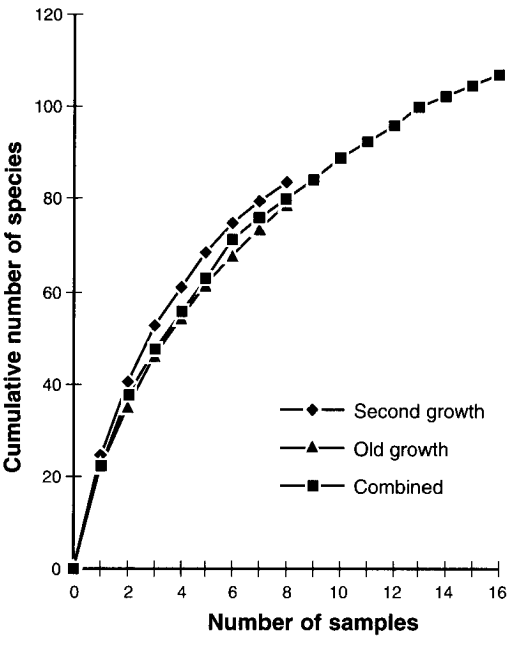

Figure 13.3. Within-habitat versus combined species-accumulation curves for the Berlese data (see text). Inventory efficiency (steepness of species-accumulation curves) does not differ greatly between old-growth and second-growth forest habitats, as revealed by eight Berlese samples. In addition, stratifying eight Berlese samples by forest habitat does not improve inventory efficiency.

How Can Species-Accumulation Rates Be Maximized?

When undertaking an inventory, choices have to be made about which sampling methods to use and whether to stratify sampling with respect to habitat variables or over time. How does one evaluate whether stratifying by habitat or using different methods is actually beneficial to an inventory? Comparing species-accumulation curves is one method of evaluating inventory efficiency (Longino and Colwell 1997). If the species-accumulation curve is much steeper in one habitat than another, concentrating inventory effort in the more productive habitat is advised. If two habitats have similar species-accumulation curves and very low species overlap (high complementarity *sensu* Colwell and Coddington 1994), then a combined species-accumulation curve, drawing samples randomly from both habitats, will be steeper than either within-habitat species-accumulation curve. In such a situation, stratifying samples across the two habitats is advised. If the combined curve is not steeper (it can lie below curves for the richest single samples), then there is less advantage to stratifying.

For example, the Berlese samples can be partitioned into those from old-growth forest and those from second-growth forest. Within-habitat