



Figure 15.1. Assessment of leaf litter ant sampling technique at 825 m on the Masoala Peninsula, Madagascar. The lower species-accumulation curve (thick line) plots the observed number of species as a function of the number of stations sampled. The upper curves display the nonparametric first-order jackknife (dashed line) and the incidence-based coverage estimator (ICE; solid line), estimated total species richness based on successively larger numbers of samples from the data set. Curves are plotted from the means of 100 randomizations of sample accumulation order.

50-sample sizes are shown in Table 15.1. Within the area of the survey, the Winkler technique collected the majority of ants foraging and living in the leaf litter. Most species collected by pitfall traps were also sampled by Winkler extraction, indicating that whereas pitfall samples in the same area would most likely add additional species, these species would probably have already been obtained by the Winkler method. Although this may hold true for most rainforest sites, it may not apply to all habitats. For example, Fisher and Razafimandimby (1997) found that in dry forest habitats, which contain more areas of open or bare ground, pitfall traps may collect a greater number of unique species.

Species-accumulation curves for the 825-m site on the Masoala Peninsula, the most species-rich site (Fig. 15.1), indicate that within the area

of the survey the techniques employed collected the majority of ants foraging and living in the leaf litter in the area encompassed by the 250-m transect, and that with increased sampling effort using the same methods in the same area, only marginal increases in species richness would be attained. Although additional collecting methods, or a survey in a different area or season at the same elevation, would most likely collect additional species, these results show that the ALL Protocol provides sufficient sampling for statistical estimation and comparison of species richness, and for comparison of faunal similarity and species turnover.

## Malaysia

Studies of ant diversity in the Pasoh Forest Reserve of West Malaysia by Malsch provide interesting data on the effects of plot size sampled in ant diversity studies. Situated in Negeri Sembilan, West Malaysia, about 140 km southeast of Kuala Lumpur (2 59'N, 102 19'E), the Pasoh Forest Reserve is a typical example of a Southeast Asian ever-wet lowland rainforest, with primary lowland dipterocarp forest situated between 75 and 150 m above sea level.

A total of nine leaf litter plots (each 25 m<sup>2</sup>) were investigated. Each plot comprised a 5 × 5-m<sup>2</sup> area with an additional 3 × 3-m<sup>2</sup> area nested in the middle of the plot. Each of the two nested areas (16 m<sup>2</sup> and 9 m<sup>2</sup>) was sampled separately, and the sum of the two equaled a 25-m<sup>2</sup> area. This approach enabled the comparison of all nested areas within plots. Ants from the leaf litter were extracted by the Winkler method after 24 hours and then again after an additional 24 hours (Chapter 9).

The nested sampling area design revealed that the size of the leaf litter sample (plot size) can influence the number of ant species collected. The number of species collected per square meter for each 9- and 25-m<sup>2</sup> plot is shown in Table 15.2. On average, one more species was