tles, and earwigs in woodlands, and hemipterans, beetles, and butterflies in shrublands (Table 6.2). Furthermore, no associations were found between ants and lizards (collected by hand searching) in woodlands.

The study by Cranston and Trueman (1997) is the only other study to find a positive relationship between the species richness of ants and that of another taxon, in this case plants. They compared the species richness of ants with that of several other invertebrate groups (collected in pitfall traps, in yellow-pan traps, and by leaf litter extraction in Tullgren funnels) and with the species richness of plants in five sites in northeastern Tasmania. Since they had only one site in each habitat, correlation analysis was not possible. Instead, the five sites were ranked independently according to the species richness of each taxon, and then the rank order was compared between taxa. It was identical only to the site ranking based on plant species richness (Table 6.2). The results of this study should be viewed with caution because the small sample size and superficial analysis do not provide a sound comparison of the patterns of species richness between taxa.

Burbridge et al. (1992) sampled ants in undisturbed woodlands and heaths in Western Australia using pitfall traps, hand collecting, and leaf litter extraction using Winkler sacks. They compared the species richness of ants to the number of vertebrate species sampled by a separate study conducted in the same area (A. H. Burbridge and J. Rolfe, unpubl. data). Reptiles and small mammals were collected in a pit line. They found no significant correlations between ant species richness and the species richness of reptiles, birds, or mammals (Table 6.2).

Oliver and Beattie (1996a, 1996b) studied the relationship between the species richness of ants and that of beetles or spiders collected in pitfall traps in New South Wales, Australia, in four habitat types along a transect that represented a transition from dry soils and a fairly open canopy to higher soil moisture and denser canopy cover. When the four forest types were ranked in order of species richness for each taxon, site rankings for ants, beetles, and spiders were all different. They found a significant negative correlation between ant and beetle species richness in each forest type (Oliver and Beattie 1996b; Table 6.2). In addition, ordination analysis of species turnover between the four forest types revealed that ants and beetles had similar levels of turnover but that spiders showed lower levels.

Finally, Oliver et al. (1998) investigated the relationship between species richness and turnover of ants and other groups between logged and unlogged forests in northeastern New South Wales, Australia. They conducted plant and bird point surveys at 100-m intervals along transects through each site. Small mammals were captured with Elliot traps at each of these points; reptiles and amphibians were collected by timed visual searches and in pitfall traps; and invertebrates were sampled using pitfall traps. Only ants and three families of beetles were sorted and identified from the invertebrate samples. No significant positive correlations were found between ants and any other group in unlogged or logged forest sites (Table 6.2). A significant negative correlation was found between ants and birds in unlogged forest but not in logged forest (Table 6.2). Species turnover between sites was in the order plants > invertebrates > vertebrates, indicating that these three groups do not display similar patterns of response to environmental change.

Limitations to the Indicator Approach

The finding that there are few strong positive correlations between ant species richness and that of other taxa is not surprising. There is no strong a priori reason why the diversity of a