

## Distribution of Behavioral Dominance

Globally, behavioral dominance becomes increasingly important to community structure with decreasing stress and disturbance. This trend is illustrated by ant behavior at tuna baits along an environmental gradient in southeastern Arizona, where monopolization by large numbers of behaviorally dominant species was greatest in desert (warm and open) habitats and least in forest (cool and shady) habitats (Fig. 3.3; Andersen 1997a).

The behaviorally dominant ants in warm regions are primarily Dominant Dolichoderinae and Generalized Myrmicinae, and, as previously mentioned, in open habitats there is often competitive tension between them. Dominant

dolichoderines are strongly associated with hot, open habitats, such as deserts, Mediterranean ecosystems, and the canopies of tropical rainforests. Generalized myrmicines, by comparison, are far more shade tolerant, with *Pheidole* being a numerically dominant genus on the rainforest floor throughout the tropical world (Chapter 8). Globally, I consider Generalized myrmicines to be competitively subdominant ants (Andersen 1995) for the following reasons (Table 3.2):

1. They are considerably more stress tolerant than Dominant dolichoderines.
2. Whereas Dominant dolichoderines typically have large territories and individuals exhibit extremely high rates of activity, territory size tends to be more restricted in

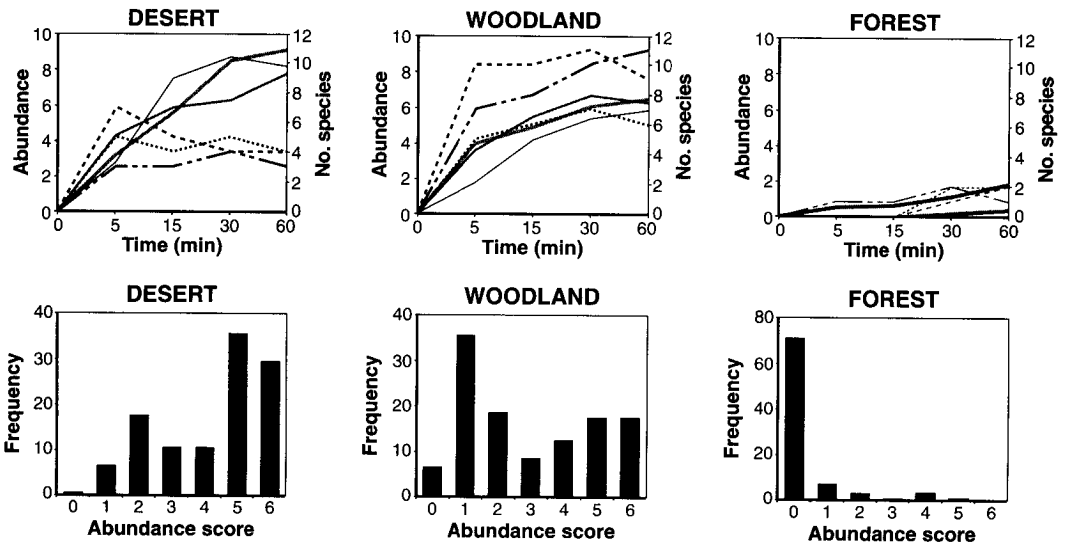


Figure 3.3. Behavior of ants at tuna baits at desert, woodland, and forest sites in southeastern Arizona, illustrating high, moderate, and low levels of behavioral dominance, respectively. Ant abundance (top; solid lines) at desert sites increases rapidly, reaching saturation levels after 30 minutes. Species richness (top; dotted lines), however, levels off after 5 minutes owing to competitive exclusion. Ant abundance is lower at woodland sites, but species richness continues to increase with time (local species richness is similar at desert and woodland sites). Both abundance and richness are very low at forest sites. Ant abundance scores (bottom) were usually either 5 (>20 ants) or 6 (>50 ants) at desert sites, fairly evenly distributed at woodland sites, and usually 0 (no ants) at forest sites. Data from Andersen (1997a).