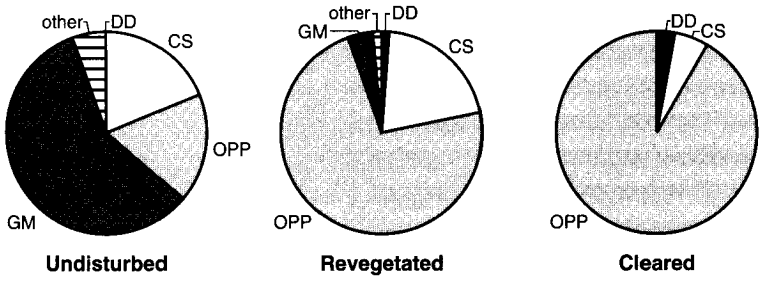

Figure 3.5. Effects of disturbance on functional group composition of rainforest ants in the humid tropics of Queensland. Functional groups as in Fig. 3.4. Data from King et al. (1998).

north, and *Lasiophanes, Notoncus, Prolasius,* and certain *Monomorium* in the south), Cryptic species (e.g., *Hypoponera*), and Opportunists (e.g., *Paratrechina, Rhytidoponera,* and the *fusca* group of *Formica*).

Functional group composition responds predictably to habitat disturbance in temperate and semiarid regions (Andersen 1990; Bestelmeyer and Wiens 1996), but the effects of disturbance on functional group composition of tropical rainforest ant communities have been poorly documented. In temperate southeastern Australia, for example, disturbance typically results in the proliferation of Opportunists, especially small species of *Rhytidoponera* (Andersen 1988, 1990; Andersen and McKaige 1987). Such a proliferation of Opportunists, especially species of *Formica* (*fusca* group) and *Myrmica,* following disturbance is also characteristic of cool-temperate regions in the Northern Hemisphere (Brian 1964; Gallé 1991; Andersen 1997a). Results from Queensland (Fig. 3.5) indicate that a proliferation of Opportunists (species of *Paratrechina* and *Rhytidoponera*) is also a characteristic response to severe disturbance in humid tropical Australia. This also appears to be true in the Solomon Islands, where tree clearing favors opportunist species of *Cardiocondyla, Paratrechina, Tapinoma,* and *Tetramorium* (Greenslade and Greenslade 1977). Aside from arboreal taxa, Specialist predators and Cryptic species were especially sensitive to tree clearing in the latter study. Cryptic species also appear to be especially sensitive to tree clearing in the neotropics (Majer et al. 1997), where edge effects can be manifest for up to 200 m into the forest.

Conclusion

In any functional group analysis there is an inevitable trade-off between generality and precision, and the broad-scale predictive power of a global scheme will inevitably be inadequate for a detailed understanding of the dynamics of particular communities (Andersen 1997b). However, a global ecology based on functional groups in relation to stress and disturbance provides a predictive framework for analyzing broad patterns of (1) community composition and behavioral dominance within and between rainforest types, and (2) the responses of rainforest ant communities to disturbance. Unfortunately, even such coarse-scale analyses are highly constrained by a patchy geographic coverage of relevant studies (e.g., very little has been published from Africa) and a paucity of information on the effects of habitat disturbance (other than tree clearing). Nevertheless, there appears to be substantial convergence between biogeographic regions in the distribu-