most of the state, being present in most regions except for the northern part of the Kimberley. *M. turneri perthensis* is common in the southwest of WA and extends through the central Goldfields into the northern Pilbara region. It does not seem to extend into the arid interior of the State. The taxonomy of *Melophorus* is currently under review, so this distribution may ultimately represent more than one species.

Sites and general sampling techniques

Ant sampling was conducted between February 1976 and April 1979 at seven sites in the southwest of Western Australia (Fig. 2; Supplemental Table S1). The Dwellingup, Karragullen and Manjimup sites are on the Darling Plateau, with laterite soils, while the Perth and Yalgorup sites are on the Swan Coastal Plain, which has sandy soil. Ant seasonality was assessed at six of the sites (not at Yalgorup) using a procedure described in detail in Koch and Majer (1980). At five of the sites, a 6 × 6 grid of 18 mm internal diameter pitfall traps, 3 m apart, was left open for 1 week; while at Karragullen a 5 × 4 grid of 54 mm internal diameter traps, 5 m apart, was used. Further details of the sites are given in Koch and Majer (1980) and Majer (1984). The six locations were repeatedly sampled on no less than a monthly basis for a year or more (see Supplemental Table S1 for period details). Additionally, a range of measurements and observations were performed on colonies and nests at the Karragullen and Dwellingup sites, and also at Yalgorup National Park.

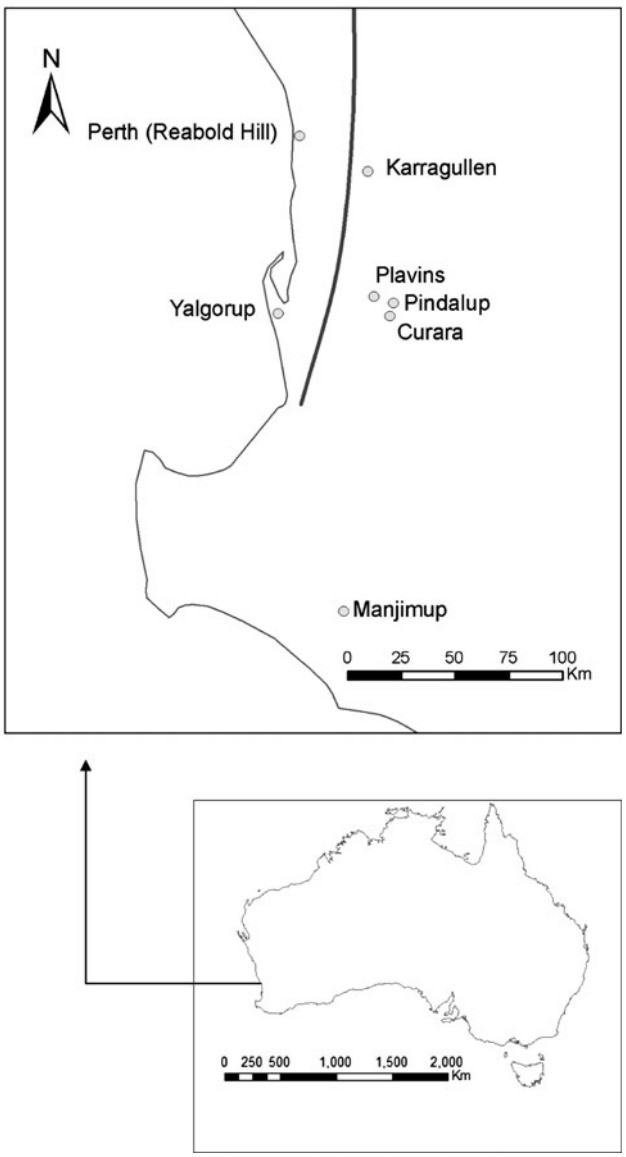

Fig. 2 Map of southwest Western Australia, showing sites where detailed observations or samples were taken for *R. violacea*, *R. inornata* and *M. turneri perthensis*. The *solid black line* shows the position of the Darling Scarp, which separates sandy soil to the west, from lateritic soil to the east

Seasonality of foraging

We tested for a temporal correlation of *Rhytidoponera* and *Melophorus* activity in each of the six pitfall trap locations using Spearman's rank correlation. We then asked whether ant activity for each species varied seasonally. In order to create replicated samples, we matched up each month of sampling from the six locations (no matter in which year this month occurred). We then performed an ANOVA to determine whether ant activity varied significantly amongst months. We performed the tests separately for the three ant species.

Diurnal activity

Notebook observations on diurnal activity were maintained at the Karragullen site over an 18-month period. In addition, in three seasons (summer, 22 Feb 1978; winter, 25 May 1978; spring, 31 Aug 1978), five nest entrances of each of the three species were observed for 3 min, every hour for 24 h and the number of individuals leaving the nest was quantified. The response of these species to daily environmental variation was compared.

Response to fire

Four of the six sites were subjected to controlled burns (see Supplemental Table S1). In each case a matched control (unburnt) plot of pitfall traps was sampled during the same period as the burnt plot, before and after the burn.

Analysis was performed separately for each species. We used a Before–After Control Impact (BACI) design, with each of the four sites representing a replicate. Within each site we calculated a mean value of ant abundance across sample periods for the BACI combination. After-fire