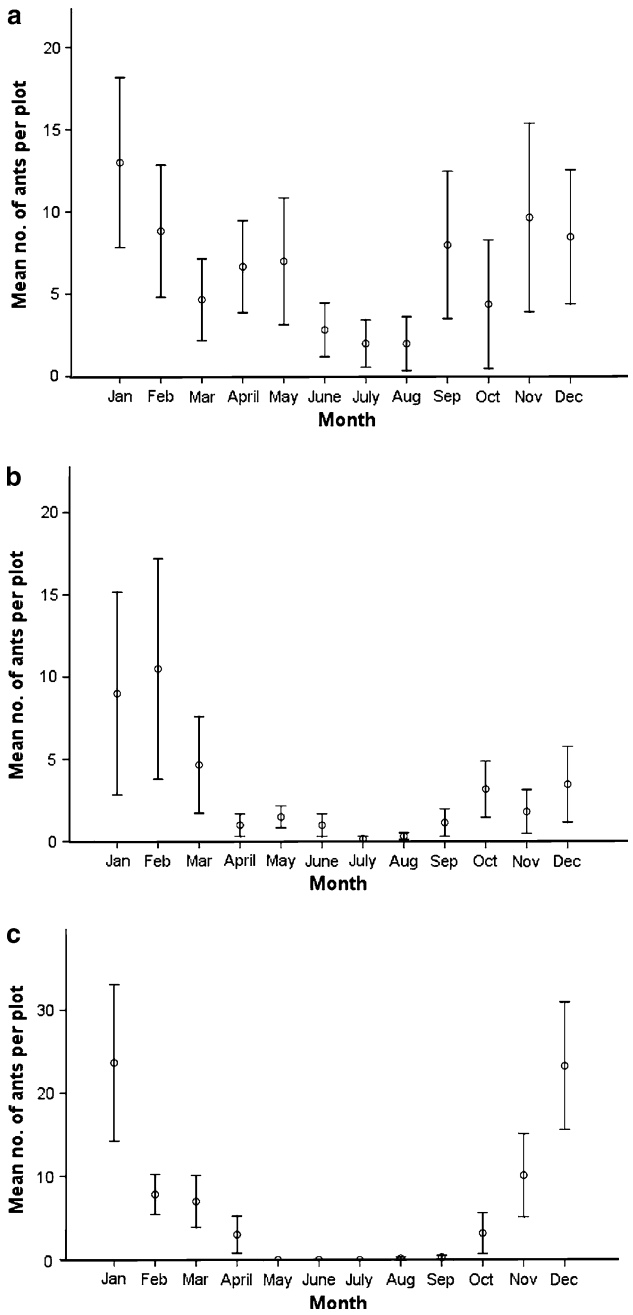

Fig. 3 Seasonal variation in activity of **a** *R. violacea*, **b** *R. inornata* and **c** *M. turneri perthensis* at six sites. *Error bars* represent 1 standard error; vertical axes scales differ in the three graphs

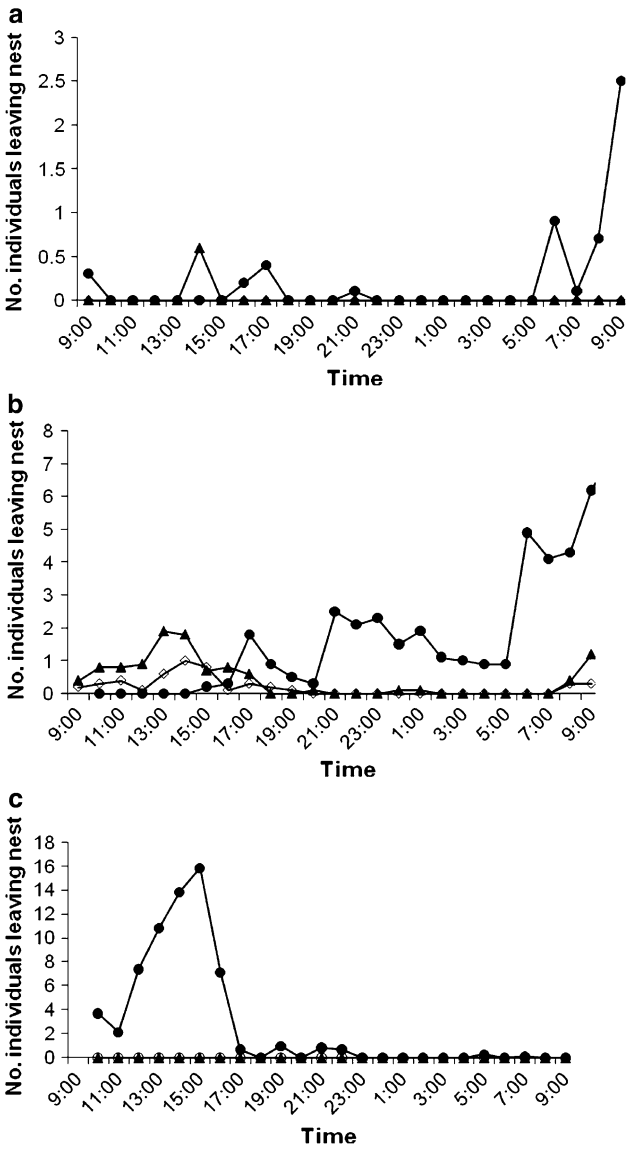

Fig. 4 Diurnal activity of **a** *R. violacea*, **b** *R. inornata* and **c** *M. turneri perthensis* over three seasons. Activity was quantified as the number of individuals leaving a nest over a 3-min period, recorded each hour; vertical axes scales differ in the three graphs. *Filled circle* summer, *filled triangle* winter, *empty diamond* spring

significant for *R. violacea* ($F_{11,59} = 1.306$, $P = 0.244$) or *R. inornata* ($F_{11,59} = 0.846$, $P = 0.596$). *M. turneri perthensis* exhibited a more pronounced increase in activity during the spring–summer months (November to February). *Rhytidoponera* also demonstrated a peak in activity during January to February, but not to the same extent. *M. turneri perthensis* exhibited a complete lack of activity during winter months, while both *Rhytidoponera* spp. maintained low-level activity during this period.

On average, across all locations and all sampling periods, *Rhytidoponera* spp. was 1.4 times more active than *Melophorus*.

Diurnal activity

All ant species were most active in the summer months (Fig. 4a–c). While *Rhytidoponera* spp. activity peaked in the morning (Fig. 4a, b), approximately after sunrise, *Melophorus* activity peaked during early afternoon (Fig. 4c); generally the warmest part of the day. No *Melophorus* activity outside of nests was recorded during the winter and spring observation periods. During winter,