



Extended maternal care enhances brood survival and may be a precursor to sociality in the orchid bee *Euglossa viridissima*

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Many insect species exhibit extended parental care, in which one or both parents remain with their juvenile offspring beyond provisioning, presumably enhancing offspring survival. Extended parental care has often been viewed as a precursor to eusociality. In the facultative social orchid bee *Euglossa viridissima*, a foundress mother mass provisions and lays an egg in each of a batch of 1-13 brood cells within a small nesting cavity, then seals the cavity from within to await 58-63 days for offspring emergence, whereupon brood cell provisioning recommences; the nest may then become social. We experimentally tested for benefits of extended maternal care in *E. viridissima* by removing foundress females from some nests after they had provisioned and laid eggs in a batch of brood cells, paired with nests in which we did not remove the foundress female. Brood survival through to offspring emergence was high (87%; mean \pm SD 8.2 \pm 3.7 offspring per nest) in nests with a foundress but low (41%, mean \pm SD 3.0 \pm 2.7 offspring per nest) in nests from which we had removed the foundress. We also recorded intranidal behaviours of foundress females through glass-roofed nesting cavities; foundresses exhibited considerable brood care (40.6% of observed behaviours across all nests), but also nest defence (21.5%) and nest maintenance (14.9%). These traits could explain why *E. viridissima* females benefit from remaining with their initial batch of offspring. The extended lifespan of females, as seen in *E. viridissima*, could also lead to considerable overlap of foundress with offspring, increasing the opportunity for sociality in this species. The enhanced survival of offspring when guarded by a conspecific also highlights a potential benefit of sociality through protection of kin pupae.