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**Habitat characteristics and species interference influence space use and nest-site occupancy:
implications for social variation in two sister species**

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Abstract

Nest-site selection is an important component of species socio-ecology, being a crucial factor in establishment of group living. Consequently, nest-site characteristics together with space-use proxies may reveal the social organization of species, which is critical when direct observation of social interactions is hindered in nature. Importantly, nest-site choice is expected to be under strong selective pressures and the object of intra- and inter-specific competition. Although the bulk of research on sociality focuses on its ecological drivers, our study introduces interspecific competition as a potential factor that could influence social evolution. We investigated the influence of habitat and interspecific competition on the social organization of two sister species of the African four striped mouse (*Rhabdomys dilectus dilectus* and *Rhabdomys bechuanae*) in a similar macroenvironment. These species diverged in allopatry and occupy distinct environmental niches. We radiotracked 140 adults to identify their nest-sites, determine nest characteristics and record groups that shared nest-sites. Group cohesion was estimated from nest-site fidelity, group association strength, and home range overlap within versus between group members. We compared the two species in sympatry versus parapatry to determine the impact of species interference on sociality. In parapatry, the two species selected distinct nest-site types, interpreted as different anti-predator strategies: *R. bechuanae* selected fewer, spaced, less concealed nest-sites whereas *R. d. dilectus* selected clumped and less visible nest-sites. *Rhabdomys bechuanae* also showed more cohesive and stable social groups than *R. d. dilectus*. In sympatry, compared to *R. bechuanae*, *R. d. dilectus* occupied similar nest-sites, however slightly more exposed and clumped, and displayed similar nest-site fidelity and group association strength. We conclude that although habitat selection may be an important driver of social divergence in *Rhabdomys*, species interference, by limiting *R. d. dilectus* movements and forcing nest-site sharing may induce new ecological pressures that could influence its social evolution.

Key words: habitat selection, home range overlap, interspecific competition, nest-site sharing, radiotracking, *Rhabdomys*, secondary contact, social groups