

Title: Exploitation competition between hole-nesters (*Muscardinus avellanarius*, Mammalia and *Parus caeruleus*, Aves) in Mediterranean woodlands. *Journal of Zoology*, 2005

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Background to study

Competition between species for natural resources is a major factor that may limit the distribution and abundance of species. Research suggests there may be competition for artificial nesting sites between common dormice and bird species however the impact on either species is undetermined.

Method

- Dormouse and blue tit occupation of nest boxes was monitored in 13 sites in the Madonie Mountains, from 1996-2003. Areas varied in altitude, habitat and climate but were accounted for in analyses. No. boxes erected per site ranged from 5 to 58 and 7 of 13 sites had additional larger holed fat dormice monitoring boxes present (25/site).
- A further 50 nest boxes were erected in 3 study areas within the Sicani Mountains where dormice are absent and used as a control for investigating blue tit occupation of nest boxes without competition. Monitoring was carried out between 1993/1997 and 2002
- Monthly nest box checks were conducted throughout the year and every 7-14 days between March and June when competition for nest sites was presumed to be highest.
- At one site, the entrance of 25 nest boxes were closed during November 2001 and March 2002 and reproductive patterns of both species were compared with other sites.
- At five sites during 2002/3 breeding seasons, stuffed specimens representing intruders, predators and competitors of blue tits were placed in blue tit nests to investigate the response of blue tits to the presence of common dormice.

Key results

- Blue tits colonised boxes in March, during low abundance phase of dormice, whilst dormice occupation of boxes rose gradually till June. Changed ownership of boxes equated to 7%.
- Nesting by blue tits in boxes abandoned by dormice was more frequent than the reverse.
- Both dormice and blue tits selected small holed nest boxes over large.
- No. of blue tit and dormice breeding pairs significantly correlated to nest box density.
- Direct competition for nest boxes was observed and occupation by dormice had an immediate rather than delayed effect on blue tit abundance. Blue tit abundance decreased during years of high dormouse abundance and increased when dormouse abundance was low.
- Blue tit occupation rates were significantly lower where dormice were present.
- Dormice occupation rate decreased in response to nest box exclusion, whereas blue tit occupation increased, reaching similar levels to areas where no dormice were present.
- Blue tits demonstrated intruder behaviour when presented with stuffed dormice, suggesting dormice may pose a threat to blue tit eggs and/or fledglings.

Key messages to landowners and managers derived from these results

- Dormouse monitoring data is likely to be effected by nesting site competition with birds and as such, lower dormouse occupation rates may not indicate a reduction in dormouse abundance.
- Excluding nest box occupation over winter is not recommended for dormouse monitoring.

Key words/phrases

Dormice; *Muscardinus avellanarius*; blue tit, *Parus caeruleus*; nest sites; competition; Mediterranean woodlands