

Fantastic Mrs. Fox -- mother knows best for urban fox families

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In urban fox families, mothers determine which cubs get to stay and which must leave while fathers have little say in the matter, new research by biologists at the University of Bristol has found.

In a world of increasing urban sprawl, [red foxes](#) have successfully established themselves in our very backyard. Surprisingly sociable, these foxes live in defined [family](#) groups with a dominant male-female pair and a varying number of subordinate adults. In spring each family produces a litter of cubs. Some of these cubs remain in the family group for the rest of their lives while others leave to search for another family to join. Scientists have long wondered what, or who, drives these individuals to leave the safety of their family.

The urban foxes in Bristol have been studied continuously since 1977 giving a rare window into their normally secretive lives. While the rest of the city sleeps, a dedicated team of researchers from Bristol University's School of Biological Sciences spends numerous nights following radio-collared foxes, observing family life, and discovering cubs in the strangest of places.

Establishing family trees for the foxes used to be difficult, as during the [mating season](#) male foxes often sneak off to mate with unknown females. However, by combining field observation with DNA paternity testing in the lab, the researchers have now succeeded in creating extensive fox family histories. Using this information, they found that the cub's [genetic relationships](#) with female family members determine its

dispersal strategy.

The findings suggest male cubs with dominant mothers disperse to avoid inbreeding while their sisters remain to enjoy the benefits of living with their dominant mother figure. The opposite pattern is observed for cubs born to subordinate mothers.

Comparison of the dispersal strategies of cubs fathered by [dominant males](#) with those fathered by males outside of the family demonstrates that fathers appear to play no role in this decision.

Helen Whiteside, lead author of the study said: "There is a limited cost to the dominant male fox in allowing unrelated males to stay in the family group. Moreover, sneaky matings outside the family mean that dispersal is not a reliable mechanism for preventing [inbreeding](#) between fathers and daughters. Consequently, control of cub dispersal is much more important for mothers than fathers.

"These findings have important implication for the evolution of dispersal and group living in social mammals, and provide a unique opportunity to advance our understanding of the key biological process of dispersal."

More information: Whiteside HM, Dawson DA, Soulsbury CD, Harris S (2011) Mother Knows Best: Dominant Females Determine Offspring Dispersal in Red Foxes (*Vulpes vulpes*). *PLoS ONE* 6(7): e22145. [doi:10.1371/journal.pone.0022145](https://doi.org/10.1371/journal.pone.0022145)

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