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Rodent societies – how population densities affect the breeding system

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In many rodents species population densities fluctuate tremendously with effects on social interactions and contact rates. Even strength of and solutions to intersexual and intrasexual conflicts vary with density. We combine population experiments, life trapping, behavioural observations, endocrinological data, and breeding rates to investigate effects of density changes on territoriality, multipaternity, and the Bruce effect in Bank voles, a small microtine rodent. We suggest for example, that the Bruce effect (a pregnancy termination after encountering a strange male, commonly observed in caged rodents) may be adaptive for free living, breeding rodent females only under very specific conditions related to populations with cyclically fluctuating densities, such as the increase phase of the rodent cycle when infanticide risk by single males is high. During other times of the cycle with high density, females use multiple male mating to protect offspring from infanticide. Thus, our studies show that within rodent populations animals are extremely flexible in their social behaviour, and that population density is the most important variable explaining the organisation of a rodent society.