Stony Brook University
The Graduate School

Doctoral Defense Announcement

Abstract

Social Structure and Mating System of Gunnison's
Prairie Dogs (Cynomys gunnisoni)

By

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Social animals often show considerable intraspecific variation in their social structure, both within and between populations. This variation provides the opportunity to investigate the evolution and maintenance of animal grouping patterns and cooperation by providing insight into the adaptive value of social plasticity and the proximate mechanisms underlying different social strategies. I investigated the ecological determinants of Gunnison's prairie dog social structure and mating system in two colonies in northern Arizona. I tested whether Gunnison's prairie dog social structure was resource-based or whether male mating strategies drive the organizational patterns observed. To do so, I experimentally changed the dispersion and abundance of resources to analyze whether and how space use and social organization of Gunnison's prairie dog responded to. I collected genetic data to describe patterns of relatedness among individuals within social groups, and to determine what factors influence male reproductive success and female mate choice.

In these populations of Gunnison's prairie dogs, group size was predicted by territory size and density of food available. The spatial overlap of adults within territories was positively correlated with spatial patchiness of food resources

There was a lack of sexual dimorphism between males and females. Contrary to predictions of typical mammalian male mating strategies, adult females ranged significantly further than males during the mating period. Food manipulations demonstrate that Gunnison's prairie dog adults responded to changes in food dispersion by changing territory size and modifying home ranges. Results of the genetic data indicate that Gunnison's prairie dog social groups are not composed of close kin and that relatedness is not correlated with space-use in these populations. Lastly, outcomes of paternity analysis showed that resident males do not consistently have a higher frequency of siring the offspring in their territories. Results from this study support critical components of the resource dispersion hypothesis and strongly suggest that patterns of space use and group membership in Gunnison's prairie dogs are the result of individual responses to resource abundance and distribution.

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