

Consequences of corticosterone-mediated sexual conflict in common lizards (*Zootoca vivipara*)

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Frequently, males and females show different optimal fitness strategies concerning the system and frequency of mating, giving rise to sexual conflict. The outcome of this sexual conflict is determined by the balance between the costs and benefits of mating for each sex and proves essential in the evolution of reproductive strategies that can lead to speciation. Stress is a common response during reproductive events. It affects a diverse range of behavioural interactions, including mating, and oftentimes it negatively affects female fecundity and offspring quality. Asymmetric (sex-specific) effects of stress may influence the balance of costs and benefits of mating and thereby alter sexual conflict resolution.

Common lizards (*Zootoca vivipara*) exhibit a polygynandrous mating system in which males possess higher potential rate of reproduction than females, their fitness (i.e. number of offspring) largely depending on the number of mates they can fertilize. Females' potential reproductive rate is lower and they exhibit stronger mate discrimination. Their offspring do not increase proportionally with the number of mates and their lifetime fitness may be affected by current reproductive investment. In a mating experiment, we used corticosterone, one of the main glucocorticoid hormones involved in the stress response of lizards, to investigate female mating behaviour under high blood corticosterone levels and thereby assess the effects of increased asymmetric costs of mating in sexual conflict resolution. Since multiple paternity is common in the wild, we presented females with at least two different partners (either known or novel). This allowed us to further explore the hypothesis that high corticosterone level females might use multiple mating as a mechanism to compensate their higher costs of mating through increased genetic diversity, viability or sexual attractiveness of their offspring (i.e. potential benefits). Results revealed that high corticosterone level females were more aggressive towards conspecifics, especially males and known partners. They showed reduced probability of copulation compared to control females and this response was size-dependent. In contrast, males showed very similar behaviour towards females from different corticosterone group. Regardless of male increased interest towards known females, the probability of copulation between different groups of partner novelty was unchanged. Furthermore, copulations were longer on average with novel females, implying an increased chance of fertilization. Our results are consistent with the hypothesis that females try to reduce (rather than compensate) the elevated costs of mating through stronger mate discrimination, favouring long-term reproductive success over current attempts. This suggests an important, potential impact of environmental sources of stress during breeding in the evolution of reproductive strategies.

Sexual conflict, female choice, stress, multiple mating, mating behaviour, lizard.