

# Research, briefly: Raising offspring comes at a cost



LaSharr

## Key findings

Mule deer females that enter winter with more fat tend to lose more fat over winter. In comparison, females with less fat lose less over winter.

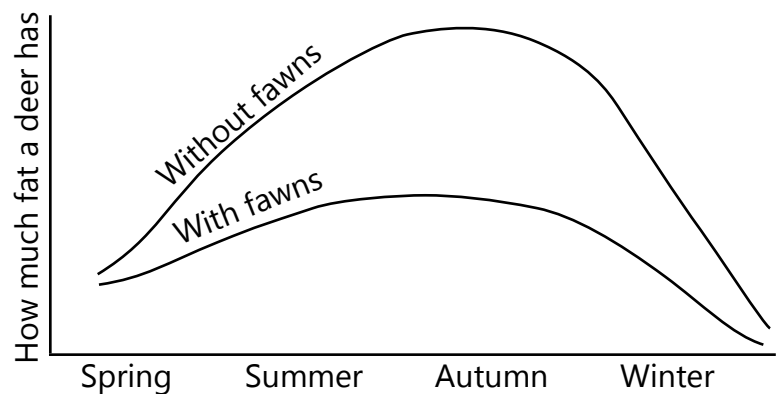
Mule deer that are raising fawns tend to gain less fat than mule deer without fawns.

Mule deer sometimes have to make hard tradeoffs between raising fawns and gaining enough fat for winter.

North American ungulates such as mule deer use warm months when plants are abundant to put on fat in preparation for winter, when food will be scarce. Females make trade-offs in how they split up their fat reserves between reproducing and providing nutrition to offspring, surviving, and preparing for the future.

Most female mule deer lost fat during the winter, but the specifics of how much fat they lost depended on how much fat they had going into winter.

Females who entered winter with no offspring had greater fat reserves, indicating that mothers with fawns spend more resources in summer and autumn than mothers without fawns, even at the risk of gaining enough reserves for overwinter survival.



## Mule deer ecology carries over between seasons

Raising fawns isn't easy, and mule deer occasionally need to make important tradeoffs between their own survival and raising offspring.

Because recruitment of fawns was linked to fat accumulation and spending resources in the winter, this research highlights the interconnected nature of seasonal dynamics in ungulates. The entire year should be seen as intertwined: rearing fawns in the summer could be costly for the mother in the winter, or severe conditions of a previous winter could have negative ramifications for the upcoming summer.



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The researchers studied changes in fat levels across seasons in 136 female mule deer in Sierra Nevada mountains of central California. Researchers captured mule deer and measured their fat content (process shown in top picture), as well as assessed the number of fawns per mother in the autumn.

This brief is based on the scientific article, "Risk-sensitive allocation in seasonal dynamics of fat and protein reserves in a long-lived mammal" published in the Journal of Animal Ecology in 2013, and written by K. L. Monteith, T. R. Stephenson, V. C. Bleich, M. M. Conner, B. M. Pierce, and R. T. Bowyer. Brief led by A. Ewen.