

Key to evolutionary fitness: Cut the calories

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Charles Darwin and his contemporaries postulated that food consumption in birds and mammals was limited by resource levels, that is, animals would eat as much as they could while food was plentiful and produce as many offspring as this would allow them to. However, recent research has shown that, even when food is abundant, energy intake reaches a limit, even in animals with high nutrient demands, such as lactating females. Scientists at the Research Institute of Wildlife Ecology in Vienna suggest that this is due to active control of maternal investment in offspring in order to maintain long-term reproductive fitness.

The research, to be presented by Dr Teresa Valencak at the Society for [Experimental Biology](#) Annual Meeting in Glasgow has shown that, when their energy reserves are low or when their offspring are kept in cooler temperatures, Brown hares are able to increase their energy turnover and rate of milk production above that normally observed. This indicates that, ordinarily, the hares are operating at below their maximum capacity and shows that this is not due to any kind of physiological constraint, such as length of digestive tract or maximum capacity of mammary glands. Also, as the hares were provided with plentiful food, there could be no limitation of energy turnover due to food availability.

The way that females regulated their energy expenditure according to pup demand and their own fat reserves but did not exceed certain levels fitted with the group's theory that using energy at close to the maximum rate has costs for animals which may compromise their ability to successfully reproduce in the future. If a hare puts most of its energy

into a litter of pups then it will have little left over for growth and body repairs for example, which may shorten its life or make it less able to produce or care for young in the future. By actively limiting the rate of energy turnover, a mother can prevent this and maintain a higher level of [reproductive success](#) over her lifetime.

Source: Society for Experimental Biology

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