

## TO BE OR NOT TO BE... A SMALL

### Summary

Body mass (size) is a very important biological character, interrelated with key life history traits, such as fertility, age at maturity, reproductive success and mortality. On the physiological level, body mass is also closely associated with key components of energy budgets. Yet, factors moulding within-species variation of body mass and its relations to energy expenditures and life history traits are still not fully understood. The weasel (*Mustela nivalis* Linnaeus, 1776) is an extremely interesting species almost perfectly suited to study these relations. It is characterized by a considerable variation in body mass (range 40–150 g) and extremely high metabolic rates. This highly specialised predator hunts on different species of rodents. In the forest weasel preys on the bank vole (*Clethrionomys glareolus*) and yellow-necked mouse (*Apodemus flavicollis*), whereas in the open habitats it mainly preys on the voles (*Microtus* spp.). Due to their small body size and high metabolic rates, weasels encounter numer-

ous constraints. The prey size is one of the main ecological factors determining variation in weasel's body mass. Males heavier than 100 g suffer from increased winter mortality. We therefore hypothesise that in summer bigger males are favoured by sexual selection, whereas in winter energy constrains select for smaller animals. To test this we investigated time budgets, resting (RMR) and field metabolic rate (FMR) in weasel males of various sizes during winter and summer. In contrast to other carnivore species the body-mass corrected RMR of weasels was lower in winter than in summer. Weasels also minimised their winter energetic expenditures by decreasing hunting activity (on average 4 h/day in summer *vs.* less than 2 h/day in winter). Irrespective of body mass this was usually sufficient to catch just a single prey unit. In accordance with our expectations the winter hunting activity was sufficient to balance the energy budget of small males, but compromised survival prospects of bigger individuals.