

Abstract

Presented Ph.D. thesis contains an introduction and four chapters concerning reproductive strategies in geckos. The chapters include four peer-reviewed papers and a submitted manuscript. All geckos share rather exceptional reproductive trait known as invariant clutch size, which is characterised by low and invariable clutch size. The first chapter demonstrates that invariant clutch size probably evolved in geckos under selection for enlargement of investment per offspring. On the other hand, in anoles (a group not related to geckos possessing the same mode of reproduction) invariant clutch size allowed considerable decrease of female reproductive burden. Moreover, the interspecific allometries of egg mass and clutch mass in anoles and geckos are informative for understanding of reproductive allometries in a broader context of squamate reptiles. The second chapter is focused on a trade-off in energy investment among reproduction, growth and fat storage in a gecko *Paroedura picta*. Surprisingly, there seems to exist a clear hierarchical rule for allocation among particular life-history traits. Effect of temperature on reproductive rate in the same species of gecko is the subject of the third chapter. Observed thermal dependence is in contrast to the general relationship suggested under the so-called Metabolic Theory of Ecology. The last chapter consists of two papers and it is mainly focused on potential proximate mechanisms of reproductive strategies in geckos. The evidence presented in the fourth paper confirms the parallel function of both ovaries in geckos. Freshly laid eggs from the same clutch share similar mass and levels of maternally allocated steroids. The fifth paper concerns potential for manipulation with offspring sex ratio via maternally allocated steroids in gecko species with temperature-dependent versus genotypic sex determination. Offspring sex ratio apparently does not correspond to steroid levels in freshly laid eggs in geckos with genotypic sex determination. A potential for maternal manipulation with offspring sex is restricted to species with temperature-dependent sex determination.