Sexual selection is a major evolutionary force contributing to the diversity of life. Arising from reproductive competition, it has lead to the evolution of such traits as peacock train which attract mates, or elaborated weapons (eg. deer antlers) that help in direct competition for mating opportunities. Furthermore, sexual selection can contribute to such fundamental processes speciation and extinction. For example, speciation may occur when females are attracted to different male traits in different populations, and survival costs of elaborated weapons may lead to extinction, as postulated for giant elk. The proposed research will investigate consequences of sexual selection for population persistence. On the one hand, it can be expected that sexual competition should negatively affect population demography, for example when sensitivity to food shortage or other adverse environmental impacts is increased for males that carry heavy antlers or long tails. On the other hand, it has been argued that only fit males can succeed in intrasexual competition. Thus, by favoring males whose genomes are best adapted and least burdened with deleterious mutations, sexual selection may help populations to persist and adapt. The project will investigate when beneficial effects of sexual competition prevail over adverse ones, both empirically and theoretically. For empirical work we will use a soil mite, *Sancassania berlesei,* a species easily cultured in the lab, whose males are of two types: aggressive males which carry mortal weapons – thickened and sharply terminated legs of third pair, and benign males that to not express the weapon. It is possible to experimentally steer male development to produce population with high or low proportion of aggressive, armored males. We will use experimental evolution in the laboratory in order to understand how the presence of armored, aggressive males affect population persistence in face of temperature anomaly (mimicking one of the consequences of global climate changes). We will investigate whether the effect of aggressive competition for mates depends on environmental complexity and population size. Individual-based computer simulations will generalize these questions to other cases of reproductive competition, such as those based on attracting mates, and mating systems (eg. polygamous vs. monogamous). The improved understanding of consequences of sexual selection to population persistence that the project will achieve will not only help us to interpret evolutionary history of biodiversity on earth, but also to manage endangered species facing increasing, mostly human-induced, environmental challenges.