

ABSTRACT:

According to life history theory, natural selection and other evolutionary forces shapes organisms in a way that leads to optimization of their survival and reproduction when they face ecological challenges from the environment. It explains how natural selection work to shape the way in which organisms parcel their resources into making offspring (Daniel Fabian & Thomas Flatt. Life History Evolution, 2012. Nature Education). Fitness of an organism would be maximum when its survival and reproduction is maximum. But this is not the case in nature due to various constrains like limitation of resources and trade offs. Trade-off exist when an increase in one trait which improves the fitness is coupled to a decrease in another trait which thereby leads to a decline in fitness so that the fitness benefit is balanced with a fitness cost .One of the most commonly seen trade-off is the trade-off between reproduction and survival. A previously conducted study *on* *Drosophila melanogaster* that has experimentally evolved adaptation to larval crowding suggests that these populations have evolved an increased life span. Using the same model population this study investigates the existence of any reproductive trade -off in them with respect to their investment in accessory glands (in terms of relative accessory gland size). The study reports that there is a significant effect of adaptation to larval crowding on relative accessory gland size.