

Abstract

The effect of age on an individual's fitness is one of the key topics of evolution ecology. Currently intensively studied manifestation of age is an aging of organism, thus a deterioration of metabolic functions and condition with age. An increasing count of studies shows that aging in the wild is rather a rule than exception, even with short-lived species of which the aging has not been previously presumed at all. Despite an increasing interest of evolution ecologists in this matter, some important aspects remain overlooked. Senescence of the traits are usually studied separately, therefore, an information whether an individual traits show similar or different aging dynamics is missing. The information is needed to assess if the signs are aging synchronously, as predicted by the William's antagonistic pleiotropy theory, or rather asynchronously. The suitable traits for study are these, which are involved in a reproduction activity. The reproduction is a sequential process consisting of many components, e.g. an expression of sexual ornaments (attractivity), nesting timing, amount of eggs laid and their size, etc. There is currently a little knowledge of which of these reproduction components are affected by the aging the most, and which are resistant to the the effect of age. Well studied is neither dynamics nor aging (a)synchrony in individual reproductions signs.

For this work, I have used a data from a long-term observation on barn swallow (*Hirundo rustica*) population, with a goal of analyzing an influence of age on individual female reproduction traits (e.g. laying eggs timing, hatchlings amount and so on). In my analysis, I have observed whether a separate traits show aging and if so, whether is its process similar (synchrony) or different (asynchrony). The results illustrated the effect of age on all studied traits, although with a highly distinct results. Some characteristics showed only maturation (i.e. improvement with age) without an evident aging, while others displayed a clear aging. A course of aging had differed for separate traits as well, since some of the traits linearly declined for the whole life span, while next had the aging observable only at a late age after a previous maturation period.

From my results is evident, that if we compare a different characteristics with each other, we observe a distinct asynchrony of aging. This indicates, that the concept of aging synchrony based on the antagonistic pleiotropy theory will need to be reconsidered.

Key words:

Barn swallow senescence, reproductive senescence, synchrony of ageing, asynchrony of ageing, reproductiv succes, sexual ornaments