

Master student project

Title: Fitness consequences of choosing the wrong substrate in saproxylic beetles.

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In insect the female often selects the substrate or microsite where her young is going to grow up as larvae by her choice of place for oviposition. In ecological theory it is expected that natural selection has exerted a strong selection on females to make optimal oviposition choices as this choice is expected to influence survival and growth of her offspring. A correlation between oviposition choice and offspring fitness characteristics has been shown for some insect species.

However, our knowledge on the correlation between oviposition choice and fitness characteristic is very limited for one important group of insects, wood living (saproxylic) species that are a very species rich and ecologically important group. This group of insects are also threatened by modern forestry a large proportion of them are now on the Swedish red list (Gärdefors 2010). Gaining information on the consequences of oviposition choice for fitness of this group of insects are of great ecological importance as well as having management implications.

We have collected on saproxylic insects emerging from various dead wood substrates for more than 10 year. By that we now know that many species that are regarded as confined to dead wood from a certain tree species (e.g. spruce) or a certain type of wood (e.g. shaded or standing trees) also emerge in quite high frequency from what could be regarded as suboptimal substrates. We can use this data to address the question if individuals emerging from suboptimal substrates have characteristics that indicate reduced fitness. One such obvious characteristics is body size. Body size in insects is associated with fitness related characteristics such as numbers of eggs and competitive ability at mating.

The method used will be measurement of size of saproxylic beetles individuals collected emerging from different substrate types. Their size (and in the case of females egg loads) will be used as a proxy for fitness. The project includes laboratory work that can be conducted at any time of the year as the insects already are collected. The project is expected to generate a peer review publication in an international journal.

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