

X. EUROPEAN ECOLOGICAL CONGRESS



ORGANIZED BY
EUROPEAN ECOLOGICAL FEDERATION
TURKISH ECOLOGICAL SOCIETY
EGE UNIVERSITY CENTER
FOR ENVIRONMENTAL STUDIES



PINE BAY HOLIDAY RESORT
NOVEMBER 08 -13, 2005
KUSADASI / TURKEY
[HTTP://EURECO2005.EGE.EDU.TR](http://eureco2005.ege.edu.tr)

BODY SIZE AND REPRODUCTIVE ALLOCATION OF ORIBATID MITES ALONG AN ALTITUDINAL GRADIENT

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ABSTRACT

We studied the covariation of reproductive characteristics with body size of oribatid mites, using one-year monthly samplings along an altitudinal gradient. Sampling was carried out under the canopy of the *Juniperus* sp. shrubs, which are scattered all along the altitudinal gradient, and at the adjacent grass-covered openings. For all egg carrying females of all species we estimated body length, abdomen volume, number of eggs in the abdomen, absolute egg volume, egg volume relative to abdomen volume, reproductive capacity, i.e. number of eggs that may fit in the abdomen, and reproductive allocation, i.e. total egg volume relative to abdomen volume. All reproductive characteristics were scaled to body size.

Among the oribatid populations studied, two reproductive strategies may be considered as the opposite extremes of a size gradient. Large animals lay eggs that are larger than those of smaller species, but small compared to the adult body size. Thus, the investment per egg is lower and the time needed for egg development is longer. Although, egg number is positively correlated with body size, large species display plasticity regarding the number of eggs they lay and in most cases they lay fewer eggs than they theoretically could. This indicates a lower reproductive allocation than that of smaller species. Regarding spatial distribution, large species seem to prefer the lower altitudes and the protected sites under the shrub canopy cover. On the other hand, the smallest species lay a single egg at each occasion, which is large for their own size and covers almost all the space available in their abdomen. This strategy of high reproductive investment shortens the time needed for the development of the vulnerable stages, i.e. eggs and young hatchlings, and allows these animals to occupy harsher environments, such as high altitudes and the exposed grass covered openings between the shrubs.