

Abstract

This study focuses on the influence of ant clusters on nest thermoregulation. The significance of this influence has been measured using temperature information from dataloggers about inner nest as well as ambient air temperature during the period from April 4 to June 4, 2016 and images capturing the ant mound surface for the same period. The results show that the ant clusters incidence rate and the size of the clusters are significantly affected by the inner temperature of the nest. The dependence of the cluster occurrence on the inner temperature is not linear but rather has the character of steep drops at defined temperature thresholds. In the temperature range of 0 - 7°C cluster occurrence significantly increases and reaches the occurrence peak at the upper limit of this interval, from 7°C to 21°C the cluster occurrence rate is significantly lower but relatively constant and at the temperature above 21°C there is a steep decrease. The occurrence of clusters is also significantly determined by climatic influences and insolation, with the measured data showing that after a precipitation or snowfall, the average cluster size is significantly larger compared to similar days without a precipitation or snowfall recorded.

Keywords: *Formica polyctena*, thermoregulation, nest, temperature, ecology