Anthropogenic thermal gradient in managed landscapes determines physiological performance and explains the edge-biased distribution of ectothermic arthropods

Barahona-Segovia, Rodrigo M.

Crespin, Silvio J.

Grez, Audrey A.

Veloso, Claudio

The intensive management of tree plantations has replaced and fragmented native forests worldwide. A direct consequence of this activity is the creation of new edges, which generate changes in microclimatic conditions in the adjacent forest as well as in the neighboring clearcut stands left over after harvesting by clearcut logging. Thus, newly created anthropogenic thermal gradients could influence ectothermic responses regarding abundance and physiology of native species in fragmented landscapes. Interestingly, the consequences of these changes have not been studied in insects. To test the effects of the anthropogenic thermal gradient on the abundance and physiology of ectothermic species, we chose the fragmented Maulino forest and the ground-dwelling beetle Ceroglossus chilensis (Coleoptera: Carabidae) as our biological model, working with seven fragments of native forest surrounded by active and clearcut pine plantation stands. We measured temperature variables