



Conference Abstract

# Long term effect of fire severity on carabid and lichen assemblages

Colin Bergeron<sup>‡</sup>, Dominique Arseneault<sup>§</sup>

<sup>‡</sup> University of Alberta, Edmonton, Canada

<sup>§</sup> Université du Québec à Rimouski, Rimouski, Canada

Corresponding author: Colin Bergeron ([cb1@ualberta.ca](mailto:cb1@ualberta.ca))

Received: 24 Jul 2019 | Published: 29 Jul 2019

Citation: Bergeron C, Arseneault D (2019) Long term effect of fire severity on carabid and lichen assemblages.

ARPHA Conference Abstracts 2: e38519. <https://doi.org/10.3897/aca.2.e38519>

## Abstract

Variation in fire severity strongly influences post-fire forest development. The resulting fine scale forest heterogeneity could impact biodiversity over long periods after fire events. In the James Bay area of northern Québec, differential seed mortality caused by high and low crown fire severity resulted in dramatic variation in regeneration density of both jack pine and black spruce. Sixty years after such fire event, we show that composition of lichen and carabid assemblages varied significantly between areas of high (c. 2600 stems/ha) and low (c. 560 stems/ha) stem density established by differential crown fire severity. The carabids, *Notiophilus semistriatus* and *Miscodera arctica*, were found in low stem density areas while *Carabus taedatus* and *Pterostichus brevicornis* were found in high stem density areas. Amount of bare ground was higher in low stem density area which may favor active visual diurnal hunters such as *Notiophilus* species. *Cladonia rangiferina* and *C. stellaris* were associated with high stem density area while *C. uncialis* and *C. mitis* were associated with low stem density area. This likely reflects the fact that photosynthetic rate of *C. rangiferina* is optimal under shady areas whereas *C. uncialis* is better adapted to hot, dry and sunny conditions. Thus, variation in fire behavior led to long-lasting variation in forest conditions that clearly affected both lichen and carabid assemblages even 60 years after fire.

**Keywords**

Fire behavior, Fire severity, carabidae, lichens, long-term effects, post-fire regeneration

**Presenting author**

Colin Bergeron

**Presented at**

European Carabidologist Meeting