

Brief report

The fire-adapted flatbug *Aradus laeviusculus* Reuter (Heteroptera, Aradidae) rediscovered in Finland (North Karelia, Koli National Park)

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Lappalainen, H. & Simola, H. 1998: The fire-adapted flatbug *Aradus laeviusculus* Reuter (Heteroptera, Aradidae) rediscovered in Finland (North Karelia, Koli National Park). — Entomol. Fennica 9: 3–4.

We report the finding of the flatbug *Aradus laeviusculus* Reuter, 1875 in the Koli National Park (North Karelia, Finland). One mature female was caught by using a window trap during the period 22.VII.–24.VIII.1996 in a slash-and-burning plot that had been burned earlier in summer 1996. *A. laeviusculus* has been listed as extinct in Finland, the last previous record being from the year 1949 (Lammi, South Finland).

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Received 27 April 1997, accepted 13 March 1998

The flatbug genus *Aradus* includes several species that have a strong predilection for burned wood; presumably feeding on fungal hyphae living in these special environments (Wikars 1992). Owing to the cessation of slash-and-burning agriculture by the end of the last century, the effective control of wildfires, and a decline of prescribed burning in forest regeneration during the past decades, many of these species have become exceedingly rare or even extinct in Finland (Heliövaara & Väisänen 1983, Rassi *et al.* 1986, 1992). The situation is similar in Sweden (Coulianos 1989).

Slash-and-burning has been taken up as a management practice in the Koli National Park (North Karelia, Finland) since 1994. In order to find out whether fire-adapted insects will reappear in an area where forest burning is re-established after several decades' discontinuation, we started monitoring the insect fauna of the slash-and-burn site in 1996.

Four window traps with crossed acrylic sheets were kept through summer 1996 on a slash-and-burn clearing, in the Koli National Park (Lieksa, Kb, grid 27°E 7003:641). The clearing is about 1 ha in area and it was burned at the end of May 1996. The area had been cleared from a 60-year-old spruce stand (wood biomass ca. 300 m³) in the previous year. Most of the thick bases of the felled tree

trunks (about 100 m³) had been removed from the site, but the upper parts (< 20 cm diam.) and branches had been left on the ground. Some spruce and pine trees had been girdled and left standing on the site. Adjacent to the site there is a similar clearing that was burned in 1994.

The traps were installed on 17 June 1996, 1–1.5 m above the ground, and they were controlled at roughly monthly intervals (22 July, 24 August and 1 October).

One adult female individual of *Aradus laeviusculus* Reuter was caught during the period 22.VII.–24.VIII. (Fig. 1). The trap was positioned by the upturned roots of a windfallen spruce tree in the middle of the burned area.

A. laeviusculus has been listed as extinct in Finland (Rassi *et al.* 1986, 1992), while the last previous record was from the year 1949 (Heliövaara & Väisänen 1983). Our finding is the first report of this species in the province of Kb (Lammes & Rinne 1990). According to Sahlberg (1920), the species appeared to be widespread in Finland in the whole geographic range of spruce, and early in this century was relatively easily found under the bark of fire-damaged standing spruce trees. *A. laeviusculus* has also been found in Norway, Sweden and NW Russia (Heliövaara & Väisänen 1983).



Fig. 1. *Aradus laeviusculus* Reuter, ♀, length 6.7 mm. Koli National Park 22.VII.–24.VIII.1996 (Lieksa, Kb, grid 27°E 7003:641).

Other species obtained with the same trap in which *A. laeviusculus* was found included the beetles *Sphaeriestes stockmanni* (Biström, 1977), *Pediacus fuscus* Erichson, 1845, *Euglenes pygmaeus* (Degeer, 1775) and *Stenotrachelus aeneus* (Paykull, 1799), and the flatbugs *Aradus lugubris* Fallén, 1807 and *Aradus betulae* (Linnaeus, 1758).

Increasing awareness of the role of fire as an ecological factor in the forests has brought prescribed burning into the management of some nature reserves in Finland during the past few years. Reviving of slash-and-burning practices (in the Linnansaari and Koli National Parks and in the Telkämäki nature reserve) aims at re-establishing in limited areas the landscape and vegetation structure that was typi-

cal of the entire eastern Finland during the heyday of slash-and-burning in the 18th and 19th centuries (Heikinheimo 1915). In other nature reserves, e.g. the Patvinsuo National Park, prescribed burning as an imitation of natural fires is used for creating young successional forest stands on suitable sites. It is obvious that widening and continuing the use of fire will be beneficial for the fire-adapted biota including several species of insects and fungi presently considered endangered in Finland, and monitoring of insect fauna at such sites is a worth while pursuit.

Acknowledgements. We thank Kauko Salo (Forest Research Institute) for permission to do the sampling in the Koli National Park, Ilpo Mannerkoski for confirming the identification of *A. laeviusculus* and Ilpo Rutanen for his kind help with the beetle material. This study was supported financially by Joensuu seudun luonnonystävät ry., Pohjois-Karjalan luonnonsuojelupiiri (Finnish League for Nature Conservation) and Suomen Luonnonsuojelun Säätiö.

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