Table of Contents

In Press

Article Archive

JFS (64) 2018

JFS (63) 2017

JFS (62) 2016

JFS (61) 2015

JFS (60) 2014

JFS (59) 2013

JFS (58) 2012

JFS (57) 2011

JFS (56) 2010

JFS (55) 2009

JFS (54) 2008

JFS (53) 2007

Issue No. 1 (1-40)

Issue No. 2 (41-92)

Issue No. 3 (93-137)

Issue No. 4 (139-191)

Issue No. 5 (193-242)

Issue No. 6 (243-298)

Issue No. 7 (299-344)

Issue No. 8 (345-389)

Issue No. 9 (391-444)

Issue No. 10 (445-490)

Issue No. 11 (491-527)

Issue No. 12 (529-572)

Special Issue (1-88)

JFS (52) 2006

JFS (51) 2005

JFS (50) 2004

JFS (49) 2003

Editorial Board

Ethical Standards

Peer Review Process

Reviewers 2017

For Authors

Author Declaration

Instruction for Authors

Submission Templates

Guide for Authors

Copyright Statement

Submission/Login

Spatial distribution of four spruce bark beetles in north-western Slovakia

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Infestation density of four the most common spruce bark beetle species was estimated on 15 study sites (10 trees per site) in the Kysuce model region in 2006. Five half-metre long sections of the stem were selected and dissected at the base of the stem; midway between the base of the stem and the base of the crown; just below the base of the crown; in the middle of the crown; and in the upper part of the crown. The infestation density of bark beetles, expressed as the number of mating chambers per dm^2, was determined. Ordinary kriging was then used to produce smooth maps and visualize spatial distribution of study species. Maps with isolines indicating high infestation were produced for study species (I. Typographus over 0.38; (I. amitinus over 0.15; (I. duplicatus over 0.11; and P. chalcographus over 0.415 nuptial chambers per dm^2). Ips typographus L. remained dominant species on majority of sites having high intensity of infestation. Lower altitudes in the south-eastern part of the region were often infested by I. duplicatus Sahlberg and also by I. typographu and Pityogenes chalcographus L. Higher elevations in the north-eastern part of territory in the vicinity of border with Poland were heavily infested by I. amitinus Eichhoff (often with I. typographus). P. chalcographus was abundant on majority of territory – mainly in southern half of area. However locally, it was found in extremely high abundance. The results suggest the need for control measures set up jointly against the most abundant bark beetle species in study region.

Keywords:

bark beetles; infested spruces; spatial distribution; kriging

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