Title: Dating fire events in *Pinus heldreichii* forests by analysis of tree ring cores

Author: Pepa Vasileva Momchil Panayotov

PII: S1125-7865(16)30034-0
DOI: http://dx.doi.org/doi:10.1016/j.dendro.2016.04.001
Reference: DENDRO 25380

To appear in:

Received date: 15-6-2015
Revised date: 16-3-2016
Accepted date: 4-4-2016

Please cite this article as: Vasileva, Pepa, Panayotov, Momchil, Dating fire events in Pinus heldreichii forests by analysis of tree ring cores.Dendrochronologia http://dx.doi.org/10.1016/j.dendro.2016.04.001

Dating fire events in *Pinus heldreichii* forests by analysis of tree ring cores

Pepa Vasileva, Momchil Panayotov

University of Forestry, Dendrology Dept. Kliment Ohridski 10 Blvd., Sofia 1756, Bulgaria;

email:lessage@abv.bg

Abstract

Bosnian pine (*Pinus heldreichii* Christ, also known as *Pinus leucodermis* Antoine) is a relict species found in isolated locations in the mountains of the Balkan Peninsula and Southern Italy. The forests are of high conservational value because they are extremely rich in rare and endemic species of plants and fungi. Yet, the natural history and disturbance regime of *Pinus heldreichii* ecosystems is not well understood. Fire traces show that fires played a major role, but there is very limited historical data. Therefore proxy methods to reconstruct past events have to be used. The analysis of tree rings provides such an opportunity. To our knowledge, there have been no attempts to use tree ring cores from *Pinus heldreichii* trees to date fire events. Our aim was therefore to test if tree ring cores collected with an increment borer could successfully be used to date fires and verify other tree ring indicators caused by the fire events. We tested an approach that was based on extracting multiple cores from fire-scarred trees and nearby standing trees without injuries. A total of 136 cores from 99 trees were collected from which we dated all 34 cores with fire scars. We found the exact fire years for 29 of the samples, and the remaining 5 samples were approximately dated. Up to 83% of all sampled trees had additional growth reactions, mostly suppressions lasting 5 to 10 years after the fire years.