Abstract template for the conference "A century of national forest inventories – informing past, present and future decisions"

Abstract title:		Dead wood patterns in Mediterranean forests
Take-home message:		*The estimations of carbon and volume of dead wood using National Forest Inventories data provide key forest information for the management and the development of supporting tools for policy decision-making*
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General topic, see website: (please double click on the check box and activate the relevant one)	☐	Improving future NFIs by learning from the past
	☒	NFIs today and in the future
	☐	Cutting edge and futuristic inventory techniques and technologies
Preferred presentation form:	☒	Oral presentation
	☐	Poster

Dead wood patterns in Mediterranean forests

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Introduction: Dead wood is one of the most accepted indicators associated with forests biodiversity and conservation state. It is a crucial component of ecosystem structure and function playing a key role in nutrient cycling, providing habitat for a wide array of organisms. Dead wood represents one of the carbon pools in forest ecosystems and play an important role in the carbon emission flow between soil and atmosphere. However, there are not much information available of dead wood stocks in Mediterranean ecosystems. The objectives of this study are threefold: (i) to determine national values of dead wood stock and carbon and their percentage considering the living growing stock; (ii) to study of patterns along the four biogeoregions of Spain (Atlantic, Mediterranean, Alpine and Macaronesic); (iii) to analysis the relationship between forest management and dead wood stock.

Materials and methods: Since 2005, during the Third and Fourth Spanish National Forest Inventory cycles (SNFI3, 1997-2007; SFNI4, 2008-ongoing), dead wood data has been recorded in more than 35,000 plots. Dead wood is measured in the SNFI 15 m radius subplot considering five different types (lying and standing adult trees and saplings, branches, stumps), by species and decay classes. To estimate tree volume (either standing or lying) SNFI stem and branch equations are used, considering the measured dendrometric variables, species and tree shape. The percentage of remaining branches on the dead trees is also recorded and taken into account. The volume of dead standing and lying saplings, lying branches and stumps are calculated using geometric equations. Using GIS and descriptive statistics average values at national level and biogeoregions were estimated. Additionally, naturalness and silvicultural treatments recorded in the SNFI plots were considered to analyse the effects of forest management in the dead wood stock.

Results: The average percentage of dead wood stock is 7.1% when comparing with all woody stock at plot level (dead and living trees). In Spain, the average dead wood volume and carbon stock accounts 4.60 and 1.99 m^3/ha respectively. Dead wood stock was found to be higher in the Alpine and Alpine bioregions, while higher percentages when comparing with living stock were found in the Macaronesic and Mediterranean regions. We found significant differences of deadwood stock between forests with different anthropogenic degree. The most unaltered forest types, such as the endemic *Abies pinsapo* forests, showed the largest deadwood stocks.

Conclusion: The estimation of carbon and volume of dead wood using the SNFI provide key forest information for the management and the development of supporting tools for policy decision-making. The results derived are relevant for all Forests Strategies or Networks using dead wood as a key indicator as for the conservation assessment of Natura 2000 areas or the evaluation of forest and pest hazards.

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