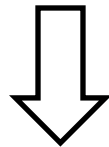




DEADWOOD WITHIN ICP FORESTS

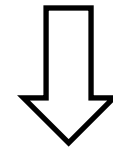
Travaglini D., Chirici G.

Methods for deadwood assessment have been applied at the Level I and Level II ICP plots according to harmonized protocols developed in the frame of two demonstration projects



**field assessment in 2006
and 2007 on**

4200 LEVEL I plots



**field assessment in 2004
and 2005 on**

91 LEVEL II plots

Deadwood components within ICP forests



1. Standing dead trees



2. Downed dead trees



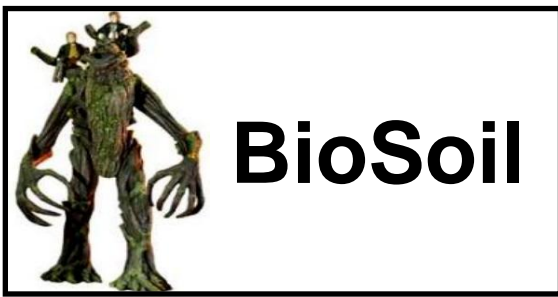
3. Snags



4. Stumps

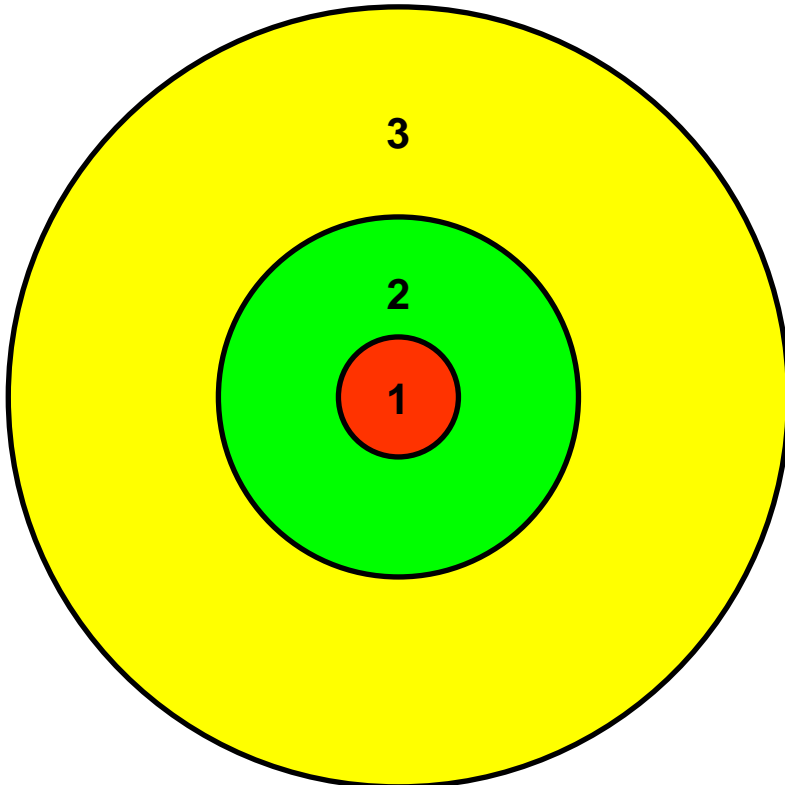


5. Lying deadwood pieces

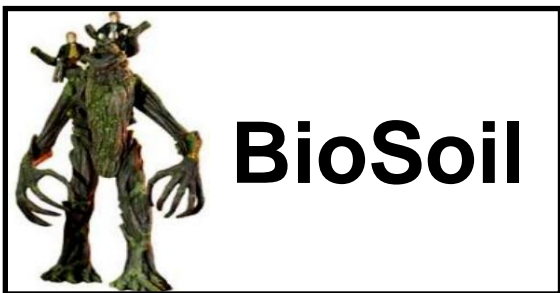


Survey scheme

The basic BioSoil plot is devised as a circular plot divided into three circular subplots:

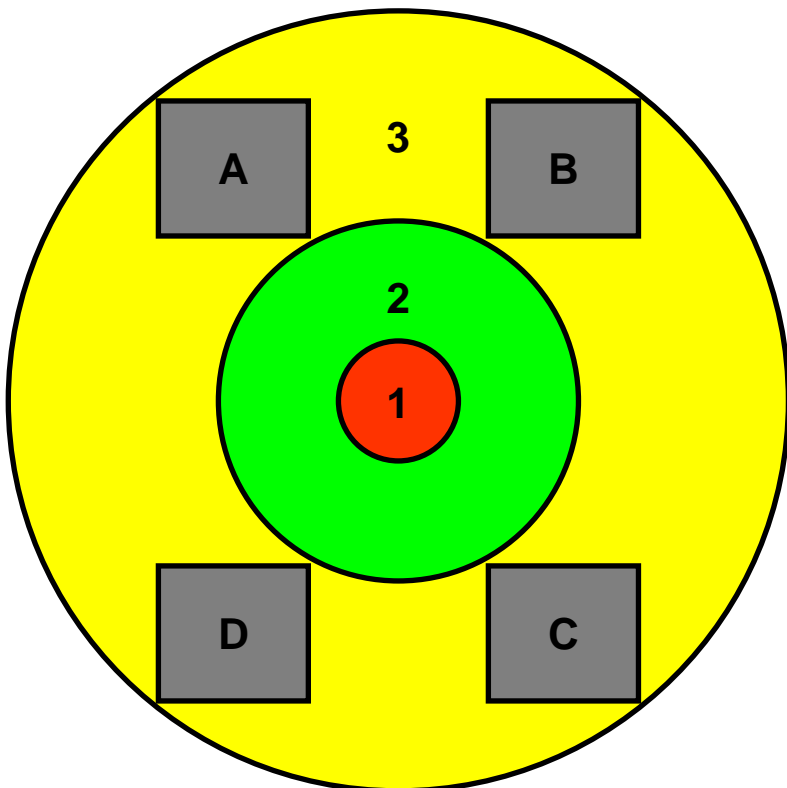


Unit	Shape	Radius (area)
Subplot (1)	Circle	3.09 m (30 m ²)
Subplot (2)	Circle	11.28 m (400 m ²)
Subplot (3)	Circle	25.24 m (2000 m ²)

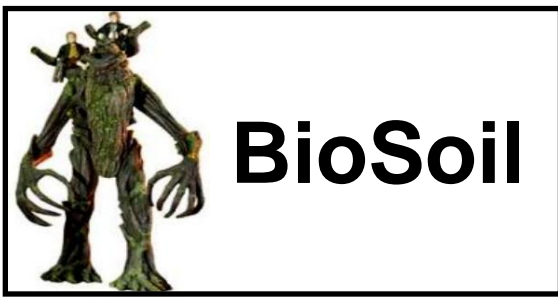


Survey scheme

For specific survey of coarse woody debris 4 randomly selected squares (sampling units A, B, C and D) may be established within the BioSoil subplot 3



Unit	Shape	Radius (area)
Subplot (1)	Circle	3.09 m (30 m ²)
Subplot (2)	Circle	11.28 m (400 m ²)
Subplot (3)	Circle	25.24 m (2000 m ²)
Unit A, B, C, D	Square	10 m x 10 m (100 m ²)



BioSoil

General Plot Description

Previous land use

Origin of stand

Forest types

Forest management

Harvesting method

Removal of coarse woody debris

Ownership information

Age of the dominant tree

Etc.





BioSoil

Survey rules

Standing deadwood

height \geq 1.3 m

Downed dead trees

height \geq 1.3 m

Snags (without branches)

height \geq 1.3 m; DBH $>$ 10 cm

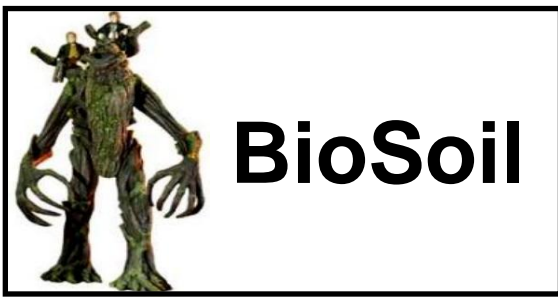
Lying deadwood pieces

diameter at the thicker end $>$ 10 cm

Stumps

height $<$ 1.3 m; diameter at cut $>$ 10 cm

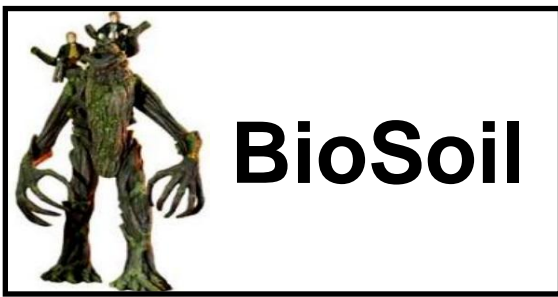




Plot measurements and diameter thresholds

Deadwood components	Attributes	Subplot 1	Subplot 2	Subplot 3	Sampling units A, B, C, D (100 m ² each)
		(30 m ²)	(400 m ²)	(2000 m ²)	
Standing and downed dead trees	Species, DBH	All dead trees DBH>0 cm	All dead trees DBH>10 cm	All dead trees DBH>50 cm	
Snags	Species, height, diameter at half height	D>10 cm	D>10 cm	or	D>10 cm
Stumps	Species, height, diameter at cut	D>10 cm	D>10 cm	or	D>10 cm
Lying deadwood pieces	Species, length, diameter at half length	D>10 cm	D>10 cm	or	D>10 cm

Decay state (5 classes following Hunter, 1990) of all deadwood components



Plot measurements and diameter thresholds

Deadwood components	Attributes	Subplot 1	Subplot 2	Subplot 3	Sampling units A, B, C, D
		(30 m ²)	(400 m ²)	(2000 m ²)	(100 m ² each)
Standing and downed dead trees	Species, DBH	All dead trees DBH>0 cm	All dead trees DBH>10 cm	All dead trees DBH>50 cm	
Snags	Species, height, diameter at half height	D>10 cm	D>10 cm	or	D>10 cm
Stumps	Species, height, diameter at cut	D>10 cm	D>10 cm	or	D>10 cm
Lying deadwood pieces	Species, length, diameter at half length	D>10 cm	D>10 cm	or	D>10 cm

Decay state (5 classes following Hunter, 1990) of all deadwood components

optional

Diameter and length of fine woody debris (5<D≤10 cm)



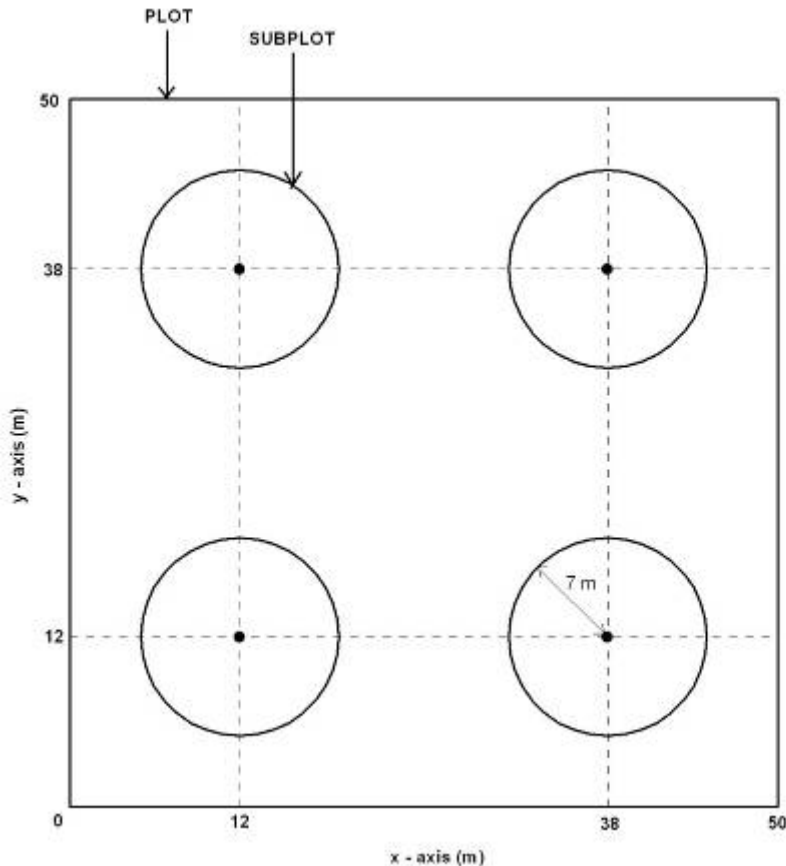
Participating countries

The protocol for deadwood assessment have been applied to 91 ICP Level II plots, distributed over 11 European countries:



Country	Number of ICP level II plots
Czech Rep.	3
Denmark	4
Finland	8
Germany	20
Greece	4
Italy	12
Slovak Rep.	3
Spain	12
Switzerland	17
The Netherlands	5
Ukraine	3

Survey scheme



Survey unit consists of a 50 m side square plot with a cluster of four circular subplots of 7 m radius

The protocol asks for a complete census of all standing and downed dead trees within the 50-m plot, whereas stumps and lying deadwood pieces are surveyed within the four circular subplots



General Plot Description

Ancient forest site

Intensity of forest management

Management type

Management method

Prevalent forest types

Is deadwood usually removed?

Age

Altitude

Etc.





Survey rules

Standing deadwood

dbh \geq 5 cm

Downed dead trees

dbh \geq 5 cm

Lying deadwood pieces

diameter at the thicker end \geq 5 cm

Stumps

diameter at the level of cut \geq 10 cm

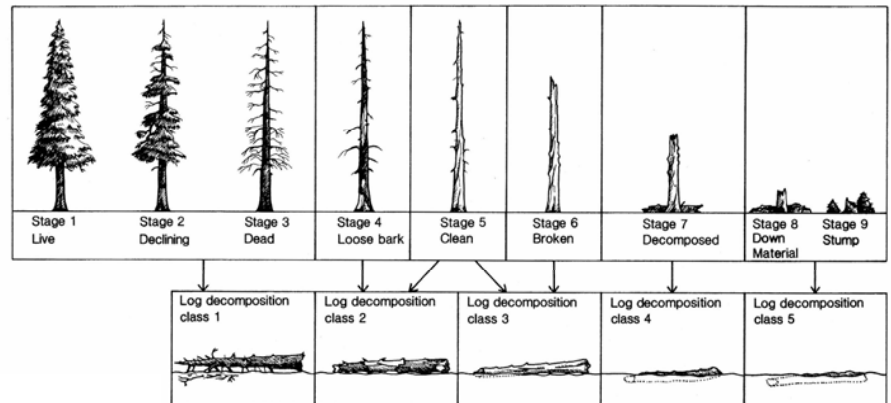




Plot measurements

Deadwood components	Attributes	Survey unit
Standing deadwood (including snag)	Species, dbh and height for snag, also stem diameter at half snag height, only if snag height ≤ 4 m	Plot
Downed dead trees	Species, dbh and length	Plot
Stumps	Species, height and diameter at the level of cut	Subplot
Lying deadwood pieces	Species, length and diameter at half length	Subplot

Decay state (5 classes following Hunter, 1990) of all deadwood components

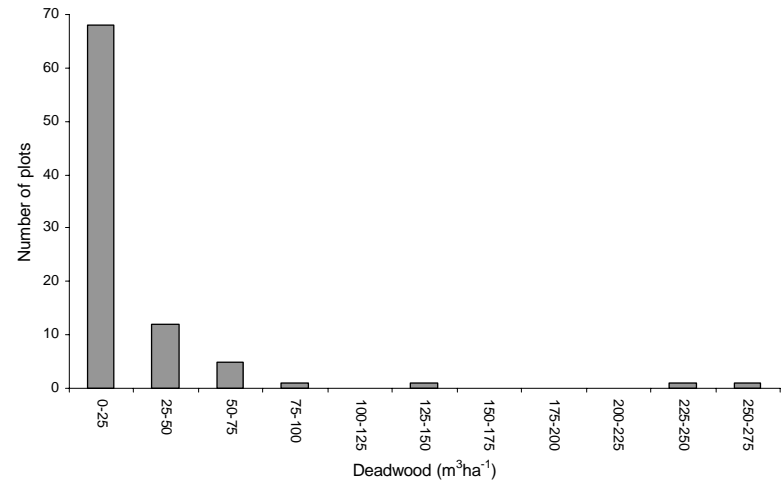
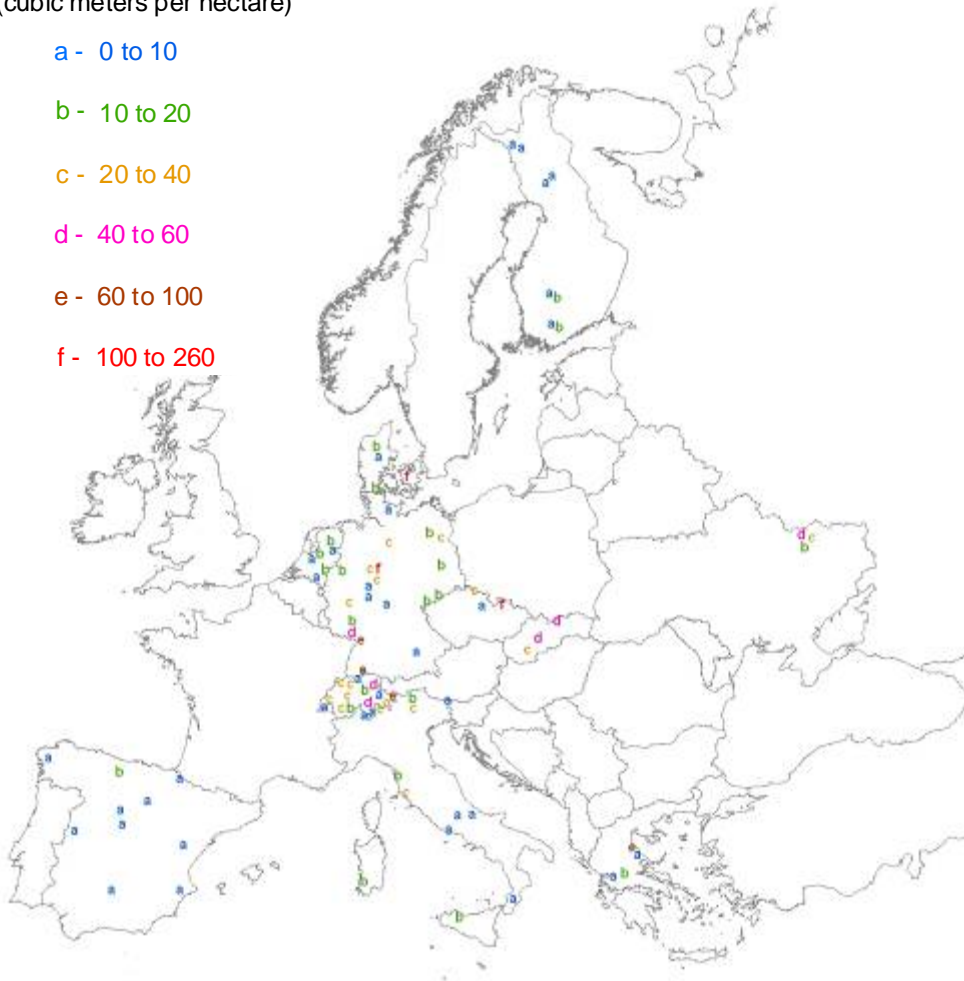


Forest BIOTA

Some main results

Deadwood
(cubic meters per hectare)

- a - 0 to 10
- b - 10 to 20
- c - 20 to 40
- d - 40 to 60
- e - 60 to 100
- f - 100 to 260



Differences of the mean percentages for both coarse and fine necromass are very highly significant among forest types ($p < 0.001$)

Differences of the mean percentages among forest types are highly significant ($p < 0.01$) also for the deadwood components, except for snags



Thank you