# THE MOST IMPORTANT NWFPS FROM DAMBOVITA COUNTY IDENTIFIED THROUGH THE ANALYTICAL HIERARCHY PROCESS

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#### ABSTRACT

The present paper analyses the main non-wood forest products (NWFPs) characteristic to Dâmbovița County, by decision-making a specialised usina analysis software based on the analytical hierarchy process (AHP). The work starts with a short description of Dâmbovița County and of the NWFP concept. This is followed by the method in which the analysed products were grouped, as well their analysis and classification as method based on 19 criteria. Furthermore, the analytical hierarchy process (AHP) is also well explained and defined. A total number of eight NWFP were analysed, belonging to the following categories: mushrooms, products originating from trees, plants and animals. The results section presents the most products important non-wood from Dâmbovița County as well as the advantages and disadvantages of the analysed criteria. Based on the obtained results, the most important NWFPs from Dâmbovita County are Cantharellues cibarius and Sorbus torminalis, while the least important one is Alium ursinum.

### INTRODUCTION

The aim of this study was to highlight the most important non-wood forest products from Dâmboviţa County.

Dâmbovița County has a surface of 4.054 km<sup>2</sup> (1,7 % of the country's surface). Situated in the central-south part of Romania (figure 1), overlapping lalomița and Dâmbovița hydrographic basins

(https://ro.wikipedia.org/wiki/Judetul\_Dam bovita).

The county's surface occupied by forests is of 55075 ha, having the following composition: 89,67% broadleaved (19,93% common beech, 39,82% oak, 22,43% different hardness, 7,49% different softness) and 10,33% resinous (8,05% Norway spruce, 0,42% fir, 1,86% other resinous species) (http://www.rosilva.ro/unitati\_silvice/damb ovita\_l\_15.htm).

According Food to the and Agriculture Organization (FAO), nonwood forest products (NWFP) are biological products, other than wood, obtained from the forest, from afforested fields or from trees located outside forests. NWFPs include products used as food (fruits, seeds, plants, mushrooms, game), gum, resin, vegetal and animal plants used in cosmetic, medicinal or cultural purposes (Man and Funar, 2011).

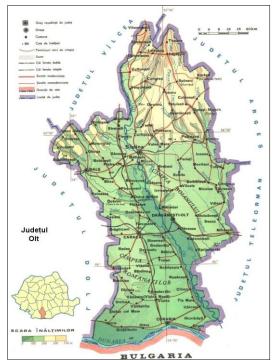


Fig. 1. Location of Dambovita County (Source: Google Maps)

#### MATERIAL AND METHODS

The studied NWFPs were grouped in four main categories: Mushrooms, Understory plants, Tree products and Animal origin. The most important NWFPs were then selected based on the above-mentioned data. Grouping NWFPs into these categories was done in the European project COST Action FP1203 and was also used in similar studies conducted recently for Prahova (Enescu et al., 2018), Maramures (Enescu et al., 2017), Bihor (Timis-Gânsac et al., 2018), Timis (Enescu et al., 2018), Dambovita (Bragă and Dincă, 2019) and Dolj counties (Cântar et al., 2018).

The Expert Choice Desktop (v. 11.5.1683) software package was used for analysing the data, based on an analytical hierarchy process (AHP). This technique, developed by Saaty in 170, is used for analysing and organising complex decisions, taking its inspiration from psychology and mathematics.

The four NWFP categories were evaluated by experts and graded from 1 to 9 based on 19 criteria. Both the criteria and the average obtained for each product can be analysed in Table number 1.

### **RESULTS AND DISCUSSION**

The NWFPs selected for each category are the following: *Cantharelluescibarius*for*Mushrooms* category, needles and Christmas trees for *Tree products* category, *Sorbustorminalis*, *Aliumursinum* and *Hypericumperformatum* for *Understory plants* category and *Ursusarctos* and *Lutralutra* for *Animal origin* category. The average of the obtained graded for each NWFP mentioned above can be analysed in Table number 1.

According to the AHP results, the most important NWFPs products from Dâmbovita Countv are Cantharelluescibarius and Sorbustorminalis, while smaller а importance obtained is by LutralutraandAliumursinum (Fig. 2).

#### AHP alternative ranking

	n uncernat	11010	i iii iig				Tab	le 1
	Mushrooms	Tree products		Understory plants			Animal origin	
Criterion	Cantharellu scibarius	Needles	Christmas trees	Sorbustormi nalis	Allium ursinum	Hypericump erforatum	Ursusarctos	Lutralutra
Harvesting period	4	8	1	5	2	6	3	7
Portfolio of derived products	6	5	1	7	3	8	4	2
Harvested quantity / worker / 8 hours	5	3	4	6	7	8	1	2
Harvesting cost	3	6	5	4	1	2	8	7
Knowledge for recognition	7	3	2	8	5	4	1	6
Knowledge for harvesting	3	5	6	4	1	2	8	7
Tools needed for harvesting	3	5	6	4	2	1	8	7
Complexity of harvesting process	3	5	6	4	1	2	8	7
Distribution range	4	6	5	3	8	7	2	1
Market potential	4	3	6	7	5	8	2	1
The price of raw product	7	5	6	3	1	2	8	4
The price of the derived product	4	5	6	7	1	2	8	3
Transport (harvesting - storage center)	8	6	7	3	1	2	5	4
Perishability	8	2	1	7	5	4	6	3
"Celebrity" of the product on market	4	5	7	6	1	3	8	2
Market demand	6	8	7	5	1	4	3	2
Biotic threats	8	4	3	6	5	7	2	1
Abiotic threats	8	4	3	7	6	5	2	1
Development of harvesting process	2	4	6	5	1	3	8	7

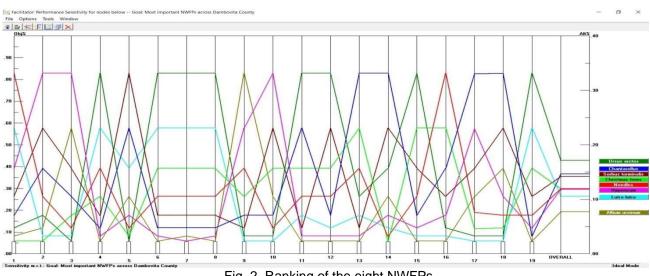


Fig. 2. Ranking of the eight NWFPs

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According the obtained to Sorbustorminalis is the classification, second NWFP and has obtained good grades in regard with recognition knowledge, the price of derived products, perishability and abiotic threats, being an extremely appreciated tree species (Dincă, 2003).

Christmas trees, classified on the third place, have an extreme importance

CONCLUSIONS Using AHP and Expert Choice eco Desktop software proved to be an easy to ma use method for solving complex inc decisitional problems. ow

The present study brings an important contribution in regard with the general evaluation of NWFPs potential, especially in Dâmboviţa County.

Taking into consideration the fact that NWFP can represent an important

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The last place is occupied by *Aliumursinum*, with a lot of minimum grades obtained for 9 out of 19 criteria. However, we consider that a good understanding and promotion of this plant and its potential in naturist medicine and cooking can propel it in the average side of the analysed NWFP classification.

economic alternative for capitalizing wood mass, they can become an important income source for forest managers and owners.

More precise results in regard with the realized analysis can be obtained by introducing other criteria and by involving specialists from connex NWFP domains and even other NWFPs that can prove to be important.

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