THE HIGH CONSERVATION VALUE FORESTS (HCVF), A NEW SYSTEM OF PROTECTION AND CAPITALISATION OF THE NATIONAL FORESTRY PATRIMONY

Seghedin Georgeta Silvia*

* National Forest Administration Romsilva, Bd. Magheru 31 sectorul 1 Bucuresti, Romania, Doctoral student of "Stefan cel Mare" University Suceava, e-mail: georgetaseghedin@gmail.com

Abstract

The paper presents the categories of high conservation value forests and exemplifies them with the situation in Suceava County Forest Administration. Category 4.2 forests (forests critical for the control of erosion) is the most representative category of forests, while the forests with the least area are the high conservation value forests from category 4.3 (forest areas with critical impact on agricultural and fishery land).

Key words: high conservation value forests, biodiversity, protected natural area, forest certification, endemic species.

INTRODUCTION

The concept of "forest certification" appeared and developed in the early 1990s, in response to the degradation and destruction of the forests, including the loss of their biodiversity and to the necessity to preserve the remaining natural heritage (Seghedin,G., 2006). Given the adverse effects of the generalized (economic, social, ecologic) crisis, the protection of the natural reservations of different ranks and types (protected areas method) is no longer sufficient because the ecological state of the planet depends on the health and proper functioning of all forests, not just of a fragment of them, this being a global effect. We need to protect all that contributes to the maintenance of the ecologic equilibrium and to the provision of homeostasis on Earth and the forests have a decisive role for this.

Considering this requirement, upon initiative of some professional forestry organisations, of the logging and wood processing companies, of the forest owners, of the environmental organisations and of the organisations for the protection of the indigenous populations, the Forest Stewardship Council (FSC) was established.

FSC purpose is to support the sustainable and responsible ecologic, social and economic management of all forests (www.certificareforestiera.ro). To this purpose, standards have been established for the certification of forest management and wood commercialisation, within strictly delimited limits, so as not to affect the long-term development of the economic and protective functions. FSC is an independent, non-governmental, non-profit organisation established with the

purpose to promote the responsible management of the world forests (www.fsc.org).

The notion of "high conservation value forests" defined for the first time by FSC is widely explained in the *Practical guide for the identification of the high conservation value forests*" developed by the World Wide Fund for Nature (WWF) and Ingvar Kamprad Elmtaryd Agunnaryd (IKEA); these are the forests which have one or several fo the following attributes":

a). HCV 1: Globally, regionally or nationally significant concentrations of biodiversity values (Protected Areas, Threatened and endangered species, Endemic species, Critical temporal use)

b). HCV 2: Globally, regionally or nationally significant large landscape level forests, where the populations of the autochthonous species exist in their natural form in terms of distribution and density;

c). HCV 3: Forest areas that are in or contain rare, threatened or endangered ecosystems;

d) HCV 4: Forest areas that provide basic services of nature in critical situations (Forests critical to water catchments, Forests critical to erosion control, Forests providing barriers to destructive fire)

e) HCV 5: Forest areas fundamental to meeting basic needs of local communities (such as the means necessary for subsistence, health); in our country they ensure the only resources for heating and the wood for other wood products necessary for the traditional activities and crafts;

f) HCV 6. Forest areas critical to local communities' traditional cultural identity; in our country they are represented by the forests linked to local customs and celebrations which usually take place in forest areas or on forest areas close the religious communities, pilgrimage places and historical monuments. (Stanciu, E. et. al., 2005)

According to this definition, the HCVF can be smaller or larger wood areas, which don't belong to a specific area protected by law and which do not necessarily overlap the limits of administrative units.

"Generally, all the forests from the first functional group are HCVF: forests with priority function of water, soil and climate protection, forests for the protection of the objectives of national interest, forests for leisure activities, forests used to protect the genetic fund and the ecological fund, as well as forests from the protected natural areas of national interest" (I.Popescu-Zeletin, 1952).

MATHERIAL AND METHOD

The basic material consisted of forest arrangements (ICAS, 2005). In places, where the information was deficient, field trips have been taken and the young trees with natural or quasi natural structure have been identified, as well as the characteristic herbaceous plants, the endemic species and

other specific and important traits for the definition of HCVF.

RESULTS AND CONCLUSIONS

The action of HCVF identification and separation (written and mapped) started in 2006 in our country and it still continues presently. The results acquired for Suceava County are as follows: a total of 17,704 areas covering 137,210.1 ha, from the total 334,309.8 ha of forest (41.4%) have been identified and included within the HCVF system.

Our survey has shown that the fir tree is an endangered species (Oltean, M. et. al., 1994) and it must be protected throughout that area; this is why all the young trees where the proportion of fir tree exceeds 70% have been classified as HCV 3.

Given the high concentration of monasteries in Bucovina, we also identified several large areas of HCV 6. We did not delimit HCV 5 areas because the amount of wood necessary for the local population is established annually by each forest district.

At the level of the Suceava County Forest Administration, the largest proportion of HCVF (16.7%) belongs to category HCV 4.2 (Forests critical to erosion control – Tables 1 and 2, Figure 1). This category expands on an area of 55,878 ha and is present in all the forest districts, except the Pătrăuți forest district.

The analysis of each forest district has revealed the following: category HCV 4.2 holds the largest proportion (65.7%) (Table 3) in the mountain area of Coşna forest district, where the spruce fir forests include old, high quality trees. The second position in terms of proportion belongs to Tomnatic forest district (34.2%), followed by Crucea forest district (30.6%), with an area of 8109.7 ha predominated by spruce fir trees, with extended areas of pure spruce fir forests. These forests are located of mountain sides with slopes steeper than 30°. HCV 4 holds a percentage smaller than 1% in Marginea forest district, covering an area of just 151 ha, in which the mixture of resinous and deciduous trees is dominant, due to the altitude of the mountains in this area (below 1000 m).

Category HCV 1 (Globally, regionally or nationally significant concentrations of biodiversity values) holds the second position as covered area, 9.011%, of which:

- 7% HCV 1.1 Protected Areas, with an area of 24,615.8 ha;
- 2% HCV 1.2 Threatened and endangered species, with an area of 6,531.8 ha;
- 0.01% HCV 1.3 Endemic species, with an area of 40.4 ha:
- 0.001% HCV 1.4 Critical temporal use, on an area of just 5 ha.

Table 1

The distribution of the high conservation value forests (HCVF) on Suceava County Forest Administration

		The high conservation value forests (ha)										
Forest district	**Surface(ha)**	**HCV 1.1**	**HCV 1.2**	**HCV 1.3**	**HCV 1.4**	**HCV 2**	**HCV 3**	**HCV 4.1**	**HCV 4.2**	**HCV 4.3**	**HCV 4.4**	**HCV 6**
Brosteni	23863,9	552.5	518.8	0	0	0	0	2780.2	7284.7	0	740.1	62
Crucea	26503,12	883.8	0	0	0	46	414.2	14158.2	8109.7	0	0	233.6
Dorna Candreni	11290,26	4796	975.3	0	0	4257.3	1095.8	101.7	2869.4	0	43.3	80.5
Cosna	2305,36	1469.5	0	0	0	298.2	199.5	97.4	1515.8	0	0	0
Vatra Dornei	10762	2418.6	92.2	0	0.9	0	200.8	0	5085.1	0	265.6	382.9
Iacobeni	14973,28	2301	507.6	0	0	1573	0	27	2033.9	0	3.6	3087.6
Cârlibaba	17242	3626.5	1571.8	0	0	2948	233.1	1.7	2168.1	0	17.4	999.4
Breaza	10890	782.3	1322.6	24.9	0	0	0	0	2340.1	0	0	0
Pojorâta	14750	1292.3	0	11.6	0	0	5.6	82.5	2595.7	0	24.7	1058.2
Tomnatic	9437,5	357.3	646	0	0	0	0	0	3233.3	0	0	1464.4
Vama	15007	159.4	76	3.9	0	0	3.9	0	3419	0	0	3956.2
Moldovița	13731,27	1051.3	0	0	0	0	40.5	0	1241.4	0	0	0
Frasin	10675	176.4	33.2	0	0	0	0	8.4	1417.4	0	0	560
Stulpicani	17417	658.5	0	0	4.1	198.6	904.3	0	2791.9	0.8	0	329.6
Gura Humorului	12546	440.2	116.9	0	0	0	149.4	0	140.8	0	0	63.9
Solca	8636,68	68.7	0	0	0	0	357.1	671.1	213.6	0	0	1109
Marginea	15161,29	213.1	0	0	0	0	392	716.3	150.8	0	0	1429.3
Putna	9613,6	219.7	0	0	0	0	84.1	0	224	0	0	77.7
Falcău	11015,96	465.9	0	0	0	0	15.2	31.1	2161.2	0	0	0
Brodina	13328	291.2	16.7	0	0	0	0	702.4	637.8	0	0	0
Mălini	18555	593.9	259	0	0	0	179	0	1749.4	0	0	952.3
Râşca	18132	488.8	288.1	0	0	0	32.3	0.8	2438.2	0	0	16.2
Fălticeni	6928,06	285.8	0	0	0	0	0	0	241.5	0	0	0
Dolhasca	8226,06	125.2	0	0	0	0	0	0	124.4	0	0	13.3
Pătrăuți	7121,5	370.4	0	0	0	0	126.3	0	0	0	0	34.5
Adâncata	6198	527.5	107.6	0	0	0	0	0	1690.8	0	0	0
The County Forest Administration Surface	334309,79	24615.8	6531.8	40.4	5	9321.1	4433.1	19378.8	55878	0.8	1094.7	15910.6

Table 2

The distribution of the number of high conservation value forests (HCVF) in Suceava County Forest Administration

Forest district	The high conservation value forests (number)										
	HCV 1.1	HCV 1.2	HCV 1.3	HCV 1.4	HCV 2	HCV 3	HCV 4.1	HCV 4.2	HCV 4.3	HCV 4.4	HCV 6
Brosteni	62	57	0	0	0	0	284	892	0	112	6
Crucea	97	0	0	0	6	37	3112	982	0	0	40
Dorna Candreni	437	105	0	0	489	99	29	429	0	11	13
Cosna	154	0	0	0	28	12	24	280	0	0	0
Vatra Dornei	206	6	0	1	0	19	0	616	0	27	69
Iacobeni	229	54	0	0	306	0	5	292	0	2	517
Cârlibaba	367	202	0	0	311	15	2	324	0	3	144
Breaza	69	144	4	0	0	0	0	449	0	0	0
Pojorâta	147	0	2	0	0	2	9	472	0	2	158
Tomnatic	27	46	0	0	0	0	0	364	0	0	202
Vama	13	8	2	0	0	2	0	387	0	0	411
Moldovița	**73**	0	0	0	0	2	0	206	0	0	0
Frasin	8	4	0	0	0	0	1	215	0	0	61
Stulpicani	57	0	0	1	19	98	0	485	1	0	49
Gura Humorului	21	15	0	0	0	6	0	76	0	0	4
Solca	3	0	0	0	0	41	35	102	0	0	146
Marginea	17	0	0	0	0	20	239	51	0	0	122
Putna	6	0	0	0	0	4	0	19	0	0	7
Falcău	21	0	0	0	0	3	19	290	0	0	0
Brodina	23	3	0	0	0	0	85	117	0	0	0
Mălini	27	16	0	0	0	14	0	146	0	0	54
Râșca	24	13	0	0	0	3	1	209	0	0	2
Fălticeni	102	0	0	0	0	0	0	96	0	0	0
Dolhasca	9	0	0	0	0	0	0	36	0	0	4
Pătrăuți	36	0	0	0	0	5	0	0	0	0	6
Adâncata	51	15	0	0	0	0	0	235	0	79	0
Total	2286	688	8	2	1159	382	3845	7770	1	236	2015

Table .3

The distribution of the percent of high conservation value forests (HCVF) in Suceava County Forest Administration

Forest district	The high conservation value forests (number) (%)										
	HCV 1.1	HCV 1.2	HCV 1.3	HCV 1.4	HCV 2	HCV 3	HCV 4.1	HCV 4.2	HCV 4.3	HCV 4.4	HCV 6
Brosteni	2.30	2.17					11.60	30.50		3.10	0.30
Crucea	4.90				0.10	1.60	53.40	30.60			
Dorna Candreni	42	8.60			37.70	9.70	0.90	25.40		0.40	0.71
Cosna	63.70				12.90	8.60	4.20	65.70			
Vatra Dornei	24.30	0.85		0.01		1.90		47		2.50	3.60
Iacobeni	15.30	3.40			10.50		0.20	13.60		0.02	20.60
Cârlibaba	21	9.10			17	1.30	0.00	12.60		0.10	5.80
Breaza	7.20	12.10	0.20					21.50			
Pojorâta	9		0.10				0.60	17.60		0.20	7.10
Tomnatic	3.70	6.80						34.20			15.50
Vama	1.06	0.50	0.02			0.03		22.80			26.30
Moldovița	7.60					0.30		9			
Frasin	1.65	0.30					0.07	13.30			5.20
Stulpicani	3.80			0.02	1.14	5.10		16	0.00		1.90
Gura Humorului	3.50	0.90				1.20		1.10			0.50
Solca	4.90					4.10	7.70	2.50			12.80
Marginea	1.40					2.60	4.70	1			9.40
Putna	2.30					0.80		2.30			0.80
Falcău	4.20					0.10	0.30	19.60			
Brodina	2.20	0.10					5.30	4.80			
Mălini	3.20	1.40				0.96		9.40			5.10
Râșca	2.70	1.60				0.40	0.00	13.40			0.08
Fălticeni	4.10							3.50			
Dolhasca	1.50							1.51			
Pătrăuți	5.20					1.80					0.50
Adâncata	8.50	1.70						27		8	
Percentage of the County Forest Administration	7	2	0.01	0.001	2.80	1.30	5.80	16.70	0.00002	0.50	4.70

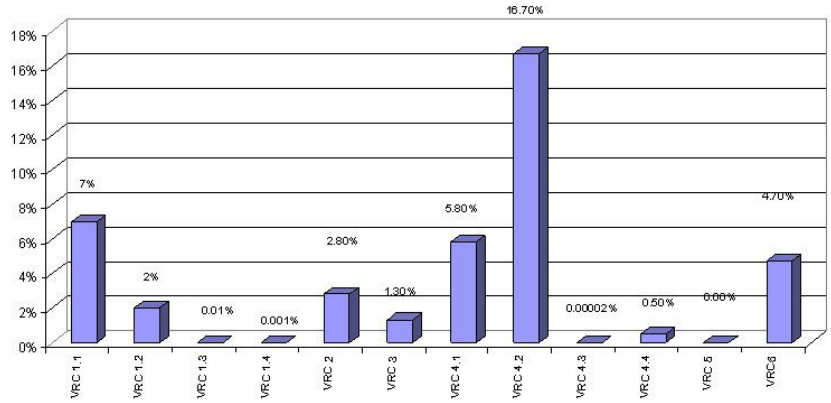

Figure 1. The distribution of the percent of high conservation value forests (HCVF) in Suceava County Forest Administration

The analysis by forest districts shows that HCV 1.1 holds the largest area in Dorna Candreni forest district (4796 ha), representing 42% of the total area of the forest district and 1.4% of the total area administrated by the County Forest Administration. On the second position is Cârlibaba forest district with an area of 3,626.5 ha, 21% of the forest district area and 1.08% of the total area administrated by the County Forest Administration. Vatra Dornei forest district is on the third position, with 2,418.6 ha which account for 22% of the forest district area and 0.7% of the total area administrated by the County Forest Administration. This is explainable by the exceptional diversity of the forest area from these forest districts: the large number of scientific and natural reservations, the Călimani national park, natural monuments, rare ecosystems represented by oligotroph peat bogs (Pop, E., 1943) with specific biotopes which harbour relic species: *Betula nana* (Beldie, A., 1977), *Sphagnum* (Seghedin, T. 1983) and other (endemic species, rare and protected species of flora and fauna).

The forest district with the smallest HCV 1.1 area is Solca, with 68.7 ha, which means 0.02% of the total area administrated by Suceava County Forest Administration.

HCV 1.2 category is present on half of the forest areas of Suceava County. It is not present in: Crucea, Coşna, Pojorâta, Moldovița, Stulpicani, Solca, Marginea, Putna, Falcău, Fălticeni, Dolhasca, Pătrăuți forest districts. HCV 1.2. covers 2% of the total area administrated by Suceava County Forest Administration.

HCV 1.3 covers a large proportion in Breaza, Pojorâta and Vama forest districts, an area of 40.4 ha, while HCV 1.4 appears only in Vatra Dornei forest district, on an area of 0.9 ha and in Stulpicani forest district, on an area of 4.1 ha.

Most of HCV 1, including all its 4 subcategories, both as count, and as

covered area, are at higher altitudes, their area decreasing in the hilly and field areas, which is normal because, as it is known, the mountains hold the bulk of the flora and fauna treasures of our country.

HCV 4 (Forests critical to water catchments, Forests critical to erosion control, Forests providing barriers to destructive fire) is on the third position, covering 5.8%, representing an area of 19,379 ha, which includes most mineral water basins in the Dorna area, reputed for their curative properties.

The widest area covered by HCV 4 is in Crucea forest district (14,158 ha), 53.4% from the area of the forest district and 4.2% of the total area administrated by Suceava County Forest Administration. Following are Breaza forest district with 2,780.2 ha, 11.8% of the forest district area and 0.8% of the total area administrated by Suceava County Forest Administration.

HCV 4 is not present in: Vatra Dornei, Breaza, Tomnatec, Vama, Moldovița, Stulpicani, Gura Humorului, Putna, Mălini, Fălticeni, Dolhasca, Pătrăuți and Adâncata forest districts.

HCV 6 (Forest areas critical to local communities' traditional cultural identity) is on the fourth position, covering 15,910.6 ha, 4.8% of the total area administrated by Suceava County Forest Administration. This is explained by the large number of monasteries and historical monument from Bucovina.

Marginea, Gura Humorului, Putna, Vama and Pătrăuți forest districts have the largest areas covered by HCV 3 forests, with a total of 5,562 ha. This category is not present in Coşna, Breaza, Falcău, Brodina, Fălticeni and Adâncata forest districts.

HCV 2 is on the fifth position, with 9,321 ha, 2.8% of the total area administrated by Suceava County Forest Administration. This category is present in 6 forest districts: Crucea, Dorna Candreni, Coşna, Cârlibaba, Stulpicani.

HCV 3 (Forest areas that are in or contain rare, threatened or endangered ecosystems, virgin or quasi virgin forests, PINMATRA areas) is on the sixth position. This category covers just 4,433.1 ha, 1.3% of the total area administrated by Suceava County Forest Administration. This category is present in Dorna Candreni and Stulpicani forest districts (century-old forest from Slatioara, century-old forest from Giumalău, high altitude pit bogs, PINMATRA areas) and it lacks in Broşteni, Iacobeni, Breaza, Tomnatic, Frasin, Brodina, Fălticeni, Dolhasca and Adâncata forest districts.

Finally, the poorest represented categories are HCV 4.3 (forests with critical impact on agricultural and fishery land), covering 0.8 ha, which is less than 1%, and HCV 4.4, representing just 0.5% of the total area administrated by Suceava County Forest Administration, with 1,094.7 ha.

CONCLUSIONS

Our investigations yielded the following conclusions:

a). The system of high conservation value forests (HCVF) identification, delimitation and classification is complex, multilateral and heterogeneous. It includes criteria originating in the different areas of human activity, with the purpose to cover all the characteristic situations of the ecosystem (forest) – man relations. It makes a full picture of the forests that need to be preserved, based on criteria referring to species (rare, endemic, red list species), to ecosystem (rare, endangered and very expanded ecosystems (minimum 7,000 ha) with particular ecological significance), to the environmental conditions (rocky, humid habitats), to the local economy (forests essential to the local production of wood), to ethnography (forests with folkloric importance) and to history (forests protecting historical monuments, monasteries).

b). The forest arrangements delimit the forests from each production unit (PU) in several management areas, some of them producing wood, other dedicated exclusively to protection, where tree felling is completely forbidden. Among the latter areas are the protected management areas (series E, F), series K (seeds reservations) and M (forests where no clearing is allowed, many of these forests also playing a buffering role).
Indices E, F, M, K from the arrangement areas match exactly the HCV.

The functional classification of each arrangement plot allows dividing the HCVF in sub-types, but no further information can be supplied (for instance, what species needs protection, or what cultural objective is endangered?). Hence, the need to include further information in the arrangements, regarding HCVF identification. This information must originate from special investigations conducted by specialised scientists (for instance botanists).

c). The correct determination of the critical thresholds in HCVF determination, because if a wider range of criteria is available, from ecologic to cultural, almost every forest might be included in a HCV category. Plausible motivations may be found, except for the remote forests from the mountains which are difficult to access, but there too rare species, red list species or virgin woods may be identified.

This shows that HCVF delimitation must be done attentively, in order to avoid exaggerations and not to diminish significantly the economic function of the forests.

d) Separation of the management areas according to silvicultural, more rarely ecological criteria, doesn't allow, unfortunately, the identification of all the types of HCVF. This approach will leave aside the types with economic (HCV 5), social and cultural (HCV 6) character, as well as the subtypes aiming a particular species that needs conservation (HCV 1, HCV

2, HCV 3, HCV 4). Special investigations are necessary to this purpose.

e) Because the fir tree is included in the red list at rare, vulnerable species, the young fir tree forests where the fir tree accounts for at least 70% of the forest trees, must be fully included in HCV 3.

The 140 – 160 old quasi virgin ecosystems with young fir trees must be included in HCV 3 category and become protected areas.

f) The analysis of this information shows that in Suceava County Forest Administration, the HCVF account for 137,210 ha, which is 41.4% of the total forest area. The best represented are HCV 4.2 (16.7%), HCV 1 (9%) and HCV 4.1 (5.8%). HCV 6 also holds an important position due to the 4.8% coverage of the total forest area in Suceava County. The other categories are poorly represented, with percentages lower than 3%.

g). The process of identification of the high conservation value forests in Suceava County Forest Administration must continue in the coming years. Instructions must be developed for the use of certification in wood production.

h). A special problem is that of the management area K (seeds reservations). According to the instructions, no wood clearing is allowed here due to the purpose of establishing these management areas. However, the very purpose of their establishment requires a special system of forest management which to accomplish their purpose. No weed production is demanded, no special protection is required, only large amounts of good quality seeds. This aspect has been raised and discussed during the field trips and during the works of the International Fir Tree Symposium, Poiana Braşov, 4-9 September 2005.

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