

Research on the land fund of the Lipova Forest District, Romania

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Abstract This paper presents a study of the land fund within the Lipova Forest District, Arad County, Romania, which occupies a total area of 15,232.47 ha and comprises nine production units. This forest fund is managed by the Lipova Forest District and comprises state-owned forests located in the western part of the country, respectively in the south-eastern part of Arad County, in the Lipovei Plateau. Part of the Lipova Forest District lies in the lower basin of the Mureș River, on its left side (UP I-V) and another part, in the Bega River basin, on its right side (UP VI-IX). It comprises 10 types of stations, where those of superior creditworthiness predominate with 79%, followed by those of medium creditworthiness, with 21% and those with lower creditworthiness, with <1%. Also, within the territory studied, 18 natural fundamental types of forest were determined grouped into 11 forest formations. The share of natural forest types is 74%, artificial ones 16%, and derived arboreta (partially or totally) occupy 9% of the forest fund area and young ones, undefined, 1%. Higher productivity trees occupy 70% of the forest area, medium productivity trees 26%, and lower productivity trees, 4%.

Key words

forest protection, forest district, forest background

The territory of the Lipova Forest District covers four hunting funds, two of which (FC 71 Zăbaț and 72 Lipova) are managed by A.J.V.P.S. [3, 11, 16] Lipova and two (FC 73 Neudorf and FC 74 Zăbrani) by the Lipova Forest District. For their proper management, the facilities provide for appropriate measures [2, 5, 8].

The area of the state-owned forest fund managed by the Lipova Forest District is 15,232.47 ha and is contained in 9 production units [6, 10, 17]. This is 1,479.73 ha smaller than that of the previous administration (16,712.20 ha) [14, 15].

The network of transport facilities amounts to 176.16 km, of which 53.90 km public roads, 122.26 km forest roads, ensuring 81% accessibility of the forest fund [1, 7, 13]. With a view to access to the entire area of the forest district, two more projected forest roads with a total length of 13.20 km and 5 necessary roads for a total length of 11.30 km have been proposed [7, 9, 12].

Material and Method

The paper contains a dynamic of the development of the forest fund through which the intermediate stages that the forests of the Lipova Forest District will go through in order to normalize the structure and size of the production fund are envisaged. The novelty of the activities carried out by the Lipova Forest District consists of:

- conservation and improvement of biodiversity;
- certification of forests;
- assessment of environment or of environmental impact, as appropriate, and appropriate assessment of the potential effects on protected natural areas of community and fauna (bird) interest (Natura 2000 Sites - ROSCI0337 Neudorf Forest, ROSCI0407 Zărandu de Vest, and ROSPA0029 Lower Mureș Gorges-Lipovei Hill) is an integral part of it;
- establishment of the related GIS database.

Results and Discussions

The area of the state-owned forest fund managed by the Lipova Forest District is 15,232.47 ha and is contained in 9 production units. This is 1,479.73 ha smaller than that of the previous administration (16,712.20 ha).

The area difference (-1,479.73 ha) is justified by:

- refunds of land to former owners under Law No. 1/2000: - 36.78 ha;
- refunds of land to former owners under Law No. 247/2005: -1,498.24 ha;
- entries into the forest fund with legal documents: +1.48 ha (Contract of Sale Purchase No. 1559/24/12.2008 - UP I - 1.48 ha);
- differences resulting from cadastral measurements (tabulations): -1.04 ha

The distribution of the forest fund area by use category is as follows:

- A. Forests and land for afforestation 14,928.30 ha;
- B. Lands affected by forest management 297.83 ha;
- C. Non-productive land 1.29 ha;
- D. Land temporarily removed from the forest fund 5.05 ha.

The forests within the Lipova Forest District are located, from a phytoclimatic point of view, in the

vegetation floor F.D.2 – hill oak forests (GO, CE, GI and mixtures of them) and hill strips – 14,928.30 ha (100%).

The characterization features of the forest fund structure (total forest – 14,923.83 ha) are as follows:

The division of the area by functional groups and categories is as follows:

Table 1. The structure of the forest fund from Lipova Forest District

| <i>Group, sub-group and functional category</i> | | Area | |
|---|--|-------------|----------|
| Code | <i>Name (priority function)</i> | ha | % |
| Group I, of which: | | | |
| 2A | Forests situated on rocks, on detritus, on deep erosion land, on land with a slope greater than 35 degrees (T II) | 58.45 | - |
| 2I | Forests located on land with permanent marshing (T II) | 0.83 | - |
| 4B | Forests around Lipova and communes. and forests located within their buildable perimeter (T III) | 50.33 | - |
| 5C | Nature reserves comprising land areas for the conservation of living environments, gene fund and forest eco fund (IT) | 113.91 | 1 |
| 5G | Forests-plots or parts of plots constituted as separate landscaping units - in which experimental areas for long-term forest research, not constituted in scientific reserves (TII). are located | 16.54 | - |
| 5H | Forests established as reserves for the production of forest seeds and the conservation of forest gene fund (T II) | 295.49 | 2 |
| 5K | Dendrological parks and arboreta (TII) | 50.42 | - |
| 5L | Forests established in protection zones (buffer zones) of forest genetic resources (T m) | 84.13 | 1 |
| 5M | Forests located in the perimeter of <i>Natura 2000 Sites - ROSCI0337 Neudorf Forest. ROSCI0407 Zărandu de Vest and ROSPA0029 Lower Mureş Gorges-Lipovei Hills</i> (T. IV) | 4,476.92 | 30 |
| Total group I | | 5,147.02 | 34 |

Table 2. The distribution of the forest fund area by use category from the Lipova Forest District

| <i>Group, sub-group and functional category</i> | | Area | |
|---|---|-------------|----------|
| Code | <i>Name (priority function)</i> | ha | % |
| Group II, of which: | | | |
| IA | Forests intended mainly to produce thick and high-quality trees for the purpose of obtaining wood for aesthetic and technical veneers, as well as resonant wood and keyboard (TV) | 136.09 | 1 |
| IB | Forests intended mainly to produce high-quality thick timber trees (T.VI) | 9371.87 | 63 |
| IC | Forests intended mainly to produce medium and thin trees for cellulose, rural construction and other uses (T.VI) | 273.32 | 2 |
| Total group II | | 9,781.28 | 66 |
| Total groups I + II | | 14,928.30 | 100 |
| - | Lands without functional group (affected-cat. B, unproductive-cat. C, temporarily removed from the forest fund-cat. D) | 304.17 | - |
| TOTAL DISTRICT | | 15,232.47 | - |

The following production and protection subunits have been established:

- SUI - A - regular woods - ordinary assortments: 13,960.41 ha;
- SUP - E - reserves for full nature protection: 113.91 ha;
- SUP - K - seed reserves;
- SUP - M - forests subject to special conservation regime: 126.24 ha;
- SUP - O - land to be removed from the state's publicly-owned forest fund: 187.49 ha;
- SUP - Q - simple-acacia grove: 240.29 ha.

Conservation cuts have been provided in the mature arboreta of SUP M.

- exploitability: protection for functional Group I arboreta, and technique for functional Group II arboreta;

- the 100-year cycle in UP V; 110 years in UP I, III, VI, VIII and 120 years in UP II, IV, VII, IX. For the arboreta of SUP "0", a 100-year cycle (U.P. V) was adopted, and for those in SUP "Q" (U.P. II and IV), 25-year cycles were adopted.

The main product possibility is 42,020 mc/year (40,063 mc/year from SUP A, 1,565 mc/year from SUP Q, and 392 mc/year from SUP O), i.e. 4% lower than the previous possibility (43,900 mc/year). Preservation cuts will extract 41 mc annually.

The harvest index of the main products is 2.9 mc/year/ha and the total area with forest of 2.8 mc/year/ha.

The annual areas to be covered with care work and the volumes to be harvested are as follows:

- clearances: 69.54 ha;
- cleaning: 62.22 ha, from which 205 mc will be harvested;
- thinning outs: 282.80 ha, from which 5076 mc will be harvested.

With hygiene cuts, 7,401.22 ha will be covered, from which 6,418 mc will be harvested.

The total volume of wood to be harvested annually is 53,760 mc with a total harvest index of 3.6 mc/year/ha.

The regeneration works to be carried out in the following decade are as follows:

- works necessary to ensure natural regeneration: 5,084.88 ha;
- regeneration works: 457.03 ha;
- additions in young arboreta: 173.95 ha;
- caring for young crops: 2,728.40 ha.

Planning include recommendations for preventing and combating destabilising and limiting factors, as well as measures to protect the forest fund.

Conclusions

The Lipova Forest District has four kinetic funds, two of which are managed by A.J.V.P.S. Lipova and two by the Lipova Forest District. It comprises 10 types of stations, where those of superior creditworthiness predominate with 79%, followed by those of medium creditworthiness with 21%, and those with lower creditworthiness with <1%.

Within the Lipova Forest District, 18 natural fundamental forest types were determined grouped into 11 forest formations. The share of natural ones is 74%, that of artificial ones 16%, that of derived arboreta (partially or totally) 9%, and that of young ones, undefined, only 1%. Higher productivity trees occupy 70% of forest area, medium productivity trees 26%, and lower productivity trees 4%.

The total volume of wood mass set annually is 53,760 mc and the total harvest index is 3.6 mc/year/ha.

The regeneration works that are recommended to be carried out in the following decade are works necessary to ensure natural regeneration, on 5,084.88 ha; regeneration works, on 457.03 ha; additions in young arboreta, on 173.95 ha; and care of young crops, on 2,728.40 ha.

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