Silvicultural Assessment of Natural Coppice Forests: a Case Study Relating to Coppice Management by Rural Communities in the Ukrainian Subcarpathians

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INTRODUCTION

In Ukraine, there are two silvicultural types of coppice woodlands focusing on the natural coppice and on the short rotation coppice crops. The research work is directed to study the natural coppice woodlands that involves local community and potential to yield products for own use. In the Ukrainian Subcarpathians natural coppice woodland are mostly characterized for the rural community in the poor economical regions (Fig. 1).

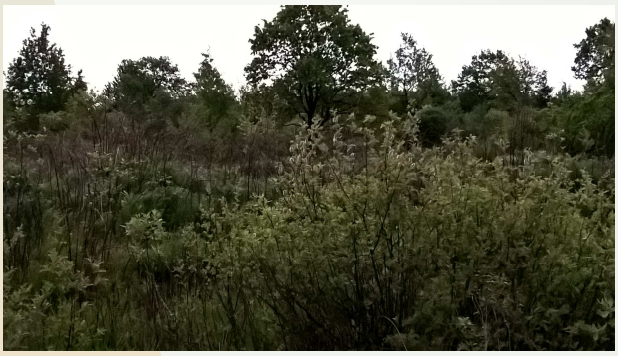

Fig. 1. Natural mixed broadleaved coppice forests on the infertile agricultural lands

From time to time in the low forests are mostly managed by rural people to provide random supplies of small-wood with many uses including firewood, charcoal, pole wood and branches for brooms. The coppiced trees were mainly selected for firewood (e.g. *Carpinus betulus* L., *Fagus sylvatica* L., *Betula verrucosa* Ehrh., *Salix alba* L., *Salix caprea* L., *Alnus glutinosa (L.) Gaerth., Alnus incana* (L.) Moench, *Sorbus aucuparia* L., *Malus sylvestris* Mill., *Populus tremula* L., *and Corylus avellana* L.), while the uneven-aged standards were selected to produce timbers *(e.g. Quercus robur* L., *Quercus rubra* L., *Fraxinus excelsior* L., *Fagus sylvatica* L., *Alnus glutinosa* (L.) Gaerth.).

The active silvicultural management are neglected for more than a century. Over the past decade natural coppice is of the biologic-ecological importance in the context of the conservation and a revival of traditional country. Current government policy is not encouraging the development of natural coppice and stimulating public participation in their management. This will probably lead to the abrupt changes in coppice ecosystems and cause some biological problems for the local species and their wildlife.

OBJECTIVES

The objectives of the research work are to make a silvicultural assessment of natural coppice forests in the rural communities focusing on the development of indicators and criteria that follows to take for the right decisions in the forest management planning in the Ukrainian Subcarpathians (Fig. 2).

Fig. 2. Research area of natural coppice forests on the digital map

The study site is located in a temperate continental part of Ukraine, with an average temperature of 25 ℃ in July and of –10 ℃ in January. The tempera ture of over 10 ℃ are characterized for 160 – 170 days. Precipitation averages 800 mm per year (meteorological data measured during 2010 –2015).

CONCLUSIONS

Natural coppice forests in the Ukrainian Subcarpathians occupies a significant ecological niche that are of great social and economic value. They are mostly divided into two types regarding the site conditions:

- *along small rivers with temporary wet soils;*
- *poor forest soil with low fertilization and low moisture content.*

In both natural coppice forest types there are no regular forest management. The silvicultural treatments are mostly linked with demands of rural community on wood as raw materials (to harvest some elements for wooden construction, firewood, piles etc.), non-wood forest products (to harvest herbs, berries, mushrooms and eco-fishes), woodland pasture, games and recreational area for kids.

Generally, coppice forests are irregularly structured due to the disorganized forestry in Ukraine. There are some problems of coppice forests in the rural communities as well: (a) the lack of the forest management plans, (b) frequent damages due to illegal cutting and random fires (Fig. 3), (c) over-use of coppice forests, (d) unfavorable energy policy in the country and (e) no real data about coppice forests in cadasters.

Fig. 3. Illegal cutting and random fires in the natural coppice forests

Research interest in the coppice forests are to protect endangered species and to enhance biodiversity as well to obtain a sustainable source of energy for the rural communities in Ukraine. The efforts to restore coppice forest management are viewed well by some local foresters, but some information are required in the context of the forest management planning. The systems of coppice forest management is not well known about the economic effectiveness and they need to be developed. The future expansion of wood biomass production systems is one of main challenge for the rural communities addressing on the sustainable development.

The negative impact on natural forests coppice are connected to harvesting of almost all mature trees or to burn of the huge area of coppice forests that caused crucial changes in site conditions and species composition. Our research project on the natural coppice forests are addressed on the development of "smart – coppice – districts" that foresee the coppice management plan regulating anthropogenic impact on biodiversity in coppice forests and their monitoring.

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