

Summary

The aim of the study is to identify and describe the potential threats for the following forest habitats of community interest: **91D0** *Bog woodland, **91E0** *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion*, *Alnion incanae*, *Salicion albae*), **91F0** Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmion minoris*), **91H0** *Pannonian woods with *Quercus pubescens*, **91I0** *Euro-Siberian steppic woods with *Quercus* spp. and **91Y0** Dacian oak and hornbeam forests. The knowledge about such threats is important and needed to prevent and counteract their negative effects. Therefore, this study could provide guidance for protection and also a framework for developing management measures for such habitats included in Natura 2000 sites.

The work, part of the LIFE Nature Project "*Priority forest, sub-alpine and alpine habitats in Romania*" (LIFE05 NAT/RO/000176), has been funded by the European Commission through the LIFE financial instrument. Data and information for the study was collected by specialists both from the field (during the summer of 2006) and from other sources (scientific literature and the internet). The final form is the result of several meetings with participation of specialists from the Romanian Academy of Agricultural and Silvicultural Sciences, Forest Research and Management Planning Institute (Bucharest and Brasov), Faculty of Silviculture and Forest Operations (within Transilvania University of Brasov), the Silviculture Division from the Faculty of Horticulture (within the University of Agricultural Sciences and Veterinary Medicine - Cluj Napoca) and private forest management planning companies (S.C. Forestamen S.R.L., S.C. Forest Design S.R.L.).

The study encompasses five chapters, a list of bibliography and appendices. It starts with a short introduction which provides the reader with basic information about the Natura 2000 ecological network: the concept and some specific terms (e.g. Habitats and Birds directives, Natura 2000 sites, habitats of community interest, conservation status, favourable conservation status etc.). At the end, it gives a short presentation of the project LIFE05 NAT/RO/000176.

The next chapter delineates the aim of the work emphasizing the importance of identifying the potential threats for the subject habitats. This would provide

a very helpful tool in establishing comprehensive management guidelines for a sustainable development of local communities living in areas with Natura 2000 sites. The authors also propose some measures to counteract the effects of such threats. Although these guidelines try to cover all negative influences of the potential threats identified here, they are not detailed and will be subject to a different study. However, the authors recommend that such measures should be identified, decided and agreed upon on a case-by-case basis and only after a thorough field check performed by specialists.

Chapter 3 represents the main body of the study. For each of the 6 forest habitats mentioned earlier it gives the description according to the European and Romanian manuals followed by the potential threats grouped in three main categories: human activities, natural biotic factors and natural abiotic factors. As the first category (human impacts) includes numerous and diverse factors, the following subcategories were delineated further: (1) Legislation, ownership, insufficient public awareness; (2) Limits and neighboring properties; (3) Inappropriate management, disobeying the forestry rules and guidelines; (4) Constructions and other such activities (maintenance, repairs, upgrades); (5) Exploitation of biotic and abiotic resources; (6) Agriculture, animal breeding and (7) Pollution.

For each potential threat the following issues are presented: its frequency (*Nivelul de incidentă*); the area affected by the threat (*Suprafața din habitat afectată*); the intensity (*Intensitatea influenței negative*); the way it affects the habitat (*Modul de acțiune al factorului destabilizator*) and Possible measures to counteract the effects of that threat (*Măsuri posibile de contracarare*). To ease the reading, the description of threats is presented in a table format (Tables 2 to 7).

To give the reader a comprehensive insight, the descriptions for frequency, area affected by the threat and intensity, are more detailed in tables 2 to 7. However, to compare the effects of the same threat on different habitats, these details are converted to a simple format (single word) according to the scale presented in table 1 where: *Potențial*-Potential, *Redus*-Low, *Mediu*-Medium, *Ridicat*-High, *Mică*-Small, *Medie*-Medium and *Mare*-Large. The comparison among different habitats for each threat is presented in Annex 2.

The Discussion (Chapter 4) contains an analysis of the threats identified and described in the study. For this analysis, the Global Impact of each threat was assessed as a function of frequency, affected area and intensity according to a defined scale with 4 levels:

1. Potential (*Impact potențial*)
 - a. When the frequency is potential, regardless the affected area and threat intensity.
2. Low (*Impact scăzut*)
 - a. Low frequency, regardless the affected area and threat intensity (except when both are high);
 - b. Medium frequency and both affected area and intensity are low.
3. Moderate (*Impact mediu*)
 - a. Low frequency but both affected area and intensity are high;
 - b. Medium frequency regardless the affected area and threat intensity (except when both are high or both are low);
 - c. High frequency but both affected area and threat intensity are low.
4. Strong (*Impact ridicat*).
 - a. Medium frequency and both affected area and threat intensity are high;
 - b. High frequency regardless affected area and threat intensity (except when both are low).

Using this scale, a synthesis table was built using different colors for different levels of impact (Table 8). Further, all habitats were compared according to the number of threats and their global impact. The analysis of table 8 shows that some of the threats have the same effect on all studied habitats. Those with a strong impact are of human origin and refer to legislation - existence and observance. Therefore, they are considered to have just a temporary effect (should disappear in the near future). Although threats of biotic and abiotic origin, in general, don't have a strong impact, they affect the studied habitats in a relatively similar way. This situation remains stable as long as human disturbances don't exceed the resilience capacity of the ecosystems. Anyway, these threats can interact with each other and modify their impact on habitats.

For a better understanding of the situation, data was also presented on charts showing the number of threats for each habitat type. Threats are presented with different colours according to their global impact (in a form of stacked columns: Potential - green; Low - yellow; Medium - orange; High - red). Figure 1 shows the situation for all threats together while figures 2 to 4

present the situation separately for human activities (*Amenințări antropice*), biotic factors (*Amenințări biotice*) and abiotic factors (*Amenințări abiotice*).

Looking at threats with moderate and strong global impact, the analysis shows that riparian habitats (91F0 and 91E0*) and Dacian oak-hornbeam forests (91Y0) are the most threatened. The steppic woods with *Quercus* spp. (91I0*) are next, while bog woodlands (91D0*) and woods with *Q. pubescens* (91H0*) encompass the lowest number of potential threats. For 91E0* and 91F0 this is considered to be due to the fact that they are usually fragmented (narrow strips along rivers) and located close to roads and human settlements. Therefore, they are subject to most of the threats considered by the study. For 91Y0 this is most probably an artifact of the very large and scattered distribution of this habitat at national level (i.e. it covers a very diverse set of conditions and therefore, includes most of the potential threats). The situation for the steppic woods with *Quercus* spp. (91I0*) is the result of the fact that the distribution of the habitat which is rather large at national level, but in many cases the habitat is fragmented, occupies small areas, is close to human settlements and is surrounded by agricultural lands. Habitats 91D0* and 91H0* seem to be the less threatened as they exist on sites hostile to most of the human activities considered as potential threats by this study (i.e. many of such activities are not present in these ecosystems) and they are very specialized/adapted to these sites (i.e. the chance of other species to invade such ecosystems and of other factors to disturb them is reduced).

In chapter 5 - Conclusions - the authors present the threats encountered most often, with a focus on those with strong and moderate influence on the studied habitats. They conclude that human activities cover most of the threats considered to have an important influence on these habitats. Although, after analysis, habitats 91D0* and 91H0* seem less threatened, it is emphasized that they should be still considered vulnerable as they cover small and fragmented areas and are very sensitive to the specific site conditions (very moist and acidic environments - for 91D0*, southern exposures and steep slopes - for 91H0*). It is also the case of 91I0* forests when they are fragmented and surrounded by agricultural lands.

Finally, authors conclude that some of the identified threats (especially those of human origin) are temporary and could disappear in the near future. Meanwhile some other could arise. Therefore, the situation is rather complex than simple. However, the study looks at general aspects regarding the potential threats for these forest habitats and it does not cover all conditions

and combinations of factors which could arise in the field. Knowing the reality for each particular case is a basic requirement for choosing and applying the most efficient solutions needed for a sustainable management of such ecosystems and thus for the conservation of the natural richness of Romania.

Appendices

- **Appendix 1** presents all potential threats identified in the study (regardless the habitat type) arranged on categories and subcategories.
- **Appendix 2** groups together all tables with threats from the 6 forest habitats included in the study. For each potential threat it presents all particular aspects from the different habitats affected, helping the reader to compare among them.
- **Appendix 3** presents a field sheet for evaluation (presence and evolution tendency) of potential threats in a particular Natura 2000 site.
- **Appendix 4** includes pictures taken in the field during 2006 and 2007 with potential threats for the studied forest habitats.