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Identification of High Conservation Value Forests in the Republic of Moldova





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Acronyms and Abbreviations

ALRC	Agency for Land Relations and Cadastre	ICAS	Forest Research and Management Institute [Institutul de Cercetări și Amenajări Silvice]
ASCI	Area of Special Conservation Interest	IFAD	International Fund for Agricultural Development
ATU	Administrative-Territorial Unit	IUCN	International Union for Conservation of Nature
CBD	Convention on Biological Diversity The EU-funded regional program “European	MoE	Ministry of Environment
ENPI	Neighborhood and Partnership Instrument	Moldsilva	Agency Moldsilva
FLEG	East Countries Forest Law Enforcemen and Governance”	NBS	National Bureau of Statistics
EU	European Union	NFG	National Forest Ground
FAO	Food and Agriculture Organization	NGO	Nongovernmental Organization
FMP	Forest Management Plan	NP	National Park
FSC	Forest Stewardship Council	NTFP	Non-timber forest product
GEF	Global Environmental Facility	PA	Protected Area
GD	Government Decision	SFE	State Forestry Enterprise
GIS	Geographic Information System	UNDP	United Nations Development Programme
HCV	High Conservation Value		
HCVF	High Conservation Value Forests		
IBAs	Important Bird and Biodiversity Areas		



Abstract

The study aims to identify high conservation value forests (HCVFs) in Moldova, which are crucial for biodiversity and provide long-term benefits. These forests account for more than 80% of the country's biological diversity and have social, economic, climate, hydrological, and erosion control benefits.

The study provides a comprehensive overview of Moldova's forestry sector, that includes forest cover, ownership, functions, structure, and production. It also includes information on forest management and the institutional framework. The primary objective of this study is to contribute to the protection of valuable forest ecosystems and establish discussion platforms with stakeholders for their future conservation and long-term resource management.

Approximately 175,500 ha of forest land, accounting for 47.3% of the total forested area,

were identified as HCVFs. Most of these forests are owned and managed by the state. To ensure their preservation, the study recommends establishing a network of HCVFs and modernizing legislation on protected areas. The methodology involved a practical guide and GIS techniques.

The study provides technical and policy recommendations, such as improving the HCVF identification guide, conducting further research, amending laws on protected areas, and developing an adaptive forest management to ensure future ecosystem services. Forest managers, landscape planners, and beneficiaries of forestry services can use the findings to align management plans, prioritize conservation, and promote sustainable land use. Proper implementation of HCVF principles can attract donors and investors to support Moldova's forestry sector.

Foreword

Moldova's forests are an important part of the country's natural capital. They are home to over 80% of the country's species and provide social, economic, climate, hydrological, and erosion control benefits. This study was performed at the request of the environmental authorities of the Republic of Moldova (hereafter – Moldova) and aims to identify high conservation value forests (HCVFs). It was completed pursuant to the strategy of the Ministry of Environment of Moldova for re-evaluating the conservation status of the country's forest ecosystems based on their true significance – a forest management designation that has never been applied before in the country. Despite being categorized under the national legislation as Group I – forests with primary protective functions, Moldova's forests are still unsustainably managed, prompting the authorities to reconsider the country's approach toward reconciling economic development with conservation. The study's findings reveal that almost one-half of Moldova's forests have the potential for HCVFs and provide a classification of these forests according to the approach developed by the Forest Stewardship Council (FSC).

This study was made possible thanks to a fruitful collaboration among the EU4Environment Programme, the Ministry of Environment of Moldova, and various stakeholders: civil society, forestry entities, protected area units, research

and academic institutions, and many experts. Preliminary findings have been shared with stakeholders and have garnered significant attention, aligning with the country's priorities of improving forest management and expanding conservation areas.

The report's five chapters cover (1) the study's purpose and objectives, (2) general context of Moldova's forestry sector, (3) the methodology used to identify HCVFs, (4) the study results, and (5) findings and recommendations. In addition to estimating the extent of HCVFs and proposing specific management considerations for each identified category, the report also identifies a new area of high conservation significance that has not yet been recognized. This finding underscores the need for further verification of Moldova's entire forest management system and for enhanced conservation efforts. The report's findings and recommendations can bolster Moldova's position in achieving its Sustainable Development Goals (SDGs) as the country is implementing an environmental institutional reform.

Maintaining and expanding forest cover will strengthen the environmental and economic security of the country by providing sustainable benefits and livelihoods. All this will support the country's capacity to adapt to climate and water shortage challenges.



Executive Summary

Nature (Scientific) Reserve Beech Land (5,642 ha) is located in the high-land region of the central Moldova; most of its area is of a medium landscape integrity (HCVF category 2), while its core zone represents a high conservation area (HCVF category 1). The presence of secular trees of the European beech (*Fagus sylvatica*) at the eastern edge of its range ensures conditions for many other species in the food web as well as other environmental benefits. In addition to beech, two native oak species (*Quercus robur* and *Q. petraea*) form the so-called 'natural fundamental stands' (HCVF category 3).

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Moldova's forests are home to over 80% of the country's biological diversity, providing a wide range of long-term benefits, including social, economic, climate, hydrological, and erosion control. These forests have been and continue to be an important strategic domestic resource. Maintaining and expanding forest cover will strengthen the ecological and economic security of the country by ensuring a sustainable provision of benefits and supporting the country's capacity to adjust to the new realities that imply climate or hydrological challenges. At the same time, forests that are designated for production and/or protection purposes provide essential livelihoods and resources, including energy, to local communities and the national economy.

This study was carried out at the request of the environmental authorities of Moldova to support the efforts in delimiting forests subject for high conservation (to be classified as high conservation value forest [HCVF] ecosystems) from the forest areas designated for protection and/or production purposes, all providing important multidimensional values.

In the absence of forest certification, the HCVF concept can be a key tool for: (a) conservation of important areas for species, ecosystems, and landscapes; (b) protection of people against floods and soil erosion; (c) conservation of natural resources of specific importance for the local communities; and (d) conservation of the most valuable areas for communities' identity or cultural heritage (Rietbergen-McCracken et al. 2007) and for promotion of sustainable management (Maesano et al. 2011).

The study contributes to the identification of HCVFs regardless of their ownership or geographic location. It aligns with Moldova's national priorities and international commitments, such as the

Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC), which emphasize the importance of sustainable forest management and biodiversity conservation. The study is built on extensive analysis of publicly available data and on original data compilations.

The report provides an overview of Moldova's forestry sector as well as centralized data on forest cover; ownership of forest lands; forests' functions, structure, and main indicators; and the production of wood and non-timber forest products (NTFPs). It also contains data on forest management and the related institutional framework and provides a brief description of the country's system of protected areas (PAs).

Forestry sector and the need for HCVF identification

The area of the National Forest Ground (NFG) represents 450,600 ha or 13.8% of the country's territory, of which forests cover only 371,000 ha or 11% (ALRC 2022). The state owns and manages the largest share of forests — 317,800 ha) while administrative-territorial units (ATUs) own and manage 85,100 ha. Private forests count for only 2,800 ha.

The moderate values of the forest production indicators and the growing demand for forest products and services require new approaches deployed through a lens of resource conservation and augmentation. In this context, the study aims to effectively support protection of valuable forest ecosystems through an interdisciplinary approach as well as to establish dialog platforms with all stakeholders, including the state, local communities, civil society, and businesses, to identify balanced solutions to conservation and long-term management of forest resources.



Methodology applied for HCVF identification

The methodology for identifying HCVFs first involved the development of a “Practical Guide for HCVF Identification in the Republic of Moldova” (Annex 1), which was subject to a country-wide comprehensive consultations with all relevant key stakeholders (central and local public authorities, civil society, research, and experts from various fields). This preliminary stage sought to define, in the national context, the relevant forest-related values and, for each value, to identify the threshold level, that is, the level above which the respective forest-related value becomes a high conservation value (HCV).

Elaborating the Practical Guide for HCVF Identification included the review and analysis of a number of similar documents applied in other countries/regions. Pursuant to these guidelines, HCVFs were classified in accordance with six categories:

- HCVF Category 1: Concentrations of biodiversity (including endemic rare, threatened, or endangered species that are significant at global, regional, or national levels);
- HCVF Category 2: Large landscape-level ecosystems that are significant at the global, regional, or national levels and that contain viable populations of a great majority of the naturally occurring species in natural patterns of distribution and abundance;
- HCVF Category 3: Rare, threatened, or endangered ecosystems, habitats, or refugia;
- HCVF Category 4: Basic ecosystem services in critical situations, including those requiring protection of water catchments and control of erosion of vulnerable soils and slopes;
- HCVF Category 5: Sites and resources fundamental for satisfying the basic needs of local communities or indigenous peoples (for livelihoods, health, nutrition, water, and so on);

- HCVF Category 6: Sites, resources, habitats, and landscapes of global or national cultural, archaeological, or historical significance and/or of critical cultural, ecological, economic, or religious/sacred importance for the traditional cultures of local communities.

Relevant forest values were established specific for Moldova for each HCVF category, and thresholds identified for each forest-related value. The draft “Practical Guide for HCVF Identification in the Republic of Moldova” was then submitted for consultation to relevant stakeholders. All inputs collected from stakeholders (regarding the thresholds for HCVF and the minimum management measures) were incorporated in the Practical Guide’s final version.

Findings and recommendations

Approximately 175,500 ha of forest land (representing 47.3% of the country’s total forested area) may have the potential to be classified as HCVF. The majority of these forests are owned and managed by the state. In Moldova, approaches to forest management range from intensive to close-to-nature and entail the need to be balanced while contributing to the well-being of the population. Civil society and local communities increasingly call for the conservation and preservation of forests as critical zones for biodiversity. Identifying and mapping these forest areas could serve as a turning point in designing a network of important ecological areas in the country and modernizing the national legislation governing PAs. This would also support future biodiversity conservation efforts, such as implementing strategic documents under CBD or afforestation/reforestation initiatives.

HCVF categories identified through overlaying of the corresponding GIS layers and their areas are shown in Table ES 1 while a brief description of assigned categories and subcategories is provided further.

Table ES 1. HCVF categories, sub-categories, and areas

HCVF Category	Forests (ha)		
	Total	Other holders	State
HCVF 1.1	58,078.31	253.06	57,825.25
HCVF 1.2 + HCVF 1.3	95,218.42	75.52	95,142.9
HCVF 2	31,709.70	0.00	31,709.70
HCVF 3	86,596.83	59.34	86,537.49
HCVF 4.1	34,572.51	7,064.61	27,507.90
HCVF 4.2	9,544.03	1,927.37	7,616.66
HCVF 4.3	—	—	—
HCVF 5	—	—	—
HCVF 6	802.83	685.11	117.73
Total (excluding overlapping)	175,496.15	8,979.15	166,517.00

Note: Some forests represented in the total area are included in two or three categories/sub-categories.

HCVF Category 1 (with three subcategories):

Overlaying the map of PAs with the map of forests provided a forest area of 58,078.31 ha, which was included in HCVF 1.1 category. The management measures for these forests should be established through the management plans for PAs. Overlaying the maps of Emerald Network sites and IBAs with the map of the forests resulted in a forest area of 95,218.42 ha (HCVFs 1.2 and 1.3). The latter subcategories include only forest management units that contain the most important tree species, corresponding to the types of forest habitats of European interest for which the Emerald sites were declared.

HCVF Category 2: In Moldova, there are no areas larger than 50,000 ha, in which forests represent at least 35,000 ha, at least 5,000 ha are primary forest ecosystems, and man-made forests are not greater than 10%. These findings are also supported by the Forest Landscape Integrity Index which shows that in Moldova, there are no high-forest integrity areas and are only limited areas of medium

integrity in terms of anthropogenic modification level, and most areas are low-integrity forests. Because of the small extent of medium-integrity forest landscapes, these forests (31,709.7 ha) are considered for inclusion in HCVF Category 2 and for proper monitoring for integrity preservation. In these forests, appropriate intervention measures are recommended to be implemented so that the forests' natural characteristics are preserved to promote the natural forest types. In HCVF Category 2, **the study has identified nearly 3,400 ha of valuable forests that are not assigned a special protection/monitoring status.** This finding should inform urgent protection measures (including immediate inclusion of such protection in the regulatory framework that is under development) carried out by authorities to prevent forest degradation, especially through overexploitation.

HCVF Category 3: This category includes forest units that contain natural forest stands comprised of species of major importance for Moldova: pedunculate oak (*Quercus robur*), sessile oak



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(*Q. petraea*), greyish oak (*Q. pedunculiflora*), downy oak (*Q. pubescens*), and beech (*Fagus sylvatica*). These forests are considered as rare, threatened, or endangered ecosystems and must be monitored so that their area is not reduced. Forests proposed to be included in this category represent an area of 86,596.8 ha. The study recommends that HCVF 3 should serve as the basis of a network of biodiversity/conservation nodal zones consisting of rare ecosystems, specific to Moldova, especially those that still retain their naturalness due to the presence of beech and oak species.

HCVF Category 4 (with three subcategories):

The first subcategory (4.1) includes forests of particular importance for water sources. These forests were identified by overlaying the map of forests with the map of natural hydrological risk areas, resulting in an overlapping area of 34,572.5 ha. The second subcategory (4.2) refers to forests that are critical for preventing and mitigating soil erosion and includes forests located on lands with a slope greater than 20°; these forests account for an area of 9,544.03 ha. The third subcategory (4.3) refers to forests with critical impacts on agricultural land and air quality, where shelterbelts¹ are of specific interest. The total area proposed for this category is 44,116.54 ha and specific conservation measures requiring long periods of regeneration are recommended for forests included in this category.

HCVF Category 5: No forests have been identified in this category. Recent research (Talpă et al. 2022) shows that NTFPs are less essential for meeting the basic needs of local communities compared to wood products. Generally, wood resources are of crucial importance for local communities, as concluded in other studies (Capcelea et al. 2011; Lozan and Rotaru 2015; Mitchell et al. 2015). However, even if the wood resources around a locality become scarce, purchasing wood from the

neighboring areas will remain feasible, especially due to the relatively short distances between forest bodies. It is important to note that members of local communities can harvest NTFPs (especially fruit/berries, medicinal herbs, or food plants) in the forests for their vital needs in reasonable quantities, and the availability of these accessory forest resources is closely related to the quality of forest ecosystems and their management.

HCVF Category 6: In this category, only forests within 500 m of religious sites were included, totaling 802.83 ha. This area includes Moldova's monasteries and the forests that surround them. The general management recommendation for this category is to maintain and expand forests in these areas. Forests play an important role in the history and culture of the country's population. Therefore, further efforts to complete a ground-level inventory of these forests and take necessary actions to implement appropriate management measures for the optimization of the forests' sociocultural functions are recommended.

Based on the research and data analysis, the study has identified the following technical and policy recommendations:

- Further improve, in a participatory manner, the "Practical Guide for HCVF Identification in the Republic of Moldova";
- Promote research to improve the accuracy of the determination of the area and field validation of the existence of HCV before any management systems are adopted or a legal protection status or special management of such areas is formally assigned;
- Based on the results of this study, amend Law 1538/1998 on PAs of Moldova by incorporating provisions on HCVF;
- Design a network of nodal zones of biodiversity/conservation of rare ecosystems specific to

1. Moldova's shelterbelts are located on around 30,300 ha. A cartographic database is available only for the central and southern part of the country. Considering their agricultural and community importance, the authorities make efforts to draw public attention, through extensive cooperation with various external partners (FAO, IFAD, UNDP) to rebuild/restore existing shelterbelts or to plan new ones.

the eco-regions of the country;

- Based on this study and the related field validations, identify forests that contribute to reducing the effects of extreme hydrological and soil erosion events;
- Develop a strategy for the management of shelterbelts, to be preceded by their inventory, and ensure the implementation of an appropriate management system that enables them to fulfill the assigned functions;
- Continue to inventory forests with sociocultural significance and implement appropriate measures for their management.

This study's results can be readily adopted by

various groups of users, depending on the extent and the pattern of access to forest resources, including forest managers, landscape planners, and beneficiaries of forestry services.

Finally, the identification process must be closely followed by appropriate implementation of HCVF-related principles and standards. This will ultimately open up larger opportunities to attract donors or investors to support the development of the national forestry sector, with a specific focus on supporting healthy and biologically/ecologically diverse forests.

Chapter 1

Introduction



The Lower Dniester Ramsar site is home to great biological diversity and a livelihood source for the local population. Forests with the white poplar (*Populus alba*) and the European ash (*Fraxinus excelsior*) in composition are often flooded, ensuring conditions for aquatic life (fish, birds, etc.) and acting as a water storage (HCVF category 4.1).
© Aurel Lozan, near village Crocmaz (Ștefan Vodă district).

1.1. Necessity and opportunity

A study to identify, document, and map high conservation value forests (HCVFs) in Moldova stems from the need:

- To plan approaches to protect valuable forest ecosystems based on the best possible knowledge of the current situation;
- For a multidisciplinary approach (biodiversity/economy/society) to forest management; and
- To guide future field studies and consultations with local communities and stakeholders for effective designation of HCVFs as areas with special status from an applied management perspective.

In this context, the HCVF concept under Principle 9 of the FSC certification system, provides a significant opportunity, given its widespread use and testing. The HCVF concept refers strictly to

particular forests that fulfill important functions in certain aspects (ecological, social, and cultural and not just biodiversity). In the certification process, identification and proper management of HCVFs is a basic requirement.

The opportunity offered by the regional program “European Union for the Environment” (EU4Environment), including the European Union (EU) contribution to forest conservation/management and the proximity of the European family, creates the necessary framework for the potential HCVF identification in Moldova. This identification is an important step toward future approaches (including on-the-ground research) and implementation of appropriate management measures on these areas.

1.2. Purpose and objectives

The purpose of this study is to strengthen the capacity of the national and local environmental protection authority of Moldova to identify HCVFs. The specific objectives are to:

- Develop criteria for the conceptual identification of HCVFs and the identification of relevant forest habitats according to conservation needs;
- Map HCVFs based on a GIS analysis to enable the localization of future field validation actions in these areas;
- Provide graphical representations of HCVFs, including relevant identification elements; and
- Provide recommendations for improving forest ecosystem conservation in line with international commitments.

Chapter 2

General Context



Area of mixed forest vegetation with presence of downy oak (*Quercus pubescens*) in the steppe-forest region of Moldova (HCVF category 3). These forests are important for both local biodiversity and local population who traditionally use them as pastureland and for hay making.

© Aurel Lozan, near Hârtoș village (Cimișlia district).

2.1. Moldova's forests and the forestry sector

According to the latest publicly available data provided by the Agency for Land Relations and Cadastre of Moldova (ALRC), as of January 1, 2022 (ALRC 2022), the area of the NFG² (FC 1996) totaled 450,600 ha (13.8% of the country's territory), of which 362,700 ha are owned by the state, while 85,100 ha are held as public property of Administrative-Territorial Units (ATUs), and only 2,800 ha are in private property (Table 1). The area of land covered with forests constitutes 371,000 ha, of which 317,800 ha are owned by the state, 50,500 ha are owned by ATUs, and 2,700 ha are privately owned. At the same time, Moldova has 50,700 ha of forest vegetation outside the NFG, of which 30,300 ha are shelterbelts and 20,400 ha are other types of forest vegetation. The share of the forest ecosystems, accounting for about 11%

of the country's overall area (ALRC 2022), is still considered very low (Talmaci and Miron 2016). If forestland does not expand, rural areas will be vulnerable to natural hazards (such as land and soil erosion and flooding), especially in some areas of the country where aridification is intensifying and there are already signs of desertification (Talmaci and Miron 2016). The uneven distribution and fragmentation of forest lands have negatively affected their economic and protective functions (Moldsilva 2016). Deciduous species predominate (98%) and oak forests (44%) are the most representative forest ecosystems, contributing over 80% to the country's biodiversity (Moldsilva 2016; TUB 2015).

Table 1. Structure of NFG according to ALRC (2022)

Categories of holders	Total area/share (ha/%)	Areas covered by forests/share (ha/%)
NFG public property of the state	362,700/80.5	317,800/85.7
NFG public property of ATU	85,100/18.9	50,500/13.6
NFG private ownership	2,800/0.6	2,700/0.7
Total	450,600/100	371,000/100

At 11% of its area, Moldova has one of the lowest shares of forest ecosystems in Europe (the European average is estimated at 39.8%; WB 2020). New lands have to be afforested to meet increasing needs in wood products. At the same time, according to some estimates (Mitchell et al. 2015), there are many abandoned and/or degraded lands in Moldova, which are now essentially outside of the economic circuit. However, they provide good potential for afforestation/extension and delivery of ecosystem services for the public.

In addition to financial constraints, many other impediments are encountered in forest expansion, including conflicts between forest expansion and agricultural land used by rural communities (Gulca 2009).

According to Article 14 of the Forest Code of Moldova (FC 1996), the NFG forests were included in Functional Group I, meaning that the forests have mainly environmental protection functions. Government Decision (GD) No. 1008, dated October 30, 1997 (GD 1997) established five

2. National Forest Ground (NFG) is the English translation for a specific notion used in land/forest legislation and practice in Moldova. It includes forests, lands intended for afforestation, and lands under forest management, as well as nonproductive lands, included in forest management plans (FMPs) or in the land cadaster as forests and/or forest plantations (as per the Forest Code).



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categories within Functional Group I, all based on the functions assigned:

1. Forests with water protection functions (1.6%);
2. Forests with land and soil protection functions (7.9%);
3. Forests with protection functions against harmful climate and industrial factors (47.4%);
4. Forests with recreational functions (26.4%);
5. Forests with functions of scientific interest and protection of the ecologic and genetic pool (16.7%).

Moldova's forest resources have low-value indicators (Table 2); each inhabitant is attributed

11.3 m³ per year of standing wood and 0.16 m³ per year of harvested wood (Galupa et al. 2018). However, most of Moldsilva's income from forestry activity comes from the use of wood (Galupa et al. 2018; Moldsilva 2016). Moldsilva still operates under a self-financing mechanism introduced in 1998. This mechanism is seen as imposing a heavy burden on the existing forests (Lozan 2021; Spitoc et al. 2021). According to official reports, the volume of wood harvested from the NFG managed by Moldsilva is close to the annual allowable cut established cumulatively by forest management plans (Figure 1).

Table 2. Total volume of the standing timber and the total volume of forests managed by Moldsilva

Region	Total standing volume, m ³	Share of total standing volume, %	Total volume, m ³ /year	Share of total volume, %
North	12,163,292.04	30.36	54,017	27.01
Center	22,992,365.00	57.39	283,190	49.67
South	4,910,448.21	12.26	132,988	23.32
Total	40,066,105.25	100.00	570,195	100.00

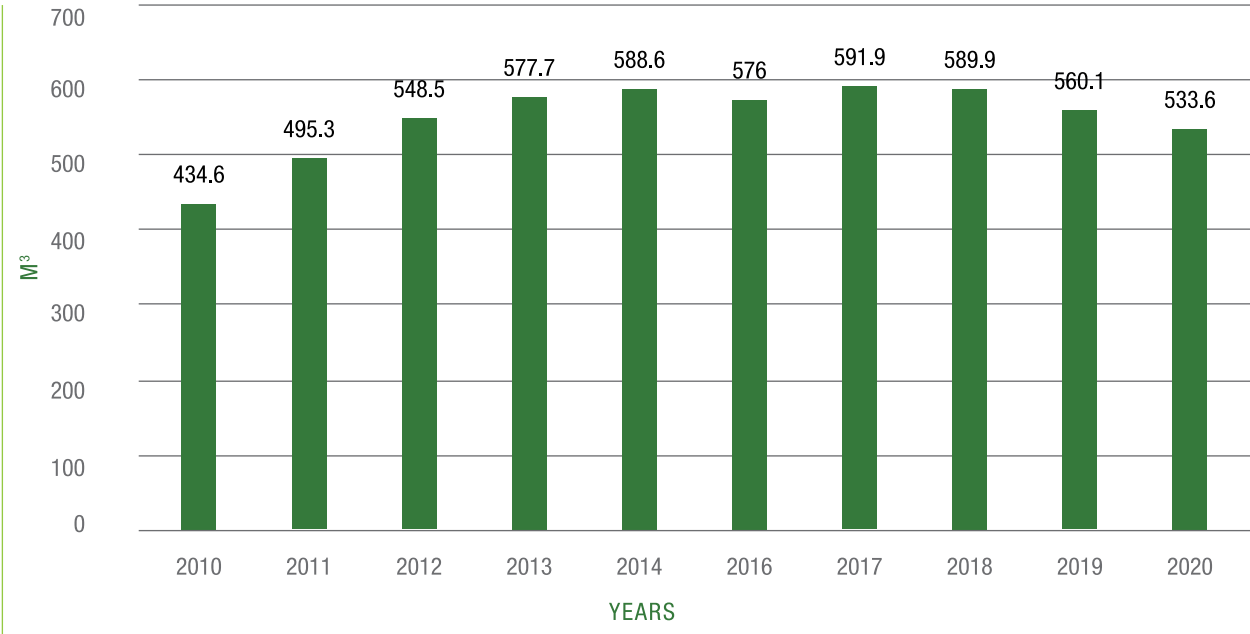
Source: Galupa et al. 2018.

In the past three decades Moldova's forest area has increased; however the average production category and the average standing volume have experienced significant downward trends (by 69.6% and 4.8%, respectively). This decrease is mainly because most of the new afforestation was carried out on degraded land and in difficult pedo-ecological conditions where forest stands can only achieve low productivity. Also, the forests owned by ATUs are too young to achieve high volume and, due to illegal cutting in 1992–1998, have altered

and often low consistency (Talmaci et al. 2018).

Moldova's forest sector contributes only a small share of the country's gross domestic product (GDP) (0.27% in 2010), yet it represents a significant part of the country's natural capital and provides many environmental benefits. It also provides jobs as well as other services that have more significant value than reflected in official data (Popa 2018). In addition, there is a high dependence on forests among the rural population (Popa et al. 2014).

Figure 1. Dynamics of volumes of wood harvested by Moldsilva



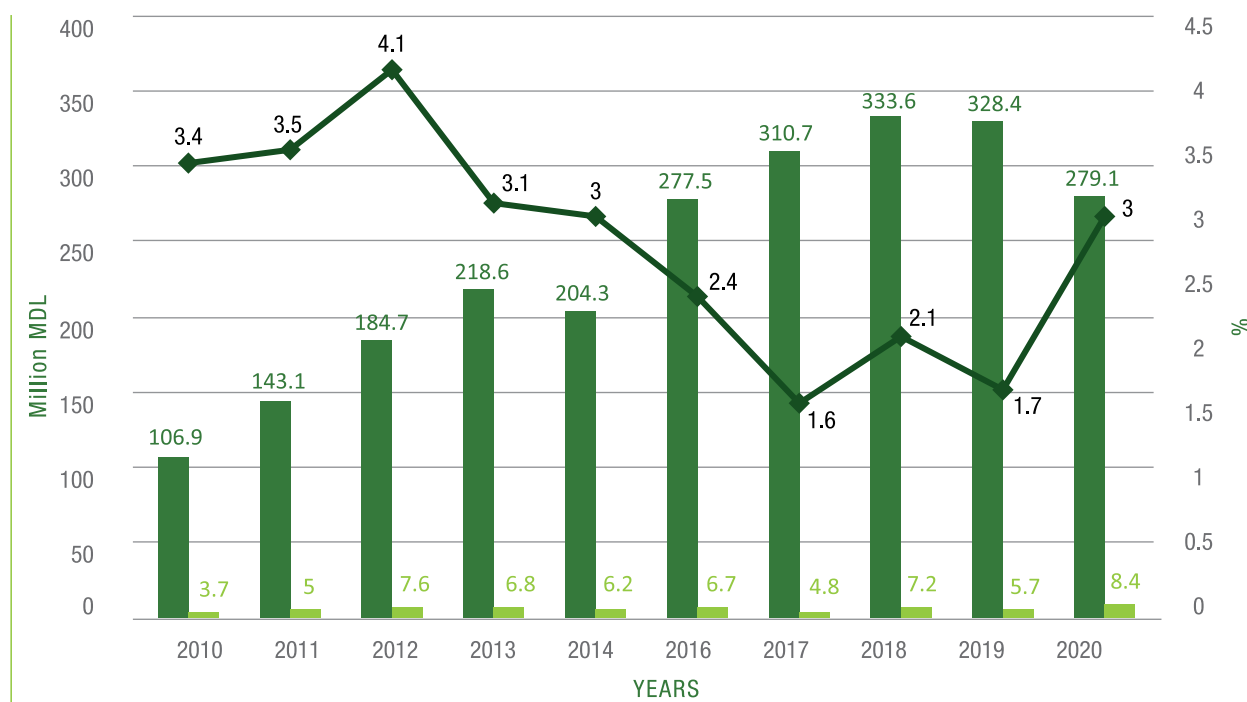
Source: Moldsilva 2021a, 2021b.

Quantities of non-timber forest products (NTFPs) harvested by Moldsilva vary depending on the environmental factors and market demand (Botnari et al. 2011). Income generated from the production and sale of NTFPs represents only 2–4% of timber sales (Figure 2). This is because (a) most areas that were cultivated with various fruit forest species are now degraded or have been transferred to a different land use category (currently there are only 289.2 ha of crops with different fruit species; Novac 2018) and (b) there is a lack of specialized units to harvest and process NTFPs (Galupa and Rotaru 2016), as well as a lack of sufficient investments and interest to promote these resources (Talpa 2021). Berries and medicinal plants — the most important NTFPs — are harvested without prior research on

their biological and commercial potential. Such uncontrolled harvesting of berries and medicinal plants has negative impacts on the species and habitats and can lead to reduced harvest yields in the future (Novac 2018). The current drop in the production of NTFPs can be attributed to the lack of investment in the development of new plantations dedicated for forest fruits. The existing plantations of this kind require reconstruction, while the berries in the wild flora are highly affected by the specific forest works, which are often implemented improperly (Novac 2018). Based on the foregoing and on relevant supporting data and despite Moldsilva’s recent efforts to capitalize on forest resources other than wood, much remains to be done to reach the maximum potential.



Figure 2. Incomes of Moldsilva from wood and non-timber forest products



- Income obtained from wood selling
- Income obtained from non-wood products selling
- Income obtained from non-wood products versus income from wood

Source: Moldsilva 2021a; 2021b.

Inefficient use of the lands planted with berries, the lack of trained personnel, and the lack of a long-term vision and financing contracts (Galupa and Rotaru 2016) will most likely impede future growth. The non-wood products' harvesting trend will likely

further oscillate within the same limits (Table 3), supporting the assumption that there will be no significant upward trends in the income from the sale of these products.

Table 3. Dynamics of NTFP collection by Moldsilva

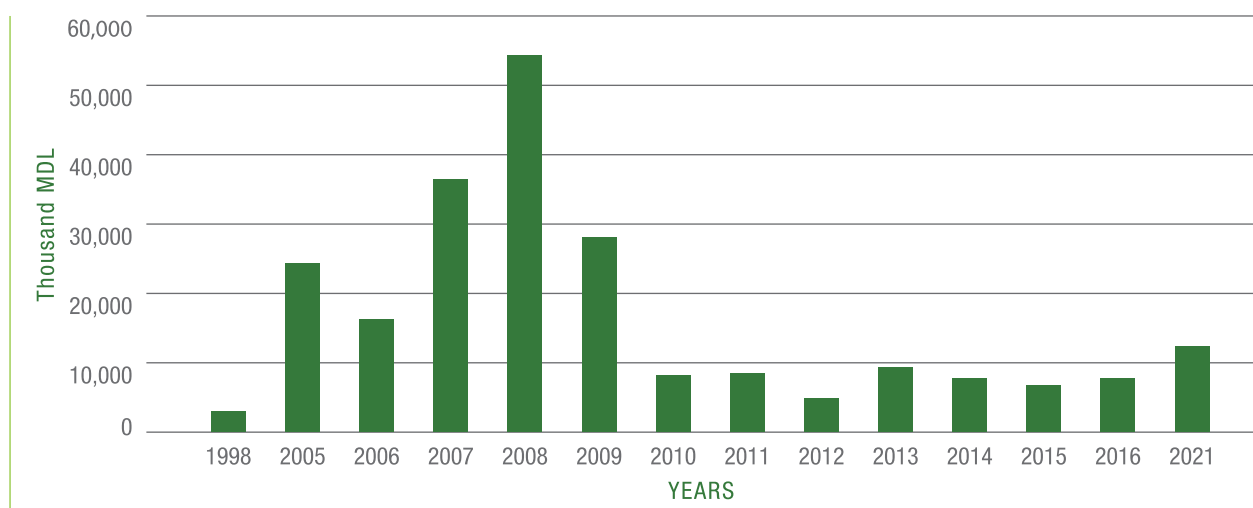
Products (tons)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fruits and berries	360.8	609.0	501.8	947	735.6	761.6	350.1	270.5	531.8	573.1	595.9
Medicinal herbs	45.2	60.1	60.6	92.7	66.2	56.5	70.6	40.7	59.4	45.8	48.9
Bee honey	5.2	5.2	2.8	4.5	4.3	4.8	3.7	4.5	4.8	4.9	1.6
Roman snails	23.7	—	0.8	0.5	0.5	2.9	1.3	—	—	—	—
Fish	—	7.5	—	8.4	0.7	2.3	1.0	5.2	1.3	1.8	—

Source: Moldsilva 2021a.

According to Moldsilva, improved collection/harvesting and commercialization of non-wood forest products require: a regulatory framework governing these products, market research, basic infrastructure, capacity building, establishment of new and consolidation of existing organizational structures (Moldsilva 2021a), and so on. A lack of research on the forests' ecological potential non-wood forest products is also an impediment. While the forestry sector is expected to cover its

expenses from the revenues from the sale of its production or services, is also receives support from the state budget albeit in insufficient scope. In 2015, the budgetary allocations for the forestry sector amounted to MDL 6.9 million and covered only 1.79% of total forestry consumption and costs (Moldsilva 2016); in 2016, these allocations increased to MDL 7.9 million (Galupa et al. 2018); and continued to increase amounting for nearly MDL 12.6 million in 2021 (Figure 3).

Figure 3. Dynamics of the state financial support for the forestry sector



Source: Botnari et al. 2011; Galupa et al. 2018; Moldsilva 2016; 2021b.

Although the forest sector provides many employment opportunities, there is a downward trend in the number jobs: from 5,563 in 2007 to 3,934 in 2015 — a reduction of 29% (Botnari et al. 2011; Moldsilva 2016). Fewer jobs in the forest sector and the low budget allocations indicate that the self-financing system impedes the sector's capacity to achieve its substantial development goals and that financial support is urgently needed (Botnari et al. 2011).

Moldova's forest sector is affected by illegal logging. Contributing factors are: poverty; high

and continuously increasing cost of firewood (from MDL 340 per m³ in 2010 to MDL 530 per m³ in 2016; Galupa et al. 2018); a lack of capacity to meet the demand for firewood (Table 4); low wages; a lack of monitoring of forest vegetation under the management of ATUs; and insufficient state oversight of forest resources (Galupa et al. 2011). Although between 2009 and 2014 about MDL 5 million was collected through fines for illegal use of forest products, illegal logging caused estimated losses of about MDL 45.5 million (ENPI FLEG 2015), and the losses of ecosystem services were estimated at USD 8.8 million (Cazanțeva et



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al. 2016). Illegal logging, in the long term, can lead to the degradation of forest resources and can impact sustainable forest management (Galupa et al. 2011). A 2011 study (supported by the EU under the EU-funded regional program “Improving Forest Law Enforcement and Governance in the European Neighbourhood Policy East Countries and Russia” [ENPI FLEG]) estimated the average annual consumption of firewood in Moldova’s households in 2003–2009 at 1.2737 million m³ (Capcelea et al. 2011). This is in the same range as Moldova’s average annual forest growth of approximately 1.3 million m³ (Moldsilva 2016). However, compared to the reported annual volume of wood/timber harvested in the forests under the management of Moldsilva (the annual allowable cut), consumption of wood is almost three times greater than the reported value (Capcelea et al. 2011). This indicates a high volume of wood of unknown origin consumed as firewood. According to many studies (Capcelea et al. 2011; Galupa et al.

2011), The difference between wood consumption and the official reporting on the harvested quantities can be attributed to illegal cutting – an urgent issue of the forest sector that negatively impacts the economy, local communities, ecosystems, and biological diversity. Using the same calculation method, another study from 2015 (ENPI FLEG 2015) estimated that the consumption of wood in 2014 totaled 1.0365 million m³. The National Bureau of Statistics (NBS) estimated firewood consumption: in 2015–2016 at 2.4057 million m³, with average annual consumption of 3.6 m³ per rural household (NBS 2016). Different values reported for the monitoring indicators are mainly due to the different approaches and methodologies used. This makes it difficult to estimate the overall social demand. However, dependence on wood resources for energy and illegal logging raise are serious concerns and unsustainable resource use (Popa and Borz 2014).

Table 4. Harvested quantity and estimated wood consumption in 2014, by geographic region, thousand m³

Region	Cuttings Moldsilva	Other holders	Total cuttings total	Consumption	Deference
North	123.9	3.5	127.4	198.8	-71.4
Center	351.7	19.0	370.7	459.4	-88.7
South	112.6	10.1	122.7	378.3	-255.6
Total	588.2	32.6	620.8	1036.5	-415.7

Source: ENPI FLEG 2015; Moldsilva 2016.

The Biological Diversity Strategy of the Republic of Moldova (GD 2015) describes the use of the country’s natural resources as irrational while also highlighting the need for significant improvements in biodiversity conservation. Under the currently limited institutional capacities as well insufficient regulatory enforcement, insufficient integration of economic sectors regarding biodiversity conservation, and insufficient general public awareness of the importance of biodiversity conservation, a more constructive and practical

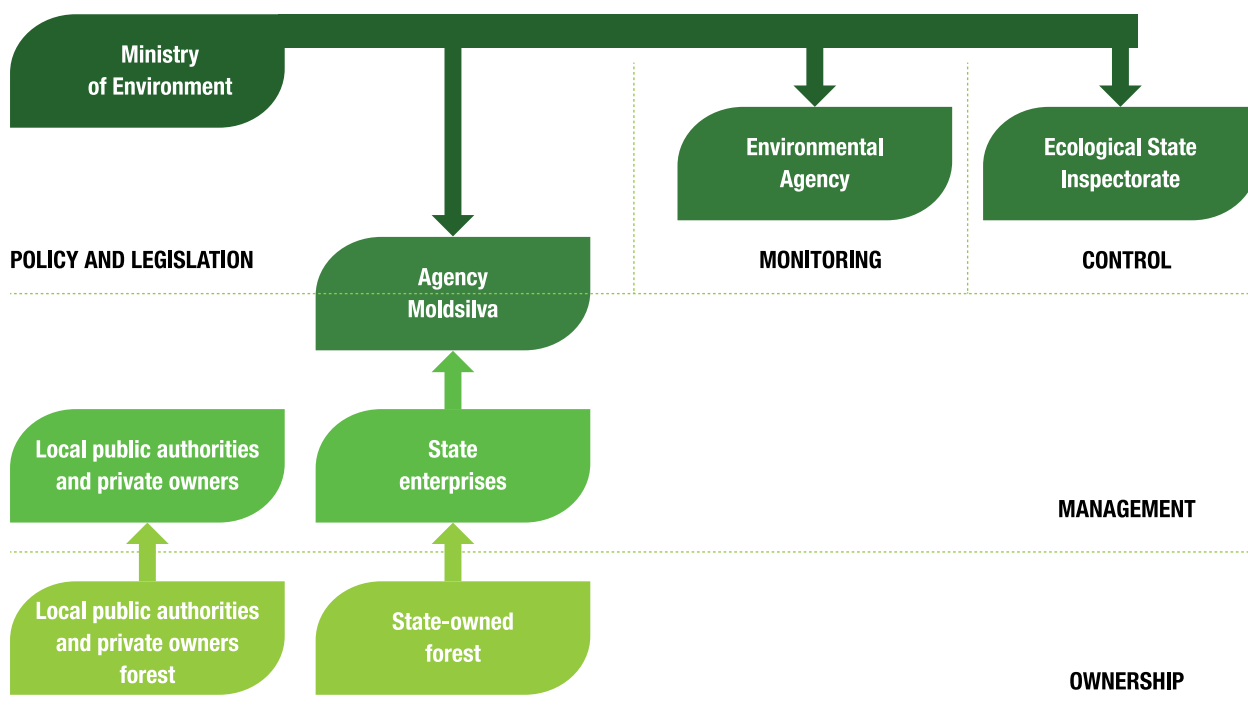
approach is needed to define the role of the forests for the national economy and the importance of protecting biological diversity. Biodiversity losses are caused by several factors, primarily by illegal and misuse of forest resources through illegal logging, poaching and irrational use of game resources, illegal fishing and irrational use of fish resources, abusive grazing, illegal trading of forest products, degradation, all in the conditions of high natural resource dependence and poverty (GD 2015).

2.2. Forest management

The current institutional framework of Moldova’s forestry sector includes the Ministry of Environment (MoE), the Environment Agency, the Environmental Protection Inspectorate, Agency Moldsilva, state forestry enterprises (SFEs), and ATUs that own forests (Figure 4). MoE is responsible for regulatory oversight and strategic planning (GD 2021). The MoE’s subordinated forestry administrative authorities are: (a) Moldsilva, responsible for oversight of public forest and biodiversity

protection policies’ implementation (GD 2010); (b) the Environment Agency, responsible for issuing permits for natural resources use (GD 2018a); and (c) the Environmental Protection Inspectorate, responsible for environmental oversight (GD 2018b). While ATUs have legal obligations to manage their own forests (FC 1996), there is no clear distinction between the tasks assigned to ATU and to Moldsilva at the level of communal forests³ (Popa 2016).

Figure 4. Moldova’s forest sector institutional framework



Source: Talpă et al. 2021.

Management of state forests is performed by 25 legally independent SFEs, which form a network of territorial state-owned entities responsible for managing all state-owned forests. However, communal forests are unequally managed: some are under the management of municipal enterprises specialized in providing forest management

services, among other public services (Proșii and Talmaci 2018) while others have no assigned management body oversight. Moldsilva is a self-financed state agency in charge of SFE coordination and policy enforcement as well as provision of other extension services for all parties interested in managing or creating forests. Although in the case

3. "Communal forests" is a term attributed to the forestlands owned and managed by the ATUs, whose residents (communities) use forests to meet their needs in wood or NTFPs and other ecosystem services in a sustainable way, usually not on a commercial basis.



of Moldsilva, there is a clear overlap between the regulatory and management functions (GD 2010), its mandate includes significant involvement in policy development, which makes Moldsilva more of an authority institution than a forest management institution.

All state-owned forests have FMPs, elaborated in accordance with a regulatory framework based on principles of sustainable management (Moldsilva 2016). However, only a small part of non-state forests has FMPs or forest management administrations

(Proșii and Talmaci 2018). Most of the lands with forest vegetation outside NFG do not have FMPs and are not appropriately managed. This leads to non-compliance with respect to specific forestry technologies or forest ecological requirements (Moldsilva 2016). Even though the effectiveness of Moldova's forestry regulatory framework is greater than perceived (Lozan and Rotaru 2015; Mitchell et al. 2015), there are concerns with the current condition and development prospects of forests and with regulatory enforcement (Budeanschi et al. 2013).

2.3. Moldova's protected areas

Law 1538/1998 on State Protected Areas (PAs) provides legal grounds for designating and management of PAs, and defines principles; mechanisms of conservation; as well as competences and plenary powers of central and local authority, nongovernmental organizations (NGOs), and citizens in PAs (Lozan 2021). Under the law, PAs include natural and valuable objects and complexes for (a) the conservation of biodiversity and natural habitats (of international and transboundary importance), including those important for migratory species of animals; (b) the study of natural processes; (c) the restoration of the ecological balance; (d) public environmental education; and (e) the development of ecological tourism (Law 1998).

PAs consist of categories of objects and natural systems, established based on several international classifications (Law 1998). According to the International Union for Conservation of Nature (IUCN) classification, Moldova is endowed with scientific research reserves and national parks (NPs), nature monuments, landscape reserves, and multifunctional management nature reserves. There are also PAs that are not classified according to the

IUCN classification. These include: dendrological gardens, landscape architectural monuments, and zoological gardens. Other international guidelines and agreements are followed to regulate biosphere reserves (UNESCO Programme) and the wetlands of international importance (Ramsar Convention; Law 1998). Almost all forest-type PAs are established in state forests (Moldsilva 2016).

The Emerald Network launched by the Council of Europe and implemented Moldova accounts for another important mechanism applied to protect the natural environment. This network is a special instrument for the protection of Europe's natural environment and is composed of areas of special conservation interest from non-EU countries, matching Natura 2000 network sites (CE 2016). The Emerald Network is a system of coherent and interconnected spaces subject to management, monitoring, and information measures. Initiated under the Bern Convention, the network aims to ensure the long-term survival of species and habitats protected under this treaty and requires specific conservation measures (CE 2016).

2.4. HCVFs: Current status of knowledge

Forest certification is an effective instrument designed to promote sustainable forest management (Rametsteiner and Simula 2003). There are several forest certification organizations, yet FSC was the first and is currently among the largest entities in the field (Maesano et al. 2016) aimed to promote the use of responsible management in forests worldwide (FSC 2007). FSC forest management certification implies a process by which an independent organization confirms through an audit that a certain forest area is managed in accordance with an established standard (Murariu and Melu 2015). The standard includes 10 principles and 56 criteria (FSC 2015) that cover three specific areas of sustainable management: economic, social, and environmental (Murariu and Melu 2015). FSC's Principle 9, referring to HCVFs, is an important principle to be followed. According to this principle, management activities in HCVFs must maintain or enhance the identified high conservation values (HCVs) (Brown and Senior 2014).

Although the HCVF concept is predominantly used under the FSC certification, it can also be extended beyond the certification process for identifying, managing, and monitoring the high values existing in the forest area (Murariu and Melu 2015). The first practical guide for the identification, management, and monitoring of HCVFs was published in 2003 by a natural resource management consultancy company, Proforest (Jennings et al. 2003). Since then, the guide has been translated into several languages and adapted to specific conditions of many countries around the world (Rietbergen-McCracken, et al. 2007). All forests provide important benefits to the environment and the society, but HCVFs are those with significant biological, ecological, social, or cultural values (Brown et al. 2013) or are critically important

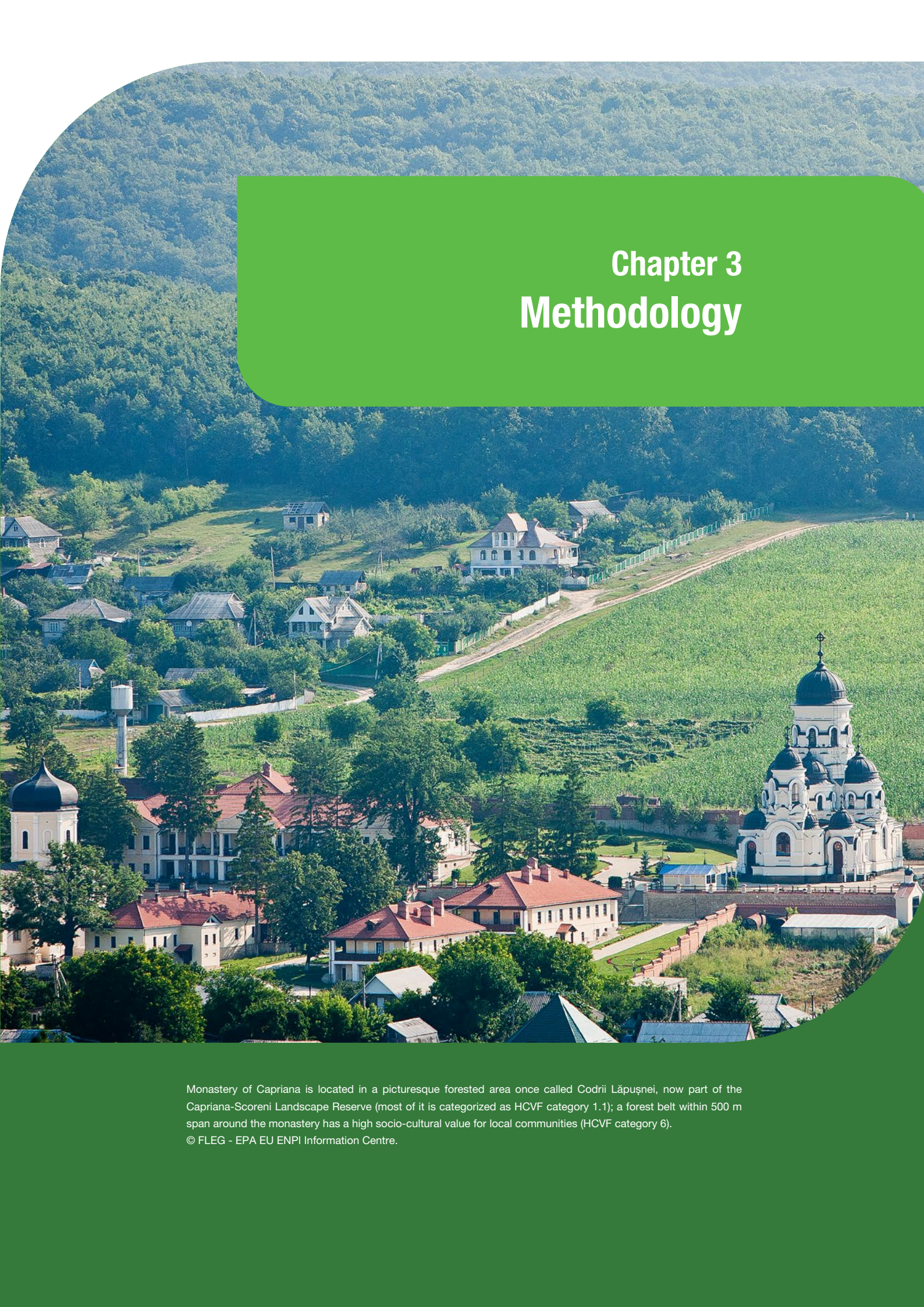
globally, nationally, or regionally (Jennings et al. 2003). HCVF categories 1–3 contain biodiversity values; HCVF categories 4 and 5 include forests that have socioeconomic role; and HCVF Category 6 contains forests that are critical for cultural values (Murariu and Melu 2015).

The HCVF concept is recognized as a good instrument to identify priority conservation areas (Areendran et al. 2020). Although also referring to forests intended for production (Senior et al. 2015), the concept does not imply excluding these forests from use. Instead, it aims to promote the elaboration of FMPs based on principles of conservation or improvement of identified HCVs (Rietbergen-McCracken et al. 2007), thus focusing the management process under the concept of naturalness in ecosystems rather than the intact state thereof (Vlad et al. 2013). HCVFs outside the networks of PAs do not necessarily need to be established as PAs; many HCVFs continue to be used commercially, according to management regimes that are recommended after proper assessment (Rietbergen-McCracken et al. 2007). The HCVF concept does not necessarily imply creating more PAs; it rather aims to support the assessment of the existing PAs to determine whether they include all the current critical conservation values (Rietbergen-McCracken et al. 2007). HCVF assessments can support governments in achieving their national forest and environmental commitments, such as development of national forest programs, and identification of deficiencies in PAs' coverage. They also provide recommendations for the reconfiguration of the system of PAs (Rietbergen-McCracken et al. 2007). In addition to promoting the implementation of the best management practices, the HCVF concept can also contribute to greater stakeholder participation in decision-making (Ioras et al. 2009).



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For Moldova, in the absence of forest certification, the HCVF concept can be a key tool for: (a) conservation of important areas for species, ecosystems, and landscapes; (b) protection of people against floods and soil erosion; (c) conservation of natural resources of specific importance for the local communities; and (d) conservation of the most valuable areas for communities' identity or cultural heritage (Rietbergen-McCracken et al. 2007) and for promotion of sustainable management (Maesano et al. 2011).



Chapter 3 Methodology

Monastery of Capriana is located in a picturesque forested area once called Codrii Lăpușnei, now part of the Capriana-Scoreni Landscape Reserve (most of it is categorized as HCVF category 1.1); a forest belt within 500 m span around the monastery has a high socio-cultural value for local communities (HCVF category 6).
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3.1. General methodological framework: Practical Guide for HCVF Identification in the Republic of Moldova

The following steps were taken in developing the “Practical Guide for HCVF Identification in the Republic of Moldova”:

- With the support of the MoE, a review of needed expertise and potential for defining the HCV was carried out;
- Based on the internationally developed guidelines for the identification of HCVFs, the relevant forest values (that is, attributes) and thresholds for each attribute (that is, the level beyond which the respective forest attribute can be considered as an HCV) were proposed; the proposals included elements for the identification of HCV by GIS query; the proposals were incorporated into a draft Practical Guide;
- The draft Practical Guide was subject to stakeholder consultations in the autumn of 2022. The list of consulted stakeholders is provided in Annex 2;
- National experts evaluated the lists of species and habitats, thresholds for each category of HCV, and the minimum recommended management measures. Their comments were reflected the final version of the Guide.

The final version of the Guide served as basis for the GIS analyses/queries that were carried out to map the forests with conservation values described in the Guide.

Identification of HCVFs (Table 5) at the national level requires analysis of specific values and datasets and ongoing consultations with national

experts and forest conservation NGOs (Brown et al. 2013; Murariu and Melu 2015). This ensures that the opinions or information provided by relevant stakeholders are incorporated into the process (Rietbergen-McCracken et al. 2007; Stewart and Rayden 2009). When identifying HCVFs in each country, forest values and their thresholds, that is, the level beyond which the respective forest attribute can be considered as HCV should be established (Murariu and Melu 2015; Vlad et al. 2013). The thresholds should be determined in a way that does not result in the inclusion of only small forest areas or areas that do not have critical or significant values (Vlad et al. 2013).

The HCV identification and assessment does not require new tools or techniques. It can utilize existing research and mapping data can be used (Rietbergen-McCracken et al. 2007 and should be based on sound information, incorporating and using all relevant local scientific data (Stewart and Rayden 2009). While certain categories can be designated based on existing descriptive data in technical documentation, in some cases, when significant data gaps are identified, data collection and field research are required (Murariu and Melu 2015; Stewart and Rayden 2009). In these cases, a precautionary principle is recommended (Stewart and Rayden 2009). In the absence of data or certainty about the sufficiency of attributes, forests should be designated as an HCVF until newly identified information proves otherwise (ProForest 2016).

Table 5. Categories of HCVFs

HCVF 1	<p>Concentrations of biological diversity including endemic species and rare, threatened, or endangered species that are significant at global, regional, or national levels.</p> <p>HCVF 1.1. Forests in protected areas</p> <p>HCVF 1.2. Forests hosting rare, threatened, or endangered species</p> <p>HCVF 1.3. Forests with critical seasonal use</p>
HCVF 2	<p>Large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional, or national levels and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.</p>
HCVF 3	<p>Rare, threatened, or endangered ecosystems, habitats, or refugia</p>
HCVF 4	<p>Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.</p> <p>HCVF 4.1. Forests of particular importance for water sources</p> <p>HCVF 4.2. Forests critical for preventing and combating erosion</p> <p>HCVF 4.3. Forests with critical impact on agricultural land and air quality</p>
HCVF 5	<p>Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, and so on)</p>
HCVF 6	<p>Sites, resources, habitats, and landscapes of global or national cultural, archaeological, or historical significance and/or of critical cultural, ecological, economic, or religious/sacred importance for the traditional cultures of local communities</p>

Source: Jennings et al. 2003; Vlad et al. 2013.

The HCVF mapping started with the collection of available cartographic or descriptive information. Subsequently, collected data and maps were aggregated through a complex consolidation process using appropriate geographic information system (GIS) techniques. The entire process, which relied on the quality of initial data, resulted in maps produced from original data and compilations, including:

- Map of State-Owned Forests developed based on the management maps provided by Forest Research and Management Institute (ICAS);
- Map of Non-State Forests (owned by ATUs and other holders) developed based on the land use maps designed by the Agency for Land Relations and Cadastre (ALRC) and on the management maps for ATUs that have undergone forest management planning;
- Map of PAs developed based on the data/indications provided in the PA reassessment forms, made available by the Ministry of Environment (MoE);
- Map of Emerald Network Sites representing Areas of Special Conservation Interest (ASCI) in non-EU countries compatible with the Natura 2000 network sites;
- Map of Important Bird and Biodiversity Areas (IBAs) designated for the long-term conservation of sites that are of significant importance for birds and biodiversity;
- Forest Landscape Integrity Index map;
- Map of Natural Hydrological Risk Areas; and
- Digital Elevation Model.



Based on the above cartographic resources, other data, and relevant GIS techniques, maps of the HCVF categories were developed and supported by a detailed analysis. While the maps can serve as a starting point for further field investigations, the study was limited solely to HCVF identification.

A future scientific and field-based inventory of HCVCs in Moldova is essential to establish an adequate management system that supports an active conservation of valuable forests, considering the low forest cover and high demand for forest products and services.

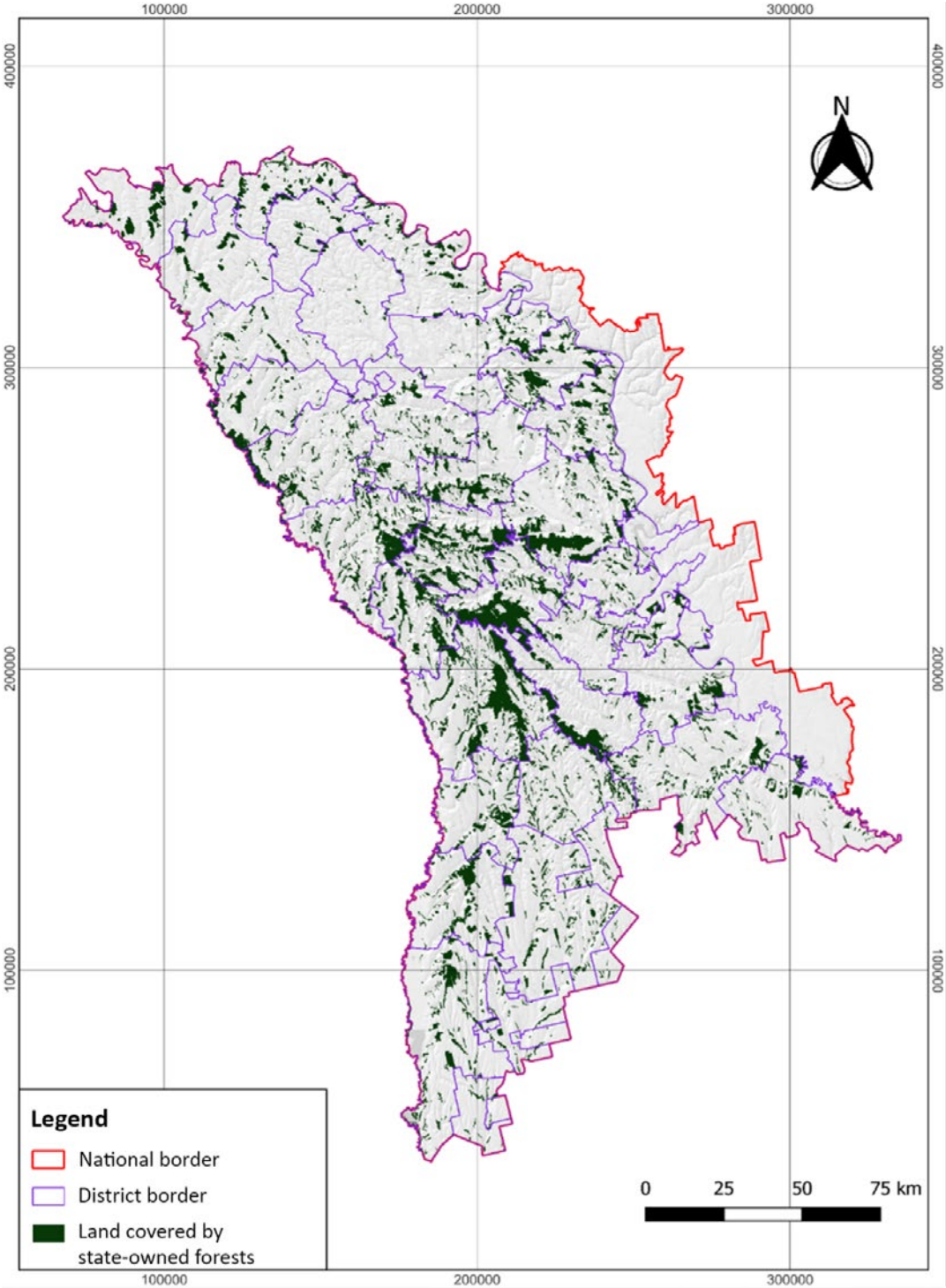
3.2. Identification of HCVCs: collecting and processing cartographic data

3.2.1. National Forest Ground

Management planning maps provided by ICAS were used for HCV identification of state-owned national forest ground (NFG). Because forest management planning is carried out every 10 years with only about 35,000 ha covered per year; the cartographic data corresponding to FMPs is out of date for about nine years. To produce a complete national-level map, data at the level of the forestry district were taken for each SFE. By merging the cartographic data corresponding with all forestry

districts containing detailed description of stands, a national-level map was developed for the state-owned NFG managed by SFEs with an area of 337,925 ha. Other land categories except for forests were excluded (in total 31,531.3 ha) from the map. The resulting map is shown in Figure 5. certainty about the sufficiency of attributes, forests should be designated as an HCVC until newly identified information proves otherwise (ProForest 2016).

Figure 5. Map of state-owned forests (managed by Moldsilva)



Source: ICAS

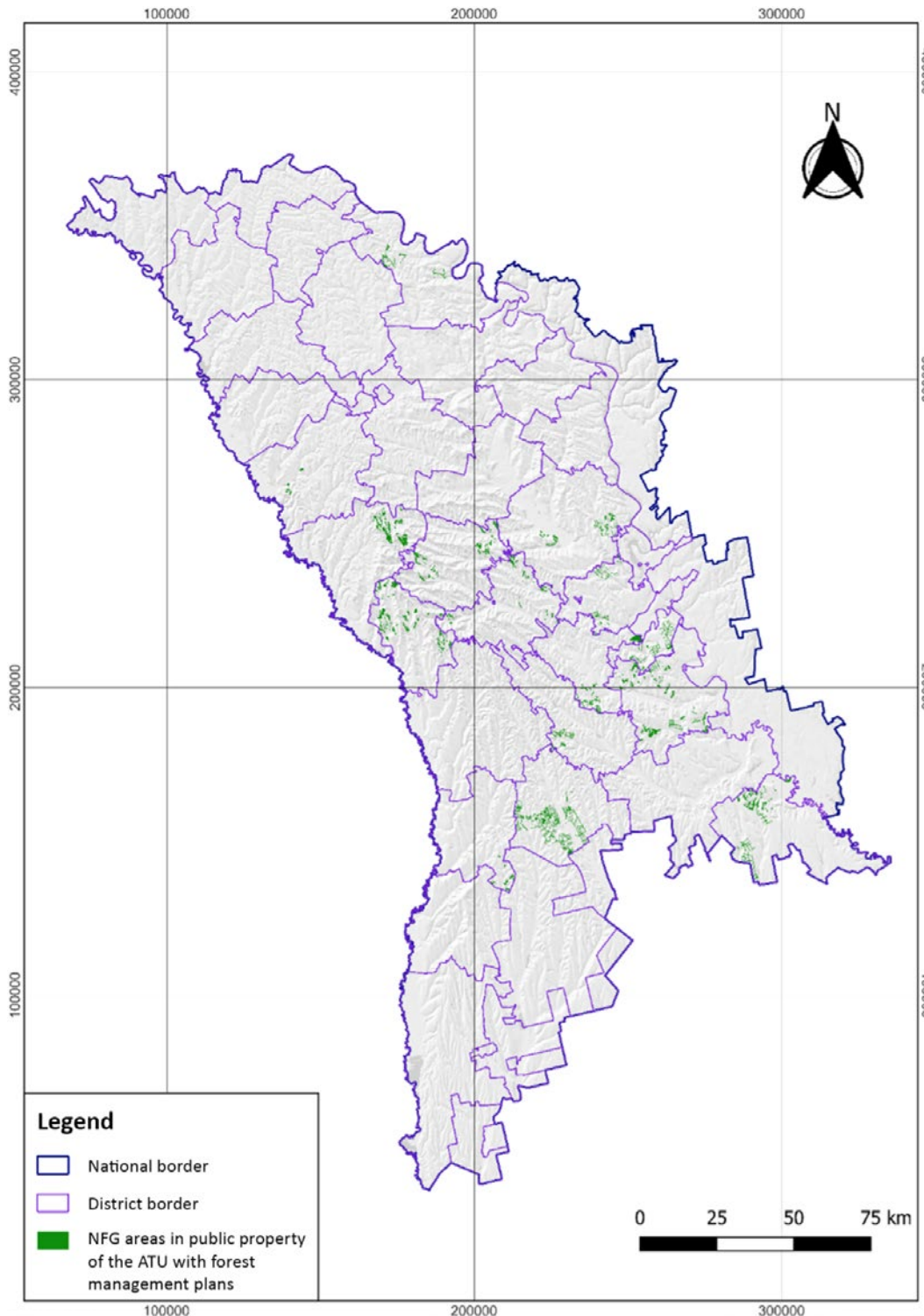


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To elaborate a map of forests belonging to owners other than the state, the first step was to get cartographic data from ICAS regarding the NFG owned by the 41 ATUs having GIS-

based management plans for their forest lands. Combining all corresponding cartographic data for each ATU resulted in an area of 10,492.8 ha (Figure 6), of which 8,956.18 ha are forests.

Figure 6. Map of ATU forests with FMPs



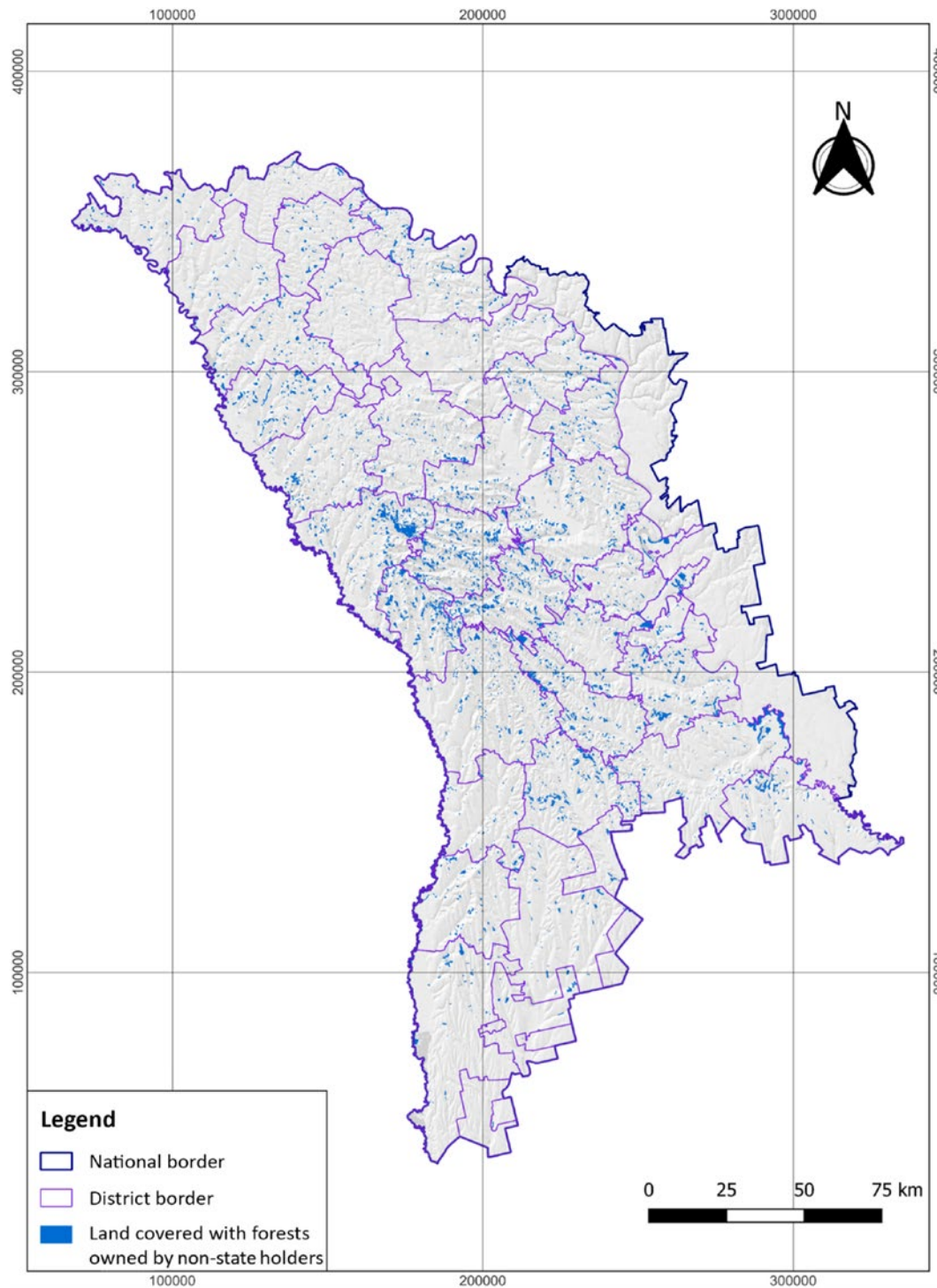
For the remaining area of land covered by forests of non-state holders, the land use map from ICAS (published in 2017 by ALRC) was used. Deciduous, coniferous, mixed, and dense forests were selected. The resulting forest area is 364,854 ha (including Transnistria). Several processing steps were performed to obtain a vector layer, the first being the exclusion of Transnistrian areas. Subsequently, the state-owned NFG areas were excluded according to the FMP maps as were the areas overlapping with urban/communal area and cadastral parcels in the ARFC database to correct the resulting GIS layer. As a result of this process,

which was automatically carried out using the QGIS software, there were some non-corresponding areas due to the difference between the original land use map and the corresponding state-owned NFG. These areas were manually corrected. The resulting map for the area covered by non-state forests (38,210.5 ha) is shown in Figure 7. This map was used to identify the corresponding forest areas based on the classification of each HCVF category. The generalized map of land covered by forests (state and non-state holders) is shown in Figure 8 below.



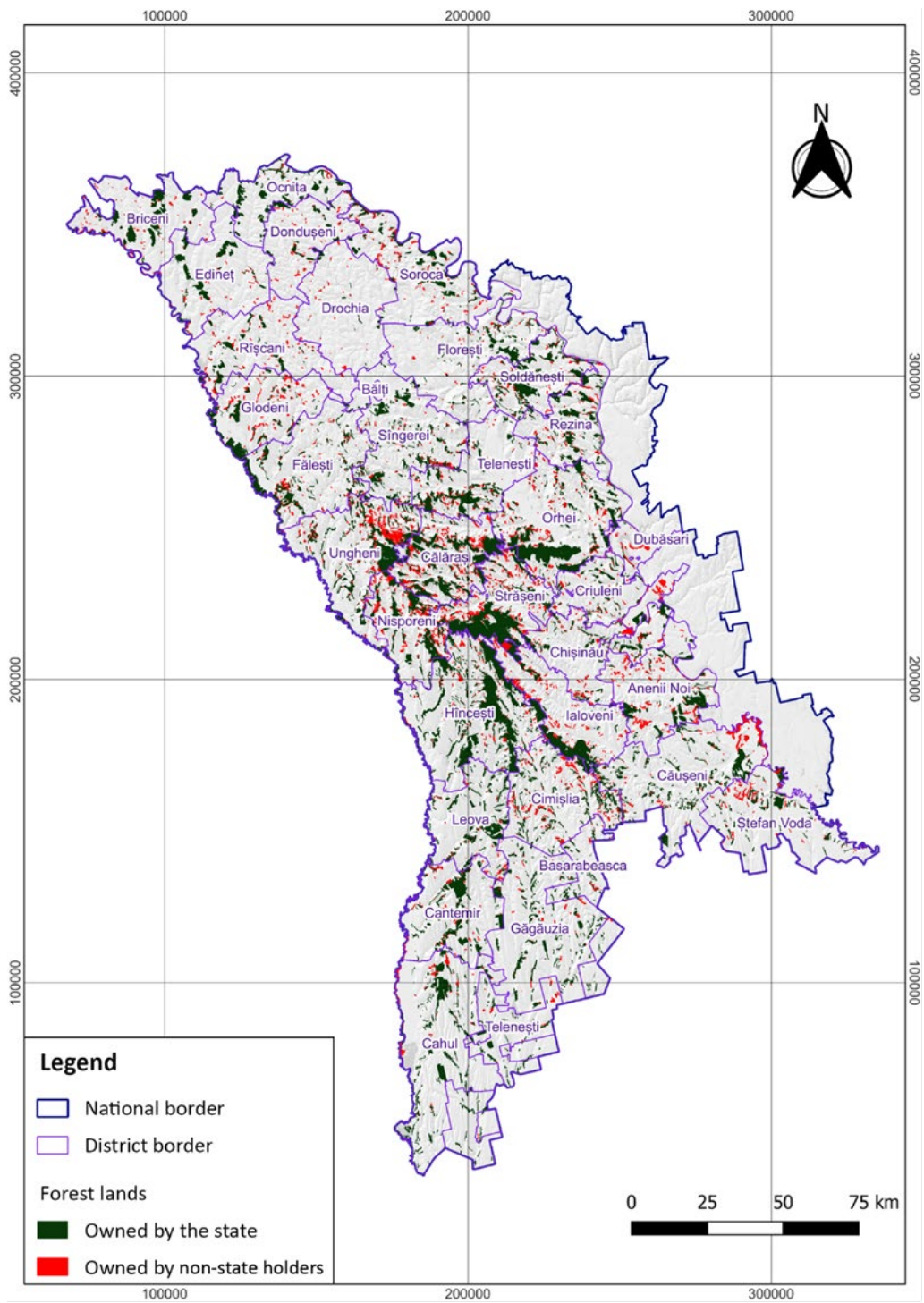
Identification of High Conservation Value Forests in the Republic of Moldova

Figure 7. Map of forest land owned by non-state holders



Source: ICAS

Figure 8. General map of forest lands in Moldova



Source: Original compilation for this publication based on ICAS and ALRC data.



3.2.2. Protected Areas

For the identification and mapping of 'HCVF 1.1 - Forests in protected areas', data on the geographical distribution of PAs (with the main objective of biodiversity conservation) were required (Jennings et al. 2003; Stewart and Rayden 2009; Vlad et al. 2013).

In Moldova, such areas can be found in:

- **Scientific Reserves:** aimed at maintaining intact natural sites and systems and conserving biodiversity;
- **Nature Reserves:** Intended to ensure optimal conditions for the protection and restoration of nationally significant species and plant and animal communities;
- **Botanical Nature Monuments:** Representative sectors with forest vegetation—territories designated for protection to conserve unique or typical habitats of relict plant species, their communities, and rare or endangered plant species and secular trees. According to PA re-evaluation, these are proposed to be transferred to the category of nature reserves (Postolache et al. 2013);
- **National Parks:** For Orhei NP, Zones A and B1 were considered. Zone A includes unique natural areas that preserve their natural character and influence and serve as a natural repository for the preservation of the gene pool of native plants and animals; in Zone B1 for protection and recreation, natural processes are prioritized, with ecological reconstruction and rehabilitation being the only interventions allowed (GD 2014). For Lower Nistru NP, only Zone A was considered because Zone B1 only has recreational objectives (GD 2022); and
- **Landscape Reserves:** According to the PA re-evaluation, these are proposed to be upgraded to nature reserves with the main protection objectives or values of conserving natural

forests, rare plant and animal populations, and landscape (Postolache et al. 2013).

For the identification of forest areas to be included in HCVF 1.1, the PA (pursuant to Law 1538/1998) maps in GIS format could not be found. Upon specific request, the MoE has provided the PA re-evaluation forms developed under the UNDP/GEF project 'Strengthening institutional capacities and representativeness of the protected areas system in Moldova', carried out between July 2010 and December 2012 to identify the current state of PAs in Moldova as well as to suggest proposals and recommendations for optimizing biodiversity conservation (Postolache et al. 2013).

This re-evaluation was not officially recognized in the legislation; hence, in this study, PAs from the above categories were included according to Law 1538/1998, but their projection on the map was made based on the recommendations made as part the re-evaluation process. These recommendations are timely as they provide an updated status of PAs. Using the information in the re-evaluation forms, a map of PAs of interest for this category of HCVFs was produced (PAs that were proposed to be excluded from the list of 'protected areas' and areas on the territory of Transnistria—due to lack of positioning data—were not included). Based on the PA location in the re-evaluation forms and following the FMP maps from ICAS, a GIS map containing the boundaries of PAs of interest was produced (Figure 9). The area for these PAs is different from that included in the re-evaluation forms. Boundaries of most of the forest subunits, proposed to be included in the PA system, have been adjusted during forest management planning works, resulting in changes in the surface area. At the same time, the authors of the re-evaluation asserted that the surfaces might be modified if the proposals for reclassification of

the PAs are considered (Postolache et al. 2013). For the NPs' inclusion in the GIS map, data from the corresponding normative acts (that is, GD 923/2014 for Orhei National Park and GD 144/2022 for Lower Nistru National Park) were used.

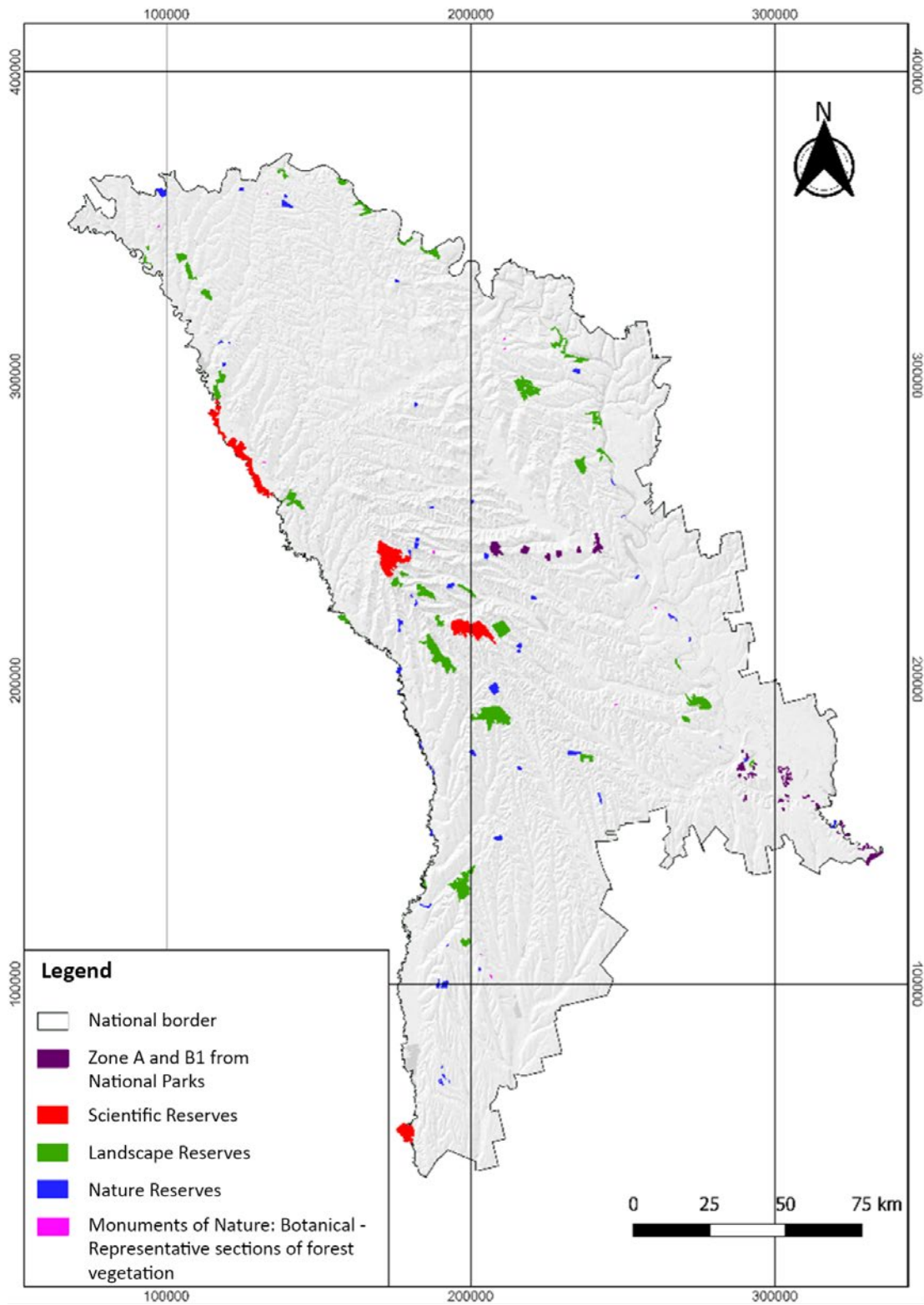
The map of PAs of interest for the identification of HCVF 1.1 (Figure 8) contains the following:

- 4 scientific reserves: One was excluded due to its location in the Transnistrian region;
- 43 forest nature reserves: Out of 51 (according to Law 1538/1998), 3 were proposed for exclusion and 4 are located in the Transnistrian area;
- 4 nature reserves of medicinal plants: Out of 9 (according to Law 1538/1998), 4 were excluded or merged with forest nature reserves and 1 is located in the Transnistrian region;
- 3 mixed nature reserves;
- 55 landscape reserves: Out of 61 (according to Law 1538/1998), 4 are located in the Transnistrian region and 2 are proposed to be transferred to the category of Nature Monuments A) Geological and Paleontological, which makes them unsuitable for inclusion in HCVF 1.1;
- 12 monuments of nature— a) Representative sectors of forest vegetation and c) Botanical —out of 13 (according to Law 1538/1998), 1 is located in Transnistria.



Identification of High Conservation Value Forests in the Republic of Moldova

Figure 9. Map of PAs of interest for the identification of HCVF 1.1



Source: MoE & ICAS.

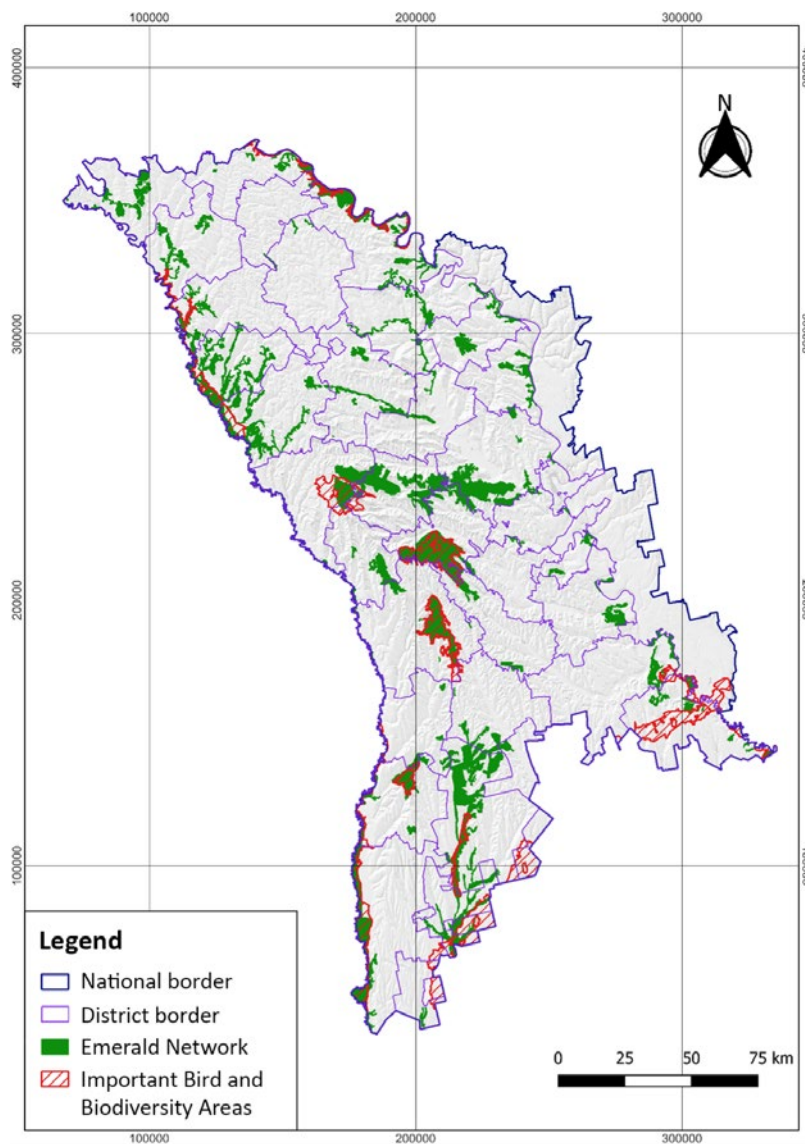
3.2.3. Emerald network sites and important bird and biodiversity Areas (IBAs)

To map the Emerald network sites, the European Environment Agency website was accessed and the cartographic data and standard forms for each Emerald site were downloaded (EEA 2023). All downloaded files were combined, resulting in a

common map of 61 sites (Figure 10).

To produce the map of IBAs, data were requested and received from the datazone.birdlife.org platform.⁴

Figure 10. Map of IBAs and the Emerald Network sites in Moldova



Source: BirdLife 2023a; EEA 2023.

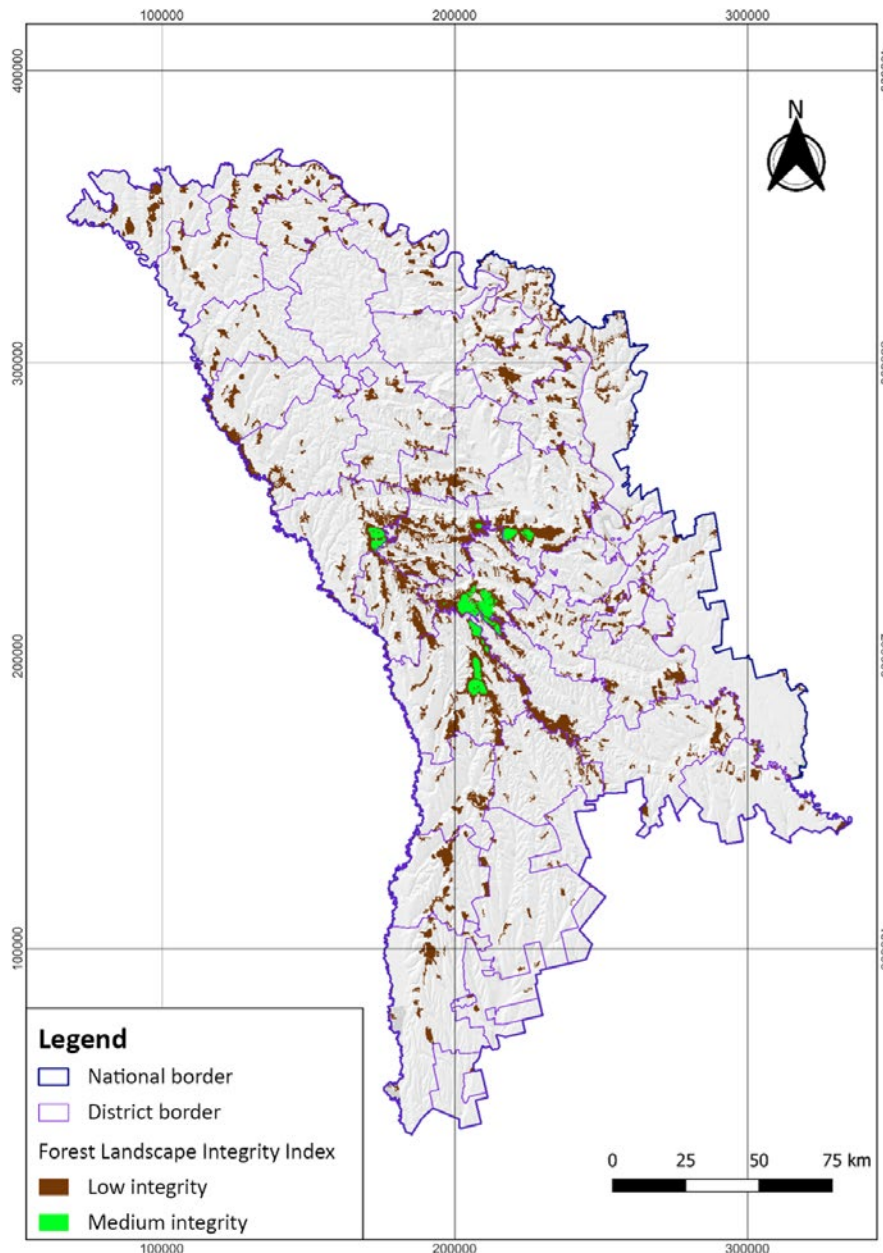
4. <https://datazone.birdlife.org/home>.



3.2.4. Graphic representation of the Forest Landscape Integrity Index

In Moldova, there are no intact forest landscapes (GFW 2023) nor forest landscapes with high integrity. Instead, there are only small areas with medium integrity in terms of the level of anthropogenic changes and most forests have low integrity (Figure 11; FLII 2023).

Figure 11. Moldova’s Forest Landscape Integrity Index map



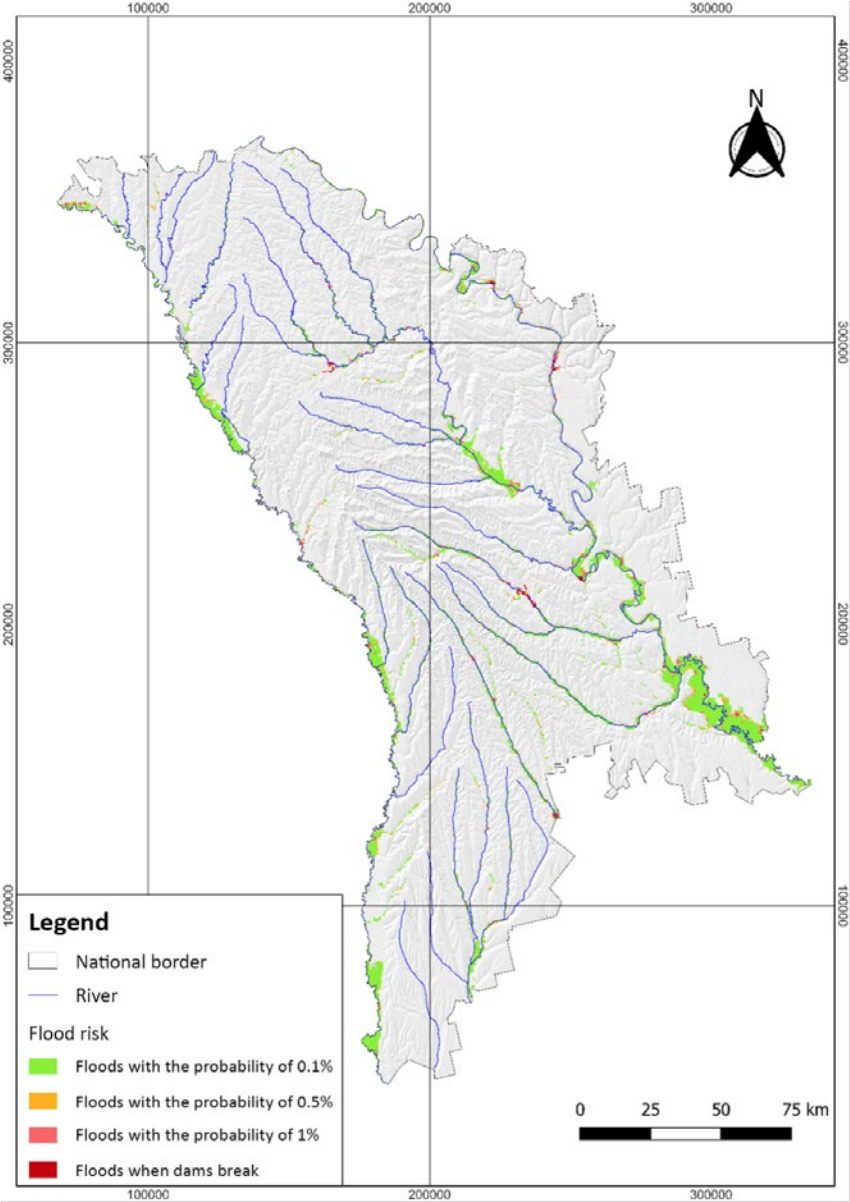
Source: FLII 2023.

3.2.5. Map of natural hydrological risk areas

To identify the important forests for this HCVF category, the map of natural hydrological risk areas (Figure 12) provided by the Moldovan Water Agency was used with data available on the

geodata.gov.md portal. The boundaries of these areas also include the forest areas with special water protection functions or located in the Prut and Nistru River meadows.

Figure 12. Natural hydrological risk areas map



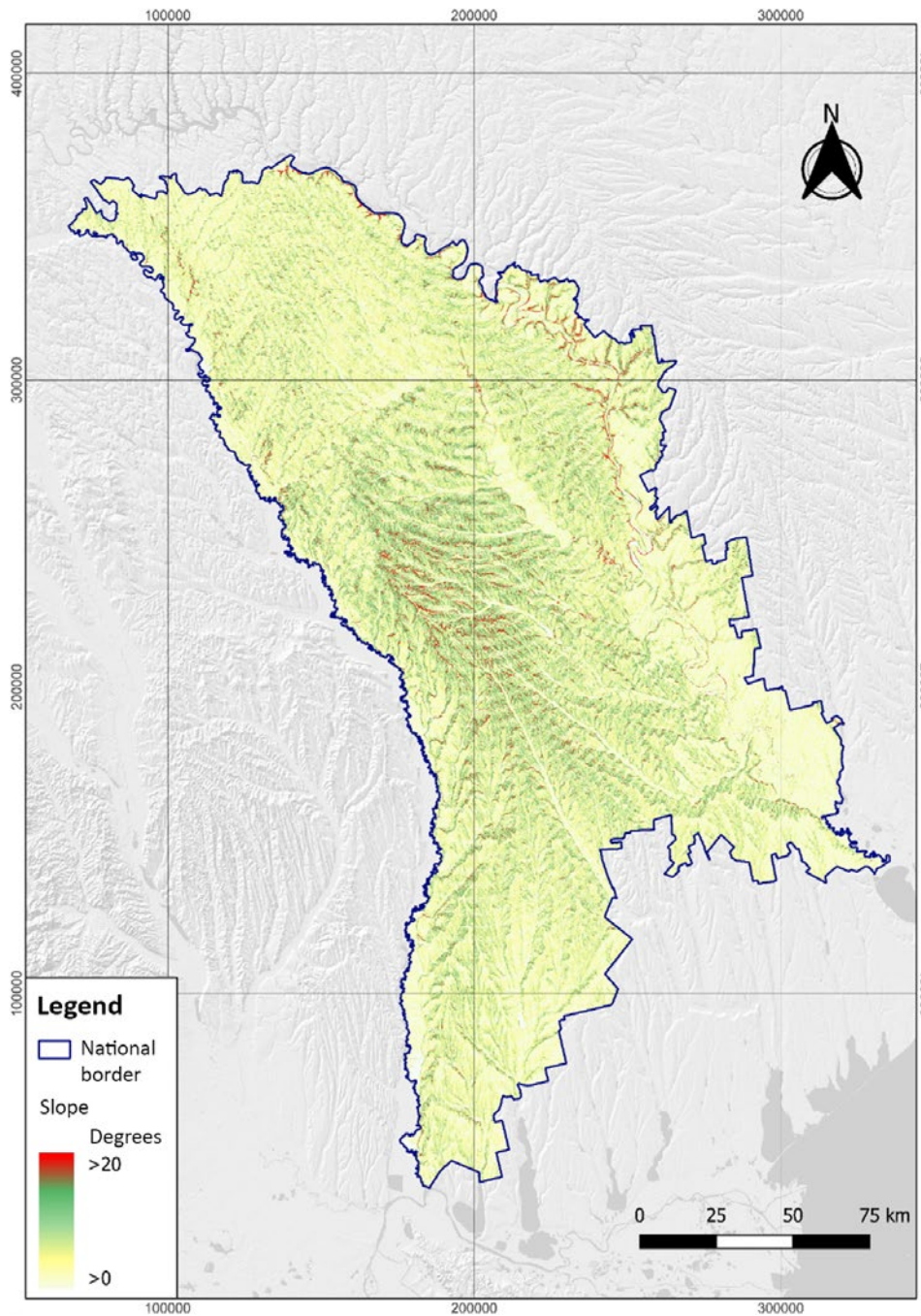
Source: Moldovan Water Agency; ALRC.



3.2.6. Digital Elevation Model

A slope gradient map (Figure 13) was produced with a pixel size of 10 m. based on the ALRC national digital elevation model

Figure 13. Moldova slope gradient map



Source: ALRC.



Chapter 4 Results and Discussion

Community-owned and collectively-managed forest in the hilly area of the northcentral Moldova (HCVF category 4.2).
© Aurel Lozan, Boghenii-Noi commune land, Ungheni district.



4.1. HCVF 1. Forests containing globally, regionally, or nationally significant concentrations of biodiversity

4.1.1. HCVF 1.1. Forests in protected areas

Forest lands proposed to be designated as HCVF 1.1 are included in PAs that have biodiversity conservation as their main objective (Jennings et al. 2003; Stewart and Rayden 2009; Vlad et al. 2013). In Moldova, such areas are found in scientific reserves, nature reserves, areas declared as monuments of nature, and integral protection zones in PAs subject to Law 1538/1998. The graphic representation of these areas resulted from overlaying the map of forests with the PA map.

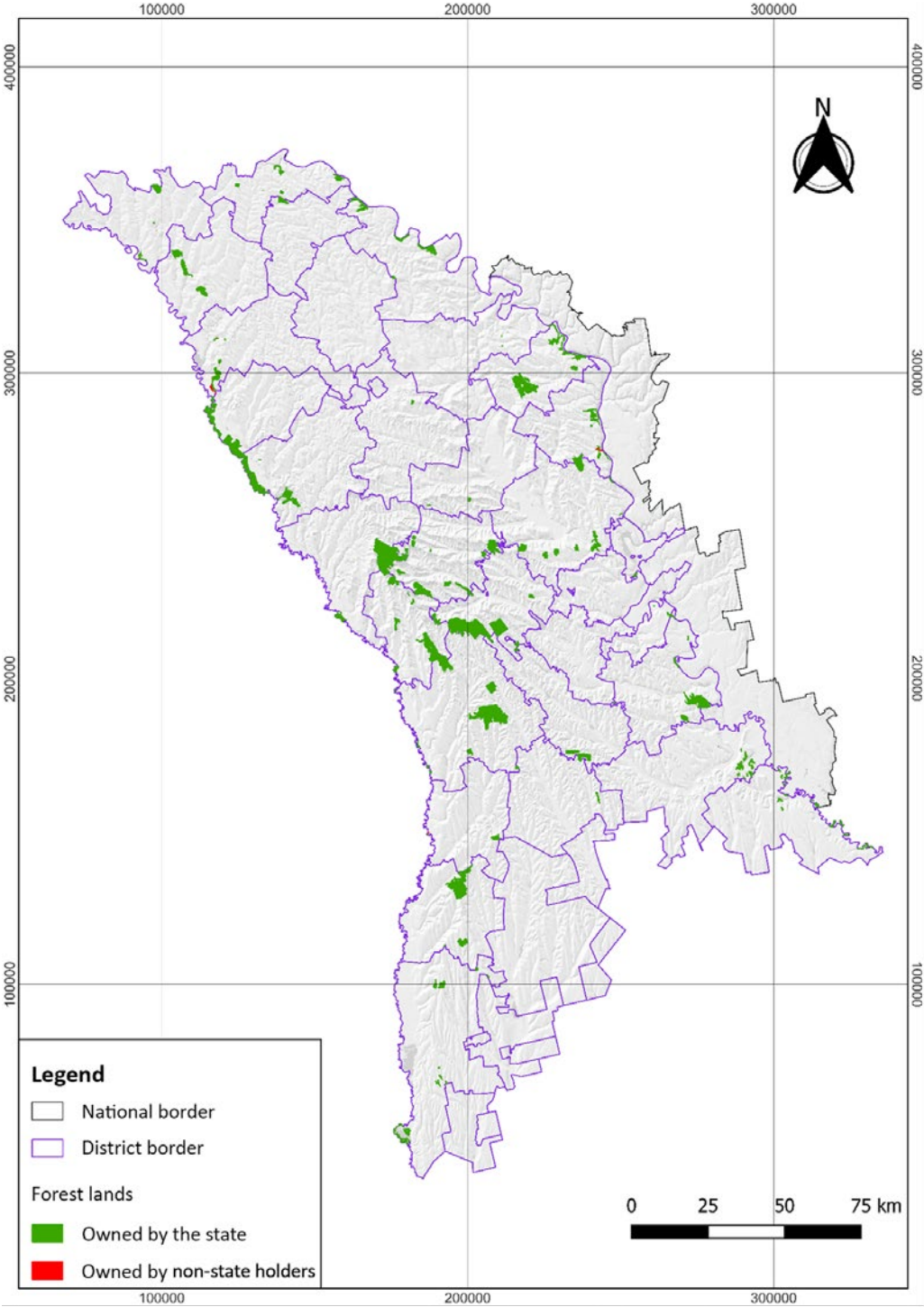
The relationship between these PAs subject to Law 1538/1998 and their re-evaluation (by GEF/UNDP Project), on the one hand, and the areas resulting from this study classified in HCVF 1.1 by type of ownership, on the other hand, are summarized in Table 6 and detailed in Table A3.1 (see in Annex 3).

Table 6. PA and forest areas included in HCVF 1.1

No.	PA category	Area, according to Law 1538/1998 (ha)	Area, according to reevaluation (ha)	Area, according to the study (ha)			
				Total	Forest owned by the state	Forest owned by non-state holders	Total forest
1	National Parks (Orhei NP - Zones A and B1; Lower Nistru NP - Zone A)	4,583.8	—	4,790.1	3,640.3	0.00	3,640.3
2	Scientific reserves	19,007.0	18,930.8	18,877.0	16,302.2	0.00	16,302.2
3	Nature reserves	5,827	6,257.44	6,283.71	6,165.5	22.78	6,188.28
4	Monuments of Nature C) Botanical a) Representative areas with forest vegetation	70.2	101.33	98.53	97.98	0.35	98.33
5	Landscape reserves	32,428.0	33,499.08	33,746.39	31,619.3	229.93	31,849.2
Total		61,916.0	58,788.65	63,795.73	56,536.3	769.51	57,305.81

Forest areas included in HCVF 1.1 are shown in Figure 14.

Figure 14. Map of HCVF 1.1 forests



Source: MoE & ICAS.



4.1.2. HCVF 1.2. Forests hosting rare, threatened, or endangered species and HCVF 1.3. Forests with critical seasonal use

Under HCVF 1.2 and HCVF 1.3, it is recommended to include forests within scientifically designated sites containing superior plant or animal species that, at certain essential stages of their existence, need forest ecosystems (Vlad et al. 2013). These rare, threatened, or endangered species are protected by the state and are included in Annex 3 of the law on PAs (Law 1998) and in the Red Book of Moldova (CR 2015). The Emerald Network was used to identify these forest types. In addition, important areas for birds and biodiversity were also analyzed (BirdLife 2023b). Their aim is to ensure the long-term conservation of sites of significant importance for birds and biodiversity. These areas are selected by applying ornithological criteria based on the latest knowledge of the bird population sizes and trends. These criteria ensure that the selected areas are of significance for the international conservation of bird populations and provide a common system, thus creating consistency between sites and allowing comparisons to be made at national, continental, and global levels (BirdLife 2023b). As many as 11 such areas have been identified in Moldova with a total cover of

124,438 ha containing 236 bird species (of which 149 species are terrestrial, 87 water species, 16 marine species) with 208 species being migratory, 12 of which are globally threatened bird species (BirdLife 2023c). Forests within these areas can be considered as HCVF 1.2, HCVF 1.3, or even HCVF 1.1, provided that the areas concerned are designated as scientific reserves, nature reserves, nature monuments, or strictly zones within PAs.

The area of state-owned forests included in this category of HCVF was identified by overlapping the state forests map with the Emerald Network map. The overlapping surfaces that benefit from the presence of the most important species—oak, downy oak, greyish oak, sessile oak, beech, willow, alder—corresponding to the forest habitat types of European interest for which Emerald sites have been declared (Table 7) were included in HCVF 1.2. For the ATU-owned forests that have FMPs in place, a similar procedure was used. It was not possible to identify the presence of alder using only the FMP maps.

Table 7. List of forest habitats of European interest for which Emerald sites have been declared and are of interest for HCVF 1.2 and HCVF 1.3

No.	Code	English name of the habitat	Romanian name of the habitat
1	G1.11	Riverine willow woodland	Formațiuni riverane de salcie
2	G1.21	Middle European stream ash - alder woods	Păduri de frasin și arin central europene
3	G1.41	Alder swamp woods not on acid peat	Păduri mlăștinoase de arin pe turbă neacidă
4	G1.22	Mixed oak - elm - ash woodland of great rivers	Păduri mixte de stejar - ulm - frasin pe râuri mari
5	G1.6	Beech woodland	Păduri de fag
6	G1.7	Thermophilous deciduous woodland	Păduri termofile de foioase
7	G1.A1	Oak - ash - hornbeam woodland on eutrophic and mesotrophic soils	Păduri de stejar - frasin - carpen pe soluri eutrofe și mezotrofe

Source: EUNIS (version 2012, amended 2019); Law 94/2007 (amended 2021).

The area of Emerald sites is 325,197 ha (Law 2007). Of this area, forests of interest for HCVF 1.2 represent 93,131.4 ha for state-owned forests and 55.08 ha for ATU-owned forests. Detailed descriptions of each Emerald site are in Table A3.2 (see Annex 3).

The same approach was used to identify the forest areas overlapping with important areas for birds and biodiversity. Forests overlapping with these

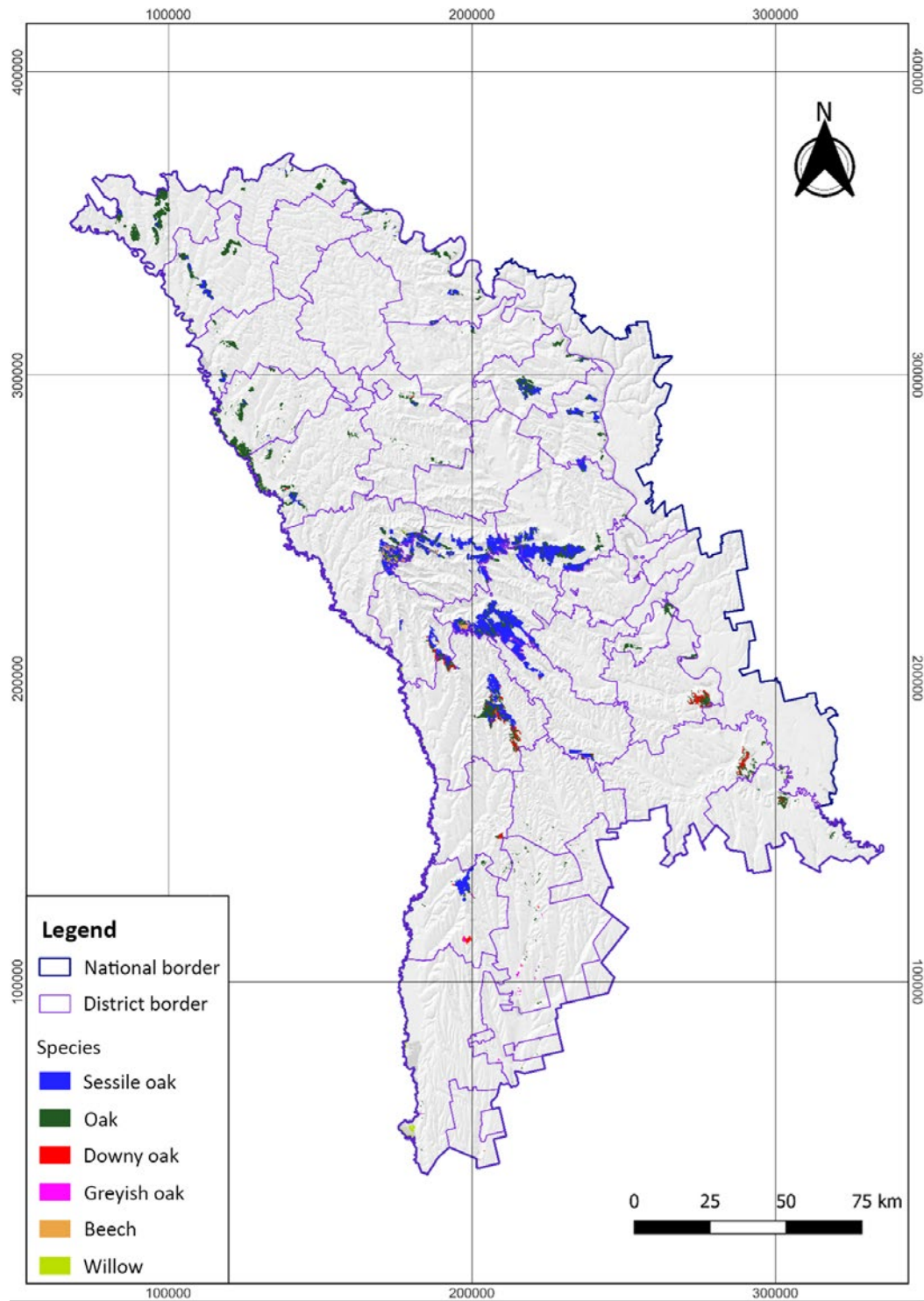
areas represent 38,172.1 ha and 20.44 ha for state-owned and non-state-owned forests, respectively.

The layers obtained for both HCVF 1.2 and HCVF 1.3 were combined resulting in a forest area of 95,142.9 ha for state and 75.52 ha for non-state holders, which are included in HCVF 1.2. The location of the forests included in HCVF 1.2 and HCVF 1.3 is shown in Figure 15.



Identification of High Conservation Value Forests in the Republic of Moldova

Figure 15. Map of HCVF 1.2 and 1.3 forests



Source: MoE & ICAS.

4.2. HCVF 2. Extensive, globally, regionally, or nationally significant forest landscapes with viable populations of native species in their natural form in terms of distribution and density

According to the general guidelines for HCVF identification (Brown et al. 2013; Jennings et al. 2003) and those developed at the national level (Maesano et al. 2016; Vlad et al. 2013) to be included in this category, forests must meet spatial criteria (in some cases they must be at least 50,000 ha) and contain a high degree of naturalness and integrity. In Moldova, there are no intact forest landscapes (FGW 2023) nor forest landscapes with high integrity. There are only small areas with medium integrity in terms of the level of anthropogenic changes (FLII 2023). Because forest landscapes with medium integrity contain small-sized forest bodies, it is appropriate to include them in HCVF

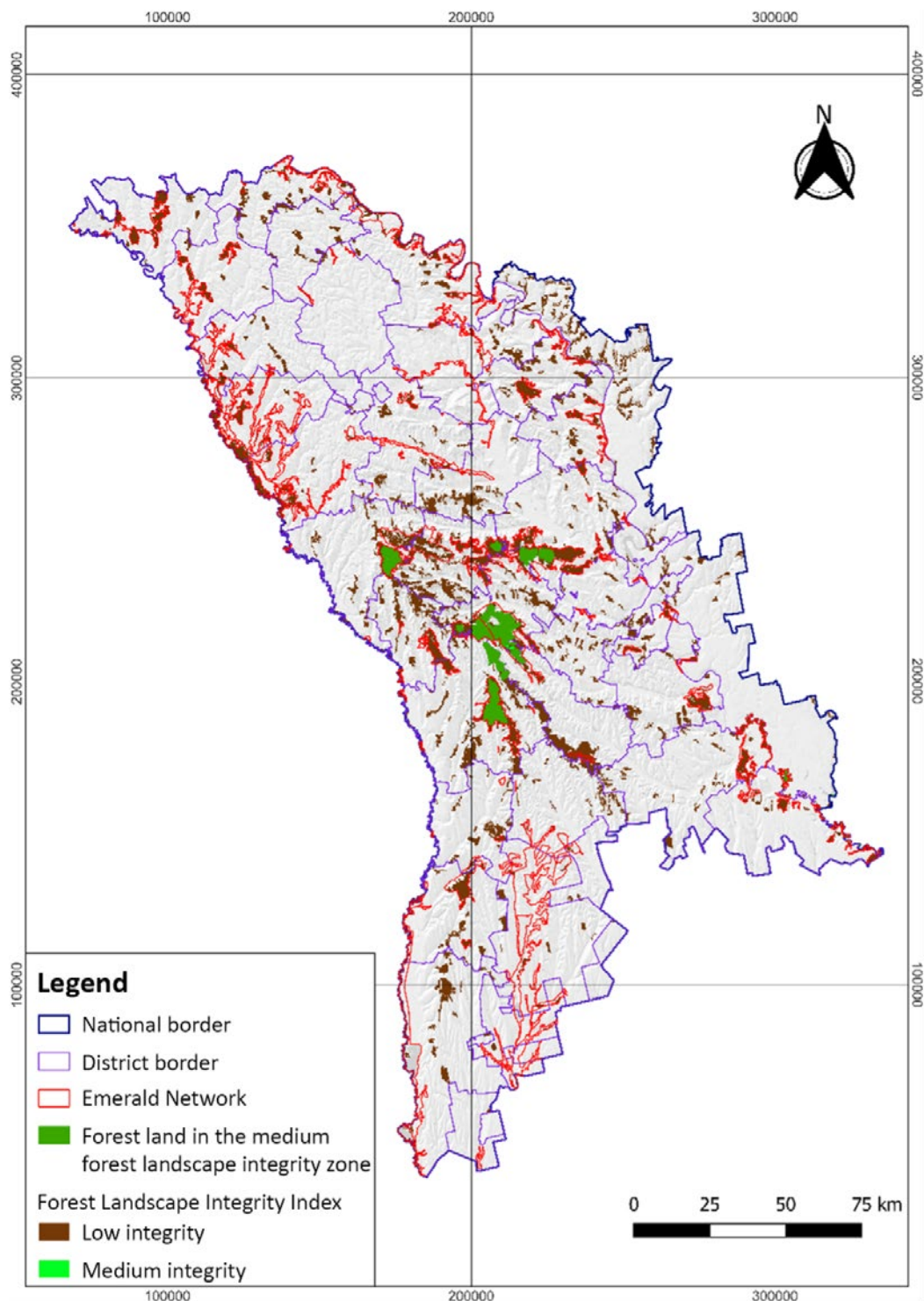
2 and monitor them so that their integrity does not decrease. Most of such landscapes with medium integrity are included in the Emerald Network (Figure 16) and other PAs, however, a significant part (3,394.53 ha) lacks regulatory protection except for forestry specific legislation.

For the area identification, the region corresponding to the medium integrity level was overlaid with the forest map, resulting in a forest area of 31,709.7 ha that was included in the HCVF 2 Category. The detailed description of the forest areas included in the HCVF 2 is shown in Table A3.3 (see Annex 3).



Identification of High Conservation Value Forests in the Republic of Moldova

Figure 16. Map of HCVF 2 forests with medium integrity



Source: MoE & ICAS.

4.3. HCVF 3. Rare, threatened, or endangered ecosystems, habitats, or refugia

This category includes natural arboreta composed of species of major importance for Moldova— oak, sessile oak, greyish oak, downy oak, and beech. These forests were identified based on the

provisions of the FMPs and the current state of forest types 1–3. The area of forests included in HCVF 3 is shown in Table 8 and Figures 17 and 18.

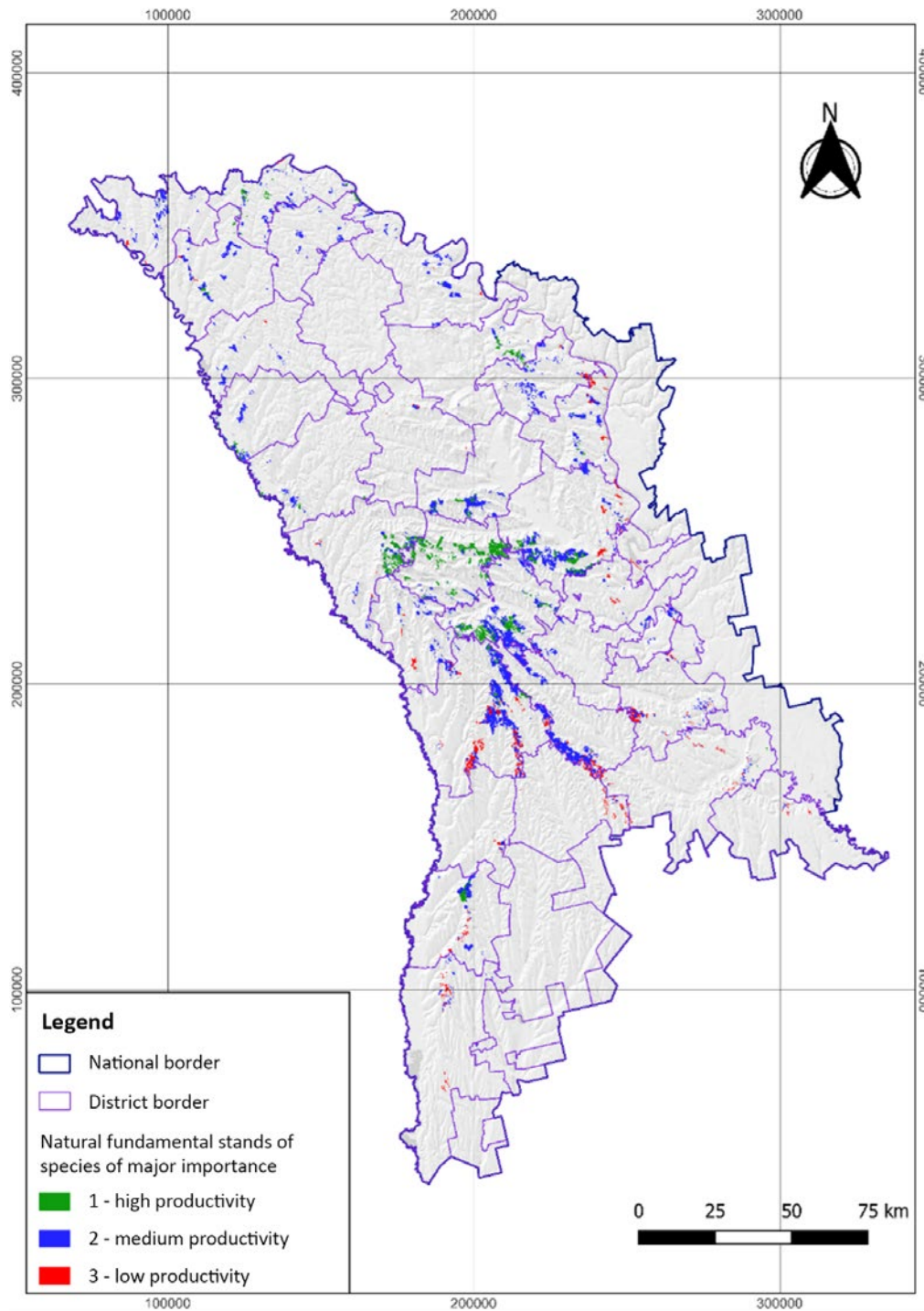
Table 8. Area of forests included in HCVF 3 and its distribution by tree species

No.	Ownership	Current state of forest type	Species					Total
			Sessile oak	Oak	Downy oak	Greyish oak	Beech	
1	State	1	14,641.90	4,066.48	23.18	0.00	471.26	19,202.82
2	State	2	37,097.70	15,709.40	4,775.85	226.23	235.23	58,044.41
3	Non-state holders		0.00	48.16	1.18	0.00	0.00	49.34
4	State	3	1,436.06	7,303.52	556.40	4.28	0.00	9,300.26
5	Total		53,175.66	27,127.56	5,356.61	230.51	706.49	86,596.83



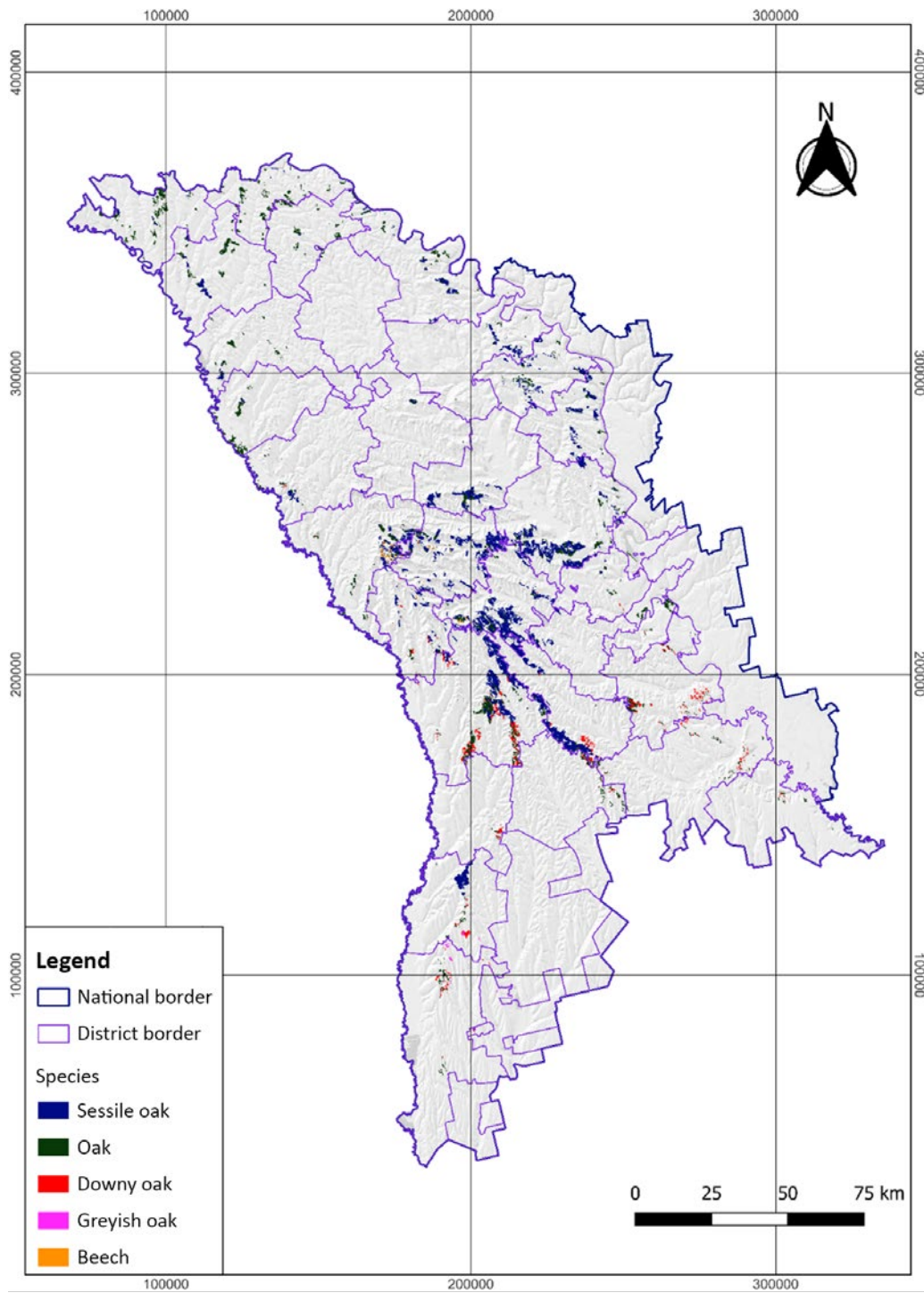
Identification of High Conservation Value Forests in the Republic of Moldova

Figure 17. Map of HCVF 3 forests according to productivity



Source: ICAS.

Figure 18. Map of HCVF 3 forests according to the main species



Source: ICAS.



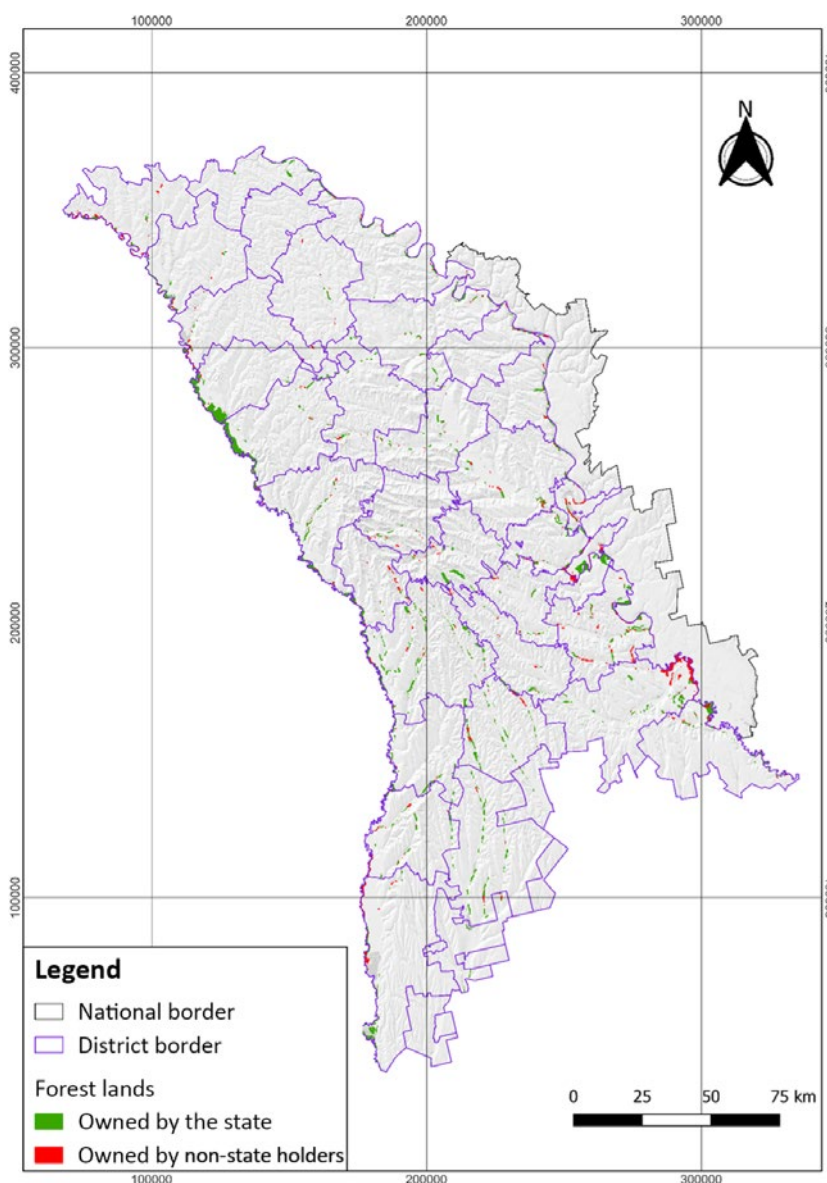
4.4 HCVF 4. Forests providing essential environmental services in critical situations

4.4.1. HCVF 4.1. Forests of particular importance for water sources

To identify forests in the HCVF 4.1 category, the map of natural hydrological risk areas was overlaid with the forest maps to identify areas of state-owned forests, resulting in an area of 27,507.9

ha, as well as with the map of non-state forests, resulting in an area of 7,064.61 ha. The location of the forests included in HCVF 4.1 is shown in Figure 19 and represents a total area of 34,572.51 ha.

Figure 19. Map of HCVF 4.1 forests



Source: ICAS.

In other countries, this HCVF category includes the following forestlands: forests in areas adjacent to drinking water resources for local communities with no feasible or readily available alternatives, forests related to torrential watersheds for water

flow regulation, forests along the banks of flowing waters where they play a flood control function (Maesano et al. 2016; ProForest 2016; Vlad et al. 2013).

4.4.2. HCVF 4.2. Forests critical for preventing and combating erosion

The areas covered by forest in the state-owned property were classified in the HCVF 4.2 category using forest maps. All management units containing forested lands under functional category 1.2A - Forests located on land with deep erosion and on land with slope greater than 20°, were included, resulting in an area of 7,616.66 ha.

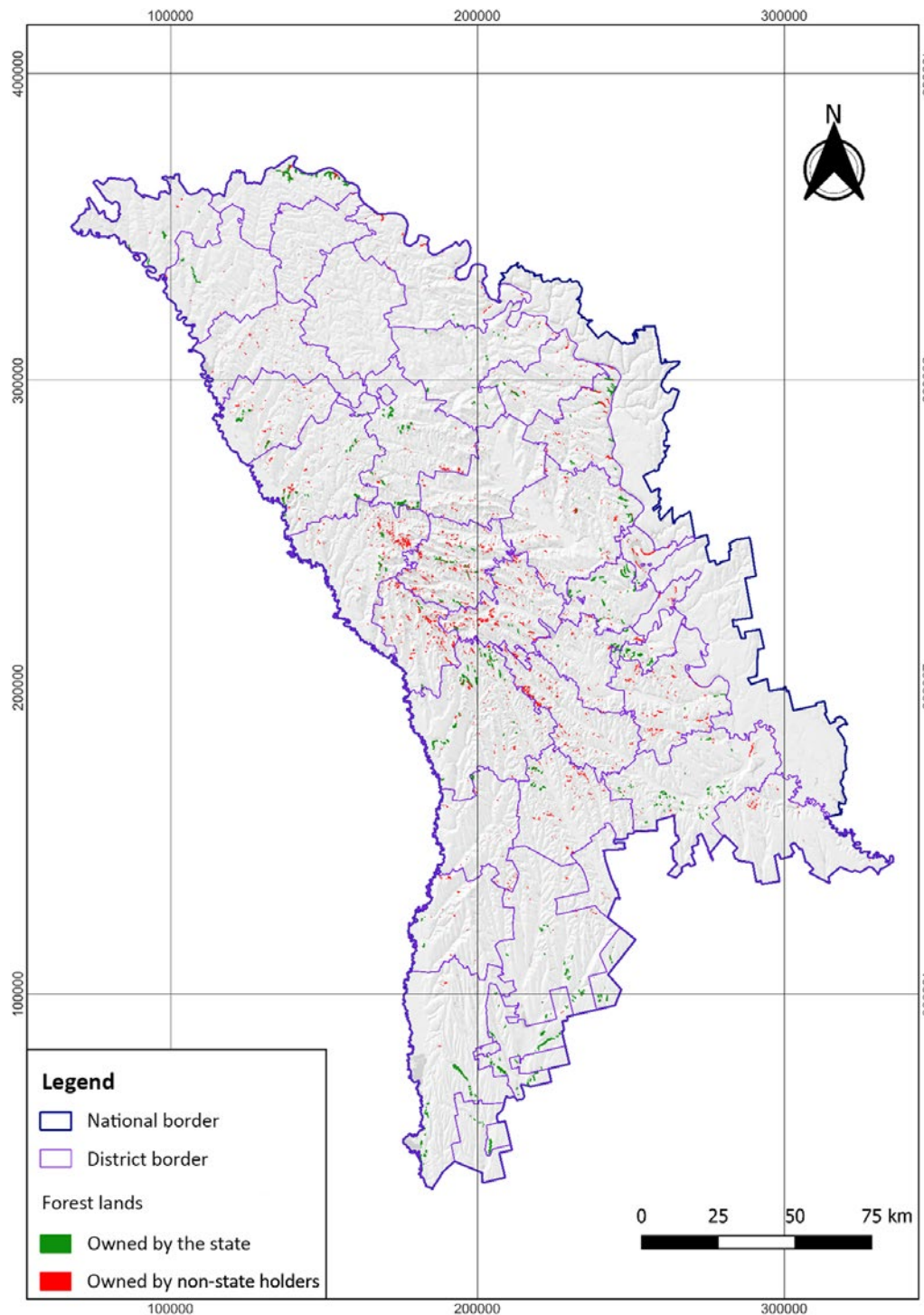
The map of lands with a slope greater than 20° was overlaid with the map of ATU-owned forests, resulting in an area of 1,927.37 ha. The map of the forests included in HCVF 4.2 is shown in Figure 20.

In Romania, the HCVF 4.2 category includes forests on rocky slopes, lands with obvious soil erosion events, and land with steep slopes: $\geq 35^\circ$ on any kind of lithological substrate, $\geq 30^\circ$ on felsic substrate, and $\geq 25^\circ$ on sand and gravel substrate (Vlad et al. 2013). In Bulgaria, the slope threshold above which forest areas are considered as HCVF 4.2 is 30° , having a total area above 1 ha and tree consistency greater than 0.6 (ProForest 2016), and in the case of Italy, forests on slopes greater than 21.8° (40%) (Maesano et al. 2016).



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Figure 20. Map of HCVF 4.2 forest lands

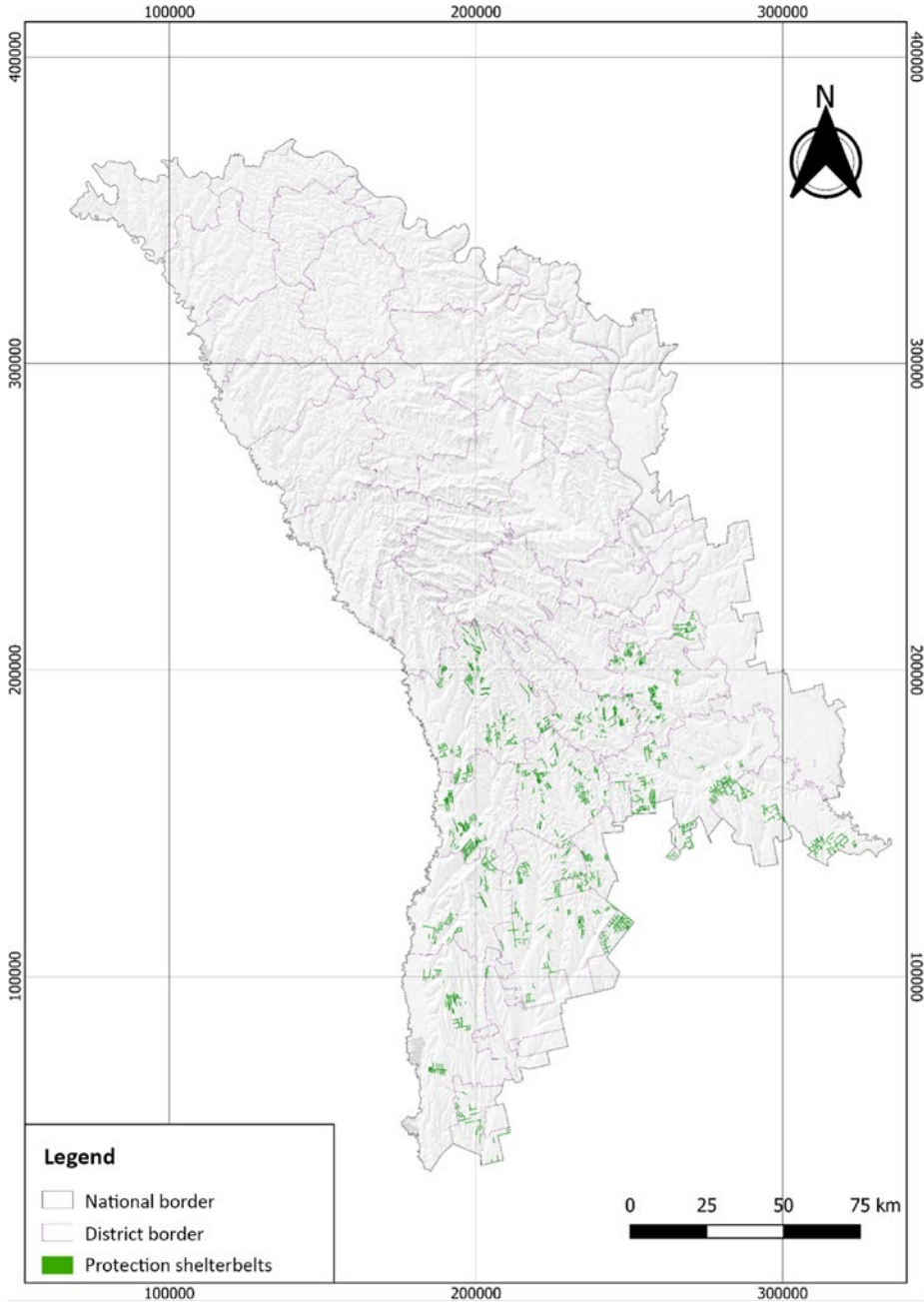


Source: ICAS.

4.4.3. HCVF 4.3. Forests with critical impact on agricultural land and air quality

In this category, shelterbelts should be included. They cover an area of 30,300 ha (ALRC 2022) outside the NFG, but currently there is no cartographic information on their location, except in the central and southern part of the country (Figure 21).

Figure 21. Map of shelterbelts in central and southern Moldova



Source: ALRC.



4.5. HCVF 5. Forests essential for meeting basic needs of local communities

In Moldova, NTFPs, although important, are not essential for local communities and represent only 1% of their income. However, wood resources, especially firewood, are important. Households with modest incomes have to spend, on average, 22.6% of their income for this resource (Talpă et al. 2022). These needs have been identified in several

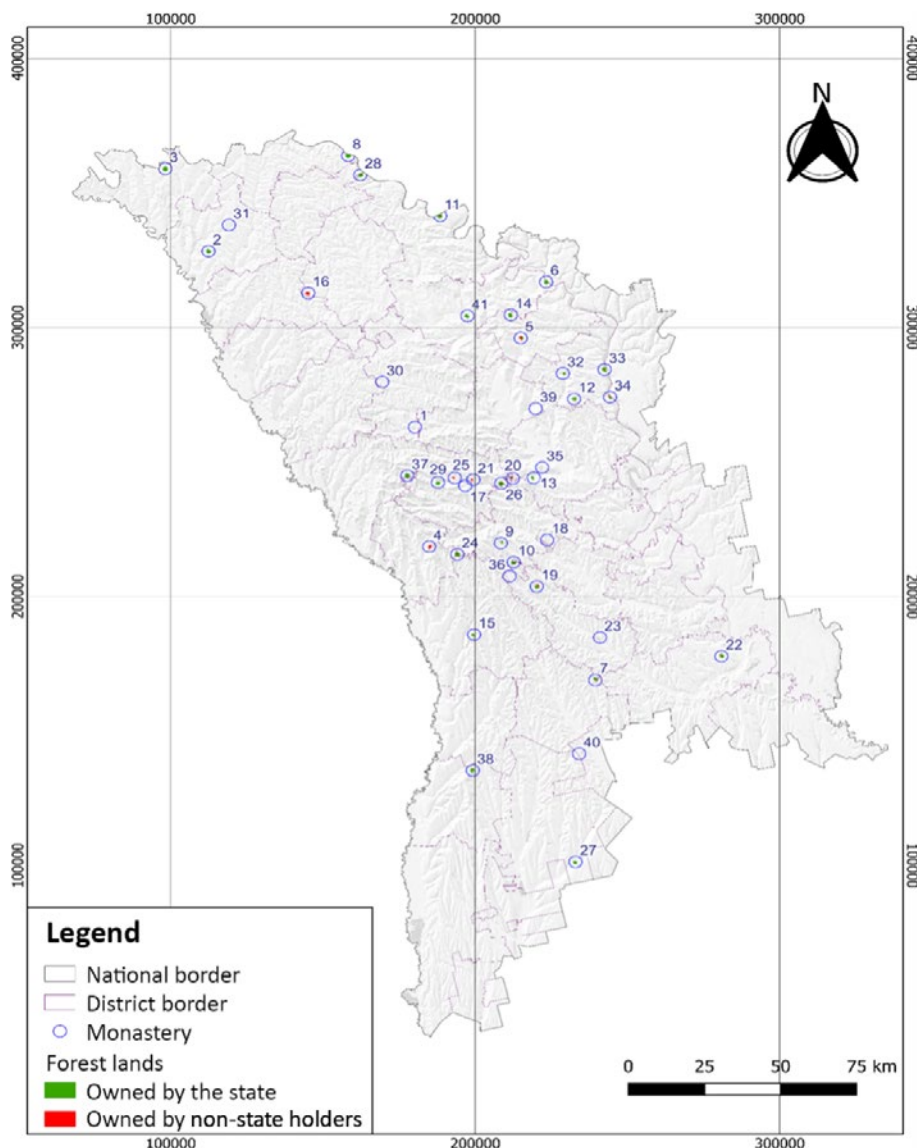
localities across different parts of the country and all of the country's forests meet a major social need. However, because of the relatively close proximity of forest bodies to one another and to human settlements, local communities do not seem to face major difficulties in obtaining wood from neighboring localities.

4.6. HCVF 6. Forests essential for preserving cultural identity of a community or area

Following the model specified in the HCVF identification guide for Bulgaria (ProForest 2016), forest areas within 500 m of religious sites were included in the HCVF 6 category. All known

monasteries in Moldova (see Table A3.4 in Annex 3) and the forests overlapping their area of activity were mapped (Figure 22).

Figure 22. Map of HCVF 6 forest lands



Source: authors' compilation based on GIS data.

4.7. Final evaluation of the HCVF: General management recommendations

All GIS layers with the forests in each HCVF category were merged into a common layer (Figure 23). The total HCVF area for state-owned forests is 166,517 ha while the total HCVF area of non-state

holders is 8,979.15 ha. Together, they represent 175,496.15 ha (Table 9). The general management recommendations for the identified HCVF are listed in Table 10.



Table 9. Resulted HCVFs by category and ownership

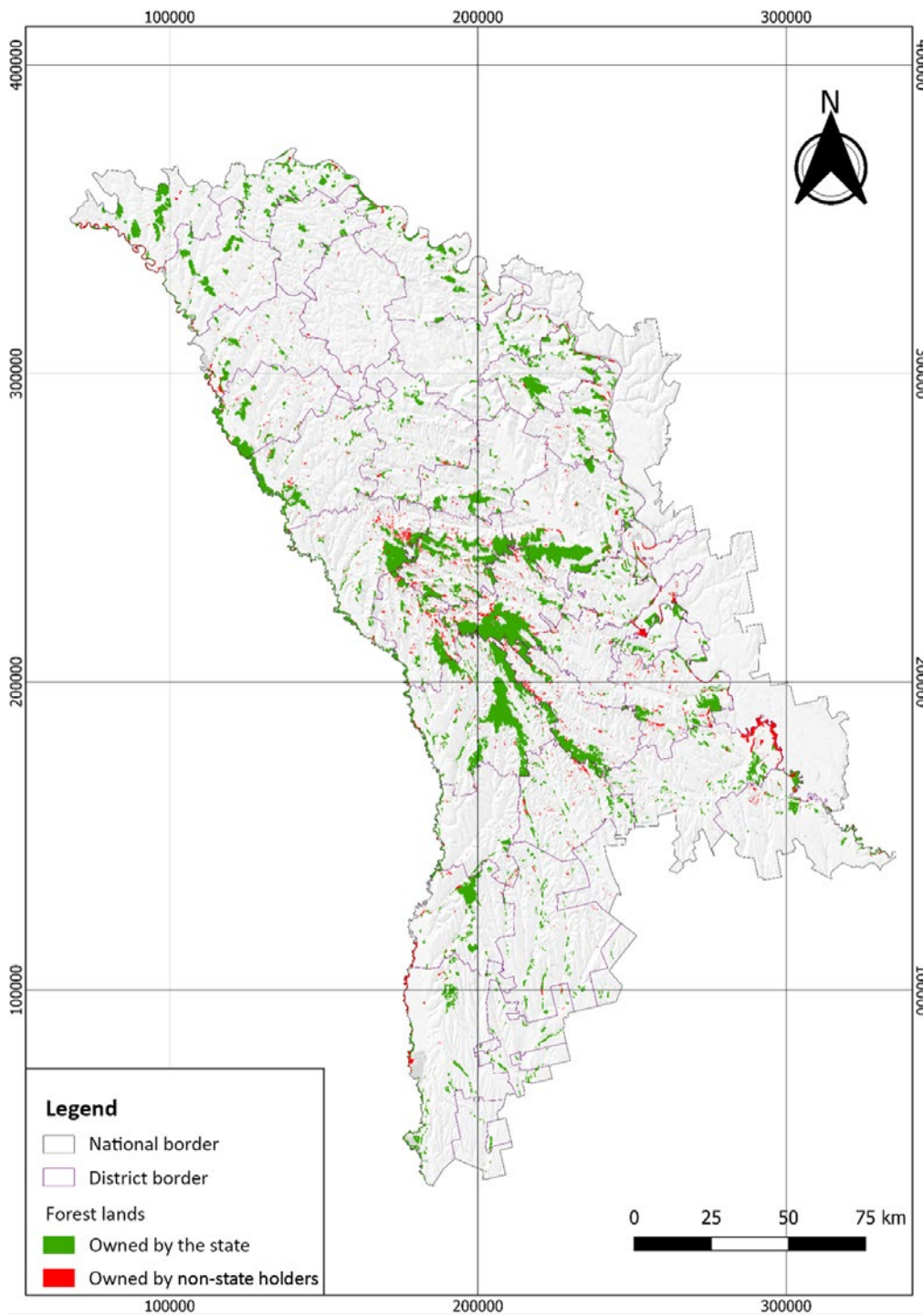
No.	HCVF	Areas covered by forests (ha)		
		Total	Non-state holders	State
1	HCVF 1.1	58,078.31	253.06	57,825.25
2	HCVF 1.2 + HCVF 1.3	95,218.42	75.52	95,142.90
3	HCVF 2	31,709.70	0.00	31,709.70
4	HCVF 3	86,596.83	59.34	86,537.49
5	HCVF 4.1	34,572.51	7,064.61	27,507.90
6	HCVF 4.2	9,544.03	1,927.37	7,616.66
7	HCVF 4.3	—	—	—
8	HCVF 5	—	—	—
9	HCVF 6	802.83	685.11	117.73
Total HCVF overlapped		175,496.15	8,979.15	166,517.00

Table 10. General management recommendations for HCVF categories

No.	HCVF	Management recommendations
1	HCVF 1.1	Management measures for HCVF 1.1 will be those set out in the PA management plans.
2	HCVF 1.2 + HCVF 1.3	The forestry works applied will correspond to the ecological requirements (in particular water and light) of the species to be preserved and will be established in consultation with biologists. In addition, they will ensure the continuity of the habitat in the area, either in the same stands or in neighboring stands. Logging will be carried out outside the growing season of the species concerned to ensure conditions for reproduction and perpetuation. Skidding shall be carried out with minimum soil damage to avoid destruction of roots and underground reproductive organs. Forest management must ensure quietness during critical periods within perimeters where particular concentrations of target species have been identified. Proposed management measures will also seek to create a succession of ages that will ensure both the continuity of forest vegetation and the maintenance of structures within forest bodies that will perform the assigned functions (on a case-by-case basis).
3	HCVF 2	Appropriate interventions are recommended in forests for this category to maintain their natural characteristics, mainly through promoting natural forest types.
4	HCVF 3	Progressive cutting is recommended in oak-type forests only during fruiting years (for the opening cut) and regeneration cutting (widening cut and final cut). In addition, before widening and final cut, all necessary work should be carried out to maintain oak trees in the future stand composition (for example, assisted regeneration and thinning).
5	HCVF 4	Special conservation work or treatments with a long regeneration period are recommended.
6	HCVF 6	Forest maintenance in areas identified as HCVF 6 is recommended. This will be ensured for forests located around places of worship by applying conservation works. In addition, treatments to promote natural regeneration are also recommended.

Source: Bećirović et al. 2019; GNES 2019; Stewart et al. 2008; Vlad et al. 2023.

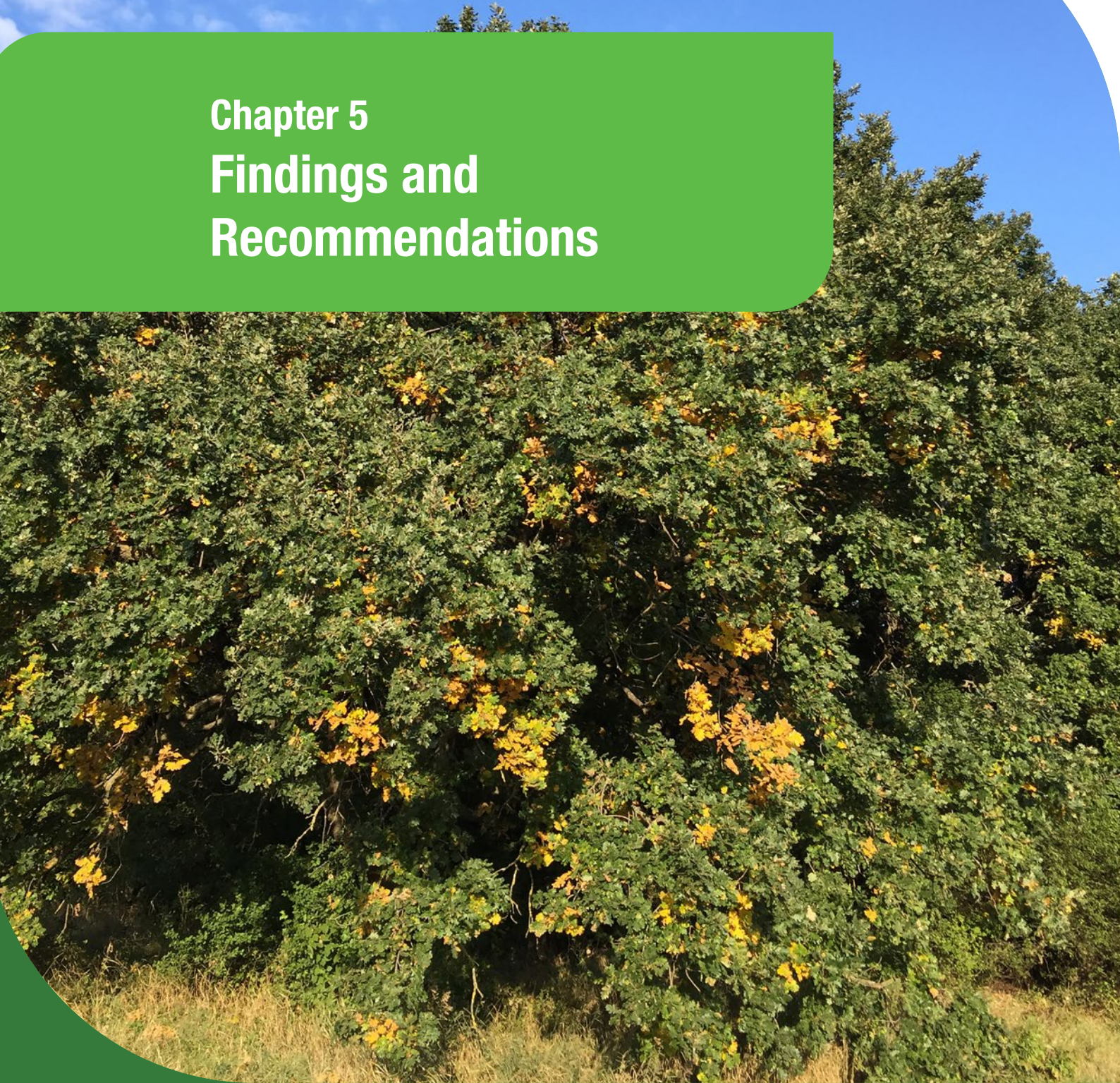
Figure 23. HCVF area distribution by type of ownership



Source: Original compilation for this publication based on MoE and ICAS data.

Chapter 5

Findings and Recommendations



Forest dominated by pedunculate oak (*Quercus robur*) in the southern steppe region of Moldova (HCVF category 3).
© Aurel Lozan and Nicolae Talpa Sr., seed reserve (genetic) site, Forest Unit Baimaclia.

5.1 Findings

This study aimed to identify Moldova's high conservation value forests (HCVFs) and evaluate the conservation status of the country's forest ecosystems based on their true significance – a forest management designation that has been applied in the country for the first time. Despite being categorized under the national legislation as Group I forests with primary protective functions, almost Moldova's forests are largely used for production purposes (supplying communities with basic livelihood needs, primarily fuelwood) and are unsustainably managed, prompting the authorities to reconsider the country's approach toward reconciling economic development with conservation.

This study's findings reveal that, according to the approach developed by FSC, Moldova has significant forested areas that have the potential to be HCVFs. Considering overlaps, they are estimated at approximately 175,000 ha (or 47.3% of the existing forest area). Based on many sources of descriptive and spatial datasets on forests in Moldova, with additional analysis based on GIS techniques, the study evaluated the potential of the country's forests to provide multiple benefits (from biodiversity conservation, to economic and climate benefits, as well as hydrological, and erosion control).

Based on comprehensive country-wide consultations with all key stakeholders, this study developed first ever "Practical Guide for HCVF Identification in the Republic of Moldova" informed by the experience of the countries in a similar geographic region.

This attests to the significant environmental, social, and cultural importance of forests in the national context.

This study's findings aim to inform the ongoing reevaluation of PAs in Moldova and include the following:

- HCVF category 1.1, mapped by analyzing the overlap between PAs and forests, has a potential extent of nearly 58,000 ha.
- HCVF category 1.2 and HCVF category 1.3, considered together in this study, are the most represented categories with a total area of more than 95,000 ha; this area indicates a significant potential in terms of protecting species of conservation interest, but it should be noted that ***only the field validation of the presence of HCV, with the application of the precautionary principle, should determine the application of restrictions in terms of management of these forests.***
- In the absence of forest landscapes with high integrity, those of medium integrity are important and it is recommended to include them in the HCVF category 2 –an area of about 3,400 ha which, currently, does not have a special protection/monitoring status.
- Mapping HCVF category 3 forests on the basis of FMP information on forest composition alone revealed an area of about 86,000 ha; however, it is believed that a large part of this area does not necessarily represent rare, threatened, or endangered ecosystems, and, therefore, requires further validation of the generated cartographic data before a different management system can be adopted.
- Forests providing critical environmental services are represented by forests with importance for water sources, for the prevention and control of soil erosion, and forests of critical impact on agricultural land. HCVF in these categories can cover an area of about 45,000 ha; however a lack of qualitative data on shelterbelts precluded their inclusion in the study.



Identification of High Conservation Value Forests in the Republic of Moldova

- Initially, more than 800 ha of forests can be considered as significant in terms of their proximity to important religious sites. Consideration and inclusion of other forest

areas in this category given their historical and cultural link to the people of Moldova can be a subject of further studies.

5.2 Recommendations

Based on extensive identification and mapping of Moldova's potential HCVPs, this study suggests the following recommendations:

- Further refine the "Practical Guide for HCVP Identification in the Republic of Moldova" (Annex 1) through a participatory process, and adapt the HCVP identification criteria to the country's environmental and socioeconomic context.
- Foster further research in the field and improve the accuracy of identified areas and make the data, especially those managed in GIS, which inform this report, publicly available.
- This study did not include field validation of the mapped HCVP areas which require further field validation before any management systems are implemented and a legal protection or special management status is formally attributed to these areas.
- Identification of potential HCVPs can serve a starting point to inform future biodiversity conservation planning efforts such as strategic documents on biodiversity conservation as required by the Convention on Biological Diversity (CBD) ratified by Moldova.
- This study's findings inform the proposed amendment of Law 1538/1998 on PAs in the Moldova by providing cartographic data and prerequisites for an accurate identification of biodiversity values requiring protective measures.
- The study's recommendations with respect to resource management are indicative and are based on relevant literature on environmental conditions of Moldova's forests; recommendations should be developed at

the national level to capture specificity of the identification process.

- This study has identified an area of about 3,400 ha of medium integrity forests which, as of the publication date of this report, have no protection/monitoring status therefore monitoring and, if necessary, implementation of appropriate management measures to ensure their continuity are recommended.
- HCVP 3 could form the basis of a network of biodiversity/conservation zones of rare ecosystems specific to Moldova, that is, those that still retain a natural character based on the presence of beech and oak species.
- Moldova's specific geomorphological features require continuous monitoring of the risks of flooding and torrential rainfall. Based on this study and further field validation, identifying forests that can help mitigate the effects of these natural hazards along with their appropriate management is recommended; this also applies to forests that are critical for preventing and combating soil erosion.
- Although in many respects agricultural shelterbelts do not fall into the category of forests, these areas are highly important for the country's agriculture and other sectors; however, due to limited data on mapping of these areas, continued efforts to inventory these areas and to implement a management system that allows them to perform their role are recommended.

Forests play an important role in the history and culture of Moldova's people, continued efforts to inventory these forests and to establish appropriate

measures for their management to optimize their sociocultural functions are recommended.

Overall, the HCVF identification seeks to provide additional safeguards to ensure that forests containing exceptional or critical values are not (or will not be) degraded or adversely affected by their management. The designation of sectors/areas as HCVF does not automatically preclude management operations such as wood harvesting (which is sometimes the main source of energy for rural population) but rather adjusts/coordinates planning and implementation of socioeconomic activities.

This study's findings and recommendations can be readily adopted by various user groups, according to the way they access forest resources:

- Forest managers (especially Moldsilva, some ATUs), in aligning forest management plans (FMPs) with the identified HCVF within their range to ensure an appropriate planning of relevant activities (for example, promotion of native species, conservation of certain resting areas, and preservation of old seed stands).
- Landscape planners, in establishing priorities for land users to design conservation measures and promote sustainable use of land (for example, adjustment of urban plans, hydrographic approach, and rationalization of infrastructure and construction projects).
- Beneficiaries of forestry services including HCVFs, in considering various potential risks associated with income generation, prompting precautionary measures under applicable law (for example, operators of tourist companies or businesses dealing with harvesting wood/non-wood products, including hunting activities).
- Finally, the HCVF identification needs to be complemented by updated national HCVF standards, which would open more opportunities to attract donors or investors in the development of Moldova's forestry sector based on the principles of supporting healthy and biologically/ecologically diverse forests.



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Annex 1. Practical Guide for HCVF Identification in the Republic of Moldova

HCVF 1. Concentrations of biological diversity including endemic species and rare, threatened, or endangered species that are significant at global, regional, or national levels

The HCVF 1 category includes forest areas characterized by high biological diversity (including areas with high concentrations of species with a special status - threatened or endangered species) or by the presence of unusual combinations of ecological or taxonomic groups and exceptional seasonal concentrations. There are many forests that contain rare species but are not HCVF 1 because there is no significant concentration at global, regional, or national levels.

HCVF 1.1. Forests in protected areas

PAs are an essential component of biodiversity conservation.

Definition: Forests in scientific reserves, nature reserves, areas declared monuments of nature, and integral protection areas or strict protection areas in protected natural areas according to Law 1538/1998.

Threshold: Presence of forests in PAs in the above categories, provided that their main objective is the conservation of biodiversity.

Identification: List of PAs in Moldova and FMPs.

Establishment: HCVF 1.1 can be established in all forests in the NFG, subject to assessment included

in the above categories.

Preliminary evaluation: As a first step in the preliminary evaluation, it is important to check the overlapping of forests with protection function, with areas of integral protection within NPs, scientific reserves, nature reserves, and monuments of nature - representative sectors with forest vegetation. In addition, forests areas owned by holders other than the state should be checked for their appropriateness to be included in a PA.

Full evaluation: The preliminary evaluation provides sufficient details of all PAs that are considered as HCVF 1.1.

HCVF 1.2. Forests hosting rare, threatened, or endangered species

For the inclusion of forests in this HCVF category, priority attention will be given to sites already recognized as hosting significant concentrations of rare, threatened, or endangered species and within these, to habitats critical for sustaining these concentrations (breeding, shelter, feeding, roosting, and migration/connectivity areas).

Definition: Forests providing habitats for rare, threatened, or endangered plant species.

Threshold: The presence of a habitat of national or international interest that supports significant concentrations of rare, threatened, or endangered plant species and the location of this habitat in a scientifically designated site recognized as

supporting nationally or regionally significant concentrations must be considered cumulatively.

Identification: The following sources will be used to identify forests hosting critical concentrations of plant species: PA designation documents; scientific papers in the field; and consultations with research and education institutions, NGOs, and so on.

Establishment: HCVF 1.2 represents all forests constituting habitats of national or international interest within scientifically designated sites recognized as hosting significant concentrations of nationally or regionally rare, threatened, or endangered plant species.

Preliminary evaluation: Verification of the distribution of PAs or existence of other relevant existing documentation.

Full evaluation: If a forest is considered as a potential HCVF 1.2, then a full evaluation will be required to confirm whether significant concentrations of rare, threatened, or endangered plant species do indeed occur in the forests concerned.

HCVF 1.3. Forests with critical seasonal use

This subcategory was created to ensure the maintenance of significant concentrations of species that, at least occasionally or at certain times or stages in their lives, use the forest as a host ecosystem. At such times, these species seasonally concentrate in/use certain forests which represent, at that time, an indispensable habitat for their existence and perpetuation. The term 'critical seasonal use' is used here precisely to underline the importance of these sites for the existence of the species and for these concentrations, but especially their importance at certain periods

or life stages. This includes critical breeding sites, roosting/breeding sites, and migration/connectivity/passage sites.

Species that, at least in certain periods of their existence, depend on the forest ecosystem are considered. This is the case of species that, in the course of their life, need various habitats (for example, forest areas, karst, hollows, cliffs, peat bogs, streams, and water courses) but which concentrate in forests at certain critical periods for their existence (that is, so there is a critical seasonal use).

Definition: Forests that provide shelter for species found in critical concentrations at certain critical times of their existence.

Threshold: The presence of a habitat of national or international interest that supports a high concentration of animal species during a critical period of its existence and the location of this habitat in a scientifically designated site recognized as supporting nationally or regionally significant concentrations. PAs of national interest or other relevant studies must be considered cumulatively.

Identification: The following sources will be used to identify forests hosting critical concentrations of animal species: PA designation documents, scientific papers in the field, FMPs, consultations with research and educational institutions, NGOs, and so on.

Establishment: All forests that constitute habitats of national or international interest within scientifically designated sites recognized as hosting nationally or regionally significant concentrations and containing animals that are found in critical concentrations at certain times (that is, critical periods) of their existence will be established as HCVF 1.3.



Preliminary evaluation: Preliminary evaluation includes studying existing maps or other sources of information that help delineate areas that contain or may contain seasonally significant concentrations of animal species.

Full evaluation: A full evaluation shall be carried out if forest areas have been identified as potentially containing critical seasonal concentrations according to the data from the primary assessment.

HCVF 2. Large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional, or national levels and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance

This category of HCVF aims to identify those forests (a) that contain viable populations of most or even all species occurring in their natural form and (b) whose ecological processes (for example, natural disturbance regime, forest succession, species, and distribution and abundance) are completely or relatively unaffected by recent anthropogenic activities. As a result, these forests must be relatively large in area (to meet the first condition) and as little affected by recent human activities as possible, with outstanding structures in this respect at regional or national level (to meet the 'significant' condition). The purpose of the designation is not to remove humans from the forest but only to ensure a form of management that maintains the 'naturalness' of this ecosystem (not the intactness but the naturalness of the landscape).

Definition: Large, globally, regionally, or nationally significant forest landscapes that retain needed characteristics (that is, structures, compositions, and processes) of natural ecosystems, including viable populations of native species in their natural form in terms of distribution and density.

Threshold: The following must be considered cumulatively: (a) the presence of a forested landscape of more than 50,000 ha, of which at least 35,000 ha are forests; in addition, of the total forest area, a minimum of 5,000 ha are primary forest ecosystems and a maximum of 10 % are man-made forests; (b) presence of all/most species that can occur naturally in that ecosystem type and where abundance, distribution, and reproductive capacity are similar to natural patterns; and (c) good connectivity of species and habitats.

Identification: List of PAs, forest management plans, and results of specialized studies.

Establishment: All forests, including in the territory that meets conditions described in the definition as well as the threshold mentioned above, will be designated as HCVF 2.

Preliminary evaluation: The identification and designation of HCVF 2 is done at the national level through the involvement of relevant authorities and/or expert organizations. Thus the preliminary evaluation only aims at confirming the overlap of some forests with the existing HCVF 2 landscape. If such overlap is confirmed, the areas concerned are designated as HCVF 2 without the need for a full evaluation.

Full evaluation: This is required only if the presence of a given HCVF 2 landscape is not already confirmed.

HCVF 3. Rare, threatened, or endangered ecosystems, habitats, or refugia

Some ecosystems are widespread while others are rare (either due to natural conditions or anthropogenic pressure). The conservation of biodiversity requires continuous perpetuation of all ecosystems (that is, both widespread

and rare) over a sufficiently large area. In most cases, only part of the area is included in existing PAs that aim to conserve biodiversity (that is, where the perpetuation of these ecosystems is ensured). Therefore, it is necessary to manage these ecosystems rationally outside the network of PAs to cover the necessary surface area and especially their entire range. The conservation of rare ecosystems is a high priority, given their fragility and high risk of extinction. Natural forest ecosystems that are characteristic of a region, but are not rare or endangered, are not subject to this category of HCVF.

Definition: Forest areas hosting rare, threatened, or endangered ecosystems (that is, these forest areas are either located in rare, threatened, or endangered ecosystems or contain rare, threatened, or endangered ecosystems).

Threshold: The presence of an ecosystem that is dominated by nationally important species (pedunculate oak, sessile oak, beech, greyish oak, and downy oak) in a favorable state of conservation.

Identification: This is done according to the recommendations for the preliminary and full evaluation of this category.

Establishment: HCVF 3 may cover either the whole forest or only parts of it (that is, only certain management units within it) so that through management measures the conservation status of the ecosystems concerned can be maintained or improved without significant loss in extent and quality (that is, possible necessary buffer zones will also be included as HCVF).

Preliminary evaluation: This stage aims to signal (or even confirm where possible) the presence of ecosystems that are dominated by nationally important species (pedunculate oak, sessile oak, beech, greyish oak, and downy oak).

Full evaluation: This step is only necessary for cases where the presence of important ecosystems could not be confirmed on the basis of the sources consulted in the office, and their field assessment is necessary.

HCVF 4. Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes

All forests are important either for their products or for the services they provide to society. In some cases, however, environmental services to neighboring human communities or investment works are critical. These services must therefore be maintained at all times through appropriate management. This attribute (that is, the service provided) can be considered as HCV if its loss has a serious or irreversible impact on the environment or human well-being (for example, serious damage to local communities, important infrastructure works, and soil resources).

HCVF 4.1. Forests of particular importance for water sources

All forests to some extent affect the hydrological regime of the catchments in which they occur. They play an important role in preventing floods, controlling run-off flows, and ensuring water quality. This does not mean that all forests in a river basin have an HCV but only those that are of critical importance in preventing extreme events (floods, torrential floods, and degradation of drinking water sources). The greater the danger of such events is, the greater the importance of the forest in question and the higher its conservation value.

Definition: Forests in NFG that are located in areas of natural hydrological risk are considered as HCVF 4.1.



Threshold: Forests located in areas of natural hydrological risk.

Identification: FMPs, forest planning maps, hydrographic maps, and official sources on flood disaster records.

Establishment: All forests that meet the threshold conditions mentioned for this category constitute HCVF 4.1.

Preliminary evaluation: Most areas can be identified based on the assessment of existing data, in particular in FMPs. By checking the functional subgroup 1 - forests with special water protection functions, stands representing HCVF 4.1 can be located on the forest map.

Full evaluation: This step is only necessary in cases where the presence of HCVF 4.1 has been reported but is still uncertain (that is, the fulfilment of threshold conditions is in doubt or the areas are not yet precisely located on maps). In such cases, further assessments (including field assessments) are necessary to clarify the situation (that is, to confirm or deny the presence of HCV 4.1 and to determine the exact areas concerned).

HCVF 4.2. Forests critical for preventing and combating erosion

Forests ensure land stability and soil protection by combating and preventing erosion and landslides.

Definition: HCVF 4.2 includes forests that are particularly vulnerable to erosion, landslides, or sedimentation, where soil resources, the health and livelihoods of local communities, important infrastructure, or other HCVs may be fundamentally affected.

Threshold: The condition and situations should

be considered cumulatively. The condition is that forests located on deep eroding land and on steep slopes should be considered. By situation, there is a threat with serious effects on the health and well-being of local communities, soil resources, other categories of HCV or on the functioning of important infrastructure (roads, dams, buildings, and so on).

Identification: Forest management documents (including maps), geological or soil survey maps, and surveys with information on the presence of quicksand, erosion phenomena, and landslides.

Establishment: All forests that meet the threshold conditions mentioned for this category constitute HCVF 4.2. Particularly useful for the preliminary evaluation are areas classified under functional category 1.2A.

Preliminary evaluation: Most areas can be identified based on the assessment of existing data, in particular from FMPs. By checking the functional categories, it is possible to locate the stands representing HCVF 4.2 on the forestry map.

Full evaluation: This step is only necessary in cases where the presence of HCVF 4.2 has been reported but is still uncertain (that is, if the fulfilment of the threshold conditions is in doubt or if the areas are not yet precisely located on the maps). In such situations, additional assessments (including field assessments) are needed to clarify the situation (that is, to confirm or deny the presence of HCVF 4.2 and to determine the exact areas concerned).

HCVF 4.3. Forests with critical impact on agricultural land and air quality

The impact of forests on maintaining agricultural production varies according to climate and topography, the configuration of agricultural and

forest land, and the nature of crops. In addition to maintaining the microclimate, forests play an important role in reducing the effects of pollution by purifying the air of dust, smoke, and other pollutants; increasing the amount of oxygen; and mitigating climatic extremes.

Definition: The following forests in the NFG under assessment constitute HCVF 4.3: (a) forest shelterbelts around agricultural land in areas with phenomena negatively influencing agricultural production and (b) forests that provide protection against air or soil pollution.

Threshold: Category a - presence of forests in areas with phenomena that negatively influence agricultural production (strong winds, drought, and shifting sands). Category b - presence of such forests in areas with air and/or soil pollution phenomena located near settlements.

Identification: Forest management planning documents (including maps), climate maps and studies with information on the presence of phenomena negatively influencing agricultural production (high winds, drought, quicksand, and so on) or positively influencing the impact of pollution/dust on urban areas, and maps and studies on air and/or soil pollution.

Establishment: All forests that meet the threshold conditions mentioned for this category constitute HCVF 4.3.

Preliminary evaluation: Preliminary evaluation includes the study of existing maps or other sources of information that can help delineate forests that meet the threshold conditions mentioned for this category.

Full evaluation: This step is only necessary in cases where the presence of HCVF 4.3 has been

reported but is still uncertain (that is, the fulfilment of the threshold conditions is in doubt or if the areas are not yet precisely located on the maps). In such cases, further assessments (including field assessments) are necessary to clarify the situation (that is, to confirm or deny the presence of HCVF 4.3 and to determine the exact areas concerned).

HCVF 5. Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, and so on)

Forests that provide basic livelihoods/products (if there are no feasible alternatives and if loss or damage would cause serious loss to local communities) to community members are included in HCVF 5. In Moldova, these products are generally firewood and wood for various construction or craft products. Forests become essential when the communities concerned have no other alternatives for obtaining those products (for example, communities are isolated at least at certain times of the year) or existing alternatives are not economically (financially) feasible. This category will not include forests that provide resources that are useful but not fundamental to local communities or could easily be obtained elsewhere or could be replaced in a feasible way (for example, a forest from which firewood is extracted for a community that also benefits from other sources of heating). Also, a forest cannot be designated as HCVF 5 if the exploitation of the resource is not sustainable, even if the activities are traditional and the communities concerned are dependent on the resource. Excessive logging leads to the exclusion of the forest from this category, and any illegal practice should not be encouraged, even if it helps to meet the basic needs of a community.

Definition: Forests that meet the basic needs of local communities: (a) energy for heating homes



and cooking, (b) material for various constructions, and (c) raw material for the production of products that provide necessary income for the subsistence of the population.

Threshold: HCVF 5 is established when it is not feasible to obtain resources from other locations for the mentioned situations.

Identification: Consultation with forest owners and managers, including documents held by them (FMPs, land use maps, statements on the value of wood from the population, and so on).

Establishment: The body or bodies of forest, on which the respective local community is dependent for the provision of basic needs, constitute HCVF 5.

Preliminary evaluation: Most of the areas constituting HCVF 5 can be identified at the preliminary evaluation stage based on consultations with the most important stakeholders. Based on discussions and documents (that is, FMPs, land use maps, and timber harvesting situations and the existence of alternative sources, material situation, and so on), it is possible to identify forest areas that can be designated as HCVF 5.

Full evaluation: This step is only necessary in cases where (a) the presence of HCVF 5 has been reported based on the above discussions and sources but is still uncertain (that is, difficult to assess whether there really are no alternatives or whether the existing alternatives are not economically feasible) and (b) the presence is certain, but in the preliminary evaluation stage, the extent of the area of HCVF 5 could not be established (the boundaries could not be finalized). In both cases, field analyses are required to clarify the situation (that is, to confirm or deny the presence of HCVF 5 and/or to delimit HCVF 5).

HCVF 6. Sites, resources, habitats, and landscapes of global or national cultural, archaeological, or historical significance, and/or of critical cultural, ecological, economic, or religious/sacred importance for the traditional cultures of local communities

Forests can be of critical importance to society and communities in terms of their cultural identity. Therefore, a forest may be designated as HCVF if it contains or provides nationally significant cultural values or values that are essential to the local community. This value is designated to protect the culture and traditions of local communities.

Definition: Forests with values essential for the preservation of the cultural identity of a community or area. Such forests are (a) those associated with local customs and celebrations traditionally held in the forest area; (b) symbolic forests evoked in literary works or legends; (c) those in the vicinity of historical monuments or religious communities declared as historical and/or cultural monuments.

Threshold: (a) There are historically important celebrations and customs taking place in the area of the forest under assessment, which are essential events for the local cultural identity; (b) the forest under assessment (identified by legislation or literary works) has a clear cultural value (local or national), which has been transmitted through legends or literary works; (c) there are historical monuments or places of worship and pilgrimage in the area of the forest under assessment or in its immediate vicinity.

Identification: It is done according to the recommendations on the preliminary and full evaluation of this category.

Establishment: Territory requiring a complex of management measures to ensure the preservation

of values essential for maintaining the cultural identity of local communities.

Preliminary evaluation: Most of the areas constituting HCVF 6 can be identified already at the preliminary evaluation stage based on consultation of existing information sources and specialists such as ethnographers, sociologists, and historians.

Full evaluation: This stage is only necessary in cases where the presence of HCVF 6 has been

reported during the preliminary evaluation stage on the basis of abovementioned discussions and sources, but the exact location in the field is still uncertain (that is, the location and boundaries of the HCVF 6 area in question could not be established). In such cases, it is necessary to go to the field to clarify the situation (that is, to confirm the location in the field and the boundaries).



Annex 2. Stakeholders Consulted in Developing the Practical Guide for HCVF Identification in the Republic of Moldova

Institution	Objectives
Common objectives (to be pursued in all meetings): 1. Presentation of the designation of HCVFs approach and methodology 2. Invitation for comments and suggestions on the guidelines for the designation of HCVFs	
MoE	Achieving synergy with other public authority approaches. Discuss criteria for HCVF 4.2 Forests critical for preventing and combating erosion. Discuss criteria for HCVF 4.3 Forests with critical impact on agricultural land and air quality.
Moldsilva	Collect proposals nominating members of the working group for the identification of HCV and HCVF. Discuss criteria for HCVF 5 Forests essential for meeting basic community needs.
ICAS	Discuss criteria for HCVF 1, HCVF 2, and HCVF 3 (discuss Annex 3. HCVF 3 Rare, threatened, or endangered ecosystems). Collect proposals nominating members of the working group for the identification of HCV and HCVF. Advanced discussions on databases and information sources.
Botanical Garden (Institute) 'Alexandru Ciubotaru'	Discuss criteria for HCVF 1.2.
State University of Moldova	Discuss criteria for HCVF 1.2. Discuss criteria for HCVF 1.3.
NGOs: Biotica Ecological Society Ecological Movement of Moldova EcoContact Association for Birds and Nature Protection	Collect information and proposals to improve the Practical Guide for HCVF Identification in the Republic of Moldova.

Annex 3. Detailed Information on Forest Cover Areas Included in HCVF categories

Table A3.1. Forest classification in HCVF 1.1

No.	Name	Surface, according to Law 1538/1998 (ha)	Surface, according to revalidation (ha)	Total	Surface, according to the study (ha)			Comments
					Forest owned by the State	Forest owned by other holders	Total forest	
1	2	3	4	5	6	7		8
National Parks								
1	Orhei Zone A	992.4	—	1,058.8	977.06	-	977.06	Area according to forest management = 1,058.8 ha
2	Zone B1	1,495.8	—	1,635.7	1,624.9	-	1,624.90	Area according to forest management = 1,635.7 ha
3	Lower Nistru Zone A	2,095.6	—	2,095.6	1,038.34	0	1,038.34	Only the area in Zone A—the integral protection zone—has been included in HCVF 1.1
Total NPs		4,583.8	—	4,790.1	3,640.3	-	3,640.30	
1	Codrii	5,642.0	5,170.58	5,172.26	5,089.21	-	5,089.21	
2	Pădurea Domnească	6,032.0	5,920.68	5,907.05	5,304.08	-	5,304.08	
3	Plaiul Fagului	5,642.0	5,615.53	5,573.7	5,516.65	-	5,516.65	
4	Prutul de Jos	1,691.0	2,224.0	2,224.0	392.26	-	392.26	
5	Iagorlâc	—	—	—	—	—	—	Located in Transnistria
Total scientific reserves		19,007	18,930.79	18,877.01	16,302.2	-	16,302.2	
Nature reserves								
a) Forest								
1	Voinova (Cobusca)	27.0	104.04	27.54	26.04	-	26.04	Another woodland body has been included in the revalidation which does not contain management units containing oak trees. The forest body referred to Law 1538/1998 was included in the study
2	Rosoşeni	149.0	520.45	514.13	511.04	-	511.04	
3	Baurci	93.1	162.72	159.79	154.48	-	154.48	

No.	Name	Surface, according to Law 1538/1998 (ha)	Surface, according to revalidation (ha)	Total	Surface, according to the study (ha)			Comments
					Forest owned by the State	Forest owned by other holders	Total forest	
4	Sitişchi	—	—	—	—	—	—	Located in Transnistria
5	Vadul	—	—	—	—	—	—	Located in Transnistria
6	Colohur (Călugăr)	—	—	—	—	—	—	Located in Transnistria
7	Ciobalaccia	13.4	13.45	12.89	12.89	0	12.89	
8	Moleşti-Răzeni	250.7	356.68	355.59	347.38	0	347.38	
9	Sadova	229.0	227.75	228.27	224.38	0	224.38	
10	Boguş	89.0	88.09	89.14	89.14	0	89.14	
11	Leordoia	158.0	148.98	158.49	158.00	0	158.00	
12	Scăfăreni	97.0	93.88	94.57	93.36	0	93.36	
13	Voinova	192.0	181.92	182.01	182.01	0	182.01	
14	Misilindra	1.7	1.44	1.46	1.46	0	1.46	
15	Hârtopul Moisei	101.0	106.01	108.85	108.85	0	108.85	
16	Liceul Bolgrad	54.0	54.25	55.58	55.58	0	55.58	
17	Dubăsari	93.0	108.15	105.84	93.41	0	93.41	
18	Zoloceni	69.0	72.30	72.19	68.75	0	68.75	
19	Pădurea Băxani	45.0	55.44	55.29	52.50	0	52.50	
20	Dancu	131.0	47.62	47.62	43.01	0	43.01	
21	Nemţeni	20.9	16.69	16.43	16.43	0	16.43	
22	Sărata Galbenă	220.0	204.97	204.97	204.74	0	204.74	
23	Vila Caracui	84.0	80.45	80.43	79.53	0	79.53	
24	Sărata-Răzeşi	27.0	32.79	32.79	30.29	0	30.29	
25	Pogăneşti	203.0	20.26	20.32	20.32	0	20.32	
26	Moleşti	—	—	—	—	—	—	According to revalidation - it is excluded
27	Lowland forest standard sector (Scoreni-Condriţa)	110.2	111.16	147.96	145.38	0	145.38	
28	Ostianova	211.2	211.20	269.88	261.76	0	261.76	
29	Selişte-Leu	315.0	258.01	257.87	256.74	0	256.74	
30	Cabac	24.7	80.39	80.50	80.50	0	80.50	
31	Zberoaia-Lunca	147.9	176.65	176.85	138.30	0	138.30	
32	Ocnîţa	103.0	99.79	99.92	97.55	0	97.55	
33	Mestecăniş	—	—	—	—	—	—	According to revalidation - it is excluded
34	Climăuţi	70.0	70.48	69.50	69.5	0	69.50	
35	Cobâleni	33.5	39.76	42.69	42.69	0	42.69	
36	Vâşcăuţi	24.0	19.82	23.98	23.98	0	23.98	

No.	Name	Surface, according to Law 1538/1998 (ha)	Surface, according to revalidation (ha)	Total	Surface, according to the study (ha)			Comments
					Forest owned by the State	Forest owned by other holders	Total forest	
37	Erjova	—	—	—	—	—	—	Located in Transnistria
38	Sîlnca	55.0	38.23	37.87	33.46	22.78	56.24	
39	Pociumbeni	—	—	—	—	—	—	According to revalidation - it is excluded
40	Lucăceni	49.6	83.67	82.24	81.97	0	81.97	
41	Şaptebani	17.0	16.67	16.67	16.67	0	16.67	
42	Copanca	167.0	92.96	95.34	95.34	0	95.34	
43	Leuntea	30.1	31.85	34.57	34.57	0	34.57	
44	Condriţa	61.0	61.17	62.46	62.46	0	62.46	
45	Roşcani	134.0	136.83	139.63	139.63	0	139.63	
46	Hligeni	70.0	191.53	190.84	190.84	0	190.84	
47	Olăneşti	108.0	108.07	108.88	108.88	0	108.88	
48	Ghiliceni	38.0	34.66	39.48	39.48	0	39.48	
49	Teleneşti	111.0	77.62	73.79	73.79	0	73.79	
50	Vadul lui Isac	68.0	65.49	67.43	67.29	0	67.29	
51	Flămânda	71.0	80.12	71.16	71.16	0	71.16	
	Total	4,367.0	4,784.46	4,813.70	4,705.53	22.78	4,728.31	
b) Medicinal plants								
1	Rosoşeni	—	—	—	—	—	—	According to the revalidation - merged with Rosoşeni Nature Reserve and excluded from the list of protected areas
2	Cahul	343.0	333.24	330.65	322.51	0	322.51	According to the revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
3	Hruşca	—	—	—	—	—	—	Located in Transnistria
4	Bugeac	—	—	—	—	—	—	According to revalidation - moved to Steppes and merged with Steppe
5	Cernoleuca	334.0	342.79	342.52	340.87	0	340.87	According to revalidation - moved to category Nature Reserves (IUCN IV): Forest
6	Logăneşti	710.0	724.29	724.30	724.05	0	724.05	According to revalidation - moved to category Nature Reserves (IUCN IV): Forest
7	Sărata Galbenă	—	—	—	—	—	—	According to revalidation - merged with Nature Reserves: Forest
8	Selişte Leu	—	—	—	—	—	—	According to revalidation - merged with Nature Reserves: Forest
9	Rădoaia	73.0	72.66	72.54	72.54	0	72.54	According to revalidation - moved to Nature Reserves (IUCN IV): Forest
	Total	1,460.0	1,472.98	1,470.01	1,459.97	0	1,459.97	

No.	Name	Surface, according to Law 1538/1998 (ha)	Surface, according to revalidation (ha)	Total	Surface, according to the study (ha)			Comments
					Forest owned by the State	Forest owned by other holders	Total forest	
1	Cantemir	132	87.47	87.47	0	0	0	According to revalidation - moved to Nature Reserve category (IUCN IV): Lowland
2	Lebăda Albă (Aquatic ecosystem Lebăda Albă)	30	78.42	78.42	0	0	0	According to revalidation - moved to Nature Reserve category (IUCN IV): Lowland
3	Swamp 'Togai'	50	51.16	51.16	0	0	0	According to revalidation - moved to Nature Reserves (IUCN IV): Fores
	Total	213	217.05	217.05	0	0	0	
	Total nature reserves	5,827.0	6,257.44	6,283.71	6,165.5	22.78	6,188.28	
Landscape reserves								
1	Forest Hârbovăț	2,218.0	2,267.99	2,261.69	2,132.82	0	2,132.82	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
2	Telița	124.0	131.32	126.62	121.54	0	121.54	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
3	Tețcani	164.0	171.94	170.64	115.25	0	115.25	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
4	The geological and paleontological complex of the Lopatnic river basin	—	—	—	—	—	—	According to revalidation - moved to category Natural Monuments: A) Geological and Palaeontological
5	Bugornea	—	—	—	—	—	—	Located in Transnistria
6	Valea Adâncă	—	—	—	—	—	—	Located in Transnistria
7	Glubocaia Dolina	—	—	—	—	—	—	Located in Transnistria
8	Floodplain near	93.6	94.60	94.60	0	0	0	According to revalidation - moved to the category Nature Reserves: Lowland
9	Antonești	307.0	494.96	494.79	492.98	0	492.98	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
10	Chioselia	2,519.0	2,955.53	3,224.35	3,113.32	0	3,113.32	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
11	Codrii Tigheci	607.0	606.76	630.73	628.45	0	628.45	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
12	Cărbuna	680.0	592.36	586.69	584.04	0	584.04	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
13	Țigănești	407.0	422.0	425.09	424.38	0	424.38	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape

No.	Name	Surface, according to Law 1538/1998 (ha)	Surface, according to revalidation (ha)	Total	Surface, according to the study (ha)			Comments
					Forest owned by the State	Forest owned by other holders	Total forest	
14	Căbăiești-Pârjolteni	1,213.0	1,220.57	1,223.59	1,209.56	0	1,209.56	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
15	Temeleuți	209.0	207.37	207.52	204.65	0	204.65	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
16	Ravines from Cimișlia	—	—	—	—	—	—	According to revalidation - moved to category Natural Monuments: A) Geological and Paleontological
17	Rudi-Arionești	916.0	591.44	585.25	569.93	0	569.93	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
18	Dry Valley Tomașlăc	—	—	—	—	—	—	Located in Transnistria
19	La Castel	596.0	629.04	642.28	559.77	0	559.77	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
20	Fetești	555.0	558.51	555.21	510.76	0	510.76	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
21	Zăbriceni	596.0	587.45	589.45	585.00	0	585.0	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
22	Izvoare-Risipeni	1,162.0	1,212.97	1,200.2	1,167.54	0	1,167.54	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
23	Forest from Hâncești	4,499.0	4,517.65	4,519.74	4,468.50	0	4,468.5	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
24	Cazimir Milești	500.0	564.35	566.69	558.65	0	558.65	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
25	Vila Nisporeni	3,499.0	3,601.17	3,601.52	3,392.85	0	3,392.85	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
26	Dolna	389.0	380.78	380.12	378.13	0	378.13	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
27	Călărășăuca	252.0	276.76	271.07	263.48	0	263.48	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
28	La 33 de Vaduri	184.0	264.86	244.43	222.36	0	222.36	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
29	Pohrebeni	1,049.0	1,038.84	1,043.92	1,023.41	0	1,023.41	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
30	Trebujeni	500.0	610.40	610.00	532.99	0	532.99	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
31	Saharna	674.0	668.24	647.07	587.13	0	587.13	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape

No.	Name	Surface, according to Law 1538/1998 (ha)	Surface, according to revalidation (ha)	Total	Surface, according to the study (ha)			Comments
					Forest owned by the State	Forest owned by other holders	Total forest	
32	Țâpova	306.0	410.29	421.66	152.44	173.31	325.75	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
33	Suta de Movile	1,072.0	1,224.48	1,215.39	651.23	56.62	707.85	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
34	Grădina Turcească	224.0	220.12	209.82	197.35	0	197.35	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
35	Cosăuți	585.0	680.60	666.35	603.1	0	603.1	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
36	Holoșnița	199.0	237.49	242.03	239.49	0	239.49	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
37	Căpriana-Scoreni	1,762.4	1,783.15	1,786.13	1,760.76	0	1,760.76	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
38	Climăuții de Jos	668.0	649.34	665.97	581.55	0	581.55	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
39	Dobrușa	2,634.0	2,722.80	2,713.78	2,698.67	0	2,698.67	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
40	Poiana Curătura	692.0	519.74	534.74	522.76	0	522.76	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
41	Valea Mare	373.0	383.21	387.26	364.43	0	364.43	According to revalidation - moved to Nature Reserve category (IUCN IV): Landscape
Total landscape reserves		32,428.0	33,499.08	33,746.39	31,619.27	229.93	31,849.20	
Monuments of Nature: C) Botanical a) Representative areas with forest vegetation								
1	Schinoasa Mare	15.0	17.07	15.88	15.88	0	15.88	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
2	Cărăcușeni	4.2	8.65	7.00	7.00	0	7.00	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
3	Cuhurești	13.0	7.92	9.81	9.81	0	9.81	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
4	Bălțata (Dumbrava Bălțata)	2.8	4.36	4.18	3.98	0	3.98	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
5	Hârjauca – Sipoteni (Hârjauca – Mindra)	5.4	17.78	17.41	17.41	0	17.41	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
6	Borceag (Borceac)	11.3	19.50	19.47	19.47	0	19.47	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest

No.	Name	Surface, according to Law 1538/1998 (ha)	Surface, according to revalidation (ha)	Total	Surface, according to the study (ha)			Comments
					Forest owned by the State	Forest owned by other holders	Total forest	
7	Cîietu	4.0	4.17	4.13	4.13	0	4.13	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
8	Pădurea de Plop (Plopișul de la Dubăsarii Vechi)	0.3	0.35	0.35	0	0.35	0.35	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
9	Pogoreloe (Secular oak Pogoreloe)	5.6	3.40	5.11	5.11	0	5.11	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
10	Rudi-Gavan	—	—	—	—	—	—	According to revalidation - merged with Landscape Reserve Rudi-Arionești
11	Călineștii Mici (Downy oak forest Călinești)	7.0	16.59	13.73	13.73	0	13.73	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
12	Lipnic (Spruce plantation Lipnic)	1.6	1.54	1.46	1.46	0	1.46	According to revalidation - moved to the category of Nature Reserves (IUCN IV): Forest
13	Haraba	—	—	—	—	—	—	Located in Transnistria
	Total monuments of nature	70.2	101.33	98.53	97.98	0.35	98.33	
	Total general				57,825.25	253.06	58,078.31	

Table A3.2. Forest classification in HCVF 1.2.

No.	Emerald site code	Emerald site name	Area according to standard form (ha)	Forest area		
				State (ha)	Non-state holders (ha)	Total (ha)
1	MD0000001	Lower Prut	1,721.0	261.26	0	261.26
2	MD0000002	Pădurea Domnească	6,113.0	2,895.81	0	2,895.81
3	MD0000003	Plaiul Fagului	5850.0	5,136.05	0	5,136.05
4	MD0000004	Codru	6498.0	5,045.66	0	5,045.66
5	MD0000005	Unguri-Holoșnița	11,180.0	1,651.02	0	1,651.02
6	MD0000006	Caracușeni	6,992.0	4,675.35	0	4,675.35
7	MD0000007	Codrii Orheiului	28,640.0	19,531.4	9.23	19,540.63
8	MD0000008	Bahmut-Hârjauca	13,260.0	5,356.96	41.23	5,398.19
9	MD0000009	Codrii Tigheci	6,466.0	2,348.76	0	2,348.76
10	MD0000010	Codrii Strășenilor	18,500.0	11,583.3	0	11,583.3
11	MD0000011	Middle Prut	32,630.0	5,575.14	0	5,575.14
12	MD0000012	Lower Prut Lakes	16,420.0	706.67	0	706.67
13	MD0000013	Lower Nistru	59,200.0	2,014.33	0	2,014.33
14	MD0000014	Stâncile Nistrene	4,458.0	1,567.62	0	1,567.62
15	MD0000015	Rezina	3,898.0	1,998.39	0	1,998.39
16	MD0000016	Steppe Bugeacului	49,610.0	564.96	4.62	569.58
17	MD0000017	Steppe Bălțului	12,460.0	792.72	0	792.72
18	MD0000018	Pădurea Hârbovăț	3,821.0	1,523.18	0	1,523.18
19	MD0000019	Pădurea Hâncești	11,290.0	7,499.12	0	7,499.12
20	MD0000020	Poiana Curătura	695.0	385.77	0	385.77
21	MD0000021	Climăuții de Jos	1,482.0	292.66	0	292.66
22	MD0000022	Cărbuna	678.0	559.30	0	559.3
23	MD0000023	Lunca Baraboi	330.0	0	0	0
24	MD0000024	Bursuceni Meadows	30.0	0	0	0
25	MD0000025	Drăgănești Meadows	46.0	0	0	0
26	MD0000026	Forest Molești-Răzeni	386.0	356.50	0	356.5
27	MD0000027	La castel	760.0	492.69	0	492.69
28	MD0000028	Vila „Nisporeni”	5,451.0	2,605.97	0	2,605.97
29	MD0000029	Zăbriceni	595.0	567.55	0	567.55
30	MD0000030	Fetești	754.0	456.45	0	456.45
31	MD0000031	La 33 de vaduri	265.0	75.97	0	75.97
32	MD0000032	Marshy Meadow Maramonovca-Cubolta	212.0	0	0	0
33	MD0000033	Marshy Meadow Maramonovca-Căinari	108.0	0	0	0
34	MD0000034	PNA Mestecăniș	50.0	31.14	0	31.14
35	MD0000035	PNA Ocnîța	101.0	87.11	0	87.11
36	MD0000036	PNA Telița	616.0	246.13	0	246.13
37	MD0000037	Zberoaia-Prut	381.0	41.33	0	41.33
38	MD0000038	Ostianova	278.0	234.61	0	234.61
39	MD0000039	Măcărești-Prut	188.0	15.72	0	15.72
40	MD0000040	PNA Trebujeni	1,064.0	385.97	0	385.97



Identification of High Conservation Value Forests in the Republic of Moldova

Table A3.2. Forest classification in HCVF 1.2. (continued)

No.	Emerald site code	Emerald site name	Area according to standard form (ha)	Forest area		
				State (ha)	Non-state holders (ha)	Total (ha)
41	MD00000041	Natural Area Seliște-Leu	286.0	168.84	0	168.84
42	MD00000042	Natural Area Nemțeni	288.0	49.36	0	49.36
43	MD00000043	Lunca Ialpuș	62.0	15.5	0	15.5
44	MD00000044	Lebăda Albă	100.0	1.75	0	1.75
45	MD00000045	Lunca Antonești	177.0	0	0	0
46	MD00000046	Canionul Vărăncău	731.0	78.53	0	78.53
47	MD00000047	Dancu-Prut	177.0	73.61	0	73.61
48	MD00000048	Chizlear-Stepa	301.0	0	0	0
49	MD00000049	Zolonceni	225.0	90.54	0	90.54
50	MD00000050	Dubăsarii Vechi	1,114.0	582.47	0	582.47
51	MD00000051	Aflorimentul Goian	313.0	0	0	0
52	MD00000052	Cimișeni	661.0	298.4	0	298.4
53	MD00000053	Sculeni-Prut	153.0	14.61	0	14.61
54	MD00000054	Chioselia	552.0	319.25	0	319.25
55	MD00000055	Limanul Cahul-Etulia	640.0	6.13	0	6.13
56	MD00000056	Pohrebeni	998.0	950.85	0	950.85
57	MD00000057	Matrașanca-Orhei	128.0	0	0	0
58	MD00000058	Rădoaia	1,430.0	414.11	0	414.11
59	MD00000059	Steppe Sector Vrancești	147.0	11.14	0	11.14
60	MD00000060	Dobrușa	3,032.0	2,418.71	0	2,418.71
61	MD00000061	Vâșcăuți	205.0	75.12	0	75.12
Total			325,197.0	93,131.4	55,08	93,186.48

Table A3.3. Classification in HCVF 2

No.	Emerald Site	Component plots	Total area (ha)	Forest area (ha)
1	Plaiul Fagului	RN Plaiul Fagului - plots 3–10, 13–19, 21–24, 27–32, 35–41, 45–57, 62; OS Cornești 79–81	4,379.27	4,243.09
2	Codrii Orheiului	OS Bravicea - plots 75, 77–82, 84–89, 106, 107; OS Vatici - plots 35, 36, 46–56, 60–62; OS Seliște - plots 24–32, 47–49; OS Teleșeu - plots 1–8, 10–23, 27–33, 39–41, 50–58, 62–66	4,614.57	4,589.57
3	Codru + Codrii Strășenilor	RN Codrii - plots 9–11, 17, 18, 35–63; OS Căpriană - plots 5–31, 33–40, 42–45, 49–57; OS Scoreni - plots 1–17, 19, 20, 30–45, 48–50; OS Strășeni - plots 1–4, 6–16, 18, 19	12,767.0	12,547.3
4	Hâncești Forest	OS Mereșeni - plots 10–15, 18–23, 28–40, 42–44, 46, 47; OS Logănești - plots 14, 19–21, 23–26, 28–31, 33–36, 38–44, 48–51, 55–61	6,165.11	6,089.33
5	Lower Nistru	OS Talmaza - plots 60, 63, 65, 66, 68, 69; OS Olănești - plots 38–43, 57, 63	950.16	818.09
6	Area not included in Emerald Network	OS Bobeica - plots 1–26, 28, 30–34, 52	3,430.46	3,373.56
7	Area not included in Emerald Network	OS Olănești - plot 60	20.97	20.97
Total			32,327.5	31,681.9

Table A3.4. List of monasteries and the area of forest within 500 m around them

No.	Name of monastery	Total Forest (ha)	State (ha)	Non-state (ha)
1	Bocancea	0.00	0.00	0.00
2	Zăbriceni	37.43	37.43	0.00
3	Briceni	64.23	64.23	0.00
4	Vărzărești	5.74	0.00	5.74
5	Dobrușa	22.66	1.65	21.01
6	Japca	37.24	37.24	0.00
7	Zloți	28.74	26.01	2.73
8	Călărășeuca	50.54	50.54	0.00
9	Căpriană	4.51	4.51	0.00
10	Condrița	23.35	22.8	0.55
11	Cosăuți	50.04	47.8	2.24
12	Cuizăuca	24.86	24.86	0.00
13	Curchi	6.47	6.47	0.00
14	Cușelăuca	36.21	36.21	0.00
15	Negrea	4.89	4.89	0.00
16	Nicoreni	19.58	0.00	19.58
17	Răciula	0.00	0.00	0.00
18	Sireți	0.00	0.00	0.00
19	Suruceni	37.84	26.01	11.83
20	Tabăra	2.14	0.33	1.81
21	Frumoasa	0.96	0.00	0.96
22	Hagimus	33.94	22.58	11.36
23	Horești	0.00	0.00	0.00
24	Hîncu	44.34	20.3	24.04
25	Hîrbovăț	1.61	0.00	1.61
26	Țigănești	40.63	39.65	0.98
27	Ceadîr-Lunga	20.23	20.23	0.00
28	Rudi	41.5	41.5	0.00
29	Hîrjauca	29.35	22.68	6.67
30	Coadă Iazului	0.00	0.00	0.00
31	Elisabeta Feodorovna	0.00	0.00	0.00
32	Pripiceni-Curchi	3.96	2.52	1.44
33	Saharna	15.44	14.96	0.48
34	Țipova	4.88	4.14	0.74
35	Hirova	0.00	0.00	0.00
36	Ulmu	0.00	0.00	0.00
37	Veverița	52.87	48.92	3.95
38	Cociulia	36.36	36.36	0.00
39	Chiștelnița	0.00	0.00	0.00
40	Chistoleni	0.00	0.00	0.00
41	Sfîrceni	20.29	20.29	0.00
	Total	802.83	685.11	117.72



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The study aims to identify high conservation value forests (HCVFs) in Moldova, which are crucial for biodiversity and provide long-term benefits. These forests account for 80% of the country's biological diversity and have social, economic, climate, hydrological, and erosion control benefits.

The study provides a comprehensive overview of Moldova's forestry sector that includes forest cover, ownership, functions, structure, and production. It also includes information on forest management and the institutional framework. The primary objective is to protect valuable forest ecosystems and establish discussion platforms with stakeholders for conservation and long-term resource management.

Approximately 175,500 ha of forest land, accounting for 47.3% of the total forested area, were identified as HCVFs. Most of these forests are owned and managed by the state. To preserve these ecological areas, the study recommends establishing a network of HCVFs and modernizing legislation on protected areas. The methodology involved a practical guide and GIS techniques.

The study provides technical and policy recommendations, such as improving the HCVF identification guide, conducting further research, amending laws on protected areas, and developing an adaptive forest management to ensure future ecosystem services. Forest managers, landscape planners, and beneficiaries of forestry services can use the findings to align management plans, prioritize conservation, and promote sustainable land use. Proper implementation of HCVF principles can attract donors and investors to support Moldova's forestry sector.



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