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# Biodiversity in Mountainous Areas: Challenges and Protection

**Dr Leila Yebda**

Faculty of Law, University of Algiers1, Algeria
Legal Laboratory of Artificial Intelligence and Society
l.yebda@univ-alger.dz

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## Abstract

Mountain environments cover 27% of the global land area, supporting 22% of the world's population and providing essential freshwater and biodiversity hotspots for over half of humanity. Despite their vital ecological and socio-economic importance, these fragile ecosystems face severe threats from climate change, poverty, and destructive human activities like commercial mining and logging. In response to these risks, international frameworks such as Sustainable Development Goal 15 and Agenda 21 mandate the creation of protected areas. Aligning with these global efforts, Algeria has implemented dedicated national legislation—specifically Law No. 04-03 on sustainable mountain protection and Law No. 11-02 on protected areas—to safeguard its mountainous biodiversity.

**Keywords:** biodiversity; mountains; protection; protected areas; Algeria.

**Résumé:**

Les environnements montagnards couvrent 27 % des terres mondiales et abritent 22 % de la population, tout en fournissant de l'eau douce et des services écosystémiques essentiels à plus de la moitié de l'humanité. Malgré leur rôle crucial en tant que refuges de biodiversité, ces régions subissent des pressions majeures liées au changement climatique, à la pauvreté et aux activités humaines destructrices comme l'exploitation minière et la déforestation. Pour contrer ces menaces, des initiatives internationales telles que l'Objectif de Développement Durable 15 et Agenda 21 exigent la mise en place de zones protégées. S'inscrivant dans cette dynamique, l'Algérie a adopté un cadre juridique national rigoureux, notamment la loi n° 04-03 sur la protection des zones de montagne et la loi n° 11-02 relative aux aires protégées.

**Mots-clés :** biodiversité ; montagnes ; protection ; zones protégées ; Algérie.

## Introduction:

Mountain environments cover approximately 27% of the world's land area. About 22% of the world's population lives in mountain regions and the lands immediately adjacent to them, while mountains support the livelihoods of nearly 12% of the global population. They store enormous quantities of water: 86% of the Earth's freshwater is reported to be stored in ice and snow, and more than half of the world's population depends on mountain-stored freshwater for drinking, cooking, washing, irrigation, industry, and transport.[1]

Mountains provide essential goods and services to more than half of humanity. Nevertheless, many of the world's poorest people and those most affected by food insecurity live in mountain regions. Mountain dryland ecosystems account for more than one-third of all mountain areas and provide 90% of the freshwater supply in those regions. More than one-quarter of biodiversity hotspots are located in mountainous areas.[2]

Mountains also play an important role in regulating climate. By intercepting moisture-bearing air masses, they create rain shadows in areas lying on the leeward side of prevailing winds.

Because these fragile ecosystems are of exceptional importance, they have received international attention. At the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, Agenda 21 was adopted. Chapter 13 is devoted to mountains under the title "Managing Fragile Ecosystems: Sustainable Mountain Development." It includes two programme areas intended to protect mountain ecosystems. The first concerns generating and strengthening knowledge about mountain ecosystems; the second promotes integrated watershed development and alternative livelihood opportunities.[3]

In 1998, the United Nations General Assembly, through Resolution 53/24, declared 2002 the International Year of Mountains. This declaration encouraged effective, long-term measures to implement Chapter 13, raise awareness of the importance of mountains to life, improve mountain environments, and enhance the living conditions of mountain populations. Subsequently, 11 December was designated International Mountain Day, beginning in 2003, pursuant to General Assembly Resolution 57/245.[4]

The significance of this topic lies in highlighting the importance of mountain regions, the richness of their biodiversity, the risks threatening it, and the protection afforded to it.

The aim of this study is to clarify the extent to which Algeria has implemented the provisions of Chapter 13 of Agenda 21 to protect its mountain regions.

Accordingly, the study addresses the following research question:

**What international efforts have been made to protect biodiversity in mountainous areas, and to what extent has Algeria implemented them?**

To answer this question, the study examines Chapter 13 of Agenda 21, which is devoted to protecting mountain environments and provides a general international framework for safeguarding these fragile ecosystems. It then considers the extent to which Algeria has implemented such protection.

Before examining the international and national protection of biodiversity in mountainous areas, it is necessary to clarify the concept of biodiversity in these regions.

## Section One: The Concept of Biodiversity in Mountainous Areas

No specific definition of biodiversity in mountainous areas was identified in the materials considered. The general concept of biodiversity, however, applies to all ecosystems. It is therefore necessary first to define mountains and biodiversity, and then to propose a definition of biodiversity in mountain regions.

### First Subsection: Defining Biodiversity in Mountainous Areas

This subsection defines mountains and biodiversity before proposing a definition of biodiversity in mountainous areas.

#### First Branch: Definition of Mountains

Mountains are generally understood as the highest landforms on the Earth's surface, characterized by a relatively narrow base and broad summits. There is no universally accepted set of indicators for identifying mountains. Some countries, such as the United States, use an elevation threshold of 300 metres; the United Kingdom has used 600 metres; and other countries also take slope into account. In its programme for protecting mountain areas, the United Nations has used both elevation and slope as criteria.[5]

Article 2 of Algerian Law No. 04-03 of 23 June 2004 on the protection of mountain areas within the framework of sustainable development defines mountain areas as "all spaces formed by mountain ranges and/or mountain massifs, characterized by geographical features such as relief, elevation, and slope, as well as adjoining spaces related to the economy, land-use planning factors, and the ecosystems of the mountain area concerned, which are themselves considered mountain areas." The Algerian legislature also treats mountain areas forming a coherent geographical and social entity as mountain massifs.[6]

#### Second Branch: Definition of Biodiversity

Among the definitions of biodiversity is the "variability among living organisms from all sources, including desert, marine, and other aquatic ecosystems, and the ecological complexes of which they form part." Biodiversity has also been defined as the natural diversity of living organisms, taking into account ecosystem diversity, species diversity, community diversity, and genetic diversity across time and space, as well as the organization and maintenance of ecosystems at biogeographical levels.

Another definition describes biodiversity as the collection of species and living organisms found on Earth, extending across the entire taxonomic and evolutionary scale, from the simplest microorganisms to the most highly developed mammals and plants. It also includes the diversity and distribution of genes in all living organisms, genes being fundamental to life and embodied in the genetic information that supports the growth, integrity, and continuity of every form of life within populations, from the simplest to the most complex.

Article 2 of the Convention on Biological Diversity, adopted in Rio de Janeiro on 5 June 1992, defines biological diversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."[7]

The Technical Expert Group on biodiversity has defined it as all plants, animals, microorganisms, and the ecosystems of which they are part, including diversity within species, between species, and among ecosystems.

These definitions use the term "ecosystem." Article 2 of the Convention on Biological Diversity defines an ecosystem as "a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit."[8]

The definitions cited above are not specific to mountain environments; rather, they apply generally to all ecosystems. The Convention's definition covers terrestrial, marine, and aquatic domains, from which it can be inferred that mountain regions are included within the terrestrial domain.

On the basis of these definitions, biodiversity in mountainous areas may be defined as the variability of living organisms derived from mountain ecosystems, including diversity within species, between species, and among mountain ecosystems.

**Second Subsection: The Need for International Protection to Conserve Biodiversity in Mountainous Areas**

The need to protect mountain biodiversity arises from both its richness and the range of threats to which it is exposed. These factors are examined below.

**First Branch: The Richness of Biodiversity in Mountainous Areas**

Mountain regions are cradles and refuges of biological diversity. Half of the world's biodiversity hotspots are concentrated in mountains, which contain some of the most complex agricultural gene pools in the world. They are rich in endemic species and support a wide variety of species and habitat types. Mountains are also home to many distinctive ethnic communities. Their relative isolation has helped protect and preserve species and cultivated varieties, including deer, eagles, llamas, mustard, apricots, and squash. For example, as many as 200 traditional potato varieties are cultivated in the Andes, while approximately 200 rice varieties are found in the mountains of Nepal.[9]

Mountain forests cover more than nine million square kilometres, representing 28% of the world's closed-canopy forests. Their exposure to cool, humid climates—where marine air encounters coastal mountains and temperate rainforests—allows them to generate high levels of biomass compared with many other ecosystems. Such forests are found in areas including Chile and the Pacific Northwest of North America. Montane cloud forests, which are almost permanently shrouded in mist and clouds, provide food and shelter for thousands of people and countless unique plant and animal species. Up to 90% of the cloud forests in the northern Andes have disappeared.[10]

Many biodiversity hotspots are located in mountain regions. The global number of flowering plant species has been estimated at 420,000. Tropical and subtropical mountain regions are among the world's richest areas in terms of living species. The mountains of the Mediterranean region, arid mountain ranges, parts of the Rocky Mountains in the United States, the Atlas Mountains, and parts of Central Asia are also species-rich. In general, the Neotropical mountain regions are exceptionally diverse, with more than 90,000 flowering plant species and approximately 45,000 species in highland areas.[11]

Mountains also contain medicinal plants and many widely cultivated crops. Some originated in alpine mountain regions, while others are cultivated in mountains, including potatoes, maize, tomatoes, tamarind, green and hot peppers, arracacha, wheat, rice, beans, oats, grapes, oranges, and rye.

Because mountain microclimates vary markedly in comparison with a given lowland area, genetic diversity may increase when plants are introduced into these environments. Diversity is often particularly high among native plant species. For example, farmers in the Andes cultivate around 50 different potato varieties. However, agricultural production in mountains is constrained by harsh environmental conditions, difficult access, fragile ecosystems, and low returns. Despite the high diversity of mountain regions and the associated costs of production, crops are cultivated in low-, middle-, and high-altitude mountain areas.

**Second Branch: Risks and Threats Facing Mountain Biodiversity**

The vital services and sustainable supplies provided by mountains face increasing threats, particularly climate change and poverty. Human activities add further pressure, including commercial mining, logging, trade in rare mountain plants and animals —such as certain orchid species—depletion of birds and amphibians, overgrazing, and abandonment or inadequate management of land. These pressures have reduced the natural capacity of mountain ecosystems to withstand climate change.[12]

The elevation and steep slopes characteristic of mountain ecosystems make them especially sensitive to climatic fluctuations, including heat and cold. Global warming raises temperatures and prompts plant and animal species to shift their ranges. However, mountain species have limited opportunities to move to higher elevations in response to rising temperatures. This is particularly true of isolated mountain "islands," where endemic species are often concentrated. As a result, some mountain species may disappear. In the Alps, for example, some plant species have shifted upward by between one and four metres per decade, while other plants formerly found on mountain summits have disappeared.

A second problem arises because mountains narrow as elevation increases. As plants and animals move upward in response to higher temperatures, several species may be forced to compete for the same limited high-altitude area. Resources may become insufficient, potentially causing rare species to disappear over the long term.[13]

Significant climate changes have also contributed to increased atmospheric carbon dioxide, higher temperatures on land and in the oceans, changes in rainfall patterns, and rising sea levels. These changes affect the timing of animal reproduction and plant growth, animal migration, and the length of growing seasons. They also alter species distributions and the spread of pests and diseases. Competition for land in mountain regions has forced smallholder farmers onto steep, unsuitable, erosion-prone slopes, resulting in substantial losses of soil and biodiversity in mountain ecosystems.[14]

Human activities pose additional significant risks to mountain regions. People use timber and non-timber forest products, traditional medicinal resources, and animals hunted in forests, as well as fish from mountain rivers and lakes, domestic animals, and mountain crops. Expansion of agriculture and mountain pastures beyond the sustainable use of forest products has contributed to substantial declines in species and structural diversity. Poorly designed infrastructure projects, unsustainable tourism practices, and quarrying and mining at high elevations may also affect lowland areas.[15]

Deforestation in mountain regions is a further threat to mountain ecosystems. The Secretariat of the Mountain Partnership—the body within the Food and Agriculture Organization responsible for monitoring efforts toward Target 15.4, the "Mountain Green Cover Index"—has recognized a direct relationship between mountain green cover, ecosystem health, and the ability of mountain ecosystems to perform their functions. Monitoring changes in mountain vegetation over time provides a useful measure of the conservation status of mountain ecosystems. Removing forest cover leaves mountain land unprotected, increases surface runoff and soil erosion, and degrades water quality in streams and rivers used by communities both upstream and downstream. It also threatens fish and other aquatic species.[16]

The conservation of mountain forests is also important because they help protect people from disasters. When forest cover is lost, villages, towns, tourist resorts, power stations, transport lines, roads, and railways become more vulnerable to landslides, avalanches, and floods. As climate change intensifies, the protective role of mountain forests becomes even more important. Nevertheless, the risk of natural disasters in mountainous areas can increase during severe storms and heavy rainfall.[17]

Overgrazing and the removal of trees on steep mountain slopes disturb the soil. Heavy rainfall increases the likelihood of landslides when human use damages the soil's hydrological properties. On very steep slopes, natural hazards include rockfalls, ice and snow avalanches, debris flows, landslides, and soil erosion caused by water and wind. These hazards tend to become more severe in environments that have experienced significant disturbance, for example after deforestation.

**Section Two: International Protection of Biodiversity in Mountainous Areas**

This section considers international attention to the protection of biodiversity in mountain regions, the provisions of Chapter 13 of Agenda 21 relevant to this issue, and the extent to which Algeria has implemented them.

**First Subsection: International Attention to the Protection of Mountain Biodiversity**

The 2030 Agenda for Sustainable Development contains 17 Sustainable Development Goals. Goal 15 concerns protecting, restoring, and promoting the sustainable use of terrestrial ecosystems; sustainably managing forests; combating desertification; halting and reversing land degradation; and halting biodiversity loss. Target 15.4 specifically calls for the conservation of mountain ecosystems, including their biodiversity, in order to strengthen their capacity to provide benefits essential to sustainable development by 2030.[18]

In 2004, the Secretariat of the Convention on Biological Diversity adopted a Programme of Work on Mountain Biodiversity. At its tenth meeting, held in Japan in 2010, the Conference of the Parties conducted an in-depth review of the programme. As of 2009, approximately 14.4% of mixed mountain biogeographical areas had been protected.[19]

A Global Mountain Biodiversity Assessment programme was also established as part of the international biodiversity research programme. It contributed to the development of policies for conserving and sustainably using mountain biodiversity. In 2010, the programme launched its mountain-biodiversity portal to facilitate access to primary biodiversity data in a targeted manner.

In addition, an interdisciplinary international cooperation platform known as the Global Mountain Biodiversity Assessment was established to assess mountain biodiversity, its conservation, and its sustainable use. In cooperation with the Global Biodiversity Information Facility, the platform developed an online portal providing geographically referenced baseline data on mountain ecosystems.[20]

**Second Subsection: Protection of Mountain Biodiversity under Chapter 13 of Agenda 21**

Chapter 13 of Agenda 21 is devoted to mountains under the title "Managing Fragile Ecosystems: Sustainable Mountain Development." It sets out two programme areas for addressing fragile mountain ecosystems. The first concerns generating and strengthening knowledge about mountain ecosystems and their sustainable development; the second concerns promoting integrated watershed development and alternative livelihood opportunities. Among the chapter's most important provisions for mountain biodiversity is the commitment by governments to establish appropriate protected areas at sites and in regions rich in representative species, and to provide mechanisms for conserving threatened areas so as to protect wildlife, conserve biodiversity, or establish national parks.[21]

The management of protected areas can be one of the most effective tools for conserving the world's natural and cultural resources. Decisions of the Conference of the Parties have repeatedly affirmed the central role of protected areas in the conservation and sustainable use of biodiversity. In mountain ecosystems, protected areas may be established as specific measures for conserving biodiversity and ensuring a continuing supply of the goods and services provided by those ecosystems.[22]

International experience, traditional practice, and scientific principles also indicate the need to establish and manage protected areas in conjunction with agriculture, forestry, and other land uses, in order to conserve the distinctive biodiversity of mountain regions.

The criteria for designating protected areas in mountain ecosystems vary. They may be biological—for example, the protection of places with exceptionally high species diversity. They may also be practical, such as protecting water resources for urban use or preventing flood damage in downstream areas. Spiritual and cultural criteria must also be considered, in view of the intrinsic value of mountains to traditional communities.[23]

It is worth noting that all Parties with mountain regions have indicated in their thematic reports that they have established protected areas in those regions, including Algeria.

The following subsection therefore examines the extent to which Algeria has implemented key elements of Chapter 13 of Agenda 21 by establishing protected areas in mountainous regions.

**Third Subsection: Algeria's Protection of Mountain Biodiversity through the Establishment of Protected Areas**

Mountain regions occupy a substantial part of Algeria's natural territory, covering more than six million hectares. Despite efforts undertaken since independence to protect these ecosystems through various projects, mountain areas have remained marginalized, particularly economically.

The Aurès Mountains, for example, cover an area estimated at approximately 9,000 square kilometres and consist of mountain ranges with sharply pointed rocky summits in the south and less steep summits in the north. Their average elevation is estimated at 1,000 metres. Their irregular and varied slopes have east–west and north–south orientations and are crossed by several valleys forming a group of basins, the most important of which include the Oued El Abiod and Oued Abdi basins. The northern parts contain Aleppo pine and holm oak forests, while the south supports scrub, steppe vegetation, and desert plants. The Aurès region also contains many orchards and fields producing cereals and fruit.

Algeria is characterized by diverse ecosystems, particularly coastal areas, steppes, mountains, and oases. Their diversity and richness constitute important biological reserves, but they are threatened by urban development and increasing demographic pressure. These environments are sensitive areas. In response to their importance, a regional action programme was established under the National Spatial Planning Scheme, one of whose objectives is to protect and enhance mountain areas. Algeria's mountain regions face a twofold crisis. First, the natural environment is deteriorating due to damaging agricultural and pastoral practices, human pressure on resources, deforestation, and related activities. Second, the mountain rural economy is declining because of resource shortages, loss of resources that underpin agricultural systems, neglect of traditional industries, and the reduced economic importance of trees, among other factors.[24]

Algeria has adopted several laws dealing with mountain regions. Law No. 01-20 provides that the National Spatial Planning Scheme should promote an integrated economy in highland mountain areas through various measures, including developing agriculture and livestock farming in mountain regions and protecting biodiversity. Law No. 10-02 also addresses these fragile areas: the National Spatial Planning Scheme identifies 20 mountain massifs to be developed and enhanced, with a specific development plan to be drawn up for each massif.[25]

With regard to biodiversity protection in these fragile ecosystems, protected areas are an integral part of the natural environment and may be particularly vulnerable to pollution because they contain unique plant and animal components. Protection is therefore necessary to preserve their character and biodiversity. Like other countries, Algeria has adopted specific legislation on protected areas. Law No. 11-02 on protected areas within the framework of sustainable development was enacted after protected areas had been regulated under Law No. 03-10 on environmental protection within the framework of sustainable development.

Earlier legislation also addressed the protection of natural areas. The first legislative text to deal with protected areas, even without expressly using that term, was Ordinance No. 67-281 of 20 December 1967 on excavations and the protection of historical and natural sites and monuments, which placed the national natural heritage under state protection. Law No. 83-03 subsequently dedicated a chapter to nature reserves and national parks, covering them in ten articles. Decree No. 87-144 of 16 June 1987 later specified the procedures for establishing nature reserves. However, the idea of creating natural protected areas in Algeria dates back to the French colonial period, through a decision issued by Governor Jean Baptiste Abel on 17 February 1921.[26]

Legal scholarship defines nature reserves as natural areas of land, sea, or water bodies with specified boundaries and legal protection intended to conserve animal and plant biodiversity against excessive exploitation or destructive natural change. Such areas may possess distinctive biological, geophysical, or geological characteristics and form part of the material foundations of nature and life. They may also serve as enduring repositories of economic, aesthetic, or cultural resources that are threatened with degradation or extinction. The International Union for Conservation of Nature similarly defines a protected area as an area of land or sea designated to protect biological diversity, ecological values, or heritage and managed through legal or other effective means.[27]

Article 4 of Algeria's Environmental Protection Law within the framework of sustainable development defines a protected area as "an area designated for the protection of biodiversity and shared resources." Article 2 of Law No. 11-02 defines it as "all or part of the territory of one or more municipalities, as well as areas belonging to the public maritime domain and subject to special regimes established by this law, for the purpose of protecting fauna, flora, and terrestrial, marine, coastal, or other relevant ecosystems."[28]

The source article states that Algeria has approximately 19 natural protected areas covering an area estimated at 53 million hectares, including ten national parks, four nature reserves, five wildlife-protection centres, and four hunting reserves. These figures are reproduced as presented in the source text.

National parks are among the most prominent types of protected area for conserving natural spaces and environments characterized by rich and diverse plant and animal life. The world's first national park was Yellowstone in the United States,

established in 1872. In Algeria, attention to national parks dates to the French occupation in 1912.

Article 5 of Law No. 11-02 defines a national park as “a natural area of national importance established for the complete protection of one or more ecosystems, with the aim of conserving and protecting unique natural areas on account of their biological diversity, while allowing public access for education and recreation.” Article 3 of Decree No. 83-458 defines a park as an administrative body and decentralized administrative entity placed under the supervision of the Minister of Agriculture. The principal purpose of national parks is to protect and enhance animal and plant species, as well as the land, subsoil, air, and water constituting the natural environments within them, against harmful impacts.[29]

Algeria has implemented provisions of Chapter 13 of Agenda 21 through the adoption of Ordinance No. 06-05. Article 8 prohibits any use, activity, construction, or establishment of a facility that has not been expressly authorized. Algeria has also established several national parks and nature parks in coastal and mountainous regions to protect species and varieties of plants and animals and maintain biological balances, which are considered matters of public interest.

The national parks located in mountain regions include Djurdjura National Park, established by Decree No. 83-460 of 23 July 1983; Belezma National Park, established by Decree No. 84-426 of 3 November 1984; Chréa National Park, established by Decree No. 83-461 of 23 July 1983; Theniet El Had National Park, established by Decree No. 83-459 of 23 July 1983; and Tlemcen National Park, established by Executive Decree No. 93-117 of 12 May 1993. The two national parks located in desert regions are Tassili n’Ajjer National Park and Ahaggar National Park.[30]

Despite this positive step toward protecting biodiversity in mountain regions by establishing national parks, various difficulties prevent these parks from fully achieving their objectives. Competences overlap among several administrations, including park management, forestry authorities, and the wilaya administration. Park territories may also contain several land-tenure regimes, including public and private state property and waqf property, as well as diverse types of natural space. In addition, there is a shortage of the technical, practical, and scientific resources required to preserve park biodiversity, while neighbouring residents may encroach upon these areas without sufficient attention to conservation.

## Conclusion:

Mountain regions are cradles and refuges of biological diversity. Half of the world’s biodiversity hotspots are concentrated in mountains, which contain some of the most complex agricultural gene pools, are rich in endemic species, support a wide range of species and habitats, and are home to many distinctive ethnic communities.

Nevertheless, the vital services and sustainable supplies provided by mountains face increasing threats, particularly climate change and poverty. Human activities also put pressure on these regions, including commercial mining, logging, and trade in rare mountain animals and plants.

These risks have prompted international attention to the protection of biodiversity in mountain regions. The 2030 Agenda for Sustainable Development addresses this issue; the Secretariat of the Convention on Biological Diversity has adopted a programme of work on mountain biodiversity; and Chapter 13 of Agenda 21 calls on governments to establish appropriate protected areas in sites and regions rich in representative species. Algeria has acted on this approach by establishing several national parks in mountain regions. However, the study concludes that these parks have not yet achieved the intended level of protection.

**Sources and References**

## I. Primary Sources

### A. International Documents

1. United Nations. (1993). Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3–14 June 1992, Vol. I. New York: United Nations.
2. United Nations General Assembly. (2016). Sustainable Mountain Development: Report of the Secretary-General. Seventy-first session, provisional agenda item 19(j).
3. Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice. (2003, 10–14 March). Mountain Biological Diversity. Montreal, provisional agenda item 4; document addressing mountain biodiversity (2002).
4. Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice. (2003, 10–14 June). Climate Change. Montreal, provisional agenda items 4 and 5.
5. United Nations General Assembly. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. Seventieth session, agenda items 15 and 116.
6. United Nations General Assembly. (2011, 3 August). Sustainable Mountain Development: Report of the Secretary-General. Sixty-sixth session, provisional agenda item 19(j).

**B. National Legislation**

7. Ordinance No. 67-281 of 20 December 1967 on excavations and the protection of historical and natural sites and monuments, Official Gazette No. 7.
8. Decree No. 83-458 of 23 July 1983 establishing the model statute for national parks, as amended and supplemented, Official Gazette No. 31.
9. Decree No. 83-459 of 23 July 1983 establishing Theniet El Had National Park, Official Gazette No. 31.
10. Decree No. 83-460 of 23 July 1983 establishing Djurdjura National Park and defining its boundaries, Official Gazette No. 31.
11. Decree No. 83-461 of 23 July 1983 establishing Chréa National Park, Official Gazette No. 31.
12. Decree No. 84-426 of 3 November 1984 establishing Belezma National Park, Official Gazette No. 55.
13. Decree No. 87-144 of 16 June 1987 specifying the procedures for establishing nature reserves, Official Gazette No. 25.
14. Law No. 11-02 of 28 February 2001 on protected areas within the framework of sustainable development, Official Gazette No. 13. (Date and number reproduced as provided in the source.)
15. Law No. 03-10 of 19 July 2003 on the protection of the environment within the framework of sustainable development, Official Gazette No. 43.
16. Law No. 04-03 of 23 June 2004 on the protection of mountain areas within the framework of sustainable development, Official Gazette No. 41.

## II. Secondary References

**A. Journal Articles**

17. Gouas, Hassina. (2016). Protected areas under Algerian legislation. Journal of the University of Emir Abdelkader for Islamic Sciences, 30(3).
18. Saifi, Zouhair. (2010). The problem of local development in marginalized rural mountain areas. Forum of the Professor, 6(1).
19. Zerabib, Saleh, and Cherad, Salah Eddine. (2011). Agro-pastoral life and the exploitation of mountain areas: Balances and imbalances in the Aurès. Journal of Science and Technology, Issue 33.
20. Zouaghi, Abdelrazak. (2001). Analysis of public policy on rural and mountain development in Algeria: Available resources and challenges. Journal of Political and Administrative Research, Issue 10.

**B. University Theses**

21. Laïb, Djemal. (2005). Biodiversity as a dimension of international law and international and national efforts for its protection. Master's thesis, University of Algiers, Faculty of Law and Administrative Sciences, Algeria.
22. Turki, Shahrazad, and Salhi, Sonia. (2015). The environmental dimension of the National Spatial Planning Scheme and its applications in urban-planning law. Master's thesis in law, Abderrahmane Mira University, Faculty of Law and Political Science, Béjaïa.

**C. Websites**

23. Food and Agriculture Organization of the United Nations. (2012). International Mountain Day. Available at: http://www.fao.org/forestry/internationalmountainday
24. Food and Agriculture Organization of the United Nations. "International Mountain Day: Mountain Forests—Roots for Our Future." Available at: http://www.fao.org/mnts/intl_mountain_day_en.asp

## Notes

[1] -United Nations General Assembly, Sustainable Mountain Development: Report of the Secretary-General, (2011); see also the Food and Agriculture Organization of the United Nations, International Mountain Day resources. The statistics are reproduced as stated in the source manuscript.

[2] -United Nations, Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3–14 June 1992, vol. I (New York: United Nations, 1993); and Convention on Biological Diversity materials on mountain biodiversity.

[3] -United Nations, Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3–14 June 1992, vol. I, Agenda 21, Chapter 13 (New York: United Nations, 1993).

[4] -United Nations General Assembly Resolution 53/24 (1998), declaring 2002 the International Year of Mountains; United Nations General Assembly Resolution 57/245 (2002), concerning the observance of International Mountain Day.

[5] -United Nations General Assembly, Sustainable Mountain Development: Report of the Secretary-General, 66th session, provisional agenda item 19(j), 3 August 2011. The criteria are presented as described in the source manuscript.

[6] -Algeria, Law No. 04-03 of 23 June 2004 on the Protection of Mountain Areas within the Framework of Sustainable Development, Official Gazette No. 41.

[7] -Convention on Biological Diversity, Article 2, adopted at Rio de Janeiro on 5 June 1992.

[8] -Convention on Biological Diversity, Article 2, definition of "ecosystem."

[9] -Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice, materials on mountain biological diversity; see also the Food and Agriculture Organization of the United Nations' International Mountain Day materials.

[10] -Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice, Mountain Biological Diversity, Montreal, March 2003. The figures are retained as reported in the source manuscript.

[11] -Convention on Biological Diversity, materials on mountain biological diversity. Numerical estimates are translated from the source manuscript and have not been independently verified for this translation.

[12] -Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice, documents on climate change and biodiversity, Montreal, June 2003.

[13] -United Nations, Sustainable Mountain Development materials addressing the effects of warming on mountain species and ecosystems; the example of upward plant migration in the Alps is reproduced from the source manuscript.

[14] -Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice, Climate Change, Montreal, 10–14 June 2003.

[15] -United Nations General Assembly, Sustainable Mountain Development: Report of the Secretary-General, 71st session (2016); see also Convention on Biological Diversity materials on mountain ecosystems.

[16] -Food and Agriculture Organization of the United Nations, Mountain Partnership materials concerning Target 15.4 and the Mountain Green Cover Index.

[17] -United Nations General Assembly, Sustainable Mountain Development: Report of the Secretary-General; Food and Agriculture Organization of the United Nations, materials on mountain forests and disaster-risk reduction.

[18] -United Nations General Assembly, Transforming Our World: The 2030 Agenda for Sustainable Development, A/RES/70/1 (2015), Goal 15 and Target 15.4.

[19] -Convention on Biological Diversity, Programme of Work on Mountain Biodiversity, adopted in 2004; review by the Conference of the Parties at its tenth meeting in Japan in 2010. The 14.4% figure is reproduced from the source manuscript.

[20] -Global Mountain Biodiversity Assessment and Global Biodiversity Information Facility, as described in the source manuscript. The original reference list does not provide full publication details for these initiatives.

[21] -United Nations, Agenda 21, Chapter 13, "Managing Fragile Ecosystems: Sustainable Mountain Development," in Report of the United Nations Conference on Environment and Development (New York: United Nations, 1993).

[22] -Convention on Biological Diversity, decisions and programme materials affirming the role of protected areas in biodiversity conservation and sustainable use.

[23] -United Nations, Agenda 21, Chapter 13; the biological, practical, spiritual, and cultural criteria are summarized as presented in the source manuscript.

[24] -Algeria's National Spatial Planning Scheme and the national regional-development measures discussed in the source manuscript. Full bibliographic details for the relevant regional action programme were not supplied in the original reference list.

[25] -Algeria, Law No. 01-20 on the orientation of the territory within the framework of sustainable development, and Law No. 10-02 approving the National Spatial Planning Scheme. These instruments are cited in the source text; complete publication details are not listed in its bibliography.

[26] -Algeria, Ordinance No. 67-281 of 20 December 1967; Law No. 83-03 on environmental protection; and Decree No. 87-144 of 16 June 1987, as listed in the source manuscript's references.

[27] -International Union for Conservation of Nature (IUCN), definition of a protected area as summarized in the source manuscript. No specific IUCN publication or edition was identified in the provided bibliography.

[28] -Algeria, Law No. 03-10 of 19 July 2003 on the Protection of the Environment within the Framework of Sustainable Development, Official Gazette No. 43; and Law No. 11-02 on Protected Areas within the Framework of Sustainable Development, as cited in the manuscript. The date of Law No. 11-02 is reproduced from the source list.

[29] -Algeria, Law No. 11-02, Article 5; Decree No. 83-458 of 23 July 1983, Article 3.

[30] -Algeria, Ordinance No. 06-05, Article 8; Decrees Nos. 83-459, 83-460, and 83-461 of 23 July 1983; Decree No. 84-426 of 3 November 1984; and Executive Decree No. 93-117 of 12 May 1993, as cited in the source manuscript.