

How to Plan a Sustainable Forestry Management When Environmental Goals Conflict with Existing Practices in National Prespa Park

Dorina Grazhdani
Agricultural University of Tirana, Faculty of Economics and Agribusiness
Tirana-ALBANIA

Abstract

Concerns over the relationship between environmental protection, prevention of loss of biodiversity and protection of habitats and of internationally important species of flora and fauna on the one hand and sustainable economic activities and recreation in a protected area on the other can all be dealt with effectively by appropriate regulatory and policy measures, particularly with the support of local actions that strive to preserve local biotopes and conditions. The aim of the present paper is to provide information on the current situation of the forestry on the Albanian side of the lakes Macro and Micro Prespa, along with the existing practices and regulations, and to offer views from an Albanian perspective that will help resolve some of the current difficulties. Forestry is one of the main economic activities in the area. Forest areas in Prespa mainly consist of oak forests (63%) and beech stands (15%). Lack of alternative heating resources set a high pressure on forests that are used for firewood production for communities living within and in some areas around the Prespa Park. In addition, fodder production and forest grazing are damaging the forests area. Some forest areas (3 721 ha) are transferred to communal use and are managed by the Forest Users Association of Liqenas. In the last three years several improvement interventions (coppicing, fencing, thinning) are realized with the support of World Bank, WFP and other donors. There is a need for a general forest management plan and improvement interventions in the area. The forestry policies and practices applied in Albania over the last fifty years have negatively affected the region's biodiversity in general and its forest species in particular. It is very important for the future of the species found in the Prespa region, as well as for the communities that depend upon them, to strive, through best practices, analysis of policy and positive actions of trans-boundary cooperation, to improve the current situation. Some remedies are presented in the present paper.

Keywords: Forestry, environment, biodiversity, pasture, firewood

Introduction

The Prespa region (~41°N, ~23°E) is located on the borders between eastern Albania, Greece and the Republic of Macedonia. It is a high-altitude basin and includes two connected lakes, Macro Prespa and Micro Prespa and the surrounding mountains. Lake Macro Prespa (surface area 253.6 km²) is divided among the three states, while Micro Prespa Lake (47 km²) is shared between Albania and Greece (Figure 1). The smaller lake has a maximum depth of 8.4 m, collecting water from a granite and karstic catchment 189 km² in size, including snow-capped mountains that rise to more than 2,000 m. There has been considerable human modification of the local hydrology with the diversion of the Agios Germanos stream from Micro Prespa to Macro Prespa on the Greek side and of the River Devoll into Micro Prespa on the Albanian side.

The two Prespa lakes are situated at an altitude of 850 m above sea level and have a combined drainage basin area of size 2 519 km². The highest peaks of the surrounding mountains reach 2 600 m, with the Baba Mountain Range bordering the lake basin to the east and with Pelister Mountain as its highest peak. To the north, Plakenska (1 998 m) and Bigla (1 656 m) dominate the landscape, while on the Greek side, Lake Micro Prespa is bordered to the south by the Triklarion Mountains, rising to 1 750 m.

Prespa area is an area internationally known for its ecological importance. Meanwhile, Prespa area abounds in rare animal and plant species, and contains some extraordinary examples of Byzantine heritage. Livestock, farming and fishing are the most important sources of income in the Prespa lowland.

The Prespa area in Albania (Macro and Micro Prespa), in 1999 was designated as a National Park Prespa not only due to the specific geographical features: there are two lakes connected to each other, but and for its very high biodiversity, extremely rich flora and fauna and exceptional beauty.

During the turmoil of 1990s, extensive illegal felling by commercial interests from outside the area left the once extensive oak and birch forests seriously degraded. With the designation of the

Prespa National Park (PNP) the state-owned forest is no longer exploited commercially for timber and active forest management has basically ceased in Prespa until PNP determines how to proceed.

Local communities are allowed to obtain firewood and fodder from these protected forests. This is difficult to control because firewood is the main source of heating and cooking fuel for all 5,300 people living in Prespa. There are no other sources as readily available or as cheap as wood. Electricity is erratic and expensive. Solar is too expensive and impractical. Household-level biogas may be viable, but requires pilot testing in Prespa's climate. No replacement for wood fuel is envisioned to be economically feasible in the near future. A reasonable estimate is that local people in Prespa will rely largely upon wood for their heating and cooking needs for another ten years.

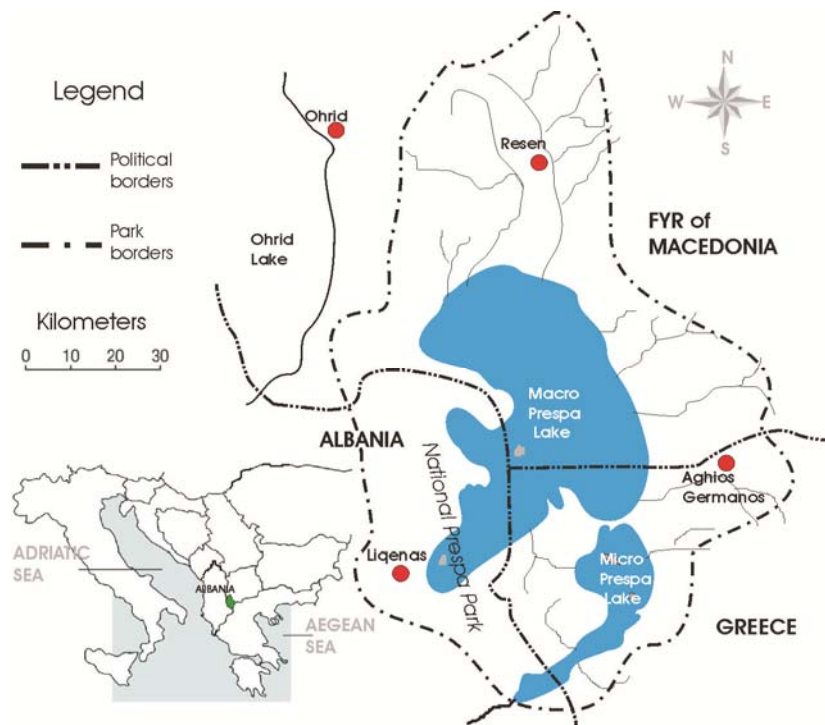


Figure 1. Lakes Prespa region

Annual growth rates of forests in Prespa range from 1.6 m³/ha to 5.4 m³/ha (Grazhdani, 2007). It can be assumed that the growth rate/ha in Prespa is at the lower end of the range, or approximately 8,500 m³/year (2.5 m³/ha per year x 3,400 ha = 8,500 m³/year). A household of five persons will need approximately 10 m³ of fuel wood/year. Apply this figure to the approximately 1,000 families in Prespa and one can see that about 10,000 m³ of fuel wood/year is needed. This approximate figure illustrates the difficulty with which existing forest cover meets current wood demand. In addition, not only people from inside the Prespa Basin demand fuel wood and there can be high pressure at certain locations. Clearly, the challenge facing forest management in Prespa is how to meet fuel wood and fodder needs and restore forest health.

There are encouraging signs. Local villagers have recently formed the "Prespa Forest Users Association." The World Food Program supported a community forestry project with two communities in Liqenas Commune. The project sought to reforest degraded areas and keep out goats, but apparently they have been minimally effective. To control illegal harvesting in the Micro Prespa area, the forest department is considering installing a new check post on the road.

Available pastures in the study area are in the range of 1 800 ha. The total number of livestock decreased by about 45% during the last 10 years. For Prespa area, overgrazing of grasslands and erosion are clearly evident and goats are considered to be the primary threat facing forest health.

The main source of stress on forest ecosystem function is much more practical and immediate. Management capacity within the Prespa National Park is low. The resource base has not been accurately inventoried or monitored, and there are few financial and technical resources, especially for biodiversity and integrated ecosystem management. The underlying issues include: destructive firewood and fodder harvesting; poor grazing practices; low capacity of forest and park staff to work with local people to develop joint solutions to meeting fuel and fodder needs while restoring forest health.

Habitats of European interest

Although no habitat type can be regarded as rare at a global level, a number of forests in Prespa Park are classed as habitat types of European interest, including the following:

- The thermophilous deciduous woodland of *Quercetum trojanae macedonicum* develops on steep, stony terrains up to 1200 meters above sea level. This type of forest habitat is registered along both sides of the road between Djellas and Biglla in Albania;

- The Grecian juniper woods *Juniperus excelsa*, rare in Europe where it occurs only in northern parts of Greece and in FYR of Macedonia, with the Prespa lakes basin being an important site. (e.g., Kallamas in Albania).

Policy framework in the forestry sector

The legislation in the field of forestry is based on both the exploitation of forest resources in a responsible way and the development of the sector. Forestry activities are regulated by Law No. 9385 dated 4 May 2005 "On Forests and the Forest Police", Law No. 8906 dated 6 June 2002 "On Protected Areas", Law No. 7917 dated 13 April 1995 "On Pastures and Meadows", Law No. 7875 dated 23 November 1994 "On the protection of wildlife and hunting", Law No. 7722 dated 15 June 1993 "On the protection of natural medicinal, oil-etheric plants". The laws prescribe the functions of central and local consultative organs, scientific research, and the manner of practise of forest or pasture activities, or both, the management of protected areas and the manner of control. It also includes contraventions, sanctions and responsibilities. Theoretically, there is good coverage of all relevant issues in the sector and EU guidance in drafting the new legislation has been successfully adopted.

Forestry and Pasture Status

The total forest land inside NPP is 13 500 ha, from which 9 399 ha (69.6%) belongs to state forest land, 3 721 ha (27.6%) to communal and 380 ha (2.8%) to private forest land. The current uses of forests and woodland in the basin may be categorized in three groups: Timber and fuel wood, grazing and fodder and non-timber forest products. At least 5,000 people dependence on fuel wood and fodder from an already degraded forest. There are three factors which impact the condition of forest inside NPP: grazing of animals (goats, sheep, and cows) inside the forest land, lopping of fodder (branches and leaves) for livestock, and illegal wood cutting. These three practices carried out by the local population for subsistence economy but also for income generation (selling of firewood) had led to a severe degradation of the forest areas. More than 50% of the forest cannot be called forest anymore.

a. Grazing in Forestlands

Traditionally, livestock rising was an important economic activity. According to official there are presently about 2 700 cattle, 3 700 sheep, 4 100 goats, and 800 donkeys, mules, and horses (Table 1). In addition to the information provided in table 1, some browsing and grazing pressure comes from outside the NPP. Several of the bordering villages from the west side of the Mali i Thate Mountain send their animals on the mountain slopes and alms outside and inside the national park. In summary, the impression obtained is that the livestock pressure on the forests from outside the national park is less important than the livestock pressure from the villages inside the park and that in total the number of livestock, especially of goats and sheep is decreasing, due to a changing lifestyle of younger people.

Table 1. Livestock numbers from settlements inside the NPP (2004/2005)

| Commune or village | Cattle | Sheep | Goats | Donkeys, horses, mules | Total LSU * |
|--------------------|--------------|--------------|--------------|------------------------|--------------|
| Liqenasi | 2 560 | 2 567 | 3 267 | 650 | 4 377 |
| Zagradeci | 50 | 400 | 50 | 50 | 190 |
| Shueci | 44 | 400 | 250 | 40 | 214 |
| Rakicka | 60 | 300 | 500 | 50 | 270 |
| Total | 2 714 | 3 667 | 4 067 | 790 | 5 051 |

Source: Commune Liqenas, Bilisht Qendër and Progër

* Livestock Units: Cattle = 1, sheep, goats = 0.2, Donkeys, horses, mules = 1.

Taking into account that at least half of the cattle and about all the horses, donkeys and mules are kept in the households the total present livestock pressure from inside the park is estimated at 2 900 LSU and another 1 000 LSU may come from outside the national park. The 3 900 LSU are not equally spread over a grazing area of 1 880 ha and a forest area of 4 350 ha. However, abandoned lands and inhabited areas (4 950 ha) and cultivable land (2 100 ha) are available as well as pasture in the NP, thus relieving the pressure on the forest rangelands and pastures. This results in a total grazing area of about 13 280 ha, giving a theoretical livestock charge of 0.3 LSU/ha (= 1.5 Sheep Equivalent Units (SEU)/ha).

Grazing capacity of wooded lands, namely high and coppice forests as well as scrublands is generally estimated to about 1.3 SEU/ha. On the contrary, the grazing capacity of pasture and meadows officially accepted is 3.66 SEU/ha. The actual grazing capacity under the present degraded state of shrub forests and pastures, however, is estimated to be much less, about 0.9 SEU/ha. In future, some 1 000 ha of the grazed forest land bordering Greece may fall into the core protection zone of the national park, and should therefore be excluded from the available rangeland, resulting in a livestock charge of 1.6 SEU/ha.

From this estimation, it is clear that the present grazing pressure is probably still too high for the generally degraded vegetation resources. A continuation of the trend of decreasing livestock numbers and/or improvement of the grazing schemes and thus the state of the pastures will be necessary to resolve this situation.

Over-grazing of sub-alpine and alpine meadows detrimentally affects the naturally fragile alpine ecosystems of the Prespa National Park. It has been investigated how feasible it is to reactivate alpine pastures for livestock grazing from the socio-economic perspective. The main constraints/restrictions for and advantages of grazing on sub-alpine meadows can be summarized:

1. Bad experience made in communist times with joined community herds:

- No trust in each other, afraid that a shepherd does not care about their personal animals;
- Afraid that they do not receive the corresponding amount of milk of their animals;

2. Daily dependency on milking for milk, cheese, yoghurt and butter;

3. Higher logistical demand of transporting the milk down to the villages every day and distributing the milk corresponding to the productivity of each animal or organizing to produce cheese in the mountains;

4. Livestock keeping at a small scale (average 8-10 goat & sheep, 1 cow) is not seen as profitable enough to justify the increased organization and costs of paying a shepherd, organizing milking etc. Herds that already graze on alpine meadows consist of more than 100 animals;

5. The general opinion is that the number of sheep and goat is going to increase even more in the future. Depending on their personal economic situation, many people would rather reduce their number of animals;

6. Livestock-related work is mostly done by old people and women. It will be hard work for them to stay in the mountains;

7. Salary for shepherd.

Advantages of grazing on alpine meadows:

- Higher quality of milk (because grass is better, milk smells nicer);
- Possibly higher productivity;
- Less moving of livestock can lead to faster growth, more meat;

Fresh air etc. - healthier animals.

Infrastructure needed on alpine meadows:

- Maintain and establish water ponds;
- Overnight place for shepherd;
- Footpath if not available, some mentioned road.

Infrastructure needed for cheese production:

- Drinking water;
- Production and cool storage place for making cheese;
- Milk factory in the villages.

b. Lopping of fodder

Tree lopping for winter fodder production is considered a problem in the Albanian part of the basin, where oak branches are reported to supply about 80% of winter fodder requirements. As a result, woodland near the villages is degraded. Dry foliage of oak branches cut in August or September are fed at a rate up to 80% of the winter diet of goats, and to a lesser extent to sheep. About 200 kg of dry branches (a small pile) is needed per animal for which an area of 600 m² of coppice bush has to be cut. This needs about 0.5 work-days and a fee of 100 Lek/pile has to be paid to the Forest Administration. In fact, according to information from the Association of Communal Forests of Liqenas, an amount of 200 Lek/family is paid to the Forest Directorate of Korça. For the estimated number of 4 067 goats a lopping area of 244 ha should be provided annually and for the 3 667 sheep another 220 ha may be needed. These cuts can be executed every 5 years on the same area. Thus, a total oak bush area of 2 320 ha should be foreseen for lopping, which is about 42% of the 5 500 ha of oak shrubs in the park.

In future, some leaf fodder could be provided through the scheduled clear-cutting and releasing (singling of coppices) work in the managed oak stands and later on by green pruning.

c. Illegal Wood Cutting

Wood in the Prespa lakes basin is mainly used for fuel, through legal and illegal cutting. In order to describe the demand/supply situation for wood cutting the recently elaborated Communal Forest Management Plan (2001) of the Association of Communal Forest of Liqenas is used as a preventative example. The average annual wood needs of the 1 148 families of the association has been estimated at 13 181 m³ stere of firewood (= 11.5 m³ stere/family/year) and 2 633 m³ of construction wood (= 2.3 m³/family/year). About half of the firewood is estimated to be obtained legally, generating an annual income to the Forest Directorate of Korça of about 0.36 million Leks (5 m³ stere of dead wood/family).

The total number of families in the NPP is about 1 273 (Liqenas 1 148, Buzeligeni 50, Shueci 35, Rakicka 40). Their total wood needs can be estimated at 12 900 m³/year. According to estimates of the NPP Director, the amount of self-consumed wood inside the NP is around 10 000 m³ stere. Additionally, 1 000 m³ stere is cut and sold to outside communities and an amount of mostly illegally cut wood of 4 000 m³ stere/year is taken out by some neighboring communities like Zvesda, Bitincka or Tren.

The total annual demand of wood from the Communal Forest of Liqenas has to come from a forest area of 7 500 ha, of which 1 000 ha of the grazed forest land bordering Greece will fall into one of the proposed core protection zone of the national park. This gives an average demand of 1.4-1.9 m³/ha/yr, or without core zone of 1.6-2.2 m³/ha/yr, which can hardly be met by the present growth of these types of forests of 0.35-2.2 m³/ha/yr (estimation of the Communal Forest Management Plan of Liqenas, 2001). However, through rehabilitation, the forest productivity could be improved up to 3-4 m³/ha/yr (Grazhdani, 2007).

A virulent problem remains the obvious large scale illegal wood cutting by the population of Rackika in the Greek Prespa Park in silent alliance with Greek livestock holders profiting from the clearing of forest trees, and to a lesser degree of the population of Shueci and Buzeliquen also in the Greek Prespa Park. The Greek forest rangers are not in a position to handle this problem alone and a close cooperation with the Albanian authority is required to present economic alternatives to the people, e.g. involvement in forest management in the NPP. In the FYR Macedonian Galiçica NP bordering with Albanian NPP, only minor illegal cuttings, probably by Albanians from the village of Kallamas, have been observed, which should be jointly addressed by the National Park Authorities of Prespa and Galiçica.

In table 2 is given firewood generation and marketing. The total firewood production in the NP is 20 000 m³. The price for one m³ is about 20 €, amounting to an overall income from firewood production amounting to 400 000 €.

Table 2. Firewood generation and marketing

| Item | Firewood (m ³ stere) |
|---|---------------------------------|
| Wood legally produced in NPP | 11,000 |
| Wood illegally cut in NPP by buffer zone communities | 4,000 |
| Wood illegally cut in Greek NPP | 5,000 |
| Total firewood production (NPP + from Greek NPP) | 20,000 |
| Of total: Consumption in NPP | 10,000 |
| Of total: Consumption in NPP buffer zone | 4,000 |
| Of total: Sold outside NPP | 6,000 |

d. Non-timber forest products

The most important non-timber forest products in the study area are wild fruits/medicinal plants (e.g. mushrooms, blueberries, mountain tea etc.). The economic value of these products indicates that there is a pressure on these resources. Except for a few people in the Park, who collect mountain tea for the market, most people only collect for home consumption. It is assumed that mountain tea and other wild fruits/medicinal plants have a certain importance for income generation. However, there is no data available on quantities and prices. It is reported that one person earns €3 000 with the production of mountain tea, which corresponds to the average household income in the region.

Priorities

Albania's lake forestry authorities need to consider some specific priorities concerning the present constraints and problems.

In Albania there is a need for active management of degraded forest areas through reforestation, rehabilitation and restoration, as well as control of forest exploitation and the development of alternative renewable energy resources, such as fuel-wood plantations. Special attention must be paid to the support to inclusion of some of the typical forest habitats in the zones of strict protection. Some others priorities are as follows:

- Phasing-out of livestock grazing on dedicated forest land in all three countries (policy development and capacity building);
- Sustainable firewood production;
- Sustainable utilization of designated forest lands for wood fiber and minor forest products;
- Elaborate and implement range management plans for Prespa NP (Albania) and its support zone;
- Livestock quality improvement and elaboration of range management plans for selected priority villages in the support zone of the Albanian Prespa Park.

Prospective

The transboundary Prespa Park initiative has, via the Coordination Committee, become over the last five years a main tool toward achieving sustainable goals in all aspects of life in Prespa. Given the fact that these two lakes are shared among three countries, there is need for a system of integrated lake basin management. This system will include strategic approaches to addressing the driving forces of overexploitation and to providing sustainable livelihoods for the people of the area (Shumka & Roumeliotou, 2004; Society for the Protection of Prespa, 2003).

Given the relevant legislation on forest use and administration, forestry, nature conservation and biodiversity there is a need for integration of the different sectors. While a broad legal framework covering all issues exists, there is a need for setting up priorities for securing a healthy environment for future generations.

As a result of extensive over-utilization, most local forests have deteriorated into unproductive shrub communities of low commercial and biodiversity values. This is presumably associated with a reduction in species diversity and loss of biodiversity. Therefore, concrete efforts should be needed to rehabilitate successfully the forests of the Prespa area. The forest and pastures strategy will drive starting through proper management, improving the land use planning and choices by local government and local people. The forest regeneration and rational use through the better financial support of this vital sector will be treated as crucial points. Grazing of alpine meadows requires a sound range management plan that regulates grazing season, livestock numbers, and species composition and rotation cycles in designated areas. In terms of protected areas, like Prespa, it can be made possible only through providing suitable alternatives to fuel wood, reducing livestock numbers, reducing goat populations and eliminating tree lopping.

The well-known local energy shortage continues to have detrimental effects on the forest ecosystems of the National Park Prespa and its surrounding area, as fuel wood is the major source of energy for the predominantly rural population of the region. The National Strategy of Energy (1998), moreover, is looking for the renewable energy, i.e. like solar panels. Since the people in Prespa (and surrounding villages) still have the main energy source provided by wood, it should be an issue of big concern. The demand for energy is going to be increased in the villages of this area and it remains a big challenge for the future.

Considering this extreme situation, the restoration of forests represent an imperative task, of top priority, in order to ripristine the natural habitats, manly in core and buffer zones of the NP. By this, the scenic beauty will be regained and the attractiveness for the visitors will be increased. But this may only be achieved in close cooperation with local villagers, providing and supporting them with suitable alternatives to fuel wood, suggesting and supporting activities that will led on reducing livestock numbers, reducing goat populations, and eliminating tree lopping. Special attention is paid to the support to inclusion of some of the typical forest habitats in the zones of strict protection.

To achieve the targets set by such a policy, there will be a need for involving the local park administration, associations, authorities and environmentalists. The promulgation of administrative guidelines for a common strategy in protecting the local ecosystems should raise the awareness of local authorities and people for a further and more effective future co-ordination and co-operation.

There is an urgent need for implementing a better control and rational utilisation of the lakes' resources. There is a need for active management of degraded forest areas through reforestation,

rehabilitation and restoration, as well as control of forest exploitation, the development of alternative renewable energy resources, such as fuel-wood plantations, and conservation and enhancement of biodiversity.

References

- Grazhdani D. (2007).** Socio-economic analysis of main stakeholders in National Prespa Park. Master Thesis, p. 93.
- Shumka S., Roumeliotou V. (2004).** *Transboundary Prespa Park strategic planning.* BALWOIS Conference, Ohrid.
- Society for the Protection of Prespa. (2003).** *Strategic Action Plan (SAP) for the Conservation and Sustainable Development of the Prespa Park.* Agios Germanos, Greece.