

Biodiversity Conservation and Economic Growth Project (BCEG)

**Collaborative Management of
Non-timber Natural Resources**
*Pilot Program in Rila and Central
Balkan National Parks*

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Abbreviations

| | |
|--------------|---|
| BCEG | Biodiversity Conservation and Economic Growth Project |
| CA | Control area |
| CBNP | Central Balkan National Park |
| EIMP | Economically important medicinal plants |
| LHIZ | Limited Human Impact Zone |
| MAF | Ministry of Agriculture and Forests |
| MOEW | Ministry of Environment and Waters |
| MP | Management plan |
| MPA | Medicinal Plants Act |
| NFB | National Forestry Board, MAF |
| NGO | Non-governmental Organizations |
| NNPS | National Nature Protection Service, MOEW |
| NP | National Park |
| NPD | National Park Directorate |
| NTNR | Non-timber Natural Resources |
| PAA | Protected Areas Act |
| PS | Park Section |
| RIEW | Regional Inspectorate of Environment and Waters |
| RNP | Rila National Park |
| RS | Ranger's section |
| SME | Small and Medium Enterprises |
| USAID | United States Agency for International Development |

Preface

The Biodiversity Conservation and Economic Growth (BCEG) Project is funded by the United States Agency for International Development, (USAID), as part of its strategic support to the Republic of Bulgaria. The Project is sponsored by USAID in conjunction with the Government of Bulgaria – the Ministry of Environment and Waters (MOEW). The Project is governed by a Memorandum of Understanding (MOU) between the two governments, and its implementation covers the period: May 2000 – June 2003.

This Project is a logical evolution of earlier USAID assistance to biodiversity conservation in the country. It follows some 10 years of assessment, technical assistance and financing of Bulgaria's biodiversity conservation strategic development, new protected areas legislation, and new national park institutions. The Project is designed to capitalize on the achievements of the Bulgaria Global Environmental Facility (GEF) Biodiversity Project (implemented during the period June 1995-April 2000), and builds on lessons learned.

The BCEG Project addresses six specific contract themes known as “contract result packages”. The BCEG Project includes the finalization and implementation of two national park management plans, the development of a new management plan for Rila Monastery Nature Park. It assists in the development of financial mechanisms and strategies to ensure the solvency of National Parks. The Project pilots economic growth activities with select target groups around two Bulgarian National Parks. And it continues to build on the principles of strong public information and awareness as stepping stones for informed public engagement and promotion of biodiversity conservation and protected area management activities.

This Project is issued as Task Order 01, Contract Number LAG-I-00-99-00013-00 under the USAID Global Biodiversity and Forestry Indefinite Quantities Contract (IQC); and is implemented on behalf of USAID, by Associates in Rural Development, (ARD) Inc., of Burlington, Vermont, USA.

The Project is implemented through a Project Management Unit (PMU) based in Sofia, and includes a Team Leader, three Bulgarian technical specialists, and support staff.

Project activities are coordinated through two mechanisms –

- (a) Project Counterpart Team – PMU staff and MOEW/NNPS counterparts
- (b) Project Coordination Group – that serves as a steering committee for Project planning and monitors implementation. This consists of the National Nature Protection Service of the MOEW, and national park directors, the PMU and USAID.

The Project is largely implemented through the Directorates for Rila and Central Balkan National Parks. Additional technical assistance is provided by Bulgarian and international consultants, and is based on specific terms of reference.

Summary

This report summarizes the activities and the results of the Pilot Program for Collaborative Management of Non-Timber Natural Resources (NTNRs) in Rila and Central Balkan National Parks in Bulgaria, between 2000 and 2002. It summarizes the efforts to reform the personal and commercial collection of one important species of non-timber natural resources management – bilberries (*vacinium spp.*) – during the 2002 season, in pilot regions of the two National Parks. The report is a synopsis of lessons learned, and points to recommendations that affect non-timber natural resource (medicinal plants) management within national parks and other protected areas. The results of the Pilot Program offer important tools and approaches to non-timber natural resources collection, and they suggest their wider replication where better resource management, higher revenue for Parks, and greater citizen collaboration in the sustainable use of wild resources, are goals.

Program Objectives and Justification

There are three National Parks in Bulgaria harboring significant localities of non-timber natural resources. It is significant to note for example, that some 80 % of the bilberry resources in the country are to be found within the boundaries of the three National Parks. This small mountain blueberry is prized in Europe for its flavor.

The goal of the Pilot Program was to develop a model for collaborative management of non-timber natural resources in Bulgarian National Parks. The Program was accomplished within the framework of the 10-year management plans for Rila and Central Balkan National Parks. Technical support and some financial assistance for the Pilot Program was provided by USAID, through its Biodiversity Conservation and Economic Growth Project, implemented by Associates in Rural Development, (ARD), Inc.

The management purpose of National Parks is the conservation of biodiversity and ecosystems, as well as the development of favorable conditions for economic growth of the areas (communities) surrounding the parks. Each Park's management plan defines territorial zones (management units) and includes regimes (allowed activities, including collection) and norms (quantities) for non-timber natural resources such as herbs, fruits and mushrooms.

Biological resource information collected in preparation for park management plans (1997-1998) points to the National Parks as a rich and important source of non-timber natural resources – particularly medicinal plants, wild fruits, and mushrooms. Socio-economic surveys during the same period illustrated high social and economic value of these resources to the communities around the parks. Up to 80 % of the population in some of the communities surrounding the parks are economically dependent on the collection and sale of wild products.

Management and use of most of non-timber natural resources throughout the country are largely regulated by the *Medicinal Plants Act* of 2000. The *Protected Areas Act* 1999, and the *Management Plans for Central Balkan* and *Rila National Parks* (2001-2010) regulate access and use of these resources further within the National Parks.

Evaluation of non-timber natural resources within National Parks suggests that the harvesting of most non-timber natural resources has no significant threats, and that collection has been practiced for as long as people can remember. Most damages are local, and the collection of personal or commercial quantities of wild resources does not suggest significant threats to reproductive health or ecosystem quality if done according to sustainable harvesting practices. Thus, both National Park management plans provide for the continued access and use of significant parts of both park territories for collection of these resources.

A Pilot Program for NTNRs originated due to the absence of purposeful management of a select number of resources of high commercial value within the parks' new management zones. There is an increasingly high demand for wild resources on the domestic and international markets. With the deterioration of centralized state control of all non-timber natural resources collection in the country, National Parks needed to develop a system whereby they could continue to allow access to resources by communities, and ensure their sustainable use. Non-timber natural resource management should bring opportunities for income and profits for the local people, as well as generate income for the parks.

In order to achieve these goals National Parks implemented a Pilot Program using a **collaborative management approach to non-timber natural resources**. The approach emphasizes the shared roles and responsibilities of park management and local communities for nature conservation and income generation.

Pilot Program Management

The Pilot Program was developed and managed at two levels. A National Working Group was established, which included one representative of the Ministry of Environment and Waters, two national parks staff from each National Park, and two technical advisors from the BCEG Project. The working group supervised and guided the Pilot Program in both National Parks. National Park working groups were comprised of park section heads from each pilot region and each park's flora specialist, along with pilot area community representatives and commercial NTNR collectors.

The Pilot Areas were selected according to specifically selected criteria. These criteria are provided in greater detail in an interim report on the Pilot Program. The pilot areas for *Rila National Park* included park administrative *sections Belitsa and Yakoruda* – a total area of 21 087,6 ha; and park administrative *section Klissura* for *Central Balkan National Park*, with a total area of 12 728,4 ha. The Pilot Program focused on high mountain populations of bilberries (*Vaccinium myrtillus L.*).

Stages of the Pilot Program

The program was implemented in five stages:

1. Start-up - general orientation to principles and objectives of collaborative management, and the role of NTNR in national park management. This phase included formation of the working group and the parks teams (December 2000 – March 2001)
2. Survey work for each pilot area - the collection of in-depth socio-economic information and household dependence on wild resources, as well as a review of the supply chain for bilberries. (April – October 2001)
3. Situation Analysis and Design of the 2002 campaign for bilberry management. (November 2001 – April 2002)
4. Pilot Campaign for the collection of bilberries – 2002 – implementation (May-September 2002)
5. Institutionalization of the pilot program results (October 2002 – February 2003)

Results from the first three stages

The results of the first three stages of the Pilot Program are presented in detail in the Report of the BCEG Project “Non-timber Natural Resources and the National Parks” (January 2002).

The first three stages pointed to the following conclusions:

- The new Medicinal Plants legislation has flaws that could thwart opportunities for the timely and strict monitoring of non-timber natural resources within National Parks. These should be addressed.
- The supply chain of wild products is comparatively well organized at national and local levels. International markets dictate much of the supply chain dynamics. Most of the wild resources of national parks, and indeed, Bulgaria, are destined for export.
- Small and medium enterprise development (SME) is not a viable tool to attempt to add value to wild resource collection at the local level. Supply chain dynamics are such that attempts to add value to most wild resources at local level would not successfully compete against a well-organized national processing industry.
- Non-timber natural resources are extremely important to local communities at social and economic levels. Local collectors have a strong affinity with national park resources, and know the territory well. They have a vested interest in continuing to be allowed access to these resources. Providing them with legitimate access and rights to resource collection are among their biggest concerns.
- An internationally recognized methodology for wild resource (NTNR) assessment was tested successfully within both pilot areas, and beneficially engaged local collectors and park staff in the process. The methodology is easily replicated each year, and can be used for other NTNR resources.

- Greater levels of trust, engagement, and cooperation were achieved between the parks and their local partners.
- Partnerships with the private sector supply chain (local collectors, buyers, and traders) have been established. Local government administrations have been successfully engaged.
- Phenological monitoring (observations of seasonal plant development) was used successfully to establish the timeliness of seasonal collection activities – including when to commence with resource assessment and when to start collection campaigns (collection seasons).
- Organic certification is premature for wild resources coming from National Parks. Certification standards remain problematic in Bulgaria and Europe, and Parks can not comply with the chains of custody necessary for proper certification.

Pilot Campaign for Bilberry Harvesting for the Collection Season 2002

A new system for bilberry management in the pilot areas in the two National Parks was implemented during the summer of 2002. Its design was a direct result of the information and lessons learned in the previous season.

This system was characterized by the following elements:

- Park staff and local collectors, buyers and local government became stakeholders in the implementation of the bilberry collection campaign. They shared responsibilities for shared decision making, action planning, and the implementation of activities.
- Bilberry collection and management were based on the results from the monitoring and resource assessment. Collection localities and harvest quantities were set for the first time within the new management zones for each pilot area in the National Parks.
- Collection start dates were established for the first time within the national park territory, thus providing much better resource control and management than in the past.
- A simple system for controlling collection was implemented. Collection permits were successfully tried in an effort to monitor and regulate personal and commercial collection. This new system provided for better resource management and resulted in increased park revenue collection.
- A successful public awareness campaign supported community and park goals of information sharing, transparency and education among local communities.
- 39 members of Park staff were trained in phenological observations and resource assessment methodologies.

Planning and preparation of the campaign included a number of meetings of the national working group with the stakeholders and partners in the pilot areas. All steps and materials of the campaign were discussed and negotiated between parks, local government officials, collectors' representatives and buyers.

Public awareness was conducted using a campaign poster and guidebook circulated by local groups of volunteers. The campaign was augmented with information releases in the local press. The campaign was also covered by the central mass media as part of a national campaign of public awareness.

Results

The results from the phenological monitoring showed normal bilberry development phases and good conditions of the resource in 2002. The methodology was used to set dates for the resource assessment and the beginning of the collection season.

The Resource assessment, conducted in July with the participation of local collectors, estimated that the exploitable resource in the Central Balkan National Park pilot area amounted to 52,896 kilograms. The amount estimated for collection from Rila National Park pilot area was 31,256 kilograms.

The collection campaign started on the 27th of July in Central Balkan and 3rd August in Rila. The collection start dates were observed in both parks due to good public awareness, effective organization of the park guards, and the cooperation of local buyers.

Permit coupons for bilberry harvesting were introduced for the first time in National Parks. They were given to all bilberry collectors in the pilot areas of the parks. Collection coupons were marked for commercial and personal use. The design and the text of the coupons were developed by the Park Directorates and their community partners. The purpose of these coupons was to attempt to register every collector in the field, and to use coupons to monitor resource quantities, and localities of collection.

The distribution of the coupons involved park offices, local buyers, local mayors, and chalet keepers. Local buyers distributed coupons only to the collectors who were harvesting bilberries for commercial use. Buyers were given the right to distribute coupons only after registering their buy out point with the appropriate Regional Environmental Inspectorate, and after they had paid the corresponding collection fee associated with the amounts of berries that were bought. This fee is set in the Medicinal Plants Act.

For the first time in the National Park there was a monitoring and control system being employed for NTNR collection. Park guards conducted daily field patrols and kept a record of their observations and monitoring. This information contributed to clearer picture of collection dynamics in each of the pilot areas.

The collection campaign lasted 36 days for Central Balkan National Park, and 51 days for Rila National Park. More than 500 collectors were in the collection areas during the busiest time of the campaign for Central Balkan, and fewer, (100) on average, during the campaign period for Rila National Parks. Differences in number, quantities of resources collected, etc., are explained in more detail in the report.

At the end of the campaign period, Central Balkan generated 11,550 BGL against a total commercial quantity of 77,000 kg of wild bilberries. This quantity exceeds the resource assessment due to the fact that the collection permits were issued also for neighboring park sections. Rila National Park generated a total of 306 BGL against a total commercial quantity of 2000 kg. Together these represent an increase of more than 300% in revenue collection from the commercial permitting of bilberries between 2001 and 2002 collection seasons.

Collectors in Central Balkan generated approximately 104,000 BGL from bilberries this collection season, or an average of 700 BGL per household (between 20-25 % of total annual income). The income generated in the villages and towns in Rila pilot area was low – 2,200 levs, although the households have collected bilberries for personal use equivalent to 23,400 levs. Improvised open road markets have sold wild products for approximately 4,000 levs. This money also entered local households.

Lessons Learned

The implementation of the new non-timber natural resource management system in the pilot areas had certain difficulties. These include:

Phenological monitoring and resource assessment demonstrated their importance and efficacy as tools in NTNR conservation and management. In some instances, however, observations were not conducted in a timely fashion. This led to some errors in estimating total seasonal yields.

The introduction of collection coupons challenged park management procedures. Commercial collection permits were given to local buyers before payment of collection fees. According to the Medicinal Plants Act, collection fees must be paid in advance of each season. This irregularity should be discontinued in the future.

Monitoring of the collection campaign in the field was a new activity for park staff. They underestimated the time and necessity for record keeping. This led to irregularities in records, and inconsistencies in the compilation of field statistics.

The Working Group underestimated the amount of time needed to engage other institutions responsible for NTNRS in territories outside of the National Parks. More efforts need to be made to engage regional institutions during the preparatory stage of the campaign. These institutions include the Regional Forest Directorates, Local and regional fire brigades, regional police departments, etc. More specific coordination of schedules and buy- out- point monitoring needs to take place with regional environmental inspectors.

Recommendations

Non-timber natural resource management in the National Parks will require changes to the Medicinal Plants Act, and to secondary legislation in the Protected Areas Act.

Changes should include the ability to issue commercial collection permits to local buyers as well as to individual private collectors as presently specified in the Medicinal

Plants Act. Additionally, Park Directorates should also have the administrative right to supervise buy out-points, markets, and commercial processing enterprises in areas around the parks.

Personal use collection permits should be issued in cooperation with local mayors.

Park management should increase their efforts to enforce more strict observation of collection restrictions within some park management zones. This matter should be addressed through a combination of more frequent field visits, greater public education, and better marking of zone boundaries. In addition, park management should take greater steps to ensure that field monitoring and field notes during collection seasons are kept on a more regular basis by park section heads and park rangers.

The techniques and methodologies used in the bilberry collection season of 2002 should be expanded beyond the pilot areas and include the entire park territory. In addition, the phenological observation and resource assessment methodology should be expanded to other NTNRs of commercial importance.

The results were also shared at a national workshop of state agencies responsible for the national protected areas network, environmental NGOs, the Bulgarian Academy of Science, and the private sector working in medicinal plants processing and export, in December of 2002. The results of these discussions and the recommendations noted form the basis for greater inter-agency cooperation in future collection seasons, and the extension of the Pilot Program approach into other protected areas.

Acknowledgements

The pilot program was implemented successfully owing to the hard work and commitment of the National Park Directorates for Rila and Central Balkan, the National Nature Protection Service, of the Ministry of Environment and Waters, and the Plovdiv Regional Inspectorate of Environment and Waters. Its success is also due to many local partners: mayors, collectors, purchasing stations, and the most active export company for wild fruits from Bulgaria – Ecovita. We also wish to acknowledge the assistance and cooperation of the local and regional units of the National Forestry Board, Police Directorate, and Fire-Fighting Service. The staff and consultants of the BCEG Project merit special thanks for their pioneering efforts in collaborative management.

The driving force, source of ideas for the entire program and the leader of its implementation was Mr. Peter Hetz – team leader of the Biodiversity Conservation and Economic Growth Project.

The consultant during the first phase was Mr. Jared Hardner who provided technical assistance during the creation of the concept, and its first phases.

The Ministry of Environment and Water was represented by Mr. Mihail Mihailov – chief of Protected Areas Department at NNPS and senior expert on medicinal plants at the same directorate Mrs. Raina Hardalova who took active participation in the work.

The Directorates of the two National Parks were direct implementers of the Зсвдш Program and the 2002 campaign:

Rila National Park – Mimi Pramatarova – Director; Vassil Petrov – Acting Director; Verka Ivanova – Forest Management Expert, Philip Zaikov – Chief of Yakoruda Park Section, Stefan Kirilov – PR expert and all guards and rangers from both park sections “Belitsa” and “Yakoruda” - Roumen Kolchagov, Atanas Asiov, Akia Manzurski, Usain Kutev; and Aishe Salih, Djamile Mehmed, Sabri Durleov and Ventsislav Kozarev – collectors from Cherna Mesta village and Belitsa town.

Central Balkan National Park – Nela Rachevits – Director, Ivailo Nikolov – Deputy Director, Gergana Staneva - Flora expert, Marin Kostov – Chief of Klissura Park Section, Dinana Terzieva and Plamen Stoyanov – PR experts, Gencho Iliev – GIS expert and all guards and rangers from Klissura Park Section – Dimcho Ladjov, Nesho Hristev, Giuro Ivanov; and Nikolai Penchev and Anton Penchev – collectors from Christo Danovo village.

Representatives of the Bulgarian Academy of Science (BAS), Botany Institute participated as consultants in the phenological observations and in the resource assessment: Dr. Antonina Vitkova, Dr. Elena Genova, Dr. Vladimir Valchev.

1. Pilot Program for the Collaborative Management of Non-timber Natural Resources in National Parks – Background

Bulgarians and nature interdependence - nowhere is this more pronounced than in the traditional harvesting of non-timber natural resources (NTNRs). Because of its special location at an ecological and climactic cross-roads between major continental systems, Bulgaria is blessed with a wide variety of non-timber natural resources – a botanical diversity – that rivals other temperate, as well as tropical, systems. Bulgaria maintains a long history of ethno-botany, reflected in its use of medicinal plants in traditional remedies and treatments, as well as in cuisine. Bulgaria presently ranks as the largest exporter of wild medicinal plants in Europe. Over the last five years the country has been ranked between 5th and 8th in the world in the export of wild NTNRs. Annual exports of these resources can be counted in the millions of Bulgarian leva.

So important are medicinal plants to the Bulgarian portfolio of natural resource diversity that they are a substantial focus of the National Strategy for the Conservation of Biological Diversity (finalized in 1994 and adopted by the Government of Bulgaria in 1998). They are also the subjects of specific legislation, the Medicinal Plants Act, 2000.

1.1. National Park Context

Bulgarian National Parks – Pirin, Rila, and Central Balkan – all harbor significant populations of medicinal plants – wild resources that can have both commercial and personal benefit. National protected area policy, as well as Park management plans, provides for continued access and sustainable harvest of non-timber natural resources.

The management of the National Parks in Bulgaria is based upon the Protected Areas Act (1998). This Act provides the institutional framework for their establishment and management. The parks are managed by Directorates, and the park area is divided into park sections with local offices. The park section boundaries are determined in accordance with the landscape relief of the park area. Park section offices are located in the neighboring municipalities.

Ten-year National Park Management Plans determine the regimes and norms for the use of all natural resources, including the non-timber natural resources such as herbs, fruits, mushrooms. Zoning is the main tool for conservation and management of these territories. Management zones are territorial units that are determined by long-term park goals and management objectives. Each zone's main designation is determined in accordance with its resources and conservation significance. Rila and Central Balkan National Park Management Plans, which were approved in 2001, define five management zones:

- Reserve Zone – provides for the most strict protection regime; allows little human intervention;

- Limited Human Impact Zone – provides limited tourist activities and the collection of limited quantities of non-timber natural resources for personal needs;
- Tourism Zone – defines the major tourist trails and the area around tourist infrastructure;
- Infrastructure Zone – defines the Park’s major infrastructure - roads, buildings, hydrological facilities, etc.;
- Multifunctional Zone – is the largest designation of land and covers about 46% of the territory of Central Balkan National Park and 65% of the territory of Rila National Park. Regimes allow varied natural resource uses, such as grazing, firewood collection, and non-timber natural resources collection.

1.2. The Context of Non-timber Natural Resources within the National Parks

Information concerning plant diversity of Rila and Central Balkan National Parks, as well as the socio-economic data, gathered during the drafting of Park Management Plans (1997 - 1999), provided a broad assessment of the condition and diversity of medicinal plants and mushrooms within the parks. These surveys also demonstrated the significance of renewable natural resources as a means of livelihood for people living around the parks.

Estimates of annual, average value of wild products collection indicates that the three National Parks of Bulgaria have wild resources collected from their territory with a commercial gate value of 7.8 million BGL per annum. The value of the NTNR collection from Rila is approximately 3.5 million BGL, 2.55 m BGL for Central Balkan and 1.75m BGL for Pirin. Compare this to an average of 2.75m BGL invested in park management and development for these three parks each year.

In some towns and villages of the pilot areas the collection of non-timber natural resource is crucial to the livelihoods of some 80% of their population. In practical terms, collection creates employment for the local population, and has “in-kind values” of significance to each collecting household. NTNR collection is seasonal but provides the most serious injection of cash into household economies comparable to the annual average salary for the country (2,500 BGL/year). The importance of non-timber natural resources for annual income increases given growing unemployment rates in rural areas, and the restructuring of state enterprises. This trend is noticeable in towns and villages with a high percentage of ethnic minorities.

The analysis of 2001 data suggests that wild resources of commercial significance will experience increased demand and exploitation. These resources will also remain a significant source of real, annual income for at least 300,000 people nation wide. Subsequently, we can expect to see wild resources endure more and more exploitation and pressure.

The use of medicinal plants (mainly herbs and many of the wild fruits) in the country is regulated by the Medicinal Plants Act, 2000; (it does not cover the use of mushrooms). This Act is also applied in the management of medicinal plants within

every protected area that provides for sustainable wild resource collection. The sustainable use of medicinal plants is specified in each park management plan; yet there is no national policy regarding the rights and access of Bulgarians to these wild resources. Thus each park management plan is responsible for the development of specific park medicinal plant technical management plans. (*Appendix 8*) These plans regulate the methods and regimes of sustainable non-timber natural resource use. These technical management plans apply the law. State authorities are required issue collection permits to *individuals* for *commercial quantities* of specific resources. Permits are issued against fees that are determined by the respective Tariff Tables approved by the Government. Permits for personal collection are not necessary. Personal use norms are specified in the Law. However, in many instances there is nothing to distinguish collection for personal or commercial use in the field – as the permitted daily quantities are virtually indistinguishable. Thus, there is no tool to control commercial quantities of wild resource collection in the field, and protected areas lose revenue.

1.3. Collaborative Management of Non-timber Natural Resources – Designing a Pilot Program

1.3.1. Program justification and goals

On the one hand, the National Parks aim to preserve the natural condition and integrity of natural elements and ecological processes within the parks. On the other hand, their goal also is to achieve a very high level of support by the local population for the park objectives and tasks.

The particular need for a Pilot Program to address non-timber natural resources (NTNR) is determined by the following:

1. The lack of targeted management of non-timber natural resources is a threat to the protection of the park ecosystems;
2. The National Parks need to generate income from the fees for the permits for collection of these resources, and they are able to invest such income back into nature protection activities;
3. A system for monitoring and control over these resources needs to be applied in partnership with local collectors;
4. The opportunities for the local people to generate income from the collection of these resources can be improved.

The overall national park management plan philosophy uses management approaches that are based upon partnership with all interested parties. State institutions are unable to manage nature protection on their own. Therefore, in order to achieve their goals set forth by the management plans, the National Parks seek management partnerships.

In response to these challenges, Rila and Central Balkan National Parks have set in their management plans the implementation of Pilot Programs for Non-timber Natural Resources Collaborative Management.

The Pilot Program goals are:

- To improve the management of non-timber natural resources in the National Parks;
- To stimulate the economic development of the regions around the National Parks.

1.3.2 What is Collaborative Management of Non-timber Natural Resources?

Collaborative management of non-timber natural resources is an approach, which endorses the rights and the needs of people around the park to use NTNRs in the park in a sustainable fashion. This approach requires the identification of all stakeholders and their involvement in the development and execution of a new model for sustainable NTNR management. The participants in this process require orientation and training, and it is necessary to clarify their specific responsibilities and commitments.

The approach **collaborative management of non-timber natural resources represents in fact an agreement for management of** natural resources with the following elements:

- All consumers with an economic interest in the natural resources in the Park are identified;
- The populations of the significant (from conservation and economic point of view) natural resources are identified;
- The territory (area) of collection (operations) is outlined;
- A permit and monitoring plan is developed. It agrees the type of harvested natural resources, the quantities, the place and time;
- The responsibilities of each partner are defined – regarding education, information sharing, public awareness, financing, control, technical support, etc.;
- Conflict resolution procedures are defined.

In the creation of this Pilot Program, Rila and Central Balkan National Parks identified five major stakeholders in the development of the collaboration management model.

- *National Parks* - their mandate is to ensure the conservation and sustainable use of resources;
- *Collectors* - their interest is to keep their livelihood from collection, and to generate income;
- *Local Government* - their responsibility is to the economic and social development of their municipality / mayoralty;
- *Local Businesses and Buyers* – their interest is to make money from the buying and selling of wild resources, and to ensure the quality of these resources in a competitive and demanding market place.
- *Commercial Processors and Exporters* – their interest is to assure quality products at a competitive price to a largely western European processing industry.

1.3.3. Pilot Program Coordination and Management

National level – The management and supervision of the Pilot Program was accomplished through a *national working group*, which included: the Senior Medicinal Plants Expert from the Ministry of Environment and Water – National Nature Protection Service (NNPS); the flora experts from the National Park Directorates, park section heads from participating Park Sections, the BCEG Project's Pilot Program Coordinator, the Project's Biodiversity Expert and the BCEG Project long-term Bulgarian consultant in NTNR management.

Operational level - The Pilot Program was coordinated and implemented in the pilot park sections by the heads of park sections, and the Park Directorate's flora expert. Regular supervision and technical advice was provided by the long-term NTNR management consultant and BCEG Project staff.

1.3.4. Stages of Program Implementation

The Pilot Program was characterized by five distinct stages. Briefly, these were:

Stage 1. Beginning of the Pilot Program – December 2000 – March 2001

Characterized by the general orientation of Park Directorate staff, their technical experts, conservation and NTNR consultants, and representatives of the Biodiversity Conservation and Economic Growth Project, this stage included working meetings in Sofia in December 2000. 25 people participated in each of the Sofia meetings and discussions about the nature and approaches used in collaborative NTNR management were held between representatives of: the National Parks; the Ministry of Environment and Waters; the Ministry of Agriculture and Forests; the Bulgarian Academy of Sciences (BAS) - the Institutes of Botany and Forests; Sofia University faculty of ecology, botany and biology; the Association of Herb and Mushroom Collectors; the Ministry of Health Units responsible for the medicinal plants use; and conservation non-governmental organizations. These meetings were used to determine the composition of the national working group, and examine legislative issues and changes.

The first set of meeting to launch the Pilot Programs was held in each Park's pilot areas was held in March 2001. They were used to present the non-timber natural resources collaborative management concept, to identify the stakeholders, potential partners at the local level, and to design an initial Pilot Program action plan for 2001. They were also used to examine the social and political dynamics of the pilot areas for each park, as well as confirm the non-timber natural resource(s) that would be the focus of the model.

Stage 2. Collection of Information – April – October 2001

The second stage was devoted to the collection of information specific to each of the pilot areas. The results from this stage are used to plan a model collection campaign in 2002. Information included a review of:

- Status and condition of the wild resource in each of the pilot areas;
- legislative provisions for NTNR management in the field;
- NTNR local and national supply chains, and the role of small and large businesses in the supply chain;
- social and economic dependency on the non-timber natural resource in each of the pilot areas; and
- Review of the opportunities for *certification* to add value to local and export markets.

Information collection and analysis was undertaken by combinations of national parks rangers, Bulgarian and international consultants, as well as the national working group.

Stage 3. Situation Analysis and Planning – November 2001 – April 2002

The analysis of the information collected in Stage 2 provided answers to five major questions:

- Is there an opportunity to establish and develop small and micro enterprises for processing non-timber natural resources in order to generate economic benefits for the local population?
- In which ways can monitoring and control be improved in order to manage the NTNRs in the national park?
- What are the best and most effective methods for assessing NTNRs within the national parks?
- How can Parks best involve partners in the non-timber natural resources management – Regional Environmental Inspectorates, local government authorities, business partners, etc.?
- How to improve the commercial permit system in order to enable more efficient control over sustainable resource use and help parks to improve income generation from associated fees and taxes?

The situation analysis was conducted in a series of meetings and workshops assisted by national and international consultation.

Stage 4. Bilberry Collection Campaign – May – September 2002

The results of the situation analysis were applied during the seasonal bilberry collection of 2002. During this stage, a set of experimental approaches was used to address problems in sustainable management of wild bilberries, and to provide evidence of the benefits of a collaborative management approach to NTNR collection in National Parks. The details of this campaign form the bulk of this report.

Stage 5. Institutionalizing the Results – October 2002 – February 2003

This stage comprises two working meetings:

- A workshop in November 2002. Pirin National Park joined Central Balkan and Rila National Parks in the analysis of the results from the collection season. Participants included the directors of the three National Parks, flora experts and the heads of the park sections where the Non-timber Natural Resources Pilot Program was implemented. Follow up steps were outlined. Recommendations were made to be presented at the national working meeting in order to address changes to the legislation.
- A National Working Meeting was held in December 2002. Representatives of the following institutions took part: Ministry of Environment and Water – NNPS; Ministry of Agriculture and Forests – National Forestry Board (NFB); Ministry of Regional Development and Public Works; relevant Regional Environmental Inspectorates; the National Association of Herb and Mushroom Collectors, National and Nature Parks representative; national and local NTNR businesses, mayors of pilot area municipalities and villages, international donors, nature protection and local government reform NGOs; Bulgarian Academy of Sciences, and two universities. (*Appendix 5*)

1.3.5. Pilot Program Areas

One Pilot Program Area in each National Park was chosen for the development of the collaborative management model. Areas included the park sections of Belitsa and Yakoruda in Rila National Park, and park section Klissura in Central Balkan National Park.

Selection criteria for pilot areas:

- Presence and sufficient quantity of the *vaccinium* resource in the park sections;
- Appropriate zones and regimes as defined in the management plan,
- Presence of *vaccinium* harvesting and supply chain functions – buy out points, groups of collectors, interest of commercial traders
- Socio-economic situation in the area – problems with unemployment and participation of ethnic minorities;
- Interest between parks and the local communities for cooperation

Rila National Park

Belitsa Park Section is situated in the southeastern region of Rila National Park. The section is an administrative part of the park and is managed and guarded by the head of park section and 6 guards using one automobile and two motorbikes. The total area of the section is 10129,8 km², from which 6435,8 km² is forest fund and 3694,0 km² are high-mountain meadows and pastures. More than 90% of this section falls into the multifunctional zone of the park. The office of the park section is located in the town of Razlog.

Yakoruda Park Section is situated in the Southern and Southeastern region of the Rila National Park, with a total area of 9957,8 km² of which 5291,8 km² is forest fund and 4666,0 km² are high-mountain meadows and pastures. More than 90% of this section falls into the multifunctional zone of the park. The park section office is located in the town of Yakoruda. The section is managed and guarded by the head of park section and 6 guards using two automobiles and two motorbikes.

The sections outside of the Park fall administratively within the boundaries of the following minor municipalities: Belitsa, Razlog and Yakoruda. These administrative areas include about 11 000 people, representing approximately 4 000 households. Most of them live in small villages and hamlets. The towns and villages of these minor municipalities are concentrated in the valleys of Rila, Pirin and the Rhodope Mountains. The small hamlets are located mainly along the slopes of the Rhodope Mountains.

The social and religious history of the area is an important social characteristic. More than 50% of the population of the municipality of Belitsa and more than 60% of the population of Yakoruda is Bulgarians of Muslem faith – or “Pomaks”.

The livelihood of the local people is highly dependant on the natural resources in the region – collection of wood, wood processing, large scale collection of non-timber natural resources and to a certain extent, agriculture, including potatoes and tobacco. Raising animals and mountain livestock breeding augment these activities. Families plan their income and employment on a seasonal basis, and depend on the collection of renewable natural resources.

The level of unemployment in the villages according to the mayors is more than 80%. Actually, a lot of the people are not unemployed but self-employed farmers, who keep small farms and animals. A significant percentage of the time of the families is spent on the collection of wild products.

Based on information, shared by the mayors of the villages and the buyers, the average annual income of a collector varies between 1500 and 1800 BGL from NTNRS collected for commercial purposes. This is a significant addition to the family budget, given the country's average annual salary for the year 2001 was about 2500 BGL (exchange rate 2 BGL: 1 USD).

Central Balkan National Park

Klissura Park Section, with an area of 12728,4 ha., is located on the southern slopes of the main ridge of Zlatishko – Teteven Mountain and the Troyan Mountain.

Klissura Park Section is an administrative unit of the National Park with a local office in the town of Klissura. It is equipped with two automobiles and two motorbikes. The team of the park section consists of one park section head and six guards.

More than 90% of its territory falls into the Park's multifunctional zone designation.

The Park section borders the municipality of Karlovo. The municipality contains a population of 74,000 people, who are equally distributed amongst its villages. The Pilot Program is implemented in settlements that share a boundary with Klissura Park Section – the town of Klissura, and the villages of Rosino, Hristo Danovo and Karnare.

The population of these settlements is around 8 000, living in about 2000 households. In two of the villages – Rosino and Hristo Danovo- the population consists of a large group of Roma minority – up to 40% in the first village and up to 30% in the second village. 30% of the population in the villages of Hristo Danovo and Rosino is Turkish.

In the villages of Rosino and Hristo Danovo the unemployment is nearly 70 - 80%. The restructuring of the economy and the closure of large state enterprises has caused most of the unemployment in the villages.

The average income from the collection of non-timber natural resources from this pilot area is approximately the same as those for the pilot area in Rila National Park – 1500 – 1800 BGL.

1.3.6. Bilberries – Pilot Program Resource

One pilot species (*Vaccinium myrtillus L.*) was selected for the purposes of the Pilot Program, so that other aspects of the program could be controlled.

Selection criteria for pilot resource:

- Must meet all legal requirements for sustainable use as stated in the Medicinal Plants Act and the park management plans;
- Must be suitable for inventory and taxation using conventional resource assessment techniques that are recognized internationally;
- Should be collected for personal use and commercial purposes;
- Should be widely distributed in the national park;
- The resource should have regular annual commercial interests and should have a developed supply chain;
- The resource species should be attractive as a source of income generation;
- The selected resource species should be “well known” to the users, it's formation and development should be commonly known among the collectors/users.

Bilberries (*Vaccinium myrtillus L.*) are a sustainable natural resource with a long history of collection.

2. *Main Results from the Situation Analysis – 2001*

The fieldwork and analysis of the information collected in 2001 served as the basis for designing the 2002 bilberry collection campaign for the two national park pilot areas. The following results are of note. They are presented in greater detail in a report entitled: Non-timber Natural Resources and National Parks, BCEG Project, January 2002.

2.1. **Legislation – Medicinal Plants Act and the Protected Areas Act**

Medicinal Plant Act – Results of the situation analysis indicate that this Act is not being applied effectively in the management of non-timber natural resources inside the Park. Specific problems lie with the inability of Park personnel to distinguish between NTNRS collected for personal use, and those collected for commercial purposes. Daily collection limits for individual collectors are virtually the same, irrespective of if they are for personal or commercial use. This makes monitoring of each year's harvest problematic, and the collection of revenue for commercial collection from within a specific area virtually impossible.

In addition, there is no systematic effort to register and enforce the rules of medicinal plants act at buy out points. There is low participation in the commercial permit system. Commercial permit fees for 2001 for NTNRS in the two National Parks were only 3,000 BGL. The quantities that were estimated from these same territories should have brought more than 5 times this amount. If commercially collected quantities of medicinal plants are to be monitored for impacts to the environment and for purposes of revenue collection, then the cooperation of buyout points must be secured.

Fieldwork during this period also indicated no cooperation on source, origin, or payment of collection fees on municipal territories between representatives of the MOEW and MOAF. Collection permits can be secured by a commercial collector without any coordination between these authorities. Thus wild products can be collected from one territory and paid for in another administrative region. There is no connection between fees paid and the source of the berries.

While there are still no serious threats to the population of bilberries in the National Parks, a free-market economy already has placed unacceptable risks on the sustainable harvests of other renewable resources inside and outside protected areas. Market demand and the absence of measures to conserve the population of St. John's Wort in previous years had a devastating effect on the population of this conservation species nation - wide.

Protected Areas Act – Since the PAA makes provisions for specialized management of all medicinal plants (NTNRS) of conservation and commercial significance, it is incumbent on each Park's management plan to address population conservation and sustainable harvests within specialized management plans. (*Appendix 8*) It is clear the

all protected area management plans are faced with the ambitious task of replicating the bilberries situational analysis for all medicinal plants of commercial significance. In addition, these plans must be linked to the new management zone schemes designated and recognized by law for each of the protected areas. At present there is little control of collection areas or collection intensity within these zones.

2.2. The Bilberry Supply Chain

The wild bilberry supply chain refers to the chain of practices from the point of collection to the point of final use. Analysis indicates that the bilberry supply chain in Bulgaria is very well developed, with only marginal markups in price at each step in the chain. The supply chain is dependent on both the quantity and quality of berries – with quality being the predominant factor. Bulgarian bilberries are used for flavor on the international wild fruit market.

In addition, the domestic market is flooded with ample quantities of commercially available, inexpensive bilberry jam, and other wild berry products. Further supply chain analysis indicates there is only marginal possible success for “boutique” supplies of blueberry products domestically and internationally. No commercial entrepreneurs in the domestic supply chain found the boutique market attractive. International distributors of Bulgarian bilberry products are already producing and distributing “high-end” bilberry products. In these cases processing and production is taking place outside of Bulgaria.

Wild bilberry collectors from the towns and villages in the pilot areas, on the other hand, are well organized around known buyers. A consolidating “buyers” market in the country is establishing stricter collection and purchase procedures that are aimed at increasing the value at every step of the export supply chain. This shows that buyers (especially export buyers) are focused on berry ripeness and flavor.

Small quantities of wild bilberries are used for domestic processed products (ice cream, jam, fruit drinks). Over 80% of this wild natural resource leaves the country as frozen raw material. Export purchase price depends on market demands and trends on the big European markets – mainly Italian and the German.

2.3. Small and Medium Enterprise

One motive for NTNR management was to investigate possibilities for small and medium enterprise development as part of economic growth opportunities in communities surrounding the Parks. Information collected during 2001 and its analysis suggest only marginal profits are realized for seasonal wild products like bilberries. There is little or no capacity for commercial primary processing of most wild products collected from Parks by local communities, as most primary and secondary processing and production require investments far beyond the capacity of these small villages. Observations suggest a consolidating NTNR processing market. This production

market centers on large agricultural processing centers. Most processors are capable of processing a variety of agricultural products and not just wild supplies.

Thus, small supply chain mark-ups and a consolidating processing market detracts significantly from the viability of micro/SME business to develop in communities around National Parks. Village SME development represents an unacceptable risk for villagers. SMEs would not be competitive with either domestic or international markets – either on a commercial or specialty foods level. In addition, no village bilberry business could survive on the proceeds of a capricious, seasonal wild bilberry business alone. Any village enterprise would be forced to examine the processing of other wild products. No appropriate business acumen was encountered in either of the pilot areas. And there was little interest on the part of large-scale domestic processors and exporters to invest in processing at village level.

2.4. Implementation of the Resource Assessment Methodology in the Parks

Between 3-9 August 2001 for the Central Balkan NP and 9-15 August for Rila NP, scientists, park experts and guards and local collectors from neighboring villages joined in the first assessment of wild bilberry stocks (*Vaccinium myrtillus L.*) to evaluate annual, average wild productivity for the pilot areas. The “Methodology for Determination of Medicinal Plants Resources” (1986)* was successfully implemented. The methodology has been piloted in research plots and projects by the Ministry of Environment and Water**. In Rila National Park, the assessment team included 14 people - 3 scientists, 1 park section head, one mobile park guard, 5 rangers and 4 local collectors. For Central Balkan NP the assessment team consisted of 10 people – 2 scientists, Park Flora expert, one section head, 3 park rangers and 3 collectors from the local communities. Park staff and collectors were trained in the implementation of the methodology and spent a week in the field employing it in practical terms.

A resource assessment is used to determine quantities and regions of berries that will be allowed for collection. The 2001 bilberry resource assessment served as a baseline. These assessments become the basis for long term monitoring of the populations, as well as the condition of habitats. Eventually, the technique will be used to assess territories containing other significant NTNRS.

Cooperation between park staff and local collectors make the exercise of assessment, as well as the results, commonly understood by both parties. Sharing the responsibility of resource assessment and the results are an important aspect of collaborative management. Ideally, local collection groups and park decision-makers join to agree

* “Methodology for Determination of Medicinal Plants Resources”, 1986. USSR State Committee of National Forestry, Moscow, p. 52

** The methodology has been used in Bulgaria for the purpose of medicinal plants resources evaluation on different occasions, including: MoEW: “Resource Investigation of Medicinal Plants Under Protective Management Regime for the Purposes of Determination of Scientifically Based Norms of Their Use” (1993-1995); BNSF B-436: “Distribution, Population Status and Resource Characteristic of Medicinal Plants in the Znepole Floristic Region” (1994-1997); studies conducted during BSBCP project on “High Mountain Treeless Zone of Central Balkan National Park” (1995 - 1997).

on annual collection areas and harvest yields. This practice is expected to lead to successful adoption and implementation of sustainable harvesting and conservation measures.

During 2001, the localities of bilberry resources of significance, as well as the general status and conditions of the populations in the pilot areas were identified. Threats and human impacts were identified. Wildlife dependence on wild bilberries was also given a preliminary assessment.

The results of the 2001 Resource Assessment indicate that the productivity and distribution of bilberries are most significantly impacted by meteorological conditions. The conditions of bilberry populations in the pilot areas are generally in good health, and their reproductive capacity and plant health are satisfactory. These results provided recommendations on the sustainable harvesting of bilberry resources for both personal and commercial purposes.

In addition, the results fruit analysis from both parks show an absence of heavy metals in the samples taken from the pilot areas.

2.5. Trust and Cooperation Created on Local Levels

With the launch of the collaborative management model of NTNRs in parks, the national park directorates and municipalities started building new partnerships. During each stage of the pilot area program, local collectors and buyers, local government authorities, and the park staff were involved in a dialogue regarding the possibilities and constraints of collaborative natural resource management in the Parks. This regular exchange of information proved critically important to building trust and overcoming problems.

2.6. Partnerships

Three important partnerships grew out of the situation analysis:

New park administration field staff (park guards) were effectively engaged in day to day contact and supervision of collection groups in the field. This was the first season in which park guards operated under the mandate of recently approved management plan. These plans govern collectors' activities, collection locations, and behavior. The resource assessment activities helped to forge some new trust and cooperation between ethnic minority collectors and park guards

The partnership of National Park Directorates with Buyers:

The strongest partnerships were forged between park directorates and buyers operating commercial buy out points for wild resources. This again was the first formal engagement of both parties in problems and opportunities of mutual concern. Partnerships arose around common concerns for the timely delivery of quality wild products from known concentrations in each Park, issues of access, collector behavior,

and collection permits and revenue collection. New partnerships were reflected at two levels – local buy out point operators (both legal and illegal) and large-scale commercial exporters operating a multi-million BGL industry.

The partnership of National Park Directorates with Local Government:

Important partnerships evolved due to the engagement of local mayors and other local government officials. Local officials were quick to realize the objectives of the national parks collaborative management program, and the potential benefits accruing to local administration. They recognized that continued access to wild resources and sustainable collection meant continued seasonal employment, income generation, and potentially greater municipal engagement in the evolving partnerships between collectors, buyers, exporters and Parks.

Two partnerships were evaluated as weak and in need of strengthening. These were the relations between National Park Directorates, the Pilot Program Areas and the Regional Environmental Inspectorates, and between the Directorates and other line Ministries with operational mandates on territories surrounding the National Parks. Attempts to engage these agencies in meetings, focus group discussions and local program development were frustratingly inadequate.

2.7. Phenological monitoring of the bilberries

The 2001 Resource Assessment illustrated the need to initiate a program of phenological monitoring of key wild resources designated for sustainable harvests. If sustainable collection is going to result in:

- improved harvest quality;
- accurate harvest quotas;
- improved income generation for collectors,
- better market planning for buyers; and
- revenue generation for parks,

then better forecasting of plant productivity is necessary. Bilberry resource assessment must be accompanied by annual monitoring of wild plant development, including productivity, to allow for better forecasting and to monitor the long-term impacts of the sustainable harvest program and collaborative management over time.

2.8. Certification

The merits of certification for NTNRS coming from the National Park were investigated during September and October 2001. Certification was examined as a means for increasing the market value of wild products for local communities. European certification systems are so diverse, and certification standards are so poorly applied in the industry that certification would add nothing to the market gate prices

for commodities. Thus there were no short or medium term advantages of certification expected for community collectors. Many exporters are already securing certification certificates from Bulgarian institutions without any chain of custody documentation – making a mockery of the certification labels used by western countries in marketing raw materials from Bulgaria.

National Park Directorates continue to examine the benefits of certifying wild products obtained from national parks as a way of increasing revenue/income, as well as increasing the profile of national parks in wild resource sustainable harvesting.

3. 2002 Bilberry Collection Campaign

3.1. General Framework

The situation analysis and resource assessment confirmed that ecological management of wild resources is improved when:

- Collectors, buyers and local government participate in the regulatory system;
- Management burden is shared with commercial operators (buyers);
- Parks management controls areas, timing and intensity;
- Management is based on science, and annual monitoring.

The analysis also illustrated that economic benefits can be realized and increased if:

- Sustainable access to wild resources is ensured by local communities who have a vested interest in their future;
- Economic values of wild resources remain in local communities;
- Private investments are attracted to these local communities.

Therefore, ecological and economic objectives can be met by implementing two changes to NTNR management in national parks. These are:

- Introduction of collection permits for all collectors, and,
- Commercial collection contracts.

The 2002 pilot campaign was therefore based on the introduction of a new collection permit system for all collectors. The same campaign would also start to investigate using commercial contracts. In addition, the Parks would begin to employ an adaptive management system; scientific monitoring would determine how much wild resource management is required, and a new regulatory systems (collection permits and contracts) would be adjusted based on wild resource management needs.

3.2 Elements of the Campaign 2002 – Developing a Sustainable NTNR Management Model

The National Working Group for this Pilot Program resolved the following aspects of the collaborative management model for parks:

- Determine the quantities and locations of NTNR use based on the phenological monitoring results and an annual resource assessment;
- Fix the starting date of resource collection on the basis of the phenological monitoring results;

- Introduce an easy to implement unified system for registration of all personal and commercial uses – introduce collection permit coupons for all collectors, enabling regular field control;
- Involve of all stakeholder in the implementation of the campaign planning and execution – collectors, local authorities, buyers, businesses;
- Conduct a broad campaign of public information and education for local communities in the pilot areas on NTNRs sustainable management and park wild resource management system;
- Train park personnel in the application of new adaptive management tools;

3.3. Legal Basis

The introduction of new types of controlling documents – collection permit coupons – was motivated by the need to register the scope of use and to collect information on the resource. The legal basis of this activity of the National Park Directorates is embraced under Article.5, item. 9 of the Protected Areas Act. In exercising their rights in accordance with the Medicinal Plants Act, Art. 56, point 1, the National Park Directorates also conduct monitoring and assessment of the condition of the populations and of NTNR as well as their use.

The new collection permit coupons should be implemented in parallel with the existing commercial collection licensing permit system. Issue of permits should keep to the procedures that are regulated in the Medicinal Plants Act. All administrative and park instruction and orders regarding non-timber natural resources should be observed.

3.4 Characteristics of the Bilberry Collection Permit System

In an effort to provide better control over bilberry collection from Parks, the national working group decided on a permit system that would be a serious improvement to the existing permit system. The existing permit system is only used to collect park fees for the commercial collection of NTNRs. These same permits provide “proof of payment” for NTNRs that are exported from the country. Since the existing permit system was shown to have serious drawbacks as a sustainable resource management and monitoring tool, the new collection permit system will have the following principles and characteristics:

- A permit system should be based on a long-term resource assessment of each commercially significant population and locations of bilberries. For a permit system to work as a conservation tool, it is important to know the environmental parameters associated with sustainable use. For a permit system to be most effective, regular resource assessments must be conducted. A history of resource assessments will contribute to a long-term evaluation and understanding of resource dynamics under the influence of man-made and natural phenomena for each commercially significant resource.
- A permit system is only any good if it increases the ability of park managers to

use it to adjust for impacts to each resource. Park managers must eventually be able to use a permit system to control both the quantities and localities of each resource collection.

- Permit systems will introduce the use of “collection coupons”, individually, recognizable pieces of paper that acknowledge the rights and obligations of collectors in the personal AND commercial use of bilberries.
- Permitted quantities of bilberries should not exceed the potential annual yield for the protected area. Once annual harvest limits are set, then the number of coupons issued can not be greater than the amount of resource allowed for harvesting. The number of coupons/the quantities of bilberries allowed for harvesting WILL NOT change during the course of a collection season.
- Buyer and brokers who organize the purchase of bilberries are key partners. They are direct points of contact between local collectors and protected area directorates. They must be engaged in the use of a collection permit system. To be a partner, buyers and brokers must be legally registered. Once registered, they should be engaged in the distribution and collection of collection coupons issued for *commercial collection*.
- Local collectors must be guaranteed free access to collection coupons. No fees, no application forms, and not documentation will be needed to obtain a collection coupon. However, every collector will be required to carry a collection coupon with him/her.
- Personal collection coupons will be available from many sources around the Park, and are available in the field until the total numbers of annual collection coupons have been issued.
- Commercial collection coupons will be available from legally registered buyers. Their payments and processing of their papers will be in compliance with the Medicinal Plants Act.

These permit system characteristics will be examined for their applicability to the collection of other commercially valuable NTNRs within National Parks.

3.5. Basic Procedures and Roles of the National Park Directorates

- The National Park Directorates are responsible for Monitoring the seasonal development, the health condition and the anthropogenic influence on the bilberry (NTNR) resources. The results are used to determine the TOR of a resource assessment and the start date of the campaign.
- The conduct of assessments of NTNR resources and their condition. Forecasts are made for the annual quantities of fruit.
- Developing an annual Plan of Use, which regulates the permitted quantities, number and types of permit coupons for the respective territorial management units (park areas).
- Announcing the start date of the collection campaign for the whole park depending on the ripeness of NTNRs.

- Informing all interested institutions and partners about the beginning of the campaign and coordinates the actions, with these institutions in advance of the start dates.
- Issue permits under the Medicinal Plants Act, to buyers registered in the Regional Environmental Inspectorates and provide the buyers with the appropriate quantity of commercial permit coupons.
- Exercising control and monitoring during the collection campaign.

3.6. Collection Coupons

The collection coupons are monitoring documents containing the following information:

- name of the National Park and the Park Section;
- number of absolute numbering;
- resource type;
- campaign start date;
- cell for the permitted quantity (10 kg);
- cells for the type of use;
- control number, bearing the same number and description of the locations to indicate the inspection;
- rules for sustainable use and behavior in the park.

(Appendix 1.1.)

In 2002, coupons were issued by the NP Directorates. Collectors could obtain these coupons from the park employees or their partners - buyers and brokers, municipalities, local NGOs, as appropriate.

Each collector needed a coupon in order to collect bilberries (NTNRs) from the territory of the park irrespective of personal or commercial use. The park guards checked the coupons. The coupons served to control the number of collectors entering the park, to monitor the different bilberry populations, to certify the origin of resources, and to register the purpose of use - personal or commercial.

The commercial use coupons were distributed and collected at the buy out points in cooperation with the local buyers.

The personal use coupons were distributed by the park sections, local mayors and by the local NGOs.

3.7. Campaign Planning and Implementation with Partners

One of the basic elements of the 2002 collection campaign was the participation of the partners.

At the national level, campaign planning and coordination was carried out by the national working group.

At the local level, local partners also took part in the process. Regular coordination meetings were held between parks' representatives, local collectors, local buyers, local government authorities, RIEWs, processing and exporting companies, local NGOs, and regional structures of other state institutions – NFB, Fire-Fighting Service, Ministry of the Interior, etc.

The regular local level meetings had two concrete goals:

- To consult and adjust every concrete step that has been planned, and every concrete product (letters, information materials – [Appendix 6](#), etc.) that was to be used during the campaign,
- and
- To enable the coordination between the partners on site.

During *the first set of meetings*, a review was made of the 2001 situation analysis results. Subsequently the overall design of the 2002 pilot collection campaign was developed.

The second set of meetings developed the Collection Campaign Action Plan. Responsibilities were distributed among the partners. At these meetings, the contents and the general design of the permit coupons and public information material were approved.

At the third set of meetings, local campaign planning teams:

- Reviewed the phenological survey report and specified the start dates for the collection campaign in the two national parks;
- Approved the concrete content and design of the information materials and of the coupons;
- Planned the park staff training;
- Approved the content of the parks' order for the start date and sent letters to the partner institutions.

The fourth set of meetings was devoted to the start of the public information campaign. This campaign served to announce the Directors' Orders, to distribute public information materials among the partners. The Park Section Heads received the coupons from the Park Directorates. All park guards from the pilot areas and journalists from the local mass media attended this set of meetings.

3.8. Public Information Campaign

An important element of the collection campaign was the information and education efforts aimed at populations in the pilot area, and the coverage of the campaign by the central media. (*Appendix 1.13.*) The goals of this effort were to sensitize local and national audiences to the collection campaign and to increase public awareness of the need for reform.

Local public information included a leaflet/poster (*Appendix 4*) (2000 piece for *Klissura PS* and 3500 pieces for *Yakoruda and Belitsa PS*), promotional T-shirts (100 pieces for each of the two pilot areas) and data registration diaries for the guards.

The circulation of leaflets was coordinated with local partners to provide broad information coverage in local communities. The leaflet/poster contained information about the National Park Management Plans, about bilberry biology, ecology and value of the fruits, about the methods of sustainable collection, an explanation on how the new collection coupon system worked, how to obtain the permits, and how they would be used. Photos used in the posters illustrated moments from collaborative activities during 2001. They featured local children from collectors' families.

The information campaign at local level started on July 9, 2002 for Klissura PS and on July 22, 2002 for Belitsa and Yakoruda PS. Journalists from the local press, radio and cable operators were invited to attend the launching event. The campaign was covered in 12 press publications and in 14 radio and TV shows on local and regional media in the region of Klissura, the Central Balkan and in 3 press and 4 electronic media for the pilot area of Rila National Park.

Park guards, mayors and school eco-clubs from the village of Rozino (Klissura PS) and Yakoruda PS actively participated in the distribution of information materials. The information campaign started 20 days before the start date of the collection campaign.

Coverage of the collection campaign in central media contained the following steps:

1. Communication of information to 50 different central media through the Ministry of Environment and Waters, July 9, 2002. This information package included: program messages for collaborative management of non-timber resources; details of local public information campaigns, start dates for collection, presentation of the experimental coupon system. Results included 11 radio and TV broadcasts and 3 press releases.
2. Regular meeting with "green journalists", organized on July 15, 2002 with the support of MoEW Press Center. Leaflets and information about the collection campaign were distributed to 18 journalists from the central media, who work on nature conservation issues.
3. Publication in Zemia Central Daily, July 26 of a feature article
4. Organization of a field trip for journalist to one of the pilot areas at the start of the collection campaign. Klissura PS in Central Balkan National Park, August 2, 2002. Was visited by 10 journalists. A full list of the publications can be found in (*Appendix 7*)

12 mayors and the local eco-club participated in the distribution of coupons and information materials in Yakoruda and Belitsa. Permit coupons were distributed at 12 points at the town halls of the villages of Dobarsko, Godlevo, Bachevo, Gorno Draglishte, Belitsa, Kraishte, Cherna Mesta, Buntsevo, Avramovo, Bel Kamen and Smolevo.

In the area of Klissura Park Section, mayors, of the villages of Rozino, Hristo Danovo, Karnare, children from eco club “Malkata Ida” from the village of Rozino, and “23rd April Cultural Center” in the town of Klissura acted as partners in the distribution of coupons in Klissura PS. There were 5 points during the campaign where 512 coupons were distributed for personal needs.

3.9. National Park Staff Training and Preparation

The training for the Park directorate staff was organized in two stages:

The first stage included a formal training course on the following topics:

- Medicinal Plants Act and Management Plans for medicinal plants;
- Identification, biological and ecological features of different medicinal plants species, allowed for commercial collection in compliance with the Management Plans;
- Medicinal plants of conservation importance;
- Phenological observations – monitoring of seasonal development, health conditions and anthropogenic impact on the populations of medicinal and fruit plants.
- Resource assessment methodology of medicinal plants and wild fruits;

The training for Central Balkan National Park took place on May 13-14, 2002 in Klissura. 16 NPD officers received training – the flora and GIS experts, 7 heads of park sections and 7 Park guards. 23 officers – the forests and GIS experts, as well as the Director and the Deputy Director, 9 heads of park sections, 9 guards and 1 mobile guard, attended the training for Rila National Park, organized on May 20-21, 2002 in Yakoruda.

The second stage of the training was realized during the preparation and organization of the campaign. All heads of park sections and guards from the pilot areas received training. Standard operational procedures for the collection campaign were developed to this end. (*Appendix 1.2.*) Thus, park guards received comprehensive information on the objectives of the introduction of a coupon model, coupon elements and objective, their duties in distribution and collection of coupons and registration of campaign data. Special instructions were provided to clarify the “orders” for start dates of the collection campaign. Park staff from neighboring sections were also informed and instructed about the model experiment in order to avoid conflicts during the campaign.

3.10. Documentation

In the preparation and implementation of the pilot campaign the National Park Directorates drafted and presented the following documents. Examples are provided in the (*Appendix 1*).

1. Permit coupons– monitoring documents for registration of the type and quantity of use, issued by the two Parks Directorates;
2. Standard Operational Procedures – written instructions, regulating the standard actions for distribution and collection of coupons, the on-site control and campaign description;
3. Orders by the National Park Directorates fixing the starting date of collection – documents, announcing the starting date and campaign organization. This order regulates the resource assessment in Rila;
4. Order for distribution of use of herbs and wild fruits – regulates the type of resources, quantities and park sections where the collection and localities is allowed;
5. Cooperation agreement – sets rights and responsibilities of the National Park Directorates and the partners (mayors, buyers and brokers) during the campaign;
6. Acceptance Sheet for commercial use coupons – registers the number of coupons received by the partners;
7. Acceptance Sheet for personal use coupons – registers the number of coupons received by the partners;
8. Inventory of collected coupons– the number of commercial use coupons collected by buyers and brokers is described. To be completed by the buyers;
9. Permit issue request– required by the Medicinal Plants Act. To be submitted by the candidates applying for permits for use of non-timber natural resources;
10. Permits for collection of herbs, mushrooms and wild fruits - required by the Medicinal Plants Act;
11. Bilberry Campaign data registration diary – diary and questionnaire complying with the Standard Operational Procedures for registration of site information. To be kept by the park guards;
12. Reference Sheet on Bilberry 2002 campaign reporting – standard form for registration of campaign related data. To be kept by each park guard;
13. Information Sheet on Bilberry 2002 campaign reporting – standard form, summarizing the reference sheets of the park guards. To be completed by the head of the park section;
14. Notification letters to the regional institutions about the starting date and the conditions of the campaign implementation;
15. Press Releases – for the central media and for the local media;

4. Pilot Collection Campaign 2002 – Results

4.1. Phenological Observations

The phenological observations were used to monitor the seasonal development of bilberries (*Vaccinium myrtillus L.*) in the year 2002. This information in turn was to determine the timing of the resources assessment and to select the collection campaign starting date. Observations covered 5 phenological phases – vegetation, germination, blossoming, fruit-formation and ripening.

For the purposes of the phenological observations, permanent phenological plots were localized, marked and recorded according to the methodological requirements for similar studies. The operational rules were determined and a common working schedule was developed. The monitoring was conducted on a 5-day period basis during blossoming and 10 day period during fruit formation and ripening. Besides the individual pheno-phases, some meteorological processes, phytosanitary conditions of the populations and existing anthropogenic threats were set for additional registration. The Park guards were provided with monitoring diaries and summary data forms.

The observations were conducted in seven (3 for Klissura PS and 4 for Yakoruda and Belitsa PS) permanent phenological plots. Participants included the Flora experts from National Park Directorates, heads of park sections and guards from the pilot areas.

Central Balkan National Park - On May 15, 2002 three phenological plots were set in the area of Skoka (altitude of 1480 m), Beklemeto (altitude of 1597 m) and Vartopa (altitude of 1667 m). The phenological observations were conducted in the period between May 15 – July 8, 2002. 11 observations were conducted in two of the plots and 12 observations were conducted in the third one. The Head of Klissura PS led the observations.

The Geographic Information Systems GIS Expert for Central Balkan National Park included the phenological plots coordinates into the park's digital model. This is the first application of the GPS technology for a specific park management task. This involved on-site collection of information in real time, and use of information for the development of illustrations helping to visualize results. (*Appendix 2.2.*)

In 2002, the phenological phases of bilberries in the Klissura Park Section developed normally. The terms and duration of each phase were registered. The altitude influenced the terms of the phenological phases. A delay of about 8-10 days was registered between upper and lower altitudes. Fruit formation takes longest (27 to 31 days are necessary for the fruits to develop). Fruit ripening takes around 20 days. The populations in the plots were found to be in excellent general condition, without any phyto-pathological phenomena. Meteorological conditions were very favorable for bilberries during the year. Plants were not damaged by late cold rains, hail, or other unfavorable conditions.

Rila National Park - Phenological plots in the pilot areas were set on May 22, 2002, in four bilberry locations - the area of Grancharitsa (altitude of 1930 m) in Yakoruda PS and the areas of Polenitsa (altitude of 2024 m), Karaalanitsa (altitude of 1750 m) and Vapata (altitude of 1996 m) in Belitsa PS. Observations took place between May 22 - July 15, 2002 with 9 visits to two of the plots and 8 to the other two plots. The Park Section Head and one Park Guard conducted the observations in Yakoruda. Another two park employees conducted the observations in Belitsa PS.

The results of the phenological observations indicated normal bilberry developmental phases during 2002. The general condition of the localities is satisfactory. No damages on bilberry bushes were reported except for some drying of the bilberry leaves in the locality in Vapata area. The vegetative parts of the plants were not damaged by meteorological conditions. Frequent rains and hail during the blossoming and fruit formation periods ruined some fruit development and caused lower productivity.

The phenological observations provided a clear picture of bilberry seasonal development for the pilot areas during 2002. This made it easy to forecast dates for ripening of the majority of the fruits. Observations allowed the timing of the resource assessment and the start date of the collection campaign to be determined with confidence. (*Appendix 2*)

4.2. Resource assessment

Significant bilberry populations that were identified and recorded in 2001 were further studied. Two parameters are used for the evaluation of exploitable resources: total area of the localities and yield per unit area. The total area (ha) was determined with the help of each park's GIS. (*Appendix 3*)

The yield (kg/ha) was calculated by using the method of projective cover (percentage of area, occupied by the projection of bilberry's upper parts, above the soil, within the sample plot). This method is suitable for assessing the resources of plants that form dense formations like the bilberry. Depending on the terrain and the total area of the specific resource locality, temporary control areas of 400 m² to 1000 m² were formed. A percentage of the projective cover and fruit yield in 1% of the total projective cover was determined and systematically placed sample plots of 1 m² or 0.25 m² were located. The number of sample plots complies with the requirements for statistical reliability and accuracy. The fruit yield per unit area and the exploitable resources were calculated and the results were statistically processed. The evaluated resources localities were marked on maps at 1:25000 scale, in the form of polygons. Each control area was identified and numbered. A site diary was used to record the altitude; exposure and site inclination, as well as the type of plant community and the dominant species. The description of each area includes notes about existing and potential threats, and specifically anthropogenic impact on the conditions of the population.

Central Balkan National Park- Klissura Park Section Eight major bilberry localities were evaluated. These have a total area of 842.94 ha, and represent 6.6% of the total Park area. The average yield of bilberries in these areas was 56.09 kg/ha, and the total exploitable resource was estimated at **52,895.96kg**. The most productive

locality was Beklemeto Zapad – 131.65 kg/ha, and the least – Vartopa – 20.6 kg/ha. The best resource potential was found in the localities of Ravna, Beklemeto – West, Vlah Bunar, and Beklemeto West – Balevsko.

Table 1: Results from the bilberry (*Vaccinium myrtillus L.*) localities in Central Balkan National Park, Klusura PS:

| N | Locality | Area (ha) | Yield (kg/ha) | Exploitable Resource (kg) |
|--------------|---|---------------|---------------|---------------------------|
| 1 | Podmola | 55.62 | 56.09 | 3,119.72 |
| 2 | Sikirish Cheshme | 22.28 | 99.18 | 2,209.73 |
| 3 | Vartopa | 11.47 | 56.09 | 643.35 |
| 4 | Vartopa | 14.46 | 20.60 | 297.87 |
| 5 | Vartopa | 17.83 | 56.09 | 1,000.08 |
| 6 | Vartopa | 12.18 | 56.09 | 683.17 |
| 7 | Vartopa | 5.84 | 56.09 | 327.56 |
| 8 | Vlah Bunar | 112.34 | 56.09 | 6,301.15 |
| 9 | Ravna | 292.01 | 56.09 | 16,378.84 |
| 10 | Yumruka | 53.19 | 56.09 | 2,983.43 |
| 11 | Skoka | 7.00 | 56.09 | 392.63 |
| 12 | Yumruka | 8.01 | 56.09 | 449.28 |
| 13 | Yumruka | 43.20 | 26.90 | 1,162.08 |
| 14 | Beklemeto – Aviators' monument | 14.57 | 31.30 | 456.04 |
| 15 | Beklemeto – Aviators' monument (Kladenetsa) | 3.98 | 29.90 | 119 |
| 16 | Beklemeto Zapad | 92.17 | 131.65 | 12,134.18 |
| 17 | Beklemeto Balevsko | 79.79 | 53.10 | 4,237.85 |
| Total | | 842.94 | | 52,895.96 |

Rila National Park - Belitsa and Yakoruda PS - Seven localities of bilberries with a total area of 503.8 ha were evaluated – 6.2% of Park territory. The average yield of bilberries was 54.7 kg/ha. Exploitable resources were estimated at **31,256 kg**. The most productive locality is that of Ropalitsa – 90.2 kg/ha, and the least – in Karaalanitsa – 15.0 kg/ha. The highest yields are from the Grancharitsa, Polenitsa and Kitkata localities.

Table 2: Results from the bilberry (*Vaccinium myrtillus L.*) localities in Yakoruda PS and in Belitsa PS:

| N | Locality | Area (ha) | Yield (kg/ha) | Exploitable Resource (kg) |
|--------------|--|--------------|---------------|---------------------------|
| 1 | Ropalitsa – Djenem Dere | 22.62 | 90.2 | 2,040 |
| 2 | Polenitsa | 67.02 | 59.4 | 3,981 |
| 3 | Grancharitsa | 173.20 | 87.2 | 15,103 |
| 4 | Vapata | 36.99 | 75.3 | 2,785 |
| 5 | Karaalanitsa (Dvete reki) | 28.77 | 15.0 | 431 |
| 6 | Kitkata – Malkia razdol (Ravnite mochuri) | 86.17 | 33.6 | 2,895 |
| 7 | Sofan – Leeve (Geshev pat, Dautitsa, Kaldaritsa) | 26.09 | 22.2 | 579 |
| 8 | Germanitsa | 15.57 | 54.7 | 852 |
| 9 | Dinkov dol | 15 | 54.7 | 820 |
| 10 | Tupia vrah | 3 | 54.7 | 164 |
| 11 | Sredkovoto | 1 | 54.7 | 55 |
| 12 | Lopatitsa | 3 | 54.7 | 164 |
| 13 | Vadata (Vodev chuchur) | 8.01 | 54.7 | 438 |
| 14 | Zoovete | 5.97 | 54.7 | 326 |
| 15 | Karkama (Tranlivetso) | 11.39 | 54.7 | 632 |
| Total | | 503.8 | | 31,256 |

4.3. Start Dates

The campaign started with the last of the series of meetings in the pilot areas, held respectively on July 9, 2002 in Klissura pilot area, and on July 22, 2002 in Yakoruda-Belitsa pilot area.

Using special orders, National Park Directorates announced July 27 as a starting date for the bilberry campaign for Central Balkan National Park and August 3 for Rila National Park. (*Appendix 1.3.*) The orders were officially communicated to NP staff and to municipalities, mayors, buyers and other interested individuals and organizations. Copies of orders were placed at the most frequently visited places in the towns and villages. Park Directorates informed the Regional Forestry Directorates, the Regional Environmental Inspectorates, Regional Directorates of Interior, and Regional Police Departments. (*Appendix 1.12.*)

Start dates were key to bilberry management. There were some small areas of conflict between collectors starting to pick prematurely in Klissura Park Section. None were noted in Yakoruda and Belitsa Park Sections.

Start dates were generally effectively implemented due to:

1. The good organization and professionalism of the Park guards;
2. The partnership with local buyers – Ecovita, as a wholesale exporter was particularly helpful to the campaign;
3. Successful information campaigns – local community attention was drawn to the start dates.

4.4. Collection Coupons

The heads of PS divided the coupons among the park guards, local mayors' offices and other partners. Under their supervision coupons were marked for personal, or commercial use, by placing different color signatures in on the signature cells on the coupon. The personal use coupons were additionally marked on the lower right or left corner of the front page.

Coupons were distributed free of charge. The coupons were not supposed to be used as buyers' accounting documents. Distribution of coupons started 5 days before the collection start dates.

4.4.1. Personal use coupons

All the park staff, as well as the local partners distributed the personal use coupons. Park guards had the right to distribute coupons in the field. The distribution of personal use coupons was accomplished by instructions about their purpose and collector's responsibilities.

Individuals who were not Park staff could distribute personal use coupons, but had to enter into a cooperation agreements with the NPD. Buyers, brokers, mayors and municipal officials, teachers and local NGOs (*Appendix 1.4.*) became coupon distribution agents during the campaign.

4.4.2. Commercial use coupons

Commercial use coupons were distributed only at buy out points.

Businesses with the intention of buying bilberries or to distribute commercial collection coupons had to meet two special requirements:

1. to be registered at the REWI as buyers under the Medicinal Plants Act;
2. to have a permit under the Medicinal Plants Act, issued by the Directorate of the respective park, and a document proving the payment of the fee.

Buyers received a specific number of coupons determined by the total quantity of berries for which they paid commercial collection fees to Park Directorates.

Buyers received coupons marked only for commercial use.

For commercial collection, the buyers provided the collectors with one coupon for 10 kg every day. At the end of the day, the collectors submitted their harvest along with a collection coupon. They would receive a new coupon for the next day. Every day, the buyers submitted all coupons to a park guard. The buyers had the right to purchase fruits collected with personal use coupons only if they reported them within the total quantity of coupons and of the resources for the day.

4.5. Monitoring and Control on Collection

Field control functions were entrusted to the park guards and heads of park sections. Measures were taken to coordinate with park guards from neighboring park sections, since the collectors could enter neighboring park sections where resource assessment had not yet been conducted.

The guards strengthened their presence in the field. The main duty of the park guards was to inspect collectors' coupons. They were also authorized to distribute coupons in the field, as necessary. Detachable control stubs on each coupon were used to indicate the date and place of inspection. Reports were produced daily.

Coupons could also be inspected during transit and at a buy out points.

Each park guard received a diary to record how certain activities had been conducted. (*Appendix 1.9.*) The following basic data was recorded:

1. Number of distributed coupons per day;
2. Number of coupons collected per day;
3. Number of inspection coupons per day – location, number of collected control coupons for personal, respectively commercial use, number of distributed coupons;
4. Field schedule of the Guard - visited areas, type of transportation, fuel cost;
5. Approximate number of collectors (men, women, children) observed in each location, type of transport;
6. Record of illegal buyers encountered;
7. Threats and violations (e.g. improper collection technology, trash, noise, etc.).

Data collected by the guards was summarized in a standard table format – “Reference Sheet on the 2002 Bilberry Campaign”. All reference sheets were later summarized by the Park Section Head. (*Appendixes 1.10 and 1.11*)

The campaign in **Klissura PS** lasted for 36 days (from July 27 to August 31).

Table 3: Data on the Dynamics of Collectors' Flow

| Indicator | Value |
|---|-------------------------------|
| Duration of the campaign | 36 days (July 27 - August 31) |
| Men | 69 |
| Women | 84 |
| Children | 24 |
| Average number of collectors per day | 178 |
| The most intensive period of the campaign | 15 days (from July 27) |
| Max. number of collectors per day | 509 |
| Trucks | 23 |
| mini busses | 7 |
| cars | 41 |
| carts | 14 |
| Total number of registered vehicles | 85 |
| trucks | 7 |

| | |
|--|----|
| mini busses | 3 |
| cars | 8 |
| Average number of vehicles in PS per day | 18 |

The first 15 days were the most intensive days of the campaign, and the largest number of collectors was registered on the starting date 27.08. Bilberry localities were approached by trucks, cars and vans. Trucks and vans needed a special pass to enter the park's territory. NPD recorded the dynamics in the distribution of the collector's flow.

Klissura Park Section has only one registered buy out point. 12,696 coupons or 84.4% of the total numbers for the region were distributed. 11,500 (94% of the total distribution) were for commercial use and 1,199 or 6% - for personal use. Average 460 pieces per day were for commercial use. The maximum rate during the first days of the campaign was 800 pieces. The buy out point collected only 2,313 coupons. 96 of them were for personal use. During the site inspections the park guards collected 5,400 control coupons or 42% of the total number. 4,401 of them were for commercial use and 999 for personal use.

The number of coupons collected at the point is relatively low compared to the total number of coupons distributed. On the other hand, the total number of controlled coupons was 7,713 and corresponds to the quantities requested for permits and fees. Having in mind the relationship between the park staff, buyer and collectors it is normal to have some "dispersion" or "loss" of a certain number of coupon. Therefore the park cannot determine the actual quantity of use against the total estimated yield. A great number of coupons were not collected back during the first intensive days of the campaign, when the distributed coupons were around 700 per day. The percentage of returned coupons should improve as time passes and people get used to the use of coupons.

7 park guards participated in the coupon distribution, monitoring and control. They distributed 29 coupons in the Park Section office and 658 in the field. Two Lada Niva 4WD jeeps and one IJ motorcycle were used for transportation. They cover a total distance of 3,446 km in high mountain conditions. 447 liters of fuel were used for a total of 625.8 BGL. The guards spent 36 person days working on the campaign; 25 of them were spent in the field.

The Central Balkan National Park Directorate issued one commercial collection permit for 77,000 kg of bilberries, in 2002. The taxed quantity exceeded the permissible quantities of 52895.96 kg, almost 25,000 kg.

Part of this difference can be explained by the incorrect calculations of the total areas of bilberries for collection. Part of it results from some areas being over-harvested. In another instance, some of the quantity was most likely collected from other areas of the Park and brought out through the Klissura Park Section. And some of the bilberries were undoubtedly collected in other areas away from Klissura Park Section, and sold under this commercial permit.

Despite the best efforts of the Klissura pilot area team, illegal (unregistered) buyers intervened in the bilberry business. Three unregistered bilberry buyers were discovered. They purchased approximately 8 tons of fruit: 5 tons before the starting date and 3 after it.

The purchase price offered by the unregistered buyers was the same as by Stoycho Atanassov – 2.3 BGL per kg. These bilberries were sold at the domestic market at the approximate retail price 4-5 BGL in major cities.

The campaign in **Yakoruda and Belitsa PS** lasted for 51 days (from August 3 to September 22). A total of 1,131 bilberry collectors entered the Park Section.

Table 4: Summarized Data on the Dynamics of Collectors' Flow

| Indicator | Value |
|--|-----------------------------------|
| Duration of campaign | 51 days (August 3 - September 22) |
| · men | 286 |
| · women | 750 |
| · children | 90 |
| Total number of collectors in PS | 1131 |
| Average number of collectors per day | 22 |
| The most intensive period of campaign | 18 days (August 8 - 25) |
| · men | 11 |
| · women | 25 |
| · children | 3 |
| Average number of collectors per day in the intensive period | 39 |
| Max. number of collectors per day | 102 |
| · trucks | 8 |
| · mini busses | 20 |
| · cars | 70 |
| · motorcycles | 2 |
| · carts | 2 |
| Total number of registered vehicles | 102 |

1,178 permit coupons representing 4.7% of the total coupons available for the pilot area were distributed. All of them were issued for personal use only. (There are no registered buy out points in this park section despite repeated attempts.)

12 Park guards participated in the distribution of coupons, monitoring and control. They distributed 39 coupons in the Park Section office and 690 in the field. Their transport consisted of two Lada Niva 4WD jeeps and two IJ motorcycles. The total distance traveled was 7,500 km in high mountain conditions. The value of fuel consumed for the two areas was 1,297 BGN – 647 for Belitsa and 650 for Yakoruda. The guards spent 50 days working for the campaign, 40 of them in the field.

The National Park Directorate issued a commercial collection permit for only 2,000 kg of bilberries during 2001.

4.6. Generating Revenues from Fees

The campaign generated revenues from collection tariff fees at 0.15 BGL/kg. The total revenue generated from the campaign exercise amounted to 11,812 BGL for the two pilot areas. 11,550 BGL were collected for Central Balkan National Park, and 306 BGL from Rila National Park. The disparity in BGL between the two parks is due almost entirely to the respective collection patterns in each park, and to market demand. The difference in revenue was not due to problems with revenue collection.

4.7. Buyers

Contacts with buyers (both registered and unregistered) at the two pilot areas were maintained throughout the campaign. Data on the quantities of wild bilberries purchased, the average price per kilogram, market destination information were collected.

Central Balkan National Park

The main buyer in Klissura PS remains Stoycho Atanasov – broker of wild fruits, herbs and mushrooms in the village of Hristo Danovo. He is registered as a buyer at the REWI in the town of Plovdiv. His cooperation and participation in the campaign proved invaluable to the success of the commercial collection effort and revenue generation for Parks. At present, Mr. Atanasov is the sole buyer for the largest bilberry exporter in the country – ECOVITA. Mr. Atanasov collected approximately 90 tons of bilberries during the harvest of 2002. This entire amount was sold to ECOVITA.

Of the 90 tons of bilberries processed by Mr. Atanasov, 77 tons was collected from the territory of the Central Balkan NP. The balance came from minor regions outside the Park.

Mr. Atanasov distributed 11,500 commercial permit coupons and collected 2,313 coupons back. Mr. Atanasov decided to additionally mark the coupons with his own stamp, certifying that the coupon had been received at his point. Thus the collectors organized through his efforts were distinguishable from other collectors, thus protecting his name and image with the Park. He organized collectors from the villages of Rozino and Hristo. Danovo, and organized them for the campaign. He provided directions concerning collection areas, and instructions on the rules of collection and transportation.

Rila National Park

The bilberry business in Yakoruda and Belitsa pilot area was not very intensive during the campaign season. One of the factors was believed to be the relatively poor total amount of resources (31,256 kg), but the crucial reason was the absence of interest from the local buyers, as the campaign coincided with the collection of the very rich mushroom resources. Demand for mushrooms far outstripped bilberries, and bad weather conditions and the low purchase price were other factors contributing to the low collection of bilberries.

The buy out point in Cherna Mesta was the only places where bilberries were purchased, but this point only operated for a period of two weeks. No bilberries were purchased at market points in the village of Dobarsko and in the town of Belitsa. The Park recorded 2 tons of fruit collected with personal use coupons, and these were sold on the open market. At the beginning (August 18) the price was 1.10 BGN/kg and it reached 1.50 BGN/kg by the end of the season (September 25). 5 unregistered buyers were recorded as purchasing berries.

Local brokers participating in the collection campaign failed to register themselves with RIEW in Blagoevgrad. The only exception was the broker from the village of Sveta Petka – Ali Plank, who registered at the REWI Pazardjik, very late in the campaign.

Despite the low market demand and low bilberry prices in the region, an active roadside market emerged. Dozens of ad hoc “stands” offered wild fruits in the road section between Smolevo railway station and Yundola, in the higher elevations of public road between Razlog and Velingrad. The bilberry price was 2.0-2.5 BGN/kg (These roadside stands are not a new phenomenon; they are a regular, seasonal occurrence during the summer). A significant portion of these fruits was collected from the Park during the second half of September, when stock of bilberries in the Rhodopes were past their prime.

4.8. Campaign Outcomes for the Local Communities

The 2002 bilberry campaign generated 104,000 BGL in total for local community collectors from the Klissura Pilot Area. This is an average of 700 BGL/per household from wild bilberries, and does not factor in other herbs, wild fruits, or mushrooms collected from the same areas. The Yakoruda/Belitsa Pilot Area officially generated only 2,200 BGL for local community collectors but mushroom and “un-official” wild fruit collection and herbs accounted for much more.

Yakoruda and Belitsa areas are known for the very short active season for collection of bilberries for commercial purposes. Based on the number of coupons distributed for personal use only, some 18 tons of bilberries were collected from the park. This represents a cash market value of 23,400 BGL. Quantities collected under personal use permits for personal use found some commercial markets. Estimates made by the local campaign coordination teams suggest that about 2 tons were sold along the roads in the region (total value of approximately 4,000 BGL), another 2 tons were “exchanged” for goods at the markets of the nearby towns. About 2 tons were sold at the buy out points. The remaining 12 tons were used for household consumption.

5. Lessons Learned

5.1 Phenological Observations and the Resource Assessment – Tools for Management Decision Making

Phenological monitoring and resource assessment are one of the most important new tools for forecasting NTFP productivity and setting amounts for collection. The 2002 campaign illustrated that collection procedures and start days could be set with great assuredness and better control, giving each Park greater overall management over territories and resources than had been the case in previous years. Phenological monitoring and resource assessment activities allowed for better environmental protection, as well better planning for deployment of personnel in the field during collection periods. Both methodologies proved easy to implement, and with more regular use, these methodologies can be used with greater confidence between the Park staff, collectors and buyers for other non-timber natural resources with commercial markets.

Both collectors and buyers also found value in both methodologies, because they could plan their collection and processing activities with greater confidence. Such forecasting also provided buyers with a better understanding of yields, making it easier for them to prepare processors and markets, more reliably, about quantities of supply.

Community involvement in both phases of resource monitoring and assessment were important for trust building, and were used to better understand both collection regions and collector preferences.

5.2. Organizational and Methodological Difficulties in Conducting Bilberry Phenological Observations

The phenological observations (*Appendix 2*) in both Parks started late due to logistic problems, hence the beginning of bilberry vegetative development for 2002 could not be registered accurately. A timely start is a prerequisite for understanding overall delays or accelerations in the seasonal development of each commercial resource.

In 2002 the phenological monitoring intervals were every 5 days. Later on, the number of observations was reduced and the length of the period between the observations extended. This change meant a considerable time difference for observations made between fruit formation, fruit development and ripening phases in some phenological plots. The inconsistency in data collection risked important data collection. It jeopardized Parks' understanding of the development of significant formations of resource in commercial quantities, and weakens the cause and effect impact of meteorological conditions.

5.3 Calculating Resource Yields

The total area of bilberry localities and the assessment of yield per unit area are the major parameters for predicting total annual harvests of herb and wild fruit resources every year. The two summers of assessment allowed for these parameters to be refined, improved, and established with greater confidence than at any time previously in the management of this resource. (*Appendix 3*) Both the assessments in 2001 and 2002 encountered some difficulties in establishing the actual total area of bilberry localities of commercial significance in both pilot areas. Prior to these two summer assessments, there have been no systematic attempts to identify total area of bilberries, let alone areas of commercial significance in either park. The difficulty in accurately identifying and establishing the total area of the bilberry resource has led therefore to underestimation of the total amounts of exploitable resource. This estimate is critical for an effective permit system.

During 2001, the actual bilberry quantities collected from Klissura PS were twice and even three times more than the resource assessment had estimated. Therefore, in 2002, the Park revisited both parameters, and used the 2001 experience with collectors and observations to better identify the actual areas of bilberry localities. With the assistance of GIS in each Park, it became clear that bilberry collection was also taking place in areas where bilberry ground cover was very low. Areas of low bilberry plant density had not been included in the original projections of bilberry area, but these areas were being picked despite their low projective cover. Previously they had not been considered as an area of economic significance. These facts were used to refine the understanding of bilberry population distribution for each Park pilot area.

In 2002, the estimations for yield per unit area were more precisely calculated and the data was more carefully processed. The results recorded during the collection campaigns of 2002 were much closer to the reality in the field, and were significantly more accurate, were much closer to reality, and more clearly linked to the new collection permit system.

5.4. Implementation of Collection Permit Coupon System

2002 illustrated the successful introduction of a simple collection permitting system. In most of the cases, the coupons gave self-confidence to collectors in the territory of the Park. Coupons imparted a sense of legality among the collectors, and allowed for much more effective monitoring and control by Park guards of collectors and collector habits. Parks, communities and collectors gave their evaluation of the new system – coupons were easy to distribute and easy to obtain. They were properly designed and easy to use. (*Appendix 1.1.*) Importantly they were free, and without administrative procedures. Coupons were an effective tool to obtain a real picture of the number of collectors, their movement, and collection locations. Coupons served as an effective tool for field control and evaluation of actual use.

Two compromises in the application of the coupon system were made, however. The first is that individuals receiving commercial collection permits (*Appendix 1.8.*) were

not made to pay commercial collection permit fees up front. This contravenes the Medicinal Plants Act.

The second compromise was that the regional buyer for Central Balkan was allowed to pay the full “seasonal” collection tax at the end of the season. He obtained the certificate of payment, and not before, as is customary. (Most commercial collection fees are paid in advance; buyers must then rush to fill their quotas as reflected in their permits, often forcing them to take berries from anywhere they can get them. If they collect more than the amount stated in their “prepaid” collection permit, then they must obtain an additional permit to allow them to export these extra amounts). The compromise practiced in CBNP afforded both parties a closer working relationship and better coordination between Park, collector and buyer.

Individual commercial collection permits are not issued to each collector, as required by the Medicinal Plants Act. Individual collectors do not pay the fees, and seldom possess the capacity at the beginning of a collection season. Rather, buyers pay fees for commercial collection to Parks on behalf of an approved list of individual collectors. The second approach is more effective. It is easier to administer, more cost – effective and leaves more time for field monitoring. The first approach is unwieldy and uses huge amounts of administrative time and money.

Exporting companies actually pay the commercial collection fees. They advance the fees to their buyers. But they are so far removed from the origins of their products that violations of collection agreements or negative impacts to the environment at the beginning of the supply chain can not be detected at the time of export. Ironically commercial collection permits are only needed for export purposes.

More importantly, the 2002 campaign illustrated that there is no control in Bulgaria exercised on the “legality of commercial quantities” as provided for in the medicinal plants act. At the present time, there is no effective NTNMR management tool used to control commercial supplies entering public markets and amongst the local pharmaceutical and food industry.

It is necessary to introduce rules, which make it obligatory for all NTNMRs, collected for commercial purposes to be accompanied by the document that proves their origin. This is very similar to the forestry certification standards being discussed in the country.

Permits issued to individual collectors make it impossible for the Park Directorates to negotiate the conditions over the collection of the resources. The only thing they can do is to provide recommendations, information, and training to collectors, but cannot impose requirements and sanctions. Practically, the parks cannot identify people who have left garbage or have damaged the sites. However, if a company holds the commercial collection permit, then Park Directorates can address the company and hold it accountable.

5.5. Data Collection and Field Monitoring

For the first time the Park staff kept daily journals for field events. (*Appendix 1.9.*) They are inexperienced in this task, and although they received training in its use, they did not register completely the facts from field observations and control functions. This resulted in the loss of valuable information. An additional problem with data management was the untimely registration of data and facts into a master report. The data were entered into campaign reports much later. Poor data management could have distorted some facts.

5.6. Collection in the Limited Human Impact Zone

The bilberry (*Vaccinium myrtillus L.*) campaign tested one of the most important elements of the Management Plan – zones and their regimes and norms. For example in Central Balkan National Park, after finishing bilberry resources in the pilot area's multifunctional zone, collectors moved into the Troyan PS, which is not part of the pilot area. After finishing the bilberries in this Park section's multi-functional zone, the collectors moved to areas that are located within the Limited Human Impact Zone (LHIZ). According to the Management Plan, the collection of herbs and wild fruits in this zone is allowed only for personal use. Armed with commercial use coupons, the collectors did not suspect that they had violated the regulations. They were not sufficiently aware of the location of this new zone, nor its more restrictive regimes.

To prevent conflict during the first experimental season of implementation of the new collection system, the Park Directorate allowed the collectors to obtain personal use coupons while in this zone. This was a compromise with the regimes provided for in the Management Plan. Next campaigns should include a better program of proper information sharing. Zones should be clearly marked at their critical points, and the regime should be better explained.

5.7. Involving the right “players”

One major player turned out to be missing from the regional analysis of the bilberry supply chain for Rila National Park. An important local broker/buyer was not identified until late in preparation of the 2002 campaign. The broker in Sveta Petka, Velingrad municipality, was on the margins of the Yakorouda/Belitsa pilot area.

Unfortunately, he was lost as a partner for the 2002 collection season, and was not enlisted in the distribution of coupons. Fortunately late in the 2002 campaign he registered his buy out point at REWI Pazardjik.

5.8. Market analysis - Understanding the Supply Chain

Following the NTNR supply chains are critical to the future success of any collaborative NTNR management program. This was highlighted by the changing situation in the Southern Rila region bilberry markets where mushroom collection was far more lucrative than bilberries. Parks need to maintain an updated analysis of the market situation and its importance to the local communities.

5.9. Participation of the Regional Environmental and Water Inspectorates

The participation of one of the main institutions responsible for the enforcement of the Medicinal Plants Act – the Regional Environmental and Water Inspectorates – is crucial for the successful experimental implementation of this collaborative management system. The authority of the National Park Directorates does not apply to buy out points and monitoring activities outside the Parks. It is the responsibility of the MoEW regional office to register the buyers and control the buy out points. This makes them important elements in the implementation of this management program.

Despite the Working Group's efforts at national and regional levels, the REWI did not actively participate in the campaign. In part this stems from a lack of resources to move easily about the regions, and also from inadequate planning with the regions.

Control and monitoring of buyers remains critical to any future NTNR harvesting campaign. Buy out points are key to successful control and management of all NTNRs in the country, not just national parks. It is important therefore to examine ways in which the authority of the Park administrations can be extended so as to have the right and authorization to control buy out points locally.

5.10. Communication, Information Exchange and Regional State Institutions

The 2001 and 2002 planning and implementation phases of the campaign did not sufficiently engage other state and regional institutions in the collaborative management model. In part this was simply a matter of resources, and also a matter of time of the Directorates.

As the planning and campaign phases reached their conclusion in 2002, Park Directorates realized that the omission of regional offices of important state institutions is detrimental to NTNR management and the collaborative management model. Most importantly, the regional offices of the Ministry of Agriculture and Forests – the Regional Forestry Directorates and Forestry Enterprises are critical to the success of a national policy of NTNR management in parks and around them. Additional partners in this effort include the local and regional offices of the Ministry of Interior – Fire Management and Control.

Their assistance and participation is necessary with respect to the implementation of campaign activities in the parks, but their role is even more important in the surrounding areas. A good example is the importance of inter-agency cooperation to the start dates for NTNR (bilberries) collection.

6. Recommendations

The following recommendations arise from two seasons of efforts in the two pilot regions of Rila and Central Balkan National Parks. These recommendations are based on a national workshop of private and public sector participants in the management and trade of NTNRS. They focus primarily on changes to legislation and improvements to inter-institutional cooperation.

6.1 Legislation

The following amendments are recommended. Each is followed by the relevant legislation that needs to be addressed.

Authorization of NPD to issue permits for commercial use of medicinal plants to buyers registered under the Commercial Act. Medicinal Plants Act

Results from the Pilot Program illustrate the need to make changes to the Medicinal Plants Act in Article 26 that provide for commercial collection permitting. These provisions should be changed to allow permitting to local buyers licensed under the Commercial Act, as well as private individuals. Local buyers have the most impact on collection behavior, and also exercise the greatest amount of control on collection periods and quantities. They provide the most direct links between collectors and large, wholesale buyers.

Changes to the Act should also address the development of a commercial collection permit form that regulates different collection conditions. These include: type and quantity of the resource, period of collection, place of collection, buy out point, list of collectors and a record of individual permit coupons, training requirements, a list of indicators showing the state of the locality after harvest, and transport/access routes. These permits would provide buyers with the responsibility for resources and conditions of the environment after the harvest. In essence, these permits will become “contracts”, legally binding documents between buyers and parks for commercially harvested resources. These new permits would regulate all conditions, responsibilities, and fees.

Authorization of the National Park Directorates to oversee the buy out points in the surrounding territories. Medicinal Plants Act and the Regulation Governing Roles and Functions of the National Park Directorates

Effective supervision of harvests from park territories often fail because National Park Directorates are not authorized to control buy out points in the surrounding territories. At present, their jurisdiction ends at Park boundaries. Even though they can track

illegal commercial collection of NTNRS from within parks, they have no way to address infractions or problems once the harvest leaves the parks. This makes it difficult to correlate amounts of wild products permitted within national parks to the amounts permitted at buy out points. This means a loss of revenue to the Parks, and the inability to follow source and origin of resources. In order to ensure effective monitoring of the revised permitting system, it is necessary to extend the authority of National Park Directorates to include buy out points around the national parks territories.

This change will require changes to Article 47 of the Medicinal Plants Act, and to the regulation governing the roles and responsibilities of Park Directorates. Though this authority will overlap with the role and responsibilities of Regional Environmental Inspectors, the overlap is welcome. It provides much more effective coverage of an area with minimal extra effort. It also helps extend the authority and capacity of heavily burdened Regional Environmental Inspectors.

Ensure a registration of geographical origin for non-timber natural resources is provided along the supply chain. Medicinal Plants Act

Future commercial collection permits issued for buy out points must register the geographical origin of all wild resources. A change needs to be introduced in Article 31 of the Medicinal Plants Act and the Regulation on the requirements for buy-out – points, according to Article 29 of the same Act. This will increase the correlation between collector, collection area, and buyer, and thus increase accountability and closer association with resource management and fee payment. This document will be required for all exports of medicinal plants and wild fruits. It must accompany the transport of wild products from buy out points to end-user.

Such a regulation will limit the incidences of wild resource collection from un-managed or illegal resource collection areas. This regulation will also increase the chances for each relevant state authority to collect legitimate commercial fees from state managed territory. This regulation will also increase the potential for wild products to eventually secure organic certification, thus raising its price and profile on international markets.

Use of personal use collection coupons for wild resources harvested within National Parks Medicinal Plants Act

The Medicinal Plants Act should introduce a regulation that mandates the permitting of all wild resource collection from within National Parks. This regulation should provide for the use of personal use collection coupons for non-timber natural resources within all protected area territories, and specifically within National Parks. These permits should be issued for free, and should be easily available in park chalets, local town halls, offices of the park, and even at commercial/private stores. The use of personal collection coupons will contribute to more precise monitoring of all resources and quantities of the resources that are collected from within the protected areas system.

Personal Use quantities (norms) of wild resources should be reduced. Medicinal Plants Act

It is necessary to revise the norms for personal use of wild resources from within parks. The changes should be reflected in the Medicinal Plants Act and subsequently in each Park's management plans. Existing norms are so high that they often conceal collection intended for commercial markets. Personal use quantities should be reduced according to the real needs of consumption or family consumption on individual level. It is appropriate to consider procedures that authorize local authorities to supervise the issuing of personal or family collection permits to their constituency, similar to the procedure used by parks and the mayors of local municipalities to determine household fuel wood needs. This will provide local population with an easy and legitimate access to each park's wild resources and within reasonable limits.

6.2. Park Management

National Park Directorates should take actions for more effective implementation of the regimes and norms set in the Management Plans:

Eliminate wild resource collection in the Limited Human Impact Zone (LHIZ) and Strict Reserves.

Medicinal plant collection, particularly bilberry collection, from the Parks' limited human impact zone remains problematic. Under the present norms allowed for personal use collection, amounts of wild resources permitted from this zone can still have impacts similar to commercial collection. Therefore there is no easy distinction between the regimes and norms of the Multiple Use Zone and LHIZ. The Medicinal Plants Working Group therefore, recommends that all medicinal plant collection be stopped in this zone for an experimental period of the next 8 years – until the next park management plan is developed. Each park's medicinal plant management system should continue to assess and monitor wild resource development within this zone, but all collection should be stopped. This will provide an important control site against which continued personal and commercial collection in the Multiple Use Zone can be compared. This adjustment to Park regimes should be established for all bilberry harvest in the LHIZ, at the very least. This can be done with an Order issued from the National Park Director. This order will need follow-up with field monitoring during collection season(s), and with better zone boundary definition and public education.

Better enforcement of regimes should continue to be observed in strict reserves within both Parks.

Expand the medicinal plants management and monitoring system

Bilberry resource management provides an important framework for other NTNR management in National Parks, and supports principles of adaptive management. The

national park directorates should use the bilberry collection results to guide the implementation of additional NTNR resource management, particularly for species of commercial importance.

For bilberries: Resource assessments of bilberry resources in all National Parks should continue to be done on an annual the basis, with the assistance of experts for at least 3-4 more years. This will help refine the system, and to better link resource productivity with regular observations about their development. Parks will become more skilled in predicting annual amounts, and these amounts will be more effectively linked to limits of acceptable use, and the permit system. Phenological monitoring should continue to better understand plant development trends, to better understand the impacts of meteorological conditions plant productivity.

After this preliminary period for important NTNRS is completed, field assessment of key resources should be carried out every 2 or 3 years.

MOEW/NNPS should review and approve the draft Terms of Reference (*Appendix 8*) for all park-based medicinal plants and wild fruits that are collected for commercial purposes. The terms of reference is a general guideline for the assessment and management of all NTNRS in National Parks, and its implementation is a requirement of all protected area management plans in the country. The TOR was produced along with the Pilot Program with the National Park Directorates of Rila and Central Balkan National Parks and the technical assistance of the BCEG Project.

Data bases for medicinal plants compiled in preparation of management plans for Rila and Central Balkan National Parks should be augmented with detailed and concrete inventory of the bilberry localities and resource amounts. This will allow operational use of this information in each Park's Geographic Information System (GIS) and greatly assist in long-term monitoring and diagnostics of these park resources.

Monitoring Collectors

Commercial collection campaigns of non-timber natural resources are generally characterized by large groups of people and high numbers of vehicles in the National Parks. The National Parks Ecological Monitoring programs should also include monitoring of collectors' activities to help determine the effects of distribution, impacts, and collection dynamics on species, habitats and ecological systems in each Park. This is the basis for adaptive management.

Human Resource Management and Collection Campaigns

The implementation of a systematic approach to sustainable non-timber natural resources management includes the regular use of: phenological monitoring, resource assessment, collection campaign start dates, and field monitoring. The following matrix is a summary of those steps, time frame and responsibilities for bilberry collection:

Calendar for Annual Bilberry Collection Campaign

| Activity | Time period | Responsible person |
|---|---------------|---|
| ➤ Overall planning | February | Chief expert in flora |
| ➤ planning of phonological monitoring | February | Chief expert in flora and heads of park sections (PS) |
| ➤ meetings with partner institutions | March | NP Directors |
| ➤ beginning of phonological monitoring | April | Heads of PS and guards, have been trained in monitoring |
| ➤ monthly report for phonological monitoring | | Heads of PS |
| ➤ planning and evaluation of the resources | May | Flora expert |
| ➤ Report of the results from the phonological monitoring and recommendations for the time of the resource assessment and a set date for the beginning of the of the collection campaign | June | Chief expert in flora and heads of park sections |
| ➤ Planning of the information campaign | May | PR expert |
| ➤ Resource assessment | July | Flora expert, heads of PS, guards, external consultants |
| ➤ Report on the resource assessment, that includes the proposed localities and suggested quantities | July | Flora expert, heads of PS, guards, external consultants |
| ➤ meetings with partner institutions | July | NP Director |
| ➤ Plan for Resource Use and Order setting the starting date of the campaign | July | NP Director |
| ➤ Information Campaign | July - August | PR expert and heads of PS |
| ➤ Issue of permits and coupons | July | Heads of PS, guards |
| ➤ Monitoring and Control | July - August | Teams of the PS |
| ➤ References and Information about the campaign | September | Guards and heads of PS |
| ➤ Summarized (final)report | November | Flora expert |

6.3. Collection Season 2003

The following recommendation can be made for the 2003 collection:

1. Organize monitoring of the bilberry (*Vaccinium myrtillus L.*) use for all Park sections with traditional usage of bilberry. Apply the collection permit system, and exercise monitoring and control during the campaign.
2. Monitor the use of edible mushrooms for park sections in Rila National Park where intensive use is known. Monitoring will be done following an expert methodology, different to the medicinal plants methodology.
3. Provide effective operational support and strengthened control in the field during any collection exercise.
4. Continue to strengthen the connection with local buyers. Efforts should be made to increase their role in the organization and supervision of collectors during any campaign. Where necessary, assistance should be given to them to help them register with their respective Regional Environment Inspectorates, according to the provisions of the Medicinal Plants Act.
5. Work with buyers to improve the permits and documentation necessary for commercial collection, source and origin designation, and movement of goods along the supply chain.
6. More efforts should be made to engage large-scale companies involved in the final processing of NTNRs within Bulgaria, and for export markets. There are tangible benefits that accrue leading to possible organic certification of park-based non-timber natural resources.
7. Standardize the field reporting forms before the campaign begins. These should be simple and easily replicated locally. Park section heads should be encouraged to summarize field reports from the Park section as part of the standard monthly reporting statement to each HQ. Supervision, training and support should be provided to park guards in forming these field habits. Feedback should be provided to rangers at the end of every collection season.
8. Recommendations for the public information campaign associated with NTNR collection suggest that they should be structured at two levels and involve two target groups:

Local communities – Continue to reinforce the awareness of local communities living near the Park on matters related to sustainable practices in nature resources use. The territorial scope of information campaigns should be enlarged, and all areas where traditional collection of bilberries takes place should be addressed. This includes Park sections “Trojan” and “Teteven” for Central Balkan National Park and Park Sections “Belovo” for Rila National Park.

Institutions – Regional Forest Directorate, Regional Environmental Inspectorates and Forest Enterprises should be more regularly involved in stages related to each campaign. Annual coordination and planning meetings should commence in January of each year. Meetings should be used to review annual plans, clarify roles and responsibilities, and to coordinate the annual public information campaign. All efforts should be made to coordinate start dates for collection campaigns within the

region – irrespective of park boundaries. Seasonal collection of wild resources should attempt to set collection dates just as for fishing and hunting seasons in the country.

APPENDIXES

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Appendix 1.1

Collection Coupons

The coupon should be available for control check while collecting resources in the Park



**RILA
NATIONAL PARK**
Belitsa Park Section
Yakoruda Park Section

COUPON №

Resource: bilberries

Start date of collection campaign
27 July 2003

PERSONAL
USE

10 kg

COMMERCIAL
USE

CONTROL SECTION №

- ◆ Sofan - Leeve
- ◆ Ropalitsa Vranovishte
- ◆ Grancharitsa
- ◆ Polenitsa
- ◆ Germanitsa
- ◆ Dinkov Dol
- ◆ Karaalanitsa
- ◆ Tupia Vrah
- ◆ Vapata
- ◆ Kitkata
- ◆ Sredkovoto
- ◆ Lopatitsa
- ◆ Other Park Section
- ◆ Buy- out point

 **Use only this tool for collection of bilberries**

 **The bilberries plants should not be uprooted and their branches should not be cut**

-  **Camping is allowed only in the marked areas**
-  **Putting on fire is allowed only in the marked areas**
-  **Cutting trees and branches is forbidden**
-  **Hunting and chasing wildlife is forbidden**
-  **Do not litter**

Appendix 1.2

Standard Operational Procedures

DIRECTIVES

For the distribution of coupons and the monitoring of the bilberry collection campaign 2002 in the Klissura PS, for Central Balkan National Park and Belitsa and Yakoruda PS for Rila National Park

The non-timber forest resources collection (herbs, wild berries and mushrooms) in the NP is determined by the Protected Areas Law and the Medicinal Plants Law. In the Management Plans are set the norms, the regimes for these uses and are specified the ways to define the locations, where this is allowed. It is done in an approved by the NPD plan, based on resources evaluation. Two types of uses are allowed – for personal purposes and for commercial purposes. By personal purposes is understood the collection of defined quantities (wild berries – up to 10 kg; stalks – up to 2 kg; leaves- up to 1 kg; blossoms – up to 0.5 kg; seeds- up to 0.1 kg) in fresh status per day. The personal purposes collection is free and allowed in the designated locations, without the necessity to issue a special document. The commercial purpose collection (collection for sale) can be carried, based on issued by the NPD permit, after the submitted request by the user – a physical entity and payment of defined fee. The permit defines: the type of the use, the allowed quantity of herbs, the area of the particular locality, the way of collection and the validity of the permit. The collection and the transportation of herbs and wild berries without a permit or in excess of the defined species, areas and localities, quantities and ways of collection is sanctioned by fines.

Due to reasons of a different character, this permitting system is hard to implement in the particular conditions. Very often, the permits are issued on the herb processors' or brokers' name, and the collectors enter the park without a document for the use. Usual practice is the buying out of park resources with permits, obtained from the State Forestry Enterprises, which territories, in most of the cases are from very remote territories. The tariff fees are not paid by the collectors, but by the herb processors. As a result in the park enter dozens, and hundred of collectors, without permits, and often even without identification cards. It is impossible to enforce control, the number of collectors cannot be monitored, as well as the localities, where is collected, or the monitor the quantities from the stock used.

In the 2002 season, during the bilberry fruit collection is conducted an experimental implementation of a new system model for permits. The aim of the system is the recording of all uses or "Everyone entering the NP to collect, must have a permit". The acquisition of this purpose will bring to a more realistic and more efficient control over the use and its accompanying impacts on the vegetation populations, the animals and the nature in the park. The required condition for the completion of this goal is every collector to acquire a coupon (not a permit as until now), despite for what purposes he will collect the bilberry fruits – personal or commercial. The coupons are given away by the NPD.

The proposed model is applied in parallel with the actual enforced permitting system.

1. Issue of permits in accordance with the Medicinal Plants Law

The issue of permits shall be accordance with the MPL, as set by the present acting order and procedures. Observed are all regulation requirements, listed in the MPL and

NPD instructions. Developed is a plan for coordination between the bordering park territories with the pilot PS as well as agreement of the activities of the rangers. All employees of these PS are informed for the carrying of the experimental implementation of the coupons and are instructed for the campaign conduction.

2. Acquisition of coupons by individuals, which will distribute those

The coupons are produced by ARD in a defined edition for each NP (25000 for Rila). The total quantity of coupons for each pilot area is handed to a park employee, appointed for the purpose with Park Director's order. This employee is accountable for the whole coupon edition and is responsible for these. Observed are the requirements when park assets are given or handed.

The NPD responsible people, who will receive the coupons to be handed over during the campaign, are appointed with Director's order.

To the non-employed by the park will receive coupons and can distribute them during the campaign, are offered a mutual cooperation with the NPD contract. Such can be herb processors and brokers, mayors and specially engaged for the purpose individuals. The reception of coupons with a contract is by signing a transfer protocol, set as format in the contract. The protocol should contain data of the individual and an inventory of the coupons by numbers.

The individuals distributing the coupons and will buyout bilberries shall be registered as herb processors in the respective Regional Environmental Inspectorate, as for the purpose these should produce an official document (a document form the REI or a record book with the bought quantities of berries and fruits, certified by the REI).

For the acquisition of coupons is needed the herb processors and the brokers, besides being registered by the REI, to have a permit, accompanied by a document for paid fee to the NPD, by the meaning of the MPL and PAL. The number of coupons, which the herb processors receive, is defined, based on the allowed in the permit quantity of fruits, requested by them or by the collectors, these represent.

The coupon distribution, made by the park employees, the town halls, and other partners is carried by the authorized by the Park Director person – the PS heads, which are the project coordinators.

Under the supervision of the official, the coupons are marked with its signature, with a different color (brown – for personal use and blue – for the commercial purposes) listed in the coupon's sign field. The coupons for personal uses, besides the above listed spot, are marked on the front side of the control slip, in the lower right or left corner. In the marking of the coupons participate one and the same employees of the park guards, with regards, avoiding mistakes and discrepancies. The check sign is placed visibly and clearly, well distinguishable of the coupon.

To the herb processors are given coupons, marked only in the commercial purposes field. To the remaining individuals, participating in the distribution, are given coupons, marked only in the coupon sign field for personal use.

The coupons are not a document for financial accounting of the persons, engaged in the buying out of the resources.

The collectors do not pay fees for the acquisition of the coupons.

3. Distribution of coupons

When distributing the coupons, one should observe the following:

1. The coupon, which is given, should be marked with a permanent marker, only in one sign field – either for personal, or for commercial purposes. It is not allowed to distribute coupons, marked in the both sign fields.
2. The person, who gives away the coupon, shall instruct the collector about the purpose of the coupon, the obligation to be available when collecting and the observation of the rules, written on the coupon.
3. It is not admitted the refusal to give a coupon, due to exhausted quantity or the lack of authorized individual on the designed location.
4. The coupon distribution begins 5 days before the starting date of the campaign - 29 July for the Rila NP.

3.1. Coupon distribution by herb processors and brokers

The herb processors and the brokers receive number of coupons, respective to the allowed for collection quantities, which these intend to buyout during the campaign. During the first coupon distribution are made individual or group instructing of the collectors.

The herb processors give to the collectors everyday one coupon for 10 kg, and at the end of the working day, when buying out the collected fruits, require this coupon and give the collector the coupon for the next day.

The herb processors and the brokers collect the acquired coupons and provide these to the authorized by the park official, on a daily basis.

The herb processors can buyout fruits, collected with coupons, marked for personal use, only in case, they request the coupon form the collector and account it along with the total number of coupons.

3.2. Coupon distribution by park employees and specially assigned people

Coupons are distributed by all employees of the respective park section and by the employees of the Directorate, specially authorized for the purpose by the park Director through an order.

Coupons are distributed in the park offices and defined for the purpose locations, listed in an official leaflet -poster of the park.

Coupons can be given in the field by the park guards.

Upon each coupon giving, the appointed shall instruct the collectors.

4. Control

On the field, the park guards and the authorized NPD employees perform control functions. All authorized persons are acquainted with the present directives and pass a special training by the directorate. In it are reviewed the violations, needing sanctions as well as the coordination between the rangers.

The park rangers check the collectors for the coupons availability and keep the control slip of the permit coupon, marking at the same time on the coupon the location where the check had been performed. The marking is made with single type of markers and precisely the same color.

The park section head, agreed with the park director, defines the number of the control slips, which the particular park ranger shall present.

The checks are conducted exclusively on the field and rarely at the buyout stations.

In case of lack of coupon, the ranger shall provide the individuals who collect bilberries with such.

5. Starting date

The NPD declares the start of the bilberries collection campaign, through a special order of the park Director. The order is delivered to the knowledge of all NP employees. The order is disseminated to municipalities, town halls, buyers, buyout stations and it is posted to the most visited places in the settlements. At the buyout stations and the town halls, the orders are shown with ink stamp of the park. Announced is also through the local newspapers and cable TVs. Announcing letter is sent to the RFB, Local Police Department, Fire Prevention service and in case of necessity are conducted meetings with responsible representatives of these institutions.

6. Monitoring during the 2002 bilberry campaign.

For the effective monitoring of the 2002 campaign it is required to record how some of the main activities are happening (coupon distribution, coupon slips collection, collector's checks, etc) as well as other phenomenon. All participants in the campaign, officials and individuals, working under the mutual cooperation, shall be recorded in a logbook, all information, related to the their duty performance, during the campaign. The recording is done for the entire campaign period.

What shall be recorded:

1. How many coupons are given away daily? – this recording is made at daily basis, by all individuals, which participate in the campaign. The recording is done immediately after the conclusion of the distribution. Recorded are any difficulties and restrictions in the coupon distribution.
2. How many coupons were collected daily by each herb processor or a broker? – this recording is made by the individuals, authorized to collect the coupons form the herb processors. Recorded is also the number of coupons for personal purposes collected by the herb processor. Recorded is the number of coupons without control slips. As well as difficulties in the coupon retrieval.
3. How many collectors were checked during the day? –this recording reflects the number of the checked collectors and id done daily by the park rangers and other authorized individuals, which can check for coupon availability. Reflected is the date, the localities, where are conducted the checks, as well as the numbers of the control slips (total number, number for commercial

purposes and number for personal purposes) – for instance. 29.07.2002, Vartola locality – total checked 45 coupons, out of those 40 for commercial and 5 for personal purposes; Skoka locality – total checked 23 coupons, out of those – for commercial purposes -23. The collected control slips are sealed in an envelope, printed is the name of the ranger and the date of the check. The park section head stores the sealed envelopes.

4. What is the daily route of the park ranger during the campaign? – described are consecutively the localities visited, the time for moving from one to the next location, type of transport, fuel cost.
5. What is the average number of collectors in a separate locality – recorded is the average total number in a locality, if possible are given data how many men, women, children. At what time these enter and exit the park. Recorded are the number and the type of the vehicles the collectors use to access the territory.
6. How many collectors were lacking coupons and where these were given? – recorded is the total number of collectors, which did not obtain permit coupon and were given on the spot, respectively numbers for personal collection and commercial collection.
7. Is there a presence of illegal buyers in the region – recorded is where these were registered, who these operate in the region, what vehicles they use, are they connected to the local people, do these work directly or through intermediates by the local people, were any sanction measures undertaken.
8. Are there any signals for illegal buying – how many and by who were notified the rangers – local people, collectors, herb processors or brokers.
9. What violations were found? – described is the number and the type of the violations, measures taken and imposed sanctions.
10. What main threats were observed? – natural (fires, erosion, etc.); anthropogenic – over harvesting, non-observation of the way of collection, fires, pollution with various waste, excessive grazing and grazing outside the assigned locations, grazing without herdsman, development of infrastructure and increased human presence.
11. What is the general impression for the day and any additional remarks? – recorded is everything interesting from the working day, and everything which is not in the scope of the above questions, and the ranger or the authorized individual considers important and shall be addressed by the management and the guards.

Appendix 1.3**Bilberries collection Start Date Order of Rila NPD**

| |
|---|
| <p>MINISTRY OF ENVIRONMENT AND WATER DIRECTORATE RILA NATIONAL PARK 2700 Blagoevgrad, Varosha district, 12 V Bistritsa Str, POBox 56, tel./fax: 073 / 805 38</p> |
| <p>ORDER № 79 RD</p> <p>Blagoevgrad, 15.07.2002</p> <p>Based on art. 50, it. 1 and item. 3 of the Protected Areas Law, art. 37, par. 2, art. 47 and art 63 of the Medicinal Plants Law, Appendix № 30 of the Rila NP Management Plan, Program 5.4.2 for collaborative management of natural resources and the pilot project, developed for the PS Belitsa and Yakoruda, related to the use of the medicinal plants, for the provision of their sustainable use, herewith</p> <p>I APPOINT:</p> <p>I.The deadline for the collection of bilberry fruits on the Rila NP territory: I.1 For commercial and personal purposes form 03 August 2002 until 30 September 2002 r.</p> <p>II. The localities and the quantities of bilberry fruits, which can be collected on the territory of Belitsa and Yakoruda PS in 2002, will be defined with a separate order, after the conduction of resource assessment on the localities.</p> <p>II.1 The evaluation of the bilberry resource to be conducted within the period of 22 – 27 of July 2002 .</p> <p>III. The collection of bilberry fruits is carried in accordance with the Application “Directions for the order and the way for medicinal plants use”, which is inseparable part of the present order.</p> <p>The control on the management of the order I appoint to Verka Ivanova – Forest Senior Expert and Yulia Trencheva – Head of Financial and Accounting Department.</p> <p>The present order to be brought to the knowledge of all interested for information and execution.</p> <p>Director:</p> <p>/M. Pramatarova/</p> <p>Handed on: 2002 .</p> <p>Received: /</p> <p>Delivered by: /</p> |

Appendix To item. III of the
Order № RD 79, 15.07.2002

D I R E C T I V E S

For the order and the way of the use of medicinal plants, mushrooms, and wild berries (which are not form medicinal plants)

I. General Provisions

1. Annually, after a resource evaluation, with NP's Director are determined:

1.1. The medicinal plants, the localities, the type and the qualities of herbs, which can be collected on the Rila NP territory.

1.2. The localities, the type and the quantities of mushrooms and wild berries (which are not form medicinal plants), which can be collected on Rila NP park sections territory.

1.3. The deadline for collection of the determined quantities of medicinal plants, mushrooms and wild berries (which are not form medicinal plants).

1.4. The resource evaluation is completed by the 30 of July.

2. The permits for the use of medicinal plants are issued on physical entities, collecting herbs for sale or for primary processing, after a submitted request to the Park directorate and payment of a fee, in accordance with the tariff for medicinal plants uses form exclusive state property, approved with Council of Ministers letter № 94, 29.05.2000.

3. Permits for collection of mushrooms and wild berries (which are not from medicinal plants) for commercial purposes are issued on physical and legal entities after the payment, of a fee, in accordance with the medicinal plants uses form Protected Areas - exclusive state property Tariff, approved with Council of Ministers letter № 93, 29.05.2000.

4. Permits for the uses of medicinal plants, mushrooms and wild berries (which are not form medicinal plants) are not issued.

5. Under personal purposes use is understood:

5.1. Herbs – fresh quantities, collected by one person within one day, as follows:

5.1.1. Fruits – up to 10 kg;

5.1.2. Roots and rutages – up to 1 kg;

5.1.3. Sticks – up to 2 kg

5.1.4. Leaflets – up to 1 kg

5.1.5. Blossoms – up to 0,5 kg

5.2. Mushrooms – fresh quantities, collected by one person within one day – up to 3 kg;

5.3. Wild berries (which are not form medicinal plants) – fresh quantities, collected by one person within one day – up to 10 kg;

6. The means and the ways for collection are as follows:

6.1. Fruits – the collection is done by hand or with a special small combs with rounded metal teeth (bilberry combines); restricted is the scything and the uprooting of the plants; the single extraction of a particular population shall not exceed 70 %.

6.2. Alpine Dock roots – digging of the root with a handy instrument and leveling down of the surface after the extraction of the root, the leaf mass is evenly distributed along the terrain.

6.3. Sticks – used are cutting instruments – knives or orchard scissors; cut off are just the leafed blossoming parts of the plant; left are the young non-blossoming plants and not less than 30% of the mature plants for the populations' regeneration.

6.4. Leafs – collected are manually, without damaging the stalks and the blossoms. Not less than 1/3 of leafs should be left on each plant, in order to ensure its normal development.

6.5. Blossoms – the collection is done manually or with the assistance of the suitable cutting instrument. It is not allowed the damage of the integrity of the plant, and if are collected from trees and shrubs it is not allowed the breaking and the removal or cutting of branches.

6.6. Mushrooms – cutting with knife of the located above the surface part.

II. Issue of permits for use of herbs, mushrooms and wild berries (which are not form medicinal plants)

7. Right to issue permits for collection of herbs, mushrooms and wild berries (which are not from medicinal plants) have the following authorities:

7.1. Park Section Heads – for the respective park section territory;

7.2. The inspectors and the park rangers, coordination and controllers – for the respective park section;

7.3. Head of Financial and accounting Department – for the entire Rila National Park territory.

8. The permits for the use of medicinal plants are issued based on the order and the submitted requests for the determined by director's order quantities by localities and/or forestry fund sections.

8.1. Before the initial period of the campaign, on a visible location in the park section is displayed the following information:

8.1.1. The time, which the individuals submit the requests for the use of medicinal plants;

8.1.2. Filled forms of request and permit;

8.1.3. The regions and the quantities for which the permits will be issued;

8.1.4. The areas and the quantities where herbs for personal collection can be obtained;

8.1.5. The tariff fees defined for the collection.

8.2. The request is delivered to the respective park section office the same is recorded with a consecutive number in a special record book by the Section Head.

8.3. The request (Appendix № 1) contains compulsorily the following information:

8.3.1. The name, the permanent residence and the data from the ID card of the requesting;

8.3.2. The type and the quantity of the use;

8.3.3. The area of collection.

8.4. The permit is issued in one day period, except if in the definition of collection quantity are required additional references, but it shall be not later than 5 days from request submission.

8.5. For the issue of the permit is used the official approved by the MOEW form of a Permit for collection of herbs, mushrooms, and wild berries .

8.6. The permit is filled in 3 copies, as the original is provided to the user, second copy remains in the stalk and the third copy is delivered to the Accounting department of the Rila NP.

8.7. In the permit are listed compulsorily the type of the use (the medicinal plant and the type of herb), the permitted kilograms, the regions or the particular area (locality, land, municipality, forestry fund departments), the way of use, as well as all other remaining attributes, with no exception, listed in the approved form (Appendix № 2).

8.8. The permit is personal and cannot be remised to other individuals.

8.9. Alteration of the permit can be made only by the organ which issued it, when the entitled expresses such wish, it can refer to the type, the quantity and the area of collection.

9. Permit for the use of mushrooms and wild berries (which are not medicinal plants) are issued in accordance with item 7.

III. Control on the herbs, mushrooms and wild-berries use.

10. The Rila NP employees control the use of herbs, mushrooms and wild berries, on the Rila NP territory.

11. The Forests and Flora exerts form the Head office of the Rila NPD supervise the overall observation of the orders as well as the directives for the use of the herbs, mushrooms and wild berries on National Park's territory.

12. The Park Section Heads supervise the overall observation of the orders as well as the directives for the use of the herbs, mushrooms and wild berries on National Park section.

13. The inspectors and the park rangers supervise the observation of the area, the type and the quality, as well as the way of collection and the other requirements, listed in the permits. The same constitute acts to the violators, in accordance with the Medicinal

Plant Law and the Protected Areas Law.

14. When due to the activity of the entitled in the permit a damage or destruction of a medicinal plants locality had occurred, the permit is withdrawn with Park's Director order. To the guilty side, is constituted an act for violation under the Medicinal Plant Law.

15. Restricted is the issue of permits for the collection of herbs, mushrooms and wild berries for regions, type of use, quantities and ways of collection, which are not defined with Park Director's office.

16. The authorized persons, who violated the restriction under item 15, will be sought disciplinary and administrative – penal responsibility.

IV. Accountability for the use of mushrooms, herbs and wild berries

17. Every Monday within the collection campaign, the park section heads provide information to the Park Directorate in Blagoevgrad, for the type and the quantities of herbs, mushrooms and wild berries, by locality, and sections, for which permits are issued

18. The collected tariff fees are accounted in the Rila NPD accounting office, but not later than the 5th date of the following month and the funds are transferred to the NEPF until the 25 date of the month.

V. Directions for the collection of bilberry fruits on the Rila NP territory – Park Sections Belitsa and Yakoruda in 2002.

19. In the Belitsa and Yakoruda PS is introduced experimentally a new system model for the collection of bilberry – with coupons, marked in the either for personal or for commercial purpose. The coupons for commercial purpose are based on the issued by the Rila NPD permit

20. Reception of coupons, by people which will distribute them:

20.1. The Official from the Rila NPD be responsible for the entire amount of coupons and is in charge for their utilization.

20.2. The NPD officials, who will receive coupons for distribution in the campaign process, will be defined by Director's order.

20.3. For the non Rila PD officials:

20.3.1. Physical entities, for which a permit for bilberry collection had been issued, conclude a mutual cooperation contract with the Rila NP (Appendix № 3). The reception of coupons under this contract is made after the signing of transfer protocol (Appendix № 4). The protocol contains data for the person and a description of the coupons it receives, by their numbers as well as their particular obligations. The number of the coupons is defined based on the quantity of bilberry fruits, for which has been issued a permit by the Rila NPD.

20.3.2. Other park partners: receive coupons marked for personal use with a transfer protocol in accordance with Appendix № 5.

21. The coupons are free of charge.

22. Distribution of coupons to the collectors for personal and for commercial purposes:

22.1. The coupons for commercial purposes are given by the park section heads of the respective park sections and by physical entities under item 20.3.1.

22.2. Coupons for personal purposes are distributed by the Park section heads of the

respective park sections, or by the park rangers and the individuals under item 20.3.1
22.3. The persons under item 20.3.1. distribute to the collectors daily a 10 kg coupon per person, marking them for commercial purposes, as well as performing an instruction and at the end of the working day, at the buying out - require this coupon and provide the collector with another coupon for the next day. The collected coupons are handed to the Rila NPD authorized person on daily basis, with a protocol, as in Appendix № 6.

22.4. The individuals under item 20.3.2. distribute to the collectors daily a 10 kg. coupons, marking these with a signature and a personal collection use. These are distributed in the park sections offices and the specially assigned locations, listed in the official poster- leaflet of the park. Coupons can be obtained on the field from the park rangers, which shall perform instructing to the collectors.

22.5. The coupons for commercial purposes are distributed in the designated locations.

23. The individuals distributing coupons, are obeyed to perform instructing to the collector and about the purpose of the coupon, the obligation, the coupon to be available when collecting, as well as the observation of the rules, listed on the coupon.

24. It is not allowed the refusal to give coupons if such are available.

25. The coupon distribution begins after the issue of the order, with which are assigned the localities and the quantities available for collection for personal and commercial purposes.

26. Control

26.1. On the field the park rangers of the respective park section have the control functions, these are identify themselves with a Rila NP card and check the collectors for the availability of a coupon, remove and keep the control slip, marking the locality the check was performed.

26.2. At the buyout station park rangers as well as the park section head and the experts, have the control functions, which identify themselves, and check about the correspondence between the quantities of fruits and collected back coupons. Desirable is during these checks to participate also the respective Regional Inspectorates officials

27. Accounting:

27.1. The officials under items 20.1 and 20.2 make daily report of the recordings /Appendix № 6/.

27.2. The Physical entities under items 20.3.1 account the daily distributed to the collectors coupons and the collected back from them in the buyout stations with a special form /Appendix № 6/.

27.3 The physical entities under item 20.3.2 account on daily basis the distributed coupons /Appendix № 6/.

All forms from Appendix № 6 are collected by the park section head and are handed to the Rila National Park Directorate

Prepared by :

Verka Ivanova – Forests senior expert

Approved : Director/M. Pramatarova/

Appendix 1.4

Memorandum of Understanding between Central Balkan NP and its Partners

| | |
|---|---|
| <p>CONTRACT FOR MUTUAL COOPERATION №</p> | |
| <p>The parties perform their cooperation on equal and mutually beneficial basis, in observation of the acting legislation, led by the desire to develop mutual cooperation. Being convinced that this would be of mutual interest, they agreed about the following:</p> | |
| <p>Today in the town of Klissura, between:</p> | |
| <p>..... address</p> | |
| <p>represented by</p> | |
| <p>on one behalf and on other behalf:</p> | |
| <p>with an address:.....</p> | |
| <p>Represented by.....</p> | |
| <p>Hereinafter called PARTNERS:</p> | |
| <p>Was concluded the following contract regarding:</p> | |
| <p>.....</p> | |
| <hr/> <p>THE PARTNERS agreed about the following:</p> | |
| <p>1.</p> | <p>The Central Balkan National Park hands over to Coupon stubs for forest fruit collection from the multifunctional territory for the Klissura PS in accordance with the transfer protocol.</p> |
| <p>2.</p> | <p>..... agrees to observe the unified starting date for the beginning of the buyout campaign as in accordance with order №</p> |
| <p>3.</p> | <p>..... provides to the CBNP list with the individuals, which will collect bilberries in season 2002.</p> |
| <p>4.</p> | <p>..... supervises, the included in the lists collectors to observe the requirements, listed on the reverse side of the coupon.</p> |
| <p>5.</p> | <p>..... shall not use other collectors, but the enlisted ones.</p> |
| <p>6.</p> | <p>..... provides a list with the type, the number and the registration numbers of the vehicles, which will be used during the campaign.</p> |
| <p>7.</p> | <p>..... assures the presence of the enlisted collectors during the instructing, carried by the CBNP employees.</p> |
| <p>8.</p> | <p>CBNP shall not allow collectors of other organizations, collecting forest fruits for commercial purposes, which are not park partners under the project Sustainable use of the non timber natural resources on the Klissura PS territory</p> |
| <p>This contract is constituted in two equal copies as inseparable part of the following transfer protocol.</p> | |
| <p>The present contract was prepared in two copies, each one in Bulgarian and in Polish languages as both the texts have equal obligation power.</p> | |
| <p>For CBNP FOR</p> | |
| <p>Nela Rachevitz, Director.....</p> | |
| <p>ASSIGNER:..... ASSIGNEE:.....</p> | |

Appendix 1.5

Protocol for handing over of collection coupons

1. Protocol for coupons for both personal and commercial uses

| | |
|---|---|
| <p>TRANSFER PROTOCOL №..... dated.....2002.</p> | |
| <p>Today2002, the bellow signed :</p> <p style="padding-left: 40px;">/name, surname, family name/ PIN</p> <p style="padding-left: 40px;">address, №..... ID card №, issued.....by</p> | |
| <p>I HAVE RECEIVED..... free coupons with serial numbers from №to № for the collection of bilberries for uses on the territory of park section :.....</p> | |
| <p>I shall daily provide coupons to each bilberry collector until the depletion of the resource evaluation determined quantities.</p> | |
| <p>Delivered by :</p> <p>/...../</p> | <p>Received by:.....</p> <p>/...../</p> |

2. Protocol for coupons for commercial uses

| | |
|---|---|
| <p>TRANSFER PROTOCOL №.....dated.....2002</p> | |
| <p>Today2002,the bellow signed :/name, surname, family name/ PIN</p> <p style="padding-left: 40px;">address, №..... ID card № issued.....by</p> | |
| <p>I HAVE RECEIVED..... free coupons with serial numbers from №to № for the collection of bilberries for commercial uses on the territory of park section :.....</p> | |
| <p>I shall daily provide the collectors with coupon, under Permit number №, for.....kg.</p> | |
| <p>I shall in receiving the bilberry quantities during the Campaign 2002 daily to collect and account the number of coupons given back by the collectors with a record, in accordance with the directives set in Application №1 of order № RD 79 dates 15.07.2002 . In case I receive the quantities of bilberry fruits with personal purposes marked coupon u shall deliver these as well with the record.</p> | |
| <p>Delivered by :</p> <p>/...../</p> | <p>Received by:.....</p> <p>/...../</p> |

Appendix 1.6

Buyers Record Log for distributed and collected collection coupons

| | |
|----------------------|----------------------------|
| DISTRIBUTED COUPONS: | |
| RECEIVED COUPONS: | For commercial purposes №: |
| | TOAL COUPONS /NR./: |
| | For personal purposes №: |
| | TOTAL COUPONS /NR./: |

TOTAL COUPONS /NR./:

Date :

Town.:

RECORD PREPARED by:

Appendix 1.7

Permit Issue Request

TO: THE NP DIRECTOR

APPLICATION

Form
PIN, ID №, issued.....,
city
Address, district.
St. №, bl. №, fl., app.

MR DIRECTOR,
Herewith I kindly ask for the issue of Permit for collection of
..... forkg; In the
region of

I shall observe the requirements of the Medicinal Plants Law and the directives for the way
and order for medicinal plants, mushrooms and wild berries fruits (which are not form
medicinal plants

Date:
Town Requesting:

Appendix 1.8

Permits form for collection of herbs, mushrooms and wild fruits required by the
MPA**front**

| | | | | |
|---|---------------------|--|---|-------------|
| MINISTRY OF ENVIRONMENT AND WATERS | | | | |
| National Park Directorate Address | | Statistical Number Tax number: 1220008564 | | |
| Permit No 004276/..... | | Locality..... | | |
| For gathering of herbs, mushrooms and wild fruits | | Site..... | Municipality..... | |
| Park Section..... | | Sections..... | | |
| In accordance with Art. 50, point 6 of the PAA for the period - | | | | |
| It shall be permitted to (name) | | | | |
| With address: Town | | Enterprise..... | Statistical Number..... | |
| Street | | Town | Tax number: | |
| Municipality | | Street | | |
| Region | | Municipality | | |
| PIN | | Region | | |
| | | | | |
| For the collection of: | | | | |
| No | Name of the product | Quantity (kg) | Price per piece (BGL) | Total (BGL) |
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| | Total: | | | |
| Total in words..... | | | | |
| From the above stated sections and sites and in accordance with the following conditions: (means and methods of collection) | | | | |
| and the obligations stated on the other side of this permit | | | | |
| Depositor: (signature) | | (position, name) | Receptionist of the amount: (signature) stamp | |

back

| |
|---|
| Obligations for the user: <ol style="list-style-type: none"> 1. During the collection shall bring the Permit with oneself 2. Shall not practice the collection on places, in manners and with means other than stated in the Permit 3. Shall not collect other products than stated in the Permit 4. Shall inform the Park Administration for fires 5. Shall not reassign the rights of this Permit |
|---|

Appendix 1.9**Bilberry Campaign data registration**

*Diary and Questionnaire used for monitoring purposes of the Bilberry Campaign 2002
by the park staff*

Monitoring of the bilberry campaign 2002

For the effective monitoring of the 2002 bilberry campaign, is needed to record the progress of certain activities (coupons distribution, coupon slips retrieval, collector's check on the spot, etc) as well as other phenomenon. All participants in the campaign, authorized, and working in mutual cooperation, shall record in the logbook any information, related to the performance of their duties, during the campaign. The recording is done for the entire campaign period.

What shall be recorded:

1. How many coupons are given away daily? – this recording is made at daily basis, by all individuals, which participate in the campaign. The recording is done immediately after the conclusion of the distribution. Recorded are any difficulties and restrictions in the coupon distribution.
2. How many coupons are collected daily by a herb processor or a broker? – this recording is made by the individuals, authorized to collect the coupons form the herb processors. Recorded is also the number of coupons for personal purposes, collected by the herb processor. Recorded is the number of coupons without control slips. As well as difficulties in the coupon retrieval.
3. How many collectors were checked during the day? –this recording reflects the number of the checked collectors and id done daily by the park rangers and other authorized individuals, which can check for coupon availability. Reflected is the date, the localities, where are conducted the checks, as well as the numbers of the control slips (total number, number for commercial purposes and number for personal purposes) – for instance. 29.07.2002, Vartola locality – total checked 45 coupons, out of those 40 for commercial and 5 for personal purposes; Skoka locality – total checked 23 coupons, out of those – for commercial purposes -23. The collected control slips are sealed in an envelope, printed is the name of the ranger and the date of the check. The sealed envelopes are stored by the park section head.
4. What is the daily route of the park ranger during the campaign? – described are consecutively the localities visited, the time for moving from one to the next location, type of transport, fuel cost.
5. What is the average number of collectors in a separate locality – recorded is the average total number in a locality, if possible are given data how many men, women, children. At what time these enter and exit the park. Recorded is the number and the type of the vehicles the collectors use to access the territory.
6. How many collectors were lacking coupons and where these were given? – recorded is the total number of collectors, which did not obtain permit coupon and were given on the spot, respectively numbers for personal collection and commercial collection.
7. Is there a presence of illegal buyers in the region – recorded is where these were registered, who these operate in the region, what vehicles they use, are they

- connected to the local people, do these work directly or through intermediaries by the local people, were any sanction measures undertaken.
8. Are there any signals for illegal buying – how many and by whom were notified the rangers – local people, collectors, herb processors or brokers.
 9. What violations were found? – described is the number and the type of the violations, measures taken and imposed sanctions.
 10. What main threats were observed? – natural (fires, erosion, etc.); anthropogenic – over harvesting, non-observation of the way of collection, fires, pollution with various waste, excessive grazing and grazing outside the assigned locations, grazing without herdsman, development of infrastructure and increased human presence.
 11. What is the general impression for the day and any additional remarks? – recorded is everything interesting from the working day, and everything which is not in the scope of the above questions, and the ranger or the authorized individual considers important and shall be addressed by the management and the guards.



Central Balkan National Park



**Biodiversity Conservation &
Economic Growth
Project**

Sponsored by USAID and the Government of Bulgaria

STANDARD OPERATIVE PROCEDURES

For the distribution of coupons and for the monitoring of the 2002 bilberry campaign
In the Klissura PS – Central Balkan National Park

The non-timber forest resources collection (herbs, wild berries and mushrooms) in the NP is regulated by the Protected Areas Law and the Medicinal Plants Law. In the Management Plans are set the norms, the regimes for these uses and are specified the ways for the definition of the locations, where this is allowed. It is done in an approved by the NPD plan, based on resources evaluation. Two types of uses are allowed – for personal purposes and for commercial purposes. By personal purposes is understood the collection of defined quantities (wild berries – up to 10 kg; stalks – up to 2 kg; leafs- up to 1 kg; blossoms – up to 0.5 kg; seeds- up to 0.1 kg) in fresh status per day. The personal purposes collection is free and allowed in the designated locations, without the necessity to issue a special document. The commercial purposes collection (collection for sale) can be carried, based on issued by the NPD permit, after the submitted request by the user – a physical entity and payment of defined fee. The permit defines: the type of the use, the allowed quantity of herbs, the area of the particular locality, the way of collection and the validity of the permit. Fines sanction the collection and the transportation of herbs and wild berries without a permit or in excess of the defined species, areas and localities, quantities and ways of collection.

Due to different reasons, this permitting system is hard to implement in the particular conditions. Very often, the permits are issued on the herb processors' or brokers' name, and the collectors enter the park without a document for the use. Usual practice is the buying out of park resources with permits, obtained from the State Forestry Enterprises, which territories, in most of the cases are from very remote territories. The tariff fees are not paid by the collectors, but by the herb processors. As a result, in the park enter dozens, and hundreds of collectors, without permits, and often even without identification cards. It is impossible to enforce control, the number of collectors cannot be monitored, as well as the localities, where is collected, or the quantities from the stock used.

In the 2002 season, during the bilberry fruit collection is conducted an experimental implementation of a new system model for permits. The aim of this system is the recording of all uses or "Everyone entering the NP to collect, must have a permit". The acquisition of this purpose will bring to a more realistic and more efficient control over the use and its accompanying impacts on the vegetation populations, the animals and the nature in the park. The required condition for the completion of this goal is every collector to acquire a coupon (not a permit as until now), despite for what purposes he will collect the bilberry fruits – personal or commercial. The coupons are distributed for free by the NPD.

The proposed model is applied in parallel with the actual enforced permitting system.

1. Issue of permits in accordance with the Medicinal Plants Law

The issue of permits shall be in accordance with the MPL, as set by the present acting order and procedures. Observed are all regulation requirements, listed in the MPL and NPD instructions. Developed is a plan for coordination between the bordering park territories with the pilot PS as well as agreement of the activities of the rangers. All employees of these PS are informed for the carrying of the experimental implementation of the coupons and are instructed for the campaign conduction.

2. Acquisition of coupons by individuals, which will distribute those

The coupons are produced by ARD in a defined edition for each NP (25000 for Rila). The total quantity of coupons for each pilot area is handed to a park employee, appointed for the purpose with Park Director's order. This employee is accountable for the whole coupon edition and is responsible for these. Observed are the requirements when park assets are given or handed.

The NPD responsible people, who will receive the coupons to be handed over during the campaign, are appointed with Director's order.

To the non-employed by the park will receive coupons and can distribute them during the campaign, are offered a mutual cooperation with the NPD contract. Such can be herb processors and brokers, mayors and specially engaged for the purpose individuals. The reception of coupons with a contract is by signing a transfer protocol, set as format in the contract. The protocol should contain data of the individual and an inventory of the coupons by numbers.

The individuals distributing the coupons and buying out bilberries shall be registered as herb processors in the respective Regional Environmental Inspectorate, as for the purpose these should produce an official document (a document form the REI with a record book with the bought quantities of berries and fruits, certified by the REI).

For the acquisition of coupons is needed the herb processors and the brokers, besides being registered by the REI, to have a permit, accompanied by a document for paid fee to the NPD, by the meaning of the MPL and PAL. The number of coupons, which the herb processors receive, is defined, based on the allowed in the permit quantity of fruits, requested by them or by the collectors, these represent.

The coupon distribution, made by the park employees, the town halls, and other partners is carried by the authorized by the Park Director person – the PS heads, which are the project coordinators.

Under the supervision of the official, the coupons are marked with its signature, with a different color (brown – for personal use and blue – for the commercial purposes) listed in the coupon's sign field. The coupons for personal uses, besides the above listed spot, are marked on the front side of the control slip, in the lower right or left corner. In the marking of the coupons participate one and the same employees of the park guards, with regards, avoiding mistakes and discrepancies. The check sign is placed visibly and clearly, well distinguishable of the coupon.

To the herb processors are given coupons, marked only in the commercial purposes field. To the remaining individuals, participating in the distribution, are given coupons, marked only in the coupon sign field for personal use.

The coupons are not a document for financial accounting of the persons, engaged in the buying out of the resources.

The collectors do not pay fees for the acquisition of the coupons.

3. Distribution of coupons

When distributing the coupons, one should observe the following:

1. The coupon, which is given, should be marked with a permanent marker, only in one sign field – either for personal, or for commercial purposes. It is not allowed to distribute coupons, marked in the both sign fields.
2. The person, who gives away the coupon, shall instruct the collector about the purpose of the coupon, the obligation to be available when collecting and the observation of the rules, written on the coupon.
3. It is not admitted the refusal to give a coupon, due to exhausted quantity or the lack of authorized individual on the designed location.
4. The coupon distribution begins 5 days before the starting date of the campaign - 29 July for the Rila NP.

3.1. Coupon distribution by herb processors and brokers

The herb processors and the brokers receive number of coupons, respective to the allowed for collection quantities, which these intend to buyout during the campaign. During the first coupon distribution is made individual or group instructing of the collectors.

The herb processors give to the collectors everyday one coupon for 10 kg, and at the end of the working day, when buying out the collected fruits, require this coupon and give the collector the coupon for the next day.

The herb processors and the brokers collect back the acquired coupons and provide these to the authorized by the park official, on a daily basis.

The herb processors can buyout fruits, collected with coupons, marked for personal use, only in case, they request the coupon form the collector and account it along with the total number of coupons for commercial purpose.

3.2. Coupon distribution by park employees and specially assigned people

Coupons are distributed by all employees of the respective park section and by the employees of the Directorate, specially authorized for the purpose by the park Director through an order. Coupons are distributed in the park offices and defined for the purpose locations, listed in an official leaflet -poster of the park.

Coupons can be given in the field by the park guards.

Upon each coupon giving, the appointed shall instruct the collectors.

4. Control

On the field, the park guards and the authorized NPD employees perform control functions. All authorized persons are acquainted with the present directives and pass a special training by the directorate. In it are reviewed the violations, needing sanctions as well as the coordination between the rangers.

The park rangers check the collectors for the coupons availability and keep the control slip of the permit coupon, marking at the same time on the coupon the location where the check had been performed. The marking is made with single type of markers and precisely the same color.

The park section head, agreed with the park director, defines the number of the control slips, which the particular park ranger shall present.

The checks are conducted exclusively on the field and rarely at the buyout stations.

In case of lack of coupon, the ranger shall provide the individuals who collect bilberries with such.

5. Starting date

The NPD declares the start of the bilberries collection campaign, through a special order of the park Director. The order is delivered to the knowledge of all NP employees. The order is disseminated to municipalities, town halls, buyers, buyout stations and it is posted to the most visited places in the settlements. At the buyout stations and the town halls, the orders are shown with ink stamp of the park. Announced is also through the local newspapers and cable TVs. Announcing letter is sent to the RFB, Local Police Department, Fire Prevention service and in case of necessity are conducted meetings with responsible representatives of these institutions.

6. Monitoring during the 2002 bilberry campaign

For the effective monitoring of the 2002 campaign it is required to record how some of the main activities are happening (coupon distribution, coupon slips collection, collector's checks, etc) as well as other phenomenon. All participants in the campaign, officials and individuals, working under the mutual cooperation, shall be recorded in a logbook, all information, related to the their duty performance, during the campaign. The recording is done for the entire campaign period.

What shall be recorded:

1. How many coupons are given away daily? – this recording is made at daily basis, by all individuals, which participate in the campaign. The recording is done immediately after the conclusion of the distribution. Recorded are any difficulties and restrictions in the coupon distribution.
2. How many coupons are collected daily by a herb processor or a broker? – this recording is made by the individuals, authorized to collect the coupons form the herb processors. Recorded is also the number of coupons for personal purposes collected by the herb processor. Recorded is the number of coupons without control slips. As well as difficulties in the coupon retrieval.
3. How many collectors were checked during the day? – this recording reflects the number of the checked collectors and id done daily by the park rangers and other authorized individuals, which can check for coupon availability. Reflected is the date, the localities, where are conducted the checks, as well as the numbers of the control slips (total number, number for commercial purposes and number for personal purposes) – for instance. 29.07.2002, Vartola locality – total checked 45 coupons, out of those 40 for commercial and 5 for personal purposes; Skoka locality – total checked 23 coupons, out of those – for commercial purposes -23. The collected control slips are sealed in an envelope, printed is

- the name of the ranger and the date of the check. The sealed envelopes are stored by the park section head.
4. What is the daily route of the park ranger during the campaign? – described are consecutively the localities visited, the time for moving from one to the next location, type of transport, fuel cost.
 5. What is the average number of collectors in a separate locality – recorded is the average total number in a locality, if possible are given data how many men, women, children. At what time these enter and exit the park. Recorded are the number and the types of the vehicles the collectors use to access the territory.
 6. How many collectors were lacking coupons and where these were given? – recorded is the total number of collectors, which did not obtain permit coupon and were given on the spot, respectively numbers for personal collection and commercial collection.
 7. Is there a presence of illegal buyers in the region – recorded is where these were registered, who these operate in the region, what vehicles they use, are they connected to the local people, do these work directly or through intermediates by the local people, were any sanction measures undertaken.
 8. Are there any signals for illegal buying – how many and by who were notified the rangers – local people, collectors, herb processors or brokers.
 9. What violations were found? – described is the number and the type of the violations, measures taken and imposed sanctions.
 10. What main threats were observed? – natural (fires, erosion, etc.); anthropogenic – over harvesting, non-observation of the way of collection, fires, pollution with various waste, excessive grazing and grazing outside the assigned locations, grazing without herdsman, development of infrastructure and increased human presence.
 11. What is the general impression for the day and any additional remarks? – recorded is everything interesting from the working day, and everything which is not in the scope of the above questions, and the ranger or the authorized individual considers important and shall be addressed by the management and the guards.

Appendix 1.10

Rangers Reference – Report Sheet for the Bilberry Campaign 2002

National Park: **Park section:**

| Table 1 | Date | Number of distributed coupons | | | Commercial purposes | Number of coupons retrieved | | | Number of collectors checked | | |
|---------|------|-------------------------------|-----------|----------|---------------------|-----------------------------|----|---------------|------------------------------|----|---------------|
| | | Personal purposes | | | | PP | CP | W/O ctrl slip | PP | CP | W/O ctrl slip |
| | | town halls | PS office | on field | | | | | | | |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| | | | | | | | | | | | |

| Table 2 | Date | Number of collectors on the locality | | | Type and number of the vehicles | | | |
|---------|------|--------------------------------------|-------|----------|---------------------------------|------|------|-------|
| | | men | women | children | trucks | vans | cars | carts |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| | | | | | | | | |

| Table 3 | Date | Daily route of the ranger | | | |
|---------|------|---------------------------|----|---------|--------------------------------|
| | | locality | km | vehicle | type of fuel / amount / figure |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| | | | | | |

| |
|--|
| Table 4 |
| Coupons distribution points: |
| Number and figure of the issued Permits: |
| Weaknesses established: |
| <u>Before the starting date:</u> |
| <u>After the starting date:</u> |
| Violations established: |
| Date: |
| Park Section head: (signature) |

Appendix 1.13

Section Heads Reference – Report Sheet for the Bilberry Campaign 2002

National Park: **Park Section:**

Guarded Section: **Park Ranger:**

| Table 1 | Date | Number of distributed coupons | Number of checked up collectors | | | Number of coupons collected by the buy-out points | |
|---------|------|-------------------------------|---------------------------------|----------------|----------------|---|----------------|
| | | | personal use | commercial use | without coupon | personal use | commercial use |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| | | | | | | | |

| Table 2 | Date | Number of collectors in the locality | | | | Type and number of the vehicles | | | |
|---------|------|--------------------------------------|-----|-------|----------|---------------------------------|------|------|-------|
| | | locality | men | women | children | trucks | vans | cars | carts |
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| | | | | | | | | | |

| Table 3 | Date | Daily route of the ranger | | | |
|---------|------|---------------------------|----|---------|--------------------------------|
| | | locality | km | vehicle | type of fuel / amount / figure |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| | | | | | |

| |
|--|
| Table 4 |
| Coupons distribution points: |
| Number and figure of the issued Permits: |
| Weaknesses established: |
| <u>Before the starting date:</u> |
| <u>After the starting date:</u> |
| Violations established: |
| Date: |
| Park Section head: (signature) |

Appendix 1.12**Rila NPD letter informing the Regional Institutions about the Bilberry Campaign
2002****MINISTRY OF ENVIRONMENT AND WATER****RILA NATIONAL PARK DIRECTORATE**

2700 Blagoevgrad, Varosha district, 12 Bistritsa Str., POBox. 56, tel. / fax 073/805-37,
e-mail: nprila@infonet.techno-link.com

To:

DEAR.....,

Rila National Park is working already for a second year for the implementation of its ten-year Management Plan. One of the management objectives of this plan includes a partnership program with the local people from the park surroundings, for the management and use of the non-timber natural resources.

The implementation of this program began during the last collection season, when the genuine situation was assessed. It was found that, a greater part of the local population secures significant part of their annual incomes, using the herbs, mushrooms and wild fruits.

The program the Rila NP starts to implement has the objective simultaneously to protect the resources on park's territory and to provide continued access and yield to the local population.

The approach of this program is aimed at the attraction of the direct users to participate in the protection and the management of the resource– collectors, buyout stations, municipalities, local clubs, schools, etc.

For the same purpose, this year the Program is a pilot one, and it is implemented only for the bilberry resources on the territory of the Yakoruda and Belitsa Park sections, (it includes also the municipalities Razlog and Belitsa) (and for Yakoruda includes the Yakoruda municipality), as for its successful implementation will be provided a coordination with the other park sections.

With the present letter, I would like to notify you about the way the bilberry 2002 collection campaign in the Rila NP would be conducted, herewith I ask you for your assistance and coordination of the efforts.

The novelties in the campaign, in comparison with the previous years are consisting of:

1. With the director's order a unique starting date has been declared – for the commencing of the bilberry collection campaign for the entire park territory – 3rd of August 2002. The collection of bilberries before this date on the entire park territory would be considered a violation of the law and would be subject to sanctions.
2. Everyone, collecting bilberries in the Belitsa and Yakoruda PS would require to obtain a special coupon, distributed free for charge by the Park.
3. For the purpose of the campaign implementation, the Park conducts wide public information through the mass media, posters, leaflets.
4. The directorate with regards the implementation of the Medicinal Plants Law and the collection of the envisaged in it fees for commercial uses will monitor the access to the coupons for commercial purposes. The permits, in accordance with the Medicinal Plants Law, which are issued against fee payment, are compulsory. The individual coupons are additional mean for control and management of the uses. These are valid only for the Rila NP territory, Belitsa and Yakoruda PS.
5. The Park directorate will provide for distribution coupons, only in buyout stations, registered as such under the Medicinal Plant Law in the respective Regional Inspectorate.

DEPUTY DIRECTOR /Vassil Petrov/

*Appendix 1.13***Press Releases of the Rila and Central Balkan NPDs for the local and central media regarding the Bilberry Campaign 2002**

МИНИСТЕРСТВО НА ОКОЛНАТА СРЕДА И ВОДА
CENTRAL BALKAN NATIONAL PARK DIRECTORATE
 Gabrovo 5300; 3 Bodra Smiana Str.; tel./fax 066 801 277
 E-mail: office@centralbalkan.bg

PRESS RELEASE
09.07.2002

This year the collection of bilberries on the Central Balkan National Park territory will commence on the 27th of July 2002. Everyone, who collects bilberries on the territory of the CBNP – Klissura Park Section, shall acquire special coupons for the collection of bilberry in the park.

The park sections, municipalities and the registered buyout stations, will distribute the coupons from 24th of July 2002. There is no limitation for the number of coupons, which can be acquired. The coupons are free of charge. This year, everyone, who collects bilberry within the Kalofer Park Section territory, as a pilot area, shall possess such coupon. Park rangers will perform control.

The program which is implemented this season, is part of the implementation of the ten-year Management Plan of the CBNP. One of its aims is to provide opportunities for nature sound livelihood for the people, living in a close proximity to the park.

In more than a year, experts from the Central Balkan National Park collected and analyzed the information about the existing practices for the uses of non-timber natural resources from the park – herbs, mushrooms and forest fruits. It turned that, thousands of families in the surrounding settlements rely on these resources for the complementing of the family budget.

The National Park has the responsibility to conserve these resources in a way, that the nature in the park remains unchanged, and the resources – available for use by the generations ahead.

The analysis shows, also, that the Bulgarian bilberries are demanded and valued on the international markets, due to their excellent qualities. Therefore, it is required these to be collected only in their full maturity and this way ensuring their maximal price..

The National Park implements the present Program for collateral management of the natural resources with the direct participation of the local communities – mayors, collectors, buyout stations, schools, children's clubs. These participate in the monitoring of the development of the bilberries, from their coming into leaves in the spring – to their fruit ripping, in order to explain better which factors influence the yield. So can be estimated the yield and in reality the park will take decisions from where how much to collect and the local entrepreneurs will plan better their business.

The Program is implemented with the assistance of the Biodiversity Conservation and Economic Growth Project of the USAID.

For more information: Gergana Staneva – Flora Senior Expert Tel: .: 066 / 6 13 02, 6 22 79



**MINISTRY OF ENVIRONMENT AND WATER
DIRECTORATE
RILA NATIONAL PARK**

2700 Blagoevgrad, Varosha district, 12 Bistritsa, POBox 56
tel./fax 073/ 805 28, e-mail: nprila@infonet.techno-link.com

PRESS RELEASE

July 2002

Collaborative management of the natural resources - Bilberry collection campaign 2002

This year, the collection of bilberries on the Rila NP territory will commence on 3rd of August. Everyone, collecting bilberries on the territory of the Belitsa and Yakoruda Park sections, shall obtain a special coupon for bilberry collection in the park. These will be distributed in the park offices, the municipalities and the register buyout stations. The coupons, which can be obtained, will cover entirely the quantities designed for collection of bilberry. The coupons are free of charge. Within park territory, especially in the Yakoruda and Belitsa Park Sections, everyone must have such coupons, if wishes to collect bilberries. These park sections are located in the municipalities Razlog, Belitsa and Yakoruda. The park rangers will perform continuous control during the collection campaign.

The Program, implemented in this season, is part of the implementation of the ten-year Management Plan of the Rila National Park. One of its objectives is to provide opportunities for naturally sound livelihood for the people, living in close proximity to the park.

Within a year, expert teams of the Rila NP collected and analyzed the information about the existing practices of the uses of non-timber natural resources in the park (herbs, mushrooms, wild fruits). Appeared that, many families in the surrounding settlements rely on these resources for the supplementing of their family budget. The National Park is responsible to preserve these resources and to manage them in a way, that the nature remains protected, and the resources – available for use for the generations ahead.

The analysis also showed, that the Bulgarian bilberries are demanded and valued on the international markets for their excellent quality. That is why is needed, these to be collected only in their full maturity and this way to ensure their basic price.

The National park implements this collaborative management program with the direct participation of the local communities – mayors, the collectors, buyout stations, the schools, the children's clubs. They participate in the monitoring of the bilberries ripping since their leaves appear in the spring until the fruit ripping, in order to explain better which factors influence the yield. In this way, they would be able to forecast the yields and the Park can make a decision where how many to be harvested, and the local entrepreneurs will plan better their business.

The Program is implemented with the assistance of the Biodiversity Conservation and Economic Growth Project of the USAID.

Coupons can be obtained form the following locations: **Yakoruda:** Park Section office, №3 Vassil Levski str., tel: 0744 222 98; municipality, №1 Vassil Levski str. , tel: 0744 223 28; **Belitsa:** municipality, tel: 07 444 23 23; **Cherna Mesta:** municipality, tel: 07442 222 09; **Konarsko:** municipality, tel: 0744 222 52; **Buntsevo:** municipality, tel: 0744 231 43; **Bel Kamen:** municipality, tel: 0744 231 43; **Smolevo:** municipality, tel: 0744 231 41; **Avramovo:** municipality, tel: 0744 223 16; **Yourukovo:** municipality; "Granchar" **Tourist chalet;** **Kraishte:** municipality; **Gorno Draglishte:** municipality, tel: 0744 01 220; **Dolno Draglishte:** municipality, tel: 0744 03 331; **Dobarsko:** municipality, tel: 0744 06 215

For more information you can refer to Mr. Stefan Kirilov, tel.: 073 /8 05 37

Appendix 2

Results of phenology monitoring on localities of bilberry (*Vaccinium myrtillus*) in pilot park sections of Rila and Central Balkan National Parks, 2002

| | | |
|-----------------------|---|----|
| Appendix 2. 1. | Results of the phenology monitoring on localities of bilberry (<i>Vaccinium myrtillus</i>) in pilot park sections of Rila National Park, 2002 | 84 |
| Appendix 2. 2. | Results of the phenology monitoring on localities of bilberry (<i>Vaccinium myrtillus</i>) in pilot park sections of Central Balkan National Park, 2002 | 93 |

Appendix 2.1**Results of the phenology monitoring on localities of bilberry (*Vaccinium myrtillus*)
in pilot park sections of Rila National Park
May - July 2002****I. Goals of the phenology monitoring:**

The goals of the phenology monitoring on bilberry (*Vaccinium myrtillus*) in Belitsa and Yakoruda park sections of Rila National Park were:

1. To follow up the development of the bilberry plants during the vegetation season 2002 in order to determine the starting date of the campaign for fruit collection.
2. To follow up the development of the plants of bilberry during the vegetation season 2002 in order to determine the period for resource assessment of bilberry.
3. To observe the impact of the climatic factors on the development of bilberry, and to determine the health status of the plants throughout the vegetation season and the type and degree of human impact.
4. To start real monitoring on selected object in the park aiming at gaining experience in its organization and implementation by the park employees.

II. Participants, organization, implementation and documentation of the monitoring

On 22 May, 2002 four phenology plots were established in two pilot park sections of Rila National Park - in Grancharitsa (1930 m alt.) locality of Yakoruda park section and Karaalanitsa (1750 m alt.), Vapata (1996 m alt.) and Polenitsa (2024 m alt.) localities of Belitsa park section. In the selection of the phenology plots and their marking and description took place Verka Ivanova – “Forests” expert, Tatyana Maleshevska - expert GIS, Filip Zaikov, Rumén Kolchagov, Sabri Durleov, Atanas Asyov and Akia Manzurski - employees from the national park directorate as well as Chavdar Gushev - consultant on non-timber natural resources and Dimitrina Boteva - expert of biodiversity in Biodiversity Conservation and Economic Growth Project. On the field the phenology plots were marked in each of the four corners with sticks stained with spray and their coordinates were measured with GPS receiver. For each plot description (passportization) was made. When the phenology plots were established the state of the bilberry plants and the their growth stage were assessed. The employees from the national park directorate had been trained to implement phenology monitoring methods, where they were informed about the aims of the monitoring and the way for documentation and preservation of the information.

The phenology monitoring was carried out from 22 May to 17 July 2002. In two of the phenology plots 9 observations were performed and in the other two - 8 observations. The observations were conducted by the park section heads and selected park rangers who had to “specialize” in carrying out such observations. In Yakoruda park section the

observations were implemented by Filip Zaikov and Akia Manzurski and in Belitsa park section - by Rumen Kolchagov and Sabri Durleov.

III. Results:

The results from the phenology monitoring show that in 2002 the development stages of the bilberry plants followed a normal course. The general condition of the localities was good. No damages and injuries of the bilberry plants were registered. Only in the Vapata locality on certain bilberry plants drying spots were observed.

In 2002 the meteorological conditions were favorable for the bilberry plants. No damages on the vegetative parts caused by late colds, rain, and hale were registered. The frequent rains and sometimes hales during the stages of flowering and fruit formation had caused in some of the localities decrease of the fruit quantity, hence smaller fruit yield from these localities.

As is obvious from the respective tables on 22 May 2002, the starting date of the monitoring, the localities were already in the starting vegetation stage. In order to follow up the growth of the bilberry plants from the very beginning, an earlier starting date of the phenology monitoring can be recommended - 15th May. The delayed phenological stages at higher elevations were due to lower temperatures and more rain. Fruit ripening started in mid-July (15 July). On the basis of the phenology monitoring the starting date for the fruit collection campaign was determined in Yakoruda and Belitsa park sections – 3 August, when the prognosis showed that the fruits of most of the bilberry plants would be already ripe. Only in the localities at the highest elevation the plants were in the beginning of this stage when the fruit collection campaign started.

IV. Description of the localities and concrete results from the monitoring:

I Phenology plot № 1, Grancharitsa locality

Park section: Yakoruda

Number of the phenology plot: No 1

Date of the establishment of the phenology plot: 22.05.2002г.

Ranger's section : 2

Locality, unit, sub-unit, cadastre number: Grancharitsa locality, unit 13, sub-unit "1"

Relief shape, altitude, exposure, slope:

Middle part of a slope, 1930 m alt., NE exposure, slope 45°;

Bed rock: silicate

Soil type: stony, forest soil type, with big rock outcrops.

Plant community: Macedonian pine */Pinus peuce/* and spruce */Picea abies/* Pp 5 Pa 5;

canopy 0.2; grass projective cover: 90 % with composition: bilberry */Vaccinium myrtillus/*, different grasses: */Luzula spp./*, anemones */Anemone spp./*,

% projective cover of bilberry plants: 34 % at the moment of the establishment of the phenology plots.

Size of the phenology plot: 100 m².

Notes: Massive flowering of *Soldanella* spp.

1. Results from the phenology monitoring:

Number and date/s of the phenology observations:

Altogether nine observations were conducted in the phenology plot. 22 May 2002; 27 May 2002; 1 June 2002; 6 June 2002; 11 June 2002; 16 June 2002; 26 June 2002; 5 July 2002; 15 July 2002.

| Development phase | Beginning date | End date | Phase duration /number of days/ |
|--|-----------------------|---------------|---------------------------------|
| Starting of vegetation period - leaf formation | 22 May, 50% - massive | 27 May | 6 days |
| Vegetation | 27 May | - | |
| Starting of budding stage | 27 May - 40 % | 1 June | 6 days |
| Budding | 1 June - 35 % | 6 June | 6 days |
| Full flowering | 6 June -50 % | 16 June | 18 days |
| End of flowering stage | 16 June - 30 % | 26 June -50 % | 39 days |
| Fruit formation | 26 July - 50 % | 15 July | 14 days |
| Fruit ripening | 15 July - 10 % | - | |

General assessment of the phenological phases in the phenology plot: normal running.

2. Results from the meteorological monitoring:

| Date | Meteorological phenomenon | Degree of damages |
|---------|---|-------------------|
| 17 July | Hale along Grancharitsa river and in the vicinity of "Nehtenitsa" | None registered |

3. Results from the observation of the health condition

3.1 Changes in the color of the plants in the phenology plot – description and degree of manifestation (0 degree (0 – 10%); 1 degree (11 –25 %); 2 degree (26-6-%); 3 degree (over 60%))

No changes in the color of the plants were observed in the phenology plot.

3.2 Changes and damages of the leaves, branches and flowers/fruits: none

4. Monitoring of the anthropogenic pressure

No such pressure has been registered

5. General assessment of the state of the bilberry plants:

Notes: During the observation conducted on 1 July 2002 the presence of Bumble bees and massively small flies were observed. This is the beginning of the flowering phase and the Bumble bees are among the pollinators of the bilberry plants.

II Phenology plot № 2, Polenitsa locality

Park section: Belitsa park section

Number of the phenology plot: № 2

Date of the establishment of the phenology plot: 22.05.2002г.

Ranger's section: 5

Locality, unit, subunit, cadastre number: Polenitsa locality, unit 140, subunit "b"

Relief shape, altitude, exposure, slope: middle of a slope, 2024 m alt., E/SE, slope 40°;

Bed rock: silicate

Soil type: brown forest soil type, open big rock blocks

Plant community: *Pinus peuce* pp 10; canopy 0.4;

Grass projective cover: 70 %; composition: bilberry */Vaccinium myrtillus/*, different herbs: */Luzula spp./*,

% projective cover of bilberry - 42 % when the phenology plot was established.

Size of the phenology plot: 110 m².

1. Results from the phenology monitoring

Number and date/s of the phenology observations in the phenology plot:

Altogether nine observations were conducted in the phenology plot. 22 May 2002; 27 May 2002; 1 June 2002; 6 June 2002; 11 June 2002; 16 June 2002; 25 June 2002; 5 June 2002; 15 June 2002.

| Development phase | Beginning date | End date | Phase duration /number of days/ |
|------------------------------------|------------------------|----------------|---------------------------------|
| Beginning of the vegetation period | 22 May - 50%. -massive | - | |
| Beginning of budding | 22 May - 40 % | 1 June | 11 days |
| Budding | 1 June - 35 % | 6 June | 6 days |
| Full flowering | 6 June -50 % | 16 June | 18 days |
| End of flowering | 16 June -30 % | 26 June - 50 % | 39 days |
| Fruit formation | 26 July - 50 % | 15 July | 14 days |
| Fruit ripening | 15 July - 10 % | - | |

General assessment of the development of the phenology phases in the phenology plot: General normal running of the phenology phases is observed. During the observation on 25 June 2002 lower number of young fruits was observed as compared to the previously observed flowering plants. Pollination of the bilberry flowers by forest ants was observed.

Results from the meteorological monitoring:

| Date | Meteorological phenomenon | Degree of damages |
|---------|---------------------------|-------------------|
| 26 May | Rain | Not registered |
| 29 May | Rain | Not registered |
| 4 June | Rain | Not registered |
| 13 June | Heavy rain | Not registered |
| 27 June | Rain | Not registered |
| 7 July | Rain - hale | Not registered |
| 9 July | Rain | Not registered |
| 17 July | Rain | Not registered |
| 20 July | Rain | Not registered |

3. Results from the observation of the health condition:

3.1. Changes in the color of the plants in the phenology plot: description and degree of manifestation (0 degree (0 – 10%); 1 degree (11 –25 %); 2 degree (26-6-%); 3 degree (over 60 %)

No change in the color of the plants has been registered in the phenology plot.

3.2. Changes and damages in the leaves, branches and flowers/fruits: none

4. Assessment of the anthropogenic pressure: none

5. General assessment of the state of bilberry: the state of the bilberry in the phenology plot is good

III Phenology plot № 3, Karaalanitsa locality

Park section: Belitsa park section

Number of the phenology plot №3

Date of the establishment of the phenology plot: 22 May 2002

Ranger's section: 4

Locality, unit, sub-unit, cadaster number: Karaalanitsa locality, unit 26 “o”

Relief shape, altitude, exposure, slope: lower part of a slope; 1750 m alt.; SW; slope 20°;

Bed rock: silicate

Soil type: brown, dark forest soil type

Plant community: spruce/ *Picea abies* / 10; canopy 0.2;

Grass projective cover: 80 % composition: bilberry /*Vaccinium myrtillus*/, /*Luzula* spp./, /*Calamagrostis* spp./

% projective cover of bilberry - 47 % at the establishment of the phenology plot

Size of the phenology plot: 156 m².

Results from the phenology monitoring

Number and date/s of the phenology observations:

Altogether eight observations were conducted in the phenology plot. 22 May 2002; 27 May 2002; 1 June 2002; 7 June 2002; 13 June 2002; 25 June 2002; 6 July 2002; 15 July 2002.

| Development phase | Starting date | End date | Phase duration /number of days/ |
|------------------------|-------------------------------------|----------------|---------------------------------|
| Vegetation | 22 May degree of manifestation 50%. | - | |
| Beginning of flowering | 22 May - 40 % | 1 June | 9 days |
| Full flowering | 27 May - 35 % | 7 June | 10 days |
| End of flowering | 7 June | 25 June | 18 days |
| Fruit formation | 1 June - 5 % | 15 July - 80 % | 44 days |
| Fruit ripening | 15 July - 10 % | - | |

General assessment of the development of the phenological phases in the phenology plot:

Generally normal running of the phenology stages is observed. During the observation on 25 June 2002 lower number of young fruits was observed as compared to the previously observed flowering plants. Pollination of the bilberry flowers by forest ants was observed.

1. Results from the meteorological monitoring:

| Date | Meteorological phenomenon | Degree of damages |
|----------|---------------------------|-------------------|
| 26 May | Rain | Not registered |
| 29 May | Rain | Not registered |
| 4 June | Rain | Not registered |
| 13 June | Heavy rain | Not registered |
| 27 June | Rain | Not registered |
| 7 July | Hale | Not registered |
| 9 July | Rain | Not registered |
| 17 July. | Rain | Not registered |
| 20 July | Rain | Not registered |

2. Results from the observation of the health state

- 3.1. Changes in the color of the plants in the phenology plot – description and degree of manifestation (0 degree (0 – 10%); 1 degree (11 –25 %); 2 degree (26-6-%); 3 degree (over 60 %). No changes in the color of the plants in the phenology plot
- 3.2. Changes and damages of leaves, branches and flowers/fruits: none

3. Monitoring of the anthropogenic pressure: none

4. General assessment of the condition of the bilberry: goodIV Phenology plot № 4, Vapata locality**Park section:** Belitsa park section**Number of the phenology plot:** № 4**Date of the establishment of the phenology plot:** 22 May 2002**Ranger's section:** 5**Locality, unit, sub-unit, cadastre number:** Vapata, unit 40 sub-unit "z"**Relief shape, altitude, exposure, slope:** middle part of a slope, 1996 m alt; SW; slope 40°;**Bed rock:** silicate-granite**Soil type:** dark colored soil type, with big rock formations.**Plant community:** *Pinus peuce* pp 10, understory - *Pinus peuce*; canopy 0.2; herbaceous layer projective cover: 65 % composition: bilberry /*Vaccinium myrtillus*/, different herbs /*Luzula* spp./, anemones /*Anemone* spp./, % projective cover of bilberry - 48 % when the phenology plot was established.**Size of the phenology plot:** 209.40 m²**1. Results from the phenology monitoring**

Number and date/s of the phenology observations:

Altogether nine observations were conducted in the phenology plot. 22 May 2002; 27 May 2002; 1 June 2002; 6 June 2002; 11 June 2002; 16 June 2002; 26 June 2002; 5 July 2002; 15 July 2002.

| Development phase | Starting date | End date | Phase duration /number of days/ |
|--|--|-----------------|--|
| Beginning of the vegetation - leaf opening | 22 May - degree of manifestation 50% - massive | - | |
| Beginning of budding | 22 May - 40 % | 1 June | 11 days |
| Budding | 1 June - 35 % | 6 June | 6 days |
| Full flowering | 6 June - 50 % | 16 June | 18 days |
| End of flowering | 16 June - 30 % | 26 June - 50 % | 39 days |
| Fruit formation | 26 July - 50 % | 15 July | 14 days |
| Fruit ripening | 15 July - 10 % | - | |

General assessment of the development of the phenology phases in the phenology plot:

When the phenology plot was established, spots of drying bilberry plants were registered in the locality. Generally normal running of the phenology stages was observed.

2. Results from the meteorological monitoring:

| Date | Meteorological phenomenon | Degree of damages |
|---------|----------------------------------|--|
| 29 May | T°- from 0° to 2°, light snowing | Not registered |
| 4 June | Rain | Not registered |
| 13 June | Heavy rain | Withering of flowers |
| 27 June | Rain | Decrease of the number of young fruits |
| 1 July | Rain | Not registered |
| 7 July | Hale | Not registered |
| 9 July | Rain | Not registered |
| 17 July | Rain | Not registered |
| 20 July | Rain | Not registered |

3. Results from the observation of the health condition: registration of drying spots of bilberries when the phenology plot was established. The process continued during the development of the phenology phases.

3.1 Changes in the color of the plants in the phenology plot – description and degree of manifestation (0 degree (0 – 10%); 1 degree (11 –25 %); 2 degree (26-6-%); 3 degree (over 60 %)

No changes in the color of plants in the phenology plot.

3.2 Changes and damages of the leaves, branches and flowers/fruits: spots of withered leaves and dry branches over the whole area of the phenology plot at the moment of its establishment.

4. Monitoring on the anthropogenic pressure - not registered

5. General assessment of the state of the bilberry plants: the state of the bilberry plants in the phenology plot varies from average to good. Generally the fruit yield is smaller than in 2001.

V. Recommendations for conduction of phenology monitoring

1. The phenology monitoring in Yakoruda and Belitsa park sections should start earlier, about 1-15 May, in order to establish the beginning of the vegetation growth of the bilberries. Thus the possible overall delay of the plant growth can be registered.
2. The observations should be performed every other 5-7, 10 days at most. Since the meteorological conditions are the most important factors for fruit quantity

(exploitation resources) possible heavy rains and hales can spoil the yield. This fact cannot be registered on time if not more frequent field observations are conducted. The timely registration of the processes leads to more precise determination of the dates for the resource assessment and the beginning of the fruit collection campaign. This also can help to prevent exploitation of the localities in which fruiting is disturbed or the fruits are damaged and/or destroyed.

3. More complete notes should be taken down for the meteorological conditions, anthropogenic impact and the health state of the bilberry plants as a whole (See the tables above). In the course of time with the gathering of more information, the comparison of the meteorological conditions and fruit yield during the years will make possible easier prognosis for the fruit yield and the assessment of resources, hence the exploitation of the resources can be better planned. Particularly important is the human impact - timely monitoring and better notes can prevent the negative impact and can strengthen the control in the field.
4. Two or three park rangers per park section should be trained how to conduct the phenology observations in the localities that are inside or close to their ranger's section. In the beginning it is good the rangers to carry out the observations together in order to equalize their assessments and provide for comparison of the results.
5. There should be a separate notebook for each phenology plot supplied with a passport – description of the plot and the chronological observations throughout the years.
6. The visits to the phenology plots should be planned already in January and the notebooks should be prepared. This will help to conduct the field monitoring quickly and easily during the vegetation season.
7. Every two weeks each park section head should inform the “Flora” expert in the national park directorate about the development of the bilberries in his park section. The expert himself makes the assessment of the condition of the localities of bilberries in the whole park and not later than 01.07 will suggest to the Director a starting date for the resource assessment and the fruit collection campaign. The starting date should be agreed among the park section heads by the Director of the park and proclaimed with an Order issued by the national park directorate.

Appendix 2.2**Results from the phenology monitoring on the localities of bilberry (*Vaccinium myrtillus*) in Klissura park section of Central Balkan National Park, May - July 2002****I. Goals of the phenology monitoring:**

The aims of the phenology monitoring on the localities of bilberry (*Vaccinium myrtillus*) in Klissura park section of Central Balkan National Park were:

5. To follow up the development of the bilberry plants during the vegetation season of 2002 in order to determine the starting date of the campaign for fruit collection.
6. To follow up the development of the bilberry plants during the vegetation season of 2002 in order to determine the period for resource assessment of bilberry.
7. To observe the impact of the climatic factors on the development of the bilberry plants, and to determine the health status of the plants throughout the vegetation season and the type and degree of human impact.
8. To start real monitoring in a selected object in the park aiming at gaining experience in its organization and implementation by the park employees.

II. Participants, organization, implementation and documentation of the monitoring

On 15-th of May 2002 three phenology plots were established in Central Balkan National Park - in Skoka (1480 m alt.), Beklemeto (1597 m alt.) and Vartopa (1667 m alt.) localities. In the selection of the phenology plots and their marking and description took place Gergana Staneva – expert “Flora”, Gencho Iliev - expert GIS, Marin Kostov - chief of Klissura park section, Dimcho Ladzhov and Gyuro Ivanov - park rangers in National Park Directorate and Chavdar Gushev - consultant on non-timber natural resources and Dimitrina Boteva - biodiversity expert in the Biodiversity Conservation and Economic Growth Project. On the field the phenology plots were marked in each of their four corners with sticks stained with spray and their coordinates were measured with GPS receivers. For each station description (passportisation) was made. When the phenology plots were established the state of the bilberry plants and their growth stage was assessed and registered as a first phenology observation. The employees from the national park directorate had passed through training in conducting phenology monitoring, when they were informed about the aims of the observations and the way for documentation and preservation of the information.

The phenology monitoring was carried out from 15 May to 4 August 2002. In two of the phenology plots 11 observations were performed and in the third - 12 observations. The observations were conducted by the chief of the Klissura park section Marin Kostov.

The coordinates of the phenology plots were input in the digital model of the park by the GIS expert ing. Gencho Iliev and the localization of the stations were illustrated on maps. This is the first application of the GPS technology and the new GPS receivers in a specific task related to the park management from gathering information in real time in the field to development of illustrative maps in this report. The GPS coordinates were transformed from the coordination system WGS 84 to coordination system 1970, which is used in the park, with the help of the special software created within the Biodiversity Conservation and Economic Growth Project.

III. Results:

The results from the phenology monitoring show that in 2002 the growth stages of the bilberry plants follow a normal course. Changes in the color of the plants and damages of the leaves, branches and flowers/fruits were not registered

In 2002 the meteorological conditions were very favorable for the bilberry plants. No damages caused by late colds, rain, and hale were registered.

As is obvious from the respective tables on 15 May 2002, the starting date of the monitoring, some of the localities were already in the flowering stage, while in the localities at higher elevation the vegetation development of the plants had just started. The phenological stages started later in the localities on higher altitude due to the lower temperatures and more rain as registered in the report. Fruit ripening started at the beginning of July (5 July). On the basis of the phenology monitoring the starting date for the fruit collection campaign was determined in Klissura park section – 27 July, when the prognosis showed that the fruits of most of the bilberry plants would be already ripe. Only in the localities at the highest elevation the plants were in the beginning of the fruit ripening stage when the fruit collection campaign started.

IV. Description of the localities and direct results from the survey:

I. Phenology plot “Beklemeto”

Number of the phenology plot: 1

Date of the establishment of the phenology plot: 15 May 2002

Park section: Klissura

Ranger’s section: Beklemeto

Locality, unit, sub-unit, cadastre number: Beklemeto locality

Relief shape, altitude, exposure, slopes: 7%; NE; upper part of a slope, 1597 m alt.

Bed rock: sandy rock

Soil type: mountainous dark forest soil

Plant community: *Bruckenthalia spiculifolia* + cow berry and bilberry (*Vaccinium vitis-idaea* and *Vac. myrtillus*):

% of the total projective cover - 90%

% of the projective cover of bilberry - 14.3%

Scheme of the localization of the phenology plot:**1. Results from the phenology monitoring**

Number and date/s of the phenology observations:

11 observations (15 May; 20 May; 25 May; 29 May; 3 June; 7 June; 14 June; 20 June; 24 June; 4 July; 15 July)

| Development phase | Beginning date | End date | Phase duration /number of days/ |
|-------------------------|----------------|----------|------------------------------------|
| Beginning of vegetation | 15 May 2002 | 20 May | 5 |
| Beginning of flowering | 20 May | 3 June | 15 |
| End of flowering | 3 June | 7 June | 4 |
| Fruit formation | 7 June | 4 July | 27 |
| Fruit ripening | 5 July | 26 July | 21 |

General assessment of the phenological stages in the phenology plot: normal running of the phases.

2. Results from the meteorological monitoring:

| | Date 2002 | Meteorological phenomenon | Degree of damages |
|---------|----------------|---------------------------|-------------------|
| Vartopa | 30 May – 0.5 l | rain | No damages |

3. Results from the observation of the health state

- b. Changes in the color of the plants in the phenology plot – description and degree of manifestation (0 degree (0 – 10%); 1 degree (11 –25 %); 2 degree (26-60%); 3 degree (over 60 %)

| Date | Degree |
|------|--------|
| | - |

- c. Change and damages of the leaves, branches and flowers/fruits

| Date | Description of damages | % affected plants | Cause if possible to be identified |
|------|------------------------|-------------------|------------------------------------|
| | - | | |

4. Monitoring of the anthropogenic pressure**5. General assessment of the condition of the bilberry plants:** excellent condition

Notes: none

II. Phenology plot “Skoka”

Number of the phenology plot: II

Date of the establishment of the phenology plot: 15 May 2002

Park section: Klissura

Ranger’s section: Ravna

Locality, unit, sub-unit, cadastre number: Skoka locality

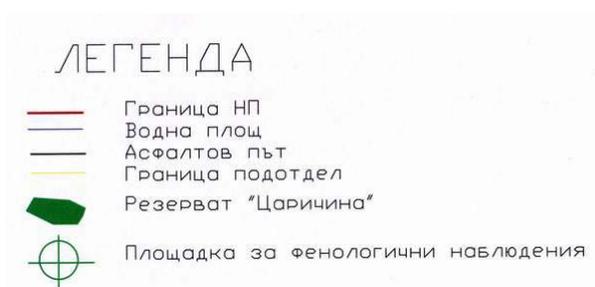
Relief shape, altitude, exposure, slopes: 1480 m alt.; 15%; middle part of a slope.

Soil type: mountainous dark forest soil

Plant community: Siberian juniper (*Juniperus sibirica*) + bilberry (*Vaccinium myrtillus*)

% of the total projective cover - 90%

% of the projective cover of bilberry - 34%

Scheme of the localization of the phenology plot:**1. Results from the phenology monitoring**

Number and date/s of the phenology observations in the phenology plot:

11 (15 May; 20 May; 25 May; 29 May; 3 June; 7 June; 14 June; 20 June; 24 June; 4 July; 15 July)

| Development phase | Beginning date | End date | Phase duration /number of days/ |
|------------------------|----------------|----------|---------------------------------|
| Beginning of flowering | 15 May | 29 May | 14 |
| Formation of fruits | 3 June | 4 July | 31 |
| Fruit ripening | 4 July | 25 July | 21 |

General assessment of the phenological stages in the phenology plot: normal running

2. Results from the meteorological monitoring: no damages

| Date | Meteorological phenomenon | Degree of damages |
|------|---------------------------|-------------------|
| | | |

3. Results from the observation of the health status:

3.1. Changes in the color of the plants in the phenology station: – description and degree of manifestation (0 degree (0 – 10%); 1 degree (11 – 25 %); 2 degree (26-60 %); 3 degree (over 60 %))

| Date | Degree |
|------|--------|
| | - |

3.2. Changes and damages of the leaves, branches and flowers/fruits - none

| Date | Description of the damages | % damaged plants | Cause if possible to be identified |
|------|----------------------------|------------------|------------------------------------|
| | - | | |

4. Monitoring of the anthropogenic pressure**5. General assessment of the condition of the bilberry plants:** excellent status

Notes: none

III. Phenology plot “Vartopa”

Number of the phenology plot: III

Date of the establishment of the phenology plot: 15 May 2002

Park section: Klissura

Ranger’s section: Vartopa

Locality, unit, sub-unit, cadastre number: Vartopa locality

Relief shape, altitude, exposure, slope: 1667 m alt.; 35%; N-NE; middle part of a slope.

Bed rock

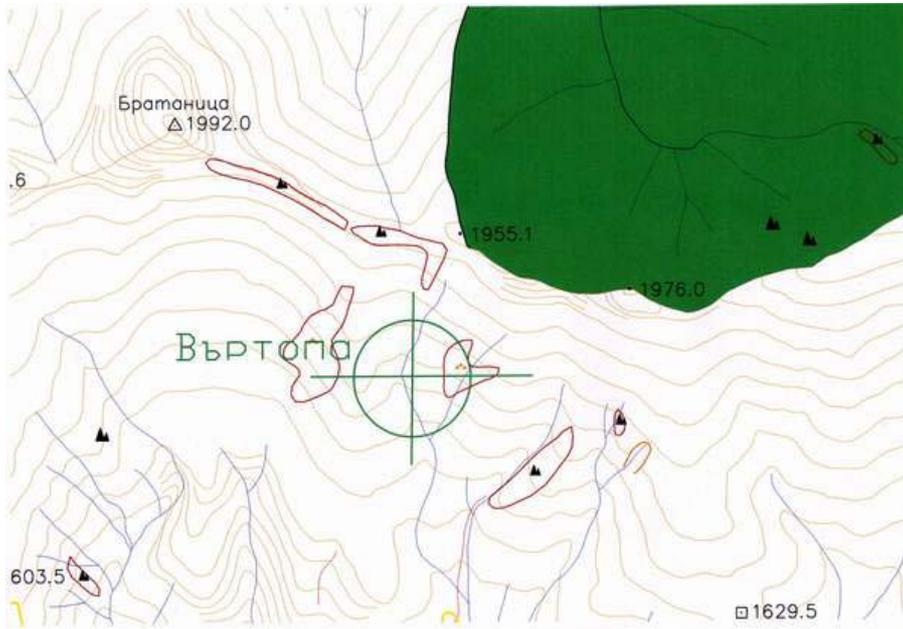
Soil type: mountainous dark forest soil

Plant community: Siberian juniper (*Juniperus sibirica*) + bilberry (*Vaccinium myrtillus*)

% of the total projective cover 90%

% of the projective cover of bilberry 14.3%

Scheme of the localization of the phenology plot



1. Results from the phenology monitoring

Number and date/s of the phenology observations in the phenology station:

12 (15 May; 20 May; 25 May; 29 May; 3 June; 7 June; 14 June; 20 June; 24 June; 4 July; 15 July; 4 August)

| Development phase | Beginning date | End date | Phase duration /number of days/ |
|-------------------------|----------------|----------|---------------------------------|
| Beginning of vegetation | 15 May 2002 | 25 May | 11 |
| Beginning of flowering | 25 May | 7 June | 13 |
| End of flowering | 7 June | 14 June | 7 |
| Formation of fruits | 14 June | 15 July | 31 |
| Fruit ripening | 15 July | 4 August | 20 |

General assessment of the phenological stages in the phenology plot: normal running of the phenological stages for this climatic region. Lower temperatures and more rain are typical for the period 30 May – 9 July 2002.

2. Results from the meteorological survey: no damages

| | Date 2002 | Meteorological phenomenon – rain/temperatures | Degree of damages |
|------------------|--|--|-------------------|
| Vartopa locality | 30.05 – 0.5 l – 13°C / 31.05. – 56 l – 10°C / 4.06 – 23 l – 7°C / 11.06 – 36 l – 13°C / 13.06 – 81 l – 17°C / 14.06 – 0 l – 23°C / 28.06 – 61 l – 23°C 02.07 – 10.5 l – 19°C / 07.07 – 12.5 l – 26°C / 09.07 – 9 l – 24°C | | |
| Podmola locality | 30.05 – 5 l – 12°C / 31.05 – 88 l – 11°C / 05.06 – 32 l – 17°C / 11.06 – 43 l – 12°C / 13.06 – 63 l – 10°C / 28.06 – 23 l – 25°C / 01.07 – 13.5 l – 18°C / 06.07 – 28 l – 24°C / 09.07 – 4.5 l – 23°C | | |

3. Results from the observation of the health status:

Changes in the color of the plants in the phenology station: – description and degree of manifestation (0 degree (0 – 10%); 1 degree (11 –25 %); 2 degree (26-60%); 3 degree (over 60 %)

| Date | Degree |
|------|--------|
| | - |

Changes and damages of the leaves, branches and flowers/fruits

| Date | Description of the damages | % damaged plants | Cause if possible to be identified |
|------|----------------------------|------------------|------------------------------------|
| | - | | |

4. Monitoring of the anthropogenic pressure

5. General assessment of the condition of the bilberry plants: excellent condition

Notes: none

V. Recommendations for conduction of phenology monitoring

1. The phenology monitoring in Klissura park section should start earlier, about 1st May, in order to establish the beginning of the vegetation growth of the bilberries and not to start the survey during the beginning of flowering phenology stage. Thus the possible general delay of the plant growth can be registered.
2. The observations should be every other 5-7, 10 days at most. It is obvious from the tables that the observations between the stages of fruit formation and fruit ripening have been carried out within a month. There is a risk to be missed important observations such as the development and growing of the fruits and the meteorological conditions. Most important for the fruit quantity (exploitation resources) of the bilberries are the meteorological conditions. Heavy rains or hales can spoil the fruit production, but this might not be registered if there are no more frequent observations in the field. The timely registration of the processes leads to more precise determination of the beginning of the period for a resource assessment and the beginning of the fruit collection. This also can help to prevent exploitation of the localities in which fruiting is disturbed or the fruits are damaged and/or destroyed.
3. More complete notes should be taken down for the meteorological conditions, anthropogenic impact and the health status of the bilberry plants as a whole (See the tables above). In the course of time with the gathering of more information, the comparison of the meteorological conditions and fruit yield during the years will make possible easier prognosis for the fruit yield and the resource assessment, hence the exploitation of the resources can be planned better. Particularly important is the human impact - timely monitoring and better notes can prevent the negative impact and can strengthen the control on the field
4. In 2002, due to different reasons, such as: lack of experience of the rangers, first experimental phenology monitoring and others, the observations were carried out mainly by the chief of the park section head. In the future, two or three park rangers have to be educated how to conduct the monitoring in the localities, that are within and close to their ranger's sections. It is good in the beginning the rangers to conduct the monitoring together in order to unify their assessments and to compare the results from the observations.
5. There should be a separate notebook for each phenology plot supplied with a passport – description of the plot and the chronological observations throughout the years.
6. The visits to the phenology plots should be planned already in January and the notebooks should be prepared. This will help to conduct the field visits quickly and easily during the vegetation season.
7. Every two weeks each park section head should inform the “Flora” expert in the national park directorate about the development of the bilberries in his park section. The expert himself makes the assessment of the condition of the

localities of bilbarries in the whole park and not later than 01.07 will suggest to the Director a starting date for the resource assessment and the fruit collection campaign. The starting date should be agreed among the park section heads by the Director of the park and proclaimed with an Order issued by the national park directorate.

Appendix 3

**Resource Assessment of bilberry (*Vaccinium myrtillus L.*) in
Rila and Central Balkan National Parks, 2002**

- Appendix 3. 1.* Resource Assessment of bilberry (*Vaccinium myrtillus L.*) in 104
Yakoruda and Belitza Park sections in Rila National Park - 22-
28 July, 2002
- Appendix 3. 2.* Resource Assessment of the bilberry (*Vaccinium myrtillus L.*) 119
in Klissura Park Section of Central Balkan National Park -
2002

*Appendix 3.1***Resource Assessment of bilberry (*Vaccinium myrtillus L.*) in Yakoruda and Belitza Park sections in Rila National Park - 22-28 July, 2002****Report**

from Assoc. Prof. Dr. Vladimir Valchev and Dimitrina Boteva

S u m m a r y: *The resources of bilberry localities on 504 ha of the territories of Yakoruda and Belitza Park sections of Rila National Park are assessed. The methodology used in the vegetation season of 2001 for the resource assessment of bilberry was applied again. The mean yield of bilberry fruit in the studied localities was calculated on the basis of the obtained results. It amounted to 54,7 kg/ha. The bilberry resources on the studied territory reached 31 256 kg. Most productive was the Ropalitza locality (90.2 kg/ha), while the least productive one was the Karaalanitza locality (15.0 kg/ha). The fruit resources reached their highest values in Grancharitza, Polenitza and Kitkata localities – 15 103, 3 981 and 2 895 kg/ha respectively.*

The strongest impact on the productivity of the bilberry localities had the eco-meteorological factors. The zoogenic influence was insignificant. The great differences in the conditions of the vegetation seasons in 2001 and 2002 did not allow a detailed comparison of the obtained results. We recommend resource assessment in 2003 as well.

1. Objectives of the Assessment

The main objective was to evaluate the fruit resources of bilberry (*Vaccinium myrtillus L.*) on the territory of Yakoruda and Belitza Park sections in Rila National Park in the vegetation season of 2002. The assessment was conducted before the official start of the fruit collection campaign. Thus, the obtained results were used for selecting the localities and quantities permitted for collection in 2002. The assessment also aimed at a comparison of the results from the vegetation seasons in 2001 and 2002 in order to reveal the tendencies in the state of the localities and the exploitation resources of bilberry in them.

2. Assessment Territory, Period and Participants

The assessment of the bilberry resources was conducted on the territory of Yakoruda and Belitza Park sections of Rila National Park from 22 to 28 July, 2002. The assessment team included Assoc. Prof. Dr. Vladimir Valchev, Assist. Prof. Chavdar Gushev (Institute of Botany, Bulgarian Academy of Sciences), Dimitrina Boteva (Project Biodiversity Conservation and Economic Growth), eng. Rumen Kolchagov and eng. Philip Zaikov (Chief of Yakoruda Park section); Atanas Asjov, Akia Manzurski, Usain Kutev, Park rangers, Aishe Salih, Dzamile Mehmed, Sabri Durleov and Vencislav Kozarev – fruit collectors from Cherna Mesta village and Belitza. Mr. Bojan

Zlatkovich from the Institute for Protection of Nature of Serbia, Department in Nis, also took part in the assessment.

3. Methodology

The evaluation of the resources of bilberry in the selected territory of Rila National Park was conducted according to the methodology, already adopted in 2001 “Methods for determination of the resources of medicinal plants” (1986, State Committee for Forestry enterprise of USSR). The method of sample plots was applied. The fruit yield was calculated on the basis of the projective cover of the species. For the purpose of the study the territory was divided into regions that were visited consecutively by the assessment team. The regions were selected on the basis of the recommendations of the Park rangers, who had established in advance the localities of economic interest for the local fruit collectors.

In each bilberry locality control areas of 1 dka were established. The area of the sample plots was 0.25 m² defined with a wooden frame. According to the Methodology the number of the sample plots had to be high enough to ensure statistical error below 15%. In 2001, in each control area about 60 sample plots were established and the statistical error varied between 15 and 18%. In order to increase the reliability of the results over 70 sample plots were established in each control area in 2002. Thus we reached a statistical error below 15%.

The sample plots were established regularly throughout the whole control area at a three-step interval. The mean projective cover of the bilberry plants in percent, and the fruit quantity, number and weight of fruits per unit area, in this case 25% of 1 m² (0.25 m²) were measured. To calculate the “price” of 1% projective cover, i.e. the fruit yield from 1% projective cover, the quantity fruit collected per 0.25 m² were divided by 25. The assessment was conducted before the start of the fruit collection campaign when the maximum of the fruiting stage was not reached (respectively the final weight of the fruits). That was the reason why, to calculate the “price” of 1% projective cover we counted the number of fruits on 1 % of the control area and multiplied the result by the weight of a mean model fruit. The weight of a mean model fruit was calculated by measuring the weight of a certain quantity of fresh, fully ripe and well developed fruits and dividing this value by the number of these fruits. The mean model fruit weight was 0.238 g (for comparison in 2001 the weight of a mean model fruit in Rila National Park was 0.224 g). Using these initial data the fruit resources of all localities were calculated according to the Methodology. The results obtained from all studied localities were statistically processed. In Annex No 1 is given an example for the calculation of the fruit yield from a control area in Grancharitza locality.

In the localities in which no control areas were established in 2002 the fruit resources were calculated on the basis of the mean fruit yield (54,7 kg/ha) estimated from the directly studied control areas in the assessed on the field localities.

Each control area was identified, numbered and localized on a map. Its altitude, exposure and slope, as well as the species content of the tree community and the canopy density were noted. The descriptions of the control areas included also notes about certain peculiarities of the ground vegetation layer.

4. Locality Description

The bilberry localities are in communities of Macedonian pine (*Pinus peuce*) and Scots pine (*Pinus sylvestris*), which is due to the specific ecological demands of bilberries towards the light factor. The mentioned plant communities belong to the so-called “light coniferous forests” and provide for very good ecological conditions for the bilberry plants. Very often the bilberry localities are in spruce (*Picea abies*) phytocoenoses (or in mixed phytocoenoses of spruce (*Picea abies*) with Scots pine (*Pinus sylvestris*), Macedonian pine (*Pinus peuce*) and fir (*Abies alba*). In these latter cases, bilberries grow in open places (most often a result of sanitary tree cuttings) or in parts where Scots pine (*Pinus sylvestris*) or Macedonian pine (*Pinus peuce*) prevail. If such clearings are absent the bilberries grow on the periphery of the spruce forests where the light conditions are favourable for them. Towards timberline the dwarf pine (*Pinus mugo*), entered the tree communities, and the bilberries grow around the dwarf pine shrubs.

The area of the studied localities varied strongly – from 12 ha in Ropalitza locality to 70 ha in Grancharitza locality. Their total area reached 244 ha. They covered different terrains – different exposure and slope at an altitude from 1800 up to 2050 - 2100 m. Typical for this region is the almost regular presence of rock outcrops – single rocks or rock gatherings.

Studied localities:

1. Ropalitza – Dzenem Dere
2. Polenitza
3. Grancharitza
4. Vapata
5. Karaalanitza
6. Kitkata (Malkija razdol)
7. Sofan-Leeve (Geshev pat)

4.1 Ropalitza – Dzenem Dere Locality

Date of study – 23 July 2002

Location – Forest Unit 390 a; 386 d

Locality area - 12 ha

| № | Area m ² | Altitude m | Exposure | Slope (°) | Plant community | Canopy | Projective cover % | Fruit yield (kg/ha) |
|------|------------------------|---------------|---------------|--------------|--------------------|--------|-----------------------|------------------------|
| 1 | 1094 | 1894 | South West | 25° | PA8, PP 2 | 0,4 | 44,0 | 162,3 |
| 2 | 1000 | 1900 | East | 40° | PA8, PP1,PS1 | 0,7 | 44,3 | 18,2 |
| Mean | | | | | | | | 90,2 |

PP - Macedonian pine (*Pinus peuce*); PA- spruce (*Picea abies*); PS - Scots pine (*Pinus sylvestris*); dwarf pine (*Pinus mugo*); AA- fir (*Abies alba*); FS – beach (*Fagus sylvatica*)

The control areas were in spruce (*Picea abies*) communities mixed very often with Macedonian pine (*Pinus peuce*). That was the reason why the canopy of the tree layer varied between 0.4 and 0.7. The rock outcrops reached 20%.

4.2. Polenitza Locality

Date of study – 24 July, 2002

Location – Forest Unit 141d, 126b, 136 b, 142 a

Locality area - 37 ha

| No | Area m ² | Altitude m | Exposure | Slope (°) | Plant community | Canopy | Projective cover % | Fruit yield (kg/ha) |
|------|------------------------|---------------|---------------------|--------------|--------------------|---------|--------------------------|---------------------------|
| 3 | 500 | 1994 | South | 15° | PP 10 | 0,6 | 48,8 | 72,6 |
| 4 | 1000 | 1984 | West | 35° | PP 10 | 0,6 | 53,8 | 60,1 |
| 5 | 1000 | 2000 | North/North East | 25°-30° | PP10, PA+ | 0,3 | 49,8 | 82,9 |
| 6 | 1000 | 2000 | South | 35°-40° | PP9, PS1, PP+ | 0,5-0,6 | 42,7 | 21,9 |
| Mean | | | | | | | | 59,4 |

The control areas were in communities of Macedonian pine (*Pinus peuce*) with different light exposure. Macedonian pine prevailed, but in some places the number of Scots pine (*Pinus sylvestris*) trees was also high. The tree layers were with relatively regular horizontal structure, and the canopy varied between 0.3 and 0.6. Very often rock outcrops were present.

4.3 Grancharitza Locality

Date of study – 25 July, 2002

Location – Forest Unit 10 b, 12 g, 13 b, o, m, 382 v

Locality area - 70 ha

| No | Area m ² | Altitude m | Exposure | Slope (°) | Plant community | Canopy | Projective cover % | Fruit yield (kg/ha) |
|------|------------------------|---------------|----------|--------------|------------------------|--------|--------------------------|------------------------|
| 7 | 1000 | 2050 | North | 20° | PP+, PM+ Herbaceous | Open | 72,7 | 44,4 |
| 8 | 1000 | 1890 | East | 5° | PP+ | Open | 40,3 | 129,9 |
| Mean | | | | | | | | 87,2 |

Control area 7 was established just above the timberline in a community of dwarf pine (*Pinus mugo*) with single trees of Macedonian pine (*Pinus peuce*). The bilberry plants formed a relatively homogenous synusium with high projective cover. Control area 8 was on the place of a large old tree cutting area of Macedonian pine. The canopy was practically open. The rock outcrops, single stones and small rocks, reached 5%.

4.4 Vapata Locality

Date of study – 26 July, 2002

Location – Forest Unit 35 g; 40 d, e, j, z

Locality area - 40 ha

| No | Area m ² | Altitude m | Exposure | Slope (°) | Plant community | Canopy | Projective cover % | Fruit yield (kg/ha) |
|------|------------------------|---------------|--------------|--------------|--------------------|---------|--------------------------|---------------------------|
| 9 | 1322 | 1973 | West | 25° | PP10, PS+ | 0,4-0,5 | 72,7 | 106,3 |
| 10 | 1000 | 1950 | Nort West | 35°-40° | PP10 | 0,3 | 57,4 | 50,7 |
| 11 | 1000 | 1940 | West | 30°-35° | PP10 | 0,2 | 64,6 | 69,0 |
| Mean | | | | | | | | 75,3 |

The three control areas were in well-developed 200-220-year old communities of Macedonian pine (*Pinus peuce*). The canopy density was 0.2 – 0.5. The stone pieces and rocks on the soil surface appeared very often.

4.5 Karaalanitza locality

Date of study – 26 July 2002

Location – Forest Unit 25 d, l, κ, j; 22 g, m, r, o

Locality area - 34 ha

| No | Area m ² | Altitude m | Exposure | Slope (°) | Plant community | Canopy | Projective cover % | Fruit yield (kg/ha) |
|----|------------------------|---------------|---------------|--------------|--------------------|--------|--------------------------|------------------------|
| 12 | 1000 | 1750 | South West | 20° | PP 10 | 0,3 | 30,2 | 15,0 |

The control area was situated in a way to include the phenological point in Karaalantiza locality. It was an open spruce community near the road. In some places eroded soil and rock peaces could be seen.

4.6. Kitkata (Malkia razdol) Locality

Date of study – 27 July, 2002

Location – Forest Unit 123 z

Locality area - 35 ha

| No | Area m ² | Altitude m | Exposure | Slope (°) | Plant community | Canopy | Projective cover % | Fruit yield (kg/ha) |
|------|------------------------|---------------|--------------------|--------------|--------------------|--------|--------------------------|------------------------|
| 13 | 1000 | 1657 | West | 10° | PS8, AA1, FS1 | 0,7 | 29,9 | 9,0 |
| 14 | 1000 | 1670 | West/South West | 10°-15° | PS9, PP1 | 0,5 | 46,7 | 58,1 |
| Mean | | | | | | | | 33,6 |

Both control areas were in almost clear Scots pine (*Pinus sylvestris*) communities. The participation of spruce (*Picea abies*) and fir (*Abies alba*) increased the canopy up to 0.7. The communities covered relatively flat areas. The ground vegetation layer comprised mainly bilberry and a number of herbaceous species characteristic for such type of communities.

4.7. Sofan – Lееve (Geshev pat) Locality

Date of study – 23 July, 2002

Location – Forest Unit 150 v, g; 153 b

Locality area - 16 ha

| No | Area m ² | Altitude m | Exposure | Slope (°) | Plant commu nity | Canop y | Projective cover % | Fruit yield (kg/ha) |
|----|------------------------|---------------|----------------------|--------------|------------------------|------------|--------------------------|------------------------|
| 15 | 1000 | 1550 | North/Nor th East | 30°-35° | PS7, PP3 | 0,5-0,6 | 43,7 | 22,2 |

The control area was in a community of Scots pine (*Pinus sylvestris*). The participation of spruce (*Picea abies*) in this community was the reason for the relatively high value of canopy about 0.5 – 0.6. This resulted in a clearly expressed mosaic horizontal structure of the bilberry synusium.

In Leevstizza area the locality evaluated in 2001 was visited (marked number 3 in the report for 2001). It turned out that this locality did not fruit in 2002. The park rangers reported that this locality was damaged by late spring frost and heavy rain during the flowering period of the bilberry plants. This was the reason for the absence of fruits in 2002.

5. General Assessment of the Locality State

The general impression for the state of the bilberry localities in Yakoruda and Belitza Park sections of Rila National Park was that the plants had passed a normal growth cycle in 2002. This meant that the fruit resources measured in 2002 were close to the normal quantity in this part of Bulgaria. Only single regions were affected by cold

weather during flowering of the bilberry plants and their fruit yield was zero. This was the most probable reason why the plants did not fruit in the control area of Leevstizza locality established in 2001.

The data from the studied control areas varied from 9.0 kg/ha (for one of the control areas in Malkia razdol locality) up to 162.0 kg/ha (for one of the control areas in Ropalitza – Dzenem dere locality). The mean fruit yield amounted to 54.7 kg/ha. In 2001 the mean fruit yield was 47.0 kg/ha, while the yield from the different localities varied from 5.04 kg/ha (Vodev Chuchur locality) to 108.90 kg/ha (Ropalitza locality). We consider that the lower mean fruit yield and the broader interval of variation of the fruit yield per bilberry locality in 2001 were due to unfavorable meteorological conditions as well as collection prior the assessment.

The bilberry synusium had relatively homogenous horizontal structure, that only in single places was of mosaic type due to different factors (uneven horizontal structure of the tree layer in the phytocoenoses, presence of dwarf pine and juniper gatherings, stone and rock outcrops).

6. Abiotic and Biotic Negative Impact

In the course of the resource assessment no bilberry plants damaged by hales were registered. This meant that if there were any hales in 2002 the damages they caused were compensated by the recovery mechanisms of the bilberry plants.

As was mentioned above, single, not very large areas of bilberry plants affected by short local cold periods during flowering were detected. As a whole, nevertheless the cool and rainy summer the complex of meteorological conditions for this part of the mountain did not undergo drastic changes during flowering and fruiting of the bilberry plants thus the fruit yield reached its normal values for the region.

No considerable zoogenic impact (both by cattle and wild animals) was registered. In some places the grass cover was damaged by wild boars, but on very small areas.

The fact that the resource assessment was conducted prior to the proclaimed starting date (03 August, 2002) of the fruit collection campaign and the cool and humid summer were the reasons for the limited human presence in the region. In this respect the information media campaign that explained the new rules for bilberry fruit collection on the territory of the Park in 2002 played considerably positive role. The Park Directorate also contributed with their protection and control measures.

The phytosanitary state of the bilberry localities was excellent. No phyto-pathogenic impact was detected.

7. Summarized Results from the Studied Localities

The mean projective cover of the localities was calculated on the basis of the temporary control areas established in them. This parameter varied considerably – from 30.2 to 64.9 %. The horizontal structure of the bilberry synusium was homogenous. In some places (Kitkata locality) the bilberry synusium had clearly expressed mosaic structure.

The mean productivity of the localities also varied considerably. Most productive was the Ropalitza locality – 90.2 kg/ha, while least productive was Karaalanitza locality –

15.0 kg/ha. Reason for changes in this parameter is usually unfavourable climatic conditions during flowering and early fruiting (late cold masses, snowfalls, hales, etc.).

For the interpretation of the data the following facts should be taken into consideration:

1. The locality areas were determined on the basis of the evaluation during the resource assessment in 2001 based on the descriptions of the forest fund units, together with the information provided by eng. Philip Zaikov and eng. Rumen Kolchagov in 2002.
2. Localities No 1,2,3,4,7,9,10 (marked in gray) were directly assessed during the field work in 2002 and the exploitation resources were calculated on the basis of the data about the fruit yield directly received from the control areas established in 2002.
3. The bilberry resources in localities No 5,6,8,11,12 were calculated indirectly on the basis of the mean fruit yield kg/ha from the control areas studied during the fieldwork in the period 23 – 28 July, 2002. The mean yield for 2002 was 54.7 kg/ha.

The obtained results were used for the calculation of the exploitation resources of bilberries on the territory of the two Park sections immediately after the end of the field work in July 2002. On the basis of these results an order was issued by the Director of Rila National Park for the fruit quantity permitted for collection in 2002.

Summarized data about the bilberry fruit resources in Yakoruda and Belitza Park sections of Rila National Park estimated during the resource assessment

| Locality | Area (ha) | Mean projective cover (%) | Fruit yield (kg/ha) | Exploitation resources(kg) |
|-----------------|-----------|---------------------------|---------------------|----------------------------|
| 1. Sofan-Leeve | 16 | 43,7 | 22,2 | 355 |
| 2. Ropalitza | 12 | 44,2 | 90,2 | 1082 |
| 3. Grancharitza | 70 | 56,5 | 87,2 | 6104 |
| 4. Polenitza | 37 | 48,8 | 59,4 | 2198 |
| 5. Germanitza | 55 | | 54,7 | 3008 |
| 6. Dinkov Dol | 15 | | 54,7 | 820 |
| 7. Karaalanitza | 34 | 30,2 | 15,0 | 510 |
| 8. Tupia vrah | 3 | | 54,7 | 164 |
| 9. Vapata | 40 | 64,9 | 75,3 | 3012 |
| 10. Kitkata | 35 | 38,3 | 33,6 | 1176 |
| 11. Sredkovoto | 1 | | 54,7 | 55 |
| 12. Lopatiza | 3 | | 54,7 | 164 |
| | 321 | | | 18 648 kg |

Consequently the locality borders were digitalized from topographic maps, scale 1:25000, and included in the digital model of Rila National Park. With the help of the GIS of the Park the locality areas (the polygons on the maps) were precisely calculated and the data about the exploitation resources were corrected on this basis. Since the exploitation resources depend on the fruit yield and the precise locality area the mentioned correction of the locality areas resulted in correction of the quantities of bilberry fruits collected in each locality.

The data in the table show that richest are Grancharitzta, Kitkata and Polenitza localities. The relevant data for 2001 show that in 2001 Grancharitzta and Kitkata localities were also among the most perspective localities.

Highest were the fruit resources in Grancharitzta locality 15103 kg, while in the Sredkovoto locality the lowest fruit resources were measured - 55 kg.

Summarized data for the bilberry resources in Yakoruda and Belitza Park sections of Rila National Park calculated after the digitalization and calculation of the precise area of the localities

| ¹ | Locality | Area (ha) | Mean projective cover (%) | Fruit yield (kg/ha) | Exploitation resources (kg) |
|--------------|---|-----------|---------------------------|---------------------|-----------------------------|
| 1. | Ropalitza – Dzenem dere | 22,62 | 44,2 | 90,2 | 2 040 |
| 2. | Polenitza | 67,02 | 48,8 | 59,4 | 3 981 |
| 3. | Grancharitzta | 173,20 | 56,5 | 87,2 | 15 103 |
| 4. | Vapata | 36,99 | 64,9 | 75,3 | 2 785 |
| 5. | Karaalanitza (Dvete reki) | 28,77 | 30,2 | 15,0 | 431 |
| 6. | Kitkata – Malkia razdol (Ravnite mochuri) | 86,17 | 38,3 | 33,6 | 2895 |
| 7. | Sofan – Leeve (Teshev pat, Dautitza, Kaldaritzta) | 26,09 | 43,7 | 22,2 | 579 |
| 8. | Germanitza | 15,57 | | 54,7 | 852 |
| 9. | Dinkov dol | 15 | | 54,7 | 820 |
| 10. | Tupia vrah | 3 | | 54,7 | 164 |
| 11. | Sredkovoto | 1 | | 54,7 | 55 |
| 12. | Lopatitza | 3 | | 54,7 | 164 |
| 13. | Vadata (Vodev Chuchur) | 8,01 | | 54,7 | 438 |
| 14. | Zoovete | 5,97 | | 54,7 | 326 |
| 15. | Karkama (Tranlivetzo) | 11,39 | | 54,7 | 623 |
| | TOTAL | 503,8 | | | 31 256 |

Summary, conclusions and recommendations:

The information collected during the resources assessment of the bilberry resources in “Yakoruda” and “Belitza” Park Sections forms the picture for their state during the vegetation season in 2002. The local people have used the studied localities for decades for fruit collection. The fieldwork and the successive date processing lead to the following conclusions and recommendations for the studied region:

1. The exploitation resources of bilberry fruit in 2002 in Yakoruda and Belitza Park Sections of Rila National Park amount to 31 256 kg from an area of 504 ha. This area is 2.6% of the whole territory of the two Park Sections.
2. The resources in 2002 were higher than these in 2001, which is due to the more precise determination of the locality area and the inclusion of new localities in the resource assessment. Also, in contrast to 2001, the localities have not been visited by fruit collectors prior to the resource assessment, which contributes for real values for the exploitation resources of the localities.

3. The productivity of the studied area was most affected by the specific ecological and meteorological conditions. The zoogenic impact on the bilberry plants was within the normal limits.
4. The comparison of the results from the two years shows that the methodology is objective and is applied correctly. This is proved by the small errors in the statistical processing of data both about the yield and projective cover. For the vegetation season in 2002 the error is lower than 15%.
5. The results from 2002 and the phenological observations in the permanent sample plots show that the yield of bilberry fruits is formed in conditions normal for this part of the Rila National Park. The meteorological conditions in the vegetation season in 2001 were unfavorable during the period of flowering and fruiting of the bilberry plants while in 2002 the development of the bilberry plants was almost undisturbed till the organized campaign for collection of bilberry fruits. The differences in the climatic regimes in 2001 and 2002 do not allow a detailed analysis of the results obtained for the two years. An evaluation of the bilberry localities is recommended for 2003 and for a further period at least of 2 – 3 years. The obtained results will provide for an approximate assessment of the tendencies in the development of the bilberry populations and their productivity on the territory of Yakoruda and Belitza Park Sections of the Rila National Park.
6. Phenological observations, especially during the generative processes of bilberry plants should continue in order to support the determination of the correct period for resource assessment and the starting date of the collection campaign. In a long-term aspect, phenological survey will give the necessary basic information for the expert resource assessment.
7. The park rangers should continue with the strong control for the observation of the starting date of the fruit collection campaign that will prevent the collection of unripe fruits of lower quality and price. This will also provide for an objective assessment of the exploitation resources of bilberry plants.
8. It is necessary to continue the restriction of cattle pasture on the territory of the studied region.
9. Best results will be achieved if the media information for the local people continues. The information campaign should not be restricted only closely before and during the collection period, but should take place throughout the whole year.

In this respect it should be mentioned the successful propaganda with posters and other printed material in 2002 and the skilful introduction of effective mechanism for control and assessment of the collected quantities of bilberry fruits by means of special talons.

Annex 1

Calculation of the fruit yield from a single control area

Resource assessment of bilberry fruit (*Vaccinium myrtillus L.*) in Rila National Park in 2002

One of the two control areas established in Grancharitzsa locality was used as an example for the calculation of the fruit yield during the resource assessment of bilberry fruit (*Vaccinium myrtillus L.*) in Rila National Park in 2002.

A control area of 1000 m² (1 dec) was established in Grancharitsa locality. One hundred sample plots were established each of 0.25 m². The mean projective cover in each sample plot was calculated in percent and the fruit quantity of bilberry plants was measured. To calculate the “price” of 1% projective cover the obtained results were divided by 25. Thus the fruit yield from 1% projective cover of bilberry plants was calculated.

(Projective cover – the percent area covered by the projection of the over-ground parts of the studied species within the borders of the sample plot or the whole locality).

The weight of a mean model bilberry fruit was calculated when the weight of a certain amount of fresh, fully ripe and developed bilberry fruits was divided by the number of all measured fruits. It was measured to be 0.238 g. For comparison, in 2001, the weight of a mean model bilberry fruit on the territory of Rila National Park was 0.224 g.

For the first sample plot of 0.25 m² (= 25 % of 1 m²) the fruit quantity was calculated to be

$$12 \times 0.238 = 2.856 \text{ g.}$$

The fruit yield from 1% projective cover equals $2.856 \text{ g}/25 = 0.11424 \text{ g}$. (See the respective Table).

Applying the adopted Methodology and the results for the mean weight of a model fruit the following groups of data were received for each sample plot – projective cover, square of the projective cover, number of fruits per sample plot, “price” of 1% projective cover, and the square of the price of 1% projective. In the bottom of the Table the sums of the projective cover, the price of 1% and the square of the prices of 1% of fruits are given.

Sample plot 8, Grancharitsa Site

| Sequal number | % Projective cover (PP) | % PP ² | Number of fruits from 25% | “Price” 1% (g) | (“Price” 1%) ² |
|---------------|-------------------------|-------------------|---------------------------|----------------|---------------------------|
| 1 | 75 | 5625 | 12 | 0,11424 | 0,013050778 |
| 2 | 70 | 4900 | 10 | 0,0952 | 0,00906304 |
| 3 | 70 | 4900 | 4 | 0,03808 | 0,001450086 |
| 4 | 80 | 6400 | 57 | 0,54264 | 0,29445817 |
| 5 | 20 | 400 | 0 | 0 | 0 |
| 6 | 30 | 900 | 32 | 0,30464 | 0,09280553 |

| | | | | | |
|----|----|------|-----|---------|-------------|
| 7 | 25 | 625 | 10 | 0,0952 | 0,00906304 |
| 8 | 60 | 3600 | 47 | 0,44744 | 0,200202554 |
| 9 | 45 | 2025 | 58 | 0,55216 | 0,304880666 |
| 10 | 30 | 900 | 41 | 0,39032 | 0,152349702 |
| 11 | 40 | 1600 | 14 | 0,13328 | 0,017763558 |
| 12 | 40 | 1600 | 23 | 0,21896 | 0,047943482 |
| 13 | 30 | 900 | 11 | 0,10472 | 0,010966278 |
| 14 | 40 | 1600 | 14 | 0,13328 | 0,017763558 |
| 15 | 50 | 2500 | 119 | 1,13288 | 1,283417094 |
| 16 | 30 | 900 | 7 | 0,06664 | 0,00444089 |
| 17 | 30 | 900 | 11 | 0,10472 | 0,010966278 |
| 18 | 45 | 2025 | 84 | 0,79968 | 0,639488102 |
| 19 | 25 | 625 | 44 | 0,41888 | 0,175460454 |
| 20 | 30 | 900 | 16 | 0,15232 | 0,023201382 |
| 21 | 30 | 900 | 27 | 0,25704 | 0,066069562 |
| 22 | 35 | 1225 | 72 | 0,68544 | 0,469827994 |
| 23 | 70 | 4900 | 131 | 1,24712 | 1,555308294 |
| 24 | 70 | 4900 | 62 | 0,59024 | 0,348383258 |
| 25 | 60 | 3600 | 121 | 1,15192 | 1,326919686 |
| 26 | 30 | 900 | 21 | 0,19992 | 0,039968006 |
| 27 | 50 | 2500 | 115 | 1,0948 | 1,19858704 |
| 28 | 70 | 4900 | 27 | 0,25704 | 0,066069562 |
| 29 | 15 | 225 | 19 | 0,18088 | 0,032717574 |
| 30 | 60 | 3600 | 16 | 0,15232 | 0,023201382 |
| 31 | 40 | 1600 | 26 | 0,24752 | 0,06126615 |
| 32 | 50 | 2500 | 40 | 0,3808 | 0,14500864 |
| 33 | 50 | 2500 | 36 | 0,34272 | 0,117456998 |
| 34 | 30 | 900 | 41 | 0,39032 | 0,152349702 |
| 35 | 40 | 1600 | 71 | 0,67592 | 0,456867846 |
| 36 | 20 | 400 | 83 | 0,79016 | 0,624352826 |
| 37 | 50 | 2500 | 123 | 1,17096 | 1,371147322 |
| 38 | 20 | 400 | 7 | 0,06664 | 0,00444089 |
| 39 | 40 | 1600 | 27 | 0,25704 | 0,066069562 |
| 40 | 90 | 8100 | 63 | 0,59976 | 0,359712058 |
| 41 | 10 | 100 | 0 | 0 | 0 |
| 42 | 40 | 1600 | 24 | 0,22848 | 0,05220311 |
| 43 | 50 | 2500 | 93 | 0,88536 | 0,78386233 |
| 44 | 30 | 900 | 16 | 0,15232 | 0,023201382 |
| 45 | 80 | 6400 | 22 | 0,20944 | 0,043865114 |
| 46 | 20 | 400 | 15 | 0,1428 | 0,02039184 |
| 47 | 20 | 400 | 13 | 0,12376 | 0,015316538 |
| 48 | 45 | 2025 | 19 | 0,18088 | 0,032717574 |
| 49 | 45 | 2025 | 71 | 0,67592 | 0,456867846 |
| 50 | 90 | 8100 | 90 | 0,8568 | 0,73410624 |
| 51 | 70 | 4900 | 31 | 0,29512 | 0,087095814 |
| 52 | 0 | 0 | 0 | 0 | 0 |
| 53 | 40 | 1600 | 100 | 0,952 | 0,906304 |
| 54 | 50 | 2500 | 21 | 0,19992 | 0,039968006 |
| 55 | 50 | 2500 | 51 | 0,48552 | 0,23572967 |
| 56 | 40 | 1600 | 116 | 1,10432 | 1,219522662 |
| 57 | 40 | 1600 | 101 | 0,96152 | 0,92452071 |

| | | | | | |
|------------|---------------|---------------|-----|-----------------|--------------------|
| 58 | 5 | 25 | 0 | 0 | 0 |
| 59 | 5 | 25 | 0 | 0 | 0 |
| 60 | 5 | 25 | 0 | 0 | 0 |
| 61 | 30 | 900 | 99 | 0,94248 | 0,88826855 |
| 62 | 40 | 1600 | 64 | 0,60928 | 0,371222118 |
| 63 | 20 | 400 | 13 | 0,12376 | 0,015316538 |
| 64 | 45 | 2025 | 31 | 0,29512 | 0,087095814 |
| 65 | 50 | 2500 | 75 | 0,714 | 0,509796 |
| 66 | 80 | 6400 | 31 | 0,29512 | 0,087095814 |
| 67 | 60 | 3600 | 0 | 0 | 0 |
| 68 | 0 | 0 | 0 | 0 | 0 |
| 69 | 30 | 900 | 40 | 0,3808 | 0,14500864 |
| 70 | 30 | 900 | 14 | 0,13328 | 0,017763558 |
| 71 | 50 | 2500 | 37 | 0,35224 | 0,124073018 |
| 72 | 60 | 3600 | 35 | 0,3332 | 0,11102224 |
| 73 | 30 | 900 | 0 | 0 | 0 |
| 74 | 0 | 0 | 0 | 0 | 0 |
| 75 | 0 | 0 | 0 | 0 | 0 |
| 76 | 40 | 1600 | 0 | 0 | 0 |
| 77 | 30 | 900 | 92 | 0,87584 | 0,767095706 |
| 78 | 70 | 4900 | 92 | 0,87584 | 0,767095706 |
| 79 | 30 | 900 | 67 | 0,63784 | 0,406839866 |
| 80 | 40 | 1600 | 81 | 0,77112 | 0,594626054 |
| 81 | 80 | 6400 | 18 | 0,17136 | 0,02936425 |
| 82 | 40 | 1600 | 69 | 0,65688 | 0,431491334 |
| 83 | 80 | 6400 | 27 | 0,25704 | 0,066069562 |
| 84 | 40 | 1600 | 111 | 1,05672 | 1,116657158 |
| 85 | 50 | 2500 | 197 | 1,87544 | 3,517275194 |
| 86 | 20 | 400 | 19 | 0,18088 | 0,032717574 |
| 87 | 20 | 400 | 0 | 0 | 0 |
| 88 | 60 | 3600 | 73 | 0,69496 | 0,482969402 |
| 89 | 70 | 4900 | 142 | 1,35184 | 1,827471386 |
| 90 | 0 | 0 | 0 | 0 | 0 |
| 91 | 0 | 0 | 0 | 0 | 0 |
| 92 | 45 | 2025 | 25 | 0,238 | 0,056644 |
| 93 | 35 | 1225 | 11 | 0,10472 | 0,010966278 |
| 94 | 15 | 225 | 8 | 0,07616 | 0,005800346 |
| 95 | 40 | 1600 | 73 | 0,69496 | 0,482969402 |
| 96 | 25 | 625 | 39 | 0,37128 | 0,137848838 |
| 97 | 45 | 2025 | 29 | 0,27608 | 0,076220166 |
| 98 | 60 | 3600 | 23 | 0,21896 | 0,047943482 |
| 99 | 30 | 900 | 0 | 0 | 0 |
| 100 | 20 | 400 | 38 | 0,36176 | 0,130870298 |
| Sum | 4030 | 209350 | | 39,96496 | 30,71573012 |
| | 40,30% | | | | |

%PP=% projective cover

To calculate the exploitation resources according to Annex 7 of the adopted Methodology for assessment of the resources of medicinal plants (1986) the following formulas were used. They were applied separately for the calculation of the data about the projective cover and the fruit yield.

M – mean value $\bar{X} = \Sigma v : n$

C - dispersion $C = \Sigma v^2 - [(\Sigma v)^2 : n]$

σ - mean quadratic error $\sigma = \sqrt{C : (n-1)}$

m - error $m = \sigma : \sqrt{n}$

With the help of these formulas and the raw data the following final data were calculated for the studied locality:

1. For the projective cover:

Mean projective cover $M=40.30\%$

$C=46\,942$

$\sigma=21.7750$

$m=2.178$

$M \pm m = 40.30\% \pm 2.18$ (m is 5.4%, i.e. the mean value for the projective cover is calculated precisely enough)

2. For the exploitation resources:

“Price” of 1 % is $M = 0.3996$ g

$C = 14.7437$

$\sigma = 0.3859$

$m = 0.0386$

$M + m = 0.3996$ g ± 0.0386 (m is 9.6%, i.e. the “price” of 1% projective cover is calculated precisely enough)

According to the Methodology the lowest yield value $M - 2m$ was used for the determination of the exploitation resources. Since this method is rather conservative in the case of bilberry resource assessment the lowest yield value was used in order to leave part of the fruits in the field to insure seed reproduction of the locality as well thus avoiding over exploitation of the localities.

In our case lowest yield value was $M - 2m = 0.3224$ g from 1 % projective cover. The lowest yield value was multiplied by the mean value of the projective cover for the respective sample plot $(M - 2m) \text{ g} \times \%III = 0.3224 \times 40.30 = 12.992 \text{ g/m}^2$

The obtained data were transformed into kg per ha – in this particular case it was 129.9 kg/ha.

Two control areas were established in Grancharitzha locality. As was mentioned above the fruit yield from one of them was calculated to be 129.9 kg/ha. The other control area in this locality had fruit yield 44.4 kg/ha. The mean fruit yield for the whole locality was 87.2 kg/ha.

The exploitation resources for Grancharitzha locality were calculated when the mean yield was multiplied by the locality area:

$$87.2 \text{ kg/ha} \times 173.20 \text{ ha} = 15\ 103 \text{ kg}$$

Appendix 3.2

**Resource Assessment of the bilberry (*Vaccinium myrtillus*) in Klissura Park
Section of Central Balkan National Park - 2002****Report**

by

Assist. Prof. Dr. Antonina Vitkova and Assoc. Prof. Dr. Vladimir Valchev

Assessment of the exploitation resources of bilberry (*Vaccinium myrtillus*) in the economically important localities on the territory of Klissura Park section was made. The assessment is conducted in relation with the development of a management plan for the exploitation of the resources of medicinal plants according to the Management plan of Central Balkan National Park and the aims of the pilot project for collaborative management of the natural resources. The assessment was conducted in the period 15 - 20 July 2002.

Summary: *The resources of eight localities of bilberry on the territory of Klissura Park section in Central Balkan National Park are evaluated. Their total area is 842.94 ha that equals 6.6% from the total area of the Park section. The applied methodology is the one used in 2001 for the assessment of bilberry resources – “Methodology for assessment of the resources of medicinal plants” (1986, State Committee for forestry enterprise of USSR). The results show that the mean yield of bilberry from the studied localities amounts to 56.09 kg/ha. The bilberry resources in the territory of the studied region are 52 895.96 kg. Most productive is “Ravna” locality - 16378,84 kg, while least productive is the one in Kladenetza locality - 119 kg. “Ravna”, “Beklemeto-West”, “Vlah Bunar”, and “Beklemeto-West Balevsko” localities have best resource potential.*

The eco-meteorological conditions have strongest impact on the productivity of the bilberry localities. The zoogenic impact is inconsiderably weak. Because of the big differences in the conditions in the vegetation seasons in 2001 and 2002 no detailed comparison of the results is possible. Assessment of the exploitation resources is recommended also for 2003.

1. Organization of the resources assessment, participants, methodology

The exploitation resources of bilberry fruit were evaluated in eight localities identified as economically important by the Park employees prior to the current assessment. In four of them – “Skoka”, Vetrovity Preslap”, “Aviators’ monument” and “Kladenetza” localities – resource assessment had been conducted in 2001 as well. The localities in “Beklemeto_West”, “Beklemeto-Balevskoto”, and a new locality in “Vartopa” and “Sekirish Cheshme” places were additionally included in the assessment in 2002. The studied localities represent parts of different plant communities.

Three scientists from the Institute of Botany of the Bulgarian Academy of Sciences performed the fieldwork – Assist. Prof. Dr. Antonina Vitkova, Assoc. Prof. Dr. Vladimir Valchev, and Assist. Prof. Chavdar Gushev - consultant for the non-timber natural resources to the Biodiversity Conservation and Economic Growth Project. On behalf of the Central Balkan National Park Directorate the participants included: Miss

Gergana Staneva – chief expert Flora, Mr Gencho Iliev – GIS expert, Mr Marin Kostov – head of Klissura Park sections and the park rangers Dimcho Ladzov, Nesho Hristov and Gjuro Ivanov. Two teams were formed. The fruit collectors from Hristo Danovo village – Nikolay Penchev and Anton Penchev – also took part in the resource assessment.

We are grateful to Miss Dimitrina Boteva, Mr Chavdar Gushev and Mr Marin Kostov for the good organization that facilitated the field studies.

The “Methods for determination of the resources of medicinal plants” (1986, State Committee for Forestry enterprise of USSR) is used in the evaluation. The yield was calculated on the basis of the projective cover (item 3.7 from the Methodology). The mean projective cover of the species within the locality and the fruit yield from 1% projective cover – called “price” - are calculated. According to a modern data in the relevant literature modification in the calculation of the “price” was made. The mean fruit yield from sample plot with 1m² area is divided by 100 to receive the yield from 1 dm² (1%) or by 25, when the sample plot is with 0.25 m² area. The calculation of the fruit yield for each locality is done according to the Annex 7 from the Methodology. The standard error of the mean values for the projective cover and the “price” are within the permitted limits, 10 to 15%, and very rarely between 20 and 25%.

2. Results

1. “Yumruka” (locality № 13)

/the number of the locality in the brackets is according to the numbers in the map sheets/

Date of study 16 July 2002

Location – map sheet H-3-56-2-8; M-32

Locality area – 14.0 ha

Bilberry (*Vaccinium myrtillus*), cowberry (*Vaccinium vitis-idaea*) and Siberian juniper (*Juniperus sibirica*) formed together one plant community in this locality.

The team of A. Vitkova, working in the eastern part of the locality, used a control area of 1000 m² (20x50 m) with 54 sample plots of 1m². The number of the sample plots were in conformity with the studies in 2001 that proved that the number of the sample plots in this locality should be about 60 in order to achieve reliable results and error below 15%. The projective cover was 13.78±2.88%. The fruit yield from 1% projective cover - the “price” was 0.13±0.04 g.

The team of V. Valchev, working in the western part of the locality, studied a control area of 1000 m² (20x50 m) with 63 sample plots of 0.25 m². The mean projective cover was 40.5±3.6%, and the “price” from 1% projective cover was 0.33±0.08 g.

The mean projective cover for the whole locality was 27.14%±3.24%, and the “price”- 0.23±0.06. The exploitation resources of bilberry were 376.6 kg

The control areas are situated in plant communities of juniper and bilberry. The locality state is good. Only in one place of 4-5 m² (outside the control areas) the grass cover was damaged by wild boars.

As a result of the every year fruit collection certain anthropogenic pressure – tramping and damaging of plants – was observed especially in the western part of the locality. In some places the bilberry plants were depressed. Impact of abiotic factors was also established – freezing of partial shrubs from spring snowfalls and frost. We recommend the rotation principle for the exploitation of this locality.

Characteristics of the control areas

| No | Area m ² | Altitude | Exposure | Slope | Plant community | Projective cover % | Fruit yield kg/ha |
|----------------------------|------------------------|----------|----------------|--------|--|-----------------------|----------------------|
| 1 | 1000 | 1600 | South- East | 45° | <i>Juniperus sibirica</i> + <i>V. myrtillus</i> + <i>V. vitis idea</i> | 13.78±2.88 | 8.30 |
| 2 | 1000 | 1600 | South | 30-35° | <i>Jniperus sibirica</i> + <i>V. myrtillus</i> | 40.5±3.60 | 70.58 |
| Mean for the control areas | | | | | | 27.14±3.24 | 39.44 |

2. “Skoka” (locality №11)

Date of study – 16 July, 2002

Location – map sheet - K-3-56-B-2; Q-30

Locality area – 2.9 ha

The assessment of the bilberry resources was conducted by the teams of V. Valchev and A. Vitkova. The bilberry participate in a plant community of Scots pine */Pinus sylvestris/* at the age of 30-50 years. The tree height was 5 - 7 m, and the canopy was 0.4 - 0.5. The ground plant layer consisted of single individuals of juniper, among which abundantly grew the bilberry shrubs.

The territories on both sides of the road that crossed the place were studied. The region on the left side of the road (direction from Klissura towards “Skoka”) is about 1.45 ha. The team of A. Vitkova investigated this region. Two control areas were established - 400 m² and 800 m² respectively. The increase of the number of control areas in comparison with the previous year was imposed by the uneven fruiting rate of the bilberry plants within the locality. The fruit yield was considerably lower under the canopy of the forest than in the open places, especially along the road. The difference in the projective cover in 2001 and 2002 showed clearly the uneven distribution of the species in this locality.

In the same place, on the right side of the road, worked the team of V. Valchev. Their control area was 1000 m² (20x50 m). The studied area is 1.45 ha. The bilberry plants were in very good state. Sixty sample plots each of 0.25 m² were established in the control area.

The mean projective cover in the locality was 48.52±6.12%, and the “price” - 0.59±0.06%. The exploitation resources of the bilberry fruit in this locality were 697.35 kg.

The state of the locality was good. Bearing in mind the phytocoenotic conditions, i.e. the participation of *Vaccinium myrtillus* in a forest community, the plants were big, fresh, with unchanged colour of the leaves. No frost damages were observed. The fruits were bigger than in the other studied localities.

We recommend strict control in the exploitation of this locality since it is one of the few localities in Klissura Park section, where bilberries participate in such type of plant community. Not only the bilberries, but also the plant community as a whole should be protected.

Characteristics of the control areas

| No | Area m ² | Altitude | Exposure | Slope | Plant community | Projective cover % | Fruit yield kg/ha |
|----------------------------|------------------------|----------|----------|--------|---|-----------------------|----------------------|
| 1 | 400 | 1600 | South | 10-15° | <i>Pinus sylvestris</i> + <i>Juniperus sibirica</i> + <i>V. myrtillus</i> + <i>V. vitis idea</i> | 34.34±7.72 | 3.10 |
| 2. | 400 | 1600 | South | 20-25° | <i>Pinus sylvestris</i> + <i>J.sibirica</i> + <i>V. myrtillus</i> + <i>V. vitis idea</i> | 40.20±7.73 | 79.00 |
| 4. | 1000 | 1600 | North | 15° | <i>Pinus sylvestris</i> + <i>J.sibirica</i> + <i>V. myrtillus</i> + <i>V. vitis idea</i> | 71.0±2.9 | 78.31 |
| Mean for the control areas | | | | | | 48.52±6.12 | 53.47 |

3. "Vartopa" (locality №4)

Date of study – 17 July, 2002

Location – map sheet K3-56-Bz

Locality area - 15 ha

In contrast with 2001 a new locality, situated to the West of the one studied in 2001, was investigated in Vartopa place. The new locality was identified as an economically more perspective one by the Park employees. The team of A. Vitkova conducted the assessment of the exploitation resources of bilberry fruit in this locality.

Three control areas, each of 1000 m² (50x20 m) were studied. The sample plots were distributed along the East-West diagonal of the locality. The altitude difference between the first and third control areas was 130 m. In the first control area the bilberry (*V. myrtillus*) grew together with juniper (*J. sibirica*) and cowberry (*V. vitis-idaea*), while in the control area situated at the highest altitude /1790 m/ no juniper was found in the bilberry communities.

The sample plots were situated along horizontal transects at 5 m distance. In the first two control areas 35 sample plots of 1m² were established, while in the third one the interval at which the sample plots were established was smaller, thus the number of

sample plots was higher – 52. The latter was imposed by the fact that the ripe fruit in this control area was only 0.5%. All fruit, ripe and unripe, was collected. The percent of the ripe fruit and their weight was calculated. The potential fruit yield from this control area was calculated.

The impact of the different altitude on the ripening period of the bilberry fruits should be mentioned here - in the first control area the percent of ripe fruit reached 85-90% while in the third, the one at the highest altitude – it was only 0.5%. This showed that the ripening period and the related collecting period might be different even in one and the same locality.

The mean projective cover was $17.36\% \pm 2.45$. The “price” was 0.28 ± 0.07 g. The fruit yield from the three control areas varied considerably, which showed that not only the distribution of the species, but also the fruiting rate varied within the locality. Obviously, the different climatic conditions had significant influence on this. The exploitation resources of bilberry fruit from this locality amounted to 309.00 kg.

The locality was in a good state. Although the locality was actively used for fruit collection, no traces of anthropogenic pressure were detected. No negative impact of the abiotic factors was observed.

Characteristics of the control areas

| No | Area m ² | Altitude | Exposure | Slope | Plant community | Projective cover % | Fruit yield kg/ha |
|----------------------------|------------------------|----------|----------|-------|---|-----------------------|----------------------|
| 1. | 1000 | 1660 | South | 35° | <i>Juniperus sibirica</i> + <i>V. myrtillus</i> + <i>V.</i> <i>vitis idea</i> | 13.52%±2.62 | 3.00 |
| 2. | 1000 | 1690 | South | 35° | <i>J.sibirica</i> + <i>V.</i> <i>myrtillus</i> + <i>V. vitis</i> <i>idea</i> | 13.17±2.10 | 1.40 |
| 3. | 1000 | 1790 | South | 40° | <i>V. myrtillus</i> + <i>V.</i> <i>vitis idea</i> | 25.40±2.62 | 93.20 |
| Mean for the control areas | | | | | | 17.36±2.45 | 32.53 |

4. “Sikirish cheshme” (locality №2)

Date of study 17 July, 2002

Location – map sheet K3-56-B6

Locality area - 9.0 ha

The westernmost locality in Klissura Park section studied in 2002 was the one in Sekirish Cheshme. Its area is 9.0 ha. The team of V. Valchev who established one control area of 1000 m² studied this locality. The control area covered community of *Vaccinium myrtillus* with *Lerchenfeldia flexuosa*, *Bruckenthalia spiculifolia* and *Chamaespartium sagittale*. The bilberry shrubs built a ground sylvanum with slightly

mosaic horizontal structure. This was a result of the open rock surfaces and the strongly tufted communities of *Festuca valida*. Several tourist trails crossed the locality.

Eighty-one sample plots of 0,25 m² were established in the locality. The data processing showed that the mean projective cover was 28.2±2.2%, and the “price” of 1% projective cover was 0.51±0.08g. The exploitation resources of bilberry fruit were 892.62 kg.

Characteristics of the control areas

| No | Area m ² | Altitude | Exposure | Slope | Plant community | Projective cover % | Fruit yield kg/ha |
|---------------------------|------------------------|----------|----------------|--------|--|-----------------------|----------------------|
| 1 | 1000 | 1500 | South- East | 40-45° | <i>V. myrtillus</i> + <i>Bruckenthalia</i> <i>spiculifolia</i> + <i>Lerchenfeldia</i> <i>flexuosa</i> + <i>Chamaespartium</i> <i>sagittale</i> | 28.2±2.2 | 99.18 |
| Mean for the control area | | | | | | 28.2±2.2 | 99.18 |

5. Beklemeto - West (locality №16)

Date of study – 15 July, 2002

Location – map sheet K3-56-Г6

Locality area – 6.0 ha

Two control areas, each of 1000 m², were studied by the team of V. Valchev in the West part of Beklemeto in a locality of 60 dka. The locality was a community of *V. myrtillus* with *Bruckenthalia spiculifolia*, *J. sibirica* and *Lerchenfeldia flexuosa*. The horizontal structure of the bilberry synusium was rather homogenous with few small rocks in it. Single bilberry shrubs throughout the whole locality were with dry or necrotic apical parts. Most probably this was a result from a local frost during spring.

In both control areas 60 sample plots were established. The mean values from the two control areas were: mean projective cover – 46.5±3.9%, and “price” of 1% - 0.41±0.06 g. The exploitation resources of bilberry fruit in this locality amounted to 789.90 kg.

Characteristics of the control areas

| | Area m ² | Altitude | Exposure | Slope | Plant community | Projective cover % | Fruit yield kg/ha |
|----------------------------|------------------------|----------|------------------------|--------|---|-----------------------|----------------------|
| 1 | 1000 | 1500 | East North- East | 20-30° | <i>V. myrtillus</i> + <i>Bruckenthalia</i> <i>spiculifolia</i> + <i>J.</i> <i>sibirica</i> + | 50.9±4.9 | 132.07 |
| 2 | 1000 | 1500 | East North- East | 20-30° | <i>V. myrtillus</i> + <i>Bruckenthalia</i> <i>spiculifolia</i> + <i>J.</i> <i>sibirica</i> | 42.2±2.9 | 131.24 |
| Mean for the control areas | | | | | | 46.5±3.9 | 131.66 |

6. Beklemeto – Aviators’ monument (locality № 14)*Date of study – 18.07.2002**Location – map sheet K-3-56-Г-a; I-40**Locality area – 4.0 ha*

Two teams worked in the area of the Aviators’ Monument. One control area was studied by the team of A. Vitkova in the western part of the locality. Its area was 1 000 m² (50x20 m) with 53 sample plots each of 1 m². The plant community consisted of bilberry (*V. myrtillus*), cowberry (*V. vitis-idaea*) and Siberian Juniper (*J. sibirica*). The sample plots were situated at 5 m interval, in transects parallel to the long side of the locality. The bilberry shrubs were well developed, with fresh leaves, unchanged in colour. No frozen or dry partial shrubs were found.

The mean projective cover of the species in this part of the locality was 25.90%±2.26, and the “price” was 0.16±0.02g.

Westwards from the first team, the team of V. Valchev studied a control area in a community of bilberry (*V. myrtillus*) with *Lerchenfeldia flexuosa* and little Siberian Juniper (*Juniperus sibirica*). The area was 1000 m² (20x50 m). The horizontal structure of the bilberry synusium was relatively homogenous. Typical for this control area was that the fruiting bilberry shrubs altered with completely fruitless shrubs. This proved that the slope on which was the control area was affected by cold air mass that had damaged partially the bilberry flowers. Eighty sample plots were established in this control area. The results were: mean projective cover 19.1±1.8%, and the “price” of 1% projective cover 0.26±0.04 g.

The projective cover established for this locality in 2002 (22.5±2.03%) was higher than this in 2001 (11.6±2.64%). This was due may be to the fact that in 2002 new control areas were evaluated. The results for the two years showed very uneven distribution of the species in the locality. This imposed the establishment of more sample plots for the assessment of the resources of bilberry fruit.

The resources of bilberry fruit were calculated on the basis of the means of the projective cover (22.5±2.03%) and the “price” (0.21±0.03g). The exploitation resources amounted to 125.20 kg.

Characteristics of the control areas

| No | Area m ² | Altitude | Exposure | Slope | Plant community | Projective cover % | Fruit yield kg/ha |
|----------------------------|---------------------|----------|------------|--------|--|--------------------|-------------------|
| 1 | 1000 | 1600 | South-East | 30-35° | <i>V. myrtillus</i> + <i>V. vitis-idaea</i> + <i>J. sibirica</i> | 25.90±2.26 | 28.80 |
| 2. | 1000 | 1600 | South-West | 45° | <i>V. myrtillus</i> + <i>V. vitis-idaea</i> + <i>J. sibirica</i> | 19.1±1.8 | 33.20 |
| Mean for the control areas | | | | | | 22.5±2.03 | 31.00 |

Despite the fact that the tourist trail from Kozja stena chalet to Beklemeto crossed the locality no negative human impact on the bilberry population was registered. Fruit collection also had no negative influence on the species. As a result of local spring cold the bilberry flowers were partly frozen in the western part of the locality. We recommend the rotation principle in the exploitation of this locality.

7. Beklemeto – Aviators' monument - Kladenetza (locality № 15)

Date of study – 18 July, 2002

Location – map sheet K -3-56-Г-a; I-40

Locality area – 1.2 ha

Two teams worked in this locality. The team of V. Valchev evaluated a control area of 1000 m² in the northern part of the locality. It was in a community of bilberry (*V. myrtillus*) with Common juniper (*Juniperus communis*). Typical for this control area was that the juniper forms separate patches of 8 - 9 m², where no bilberries grew, i.e. the bilberry synusium had a clear mosaic structure. Eighty-four sample plots each of 0.25 m² were established in this control area. The following results were obtained: mean projective cover – 21.9±2.3% and “price” of 1% projective cover - 0.56±0.097 g.

- The team of A. Vitkova worked in the southern part of the locality on a control area of 1000 m²/50x20 m/. This control area was in a community of bilberry (*V. myrtillus*) with cowberry (*V. vitis-idaea*), blueberry (*V. uliginosum*) and Siberian juniper (*J. sibirica*). Along the long side of the control area 56 sample plots of 1m² were established. In this part of the locality the projective cover of the species was 15.98±1.86% and the “price” of 1% projective cover was 0.02±0.008g.
- The results showed clear irregularity in the fruiting of the bilberry even within a relatively small area as was the case in this locality. This was due both to the biological characteristics of the species and the microecological conditions in the different parts of the locality.
- The mean projective cover for the locality as a total was 18.94-2.80%, and the “price” was 0.29±0.05 g. The exploitation resources of the locality were 35.88 kg. They were about two times lower than the values from 2001, which was due to the mosaic horizontal structure of the population, periodicity of fruiting and the microecological conditions of the region.

Characteristics of the control areas

| No | Area m ² | Altitude | Exposure | Slope | Plant community | Projective cover % | Fruit yield kg/ha |
|----------------------------|---------------------|----------|------------|--------|---|--------------------|-------------------|
| 1. | 1000 | 1600 | North-West | 25-30° | <i>V. myrtillus</i> + <i>J. sibirica</i> | 21.9±2.3 | 70.60 |
| 2. | 1000 | 1600 | North-West | 40° | <i>V. myrtillus.</i> + <i>V. vitis-idea</i> + <i>V. uliginosum</i> + <i>J. sibirica</i> | 15.98±1.86 | 0.90 |
| Mean for the control areas | | | | | | 18.94±2.08 | 35.70 |

8. Beklemeto – West – Balevskoto (locality № 17)*Date of study – 15.07.2002**Location – map sheet K3-56-Г6**Locality area –3.1 ha*

The team of A. Vitkova worked in this locality. The area of the locality is 3.1 ha and it had the shape of a rectangle. Bilberry (*Vaccinium myrtillus*) built a phytocoenosis with cowberry (*V. vitis-idaea*) and *Bruckenthalia spiculifolia*. Sixty-eight sample plots were established in this locality along the diagonals and the upper and lower side of the locality. This approach for the calculation of the projective cover and the fruit yield from a unit area was suitable for localities smaller than 50 dka. Thus, the results about the horizontal structure of the population and the projective cover of the studied species, especially with its irregular distribution, are more precise.

Despite the active fruit collection in this locality yearly, the bilberry shrubs were in good state. No frozen parts were detected.

The mean projective cover was $19.70 \pm 1.79\%$, and the “price” of 1% projective cover was $0.43 \pm 0.07\text{g}$. The exploitation fruit resources were 164.61 kg.

Characteristics of the control area

| No | Area m ² | Altitude | Exposure | Slope | Plant community | Projective cover % | Fruit yield kg/ha |
|---------------------------|------------------------|----------|------------|--------|---|-----------------------|----------------------|
| 1 | 3100 0 | 1500 | South-East | 35-40° | <i>V. myrtillus</i> + <i>V. vitis-idaea</i> + <i>Bruckenthalia spiculifolia</i> . | 19.34±1.92 | 53.10 |
| Mean for the control area | | | | | | 19.34±1.92 | 53.10 |

Summarized results from the evaluated localities of bilberry (*Vaccinium myrtillus* L.) in Central Balkan National Park, Klissura Park section – resource assessment in 2002

| No | No Marked the map | on | Locality | Area (ha) | Mean Cover (%) | Projective | Yield (kg/ha) | Exploitation resource (kg) |
|----|-------------------------|-----|-----------------------|--------------|----------------------|------------|------------------|----------------------------------|
| 1. | | 13. | Yumruka | 14.0 | | 27.14±3.24 | 26.90 | 376.60 |
| 2. | | 11. | Skoka | 2.9 | | 48.52±6.12 | 240.46 | 697.35 |
| 3. | | 4. | Vartopa | 15.0 | | 17.36±2.45 | 20.60 | 309.00 |
| 4. | | 2. | Sikirish Cheshme | 9.0 | | 28.20±2.20 | 99.18 | 892.62 |
| 5. | | 16. | Beklemeto – West | 6.0 | | 46.50±3.90 | 131.65 | 789.90 |
| 6. | | 14. | Aviators' Monument | 4.0 | | 22.50±2.03 | 31.30 | 125.20 |

| | | | | | | |
|-------|-----|------------|-----|------------|-------|--------|
| 7. | 15. | Kladenetza | 1.2 | 18.94±2.08 | 29.90 | 35.88 |
| 8. | 17. | Balevsko | 3.1 | 19.34±1.92 | 53.10 | 164.61 |
| Total | | 55.20 | | 3391.16 | | |

After clarifying and reaching an agreement with the Klissura Park section employees about the size and borders of the localities the latter were marked on maps, scale 1:25000 and digitized. This resulted in corrections in the preliminarily given areas. Since the exploitation resources depend on the fruit yield and the size of the concrete area the correction of the localities area caused correction in the data about the fruit quantity from each locality.

After the extreme values minimum and maximum (kg/ha) from "Skoka" locality were removed from the final calculations, the mean value of the bilberry fruit yield from all localities was calculated and it amounted to 56.09 kg/ha. On the basis of this value were calculated the exploitation resources of the localities that were not directly assessed and no control areas were established in them. In the localities in which sample plots were established during the 2002 fieldwork, the exploitation resources were calculated on the basis of the fruit yield (kg/ha) from each locality. The exploitation resources were calculated using the new, corrected values for the area of the localities.

Summarized results of the exploitation resources of the bilberry (*Vaccinium myrtillus L.*) localities in Central Balkan National Park, Klissura Park section, after the correction of their area size

| No | Locality | Area (ha) | Yield (kg/ha) | Exploitation resource (kg) |
|----|------------------|-----------|---------------|----------------------------|
| 1 | Podmola | 55.62 | 56.09 | 3119.72 |
| 2 | Sikirish Cheshme | 22.28 | 99.18 | 2209.73 |
| 3 | Vartopa | 11.47 | 56.09 | 643.35 |
| 4 | Vartopa | 14.46 | 20.60 | 297.87 |
| 5 | Vartopa | 17.83 | 56.09 | 1000.08 |
| 6 | Vartopa | 12.18 | 56.09 | 683.17 |
| 7 | Vartopa | 5.84 | 56.09 | 327.56 |
| 8 | Vlach Bunar | 112.34 | 56.09 | 6301.15 |
| 9 | Ravna | 292.01 | 56.09 | 16378.84 |
| 10 | Yumruka | 53.19 | 56.09 | 2983.43 |
| 11 | Skoka | 7.00 | 56.09 | 392.63 |
| 12 | Yumruka | 8.01 | 56.09 | 449.28 |

| | | | | |
|--------------|--|---------------|--------|-----------------|
| 13 | Yumruka | 43.20 | 26.90 | 1162.08 |
| 14 | Beklemeto – Aviators’ Monument | 14.57 | 31.30 | 456.04 |
| 15 | Beklemeto – Aviators’ Monument /Kladenetsa/ | 3.98 | 29.90 | 119 |
| 16 | Beklemeto – West | 92.17 | 131.65 | 12134.18 |
| 17 | Beklemeto - Balevskoto | 79.79 | 53.10 | 4237.85 |
| Total | | 842.94 | | 52895.96 |

3. Conclusions and recommendations for bilberry resources management

1. The exploitation resource of bilberry fruit in 2002 in Klissura Park section – Central Balkan National Park amount at 52895.96 kg from 842.94 ha. The exploitation resources are evaluated on an area that equals 6.6% of the whole territory of the Park section.
2. The many times higher values for the resources in 2002 than this in 2001 are due to the more precise calculation of the localities area, the inclusion of new localities with high exploitation resources (Vartopa locality /new locality /, Beklemeto – Balevskoto locality, Beklemeto – West, Sikirish Cheshme locality) in the resource assessment, and to the fact that the mentioned localities have not been visited by collectors prior to the assessment, which helped for real results to be achieved. As a whole the climatic conditions in 2002 favored the fruiting of bilberry and the yield was higher. The big differences in the conditions in which the assessment was conducted in the vegetation seasons of 2001 and 2002 do not allow detailed comparison of the results received for the two years. Assessment of the exploitation resources is recommended for 2003.
3. The localities of the bilberry in Klissura Park section are in a good state. Although rarely, the localities are influenced by the annual fruit collection (Yumruka and Beklemeto-West localities). The disturbance of seed reproduction as a consequence of massive annual fruit collection can cause in the future changes in the population structure. In 2002 part of the localities are influenced although weaker than in 2001 by the abiotic factors – late spring colds and rains (Beklemeto-West and Kladenetsa localities).
4. The results show clearly that the distribution of bilberry shrubs in the localities is uneven and the fruiting rate of the bilberry (yield per unit area kg/ha) within even relatively small areas is unequal. This is due both to the biological peculiarities of the species and the specific microecological conditions of each locality that have impact on the growth and fruiting of the bilberries. All these require annual resource assessment within a period of 4 –5 years. That will help to follow through the

fruiting rhythm with the aim to calculate the approximate mean values for the yield and exploitation resources in each locality.

5. The altitude varies both between the localities and within a locality relatively slightly - from 1500 to 1790 m. a.s.l. Since changes in the altitude have impact on the climatic factors the ripening period for the fruits of bilberry is different even for the different parts of one and the same locality. This fact supports the requirement to keep of a certain date as a beginning of the collection period (starting date) in order to provide for maximum ripe fruits, thus fruits with a better quality and higher market value.
6. The results show that the following rules are to be followed in the exploitation of the resources of bilberry fruits:
 - Determination and keeping of a starting date for fruit collection in accordance with the climatic conditions of the year and the development of the bilberry in each locality,
 - Performance of phenological observations for the determination of the starting date for fruit collection,
 - Imposing rotation in the exploitation of the localities or, better, leaving a part of the fruits uncollected thus providing seed reproduction in the locality.
7. It is better, after the final determination of the locality borders, to select enough control areas in the localities, that should be marked on the field in a suitable way and to become permanent control areas in which annually (periodically) resource assessment will be conducted. Within a period of 4-5 years the state and localization of the permanent control areas should be assessed and updated and if necessary to change their number, size, distribution within the respective locality.
8. When initial information about the yield in the concrete localities within a period of 4-5 years is accumulated, the annual assessment may be conducted in only several selected localities, while the exploitation resources of the rest of the localities (especially the smaller ones) to be calculated on an expert level.
9. Despite the recommendation for a transition to an expert assessment of the resources in long term, it is necessary every locality to be planned for a field assessment at least once in three years in order to update the data about its yield.
10. It is necessary to introduce phenological observations as a routine practice for every bigger and economically important locality that will be conducted by the park rangers in their every day work.
11. After the phenological observation in the selected phenological stations is conducted, before the resource assessment itself, all localities must be visited and their state must be evaluated. Thus, the localities that have not fruited in the current year will be excluded from the resource assessment. Also, the visits for the resource assessment will be planned according to the degree of ripening of the fruits in all localities. Most often, the assessment will start from the localities at the lowest altitudes progressing towards the localities on higher altitude, thus the fruits during the assessment will be ripest and closest to their real weight for collection.

4. Recommendations for the methodology application

The yearly changes in the specific conditions in which the resource assessment is conducted due to climatic and other factors impose relevant variations and creativity applying the methodology for bilberries resources assessment.

Our experience from 2001 and 2002 shows that:

1. The “price” of 1% projective cover is better to be determined not from 1dm directly (one quadrant from the frame), but from the whole frame with area of 1 m² or 0.25 m².
2. For more precise results from a control area of 1000 m² not less than 60 sample plots must be measured.
3. For the localities not bigger than 5 ha the whole area of the locality should be taken as a control area and the sample plots should be situated along the diagonals and the upper and lower border of the locality. Thus, the data about the horizontal structure of the population and the projective cover of the studied species are more precise, especially when the species has uneven distribution.
4. When the development of the bilberry plants is delayed and the fruits are not completely ripe during the resource assessment it is possible to use the “mean model weight” of single bilberry fruit for the respective year to calculate the yield or to determine the ratio between the percentage of the unripe fruits to the percentage of ripe fruits and the respective weight of the ripe fruits.

**Information Leaflet / Poster – Bilberry Collection Campaign 2002
(text)**

Central Balkan National Park

1

The Central Balkan National Park

Collaborative management of the natural resources

Bilberry

Campaign 2002

2

CENTRAL BALKAN NATIONAL PARK AND THE NATURAL RESOURCES

The Central Balkan National Park was declared in 1991, in order to conserve the unique variety of plants, animals and habitats in the mountain. Its area is of 716 км² and it is located on the territory of five administrative districts as well as eight municipalities: Teteven, Troyan, Apriltsi, Sevlievo, Pavel Bania, Karlovo, Anton and Pridop.

Along with the beautiful views, the multiple species of animals and plants, the park conserves also a enormous variety of 166 species of medicinal plants. The bilberry represents a particular value, since in the park are preserved large quantities of it, which have an economic importance.

Each year thousands of families from the regions around the park complement their incomes thanks to the collection of herbs, mushrooms, herbs and fruits from the park.

In practice, only with the insurance of controlled access to these resources, the National Park contributes to the economic benefit of the local people as well as continued use of these resources.

3

THE MANAGEMENT PLAN AND THE NATURAL RESOURCES PROJECT

In accordance with the Protected Areas Law, the protection of the nature in Central Balkan National Park is assigned to the NP Directorate, which is a division of the Ministry of Environment and Water. The activities in the park are carried, based on the approved by the Council of Ministers ten-year Management Plan.

In it, is envisaged a program for collaborative management of the non-timber natural resources. It has the objective to create conditions for better resource protection and for the extraction of greater benefits for the local population. Particular example for the implementation of this program is the 2002 collection season for the bilberries in the region of Klissura PS. The Park Directorate has the intention in partnership with local people to evaluate the quantity of the existing in the park bilberry resources, as well as to find the best way for the local people to gain benefit out of this natural richness.

In the beginning of 2001, until the middle of 2002, the Park Directorate conducted series of meetings in the settlements, which are within Klissura PS. It discussed extensively with the local people how to organize the protection of the natural resources as well as their collection.

In the summer of 2001, representatives of the local collectors participated in the bilberry resource evaluation team. We have studied the significance of the natural resources for the local economy, and it showed that, thousands of families provide significant part of their annual incomes through the collection of herbs, mushrooms and fruits in the park.

In order to provide the opportunity for collection of fruits continuously and ensure a good yield, now we agree to continue to work together.

In the 2002 collection season, the National Park Directorate expects people from the villages and the towns to accept the new way to account for the activities, related to the bilberry collection. Through this cooperation we hope to conserve the resources of your Park and to continue to contribute for your benefit.

4

Rules about the behavior in the Park

We shall not damage the flowers. Among them there can be rare and endangered from extinction species.

Take in – Take out – we shall not leave anything that pollutes or litters after us.

The bivouacking and the fire setting are allowed only in the designated spots.

Fishing is allowed only in the assigned areas.

It is not allowed the collection and the damage of fossils and rock formations

When moving with vehicle we shall use only the assigned roads and parking.

The hunting and the disturbance of wild animals are not allowed.

Cutting and breaking of branches and trees are not allowed.

5

The nature of the bilberry

The bilberry is a small shrub and grows in the sunny forests and bushes, on rocky meadows, in peat localities and high mountain meadows between 1 200 and 2 900 meters above the seal level.

The bilberry communities form a dense layer on the ground surface. Due to this, these play an important role for the preservation of the soil quality and the regulation of the water flow.

The bilberry blossoms in May- June, and gives fruits in July – September. The short vital cycle depends to a large extent of the particular spot, where it grows, as well as from the meteorological conditions in the particular year.

Insects, mostly wild bees when collecting nectar and pollen, pollinate the bilberry. It is uses mostly vegetative reproduction through root extensions. Seeds are disseminated through animals, consuming bilberries. More than 25 species of birds as well as some mammals (bear, fox, marten, chamois etc.) feed with bilberries.

The fruits of the bilberry have excellent nutrition and healing qualities for the man. For decades these are used for the preparation of healthy and strong foods and drinks for prophylactic and healing purposes with diverse action.

Rules for collection

- ✓ The collection of fruits shall be done with a **billberry combine** (wooden box with handle, with attached metal comb with rounded metal teeth, in order not to damage the fruits and the leaves).
- ✓ **It is not acceptable to uproot, cut and destroy the bilberry shrubs.** These shall remain intact, where they are, in order to give more fruits in the following year. For one shrub to start giving bilberries needs at least 5 years. Besides, the blossoms, which are the origin of the fruits, start their formation in the previous year, and if during the harvesting these are destroyed, on the next year there would be neither blossoms nor fruits. The branches and the stubs of the bilberries grow just one centimeter per year. Imagine how much do we lose, if are damaged or destroyed the already grown stubs and branches.
- ✓ The bilberries are most valuable on the market for their wonderful taste, their sweetness and their unique combination of vitamins and other healing substances. All these qualities though, exist to a greater extent, in the fully ripe fruits. Only then, their value and preciousness can be estimated higher and in the next years one can rely on a higher purchase prices. It imposes the collectors to observe the date Central Balkan National Park declares for a **starting date for the bilberry collection – 27 July 2002**. The collection before this date will be sanctioned. This year in particular the general start is needed for the normal completion of the stocks of resources evaluation by the joined teams between the Directorate and the local collectors.
- ✓ NPD declares **the initiation of the campaign for bilberry collection through a special order of the Park Director**. This order is announced through the local newspapers and cable televisions, municipalities, brokers, buyout stations and it is posted in the most visited spots in your settlements.

7

Permit system and permission coupons

The Protected Areas Law and the Medicinal Plants Law determine the collection of bilberries, and other wild berries and mushrooms in the park.

In the Management Plan are listed the norms, the regimes for these uses and are specified the ways for the definition of the localities, where this is allowed. The use will happen in accordance with approved by the Directorate Plan, based on resource evaluations.

Two types of uses are allowed - for personal and for commercial purposes.

In season 2002 for the collection of bilberry fruits is introduced a new system of permits. The price of this system is the registration of all users or: ***Everyone, who enters the NP to collect bilberries, will have a coupon***. ***This refers as for the personal collection as well as for the commercial purposes.***

THERE IS NO LIMITATION OF THE NUMBER OF COUPONS, WHICH PEOPLE CAN OBTAIN. THE COUPONS ARE FREE OF CHARGE!

The permits for collection of herbs, mushrooms and wild berries for commercial purposes, for which a fee is paid, remain compulsory as well! To these are added THE NEW COUPONS< THATH EVERY COLLECTOR WILL HAVE during the collection of bilberries on park territory!

For the acquisition of permitting coupon application are not needed, as these are not recorded.

8

The permit coupon sample looks like:

The distribution of the coupons will start on the 24th of July 2002.

These can be obtained on the following spots:

- ✓ Klissura, "20 April" str, Cultural house 20 April
- Klissura PS office, CBNP, tel. 031372052
- CBNP Information Center
- ✓ Rozino village
- Town hall (will be distributed by the park ranger Ivan Nenov)
- Cultural House, Eco-club "Malkata Ida"
- ✓ Hristo Danovo village
- Cooperative yard, Buyout station of Stoicho Atanassov
- Town hall
- ✓ Karnare village
- town hall

POSTER

Central Balkan NP

Klissura PS

BILBERRY COLLECTION CAMPAIGN 2002

Large Photo

Map of the park with outlined both park sections

Initial date for the collection of the bilberries

27 JULY 2002

EVERYONE, WHO COLLECTS BILBERRIES WITHIN PARK TERRITORY WILL
HAVE A PERMITTING COUPON. Have you received yours?

The coupon's both sides, original scale

Locations for the coupons distributions after 24th of July 2002:

- ✓ Klissura, "20 April" str, Cultural house 20 April
- Klissura PS office, CBNP, tel. 031372052
- CBNP Information Center
- ✓ Rozino village
- Town hall (will be distributed by the park ranger Ivan Nenov)
- Cultural House, Eco-club "Malkata Ida"
- ✓ Hristo Danovo village
- Cooperative yard, Buyout station of Stoicho Atanassov

- Town hall
- ✓ Karnare village
- town hall

Form the same locations you will receive this poster - leaflet for more information.

Rila National Park

1

Rila National Park
Co-Management of Natural Resources
Billberry
2002 Campaign

2

Rila National park was declared in 1992 to preserve the unique diversity of plants, animals and habitats in the mountain. Its area is 81,046 hectares and it spreads over the territory of four administrative regions and eleven municipalities: Blagoevgrad, Simitli, Razlog, Belitsa, Yakoruda, Belovo, Kostenets, Dolna Banya, Samokov, Sapareva Banya, and Dupnitsa. It is the largest National Park in Bulgaria.

Along with the beautiful views, the numerous animal and plant species, the Park also preserves the enormous richness of 140 medicinal plant species. The billberry is of a special value, since large quantities of this plant, which are of important economic significance, are preserved in the Park.

Every year thousands of families from the regions around the Park ensure their income owing to the collection of herbs, mushrooms and fruit from the Park.

In fact, the only way for the National Park to contribute to the economic prosperity of the local people is to provide permission and access to these resources.

3

According to the Protected Areas Act, the nature protection in Rila National Park is assigned to the National Park Directorate, which is directly subordinated to the Ministry of Environment and Waters. The activities within the Park are carried out in accordance with a ten-year management plan, approved by the Council of Ministers.

This plan provides for a Co-management of Non-Timber Natural Resources Program. Its goal is together with partners from the municipalities around the Park to create conditions for better conservation of the resources and for ensuring more benefits to the local population. A concrete example for the application of this program is the 2002 billberries collection season for the regions of Belitsa and Yakoruda. The Park intends, with the local people's help, to record the quantity of the existing Park resources, and also to find the best way for the local people to benefit from this richness.

From the beginning of 2001 to the middle of 2002 the Rila National Park held a series of meetings in the settlements falling within the region of the two Park Sections of Belitsa and Yakoruda, and many times discussed with the local people how to organize the natural resources conservation and utilization. In the summer of 2001, representatives of the local collectors participated in the Park's team for billberry resource assessment. We also studied the significance of natural resources to the local economy, and it turned out that thousands of families provide for their living through collection of herbs, mushrooms and fruits from the Park.

In order to make this opportunity last for many years, in order to have this richness at our disposal, we have to start working together NOW.

During the 2002 collection season, the National Park expects that the people from the villages and towns will adopt the new reporting methods for the activities related to billberry collection, which will lay the foundations for a long-term cooperation. Through this cooperation we are hoping to contribute to the local peoples' enrichment and better nature conservation.

4

Rules for Behavior in the Park

Hunting and disturbing the wild animals is prohibited.

Felling trees and breaking branches is not allowed.

Let's not harm the flowers. Some of them may be rare or threatened with extinction.

Take in – Take out – let's not leave behind anything that pollutes.

Camping and lighting fire is only allowed at the locations that are especially marked for that purpose.

Fishing is only allowed at the marked locations.

Collection and damaging fossils and rock formations is not allowed.

When driving a vehicle, let's stay on the marked roads and parking sites.

5

The Billberry

The billberry is a small bush that grows in light coniferous forests and shrubs, on stony or rocky meadows, on peat areas and high-mountain pastures in the mountains between 1200 and 2900 m of altitude.

The billberry communities form dense cover near the soil surface and therefore they are of important significance for the preservation of the soil qualities and regulation of water flows.

The billberry flowers in May-June, and bears fruits in July-September. The running of the short life cycle depends to a large extent upon the particular growing locality and on the meteorological conditions in the concrete year.

The billberry is pollinated by insects, mainly wild bees collecting nectar and pollen. Its reproduction is mainly vegetative, through root suckers. The seeds get spread by animals that eat billberries. More than 25 bird species (capercaillie, hazel hen, rock partridge, wild doves, thrushes, etc.) and some mammals (bear, fox, beech marten, chamois, etc.) feed on billberries. The billberry fruits have excellent nutritive and medicinal value for the humans as well. For decades they have been used for the preparation of healthy and nutritional foods and beverages, and for prophylactic drugs and remedies of various effect.

6

Collection Rules

- Fruits have to be collected through a **billberry-collecting device** (a wooden box with a handle and an attached comb of rounded metal teeth that do not harm the fruits and the branches).
- **Uprooting, cutting and destroying the billberry shrubs is inadmissible.** They have to remain undamaged where they were, in order to bear fruits in the following year as well. In order to start bearing berries, a shrub needs to grow for at least 5 years. Besides, the buds that bear the fruits start developing one year earlier, and if they get destroyed during the collection, there will be neither blossoms, nor fruits on the following year. The billberry branches and stems grow only by one centimeter per year. Imagine how much will we all lose if you take away the stems and branches that have already grown.
- The billberries are valuable for the market mainly because of their excellent taste, sweetness and unique combination of vitamins and other remedial substances. However, all those features can be found in their maximum amounts in the ripe fruits. Only then will their value receive a higher evaluation and in the following years higher purchasing prices can be relied upon. That is why the collectors have to observe the date, announced by the Rila National Park as a **start date for billberry collection**. Any collection prior to this date will be sanctioned. This year in particular, the 'common start' is also necessary for the proper resource evaluation by the joint teams of the Park Directorate and local collectors.
- The NPD will announce **the start of the billberry collection campaign through a special order by the Park Director**. This order will be published through the local newspapers and cable TV stations; it will be distributed among the municipalities, purchasers, purchase stations, and will be posted at the most visited places in your settlements.

7

Permitting System and Permit Coupons

The collection of blueberries, and other wild growing fruits, herbs and mushrooms in the Park is regulated by the Protected Areas Act and the Medicinal Plant Act.

The Management Plan lists the regimes and norms for these uses and sets the ways to define the locations, where they are allowed. The use will follow a plan, approved by the Park Directorate and based upon resource assessments.

Two types of use are allowed – for personal needs and commercial purposes.

Collection for personal needs means collection of up to 10 kilograms of wild growing fruits for immediate consumption or preparation of winter supplies. No fee is charged for this use.

The use for commercial purposes (collection of fruits for sale) is also allowed, but there is a fee associated with it. It is based upon a permit issued by the Park Directorate, after submitting an application.

During the 2002 season, an experimental introduction of a new permitting system model is proposed for the collection of billberry. The goal of this system is to register all types of use or **“everyone who enters the NP to collect fruits, should have a permit coupon”**. ***This applies to both the personal need collections, and the collections for commercial purposes.***

THERE WILL BE NO LIMIT ON THE NUMBER OF PERMIT COUPONS THAT ONE CAN REQUEST!

The permits for commercial purposes, for which a fee is paid, remain obligatory for this year as well! Besides them, everyone who collects billberries in the Park should carry THE NEW PERMIT COUPONS.

No application is needed to obtain a permit coupon, nor a record is kept.

8

The permitting coupons are shown below:

The issuing of coupons will start on JULY 29, 2002.

They can be obtained at the following locations:

- Yakoruda Park Section Office
Address: № 3 Vassil Levski Str., tel: 0744 2 22 98; Tel:
- Belitsa Mayor's Office, tel: 07444 23 23
- Mayor's office, Cherna Mesta village, tel.: 0744 2 22 09
- Mayor's office, Konarsko village, tel: 0744 2 22 52
- Mayor's office, Buntsevo, tel: 0744 2 31 43
- Mayor's office, Bel Kamen, tel.: 0744 2 31 43
- Mayor's office, Smolevo, tel: 0744 2 31 41
- Mayor's office, Avramovo, tel: 0744 2 23 16
- Mayor's office, Jurukovo
- Chalet Granchar
- Mayor's office, Kraishte
- Mayor's office, Gorno Draglishte, tel: 0744 01 220
- Mayor's office, Dolno Draglishte, tel: 0744 03 331
- Mayor's office, Dobarsko, тел.: 0744 06 215

POSTER

RILA NATIONAL PARK

Yakpruda Park Section and Belitsa Park Section

2002 Billberry Collection Campaign

PARK MAP WITH THE TWO SECTIONS HIGHLIGHTED

EVERYONE WHO COLLECTS BILLBERRIES IN THE PARK SHOULD OBTAIN PERMIT COUPONS

BOTH SIDES OF THE COUPON, ACTUAL SIZE

Places for obtaining coupons after July 29, 2002:

They can be obtained at the following locations:

- Yakoruda Park Section Office
Address: № 3 Vassil Levski Str., tel: 0744 2 22 98; Tel:
- Belitsa Mayor's Office, tel: 07444 23 23
- Mayor's office, Cherna Mesta village, tel.: 0744 2 22 09
- Mayor's office, Konarsko village, tel: 0744 2 22 52
- Mayor's office, Buntsevo, tel: 0744 2 31 43
- Mayor's office, Bel Kamen, tel.: 0744 2 31 43
- Mayor's office, Smolevo, tel: 0744 2 31 41
- Mayor's office, Avramovo, tel: 0744 2 23 16
- Mayor's office, Jurukovo
- Chalet Granchar
- Mayor's office, Kraishte
- Mayor's office, Gorno Draglishte, tel: 0744 01 220
- Mayor's office, Dolno Draglishte, tel: 0744 03 331
- Mayor's office, Dobarsko, tel.: 0744 06 215

At the same places you can also obtain this poster – leaflet with more information.

Appendix 5

**Collaborative management of Non – Timber Natural Resources
National Working Meeting
4 December 2002**

Venue – Park Hotel Moskva, Sofia

Objective:

The objective of the National workshop is, based on the experiences in the country and from the pilot project to recommend policy development to the GOB on the NTNMR management.

Expected results:

Agreed recommendations and action plan for improvement of the national legislation and a strategy for its adoption.

Participants

1. MoEW
2. MAF/ National forestry Board
3. Parliamentary commission of Environment and Water
4. Ministry of Regional Development
5. Regional Environmental Inspectorates
6. National Association of herbs collectors
7. Three National parks
8. Nature parks
9. Businesses – local and national – buyers and exporters
10. Local mayors
11. Donors – USAID, UNDP, Swiss, World Bank, LGI
12. NGOs – environmental and regional development
13. BAS
14. BCEG

Schedule

| | |
|-------|---|
| 9.00 | Opening. The objectives of the workshop, introductions of participants |
| 9.45 | Statements of the two National Park Directors – NTNMR projects in their management plans – why is this important, the connection between resource assessment, monitoring and management decisions for extraction of resources Presentation of the steps of the pilot project – actions undertaken and stakeholders involved. Description of Campaign 2002 Questions and Answers |
| 11.00 | Coffee break |
| 11.30 | Presentation by representatives of the National Forestry Board – natural resources management in the forests |
| 12.00 | Presentation of the National association of herbs collectors – practices and issues |
| 12.30 | Lunch break |
| 14.00 | Presentation of the businesses – national and local |
| 14.30 | Presentations of the local mayors – the benefits of local communities and their participation in the campaign |
| 15.00 | Presentation of the Regional Environmental Inspectorates |
| 15.00 | Presentation of the ToR for the Medicinal plants management plans. Questions and Answers |

- 16.00 Coffee break
- 16.30 Conclusions of the campaign and proposed changes in the legislation –
National parks directors and NNPS Questions and answers and discussion
- 17.30 Summary of the discussion. Action plan for legal initiative and the next season
– NP and NNPS
- 18.00 Closing session

ARD - Bulgaria
Biodiversity Conservation &
Economic Growth
Project
Sponsored by
USAID and the Government of Bulgaria

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tel./fax: (+359 2) 986 7418; 986 3686; 986 3846; 980 7240

November, 2002

Dear Mr. / Mrs.,

I have the pleasure to invite you to a National Seminar dedicated to the theme of Collaborative Management of Non-Timber Natural Resources (NTNRs) within Bulgarian National Parks.

The seminar will take place on the 4.12.2002 at Park Hotel Moskow in Sofia, starting at 9:00am. It will run for the entire day.

This seminar is the result of one and a half years of practical experience managing non-timber natural resources in two pilot regions of Central Balkan and Rila National Parks. NTNR or medicinal plant management in National parks is part of each park's management plan and one of their operational responsibilities. Medicinal plants are a significant source of revenue for Bulgaria, and an essential part of many Bulgarian households. The benefits to households and the nations can be counted in the thousands and millions of BGL respectively. NTNR management within protected areas is a significant challenge, while at the same time also representing a significant opportunity for parks to work with local communities and the NTNR industry.

Since May 2001, USAID has been supporting the development of these medicinal plant management models. Collaborative and adaptive management systems have been used with positive results and many lessons have been learned.

Our goal is to use this seminar to review important NTNR experience in Bulgaria, and to respond to critical issues affecting the future of their management within protected areas. Our discussion will also focus on recommendations for changes to legislation, and the future of sustainable natural resource use.

We will share the experiences of different authorities and organizations in Bulgaria, and include a preliminary agenda for your information. Please make plans to attend this important meeting.

For additional information and questions as well as for confirming the participation, please, contact Kamelia Georgieva, who is coordinating the NTNR collaborative management program on behalf of the Project.

I am expecting that you will actively participate.

Greetings

Peter Hetz
Senior Resident Advisor and Team Leader

Participants List**1. MOEW**

Mrs. Iliaz – deputy minister of environment and waters
 Mr. Bojinov – head of NNPS, MOEW
 Mr. Michailov – chief expert NNPS, MOEW

2. MAF / NFB

Mrs. Plugchieva – deputy minister of agriculture and forests
 Mr. Ionov – director of International section, MAF
 Mr. Kanev – head of section Lateral use

3. Parliament Environment and Water committee

Mr. Chakarov - chairman

4. Ministry of Regional Development and Public Works

Mr. Djenkov
 Mrs. Chavdarova

5. RIEW

Mr. Dimitrov – RIEW - Plovdiv

6. Bulgarian herb and mushroom collectors association

Mr. Dionisiev - chairman

7. National Parks

- **Central Balkan**

Mrs. Rachevits - director
 Mr. Kostov – section head - Klissura

- **Rila**

Mr. Petrov - director
 Mrs. Ivanova – expert Forests
 Mr. Zaikov – section head - Yakoruda
 Mr. Kolchagov

- **Pirin**

Mr. Grancharov - director
 Mr. Klecherov

8. Nature parks

Strandja – Mr. Uzunov
 Vrachanski Balkan – Mr. Nenchev - director
 Vitosha – Mr. Belev - director

9. Private business

Mr. Nemski, Mrs. Sabeva – Neri & Aziago
 Mr. Atanassov - Klissura

10. Local authorities

Mr. Buntsev – mayor Cherna Mesta
 Mr. Kafelov – mayor Yakoruda municipality, Michael Stanislavski – Peace Corps
 Mr. Ilan – mayor Belitsa municipality
 Mr. Petkov – Mayor Christo Danovo
 Mr. Domuschiev – mayor Karlovo municipality

11. Donors

USAID – Mr. Lee, environmental specialist
 UNDP – Mrs. Glavosanova, Mr. Germer
 BSBCP – Mrs. Dimitrova
 Wet zones Project – Mrs. Gaidarova

12. NGO

Municipalities in Bulgaria Association – Mrs. Andreeva
 Green Balkans – Mr. Nickolov
 BSPB – Mr. Spasov
 Wilderness fund – Mr. Spiridonov

13. BAS – botanical institute

Mr. Valchev

Mrs. Genova

Mrs. Vitkova

14. BCEG Project

Mr. Hetz – team leader

Mrs. Georgieva – coordinator of the pilot projects

Mrs. Boteva – biodiversity specialist

Mr. Gussev - consultant

Appendix 6

Q&A Presentation of Situation Analysis Results to the Local Partners

COLLABORATIVE MANAGEMENT OF THE NATURAL RESOURCES
SITUATION ANALYSIS AND FUTURE PERSPECTIVES

The Central Balkan National Park is home for significant localities of medicinal plants and mushrooms – commercially important resources, as well as valuable for personal purposes. The national policy, related to the protected areas, as well as the Management Plan of the park provide continued access and sustainable collection of the non-timber natural resources, as this access is controlled. The sustainable collection, conservation and protection of these resources represents one of the greatest challenges to the management of the national parks – partially due to the “inviolable” right of the Bulgarians to collect these resources, and due to many of them are endangered and vulnerable.

Realizing its great responsibility, the Central Balkan NP Directorate, with the assistance of the BCEG Project, proposes and carries a program for collaborative management of the natural resources.

What is the collaborative management of the natural resources?

The collaborative management of the natural resources is an approach, which ensures the right and the necessity of the people around the park to use the natural resources on park's territory, as well as to participate in their sustainable management. This approach requires the identification of all interested parties and their engagement in the resource evaluation, the decision taking for the ways, the localities and the quantities used, as well as the activities related to their protection. The participants in this process receive the required knowledge and are clarified the exact responsibilities and engagements of each participant.

The first step to the implementation of the program for collaborative management is the analysis of the situation, which has been conducted in the last months. Analyzed is the contemporary legal basis, studied was the commercial chain on a national and local level, as well as the main groups of participants, defined was the economic value of the non-timber natural resources, described were the existing practices in the management and the collection of these resources and was clarified their importance for the livelihood of the population. Not at last was made an analysis of the threats and the restrictions to these resources.

The analysis was focused in a pilot area - Klissura Park Section and one particular resource – bilberry fruits, which is representative for the park and with commercial and personal purpose use importance

Situation analysis

The Medicinal Plants Law and the Protected Areas Law regulate relatively strictly and clearly the ruled for the uses of the non-timber natural resources in and outside the national parks. Relatively clearly and categorically are defined the obligations and the responsibilities of the different institutions.

The commercial chain is well developed, competitive and the profit is distributed fairly at all level

As the national commercial chain for industrial collection of wild resources, as well as the commercial chain at local level in Yakoruda pilot area are two well-developed dynamic systems and even are in a period of consolidation after the market expansion in 1993-95.

The collectors from the pilot area settlements are well grouped around the brokers and the intermediates. These have strictly defined procedures of buying with increasing the value at every step made on the National export system chain. Lots of the local brokers' intermediates are well trained in their profession and they were part of the National guild of buyers' intermediates and processors of non-timber natural resources in the past.

As a whole, the value of the most of the wild resources, collected in the country and in the pilot area, increases just a little. It includes primary processing, freezing or drying. Small quantities are used for the production of ready products, designated for consumption within the country. More than 80% of the wild natural resources, including the bilberries, leave the country in the form of raw material. The greatest pure profit, in fact is formed on the first level of the chain – at the direct collectors. Each following step is associated with greater investments and more risks.

The non-timber natural resources have a considerable role or the local economy.

For some of the settlements, the collection of non-timber natural resources is of decisive importance for the livelihood of about 80% of their inhabitants. In practice, it provides “job positions” for individuals, which are not able to “sell” their labor force almost nowhere at the present moment. For the greater number of the permanent collectors, this activity allows them to generate incomes, comparable to the average annual salary. This fact gives exclusive economical, social and political importance of the way, as in the future these resources would be managed, with regards retaining the access to the resource and the quantities for a maximal period of time. The importance of the natural resources to generate annual incomes grows, due to the increasing unemployment and the restructuring of the local economies. It is expected more and more pressure on the wild resources with economic importance.

The commercial value of the non-timber resources, collected from the national parks for commercial purposes, goes way beyond the governmental subsidy, released to the national parks from the states budget.

The analysis of the threats and the restrictions for the protraction and the sustainable use of the non-timber natural resources showed, that in the present trends and influences, many of the problems, related to the non-timber natural resources collection from the national parks, can be solved through the improvement of the regulatory base and the management procedures, related to the resources, as well as information and public awareness programs.

At present, the government strategy to use the national parks as an effective instrument for preservation and resources management, has its return under the form of additional incomes for the households, which surpasses greatly the government investment in the parks.

In the country and the park region there is well-developed production capacity, which capacities are just partially enhanced. It is not appropriate the artificial establishment of small processing enterprises.

The bilberries represent sustainable natural resource with a long collection history. The results from the conducted analysis show the absence of heavy metals in the samples, collected from the pilot area. The Bulgarian bilberries are valued on the international markets and enjoy a well-developed external market. In the same time, this well developed industry leaves little or none opportunities for generation of added value to the price of the wild bilberries, on a small community's level. The local initiatives for addition of value would suffer a strong pressure in competing with the regional and national private processors of agricultural products and the external markets and would hardly achieve success. At present, the establishment of small and medium enterprises does not represent a viable economic growth opportunity for the local communities.

In the national system for issue of permits for the collection of medicinal plants has its imperfections as well as the lack of coordination between the responsible for their issues entities.

It means, that the management and the control over the collection of many natural resources are not performed effectively enough. It is not a serious threat for sustainable natural resources, as the bilberries. But this will constitute a serious problem in the management of natural resources with conservation importance or such, which under the market's demands are subject to campaign collection or for market testing.

The Resource Evaluation and the outcomes

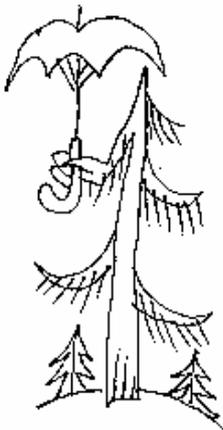
The formed partnerships with the local communities gave the Directorate the opportunity with the support of the BCEG Project to realize the following element of the collaborative management program – the resource assessment (usage opportunities) with the participation of Park Directorate specialists, scientists and local collectors.

The resource assessment is necessary for the definition of the exact amounts and regions for which permits are going to be issued. The information from the assessment serves as ground for carrying out long-term monitoring of the populations and the condition of the ecosystems that include significant non-timber natural resources. The collaborative work of the park employees and the collectors makes the assessment methodology easier for understanding by the local community as well as the results received easier for acceptance and at the same time increases the opportunity for successful acceptance and implementation of the proposed measures for conservation and use.

For the purposes of the pilot project was carried a resource evaluation of two types of blue berry – bilberry (*Vaccinium myrtillus* L.) and cowberry (*Vaccinium vitis-idae* L.).

In the period 03 - 09.08.2001 and 15 - 20.07.2002 scientists, park rangers and collectors from the local settlements united their efforts for a resource evaluation of the bilberry and cowberry. Implemented is a methodology for evaluation of the reserves, successfully implemented in similar research tasks and projects for the needs of the Ministry of Environment and Water.

Defined are the location of the commercially important localities, the exploitation stocks, and the condition of the both species' populations in the pilot area. Identified were the existing threats and anthropogenic influence. Provided is an information about the blueberries as a nutrition basis for the wild animals.



The results of the evaluation show, that for the reproduction and the dissemination of the examined species at present, the strongest influence have the specific ecological and meteorological conditions. The status of the populations of bilberry and cowberry in the pilot area is stable and are not observed serious violation of their spatial structure. Based on the received results are outlined particular recommendations for the sustainable use of the bilberry resources, as for personal as well as for commercial use.

The input of the local partners

The execution of the first successful steps for the implementation of the program for collaborative management was impossible without the trust and the partnership with the local people

In the process of information collection, began the building of the partnership between the National parks and the adjacent municipalities. At each level of this process, local collectors, herb processors, the local authorities and the park staff were engaged in a dialog, discussing the values and the opportunities, which the collaborative management of the natural resources in the national parks provides. This exchange of information is of a vital importance for the identification of problems and the confirmation of assumptions, related to the collection of the non-timber natural resources. All this brought to a successful situation analysis with a valuable deductions and conclusions

In the process of the resource evaluation, the dialog between the partners brought to the definition of the territories with a greater abundance of resource, as well as the development of trust between the managing organs and the users of this resource.

Expected is the collaborative management approach to achieve stable results in long-term aspect, in its implementation endorses in the time.

In this context, the first test before the partners is the experimental development of a new permitting system model, developed by the Park Directorate and the BCEG Project. The better management of the activities, related to the resource collection, requires improved system for the issue of permits. On one side, the improvements shall retain the access of the local population to the economic activities in the park, but from the other, to provide minimal impact on the “ecological health” of the populations and the ecosystems in the Park.



What is the new permitting system model, which is implemented?

This model is experimented in the season 2002 as example was used the bilberry.

- The first condition is the model to be implemented, providing unified starting date for the collection campaign for the entire park territory. The beginning of the collection campaign is declared by the Directorate through:
 - Notification letter to the interested parties;
 - Announcement on a public spots and in the local newspapers, dissemination of leaflets, radio and television announcements, local electronic media;
 - Meetings with collectors' representatives in the settlements.

- The characteristic features of the proposed model are consisting of: The permits, issued in the last years remain to be issued also this year. For these one shall pay the respective fees. In addition, to these are introduced COUPONS, which are needed, as for commercial purposes, doubling the above permits, but as well as for personal purpose collection. These coupons are free of charge.

- The result form this system implementation is expected to be exact registration of all uses. Everyone who collects shall have a coupon.

The main objectives of the new model are the performance of real and effective control over the uses and its accompanying activities on the populations, the species the habitats and the ecosystems, and implementation of a unified system for the recording of all uses. This is the main condition to ensure the utilization of the resources and their sustainable use.

- The basic procedures, required for the implementation of the new model are as follows:

- The Park Directorate, along with its partners from the settlements, around the park conducts annual resource evaluation based on populations' monitoring as well as based on field evaluation of the exploitation reserves of fruits.
- Based on the resource evaluation is prepared a Usage Plan, in which are defined the acceptable limits of quantities for collection, number and types of coupons, which are issued for the respective territorial management units (park and guarding sections).
- The permits for commercial purposes use which were issued up to now by the Park Directorate, remain also for this year, but accompanied by COUPONS.
- The coupons for each permit are distributed after a group instruction to the collectors

forms the herb processor.

- The coupons for personal collection purposes are distributed by the park rangers after instruction carried. The acquisition of coupons of this type can be on the following locations: Park Directorate; PS offices; town halls (in partnership with the mayors); tourist chalets (in partnership with chalet keepers); tourism facilities in the settlements (in partnership with the entrepreneurs).

No applications are needed for the coupon acquisition.

In the coupons are listed the way of collection, as well as main rules about the behavior in the park. The coupons have a control slip, part which is retrieved during National Park employees check on the field.

For more information:

Clissura Park section- tel.03137 / 20 52

Illustrations: Boris Dimovski



COLLABORATIVE MANAGEMENT OF THE NATURAL RESOURCES SITUATION ANALYSIS AND FUTURE PERSPECTIVES

Rila National Park is home for significant localities of medicinal plants and mushrooms – commercially important resources, as well as valuable for personal purposes. The national policy, related to the protected areas, as well as the Management Plan of the park provide continued access and sustainable collection of the non-timber natural resources, as this access is controlled. The sustainable collection, conservation and protection of these resources represents one of the greatest challenges to the management of the national parks – partially due to the “inviolable” right of the Bulgarians to collect these resources, and due to many of them are endangered and vulnerable.

Realizing its great responsibility, the Rila NP Directorate, with the assistance of the BCEG Project, proposes and carries a program for collaborative management of the natural resources.



What is the collaborative management of the natural resources?

The collaborative management of the natural resources is an approach, which ensures the right and the necessity of the people around the park to use the natural resources on park's territory, as well as to participate in their sustainable management. This approach requires the identification of all interested parties and their engagement in the resource evaluation, the decision taking for the ways, the localities and the quantities used, as well as the activities related to their protection.

The participants in this process receive the required knowledge and are clarified the exact responsibilities and engagements of each participant. The first step to the implementation of the program for collaborative management is the analysis of the situation, which has been conducted in the last months. Analyzed is the contemporary legal basis, studied was the commercial chain on a national and local level, as well as the main groups of participants, defined was the economic value of the non-timber natural resources, described were the existing practices in the management and the collection of these resources and was clarified their importance for the livelihood of the population. Not at last was made an analysis of the threats and the restrictions to these resources.

The analysis was focused in a pilot area - Belitsa and Yakoruda Park Sections and one particular resource – bilberry fruits, which is representative for the park and with commercial and personal purpose use importance.

Situation analysis

The Medicinal Plants Law and the Protected Areas Law regulate relatively strictly and clearly the ruled for the uses of the non-timber natural resources in and outside the national parks. Relatively clearly and categorically are defined the obligations and the responsibilities of the different institutions.

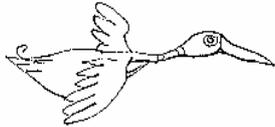
The commercial chain is well developed, competitive and the profit is distributed fairly at all level

As the national commercial chain for industrial collection of wild resources, as well as the commercial chain at local level in Yakoruda pilot area are two well developed dynamic systems and even are in a period of consolidation after the market expansion in 1993-95.

The collectors from the pilot area settlements are well grouped around the brokers and the intermediates. These have strictly defined procedures of buying with increasing the value at every step made on the National export system chain. Lots of the local brokers' intermediates are well trained in their profession and they were part of the National guild of buyers' intermediates and processors of non-timber natural resources in the past.

In general, the value of the most of the wild resources, collected in the country and from the pilot area, is just slightly increased. That includes primary processing, freezing or drying. Small quantities are used for

the collection of ready products, destined for consumption within the country. More than 80% of the wild natural resources, including the bilberries leave the country in the form of raw material. The greater pure profit in fact is formed on the first step on the chain – at the direct collectors. Each following step is related to a greater investment and more risks.



The non-timber natural resources have significant importance for the local economy.

For some settlements of the pilot area, the collection of non-timber natural resources is of decisive importance for the livelihood of more than 80% of their population. In practice it provides “job positions” for people, which are not able to “sell” their labor almost nowhere at the present moment. For greater part of the permanent collectors, this activity allows them to generate incomes, comparable to the average salary for the country. This fact gives a significant economic, social and political importance of the way in future these resources will be managed with regards the provision of continued access to the resource for a maximal period of time. The importance of the natural resources in terms gaining annual incomes increases, due to the growing unemployment and the restructuring of the economic branches. It is expected more and more pressure to be put on the commercially important for the market wild resources.

The commercial value of the non-timber resources, collected from the national parks for commercial purposes, goes way beyond the governmental subsidy, released to the national parks from the states budget.

The analysis of the threats and the restrictions for the protraction and the sustainable use of the non-timber natural resources showed, that in the present trends and influences, many of the problems, related to the non-timber natural resources collection from the national parks, can be solved through the improvement of the regulatory base and the management procedures, related to the resources, as well as information and public awareness programs.

At present, the government strategy to use the national parks as an effective instrument for preservation and resources management, has its return under the form of additional incomes in the households, which surpasses greatly the government investment in the parks.

In the country and the park region there is well developed production capacity, which capacities are just partially enhanced. It is not appropriate the artificial establishment of small processing enterprises.

The bilberries represent sustainable natural resource with a long collection history. The results from the conducted analysis show the absence of heavy metals in the samples, collected from the pilot area. The Bulgarian bilberries are valued on the international markets and enjoy a well-developed external market. In the same time, this well developed industry leaves little or none opportunities for generation of added value to the price of the wild bilberries, on a small community’s level. The local initiatives for addition of value would suffer a strong pressure in competing with the regional and national private processors of agricultural products and the external markets and would hardly achieve success. At present, the establishment of small and medium enterprises does not represent a viable economic growth opportunity for the local communities.

In the national system for issue of permits for the collection of medicinal plants has its imperfections as well as the lack of coordination between the responsible for their issues entities.

It means, that the management and the control over the collection of many natural resources are not performed effectively enough. It is not a serious threat for sustainable natural resources, as the bilberries. But this will constitute a serious problem in the management of natural resources with conservation importance or such, which under the market’s demands are subject to campaign collection or for market testing.

Resource evaluation and the outcomes

The formed partnerships with the local communities gave the Directorate the opportunity with the support of the BCEG Project to realize the following element of the collaborative management program – the resource assessment (use opportunities) with the participation of Park Directorate specialists, scientists and local collectors. The resource assessment is necessary for the definition of the exact amounts and regions for which permits are going to be issued. The information from the assessment serves as ground for carrying out long-term monitoring of the populations and the

condition of the ecosystems that include significant non-timber natural resources. The collaborative work of the park employees and the collectors makes the assessment methodology easier for understanding by the local community as well as the results received easier for acceptance and at the same time increases the opportunity for successful acceptance and implementation of the proposed measures for conservation and use.

For the goals of the pilot project a resource assessment was carried out of the resources of two species of blueberry – black (*Vaccinium myrtillus* L.) and red (*Vaccinium vitis-idae* L.). In the 09 - 15.08.2001 and 22-26.07.2002 period scientist, park rangers and collectors from the local villages gathered their efforts for the resource assessment of the bilberries and the cowberries. The methodology used for the resource assessment, which have been successfully used before for similar research tasks and projects for the needs of the Ministry of Environment and Waters. The location of the significant for the market habitats, exploitation reserves and the condition of the populations of the both species in the pilot region are defined. The existing threats and the anthropogenic impact have been identified. Provided is an information about the bilberries as nutrition base of the wild animals. The results of the evaluation show, that for the reproduction and the dissemination of the examined species at present, the strongest influence have the specific ecological and meteorological conditions. The status of the populations of bilberry and cowberry in the pilot area is stable and are not observed serious violation of their spatial structure. Based on the received results are outlined particular recommendations for the sustainable use of the bilberry resources, as for personal as well as for commercial use.



The contribution of the local partners

The execution of the first successful steps for the implementation of the program for collaborative management was impossible without the trust and the partnership with the local people.

In the process of information collection, began the building of the partnership between the National parks and the adjacent municipalities.

At each level of this process, local collectors, herb processors, the local authorities and the park staff were engaged in a dialog, discussing the values and the opportunities, which the collaborative management of the natural resources in the national parks provides. This exchange of information is of a vital importance for the identification of problems and the confirmation of assumptions, related to the collection of the non-timber natural resources. All this brought to a successful situation analysis with a valuable deductions and conclusions. In the process of the resource evaluation, the dialog between the partners brought to the definition of the territories with a greater abundance of resource, as well as the development of trust between the managing organs and the users of this resource. Expected is the collaborative management approach to achieve stable results in long-term aspect, in its implementation endorses in the time.

In this context, the first test before the partners is the experimental development of a new permitting system model, developed by the Park Directorate and the BCEG Project. The better management of the activities, related to the resource collection, requires improved system for the issue of permits. On one side, the improvements shall retain the access of the local population to the economic activities in the park, but from the other, to provide minimal impact on the “ecological health” of the populations and the ecosystems in the Park.

What is the new model of permitting system, which is implemented?

This model is experimental for the 2002 bilberry collection season.

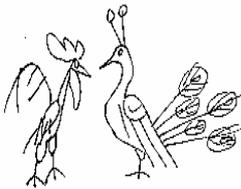
➤ The first condition for the model to be implemented is providing a unified starting date for the collection campaign for the entire park. The beginning of the collection campaign is declared by the Park Director through an:

- Notification letters to the interested parties;
- Announcements on public locations and local newspapers, dissemination of leaflets, radio and television announcements in the local electronic media;
- Meetings with collectors’ representatives in the settlements.

➤ The characteristic features of the proposed model are consisting of:
The permits, issued in the last years for commercial purposes will be issued also during this season. For these you shall pay the respective fees. In addition to these, are introduced COUPONS, which are needed as for commercial purposes collection permits, doubling the above mentioned permits, but as well as for personal collection purposes. These coupons are free of charge.

➤ The result of this system is expected to be exact registration of all uses. Everyone ho collects, shall have a coupon.

The main goals of the new model are carrying of a real and effective control over the use and its accompanying impacts over the populations, the species, the habitats and the ecosystems, as well as the introduction of a unified system for the recording of all the uses. This is the main condition for the ensuring the protection of the resources and their sustainable use.



➤ The Basic procedures, which requires the implementation of the new model are the following:

- The Park Directorate, along with its partners form the settlements, around the park conducts annual resource evaluation based on populations' monitoring as well as based on field evaluation of the available stocks of fruits.
 - Based on the resource evaluation is prepared a Usage Plan, in which are defined the acceptable limits of quantities for collection, number and types of coupons, which are issued for the respective territorial management units (park and guarding sections).
 - The permits for commercial purposes use which were issued up to now by he Park Directorate, remain also for this year, but accompanied by COUPONS.
 - The coupons for each permit are distributed after a group instruction to the collectors from the herb processor.
 - The coupons for personal collection purposes are distributed by the park rangers after instruction carried. The acquisition of coupons of this type can be on the following locations: Park Directorate; PS offices; town halls (in partnership with the mayors); tourist chalets (in partnership with chalet keepers); tourism facilities in the settlements (in partnership with the entrepreneurs).
- No appications are needed for the coupon acquisition.

In the coupons are listed the way of collection, as well as main rules for behavior in the park.

The coupons have a control slip, part which is retrieved during National Park employees check on the field.

For more information:

Yakoruda Park Section - tel .07442 / 22 98

Illustrations: Boris Dimovski

Appendix 7**Central Media Coverage Report
For the Bilberries Collection Season 2002**

*The Media Report is produced by Svetlana Aladjem,
Environmental Education and Communication Specialist, BCEG Project*

The Central Media Campaign includes the following steps and activities:

1. Dissemination of a Press Release to all central media through MOEW channels on July 9th;
2. Handing out the campaign materials to the “Green” Journalists during a regular meeting organized in cooperation with the MOEW Press Office on July 15th;
3. Organizing a provoked article in Zemina Central Daily on July 26th;
4. Organizing Journalist Tour to one of the NTNR Collaborative Management Program Pilot sites – Klissura Park Section of the Central Balkan National Park on August 2nd;

A brief description of the activity, list of journalists who participated, list of TV/Radio broadcasts and articles are given below.

1. A Press Release

Presenting the NTNR co-management program messages, the information campaign launching, the experimental coupon system and announcing the starting dates for the collection campaign in the two parks was produced by BCEG PMU and disseminated through MOEW channels to 50 central media on the 9th of July. It provoked eleven radio and TV broadcasts and three newspaper articles.

The text of the Press Release was posted on the web sites of MOEW and the Government, which are visited by hundreds of users every day.

National Parks and Local People Apply a Billberries Co-Management Program

Press Release

July 9, 2002

The information campaign that precedes the billberry collection within the Central Balkan National Park starts on July 9, 2002. In Rila National Park the work on informing the local public starts on July 16. The campaigns are carried out by the National Park Directorates with the participation of the local communities – mayors, collectors, purchasing stations, schools, kindergartens, and with the support of the United States Agency for International Development. They comprise meetings with the local authorities, collectors and journalists, handing out information and education materials to each household in the region, placing posters in the settlements. The goal is to train the collectors in the collection rules, so that they can

use the wild fruits without doing any harm to nature and to obtain a better price for them.

This year, an experimental system was introduced for registering the collected quantities through coupons. The coupons supplement the permits required by the Medicinal Plants Act for the collection of herbs, mushrooms, and wild fruits. The coupons will be tested this year for the bilberries in selected regions within the two National Parks – Central Balkan and Rila – and they are applicable as a sustainable management tool for all natural resources in the National Parks. The collection of bilberries in Central Balkan National Park will start on July 27, 2002. Everyone, who wishes to collect fruits for personal or commercial needs at the territory of Klisura Park Section, on the lands of Klisura and the villages of Anton, Rozino, Hristo Danovo, Karnare, Iganovo, has to obtain coupons. They will be handed out free of charge and without limits on the number, starting from July 24, at the Park Section offices, mayor's offices and the registered purchasing stations. The goal is to identify, on the basis of the information gathered and the data from the field resource assessment, the locations and quantities of fruits that can be collected without threatening the resource. Several years ago there was an example for such a bad practice with the St. John's wort, which was improperly collected in large quantities, and that led to the destruction of its localities.

The collection of bilberries in Rila National Park will start on August 3, 2002, and the coupons will be used in Belitsa and Yakoruda Park Sections, on the lands of Belitsa, Yakoruda, Gorno Draglishte, Dolno Draglishte, Dobarsko, Cherna Mesta, Konarsko, Buntsevo, Bel Kamen, Smolevo, Avramovo, Yurukovo, Kraishte, where they will be handed out from July 30.

The National Parks preserve the enormous richness of more than 160 medicinal plants. The bilberry is of a special value, since large quantities of this plant, which are of important economic significance for the regions and for the country, are preserved in the Parks. More than 25 bird species, and some mammals, like bear, fox, beech marten, chamois, etc., feed on bilberries. The bilberry fruits have excellent nutritive and medicinal value for the humans. For decades they have been used for the preparation of healthy and nutritional foods and beverages, and for prophylactic drugs and remedies. Thousands of families in the villages around the Rila and Central Balkan National Parks rely on the collection of wild natural products to supplement their household budgets.

Bulgarian bilberries are valuable for the international market mainly because of their excellent taste, sweetness and unique combination of vitamins and other remedial substances. However, all those features can be found in their maximum amounts in the ripe fruits. Only then will their value receive a higher evaluation and in the following years higher purchasing prices and better market positions can be relied upon. That is why the collectors have to observe the dates, announced by the National Park Directorates as start dates for bilberry collection. The Directorates determine the bilberry collection period on the basis of resource monitoring and assessment, carried out together with the local collectors. Any collection prior to these dates will be sanctioned.

The bilberry collection campaign will be announced through special orders by the Park Directors, which will be published through the local newspapers and cable TV stations; they will be distributed among the municipalities, purchasers, purchase stations, and will be posted at the most visited places in the settlements. The

cooperation of the journalists and media in the promotion of modern approaches for sustainable co-management of natural resources is extremely important for our country.

The bilberry co-management program is part of the implementation of the ten-year management plans for the National Parks and is carried out under the Protected Areas Act. The National Parks are responsible for the preservation of natural resources and they have to manage these resources so that they can be used by many generations and that the nature remains preserved. The bilberry yields are prognosticated and the Park Directorates decide where and how much fruit can be collected, and the local entrepreneurs are able to better plan their business. During the 2002 collection season, the two National Park Directorates expect that the local people will adopt the new reporting methods for the bilberries collected, and they hope to preserve the park resources through the cooperation with the local communities.

List of TV/Radio broadcasts and newspaper articles, which appear as a result of the Press Release dissemination:

| Time and Date | Radio Broadcast/Article | Duration/Size | Circulation / Audience |
|---------------------|-------------------------|---------------|----------------------------|
| 10 July - 3:15 p.m. | Horizon Program, BNR | 3 min | The largest in the country |
| 10 July - 6:20 p.m. | Darik Radio | 4:20 min | 3.3% |
| 10 July - 5:45 p.m. | Express Radio | 2:30 min | 0.8% |
| 11 July | 24 hours Daily | 20 lines | 200 000 |
| 12 July | Kesh Weekly | 10 lines | 12 000 |
| 12 July | Duma Daily | 15 lines | 9 000 |

2. Handing out the campaign materials to the “Green” Journalists

The leaflets and the press release of the collection campaign were handed out to 18 journalists from central media, working in the field of environment protection, at a regular meeting organized by the BCEG Project PA specialist in cooperation with the MOEW Press Office on 15 July.

The journalists were offered support in the organization of broadcasts and articles and invited to take part in a tour to the pilot areas.

The List of journalists, who participated in the meeting, List of TV/Radio broadcasts and newspaper articles, which appear as a result of the meeting, follow.

**List of the media representatives who participated in the meeting organized by
BCEG Project on the 15th of July 2002**

| N | Name | Media |
|-----|---------------------|--------------------------------------|
| 1. | Maria Dimitrova | Radio Bulgaria |
| 2. | Ivaila Tsikalova | Radio Bulgaria |
| 3. | Tania Kirkova | Newsman newspaper |
| 4. | Vania Bojilova | BTA |
| 5. | Maria Koleva | Info Radio |
| 6. | Velin Iavorski | Bulgarian army newspaper |
| 7. | Dobrinka Ivanova | Day TV |
| 8. | Mariana Dimitrova | BN TV |
| 9. | Margarita Dimitrova | Earth newspaper |
| 10. | Irina Anastasova | Earth newspaper |
| 11. | Viktor Ivanov | 24 hours newspaper |
| 12. | Lev Kokushkin | Money plus newspaper |
| 13. | Milena Ilieva | Europe TV |
| 14. | Juliana Dimitrova | Cash newspaper |
| 15. | Marina Evgenieva | Darik Radio |
| 16. | Natalia Georgieva | Eurocom TV |
| 17. | Rumiana Panaiotova | BNR Christo Botev Program |
| 18. | Antoaneta Nenkova | Deutsche Welle German National Radio |

**List of TV/Radio broadcasts and newspaper articles that appear as a result of
the meeting**

| Time and Date | Radio Broadcast/Article | Duration/Size | Circulation / Audience |
|---------------|-------------------------|-------------------|--------------------------|
| 15 July | Darik Radio | 2:30 min | 3.3% |
| 15 July | BTA Buletin | 50 lines | 200 media are subscribed |
| 15 July | Info Radio | 5:30 min | 0.4% |
| 15 July | Day TV | 1:30 min | 0.5% |
| 15 July | Europa TV | 1:10 min | 0.7% |
| 15 July | Evrocom TV | 1:50 min. | 0.5% |
| 16 July | Zemia Daily | 75 lines | 18 000 |
| 16 July | Morning Program, BNTV | 50 sec | 43.6% |
| 16 July | Novinar Daily | 10 lines | 20 000 |
| 17 July | Monitor | 25 lines, 1 photo | 17 000 |
| 18 July | Hristo Botev, BNR | 4:20 min | 1.8% |
| 22 July | Pari Daily | 45 lines | 6 000 |
| 22 July | Pari + Weekly | 50 lines | 6 000 |
| 25 July | Weekly Trud | 45 lines | 350 000 |
| 27 July | Radio Bulgaria | 3:20 min | international |

3. Journalist Tour to Klissura Park Section, CB National Park – 2nd of August

The BCEG PMU organized a one-day tour for journalists from the Central Media. The focus of the tour was the bilberry collection campaign and the coupon system experimented this year. The opportunity was offered on 15 July at the regular meeting with the “Green Media Machine”.

All journalists who cover the environment issues in the central media were invited. Geven below is the list of those who took part in the tour:

| N | Name | Publication/Radio |
|-----|---------------------|--------------------------------------|
| 1. | Antoaneta Nenkova | Deutsche Welle German National Radio |
| 2. | Radi Biliarska | Horizon Program of the BNR |
| 3. | Tania Kirkova | Novinar Daily |
| 4. | Liulin Stamenov | Photographer for Novinar Daily |
| 5. | Margarita Dimitrova | Zemia Daily |
| 6. | Petar Krastev | Photographer for Zemia Daily |
| 7. | Velin Javorski | Bulgarian Army Daily |
| 8. | Mara Georgieva | Capital Weekly |
| 9. | Juliana Dimitrova | Kesh Weekly |
| 10. | Vera Dacheva | Newspaper for the woman Weekly |

Participants from the BCEG Project:

Svetlana Aladjem, Environmental Education and Communication Specialist
Chavdar Gussev, short-term Consultant

Participants from the Central Balkan National Park Directorate:

Nela Rachevitz, Director
Marin Kostov, Klissura Park Section Head

The tour provoked a series of radio broadcasts and newspaper articles. A list of them follows, indicating the newspaper circulation and the Radio Station audience.

| Time and Date | Radio Broadcast/Article | Duration/ Size | Circulation/ Audience |
|---------------------|--|--------------------|------------------------------------|
| 26 July | Woman's World | 30 lines | 4 000 |
| 2 August 5:46 p.m. | Report in the evening political magazine show of Horizon program of the BNR | 3 min. | The country's largest |
| 6 August | Novinar Daily | 45 lines, 2 photos | 20 000 |
| 6 August | Zemia Daily | Page, 3 photos | 18 000 |
| 9 August | Kesh Weekly | Page, 2 photos | 12 000 |
| 13 August 4:00 p.m. | Report + interview of Nela Rachevitz in the afternoons program for Bulgarian listeners of Deutsche Welle German National Radio | 6 min. | International |
| 15 August | "Bulgarian Army" newspaper | Page, 3 photos | 11 000 |
| 15-21 August | Newspaper for the Woman Weekly | Page, 5 photos | 80 000 (the second largest weekly) |
| 16 August | Woman's World | 75 lines, 1 photo | 4 000 |
| 23 August | Capital Weekly | Page, 2 photos | 25 000 |

Note: As a result of the same campaign, a 1:30 min. report was broadcast by bTV at 10 p.m. on 12 August. It covered the bilberry collection campaign in Yakoruda Park Section of Rila National Park. bTV is the TV with the largest audience in our country.

Newspaper ZEMYA (LAND), 26 of July 2002**Bilberries – A Resource to be kept for Our Children**

Tomorrow is the start-up of picking campaign 2002 in the National park “Central Balkan”, and on the 3rd of August, in the National park “Rila”. For the first time in these protected areas there will be a fixed date for the start-up of the campaign and registration coupons/cards are to be introduced.

Bulgarian bilberries have very high reputation in Europe among wild forest fruits. Their unique taste, aroma, nutrition and medical characteristics make them wild fruits of great value at Italian and German markets. Spanish and Dutch fruit dealers are interested, too and blueberry jam of Bulgarian origin is sold in the United States. So far, there has not been reliable information on quantities picked within one season. What is known is that, for example, last year 150 tons were exported. About 70% of the natural fields are located in the National parks Central Balkan and Rila, and the rest are in the mountains Pirin, the Rhodopes, Sredna gora and Vitosha.

A new system is being piloted this year. In addition to the picking license as per the Medical Plants Act, each picker in the pilot areas of the two parks should get a registration coupon. Also this year for the first time a start-up date for the picking campaign has been fixed, i.e. 27 July in Central Balkan areas and 3 of August in Rila areas. This is the first attempt for joint management of natural resources. This joint management program is being implemented by the National Parks Departments, local communities, with the support of Biodiversity Conservation and Economic Growth Project of the American Agency for International Development. This program includes evaluation of blueberry resources and fields, organization of blueberry campaign and care of the park. Park departments, blueberry pickers, purchasers, local municipalities, NGO-s, schools, Children Clubs and local journalists are involved in the program.

The registration cards are free of charge but essential for every blueberry picker.

Tomorrow, 27th of July, all pickers at Park Section Klisura in Central Balkan, will have to be “equipped” with their individual registration coupons. For the last few days these coupons are being offered for free at the purchase stations, at the municipalities and day centers in the villages of Rozino, Hristo Danovo, and Carnare. In the Park Sections Belitza and Yakoruda of Rila National Park, registration coupons will be a must. These coupons will be offered from 29 June onwards in the municipalities of Yakoruda, Belitza, Cherna Mesta, Konarsko, Buntzevo, Bel Kamen, Smolevo, Avramovo, Yurukovo, Kraishte, Gorno Draglishte, Dolno Draglishte, Dobersko. In the National Park “Rila” the blueberry picking campaign starts on the 3rd of August. These coupons are one-day - the pickers get them in the morning and show them to be duly checked in the evenings. The coupons have to be with the pickers during the day because the park security guards will be in charge of crosschecking the process. “Each picker will have to treat friendly the blueberry fields and cause no pollution in the area. And most importantly, pickers have to safeguard the forests from fires which are most common in summer”, Kamelia Georgieva says, Project Consultant. She ensures us that the management plans in both of the two parks aim at both preservation of natural resources, and support local communities to earn some seasonal income. These registration coupons will allow for identification of the picking areas as well as quantities picked and exported.

The pick hour of the campaign will be throughout August. For areas above 1800 m, the season will be in September. Blueberry dealers are very keen on the ripeness of the fruits. Sometimes a few unripe bilberries may ruin the whole lot.

The registration coupons look like this:

| | |
|---|--|
| National Park Central Balkan Park Section Klisura Natural Resource: Bilberries Start-up of the picking campaign 27 July 2002 For Personal Use 10 kg For Sale 10 kg. | Control Check |
| Name of blueberry field: Anton Vartopa | (sign) Blueberry picking by manual rakes (sign) Braking, cutting and pulling out blueberry branches and stems is forbidden |

| | |
|---|---|
| Ravna Beklemeto Some other Park Section Purchase Station | (sign) Camping only at the designated places (sign) Fire places are allowed only at the designated places (sign) – Wood cutting is forbidden (sign) Hunting and disturbance of wild animals is forbidden (sign) Don't pollute waters and areas with garbage |
|---|---|

Last year the purchase price of bilberries was between 1.80 and 2 BG levs and exported at 3.50 BG levs. The price increase along the commercial chain is reported to be quite reasonable, project team analyses claim. Locally speaking, the largest share remains with the pickers themselves since their production expenses are near to null in terms of financial means, as they employ just physical labor. Approximately 800 pickers were reported in Central Balkan National Park, and 1000 – 1200 in Rila National Park. The daily average quantity picked by one adult person is about 10 kg. One family is able to earn 2500-3000 BG levs out of medical plants and forest fruits gathering within a season.

(picture) *Last year in the village of Hristo Danovo there were everyday activities in front of the purchase station till the end of the blueberry season.*

The bilberries are a low bush that grows in coniferous forests and bushy areas, rocky meadows, peateries and high mountain pastures, between 1200 and 2900 m height above sea level. The blueberry fields make a full blanket over the soil surface. That is why they are essential for maintaining soil quality and regulation of water drainage. Bilberries in Bulgaria blossom in May and June and give ripe fruits in July – September. Wild bees are in charge of the pollination process. Bilberries spread through their root offspring system. Bears, foxes and wild goats, too carry around some of the blueberry seeds. That is why every year scientists work out analysis of the state of this valuable natural resource and the picking licenses refer to 90% of the fruits and the rest is left for birds and existing mammals.

The picking itself is done by manual rakes. The blueberry bushes have to be safeguarded from breaking, cutting or pulling out. They must remain intact, as if no human intervention has ever occurred. Only thus the bushes will give fruits again. This plant gives fruits on the fifth year after germination. The branches and the stems grow by one sm. per year.

Authors: Irina Atanossova, Margarita Dimitrova
(picture) Girls blueberry pickers from Rila region

Capital Weekly
24-30 August 2002A US-SPONSORED PROJECT TEACHES PEOPLE HOW TO
MAKE MORE MONEY OUT OF BLUEBERRIES**An Experimental System Sets the Rules in Picking Forest Fruits**

by Mara GEORGIEVA

A village green, the pungent smell of *kebabcheta* drifting in the air. Swarthy kids scurry past stalls festooned with trinkets tinkering in the breeze. Grinning gypsies jump off truck beds and pad towards the buy-up station dragging sacks of blueberries with them. They dump their daily pickings into plastic crates and pour water over them to separate the green berries, leaves, stray sticks and other debris from the good, ripe fruit. The primary cleaning of the harvest is completed and the pickers, still grinning from ear to ear, line up at the scales, then pocket their earnings and head straight for the *kebabcheta* stalls.

For some time this whole ritual has been a recurring sight outside the village of Hristo Danovo, near Karlovo. The buy-up station is owned by Stoicho Atanassov. About fifteen hundred people from the village and nearby communities are taken every day on truck beds to different localities in the Balkan Mountain. The harvest is good this summer and Atanassov buys up 5 to 6 metric tons of the black fruit every day, as compared with 200 to 300 kilos for last year.

Working at maximum capacity, a blueberry picker can turn up at the station with a load of 25 to 30 kilograms of blueberries picked in a single day. Last year, some pickers made a cool 1,000 to 1,500 leva for the season at buy-up prices of 1.90 leva a kilo. This season the price is 1.30 leva. Stoicho Atanassov then sells the blueberries on to a canning factory but wouldn't disclose his selling price. All he says is he's working on commission – more berries, more cash. Overseas blueberries sell at 2 to 2.50 leva a kilo, we learned from the sectoral association of mushroom and herb pickers.

Herbs and forest fruits provide thousands of people with their daily bread, all year round. Hundreds of families make a living picking, gathering, buying up, processing and trading in medicinal plants. Every summer government bureaucrats and environmentalists would cry out that somewhere someone has milked another picking area dry. The oft-cited example of the devastated fields of St. John's wort is a case in point. This year, a new system of forest fruit picking was introduced in its experimental phase in an attempt to stave off such unwanted side effects.

For the first time, the picking of blueberries in selected section of Central Balkan and Rila National parks is governed by a new set of rules. A so-called Special Program for the Joint Management of Natural Resources was launched in March of last year; it is implemented with the financial support of the US Agency for International Development, through the Biodiversity Conservation and Economic Growth Project (BCEGP).

As a first step, last summer forest fruit and herb pickers from the two pilot areas participated in making an estimate of the available resources of blueberries in them. During the winter and spring of 2002, the Directorates of both National Parks organized a workshop with local mayors, pickers, buyers, and high-school students. Thousands of sets of information leaflets were handed out; hundreds of posters put up in both areas. The aim was for blueberry pickers to learn about the proper method of collecting wild fruit without damaging nature, and the required quality standards of their picking that would earn them a better price.

For the first time this year, an official fruit-picking season was declared, with July 27th the launch date for Central Balkan, and August 3rd for Rila National Park. Prior to those dates, security in the harvest sections was beefed up

to keep off early birds

because Bulgarian blueberries may be of very high quality and a hot item on international markets, but only if they are left to completely and properly ripe. Only then do they fetch their maximum price. The launch dates and the harvesting season were planned, based upon a close monitoring of resources and a proper estimate of the existing stocks. The planning crew was made up of botany experts from the Bulgarian Academy of Sciences, experts from both Park Directorates, the heads of the respective park

sections, park rangers and local pickers. The survey was conducted as part of the Biodiversity Conservation and Economic Growth Project.

This summer blueberry pickers benefit from yet another novelty: the experimental score-keeping system introduced to help keep tabs of the quantities extracted. This is done by means of special day permits, slips of paper handed out free of charge and without restriction at park section offices, at mayors' offices and registered buy-up stations. Children also join in the initiative, distributing day slips at local eco-clubs. Every day slip entitles its bearer to a daily quota of 10 kilos of blueberries. Everyone is free to choose how many slips to pick up for the day, depending on the estimated amount of blueberries he or she is planning to pick that day. Besides, each slip is printed with a set of instructions that caution and educate at the same time. Fruits are to be picked using a special contraption: a wooden box with a handle and a comb attached to it. Plants are not to be pulled out with their roots. Stems and branches are not to be cut off. Fires are to be built at designated places only. Solid waste is not to be dumped at random, etc.

"Those day permits do not replace the actual picking licenses as required under the Medicinal Plants Mushrooms and Wild Fruits Act. They only supplement a system already in place. The day slips are handed in at the buy-up station together with the respective quantities of fruits. On the next day Park staff make sure the pickers have their new slips ready before they are allowed in," explains Eng. Marin Kostov, head of section in Central Balkan National Park.

"Many people think they have an

inalienable right to pick

herbs and forest fruits," says Chavdar Gushev, scientific consultant with the Project. "Indeed, the state grants access to the harvesting areas, but this access is strictly controlled. Anyone allowed into the Park is supposed to carry a free day slip, which enables us to keep tabs of how many people are in the area at any given time. In this way we can re-direct people from overcrowded picking areas into new ones. Because overcrowding the park entails too much noise, too many cars, pollution, campfires, tree cutting, even hunting. It is not for the park rangers to weigh up individual quantities of fruit picked. They are there to enforce the rules, that's all.

Says Eng. Nella Rachevitz, Director of Central Balkan National Park: "The idea is for Park Directorates to keep tabs of how much is picked and where, and to prognosticate the seasonal blueberry harvest. The ultimate goal is to conserve the park resources and ensure their renewability and sustainability. We wish to jointly introduce and enforce rules that would be in the best interest of everyone to keep."

The experiment is not over yet, but its benefits are already clear. Pickers gather ripe berries from abundant, viable stocks. The buyers are legitimate, collaborate in partnerships with the Park Directorates, make sure every picker has a day slip. Only quality fruit enters the market. In a longer-term perspective, all this ultimately ensures better blueberry stocks in the future. Thus, for a minimum investment of time, money and effort, entrepreneurs prolong the viability of the resources they are dealing with.

And another thing. The market price of Bulgarian blueberries would increase if they are certified as organic products. The new system that will strive to achieve that requires that several conditions are met: observance of a certain set of rules in growing and harvesting the fruits; prevention of any damage to the environment, and others. The new experimental system ensures that forest fruits are picked in an ecologically sound way: without destroying the plants, without exceeding the prescribed limit of sustainability. Besides, the day slips clearly indicate the exact location where the harvest came from.

It is to be hoped that the system will be implemented in other sections and on other forest fruits.

Box 1:

The Biodiversity Conservation and Economic Growth Project (BCEGP) was launched in May of 2000 and is to continue until March of 2001. With a budget of US\$ 2.5m, it is jointly sponsored by the US Agency for International Development and the Government of Bulgaria. Principal partner on the Bulgarian side is the Ministry of the Environment and Waters (MOEW). Principal contractor for the US side is the Burlington, Vermont-based firm Associates for Rural Development (ARD).

BCEGP is a continuation of the so-called GEF Biodiversity Conservation Project implemented between 1996-2000, similarly sponsored by USAID, as a result of which the Rila and Central Balkan National Parks were institutionalized.

Box 2:**WHERE THE EXPERIMENT IS TAKING PLACE**

In Klissura park section of Central Balkan National Park, more specifically, in the lands of the villages and townships of Anton, Klissura, Rozino, Hristo Danovo, Karnare, Iganovo.

In Belitza and Yakoruda park sections of Rila National Park, more specifically, in the lands of the villages and townships of Belitza, Yakoruda, Gorno Draglishte, Dolno Draglishte, Dobarsko, Cherna Mesta, Konarsko, Buntzevo, Bel Kamen, Smolevo, Avramovo, Yurukovo, Kraishte.

Box 3:**THE MAIN OBJECTIVES OF BCEGP****1. Provision of financial mechanisms for biodiversity conservation by means of:**

- improvement of the structure and policy of generating financial income;
- tourism-related services and products;
- sponsorships from businesses and private individuals as well as business partnerships;
- setting up of local trust funds and organizations.

2. Economic growth and biodiversity conservation.

Two pilot projects are being developed:

- Ecotourism partnerships with local entrepreneurs offering tourist services, and with local authorities for the purpose of developing models of environmentally sound tourism inside and outside the parks. The locations selected to implement the pilot projects for ecotourism are Samokov municipality for the area of Rila National Park, and Kalofer Municipality for Central Balkan National Park. The Project also assists the Bulgarian Government in sorting out its policy on ecotourism.

- A program for the joint management of natural resources, which includes an assessment and monitoring of natural resources and decision making on their use in conjunction with all stakeholders. The pilot areas where this program is being implemented are Belitza and Yakoruda park sections of Rila National Park, and Klissura park section of Central Balkan National Park.

3. Approval of the management plans and their implementation in Rila and central Balkan National Parks.

The first management plans for national parks in Bulgaria, developed as a product of new legislation, were approved by the Council of Ministers in early July 2001. The Project has since financed the setting up and development of tourist infrastructure (entrances, shelters, routes and trails, camp sites) and tourist information (billboards, signs and marking), and provides assistance to environmental education and eco-monitoring.

4. The Rila Monastery Nature Park management plan.

The planning effort is based upon the information already gathered about the Park territory and the adjoining areas, and is in an advanced stage of its development.

5. Publicity and public awareness

The Project provides assistance to the Directorates of Rila and Central Balkan National parks in their public relations efforts involving the local community. Jointly with the Ministry of the Environment and Waters, it carries out a national public awareness campaign geared to enlist public support for the conservation of the rich natural heritage in the National Parks. A multi-media CD-ROM on "The National Parks of Bulgaria" was released, soon to be followed by a web-page on the same subject.

Cash Newspaper, August 9, 2002

Source of Livelihood Column

**IN THE MOUNTAIN, YOU REAP FOR A MONTH,
YOU EAT FOR A YEAR**

A day permit to control the use of blackberries in Klisura area

By Juliana DIMITROVA

Mountain dwellers, it is said, are different from people down in the plains. It may well be true. In every encounter with them you notice a kind of otherness, as if they aren't regular folks like you and me. They live in the bosom of nature, and this is a relationship of mutual love and a yearning for protection, while regular folks like you and I just look at nature with awe and from a distance.

People in Klissura have no factories or plants to work in; unemployment in the area is close to a whopping 80 percent of the able-bodied population. At present, the central township of Klissura Municipality is home to some 3,000 people. After a military industrial plant was shut down in the area, former employees had a hard time adapting from their former generous salaries to unemployment handouts.

In the surrounding countryside, however, where a crisscross of roads connects the town with the surrounding villages of Hristo Danovo, Karnare, Rozino, Ignatovo and Anton, the proximity of the mountain offers the many unemployed an alternative

opportunity to rake in some extra income

at least, during the summer. Most people, indeed, take advantage of this opportunity by gathering different herbs and medicinal plants, mushrooms and forest fruits from the territory of the Balkan Mountain and the protected area of Central Balkan National Park. To make things easier for the community inhabiting the adjoining territories, the Directorate of the National Park, which has its offices in the city of Gabrovo, has introduced, as of this year, an annual harvesting season for blackberries by issuing special day permits, which allow some control of the available resources, their orderly extraction and the number of daily visits to the protected area. According to Nella Rachevitz, Park Director, the new system has so far been a success and the Park directorate will consider extending its scope over other non-timber resources throughout the Park. Most of the population of the adjoining territory are gypsies, but this fact does not stop them from having a caring, protective attitude towards the mountain as their year-round source of livelihood. Every day, before they leave for the forest,

they pick up a day permit,

a slip of paper giving them one-time access to the territory, from the buy-up point or another designated place where young volunteers issue them on the spot. The gathering of blackberries (the season for that was launched July 27th and will continue through mid-August) is not an easy way to make a living for oneself and one's family. Stoyan Shashev, who is in his sixth season of harvesting this curative plant, says that all members of his household come with him to lend a hand in the process. An organized visit to the gathering fields typically starts with the break of dawn. People meet up at designated places outside the Park perimeter and travel for about an hour in their own cars or by scheduled transportation, in order to get to the protected ridges of the mountain where picking is allowed. Initially the distance is shorter, but as time passes,

stocks run out,

unharvested blackberry fields recede further uphill, making the trip ever more strenuous and time consuming. The unpredictable time factor, in turn, makes life difficult for both the gatherers and the Park security people. Oftentimes, the gathering fields are strewn with garbage, or they would build campfires to spend the night, says Mircho Petrov, junior security expert. During blackberry season, some 1,000 people enter the Klissura park section every day, but most of the problems are created by newcomers, usually people from faraway place not familiar with the local terrain. That is why they are so careless with the mountain, experts say. Most of the population of the villages of Rozino, Hristo Danovo, Anton and Karnare spend the entire summer gathering herbs and wild fruits. They carry on picking mushrooms until the beginning of November, thus making an extra 100 leva per person per month for the rest of the year. Naturally, they have a local benefactor to give their families food or lend them money to bridge over the winter months. Says Stoicho Atanassov, a fruit buyer: "In the summer time, they pay me back the money they borrowed the previous winter by picking blackberries or mushrooms." Atanassov's whole family is involved in the buying business; on a good summer day, they can move several tons of forest fruits, for which he pays gatherers 1.30 leva per kilogram. Atanassov says he only buys up freshly picked

fruit but does not do marketing; instead, he stores the produce in his own warehouse, then sells it to wholesale companies for export. Indeed,

wild forest fruits are exported,

for which Atanassov receives a commission on the quantities supplied. His work day peaks in the afternoon, when gatherers, riding in the bed of a truck with their 2-gallon cans of wild fruits on their backs, come back from the top of the mountain. To separate the ripe fruit from the green, the daily pickings are dumped in a barrel filled with water; the green ones float on top and are scooped away. After all is weighed up and paid for, it's rest, fun and games time. Small children, their hands black with fruit juice, run around the field, pleased with their parents' earnings. Soon the day passes and the tired mountain dwellers head home thinking about tomorrow's work in the mountain, amid its problems.

(inset:)

**CENTRAL BALKAN NP
SPREADS OVER FIVE DISTRICTS**

Central Balkan National Park was declared a protected area in 1991. The goal was to protect the unique diversity of plants, animals and habitats in the Balkan Mountain. The Park covers an area of 716 sq.km. in the territories of five districts, a total of eight municipalities: Teteven, Troyan, Apriltzi, Sevlievo, Pavel Banya, Karlovo, Anton and Pirdop. It is home to more than 1,900 species of plants. Of these, 10 are endemic to Bulgaria, and another 10 species and 2 subspecies, to the respective protected park zone. This part of the Balkan Range is also inhabited by 70 percent of the invertebrate and 62 percent of the vertebrate animal species of Bulgaria. Its rich biodiversity includes 229 species of moss, 256 of mushrooms, 208 species of fresh-water algae, of which 12 are protected by law. Birds are represented by 121 species in the Park. Over 130 higher plants and vertebrate animals inhabiting the Park are listed in the Bulgarian and World Red Books.

(side column:)

10 KILOS OF BLACKBERRIES A DAY

What and how much can we pick in the forest?

| | |
|---------------------------|--------------|
| Wild fruits and mushrooms | up to 10 kg |
| Medicinal plants (whole) | up to 2 kg |
| Medicinal plants (leaves) | up to 1 kg |
| Medicinal plants (petals) | up to 0.5 kg |
| Medicinal plants (seeds) | up to 100 g |

Starting this year, the Directorate of Central Balkan National Park has allowed, on an experimental basis, the gathering of blackberries in the Klissura park section. Gatherers are issued special day permits featuring a short questionnaire about the quantities of fruit gathered and the location they are extracted from. These slips of paper are issued in the hope that they will help the Park management complete their information about the concentrations of blackberries in the Park territory, and the possibilities for their conservation. The gatherer is instructed to state on the slip the purpose of gathering the fruit – whether for private needs or commercial purposes. On a first visit gatherers are entitled, pursuant to the Medicinal Plants Act, to extract 10 kilos of fresh fruits, subject to certain conditions as stated on the slip. For commercial gatherers, a permit must be issued by the Park section director and the applicant is liable to pay, on leaving the Park, 0.15 leva per kilogram. Since the season was launched, the Klissura park section has issued 42 commercial gathering permits allowing the gathering of 500 kilograms of fruit each. The day permits also help rangers keep tabs of gatherers and the areas they visit. This reduces human impact and pollution in the Balkan Mountain.

Zemya Newspaper
August 6, 2002**Agriculture - Economy****Bilberry – the Balkan’s Gold****By Margarita Dimitrova**

It is 5 p.m. sharp. The first truck arrives at the purchase station in the village of Hristo Danovo, in minutes at least 30-40 men and women with backpacks, buckets, and bags jump out of it. These are the bilberry collectors. First, they put the bilberries in large canisters with water, so that the leaves come to the top, and then they put the fruits in trays, and dully stand in a row in front of the scales. They receive the money –1.30 leva per kilogram – at once. Everything happens quickly, in less than one hour. Then the other trucks come, and the last are the wealthier collectors, who deliver their goods in rather old Jiguli cars.

We purchase an average of 5 tons of bilberry per day. In the beginning of the campaign, 1500 people came to the station every day, now they are about 300-400, says Stoycho Atanassov, who has been purchasing the mountain’s elixirs for several years now. Every evening a tradesman with a refrigerating truck takes everything. The further marketing is no problem. There is a great demand for the black gold abroad. Especially in Italy, they say, the price reaches 3-4 dollars per kilogram on the international market. The bilberry has unique qualities – because of its high contents of vitamin E, it is recommended to people, experiencing problems with their eyes. It is a strong antioxidant. It beats the Viagra. Herbs, bilberries, mushrooms – these are the sources of livelihood for the people from the villages of Rozino and Hristo Danovo, and 80 per cent of the local population are gypsies.

This year a new system for registration of the collected quantities through coupons was introduced in the two National Parks – Central Balkan and Rila. The information will serve for determining the locations and quantities of fruits that can be collected without threatening the resources. The National Park Directorates initiated the awareness campaign even in July, and the local communities joined their efforts – mayors, collectors, purchasers, schools. The Biodiversity Conservation and Economic Growth Project of the United States Agency for International Development supported the experiment.

In Central Balkan the bilberry collection started on July 27. Everyone, who wishes to collect the fruits within the territory of the Klissura Park Section in the lands of the villages of Anton, Klissura, Rozino, Hristo Danovo, Kurnare and Ignatovo, has to obtain coupons. They are free and are distributed without restrictions at the Park Section offices, mayors’ offices, and the registered purchasing stations. A date is entered on each coupon and it is valid for one day. The Park Section guards keep the coupon segment marked with “control.”

[Photo 1] We go out for bilberries at 6 in the morning; what we earn from the mountain is all we have, there is no other job for us, tells the 19-year-old Vasko (the first on the left). By noon, he managed to collect just 2-3 kg; during the first days, they gathered the bilberries from the easily accessible sites. Now fruits have only remained on the steep slopes.

[Photo 2] A large group of bare-footed kids has surrounded the purchasing station. Some will get waffles, others – maybe even meatballs. In the evenings, the meadow turns into a big market. Various goods are offered for sale – watermelons, bed sheets, belts, etc. Usually the goods are laid right on the ground. Worn out shoes and jeans cost between 1 and 3 leva. Cheap goods for poor people, summarizes a swarthy tradesman.

[Photo 3] For the past five-six years there have not been so many fruits, says Marin Kostov, Head of Klissura Park Section. The bilberry is large and ripe. One of the reasons for the good yield is the collection start date, set by an order. This happens for the first time, but it obviously leads to excellent results. In the previous years, entire batches have been rejected for export because of the unripe fruits in them. The coupon system did not confuse the local population. Right the opposite – the collectors are more confident in their contacts with the guards. There have been no problems in the Park with the current campaign, says Kostov.

Photos: Petar Krustev

Novinar Newspaper
August 6, 2002

One Can Get 1000-1500 Leva from Bilberry Collection in 20 Days
By Tanya Kirkova

This is the most fruitful year for the bilberries, tells me Stoyo Atanassov from Hristo Danovo. He and his family operate the wild fruit and mushroom purchasing station in the village since 1994 and provide a source of livelihood to 80% of the population in this region.

A person can collect 10-15, and even 20 kg bilberries per day. They are purchased at 1.30 leva per kilogram. Last year the price was 1.80, but there were no fruits. They are sold for 2.50-3 leva on the markets in Sofia.

An experienced collector earns 1000-1500 leva per person only from bilberries, and the mushroom and hips is yet to start.

Bulgarian bilberry is a very valuable fruit on the international market. It is not as big as the Scandinavian, but because of its aroma and taste in the foreign countries, it is added to the Scandinavian fruits to improve them. The small dark-blue, almost black fruit is an antioxidant and has many medicinal properties. During the World War II, they used to give it to the pilots to sharpen and improve their vision.

There are 1000-1300 collectors in the villages of Anton, Klissura, Rozino, Hristo Danovo, Kurnare and Ignatovo. This year they joined an eco-project, which is aimed at teaching the local people how to manage the natural resources so that they can use them for many years.

In order to reserve more fruitful areas, many people spent the night of the 26 of July in the mountain, since July 27 was the date declared by the Central Balkan National Park administration a start date for the bilberry collection. The most impatient ones started collecting even at 4 in the morning in the light if torches.

About 4-5 in the afternoon the purchasing center in Hristo Danovo reminds of a fair. Bed sheets, tablecloths, garments, shoes and various other goods – new or more or less used – are displayed on Ladas and other socialist cars, and even on the ground. The grill and the cases of beer await the trucks with the collectors, most of which are from the minorities. They do not keep money for long time – they take it and by the evening they have spent it, explains Stoyo, who runs the business in this region.

[Photo 1] The fruits are collected with a bilberry-collector – a wooden box with a handle and a comb of rounded metal teeth, so that the fruits remain undamaged.

[Photo 2] The family returns from collecting bilberries. 80% of the population in the Klissura region provide for their living from the collection of wild fruits, plants and mushrooms.

Photos: Petar Krustev

Bulgarian Army newspaper
15 August 2002

SOCIETY

- New license system in blueberry picking is being piloted

A LOT OF PEOPLE RELY ON NATURAL RESOURCES TO MAKE A LIVING

- **Institutions and local communities demand understanding**
- **Prohibition measures fail to ensure the balance of interests needed**
- **Local communities are expected to accept the registration practice proposed**

The mountain seems to have become part of the sky. Fog and clouds make impossible human sight to penetrate more than a couple of yards. We are staring intensely through the windshield of the car to see the blueberry pickers. Over 1000 industrious pickers are out on the field according to data of Park Section Klisura to the National Park Central Balkan. Some time later, a few meters ahead, two figures appear a man and a teenager boy carrying buckets.

Engineer Marin Kostov, head of Park Section Klisura stops the car and asks 'Have you got registration cards?' The question does not bring any confusion in the little team of pickers. The man takes out of his pockets two colored pieces of paper and handles them to Mr. Kostov. The head of the Park Section tears off the control patch. 'And don't forget to get new ones for tomorrow.' The man hurriedly replies 'Sure, we will.' He puts back in his pocket the checked cards, turns his back and darts ahead. The voice of Mr. Kostov is still following him 'How is it? Are there plenty of blueberries?' 'So, so.' replies the man and shows his bucket, half-empty. There have been much more the first days.'

Marin Kostov dashes the door of the car and we go on slowly along the mountain ridge. 'We did our best to convince them to wait till the official start-date of the blueberry campaign. Some of them came here one night earlier, at the eve of the campaign. But they did waited till 6 o'clock next morning.'

One year ago a survey was carried out in the Park Section Klisura in Central Balkan with a view of implementing a program for joint management of natural resources. At first sight, the terms seem to be quite unrelated to daily life of local people, but during these twelve months experts and consultants from the National Park and the team of the Project for Conservation of Biodiversity and Economic Growth, funded by the American Agency for International Development, have explored the region, meeting representatives of local communities. This region of the National Park has been especially chosen as project target area for its high rate of unemployment. The settlements directly involved in the project comprise mainly population of Romany and Turkish ethnic groups for whom it is hard to find a steady job. In the town of Klisura, the villages of Hristo Danovo, Kakrina, Rozino, and Ignatovo the unemployment rates up to 80% of local population and it concerns chiefly ethnic Romany. That is why one of the objectives of this project is to create opportunities for earning and helping the family budget of local communities.

The administration of the National Park Central Balkan, local mayors of municipalities, individual pickers of wild fruits and herbs and fungi, owners of purchase stations, schools, children's ecoclubs, have all been involved in this campaign. Project organizers confirm that one of the project objectives is the pickers to be trained to observe the right picking practice thus avoiding violation of the balance of nature and damages to the plants. They all remember their bitter experience from last year when rumors spread among local population that yellow tutsan would be the hit of the season and a lot of untrained people rushed out and plucked it out together with the root. The unhappy end was that whole areas traditionally covered by yellow tutsan (St. John's wort) have been destroyed and about 3 thousand tons of this precious wild herb are still in the storehouses or in the households. Pitifully, this year in the vicinity of these former 'activities', one has to look hard in order to find a handful of this verb.

The first day of the picking campaign was set to be 27th of July and the number of pickers registered was about 1300 individuals. About 5 tons was the quantity in just one purchase station in Hristo Danovo village. It is hardly possible all purchaser to be traced, there have been cases of both artificially increasing

or decreasing the price. Last year for example some new players appeared on the market with frozen fruits and succeeded to lower the price of fresh blueberries. One can hardly speak here of war of interest since local demand is rather low. Mr. Chavdar Gusev, project biology consultant, added that in 2002, one of the project objectives set, is to ensure picking of this unique natural resource when it is fully ripe. Thus not only the approximate number of the pickers would be more likely to be followed, but the purchaser would receive a product of better quality. Mr. Marin Kostov who is in charge of the security of the National Park, comments that the limited staff and financial capacity of park administration and security, do not allow an extensive control over picking activities. Hence, they keep contact with the main purchase stations, set before the beginning of the campaign. Establishing good communication between all stakeholders, and all that are concerned in conservation of nature is equally important. The registration cards may act as an indicator and show that a balance of interest is possible to be achieved. What is going to happen next year is still obscure. Certain funding would be needed for increasing the awareness of local communities concerned, for organization of control and recording of natural resources utilized. In fact local people of all ethnic groups or religion come to the same conclusion that if they do not keep in line with certain rules when picking these gifts of nature, then in a year or two they would not be able to earn from the resources of nature. Undoubtedly, is a matter of great concern since nature provides a source for income for many families in this part of the Rose Valley?

Unemployment and opening of a new market area for this ecological product are stimulating trading companies to organize the process. Local demand of blueberries is rather limited, and the latter are exported with greater success.

It is late afternoon. In one of the purchase blueberry stations near to Hristo Danovo village here come the first pickers of this wild forest fruit. Next to the plastic containers eager representatives of Romany origin have gathered. They are hurriedly engaged in removing touches of leaves and dry grass from what they have collected. Only then Mr. Stoicho Atanasov would accept the product. Stoicho is more than a father for them here in this region of the Rose valley. The 43-year local resident, a former game-breeder has been in the purchase of wild forest fruits, fungi and herbs business for almost seven years. He bought the old storehouse for grain of the former socialist type of collective co-operative farm where his parents have worked and he turned it into a purchase station. This seasonal work is nearly the only way for earning some cash for the Romany community. From all statistical data available a blueberry picker is able to gather and submit to the purchase station more than 10 kg. a day, and if he/she is particularly skillful – up to 30 kg. This year the price of one kg of blueberries at the purchase station in Hristo Danovo village has been 1.30 BG lev.

(Text to photos: Eng. Marin Kostov has been for two years head of Park Section Klisura within the National Park Central Balkan. This area comprises the land of 6 settlements.

(Text: Representatives of Romany ethnic group are most of the traditional pickers)

Local Blueberry Pickers

The population in the region Central Balkan seems to be well informed on the areas rich in forest herbs, plants used as spices, other fruits and fungi. A survey carried out by ARD – Bulgaria, indicates that 53% or approx. 69 000 people from local population of Central Balkan region get themselves involved in picking activities in the forest, go hunting or fishing. About 55 000 people pick up herbs and 45 000 pick up forest fruits and/or herbs.

Picking up forest gifts is very often for personal use. In Central Balkan region people that engage themselves in picking spice plants for sale are 5% of all people collecting spice plants, 7% for those gathering wild fruits, and 8% for those collecting herbs, and raising to 18% for those picking fungi. The number of people collecting wild fruits, herbs, spice plants, snails and fungi varies between 1000 and 2000 individuals within the region of Central Balkan. Picking plants, wild fruits and snails for sale suggests higher intensity and range when compared to picking for household use. Pickers that sell wild plants, fruits, fungi and snails are mainly men from 20 to 29 and from 40 to 49. They are of basic education, up to 8th grade at school, unmarried, belonging to ethnic groups other than Bulgarian, unemployed, whose income is up to 50 BG levs or not at all.

During the last year there is a tendency ethnic Bulgarians to join the group of pickers as a result of closing up of a number of enterprises and factories in Karlovo, Sopot, Rossino, Hristo Danovo and Karnare.

The New Model

The National Parks in Bulgaria represent a natural reserve with vast variety of 160 plants that can be used for medical purposes. There is a considerable high value resource of herbal plants and fungi in the National Park Central Balkan. The national policy targeted at protected areas and the management plan of the Park has provided for a steady access and sustainable picking of non-timber natural resources. Naturally, that access is subject to control. Sustainable gathering, conservation and protection of these resources is a big challenge to the management team of the National Park, partly because of the “inherent” right of Bulgarian citizens to collect these resources, i.e. it is difficult to convince people concerned that this type of natural resources is not available for free, and secondly, taking into account that many of these plants are vulnerable and endangered.

For the last six years blueberries has recently become rather attractive for traders and producers. Statistical data indicates that the annual quantities amount to 150 tons.

During this year the administration of National Park Central Balkan has defined 27th of July as a start-date for the opening up of the picking campaign. On the basis of former negative experience its has been summed up that the most eager ones start the blueberry picking season some time before the blueberries have actually reached ripeness. Through a Joint Project of the National Park Central Balkan administration and The American Agency of International Development, a decision to this problem was suggested.

The new model of licenses comprises a number of conditions, the first of which is ensuring a unified start-date of the picking campaign throughout the National Park areas. The model proposed to use the same type of charged picking licenses as those that have been used for the recent years simultaneously with additional registration cards, which apply both to picking blueberries for profit and for non-profit purposes. The latter are free-of-charge. It is expected project outcomes to identify the actual use.

(Text to the picture: For the first time this year picking of blueberries will be monitored through registration cards)

Author and photographer: Velin Yavorsky

15 – 21 August 2002
LADIES NEWSPAPER
HOME ENCYCLOPAEDIA

GIFTS OF NATURE

WILD FOREST FRUITS GIVE YOU THE FEELING OF KEEPING SUMMER FLAVOR FOR A LONG TIME

August is a favorable time for economic tourism. Now is the season for the most delicious gifts of the forest: blueberries, wild strawberries, raspberries, and blackberries. If you happen to go out in the mountain you cannot help picking some handfuls of these aromatic fruits. In addition to their delicious taste, they are rich in vitamins and minerals. Blueberries have retained their place as special wild forest fruits since strawberries, raspberries and blackberries have been cultivated for a long time in Bulgaria. From the high mountain meadows of Central Balkan ridge, Rila, Pirin and the Rhodoppes, thousand of blueberry pickers carry down on their backs tons of this delicious fruit. Pickers may go on foot and pass 15 – 20 km a day searching for and picking blueberry. For the two fortnights of the picking season pickers could earn about 600 BG/levs (1.50 BG levs per a kilo).

One of the purchase blueberries stations for the area of Central Balkan is located in a village near Karlovo - Hristo Danovo. Here the family of Stoicho Atanosov proceeds about 5 tons on daily basis. In the evening hundreds of blueberry pickers come to the station. Their families rely mainly on this source of income for the year. They are happy with this year blueberry 'yield'. Since the foundation of National Park Central Balkan ten years ago, here in Park Section Klisura, a pilot registration system checking the blueberries picked has been initiated. The Romany involved seems to appreciate the new order and duly fill in their registration cards on daily basis. Thus the experts would be able to follow the quantities picked and the location of the blueberry fields. The pilot initiative is implemented by the administration of the Park with the participation of local communities and with the support of the Project for Biodiversity and Economic Growth and the International Agency of International Development. Local people already seem to realize that the new registration system is meant to protect natural resources and limits the presence of illegal purchasers.

The 19-year old Stoyan Nikolov and his cousins Asen Sashev and Vasko Dimitrov are picking blueberries in the region of Beklemeto. They say that it has been a good idea to have a starting day of the blueberry campaign set (27 July). For the first year the Park security team has managed to cope with the problem of people picking blueberries still unripe. "Now we would be able to make more money because what we have gathered is all well ripe and good quality."

Among the hundreds of people picking blueberries up and down the hills, a great many do it just for their own use. Professional pickers seem not to be annoyed by tourist pickers for they know tourist are not able to gather more than 4 kilos, especially if they have not the necessary blueberry rake device. Manual picking of blueberries has certainly some advantages. The so-called blueberry pickers' 'comb' rakes a lot of green fruits, grass and leaves. The latter are removed in water because they stay on the surface.

In the region of Klisura, local ladies' folk use to make fantastic jam of wild strawberries, blueberries and raspberries. Dried blueberries are used for adding more aroma to forest raspberry and blueberry leaves home tea. This type of tea is said to lower blood sugar and the blueberries alone help with stomachaches and indigestion. Dried blueberries are used for sore throat, burns and skin problems. Biology expert Chavdar Roussev from the Bulgarian Academy of Science, a consultant to the Project for Biodiverse Conservation and Economic Growth specifies, "Blueberries contain manganese, iron, tannin extracts, flavanoids, carotene and vitamins C,P,B1 and B2. Their popularity is growing since blueberries are considered to act as a powerful antioxidant.' In addition to the anti-cancerous effect, blueberries strengthen human sight, blood capillaries and blood circulation to the peripheral blood vessels.

One can freeze all these forest fruits in the family freezer or boil and sterilize the fruits with some sugar added in jars for about 10 minutes. This is the best way to keep their exotic flavor. Also you can make your own home jelly through boiling the fruits with sugar for some longer time, but the process is far time costly and not quite economic. You can also use a sweetener, but you would again have to sterilize the

jars. It is a helpful information to know that even after a thermal treatment blueberries keep their unique healing properties, even according to some diet specialists thus they are better digested.

(Text to the photos: Most of the yield at the purchase station Hristo Danovo is for export. Local processing of blueberries is rather limited).

(Stoyan, Asen and Vasko have been picking blueberries in the region of Beklemeto since the start date 27 of July. The yield is especially abundant this year.)

Author: Vera Dacheva

Appendix 8

DRAFT
TERMS OF REFERENCE
For development of a Management Plan for Medicinal Plants and Wild Fruits
permitted for collection for commercial use in
Central Balkan and Rila National Parks
June, 2003

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INTRODUCTION

The Directorates of Rila and Central Balkan National parks are specialized regional authorities of the Ministry of Environment and Waters (MoEW) for the management and control of the National parks. The Protected Areas Act as well as the Regulation for the Organization and the Activities of the Directorates define their roles and responsibilities. The Directorates participate in the process of development of management plans as well as technical plans and projects. These implement the park Management plan by commissioning execution of activities and projects. The National Park Directorates are responsible for activity management on the conservation of the medicinal plant species populations on the territory of the park as for the conditions in their habitats. They are responsible for law enforcement of the norms, regimes and conditions according to the Management plans of the different zones of the parks.

Rila and Central Balkan National Parks are divided into administrative units – Park Sections which are 7 for the CBNP and 9 for RNP. Each Park Section is managed by a park section head to which 4 to 6 park rangers are subordinated. The Park Sections' offices are located in the settlements near the borders of the park. Each of the National Parks has a HQ where technical experts of different specialization work.

The operational and methodological guidance and control of the Directorates' activities is performed by the National Nature Protection Service under MoEW.

The legal bases for Terms of reference development for management plan of medicinal plants and wild fruits permitted for collection for commercial use in Central Balkan and Rila National Parks is:

1. *The Protected Areas Act (published State Gazette 133 / 11.11.1998, modified SG 98 / 12.11.1999, active 12.11.1999; modified and supplemented SG 28 / 4.04.2000, modified SG 48 / 13.06.2000; supplemented SG 78 / 26.09.2000) - Art. 64;*
2. *Medicinal Plants Act (published SG 29 / 7.04.2000; modified and supplemented SG 23 / 01.03.2002) – Art. 50, 55 and 57;*
3. *Management plan of Rila National Park, Section II, Prescriptions, 5.0. Programs and Projects:*
 - 5.1.8. Program for management of the resources of medicinal plants, wild fruits, mushrooms, etc.
 - Project – Distribution of medicinal plants, species composition and resource assessment;
 - Project – Distribution of wild fruits, species composition and resource assessment;
 - Project – Monitoring of the population state and resources of medicinal plants, wild fruits and mushrooms;
4. *Management plan of Central Balkan National Park, Section II, Prescriptions, 5.0. Programs and Projects:*
 - 5.1.9. Program for management of the resources and protection of the biological diversity of medicinal plants, wild fruits and mushrooms

- Project – Management of the resources of the medicinal plants and mushrooms permitted for collection for commercial use;
 - Project – Monitoring of the state of the populations and resources of the medicinal plants, wild fruits and mushrooms;
- 5.5.2. Ecomonitoring Program
- Project – Monitoring of the populations and resources of medicinal plants and mushrooms;

In the implementation of Rila and Central Balkan National Parks Management plans for the conservation and sustainable use of the medicinal plants a Management plan for the medicinal plants and wild fruits has to be developed. The management plans of the two Parks include major parts of the section “Medicinal plants” as required by Art. 55 of MPA – description of the resources of medicinal plants, ideal and management objectives for their protection and management, zones, regimes and norms that regulate the exploitation of the resources. The ideal and operational goals for conservation and management of the medicinal plants in the Management plans of the two parks are included in Appendix №2.

The objective of the current Terms of reference is to further develop the “Medicinal plants” section and to formulate the requirements for the contents, form and preparation of a management plan for the medicinal plants and wild fruits, permitted for collection for commercial use as well as the ways and means of its development.

The TOR draft is developed within the frames of the “Biodiversity Conservation and Economic Growth” Project in support of Central Balkan and Rila National Park management plans implementation.

I. GENERAL SECTION

The present TOR covers the following themes:

- Requirements towards the Vendor;
- Phases and deadlines for development, reviewing and agreement on the Medicinal plants management plan ;
- Content and form of the necessary specialized information for medicinal plants resource management;
- Form of final project presentation and number of copies of the outputs.

Requirements towards the Vendor

1. The Vendor is fully responsible for the development process and the quality of the Medicinal plants management plan.
Full list of the participants in the team, which will develop the plan has to be stated. The team that is applying for the implementation of the present ToR has to have professional training and experience in the resource assessment of the medicinal plants and wild fruits and/or in development of Management plans for non-timber natural resources. The team has to include trained experts and to provide the necessary proofs – professional CVs of the experts; information on implemented ToRs and projects in the sphere of resource management of the medicinal plants and other appropriate documentation and materials;
2. To observe the requirements of the approved ToR regarding the content, the development process and the final products.
3. To organize and carry out a public presentation and hearing of the results for the interested local authorities (regional and municipal administrations, state forestry's, RIEWs etc.) as well as for the public.
4. To submit detailed budget for the ToR execution including:
 - Field work expenses – planning, carrying out – days manpower (travel – leva/km, perdiems, overnights); materials and equipment; payments; other;
 - Expenses for laboratory work - days manpower (travel – leva/km, perdiems, overnights during the review and agreement of the results); processing; summary and analysis of the data; layout of the final products; materials and equipment; print out; payments, etc.
 - Expenses for the carrying out of the public presentation of the Medicinal plants management plan - days manpower (travel – leva/km, perdiems, overnights); materials and equipment; rents; etc.

Phases and deadlines for development, reviewing and agreement on the Medicinal plants management plan

The overall duration of the ToR implementation is a total of 2 years.

1. First Phase

- inventory and mapping of the localities of the medicinal plants and wild fruits in Rila and Central Balkan National parks permitted for collection for commercial use. Description text preparation and database filling in for the medicinal plants in the parks with the information under points 0, 1.1; 1.2; 1.3 and 1.4 of the specialized section of the ToR. Selection of permanent sample plots within the localities of medicinal plants for follow-up resource assessment. - *Deadline: up to 8 months starting the commissioning of the Project*
- Review, discussion and approval of the results from the first phase of the Plan development by the National Park Directorate - *Deadline: up to 10 months starting the commissioning of the Project*

2. Second Phase

- Resources assessment of the medicinal plant and wild fruit permitted for commercial collection, filling in the database for the medicinal plants in the parks with the results of the field and laboratory work points 1.5; 2; 3; 4 and 5 from the specialized part of the TOR; organization and carrying out of a public presentation and discussion; finalization and submission of the Medicinal plants management plan and the materials that are part of it to the NPD and MoEW. - *Deadline: up to 18 months starting the commissioning of the Project*
- Review, discussion and approval of the results of the second phase of the development of the Plan by the NPD. - *Deadline: up to 20 months starting the commissioning of the Project*
- Preparation of a Summary of the Plan for review and agreement according to the requirements of the Art. 65 of the PAA, approval of the Project after the agreement ensured. - *Deadline: up to 22 months starting the commissioning of the Project*
- Technical finalization, print out and final submission of the Project to NPD and MoEW - *Deadline: up to 24 months starting the commissioning of the Project*

All discussions are carried out in the NP Directorate. The procedure for approval of the Plan is conducted according to the Art. 65 of the Protected Areas Act.

General conditions

Within the frames of the TOR the following general conditions are valid:

1. The TOR is developed for the medicinal plants and wild fruits permitted for commercial collection in Rila and Central Balkan National Parks.
 - According to the management plan of Central Balkan National Park 17 species of medicinal plants and two species of wild fruits are permitted for commercial collection (Appendix № 26 from the management plan of CBNP). Ten of these species have been selected for the preparation of a management plan with priority (Appendix № 3).

- In Rila National Park six species of medicinal plants are permitted for commercial collection (Appendix № 30 of the Management plan of RNP). (See Appendix № 3)
2. The Management plan for medicinal plants and wild fruits refers to the territory of two Park zones:
- Limited human impact zone
 - Multifunctional zone

| | Rila National Park | | | Central Balkan National Park | | |
|-------------------------------|-------------------------|-----------------------------------|-----------------------|------------------------------|-----------------------------------|-----------------------|
| | <i>Forests (ha)</i> | <i>Treeless zone (ha)</i> | <i>Total (ha)</i> | <i>Forests (ha)</i> | <i>Treeless zone (ha)</i> | <i>Total (ha)</i> |
| LHI zone | 6960,24 | 4948,39 | 11908,63 | 3644,44 | 9951,94 | 13596,38 |
| Multifunctional zone | 30413,56 | 18808,06 | 49221,69 | 22601,79 | 15265,15 | 37866,94 |
| Total Area of the Park | 53481,00 | 27565,00 | 81046,00 | 44000,80 | 27668,70 | 71669,50 |

3. The resource assessment is the basis of the Management plan for medicinal plants and wild fruits allowed for commercial collection in the National Parks.

The main tasks of the resource assessment are:

- establishment of the location of the economically important localities of medicinal plants and wild fruits
 - assessment of the exploitation resources
 - evaluation of the possible annual yield
 - assessment of the status of the localities
 - preparation of recommendations for use and protection of the localities.
4. The resource assessment to be planned so that it precedes the collection campaign in order to give opportunities for a realistic assessment of the resources and also to avoid conflicts with the collectors.
5. In the resource assessment to be included localities that meet the criteria for economically important localities.

The preliminary criteria for economically important localities are given in Appendix № 4.

To facilitate the accomplishment of this requirement preliminary chorological data will be provided for the economically important localities of the studied species by Park sections.

Note: The preliminary registration of the already known localities suitable for economic exploitation will only facilitate the fulfillment of the TOR, but *should not be regarded as complete or should not restrict the work only on the given localities.*

II. SPECIALIZED SECTION**0. INFORMATION ABOUT THE MEDICINAL PLANT SPECIE**

1. Number of the specie according to Appendix №26/30 from the management plans of the National Parks
2. Bulgarian and Latin names
3. Plant's morphological parts used according to Appendix №26/30 from the management plans of the National Parks

1. LOCALITY DESCRIPTION

The following should be described for each locality:

1.1. Location

Describe the localization giving the following information:

1. Unique number of the locality – each locality to be marked with a unique number A.B.1.1, A.B.1.2, A.B.1.3 etc.; A.B.2.1, A.B.2.2, A.B.2.3 etc. where A is the number of the Park section and B – the number of the ranger's section, next comes the number of the specie from the list in Appendixes № 26 and № 30 in the Central Balkan and Rila National Parks management plans and the serial number of the locality of the respective species in the Park section.

Park section № /Ranger's section № /species №/locality №

2. Park section
3. Ranger's section
4. Name of land area
5. Forest unit and sub-unit (when the locality is within the forest fund)
6. Cadastre number (if such exists in the treeless zone)
7. Borders – to describe the borders of the locality in case of existing characteristic topographic markers (ridges, rivers, roads, etc.)
8. Locality area – approximate area of the locality in ha

1.2. Locality conditions**1.2.1. Abiotic factors**

The control areas should be representative for the whole locality and should be chosen with the perspective to become permanent control areas, which NPD will use for the execution of periodical resource assessments.

The coordinates of the control areas where the assessment of the locality is conducted should be taken by GPS to be later included in the thematic map layer for natural resources in the GIS of the National Park.

The habitat conditions for each control area within the locality should be described:

- altitude,
- exposure,
- slope
- bed rock

- soil type
- humidity
- illumination

On the basis of the collected information for the control areas in the locality and other observations a description of the overall locality to be prepared.

1.2.2. *Biotic factors*

Identify and describe the basic vegetation type. Describe the plant community and its basic species composition.

The plant species and habitats of conservation value within the locality and its vicinities should be listed.

The basic data for the control areas should be given in the following table:

Characteristics of the control areas

| N ^o CA | Location of CA forest unit, sub- unit, cadastre number | GPS coordinates Latitude | GPS coordinates Longitude | area [ha] | Alt. [m] | Exposure | Slope [%] | Plant community |
|----------------------|---|--------------------------------|---------------------------------|--------------|-------------|----------|--------------|--------------------|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

1.3. **Infrastructure assessment in the region of the locality**

- Accessibility of the locality should be evaluated.
- The existing access roads to the locality should be described – the existing roads and tourist paths, state, starting point for the localities, etc.
- Describe the buildings within the locality and its vicinity, incl. Chalets, shelters, etc. – condition, ownership, etc, together with the approximate distance to them. Evaluate the opportunities for their use as base camps for the management activities on the medicinal plants and wild fruits.
- Described other elements of the infrastructure such as derivations, power cables, etc. within the locality and its vicinity whose exploitation or maintenance affect the condition of the population of the respective medicinal plant specie. Evaluate the real and/or potential threats from the existence of the infrastructure objects inside or close to the locality.
- List the location (settlements) of the closest buy out points.

1.4. **Threats and limitations**

Natural threats

Describe the type and degree of the existing natural threats in the control areas and in the whole locality, which have impact on the population of the respective medicinal plant specie and the state of its resources.

Anthropogenic threats

Describe the type and degree of the anthropogenic impact in each control area within the locality and in the locality as a whole.

Characteristics of the control areas

| № CA | Natural processes | Anthropogenic impact |
|------|-------------------|----------------------|
| | | |
| | | |
| | | |

- *Natural processes and phenomena*: successions, fires, erosion, etc.
- *Anthropogenic impact*: grazing, cutting, mowing, tree planting, tramping, collection of herbs, mushrooms, wild fruits, fires, etc.

1.5. General assessment of the state of the species in the locality

Describe in text the state of the species in the respective locality - the mean number of individuals of the specie per unit area and/or the % projective cover, species vitality and the general state of the locality.

For an exemplary form for fieldwork and summary of the results see Appendix № 5.

2. RESOURCES ASSESSMENT BY LOCALITIES

The exploitation resources of the specie and the degree of their use should be evaluated according to "Methodology for determination of medicinal plants resources", 1986 (State Forestry Commission of the USSR, p. 50).

The following parameters should be identified:

1. Yield (fresh weight);
 - a/ per unit area g/m² and kg/ha;
 - б/ from a model individual (branches and stems) for dog rose, dewberry, raspberry g/individual, g/m² and kg/ha;
2. Exploitation resource (kg fresh weight) of the locality.
3. Potential annual yield (kg fresh weight) from the locality.

The following data for the control areas in the locality should be given:

Characteristics of the control areas in the locality

| № CA | Mean projective cover [%] or number of individuals ind./m ² | Yield [kg/ha] |
|-------|--|---------------|
| | | |
| Mean: | | |

3. RESOURCES ASSESSMENT OF THE SPECIES IN A PARK SECTION

The summarized data about species localities in the respective Park section should be given in the following table:

Summarized table for the resources of a species in the respective Park section

Medicinal plant specie

Plant's morphological part in use

Park section

| № | Locality number | Land area name | Mean projective cover [%] or number of individuals ind/m ² | Area ha | Yield kg/ha | Exploitation resources kg | Annual yield use turnover | Possible annual yield kg |
|---|-----------------|----------------|---|------------|-------------|---------------------------|---------------------------|--------------------------|
| | | | | | | | | |
| | | | | | | | | |
| | | | | total area | mean yield | total | total | |

4. RESOURCES ASSESSMENT BY PARK SECTIONS AND BY SPECIES IN THE NATIONAL PARKS

The data for the resources of the species in the Park sections for the territory of the whole Park should be summarized in the following table:

| | Exploitation resources (kg) | | | | | |
|-----------|-----------------------------|----------------|----------------|-------|----------------|--------------|
| | Park section 1 | Park section 2 | Park section 3 | | Park section N | Total for NP |
| Specie 1 | | | | | | |
| | | | | | | |
| Species N | | | | | | |

5. MEASURES FOR CONSERVATION AND MANAGEMENT OF THE RESOURCES OF MEDICINAL PLANTS AND WILD FRUITS

5.1. Conservation measures

- Determine the periodicity of resource collection in each locality according to the morphological plant parts used the in order to achieve sustainable exploitation of the resources.

When assess the periodicity of plant collection in the respective localities the following conditions should be taken into consideration:

1. Do not prescribe resources collection in economically important localities that are close to or include populations of species of conservation significance.

2. To take in mind the accessibility of the respective locality and the related infrastructure within and outside the Park territories that reduces the expenses and facilitates the organization of the medicinal plant collection and the control on the collectors in the field.
 3. To use the localities in rotation in order to avoid overexploitation of one and the same localities.
- List recommendations for a possible increase/reduction of the exploitation rate of certain species and eventual prohibition on medicinal plant collection in certain localities based on the analysis of the exploitation resources and the yield of medicinal plants in the localities.
 - In relation to the established threats and limitations prescribe recommendations for concrete measures for the conservation of the species to be taken by localities by the DNPs when necessary.

5.2. Management of the resources and activities of the NPD

The collected and analyzed data is going to be used by the Directorates of the NPs for the preparation of annual plans for use of medicinal plants. They will define and regulate the annual amount of herbs allowed for collection as well as the permitted localities by park sections while considering the periodicity for collection from the separate localities.

- Provide recommendations for optimization of National Park Directorate activity connected with medicinal plants resource management based on evaluation of the structure of DNPs - staff and functions.
- Specify the validity of the data collected for the resources of each specie and a scheme for their update – activities, time, executors. The necessary additional monitoring activities for forecasts and evaluation of the resource in the localities should be described.
- Described the necessary activities by type and time of execution for current annual update of the information for the condition of the medicinal plants and wild fruit localities and maintenance of the database.
- Provide a quantity and value account for the activities that have to be performed annually on the territory of the park regarded to management of the medicinal plants and wild fruits permitted for commercial use.

6. MAPPING OF THE LOCALITIES

The position of the economically important localities of each of the studied species should be mapped.

For each locality:

- The borders of each locality should be clearly marked on a topographic map and/or map of the forest fund, scale 1:25000 or 1:10000. These have to be presented in a digital format for incorporation in the digital model of the park.
- The location of the control areas should be determined by means of GPS and included in a thematic map layer for the natural resources in the GIS of the National Parks.

- The coordinates of at least four characteristic points along the borders of the locality should be registered with GPS, which allows for a determination of a polygon with an area close to this of the respective locality. It is recommended the most remote points in directions North-South and East-West to be registered. It is also preferable to register more than four points per locality.

According to the % projective cover/number of individuals per unit area the localities of the species to be grouped in three categories and shown on the map appropriately.

The maps have to be divided on map sheets with proper working area dependent on the scale (1:25000 or 1:10000). The maps have to have all major topographic elements, the borders of the park, the borders of the park sections.

As an output the following specialized maps are required: *Thematic maps by plant species – map of the Park with the localities of each specie separately in scale 1:25000 or 1:10000.*

III. MEDICINAL PLANT MANAGEMENT PLAN PRESENTATION

The information in the medicinal plant management plan has to be organized by park sections and within the park section – by plant species.

As final product the Vendor presents:

Outputs of the First Phase:

1. Report for the results of the inventory of the localities of medicinal plants and wild fruits permitted for commercial collection in Rila and Central Balkan National Parks. The information includes explanatory text and tables under points 0, 1.1, 1.2, 1.3, 1.4 of the specialized part of the ToR.

For review, discussion and approval of the results of the first phase by DNP the report has to be submitted in one hard copy and in Word format. For final submission of the results the report has to be presented in 3 hard copies – 2 for the DNP and one for NNPS, as well as in an electronic format (Word).
2. Digital model of the localities for each medicinal plant specie, presented as polygons in a separate file, which to be included as a separate layer in the GIS of the park. The data for the localities has to be in .dwg 2000 format for AutoCAD LDD. The digital data has to be geo-referenced into 1970 or WGS 84 coordinate systems. For review, discussion and approval of the results of the first phase by DNP the model has to be submitted in 1 copy on a CD. For final submission of the results the model has to be presented in 2 copies – one for DNP and one for NNPS.
3. Table with the coordinates of the control areas in 1970 or WGS 84 coordinate systems on hard copy and in electronic format Word or Excel files. Digital model including the points of the control areas of the localities of each specie separately in .dwg 2000 format for AutoCAD LDD. For review, discussion and approval of the results of the first phase by DNP the model has to be submitted in 1 copy on a CD. For final submission of the results the model has to be presented in 2 copies – one for DNP and one for NNPS.
4. Database in format Access 2000 for the management of the medicinal plants filled in with the data on points 0; 1.1; 1.2; 1.3 and 1.4 of the specialized part of the ToR. For review, discussion and approval of the results of the first phase by DNP the database has to be submitted in 1 copy on a CD. For final submission of the results the database has to be presented in 2 copies – one for DNP and one for NNPS.
5. Set of maps of the park 1:25000 or 1:10 000 scale with the borders of the localities of medicinal plants allowed for commercial use presented on them. As base for the maps the map Zoning of the park to be used. The localities of more than one species could be combined on a single map sheet only if there is no overlap between the localities of the different species. The set of maps has to be presented in 3 copies – 2 for DNP and one for NNPS. The map sheets have to be grouped by park sections, folded and put in boxes.

Outputs of the Second Phase:

1. Report for the results of the resources assessment of the localities of medicinal plants and wild fruits permitted for commercial collection in Rila and Central Balkan National Parks. The information includes explanatory text and tables under points 1.5; 2; 3; 4 and 5 of the specialized part of the ToR.
For review, discussion and approval of the results of the second phase by DNP the report has to be submitted in one hard copy and in Word format. For final submission of the results the report has to be presented in 3 hard copies – 2 for the DNP and one for NNPS, as well as in an electronic format (Word).
2. Database in format Access 2000 for the management of the medicinal plants filled in with the data on points 1.5; 2; 3; 4 and 5 of the specialized part of the ToR. For review, discussion and approval of the results of the second phase by DNP the database has to be submitted in 1 copy on a CD. For final submission of the results the database has to be presented in 2 copies – one for DNP and one for NNPS.
3. A protocol from the public presentation and discussion of the Management plan of the medicinal plants allowed for commercial use. Summary of the recommendations, which have been reflected in the plan as well as the ones that haven't been. The protocol has to be submitted in two copies one for DNP and one for NNPS on hard copy and in electronic format in Word.
4. Summary of the Plan for process of review and agreement as required by Art. 65 of the Protected Areas Act.

Additional Conditions

1. DNP provides to the Vendor as bases copies from the maps with presented the preliminary identified localities of medicinal plants, which were included into the GIS of the park.
2. DNP provides the Vendor with the necessary for the competition of his work data in electronic format - .dwg files, as well as a copy of the database for management of the medicinal plants to be filled up.
3. Prior to the start of work the Vendor is obliged to check the compatibility of the data with the available to him software and hardware as well as other equipment in order to ensure effective and successful work. If there are any problems the Vendor should inform the GIS expert of DNP and take the necessary measures to eliminate them.

APPENDIXESAppendix № 1**LIST OF LITERATURE SOURCES**

- “Central Balkan” National Park – Management Plan – 2001 - 2010, accepted on 04.07.2001, Decision 522 of the Ministry Council
- “Rila” National Park – Management Plan – 2001 - 2010, accepted on 04.07.2001, Decision 522 of the Ministry Council
- Evstatieva, L., Gussev, Ch. 1989. Instructions for protection of medicinal plants. 1-21. Sofia
- Evstatieva, L., Hardalova, R. 2000. In: Popov, A., Meshinev, T. (eds) Highmountain treeless zone of “Central Balkan” National Park. Biological diversity and problems for its protection. BSPBP. Biological diversity and resources of medicinal plants. Pensoft, 455-484.
- Evstatieva, L., Vitkova, A. 1999. In: Sakalyan, M. (ed). Biological diversity in “Central Balkan” National Park, Part I. Biological diversity of medicinal plants in “Central Balkan” National Park, 61-113, Pensoft, Sofia.
- Government Decree № 80 for the adoption of the Regulations for the application of the Forest Law State gazette 41/1998
- Hardalova, R., Evstatieva, L., Gussev, Ch. 1994. Characteristics of the resources of wild medicinal plants in Bulgaria and recommendations for their sustainable use and development. National Strategy for Protection of Biological Diversity, v. II. 41-72. "Bulvest" 2000, Sofia
- Medicinal Plants Act. - State gazette 29/ 07.04.2000
- Meshinev, T., Apostolova, I., Kachaunova, E., Velchev, V., Bondev, I. 2000. In: Popov, A., Meshinev, T. (eds) Highmountain treeless zone of “Central Balkan” National Park. Biological diversity and problems for its protection. BSPBP. Flora and plant communities. pp. 1 – 351. Pensoft, Sofia.
- Method for evaluation of medicinal plants resources. 1986. State Forestry Commission of the USSR, p. 50.
- Nature Protection Act. - State gazette 47/1967, changed in State gazette 11 and 133/1998
- Non-timber natural resources in the national Parks. 2000. Report to the BCEG Project
- Vitkova, A., Evstatieva, L. 1999. In: Sakalyan, M. (ed). Biological diversity in “Rila” National Park, Part I. Biological diversity of medicinal plants in “Rila” National Park, 91-131., Pensoft, Sofia.
- Vitkova, A., Evstatieva, L. 2000. Distribution and resources of the medicinal plants in “Rila” National Park. Collection “Medicinal plants – ecohorizon 2000”, 79-87.

Appendix № 2

IDEAL AND MANAGEMENT OBJECTIVES IN CENTRAL BALKAN AND RILA NATIONAL PARKS MANAGEMENT PLANS IN RELATION TO THE MEDICINAL PLANTS MANAGEMENT

MANAGEMENT PLAN OF CENTRAL BALKAN NATIONAL PARK

Ideal and management objectives

Long-term objective 3.1.8 To protect and maintain the natural state and biological potential of the medicinal plants, wild fruits and mushrooms in the Park

Management objective

- To make an inventory, to map and investigate the biological and exploitation resources of medicinal plants, wild fruits and mushrooms in the Park and to prepare management plan and annual plans for their use.
- To develop and apply a monitoring system for assessment of the biological and exploitation productivity of the populations of medicinal plants, wild fruits and mushrooms.
- To develop and put in use an education program for the protection and reasonable use of the resources of medicinal plants, wild fruits and mushrooms in the Park. The collectors should be only well educated local people who can be involved also in the monitoring of the population state of the medicinal plants, wild fruits and mushrooms in the Park.

Long-term objective 3.1.10 To maintain an optimal level of knowledge and long-term monitoring of the biological diversity in the Park

To fill in the gaps and maintain up-to-date information about the biological diversity and its current state is of primary importance for its protection.

Management objectives

To develop and apply a system for ecological monitoring together with the institutions and organizations interested in the objectives and management of the Park.

MANAGEMENT PLAN OF RILA NATIONAL PARK

Ideal and management objectives

Long-term objective 3.1.4. To protect and maintain the natural state and biological potential of the populations of medicinal plants, wild fruits and mushrooms in the Park

Management objectives

- To make an inventory, to map and investigate the biological and exploitation resources of the medicinal plants, wild fruits and mushrooms in the Park, and to prepare a management plan and annual plans for their use;
- To investigate growth specificity, habitat characteristics, and population state of the medicinal plants, wild fruits and mushrooms and to reveal the possibilities for nature-friendly collections;
- To develop and apply a system for monitoring and evaluation of the population state of the medicinal plants, wild fruits and mushrooms in order to assess their biological and exploitation productivity;
- To develop and apply an education program for protection and reasonable use of the resources of medicinal plants, wild fruits and mushrooms in the Park, and during the collection campaigns. The collectors to be only well trained people from the local municipalities who will also be involved in the monitoring of the population state of the medicinal plants, wild fruits and mushrooms.

Appendix № 3

**MEDICINAL PLANTS PERMITTED FOR COLLECTION FOR ECONOMIC USE
ACCORDING TO THE MANAGEMENT PLANS OF RILA AND CENTRAL BALKAN
NATIONAL PARKS**

Appendix No 26 from the Management plan of Central Balkan National Park
**Medicinal plants permitted for collection for economic use for which the
preparation of management plan is a priority**

1. Bilberry - *Vaccinium myrtillus* L., fruits
2. Red whortleberry - *Vaccinium vitis-idaea* L., fruits
3. Tawny hawkweed- *Hieracium pilosella* L., shoot
4. Wild thyme- *Thymus* sp., shoot
5. Raspberry - *Rubus idaeus* L., fruits
7. Common St. Johann's worth - *Hypericum perforatum* L., shoot
9. Sheep's sorrel – *Rumex acetosella* L., shoot
11. Dewberry - *Rubus* sp. diversa, fruits

**Wild fruits (additional to the medicinal plants) permitted for collection for
economic use**

1. Common juniper – *Juniperus communis* L., galbules
2. Dog rose – *Rosa* sp. diversa, fruits

Appendix № 30 from the Management plan of Rila National Park
Medicinal plants in Rila National Park permitted for collection for economic use

1. Alpine dock /*Rumex alpinus* L./ - roots
2. Stinging nettle /*Urtica dioica* L./ - rhizomes and stem
3. Dewberry /*Rubus caesius* L./ - fruits and leaves
4. Raspberry /*Rubus idaeus* L./ - fruits and leaves
5. Red whortleberry /*Vaccinium vitis-idea* L./ - fruits
6. Whortleberry /*Vaccinium myrthillus* L./ - fruits

Appendix № 4**PRELIMINARY CRITERIA FOR ASSESSMENT OF THE LOCALITIES OF MEDICINAL PLANTS AS "ECONOMICALLY IMPORTANT"**

- 1̃ The area of the localities of *Vaccinium myrtillus* (bilberry), *Vaccinium vitis idaea* (red whortleberry), *Rubus idaeus* (raspberry), *Rubus sp. div.* (dewberry), *Thymus sp. div.* (wild thyme), *Hieracium pilosella* (tawny hawkweed), *Juniperus sp.* (common and Siberian juniper), *Hypericum sp.* (common and maculate St. Johann's worth) и *Rosa sp, div.* (dog rose) to be larger than 5 ha or the total area or all compact patches from each species in the locality to be approximately 5 ha.
- 2̃ The area of the localities of *Rumex alpinus* (alpine dock) and *Urtica dioica* (stinging nettle) to be at least 1 ha or the total area or all compact patches from each species to be approximately 1 ha.
- 3̃ The number of vital individuals from *Rosa sp.* (dog rose) suitable for exploitation to be at least 10 indiv./100 m². For the rest of the species the projective cover is calculated and it should exceed 15%.
- 4̃ The natural reproduction of the species (seed or vegetative) to be normal and not to be affected by the anthropogenic pressure.
- 5̃ Accessibility - the localities should be accessible by car or to be not further than 2 hours walk from the nearest road.

Appendix № 5**CHARACTERISTICS OF THE CONTROL AREA/LOCALITY****I. General characteristics**

1. Number of the locality marked on the map
2. Park section
3. Ranger's section
4. Forest unit and subunit
6. Cadastre number (when the locality is in treeless area and cadastre number exists)
7. Location
8. GPS measured coordinates from the place of the assessment
9. Locality area
10. Habitat characteristics:
 - altitude,
 - exposure,
 - slope
 - bed rock - limestone or silicate
 - soil type
 - humidity - very dry, dry, slightly humid, humid, slightly wet, wet
 - illumination - open area, diffuse light, dense shadow
11. Plant community (basic species composition)
12. Plant species of conservation significance
13. Accessibility of the locality - accessible by car; accessible on foot; difficult to be accessed
14. Threats and limitations

| № | Natural processes | Anthropogenic impact | Infrastructure |
|---|-------------------|----------------------|----------------|
| | | | |

15. Status of the specie
 - A) Projective cover (%) of the medicinal plant specie - in % at interval of 5%
 - B) Number of individuals per unit area:
 - shrubs: number of individuals per 100 m²;
 - herbs: number of individuals per 1 m².
 - C) Vitality of the species
 - high - over 50% flowering and fruiting individuals;
 - average - vegetative development, flowering and fruiting are normal
 - low - vegetative and seed reproduction is strongly depressed
 - D) Locality status
 - excellent /over 50 % fruiting individuals/
 - good /50% young and 50% fruiting/
 - bad /over 50% aged and not-fruiting individuals/

Date of evaluation

Name of the evaluator

Appendix № 6**DATA BASE FOR THE MANAGEMENT OF THE RESOURCES OF MEDICINAL PLANTS PERMITTED FOR COLLECTION FOR ECONOMIC USE IN “RILA” AND “CENTRAL BALKAN” NATIONAL PARKS****Contents**

- Information about the medicinal plant species
 - 1̃ Medicinal plant species – Bulgarian name
 - 2̃ Medicinal plant species – Latin name
 - 3̃ Family - Bulgarian name
 - 4̃ Family - Latin name
 - 5̃ Biological type – tree, shrub, semi-shrub, small shrub, herb
 - 6̃ Plant part/s permitted for collection – shoot, leaf, flower, fruit, galbules, root, rhizome
 - 7̃ Phenophase suitable for collection - vegetative, budding, flowering, fruiting

- Information about the locality
 - I. General characteristics**
 - 1. Number of the locality marked on the map
 - 2. Park section
 - 3. Ranger's section
 - 4. Forest unit (when the locality is within the forest fund)
 - 5. Forest sub-unit (when the locality is within the forest fund)
 - 6. Cadastre number (when the locality is in treeless area and cadastre numbers are available).
 - 7. Land area name
 - 8. GPS measured coordinates from the place of the assessment
 - 9. Locality area
 - 10. Habitat characteristics:
 - altitude,
 - exposure,
 - slope
 - bed rock - limestone or silicate
 - soil type
 - humidity - very dry, dry, slightly humid, humid, slightly wet, wet
 - illumination - open area, diffuse light, dense shadow
 - 12. Plant community (basic species composition)
 - 13. Plant species of conservation significance in the locality
 - 14. Projective cover of the medicinal specie – in percent at 5% interval
 - 15. Number of individuals per unit area – shrubs: number of individuals on 10 m², herbs: number of individuals on 1m²
 - 16. Status of the locality – excellent, good, bad, the locality is destroyed.
 - 17. Vitality of the species – high, average, low
 - 18. Infrastructure – medicinal plant buy out points/settlement
 - 19. Accessibility of the locality - accessible by car; accessible on foot; difficult to be accessed
 - 20. Date of evaluation

21. Name of the evaluator

II. Characteristics of the locality resources

- 1̃ Date of the evaluation
- 2̃ Evaluator - name
- 3̃ Yield kg/ha fresh weight
- 4̃ Exploitation resource – kg fresh weight
- 5̃ Possible annual yield – kg fresh weight
- 6̃ Permitted quantities (according to the permissions)
- 7̃ Yield use turnover – annual, periodical – in 1, 3 and 5 years
- 8̃ Established negative impact on the studied species and its community
 - **Anthropogenic impact:** grazing, cuttings, mowing, tree planting, collection of medicinal plants, mushrooms and wild fruits, fires, etc.
 - **Natural processes and phenomena:** successions, fires, erosion, others
- 9̃ Measures for protection of the species

Appendix № 7

GLOSSARY

Possible annual yields – the quantity that can be collected every year on a specific territory without causing any damages to the resource basis. It is calculated when the exploitation resources of all units are divided by the yield turnover.

Yield (density of the resources) – the quantity of the phytomass extracted from unit area.

Exploitation resource – the quantity of the phytomass of all usable individuals from a certain species in all areas suitable for collection.

Locality (plant population or a part of it) – the total of all individuals from one and the same species of medicinal plant in one community in a area suitable for collection.

Yield turnover – a period that includes the year of collection and the number of years, necessary for the restoration of the exploitation resource.

Projective cover – percent area, covered by the projection of the overground organs of the studied species within a control area or the whole locality. It should not be confused with percent area – the area covered by the locality of the studied species in the respective plant community.