

MACEDONIAN COUNTRY PROFILE

Prepared by: Prof. Biljana Bauer, MD, PhD
Faculty of Pharmacy
Str. Majka Tereza No.47
1000 Skopje
Republic of Macedonia
E-mail: biba@ff.ukim.edu.mk
tel: +389 2 3126-024/114
fax: +389 2 3123-023
www.ff.ukim.edu.mk

1. Geographical data:

The territory of the country is 25,713 square kilometers. Located in South-east Europe, in the central part of the Balkan Peninsula, between northern latitudes of 40° 51' 16" and 42° 22' 21" and eastern longitudes of 20° 27' 32" and 23° 02' 12". It borders Bulgaria to the east, Greece to the south, Albania to the west and Kosovo and Serbia to the north.

Macedonia is predominantly a mountainous country, cut by larger or smaller valleys, gorges, plateaus, and highlands. Altitude ranges from about 60 m at the lowest point to 2,764 m at the highest point. It has about 15 mountain ranges higher than 2,000 m, but only the Shara Mountain has more than 20 peaks higher than 2,500 m. From the geomorphologic point of view, Macedonia can be divided into two main regions: the western part with carbonaceous rocks and the eastern part with a great diversity of siliceous rocks.

The territory of Macedonia includes 25 percent pastureland; 25 percent arable land, meadows, vineyards, and orchards; 8 percent barren land; 37 percent gazetted (legally established) forestland; 2 percent lakes; and 3 percent urban or industrial land. Sub-Mediterranean-Balkan and Balkan- Middle-European forests occupy the biggest area.

Macedonia contributes greatly to the species diversity of Europe. The country contains between 3,200 and 3,500 species of vascular plants, 485 species of vertebrate animals, and 6,844 species of invertebrate animals. Within the more than 3,000 species of vascular flora are 132 different plant communities (ranging from aquatic to alpine ones), including: 21 aquatic and swamp communities, 8 halophytic communities, 2 steppe communities, 50 forest communities and 51 alpine communities.

Three national parks, two strictly protected natural reserves, three natural reserves of special natural features. Natural monuments occupy 58,084 ha. These include the three glacial lakes: Ohrid Lake with 23,000 ha, Prespa Lake with 17,680 ha and Dojran Lake with 2,730 ha.

2. Climatic conditions:

The territory of the Republic of Macedonia distinguishes between the following homogenous climates regions: sub-Mediterranean region (50 – 500 m), moderate continental sub-Mediterranean region (up to 600 m), warm continental region (600-900

m), cold continental region (900-1100 m), sub-forest continental mountain region (1100 – 1300 m), forested continental mountain region (1300 -1650 m), sub-Alpine mountain region (1650-2250) and Alpine mountain region (above 2250 m)

3. Socio-economic data:

Economic aspects:

The collection of wild gathered products, even though considered as a very old traditional activity of the people living especially in under-developed area, was never considered as a significant commercial activity for the country in general. For a long time it was presented as a sector providing some supplemental income to vulnerable groups in Macedonia. Its relevance for the overall Macedonian economy and especially its contribution to the overall export was never seriously considered.

Some analyses show that around 60,000 people obtain additional income from gathering wild products, and annually there are up to US\$16 million in WGP exports. As a general overview around 20.000 families in Macedonia have regular links in the sector, season by season. The sector employees around 600 persons, engages around 3.000 seasonal workers for a period of 4 months, meaning additional 1000 permanent employments.

The employment opportunities are large, but they depend on the organization and regulation of the sector. Once the integrated system of collection, processing and export monitoring will be organized, it will be much easier to record the number of employments as well as to plan future business, further employments.

These projections are only for the next decade, since experts believe that the standard of rural people will rise and this sector will be neglected.

Social Aspect:

Approximately 60 000 people were involved into collecting process. The average collectors' age is 50 years. About 70% of retailers are unregistered. The processing is organized in 20-30 companies which have 300 employees with permanent status and 3,000 seasonal workers. Lack of legal mechanisms to protect retailers (licensed companies). Standardization of retailers points, or meets international criteria as Hasap (NASSP) measures.

4. Current forms of production

4.1 Wildcrafting:

Upon the investigations in the Republic in Macedonia are registered from Regnum *Fungi* (fam. *Boletaceae*, *Agaricaceae*, *Tricholomataceae*, *Polyporaceae*, *Russulaceae*, *Cortinariaceae*, *Hygrophoraceae*) 1590 species.

From Regnum (*Plantae*): Divisio *Bryophyta* – mosses 349 species, Divisio *Lycopodophyta* 6 species, Divisio *Equisetophyta* (*Sphenophyta*) – The horsetails 7 species, Divisio *Polypodiophyta* – The Ferns 42 species, Divisio *Pinophyta* - The Conifers 15 species, Divisio *Magnoliophyta* – The Flowering plants (fam. *Astearaceae*, *Poaceae*, *Fabaceae*, *Apiaceae*, *Lamiaceae*, *Caryophyllaceae*, *Ericaceae*, *Rosaceae*) 3200 species.

Priority Non-Wood Forest Product's species of Macedonia and geographical areas where they can be found are:

Fungi: *Amanita caesarea* (in oak forests in the whole southern part of the country), *Boletus spp.* (*aereus*, *edulis*, *reticulatus* - whole country), *Cantharellus cibarius* (whole country), *Lactarius spp.* (*deliciosus*, *sanguifluus*, *semisanguifluus* - whole country in pine forests and plantings), *Morchella spp.* (*conica*, *esculenta*, *elata* - whole country), etc.

Lichens: *Evernia prunastri* (whole country)

Berries: Blackberries (whole country), Blueberries (whole Mt. region), Raspberries (whole country), Cranberries (Belasica Mt.) etc.

Medicinal and aromatic plants: *Arctostaphylos uva-ursi*, (Pelister Mt., Osogovski Planini Mt., Kitka), *Gentiana spp.* (*lutea*, *punctata* – Sara Mt., Pelister Mt., Nidje Mt., Jacupica Mt., Jablanica Mt.), *Hypericum perforatum* (whole country), *Juniperus spp.* (whole country, mostly on Pelister Mt., Berovo, Osogovski Planini Mt., Bistra Mt.), *Tilia* (mostly Veles, Kitka, Galicica Mt.), *Thymus* (whole country), *Salvia* (whole country), *Sideritis spp.* (*scardica* – Sara Mountain, *raeseri* – Galicica, Kozuf), etc.

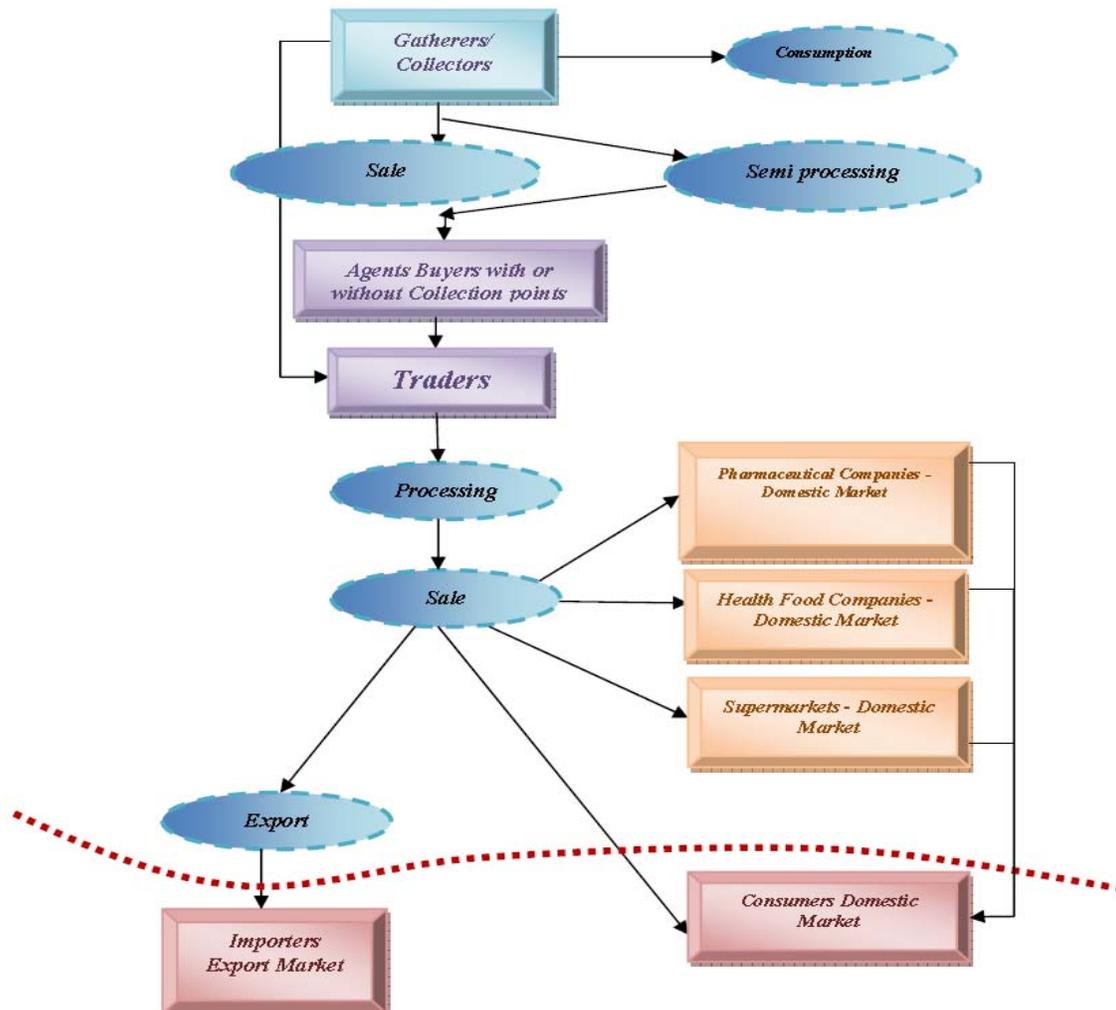
Collecting of Non-Wood Forest Product's in Macedonia

No official data exists on main gatherers gender; usually families living in rural areas with both men and women are gatherers of Non-Wood Forest Product's.

Most of the gatherers are unorganized groups. Despite the existence of the Association of Gatherers "Herba M" which is result of SIPPO project activity only small percent of all gatherers are members and registered. Main reason is that gatherers fear registration due to the possible social security lost.

Producers are organized in Association of wild products, gatherers, buyers, processors and traders, "Sumski Plod", USAID AgBiz supported project.

Value Chain process of the WGP is organized as follows:



The value chain of the WGP sector in Macedonia, even not organized or structured can be easily understood of how it functions, what are the links and how can they be improved. The value chain is supply driven, as everything depends on the supply of the WGP that can not be predicted. At the moment there is large export market for these products, where unlimited quantities of Macedonian WGP can be sold.

Gatherers/Collectors

Gatherers are unorganized groups with no equipment and very small knowledge or training. On the other hand, buy out companies are small scale firms with equipment for cutting and drying. They all have plans to invest in this process. Currently there are 100 to 150 firms with HACCP implemented system who are contracting local population for gathering.

The number of collectors varies, but it has trend of increasing in the last several years. At present there is estimation for 12.000 collectors. The collectors do not possess

may power in the value chain as they depend on the domestic market buy-out traders, companies. They usually sold their products fresh (mostly the berries and mushrooms) and dried (MAP, lichens and mushrooms). Large portion of collectors do not possess equipment, skills and habits for adding value to products, while small number dries the collected mushrooms. Small number of processors keeps part of the collected products for their own needs, which is a result of limited tradition in the home use of the products. Comment: In processing of NWFP's women are mostly engaged, nearly 90%, and in selling and trading of products men are with higher involvement.

The employment data related to WGP in official data bases does not exist. The reasons for these lay on the limitations in collection of such data, since there is no registration of collectors, as no registration of the large portion of seasonal workers, engaged during the season. In this respect the following data is based on the interviews with companies, State Statistical Office and Ministry of environment and spatial planning, as an orientation data for the sector.

Collectors

The number of collectors is around 12.000 people on the national level. This data arises from the quantities buy-out by the companies, and quantities exported, with some averages for collection quantities of mushrooms, lichens, berries and MAPs. The number of collector is increasing. Even the collection is traditional activity of the population living near the forests; it used to be diminished during the phases of industrialization of Macedonia. The collection was again re-introduced as the market required high quantities with good buy-out of the products from the early 90's. In the recent period (last 3-5 years) the number of collectors increases. Many middle age people, unemployed, coming out from the large bankrupted companies involve themselves as collectors. Pressured by great poverty and limited job opportunities, the high altitude areas in Macedonia continue their tradition for collection.

4.2 Cultivation:

5. Stakeholders of production:

In the several decades experience, Macedonian products are almost no contaminated, meaning even there are certain levels of contamination substances acceptable, and our products show almost no presence of it. At the moment the products in Macedonia are checked for contamination only if they are for export, when it is required to have Radiological Certificate. Two laboratories are certified for these tests, one in the Republic Health Protection Agency, and one at the Veterinary Faculty. The tests are checking the presence of Ce137 and Ce134. Macedonian products show almost no presence of radioactivity, as the permitted limit is 600 Berkelium, and in Macedonian mushrooms are up to 50 Berkelium.

6. Stakeholders of Processing:

Processors

Processors are the main player in the sector that possess the power in the chain. As almost all of the products are exported through these companies, the whole value chain depends on them. The processors have their own inactive association, that gathers when there is urgent need, but it has no permanent representation or any lobby power. The processors organize the most of the buy-out and the export with average gross margins range from 25% to 79% depending on the product and the level of processing. There are around 20 serious players in this group, that invested a lot in their business capacities, implement standards, organize buy-out stations and identify the export markets.

The processing of the wild gathered products covers few technology cycles that create semi-final products offered mainly on the export markets. The collected and buy-out wild gathered products exported are: wild mushrooms: fresh and chilled, frozen, dried, brined and fried; berries: fresh and chilled, frozen; lichens – dried.

Medical and Aromatic Plants are processed in dried parts, packed as individual medicinal plants, teas (medicinal teas, fruit teas, organic teas), tinctures, oleums, syrups, extracts, creams and gels, powders, pitch (resines) etc.

Mainly responsible for/involved in the processing of Non-Wood Forest Product's in Macedonia are women and companies like Alkaloid Ad Skopje, Replek Ad Skopje, Galafarm, Leafarm, Galenius Doo etc.

The processing capacities vary most of the processors possess their own capacity that is organized on an area from 300 – 3000 m² that enables from 1–50 tones of processing per day. They possess different equipment, but it seems that freezers are compulsory. Most of them are equipped with cutting and drying machines, while the modern boiling and fermentation equipment is rare. The implementation of standards such as HACCP is ongoing since legal regulation is in force from 2010.

Processing and Export

The processing is organized in around 20-30 companies in Macedonia, where the estimations are that around 600 persons are permanently employed. The companies engage around 3000 persons during the season in the processing. The processing companies organize the export of the products.

7. Marketing/Trade data:

Traders/Agents

There are traders and agents that appear during the season, for whom the processors say they represent the un-loyal competition. Most of these traders are not registered. They collect around 20-30% of the buy-out quantities, play with the prices, and in most of the cases sell the products to the processors.

Buy-out companies and traders

The buy-out companies and independent traders are almost the same that organize the export. There are approximately 80 companies and around 100 independent, not registered traders that organize the buy-out of the products.

The domestic sales (companies)

These companies deal with small quantities of medicinal and aromatic plants, mainly in production of teas and medical supplements. Additionally some restaurants buy very small quantities of mushrooms. There are few supermarkets that offer wild mushroom where the sales is in very limited quantities. The domestic sales players are insignificant for the sector.

The export market (importers)

The importers of the WGP's belong to the group of traders and large processing companies. They buy semi-finalized products, which are further packed and sold in the supermarkets, or as raw material in the pharmacological and cosmetics industry. The importers define the price, quantities and the products that should be processed. They possess the greatest power in the value chain. Most of the processors are traditional partners of Macedonian companies, from several European countries. Some of the importers have opened their own processing companies in Macedonia creating competition to the local ones. The importers move the market and the development of the sector in the country.

7th of July St. Johns day (Ivanden) is the day of Medicinal plants. In Krusevo specialized market for Non-Wood Forest Product's is organized.

The wild mushroom sales on the export markets can be observed both on target market sales on one hand and then as fresh or chilled and dried wild mushroom products. The European market (EU market are the EU-27 countries and other developed European countries, however without the regional EU members such as Romania, Bulgaria, Greece and Slovenia) is the main market both for the fresh and dried wild mushrooms. The European market is by far larger than the regional (the ex-Yu countries together with Bulgaria, Albania, Romania and Greece) and other markets (the Americas, ex-Soviet countries). The regional market does not exceed the export value of one million US\$ for both fresh and dried wild mushrooms and therefore is less significant. However, if we consider the export values for Fresh or Chilled Wild Mushrooms, on an individual country level, we can conclude that the most significant export partner within Europe is by far Italy (with 65% sales in Y2007 from all European countries), then France, Germany, Austria and Spain. For dried wild mushrooms on the European market again Italy is by far the most important partner followed by France.

From the Regional partners for export of Fresh and Chilled Wild Mushrooms most significant sales are mostly going to Serbia and Bulgaria in the last year. The sales in the other countries in the region appear to be incidental. The same market for dried mushrooms shows Serbia and Slovenia as constant partners and Romania with most significant value.

Lichens from the genus Evernia and Centraria are exported mostly to Morocco, Spain and France. The other export markets are more incidental and for much smaller value. If we consider the countries as groups of markets as described in the previous

sections then the most significant market for the lichens is the European market and lately the other countries.

The main export market for the fresh berries is Serbia. If we consider the period in the last five years it seems that this product is relatively “new” in terms of export since the value of exports is significantly increased in the last three years while almost not exports in the previous years. It appears that the European market is almost insignificant for fresh berries while almost all fresh berries export is ending on the regional market i.e. Serbia.

The processed berries have no specific pattern of sale by country although the sales in Europe for processed berries (mostly Austria and Italy) are higher than on the regional market (mostly Serbia). The other markets do not appear for the processed berries as well.

The Medicinal and Aromatic Plants (MAP) is the fourth category considered with a trend of constant increasing export value in the last five years. The most significant European market per country is by far Germany representing 48% in Y2007 to 69% in Y2005, of the total MAP exports to the European market. Then is the Italian market with increasing values form 3% in Y2003 to 14% in Y2007 from the European exports, while the French market’s export value is reducing, 27% in Y2004 to 14% in Y2007.

The most significant regional market is Serbia representing around 30% to 50% of the regional export value for MAP. Other significant regional markets are Croatia, Slovenia and Bulgaria.

The most significant export markets from the other markets are the USA, and Australia.

Considering the four product groups all together: wild mushrooms, lichens, wild berries and MAP together we can see that the most significant market is the European market, with much larger export value sales, followed by the Regional market and then by all other export markets.

International trade

Raw and processed Wild mushrooms are traded in:

- The European market (Italy, France, Germany, Austria and Spain) is the main market both for the fresh and dried wild mushrooms.
- The regional market (the ex-Yu countries together with Bulgaria, Albania, Romania and Greece)
- Other markets (the Americas, ex-Soviet countries).

Lichens *Evernia prunastri* and *Pseudoevernia furfuracea* are exported mostly to France, Spain and Morocco.

The main export market for the fresh berries is Serbia. The processed berries have no specific pattern of sale by country although the sales in Europe for processed berries (mostly Austria and Italy) are higher than on the regional market (mostly Serbia).

The Medicinal and Aromatic Plants (MAP) are exported in the European market (Germany, Italy, France), regional market (Serbia, Croatia, Slovenia and Bulgaria. and other markets are the USA, and Australia.

Sideritis raeseri (Heldr.) Papan. & Kokkini – Ohrid tea is a brand species with geographical name and marked origin - registered in State Office of Industrial Property

Oleum hyperici (St. John's Worth Oil), Good Nature-teas (Organic Teas produced in a strictly controlled environment, certified for organic production of safe food) and Bil-ol-gel, as trade marks produced by pharmaceutical company Alkaloid.

8. Legislation issues:

National legislation

In Republic of Macedonia there is regulation on the collection of wild products (including wild mushrooms, MAP and lichens). The regulation is consisted of:

Forest Law (Official Gazette 64/09), Regulation on the methods for use and collection of non forest products, It authorizes the Public Enterprise "Makedonski sumi" to manage with all natural resources on the forest areas;

Regulation on the methods for use and collection of non forest products, where the companies are supposed to pay for the use of forests, based on the previously signed Contract with the Public Enterprise or the Ministry of Environment;

Nature Protection Law (Official Gazette 67/04, 14/06, 84/07), that regulates the protection of the biodiversity through establishment of system of measures for protection of the wild species, their habitats and ecosystems and secures the sustainable usage of it. The Law regulates the existences and compilation of red lists (currently not existing) of threatened fauna and flora (including wild mushrooms, MAPs, lichens), and regulates the system of permits for trade (export) of threatened species by issuing export permit D4 and CITES certificate for trade of species on the CITES list;

Institution/Ministry is responsible for the regulation of collection, processing and trade of NWFPs

1. Ministry of Environment and Physical Planning in charge of Law of Nature protection and two sub law regulations regarding non wood forest products (issuing license for gathering threatened and protected wild species, mushrooms and animals and parts of animals) and (Decision for determination of goods for import and export format (mode)).
2. Ministry of Agriculture, Forestry and Water Economy in charge of Law on Forests and sub law regulation regarding non wood forest products (use and collection of NWFP's)
3. Public Enterprise "Macedonian Forests", established by the Government for management of state owned forests,
4. Custom Office – controls trade of export/import of NWFP's

Trade permits

Macedonian Law on nature protection, as well as the ratified conventions on protection of threatened species of flora and fauna, and the convention of trade of threatened species (CITES) regulate that the export of these species must be based on the export licenses issued by the Ministry of Environment and Spatial Planning. Each company that plans to export any of the threatened species of lichens, medicinal and aromatic plants or wild mushrooms placed on the List of threatened species (listed in question 11), must apply for export license. The section for protection of nature within the Ministry of Environment and Spatial Planning (MOEPP) based on the requested documents (Registration List of the company, Application Form, and previous used license for export) gives recommendation for the quantity and species that the applicant

should be licensed to export in the next six months. The legal sector within the MOEPP approves the recommendation and the license is finally issued by the Minister.

The section for protection of nature also recommends the prohibition for export of certain species for certain time period to the Minister, where he decides whether and for how long should be prohibited. For any serious, integrated approach in measure of the supply, regulation on the quantities exported and permits issued there is a need of existence of scientific information (mapping) as well as field information and full documentation on the trade.

At the moment this is not the case. There is some mapping for specific products realized on specific locations, but it is far less than it is required. There are no tracked and systemized information on the licenses issued and licensed used, even this information is required and should be submitted by the companies. Last year new electronic system for issuing licenses was established which is creating more systematic approach on gathering data for issuing and using license.

On the other hand the ratification of certain conventions for threatened species in many cases does not respond on the field situation in the country. The conventions imply certain regulations over the protection, trade, based on the international projections, researches. Many of the wild mushrooms in Macedonia are used in sustainable manner, they appear in large quantities and they are not threatened at this stage, but according to the international conventions they are subject of regulation.

List of threatened species of wild mushrooms and medicinal/aromatic plants

Evernia prunastri (L.) Ach
Cetraria islandica (L.) Ach
Aconitum divergens Panc
Adonis vernalis L.
Althaea officinalis L.
Anacamptis pyramidalis (L.) Rich.
Arctostaphylos uva-ursi (L.) Sprengel
Centaurum erythraea Rafin
Colchicum bivonale Gus.
Colchicum macedonicum Koshanin
Colchicum pieperianum Markgr.
Dactylorhiza maculata (L.) Soo
Daphne blagayana Freyer
Digitalis grandiflora Miller
Digitalis feruginea L.
Gentiana lutea L. subsp. *symphiandra* (Murb.) Hayek
Gentiana punctata L.
Glycyrrhiza glabra L.
Hetychrysum zivojinii Cernjavski&Soshka
Hepatica nobilis Miller
Hypericum perforatum L.
Hyssopus officinalis L.
Juniperus communis L.
Licopodium clavatum L.

Leucojum aestivum L.
Menyanthes trifoliata L.
Orchys laxiflora Lam. Fam Orchidaceae
Orchys militaris L.) fam Orchidaceae
Peonia masculata (L.) Miller
Peonia peregrina Miller
Paris quadrifolia L.
Primula veris L.
Pulmonaria officinalis L.
Ruta graveolens L.
Sambucus nigra L.
Sideritis raeseri Boiss&Heldr.
Sideritis scardica Griseb.
Thymus oehmianus Ronniger&Soshka
Tulipa mariannae Lindtner
Tulipa scardica Bornm.
Veratrum aum L.
Cryptogramma cryspa
Osmunda regalis
Astragalus physocalyx
Dactylorhiza sambucina fam Orchidaceae
Galium rhodopaeum
Coronilla coronata
Fritillaria gussichiae
Trapa natans
Galanthus nivalis
Ramonda serbica
Marsilea quadrifolia
Salvinia natans
Aldrovanda vesiculosa
Origanum vulgare L.
Salvia officinalis L.

List of threatened species of wild mushrooms

Amanita caesarea (Scop:Fr.) Pers
Amanita ovoidea (Bull:Fr.) Link.
Boletinus cavipes (Opat.) Kalchbr.
Boletus appendiculatus Schff.
Boletus fechtneri Velenovsky
Boletus impolitus Fr.
Boletus pulverulentus Opat.
Boletus regius Kromb.
Boletus rhodoxanthus (Kromb.) Kallembach
Boletus torosus Fr.
Cantharellus cibarius var.*amethysteus* QuOl
Hericium spp.

Hirneola auricula-judae (Bull:St.Am.) Berk
Hygrophorus marzuolus (Fr:Fr) Bres.
Langermania gigantea (Batsch:Pers) Rostk.
Morchella elata Fr.
Pleurotus eryngii (D.C:FR) QuOl.
Suilus sibiricus (Sing.) Sing.
Tuber spp.
Agaricus spp.
Armillaria spp.
Boletus aereus
Boletus aestivalis
Boletus reticulatus
Boletus edulis
Boletus pinophilus
Bovista plumbea
Bovista nigrescens
Calvatia utriformis
Cantharellus cibarius var. *cibarius*
Craterellus cornucopioides
Hydnum repandum
Lactarius deliciosus
Lactarius salmonicolor
Lactarius semisanguifluus
Lactarius sanguifluus
Marasmius oreades
Morchella conica
Pleurotus ostreatus
Calocybe gambosa (Fr.) Donk; syn. *Tricholoma georgii* (Clusius: Fr.) Quel
Xerocomus badius (Fr.: Fr.) Gilb.; syn. *Boletus badius* Fr.: Fr.

This list is part of Decision for determination of goods for import and export mode (Official Gazette of RM 167/2008). Cause for threat for listed species in most of the cases is human negligence and unsustainable gathering, but there is no research to support this information.

9. Research institutions:

Department of Pharmacognosy, Faculty of Pharmacy, University of Ss Cyril and Methodius, Skopje, Republic of Macedonia

10. National incentives

Strategy for protection of biodiversity of Republic of Macedonia with Action Plan, adopted in 2004 providing directions for sustainable use of the nature resources, and stimulating the cultivated production of medicinal and aromatic plants.

Strategy for sustainable development of forests in Republic of Macedonia, adopted in 2006, for contribution of the forestry sector to the national economy and rural development through sustainable forest management, ensuring renewable resources and

protection of local and global environment, and providing products and services for improving the quality of life of all citizens.

Republic of Macedonia has not adopted its own collection standards for WGs. It relies on the international standards for collection, accepting it through ratification of conventions and international agreements for WGs collection, protection and trade. The standards commonly state that the area where gathering takes place has to be identifiable. Sustainability and/or stability are key words in the standards. Standards specifically require collection to take place only from a stable ecosystem. All standards require gathering to be carried out in a manner that does not exceed sustainable yields.

Most of the standards deal with the collection activity and leave open whether or not the land used for collection of specific products is cultivated. The standards merely apply to the collected products and include some additional requirements to prevent contamination with prohibited substances.