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Plant Genetic diversity of berries in Albania – Challenges for the future

Prof. Dr. Alban Ibraliu

Department of Agriculture Sciences
Faculty of Agriculture and Environment
Agricultural University of Tirana
Email: albanibraliu@ubt.edu.al

Albania

Population (2018): 3.162 000
Area : 25 713 km2

The Republic of Albania, is a country in Southeastern Europe. It is bordered by Montenegro to the northwest, Kosovo to the northeast, Macedonia to the east, and Greece to the south and southeast.

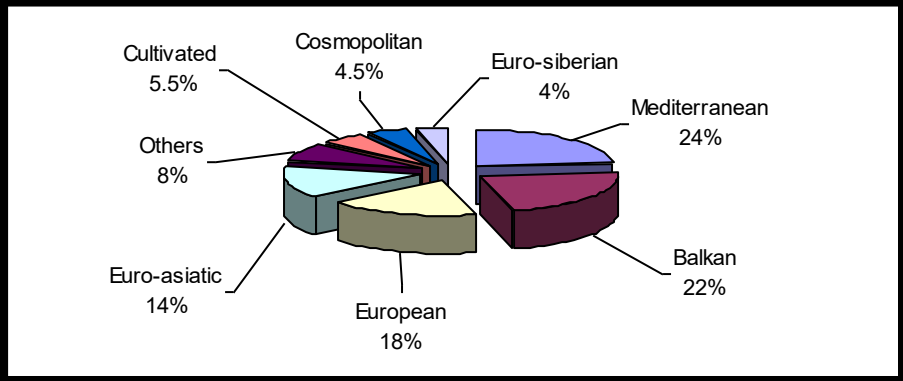
The Albanian Flora

Albania represents one of the European countries with a very rich flora

- **Favourable climatic conditions**, with a range from coastal subtropical to inland continental climates

- **Geographical position** in the Mediterranean region and in the Balkan Peninsula

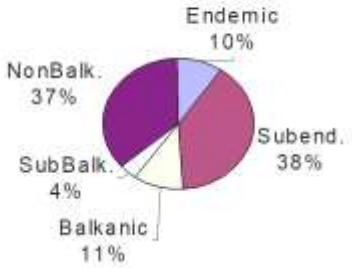
- **Many different types of landscape**



Albania represents one of the European countries with a very rich flora

- Very rich flora with 3270 plant species or about 30 % of European Flora. (*Flora of Albania, No.1 1994)*
- 30 endemic species and about 180 subendemic species. *(The Red Book.* Flora. 1995)
- Needs to give a special value for rare, endangered and relict species too (10 % of Albanian Flora) (*The Red Book. Flora. 1995)*

Fig.2 Floristic spectrum



Albania represents a very rich country in PGR in Europe

- It is estimated that more than 800 species are considered as plant genetic resources for food and agriculture.

Currently, about 15 arable species, 15 forage species, 35 vegetable species, and 20 fruit-tree species are cultivated in the country.
In addition to these agricultural species, medicinal and aromatic plants (MAPs), which widely occur in the country, comprise an important natural economic resource which is not widely and sustainably exploited.
More than 30 species of berries belong to the Albanian flora that occur in the wild. They are important natural and economic resources of the country.

Main Products

Salvia Officionals

Sage Triloba

Savory

Oregano

Thyme

Rubi Fructicosi

Myrtilli

Juniper

Lavandula

Current Situation of the Distillery in Albania

- 12 distilleries with the capacity, from 3000 liters-3600 liters.

Current Situation of the Distillery in Albania

Early production around 36 000 kg.

Manly is sage oils

- organum oil
- juniper berries oil
- myrtill oil
- lauris oil
- helicrysium oil

JUNIPER: Berries & Essential Oil

Juniper Oxycedrus L.Cupressaceae
Clean grain and 100% natural oil

Constituents:

0.5-2% Volatile oil and contain myrcen 50.8-54%, α-pinene 25-27%, limonene 8.5%, β-caryophillen 2.8-4.34%, α-humulene 2-3.6%, α-,β-γ-kadinene 1.23-1.85%, β-pinene 1.25-1.6%, borneol 0.9-1.25%, citronelal myrtenal 0.2-1.3%, terpinil acetate 0.36-0.67%, bornil acetate 0.22-0.58%, α-terpineol 0.57%, terpinene-4-ol 0.35-0.55%, terpinolene 0.4-0.46%, cedrene 0.2-0.47%, germacrene-D 0.08-0.8%, γ-terpinene 0.22%, β-elemene 0.1-0.34%.

Essential Oil

Juniper oil is obtained by Steam Distillation from dried ripe fruit of Juniperus Oxycedrus

Appearance: Colorless to pale yellow liquid
Odor: Strong, fresh, pine-like odor
Origin: Albania

Juniper Communis L.Cupressaceae

Clean grain and 100% natural oil

Constituents:

0.5-2% Volatile oil with monoterpenes as chief components (up to 80% α- and β-pinenes, up to 5% terpinen-4-ol, α-terpineol, borneol, geraniol, etc), but also sesquiterpenes (e.g.cadinen), which are often found only in traces.

Fruit contains also about 30% invert sugar, 3-5% catechol tannins, flavonoids and leucoanthocyanidins.

Essential Oil

Juniper berry oil is obtained by Steam Distillation from dried ripe fruit of Juniperus Communis

Appearance: Colorless to faintly yellow liquid
Odor: Characteristic woody soft
Origin: Albania

MYRTILLI: Fruit & Leaves

Vaccinium myrtillus L., Ericaceae
Common Blueberries (Hand clean fruit, leaves)

Constituents:

Fruit: up to 12% tannins (mainly cathecol tannins) anthocyanins, (mainly myrtilin, delphinidin-3-glucoside, etc) , flavonoids, about 30% invert sugar, pectins, 1-1.17% fruit acids (malic,citric,etc),vitamins (B-group, C, provitamin A), some hydroquinone, etc.

Leaves: traces of arbutin and hydroquinone wich sometimes are absent, catechol, tannins, neomyrtillin (a "glucokinin"), flavonoids, leucoanthocyanins; caffeic, chlorogenic and quiniacids; oleaonolic and ursolic acids, β-amyrin; relatively rich in manganese.

Crop Calendar: From September to November

MYRTLE: Fruit, Leaves & Essential Oil

Myrtus Communis L., MYRTACEAE
Clean sheet, minced & 100% natural oil

Constituents:

0.4-0.8% volatile oil (with 26-36% cineole, myrtenole, α-pinene, limonene, dipenten, camphen, linalool, geraniol, nerol), about 14% tannin (gallic acid, ellagic acid and 3,6-digaloylglucose), a bitter substance, rosin, flavonoids (myricetin, myncitrin), etc.

Essential Oil

Myrtle Oil is obtained by Steam Distillation from leaves of the plant Myrtus Communis

Appearance: Pale to Reddish yellow liquid
Odor: Sweet, fresh, herbaceous odor
Origin: Albania

CYNOSBATI: Hip & Seed

Rosa canina L.Rosaceae
Rose hips, hip seeds

Constituents:

Hips: rich in vitamin C (0.2-0.8%); other vitamins such as vitamin A, B1, B2, K, nicotinic acid. They contain also tannin, invert sugar, pectin, sacharose, organic acids (citric,malic), lycopin, xanthophyll, carotene, flavonoids (rutin,etc).

Hip seeds (real fruits): about 8% fixed oil, 0.2-0.3% volatile oil, sometimes traces of vitamin E (α- and β-tocopherol), etc.

SAMBUCI: Flowers & Fruit

Sambucus nigra L.Caprifoliaceae
Elder (Flower, fruit)

Constituents:

Flowers: about 1.5% flavonoids (rutin being the chief compound, followed by isoquercitrin, hyperoside, astragalin, quercetin, kaempferol, etc), some volatile oil, about 3& chlorogenic acid; p-coumaric, caffeic and ferulic acids as well as their glucose esters; traces of sambunigrin (a cyanogenic glucoside), triterpenoid compounds (about 0.85% ursolic and oleanolic acids), sterols, mucilage, tannin, etc.

Fruit: organic acids (citric, malic,etc), about 3% tannin sugar, flavonoids (rutin, isoquercitrin, etc), antocyanins (cyaniding glucosides), trace of volatile oil, vitamin C, etc.

Genetic Erosion in Albania

Based on observations carried out by agriculture research institutes, and according to the data collected during some collection missions carried out during 1941 (*H. Stube*) and after 1990 (*K. Hammer, L. Xhuveli, D. Pignone, etc*), the result indicates that during the last fifty years, the **genetic erosion** of some species was estimated

- about 94% for *Triticum aestivum*;
- 100% for *Triticum durum*;
- 100% for *Triticum turgidum*;
- 83% for *Triticum monococcum*;
- 76% for *Avena spp*.;
- 59% for *Hordeum vulgare*;
- 78% for *Vicia ervila*
- 42% for *Vicia sativa*.

The main driving factors of genetic erosion included:

- The replacement of local varieties by foreign varieties and hybrids;
- Exploring collected plants without any biological criteria and no regulatory framework;
- Destruction of habitat through unplanned works, road construction or other social buildings and stone-quarries;
- Social-economic changes and demographic migration, abandonment of rural areas, mainly hilly and mountain areas, which are richer in plant genetic resources;

The main factors leading to genetic erosion in Albania are:

- In wild plants, **the reason of erosion** is **their gathering without rules and regulations on their biological renovation, and also fires that cause irrevocable losses;**
- Lack of programs for preserving native genetic resources and using them in rational ways;
- Urbanization is an effective cause of erosion, especially in olive-groves surrounding cities;
- Limited knowledge on genetic resources.

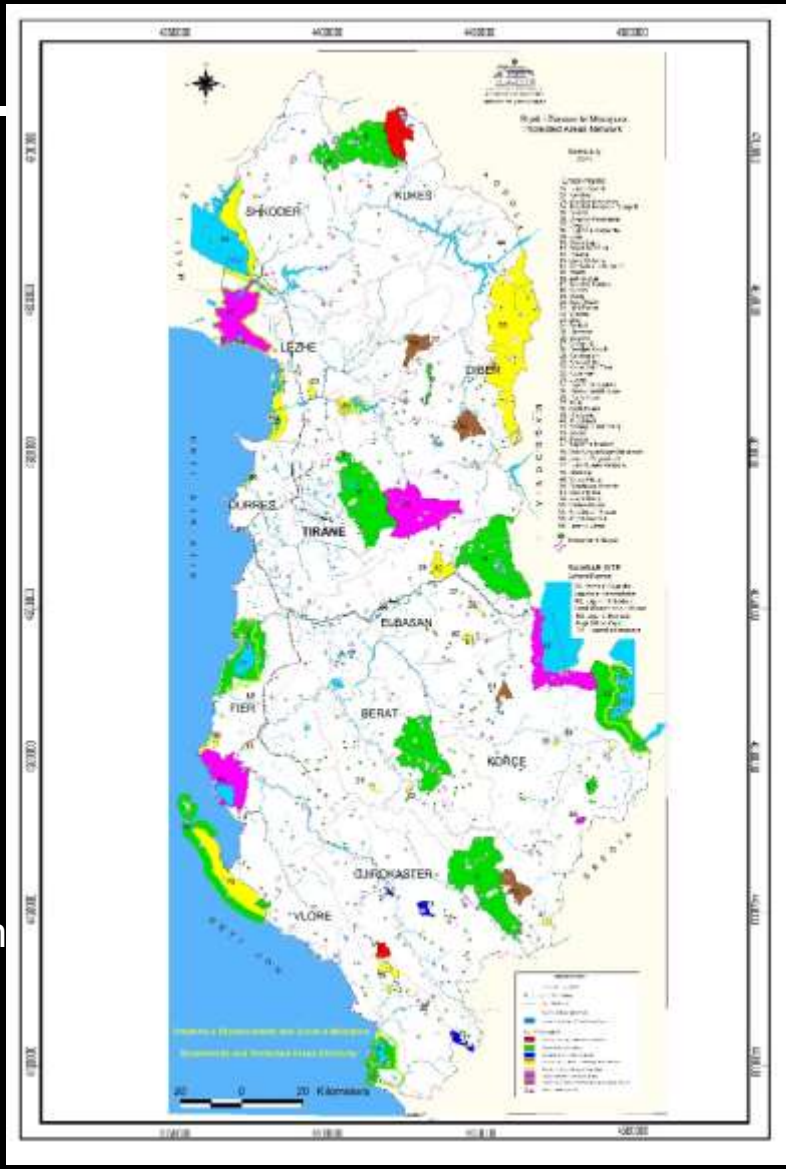
Status of *In-Situ* Conservation and Management

Protected Areas in Albania

Category	No of Protected area	Area in ha
I (Strict Nature Reserves/Scientific reserves)	2	4800
II (National Parks	16	210501
III (Natural Monuments)	6	
IV(Regional Natural Park)	22	127180
V (Protected Landscape)	5	95864
VI (Protected Area of Managed Natural Resources)	4	18245
Total Protected Areas		**98180**

Territory of Albania Albania has recently made significant progress in expanding the network of protected areas from 5.2% of the country's territory in 2005 to 16% in 2014

http://www.natura.al/page.php?lang=en&section=albaniapas



Promoting *in-situ* conservation and management of berries

Protected areas have strongly increased over the last decades in Albania

- *In-situ* conservation in Albania is undertaken in national parks and protected areas, which in total amounts more than 90000 ha.
- The main function of these parks and protected areas is the preservation of flora and fauna in general, especially the forest flora (*trees and shrub species*).

Inventory of berries occurring in national parks and protected areas

In Albania a comprehensive inventory of berries occurring in national parks and protected areas is presently missing, and, in general, the management plans of national parks and protected areas do not specifically address issues related to the conservation and management of berries.

ALBANIA NATIONAL INVENTORY (NI)
Code: ALB017; Institute: Albania Gene Bank, Accessions:

Albanian Gen Bank *Network*

- **Albanian Gen Bank at Agricultural University of Tirana, established in 1996, is National Coordinator Institutions for PGR.**
- Gene bank of Albania provides and practises realization of the tasks resulting from National Programme on Conservation of Plant Genetic Resources for Food and Agriculture and Regulation No. /2008 with co-operation ***ATTC centres and local focal points*** where represented -accessions by July 2015.




Albanian Gene Bank (AGB)

- Since 2008, Albanian Genbank is National Coordinator for PGR' Institution .
- On 2008, Agricultural University (AGB)and Ministry of Agriculture have singed an agreement on "Plant Genetic resources Management", ***with a strong support of SEEDNet programme.***
- According to this agreement it is foreseen all activities to be coordinated between our institutions.
- From 2008-2010, we have organised several training with the support of SEEDNet .

- National Workshop "The technology transfer of the techniques related to the use of PGRFA». (**organisers**: FAO & SEEDNet, 2008)

'The establishment of the national network for the *documentation of the genetic resources, the process of documementation in the local database of ATTC'*, The organisers: SEEDNet and EURISCO

"Organization models of gene banks" by SEEDNet, on February 2009 in Tirana **organiser: SEEDNet, etc**

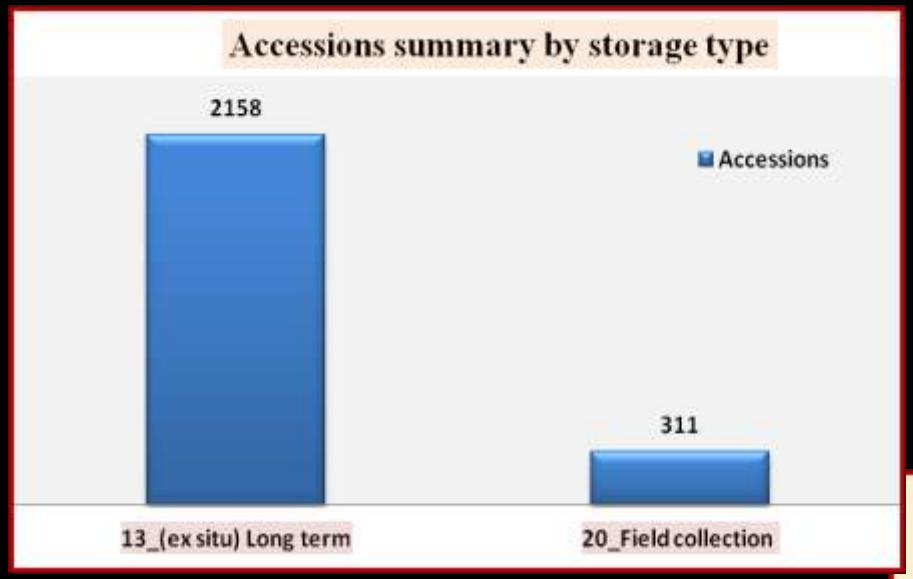
Inventory of Gene Bank

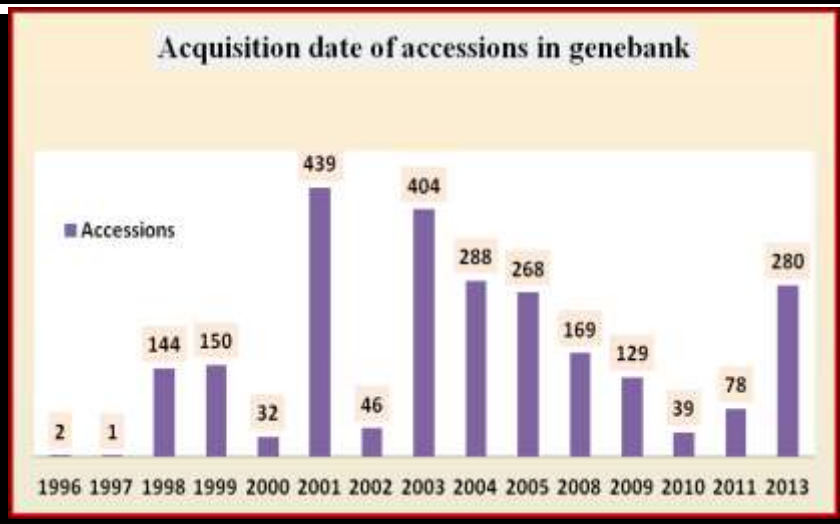
- **ex-situ** conservation over 3000 accessions of different species.
- **Accepted** in years: 1998, 2003-2005, 2008-2010, 2013.
- **Storage**: in 10 standard equipments (freezers). at -18°C (3–7 % seed moisture content). all accessions are stored as = **base collection**.

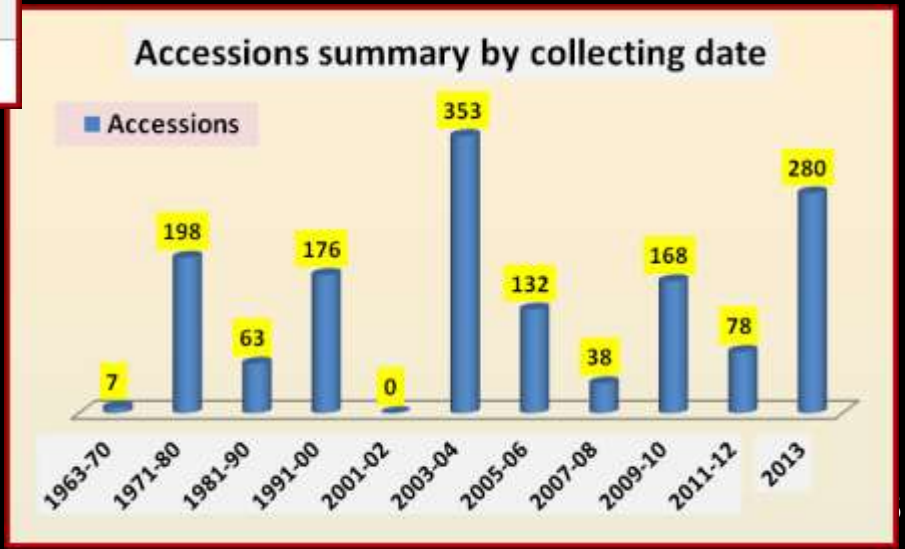
COLLECTING MISSIONS

- The first collecting missions conducted in Albania were reported in 1940. According to Hammer et al. (1995),
- Stubbs's expeditions were the first organized as multi-crop expeditions in Albania during 1941-1942.
- Later on, in 1950 – 1976, some expeditions were organized by the Agricultural Scientific Research Institutes for the inventory and the collection of autochthonous landraces of different crops.
- In 1993 - 1994, three other collecting missions on the wild relatives of crops were carried out by the Albanian Institutions in cooperation with IPK Gatersleben (Knüpffer, 2010). They resulted with the collection of about 500 seed samples of cultivated plants and crops wild relatives (Xhuveli, 1995).
- Albania didn't conduct any national inventory (NI) or survey on plants for food production until 2003 , (from 2003-2005 collecting missions ASP – project)
- SEEDNet missions 2008-2010
- FAO TCP projetc 2012-2014

ALBANIA NATIONAL INVENTORY (NI)
Code: ALB017; Institute: Albania Gene Bank, Accessions:



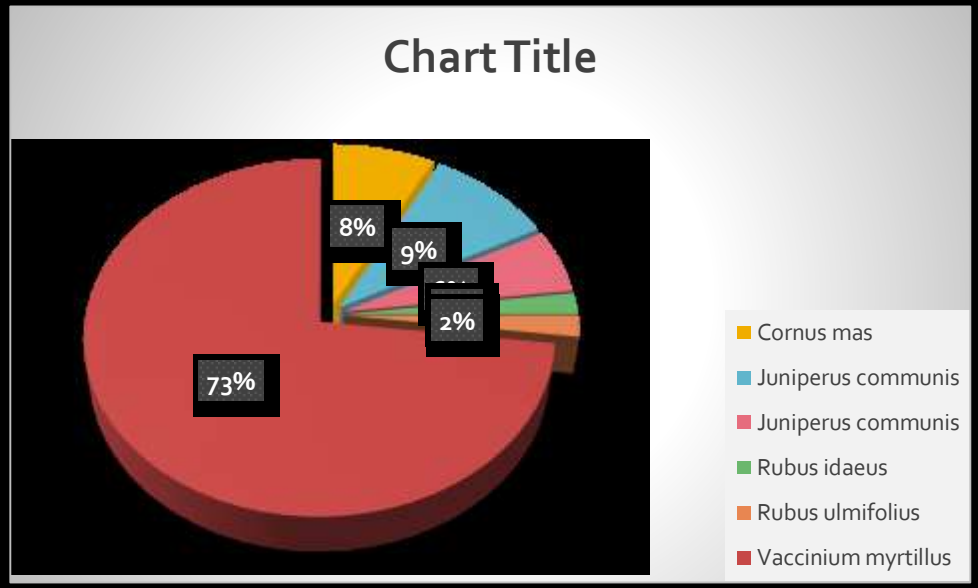




Berries species in Albanian Genbank

ALBANIA NATIONAL INVENTORY (EURISCO) for berries: Accessions summary by genus:

Nr	Genus	Accessions
1	Cornus mas	4
2	Juniperus communis	5
3	Juniperus oxycedrus	1
4	Rubus ideus	1
5	Rubus ulmifolius	1
6	Vacinium myrtillus	39
	Total	51



A total of 6 taxa were collected and accession are part of Albanian Genbank

ACCENUMB	TaxonName_Accepted	GENUS	SPECIES	Name of crop	COLLDATE	ACQDATE	ORIGCTY	COLLSITE	LATITUDE	LONGITUDE	ELEVATION	STORAGE
AGB1914	Cornus mas	Cornus	mas	Thanë	20090116	20090116	ALB	Kotë	402333N	0193609E	204	20
AGB3109	Cornus mas	Cornus	mas	Thanë	20110914	20111109	ALB	Mollaj	403136N	0203930E	1089	13
AGB3110	Cornus mas	Cornus	mas	Thanë	20110914	20111109	ALB	Vithkuq	403145N	0203849E	1079	13
AGB3122	Cornus mas	Cornus	mas	Thanë	20110917	20111109	ALB	Shalë	421935N	0194622E	490	13
AGB1436	Juniperus communis	Juniperus	communis	Dëllinjë	20030725	20040428	ALB	Drobonik, Velabisht	404000N	0200000E	520	13
AGB1444	Juniperus communis	Juniperus	communis	Dëllinjë	20030726	20040428	ALB	Leshnjë	403500N	0201800E	1800	13
AGB1497	Juniperus communis	Juniperus	communis	Dëllinjë	20030820	20040428	ALB	Guri i Bardhe, Xibër	412638N	0200454E	765	13
AGB1519	Juniperus communis	Juniperus	communis	Dëllinjë	20031108	20040428	ALB	Shëngjergj	412007N	0200406E	720	13
AGB1736	Juniperus communis	Juniperus	communis	Dëllinjë	20050825	20051209	ALB	Gjegjan	415638N	0200013E	360	13
AGB3124	Rubus idaeus	Rubus	idaeus	Mjedër	20110917	20111109	ALB	Shkrel	421752N	0193219E	1468	13
AGB1822	Rubus ulmifolius	Rubus	ulmifolius	Manaferrë	20080225	20080225	ALB					20
AGB1737	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Blerim	421056N	0200749E	920	13
AGB1738	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Blerim	421026N	0200729E	900	13
AGB1739	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Fierzë	421106N	0200709E	845	13
AGB1740	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Blerim	421016N	0200739E	870	13
AGB1741	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Fierzë	421222N	0200521E	820	13
AGB1742	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Fierzë	421252N	0200551E	850	13
AGB1743	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Blerim	421017N	0201004E	1600	13
AGB1744	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Blerim	421017N	0201004E	1600	13
AGB1745	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Fierzë	421509N	0200107E	660	13
AGB1746	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20050826	20051209	ALB	Fierzë	421509N	0200107E	660	13
AGB3788	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20140719	20141209	ALB	Gjegjan	415936N	0195746E	1240	13
AGB3789	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20140719	20141209	ALB	Gjegjan	415914N	0195748E	1251	13
AGB3790	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20140823	20141209	ALB	Margegaj	423038N	0195840E	1622	13
AGB3791	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20140823	20141209	ALB	Margegaj	423017N	0195944E	1672	13
AGB3792	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20140824	20141209	ALB	Margegaj	422939N	0195948E	1857	13
AGB3793	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20140824	20141209	ALB	Margegaj	423021N	0200039E	2035	13
AGB3794	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20140824	20141209	ALB	Margegaj	423042N	0200046E	1918	13
AGB3795	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20140824	20141209	ALB	Margegaj	423109N	0200037E	1985	13
AGB4106	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150714	20151115	ALB	Iballë	421025N	0200302E	1419	13
AGB4107	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150714	20151115	ALB	Iballë	421044N	0200204E	1136	13
AGB4108	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150714	20151115	ALB	Iballë	420751N	0200204E	1340	13
AGB4109	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150714	20151115	ALB	Pukë	420015N	0195550E	1245	13
AGB4110	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150714	20151115	ALB	Gjegjan	415846N	0195542E	1156	13
AGB4111	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Sllovë	414634N	0202934E	2000	13
AGB4112	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Sllovë	414505N	0203007E	1913	13
AGB4113	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Sllovë	414524N	0202922E	1735	13
AGB4114	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	422752N	0200055E	1972	13
AGB4115	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	423219N	0200150E	1751	13
AGB4116	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Topojë	423257N	0200313E	2046	13
AGB4117	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Topojë	423301N	0200404E	1860	13
AGB4118	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Topojë	423214N	0200443E	2038	13
AGB4119	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Topojë	423236N	0200500E	1975	13
AGB4120	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	422820N	0200226E	1934	13
AGB4121	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	422821N	0200204E	1928	13
AGB4122	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	422851N	0200031E	2065	13
AGB4123	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	422846N	0195959E	1909	13
AGB4124	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	423021N	0200039E	2039	13
AGB4125	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	423008N	0195946E	1699	13
AGB4126	Vaccinium myrtillus	Vaccinium	myrtillus	Boronicë	20150818	20151115	ALB	Margegaj	423017N	0195943E	1671	13

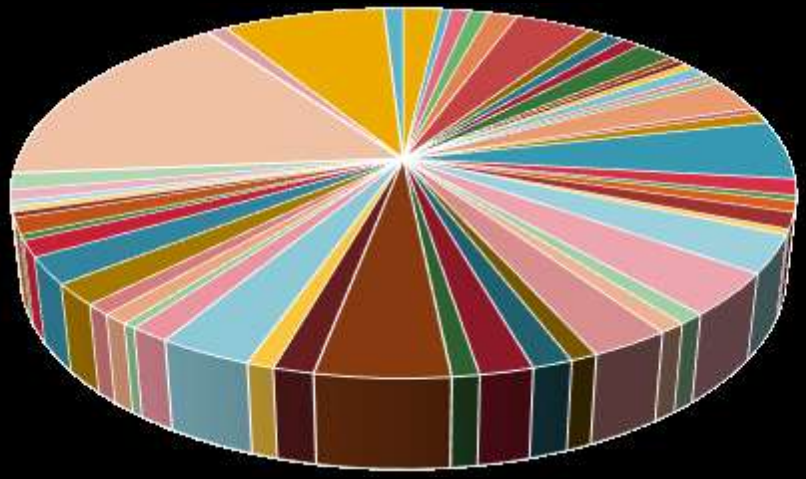
Case of study: an Albanian PGR Database for CWR conservation strategy?

- To create an Albanian CWR checklist
- To create an updated and complete taxonomic Working Database of the PGR-CWR Vascular Plants at least in one Protected Area Albania. Case Study: CWR Database for Shebenik-Jabllanice Protected Area zone (since at present no taxonomic reference for the entire Albanian Database for PGR exists).

List of 86 Genus of CWR and WFP in Albania

1	Abelmoschus	29	Crepis	58	Opuntia
2	Abies	30	Dactylis	59	Phalaris
3	Aegilops	31	Daucus	60	Phleum
4	Agrostis	32	Dioscorea	61	Pimpinella
5	Allium	33	Diospyros	62	Pistacia
6	Amelanchier	34	Diplotaxis	63	Pisum
7	Arbutus	35	Festuca	64	Poa
8	Arctostaphylos	36	Ficus	65	Prunus
9	Asparagus	37	Foeniculum	66	Punica
10	Astragalus	38	Fragaria	67	Pyrus
11	Atriplex	39	Hordeum	68	Raphanus
12	Avena	40	Juglans	69	Ribes
13	Barbarea	41	Juniperus	70	Rosa
14	Bellis	42	Lactuca	71	Rorippa
15	Berberis	43	Laurus	72	Rorippa
16	Beta	44	Lathyrus	73	Rubus
17	Brassica	45	Lens	74	Rumex
18	Carum	46	Lepidium	75	Sambucus
19	Castanea	47	Linum	76	Salsola
20	Celtis	48	Lolium	77	Sinapis
21	Ceratonia	49	Lotus	78	Solanum
22	Cichorium	50	Lupinus	79	Sorbus
23	Citrullus	51	Malus	80	Trifolium
24	Colchicum	52	Medicago	81	Trisetum
25	Coriandrum	53	Melilotus	82	Triticum
26	Cornus	54	Mespilus	83	Tilia
27	Coryllus	55	Myrtus	84	Vaccinium
28	Crataegus	56	Olea	85	Vicia
		57	Onobrychis	86	Vitis

CWR species or WFP in Albania



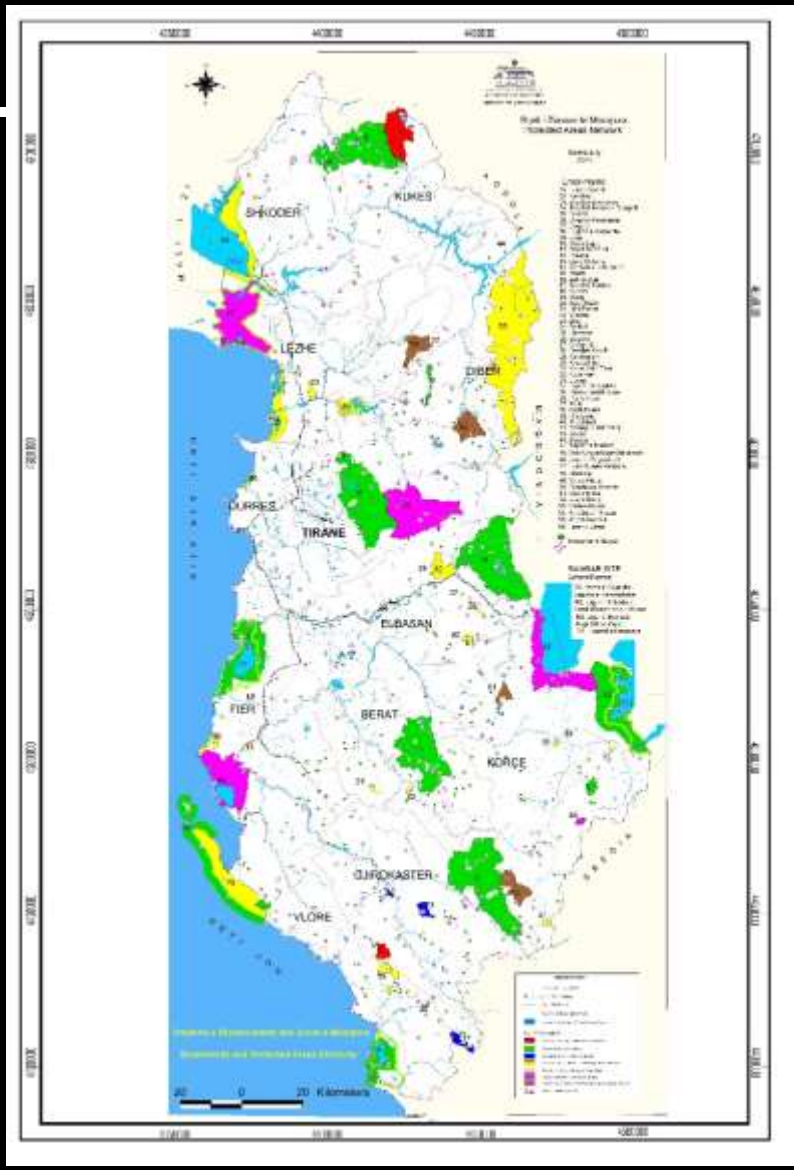
Aegilops, Agrostis, Allium, Arbutus, Asparagus, Astragalus, Avena, Barbarea, Beta, Brassica, Carthamus, Celtis, Cornus, Corylus, Crataegus, Dactylis, Daucus, Dioscorea, Diplotaxis, Festuca, Festuca, Ficus, Fragaria, Hordeum, Juglans, Juniperus, Lactuca, Lathyrus, Lens, Linum, Lolium, Lotus, Lupinus, Malus, Medicago, Melilotus, Olea, Onobrychis, Phalaris, Phleum, Pistacia, Pisum, Poa, Prunus, Pyrus, Raphanus, Ribes, Rorippa, Rubus, Secale, Sinapis, Sorbus, Trifolium, Vaccinium, Vicia, Vitis

A total of 472 taxa were selected through objective and subjective reasoning to arrive at a list of priority CWRs for Albania that are most likely to meet a future requirement for genetic resources based on the production of crops within both Albania and Europe

Status of *In-Situ* Conservation and Management

Protected Areas in Albania

Category	No of Protected area	Area in ha
I (Strict Nature Reserves/Scientific reserves)	2	4800
II (National Parks	16	210501
III (Natural Monuments)	6	
IV(Regional Natural Park)	22	127180
V (Protected Landscape)	5	95864
VI (Protected Area of Managed Natural Resources)	4	18245
Total Protected Areas		**98180**



Natura 2000 Inventory list of protected areas

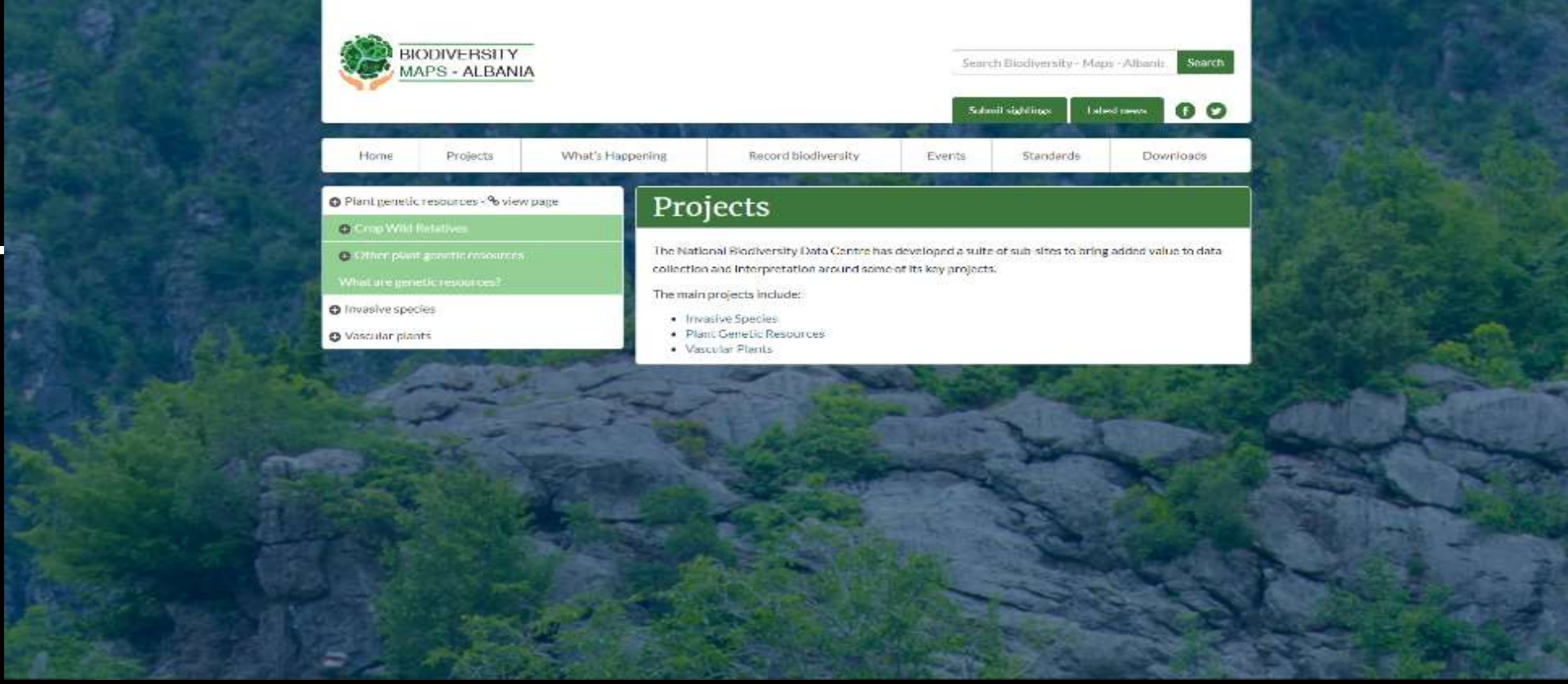


Fig view of the web page of the PGR in Protected area

Managing package of the base data

This package would enable the management of the base information from the Protected Area.

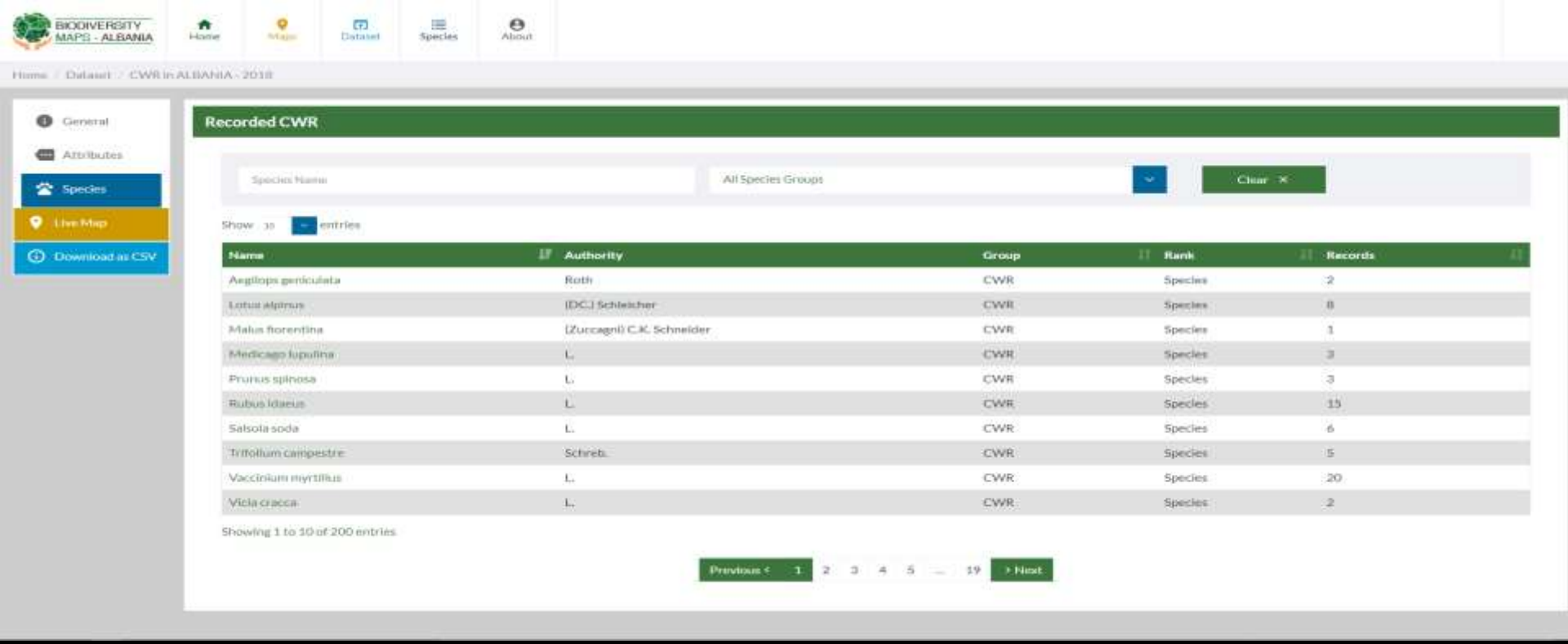


Fig : List of the CWR in Protected Area

Will enable the registering and management of the speciespecies base information: (*Genus, Specie, Author, Albanian name, Family name_Latin, Family Name-Albanian, Genus-Albanian, Group of sp., Number of recorder, Phenology, Threat Status according IUCN, References*) by creating the possibility to generate CWR register of the PGR in this zone .

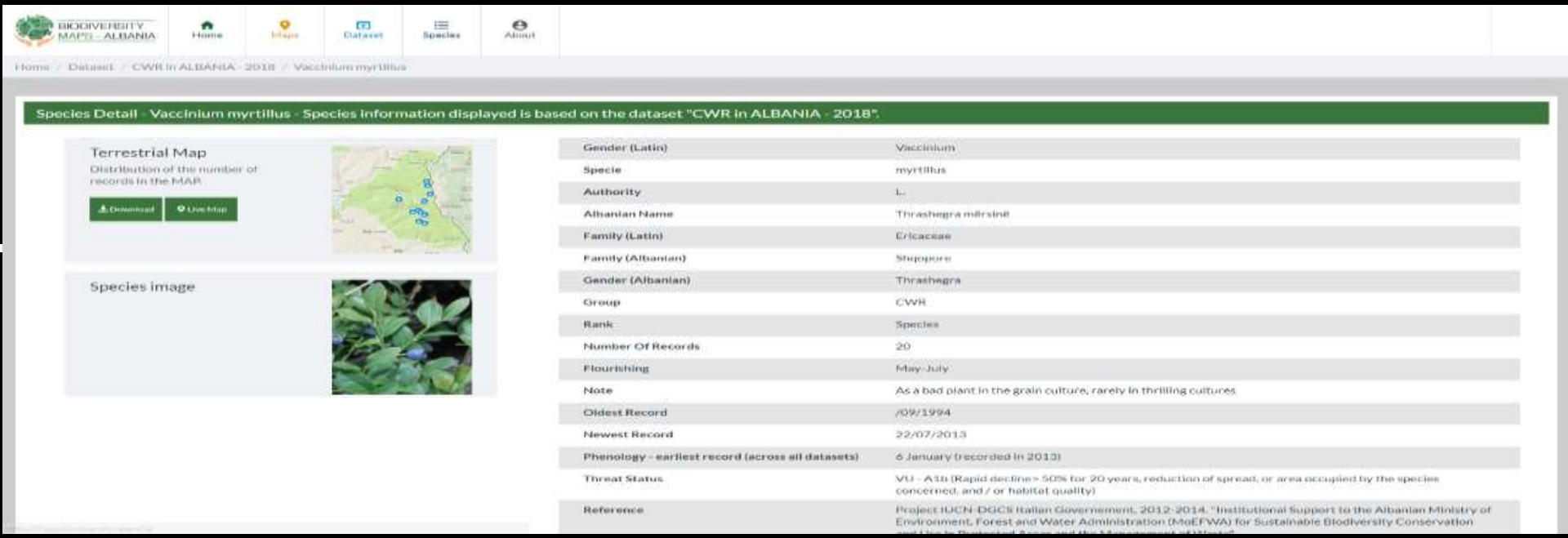


Fig: list of the base information for which CWR species in database

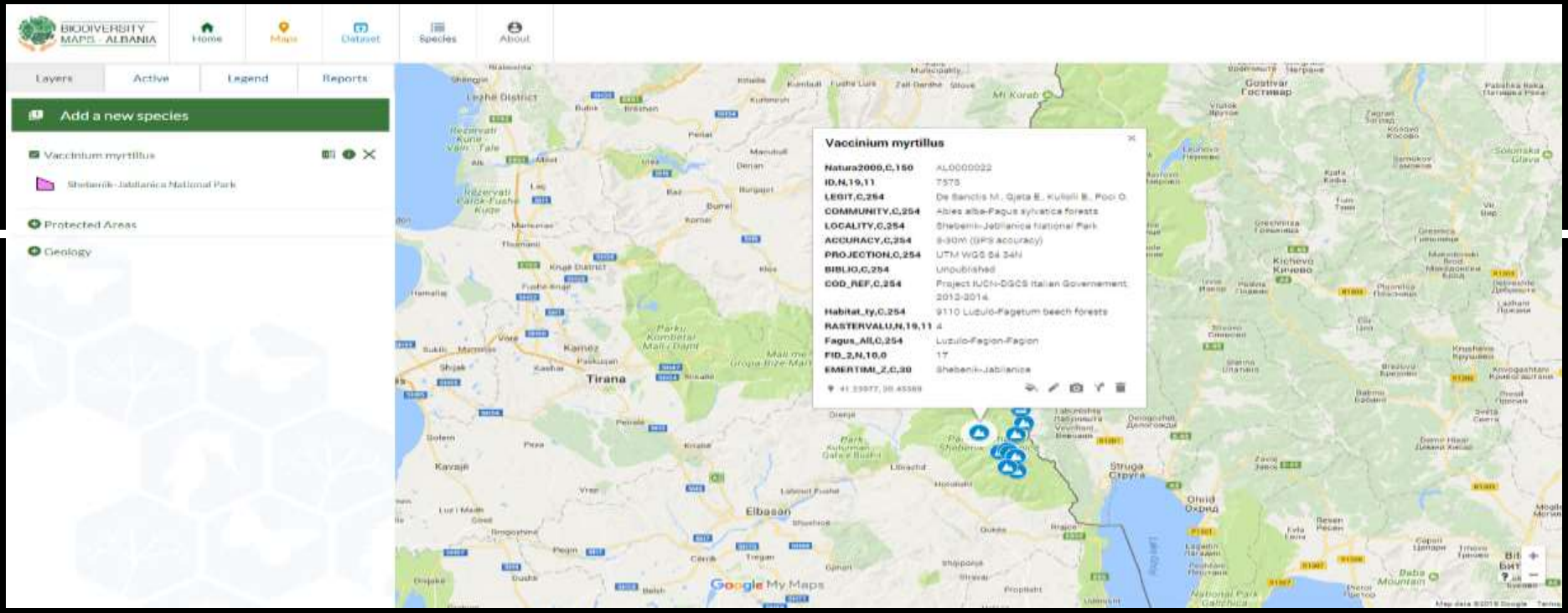


Fig . Maps of the distribution for which species in Protected Areas

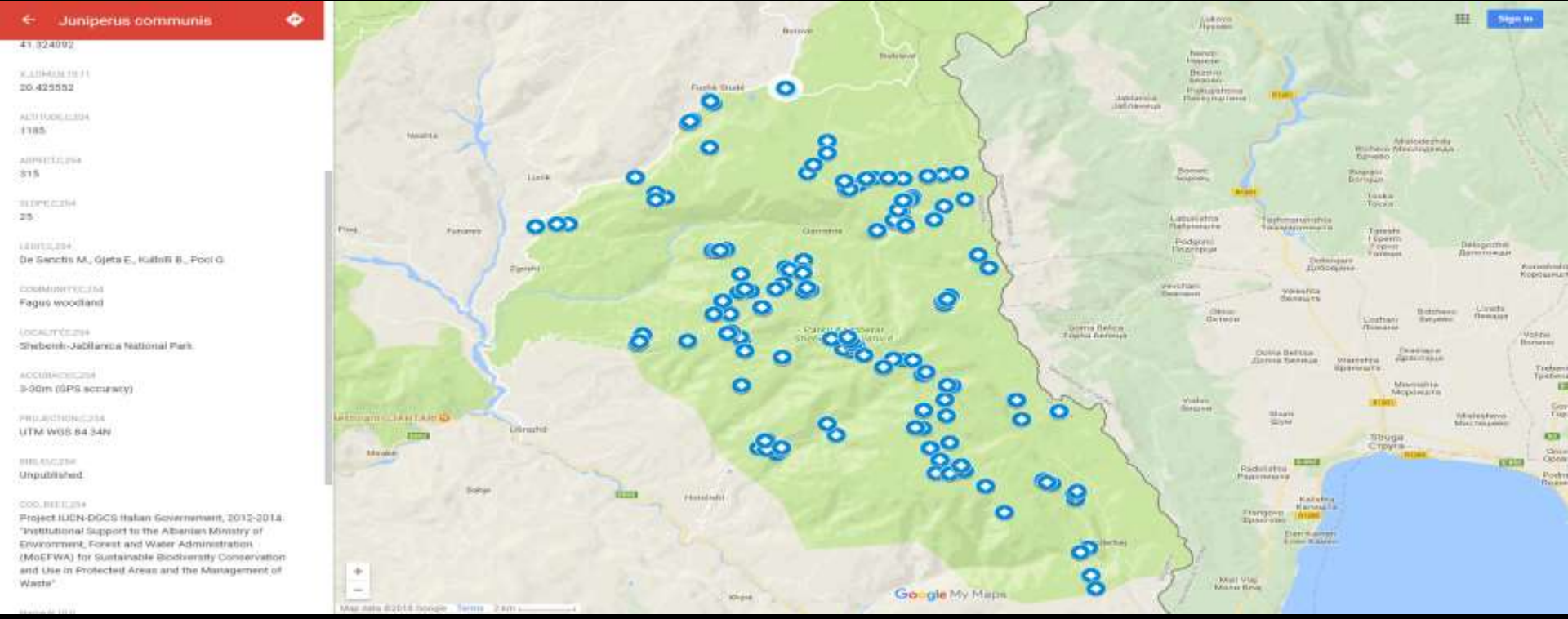


Fig Maps of the distribution for all CWR species in one protected area (Shebenik-Jabllanicë SHebenik-Jabllanica Protected Area)

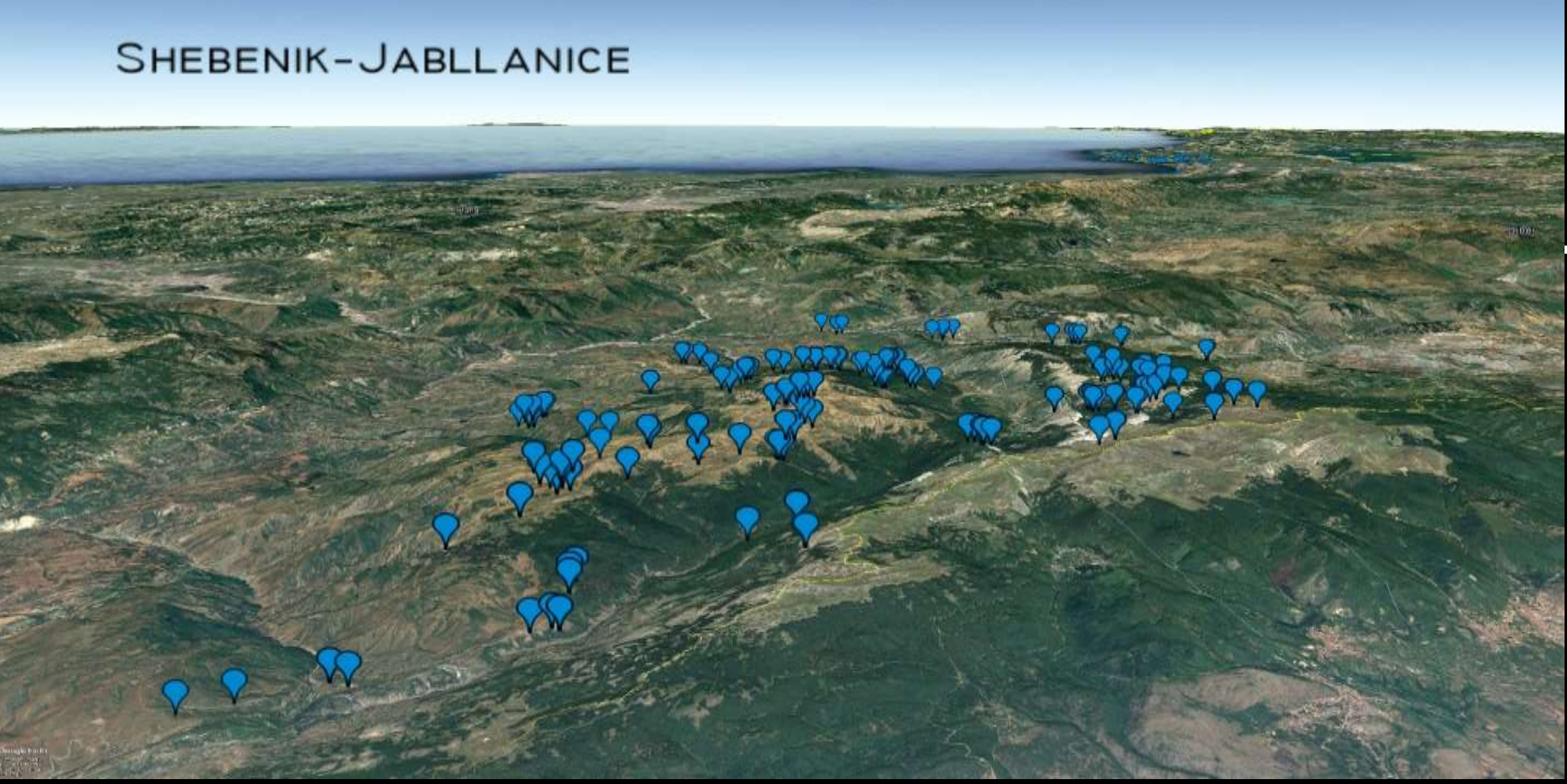


Fig . Maps of the distribution for all CWR species in one Protected area (Shebenik-Jabllanicë SHebenik-Jabllanica Protected area), generated by Google Earth

GOOGLE EARTH - CWR selection from Habitat Flora GIS.kml

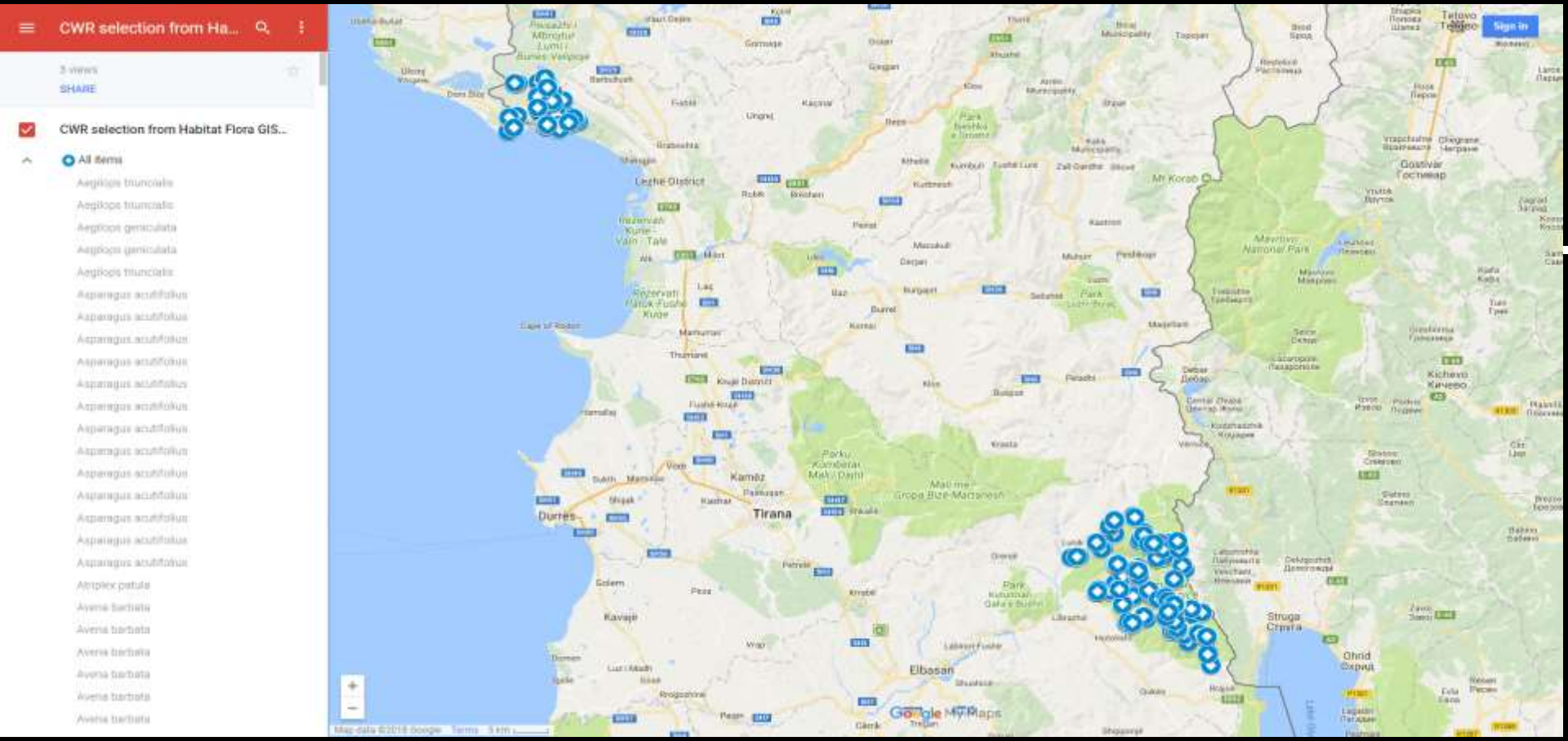


Fig Maps of the distribution for all CWR species in bothe Protected area (Protected areas (Shebenik-Jabllanicë SHebenik-Jabllanica Protected area and Buna-Velipoje Protected area), generated by google Google Earth.

Berry project propasal:

PGR Database for Berries in Protected Areas in Europena countries ?????

Thank you for your attention !