

CONSERVING IMPORTANT PLANT AREAS:

INVESTING IN THE GREEN GOLD OF SOUTH EAST EUROPE



PLANTLIFE

our plants our planet our future

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Front cover: West Rhodopi Mountain, Bulgaria.
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Use of the term Macedonia throughout this document refers to the Sovereign State known in full as Macedonia – the Former Yugoslav Republic (FYR). It is used for convenience and to improve readability, and does not imply the expression of any opinion whatsoever on the part of Plantlife International concerning the name of this State.

Plantlife International is a charitable, non government organisation dedicated exclusively to conserving all forms of plant life in their natural habitats, in the UK, Europe and across the world. We act directly to stop common wild plants becoming rare in the wild, to rescue wild plants on the brink of extinction and to protect sites of exceptional botanical importance. The charity carries out practical conservation work, influences relevant policy and legislation, involves its members in many aspects of its work, and collaborates widely to promote the cause of wild plant conservation. Plantlife International is a member of Planta Europa, the network of organisations working for plant conservation across Europe. Plantlife's head office is in Salisbury, UK.

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Plantlife International



PLANTLIFE

Stichting FLORON, the Netherlands



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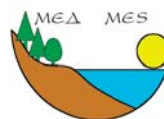
Website: www.plantlife.org.uk

Publicly accessible IPA project database:

www.plantlife-ipa.org/reports.asp

In Macedonia FYR:

The Macedonian Ecological Society working in partnership with Ljuboten Mountaineering Club on the conservation pilot project.



The Planta Europa network



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www.plantlife-ipa.org/resports.asp

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Cypridium calceolus (Lady's slipper orchid) is threatened across Europe. A new population of this species was found in Montenegro during this project.

Executive summary

Important Plant Areas are internationally important sites for wild plants and fungi, identified at a national level using standard criteria.

Initially developed to address the lack of focus on conserving plant diversity, IPAs provide a framework to assess the effectiveness of conservation activities for plants, and target sites for future action. They support existing conservation programmes, such as protected area networks, the EU Natura 2000 network and the CBD Global Strategy for Plant Conservation. Over 1,500 IPAs have now been identified in 17 countries pan Europe, and many countries are embarking on IPA initiatives worldwide.

South East Europe – the Balkan Peninsula - has the richest flora of any part of the continent due to its geomorphology, its location at the junction of several bioclimatic zones and its long history of human settlement. Recent conflict and political and social isolation from the rest of Europe, has slowed development in the region and has, to an extent, protected plant diversity and the associated natural resources. Today the Balkan region is undergoing immense economic and social change, which is placing great pressure on wild plants and their habitats.

This report describes the three-year project to conserve Important Plant Areas (IPAs) in South East Europe, a partnership between Plantlife International, Stichting FLORON (the Netherlands) and organisations in Bulgaria, Croatia, Macedonia FYR and Montenegro.

291 Important Plant Areas have been identified in the four countries, and new site-based data on their botanical features, protection status, management, land uses and major threats recorded on the public IPA web database. These IPAs contain diverse habitat mosaics, dominated by forest and grassland. 152 habitats that are recognised as threatened in Europe are found across all the IPAs identified; threatened forest and grassland habitats appear on the greatest number of sites. High mountain screes and deep limestone gorge habitats are of particular importance in the region as they are home to unique vegetation, including relict species from the tertiary era. 355 threatened plant and fungus species are present on the IPAs identified, currently 292 of these species (which are unique to the Balkan region and known to be threatened) are not listed on European legislation.

South East European IPAs are currently largely intact; however they are subject to significant threats which are increasing in intensity. The miles of coastline, turquoise seas, spectacular mountains and gorges, and warm summer climate are a tour operator's dream. Consequently development (particularly tourist development) is the greatest threat to the integrity of the IPA network, adversely affecting over half of the IPAs identified – frequently at the highest level of intensity. The prospect of short-term financial gain from tourism is currently winning over the long-term security of biodiversity.

Poor forestry practices are damaging forest habitats on 43 % of IPAs identified. Flower-rich farmland – a biodiversity-rich product of traditional farming practices - is suffering from abandonment, particularly in Croatia, where

Trollius europaeus

BORISSASSVOV

34% of IPAs are threatened in this way. Climate change is an important threat, mainly for coastal and alpine IPAs, though this threat proved difficult to quantify at site level.

59% of IPAs in the project countries remain unprotected at national level. Protection levels vary between countries; 59% of IPAs are fully or partially protected in Bulgaria compared to just 18% in Croatia. Up to 90% of IPAs in the project countries *should* qualify for protection through European Union legislation, if this legislation is implemented when those countries accede to the EU. Management plans exist or are in preparation for only 20 of the 291 IPAs identified during the project. This is a shockingly low number for sites of international importance.

Broadly speaking, policies exist to safeguard the diversity of IPAs in South East Europe, through nature conservation legislation and sectoral policy (spatial planning, agriculture and forestry). The development of these policies has been helped by the EU policy framework and international biodiversity commitments. Unfortunately, the human and financial capacity needed in key environmental institutions to enforce the resulting legislation is often lacking. There is an equally important need for improved leadership and commitment by relevant national, regional and local government departments, to ensure legislation is implemented on-the-ground.

Appropriately targeted incentives for the sustainable management of forestry and agricultural land are urgently needed for land owners, users and managers, on whom the conservation of IPAs will ultimately depend. The opportunity for private land owners (who currently own land within 53% of the region's IPAs) to earn a sustainable income whilst managing the land for biodiversity benefit, will be essential to prevent potentially disastrous changes of land use.

This project has shown that IPAs can engage and inspire local communities to act positively for conservation. The short-term, plant focused, low budget pilot projects, described in section V, have succeeded in engaging school children, tour operators, farmers, mountaineers, parents and local officials in plant conservation. Each project has been a small but tangible step forward in engaging civil society in conservation action on the ground, led by the value people place on wild plants and plant resources.

The key to IPA conservation in South East Europe is to find and exploit the links between conservation and development. The challenge is to develop prosperous communities in and around IPAs without sacrificing plant diversity. Plants are an ideal tool to address this challenge because, just as societies need plants, plants need society. South East Europe's IPAs hold the jewels of the region's green gold - securing them for the future is something we cannot afford to fail on.

Recommendations

1. **RECOGNISE** Important Plant Areas (IPAs) as internationally significant priority sites for conservation in local, national and regional **environmental policies and plans**.

Gov- Nat. Gov- Local

2. **REVIEW** the **protected area status** of IPAs in each partner country in the light of data provided by this project, and the commitment of south east European countries to protect 50% of their important areas for plants by 2010 (CBD Global Strategy for Plant Conservation, 2002).

Gov- Nat. Gov- Local

3. **INCORPORATE** national IPA networks into candidate **Natura 2000** networks in accession and potential accession countries in south east Europe.

Gov- Nat. EC/EP NGOs/Civil

4. **UPDATE management plans for protected** areas that are also IPAs, to include specific plant conservation measures that will conserve IPA qualifying species and habitats.

Gov- Nat. Gov- Local Donors

5. **ENSURE** that **Environmental Impact Assessments** are undertaken on all development projects (tourism, transport and industry) within and adjacent to Important Plant Areas, that are not under legal protection and ensure their recommendations are enforced and monitored.

Gov- Nat. Gov- Local EC/EP Donors

6. **ASSESS** the vulnerability of the key botanical features of IPAs to **climate change**. Develop solutions to mitigate effects for those that are most vulnerable, for example investigating the potential of the IPA Zones of Opportunity concept to the restoration of appropriate habitats, corridors and buffer zones.

Gov- Nat. Gov- Local NGOs/Civil Scientists Donors

7. **FULLY** implement government commitments under the **Kyiv resolutions** on forestry, agriculture and biodiversity.

Gov- Nat. Gov- Local

8. **TARGET** IPAs where forestry activities take place for application of sustainable forest management schemes and IPAs where agricultural activities take place for agri-environment schemes.

Gov- Nat. EC/EP

Key:

Gov- Nat. = National government – Ministries of Environment, Agriculture and Forestry and their administrations

Gov- Local = Local government – regional authorities, municipalities

EC/EP = The European Commission/European Parliament

NGOs/Civil = Conservation non-government organisations and Civil society organisations and individuals

Scientists = Botanists, ecologists, conservationists, foresters, agronomists, sociologists across institutions

Donors = National and international funding agencies

9. **INCREASE** national and regional rural development funding to ensure sustainable management of the most biodiverse forests and grasslands in south East Europe. Assist land managers in developing sustainable land use practices where they are absent.

Gov- Nat.

EC/EP

10. **ENCOURAGE** communities whose livelihoods depend on plant resources on IPAs to participate in IPA conservation planning and activities (e.g. collectors on medicinal plants and other non timber forest projects, promoters of nature tourism, hunters, mountain guides).

Gov- Local

NGOs/Civil

Donors

11. **INVEST** in the provision of comprehensive and up to date information on plant and fungi species in South East Europe and use this information to update European species protection legislation as appropriate. This should include
- A valid, accepted European checklist of vascular plants
 - A pan European Red List for vascular plants
 - National Red List for all plant groups and fungi in south east European countries
 - Developing a centralised (European) infrastructure for observation data of plant species as a means of enhancing national and international communications around plant knowledge and conservation

Gov- Nat.

EC/EP

NGOs/Civil

Scientists

Donors

12. **USE** IPA data and the associated IPA database for ongoing monitoring of the ecological status of important sites, threatened habitats, threatened species and the success of conservation activities.

Gov- Nat.

Gov- Local

EC/EP

NGOs/Civil

Scientists

13. **INVEST** in building the capacity of key nature conservation institutions and conservation NGOs in the region, so they may be better equipped to implement legislation and undertake practical conservation activities on key sites.

Gov- Nat.

EC/EP

NGOs/Civil

Donors

14. **USE** IPAs as a local and national focus for awareness raising and education about the importance of natural resources conservation in general, and plant conservation in particular.

Gov- Nat.

Gov- Local

EC/EP

NGOs/Civil

Donors

15. **RENEW** commitment to ensuring conservation is delivered through good policy implementation at all levels of government administration.

Gov- Nat.

Gov- Local

EC/EP

Section I: Context

Introduction

Europe's prime sites for plant diversity are not receiving the recognition that they deserve, and consequently the attention that will safeguard them for the future. Despite the fundamental importance of plants and fungi to healthy ecosystems and in supporting livelihoods, data on the distribution and status of plants are the least complete of all major groups of organisms. In Europe there are over 12,500 species of vascular plants (not including Turkey) and it is the best known flora in the world, yet datasets on the location and threatened status of plant species and their habitats are lacking or incomplete, along with measures that focus on conserving plant diversity. This is particularly but not exclusively true outside the European Union.

Plantlife International's Important Plant Areas programme addresses these issues. The programme's objective is to conserve the best sites for wild plant and fungal diversity across the globe, by identifying priority sites using robust criteria, sound data and specialist knowledge; and by demonstrating and encouraging appropriate conservation action on these sites from global to local (site) level. Over 1500 IPAs have now been identified in 17 countries pan Europe, and over 60 countries are embarking on IPA initiatives worldwide.

Important Plant Areas (IPAs) are the most important places in the world for wild plant diversity. They are identified at national level using internationally standardised criteria; the presence of threatened species, threatened habitats and species richness.

IPAs provide a framework to assess the effectiveness of current conservation activities for plants and are targets for future action. They provide essential information to support the development, implementation and monitoring of environmental policies and programmes (e.g. the Convention on Biological Diversity, protected area networks, site management plans, Natura 2000 and rural development plans). Important Plant Areas are a sub set of Key Biodiversity Areas; sites of global significance for biodiversity conservation. KBAs exist for other species groups in South East Europe; BirdLife International has identified Important Bird Areas (IBAs) and Butterfly Conservation in Europe has identified Prime Butterfly Areas (PBAs). IBAs and PBAs like IPAs, are not legal designations, but provide information to assist the prioritisation of sites for conservation action.

Securing the future of IPAs is of the utmost priority to prevent plant diversity loss, preferably using a two-way approach; the development of good environmental policy and the enforcement of associated legislation (top down), working in parallel with practical conservation action driven by the community (bottom up).

This report is the result of a three-year programme to implement the Important Plant Area (IPA) programme in South East Europe, specifically in Bulgaria, Croatia, Macedonia FYR and Montenegro (referred to collectively in the report as the 'project countries'). It complements work that took place within a previous project in Central and East

Flower rich meadow in Bulgaria – a product of traditional farming practices.

KOEN DE RIJCK WWF/DCP





Extensive spruce forests near Smolyanski Lakes in Trigrad-Perelik-Persenk IPA, Bulgaria.

Europe (2001-2004), where IPAs were identified by Plantlife International and partner organisations in seven countries. This current report also includes additional information on IPA projects in Serbia and Turkey from projects that took place independently of Plantlife International but used the accepted IPA methodology.

The aim of the IPA programme in the South East European project countries was twofold:

- to identify IPAs and collate site based data on their botanical features, protection status, management, land use and the major threats affecting them;
- to demonstrate conservation activities at IPAs through a series of local conservation pilot projects, where the starting point was the plants.

The importance of conserving the South East European flora

South East Europe or the Balkan Peninsula contains the richest flora of any region in Europe. It possesses greater species numbers than any other European region including around 1800 endemic vascular plant species (growing only on this peninsula and nowhere else in the World). This diversity is a result of the peninsula's geomorphology, climate and the profound affect of human activity. Relict species persist on the Balkan Peninsula that found refuge on the mountains formed in the Tertiary uplift and associated ice ages. Classic examples in the project countries include the Macedonian Pine (*Pinus peuce*) or the vascular plant genera *Haberlea*, *Jankaea* and *Ramonda*). Since

that time speciation has been enhanced by the isolation of populations on numerous islands and peninsulas that were created by sea level changes during the uplift and fracturing of land that took place at the end of the Tertiary/early Quaternary. Climatically the region is at a 'cross roads' of three bioclimatic zones (European continental, Eurasian steppe and Mediterranean) resulting in a huge range of conditions for different species and vegetation types to evolve in. Agricultural practices have been influencing the vegetation and landscape of the Balkans for 10,000 years; burning of vegetation, grazing, deforestation and cultivation have all contributed to the diversity of vegetation types and associated species.

SONYATSONEVA



Haberlea rhodopensis.

A significant percentage of the region's plant diversity can be found in the mosaic of mountains, forest, grasslands, river gorges, lakes and coastlines of the four countries in this project. The Balkan and Rhodope Mountains are recognised as global Centres of Plant Diversity. It is imperative that the importance of this enormous plant diversity should be properly recognised, documented and conserved. The project countries are all countries with economies in transition (from state to market based economy). Bulgaria is the only partner country currently within the EU. The drive for economic prosperity in these countries, as elsewhere, is often sought with little regard for the long term security of natural resources, despite the ultimate dependence of all economic activity on these resources. Conservationists have a responsibility to ensure the economic, social, aesthetic and intrinsic values of this irreplaceable natural heritage is fully understood and properly communicated; ensuring that future decisions taken by government and civil society on the future use of natural resources are made in the full knowledge of the potential consequences for the wild plants, the habitats and the inhabitants of this region.

IPAs and key political initiatives

The conservation of important areas for plant diversity is embedded within target 5 of the Convention on Biological Diversity (CBD) Global Strategy for Plant Conservation (GSPC). Endorsed by the Parties to the CBD in 2002, this Strategy recognises the importance of conserving plant diversity and has galvanised botanical and conservation communities at global, regional and national levels, drawing together plant conservation projects and pushing forward plant conservation. 182 governments have ratified the CBD including those of the project countries in this project. Target 5 of the Global Strategy for Plant Conservation is *Protection of 50 per cent of the most important areas for plant diversity assured* [by 2010]. Plantlife International and IUCN are recognised as facilitating organisations for this target, and the IPA methodology a useful tool in its implementation. In Europe plant conservationists have responded by developing the European Strategy for Plant Conservation (2002, 2007) with regional sub targets including two for the conservation of IPAs.

Important Plant Areas are not designations, but the criteria for identifying them in Europe include those required to designate important sites for biodiversity conservation that make up the Natura 2000 and the Emerald networks, actions under the EC Habitats Directive and the Bern Convention respectively. IPA criteria differ only in their consideration of exceptionally species rich sites and crucially, of species that are

recognised as threatened by botanical experts, but are not included within the current EU legislation. IPAs therefore provide important baseline data that can be used for defining these networks, directly contributing to Natura 2000, the Emerald network and other European nature conservation legislation which is discussed in more detail in section III.

Useful references

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Peljesac IPA, Croatia.



TONI NIKOLIĆ

Section II: Important Plant Area identification and data analysis in South East Europe – Overview of IPAs in the four project countries

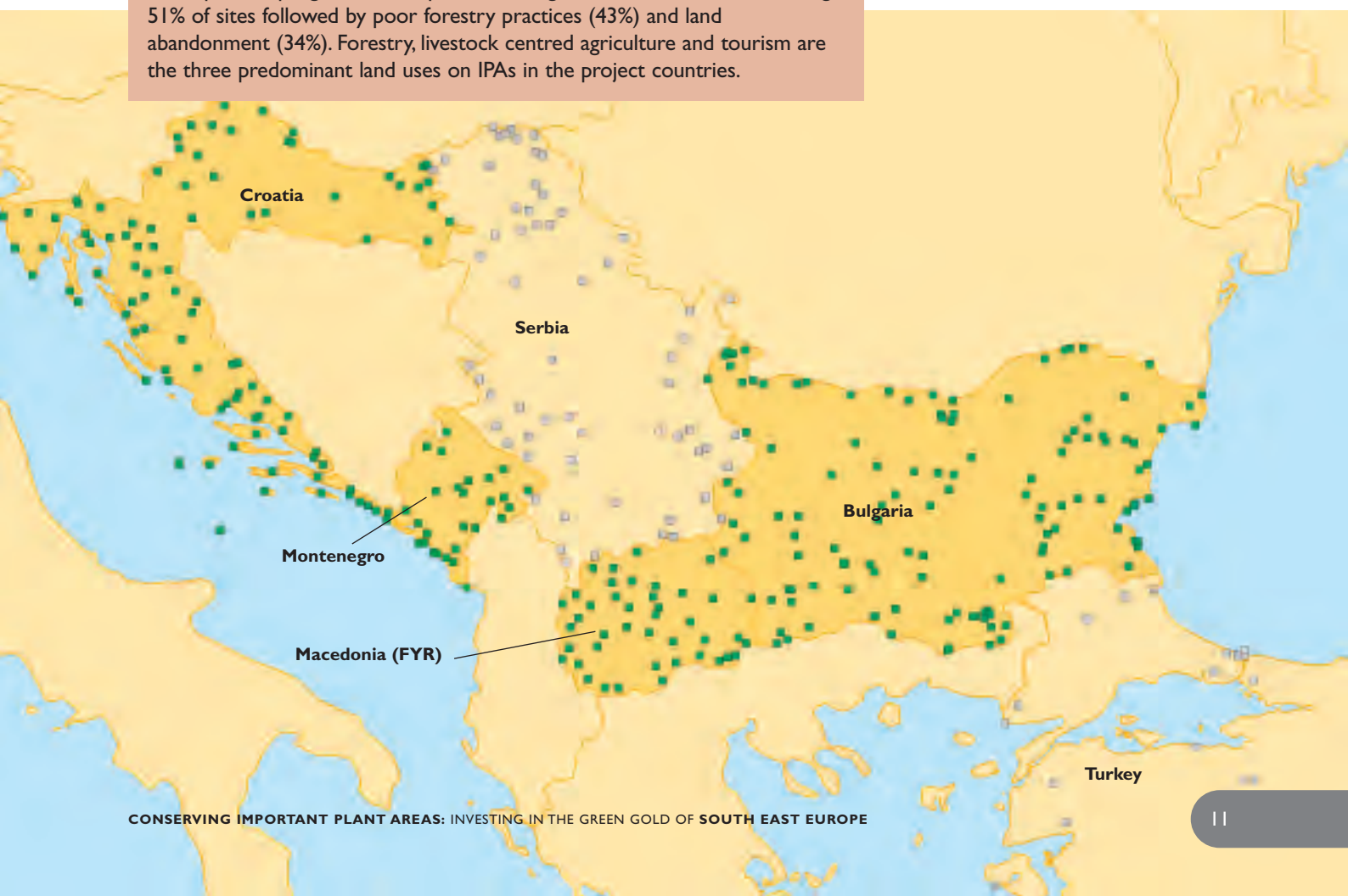
Summary

291 IPAs have been identified in the four SEE project countries, covering 3,853,934 hectares. 333 species are present on fewer than five IPAs, showing the high levels of local endemism within the project countries.

Forest and grassland are the most dominant and frequent habitats on IPAs. 71% are made up of threatened forest habitats and 61% of threatened grassland habitats. Heathland (encompassing garrigue, maquis and alpine scrub) is a frequent but less extensive component of the vegetation. Threatened habitats associated with scree and rocks are not extensive but are present on 30% of IPAs and contain a large number of important, tertiary relict species. **118 (41%) IPAs are protected at national level (in full or part).** This varies greatly between countries, as does the level of protection. More IPAs have lower levels of national protection. Approximately one third of IPAs overlap with Important Bird Area and Important Butterfly Areas but significant numbers do not, illustrating the importance of considering all species groups when prioritising conservation action.

Management plans exist for 13 IPAs out of 291, with an additional seven plans in progress. Development is the greatest threat to IPAs affecting 51% of sites followed by poor forestry practices (43%) and land abandonment (34%). Forestry, livestock centred agriculture and tourism are the three predominant land uses on IPAs in the project countries.

Fig. 1. IPAs in South East Europe





Globally threatened *Degenia velebitica* found only on the Velebit mountain range in Croatia and depicted on the 50 lipa coin.

No. and Size of IPAs

In each country the majority of IPAs are between 1000 and 10,000 hectares. Macedonia and Montenegro contain fewer smaller IPAs.

	Bulgaria	Croatia	Macedonia FYR	Montenegro
No. of IPAs	125	97	42	27
Area (ha)	1,721,248	964,655	459,425	708,606

Table 1. Number and area of IPAs in the SEE project countries

Size range of IPA (ha)	Bulgaria	Croatia	Macedonia FYR	Montenegro	Total
<10	8	2	0	0	10
≥ 10 and < 100	18	9	0	0	27
≥ 100 and <1000	33	28	2	8	71
≥ 1000 and <10,000	42	34	24	15	115
≥ 10,000 and < 100,000	18	23	16	3	60
≥ 100,000	6	1	0	1	8

Table 2. Size range of IPAs in the SEE project countries

Qualifying criteria for IPAs

The majority of IPAs qualify with more than one criterion: 205 IPAs qualify based on the presence of threatened species (criterion A), 270 on the presence of threatened habitats (criterion C) and 82 for species richness (criterion B). Most IPAs also have more than one *qualifying feature* ie. more than one A species or C habitat even though one is sufficient. For example Bistra Mountain (Macedonia FYR) has 19 IPA qualifying features but Cesargradska Mountain (Croatia) and Devisha (Bulgaria) have only one each.

IPAs with Criterion A threatened species

205 IPAs (70%) in the project countries were identified using Criterion A (the presence of significant populations of threatened species) as the qualifying criteria, these are broken down into sub categories in the table below. 378 threatened species are present within the 291 IPAs in the project countries, and these have been recorded a total of 997 times across all sites.

Criterion A	Total IPAs	Bulgaria	Croatia	Macedonia FYR	Montenegro
Total sites for A (Ai-Aiv)	205	90	52	40	23
Ai	52	21	11	5	15
Aii	158	67	42	28	21
Aiii	73	14	0	23	9
Aiv	113	40	16	38	19
HD species	78	30	25	7	16
BC species	129	60	31	19	19

Table 3. IPAs containing criterion A threatened plant and fungus species in the SEE project countries

Ai = global threat; Aii = regional threat; Aiii = threatened national endemic; Aiv = threatened near endemic/limited range; HD = Habitats Directive; BC= Bern Convention.

155 threatened species are present in **only one IPA** in the four project countries, such as the globally threatened *Tulipa rhodopaea* on one IPA in Bulgaria and the endemic *Nepeta ernesti-mayeri* in Macedonia. Five species of *Campanula* (bellflower) and ten species of *Verbascum* (mullein) are also recorded on only one IPA, two of the many genera showing remarkable speciation in the region. **333 threatened species** are present on **fewer than 5 IPAs** in the four project countries, for example *Degenia velebitica* and *Aquilegia kitaibelii* are found on only two sites in Croatia and globally threatened *Daphne malyana* on four sites in Montenegro. Many other species are found on less than 10 sites: the regionally threatened *Gomphus calactus* (Pig's Ear Mushroom) and *Cypripidium calceolus* (Lady's Slipper orchid) – both found on five sites. That so many species are confined to a small number of IPAs, is a reflection of the high levels of speciation and local endemism present in the region, and the potentially precarious situation for many of these species should the integrity of the IPAs be threatened.

Criterion A species present on the EU Habitats Directive lead to the qualification of less than 40% of IPAs, compared to 55 % of IPAs qualifying through the presence of threatened near endemic/limited range species (endemic to the Balkan region). The annexes of the Habitats Directive do not

Endemic of the south east Dinaric Alps, *Daphne malyana* inhabits limestone rock crevices.



VLADIMIR STEVANOVIC

include many plant species that are threatened in South East Europe, due to the Directive being designed for use in the European Union. However, in the absence of a European Red List, the annexes of Habitats Directive (and those of the Bern Convention) provide the best available list of species threatened across Europe.

IPAs with Criterion C threatened habitats

270 IPAs (93%) were identified using criterion C habitats from the EU Habitats Directive and the Bern Convention annexes. 152 criterion C threatened habitat types are present across all 291 IPAs, which were recorded 1287 times. **16 threatened habitats** are recorded on only one IPA in the four countries. For example Pannonic sand steppe (Bulgaria), Mediterranean salt steppe (Croatia), Bladderwort colonies and tree spurge formations (Montenegro) and xerothermophilous formations with *Buxus* (Macedonia). The steppe habitats are ‘priority habitats’ on the EU Habitats Directive,

Criterion C	Total IPAs	Bulgaria	Croatia	Macedonia FYR	Montenegro
Total sites for C (Ci-Cii)	270	109	95	40	26
Ci	161	72	55	33	1
Cii	250	93	91	40	26
HD habitats	251	107	94	37	13
BC habitats	78	11	3	39	25

Table 4. IPAs containing criterion C threatened habitats

Ci = priority threatened habitats as defined by the Habitats Directive
 Cii = threatened habitats; HD = Habitats Directive; BC= Bern Convention.

***Gomphus clavatus* (Pigs ear fungus) recorded on only five IPAs.**



COLIN ROSE / CREATIVE COMMONS

IPAs under Criterion B, botanical richness

80 Croatian IPAs qualified under criterion B, one in Montenegro (sand dune habitat) and one in Macedonia (alpine and sub alpine pastures). The criterion was not used in Bulgaria. Use of this criterion was limited to habitats about which there is more detailed knowledge.

Major habitats

The most frequently occurring habitats on IPAs in south east European project countries are forest or woodland (on 81% if IPAs) and grassland (on 76%) and these habitats are dominant in 50% of sites where they occur. Heathland is present on 50% of sites but is a less extensive component of the vegetation. 'Heathland' encompasses the garrique and maquis component of habitats in the Mediterranean and the sub-alpine scrub in continental regions.

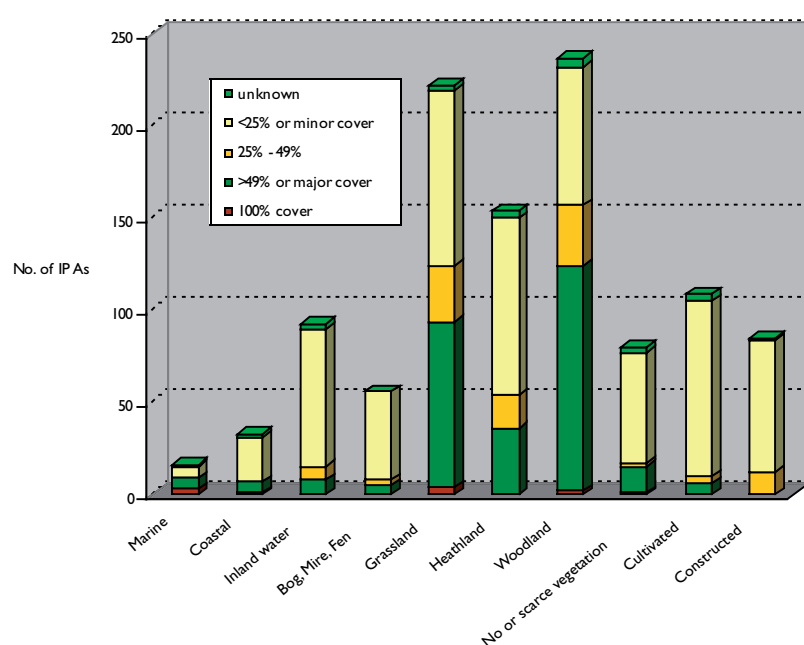


Fig. 2. Major habitats and their extent on IPAs in the SEE project countries

Major habitat	Total no. of IPAs (percent)	Cover				
		100% cover	>49% or major cover	25% - 49%	<25% or minor cover	unknown
Marine	16 (5%)	3	6	0	6	1
Coastal	33 (11%)	1	6	0	24	2
Inland water	93 (32%)	0	8	7	75	3
Mire, Bog, Fen	56 (19%)	0	5	3	48	0
Grassland	222 (76%)	4	90	30	95	3
Heathland	157 (54%)	0	36	18	96	4
Forest/woodland	237 (81%)	2	122	33	75	5
No vegetation	81 (28%)	1	14	2	60	3
Cultivated	109 (37%)	0	6	4	95	4
Constructed	77 (26%)	0	0	12	72	1

Table 5. Major habitat types and their extent on IPAs in the SEE project countries



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Threatened habitat types on IPAs

Threatened forests and grassland habitats appear on the greatest number of IPAs, reflecting the significance of these general habitats in the region and their importance on a European level. European threatened habitats associated with scree, rock and stone (e.g. calcareous and siliceous rocky slopes and screes and eastern Mediterranean screes) are present on high numbers of IPAs within the project countries. This reflects the importance of the vegetation associated with high mountain screes and the rock faces of deep limestone gorges, including unique relict species from the tertiary.

Cliffs, screes, alpine grassland and forests of Dolina Grbaje IPA, Montenegro.

Criterion C habitat type	Total IPAs containing habitat type (% of all IPAs)	IPAs containing Ci priority habitat type* (% of all IPAs)
Threatened forest habitats	207 (71%)	68 (26%)
Threatened grassland habitats	178 (61%)	109 (41%)
Threatened bog and wetland habitats	22 (8%)	12 (5%)
Threatened inland water habitats	46 (16%)	0
Threatened scree/rock/stone habitats	88 (30%)	0
Threatened scrub and heath habitats	59 (20%)	19 (7%)
Threatened coastal and halophytic habitats	35 (12%)	4 (2%)
Threatened dune habitats	13 (4%)	2 (<1%)

Table 6. IPAs identified containing threatened habitats by habitat type in the SEE project countries.

*'Ci priority habitat types' are those classified as such under the Habitats Directive system. Montenegro uses the Bern Convention system for classifying its many threatened habitat types they are not 'priority' habitat in this context and are not therefore included in the analysis in this final column of the table.

Protection and management of IPAs

118 (41%) of the IPAs identified have some sort of protection/designation on at least part of the site, which may include more than one protection mechanism (table 7). This figure varies dramatically between countries, for example 59% of IPAs are fully or partially protected in Bulgaria compared to 18% in Croatia.

The type of protection can give a greater indication of the level of real protection afforded to a site (table 7). Many IPAs are protected in only a small part of the site where there is a feature particular of interest (this feature may or maybe not be botanical). For example one part of an IPA may be a strict nature reserve (high protection) and the rest of the site within a natural park (lower protection). A more detailed analysis of protection levels in each of the project countries can be found in the country pages from page X. Most of the protected IPAs are under the lowest level of national protection (table 8) and 59% percent of IPAs identified have no national protection, a large proportion considering that IPAs are of international importance for wild plants.

Lilium rhodopaeum in Sivino IPA, the mountain hay meadow is cut once a year and then grazed.



	Total no. IPAs with protection	Unprotected IPAs	IPAs with multiple PA types recognised				Relationship between protected areas and IPAs (No. of IPAs)		
			1 type	2 types	3 types	4 types	PA contains IPA	PA is within IPA	PA and IPA overlap
Bulgaria	74 (59%)	51(41%)	50	17	7	0	22	51	1
Croatia	18 (19%)	79 (82%)	14	3	0	1	1	6	11
Montenegro	11(41%)	16 (59%)	9	0	2	0	3	6	2
Macedonia FYR	15 (36%)	27 (64%)	14	1	0	0	10	2	3
Total	118 (41%)	173 (59%)							

Table 7. IPAs in the SEE project countries with existing protection (all or part) PA = protected area

The majority of IPAs (over 90% in some countries) in South East Europe should qualify as sites of European importance as defined by the EU Habitats Directive and/or the Bern Convention, as the criteria for designating sites under these European policies are incorporated into the IPA criteria. However in Bulgaria 71 (57%) of IPAs have been proposed as SACs under the EU Habitats Directive (table 8). When they are approved by the European Commission, they should be the subject of conservation measures to avoid their deterioration under article 6 of the Directive and Bulgaria's commitment to biodiversity conservation will be tested. Substantial overlap exists between IPAs and potential Natura 2000 networks in Croatia, Montenegro and Macedonia, although active measures for conservation are not yet widespread at these sites.

One of the best indications of conservation management on an IPA is the presence of a management plan (and evidence of its implementation). Currently management plans are in place for all or part of 13 IPAs out of 291 IPAs identified during the project. An additional seven IPAs are the subject of prepared but unapproved plans. Overall this is an extremely low percentage for sites of such importance for biodiversity conservation.

	National protection on IPAs (higher level)	National protection on IPAs (lower level)	European recognition of IPAs (as potential SAC & Emerald sites*)	International recognition of IPAs (not necessarily protected)
Bulgaria	37	63	SAC: 71	5
Croatia	9	12	Significant overlap with IPAs and potential SAC network /existing Emerald network	4
Montenegro	6	7	Emerald: 22	2
Macedonia FYR	7	7	Emerald: 31	39

Table 8 Levels of protection of IPAs in the project countries in SEE

*SAC= Special Area of Conservation designated under the EU Habitats Directive (part of the Natura 2000 network)

Emerald site = Site of Nature Conservation Interest designated under the Bern Convention as part of the pan European Emerald Network



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Flood plain forest on the edge of Skadar Lake IPA, Montenegro.

Official protection (through national protected area mechanisms) is not the only way of ensuring the future integrity of IPAs, and may not always be the most appropriate. Ultimately the key to safeguarding IPAs will be securing appropriate management for the plant diversity on each site and this will depend heavily on landowners and managers.

IPAs and Key Biodiversity Areas

Important Plant Areas are a sub set of Key Biodiversity Areas; sites of global significance for biodiversity conservation. KBAs exist for other species groups in south east Europe; BirdLife International has identified Important Bird Areas (IBAs) and Butterfly Conservation in Europe has identified Prime Butterfly Areas (PBAs). IBAs and PBAs like IPAs, are not legal designations, but provide information to assist the prioritisation of sites for conservation action. Within the project countries there is significant overlap between some of these sites, around 60 % of IBAs overlap to some extent with an IPA, and 65 % of PBAs overlap with an IPA, any conservation measures should take account of this breadth of diversity. However a proportion of IBAs, IPAs and PBAs do not overlap and are globally significant for one species group only, illustrating the importance of considering all species groups when prioritising sites for conservation action.

IBA references:

Bulgaria: Kostadinova, I. and Gramatikov, M., eds. (2007) *Important Bird Areas in Bulgaria and Natura 2000*. Bulgarian Society for the Protection of Birds, Sofia.

<http://www.birdlife.org/datazone/sites/index.html?action=SitHTMFindResults.asp&INam=&Rtg=7&Cty=33>

Croatia: Radovic, D., Kralj, J., Tutis, V., Radovic, J. and Topic, R. (2005) *National Ecological Network – areas important for birds in Croatia*. Institute of Ornithology, Zagreb.

<http://www.cro-nen.hr/pdf/publikacije/NEM-ptice.pdf> [Note: some of the sites proposed await formal confirmation as IBAs by BirdLife International]

Macedonia Velevski, M., Hallmann, B., Grubač, B., Lisičanec, E., Božič, L., Lisičanec, T., Stojnov, E. and Stumberger, B. (in prep.) *Important Bird Areas in Macedonia*.

<http://www.birdlife.org/datazone/sites/index.html?action=SitHTMFindResults.asp&INam=&Rtg=7&Cty=239>

[Note: some of the sites proposed await formal confirmation as IBAs by BirdLife International.

Montenegro: Puzovic, S. and Grubac, B. (2000) Federal Republic of Yugoslavia. Pp. 725-745 in Heath, M. and Evans, M., eds. *Important Bird Areas in Europe: priority sites for conservation*. Volume 2: Southern Europe. BirdLife International, Cambridge, UK.

<http://www.birdlife.org/datazone/sites/index.html?action=SitHTMFindResults.asp&INam=&Rtg=7&Cty=272>

PBA references:

Van Swaay C.A.M and Warren M.S. (2003) *Prime Butterfly Areas: Priority sites for conservation – National Reference Centre for Agriculture, Nature and Fisheries, Ministry of Agriculture, Nature Management and Fisheries*. Wageningen, The Netherlands.

Bulgaria: Abadjiev, S. & Beshkov, S. 2007. *Prime Butterfly Areas in Bulgaria*. - Pensoft, Sofia-Moscow, 222 pp. [In Bulgarian and English].

	Total IPAs	No. of IBAs which are in some part IPAs (total IBAs)*	No. of PBAs which are in some part IPAs (total PBAs)*
Bulgaria	125	47 (114)	32 (50)
Croatia	97	31 (40)	3 (3)
Macedonia	42	13 (21)	5 (8)
Montenegro	27	3 (5)	4 (5)

Table 9: IPAs, Important Bird Areas (IBAs) and Prime Butterfly Areas (PBAs) in the SEE project countries*

IBA analysis provided by BirdLife International and PBA data provided by Butterfly Conservation in Europe. See also references below

Threats to IPAs in South East Europe

Threats to IPAs are assessed based on extent, potential damage and timescale to produce a 'high' 'medium' or 'low' threat rating. Development and poor forestry practices affect the largest number of IPAs in the south east European project countries. Development (industry, infrastructure, tourism and urban) affects 51% of all sites, with tourism development alone affecting 31%. Ohrid Lake (Macedonia), Nesbar Sand Dune (Bulgaria), Mljet Island (Croatia) and Kotor-Risanki Bay World Heritage Site (Montenegro) are just a few of those IPAs highly threatened by tourist development.

Poor forestry practices threaten over 40% of IPAs, deforestation and intensified forest management are the main activities responsible. For example, high levels of deforestation threaten well known IPAs in Bulgaria; Rila, Strandzha and the Western Balkan IPAs. Intensification of forest management is threatening forest habitats on Komovi Mountain in Montenegro and in the Crn Drim gorge in Macedonia.

Land abandonment or reduction of land management is the third most important threat, affecting 100 IPAs (over one third of all sites) resulting in loss of biodiversity rich grassland habitats as they revert to coarse grassland /scrub when grazing is reduced (see also Section IV page 85). this is particularly evident in Croatia for example on Žumberak and Bistrinci IPAs. On these IPAs human intervention through active land management is necessary to maintain the plant biodiversity.

Tourism development, deforestation, agricultural intensification through over grazing and combined water management threats, show a high or medium level of threat at over two thirds of the IPAs where they occur. These threats are frequently associated with irreversible activities: building hotels, roads, dykes, dams and drainage channels, and removal of forest. Eutrophication and water mismanagement show high levels of threats affecting fewer IPAs. Only twelve out of 291 IPAs have no recorded threats at present.

Kotor-Risanski bay IPA, under huge pressure from tourism.



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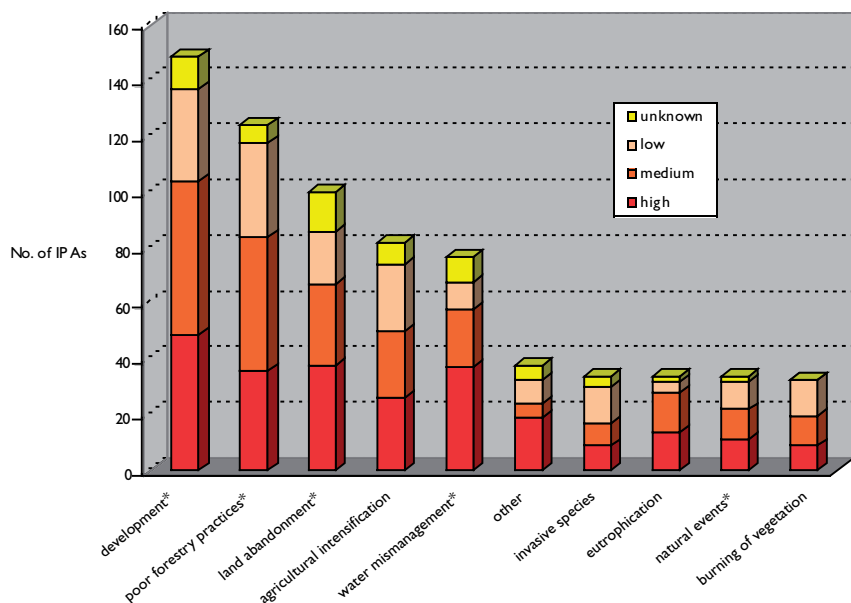


Fig. 3. Top ten threats affecting IPAs in SEE project countries

*Development: tourism, urban, industrial and infrastructure development

*Poor forestry practices: damaging afforestation and deforestation and inappropriate management of forests

*Water mismanagement: dredging and canalisation, drainage, management systems and constructions of dams/dykes.

*Natural events: flood, drought, fire etc

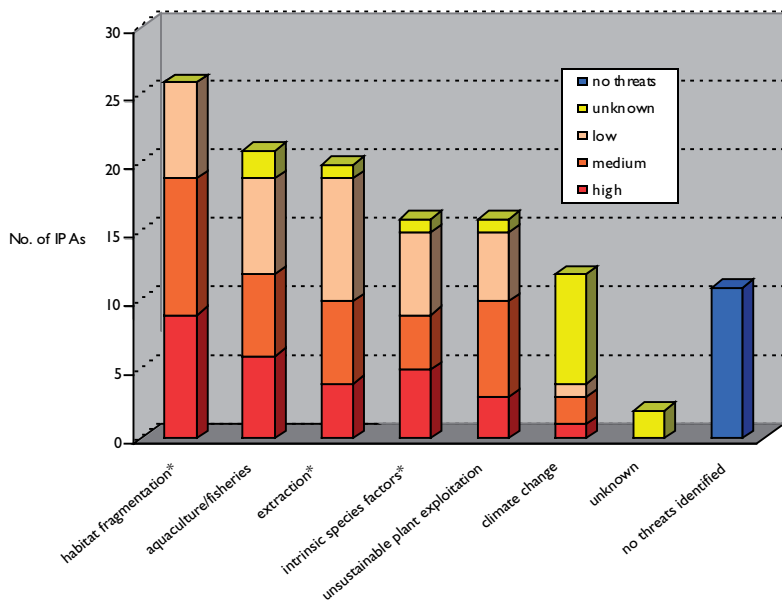


Fig. 4. Other threats affecting IPAs in SEE project countries

*Extraction: minerals, quarries and peat extraction

*Intrinsic species factors: slow growth, density etc



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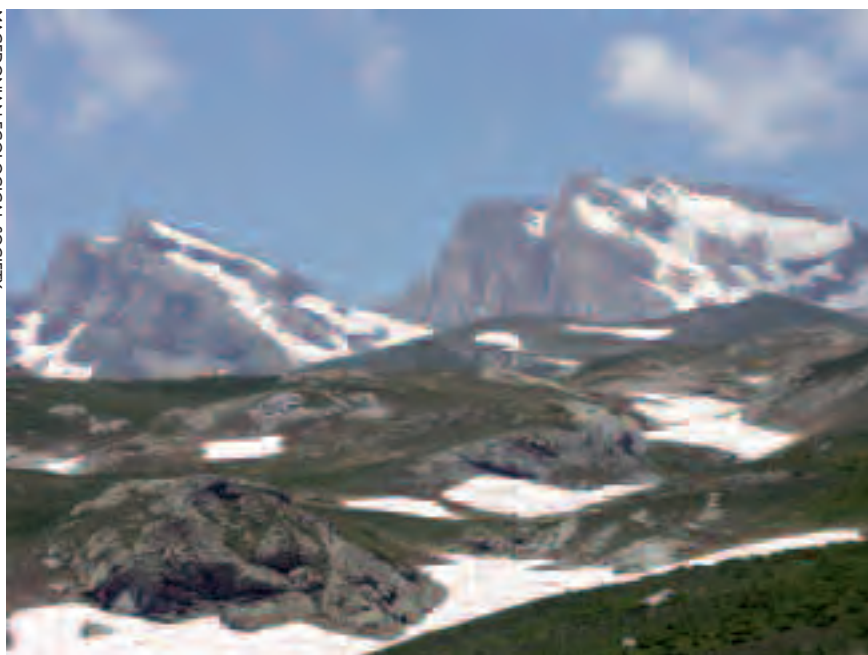
Eryngium alpinum – a European threatened species (criterion Aii).

The threat to IPAs from climate change

Climate change has been recorded in this project as a threat that affects only a few IPAs. This is surprising in a region where the threatened flora is highly locally endemic, frequently associated with the mountains and where many species live in distinct ecological niches and display high niche specificity. What is not surprising is that where the level of intensity of this threat is recorded it is largely unknown.

Amongst the conclusions of the report from the Intergovernmental panel on Climate Change (Climate Change 2007) is the statement that the effects of climate change in Europe will be greatest in the south; particularly the Mediterranean where there will be a decrease in available water resources, and in high mountain ecosystems where snow cover will decrease and there will be extensive species losses (up to 60% by 2080 in some scenarios). IPA teams within the region are all aware of the threat posed by climate change to plant diversity, they know that change will come to plant populations and vegetation, and it will be profound. Due to the nature of the climate change threat - potentially huge, intangible and with no one obvious remedy or solution - quantifying the threat at site level in south east Europe has proved very difficult. The site based threats recorded for climate change represent the changes that can be quantified with some degree of certainty. Undoubtedly further sensitising to the threats posed by climate change is needed at grass roots conservation level throughout the region, as elsewhere in Europe. The climate change threat is significant and deserves more understanding and attention and most importantly, the development of activities that can contribute to ameliorating the threat at site/local level. The IPA Zones of Opportunity concept which aims to links core areas of IPAs within the wider countryside is a small step in this direction and will be explored in section IV.

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Species restricted to high mountain tops are especially vulnerable to the rising temperatures associated with climate change. Korab – Dešat IPA.

Threat	No of IPAs (% of all IPAs)	Level of threat			
		high	medium	low	unknown
Development	149 (51%)	49	55	33	12
a. Development (recreation/tourism)	91 (31%)	32	33	19	7
b. Development (urbanisation)	48 (16%)	15	12	14	7
c. Development (infrastructure/transport)	45 (15%)	8	22	11	4
d. Development (industry)	10 (3%)	4	2	3	1
Poor forestry practices	124 (43%)	36	48	34	6
e. Forestry (deforestation)	57 (20%)	20	18	16	3
f. Forestry (intensified forest management)	53 (18%)	12	30	10	1
g. Forestry (afforestation)	24 (8%)	4	6	12	2
Abandonment/reduction of land management	100 (34%)	38	29	19	14
Agricultural intensification	82 (28%)	26	24	24	8
h. Agricultural intensification (grazing)	35 (12%)	12	12	9	2
i. Agricultural intensification (arable)	30 (10%)	9	8	9	4
j. Agricultural intensification (general)	19 (7%)	5	4	8	2
k. Agricultural intensification (horticulture)	4 (1%)	1	2	1	0
Water mismanagement	77 (26%)	37	21	10	9
l. Water (dredging/canalization)	27 (9%)	14	6	4	3
m. Water (management systems)	26 (9%)	14	4	3	5
n. Construction/impact of dyke/dam/barrage	23 (8%)	8	6	5	4
o. Water (extraction/drainage/canalisation/management)	17 (6%)	10	4	3	0
p. Water (drainage)	11 (4%)	2	7	1	1
Other	38 (13%)	19	5	9	5
Invasive species	34 (12%)	9	8	13	4
Eutrophication	34 (12%)	14	14	4	2
Natural events (disease/flood/fire/drought/etc)	34 (12%)	11	11	10	2
Burning of vegetation	33 (11%)	9	11	13	0
Habitat fragmentation/isolation	26 (9%)	9	10	7	0
Aquaculture/fisheries	21 (7%)	6	6	7	2
Extraction (minerals/quarries/peat)	20 (7%)	4	6	9	1
Intrinsic species factors (slow growth, density)	16 (6%)	5	4	6	1
Unsustainable plant exploitation	16 (6%)	3	7	5	1
Climate change/ sea level rise	12 (4%)	1	2	1	8
Unknown	2 (<1%)	0	0	0	2
No threats identified	12 (4%)	0	0	0	12

Table 10. Threats and intensity of threats to IPAs in South East Europe

Ownership and land use

61% of IPAs are currently owned (at least in some part) by the state in the project countries, 53% have some private ownership and 43% have an ownership that involves municipalities. Other significant ownership categories are communal and 'other'. Five IPAs are owned by conservation organisations.

Forestry, livestock centred agriculture and tourism are the three predominant land uses on IPAs in the project countries. Forestry where it occurs often takes place on over 50% of each IPA. Nature conservation and research activities are also significant, reflecting the high percentage of sites under some sort of protective area mechanism and thus frequently the subject of ongoing research.

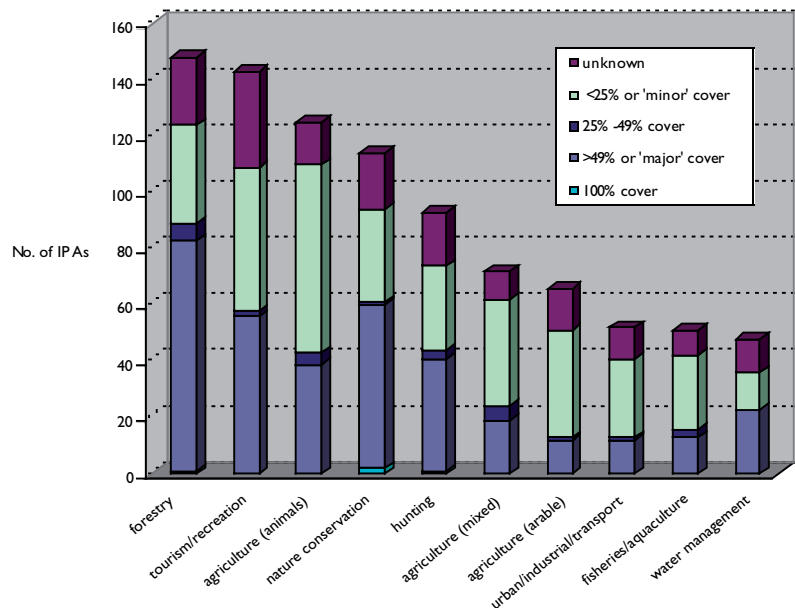


Fig. 5. Top ten land uses at IPAs and their extent in SEE project countries

Grazing livestock as here in Kotel, East Bulgaria is crucial for maintaining high diversity grassland.

Further information on land use within the SEE project countries can be found in the table overleaf and in the country sections from page 27



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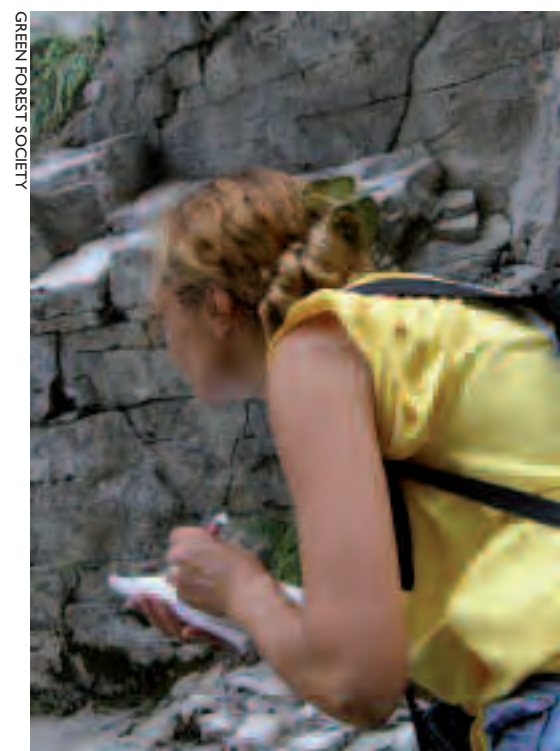
Land Use	Total	Cover				
		100%	>49% or 'major'	25% - 49%	<25% or 'minor'	unknown
Forestry	148 (51%)	1	82	6	35	24
Tourism/recreation	143 (49%)	0	56	2	51	34
Agriculture (animals)	125 (43%)	0	39	4	67	15
Nature conservation /research	114 (39%)	2	58	1	33	20
Hunting	93 (32%)	1	40	3	30	19
Agriculture (mixed)	72 (28%)	0	19	5	38	10
Agriculture (arable)	66 (23%)	0	12	1	38	15
Urban/industrial/transport	52 (18%)	0	12	1	28	11
Fisheries/aquaculture	51 (18%)	0	13	3	26	9
Water management	48 (17%)	0	23	0	13	12
Not utilised	38 (13%)	3	12	3	7	13
Wild plant harvesting	30 (10%)	0	6	0	22	2
Mowing/hay making	20 (7%)	2	3	1	14	0
Other	20 (7%)	0	7	0	10	3
Extraction (minerals)	17 (6%)	0	4	0	10	3
Military	14 (5%)	0	1	0	12	1
Agriculture (horticulture)	6 (2%)	0	1	0	5	0
Extraction (peat)	5 (2%)	0	1	0	2	2
Unknown	2 (1%)	0	0	0	2	0

Table 11. Land uses and their extent (cover) at IPAs in SEE project countries

The need for international community building around plant data collection and plant protection

One of the major conclusions of the process of identifying IPAs in South East Europe has been the urgent need to update and expand distribution data for plants and fungi in the region. One solution may be to use European networks of conservationists by sharing and enhancing knowledge of wild plants. Many conservationists both professional and volunteer do not confine themselves to their own countries, but travel through Europe in search of special sites or species. A central European facility to store “holiday” observations of these conservationists could well serve policy makers and conservationists in the receiving countries with foreign additions to their national observation databases. Also national conservationists would be able to use such a facility for observations in their own countries.

The countries of south East Europe are in need of economic growth, tourism is seen as a great opportunity and could also one for nature conservation if sustainability is taken into account (see also section III). Eco-tourism could play a role, by advertising ways to get tourists to collect observations in a way that is useful for policy and conservation issues. For example the provision of information needed for the implementation and enforcement of European and national legislation. If it is clear that national governments will use the data, this process could also stimulate local conservationists and even the general public to provide observations. An observation not recorded can not be used to take the proper conservation actions. The process of recording is therefore critical. This idea needs the enhancement/adaptation of national and international initiatives, such as:



GREEN FOREST SOCIETY



TONI NIKOLIC

Fieldwork equipment.

A centralised and accepted Pan-European checklist

Conservationists are in need of a European checklist of plant species. Probably the most promising initiative now is PESI (Pan European Species-directories Infrastructure, www.eu-nomen.eu/pesi/). Connection to the Worldwide initiatives as Encyclopedia of life (EOL) and (Catalogue of life (COL) is provided in the PESI initiative. This online free available list should include Worldwide, European and national Red List status, Habitats Directive status etc. of all species as far as available.

A centralised infrastructure around observation data

European internet data collection initiatives and the delivery of observation (and collection) data that are governed by national communities is growing. A good national example is provided by the UK National Biodiversity Network; in Europe similar initiatives such as Life Watch are emerging. In the Netherlands the Dutch National Database of Flora and Fauna (NDFF), is the central data facility for the Netherlands. It is linked to webportals for online observation data entry (like www.telmee.nl and www.waarneming.nl). Webportals are beginning to consider international possibilities (for example www.observado.org). Observations collected in a country automatically reside in national domains and are thus available for conservationists and policy makers. National conservation organisations should also be involved in the data validation. Those organisations can raise species or species group specialists both volunteer and professionals that could validate observations.

As this infrastructure is highly internet-based, and involves a lot of people working on the same national or international species-group, it is very suitable for community building.

MACEDONIAN ECOLOGICAL SOCIETY



Collecting specimens for the herbarium.

Section III: Important Plant Area country reports – national overview of IPAs in six countries

Bulgaria

By D. Peev, A. Petrova, I. Apostolova, M. Delcheva



Fig. 6. IPAs in Bulgaria

Each circle represents one IPA – the diameters of the circles are proportional to the size of the IPA

Summary

Bulgaria has 125 Important Plant Areas covering 1,721,248 hectares. Of these, 68% qualify through the presence of both threatened species and threatened habitats (criteria A and C). Final site selection was also strongly influenced by parallel work developing the Natura 2000 network in Bulgaria.

74 IPAs are either fully or partly within protected areas and many contain more than one level of protection. It is anticipated that nearly two thirds of IPAs will fall within the Natura network, but more may qualify that may be excluded, including a few sites that are vulnerable to tourist development. 51 Bulgarian IPAs are currently unprotected. The greatest threats to Bulgaria's IPAs are poor forestry practices and development (affecting over 50%) and agricultural intensification (affecting 34%). Half of Bulgaria's IPAs are associated with agriculture and the maintenance of traditional farming systems on these sites is crucial, as is the need for widespread sustainable forestry practices.



National IPA team

Institute of Botany, Bulgarian Academy of Sciences: Apostolova, I., Assyov, B., Delcheva, M., Dimitrov, V., Ganeva, A., Georgiev, V., Gussev, C., Gyosheva, M., Meshinev, T., Nacheva, R., Peev, D., Popova, N., Tsoneva, S., Vladimirov, V. *Botanical Garden, Bulgarian Academy of Sciences:* Petrova, A., Venkova, D. *NGO Wilderness Fund:* Spiridonov, G. *Translation:* Dimitrova, D. *For the pilot project the Bulgarian Biodiversity Foundation:* Angelova, K., Avramov, S., Vassilev, R.

National coordinating organisation: Institute of Botany, Bulgarian Academy of Sciences

National Coordinator: Prof. Dimitar Peev

Deputy National Coordinator: Dr Antoaneta Petrova

Senior Consultant: Prof. Tenyo Meshinev

Cooperating organisations/individuals: Ministry of the Environment and Waters; National Environmental Agency; Regional Inspectorates of Environment and Water of Sofia, Varna, Bourgas, Pleven, Stara Zagora, Haskovo and Shumen town; National and Nature Parks (Directorates) Pirin, Rila, Central Balkan; Natural Parks Sinite kamani, Balgarka, Vitosha and Shumensko plato; Botanical Garden of BAS; Institute of Space Research; the Wilderness Fund, the Bulgarian Society for Protection of the Birds; Project "Rhodops"; National Museum of Natural History, BAS; Faculty of Pharmacy, Medical University; State forestry departments in Krumovgrad Town, Kirkovo village and Elhovo Town; National Gamegrowing Station, Tundzha, Yambol Town; Fund for Wild Flora and Fauna; the Mathematic Secondary School, Stara Zagora; Sofia University "St. Kliment Ohridski"; Forest-Engineering University, Sofia; Mechmed, Achmed (local farmer, Zvezdelina village); Nyagolov, Konstantin (Expert, Karnobat Town); Stoyanova, Milka (local farmer, Simeonovo village).

Additional data kindly provided by: Project "Natura 2000"; State Forestry Agency; experts from Sofia University (Department of Botany); National Museum of Natural History



Pirin IPA, Bulgaria

Bulgaria is situated in the north-eastern part of the Balkan Peninsula and covers an area of 110 990 km². Her northern boundary is the Danube and Romania; to the east, the Black Sea; to the west, Macedonia (FYR) and Serbia; and to the south Greece and Turkey. The altitude range is from sea level to 2,925m, the height of Musala peak on Rila Mountain, which is the highest summit on the Balkan Peninsula. Two thirds of Bulgarian territory is mountainous and forested, with 200 peaks higher than 2000m.

The fauna and flora of Bulgaria is of special interest due to its intermediate (transitional) character between the Central European and the Mediterranean biogeographic zones. The flora is especially rich with an incredible 3900 vascular plants, 6000 species of fungi, and 6000 algae. This includes a considerable number of (mountain) endemics and limited range species. Nearly 190 of Bulgarian's vascular plants are tertiary and glacial relicts; there are 174 endemic plant species, 100 subspecies, and over 300 Balkan endemics within her territory, the genera *Centaurea*, *Cyanus*, *Dianthus*, *Thymus*, *Sedum*, *Verbascum* and *Viola*, are amongst those rich in endemics. The same levels of diversity exist within vegetation and habitat types; 89 (38.4%) of the 232 European habitats of conservation importance are present in Bulgaria. Broadleaf deciduous forests dominated by oak (seven species), and beech (three species), are the largest major habitat type in Bulgaria, followed by *Picea* and *Pinus* dominated coniferous forests and then grassland habitats. There are well preserved sand dune habitats along the Black Sea coast.

Bulgaria became a member of the European Union in January 2007, and is a member of the Council of Europe.

Qualifying IPAs

Criterion A	No. of IPAs	Criterion A Tax. Group	No. of IPAs	Criterion C	No. of IPAs
All sites with A species	90	Vascular plants	89	All sites with C habitats	109
Ai	21	Bryophytes	8	Ci	72
Aii	67	Lichens	0	Cii	93
Aiii	41	Algae	0		
Aiv	40	Fungi	22	HD habitats	107
HD species	30			BC habitats	11
BC species	60				

Table 12. Qualifying criteria for IPAs in Bulgaria: threatened species and habitats

Ai = global threat; Aii = regional threat; Aiii = threatened national endemic; Aiv = threatened near endemic/limited range; HD = Habitats Directive; BC = Bern Convention. Ci = priority threatened habitats as defined by the Habitats Directive; Cii = threatened habitats.

Criterion A is used as a single criterion for the selection of 11 IPAs including one site for fungi. Criterion C is used as a single criterion for the selection of 28 (23% of the total number of sites). 21 sites contain global threatened species in Bulgaria. Endemic species are a significant element of the Balkan flora and 80 Bulgarian IPAs contain threatened endemic (Aiii) and near endemic (Aiv) species. 30 IPAs contain regionally threatened species from the EU Habitats Directive, which does take into account some of the regional priorities for conservation in the east of the European Union region. Regionally threatened species from the appendix of the Bern Convention are present on 60 sites.

The Bulgarian IPA team used predominantly threatened habitats from the EC Habitats Directive to identify IPAs, this list was modified when Bulgaria acceded to the EU and is therefore appropriate. 107 IPAs (86%) contain regionally threatened habitats. Regionally threatened habitats from the Bern Convention are present on 11 sites. For further information on the Bulgarian IPA selection methodology see appendix 2.



KIRIL METODIEV

C. pseudoaxillaris and *Centaurea mannagettae* – threatened Bulgarian endemic species, two of the many *Centaurea* species restricted to the Balkans.

Major habitats

Forest and grassland are the most frequent habitats at IPAs in Bulgaria; they occur on over 70% of sites and as a significant component of the vegetation cover. Broadleaved woodland occurs at the most sites (83) followed by coniferous forests (16). Dry grasslands occur at 75 sites mesic and alpine/sub alpine grasslands at 20 and 13 IPAs respectively. Only five IPAs contain a single habitat type (3 dune and 2 steppe habitats). The remaining sites contain up to 10 habitats.

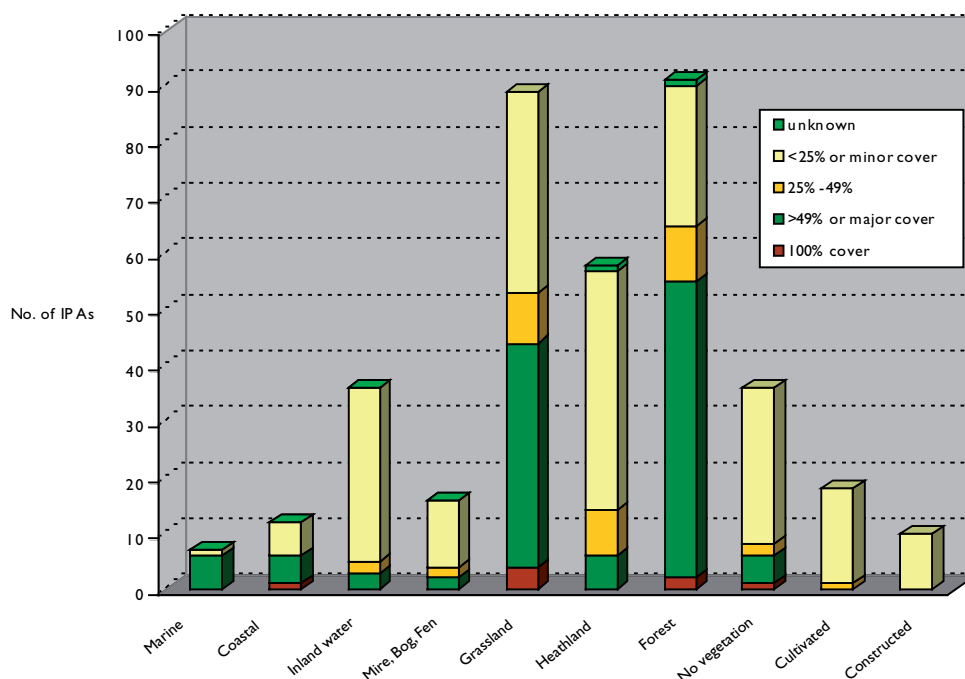


Fig. 7. Major habitats at IPAs in Bulgaria

Protection and management of IPAs

Protected areas in Bulgaria are designated based on the presence of exceptionally high plant diversity, therefore it follows that 74 (59%) of Bulgaria’s IPAs have protection in some part of the site. Many IPAs contain more than one type of protection. For example Strandzha IPA is within Strandzha Natural Park (lower level of national protection), this Natural Park contains 4 Strict Nature Reserves (higher level of national protection) and all of these are within the IPA. Pomoriysko ezero IPA is a wetland site, part of it is a Ramsar site of international importance and a nationally Protected Site, but other parts are not protected. 51 Bulgarian IPAs are not currently protected at national level. Several of these unprotected IPAs were selected as a result of field work undertaken within this project.

Total IPAs	Un protected	Total no. protected (all or part)	National protection (higher level)	National protected (lower level)	European recognition (Emerald or potential SAC*)	International recognition (not necessarily protection)
125	51 (41%)	74 (59%)	Strict Nature Reserve (23) National Park (4)	Natural Park (8) Protected site (32)	SAC (71)	Ramsar wetland site (5)

Table 13. Protection of IPA in Bulgaria

*SAC= Special Area of Conservation designated under the EU Habitats Directive (part of the Natura 2000 network).

Emerald site = Site of Nature Conservation Interest designated under the Bern Convention as part of the pan European Emerald Network.

It is encouraging for the future of Bulgarian IPAs that 57% are in the final stages of the process to include them in the Natura 2000 network as Special Areas for Conservation, and will therefore be the subject of conservation measures to avoid their deterioration and disturbance (Article 6 of the EC Habitats Directive). However there are 29 IPAs that qualify through both criterion A and criterion C and are not proposed for inclusion within the Natura 2000 network, including Primorsko Perla Sand dunes, Gabarevo-Elaka, Sigmen-Glumche. All of these sites contain species and habitats of European importance and some are also prime sites for tourist development.

Threats to IPAs in Bulgaria

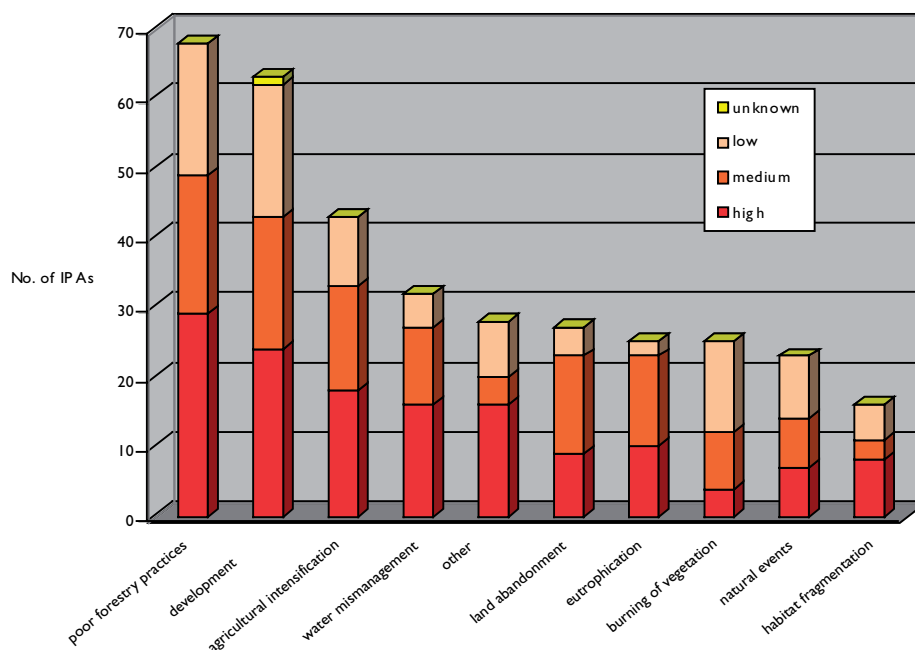


Fig. 8. Top ten threats affecting IPAs in Bulgaria

*Development: tourism, urban, industrial and infrastructure development

*Poor forestry practices: damaging afforestation and deforestation and inappropriate management of forests

*Water mismanagement: dredging and canalisation, drainage, management systems and constructions of dams/dykes.

Threats to IPAs in Bulgaria strongly reinforce the pattern emerging in the region as a whole; poor forestry practices, development (particularly tourist development), agricultural intensification and water mismanagement are the greatest threat to IPAs in Bulgaria, with land abandonment/ reduction of management close behind. Forestry and development related threats are affecting over 50% of sites, as expected given the large percentage of IPAs containing forest habitats. 28 sites are affected by ‘other’ threats which include non native species planting and chemical pollution of freshwater. In most cases the sites are endangered by the complex interaction of several threats, only three out of 125 of Bulgaria’s IPAs are classed as unthreatened.

New hotel complex threatens important habitats in Trigrad-Perelik-Persenk IPA.

SONYATSONEVA



Threat	No of IPAs (% of all IPAs)	Level of threat			
		high	medium	low	unknown
Poor forestry practices (a-c combined)	68 (54%)	29	20	19	0
a. Forestry (intensified management)	32 (26%)	11	14	7	0
b. Forestry (deforestation)	29 (23%)	15	9	5	0
c. Forestry (afforestation)	11 (9%)	3	1	7	0
Development (d-g combined)	63 (50%)	24	19	19	1
d. Development (recreation/tourism)	35 (28%)	16	9	10	0
e. Development (infrastructure/transport)	20(16%)	4	7	8	1
f. Development (industry)	9 (7%)	4	2	3	0
g. Development (urbanisation)	14 (11%)	3	5	6	0
Agricultural intensification (h-j)	43 (34%)	18	15	10	0
h. Agricultural intensification (grazing)	22(18%)	11	7	4	0
i. Agricultural intensification (arable)	11 (9%)	3	5	3	0
j. Agricultural intensification (general)	13 (10%)	5	3	5	0
Water mismanagement (k-o)	32 (26%)	16	11	5	0
k. Water (management systems)	15 (12%)	10	3	2	0
l. Construction/impact of dyke/dam/barrage	7 (6%)	2	3	2	0
m. Water (drainage)	7 (6%)	1	5	1	0
n. Water (dredging/canalization)	5 (4%)	3	1	1	0
o. Water (extraction/drainage/canalisation)	2 (2%)	2	0	0	0
Other	28 (22%)	16	4	8	0
Land abandonment	27 (22%)	9	14	4	0
Eutrophication	25 (20%)	10	13	2	0
Burning of vegetation	25 (20%)	4	8	13	0
Natural events	23(18%)	7	7	9	0
Habitat fragmentation	16 (13%)	8	3	5	0
Invasive species	14 (11%)	4	2	7	1
Unsustainable plant exploitation	10 (8%)	3	5	2	0
Extraction (minerals/quarries/peat)	8 (6%)	4	3	1	0
Intrinsic species factors (slow growth, density)	6 (5%)	3	0	2	1
Aquaculture/fisheries	6 (5%)	2	2	2	0
Climate change/ sea level rise	4 (3%)	0	0	1	3
No threats identified	3 (2%)				

Table 14. Threats and their intensity (level) at IPAs in Bulgaria



ELIZABETH RADFORD

Land use

Forestry activities are dominant in Bulgaria, as are forest habitats. Agricultural land uses are associated with over 50% of sites, particularly grazing and haymaking. Many IPAs are used for nature conservation and research, common activities on protected areas, of which there are a large proportion in the Bulgarian IPA network. IPAs are prime sites for nature, so tourism related land uses are also expected. Hunting in Bulgaria is a popular pass-time and the third most frequent land use on IPAs. Hunting is for deer, wild boar, hare and birds (quail, pheasant, wild ducks and geese). Hunting is allowed over large parts of the territory state, municipal and some privately owned lands. It takes place in different seasons, for example arable lands are used for hunting hare and quail only after harvesting. In most cases hunting has a neutral impact on plant biodiversity. Fossicking wild boar open up bare ground for colonisation by woodland plants which can be positive, and when the populations are high, hunting quotas increase which can benefit the rare bulb species on which they browse.

Honey production is common on the IPAs of South East Europe.

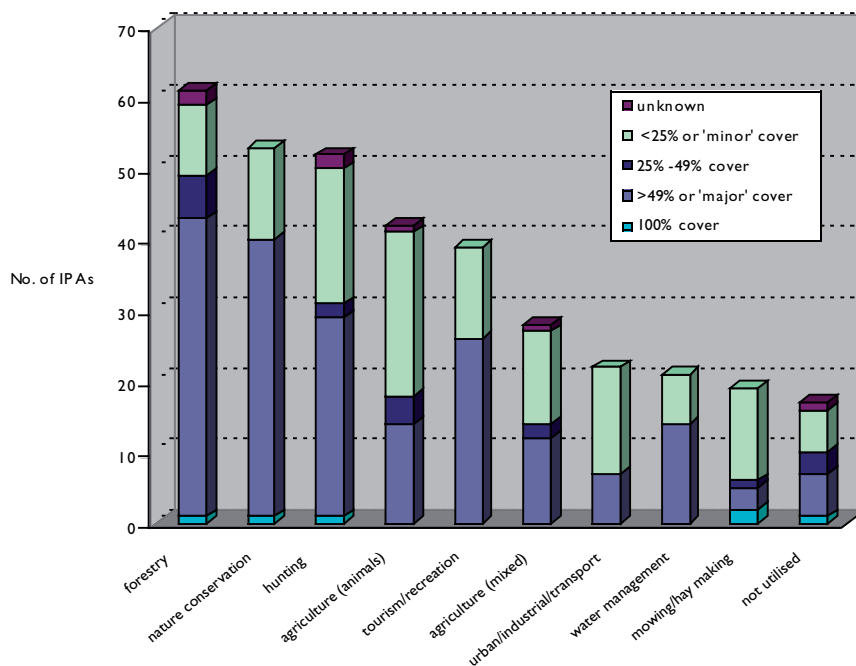


Fig. 9. Top ten land uses and their extent (cover) on IPAs in Bulgaria

Ownership

The state and municipal authorities own land within over 70% of IPAs (full or part ownership) and 55% of IPAs are at least partially under private ownership. The future approach taken to managing the Natura 2000 network in Bulgaria (which overlaps considerably with the IPA network) will be a good indication of the level of State commitment to the protection of plant diversity. With such a large proportion of IPAs under government stewardship, environmental regulations and conservation initiatives affecting the Bulgarian IPA network should have a reasonable chance of success.

The regional inspectorates of the Ministry of Environment and Waters have already engaged in IPA conservation initiatives on a small scale (ref. Bulgarian pilot project on page 96). Their local knowledge and contacts mean they are ideally placed to influence conservation action associated with the IPA network, as are the administrations of the National and Natural Parks.

Trigrad-Perelik-Persenk IPA.

Trigrad-Perelik-Persenk IPA

A large IPA (64,000ha) in the Central Rhodope Mountains, containing a mosaic of forest, shrub and grassland habitat types. Six threatened forest types (criterion C) are found here including Moesian silver fir, Rhodopide and Balkan Range Scots pine, Hellenic beech and (Sub-) Mediterranean pine forests with endemic black pines. Other important habitats include the alkaline fens, endemic oro-Mediterranean heaths with gorse, Alpine and subalpine calcareous grasslands and calcareous rocky slopes with associated chasmophytic vegetation. Fifteen criterion A threatened species can be found at this site, including *Arenaria rhodopaea*, *Haberlea rhodopensis*, *Secale rhodopeum*, *Sedum kostovii* and *Trachelium rumelianum*. The area has a rich bryophyte flora characteristic of humid shaded calcareous rocks, including 10% of the Bulgarian population of the moss *Buxbaumia viridis*, threatened across Europe. Part of the site – the region of Trigrad – is a Prime Butterfly area and an Important Bird Area, as well as being one of the most popular tourist destinations in Bulgaria.



Landscape within Strandzha IPA.

DIMITAR PEEV

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Strandzha IPA

This site is a Natural Park of 116,068 hectares in south-east Bulgaria. It covers most of Bulgarian part of Strandzha Mts, including Black Sea coast and contains five strict reserves and 19 other protected areas that are important for plants species and habitat diversity. The site holds important relict vegetation, with a total vascular flora of about 1500 species (nearly 37% of the Bulgarian flora). Significant habitats include: western pontic beech forests with *Laurocerassus officinalis*, *Rhododendron ponticum*, riparian mixed forests of oak elm and ash, arborescent matorral with *Juniperus* spp., semi-natural dry grasslands, and scrub on calcareous substrates with important orchid sites and pseudo-steppe. Strandzha IPA contains 14 criterion A species of vascular plants and fungi, including *Tulipa thracica*, *Verbascum bugilifolium*, *Teucrium lamifolium* and 100% of the national population of *Veronica turriliana* and *Vaccinium arctostaphylos*. 12 species of fungi and 15 bryophytes from Bulgarian Red Lists also occur. The site is also an Important Bird Area and contains a Prime Butterfly Area.

Recommendations for IPAs in Bulgaria

Data related

- Ensure the data gathered on IPAs in Bulgaria is made available to and used by local and regional authorities – such as the regional inspectorates for the Ministry of Environment and Waters, and the municipalities for use in conservation and to help influence planning decisions.
- Improve the data in relation to 'lower plants': bryophytes (mosses and liverworts, ferns, fungi and algae) as well as for the gaps about the populations of the flowering plants and coverage or rare habitats.
- Prioritise field research for endemic species where there is no recent data about their localities and populations; implement monitoring schemes for populations of critically endangered taxa; map the coverage of Criterion Ci (priority) habitats in IPAs.

Awareness

- Raise awareness of the IPA network within civil society, encourage individuals and organizations to watch over and care for their local IPAs.

Policy practice

- Consider using the IPA network for targeted environmental and conservation policy for e.g. example biodiversity policies affecting forestry and agriculture, as these sites now have baseline data and can be easily monitored.

Croatia

By Toni Nikolić



Fig. 10. IPAs in Croatia

Each circle represents one IPA – the diameters of the circles are proportional to the size of the IPA

Summary

Croatia has 97 Important Plant Areas, covering 964,655 hectares. The majority qualify through the presence of both threatened species and threatened habitats (criteria A and C). The use of digitised data was an important part of the selection process.

Only 18 IPAs in Croatia are either fully or partly protected at national level – the lowest percentage in the project countries. Land abandonment is the greatest threat to Croatia's IPAs, affecting 62% of sites, so maintaining rural land management practices will be as a necessity if Croatia's plant diversity is to be secured. Three quarters of IPAs are used for tourism and recreation activities. Development threatens 44% of sites and 33% are threatened by development specifically associated with tourism: coastal and island IPAs are especially vulnerable.



National IPA team members: Nikolić, T., Vuković, N., Alegro, A., Štrbenac, A., Bogdanović, S., Mitić, B., Britvec, M., Buzjak, S.; Franjić, J., Topić, J., Radović, J., Nenad, J., Milović M., Ruščić M., Jelaska, S., Vrbek, M.

National coordinating organisation: Faculty of Science, University of Zagreb

National coordinator: Professor Toni Nikolić

Cooperating organisations in the national team: Faculty of Science, Faculty of Agronomy, Faculty of Forestry (University of Zagreb); Museum of Natural History; State Institute for Nature Protection; Croatian Botanical Society; Institute for Marine and Terrestrial Ecology (University of Dubrovnik).

Croatia covers 56,500 km² from the Adriatic coast to the mountains of the north plus 31,067 km² of territorial waters. Slovenia, Bosnia and Herzegovina, Serbia and Montenegro, and Hungary all share borders with Croatia. There are four biogeographic zones: Pannonic, Continental, Alpine and Mediterranean which contain large numbers of Balkan endemic plants and a rich mosaic of plant communities.

Lowland Croatia is bordered by the Sava, Mura, Drava and Danube rivers. Large areas of wet oak-woods contain the greatest biological diversity of the region, with significant populations of threatened European bird species. Rivers, marshes and carp ponds are important habitats for migratory water-fowl. Wet meadows and pastures, remnants of inland dunes and the most westerly elements of steppe flora and fauna are also present in this region. Highland Croatia consists of a section of the Dinaric Alps; a ridge of karst (limestone) stretching parallel to the coast from

the north-west to the south-east of the country. The highest peak is Dinara at 1,831 m. The major habitats are the beech and fir forests which contain wolf, brown bear and lynx; the high mountain rock and scree with unique endemic and relict mountain flora and fauna (e.g. *Velebit degenia* and Martino's snow vole); and remnants of the most southerly European heaths. The geomorphological diversity is immense; 8,000 registered phenomena include caves, pits, rocks, ravines, karst valleys and natural lakes containing unique aquatic fauna. Coastal and insular Croatia covers the littoral zone, and forms the most indented part of the Mediterranean coast, with 6116 km of coastline including 1,231 islands, islets and reefs. The major natural features are the coastal forests and their succession stages (evergreen holm oak, deciduous forests of pubescent oak), the stony limestone coast the islands, and the rivers, marshes and lakes of the Adriatic catchment area.

Croatia is a member of the Council of Europe and an accession state to the European Union.

Velebit IPA, Croatia.



TONI NIKOLIC

Qualifying criteria

Criterion A	No. of IPAs	Criterion A Tax. Group	No. of IPAs	Criterion C	No. of IPAs
All sites with A species	52	Vascular plants	52	All sites with C habitats	95
Ai	11	Bryophytes	0	Ci	55
Aii	42	Lichens	0	Cii	91
Aiii	0	Algae	0		
Aiv	16	Fungi	0	HD habitats	94
HD species	25			BC habitats	3
BC species	31				

Table 15. Qualifying criteria for IPAs in Croatia

Ai = global threat; Aii = regional threat; Aiii = threatened national endemic; Aiv = threatened near endemic/limited range; HD = Habitats Directive; BC = Bern Convention. Ci = priority threatened habitats as defined by the Habitats Directive, Cii = threatened habitats on the Habitats Directive and the Bern Convention.

82 (84%) of Croatia's IPAs qualify with more than one criterion, and all but two sites qualify under criterion C (presence of threatened habitats). Fifteen sites qualify on one criterion only; 13 IPAs through criterion C and two 2 through criterion B. Eleven IPAs contain globally threatened species in Croatia. The country has many national vascular plant endemics, but fewer threatened endemics than the other project countries, as the endemic taxa are found mostly in undisturbed locations. Many sites contain threatened near endemic (Balkan endemic) species. Most IPAs contain regionally threatened species (42) and habitats (95) that are present on European legislation (qualifying under Aii, Ci and Cii). In Croatia, as in Bulgaria, threatened habitats from the EC Habitats Directive were used to identify IPAs, as Croatia is already compiling this information in preparation for entry into the EU. For more information on the approach to IPA selection in Croatia see appendix 2.



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Convolvulus cneorum, a relict species endemic to the Croatian islands and coast.

Major habitat at IPAs in Croatia

Forest (woodland) and grassland habitats are the most frequent on IPAs in Croatia, occurring on 93% and 87% respectively. In Croatia, more than elsewhere, IPAs are formed from a mosaic of different habitats; heathland, cultivated and constructed habitats are present up to 25% in two thirds of IPAs. Broadleaved woodland is the most frequent forest habitat (78 sites), followed by broadleaved evergreen woodland (33) and coniferous woodland (28). Dry grasslands are frequent component of the IPA network, but there are also higher numbers of IPAs with seasonally wet or wet grassland (33) than in other parts of the region. Garrigue (33) and temperate and mediterranean-montane scrub (30) are important heathland habitat components of Croatia's IPAs. Two habitats are represented at only one site: sub littoral rock and inland saline grass and herb dominated.

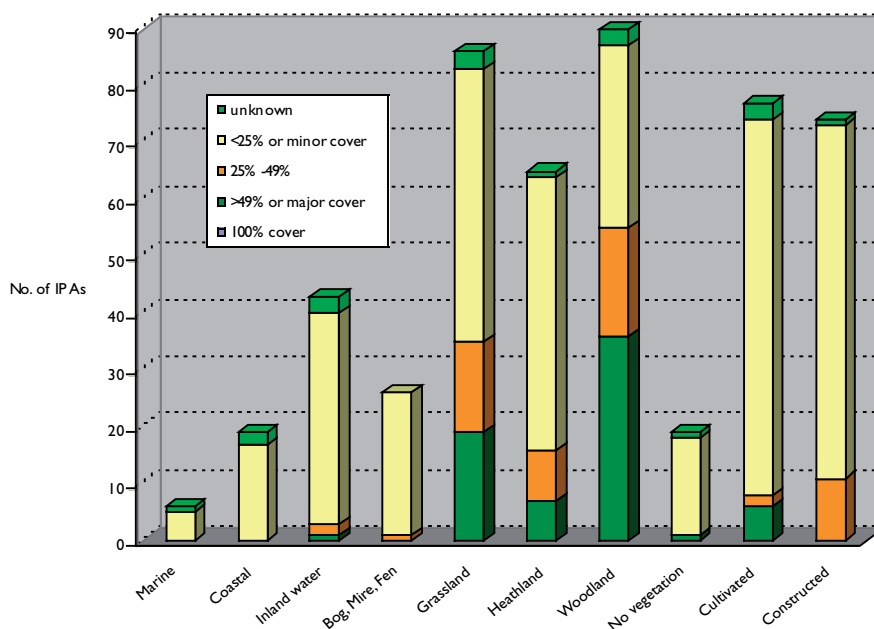


Fig. 11. Major Habitats at IPAs in Croatia

Protection and management of IPAs Croatia

Over 80% of IPAs in Croatia are not currently protected at national level, 18 IPAs overlap with existing protected areas (Parks of Nature or National Parks) in four cases the area of the IPA is greater than that of the protected area, 14 IPAs and Protected Areas overlap 100%. A number of IPAs have more than one type of protection associated with them, where the smaller Strict Nature Reserves are within National Parks or Parks of Nature, for example at Gorski kotar – Kupa valley and Velebit IPAs.

The government of Croatia is currently working on the identification and designation of Special Areas of Conservation (SAC) for the Natura 2000 network. The indications are that following the designation of the Natura 2000 network, the percentage of IPAs under protection – at least on paper - will increase. As the criteria used for identifying

IPAs include those used for SACs, the Croatian IPA inventory will provide site-based baseline data needed for this process, and thus can act as a guide to ensure appropriate sites are finally designated.

Total IPAs	Un protected	Total no. protected (all or part)	National protection (higher level)	National protected (lower level)	European recognition (Emerald or potential SAC*)	International recognition (not necessarily protection)
97	79 (82%)	18 (19%)	Strict Nature Reserve (3) National Park (6)	Park of Nature (12)	Significant overlap with the Natura 2000 network – no precise data available	Ramsar wetland site (3) Biosphere reserve (1)

Table 16. Protection of IPAs in Croatia

*SAC = Special Area of Conservation designated under the EU Habitats Directive (part of the Natura 2000 network)

Emerald site = Site of Nature Conservation Interest designated under the Bern Convention as part of the pan European Emerald Network

Threats to IPAs in Croatia

The top ten threats to IPAs in Croatia are similar to those throughout the region, but the issue of land abandonment is far greater than elsewhere in the project countries and is the greatest threat to Croatian IPAs, affecting 62% of sites. Development related threats affect 44% of sites. The influence of climate change is only broadly assessed and remains unknown for many sites.

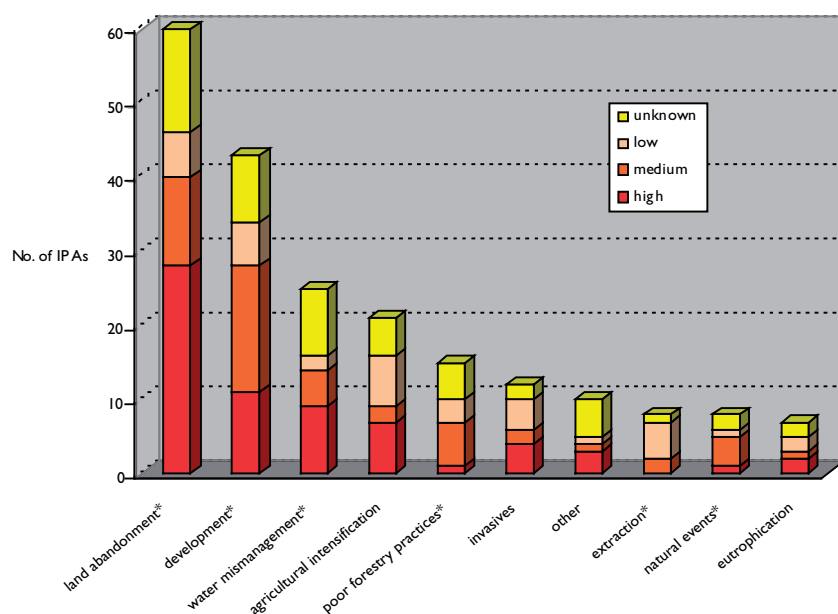


Fig. 12. Top ten threats affecting IPAs in Croatia

*Development: tourism, urban, industrial and infrastructure development

*Poor forestry practices: damaging afforestation and deforestation and inappropriate management of forests

*Water mismanagement dredging and canalisation, drainage, management systems and constructions of dams/dykes.

Threat	No of IPAs (% of all IPAs)	Level of threat			
		high	medium	low	unknown
Abandonment of land	60 (62%)	28	12	6	14
Development (a. - c. combined)	43 (44%)	11	17	6	9
a. Development (recreation/tourism)	29 (30%)	7	12	4	6
b. Development (urbanisation)	19 (20%)	5	3	4	7
c. Development (infrastructure/transport)	12 (12%)	0	7	2	3
Water mismanagement (d.-h. combined)	25 (26%)	9	5	2	9
d. Water (management systems)	11 (11%)	4	1	1	5
e. Water (dredging/canalization)	10 (10%)	4	3	0	3
f. Construction/impact of dyke/dam/barrage	8 (8%)	2	0	2	4
g. Water (drainage)	4 (4%)	1	2	0	1
h. Water (extraction/drainage/canalisation)	3 (3%)	1	2	0	0
Agricultural intensification (i. - l. combined)	21 (22%)	7	2	7	5
i. Agricultural intensification (arable)	16 (16%)	6	1	5	4
j. Agricultural intensification (general)	2 (2%)	0	0	1	1
k. Agricultural intensification (grazing)	2 (2%)	1	1	0	0
l. Agricultural intensification (horticulture)	1 (1%)	0	0	1	0
Poor forestry practices (m.-o. combined)	15 (15%)	1	6	3	5
m. Forestry (afforestation)	10 (10%)	0	4	4	2
n. Forestry (deforestation)	6 (6%)	1	2	1	2
o. Forestry (intensified forest management)	2 (2%)	0	1	0	1
Consequences of invasive species	12 (12%)	4	2	4	2
Other	10 (10%)	3	1	1	5
Extraction (minerals/quarries)	8 (8%)	0	2	5	1
Natural events (disease/flood/fire/drought/etc)	8 (8%)	1	4	1	2
Eutrophication	7 (7%)	2	1	2	2
Aquaculture/fisheries	4 (4%)	1	0	2	1
Climate change/ sea level rise	4 (4%)	1	2	0	1
Habitat fragmentation/isolation	4 (4%)	1	3	0	0
Burning of vegetation	3 (3%)	1	0	2	0
Intrinsic species factors (slow growth, density)	2 (2%)	1	0	1	0
Unsustainable plant exploitation	1 (1%)	0	0	0	1
No threats identified	7 (7%)				

Table 17. Threats and their intensity (level) at IPAs in Croatia

Land use

75% of IPAs are used for tourism and recreation, and 39% for nature conservation research, all reflecting the high nature value of Croatian IPAs. Agriculture and forestry land uses are high as expected based on the predominant habitat types. Hunting, the sixth most frequent land use, is by concession in Croatia, its affect on plants and vegetation is not perceived to be an important conservation issue.

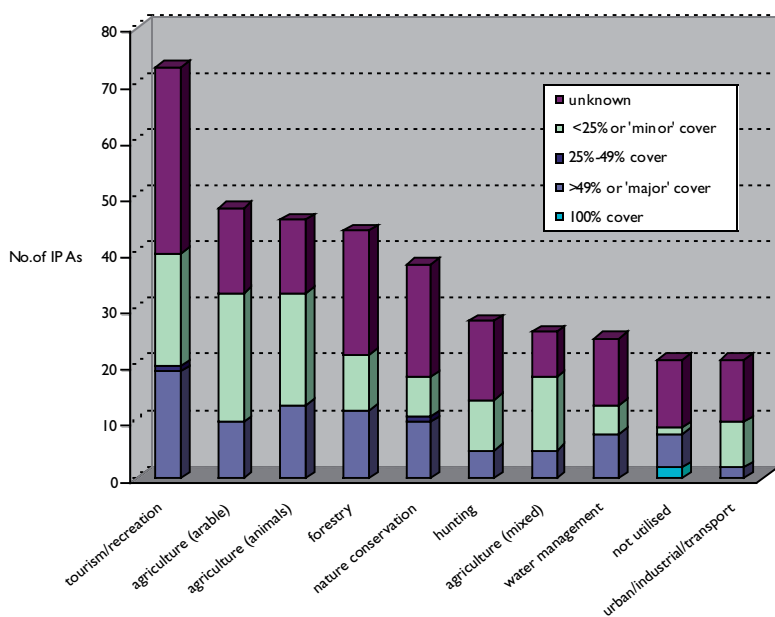


Fig. 13. Top ten land uses on IPAs in Croatia

Ownership

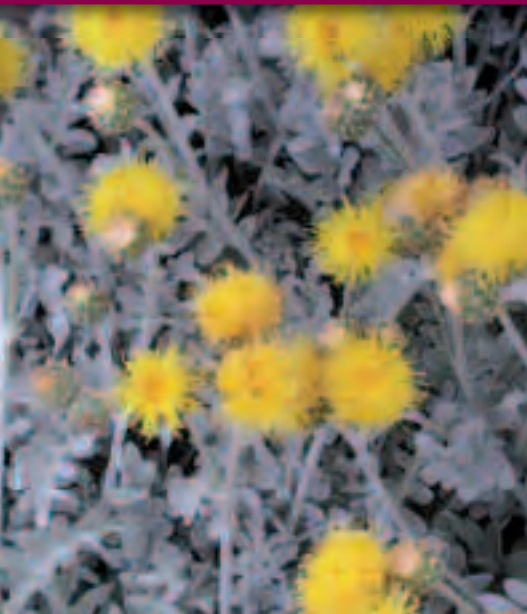
The state authorities own land within over 50% of IPAs (full or part ownership) and 53% of IPAs are at least partially under private ownership. 28 sites have a communal element to ownership. Land owners are critical stakeholders in any process to secure good conservation management of these sites, but information on land ownership is one of the most difficult to collect, particularly regarding the sites that are not in state ownership. In theory with such a large proportion of IPAs under government stewardship, environmental regulations and conservation initiatives affecting the Croatian IPA network should have a reasonable chance of success.

The level of sympathy of private landowners to conservation is difficult to judge in Croatia and currently there may be more scope for conservation measures with the state owned sites. The key to engaging private land owners may be the provision of incentives through agricultural policy (to which Croatia is committed through the Kiev resolution). Site based plant conservation activity at Pantan IPA in this project has succeeded in gaining the cooperation of private land owners (see section V) and also initiatives led by the State Institute for Nature to engage volunteers in monitoring.

Abandonment of land and loss of traditional farming practices is a huge threat to Croatia IPAs.



KOEN DE RIJCK WWF/DCP



TONI NIKOLIĆ

Centaurea ragusina, on Palagruža IPA – endemic to the islands and coast of Croatia.

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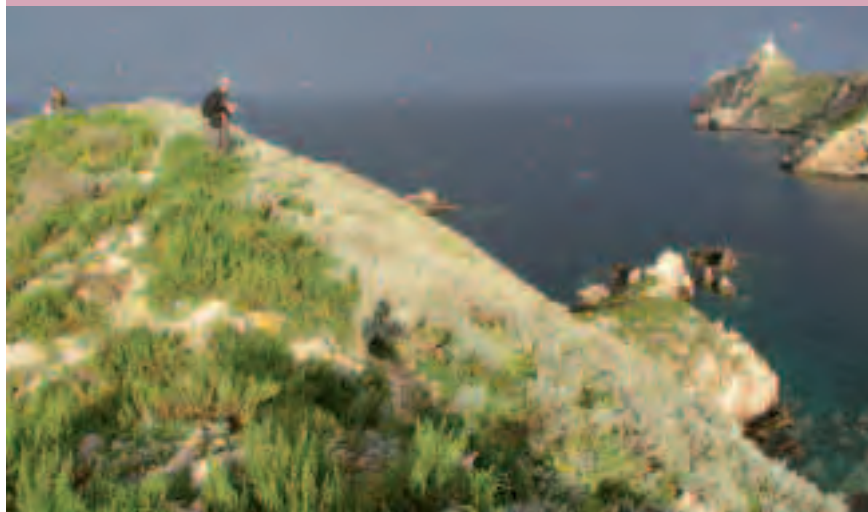
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Nikolić T. ed., 2008. *Flora Croatica Database On-Line* (<http://hirc.botanic.hr/fcd>) Department of Botany, Faculty of Science, University of Zagreb.

Palagruža IPA

Palagruža is a small and remote archipelago in the southern Adriatic Sea. It is surrounded by deep sea and was not connected to the mainland during the periods of glaciation. This long isolation has resulted in the evolution of many new taxa and the island has a rich paleoendemic flora. The only inhabitants of the archipelago are two lighthouse keepers.



TONI NIKOLIĆ

Neretva Delta IPA

The Neretva Delta is the largest remaining wetland on the Croatia coast, containing unique plants and habitats threatened by land reclamation and drainage projects, such as the halophytic (salt loving) communities. The site is also an Important Bird Area and a Ramsar site.



TONI NIKOLIĆ

Recommendations for IPAs in Croatia

For identification and monitoring

- Systematic taxa and habitat mapping activities on national level to fill the gaps in information, and to ensure more objective spatial evaluation of the state territory. This will benefit the creation of the Natura 2000 network and the national ecological network.
- Continue with the education of volunteers to support these activities.

For IPA conservation

- Ensure the implementation of Natura 2000 and the associated necessary conservation measures work for IPAs.

Macedonia – Former Yugoslav Republic

By Ljupcho Melvoski, Vlado Matevski and Natalija Angelova

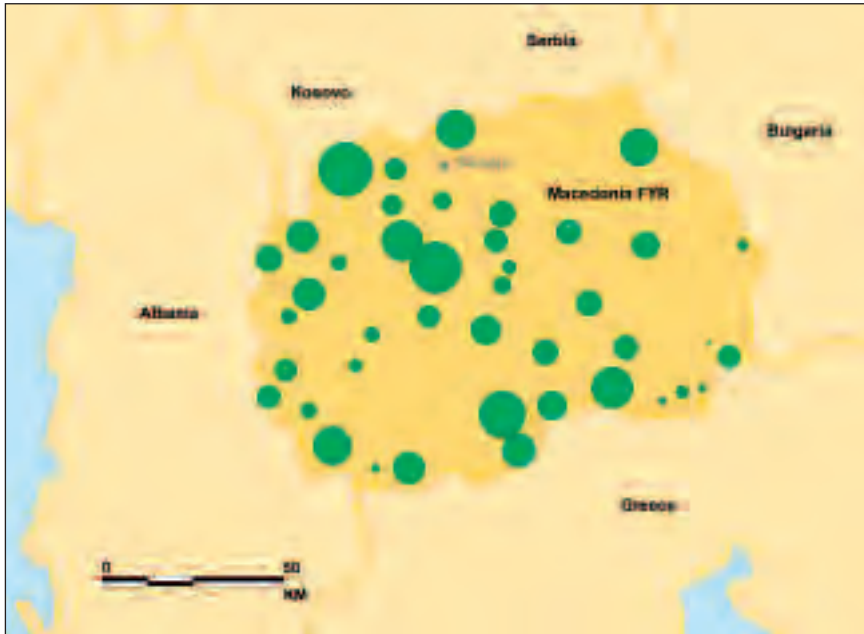


Fig. 14. IPAs in Macedonia (FYR)

Each circle represents one IPA – the diameters of the circles are proportional to the size of the IPA

Summary

Macedonia (FYR) has 42 Important Plant Areas, covering almost 18% of the country's territory. Only 13 of these are protected at national level. Conservation measures within IPAs in national parks include measures for forests, but not for plant species. Although Macedonia has ratified almost all conventions for biodiversity protection, the conservation status of plants and habitats is not favourable. Remarkably, for such a unique flora, only eight Macedonian plant species are present on the EC Habitats Directive, illustrating the need for amending this, should Macedonia join the EU.

Forestry and stock based agriculture is the predominant land use on Macedonian IPAs. Poor forestry practices threaten 69% of sites, mostly at high threat intensity. Wetlands are also particularly threatened and a third of IPAs suffer from water mismanagement, notably from dams and hydropower units. The majority of IPAs are owned by the state but denationalisation is ongoing and private land owners will be important stakeholders in future conservation activities.



National IPA team members: Melovski, Lj., Matevski, V., Karadelev, M., Kostadinovski, M., Avukatov, V., Angelova, N., Melovski, D. (in the pilot project activities).

National coordinating organisation: Macedonian Ecological Society

National coordinator: Natalija Angelova

Cooperating organisations in the national team: Institute of Biology, Faculty of Natural Sciences and Mathematics; Museum of Natural History; Public Institution "National Parks of Macedonia"; Ministry of Environment and Physical Planning; Faculty of Forestry; Mountaineering Club "Ljuboten".

Belasica IPA, Macedonia

Macedonia (FYR) covers an area of almost 26,000 km² with mountain terrain in the west and east, and lowland habitats in the centre. Macedonia borders Bulgaria, Greece, Albania, Kosovo and Serbia and contains two biogeographic zones, the Alpine and the Continental but the biogeographic division used within the country is of a finer scale and includes sub-mediterranean and pontic steppes. The valleys located deep in the continental part have a strong Mediterranean influence. Macedonia has comparatively a very high level of local and Balkan endemic species, and relict species in the mountains, forests and “steppes” of the lowlands. 3.6% of the vascular flora is endemic including two endemic bryophyte species and 114 endemic vascular plant species (including one fern) for e.g. *Heptaptera macedonica*, *Hedysarum macedonicum*, and multiple endemic species from the genera *Alkanna*, *Centaurea*, *Silene*, *Verbascum* and *Viola*. The percentage of near endemic (Balkan endemic) species is considerably greater including the notable *Ramonda nataliae*, *Pinus peuce* and *Stipa rechingeri*. Although the flora is well studied, there are often records for new species (even newly described). Many species reach the borders of their range in the territory; the southern border for boreal and alpine species, northern for Mediterranean species and western border Ponto-Caspian and Asia Minor elements. The diversity of plant communities is also high.

Macedonia (FYR) is a member of the Council of Europe.

Qualifying IPAs

42 IPAs have been selected in Macedonia using all three criteria. Twelve of them are cross border IPAs with neighbouring countries. Many of the IPAs cover wide areas (mountain massifs) and some have a relatively small area (some wetlands and sites with steppe-like vegetation).

Criterion A	No. of IPAs	Criterion A Tax. Group	No. of IPAs	Criterion C	No. of IPAs
All sites with A species	40	Vascular plants	40	All sites with C habitats	40
Ai	5	Bryophytes	0	Ci	33
Aii	28	Lichens	0	Cii	40
Aiii	23	Algae	0	HD habitats	38
Aiv	38	Fungi	13	BC habitats	40
HD species	9				
BC species	24				

Table 18. Qualifying criteria for IPAs in Macedonia: threatened species and habitats

Ai = global threat; Aii = regional threat; Aiii = threatened national endemic; Aiv = threatened near endemic/limited range; Ci = priority threatened habitats as defined by the Habitats Directive Cii = threatened habitats; HD = Habitats Directive; BC = Bern Convention.

All but three IPAs in Macedonia qualify under both criterion A and criterion C. Five sites contain globally threatened species, however many endemic and near endemic species in Macedonia have yet to be properly assessed and the flora may prove more threatened than current lists suggest. Threatened endemic species (Aiii) are present at 50% of Macedonian IPAs and threatened near endemic species (Aiv) at 90% of sites, however IPAs in Macedonia contain only eight species listed on the EC Habitats Directive: *Aldrovanda vesiculosa* L., *Marsilea quadrifolia* L., *Ramonda serbica* Pancic, *Lindernia procumbens* (Krocker) Philcox, *Ranunculus degenii* Kummerle & Jav, *Astragalus physocalyx* Fisch., *Ranunculus cacuminis* Strid & Papan and *Thymus oehmianus* Ronninger & Soška. This underlines the ineffectiveness of this directive for prioritising plant species requiring conservation measures in parts of south east Europe. The Macedonian team were able to use the threatened habitats list from the Habitats Directive, as for the most part these can be easily matched to those of the pan European Bern Convention, a more familiar system in Macedonia. For more information on how IPAs were selected in Macedonia, see Appendix 2.

Major habitats

Forest (woodland) and grassland habitats are the most frequent on IPAs in Macedonia, occurring on 85% and 67% of IPAs respectively, where these habitats occur they often are the dominant vegetation types, especially on the 18 mountainous IPAs. The most common forests are broad leaved deciduous woodland (on 34 IPAs) and broadleaved evergreen woodland (23) and coniferous forests (9). Of the grassland habitats, dry grasslands are the most frequent (on 20 IPAs), then alpine and sub alpine grassland (12). Sparsely or non-vegetated habitats are also common on Macedonian IPAs occurring on 60% of IPAs. These habitats include the vegetation associated with screes and rock on mountain IPAs (5), but largely reflects the importance of inland cliff habitats for plants in Macedonia (25 IPAs) especially those associated with deep river gorges (8 IPAs).

Alshar IPA.



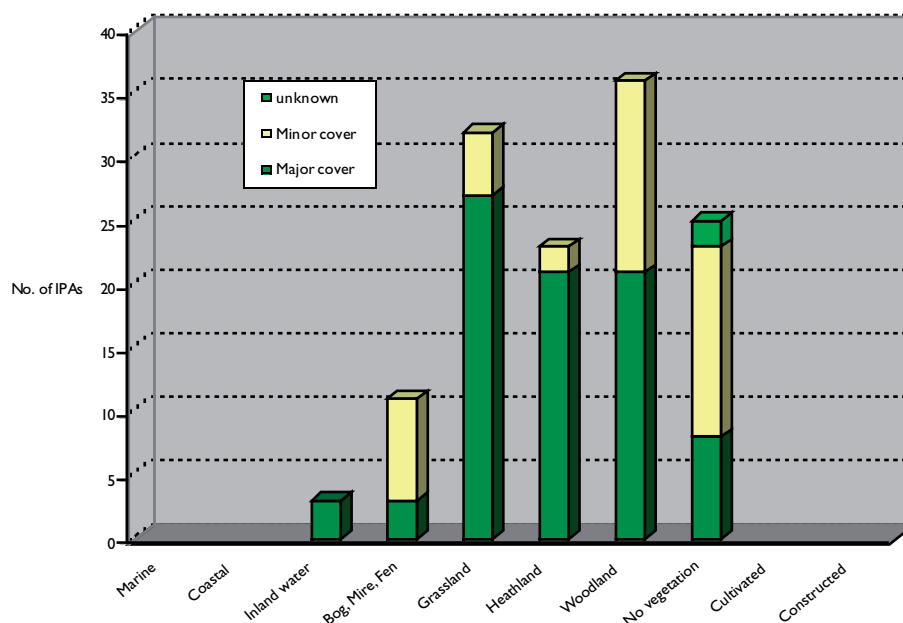


Fig. 15. Major habitats at IPAs in Macedonia

Protection and management of IPAs

Only 13 IPAs (31%) are within protected areas in Macedonia (three national parks, two strict natural reserves and seven monuments of nature). Two of the national parks more or less overlap with corresponding IPAs and National Park “Mavrovo” contains three IPAs. However most of the conservation measures in national parks are concerned only with game animals and forests. Strict natural reserves were established mainly for bird conservation, with the plant component (wetland habitats and some other species), not recognised as being important. Monuments of Nature do not have management administration and no conservation measures are applied. The exception is Matka canyon, which is part of the Treska Gorge IPA. This is the only locality of *Thymus oehmianus* (Ai species), which was formerly considered extinct. In spite of this, water management practice is threatening rare flora and fauna in the canyon (recently one dam was constructed and one is in the stage of construction). Other sites (IBAs, PBAs and Ramsar sites) are not included in the national protected area system.

It is important to note that recent process of designating Emerald sites has made an attempt to compensate for the gaps from previous times. 31 or 74% of IPAs overlap with Emerald sites and almost 89% of all Emerald sites are IPAs (31 out of 35).

Total IPAs	Un protected	Total no. protected (all or part)	National protection (higher level)	National protected (lower level)	European recognition (Emerald or potential SAC*)	International recognition (not necessarily protection)
42	26 (69%)	13 (31%)	Strict Nature Reserve (2)* National Park (5)	Monument of Nature (7)*	Emerald sites (31)	Ramsar wetland site (1) IBA (18) PBA (10)

Table 19. Protection of IPAs in Macedonia FYR

* Strict Nature Reserve “Ezerani” overlaps with the Monument of Nature “Prespa Lake”

Threats affecting IPAs in Macedonia

The top four threats to IPAs in Macedonia reflect the pattern for the whole south east European region. Poor forestry practises including non timber forest product collection threaten nearly 70% of IPAs (29 sites) and, in the majority, the threat is at its highest level. Much of the forest is owned and controlled by the state and there is a well established system of wood cutting, although not perfect it does not threaten the survival of plant species. There is a threat from illegal cutting which is recognised by the officials in the Ministry of Agriculture, Forestry and Water Management. The problem has intensified since the conflict in 2001 because of the limited control that can be exerted by the state forestry inspectors over large territories. This, along with rising poverty during the last decade, causes increased pressure on forests.

Development is a concern at over 50% of sites – predominantly tourist development and agricultural intensification (over grazing) and water mismanagement at around 30%. Where water mismanagement occurs the threat level is usually high or medium. There is considerable concern about canalisation and drainage in Macedonia and four IPAs are threatened by the construction of dams. In January 2008, the Ministry of Economy approved 400 small hydroelectric power plant concessions across Macedonia, each lasting 20 years. Many of these concessions lie within IPAs or existing protected areas and Emerald sites (future Natura 2000 sites) and could devastate the biodiversity in the areas concerned.

17% of IPAs are also affected to a lesser extent by land abandonment where once overgrazed pastures are suffering from scrub encroachment as sheep flocks have undergone a huge reduction the last 50 years. For example on Galičica Mountain one hundred sheep graze now where up to 30,000 were grazing in 1968. On Bistra Mountain IPA 120,000 sheep grazed prior to World War II, these have been reduced to less than 20,000. The problem is not as advanced as in some of the new member states of the European Union, but if efforts are not made to improve the situation for rural shepherds, the threat could increase.

There are no IPAs without any threats affecting them.



MACEDONIAN ECOLOGICAL SOCIETY

A dam generates hydroelectric power in the Matka gorge IPA, site of globally threatened *Thymus oehmianus* – numerous Macedonian IPAs are threatened by potential hydropower developments.

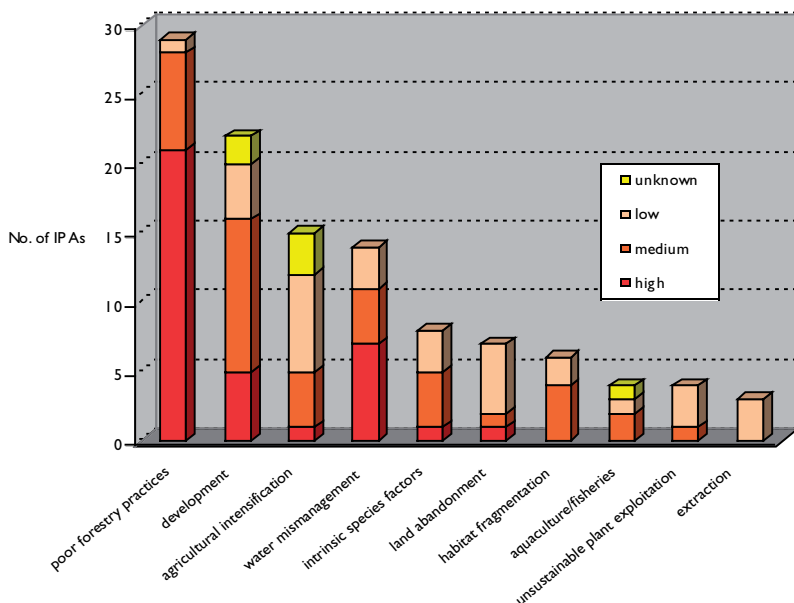


Fig 16. Top ten threats affecting IPAs in Macedonia FYR

*Development: tourism, urban, industrial and infrastructure development

*Poor forestry practices: damaging afforestation and deforestation and inappropriate management of forests

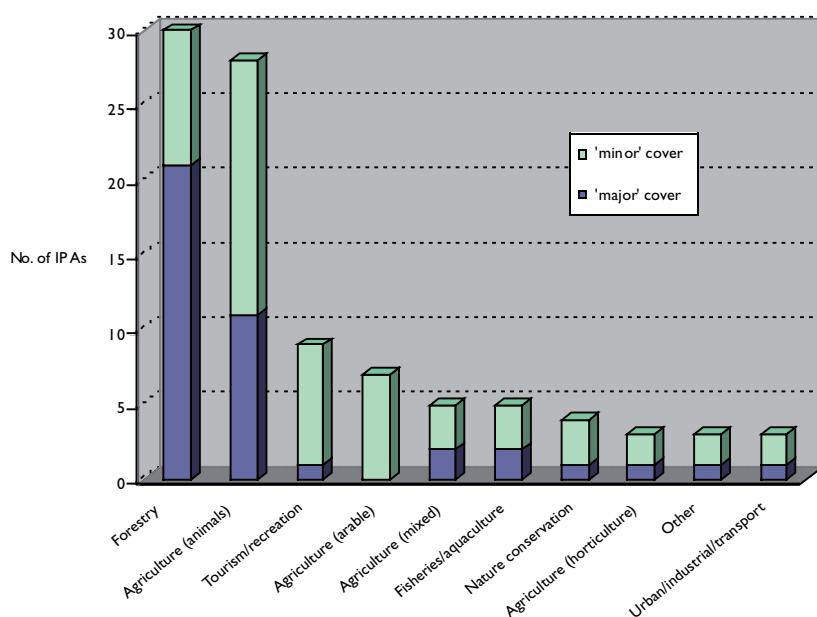
*Water mismanagement: dredging and canalisation, drainage, management systems and constructions of dams/dykes.

Threat	No of IPAs (% of all IPAs)	Level of threat			
		high	medium	low	unknown
Poor forestry practises (a - c combined)	29 (69%)	21	7	1	0
a. Forestry (deforestation)	13 (31%)	0	6	6	1
b. Forestry (afforestation)	1 (2%)	0	1	0	0
c. Forestry (intensified forest management)	18 (43%)	0	15	3	0
Development (d - g combined)	22 (52%)	5	11	4	2
d. Development (recreation/tourism)	12 (29%)	2	7	2	1
e. Development (urbanisation)	8 (19%)	3	3	2	0
f. Development (infrastructure/transport)	7 (17%)	1	5	1	0
g. Development (industry)	1 (2%)	0	0	0	1
Agricultural intensification (h-k combined)	15 (36%)	1	4	7	3
h. Agricultural intensification (grazing)	9 (21%)	0	2	5	2
i. Agricultural intensification (general)	3 (7%)	0	0	2	1
j. Agricultural intensification (horticulture)	3 (7%)	1	2	0	0
k. Agricultural intensification (arable)	2 (5%)	0	2	0	0
Water mismanagement (l-m combined)	14 (33%)	7	4	3	0
l. Water (extraction/drainage/canalisation)	11 (26%)	6	2	3	0
m. Construction/impact of dyke/dam/barrage	4 (10%)	1	2	1	0
Intrinsic species factors (slow growth, density)	8 (19%)	1	4	3	0
Abandonment/reduction of land management	7 (17%)	1	1	5	0
Habitat fragmentation/isolation	6 (14%)	0	4	2	0
Aquaculture/fisheries	4 (10%)	0	2	1	1
Unsustainable plant exploitation	4 (10%)	0	1	3	0
Extraction (minerals/quarries)	3 (7%)	0	0	3	0
Invasive species	2 (5%)	0	1	1	0
Unknown	2 (5%)	0	0	0	2
Invasive species	2 (5%)	0	1	1	0
Eutrophication	1 (2%)	1	0	0	0
Natural events (disease/flood/fire/drought)	1 (2%)	1	0	0	0

Table 20. Threats and their intensity (level) at IPAs in Macedonia FYR

Land use in Macedonia

As expected from the habitat analysis, forestry and animal based agriculture are the predominant land uses on IPAs – on 71 % and 67% of sites respectively. Tourism and recreation, nature conservation and research and other forms of agriculture take place to on many fewer sites and largely to a much lesser extent.



Ownership

31 IPAs (74%) are owned in some part by the state and 10 (24%) by private owners and 8 (19%) include mixed ownership. These data must be treated with caution as the process of denationalisation (that began after the political changes of 1991), is still in progress and the situation remains unclear. Some forest areas must still be reclaimed by private owners. It should, in theory, be easier to undertake (plant) conservation activities on state owned land, but in order to conserve IPAs for the future it will be necessary to engage private land owners and civil society. This is certainly possible on a small scale in Macedonia with key interest groups (see pilot project on page 104). The challenge will be making the safeguarding of these sites of relevance and importance to the whole community through the delivery of improved livelihoods in and around IPAs.



KIRIL METODIEV

Galičica IPA (including Stara Galičica, Kazan, Vojtina, Tomoros, Lako Signoj, Poljce, Petrina)

Galičica is a cross border IPA with Albania in the south west of Macedonia. This site represents the Boreal biogeographic region and Middle-South-European mountain biogeographic region (both in the Scardo-Pindic province). 21 threatened species have been recorded on this site including three species of global conservation concern: *Fritillaria gussichiae*, *Malus florentina* and *Pinus heldreichii* var. *leucodermis*. Some species are especially important for plant conservation due to their extremely small range (*Crocus cvijicii*, *Centaurea soskae*, *Ajuga piskoi*, *Rindera graeca*) or over exploitation (*Nepeta ernesti-mayeri* and *Sideritis raeseri*). 15 species have their *locus classicus* at this site (the place where they were first collected and described). *Ramonda serbica* Habitats Directive and Bern Convention species is also present.

Most of the IPA is within Galičica National Park, land uses include nature conservation research, agricultural and forestry activities and limited tourism. Tourist activities are likely to increase in the future as the adjacent Ohrid Lake is a famous tourist destination. Threats include development of tourism and intensified forest management (including some parts of the park). In recent years there has been concern about the decline of grazing agriculture at the site, which will lead to a change in the floristic diversity as well as the social issues associated with declining rural livelihoods.

Fritillaria gussichiae, threatened in Europe.

Dryas octopetala, a boreal-artic relict species.



BORIS ASSYOV

Nidze IPA (including Kajmakcalan, Belo Grotlo, Zmejca, Dobro Pole)

Nidze is a cross border IPA with Greece. This site also represents the boreal and Middle-South-European mountain biogeographic regions. Its silicate peak Kajmakchalan (2512 m) contains alpine habitats and the large limestone massifs of Belo Grotlo and Zmejca are known for their rich plant diversity. Molika pine (*Pinus peuce*) is one Balkan endemic that can grow on limestone bedrock. 20 threatened species have been recorded in this site including: *Linum elegans* var. *iberidifolium*, *Aconitum divergens*, *Pyrola chlorantha*, *Dryas octopetala*, *Huperzia sellago*, *Saxifraga pedemontana* ssp. *cymosa*, *Saxifraga stellaris* ssp. *alpigena*, *Silene ciliate*, *Trollius europaeus*, *Veronica bellidioides*, *Stachys viridis*. Globally threatened *Ranunculus cacuminis* also occurs and the narrow endemics *Dianthus kajmakzalanicus* and *Silene horvatii*. The IPA contains nine threatened habitats. The land is used for forestry and to a lesser extent agriculture. Currently the threats (all at a low level) include land abandonment and intensified forest management. Hunting is common in the IPA and some times plant hunters overexploit plant resources (medicinal and aromatic plants). *Gentiana punctata* is the most threatened plant species on Kajmakchalan.



Recommendations for IPAs in Macedonia (FYR)

Data

- Habitat maps are urgently needed. A lack of habitat maps for the whole territory is the main obstacle for nature conservation in Macedonia (for e.g. the elaboration of Environment Impact Studies is hampered by this). Some mapping has begun in the national parks but a comprehensive mapping project is needed.
- Development of a national Red List. The criterion A lists developed for this project could provide a good starting point for this initiative in Macedonia.

Policy practice

- It is important to use IPA knowledge in Macedonia and the IPA database in preparation of the future national Natura 2000 network. The preparation of national ecological network (an obligation under PEBLDS) is currently in progress, being led by the NGO sector; this too will benefit from the IPA project.
- Commitment to, and action for nature conservation is needed from the highest to lowest administrative levels. The relevant administrations, though hampered by lack of resources and capacity, lack commitment to the development and implementation of policy, it is very difficult to make progress in the field of conservation at ground level.

Pastures, beech forests, karst slopes and rocky outcrops of Galičica IPA.

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Buxbaumia viridis – one of many bryophytes that are threatened in Europe.

Montenegro

By Danka Petrović



Fig. 18. IPAs in Montenegro

Each circle represents one IPA – the diameters of the circles are proportional to the size of the IPA

Summary

The IPA project in Montenegro has been exceptionally well publicised and received a high level of positive public interest. Montenegro has 27 IPAs, covering 708,606 hectares. There is good coincidence between the Montenegrin IPA network and the Emerald Network (designated under the Bern Convention) and 11 IPAs are protected either fully or partially. However, this leaves nearly 60% of Montenegro's IPAs unprotected. Other than National Parks, 'protected areas' in Montenegro do not have management plans or any regulation of potentially damaging activities.

Most IPAs in Montenegro are owned part by the state and part by private land owners. Tourism and recreation is the dominant land use at 81% of sites and thus, unsurprisingly, development threatens 78%, with over half of the sites threatened specifically by tourist development. This is a particular problem on the coast. Forestry and mixed agriculture takes place on almost half of Montenegrin IPAs and low level wild plant harvesting on one third. One third of sites are also threatened by deforestation and burning of vegetation. The mismanagement of water resources threatens five lake and coastal IPAs at an acute level.



National IPA team members: Petrović, D., Vuksanović, S., Stešević, S., Hadžialahović S., Mačić D., Kasom, V., Dragičević, G., Biberdžić, S., Djurišić, V., Bubanja, S., Bušković, N., Boroja, V., Karaman, M.

National coordinating organization: Green Forest Society

National coordinator: Danka Petrović

Cooperating organisations in the national team: University of Montenegro (Department of Biology), Ministry of Environment; Natural History Museum; Republic Institution for Protection of Nature; Institute for Marine Biology; National Parks of Montenegro; UNDP office in Montenegro.



ELIZABETH RADFORD

Montenegro covers an area of almost 14,000 km² and has two biogeographic zones: Mediterranean and Alpine. Montenegro borders Albania, Bosnia-Herzegovina, Croatia, Kosovo and Serbia. On a European scale Montenegro is believed to have the greatest number of vascular plants per unit area, and contains many national and Balkan endemics – *Asperula*, *Campanula*, *Dianthus*, *Edrianthus* and *Ophrys* are just a few of the important genera. The natural and semi-natural habitats are characterised by forest (oak, beech and coniferous), grasslands, and the coastal habitats of the Adriatic Sea. Montenegro is a member of the Council of Europe.

Komovi IPA in Montenegro home to 14 threatened species and numerous Balkan endemics.

Criterion A	No. of IPAs	Criterion A Tax. Group	No. of IPAs	Criterion C	No. of IPAs
All sites with A species	23	Vascular plants	23	All sites with C habitats	26
Ai	15	Bryophytes	5	Ci	1
Aii	21	Lichens	0	Cii	26
Aiii	9	Algae	3		
Aiv	19	Fungi	2	HD habitats	13
HD species	16			BC habitats	25
BC species	19				

Table 21. Qualifying criteria for IPAs in Montenegro: threatened species and habitats

Ai = global threat; Aii = regional threat; Aiii = threatened national endemic; Aiv = threatened near endemic/limited range; HD = Habitats Directive; BC = Bern Convention. Ci = priority threatened habitats as defined by the Habitats Directive Cii = threatened habitats;

Qualifying IPAs

Twenty seven IPAs have been identified in Montenegro. 21 (78%) of Montenegro's IPAs qualify under both criterion A (threatened species) and criterion C (threatened habitats). Criterion A is used as a single criterion for the selection of two sites, and criterion C for four sites.

Despite the lack of information on threatened species and the relatively small size of the Montenegrin territory, 15 IPAs have been identified containing globally threatened plant species, nine with national endemics and 19 with near endemic (Balkan endemic) species. The smaller number of IPAs containing species and habitats from the Habitats Directive reflect both the lack of systematic assessment of the Montenegrin flora prior to this project, and that the species and habitats on the Directive are more relevant to those countries within the European Union. The Montenegrin IPA team to identify IPAs under criterion C used the pan European threatened habitat list associated with the Bern Convention.

Major habitats

Forest (woodland) habitats are the most frequent in Montenegro with significant coverage on most of the sites where they occur. Grassland, cultivated and inland water habitats are also frequent. IPAs in Montenegro are largely made up of habitat mosaics other than three sites which are 100% marine. Broadleaved deciduous woodland occurs at the most sites (19), followed by coniferous forests (14) and mixed forests (8). Predominant grassland habitats are mesic (8), sub alpine and alpine (8) and dry (5).

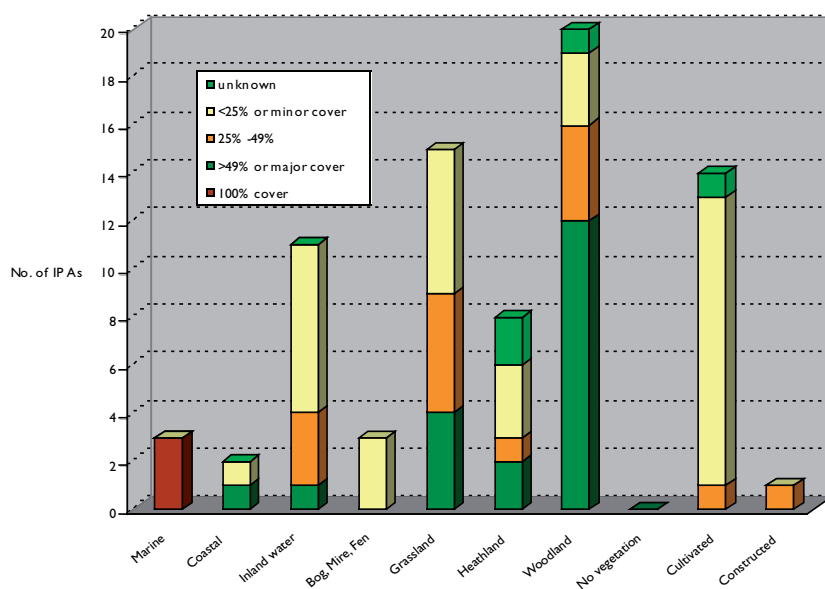


Fig 19. Major habitats at IPAs in Montenegro



DANKA PETROVIC

Wulfenia bleicii – a threatened Montenegrin endemic recorded on four IPAs, currently unprotected in Europe.

Protection and management of IPAs in Montenegro

Sixteen of Montenegro's 27 IPAs (nearly 60%) are unprotected. The other 40% have some level of official national protection on all or part of the site. Multiple protection systems on one site are uncommon only occurring on two IPAs: Durmitor and Tara Canyon (World Heritage site, National Park and containing a Reserve of Nature) and Skadar Lake. (Ramsar site, National Park and containing a Monument of Nature and a Reserve of Nature). 22 IPAs have been recognised at European level through their inclusion in the Emerald Network.

Total IPAs	Un protected	Total no. protected (all or part)	National protection (higher level)	National protected (lower level)	European recognition (Emerald or potential SAC*)	International recognition (not necessarily protection)
27	16 (59%)	11 (41%)	Nature Reserve (2) National Park (4)	Monument of Nature (5) Site of Special Nature Merits (2)	Emerald (22) 12 IPAs are smaller, 10 have the same boundaries	World Heritage site (1) Ramsar (1)

Table 22. Protection of IPAs in Montenegro

*SAC= Special Area of Conservation designated under the EU Habitats Directive (part of the Natura 2000 network)

Emerald site = Site of Nature Conservation Interest designated under the Bern Convention as part of the pan European Emerald Network

Other than National Parks, ‘protected areas’ in Montenegro only have protection on paper. They do not have management plans and there is no regulation of potentially damaging activities such as urbanisation, wood cutting, hunting and sand and gravel exploitation. Consequently these activities go ahead and degrade or destroy the natural ecosystems. National Parks have perennial and annual management plans, and there is much better protection of natural ecosystems within them than in other protected areas. However, within National Parks there are some activities that should not be tolerated: urbanisation in Durmitor National Park and sand/gravel exploitation in Skadar Lake National Park. The best protected and conserved National Park is Bjelasica. All four National Parks in Montenegro are IPAs and the borders of the IPA are identical to the borders of the National Park.

The Emerald Network has good coincidence with the IPA network and should Montenegro join the European Union these sites would provide a good guide for the identification Special Areas of Conservation (SAC) sites for the Natura 2000 network. If appropriate conservation measures are then taken on these sites, for example the development and implementation of conservation management plans as required by the EU Habitats Directive, the future of the plant diversity on IPAs and protected areas of Montenegro will be more promising than it is at present.

Threats to IPAs in Montenegro

The top two threats to IPAs in Montenegro, as elsewhere in the partner countries are development (largely for tourism) and poor forestry practices. The level of threat is high or medium on 50% of the sites affected. Agricultural related threats also predominate; burning vegetation, land abandonment and intensification, and threats to IPA integrity through water mismanagement. More particular to Montenegro is the threat from aquaculture and fisheries, reflecting the important marine and freshwater sites in Montenegro: Kotorsko-risanski Bay, Skadar Lake, and the IPAs containing the Tara, Piva and Lim rivers and the islands of Katići, Donkova and Velja seka. In Montenegro climate change is recognised as one of the top ten threats to IPAs, but proved impossible to quantify. Only one site, Lukavica currently has no threats associated with it.

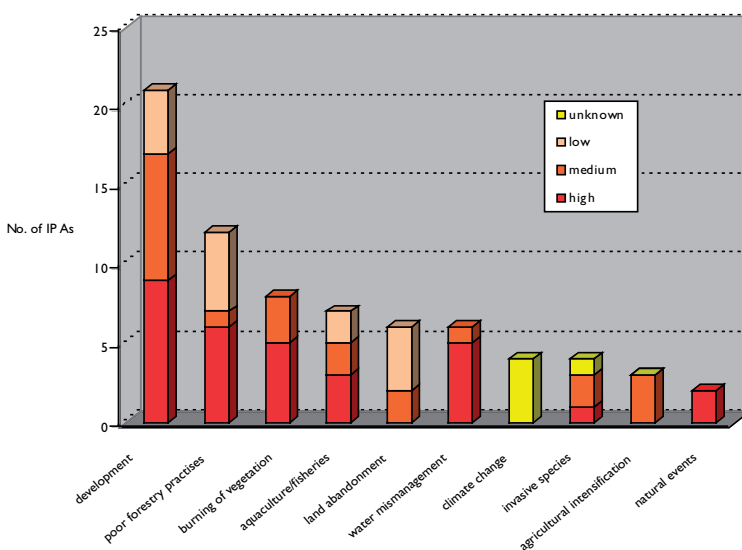


Fig. 20. Top ten threats affecting IPAs in Montenegro

*Development: tourism, urban, industrial and infrastructure development

*Poor forestry practices: damaging afforestation and deforestation and inappropriate management of forests

*Water mismanagement: dredging and canalisation, drainage, management systems and constructions of dams/dykes.

Threat	No of IPAs (% of all IPAs)	Level of threat			
		high	medium	low	unknown
Development (a - c combined)	21 (78%)	9	8	4	0
a. Development (recreation/tourism)	15 (56%)	7	5	3	0
b. Development (urbanisation)	7 (26%)	4	1	2	0
c. Development (infrastructure/transport)	6 (22%)	3	3	0	0
Poor forestry practices (d - f combined)	12 (44%)	6	1	5	0
d. Forestry (deforestation)	9 (33%)	4	1	4	0
e. Forestry (afforestation)	2 (7%)	1	0	1	0
f. Forestry (intensified forest management)	1 (4%)	1	0	0	0
Burning of vegetation	8 (30%)	5	3	0	0
Aquaculture/fisheries	7 (26%)	3	2	2	0
Abandonment/reduction of land management	6 (22%)	0	2	4	0
Water mismanagement (g - i combined)	6 (22%)	5	1	0	0
g. Construction/impact of dyke/dam/barrage	4 (15%)	3	1	0	0
h. Water (dredging/canalization)	1 (4%)	1	0	0	0
i. Water (extraction/drainage/canalization)	1 (4%)	1	0	0	0
	0	0	0	0	
Climate change/ sea level rise	4 (15%)	0	0	0	4
Invasive species	4 (15%)	1	2	0	1
Agricultural intensification (j-l combined)	3 (11%)	0	3	0	0
j. Agricultural intensification (grazing)	2 (7%)	0	2	0	0
k. Agricultural intensification (arable)	1 (4%)	0	0	1	0
l. Agricultural intensification (general)	1 (4%)	0	1	0	0
Natural events (disease/flood/fire/drought/etc)	2 (7%)	2	0	0	0
Eutrophication	1 (4%)	1	0	0	0
Extraction (peat)	1 (4%)	0	1	0	0
Unsustainable plant exploitation	1 (4%)	0	1	0	0
No threats identified	1 (4%)				

Table 23 Threats and their intensity (level) at IPAs in Montenegro

Narcissus from upland pastures, collected by children and sold to passers by in Montenegro.

Land use

The dominant land use on IPAs in Montenegro is tourism and nature conservation/research. Tourist activities take place at 82% of sites. These are followed by agriculture and forestry activities, as would be expected from the major habitats analysis. Hunting is also an important land use; quarry includes wolves and pigs in the the forests and birds at coastal and lake IPAs. Low level wild plant harvesting takes place in over one third of Montenegro's IPAs.



DIANE RADFORD

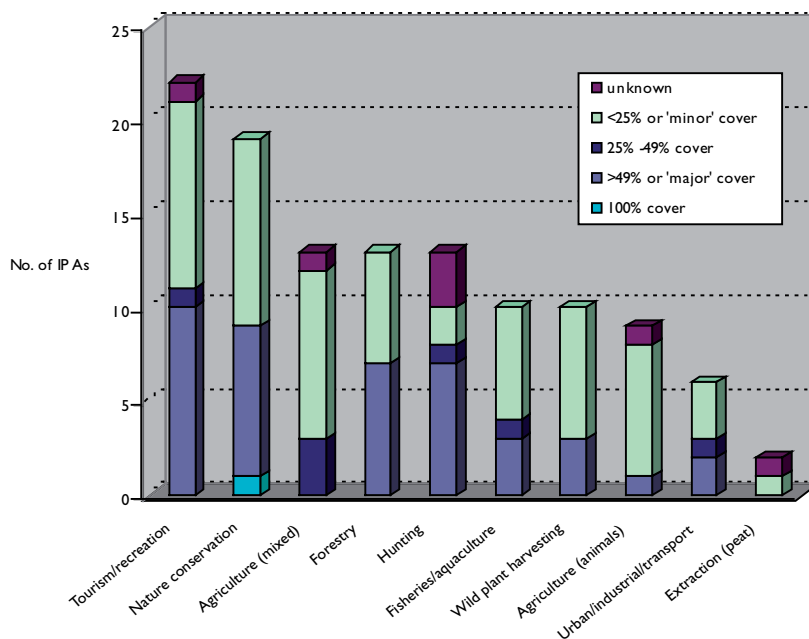


Fig. 21. Top ten land uses and their extent (cover) on IPAs in Montenegro

Ownership

Virtually all IPAs are owned in part by the state (99%) and in part privately (88%), with an additional nine IPAs also part owned by the municipality. The large proportion of IPAs within state ownership may reflect the current focus of IPAs on the well known parts of Montenegro. When the more poorly known areas are investigated, the proportion of IPAs in state ownership may decline. In Montenegro the interest of private landowners in conservation activities has not been widely tested. The IPA team believe in order for private land owners to engage with conservation issues in the current economic climate in Montenegro, it is essential that their livelihoods improve through benefits these activities bring and/or through incentives offered for proper conservation management. Civil society in Montenegro is ready to engage with these issues as has been demonstrated on a small scale through the pilot project in Cijvena canyon (see section V). The engagement has been helped by strong and effective promotion of the IPA project on national television, in daily newspapers, through lectures, information tables and through the project web site. In general the importance of IPAs to Montenegro has been vigorously promoted to the general public and well received by them.

Long Beach-Ulcinj and Ada Bojana Island IPA

The Long Beach (Velika plaža) of Ulcinj is located at the eastern end of Montenegro's coastline between Port Milena (in the west), and river Bojana (in the east). The IPA is 12 kilometres long and varies from 200 - 1000m in width and contains the best preserved sand dune vegetation on the eastern Adriatic coast. The important biodiversity is located mainly in eastern part of the beach, and the western part is under increasing threats from human activity. Eight criterion C habitats can be found on this site in the littoral zone, beach, dunes, depressions with alkaloid and fresh water habitats up and the remains of the indigenous Skadar Oak forest. Ada Bojana Island (440 hectares) is characterised by a natural mosaic of habitats formed by the dynamic delta of the Bojana River. Alluvial, undisturbed forests are a remarkable feature of the island. The sand dunes of Long Beach and Ada Bojana contain all plant species characteristic for this habitat type in Montenegro including *Calystegia soldanella* and *Pancreatium maritimum* which have vanished from other sites due to intensive urbanisation. The beach is protected by national legislation, recognised as an area with special natural values, and protected as monument of nature.



MARKO KARAJAN

Alluvial forest in the dynamic delta of the Bojana River.

Durmitor Massif and the canyon of the Tara River IPA

This huge IPA overlaps with the borders of Durmitor National Park and covers an area of 35,757 ha. Durmitor NP is characterised by exceptional diversity of vascular flora with more than 1300 taxa known to occur on its territory, 22 vascular plants are local, national or Balkan endemics and the site represents an important refuge centre for high-mountain flora. The IPA contains 35 taxa from the criterion A qualifying list – the most for any current IPA in Montenegro. It is specially important for *Adenofora lilifolia* – the complete Montenegrin population is located in Tara River Canyon; *Protoedraianthus tarae* – the *locus classicus* for this Montenegrin endemic; and *Cypripedium calceolus* – half of the Montenegrin population is located with Durmitor on Crna poda. 17 criterion C threatened habitats are also present. Forests habitats are significant on Durmitor, the best and most valuable forests are under strict protection. Since 1980, Durmitor has been on UNESCO's World Heritage list, and the Tara canyon is also part of the National Park. Tara River Basin is also a biosphere reserve under UNESCO's Man and Biosphere Programme.

***Cypripedium calceolus* (Lady's slipper orchid), threatened across Europe. Half of the Montenegrin population is found on Durmitor mountain.**



DANKA PETROVIĆ



Tara canyon in autumn – part of Durmitor and Tara Canyon IPA.

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Petrović, D. et al (2009) In press: *Važna Biljan Staništa U Crnoj Gori – IPA projekat Important Plant Areas of Montenegro IPA programe*. Green Forest Society. (In Montenegrin)

Recommendations for IPAs in Montenegro

For identification and monitoring

- Preparation of a Plant Red Data Book using IUCN categories is a priority for Montenegrin botanists because without this important document, future projects on the protection of plants and their habitats cannot be successfully implemented. Some work has already begun on red listing vascular plants. Preparation of the Red Book should be accompanied by the establishment of a database with detailed distributional and population data on target taxa.
- Data on lichens should be incorporated in further identification of IPAs
- Monitoring of species whose populations were evaluated as decreasing during this project should be established as a priority.
- Priority for the field research should be those areas which, according to the literature, contain populations of criterion A species and were not visited during the course of this project. This is particularly important for those species which were not found at all during the course of this project.
- The coverage of Criterion C habitats (EU Habitats Directive and Bern Convention habitats) should be better defined particularly within IPAs.

For IPA conservation

- Conservation activity should focus at the local level (though the municipalities on which territories the IPAs are located). It will be important to increase understanding of the value of nature protection in the context of the difficult economic situation by many in Montenegro, where short term benefits for example wood cutting, sand and gravel exploitation, hotel construction and the construction of hydro-power plants are seen as ways to improve livelihoods (see also section III).

Serbia

Vladimir Stevanović & Jasmina Šinžar-Sekulić



Fig. 22 IPAs in Serbia

Summary

Serbia has 62 IPAs. 31 qualified through all three criteria, including criterion B, so indicating the presence of at least 600 native plant taxa within the IPA. Approximately 40% of the total IPA area is covered by forest (mostly broadleaved) and semi-natural grassland habitats cover almost 30%.

56% of Serbian IPAs are nationally protected in full or in part - nearly half at a higher level of protection. The most frequent threats to Serbian IPAs are land abandonment, fragmentation and invasive species but the most acute threats come from deforestation and water extraction.

The Serbia IPA project was undertaken as a separate initiative (2004 – 2006), funded by the Ministry of Environment of the Republic of Serbia. A summary of the results of the project are included here to provide further insight into the Important Plant Areas of South East Europe, beyond the partner countries included within Plantlife International's 2005 – 2008 programme.

Faculty of Biology



University of Belgrade



Institute of Botany and Botanical Garden "Jevremovac"
Faculty of Biology, University of Belgrade



National coordinating organisation: Ministry of Environmental Protection of the Republic of Serbia

National coordinator: Prof Vladimir Stevanović

National IPA team: *Institute of Botany, Faculty of Biology, University of Belgrad:* Stevanovic Vladimir, Lakušić Dmtar, Sabovljević Marko, Šinžar-Sekulić Jasmina, Stevanović Branka, Tomović Gordana, Vukojičić Snežana; *Department of Biology and Ecology, University of Novi Sad:* Anačkov Goran, Pal Boža, Radulović Snežana; *Faculty of Sciences and Mathematics, University of Nis:* Jušković Marina, Zlatković Bojan, Vučković Mirjana, Ranđelović Vladimir; *Institute of Nature Protection of the Republic of Serbia:* Amidžić Lidija, Butorac Branislava, Panjković Biljana, Lazarević Predrag, Stojić Vida; *Natural History Museum, Belgrade:* Niketić Marjan; *Faculty of Sciences and Mathematics, University of Kosovska Mitrovica:* Krivošej Zoran.



Natural forest steppe of silver lime and durmast oak on the north facing dunes of Deliblatska Sands IPA.

Serbia is situated in the central part of the Balkan peninsula, and is bordered by Hungary, Croatia, Bosnia and Herzegovina, Montenegro, Macedonia FYR, Bulgaria and Romania. The territory covers 88,361 km², the climate is continental in the north and south east with semi-arid summer and cold winter periods, in the west it is humid-temperate and in the centre and east semi-arid temperate-continental or sub-continental, with transitional sub-Mediterranean parts.

Northern lowland Serbia consists of the south east Pannonian plain where wide alluvial lowlands and surrounding loess plateaus are found along the Danube, Sava, Tisa, Tamiš and Begej rivers. Two mountains are found here: Fruška Gora (538m) and Vršачke planine (640m). Southern Serbia is mountainous except the valleys of the Velika, Morava, Western Morava, Southern Morava, Nišava and Ibar rivers. The mountains belong to four systems: Dinaric Alps, Carpathian-Balkan mountains, the Rhodopes and Scardo-Pindhic. In the east., old igneous rocks and limestone and siliceous bedrocks support croplands with some steppe and sand-steppe vegetation with remnants of diverse continental psammophyte vegetation. West and central Serbia is formed of limestone, serpentine and igneous rocks.

Along the main rivers, alluvial forest of white willow, white and black polar, ash and pedunculate oak, as well as small areas of marshes with rich macrophyte flora, occur. Mountainous regions of Serbia are covered by mixed oak forests, mainly by Hungarian-Turkish oak and Sessile oak-Hornbeam communities. The vegetation belts above are composed of beach or beech-silver fir forests. Subalpine forest is either spruce forests in the continental mountains and Macedonian or White-barked Pine in the mountains of Kosovo and Metochia province. The limestone and serpentine gorges and canyons hold a very rich flora of numerous relict and endemic taxa. Mountain areas above the tree line are also rich in diverse chasmophytic, scree and rocky ground communities composed by endemic and Alpine orophytes.

Qualifying IPAs

	Pannonian	Continental	Mountain
Criterion A IPAs	12	20	15
Criterion B IPAs with more than 500 taxa per IPA	7	13	11
Criterion C IPAs	26	21	15

Table 24. IPAs in Serbia identified under the different criteria across three biogeographic zones

Major habitats

Approximately 40% of the total IPA area is covered by forests. More than 80% are various broad-leaved deciduous forests: lowland alluvial poplar-white willow, ash and pedunculate oak forests, montane oak and beech forests, thermophilous European and Oriental hornbeam forests and planted poplar and false acacia forests. Coniferous forests cover less than 10% of IPAs, the majority are Black Pine and mixed Black and Scots Pine forests on serpentine bedrock, and Bosnian and Macedonian pine in the south west. Spruce forests cover less of 3%. Mixed deciduous – conifer forest of beech-silver fir and spruce-beech forest occupy 10%.

Natural and semi-natural grassland formations cover almost 30% of the total area of IPAs, the majority on limestone and serpentine soils. Inland surface water habitats include lowland marshes, ponds and macrophytic vegetation and cover approximately 5% of the area IPAs, particularly those situated in lowland flooded areas along rivers. Heathland and scrub habitats cover around 13% of total IPA area. Temperate and mediterraneo-montane scrub habitats are dominant, with significantly less high mountain heath. Mire, bog and fen habitats and sparsely vegetated habitats occupy around 2% of the area covered by IPAs.

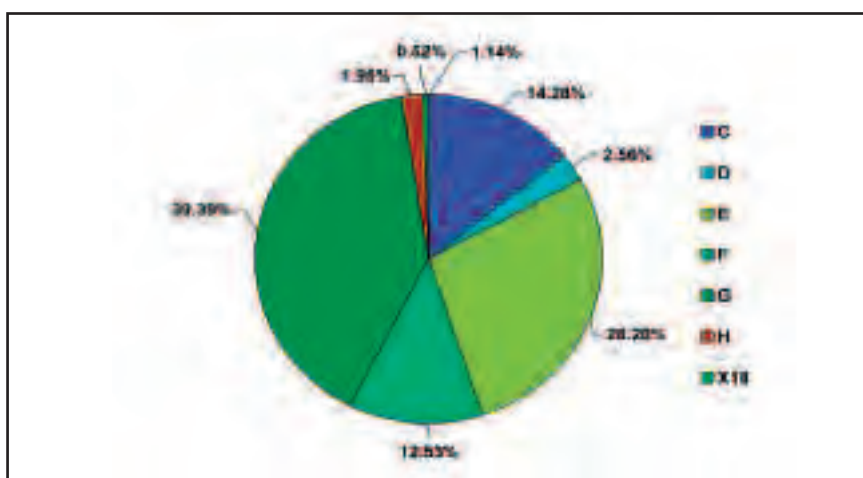


Fig. 23. EUNIS level I habitat types on IPAs in Serbia

C: Inland surface water, D: Mire bog and fen, E: Grassland, F: Heathland and scrub, G: Forests, H: Sparse or unvegetated

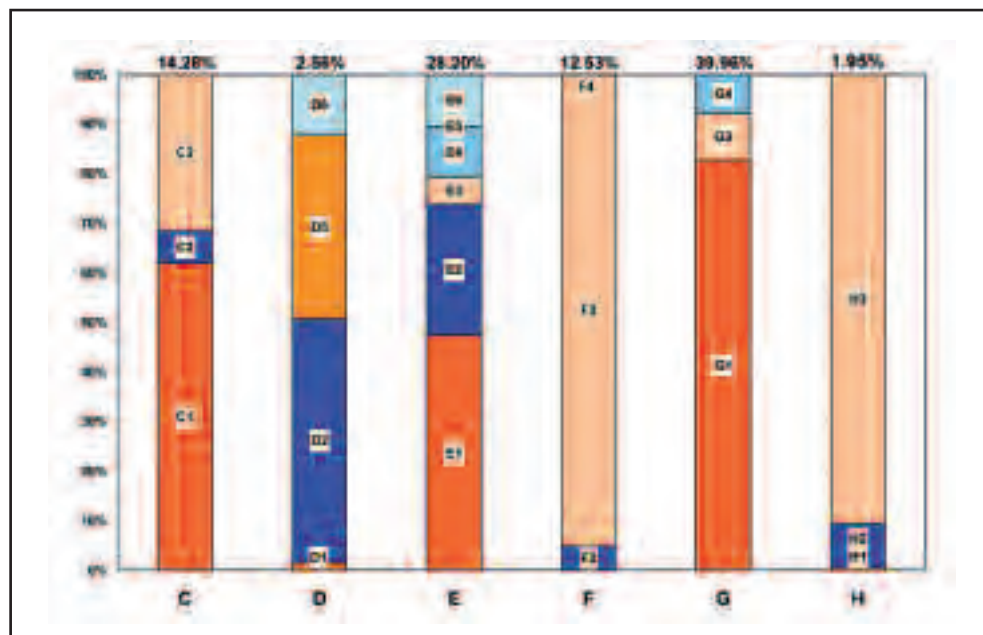


Fig. 24. EUNIS level II habitat types on IPAs in Serbia

C: Inland surface water – C1 standing waters, C2 running waters, C3 Littoral zone of inland waters.

D: Mire bog and fen – D1 Raised and blanket bogs D2 Valley mires, poor fens and transition mires, D5 Sedge and reed beds.

E: Grassland – E1 Dry grassland, E2 Mesic grasslands, E3 Seasonly wet and wet, E4 Alpine and sub alpine, E5 woodland fringes, E6 inland saline grass and herb.

F: Heathland and scrub – F2 arctic alpine and sub alpine scrub, F3 temperate/mediterraneo-montane scrub, F4 Temperate shrub heathland

G: Forests – G1 broad leaved deciduous, G3 coniferous, G4 mixed deciduous and coniferous

H: Sparse or unvegetated – H1 cave systems, H2 Screens, H3 Inland cliffs

Protection and management

56% of IPAs in Serbia are protected in full or in part. 44% of IPAs are not under protection and frequently exposed to anthropogenic threats. These unprotected IPAs are currently under evaluation and may be proposed for protection in near the future.

Total IPAs	IPAs with no legal protection	National protection of IPAs (high level)	National protection of IPAs (lower level)	European recognition of IPAs	International recognition of IPAs
62 (100%)	27 (44%)	28 (45 %)	7 (11 %)		Ramsar (9)
		National Park (5), Natural Park (8) , Regional Nature Park (1), Special Nature Reserve (14),	Landscape of outstanding Natural Qualities (6), Natural Monument (1).		

Table 25. Protection of IPAs in Serbia

Threats

Every IPA has at least one high or moderate threat affecting it which has the potential to destroy habitat or cause sudden decline in the populations of threatened species. The most important threats are directly related to human activity: water extraction, drainage, creation of reservoirs, expansion of agriculture in lowland areas, fertilisation of natural meadows in mountain areas and poor forest management (both afforestation and deforestation).

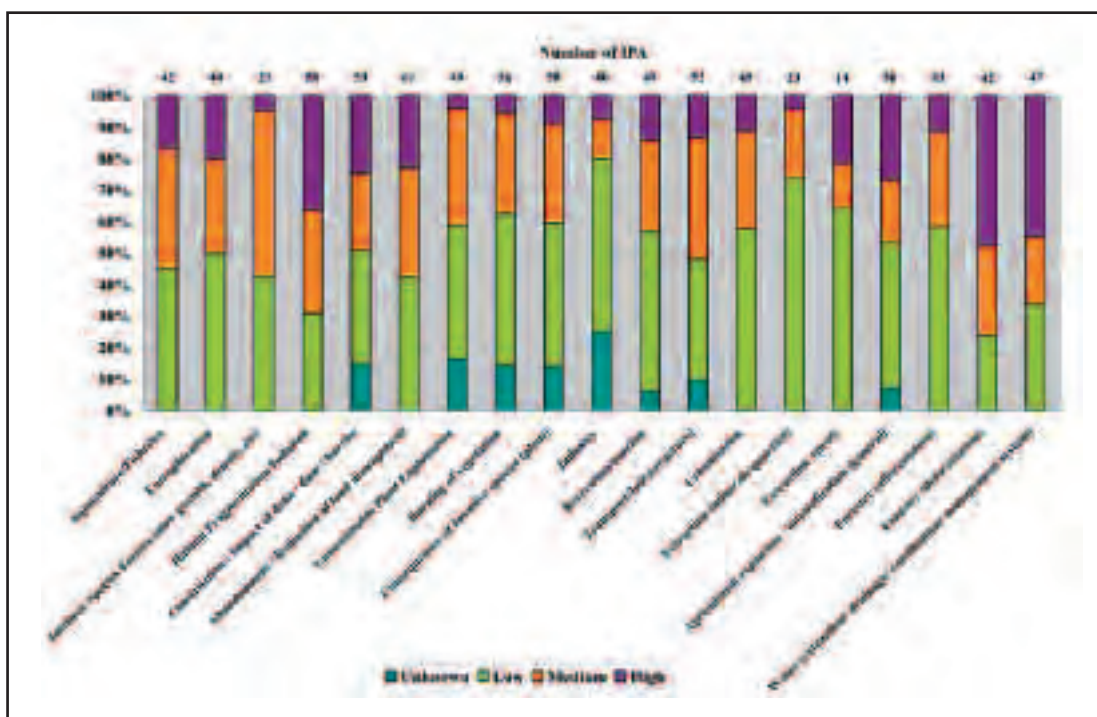


Fig. 25 Threats affecting IPAs in Serbia



VLADIMIR STEVANOVIC

Rindera umbellata – a steppic species that is rare across the whole Pannonian plain.

Picea omorika – Mt Tara



VLADIMIR STEVANOVIC

Deliblatska Sands IPA

Deliblatska Sands IPA represents the greatest sandy area in south east of the Pannonian plain covering 900km² with an altitude of 75-230m. 34,829 ha is under protection as a nature reserve. Sand-steppe, steppe, hawthorn and common juniper scrubs, mixed silver lime and downy oak forests are present at this IPA, as well as the flooded river islands and marshes of the Danube - the “Labudovo okno” Ramsar site. Huge tracts are under cultivation as forests of black and scots pine and false acacia. The total number of vascular plants is approx. 900 taxa including criterion A species *Artemisia pancicii*, *Astragalus dasyanthus*, *Colchicum arenarium*, *Fritillaria montana* Hoppe (= *F. degeniana*), *Paeonia officinalis* L. subsp. *banatica*, *Paeonia tenuifolia*, *Pulsatilla vulgaris* subsp. *grandis*. Deliblatska Sands is the richest part of Vojvodina province in terms of rare steppic plants. *Rindera umbellata*, *Iris pumila*, *Adonis vernalis*, *Stipa sabulosa*, *Hesperis tristis*, *Prunus tenella*, *Astragalus asper*, *Centaurea sadlerana*, *Echinops ruthenicus*, *Peucedanum arenarium*, *Alyssum tortuosum*, *Senecio integrifolius*, *Festuca vaginata* are some of those present. The main natural type of vegetation is forest-steppe on sandy soils, the succession of vegetation is closely related to the evolution of these soils, pioneer vegetation on sands, *Festuca vaginata* on sandy steppe, well developed steppe communities on sandy chernozem e.g. *Chrysopogon gryllus* communities. Natural forests are restricted to north facing dunes. In the last hundred years, the vegetation cover has been changed by intensive planting of pine and false acacia forest and the elimination of grazing.

Mt Tara IPA

Mt Tara IPA is a national park 19,200 hectares situated in west Serbia. The majority of the IPA is mountain plateau of 1000-1300 m the highest peak is 1591m. The IPA is covered by mixed deciduous and conifer forest and mountain meadows, including wet peat. The plateau is surrounded by deep limestone gorges and canyons of the Drina, Derventa, Brusnica and Grlac rivers. Highly diverse flora and vegetation occurs throughout the IPA, 1100 species of vascular plants have been recorded. The majority of the species belong to the central-European and Boreal floristic elements, while endemic Balkan species constitute approx. 6% of total flora. The Serbian Spruce (*Picea omorika*) and its relict habitats on north facing limestone slopes of canyons are particularly interesting. Other endemic species having restricted distribution in the Dinaric Alps are *Aquilegia grata*, *Daphne malyana*, *Centaurea derventana*, *Moehringia bavarica*, *Onosma stellulatum*, *Edraianthus graminifolius* aggr., *Micormeria croatica* and *Achillea serbica*. Endemics that are restricted to serpentine rock include *Halacsya sentneri*, *Stachys scardica*, *Euphorbia glabriflora*, *Linaria rubioides*, *Gypsophila spergulifolia* and *Genista friwaldskyi*.

Mt Tara IPA contains the most diverse forest in Serbia. Large areas of Mt Tara are covered by beech, silver fir and spruce forests. Pure stands are very rare. Well preserved old forest stands are within strict natural reserves. Serpentine soils are covered by mixed Black and Scots pine with *Erica herbacea* in lower shrub layer. On the deep cliffs of the limestone canyons are mixed forests of beech, few species of maple, Sessile and Turkish Oaks, Common Walnut, lime, European hop-hornbeam, common hornbeam, Turkish hazel, black pine etc. Significant areas are covered by mowed mountain meadows, while wet meadows and peat-bogs are restricted to depressions along the mountain streams in forest zones.

Turkey

Sema Atay, Andrew Byfield, Neriman Özhatay

Turkey was the first country to complete a national inventory of Important Plant Areas following a partnership project undertaken by Doğal Hayatı Koruma Derneği (DHKD), Fauna & Flora International (FFI) and Istanbul University Department of Pharmaceutical Botany (ISTE) in the 1990s. Turkey is a botanically complex country and it was through the project in Turkey that the original IPA criteria were tested and refined. This work along with the opinions of numerous botanists and conservationists across Europe helped influence and shape the present day IPA criteria for Europe. A summary of the results of the project are included here to provide further insight into the Important Plant Areas of South East Europe, beyond the partner countries included within Plantlife International's 2005 – 2008 programme.



National IPA coordinators: Sema Atay and Neriman Özhatay

National coordinating organisation: Doğal Hayatı Koruma Derneği (DHKD)

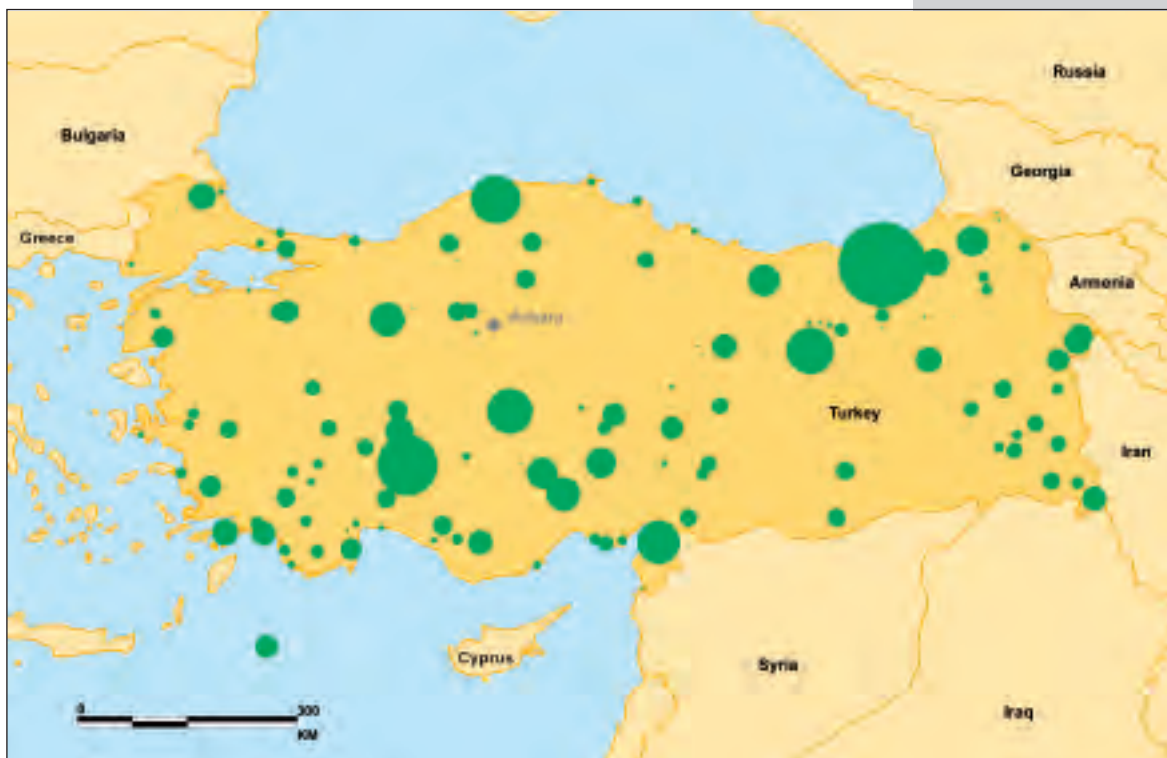


Fig. 26 IPAs in Turkey

Summary

144 IPAs have been identified in Turkey since in 2003, covering 11,301,000 hectares – 13% of Turkey's total area. The sites range from 154 to 1,545,632 hectares. Over 50% of the selected sites qualify as IPAs by meeting more than one criterion. 3442 rare taxa occur within the 144 IPAs. Detailed information can be found in the publications listed at the end of this section.

The greatest threat to Turkish IPAs is the intensification of agriculture which affects 44 % of sites followed by development related to tourism and recreation (35%) and deforestation (24%).

Acantholimon sp.

ANDREW BYFIELD

With about 11,000 native vascular plant taxa – and one in every three endemic – the flora of Turkey is richer than that in any other mainland country in the Western Palearctic, both in terms of overall plant diversity and endemism. Turkey has three floristic regions (Euro Siberian, Mediterranean and Irano-Turanian), and is the meeting place of the floras of Europe and Asia. The flora is also of exceptional importance from an economic point of view: major parts of two of the eight centres of crop plant diversity lie within Turkey; over 350 medicinal plants are collected for trading purposes; and garden plants have been derived from over 200 genera. The habitats mimic this diversity, and range from semi-desert and salt steppe, through Mediterranean cedar/fir forests and temperate rainforest, to a wide range of grassland, wetland, peatland and heathland habitats.

Approximately 50% of the Turkish land surface is covered by semi-natural vegetation principally forest, steppe and montane habitats. Over one quarter of Turkey's land surface was covered in forest in 1980. Approximately 1,240,000 hectares of wetlands of international importance for birds have been identified as Important Bird Areas.

Turkey-in-Europe covers 24,378 m². East of the Bosphorus sea is Anatolia largely a huge plateau (about 790,200 m²), which rises steadily towards the east and is bounded in the north and south by steep mountain ranges. North Anatolia is characterised by heavy rainfall, particularly in the east. South and West Anatolia are typically Mediterranean climate near the coast, with higher temperatures in the South. Inner Anatolia is continental, winter temperatures are very low, particularly in the eastern highlands, many of which remain under snow from November to March. In Southeast Anatolia temperatures are higher, and the flora has affinities with the Syrian Desert, of which it is effectively the northern extension. Turkey is a member of the Council of Europe and an accession country to the European Union.

Threats

Virtually all parts of the Turkish land mass are used, except the most inaccessible cliffs and upland regions, and many habitats and species are under severe threat. Much irreplaceable habitat has been lost over the last 30 years: 79% of the south-western Black Sea sand dunes, 85% of the heathlands, 90% of the peatlands, and 1.6 million hectares of wetlands. Just 12% of the north-eastern Anatolian temperate rain forest survives in a pristine state.

The threats facing the Turkish IPAs are diverse covering 25 categories, ranging from agricultural reclamation, intensive forestry and industrial/urban development which often affect sites to a large and highly damaging extent, to less obvious threats such as the collection of species for trade and the spread of aggressive alien plant species into the environment. Overall, 94% of the IPAs are thought to be threatened to some extent by at least one potentially damaging activity, with the vast majority - approximately 80% - threatened by two or more factors.

Threat	No. IPAs affected	% IPAs affected
Agricultural intensification (livestock / grazing)	63	44
Development (recreation / tourism)	43	35
Forestry (deforestation, including gathering of fuelwood)	35	24
Forestry (afforestation)	32	22
Agricultural expansion (arable)	30	21
Water (extraction / drainage / canalisation)	28	20
Development (urbanisation)	24	20
Development (transport / infrastructure)	16	12
Unsustainable plant exploitation	16	11
Burning of vegetation	12	10
Eutrophication	12	10
Pollution (industrial)	12	10
Construction / impact of dyke, dam, barrier	9	7
Extraction (minerals / quarries)	8	7
Agricultural expansion (horticulture)	6	5
Abandonment / reduction of land management	5	4
Agricultural expansion (general)	4	3
Extraction (peat)	3	2
Intrinsic species factors (slow growth, density etc)	3	2
Dumping	3	2
Development (industry)	2	2
Habitat fragmentation / isolation	2	2
Aquaculture / fisheries	1	1
Consequences of invasive species (plants)	1	1
No threats identified	6	5

Table 26. Threats affecting IPAs in Turkey



SEMA ATAY

Uludağ IPA.

Rapid growth in the agricultural and industrial sectors, combined with a fast-increasing population is placing immense pressures on many of the most threatened species, and the often-unique habitats in which they grow in Turkey. Few if any of the IPAs identified in the Turkish IPA inventory remain altogether unscathed by the negative impacts of man's activities. Accordingly much still needs to be done to adequately conserve Turkey's botanical diversity, under a wide range of topics, from legislation to on-the-ground site management.

Uludağ IPA (Bursa)

Uludağ is the highest mountain in North-western Anatolia and has a wide range of habitats, including broadleaved and coniferous forests, sub-alpine moorland, seasonal moorland pools, extensive alpine cliff communities, glacial lakes, and exposed summit communities. The flora is exceptionally rich: a total of 791 taxa have been recorded. Of the 96 nationally rare species that have been found, 57 taxa are of global and European conservation concern and 25 are endemic to this single site, including *Arabis drabiformis*, *Gypsophila olympica* and *Ranunculus fibrollosus*.

Despite protection as one of the first national parks in Turkey (declared in 1961), the area is still under considerable threat, most notable is the destruction of sub alpine moorland vegetation from the continuing expansion of ski facilities within the site which began in the 1940s. The loss of this important habitat on a protected site, illustrates the woeful inadequacy of Turkish laws and regulations in being able to protect the unique scientific importance of Uludağ in particular, and of statutory protected areas in general. Construction of a second complex of seven hotels (bed capacity of 2100) within the subalpine moorland east of the existing resort started in 1995, and is currently 50% completed. These developments have resulted in further damage and destruction of unique vegetation, further loss of natural spring communities (to provide a water supply for the hotels) and increased disturbance to wildlife.



SEMA ATAY

Coruh Valley IPA.

Çoruh Valley IPA (Erzurum and Artvin):

Located in the North-east of Turkey, the IPA comprises the middle and lower reaches of the Coruh River, one of the largest and the least disturbed rivers in Turkey. The vegetation includes mixed deciduous forest at low altitudes, small stands of stone pine (*Pinus pinea*), and extensive dry steppe on the valley sides. Approximately 750 taxa occur in the flora, of which at least 104 are nationally rare and of these about 67 are endemic to Turkey. There are 6 globally threatened taxa and 61 that are threatened in Europe including multiple endemic taxa from the genera *Allium*, *Anthemis*, *Asperula*, *Astragalus*, *Campanula*, *Centaurea*, *Galium*, *Hieracium*, *Salvia* and *Sempervivum*.

Despite its exceptional floristic importance, the Çoruh River Gorge receives no formal protection. It is under immense threat principally through the proposed construction of series of major dams along the length of the main river, and its tributaries. Construction has commenced on three of the main dams (1998): at Borçka, Muratlı, and the giant Deriner Dam upstream of Artvin province. The Turkish government is looking into options for further dams up to 27 on the upper reaches of the Çoruh River and all its tributaries. Substantial populations of many of the rarer endemics of the gorge will be destroyed by these hydrological engineering schemes. If realized, they would incur incalculable damage to one of Eurasia's richest and most distinctive botanical sites.

Useful references

Davis, P.H. (ed.), 1965. *Flora of Turkey*, University Press, Edinburgh

Özhatay, N., Byfield, A., Atay, S., 2005. *Türkiye'nin 122 Önemli Bitki Alanları (122 Important Plant Areas of Turkey)*, WWF Türkiye, İstanbul.

Özhatay, N., 2006. *Türkiye'nin BTC Boru Hattı Boyunca Önemli Bitki Alanları (Important Plant Areas along the BTC Pipeline in Turkey)*, BTC Şirketi, İstanbul.

Recommendations for IPAs in Turkey

A national IPA conservation strategy should be developed in the context of the institutional framework for national conservation and natural resource management (legislation, strategies, institutional and political structures, tenure, etc.).

Data and capacity

- Continue to identify and assess sites for addition to the IPA inventory, and to undertake detailed surveys of poorly-understood habitats (e.g. grasslands).
- Continue to assess the status of Turkey's rarest plant species, taking account of species that have only been recorded once.
- Provide statistics on the Turkish situation for the European and the world botanical databases.
- Increase capacity of NGOs, and local/central governmental agencies in Turkey and to prioritise plant conservation action.
- Support of educational and public awareness campaigns at IPA sites and in Turkey in general.
- Increase knowledge of botanists, scientists and other interest groups all around the world about Turkey's plants.

Legislation

- IPA data should be used to support, inform and underpin existing conservation strategies, including those inherent to protected areas, ecological restoration, community management and sustainable use, and legislative improvement.
- IPAs should be used as an integral part of the Pan European Ecological Network in Turkey and the Natura 2000 network in Turkey.
- Review current legislation protecting sites of nature conservation importance across Turkey in the light of the IPA inventory.
- Use IPA criterion A species to review species on Appendix I of the Bern Convention
- Use IPA criterion A, B and C lists for reviewing candidate habitats and species for listing on Annexes I and II of the EU Habitats Directive.

Conservation action

- IPAs should be the focus for developing micro projects involving local resource users, authorities, the private sectors and rural communities in IPA management through sustainable utilisation of plants in a manner which delivers poverty alleviation, income and food security.
- IPAs can provide a target to engage civil society in conservation such as *IPANET: Establishment of a Volunteer Network for the Important Plant Areas in Turkey* (see section IV).

Section IV: Important Plant Area Conservation – Policy and Practice

Identifying Important Plant Areas is the first step towards securing their future. However, this action alone will not result in their conservation. Following identification, concerted action is required to take up opportunities for conservation and to remove, or mitigate against, potential threats. This section provides an opportunity to examine plant conservation in relation to various environment instruments and policies both within and without the EU. A summary of the relationship between IPAs and various nature conservation policies and initiatives that are active at global and regional level can be found in Appendix 3.

The process of IPA conservation begins during the identification process. The provision of scientifically robust plant conservation priorities and associated data on the status, botanical features, threats and management of IPAs, informs future conservation activities and provides a baseline for monitoring IPA condition. The process of selecting the network of IPAs spreads knowledge on the existence of these important sites throughout communities, which can help 'prepare the ground' for future conservation actions. These actions can be divided into two main types; those relating to policy and those related to practice, i.e. conservation activity on the ground. The two are mutually reinforcing as policy development will eventually lead to changes in practice and vice versa.

This section focuses on IPA conservation in relation to policy; the development and application of existing environmental policy and legislation in south east Europe. The policy context for nature conservation in the partner countries is similar, in that all their governments have committed to the three major international conservation charters: they are signatories of the Convention on Biological Diversity (CBD); participants in the Pan European Biological and Landscape Diversity Strategy (PEBLDS) - a means of implementing the CBD in Europe; and signatories to the Bern Convention of the Council of Europe. The partner countries have differing relationships with the European Union. Bulgaria is an EU member country, Croatia and Macedonia FYR are EU accession countries and Montenegro is a potential accession country.

IPAs are not a legal designation – they are priority sites for the conservation of wild plants, fungi and their habitats. The IPA data collected as part of this project can contribute to the implementation of existing environmental policies, legislation and biodiversity conservation targets within south east Europe, both inside and outside the European Union. IPAs can and should benefit from the proper application of these policies.



Cortinus viola



Himantoglossum caprinum – threatened in Europe (criterion Aii species) and present on 18 IPAs in south east Europe.



Biodiversity, Nature Conservation and IPAs

Quick statistics:

- 116 (40%) IPAs in the south east European partner countries are protected in part or fully at national level, though this percentage is widely different in each country.
- 175 (60%) IPAs are unprotected.
- 59 (20%) are protected with higher level national legislation, at least in part.
- 129 (44%) IPAs contain species from the Bern Convention and 78 contain species from the Habitats Directive.
- 78 (27%) IPAs contain habitats from the Bern Convention and 251 contain habitats from the Habitats Directive.
- 94 (32%) IPAs overlap to some extent with Important Bird Areas (IBAs = 180).
- 44 (15%) IPAs overlap with Prime Butterfly Areas (PBAs = 66).

Places of high biodiversity value have long been singled out for special conservation attention as 'priority sites'. The biodiversity value of sites can be measured in a number of ways but most approaches consider irreplaceability (uniqueness) and vulnerability (threat) of the species and habitats therein. If priority sites are lost, there is an irreversible loss of biodiversity and associated resources, and damage to ecosystem services. Traditionally, priority sites have been declared protected areas and all south east European partner countries have at least one national system of protected areas. Since the late 1970s, conservationists have begun to favour the ecological network approach, where 'core areas' (priority sites for biodiversity) are surrounded by buffer zones and linked by natural corridors or stepping stones. Ecological networks are now widely accepted as an effective tool for conserving biological diversity, particularly with the growing threat of climate change.

In identifying priority sites, IPA methodology considers both the uniqueness of and threats to species, (by considering threatened endemics species), as well as the integrity of the (semi) natural vegetation present and species richness associated with it (see also appendix 1 on methodology). 355 species and sub species in the four partner countries are known to be threatened and endemic (either nationally endemic or endemic to the Balkan region), **292 of these are not currently on any global or regional Red List or on European legislation that protects species.** This reflects the inadequacy of existing European biodiversity legislation to protect the plant species diversity within the Balkans region. If this legislation is to be effective for species when the EU is further enlarged, additional species will need to be incorporated in the annexes of relevant directives. The regionally threatened habitat lists used for IPAs are those associated with the Bern Convention (Resolution 4) for Pan Europe, and the EU Habitats Directive (Annex 1) of the European Union. 183 regionally threatened habitats from these lists are present in the four partner countries. These lists provide good coverage of threatened habitats but some of the more unique habitats in the Balkans may be missing from this list.

IPAs can be interpreted as a gap analysis for plant interest in existing protected site networks, along with other species initiatives that show gaps for birds and butterflies - Important Bird Areas and Prime Butterfly Areas. Gaps in protected area systems for plants do exist; 60% of IPAs in the partner countries are currently unprotected at national level. There are strong correlations between IPAs and sites recognised by European and international site legislation, but until this legislation is implemented in the partner countries, the protection of the biodiversity on IPAs will remain inadequate.

***Lonicera glutinosa* a threatened Balkan endemic recorded on only one IPA in Montenegro. Currently unprotected by European legislation.**

An emerging concept within the IPA programme is **IPA Zones of Opportunity**. A Zone of Opportunity is simply an area in or around one or more IPAs in which some form of habitat restoration is desirable and possible, either to increase the extent or quality of the IPA, improve existing habitat within a buffer zone (which may then qualify as an IPA in the future), or to restore connectivity between IPAs through corridors or stepping stones. Zones of Opportunity can be located by mapping all the relevant ecological factors (habitat characteristics, soil type, rainfall etc) in concentric rings around the IPA, and then restricting the overlap to areas that have the potential to be restored, i.e. they have the correct ecological characteristics and are not developed or beyond restoration. This concept is in its infancy and has not yet been investigated in south east Europe, it has most potential in fragmented (semi) natural landscapes such as lowland Bulgaria and Serbia and could be used to improve connectivity in the Pan European Ecological Network.

IPAs were never intended to be ‘another site designation’ they are however a robust scientific framework for identifying priority sites for conservation action. Protected areas and related initiatives are an important, but not the only mechanism which can be used to conserve IPAs. The potential role of current site-related policies in the conservation of IPAs is examined below.

The policy response

A suite of site based policy responses that can be applied to conservation of IPAs in south east Europe have been initiated at international and European level. These build on the traditional national protected area mechanisms operating in every country in the region. All have encouraged countries to develop and implement national policies on protected areas and networks.

The **Convention on Biological Diversity** is especially significant for plant conservation, primarily due to the Parties’ endorsement of the **Global Strategy for Plant Conservation (GSPC) in 2002**. Target five of this sixteen-target strategy requires signatory governments to “ensure the protection of 50% of the most important areas for plants” [by 2010]. IPAs provide an ideal framework for the implementation of this and other targets in this strategy on the conservation of production lands, sustainable use of plants and control of invasive species as well as targets within the CBD work programme on protected areas.

In Europe, Planta Europa and the Council of Europe have developed the **European Strategy for Plant Conservation (ESPC)**, the European contribution to the CBD GSPC in which IPA conservation is embedded. Now in its second phase, this regional strategy has been endorsed by the Bern Convention Standing Committee in 2001 (recommendation no. 87) and again in 2008 (recommendation no. 138). Pan Europe, the PEBLDS-initiated **Ministerial Process ‘Environment for Europe’** is of particular relevance to the conservation of IPA across south east Europe. Through this process European Ministers of Environment approved a key policy framework in 2003 known as the **Kyiv Resolution on Biodiversity** its ultimate goal is halting the loss of biodiversity in Europe and one of nine key targets is the recognition and conservation of the Pan European Ecological Network of sites and corridors. The resolution is not legally binding; commitments should be delivered through programmes and legislation developed and implemented at national level.

MELANIA GYOSHEVA

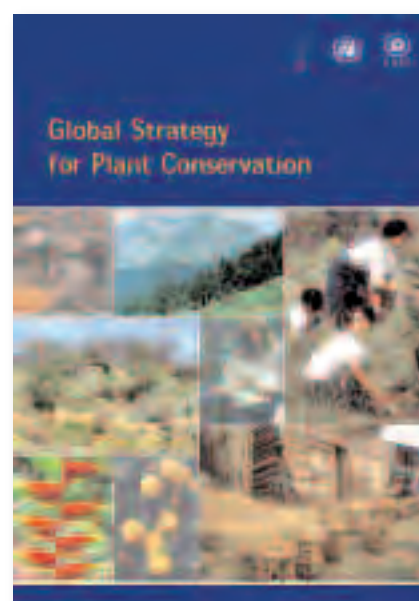


Fungi are also considered in the IPA project – such as *Hericium erinaceum* threatened in Europe.

KIRIL METODIEV



Marrubium friwaldskyanum a vulnerable Bulgarian endemic. Currently unprotected by European legislation.





Arborescent matorral with *Juniperus* spp. A habitat directive habitats in the Easter Rhodope mountains Bulgaria.

Useful references

Anderson, S. et al., 2005. *Important Plant Areas in Central and Eastern Europe*. Plantlife International, Salisbury.

Bennett, G., and Mulungoy, K. J., 2006. *Review of the experience with ecological networks, corridors and buffer zones*. CBD Technical Series 23, Convention on Biological Diversity, Ottawa.

Bennett, G. and Wit, P., 2001. *The Development and Application of Ecological Networks*. AIDEnvironment: Amsterdam, Holland.

Biro, E. et al., 2006. *Indicative map of the Pan European Ecological Network in south eastern Europe technical background document*. Tilburg ECNC

Hutchinson, N. and Dines, T., 2008. *Developing IPA boundaries in the UK*. Plantlife paper on www.plantlife.org.uk – for IPA Zones of Opportunity

Langhammer, P.F., et al., 2007. *Identification and Gap Analysis of Key Biodiversity Areas Targets for Comprehensive Protected Area systems*. Gland Switzerland IUCN

Bulgaria, as the only EU member within the partner countries is also legally bound by the European Union's **Habitats Directive**, which requires the designated and conservation of Special Areas of Conservation within the Natura 2000 network. Accession and potential accession countries (Croatia, Macedonia FYR and Montenegro), are working to align their national policies with those of the European Union and also are committed to designating Sites of Conservation Importance for the Emerald Network under the Bern Convention which fulfils the same goals Pan Europe but is not legally enforceable.

267 (91%) of IPAs in the South East European project countries Habitats Directive species and/or habitats. 163 (56%) contain Bern Convention species and/or habitats, but in most partner countries the Habitats Directive classification of habitats was used in preference to use of the Bern Convention – there is some but not total overlap between these two classifications.

Priorities for improving nature conservation and biodiversity policy and practice in south east Europe

- Improved enforcement of existing legislation relating to protected areas and other priority sites for biodiversity. *Appropriate policy frameworks are already in place.*
- Ensure proper implementation of the EU Habitats and Species Directive (or equiv.). *In countries acceding to the EU, their IPA networks can provide information for the development of Natura 2000 networks.*
- Increasing the connectivity between IPAs and other priority sites for biodiversity. *The IPA Zones of Opportunity concept is a scientifically robust way to approach the creation of site networks, and a realistic approach to the restoration of appropriate habitats, corridors and buffer zones.*
- Ensure the development and implementation of effective management plans for protected areas and IPAs that contain actions to conserve plant and fungal diversity. *The IPA database, country inventories and IPA national team members can provide useful information to assist with this process.*
- Development of national Red Lists of threatened species for plants and fungi in Macedonia and Montenegro. *IPA criterion A species (global regional and national threat) provide a good starting point for countries developing national Red Lists and for improving annexes of EU legislation in those countries hoping to accede to the EU.*

Biodiversity, development (tourism and transport) and IPAs

Quick statistics:

- Tourism and recreation is a land use in 143 (49%) of IPAs in south east Europe.
- Urban, industrial or transport related land uses are present on 52 (18%) of IPAs in the south east European partner countries.
- 149 (51%) of IPAs are threatened by development: recreation and tourism (31%), urbanisation (16%), infrastructure and transport (15%), industry (3%). This threat is the most frequent on IPAs in the partner countries.

Tourism and transport development affects all habitat types on IPAs. Tourism has the potential to be a huge industry in the Balkans and is widely viewed as the key to bringing economic prosperity to the region. The miles of coastline, turquoise seas, mountains cloaked in forest, spectacular gorges and a warm summer climate makes south east Europe a tour operator's dream, and it is unsurprising that tourism or recreation activities are the second most frequent land use on IPAs in the partner countries. The Adriatic coast is a popular tourist destination and Bulgaria has also established itself as a holiday venue in summer and winter as her mountain ski resorts offer a more affordable alternative to the Alps. Undoubtedly tourism will be a crucial wealth generating mechanism in these countries in transition, but at what cost? Development is currently the greatest known threat to the integrity of the IPA network in south east Europe adversely affecting over half of the IPAs identified in this project, frequently at high levels of intensity. The prospect of short term financial gain is currently winning over the long term security of biodiversity.

Relaxation of controls on foreign investment has resulted in prolific building on and around prime tourist destinations, many of which are also prime sites for nature. These activities are plainly evident along the length of Adriatic Coast as well as in many towns inland. The Black Sea Coast is also suffering loss of critical plant habitats as a result of often controversial development, for e.g. the Golden Pearl holiday complex built of Strandzha IPA (also a national park) that was declared illegal following its construction. In parts of the Rhodopes, Rila and Pirin mountains ski hotels are being built on every available clearing at the edge of the forest irreversibly destroying meadow habitat. The destruction of habitats through building is one problem; the pressure on the associated infrastructure (roads, sewage etc) frequently leads to further problems from pollution. Also in Bulgaria there is concern that large scale investors (construction, real estate and energy producing companies and some sectors of mass tourism e.g. ski and golf development) are favoured over the smaller biodiversity friendly investors (e.g. eco-camping or organic agriculture) as the latter will not be required to pay large amounts of commission to the government.

Another development drive aimed at increasing economic prosperity in the region is the improvement of transport links and other large infrastructure projects. The project PPI8 Rhine/Meuse-Main-Danube inland waterway, a priority project from Europe's Transport Infrastructure (TEN-T), will affect six Bulgarian IPAs (and 15 Romanian IPAs) located along the Danube as well as 62 Important Bird Areas. Numerous additional IPAs lie in the zone of influence of the Danube. Elsewhere in the Balkans concern has been raised about the environmental impact of extensions to the TEN-T schemes; the proposed motorway



ELIZABETH RADFORD

Road building threatens IPAs throughout the Balkan region – here cutting through wolf habitat near Biokovo IPA, Croatia.



Construction of ski infrastructure is damaging threatened habitat in Bulgarian IPAs

axis between Ljubljana and Thessaloniki and rail links from Ljubljana through Sofia to Istanbul and through Skopje to Thessaloniki. The EU has been forced to emphasise the requirements for proper Strategic Environmental Assessments before committing to further financing. Regional road building has already highlighted the lack of robust planning policy for biodiversity in the region. New highways in Croatia are threatening plant biodiversity on and around IPAs. A section of the Vc motorway threatens the Drava wetlands, other highways threaten the Neretva wetland area, Kozjak mountain (tunnel), Biokovo mountain (tunnel) and Medvednica (tunnel). There is concern about the impact of constructing a bridge at Pelješac on both the Pelješac peninsula and Maloston Bay. In Macedonia the EIA for Demir Kapija-Smokvica resulted in the diversion of the motorway from an important cave but did not succeed in saving European threatened habitats (e.g. *Buxus* thickets) from deterioration. The planned improvement of a road through the Kresna gorge in Bulgaria has also been the subject of intense environmental scrutiny. If the road through the gorge is completed, some unique Bulgarian habitats will be destroyed, the final decision on the route for the road currently sits with the Council of Ministers. In Bulgaria the development of wind power farms are also a potential serious threat to key species and habitats on extensive highly biodiverse pastures, especially vulnerable are the sub Pannonian and Pontosarmatian habitats.

Policy response

Within the European Union the ‘Environment Impact Assessment (EIA) Directive’ as it is known (approved in 1985 and amended in 1997) requires Environmental Impact Assessments (EIAs) to be undertaken for all major projects; full public participation in these assessments; and due diligence to their findings. Legislation in Bulgaria and Macedonia is compliant with these directives and other partner countries are working to bring their legislation to this standard. Conservationists have little confidence in the

implementation of national EIA legislation in the partner countries, and fears that biodiversity will be compromised by development have to date been largely justified. Sites qualifying for Natura 2000 in Bulgaria were initially excluded from the official list as a result of influence by investors. The government ultimately responded to pressure from the nature conservation community and now the list includes all these sites except the Rila buffer, an area close to Rila National park, which has been kept aside for development of ski resorts. The few official declaration orders for Natura sites that have been published by the government (showing precise borders, internal zoning, management regimes and the restrictions for each given site) suggest the restrictions will be as weak as possible in order not to conflict with the interest of investors. The “devil is in the detail”, in this case, in the implementation of the legislation.

In Croatia regulations exist on Strategic Impact Assessment, Environmental Impact Assessment and Nature Impact Assessment. The latter should protect the National Ecological Network, but the level of public involvement in decision making should be increased. Frequently changing and overlapping legislation marginalises nature conservation and public participation. This is compounded by a lack of clarity on who is responsible for implementation amongst ministries, institutions and agencies, which means the legislation does not work in the field. In Macedonia the Ministry of Environment and Physical Planning needs increased capacity to monitor activities after EIAs have been completed, otherwise the current lack of control of the implementation of mitigation measures will persist.

Priorities for improving development policy and practice in South East Europe

- Undertake EIA on all development projects within and adjacent to Important Plant Areas that are not already under legal protection, and the application of the precautionary principle to all decisions.
- Ensure EIA outcomes are properly monitored
- Increase the understanding of the potential and extent of impacts of the extension to the European Transport Infrastructure (TEN-T) in the Balkan region (on potential Natura 2000, Emerald Network and other important biodiversity sites).
- Ensure that the EU and European Investment Bank fund only sustainable transport and infrastructure development projects across the region.
- Stronger commitment by administrations to the enforcement of EU and national environmental law in relation to development projects.
- Guard against over reliance on tourism activities to support conservation measures.



LYUBOMIR PROKHOROV

Destruction of sub Pannonian steppe habitat in Bulgaria for wind farms

Useful references/websites

Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment (the EIA directive) and its amendments 97/11/EC.

CEE Bankwatch network: <http://bankwatch.org/>

BirdLife and EU transport policy:

http://www.birdlife.org/eu/EU_policy/Ten_T/index.html

Various publications from the Regional Environmental Centre: <http://www.rec.org/>



Some of South East Europe's most pristine old growth forest in Biogradska Gora IPA.

Forests, forestry and IPAs

Quick statistics:

- 237 (81%) IPAs in the South East European partner countries contain forest habitats (214 broadleaved deciduous, 57 broadleaved evergreen, 67 coniferous, 12 mixed and 14 contain forest habitats with a strong anthropogenic influence).
- 207 (71%) IPAs contain threatened forest habitats from the Habitats Directive and the Bern Convention, 23% of these sites contain 'priority habitats' from the Habitats Directive.
- 51% of IPAs are used for forestry activity.
- 32% of IPAs are used for hunting.
- 43% are threatened by poor forestry practices: deforestation (20%), intensified forest management (18%) and afforestation (85%).

The forests of South East Europe are the most diverse in Europe, not only in the diversity of their tree species but also of other woody, herbaceous and lower plant (moss, fungi and lichen) species associated with them. This diversity is often associated with large tracts of old growth (ancient or virgin) forest found throughout the region. The forests include fir, spruce, pine and conifer forest above 700m; deciduous beech forest and lowland mixed forest of oak and hornbeam; Mediterranean coastal forests with maquis and garrigue shrub layers; and the mixed deciduous forest (oak, hornbeam, laurel, ash and maple) of the Mediterranean interior. Between and within these zones are a large number of transitional forest communities that are frequently highly diverse and important from a biodiversity perspective. For example: mixed Hungarian oak forests,

Oriental Beech and Rhododendron forests, Karst ash and oak, Oriental Plane and Walnut, Sweet and Horse Chestnut, Macedonian oak woods and, unique to the Balkans, Macedonian Bosnian and Balkan pine forests (*Pinus peuce*, *P. leucodermis* and *P. heldreichii*). The latter occur very locally and are particularly vulnerable. 71% of IPAs in the partner countries contain forest habitats that are threatened in Europe.

Forestry is an important industry in the region (for construction and fuel wood) and forest cover has increased since 1990, mainly through afforestation and some natural regeneration. Many of the biodiversity-rich forests are threatened by deforestation and replacement with plantations, and this is strongly reflected in the IPA analysis; the second most damaging threat to IPAs in the partner countries is poor forestry practices affecting 43% of sites – deforestation threatens 20% and intensified forest management 18%. Not only does this diminish the biodiversity value of South East Europe's forests, but all the associated ecosystem services. Undisturbed forests prevent soil erosion and maintain the water balance, as well as providing income for (often the poorest) rural communities through non-timber forest products (fungi, medicinal plants, berries etc). Recent research (Luyssaert *et al* 2008) shows that old-growth forests act as efficient carbon sinks. They continue to sequester carbon for up to 800 years in live woody tissues and slowly decomposing organic matter in leaf litter and soil. This carbon re-enters the atmosphere if the forests are disturbed.

The policy response

Since the early 1990s international policy processes have acted as a driving force for national forest policy development. There is no pan European forest policy but across Europe 46 countries – including all partner countries - participate in the Ministerial Conference for the Protection of Forests in Europe (MCPFE). Since 1990 nineteen resolutions on sustainable forest management have been adopted by this Conference. These aim to promote a balance between the economic, ecological, social and cultural dimensions of sustainable forest management. For example the conservation of IPAs can contribute to the resolutions of MCPFE V4: Forest Biological Diversity, H2: Biological diversity and S1: Monitoring of Forest Ecosystems and thus to the Forest Biodiversity Expanded Programme of Work of the CBD.

The Parties have adopted general (voluntary) guidelines for the Sustainable Management of Forest in Europe and for the Conservation of the Biodiversity of European Forests. The MCPFE activities have been brought under the framework of PEBLDS and the Environment for Europe process; they are embedded in the Kyiv Resolution on Biodiversity 2003).

Measures relating to conserving EU forest biodiversity can be found in a number of documents: the EU Forestry Strategy and Forest Action Plan, the Rural Development Regulation and the Forest Focus regulation. All of these policies and resolutions rely on the development of national forest programmes, with appropriate regulation and allocation of sufficient resources at the national level.



SONYATSONEVA

Deforestation is a major threat to the integrity of IPAs across the region.



Montane and sub-montane beech forests in Macedonia.

Useful references/websites

Luyssaert, S., Detlef Schulze, E., Börner, A., Knohl, A., Hessenmöller, d. Law, B.E., Ciais P. and Grace, J., 2008. Old-growth forests as global carbon sinks *Nature* **455**, 213-215.

MCPFE Liaison Unit Warsaw, UNECE and FAO., 2007. *State of Europe's Forests 2007 – the MCFPEs report on Sustainable Forest Management in Europe* (Full and Summary reports). Also other information at www.mcpfe.org

Ratarova, V. and Ferdinandova, V., 2008. *Funding forests into the Future? How the European fund for rural Development affects Europe's forests: The Case of Bulgaria*. FERN report series. Also other information at www.fern.org

Bulgaria's forest policy is articulated in two strategic documents which recognise the need for sustainable development in the forest sector. The national forest programme is in the development phase, and has been delayed due to lack of registration of forest owners. A study by the NGO FERN (Ratarova and Ferdinandova, 2008) found that measures to improve economic return through intensive exploitation of Bulgaria's forest and marketing the (timber) products are greater than those which conserve forest

biodiversity (2008). Within the Rural Development Programme for agriculture and forestry only one environmental measure supports the conservation of forests on Natura 2000 Special Areas of Conservation – estimated at 0.48% of the RDP budget.

Croatia, Montenegro and Macedonia all have national forest policies in various stages of development, all of which incorporate the concepts of sustainable forest management. In Croatia much of the forest is managed by the state with cutting limited or forbidden in 'unexploitable' or protected forests (though only 18 IPAs are protected in Croatia). In theory Croatian forests receive the official certificate SA-FM/COC-001212 from The Forest Stewardship Council which guarantees sustainable management according to strict rules; however those rules need to be more consistently applied. Five of the 35 policy statements in Montenegro's draft forest strategy have direct links to conservation of forest biodiversity and five out of 42 actions within Macedonia's forest action plan (2007 – 09) relate to environmental and social aspects of forestry, though none of these are specific to biodiversity. Both countries will rely on significant donations from organisations outside the country to ensure the fulfilment of their national programmes.

Priorities for improving forest conservation policy and practice in South East Europe

- Increase the protection of the most ancient and diverse forests in Europe through existing protection mechanisms. *Forest IPAs are suitable target sites for this protection.*
- Increase the funding from rural development programmes that is available for sustainable forest management schemes. Target these schemes at forests where there are high levels of forestry activity and forest biodiversity. *Forest IPAs are suitable targets for these schemes and can provide focus for awareness-raising around the importance of forest biodiversity.*
- Include further development and expansion of sustainable forest management practices within national forest policies and allocate resources to their development where they are absent.



DIANE RADFORD

Grasslands, Agriculture and IPAs

Upland hay meadows in Durmitor IPA.

Quick statistics:

- 220 (76%) IPAs in the south east European partner countries contain grassland habitats.
- 178 (61%) IPAs contain threatened grassland habitats from the Habitats Directive and the Bern Convention, 41% of these sites contain 'priority habitats'.
- 43% are used for agriculture (grazing animals).
- 7% are used for haymaking/mowing.
- 12% are used for other forms of agriculture (arable, mixed, horticulture).
- 34% of IPAs are threatened by land abandonment.
- 28% are threatened by agricultural intensification.

Traditional, low input agricultural systems are predominant in South East Europe. These systems result in farmland of high biological diversity, whose conservation importance has been recognised by policy makers across Europe and the land categorised as *High Nature Value (HNV) farmland*. Grassland/agricultural IPAs in the partner countries provide a subset of HNV farmland. IPAs are not only representative of HNV areas associated with rare species (type 3), but IPA criteria include an assessment of threatened habitats (land cover) and species richness (high quality semi natural vegetation) across all habitat types. 76% of sites within the IPA network in the partner countries contain grassland habitats and 135 IPAs are used for agriculture related to grazing animals, hay making and/or mowing (46%), underlining the importance of grassland habitats and associated agricultural activities in maintaining sites of exceptional botanical diversity. On many of these sites mosaics of semi natural vegetation are common.

Traditional farming systems are declining in the region, being replaced by either more intensive farming, or being abandoned altogether; 28% of IPAs are threatened by agricultural intensification and 34% by land abandonment. The net result is loss of biodiversity (see references).

High Nature Value Farmland (HNV): Those areas in Europe where agriculture is a major land use and where that agriculture supports or is associated with a high species and habitat diversity and/or the presence of species of European conservation concern.

The policy response

The importance of traditional (low input) agricultural systems in maintaining biodiversity, and the need to identify and conserve HNV farmland is recognised in the agricultural targets of the Kyiv resolution (Environment for Europe process) and the Rural Development Policy (the basis of the second pillar of the EU Common Agricultural Policy – CAP), see box on page 87. The complexities of implementing EU Rural Development Policy through the Rural Development Regulation, are well documented elsewhere (see references), but essentially both the Kyiv targets and the EU’s Rural Development Regulation require incentives/subsidies to be given to farmers to maintain measures which use resources sustainably and maintain biodiversity. Their limited success in delivering conservation of biodiversity in west and central Europe has also been well documented. Successes are frequently undermined by subsidies provided by other production orientated measures in Rural Development Plans, which have negative affects on farmland biodiversity across large parts of the EU.

Supporting traditional agricultural systems in South East Europe is crucial to maintain High Nature Value farmland.



DIMITAR PEVY

Bulgaria, the only SEE IPA partner country within the EU, has begun a national agri-environment programme which includes the maintenance and restoration of HNV farmland and traditional crop varieties and increasing knowledge of traditional farming practices. In 2007 the European Forum for Nature Conservation and Pastoralism and WWF found a number of key issues preventing effective implementation of rural development measures that could benefit HNV farmland in Bulgaria (and Romania). Crucially not all of the appropriate HNV land has access to payments because it is not officially registered. National and EU deterrents to registration include: the minimum size rules for land registration in Bulgaria which exclude the land parcels of many very small scale semi subsistence or subsistence farmers; the ban on the inclusion of forested land as forage, which is difficult for those owning herds which include forest browsing goats; and difficulties associated with accessing payments on communal land, another common characteristic of Bulgarian farming systems. There are significant problems to overcome in the Bulgarian scheme and farmers need considerably more financial, administrative and technical support to ensure RDP payments provide benefits to those farmers whose farming methods support biodiversity conservation.

Croatia, Montenegro and Macedonia FYR, as accession/potential accession countries, are developing Rural Development Programmes, often through enhancing existing national legislation. Despite this, the identification of HNV farmland and development of supporting programmes is in its infancy in the Western Balkans. DeRijck and Erg (2006) concluded that a number of key measures were needed to promote and implement appropriate policies: establishment of datasets; pan European monitoring on species and habitats; sound comparative and analytical research into the effectiveness of policy responses; innovative plans for HNV protection and considerable awareness-raising (through literature, demonstration farms, training and international organisations). In light of the threats faced by the agricultural and grassland IPAs in South East Europe, that have been quantified by this project (34% threatened by land abandonment), there is an urgent need to start delivering on these recommendations now.

Relevant agricultural policy in partner countries:

Ministerial Environment for Europe process: The Kyiv resolution on biodiversity (2003), specifically the agriculture and biodiversity targets

- identify high nature value areas in agricultural ecosystems by 2006
- to ensure that a substantial proportion of these areas will be under biodiversity sensitive management by using appropriate mechanisms such as rural development instruments, agri-environment programmes and organic agriculture....(by 2008)

Common Agricultural Policy and the Rural Development Regulation

Pillar 2 of the CAP offers support for farmers through the European Agricultural Fund for Rural Development. The Rural Development Regulation determines how that money will be spent requires EU Member States to develop national rural development strategies and plans (RDPs). A number of measures must be chosen to help the protection and enhancement of natural resources and landscapes in rural areas, and at least 20% of funding must go to sustainable land management. This funding should contribute to the EU priority areas of safeguarding biodiversity, and the preservation of high nature value farming and forestry systems and traditional agricultural landscapes.

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A typical High Nature Value landscape mosaic in the Eastern Rhodope, Bulgaria.

Priorities for improving agricultural policy and practice in South East Europe

- Define and prioritise support for the HNV farming systems that are crucial to HNV farmland. *Grassland/agricultural IPAs (as a sub set of HNV farmland) provide a good place to start with the bottom up process of defining the HNV farming systems.*
- Undertake research into the impact of policy responses on farmland. *IPAs are a ready made network with comprehensive baseline biological data on species and habitats providing a good platform from which to monitor change.*
- Develop effective agri-environment schemes and target them at farmers HNV farming systems that are maintaining high diversity. *Grassland/Agricultural IPAs (as a sub set of HNV farmland) are ideal targets for these schemes.*
- Invigorate the promotion and awareness-raising of HNV farmland concept in the Western Balkans. *Grassland/agricultural IPAs can provide focus for awareness-raising around the importance of agricultural biodiversity.*
- Develop pilot conservation projects that engage local communities and focus on raising the economic viability of HNV farming; for example branding specialist farming products.

KOEN DE RIJCK WWF/DGCP



Wetlands, Coast, Water use and IPAs

Quick statistics:

Inland water

- 93 (32%) of IPAs in the south east European partner countries contain inland water habitats: surface standing water (49), surface running waters, (47) surface water bodies (27).
- 46 (16%) of IPAs contain threatened inland water habitats from the Habitats Directive and the Bern Convention.

Mire, bog and fen

- 50 (17%) IPAs in the partner countries contain mire, bog and fen habitats: raised and blanket bogs (1), poor fens, valley and transition mires (10), base-rich fens (12), sedge and reed beds (32).
- 22 (8%) of IPAs with mire, bog and fen habitats contain threatened habitats from the Habitats Directive and the Bern Convention, 12 of these sites contain 'priority habitats.'

Marine and coast

- 16 (5%) IPAs in the partner countries contain marine habitats: littoral rock (3), littoral sediments (7), sublittoral rock (3), sublittoral sediments (6), pelagic water column (1).
- 33 (11%) IPAs in the partner countries contain coastal habitats: coastal dune and sand (13), coastal shingle (5), cliffs, ledges and shores (23).
- Of the coastal and marine sites, 35 (2%) contain threatened habitats from the Habitats Directive and the Bern Convention and 4 of these sites contain 'priority habitats' for marine and coast.

Land use

- 51 (18%) of IPAs are used for fisheries /aquaculture.
- 48 (17%) IPAs are used for water management (reservoirs, hydropower etc).
- 5 (2%) of IPAs are used for peat extraction.

Threats

- 77 (26%) of IPAs are threatened by water mismanagement: dredging and canalisation (27), management systems (26), construction of barrage/dam (23), extraction/drainage 17, drainage (4).
- 21 (7%) of IPAs are threatened by aquaculture and fishery activities.
- 34 (12%) of IPAs are threatened by eutrophication.
- Tourism development is a significant threat for many marine and coastal IPAs.

Riparian mixed forests of Oak (*Quercus robur*), Ash (*Fraxinus excelsior*, *F. angustifolia*) and Elm (*Ulmus laevis*, *U. minor*) are threatened in Europe



INSTITUTE OF BOTANY, BAS

Tourist developments threaten important habitats on the Black Sea Coast, Bulgaria.

Water and wetlands habitats are universally important for water supply, agriculture, fisheries, hydropower, water regulation and flood control. Balkans countries are rich in water of good quality, but industrial, pesticide and fertiliser pollution of rivers and their estuaries with the Adriatic Sea has been a major problem in the region, especially prior to the conflict in the 1990s.

Coastal habitats are of major economic importance for tourism in Croatia, Montenegro (the Adriatic) and Bulgaria (the Black Sea). The coast and associated dune habitats are under pressure and in many cases threatened by tourism development (as discussed in the policy section on biodiversity development page 79). Coastal wetlands are few in the region, largely because they have been drained and used for intensive agriculture; the Neretva Delta on the Croatian/Bosnian border is the largest remaining coastal wetland in the partner countries and even here only fragments of the original Mediterranean wetland remain. Rivers and deep gorges are another characteristic feature of most of the limestone mountains in the Balkans, for example the Moraca, Tara and Vardar rivers. The undisturbed sides of the gorges, were refuges in past times of changing climate and are particularly rich in Tertiary relict species. These canyon habitats are threatened by the creation of dams and reservoirs to secure water supply and deliver hydropower - 8% of IPAs in the region are threatened by dam or barrage construction. Small hydropower plants (SHP) are gaining ground in the Balkans because of the need for energy independence. If not located wisely, SHP will devastate sites of unique biodiversity. During this project the Macedonian government granted 400 twenty-year concessions for small hydroelectric power plants. 11 IPAs in Macedonia (out of 42) will be affected as well as additional Important Bird Area, Emerald sites and two National Parks. Similar problems, albeit on a smaller scale, exist in Bulgaria.

Large freshwater lakes are present in all partner countries except Croatia and they often cross borders for e.g. Lake Ohrid (Macedonian /Albanian border) and Skadar Lake (Montenegro /Albanian border). These lakes frequently contain their own endemic fauna and flora, and like the coastal regions are threatened by eutrophication and poorly regulated aquaculture and fishing activities. Artificial lakes are also present in the region for e.g. Lake Marovo in Macedonia, as well as numerous glacial lakes in the mountain regions. Rila Mountain in Bulgaria has 190 glacial lakes alone.

Bog, and mire habitats are much less common in the Balkans than in northern Europe, fens are slightly more common as are reed and sedge beds – which is reflected in the IPA habitat data. As a result, where these habitats do occur they are significant – in half of the IPAs containing these types of wetland habitats, the habitats are threatened at a European level.

Policy response

Within the European Union the EU Water Framework Directive (WFD) provides legally binding regulation to protect the water systems' of Member States (rivers, lakes, coast, estuaries and groundwater). The Directive includes a commitment to protect and enhance aquatic ecosystems and the terrestrial and wetland ecosystems that depend on them. This legislation currently applies to Bulgaria as the only EU Member State within the partner countries, but all partner countries are working to harmonise their water policy with that of the EU. When the WFD is transposed into national law it requires a number of elements which can be either assisted by using IPA data, or that will assist

with wetland IPA conservation these are: a national register of protected areas within water systems, management plans for river basins, and a network of sites to monitor the ecological status of water systems.

The Ramsar Convention is the key international treaty that obliges governments to identify and protect wetland sites; providing a framework for national action and international cooperation on the conservation of wise use of wetlands and their resources. 10 IPAs in the partner countries are currently designated as Ramsar sites, many of which are cross borders such as Skadar Lake. The criteria for designating Ramsar sites overlap with those used to identify IPAs.

Croatia is a signatory of the Barcelona Convention for protection against pollution in the Mediterranean Sea. Signatories agree to take specific measures against water pollution from various sources, to cooperate with others, to protect biodiversity, to apply legislation and facilitate public access to information and public participation. It is perceived by conservationists as one of the weakest Conventions, the goal is integrated coastal zone management but practically in Croatia, there is little evidence of it working for biodiversity.

Countries in the south east European region have taken steps to harmonise their approach to water management through BALWOIS (The Water Observation and Information System for Balkan Countries). The network aims to create a community of the main stakeholders in the field of water protection and water management ranging from scientists, private sector, experts, NGO's, to decision makers and wider public.

Priorities for improving water policy and practice in South East Europe

All the priorities for nature protection and biodiversity apply to water bodies in the region.

- Reassess the protection levels of key water bodies based on information now available of wetland IPAs.
- Ensure the siting of hydroelectric developments balance energy needs and biodiversity conservation benefits (avoiding sites of international importance for biodiversity)
- Prioritise the reduction of water pollution in internationally important wetland and coastal IPAs



MAJINA DELCHEVA

Useful references/websites

The Ramsar Convention: www.ramsar.org
 The EU Water Framework Directive:
http://ec.europa.eu/environment/water/water-framework/index_en.html
 Wetlands Knowledgebase:
<http://www.wetlands.org/RSIS/WKBASE/>

Priority coastal habitats such as these fixed dunes on the Black Sea Coast are extremely threatened by development.



DIMITAR PELEV

Wild harvesting of fungi provides additional income for those in rural areas.

Wild plant harvesting, Fungus collection and IPAs

Quick statistics

- Wild plant harvesting is recorded as a land use on 30 (10%) of IPAs in the south east European partner countries
- 16 (5 %) of IPAs are threatened by unsustainable wild plant and fungi collection

Plant and fungi species are known to be collected from the wild in 10% of IPAs in the South East European project countries and wild plant harvesting has a long and deep rooted tradition in the rural areas of the partner countries. It is likely that this is an underestimate, as much collection goes unrecorded or even unnoticed beyond very local communities, especially if it is not threatening species and habitats. Collection is both commercial and non commercial (for personal use) and includes bark, leaves, fruits, roots and whole herb parts for flowering plants and the whole fruiting body of fungi. The main uses are herbal medicine and fruits and mushrooms (fungi) for food. Significant parts of rural population depend on wild harvesting for additional income (especially the poor or the retired) and individuals of all social/age groups collect for personal use.

The numbers of species collected by wild harvesting are difficult to ascertain but it is in the hundreds, many of the plants collected are relatively common species (e.g. Blackthorn - *Prunus spinosa*, Nettle - *Urtica dioica*, Bilberry - *Vaccinium myrtillus*, Juniper - *Juniperus communis* and Blackberry - *Rubus fruticosus*) but some are threatened species and known to have declined in recent years through over collection (e.g. *Gentiana lutea*, *Sideritis scardica*, *Paeonia officinalis*) hence half the IPAs where this land use is recorded are also threatened by this activity though only at a low level. Some of these threatened species are now cultivated, or being investigated for their cultivation potential as their collection in the wild is so difficult because natural populations have decreased significantly, for example *Sideritis scardica* in Bulgaria. In Croatia cultivation of medicinal plants is not common practice.

The collection of wild plant and fungi can be a huge opportunity for conservation activities, both within and outside IPAs. The sustainable collection of more common species and promotion of their plant products can help safeguard sites and bring benefits for the more threatened species and habitats, whilst improving local livelihoods. Those who collect wild plants and fungi know that only sustainable harvesting will ensure their survival. This not only means careful harvesting and monitoring of the species concerned but care for the habitat on which they depend. Experience elsewhere (Romania, Italy, the Himalayas, East Africa) shows that the local collectors themselves are frequently the most motivated to conserve species and habitats. Medicinal plants, herbal tea, fungi, fruits etc provide an opportunity for both conservation and development; a very tangible income derived and enhanced from conservation activities. The potential to tap into local interest for conservation of medicinal plants was demonstrated in the Macedonian pilot project on Shara Mountain (section V) where the medicinal plant species highlighted within the project generated much interest and discussion.

Policy response to over harvesting

CITES the Convention on International Trade in Endangered Species prohibits the collection and sale of many plant species, whilst others are monitored and regulated, Bulgaria, Croatia and Montenegro are signatories. The ability to comply depends on

Cultivation of *Scardica sideritis*, has relieved pressure on this species in the wild – around beehives in Trigrad IPA.



ELIZABETH RADFORD

national legislation. EU regulations implement CITES provisions in Europe with a number of stricter measures affording species listed in four annexes. Annex V of the EU Habitat Directive obliges members to safeguard resources of some commercially important plant species.

Nationally Bulgaria has a specific Medicinal Plants Act (amended in 2002) with 500 species within the annex to which various restrictions apply. Croatia's medicinal plants are covered by the Law on Nature Protection, in Macedonia they are referred to within the Sustainable Development Plan. In general medicinal or harvestable species already on protected species lists cannot be harvested. Other medicinal plants may require permits to collect, for which a fee is paid to local authorities. A number of species in Bulgaria and Croatia are subject to quotas defined by regional and municipal authorities, or by protected area authorities with national and nature parks. This practice ensures also a regular monitoring of the populations of those species.

In Bulgaria the quota system is regarded as a good policy that works in practice, for example for *Leucosium aestivum* and *Arctostaphylos uva-ursi*. Macedonia has developed National List of threatened species for export control known as D4, based on the CITES requirements. The national level of collection was estimated for some plant species and quotas for export were defined for e.g. *Arctostaphylos uva-ursi* and *Evernia prunastri*. Collection of *Gentiana lutea* has been banned for five years.

IUCN, BfN and WWF Germany have developed a standard for the sustainable wild collection of medicinal plants for ecological, organic, ethical, and social best-practice and certification systems involving wild plant species, the International Standard for the Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP).

Priorities for improving wild plant harvesting policy and practice in South East Europe

- Encourage sustainable development practices in local communities where wild plants and fungi are collected, for example those contained in the International Standard for the Sustainable Wild Collection of Medicinal and Aromatic Plants.
- Develop relationships that allow local wild plant collectors to use their knowledge to assist plant conservation on priority sites for example to help define quotas in protected areas and IPAs where collection is damaging plant populations.
- Develop pilot conservation projects that engage local wild harvesting communities and focus on ensuring sustainable collection and subsequent development and promotion of the sustainably sourced plant products. IPAs are a natural target for these projects.



ANDREW BYFIELD

Crocus harvested for saffron in Turkey.

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SONYA TSONEVA

Lilium rhodopaeum, a Bulgarian endemic.

Conclusion

The policy frameworks to deliver the conservation of plant diversity on and off IPAs exist in all the major sectors in the partner countries in South East Europe. In recent years there has been considerable progress in policy development, encouraged by internationally driven processes and commitments. In Europe EU policy backed by EU financing has done much to improve the delivering of environmental policy in the EU. Mistakes have and continue to be made, particularly in the implementation of agricultural policy, but there is a perfect opportunity for south east European accession and potential accession countries to learn from these mistakes and to make and enforce much better policy for the environment as they enter the EU.

Despite this improvement in policy, a serious and crucial lack of commitment exists through all administrative levels to implement national environmental policy on the ground (writing policy is the easy part). Obstacles include over complication of legislation, overlapping competences within key institutions, diminishing the authority of nature protection agencies, marginalising public participation in decision making, diverting resources away from conservation and the environment and, especially in coastal areas, over reliance on tourism as the Holy Grail to finance conservation as well as improving economic prosperity.

It is essential that appropriately directed and properly managed financial resources (incentives/subsidies) and expertise are made available for conservation, and that the authorities have a proper understanding of the fundamental importance of biodiversity and healthy environments in the long term. These should be underpinned by total commitment to proper enforcement of sound environmental legislation, if (plant) conservation is to be achieved in the Balkan region.

Governments are critical in the process, but society and the choices it makes for itself at a local level are equally important. The next section discusses on the ground conservation activity, focusing on plants and with an emphasis on engaging civil society.

Section V: Important Plant Area Conservation – Pilot projects

Placing the local community at the heart of the conservation has the potential to benefit the greatest number of IPAs. Traditional protected area mechanisms, subsidies and regulation are expensive and will benefit biodiversity on only a proportion of IPAs, especially in South East Europe where fewer resources are available. The policies and legislation behind these ‘top down’ (government driven) conservation mechanisms take time to establish and enforce, but in the accession and potential accession countries of South East Europe, conservation needs to be happening now. Plant conservation can also be driven from the ‘bottom up’; community based conservation. This approach acknowledges that to achieve sustainable conservation of IPA networks, it is necessary to engage the people who live on and around these sites and who use the natural resources available within them in their everyday lives. It understands that social processes are as important as biological processes in conservation. Community based conservation is fundamental to the Ecosystem Approach championed by the Convention on Biological Diversity as the main approach to sustainable conservation and development (see box).

Community conservation is not an easy option, particularly in South East Europe where the economy is in transition and value is placed on products and activities that provide income quickly. The advantage of focussing on plants is that plants and their pollinators are invariably the fundamental component of the (economic) value of any site: grassland as a grazing pasture; forest as a source of fuel; medicinal plants as both income and for health, vegetables, grains and fruit for food and flowers (with bees) for honey. Plants are key component of ecosystem services, for example peat land and forest are both water regulators and carbon sinks.

Each IPA team in the partner countries completed a small pilot project to explore the potential for conservation work focusing on plants at IPAs. The budgets for these projects were small, between 5 and 10,000 Euros. Each team took a bottom up approach to plant conservation engaging the communities that lived on or near IPAs and used the sites frequently. These pilot projects are described in this section. An additional project taking place on IPAs in Turkey and led by the NGOs Dođal Hayatı Koruma Derneđi and Stichting Rubicon is also described.

Practical steps to the ecosystem approach (based on *The Ecosystem Approach: five steps to implementation*, Shepherd 2004).

1. Determine stakeholders and the relationship between them and the area under scrutiny;
2. Characterise the structure and function of the ecosystem and set in place mechanisms to manage and monitor it;
3. Identify important economic issues affecting the ecosystem and stakeholders;
4. Adapt management and determine impacts over space;
5. Adapt management and determine impacts over time.



Organisation responsible for project: The Bulgarian Biodiversity Foundation (BBF)

The BBF is an NGO working for nature conservation and sustainable development. Its mission is to contribute to the conservation of the natural heritage of Bulgaria and neighbouring countries of South-Eastern Europe, by increasing the involvement of the civil society in conservation.

Project team: BBF: Katerina Angelova (coordinator), Georgi Popgeorgiev, Dimitar Plachiiski, Stefan Avramov and Rossen Vassilev; Botanical Garden of the Bulgarian Academy of Sciences, Sofia: Antoaneta Petrova; Institute of Botany of the Bulgarian Academy of Sciences, Sofia: Iva Apostolova; Regional Inspectorate of the Environment and Waters – Pazardjik: Kiril Metodiev; Regional Museum of Natural History – Plovdiv: Stefan Stanev.

Project period: February 2007 to May 2008

Sustainable conservation of the Important Plant Area: The Besaparski Hills, Bulgaria

Katerina Angelova, Bulgarian Biodiversity Foundation



KIRIL METODIEV

Critically endangered *Gypsophila tekirae* – at Besaparski the population is threatened by the invasive *Ailanthus altissima*

Geographical and Botanical context of IPA

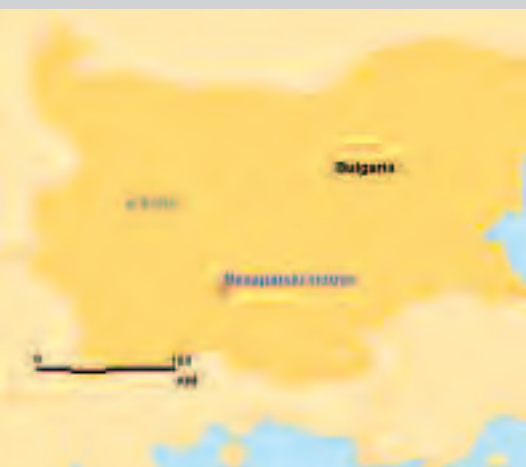
The Besaparski Hills are located in the southwest of the Upper Thracian plain, near the town of Pazardjik at the foot of the Western Rhodope Mountains, Bulgaria. The hills are rounded limestone and marble, predominantly grassland with rocky outcrops, and range from 350 to 536 metres. The Besaparski Hills IPA is 4,035 hectares and contains 45 floristic elements, the largest being Sub Mediterranean following by Euro-Mediterranean and Euro-Asiatic.

The climate is transitional-continental due to the southern geographical position, the proximity to the Mediterranean Sea and the protective role of the Stara Planina Mountain. In addition to these conditions a range of local factors such as lime rich bedrock, the predominant lack of forests, the shallow dark soils rich in humus and carbonate and the almost complete lack of water considerably modify the temperature and precipitation, enhancing the xerothermic conditions of the hills.

In relation to its size, the Besaparski hills are extraordinarily diverse with numerous rare relict and endemic plant species and habitats species, 260 of which are of conservation importance and 13 are IPA qualifying species under criterion A. For example *Fritillaria gussiiachae*, *Gypsophila tekirae* and *Onosma rhodopea*. The species on the Besaparski hills represent 42.9 % of the plant families of Bulgaria and 15.5 % of the diversity of her vascular flora. There are 5 criterion C qualifying habitats. 140 hectares of the site was already a protected area at the beginning of the project and the site is also important for raptors and mammals (suslik).

Project aim

To secure the sustainable conservation of the Besaparski Hills through improving legal mechanisms and community involvement, firstly by providing detailed documentation of the site's key features of conservation importance and secondly by successfully engaging local stakeholders in activities that illustrate the potential benefits of valuing and conserving the site.





KIRIL METODIEV

Plant conservation issues

The plant diversity of the Besaparski hills is exposed to a number of threats: habitat loss through conversion of pastures and meadows into vineyards; expanding quarries; illegal fungi extraction from habitats of protected species by local people; afforestation with non-characteristic species - for example Cedar; encroachment by the invasive species *Ailanthus altissima* and plans for rubbish dump and garbage processing plant near local villages. There are additional general threats to the site's habitats and particularly to the raptor populations: including burning pastures and stubble, illegal hunting and nest robbing, pesticides, erosion, contamination from industry and disturbance from the potential creation of wind farms, road building and forestry activities.

The quarry encroaching on the IPA.

Activities and outcomes

Legal mechanisms

Initially the **provision of accurate information** for decision makers was important for this site. The project team assisted by experts researched and documented the important botanical features of the site, updating old records, combining them with new information and digitally mapping the extent and distribution of priority species and habitats. This information was used to present a strong case to the Ministry of Environment and Waters to present the case for enlarging the protected area to safeguard the most important plant species and habitats. The consultation process also involved the Regional Inspectorate of Environment and Water and State forestry office in Pazardjik who manage much of the site. **Detailed analysis and mapping of threats** to the site and proposal for solutions to address them were also documented, including suggested management activities. **The proposal to enlarge the protected area at Besaparski Hills was accepted**, including measures to restrict certain damaging activities within the protected area (construction, change of use, new quarries and other mining, building wind farms, removing topsoil, forestation and hang gliding). The area protected has increased from 140 to 860 hectares on the state and municipal lands. A small part of the population of the local endemic and globally threatened species *Gypsophylla tekirae*, as well as other populations of other important species are now included within the enlarged protected area. Unfortunately the majority of the population of the local endemic remains out of the protected area in private lands.

Community involvement

A major part of the project was engaging local communities in the conservation of Besaparski Hills, through raising awareness of the importance of the site and promoting opportunities for conservation activities. Seminars were held for both **tour operators and farmers**. The tour operators discussed the opportunities for nature tourism within



Prize winners from the school competition

Besaparski IPA. EU agri-environment schemes have not yet been launched in Bulgaria but Ministry officials assisted with the project seminar where farmers and other land managers were informed about the forthcoming agricultural measures and how they could use the subsidies for the benefit of nature conservation. 31 representatives of the local communities including landowners, farmers, agricultural advisers, mayors, journalists and NGOs attended this meeting. A larger project with agri-environmental activities and grants for the local farmers is now taking place led by The Bulgarian Society for the Protection of Birds (BSPB).

A regional competition was carried out in 62 schools in Pazardjik and Plovdiv districts with the aim to increase interest in protected areas and species in the local environment involving 917 children. Training handbooks and practical exercises were prepared for the competition and students were taught about national and regional protected areas, rare and threatened species in their districts, the legal aspects of nature conservation, the creation of the Important Plant Area network in Bulgaria. Each school and all the finalists received a diploma and special awards were presented to the top ten competitors in both regions. The Regional Inspectorates in both regions were partners in the competition along with the Agricultural University in Plovdiv and the Confederation of Employers and Industrialists of Bulgaria in Pazardjik.

A booklet “The Natural Wealth of the Besaparski Hills” was produced during the project. In 50 colour pages the booklet represents the biodiversity of the hills and the conservation status of all species and habitats there. The text is illustrated with over 100 photos. 1000 copies of a booklet were distributed across the Pazardjik and Plovdiv region (to schools and university libraries, biology teachers, university lecturers, staff of the Regional Inspectorate of Environment and Waters, ecology students, BBF volunteers, tour operators, NGOs and competition finalists). This was produced as part of the project and included creating a library of 1400 photographs of the IPA, illustrating the biodiversity of the site and the key species and habitats within it. A large proportion of the local community is now much more aware of the importance of Besapari Hills for nature conservation.



KIRIL METODIEV

Future Recommendations

- Protect larger territories in the region and declare new protected zones.
- Undertake further scientific studies and monitoring of the status of the species with conservation importance. The localities of the local endemic species *Gypsophyla tekirae* are found mainly on private lands; a purchase of these lands would help their sustainable management in favour of the species survival.
- Develop a good Natura 2000 management plans for the site using the results of this project. Implement check-ups for improved control on legislation.
- Develop sustainable agriculture practices in the private farmlands by: training of local landowners in the application of the agri-environment schemes, supporting the establishment of producer associations, sharing know-how on increasing agricultural production. Technical support for business plans and project preparation oriented towards sustainable land use and nature protection in the Natura 2000 zone.
- Develop a promotion strategy for the region. E.g. the establishment of a permanent exhibition presenting the biological diversity in local community centres and continuing the educational activities to develop environmental awareness for children – showing environmental awareness and active behavior for nature protection are an integral part of the sustainable development of the area.
- Create a good tourist map of the region together with the information materials and panels in foreign languages. The development of tourism trails and a GPS guidebook of the type *Where to watch wildlife on Bessaparski Hills* would attract more tour-operators to include the site in their eco-tourism programmes and would encourage the local people to value high and to protect the nature.

Calcareous grassland of the rounded limestone and marble hills of Bessaparski IPA.

The guide showcasing the nature of Bessaparski Hills IPA.





Organisation responsible for project: SUNCE the Association for Nature, Environment and Sustainable Development

SUNCE is a regional NGO founded in 1998 in Split, Croatia. Today it is the largest environmental association in the Dalmatian region. The main beneficiaries of Sunce's activities are the citizens of Split and the Dalmatian coast and islands, but Sunce is also active on national and international level, through partnerships with other organisations and institutions. The main goals of the association are: the conservation of nature and protection of environment as basic values society, and the management of natural resources through the implementation of sustainable development.

Project team: SUNCE: Ivana Carev (coordinator) and Ivana Marić; University of Split: Professor Mirko Rusičić
Volunteer: Mirela Bilokapić.

Project period: February 2007 to December 2007
Total project cost: 4, 630 Euros



The Conservation of Important Plant Area Pantan

Ivana Carev



ELIZABETH RADFORD

Investigating public opinion on the conservation of Pantan IPA.

Geographical and Botanical context of the project site/IPA

Pantan is a 40 hectare wetland on the Dalmatian coast in the western end of Kaštel Bay, just east of the city of Trogir. It is one of the remaining coastal wetlands in Croatia, and listed as a protected area for fish and birds. The site has considerable floristic value at both regional and international levels but the vegetation is not noted as a feature of the protected area. The site is dominated by *Phragmites* which surrounds a lagoon, and prior to the project 42 vascular plant species and six plant associations have been recognised at the site (*Limonio-Artemisietum coerulescentis*, *Salsolietum sodae*, *Juncetum maritimo-acuti*, *Rupprietum maritimae*, *Phragmitetum australis*, *Bolboschoenetum maritime*). These associations occur in a mosaic complex reflecting the varied patterns of water depth, salinity, tidal movements and soil texture across the site. The IPA qualifying habitat is rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation. On the basis of the EU Habitats and Species Directive (Council directive 92/43/EEC) the Croatian State Institute for Nature Protection has recognised Pantan as potential Natura 2000 site.

Project aim

To raise public awareness of the value of Pantan, and work towards better management of the IPA through extensive engagement with stakeholders and civil society in the surrounding area.



IVANA CAREV

Plant conservation issues

Despite protection by law, Pantan is threatened by a number of anthropogenic activities, mainly a result of lack of public awareness and proper management of the site (there is no site management plan). The site was under pressure from all sides prior to the start of the project. Previous regulation of the water course and the construction of greenhouses and artificial ponds had already severely damaged certain areas of the site. Other ongoing threats include

- Infilling of the wetland for farmland extension in greenhouses inside of the protected area.
- Run off from a road adjacent affecting the main spring for the site.
- Excavations in preparation for the planned construction of housing and a slaughter house on the northern part of the beach.
- Eutrophication from encroaching horticultural activities (greenhouses legally and illegally placed) and sewage
- Dumping of rubble and rubbish.

The outer edge of the shallow lagoon is also threatened from disturbance by summer swimmers, local people search for shellfish in the lagoon and the beach is busy with people and litter in the summer when a small café opens on the shore.

Pantan IPA.



Information on the plant diversity for visitors to the Mill.

IVANA CAREV

Activities and outcomes

Initially SUNCE carried out **face to face interviews** with a number of local people and distributed **questionnaires** to determine the level of existing knowledge on Pantan and (in the case of owners of private properties) information on the legislation and their rights and obligations under Croatia law and the EU Directives. Concurrently, with staff from the University, SUNCE carried out **extensive field research on the vegetation** of Pantan (5 visits assessing winter and summer vegetation), including detailed GIS observations for entry into the national Flora Croatica Database (<http://www.botanic.hr/>). This up to date information on the floristic value of the site was presented to the Public Institution for the Management of Nature Values of Spil-Dalmatia County - who is responsible for the proper management of the site.

All those interviewed; local farmers, the café owner, public institution officials, fishermen and women, residents, users of the beach, along with the townspeople of Trogir, journalists and the town major, were invited to a specially prepared **photographic exhibition on Pantan** in the local library. The exhibition was in partnership with the library, the Public Institution and the local senior school and was promoted on local TV and radio. The photographs were later displayed in Pantan Mill – a fortified renaissance mill of the late 16th century, immediately adjacent to the wetland, whose owner is keen to promote the area. All those who had filled in questionnaires or who had shown interest in the site were invited to a **public meeting at the library** where the result of the survey and interviews were presented, and the issues around the current and future management of Pantan were discussed. Both the regional Public Institution for Management of Nature Values and the State Institute for Nature Protection were represented.

The survey showed that 60% stakeholders thought Pantan was worth protecting and the present conservation action is not adequate. The main problems were seen as inadequate sewage and waste disposal, as rubbish dumping is very close to the area of Pantan's source spring. Low human awareness and inappropriate behaviour of local residents lighting fires inside the protected area, illegal agricultural activities were also recognised as significant problems. Other threats were perceived as the airport and illegal activities due to lack of law enforcement.

The workshop discussion was very positive and constructive, participants welcomed the opportunity to discuss and give recommendations on the future management of Pantan as follows:

- Local people are interested in the management of Pantan and should be included in future management planning.
- The main threats to Pantan are coming from the lack of awareness on the importance of Pantan and enforcement of law.
- The Public Institution for Nature Protection of Split Dalmatian County presented their future plans for Pantan with the main objective of developing management plan of Pantan. They plan to make 3 sections with different management measures for each:

Section A: to include the lagoon and the wetland with main species *Phragmites*. This is most valuable section of Pantan where approach should be forbidden or strictly limited in order of conservation.

Section B: To include the beach, is also very valuable as section A, but as it is famous beach for the people of Trogir, so the approach to this section will be less restricted than to section A, allowing access from 15th July to 15th September.

Section C: The most degraded and least valuable part of Pantan where many human activities persist and will be allowed but under controlled conditions. This presents zone where some small agricultural activities and tourist activities will be allowed, and the main emphasis will be on restoration of wetland.



An initial proposal for a management plan for Pantan.

In preparation for the exhibition and the public meeting SUNCE produced a **small information booklet** about Pantan using the results of the field research. Following the meeting **educational tables were produced for the Pantan reserve**, they are currently located within the Pantan Mill. The Public Institution, who is managing Pantan, plans to put them on the site after the development of the management plan.

During the project the profile and understanding of the value of Pantan in Split-Dalmatia County was raised significantly, especially among local residents and the Public Institution. The coordinator obtained excellent **local and national media coverage**, with one report on national TV and the exhibition and workshop were covered by local media on TV, newspapers and on the web.

The Future

This project has facilitated agreement by the Public Institution to make a management plan for Pantan within a year and along with four other sites in the county. The plans development will involve Croatian experts and local stakeholders through and SUNCE has said they will facilitate this involvement of local stakeholders. At the time of writing the management plan process has not begun but the Public Institution has arranged for rubbish clearance from Pantan.

As the local residents have been sensitised to the importance of Pantan (not just as a place to swim or meet friends) it is hoped that should new activities start that further threaten the site they will be quick to react.



Organisation responsible for project: The Macedonian Ecological Society (MES) in partnership with the Ljuboten Mountaineering Club

The Macedonian Ecological Society was established in 1972 in order to unite ecologists and environmental workers in Macedonia with the aim of better and more effective resolving of the ecological and environmental problems and improving nature conservation. MES is non-governmental organization with about 100 active members - experts working in many areas of ecology and protection of the environment such as fundamental ecology (terrestrial and aquatic ecosystems), biodiversity, agroecology, landscape ecology, pollution, monitoring, measures for the protection of environment, ecological education etc.

Project team: MES: Natalija Angelova (coordinator), Ljupčo Melovski, Vlado Matevski, Mitko Karadelev, Mitko Kostadinovski, Vasko Avukatov, Dime Melovski. Ljuboten Mountaineering Club, Tetovo: Jovan Bozinoski, Dimce Grncaroski, Risto Ristoski, Miroslav Ristoski, Dragan Ileski, Vanco Dupicinov, Marina Jancevska.

Project period: July 2007- February 2009

Total project cost: 9435.00 Euro funded by the MAVA foundation



The conservation of Šar Planina (Shara Mountain): an Important Plant Area on the Macedonian (FYR) border

Natalija Angelova



ELIZABETH RADFORD

Bruckenthalia spiculifolia found in association with *Juniperus communis*, *Vaccinium myrtillus*, *V. uliginosum*, *Sorbus chamaemespilus* and *Daphne mezereum* in the project locality.

Geographical and Botanical context of the IPA

Šar Planina is an 80 km mountain range that is situated on the north western border of Macedonia (bordering Albania, Kosovo and Serbia). There are numerous summits along the length of the range, all of which rise above 2000 m. The project activities focused on the area if the mountain around Popova Shapka above the town of Tetovo (including the summits of Ljuboten, Vakuf, Titov Vrv and Gorna Leshnica). This area consists of a wide mountain belt from 1650 m to 2250m, which has a sub alpine to alpine climate. In Popova Shapka (a tourist and ski-centre) the summers are short, cool and humid (highest average 13.2 °C) and the winters are long, very cold and snowy (-3.8 °C). Spruce forest occurs between 1300m and 1600m at lower altitudes mixing with fir and beech. Forests give way to sub alpine scrub and grassland around 1720m. In the sub alpine belt the vegetation is composed of small bushes called hits, mostly on silicate substrates.

Close to 2,000 plant species exist on Šar Planina (the whole of Macedonia has 3,700), from the warmer gorges at lower altitudes to the highest alpine regions. It is a significant Balkan and European centre of mountain endemism containing numerous local, national and Balkan endemic and relict vascular plant species from over 60 genera including: *Silene*, *Pedicularis*, *Saxifraga*, *Potentilla*, *Viola*, *Thymus*, *Sedum*, *Sesleria*, *Gentianella*, *Androsace*, *Soldanella*, *Campanula*, *Knautia*, *Allysum* and *Lilium*. Shara Planina is the *locus classicus* (first recorded location) of 15 plant species. The unique forests of the endemic Macedonian and Bosnian pines (*Pinus peuce* and *P. heldreichii*) are a trademark of Shara.

The extraordinary floral diversity is mirrored in the fauna. Šara Planina supports 130 species of diurnal butterflies; 150 species of ground beetles; 11 amphibians; 18 reptiles; 129 birds including *Aquila chrisaetos*, *Gyps fulvus*, *Bubo bubo*, *Falco peregrines*, *Falco subbuteo*; 48 mammals including the extremely rare Balkan Lynx, the Brown bear, wolf, chamois, Eurasian water-shrew mole, Mediterranean mole, Martino's snow vole, subterranean vole, yellow-necked mouse, striped field mouse and European wild cat. Many of these species are endemic and/or threatened.



ELIZABETH RADFORD

Project aims:

- To educate mountaineers and other visitors engaged in recreation, about the value of the flora and fauna on Šar Planina, through the provision of information and the development of new mountains trails
- To promote the conservation and wise use of umbrella species of plants (for example medicinal plants) enabling the conservation of other species at the same time
- To increase the knowledge of flora of the area to contribute to a Red List for Macedonian plants.

Alpine grasslands and forests of Šar Planina.

Plant conservation issues

Conservation and development issues are closely linked on Šar Planina. The area is declining economically it was formerly a tourist 'hotspot', but since the mid nineties it has been associated with conflict and visitors have declined. Agriculture (sheep rearing for milk, cheese and meat) is a major summer activity on the IPA, and is instrumental in maintaining the diversity of the high remote pastures. It too is declining (or becoming concentrated in small areas close to habitation) as it is no longer profitable and people are moving to the towns for work. This land abandonment could eventually lead to scrub encroachment on the pasture reducing the diversity, and concentration of stock can lead to erosion nearer settlements. Long term destruction of the forest has opened up more areas of pasture and bushy vegetation. At lower altitudes there is some illegal cutting of the forest, this is not on a large scale.

Neither the project site nor any part of Šar Planina is subject to any nature conservation legislation and it is not therefore officially protected. The most endangered endemic and relict species would benefit from protection, for this to be effective it must include the maintenance of their natural habitats, and the whole mountain landscape. The benefits of establishing Šar Planina Mt. trans-boundary protected area could go well beyond biodiversity conservation; such an area could also play a major role in promoting



NATALIJA ANGELOVA

The information panels set up on newly opened trails.

cooperation and confidence building between Macedonia and Kosovo and within the Balkan region. The conservation challenge is to secure the plant diversity of Šar Planina for the future whilst addressing development issues and lifting the economy.

Activities and outcomes

The project was created around a **new conservation partnership** between the Macedonian Ecological Society and the local Mountaineering Club “Ljuboten”, based in Tetovo. After initial field investigation by the project team, **special localities were selected** based on: the presence of IPA species and habitats, high species diversity, important (relict) forests and the potential of these places to be popular with visitors. **Detailed fieldwork** was undertaken within these

localities to provide information and photographs for eight new ‘information tables’. **Eight trails were selected for promotion as hiking/walking routes** and these were way-marked by members of the mountaineering club. **A tourist map** has been produced in Macedonian, Albanian and English for visitors to the area, as well as **small leaflets for each mountain trail**. Information on important habitat and species in the project area has been researched and presented *in situ* on information tables in nine areas within the IPA. All promotional materials from the project together with the information tables were presented to other mountaineering clubs, ecological societies and local people to encourage new initiatives.

During the winter and spring **six lectures** were arranged for local people in the town of Tetovo and the surrounding villages, attendees included local NGO representatives, biology teachers, students from the university, officials from the municipal government and members of the Ljuboten MC and other mountaineering clubs. The activities of the conservation project were presented, focusing on interesting habitats and species (such as medicinal plant species) that could be used as flagships for promoting the natural value of the area. In addition MES presented the activities associated with the Balkan Lynx recovery programme that is coordinated by the Society and active in the same area. Local opinion was sought and the projects discussed.



NATALIA ANGELOVA

The structure of the audiences was different in different places (in age, profession, culture and nationality) reflecting the complexity of the area. The challenge was to unify the people within this large area and to explain them that if this area is protected they will benefit. The lectures proved to be the best way of promoting what the project was trying to do, and the team feel this should continue for every future activity connected to this area, because the **local community were pleased to have be included and informed of the project, and proud that their area was being promoted in a positive way.** It was the first time that many of the IPA project team had been in contact with some communities since the conflict of the 1990s and they were very well accepted by the local people. Locals were also impressed by the activities of the partnership and particularly because this was the first project to promote the natural beauty of their home. Many contacts were established and the cooperation with some of them is continuing.

The Future

It is hoped that other mountaineering clubs and societies will take similar initiatives in their areas. Awareness of the importance of the region will be promoted through the Ljuboten mountaineering club who are the main disseminators of information actively distributing leaflets to visitors to Šar Planina. If further resources can be found the Project team would like to print an educational mountain guide that will be mixed with lot of impressive mountain trails, maps, ecological information, flora and fauna, tourism opportunities etc.

Ljuboten mountaineering club members marking the mountain trails.



Organisation responsible for project:

Green Forest Society

Green forest aims to address the needs of protecting nature through sustainable development. To educate and develop the awareness of the population through illustrate the advantages of development in harmony with natural principles, to promote the importance of the relationship between humans and nature and to promote and present the wealth and diversity of plant and animal world of Montenegro nationally and internationally.

Pilot Project team: Green Forest: Danka Petrovic, Marko Karaman, Danijela Stešević, Snežana Vuksanović.

Project period: September 2007 – March 2008

Total project cost: 3,150 Euros

The conservation of Important Plant Area Cijevna Canyon, Montenegro

Danka Petrovic and Marko Karaman



VLADIMIR STEKANOVIĆ

Ramonda serbica this important Balkan relict species is found in the canyon.

Geographical and Botanical context of the IPA

The Canyon of Cijevna River is a deep limestone canyon, 15km east of the capital city of Podgorica. The source of the river is in the Prokletije Mountains in Albania and its total length is approximately 59 km, 32km is within Montenegro where it has formed an impressive limestone canyon that reaches a depth of 300m in places. The water is of extremely high quality and a large number of plant and animal species are associated with the river and the canyon.

The dynamic geological past, diverse relief and vegetation cover, complex climate results in a very diverse plant with both Mediterranean and mountain floristic elements found within the canyon. The walls of the canyon are a refuge for many rare plant species, relicts from the Tertiary period. 959 plant taxa (one third of the Montenegrin flora) are found within the wider canyon area and more than 30 plant communities. Several vegetation strips alter with change of altitude and change of climate regime. The dominant vegetation type is thermophilic oak forests and particularly important are the well preserved high oro-Mediterranean pine forests (one of the 10 criterion c habitat found in the canyon). These forests are also characterised with high diversity of fungi; about 200 fungi species have been recorded so far on this IPA. 10 of them are protected by national legislation. The site contains 14 threatened species from the criterion A list including *Cymbalaria ebelii*, *Hyacinthella dalmatica*, *Narcissus angustifolius*, *Tulipa grisebachiana*, and one of the five largest populations of the Balkan endemic *Ramonda serbica*.

Project aim

To increase the awareness of the international importance of the Cijevna River Canyon in terms of its floristic richness, with activities aimed at the local population, the municipalities (Tuzi and Podgorica) and the Institution for Protection of Nature.

To prepare a proposal for the protection of the Cijevna River canyon, for presentation to the Institution for the Protection of Nature.





Plant conservation issues

The Cijevna river canyon is not currently formally protected, but neither at present is it greatly threatened. However there is growing concern about the effect of gravel extraction from the riverbed and increasing water extraction. These have the potential to cause damage to the vegetation and river profile close to the extraction sites and to degrade the water quality. These issues are of relevance and interest to the local population (small village of about 300 inhabitants) who extract water from the river for domestic use.

A number of activities aimed at protecting the Canyon have been attempted, but they were not successful because they did not include the local people and were not based on an understanding of the natural value of the system or on accurate data on the flora and fauna. The local people were therefore unaware of why action was needed.

Activities and outcomes

The project focused on the promotion of the natural value of Cijevna Canyon amongst the local and national population and to investigate the possibilities for future protection through both the actions of local citizens and municipal authorities.

A seminar was arranged for the local population 60 people attended including the director of the Institute for Nature Protection, representatives of NGO “Friends of Cijevna Canyon”, NGO Green Home that realized the “Sustainable development of Cijevna River Basin” project, TV Crna Gora, several representatives of elementary

Cijevna canyon.

Low level domestic water extraction in the canyon.





The poster with the results of the photograph competition.

schools. Leaflets containing information on botanical values of the canyon, the importance of its protection, the IPA project were distributed with details of a competition for the selection of the most beautiful photographs of the canyon. The discussion concluded that “Values and importance of the canyon are unquestionable, but idea of their protection will be hard to realise.”

Features on the Cijevna River Canyon, its botanical values and the IPA project in Montenegro were recorded for **national TV Crna Gora and national Radio Crna Gora**

IPA pilot project was presented at a **round table meeting** “*Potentials for sustainable development of Cijevna River Basin*” organized by NGO Green Home in cooperation with NGO Albanian Association for Ecological Education.

A photo competition for the most beautiful photo of the canyon, with particular focus on the flora and habitats was launched as part of the promotional campaign. The winning photos were included on a **poster of the canyon** which contains information on the IPA and its key botanical features, the objectives and importance of the IPA project, information on factors endangering the biodiversity and the importance of its preservation. The poster has been distributed in elementary schools in Tuzi and Podgorica (the municipalities through which the river flows), distribution in schools all around Montenegro is also planned. The poster was delivered to institutions responsible for research and protection of environment (University of Montenegro Department of Biology), Ministry of Environment, Natural History Museum, Republic Institution for Protection of Nature, UNDP office in Montenegro) and some partner NGOs.

Information boards two wooden boards of dimensions 1m x 1,2m, were installed 1.6 m above the ground in the vicinity of the main road, supported by the local authorities of Tuzi urban municipality. The text on the boards is in Serbian and Albanian and states: *Cijevna Canyon is an area that is important for plants - an Important Plant Area or IPA, where you can see rich flora, rare protected plants, endemic plants, endangered and protected habitats.*

The Future

The project was not designed to deliver official protection of the Cijevna Canyon as a result of the pilot project, but to inform and enthuse local communities about the site – which it has achieved. It has been an important contribution to awareness-raising about the botanical values of the canyon and importance of its protection. These messages have been spread beyond the local community to the whole of Montenegro because of the involvement of national media.

The involvement of municipalities and the Institute for Nature Protection of Montenegro throughout the project has been very important and a future proposal for the protection of the canyon may be submitted in the near future.

IPANET – Establishing a Volunteer Network for Important Plant Areas on Turkey

Sema Atay and Canan Orhun

This 22 month project is coordinated by The Society for the Protection of Nature (Doğal Hayati Koruma Derneği-DHKD) and the Rubicon Foundation with support from IVN Netherlands and FLORON. It is funded by the Matra Projects Programme of the Netherlands Ministry of Foreign Affairs. Plantlife is grateful to the project partners who have given permission for a summary of the project to be included in this report, because of its relevance to the conservation of Important Plant Areas and to the South East European region.



Geographical and Botanical context of the project

Practically the project focuses on nine Important Plant Areas across 12 Turkish provinces, representing a huge diversity of species and variety of habitat types. The results are applicable on a national scale.

1. Ergene Basin IPA (within the provinces of Edirne and Kırklareli): Relict fragments of dry closed grasslands overlying calcareous loams and marls, containing 7 species of Global and European conservation concern.
2. Omerli Basin IPA (Istanbul): A water catchment area for Istanbul, with a mosaic of heath and coppice forest habitats, with associated grassland, seepage mire on peat, and seasonally flooded pool. The site has at least 36 nationally rare species and 15 species of global and European conservation concern.
3. Uludağ IPA (Bursa): The highest mountain in North-western Anatolia with many habitats including broadleaved and coniferous forests, sub-alpine moorland, seasonal moorland pools, extensive alpine cliff communities, glacial lakes and exposed summit communities. 791 plant taxa are endemic to this single site.
4. Coruh Valley IPA (Erzurum and Artvin): An undisturbed river system, with mixed deciduous forest including stone pine (*Pinus pinea*) at lower altitudes and extensive dry steppe on the valley sides. Approximately 750 taxa occur at this site. 67 are endemic to Turkey.
5. Baba Mountain IPA (Mugla): An altitudinal succession from maquis through lowland pine forest, cedar of Lebanon (*Cedrus libani*) forest, scree, cliff and exposed summit communities in alpine zone. 50 nationally rare plants have been recorded, including 40 of global and European importance.



Overall project responsibility: Rubicon Foundation, the Netherlands;
www.rubiconfoundation.org

Organisation responsible for project in Turkey: The Society for the Protection of Nature (Doğal Hayati Koruma Derneği -DHKD) www.dhkd.org

Founded in 1975, DHKD is one of the leading non-governmental organisations in Turkey. For more than 30 years, DHKD has been dedicated to conserving the rich flora and fauna and their natural habitats in Turkey. DHKD's goal is to contribute to the protection of nature and natural resources and to build a future in which man lives in harmony with nature. DHKD's mission is to achieve its goal through:

- i) the preservation of ecosystems and biodiversity;
- ii) the promotion of sustainable use of natural resources;
- iii) the contribution to the development of national environmental policies.

Project team: Rubicon: Canan Orhun (overall project Coordinator); DHKD: Sema Atay (coordinator in Turkey), Ozlem Dagdeviren, Kerem Ali Boyla, Didem Dogruoz; IVN: Ruud Maarschall; FLORON: Baudewijn Odé and Wout van der Slikke.

Project period: 2007 – 2009 (on going)

6. Lara-Perakende Sand Dunes IPA (Antalya): The flora of the site is rich in species largely restricted to the Pamphylian Plain: 34 nationally rare plants have been recorded and 18 of global and European importance

7. Ahır Mountain IPA (Kahramanmaraş): A barren limestone mountain in South-eastern Anatolia where the vegetation has been affected by human activities; degraded oak scrub, montane steppic grassland and barren rubble plant communities. The flora remains rich: 122 Turkish endemic taxa are recorded.

8. Erciyes Mountain IPA (Kayseri): The largest extinct volcano in Central Anatolia, where dense forests have been replaced by montane steppe communities following cutting and grazing. The flora remains rich, with over 840 taxa recorded.

9. Cildir Lake IPA (Kars and Ardahan): A series of oligotrophic lakes on the upland plateau of easternmost Anatolia. The lakes support vegetation types otherwise rare in Turkey. As a result, the flora is rich in species that are highly localised in Turkey. The IPA contains at least 10 threatened plant species.

Project aim

To create and train a strong civil network, skilled to work at the community level on plant conservation with various stakeholders (i.e. government organisations, local NGOs, universities, private sector and individuals), to develop and trigger proper participatory processes in order to influence political decisions about the management of Important Plant Areas that have implications on the livelihoods of the society and the future of the IPAs.

Plant conservation issues

The sites within the project have conservation issues that are as diverse as the habitats and species within them. Those issues largely relate to the improper management of natural resources that has resulted (or is resulting) in a dramatic decline in the size and quality of many Turkish habitats (peat land, wetlands, sand dunes, heathlands, liquid amber forests and old growth colchic forests to name but a few). An issue that is relevant to all IPAs in Turkey (and in many South East European countries) is the insufficient capacity at the governmental level to implement conservation measures, and a lack of awareness and participation from the civil society in the decisions that affect these important sites, the resources they contain and thus the lives of those who are dependent upon them. In Turkey there is also a lack of individual and organisational capacity in the conservation of natural (plant) resources, civil society is not frequently engaged with conservation activities.

Activities and outcomes

The project has three main elements with associated activities running concurrently: capacity building (training), awareness raising and establishing the IPANETs volunteer network and multi-stakeholder platforms for each IPA.

Capacity Building

The core project team from Turkey and the Netherlands carried out a series of training workshops for the nine Local Coordinators, which allowed them to develop skills in participatory processes that would help to engage members of civil society in their area in conservation. Some of the themes covered during the trainings are as follows:

Centaurea truimfetti.



ANDREW BYFIELD



SEMA ATIN

- Explaining and promoting the ecosystem approach to resource management
- Developing site visions and site action plans through participation
- Working with volunteers (recruiting, retaining, motivating)
- Training volunteers to monitor sites and species within sites

IPANET volunteers learn from the Volunteer coordinator on Uludağ IPA.

Capacity building is ongoing in three major areas: building the capacity of DHKD as a national NGO to continue taking the lead in IPA conservation, building the capacity of the IPA Coordinators to work at the local level and building the capacity of the local authorities in understanding the IPA process. The latter includes how IPA conservation is actually supporting the national legislation of Turkey, along with the country's international obligations under Ramsar, CBD, Bern and the EU accession process.

DHKD is using the IPA programme as an umbrella in promoting itself actively. This concerted effort has led to new sponsors thus strengthening the operations of the organization. The IPA Coordinators through the training they receive have been empowered and motivated to start local level actions and are much motivated. The actions are also leading to renewed relations with local authorities some of whom have joined the IPANET themselves.

Awareness-raising

A number of promotional events will continue throughout the life of the project. Materials (booklets) about the project and selected IPAs were produced for the first introductory meeting with local coordinators and for the high profile launch event. The launch was covered by national TV and attended by national and regional level stakeholder representatives (of NGOs, government authorities and MPs) as well as journalists and other interested individuals.

A public awareness raising campaign is being carried out in the 12 provinces associated with the IPANET including: the production and distribution of IPA posters; face to face meetings with government stakeholders at provincial level to ask for their participation in the activities; public presentations of the project, and meetings between the Local Coordinators and various community groups. There is a project website which provides up-to-date information to the public. It is also linked to the Planta Europa website and the international IPA database. The website may be viewed at www.obanet.net.

Through media promotion the IPA concept and DHKD is being kept alive in the public eye. As the project progresses local IPA Coordinators are being contacted by media rather than having to seek attention and members of the public are asking how they can join the local actions. Visits to the DHKD and project websites have increased.

There have been ripple effects, for example all IPA Coordinators have been successful in finding Assistant (or Co-coordinators) for their IPAs. At several IPAs local level actions have started, i.e. the campaign to encourage the locals at Kahramanmaras IPA to grow an endangered local crab apple tree in their gardens. A poster was developed under the project and distributed along with seedlings of the crab apple tree. At Lara-Perakende IPA (Antalya) there has been a huge positive reaction from the public to the media actions taken by the IPA Coordinators. The workshops are also motivational at the local level for the public and the local authorities, especially in very rural areas (i.e. Kars). The locals are motivated by our interest and willingness to help. The opportunities which surface for rural development and exchange of ideas are contributing to the long term sustainability of the actions and the IPANET.

Crocus chrysanthus on Uludağ IPA.



ANDREW BYFIELD

Multi-stakeholder platforms – creation of the IPANET of volunteers

Throughout the project local coordinators will work to identify and recruit local volunteers to participate in the IPANET and to work together to influence the authorities on the future conservation of their local IPA.

To date some of the local coordinators arranged a number of public meetings in each province, which were attended by all those willing to participate in the local IPANET. Provincial government officials also attended. These public meetings were used as part of “learning by doing” process where the Local Coordinators led participatory discussions and put into practice the skills learned in earlier theoretical training.

Section VI:

Conclusion and recommendations for IPA conservation in South East Europe

Protected areas are, traditionally, the backbone of site-based conservation in south east Europe. They remain an important element in safeguarding IPAs but a greater emphasis on the development and implementation of management plans for the areas with particularly attention on measures to protect wild plants and their habitats is crucial.

IPA data show clearly where the existing, officially recognised species and habitat lists underpinning current legislation need updating. This provision of new site-based information on priority plants, fungi and their habitats has and will continue to inform national and regional conservation programmes and legislation; particularly country commitments to the CBD Global Strategy for Plant Conservation (target 5), the (potential) Natura 2000 Network, the Pan European Ecological Network and many targets within the Kyiv resolution on biodiversity. Furthermore, the IPA data illustrates where current national and regional environmental policies and legislation are working for plants and where they are going wrong.

Improved enforcement of legislation related to development (tourism, infrastructure and urban) is vital for safeguarding IPAs, as is a renewed focus on targeting government-administered funds to maintain biodiversity through sustainable forestry and agricultural practices. Addressing the balance between energy provision and the protection of wetland biodiversity is also becoming an increasingly important issue in the region, with wetland and riverine IPAs at risk from severe damage. In addition, more attention is needed to understand the local effects of climate change, alongside solutions to ease negative affects.

IPAs are ideal tools for engaging communities in conservation. They inspire pride in the local natural environment, and provide a focus for conservation action. As the basis of economic, social and cultural facets of everyday life, wild plants should be regarded as an integral link between conservation and sustainable development within the Balkans region.

The flora of South East Europe is astonishingly diverse. A significant part of this diversity is unique to the region, under threat and of global importance to conservation. The Important Plant Areas programme has begun the process of improving the conservation of this diversity, through data provision, analysis, heightened public awareness and pilot conservation projects. As the region continues to undergo rapid economic and social change, there is an opportunity to develop a refreshed approach to conservation that puts the value of plant diversity at its core; an opportunity that should be wholeheartedly embraced.

Paeonia peregrina



DIMITAR PEVY

Recommendations

1. **RECOGNISE** Important Plant Areas (IPAs) as internationally significant priority sites for conservation in local, national and regional **environmental policies and plans**.

Gov- Nat. Gov- Local

2. **REVIEW** the **protected area status** of IPAs in each partner country in the light of data provided by this project, and the commitment of south east European countries to protect 50% of their important areas for plants by 2010 (CBD Global Strategy for Plant Conservation, 2002).

Gov- Nat. Gov- Local

3. **INCORPORATE** national IPA networks into candidate **Natura 2000** networks in accession and potential accession countries in south east Europe.

Gov- Nat. EC/EP NGOs/Civil

4. **UPDATE management plans for protected areas** that are also IPAs, to include specific plant conservation measures that will conserve IPA qualifying species and habitats.

Gov- Nat. Gov- Local

5. **ENSURE** that **Environmental Impact Assessments** are undertaken on all development projects (tourism, transport and industry) within and adjacent to Important Plant Areas, that are not under legal protection and ensure their recommendations are enforced and monitored.

Gov- Nat. Gov- Local EC/EP

6. **ASSESS** the vulnerability of the key botanical features of IPAs to **climate change**. Develop solutions to mitigate effects for those that are most vulnerable, for example investigating the potential of the IPA Zones of Opportunity concept to the restoration of appropriate habitats, corridors and buffer zones.

Gov- Nat. Gov- Local NGOs/Civil Scientists Donors

7. **FULLY** implement government commitments under the **Kyiv resolutions** on forestry, agriculture and biodiversity.

Gov- Nat. Gov- Local

8. **TARGET** IPAs where forestry activities take place for application of sustainable forest management schemes and IPAs where agricultural activities take place for agri-environment schemes.

Gov- Nat. EC/EP

Key

Gov- Nat. = National government – Ministries of Environment, Agriculture and Forestry and their administrations

Gov- Local = Local government – regional authorities, municipalities

EC/EP = The European Commission/European Parliament

NGOs/Civil = Conservation non-government organisations and Civil society organisations and individuals

Scientists = Botanists, ecologists, conservationists, foresters, agronomists, sociologists across institutions

Donors = National and international funding agencies

9. **INCREASE** national and regional rural development funding to ensuring sustainable management of the most biodiverse forests and grasslands in south East Europe. Assist land managers in developing sustainable land use practices where they are absent.

Gov- Nat.

EC/EP

10. **ENCOURAGE** communities whose livelihoods depend on plant resources on IPAs to participate in IPA conservation planning and activities (e.g. collectors on medicinal plants and other non timber forest projects, promoters of nature tourism, hunters, mountain guides).

Gov- Local

NGOs/Civil

Donors

11. **INVEST** in the provision of comprehensive and up to date information on plant and fungi species in South East Europe and use this information to update European species protection legislation as appropriate. This should include
- A valid, accepted European checklist of vascular plants
 - A pan European Red List for vascular plants
 - National Red List for all plant groups and fungi in south east European countries
 - Developing a centralised (European) infrastructure for observation data of plant species as a means of enhancing national and international communications around plant knowledge and conservation

Gov- Nat.

EC/EP

NGOs/Civil

Scientists

Donors

12. **USE** IPA data and the associated IPA database for ongoing monitoring of the ecological status of important sites, threatened habitats, threatened species and the success of conservation activities.

Gov- Nat.

Gov- Local

EC/EP

NGOs/Civil

Scientists

13. **INVEST** in building the capacity of key nature conservation institutions and conservation NGOs in the region, so they may be better equipped to implement legislation and undertake practical conservation activities on key sites.

Gov- Nat.

EC/EP

NGOs/Civil

Donors

14. **USE** IPAs as a local and national focus for awareness raising and education about the importance of natural resources conservation in general, and plant conservation in particular.

Gov- Nat.

Gov- Local

EC/EP

NGOs/Civil

Donors

15. **RENEW** commitment to ensuring conservation is delivered through good policy implementation at all levels of government administration.

Gov- Nat.

Gov- Local

EC/EP



Fritillaria macedonica.

Appendix I

Important Plant Area identification and data analysis

Important Plant Area Methodology and the IPA database

Important Plant Areas (IPAs) are internationally important places in the world for wild plant diversity. An IPA is a natural or semi-natural site exhibiting exceptional botanical richness and/or supporting an outstanding assemblage of rare, threatened and/or endemic plant species and/or vegetation of high botanic value.

Important Plant Areas are identified on the basis of three international recognised criteria:

Criterion A: presence of threatened species

Criterion B: presence of exceptional botanical richness

Criterion C: presence of threatened habitats

The methodology for identifying Important Plant Areas and the detail of how to apply the criteria (accepted reference sources, categories and thresholds) has been developed and refined through extensive consultation over several years. The European criteria are summarised for Europe in the table on page 123, further detail on the application of the methodology can be found in two publications listed at the end of the section (Anderson, 2002 and Plantlife, 2004). Below the application of the methodology in the South East European partner countries is outlined, further detail can be found in the individual country page in section II.

Criterion A: threatened species

For the four partner countries 450 taxa were included in the Criterion A list of threatened species. 405 of those were vascular plants, 14 bryophytes, 4 lichens and 26 fungi.

Ai	Global threat	35 taxa
Aii	European (regional threat)	114 taxa
Aiii	National Endemic (threatened)	133 taxa
Aiv	Near Endemic/Limited Range (threatened)	165 taxa

A national endemic is defined as a species that occurs in only one country. A 'near endemic' species is defined as a 'species which occur in limited range in no more than 3 countries'.

For Ai, global threat, the following sources are accepted: the IUCN Global Red List updated annually on the web at www.iucnredlist.org; the IUCN Global Red List for Vascular Plants 1997 (uses a previous version of the IUCN criteria); the World List of Threatened Trees 1998; and the Global Red List for Bryophytes 2001. For Aii, European threat, the following sources are used: the EU Habitats Directive Annexes IIb and IVb (83 taxa on these annexes are present in the partner countries); the Bern Convention

Appendix I (45 taxa in the partner countries); the European Red List of Bryophytes 1995; the European Red List of Macro-lichens 1989; and the 33 threatened fungi species prepared by the European Committee for the Conservation of Fungi (ECCF) were also used in this project under Aii.

National Red Lists were used for assessing the threat status of Aiii (national endemic) species and Aiv (near endemic/limited range) species where they were available. Neither Macedonia nor Montenegro have completed national Red Lists for vascular plants or fungi. In Montenegro national endemic and near endemic species from the list of officially protected species were used instead, and the project team began to undertake Red List assessments on these and other potentially threatened species as part of the project. 40 national Red List assessments have been completed to date. In Macedonia a list of 'potentially' threatened endemic and near endemic species was compiled during the project – which will form the basis of future work to produce a national Red List, with an existing published list of preliminary threatened macromycetes (fungi). The assessment for the Red Data List of Plants and Fungi in Bulgaria is based on the selection of about 900 species. 35% of Bulgarian endemic plant species and 56% of Balkan endemics are 'Data Deficient' or 'Not Evaluated'.

There are 292 criterion Aiii and Aiv species (threatened endemics and near endemic/limited range species) in the four partner countries, which are not currently recognised on any global or regional Red Lists or European species protection legislation. If completed Red Lists were available undoubtedly there would be more. This reflects the potential inadequacy of the annexes of current European nature conservation legislation to deal with the diversity the Balkans region. When the EU is further enlarged and if the existing legislation is to do an effective job, additional species may need to be incorporated into these annexes.

The two main challenges to the application of criterion A were the lack of national red lists of threatened species in Macedonia and Montenegro, and the lack of a European Red List. The latter would allow the identification of priority threatened species which are not endemic or limited range, but are relatively widespread geographically and declining everywhere. Currently IUCN is leading two projects for vascular plants in Europe that will improve this situation: the status of national endemics in the Mediterranean region will be assessed in 2009 and 2,000 European vascular plant species will be assessed by the end of 2010. European Red Lists for lichens, fungi and algae would also help to prioritise target species for conservation action.

Criterion B: botanical richness

The methodology for applying this criterion is based on a comparison of species richness within standard units of habitat classification. In Europe, EUNIS level 2 habitats are the unit of comparison. For example sites 'Dry Grasslands' (EUNIS habitat E5) are compared for species richness with each other using indicator lists of species drawn up specifically for dry grasslands, sites containing other habitats are compared with each other, like with like. Each country defines the indicator species to use and they can include all characteristic species for that habitat, or be targeted towards threatened, rare or endemic species, or focus on particular taxonomic groups, such as mosses, lichens, fungi or algae. This criterion was not applied in Bulgaria and only in limited way in Macedonia and Montenegro due to lack of comprehensive data on characteristic species and the comparative richness of habitats. In Croatia the criterion was applied using rare

and threatened species coincidence (ref. country pages in section II)

Criterion C: threatened habitats

The list of threatened habitats in Europe consists of the EU Habitats Directive Annex I, and the Bern Convention Resolution 4 list of habitats. The criterion is split into two categories Ci and Cii, where Ci are 'priority threatened habitats' defined as such by the EU Habitats Directive. 183 threatened habitats in the Criterion C lists were present in the four partner countries; 34 Ci (priority threatened habitats) and 149 Cii (threatened habitats).

Bulgarian, Croatian and Macedonian teams used both habitat classification systems with their IPA project, but predominantly those from the EU Habitat Directive, as considerable work has already been done to interpret this classification alongside their national classification systems. The Montenegrin team used only the Bern Convention system. The application of this criterion is difficult all partner countries as detailed national habitat maps are lacking.

Bryophytes, fungi, lichen and algae

The IPA programme includes lower plants (bryophytes, lichens and algae) and fungi in the assessment methodology (criteria A and B) as the conservation of these important organisms frequently are neglected this is reflected in the lack of species in the annexes of European nature conservation legislation. None of these groups are particularly strongly represented in this south east European IPA project, due to considerable lack of data. In future the IPA inventories will benefit from further information on the distribution of lower plants.

Bryophytes (mosses and liverworts) were recorded as qualifying features on 17 IPAs in Bulgaria or Montenegro only. Lichens were not used as qualifying species on any IPAs in the four countries. The 1989 European Red List for Macro-lichens is the standard reference for lichens in Criterion A, however this Red List is now quite old and an updated European Red List would help to identify priority lichen species and sites. In Macedonia a preliminary list of threatened fungi has been published, and near endemic/ limited range species on this list contributed to identifying IPAs there. Criterion A fungi are recorded on 89 IPAs, but the percentages of the national populations are unknown, so it is not known whether these species hit the criterion A threshold for qualifying sites. In each country the mycologists made the decision on whether there was sufficient data and if it was appropriate to identify IPAs using fungal species. In Croatia there are no mycologists so fungi data was excluded. Lack of data was a significant problem for fungi in this project. A European red list for fungi would help to identify priority species for conservation and specific recognition for fungi in European legislation and policies would also help in their conservation. The Bern Convention lists 12 *algae* species, although only one of these was known by the teams to occur in the partner countries, in Montenegro. No algal species are recognised in the EU Habitats Directive. A European Red List for algae would also help to prioritise conservation action for this group.

Data availability and data strategies

Data availability and quality varied in the four partner countries, and fieldwork was an important part of the project to establish the accuracy of existing data and update records. Bulgaria and Croatia had more recent, computerised and digitised plant and habitat records, IPAs were selected based on existing data supplemented by fieldwork in

targeted regions that were less well known. In Macedonia and Montenegro, fewer recent or computerised records were available and IPAs were identified using targeted fieldwork on potential sites, known from the existing data and/or knowledge of experts. In these countries the project has highlighted areas where there are no current data and these gaps could form the future of further IPA identification work.

Site selection

An IPA can be selected for one or more qualifying criteria. The basic principles of site selection, including guidelines on site boundaries, and criteria for selection, are given in the *IPA Site Selection Manual for Europe*. Fundamental to decisions on site selection were the number and size of IPAs and the definition of site boundaries. Each country decided on the balance of large IPAs with a mosaic of habitats and species and smaller IPAs identified to protect a particular species or habitat. Boundary demarcation, such as the treatment of small IPAs located near to each other, or the defining of boundaries in areas of fragmented habitats or land uses, was decided on the basis of the local conditions of ecological integrity, ownership and practical management.

Methodology challenges

Implementing the programme in south east Europe presented similar challenges to the previous project in Central Europe:

- Lack of recent and accessible data for species and habitats – population and trend data and habitat maps
- Lack of red lists at the national and regional level (this is a more acute problem in south east Europe than in central Europe)
- Chronic lack of data on lower plant and fungus species
- Defining practical boundaries

IPAs can only be identified on the basis of what is known by the botanical and mycological experts and specialists in the national IPA team, the regional authorities and members of the community who live and work on or close to the sites. If a site's inclusion in the IPA list can be justified by sound scientific data that relates to the criteria supplemented by the knowledge of national and regional experts and then that is sufficient, no better authority will exist to select IPAs. All information is made available to everyone through national inventories and the online IPA database (see below). The latter can easily be updated by IPA coordinators whenever new data is made available.

IPA site selection criteria in Europe

CRITERION	DESCRIPTION	THRESHOLD	NOTES
A(i) (threatened species)	Site contains globally threatened species	All sites known, thought or inferred to contain 5% or more of the national population can be selected, or the 51 'best' sites, whichever is the most appropriate.	Species must be listed as ' threatened '* on IUCN global red lists
A(ii) (threatened species)	Site contains regionally (European) threatened species		Species must be listed as ' threatened '* on European IUCN red list; or Habitats Directive Annexes IIb & IVb; or Bern Convention Appendix I
A(iii) (threatened species)	Site contains national endemic species with demonstrable threat not covered by A(i) or A(ii)	¹ (In exceptional cases, for example where there are less than 10 sites in the entire country or there are between 5-10 large populations of a species, up to 10 sites can be selected)	Species must be listed as national endemic (on any recognised list or publication) and ' threatened '* on national red lists
A(iv) (threatened species)	Site contains near endemic/limited range species with demonstrable threat not covered by A(i) or A(ii)	(populations must be viable or there is a hope that they can be returned to viability through conservation measures)	Species must be listed as near endemic/ limited range (on any recognised list or publication) and ' threatened '* on national red lists
B (species richness)	Site contains high number of species within a range of defined habitat types Site contains threatened habitat Site contains threatened habitat	Up to 10% of the national resource (area) of level 2 EUNIS habitat types, or 52 'best' sites, whichever is the most appropriate. ² (In exceptional cases, for example there are between 5 and 10 exceptionally rich sites for a particular habitat, up to 10 sites can be selected for each level 2 habitat type)	Species richness based on nationally created list of indicator species created for each habitat type and from the following types of species characteristic species and/or endemic species and /or nationally rare and scarce species (where the endemic and rare and scarce species are numerous and/or are characteristic for the habitat) Defined Habitat Type taken as level 2 (generic) habitat types in EUNIS (e.g. D1 raised & blanket bogs; G1 broad-leaved deciduous forests; E1 dry grasslands)
C(i) Priority threatened habitats		All sites known, thought or inferred to contain 5% or more of the national resource (area) of priority threatened habitats can be selected, or a total of 20-60% of the national resource, whichever is the most appropriate.	Priority threatened habitats are those listed as priority on Annex I of the Habitats Directive (and any corresponding habitat from the Bern Convention Res. 4)
C(ii) Threatened habitats		All sites known, thought or inferred to contain 5% or more of the national resource (area) can be selected, or the 53 'best' sites, whichever is the most appropriate. ³ (In exceptional cases, for example where there are less than 10 sites in the whole country, or there are 5-10 exceptional sites, up to 10 sites can be selected)	Threatened habitats are those listed on Annex I of the Habitats Directive and the Bern Convention Resolution 4, not covered by C(i)

* Criterion A, threatened species must be listed as **Critically Endangered (CR)**, **Endangered (EN)** or **Vulnerable (VU)** using the current IUCN criteria, or **Extinct/Endangered (Ex/E)**, **Endangered (E)** or **Vulnerable (V)** using former IUCN categories in publications prior to 1998.



The IPA database <http://www.plantlife-ipa.org/reports.asp>

The Important Plant Areas database is the key tool for storing information on IPAs across Europe and can be used in conjunction with the IPA questionnaire from the site selection manual (Anderson 2002). The database holds site based information on each IPA: location, area, altitude, general habitats, land-use, existing protection, threats, site management, presence and trends of qualifying species and habitats and a summary of the IPA's main features. Collectively this information is known as the 'IPA site account' and the contributors to the accounts are also recorded. Data is entered on line by the partners, all of whom have their own dedicated log in and password. Presence, abundance and trend of qualifying species and habitats can also be monitored using the database, which can be used to provide an indication of site condition over time

Use of the data is governed by a data sharing agreement, which includes data ownership issues and confidential information. Each national partner can download their country's data into MS Access from the website for analysis. IPA factsheets are publicly available for every site at <http://www.plantlife-ipa.org/reports.asp> along with statistics on threats, key species and habitats. The IPA database was designed to hold data which are compatible with the Important Bird Areas database of BirdLife International). Improving the public access to IPA information ensures that decision makers and stakeholders will have the latest information on plant conservation benefits and threats.

Useful references

Anderson, S., 2002 Identifying Important Plant Areas: A Site Selection Manual for Europe, and a basis for developing guidelines for other regions of the world. Plantlife International, London. [And references therein]

Plantlife International, 2004. Identifying and Protecting the world's Important Plant Areas – a guide to implementing target 5 of the Global Strategy for Plant Conservation. Plantlife International, Salisbury.

Plantlife International's website www.plantlife.org.uk: Technical Reports from various national and regional IPA workshops [including Central and East Europe, southern Africa and the Mediterranean].

A summary of the methodology for IPA selection in each country

Criteria - Species and habitats used for IPA selection in each country

	Bulgaria	Croatia	Macedonia FYR	Montenegro	Turkey
Criterion A Threatened species	230 threatened species Ai global (18) Ai/Aii global/regional (4) Aii regional (83) Aiii national endemic (82) Aiv near endemic (43) Habitats Directive (24) Bern Convention (58) Vascular plants (201) Fungi (13) Algae (0) Lichens (4) Bryophytes (12)	51 threatened species Ai global (3) Ai/Aii global/regional (3) Aii regionally (33) Aiii nationally endemic (1) Aiv near endemic (11) Habitats Directive (22) Bern Convention (28) Vascular plants (51) Fungi (0) Algae (0) Lichens (0) Bryophytes (0)	122 threatened species Ai global (4) Aii regional (20) Aiii national endemic (34) Aiv near endemic (64) Habitats Directive (17) Bern Convention (12) Vascular plants (102) Fungi (19) Algae (0) Lichens (0) Bryophytes (1)	104 threatened species Ai global (6) Aii regional (33) Aiii national endemic (11) Aiv near endemic (53) Habitats Directive (16) Bern Convention (22). Vascular plants (91) Fungi (4) Algae (1) Lichens (0) Bryophytes (8)	3900 threatened taxa Ai global(311), Aii regional (3163) Bern Convention (69)
Criterion B Species richness	Not applied in current project.	Applied using best available distributional data on threatened plant taxa from the national Red Data Book of vascular plants and the distribution atlas of endemic plants	2 habitat types assessed (Alpine and sub-alpine grasslands)	1 habitat type assessed (Coastal and sand dune), 1 site selected	
Criterion C Threatened habitats	148 threatened habitats Ci (25) Cii (125); Habitats Directive (82) Bern Convention (66)	89 threatened habitats Ci (23) Cii (66) Habitats Directive (77) Bern Convention (66)	56 threatened habitats Ci (6) Cii (50) Habitats Directive (24) Bern Convention (32)	103 threatened habitats Ci (12), Cii (91); Habitats Directive (51), Bern Convention (52)	

Appendix 2: Summary of country approach to IPA identification and selection

	Bulgaria	Croatia	Macedonia FYR	Montenegro	Turkey
Notes on criteria	Criterion A taxa were identified using the national Red List of Vascular plants and fungi elaborated in 2005. Criterion C list includes all habitats of European significance listed in the Biological Diversity Act of Bulgaria.	For criterion B 224 Red Data Book taxa in categories CR, EN, and VU, and 352 taxa of stenoendemic, endemic and/or sub-endemic status for the national territory were used as trigger species. The taxa were mapped and the greatest concentrations investigated as potential IPAs. Some IPAs qualifying under B criterion were composed of a number of habitats with a varying number of trigger species depending on their associated habitat type, those sites containing up to 10% of the national resource of the habitats or the 5 best habitat types qualified as IPAs under criterion B.		For criterion A the team members used lists of rare, endemic and threatened species protected by law in Montenegro (Official Register of the Republic of Montenegro, no. 36/82; Official Register of the Republic of Montenegro, no. 26/06.) and began to assess some vascular plant species as a first step to make a National Red List for the vascular plants of Montenegro. For criterion B in addition to the one site selected it is recognised that there is exceptional diversity of fungi species within Canyon of Cijevna river and Hum orahovski IPA, and exceptional diversity of fungi and bryophytes in Durmitor IPA which cannot yet be quantified.	Prior to the project, no list of threatened species and habitat types of global conservation concern and botanical importance had been drawn up for Turkey, therefore particular effort was made to include information within the final inventory on the wide range of rare species and habitats found within the IPA network. The full list of rare and threatened species and threatened habitat types featured in the IPA network are listed in the appendices of the Turkish IPA inventory along with their IUCN threat categories and the specific number for the IPAs in which they occur 3442 rare taxa occur within the 144 IPAs.
Data and field work:	The IPA selection was based on existing data and additional field inventories undertaken during the course of the project; considerable information was obtained from published records and the knowledge of experts. The relatively newly created Natura 2000 network (2004-2007) was also used to provide information on ownership, land use and threats.	Much of the information related to species distribution that was used to select IPAs came from the existing Flora Croatica Database of the Faculty of Science (University of Zagreb) see http://www.botanic.hr/ . Information about habitat types came from the national habitat maps (scale 1:100000). Field work focussed on the data poor areas, and 33 additional potential IPAs were explored in these areas during 2007-2008. Almost 10,000 new records for 668 taxa were generated at 213 localities to support IPA selection and this data was entered on and analysed through the Flora Croatica Database.	Initially existing data on the qualifying species and habitats were collated and potential sites for field investigation selected. Two extensive field seasons on almost 50 sites were carried out during 2007 and 2008. Literature data were checked and some additional threats were identified.	The project began with a literature search of all the data available on target species and habitats. Large amounts of data were rather old, inaccurate and/or doubtful, but were used along with knowledge of the IPA team members to prioritise field work activities. Field trips focused on checking old data and collecting more accurate data on the condition of populations of criterion A species and criterion C habitats. All potential IPA sites were visited during the course of the project and significant amounts of data were collected. Fieldwork activities were a major element of this project in Montenegro.	Approximately 40 botanists from 20 universities, many other researchers and institutions provided assistance, compiling the site accounts. The principle source of data was the knowledge of experts within this botanical network. In many cases the IPA site accounts represent many years of detailed collecting and research at the sites in question, supplemented by additional information in the form of theses, reports and papers. The project also included a series of habitat-by-habitat surveys to fill gaps in existing knowledge (e.g. reviewing Turkey's peatlands and sand dunes).

	Bulgaria	Croatia	Macedonia FYR	Montenegro	Turkey
Site selection:	<p>IPA selection follows existing Natura 2000 sites which have sufficient representation of Criteria A species and C habitats to be selected as IPAs. In some cases the selected boundaries of Natura 2000 sites include agricultural fields and ruderal communities which were excluded from the IPA selected territories.</p>	<p>IPA data was largely interpreted through GIS in Croatia. Initially the whole state territory was analysed according to the total number of taxa per square unit (MTB ¼ square, ~25 km²) to show spatial coincidence. Taxa associated with A and B criteria were treated separately. Individual information was presented by circle (the radius of which depended on the quality of the geocoding information available for the species records). Additional calculated indices were used for to assessing emphasising incidence of the rare taxa. All habitats from criterion C were selected from the national habitat maps, and represented as a number of target habitats per square unit, as above. The results showed spatial coincidence of the target habitats.</p>	<p>The national site selection strategy focused initially on selecting larger sites, which contain a high number of qualifying criteria, and a complex of habitat types. Criterion A was applied first and then Criterion C. Criterion B was then applied only to a limited extent.</p>	<p>In the first phase of site selection, areas of exceptional floristic diversity which contained the most representative criterion C habitats were selected, based both on the literature and fieldwork experience. These sites included the best populations of criterion A species. Additional sites were selected that</p> <p>i) contained good populations of one or more criterion A species, but did not have important habitats or special botanical values</p> <p>ii) contained important (criterion C) habitats, but did not have other special botanical values</p> <p>iii) contained exceptional diversity of bryophytes and/or fungi (4 sites)</p> <p>Two sites that were on the preliminary list are not on the final IPA list of 2008, because insufficient field research has taken place to justify their inclusion.</p>	<p>The IPAs were chosen to fully represent Turkey's 7 administrative regions (which roughly equate to the main phytogeographical regions in the country). The IPA selection methodology also sought to identify the most floristically-rich examples from each habitat category within each of the three biogeographic regions (Anatolian, Black Sea and Mediterranean). For this purpose, the Palaearctic Habitat Classification (formerly EU CORINE biotopes) nomenclature was used.</p>
Key issues:	<p>Due to the incomplete inventories of fungi, bryophytes and algae in the country these groups are only partially incorporated in the site selection, and the algae are not considered. The lack of national inventory for habitats distribution, boundaries and area, made it difficult to estimate the threshold for habitat representation for criterion C.</p>	<p>All the areas that satisfied any of the criteria were provisionally delimited on maps of scale 1:100,000. Additional potential IPAs were added according to the personal knowledge of professionals. Finally the 97 confirmed IPAs were fine delimited to a scale of 1:25,000. Lower plants, non-vascular plants and fungi are not included in the IPA analysis for Croatia because of a lack of data and experts for these groups. For small IPAs the resolution of available habitat maps was not sufficient (9 ha), so additional vegetation data were used from literature and the personal experience of collaborators. The best available data do not always cover real situation in the field so future work could include a national vascular plant mapping programme which will allow the IPAs to be updated.</p>	<p>The main obstacles to full implementation of the IPA methodology in Macedonia were lack of data on plants and fungi; lack of assessment of the threatened status of the flora and no national Red List, lack of assessment of threats to Macedonia's habitats and vegetation. There are no databases of the flora and the vegetation and no vegetation maps for the whole country. As a result the species on the Bern Convention do not include species that are believed to be of conservation concern in Macedonia. Many of the floristic and vegetation data are very old. Criterion B was only implemented for a limited number of sites due to the lack of appropriate data on species richness.</p>	<p>A lack of a Red Data book for Montenegro was the biggest problem in applying the methodology. Combined with the lack of a European Red list for plants means that many threatened Montenegrin species (endemic, sub-endemic and rare species) have not been assessed or therefore incorporated into European legislation and do not appear in the accepted lists for criterion A species. Lichens were not taken in consideration for this project because before 2007 there were no lichenologists working in Montenegro. A lack of mycological data was also a problem during the selection of areas important for fungi. Lack of harmonisation of Montenegrin habitats with the EUNIS habitat classification significantly complicated the implementation of B and C criteria. And the unequal degree of research into the flora of different regions within the national territory.</p>	<p>There was limited research and information on non-vascular plants in Turkey, so it was not possible to consider these groups during the IPA identification process. The Turkish IPA inventory represents the first attempt to identify sites of international botanical importance in Turkey and some habitat types – sand dunes, heathlands, peatlands, montane systems and larger wetlands, for example – are relatively well represented in the listing. However, it is clear that other habitat types are far less well represented – notably grassland and maquis/phrygana communities – and every effort should be directed at their identification and protection.</p>

Appendix 3: Relationship between major global, regional conservation policies and IPAs in South East Europe

(For further information see also Anderson *et al* 2005)

Asphodeline lutea



KIRIL METODIEV

Policy/legislation	Key components	Relationship to IPA
<i>Global</i>		
CBD Global Strategy for Plant Conservation Ref: www.cbd.int	Target 5 of this 16 target strategy requires signatory governments to “ensure the protection of 50% of the most important areas for plants [by 2010]	IPA programme provides a framework for this target and conservation of IPAs contributes to many of the 16 targets in this strategy
Ramsar Convention (1971) Ref: www.ramsar.org	The convention provides the framework for conservation and wise use of wetlands and their resources, the guidelines for selecting Ramsar sites include 4 criteria for plants and plant communities	IPA data provides information that supports the identified of Ramsar sites, as the criteria include components common to both processes. The data can also be used to assist management prescriptions of Ramsar sites 10 IPAs in partner countries are Ramsar sites
<i>European</i>		
The Pan European Biological and Landscape Strategy (PEBLDS) and the Ministerial Process Environment for Europe Ref: UN/ECE (2003) Kyiv Resolution on biodiversity. Fifth Ministerial conference ‘Environment for Europe’. Kyiv, Ukraine 21-23 May 2003. Document ECE/CEP/108.	The Kyiv Resolution on biodiversity (2003), with targets on biodiversity conservation related to: forests; HNV agricultural land; the Pan European Ecological Network (PEEN), which seeks to identify priority sites and corridors; invasive alien species; financing; monitoring; public participation and awareness.	IPA data can be used to assist with the identification of HNV areas and provide potential pilot sites for incentive and subsidy schemes IPAs have been incorporated in certain areas of the PEEN and the new data from this project can make a significant contribution to improving and expanding the PEEN in SEE
Council of Europe and Planta Europa European Strategy for Plant Conservation	This 30 target strategy is a Pan European level contribution to the implementation of the CBD GSPC above. Target 5.1 states that all countries should develop an action framework for the conservation of IPAs or equivalent programmes.	IPA data highlights invasive species threats in SEE IPA programme provides a framework for target 5.1 of this strategy and the conservation of IPAs contributes to many of the other targets.
The Bern Convention (1979) and subsequent recommendations	This convention requires signatories (members of the Council of Europe) to establish a network of sites that contain species and habitats of European importance; The Emerald Network	The criteria by which IPAs are identified include those used for the Emerald Network and can be interpreted as the plant component of the Emerald Network. Of the 4 countries 26% of sites contain BC habitats and species
The EU Habitats Directive	This legally binding directive requires EU member states to identify and protect Special Areas of Conservation SACs which together with Special Protection Areas for birds, make up the Natura 2000 network	The criteria by which IPAs are identified include those used for the sites within the Natura 2000 network and can contribute to its development Of the 4 countries 86% of sites contain HD habitats and species
The EU Water Framework Directive	This legally binding directive requires EU member states to protect the water systems of Europe Article 6, 7 and 8 require a register of protected areas which fall within these water systems; management plans for river basins and a network of sites to monitor ecological status of water systems	IPAs can be used to provide a check on the comprehensiveness of the registers of areas, and the sites within the IPA network can be used monitoring sites. 93 sites in SEE partner countries contain inland water habitats 50 sites contain Mire bog and fen 33 coastal and halophytic
The EU Common Agricultural Policy	Rural development schemes pillar II	IPAs on agricultural sites are potential target sites for incentives and subsidies





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