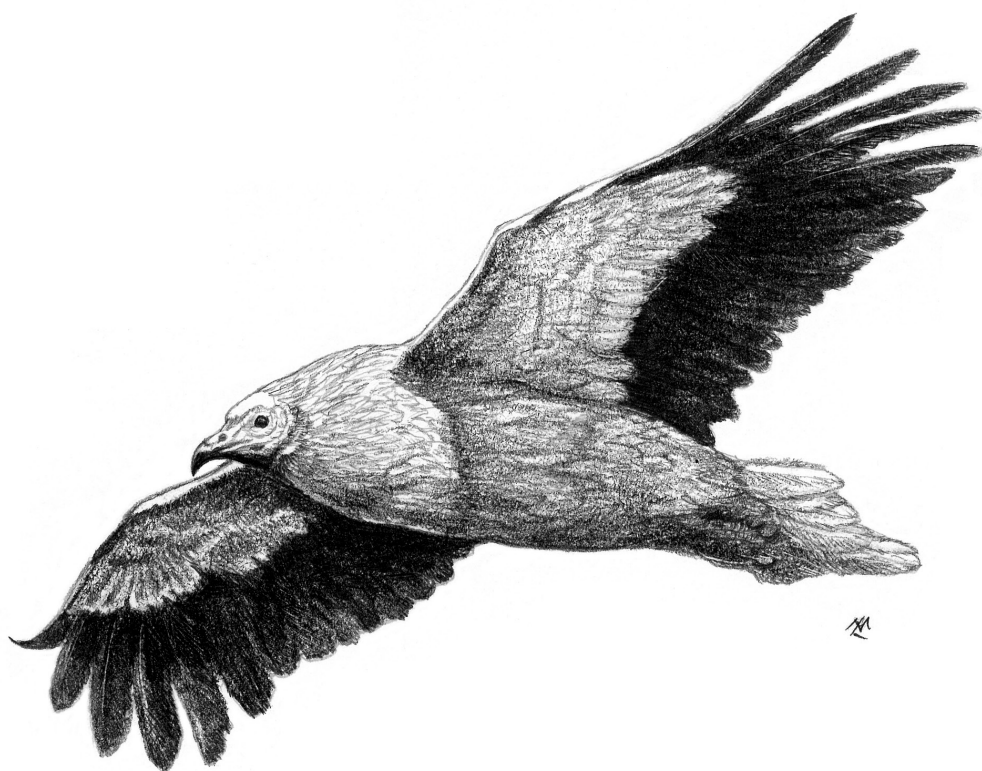


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južna postovka / Lesser Kestrel *Falco naumanni*
risba / drawing: Jurij Mikuletič



A MILESTONE ON THE ROAD TO NATURA 2000

Mejnik na poti k Naturi 2000



The publication “Important Bird Areas of Macedonia: Sites of Global and European Importance” provides a fascinating insight into the natural and cultural heritage of the country. The approved list of sites now includes a wide variety of landscapes hosting bird species that have become rare or threatened in many parts of Europe. Very important is the fact that only about 21% of the national protected area network overlaps the Important Bird Areas of Macedonia. Now an assessment of the natural assets of Macedonia is available for the first time, based on a systematic approach using the international criteria developed by BirdLife International for the selection of sites under the EU Birds Directive. The first results indicate where the country hosts areas of European and even global importance, where urgent conservation measures are needed, and are excellent guidelines for the rural development and tourism.

A wide range of political commitments within the European Union is aimed at preserving ecosystems and biodiversity, with various species protection provisions as well as Special Protection Areas (SPAs) identified under the Birds Directive and Sites of Community Importance (SCIs) identified under the Habitats Directive, both incorporated into the Natura 2000 (N2000) network. The publication of the “Important Bird Areas of Macedonia” prepared by the Macedonian Ecological Society (MES) as a national representative of the BirdLife International’s partnership is the first systematic assessment of Macedonia’s sites based on the internationally recognized criteria to implement the Birds Directive. However, the complete identification of IBAs of EU importance (application of C criteria) will still need to follow in the future to fully comply with provisions of the Birds Directive.

BirdLife’s Important Bird Area (IBA) program is remarkable for the valuable – and largely unpaid – contribution it makes to the fulfilment of EU objectives:

- Birds are the only pillar of N2000 for which a Europe-wide inventory based on the findings of an independent NGO network, the IBAs, exists. The European Commission makes active use of BirdLife International’s publications in its evaluation of the completeness of national proposals for SPAs.
- In practice, the N2000 network is defined, to a large extent, by IBAs. In many regions, SPAs and SCIs overlap, with birds serving as conspicuous indicators of rare and threatened habitats from remote coastal islands to the peaks of the Alps.

Despite a joint database, the European Commission is currently unable to report on the total size of the N2000 network in Europe (see N2000 Barometer¹). Numerous sites have been designated both as SPAs and SCIs, making an entirely objective assessment of BirdLife’s contribution impossible. Nevertheless, it is clear that IBAs play a key role in the establishment of national and European ecological networks.

Back to Macedonia: quite striking is the fact that only about 21% of the IBAs cited here overlap the existing protected areas of the country. However, the effective implementation of the Birds Directive requires full, clear and precise transposition of sites by Member States. For countries such as Macedonia, the process of defining the IBAs is an excellent way to prepare the accession and to prevent degradation of the most important habitats. While Article 17 of the Habitats Directive requires Member States to report every six years on the progress made with the implementation of the Directive, it is important to start the preparation of the N2000 network in those countries, which have not achieved membership yet².

The publication has been prepared with great care and is based on data collected via extensive field work. While it provides relatively complete coverage of birds of prey and waterbirds, smaller songbirds and forest species are underrepresented – a significant shortcoming, given Macedonia's large tracts of forest. It will be the task of a later version to incorporate more data, based on line transects or other estimates. Birdwatchers visiting the country are encouraged to report their sightings to the MES or to offer their skills to evaluate the large forests, for example along the Macedonian part of the European Green Belt (RIECKEN 2010).

In addition to mountains and wetlands, the new IBA publication includes areas of countryside such as the steppe-like habitats near the Bregalnica River (MK020), the huge plains of Pelagonia (MK012) and Ovče Pole (MK019). It is important that these sites of European importance become better known and that ways be found to preserve their functioning as habitats and support sustainable agriculture. The traditional large scale pasturing is one of the important land-use systems, which will need special attention to maintain and improve the conservations status of birds and many other species living on the sites (compare SCHNEIDER-JACOBY & BROXHAM 2010). The cultural landscape with its avifauna, including several species of highly threatened birds of prey, is a great asset of Macedonia.

However, several of the species cited here, such as the Egyptian Vulture *Neophron percnopterus* and Lesser Kestrel *Falco naumanni*, no longer have a favourable conservation status in Macedonia, so that it will be not enough to promote the sites as IBAs and future N2000. Conservation will require restoration projects and continued sustainable management – that is, effective lobbying. Projects such as drainage of the Pelagonian marshes, performed in “Yugoslav times” without an environmental assessment, need to be re-evaluated before old drainage and irrigation systems are re-established. Only a proper assessment based on indicators and the natural potential will find solutions that improve the conservation status, for instance the restoration of the lost wetlands of the Crna Reka marshes (compare THÖNEN 2006, STUMBERGER & SCHNEIDER-JACOBY 2006).

Achieving a favourable conservation status for species of global and European importance is a daunting task for any country. “Important Bird Areas of Macedonia” will aid Macedonia in complying with the Birds and Habitats Directives and implementing N2000 in its forthcoming European perspective. The publication highlights potential conflicts arising from infrastructure development and will help to foster ecologically sustainable rural development. Last but not least, it is an interesting reading that will raise the country's profile

as a destination for birdwatching and eco-tourism. It provides fascinating insight into the country's natural and cultural heritage detailing a wide variety of habitats with many birds that are rare elsewhere in Europe (compare SCHWADERER & SPANGENBERG 2009).

Publikacija “Mednarodno pomembna območja za ptice globalnega in evropskega pomena v Makedoniji” daje nadvse zanimiv vpogled v naravno in kulturno dediščino te države. Potrjeni seznam območij zdaj zajema širok izbor krajin, v katerih živijo tudi ptičje vrste, ki so v mnogih delih Evrope že postale redke ali ogrožene. Nadvse pomembno je dejstvo, da se samo 21 % nacionalne mreže zavarovanih območij prekriva z mednarodno pomembnimi območji za ptice v Makedoniji. S tem delom je prvič na voljo ocena naravnih vrednot v Makedoniji, sloneča na sistematskem pristopu z uporabo mednarodnih kriterijev, ki jih je organizacija BirdLife International razvila za izbor območij v okviru evropske Ptičje direktive. Prvi rezultati zajemajo seznam območij evropskega in celo globalnega pomena, katere je treba zavarovati z nujnimi naravovarstvenimi ukrepi, hkrati pa so tudi izvrstne smernice za razvoj podeželja in turizem.

Namen različnih političnih odločitev, ki jih je sprejela in se jim zavezala Evropska unija, je tudi ohraniti ekosisteme in biotsko pestrost z ukrepi varovanja različnih vrst, kot tudi s posebnimi območji varstva (SPA), opredeljenimi v okviru Ptičje direktive, in posebnimi ohranitvenimi območji (SCI), opredeljenimi v okviru Habitatne direktive, obojimi vključenimi v omrežje Natura 2000 (N2000). Publikacija »Mednarodno pomembna območja za ptice globalnega in evropskega pomena v Makedoniji«, ki jo je pripravilo Makedonsko ekološko društvo (MES) kot nacionalni predstavnik partnerstva organizacije BirdLife International, je prvi sistematičen popis makedonskih območij, ki sloni na mednarodno priznanih kriterijih za uresničevanje Ptičje direktive. Toda da bi bila v celoti izpolnjena določila te direktive, bo v prihodnosti potrebna tudi popolna opredelitev IBA-jev pomembnih na nivoju EU z uporabo kriterijev C.

Program BirdLifeovih mednarodno pomembnih območij za ptice (IBA) je izredno pomemben zaradi dragocenega – in v precejšnji meri neplačanega – prispevka k izpolnjevanju naslednjih ciljev EU:

- Ptice so edini steber N2000, za katerega obstaja vseevropski popis območij, IBA-jev, sloneč na ugotovitvah mreže neodvisnih nevladnih organizacij. V svojih ocenah ustreznosti nacionalnih predlogov za določitev SPA-jev se Evropska komisija zanaša prav na publikacije organizacije BirdLife International.
- V praksi N2000 v veliki meri opredeljujejo IBA-ji. V mnogih regijah se SPA-ji in SCI-ji prekrivajo, pri čemer se ptice uporabljajo kot jasni kazalci redkih in ogroženih habitatov vse od oddaljenih otokov do alpskih vrhov.

Kljub skupni podatkovni bazi je Evropska komisija trenutno nezmožna poročati o skupni velikosti omrežja N2000 v Evropi (glej N2000 Barometer¹). Mnoga območja so bila opredeljena kot SPA-ji in SCI-ji hkrati, kar pomeni, da ni mogoče popolnoma objektivno oceniti prispevka organizacije BirdLife

International. Pa vendar je jasno, da IBA-ji igrajo ključno vlogo pri osnovanju nacionalnega in evropskega omrežja varstvenih območij.

Vrnimo se k Makedoniji. V oči bode dejstvo, da se le 21 % IBA-jev, navedenih v tej publikaciji, prekriva z obstoječimi zavarovanimi območji v državi. Pa vendar učinkovita uresničitev Ptičje direktive terja poln, jasen in natančen prenos območij s strani držav članic EU. Za državo, kakršna je Makedonija, je proces določanja IBA-jev izvrstna priprava za pristop k EU in preprečevanje degradacije najpomembnejših habitatov. Medtem ko 17. člen Habitatne direktive zahteva od držav članic EU, da vsakih šest let poročajo o napredku v uresničevanju Direktive, je pomembno, da se priprave mreže N2000 lotijo v državah, ki še niso članice EU².

Pričujoča publikacija, ki je bila pripravljena nadvse skrbno, sloni na podatkih, zbranih med intenzivnim terenskim delom. Toda medtem ko razmeroma celostno pokriva ujede in vodne ptice, manjše ptice pevke in gozdne ptice niso predstavljene v zadostni meri, kar je glede na velike gozdne površine v tej državi precejšnja slabost. V poznejših različicah publikacije bo torej vanjo treba vključiti več podatkov, temelječih na linijskih transektih ali drugih ocenah. Opazovalci ptic, ki obiskujejo to državo, so zato vljudno vabljeni, da poročajo o svojih opažanjih Makedonskemu ekološkemu društvu ali pa da svoje znanje ponudijo pri vrednotenju velikih gozdov, na primer vzdolž makedonskega dela Evropskega zelenega pasu (RIECKEN 2010).

Nova publikacija o makedonskih IBA-jih poleg gora in mokrišč vključuje stepam podobne habitate v bližini reke Bregalnice (MK020), prostrano Pelagonsko nižino (MK012) in Ovče Pole (MK019). Pomembno je, da ta območja evropske varstvene pozornosti postanejo bolj znana in da se najdejo načini, kako ohraniti njihovo delovanje kot habitatov in podpreti trajnostno kmetijstvo v njih. Zelo razvito tradicionalno pašništvo je eno izmed pomembnih sistemov rabe tal, ki mu je treba nameniti posebno pozornost, če želimo ohraniti in izboljšati varstveni status ptic in mnogih drugih vrst, ki živijo na tem območju (primerjaj SCHNEIDER-JACOBY & BROXHAM 2010). Kulturna krajina s svojo avifauno, ki vključuje več močno ogroženih ujed, je vsekakor velika vrednota Makedonije.

Pa vendar že nekaj vrst, navedenih v tej publikaciji, na primer egiptovski jastreb *Neophron percnopterus* in južna postovka *Falco naumanni*, v Makedoniji nima več ugodnega varstvenega statusa, kar pomeni, da promocija območij kot IBA-je in bodoča N2000, ne bo dovolj. Naravovarstvo bo terjalo pripravo projektov za ohranitev vrst in kontinuirano trajnostno upravljanje – se pravi učinkovito lobiranje. Projekte, kot je osuševanje pelagonskih močvirij, česar so se lotili v "jugoslovanskih časih" brez kakršne koli presoje vplivov, je treba oceniti na novo, in sicer še preden se ponovno uvedejo kakršni koli osuševalni in namakalni sistemi. Rešitve, ki bodo izboljšale varstveni status območij, na primer obnovitev tako rekoč izgubljenih močvirij Crne Reke (primerjaj THÖNEN 2006, STUMBERGER & SCHNEIDER-JACOBY 2006), bo prinesla le ustrezna ocena, temelječa na kazalcih in naravnih potencialih območij.

Doseči ugoden varstveni status vrst globalne in evropske varstvene pozornosti je zelo težka naloga za vsako državo. Publikacija "Mednarodno pomembna območja za ptice v Makedoniji" bo pomagala tej državi, da izpolnjuje Ptičjo in Habitatno direktivo pri uresničevanju N2000 v njeni prihajajoči evropski

perspektivi. Publikacija opozarja na potencialne konflikte, izvirajoče iz razvoja infrastrukture, in bo vsekakor pomagala pri pospeševanju trajnostnega razvoja podeželja. Nenazadnje pa je tudi zanimivo branje, ki bo izboljšalo podobo te države kot destinacije za opazovanje ptic in ekoturizem. S podrobnim orisom zelo različnih habitatov in ptic, ki so že zelo redke drugod po Evropi (primerjaj SCHWADERER & SPANGENBERG 2009), pa zagotavlja tudi zelo zanimiv vpogled v makedonsko naravno in kulturno dediščino.

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¹ http://ec.europa.eu/environment/nature/natura2000/barometer/index_en.htm

² Macedonia was granted official candidate country status for the accession to the EU in December 2005/ Makedonija je decembra 2005 dobila uradni status države kandidatke za članstvo v EU

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IMPORTANT BIRD AREAS IN MACEDONIA: SITES OF GLOBAL AND EUROPEAN IMPORTANCE

Mednarodno pomembna območja za ptice globalnega in evropskega pomena v Makedoniji

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Identification of the Important Bird Areas (IBAs) is an initiative implemented by BirdLife International at the global level, aiming to conserve a network of sites that are particularly important for the conservation of birds. With the changed conservation status of some species and increased information on the distribution and population sizes of birds in Macedonia in general, a revision of the IBA network was needed to update previous inventories for this country, published in 1989 and 2000. As the bird fauna of the Republic of Macedonia ranks among the least known in Europe, and as data on many species, notably passerines, are still largely missing, the inventory is mainly based on some threatened or rare birds of prey and a few other larger species, yet characteristic of the Macedonian landscape. Data used were collected in the course of different dedicated studies and projects carried out after 2000. Out of 314 species so far registered in Macedonia, 114 regularly occurring species have currently unfavourable conservation status in Europe, 84 of which breed or possibly breed in the country. Several criteria for the selection of IBAs of global (A criterion) and European importance (B criterion) developed by BirdLife International were used for sites selection, taking into consideration species of global conservation concern (A1), biome-restricted species (A3), important congregations (A4, B1) and species with an unfavourable conservation status (B2) or concentrated (B3) in Europe. Species of global conservation concern used for site identification include the Egyptian Vulture *Neophron percnopterus*, considered Endangered (EN) at the global level according to the latest IUCN Red List of Threatened Species, Dalmatian Pelican *Pelecanus crispus* and Imperial Eagle *Aquila heliaca* (both Vulnerable – VU), and Roller *Coracias garrulus* and Semicollared Flycatcher *Ficedula semitorquata* (both Near Threatened – NT). Furthermore, species assemblages characteristic as occurring mostly or entirely within a Eurasian high-montane or Mediterranean biome are found in Macedonia. Important congregations of non-breeding waterbirds with at least 1% of global or biogeographic populations of individual species occur on all three large lakes in the country, some of them (e.g. Dalmatian Pelican, Red-crested Pochard *Netta rufina*) in very large numbers, surpassing the 1% threshold by more than tenfold. In total, 25 species regularly occurring in

the breeding season, for which the site protection approach is thought to be appropriate in Macedonia, were used for the selection of sites of European importance. Site boundaries were drawn following distinct natural features or isohypses to include breeding sites and foraging areas of triggering species, and, for Imperial Eagle and Egyptian Vulture also former breeding sites back to 1991, taking into consideration their habitat requirements, land-use and management needs. The resulting IBA list numbers 24 sites, covering 6,907 km² or 26.9% of the entire territory of Macedonia: (1) Šar Planina Mountain, (2) River Radika Catchment, (3) Lake Ohrid, (4) Lake Prespa, (5) Demir Kapija Gorge, (6) Lake Dojran, (7) Zletovska River Valley, (8) Tikveš Region, (9) Pčinja - Petrošnica - Kriva Reka Rivers, (10) Preod - Gjugjance, (11) Osogovo Mountains, (12) Jakupica Mountain, (13) Taor Gorge, (14) Ovče Pole, (15) Topolka - Babuna - Bregalnica Rivers, (16) Gradsko - Rosoman - Negotino, (17) Lake Mantovo and Kriva Lakavica River, (18) Raec River Valley, (19) Pelagonia, (20) Mariovo, (21) Lake Tikveš, (22) Bošavija, (23) Kočani Rice Fields, and (24) Lower Vardar. With the exception of three sites occupying the highest parts of the large mountain massifs in NW and central parts of Macedonia, and the lakes Ohrid and Prespa, sites are concentrated mostly in central hilly and lowland parts of the country, comprising breeding areas of species of global conservation concern. The percentage of territory covered by the IBAs in Macedonia is relatively high compared to the total European average but comparable to several countries in SE parts of Europe. The size of separate IBAs ranges from 25 km² (Taor Gorge) to 1,136 km² (Pelagonia) and number of triggering species per site from one (Bošavija, Kočani Rice Fields) to 17 (Pčinja - Petrošnica - Kriva Reka Rivers). 22 sites trigger some of the criteria of global importance – three sites (Lakes Ohrid, Prespa and Dojran) meet A4 criterion, eight sites hold significant populations of species characteristic of the Mediterranean biome, while three other sites sustain significant populations characteristic of the European high-montane biome. Species of global conservation concern are included as follows: Egyptian Vulture on 13 sites, Imperial Eagle on 7, Dalmatian Pelican and Saker Falcon *Falco cherrug* on 2, Ferruginous Duck *Aythya nyroca* on 3, Roller *Coracias garrulus* on 10, Red-footed Falcon *Falco vespertinus* on 3 sites, and Semi-collared Flycatcher on 1 site. Individual triggering species for sites of European importance are represented on 2–15 sites. The IBA network includes 80–100% of the national populations of the globally threatened species, while the coverage of other species vary between 5% and 100%, being over 40% in great majority of species. Non-irrigated arable land and transitional woodland-shrub are dominant land-cover types, jointly covering 32% of the total IBA surface area. Abandonment of traditional pastoral system, resulting in decrease of the livestock numbers and overgrowing as well as trapping, poisoning and poaching, are considered the most serious threats for triggering species, particularly the Egyptian Vulture and Imperial Eagle, being classified as high on no less than 11 sites, respectively. The national legal protection of the sites is incomplete, being either only partial or with inadequate conservation measures adopted, or, many sites still lack any form of legal protection. With about 21% of the National protected area network overlapping with the IBAs, the existing protected area system is thus insufficient for conservation of most priority species. Notably underrepresented are the regions in the lower parts of the country with the highest number of species of global conservation concern.

Key words: Important Bird Areas, IBA identification, triggering species, population size, IBA criteria, species of global conservation concern, threats, Macedonia

Ključne besede: Mednarodno pomembna območja za ptice, opredelitev IBA, kvalifikacijske vrste, velikost populacij, IBA kriteriji, vrste globalne varstvene pozornosti, dejavniki ogrožanja, Makedonija

Клучни зборови: значајни подрачја за птици, идентификација на ЗПП, видови кои ги исполнуваат критериумите за ЗПП, големина на популација, критериуми за избор на ЗПП, видови од глобален интерес за зачувување, закани, Македонија

1. Introduction

1.1. IBA programme and its history in Macedonia

Identification of the Important Bird Areas (hereinafter referred to as to “IBAs”) is an initiative implemented by BirdLife International at the global level, aiming to conserve a network of sites that are particularly important for the conservation of birds, i.e. for globally threatened species, species of European conservation concern, for migratory species that congregate in high numbers, species unique for small regions (endemic species) and sites that support species assemblages highly representative of a distinct biome (HEATH & EVANS 2000).

The first IBA inventory that covered Europe was published in 1989, and within, Macedonia was elaborated as a part of former Yugoslavia. At that time, B. Grubač compiled the data of the seven terrestrial sites, while the lakes were included on the basis of results from the mid-winter censuses in 1987 and 1988 (GRIMMETT & JONES 1989). At that time, 10 IBAs were identified (Table 1, Figure 1), with a total coverage of 2,709 km² (ca. 10% of the territory of Macedonia). This list was partially revised in 2003, when three new IBAs were proposed by E. Stoyanov and accepted by BirdLife International. Two of them (Rice Plantations of Bregalnica and Zletovska Rivers, MK012 and Tikveš, MK013) were proposed on the basis of A1 criterion, supporting populations of Lesser Kestrels *Falco naumanni* and/or Imperial Eagles *Aquila heliaca*, while the third (Bistrenči Fishpond, MK011) was already within the boundaries of the previously identified IBA Demir Kapija Gorge (MK008), and was proposed under criterion B1iv (assumed bottleneck for passage of > 5000 White Storks *Ciconia ciconia*).

With the changed conservation status of some species (especially uplisting the Egyptian Vulture *Neophron percnopterus* and the Roller *Coracias garrulus* as Endangered and Near Threatened in 2007), and increased information on the distribution of these as well as other species (Lesser Kestrel, Imperial Eagle, etc.)

in Macedonia, with a more accurate estimation of their populations, a revision of the IBA network was needed.

1.2. Bird fauna of Macedonia

Bird fauna of the Republic of Macedonia is among the least known in Europe, which is particularly true regarding the knowledge on distribution and quantitative population estimations, as can be witnessed by the gaps in the Atlas of European Breeding Birds (HAGEMEIJER & BLAIR 1997) and some rather imprecise estimates (BIRDLIFE INTERNATIONAL 2004). Although the territory presently covered by the country has been of interest of foreign ornithologists in the period before the First and Second World Wars, and several milestone publications have been published with data from that period (GENGLER 1920, STRESEMANN 1921, MAKATSCH 1950), later studies (until 2000) have been mostly sporadic, short-term or localized in coverage. Notable exceptions are the works of DIMOVSKI (1967), studying the fauna of birds in Skopje Valley in the 1955–1959 period and MICEVSKI (1998 & 2003) for Lakes Prespa (1987–1997) and Ohrid (1988–2000). Quantitative information on bird numbers and densities is also rare – in his papers, DIMOVSKI (1967, 1971A & 1971B) provides information on the frequencies of findings of the species he had registered and their relative abundance only. The first and so far the only quantitative study of the terrestrial bird communities has been performed on Mt Galičica in the 1985–1989 period (MICEVSKI 1990), while precise figures for the wintering populations at the three large lakes (Ohrid, Prespa and Dojran) have been gathered during several mid-winter counts (e.g. MICEVSKI 1991 & 1996, FREMUTH *et al.* 2000).

Situation has been similar when censuses of particular species are concerned – the only complete countrywide census being the White Stork census in 1958 (JOVETIĆ 1960). Later, somewhat less thorough in coverage, have been the works on the Golden Eagle *Aquila chrysaetos* in the 1980–1985 period, Lanner Falcon *Falco biarmicus* (1980–1994) and Long-legged Buzzard *Buteo rufinus* (1980–1995) (GRUBAČ 1986/87,

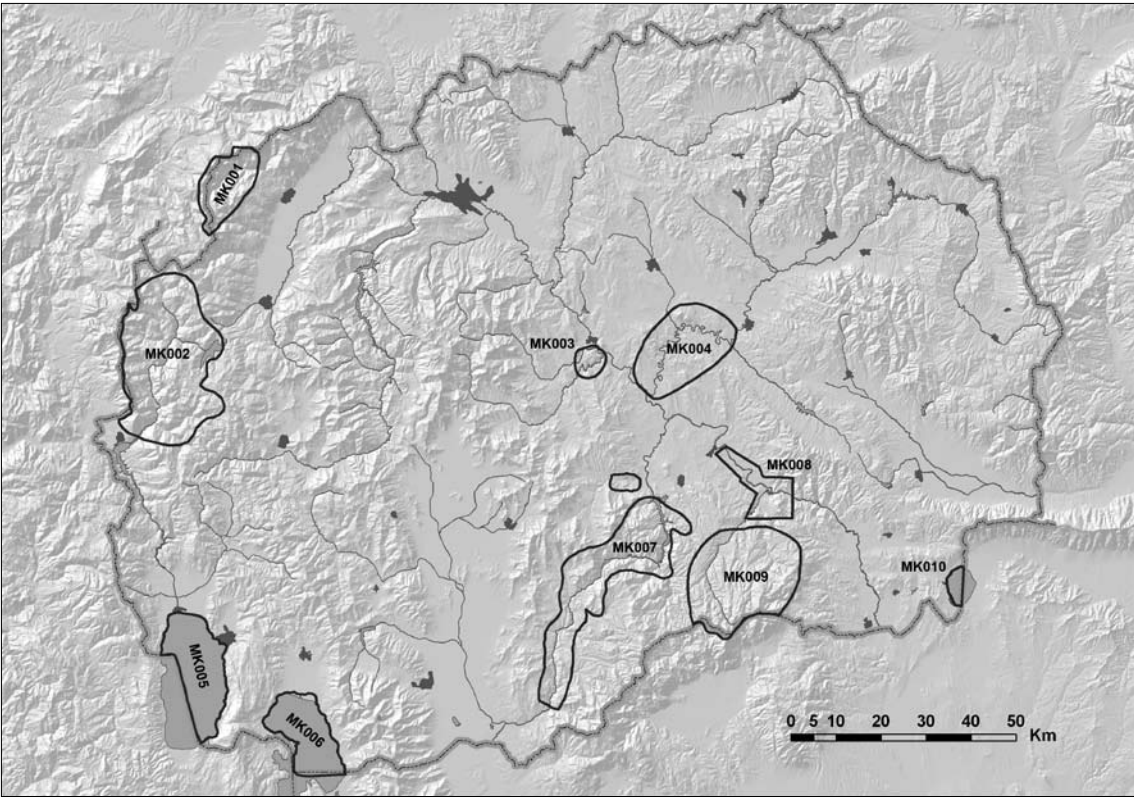


Figure 1: Map of Important Bird Areas (IBAs) in Macedonia identified in 1989 (GRIMMETT & JONES 1989, HEATH & EVANS 2000)

Slika 1: Zemljevid mednarodno pomembnih območij za ptice (IBA-jev) v Makedoniji, opredeljenih leta 1989 (GRIMMETT & JONES 1989, HEATH & EVANS 2000)

Table 1: List of IBAs in Macedonia identified during the 1989 (GRIMMETT & JONES 1989) and 2000 inventories (HEATH & EVANS 2000). Surface areas were recalculated by the Macedonian Ecological Society since the GIS technology has become available.

Tabela 1: Seznam makedonskih IBA-jev, opredeljenih med popisi leta 1989 (GRIMMETT & JONES 1989) in 2000 (HEATH & EVANS 2000). Površine območij je na novo izračunalo Makedonsko ekološko društvo s pomočjo tehnologije GIS.

IBA code/ IBA koda	Site name / Ime območja	Centroid coordinates/ Koordinate centroida	Surface area/ Površina (km ²)	Surface area (recalculated)/ Površina (preračunana) (km ²)
MK001	Shara Mountain [parts of]	21°00'E, 42°00'N	120.0	159.5
MK002	Korab Mountain and Radika Gorge	21°15'E, 41°45'N	500.0	651.4
MK003	Babuna Gorge, Topolka Gorge, and Crn Kamen	21°45'E, 41°40'N	25.0	38.5
MK004	Bregalnica River	22°00'E, 41°45'N	100.0	306.9
MK005	Lake Ohrid	20°45'E, 41°07'N	251.0	246.1
MK006	Lake Prespa	21°00'E, 40°49'N	189.2	196.3
MK007	Crna River Gorge	22°00'E, 41°19'N	400.0	504.4
MK008	Demir Kapija Gorge	22°19'E, 41°19'N	80.0	122.0
MK009	Kozhuf Mountain and Boshava River	22°15'E, 41°10'N	200.0	460.3
MK010	Lake Dojran	22°45'E, 41°12'N	42.0	23.8
Total / Skupaj			1,907.2	2,709.2

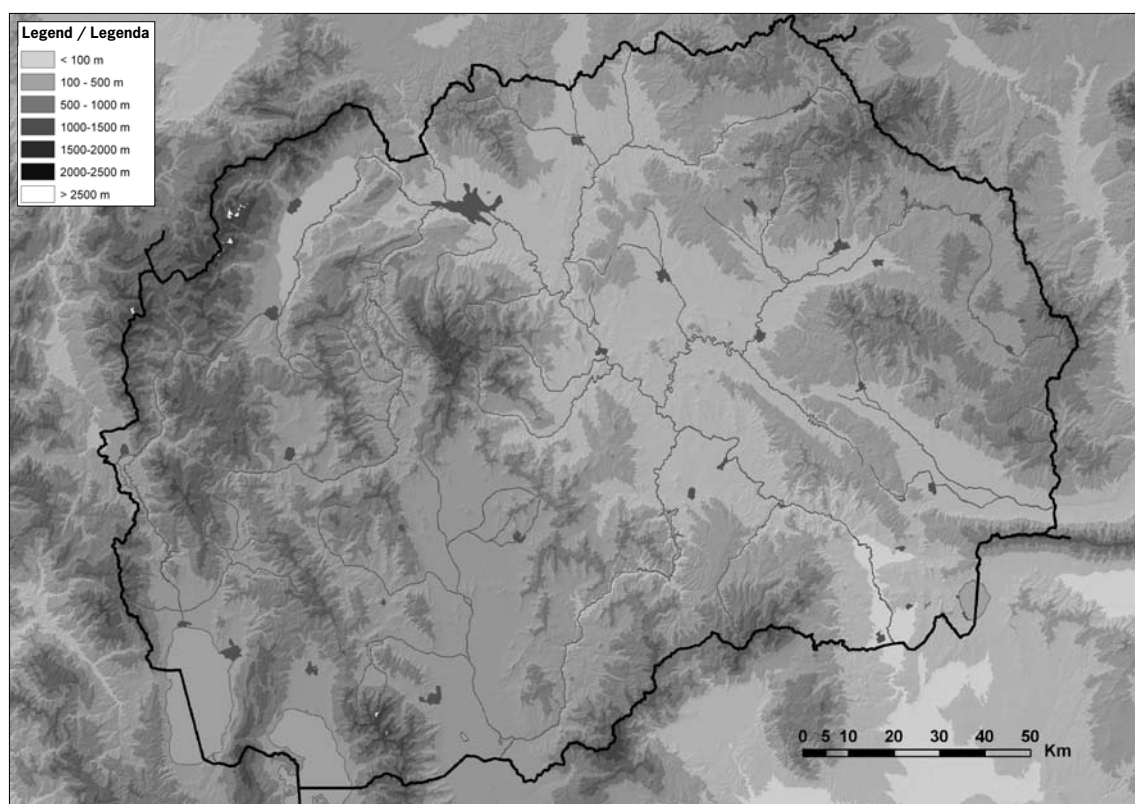


Figure 2: The relief, main waterbodies and settlements in Macedonia (from ESRI Data & Maps for ArcView 9.1.)

Slika 2: Relief, glavna vodna telesa in naselja v Makedoniji (po ESRI Data & Maps for ArcView 9.1.)

1994 & 1999), Wallcreeper *Tichodroma muraria* (1980–2000) (GRUBAČ 2001) and vultures (1980–1997) (e.g. GRUBAČ 1989 & 1997).

The checklist of birds of Macedonia lists 314 species (MICEVSKI 2002/2003), but since then information on two more species (Pallid Swift *Apus pallidus*, VASIĆ *et al.* 2009, and Great Black-headed Gull *Larus ichthyaethus*, VELEVSKI & SAVELJIĆ 2010) has become available. Since 2009, updated checklists of birds of Macedonia and almost complete list of references for the country have been available online (VELEVSKI 2011, VELEVSKI & STUMBERGER 2011A & 2011B).

Based on information compiled by E. Stoykov, B. Hallmann and M. Veleviski, BIRDLIFE INTERNATIONAL (2004) provides quantitative estimation for all breeding bird species regularly found in the country. However, in most cases these estimations are of poor quality and with very wide margins. For the few species for which more precise information is available, the information has been largely collected in the 2000–2003 period, mostly through different conservation projects (see Chapter 2.2.). After this publication, new or updated

population estimates become available for few more species – Short-toed Eagle *Circus gallicus* (VELEVSKI & GRUBAČ 2007), Black Stork *Ciconia nigra* (VELEVSKI *et al.* 2008), and the Lanner Falcon (GRUBAČ & VELEVSKI 2010).

114 regularly occurring species in Macedonia have currently unfavourable conservation status in Europe (SPEC 1 – nine species, SPEC 2 – 33 species, SPEC 3 – 72 species), 84 of which breed or possibly breed in the country. Out of them, one species, the Egyptian Vulture, is considered Endangered (EN), three (Dalmatian Pelican *Pelecanus crispus*, Imperial Eagle and Saker Falcon *Falco cherrug*) Vulnerable (VU), and five more (Ferruginous Duck *Aythya nyroca*, Red-footed Falcon *Falco vespertinus*, Black-tailed Godwit *Limosa limosa*, Roller and Semicollared Flycatcher *Ficedula semitorquata*) Near Threatened (NT) at the global level (IUCN 2011). We have considered the Lesser Kestrel as Least Concern (LC) according to the latest assessment of its status (BIRDLIFE INTERNATIONAL 2011).

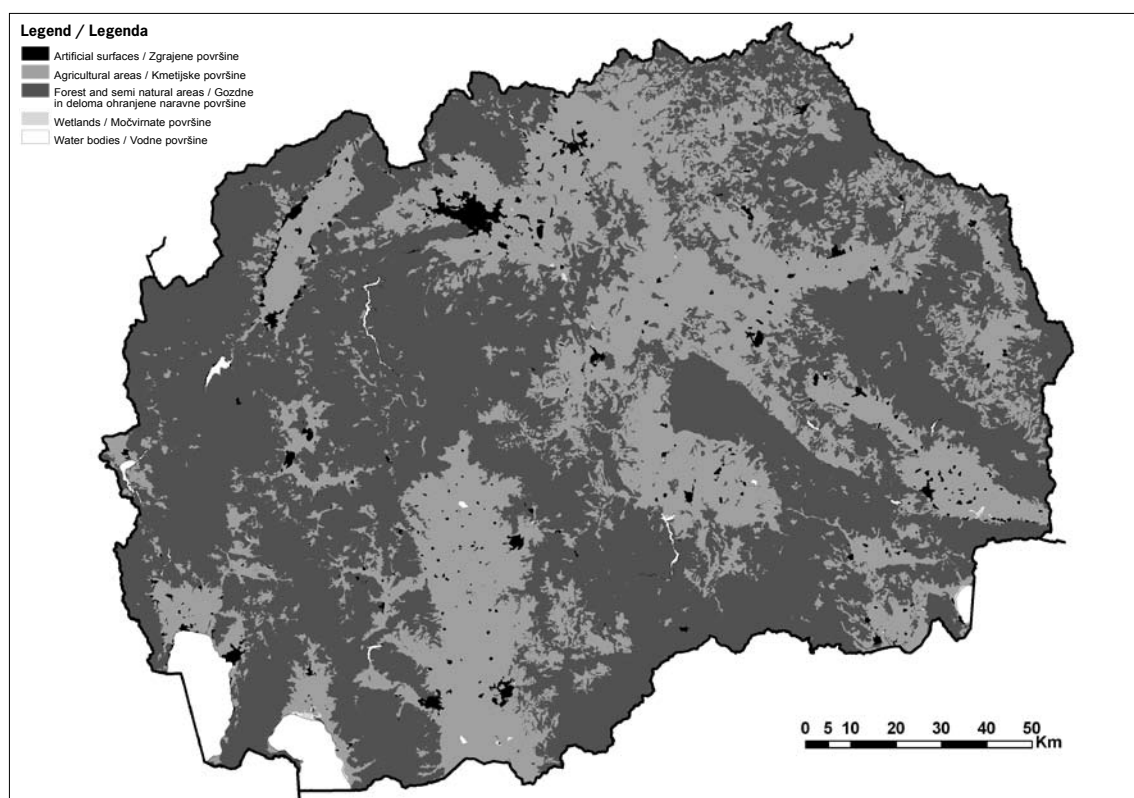


Figure 3: Main land use types, according to the CORINE Land Cover mapping, Level 1 (2006)

Slika 3: Glavni tipi rabe tal po CORINE Land Cover mapping, Level 1 (2006)

2. Study area and methods

2.1. Study area

Macedonia is small, land-locked country in the centre of the Balkan Peninsula, covering 25,713 km² (ca. 0.25% of the European territory). The country can be roughly divided into the western mountainous region (Šar-Pindus Mountain Range, total of 141 peaks higher than 2,000 m a.s.l.), central lowland region (mostly the Vardar River Valley, 80–300 m a.s.l., Pelagonia Plain, 650 m a.s.l., Ovče Pole Plain, 350 m a.s.l.), and eastern mountain (Rhodopean) region (only three peaks above 2,000 m altitude). Large mountainous regions are also found in the central part of the country (20 peaks above 2,000 m altitude) and in the southern parts (12 peaks above 2,000 m altitude), with ridges forming part of the borderline with Greece. Most of the country surface (44.1%) ranges at altitudes between 500–1,000 m a.s.l. (STATE STATISTICAL OFFICE OF THE REPUBLIC OF MACEDONIA 2011) (Figure 2).

Two large tectonic lakes, Ohrid (shared with Albania) and Prespa (shared with Albania and Greece), define the SW corner of the country, while the third natural lake (Lake Dojran) is located in the SE corner, on the borderline with Greece. The longest river is the Vardar (301 km), its longest left tributary the Bregalnica (225 km), and the longest right tributary the Crna Reka (207 km) (GAŠEVSKI 1978).

In 2010, forests occupied 36.9% of the territory (broadleaved forests being dominant with 21.4%, while mixed forests comprise 12.3% and conifer forests only 3.3%), 19.8% were cultivated land and 23.8% pastures (STATE STATISTICAL OFFICE OF THE REPUBLIC OF MACEDONIA 2011) (Figure 3). Large portions in the central part of the country are of steppe-like character. The climate is sub-Mediterranean in the southern lowland parts (average annual temperatures 13.8–14.5 °C), continental throughout most of the country and mountainous above roughly 1,500 m a.s.l. altitude (with annual averages from –0.6 to 8.7 °C). The average annual precipitation is 742 mm, ranging from 471 mm at Ovče Pole Plain (Central Macedonia)

Table 2: Criteria for the selection of Important Bird Areas of global and European importance (after HEATH & EVANS 2000). Criteria denoted in bold were used for sites selection in Macedonia.

Tabela 2: Kriteriji za izbor IBA-jev globalnega in evropskega pomena (po HEATH & EVANS 2000). Kriteriji v mastnem tisku so bili uporabljeni za izbor območij v Makedoniji.

Category / Kategorija	Criteria / Kriterij
A criteria – Important Bird Areas of global importance	
A1. Species of global conservation concern	The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.
A2. Restricted-range species	The site is known or thought to hold a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).
A3. Biome-restricted species	The site is known or thought to hold a significant assemblage of the species whose distributions are largely or wholly confined to one biome.
A4. Congregations	i) The site is known or thought to hold, on a regular basis, $\geq 1\%$ of a biogeographic population of a congregatory waterbird species. ii) The site is known or thought to hold, on a regular basis, $\geq 1\%$ of the global population of a congregatory seabird or terrestrial species. iii) The site is known or thought to hold, on a regular basis, $\geq 20,000$ waterbirds or $\geq 10,000$ pairs of seabirds of one or more species. iv) The site is known or thought to be a bottleneck site where at least 20,000 storks (Ciconiidae), raptors (Accipitriformes & Falconiformes) or cranes (Gruidae) regularly pass during spring or autumn migration.
B criteria – Important Bird Areas of European importance	
B1. Congregations	i) The site is known or thought to hold $\geq 1\%$ of a flyway or other distinct population of a waterbird species. ii) The site is known or thought to hold $\geq 1\%$ of a distinct population of a seabird species. iii) The site is known or thought to hold $\geq 1\%$ of a flyway or other distinct population of other congregatory species. iv) The site is a 'bottleneck' site where over 5,000 storks, or over 3,000 raptors or cranes regularly pass on spring or autumn migration.
B2. Species with an unfavourable conservation status in Europe	The site is one of the 'n' most important in the country for a species with an unfavourable conservation status in Europe (SPEC 2 & 3) and for which the site-protection approach is thought to be appropriate.
B3. Species with a favourable conservation status in Europe	The site is one of the 'n' most important in the country for a species with a favourable conservation status in Europe but concentrated in Europe (non-SPEC ^{E*}) and for which the site-protection approach is thought to be appropriate.

* Formerly referred to as SPEC 4 species but renamed to non-SPEC^E in BIRDLIFE INTERNATIONAL (2004)

to 1,096 mm at Mt Šar Planina (NW Macedonia) (LAZAREVSKI 1993, STATE STATISTICAL OFFICE OF THE REPUBLIC OF MACEDONIA 2011). Human population was 2,022,547 in 2002, with average density of 78.7 people/km² mostly concentrated in the urban centres (25% in the capital Skopje). Currently, the population is employed mainly in industry and trade (41.5%), while agriculture, forestry and hunting jointly contribute to the employment rate with only 3% (STATE STATISTICAL OFFICE OF THE REPUBLIC OF MACEDONIA 2011). However, agriculture as a secondary profession is common in rural centres.

2.2. Data collection

Several different surveys and conservation projects have resulted in numerous precise distribution data and quantitative estimations for many species, that were used at identification of the IBAs in Macedonia. The present proposal is based on data mostly gathered in the 2002–2011 period, but where necessary, older information was used in order to fill in some gaps in our knowledge.

Data on mountain IBAs were collected during the research camps organised by the Biology Students'

Table 3: Species of global conservation concern, registered in Macedonia until 2011 with statuses and thresholds given. Denoted in bold are species for which identification of Important Bird Areas was considered possible under the A1 criterion.

Tabela 3: Vrste globalne varstvene pozornosti, zabeležene v Makedoniji do leta 2011, z njihovim statusom in populacijskimi pragovi. Z mastnim tiskom so označene vrste, za katere je bila opredelitev IBA ocenjena kot mogoča v okviru kriterija A1.

Species / Vrsta	IUCN 2011 Red List Category/ Kategorija Rdečega seznama	Status in Macedonia/ Status v Makedoniji	Threshold/ Populacijski prag
<i>Pelecanus crispus</i>	VU	Resident, not breeding	30 ind.
<i>Anser erythropus</i> *	VU	Vagrant?	15 ind.
<i>Branta ruficollis</i>	EN	Vagrant	Regular presence
<i>Marmaronetta angustirostris</i>	VU	Extinct	15 ind.
<i>Aythya nyroca</i>	NT	Resident, breeding	20 pairs
<i>Oxyura leucocephala</i>	EN	Vagrant	Regular presence
<i>Milvus milvus</i>	NT	Vagrant	30 ind.
<i>Neophron percnopterus</i>	EN	Migratory, breeding	Regular presence
<i>Aegypius monachus</i>	NT	Extinct	5 pairs
<i>Circus macrourus</i>	NT	Vagrant	30 ind.
<i>Aquila clanga</i>	VU	Vagrant	6 ind.
<i>Aquila heliaca</i>	VU	Resident, breeding	2 pairs
<i>Falco vespertinus</i>	NT	Migratory, possible breeding	30 ind.
<i>Falco cherrug</i>	VU	Probable breeding	2 pairs
<i>Tetrax tetrax</i>	NT	Extinct?	60 ind.
<i>Otis tarda</i>	VU	Vagrant?	30 ind.
<i>Gallinago media</i>	NT	Vagrant?	60 ind.
<i>Limosa limosa</i>	NT	Migratory	60 ind.
<i>Numenius tenuirostris</i> *	CR	Vagrant?	1 ind.
<i>Numenius arquata</i>	NT	Migratory	60 ind.
<i>Coracias garrulus</i>	NT	Migratory, breeding	10 pairs
<i>Acrocephalus paludicola</i>	VU	Vagrant?	30 ind.
<i>Ficedula semitorquata</i>	NT	Migratory, breeding	20 pairs

* Species given as "possibly to be found in Macedonia as it has been found in neighbouring regions" in MATVEJEV & VASIĆ (1973) and as such transferred in the latest checklist (MICEVSKI 2002/2003)

"?" denotes uncertain status of the species

IUCN Red List categories (only the following categories were applied): CR – Critically Endangered, E – Endangered, VU – Vulnerable, NT – Near Threatened

Research Society, particularly for Šar Planina (1995–1998; KAJEVSKA *et al.* 1996, VELEVSKI *et al.* 2002A), Mt Bistra (VELEVSKI *et al.* 2003B), Pelister (VELEVSKI *et al.* 2003A), Jakupica (1997–1999; VELEVSKI *et al.* 2002B, and in 2010 during the preparation of the Multipurpose Protected Area »Jasen« management plan by UNDP – United Nations Development Program and Exploring Society »Ursus speleos« from Skopje). Results from the inventory for the needs of the National Park »Mavrovo« management plan prepared by Oxfam Italia (MICEVSKI 2010) have also been considered. Still unpublished data for other high-mountain regions gathered by M. Veleviski in the 2002–2009 period during the projects implemented by the Biology Students' Research Society and the Macedonian Ecological Society were

also available for the mountains of Korab, Jablanica, Kožuf, Nidže and Osogovo.

Census of the Lesser Kestrel population in Pelagonia in 2002 (B. ŠTUMBERGER & M. VELEVSKI *unpubl.*) resulted with estimation of the population of not only this species, but also of the White Stork (ŠTUMBERGER & VELEVSKI 2002), Montagu's Harrier *Circus pygargus*, Jackdaw *Corvus monedula* and Roller. At the same time, a survey of the Lesser Kestrel colonies took place in other parts of Macedonia (LISICHANETS *et al.* 2004). With the start of the Vulture Conservation Project in Macedonia in 2003, implemented by the Macedonian Ecological Society and Aquila Nature Conservation Association (formerly Fund for Wild Flora and Fauna – Macedonia), precise data were gathered on

Table 4: Species in Macedonia occurring mostly or entirely within a particular biome (biome-restricted species), for which IBA identification was considered appropriate under A3 criterion

Tabela 4: Vrste v Makedoniji, ki se pojavljajo večinoma ali v celoti znotraj določenega bioma (na določen biom vezane vrste) in za katere je bila opredelitev IBA ocenjena kot ustrezna v okviru kriterija A3

Biome / Biom	Species / Vrsta
Eurasian high-montane	<i>Prunella collaris</i>
	<i>Tichodroma muraria</i>
	<i>Pyrrhocorax graculus</i>
	<i>Montifringilla nivalis</i>
Mediterranean	<i>Alectoris graeca</i>
	<i>Oenanthe hispanica</i>
	<i>Hippolais olivetorum</i>
	<i>Sylvia cantillans</i>
	<i>Sylvia melanocephala</i>
	<i>Sitta neumayer</i>
	<i>Lanius nubicus</i>
	<i>Emberiza melanocephala</i>

population sizes of the Egyptian and Griffon Vultures *Gyps fulvus*, but data of good quality were also gathered for the Black Stork (VELEVSKI *et al.* 2008), Lanner Falcon *Falco biarmicus* (GRUBAČ & VELEVSKI 2010), Short-toed Eagle (VELEVSKI & GRUBAČ 2008), Golden Eagle, Long-legged Buzzard and Eagle Owl *Bubo bubo*. The Imperial Eagle has also been partially covered with these surveys, with the special survey and monitoring of this species carried out by B. Hallmann, T. Lisičanec and E. Lisičanec in the 2003–2008 period. In 2010 and 2011, the Macedonian Ecological Society implemented mid-winter censuses at the three large lakes, Ohrid, Prespa and Dojran, together with several smaller sites. Hitherto no detailed surveys have been carried out for passerines, therefore quantitative population estimates for separate sites have rarely been possible.

The surveys carried out by a group of Czech ornithologists (ŠKORPIKOVÁ *et al.* 2006 & 2007) and the detailed information made available by them to the authors were of significant value in improving the estimation of populations and delineation of the boundaries of some sites. Finally, a census of White Stork was carried out in parts of Central and Eastern Macedonia by H. Heckenroth and J.-U. Heins (The Stork Foundation) during 2010 and 2011.

As a result of the information available, compared to BIRDLIFE INTERNATIONAL (2004), new national estimations were provided for several species (Appendix 1).

2.3. Criteria for IBA identification

Several criteria for the selection of IBAs have been developed by BirdLife International (HEATH & EVANS 2000). According to them, the international importance of sites can be categorized at different geographical levels: global (A criterion), European (B criterion) and European Union (C criterion, used for the selection of sites under the EU Birds Directive not treated herein). Criteria for the selection of sites of global and European importance are summarized in Table 2.

The methodology for identification of the IBAs presented in HEATH & EVANS (2000) was followed. The latest assessment of the Red List category (IUCN 2011) was used for the selection of species of global conservation concern. SPEC categories were after BIRDLIFE INTERNATIONAL (2004), together with estimation of the European populations, except for the Lesser Kestrel, Roller, Egyptian Vulture and Semi-collared Flycatcher, where the data from the updated species action plans were used (IÑIGO *et al.* 2008, KOVACS *et al.* 2008, GEORGIEV & IANKOV 2010, IÑIGO & BAROV 2010). The following criteria were used for selection of IBAs in Macedonia:

(1) A criteria: Important Bird Areas of global importance

For identification of the sites of global importance under the criteria A1 and A3, lists of species potentially fulfilling these criteria were developed (Tables 3 & 4), and only the species regularly occurring in the country were taken into consideration.

Under the A1 criterion, sites holding sufficient numbers of globally threatened (IUCN Red List categories CR, EN and VU) and Near Threatened (NT) species are selected. For Critically Endangered (CR) and Endangered (EN) species, their regular presence alone merits the site identification, while others should meet corresponding thresholds (Table 3) and be regularly present at a site. Thresholds were used after HEATH & EVANS (2000) updated with information from BirdLife International (I. BURFIELD *pers. comm.*).

Under the A3 criterion, representative sites, holding rich assemblages of biome-restricted species and reflecting the distribution of biome in the country are selected. Out of five biomes treated under this criterion in Europe, two occur in Macedonia – the Eurasian high-montane biome (with 10 characteristic bird species in Europe) and Mediterranean biome (21 characteristic species). The list of biome-restricted species occurring in Macedonia is given in Table 4.

Table 5: Population estimates of non-breeding congregatory waterbirds in Macedonia in the 1988–2011 period. Species denoted in bold meet 1% threshold for criteria A4i and B1i on at least one site.

Tabela 5: Ocene populacij negnezdečih vodnih ptic, ki se združujejo v jate, v Makedoniji v obdobju 1988–2011. Vrste, prikazane v mastnem tisku, zadovoljujejo enoodstotni populacijski prag za kriterija A4i in B1i v vsaj enem območju.

Species/ Vrsta	Non-breeding population MK (ind.)/ Negnezdeča popul. MK (os.)		Waterbird population/ Populacija vodnih ptic	Percentage of population in MK / Odstotek populacije v MK (%)		1% threshold/ popul. prag
	min	max		min	max	
<i>Gavia arctica</i>	5	50	<i>arctica</i>	< 0.1	< 0.1	3,750
<i>Tachybaptus ruficollis</i>	100	900	<i>ruficollis</i>	< 0.1	0.2	4,000
<i>Podiceps cristatus</i>	400	5,700	Black Sea, Mediterranean	0.1	0.8	7,250
<i>Podiceps nigricollis</i>	100	5,700	Europe, N Africa	< 0.1	2.7	2,200
<i>Phalacrocorax carbo sinensis</i>	100	1,200	Black Sea, Mediterranean	< 0.1	0.3	4,000
<i>Phalacrocorax pygmeus</i>	20	3,500	SE Europe, Turkey	< 0.1	5.0	700
<i>Pelecanus onocrotalus</i>*	200	550	Europe, W Asia	1.0	1.7	270
<i>Pelecanus crispus</i>*	300	1,000	Black Sea, Mediterranean	6.0	20.8	45
<i>Cygnus olor</i>	10	160	Black Sea	< 0.1	0.4	450
<i>Anas penelope</i>	65	940	Black Sea, Mediterranean	< 0.1	0.3	3,000
<i>Anas strepera</i>	10	100	Central Europe, Black Sea, Mediterranean	< 0.1	0.1	1,100
<i>Anas crecca</i>	650	6,500	Black Sea, Mediterranean	0.1	0.6	10,600
<i>Anas platyrhynchos</i>	200	5,100	Black Sea, E Mediterranean	< 0.1	0.3	20,000
<i>Anas acuta</i>	25	100	Black Sea, Mediterranean, W Africa	< 0.1	< 0.1	7,500
<i>Anas clypeata</i>	15	100	Black Sea, Mediterranean, W Africa	< 0.1	< 0.1	4,500
<i>Netta rufina</i>	550	7,000	Black Sea, E Mediterranean	1.9	23.7	320
<i>Aythya ferina</i>	300	10,500	Central Europe, Black Sea, Mediterranean	< 0.1	1.1	10,000
<i>Aythya nyroca</i>	5	10	E Europe, E Mediterranean, Black Sea	< 0.1	< 0.1	450
<i>Aythya fuligula</i>	300	18,500	Central Europe, Black Sea, Mediterranean	< 0.1	2.6	7,000
<i>Bucephala clangula</i>	20	500	SE Europe, Adriatic	< 0.1	0.3	2,000
<i>Mergellus albellus</i>	2	35	Black Sea, E Mediterranean	< 0.1	0.1	350
<i>Mergus merganser</i>	2	22	Balkans	2.8	31.1	1
<i>Fulica atra</i>	20,000	81,000	Black Sea, Mediterranean	0.8	3.2	20,000
<i>Larus ridibundus</i>	100	1,600	E Europe	< 0.1	0.1	13,000
<i>Larus michahellis / cachinnans</i>	20	1,400	<i>michahellis / cachinnans</i>	< 0.1	0.2	20,000

Wintering populations, except * non-breeding population occurring in the reproductive period of the species. Waterbird population after WETLANDS INTERNATIONAL (2006).

For category A4, the site must meet at least one of the criteria given in Table 2. However, Birdlife International now treats A4i as 1% of the total global population (I. BURFIELD *pers. comm.*). We have used data from the winter waterbird censuses (MICEVSKI 1991, MICEVSKI 1996, MICEVSKI & SCHNEIDER 1997, MICEVSKI 1998, FREMUTH *et al.* 2004, WETLANDS INTERNATIONAL *in litt.*), unpublished results of the Macedonian Ecological Society from 2010 and 2011, and estimates of their respective global populations (WETLANDS INTERNATIONAL 2006) for site identification under the A4i criterion.

We have considered species qualifying under A4i only if it has met 1% of its total global population in at least one third of the mid-winter counts. Total numbers of waterbirds registered during the winter counts were used to test sites against A4iii criterion ($\geq 20,000$ waterbirds on regular basis).

(2) B criteria: Important Bird Areas of European importance

Several criteria for the identification of sites of European importance were considered suitable for Macedonia.

We have considered species qualifying under

Table 6: Species used for identification of Important Bird Areas under B2 and B3 criteria, with population estimates, percentage of European population in Macedonia, median of population size in IBAs confirmed under the B2 & B3 criteria in the World Bird/Biodiversity Database (WBDB) and thresholds used in Macedonia given

Tabela 6: Vrste, uporabljene za opredelitev IBA-jev v okviru kriterijev B2 in B3, z ocenami njihovih populacij, odstotkom evropske populacije v Makedoniji, srednjo vrednostjo velikosti populacije v IBA-jih, potrjenih v okviru kriterijev B2 in B3 v World Bird/Biodiversity Database (WBDB), in s populacijskimi pragovi, uporabljenimi v Makedoniji

Species / Vrsta	SPEC	Population MK/ Populacija MK		Population Europe/ Populacija Evropa		Percentage of Europe population in MK/ Odstotek evropske populacije v MK (%)	Max. No. of sites under B2 & B3 / Največje št. območij v okviru B2 in B3	Median IBAs Europe / Srednja vrednost v evropskih IBA-jih (B2 & B3)		B2 & B3 thresholds for MK/ Populacijski prag za MK
		min	max	min	max			min	max	
<i>Falco naumanni</i>	1	1,500	2,500	29,900	34,500	6.0	10	95	100	20
<i>Aquila heliaca</i>	1	30	40	850	1,400	3.2	5	3	4	2
<i>Phalacrocorax pygmaeus</i>	1	60	120	28,000	39,000	0.4	5	80	110	30
<i>Aythya nyroca</i>	1	20	40	12,000	18,000	< 0.1	5	25	40	10
<i>Crex crex</i>	1	50	150	1,300,000	2,000,000	< 0.1	5	40	50	20
<i>Alectoris graeca</i>	2	2,000	5,000	40,000	78,000	5.7	10	60	100	50
<i>Accipiter brevipes</i>	2	40	100	3,200	7,700	1.3	5	8	12	3
<i>Lanius nubicus</i>	2	300	500	35,000	100,000	0.7	5	10	20	10
<i>Ciconia ciconia</i>	2	650	800	180,000	220,000	0.4	5	80	110	30
<i>Coracias garrulus</i>	2	200	400	55,000	117,000	0.4	5	20	35	10
<i>Ciconia nigra</i>	2	35	45	7,800	12,000	0.4	5	10	10	3
<i>Lanius minor</i>	2	2,000	5,000	620,000	1,500,000	0.3	5	30	60	30
<i>Falco biarmicus</i>	3	25	35	480	900	4.5	5	1	3	1–2
<i>Circus gallicus</i>	3	120	150	8,400	13,000	1.3	5	10	14	3
<i>Monticola saxatilis</i>	3	1,000	2,500	100,000	320,000	0.9	5	25	40	30
<i>Buteo rufinus</i>	3	80	120	8,700	15,000	0.9	5	8	10	4
<i>Aquila chrysaetos</i>	3	60	100	8,400	11,000	0.8	5	7	8	3
<i>Neophron percnopterus</i>	3	28	32	3,300	5,050	0.7	5	5	5	3
<i>Bubo bubo</i>	3	100	300	19,000	38,000	0.6	5	10	15	4
<i>Burhinus oedipnemus</i>	3	200	400	46,000	78,000	0.5	5	50	100	20
<i>Monticola solitarius</i>	3	400	1,000	120,000	260,000	0.4	5	15	30	20
<i>Isobrychus minutus</i>	3	200	300	60,000	120,000	0.3	5	50	70	20
<i>Riparia riparia</i>	3	1,000	5,000	5,400,000	9,500,000	< 0.1	5	10,000	10,000	1,000
<i>Sternula albigularis</i>	3	20	50	35,000	55,000	< 0.1	5	70	120	20
<i>Circus pygargus</i>	non-SPEC ^E	100	140	35,000	65,000	0.2	5	20	45	20

Nadaljevanje tabele 6 / continuation of Table 6

Population estimates refer to breeding pairs after BIRDLIFE INTERNATIONAL (2004), except *Falco naumanni*, *Coracias garrulus*, *Neophron percnopterus* and *Ficedula semitorquata*, where data from the action plans were used (IÑIGO *et al.* 2008, KOVACS *et al.* 2008, GEORGIEV & IANKOV 2010, IÑIGO & BAROV 2010)

SPEC – species of European conservation concern (SPEC 1 – European species of global conservation concern in Europe, i.e. classified as Critically Endangered, Endangered, Vulnerable, Near Threatened or Data Deficient under the IUCN Red List Criteria at a global level; SPEC 2 – species whose global populations are concentrated in Europe, and which have an Unfavourable conservation status in Europe; SPEC 3 – species whose global populations are not concentrated in Europe, but which have an Unfavourable conservation status in Europe; non-SPEC^E – species whose global populations are concentrated in Europe but which have a Favourable conservation status in Europe) (BIRDLIFE INTERNATIONAL 2004)

B1i only if it has met 1% threshold for the individual waterbird flyway population (WETLANDS INTERNATIONAL 2006) in at least one third of the mid-winter counts (Table 5).

For identification of the sites that meet B2 and B3 criteria, the following steps were followed for selection of the triggering species:

- to have unfavourable conservation status in Europe (SPEC 1, 2 & 3) – B2, or favourable conservation status, but with more than 50% of their global range lying in Europe (non-SPEC^E) – B3 (BIRDLIFE INTERNATIONAL 2004);
- a site protection approach is thought to be appropriate in Macedonia;
- to have national population of at least 0.5% of the European population or it was possible to identify IBAs according to HEATH & EVANS (2000) who state, “Also, for countries which hold less than 1% of the European population of a given species, or for countries which comprise less than 1% of the total land area of Europe (i.e. less than ca. 100,000 km²), sites may still be selected under this criterion if they support similar numbers of the species as sites in other countries, which meet this criterion in a standard fashion”. Instead of minimal populations, we applied geometric means of the estimations due to low quality of the estimation data provided in BIRDLIFE INTERNATIONAL (2004). A threshold of 1% of the national population size was used to identify the most important sites for these species, but for species the minimal population size of which has been estimated at under or close to 100 pairs, like Levant Sparrowhawk *Accipiter brevipes*, Black Stork, Lanner Falcon, Short-toed Eagle, Long-legged Buzzard and Eagle Owl, direct recommendations from BirdLife International, based on the data from already confirmed IBAs in the World Bird/Biodiversity Database (WBDB), were followed (I. BURFIELD *pers. comm.*). For species where national population was up to 5% of European population, maximum of five IBAs were proposed, while for species where national

population was 5–10% of European population, 10 IBAs at the most were proposed. Species used for identification of IBAs under these criteria are given in Table 6. Full list of species considered under B2 and B3 criteria is given in Appendix 1.

2.4. Other important bird species

Species of global conservation concern found with populations not sufficient to meet A1 criterion, SPEC 2 and SPEC 3 species that have populations that would otherwise meet B2 criterion, but for which maximal number of sites (5 or 10) has already been proposed, or do not meet the threshold set, but are still considered to be of national importance for conservation due to their small populations or negative population trends have been identified as ‘other important species’ and are also presented in the site overviews. Also, species with significant percentages of their national populations (roughly > 50%) found at only a few sites were included in this group.

2.5. Boundaries, land cover and threats

For delineation of the boundaries, ArcView 9.1 (ESRI 2005) was used. All known nesting locations of solitary pairs and colonies of the triggering species, with number of pairs in colonies were overlaid on 1 : 25,000 scale topographic maps used as background layer. Boundaries were drawn to include breeding sites, foraging areas, and, for Imperial Eagle and Egyptian Vulture only, former breeding sites (back to 1991) as much as possible and reasonable. Also, habitat requirements of the triggering species, land-use and management needs were considered. All boundaries were drawn following natural distinct features (ridges, valleys, roads), or, where this was impossible, isohypsies were followed. The chapters “Site description” (see 3.2. Overview of sites) include descriptions of the borders in a manner that they can be easily identified on topographic 1 : 25,000 scale maps. Geographical and geological characteristics are presented, after KOLČAKOVSKI (2004 & 2008).

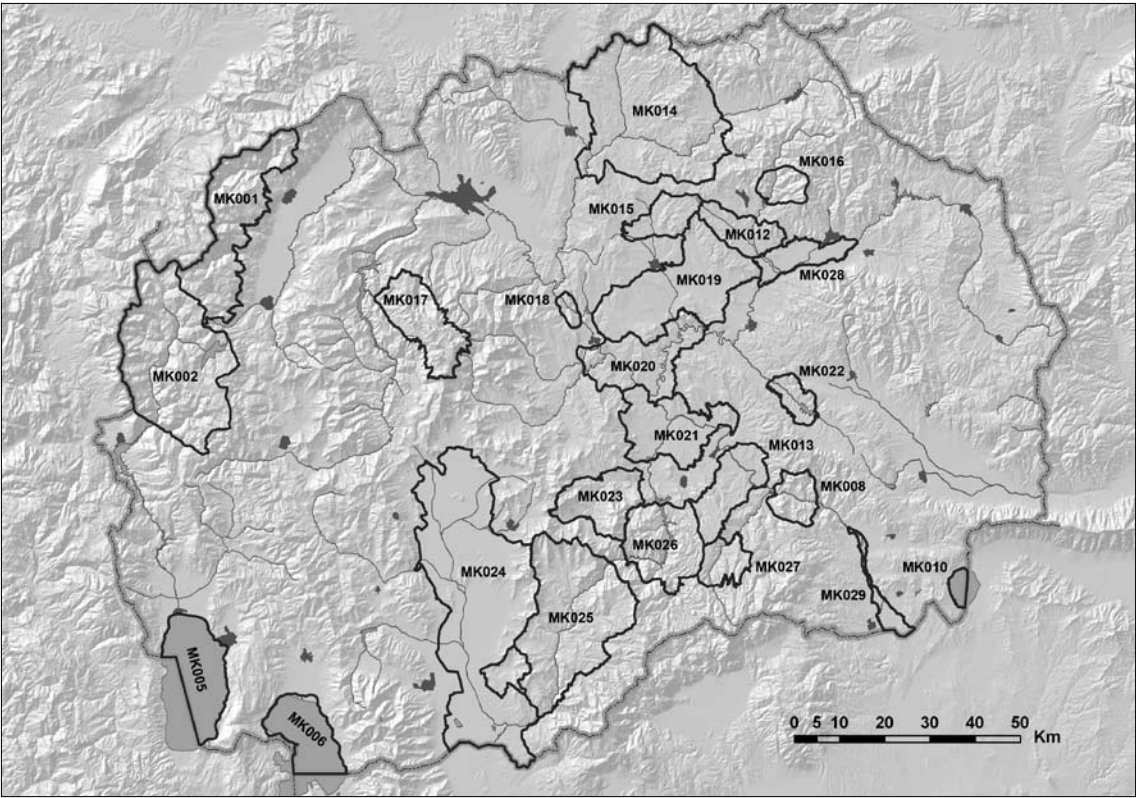


Figure 4: Map of the IBAs identified in Macedonia

Slika 4: Zemljevid IBA-jev, opredeljenih v Makedoniji

Using data from CORINE Land Cover (EEA 2006), the percentage of land cover types according to the CORINE Land Cover, Level 3 was calculated for each site. However, only land cover types exceeding 5% of the total surface area of the site are presented in the tables, others being merged under the label “Others”. The exceptions are small-scale land cover types of particular importance for the triggering species. The overall classification of the major CORINE land cover types found within IBA boundaries is given in Appendix 2.

Threats were identified on the basis of threat list provided in the national Emerald Database (see Appendix 3). To quantify the importance of threats with regard to their actual or potential impact, the scoring method after HEATH & EVANS (2000) was used:

- | | | | |
|---|---|--|---|
| (1) Effect of threat on the habitat (for habitat-related threats) | | (1) Expected/measured effect on threatened species (for bird-related threats) | |
| – destruction | 3 | – majority of critical species are affected | 3 |
| – rapid deterioration | 2 | – some critical species are affected | 2 |
| – slow deterioration (scores) | 1 | – only non-critical species are affected | 1 |
| | | (2) Spatial scale of the threat in relation to the IBA | |
| | | – affects the IBA as a whole | 3 |
| | | – affects a large part of the IBA but not critical sites for threatened species or a relatively small part of the IBA, which is important for threatened species | 2 |
| | | – affects a relatively small part of the IBA with no crucial site for threatened species | 1 |
| | | (3) Realization of the threat | |
| | | – threat already exists | 3 |
| | | – threat is planned with realization expected in short term | 2 |
| | | – threat is planned with realization expected in longer term | 1 |

Table 7: List of IBAs identified in Macedonia with criteria used.

Tabela 7: Seznam IBA-jev, opredeljenih v Makedoniji z uporabljenimi kriteriji

IBA code/ IBA koda	Site name (Macedonian)/ Ime območja (makedonsko)	Site name (English)/ Ime območja (angleško)	IBA Criteria/ IBA kriteriji
MK001	Šar Planina	Šar Planina Mountain	A3, B2
MK002	Sliv na reka Radika	Radika River Catchment	A3, B2
MK005	Ohridsko Ezero	Lake Ohrid	A4iii, B1i, B2
MK006	Prespansko Ezero	Lake Prespa	A1, A4i, B1i, B2
MK008	Demirkapiska Klisura	Demir Kapija Gorge	A1, A3, B2
MK010	Dojransko Ezero	Lake Dojran	A1, A4i, B1i, B2
MK012	Dolina na Zletovska Reka	Zletovska River Valley	A1, B2
MK013	Tikveški region	Tikveš Region	A1, B2
MK014	Reka Pčinja - reka Petrošnica - Kriva Reka	Pčinja - Petrošnica - Kriva Reka Rivers	A1, A3, B2
MK015	Preod - Gjulgance	Preod - Gjulgance	A1, B2
MK016	Osogovski Planini	Osogovo Mountains	A1, B2
MK017	Jakupica	Jakupica Mountain	A3, B2
MK018	Taorska Klisura	Taor Gorge	A1, A3
MK019	Ovče Pole	Ovče Pole	A1, B2
MK020	Reka Topolka - reka Babuna - reka Bregalnica	Topolka - Babuna - Bregalnica Rivers	A1, A3, B2
MK021	Gradsko - Rosoman - Negotino	Gradsko - Rosoman - Negotino	A1, A3, B2
MK022	Mantovsko Ezero i reka Kriva Lakavica	Lake Mantovo and Kriva Lakavica River	A1, B2
MK023	Dolina na reka Raec	Raec River Valley	A1, A3, B2
MK024	Pelagonija	Pelagonia	A1, A4ii, B1iii, B2, B3
MK025	Mariovo	Mariovo	A1, A3, B2
MK026	Tikveško Ezero	Lake Tikveš	A1, A3, B2
MK027	Bošavija	Bošavija	A1
MK028	Kočanski orizovi polinja	Kočani Rice Fields	B2
MK029	Dolen tek na reka Vardar	Lower Vardar	B2

The combined level of the threat is calculated by summing up the values (1), (2) and (3). Threats can be classified into three groups according to the magnitude of the impact: high impact (scores 8 and 9), medium impact (scores 6 and 7) and low impact (scores 3, 4 and 5). Detailed calculation of threat scores is given in Appendix 4.

2.6. Data presentation

Species data are presented in tables. The first column delineates the species' Latin name, while the second column presents the information on the status of species and season in which species meets IBA criteria after HEATH & EVANS (2000) (R = breeding resident, B = breeding visitor, W = wintering visitor, P = passage visitor, N = non-breeding visitor, and U = unknown). In the column "Year", the year of population estimation is given. When period is given, it is related to species population size change or fluctuation in the given period. Under "Population", estimation of the

population size in pairs (unless stated in individuals) is given. In some cases, where no sufficient data existed to estimate the population size, qualitative abundance estimates according to HEATH & EVANS (2000) have been presented ("abundant" = encountered in large numbers in preferred habitat, "common" = encountered singly or in small numbers in preferred habitat, "frequent" = often, but not always, met in the preferred habitat, "uncommon" = encountered sporadically in preferred habitat, "rare" = rarely seen, usually less than 10 records, and "unknown" = not possible to assess abundance). Quality of the estimation is presented in the column "Acc." (Accuracy), where A = reliable, B = incomplete, C = poor (after HEATH & EVANS 2000). No data quality is given if population figures are not available. In the last column "Criteria", one or more criteria that the species meet at a particular site are given, with "?" indicating that the species probably meets the given criterion, but further research is needed to justify it. In the same column, "N" is used when a population is considered to be of

national importance. Species meeting at least one IBA criterion on given site are denoted in bold.

3. Results

3.1. Sites

The new IBA proposal lists 24 sites (Table 7, Figure 4), covering 6,907.35 km² or 26.9% of the territory of Macedonia (Table 7). With the exception of the mountain ranges in the NE and central parts of Macedonia, and Lakes Ohrid and Prespa, sites are distributed mostly in the central lowland parts of the country (Pčinja-Vardar Valleys and Pelagonia Plain). The size of separate IBAs ranges from 25 km² (Taor Gorge) to 1,136 km² (Pelagonia), with relative coverage of the country between 0.1 and 4.4%. The number of triggering species per site ranges from one (Bošavija, Kočani Rice Fields) to 17 (Pčinja - Petrošnica - Kriva Reka Rivers). Some of these localities are partially or entirely under protection of the national legislation (Ohrid Lake, Prespa Lake, Dojran Lake, Tikveš Lake, Demir Kapija and Radika River Catchment), while others are partially or entirely included in the national Emerald Network (Osogovo Mt, Topolka - Babuna - Bregalnica Rivers, Taor Gorge, Jakupica Mt, Šar Planina Mt, Ovče Pole, Pelagonia and Mariovo). Non-irrigated arable land and transitional woodland-shrub are dominant land-cover types, covering 1,171.5 km² (17 sites), and 1,017 km² (23 sites) in total, respectively. The total coverage of agricultural areas is 3,282 km² (47.5%) of IBAs.

3.2. Overview of the sites

3.2.1. Šar Planina Mountain

General information

Name in English: Šar Planina Mountain

Name in Macedonian: Šar Planina (Шар Планина)

IBA code: MK001

Criteria: A3, B2

Area: 43,418 ha

Central coordinates: 20°49'18.96"E, 41°57'11.34"N

Altitude: 640–2,748 m a.s.l.

Administrative region(s): Tearce, Tetovo, Bogovinje, Vrapčište, Gostivar, Rostuše-Mavrovo

Site description

The site occupies southern and central parts of Šar Planina Mt, which is one of the largest mountains in Macedonia, situated in its NW corner, and whose

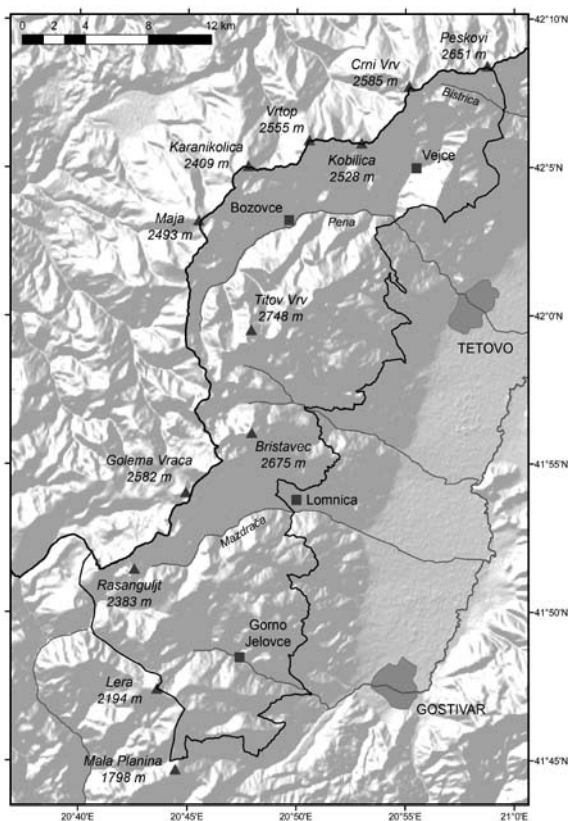


Figure 5: Map of the IBA Šar Planina Mountain with its main features depicted

Slika 5: Zemljevid IBA Šar Planina z glavnimi značilnostni območja

ridge forms the borderline with Kosovo. The lower boundary of the site runs at ca. 1,200 m a.s.l, but at places descends to as low as 640 m a.s.l. To the south, the boundary follows the Čafa e Kadis and Ađina Reka Rivers and the ridge between the peaks of Lera (2,194 m a.s.l.), Morava (2,147 m a.s.l.) and Mala Planina (1,798 m a.s.l.). To the NW, it reaches the peak of Peskovi (2,651 m a.s.l.) and the Bistrica River Valley, leaving ca. 12 km of the mountain ridge (not of high importance for the conservation of triggering species) outside the site. Compared to the boundaries from 1989 (site YU048, GRIMMETT & JONES 1989) and 2000 (site MK001, HEATH & EVANS 2000), the site coverage has expanded almost three times. The site adjoins the IBA "Šar-planina" (RS035) in Kosovo, Puzović *et al.* (2009).

Mountainous relief dominates, with the highest parts of the mountain (Titov Vrv 2,748 m a.s.l., Mal Turčin 2,702 m a.s.l., Kobilica 2,528 m a.s.l. etc.) well above 2,500 m altitude. Quite characteristic is the Pena River

Table 8: List of triggering and other important bird species in the IBA Šar Planina Mountain

Tabela 8: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Šar planina

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Prunella collaris</i>	B	2004	20–40	C	A3
<i>Tichodroma muraria</i>	B	2004	5–10	C	A3
<i>Pyrrhocorax graculus</i>	B	2005	100–200	C	A3
<i>Montifringilla nivalis</i>	B	2004	10–30	C	A3
<i>Aquila chrysaetos</i>	R	2003	3–4	B	B2
<i>Alectoris graeca</i>	R	2009	50–150	C	B2
<i>Crex crex</i>	B	2010	20–50	C	B2
<i>Bubo bubo</i>	R	2007	5–10	C	B2
<i>Pyrrhocorax pyrrhocorax</i>	B		Common		B2?
<i>Gyps fulvus</i>	N	2009	1–10 ind.	C	N
<i>Falco peregrinus</i>	R	2009	2–5	C	N
<i>Eremophila alpestris balcanica</i>	B		Common		N

Table 9: The main CORINE land cover types (Level 3) in the IBA Šar Planina Mountain

Tabela 9: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Šar planina

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
311	Broad-leaved forest	24.2
321	Natural grasslands	56.1
322	Moors and heathland	4.3
324	Transitional woodland-shrub	7.9
	Other	7.5

Valley with the cliffs at the locality called Lešnica. Other larger river valleys are Jelovjanska Reka, Mazdrača and (Tearska) Bistrica. Geologically dominant are Paleozoic metamorphic cliffs with carbonates. Pleistocene glacial relief is present in the highest parts. Most of the glacial lakes on Šar Planina Mt are within the boundaries of the site, among which is also Lake Bogovinsko, the largest glacial lake in Macedonia (Figure 5).

Species

The list for the entire mountain totals ca. 130 species (MELOVSKI *et al.* 2010), which indicates that the area has not been studied thoroughly. The site is one of the five most important sites for the Golden Eagle (3–4

Table 10: The main threats to birds and their importance in the IBA Šar Planina Mountain

Tabela 10: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Šar planina

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
141	Abandonment of pastoral systems	high	<i>G. fulvus</i> , <i>P. graculus</i>
160	General forestry management	high	forest species
960	Interspecific faunal relations	high	<i>A. chrysaetos</i> , <i>B. bubo</i> , <i>G. fulvus</i>
230	Hunting	medium	<i>A. graeca</i>
243	Trapping, poisoning, poaching	medium	<i>A. chrysaetos</i> , <i>G. fulvus</i>
501	Paths, tracks, cycling tracks	medium	<i>A. chrysaetos</i> , <i>G. fulvus</i>
530	Improved access to site	medium	<i>A. chrysaetos</i> , <i>G. fulvus</i>
167	Forest exploitation without replanting	medium	<i>B. bubo</i>
624	Mountaineering, rock climbing, speleology	medium	<i>A. chrysaetos</i> , <i>G. fulvus</i>
600	Sport and leisure structures	low	<i>A. chrysaetos</i> , <i>B. bubo</i>



Figure 6: Characteristic landscape of the IBA Šar Planina Mountain (photo: Lj. Melovski)

Slika 6: Značilna krajina IBA Šar planina (foto: Lj. Melovski)

pairs) and Eagle Owl (5–10 pairs) in the country, but the main reason for its designation is the presence of the country's largest populations of four species characteristic of the Eurasian high-montane biome. One pair of Lammergeier *Gypaetus barbatus* had also bred there until 1981 (GRUBAČ 1990). Historical breeding records of Capercaillie *Tetrao urogallus* also exist (MATVEJEV 1957), but it has not been confirmed since that period, although good habitats offer possibilities for its survival and, furthermore, the species was registered on the northern slopes of the mountain (PUZOVIĆ *et al.* 2009). Until 1990s, non-breeding Griffon Vultures had also been frequent (GRUBAČ 1997), but their number have significantly decreased in the last several years. Other species that are limited to the alpine biome in the Balkan Peninsula and have important national populations on Šar Planina Mt are the Red-billed Chough (50–100 pairs in 1980s, B. GRUBAČ *unpubl.*, but have probably declined since then) and Shore Lark (Table 8).

Habitats and land use

Large parts of the site are situated above 1,600 m altitude, dominated by pastures on silicate and calcareous bedrocks, as well as heathland with bilberry *Vaccinium* spp. and Common Juniper *Juniperus communis*. Both silicate and calcareous cliffs are present, especially in the central part of the mountain (the complex Lešnica in the Pena River Valley). Moorlands are also found around the spring areas of almost all larger rivers (Table

9). Broad-leaved forests are dominated by Beech *Fagus sylvatica*, on some places mixed with Bulgarian Fir *Abies borisii-regis*. Conifer forests are dominated by the latter, although Spruce *Picea abies* and Molika Pine *Pinus peuce* are also present. Around the villages, the natural vegetation is strongly modified. Principal activities are livestock breeding and forestry (Figure 6).

Threats

Poaching of all game species, possibly including birds of prey, regularly takes place. The area has been in the centre of the armed conflict from 2001, and it is estimated that large numbers of illegally held weapons are present in the region, resulting in widespread poaching, most likely including important bird species and their prey base. Both commercial and illegal logging takes place. Reduction of livestock numbers, especially sheep, has likely influenced the population of the Choughs and vultures. The mountain is a popular mountaineering destination. Construction of new roads and hotels is also planned (Table 10).

Conservation

The westernmost part of the site falls within the boundaries of Mavrovo National Park. A small protected area (Popova Šapka) lies in the central part of the mountain. Establishment of a new national park, "Šar Planina Mt", is planned, which will entirely cover the rest of the site. The region is also an Emerald Site (MK0000008).

3.2.2. Radika River Catchment

General information

Name in English: Radika River Catchment
Name in Macedonian: Sliv na reka Radika
 (Слив на река Радика)
IBA code: MK002
Criteria: A3, B2
Area: 70,392 ha
Central coordinates: 20°39'53.95"E, 41°40'47.09"N
Altitude: 610–2,764 m a.s.l.
Administrative region(s): Gostivar, Rostuše-Mavrovo,
 Debar, Drugovo, Zajas

Site description

The site adjoins Šar Planina Mt (MK001) to the SW, while its western boundary follows the national border with Albania in NW Macedonia. The boundary to the south passes under the village of Skudrinje, follows the Mala Reka and Garska Reka Rivers to the locality known as Jama, where it turns north, following the ridges of Dumovica (2,023 m a.s.l.), Pašinica (1,890 m a.s.l.), Ahmetovica (1,901 m a.s.l.), Mali Šar (1,993 m a.s.l.), Aramiski Kamen (1,700 m a.s.l.), Dejanovec (1,622 m a.s.l.) and Vlainica (1,304 m a.s.l.), from where it turns west and, after passing Bunec, reaches Mala Planina. It occupies small parts of Šar Planina Mt, almost entire Mt Korab and a significant part of Mt Bistra, including Mavrovo Reservoir. The site

Table 11: List of triggering and other important bird species in the IBA Radika River Catchment

Tabela 11: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Povodje reke Radike

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Prunella collaris</i>	B	2002	10–50	C	A3
<i>Tichodroma muraria</i>	B	2002	10–20	C	A3
<i>Pyrrhocorax graculus</i>	B	2005	100–200	C	A3
<i>Montifringilla nivalis</i>	B	1998	10–30	C	A3
<i>Aquila chrysaetos</i>	R	2008	4–6	B	B2
<i>Crex crex</i>	B	2010	30–100	C	B2
<i>Bubo bubo</i>	R	2008	8–15	C	B2
<i>Monticola saxatilis</i>	B	2002–2010	30–100	C	B2
<i>Falco tinnunculus</i>	R		Common		B2?
<i>Gyps fulvus</i>	N	2006	5–10 ind.	C	N
<i>Eremophila alpestris balcanica</i>	B		Common		N
<i>Pyrrhocorax pyrrhocorax</i>	B		Frequent		N

Table 12: The main CORINE land cover types (Level 3) in the IBA Radika River Catchment

Tabela 12: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Povodje reke Radike

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
311	Broad-leaved forest	42.0
321	Natural grasslands	34.5
322	Moors and heathland	5.1
324	Transitional woodland-shrub	8.7
	Other	9.7

was formerly named “Korab Mt and Radika Gorge” (HEATH & EVANS 2000). Only minor corrections to the former site’s boundaries have been made, in order to follow the natural features and/or boundaries of Mavrovo National Park.

The site characterizes a complex relief structure, with high mountains, deep river valleys and gorges. The highest mountain in Macedonia – Korab – is located here (summit Golem Korab 2,764 m a.s.l.). The geological composition is diverse, with formations from different periods. Also characteristic is the limestone on Mt Bistra. The site’s main water bodies are the Radika River and Mavrovo reservoir (Figure 7).

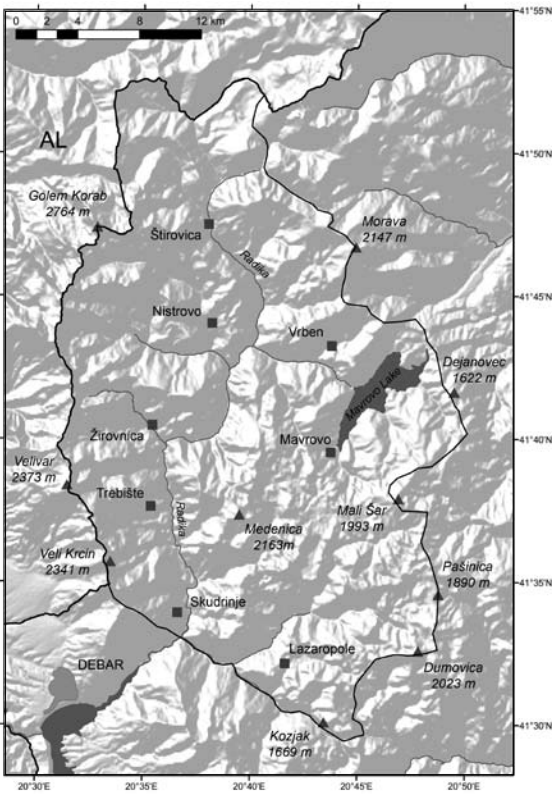


Figure 7: Map of the IBA Radika River Catchment with its main features depicted

Slika 7: Zemljevid IBA Povodje reke Radike z glavnimi značilnostmi območja

Species

Biogeographically and ecologically, the site is almost identical to Šar Planina Mt, thus boasting

almost identical bird community composition and ornithological importance. The list of registered bird species amounts to over 140 species (VELEVSKI *et al.* 2003A, MICEVSKI 2010). Triggering species are the Golden Eagle (4–6 pairs) and Eagle Owl (8–15 pairs), but populations of the four species characteristic of the Eurasian high-montane biome, occurring mostly in the highest parts of Mt Korab above 2,200 m a.s.l. are also relatively large. The site holds internationally important populations of Rock Partridge and Rock Thrush, while Common Kestrel, Red-billed Chough and Shore Lark are probably also present with important populations. Non-breeding Griffon Vultures used to have important roosting site here, numbering up to 60 individuals in the 1990s (GRUBAČ 1997), but are now seen only sporadically (Table 11). The Black Vulture *Aegypius monachus* and Lammergeier *Gypaetus barbatus* have also been known to occur here (GRUBAČ 1998 & 2002).

Habitats and land use

Broad-leaved forests are dominated by oaks (several species and communities) and Beech *Fagus sylvatica*. Very often, mixed Beech and Bulgarian Fir *Abies borisii-regis* forests are found, as well as mixed oak and fir forests in some places. Fir forests form pure stands. A smaller pure stand of Spruce *Picea abies* is also present. High-montane grasslands used as summer pastures for livestock and heathlands are the second dominant habitat type here (Table 12), but general landscape is formed by steep limestone cliffs (Figure 8).

Threats

Although protected as a national park, poaching is common in the border regions, and probably had direct and indirect impacts on raptors (direct persecution,

Table 13: The main threats to birds and their importance in the IBA Radika River Catchment

Tabela 13: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Povodje reke Radike

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
960	Interspecific faunal relations	high	<i>A. chrysaetos</i> , <i>B. bubo</i> , <i>G. fulvus</i>
141	Abandonment of pastoral systems	medium	<i>P. graculus</i> , <i>G. fulvus</i>
160	General forestry management	medium	forest species
243	Trapping, poisoning, poaching	medium	<i>G. fulvus</i> , <i>A. chrysaetos</i>
410	Industrial or commercial areas	medium	<i>A. chrysaetos</i> , <i>P. graculus</i> , <i>P. collaris</i> , <i>M. nivalis</i>
501	Paths, tracks, cycling tracks	low	<i>A. chrysaetos</i>
624	Mountaineering, rock climbing, speleology	low	<i>A. chrysaetos</i> , <i>G. fulvus</i>
530	Improved access to site	low	<i>A. chrysaetos</i> , <i>G. fulvus</i>



Figure 8: Characteristic landscape of the IBA Radika River Catchment (photo: Lj. Melovski)

Slika 8: Značilna krajina IBA Povodje reke Radike (foto: Lj. Melovski)

prey base reduction, disturbance). Some 9,000 inhabitants live in the region, partially depending on its natural resources, especially pastures and forests. Decrease in the number of livestock, especially sheep, has been significant, probably having a negative impact on vulture populations and Choughs. The National Park management implements forest management practices that should be improved to maintain higher biodiversity. Construction of two hydro-power plants with reservoirs and connected water-supply channels meant to provide water from streams as much as 18 km far is planned for near future. One of them, “Boškov Most”, is located on the site’s southern boundary, while the other, “Lukovo Pole”, is in the core area, which no doubt means that significant deterioration can be expected. In addition, at least six small hydro-power plants are planned, some of them in highly sensitive regions (Table 13).

Conservation

The entire site lies within the boundaries of Mavrovo National Park, which has been also identified as an Emerald Site (MK0000007). The first management plan of the Park is presently under development by the Park’s management and Oxfam Italia (2009–2010). Two very small protected areas (Dlabok Dol and Garska Reka) are also located within this site.

3.2.3. Lake Ohrid

General information

Name in English: Lake Ohrid
Name in Macedonian: Ohridsko Ezero (Охридско Езеро)
IBA code: MK005
Criteria: A4iii, B1i, B2
Area: 24,736 ha
Central coordinates: 20°43’52.65”E, 41°03’36.88”N
Altitude: 695–900 m a.s.l.
Administrative region(s): Struga, Debarca, Ohrid

Site description

Situated in the SW of the country, this site includes part of Lake Ohrid, following its shore line and the national border with Albania, which runs across the lake surface. The site is adjacent to the Albanian IBA site “Lake Ohrid” (AL002, HEATH & EVANS 2000).

The shore line of the lake is polygenetic, with limnogene shore (from lake sediments) situated in the north. At Ljubaništa and St. Naum there is the potamogene coast, while the western slopes of Mt Galičica are of tectogene and abrasive origin, with characteristic cliffs. The coastline is dominated by Triassic limestones. The lake is tectonic, some 3 million years old, with max. depth of 286 m (Figure 9).

Species

The site’s bird fauna has been studied relatively well (MICEVSKI 2003), although precise quantitative data and estimates for the breeding species are missing. In total, 89 waterbird species have been recorded, including the arable land and swamps surrounding the lake (presently largely dried and of little importance). Winter census data are available for the periods 1987–1991, 1997–2000, 2002, 2010 and 2011 (MICEVSKI 1996, MICEVSKI 1998, FREMUTH *et al.* 2000, WETLANDS INTERNATIONAL *in litt.*, MES *unpubl.*). The total number of wintering waterbirds on the lake surface (Macedonian part only) was between 79,000 individuals in 1989 (WETLANDS INTERNATIONAL *in litt.*) and 24,000 individuals in 1997 (FREMUTH *et al.* 2000), but only about 10,000 and 17,000 were counted in 2010 and 2011, respectively (MES *unpubl.*). The most numerous species is the Coot (as many as 60,000 ind. in 1989, but only 7,500 in 2010), followed by the Pochard (500–7,000 ind., but only 150 and 300 in 2010 and 2011, respectively), Red-crested Pochard (350–7,000 ind.), Tufted Duck (240–6,500 ind., but only 20 in 2010) and Black-necked Grebe (130–3,600 ind.). There was a substantial decrease in numbers of the latter in the period after 1991, and the threshold of 2,200 individuals has not been met again after then. Triggering species for the breeding period are the Pygmy Cormorant with some 50–100 pairs breeding in 2000 (MICEVSKI 2003), which has met also the B1i criteria only in 1989 and 2002 (MICEVSKI 1996, WETLANDS INTERNATIONAL *in litt.*), and the Goosander, which most probably bred there in 2006 (ŠKORPIKOVÁ *et al.* 2006). The Great Crested Grebe is

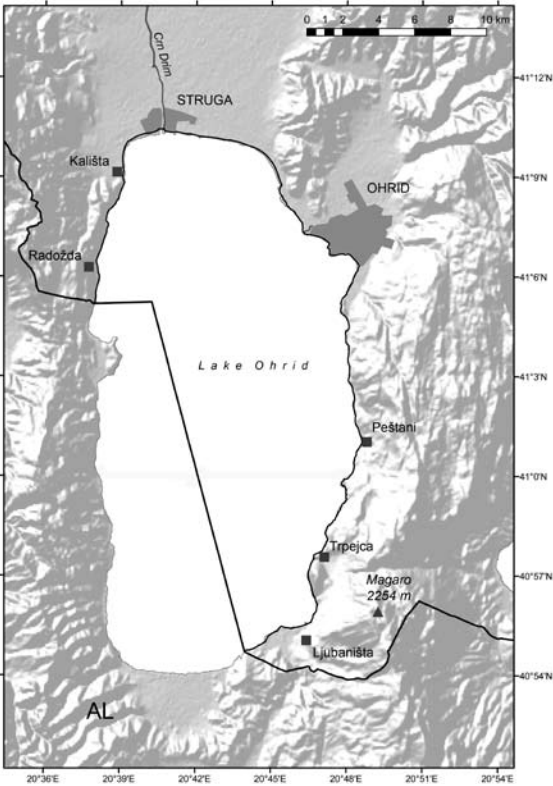


Figure 9: Map of the IBA Lake Ohrid with its main features depicted

Slika 9: Zemljevid IBA Ohridsko jezero z glavnimi značilnostmi območja

Table 14: List of triggering and other important bird species in the IBA Lake Ohrid

Tabela 14: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Ohridsko jezero

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
all waterbirds	W	1987–2002	20,000–79,000 ind.	A	A4iii
<i>Podiceps nigricollis</i>	W	1988–1991	2,600–3,600 ind.	A	B1i
<i>Netta rufina</i>	W	1987–2011	350–7,000 ind.	A	B1i
<i>Fulica atra</i>	W	1987–2011	13,000–60,000 ind.	A	B1i
<i>Mergus merganser</i>	B	2006	1–3	A	B1i
<i>Phalacrocorax pygmeus</i>	B	2000	50–100	C	B2
<i>Podiceps cristatus</i>	W	1991–2000	800–1,400 ind.	A	N
<i>Podiceps cristatus</i>	B	–2003	20–100	C	N
<i>Phalacrocorax pygmeus</i>	W	1989–2002	1,100–3,250 ind.	A	N
<i>Aythya ferina</i>	W	1987–2000	500–7,000 ind.	A	N
<i>Aythya fuligula</i>	W	1989–1999	240–6,500 ind.	A	N



Figure 10: Characteristic landscape of the IBA Lake Ohrid (photo: S. Hristovski)

Slika 10: Značilna pokrajina IBA Ohridsko jezero (foto: S. Hristovski)

Table 15: The main CORINE land cover types (Level 3) in the IBA Lake Ohrid

Tabela 15: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Ohridsko jezero

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
512	Water bodies	99.6
	Other	0.4

considered one of the most frequent breeding birds on the Lake (MICEVSKI 2003) (Table 14).

The northern shallow part of the lake is of the highest importance for wintering waterbirds (MICEVSKI 1996), with the Coot and Red-crested Pochard being the

most abundant, which is explained by the presence of extensive reedbeds, underwater *Chara* vegetation and influx of nutrients by the Satoka River.

Habitats and land use

The lake constitutes the greater part of the site (Table 15). Cliffs along the western and especially eastern shoreline are also part of the site. The most extensive reedbeds are found on the northern shore of the Lake, although small reed patches can be found along the entire shoreline. The lake is oligotrophic. Smaller xerophyllous oak forests are found within the site boundaries (Figure 10).

Threats

Lake Ohrid is an attractive tourist destination, and practically the entire shoreline is strewn with tourist

Table 16: The main threats to birds and their importance in the IBA Lake Ohrid

Tabela 16: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Ohridsko jezero

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
600	Sport and leisure structures	high	<i>M. merganser</i>
803	Infilling of ditches, dykes, ponds, marshes or pits	high	<i>P. pygmeus</i>

resorts. For the needs of tourism, beeches are expanded and reedbeds removed or dried out. Eutrophication probably takes place (Table 16). No zoning concept has been implemented.

Conservation

The Lake is protected as a Nature Monument, and is also proposed as an Emerald Site (MK0000024). Together with the town of Ohrid and its wider surrounding, it is listed on UNESCO's list of World Natural and Cultural Heritage Sites. The site also includes a small portion of Galičica National Park.

3.2.4. Lake Prespa

General information

Name in English: Lake Prespa

Name in Macedonian: Prespansko Ezero
(Преспанско Езеро)

IBA code: MK006

Criteria: A1, A4i, B1i, B2

Area: 19,842 ha

Central coordinates: 21°00'43.56"E, 40°55'58.94"N

Altitude: 850–970 m a.s.l.

Administrative region(s): Resen

Site description

The site includes the Macedonian part of Lake Prespa (Macro Prespa) in SW Macedonia, cliffs on its shoreline and swamps near the villages of Stenje and Nakolec, as well as wet meadows, reedbeds and fishponds between the villages of Sir Han and Asamati. It is adjacent to the sites "Lake Megali Prespa" (AL003) in Albania and "Lake Mikri Prespa and Lake Megali Prespa" (GR047) in Greece (HEATH AND EVANS 2000).

Lake Prespa's coast is polygenetic; the east coast (slopes of Mt Pelister) is of potamogene character as a result of several river inflows from the mountain (Brajčinska Reka, Kranska Reka etc.). The northern coast is basically of limnogene character, and along the northern shoreline it is of phytogene origin (owing to its wetland vegetation). On the western coast, the shoreline is of abrasive character, with notable cliffs, as a result of the geological composition represented by Triassic limestone. The most important river is the Golema Reka in the north. The max. depth of the lake reaches 54 m (Figure 11).

Species

Bird fauna of Lake Prespa is among the best studied in the country (MICEVSKI 1998). In total, 103 waterbird species have been recorded. Winter censuses data are

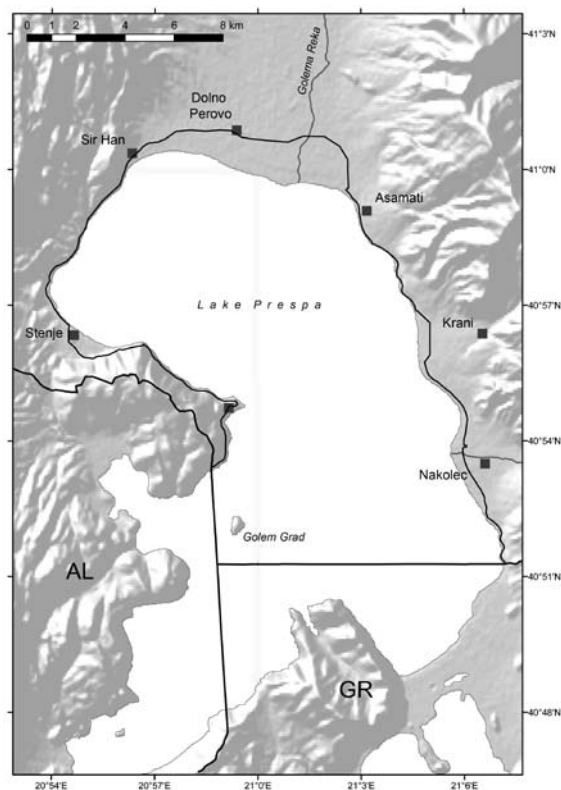


Figure 11: Map of the IBA Lake Prespa with its main features depicted

Slika 11: Zemljevid IBA Prespansko jezero z glavnimi značilnostmi območja

available for the periods/years 1987–1990, 1997–2002, 2004–2006 and 2009–2011 (MICEVSKI & SCHNEIDER 1997, FREMUTH *et al.* 2000, VASIĆ 2009A, WETLANDS INTERNATIONAL *in litt.*, MES *unpubl.*). The most numerous has been the Coot (1,000–20,700 ind.), followed by Tufted Duck (between as few as 12 ind. in 2002 and 9,000–12,500 ind. in 1988–1989), Black-necked Grebe (up to 5,800 in 2004, with decline in numbers thereupon, the exception being 2009 with 3,900 ind.), Pochard (12,500 ind. in 1988, 9,000 ind. in 1989, but only 15 ind. in 2004), and Teal *Anas crecca* (up to 2,500 ind.). The total number of wintering waterbirds exceeded 20,000 individuals only in 2009, when 31,500 waterbirds were counted (VASIĆ 2009A). The island Golem Grad holds the largest Cormorant colony in the country (2,500–3,000 pairs, VASIĆ 2010) and the only colony (ca. 50 pairs) of the Yellow-legged Gull in Macedonia (VASIĆ 2009A). 30–50 pairs of Goosander breed along the lake shores (VASIĆ 2010), with some of them also wintering on the lake. Up to

Table 17: List of triggering and other important bird species in the IBA Lake Prespa

Tabela 17: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Prespansko jezero

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Pelecanus crispus</i>	N	2008–2010	300–1,000 ind.	C	A1, A4i, B1i
<i>Pelecanus onocrotalus</i>	N	2008–2010	150–500 ind.	C	A4i, B1i
<i>Mergus merganser</i>	B	2008–2010	30–50	B	B1i
<i>Mergus merganser</i>	W	1987–2011	2–22 ind.	A	B1i
<i>Ixobrychus minutus</i>	B	2009	50–200	C	B2
<i>Podiceps cristatus</i>	W	2010–2011	2,000–3,400 ind.	A	N
<i>Podiceps cristatus</i>	B	1987–2010	100–600	C	N
<i>Podiceps nigricollis</i>	W	1989–2004	1,400–5,800 ind.	A	N
<i>Phalacrocorax pygmeus</i>	B	1993	10–20	C	N
<i>Phalacrocorax carbo sinensis</i>	B	2008–2010	2,500–3,000	B	N
<i>Casmerodius albus</i>	N	2010	60–150 ind.	B	N
<i>Anas strepera</i>	B	–1998	0–10	C	N
<i>Aythya nyroca</i>	B	1998–2008	3–10	B	N
<i>Aythya ferina</i>	W	1989–1999	1,850–3,200 ind.	A	N
<i>Aythya fuligula</i>	W	1988–1997	100–9,000 ind.	A	N
<i>Fulica atra</i>	W	1997–1998	9,000–9,750 ind.	A	N

300 individuals of Dalmatian Pelican and up to 100 individuals of White Pelican can be seen concurrently on the lake surface. Both pelican species breed at Lake Mikri Prespa in Greece with estimated 1,169 pairs of Dalmatian and 332 pairs of White Pelican in 2010 (SOCIETY FOR PROTECTION OF PRESPIA 2011). They visit Lake Macro Prespa for feeding (when they can be readily seen accompanying fishermen's boats) and roosting, especially along the shoreline between the villages of Konjsko and Stenje. On the basis of these numbers, we have estimated the number of non-breeding birds present in the Macedonian part of Lake Prespa at 300–1,000 individuals of the Dalmatian Pelican and 150–500 individuals of the White Pelican. The population of the Ferruginous

Duck has been estimated at only 3–4 pairs breeding in the presently dry fishpond at Asamati village in 1995 (MICEVSKI 1998), and at 3–10 pairs by VASIĆ (2010). The probable breeding population of the Gadwall has also been estimated to 10 pairs at the most (VASIĆ 2010), supposedly on the grounds of observations by MICEVSKI (1998) in the breeding period. Some 20–50 breeding pairs of the Great Egret have been estimated to breed at Lake Prespa (VASIĆ 2010), although the breeding colony may possibly resides in its entirety in Greece. Still, the species uses the Macedonian part of the lake for foraging as well. MICEVSKI (1998) reports on minimum 30 breeding pairs of the Great Crested Grebe along the northern shore, while VASIĆ (2010) gives an estimate at 500–750 pairs for Galičica National Park (both Ohrid and Prespa shorelines included), which gives a rather imprecise, but still high estimate of the breeding population at 100–600 pairs (Table 17).

Table 18: The main CORINE land cover types (Level 3) in the IBA Lake Prespa

Tabela 18: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Prespansko jezero

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
512	Water bodies	91.0
411	Inland marshes	4.9
	Other	4.1

Habitats and land use

The lake surface constitutes the greater part of the site, but extensive reedbeds are found along the northern shore (between the villages of Sir Han and Asamati), and along the eastern shoreline (near Stenje and at Nakolec) (Table 18). Remains of riparian forests can also be seen. There are two drained fishponds with recent plans for reactivation. Large sand beach in process of succession is found around the village



Figure 12: Characteristic landscape of the IBA Lake Prespa (photo: Lj. Melovski)

Slika 12: Značilna krajina IBA Prespansko jezero (foto: Lj. Melovski)

of Stenje on the northern shore. Wet meadows and *Carex* fields spread around the village of Perovo. Cliffs are present on the island Golem Grad and between Stenje and Konjsko villages, overgrown by old Greek Juniper *Juniperus excelsa* forests (Figure 12).

Threats

Sand extraction and conversion of meadows into intensively managed orchards are widely practiced by the local population. Poaching is also common.

Tourism activities have decreased in the last two decades, although plans for the construction of new hotels exist. Water quality decreased, and the lake is presently treated as eutrophic (LEVKOV *et al.* 2007) (Table 19).

Conservation

The entire lake is protected as a Nature Monument; since 1996, its northern shallow parts and shores have been protected as Strict Nature Reserve Ezerani

Table 19: The main threats to birds and their importance in the IBA Lake Prespa

Tabela 19: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Prespansko jezero

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
100	Cultivation	high	<i>I. minutus</i>
701	Water pollution	high	wintering waterbirds
952	Eutrophication	high	wintering waterbirds
243	Trapping, poisoning, poaching	medium	Anatidae
600	Sport and leisure structures	medium	<i>P. crispus</i> , <i>P. onocrotalus</i>
803	Infilling of ditches, dykes, ponds, marshes or pits	medium	<i>A. nyroca</i> , <i>I. minutus</i>

(2,080 ha). This reserve is presently in the process of re-proclamation (in the category Nature Park), and new boundaries covering 1,917 ha are propose. Temporal and spatial zoning of the lake surface in order to preserve waterbirds is missing. The coast from Sir Han to the border with Albania and the island Golem Grad are integrated into Galičica National Park. All three protected areas are proposed as Emerald Sites (MK0000001, MK0000002 and MK0000025, respectively). It is also a Ramsar Site of international importance, among other criteria due to its importance for waterbirds. Management plans are under development for Galičica and Ezerani.

3.2.5. Demir Kapija Gorge

General information

Name in English: Demir Kapija Gorge

Name in Macedonian: Demirkapiska Klisura
(Демиркаписка Клисура)

IBA code: MK008

Criteria: A1, A3, B2

Area: 9,665 ha

Central coordinates: 22°18'20.44"E, 41°23'46.84"N

Altitude: 110–928 m a.s.l.

Administrative region(s):

Demir Kapija, Gevgelija, Konče, Valandovo

Site description

Situated E-SE of the town of Demir Kapija in southern Macedonia, the site includes about a half (upper part) of the longest gorge of the Vardar River (in total ca. 20 km long). The border runs along the last houses of Demir Kapija, turns south towards Čiflik and Dren villages, then follows the Drenska Reka (a tributary of the Vardar) to the east to the Stefan ridge, where it turns north. Then it continues towards the hills of Študer (609 m a.s.l.) and Veternikot, crosses the Vardar and, by following the ridges of Ilovski Čukar (524 m a.s.l.), Golem (928 m a.s.l.) and Mal Karadag (707 m a.s.l.), reaches Vaganar (880 m a.s.l.). From there it turns west and follows the intermittent rivulets Linan Dere and Dobrošte, runs through Iberlija village and follows the Lesovo rivulet to Kurtlu Čuka. Then it continues south, and via Sreden Rid (556 m a.s.l.) descends to the Vardar River, crossing it at Demir Kapija. In this way, the border is strongly modified as for the one in HEATH & EVANS (2000).

Main morphological characteristic is the gorge, which is in certain parts a typical canyon with walls of over 200 m high. Jurassic limestones are dominant in the beginning of the gorge, while in the SE the geological composition is of Jurassic magmatic rocks. Main tributaries of the Vardar are the Iberliska (Čelevečka) Reka (forming a typical canyon) and the Golema Javorica (Figure 13).

Table 20: List of triggering and other important bird species in the IBA Demir Kapija Gorge

Tabela 20: Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Soteska Demir Kapija

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2006–2010	2–3	A	A1
<i>Alectoris graeca</i>	R		Common		A3
<i>Oenanthe hispanica</i>	B		Common		A3
<i>Sylvia cantillans</i>	B		Abundant		A3
<i>Sitta neumayer</i>	R		Common		A3
<i>Emberiza melanocephala</i>	B		Frequent		A3
<i>Circaetus gallicus</i>	B	2007	5–8	B	B2
<i>Accipiter brevipes</i>	B	2005	4–6	B	B2
<i>Ciconia nigra</i>	B	2010	1	A	N
<i>Gyps fulvus</i>	R	2009–2010	6–7	A	N
<i>Buteo rufinus</i>	R	2010	1–2	B	N
<i>Milvus migrans</i>	B	2010	1	A	N
<i>Aquila pennata</i>	B	2010	1	A	N
<i>Aquila chrysaetos</i>	R	2010	1–2	A	N
<i>Falco biarmicus</i>	B	2007	0–1	B	
<i>Falco peregrinus</i>	R	2009	2	B	N
<i>Bubo bubo</i>	R	2005	3–5	B	N

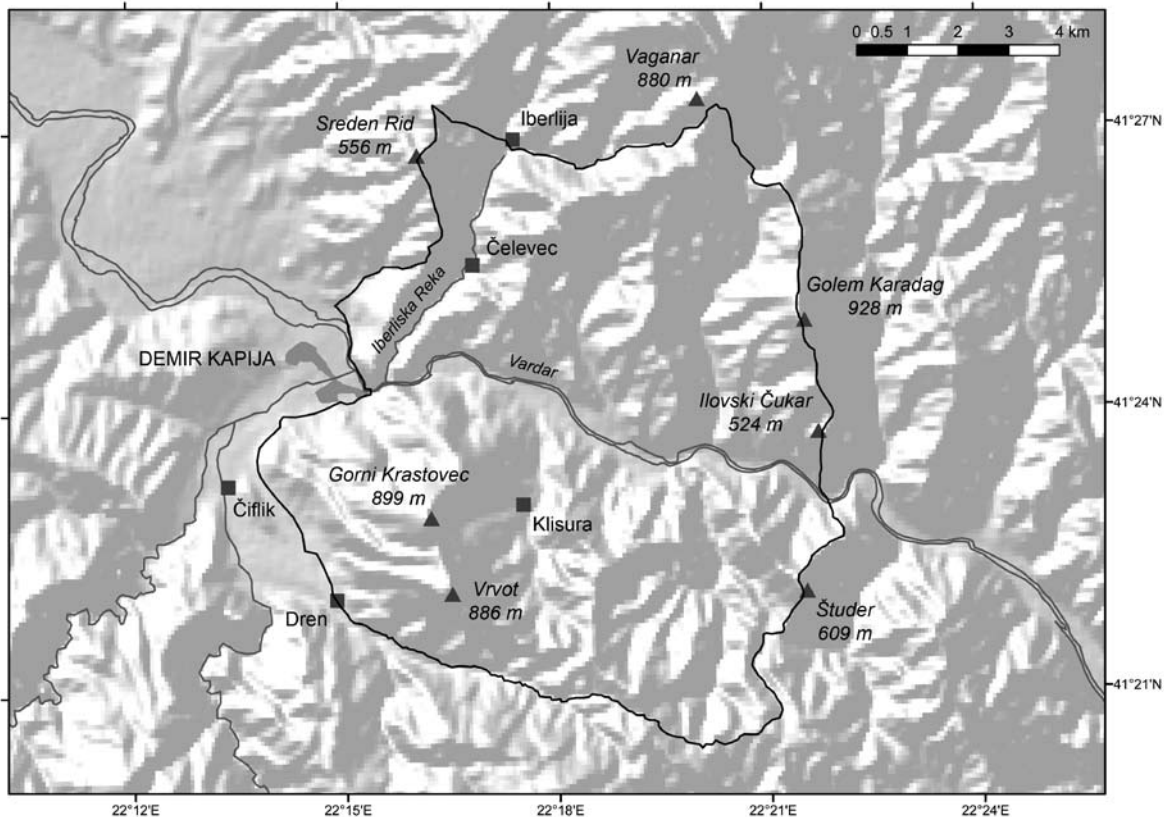


Figure 13: Map of the IBA Demir Kapija Gorge with its main features depicted

Slika 13: Zemljovid IBA Soteska Demir Kapija z glavnimi značilnostmi območja

Species

This location is best known by the birds of prey breeding on limestone cliffs, especially Griffon and Egyptian Vultures. Both had undergone strong decline; in 1996, their breeding populations were estimated at 16 and 10 pairs (GRUBAČ 1997 & *unpubl.*), but numbered only six and two pairs in 2010, respectively. The Griffon Vulture colony there is one of the only three remaining breeding colonies in Macedonia. The total number of all registered bird species reached 149 (ROLEVSKI *et al.* 2003). Today, the site is one of the five most important localities in the country for the Short-toed Eagle (5–8 pairs), whose breeding density with 0.5 pairs/10 km² is the highest in the country (VELEVSKI & GRUBAČ 2008). Riparian Oriental Plane forests are very favourable for the breeding of the Levant Sparrowhawk (4–6 pairs). Among other species rarely found in Macedonia are the Booted Eagle, Black Kite, Black Stork, Long-legged Buzzard, etc. Most abundant among the

Table 21: The main CORINE land cover types (Level 3) in the IBA Demir Kapija Gorge

Tabela 21: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Soteska Demir Kapija

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
242	Complex cultivation patterns	5.7
311	Broad-leaved forest	21.6
332	Bare rocks	0.3
323	Sclerophyllous vegetation	34.8
324	Transitional woodland-shrub	33.2
	Other	4.4

species characteristic of the Mediterranean biome is the Subalpine Warbler (presumably one of the highest densities in the country) in the pseudomaquis, and the Rock Nuthatch on the limestone cliffs (Table 20).



Figure 14: Characteristic landscape of the IBA Demir Kapija Gorge (photo: M. Velevski)

Slika 14: Značilna krajina IBA Soteska Demir Kapija (foto: M. Velevski)

Table 22: The main threats to birds and their importance in the IBA Demir Kapija Gorge

Tabela 22: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Soteska Demir Kapija

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
243	Trapping, poisoning, poaching	high	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>A. chrysaetos</i> , <i>A. graeca</i>
141	Abandonment of pastoral systems	high	<i>G. fulvus</i> , <i>N. percnopterus</i>
230	Hunting	high	<i>G. fulvus</i> , <i>A. graeca</i>
160	General forestry management	medium	<i>C. nigra</i> , <i>A. pennata</i> , <i>M. migrans</i> , <i>C. gallicus</i>
502	Motorways, roads	medium	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>C. gallicus</i> , <i>A. brevipes</i>
624	Mountaineering, rock climbing, speleology	medium	<i>G. fulvus</i>
301	Quarries	medium	<i>C. gallicus</i> , Mediterranean bird assemblage
410	Industrial or commercial areas	medium	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>A. chrysaetos</i> , <i>C. gallicus</i> , <i>A. pennata</i>
730	Military manoeuvres	medium	<i>G. fulvus</i>
400	Urbanised areas, human habitation	low	<i>G. fulvus</i> , <i>A. chrysaetos</i> , <i>A. graeca</i>

Habitats and land use

Limestone cliffs dominate the landscape, but degraded pseudomauquis with dominance of Kermes Oak *Quercus coccifera* is the prevailing forest community. At some locations, mature oak forests with significant presence of Silver Lime *Tilia argentea* are found, while

along the Vardar and all smaller rivers, Oriental Plane *Platanus orientalis* belts are present (Table 21, Figure 14).

Threats

Hunting and poaching regularly take place, and use

of poisonous baits was common until recently. Cliffs attract cliff-climbers, but are also used for military training. Depopulation of the villages resulted in a drastic decrease in livestock numbers, reducing food source for vultures. Illegal wood extraction for heating and construction purposes takes place along with official forest management practices. The reconstruction of E-75 highway from Skopje to Thessaloniki (Greece) is another serious threat the site will face in the near future. High disturbance is expected during the reconstruction phase, and somewhat less during the operation phase. Also, a plan for wind farm construction in the area has been prepared (Table 22).

Conservation

Part of the site is protected as a Nature Monument, but the protected site does not include some of the key localities. Also, parts of the valley of the Iberliska Reka River are under protection. It is proposed as an Emerald Site (MK0000005), but boundaries of this site have not been suitably defined as yet.

3.2.6. Lake Dojran

General information	
Name in English:	Lake Dojran
Name in Macedonian:	Dojransko Ezero (Дојранско Езеро)
IBA code:	MK010
Criteria:	A1, A4i, B1i, B2
Area:	2,691 ha
Central coordinates:	22°44'3. 00"E, 41°12'51.81"N
Altitude:	150 m a.s.l.
Administrative region(s):	Nov Dojran

Site description

The site is located in the SE part of the country, and includes the Macedonian part of Lake Dojran, together with the surrounding wetland vegetation. It adjoins the site "Lake Doirani" (GR023) in Greece (HEATH & EVANS 2000).

The coast is limnogene, consisting of the lake sediments. It is a shallow tectonic lake with maximum depth of 10 m (Figure 15).

Species

The avifauna has been insufficiently studied; the complete list numbers only 84 waterbird species (MICEVSKI 2000, MICEVSKI 2002/2003, VELEVSKI & SAVELJIĆ 2010, HANŽEL 2010). However, for 12 species only single records are at hand. Data from winter censuses are available for the periods/years: 1982–1983, 1985, 1987–1990, 2002, and 2010–2011 (MICEVSKI 1991, WETLANDS INTERNATIONAL *in litt.*, MES *unpubl.*). The total number of wintering waterbirds ranges from only 700 individuals in 2002, 3,200 in 2010, and up to 19,000 individuals in 1989. Most abundant are the Coot (between only 81 ind. in 2002 and 10,000 ind. in 1989), Pochard (up to 5,600 in 1990) and Tufted Duck (up to 3,000 in 1989). Of highest importance is the winter presence of Dalmatian Pelicans (330 ind. in 2002 and 450 in 2010) and Pygmy Cormorants (230 ind. in 1990). Other important species include 2–5 breeding pairs of Ferruginous Duck (MICEVSKI 2000), Bittern (at least two pairs, ŠKORPIKOVA *et al.* 2006) and Little Bittern, whose breeding population has been estimated at a minimum of 30 pairs (MICEVSKI 2000). A flock of min. 70 White Pelicans has been observed in spring 2010 (J. HANŽEL *pers. comm.*). A single record of Red-breasted Goose *Branta ruficollis* exists (12 ind. on 14

Table 23: List of triggering and other important bird species in the IBA Lake Dojran

Tabela 23: Seznam kvalifikacijskih in drugih pomembnih ptic v IBA Dojransko jezero

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Pelecanus crispus</i>	W	2002–2010	300–450 ind.	A	A1, A4i, B1i, B2
<i>Ixobrychus minutus</i>	B	2000	30–60	B	B2
<i>Botaurus stellaris</i>	B	2006	2–6	B	B2?
<i>Pelecanus onocrotalus</i>	N	2010	70 ind.	A	N
<i>Phalacrocorax pygmeus</i>	W	1988–2011	20–230 ind.	A	N
<i>Aythya nyroca</i>	B	2000	2–5	C	N
<i>Aythya fuligula</i>	W	1987–1990	200–3,000 ind.	A	N
<i>Fulica atra</i>	W	1989–2011	800–10,000 ind.	A	N
<i>Aythya ferina</i>	W	1988–2002	220–5600 ind.	A	N

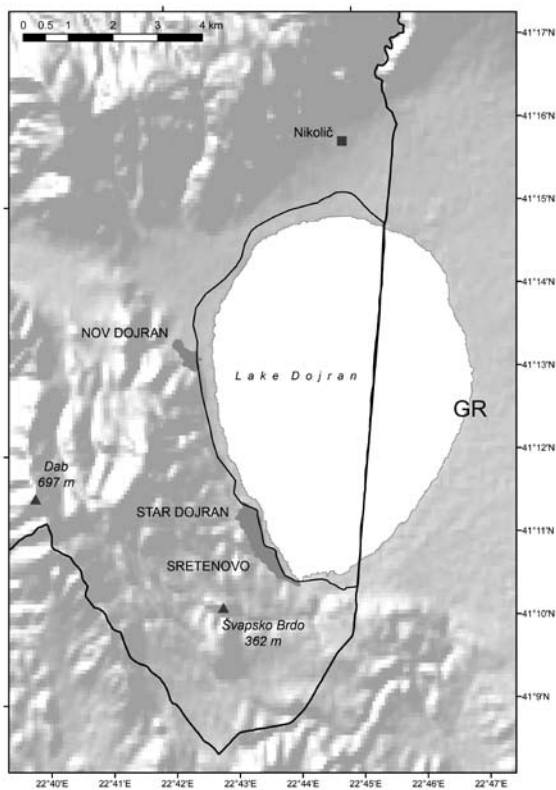


Figure 15: Map of the IBA Lake Dojran with the main features depicted

Slika 15: Zemljovid IBA Dojransko jezero z glavnimi značilnostmi območja

Feb 2003, E. STOYNOV & Y. ILIEV *unpubl.*), being only the second for the whole country (Table 23).

Habitats and land use

The lake surface constitutes the greater part of the IBA, with reedbeds along most of its shore included (Table 24). After withdrawal of the water during drying-up

Table 24: The main CORINE land cover types (Level 3) in the IBA Lake Dojran

Tabela 24: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Dojransko jezero

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
512	Water bodies	86.0
411	Inland marshes	9.7
	Other	4.4

of the lake in the past, muddy shores were used for agriculture. The lake is eutrophic (Figure 16).

Threats

The lake was seriously threatened by drying out in the 1995–2002 period due to droughts and excessive water exploitation. Hydrological conditions have improved since, and supplementary water inflow has been secured, resulting in return of the water to the previous level. Intensive fishing, in which birds were formerly used, continues almost permanently (APOSTOLSKI & MATVEJEV 1955). In the summer period, the lake is a popular tourist destination. A wind farm has been constructed on the Greek side of the Lake basin, probably impacting Dalmatian Pelicans and other waterbirds (Table 25).

Conservation

The lake is protected as a Nature Monument. It is a Ramsar Site of international importance owing to its significance for waterbird populations, and an Emerald Site (MK0000003). Apart from ensuring additional water inflow into the Lake, no other conservation activities are taking place here.

Table 25: The main threats to birds and their importance in the IBA Lake Dojran

Tabela 25: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Dojransko jezero

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
410	Industrial or commercial areas	high	<i>P. crispus</i>
210	Professional fishing	high	<i>P. crispus</i> , <i>A. nyroca</i>
600	Sport and leisure structures	high	<i>B. stellaris</i>



Figure 16: Characteristic landscape of the IBA Lake Dojran (photo: Ž. Brajanoski)

Slika 16: Značilna krajina IBA Dojransko jezero (foto: Ž. Brajanoski)

3.2.7. Zletovska River Valley

General information					
Name in English: Zletovska River Valley					
Name in Macedonian: Dolina na Zletovska Reka (Долина на Злетовска Река)					
IBA code: MK012					
Criteria: A1, B2					
Area: 12,687 ha					
Central coordinates: 22°10'25.28"E, 41°55'52.66"N					
Altitude: 310–867 m a.s.l.					
Administrative region(s): Probištip, Češinovo - Obleševo, Kočani, Sveti Nikole					

Site description

The site occupies the valley of the Zletovska Reka River south of the villages of Pišica and Novoselani, the SW slopes of Mt Osogovo and the eastern slopes of Mt Mangovica in NE Macedonia. Its SW boundary follows the ridge of Mangovica north of the village of Gorno Barbarevo, then continues SE to Petrišino village, passes the river valley at Globica village and proceeds east below the villages of Buneš and Rajčani, following the ridge formed by the peaks of Blatec (825 m a.s.l.), Božurnjak (767 m a.s.l.) and Uši (628 m a.s.l.), and descending SW to the village of Sokolarci. From there, it follows the irrigation channel

Table 26: List of triggering and other important bird species in the IBA Zletovska River Valley

Tabela 26: Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Dolina Zletovske reke

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Aquila heliaca</i>	R	2009	3–4	A	A1, B2
<i>Burhinus oedicephalus</i>	B	2008	5–20	C	N
<i>Circus pygargus</i>	B	2008	3–10	C	N
<i>Falco cherrug</i>	B	2003	0–1	A	N
<i>Coracias garrulus</i>	B	2008	1–5	C	N

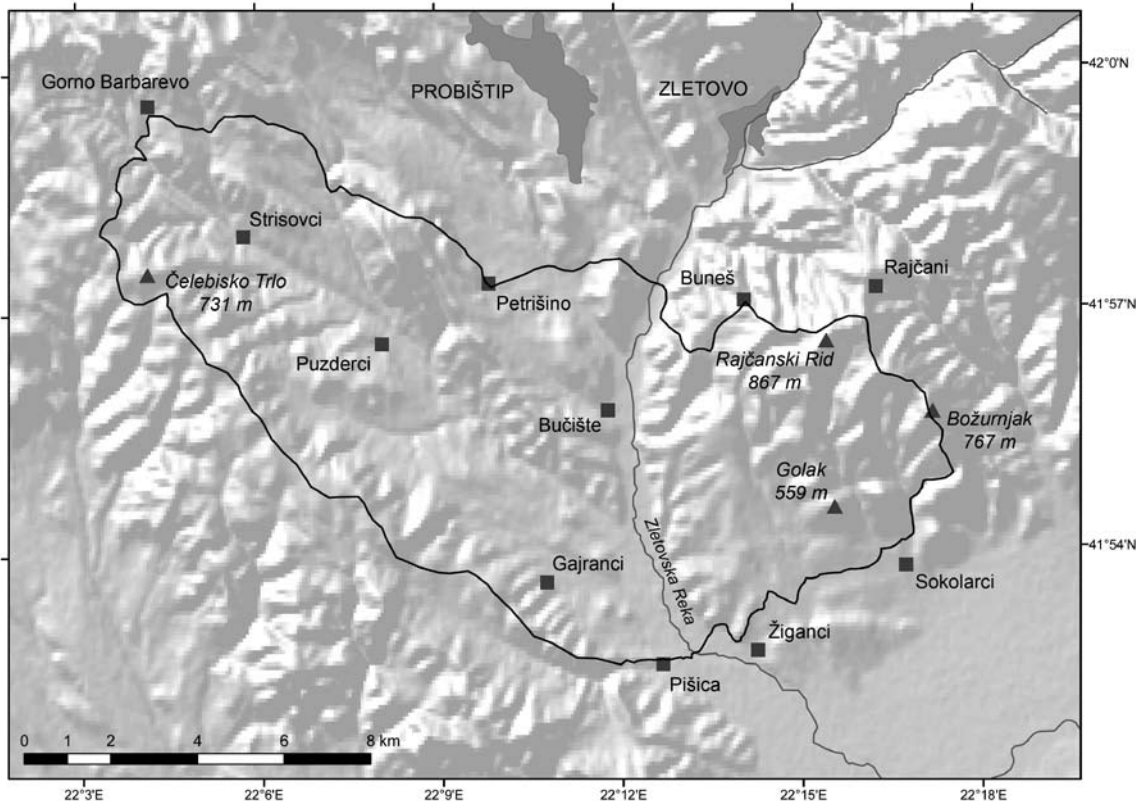


Figure 17: Map of the IBA River Zletovska valley with its main features depicted

Slika 17: Zemljevid IBA Dolina Zletovske reke z glavnimi značilnostni območja

westwards to the village of Novoselani. The boundary has been largely modified from the original proposal by E. Stoyanov from 2003 and excludes the rice fields along the Bregalnica River.

The site is characterized by low, undulating hilly and mountainous relief with dominant valley of the Zletovska Reka River and several intermittent streams in the western parts of the site. The geological composition is diverse, with magmatic rocks of Kratovo - Zletovo volcanic region and different metamorphic and alluvial sediments along the river (Figure 17).

Species

No detailed species list for the site is available, although ca. 80 species have been registered so far. Most important are the Imperial Eagle (3–4 pairs) and Stone Curlew (5–20 pairs), breeding on the hilly slopes with dry pastures and in remains of oak forests (Imperial Eagle), although the Roller (up to five breeding pairs) and a possible breeding of the Saker Falcon (one pair) have also been recorded.

Up to 10 pairs of Montagu's Harrier also breed here (Table 26).

Table 27: The main CORINE land cover types (Level 3) in the IBA Zletovska River Valley

Tabela 27: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Dolina reke Zletovske

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	34.0
242	Complex cultivation patterns	18.0
243	Land principally occupied by agriculture, with significant areas of natural vegetation	10.9
231	Pastures	15.3
324	Transitional woodland-shrub	17.8
	Other	3.9



Figure 18: Characteristic landscape of the IBA Zletovska River Valley (photo: M. Veleviski)

Slika 18: Značilna krajina v IBA Dolina Zletovske reke (foto: M. Veleviski)

Table 28: The main threats to birds and their importance in the IBA Zletovska River Valley

Tabela 28: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Dolina Zletovske reke

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
141	Abandonment of pastoral systems	high	<i>B. oedicnemus</i>
243	Trapping, poisoning, poaching	high	<i>A. heliaca</i>
101	Modification of cultivation practices	medium	<i>C. ciconia</i>
410	Industrial or commercial areas	medium	<i>A. heliaca</i>

Habitats and land use

The greater part of the lowland is used for agriculture, while the surrounding hills are typical dry pastures with remains of xerophyllous oak forests, somewhat better preserved in the ravines. Poplar and willow belts have developed along the river (Table 27, Figure 18).

Threats

Threats are not well documented, but very likely include reduction of livestock numbers and poaching. Wind farm planned north of Sveti Nikole is also likely to affect Imperial Eagles breeding at this site.

Conservation

The site is not protected.

3.2.8. Tikveš Region

General information

Name in English: Tikveš Region

Name in Macedonian: Tikveški region
(Тиквешки регион)

IBA code: MK013

Criteria: A1, B2

Area: 18,696 ha

Central coordinates: 22°08'1.46"E, 41°25'6.82"N

Altitude: 160–855 m a.s.l.

Administrative region(s):
Negotino, Demir Kapija, Kavadarci

Site description

Site is situated in the southern-central parts of Macedonia, south of the town Negotino. The boundary

starts at Pepelište village, crosses the Vardar, continues south to the village of Dolni Disan, then SW to the village of Moklište, continues along the road on the Vitačevo plateau to the crossroad towards the village of Stragovo, descends to this village, continues NE above the villages of Vešje and Besvica to the E-75 Skopje–Gevgelija highway, follows it east almost to Demir Kapija, crosses the Vardar and turns north to Korešnica village, then north to Široki Kuk, NW to the village of Brusnik and west back to the village of Pepelište (Figure 19).

The site is dominated by hills formed as a result of erosion that has shaped the bottom sediments of the Pliocene lake. The Vitačevo Plateau in the SW is composed of volcanogenic tuffs.

Species

The site classifies on the basis of two Egyptian Vulture pairs in its southern part and some 230–250 breeding pairs of Lesser Kestrel in the northern part, breeding exclusively in the villages. Northern part also includes the Vardar River Valley, where 1–2 pairs of Imperial Eagles breed. At least one pair of Lanner Falcon has been found, although there are indications that a second pair inhabits the area as well. Within this site, the dump site Dubrovo is situated, which formerly (1980–1991 period) attracted up to 120 individuals of Egyptian Vultures prior to their migration (B. GRUBAČ *unpubl.*), as well as a fishpond at the village of Bistrenci that presumably used to attract large numbers of migratory waterbirds. This fishpond has been dried out and converted into arable land; unfortunately, no systematic surveys of the bird fauna have ever been carried out there. The site also holds the largest

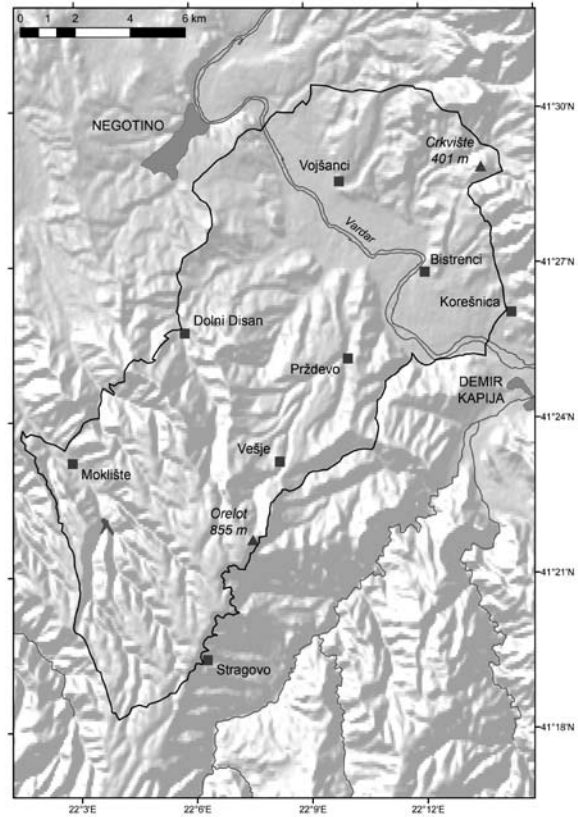


Figure 19: Map of the IBA Tikveš Region with its main features depicted

Slika 19: Zemljevid IBA Tikveško okrožje z glavnimi značilnostmi območja

Table 29: List of triggering and other important bird species in the IBA Tikveš Region

Tabela 29: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Tikveško okrožje

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2009	2	A	A1
<i>Coracias garrulus</i>	B	2009	5–15	C	A1
<i>Falco naumanni</i>	B	2003	230–250	B	B2
<i>Accipiter brevipes</i>	B	2009	2–3	C	B2?
<i>Buteo rufinus</i>	R	2010	2–4	C	B2?
<i>Ardea cinerea</i>	B	2001–2010	60–90	A	N
<i>Falco biarmicus</i>	B	2007	1–2	B	N
<i>Circus gallicus</i>	B	2008	3–5	B	N
<i>Aquila heliaca</i>	R	2010	1–2	B	N
<i>Aquila chrysaetos</i>	R	2009	1–2	A	N
<i>Bubo bubo</i>	R	2009	2–4	B	N



Figure 20: Characteristic landscape of the IBA Tikveš Region (photo: M. Velevski)

Slika 20: Značilna krajina IBA Tikveško okrožje (foto: M. Velevski)

national colony of Grey Heron *Ardea cinerea* (60–90 pairs) (Table 29).

Habitats and land use

The greater part of the site is used for agriculture – vineyards and orchards dominate, although dry pastures (steppe-like grasslands) and remains of oak scrubs are well-represented (Table 30, Figure 20).

Threats

Documented cases of Griffon Vultures *Gyps fulvus* being poisoned exist from the past, with the most prominent single event of poisoning taking place in 1993 at the Dubrovo dump site, when ca. 60–70 individuals of Egyptian Vultures were poisoned during deratization of the dump site just prior to their migration (GRUBAČ 1997). Pesticide use is likely, as well as hunting; poaching is also present. Livestock

Table 30: The main CORINE land cover types (Level 3) in the IBA Tikveš Region

Tabela 30: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Tikveško okrožje

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	14.0
242	Complex cultivation patterns	29.0
243	Land principally occupied by agriculture, with significant areas of natural vegetation	9.2
231	Pastures	13.0
221	Vineyards	7.8
321	Natural grasslands	14.0
324	Transitional woodland-shrub	9.1
	Other	4.0

Table 31: The main threats to birds and their importance in the IBA Tikveš Region

Tabela 31: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Tikveško okrožje

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
110	Use of pesticides	high	<i>F. naumanni</i> , <i>C. garrulus</i>
243	Trapping, poisoning, poaching	high	<i>A. heliaca</i> , <i>G. fulvus</i> , <i>N. percnopterus</i>
141	Abandonment of pastoral systems	medium	<i>F. naumanni</i> , <i>N. percnopterus</i> , <i>G. fulvus</i>
511	Electricity lines	medium	<i>F. naumanni</i> , <i>A. heliaca</i> , <i>C. garrulus</i>
502	Motorways, roads	medium	<i>A. heliaca</i> , <i>C. garrulus</i> , <i>F. naumanni</i>

breeding has decreased, very likely impacting vulture populations in the area (Table 31).

Conservation

Site is not protected, and no conservation measures are ongoing.

3.2.9. Pčinja - Petrošnica - Kriva Reka Rivers

General information

Name in English: Pčinja - Petrošnica - Kriva Reka Rivers

Name in Macedonian: Reka Pčinja - reka Petrošnica - Kriva Reka (река Пчиња - река Петрошница - Крива Река)

IBA code: MK014

Criteria: A1, A3, B2

Area: 84,938 ha

Central coordinates: 21°55'48.62"E, 42°10'2.20"N

Altitude: 280–1,355 m a.s.l.

Administrative region(s): Kumanovo, Staro Nagoričane, Kratovo, Probištip, Rankovce

Site description

Situated in the northern part of the country, this large IBA includes three geographically and ecologically different areas of significant ornithological value. Starting from the border with Serbia north of Kumanovo (near Sopot village), the boundary runs south avoiding the town of Kumanovo and its nearest villages, crosses the Pčinja River south this town (at the village of Pčinja), continues eastwards following the motorway from Kumanovo to Sveti Nikole and through villages of K'šanje and Tatomir, turns north below the peak of Gradište (1,009 m a.s.l.) and continues through Filipovci and Železnica villages near Kratovo. It continues north through the villages of Opila and Rankovce, and then turns NW, until passing through Arbanaško village and reaching the national border again. The site adjoins the site "Pčinja" in Serbia (SER025 in HEATH & EVANS 2000, but RS036 in PUZOVIĆ *et al.* 2009), forming a trans-boundary IBA.

The site embraces medium-size mountains, most dominant being Mt Kozjak in the north (summit

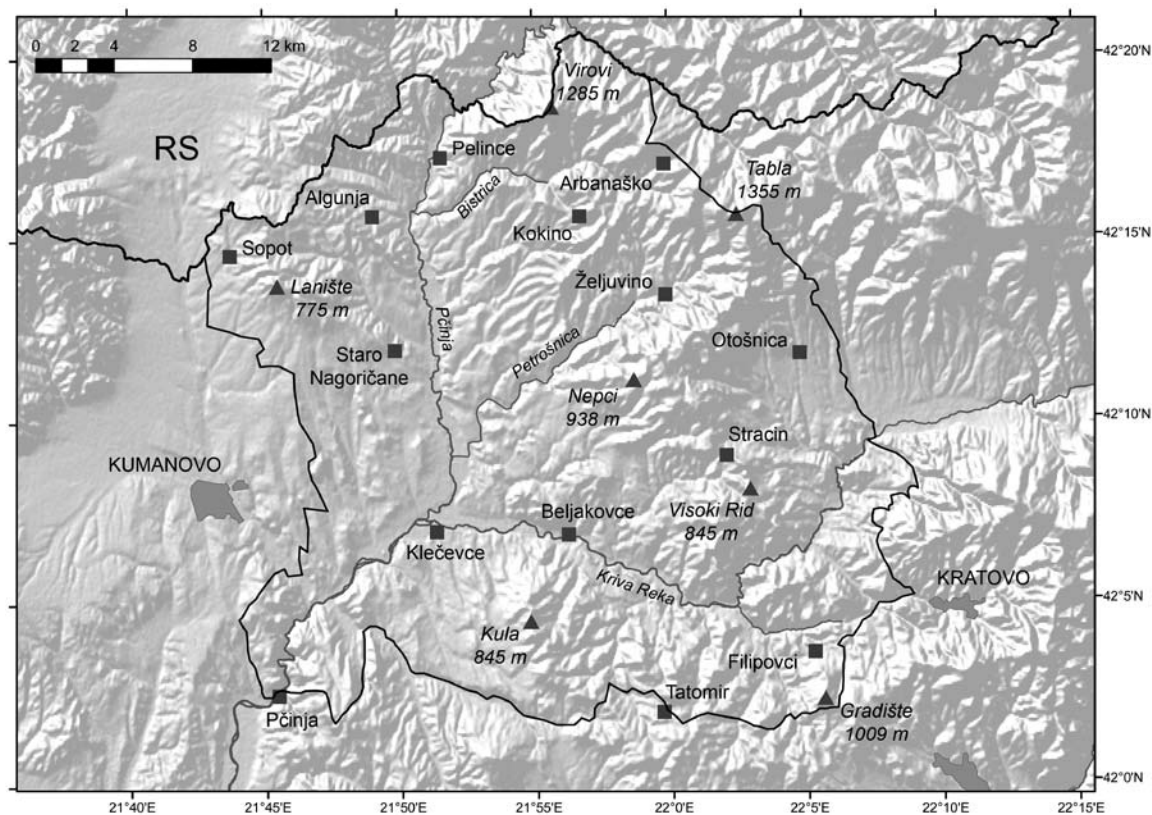


Figure 21: Map of the IBA Pčinja - Petrošnica - Kriva Reka Rivers with its main features depicted

Slika 21: Zemljevid IBA Reke Pčinja - Petrošnica - Kriva reka z glavnimi značilnostmi območja

Table 32: List of triggering and other important bird species in the IBA Pčinja - Petrošnica - Kriva Reka Rivers**Tabela 32:** Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Reke Pčinja - Petrošnica - Kriva reka

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2008–2010	2–4	A	A1, B2
<i>Aquila heliaca</i>	R	2010	4–6	A	A1, B2
<i>Coracias garrulus</i>	B	2007	5–20	C	A1
<i>Ficedula semitorquata</i>	B	2009	20–50	C	A1
<i>Alectoris graeca</i>	R	2009	30–100	C	A3, B2
<i>Lanius nubicus</i>	B	2008	10–30	C	A3, B2
<i>Oenanthe hispanica</i>	B		Frequent		A3
<i>Hippolais olivetorum</i>	B		Frequent		A3
<i>Sylvia cantillans</i>	B		Common		A3
<i>Sitta neumayer</i>	R		Common		A3
<i>Emberiza melanocephala</i>	B		Common		A3
<i>Ciconia nigra</i>	B	2008	3–4	A	B2
<i>Circus gallicus</i>	B	2008	10–15	C	B2
<i>Buteo rufinus</i>	R	2010	12–15	B	B2
<i>Falco naumanni</i>	B	2010	10–50	C	B2
<i>Falco biarmicus</i>	B	2009	3–4	B	B2
<i>Bubo bubo</i>	R	2007	5–10	C	B2
<i>Falco vespertinus</i>	P	2008	5–50 ind.	C	A1?
<i>Falco tinnunculus</i>	R		Common		B2?
<i>Gyps fulvus</i>	N	2008	2–5 ind.	C	N
<i>Aquila chrysaetos</i>	R	2010	1–2	C	N
<i>Falco peregrinus</i>	R	2010	3–5	C	N
<i>Burhinus oedicnemus</i>	B	2011	10–20		N

Virovi 1,285 m a.s.l.), and the highest peaks towards Mt German in the east (Tabla summit 1,355 m a.s.l.). The geological composition is diverse, with predominating metamorphic rocks of different ages. Main rivers are the Kriva Reka with its tributary Kratovska Reka, and the Pčinja with the Bistrica and Petrošnica being its main tributaries (Figure 21).

Species

The mosaic landscape of steppe-like pastures and woods intersected with river valleys and small gorges attracts very large number of species, including raptors and seven species characteristic of the Mediterranean biome, some of which (Masked Shrike, Rock Nuthatch) reach here the northernmost part of their distribution areas in the Central Balkans. Large portions of the site have been insufficiently studied, making the estimate of population sizes difficult, and thus in most cases the figures given should be considered conservative. Some of the species (e.g. Egyptian Vulture, Imperial Eagle) have undergone a notable decline in the last decade (GRUBAČ & VELEVSKI *in prep.*), but other

important species seem to have increased in numbers, especially the Lesser Kestrel (10–50 pairs), for the first time recorded breeding in small colonies in the villages in 2010 (M. RUŽIĆ *pers. comm.*). Notable is the breeding density of the Semicollared Flycatcher (20–50 pairs) in the northernmost parts of the site, reaching 6 pairs/5 ha in the remaining patches of mature Beech forests (ŠKORPIKOVÁ *et al.* 2009B), and further studies on distribution and population size of this species here are urgently needed. Other species that is likely to meet the thresholds set for populations of European importance is Common Kestrel. Small migrating flocks of Red-footed Falcons have also been observed (Table 32). Historically, breeding of Griffon Vultures has been recorded (B. GRUBAČ *unpubl.*)

Habitats and land use

Very complex mosaic of habitat types is found at this site, from bare limestone cliffs in the gorges and bare silicate cliffs both in gorges and mountains, to old Beech and oak forests. Poplar and willow belts are found along all major rivers. Extensive arable fields



Figure 22: Characteristic landscape of the IBA Pčinja - Petrošnica - Kriva Reka Rivers (photo: B. Rubinić)

Slika 22: Značilna krajina IBA Reke Pčinja - Petrošnica - Kriva reka (foto: B. Rubinić)

and dry pastures are present, especially in the southern part of the site, while the northern part is dominated by oak forest remains on silicate, often exposed bedrock (Table 33, Figure 22).

Table 33: The main CORINE land cover types (Level 3) in the IBA Pčinja - Petrošnica - Kriva Reka Rivers

Tabela 33: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Reke Pčinja - Petrošnica - Kriva reka

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	15.0
242	Complex cultivation patterns	17.5
243	Land principally occupied by agriculture, with significant areas of natural vegetation	10.4
231	Pastures	28.5
311	Broad-leaved forest	8.2
324	Transitional woodland-shrub	18.0
	Other	2.4

Threats

Serious threat to the large raptors is the planned wind farm along the borderline with Serbia. Construction of railway and highway from Kumanovo to the Bulgarian border will possibly impact the breeding pairs of Imperial Eagles, Long-legged Buzzards, Black Stork, Lanner Falcon, and others. Forestry practices unfavourable to the Semicollared Flycatcher are likely. Hunting is widespread, poaching probably takes place, and occasional use of poisonous baits has been noted. Interest by falconers, especially in Lanner Falcon nests, exist, although no nest robbery has been documented so far. As in other regions of the country, livestock reduction has probably impacted vultures and Imperial Eagles (Table 34).

Conservation

Only an insignificant portion (less than 1%) of the site has been protected within three separate sites (Orašac, Kuklica and Ploče - Litotelmi), on locations without significant importance for birds. Large part of the IBA overlaps the proposed Emerald Site "German - Pčinja" (MK0000029).

Table 34: The main threats to birds and their importance in the IBA Pčinja - Petrošnica - Kriva Reka Rivers**Tabela 34:** Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Reke Pčinja - Petrošnica - Kriva reka

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
141	Abandonment of pastoral systems	high	<i>N. percnopterus</i> , <i>F. naumanni</i> , <i>G. fulvus</i>
243	Trapping, poisoning, poaching	high	<i>A. heliaca</i> , <i>N. percnopterus</i>
230	Hunting	medium	<i>A. graeca</i>
160	General forestry management	medium	<i>F. semitorquata</i>
242	Taking from nest (falcons)	medium	<i>F. biarmicus</i>
410	Industrial or commercial areas	medium	<i>N. percnopterus</i> , <i>B. rufinus</i> , <i>A. chrysaetos</i> , <i>F. vespertinus</i>
502	Motorways, roads	medium	<i>C. nigra</i> , <i>A. heliaca</i> , <i>F. biarmicus</i> , <i>B. rufinus</i>
503	Railway lines, TGV	medium	<i>A. heliaca</i> , <i>B. rufinus</i> , <i>C. garrulus</i>
701	Water pollution	medium	<i>C. nigra</i>

3.2.10. Preod - Gjulgance

General information

Name in English: Preod - Gjulgance

Name in Macedonian: Преод - Гјуѓанце (Преод - Ѓуѓанце)

IBA code: MK015

Criteria: A1, B2

Area: 10,893 ha

Central coordinates: 21°58'9.22"E, 41°57'32.02"N

Altitude: 320–776 m a.s.l.

Administrative region(s): Sveti Nikole, Probištip, Kumanovo

Site description

The site is situated in central Macedonia, north of the town Sveti Nikole. Starting from Nemanjica village, the boundary runs NE following the slopes of Mt Mangovica to the village Gorno Barbarevo. Part of this boundary is shared with the Zletovska River Valley site (MK012). From Gorno Barbarevo, the boundary turns

west to Kokošinje village, and then continues S-SW to the villages of Stanjevci and Alakince, following the road Kumanovo–Sveti Nikole for a few kilometres. From Alakince, it roughly follows the 400 m isohypse to the village of Preod, from where it turns east to the village of Nemanjica again.

The site is characterized by low mountainous relief as part of Mt Mangovica, with geological composition dominated by metamorphite and magmatites, while lake sediments are found in the lower parts. The largest river is the Karataš (Figure 23).

Species

The site has been insufficiently studied, but 2–3 pairs of Imperial Eagle are found, breeding on the slopes of the hills and in the fields, together with 30–50 pairs of Lesser Kestrel breeding in the villages of the region. Rollers are also present, but their population was not censused. Other important species include Golden Eagle and possibly single pairs of Black Stork *Ciconia nigra* and Egyptian Vulture *Neophron percnopterus* (Table 35).

Table 35: List of triggering and other important bird species in the IBA Preod - Gjulgance**Tabela 35:** Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Preod - Gjulgance

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Aquila heliaca</i>	R	2007	2–3	B	A1
<i>Falco naumanni</i>	B	2003	30–50	B	B2
<i>Coracias garrulus</i>	B		Frequent		N
<i>Circus pygargus</i>	B	2010	3–10	B	N
<i>Aquila chrysaetos</i>	R	2010	1	A	N

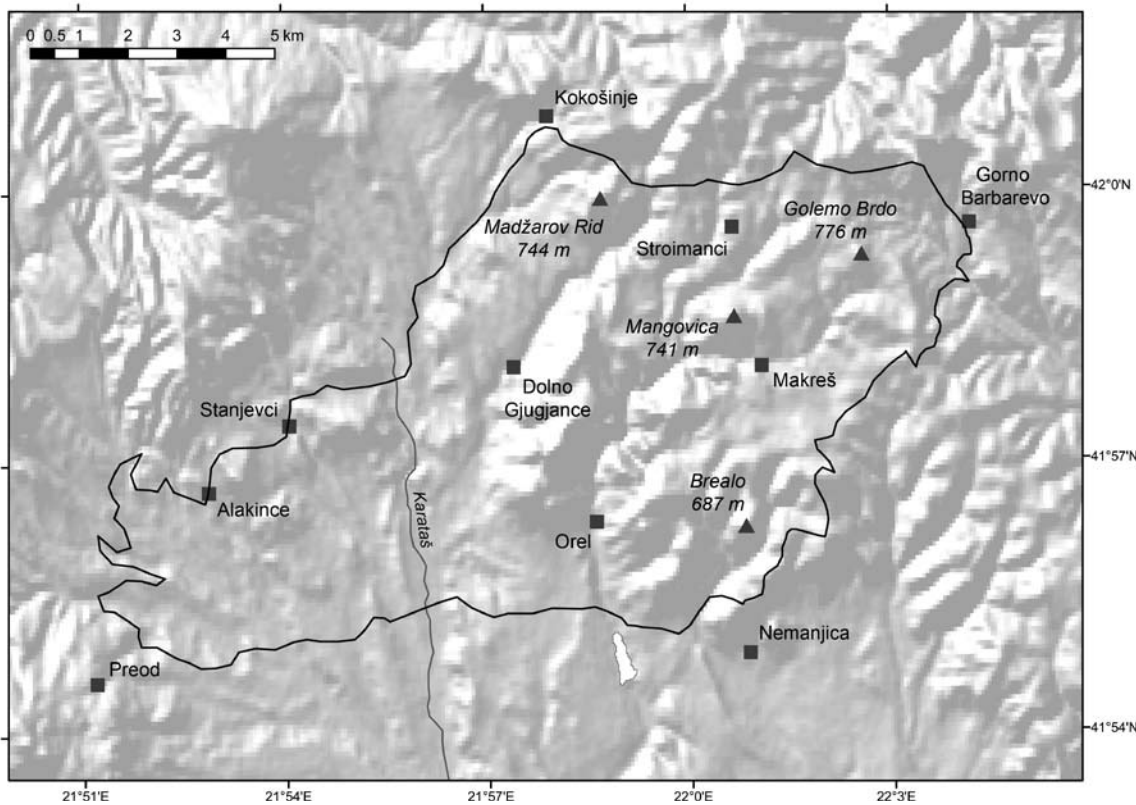


Figure 23: Map of the IBA Preod - Gjulgance with its main features depicted

Slika 23: Zemljevid IBA Preod - Gjulgance z glavnimi značilnostmi območja

Table 36: The main CORINE land cover types (Level 3) in the IBA Preod - Gjulgance

Tabela 36: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Preod - Gjulgance

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	25.4
242	Complex cultivation patterns	12.8
243	Land principally occupied by agriculture, with significant areas of natural vegetation	16.6
231	Pastures	18.9
311	Broad-leaved forest	4.5
324	Transitional woodland-shrub	21.8

Habitats and land use

Agricultural arable land predominates, although wet meadows and pastures are also present in fairly

high percentages. Remains of oak forests and wind-protection tree-rows are found, on some places forming real forest stands (Table 36, Figure 24).

Threats

Wind farm development is planned in the near future within this region, which will also affect the sites of Zletovska River Valley (MK012) and Ovče Pole (MK019). Planned highway connecting Skopje with Štip will cross the site. Also, construction of a new cargo airport is foreseen in more distant future. Other threats are poorly documented. Electricity lines at the site have proved to be the cause of Lesser Kestrel mortalities due to electrocution, although other important species are likely to be affected as well. Livestock numbers have been greatly reduced in numbers, resulting in lower food availability for Imperial Eagles and foraging vultures, but also in overgrown pastures (i.e. breeding sites of Stone Curlew being lost) (Table 37).

Conservation

The site is not protected.



Figure 24: Characteristic landscape of the IBA Preod - Gjurgjance (photo: M. Velevski)

Slika 24: Značilna krajina v IBA Preod - Gjurgjance (foto: M. Velevski)

Table 37: The main threats to birds and their importance in the IBA Preod - Gjurgjance

Tabela 37: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Preod - Gjurgjance

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
141	Abandonment of pastoral systems	high	<i>F. naumanni</i>
511	Electricity lines	high	<i>A. heliaca</i> , <i>F. naumanni</i> , <i>C. garrulus</i>
410	Industrial or commercial areas	medium	<i>A. heliaca</i> , <i>F. naumanni</i>
502	Motorways, roads	medium	<i>A. heliaca</i> , <i>F. naumanni</i> , <i>C. garrulus</i>
505	Airport	medium	<i>A. heliaca</i> , <i>F. naumanni</i> , <i>C. garrulus</i>

3.2.11. Osogovo Mountains

General information
Name in English: Osogovo Mountains
Name in Macedonian: Osogovski Planini (Осоговски Планини)
IBA code: MK016
Criteria: A1, B2
Area: 7,530 ha
Central coordinates: 22°17'12.8"E, 42°01'6.86"N
Altitude: 400–1,669 m a.s.l.
Administrative region(s): Probištip, Kočani, Kratovo

Site description

Situated east of the town Probištip in NE Macedonia, the site includes the lower western slopes of Mt Osogovo. Starting at the town Zletovo, the boundary runs east to the village of Tursko Rudare, to the locality Preslop, surrounds the Pasadžikova Čuka peak (1,544 m a.s.l.), continues north to the Ponikva ridges, west to Panagjur (1,669 m a.s.l.) and Kula (1,391 m a.s.l.), passes through the village Jamište, crosses the Zletovska Reka River and reaches Lukovo village, from where it continues south passing between the villages of Dobrevu and Lesново, reaching Zletovo again.

The relief is intersected by several river valleys, i.e.

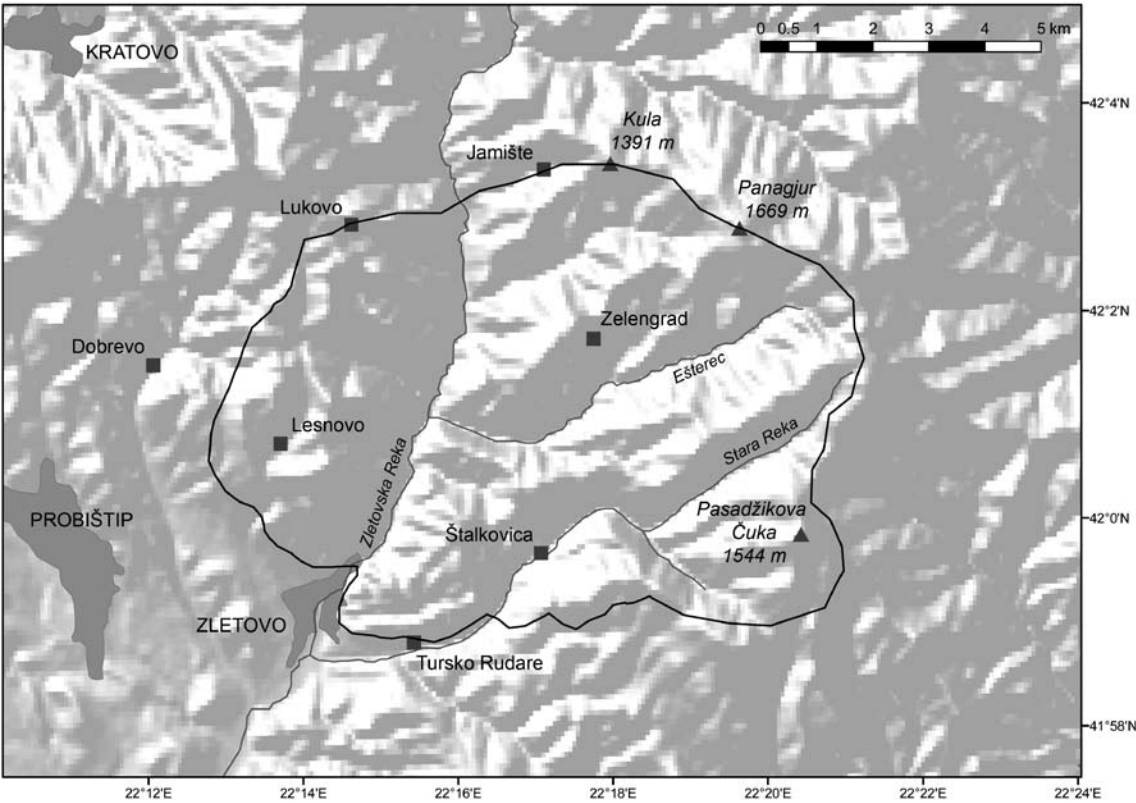


Figure 25: Map of the IBA Osogovo Mountains with its main features depicted

Slika 25: Zemljevid IBA Osogovsko gorovje z glavnimi značilnostmi območja

Zletovska Reka, Štalkovačka (Stara) Reka, Zelengradska Reka, Jamiška Reka. The largest cliffs are those of Ratkova Skala (Stara Reka Gorge). Geologically, magmatic rocks prevail in the region (Figure 25).

Species

Triggering species for the site are the Lanner Falcon (two pairs) and Egyptian Vulture (one pair; in 1990s, four territories were known, B. GRUBAČ *unpubl.*). Two

Table 38: List of triggering and other important bird species in the IBA Osogovo Mountains

Tabela 38: Seznam kvalifikacijskih in drugih pomembnih ptic v IBA Osogovsko gorovje

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2010	1	A	A1
<i>Falco biarmicus</i>	B	2007	2	A	B2
<i>Ciconia nigra</i>	B	2008	1	A	N
<i>Circus gallicus</i>	B	2008	2	A	N
<i>Buteo rufinus</i>	B	2009	1	A	N
<i>Aquila chrysaetos</i>	R	2008	1	A	N
<i>Falco peregrinus</i>	R	2008	3	A	N
<i>Alectoris graeca</i>	R		Frequent		N
<i>Bubo bubo</i>	R	2008	1–2	C	N
<i>Ficedula semitorquata</i>	B	2009	0–20	C	



Figure 26: Characteristic landscape of the IBA Osogovo Mountains (photo: M. Velevski)

Slika 26: Značilna krajina IBA Osogovsko gorovje (foto: M. Velevski)

Table 39: The main CORINE land cover types (Level 3) in the IBA Osogovo Mountains

Tabela 39: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Osogovsko gorovje

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
231	Pastures	9.2
311	Broad-leaved forest	53.2
324	Transitional woodland-shrub	26.8
	Other	10.8

breeding pairs of Short-toed Eagle, 1–2 pairs of Eagle Owl, single pairs of Black Stork, Long-legged Buzzard and Golden Eagle, and three pairs of Peregrine Falcons have also been found. Semicollared Flycatcher has been recorded breeding at scattered localities on Mt Osogovo, although in numbers probably insufficient

to include large territories of the mountain within the IBA’s boundaries. The species has not yet been recorded within the site’s boundaries, but is very likely present (Table 38). Until 2003, a small colony of Griffon Vultures used to breed here (E. STOYNOV & E. LISIČANEC, *unpubl.*).

Habitats and land use

The area is forested; oak and Beech forests alternate depending on the exposition. On some locations, forests are well preserved, with stands of mature trees present. The cliff complex, composed of several smaller and one dominant cliff, defines the landscape. The valley of Zletovska Reka River has a good deal of eroded surfaces and scrubs in different stages of succession (Table 39, Figure 26).

Threats

The local population is highly dependent on natural resources (pastures, forests) for survival, resulting in

Table 40: The main threats to birds and their importance in the IBA Osogovo Mountains

Tabela 40: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Osogovsko gorovje

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
160	General forestry management	high	<i>F. semitorquata</i>
242	Taking from nest (falcons)	high	<i>F. biarmicus</i> , <i>F. peregrinus</i>
403	Dispersed habitation	medium	<i>C. nigra</i>
502	Motorways, roads	medium	<i>C. nigra</i> , <i>N. percnopterus</i>
301	Quarries	medium	<i>C. nigra</i> , <i>N. percnopterus</i> , <i>F. biarmicus</i> , <i>F. peregrinus</i>

high timber extraction and collection of secondary forest products. Forestry is intensive, and clearcutting is frequently practiced. Mineral extraction took place in the past. A road connecting Zletovo with the “Ponikva” tourist locality is planned to pass through this site. Nest robbery (Lanner) has been noted (Table 40).

Conservation

Part of the site is managed as a hunting ground for big game, with limited access and thus under somewhat lesser pressure than the surrounding. The site completely falls within the borders of the Emerald Site (MK0000026) and the proposed protected area “Osogovo Mountains”.

3.2.12. Jakupica Mountain

General information

Name in English: Jakupica Mountain

Name in Macedonian: Jakupica (Јакупица)

IBA code: MK017

Criteria: A3, B2

Area: 23,081 ha

Central coordinates: 21°19'31.49"E, 41°45'10.59"N

Altitude: 470–2,539 m a.s.l.

Administrative region(s): Sopište, Studeničani, Čaška, Makedonski Brod, Želino

Site description

This IBA occupies the highest parts of Mt Jakupica (most of the site lies above 1,600 m a.s.l.) in central Macedonia. Its boundary starts at Kula locality south of Skopje, descends into the Oča River Valley by following the road through the abandoned village of Kapina, then follows the Oča upstream and SE to the Jaloarnik locality, then follows the 1,200 m isohypse south to just above the village of Belica, then ascends to the isohypse of 1,600 m. This isohypse forms almost

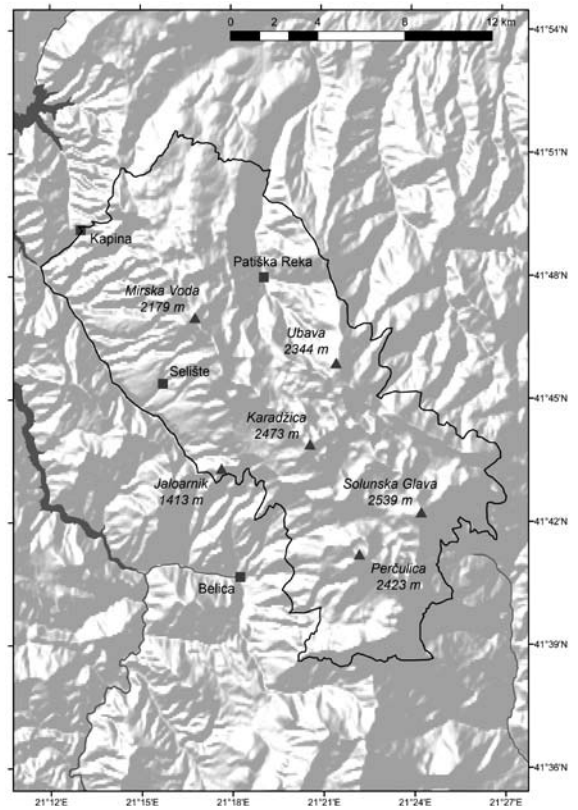


Figure 27: Map of the IBA Jakupica Mountain with its main features depicted

Slika 27: Zemljevid IBA Gora Jakupica z glavnimi značilnostmi območja

the entire southern boundary (except the Odbivarnik locality) and a large part of the eastern boundary to Kurtovica, where it ascends to 1,800 m a.s.l. Following this isohypse, the boundary continues north, to the saddle between Gorni and Dolni Pepeljak, follows the ridge Dolni Pepeljak and descends into the valley of

Table 41: List of triggering and other important bird species in the IBA Jakupica Mountain

Tabela 41: Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Gora Jakupica

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Prunella collaris</i>	B	2002	20–40	C	A3
<i>Tichodroma muraria</i>	B	1999	5–10	C	A3
<i>Pyrrhocorax graculus</i>	B	2010	100–150	B	A3
<i>Montifringilla nivalis</i>	B		Rare		A3
<i>Aquila chrysaetos</i>	R	1999	3–4	B	B2
<i>Alectoris graeca</i>	R	2010	50–100	C	B2
<i>Falco tinnunculus</i>	R		Common		B2?
<i>Falco peregrinus</i>	R	2010	2–3	C	N
<i>Bubo bubo</i>	R	2010	4–8	C	N
<i>Eremophila alpestris balcanica</i>	B		Frequent		N
<i>Pyrrhocorax pyrrhocorax</i>	B		Frequent		N

the Patiška Reka River. From here it turns west and near Kopanje reaches Kula again.

High mountain karst fields (Begovo Pole, Solunsko Pole, Šilegarnik) are the area's main geomorphologic feature. The highest peaks are Karadžica (2,473 m a.s.l.), Ubava (2,344 m a.s.l.) and Solunska Glava Mts (2,539 m a.s.l.). Most prominent in the NW part are the cliffs of Mt Karadžica, while in the south the distinctive cliffs Nežilovski Steni are dominant. Geological composition is of Precambrian dolomites and dolomite marbles (Figure 27).

Species

Parts of the site have been well studied (within wider boundaries, except the western slopes), and about 120 species have been recorded so far (DIMOVSKI 1967, VELEVSKI *et al.* 2002B). The main reason for its designation are species characteristic of the Eurasian high-montane biome, found here in significant numbers, usually inhabiting the cliffs above 1,800 m a.s.l. This is the third most important site in the

Table 42: The main CORINE land cover types (Level 3) in the IBA Jakupica Mountain

Tabela 42: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Gora Jakupica

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
311	Broad-leaved forest	10.7
312	Coniferous forest	11.3
313	Mixed forest	10.7
332	Bare rocks	0.7
321	Natural grasslands	49.9
322	Moors and heathland	2.6
324	Transitional woodland-shrub	12.7
	Other	1.4

country after Šar Planina Mountain (MK001) and the Radika River Catchment (MK002). From this group of birds, presence of the Snowfinch, a very rare

Table 43: The main threats to birds and their importance in the IBA Jakupica Mountain

Tabela 43: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Gora Jakupica

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
141	Abandonment of pastoral systems	high	<i>P. graculus</i>
243	Trapping, poisoning, poaching	high	<i>A. chrysaetos</i>
960	Interspecific faunal relations	high	<i>A. chrysaetos</i> , <i>B. bubo</i>
230	Hunting	medium	<i>A. graeca</i>



Figure 28: Characteristic landscape of the IBA Jakupica Mountain (photo: S. Hristovski)

Slika 28: Značilna krajina v IBA Gora Jakupica (foto: S. Hristovski)

species here, has also been recorded (DIMOVSKI 1967, MATVEJEV 1976). Although it has not been recorded since then, we have included it in the list. The site also holds important populations of Red-billed Chough and Shore Lark. Golden Eagle population (3–4 pairs) meets the threshold of European importance. The site holds internationally important population of Rock Partridge (50–100 pairs), and probably Common Kestrel, but their relative importance against other sites in Macedonia is unknown (Table 41).

Habitats and land use

Alpine pastures, moors, some heathland and large rocky karst fields dominate above the tree zone, with limestone cliff-faces descending steep into the forests (Beech *Fagus sylvatica* in the south, European Black

Pine *Pinus nigra* in the west). Large complexes of Mountain Pine *Pinus mugo* are found in the northern part of the site. Beech forest is the dominant broad-leaved forest, often mixed with Bulgarian Fir *Abies borisii-regis* or Black Pine (Table 42, Figure 28).

Threats

Apart from hunting and poaching, further resulting in the reduction of raptor prey base, no other direct threats have been recorded. Livestock breeding has significantly decreased, probably impacting populations of Choughs and large raptors (Table 43).

Conservation

The site is partially included in the Multipurpose protected area “Jasen”, which due to its intensive management and significant conservation efforts reduces the threats from hunting and poaching (even though controlled hunting activities are implemented by the “Jasen” management). Small parts of the site are included in the “Belešnička Reka” Nature Monument. A small protected area for the conservation of Mountain Pine (Juričica) was also designated within the site. Designation of a new national park, “Jakupica”, is planned, which is to include the remaining territory. The site is entirely included in the “Jakupica” Emerald Site (MK0000017).

3.2.13. Taor Gorge

General information

Name in English: Taor Gorge

Name in Macedonian: Taorska Klisura (Таорска Клисура)

IBA code: MK018

Criteria: A1, A3

Area: 2,538 ha

Central coordinates: 21°42'46.55"E, 41°46'37.19"N

Altitude: 170–675 m a.s.l.

Administrative region(s): Veles

Site description

The site occupies a short section of the Vardar River Valley (southernmost parts of the entire Taor Gorge) north of Veles in central Macedonia and within its borders includes the hills that are close to the Valley, as well as the locality Kalište to the north and the locality Sredno Brdo to the south (Figure 29).

The geological composition is very diverse, belonging to the complex Vardar tectonic zone, with carbonates, metamorphic and magmatic rocks from different periods.

Table 44: List of triggering and other important bird species in the IBA Taor Gorge

Tabela 44: Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Soteska Taor

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2007–2010	1–2	A	A1
<i>Alectoris graeca</i>	R	2009	10–20	C	A3
<i>Oenanthe hispanica</i>	B		Common		A3
<i>Sylvia cantillans</i>	B		Common		A3
<i>Sitta neumayer</i>	R		Common		A3
<i>Lanius nubicus</i>	B		Frequent		A3
<i>Emberiza melanocephala</i>	B		Common		A3
<i>Ciconia nigra</i>	B	2008	0–1	B	
<i>Circaetus gallicus</i>	B	2008	1–2	B	N
<i>Buteo rufinus</i>	R	2009	2	A	N
<i>Aquila heliaca</i>	R	2009	0–1	B	
<i>Aquila chrysaetos</i>	R	2010	0–1	B	
<i>Falco peregrinus</i>	R	2009	1–2	B	N
<i>Bubo bubo</i>	R	2008	2–3	B	N
<i>Coracias garrulus</i>	B	2009	2–5	C	N

Table 45: The main CORINE land cover types (Level 3) in the IBA Taor Gorge

Tabela 45: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Soteska Taor

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
242	Complex cultivation patterns	4.6
243	Land principally occupied by agriculture, with significant areas of natural vegetation	7.1
231	Pastures	21.7
311	Broad-leaved forest	18.0
333	Sparsely vegetated areas	2.8
324	Transitional woodland-shrub	43.5
	Other	2.4

Species

The Egyptian Vulture (1–2 pairs) and a group of six species characteristic of the Mediterranean biome with significant populations meet the criteria for designation of the site as an IBA. One of the two pairs of Egyptian Vultures has not been observed since 2008 and might have been lost recently. Other important species include Eagle Owl (2–3 pairs), Long-legged Buzzard (2 pairs), Peregrine Falcon (1–2 pairs), Golden Eagle (1 pair), Black Stork (possibly one pair), and possible breeding of Imperial Eagle. A few pairs of Rollers have also been recorded (Table 44).

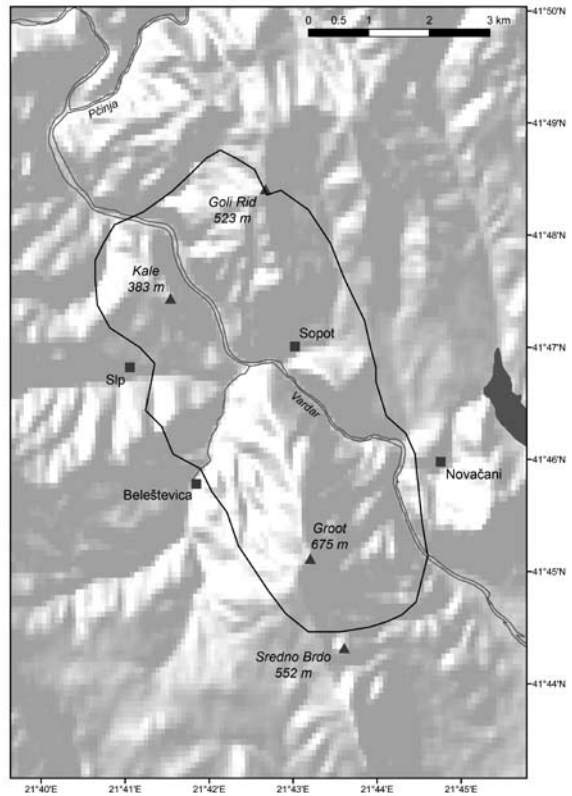


Figure 29: Map of the IBA Taor Gorge with its main features depicted

Slika 29: Zemljevid IBA Soteska Taor z glavnimi značilnostmi območja



Figure 30: Characteristic landscape of the IBA Taor Gorge (photo: M. Veleviski)

Slika 30: Značilna krajina IBA Soteska Taor (foto: M. Veleviski)

Table 46: The main threats to birds and their importance in the IBA Taor Gorge

Tabela 46: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Soteska Taor

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
960	Interspecific faunal relations	high	<i>A. chrysaetos</i> , <i>B. bubo</i> , <i>A. heliaca</i>
410	Industrial or commercial areas	high	<i>N. percnopterus</i> , <i>C. nigra</i> , <i>B. rufinus</i> , <i>C. garrulus</i>
502	Motorways, roads	high	<i>N. percnopterus</i>
162	Artificial planting	medium	<i>B. rufinus</i>
230	Hunting	medium	<i>A. graeca</i>
301	Quarries	medium	<i>B. rufinus</i> , <i>F. peregrinus</i>
501	Paths, tracks, cycling tracks	medium	<i>C. nigra</i>
503	Railway lines, TGV	medium	<i>N. percnopterus</i> , <i>C. nigra</i> , <i>B. rufinus</i>
530	Improved access to site	medium	<i>N. percnopterus</i> , <i>C. nigra</i> , <i>B. rufinus</i>
701	Water pollution	medium	<i>C. nigra</i>
220	Leisure fishing	medium	<i>C. nigra</i>

Habitats and land use

The most important habitats for birds are the two limestone cliffs, surrounded by pastures, remains of oak forests and scrubland, and divided by the Vardar River and its riparian willow belt (Table 45, Figure 30).

Threats

Stone mining activities are taking place in the site's close surrounding, and expansion of these activities into the site is possible. Construction of a hydro-power plant is planned, with reservoir that will submerge parts of the habitats. Construction will require translocation

of the existing railway closer to the cliffs. The existing highway and its maintenance cause much disturbance. Afforestation with allochthonous tree species is taking place (Table 46).

Conservation

Establishment of a protected area is planned. The site partially overlaps the “Katlanovo – Taor” Emerald Site (MK0000030).

3.2.14. Ovče Pole

General information	
Name in English:	Ovče Pole
Name in Macedonian:	Ovče Pole (Овче Поле)
IBA code:	MK019
Criteria:	A1, B2
Area:	48,183 ha
Central coordinates:	22°00'1.33"E, 41°49'1.47"N
Altitude:	230–707 m a.s.l.
Administrative region(s):	Veles, Lozovo, Sveti Nikole, Probištip, Karbinci, Štip, Gradsko

Site description

This large plain is situated in central Macedonia, with the site boundary starting near the town of Veles, going more or less eastwards towards the village of Kišino, then NE by following the ridges of small hills and ravines, till it reaches the village Bogoslovec. Then it continues SE to the village of Dobrošani, where it continues east to Suševo, north to Sarčievo, NE to Gorni Balvan, and again north to Pišica. From here it shares its boundary with the Zletovska River Valley site (MK012), going NW along the ridge of Mangovica Mt

to the dirt road under the peak of Struga (758 m a.s.l.) at the village of Dolno Barbarevo. From here it shares its boundary with the Preod - Gjulgance site (MK015) SW of Nemanjica village. Then it continues south to the irrigation channel, follows it westwards to the town of Sveti Nikole, avoiding it from the south and proceeding SW to the villages of Gjuzemelci, Sojklari and Otovica. From here it continues southwards, following the E-75 highway (Veles–Skopje), until reaching its starting point east of Veles (Figure 31).

The site is a tectonic valley, limited by Mt Mangovica, Bogoslovec Hill and the Vardar River. Geologically, it consists mostly of Pliocene lake sediments.

Species

No complete checklist of the birds of this area exists. Historically, the site was an important breeding place for the Black Vulture *Aegypius monachus* (KARAMAN 1929) and Little Bustard *Tetrax tetrax* (STRESEMANN 1920). The former has not been recorded in the wider region since 1960s (DIMOVSKI 1971A), while the last record of four Little Bustard individuals originates from the place Domus Bunar near the village of Crnilište in 1972 (TRPKOV *et al.* 1978).

The most important breeding species are the Imperial Eagle (10–12 pairs), Lesser Kestrel (200–250 pairs), and Roller (10–30 pairs). The Imperial Eagles breed in trees and on electricity pylons often close to human settlements. Lesser Kestrels are found breeding exclusively in the villages, aggregating in large numbers (flocks of 300 ind. were seen on 13 Sep 2006, M. VELEVSKI *unpubl.*) prior to their migration. The region is frequently used by foraging Griffon and Egyptian Vultures, the former arriving from the colonies at Mariovo, Tikveš Lake and Demir Kapija,

Table 47: List of triggering and other important bird species in the IBA Ovče Pole

Tabela 47: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Ovče Pole

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Aquila heliaca</i>	R	2010	10–12	A	A1, B2
<i>Coracias garrulus</i>	B	2006	10–30	C	A1, B2
<i>Neophron percnopterus</i>	N	2009	6–10 ind.	A	A1
<i>Falco naumanni</i>	B	2003	200–250	A	B2
<i>Burhinus oedicephalus</i>	B	2010	20–50	C	B2
<i>Lanius minor</i>	B	2009	30–100	C	B2
<i>Gyps fulvus</i>	N	2008	5–20 ind.	A	N
<i>Circus cyaneus</i>	B	2009	2–4	C	N
<i>Buteo rufinus</i>	R	2010	2–3	B	N
<i>Falco cherrug</i>	B	2010	0–1	C	

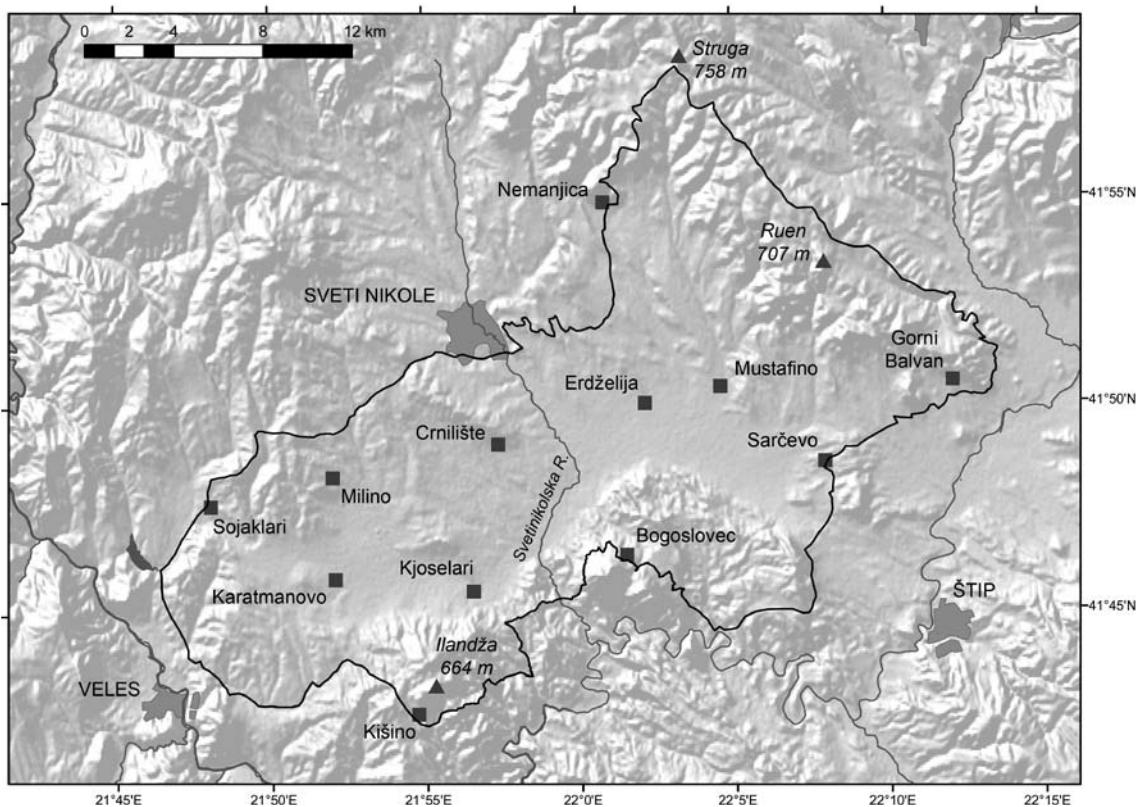


Figure 31: Map of the IBA Ovče Pole with its main features depicted

Slika 31: Zemljepod IBA Ovče Pole z glavnimi značilnostmi območja

Table 48: The main CORINE land cover types (Level 3) in the IBA Ovče Pole

Tabela 48: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Ovče Pole

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	44.9
242	Complex cultivation patterns	15.2
243	Land principally occupied by agriculture, with significant areas of natural vegetation	3.6
231	Pastures	15.4
112	Discontinuous urban fabric	0.4
311	Broad-leaved forest	1.4
333	Sparsely vegetated areas	0.2
324	Transitional woodland-shrub	14.7
	Other	3.9

and the latter from the breeding sites at Bregalnica. Subadult individuals, however, have also been

observed. Juvenile and immature Imperial Eagles are present in the wintering period as well (Table 47).

Habitats and land use

Ovče Pole is a large plain, almost entirely used for agriculture, with exception of small unsuitable salty patches and some remains of wetlands. In the peripheral parts dry pastures dominate. Tree stands with large poplar or oak trees are scattered throughout the site. Several villages are embedded in the landscape (Table 48, Figure 32).

Threats

Poisonous baits are occasionally used, resulting in poisonings of Griffon Vultures and Imperial Eagles, with the last major incident occurring in 2003 (14 Griffon Vultures and at least one Imperial Eagle found dead, T. LISIČANEC, E. LISIČANEC & B. HALLMAN *unpubl.*). The plains were the most important wintering grounds for sheep in Macedonia, but their numbers have significantly decreased. Pesticide use is probably widespread due to intensive agriculture. Hunting is



Figure 32: Characteristic landscape of the IBA Ovče Pole (photo: M. Velevski)

Slika 32: Značilna krajina v IBA Ovče Pole (foto: M. Velevski)

Table 49: The main threats to birds and their importance in the IBA Ovče Pole

Tabela 49: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Ovče Pole

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
110	Use of pesticides	high	<i>C. garrulus</i> , <i>F. naumanni</i>
141	Abandonment of pastoral systems	high	<i>G. fulvus</i> , <i>N. percnopterus</i>
511	Electricity lines	high	<i>A. heliaca</i> , <i>F. naumanni</i> , <i>C. garrulus</i>
243	Trapping, poisoning, poaching	high	<i>A. heliaca</i> , <i>G. fulvus</i>
161	Forest planting	medium	<i>B. oedicnemus</i>
230	Hunting	medium	<i>A. heliaca</i>
290	Hunting, fishing or collecting activities not referred to above	medium	<i>A. heliaca</i>
410	Industrial or commercial areas	medium	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>A. heliaca</i>

intensive, especially of Grey Partridge *Perdix perdix* and Quail *Coturnix coturnix*, and possible risks from disturbance and secondary lead poisoning exist for the Imperial Eagles. Poaching also takes place. The threat from low and medium tension electricity poles is still unknown, but is very likely. Destruction of Imperial Eagle nests on electricity pylons, where they breed, used to take place by the State electro-distribution

company. Wind farms to be erected in the future south of Štip and north of Sveti Nikole will likely impact the Imperial Eagle population and foraging vultures (Table 49).

Conservation

The site is not protected, but has been proposed as an Emerald Site (MK0000035).

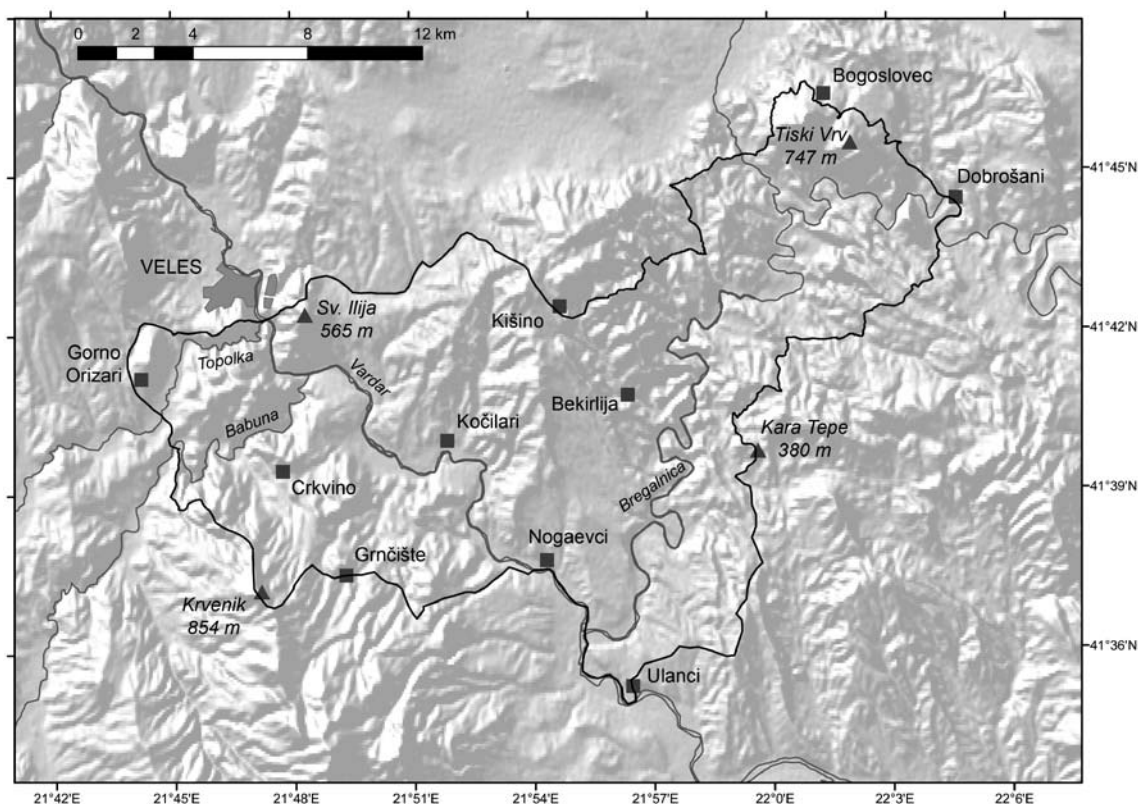


Figure 33: Map of the IBA Topolka - Babuna - Bregalnica Rivers with its main features depicted

Slika 33: Zemljevid IBA Reke Topolka - Babuna - Bregalnica z glavnimi značilnostmi območja

3.2.15. Topolka - Babuna - Bregalnica Rivers

General information

Name in English: Topolka - Babuna - Bregalnica Rivers

Name in Macedonian: Reka Topolka - reka Babuna - reka Bregalnica (Река Тополка - река Бабуна - река Брегалница)

IBA code: MK020

Criteria: A1, A3, B2

Area: 27,648 ha

Central coordinates: 21°54'27.65"E, 41°40'43.23"N

Altitude: 150–755 m a.s.l.

Administrative region(s): Veles, Gradsko, Lozovo, Negotino, Štip, Sveti Nikole

Site description

This site unites two former IBAs in central Macedonia: the "Babuna Gorge, Topolka Gorge, and Crn Kamen" (MK003) and "Bregalnica River" (MK004) (HEATH & EVANS 2000), connecting them with the ecologically similar valley of the Vardar River in its middle section.

The boundary starts south of Veles, continues west through Prevalec settlement and turns south of the Topolka River Gorge and Bair Hill. When passing the village of Gorno Orizari, it crosses the Topolka and Babuna Rivers and continues south across the peaks of Dabović (619 m a.s.l.), Seir (677 m a.s.l.) and Krvenik (854 m. a.s.l.). From here it continues east, passing the village of Grnčište and crossing the pass under peak Cucula (469 m a.s.l.), reaching the Vardar River at the village of Nogaevci and following the river south until the village of Ulanci. From here it continues NE through Cucule, Rajnički Rid and Bunarče, then turns north to Kara Tepe. By following small ridges and ravines, it reaches the valley of the rivulet Kuri Dere, from where it continues NE till the Bregalnica River. It follows the river north to Dobrošani village, where it meets the boundary of the Ovče Pole site (MK019), following it at first NW (till Bogoslovec village), then SW to Kišino village, and west to Veles.

Dominant reliefs are the hills and gorges of the Babuna, Topolka and Bregalnica Rivers and their highly typical meanders (Figure 33). Mesozoic

Table 50: List of triggering and other important bird species in the IBA Topolka– Babuna–Bregalnica Rivers**Tabela 50:** Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Reke Topolka– Babuna–Bregalnica

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2010	4	A	A1, B2
<i>Aquila heliaca</i>	R	2010	3–5	B	A1, B2
<i>Coracias garrulus</i>	B	2009	20–40	C	A1, B2
<i>Alectoris graeca</i>	R	2010	30–100	C	A3, B2
<i>Lanius nubicus</i>	B	2010	50–150	B	A3, B2
<i>Oenanthe hispanica</i>	B		Abundant		A3
<i>Hippolais olivetorum</i>	B		Frequent		A3
<i>Sylvia cantillans</i>	B		Abundant		A3
<i>Sitta neumayer</i>	R		Frequent		A3
<i>Emberiza melanocephala</i>	B		Abundant		A3
<i>Circaetus gallicus</i>	B	2009	5–10	B	B2
<i>Buteo rufinus</i>	R	2009	7–10	B	B2
<i>Falco biarmicus</i>	B	2009	3–4	A	B2
<i>Burhinus oedicephalus</i>	B	2009	20–50	C	B2
<i>Bubo bubo</i>	R	2009	6–10	C	B2
<i>Monticola solitarius</i>	B	2003–2010	20–50	C	B2
<i>Ciconia nigra</i>	B	2009	1	A	N
<i>Gyps fulvus</i>	N	2009	5–20 ind.	A	N
<i>Aquila chrysaetos</i>	R	2009	3	A	N
<i>Accipiter brevipes</i>	B		Rare		N
<i>Falco naumanni</i>	B	2002	10	B	N
<i>Falco peregrinus</i>	R	2009	3	A	N

formations prevail in the geological composition – Triassic, Jurassic and Cretaceous metamorphites, carbonates and magmatic rocks. West of the Vardar River, Eocene marine sediments are found.

Species

Parts of the site significantly differ in the level of knowledge about their bird fauna. Although the gorges of the Babuna River have been well known, attracting many ornithologists in the past (e.g. STRESEMANN 1920, MAKATSCH 1950, BODENSTEIN & KROYMANN 1967–1969), who thus provided a number of data on the nearby gorge of the Topolka River, the valley and the gorge of the Bregalnica River have been completely unknown (and hardly accessible) till recently (ŠKORPIKOVÁ *et al.* 2006 & 2007), with the exception of studies of vultures in the 1980–1991 period (GRUBAČ 1997), resulting in its identification as an IBA in the first inventory (GRIMMETT & JONES 1989).

The site holds a large number of species triggering the IBA criteria, including three species of global conservation concern and several raptor species in good

Table 51: The main CORINE land cover types (Level 3) in the IBA Topolka– Babuna–Bregalnica Rivers**Tabela 51:** Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Reke Topolka - Babuna - Bregalnica

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	12.9
242	Complex cultivation patterns	6.3
243	Land principally occupied by agriculture, with significant areas of natural vegetation	4.5
231	Pastures	32.9
333	Sparsely vegetated areas	1.7
321	Natural grasslands	12.9
324	Transitional woodland-shrub	23.7
	Other	5.2

numbers. In the past, several Griffon Vulture breeding sites were known in gorges of all three main rivers (VASIĆ *et al.* 1985). Historically, the gorge of the Babuna River



Figure 34: Characteristic landscape of the IBA Topolka - Babuna - Bregalnica Rivers (photo: M. Velevski)

Slika 34: Značilna krajina IBA Reke Topolka - Babuna - Bregalnica (foto: M. Velevski)

was a breeding site of Lammergeier *Gypaetus barbatus* (MAKATSCH 1950). The Mediterranean bird assemblage is characterized by the exceptionally numerous populations of Black-eared Wheatear and Black-headed Bunting, while the Masked Shrike's population here is the largest in the country. Only one small colony (about 10 pairs) of Lesser Kestrels was found at the village of Orizari near Veles in 2002, although the species is numerous on both adjacent sites (MK019 & MK021). Other important species include the Black

Stork, Levant Sparrowhawk and Golden Eagle (Table 50). Single historical data for Sardinian Warbler *Sylvia melanocephala* also exist, being the northernmost in the country (RUCNER 1962–1964).

Habitats and land use

Large portion of the site is dominated by dry, steppe-like pastures in different stages of succession towards oak forest, or planted with conifers. Two gorges (of the Babuna and Topolka Rivers) are found in

Table 52: The main threats to birds and their importance in the IBA Topolka - Babuna - Bregalnica Rivers

Tabela 52: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Reke Topolka - Babuna - Bregalnica

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
141	Abandonment of pastoral systems	high	<i>G. fulvus</i> , <i>N. percnopterus</i>
243	Trapping, poisoning, poaching	high	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>A. heliaca</i>
960	Interspecific faunal relations	high	<i>A. chrysaetos</i> , <i>B. bubo</i> , <i>A. heliaca</i>
100	Cultivation	medium	<i>B. oedicnemus</i> , <i>C. garrulus</i>
162	Artificial planting	medium	<i>B. oedicnemus</i>
230	Hunting	medium	<i>A. graeca</i>
403	Dispersed habitation	medium	<i>C. nigra</i> , <i>A. heliaca</i>
624	Mountaineering, rock climbing, speleology	medium	<i>N. percnopterus</i> , <i>C. nigra</i>
301	Quarries	medium	<i>A. graeca</i> , <i>M. solitarius</i>

the western part, the first of which is particularly suitable for breeding of birds of prey due to large number of rock shelters and caves. The gorge of the Bregalnica River consists of sandstone, which is also full of suitable niches. Extensive agricultural fields are found especially in the surroundings of the village of Nogaevci. Riparian forest belts are dominated by Oriental Plane *Platanus orientalis* along the Babuna and Topolka, and poplar and willow trees along the Vardar and Bregalnica (Table 51, Figure 34).

Threats

The Topolka Gorge is threatened by the stone quarry planned to be expanded in near future, while opening of new quarries could badly impact the Babuna Gorge. Weekend cottages are becoming increasingly numerous in the Babuna Gorge; speleological and cliff-climbing activities are regular. Intensive robbery of Griffon Vulture nests has been recorded in the past (Vasić *et al.* 1985). The Vardar Valley and the Bregalnica River's surroundings are planted with allochthonous tree species, losing the steppe-like character. Intensive agriculture is taking place in and around the site. Along the Bregalnica, some traditional activities (capturing wild bees) cause problems to cliff-breeding raptors. Hunting, poaching and poison use still take place, resulting in direct losses (at least 10 Griffon Vultures poisoned in 2008, M. VELEVSKI *unpubl.*) or prey base reduction. As elsewhere in Macedonia, livestock numbers have decreased a great deal (Table 52).

Conservation

Only a small paleontological locality (Karaslari) is under protection. Both Babuna Gorges and the Topolka Gorge have been proposed for protection. The Babuna - Topolka Gorges (MK0000023) and the Bregalnica Gorge (MK0000031) have also been proposed as Emerald Sites.

3.2.16. Gradsko - Rosoman - Negotino

General information

Name in English: Gradsko - Rosoman - Negotino

Name in Macedonian: Gradsko - Rosoman - Negotino
(Градско - Росоман - Неготино)

IBA code: MK021

Criteria: A1, A3, B2

Area: 27,692 ha

Central coordinates: 21°58'40.95"E, 41°32'29.04"N

Altitude: 130–898 m a.s.l.

Administrative region(s): Gradsko, Rosoman, Kavadarci, Negotino

Site description

This is another site in central Macedonia that surrounds parts of the Vardar and Crna Reka Valleys. Starting from the village of Nogaevci to the west it shares the boundary with the Topolka - Babuna - Bregalnica site (MK020) to the pass between the hills of Cucula and Golo Brdo (529 m a.s.l.). Then it turns

Table 53: List of triggering and other important bird species in the IBA Gradsko - Rosoman - Negotino

Tabela 53: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Gradsko - Rosoman - Negotino

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Aquila heliaca</i>	R	2007	6–8	A	A1, B2
<i>Coracias garrulus</i>	B	2007	20–40	C	A1, B2
<i>Neophron percnopterus</i>	N	2010	6 ind.	B	A1
<i>Alectoris graeca</i>	R		Frequent		A3
<i>Oenanthe hispanica</i>	B		Common		A3
<i>Hippolais olivetorum</i>	B		Rare		A3
<i>Lanius nubicus</i>	B		Rare		A3
<i>Emberiza melanocephala</i>	B		Common		A3
<i>Accipiter brevipes</i>	B	2007	1–5	C	B2
<i>Falco naumanni</i>	B	2003	200–250	B	B2
<i>Falco biarmicus</i>	B	2011	2–3	B	B2
<i>Falco vespertinus</i>	P	2010	10–50 ind.	C	A1?
<i>Circus gallicus</i>	B	2007	3–5	B	N
<i>Buteo rufinus</i>	R	2007	2–3	B	N
<i>Falco peregrinus</i>	R	2006	1–2	B	N

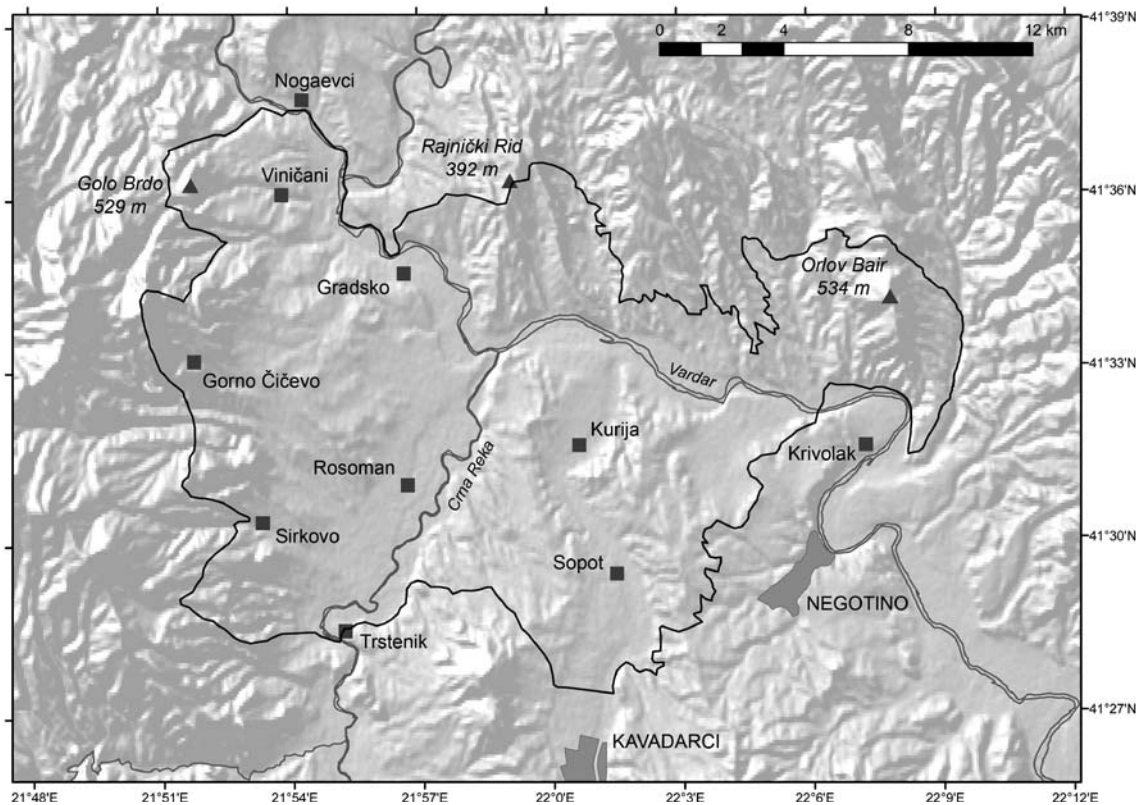


Figure 35: Map of the IBA Gradsko - Rosoman - Negotino with its main features depicted

Slika 35: Zemljevid IBA Gradsko - Rosoman - Negotino z glavnimi značilnostni območja

south to the village of Svekjani, SE to above the village Vodovrati, and SW to above the villages of Gorno Čičevo, Sirkovo and Mrzen Oraovec. From here, the boundary turns east to Trstenik village, crosses the Crna Reka River, then following the road to this village turns SE to the village of Glišić, then turns NE, crossing the Vardar River north of Krivolak village. From here it follows the road and the left banks of the Vardar SE till north of the village of Pepelište, then turns north, passing through Štipsko Ramnište, follows the valley of the Vestinja intermittent stream to Krstata. From here it continues NW to include the peak of Jokuš (300 m a.s.l.), continues west to Kara Odžali, and passes the Slana intermittent stream. After embracing the valley of the Belkamenski Potok, it continues south to Loza and Gjubrišta. Then it turns NW, following the 200 m isohypse till it meets the boundary of the Topolka - Babuna - Bregalnica Rivers site again at Rajnički Rid (392 m a.s.l.) (Figure 35).

Parts of the site belong to the Tikveš tectonic depression, intersected by the Vardar and Crna Reka Valleys. The relief is hilly, with abrasive terraces of

Table 54: The main CORINE land cover types (Level 3) in the IBA Gradsko - Rosoman - Negotino

Tabela 54: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Gradsko - Rosoman - Negotino

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	27.8
242	Complex cultivation patterns	14.4
243	Land principally occupied by agriculture, with significant areas of natural vegetation	5.3
231	Pastures	10.3
221	Vineyards	16.6
321	Natural grasslands	15.7
324	Transitional woodland-shrub	6.8
	Other	2.9

fossil lake and recent fluvial terraces. Pliocene lake sediments and recent alluvial deposits are dominant.



Figure 36: Characteristic landscape of the IBA Gradsko - Rosoman - Negotino (photo: E. Lisičanec)

Slika 36: Značilna krajina IBA Gradsko - Rosoman - Negotino (foto: E. Lisičanec)

Table 55: The main threats to birds and their importance in the IBA Gradsko - Rosoman - Negotino

Tabela 55: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Gradsko - Rosoman - Negotino

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
110	Use of pesticides	high	<i>F. naumanni</i> , <i>C. garrulus</i>
243	Trapping, poisoning, poaching	high	<i>A. heliaca</i> , <i>A. chrysaetos</i> , <i>B. rufinus</i>
511	Electricity lines	high	<i>A. heliaca</i> , <i>F. naumanni</i> , <i>C. garrulus</i>
100	Cultivation	medium	<i>F. naumanni</i> , <i>C. garrulus</i>
161	Forest planting	medium	<i>F. naumanni</i>
730	Military manoeuvres	medium	<i>A. heliaca</i> , <i>B. rufinus</i>

Species

No comprehensive study of the bird fauna of this part of Macedonia has been carried out, although the checklist is quite complete, comprising about 130 species. Most significant species are the Imperial Eagle (6–8 pairs), breeding along the Vardar River, Lesser Kestrel (200–250 pairs), breeding in villages as well as in sand cliffs, which has been rare in the last few decades in Macedonia, Roller (20–40 pairs), Lanner Falcon (2–3 pairs), and a number of Red-footed Falcons during their spring migration. Up to six adult and subadult Egyptian Vultures have been observed

in the region, foraging or gathering at predictable food sources, but no recent breeding pair is known. Five species characteristic of the Mediterranean biome regularly breed in good numbers, but with unknown population sizes. Among other important species found below the threshold numbers set, are the Long-legged Buzzard and the Short-toed Eagle (Table 53).

Habitats and land use

The site is dominated by agricultural land (mostly arable fields, but also many vineyards and some orchards), but at the periphery, dry and sometimes steppe-like

pastures are present. The banks of the Vardar are overgrown with riparian vegetation, mostly consisting of poplar and willow trees (Table 54, Figure 36).

Threats

Intensive agriculture, especially vineyard plantations, still expanding in some parts of the site, have converted large portions of the site into inappropriate habitat for triggering species. Pesticide use both in vineyards and cereal crops is intensive. Some parts of the site have been afforested with allochthonous tree species. Hunting and poaching are present; direct killing of important species, like Imperial and Golden Eagles, has been documented. Along the eastern bank of the Vardar, there is most probably some disturbance present due to military manoeuvres. Medium-tension electricity poles likely cause some mortality in important species (Table 55).

Conservation

SE parts of the site (Orlovo Brdo) are protected as Nature Monuments (1,981 ha) due to their botanical values. There are no conservation plans for the rest of the territory, nor do any particular bird conservation measures exist.

3.2.17. Lake Mantovo and Kriva Lakavica River

General information	
Name in English:	Lake Mantovo and Kriva Lakavica River
Name in Macedonian:	Ezero Mantovo i reka Kriva Lakavica (Езеро Мантово и река Крива Лакавица)
IBA code:	MK022
Criteria:	A1, B2
Area:	6,920 ha
Central coordinates:	22°18'35.69"E, 41°35'41.38"N
Altitude:	350–697 m a.s.l.
Administrative region(s):	Štip, Konče, Radoviš

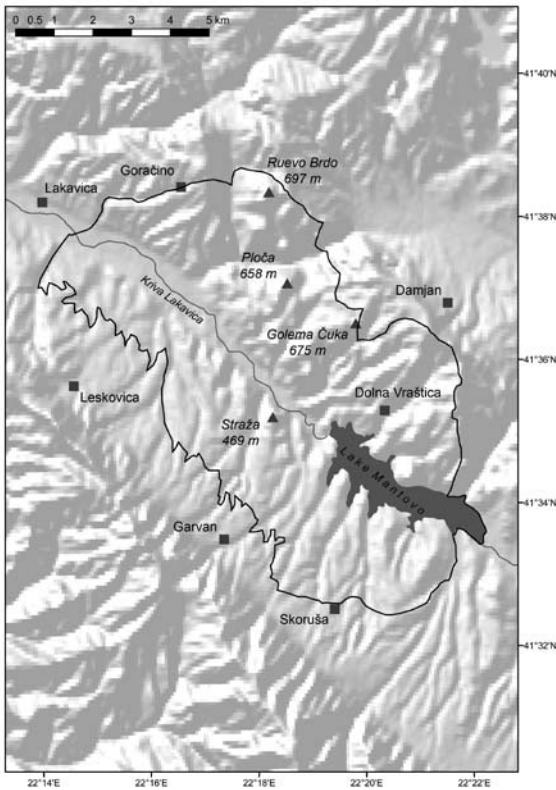


Figure 37: Map of the IBA Lake Mantovo and Kriva Lakavica River with its main features depicted

Slika 37: Zemljevid IBA Jezero Mantovo in reka Kriva Lakavica z glavnimi značilnostmi območja

Site description

This small site is located in the SE part of Macedonia. Its boundary, starting just east of the hill Pilav Tepe, runs NW around the hill Ruevo Brdo (697 m a.s.l.), then west through the village of Goracino, crosses the Kriva Lakavica River and reaches the isohypse of 400

Table 56: List of triggering and other important bird species in the IBA Lake Mantovo and Kriva Lakavica River

Tabela 56: Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Jezero Mantovo in reka Kriva Lakavica

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Coracias garrulus</i>	B	2007	5–15	C	A1
<i>Lanius nubicus</i>	B	2007	10–30	C	B2
<i>Ciconia nigra</i>	B	2008	1	B	N
<i>Aquila chrysaetos</i>	R	2005	1	A	N
<i>Falco biarmicus</i>	B	2008	1	A	N
<i>Bubo bubo</i>	R	2008	2–3	C	N



Figure 38: Characteristic landscape of the IBA Lake Mantovo and Kriva Lakavica River (photo: M. Velevski)

Slika 38: Značilna krajina v IBA Jezero Mantovo in reka Kriva Lakavica (foto: M. Velevski)

m. It follows it till east of Leskovica village, where it ascends to 500 m, following it until east of Garvan village. From here it continues south to the village of Zagorci, east to the village of Skoruša and the Radeški

Rid locality, and by following the Radeška Reka rivulet reaches the eastern shore of Lake Mantovo. Then it runs along the lake shore until reaching the Golinite ridge, and continues north to Golema Niva and Samardžica. Here it ascends NW to Golema Čuka (675 m a.s.l.) and then descends east of Pilav Tepe (Figure 37).

Table 57: The main CORINE land cover types (Level 3) in the IBA Lake Mantovo and the Kriva Lakavica River

Tabela 57: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Jezero Mantovo in reka Kriva Lakavica

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	9.8
242	Complex cultivation patterns	18.5
243	Land principally occupied by agriculture, with significant areas of natural vegetation	10.2
231	Pastures	7.7
311	Broad-leaved forest	11.4
324	Transitional woodland-shrub	36.0
512	Water bodies	3.4
	Other	3.4

The site is comprised of the Kriva Lakavica River. In the northern parts dominant are volcanogenic rocks with paleovolcanic relief (volcanic cones) are dominant, while in the southern parts Paleozoic metamorphic rocks prevail.

Species

The only triggering species for the site are the Roller (5–15 pairs) and the Masked Shrike (10–30 pairs), although several other important species breed in low numbers there: Lanner Falcon, Black Stork, Golden Eagle, Eagle Owl, and possibly Egyptian Vulture (ŠKORPIKOVÁ *et al.* 2006). The importance of the lake for waterbirds is unknown, although it is possibly high during migration (Table 56).

Habitats and land use

The artificial reservoir blends with the landscape, which is composed of volcanic stones and cliffs,

Table 58: The main threats to birds and their importance in the IBA Lake Mantovo and Kriva Lakavica River

Table 58: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Jezero Mantovo in reka Kriva Lakavica

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
242	Taking from nest (falcons)	medium	<i>F. biarmicus</i>
243	Trapping, poisoning, poaching	medium	<i>F. biarmicus</i>
331	Open cast mining	medium	<i>L. nubicus</i>
701	Water pollution	medium	<i>C. nigra</i>

overgrown with oak scrubland and forms forest stands in places. Part of the site is used for agriculture. The Kriva Lakavica River Valley is densely overgrown with mostly Willow, but also Poplar trees that form well-preserved riparian belts (Table 57, Figure 38).

Threats

Highest threat comes from the possible expansion of “Damjan” and “Bučim” surface copper mines. Both mines severely pollute the Medenska Reka River, a tributary to the Kriva Lakavica. Nest robbery has been noted. Hunting and poaching probably take place (Table 58).

Conservation

No specific conservation activities have been planned.

3.2.18. Raec River Valley

General information

Name in English: Raec River Valley

Name in Macedonian: Dolina na reka Raec (Долина на река Раец)

IBA code: MK023

Criteria: A1, A3, B2

Area: 19,805 ha

Central coordinates: 21°47'41.52"E, 41°23'43.90"N

Altitude: 170–1,745 m a.s.l.

Administrative region(s): Kavadarci, Prilep, Rosoman

Site description

The site is situated west of Kavadarci town in southern-central Macedonia. Starting from the village

Table 59: List of triggering and other important bird species in the IBA Raec River Valley

Tabela 59: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Dolina reke Raec

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2008–2010	2–5	B	A1, B2
<i>Alectoris graeca</i>	R		Frequent		A3
<i>Oenanthe hispanica</i>	B		Common		A3
<i>Sylvia cantillans</i>	B		Common		A3
<i>Sitta neumayer</i>	R		Common		A3
<i>Emberiza melanocephala</i>	B		Common		A3
<i>Ciconia nigra</i>	B	2007	2–3	B	B2
<i>Falco naumanni</i>	B	2003	15–25	B	B2
<i>Milvus migrans</i>	B	2009	0–1	B	
<i>Circus gallicus</i>	B	2010	1–2	B	N
<i>Accipiter brevipes</i>	B	2004	1–2	C	N
<i>Buteo rufinus</i>	R	2009	1–2	B	N
<i>Aquila chrysaetos</i>	R	2009	2–3	B	N
<i>Falco peregrinus</i>	R	2010	2–3	B	N
<i>Bubo bubo</i>	R	2008	3–4	B	N

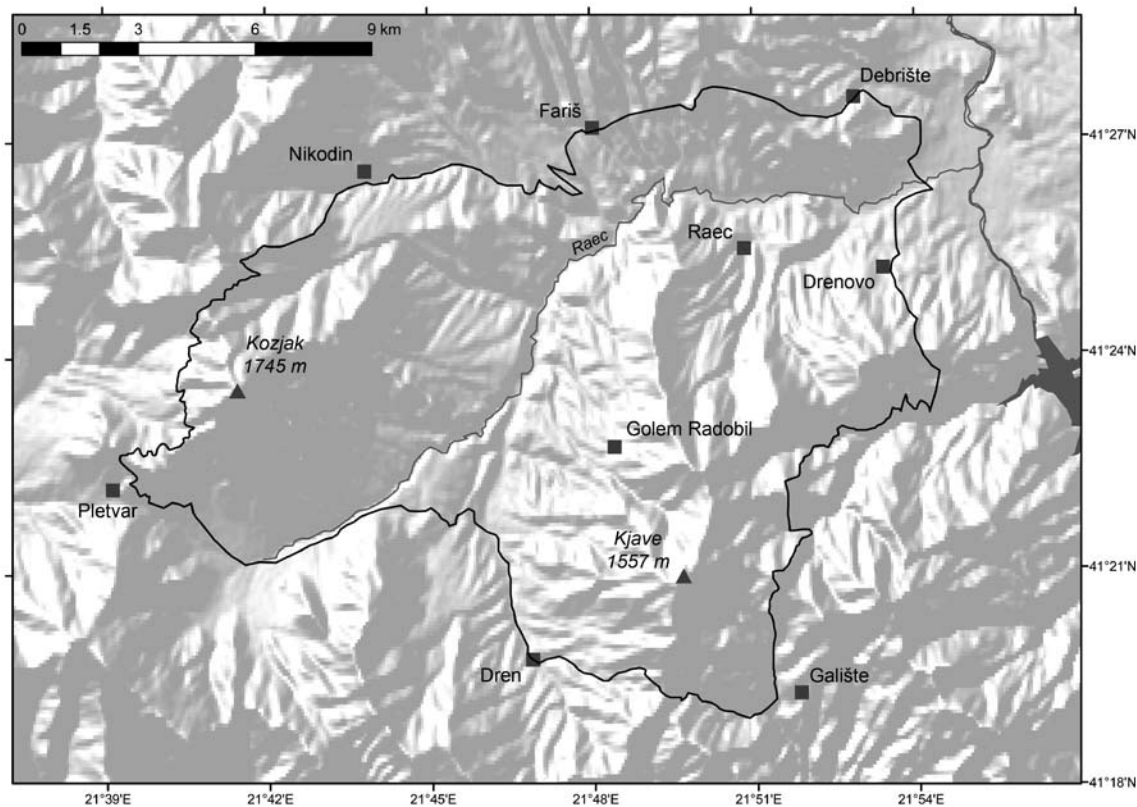


Figure 39: Map of the IBA Raec River Valley with its main features depicted

Slika 39: Zemljevid IBA Dolina reke Raec z glavnimi značilnostmi območja

of Debrešte, the boundary runs west to the villages of Fariš and Nikodin, and then turns SW to the villages Krstec and Pletvar. Here, it turns east to the village

Table 60: The main CORINE land cover types (Level 3) in the IBA Raec River Valley

Tabela 60: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Dolina reke Raec

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
242	Complex cultivation patterns	4.1
243	Land principally occupied by agriculture, with significant areas of natural vegetation	5.7
231	Pastures	6.3
311	Broad-leaved forest	34.9
321	Natural grasslands	10.4
324	Transitional woodland-shrub	34.0
	Other	4.6

of Carevik, south to Dren village and east to the village of Grbovec, Dradnja and Drenovo, before reaching Debrešte again. Smaller part of the site (the lower gorge of the Raec River, known as Drenovo Gorge) was formerly part of the IBA “Crna River Gorge” (MK007, HEATH & EVANS 2000).

North and NW of the Raec River, Mt Babuna with its peak Kozjak (1,745 m a.s.l.) is situated, while south of the river the mountain Dren is located. Geologically, Precambrian metamorphic and magmatic rocks are present in Mt Babuna and Mesozoic formations on Mt Dren. The Drenovo and Fariš Gorges are located in the eastern part of the Raec Valley (Figure 39).

Species

Some sporadic data on few species have been published for Drenovo Gorge (KALABER 1970, DANKO & SZILÁRD 1971), but no detailed survey exists. Besides significant populations of Egyptian Vultures that declined from 4–5 pairs in 2008 to only two pairs in 2010 (the reasons for this large decline are not known) and Lesser



Figure 40: Characteristic landscape of the IBA Raec River Valley (photo: M. Velevski)

Slika 40: Značilna krajina IBA Dolina reke Raec (foto: M. Velevski)

Kestrels that breed mostly in villages (although a small colony was found in the cliffs as well), the site holds 3–4 pairs of Eagle Owl, 2–3 pairs of Golden Eagle, 2–3 pairs of Black Stork, at least two pairs of Peregrine Falcon, possibly one pair of Black Kite, and several species characteristic of the Mediterranean biome in good numbers (Table 59).

Habitats and land use

Oak and to a much smaller degree Beech *Fagus sylvatica* forests are found in the higher parts of the site, but as the altitude decreases forests are replaced by dry pastures and grasslands through different degradation stages. Two small limestone gorges are of highest importance in the site’s eastern part, while one large limestone cliff and several smaller silicate cliffs are most important in the western part of the site (Table 60, Figure 40).

Threats

Private weekend-houses are being built on some key locations. Hunting and poaching probably take place. Livestock numbers have decreased, probably indirectly influencing a number of vultures in the region. Recent forest fires have probably depleted prey base for the birds of prey. Hunting and poaching have also very likely resulted in reduction of prey base, especially for Golden Eagles and Eagle Owls (Table 61).

Conservation

A small portion of the site (Drenovo Gorge, 9 ha) has been protected. Parts of the site are proposed as “Raec” Emerald Site (MK0000028).

Table 61: The main threats to birds and their importance in the IBA Raec River Valley

Tabela 61: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Dolina reke Raec

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
960	Interspecific faunal relations	high	<i>A. chrysaetos</i> , <i>B. bubo</i>
141	Abandonment of pastoral systems	medium	<i>N. percnopterus</i> , <i>F. naumanni</i>
301	Quarries	medium	<i>N. percnopterus</i> , <i>B. bubo</i> , <i>B. rufinus</i>
403	Dispersed habitation	medium	<i>C. nigra</i>
243	Trapping, poisoning, poaching	medium	<i>N. percnopterus</i>

3.2.19. Pelagonia

General information

Name in English: Pelagonia

Name in Macedonian: Pelagonija (Пелагонија)

IBA code: MK024

Criteria: A1, A4ii, B1iii, B2, B3

Area: 113,584 ha

Central coordinates: 21°27'42.20"E, 41°11'59.19"N

Altitude: 590–1,538 m a.s.l.

Administrative region(s): Bitola, Novaci, Mogila, Prilep, Krivogaštani, Dolneni, Kruševo

Site description

Situated in southern Macedonia and shared with Greece, this tectonic depression has north–south direction, covering ca. 1,200 km² in total. Starting west of Prilep town, the boundary runs north to the village of Mažučište, follows the ridge with the peaks Ridot (794 m a.s.l.) and Negrea (988 m a.s.l.), reaches the village Zabrcani, turns NE to the village Dupjacani, then WNW to Desovo, follows the mountain slopes around the village of Brailovo, passes through Slepče village, then west to the village of Kostinci, follows the road WSW to the village Slavej, continues along the road to Rilevo village, and then to the village of Žabjani. Here it turns NW to the village Debrešte (locality Gradište), then south through Slatina and Lozina localities, bypassing the village of Lažani, continues SW to Žitoše village, and then follows the road south to the villages of Lokveni, Godivje and Korenica. The boundary continues west of the village Krivogaštani and east of the village Vrboec, passes through the village of Sveto Mitrani and continues south through Mileševo and Presil villages, till it reaches the Crna Reka River. It embraces the locality Loj in the Crna Reka Valley west of the village Bučin, and from here continues SSW to the village Trnovci, passes east of the village Sveto Todor, reaches the village Ivanjevci and continues SE to Vašarejca. Running parallel with it and then following the road, it reaches western part of the village of Mogila, then follows the channel towards Karamani village and continues south, avoiding the villages of Logovardi and Poševo, to the village Kravari. From here it follows the road to the south, embraces the village Žabjani, passes through the villages of Porodin and Lažec to the border with Greece. Then it follows the national border towards the east until it reaches southern part of the village Živojno, and turns north through Živojno, Dobroveni and west of Skočivir. From here it follows the mountain ridge of Selečka Planina and continues through the village of Gnileš. Here it

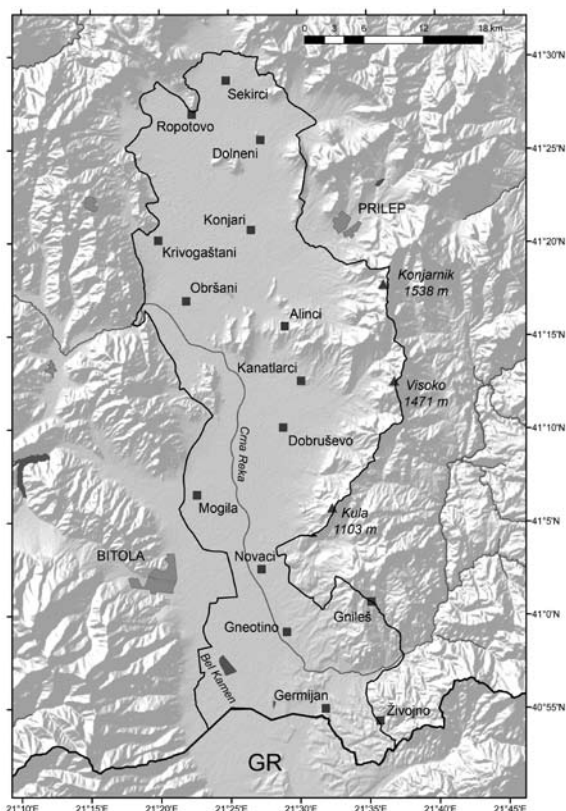


Figure 41: Map of the IBA Pelagonia with its main features depicted

Slika 41: Zemljevid IBA Pelagonija z glavnimi značilnostmi območja

turns NW, continues south of the village Paralovo and through the village Baldovenci, when reaching the Tepovska Reka stream. Then it follows the road in NW direction to the south of Biljanik village, embraces the coal mine “Suvodol” and reaches the village Meglenci, from where it runs NW and after ascending to the Selečka Planina again reaches, after passing through the localities Kula (1,103 m a.s.l.), Kalugjer (1,022 m a.s.l.) and Lisičarnik (1,025 m a.s.l.), the main ridge of Golema Gramada Mt (1,050 m a.s.l.). Then it continues north through the peaks of Kozjak (983 m a.s.l.), Liljak (999 m a.s.l.), Bobište (1,266 m a.s.l.), Murgova Niva (1,177 m a.s.l.), Visoko (1,471 m a.s.l.), Skala (1,177 m a.s.l.), Dve Steni (1,473 m a.s.l.) and Konjarnik (1,538 m a.s.l.), where it turns west through Šuti Vrv (1,277 m a.s.l.), descends to the plain again, and passes Prilep at its southern side.

The site constitutes the bottom of the Pelagonia Valley and, in the eastern part, the edge (western parts) of Selečka Planina Mt. Geologically, it is dominated

Table 62: List of triggering and other important bird species in the IBA Pelagonia

Tabela 62: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Pelagonija

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Falco naumanni</i>	B	2002	760–850	A	A4ii, B1iii, B2
<i>Coracias garrulus</i>	B	2002	10–30	C	A1, B2
<i>Ciconia ciconia</i>	B	2002	220–230	A	B2
<i>Aythya nyroca</i>	B	2002	10–15	A	B2
<i>Burhinus oedipnemos</i>	B	2002	10–30	C	B2
<i>Lanius minor</i>	B	2002	30–100	C	B2
<i>Circus pygargus</i>	B	2002	60–80	A	B3
<i>Falco vespertinus</i>	P	2002	50–150 ind.	C	A1?
<i>Pelecanus crispus</i>	N	2007	10–30 ind.	C	N
<i>Anas strepera</i>	B	2002	2–5	C	N
<i>Circaetus gallicus</i>	B	2008	2–3	B	N
<i>Buteo rufinus</i>	R	2010	3–4	B	N
<i>Falco biarmicus</i>	B	2005	1	A	N

by Pliocene lake sediments, Precambrian magmatites and metamorphites in Selečka Planina Mt. The largest river is the Crna Reka in the southern part of the site (Figure 41).

Species

No thorough information on the site's bird community has been published recently, although numerous

Table 63: The main CORINE land cover types (Level 3) in the IBA Pelagonia

Tabela 63: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Pelagonija

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
112	Discontinuous urban fabric	1.5
211	Non-irrigated arable land	47.9
212	Permanently irrigated land	21.4
242	Complex cultivation patterns	7.3
243	Land principally occupied by agriculture, with significant areas of natural vegetation	1.2
231	Pastures	12.9
311	Broad-leaved forest	1.5
321	Natural grasslands	0.6
324	Transitional woodland-shrub	4.5
512	Water bodies	0.4
411	Inland marshes	0.1
	Other	0.5

data were collected during the Lesser Kestrel and White Stork censuses in 2002 (B. ŠTUMBERGER & M. VELEVSKI *unpubl.*). Ample information, however, is available from earlier periods (1940–1970) (e.g. MAKATSCH 1950, TERRASSE & TERRASSE 1961A & 1961B, GANSO 1962). The currently drained floodplain of the Crna Reka held numerous breeding colonial waterbirds in the 1930s, the most interesting being up to 100 breeding pairs of Dalmatian Pelican, 60+ pairs of Spoonbill *Platalea leucorodia*, tens of breeding Glossy Ibises *Plegadis falcinellus* and ca. 300 pairs of Black Tern *Chlidonias niger* (MAKATSCH 1950, THÖNEN 2006); none of these species breed in the territory of Macedonia at present.

In 2002, an important population (largest in the country) of White Stork was confirmed, breeding solitarily or in small colonies of up to 20 pairs (ŠTUMBERGER & VELEVSKI 2002). Lesser Kestrel population was estimated at 760–850 pairs, entirely confined to villages and man-made structures in the central and northern parts of the plain, but using mountain slopes (especially those of Mt Selečka Planina) for foraging. At least two pairs of Long-legged Buzzards breed on cliffs of these slopes, and one more on a small hill in the plain. Several other species reach the threshold for populations of European importance, including the Montagu's Harrier with the largest breeding population in the country (60–80 pairs). The three fishponds (Bel Kamen and Bukri in the south and Belo Pole in the north) attract non-breeding Dalmatian Pelicans, and are important for the breeding Ferruginous Duck and few pairs of



Figure 42: Characteristic landscape of the IBA Pelagonia (photo: B. Stumberger)

Slika 42: Značilna krajina IBA Pelagonija (foto: B. Stumberger)

Gadwalls (Table 62). Importance of the fishponds for migrating and wintering species is still insufficiently known, although it is presumably high.

Habitats and land use

The bottom of the Pelagonian depression is used for agricultural purposes, more intensively in the south than in the central and northern parts, where dry and wet meadows and pastures remain. Several poplar tree stands are scattered throughout the landscape, and some remains of the former wetlands can be found. Three fishponds are located within the site. On the eastern edge of the site, the slopes of Mt Selečka are dominated by dry pastures and remains

of thermophyllous oak forests, among which silicate cliffs protrude (Table 63, Figure 42).

Threats

Formerly, the drainage of marshlands of the Crna Reka River caused significant changes in the composition of the site’s bird fauna, although presently this process is considered finished. Due to the intensive agriculture in southern parts of the site, use of fertilizers and pesticides is presumably high. Parts of the site are monocultures with low diversity of birds, and their expansion in the plain’s northern and central parts might have devastating effects on the populations of the triggering species.

Table 64: The main threats to birds and their importance in the IBA Pelagonia

Tabela 64: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Pelagonija

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
100	Cultivation	high	<i>C. ciconia</i> , <i>F. naumanni</i> , <i>C. garrulus</i> , <i>L. minor</i>
110	Use of pesticides	high	<i>C. ciconia</i> , <i>F. naumanni</i> , <i>C. garrulus</i> , <i>L. minor</i>
141	Abandonment of pastoral systems	high	<i>F. naumanni</i>
511	Electricity lines	high	<i>C. ciconia</i> , <i>F. naumanni</i> , <i>C. garrulus</i>
803	Infilling of ditches, dykes, ponds, marshes or pits	high	<i>C. ciconia</i>

Livestock numbers have decreased, causing changes in the pastures (overgrowing). Hunting is present, but poaching seems rare. Electrocution causes some mortality, especially in White Storks (Table 64).

Conservation

The site includes a very small strictly protected area (Lokvi), and parts of the Markovi Kuli Nature Monument. Establishment of protected area has not been formally planned, although most important parts of the site are included in the Emerald Network ("Gorna Pelagonija", MK0000034). Most important for Pelagonian birds are programs preserving and developing different temperate grassland types. Implementation of autochthonous breeds of domestic animals like water buffalo, sheep, shorthorned cattle (Busha) and horses in landscape management is essential to preserve the Pelagonian large scale pasture systems.

3.2.20. Mariovo

General information

Name in English: Mariovo

Name in Macedonian: Mariovo (Мариво)

IBA code: MK025

Criteria: A1, A3, B2

Area: 63,272 ha

Central coordinates: 21°42'34.41"E, 41°09'46.93"N

Altitude: 302–1,643 m a.s.l.

Administrative region(s): Novaci, Prilep, Kavadarci, Mogila

Site description

Situated in southern Macedonia, this site includes SW part of the former site "Crna River Gorge" (MK007, HEATH & EVANS 2000). Starting from the peak Kalusovec (1,446 m a.s.l.) on Selečka Planina Mt SE of Prilep to the south, it shares the boundary with the Pelagonia site (MK024) to the locality Lisičarnik (1,025 m a.s.l.) and the passes at Preslop, Smeč (1,303 m a.s.l.) and Gola Čuka (1,338 m a.s.l.). The boundary continues through the villages of Grumazi and Gnileš, where it again joins the common boundary with Pelagonia running south to the Crna Reka River. Here it turns NE, follows first the river and then the road to the village of Budimirci. Then it follows the Bela Reka River for a short while, turns NE and crosses the hill of Kameni Vrv (1,151 m a.s.l.), the Lešnica and Gradešnička Reka Rivers east of Gradešnica village, turns NW, follows the Porenica River, then runs through Sekulova Tumba (1,057 m

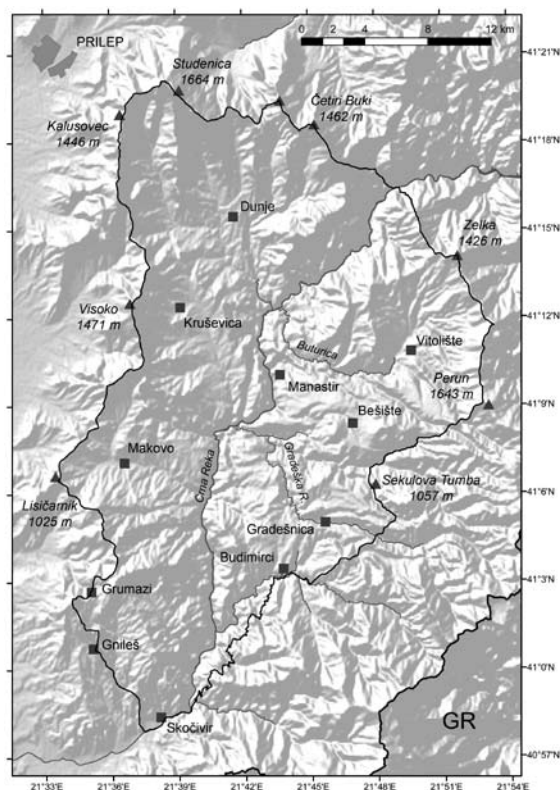


Figure 43: Map of the IBA Mariovo with its main features depicted

Slika 43: Zemljovid IBA Mariovo z glavnimi značilnostmi območja

a.s.l.), crosses the Potokot River and continues NE to the peak of Perun (1,643 m a.s.l.). From here it follows the mountain ridge north to the peaks of Zelka (1,426 m a.s.l.) and Vragovec (1,107 m a.s.l.), from where it descends to the Crna Reka River again, crosses it below the village of Gudjakovo, continues through this village in NW direction to the peaks of Trite Stragi (1,476 m a.s.l.), Četiri Buki (1,462 m a.s.l.) and Markovi Kuli (1,510 m a.s.l.), turns west to the Golina and Ligurasa passes, and again NW to the peak Studenica (1,664 m a.s.l.). Still following the ridge, the boundary turns SW to the peak Kalusovec again.

The site is constituted of the Mariovo Valley, which does not have a flat bottom, as it is broken by the valleys of the Crna Reka River and its tributaries Bela Reka, Buturica, Lisička Reka, etc. It embraces several mountains—Selečka, Nidže, Kozjak and Dren. Pliocene and Miocene lake sediments are found in the site's lowest parts, while the rest is formed by Precambrian metamorphic and magmatic rocks. The Crna Reka Valley includes the remarkable Skočivir Gorge, with

Table 65: List of triggering and other important bird species in the IBA Mariovo**Tabela 65:** Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Mariovo

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2009	4	A	A1, B2
<i>Alectoris graeca</i>	R		Frequent		A3
<i>Oenanthe hispanica</i>	B		Common		A3
<i>Sylvia cantillans</i>	B		Frequent		A3
<i>Sitta neumayer</i>	R		Abundant		A3
<i>Lanius nubicus</i>	B		Rare		A3
<i>Emberiza melanocephala</i>	B		Common		A3
<i>Ciconia nigra</i>	B	2009	2–3	B	B2
<i>Circus gallicus</i>	B	2007	8–11	B	B2
<i>Buteo rufinus</i>	R	2009	8–12	B	B2
<i>Aquila chrysaetos</i>	R	2009	4–6	B	B2
<i>Falco naumanni</i>	B	2003	120–150	B	B2
<i>Falco biarmicus</i>	B	2006	1–2	B	B2
<i>Bubo bubo</i>	R	2009	5–7	C	B2
<i>Monticola saxatilis</i>	B	2002–2010	30–50	C	B2
<i>Falco tinnunculus</i>	R		Common		B2?
<i>Gyps fulvus</i>	R	2010	8–9	A	N
<i>Accipiter brevipes</i>	B	2006	1–3	C	N
<i>Aquila pennata</i>	B	2006	0–1	C	
<i>Aquila heliaca</i>	R	2006	0–1	C	
<i>Falco peregrinus</i>	R	2009	1–3	C	N

Table 66: The main CORINE land cover types (Level 3) in the IBA Mariovo**Tabela 66:** Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Mariovo

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
242	Complex cultivation patterns	4.7
231	Pastures	24.6
311	Broad-leaved forest	16.4
321	Natural grasslands	12.9
323	Sclerophyllous vegetation	0.6
324	Transitional woodland-shrub	36.6
	Other	4.1

some of the Crna Reka's tributaries forming gorges in the lower sections as well (e.g. Gradešnička Gorge, Buturica Gorge) (Figure 43).

Species

There are relatively few published data (e.g. GRUBAČ 1989, 1997 & 1999) on the bird fauna of Mariovo,

although the region has been quite well studied, with about 140 species recorded. It is of great significance for the populations of Griffon (8–9 pairs) and Egyptian Vultures (4 pairs), which are at present the only stable populations in the country. Other birds of prey, especially Golden Eagle (4–6 pairs), Lesser Kestrel (120–150 pairs), Long-legged Buzzard (8–12 pairs), Lanner Falcon (1–2 pairs) and Short-toed Eagle (8–11 pairs), breed here in good numbers, too. The site probably holds populations of some other species that meet B2 thresholds, i.e. Common Kestrel. Species characteristic of the Mediterranean biome include large populations of Black-headed Bunting, Subalpine Warbler, Rock Nuthatch, and a few pairs of Masked Shrike. Furthermore, 2–3 pairs of Black Stork breed here, and possibly a single pair of Imperial Eagle (Table 65). The first record of the Steppe Eagle *Aquila nipalensis* for Macedonia (one ind. on 15 Jul 2002 near the village of Rapeš, B. HALLMANN *unpubl.*) comes from this region.

Habitats and land use

The landscape is dominated by large silicate rocks and cliffs in the gorge of Crna Reka River. Formerly



Figure 44: Characteristic landscape of the IBA Mariovo (photo: M. Velevski)

Slika 44: Značilna krajina IBA Mariovo (foto: M. Velevski)

extensively used for agriculture and livestock breeding, this region is now slowly returning to the climax oak forests, while part of the agricultural fields has been converted into dry pastures. The riparian vegetation along the Crna Reka River is composed of poplar and willow. Some pine plantations can also be found (Table 66, Figure 44).

Threats

Two large hydro-power plants are foreseen to be constructed on the Crna Reka River in the near future, which would submerge part of the cliffs suitable for breeding of Griffon and Egyptian Vultures and increase accessibility to other locations. Stone-mining is widespread, although so far practiced at appropriate

Table 67: The main threats to birds and their importance in the IBA Mariovo

Tabela 67: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Mariovo

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
141	Abandonment of pastoral systems	high	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>A. heliaca</i>
243	Trapping, poisoning, poaching	high	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>A. heliaca</i>
960	Interspecific faunal relations	high	<i>A. chrysaetos</i> , <i>A. heliaca</i>
230	Hunting	high	<i>G. fulvus</i> , <i>A. graeca</i>
301	Quarries	medium	<i>A. graeca</i>
410	Industrial or commercial areas	medium	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>A. chrysaetos</i> , <i>B. rufinus</i> , <i>A. graeca</i>
530	Improved access to site	medium	<i>A. graeca</i>
624	Mountaineering, rock climbing, speleology	low	<i>G. fulvus</i>

distances from the area's key localities. Depopulation of villages has been intensive in the past, resulting in decrease in livestock numbers and overgrowing of pastures. Hunting and poaching are common, and poison use, aimed at carnivore control, has been recorded regularly, in turn leading to the death of 19 Griffon Vultures in 2007. Plans exist for the opening of new coal mine, and even for the construction of a nuclear power plant. Hunting causes, besides direct killing of Rock Partridges, disturbance at the breeding sites of Griffon Vultures and decrease in the prey base of other important species (Table 67).

Conservation

Surprisingly, besides all development plans and exploitation activities in the region, parts of the region are foreseen to be given the status of protected area. Presently, the canyon of Gradešnička Reka River is under protection as a Nature Monument, along with another very small paleontological locality (Manastir). The IBA largely overlaps the proposed Emerald Site (MK0000032).

3.2.21. Lake Tikveš

General information

Name in English: Lake Tikveš

Name in Macedonian: Tikveško Ezero (Тиквешко Езеро)

IBA code: MK026

Criteria: A1, A3, B2

Area: 26,688 ha

Central coordinates: 21°57'28.87"E, 41°18'36.30"N

Altitude: 260–1,480 m a.s.l.

Administrative region(s): Kavadarci, Prilep

Site description

This is another site in southern Macedonia, located SW of the town of Kavadarci. It occupies the northern part of the former "Crna River Gorge" site (MK007, HEATH & EVANS 2000). Starting at the artificial Lake Tikveš shore near the island of Gradište on the northern end of the lake, the boundary runs west following the Drenovica River to Dradnja village and leaving part of the lake outside the site, from where it shares the boundary with the Raec River Valley site (MK023), going SW and south to the ridge west of the village of Galište. From here, following the same ridge south, it crosses Lake Tikveš to the influx of the Crna Reka River, reaching the peak of Nedelka (843 m a.s.l.) and turning east at the ridge Varelova Tumba (769 m a.s.l.). Thereupon it continues south,

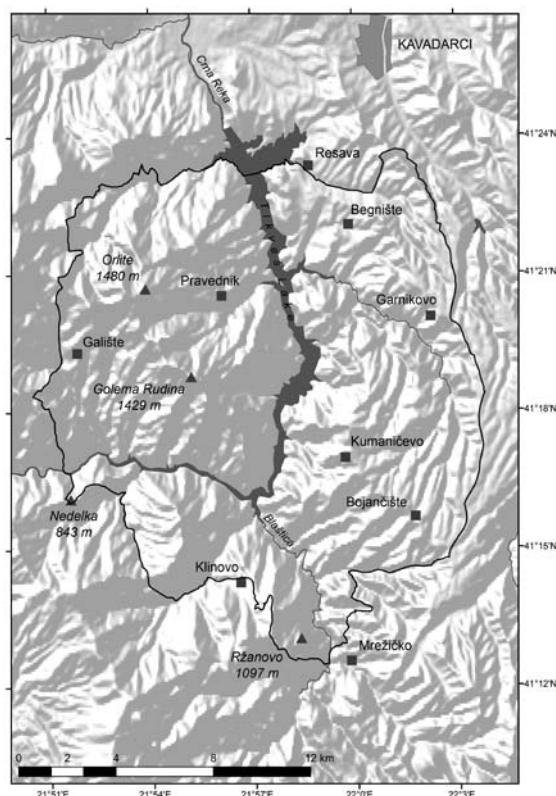


Figure 45: Map of the IBA Lake Tikveš with its main features depicted

Slika 45: Zemljevid IBA Tikveško jezero z glavnimi značilnostmi območja

following the rivulet that springs under the ridge of Golem Draguj, passes the saddle and after a short while follows the Došnica River NE to the locality Grkovite Nivi. Here it turns east, avoiding Klinovo village, and continues south to the peak of Ržanovo (1,097 m a.s.l.). Then it follows the ridge of Čatino, turns east and crosses the Blašnica River west of Mrežičko village. From here it continues NE and through the localities Ramnište and Elata, when it reaches the Parnapeš rivulet, following it upstream and east to the road on the Vitačevo plateau. This road, running north, shares the boundary with the Bošavija site (MK027), to the crossroads at Stragovo village. The IBA Lake Tikveš boundary continues north following the same road until it reaches the locality Kozarinov Kamen (in this section, the boundary is shared with the Tikveš Region site, MK013), from where it turns west to the villages of Dabnište and Resava, reaching the shores of Lake Tikveš again.

Mt Orlite occupies the western parts, Mt Kožuf

Table 68: List of triggering and other important bird species in the IBA Lake Tikveš

Tabela 68: Seznam kvalifikacijskih in drugih pomembnih vrst v IBA Tikveško jezero

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2010	3	A	A1, B2
<i>Alectoris graeca</i>	R	2009	20–50	C	A3
<i>Oenanthe hispanica</i>	B		Common		A3
<i>Sylvia cantillans</i>	B		Abundant		A3
<i>Sitta neumayer</i>	R		Frequent		A3
<i>Emberiza melanocephala</i>	B		Frequent		A3
<i>Ciconia nigra</i>	B	2010	2–3	B	B2
<i>Circaetus gallicus</i>	B	2009	5–8	B	B2
<i>Buteo rufinus</i>	R	2009	4–5	B	B2
<i>Aquila chrysaetos</i>	R	2009	3–4	B	B2
<i>Falco naumanni</i>	B	2003	70–100	A	B2
<i>Monticola solitarius</i>	B	2003–2010	20–50	C	B2
<i>Gyps fulvus</i>	R	2007–2010	5–9	A	N
<i>Aquila pomarina</i>	B	2010	0–2	C	
<i>Milvus migrans</i>	B	2007	1	A	N
<i>Accipiter brevipes</i>	B	2008	0–2	C	
<i>Falco peregrinus</i>	R	2009	3–4	B	N
<i>Bubo bubo</i>	R	2009	4–8	B	N

the southern parts and Vitačevo plateau the eastern parts of the site. Geologically, Mesozoic formations are dominant, i.e. Triassic, Jurassic and Cretaceous metamorphic and magmatic rocks with significant presence of Mesozoic carbonates. Vitačevo is composed of volcanic tuffs. The Crna Reka River forms the main gorge, its major tributary being the Blašnica River (Figure 45).

Species

The area of Lake Tikveš has been well studied, with the total number of observed species reaching 176. The number of vagrant species on the Lake is large (VASIĆ 2009B), but the carried out winter censuses have shown that it is not of international nor national importance for wintering waterbirds (up to 670 ind. in 2009 and 280 in 2010, VASIĆ 2009B, FARMAHEM 2010). However, its surrounding has long been recognized as a place of great importance for the raptors – it has been the last known breeding place of the Lammergeier *Gypaetus barbatus* in Macedonia (GRUBAČ 1990), breeding until 1984 and the surviving male being present there until 2005–2006. The Griffon Vulture colony decreased from nine to five pairs in the last few years, although still probably numbering around 20 pairs in the late 1990s (B. GRUBAČ *unpubl.*). Currently, the only three breeding pairs of Egyptian Vulture signify a decrease

from 10 pairs in 1991 (B. GRUBAČ *unpubl.*). Other raptor species include Lesser Kestrel (70–100 pairs), Golden Eagle (3–4 pairs), Short-toed Eagle (5–8 pairs), Long-legged Buzzard (4–5 pairs), Peregrine Falcon and Eagle Owl. Large populations of five species characteristic of the Mediterranean biome are found here. A small colony of Alpine Choughs (20–30 pairs) inhabits the highest peaks (Orlita 1,480 m a.s.l.). Other important or rare species include Black Stork, Black Kite and, until 2006, a single individual

Table 69: The main CORINE land cover types (Level 3) in the IBA Lake Tikveš

Tabela 69: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Tikveško jezero

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
231	Pastures	5.0
311	Broad-leaved forest	45.9
321	Natural grasslands	4.0
323	Sclerophyllous vegetation	9.2
324	Transitional woodland-shrub	22.2
512	Water bodies	3.4
	Other	10.2



Figure 46: Characteristic landscape of the IBA Lake Tikveš (photo: M. Velevski)

Slika 46: Značilna krajina IBA Tikveško jezero (foto: M. Velevski)

of Black Vulture *Aegypius monachus*, being the last known individual present in the country. Also, two pairs of Lesser-spotted Eagles breed in or in the near surroundings of the site (Table 68). Imperial Eagles are observed outside the breeding season, and a record of Steppe Eagle *Aquila nipalensis* exists (two ind. on 14 Jun 2004 on the vulture feeding site at Vitačevo, B. HALLMANN unpubl.).

Habitats and land use

The lowest parts of the site embrace Tikveš reservoir, a long and narrow water body between the slopes

overgrown with sub-Mediterranean scrub (Greek Juniper *Juniperus excelsa*, Downy Oak *Quercus pubescens*, Mock Privet *Phyllirea media*). In some parts, well preserved remains of Macedonian Oak *Quercus trojana* forests exist, while in the southern parts, Black Pine *Pinus nigra* forests are present. Limestone cliffs are scattered throughout the landscape in the valleys of the Crna Reka, Blašnica and Kamenica Rivers, forming a huge complex together with the peaks of Orlite and Galčin in the centre of the site. Some pastures in different stages of succession have remained on the Vitačevo plateau (Table 69, Figure 46).

Table 70: The main threats to birds and their importance in the IBA Lake Tikveš

Tabela 70: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Tikveško jezero

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
243	Trapping, poisoning, poaching	high	<i>G. fulvus</i> , <i>N. percnopterus</i>
403	Dispersed habitation	high	<i>G. fulvus</i> , <i>C. nigra</i> , <i>C. gallicus</i>
141	Abandonment of pastoral systems	medium	<i>G. fulvus</i> , <i>N. percnopterus</i>
160	General forestry management	medium	<i>C. nigra</i> , <i>C. gallicus</i> , <i>A. pomarina</i>
511	Electricity lines	medium	<i>G. fulvus</i> , <i>N. percnopterus</i> , <i>F. naumanni</i>

Threats

The lake shore is built up by weekend cottages, which are frequently used as bases for illegal fishing and hunting. Intensive forestry activities, including clearcuts, take place. Use of poisonous baits is still common. The Vitačevo plateau is intersected by many power lines, although direct mortality of birds of prey has not been noted (Table 70).

Conservation

Although parts of the site have been under legal protection as a strict nature reserve since 1997, no management activities have taken place. The new valorization study suggests the site will need to change its protection category into a lower one (i.e. Nature Monument), as it has lost many of its natural assets it used to have. A new management plan was recently prepared by the Ministry of Environment and Physical Planning and UNDP – United Nations Development Programme, but the site does not have a management body. Parts of the IBA are proposed as “Tikvesh” Emerald Site (MK0000006). Supplementary feeding for vultures has been regularly taking place for almost two decades, undertaken by the Aquila Nature Conservation.

3.2.22. Bošavija

General information					
Name in English: Bošavija					
Name in Macedonian: Bošavija (Бошавија)					
IBA code: MK027					
Criteria: A1					
Area: 9,286 ha					
Central coordinates: 22°06'53.53"E, 41°16'16.92"N					
Altitude: 377–1,280 m a.s.l.					
Administrative region(s): Kavadarci, Demir Kapija					

Site description

Starting at Stragovo village, the boundary of the site runs SW following the village road, until reaching the main road on the Vitačevo plateau (common border with the Tikveš Region site, MK013). It follows the road southwards (common border with the site Lake Tikveš, MK026) to the Čaškite locality, where it turns eastwards and runs through Prodanovec, crosses the Lisač River, the peak of Kumanova Glava (1,066 m a.s.l.) and the Bošava River, and by following the ravine north of Vasiljova Padina reaches the isohypse of 1,100 m at the Popranca locality. Then it follows the same isohypse to the Madžarsko Borče locality, crossing it and descending into the valley of the Dobošnica River. From here it follows the river downstream and north to the Dina locality, where it ascends to the Jurkov Rid locality and follows the ridge Gatenovo north to its peak (990 m a.s.l.). Here it turns west, descends through a ravine to the Bohulska Reka, following it to its confluence with the Bošava River. Then it turns SW following the Bošava to Krnjevo village, from where it follows the ridge NW to the village of Stragovo (Figure 47).

The valley of the Bošava River is dominant at the site, with the Vitačevo plateau in the western parts and slopes of Mt Kožuf in the south and east. Denudation forms are characteristic of the site, with different sand pillars and sand cliffs.

Species

This site was formerly part of the larger “Kožuf Mt and Bošava River” site (MK009, HEATH & EVANS 2000), but the boundaries have been changed a great deal, as the importance of the rest of this site has not been confirmed with the surveys carried out in 2003 and 2004. The site has been relatively poorly studied; its importance was identified solely due to the presence of three breeding pairs of Egyptian Vultures in 2007 and at least three more before 1990 (B. GRUBAČ

Table 71: List of triggering and other important bird species in the IBA Bošavija

Tabela 71: Seznam kvalifikacijskih in drugih pomembnih ptic IBA Bošavija

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Neophron percnopterus</i>	B	2007–2010	1–3	A	A1
<i>Circus gallicus</i>	B	2007	2–3	B	N
<i>Buteo rufinus</i>	R	2005	2	B	N
<i>Aquila chrysaetos</i>	R	2010	1	B	N
<i>Aquila pomarina</i>	B	2010	0–1	B	

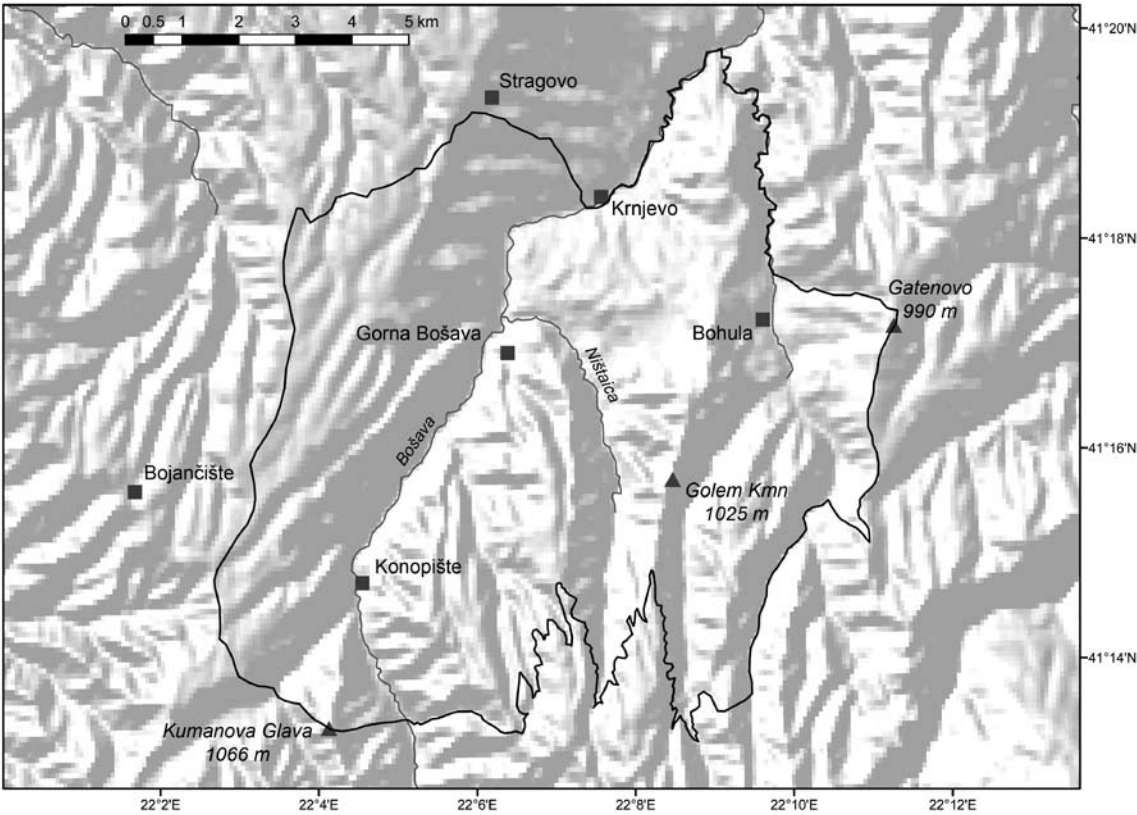


Figure 47: Map of the IBA Bošavija with its main features depicted

Slika 47: Zemljevid IBA Bošavija z glavnimi značilnostmi območja

unpubl.). However, two of the pairs have been lost in the 2007–2008 period. Also, two pairs of Long-legged Buzzard and single pairs of Golden Eagle, Short-toed

Eagle and possibly Lesser Spotted Eagle have been confirmed breeding there (Table 71).

Table 72: The main CORINE land cover types (Level 3) in the IBA Bošavija

Tabela 72: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Bošavija

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	5.0
231	Pastures	10.9
242	Complex cultivation patterns	4.5
243	Land principally occupied by agriculture, with significant areas of natural vegetation	10.4
311	Broad-leaved forest	36.0
321	Natural grasslands	10.8
324	Transitional woodland-shrub	22.4

Habitats and land use

Oak and Beech *Fagus sylvatica* forests are dominant in the SE part of the site, while dry pastures prevail on the Vitačevo plateau. Agriculture is mosaic, mostly with small vineyards and gardens. Small sand cliffs are found along the Bošava River, forming suitable places for breeding of raptors (Table 72, Figure 48).

Threats

Poisoning in the wider surroundings, outside the IBA, has caused the loss of one, possibly both Egyptian Vulture pairs breeding at this site. Forestry activities impact the insufficiently studied oak and Beech forests, and hunting, possibly even poaching, takes place. New dangerous electricity poles have been recently erected. The area is being increasingly urbanized with weekend cottages, although permanent population is decreasing (Table 73).



Figure 48: Characteristic landscape of the IBA Bošavija (photo: M. Velevski)

Slika 48: Značilna krajina IBA Bošavija (foto: M. Velevski)

Table 73: The main threats to birds and their importance in the IBA Bošavija

Tabela 73: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Bošavija

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
141	Abandonment of pastoral systems	high	<i>N. percnopterus</i>
243	Trapping, poisoning, poaching	high	<i>N. percnopterus</i> , <i>A. chrysaetos</i>
160	General forestry management	medium	<i>A. pomarina</i>
511	Electricity lines	medium	<i>N. percnopterus</i>
400	Urbanised areas, human habitation	medium	<i>A. chrysaetos</i>

Conservation

A small protected area (Konopište) aimed at conserving the geomorphologic structures was designated. No active conservation measures are ongoing, and the rest of the site is not foreseen for any form of legal protection.

3.2.23. Kočani Rice Fields

General information

Name in English: Kočani Rice Fields

Name in Macedonian: Kočanski orizovi polinja
(Кочански оризови полиња)

IBA code: MK028

Criteria: B2

Area: 11,192 ha

Central coordinates: 22°19'39.76"E, 41°52'38.18"N

Altitude: 280–400 m a.s.l.

Administrative region(s): Češinovo-Obleševo, Karbinci, Kočani, Probištip, Vinica, Zrnovci

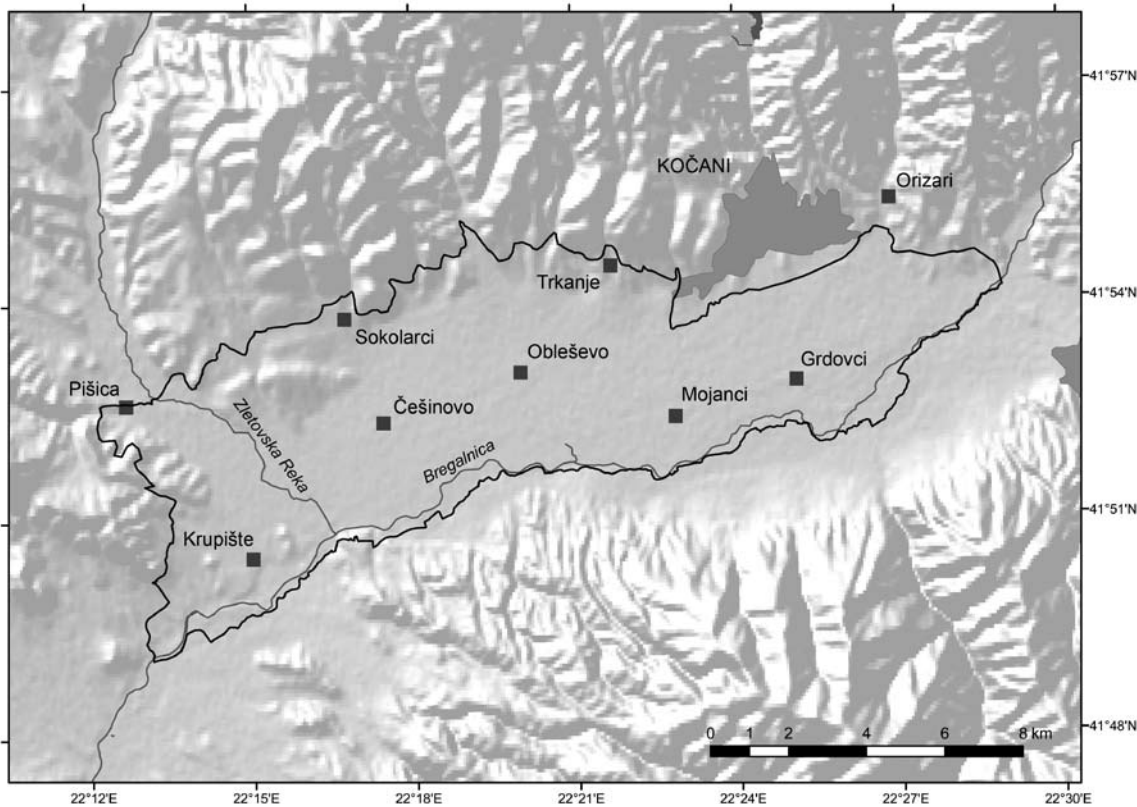


Figure 49: Map of the IBA Kočani Rice Fields with its main features depicted

Slika 49: Zemljevid IBA Kočanska riževa polja z glavnimi značilnostmi območja

Site description

Starting from the Bregalnica River west of Karbinci village, the site's boundary runs north for a short while following the railway, and then reaches the irrigation channel under the Rid locality (443 m a.s.l.). From here the site shares the boundary first with the IBA Ovče Pole (MK019) and then with the IBA Zletovska River Valley (MK012) right to the east of Sokolarci village. From here it continues eastwards to the

village of Banja, follows the irrigation channel and via Preslop locality (393 m a.s.l.) reaches the village of Trkanje. Then it continues east along the channel to the stream of Belski Dol, follows it southwards to the Kočanska Reka River, and from here runs eastwards, first following the river, and then the road south of Kočani town, until reaching the Kočanska Reka again. From here it continues eastwards, following the local road to Toplički Rid, where it turns south and crosses

Table 74: List of triggering and other important bird species in the IBA Kočani Rice Fields

Tabela 74: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Kočanska riževa polja

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Ciconia ciconia</i>	B	2011	150–180	A	B2
<i>Ardea cinerea</i>	B	2009	50–70	B	N
<i>Egretta garzetta</i>	B	2009	10–30	C	N
<i>Nycticorax nycticorax</i>	B	2009	10–30	C	N



Figure 50: Characteristic landscape of the IBA Kočani Rice Fields (photo: G. Čamlík)

Slika 50: Značilna krajina IBA Kočanska riževa polja (foto: G. Čamlík)

Table 75: The main CORINE land cover types (Level 3) in the IBA Kočani rice fields

Tabela 75: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Kočanska riževa polja

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	44.2
213	Rice fields	36.2
242	Complex cultivation patterns	10.3
243	Land principally occupied by agriculture, with significant areas of natural vegetation	6.1
324	Transitional woodland-shrub	34.0
	Other	3.2

the Bregalnica River. Then it continues parallel to the river in SW and W directions, along small dirt roads or the riverbed, until reaching the starting point west of Karbinci village again.

The plain is a tectonic depression, with soils of alluvial origin, while on its northern edge delluvial soils are also found. Main rivers are the Bregalnica and its right tributary Zletovska Reka River (Figure 49).

Species

The bird fauna of this IBA is virtually unknown, without any published information.

Very large numbers of White Stork pairs (150–180) breed in the villages of this region (HECKENROTH & HEINS *in prep.*), using its rice fields for foraging. Its breeding density is substantially larger than at Pelagonia

Table 76: The main threats to birds and their importance in the IBA Kočani Rice Fields

Tabela 76: Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Kočanska riževa polja

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
110	Use of pesticides	high	<i>C. ciconia</i> , <i>E. garzetta</i> , <i>N. nycticorax</i> , <i>A. cinerea</i>
101	Modification of cultivation practices	medium	<i>C. ciconia</i> , <i>E. garzetta</i> , <i>N. nycticorax</i> , <i>A. cinerea</i>
511	Electricity lines	medium	<i>C. ciconia</i>

(the largest population in Macedonia), making the site of special importance for the conservation of the species. This site also holds the only known mixed colony of herons in Macedonia, consisting of Grey Herons, Night Herons and Little Egrets – for the latter, this is at present the only known breeding locality in Macedonia. Two more Grey Heron colonies are known within this site (Table 74). The importance of rice fields for breeding and migrating waterbirds is unknown, although presumably high.

Habitats and land use

The extensive rice fields give this site its characteristic image. They are usually flooded in May, and the water is retained there till August. Some of them periodically turn into other arable plots of land, thus creating mosaic landscape. Small patches of reedbeds are also found. The riparian forests with poplar and willow along the Bregalnica River are preserved in a narrow belt, presumably maintaining high biodiversity value (Table 75, Figure 50).

Threats

The threats are not sufficiently documented. Pesticide use is common during rice cultivation. Also, the number of ponds dried for the purpose of growing other crops (notably maize) seems to have been on increase in the last few years. Dangerous power poles are common in the region, very likely causing significant mortality of the storks (Table 76).

Conservation

No active conservation measures are ongoing, and the site is not foreseen for any legal protection.

3.2.23. Lower Vardar

General information

Name in English: Lower Vardar

Name in Macedonian: Dolen tek na reka Vardar (долен тек на река Вардар)

IBA code: MK029

Criteria: B2

Area: 5,357 ha

Central coordinates: 22°31'58.42"E, 41°11'28.71"N

Altitude: 40–192 m a.s.l.

Administrative region(s): Bogdanci, Gevgelija, Valandovo

Site description

Starting from the right bank of the Vardar River along the Macedonian - Greek border, the site boundary

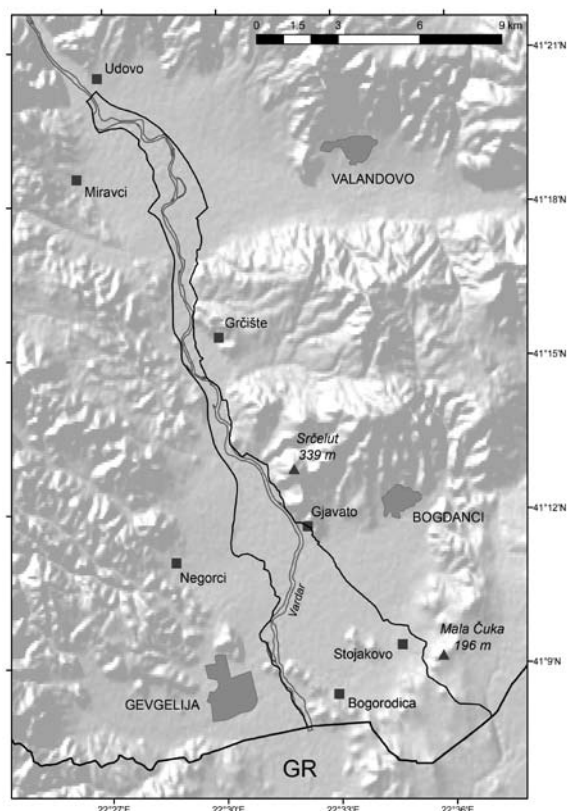


Figure 51: Map of the IBA Lower Vardar with its main features depicted

Slika 51: Zemljevid IBA Spodnji Vardar z glavnimi značilnostmi območja

follows the state border eastwards to the Selemilska Reka stream, from where it turns NW and via Mala Čuka (196 m a.s.l.) descends towards the village of Stojakovo, including it into the site, and along a dirt road continues NW to include the village of Gjavato. From there it continues north, passing close to the left bank of the Vardar, leaving the greenhouses at Grčište village outside the site. Then it continues north along the local road till it reaches the E-75 Demir Kapija–Gevgelija motorway, passes through the Šopka and Lagovo localities until reaching the Anska Reka River, follows it east to the motorway, and then runs along it north to just south of Udovo village. The boundary crosses the Vardar at its confluence with the Selište stream and turns south towards the railway station at Miravci village, passes through the Vrežot locality (66 m a.s.l.) along a dirt road and close to the Vardar River, continues south, crosses the Petruška Reka and reaches the railway. Then it follows the railway to the east of Negorci village, when it turns eastwards and



Figure 52: Characteristic landscape of the IBA Lower Vardar (photo: M. Velevski)

Slika 52: Značilna krajina IBA Spodnji Vardar (foto: M. Velevski)

Table 77: List of triggering and other important bird species in the IBA Lower Vardar

Tabela 77: Seznam kvalifikacijskih in drugih pomembnih vrst ptic v IBA Spodnji Vardar

Species/ Vrsta	Season/ Sezona	Year/ Leto	Population/ Populacija	Acc./ Zan.	Criteria/ Kriteriji
<i>Ciconia ciconia</i>	B	2011	50–60	A	B2
<i>Sternula albifrons</i>	B	2009	15–30	B	B2
<i>Riparia riparia</i>	B	2010	800–1,200	B	B2
<i>Sterna hirundo</i>	B	2009	15–30	B	N

Table 78: The main CORINE land cover types (Level 3) in the IBA Lower Vardar

Tabela 78: Glavni tipi pokrovnosti in rabe tal (po CORINE land cover, 3. nivo) v IBA Spodnji Vardar

Code/ Koda	CORINE land cover type/ tip pokrovnosti in rabe tal	Coverage/ Pokrovnost (%)
211	Non-irrigated arable land	15.1
242	Complex cultivation patterns	46.7
243	Land principally occupied by agriculture, with significant areas of natural vegetation	4.3
231	Pastures	16.2
221	Vineyards	5.9
511	Water courses	5.7
	Other	6.0

approaches the Vardar again. Close to its right bank, it reaches the state border again (Figure 51).

The Vardar riverbed between Udovo and Gevgelija is morphologically characterized by the monochannel's transition into a braided river type. This is the area with best-preserved natural river dynamics in Macedonia. The entire site is part of the Gevgelija-Valandovo valley, of tectonic origin. Alluvial deposits are found on both sides of the Vardar, but are most characteristic in western parts of the valley (the Miravci field). Aeolian sands are found in the vicinity of Gjavato village.

Species

The segment of the Vardar River near Gevgelija is important for a mixed colony of Common *Sterna hirundo* and Little Terns *Sternula albifrons* with at least 15 pairs of both species (ŠKORPIKOVÁ *et al.* 2009A) breeding on large

Table 79: The main threats to birds and their importance in the IBA Lower Vardar**Table 79:** Najpomembnejši dejavniki ogrožanja ptic in njihov vpliv v IBA Spodnji Vardar

Code/ Koda	Threat/ Dejavnik ogrožanja	Threat impact/ Vpliv	Most affected species/ Najbolj prizadete vrste
810	Drainage	high	<i>C. ciconia</i>
300	Sand and gravel extraction	high	<i>S. albifrons</i> , <i>S. hirundo</i> , <i>R. riparia</i>
410	Industrial or commercial areas	high	<i>C. ciconia</i> , <i>S. albifrons</i> , <i>S. hirundo</i> , <i>R. riparia</i>
511	Electricity lines	medium	<i>C. ciconia</i>

gravel islets in the riverbed. Furthermore, at least two colonies (one of which is very large with > 800 pairs) of Sand Martins *Riparia riparia* were found (M. VELEVSKI *unpubl.*). Truly spectacular passerine congregations during the migration period were also recorded (e.g. up to 2 million Barn Swallows *Hirundo rustica* in autumn along the Vardar River in September 1990, B. STUMBERGER *unpubl.*). Migration of soaring birds (raptors, storks) has not been studied, but is expected to be important, probably as a bottleneck site. Nearly 10% of the country's White Stork population breed within the IBA Lower Vardar. The large stork colonies in Stojakovo and Bogorodica villages held 28 and 21 breeding pairs in 2010, respectively (HECKENROTH & HEINS *in prep.*) (Table 77).

Habitat and land use

Remains of alluvial forests (e.g. willows, Oriental Plain *Platanus orientalis*), numerous gravel bars and sand river banks, reedbeds, and predominant mosaic agriculture in the lowlands on river deposits are the main features of this floodplain area. Tamarisk belts and shrublands are also well-preserved. Small hills are dominated by pastures, while some areas have been afforested with allochthonous tree species (Table 78, Figure 52).

Threats

A windfarm near the village of Miravci has already been approved. Gravel extraction takes place at several locations along the Vardar River. A large field near Bogorodica village was drained by channels. The existing dangerous power poles very likely cause mortalities in the White Stork population. The planned construction of a dam on the Vardar River just north of the site (at the village of Gradec) will probably change the entire water-regime downstream, altering sandbanks, gravel deposition and riparian vegetation. A pipeline is planned to pass through this region, and appropriate mitigation measures to conserve the floodplain will be needed (Table 79).

Conservation

No active conservation measures are ongoing, and the site is not foreseen for any legal protection.

4. Discussion

Three of the identified IBAs occupy the highest parts of the large mountain massifs, while three other IBAs embrace the large natural lakes. The rest are mostly located in the lower mountainous or hilly and especially lowland parts of the country, including breeding areas of species of global conservation concern. The percentage of territory covered by the IBAs in the country is relatively high, although less than Croatia with 40% of the land territory (RADOVIĆ *et al.* 2005) and Spain with ca. 32%, almost identical to Slovenia with 27% (DENAC *et al.* 2011), Greece with 26% (HEATH & EVANS 2000), and just slightly above Bulgaria with 23%, (KOSTADINOVA & GRAMATIKOV 2007). The fact that Macedonia has a much lower number of sites compared to these countries (Table 80), indicates their relatively large size. Indeed, almost the entire Pčinja - Vardar Valley, starting from the Serbian border in the north to Demir Kapija to the south, adjoined by Mariovo and Pelagonia, may be actually considered as one territory of clear importance for the conservation of species of the global conservation concern. This is largely due to the fact that IBA identification was possible primarily on the basis of occurrence of large raptors due to the precise quantitative data. As many of them have large home-ranges and some pairs even frequently change their breeding sites in consecutive breeding seasons, particularly the Imperial Eagle, inclusion of large areas in the network is justified. Compared to the other IBAs designated for the birds of prey in the Southern European region, the number of breeding pairs per area unit in Macedonia is well within the range.

This IBA network includes significant portion of the national population of the species of global conservation concern. Specifically, about 80–90% of

Table 80: Comparison of number of IBAs and their total coverage among countries of Southern Europe and its surroundings

Tabela 80: Primerjava med števili IBA-jev v državah južne Evrope z okolico in skupna površina IBA-jev v posameznih državah

Country/ Država	Country size/ Velikost države (km ²)	Total IBA coverage/ Skupna površina IBA-jev (km ²)	Percentage of territory under IBA/ Odstotek ozemlja v okviru IBA (%)	Total no. of IBAs/ Skupno št. IBA-jev
Albania	28,750	903	3	15
Armenia	29,800	1,820	6	5
Azerbaijan	86,600	6,161	7	52
Bosnia	51,130	68	< 1	3
Bulgaria	110,994	26,021	23	114
Croatia	56,540	22,654*	40*	40
Cyprus	9,250	1,305	14	16
France	551,600	47,248	9	277
Greece	132,000	34,332	26	196
Hungary	93,032	14,662	16	43
Italy	301,302	46,270	15	192
Macedonia	25,713	6,907	27	24
Moldova	33,700	509	2	12
Portugal	89,000	9,421	11	34
Romania	237,500	6,557	3	44
Serbia	88,361	12,596	14	35
Slovenia	20,272	5,538	27	35
Spain	492,463	157,689	32	391
Turkey	779,452	29,978	4	97
Ukraine	603,700	20,323	3	102

Croatia after RADOVIĆ *et al.* (2005), Bulgaria after KOSTADINOVA & GRAMATIKOV (2007), Serbia after PUZOVIĆ *et al.* (2009), and Slovenia after DENAC *et al.* (2011), all other countries after HEATH & EVANS (2000)

* only land IBAs (marine sites excluded)

the national Imperial Eagle breeding population, all but one known pair (95% of the national population) of Egyptian Vultures, all known possibly breeding pairs of the Saker Falcon, all non-breeding and wintering individuals of Dalmatian Pelican, 40–75% of the Ferruginous Duck population and at least 40–50% of the Roller population are included in the IBA network. With regard to the species of European importance, 80–100% of all Lesser Kestrel pairs, 50–60% of the Long-legged Buzzard, ca. 50% of the Lanner Falcon breeding population, 45–55% of the Short-toed Eagle, 40–50% of the Golden Eagle, 30–50% of the Eagle Owl, 35–45% of the Black Stork, 25–50% of the Peregrine Falcon and ca. 20–25% of the Levant Sparrowhawk populations of are included. Furthermore, all known breeding pairs and main foraging areas of the Griffon Vultures are also covered by the network. The network is also representative of the species characteristic of the Eurasian high-montane biome and the Mediterranean biome (except for the

Sardinian Warbles *Sylvia melanocephala*) (Appendix 5).

A large gap exists in the knowledge regarding the population sizes of many species, especially passerines, and priority for further research should be placed on the species that presumably meet the 0.5% threshold of the European populations, for which there is not enough information available at the moment to support site-based conservation approach (Appendix 1). These are mainly species occupying a variety of habitats and widely distributed throughout the country. Also, for a few species for which site-based conservation approach is considered suitable, lack of quantitative data prevented us from identifying the best sites. Of highest importance are efforts to precisely estimate the breeding population of the globally Near Threatened Semicollared Flycatcher, as breeding records exists from the northernmost (ŠKORPIKOVÁ *et al.* 2009B) to the southernmost (HÖLZINGER 1987) parts of the country.

There are still gaps in knowledge on the distribution and population estimates for several important species, and improving of this situation may result in identification of additional IBAs. The Sardinian Warbler (triggering species under the A3 criterion as a part of the Mediterranean biome species assemblage) is evidently underrepresented in the network, although no less than eight sites were identified that hold significant numbers of different species characteristic of the Mediterranean biome. This species, opposite to other species of this assemblage, is found in Macedonia almost exclusively in the pseudomauis in the southernmost part of the country (roughly the triangle between Demir Kapija, Gevgelija and Lake Dojran), and some part of the population may be included in the Demir Kapija Gorge site (MK008), although no firm data exist. However, further survey of this region aimed at this species is needed to delineate additional IBA, which would ideally also include potentially important populations of some other more or less underrepresented species, e.g. Levant Sparrowhawk, Booted Eagle, Lesser Spotted Eagle and some other Mediterranean species. Parts of the Skopje Valley might hold important White Stork numbers (the population has increased since the work published by MICEVSKI *et al.* 1992), and also possibly important population of the Roller, as at some places along the Vardar River its density of 1.5 pairs/km² has been noted (M. VELEVSKI *unpubl.*). The surroundings of Monospitovo Marsh near Strumica also hold important population of White Stork (ca. 60 pairs, HECKENROTH & HEINS *in prep.*), but at present no other species that might support IBA identification in this area are known.

Some of the mountains in western Macedonia, notably Mt Stogovo, may also meet A3 criterion for the species characteristic of the Eurasian high-montane biome. So far, only the Alpine Chough and the Snow Finch have been recorded, although the presence of Wallcreeper and Alpine Accentor is very likely. However, if relative abundance or population sizes are proved to be lower than at the other three sites already identified, we consider identification of additional IBA for this species assemblage not justified. The Matka Canyon near Skopje holds one pair of Egyptian Vultures and several other species characteristic of the Mediterranean biome (A3 criterion), while one species, the Eagle Owl, possibly meets B2 criterion, even though the site has not been proposed as an IBA (VELEVSKI 2008).

Abandonment of pastoral system, resulting in decrease of the livestock numbers (overview in VELEVSKI *et al.* 2003), and overgrowing of the pastures have been identified as one of the most serious threats

at 11 sites. It most negatively impacts the vultures (most notably Griffon Vulture at the national level) and other facultative necrophagous species such as the Imperial and Golden Eagles. Habitat loss due to overgrowing of the pastures negatively affects species that use this habitat for foraging (notably Lesser Kestrel in the lowlands and Alpine Chough in the mountains) or breeding (Stone Curlew). Equally important threat, also with estimated high impact at 11 sites, are direct losses from poaching and poisoning resulting in dramatic decrease in the number of vultures and, very likely, Imperial Eagles.

Interspecific faunal relationships, particularly reduction of the natural prey base due to habitat changes, overhunting and poaching (notably the European Hare *Lepus europeus*, Roe Deer *Capreolus capreolus* and Alpine Chamois *Rupicapra rupicapra*), but since recently also overharvesting of tortoises (*Testudo hermanni* and *T. graeca*) are likely having a negative impact on raptors and possibly scavengers that are exposed to the additional risk of secondary lead poisoning.

About 21% of the identified IBAs overlap the national protected area network (MELOVSKI *et al. in prep.*). Notably underrepresented are regions in the lower parts of the country, which means that the populations of Imperial Eagle, Lesser Kestrel, Roller and to some degree Egyptian Vulture inhabit the areas outside the boundaries of the existing protected areas. The situation is somewhat better with the mountainous IBAs and particularly the natural lakes. However, management measures oriented towards bird conservation are rarely a practice. High coverage of agricultural areas on the IBAs (totalling almost half of the entire surface area) suggests that promotion of new protected areas is likely to be difficult, and conservation measures will be highly dependent on suitable implementation of agri-environmental schemes in the country.

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5. Povzetek (SI) / Резиме (МК)

Opredeljevanje Mednarodno pomembnih območij za ptice (IBA) je pobuda, ki jo organizacija BirdLife International izvaja na svetovni ravni, njen glavni namen pa je zavarovati mrežo območij, ki so še posebej pomembna za ohranitev ptic. S spremenjenim naravovarstvenim statusom nekaterih ptic in z naraščajočim številom podatkov o razširjenosti in velikosti ptičjih populacij v Makedoniji na splošno je bila potrebna temeljita revizija omrežja IBA za posodobitev popisov, objavljenih v letih 1989 in 2000. Glede na dejstvo, da je ptičja favna Republike Makedonije med najslabše poznanimi v Evropi in še vedno ni na voljo podatkov o mnogih pticah, predvsem pevcih, je popis slonel predvsem na nekaterih ogroženih ali redkih ujedah in še nekaterih večjih pticah, značilnih za makedonsko krajino. Uporabljeni podatki so bili zbrani v obdobju različnih poglobljenih študij in projektov, opravljenih po letu 2000. Od 314 vrst, doslej zabeleženih v Makedoniji, 114 redno pojavljajočih se vrst trenutno obravnavamo kot vrste z neugodnim varstvenim statusom v Evropi, 84 od katerih gnezdi ali domnevno gnezdi v Makedoniji. Za izbor globalno (kriterij A) in evropsko pomembnih (kriterij B) IBA-jev je bilo uporabljenih več kriterijev, ki jih je razvil BirdLife International, pri čemer so bile upoštevane vrste globalne varstvene pozornosti (A1), vrste, strogo vezane na različne biome (A3), pomembne zgojitve ptic (A4, B1), vrste z neugodnim varstvenim statusom (B2) in vrste, koncentrirane v Evropi (B3). Vrste globalne varstvene pozornosti, uporabljene za določitev območij, vključujejo egiptovskega jastreba *Neophron percnopterus*, ki je glede na najnovejši Rdeči seznam ogroženih vrst (kategorizacija IUCN – Svetovne zveze za varstvo narave) ogrožen (mednarodna oznaka EN) na svetovni ravni, kodrastega pelikana *Pelecanus crispus* in kraljevega orla *Aquila heliaca* (oba ranljiva – VU) ter zlatovranko *Coracias garrulus* in balkanskega muharja *Ficedula semitorquata* (oba blizu ogroženosti – NT). Poleg tega so bile v Makedoniji zabeležene skupine vrst, za katere je značilno, da se pojavljajo večinoma ali v celoti znotraj evrazijskega visokogorskega ali mediteranskega bioma. Pomembne zgojitve negnezdečih vodnih ptic z najmanj 1 % globalnih ali biogeografskih populacij posameznih vrst se pojavljajo na vseh treh velikih makedonskih jezerih, nekatere izmed njih (kot na primer kodrasti pelikan in tatarska žvižgavka *Netta rufina*) celo v zelo velikem številu, tako da presegajo 1-odstotno raven za več kot desetkrat. Za izbor evropsko pomembnih območij je bilo skupaj uporabljenih 25 vrst, ki se tu redno pojavljajo v gnezditveni sezoni in za katere je območno

varstvo v Makedoniji ustrežno. Meje posameznih območij so bile zarisane glede na izrazite fizične značilnosti območja ali izohipse, da so lahko zaobjele gnezdišča in prehranjevališča kvalifikacijskih vrst, kar zadeva kraljevega orla in egiptovskega jastreba, pa tudi njuna nekdanja gnezdišča do leta 1991, pri čemer so bila upoštevane habitatne zahteve ptic, raba tal in različne upravljalске potrebe. Seznam IBA-jev, ki je nastal na tej osnovi, vsebuje 24 območij, ki pokrivajo 6.907 km² ali 26,9 % celotnega makedonskega ozemlja: (1) Šar Planina, (2) Povodje reke Radike, (3) Ohridsko jezero, (4) Prespansko jezero, (5) Soteska Demir Kapija, (6) Dojransko jezero, (7) Dolina Zletovske reke, (8) Tikveško okrožje, (9) Reke Pčinja - Petrošnica - Kriva reka, (10) Preod - Gjugjance, (11) Osogovsko gorovje, (12) Gora Jakupica, (13) Soteska Taor, (14) Ovče Pole, (15) Reke Topolka - Babuna - Bregalnica, (16) Gradsko - Rosoman - Negotino, (17) Jezero Mantovo in reka Kriva Lakavica, (18) Dolina reke Raec, (19) Pelagonija, (20) Mariovo, (21) Tikveško jezero, (22) Bošavija, (23) Kočanska riževa polja, in (24) Spodnji Vardar. Z izjemo treh območij, ki pokrivajo najvišje vrhove velikih gorskih masivov v SZ in osrednjih delih Makedonije, kot tudi Ohridskega in Prespanskega jezera so območja koncentrirana predvsem v osrednjih hribovskih in nižinskih delih Makedonije in zaobjemajo gnezditvena območja vrst globalne varstvene pozornosti. Odstotek ozemlja, ki ga pokrivajo IBA-ji v Makedoniji, je razmeroma visok v primerjavi s celotnim evropskim povprečjem, vendar primerljiv z več državami v JV delu Evrope. Velikost posameznih IBA-jev je med 25 km² (Soteska Taor) in 1.136 km² (Pelagonija), število kvalifikacijskih vrst na območje pa med ena (Bošavija, Kočanska riževa polja) in 17 (Reke Pčinja - Petrošnica - Kriva reka). 22 območij ustreza nekaterim kriterijem za globalno pomembne IBA-je – tri območja (Ohridsko, Prespansko in Dojransko jezero) kriteriju A4, v osmih gnezdiščih pomembne populacije vrst, značilnih za mediteranski biom, medtem ko na treh območjih prebivajo pomembne populacije vrst, značilnih za evrazijski visokogorski biom. Vrste globalne varstvene pozornosti se pojavljajo v različnem številu območij, in sicer: egiptovski jastreb v trinajstih, kraljevi orel v sedmih, kodrasti pelikan in sokol plenilec *Falco cherrug* v dveh, kostanjevka *Aythya nyroca* v treh, zlatovranka v desetih, rdečenoga postovka *Falco vespertinus* v treh in balkanski muhar v enem. Posamezne kvalifikacijske vrste za evropsko pomembna območja so zastopane v 2–15 območjih. Omrežje IBA-jev vključuje 80–100 % nacionalnih populacij globalno ogroženih vrst, medtem ko se zastopanost drugih vrst giblje med 5 in 100 %, vendar prek 40 % za veliko večino vrst.

Opuščanje tradicionalnega pastirstva, ki se kaže v zmanjševanju živinskih čred in posledično zaraščanju ter lov s pastmi, zastrupljanje in divji lov sta med najpomembnejšimi dejavniki ogrožanja kvalifikacijskih vrst, še posebno za egiptovskega jastreba in kraljevega orla, saj je bil njun vpliv opredeljen kot velik na nič manj kot enajstih območjih. Nacionalna pravna zaščita območij je vse prej kot popolna, saj je bodisi samo delna ali z neustreznimi varstvenimi ukrepi, ali pa v mnogih območjih kakršne koli pravne zaščite sploh ni. Glede na dejstvo, da se samo 21 % zavarovanih območij prekriva z IBA-ji, je obstoječi sistem torej neustrezen za varovanje večine prednostnih vrst. To še posebno velja za območja v nižje ležečih delih države z največjim številom vrst globalne varstvene pozornosti.

Идентификацијата на Значајните подрачја за птици (ЗПП) (Important Bird Areas, IBAs) е иницијатива спроведувана од BirdLife International na globalno nivo, so cel da se заштити мрежа на подрачја кои се од особено значење за зачувување на птиците. Со промената на конзервацискиот статус на некои видови, и воопшто со новите податоци за rasprostranuvanje to i goleminite na populaciiite na pticite vo Makedonija, беше потребна ревизија на мрежата на ЗПП за да се ажурираат постојните информации за подрачјата во земјата, објавени во 1989 и 2000 година. Бидејќи фауната на птиците во Република Македонија е меѓу најмалку проучените во Европа, и бидејќи сè уште во голема мера недостигаат податоци за многу видови, посебно птици-пејачки, инвентаризацијата главно е направена врз основа на податоците за некои засегнати или ретки грабливи птици и неколку други покрупни видови, карактеристични за македонските предели. Користените податоци беа собирани во текот на различни студии и проекти, реализирани по 2000 година. Од 314 видови птици регистрирани во Македонија до денес, 114 редовно присутни видови во моментот имаат неповолен конзервациски статус во Европа, а од нив 84 гнездат или веројатно гнездат во Македонија. При селекцијата на подрачјата беа користени неколку критериуми развиени од BirdLife International за избор на ЗПП од globalно (критериум А) и европско (критериум В) значење, земајќи ги предвид видовите од глобален интерес за зачувување (А1), видовите ограничени на посебни биомии (А3), значајните собиралишта (А4, В1) и видови со неповолен конзервациски статус (В2) или концентрирани во Европа (В3). Видовите од глобален интерес за зачувување ги вклучуваат египетскиот мршојадец (*Neophron percnopterus*), кој се смета за загрозен (EN) na globalno nivo според најновата црвена листа на IUCN na засегнати видови, кадроглавиот pelikan (*Pelecanus crispus*) и царскиот орел (*Aquila heliaca*) (двата чувствителни – VU) и модровраната (*Coracias garrulus*) и шареното муварче (*Ficedula semitorquata*) (близу засегнати – NT). Понатаму, во Македонија

се среќаваат и групи на видови карактеристични за европскиот високопланински или медитеранскиот биом. Трите големи природни езера се значајни собиралишта на негнездечки водни видови птици, кои сочинуваат најмалку 1% од биогеографската популација на одделниот вид, од кои некои (на пр., кадроглавиот пеликан, патката превез (*Netta rufina*)) во многу голем број, повеќе од десеткратно надминувајќи го прагот од 1%. За селекција на подрачјата од европско значење беа користени вкупно 25 видови кои редовно се присутни во Македонија, а за кои пристапот на зачувување преку заштита на подрачја се смета за соодветен. Границите на подрачјата беа нацртани следејќи изразени географски карактеристики или изохипси, за да ги вклучуваат местата на гнездење и исхрана на видовите кои ги исполнуваат критериумите, за царскиот орел и египетскиот мршојадец и поранешните места на гнездење (по 1991), земајќи ги предвид нивните потреби од живеалишта, користење на земјиштето и потребите од управување. Резултатот вклучува 24 ЗПП, покривајќи 6 907 km² или 26,9% од површината на Македонија: (1) Шар Планина, (2) Сливот на реката Радица, (3) Охридско Езеро, (4) Преспанско Езеро, (5) Демиркаписка Клисура, (6) Дојранско Езеро, (7) Долината на Злетовска Река, (8) Тиквешкиот регион, (9) Реката Пчиња – реката Петрошница – Крива Река, (10) Преод - Ѓуѓанце, (11) Осоговски Планини, (12) Јакупица, (13) Таорска Клисура, (14) Овче Поле, (15) Реката Тополка – реката Бабуна – реката Брегалница, (16) Градско – Росоман - Неготино, (17) Мантовското Езеро и реката Крива Лаковица, (18) Долината на реката Раец, (19) Пелагонија, (20) Мариово, (21) Тиквешко Езеро, (22) Бошавија, (23) Кочански оризови полиња и (24) Долниот тек на реката Вардар. Со исклучок на трите подрачја кои ги зафаќаат планинските масиви во северозападните и централните делови на Македонија, и Охридското и Преспанското Езеро, подрачјата се концентрирани главно во централните ридести и низински делови на земјата, опфаќајќи подрачја со гнезда на глобално засегнати видови. Процентот на територија покриена со ЗПП во Македонија е релативно висок споредено со вкупниот европски просек, но е споредлив со неколку земји во југоисточна Европа. Површината на поодделни ЗПП се движи од 25 km² (Таорска Клисура) до 1 136 km² (Пелагонија), а бројот на видови кои ги исполнуваат критериумите од еден (Бошавија, Кочански оризови полиња) до 17 (Река Пчиња – река Петрошница – Крива Река). 22 подрачја исполнуваат некои од критериумите за подрачја од глобално значење, три подрачја (Охридското, Преспанското и Дојранското Езеро) го исполнуваат критериумот A4, осум подрачја поддржуваат значаен дел од популациите на видови карактеристични за медитеранскиот биом, а три други подрачја поддржуваат значаен дел од популациите на видови карактеристични за европскиот високопланински биом. Видовите од глобален интерес за зачувување се вклучени во мрежата на ЗПП на следниот начин: египетскиот мршојадец на 13 подрачја, царскиот орел на седум, кадроглавиот пеликан и ловцискиот сокол (*Falco cherrug*) на две, црниот кожувар (*Aythya nyroca*) на три, модровраната на

10, црвеноногата ветрушка (*Falco vespertinus*) на три и шареното муварче на едно подрачје. Поединечни видови кои ги исполнуваат критериумите за подрачја од европско значење се присутни на од 2 до 15 подрачја. Мрежата на ЗПП вклучува 80-100% од националните популации на глобално засегнатите видови, а вклученоста на останатите видови варира од 5 до 100%, при што за голем дел од видовите е над 40%. Ненаводнуваните обработливи површини и предните шумски честаци се доминантни типови на покривност на земјиштето, заедно покривајќи 32% од вкупната површина на ЗПП. Напуштањето на традиционалниот сточарски систем што резултира со намалување на бројот на сточниот фонд и зараснување на пасиштата, како и поставувањето стапици, труењето и кривомотот, се сметаат за најсериозни закани за видовите кои ги исполнуваат критериумите, особено за египетскиот мршојадец и царскиот орел, и се класифицирани како „високи“ на не помалку од 11 подрачја. Националната заштита на подрачјата е недоволна, реализирајќи се или делумно, или без соодветни мерки на заштита кои се во сила, а многу подрачја сè уште немаат никаква форма на законска заштита. Со 21% од националната мрежа на заштитени подрачја која се преклопува со ЗПП, постојниот систем на заштитени подрачја е недоволен за зачувување на најприоритетните видови. Особено постои празнина кај регионите во ниските делови на земјата, кои се со највисок број на видови од глобален интерес за зачувување.

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APPENDIX 1 / DODATEK 1

Full list of species taken into consideration for identification of Important Bird Areas under B2 and B3 criteria, with population estimates, percentage of European population in Macedonia, median of population size in IBAs confirmed under the B2 & B3 criteria in the World Bird/Biodiversity Database (WBDB), and thresholds used in Macedonia given. Species denoted in bold were used for site identification.

Vrste, upoštevane pri opredelitvi IBA-jev v okviru kriterijev B2 in B3, z ocenami njihovih populacij, odstotkom evropske populacije v Makedoniji, srednjo velikostjo populacije v IBA-jih, potrjenih v okviru kriterijev B2 in B3 v World Bird/Biodiversity Database (WBDB), in s populacijskimi pragovi, uporabljenimi v Makedoniji. Vrste, prikazane v mastnem tisku, so bile uporabljene za opredelitev območij.

Species / Vrst	SPEC	Site-based conservation suitable/ Območno varstvo primerno	Population MK/ Populacija MK		Population Europe/ Populacija Evropa		Percentage of Europe population in MK / Odstotek evropske populacije v MK (%)	Max. No. of sites under B2 & B3 / Največje št. območij v okviru B2 in B3	Median IBAs Europe / Srednja vrednost v evropskih IBA-jih (B2 & B3)		B2 & B3 thresholds for MK/ populacijski prag v MK
			min	max	min	max			min	max	
<i>Falco naumanni</i>	I	Yes	1,500	2,500	29,900	34,500	6.0	10	95	100	20
<i>Aquila heliaca</i>	I	Yes	30	40	850	1,400	3.2	5	3	4	2
<i>Phalacrocorax pygmaeus</i>	I	Yes	60	120	28,000	39,000	0.4	5	80	110	30
<i>Aythya nyroca</i>	I	Yes	30	50	12,000	18,000	0.3	5	25	40	10
<i>Falco cherrug</i>	I	Yes	0	3	360	540	0.2	5	1	2	2
<i>Crex crex</i>	I	Yes	50	150	1,300,000	2,000,000	< 0.1	5	40	50	20
<i>Alcedo corax</i>	2	Yes	2,000	5,000	40,000	78,000	5.7	10	60	100	50
<i>Ficedula semitorquata</i>	2	Yes	200	1,000	5,300	34,400	3.3	5	100	130	100
<i>Accipiter brevipes</i>	2	Yes	40	100	3,200	7,700	1.3	5	8	12	3
<i>Lanius nubicus</i>	2	Yes	300	500	35,000	100,000	0.7	5	10	20	10
<i>Ciconia ciconia</i>	2	Yes	650	800	180,000	220,000	0.4	5	80	110	30
<i>Coracias garrulus</i>	2	Yes	200	400	55,000	117,000	0.4	5	20	35	20
<i>Ciconia nigra</i>	2	Yes	35	45	7,800	12,000	0.4	5	10	10	3
<i>Lanius minor</i>	2	Yes	2,000	5,000	620,000	1,500,000	0.3	5	30	60	30
<i>Phylloscopus bonelli</i>	2	Yes	3,000	8,000	1,400,000	3,500,000	0.2	5	750	750	300
<i>Aquila pomarina</i>	2	Yes	5	10	14,000	19,000	< 0.1	5	8	9	2
<i>Aythya ferina</i>	2	Yes	0	20	210,000	440,000	< 0.1	5	200	250	200
<i>Lanius senator</i>	2	No	5,000	15,000	480,000	1,200,000	1.1				
<i>Orus scops</i>	2	No	1,800	4,000	210,000	440,000	0.9				
<i>Picus viridis</i>	2	No	2,500	10,000	590,000	1,300,000	0.6				
<i>Caprimulgus europaeus</i>	2	No	2,000	5,000	470,000	1,000,000	0.5				

Nadaljevanje dodatka 1 / Continuation of Appendix 1

Species / Vrsta	SPEC	Site-based conservation suitable/ Območno varstvo primerno	Population MK/ Populacija MK		Population Europe/ Populacija Evropa		Percentage of Europe population in MK / Odstotek evropske populacije v MK (%)	Max. No. of sites under B2 & B3 / Največje št. območij v okviru B2 in B3	Median IBAs Europe / Srednja vrednost v evropskih IBA-ih (B2 & B3)		B2 & B3 thresholds for MK/ populacijski prag v MK
			min	max	min	max			min	max	
<i>Lullula arborea</i>	2	No	5,000	15,000	1,300,000	3,300,000	0.4				
<i>Miliaria calandria</i>	2	No	30,000	100,000	7,900,000	22,000,000	0.4				
<i>Emberiza melanocephala</i>	2	No	10,000	30,000	2,800,000	9,300,000	0.3				
<i>Carduelis cannabina</i>	2	No	5,000	20,000	10,000,000	28,000,000	< 0.1				
<i>Emberiza hortulana</i>	2	No	3,000	10,000	5,200,000	16,000,000	< 0.1				
<i>Phoenicurus phoenicurus</i>	2	No	2,000	3,000	6,800,000	16,000,000	< 0.1				
<i>Oenanthe hispanica</i>	2	No	1,300	2,500	1,400,000	3,300,000	< 0.1				
<i>Parus cristatus</i>	2	No	1,000	2,500	6,100,000	12,000,000	< 0.1				
<i>Vanellus vanellus</i>	2	No	50	150	1,700,000	2,800,000	< 0.1				
<i>Falco biarmicus</i>	3	Yes	25	35	480	900	4.5	5	1	3	1–2
<i>Circus gallicus</i>	3	Yes	120	150	8,400	13,000	1.3	5	10	14	3
<i>Monticola saxatilis</i>	3	Yes	1,000	2,500	100,000	320,000	0.9	5	25	40	30
<i>Buteo rufinus</i>	3	Yes	80	120	8,700	15,000	0.9	5	8	10	4
<i>Aquila chrysaetos</i>	3	Yes	60	100	8,400	11,000	0.8	5	7	8	3
<i>Neophron percnopterus</i>	3	Yes	28	32	3,300	5,050	0.7	5	5	5	3
<i>Bubo bubo</i>	3	Yes	100	300	19,000	38,000	0.6	5	10	15	4
<i>Ardeola ralloides</i>	3	Yes	100	150	18,000	27,000	0.6	5	50	60	20
<i>Falco tinnunculus</i>	3	Yes	1,500	2,500	330,000	500,000	0.5	5	50	70	50
<i>Burhinus oedipnemus</i>	3	Yes	200	400	46,000	78,000	0.5	5	50	100	20
<i>Monticola solitarius</i>	3	Yes	400	1,000	120,000	260,000	0.4	5	15	30	20
<i>Ixobrychus minutus</i>	3	Yes	200	300	60,000	120,000	0.3	5	50	70	20
<i>Nycticorax nycticorax</i>	3	Yes	180	200	63,000	87,000	0.3	5	150	200	100
<i>Aquila pennata</i>	3	Yes	15	25	4,400	8,900	0.3	5	5	10	2
<i>Melanocorypha calandria</i>	3	Yes	20,000	50,000	10,000,000	24,000,000	0.2	5	4,850	9,450	5,000
<i>Emberiza cia</i>	3	Yes	2,000	5,000	1,300,000	4,100,000	0.1	5	100	150	150
<i>Pyrrhonorax pyrrhonorax</i>	3	Yes	40	120	43,000	110,000	0.1	5	100	150	20
<i>Calandrella brachydactyla</i>	3	Yes	2,000	10,000	7,300,000	14,000,000	< 0.1	5	*	*	*

Nadaljevanje dodatka 1 / Continuation of Appendix 1

Species / Vrsta	SPEC	Site-based conservation suitable/ Območno varstvo primerno	Population MK/ Populacija MK		Population Europe/ Populacija Evropa		Percentage of Europe population in MK / Odstotek evropske populacije v MK (%)	Max. No. of sites under B2 & B3 / Največje št. območij v okviru B2 in B3	Median IBAs Europe / Srednja vrednost v evropskih IBA-ih (B2 & B3)		B2 & B3 thresholds for MK/ populacijski prag v MK
			min	max	min	max			min	max	
<i>Riparia riparia</i>	3	Yes	1,000	5,000	5,400,000	9,500,000	< 0.1	5	10,000	10,000	1,000
<i>Actitis hypoleucos</i>	3	Yes	50	100	720,000	1,600,000	< 0.1	5	*	*	*
<i>Alcedo atthis</i>	3	Yes	20	100	79,000	160,000	< 0.1	5	15	30	15
<i>Cercotrichas galactotes</i>	3	Yes	20	100	32,000	96,000	< 0.1	5	*	*	*
<i>Sternula albifrons</i>	3	Yes	15	30	35,000	55,000	< 0.1	5	70	120	20
<i>Anas strepera</i>	3	Yes	5	30	60,000	96,000	< 0.1	5	30	45	30
<i>Chlidonias hybrida</i>	3	Yes	5	30	42,000	87,000	< 0.1	5	100	140	100
<i>Milvus migrans</i>	3	Yes	3	10	64,000	100,000	< 0.1	5	20	100	5
<i>Botaurus stellaris</i>	3	Yes	1	10	34,000	54,000	< 0.1	5	20	25	5
<i>Anas querquedula</i>	3	Yes	1	10	390,000	590,000	< 0.1	5	340	430	300
<i>Aythya fuligula</i>	3	Yes	0	20	730,000	880,000	< 0.1	5	*	*	100
<i>Chlidonias niger</i>	3	Yes	0	20	83,000	170,000	< 0.1	5	100	150	100
<i>Ardea purpurea</i>	3	Yes	0	10	29,000	42,000	< 0.1	5	80	100	80
<i>Anas clypeata</i>	3	Yes	0	5	170,000	210,000	< 0.1	5	*	*	*
<i>Pendix perdix</i>	3	No	25,000	100,000	1,600,000	3,100,000	2.2				
<i>Galerida cristata</i>	3	No	50,000	150,000	3,600,000	7,600,000	1.7				
<i>Merops apiaster</i>	3	No	4,000	20,000	480,000	1,000,000	1.3				
<i>Sylvia crassirostris</i>	3	No	2,000	5,000	170,000	480,000	1.1				
<i>Passer domesticus</i>	3	No	500,000	1,000,000	63,000,000	130,000,000	0.8				
<i>Siretopelia turtur</i>	3	No	25,000	60,000	3,500,000	7,200,000	0.8				
<i>Parus palustris</i>	3	No	20,000	60,000	3,000,000	6,000,000	0.8				
<i>Anthus campestris</i>	3	No	5,000	20,000	1,000,000	1,900,000	0.7				
<i>Sturnus vulgaris</i>	3	No	100,000	500,000	23,000,000	56,000,000	0.6				
<i>Upupa epops</i>	3	No	5,000	10,000	890,000	1,700,000	0.6				
<i>Athene noctua</i>	3	No	3,000	7,000	560,000	1,300,000	0.5				
<i>Lanius collurio</i>	3	No	15,000	50,000	6,300,000	13,000,000	0.3				
<i>Alauda arvensis</i>	3	No	70,000	200,000	40,000,000	80,000,000	0.2				

Nadaljevanje dodatka 1 / Continuation of Appendix 1

Species / Vrsta	SPEC	Site-based conservation suitable/ Območno varstvo primerno	Population MK/ Populacija MK		Population Europe/ Populacija Evropa		Percentage of Europe population in MK / Odstotek evropske populacije v MK (%)	Max. No. of sites under B2 & B3 / Največje št. območij v okviru B2 in B3	Median IBAs Europe / Srednja vrednost v evropskih IBA-ih (B2 & B3)		B2 & B3 thresholds for MK/ populacijski prag v MK
			min	max	min	max			min	max	
<i>Delichon urbica</i>	3	No	25,000	35,000	9,900,000	24,000,000	0.2				
<i>Oenanthe oenanthe</i>	3	No	10,000	30,000	4,600,000	13,000,000	0.2				
<i>Hippolais pallida</i>	3	No	5,000	20,000	3,300,000	6,700,000	0.2				
<i>Coturnix coturnix</i>	3	No	5,000	10,000	2,800,000	4,700,000	0.2				
<i>Hirundo rustica</i>	3	No	20,000	50,000	16,000,000	36,000,000	0.1				
<i>Jynx torquilla</i>	3	No	500	2,000	580,000	1,300,000	0.1				
<i>Tyto alba</i>	3	No	180	300	110,000	220,000	0.1				
<i>Passer montanus</i>	3	No	15,000	40,000	24,000,000	42,000,000	< 0.1				
<i>Muscicapa striata</i>	3	No	1,000	3,000	14,000,000	22,000,000	< 0.1				
<i>Picus canus</i>	3	No	50	250	180,000	320,000	< 0.1				
<i>Scolopax rusticola</i>	3	No	30	90	1,800,000	6,600,000	< 0.1				
<i>Hippolais olivetorum</i>	non-SPEC ^E	Yes	500	3,000	11,000	23,000	7.7	10	70	110	100
<i>Dendrocopos medius</i>	non-SPEC ^E	Yes	3,000	10,000	140,000	310,000	2.6	5	50	80	50
<i>Turdus torquatus</i>	non-SPEC ^E	Yes	1,000	2,500	310,000	670,000	0.4	5	350	600	350
<i>Regulus ignicapilla</i>	non-SPEC ^E	Yes	10,000	20,000	3,300,000	6,700,000	0.3	5	*	*	*
<i>Emberiza citrinella</i>	non-SPEC ^E	Yes	30,000	100,000	18,000,000	31,000,000	0.2	5	*	*	*
<i>Ficedula albicollis</i>	non-SPEC ^E	Yes	2,000	8,000	1,400,000	2,400,000	0.2	5	2,200	4,650	2,000
<i>Circus pygargus</i>	non-SPEC^E	Yes	100	140	35,000	65,000	0.2	5	20	45	20
<i>Regulus regulus</i>	non-SPEC ^E	Yes	2,000	10,000	19,000,000	35,000,000	< 0.1	5	*	*	*
<i>Acrocephalus scirpaceus</i>	non-SPEC ^E	Yes	2,000	5,000	2,700,000	5,000,000	< 0.1	5	*	*	*
<i>Saxicola rubetra</i>	non-SPEC ^E	Yes	1,000	5,000	5,400,000	10,000,000	< 0.1	5	380	1,000	400
<i>Sitta neumayer</i>	non-SPEC ^E	Yes	500	2,000	2,000,000	6,100,000	< 0.1	5	*	*	*
<i>A. schoenobaenus</i>	non-SPEC ^E	Yes	250	1,000	4,400,000	7,400,000	< 0.1	5	2,500	3,000	2,000
<i>Sylvia melanocephala</i>	non-SPEC ^E	Yes	250	1,000	3,100,000	8,100,000	< 0.1	5	*	*	*
<i>Carduelis spinus</i>	non-SPEC ^E	Yes	250	1,000	10,000,000	18,000,000	< 0.1	5	*	*	*
<i>Columba oenas</i>	non-SPEC ^E	Yes	200	300	520,000	730,000	< 0.1	5	100	280	150
<i>Locustella luscinioides</i>	non-SPEC ^E	Yes	50	250	530,000	800,000	< 0.1	5	200	300	200

Species / Vrsta	SPEC	Site-based conservation suitable/ Območno varstvo primerno	Population MK/ Populacija MK		Population Europe/ Populacija Evropa		Percentage of Europe population in MK / Odstotek evropske populacije v MK (%)	Max. No. of sites under B2 & B3 / Največje št. območij v okviru B2 in B3	Median IBAs Europe / Srednja vrednost v evropskih IBA-ih (B2 & B3)		B2 & B3 thresholds for MK/ populacijski prag v MK
			min	max	min	max			min	max	
<i>Acrocephalus palustris</i>	non-SPEC ^E	Yes	50	250	3,200,000	6,800,000	< 0.1	5	*	*	*
<i>Larus michahellis</i>	non-SPEC ^E	Yes	50	100	210,000	256,000	< 0.1	5	*	*	*
<i>Cygnus olor</i>	non-SPEC ^E	Yes	10	25	86,000	120,000	< 0.1				
<i>Emberiza cirius</i>	non-SPEC ^E	No	30,000	100,000	2,000,000	5,200,000	1.7				
<i>Turdus viscivorus</i>	non-SPEC ^E	No	30,000	100,000	3,000,000	7,400,000	1.2				
<i>Dendrocopos syriacus</i>	non-SPEC ^E	No	3,000	15,000	530,000	1,100,000	0.9				
<i>Erethacus rubecula</i>	non-SPEC ^E	No	300,000	700,000	43,000,000	83,000,000	0.7				
<i>Corvus monedula</i>	non-SPEC ^E	No	40,000	100,000	5,200,000	15,000,000	0.7				
<i>Luscinia megarhynchos</i>	non-SPEC ^E	No	30,000	100,000	4,200,000	12,000,000	0.7				
<i>Parus lugubris</i>	non-SPEC ^E	No	2,500	10,000	450,000	1,300,000	0.7				
<i>Parus caeruleus</i>	non-SPEC ^E	No	120,000	200,000	20,000,000	44,000,000	0.5				
<i>Strix aluco</i>	non-SPEC ^E	No	2,000	5,000	480,000	1,000,000	0.5				
<i>Certhia brachydactyla</i>	non-SPEC ^E	No	15,000	30,000	2,700,000	9,700,000	0.4				
<i>Turdus merula</i>	non-SPEC ^E	No	100,000	300,000	40,000,000	82,000,000	0.3				
<i>Sylvia atricapilla</i>	non-SPEC ^E	No	60,000	150,000	25,000,000	49,000,000	0.3				
<i>Columba palumbus</i>	non-SPEC ^E	No	30,000	60,000	9,000,000	17,000,000	0.3				
<i>Fringilla coelebs</i>	non-SPEC ^E	No	300,000	500,000	130,000,000	240,000,000	0.2				
<i>Turdus philomelos</i>	non-SPEC ^E	No	30,000	100,000	20,000,000	36,000,000	0.2				
<i>Carduelis chloris</i>	non-SPEC ^E	No	30,000	50,000	14,000,000	32,000,000	0.2				
<i>Sylvia cantillans</i>	non-SPEC ^E	No	2,000	5,000	1,400,000	3,200,000	0.2				
<i>Sylvia nisoria</i>	non-SPEC ^E	No	1,000	2,500	460,000	1,000,000	0.2				
<i>Pernis ptilorhynchus</i>	non-SPEC ^E	No	220	400	110,000	160,000	0.2				
<i>Sylvia communis</i>	non-SPEC ^E	No	10,000	20,000	14,000,000	25,000,000	< 0.1				
<i>Serinus serinus</i>	non-SPEC ^E	No	3,000	10,000	8,300,000	20,000,000	< 0.1				
<i>Prunella modularis</i>	non-SPEC ^E	No	1,000	3,000	12,000,000	26,000,000	< 0.1				
<i>Sylvia borin</i>	non-SPEC ^E	No	250	1,000	17,000,000	31,000,000	< 0.1				
<i>Larus ridibundus</i>	non-SPEC ^E	No	0	250	1,500,000	2,200,000	< 0.1				

Nadaljevanje dodatka 1 / Continuation of Appendix 1

* Few or no IBAs identified for the species under the B2 & B3 criteria in the World Bird/Biodiversity Database (WBDB)

Population estimates refer to breeding pairs after BIRDLIFE INTERNATIONAL (2004), except *Falco naumanni*, *Coracias garrulus*, *Neophron percnopterus* and *Ficedula semitorquata*, where data from the action plans were used (IÑIGO *et al.* 2008, KOVACS *et al.* 2008, GEORGIEV & IANKOV 2010, IÑIGO & BAROV 2010)

SPEC – species of European conservation concern (SPEC 1 – European species of global conservation concern in Europe, i.e. classified as Critically Endangered, Endangered, Vulnerable, Near Threatened or Data Deficient under the IUCN Red List Criteria at a global level; SPEC 2 – species whose global populations are concentrated in Europe, and which have an Unfavourable conservation status in Europe; SPEC 3 – species whose global populations are not concentrated in Europe, but which have an Unfavourable conservation status in Europe; non-SPEC^E – species whose global populations are concentrated in Europe but which have a Favourable conservation status in Europe) (BIRDLIFE INTERNATIONAL 2004)

APPENDIX 2 / DODATEK 2

The overall classification of the major CORINE land cover types found within IBA boundaries in Macedonia

Celotna razvrstitev glavnih tipov pokrovnosti in rabe tal (po CORINE land cover) znotraj meja IBA-jev v Makedoniji

Level 1 / 1. nivo	Level 2 / 2. nivo	Level 3 / 3. nivo
1 Artificial surfaces/ Zgrajene površine	11 Urban fabric / Urbane površine	112 Discontinuous urban fabric/ Nesklenjene urbane površine
	12 Industrial, commercial and transport units / Industrijske, trgovinske, transportne površine	121 Industrial or commercial units/ Industrija, trgovina 122 Road and rail networks and associated land / Cestno in železniško omrežje in pridružene površine
	13 Mine, dump and construction sites/ Rudniki, odlagališča, gradbišča	131 Mineral extraction sites/ Dnevni kopi, kamnolomi 132 Dump sites / Odlagališča
	14 Artificial, non-agricultural vegetated areas / Umetno ozelenjene neketijske površine	142 Sport and leisure facilities/ Površine za šport in prosti čas
2 Agricultural areas/ Kmetijske površine	21 Arable land / Njivske površine	211 Non-irrigated arable land/ Nenamakane njivske površine 212 Permanently irrigated land/ Namakane njivske površine 213 Rice fields / Riževa polja
	22 Permanent crops / Trajni nasadi	221 Vineyards / Vinogradi 222 Fruit trees and berry plantations/ Sadovnjaki in nasadi jagodičja
	23 Pastures / Pašniki	231 Pastures / Pašniki
	24 Heterogeneous agricultural areas/ Mešane kmetijske površine	242 Complex cultivation patterns / Kmetijske površine drobnoposestniške strukture 243 Land principally occupied by agriculture, with significant areas of natural vegetation/ Pretežno kmetijske površine z večjimi območji naravne vegetacije
3 Forest and semi natural areas / Gozdne in deloma ohranjene naravne površine	31 Forests / Gozdovi	311 Broad-leaved forest / Listnati gozd 312 Coniferous forest / Iglasti gozd 313 Mixed forest / Mešani gozd
	32 Scrub and/or herbaceous vegetation associations/ Grmovje in/ali zeliščno rastlinstvo	321 Natural grasslands / Naravni travniki 322 Moors and heathland / Barja in resave 323 Sclerophyllous vegetation/ Sklerofilno rastlinstvo 324 Transitional woodland-shrub/ Grmičast gozd
	33 Open spaces with little or no vegetation / Neporasle površine z malo ali brez vegetacije	331 Beaches, dunes, sands/ Plaže, sipine in peščene površine 332 Bare rocks / Golo skalovje 333 Sparsely vegetated areas/ Redko porasle površine
4 Wetlands/ Močvirnate površine	41 Inland wetlands / Celinska močvirja	411 Inland marshes / Celinska barja
5 Water bodies/ Vodne površine	51 Inland waters / Celinske vode	511 Water courses / Vodotoki in kanali 512 Water bodies / Mirujoča voda

APPENDIX 3 / DODATEK 3

List from the national Emerald Database, used for identification of the main threats to birds and their importance in Macedonian IBAs

Seznam iz nacionalne baze podatkov Emerald, uporabljen za opredelitev najpomembnejših dejavnikov ogrožanja ptic in njihovega vpliva v makedonskih IBA-jih

Code/ Koda	Threat / Dejavnik ogrožanja
100	Cultivation / Obdelovalne površine
101	Modification of cultivation practices / Spreminjanje obdelovalnih praks
110	Use of pesticides / Uporaba pesticidov
141	Abandonment of pastoral systems / Opuščanje pašništva
160	General forestry management / Splošno gozdarsko upravljanje
161	Forest planting / Pogozdovanje
162	Artificial planting / Zasajevanje tujerodnih dreves
167	Forest exploitation without replanting / Izkoriščanje gozdov brez ponovnega zasajevanja
210	Professional fishing / Poklicni ribolov
220	Leisure fishing / Prostočasni ribolov
230	Hunting / Lov
242	Taking from nest (falcons) / Odvzemanje iz gnezd (sokoli)
243	Trapping, poisoning, poaching / Lov s pastmi, zastrupljanje, divji lov
290	Hunting, fishing or, collecting activities not referred to above / Lov, ribolov ali odvzemanje osebkov, ki ni navedeno zgoraj
300	Sand and gravel extraction / Izkopavanje peska in prod
301	Quarries / Kamnolomi
331	Open cast mining / Površinsko rudarstvo
400	Urbanised areas, human habitation / Urbanizirana območja, človeška bivališča
403	Dispersed habitation / Razkropljena bivališča
410	Industrial or commercial areas / Industrijske ali trgovske površine
501	Paths, tracks, cycling tracks / Poti, kolovozi, kolesarske steze
502	Motorways, roads / Avtoceste, ceste
503	Railway lines, TGV / Železniški tiri, TGV
505	Airport / Letališče
511	Electricity lines / Daljnovodi
530	Improved access to site / Povečan dostop na območje
600	Sport and leisure structures / Športne in prostočasne zgradbe
624	Mountaineering, rock climbing, speleology / Gornišstvo, plezanje, speleologija
701	Water pollution / Onesnaževanje voda
730	Military maneuvers / Vojaške vaje
803	Infilling of ditches, dykes, ponds, marshes or pits / Zasipavanje jarkov, vodnih teles, močvirij ali jam
810	Drainage / Osuševanje
952	Eutrophication / Evtrofikacija
960	Interspecific faunal relations / Medvrstni odnosi

APPENDIX 4 / DODATEK 4

Detailed calculation of threat scores for separate IBAs.

Podroben izračun dejavnikov ogrožanja za posamezne IBA-je.

Site / Območje	Code/ Koda	Effect habitat/ Učinek habitat	Effect species/ Učinek vrsta	Spatial scale/ Obseg	Realization/ Časovni okvir	Score/ Vsota	Threat impact/ Vpliv
Šar Planina Mountain	141	1	2	3	3	8	high
	160	2	1	3	3	8	high
	960		2	3	3	8	high
	230		1	3	3	7	medium
	243		2	2	3	7	medium
	501	2	2	2	3	7	medium
	530	1	2	2	3	7	medium
	167	2	1	2	3	6	medium
	624		2	1	3	6	medium
	600	2	2	1	2	5	low
Radika River Catchment	960		2	3	3	8	high
	141	1	2	2	3	7	medium
	160	1	1	2	3	6	medium
	243		2	1	3	6	medium
	410	1	2	2	2	6	medium
	501	1	1	1	3	5	low
	624		1	1	3	5	low
	530	1	1	1	2	4	low
Lake Ohrid	600	3	2	2	3	8	high
	803	3	2	2	3	8	high
Lake Prespa	100	3	1	2	3	8	high
	701	2	2	3	3	8	high
	952	2	2	3	3	8	high
	243		2	2	3	7	medium
	600	1	1	2	3	6	medium
	803	2	2	1	3	6	medium
Demir Kapija Gorge	243		3	3	3	9	high
	141	2	2	3	3	8	high
	230		2	3	3	8	high
	160	2	2	2	3	7	medium
	502	3	2	2	2	7	medium
	624		2	2	3	7	medium
	301	1	2	1	3	6	medium
	410		2	3	1	6	medium
	730		2	1	3	6	medium
	400	1	1	1	3	5	low
Lake Dojran	410		3	3	3	9	high
	210		3	3	2	8	high
	600	2	3	2	3	8	high
Zletovska River Valley	141	1	3	3	3	9	high
	243		3	3	3	9	high
	101	1	2	1	3	6	medium

Nadaljevanje dodatka 4 / Continuation of Appendix 4

Site / Območje	Code/ Koda	Effect habitat/ Učinek habitat	Effect species/ Učinek vrsta	Spatial scale/ Obseg	Realization/ Časovni okvir	Score/ Vsota	Threat impact/ Vpliv
Tikveš Region	410	1	2	2	2	6	medium
	110		3	3	3	9	high
	243		2	3	3	8	high
	141	2	2	2	3	7	medium
	511	2	2	2	3	7	medium
	502	2	2	1	3	6	medium
Pčinja - Petrošnica - Kriva Reka Rivers	141	1	2	3	3	8	high
	243		2	3	3	8	high
	230		1	3	3	7	medium
	160	2	2	1	3	6	medium
	242		2	1	3	6	medium
	410	2	2	2	2	6	medium
	502	2	2	2	2	6	medium
	503	2	2	2	2	6	medium
	701	1	1	2	3	6	medium
Preod - Gjugjance	141	2	3	3	3	9	high
	511	2	3	3	3	9	high
	410	2	3	2	2	7	medium
	502	2	3	2	2	7	medium
	505	3	3	2	2	7	medium
Osogovo Mountains	160	2	2	3	3	8	high
	242		2	3	3	8	high
	403	1	2	2	3	7	medium
	502	2	2	2	3	7	medium
	301	2	2	1	3	6	medium
Jakupica Mountain	141	2	2	3	3	8	high
	243		2	3	3	8	high
	960		2	3	3	8	high
	230		1	2	3	6	medium
Taor Gorge	960		3	3	3	9	high
	410	3	3	3	2	8	high
	502	2	2	3	3	8	high
	162	2	2	2	3	7	medium
	230		2	2	3	7	medium
	301	2	3	2	2	7	medium
	501	1	2	2	3	7	medium
	503	2	2	2	3	7	medium
	530	2	2	2	3	7	medium
	701	1	1	3	3	7	medium
	220		1	2	3	6	medium
Ovče Pole	110		3	3	3	9	high
	141	2	3	3	3	9	high
	511	2	3	3	3	9	high
	243		2	3	3	8	high

Nadaljevanje dodatka 4 / Continuation of Appendix 4

Site / Območje	Code/ Koda	Effect habitat/ Učinek habitat	Effect species/ Učinek vrsta	Spatial scale/ Obseg	Realization/ Časovni okvir	Score/ Vsota	Threat impact/ Vpliv
	161	2	2	2	3	7	medium
	230		1	3	3	7	medium
	290		2	2	3	7	medium
	410	1	2	2	2	6	medium
Topolka - Babuna - Bregalnica Rivers	141	1	2	3	3	8	high
	243		2	3	3	8	high
	960		2	3	3	8	high
	100	1	2	2	3	7	medium
	162	2	2	2	3	7	medium
	230		1	3	3	7	medium
	403	2	2	2	3	7	medium
	624		2	2	3	7	medium
	301	2	2	1	3	6	medium
Gradsko - Rosoman - Negotino	110		2	3	3	8	high
	243		2	3	3	8	high
	511	2	2	3	3	8	high
	100	1	2	2	3	7	medium
	161	2	2	2	3	7	medium
	730		2	1	3	6	medium
Lake Mantovo and Kriva Lakavica River	242		2	2	3	7	medium
	243		1	3	3	7	medium
	331	3	2	1	3	7	medium
	701	2	2	2	3	7	medium
Raec River valley	960		2	3	3	8	high
	141	2	2	2	3	7	medium
	301	1	3	1	3	7	medium
	403	2	2	2	3	7	medium
	243		2	1	3	6	medium
Pelagonia	100	2	3	3	3	9	high
	110		3	3	3	9	high
	141	2	3	3	3	9	high
	511	2	3	3	2	8	high
	803	1	2	3	3	8	high
Mariovo	141	2	3	3	3	9	high
	243		3	3	3	9	high
	960		3	3	3	9	high
	230		2	3	3	8	high
	301	2	2	2	3	7	medium
	410	3	3	3	1	7	medium
	530	2	2	2	3	7	medium
	624		1	1	3	5	low
Lake Tikveš	243		3	3	3	9	high
	403	2	2	3	3	8	high
	141	2	2	2	3	7	medium

Nadaljevanje dodatka 4 / Continuation of Appendix 4

Site / Območje	Code/ Koda	Effect habitat/ Učinek habitat	Effect species/ Učinek vrsta	Spatial scale/ Obseg	Realization/ Časovni okvir	Score/ Vsota	Threat impact/ Vpliv
	160	2	2	2	3	7	medium
	511		2	2	3	7	medium
Bošavija	141	2	3	3	3	9	high
	243		3	3	3	9	high
	160	2	2	2	3	7	medium
	511	2	1	2	3	7	medium
	400	1	1	2	3	6	medium
Kočani Rice Fields	110	1	2	3	3	8	high
	511	1	2	2	3	7	medium
	101	2	2	2	2	6	medium
Lower Vardar	300	3	3	2	3	8	high
	410	3	2	3	2	8	high
	810	3	2	2	3	8	high
	511	1	2	2	3	7	medium

* The combined level of the threat is calculated by summing up the (1) Effect habitat / Effect species, (2) Spatial scale and (3) Realization values. Under the (1) the highest value of both is taken into consideration in calculation of the score.

APPENDIX 5 / DODATEK 5

Overview of all qualifying and other important bird species in Macedonian IBAs with criteria, season in which species qualify, number of sites occupied, total IBA populations and percentage of national population included in the IBA network given

Pregled vseh kvalifikacijskih in drugih pomembnih vrst ptic v IBA-jih v Makedoniji s podanimi kriteriji, obdobjem pojavljanja, v katerem vrste izpolnjujejo kriterije, številom zasedenih območij, velikostjo populacije na vseh IBA-jih in odstotkom nacionalne populacije, vključene v IBA-omrežje

Species / Vrsta	Criteria/ Kriteriji	Season/ Sezona	No. of sites – qualifying/ Št. območij – kvalifikacijska	No. of sites – listed / Št. območij – navedena	Total IBA population/ Skupna IBA populacija	Year / Leto	Percentage of MK population in IBAs / Odstotek MK populacije v IBA-jih
<i>Pelecanus crispus</i>	A1, A4i, B1i	N	2	3	300–1000 ind.	2002–2010	100
<i>Neophron percnopterus</i>	A1, B2	B	13	13	22–33	2005–2010	95
<i>Coracias garrulus</i>	A1, B2	B	7	10	80–200	2002–2009	40–50
<i>Aquila heliaca</i>	A1, B2	B	6	7	28–40	2006–2010	80–90
<i>Ficedula semitorquata</i>	A1	B	1	2	20–70	2009	7–10
<i>Falco vespertinus</i>	A1?	M	0	3	70–260 ind.	2002–2010	40–70
<i>Alcedo coracias</i>	A3, B2	B	10	11	unknown	2009–2010	unknown
<i>Lanius rubicus</i>	A3, B2	B	6	6	unknown	2007–2010	unknown
<i>Emberiza melanocephala</i>	A3	B	8	8	unknown	2000–2010	unknown
<i>Oenanthe hispanica</i>	A3	B	8	8	unknown	2000–2010	unknown
<i>Sylvia cantillans</i>	A3	B	8	8	unknown	2000–2010	unknown
<i>Sitta neumayer</i>	A3	B	7	7	unknown	2000–2010	unknown
<i>Hippolais olivetorum</i>	A3	B	3	3	unknown	2000–2010	unknown
<i>Montifringilla nivalis</i>	A3	B	3	3	unknown	1998–2004	unknown
<i>Prunella collaris</i>	A3	B	3	3	unknown	2002–2006	unknown
<i>Pyrrhocorax graculus</i>	A3	B	3	3	300–550	2005–2010	50–60
<i>Tichodroma murina</i>	A3	B	3	3	20–40	1999–2004	60–70
<i>Pelecanus onocrotalus</i>	A4i, B1i	N	1	2	200–550 ind.	2008–2010	100
<i>Falco naumanni</i>	A4ii, B1iii, B2	B	9	10	1625–1975	2002–2003	80–100
<i>Mergus merganser</i>	B1i	B	2	2	31–53	2006–2010	100
<i>Fulica atra</i>	B1i	W	1	3	23000–70000 ind.	1987–2011	90–100
<i>Podiceps nigricollis</i>	B1i	W	1	2	1400–7000 ind.	1988–2004	95–100
<i>Nettion rufina</i>	B1i	W	1	1	350–7000 ind.	1987–2011	100
<i>Aquila chrysaetos</i>	B2	B	5	14	29–41	2005–2010	40–50
<i>Bubo bubo</i>	B2	B	5	13	50–89	2005–2010	30–50

Nadaljevanje dodatka 5 / Continuation of Appendix 5

Species / Vrsta	Criteria/ Kriteriji	Season/ Sezona	No. of sites – qualifying/ Št. območij – kvalifikacijska	No. of sites – listed / Št. območij – navedena	Total IBA population/ Skupna IBA populacija	Year / Leto	Percentage of MK population in IBAs / Odstotek MK populacije v IBA-jih
<i>Circus gallicus</i>	B2	B	5	13	49–78	2007–2010	45–55
<i>Falco biarmicus</i>	B2	B	5	9	14–19	2005–2009	50
<i>Buteo rufinus</i>	B2	B	4	13	45–63	2005–2010	50–60
<i>Ciconia nigra</i>	B2	B	4	8	13–19	2005–2010	35–45
<i>Accipiter brevipes</i>	B2	B	3	6	9–21	2004–2009	20–25
<i>Burhinus oedipnemus</i>	B2	B	3	5	unknown	2002–2010	unknown
<i>Ciconia ciconia</i>	B2	B	3	3	420–470	2002–2011	50–60
<i>Monticola saxatilis</i>	B2	B	2	5	unknown	2000–2010	unknown
<i>Crex crex</i>	B2	B	2	2	50–150	2010	50–75
<i>Isobrychus minutus</i>	B2	B	2	2	80–230	2000–2009	40–70
<i>Lanius minor</i>	B2	B	2	2	unknown	2002–2010	unknown
<i>Monticola solitarius</i>	B2	B	2	2	unknown	2000–2010	unknown
<i>Aythya nyroca</i>	B2	B	1	3	15–30	1998–2008	40–75
<i>Phalacrocorax pygmaeus</i>	B2	B	1	3	60–120	1993–2000	100
<i>Sternula albifrons</i>	B2	B	1	1	15–30	2008	100
<i>Riparia riparia</i>	B2	B	1	1	800–1200	2002–2010	20–80
<i>Pyrhocorax pyrrhocorax</i>	B2?	B	0	3	unknown	1999–2004	unknown
<i>Botaurus stellaris</i>	B2?	B	0	1	2–6	1998–2006	30–100
<i>Falco tinnunculus</i>	B2?	B	0	5	unknown	2000–2010	unknown
<i>Circus pygargus</i>	B3	B	1	3	66–100	2002–2010	65–70
<i>Falco peregrinus</i>	N	B	0	11	23–35	2006–2010	25–50
<i>Gyps fulvus</i>	N	B	0	8	19–35	2006–2010	100
<i>Ardea cinerea</i>	N	B	0	3	160–210	2002–2010	70–95
<i>Aythya fuligula</i>	N	W	0	3	500–10000 ind.	1987–1999	95–100
<i>Eremophila alpestris</i>	N	B	0	3	unknown	2000–2010	unknown
<i>Milvus migrans</i>	N	B	0	3	2–3	2007–2010	30–70
<i>Anas strepera</i>	N	B	0	2	2–15	1995–2002	40–50
<i>Aythya ferina</i>	N	W	0	2	2000–7000 ind.	1987–2000	80–100
<i>Falco cherrug</i>	N	B	0	2	0–2	2003–2010	60–100
<i>Podiceps cristatus</i>	N	B	0	2	100–700	2000–2010	80–95

Species / Vrst	Criteria/ Kriteriji	Season/ Sezona	No. of sites – qualifying/ Št. območij – kvalifikacijska	No. of sites – listed / Št. območij – navedena	Total IBA population/ Skupna IBA populacija	Year / Leto	Percentage of MK population in IBAs / Odstotek MK populacije v IBA–jih
<i>Phalacrocorax carbo</i>	N	B	0	1	2500–3000	2008–2010	100
<i>Larus michahelis</i>	N	B	0	1	50–100	2008	100
<i>Aquila pennata</i>	N	B	0	1	1–1	2006–2010	4–6
<i>Casmerodius albus</i>	N	N	0	1	60–150 ind.	2010	30–50
<i>Egretta garzetta</i>	N	B	0	1	10–30	2010	100
<i>Nycticorax nycticorax</i>	N	B	0	1	10–30	2010	50–80

REVIEW OF THE REFERENCES ON BIRDS OF MACEDONIA

Pregled virov o pticah Makedonije

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This list includes probably more than 90% of all the material containing data on birds of the Republic of Macedonia. This time, the references in their original language are presented, with (C) denoting that the original work was published in Cyrillic alphabet. 268 references depict Macedonian ornithology and its history, showing its ups and downs at the same time. The references presented herewith are for information purposes only. As no complete information has been at hand for certain references, some mistakes are possible. The last update was made on 14 Dec 2011. Online version of this review is available on the web page of the Macedonian Ecological Society^{a)} where it is regularly updated. You are kindly requested to report on all possible/necessary corrections, supplements or new references that embrace original data on birds of Macedonia, to the authors. The next step to be made in the ensuing years is preparation of the authors' and species' index, key words and list of localities (regions). Our cordial thanks to you all.

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Seznam vsebuje verjetno več kot 90 % celotnega gradiva s podatki o pticah Republike Makedonije. Tokrat so viri navedeni v njihovem izvirnem jeziku, kjer (C) pomeni, da je delo v originalu objavljeno v cirilici. 268 virov opisuje makedonsko ornitologijo in njeno zgodovino ter kaže na njene vzpone in padce. Viri, navedeni v tem seznamu, so zgolj informativnega značaja. Ker so bili za nekatere vire uporabljeni še nepopolni podatki, so v besedilu možne določene napake. Zadnja posodobitev besedila je bila opravljena 14.12.2011. Spletna verzija tega prispevka je dostopna na spletni strani Makedonskega ekološkega društva^{a)}, kjer se tudi redno posodablja. Prosiva vas, da vse morebitne popravke, dopolnila ali nove vire, ki vključujejo izvirne podatke o pticah Makedonije, sporočite na naslove avtorjev. Korak naslednjih let je izdelava indeksa avtorjev, vrst, ključnih besed in seznama lokalitet (regij). Hvala.

^{a)} <http://www.mes.org.mk/PDFs/Other/References%20on%20birds%20of%20Macedonia.pdf>

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SEZNAM RECENZENTOV LETNIKA 31 (2010)

The list of manuscript reviewers of Volume 31 (2010)

Spisek recenzentov, ki so pregledovali prispevke v reviji *Acrocephalus* za letnik 31, 2010. Njihov delež pri nastajanju revije je bil velik in ključen pri objavljajanju kvalitetnih prispevkov. Urednik se zato vsem iskreno zahvaljuje za opravljene recenzije v minulem letu. Imena recenzentov so urejena po abecednem vrstnem redu brez akademskih naslovov, a z oznakami držav:

The list of manuscript reviewers for the journal *Acrocephalus* in Volume 31, 2010. Their contribution was great and essential in preparing high quality papers published in Volume 31. The Editor would like to thank them for their work in the past year. Names of reviewers are presented in alphabetical order without academic titles but with abbreviations of their countries:

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If the language of the reference is other than English and the understanding of the title is important, an English translation can be provided in brackets (see example below). References should be in the following style:

journal paper: SACKL, P. (2000): Form and function of aerial courtship displays in Black Storks *Ciconia nigra*. – *Acrocephalus* 21 (102/103): 223–229. Cited as: SACKL (2000).

journal paper, language other than English (optional format): SPIRIDONOV, Z. (1988): [Contribution to the breeding avifauna of Ludogorie]. – *Orn. Inf. Bull.* 23–24: 89–98. (in Bulgarian) Cited as: SPIRIDONOV (1988).

book: HANDRINOS, G. & AKRIOTIS, T. (1997): The Birds of Greece. – Christopher Helm, A & C Black, London. Cited as: HANDRINOS & AKRIOTIS (1997).

chapter in book: DIEDRICH, J., FLADE, M. & LIPSBERGS, J. (1997): Penduline Tit *Remiz pendulinus*. pp. 656–657 In: HAGEMAUER, W.J.M. & BLAIR, M.J. (eds.): The EBCC Atlas of European Breeding Birds. – T & AD Poyser, London. Cited as: DIEDRICH *et al.* (1997).

short note: BORDJAN, D. (2005): Sombre Tit *Parus lugubris*. – *Acrocephalus* 26 (125/126): 147–157. Cited as: BORDJAN (2005).

theses: KUCHAR, B. (2005): [Diet of the Tawny Owl *Strix aluco* in Kozjansko Regional Park]. – BSc thesis, University of Maribor. (in Slovene) Cited as: KUCHAR (2005).

internet sources: BIRDLIFE INTERNATIONAL (2004): Species factsheet: Pygmy Cormorant *Phalacrocorax pygmeus*. – [www.birdlife.org], 10/5/2010. Cited as BIRDLIFE INTERNATIONAL (2004).

legislation: URAĐNI LIST RS (2004): Uredba o ekološko pomembnih območjih (no. 48/04). Cited as URAĐNI LIST RS (2004).

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(M. VELEVSKI, B. HALLMANN, B. GRUBAČ, T. LISIČANEC, E. STOYNOV, E. LISIČANEC, V. AVUKATOV, L. BOŽIČ & B. STUMBERGER)

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