

Spring migration 2013 of Eurasian Crane *Grus grus* of the Adriatic Flyway population in the Western Balkans and in the Eastern Adriatic region

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Summary

As part of an ongoing monitoring program the paper presents an analysis of data on the spring migration of Eurasian Crane *Grus grus* along the Adriatic Flyway in 2013. With a total of 32 observers, involved in the survey, crane migration was studied in Croatia, Bosnia-Herzegovina, Montenegro and Serbia, from February till early May. In a whole of 37 observation sites, scattered across the western Balkans, a total of 8,702 birds were counted: 3,853 actively migrating and 4,849 birds, resting in different stop-over sites, were counted. According to our data, most birds crossed the eastern Adriatic region over Metković (Croatia) in the lower Neretva river valley, while Mostarsko blato and Duvanjsko polje in Bosnia-Herzegovina with more than 1,400 and 1,500 birds, respectively, were identified as the most important resting and feeding sites for Eurasian Cranes in the study area. Peak migration was recorded in mid-March. In addition to monitor the migration corridor across the western Balkan Peninsula, the study aims to identify important stop-over sites and main conservation issues of the species along the Adriatic Flyway.

Sažetak

Kao dio monitoring programa koji je u toku, ovaj rad predstavlja sumirane podatke za proljećnu migraciju ždralova *Grus grus* duž jadranskog migratornog puta u 2013. godini. Monitoring je proveden u Hrvatskoj, Bosni i Hercegovini, Srbiji i Crnoj Gori od februara do kraja aprila 2013. godine. U cenzusu je učestvovao 31 popisivač. Na 37 lokaliteta ukupno je evidentirano 6,950 primjeraka, od čega je 4,101 ptica zabilježeno na preletu, dok je 2,849 ptica izbrojano na odmaralištima. Premadobijenim podacima, ždral ovisunajviše letjeli preko Metkovića. Mostarsko blato sa preko 1,400 jedinki, izdvaja se kao lokalitet od najvećeg značaja za

odmor i prehranu ždralova na istraživanom području. Period najintenzivnije seobe odvijao se sredinom marta. Pored praćenja ptica na preletu, rad ima za cilj mapiranje najvažnijih odmorišta, kao i otkrivanje faktora koji ugrožavaju ždralove na Jadranskom migratornom putu.

Keywords: Eurasian Crane, *Grus grus*, spring migration, Adriatic Flyway, stop-over sites, Balkan Peninsular

Introduction

European populations of Eurasian Crane *Grus grus* reach their wintering grounds along three major migration routes: Scandinavian and northern continental European populations migrate through Western Europe to wintering areas in France, Spain and Morocco; birds from Northeastern Europe cross central Europe, the Western Balkans and Italy to wintering areas in Tunisia, Libya and Algeria (Adriatic Flyway), while populations from Northeastern Europe and Western Russia fly over the Balkans and across/ around the Black Sea to wintering areas in East Africa (del Hoyo *et al.* 1996). Until now, crane migration across the Balkan Peninsula is insufficiently known (Stumberger & Schneider-Jacoby 2010). Currently, up to 20,000 birds are reported to gather at Slano Kopovo in Vojvodina (Knežev 2010, Lukač 2000), while up to 7,000 birds use Lonjsko polje in Croatia for stopping-over during spring and autumn migration (Stumberger & Schneider-Jacoby 2010). However, few data on migration seasons, migration routes and stop-over sites south of the Sava and Danube rivers exist. In order to gain more information on migration patterns of Eurasian Cranes along the Adriatic Flyway, in cooperation with local ornithologists, conservationists and ornithological organizations Euronatur started to collect observations on crane migration in the countries

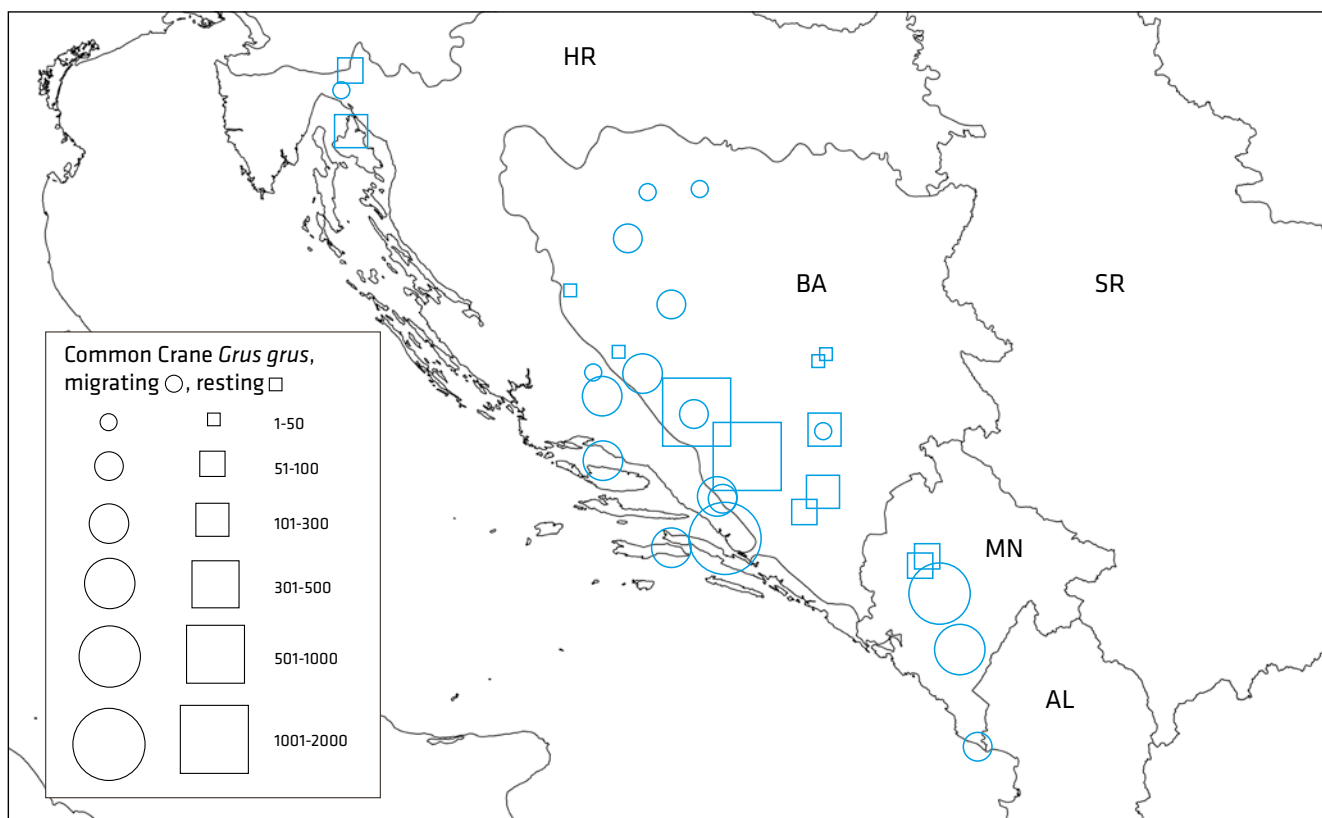


Fig. 1: Migration and stop-over sites of Eurasian Crane *Grus grus* of the Adriatic Flyway population in the Western Balkans and the eastern Adriatic region in spring 2013.

of the western and southern Balkans in 2007. First results were presented at the 7th European Crane Conference in Stralsund (Stumberger & Schneider-Jacoby 2010).

The present paper summarizes data on the migration of Eurasian Cranes along the Adriatic Flyway which have been gathered by a network of observers in Croatia, Bosnia-Herzegovina, Serbia and Montenegro in spring 2013.

Materials and methods

From mid-February to early May 2013 a survey of spring migration of Eurasian Crane in former Yugoslavia, in the area between the Sava and Danube rivers and the Adriatic Sea, in Croatia, Serbia, Bosnia-Herzegovina, and Montenegro, was organized. Both, actively migrating and resting birds, in known stop-over sites were counted. In all, 31 observers were involved in the survey. The survey in spring 2013 is part of the regular monitoring of Eurasian Crane migration within the framework of Euronatur's "Identification and Promotion of Karst Poljes in Bosnia and

Herzegovina as Wetlands of National and International Importance" and "Adriatic Flyway 2" projects. A part of the present data were collected during the monitoring of illegal hunting activities and bird shooting in the karst poljes of the Western Balkans. Relevant information were noted in the field on standard data sheets, which, in addition to date, location, and the numbers of flying and resting birds, contain information on altitude, habitat type and direction of migration.

Results

Between 22 February, as the earliest observation, and 6 May 2013, as the latest date, during 99 observations a total of 8,702 cranes were noted. Overall, 3,853 actively migrating and 4,849 resting individuals (ind.) were counted in different stop-over sites.

Tab. 1: Observations of migrating and resting Eurasian Cranes *Grus grus* in the Western Balkans and eastern Adriatic region in spring 2013. Legend: HR Croatia, CG Montenegro, BA Bosnia-Herzegovina, SRB Serbia.

Country	Location	Date	Numbers	Migration direction	Behaviour	Habitat	Observer(s)
HR	Jezero Njivice, Krk	22.02.2013	9	-	resting	lake	Andrej Radalj
HR	Rijeka	24.02.2013	6	N	flying	x	Kristijan Mandić
BA	Omarska (Prijedor)	25.02.2013	45	-	x	mine	Dario Duvnjak
HR	Križevci	28.02.2013	4	NE	flying	X	Smiljka Selanec
CG	Ulcinj	28.02.2013	16	N	circling	town	Stefan Heitmann & Katarina Denac
CG	Ada Bojana (Ulcinj)	04.03.2013	37	N	migrating	x	Jakob Smole, Luka Božić
CG	Krnovo (Nikšić)	05.03.2013	34	N	migrating	karst plateau	Darko Saveljić
BA	Veliko Blaško (Laktaši)	05.03.2013	30	N	migrating	x	Dragan Praštalo
CG	Podgorica	07.03.2013	16	N	migrating	town	Darko Saveljić
HR	Metković	08.03.2013	270	-	circling	delta	Bariša Ilić
BA	Ljubuški (Vitina)	08.03.2013	66	N	circling	x	Dario Vukojević
HR	Jezero, Njivice, Krk	09.03.2013	126	-	resting	lake	Andrej Radalj
HR	Žrnovo, Korčula	09.03.2013	100+	N	flying	X	Ursula Loos
HR	Metković	09.03.2013	177	NE	migrating	delta	Bariša Ilić
			24	NW			
CG	Danilovgrad	09.03.2013	120	NW	migrating	town	Ana Vujović
BA	Donji Radišići (Ljubuški)	09.03.2013	52	N	migrating	x	Ranko Medić
BA	Ljubuški (Vitina)	09.03.2013	60	N	circling	x	Dario Vukojević
BA	Šipovo	09.03.2013	90	NE	migrating	town	Goran Topić, Mladen Topić
HR	Metković	10.03.2013	71	NW	migrating	delta	Bariša Ilić
			35	NE			
HR	Sinj	10.03.2013	100	N	flying		Ivan Budinski
HR	Grobničko polje	10.03.2013	59		resting		Andrej Radalj
CG	Danilovgrad	10.03.2013	100+	NW	migrating	town	Ana Vujović
BA	Mandin (Duvanjsko polje)	10.03.2013	60	-	migrating	x	Miro Šumanović
BA	Potkraj (Sanski most)	10.03.2013	79	NE	migrating	x	Dragan Praštalo
HR	Metković	11.03.2013	110	NW	migrating	delta	Bariša Ilić
HR	Grobničko polje	11.03.2013	54		resting		Andrej Radalj
HR	Metković	12.03.2013	158	NW	migrating	delta	Bariša Ilić
			5	N			
			88	NE			
BA	Gatačko polje	12.03.2013	8	-	flying	karst polje	Dražen Kotrošan, Ilhan Dervović
BA	Livanjsko polje	12.03.2013	30	-	migrating	karst polje	Jelena Gotovac, Mato Gotovac
BA	Ljubuški (Vitina)	12.03.2013	7	N	circling	x	Dario Vukojević
BA	Donji Radišići (Ljubuški)	12.03.2013	45	N	migrating	x	Ranko Medić
BA	Duvanjsko polje	12.03.2013	1500		resting	karst polje	Mirko Šarac
BA	Dabarsko polje	12.03.2013	10		resting	karst polje	Dražen Kotrošan, Ilhan Dervović
BA	Gatačko polje	12.03.2013	168		resting	karst polje	Dražen Kotrošan, Ilhan Dervović
BA	Nevesinjsko polje	12.03.2013	93		resting	karst polje	Dražen Kotrošan
HR	Metković	13.03.2013	286	NE	migrating	delta	Bariša Ilić
CG	Danilovgrad	13.03.2013	54	NW	migrating	town	Ana Vujović
BA	Hutovo blato	13.03.2013	14		resting	x	Dražen Kotrošan, Ilhan Dervović
BA	Mostarsko blato	13.03.2013	1400		resting	karst polje	Dražen Kotrošan, Ilhan Dervović
HR	Metković	15.03.2013	203	NE	migrating	delta	Bariša Ilić
CG	Danilovgrad	15.03.2013	250	NW	migrating	town	Ana Vujović
HR	Borak, Ormiš	17.03.2013	100+	N	flying	x	Andrej Radalj
CG	Martinići (Danilovgrad)	17.03.2013	70+	N	migrating	x	Darko Saveljić
BA	Livanjsko polje	17.03.2013	25	-	migrating	karst polje	Jelena Gotovac, Mato Gotovac
CG	Podgorica	18.03.2013	300+	N	migrating	town	Darko Saveljić
BA	Livanjsko polje	18.03.2013	30	-	migrating	karst polje	Jelena Gotovac, Mato Gotovac
BA	Livanjsko polje	19.03.2013	30	-	migrating	karst polje	Jelena Gotovac, Mato Gotovac
BA	Visoko	19.03.2013	260	NE	migrating	-	Ilhan Dervović
BA	Haljinici	19.03.2013	1		resting	x	Ilhan Dervović
BA	Lisovo (Visoko)	19.03.2013	34		resting	x	Ilhan Dervović
BA	Mostarsko blato	20.03.2013	473		resting	karst polje	Ilhan Dervović
CG	Ada Bojana (Ulcinj)	21.03.2013	32	N,NE	migrating	x	Dejan Bordjan, Tilen Basle
CG	Brezovik (Nikšić)	21.03.2013	53		resting	x	Darko Saveljić
CG	Budoš (Nikšić)	22.03.2013	38		resting	x	Darko Saveljić
BA	Dabarsko polje	23.03.2013	86		resting	karst polje	Ilhan Dervović
BA	Nevesinjsko polje	23.03.2013	107		resting	karst polje	Ilhan Dervović
HR	Koljane, Peručko lake	25.03.2013	3	-	circling	x	Ivan Budinski
BA	Livanjsko polje	29.03.2013	120		migrating	karst polje	Jelena Gotovac, Mato Gotovac
CG	Budoš (Nikšić)	03.04.2013	50		resting	x	Duško Mrdak
BA	Ljubuško polje	04.04.2013	X	-	-	karst polje	NN
BA	Duvanjsko polje	04.04.2013	115		resting	karst polje	Dražen Kotrošan
BA	Pašića polje	06.04.2013	1		resting	karst polje	Dražen Kotrošan
BA	Ždralovac (Livanjsko polje)	06.04.2013	5		resting	karst polje	Dražen Kotrošan
BA	Haljinici	08.04.2013	5		resting	x	Ilhan Dervović
BA	Haljinici	09.04.2013	9		resting	x	Ilhan Dervović
BA	Mostarsko blato	14.04.2013	48		resting	karst polje	Erik Boven
BA	Hutovo blato	19.04.2013	X		resting	x	Erik Boven
BA	Mostarsko blato	19.04.2013	39		resting	karst polje	Dražen Kotrošan, Ilhan Dervović, Sanja Radulović, Nermina Sarajlić
SRB	Vidlič (Stara planina)	21.04.2013	47	-	migrating	mountain	Ivan Medenica
BA	Duvanjsko polje	06.05.2013	251		resting		Mirko Šarac
BA	Duvanjsko polje	10.07.2013	1		resting	karst polje	Mirko Šarac
BA	Duvanjsko polje	March 2013	100		resting	karst polje	Miro Šumanović



Fig. 2: Eurasian Cranes *Grus grus* feeding during stopping-over in Duvanjsko polje, Bosnia-Herzegovina, 5 April 2013 (Photo: Mirko Šarac)

Discussion

Unlike autumn migration, Eurasian Cranes can appear anywhere on the eastern Adriatic coast during their return from North Africa which makes the monitoring of spring migration more complicated and demanding. Between 22 February and 6 May 2013, a total of 3,853 actively migrating birds were recorded. Considering the relatively small number of observers along the 800 km long eastern coast of the Adriatic Sea which participated in the survey, the number of Eurasian Cranes which crossed the Western Balkans in spring 2013 was, most probably, much larger. Most cranes (1,427 ind.) were seen while crossing over the Neretva river delta and Metković (Croatia) inland towards Mostarsko blato and Duvanjsko polje in Bosnia-Herzegovina. Currently, both, Mostarsko blato and Duvanjsko polje, are the most important resting sites in the Dinaric Mountains, south of the Sava and Danube rivers. Furthermore, significant numbers of overall 944 cranes were seen while approximately following the route Podgorica – Danilovgrad – Nikšić in the Zeta river valley (Montenegro). In other localities smaller flocks were recorded: In Croatia small flocks were observed in Križevci (4), Sinj (ca. 100), Ženovo on Korčula Island (ca. 100), Omiš (ca. 100), Rijeka (6) and in Koljane (3 ind.); in Bosnia-Herzegovina in Visoko (260), Ljubuški (230), Livanjsko polje (235), Šipovo (90), Sanski most (79), Duvanjsko polje (60), Prijedor (45), Laktaši (30) and in Gatačko polje (8 ind.). Additionally, three flocks with a total of 85 ind. were noted in Ulcinj (Montenegro) during daytime observations of waterbird migration on Ada Island (Euronatur, unpubl.). In Serbia only a single flock of 47 ind. was recorded in Vidlič on Stara planina.

During migration Eurasian Cranes periodically gather in floodlands, swampy meadows, and shallow sheltered bays for feeding and resting (Cramp & Simmons 1980). Currently, few information on stop-over sites in the Western Balkans, south of the Sava and Danube rivers, and at the eastern shores of the Adriatic Sea and the numbers of birds which use different stop-over sites, are available. According to Stumberger & Schneider-Jacoby (2010), cranes almost exclusively use the karst poljes of the Dinaric Alps, up to 1,300 m a. s. l., which are periodically flooded during winter and early spring, for resting.

In spring 2013, more than 3,500 cranes were recorded in the karst poljes in Bosnia-Herzegovina. Considering the fact that the number of birds at stop-over sites, with birds arriving and leaving, may constantly change, the actual number of birds in the karst poljes of the Dinarides may be considerably larger than our data in Tab. 1 indicate. With

With a maximum of 1,400 and 1,500 birds Mostarsko blato and Duvanjsko polje currently constitute the most significant stop-over sites for Eurasian Cranes in the Western Balkans

a maximum of 1,400 and 1,500 birds, respectively, which were counted during a single visit, Mostarsko blato and

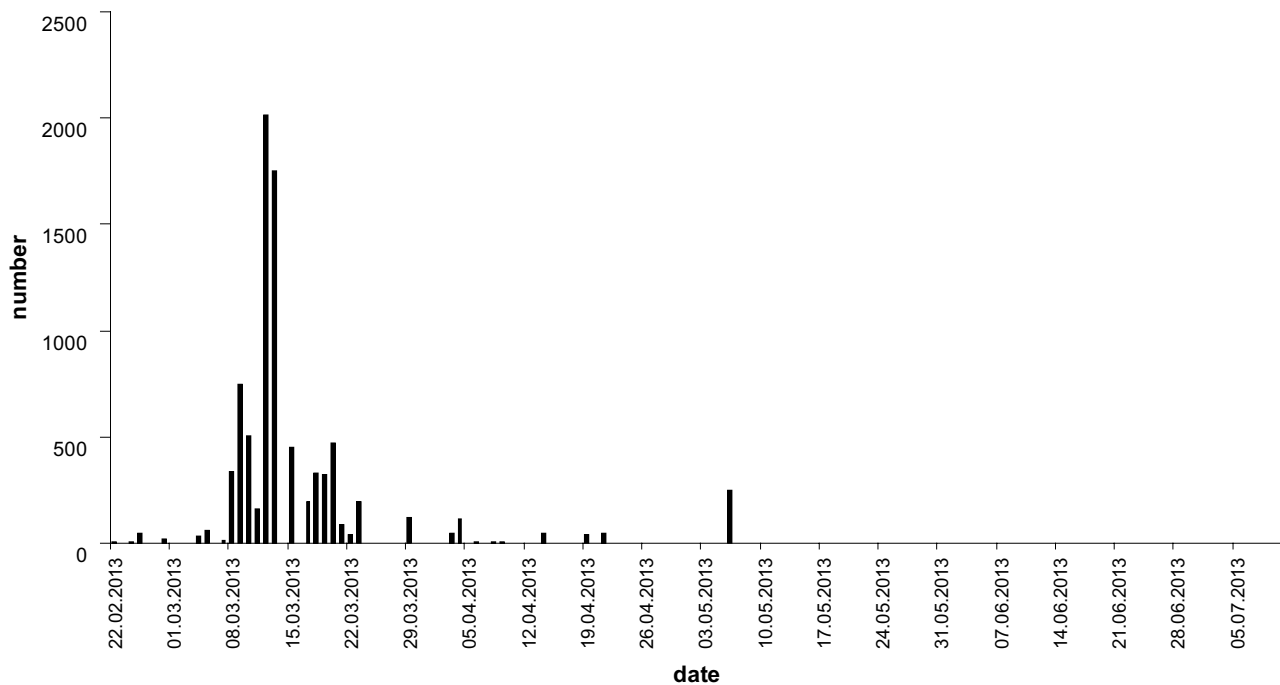


Fig. 3: Phenology of Eurasian Crane *Grus grus* migration in the Western Balkans and in the eastern Adriatic region in spring 2013.

Duvanjsko polje currently constitute the most significant stop-over sites for Eurasian Cranes in the Western Balkans (see Fig. 1 & 2). During spring 2013, Mostarsko blato as well as Duvanjsko polje were largely flooded which provided almost ideal resting and feeding conditions for large numbers of cranes. Maximum numbers in both karst poljes further correspond with the period of main migration in the lower Neretva River, near Metković. In addition, Eurasian Cranes were recorded while stopping-over in Livanjsko polje (5), Gatačko polje (168), Nevesinjsko polje (ca. 107), Hutovo blato (14), Dabarsko polje (86) and in Pašića polje (1 ind.) in Bosnia-Herzegovina. Besides karst poljes, cranes occasionally rested around Haljinići in Visoko (43 ind.). In Montenegro smaller numbers rested in Nikšićko polje in the vicinity of Nikšić, i. e. in Budoš (50) and Brezovik (53 ind.), while in Croatia resting cranes were observed at Njivice Lake (126) and in Grobničko polje (59 ind.). By excluding both major sites, Mostarsko blato and Duvanjsko polje, a total of 22 records of resting/feeding flocks with an average of 46 ind. (± 122 SD) in all other stop-over sites remain. Thus, in addition to Mostrasko blato and Duvanjsko polje, all karst poljes in the Dinarides are potentially significant resting and feeding habitats for cranes and other migrating waterbirds (Stumberger 2010).

A first flock of 9 ind. was observed on 22 February, near Njivice Lake, on the Island of Krk in Croatia, while a solitary

bird was seen in Duvanjsko polje as late as 10 July 2013. Peak migration took place between 9 and 13 March when 5,283 ind. which represent 61% of the total number, crossed the Western Balkans. Of these, almost 40% or 2,112 ind. were seen on 12 March (Tab. 1).

Because the karst plains of the Dinaric Alps constitute main stop-over sites for migrating Eurasian Cranes, after the crossing of the Adriatic Sea, the karst poljes deserve immediate international protection.

Currently, human disturbances, in particular poaching and illegal bird shooting, are the most significant conservation issues for the Adriatic Flyway population in the Western Balkans (e.g. Stumberger & Schneider-Jacoby 2013). This is also illustrated by our observations in spring 2013: On 9 March unknown “hunters” were seen while firing at a migration flock in Zagorak, in the surroundings of Danilovgrad, in Montenegro. According to anecdotal data,

in Ljubuško polje poachers shot on cranes on several occasions, while the birds rested in the area for a few days. Based on previous experiences during spring migration, illegal hunting and bird shooting is unsustainably intense in the karst poljes (e.g. Stumberger *et al.* 2008/09, Schneider-Jacoby & Spangenberg 2010, Stumberger & Schneider-Jacoby 2010). Because in the Western Balkans, the karst plains of the Dinaric Alps constitute main stop-over sites for migrating Eurasian Cranes, after the crossing of the Adriatic Sea, the karst poljes deserve immediate international protection.

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