

Livanjsko Polje – Future at the Edge of Swamp

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Abstract:

The movie “Livanjsko Polje – Future at the Edge of Swamp” describes the largest Karst polje of the world. Local people call the peat lands in the north-western part of Livanjsko Polje, the “Small” and “Great Crane Swamp”, i.e. Mali and Veliki Ždralovac, or Ždralovčić, Ždralovac blato. The site is still a potential breeding site of the Common Crane (*Grus grus*) in Bosnia-Herzegovina and in 2008 two pairs were present during the breeding season. Due to its size and regular flooding, Livanjsko Polje has become an important resting site during spring and autumn migration for more than 1,000 cranes. Although Livanjsko Polje has been nominated as a Ramsar Site, the unique wetland is still endangered due to unsustainable water use for hydropower and new water regulation projects, as well as peat excavation and lignite mining. The authors promote the protection and development of the site as a nature park and the nomination as natural and cultural world heritage site. Use values include the production of organic food and local specialities as the famous Livanjsko Sir, a tasty cheese prepared from sheep and cow milk.

Keywords: Crane (*Grus grus*), Karst polje, crane breeding site in Bosnia-Herzegovina, Ramsar site

Introduction

Livanjsko Polje is situated in Herceg-bosanska County (Livno district/ Canton 10) in Bosnia-Herzegovina, near the border to Croatia in the hinterland of Split (Southwest corner: 43°36'34"N, 17°1'0"E; Northeast corner: 44°6'21"N, 16°36'19"E). The massif of the Dinaric Mountain (1.839 m a.s.l.) separates the Karst polje from the Adriatic, which is only 30 km away. Herceg-bosanska county is a mosaic of huge Karst poljes (about 30 % of the surface: Livanjsko Polje, Duvanjsko Polje, Kupreško Polje, and Glamočko Polje) and high mountains. Karst poljes are large closed depressions, draining underground, with a flat floor across which there may be an intermittent or permanent stream (Schneider-Jacoby et al. 2006, Stumberger 2010). Livanjsko Polje is flooded each year and becomes a temporary Karst lake over several weeks and partly months. The bottom or floor of the plain makes a sharp break with the surrounding slopes

(Stumberger et al. 2007). The movie “Livanjsko Polje – Future at the Edge of Swamp” presented during the 7th European Crane Conference will be emitted in February 2011 in public television in Bosnia-Herzegovina.

Material and Method

The best description of the ornithological and natural values of Livanjsko Polje is found in the great materials of *Ornis Balcanica* (Reiser 1939). In 2002 a team supported and formed by EuroNatur started to visit Livanjsko Polje regularly (Schneider-Jacoby et al. 2006). Since the start of the Adriatic Flyway project (Damijan et al. 2010) in 2006, Livanjsko Polje was investigated at least four times a year until spring 2010 by a mixed team of bird watchers from the bird conservation organisation *Naše Ptice* from Bosnia-Herzegovina and EuroNatur (Stumberger & Sackl 2009, Stumberger and Schneider-Jacoby 2010). The documentary film has been prepared during field work and events of the Adriatic Flyway project to promote the protection of the site.

Results

Habitat

Livanjsko Polje Ramsar Site comprises a total area of 458 km² at an altitude of 720 m a.s.l. (Stumberger et al. 2007). Grassland covers 243 km² (dry to wet meadow and pastures), seasonal fresh flooded marshes and periodic Karst lakes between 26 km² and up to 230 km², water storage areas up to 55 km², non-forested peat land 60 km² and alluvial forests 21 km². Three alluvial forest types are known at Livanjsko polje: *Alnus glutinosa* forest, *Quercus rubor* forest and *Fraxinus angustifolia* forest. This is quite remarkable, considering that in the Karst poljes of Bosnia and Herzegovina (and this holds good for the entire Dinaric karst) practically no forest vegetation is to be found. The largest area is covered by alluvial hardwood forests of *Quercus rubor* belonging to the *Genisto elatae-Quercetum roboris* community. In the stands of *Fraxinus angustifolia*, species characteristics of the south European alluvial forest are present (Ritter-Studnicka and Grgic 1971).

Breeding

Reiser (1939) describes the breeding of cranes in Livanjsko Polje and collected birds and eggs. Several other rare bird species described by Reiser could be found still breeding in Livanjsko polje during recent years, as for example European Bittern (*Botaurus stellaris*), Snipe (*Gallinago gallinago*), Redshank (*Tringa totanus*), Corn Crake (*Cres crex*) or Spotted Crake (*Porzana porzana*) (Schneider-Jacoby et al. 2006, Stumberger & Sackl 2009, Stumberger et al 2010). Nobody knows when the breeding tradition of cranes ended or, indeed, whether this species still breeds in the vast swamps. The potential breeding area is situated in a 10,000 ha large flooded peat, wood and marsh land in the north-western part of Livanjsko Polje. Most striking is the fact that the marshes and bog habitats are named after the Common Crane (*Grus grus* = "ždral" in Bosnian, Croatian and Serbian language), which was breeding here very likely for centuries. Local people call the peat lands in the northern part of Livanjsko Polje, the "Small" and "Great Crane Swamp", i.e. Mali and Veliki Ždralovac, or Ždralovčić, Ždralovac blato. Melioration in Yugoslavia started late in the 1980ties, but the impacted areas are still flooded every year. Today, the area is mined to a great extent after the civil war and heavy fighting. Monitoring in parts of Livanjsko Polje is only possible from a small road at the edge of the flooded area and the regional road connecting Livno and Grahovo, which runs through the peat lands and floodplain. Nevertheless, interesting observations have been made during the last years, which indicate that the crane is still a potential breeding bird. In 2008 during the movie making and breeding bird census, monitoring activities were most intensive with good results.

On March 29th 2008, a single individual was recorded at Veliki Ždralovac. During a visit of the area on April 9th (9:00 – 9:50), two pairs singing virtually without a break were observed (Stumberger & Sackl 2009). At Veliki Ždralovac, three adult cranes were again observed between 10:30 and 11:25. Eventually, one of them left to disappear in a marshy depression after a courtship display. The site was ideal for breeding but the bird could not be seen anymore in the swamp vegetation, where it stayed after disappearing. Some 500 metres away, its partner had foraged in the company of a Eurasian Curlew *Numenius arquata* in a peat-bog pasture. On April 13th 2008, three individuals were seen again in the same locality, whereas on April 23rd they were filmed during their »dancing« performance which was included in the film "Livanjsko Polje – Future at the Edge of Swamp". Later during spring 2008 we have not been able to observe the cranes again in the wide area, but according to the reports of local shepherds, the

cranes, "almost unperceivable", but "constantly" frequented the area at least until July 10th. It is perfectly possible, that the birds went deeper into the marshes when the water was decreasing.

All crane observations were made at the edge of the flooded peat land, where the vegetation is lower due to extensive grazing. During bird counting at Livanjsko Polje between May 27th and 29th 2008 (Stumberger et al. 2009), no cranes were noted at Ždralovac where breeding has most likely occurred. On May 28th, however, an adult individual was seen feeding near Prispje in the central part of Livanjsko Polje, another site which is certainly suitable for breeding in wet years (e.g. in flooded woodlands with *Alnus* sp. and little lakes in the midst of the peat-bog area).

Migration

Cranes migrate through Livanjsko Polje every year. The numbers and observations are changing from year to year because monitoring is as yet based on few visits per year. Since 2002 observations have been documented (Schneider-Jacoby et al. 2006). In 2008, a few hundred individuals were recorded migrating through Livanjsko Polje between the end of February and mid-March (Gotovac, Dervović & Kotrošan, in litt.), while three individuals were seen near Livno in pastures and fields as early as on January 15th. Largest flocks figure in recent years up to 1,000 birds (Stumberger & Schneider-Jacoby 2010). The flooded meadows and patches of arable land offer good resting sites, while the Great Crane Swamp is used as a roosting site during migration: But climate conditions in Livanjsko Polje are very special as cold area is stagnating at the bottom of the Karst polje and temperature inversion is possible. Livanjsko Polje is longer frozen and covered by ice, than i.e. Duvanjsko Polje which is situated 150 m higher in the mountains. Here cranes stay longer and more regularly during the recent years.

Conclusion

Livanjsko Polje is a unique wetland. Beside the peat lands, alluvial forests and swamps, it is an important meadow area. More than 300 calling Corn Crakes have been counted in recent years (Schneider-Jacoby et al. 2006, Stumberger & Sackl 2009). Livanjsko Polje constitutes the most important wetland of Bosnia-Herzegovina, according to Reiser (1939) hundred years ago and still today according the new data collected for the EuroNatur Adriatic Flyway project (Stumberger & Schneider-Jacoby 2010). The movie confirms the great landscape values and beside cranes other important breeding birds as Montagu's Harrier (*Circus pygargus*) and Corn Crake are documented. Cranes following the Baltic-Hungarian-Adriatic flyway are resting in Livanjsko Polje, but

also in Duvanjsko Polje and other Karst poljes closely connected with Livanjsko Polje through the Karst groundwater aquifers. Maximum numbers of water birds reached 60,000 in autumn in recent years (Stumberger & Schneider-Jacoby 2010). The film documents the unique Karst Polje, which is the largest worldwide, and activities to save this important area. Beside the nomination as a Ramsar Site, the opening of the exhibition “Livanjsko Polje – European natural Heritage” was an important event in 2008 in the excellent Franciscan museum Gorica in Livno.

Key threats are melioration, drainage, water use for hydropower, peat excavation and lignite mining (Schneider-Jacoby et al. 2006, Stumberger et al. 2010). The film describes these impacts and promotes the ecological values. For the development of the canton Livno, the preservation of the unique system of Karst poljes, which cover about 30 % of the surface, as a unique selling point would be the best option to trigger regional development. A successful nomination as natural and cultural world heritage site, based on the continuous use of the temperate grassland and the unique size of the Karst polje, would offer good marketing opportunities for local products as the famous Livanjski Sir – cheese made of cow and sheep cheese – and a great chance to become an attractive nature tourism destination between the Dinaric mountains and the Adriatic.

The bird protection society Nase Ptice (Our Birds) is active in promoting the area in cooperation with EuroNatur. The film is part of the promotion of the site. The protection was supported by the MAVA Foundation. The successful nomination of Livanjsko Polje as a Ramsar site in 2008 is the first bog success. A team of NGOs work together with EuroNatur project including WWF and the Youth Centre Livno. In 2009 UNDP started a GEF project to restore parts of the drained peat land, to enhance the inspection service and to improve physical planning. The hunters association from Livno declared parts of the Crane Swamp as a hunting ban area in 2009.

Zusammenfassung

Der Film *Livanjsko Polje – Future at the Edge of Swamp* beschreibt das größte Karst-Gebiet der Erde. Einheimische nennen die Feuchtgebiete nordwestlich der Livanjsko Ebene, den kleinen und großen Kranich-Sumpf, wie z.B. nahe den Orten Mali und Veliki Ždralovac, oder bei Ždralovčić, Ždralovac blato. Die Gegend bietet dem Grauen Kranich (*Grus grus*) in Bosnien-Herzegovina Brutmöglichkeiten. In 2008 waren zwei Kranichbrutpaare während der gesamten Brutzeit anwesend. Aufgrund der Größe und der regelmäßigen Vernässung ist die Livanjsko-Ebene ein wichtiger Rastplatz für mehr als 1.000 Kraniche wäh-

rend des Frühjahrs- und Herbstzuges. Trotz der Nominierung zum Ramsar-Schutzgebiet ist das einzigartige Moor der Livanjsko-Ebene infolge der uneingeschränkten und überhöhten Nutzung der Wasserkraft zur Energiegewinnung und der neuen Wasserregulierungsprojekte sowie des Torf- und Braunkohleabbaus noch immer gefährdet. The Autoren unterstützen deshalb den Schutz und die Entwicklung dieses Gebietes zu einem Naturpark und dessen Nominierung zum Weltnatur- und Kulturerbe. Nutzwerte schließen die Produktion von biologischen Lebensmitteln und regionalen Spezialitäten wie den berühmten Livanjsko Sir, ein schmackhafter aus Schafs- und Kuhmilch hergestellter Käse, mit ein.

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