

NEW DATA ON BREEDING OF ALPINE CHOUGH *Pyrrhocorax graculus* IN CAVES IN BOSNIA AND HERZEGOVINA

Novi podatki o gnezdenju planinske kavke *Pyrrhocorax graculus* v jamah Bosne in Hercegovine

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1. Introduction

The Alpine Chough *Pyrrhocorax graculus* is a widespread breeding species in the southern Palearctic (SACKL 1997). It commonly nests in caves (CRAMP & PERRINS 1994). In Bosnia and Herzegovina it has been recorded as nesting in all seasons (REISER 1939, OBRATIL 1967, MATVEJEV & VASIĆ 1973, MULAOMEROVIĆ *et al.* 2002).

However, apart from general facts concerning the habitat and time of nesting, very little is known about the breeding habits of the Alpine Chough in Bosnia and Herzegovina. There are numerous caves and crevices with names suggesting a connection with the species (e.g. Vranjača, Vranovica, Čavljak, Vrana pećina cave, Čavčija jama hole, Čavkarica, Golovranjka, Vranovina, Gavranjača, Vranova jama hole, Vranska jama hole, Čavče jama hole, Vranovica, Čavčarica, Čavka, etc. [respectively from *vrana* = crow, or *čavka* = jackdaw]). There is no evidence so far, however, linking the nesting of the Alpine Chough with these sites (MULAOMEROVIĆ *et al.* 2002).

Much work has been devoted over the past few years to observing the nesting habits of this species in holes in Bosnia and Herzegovina. As a result, this species was confirmed breeding in holes on Mt. Vranica in 2000 and 2001 (MULAOMEROVIĆ *et al.* 2002). This paper sets out our findings to date on the nesting habits of the Alpine Chough in holes on Mts. Vranica and Visočica.

2. Study area and methods

During the period 2002–2004 we conducted speleological studies on Mts. Vranica and Visočica (Figure 1). We checked the holes as to whether they

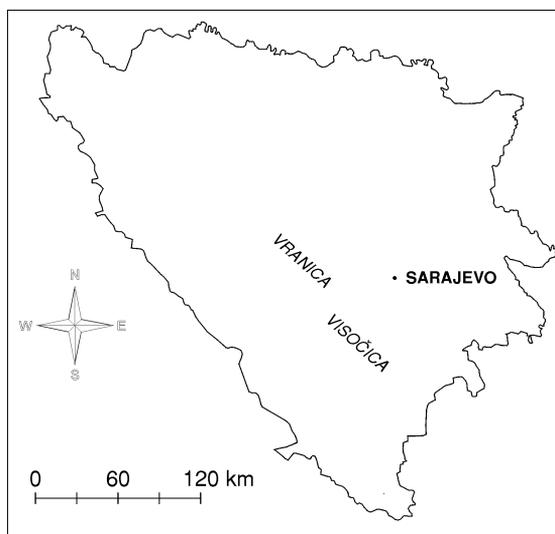


Figure 1: Position of the Mts. Vranica and Visočica in Bosnia and Herzegovina

Slika 1: Geografska lega Vranice in Visočice v Bosni in Hercegovini

were occupied by Alpine Choughs. We also gathered information from the inhabitants of alpine summer settlements who spend the whole of the summer months on Mts. Vranica and Visočica. We have received confirmation from several local people living in the summer cattle-rearing mountain villages that certain crevices are occupied by the Alpine Chough.

Mt. Vranica belongs to the ore-bearing central Bosnian mountain range, and is wellknown for its many ore-bearing sites, which have been exploited since prehistoric times. It is covered with forest vegetation up to approximately 1600 m a.s.l., where forest is replaced with alpine pastures covered in some

places with extensive stands of Bilberry *Vaccinium myrtillus*. There are isolated Mountain Pines *Pinus mugo* along the mountain ridge above the tree line at altitudes of 1900 to 2000 m a.s.l.

Mount Visočica lies within the Mediterranean region although, at its extreme limit, it is separated from Bosnia by the river Rakitnica. The highest peak of the mountain is 1988 m a.s.l. Apart from a few stunted individual plants of the Beech *Fagus sylvatica* on the lower southern slopes, the mountain is completely bare, consisting of the rocky terrain and alpine pastures typical of Herzegovina. The holes are located at an elevation of 800 to 1900 m a.s.l.

3. Results and Discussion

We have recorded the presence of the Alpine Chough in four holes on Mt. Vranica.

The holes were in limestone formations and are found solely in this zone.

The holes known as Ptičije jame are at approximately 2000 m a.s.l., above Sarajevska vrata in the direction of Krstac (2069 m a.s.l.). There are two holes, one of which has three entrances, standing about 100 m apart. In each case the entrance holes are quite small.

The hole with three entrance holes is in an open-cast mine, and the entrance to the other is surrounded by pines. We found the entrance holes by observing the birds swooping earthwards. Both holes are on a south-facing slope.

In late July 2000, we saw birds only in the hole with three entrance holes (Table 1). We registered four birds. As we came closer to the hole, the birds stopped entering it. There were some quite well-grown fledglings about 2.5 to 3 m below the entrance, on a small natural ledge in the rock; they continued to perch there without flying away the whole time we were there.

During subsequent speleological investigations in August 2000, once again four birds flew out of the hole, and one nest was observed on the wall of the hole, which was about 25 m deep (HABUL 2000). The bottom of the hole and the rocks around the entrance holes were covered with dark-blue droppings. The colour is presumably caused by the birds' feeding on bilberries (CRAMP & PERRINS 1994).

Another site where the presence of the Alpine Chough was confirmed in 2001 is an unnamed hole alongside the mountain track leading to Nadkrstac below Krstac (Table 1). This hole is at an altitude

Table 1: Breeding locations of Alpine Choughs *Pyrrhocorax graculus* in caves of Mts. Vranica and Visočica in Bosnia and Herzegovina recorded in years 2002 to 2004

Tabela 1: Gnezdišča planinske kavke *Pyrrhocorax graculus* otkrivena med letoma 2002 in 2004 v jamah Vranice in Visočice v Bosni in Hercegovini

Mountain/ gora	Cave / jama	UTM	Altitude/ nadm. višina	Evidence of Alpine Chough presence / dokaz za prisotnost planinske kavke			
				Birds / ptice	Vocalisation/ oglašanje	Nest/ gneздо	Eggshell/ jajčna lupine
Vranica	Ptičije jame	YJ27	2000 m	+	-	+	-
Vranica	hole near Krstac	YJ27	2000 m	+	+	-	-
Vranica	hole near Ločika	YJ27	?	+	-	-	-
Vranica	hole on Vodičke strane	YJ27	?	+	+	-	-
Visočica	hole near Puzim cemetery	BP72	1650 m	+	-	-	-
Visočica	Čavkarica (Hotanj spring)	BP72	1600 m	+	-	+	+
Visočica	Čavkarica (Dolovi)	BP72	1410 m	+	-	-	-
Visočica	Siljevača hole	BP73	1650 m	+	-	-	-

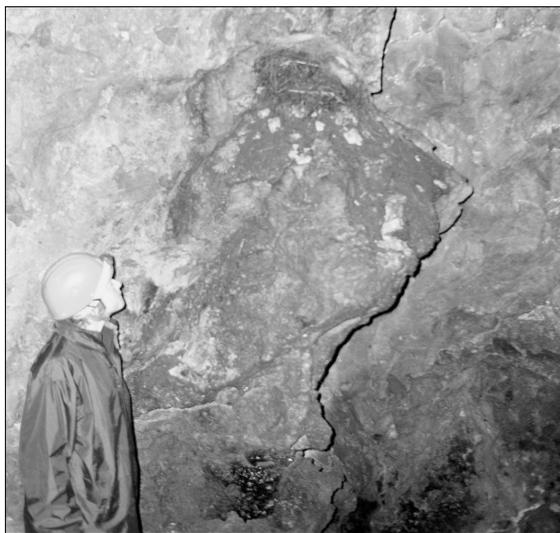


Figure 2: Nest of the Alpine Chough *Pyrrhocorax graculus* in the Čavkarica hole by the Hotanj spring on Mt. Visočica (photo: J. Mulaomerović)

Slika 2: Gnezdo planinske kavke *Pyrrhocorax graculus* v jami Čavkarica pri Hotanjskem studencu na Visočici (foto: J. Mulaomerović)

of approximately 2000 m a.s.l. The birds were not observed, but their calls could be heard.

According to the locals, there is one other hole where the Alpine Chough had been found. This is on the western facing slopes of Ločika, not far from a small clearing between the pine trees (Table 1). We did not check this site.

There is a hole on the Vodič side, on the western slopes of Rosinje, the furthest summit of Vranica in the direction of Gornji Vakuf. The hole has yet to be studied speleologically because of its extremely awkward position, but when approaching the entrance to the wide karst valley speleologists saw 10 to 15 Alpine Choughs flying in and out of the hole (Table 1).

An unnamed hole alongside the road between the Puzim cemetery and Poljice was checked. When passing by, two birds were observed flying out of the hole. The hole is surrounded by alpine pastures, at an altitude of approximately 1650 m a.s.l. A small stream disappears underground in the hole.

The Čavkarica hole, a cave with a small hole-like entrance, is not far from the summer cottages at Hotanj spring, on a hill named after the cave, at an altitude of 1600 m a.s.l. The local people occupying the summer houses confirmed that they had often seen Alpine Choughs. There were no birds in the hole when we visited it, but we observed a nest on a stone ledge at a height of about 2.5 m (Figure 2). There was

also one broken egg on the ground, about 2 m from the nest (Figure 3).

The second Čavkarica hole is on the summit of a lower hill (1410 m a.s.l.), directly above the meadow below the summer houses of Dolovi. The depth of the hole was estimated at 10 to 12 m. We did not see birds, but the local people told us that Alpine Choughs are present there.

A Siljevača hole occupied by a fair number of birds, also known only from local accounts, is located at an altitude of about 1650 m a.s.l. in the Voloderača (1728 m a.s.l.) region.

Further systematic ornithological surveys would provide a better view of the species' nesting habits, not only on Mts. Vranica and Visočica, but also on other Bosnian mountains, e.g. Bjelašnica, Čvrstica, Vran, etc.



Figure 3: Egg of the Alpine Chough *Pyrrhocorax graculus* in the Čavkarica hole by the Hotanj spring on Mt. Visočica (photo: J. Mulaomerović)

Slika 3: Jajce planinske kavke *Pyrrhocorax graculus* v jami Čavkarica pri Hotanjskem studencu na Visočici (foto: J. Mulaomerović)

Summary

Observations between 2000 and 2004 confirmed that the Alpine Chough *Pyrrhocorax graculus* nests on Mt. Vranica (four caves) and Mt. Visočica (four caves). The birds constructed their nests on natural ledges on vertical walls in the holes. The populations observed on Mts. Vranica and Visočica corroborate the known facts (manner of nesting, type of habitat, exposure of the nests, altitude etc.) concerning the breeding habits of this species. Further systematic ornithological are needed to get a better view of the species' nesting habits, not only on Mts. Vranica and Visočica, but also on other mountains in Bosnia and Herzegovina.

Povzetek

Med raziskavami, opravljenimi med letoma 2000 in 2004, je bila potrjena gnezditve planinske kavke *Pyrrhocorax graculus* v štirih jamah na Vranici in v štirih jamah na Visočici. Ptice so si gnezda zgradile na naravnih skalnih policah v jamskih navpičnih stenah. Populacije, ugotovljene na Vranici in Visočici, potrjujejo že znana dejstva (način gnezdenja, tip habitata, izpostavljenost gnezd, nadmorska višina itd.), kar zadeva gnezditvene navade te vrste. Sicer pa bi bile za boljši vpogled v gnezditvene navade vrste potrebne nadaljnje sistematične ornitološke raziskave, ne le na Vranici in Visočici, marveč tudi na drugih gorah Bosne in Hercegovine.

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