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Baillon's Crake *Porzana pusilla* on the lower Neretva river: notes on a possible breeding location in southern Dalmatia

Pritlikava tukalica *Porzana pusilla* ob spodnjem toku reke Neretve: zapiski o verjetni gnezditvi v južni Dalmaciji

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1. Introduction

Despite its extensive distribution which encompasses Australasia, sub-Saharan Africa and Eurasia, Baillon's Crake *Porzana pusilla* belongs to the least-known breeding birds of the western Palearctic. This is due to its nocturnal and largely secretive habits. In Europe the species is a rare and erratic breeder in marshlands, flooded meadows, lowland floodplains and river deltas of the temperate, Mediterranean and steppe climate zones. While the nominate race *P. p. pusilla* occurs in Russia and Asia eastwards from the Black Sea and Caspian Sea, the distribution of *P. p. intermedia* is restricted to small, fragmented and ephemeral breeding areas in Morocco, and in southern, western and central Europe (Glutz von Blotzheim *et al.* 1973, Cramp 1980, Taylor & van Perlo 1998). Apart from its European strongholds on the Iberian Peninsula, where population numbers are estimated at 3010 – 5100 pairs (SEO/BirdLife 1997, Heath *et al.* 2000), scattered populations exist on the Balkan Peninsula northwards to the floodplains of the Carpathian Basin and Danube delta in Hungary and Romania (Ciochia 1992, Gorman 1996, Magyar *et al.* 1998, Munteanu 1998).

In former Yugoslavia, Baillon's Crake was found regularly in the riverine lowlands of eastern Croatia and northern Serbia, where the species bred in small numbers in the Baranja, Slavonija, Posavina, Pokuplje and Vojvodina regions (Matvejev & Vasić 1973, Kralj 1997, Rašajski 1997, Lukač 1998). With population numbers estimated at < 11 - 100 pairs, Baillon's Crake is assessed as being critically endangered in Croatia (Lukač 1998). In contrast to the central Balkans only scattered records exist for the western part of the Balkan Peninsula since the late 19th century. Almost all records concerning the region appear to relate to migrants (Csörgey 1903, Reiser 1905 & 1939, Matvejev & Vasić 1973, Kralj 1997, Handrinos & Akriotis 1997, Lukač 1998, Rucner 1998).

The only, but vague, evidence for nesting on the western Balkans consists of: (1) On 10 Jun 1894 the dog of Ludwig von Führer caught an ash-grey male *Porzana* crake with an incubation patch in Humsko blato on Lake Skhoder. Unfortunately the bird was heavily mashed by the retrieving dog and consequently was not preserved. Later Reiser & Führer (1896) mentioned the case with much regret, because they were unable to decide retrospectively whether the specimen concerned Little *P. parva* or Baillon's Crake; (2) In the early morning of 5 Jul 1959 Géroudet (1965) heard rattling calls of birds unknown to him in three locations throughout the marshlands of Hutovo blato on the lower Neretva river (Bosnia and Hercegovina). According to recordings of the advertising calls of Baillon's Crake he later concluded that the callings he had heard in Hutovo blato may possibly have indicated the presence of the species. His report was later cited by many authors as the first evidence for breeding in the region (Matvejev & Vasić 1973, Kralj 1997, Lukač 1998); (3) In a review of the birds of the Ulcinj area in southern Montenegro, Vasić (1979) quotes a personal comment by M. Shepherd, who had heard the callings of Baillon's Crake in the salt-works of Ulcinj on 5 May 1975, but considers Shepherd's report insufficiently well documented; (4) More recently a possible breeding locality in the surroundings of Knin (Croatia) and (5) three isolated breeding entries for Albania were recorded on the distribution maps in the EBCC Atlas of European Breeding Birds (Bijlsma 1997) and the Concise Edition of The Birds of the Western Palearctic (Snow & Perrins 1998). We report here on a small population in southern Dalmatia (Croatia), where we have found evidence of breeding on the lower Neretva river downstream of Hutovo blato.

2. Study area and methods

Between 26 Apr and 2 May 2001 we visited, as part of a group of field ornithologists organized by Borut Štumberger of DOPPS/BirdLife Slovenia at the request of the Institute of Ornithology of the Croatian Academy of Sciences and Arts in Zagreb, the valley of the lower Neretva river in southern Dalmatia. Our small Slovene-Austrian team, which resided in the town of Metković, was complemented by Dominik Bombek, Matjaž Kerček, Luka Korošec, Primož Kmecl, Barbara Pislak, Jakob Smole, Greta and Karmen Štumberger. The main objective of the expedition was to investigate the presence and status of Purple Swamp-hen *Porphyrio porphyrio*, as well as to carry out an evaluation of population numbers of Great Bitterns *Botaurus stellaris* nesting in marshlands along the lower Neretva. The study area encompasses the depressions (dolina)

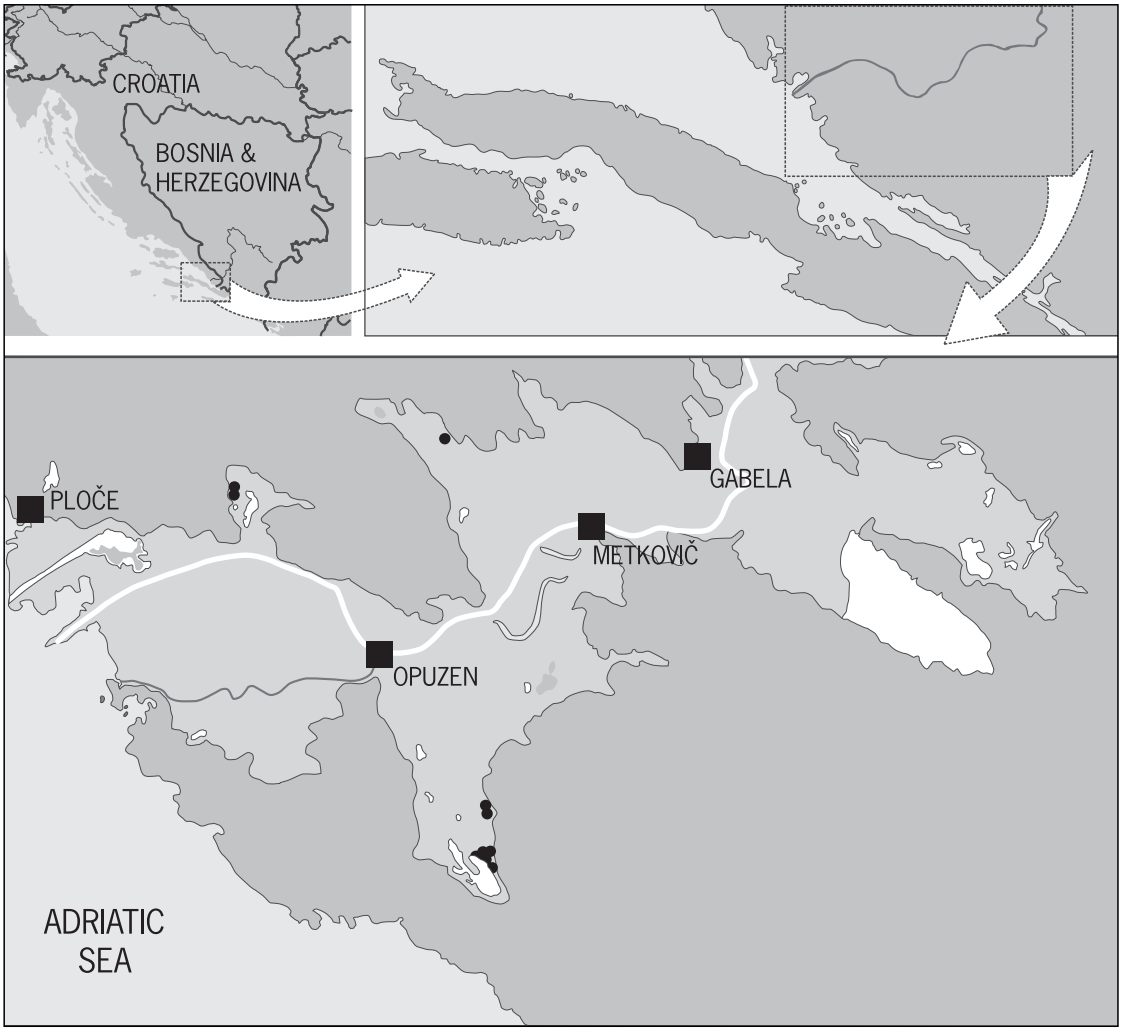

Figure 1: Study area in the lower Neretva river valley in southern Dalmatia (Croatia) with black circles (= approximate location of callers) indicating the distribution of calling groups of Baillon's Crake *Porzana pusilla* during late April and early May 2001. (white areas - inland water surface, bright grey area – Neretva river valley, dark grey area – hilly surrounds)

Slika 1: Območje raziskave v spodnjem delu reke Neretve v južni Dalmaciji (Hrvaška): črni krogci (= približna lokacija oglašajočih se ptic) ponazarjajo distribucijo klicalnih skupin pritlikave tukalice *Porzana pusilla* med koncem aprila in začetkom maja 2001 (belo obarvana območja = vodne površine; svetlo sivo območje = dolina reke Neretve; temno sivo območje = hribi)

Table 1: Records of calling Baillon's Crakes *Porzana pusilla* in the lower Neretva river valley, Dalmatia in spring 2001, at Lake Kuti and between the villages of Mislina and Trojavina.

Tabela 1: Podatki o klicočih pritlikavih tukalicah *Porzana pusilla* v spodnjem delu doline reke Neretve, Dalmacija, spomladi leta 2001, pri jezeru Kuti in med vasema Mislina in Trojavina.

Date/ datum	Location/ lokacija	Time/ čas	Number of birds, behaviour/ št. ptic, vedenje	Observers/ opazovalci
27.4.	Jezero Kuti, S Badžula	20.30 - 21.05	4 - 5 males calling spontaneously (warm, windless, very dark and moonless)	L. Božič & P. Sackl
27.4.	Blato, Podgrede	evening	1 male calling spontaneously	D. Bombek
29.4.	Jezero Kuti, Mislina - Trojavina	~ 20.00	2 males calling spontaneously 50 - 70 m from road (around 20 minutes after sunset)	L. Korošec & B. Štumberger
29.4.	Jezero Kuti, S Badžula and Badžula - Mislina - Trojavina	~ 20.00 - 21.30	no reaction to playbacks; birds between Mislina and Trojavina silent, no reaction to playbacks along the whole section Badzula - Mislina - Trojavina	L. Korošec & B. Štumberger
30.4.	Jezero Kuti, S Badžula and Badžula - Mliniste	20.40 - 22.30	no reaction to playbacks (warm, windless, bright moonlight)	L. Božič & P. Sackl
1.5.	Jezero, Modro Oko - Osac	20.35 - 20.40	2 males calling spontaneously close to road (warm and windless)	P. Kmecl & B. Štumberger

covered by extensive wetlands between the borderline to Bosnia and Hercegovina and the town of Opuzen near the estuary of the Neretva river at the Adriatic coast (Figure 1). With core wetland areas not accessible without boats we performed 42.2 km of synchronized transect counts - excluding a 6.7 km boat trip on Lake Kuti - along the periphery and along dikes crossing the marshlands with 3 - 4 teams each consisting of 2 – 3 observers during early morning (5.00 – 07.30 CET) and late evening (17.30 – 21.00 CET). To stimulate territorial calls at 73 check-points along transects (= 1.7 per km), taped playbacks of advertising and territorial calls of Purple Swamp-hen and Great Bittern were played for 5 – 10 minutes. In addition, on 30 – 40% of all check-points, when rails were not calling spontaneously, we also tested with the help of taped playbacks for the presence of Water Rail *Rallus aquaticus*, Spotted *Porzana porzana*, Little and Baillon's Crake. Except for a short rain shower during early morning of 28 April, when no counts were performed, overall windless, warm and sunny weather conditions with changing overcast prevailed. A total of 64 km^2 of wetlands, with 56.4 % homogenous reedbeds, 22.3% marshlands covered by lower vegetation and 21.3% drained wetland areas, were investigated (Figure 1).

3. Results

All Baillon's Crakes recorded during our surveys on the lower Neretva were initially found by the advertising and territorial calls of spontaneously calling birds (Table 1). We heard calling males on four locations, with the most dense concentration of 4 – 5 callers on 27 Apr in the southeastern section of Lake Kuti south of Badžula, close to the frontier guard into Bosnia and Hercegovina. The following day, two other spontaneously calling birds were heard in the same area 1.7 km north of Badžula, near the road between the small villages of Mislina and Trojavina. In the marshlands north of the Neretva river another solitary male was heard in the extensive Blato of Podgrede, east of Sv. Vid. In addition two calling males were found on the Lake of Modro Oko between Komin and Rogotin, close to the estuary of the Neretva river, on 1 May (Figure 1).

Vegetation characteristics where calling crakes were recorded, except in the Lake of Modro Oko, correspond to those summarized by Glutz von Blotzheim *et al.* (1973), Cramp (1980) and Taylor & van Perlo (1998). Most birds were calling from the edge of extensive wetland depressions characteristic of the area, in shallow, seasonally or irregularly flooded

marshlands and submerged meadows covered by low sedges *Carex* sp., soft-rush *Juncus* sp., bulrush *Scirpus* sp. and other relatively fine-stemmed vegetation intermingled with tall stands of Reed *Phragmites communis*. On Lake Kuti, calling places of at least one or two males were near floating vegetation close to deeper, more open water (Figure 2). But due to darkness and a deep canal between the road and their calling sites, we were not able to locate the position of these birds exactly. Between Mislina and Trojavina the species was found in a partly submerged meadow dominated by low sedges and fragmented stands of dense reed. In contrast, both birds heard on 1 May were calling near the edge of extensive homogenous reed beds close to the road in Modro Oko (cf. Table 1).

Figure 2: Habitat of Baillon's Crake *Porzana pusilla* at Lake Kuti near Badžula in the lower Neretva river valley, Dalmatia, May 2001. Males were found calling close to the edge (right) and more to the centre of the area behind open water in the background (photo: P. Sackl).

Slika 2: Habitat pritlikave tukalice *Porzana pusilla* ob jezeru Kuti pri Badžuli v spodnjem delu reke Neretve, Dalmacija, maj 2001. Samci so se oglašali v bližini roba (na desni) in bolj proti središču območja onkraj odprtih voda v ozadju (foto: P. Sackl).

Whereas transect counts were done during the evening as well as early morning, spontaneous calling activity of Baillon's Crake appeared to be restricted to late evening hours with almost all calling recorded towards the end of transect counting between 20.00 and 21.00 CET, i.e. 20 min to 1 hour after sunset (Table 1). Perhaps more important, calling activity appeared to be largely reduced after 27 Apr. Except for a few interruptions, when suddenly and simultaneously all crakes ceased to call, all birds were calling continually when we first encountered them on Lake Kuti in the late evening of 27 Apr. During one of the breaks we managed to provoke continuous calling bouts by using taped playbacks. Later the same evening, we had the impression that at least some birds moved around while calling, possibly indicating courtship flights invisible to us owing to darkness (cf. Glutz von Blotzheim *et al.* 1973, Taylor & van Perlo 1998). In contrast, no crakes were found calling on 29 and 30 Apr, and no response to playbacks was provoked on Lake Kuti during later visits (Table 1). On both occasions, contrary to the situation on 27 Apr of deep darkness owing to an approaching rain front, the bright moonlight night was filled with extraordinarily loud choruses of frogs *Rana* X *ridibunda* and Common Tree Frog *Hyla arborea*.

Nearest neighbour distances between solitary callers and/or calling groups on the lower Neretva (Figure 1) varied from 1.7 to 12.2 km ($\bar{x}$ = 8.2 km, n = 4). With 9 – 10 calling birds recorded we are neither able to rule out double counts between different transects nor the possibility that we missed other crakes in the area during our study. However, based on the assumption that advertising calls of Baillon's Crake are audible for 150 – 250 m (cf. Glutz von Blotzheim *et al.* 1973) and according to a total of 42.2 km of line transect surveyed, overall densities for wetland areas in the region can be roughly estimated at 0.4 – 0.8 birds /km^2.

4. Discussion

In the course of the 20th century the avifauna of the lower Neretva river valley was intensively studied by Rucner (1953 & 1993). In spite of long-term collecting and bird-watching in the area he did not find Baillon's Crakes. Nevertheless, in his most recent monograph on the bird fauna of the lower Neretva, Rucner (1993) listed Baillon's Crake as a breeding species for the area without giving further details. However, first evidence for breeding in the valley of the lower Neretva river was reported by Géroudet (1965), who heard rattling calls which he later thought might have concerned the species in Hutovo blato, 5 km upstream of our study area. Other solitary birds recorded in Dalmatia during the last century were collected or sighted outside the nesting season; i.e. a male shot in Strobeč near Split on 3 Apr 1959 and another male seen on 29 Sep 1988 in Torak Lake on the Krk river (Reiser 1939, Piasevoli & Pallaoro 1991, Stipčevic 1996, Kralj 1997).

Evidence for the breeding of the species on the western Balkans is clearly based on records of calling

birds only. Many aspects of the population dynamics, ecology, breeding biology, and behaviour of Baillon's Crake are still insufficiently studied. Given our somewhat confusing data concerning the calling activity between late April and early May 2001, the breeding status of the species for the western Balkans is still inconclusive.

However, territorial and courtship behaviour of Baillon's Crake is generally regarded to be similar to that of other, better studied *Porzana* species. In particular the hard, dry rattling calls of the species, probably given by males only, the formation of small calling groups, and courtship flights may primarily function as advertising calls and mating displays important for pair-formation and subsequent courtship (Glutz von Blotzheim *et al.* 1973, Cramp 1980). Locating territorial males by means of their advertising calls is a matter of routine in breeding surveys and census work for Corncrake *Crex crex*, Water Rail and Spotted Crake (e.g. Gilbert *et al.* 1998). According to Feindt (1968) and Szabó & Viszló (2001), advertising and territorial calls should, in the same way, be useful for population surveys of Baillon's Crake. Recently the method was used for the species in the more densely populated parts in its breeding range (cf. Marchant & Higgins 1993, SEO/BirdLife 1997, Taylor & van Perlo 1998).

Male Corncrakes are known to reduce their nocturnal calling activity drastically for a few nights immediately after they are mated, while Spotted Crakes call only until they are mated and keep silent for the rest of the breeding season (e.g. Tyler & Green 1996, Schäffer 1999). During a study in Austria's Enns river valley (1998 – 2000), calling groups of Corncrakes (< 10 callers), regularly ceased calling during late May to early June, with a second peak of calling activity between late June and mid-July (H. Faber, P. Sackl & L. Zechner unpubl.). A similar reduction of calling activity is reported by male Baillon's Crakes by Feindt (1968), Becker (1983) and Szabó & Viszló (2001). Correspondingly these authors emphasize that, in closely investigated cases, males ceased to call immediately after pair formation and/or at the start of egg laying (cf. also Glutz von Blotzheim *et al.* 1973, Taylor & van Perlo 1998). The period of time between the arrival of a female and the completion of clutch, and the period of calling activity for a solitary male at nesting sites in Lower Saxony (Germany), is given by Becker (1983) as 9 and 3 days, respectively. Calling activity of Baillon's Crake may further depend on external factors like weather conditions, the volume of noise made by frogs or the intensity of moonlight (Table 1), the latter possibly affecting predation risk in habitats covered by low, more open vegetation preferred by the species. However, our data from the lower Neretva correspond to the calling phenology and calling characteristics during courtship and pair formation described for Corncrakes and other *Porzana* species.

With timing of egg laying presumably depending on water level (Feindt 1968, Becker 1983, Szabó & Viszló 2001), our study apparently coincided with the initial stages of pair formation and egg laying. For southern and central Europe the latter is estimated by Glutz von Blotzheim *et al.* (1973) and Cramp (1980) to be early to mid-May. Although in Hungary most clutches were found between mid-May and late June, Szabó & Viszló (2001) mention a single clutch for early May and another one with already hatched chicks on 21 May. In The Netherlands in the 20th century, nests with eggs were found from 25 May – 23 June, nests with chicks or adults with chicks between 23 Jun and 5 Aug, and juveniles mainly in August (van den Berg & Bosman 2001). Apparently, breeding in the Netherlands is later than in central Europe. In more southern breeding areas a clutch of five eggs was found in the Azraq marshes of Jordan on 17 Apr 1963 (Andrews 1995) and in the Nile delta in Egypt adults in breeding condition and with downy young, respectively, were collected on 17 Apr 1917 and on 1 May 1920 (Goodman & Meininger 1989). Accordingly, Taylor & van Perlo (1998) correlate breeding condition and egg laying for the southern Mediterranean and the Middle East with April – May.

The wetland depressions of the lower Neretva are obviously situated within the climatic zone suitable for nesting and within the overall distribution of the species. In comparison to densities of the possible race "*obscura*" reported for some wetland areas of tropical Africa (Taylor & van Perlo 1998) and for *P. p. palustris* in Australia, our estimate of 0.4 – 0.8 birds / km^2 is very low, but close to maximum densities of 5 birds / 509 ha found at Thompson's Lake Nature Reserve, Western Australia, 1981- 88 (Marchant & Higgins 1993). Large sections of marsh- and wetlands on the lower Neretva were reclaimed for agriculture, road building and urban development during the last decades. Although all wetlands in the area, including designated IBA and RAMSAR sites, are heavily disturbed by excessive hunting (Štumberger unpubl.), suitable marshland nesting habitat for Baillon's Crake is apparently still widespread throughout the river delta and lower Neretva river valley. However, based on the evidence presented we conclude that the species is

probably a sparsely distributed and possibly erratic breeding bird in the area, a fact hitherto overlooked by many ornithologists.

Summary

Apart from very vague evidence for nesting, most records of Baillon's Crake *Porzana pusilla* from the western Balkans along the coast of the Adriatic Sea relate to migrants. Between 26 Apr and 2 May 2001, 64 km² of extensive marsh and wetland areas were investigated for the presence of Purple Swamp-hen *Porphyrio porphyrio*, Great Bittern *Botaurus stellaris*, Water Rail *Rallus aquaticus* and crakes *Porzana* sp. by 42.2 km of transect counting along the lower Neretva river valley between the border to Bosnia and Herzegovina and the town of Opuzen in southern Dalmatia (Croatia). Although we used playbacks of advertising and territorial calls of Baillon's Crake on 20 – 30 check points along transects, the species was only found during our surveys by spontaneously calling birds. We recorded Baillon's Crakes in four locations from solitary calling birds and from small calling groups of 2 – 4 (5) birds with the most dense concentration of 4 – 5 callers in the south-eastern section of Lake Kuti, south of Badžula. Altogether we were able to locate 9 – 10 calling birds in the area, i.e. 0.4 – 0.8 birds / km² of wetlands investigated. Nearest neighbour distances between solitary callers and/or calling groups varied from 1.7 – 12.2 km. Over the period of the study two repeatedly visited calling groups at Lake Kuti appeared to reduce their spontaneous calling activity until 29 Apr, which seems to be in accordance with published evidence of a drastic reduction of nocturnal calling activity after pair formation and egg laying. Given the location of our study area within the overall distribution area of the species, the time of season and the characteristics of calling activity which we found on the lower Neretva, we conclude that the species - overlooked by many ornithologists – is probably a sparsely distributed breeding bird in the area. The first evidence for nesting on the western Balkans is based on calling birds heard in July 1959 in Hutovo Blato (Bosnia and Herzegovina) on the lower Neretva, 5 km upstream from our study area and in the salt-works of Ulcinj (Montenegro) in early May 1975.

Povzetek

Večina podatkov o pojavljanju pritlikave tukalice *Porzana pusilla* na zahodnem Balkanu vzdolž Jadranskega morja – poleg nekaj sicer zelo neprepričljivih "dokazov" o gnezdenju te vrste v tem območju – zadeva njeno selitveno obdobje. Med 26.4. in 2.5.2001 smo pregledali 64 km² mokrišč, da bi prešteli sultanke *Porphyrio porphyrio*, bobnarice *Botaurus stellaris*, mokože *Rallus aquaticus* in tukalice *Porzana* sp. vzdolž 42,2 km dolge črte transektov v spodnjem delu reke Neretve med bosansko-hercegovsko mejo in mestom Opuzen v južni Dalmaciji na Hrvaškem. Čeprav smo na tridesetih točkah ob transektih uporabljali posnetke teritorialnega oglašanja pritlikave tukalice, smo jih med popisom našli le med njihovim spontanim oglašanjem. Zabeležili smo jih na štirih lokalitetah, kjer so se oglašale posamično, in v skupinah od 2 – 4 (5) ptic z največjo koncentracijo 4 – 5 oglašajočih se ptic v jugovzhodnem delu jezera Kuti južno od Badžule. Skupaj nam je v raziskanih mokriščih uspelo locirati 9 – 10 oglašajočih se pritlikavih tukalic, t. j. 0,4 – 0,8 ptic / km². Najmanjše razdalje med posamično oglašajočimi se pticami in/ali klicalnimi skupinami so se sukale med 1,7 in 12,2 km. V času raziskave sta se dve klicalni skupini pritlikavih tukalic ob jezero Kuti nehali spontano oglašati 29.4., kar je v skladu z objavljenimi podatki o drastičnem zmanjšanju nočnega oglašanja, ko se ptice začnejo družiti v pare in leči jajca. Glede na lokacijo preučevanega območja znotraj celotnega območja razširjenosti vrste, letnega časa in značilnosti oglašanja ob spodnjem toku reke Neretve menimo, da je vrsta – ki so jo mnogi ornitologi tu očitno prezrli – najbrž redko razširjena gnezdilka v obravnavanem območju. Prvi dokazi o gnezdenju pritlikave tukalice na zahodnem Balkanu zadevajo oglašajoče se ptice, zabeležene julija 1959 v Hutovem blatu (Bosna in Hercegovina) v spodnjem delu reke Neretve kakih 5 km severno od našega območja raziskave in v začetku maja 1975 v Ulcinjskih solinah (Črna gora).

References

ANDREWS, I.J. (1995): The Birds of the Hashemite Kingdom of Jordan. - Privately published, Musselburgh, UK.

BECKER, P. (1983): Zum Brutvorkommen des Zwergsumpfhuhns (*Porzana pusilla*) in Niedersachsen. - Beitr. Naturkd. Niedersachsens 36: 193 – 203.

BIJLSMA, R.G. (1997): Baillon's Crake *Porzana pusilla*. p.p. 228-229 In: HAGEMEIJER, W.J.M. & BLAIR, M.J. (eds.): The EBCC Atlas of European Breeding Birds: Their Distribution and Abundance. - T & AD Poyser, London.

CIOCHIA, V. (1992): Păsările clocitoare din Romania. - Editura Ştiintifică, Bucureşti.

Cramp, S., ed. (1980): Handbook of the Birds of Europe, the Middle East, and North Africa. The Birds of the Western Palearctic, Vol. 2. - Oxford University Press, Oxford, London and New York.

Csörgey, T. (1903): Fünf Monate in Spalato. - Aquila 10: 66 – 103.

Feindt, P. (1963): Sichtbeobachtungen des Kleinen Sumpfhuhns (Porzana parva) und des Zwergsumpfhuhns (Porzana pusilla) in Südniedersachsen. - Orn. Mitt. 15: 51 – 60.

Feindt, P. (1968): Zur Frage von Siedlungsdichte-Untersuchungen an Rallen. - Orn. Mitt. 20: 159 – 163.

Géroudet, P. (1965): Aperçus ornithologiques sur la Yougoslavie. VII. La basse Neretva et l'Hutovo Blato. Nos Oiseaux 28 (298): 4 – 15.

Gilbert, G., Gibbons, D.W. & Evans, J. (1998): Bird Monitoring Methods. A Manual of Techniques for Key UK Species. - Royal Society for the Protection of Birds, Sandy.

Glutz von Blotzheim, U.N., Bauer, K.M. & Bezzel, E. (1973): Handbuch der Vögel Mitteleuropas, Bd. 5. - Akad. Verlagsges., Frankfurt/Main.

Goodman, S.M. & Meininger, P.L. (1989): The Birds of Egypt. - Oxford University Press, Oxford and New York.

Gorman, G. (1996): The Birds of Hungary. - Christopher Helm, London.

Handrinos, G. & Akriotis, T. (1997): The Birds of Greece. - Christopher Helm, London.

Heath, M., Borgreve, C. & Peet, N. (2000): European Bird Populations: Estimates and Trends. - BirdLife Conservation Series 10, BirdLife International, Cambridge.

Kralj, J. (1997): Ornithofauna Hrvatske tijekom posljednjih dvjesto godina. - Larus 46: 1 – 112.

Lukač, G. (1998): Fauna Croatica XXXVII: List of Croatian Birds. Spatial and Temporal Distribution. - Nat. Croat. 7, Suppl. 3: 1 – 160.

Magyar, G., Hadaric, T., Waliczky, Z., Schmidt, A., Nagy, T. & Bankovics, A. (1998): Nomenclator Avium Hungariae - Magyarország madarainak névjegyzéke. An Annotated List of the Birds of Hungary. - Magyar Madártani, Természetvédelmi Egyesület, Budapest and Szeged.

Marchant, S. & Higgins, P.J. (1993): Handbook of Australian, New Zealand and Antarctic Birds, Vol. 2. - Oxford University Press, Melbourne.

Matvejev, S.D. & Vasić, V.F. (1973): Catalogus Faunae Jugoslaviae, IV/3 Aves. - Cons. Acad. Sci. Republ. Social. Foed. Jugoslaviae, Acad. Sci. Art. Slovenica, Ljubljana.

Munteanu, D. (1998): The Status of Birds in Romania. Romanian Ornithological Society, Cluj-Napoca.

Piasevoli, G. & Pallaoro, A. (1991): Ornitološka zbirka prirodoslovnog muzeja u Splitu. - Larus 43: 89 – 119.

Rašajski, J. (1997): Ptice Srbije: sa kartama distribucija. Prometej, Novi Sad.

Reiser, O. (1905): Materialien zu einer Ornis Balcanica. III. Griechenland und die griechischen Inseln (mit Ausnahme von Kreta). - Carl Gerold's Sohn, Wien.

Reiser, O. (1939): Materialien zu einer Ornis Balcanica. I. Bosnien und Herzegowina nebst Teilen von Serbien und Dalmatien. - Naturhistorisches Museum, Wien.

Reiser, O. & von Führer, L. (1896): Materialien zu einer Ornis Balcanica. IV. Montenegro. - Carl Gerold's Sohn, Wien.

Rucner, D. (1953): Birds of the Neretva valley. A contribution to the study of the avifauna of Croatia. - Larus 6/7: 53 – 138.

Rucner, D. (1993): O životu ptica u dolini Neretve. - Ogranak matice Hrvatske u Metkoviću, Metković.

Rucner, D. (1998): Ptice hrvatske obale Jadrana. - Hrvatski prirodoslovni muzej, Ministarstvo razvitka i obnove, Zagreb.

Schäffer, N. (1999): Habitatwahl und Partnerschaftssystem von Tüpfelralle *Porzana porzana* und Wachtelkönig *Crex crex*. - Ökol. Vögel 21: 1 – 267.

SEO/BirdLife (1997): Atlas de las aves de Espana (1975 – 1995). - Lynx Edicions, Barcelona.

Snow, D.W. & Perrins, C.M. (1998): The Birds of the Western Palearctic. Concise Edition, Vol. 1. - Oxford University Press, Oxford and New York.

Stipčević, M. (1996): A contribution to the Croatian list of rare and scarce birds recorded from 1985 – 1995. - Nat. Croat. 5: 53 – 81.

Szabó, L.V. & Viszló, L. (2001): A Csákvári-rét rejtélyes madarai. Madártani kutatások a Zámolyi-medencében. - Pro Vértes Természetvédelmi Közalapitvány, Zoologische Gesellschaft Frankfurt and Stiftung Europäisches Naturerbe, Csákvár.

Taylor, B. & van Perlo, B. (1998): Rails. A Guide to the Rails, Crakes, Gallinules and Coots of the World. - Pica Press, Sussex.

Tyler, G.A. & Green, R.E. (1996): The incidence of nocturnal song by male Corncrakes *Crex crex* is reduced during pairing. - Bird Study 43: 214 – 219.

van den Berg, A.B. & Bosman, C.A.W. (2001): Rare birds of the Netherlands, with complete list of all species. 2nd edition. - GMB Uitgeverij and Stichting Uitgeverij KNNV, Haarlem and Utrecht.

Vasić, V.F. (1979): Popis faune ptica područja Ulcinja (južna Crna Gora). - Biosistematika 5: 71 – 111.

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