

Black-headed Penduline Tits *Remiz macronyx* in Kazakhstan

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The Black-headed Penduline Tit *Remiz macronyx* is a poorly known species that breeds in reedbeds *Phragmites australis* and bulrush *Typha latifolia*, mainly in Iran, Turkmenistan and Kazakhstan (Harrap & Quinn 1996, Wassink & Oreel 2007, Madge 2008). Kazakhstan is perhaps the most accessible place to see the species, yet there is only one site where it is regularly reported by birdwatchers: the Topar lakes along the Ili river delta near lake Balkhash, Almaty province (Figure 1). Four subspecies have been recognised of which *R. m. ssaposhnikowi* occurs at the Topar lakes. The Eurasian Penduline Tit *Remiz pendulinus* does not occur in this area. As part of a research project investigating the evolution of breeding systems in penduline tits (see van Dijk *et al* 2007a) we studied populations of penduline tits in Kazakhstan. During the period 12–26 June 2008 we visited the Topar lakes in search of Black-headed Penduline Tits. Although we found Black-headed Penduline Tits, the population near the Topar lakes appeared to be of low density. In this paper we describe our findings and speculate about the taxonomy of penduline tits in the genus *Remiz*.

WHERE TO FIND A BLACK-HEADED PENDULINE TIT

Black-headed Penduline Tits are scarce in the Topar lakes area. Not every bird watching tour visiting the Topar lakes finds the species and in the period of research we managed to see only 14 birds: nine males and five females. We arrived late in the season during which many birds may be either incubating or feeding offspring. In that period, penduline tits are generally more quiet and elusive. So we might have been more successful finding Black-headed Penduline Tits if we had visited the area earlier in the breeding season. Nevertheless, the population near the Topar lakes appears to be small.



Figure 1. Distribution of Black-headed Penduline Tit *Remiz macronyx* and Eurasian Penduline Tit *Remiz pendulinus* in Kazakhstan, following Harrap & Quinn (1996) and Wassink & Oreel (2007). Red: *R. m. macronyx ssaposhnikowi*, Yellow: *R. m. macronyx*, Pink: *R. p. pendulinus jaxarticus*, Green: *R. p. caspius*.



Plate 1. Typical habitat of Black-headed Penduline Tit *Remiz macronyx ssaposhnikowi*: lakes surrounded by extensive reedbeds, Topar lakes, Kazakhstan, June 2008. © René van Dijk

The area consists of semi-desert interspersed with small lakes and marshes. The many relatively small lakes in the sand dunes seem suitable for Black-headed Penduline Tits, but we failed to find any there. Although hard to quantify in the field, we suggest that the apparently limited abundance of food or nest material might be the reason they avoid this habitat. We did find Black-headed Penduline Tits in more extensive reed beds close to the river Topar (Plate 1). These reedbeds, however, are scarce and despite extensive searches in the region we only found them in a lake system some 3 km northeast of Topar village (45° 3' 31" N, 75° 2' 50" E). The road from Topar village to Zhelturanga crosses this area. Walking beside these lakes whilst listening for their call is the way to find your penduline tit (van Dijk *et al* 2007b).



Plate 2. Male *Remiz macronyx ssaposhnikowi* with black mask, a chestnut brown crown and nape, and white throat, thus resembling male *R. pendulinus caspius*. Topar lakes, Kazakhstan, June 2008. © René van Dijk

MORPHOLOGY AND BEHAVIOUR

Harrap & Quinn (1996) described subspecies *ssaposhnikowi* as "rather variable in colour: head pattern mainly as *R. pendulinus caspius* (a race of European Penduline Tit)". Out of the nine males we observed, four had an all black head, four other males indeed resembled *R. p. caspius*, albeit variable in the extent to which the chestnut-brown was present on the crown and nape. One male exhibited an intermediate head pattern. The four males which had a completely black head also had a very dark reddish breast and red brown mantle and scapulars. The tertiaries, secondaries and primaries had white fringes, creating a white wing panel. These birds had a tricoloured appearance: black-red-white. In all respects these birds looked like the nominate subspecies of Black-headed Penduline Tit except for the broad pale fringes to the flight feathers, which are cinnamon-brown in the nominate subspecies. The four males that resembled *R. pendulinus caspius* in their head colouration, had a black mask, a chestnut brown crown and nape, and a white throat. The rest of their plumage did not differ from the birds with a completely black head, so that the mantle and scapulars were a deeply coloured dark red-brown with a lot of red colouration on the breast and flight feathers with broad white fringes (Plate 2). One male showed an intermediate head pattern: a black head intermixed with some chestnut coloured feathers and a white throat (Plate 3). All five observed females were very similar to males of Eurasian



Plate 3. (above) Male *Remiz macronyx ssaposhnikowi*. The only observed male with intermediate head pattern characteristics. The black head resembles a nominate *macronyx*, but the intermixing chestnut coloured feathers and white throat resembles a *caspius* type bird. Topar lakes, Kazakhstan, June 2008. © René van Dijk

Plate 4. (right) Female '*Remiz macronyx ssaposhnikowi*'. Topar lakes, Kazakhstan, June 2008. © René van Dijk



Penduline Tit *Remiz p. pendulinus*, yet with typical female characteristics: they had a wide mask, but squared rather than conically shaped and interspersed with some grey feathers, especially at the base of the bill and a grey ring around the eye. In addition these females had a clear red fringe on the head above the forehead patch extending to both sides of the crown and had lots of red feathers on the breast. A variable amount of black feathers on the neck was present and the back was paler than that of the males (Plate 4). This description fits well with the description given for female *caspius* in Harrap & Quinn (1996). Curiously, we did not observe any *macronyx*-type females. Bird watchers mostly report *caspius*-like males

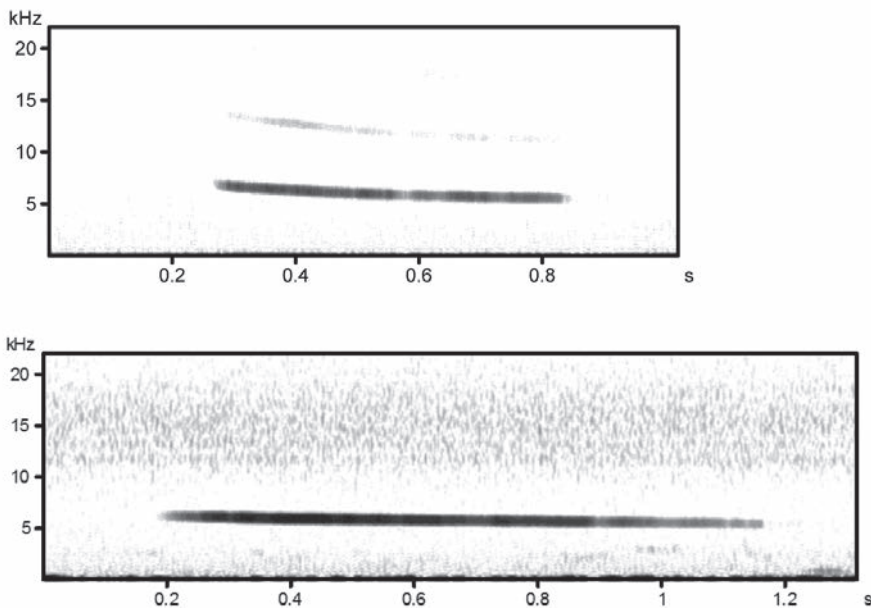


Figure 2. Sonograms of typical calls of Eurasian Penduline Tit *Remiz pendulinus pendulinus* (top), recorded in Hungary (46° 19' N, 20° 5' E) May 2006, and '*R. macronyx ssaposhnikowi*' (bottom) recorded at the Topar lakes, Kazakhstan, June 2008. Note the difference in call length.

and only a very few report black-headed males in their trip reports (see eg www.travelingbirder.com).

Song and call of both male types of *ssaposhnikowi* differ from those of European *R. p. pendulinus*. Different syllables are used in the song repertoire of *ssaposhnikowi* Black-headed Penduline Tits and their call is longer and more monotonous compared to the slightly decreasing and shorter call of the nominate *R. pendulinus* (Figure 2). Nest building behaviour may differ between the two types of male. We twice observed a black-headed male building a nest between two reed stems at about 1.5 m height in a reedbed, while a pair of the *caspius*-type had a nest in a tree. Of course, we cannot be certain that this is a species specific difference in behaviour or a habitat driven behaviour. Either species may build its nest in trees or reeds dependent on what is available. Incidentally, Black-headed Penduline Tits *Remiz m. macronyx* in Turkmenistan build their nests in either trees or reed (Y Belousov pers comm). A few records exist of nominate Eurasian Penduline Tits building their nest in reeds.

DOES REMIZ MACRONYX SSAPOSHNIKOWI EXIST?

According to published information on the species' distribution, all penduline tits in the Topar lakes area are supposed to be *R. m. ssaposhnikowi* and Vaurie (1957) treats *ssa-poshnikowi* as a hybrid swarm *R. pendulinus jaxarticus* × *R. m. macronyx* (*jaxarticus* is the subspecies of *R. pendulinus* occurring north of lake Balkhash, Figure 1). We now doubt whether we should treat all the Topar lakes birds as *ssaposhnikowi* and believe Vaurie (1957) might have been incorrect in suspecting a hybrid swarm. Subspecies *R. p. jaxarticus* approaches nominate *pendulinus* in morphology (Harrap & Quinn 1996) and thus lacks the extent of chestnut colouration found in *ssaposhnikowi*. Our observations do not provide support for *R. m. ssaposhnikowi* being a valid subspecies. Rather, we suspect that

Remiz m. macronyx and *Remiz pendulinus caspius* may well be coexisting in the area, ie *R. m. ssaposhnikowi* may in fact be identical to *R. p. caspius*. Descriptions from published sources (Harrap & Quinn 1996, Madge 2008) suggest there are no diagnostic plumage characteristics to distinguish between *R. p. caspius* and *R. m. ssaposhnikowi*. The observed possible variation in nest site selection might promote the coexistence of two distinct populations (note that the White-crowned Penduline Tit *R. coronatus coronatus* also occurs in the Topar lakes area). Out of nine observed males, one showed intermediate features, suggesting that hybridization may occur to a limited extent.

If our supposition proves correct, this would mean a relatively minor range extension for nominate *R. m. macronyx*. However, the known distribution of *R. pendulinus caspius* would need considerable revision as *R. p. caspius* is described to occur only near and around the Caspian sea, over 1000 km to the west (Figure 1).

TAXONOMY OF PENDULINE TITS OF GENUS REMIZ

Taxonomy of penduline tits in the genus *Remiz* is complex and confused. Until recently they were most often treated as one wide-ranging species, *Remiz pendulinus*, the Penduline Tit (Snow 1967). However, Harrap & Quinn (1996) and Madge (2008) recognised four species: Eurasian Penduline Tit *R. pendulinus*, Black-headed Penduline Tit *R. macronyx*, White-crowned Penduline Tit *R. coronatus* and Chinese Penduline Tit *R. consobrinus*. Eck & Martens (2006) lumped Black-headed Penduline Tit with Eurasian Penduline Tit and White-crowned Penduline Tit with Chinese Penduline Tit. They also stated that "besides the morphological and biological information already available, acoustic and molecular data are needed for sound decisions." Our research reported here has provided a new hypothesis concerning the '*ssaposhnikowi*' taxon.

From the data we collected, we cannot conclude with certainty whether to split or lump Black-headed Penduline Tit and Eurasian Penduline Tit. Nevertheless, the possible coexistence of members of both taxa without evidence for extensive hybridization suggests they are best treated as different species. Clearly, more data are needed from this and other populations in Central Asia, to verify this proposition.

We can be more confident about the relationship between the White-crowned Penduline Tit and the '*R. m. ssaposhnikowi*' population at the Topar lakes: we argue that they should be treated as different species. The White-crowned Penduline Tits in the Topar area did not show any characteristics that suggested hybridisation with the '*R. m. ssaposhnikowi*' population. Biometric measurements, song and plumage traits for *R. coronatus* were markedly different from '*R. m. ssaposhnikowi*': individuals of *R. m. ssaposhnikowi* are heavier (mean \pm SD: 10.75 \pm 0.64 versus 7.55 \pm 0.65 g), and have longer tarsi (18.00 \pm 0.28 versus 15.20 \pm 0.39 mm). The larger feet of *R. m. ssaposhnikowi* are possibly an adaptation to living in reedbeds. *R. m. ssaposhnikowi* used different syllables in its song repertoire compared to White-crowned Penduline Tits.

Most populations of White-crowned Penduline Tit occur in a different habitat. The small river along which the White-crowned Penduline Tits occurred in the Topar area lacked the extensive reedbeds that seem to be preferred by Black-headed Penduline Tits. White-crowned Penduline Tits that occur in, for instance, the South Kazakhstan province, breed along small streams, without extensive reedbeds, that come down the western Tien Shan mountains (van Dijk & Bot unpubl data). Near Topar, they build their nests in Russian Olives *Eleagnus angustifolius*, and we never observed a White-crowned Penduline Tit in a reedbed where '*ssaposhnikowi*' occurred and vice versa.

Finally, in a collaborative project with the Swedish Museum of Natural History, we are currently constructing a phylogenetic tree of penduline tits based on molecular genetics. Provisional results support our proposition that '*ssaposhnikowi*' and the White-crowned

Penduline Tit are different species (RE van Dijk, T Székely, M Irestedt & PGP Ericson unpubl data).

The Chinese Penduline Tit is also included in the phylogenetic analysis and preliminary results suggest that the Chinese Penduline Tit is distinct from White-crowned Penduline Tit, and deserves species status. These provisional molecular systematics results are supported by observations in the field: we found that Chinese and White-crowned Penduline Tits clearly differ in song, plumage and breeding system (RE van Dijk, Á Pogány, S Bot, J Komdeur & T Székely unpubl data).

For sound conclusions about the relationship between the Black-headed Penduline Tit and Eurasian Penduline Tit we need much more field data as well as high resolution phylogenetic information. In the present study we only found a limited number of birds and very little is known from the areas around the Caspian sea where both taxa meet. By publishing our findings we hope to encourage people to collect and report more information about behaviour, biometrics, morphology, hybridisation and genetic divergence to reveal the taxonomy of this morphologically and behaviourally diverse group.

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