The History of the Settling of the Chinese Penduline Tit *Remiz consobrinus* (Remizidae, Passeriformes, Aves) in the Primorsky Krai Territory

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**A R T I C L E  I N F O**

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**A B S T R A C T**

Presently, there are several nesting groups of the Chinese penduline tit in Primorsky Krai. In Russia, the first nest of the Chinese penduline tit was found in 1994 in the Hasansky region of Primorsky Krai near the border with the Democratic People’s Republic of Korea. The nest was from the previous year, which indicates that the nesting has already occurred in 1993. From 1998 to 1999, the population in the Hasansky area totalled 20–25 pairs. Further, there was an increase in the number and a northward advancement along the seacoast. Currently, the number is estimated to be between 400 and 450 pairs. On the coast of Lake Khanka, the Chinese penduline tit was noticed for the first time in 2000. In 2002, there were 35 pairs, and the current estimate is between 100 and 150 pairs. From 2012 to 2014, some pairs began to nest in two sites near Ussuriisk. Wintering and nomadic individuals have been encountered in other regions of Primorsky Krai. It is assumed that the Chinese penduline tit appeared in the territory of Primorye sometime from the end of 1980s to the beginning of the 1990s. It is assumed that this bird nests in the territory of the Democratic People’s Republic of Korea.

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The Chinese penduline tit (*Remiz consobrinus*) population of Primorye is small, nests locally and is migratory but occasionally winters. The first information about its occurrence in the south of Primorye was obtained from the private messages of ornithologists. For various reasons, these data have not been published. Thus, a group of penduline tits was observed by E.E. Stotskaya on the island of Furugelm on May 22, 1980 (recorded in an extant field diary of Y.N. Nazarov stored in the Zoological Museum FEFU). In the second half of the 1980s (the exact date is not known), a transiting flock of these birds was observed by V.D. Kurenkov (personal communication) in the floodplain of the Razdolnaya river near the Sirenevka train station in early October. Based on the timing and areas of appearance, these two observations do not refer to nestling, but rather to nomadic individuals.

The emergence of the Chinese penduline tit in Primorye as a nesting species likely occurred at the turn of the 1980s or 1990s. The very first nest (stored in the FEFU Zoological Museum) was found by V.N. Kubanina in March of 1994 at the foot of Pigeon Rock (the extreme south of the Khasan district). The nest was hanging on an Asian bird cherry tree (*Padus asiatica*) and was found to be from the previous year, which indicated that the nesting of this species in this area had already occurred in 1993. Since 1996, the area in which nests have been identified has been under the scrutiny of one of the authors of this message (O.A. Burkovskiy).

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From 1996 to 1997, the penduline tit settlement did not exceed 6 couples (Burkovskiy, 1998). In the subsequent two years, the number of birds increased from 20 to 25 couples (Burkovskiy, 2005). Importantly, during the 1990s, penduline tits nested along the coast from Pigeon Cliff through Peninsula Krabbe to the Zarubino village. However, on the coast of the Bay of Expedition, this species was markedly absent. After 2000, population growth continued and resulted in the compaction of the nidicolous grouping and the settling of inland coastal bays near the Posiet and Kraskino villages. In the period from 2007 to 2010, the population density apparently reached a critical point and the migration of the species northward occurred. This species then occupied a number of other coastal bays, specifically the Bay of Troitsa, some bays of the mainland eastern section of the Far Eastern State Marine Reserve and the bays of Boisman, Baklan and Severnaya. Currently this species is not rare in the Khasan district, and the total number, as of 2014, can be roughly estimated as between 400 and 450 conditional pairs nesting from the border with North Korea to the mouth of the Brusija river on the coast of the Gulf of Slavyanka (Fig. 1, site number 1).

In the specified area, the penduline tit originally nested at the bottom of slopes and in the foothills and low hills that are predominantly covered with woodland and oaks (Quercus dentata) and inhabited highly sparse woody areas bordering open spaces. Later, with the increase in the numbers of breeding groups, the birds began to occupy hill areas that spread up the slopes. The first seven nests found in 1996 were located in lime trees (Tilia sp.), and one nest was found on a willow (Salix sp.) (Burkovskiy, 1997). Field surveys from 1998 to 1999 revealed that the penduline tit also began to build nests on Manchurian crab apple (Malus mandshurica), black birch (Betula davurica), Amur maple (Acer ginnala), and alder (Alnus hirsuta) trees. However, this species still preferred to make nests (77.3%) in lime trees (Tilia amurensis and Tilia mandshurica). In the subsequent period, the range of trees increased to accommodate more nests. The proportion of nests that are built in the lime trees has decreased, but remains high.

Currently, many of the nests of the Khasan grouping are also located in the vast raw lined meadows and marshes in a variety of trees and shrubs, and the numbers of nests have particularly grown in the low ridges and canal dams. Of the 36 nests that were found in the extreme south-west of the Primorye Territory near the site of the first identified nest in the period from 17 to 25 May 2014, nine were located in lime trees; six in Asian bird cherry trees; five in apple trees (Malus sp.); three each in maple (Acer sp.) and hawthorn (Crataegus sp.) trees; two each in Korean elderberry (Sambucus coreana), Ilm (Ulmus sp.) and willow trees; and one...
each in hagi (*Lespedeza bicolor*), Mongolian oak (*Quercus mongolica*), Japanese emperor oak (*Quercus dentata*), and microcarpous alder (*Micromeles alnifolia*) trees.

In the Prikhankayskaya lowland, the Chinese penduline tit was first registered in 2000 when V.A. Nechayev observed a male collecting fuzz to build a nest in the vicinity of Birch lakes near the eastern coast of lake Khanka. Based on the fact that the identified nests were old, the birds were breeding in the same area in 2001. In 2002, this local Khanka group was thoroughly examined and estimated to contain 35 breeding pairs (*Gluschenko et al., 2004*). In subsequent years (up to 2011 inclusively), the numbers of nesting penduline tits at this site did not grow significantly and were even notably lower during some years, but the habitat area of this species has gradually expanded.

In the initial stage of the settling of this species in the Prikhankayskaya lowland, the birds often occupied relatively few low aspen forests growing on canal dams that were once destined for the drainage of the wetlands. Less commonly, they nested in clumps of aspens growing on the small hills of marshes or on single aspens growing on dams. Additionally, several nests have been found on the ancient beach ridges of lake Khanka that are overgrown with various trees and shrubs and in willows growing on canal dams (*Gluschenko et al., 2004*). From 2012 to 2013, the number of penduline tits nesting in the Prikhankayskaya lowland significantly increased. According to an expert evaluation, the population already comprised 100 to 150 conditional pairs, and the territory of the species included the eastern and southern sectors of the lowlands (Fig. 1, site number 2). From 2002 to 2004, of the 34 nests that were found in the Prikhankayskaya lowland, four were located in willows and 25 in aspens (*Populus davidiana*); however, of the 36 nests found in these areas from 2010 to 2013, 25 were located in willows and only nine were located in aspens. Because the majority of the nests in recent years have been found in willows, the species has good prospects because the distributions of these trees in the wetlands and lowlands of Primorsky Krai are much larger than those of other trees, such as aspens, that are suitable for Chinese penduline tit nesting in the Prikhankayskaya lowland. The shortest distance between the residential nests of different females was approximately 90 m (two cases). In other cases, the distances were 150–300 m; however, there is an impression that much of the Khanka nested grouping consisted of separate “loose” settlements (semi-colonies across which the birds could exchange with audio signals) and not random placements in appropriate habitats.

In 2010, Chinese penduline tit nests were found in the Chinese sector of the Prikhankayskaya lowlands near the coast of Lake Malaya Khanka (*Gluschenko et al., 2010*). An additional examination of this territory was conducted in 2011 and revealed that this species was clearly more abundant and more widely distributed in this territory than in the Russian sector of the lowlands in those years. This finding is quite natural because the settlement of the lowland was explicitly occurring in the southeast direction, that is, from the Chinese to the Russian territory.

Apparently, the Khasan and Khankaisky Chinese penduline tit nesting groups that are currently present appeared independently, that is, the resettlement occurred in two different streams. The first probably “walked” down the river valley Tumamaya, and the second probably arrived from the Chinese sector of the Prikhankayskaya lowlands. Given their fairly extensive ecological plasticity (particularly due to the transition to nesting in willows), these two groups will probably unite geographically in the near future and inhabit all of the appropriate areas of the valley of the lower reaches of the Razdolnaya river. Based on the individual nests that have been found, since 2012, the nesting population of this species has existed in the lower reaches of the Razdolnaya river south of Ussuriysk (Fig. 1, site number 3). In 2014, a Chinese penduline tit was found nesting near the village of Novoshakhthinsky in the Mikhailovsky district (Fig. 1, Site number 4). It is possible that this bird arrived in these areas from the territory of China along the valley of Razdolnaya (which represents another putative path to the settling of the Primorsky Krai Territory).

Notably, wintering male Chinese penduline tits have been observed in the extreme northwest part of the Primorsky Territory near Luchegorsky (Fig. 1, Site number 5) (*Burkovskiy, 1997*). On May 27, 2003, one individual was observed in the lower reaches of the Bikin river near the village of Verkhnyi Pereval (Fig. 1, Site number 6) (*Schaumburg et al., 2003*). Nevertheless, a reconnaissance survey of the sites that are physiognomically suitable for Chinese penduline tit nesting in the Ussuri river basin, from the village of Kirovsky to the border with the Khabarovsky Territory, that was conducted in the summer of 2013 proved fruitless. Based on this result, it can be assumed that, at the present time, the nesting of this species is extremely rare and local. During the seasonal migration on October 13, 2013, two juvenile Chinese penduline tit nests were caught in mist net in the Lazovsky district on the southeast coast of Primorsky Krai in the Bay of Petrov (Fig. 1, Site number 7) (*Shokhrin, 2014*).

According to the data in the existing literature (*Tomek, 2002*), in North Korea, the Chinese penduline tit is considered to be a rare migrating species that has been noted in different years in April, May and October. However, considering the sufficiently dense nesting in the Russian borderland, this species is undoubtedly currently nesting in the neighbouring North Korean territory, but this supposition still requires definite confirmation. The emergence of the Chinese Remez has also been observed on the left bank of the Amur river in the territory of Muraviovsy Park (*Smirenki, 2014*), which is indicative of an overall process of range expansion in the southeastern, eastern, and northern directions.

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Y.N. Gluschenko et al. / Achievements in the Life Sciences 8 (2014) 133–136


