

Systematic Notes on Asian Birds. 64.
The range of the Chinese Nuthatch *Sitta villosa*
and an evaluation of subspecies validity

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Zool. Med. Leiden 80-5 (16), 21.xii.2006: 265-271.— ISSN 0024-0672.

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Key words: *Sitta villosa*; habitat loss; range fragmentation; subspecies variation.

A critical analysis of the literature regarding *Sitta villosa* and the examination of specimens has shown that the range of this species is divisible into three main areas. These are well separated and each population is best treated as a valid subspecies, although for *corea*, the easternmost population, further research is needed to understand the distinctions between two apparently disjunct populations.

Introduction

The range of the Chinese Nuthatch, *Sitta villosa* Verreaux, 1865, is comparatively small, and the geographic variation of its population is reflected by past proposals to recognize two subspecies in addition to the nominate form (*corea* Ogilvie-Grant, 1906, *bangsi* Stresemann, 1929). But in fact the literature contains a variety of views. This review, which has been prepared in the context of the proposed “Synopsis of East Asian Birds” (Dickinson & Dekker, 2000), focuses on available distributional data, the evidence of gaps in the range, and the validity of taxonomic subdivision.

The recent literature (Vaurie, 1959; Zheng Bao-lai, 1982¹; Cheng Tso-hsin, 1987, Nazarenko, 1988; Fiebig, 1992; Harrap, 1996) has been reviewed and it is apparent that the extent to which there are, or may be, gaps in the range of this species is not understood. This, combined with a belief that there is clinal variation (Harrap, 1996: 142), might lead one to treat the species as monotypic (since it is no longer automatic to give recognition to each of the populations at the ends of a cline). Harrap (1996) avoided that issue and maintained the validity of both the nominate form and *bangsi* Stresemann (1929). The same literature analysis suggests that while Vaurie (1959), Nazarenko (1988) and Fiebig (1992) believed that the range was fragmented into three parts, Harrap (1996, pl. 6, fig. 12) suggested two slightly disjunct areas (with the two races each reaching a part of Gansu), whereas Zheng (1982) and Cheng (1987) both showed the range as unbroken (see Fig. 1). However, there are considerable discrepancies in the literature as regards the ranges assigned to the subspecies and as to which of the plotted records implies the presence of breeders. The most problematic issue is the status of the species on the Qin Ling Range, in southern Shaanxi.

¹ This publication was not cited by Cheng (1987), and it is not certain that collecting localities marked on the species maps in Cheng (1987) are identical with those in Zheng (1982).

Methodology

The development of this paper required a careful evaluation of the evidence underlying the maps of Chinese distribution that have been offered. To comment on the extent of variation it has been necessary to draw on specimens in the Zoological Institute, St. Petersburg (ZISP) as well as fresh material collected during my study of the species in south Ussuriland.

Habitat requirements and the breeding range

The preferred ecological niche of *Sitta villosa* in the breeding season is woodlands – a patchwork environment, containing ecological components of both forest and nonforest (scrub, grass cover) – not large dense forests of conifers. The preference is for stands of pine, larch and spruce; however, these are often mixed with some broad-leaved trees such as oak or birch (mixtures sometimes referred to as pine-oak forests), mainly in the mountains, including on plateaus and hill tops. The species has also been reported from artificial plantings of conifers near settlements at lower elevations (Fiebig, 1992).

Working, as I have been, on a generalized study of the distribution and taxonomy of the East Asian forest avifauna, I have become familiar enough with the Chinese lit-

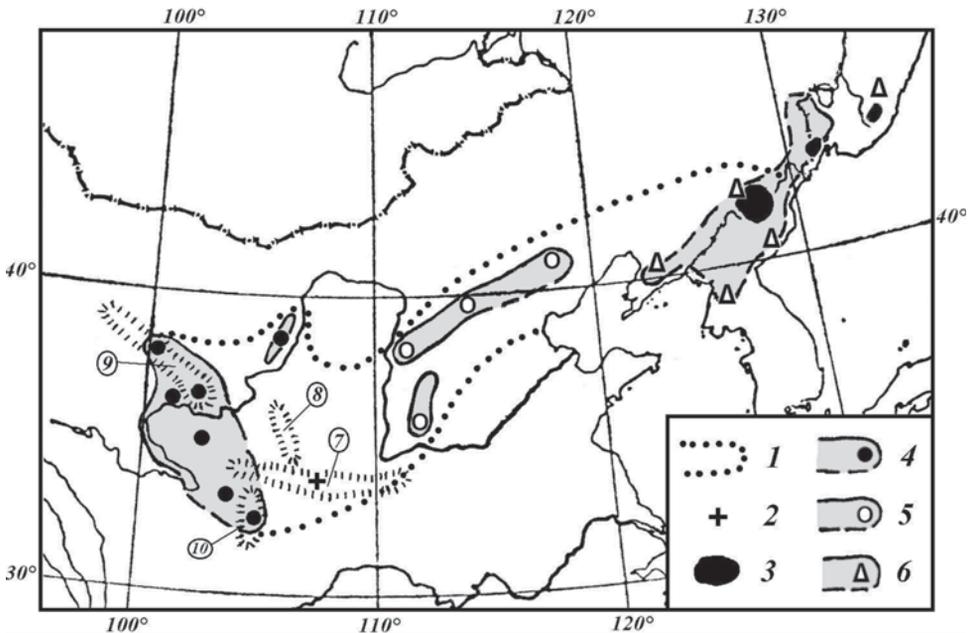


Fig. 1. Sketch-map indicating the substantiated breeding range of forms of *Sitta villosa* (from: Zheng, 1982; Nazarenko, 1988, 2005; Tomek, 2002, with changes and additions, see text). Key to numbering: 1. Overall range of the species as depicted by Zheng (1982) and Cheng (1987). 2. Locality reported for specimen which was probably a vagrant. 3. Areas known to hold "subpopulations" ecologically connected with larch forests on plateaus. 4. Range of *S. v. bangsi*. 5. Range of *S. v. villosa*. 6. Range of *S. v. corea*. 7. Qin Ling Mts., 8. Liupan Mts., 9. Qilian Mts. (incl. the "Süd Tetung Gebirge" = Daban Shan; the disjunct Helan Shan is shown to the north-east), 10. Mt. Minshan.

erature to understand that the maps and range statements of Zheng (1982) and Cheng (1987) make presumptions about continuity between the mapped localities from which there are historic specimen records. These presumptions may once have been acceptable, but forest loss – which can be assessed from satellite images – has been such that caution is now essential.

At the local level, where the extent of a forest environment has been seriously reduced due to natural and human factors, any forest bird that may well once have had a continuous range from west to east is likely to have had its range fragmented, such that there is significant but variable isolation between populations. To what extent any particular species has suffered is not easily predicted and not easy to validate over the areas that concern us here.

Vaurie (1959) referred to *bangsi* from “eastern Tsinghai (Qinghai) on the upper Hwang Ho and in the Koko Nor region, east to neighbouring Kansu [= Gansu]” and limited the range of the nominate form to “northern China from northern Hopeh [= Hebei] north to about central Manchuria, east to Korea”. Cheng (1987) mapped the species and listed it as follows: *S. v. bangsi*: “Gansu Prov. (northwestern part – Tiantang Temple)”; *S. v. villosa*: “northeast-Provinces [of China] (midpart – Changbai Mt. [Jilin], and Liaodong Peninsula), Hebei Prov. (Dongling, Pingquan), Shanxi Prov. (northwestern part – Kelan Mt., southeastern part – Zhongtiao Mt.), Shaanxi Prov. (southern part)²; Ningxia (Helan Mt.), Gansu Prov. (southern part)”³. The mapping of the two subspecies in western China in Zheng (1982: 71-72) differs somewhat: he included Qinghai and southwest and south Gansu at the border with Sichuan [but no location in Sichuan itself] in the range of *S. v. bangsi*, omitting these locations from those of *S. v. villosa*, under which he made explicit mention of the Qin Ling Range (Fig. 1). Finally, in Dickinson (2003: 646) two subspecies are listed as follows:

- *S. v. bangsi*: NW Sichuan, SW Gansu, E Qinghai, Ningxia, S Shaanxi
- *S. v. villosa*: Shanxi to E Manchuria, Korea and S Russian Far East.

It remains unclear, on what grounds *S. v. villosa* has been considered to be resident in the Qin Ling Mts. by Zheng (1982: 72) and Cheng (1987: 904). Reports of field work by Cheng’s teams, on surveys made in the Qin Ling Range in 1957-58, suggested that *Sitta villosa* was absent (Cheng et al., 1962). Two more recent surveys, the first from oak and pine forests in the Liupan mountains (34°30’-37°N, 105°40’-106°50’E, Fig. 1) in May-September, 1976 (Li Dehao, 1982), and the second from the central Qin Ling Mts. in 1982-84 (Yao Jianchu and Zheng Yonglie, 1986), failed to find this species in these regions, as did a third later study, in the central part of the Qin Ling Range (Ren Yi et al., 2002). That there is no corroboration of the presence of *Sitta villosa* in these studies suggests that it occurs solely as a non-breeding visitor (see Fig. 1). However, I hesitate to explain the apparent absence of the species from the Qin Ling Range in terms of recent deforestation. The causation, if indeed it is truly absent, is likely to be more ancient.

² Possibly Qinling Mts (although not specified).

³ Cheng (1958) also included Tsinghai (now Qinghai) and ‘Pao-hsing of west Szechwan’ (now Bao-xing Xian, Sichuan). Zheng (1982) listed Qinghai for *S. v. bangsi* and here indeed lies the type locality.

The western form *bangsi* is known from the eastern Qilian Mts (Fig. 1; Süd Tatung Range, the type locality – see below) and further south it is known from the northern Minshan Mts. (Fig. 1, approximately 33°40'N, 103°40'E⁴) (Berezowski & Bianchi, 1891), where collections were made by Berezowski in August and October 1886. Yet, this second locality is the only place, of several that have been visited, in north Sichuan (Jiuzhai-gou National Park) where the birds are said to have been met in summer (late May 2005: van Beirs, 2005)! There are, or at least there once were, several forest “islets” between here and the type locality of *bangsi*, which have not been surveyed for their avifauna, where the birds might live. There may or may not be a reasonably continuous belt of occupied habitat. This area has been considered to be within the range of the western population (see Fig. 1).

At the western bend of the Yellow River (Huang Ho) Przewalski (1876) found what seems to be another isolated population in May to July 1873, and this was revisited by Kozlov in 1908 (Bianchi, 1915). This is the Helan Range⁵. Between here and the nearest point in the range of the eastern group of populations there is a gap of at least 520 km of mainly treeless desert territory.

A second gap of at least 300 km isolates the populations of northern China proper from those of north-eastern China, Korea and Ussuriland (see Fig. 1).

In south Ussuriland, and the north of the Korean peninsula, there appear to be two “subpopulations” with distinct ecological niches. One is connected with “islands” of larch forests and woodlands on plateaus from 600 to 1500 m (in Ussuriland between 600 and 750 m – see Nazarenko, 1988). The other is found in the foothills in belts of pine-woods below 800 m (Gao Wei, 1978; Nazarenko, 1988, 2005; Fiebig, 1992; Tomek, 2002) (see Fig. 1). Exactly how these populations map out and interact, if they meet at all, remains to be worked out in North Korea (Tomek, 2002, p. 121).

Results based on the morphological nature of geographic variation

Recognition that we are dealing with isolated fragments now permits us to look at each separately in order to interpret the picture and to set parameters for the ranges of such subspecies as are to be recognized. But first we can consider the small Helan isolate and see where to place that.

Zheng (1982) and Cheng (1987), as stated above, attributed the small isolated population from the Helan Mts. to *S. v. villosa*. Based on three specimens (now in ZISP) collected by Przewalski and Kozlov, I believe it more correct to assign this population to the western form, *bangsi*. The birds of the western population are the largest and have the most richly coloured underparts. The wing lengths given by Stresemann et al. (1937) are: males 72.2 mm (69.0-75.0) (n = 20); females 69.0 mm (67.0-70.5) (n = 10). Vaurie (1972: 314) differed only slightly: males 71.7 mm (70.0-74.0) (n = 17); females 70.0 mm (68.0-72.0) (n = 8). The wing lengths of two males from the Helan Mts. are 68.5 and 70.0 mm, and a female – 71.0 mm (kindly measured for me by Dr Loskot). This attribution should

⁴ In the Times Comprehensive Atlas the Min Shan lie just in Gansu; the mountains are south of the Bailong Jiang river.

⁵ At 38°30'N., 106°E., just west of Yinchuan (38°26'N., 106°18'E.) in Ningxia.

be validated either with more extensive material, or through molecular sampling. The continued existence of this small population remains uncertain and it appears there has been deforestation of this range.

Having defined the western population as inclusive of the isolates on the Helan-shan Range we can confirm that this population is generally accepted as *Sitta villosa bangsi* Stresemann, 1929, for which the type locality was given as: Dschu lin kou gorge, south Tetung Range ⁶, northern Kansu (now north-eastern Qinghai).

The eastern Chinese population is the nominate form: *S. v. villosa* Verreaux, 1865, based on a type locality translated as: China north of Peking (see Fig. 1). These birds are rather light rufous or grayish-buff beneath (Harrap, 1996) and shorter winged. Stresemann et al., (1937) reported males average 66.2 mm (63.0-69.0) (n = 8).

The status of the eastern population fragment that was named from Korea remains unresolved, although given the remaining problems it seems desirable to retain the name *S. v. corea* Ogilvie-Grant, 1906 (type locality Mingyong, 110 miles south-east of Seoul, Korea, which Vaurie, 1959: 529 suggested was Mungchong, which is at approximately 36°08'N, 127°45'E). The type was taken on 30 November and is unlikely to have been within its breeding range because the populations of North Korea, north-eastern China (Chang Bai Mts) and southern Ussuriland are not resident year round, but are seasonally migrant (Gao Wei, 1978; Nazarenko, 1988). The North Korean birds are paler below and somewhat smaller (Vaurie, 1959: 259), whereas those from southern Ussuriland are grayish-smoky, not light-rufous beneath in the breeding season. The wing length of Ussuri males, based on a subpopulation from larch woods, averages 64.7 mm (62.5-68.0) (n = 9) ⁷. Recently, Fiebig (1992: 151-153) attempted to assess the validity of *corea* based on more extensive specimen material but does not seem to have clarified the situation.

Conclusions

Although further field studies will be welcome I believe it can be argued safely that range fragmentation has already occurred. When comparing the morphology of the disjunct populations it is important to compare like with like, in terms of sex and season. When doing this size differences are apparent as are minor colour differences.

Although the standing of the easternmost population (see Fig. 1) requires further research it is better to recognize it provisionally under the name "*corea*".

Acknowledgements

Grateful thanks go to Dr Vladimir Loskot (ZISP) for his prompt and unvaryingly helpful responses to my requests. I should also like to thank the editors, especially

⁶ The Süd Tetungs Gebirge as used by Stresemann et al. (1937) is currently named the Daban Shan. The Tatung Mts. are now known as the Datung Shan and lie NW of Lake Koko Nor (Qinghai Hu).

⁷ Zheng (1982: 71) gave a length of wing for males from Chan Bai Shan (n = 9) of 64.7 mm (62.5-67.5); females (n = 5) 62.5-64.5. mm. Tomek (2002: 121) gave a wing length for males (n = 8) of 66.0 mm (63.0-68.0); females (n = 8) 64.4 mm (63.0-67.0) based on the collection in the Zool. Inst., Korean Acad. Sci., Pyongyang.

Edward Dickinson for valuable comments on an early draft of the paper as well. I am most grateful to Dr Peter Jones of the University of Edinburgh and to Mary LeCroy (AMNH, New York), who refereed the first version of the paper and provided helpful comments and suggestions.

Mrs. Valentina Chernobaeva provided technical assistance with this paper at all stages of preparation and revisions of the manuscript. Finally, I wish to thank Dr Sergei Kholin for editing of the map.

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Final draft received: 25.vii.2006

Accepted: 7.viii.2006

Edited: E.C. Dickinson

