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研究資料（Research material）

A record of Radde's Warbler (*Phylloscopus schwarzi*) in Sapporo, Hokkaido, Japan

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Abstract

I made sound and video recordings of a warbler in a broad-leaved forest in Sapporo, Hokkaido, Japan, in late May 2008. Analyses of the sound recordings and the plumage color characteristics of the bird showed that it was a Radde's Warbler (*Phylloscopus schwarzi*), an irregular visitor in Japan.

Key words : Radde's Warbler, *Phylloscopus schwarzi*, irregular visitor, Sapporo, Hokkaido, sound spectrogram

Introduction

The Radde's Warbler (*Phylloscopus schwarzi*) is distributed in the central and eastern Palearctic. The species breeds from Novosibirsk and Soviet Altai to Transbaikalia, Amurland, Sakhalin, Manchuria, and northern Korea and winters in Burma and Indochina (Cramp & Brooks, 1992; Ornithological Society of Japan, 2000). It is an irregular visitor in Japan and has been noted on the islands of Hokkaido, Honshu, Tobishima, Hekura, and Iriomote (Ornithological Society of Japan, 2000). In Hokkaido, the Radde's Warbler only has been recorded at Kaminokuni (1995), Otaru (1996), Nemuro (1995), Tsubetu (1991) (Fujimaki, 2008), and Teuri (recorded at the Teuri Is Banding Station in 1999 and 2003.)(Yamashina Institute for Ornithology, 2000; 2004).

In this paper, I report an additional observation record of Radde's Warbler in Hokkaido.

Study area and methods

The observations were made in a suburban forest at the National Agricultural Research Center for Hokkaido Region in southeastern Sapporo, Hokkaido (42°59'45"N, 141°23'54"E, about 150 m above sea level). The forest consists mainly of natural broad-leaved trees (dominant tree species are *Quercus mongolica*, *Acer mono*, and *Betula platyphylla*). The forest floor is covered with dense bamboo grasses (*Sasa kurilensis* and *Sasa senanensis*). For a more detailed description of the study area, see Kotaka & Matsuoka (2002).

Sound recordings were made with a digital sound recorder (Edirol R-09HR). The sampling rate and bit depth of the recording were set at 48 kHz and 24 bits, respectively. Sound analysis software (Audition version 3, Adobe Systems Inc.; Spectrogram version 16, Visualization Software LLC) was used to edit waveforms and to draw the sound spectrograms of the bird songs.

A video recording of the warbler was made using a digital camcorder (Sanyo Xacti DMX-HD1000) set at high-quality resolution (1280 × 720 pixels and 60 frames per second). Still photographs were cut from the video using digital movie converting and editing software (TMPGEnc 4.0 Xpress, TMPG Inc.).

Results

Observation: The warbler was first heard at about 0500 hours on 27 May 2008. The bird sang actively in a bamboo thicket near the forest edge and sometimes moved to other singing posts. Only a few flashes of the bird could be seen as it moved around in the thicket. I recorded its songs in four files with the sound recorder, for a total audio recording length of 3 min 56 sec. The bird uttered 59 trills in the recordings with nearly equal intervals. The frequency of loud trills ranged from 2 to 6 kHz (Fig. 1A–C) and relatively soft trills ranged from 2 to 4 kHz (Fig. 1D). The length of all trills ranged from 1 to 1.5 sec. The call note of this bird was not heard during observations.

At about 0630 hours the next morning, the songs of the bird were again heard in the forest about 100 m from the forest edge. This time the bird could be identified as a warbler. It sang on the branches of a dead fallen Sakhalin fir (*Abies sachalinensis*), and it sometimes caught insects on the wing while singing and then returned near the former singing posts. As during the previous morning, the bird sometimes moved to other singing posts. I made a video recording of the bird with the camcorder for 1 min 13 sec. Still photographs showing characteristic plumage colors to identify the bird species were cut from the video clip (Photo. 1).

Thereafter I heard similar bird songs several times in late

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May and early June. Because I did not record the songs or take video clips, it is uncertain that the songs were sung by the same species described above.

Identification: Members of leaf warblers, genus *Phylloscopus*, look remarkably similar but have distinctive songs (Campbell & Lack, 1985). First, I compared the songs on

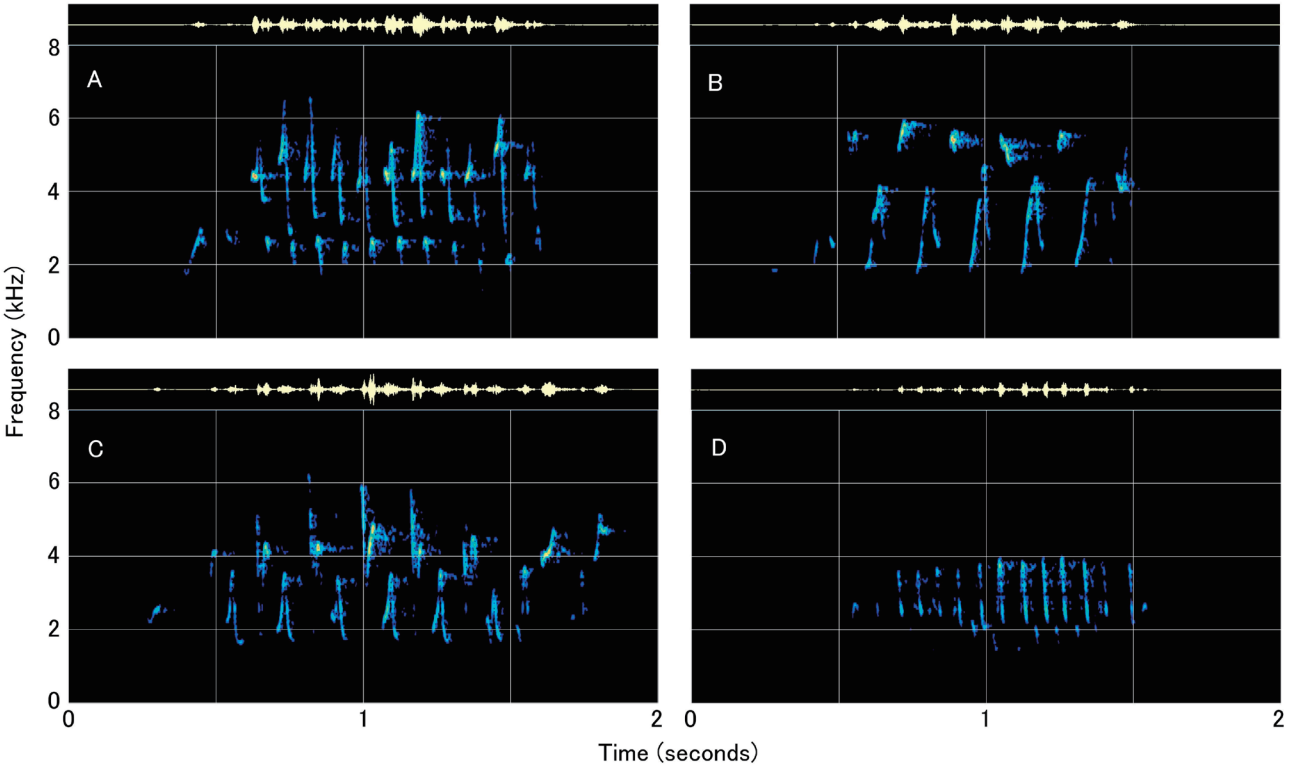

Fig.1. Four waveforms (upper in each panel) and sound spectrograms (lower) of songs of a Radde's Warbler from one sound file recorded on 27 May 2008 in Sapporo, Hokkaido. (A–C) loud trills, (D) soft trill.

Photo.1. Still photographs from a video clip of a Radde's Warbler taken on 28 May 2008, showing typical color pattern of the supercilium (A) and characteristic color of the under-tail covert (B).

the sound recording with those on the video clip, and they were judged to have come from the same species of bird. Second, I compared the songs of my recordings with those of the Radde's Warbler (*P. schwarzi*) and the Dusky Warbler (*P. fuscatus*) recorded in Sakhalin (Oda, 2005) because these two were the most likely irregular visitors in my study area. Then I compared the sound spectrograms among the three bird songs. The sounds on my recordings were a good match to those of the Radde's Warbler. Frequencies of the three bird songs ranged in a similar bandwidth (from 2 to 6 kHz), but some songs of the Dusky Warbler had higher bandwidth (from 3 to 7 kHz). The songs of my recordings and the Radde's Warbler had faster trills (more syllables per unit time) than those of the Dusky Warbler. I also compared the sound spectrograms of my recordings with those of the Radde's Warbler as depicted by Martens (1980) based on sound recordings made in Siberia. Martens' spectrograms illustrated six types of songs of the Radde's Warbler, and four of them were similar to those presented in this paper.

The Radde's and Dusky Warblers are similar in morphology and plumage color, but they have a few slight differences (Ozaki, 1986; Cramp & Brooks, 1992; Shigeta, 1996). The plumage colors of the warbler recorded at my study site were consistent with those described in the above references for the Radde's Warbler. The two species have conspicuous superciliums, but that of the Radde's Warbler is more whitish toward the rear, whereas the supercilium of the Dusky Warbler is whitish in front of the eye. The supercilium of the warbler in the still photograph (Photo 1A) is clearly white at the rear part. The color of the under-tail covert of the Radde's Warbler is orange buff, whereas that of the Dusky Warbler is buff, and the color contrast between the under-tail covert and flank is clear in the Radde's Warbler (Shigeta, 1996). The color of the under-tail covert of the recorded warbler (Photo 1B) appears to be orange buff, and there is a clear color contrast between the under-tail covert and flank.

Thus, based on sound analyses of songs and the characteristics of plumage color of the warbler observed in Sapporo, Hokkaido, the bird was a Radde's Warbler (*P. schwarzi*).

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札幌市におけるカラフトムジセッカ *Phylloscopus schwarzi* の観察記録

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要 旨

2008 年 5 月下旬に北海道札幌市羊ヶ丘の落葉広葉樹林で，ムシクイ類のさえずりを録音し，動画による記録を行った．音声の解析結果と形態的特徴から，このムシクイが，日本では稀に飛来が記録されているカラフトムジセッカ *Phylloscopus schwarzi* であることが明らかになった。

キーワード：カラフトムジセッカ、*Phylloscopus schwarzi*、札幌市、北海道、迷鳥、サウンドスペクトログラム

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