

song of *chloronotus*, but very strongly to the song of its own form. (See Table 1.)

### Conclusion

The morphological differences between *proregulus* and *chloronotus/simlaensis* do not in themselves warrant separating them from each other. However, the very marked differences in both song and calls would seem to act as reproductively isolating mechanisms if there was any sympatry. This assumption is strongly supported by playback experiments, although a longer series of tests on *proregulus* is desirable.

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## Description of a possible new species of leaf warbler of the genus *Phylloscopus* from China

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### Field

On 16–17 April 1986 on Emei Shan, Sichuan Province (29°31'N, 103°20'E), U.O. noted one individual of a *Phylloscopus* warbler with a peculiar song, which reminded him of the song of *Prinia criniger*. The bird was only seen well very briefly, but it appeared to be *P. (proregulus) chloronotus*—with a previously unrecorded type of song (see Alström & Olsson 1990).



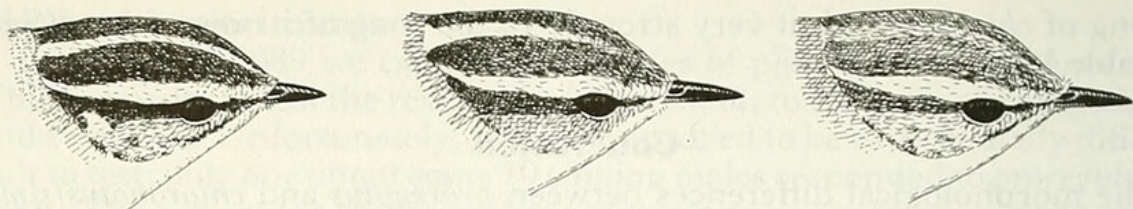


Figure 1. Heads of (Left) *P. (proregulus) chloronotus*, (Centre) '*Ph.sp.*', and (Right) *P. inornatus*. Drawing by Per Alström.

On 15 June 1988, at Western Hills, Beijing, Hebei Province (c. 40°N, 115.5°E), P.A. and U.O. observed a bird which alternated between a series of loud whistles and the *Prinia*-like song U.O. had heard on Emei Shan. This individual was also seen very poorly, but it also seemed to be *chloronotus*, which was then believed to have 4 different types of song (cf. Alström & Olsson 1990).

On 9 June 1989, P.A. and P.R.C. found a bird with the *Prinia*-like song in Jiuzhaigou, Sichuan Province (33°10'N, 104°18'E). It also had the same series of whistles that had been heard in Beijing the previous year. The bird was seen very well, and it was almost immediately realised that it was in fact not *chloronotus*, but probably an undescribed species, hereafter referred to as '*Ph.sp.*'. During the same and the following day, it was found to be rather common in one part of the area, and we heard at least 15 individuals, of which excellent views were obtained of 5. The morphological differences (see below) from *chloronotus* that we had noticed on the first individual were found to be constant. We also carried out a few vocal playback tests, which confirmed the distinctness from *chloronotus*. Unfortunately, we were unable to obtain a specimen, but it is planned to return in 1990.

#### MORPHOLOGICAL CHARACTERISTICS OF '*Ph.sp.*'

Basically, *Ph.sp.* is very similar to *chloronotus* and shares *chloronotus*' main features: small size; distinct head pattern, with dark lateral crown-stripes and pale median crown-stripe; distinct pale yellow rump; contrastingly dark-centred greater coverts with broad pale tips, forming a prominent wing-bar (a second, narrower wing-bar is formed by pale tips to the median coverts); and pale edges to the tertials.

However, *Ph.sp.* differs from *chloronotus* in the following respects: *Ph.sp.* is slightly larger, seemingly the same size as the Yellow-browed Warbler *P. inornatus*. Although this was apparent without direct comparison, it was confirmed when one individual *Ph.sp.* was seen together with a *chloronotus* on several occasions. The shape is also more like that of *inornatus*, i.e. slightly more elongated than *chloronotus*, with proportionately slightly longer bill and, perhaps as a result of this, a slightly less rounded-looking head.

The lower mandible shows a distinct pale base—in one individual the lower mandible was pale with only a small dark tip; *chloronotus* shows very little pale colouring.

The head patterns differ significantly (Fig. 1). In *Ph.sp.* the anterior part of the median crown-stripe is clearly more poorly marked, and when seen head-on, the crown often looks unmarked, and in one individual, the







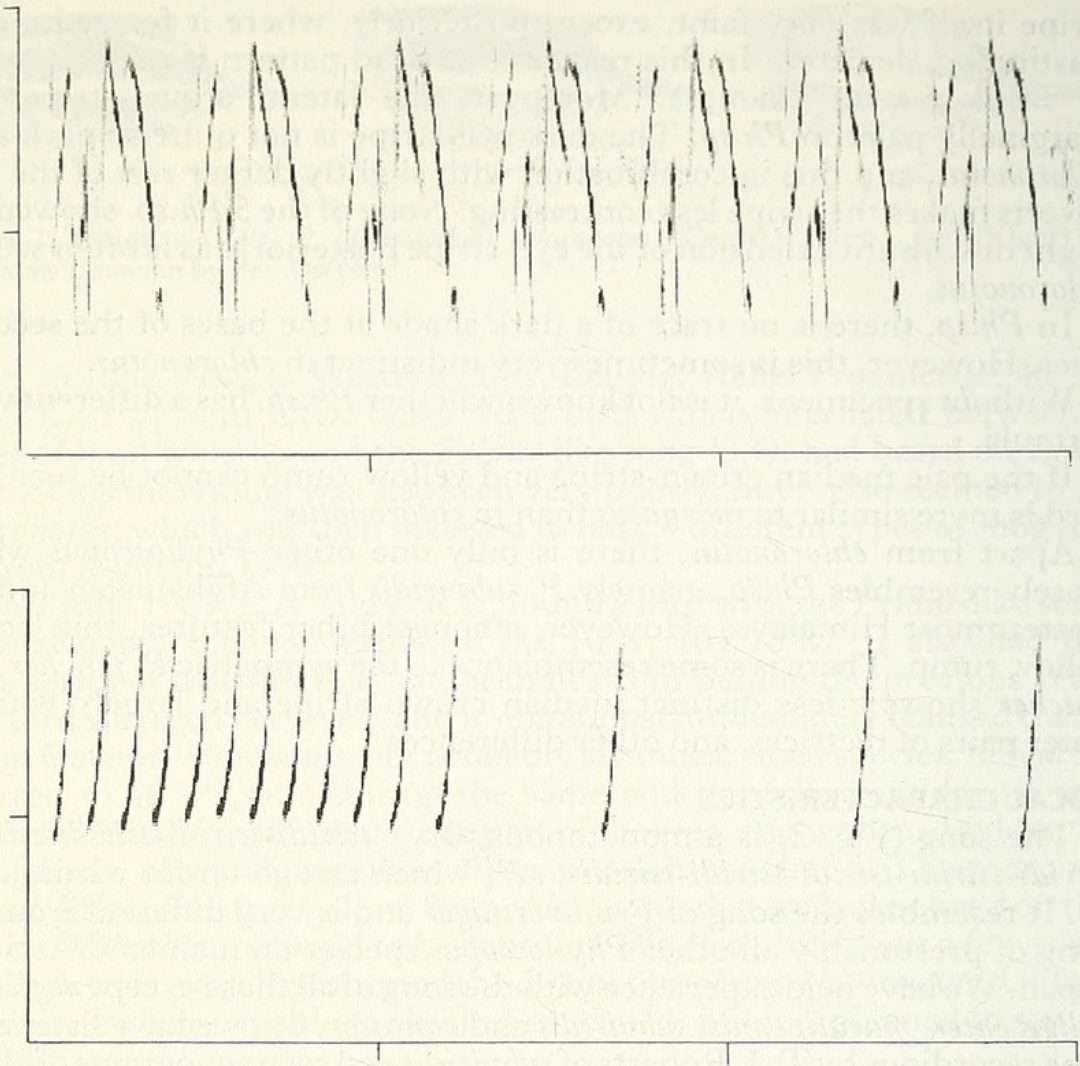


Figure 2. Part of continuous song (above) and 'call' (below) of '*Ph.sp.*'. Tape recorded by Per Alström, Jiuzhaiguo, Sichuan Province, China, June 1989. Sonogram made by Richard Ranft, British Library of Wildlife Sounds. Band width 369 Hz. Horizontal scale gives time in seconds, vertical scale gives KHz 0–8.

TABLE 1  
Response of '*Ph.sp.*' and *P. (proregulus) chloronotus* to playback of song of the other form.  
— = not played

Playback 2 minutes	' <i>Ph.sp.</i> '	First approach/time spent within 5 m of speaker (seconds)	
		<i>chloronotus</i> (1)	<i>chloronotus</i> (2)
' <i>Ph.sp.</i> '	7/104	0	0
<i>chloronotus</i>	0	12/98	8/99
<i>proregulus</i>	0	—	—

strong aggressive response to its own song—vigorous search for the aggressor, flying back and forth over the speaker, and frequently calling (Table 1).

To one *Ph.sp.* we played, in sequence, the song of *P. proregulus* (*sensu stricto*, Alström & Olsson 1990), the 2 different types of *chloronotus* song



(Alström & Olsson 1990) and both the song and 'calls' of *Ph.sp.*, each for 2 minutes. There was no response at all to *chloronotus*, but immediate strong aggressive response towards its own song (Table 1).

## DISCUSSION

Although *Ph.sp.* is both morphologically and vocally clearly distinct from *chloronotus*, the ultimate proof of them being separate species is in their sympatry and lack of response to each others' songs. The only species which is morphologically very similar to *Ph.sp.* is the allopatric *P. subviridis*, but its song is extremely different, and it seems unlikely that they would interbreed if they ever met (in itself an unlikely event, since they are, as far as known, geographically separated by some 2500 km).

Considering the great morphological similarity between *Ph.sp.* and *chloronotus*, it would not be surprising if *Ph.sp.* already exists unrecognized in some museum collection(s). P.A. and P.R.C. have examined all skins of *chloronotus* in the collection at the Institute of Zoology, Academia Sinica, Beijing, of which one or two could possibly be *Ph.sp.*; but the condition of these does not permit an identification to be made. P.R.C. has examined the skins in the British Museum (Natural History), Tring without finding any suspected *Ph.sp.*

## BREEDING HABITAT OF *Ph.sp.*

It appears that the favoured habitat of *Ph.sp.* is rather low deciduous secondary-growth, with some tall spruce *Abies* and *Picea* admixed. In Jiuzhaigou it was found at an altitude of c. 2400 m, at Beijing at c. 200 m, and on Emei Shan at c. 1000 m. The bird on Emei Shan sang from the same perch for 2 days and reacted aggressively towards its own song; but it was not found there on visits in mid May 1987 and early to mid May 1989, and so possibly was only a migrant, and it seems unlikely that it is breeding commonly there.

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