

# Male spectacled warblers are innovative singers

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Credit: Ana Plamero

The several variables in the song of every male spectacled warbler could play a crucial role in the mating, defending territory and recognition between individuals of this species. Studying their acoustic signals will help to understand how this bird, with a small brain and limited social needs, can use a complex system of communication.

Each male specimen of spectacled warbler, *Sylvia conspicillata*, has a complex, diverse song, in which new syllables are added and the order is changed as they go along, with a level of skill that relies on their capacity for innovation. Spanish scientists have characterised the acoustic signal of this species, its virtuosity and variability, to try to understand the role that this signal plays in mating, defending territory and recognising individual birds.

The data collected in the study, published in the 'Bioacoustics' journal, will help to understand how a species with a small brain and limited social requirements could show such a complex system of communication.

"The fact that the spectacled warbler does not have a fixed, characteristic song but rather has variable elements makes it an attractive object of study," Ana María Palmero, one of the authors of the study, a researcher in the Island Ecology and Evolution Research Group (IPNA-CSIC) and the Department of Ecology and Genetics at the University of La Laguna, explains to SINC.

The *Sylvia conspicillata* is a brownish-grey small bird of around 13 centimetres, which feeds primarily on small insects. Populations of the species can be found across the whole Mediterranean region and the Macaronesia, including the Canary Islands, Madeira and Cape Verde.

Its call, which has a wide repertoire, has been described by experts as a high-pitched chirp organised in song phrases of a variable number of syllables which determines the length of the song bout. The spectacled warbler can also emit a warning call similar to a metallic sound, defined by the researchers as a trill.

## **A wide repertoire**

"The reasons why these birds vary their calls are purely speculative, since in this aspect of the research we are only able to observe repertoire changes and the appearance of new syllables. The next thing will be to try to understand the causes of such complexity, whether it is due to biotic or abiotic factors," the researcher asserts.

It is common among birds for each male of the species to have his own song. "However, it is more usual for each individual's phrases to be repeated and be practically identical, quite opposite to what is observed in the spectacled warbler, where we find great variation both within and between individuals," Palmero elaborates.

The researchers studied the population of this [species](#) on the island of Fuerteventura, as it has a higher density of individuals, and they evaluated the repertoire and variation of the spectrum of notes of each individual and as a group.

## **Acoustic spectrum**

The scientists revealed that each bird's [acoustic signal](#) is organised in a variable number of song phrases composed of various syllables, from four to 69, and they characterised them into short, average and long song bouts. To study each one's [song](#), they also measured 11 spectrotemporal variations of the phrases.

Of the variables measured, those that could be more important when it comes to differentiating [individuals](#) are the duration of the first syllable and the duration and dominant frequency of the trill syllable.

"Song can be influential in a female's choice of mate, as females are more attracted to male birds with larger repertoires," Palmero informs us. The researcher also speculates that, "trill variation could help identify the singer quickly, although this hypothesis would have to be analysed

using playback studies and field experiments."

**More information:** Ana María Palmero, Juan Carlos Illera, Paola Laiolo, "Song characterization in the spectacled warbler (*Sylvia conspicillata*): a circum-Mediterranean species with a complex song structure" Published in *Bioacoustics*.

Provided by Plataforma SINC

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