

Nightingales show off their fathering skills through song

June 18 2015



Nightingale chicks at five days old. Credit: Conny Bartsch

The song of the male nightingale tells females how good a father he will

be, according to research published in the open access journal *BMC Evolutionary Biology*.

The study shows that better singers will feed their [offspring](#) more often, and that they advertise this to potential mates by singing in a more orderly way through repeating [song](#) sequences, and using more variable song, including many different 'buzz', 'whistle' and 'trill' songs.

In around 80% of all bird species, males play a key role in raising their young. Male nightingales feed the female during incubation, provide food to chicks and defend the nest against predators. A male's parental skills are therefore likely to be a crucial factor for [females](#) when choosing a mate.

Female birds assess paternal qualities on the basis of traits, including plumage coloration and courtship behaviour. In nightingales, it is a male's elaborate nocturnal song prior to pair formation that is presumed to be key in advertising their skills as a father. While male birds are able to sing around 180 different song types, little has been understood on the exact song features that are important.

Lead author Conny Bartsch from Freie Universität Berlin, Germany, said: "It has long been thought that a single feature - the size of a bird's song repertoire - may be important for females during mate choice. But our study shows that, in nightingales, it is a mix of specific song features that seem to be more important in determining their paternal efforts.

"These song features have never been described before in any other species, and include the sequential ordering of songs and the use of acoustic structures that are most probably challenging to produce. We were surprised that multiple song features - instead of one 'key' song feature - were related to male feeding effort."

The researchers studied the link between the quality of a male song before pair formation, and how good a parent he then was, based on the rate at which he provided food to his chicks. They studied 20 male nightingales, recording and analysing their nocturnal singing early in the breeding season. Following pair formation, they analysed video footage of their nests and data from electronic tags attached to the birds to record male visits and determine the level of paternal care.

They found that male nightingales contribute substantially to chick feeding, at an equal level to females (around 16 nest visits per hour on average).

Several different song features were linked to greater paternal efforts by male nightingales. These included having a more ordered singing style - repeatedly singing the same sequential order of song types. Males that sang more complex song repertoires, indicated by many different 'buzz', 'whistle' and 'trill' song types, also contributed more to chick feeding.

Since male nightingales are essentially involved in chick rearing, paternal investment might be a crucial variable for females in choosing a mate. These song features may therefore have evolved to signal direct benefits to females when assessing their mate's potential in future paternal care.

For species with complex song, such as the nightingale, the study suggest that females rely on multiple song cues to quickly gather information about their potential partner and inform mating decisions.

Song orderliness is also known to be associated with male nightingale age. This suggests that ordered singing could serve as an indicator of experience with the breeding grounds, and could mean further benefits for females choosing males with this singing quality.

More information: Conny Bartsch, Michael Weiss and Silke Kipper,

Multiple song features are related to paternal effort in common nightingales, *BMC Evolutionary Biology* 2015. [DOI: 10.1186/s12862-015-0390-5](https://doi.org/10.1186/s12862-015-0390-5)

Provided by BioMed Central

Citation: Nightingales show off their fathering skills through song (2015, June 18) retrieved 24 April 2024 from <https://phys.org/news/2015-06-nightingales-fathering-skills-song.html>

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