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Sound as part of courtship behavior in Balkan Green Lizards (*Lacerta trilineata*)



RON PEEK, 2015

Summary

Male courtship behavior in lizard species of the genus *Lacerta* usually begins by gentle biting in the female's flanks, hind legs and tail. Eventually, the male will clamp onto the female by biting her flank followed by copulation. In Balkan Green Lizards (*Lacerta trilineata*) from the Peloponnese (Greece) the author observed an additional and very remarkable aspect of courtship behavior. Males repeatedly produced a clearly audible hissing sound during courtship which lasted up to 40 seconds. This suggests that sound is part of mating behavior in Balkan Green Lizards, a phenomenon that has not been described for any of the other species in the genus *Lacerta*. A video showing these observations is available at: <https://www.youtube.com/watch?v=1eyCaBqKZ-o>

Introduction

Mating behavior in lizard species belonging to the genus *Lacerta* is generally straightforward. In the breeding season, which is usually in spring, males and females find each other and may pair up for several weeks. Eventually the male will try to mate and starts his courtship by gently biting in tail, hind legs and abdomen of the female. In case the female is non-receptive it will try to avoid further approaches by the male by walking away or by biting the male. When receptive the female generally remains motionless and the male will try to fixate her by biting firmly in the abdomen just above the hind leg. Next he will try to copulate by bringing his tail under the tail of the female resulting in cloacal contact, after which one of the hemipenes is inserted.

Observations

The description of courtship and mating behavior mentioned above can be observed in most lizard species of the genus *Lacerta*. However, the past few years I have observed an additional component of mating behavior in Balkan Green Lizards (*Lacerta*

trilineata trilineata) from the Peloponnese (Greece). In this subspecies the male stops moving with his head at the hindquarters of the female, after a period of softly biting the female in tail, hind legs and abdomen. During this pause the male repeatedly and excessively in- and exhales, thereby producing a clearly audible hissing sound. During exhalation the mouth of the male is slightly opened. This remarkable behavior may last from 20 up to 40 seconds after which the male starts moving again and continues courtship. Before actual copulation takes place the hissing behavior may be displayed several times.

Pictures of this remarkable conduct are not very informative and therefore I have tried to film this interesting behavior. Eventually I succeeded and the footage shows a male displaying the hissing behavior during two sessions (once for 20 seconds and once for 40 seconds) during courtship and before copulation occurs. This video was uploaded to YouTube <https://www.youtube.com/watch?v=1eyCaBqKZ-o> or can be found by entering the search terms: “*trilineata*” and “mating” and selecting the video entitled “*Lacerta trilineata* mating behaviour”. To fully appreciate the hissing sound produced by the male in the video the sound of your device should be set to maximum.



Start of the mating ritual. The male softly bites the female's abdomen, tail and hind legs.

The male again produces the hissing sound but now for 40 seconds.



Position of the lizards during the first 20 seconds long period of hissing by the male.

Function

When addressing the possible function of the male hissing behavior during courtship only speculative explanations can be given. Although the first explanation that comes to mind is that the male by the excessive in- and exhalation tries to smell whether the female is receptive, I do not think that this holds true. Protrusion of the tongue or „tongue flicking” seems to be the primary action for bringing scent particles to the palate and subsequently to the Jacobson’s organ for olfaction. The nostrils are mainly used for breathing. I think that it is also unlikely that the male is trying to increase its body size by displaying the hissing behavior. Although the expansion of the lungs does make the male somewhat bigger, the fact that he is behind the female during hissing makes an increase in body size also an unlikely explanation. I tend to look for a simpler explanation and find it in the sound that is produced during the hissing behavior. The fact that the male slightly opens his mouth while producing the hissing sound is in favor of this explanation as it makes the sound more audible. Possibly, the hissing sound in combination with other aspects of male courtship behavior persuades the female to mate.

Species specificity of the hissing behavior

So far I only observed the hissing behavior in Balkan Green Lizards (*Lacerta trilineata trilineata*) originating from the Peloponnesse. In other green lizards such as the Western Green Lizard (*Lacerta bilineata*), the Ocellated Lizard (*Timon lepidus*), the Iberian Emerald Lizard (*Lacerta schreiberi*) or the Pamphylian Green Lizard (*Lacerta pamphylica*) I have never observed such behavior during courtship. Searching the scientific English literature did not result in any articles describing the hissing behavior as part of courtship in *Lacerta trilineata*. However, after sharing my observations with several German herpetologists, two 30 year old reports in German were discovered that describe the hissing behavior in detail for several subspecies of the Balkan Green Lizard: *L. t. major*, *L. t. citrovittata*, *L. t. hansschweizeri* and *L. t. dobrogica* (FREITAG 1983; NETTMANN & RYKENA 1984). This indicates that this remarkable component of male Balkan Green Lizard courtship behavior was already present in *Lacerta trilineata* before diversification of the species in to several genetically different subspecies occurred about 5 million years ago (SAGONAS et al. 2014).

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