



# Article

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## *Isophya nagy*, a new phaneropterid bush-cricket (Orthoptera: Tettigoniodea) from the Eastern Carpathians (Caliman Mountains, North Romania)

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### Abstract

This study describes *Isophya nagy* sp. n. from the Caliman Mountains (Eastern Carpathians, Romania). This species was discovered on the basis of the special rhythmic pattern of its male calling song. Regarding morphology *Isophya nagy* is similar to the species of the *Isophya camptoxypha* species-group (*I. ciucasi*, *I. sicula*, *I. posthumoidalis*, *I. camptoxypha*), however the male stridulatory file contains more stridulatory pegs (105–130) compared to the other members of the species group (50–80 pegs). Calling males produce a long sequence of evenly repeated syllables (repetition rate varies between 60–80 syllables at 21–24 °C), and most importantly syllables are composed of three characteristic impulse groups contrary to songs of the other species where syllables are composed of two elements or the song consists of two syllable types. Besides the description of the basic morphological features and pair-forming acoustic signals of the new species, a calling song based key is given for the *I. camptoxypha* species group.

**Key words:** oscillogram, spectrogram, male calling song, female reply latency, stridulatory file

### Introduction

The morphology-based species level identification of specimens is often a desperately hard work in the genus *Isophya* Brunner von Wattenwyl 1878, because of very high species richness (Eades et al. 2012), the low level of morphological diversity and the lack of the sclerotised internal genitals in males (Heller et al. 2004). In males generally the fore wing and cerci bear the most useful morphological characters, in females the shape and size of ovipositor are the most widely used in species identification. However, the most efficacious and reliable way to recognize *Isophya* species is to examine the amplitude modulation pattern of the males' species specific acoustic signals (e.g. Heller 1988; Orci et al. 2010). These are the main reasons for the relative high number of species which have been described in the last decade (e.g. Sevgili & Heller 2003; Sevgili et al. 2006; 2012; Chladek 2007; Iorgu and Iorgu 2010; Ingrisich & Pavicevic 2010; Orci et al. 2010). The diversity centre of the genus is considered to be in Anatolia (La Greca 1999), but in the Eastern Balkans and in the Carpathian Mountains there are also several *Isophya* species with rather restricted distribution areas (Heller et al. 2004; Nagy 2005; Iorgu et al. 2008). The Romanian *Isophya* fauna is relatively rich, it counts presently 17 species. Four of them are known to be endemic for some territories of Romania and three of these (*I. harzi* Kis 1960, *I. sicula* Orci, Szövényi & Nagy 2010 and *I. ciucasi* Iorgu & Iorgu 2010) are distributed in different parts of the Carpathian Mountains. The very recent discovery of the two latter new and morphologically cryptic species (Orci et al. 2010; Iorgu & Iorgu 2010) shows well, that the indication of Heller et al. (2004) was right on the possible presence of yet not known species of this genus in the Carpathian Mountains. A new species of this group is described here from the Eastern Carpathian highlands.