

New data on singing cicadas (Hemiptera: Cicadidae) of Romania

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Abstract

In June 2008 we investigated the fauna of singing cicadas (Cicadidae) of South Carpatians in Romania with classic and bioacoustic methods, using recording equipment for sonic range and ultrasonic detectors. Twelve species have been previously recorded for Romania: *Lyristes plebejus* (SCOPOLI 1763), *Cicada orni* LINNAEUS 1758, *Cicadatra atra* (OLIVIER 1790), *Cicadatra hyalina* (FABRICIUS 1798), *Cicadetta tibialis* (PANZER 1798), *Cicadetta montana* s. lat. (SCOPOLI 1772), *Cicadetta brevipennis* FIEBER 1876, *Cicadetta podolica* (EICHWALD 1830), *Cicadetta iphigenia* EMELYANOV 1996, *Pagiphora annulata* (BRULLE 1832), *Tettigetta brullei* (FIEBER 1876), and *Tibicina haematodes* (SCOPOLI 1763). We discovered four additional species: *Cicadetta montana* s. str. (SCOPOLI 1772), *Cicadetta cantilatrix* SUEUR & PUISSANT 2007, *Cicadetta macedonica* (SCHEDL 1999), and *Dimissalna dimissa* (HAGEN 1856). These are the first records for Romania.

Key words: Romania, singing cicadas, Cicadidae, fauna, bioacoustics

Introduction

The singing cicadas (Hemiptera: Cicadidae) of Romania are not well known. There are published records for 12 species (ALEXINSCHI 1955; BĂCESCU 1937; CANTOREANU 1960, 1968a, 1968b, 1969, 1971, 1972, 1974, 1975d; DRUGESCU 1983; FRIVALDSZKY 1865 quoted by HORVÁTH 1889; HORVÁTH 1897; LÖRINCZ 1906; MARCU 1929; MONTANDON 1897, 1900; SOÓS 1956; SZILÁDY 1870, TRILAR & al. 2006).

The present paper provides new faunistic data, which significantly extend the earlier knowledge about the fauna of singing cicadas in this part of Europe.

Material and Methods

In the year 2008 we investigated the singing cicadas (Hemiptera: Cicadidae) of Romania with the use of classical and bioacoustic methods. From June 14th to 20th, 2008 we visited the South Carpatians - Banat and Wallachia Counties. For sound recordings we used microphones, sensitive in sonic range (Telinga Pro 6 stereo - parabola diameter 57 cm) and in ultrasonic range (ultrasonic detector Pettersson D-200) in combination with solid state recorders Marantz PMD660 and PMD670. Computer program for the analysis of acoustic data was Raven 1.2 and 1.3 (Cornell Lab of Ornithology).

The specimens collected are preserved in the collections of Slovenian Museum of Natural History (PMSL) in Ljubljana, Slovenia; all sound recordings are stored in the Slovenian Wildlife Sound Archive housed in PMSL. Representative sound samples of

species, mentioned in this paper are available also on the web pages "Songs of the European singing cicadas": <<http://www.cicadasong.eu/>>

Results

Faunistic data collected in Romania from June 14th to 20th, 2008 are presented below. All recordings, observations and collecting have been made by the authors.

CICADIDAE

Cicada orni Linnaeus, 1758

Wallachia County: Đerdap; 44°40'49.5" N, 22°31'26.3" E; 110 m; 15.06.2008; song heard

Cicadatra atra (Olivier, 1790)

Banat County: Băile Herculane, valley of the river Cerna, Gianțul Cernei (16,5 km NE of Băile Herculane along the valley of river Cerna); 44°59'48.3" N, 22°31'46.3" E; 290 m; 14. and 19.06.2008; recorded

Wallachia County: Đerdap; 44°40'49.5" N, 22°31'26.3" E; 110 m; 15.06.2008; song heard

Wallachia County: Ilovița; 44°45'55.9" N, 22°28'16.2" E; 210 m; 15.06.2008; recorded

TIBICINIDAE

Cicadetta tibialis (Panzer, 1798)

Banat County: Mehadia, Strajet; 44°53'40.7" N, 22°22'43.7" E; 200 m; 15. and 20.06.2008; recorded and collected

Wallachia County: Mehedinți: Virciorova (Varciorova), right bank of Bahna river; 44°44'12.1" N, 22°28'29.9" E; 85 m; 15.06.2008; recorded
Banat County: Băile Herculane, Platoul Coronini; 44°53'03.9" N, 22°24'59.2" E; 220 m; 19.06.2008; recorded

Cicadetta montana s. str. (Scopoli, 1772), (Fig. 1)

Banat County: Băile Herculane, valley of the river Cerna, end of the lake Lacul de acumulare Cerna; 44°57'44.2" N, 22°28'47.3" E; 270 m; 14.06.2008; recorded

Banat County: Băile Herculane, valley of the river Cerna, 4,9 km NE of the crossing for Baia de Aramă; 45°05'09.4" N, 22°37'53.8" E; 440 m; 19.06.2008; recorded

Banat County: Băile Herculane, valley of the river Cerna, 1 km NE of the crossing for Baia de Aramă; 45°03'13.3" N, 22°35'50.1" E; 390 m; 19.06.2008; recorded

Banat County: Băile Herculane, valley of the river Cerna, Gianțul Cernei (~ 16,5 km E of Băile Herculane along the valley of river Cerna); 44°59'48.3" N, 22°31'46.3" E; 290 m; 19.06.2008; recorded

Cicadetta cantilatrix Sueur & Puissant, 2007, (Fig. 2)

Banat County: Băile Herculane, valley of the river Cerna, Gianțul Cernei (~ 16,5 km NE of Băile Herculane along the valley of river Cerna); 44°59'48.3" N, 22°31'46.3" E; 340 m; 14. and 19.06.2008; recorded

Banat County: Băile Herculane, Cabana Mușuroane; 44°52'09.3" N, 22°27'31.9" E; 800 m; 17.06.2008; recorded

Banat County: Băile Herculane, Virful Domogled; 44°52'17.9" N, 22°26'37.0" E; 1000 m; 17.06.2008; recorded

Cicadetta macedonica (Schedl, 1999), (Fig. 3)

Banat County: Băile Herculane, valley of the river Cerna, Gianțul Cernei (~ 16,5 km E of Băile Herculane along the valley of river Cerna); 44°59'48.3" N, 22°31'46.3" E; 290 m; 14. and 19.06.2008; recorded and collected

Banat County: Băile Herculane, Virful Domogled; 44°52'17.9" N, 22°26'37.0" E; 1000 m; 17.06.2008; recorded

Dimissalna dimissa (Hagen, 1856), (Fig. 4)

Wallachia County: Ilovița; 44°45'55.9" N, 22°28'16.2" E; 210 m; 15.06.2008; recorded

Banat County: Băile Herculane; 44°52'58.5" N, 22°25'11.9" E; 220 m; 17.06.2008; recorded

Banat County: Băile Herculane, the trail to Crocea Alba; 220-400 m; 17.06.2008; song heard

Banat County: Mehadia, Crusovaț; 44°59'41.6" N, 22°19'52.2" E; 280 m; 18.06.2008; recorded

Banat County: Băile Herculane, Platoul Coronini; 44°53'03.9" N, 22°24'59.2" E; 220 m; 19.06.2008; recorded

Banat County: Mehadia, Strajet; 44°53'40.7" N, 22°22'43.7" E; 200 m; 20.06.2008; recorded

Banat County: Băile Herculane; 44°52'58.5" N, 22°25'11.9" E; 220 m; 20.06.2008; song heard

Tibicina haematodes (Scopoli, 1763)

Banat County: Băile Herculane, valley of the river Cerna, Gianțul Cernei (~ 16,5 km E of Băile Herculane along the valley of river Cerna); 44°59'48.3" N, 22°31'46.3" E; 290 m; 14.06.2008; recorded –

Wallachia County: Ilovița; 44°45'55.9" N, 22°28'16.2" E; 210 m; 15.06.2008; recorded

Banat County: Băile Herculane; 44°52'58.5" N, 22°25'11.9" E; 220 m; 17. and 20.06.2008; recorded

Banat County: Băile Herculane, Platoul Coronini; 44°53'03.9" N, 22°24'59.2" E; 220 m; 19.06.2008; recorded

Banat County: Băile Herculane, valley of the river Cerna, 7 izvoare; 44°55'14.0" N, 22°26'37.0" E; 240 m; 20.06.2008; recorded

Discussion

We recorded and / or collected 8 species: *C. orni*, *C. atra*, *C. tibialis*, *C. montana s. str.* (Fig. 1), *C. cantilatrix* (Fig. 2), *C. macedonica* (Fig. 3), *D. dimissa* (Fig. 4), and *T. haematodes*. There are published records for Romania for 4 of them: *C. orni* (HORVÁTH 1897; LÖRINCZ 1906; MARCU 1929; CANTOREANU 1960; DRUGESCU 1983), *C. atra* (HORVÁTH 1897; SOÓS 1956), *C. tibialis* (SZILÁDY 1870; MONTANDON 1897, 1900; CANTOREANU 1960, 1968a, 1968b, 1969, 1972, 1974, 1975d; TRILAR & all. 2006), and *T. haematodes* (MONTANDON 1887, 1900; HORVÁTH 1897; LÖRINCZ 1906; MARCU 1929; CANTOREANU 1960, 1968a, 1968b, 1969, 1972, 1975; DRUGESCU 1983; TRILAR & all. 2006). For *C. montana s. str.*, *C. cantilatrix*, *C. macedonica* and *D. dimissa* these are the first records for the fauna of Romania.

On our previous field excursion to Romania we found also *C. hyalina*, *C. brevipennis*, and *C. iphigenia* (TRILAR & all. 2006). On both field excursion we did not find three species listed in the lit-

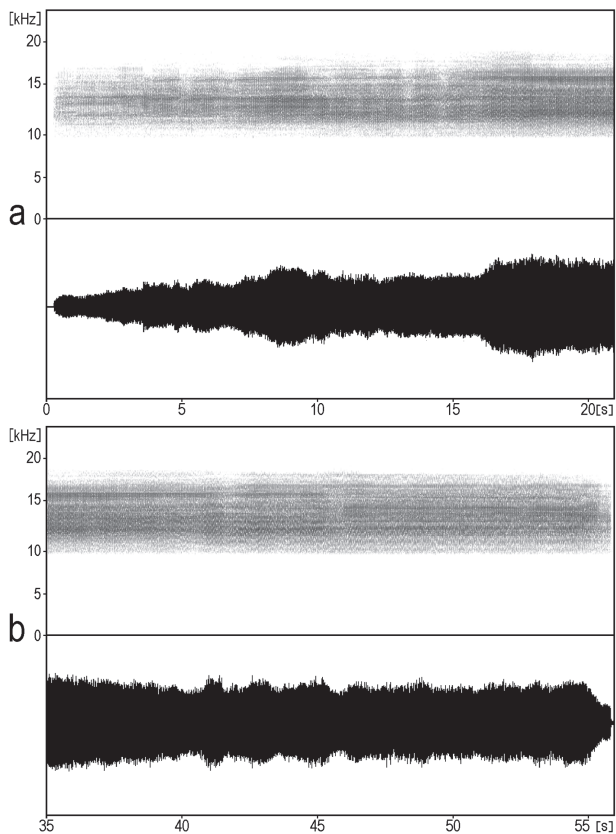


Fig. 1. Spectrogram and oscillogram of a calling song of *Cicadetta montana* s. str. (Scopoli, 1772) from the valley of the river Cerna, Romania: a) beginning of the song, b) end of the song. Since the microphone was not calibrated, there is no scale on oscillogram Y-axis (valid also for Fig. 2 to 4). The identity of the song is given by GOGALA & TRILAR (2004).

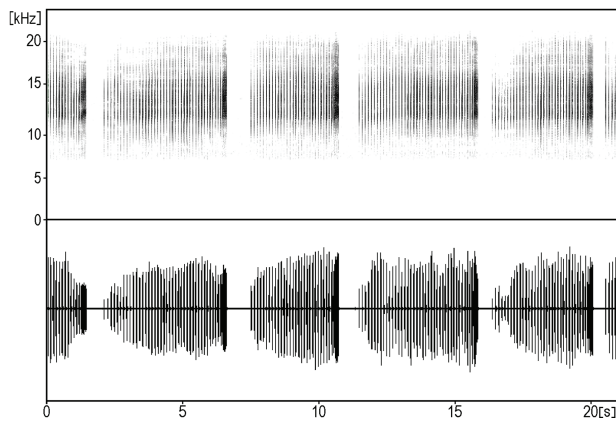


Fig. 3. Spectrogram and oscillogram of a calling song of *Cicadetta macedonica* (Schedl, 1999) from the valley of the river Cerna, Romania. Description of the song is given by GOGALA & TRILAR (2004).

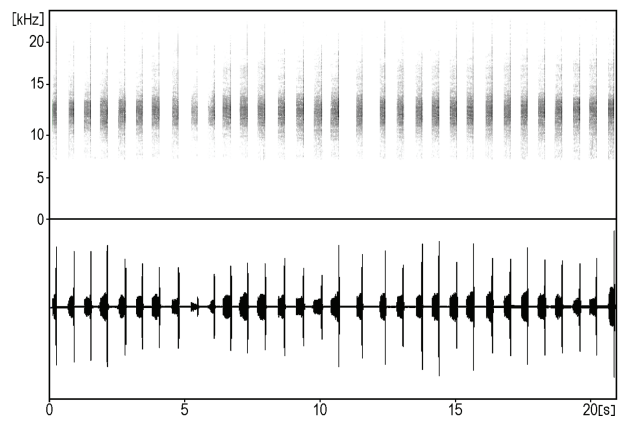


Fig. 2. Spectrogram and oscillogram of a calling song of *Cicadetta cantilatrix* Sueur & Puissant, 2007 from the valley of the river Cerna, Romania. Description of the song is given by SUEUR & PUISSANT (2007).

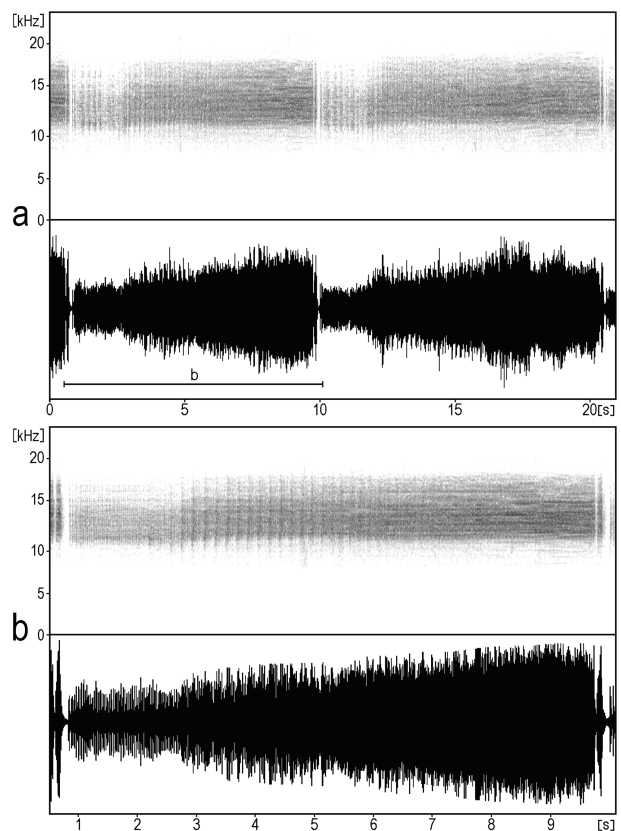


Fig. 4. Spectrogram and oscillogram of a calling song of *Dimissalna dimissa* (Hagen, 1856) from Platoul Coronini above Băile Herculane, Romania (b – part enlarged in section b of the figure). Description of the song is given by GOGALA & POPOV (2000).

erature: *Lyristes plebejus* (Scopoli, 1763) (BĂCESCU 1937; ALEXINSCHI 1955; CANTOREANU 1960), *Cicadetta podolica* (Eichwald, 1830) (= *C. concinna* Germar, 1821) (HORVÁTH 1897; Soós 1956) and *Pagiphora annulata* (Brulle, 1832) (FRIVALDSZKY 1865 quoted by HORVÁTH 1889). To register *L. plebejus* we were most probably too early in the season. To find *P. annulata* and *C. podolica* we either did not visit the suitable habitats or were simply too early in the season.

Altogether 15 species of singing cicadas are registered until now from Romania.

Citations in the literature of *Cicadetta montana* s. lat. (Scopoli, 1772) (SZILÁDY 1870; HORVÁTH 1897; CANTOREANU 1971) cannot be assigned to the specific level since a definite proof of identity is possible only with bioacoustic or/and molecular methods (GOGALA & TRILAR 2004). During our field work in 2008 we found additional three species of the *C. montana* complex: *C. montana* s. str., *C. cantilatrix*, and *C. macedonica*. These are the first records for the fauna of Romania. All three species were first acoustically detected and later recorded (Figs. 1 to 3), *C. macedonica* was also collected.

For *C. montana* s. str. this was the lowest altitude where the species was registered in Europe, and for *C. macedonica* the most northern locality of the known distribution (GOGALA & all. 2005, 2008). From this complex we previously found *C. brevipennis* in the forest reserves Negru Vodă and Padurea Hagieni in Constanța County, which were the most eastern localities of the known distribution (TRILAR & all. 2006).

Dimissalna dimissa (previously known also as *Tettigetia dimissa* – see BOULARD, 2007) is characterized by the high-pitched song (Fig. 4), hardly audible for the unaided human ear. Therefore, and due to singing high up in the tree canopies, protective coloration and different forms of escape behaviour, this common species was overlooked in the Romanian fauna by previous researchers.

To complete the fauna of singing cicadas of Romania we need to study additional literature and the material from various museum collections. Also additional field work is needed in order to prove the presence of some species cited in the literature and to clear up the situation in the *C. montana* complex.

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