

## Extinct species *Ceratocephala testiculata* (Crantz) Besser rediscovered in Slovakia after 44 years

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Abstract: *Ceratocephala testiculata* (Crantz) Besser (*Ranunculaceae*) is classified as an extinct species in Slovakia (category EX). However, this species was recorded once again in Slovakia after more than 40 years (in April 2013). It was recorded at the Čierna nad Tisou railway station (eastern Slovakia), which is the new and the most eastern locality of its occurrence in the Slovak Republic. In this paper, the deletion of *C. testiculata* from the extinct species list is proposed; the new Slovak locality is described in detail; and data on its occurrence and distribution within Slovakia as well as Europe is also provided.

Keywords: *Ceratocephala testiculata*, new locality, railway station, eastern Slovakia.

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### Introduction

The genus *Ceratocephala* belongs to the family *Ranunculaceae* and is closely related to the genus *Ranunculus*. It has two representatives in Europe: *Ceratocephala falcata* and *C. testiculata* (TUTIN 1964), and their optimum development occurs in the spring months. Although both are small pubescent annuals with basal tripartite leaves, yellow flowers and achenes on their conical receptacle, they differ in the size of their flowers, achene size and form and also in the position of achene empty cells. *C. testiculata* is usually a smaller plant, flowers are 5-10 mm in a diameter and achenes are 5-6 mm long terminating in a narrow straight beak with empty cells very close together on their upper aspect. Meanwhile, *C. falcata* is larger, flowers are 10-15 mm in a diameter, and

achenes are 9-10 mm long terminating in a broad falcate beak, with their empty cells far apart (TUTIN 1964, BERTO VÁ 1982).

These species' distribution in Europe is disputed. Flora Europaea documents their occurrence in south, central and south-eastern Europe (TUTIN 1964). *C. falcata* is reported in: Bulgaria, Czechoslovakia, Greece, Spain, Hungary, Italy, Yugoslavia, Romania, Turkey and some former U.S.S.R states, while *C. testiculata* is somewhat similarly distributed in: Austria, Bulgaria, Czechoslovakia, Greece, Hungary, Poland, Romania and also some former U.S.S.R states.

In addition *C. falcata* alone is reported in German ruins and transship centres (OBERDORFER 1979, ROTHMALER 2000), while *C. testiculata* is registered in the DAISIE database as an unestablished species in Germany and the European part of Russia (<http://www.europe-aliens.org/speciesFactsheet.do?speciesId=5857#>). *C. falcata* is extinct in Austria while *C. testiculata*'s presence there is sparse and threatened with extinction (ADLER et al. 1994, ADLER & MRKVICKA 2003, FISCHER et al. 2008). Occurrence of both these *Ceratocephala* species was formerly reported in Hungary (JÁVORKA & CSAPODY 1975), but KIRÁLY (2009) discredited *C. falcata* occurrence there, and stated that while *C. testiculata* is rare it is scattered throughout the entire country. Only *C. testiculata* is reported from Poland, where it was sometimes relatively abundant (SZAFER 1927), but MIREK et al. (1994) currently consider it an ephemero-phyt. *C. testiculata* occurs more often in the Ukraine: scattered in steppe and forest steppe zones where it is aggressive and expansive as a pioneer species in dry lowland areas. *C. falcata* is distributed only in the Crimea and also as a pioneer and expansive species (DIDUKH et al. 2004). While *C. testiculata* was previously noted in the surrounds of Prague and southern Moravia in the Czech Republic, it is currently extinct there. In addition, mistaken occurrence of *C. falcata* there was published in the literature, but this determination was incorrect (CHRTKOVÁ 1988, DOSTÁL 1989, DOSTÁL & ČERVENKA 1991, CHRTEK & FERÁKOVÁ 1999, HROUDA 2002).

Both these species are included in the extinct category (EX) in the Red List of Slovak ferns and flowering plants (FERÁKOVÁ et al. 2001). BERTO VÁ (1982) reported the occurrence of *C. falcata* in three localities, but in 1913 only one of these was documented as a herbarium specimen, and thus his report lacks reliable evidence. Meanwhile, *C. testiculata* previously occurred in more localities: in the phytogeographical districts of Kováčovské kopce Mts, Devínska Kobyla Mt. and Podunajská nížina Lowland in southern and western Slovakia. The most recent data on this is from 1969 (BERTOVÁ 1982, CHRTEK & FERÁKOVÁ 1999).

*Ceratocephala testiculata* has several synonyms: *Ceratocephalus testiculatus*, *C. orthoceras*, *Ranunculus testiculatus* (TUTIN 1964, BERTO VÁ 1982). Its original distribution was reported in south-eastern Europe and Asia Minor (FISCHER et al. 2008).

## Results and Discussion

In April 2013, we discovered the *Ceratocephala testiculata* species growing in the Východoslovenská nížina Lowland of eastern Slovakia: Čierna nad Tisou

(Třebišov district), railway station, 48°25'08.2", 22°04'55.0", 103 m a.s.l., 28.4.2013. The species grew in a railyard close to the track where gravel and stones created a substrate. Up to 100 individual plants were established along 1.5 m line. No other plant species grew on that place. All the *C. testiculata* plants were post-blossom and at the ripening, fruit-maturing stage. Their height varied from 2 to 6 cm, and their achene length ranged from 3.8 to 5.6 mm (Fig. 1).



**Fig. 1. *Ceratocephala testiculata* – herbarium specimen with achenes on the conical receptacle. (Foto: Jana Májeková and Pavol Mered'a jun.)**

This locality is completely novel, and the most eastern occurrence of this species in Slovakia (cf. CHRTEK & FERÁKOVÁ 1999). Since *C. testiculata* had previously been recorded only in western and southern Slovakia, it is presumed that it was overlooked here or constitutes a secondary occurrence. Because detailed research of Čierna nad Tisou vegetation in the second half of the 20th Century did not uncover this occurrence (JEHLÍK 1998, JEHLÍK & DOSTÁLEK 2008) we support the second eventuality. Čierna nad Tisou railway station is the last on Slovak territory, with the track continuing to Chop in the Ukraine and thence either to Hungary or southern and northern Ukraine. The species *C. testiculata* is relatively common in Ukraine, and considered an expansive species there, with its most western occurrence, and closest to Slovakia, in the Lvov region (DIDUKH et al. 2004). Since many plant species' seeds spread along railway lines (JEHLÍK

1998), we cannot entirely exclude *C. testiculata* occurrence at the Čierna nad Tisou railway station originating from the Ukraine even though our Ukraine colleagues did not record this species at Chop station in May 2013 (ANDRIK 2013 in verb.). Despite its expansive nature in the Ukraine, we do not suppose its expansive spreading in Slovakia.

In conclusion, our finding confirms the occurrence of *Ceratocephala testiculata* in Slovakia, and therefore we propose its exclusion from category EX in the Red List of ferns and flowering plants of Slovakia (FERÁKOVÁ et al. 2001).

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