

***Nehalennia speciosa* rediscovered in northwestern Italy (Odonata: Coenagrionidae)**

Stefano Aguzzi¹, Giuseppe Bogliani², Valerio Orioli³ & Nicola Pilon⁴

¹ Associazione Naturalistica Sylvia, via I Maggio 34/62, 20090 Buccinasco (MI), Italy; stefano.aguzzi@gmail.com

² Department of Earth and Environmental Sciences, University of Pavia, Via A. Ferrata, 9, 27100 Pavia, Italy; giuseppe.bogliani@unipv.it

³ Department of Earth and Environmental Sciences, University of Milano-Bicocca, Piazza della Scienza 1, 20126 Milano, Italy; valerio.orioli@unimib.it

⁴ Elitron, via Capri 11/3, 20152 Milano, Italy; nicola@elitron.mi.it

Abstract. At present only one Italian population of *Nehalennia speciosa* is known in the northeast of the country, while two populations in the northwest became extinct in the 1980s. In 2016 the authors discovered a further population of *N. speciosa* in a peat bog in north-western Italy. The implementation of a monitoring program both at the local and national scale, as well as targeted searching for other breeding sites in order to collect information to effectively protect the species in Italy is proposed.

Further key words. Damselfly, Zygoptera, conservation

Introduction

Nehalennia speciosa (Charpentier, 1840) is a Palaearctic species ranging widely in the temperate zone from Belgium in the west to Japan in the east (BERNARD & WILDERMUTH 2005). In western and southern Europe its populations have declined severely in recent decades and the species has become extinct in Belgium, Luxembourg, and Slovakia, while in other countries, like France, Romania, and the Czech Republic, surviving populations are highly endangered (BERNARD & KALKMAN 2015). In Italy, *N. speciosa* was observed for the first time in 1970 (BALESTRAZZI & BUCCIARELLI 1971; RAVIZZA 1973) at two sites in Lombardy (north-western Italy) and subsequently found in a few sites in Friuli Venezia Giulia, north-eastern Italy (PECILE 1981, 1991). While in north-eastern Italy the species has survived at one site (CHIANDETTI et al. 2013), in Lombardy it is considered to have been extinct since the 1980s (BALESTRAZZI 2002) because of drastic alteration of its habitats (cf. Fig. 1). In the last decade we visited the sites 'Lagozzetta di Besnate' and 'Torbiere d'Iseo' a number of times, without ever detecting *N. speciosa* (SA, GB, VO & NP unpubl.) and both sites now appear unsuitable for the species. In the following we report on rediscovery of *N. speciosa* in north-western Italy as result of targeted research in 2016 at further areas in Lombardy suitable for the species. Additionally, conservation measures are proposed for the protection of *N. speciosa* in Italy.

Study site and methods

The site comprised a peat bog at 550 m a.s.l. in Varese Province, Lombardy, Italy, characterised by vascular plant species typical for peat bog vegetation in the region, such as *Carex lasiocarpa*, *C. brizoides*, *Molinia caerulea*, *Drosera intermedia*, *D. rotundifolia*, *Scheuchzeria palustris*, and *Eriophorum vaginatum* (Fig. 2) (cf. BARATELLI 2012). The site was visited by us once in 2015 and three times in 2016. For reasons of conservation security we withhold the precise location. It is located in the territory defined by the 20×20 km square included in the topographic map of Varese (1:50 000; IGM Istituto Geografico Militare, Carta Topografica d'Italia n. 74). Odonates were recorded either by taking photos or by netting; individuals of *N. speciosa* were identified in the hand and released afterwards.

Results

On 28-v-2016 and 18-vi-2016 1♂ and 31♂ 1♀, respectively were recorded, representing only the second population of *N. speciosa* currently known in Italy.

Discussion

Nehalennia speciosa is classified as Near Threatened in the IUCN European Red List (KALKMAN et al. 2010) and as Critically Endangered in the IUCN Italian Red List (RISERVATO et al. 2014). Given the small number of Italian populations, we recommend establishing a coordinated national monitoring program of the two

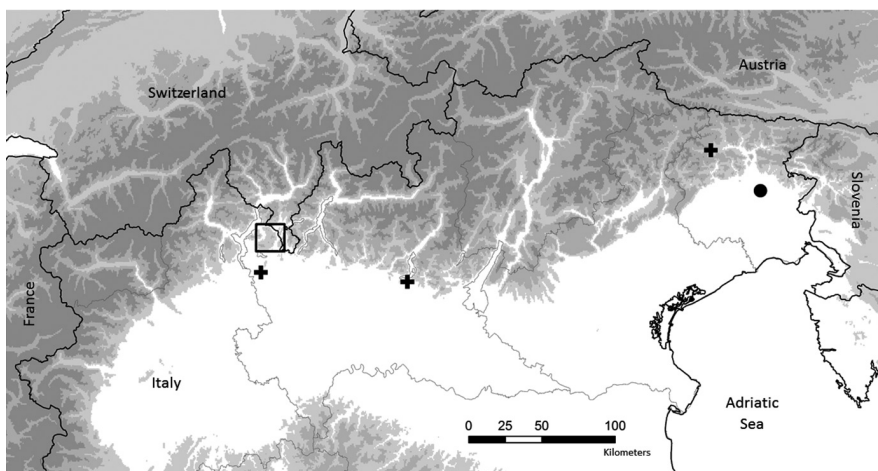


Fig. 1. Topographic representation of the known distribution of *N. speciosa* in Italy. The black circle indicates the so far only known viable population (cf. CHIANDETTI et al. 2013), the black crosses indicate sites where the species is considered extinct. The square indicates the area covered by the topographic map of Varese (1:50.000; IGM Istituto Geografico Militare, Carta Topografica d'Italia n. 74) where the new population was discovered in 2016.

known populations. This would be particularly valuable because they are located in the extreme southern part of the *N. speciosa* European range and therefore are considered more prone to local extinction, but are nevertheless crucial areas for the conservation of endangered species (CHANNELL & LOMOLLINO 2000).

Desiccation of peat bogs is probably one of the main threats for the species in Europe, but the maintenance of the damp bog habitat at the new site even at the end of the quite hot summer of 2016 suggests that the hydrological situation in the new site is relatively stable (cf. BUCHWALD & SCHIEL 2002; BERNARD & KALKMAN 2015). The absence of fish and other invasive species that prey on the dragonfly's larvae is also a positive factor. The difficult access to the area, which prevented frequent visits by humans may have facilitated its survival.

Mapping of possible remaining populations by checking all suitable locations in the area and creation of new habitats as well as restoration of former habitats to support re-colonisation are essential measures to be implemented in order to improve the survival of the species in the Varese Province (cf. BERNARD & WILDERMUTH 2005; BERNARD & KALKMAN 2015).

Acknowledgements. Thanks are due to Danilo Baratelli for the valuable informations about the site and Kelsey Horvath for checking the English.



Fig. 2. Habitat of *Nehalennia speciosa*. Varese Province, Lombardy, Italy (21-vii-2016). Photo: GB

References

- BALESTRAZZI E. 2002. Odonati. In: Furlanetto D. (Ed.), *Atlante della biodiversità nel Parco Ticino – Edizione 2002*. Vol. 1. Elenchi sistematici. Consorzio Parco Lombardo della Valle del Ticino, Pontevicchio di Magenta (Milano)
- BALESTRAZZI E. & BUCCIARELLI I. 1971. Ricerche faunistiche sulle Torbiere d'Iseo. II: *Nehalennia speciosa* (Charp.), genere nuovo per la fauna italiana. *Bollettino della Società entomologica italiana* 103: 195-198
- BARATELLI D. 2012. Studio d'Incidenza relativo al Programma di Sviluppo Turistico della Provincia di Varese "Varese land of tourism" ai sensi del DPR 357/97 e DGR 714106 dell'8.08.2003. Provincia di Varese
- BERNARD R. & WILDERMUTH H. 2005. *Nehalennia speciosa* (Charpentier, 1840) in Europe: a case of a vanishing relict (Zygoptera: Coenagrionidae). *Odonatologica* 34: 335-378
- BERNARD R. & KALKMAN V.J. 2015. *Nehalennia speciosa* (Charpentier, 1840). In: Boudot J.-P. & Kalkman V.J. (Eds), *Atlas of the European dragonflies and damselflies*. KNNV publishing, Zeist
- BUCHWALD R. & SCHIEL F.-J. 2002. Chances and limits of different management measures in mires presented for three fen-typical endangered Odonata species in Southwest Germany. *Telma* 32: 161-174
- CHANNELL R. & LOMOLLINO M.-V. 2000. Dynamic biogeography and conservation of endangered species. *Nature* 403: 84-86
- CHIANDETTI I., FIORENZA T. & ZANDI-GIACOMO P. 2013. *Nehalennia speciosa* (Charpentier): una specie a rischio di estinzione sul territorio italiano (Odonata, Coenagrionidae). *Bollettino della Società Naturalisti "Silvia Zenari"*, Pordenone, 37: 117-119
- KALKMAN V.J., BOUDOT J.-P., BERNARD R., CONZE K.-J., DE KNIJF G., DYATLOVA E., FERREIRA S., JOVIĆ M., OTT J., RISERVATO E. & SAHLÉN G. (Eds). 2010. *European Red List of Dragonflies*. Luxembourg: Publications Office of the European Union
- PECILE I. 1981. Una nuova stazione italiana di *Nehalennia speciosa* (Charp.). *Gortania – Atti del Museo friulano di Storia naturale* 2: 173-179
- PECILE I. 1991. La Fauna odonatologica di alcuni ambienti umidi delle Alpi e Prealpi Friulane (Italia Nord-Orientale). *Gortania – Atti del Museo friulano di Storia naturale* 12: 305-311
- RAVIZZA C. 1973. Relitti biotici di Donaciinae (Col. Chrysom.) nella degradazione ecologica di un piccolo bacino lacustre intermorenico lombardo. *Annali della Facoltà di Scienze agrarie dell'Università di Torino* 8: 232
- RISERVATO E., FABBRI R., FESTI A., GRIECO C., HARDERSEN S., LANDI F., UTZERI C., RONDININI C., BATTISTONI A. & TEOFILI C. (Eds). 2014. Lista Rossa IUCN delle libellule Italiane. Comitato Italiano IUCN e Ministero dell'Ambiente e della Tutela del Territorio e del Mare, Roma

Received 8th October 2016