

ASSOCIAZIONE NATURALISTICA PIEMONTESE

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GIOVANNI B. DELMASTRO* - GILLES VINÇON**

The rediscovery of *Isoperla obscura*
(Zetterstedt, 1840) in Italy
(Plecoptera, Perlodidae, Isoperlinae)

ABSTRACT - In Italy several stonefly species are highly endangered and some others are considered to be locally extinct; among them, we report *Isoperla obscura*, previously known from only a few collecting places along the Adige River and not observed for half a century. Several adult specimens of this potamophilous taxon were collected in the first half of June in 2009 and 2010 along the Po River near Casale Monferrato (Province of Alessandria). Thus, this stonefly species still occurs in Italy and our records enlarge its distribution area to the Western Po catchment basin.

KEY WORDS - Local extinction, potamophilous stonefly, new records, NW Italy, Po river.

RIASSUNTO - *Riscoperta di Isoperla obscura in Italia (Plecoptera, Perlodidae, Isoperlinae).*

Anche nella Penisola italiana molte specie di Plecotteri si trovano in grave pericolo e altre vengono giudicate localmente estinte; tra queste ultime veniva così considerata *Isoperla obscura*, nota per poche stazioni sul Fiume Adige, della quale non esistevano più segnalazioni da mezzo secolo. Svariati soggetti adulti appartenenti a questo taxon potamofilo sono stati raccolti nella prima metà di giugno degli anni 2009 e 2010 sul fiume Po presso Casale Monferrato (AL). La nostra segnalazione permette di riannoverare questo plecoterro tra le specie viventi in Italia e di ampliarne la distribuzione originaria al bacino padano occidentale.

INTRODUCTION

Stoneflies (Plecoptera) belong to a small, primitive order of inconspicuous insects with preimaginal aquatic stages and terrestrial or flying imagos;

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these latter are elongate and soft-bodied and have four subequal membranous wings which are always folded back one on top of the other. About 35% of the European stonefly species have been recorded from Italy, one of the countries with high biodiversity and an endemism rate in excess of 30% (Fochetti, 2005). Most Plecoptera, except a few eurytopic species, are highly sensitive to habitat change and are threatened by most types of pollution. Therefore they are considered as one of the most endangered groups of Invertebrates (Master *et al.*, 2000) and are considered good indicators of water and habitat quality (Fochetti, 2005; Ravizza, 2009; Ravizza & Nicolai, 1983).

In Europe the entire stonefly fauna of lowland rivers is threatened (Fochetti & Tierno de Figueroa, 2006) because these areas are subject to the greatest human impact (agricultural, domestic and industrial pollution, water removal etc.). In the past, several potamophilous species belonging to the genera *Brachyptera*, *Taeniopteryx*, *Isogenus*, *Besdolus*, *Perla*, *Xanthoperla* and *Isoperla* have been recorded in Italy, although many of them are greatly endangered or locally extinct (Ravizza & Nicolai, 1983). One of these species, *Isoperla obscura* (Zett.) is the subject of this paper.

MATERIALS, METHODS AND RESULTS

The specimens of *I. obscura* (fig. 1) were collected by GBD on two different dates (12 June 2009 and 1 June 2010) along the Po River, about 100 m a.s.l. (45°09'00"N - 8°30'35"E) in the locality of Terranova, municipal district of Casale Monferrato, Alessandria Province. Specimens were found on the left bank of the Po river, about 6.5 km upstream the confluence of the Sesia River. In this reach the Po River meanders across the floodplain, with secondary channels and aits (fig. 2). The substrate is composed of pebbles.

In all 24 specimens were collected (6 ♂♂ and 8 ♀♀ in the year 2009 and 4 ♂♂ and 6 ♀♀ in the year 2010) using a sweep-net in grasses and shrubs along the river bank. This material was preserved in alcohol 70° and later identified as *Isoperla obscura* (Zetterstedt, 1840) by GV.

In relation to the 14 species belonging to the genus *Isoperla* cited from Italy by Fochetti (1994), *I. obscura* is recognizable by the colour pattern of the head, the size of the ocelli, the shape of the sternite 8, and in the male by the very characteristic shape of the penis armature (Lubini *et al.*, 2012a, Fig. 239), and in the female by the shape of the subgenital plate.



Fig. 1 - An adult specimen of *Isoperla obscura* collected along the Po River, locality Terranova (photo GBD, June 1st, 2010).

DISCUSSION

Isoperla obscura is widespread in the northern part of the Palaearctic Region (Levanidova & Zhiltzova, 1979) and is also mentioned from Mongolia (Zwick & Surenkhorloo, 2005). In Europe, with the exception of northern regions, it has become rare and has even become extinct in several areas. For instance, it is considered greatly endangered in Switzerland (Lubini *et al.*, 2012). In France, it was reported in 1982 from the Asse River in the Alpes-de-Haute-Provence (Aubert, 1986), but not recorded afterwards (Le Doaré & Vinçon, 2006). In Austria it previously occurred widely in potamal watercourses (Graf & Hutter, 2002; Graf, 2010) and very few recent data refer to the river Danube (Malicky-Ruzicka, 2001 and 2002) and the river Drau (Kerschbaumer & Konar, 1999). It is locally ex-



Fig. 2 - The Po River near Casale Monferrato (AL), locality Terranova, the collecting place of *Isoperla obscura* (photo GBD, June 1st, 2010).

tinct in the Czech Republic, where it was recorded for the last time at the beginning of the 20th century (Bojková & Soldán, 2013).

In Italy *Isoperla obscura* was considered as probably extinct (Fochetti & Tierno De Figueroa, 2008). It was earlier known from the section of the Adige River between Verona and Merano (Ravizza & Nicolai, 1983) and the last known record from Verona dates from 1964 (Consiglio, 1966). Our recent discovery of this stonefly species along the Po River close to Casale Monferrato confirms that *I. obscura* still occurs in Italy and enlarges its former distribution area to the Western Po catchment basin and Northern Italy, as suggested by Ravizza & Nicolai (1983).

We assume that the occurrence of this species in the Western Po catchment basin was not discovered previously because of the scarcity of interest and field research concerning stoneflies and more generally all other aquatic insects in Italy (Ravizza, 2009; Ravizza & Nicolai, 1983).

Several specimens of this species were observed along the Po River at Casale Monferrato in both collecting years. Thus, the population of *I. obscura* seems to be flourishing and enriches the biological diversity of this reach of the Po River that has been included in the Natural Parks of the Piedmont Region since 1990.

Further studies of the distribution and biology of *I. obscura*, as well as tangible conservation measures for this critically endangered insect, are recommended.

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