

**REDISCOVERY OF *SYMPETRUM PEDEMONTANUM* (MÜLLER *in* ALLIONI) AND *S. VULGATUM* (L.) IN CATALONIA, NE SPAIN (ANISOPTERA: LIBELLULIDAE)**

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**Abstract** – The 2 spp. were rediscovered in an area of irrigated hay meadows in La Cerdanya (Catalonia, NE Iberian Peninsula) in Aug. 2005, the first confirmed record for the former sp. from the Iberian Peninsula since 1959 and the first ever record for the latter for Catalonia. In 2006, a much fuller survey of the whole potential breeding area of the 2 spp. was carried out and in the whole area only one small breeding colony (of both spp.) was located. This is thought to be the only known population of *S. pedemontanum* in the Iberian Peninsula. Details of the habitat and threats to the sp. are given.

**Introduction**

In August and September 2005, *Sympetrum pedemontanum* and *S. vulgatum*, the former unrecorded in Catalonia since 1959 and the latter only ever recorded once before in 1881 (but only as *S. decoloratum*), were rediscovered at the same location in semi-flooded hay meadows in the region of La Cerdanya in the Catalan Pyrenees (NE Iberian Peninsula).

*S. pedemontanum* has only ever been reliably recorded once before from the Iberian Peninsula, from La Cerdanya (CUNÍ Y MARTORELL, 1881); the references to the species by NAVÁS (1902, 1906, 1924) undoubtedly refer to this earlier record. There are unconfirmed records from Cuenca (BENÍTEZ MORERA, 1950) and Galicia (JÖDICKE, 1996), the latter seemingly an error in identification (F.J. Ocharan, pers. comm.).

Likewise, the record of *S. vulgatum* is a first record for the species in Catalonia given that the Iberian records of this species from before 1985 cannot be considered as valid (OCHARAN LARRONDO, 1987). The *Sympetrum* specimens captured in Catalonia by Cuní i Martor-

ell have no date of capture and were mistakenly identified as *S. decoloratum* by Ris. Records of the Iberian subspecies *ibericum* Ocharan, exist from the northern Meseta of Spain (OCHARAN, 1985; OCHARAN LARRONDO, 1987; JÖDICKE, 1996) and the provinces of Zaragoza (TORRALBA & OCHARAN, 2005) and Valencia (BAIXERAS, 2006).

These new records demonstrate the importance of preserving what is today over much of Catalonia and the Pyrenees a relict habitat (irrigated hay meadows) and one that is of potentially great importance for Odonata. Given the interest of the area in general for Odonata (see MARTIN, 1997) for a description of the first Iberian record of *Coenagrion hastulatum* from a nearby mountain lake in La Cerdanya, it is also hoped to carry out more field surveys in other months of the year to fully investigate the odonates of the area.

**Study area**

Occupied by the upper course of the river Segre, La Cerdanya consists of an intramontane basin lying at just over 1,000 m and running east-west between two of the largest massifs of the eastern Pyrenees (Puigmal, 2,913 m, and El Carlit, 2,921 m). Its climate is sub-Mediterranean in type with a tendency towards continentality: average annual rainfall is 800-850 mm and average January and July temperatures are 1-2°C and 18-19°C, respectively (ATLAS CLIMAT-IC DIGITAL DE CATALUNYA).

On the mountain sides mixed deciduous forests (largely *Quercus humilis* and *Q. petraea*) grade with altitude into pine (*Pinus sylvestris* and *P. uncinata*) and European silver-fir (*Abies alba*) forests (DE BOLÒS, 1990) and then fade out into extensive sub-alpine pastures above the

tree-line at 2,200 m. The valley bottom is flat and broad and most of the original vegetation has been lost, although there are still interesting alder (*Alnus glutinosa*) groves and patches of fluvial woodland along the winding course of the river Segre. Generally, though, the valley bottom is intensely exploited for agriculture / stock-raising, cereal cultivation and, in the small relict area we describe here, irrigated hay meadows.

### Methodology

Since the original rediscovery, on August 7, 2005 during the course of an entomological excursion in La Cerdanya by the author, further visits to the area were carried out in August and September 2006 by members of Oxygastra, a group formed in 2003 with the aim of studying the odonates of Catalonia and to which the author of this article belongs.

The original rediscovery was of a male *Sympetrum pedemontanum* perched in the ruderal vegetation atop the broad contention wall of the left-bank of the river Segre, a typical fast-flowing Pyrenean river that is partially canalised in its course through La Cerdanya (UTM 31TDG09, 1,000 m a.s.l.). In all after an hour's searching, four males and a single pair in tandem were observed, all in and around the artificial bank that separates the river Segre from a small irrigation channel that waters a large area of hay meadows.

Three days later 15 *S. pedemontanum* (Lluís Piella, pers. comm.) were found in the same area and good numbers were also found on August 15, 2005 by another member of Oxygastra, Bernat Garrigós, who also detected a further species of *Sympetrum* that he tentatively identified as *S. vulgatum*. This find was later confirmed on the basis of the description given by OCHARAN (1985). On September 10, 2005 the author and Bernat Garrigós returned to the site and detected good numbers of both sexes of both species of *Sympetrum*, including some very fresh individuals. Other species found in the same area during the searching included *S. flaveolum* and *S. striolatum*, both sharing habitat with the two other species of *Sympetrum*, and *Calopteryx virgo* and *Pyrhosoma nymphula* in the adjoining irrigation channel.

### Results

In 2006 members of the group, surveyed the potential habitat for *S. pedemontanum* in the valley. On September 1/2/3, 2006 the group Oxygastra organised two days of surveying along the Segre valley in order to locate the main concentrations of the populations of these two species of *Sympetrum*. The area was divided into four sectors and four separate groups walked the main habitats with recording sheets to locate the species in question and other Odonata. The members of the group Oxygastra found an emergence of this species in a small area marshland bordering the river Segre (UTM 31TDG09, 1,000 m a.s.l.). *S. vulgatum* was detected at the same site and was found to be commoner than its congener and generally shared the same habitat. *S. pedemontanum* was only detected in any numbers at this one site, where water overflowing from an irrigation ditch had formed a small semi-permanent marshland. The survey team were able to witness tandems, egg-laying, larvae emerging from the marshland and maiden teneral flights at this site, and exuviae of both *S. pedemontanum* and *S. vulgatum* were collected.

Elsewhere, scattered individuals of both *S. pedemontanum* and *S. vulgatum* were recorded, although no territorial or reproductive behaviour was noted anywhere other than at this single site. It seems possible that *S. vulgatum* will be found elsewhere in the valley given that it has been recorded from a nearby gravel pit and in terms of habitats seems less demanding.

The breeding habitat for both species of *Sympetrum* consists of a small patch of marshland of no more than 0.3 ha choked by emergent vegetation such as bulrush (*Typha angustifolia*) and purple loosestrife (*Lythrum salicaria*) with macrophytes (*Lemna* sp. and *Callitriche* sp.) populating the small areas of open water. In general the habitat resembles that described by DOMMANGET (1987) for the species in France. Beyond, the valley bottom consists of fields used selectively as either pastures, maize (*Zea mays*) cultivation or hay meadows. The water in the irrigation ditches is taken directly from the river Segre and allowed to enter the fields through a system of small hand-operated sluices.

Away from the reproduction area the two

*Sympetrum* species were also detected perched in the ruderal vegetation, of no great environmental value and dominated by plants such as tancy (*Tanacetum vulgare*), growing alongside the stony tracks that criss-cross the valley bottom. *S. vulgatum*, but not *S. pedemontanum*, was also recorded from a nearby rain-fed gravel pit with stagnant water and, aside from a few stands of common reed (*Phragmites australis*), very little other emergent vegetation.

### Discussion

The colony of *Sympetrum pedemontanum* discovered in La Cerdanya seems to be the only such colony in the Iberian Peninsula. The only previous confirmed records for the peninsula are from La Cerdanya in 1881 (CUNÍ & MARTORELL, 1881) and 1959 (unpublished, Rafael Pujol leg. et coll.). The records from Galicia (JÖDICKE, 1994) have never been confirmed or repeated and it has been postulated that they may refer to vagrant individuals of *Brachythemis leucosticta*, a species known to be expanding its range northwards (DIJKSTRA & LEWINGTON, 2006) and recorded in 1983 from the north coast of Spain (Santander province) (OCHARAN, 1983).

*S. pedemontanum* is a species that quickly colonises artificial habitats and has fluctuating, cyclical populations (WENDLER & NÜSS, 1997). Nevertheless, at a nearby gravel pit in four separate visits no trace of *S. pedemontanum* has ever been found and given the original record from 1881 and the records from 1959 (R. Pujol, pers. comm.) of an abundant colony in a similar nearby area, it would seem possible that the colony of *S. pedemontanum* found in the Segre valley is long-established.

In France, *S. pedemontanum* is considered to be locally common in the south-east and east (WENDLER & NÜSS, 1997) and the nearest known populations to La Cerdanya are probably those in La Camargue (départements de Gard and Bouches-de-Rhône, DOMMANGET, 1987), given that no other colony has ever been found in the rest of southern France (DOMMANGET, 1987). Thus, the population of *S. pedemontanum* discovered in La Cerdanya in 2005 is probably both the only known population in the Iberian Peninsula and also the

most westerly in Europe.

The discovery of *S. vulgatum* in the same area gives further credence to the idea that the valley of the river Segre is an area of exceptional importance for Odonata. Initial examinations suggest that the individuals of *S. vulgatum* found there differ from both the nominal subspecies and ssp. *ibericum*, being paler than the former and larger than the latter (F.J. Ocharan pers. comm.) and as such may be an intermediate form linking populations of *S. vulgatum* in France with those of the Iberian Peninsula.

Although *S. vulgatum* is less prone to disperse long distances than *S. pedemontanum* (DIJKSTRA & LEWINGTON, 2006), the La Cerdanya-La Tet rift valley is likely to be a natural entry route into the Iberian Peninsula for this and other species. On the other hand, the *S. v. ibericum* found on the north side of the Pyrenees further west (DIJKSTRA & LEWINGTON, 2006) could well correspond to a penetration of individuals from Iberian populations of *S. vulgatum ibericum*.

### Threats and conservation

At this moment in time, little is known about the history and/or management of the habitat of the breeding site of *S. pedemontanum* and so it is difficult to accurately determine the threats it may be suffering. However, given its small size, and its marginal nature, that is, as a habitat created accidentally by water overflowing from an irrigation canal, the risk of disappearance of the site is inevitably high if the land owner decides to plant trees, graze horses or cultivate this small corner of land. Unfortunately, this area of hay meadows enjoys no legal protection, although the river itself and immediate areas are protected as a site of natural interest (Riberes de l'Alt Segre; 26.08 ha) and a Site of Community Importance (ES5130007) (GENERALITAT DE CATALUNYA, DEPARTAMENT DE MEDI AMBIENT) owing to the well-preserved fluvial woodland and the presence of a good population of otters (*Lutra lutra*). Much of the area has also been proposed as a Natura 2000 site, although the actual reproduction site of *S. pedemontanum* lies just outside the proposed extension of this network.

In general, the valley bottom of the river

Segre in La Cerdanya is under great pressure from the expansion of golf-courses and other leisure facilities, the building of large estates of second residences (fuelled by the proximity of the area to ski-stations in France and in Spain) and the extension of the local road network (À. Bonada, pers. comm.). Much of the irrigated water meadows of the area are as such under threat since they are largely legally unprotected.

A detailed report on the discovery has been sent to the technical staff of the Cadi-Moixeró Natural Park (Lockwood, unpubl. manuscript, 2006), which has a certain influence on the management of the landscape in the region. It is hoped that through this government body the actual ownership of the site and the management practiced there can be identified, and that from here the population of *S. pedemontanum* can be monitored.

In the short term, the group *Oxygastra* aims to find out who is the owner of the land in which the breeding colony of *S. pedemontanum* is found and study the management (or lack of) that is carried out of the site. A botanical classification of this rare habitat is also planned. In the longer term, it is hoped that both *S. pedemontanum* and *S. vulgatum* will be included in a future red list of threatened Catalan invertebrates and eventually classified as a protected species.

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