

UPDATED INFORMATION ON THE DISTRIBUTION OF *SOMATOCHLORA MERIDIONALIS* NIELSEN, 1935, IN CENTRAL ITALY (ANISOPTERA: CORDULIIDAE)

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Abstract — A list and a map are given of the central Italian sites in which the presence of *S. meridionalis* has been verified in the past and recent years. Information on the 24–26 odon. spp. associated with *S. meridionalis* is provided for each site. Water parameters are also given for some

Umbrian sites in which larvae were found. The latter are the first on record for the region of Umbria.

Introduction

In the past few years, we have collected *S. meridionalis*



Fig. 1. *S. meridionalis* central Italian collecting sites, including the political regions of Tuscany, Marche, Umbria, Latium and Campania (the latter actually belongs to southern Italy). — (For locality list see Tab. I).

from several central Italian sites (political regions Tuscany and Umbria). Due to the interest that recent papers have stimulated in this species (TERZANI, 1990; CARCHINI, 1992; CORDERO et al., 1993; DI DOMENICO & CARCHINI, 1994; KOTARAC, 1993, 1995, 1997; LANDI & BERGHELLA, 1996; GRAND, 1996, 1997; UTZERI et al., 1998a, 1998b), we think worthwhile publishing an updated list of records from central Italy. Records on north Italian populations were provided by CONCI & NIELSEN (1956), MONGUZZI (1970), BALESTRAZZI et al. (1977), CAPRA & GALLETTI (1978) and PECILE (1988). At present, no *S. meridionalis* sites are known to us from central Italian regions of Abruzzi and Molise, while only one record exists from southern Italy (northern Campania) (UTZERI et al., 1998a), which is listed here along with the central Italian ones.

Methods

The present body of information consists of literature records and unpublished data (Tab. I). Water quality parameters (Tab. II) were recorded, in the laboratory, using the Winkler method for dissolved oxygen, the Kübel method for organic and reduced

matter, the method with Titriplex-solution for permanent and temporary hardness and, in the field, the AMEL 333 pH-meter (A.W.W.A., A.P.H.A., W.P.C.F., 1971). Samples of all species associated with *S. meridionalis* were collected and identified. However, this was not possible for *Sympetrum* species at Umbrian sites, indicated in the list by a question mark.

Results and comments

The localities are given in Table I and mapped in Figure 1. In these localities, *S. meridionalis* was recorded either in adult or larval stage. In particular, in Umbria, larvae were collected at localities U1-U4, meaning that in the Fersinone R. exist several breeding sites. It is relevant that our Umbrian sites are the first on record for this species in that region. The sites are unevenly distributed at elevations < 100-790 m above sea level, 33% of them ranging between 0-200 m, 56% between 200-400 m and only 11% between 400-800 m.

The following 24-26 dragonfly species were recorded in association with *S. meridionalis* (in brackets, the respective stations are given as in Fig. 1 and Tab. I); *Calopteryx haemorrhoidalis* (T9, T10, T12, T13, T14, T15, T16, U1-U5, L8), *C. splendens* (T9, T12, T13, L8), *C. virgo* (L8), *Chalcolestes viridis* (T14, T16, L1, L8), *Platycnemis pennipes* (T9, T10, T12, T13, T14, T15, T16, U1-U5, L8), *Cercion lindenii* (T9, T14, U1-U5), *Coenagrion caerulescens* (T14), *C. puella* (T6), *Enallagma cyathigerum* (T10), *Ischnura elegans* (T10, U1-U5), *I. pumilio* (T14), *Pyrrhosoma nymphula* (T9, L8), *Aeshna cyanea* (T6, L8), *Anax imperator* (U1-U5, L8), *Boyeria irene* (T10), *Onychogomphus forcipatus* (T9, T14, U1-U5), *Cordulegaster boltonii* (L5, L8), *Oxygastra curtisii* (L1), *Crocothemis erythraea* (T14, U1-U5), *Libellula depressa* (T6, T13, T14, U1-U5, L5, L8), *L. fulva* (T9), *Orthetrum brunneum* (T12, T14, T15, U1-U5, L8), *O. coerulescens* (L8), *Sympetrum meridionale* (T15, U1-U5?), *S. sanguineum* (T13, U1-U5?) and *S.*

Table I — List of central Italian localities of *S. meridionalis* — (in older literature, *S. meridionalis* was recorded either as *S. metallica meridionalis* or as *Cordulia metallica* [SPAGNOLINI & RAGAZZI, 1879])

Map ref.	Locality	References
T u s c a n y		
T1	Livorno	SPAGNOLINI & RAGAZZI, 1879
T2	Lago dell'Accesa (Grosseto) , m 157 asl	MINNITI, 1973
T3	Travaso della diga del Calcione (Arezzo), m 420 asl	CRUCITTI & DI CELLO, 1977
T4	Torrente Esse (Arezzo), m 310 asl	CRUCITTI & DI CELLO, 1977
T5	Torrente Lusignana (Arezzo), m 300 asl	CRUCITTI & DI CELLO, 1977
T6	Volterra (Pisa), Pieve di Villamagna, m 250 asl	TERZANI, 1990
T7	Terontola (Arezzo), m 300 asl	TERZANI, 1990
T8	Castellina in Chianti (Siena), m 270 asl	TERZANI, 1990
T9	Colle di Val d'Elsa (Siena), Torrente Elsa, m 185 asl	TERZANI, 1990
T10	Montaione (Firenze), Torrente Egola, m 250 asl	this paper [F. Terzani]
T11	Gavorrano (Grosseto), Monte Calvo, m 400 asl	this paper [F. Terzani]
T12	Colle di Val d'Elsa (Siena), Piano della Bufalaia, Torrente Elsa, m 185 asl	this paper [F. Terzani]
T13	Casole d'Elsa (Siena), Palazzo del Piano, Torrente Elsa, m 230 asl	this paper [F. Terzani]
T14	Massa Marittima (Grosseto), Fosso Trecina, m 105 asl	this paper [F. Terzani]
T15	Suvereto (Livorno)-Follonica (Grosseto), Fosso dell'Acqua Nera, m 90 asl	this paper [F. Terzani]
T16	Roccastrada (Grosseto), Torrente Rigo, m 80 asl	this paper [F. Terzani]
T17	Borro Palazzone (Arezzo), m 250 asl	this paper [F. Terzani]
M a r c h e		
M1	Macerata, Laghetto della Pieve (Macerata), m 200 asl	LANDI & BERGHELLA, 1996
U m b r i a		
U1	San Venanzo (Terni), Pornello, Torrente Fersinone, m 350 asl	this paper [M.V. Di Giovanni, E. Goretti, C. Utzeri]
U2	San Venanzo (Terni), Colle Folano, Torrente Fersinone, m 325 asl	this paper [M.V. Di Giovanni, E. Goretti]
U3	San Venanzo (Terni), Podere Pofao, Torrente Fersinone, m 315 asl	this paper [M.V. Di Giovanni, E. Goretti]
U4	San Venanzo (Terni), Podere Casaccia, Torrente Fersinone, m 235 asl	this paper [M.V. Di Giovanni, E. Goretti]
U5	San Venanzo (Terni), Piandoro, Torrente Fersinone, m 180 asl	this paper [A. Speziale, C. Utzeri]
U6	Panicale (Perugia), La Potassa, Fiume Nestore, m 245 asl	this paper [A. Speziale]
U7	Piegaro (Perugia), Greppolischieto, Fosso della Serpolla, m 375 asl	this paper [A. Speziale]
U8	Allerona (Terni), Poggio Spino, Fiume Paglia, m 450 asl	this paper [A. Speziale]
L a t i u m		
L1	Civitella Cesi (Viterbo), Torrente Vesca, m 140 asl	UTZERI et al., 1998a
L2	Cerveteri (Roma), Necropoli Etrusca, m 100 asl	CARCHINI, 1992
L3	Colli sul Velino (Rieti), Lago di Ventina, m 350 asl	DI DOMENICO & CARCHINI, 1994
L4	Orvinio (Rieti), Fosso di Vallebuona, m 790 asl	UTZERI et al., 1998b

Table I (continued)

L5	Nespolo (Rieti), Rio di Riancoli, m 700 asl	UTZERI et al., 1998a
L6	Roviano (Roma), m 300 asl	UTZERI et al., 1998b
L7	Gerano (Roma)	NIELSEN, 1935; CASTELLANI, 1936; 1951
L8	Sambuci (Roma), Torrente Fiumicino, m 400 asl	UTZERI et al., 1998b
L9	Patrica (Frosinone), Fosso di Patrica, m 150 asl	UTZERI et al., 1998b
L10	Pontecorvo (Frosinone), Terrarossa, Sant'Oliva, m 100-400 asl	CORDERO et al., 1993; UTZERI et al., 1998b
L11	Pastena (Frosinone), m 250 asl	CARCHINI, 1992
L12	Priverno (Frosinone), Fiume Amaseno, m 150 asl	UTZERI et al., 1998b
C1	Capriati al Volturno (Caserta), Fiume Sava, m 250 asl	UTZERI et al., 1998a

striolatum (T15, U1-U5?) (the question mark means that one or more *Sympetrum* species may be included in localities U1-U5, since identification was made visually on flying specimens; — cf. also Methods). This list includes also the 13 species reported by UTZERI et al. (1998b).

In Table II, water quality parameters of some

Umbrian sites are reported. Although only three of these parameters were also assayed by UTZERI et al. (1998b), it is interesting that they are quite comparable with sites in Umbria and Latium. Water temperature is 13.3°C for Umbria (average of 20 measurements) and 10.9°C for Latium (average of 9), oxygen content is 10.6 mg/l for Umbria

Table II — Chemico-physical analysis of Umbrian water sites harbouring larval populations of *S. meridionalis* (for sampling stations cf. Tab. I and Fig. 1)

Sampling station	Date	Water temperature (°C)	Dissolved O ₂ (mg/l)	Organic matter (mg/l)	Reduced matter (mg/l)	Permanent hardness (Fr. dgr)	Temporary hardness (Fr. dgr)	pH
U1	31-V-1994	15	10.0	1.5	1.2	5	21	8.41
U1	13-IX-1994	16	8.1	1.5	3.1	6	17	7.88
U1	15-XI-1994	7	11.0	2.3	2.9	4	26	8.20
U1	21-II-1995	5	14.0	1.7	2.6	6	23	8.45
U2	31-V-1994	17	11.0	1.7	1.1	5	23	8.37
U2	13-IX-1994	19	12.0	1.5	2.3	7	19	8.12
U2	15-XI-1994	9	11.0	2.0	2.0	5	23	8.12
U2	21-II-1995	6	12.0	2.4	2.5	9	20	8.76
U3	31-V-1994	16	11.0	1.0	1.0	6	18	8.24
U3	13-IX-1994	18	7.1	1.2	2.6	4	26	7.93
U3	15-XI-1994	9	11.0	1.5	2.0	6	22	8.09
U3	21-II-1995	7	13.0	1.7	2.0	10	20	8.59
U4	31-V-1994	19	11.0	1.1	1.0	6	22	8.29
U4	13-IX-1994	23	3.9	1.9	2.3	5	25	7.25
U4	15-XI-1994	9	11.0	2.8	2.3	8	18	8.28
U4	21-II-1995	7	12.0	3.6	2.5	8	22	8.58
U5	31-V-1994	22	10.0	1.0	1.6	10	17	8.29
U5	13-IX-1994	23	9.4	1.4	2.6	6	27	8.06
U5	15-XI-1994	11	11.0	2.3	5.0	9	19	8.24
U5	21-II-1995	9	12.0	2.9	2.4	11	17	8.45

and 11.4 for Latium and pH is 8.23 for Umbria and 7.86 for Latium.

Thus, in central Italy *S. meridionalis* appears restricted to low altitudes, similarly as is in most parts of its range (KOTARAC, 1993; GRAND, 1996, 1997), and occurs mainly in running water with relatively low temperatures, high oxygen contents and alkaline pH.

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