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ISCHNURA FOUNTAINEI MORTON AND *GOMPHUS LUCASI* SELYS IN MOROCCO, AND FURTHER DATA ON THE GENUS *ISCHNURA* (ZYGOPTERA: COENAGRIONIDAE; ANISOPTERA: GOMPHIDAE)

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Abstract — *I. fountainei* is listed for the first time from Morocco, and new Moroccan records are provided for *I. graellsii* and *I. saharensis*. Their distributional features are shown on a map. *G. lucasi* may be absent in E. Morocco, where only very pale individuals of *G. simillimus maroccanus* were found.

Introduction

During May 25-June 2, 1985, I undertook a trip in the Moroccan East in search of *Ischnura fountainei* and *Gomphus lucasi*, with the objective to ascertain their western range limits. This paper also brings some information on the genus *Ischnura* in Morocco, as gathered during 1984--1986.

List of the 1984-1986 *I. graellsii* and *I. saharensis* localities

The topographic positions are shown in Figure 1, in whose caption the species recorded in a locality are indicated.

(1) Oued Moulouya (mouth): river and marshes; 30-V-1985
(2) Oued Zegzel, in the Bni Snassen M., alt. 400 m; 30-V-1985
(3) Mechra Homadi Dam, on the Oued Moulouya, alt. 150 m; 29-V-1985
(4) Small river flowing into the O. Moulouya (rdS412, S of M. Homadi), alt. 330 m; 28-V-1985
(5) Oued Isly, S of Oujda, alt. 775 m; 31-V--1985
(6) Oued Za, nr its springs at Ayn Bni Mathar, alt. 900 m; 31-V-1985
(7) Brook nr Ifrane, alt. 1560 m; 28-VI-1984
(9) Oued Moulouya in its middle course, below Outat Oulad al Haj, alt. 600 m; 1--VII-1984
(10) Oued Guigou, above Timahdit (on the road to the "Col du Zad"), alt. 1875 m; and Aguelmam Tifounassine (permanent marsh), alt. 1920 m; 30-VI-1984, 30-IX--1984, 1-VIII-1985
(13) Oued Guir, below Tazzougart, alt. 1000 m; 1-VI-1985
(14) Guelta (= stagnant pool) of a small temporary oued flowing into the Guir, E of Bouanane, alt. 850 m; 1-VI-1985
(15) Oued Ziz, in the region of Aoufouss, alt. 900 m; 2-VI-1985
(22) Oued Draa, nr Agdz, alt. 1000 m; 17-V--1985
(29) Oued nr the waterfalls of Imouzzer Ida Outanane, alt. 1100 m (?); early IV-1985 (collector T. Couret)
(31) Large guelta at the Oued Massa mouth, 13-V-1985; also noticed by G. Balanca, early IV-1986
(32) Oued Massa, close below the Youssef Ben Tachfin Dam, nr Tiznit, alt. 125 m; 14-V--1985

Ischnura fountainei Morton

Widespread from Iran to the Maghreb, it is the most abundant dragonfly in southern Tunisia (DUMONT, 1977), and it was reported several times from Algeria (MORTON, 1905; MARTIN, 1910; LE ROI, 1915; DUMONT, 1978). We took it at 2 sites in southeastern Morocco:

(1) "Guelta" (i.e. stagnant pool) in a temporary tributary of the Oued Guir, east of Bouanane, in a sandy sub-desertic environment, with some rushes and tamarisks; alt. ca 850 m (loc. 14), 5 ♂. Associated species: *Platycnemis subdilatata, Ischnura saharensis, Cercion lindeni.*
(2) Oued Ziz, two spots near Awfouss (palm--grove between Ar Rachidia and Arfoud). One locality is a small dam with amphibious vegetation, in a broad rather dry bed, invaded by tamarisks, the other one a shaded section of the Oued, right in the palm-grove, with rapid passages on pebbles and also earthy water holes with vegetation; alt. ca 900 m (loc. 15), 17 ♂, 1 ♀. Associated species:

Calopteryx hemorrhoidalis, Platycnemis subdilatata, Ischnura saharensis, Coenagrion coerulescens, Anax parthenope, A. imperator, Orthetrum chrysostigma, O. nitidinerve, Crocothemis erythraea, Trithemis annulata, Sympetrum fonscolombei.

Like in S. Tunisia (DUMONT, 1977), the species co-occurs at both localities with *I. saharensis*, but our visit to the Ayn Bni Mathar region (loc. 6) took place probably too early in the season, therefore we did not find the species there, though the Oued Za springs seem an appropriate *fountainei* habitat (cf. LE ROI, 1915; DUMONT, 1978).

Figure 1 presents all the published and unpu-

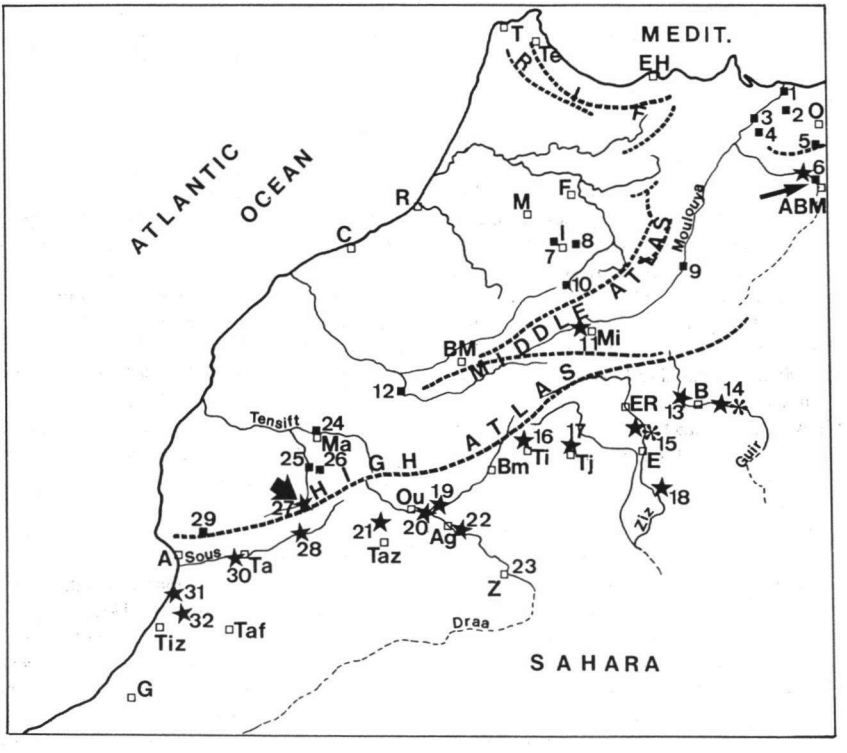

Fig. 1. The known distribution of *Ischnura graellsii* (squares), *I. saharensis* (stars) and *I. fountainei* (flowers) in Morocco — [Main mountain chains indicated by a thick broken line. — A = Agadir, Ag = Agdz, ABN = Ayn Bni Mathar, B = Bouanane, Bm = Boumalne, BM = Bni Mellal, C = Casablanca, E = Erfoud or Arfoud, EH = El (or Al) Hoceima, ER = Er (or Ar) Rachidia, F = Fes, G = Goulimime, I = Ifrane, M = Meknes, Ma = Marrakech, Mi = Midelt, O = Oujda, Ou = Ouarzazat, R = Rabat, T = Tanger, Ta = Taroudannt, Taf = Tafrawt, Taz = Taznakht, Te = Tetouan, Ti = Tinghir, Tiz = Tiznit, Tj = Tinjdad, Z = Zagora. — Origin of the data: *I. graellsii:* LIEFTINCK, 1966: 8, 12, 25; — DUMONT, 1972: 8, 24; — LAVERGNE-VIALA & THIERY, 1983: 24, — this paper: 1, 2, 3, 4, 5, 6, 7, 9, 10, 29. — *I. saharensis:* LIEFTINCK, 1966: 27; —DUMONT, 1972: 11, 15, 16, 17, 18, 19, 22, 23, 28, 30; — DUMONT, 1976: 20, 21, 32 (and several other localities in the Anti-Atlas, region of Tafrawt and Goulimime); — this paper: 6, 13, 14, 15, 22, 31, 32. — *I. fountainei:* this paper: 14, 15]

blished *I. fountainei* and *I. saharensis* localities in Morocco. In the area of the range limits of these, some *I. graellsii* records are also indicated. These represent the southeastern limit of the *graellsii* distribution in Morocco.

As is apparent from the map, *graellsii* and *saharensis* do not overlap, they are roughly separated by the main Atlas ridges, but:

(1) LIEFTINCK (1966) already emphasized that *saharensis* had crossed the High-Atlas at least at one point, along the Oued Nfiss (loc. 27; thicker arrow),

(2) We have ascertained the co-occurrence of *graellsii* and *saharensis* on the Oued Za, at Ayn Bni Mathar (loc. 6; thinner arrow),

(3) DUMONT (1972) found *saharensis* near Midelt, on a tributary of the Oued Moulouya (but he noticed that the species was scarce in this locality, otherwise rich in Odonata, and that the genus *Ischnura* was completely absent nearer to the Middle-Atlas range). We caught *graellsii* at the Moulouya itself, about 150 km downstream, at a lower altitude (ca. 600 m, compared to 1500 m for Midelt) and in a drier environment.

(4) Another contact zone could exist at the western end of High Atlas, N of Agadir, along the Atlantic coast.

Thus, in eastern Morocco, where mountain barriers are less consistent and climatic contrasts are less pronounced than in the South, *graellsii* and *saharensis* co-occur, though in very limited areas. It is likely, as tentatively assumed by DUMONT (1972), that the two species in these zones reach the limits of their respective ecological tolerance. The presence of *I. saharensis* up to Ayn Bni Mathar (loc. 6), 100 km from the Mediterranean, and in contact with *graellsii* which seems to be regular along the coast, is easily explainable by the presence of the arid and Saharan-like valley of the Moulouya. This corridor, sheltered from Atlantic influences and widely open to the South, is possibly responsible for the presence in the Riffian chain of species such as *Paragomphus genei* or *Trithemis kirbyi* (JACQUEMIN, 1984 and in press), which seem to be absent from the central Atlantic parts of the country.

I. fountainei remains a scarce and localized species in Morocco, confined (up to now) to the Southeast, a region corresponding to the Saharan zone with contrasted seasons (average minimum in January 0-3°C).

***Gomphus lucasi* Selys**

We failed to find it during our trip. The Oued Za, near Ayn Bni Mathar (loc. 6), provided 2 immature ♂ and 1 immature ♀, and the Oued Ziz, in the canyon N of Ar Rachidia, 1 aged ♀, all referable to *G. simillimus maroccanus* Lieft., as is clear from the male appendices and post-ocellar crest, and from the female post-ocellar crest and valvula vulvae (cf. LIEFTINCK, 1966; DUMONT, 1977).

The other characters, especially the coloration, are not reliable, since they show a wide variation range in *maroccanus*, as already emphasized by DUMONT (1972). Our specimens from East Morocco are very pale. The postocellar crest is mainly yellow, the black lines on labroclypeal and frontoclypeal sutures very reduced, the tarsi at least partly yellow on the outer faces, etc. The coloration features used in the key by LIEFTINCK (1966) are valid for West Morocco, or for the Atlas, but do not fit the specimens from the eastern part of the country. Thus, DUMONT's (1972) remark still remains true: "Un matériel abondant de comparaison d'Algérie s'avère nécessaire".

Algeria is the only North African country where the co-occurrence of *G. simillimus maroccanus* and *G. lucasi* is established (in the region of Constantine; cf. MARTIN, 1910). The presence of *simillimus* in Tunisia has not yet been evidenced (DUMONT, 1977) and that of *lucasi* in Morocco remains very problematical. The identity of MORTON'S (1905) *lucasi* from West Algeria is uncertain, since he did not make a reference to *simillimus*.

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References – DUMONT, H.J., 1972, *Bull. Soc. Sci. nat. phys. Maroc* 52(3/4): 149-179; — 1977, *Bull. Annls Soc. r. belg. Ent.* 113: 63-94; — 1978, *ibid.* 114: 29-35; — JACQUEMIN, G., 1984, *Bull. Inst. scient. Rabat* 8: 135-138; — LAVERGNE-VIALA, M. & A. THIERY,

1983, *Bull. Fac. Sci. Marrakech* (Sci/Vie) 2: 63-74; — LE ROI, O., 1915, *Dt. ent. Z.* 6: 609-634; — LIEFTINCK, M.A., 1970, *Annls Soc. ent. Fr.* 79: 95-104; — MORTON, K.J., 1905, *Ent. mon. Mag.* 41: 145-149.

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