

Thorax entirely matt but for the shining middle region of propodeum. Petiole variable, with a straight dorsal margin or a wide dorsal concavity. Long hairs present on the entire surface but for the middle zone of dorsal margin of the petiole.

Whole of the body covered with a dense pubescence. Pilosity from subdecumbent to erect. Numerous hairs on dorsum of gaster. Tibiae without hairs on extensor surface. Eyes with micropilosity (0.03). Genitalia without any distinctive characteristic but for the colour, bright orange-reddish.

Males and workers have been deposited in the author's collection (X.E.) and in the Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw (Poland).

GEOGRAPHICAL DISTRIBUTION

This is not an easy question to settle. Until recently, many authors have confused *F. frontalis* with *F. dusmeti* and, consequently, literature data are unsecure. We have checked as much samples as possible from all that has been published under the names *F. dusmeti* or *F. frontalis* (noted with * in the following account). The distribution, as is presently known, is reported based on provinces, references added and comments as needed. All localities are in Spain:

Albacete: Cerro Peña Blanca (Tinaut and Martínez 1998)

Burgos: Cubillos* (Tinaut and Martínez 1998)

Jaén: Nava de Paulo*; Mt. Empanadas* (Espadaler 1997).

León: Peredilla*, workers, 8 June 1983 (Espadaler leg.); Villalbina (Tinaut and Martínez 1998)

Lleida: Arànsers*, 1800 m, workers, winged females, males; Bescaràn*, 1750 m, workers, winged females, males (Espadaler leg.)

Logroño: Collado de Sancho Leza*, 1400 m, workers, winged females, 14 June 1990 (Espadaler leg.)

Madrid: Peñalara (Emery 1909); S^a de Guadarrama (Martínez 1987)

Navarra: no locality given (Tinaut and Martínez 1998)

Soria: Pineda de Almazán* (Collingwood and Yarrow 1969); Vinuesa*, 1100 m, females, 4 August 1986 (Espadaler leg.)

Teruel: Tramacastilla* (Collingwood and Yarrow 1969); Sierra de Albarracín (Martínez and Tinaut 1996)

Zamora: Cubillos*, workers; Galende*, (Collingwood, personal communication, 1996)

We have been able to locate with precision the altitude for some samples of both species and *F. dusmeti* is found at higher altitudes (mean \pm s.d.: 1550 \pm 275 m; n=6) than *F. frontalis* (mean \pm s.d.: 1160 \pm 450 m; n=15).

DISCUSSION

Formica dusmeti seems to be less abundant than *F. frontalis*. In special, it seems absent from Portugal (see comments on *F. dusmeti* in Collingwood and Prince 1998). We have been unable to locate the original Portuguese material

studied and determined as *F. dusmeti* by Santschi in 1932, coming from three localities (a queen from Soure, a worker from Santarém and a male from Jogueiras). The comments by Santschi on pilosity of the queen are in agreement with characteristics of *F. frontalis* – not of *F. dusmeti* – and, so, there is a possibility that Santschi's *F. dusmeti* males belong in *F. frontalis*. It remains to be confirmed the presence of *F. dusmeti* in Portugal.

The males of *F. dusmeti*, as compared with those of *F. frontalis*, have a shorter scape for a given head width and, accordingly, a different scape index (Table 1). None of the

	<i>F. frontalis</i>	<i>F. dusmeti</i>	t-value	d.f.	p-value
HL	1.53	1.52	0.45	38	0.65
HW	1.87	1.88	-0.43	38	0.66
SL	1.66	1.58	4.58	38	< 0.001
CI	122.3	123.6	-1.25	38	0.21
SI	88.8	83.9	5.70	38	< 0.001
ED	0.77	0.75	0.92	18	0.36
EI	40.9	40.3	0.89	18	0.38
AW	2.10	2.17	-1.13	18	0.26
AL	3.52	3.57	-0.81	18	0.42
AI	59.8	60.9	-0.58	18	0.56
PH	0.97	1.02	-1.46	17	0.16

Table 1. Comparison of biometrical measurements of males of *F. dusmeti* (Arànsers, Lleida; 12 July 1997; Espadaler leg.) and *F. frontalis* (Sant Llorenç de Morunys, Lleida; 10 July 1989; Espadaler leg.). Measures in mm. T-test for independent samples, with sequential Bonferroni's correction. See text for abbreviations.

other measured variables do show a statistical difference between those two species. A summary of morphological differences we have found to differentiate the males of *F. dusmeti* and *F. frontalis* are in Table 2; see also Figs 1–4. *F. truncorum* males (Figs 5 and 6; table 2) are also very distinct from both Iberian endemics, with its much developed pilosity on eyes, scape and legs. The shorter and hairless scape of *F. dusmeti*, its hairless tibiae and merely pubescent genae allow for a differentiation of both species. Tinaut and Martínez (1998) describe the eyes and scape of the males of *F. frontalis* as hairless. In a series of > 60 males of *F. frontalis* we have collected from Sant Llorenç de Morunys (Lleida), eyes have some minute hairs and scapes have many short, subdecumbent hairs on dorsal and ventral surfaces. There is probably intraspecific variability of the males *F. frontalis* in eye micropilosity and scape pilosity.

	<i>F. truncorum</i>	<i>F. dusmeti</i>	<i>F. frontalis</i>
Scape index	85.04 (3.3)	83.9 (3.0)	88.8 (2.4)
Eyes	>25 long hairs	~ 20 short hairs	~ 10 short hairs
Scape	hairy	hairless	hairy
Tibiae	suberect hairs	hairless	suberect hairs
Genae	subdecumbent hairs	pubescent	subdecumbent hairs

Table 2. Morphological differences of males of *Formica truncorum* (Ochotnica Górna, Gorce Mts, Poland; Yamauchi det. leg.; n=4), *F. dusmeti* (Arànsers, Lleida; 12 July 1997; n=20) and *F. frontalis* (Sant Llorenç de Morunys, Lleida; 10 July 1989; n=20). Mean (s.d.).