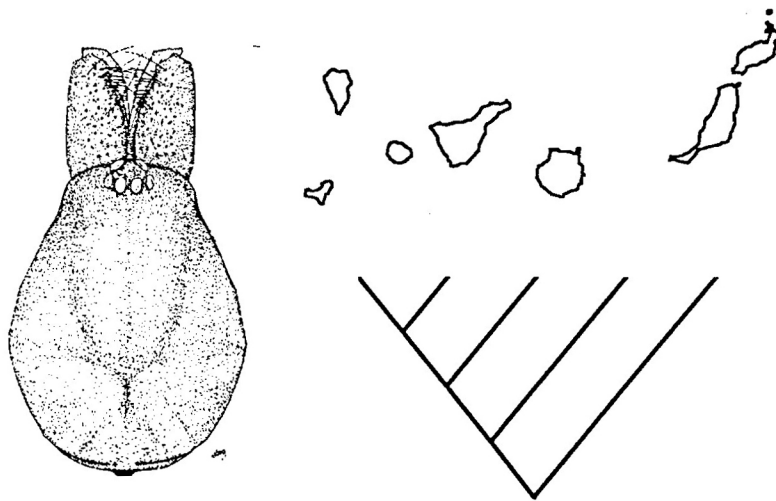


Departament de Biologia Animal  
Facultat de Biologia  
Universitat de Barcelona

Tesi Doctoral

COLONITZACIÓ I RADIACIÓ  
DEL GÈNERE *Dysdera* (ARACHNIDA, ARANEAE)  
A LES ILLES CANÀRIES



Miquel Àngel Arnedo Lombarte

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#### **4.1.2. Gran Canaria**

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# Radiation of the genus *Dysdera* (Araneae, Haplogynae, Dysderidae) in the Canary Islands: The island of Gran Canaria

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Arnedo, M. A. & Ribera, C. 1997. Radiation of the genus *Dysdera* (Araneae, Haplogynae, Dysderidae) in the Canary Islands: The island of Gran Canaria.— *Zool. Scr.* 26: 205–243.

This study continues studies on the taxonomy and distribution of *Dysdera* in the Canarian archipelago. Four new species are described: *Dysdera andamanae* sp. n., *D. arabisenen* sp. n., *D. tibicensis* sp. n. and *D. yguanirae* sp. n. Four new synonymies are reported: *D. bailadero* Wunderlich, 1991 and *D. paucisetae* Wunderlich, 1991 = *Dysdera iguanensis* Wunderlich, 1987, *D. tamadabaensis* Wunderlich, 1991 = *D. paucispinosa* Wunderlich, 1991; *D. sinuosa* Wunderlich, 1994 = *D. tilosensis* Wunderlich, 1991. Six species are redescribed: *D. bandamae* Schmidt, 1973, *D. iguanensis* Wunderlich, 1987, *D. insulana* Simon, 1883, *D. paucispinosa* Wunderlich, 1991, *D. tilosensis* Wunderlich, 1991 and *D. verneau* Simon, 1883; and neotypes are designated for *D. insulana* and *D. verneau*. The presence of the following species in Gran Canaria is reported for the first time: *D. iguanensis*, formerly only collected on Tenerife, *D. insulana*, previously of doubtful location, and *D. levipes*, known from Tenerife and La Gomera. Morphological affinities, ecology and distribution of the species are discussed. © 1997 The Norwegian Academy of Science and Letters.

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## Introduction

Oceanic archipelagos have been paradigmatic in the study and development of evolutionary biology. Adaptive radiations in the Galapagos and Hawaiian Islands figure as classic examples in most books on evolution. Although less well studied and promoted, the Canary Islands, off the Atlantic coast of North Africa also offer many cases of species radiation. The Circum-Mediterranean spider genus *Dysdera* Latreille, 1804 is represented in the Canaries by more than 50 endemic species (Wunderlich 1991). A taxonomic revision of the genus is being performed at present (Ribera & Arnedo 1994; Arnedo & Ribera 1996; Arnedo *et al.* 1996) as a first step towards uncovering the evolutionary processes that this genus has undergone in the Canary Islands. The present study deals with endemic *Dysdera* species inhabiting the island of Gran Canaria.

Gran Canaria is one of the largest islands of the archipelago (after Tenerife and Fuerteventura) and is located at the centre of the more or less straight line on which the islands lie. In the Canaries geographic location is directly correlated with time of origin, largely due to the geological processes involved, i.e. a propagating fracture expanding from the Atlas (Anguita & Hernán 1975). The closest islands to the continent (Fuerteventura 20–22 My, Lanzarote 15.5–19 My) are the oldest, while the others get younger to the west (Gran Canaria 14–16 My, Tenerife 11.6–15 My, La Gomera 10–12 My, La Palma 1.6–2 My and El Hierro 0.8–1 My) (Ancochea *et al.* 1990, Anguita & Hernán 1975; Cantagrel *et al.* 1984;

Coello *et al.* 1992; Ancochea *et al.* 1994; Mitchell-Thomé 1985).

A major ecological distinction separates the eastern islands (Fuerteventura and Lanzarote) from the others. Low altitude due to the effect of erosion prevents the eastern islands from receiving the influence of moist trade winds from the northeast, while their closeness to the African coast makes them accessible to the influence of dry east winds from the Sahara desert. The result is a lower diversity of habitats when compared with central (Gran Canaria and Tenerife) and western islands (La Gomera, La Palma and El Hierro), most areas being dry lowlands.

Before this study only six species of *Dysdera* were known in Gran Canaria in spite of the potential of the island due to its habitat richness and age: *Dysdera bandamae* Schmidt, 1973; *Dysdera paucispinosa* Wunderlich, 1991; *Dysdera sinuosa* Wunderlich, 1994; *Dysdera tamadabaensis* Wunderlich, 1991; *Dysdera tilosensis* Wunderlich, 1991 and *Dysdera verneau* Simon, 1883. When compared to the 28 endemic species described from Tenerife, the most similar island in age, habitat diversity and location, this is not a large number. Moreover, only *D. verneau* was known from both sexes, while *D. bandamae*, *D. paucispinosa*, *D. sinuosa* and *D. tamadabaensis* were known for a single specimen each. Putting all these things together, the 'paucity' of species of Gran Canaria can be considered artificial and mainly due to undersampling. In order to improve this scanty taxonomical knowledge, a large number of specimens coming from private and museum collections as well as recent authors' specific research expeditions were made available for study.



A 'diagnosability' Phylogenetic Species Concept (Nelson & Platnick 1981, Nixon & Wheeler 1990, 1992; Wheeler & Nixon 1990, Davis & Nixon 1992) was adopted. Species are considered to be "the smallest aggregation of populations...diagnosable by a unique combination of character-states in comparable individuals" (Davis & Nixon 1992). In practice, some of the species were recognized not by populations but by single specimens. A major problem resulting from the application of the diagnosability PSC is that 'species' are equated to 'populations holding fixed characters', which, from a theoretical point of view, seems to be much too restrictive (Frost & Kluge 1994). On top of this, at the present stage of study, only morphological characters have been considered. As a result of this, the current number of recognized species could be an underestimation of the actual number of diagnosable species, if additional types of characters; i.e. molecular data, behaviour, were used.

All *Dysdera* species recorded in Gran Canaria have been included in the present work. Nevertheless, some of them are known from single records on the island, while they were originally described and are far better known from other islands, mainly Tenerife.

## Material and methods

Specimens for the present study came from several sources. The following people and institutions kindly loaned material: Forschungsinstitut und Naturmuseum Senckenberg (SMF), Museo de Ciencias Naturales de Santa Cruz de Tenerife (MCNT), Muséum National d'Histoire Naturelle de Paris (MHNP), Universidad de La Laguna (UL) and J. Wunderlich (Straubenhardt, Germany). Moreover, a recent research expedition was made by a team from both the Universidad de La Laguna and the Universitat de Barcelona. Material collected on this common expedition is provisionally stored at the Departament de Biologia Animal de la Universitat de Barcelona (UB). Part of that material has been frozen to be used in molecular studies. The locations of the gathered material represented an exhaustive sample of the different Gran Canarian terrestrial ecosystems.

Characters were investigated under a Wild Heerbrugg (12–100 magnification) dissecting microscope. Female endogyne (Mcheidze 1972) was removed and muscle tissues digested using a KOH (35%) solution before observation. Male bulbi and spinnerets were removed, cleaned by means of ultrasound and examined using a Hitachi S-2300 Scanning Electron Microscope at 10–15 kV.

Characters examined together with their diagnostic resolution have been discussed elsewhere (Arnedo *et al.* 1996). The following characters have been added in the present study: relative size of cheliceral fang (in relation to carapace length), presence of granulations on leg I dorsal and pedipalp's ventral surfaces, number of leg claw teeth, posterior apophysis of male copulatory bulb relative lateral length (in relation to tegulum lateral width) and presence of back margin fold.

All characters were recorded in DELTA format (Dallwitz 1980; Dallwitz *et al.* 1993).

## Terminology

An attempt was made to use terminology as purely descriptive as possible. Structures of male bulb and female endogyne were mostly named after Deeleman-Reinhold & Deeleman (1988), with the addition of several features particular to Canarian *Dysdera* (Arnedo *et al.* 1996). Spinnerets and their associated spigot glands were assigned after Platnick *et al.* 1991.

*Cheliceral teeth*  
*D* distal tooth  
*M* medial tooth  
*B* basal tooth

*Male copulatory bulb*  
*T* tegulum  
*DD* distal division  
*IS* internal sclerite  
*ES* external sclerite  
*DH* distal haematodoca  
*C* crest  
*AC* additional crest  
*LF* lateral fold over lateral sheet between internal and external sclerites  
*L* lateral sheet  
*AL* additional lateral sheet at the internal border  
*P* posterior apophysis

## *Female genitalia* (Fig. 2A–D)

*DA* dorsal arch  
*DF* dorsal arch fold  
*VS* ventral sclerotization  
*S* spermatheca  
*TB* transversal bar  
*V* TB valve

## *Spinnerets*

*ALS* anterior lateral spinnerets  
*PMS* posterior medial spinnerets  
*PLS* posterior lateral spinnerets  
*MS* major ampulate gland spigot  
*PS* polar pyriform gland spigot

## Family DYSDERIDAE

### Genus *Dysdera* Latreille, 1804

#### *Dysdera andamae* sp. n. (Figs. 2A–C, 3A–D, 4A–C)

*Holotype male.* 9/2/96, Arnedo, Emerson & Oromi leg.; num. 2976, stored at UB.

*Type locality.* Brezal del Palmital, Santa María de Guía, Gran Canaria, Canary Islands.

*Allotype female.* Unknown.

*Etymology.* The name refers to Andamana, an aboriginal woman who together with her husband Gumidafe became queen and king of Gran Canaria.

*Diagnosis.* Small-sized spider. This species can be distinguished by carapace divergent frontal borders, rounded laterals and projected back border, in dorsal view (Fig. 2A). Prosoma heavily wrinkled. Cheliceral basal segment completely granulated. Leg spination markedly reduced. Tiny abdominal dorsal hairs curved and pointed. It is distinguished from very similar *D. minutissima* Wunderlich, 1991 from Tenerife by LF presence and L external border sclerotization (Fig. 3A).

*Description.* *Male* (Figs. 2A–C, 3A–D, 4A–C). Carapace (Fig. 2A) 2.19 mm long; maximum width 1.67 mm; minimum width 1.12 mm. Dark brown, darkened at borders; heavily wrinkled, foveate, covered with tiny granulations. Frontal border fairly rounded, about 1/2 carapace length; lateral borders

## Abbreviations used in text and figures (Fig. 1)

*Eyes*  
*AME* anterior medial eyes  
*PME* posterior medial eyes  
*PLE* posterior lateral eyes

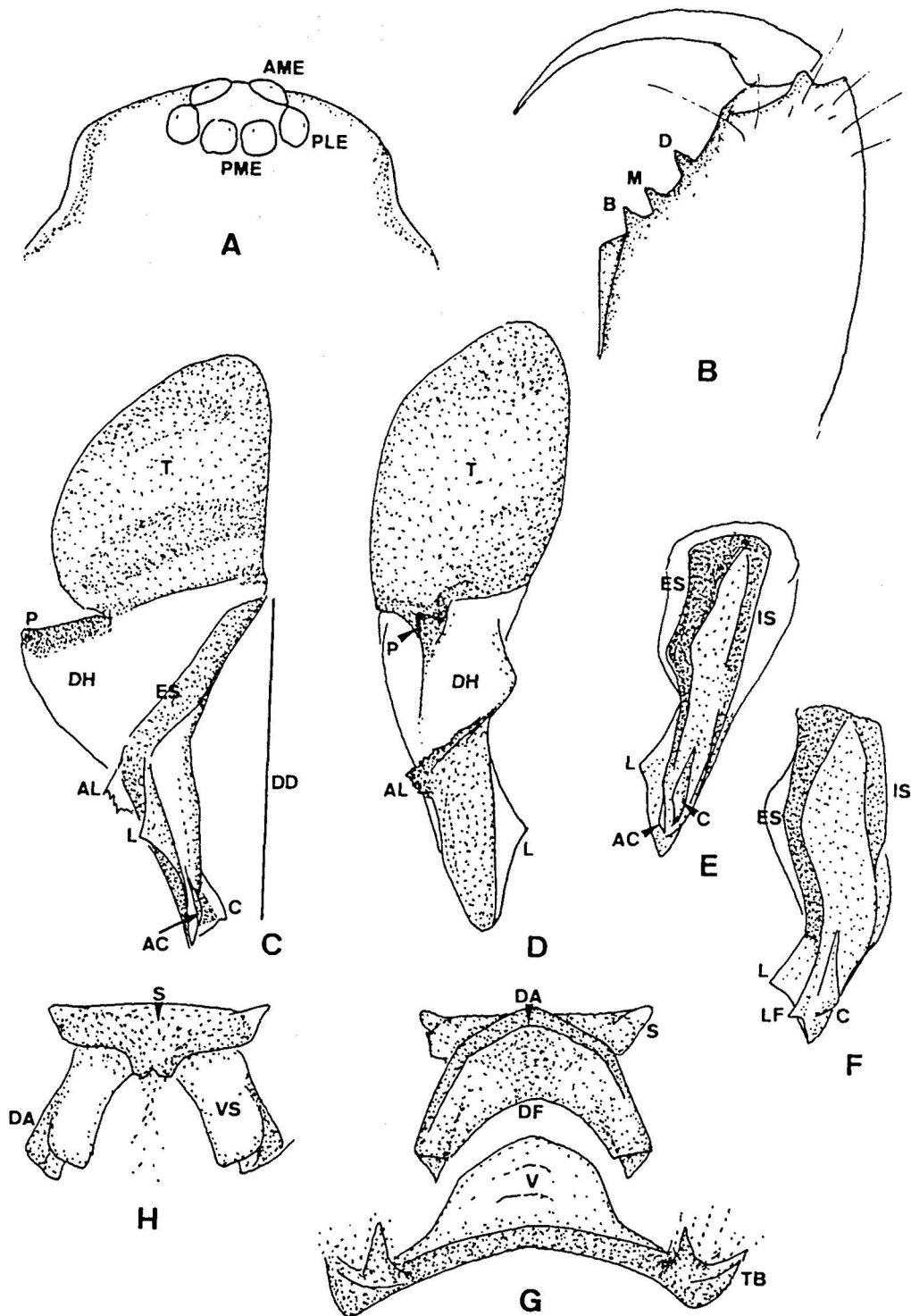


Fig. 1. —A-H. Diagram showing the various characters included in the abbreviations list.—A. Carapace frontal part, dorsal view.—B. Left chelicera, ventral view.—C. Right male bulbus; lateral view.—D. posterior view.—E. DD frontal view.—F. DD frontal view.—G. Endogyne, dorsal view.—H. Endogyne, ventral view (TB removed).

borders; heavily wrinkled, foveate, covered with tiny granulations. Frontal border fairly rounded, about 1/2 carapace length; lateral borders divergent; rounded at maximum dorsal width point, back lateral borders rounded; back margin projected. AME diameter 0.16 mm, PLE 0.11 mm, PME 0.1 mm; AME on edge of frontal border, separated one from another about half diameter, close to PLE; PME about one quarter of diameter apart, about 1/3 PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part;

longer than wide at base; with semicircular groove at tip. Sternum dark brown, darkened on borders; heavily wrinkled; uniformly covered in slender black hairs.

Chelicerae (Fig. 2B) 0.84 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 0.60 mm; basal segment dorsal and ventral side completely covered with piligerous granulations. Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base; D largest, B larger than medial; D fairly rounded, located at centre of or slightly

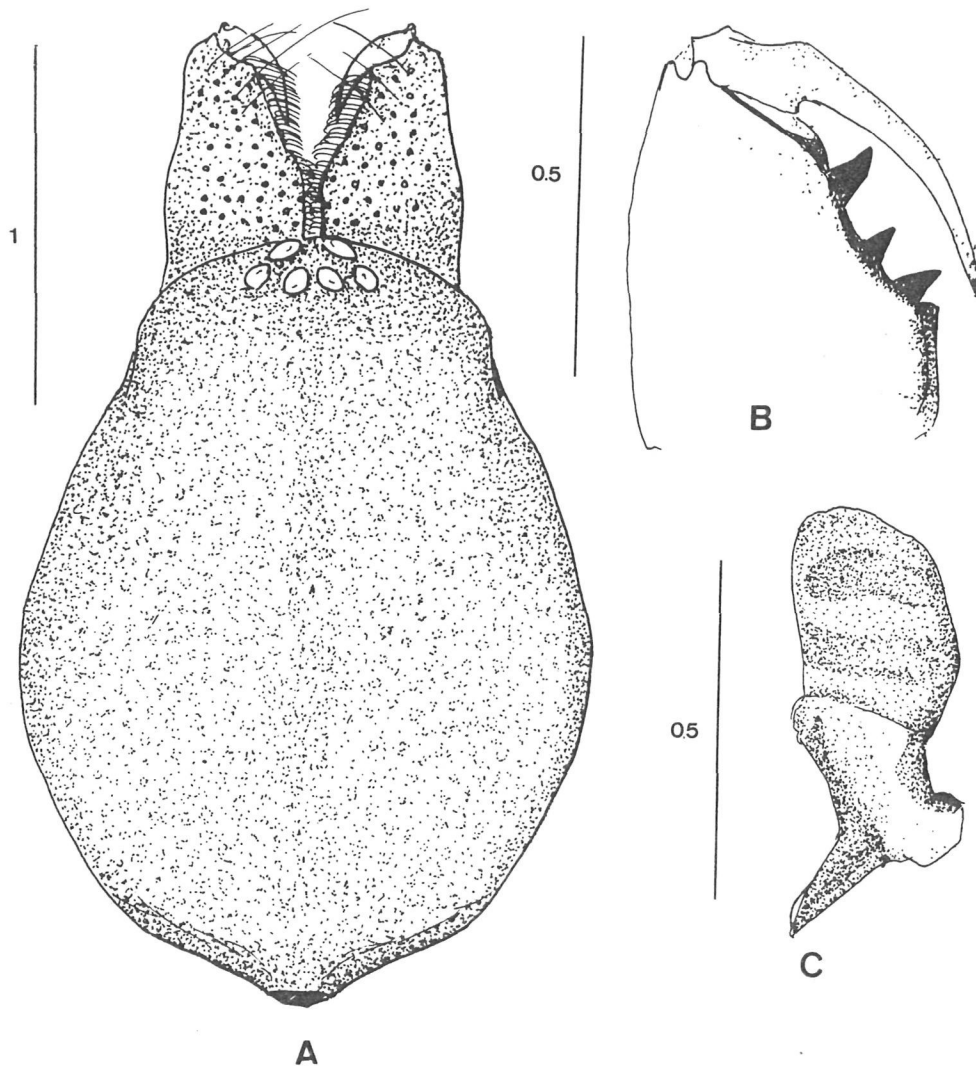


Fig. 2.—A–C. *Dysdera andamanae* sp. n.:—A. Carapace, dorsal.—B. Right chelicera, ventral.—C. Left male bulbus, external. Scale bars in millimetres.

above groove; B close to basal lamina; M close to basal. Legs yellow. Lengths of male described above: fe1 1.58 mm (all measurements in mm); pa1 0.98; ti1 1.3; me1 1.21; ta1 0.42; total 5.49; fe2 1.44; pa2 0.88; ti2 1.26; me2 1.16; ta2 0.42; total 5.16; fe3 1.12; pa3 0.6; ti3 0.84; me3 1.02; ta3 0.37; total 3.95; fe4 1.58; pa4 0.79; ti4 1.02; me4 1.40; ta4 0.42; total 5.21; fe Pdp 0.93; pa Pdp 0.18; ti Pdp 0.56; ta Pdp 0.56; total 2.23; relative length:  $1 > 4 > 2 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spineless; pa3 spineless; tb3d spines arranged in two bands: proximal 1.0.0; distal 1.0.1; tb3v; with one terminal spine on the forward margin. Fe4d spineless; pa4 spineless; tb4d spines arranged in two bands: proximal 1.0.1; distal 0.0.1; tb4v spines arranged in one band: proximal 0.1.0; with two terminal spines. Dorsal side of forward legs covered with small piligerous grains; ventral side of the pedipalp covered with small piligerous grains. Claws with 10–14 teeth.

Abdomen whitish; globular. Abdominal dorsal hairs 0.05–0.07 mm long, thin, curved, not compressed, pointed; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 2C) T slightly longer than DD; DD bent about 45° in lateral view. ES more developed than IS; IS continuous until embolus tip. DD tip (Fig. 3A–C) with upper, lower sheets sticking together; upper sheet

not projected over lower one; straight in lateral view. C present; poorly developed; located close to tip of the embolus; proximal border continuously decreasing; distal border markedly sloped; upper tip not projected, rounded; external side smooth. AC absent. LF present; distally not projected. L well-developed; external border sclerotized, not folded; distal border perpendicular, continuous. AL absent; proximal border in posterior view fused with DH. P (Fig. 3D) markedly sloped on its proximal part, perpendicular on distal one; fused to T; narrow, reduced to a ridge; lateral length from  $2/5$  to  $1/2$  T width; smooth; not distally projected; back margin not folded.

ALS (Fig. 4A) with pyriform gland spigot in polar position; remaining pyriform spigots more external than major ampulate gland spigot, arranged in one row; 3 + 1 pyriform gland spigots; PMS and PLS (Fig. 3B–C) with fewer than 10 aciniform gland spigots.

*Intraspecific variation.* Unknown.

*Distribution.* Gran Canarian endemic. The only known specimen was collected in one of the few remaining patches of Gran Canarian laurel forest (Brezal del Palmital).

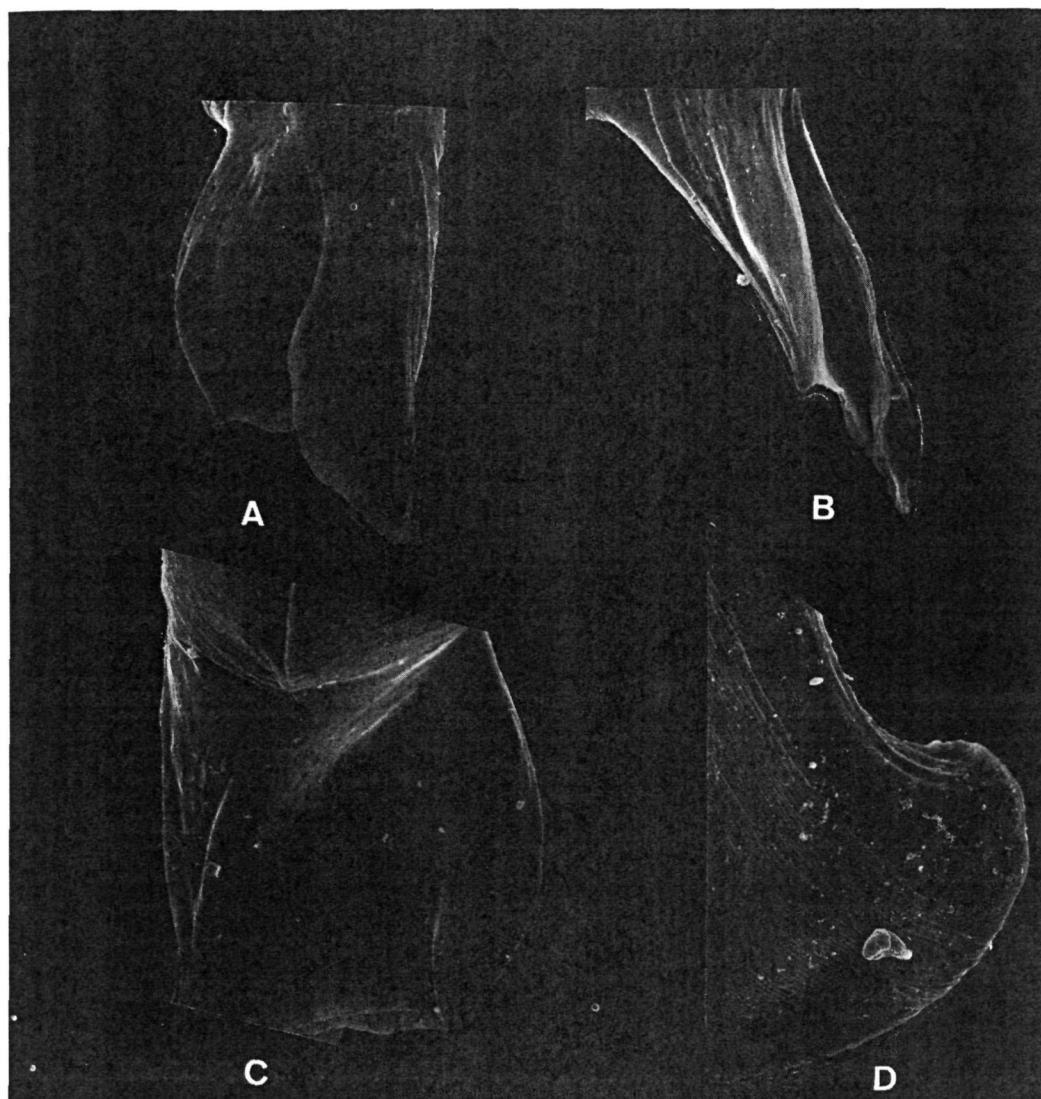


Fig. 3. —A–D. *Dysdera andamanae* sp. n.; right male bulbus.—A. DD, frontal.—B. DD, external.—C. DD, posterior.—D. P, internal.

***Dysdera arabisenen* sp. n.** (Figs. 5A–F, 6A–D, 7A–C)

*Holotype male.* 12/2/96, MA. Arnedo & B. Emerson leg.; num. 3032. Stored at UB.

*Type locality.* La Avejerilla, near Los Pechos, Vega de San Mateo, Gran Canaria, Canary Islands.

*Allotype female.* Same data as holotype; num. 3031, stored at UB.

*Paratypes.* La Avejerilla, near Los Pechos, Vega de San Mateo, Gran Canaria, Canary Islands; 12/2/96, Arnedo & Emerson leg.; 1♂ 3033 stored at UL and 1♂ 3093, stored at UB. Cumbre de Pajonales, Tejeda, Gran Canaria, Canary Islands; 11/2/96, Arnedo, Emerson & Oromí leg.; 1♀ 3022, stored at UB. El Pinalillo, road from Pinos de Gáldar, Gáldar, Gran Canaria, Canary Islands; 9/2/96, Arnedo, Emerson & Oromí leg.; 1♀ 2992, stored at UL.

*Other material.* Agaete: Pinar de Tamadaba; 1♀; 14/2/96; Arnedo, Emerson, Fragoso, Juan & Oromí leg.; 3051 UB. Gáldar: El Pinalillo, road from Pinos de Gáldar; 9/2/96; Arnedo, Emerson & Oromí leg.; 1♀ 2988 UB, 1♀ 2989 UB, 1 juv. 2991 UB, 1 juv. 2990 UB, 1♀ 2993 UB, 1♂ subad. 2994 UB, 1♀ 2995 UB, 1♀ 2996 UB, 1♀ 2997 UB. Tejeda: near Cumbre de Pajonales; 11/2/96; Arnedo, Emerson & Oromí leg.; 1♀ 3025 UB, 1♀ 3027 UB, 1♀ 3028 UB. Cruz de Tejeda; 2♀; 8/1/88; P. Oromí leg.; 2591 UB. Mirador de Moriscos; 1 juv.; 14/2/96; Arnedo, Emerson, Fragoso, Juan & Oromí leg.; 3047 UB. Vega de San Mateo: La Avejerilla, near Los Pechos; 12/2/96; Arnedo & Emerson leg.; 1♂ 3034 UB, 1♀ 3030 UB.

*Etymology.* The noun in apposition to this species corresponds to the word 'wild' in the language of the ancient aboriginal inhabitants of Gran Canaria.

*Diagnosis.* Carapace lateral frontal borders convergent, sharpened laterals and wide back border. Thick abdominal dorsal hairs, shorter and stick-like in males, compressed and pointed in females. T as long as DD. P clearly sloped in relation to T axis. Endogyne ventral sclerotization not reduced with well-developed sheet-like structures. This species can be distinguished from similar *D. tibicensis* sp. n. by more robust build, reduction in cheliceral granulations and spination, wider L and shorter ventral endogyne sheet-like structures.

*Description. Male* (Figs. 5A–C, 6A–D). Carapace (Fig. 5A) 4.69 mm long; maximum width 4.06 mm; minimum width 2.8 mm. Brownish dark red, uniformly distributed; smooth with some small black grains mainly anterior. Frontal border roughly triangular, about 3/5 carapace length; lateral borders convergent; sharpened at maximum dorsal width point, back lateral borders straight; back margin wide, straight. AME diameter 0.25 mm, PLE 0.21 mm, PME 0.18 mm; AME on edge of frontal border, separated one from another about one diameter, close to PLE; PME very close to each other, about 1/3 PME



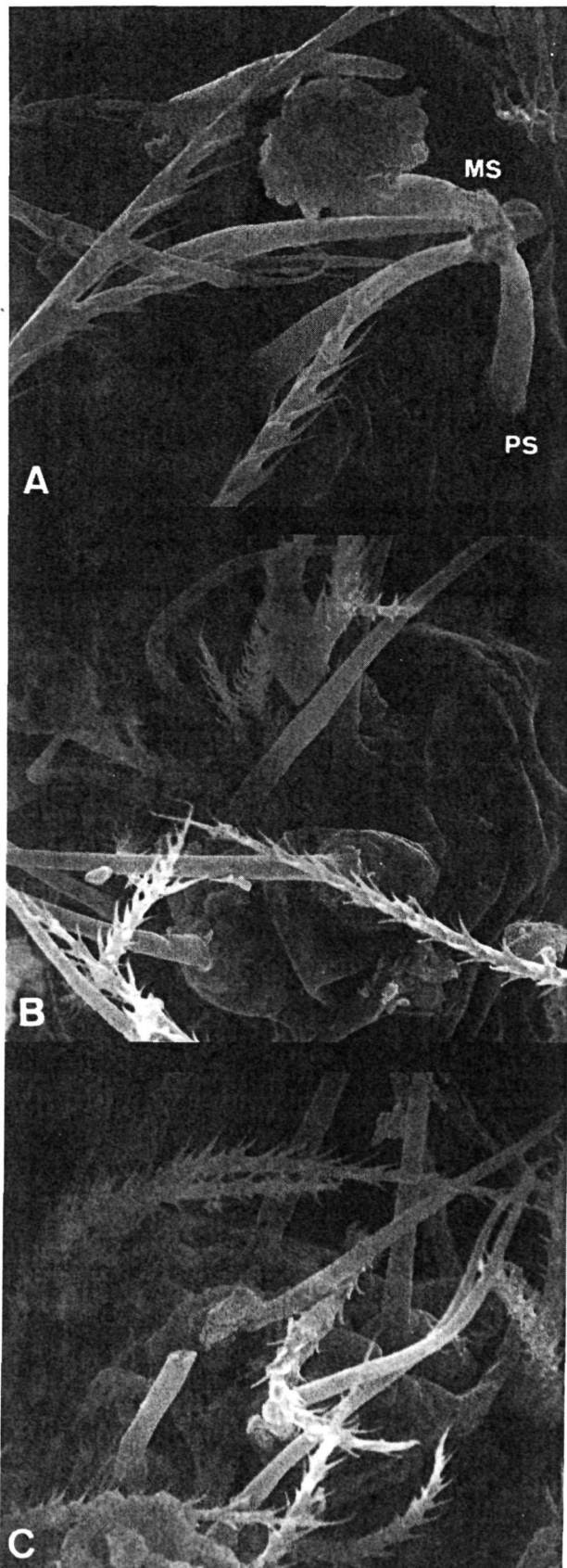


Fig. 4. —A–C. *Dysdera andamanae* sp. n.; female spinnerets.—A. Left ALS.—B. Right PMS.—C. Right PLS.

diameter from PLE. Labium trapezoid-shaped, base wider than distal part; longer than wide at base; with semicircular groove at tip. Sternum brownish orange, frontally darker, becoming lighter towards the back; smooth; uniformly covered in slender black hairs.

Chelicerae (Fig. 5B) 1.53 mm long, about 2/5 of carapace length in dorsal view; fang medium-sized, 1.54 mm; basal segment proximal dorsal and ventral side scantily covered with piligerous granulations. Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base; D largest, B larger than M; D triangular, located near segment tip; B close to basal lamina; M at middle of B, D. Frontal legs dark orange, back legs yellow. Lengths of male described above: fe1 4.06 mm (all measurements in mm); pa1 2.8; ti1 3.5; me1 3.5; ta1 0.77; total 14.63; fe2 3.85; pa2 2.59; ti2 3.15; me2 3.43; ta2 0.805; total 13.82; fe3 2.87; pa3 1.75; ti3 1.75; me3 2.66; ta3 0.77; total 9.8; fe4 3.85; pa4 2.17; ti4 2.73; me4 3.85; ta4 0.98; total 13.58; fe Pdp 2.52; pa Pdp 1.61; ti Pdp 1.33; ta Pdp 1.26; total 6.72; relative length:  $1 > 2 > 4 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spineless; pa3 spineless; tb3d spines arranged in two bands: proximal 1.0.0–1; distal 1.0.0; tb3v with two terminal spines. Fe4d spineless; pa4 spineless; tb4d spines arranged in two bands: proximal 1.0.1; distal 1.0.1; tb4v spines arranged in one band: proximal 1.1.0; with two terminal spines. Dorsal side of forward legs covered with small piligerous grains; ventral side of the pedipalp covered with hairs but lacking small grains; posterior legs densely covered with short hairs. Claws with 8 teeth or less.

Abdomen 12.04 mm long; cream-coloured; cylindrical. Abdominal dorsal hairs 0.05 mm long, thick, straight or only slightly curved mainly at distal part, not compressed, blunt, tip not enlarged; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 5C) T as long as DD; DD bent about 45° in lateral view. IS more developed than ES; IS continuous until embolus tip. DD tip (Fig. 6A–C) with upper, lower sheets sticking together; upper sheet not projected over lower one; sloped towards back in lateral view. C present; well-developed; located close to tip of the embolus; proximal border sharply decreasing; distal border stepped; upper tip not projected, rounded; external side excavated. AC present. LF absent. L well-developed; external border not sclerotized, distally markedly folded; distal border divergent, continuous. AL present, hardly visible except for small notch; proximal border in posterior view fused with DH except for its most internal part. P (Fig. 6D) sloped forming an angle of about 135° to T in lateral view; fused to T; narrow, reduced to a ridge; lateral length from 1/3 to 2/5 T width; markedly toothed along its upper margin; few teeth, about 4–6; not distally projected; back margin slightly folded towards internal side.

*Female* (Figs. 5D–F, 7A–C). All characters as in male except: Carapace 5.53 mm long; maximum width 4.69 mm; minimum width 3.15 mm. AME diameter 0.32 mm, PLE 0.23 mm, PME 0.20 mm; PME about 2/5 diameter from PLE.

Chelicerae 1.95 mm long; fang medium-sized, 1.82 mm. Lengths of female described above: fe1 4.55 mm (all measurements in mm); pa1 3.08; ti1 3.57; me1 3.57; ta1 0.84; total 15.61; fe2 4.62; pa2 3.08; ti2 3.85; me2 3.57; ta2 0.91; total 16.03; fe3 3.15; pa3 2.10; ti3 2.24; me3 3.15; ta3 1.05; total 11.69; fe4 4.13; pa4 2.31; ti4 3.15; me4 4.00; ta4 0.98; total 14.57; fe Pdp 2.80; pa Pdp 1.54; ti Pdp 1.12; ta Pdp 1.82; total 7.28; relative length  $2 > 1 > 4 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spineless; pa3 spineless; tb3d spines arranged in two

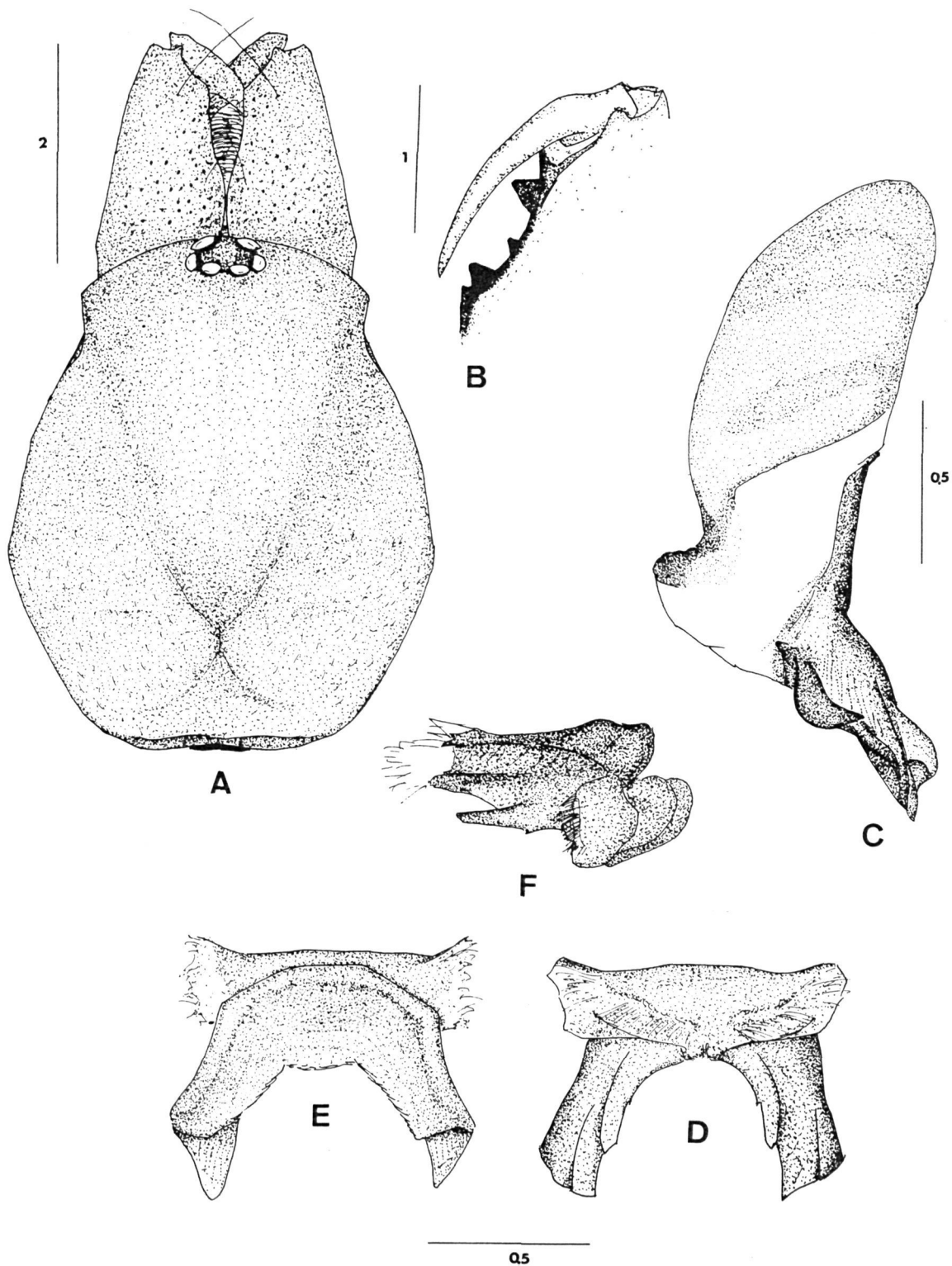


Fig. 5.—A–F. *Dysdera arabisenen* sp. n.;—A. Carapace, dorsal.—B. Left chelicera, ventral.—C. Right male bulbus, external.—D. Endogyne, ventral.—E. Endogyne, dorsal.—F. Endogyne, lateral. Scale bars in millimetres.

bands: proximal 1.0.0; distal 1.0.0; tb3v with one terminal spine on the forward margin. Fe4d spineless; pa4 spineless; tb4d spines arranged in two bands: proximal 1.0.1; distal 1.0.1; tb4v spines arranged in one band: proximal 1.1.1–0; with two terminal spines.

Abdomen 14.63 mm long; dark grey; cylindrical. Abdominal dorsal hairs 0.12 mm long, thick, curved, compressed, pointed, uniformly, thickly distributed.

DA (Fig. 5D–F) sclerotized around TB valve attachment as well as in ventral region; both regions completely

fused, not distinguishable; DF wide. DA frontal border projected, rounded; lateral margins convergent in dorsal view; slightly wider than long. Ventral region mostly sclerotized except back lateral ends; sclerotized sheet-like structure present at both sides of S attachment, joined to lateral ventral sclerotization, except its back ends, slightly shorter than dorsal sclerotization of DA, somewhat bent towards lateral area. S arms as long as DA; straight; ends projected forward. TB usual shape.

ALS (Fig. 7A) with pyriform gland spigot in polar

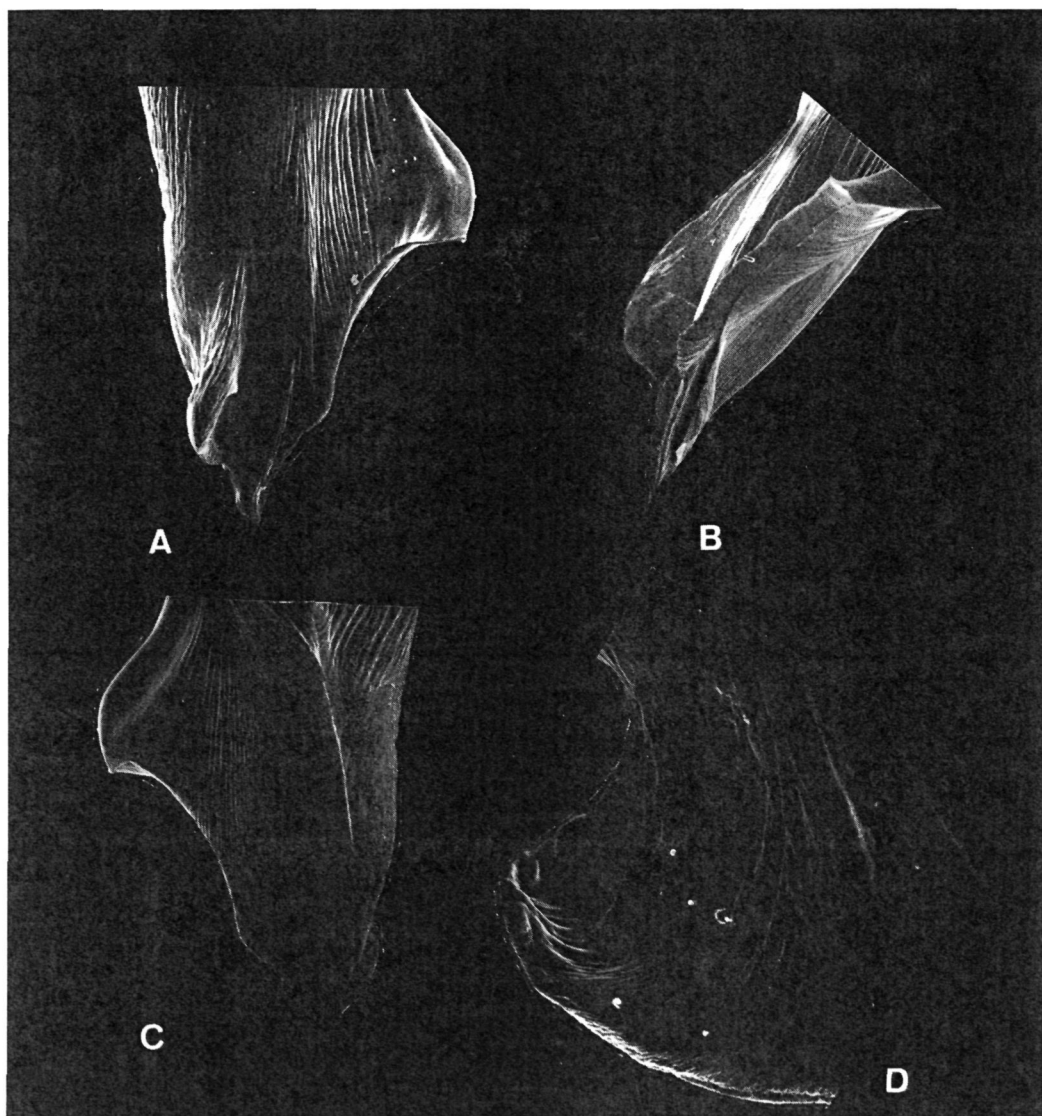


Fig. 6. —A–D. *Dysdera arabisenen* sp. n.; left male bulbus.—A. DD, frontal.—B. DD, external.—C. DD, posterior.—D. P, internal.

position; remaining pyriform spigots no more external than major ampulate gland spigot, arranged in two rows; 10 + 1 pyriform gland spigots; PMS and PLS (Fig. 7B–C) with 10–15 aciniform gland spigots.

**Intraspecific variation.** Male cephalothorax ranges in length from 4.69 mm to 5.25 mm, female from 4.69 mm to 5.53 mm. Distal and basal teeth of the chelicera similar in size. Frontal sclerites of the male's bulbus with variable sclerotization. S arms sometimes shorter than DA width and slightly curved. Spination variability in Table I.

**Distribution.** Gran Canarian endemic. Relatively abundant species from moist pine forest and degraded shrub habitats above 1200 m.

***Dysdera bandamae* Schmidt, 1973** (Figs. 8A–F, 9A–D, 10A–C)

*Dysdera bandamae* Schmidt, 1973: 360–361, Fig. 2 [5]—Wunderlich, 1991: 287.—Wunderlich, 1994: 418, Fig. 30 [5] (after Schmidt 1973, Fig. 2).

**Material examined.** Agaete: Pinar de Tamadaba; 14/2/96; Arnedo, Emerson, Fragoso, Juan & Oromí leg.; 1♀ 3053 UB. 1 juv. 3061 UB.

Agüimes: Barranco de Guayadeque; 12/2/96; Arnedo & Emerson leg.; 1♂ 3039 UB (redescription), 1 juv. 3042 UB, 1♀ 3041 UB, 1♀ 3038 UB, 1♀ 3037 UB, 1♀ 3035 UB. Mogán: near Cruz de San Antonio; 1 juv.; 15/2/96; Arnedo, Emerson, Fragoso, Juan & Oromí leg.; 3072 UB. Degollada de las Brujas, N slope; 1♀; 10/2/96; Arnedo, Emerson & Oromí leg.; 3015 UB. Near Degollada de las Brujas, NW slope; 11/2/96; Arnedo, Emerson & Oromí leg.; 1 juv. 3021 UB, 1♀ 3020 UB, 1♀ 3018 UB. Inagua; 10/2/96; Arnedo, Emerson & Oromí leg.; 1♀ 3010 UB, 1♀ 3007 UB. Ojeda; 1♀; 10/2/96; Arnedo, Emerson & Oromí leg.; 3004 UB. Presa de la Cueva de las Niñas; 1♂; P. Oromí leg.; 3130 UB. 1♀; 31/12/93; S. Martín leg.; 2637 UB. San Nicolás de Tolentino: Degollada de Tasartico; 15/2/96; Arnedo, Emerson, Fragoso, Juan & Oromí leg.; 1 juv. 3079 UB, 1♀ 3077 UB. Santa Maria de Guía: Brezal del Palmital; 9/2/96; Arnedo, Emerson & Oromí leg.; 1 juv. 2982 UB, 1♂ 2980 UB, 1♂ 2978 UB. Tejada: Montaña de Sándara; 1♀; 11/2/96; Arnedo, Emerson & Oromí leg.; 3029 UB. Vega de San Mateo: La Calderilla, 1750 m, under los Pechos; 1♀; -/5/95; P. Oromí leg.; 4782 UB.

**Diagnosis.** Carapace and sternum wrinkled. Lateral frontal borders parallel (Fig. 8A). Cheliceral segment completely covered with granulations. Very hairy abdomen, thick long hairs curved and pointed. Legs not strongly spinated. L with an outstanding frontally-projected fold at middle (Fig. 9A). Difficult to misidentify.

**Description. Male** (Figs. 8A–C, 9A–D) Carapace (Fig. 8A) 2.91 mm long; maximum width 2.3 mm; minimum width 1.53 mm. Dark red, frontally darker, becoming lighter



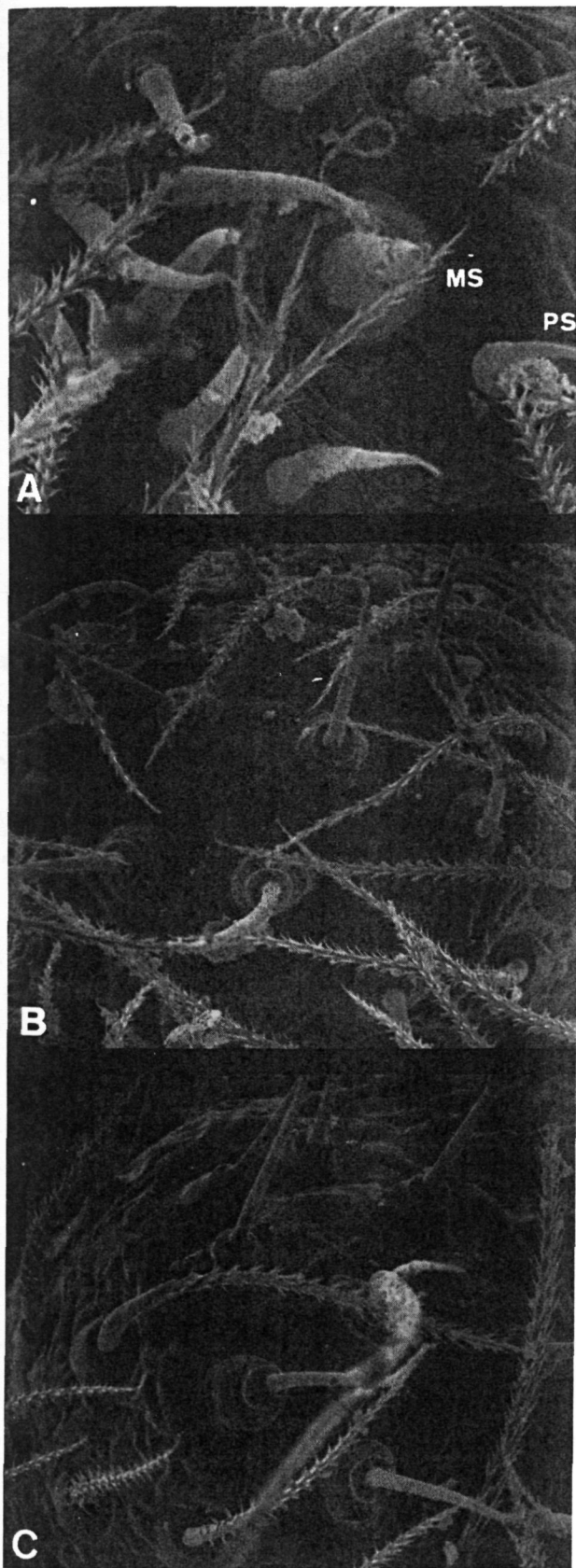


Fig. 7. —A–C. *Dysdera arabisenen* sp. n.; female spinnerets.—A. Left ALS.—B. Right PMS.—C. Right PLS.

Table 1. Intraspecific spination variability of *Dysdera arabisenen* sp. n.

	Proximal	Med.–proximal	Medial–distal	Distal
Tibia 3 dorsal	1.0.0–1	0	0	1.0.0
Tibia 4 dorsal	1.0–1.1	0	0	1.0.1
Tibia 3 ventral	0–1.0.0	0	0	0
Tibia 4 ventral	1.1.0–1	0	0	0
	Number of rows		Number of spines	
Femur 3 dorsal		0		—
Femur 4 dorsal		0		—

rounded at maximum dorsal width point, back lateral borders straight; back margin narrow, straight. AME diameter 0.21 mm, PLE 0.18 mm, PME 0.12 mm; AME on edge of frontal border, separated one from another about half diameter, close to PLE; PME very close to each other, about 1/3 PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part; as long as wide at base; with semicircular groove at tip. Sternum red, uniformly distributed; wrinkled; uniformly covered in slender black hairs.

Chelicerae (Fig. 8B) 1.26 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 0.84 mm; basal segment dorsal and ventral side completely covered with piligerous granulations. Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base, equal in size; D triangular, located near segment tip; B close to basal lamina; M at middle of B, D. Frontal legs dark orange and back legs yellow. Lengths of male described above: fe1 2.47 mm (all measurements in mm); pa1 1.72; ti1 2.37; me1 2.33; ta1 0.56; total 9.45; fe2 2.09; pa2 1.44; ti2 1.91; me2 1.91; ta2 0.51; total 7.86; fe3 1.63; pa3 0.98; ti3 1.16; me3 1.49; ta3 0.46; total 4.56; fe4 2.14; pa4 1.26; ti4 1.72; me4 1.91; ta4 0.51; total 7.54; fe Pdp 1.35; pa Pdp 0.84; ti Pdp 0.70; ta Pdp 0.65; total 3.54; relative length: 1 > 2 > 4 > 3. Spination: palp, leg1, leg2 spineless. Fe3d spines in one row: 0–1; pa3 spineless; tb3d spines arranged in two bands: proximal 1.0.0; distal 1.0.0; tb3v; with two terminal spines. Fe4d spines in two rows: forward 1; backward 2; pa4 spineless; tb4d spines arranged in one band: proximal 0.0.1; tb4v spines arranged in one band: proximal 0.1.0; with one terminal spine on one leg and two on the other one. Dorsal side of forward legs covered with small piligerous grains; ventral side of the pedipalp covered with small piligerous grains; very long hairs on back legs as well as on pedipalps. Claws with eight teeth or less.

Abdomen 7.27 mm long; cream-coloured; cylindrical. Abdominal dorsal hairs 0.2 mm long, thick, curved, not compressed, pointed; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 8C) T slightly smaller than DD; DD slightly bent in lateral view, clearly less than 45°. DD sclerites equally developed; IS truncated at middle part of haematodoca. DD tip (Fig. 9A–C) with upper, lower sheets sticking together; upper sheet not projected over lower one; straight in lateral view. C present; well-developed; located close to tip of the embolus; proximal border continuously decreasing; distal border stepped; upper tip projected, pointed; external side excavated. AC present. LF absent. L well-developed; external border not sclerotized, distally slightly folded; distal border divergent, not continuous, upper sheet strongly folded in middle. AL present, very poorly developed; proximal border in

towards back, darkened at borders; slightly foveate at borders, wrinkled in middle, covered with small black grains; hairy, covered with black hairs mainly at lateral and back borders. Frontal border roughly triangular, about 1/2 carapace length; lateral borders parallel;



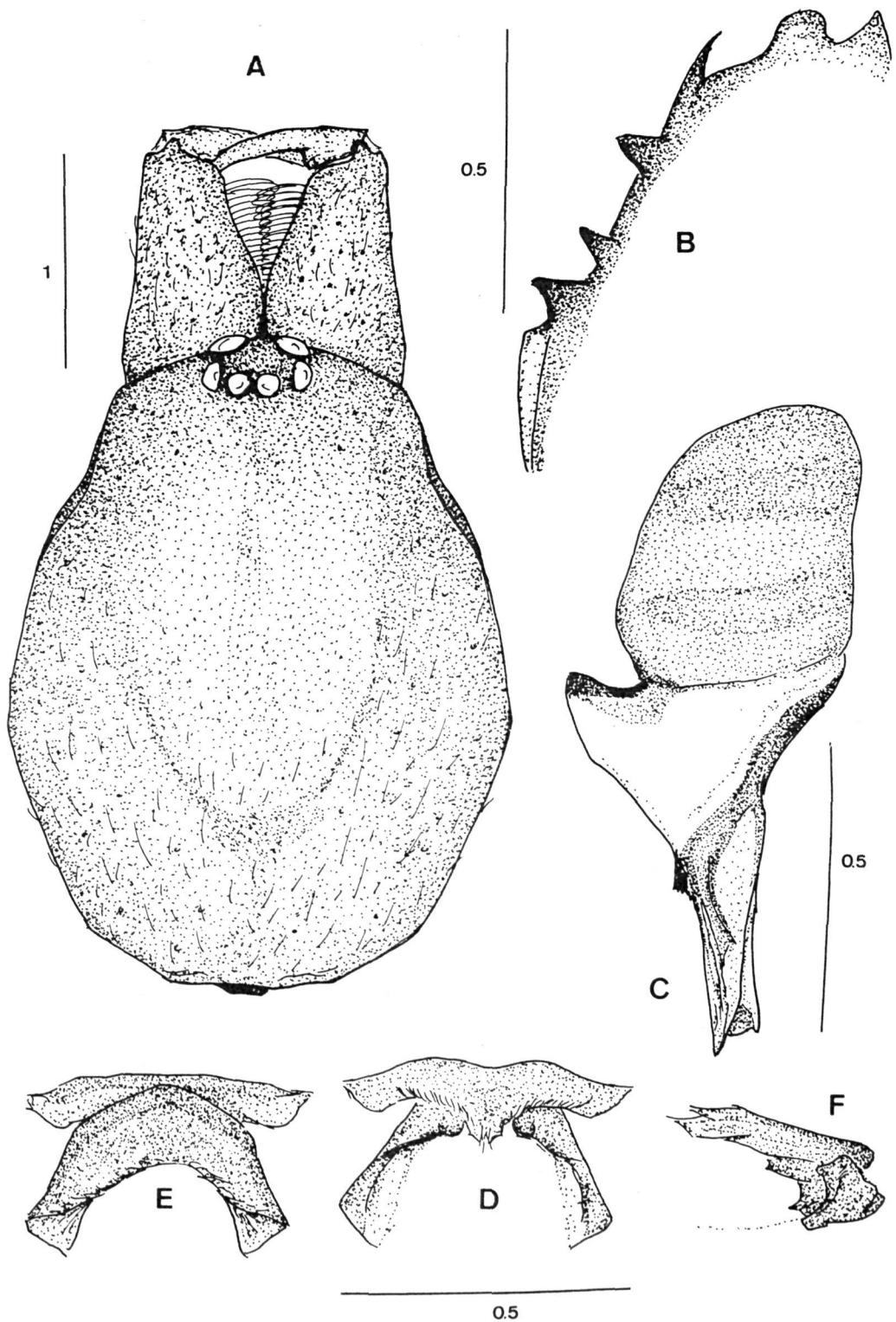


Fig. 8.—A–F. *Dysdera bandamae* Schmidt, 1973;—A. Carapace, dorsal.—B. Left chelicera, ventral.—C. Right male bulbus, external.—D. Endogyne, ventral.—E. Endogyne, dorsal.—F. Endogyne, lateral. Scale bars in millimetres.

posterior view toothed. P (Fig. 9D) perpendicular to T in lateral view; fused to T; narrow, reduced to a ridge; lateral length from 1/3 to 2/5 T width; smooth; not distally projected; back margin not folded.

*Female* (Figs. 8D–F, 10A–C). All characters as in male except: Carapace 3.4 mm long; maximum width 2.42 mm; minimum width 1.67 mm. AME diameter 0.20 mm, PLE 0.37 mm, PME 0.32 mm; AME separated one from another about 2/5 of diameter; PME about 2/5 diameter from PLE.

Chelicerae 1.44 mm long; fang 0.93 mm. Frontal legs dark orange and back legs yellow. Lengths of female described above: fe1 2.51 mm (all measurements in mm); pa1 1.79; ti1 2.19; me1 2.23; ta1 0.51; total 9.23; fe2 2.14; pa2 1.58; ti2 1.95; me2 1.91; ta2 0.51; total 8.09; fe3 1.72; pa3 0.98; ti3 1.16; me3 1.44; ta3 0.46; total 5.76; fe4 2.28; pa4 1.21; ti4 1.67; me4 1.95; ta4 0.51; total 7.62; fe Pdp 1.44; pa Pdp 0.74; ti Pdp 0.51; ta Pdp 0.74; total 3.43; relative length 1 > 2 > 4 > 3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; pa3 spineless; tb3d spines

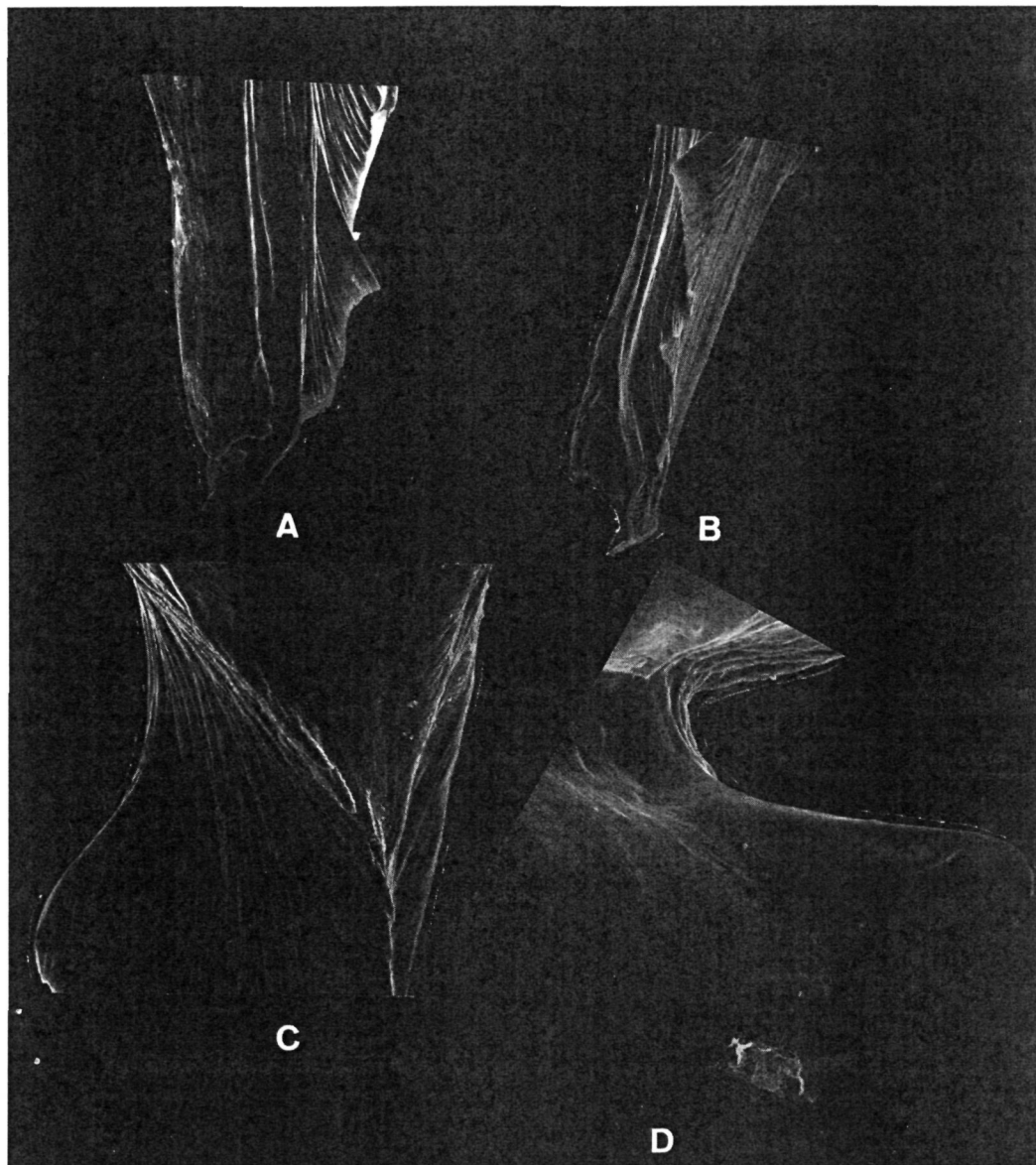


Fig. 9.—A–D. *Dysdera bandamae* Schmidt, 1973; left male bulbus.—A. DD, frontal.—B. DD, external.—C. DD, posterior.—D. P, external.

arranged in two bands: proximal 1.0.0; distal 1.0.0; tb3v with two terminal spines. Fe4d spines in two rows: forward 1; backward 2–1; pa4 spineless; tb4d spines arranged in one band: proximal 0.0.1; tb4v spines arranged in one band: proximal 0.1.0; with two terminal spines.

Abdomen 7.29 mm long; cream-coloured; cylindrical. Abdominal dorsal hairs 0.21 mm long, thick, curved, not compressed, pointed, uniformly, thickly distributed.

DA (Fig. 8D–F) sclerotized around TB valve attachment as well as in ventral region; both regions completely fused, not distinguishable; DF wide. DA frontal border projected, pointed; lateral margins convergent in dorsal view; slightly wider than long. Ventral region sclerotization reduced to most frontal area; small scale or ridge present at both sides of S attachment. S arms as long as DA; slightly curved; tips dorsally projected; neck as wide as arms. TB usual shape.

ALS (Fig. 10A) with pyriform gland spigot in polar position; remaining pyriform spigots more external than major ampulate gland spigot, arranged in two rows; 6 + 1 pyriform gland spigots; PMS and PLS (Fig. 10B–C) with 10–15 aciniform gland spigots.

*Intraspecific variation.* Male cephalothorax ranges in length from 2.91 mm to 3.21 mm, female from 3.17 mm to 3.72 mm. AME separation from 1/3 diameter to 1/2 diam. PLE-PME from 1/3 diam. to 2/5 diam. Sternum ornamentation sometimes reduced. Changeable relative size of the chelicera teeth, although not very different. P back margin slightly folded. Spination variability in Table II.

*Distribution.* Gran Canarian endemic. Very abundant species spread over most of the island habitats.

*Comments.* This species was formerly known through one single male specimen. The type material that was supposedly stored at SMF is not there (Wunderlich 1994).

#### *Dysdera crocota* C.L. Koch, 1839

*Dysdera crocota* C.L. Koch, 1839: 81.

*Dysdera verneaudi* Simon, 1883 (♀, non♂): 296–298; wrong identification.