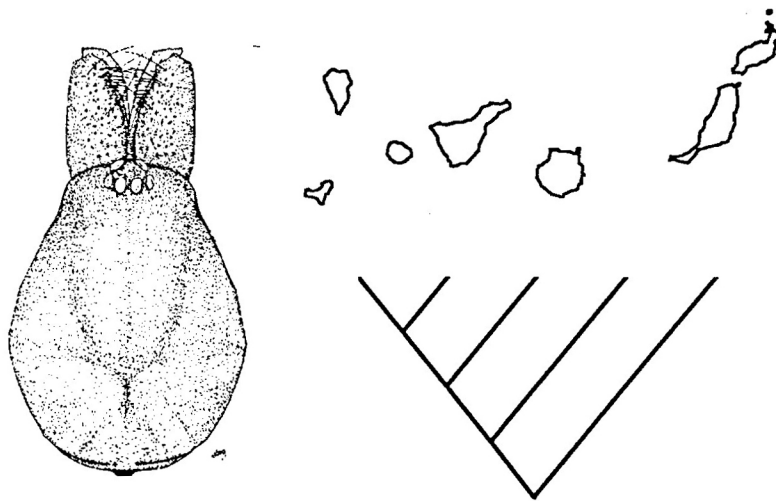


Departament de Biologia Animal  
Facultat de Biologia  
Universitat de Barcelona

Tesi Doctoral

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



Miquel Àngel Arnedo Lombarte

1998

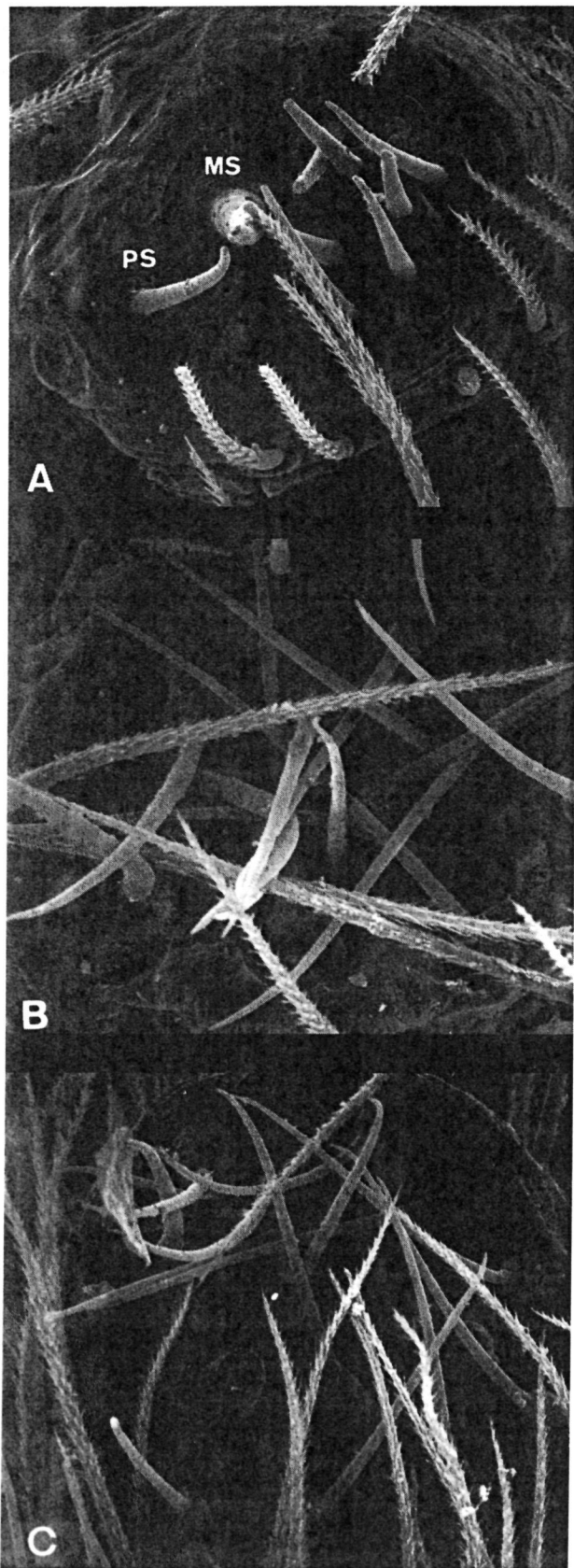


Fig. 28. —A–C. *Dysdera verneau* Simon, 1883; right female spinnerets.—A. ALS.—B. PMS.—C. PLS.

2.23; pa3 1.40; ti3 1.67; me3 2.09; ta3 0.56; total 7.95; fe4 2.89; pa4 1.81; ti4 2.47; me4 2.79; ta4 0.65; total 10.61; fe Pdp 1.86; pa Pdp 0.93; ti Pdp 0.74; ta Pdp 1.07; total 4.60; relative length 1 > 4 > 2 > 3. Spination: palp, leg1, leg2 spineless. Fe3d spines in one row: 1; pa3 spineless; tb3d

Table VIII. *Intraspecific spination variability of Dysdera verneau*

	Proximal	Med.–proximal	Medial–distal	Distal
Tibia 3 dorsal	1.2–4.1	0	0	1.0.0–1
Tibia 4 dorsal	0.0–1.0–1	1.0–2.1	0	1–2.0–1.1
Tibia 3 ventral	0–1.1–2.0	1.1–3.0–1	0–1.0–1.0	0–2.0–1.0–1
Tibia 4 ventral	0.1–3.0	1.2–4.1	0.0–2.0–1	1.1–3.1
	Number of rows		Number of spines	
Femur 3 dorsal		1		0–1
Femur 4 dorsal		2		1–2/3–6

spines arranged in two bands: proximal 1.2.1; distal 1.0.1–0; tb3v spines arranged in three bands: proximal 1.2.0; medial–proximal 1.2–1.0; distal 2–1.1–0.0–1; with two terminal spines. Fe4d spines in two rows: forward 1; backward 4–3; pa4 spineless; tb4d spines arranged in three bands: proximal 0.0.1–0; medial–proximal 1.0–1.1; distal 1.1.1; tb4v spines arranged in four bands: proximal 0.3–2.0; medial–proximal 1.3.1; medial–distal 0.1–2.0; distal 1.2.1; with two terminal spines.

Abdomen 7.28 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.36 mm long, medium-sized, straight or slightly curved mainly at distal part, not compressed, blunt, lateral knob at the tip, uniformly, thickly distributed.

DA (Fig. 26E–G) 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 sclerotized from middle area to the front; small scale or ridge present at both sides of S attachment. S arms as long as DA; slightly curved; ends projected forward; neck as wide as arms. TB usual shape.

ALS (Fig. 28A) with pyriform gland spigot in polar position; remaining pyriform spigots more external than major ampulate gland spigot, arranged in two rows; 10 + 1 pyriform gland spigots; PMS and PLS (Fig. 28B–C) with 10–15 aciniform gland spigots.

*Intraspecific variation.* Male cephalothorax ranges in length from 4.06 mm to 4.41 mm, female from 3.29 mm to 4.34 mm. AME separation from 3/4 diam. to 1 diam. PLE–PME from 1/3 diam. to 1/2 diam. Chelicera basal segment granulation reduced towards proximal dorsal area. L most external part perpendicular to DD axis. AL proximal border in posterior view without small imprints. P in lateral view as long as T (Fig. 26D). Sclerotized tooth-like projections markedly reduced in size developed from S attachment present (Fig. 26H–I). Spination variability in Table 8.

*Distribution.* Gran Canarian endemic. An abundant species from pine forest and degraded shrub habitats above 1000 m.

*Comments.* Similarly to *D. insulana*, male type material has presumably been lost as far as no adult male was found among the type material of the Simon's collection stored at MHNP. After examination of female material assigned to this species by the own author, it turned out to belong to the cosmopolitan species *D. crocota*. Although specimens

assigned to this species in the present study do not fit perfectly the original description (chelicerae were supposed to be smooth when actually they are markedly and completely covered with granulations), they are the closest to the material previously studied, sharing some unique characters (a strongly spinated femora 4) not present in other Gran Canarian *Dysdera*. Therefore, the preferred option was to keep the name and to redescribe *D. verneui*, rather than to describe a new species.

*Dysdera yguanirae* sp. n. (Figs. 29A-I, Figs. 30A-D, Fig. 31A-B)

*Holotype male*. 9/2/96, Arnedo, Emerson & Oromí leg.; num. 2985, stored at UB.

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

*Allotype female*. Same data as holotype; num. 2986, stored at UB.

*Paratypes*. Caideros (800 m), Gáldar, Gran Canaria, Canary Islands; -/1/95, M. Naranjo leg.; 1♀ num. 3168, stored at UL.

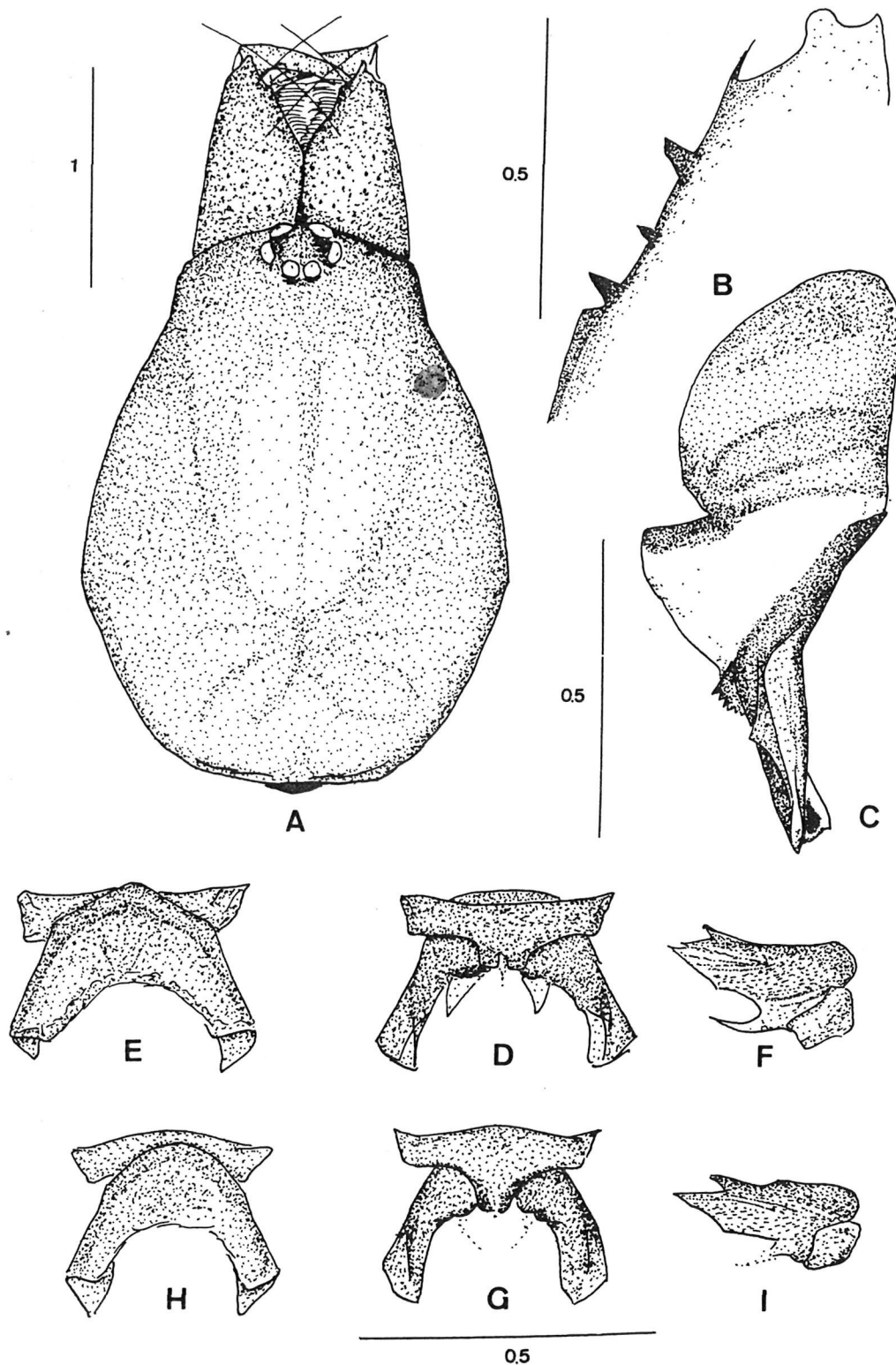


Fig. 29. —A-I. *Dysdera yguanirae* sp. n.; —A. Carapace, dorsal.—B. Left chelicera, ventral.—C. Right male bulbus, external.—D. Endogyne, ventral.—E. Endogyne, dorsal.—F. Endogyne, lateral.—G. Endogyne variability, ventral.—H. Endogyne variability, dorsal.—I. Endogyne variability, lateral. Scale bars in millimetres.

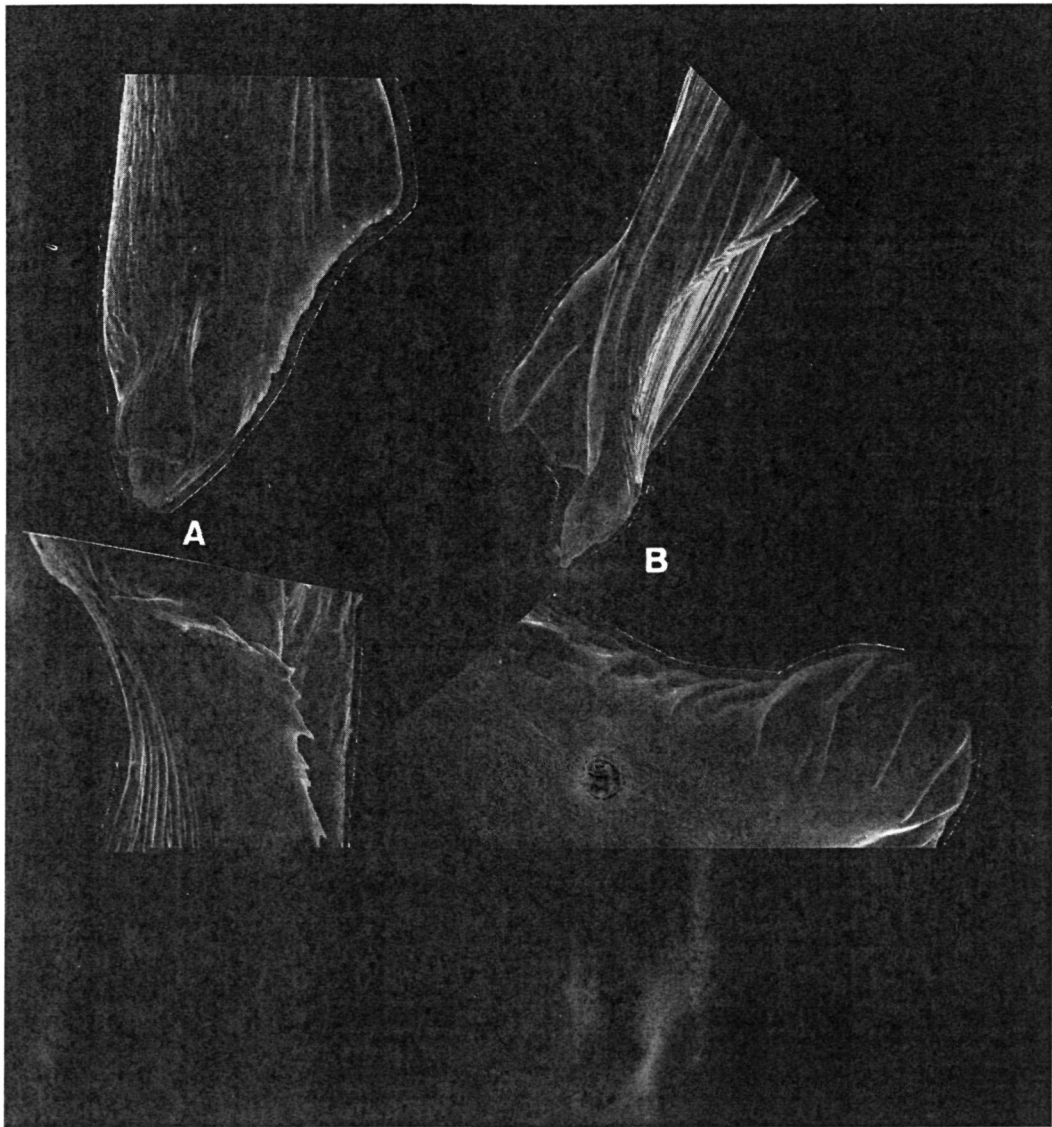


Fig. 30. —A–D. *Dysdera yguanirae* sp. n.; left male bulbus.—A. DD, frontal.—B. DD, external.—C. DD, posterior.—D. P, external.

*Etymology.* The name refers to Yguanira, daughter of Doramas, 'guanarteme' (aboriginal king) of Gran Canaria.

*Diagnosis.* Smooth carapace, parallel lateral frontal borders (Fig. 29A). Chelicerae granulation reduced towards proximal part. D large, trapezoid (Fig. 29B). Abdominal dorsal hairs stick-like in males and longer, compressed, pointed in females; strongly toothed at internal proximal border. DA ventral sclerotization reduced to the front half (Fig. 29E, H). Small sheet-like structures may be present. This species is distinguished from similar Tenerifean *D. brevispina* Wunderlich, 1991 by smaller chelicerae and fangs, larger teeth (especially distal) and spinated femur 4 (Table IX).

*Description. Male* (Fig. 29A–C, 30A–D). Carapace (Fig. 29A) 2.58 mm long; maximum width 2.05 mm; minimum width 1.21 mm. Brownish orange, darkened at borders; slightly foveate at borders, slightly wrinkled with small black grains mainly anterior; hairy, covered with black hairs mainly at lateral and back borders. Frontal border roughly rounded, about 1/2 carapace length; lateral borders parallel; rounded at maximum dorsal width

point, back lateral borders straight; back margin wide, straight. AME diameter 0.16 mm, PLE 0.14 mm, PME 0.11 mm; AME on edge of frontal border, separated one from another about half diameter, close to PLE; PME very close to each other, less than one quarter PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part; as long as wide at base; with semicircular groove at tip. Sternum orange, uniformly distributed; very slightly wrinkled, mainly between legs and frontal border; covered in hairs mainly on edge.

Chelicerae (Fig. 29B) 1.07 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 0.88 mm; basal segment proximal dorsal side scanty 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 trapezoid, located at centre of or slightly above groove; B close to basal lamina; M close to B. Legs yellow. Lengths of male described above: fe1 1.86 mm (all measurements in mm); pa1 1.21; ti1 1.67; me1 1.67; ta1 0.46; total 6.87; fe2 1.72; pa2 1.21; ti2 1.49; me2 1.53; ta2 0.46; total 6.41; fe3 1.63; pa3 0.88; ti3 1.07; me3 1.4; ta3 0.44; total 5.42; fe4 2.19; pa4 1.16; ti4 1.67; me4 2.09; ta4

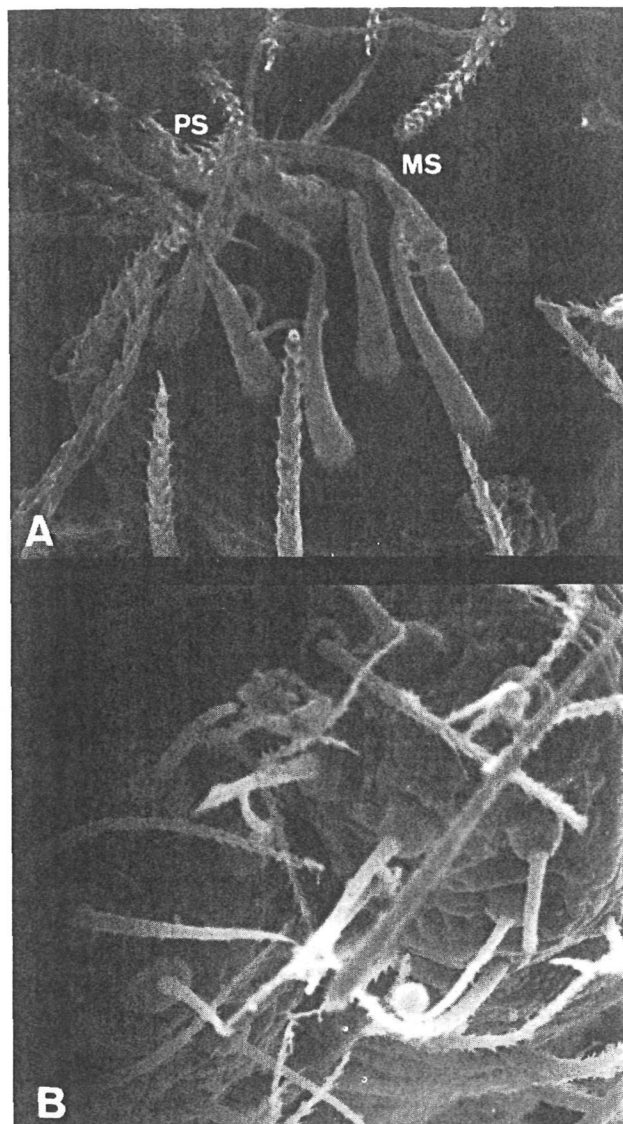


Fig. 31. —A–B. *Dysdera yguanirae* sp. n.; right female spinnerets.—A. ALS.—B. PMS (upper right) and PLS.

0.51; total 7.62; fe Pdp 1.07; pa Pdp 0.56; ti Pdp 0.51; ta Pdp 0.51; total 2.09; relative length:  $4 > 1 > 2 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spines in one row: 1; pa3 spineless; tb3d spines arranged in two bands: proximal 1.2–3.1; distal 1.0.1–0; tb3v spines arranged in two bands: proximal 1.2.0; distal 1.0.0; with two terminal spines. Fe4d spines in two rows: forward 0–1; backward 2–3; pa4 spineless; tb4d spines arranged in two bands: proximal 1.2–1.1; distal 1.1.1; tb4v spines arranged in two bands: proximal 1.2–3.1; distal 1.0.1–0; 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.

Table IX. Intraspecific spination variability of *Dysdera yguanirae* sp. n.

	Proximal	Med.–proximal	Medial–distal	Distal
Tibia 3 dorsal	1.2–4.1	0	0	1.0.0–1
Tibia 4 dorsal	1.1–3.1	0	0	1.0–1.1
Tibia 3 ventral	0–1.1–2.0	0	0	0–1.0.0
Tibia 4 ventral	1.2–3.1	0	0	1.0–1.0–1
	Number of rows		Number of spines	
Femur 3 dorsal	1		0–1	
Femur 4 dorsal	2		0–1/2–3	

Abdomen cream-coloured; cylindrical. Abdominal dorsal hairs 0.027 mm long, medium-sized, straight or only slightly curved mainly at distal part, not compressed, blunt, tip not enlarged; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 29C) T slightly smaller than DD; DD slightly bent in lateral view, clearly less than  $45^\circ$ . ES more sclerotized than IS; IS truncated in middle part of haematodoca. DD tip (Fig. 30A–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 sharply decreasing; distal border stepped; upper tip projected, pointed; external side excavated. AC present. LF absent. L well-developed; external border not sclerotized, laterally slightly folded; distal border divergent, continuous. AL present, poorly developed; proximal border in posterior view strongly toothed on its internal half. P (Fig. 30D) perpendicular to T in lateral view; fused to T; narrow, reduced to a ridge; lateral length from  $2/5$  to  $1/2$  T width; markedly toothed along its upper margin; few teeth, about 4–6; not distally projected; back margin not folded.

*Female* (Figs. 29D–I, Figs. 31A–B). All characters as in male except: Carapace 2.84 mm long; maximum width 2.42 mm; minimum width 1.53 mm. Dark brown, uniformly distributed. AME diameter 0.19 mm, PLE 0.16 mm, PME 0.12 mm; PME very close to each other, PME about  $1/3$  diameter from PLE. Sternum smooth.

Chelicerae 1.26 mm long; fang 1.02 mm. Lengths of female described above: fe1 1.95 mm (all measurements in mm); pa1 1.4; ti1 1.63; me1 1.58; ta1 0.51; total 7.07; fe2 1.84; pa2 1.35; ti2 1.49; me2 1.49; ta2 0.51; total 5.68; fe3 1.72; pa3 0.98; ti3 1.12; me3 1.49; ta3 0.44; total 5.75; fe4 2.42; pa4 1.4; ti4 1.81; me4 2.37; ta4 8.51; total 8.51; fe Pdp 0.7; pa Pdp 0.65; ti Pdp 0.46; ta Pdp 0.74; total 2.55; relative length  $4 > 1 > 2 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spineless; pa3 spineless; tb3d spines arranged in two bands: proximal 1.4–2.1; distal 1.0.1–0; tb3v spines arranged in two bands: proximal 1.2.0; distal 1.0.0; with two terminal spines. Fe4d spines in one row: 1–2; pa4 spineless; tb4d spines arranged in two bands: proximal 1.3–2.1; distal 1.1.1; tb4v spines arranged in two bands: proximal 1.3.1; distal 0–1.0.1; with two terminal spines.

Abdomen 5.31 mm long; cream-coloured; cylindrical. Abdominal dorsal hairs 0.126 mm long, medium-sized, straight or slightly curved mainly at distal part, compressed, pointed, uniformly, thickly distributed.

DA (Fig. 29D–F) sclerotized around TB valve attachment as well as in ventral region; both regions fused but distinguishable; DF wide. DA frontal border projected, pointed; lateral margins convergent in dorsal view; slightly wider than long. Ventral region sclerotized from middle area to the front; sclerotized sheet-like structure present at both sides of S attachment, not joined to lateral ventral sclerotization, markedly reduced in size. S arms as long as DA; straight; ends projected forward and tips not projected; neck as wide as arms. TB usual shape.

ALS (Fig. 31A) with pyriform gland spigot in polar position; remaining pyriform spigots more external than major ampulate gland spigot, arranged in two rows; 7 + 1

pyriform gland spigots; PMS and PLS (Fig. 31B) with fewer than 10 aciniform gland spigots.

*Intraspecific variation.* Female cephalothorax ranges in length from 2.47 mm to 2.84 mm. DA (Fig. 29G–I) frontal border projected and rounded. Ventral sclerotization of DA without sclerotized sheet-like projections. Spination variability in Table IX.

*Distribution.* Gran Canarian endemic. Rare species found in laurel forest patches (Brezal del Palmital) and degraded shrub habitats above 800 m.

### Ecology and distribution

An effort was made to sample most of Gran Canaria's different terrestrial habitats. Unfortunately, the material available at present is not considered representative enough to achieve a complete picture of the relationships between species distribution and ecological or geographical factors. In fact, knowledge about some of the species is restricted to single specimens or single captures. Nevertheless, some emerging patterns can be perceived and are worth discussing.

Eight out of the 11 species that have been recorded in Gran Canaria appear to be exclusive endemics. The three species previously known from other islands (*D. iguanensis*, *D. insulana* and *D. levipes*) have been recorded in Gran Canaria by single collections in the same locality (Macizo de Inagua, a well-preserved pine forest) and, with the exception of *D. iguanensis*, by single specimens. Curiously, all are common species in Tenerife, and *D. levipes* is also in La Gomera, with distribution closely related to laurel woods.

In general, Gran Canarian endemic species distribution does not seem to be related to particular plant communities, which is not strange in so far as *Dysdera* can be considered a general predator. This pattern has been reported from the western islands too (Arnedo *et al.* 1996). It is symptomatic that some of the endemic species were collected at sites strongly degraded due to human activity, where original plant communities have been replaced by foreign species. Perhaps the only exception to this rule is *D. paucispinosa*, whose specimens have only been collected to date in endemic wet pine forest (Pinar de Tamadaba and Macizo de Inagua).

There is no clear geographic compartmentalisation. Abundant species are spread over the island and inhabit a broad spectrum of environmental conditions, from xerophilous coastal habitats to high (> 600 m) wet forests. As an exception, a certain geographical pattern is found in both *D. arabisenen* and *D. verneui*, whose known locations are all above 600 m.

There are many cases in the literature which connect insular radiation to adaptive ecological shifts. The genus *Dysdera*, as well as most species in the family Dysderidae, are nocturnal wandering spiders. There does not seem to be any shift in the ecological niche of *Dysdera* in Gran Canaria, in particular, and the Canaries in general.

The existence of troglomorphic *Dysdera* species in other islands, as well as on the continent, has been documented.

Nevertheless, lava tubes, i.e. volcanic 'caves', are scarce in Gran Canaria, most being old and near collapse. No *Dysdera* have ever been captured in them. The so-called volcanic mesocavernous shallow stratum (MSS) is present in Gran Canaria, as well as in the remaining islands (Oromí *et al.* 1986). Several *Dysdera* specimens have been collected there (Medina 1991) (*D. iguanensis*, *D. verneui* and *D. tilosensis*), although all belong to epigeal species and do not show any troglomorphic adaptation.

The most outstanding ecological differentiation in Gran Canarian species has to do with their variation in size, which ranges from about 5 mm long ('dwarf' species: *D. andamanae*, *D. levipes*, *D. paucispinosa*) to about 20 mm long ('giant' species: *D. arabisenen*, *D. insulana*). This is a very important trait, inasmuch as it limits the scope of potential prey segregating species' ecological niches. This could explain the fact that most of the species are sympatric or share one or more location. In many cases, however, coexisting species are not different in size, or there are some species markedly different in size and others very similar (for instance, nine *Dysdera* species have been collected in Macizo de Inagua pine forest: two dwarf, five medium-size and two giant).

*Dysdera* only uses silk to construct a cocoon which is used to rest in during daylight or to protect eggs. The types of spinneret gland spigots as well as their distribution are strongly conservative not only in the genus but in the entire family of Dysderidae (Arnedo, unpublished data). However, many Canarian species strongly differ in the number of spigots. For example, *D. andamanae* has four pyriform gland spigots on the ALS and about 10 aciniform glands on both PMS and PLS, whereas *D. tibicena* has 12 pyriform glands on the ALS and about 15 aciniform glands on both PMS and PLS. There seems to be a correlation between the number of spigots and both size and troglomorphism, although exceptions to these observations have been reported. Small species usually have, in comparison, fewer spigots. Species adapted to living in lava tubes display a similar trend. The ecological, 'allo-metric' or phylogenetic significance of this observation has still to be explained and is worthy of further research.

Obviously, a huge number of morphological and, in particular, behavioural traits have not been considered here that, without a shadow of doubt, could play an important role in species' ecological segregation, preventing direct competition. A lot of work remains to be done in this particular field.

### Affinities

It is not the aim of this paper to discuss the phylogenetic relationships of the species studied. From our point of view, species relationship can only be addressed in the light of the results of a cladistic analysis, i.e. a cladogram. However, at the present stage of knowledge about this group, certain character-state distributions can be discussed.

Certain somatic characters, i.e. those related to carapace shape, eye distances, cheliceral teeth relative size and leg spination, seem to be extremely uncorrelated with each other.

*Copulatory bulbus*. Promising character-state distributions arise from detailed study of the male copulatory bulbus. Particularly, the presence of C has only been noticed in *Dysdera* species collected on western (La Gomera, La Palma and El Hierro) and central islands (Tenerife and Gran Canaria), hereafter referred to as the western group of species, while it is lacking in the eastern representatives (i.e. species inhabiting Lanzarote and Fuerteventura, with the exception of *D. lancerotensis*), and in *D. crocota* and *D. lancerotensis* (Arnedo *et al.* 1996). Another conspicuous male genitalic character to be considered is the presence of LF. This is restricted to several species from Tenerife and Gran Canaria (*D. iguanensis* and *D. andamae*). Otherwise, the apomorphic status of this state remains uncertain. Most of the western group of species lacking LF possess the so-called AC, which in turn is absent in the former ones. Because AC is a small ridge located in a similar position to LF, it could actually represent the apomorphic state of the same character, rendering LF as the plesiomorphic state for the western group of species. Several interesting characters can be recognized from L. Most of Canarian *Dysdera* hold a completely membranous L without any fold either in its middle part or on its external border. Several Gran Canarian species show this pattern (*D. levipes*, *D. paucispinosa*, *D. tilosensis*, *D. verneauti* and *D. yguanirae*). There are some modifications reported to that L type. First, a middle fold of the upper L sheet can be observed in some Gran Canarian (*D. bandamae* and *D. insulana*) and Tenerifean species (*D. cribellata* and *D. brevisetae* Wunderlich, 1991). In addition, the L most external border can be markedly folded, externally (*D. arabisenen* and *D. tibicena*, along with the Tenerifean *D. propinqua* Ribera, Ferrández & Blasco, 1985) or distally (absent in Gran Canaria but present in Tenerife), it can be only sclerotized (*D. andamae*) or both folded and sclerotized at the same time (several species from Tenerife and La Gomera along with most endemic species from the eastern islands). P shape and location can offer some information too. A P fused with T and in perpendicular position in relation to T, is the most common pattern in Canarian species. However, a couple of exceptions can be highlighted. First, the cosmopolitan *D. crocota* and the similar eastern endemic *D. lancerotensis* Simon, 1907 are the only *Dysdera* present in the Canaries that display a P not connected to T. Secondly, P can be at an angle in relation to T, which is the case in three Gran Canarian species (*D. andamae*, *D. arabisenen* and *D. tibicena*) and a small number of Tenerifean (*D. ambulotenta* Ribera, Ferrández & Blasco, 1985) and La Gomera species (*D. enghoffi* Arnedo, Oromí & Ribera, 1996). Finally, an additional contribution is made by characters related to the presence of AL and its back proximal border shape. A well-developed AL is not present in Gran Canaria, but is limited to Tenerife, La Gomera and the eastern islands, where most species have developed it in a terminal flagellum. Nevertheless, a very small AL is general in the western group. The AL back proximal border is markedly toothed in the Gran Canarian *D. tilosensis*, *D. yguanirae* and *D. bandamae* as well as in some species from Tenerife (*D. brevispina* Wunderlich, 1991; *D. cribellata*) and one from La Gomera (*D. orahan* Arnedo, Oromí & Ribera, 1996). The other species from

Gran Canaria have some marks (*D. insulana*) or do not have any trace at all.

*Endogyne*. Female genitalia are not nearly as characteristic as the male bulbus. If only the western group of species are taken into account (the eastern group along with *D. crocota* and *D. lancerotensis* displays a slightly different pattern), informative differences seem to be reduced to ventral sclerotization. There are basically two important aspects: sclerotization development and the presence and shape of sheet-like sclerotized structures. In the former character, from a more or less completely sclerotized ventral endogyne, which is present in Gran Canarian *D. arabisenen* and *D. tibicena* and in some Tenerifean species (*D. ambulotenta*, *D. labradaensis* Wunderlich, 1991), apparently two types of reduction have taken place. The first one consists of a reduction from back to front (most of the western group of species), which is displayed at different levels, while the second one affects lateral internal margins (only *D. iguanensis* in Gran Canaria and *D. montanetensis* Wunderlich, 1991 in Tenerife). The presence of well-developed sheet-like projection occurs in *D. arabisenen*, *D. tibicena* and *D. yguanirae* (although markedly reduced), as well as in several species from Tenerife and the western islands (*D. chioensis* Wunderlich, 1991; *D. enghoffi*, *D. propinqua*, *D. ramblae*, *D. rugichelis* Simon, 1907; *D. unguimmanis* Ribera, Ferrández & Blasco, 1985).

Bringing together presently available morphological information assists discussion of some aspects of Gran Canarian *Dysdera* biogeography, i.e. colonization and radiation.

As pointed out in the introduction, the Canarian Archipelago, like the Hawaiian Islands, are arranged in a more or less straight line. This line represents a gradient of both closeness to the mainland and geological age (the closer the older). However, the direction of the gradient (from NW to SE in Hawaii instead of from E to W in the Canaries), the geological processes involved in their origin and the distance from the continent mark important differences between the two oceanic archipelagos. A general pattern, otherwise very simplistic, of the progression rule, i.e. inter-island colonization, plus intra-island radiation have been reported in some endemic groups on Hawaiian islands (Wagner & Funk 1995). Some of the few phylogenetic studies carried out in the Canaries apparently support this model, in such diverse groups as darkling beetles (Juan *et al.* 1995, 1996) and lizards (González *et al.* 1996, their Figs. C and D). All these works support a basal division between eastern (Fuerteventura, Lanzarote and islets) and western islands. As previously mentioned, all Gran Canarian *Dysdera* belong to the so-called western group of species, which markedly differs from eastern endemics as well as from *D. crocota*. Both groups can be unambiguously diagnosed. Nevertheless, the monophyletic status of each group and their reciprocal relationships are still to be tested. The studies cited, however, are incongruent about Gran Canaria's role in the western group's origin. The darkling beetle genus *Hegeter* (Juan *et al.* 1996) and the lizard genus *Gallotia* (González *et al.* 1996) show a basal position of Gran Canaria in relation to the remaining western islands, while the darkling beetle

genus *Pimelia* (Juan *et al.* 1995) supports a Tenerifean origin for the western radiation, and a subsequent colonisation of Gran Canaria. At the present stage of knowledge, it is difficult to determine what model Canarian *Dysdera* could fit. For all Gran Canaria's morphological diversity, i.e. distinct character-states, can also be found in Tenerife, where in addition features unknown in Gran Canaria are present. Morphological evidence seems to deny the possibility of putative radiations in Gran Canaria. Maybe the only example of a sister-species relationship is the pair *D. arabisenen* and *D. tibicensis*, which share many character-states, mainly of their genitalia. The rest of Gran Canarian species seem to have their closest relatives on other islands. This is certainly the case for shared endemics with Tenerife (*D. iguanensis*, *D. insulana* and *D. levipes*), which, at the same time, have their closest morphological species in Tenerife. Strictly Gran Canarian endemics, with the previously cited exception, already display morphological similarities with non-Gran Canarian species. *D. andamanae* strongly resembles the Tenerifean *D. minutissima*, especially in somatic aspects, but also in bulbus L and P morphology. *D. tilosensis* resembles another clearly foveate species from Tenerife (*D. cribellata*), as well as others from La Gomera and La Palma (*D. calderensis* and *D. ramblae*) (Arnedo *et al.* 1996). *D. verneau* is difficult to distinguish from *D. curvisetae* from Tenerife and *D. ratonensis* from La Palma (Arnedo *et al.* 1996). The closest species to *D. yguanirae* is *D. brevispina* from Tenerife; they share a unique combination of carapace, leg spination and male genitalic characters. More difficult to relate are *D. bandamae* and *D. paucispinosa*. The first shows a quite distinct somatic aspect, although the presence of a middle fold of the upper L sheet is shared by *D. cribellata* and *D. brevisetae* from Tenerife. *D. paucispinosa* could be linked to *D. verneau* by a very similar genitalic pattern, but the two species share hardly any somatic character-states. If, in spite of that, both species turned out to be sister-species, a second example of intra-island speciation in Gran Canaria could be demonstrated.

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### **4.1.3. Tenerife**

Arnedo, M. A. & Ribera, C. Radiation of the genus *Dysdera* (Araneae, Haplogynae, Dysderidae) in the Canary Islands: The island of Tenerife.- *Journal of Arachnology* (en revisió).

ABSTRACT

An overwhelming number of endemic species belonging to the spider genus *Dysdera* have been reported from the oceanic archipelago of the Canary Islands. A complete taxonomical revision is currently being performed in order to assess the extent of this species' radiation, as well as to supply enough data to place it in a phylogenetic framework. The present article is devoted to the *Dysdera* species inhabiting the island of Tenerife. Two new species are described: *Dysdera guayota* sp. n. and *Dysdera hernandezii* sp. n.. Ten new synonymies are reported: *D. moquinalensis* Wunderlich, 1991 and *D. vilaflorensis* Wunderlich, 1991 = *D. brevispina* Wunderlich, 1991; *D. medinae* Wunderlich, 1991 = *D. cribellata* Simon, 1883; *D. inaequuscapillata* Wunderlich, 1991 = *D. crocota* C.L. Koch, 1839; *D. pergrada* Wunderlich, 1991, *D. pseudopergrada* Wunderlich, 1991, *D. tabaibaensis* Wunderlich, 1991, *D. teideensis* Wunderlich, 1991 and *D. teneriffensis* Strand, 1908 = *D. macra* Simon, 1883; *D. obscuripes* Wunderlich, 1991 = *D. propinqua* Ribera, Ferrández & Blasco, 1985. Sixteen species are redescribed: *D. ambulotenta* Ribera, Ferrández & Blasco, 1985; *D. brevisetae* Wunderlich, 1991, *D. brevispina* Wunderlich, 1991; *D. chioensis* Wunderlich, 1991; *D. cribellata* Simon, 1883; *D. curvisetae* Wunderlich, 1987; *D. esquiveli* Ribera & Blasco, 1986; *D. gibbifera* Wunderlich, 1991; *D. gollumi* Ribera & Arnedo, 1994; *D. labradaensis* Wunderlich, 1991; *D. macra* Simon, 1883; *D. minutissima* Wunderlich, 1991; *D. montanetensis* Wunderlich, 1991; *D. propinqua* Ribera, Ferrández & Blasco, 1985; *D. unguimmanis* Ribera, Ferrández & Blasco, 1985 and *D. volcania* Ribera, Ferrández & Blasco, 1985. The females of four species: *D. brevisetae*, *D. brevispina*, *D. minutissima* and *D. montanetensis* are described for the first time. Females formerly assigned to both *D. gibbifera* and *D. volcania* are considered to be wrong identifications. A neotype is designated for *D. macra*. The presence in Tenerife of *D. rugichelis* Simon, 1907 is considered to be doubtful. Ecological and distributional patterns of the species are discussed.

The species belonging to the spider genus *Dysdera* Latreille, 1804 are usually found in slightly damp but warm ground habitats. They are nocturnal wandering hunters that spend daytime in silken cocoons under stones, logs or bark. *Dysdera* specimens are not unusual in caves, which can be considered as an expansion of their typical habitats, and several cases of troglomorphic species have been reported (Ribera 1983, Ribera et al. 1986, Ribera 1993). This species-rich genus includes about two hundred species with a circum-Mediterranean distribution, with the single exception of the anthropophilous cosmopolitan *D. crocota* C.L. Koch, 1839. The so-called Macaronesian archipelagos (Fig. 1) represent the westernmost limit of *Dysdera*'s range. One of these volcanic archipelagos, the Canary Islands, harbors about fifty endemic species (Simon 1883, 1907; Strand 1908; Schmidt 1973; Ribera et al. 1985; Ribera & Blasco 1986; Wunderlich 1987, 1991; Ribera & Arnedo 1994; Arnedo et al. 1996; Arnedo & Ribera 1997), which represent about one quarter of the described species in the genus to date. This figure is even more remarkable when compared with the number of endemics in the remaining archipelagos: one from the Azores (undescribed species), five from Madeira (Denis 1962, Wunderlich 1994) and one from Cape Verde (Berland 1936). In addition, seven of these species were troglobites with morphological adaptations to the hypogean environment.

Nevertheless, this overwhelming number of *Dysdera* species held by the Canaries could suggest a taxonomical artifact instead of a true species radiation. A deeper look into Canarian *Dysdera* taxonomy revealed some instances that could, at least, put into question this amazing number of endemics. On the one hand, twenty-two out of the fifty recognized species were described from only one of the sexes, nineteen of which were known by single specimens. Moreover, some of the species lacked information regarding their locality, type material was lost, or both. Finally, twenty-seven species were described in a single publication together with 106 new species from the Macaronesia (Wunderlich 1991). On the other hand, most of the published descriptions of the Canarian *Dysdera* were inspecific enough to correspond to more than one species, or failed to supply the necessary information for the study of such interesting spiders in a phylogenetic framework.

With the aim of confirming the existence of this radiation, completing the species descriptions as well as their geographical distributions and, finally, offering enough data to perform a phylogenetic analysis of the group, a major revisionary work on Canarian *Dysdera* is currently being developed (Ribera & Arnedo 1994; Arnedo & Ribera 1996; Arnedo et al. 1996; Arnedo & Ribera 1997). The present article is devoted to the taxonomical revision of the genus in the Island of Tenerife.

The Canary Islands lie in the Atlantic Ocean 100 km from the north-western coast of Africa (Fig. 1). The different volcanic episodes that formed the archipelago are probably the result of a propagating fracture originated in the Atlas formation during the Alpine orogeny, about 25 My ago (Anguita & Hernán 1975). This model would explain both the reduction of the age of the islands from east to west and the continuation of active vulcanism in the older islands. The approximate ages of the islands have been recovered by means of the K-Ar technique, ranging from about 20 My to less than 1 My. The estimated geological age for each island is: Fuerteventura 20-22 My, Lanzarote 15-19 My, Gran Canaria 14-16 My, Tenerife 11.6-14 My, La Gomera 10-12 My, La Palma 1.6-2 My and El Hierro 0.8-1 My (Cantagrel et al. 1984, Mitchell-Thomé 1985, Ancochea et al. 1990, Coello et al. 1992). The island of Tenerife is located roughly at the centre of the line drawn through the archipelago. Tenerife is both the biggest (2058 Km<sup>2</sup>) and the highest (3717 m) island in the archipelago. Elevation together with trade winds are very important features in oceanic islands, mainly in tropical and subtropical latitudes. They are both responsible for the presence and distribution of the different ecological zones. In the particular case of the Canaries, the joint effect of the humid and cool NE trade winds, between 400 and 1200 m, and the dry trade winds from the NW, above 2000m, cause a temperature inversion. In this area a nearly permanent cloud belt is formed. Consequently, strong ecological segregation is observed between northern, more humid, and southern, dryer slopes. Five major ecological zones could be recognized on northern slopes of the islands. The first, from the seashore to up to 250 m, is characterized by the presence of dry-arid subtropical shrubs. Then, from 250 to 600 m there are humid to semi-arid tropical shrubs and woods. In the areas covered by the cloud belt, from 600 to 1000 m, a typical subtropical wood, the so-called laurel forest is found. Above this, from 1000 to

2000 m, an endemic pine forest occurs. Finally, dry subalpine shrub is present from 2000 m to the top. Southern slopes lack a laurel forest zone and transition between sub-arid shrubs and the pine forest takes place at higher elevation. Apart from these climatic-related ecosystems, an additional ecological zone is present in volcanic islands: the hypogean environment. Subterranean environment in the Canaries is represented by both lava tubes and the MSS (mesocavernous shallow stratum) (Juberthie et al. 1980, 1981; Oromí et al. 1986; Medina 1991). Due to their short life-span, lava tubes are found only in areas of the islands with a relatively recent *pahoehoe*-like basaltic volcanism. This explains the lack of tubes in the islands of La Gomera and their scarcity in Gran Canaria and most of Fuerteventura. However, even in the absence of caves, a very rich underground environment in the form of a shallow, intermediate sized, interconnected voids is present in all the islands.

Before the present study twenty-nine *Dysdera* endemic species had been reported from Tenerife, by far the most species-rich island in the archipelago. These species were: *D. ambulotenta* Ribera et al., 1985 (♂, ♀; one locality); *D. brevisetae* Wunderlich, 1991 (♂, single specimen); *D. brevispina* Wunderlich, 1991 (♂, single specimen); *D. chioensis* Wunderlich, 1991 (♀, one locality); *D. cribellata* Simon, 1883 (♂, ♀); *D. curvisetae* Wunderlich, 1987 (♂, single specimen); *D. esquiveli* Ribera & Balsco, 1986 (♂, ♀); *D. gibbifera* Wunderlich, 1991 (♂, ♀); *D. gollumi* Ribera & Arnedo, 1994 (♀, one locality); *D. iguanensis* Wunderlich, 1987 (♂, ♀); *D. inaequuscapillata* Wunderlich, 1991 (♂, ♀); *D. insulana* Simon, 1883 (♂, ♀; one locality); *D. labradaensis* Wunderlich, 1991 (♀, one locality); *D. levipes* Wunderlich 1987 (♂, ♀); *D. medinae* Wunderlich, 1991 (♂, ♀); *D. minutissima* Wunderlich, 1991 (♂, single specimen); *D. montanetensis* Wunderlich, 1991 (♂, single specimen); *D. moquinalensis* Wunderlich, 1991 (♂, single specimen); *D. obscuripes* Wunderlich, 1991 (♂, ♀); *D. pergrada* Wunderlich, 1991 (♂, ♀; one locality); *D. propinqua* Ribera et al., 1985 (♂, single specimen); *D. pseudopergrada* Wunderlich, 1991 (♂, ♀); *D. rugichelis* Simon, 1907 (♂, single specimen in Tenerife); *D. tabaibaensis* Wunderlich, 1991 (♂, single specimen); *D. teideensis* Wunderlich, 1991 (♂, ♀); *D. teneriffensis* Strand, 1908 (♀; single specimen, lost); *D. unguimmanis* Ribera et al., 1985 (♀, single specimen); *D. vilaflorensis* Wunderlich, 1991 (♂, single specimen) and *D. volcania* Ribera et al., 1985

(♂, ♀; one locality) (Bösenberg 1895; Strand, 1908; Denis 1941, 1953; Schmidt 1975; Ribera et al. 1985; Wunderlich 1987, 1991; Ribera & Arnedo 1994; Arnedo et al. 1996; Arnedo & Ribera 1997). Six of these species displayed morphological adaptations to the hypogean environment and were considered to be true troglobites. With a single exception (*Dysdera ratonensis* Wunderlich, 1991 from La Palma) the lava tubes of Tenerife hold all troglomorphic *Dysdera* documented so far in the Canaries.

## MATERIAL AND METHODS

The current study was based on the adoption of the so-called 'diagnosability' (Baum 1992) phylogenetic species concept (Nixon & Wheeler 1990, 1992; Wheeler & Nixon 1990, Davis & Nixon 1992). Species are recognized as the most exclusive set of populations that display a certain combination of character-states, when semaphoronts are compared (Davis & Nixon 1992). This concept was selected because it is easily applicable in practice, it avoids any reference to processes, and is fully compatible with a phylogenetic framework. However, this definition is not free of theoretical problems (Frost & Kluge 1994) and has been considered to be excessively restrictive. In addition, in the present approximation, only morphological characters were taken into account, which has probably resulted in an underestimation of the total number of species. Additional studies considering molecular, ecological or behavioral characters would be necessary in order to recover the total amount of diversity of the genus.

The first stage in the assessment of the taxonomical status of the Tenerifean species was to gather a large number of specimens (350), which were made available from both scientific institutions (as well as personal collections) and three collection expeditions to the island by the authors. The following colleagues and museum kindly supplied material for the present study: Dr. E. Enghoff from the Zoologisk Museum of Copenhagen (ZMK), R. García 'Felo' (S/C de la Palma, Canary Islands) (RG), F. Gasparo (Trieste, Italy) (FG), Dr. P. D. Hillyard from the Natural History Museum of



London (BMNH), Dr. M. Grasshoff from the Forschungsinstitut und Naturmuseum Senckenberg (SMF), Dr. P. Oromí from the Universidad de La Laguna (UL), Dr. G. Ortega from the Museo de Ciencias Naturales de Santa Cruz de Tenerife (MCNT), Dr. C. Rolland from the Muséum National d'Histoire Naturelle de Paris (MNHN) and J. Wunderlich (Straubenhardt, Germany) (JW). The material provided by authors' expeditions is stored at the collection of Arachnids of the University of Barcelona, Spain (UB).

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.* in press).

All characters were recorded in DELTA format (Dallwitz 1980, 1993).

**Terminology.**- Structures of male bulbus and female endogyne were mostly named after Deeleman-Reinhold (1988), with the addition of several features particular to Canarian *Dysdera* (Arnedo *et al.* 1996, Arnedo & Ribera 1997). Nevertheless, some new characters from female endogyne have been added or have been redefined and deserve further considerations. The vulva of the genus *Dysdera* is divided into two major diverticles: an anterior diverticle and a posterior one. They are separated by the epigastric furrow at the ventral side, and the oviduct opening at the dorsal one. The posterior diverticle is mostly membranous, with the single exception of the transversal bar. This is located at the anterior dorsal side and holds a frontal projection ('bursal valve', V) that closes the oviduct openings. On the other hand, most of the anterior diverticle is usually sclerotized. The most conspicuous structure is a T-shaped spermatheca (S) located at the ventral side of the most anterior margin. The medial lateral margins of the anterior diverticle are invaginated forming two different pouches: a dorsal pouch, which corresponds to the so-called 'dorsal arch' (DA) (Deeleman-

## El gènere *Dysdera* a les illes Canàries

Reinhold 1988) and a ventral one, hereafter referred as 'ventral arch' (VA). The DA is usually completely sclerotized. The dorsal side of the DA locks the VB and is called 'dorsal fold' (DF) (Arnedo et al. 1996). The fold that separates both diverticles is named major fold (MF), to differentiate it from several additional folds that are sometimes found on DA lateral borders. The development and sclerotization degree of the MF are very variable. In some continental *Dysdera* species MF almost entirely close the DA from the VA. The margins of the MF may be markedly separated from each other or stuck together forming an internal rim. The VA exhibits a wide range of sclerotization levels, from mostly sclerotized to completely membranous. In most of the Canarian representatives an additional ventral diverticle (AVD) in the VA has been observed. The AVD is recognized by an internal rim ventral to the MF and by its own external sclerotization, usually tooth shaped.

Spinnerets and their associated spigot glands were assigned after Platnick et al. (1991).

### Family DYSDERIDAE

#### Genus *Dysdera* Latreille, 1804

#### *Dysdera ambulotenta* Ribera, Ferrández & Blasco, 1985

(Figs. 10-21)

*Dysdera ambulotenta* Ribera, Ferrández & Blasco, 1985: 54-57, fig. 1 [♂, ♀]. Holotype male and allotype female from Cueva del Viento-Sobrado, El Amparo, Icod de los Vinos, Tenerife, Canary Islands; 14/5/1981, J.L. Martín leg.; ♂num. T-CS-17, ♀num. T-CS-18. Stored at UL. Examined.- Wunderlich, 1991: 284-287.

**Diagnosis.**- Very large species. Carapace, sternum ornamentation scarce;

anterior lateral borders convergent, long (Fig. 10). Eyes absent or markedly reduced in size. Chelicerae long; densely covered with small piligerous granulations; teeth large. Legs strongly spinated. Short abdominal dorsal hairs. T as long as DD; DD markedly bent (Fig. 12). C long; LF poorly developed; AL well-developed (Figs. 16-18). P long, proximally sloped; upper margin smooth (Figs. 12, 19). Endogyne rectangle-like, frontally rounded (Fig. 13). VA posterior region mostly sclerotized; AVD absent (Fig. 14). ALS without PS (Fig. 20).

It can be distinguished from the sympatric, also large, species, *D. labradaensis* by PLE, PME absence; legs 1, 2 spineless; lack of VA ventral ridge and AVD. The large, epigeal species *D. gibbifera* holds a well-developed LF and posterior legs poorly spinated.

**Description.-** *Holotype male* (Figs. 10-12, 16-19): Carapace (Fig. 10) 7.35 mm long; maximum width 5.6 mm; minimum width 3.78 mm. Reddish orange, frontally darker, becoming lighter towards back; slightly foveate at borders, slightly wrinkled with small black grains mainly at front. Frontal border roughly straight, from 1/2 to 3/5 carapace length; anterior lateral borders convergent (backwards long, parallel); rounded at maximum dorsal width point, back lateral borders rounded; back margin wide, straight PME, PLE lost; AME markedly reduced; AME diameter 0.09 mm; AME separation 0.936 mm. Labium trapezoid-shaped, base wider than distal part; longer than wide at base; semicircular groove at tip. Sternum dark orange, frontally darker, becoming lighter towards back; very slightly wrinkled, mainly between legs, frontal border; uniformly covered in slender black hairs.

Chelicerae (Fig. 11) 4.41 mm long, about 2/5 of carapace length in dorsal view; fang medium-sized, 2.8 mm; basal segment dorsal side completely covered with piligerous granulations (small, densely), ventral side smooth. Chelicera inner groove medium-size, about 2/5 cheliceral length; armed with three teeth and lamina at base; D>B>M (large teeth; D,B not very different); D round, located roughly at centre of groove; B close to basal lamina; M at middle of B and D. Legs orange. Lengths of male described above: fe1 6.6 mm (all measurements in mm); pa1 4.3; ti1 6.3; me1 5.4; ta1 1.2; total 23.8; fe2 6.3; pa2 4; ti2 6.2; me2 5.2; ta2 1.2; total 22.9; fe3 5.2; pa3 2.9; ti3 3.8; me3 4.5; ta3 1.3; total 17.7; fe4 6.3; pa4 3.4; ti4 5.3; me4 6; ta4 1.4; total

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22.4; fe Pdp 3.5; pa Pdp 2; ti Pdp 2; ta Pdp 1.9; total 9.4; relative length: 1>2>4>3. Spination: palp, leg1, leg2 spineless. Fe3d spines in two rows: forward 3 (distal); backward 1 (proximal); tb3d spines arranged in three bands: proximal 1.2.1; medial-proximal 1.1-2.1; distal 1.0.1; tb3v spines arranged in three bands: proximal 1-0.3-2.1; medial-proximal 1.3-2.1; distal 1.0.1; with two terminal spines. Fe4d spines in two rows: forward 4-2; backward 3-2; tb4d spines arranged in four bands: proximal 1-0.0.1-0; medial-proximal 1.2.1; medial-distal 1.3-2.1; distal 1.0.1; tb4v spines arranged in four bands: proximal 1.2-1.1; medial-proximal 1.2.1; medial-distal 1.2-1.1; distal 1.1-0.1; with two terminal spines. Dorsal side of frontal legs covered with small piligerous grains; ventral side of pedipalp smooth; posterior legs densely covered with short hairs. Claws with more than 15 teeth, slender, length twice claw width.

Abdomen 10.5 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.027 mm long (short); medium-sized, roughly straight, not compressed, blunt, tip enlarged; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 12) T as long as DD; external distal border straight; internal sloped backwards. DD bent about 45° in lateral view; internal distal border not expanded. ES wider, more sclerotized than IS; IS continuous to tip. DD tip (Figs. 16-18) straight in lateral view. C present, long; distal end on DD internal tip; well-developed; located far from DD distal tip; proximal border continuously decreasing; distal border markedly sloped, upper tip not projected, pointed; external side hollowed. AC absent. LF present; distally not projected; poorly developed. L well-developed; external border not sclerotized, laterally slightly folded, distal border divergent, continuous. AL present, well-developed; proximal border in posterior view fused with DH. P (Fig. 19) fused to T; markedly sloped on its proximal part, perpendicular on distal; lateral length as long as or longer than T width; ridge present, perpendicular to T, not expanded; upper margin smooth; not distally projected; back margin not folded.

*Allotype female* (Figs. 13-15, 20-21): All characters as in male except: Carapace 7.21 mm long; maximum width 5.6 mm; minimum width 3.64 mm. AME separation 1.16 mm.

Chelicerae 4 mm long; fang 3.22 mm.. Legs orange. Lengths of female

described above: fe1 6.6 mm (all measurements in mm); pa1 4.3; ti1 6.2; me1 5.4; ta1 1.3; total 23.8; fe2 6.1; pa2 4.1; ti2 6.1; me2 5.4; ta2 1.3; total 23; fe3 5.2; pa3 3; ti3 3.9; me3 4.8; ta3 1.2; total 18.1; fe4 6.5; pa4 3.5; ti4 5.2; me4 6.3; ta4 1.5; total 23; fe Pdp 4; pa Pdp 2; ti Pdp 1.9; ta Pdp 2.5; total 10.4; relative length  $1 > 2 = 4 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spines in two rows: forward 2; backward 1; tb3d spines arranged in three bands: proximal 1.0.1; medial-proximal 1.0.1; distal 1.0.1; tb3v spines arranged in three bands: proximal 2-1.2.2-1; medial-proximal 1.3-1.0-1; distal 1.0.1; with two terminal spines. Fe4d spines in two rows: forward 1; backward 2; tb4d spines arranged in four bands: proximal 1-0.0.1-0; medial-proximal 1.2-0.1; medial-distal 1.3-1.1; distal 1.0.0; tb4v spines arranged in four bands: proximal 1.1.1; medial-proximal 1.1-2.1; medial-distal 0-1.1-0.1; distal 0-1.1-0.1; with two terminal spines.

Abdomen 7 mm long. Abdominal dorsal hairs 0.036 mm long (short); medium-sized, roughly straight, not compressed, blunt, tip enlarged; uniformly, thickly distributed.

Endogyne (Figs. 13-15) rectangle-like in dorsal view, frontally rounded; slightly wider than long; DF wide. MF well-developed; markedly sclerotized along its extent. VA frontal region completely sclerotized; posterior region sclerotized except for internal area. AVD absent. S attachment projected under VA; arms as long as DA, slightly curved; tips dorsally projected; neck as wide as arms. TB usual shape.

ALS (Figs. 20-21) without PS; remaining piriform spigots no more external than MS, arranged in three rows; 18 piriform gland spigots; PMS, pLS with 5-10 aciniform gland spigots.

**Material examined.-** *Tenerife: El Sauzal:* Cueva de Labrada-Mechas; 1♂ subadult.; 13/3/82, J.L.Martín leg.; num. 2520; Stored at UL. *Icod de los Vinos:* Cueva de Felipe Reventón; some remains; 17/3/84, J.J.Hernández leg.; num. 2534; Stored at UL. *Cueva del Viento-Sobrado:* 1juv.; 10/12/82, J.L.Martín leg.; num. 2517; Stored at UL. 1juv.; 2/11/91, J.L.Martín leg.; num. 2518; Stored at UL. *La Orotava:* Cueva del Bucio; some remains; 27/11/84, J.L. Martín & A. Machado leg.; num. 2794; Stored at UL.; 1juv.; 4/3/85, J.L.Martín & A.Machado leg.; num. 2532; Stored at UL. 1♀; 1/4/91, Lucas & Rando leg.; num. 2511; Stored at UL. *Cueva de los Roques:* 1♂; 11/8/86,

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J.L.Martín leg.; num. 2512; Stored at UL. ? (one chelicera); 27/10/91, C. Ribera leg.; num. 2568; Stored at UL. 1♀; 25/9/96, P. Oromí leg.; num. 3184; Stored at UB.

**Intraspecific variation.**- Male cephalothorax ranges in length from 7 mm to 7.35 mm, female from 6.51 mm to 7 mm. Sometimes carapace lateral margin angled at maximum width point. AME reduction variable, from tiny bright spots to absent. Chelicera relative length from 0.43 to 0.48. D as large as or slightly larger than B. One male from Los Roques with M distinctly closer to D. In general, cheliceral teeth are large. Spination variability in Table 2.

**Distribution.**- Tenerifean endemic. Exclusively known from lava tubes. It is the most widespread of troglomorphic *Dysdera*.

### *Dysdera brevisetae* Wunderlich, 1991

(Figs. 22-33)

*Dysdera brevisetae* Wunderlich, 1991: 289-290, fig. 14-16 [♂]. Holotype male from Monte de las Mercedes, La Laguna, Tenerife, Canary Islands; in II, M. Knösel leg.; num. 37166. Stored at SMF. Examined.- Wunderlich, 1991: 284-287.

**Diagnosis.**- Carapace, sternum ornamentation noticeable; frontal border wide; anterior lateral ones slightly divergent (Fig. 22). AME separated 1/2 of diameter. Chelicerae, fang long; basal segment scantily covered with granulations; D markedly large, at segment tip (Fig. 23). Leg spineless; posterior covered with spine-like hairs. T smaller than DD; DD slightly bent; ES bend markedly sclerotized (Fig. 24). C hardly stepped; L poorly developed; strongly folded at middle (Figs. 28-30). P upper margin smooth (Fig. 31). Endogyne arch-like, frontally rounded (Fig. 25). VA posterior region sclerotized at anterior area (Figs. 26-27).

It is distinguished from other markedly foveate species like *D. cribellata*, *D. minutissima*, *D. propinqua* or *D. volcania* by wider carapace frontal border, spineless legs and from *D. levipes* by longer chelicera, large D and poorly developed L. It differs from the morphologically similar *D. macra* by: AME separation shorter than 2/3 diam. apart, longer chelicera inner groove, B small and L poorly developed but complete.

**Description.-** *Holotype male* (Figs. 22-24, 28-31). Carapace (Fig. 22) 3.62 mm long; maximum width 2.51 mm; minimum width 1.84 mm. Dark red, darkened at borders; heavily wrinkled, foveate, covered with small black grains. Frontal border roughly round, from 1/2 to 3/5 carapace length; anterior lateral borders parallel or slightly divergent; rounded at maximum dorsal width point, back lateral borders rounded; back margin narrow, straight; slightly stepped in lateral view. AME diameter 0.21 mm; PLE 0.21 mm; PME 0.16 mm; AME on edge of frontal border, separated one from another about 1/2 of diameter, close to PLE; PME very close to each other, less than 1/4 PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part; as long as wide at base (triangle-like); semicircular groove at tip. Sternum brownish red, darkened on borders; heavily wrinkled; uniformly covered in slender black hairs.

Chelicerae (Fig. 23) 1.58 mm long, about 2/5 of carapace length in dorsal view; fang long, 1.35 mm; basal segment dorsal, ventral side completely covered with piligerous granulations (spacing). Chelicera inner groove long, about 1/2 cheliceral length; armed with three teeth and lamina at base;  $D > B = M$  (B, M small); D trapezoid, located near segment tip; B close to basal lamina; M close to D. Legs orange. Lengths of male described above: fe1 2.4 mm (all measurements in mm); pa1 1.44; ti1 2.14; me1 2; ta1 0.51; total 8.49; fe2 2.23; pa2 1.35; ti2 1.91; me2 1.98; ta2 0.51; total 7.98; fe3 1.79; pa3 1.07; ti3 1.26; me3 1.68; ta3 0.51; total 6.31; fe4 2.19; pa4 1.12; ti4 1.82; me4 2; ta4 0.53; total 7.66; fe Pdp 1.4; pa Pdp 0.74; ti Pdp 0.74; ta Pdp 0.74; total 3.62; relative length:  $1 > 2 > 4 > 3$ . Spination: spineless. Dorsal side of frontal legs covered with hairs, lacking small grains; ventral side of pedipalp smooth; long, spine-like hairs on posterior tb, fe. Claws with 10-14 teeth, length twice claw width.

Abdomen 3.73 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.045 mm long; medium-sized, roughly straight, not compressed, blunt, tip enlarged; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 24) T slightly smaller than DD; external, internal distal border sloped backwards. DD slightly bent in lateral view, clearly less than  $45^\circ$ ; internal distal border not expanded. IS, ES equally developed; IS truncated at DD middle part; ES bend markedly sclerotized. DD tip (Figs. 28-30) straight in lateral view.

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C present, short; distal end on DD internal tip; well-developed; located close to DD distal tip; proximal border sharply decreasing; distal border rounded, hardly stepped, upper tip not projected, rounded; external side hollowed. AC present. LF absent. L poorly developed; external border not sclerotized, laterally slightly folded; distal border divergent, not continuous; upper sheet strongly folded at middle. AL present, very poorly developed; proximal border in posterior view fused with DH. P (Fig. 31) fused to T; perpendicular to T in lateral view; lateral length from 1/3 to 2/5 of T width; ridge present, perpendicular to T, not expanded; upper margin smooth; not distally projected; back margin slightly folded towards internal side.

*Female* (Figs. 25-27, 32-33): All characters as in male except: Carapace 3.66 mm long; maximum width 2.65 mm; minimum width 1.98 mm. AME diameter 0.23 mm; PLE 0.2 mm; PME 0.16 mm. Sternum dark red.

Chelicerae 1.72 mm long; fang 1.4 mm; basal segment proximal dorsal, ventral side scantily covered with piligerous granulations. Legs orange. Lengths of female described above: fe1 2.42 mm (all measurements in mm); pa1 1.54; ti1 2.1; me1 2.05; ta1 0.53; total 8.64; fe2 2.25; pa2 1.44; ti2 1.91; me2 2; ta2 0.53; total 8.13; fe3 1.91; pa3 1.26; ti3 1.38; me3 1.68; ta3 0.51; total 6.56; fe4 2.28; pa4 1.26; ti4 1.91; me4 2.1; ta4 0.53; total 8.08; fe Pdp 1.4; pa Pdp 0.79; ti Pdp 0.56; ta Pdp 0.88; total 3.63; relative length 1>2>4>3.

Abdomen 4.66 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.16-0.18 mm long; thin, curved, compressed, pointed; uniformly, thickly distributed.

Endogyne (Figs. 25-27) arch-like in dorsal view, frontally rounded; slightly wider than long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area. AVD hardly visible. S attachment not projected under VA; arms as long as DA, slightly curved; tips dorsally projected; neck as wide as arms. TB usual shape.

ALS (Figs. 32-33) with PS; remaining piriform spigots more external than MS, arranged in two rows; 7+1 piriform gland spigots; PMS, PLS with 5-10 aciniform gland spigots.

**Material examined.-** *Tenerife: La Laguna: Cocomoto*; 1♂; ?/2/89, C.Deniz leg.; num. 2680; Stored at UL. *El Moquinal*, under a bark of *Erica scoparia*; 1♀ (description);



18/10/94, P.Oromí leg.; num. 2935; Stored at UB. 1♀; 18/10/94, P.Oromí leg.; num. 4001; Stored at UB. Monte de las Mercedes: 1♂; 30/1/89, H. Enghoff leg.; num. 2640; Stored at ZMK. *Los Silos*: Monte del Agua; 1juv.; 14/3/87, H.Enghoff leg.; num. 2669; Stored at ZMK. 1♀; 1/2/88, J.J. Naranjo leg.; num. 2598; Stored at UB. 1♀; 3/3/89, H. Enghoff & M. Baez leg.; num. 2646; Stored at ZMK. 1♀; 3/3/89, H. Enghoff leg.; num. 2659; Stored at ZMK. 1 juv.; 18/2/96, Arnedo & Oromí leg.; num. 3118; Stored at UB. *Santa Cruz de Tenerife*: Bailadero; 1♀; ?/11/93, Arnedo & Ribera leg.; num. 4784 (T21); Stored at UB. Cabezo de Tejo; 1♀; 26/2/96, Oromí & Emerson leg.; num. 3128; Stored at UB. Casas de la Cumbre; 1juv.; 23/2/96, Oromí & Emerson leg.; num. 3127; Stored at UB. Cruz del Carmen; 1♂; 12/5/96, M. Naranjo leg.; num. 3145; Stored at UB. Vueltas de Taganana; 1♂; 20/2/84, Garcia Alayon leg.; num. 2687; Stored at UL. 1♂; /5/95, P. Oromí leg.; num. 4181; Stored at UB. 1♀; 29/11/96, P. Oromí leg.; num. 3189; Stored at UB. *Tegueste*: Pedro Alvarez; 1♂; 19/2/97, B. Emerson leg.; num. 3204; Stored at UB. 1♂; 20/2/97, P. Oromí leg.; num. 3205; Stored at UB.

**Intraspecific variation.**- Male cephalothorax ranges in length from 3.62 mm to 3.54 mm, female from 3.40 mm to 3.66 mm. PLE-PME from 1/5 to 2/5 diam. Sternum ornamentation somewhat reduced. B may be larger than M. M sometimes closer to B.

**Distribution.**- Tenerifean endemic. Abundant species known from several localities restricted to Anaga and Teno massifs.

**Comments.**- Originally known from a single male specimen, this species has been extensively collected in Tenerife.

*Dysdera brevispina* Wunderlich, 1991

(Figs. 34-45 )

*Dysdera brevispina* Wunderlich, 1991: 289-290, figs. 17-19 [♂]. Holotype male from Cueva de Felipe Reventón, Icod de los Vinos, Tenerife, Canary Islands; 23/3/84, A. Machado leg.; num. T-FR-97. Stored at UL. Examined.- Wunderlich, 1991: 284-287.

*D. moquinalensis* Wunderlich, 1991: 301, figs. 65-68 [♂]. El Moquinal, La Laguna, Tenerife, Canary Islands; 1♂; 20/4/90, P.Oromí leg.; Stored at UL. Examined. New synonymy.

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*D. vilaflorensis* Wunderlich, 1991: 310-311, figs. 124-125 [♂]. MSS-6, Barranco del Chorrillo, Vilaflor, Tenerife, Canary Islands; 1♂; 15/5/90, A.L. Medina leg.; Stored at UL. Examined. New synonymy.

**Diagnosis.**- Carapace, sternum ornamentation scarce; anterior lateral borders slightly convergent (Fig. 34). Cheliceral fang long; basal segment proximal dorsal side scantily covered with piligerous granulations; B largest, D small (Fig. 35). Abdominal dorsal hairs short, stick-like in male; curved, compressed, blunt in females. T smaller than DD; DD slightly bent (Fig. 36). AL proximal border toothed. P slightly toothed, very few teeth (1-3) (Fig. 43). Endogyne arch-like, frontally pointed (Fig. 37). VA posterior region sclerotized at anterior area (Figs. 38-39).

It can be distinguished from *D. insulana* by: presence of cheliceral granulations, spination pattern, male abdominal hairs not compressed, DD not markedly curved and L lacking medial fold.

**Description.**- *Holotype male* (Figs. 34-36, 40-43): Carapace (Fig. 34) 3.63 mm long; maximum width 2.7 mm; minimum width 1.68 mm. Brownish orange, darkened at borders; slightly foveate at borders, slightly wrinkled with small black grains mainly at front. Frontal border roughly round, from 1/2 to 3/5 carapace length; anterior lateral borders slightly convergent; rounded at maximum dorsal width point, back lateral borders straight; back margin wide, straight. AME diameter 0.16 mm; PLE 0.14 mm; PME 0.12 mm; AME on edge of frontal border, separated one from another about 1 diameter or more, close to PLE; PME very close to each other, about 1/2 PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part; longer than wide at base; semicircular groove at tip. Sternum brownish orange, darkened on borders; very slightly wrinkled, mainly between legs, frontal border; uniformly covered in slender black hairs.

Chelicerae (Fig. 35) 1.56 mm long, about 2/5 of carapace length in dorsal view; fang long, 1.35 mm; basal segment proximal dorsal side scantily covered with piligerous granulations. Chelicera inner groove medium-size, about 2/5 cheliceral length; armed with three teeth, lamina at base; additional tooth on left chelicera; B>D=M (D, M markedly small); D triangular, located roughly at centre of groove; B

close to basal lamina; M close to B. Legs pale yellow. Lengths of male described above: fe1 3.45 mm (all measurements in mm); pa1 2.19; ti1 3.12; me1 2.93; ta1 0.6; total 12.29; fe2 3.03; pa2 1.96; ti2 2.79; me2 2.7; ta2 0.6; total 11.08; fe3 3.12; pa3 1.4; ti3 1.72; me3 2.23; ta3 0.56; total 9.03; fe4 3.68; pa4 1.86; ti4 2.65; me4 3.26; ta4 0.65; total 12.1; fe Pdp 1.72; pa Pdp 0.84; ti Pdp 0.93; ta Pdp 0.93; total 4.42; relative length: 1>4>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.1-0.1; distal 1.0-0; tb3v spines arranged in two bands: proximal 2-1.3-0.2-1; distal 1.0-1.1; with two terminal spines. Fe4d spineless; tb4d spines arranged in two bands: proximal 1.1-0; distal 1.0-0; tb4v spines arranged in two bands: proximal 1.3-2.0; distal 1.0-0; with two terminal spines. Dorsal side of frontal legs smooth; ventral side of pedipalp covered with hairs, lacking small grains. Claws with 10-14 teeth; hardly larger than claw width.

Abdomen 4.52 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.018-0.027 mm long (smalls); medium-sized, roughly straight, not compressed, blunt, tip not enlarged; uniformly, scantily distributed.

Male copulatory bulbus (Fig. 36) T slightly smaller than DD; external, internal distal border sloped backwards. DD slightly bent in lateral view, clearly less than 45°; internal distal border not expanded. ES more sclerotized than IS; IS truncated at DD middle part. DD tip (Figs. 40-42) straight in lateral view. C present, short; distal end on DD internal tip; well-developed; located close to DD distal tip; proximal border sharply decreasing; distal border stepped, upper tip not projected, pointed; external side hollowed. AC present. LF absent. L well-developed; external border not sclerotized, laterally slightly folded; distal border divergent, continuous. AL present, very poorly developed; proximal border in posterior view toothed. P (Fig. 43) fused to T; perpendicular to T in lateral view; lateral length from 2/5 to 1/2 of T width; ridge present, perpendicular to T, not expanded; upper margin slightly toothed, mainly on external side, on its distal part, very few teeth; not distally projected; back margin not folded.

*Female* (Figs. 37-39, 44-45): All characters as in male except: Carapace 2.98 mm long; maximum width 2.37 mm; minimum width 1.44 mm. Brownish orange, uniformly distributed. AME diameter 0.12 mm; PLE 0.11 mm; PME 0.09 mm; PME

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about 3/5 PME diameter from PLE.

Chelicerae 1.3 mm long; fang 1.21 mm Leg lengths of female described above: fe1 3.45 mm (all measurements in mm); pa1 1.72; ti1 2.33; me1 2.23; ta1 0.51; total 10.24; fe2 2.42; pa2 1.68; ti2 2.19; me2 2.1; ta2 0.56; total 8.95; fe3 1.96; pa3 1.12; ti3 1.44; me3 1.86; ta3 0.51; total 6.89; fe4 2.79; pa4 1.49; ti4 2.33; me4 2.7; ta4 0.6; total 9.91; fe Pdp 1.4; pa Pdp 0.6; ti Pdp 0.6; ta Pdp 0.93; total 3.53; relative length 1>4>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.0-1.1; distal 1.0.0; tb3v spines arranged in two bands: proximal 2-1.3-0.2-1; distal 1.1-0.1; with two terminal spines. Fe4d spineless; tb4d spines arranged in two bands: proximal 0.1.0; distal 1.0.0; tb4v spines arranged in two bands: proximal 1.3-2.0; distal 1.0.0; with two terminal spines.

Abdomen 4.19 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.072-0.09 mm long; medium-sized, curved, compressed, blunt, tip not enlarged; uniformly, thickly distributed.

Endogyne (Figs. 37-39) arch-like in dorsal view, frontally pointed; as wide as long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area; small scale on back border internal part. AVD hardly visible. S attachment not projected under VA; arms as long as DA, straight; tips dorsally projected; neck as wide as arms. TB usual shape.

ALS (Figs. 44-45) with PS; remaining piriform spigots more external than MS, arranged in three rows; 9+1 piriform gland spigots; PMS, PLS with 10-15 aciniform gland spigots.

**Material examined.-** *Tenerife: Icod de los Vinos*: 1♀ (description); 12/4/86, J.J. Hernández leg.; num. 2744; Stored at UL. 1♀; ?/5/94, M. Arechavaleta leg.; num. 2798; Stored at UL. 1♀; ?/5/94, M. Arechavaleta leg.; num. 2806; Stored at UL. *Cueva del Viento-Sobrado*; 1♀; 14/4/83, J.L. Martín leg.; num. 2521; Stored at UL. *Santa Cruz de Tenerife: El Bailadero*; 1♀; 27/11/93, M.A. Arnedo & C. Ribera leg.; num. 2588; Stored at UB. *Santa Ursula: Bco. del Pino (8411 T/C #T)*; 1♀; 21-28/7/85, J.M. Peraza leg.; num. 2616; Stored at MCNT.

**Intraspecific variation.-** Male cephalothorax ranges in length from 2.37 mm to 3.63 mm, female from 2.84 mm to 3.47 mm. Carapace frontal lateral borders parallel.

Specimens from caves may show certain reduction in eye size. PLE-PME from 1/3 to 3/5 diam., AME separation from 3/5-1 diam. apart. Occasionally, D as large as B. In general, cheliceral teeth are small. S arms slightly curved. Spination variability in Table 3.

**Distribution.-** Tenerifean endemic. Known from several localities spread through the island's northern slopes (including Anaga). One single locality on south-western slopes (Vilaflor), collected in MSS trap. Unknown from Teno massif.

**Comments.-** After examination of *D. moquinalensis* holotype, no distinctive morphological difference from *D. brevispina*, apart from the highly polymorphic carapace colour, could be found. The only difference of *D. vilaflorensis* holotype from *D. brevispina* is an overall smaller size.

*Dysdera chioensis* Wunderlich, 1991

(Figs. 46-52)

*Dysdera chioensis* Wunderlich, 1991: 291, figs. 21-23 [?]. Holotype female from Cueva Grande del Chío, Guía de Isora, Tenerife, Canary Islands; 29/6/85, G.I.E.T. leg.; num.T-GC-5; Stored at UL. Examined.- Wunderlich, 1991: 284-287.

**Diagnosis.-** Carapace, sternum ornamentation scarce; Eyes markedly reduced in size. Chelicerae basal segment proximal dorsal side covered with piligerous granulations; teeth large, B largest (Fig. 47). Strongly spinated, presence of spines on pedipalps, Fe1, Fe2. Abdominal curved, compressed, pointed. Endogyne arch-like, frontally pointed; slightly wider than long (Fig. 48); ventral tooth-shaped expansion at VA. S attachment projected under VA; arms are shorter than DA, straight (Figs. 49-50).

It closely resembles *D. guayota* n.sp., being distinguished by eyes markedly reduced in size, spination of pedipalps and tooth-like expansions at VA.

**Description.-** *Holotype female* (Figs. 46-52): Carapace (Fig. 46) 3.73 mm long; maximum width 3.03 mm; minimum width 2 mm. Reddish orange, frontally darker, becoming lighter towards back; smooth with some small black grains mainly at front;

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hairy, covered with black hairs mainly at lateral and back borders. Frontal border roughly round, from 1/2 to 3/5 carapace length; anterior lateral borders slightly convergent; sharpened at maximum dorsal width point, back lateral borders rounded; back margin wide, slightly bilobulated. Eyes markedly reduced in size. AME diameter 0.09 mm; PLE 0.05 mm; PME 0.03 mm; AME separation 1.02 mm; AME-PLE separation 0.05 mm; PLE-PME separation 0.14 mm; PME separation 0.16 mm. Labium trapezoid-shaped, base wider than distal part; longer than wide at base; semicircular groove at tip. Sternum yellowish orange, darkened on borders; smooth; uniformly covered in slender black hairs.

Chelicerae (Fig. 47) 1.77 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 1.16 mm; basal segment dorsal side completely covered with piligerous granulations (distally scarce), ventral side smooth. Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base;  $B > D = M$ ; D round, located roughly at centre of groove; B close to basal lamina; M close to B. Legs yellow. Lengths of female described above: fe1 2.7 mm (all measurements in mm); pa1 1.68; ti1 2.14; me1 1.91; ta1 0.6; total 9.03; fe2 2.37; pa2 1.63; ti2 2.07; me2 1.96; ta2 0.6; total 8.63; fe3 2.16; pa3 1.21; ti3 1.68; me3 2.1; ta3 0.65; total 7.8; fe4 2.56; pa4 1.4; ti4 2.1; me4 2.51; ta4 0.65; total 9.22; fe Pdp 1.9; pa Pdp 0.74; ti Pdp 0.65; ta Pdp 0.93; total 4.22; relative length  $4 > 1 > 2 > 3$ . Spination: Papdp 1, tbpdp 1 medial internal. Fe1 1 distal, forward margin. Fe2: 3-2 distal, forward margin. Fe3d spines in two rows: forward 5; backward 1 (distal); pa3 spineless; tb3d spines arranged in two bands: proximal 1.2.1; distal 1.0.1.; tb3v spines arranged in two bands: medial-proximal 1.2.1; distal 1.0.0-1; with two terminal spines. Fe4d spines in two rows: forward 1; backward 7-5; pa4 1 ventral medial; tb4d spines arranged in three bands: proximal 0.0.0-1; medial-proximal 1.1.1; distal 1.0.1; tb4v spines arranged in three bands: proximal 0.2.0; medial-proximal 1.1.1; medial-distal 0; distal 1.1.1; with two terminal spines. Dorsal side of frontal legs, ventral side of pedipalps covered with hairs, lacking small grains. Claws with 10-14 teeth; hardly larger than claw width.

Abdomen 5.12 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.216-0.234 mm long; thin, curved, compressed, pointed; uniformly, thickly distributed.

Endogyne (Figs. 48-50) arch-like in dorsal view, frontally pointed; slightly wider

than long; DF wide. MF well-developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area; tooth-shaped expansion from internal back border; not joined to lateral sclerotization, slightly shorter than DA lateral margins. AVD clearly recognizable. S attachment projected under VA; arms are shorter than DA, straight; tips not projected; neck as wide as arms. TB usual shape.

ALS (Figs. 51-52) with PS; remaining piriform spigots more external than MS, arranged in two rows; 9+1 piriform gland spigots; PMS, PLS with 5-10 aciniform gland spigots.

*Male.*- Unknown.

**Material examined.**- *Tenerife: Guía de Isora: Cueva Grande del Chío; 1juv.; 28/1/93, P. Oromí leg.; num. 2545; Stored at UL. 1♀; 21/10/94, Arnedo & Ribera leg.; num. 4821 (T32); Stored at UB. La Orotava: Cueva de Los Roques; 1juv.; 11/8/86, J.L. Martín leg.; num. 2536; Stored at UL. 1♀; /11/95, P. Oromí leg.; num. 2965; Stored at UB. 1♀; 27/10/91, C. Ribera leg.; num. 2566; Stored at UB. 1♀; /11/95, P. Oromí leg.; num. 2967; Stored at UB.*

**Intraspecific variation.**- Female cephalothorax ranges in length from 3.36 mm to 5.6 mm. D at centre of chelicera groove or at tip. Specimens from Los Roques, S arms longer. Spination variability in Table 4.

**Distribution.**- Tenerifean endemic. Known from two lava tubes located on dry, south-western slopes.

**Comments.**- Even though several new specimens have been collected and a new locality has been found for this species, male specimens remain unknown.

### *Dysdera cribellata* Simon, 1883

(Figs. 53-64)

*Dysdera cribellata* Simon, 1883 (nec. Simon, 1907: 258-259, fig. 257 [♂]; wrong identification): 294-295, figs. 17 [♂]. Type male lost. Type female from Canary Islands, unknown locality; unknown data, M. Verneau leg.; num. B-536; Stored at MNHN. Examined.- Bösenberg, 1895: 7.- Reimoser, 1919.- Denis, 1941: 108.- Schmidt, 1973: 360-361.- Arnedo et al., 1996: 243.

*D. medinae* Wunderlich, 1991: 299, figs. 57-60 [♂, ♀]. Holotype male and allotype female from Monte de

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las Mercedes, La Laguna, Tenerife, Canary Islands; in II, M. Knösel leg.; Stored at SMF. Not examined. New synonymy.

*D. volcania* Ribera, Ferrández & Blasco, 1985: 59-61, figs. 3E-F [♀] (♀, non ♂). Allotype female from Cueva de Felipe Reventón, Icod de los Vinos, Tenerife, Canary Islands; 3/3/84, P. Oromí leg.; num. T-FR-107. Stored at UL. Examined. Wrong identification.

**Diagnosis.-** Carapace, sternum ornamentation noticeable. Chelicerae basal segment smooth; inner groove long; teeth small, B largest (Fig. 54). Abdominal dorsal hairs curved, compressed, pointed. T smaller than DD; DD slightly bent (Fig. 55); C upper tip not projected, sloped. L upper sheet strongly folded. AL proximal border toothed (Figs. 59-61). P distally slightly toothed (Fig. 62). Endogyne arch-like, frontally pointed; slightly wider than long (Fig. 56); VA posterior region sclerotized at anterior area. S arms slightly shorter than DA, straight (Figs. 57-58).

It can be distinguished from the similar *D. insulana* by carapace ornamentation and spination pattern. Differs from other foveate species: from *D. minutissima* and *D. volcania* by absence of cheliceral granulations and relative size of teeth ; from *D. brevisetae* and *D. levipes* by spinated legs.

**Description.-** *Male* (Figs. 53-55, 59-62): Carapace (Fig. 53) 3.22 mm long; maximum width 2.75 mm; minimum width 1.77 mm Dark red, darkened at borders; heavily foveate, covered with circular depressions, some small black grains mainly at front. Frontal border roughly round, from 1/2 to 3/5 carapace length; anterior lateral borders slightly divergent; rounded at maximum dorsal width point, back lateral borders rounded; back margin wide, straight. AME diameter 0.23 mm; PLE 0.21 mm; PME 0.16 mm; AME on edge of frontal border, separated one from another about 2/5 of 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; longer than wide at base; semicircular groove at tip. Sternum dark red, darkened on borders; heavily wrinkled; covered in hairs mainly on margin.

Chelicerae (Fig. 54) 1.35 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 1.16 mm; basal segment smooth, with no granulations. Chelicera inner groove long, about 1/2 cheliceral length; armed with three teeth and lamina at



base; B>D>M (not very different, small); D trapezoid, located roughly at centre of groove; B close to basal lamina; M close to B. Legs orange. Lengths of male described above: fe1 2.79 mm (all measurements in mm); pa1 1.86; ti1 2.61; me1 2.51; ta1 0.56; total 10.33; fe2 2.51; pa2 1.63; ti2 2.33; me2 2.28; ta2 0.56; total 9.75; fe3 2; pa3 1.12; ti3 1.49; me3 1.86; ta3 0.51; total 6.98; fe4 2.75; pa4 1.49; ti4 2.33; me4 2.7; ta4 0.6; total 9.87; fe Pdp 1.4; pa Pdp 0.7; ti Pdp 0.7; relative length: 1>4>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in three bands: proximal 1.0.1; medial-proximal 0-1.0.0; distal 1.0.0; tb3v spines arranged in two bands: proximal 1.1.1; distal 1.0.0; with two terminal spines. Fe4d spineless; tb4d spines arranged in two bands; proximal 1.0.1; distal 0.0.1; tb4v spines arranged in two bands: proximal 1.1.0; distal 1.0.0; with two terminal spines. Dorsal side of frontal legs smooth; ventral side of pedipalp covered with hairs, lacking small grains. Claws with 10-14 teeth, length twice claw width.

Abdomen 3.68 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.045-0.054 mm long; thin, curved, compressed, pointed; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 55) T slightly smaller than DD; external, internal distal border sloped backwards. DD slightly bent in lateral view, clearly less than 45°; internal distal border not expanded. ES more sclerotized than IS; IS truncated at DD middle part. DD tip (Figs. 59-61) straight in lateral view. C present, short; distal end on DD internal tip; well-developed; located close to DD distal tip; proximal border sharply decreasing; distal border stepped, upper tip not projected, sloped; external side hollowed. AC present. LF absent. L well-developed; external border not sclerotized, laterally slightly folded; distal border divergent, not continuous; upper sheet strongly folded at middle. AL present, very poorly developed; proximal border in posterior view toothed. P (Fig. 62) fused to T; perpendicular to T in lateral view; lateral length from 2/5 to 1/2 of T width; ridge present, perpendicular to T, not expanded; upper margin slightly toothed, mainly on external side, on its distal part, few teeth; not distally projected; back margin slightly folded towards internal side.

*Lectotype female* (Figs. 56-58, 63-64): Carapace 3.82 mm long; maximum width 3.08 mm; minimum width 1.82 mm. Brownish orange. Anterior lateral borders parallel; rounded at maximum dorsal width point, back lateral borders straight. AME diameter

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0.23 mm; PLE 0.21 mm; PME 0.16 mm; AME separated one from another about 2/3 of diameter; PME about 2/5 diameter from PLE. Sternum orange, uniformly distributed; wrinkled.

Chelicerae 1.67 mm long; fang 1.3 mm. Legs yellow. Lengths of female described above: fe1 2.98 mm (all measurements in mm); pa1 2.05; ti1 2.52; me1 2.47; ta1 0.56; total 10.58; fe2 2.66; pa2 1.86; ti2 2.33; me2 2.28; ta2 0.56; total 9.69; fe3 2.28; pa3 1.3; ti3 1.54; me3 1.91; ta3 0.56; total 7.59; fe4 3.03; pa4 1.63; ti4 2.33; me4 2.84; ta4 0.65; total 10.48; fe Pdp 1.49; pa Pdp 0.83; ti Pdp 0.74; ta Pdp 0.93; total 3.99; relative length 1>4>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.0.1; distal 1.0.0; tb3v spines arranged in two bands: proximal 0.1.0; distal 1.0.0; with two terminal spines. Fe4d spineless; tb4d spines arranged in one band: proximal 1.0.1; tb4v spines arranged in two bands: proximal 1.1.0; distal 1.0.0; with two terminal spines.

Abdomen 4.84 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.054 mm long; thin, curved, compressed, pointed; uniformly, thickly distributed.

Endogyne (Figs. 56-58) arch-like in dorsal view, frontally pointed; slightly wider than long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area. AVD hardly visible. S attachment not projected under VA; arms are slightly shorter than DA, straight; tips not projected; neck as wide as arms. TB usual shape.

ALS (Figs. 63-64) with PS; remaining piriform spigots more external than MS, arranged in two rows; 11+1 piriform gland spigots; PMS, PLS with 5-10 aciniform gland spigots.

**Material examined.-** *Tenerife*: ?; ?; 1M; 21/12/40, J. Denis leg.; num. BMNH1940.12.21.15; Stored at BMNH. *La Laguna*: El Moquinal; 1♀; 28/11/93, Arnedo & Ribera leg.; num. 4794 (T29); Stored at UB. 1♀; 28/11/93, Arnedo & Ribera leg.; num. 4817 (T20); Stored at UB. *Santa Cruz de Tenerife*: Cruz del Carmen; 2♂; 12/5/96, M. Naranjo leg.; num. 3148; Stored at UB. 1♀; 12/5/96, M. Naranjo leg.; num. 3149; Stored at UB. 1♂; 12/5/96, M. Naranjo leg.; num. 3150; Stored at UB. 1♀; 12/5/96, M. Naranjo leg.; num. 3151; Stored at UB. Monte de las Mercedes; 1♂; 24/5/96, P. Oromí leg.; num. 3162; Stored at UB. 1♂; 24/5/96, P. Oromí leg.; num.

3163; Stored at UB. Sima de la Robada; 1♂ (description); 9/11/92, I. Izquierdo leg.; num. 2552; Stored at UL. 1♀; 13/2/92, P.Oromí leg.; num. 2514; Stored at UL. Taganana; 1♀; 20/2/89, Garcia Alayon leg.; num. 2599; Stored at UL. *D. medinae*: Tenerife: Santa Cruz de Tenerife: Monte Aguirre; 1♂ paratype; 4/6/86, C.G. Campos leg.; num. 2741; Stored at UL.

**Intraspecific variation.**- Male cephalothorax ranges in length from 3.62 mm to 4.66 mm, female from 3.82 mm to 3.96 mm. Carapace frontal lateral margins usually parallel. AME separation from 2/5 to 3/5 diam. PLE-PME from 1/4 to 1/2 diam.. Sternum ornamentation somewhat reduced. Spination variability in Table 5.

**Distribution.**- Tenerifean endemic. Known from several localities spread through the northern slope of the island, including the Anaga and Teno massifs.

**Comments.**- The original male material of this species seems to have been lost. However, the female used in the original description was available for the present study.

The original description of *D. cribellata* (Simon 1883), as well as the remaining *Dysdera* species described in that work, lacked any reference to the locality. In a subsequent paper (Simon 1907) the original locations were assigned using new labelled material. Thus, *D. cribellata* was thought to be present in La Palma. However, after examination of the drawings of the male copulatory bulbus drawings from both the description and the redescription, they were actually considered to belong to different species (Arnedo et al. 1996). Therefore, the report of this species in La Palma was due to a wrong identification. The presence of *D. cribellata* in Tenerife has been documented previously (Bösenberg 1895, Denis 1941).

Examination of *D. medinae* male paratype and *D. volcania* female allotype did not show any diagnostic character with regard to *D. cribellata*. In both cases misidentification was probably due to unavailability of *D. cribellata* type specimens.

*Dysdera crocota* C.L. Koch, 1839

*Dysdera crocota* C.L. Koch, 1839: 81.- Schmidt, 1973: 360-361.- Wunderlich, 1991: 284-286, 292-293,

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figs. 28-31 [♂,♀].- Arnedo et al., 1996: 252-253.- Arnedo & Ribera, 1997.

*Dysdera inaequuscapillata* Wunderlich, 1991: 295, figs. 42-46 [♂,♀]. Holotype male from Punta Hidalgo, La Laguna, Tenerife, Canary Islands; 14/2/86, R.Wiss leg.; num. 3934; Stored at UL. Examined. New synonymy.

**Material examined.-** *Tenerife*: ? : ?; 1♂,2♀; 18/4/84, N.P.Ashmole leg.; num. 2715; Stored at UL. *Adeje*: Playa Paraiso, 10-50m; 1♀; 24-30/12/94, F. Gasparo leg.; Stored at FG. *Buenavista*: Teno Alto; 1♀; ?/3/94, Oromí leg.; num. 2937; Stored at UB. 1juv.; ?/3/94, Oromí leg.; num. 4814 (T6); Stored at UB. 1♂; ?/3/94, Oromí leg.; num. 4819 (T2); Stored at UB. 3♀; ?/3/94, P. Oromí leg.; num. 4823-5; Stored at UB. *El Rosario*: MSS-1,Tabaiba; 1♀; 9/10/90, A.L.Medina leg.; num. 2774; Stored at UL. *El Sauzal*: Around Cueva Labrada; 5♀; ?/11/93, Arnedo & Ribera leg.; num. 4807-11; Stored at UB. 1♂; ?/11/93, Arnedo & Ribera leg.; num. 4832 (T46); Stored at UB. 1 juv.; ?/11/93, Arnedo & Ribera leg.; num. 4834 (T49); Stored at UB. *El Tanque*: El Tanque, 550m; 1♀; 26/12/94, F. Gasparo leg.; num. ; Stored at FG. *Icod de los Vinos*: Altos de El Sobrado; 1♂; 15/3/95, G.Ortega leg.; num. ; Stored at MCNT. Icod; 1♀; 21/12/82, P.Morales leg.; num. 2768; Stored at UL. *Garachico*: La Montañeta; 8♂, 4♀, 3 juv.; 18/2/96, Arnedo & Oromí leg.; num. 3106-17; Stored at UB. *La Laguna*: Cocomoto, Tenerife, Canarias; 1♀; ?/2/89, C.Deniz leg.; num. 2596; Stored at UL. El Moquinal; 1♀; 28/11/93, Arnedo & Ribera leg.; num. 4812 (T5); Stored at UB. 1♀; 23/1/97, P. Oromí leg.; num. 3197; Stored at UB. La Laguna; 1♂; 12/2/87, C.G.Campos leg.; num. 2739; Stored at UL. 1♂; 28/12/87, C.G.Campos leg.; num. 2688; Stored at UL. 1juv.; ?/11/88, C.Deniz leg.; num. 2597; Stored at UL. Las Mercedes; 1♂; 24/11/82, A.Santaella leg.; num. 2777; Stored at UL. 1♂; 25/10/84, C.G.Campos leg.; num. 2740; Stored at UL. Los Rodeos, Tenerife, Canarias; 1♂,3♀; , R.G. Becerra. leg.; num. 2582; Stored at RG. Mesa Mota; 1♀; 4/6/83, R.Vonk leg.; num. 2773; Stored at UL. San Diego, ; 1♀; 24/11/82, E.Cavero leg.; num. 2767; Stored at UL. *La Matanza de Acentejo*: La Matanza; (900 m.); 1♀; 2/6/96, M. Naranjo leg.; num. 3172; Stored at UB. 1♂,1♀,4juv.; 2/6/96, M. Naranjo leg.; num. 3187; Stored at UB. *La Orotava*: Around Cueva del Bucio; 1♂; 21/10/94, Arnedo,Ribera & Serra leg.; num. 4003; Stored at UB. La Caldera, Aguamansa; 2♂, 1♀; 21/10/94, Arnedo,Ribera

& Serra leg.; num. 4004-6; Stored at UB. *La Victoria de Acentejo*: Las Lagunetas; 1 ♀; 4/2/89, O. Torres leg.; num. 2690; Stored at UL. 1 ♀; 30/10/94, P. Oromí leg.; num. 4002; Stored at UB. 1 ♀; 25/4/95, P. Oromí leg.; num. 3182; Stored at UB. 1 ♀; 1/5/95, Oromí leg.; num. 4175 (134); Stored at UB. *Los Realejos*: Los Realejos; 1 ♀; 25/2/83, A. Fox leg.; num. 2769; Stored at UL. *Los Silos*: Erjos; 1 ♀; 15/4/73, J.M. Fernández leg.; num. 2503a; Stored at UB. *Santa Cruz de Tenerife*: Cruz del Carmen; 1 juv.; 12/5/96, M. Naranjo leg.; num. 3144; Stored at UB. 1 ♀; 25/1/97, P. Oromí leg.; num. 3193; Stored at UB. Parque de Anaga; 1 ♀; 6/2/88, P. Suárez leg.; num. 2689; Stored at UB. *Santa Ursula*: Monte de Santa Ursula; 1 ♀; 13/12/96, P. Oromí leg.; num. 3211; Stored at UB. *Santiago del Teide*: Los Gigantes; 1 ♂; 28/3/94, P. Oromí leg.; num. 2816; Stored at UB. *D. inaequuscapillata*: *Tenerife*: *La Laguna*: Punta Hidalgo; 1 ♀ paratype; 14/12/86, R. Wiss leg.; num. 2623; Stored at SMF. 1 ♀, 1 juv.; 14/12/86, R. Wiss leg.; num. 2731; Stored at UL. 1 ♀; 23/12/86, C.G. Campos leg.; num. 2729; Stored at UL. 2 ♂; 23/12/86, C.G. Campos leg.; num. 2738; Stored at UL. Las Mercedes; 1 ♂; ?/6/84, S. Morales leg.; num. 2730; Stored at UL.

**Distribution.**- Cosmopolitan species, spread all over the world, probably due to human introduction.

**Comments.**- The presence of *D. crocota* has been documented in all the islands of the archipelago, with the exception of Fuerteventura and Lanzarote. In the Canaries, *D. crocota* is always found in habitats disturbed by human activities. It may suggest that this species has recently been introduced in the archipelago by man.

After examination of several types of *D. inaequuscapillata* Wunderlich, 1991; they were considered to belong to *D. crocota*. This misidentification is extraordinarily surprising. The original author was aware of the presence of *D. crocota* in the Canaries and even, in the same work, mentioned and drew several characters of *D. crocota*. However, he described *D. inaequuscapillata* as a different species on the basis of the 'uniqueness' of its male copulatory bulbus in the Canaries.

*Dysdera curvisetae* Wunderlich, 1987

(Figs. 65-71)

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*Dysdera curvisetae* Wunderlich, 1987: 291, figs. 12-17 [♂]. Holotype male from small cave at the North coast of San Marcos, Icod de los Vinos, Tenerife, Canary Islands; in VIII, J. Wunderlich leg.; Stored at SMF. Examined.- Wunderlich, 1991: 284-287.

**Diagnosis.-** Moderately large species. Carapace, sternum ornamentation scarce; frontal border wide; anterior lateral borders convergent; transversal suture on dorsal medial posterior surface (always so?) (Fig. 65). AME separated one from another about 2/3 of diameter, PLE less than 1/4 diameter from PLE. Chelicerae, fang long; basal segment dorsal, ventral side densely covered with small piligerous granulations; inner groove medium-size; D, B similar, large (Fig. 66). Moderately spinated. Dorsal side of frontal legs, ventral of pedipalp covered with small piligerous grains. Posterior abdominal dorsal hairs thick, curved, tip enlarged, distally acuminate. T smaller than DD; DD slightly bent (Fig. 67). L distal border most external part perpendicular (Fig. 68). P long, smooth (Fig. 71).

This species strongly resembles *D. ratonensis* Wunderlich, 1991 from La Palma and Grancanarian *D. verneaui* Simon, 1883. It is distinguished from both species by reduction in leg spination and male abdominal dorsal hairs shape and size.

**Description.-** *Holotype male* (Figs. 65-71): Carapace (Fig. 65) 5.42 mm long; maximum width 4.2 mm; minimum width 2.94 mm. Dark red, frontally darker, becoming lighter towards back; slightly foveate at borders, slightly wrinkled with small black grains mainly at front. Frontal border roughly straight, about 3/5 carapace length; anterior lateral borders convergent; sharpened at maximum dorsal width point, back lateral borders straight; back margin wide, straight; transversal suture on dorsal medial posterior surface. AME diameter 0.32 mm; PLE 0.27 mm; PME 0.23 mm; AME on edge of frontal border, separated one from another about 2/3 of diameter, close to PLE; PME very close to each other, less than 1/4 PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part; longer than wide at base; semicircular groove at tip. Sternum dark red, darkened on borders; very slightly wrinkled, mainly between legs and frontal border; uniformly covered in slender black hairs.

Chelicerae (Fig. 66) 3.08 mm long, about 2/5 of carapace length in dorsal view;

fang long, 2.1 mm; basal segment dorsal, ventral side completely covered with piligerous granulations (small, dense). Chelicera inner groove medium-size, about 2/5 cheliceral length; armed with three teeth and lamina at base;  $D > B > M$  (D, B very similar, all large); D trapezoid, located roughly at centre of groove; B close to basal lamina; M at middle of B and D. Legs dark orange-coloured. Lengths of male described above: fe1 5.6 mm (all measurements in mm); pa1 3.64; ti1 5.6; me1 5.6; ta1 0.91; total 21.35; fe2 4.41; pa2 3.01; ti2 4.48; me2 2.68; ta2 0.84; total 15.42; fe3 3.64; pa3 1.75; ti3 2.94; me3 3.78; ta3 0.84; total 12.95; fe4 4.4; pa4 2.52; ti4 4.13; me4 5.25; ta4 0.98; total 17.28; fe Pdp 2.8; pa Pdp 1.54; ti Pdp 1.47; ta Pdp 1.26; total 7.07; relative length:  $1 > 4 > 2 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.0.1; distal 1-0.0.0; tb3v spines arranged in two bands: proximal 0-1.1.0; distal 1.0.0; with two terminal spines. Fe4d spines in two rows: forward 1; backward 1; tb4d spines arranged in three bands: proximal 0.0-1.1; medial-proximal 1.1.1; distal 1.0.0; tb4v spines arranged in three bands: proximal 1.1.0; medial-proximal 0.0-1.0-1; distal 1.0.1; with two terminal spines. Dorsal side of frontal legs, ventral side of pedipalp covered with small piligerous grains. Claws with 10-14 teeth; hardly larger than claw width.

Abdomen 7.7 mm long; cream-coloured; cylindrical. Anterior abdominal dorsal hairs 0.126 mm long (large); medium-sized, curved, compressed, blunt, tip not enlarged; uniformly, thickly distributed. Posterior abdominal dorsal hairs 0.036-0.054 mm long; thick, curved, not compressed, tip enlarged, distally acuminate; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 67) T slightly smaller than DD; external, internal distal border sloped backwards. DD slightly bent in lateral view, clearly less than  $45^\circ$ ; internal distal border not expanded. IS and ES equally developed; IS truncated at DD middle part. DD tip (Figs. 68-70) straight in lateral view. C present, short; distal end on DD internal tip; well-developed; located close to DD distal tip; proximal border sharply decreasing; distal border stepped, upper tip not projected, pointed; external side hollowed. AC present. LF absent. L well-developed; external border not sclerotized, laterally slightly folded; distal border divergent, most external part perpendicular, continuous. AL present, very poorly developed; proximal border in

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posterior view fused with DH. P (Fig. 71) fused to T; perpendicular to T in lateral view; lateral length from 1/2 to 2/3 of T width; ridge present, perpendicular to T, not expanded; upper margin smooth; not distally projected; back margin not folded.

Spinneret gland spigot data not available.

*Female*.- Unknown

**Intraspecific variation**.- Unknown.

**Distribution**.- Tenerifean endemic. Known from a single locality on the island's northern slope.

### *Dysdera esquiveli* Ribera & Blasco, 1986

(Figs. 72-83)

*Dysdera esquiveli* Ribera & Blasco, 1986: 42-44, fig. 1A-F [ $\sigma$ ,  $\text{♀}$ ]. Holotype male and paratype female from Cueva del Viento-Sobrado, Icod de los Vinos, Tenerife, Canary Islands; 23/3/83, J.L. Martín leg.;  $\sigma$ num. T-CV-118,  $\text{♀}$ num. T-CV-119; Stored at UL. Examined.-Wunderlich, 1991: 284-287.

**Diagnosis**.- Small species. Carapace, sternum ornamentation scarce; frontal border narrow; anterior lateral borders slightly divergent (Fig. 72). Eyes absent or markedly reduced. Chelicerae short; basal segment proximal dorsal side spacing granulations; teeth small, equal in size (Fig. 73). Legs with long, spine-like hairs on ventral posterior tb, fe. Male abdominal dorsal hairs stick-like, tip enlarged; female curved, not enlarged. T smaller than DD; DD slightly bent (Fig. 74). L poorly developed (Fig. 78). P long; smooth or very slightly toothed (1-2 distal) (Fig. 81). Endogyne arch-like, frontally pointed; slightly wider than long (Fig. 75); VA posterior region sclerotized at anterior area. S arms as long as DA, slightly curved (Figs. 76-77).

It differs from the very similar *D. hernandezii* n. sp. by presence of cheliceral granulations, lack of fang enlargement and spination pattern.

**Description**.- *Holotype male* (Figs. 72-74, 78-81) Carapace (Fig. 72) 1.96 mm long; maximum width 1.46 mm; minimum width 0.88 mm. Brownish orange, uniformly distributed; slightly foveate at borders, wrinkled at middle, covered with tiny



granulations. Frontal border roughly round, markedly smaller than 1/2 carapace length; anterior lateral borders slightly divergent, or parallel; rounded at maximum dorsal width point, back lateral borders straight; back margin narrow, straight. Eyeless. Labium trapezoid-shaped, base wider than distal part; as long as wide at base (triangle-like); semicircular groove at tip. Sternum orange, uniformly distributed; wrinkled; covered in hairs mainly on margin.

Chelicerae (Fig. 73) 0.67 mm long, about 1/4 of carapace length in dorsal view; fang medium-sized, 0.51 mm; basal segment dorsal side completely covered with piligerous granulations (spacing, distally scarce), ventral side smooth. Chelicera inner groove medium-size, about 2/5 cheliceral length; armed with three teeth and lamina at base; D=M=B; D triangular, located roughly at centre of groove; B close to basal lamina; M close to B. Legs pale yellow. Lengths of male described above: fe1 1.67 mm (all measurements in mm); pa1 1.06; ti1 1.39; me1 1.34; ta1 0.46; total 5.92; fe2 1.52; pa2 0.89; ti2 1.32; me2 1.24; ta2 0.4; total 5.37; fe3 1.11; pa3 0.61; ti3 0.76; me3 1.01; ta3 0.28; total 3.77; fe4 1.52; pa4 0.78; ti4 1.14; me4 1.34; ta4 0.4; total 5.18; fe Pdp 0.86; pa Pdp 0.43; ti Pdp 0.43; ta Pdp 0.51; total 2.23; relative length: 1>2>4>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; pa3 1-0 ventral; tb3d spines arranged in two bands: proximal 1.0.0; distal 1.0.0; tb3v spines arranged in two bands: proximal 0.1-0.0; distal 1.0.0; with two terminal spines. Fe4d spines in one row: 1; pa4 2-3 ventral; tb4d spines arranged in two bands: medial-proximal 1.0.1; distal 1.0.1; tb4v spines arranged in four bands: proximal 1.0.0; medial-proximal 1.1.1; medial-distal 1.0-1.1; distal 1.0.1; without terminal spines. Dorsal side of frontal legs smooth; ventral side of pedipalp smooth; long, spine-like hairs on ventral posterior tb, fe. Claws with 10-14 teeth, length twice claw width.

Abdomen 2.28 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.027 mm long; medium-sized, roughly straight, not compressed, blunt, tip enlarged; uniformly, scantily distributed.

Male copulatory bulbus (Fig. 74) T slightly smaller than DD; external distal border straight; internal sloped backwards. DD slightly bent in lateral view, clearly less than 45°; internal distal border not expanded. IS and ES equally developed; IS truncated at DD middle part. DD tip straight in lateral view. C present, short; distal end

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on DD internal tip; well-developed; located close to DD distal tip (Figs. 78-80); proximal border sharply decreasing; distal border stepped, upper tip not projected, rounded; external side hollowed. AC present. LF absent. L poorly developed; external border not sclerotized, laterally slightly folded; distal border approximately parallel, not continuous, upper sheet slightly folded at middle (?). AL present, very poorly developed; proximal border in posterior view fused with DH. P (Fig. 81) fused to T; perpendicular to T in lateral view; lateral length from 2/3 to as long as T width; ridge present, perpendicular to T, not expanded; upper margin smooth; distally slightly projected; back margin slightly folded towards internal side.

*Paratype female* (Figs. 75-77, 82-83): All characters as in male except: Carapace 2.14 mm long; maximum width 1.58 mm; minimum width 0.98 mm.

Chelicerae 0.84 mm long; fang 0.6 mm.  $B>D=M$  (slightly). Leg lengths of female described above: fe1 1.77 mm (all measurements in mm); pa1 1.19; ti1 1.39; me1 1.26; ta1 0.38; total 5.99; fe2 1.52; pa2 1.09; ti2 1.24; me2 1.14; ta2 0.38; total 5.37; fe3 1.19; pa3 0.66; ti3 1.21; me3 1.14; ta3 0.4; total 4.6; fe4 1.57; pa4 0.86; ti4 1.26; me4 1.52; ta4 0.4; total 5.61; fe Pdp 0.94; pa Pdp 0.38; ti Pdp 0.38; ta Pdp 0.51; total 2.21; relative length  $1>4>2>3$ . Spination: palp, leg1, leg2 spineless.. Fe3d spineless; pa3 1-0 ventral; tb3d spines arranged in two bands: proximal 1-0.0.0; distal 1.0.0; tb3v spines arranged in one band: distal 1.0.0; with two terminal spines. Fe4d spines in one row: 1; pa4 2-1 ventral; tb4d spines arranged in two bands: medial-proximal 1.0.1; distal 1.0.1; tb4v spines arranged in four bands: proximal 1.0.0; medial-proximal 1.1.1; medial-distal 1.0.1; distal 1.0.1; without terminal spines.

Abdomen 2.7 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.05 mm long; medium-sized, curved, compressed (?), blunt, tip not enlarged; uniformly, scantily distributed.

Endogyne (Figs. 75-77) arch-like in dorsal view, frontally pointed; slightly wider than long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area. AVD hardly visible. S attachment not projected under VA; arms as long as DA, slightly curved; tips not projected; neck as wide as arms. TB usual shape.

ALS (Figs. 82-83) with PS; remaining piriform spigots more external than MS,

arranged in one row; 3+1 piriform gland spigots; PMS, PLS with fewer than 5 aciniform gland spigots.

**Material examined.**-*Tenerife: El Sauzal:* Cueva Labrada; 1♂; 11/12/84, J.J. Hernández leg.; num. 2529; Stored at UL. *Icod de los Vinos:* Cueva Felipe Reventón; 1♂ paratype; 3/3/84, G.I.E.T leg.; num. 2526; Stored at UL. 1♂; 20/6/94, P. Oromí leg.; num. 2801; Stored at UL. 1♀; 22/4/93, P. Oromí leg.; num. 2548; Stored at UL. 1♂; 18/5/85, Hernández, Izquierdo & Medina leg.; num. 2716; Stored at UL. 1♂; ?/5/94, M. Arechavaleta leg.; num. 2800; Stored at UL. 1♀; ?/5/94, M. Arechavaleta leg.; num. 2803; Stored at UL. Cueva del Viento-Sobrado; 1♂, 1 juv. paratypes; 23/3/83, J.L. Martín leg.; num. 2528; Stored at UL. 1♂; 2/12/92, I. Izquierdo leg.; num. 2549; Stored at UL. 1♂; ?/5/94, Piquetas leg.; num. 2804; Stored at UL.

**Intraspecific variation.**- Male cephalothorax ranges in length from 1.96 mm to 2.28 mm. Labrada specimen, carapace back margin slightly bilobulated. AME, PLE present, reduced to tiny whitish spots. Sternum lacking ornamentation. Chelicera dorsal relative size from 1/4 to 2/5 of carapace length. B larger than or equal to D, larger than or equal to M. In general, cheliceral teeth are small. M closer to B. P very slightly toothed at distal tip (1 or 2 teeth). Spination variability in Table 6.

**Distribution.**- Tenerifean endemic. Known from several lava tubes on the northern slope.

*Dysdera gibbifera* Wunderlich, 1991

(Figs. 84-92)

*Dysdera gibbifera* Wunderlich, 1991: 293-294, fig. 35, 36, 38, 39 [♂] (♂; non ♀, wrong identification).

Holotype male from MSS-3 Monte del Agua, Los Silos, Tenerife, Canary Islands; 10/7/88, A.L. Medina leg.; num. T-H3-124; Stored at UL. Examined.- Wunderlich, 1991: 284-287.- Arnedo & Ribera, 1997.

**Diagnosis.**- Very large species. Carapace, sternum ornamentation scarce; anterior lateral borders slightly convergent (Fig. 84). Chelicerae long; basal segment dorsal, ventral side densely covered with small granulations; teeth large, D largest, at

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segment tip (Fig. 85). Leg 4 largest; legs poorly spinated. Claws with many, slender teeth. Abdominal dorsal hairs very short, stick-like, tip enlarged. T longer than DD; DD not bent (Fig. 86). C distal border sloped; LF well-developed, not projected; L external border sclerotized, laterally markedly folded backwards (Figs. 87-89). P as long as T width; ridge distinctly expanded, not sclerotized (Figs. 86, 90).

Females formerly described as *D. gibbifera* actually belong to *D. insulana*. It is distinguished from this species by cheliceral granulations, relative shape of teeth and size, spination pattern. It differs from other species holding well-developed LF (*D. andamanae* Arnedo & Ribera, 1997; *D. iguanensis*, *D. montanetensis*) by sclerotization and lateral, backward fold of L external margin.

**Description.-** *Holotype male* (Figs. 84-92): Carapace (Fig. 84) 5.81 mm long; maximum width 4.97 mm; minimum width 3.22 mm. Dark brownish red, frontally darker, becoming lighter towards back; smooth with some small black grains mainly at front. Frontal border roughly triangular, from 1/2 to 3/5 carapace length; anterior lateral borders slightly convergent; sharpened at maximum dorsal width point, back lateral borders straight; back margin wide, straight. AME diameter 0.23 mm; PLE 0.21 mm; PME 0.2 mm; AME slightly back from frontal border, separated one from another about 1/2 of diameter, far from PLE; PME about one quarter of diameter apart, about 3/5 PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part; longer than wide at base (rectangle-like); semicircular groove at tip. Sternum brownish red, frontally darker, becoming lighter towards back; slightly wrinkled; covered in hairs mainly on margin.

Chelicerae (Fig. 85) 2.94 mm long, about 2/5 of carapace length in dorsal view; fang medium-sized, 2.1 mm; basal segment dorsal, ventral side completely covered with piligerous granulations (small, dense). Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base;  $D > B = M$  (large); D trapezoid, located near segment tip; B close to basal lamina; M close to B. Legs dark orange-coloured. Lengths of male described above: fe1 5.6 mm (all measurements in mm); pa1 3.99; ti1 5.32; me1 4.9; ta1 0.91; total 19.81; fe2 5.11; pa2 3.57; ti2 4.83; me2 4.76; ta2 0.91; total 19.18; fe3 4.41; pa3 2.59; ti3 3.5; me3 4.41; ta3 0.91; total 15.82; fe4 5.67; pa4 3.01; ti4 4.62; me4 6.02; ta4 1.12; total 20.44; fe Pdp 3.5; pa Pdp

1.68; ti Pdp 1.75; ta Pdp 1.47; total 8.4; relative length: 4>1>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands; proximal 1.1.1; distal 1.0.0; tb3v spines arranged in three bands: proximal 1-0.0.0; medial-proximal 1.1.0; distal 1.0.0; with two terminal spines. Fe4d spines in one row: 0-1; tb4d spines arranged in four bands: proximal 0.0.1; medial-proximal 1.1.1; medial-distal 1.0.0; distal 1.0.1; tb4v spines arranged in three bands: proximal 1.1.1; medial-proximal 1.1-0.0; distal 1.0-1.1; with two terminal spines. Dorsal side of frontal legs, ventral side of pedipalp covered with small piligerous grains. Claws with more than 20 teeth, slender, length twice claw width.

Abdomen 6.3 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.009-0.027 mm long (very small); medium-sized, roughly straight, not compressed, blunt, tip enlarged; uniformly, scantily distributed.

Male copulatory bulbus (Fig. 86) T slightly longer than DD, or T as long as DD; external, internal distal border sloped backwards. DD not bent, same T axis in lateral view; internal distal border not expanded. ES wider, more sclerotized than IS; IS continuous to tip. DD tip (Figs. 87-89) straight in lateral view. C present, short; distal end on DD internal tip; well-developed; located far from DD distal tip; proximal border sharply decreasing; distal border sloping on its base, upper tip not projected, pointed; external side hollowed (slightly). AC absent. LF present; distally not projected; well-developed. L well-developed; external border sclerotized, laterally markedly folded backwards; distal border divergent, continuous. AL absent. P (Fig. 90) fused to T; markedly sloped on its proximal part, perpendicular on distal; lateral length as long as or longer than T width; ridge present, not sclerotized, perpendicular to T, distinctly expanded, rounded; upper margin smooth; not distally projected; back margin not folded.

ALS (Figs. 91-92) with PS; remaining piriform spigots no more external than MS, arranged in three rows; 18+1 piriform gland spigots; PMS, PLS with more than 20 aciniform gland spigots.

*Female.* - Unknown.

**Material examined.**- *Tenerife: Icod de los Vinos: Cueva de Felipe Reventón; 1 ♂; 17/2/85, J.J. Hernández & A.L. Medina leg.; num. 2709; Stored at UL. Los Silos: Monte*

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del Agua; 1♂; 6/7/90, C.G.Campos leg.; num. 2779; Stored at UL.

**Intraspecific variation.**- Male cephalothorax ranges in length from 5.81 mm to 7.00 mm. Carapace very slightly wrinkled. AME separation from 1/2 to 2/3 of diam.. Sternum hardly wrinkled. P distally slightly toothed. Spination variability in Table 7.

**Distribution.**- Tenerifean endemic. Known from two localities at westernmost part of the northern slope, including Teno.

**Comments.**- The study of the female specimens assigned to this species in the original description (Wunderlich 1991) shows that they actually belonged to a different species, the already identified Tenerifean species *D. insulana* (Arnedo & Ribera 1997). Therefore, the female of this species is currently unknown.

### *Dysdera gollumi* Ribera & Arnedo, 1994

(Figs. 93-94)

*Dysdera gollumi* Ribera & Arnedo, 1994: 115-119, fig. 1-3 [♀]. Holotype female from Cueva de Los Roques, La Orotava, Tenerife, Canary Islands; 27/10/91, C. Ribera leg.; num. 2567; Stored at UB. Examined.

**Diagnosis.**- Small species. Carapace, sternum ornamentation noticeable; frontal border narrow; anterior lateral ones divergent. Eyes absent or markedly reduced. Chelicerae, fang short; basal segment proximal dorsal side scanty covered with large granulations; teeth similar in size. Legs bicoloured, spineless; claws with very few teeth. Abdominal dorsal hairs curved, stick-like, scant. Endogyne arch-like, frontally rounded; slightly wider than long; VA posterior region sclerotized at anterior area. S attachment projected under VA; arms slightly shorter than DA, slightly curved.

Absence or marked reduction of eyes, scarcity of abdominal dorsal hairs and certain appendage elongation distinguish this species from the otherwise very similar *D. levipes*.

**Description.**- *Holotype female*: Carapace 2.05 mm long; maximum width 1.49 mm; minimum width 0.79 mm. Dark reddish brown, darkened at borders; heavily wrinkled, foveate, covered with small black grains. Frontal border roughly triangular,

markedly smaller than 1/2 carapace length; anterior lateral borders divergent; rounded at maximum dorsal width point, back lateral borders rounded; back margin projected. PME, PLE lost; AME markedly reduced (tiny bright spots); AME diameter 0.022 mm; AME separation 0.12 mm. Labium trapezoid-shaped, base wider than distal part; as long as wide at base (triangle-like); semicircular groove at tip. Sternum orange brown, darkened on borders; heavily wrinkled; covered in hairs mainly on margin.

Chelicerae 0.63 mm long, about 1/4 of carapace length in dorsal view; fang short, 0.44 mm; basal segment proximal dorsal side scanty covered with large piligerous granulations. Chelicera inner groove medium-size, about 2/5 cheliceral length; armed with three teeth and lamina at base; D=B>M (very slightly); D triangular, located roughly at centre of groove; B close to basal lamina; M at middle of B and D. Legs bicoloured, darker on proximal border, becoming lighter distally. Lengths of female described above: fe1 2.1 mm (all measurements in mm); pa1 1.03; ti1 1.96; me1 2; ta1 0.51; total 7.6; fe2 1.72; pa2 1.03; ti2 1.68; me2 1.77; ta2 0.51; total 6.71; fe3 1.44; pa3 0.7; ti3 1.12; me3 1.49; ta3 0.42; total 5.17; fe4 1.91; pa4 0.98; ti4 1.58; me4 2.05; ta4 0.56; total 7.08; fe Pdp 0.76; pa Pdp 0.36; ti Pdp 0.41; ta Pdp 0.61; total 2.14; relative length 1>4>2>3. Spination: spineless. Dorsal side of frontal legs smooth; ventral side of pedipalp covered with hairs, lacking small grains. Claws with 8 teeth or less, robust, hardly larger than claw width.

Abdomen 3.26 mm long; whitish; globular. Abdominal dorsal hairs 0.054 mm long; thin, curved, not compressed, blunt, tip not enlarged; uniformly, scanty distributed.

Endogyne arch-like in dorsal view, frontally rounded; slightly wider than long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area. AVD hardly visible. S attachment projected under VA; arms slightly shorter than DA, slightly curved; tips not projected; neck as wide as arms. TB usual shape.

ALS (Figs. 92-93) with PS; remaining piriform spigots more external than MS, arranged in one row; 5+1 piriform gland spigots; PMS, PLS with fewer than 5 aciniform gland spigots.

*Male.* - Unknown.

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**Material examined.**- Tenerife: La Orotava: Cueva de Los Roques; 1juv.; 28/12/82, J.L. Martín leg.; num. 2537; Stored at UL. 1♀; ?/11/95, P. Oromí leg.; num. 2966; Stored at UB.

**Intraspecific variation.**- Female cephalothorax ranges in length from 1.82 mm to 2.05 mm. Cheliceral teeth small, B>M>D. Chelicera groove short. Endogyne frontally pointed, in dorsal view. As wide as long.

**Distribution.**- Tenerifean endemic. Known from a single lava tube, located at dry, middle-southern slope.

**Comments.**- Drawings of carapace, chelicera and endogyne of this species have been published elsewhere (Ribera & Arnedo 1994). In the present article, SEM photographs of spinnerets are provided for the first time.

### ***Dysdera guayota* n. sp.**

(Figs 95-106)

**Types.**- Holotype male from pine forest in La Fortaleza, Los Realejos, Tenerife, Canary Islands. 17/5/96, N. Zurita leg.; num. 3154. Stored at UB. Allotype female from Las Cañadas del Teide, close to crossroads to Vilaflor, Adeje, Tenerife, Canary Islands; 29/11/93, Arnedo & Fluhr leg.; num. 4826. Stored at UB.

**Etymology.**- The name in apposition of this species means 'devil' in the language of the 'guanches', the ancient aboriginal inhabitants of Tenerife.

**Diagnosis.**- Carapace, sternum smooth. Chelicerae basal segment dorsal side covered with spacing piligerous granulations; teeth large; D at segment tip (Fig. 96). Strongly spinated, spines at fe1, fe2. Male abdominal dorsal hairs curved, compressed, blunt, tip not enlarged; female longer, pointed. T as long as DD; DD bent (Fig. 97). L upper sheet strongly folded at middle; AL present, well-developed; proximal border toothed (Figs. 101-103). P long; toothed (Fig. 104). Endogyne arch-like, frontally rounded; slightly wider than long (Fig. 98); VA posterior region sclerotized at anterior area. S attachment projected under VA (Figs. 99-100).

It differs from the morphologically close *D. chioensis* by: lack of eye reduction,



pedipals lacking spination and absence of ventral tooth-like projection at VA.

**Description.**- *Holotype male* (Figs. 95-97, 101-104): Carapace (Fig. 95) 3.63 mm long; maximum width 3.17 mm; minimum width 2.1 mm. Brownish orange, frontally darker, becoming lighter towards back; smooth with some small black grains mainly at front; hairy, covered with black hairs mainly at lateral and back borders. Frontal border roughly straight, from 1/2 to 3/5 carapace length; anterior lateral borders slightly convergent; sharpened at maximum dorsal width point, back lateral borders straight; back margin wide, straight. AME diameter 0.16 mm; PLE 0.12 mm; PME 0.11 mm; AME slightly back from frontal border, separated one from another about 1 diameter or more, close to PLE; PME about one quarter of diameter apart, about 4/5 PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part; longer than wide at base (rectangle-like); semicircular groove at tip. Sternum orange, uniformly distributed; very slightly wrinkled, mainly between legs, frontal border; uniformly covered in slender black hairs.

Chelicerae (Fig. 96) 1.72 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 1.12 mm; basal segment dorsal side completely covered with piligerous granulations (spacing), ventral side smooth. Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base; D>B>M (all large, B broken?); D trapezoid, located near segment tip; B close to basal lamina; M close to B. Front legs dark orange, back legs yellow. Lengths of male described above: fe1 2.98 mm (all measurements in mm); pa1 1.82; ti1 2.61; me1 2.61; ta1 0.6; total 10.62; fe2 2.65; pa2 1.68; ti2 2.56; me2 2.23; ta2 0.6; total 9.72; fe3 2.1; pa3 1.21; ti3 1.68; me3 2.05; ta3 0.56; total 7.6; fe4 2.7; pa4 1.44; ti4 2.14; me4 2.56; ta4 0.65; total 9.49; fe Pdp 1.79; pa Pdp 0.88; ti Pdp 0.7; ta Pdp 0.93; total 4.3; relative length: 1>2>4>3. Spination: palp spineless. Fe1 3-2 distal, forward margin. Fe2 2-3 distal, forward margin. Fe3d spines in two rows: forward 9-10; backward 5-4; tb3d spines arranged in two bands: proximal 1.1.1; distal 1.0.1; tb3v spines arranged in two bands: proximal 1.1.0; distal 1.0.0; with one terminal spine on forward margin. Fe4d spines in two rows: forward 4-2; backward 7-5; tb4d spines arranged in three bands: proximal 0.0.1; medial-proximal 1.1.1; distal 1.0.1; tb4v spines arranged in three bands: proximal 1.1.1; medial-proximal 0.1.0; distal 1.0.1; with two terminal spines.

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Dorsal side of frontal legs, ventral side of pedipalp covered with hairs. Claws with 8 teeth or less; robust, hardly larger than claw width.

Abdomen 3.59 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.09 mm long; thick, slightly curved, compressed, blunt, tip not enlarged; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 97) T as long as DD; external, internal distal border sloped backwards. DD proximally bent about 45° in lateral view; internal distal border not expanded. IS and ES equally developed; IS truncated at DD middle part. DD tip (Figs. 101-103) sloped towards back in lateral view. C present, short; distal end on DD internal tip; well-developed; located close to DD distal tip; proximal border sharply decreasing; distal border stepped, upper tip projected, pointed; external side hollowed. AC present. LF absent. L well-developed; external border not sclerotized, laterally slightly folded; distal border divergent, not continuous; upper sheet strongly fold at middle. AL present, well-developed; proximal border in posterior view toothed on its internal half-part. P (Fig. 104) fused to T; perpendicular to T in lateral view; lateral length from 1/2 to 2/3 of T width; ridge present, perpendicular to T, not expanded; upper margin markedly toothed, along its extent, few teeth; not distally projected; back margin not folded.

*Allotype female* (Figs. 98-100, 105-106): All characters as in male except: Carapace 3.36 mm long; maximum width 2.75 mm; minimum width 1.86 mm. Orange. AME diameter 0.18 mm; PLE 0.12 mm; PME 0.12 mm; PME 3/5 diameter from PLE. Sternum yellow, frontally darker, becoming lighter towards back; smooth.

Chelicerae 1.75 mm long; fang 0.31 mm; basal segment proximal dorsal side scanty covered with piligerous granulations. B>D>M (B, D similar). Legs yellow. Lengths of female described above: fe1 2.33 mm (all measurements in mm); pa1 1.49; ti1 1.86; me1 1.4; ta1 0.46; total 7.54; fe2 2.14; pa2 1.4; ti2 1.86; me2 1.58; ta2 0.46; total 7.44; fe3 1.72; pa3 1.02; ti3 1.35; me3 1.58; ta3 0.46; total 6.13; fe4 2.37; pa4 1.26; ti4 1.86; me4 2.1; ta4 0.56; total 8.15; fe Pdp 1.49; pa Pdp 0.64; ti Pdp 0.51; ta Pdp 0.74; total 3.38; relative length 4>1>2>3. Spination: palp spineless. Fe1: 2 distal, forward margin. Fe2: 2-1 distal, forward margin. Fe3d spines in one row: 1 (medial frontal); tb3d spines arranged in two bands: proximal 1.1.1; distal 1.0.1; tb3v spines

arranged in two bands: proximal 1.1.0; distal 1.0.0; with two terminal spines. Fe4d spines in two rows: forward 1; backward 4; tb4d spines arranged in two bands: medial-proximal 1.1.1; distal 1.0.1; tb4v spines arranged in three bands: proximal 1.1.1; medial-proximal 0.1.0; distal 1-0.0.0-1; with two terminal spines. Dorsal side of frontal legs smooth.

Abdomen 3.59 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.162 mm long; medium-sized, curved, compressed, pointed; uniformly, thickly distributed.

Endogyne (Figs. 98-100) arch-like in dorsal view, frontally rounded; slightly wider than long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area. AVD hardly visible. S attachment projected under VA; arms as long as DA, slightly curved; tips dorsally projected; neck as wide as arms. TB usual shape.

ALS (Figs. 105-106) with PS; remaining piriform spigots more external than MS, arranged in two rows; 7+1 piriform gland spigots; PMS, PLS with 5-10 aciniform gland spigots.

**Paratypes.** - *Tenerife: Adeje:* Las Cañadas, close to crossroads to Vilaflor; 1 juv.; /11/93, Arnedo & Fluhr leg.; num. 4815 (T10); Stored at UB. Roque del Conde; 1 juv. paratype; 16/3/96, P. Oromí leg.; num. 3170; Stored at UL. *Arona:* Los Cristianos; 1 ♀ paratype; 20/1/96, Oromí leg.; num. 3094; Stored at UL.

**Intraspecific variation.** - Female cephalothorax ranges in length from 3.15 mm to 3.36 mm. PLE-PME from 3/5 to 1 diam.. Spination variability in Table 8.

**Distribution.** - Tenerifean endemic. Known from several localities on dry, south-western slope.

*Dysdera hermandezi* n. sp.

(Figs. 107-113 )

**Types.** - Holotype female from Cueva Labrada, El Sauzal , Tenerife; 11/12/84, J.J. Hernández leg.; num. 3214; Stored at UL.

## ***El gènere Dysdera a les illes Canàries***

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**Etymology.**- This species is dedicated to the late-lamented Juan José Hernández Pacheco, enthusiastic Canarian biospeleologist and collector of the only two known specimens of this species.

**Diagnosis.**- Small species. Carapace, sternum ornamentation scarce; anterior lateral borders divergent (Fig. 107). Eyes absent or markedly reduced. Chelicerae short; fang enlarged on middle part; basal segment smooth; teeth small, similar in size (Fig. 108). Legs poorly spinated. Abdominal dorsal hairs curved, stick-like. Endogyne arch-like, frontally rounded (Fig. 109); slightly wider than long; VA posterior region sclerotized at anterior area. S arms as long as DA, straight (Figs. 110-111).

It can be distinguished from sympatric, morphologically close *D. esquiveli* by: enlargement of cheliceral fang, lack of cheliceral granulations and spination pattern. Fang enlargement is also present in *D. ramblae* Arnedo et al., 1996 from La Gomera, which differs from *D. hernandezii* by foveate carapace, large size, eyes not reduced in size and VA tooth-shaped expansions.

**Description.**- *Holotype female* (Figs. 107-113): Carapace (Fig. 107) 1.91 mm long; maximum width 1.4 mm; minimum width 0.9 mm. Pale orange, uniformly distributed; very slightly foveate at borders, wrinkled at middle, covered with tiny granulations. Frontal border roughly round, markedly smaller than 1/2 carapace length; anterior lateral borders divergent; rounded at maximum dorsal width point, back lateral borders straight; back margin projected. PME lost; AME, PLE markedly reduced (bright tiny spots); AME diameter 0.018 mm; PLE 0.018 mm; AME separation 0.16 mm; AME-PLE separation 0.018 mm. Labium trapezoid-shaped, base wider than distal part; as long as wide at base (triangle-like); semicircular groove at tip. Sternum pale orange, uniformly distributed; slightly wrinkled; covered in hairs mainly on margin.

Chelicerae (Fig. 108) 0.79 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 0.65 mm; enlarged on middle part; basal segment smooth, with no granulations. Chelicera inner groove medium-size, about 2/5 cheliceral length; armed with three teeth and lamina at base; B>D>M (not very different, small); D triangular, located roughly at centre of groove; B close to basal lamina; M close to B. Legs pale yellow. Lengths of female described above: fe1 1.42 mm (all measurements in mm); pa1 0.98; ti1 1.21; me1 1.21; ta1 0.37; total 5.2; fe2 1.35; pa2 0.93; ti2 1.16;

me2 1.16; ta2 0.35; total 4.95; fe3 1.02; pa3 0.61; ti3 0.84; me3 0.98; ta3 0.32; total 3.77; fe4 1.35; pa4 0.74; ti4 1.12; me4 1.26; ta4 0.37; total 4.47; fe Pdp 0.79; pa Pdp 0.42; ti Pdp 0.37; ta Pdp 0.51; total 2.09; relative length 1>2>4>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in one band: distal 1.0.0; tb3v spines spineless; with one terminal spine on forward margin. Fe4d spineless; tb4d spines arranged in one band: distal 0.0.1; tb4v spines arranged in two bands: proximal 1.1-0.0; distal 1.0.0; with two terminal spines. Dorsal side of frontal legs smooth; ventral side of pedipalp covered with hairs, lacking small grains; long, spine-like hairs on posterior tb, fe (mainly ventral). Claws with 10-14 teeth, length twice claw width.

Abdomen 2.37 mm long; whitish; globular. Abdominal dorsal hairs 0.036 mm long; thin, curved, not compressed, blunt, tip not enlarged; uniformly, scanty distributed.

Endogyne (Figs. 109-111) DA arch-like in dorsal view, frontally rounded; slightly wider than long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area. AVD hardly visible. S attachment not projected under VA; arms as long as DA, straight; tips not projected; neck as wide as arms. TB usual shape.

ALS (Figs. 112-113) with PS; remaining piriform spigots more external than MS, arranged in one row; 4+1 piriform gland spigots; PMS, PLS with 5-10 aciniform gland spigots.

*Male.*- Unknown.

**Paratypes.**- *Tenerife: El Sauzal:* Cueva Labrada; 1♀ paratype; 22/11/84, J.J. Hernández leg.; num. 2585; Stored at UB.

**Intraspecific variation.**- Female cephalothorax ranges in length from 1.91 mm to 2.14 mm. Carapace frontal width about 1/2 of its length. Sternum wrinkled. Spination variability in Table 9.

**Distribution.**- Tenerifean endemic. Known from a single lava tube, located on middle-northern slope

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### *Dysdera iguanensis* Wunderlich, 1987

*Dysdera iguanensis* Wunderlich, 1987: 57-58, Figs 2-6 [♂].- Wunderlich, 1991: 294-295, Fig. 41 [♀].- Wunderlich, 1991: 284-287.- Arnedo et al., 1996: 244, fig. 1F [♂]. - Arnedo & Ribera, 1997.

**Distribution.**- Canarian endemic, known from Tenerife and a single location in Gran Canaria. In Tenerife it is an abundant species, spread through several localities on northern slope, including Anaga and Teno massifs.

**Comments.**- A complete redescription of this species has been published elsewhere (Arnedo & Ribera 1997).

### *Dysdera insulana* Simon, 1883

*Dysdera insulana* Simon, 1883: 294-295, Fig. 19 [♂] (♂, non ♀).- Simon 1907: 257-258, Fig A [♂].- Strand 1911:190.- Reimoser, 1919.- Denis, 1941: 108.- Denis, 1953: 2.- Schmidt, 1973: 360-361.- Wunderlich, 1991: 67, 296.- Arnedo et al., 1996: 271-272.- Arnedo & Ribera, 1997.

**Distribution.**- Canarian endemic, known from Tenerife and a single location in Gran Canaria. In Tenerife, known from several localities restricted to Anaga and closer location, formerly occupied by low-elevation laurel forest.

**Comments.**- A complete redescription of this species has been published elsewhere (Arnedo & Ribera 1997).

### *Dysdera labradaensis* Wunderlich, 1991

(Figs. 114-120)

*D. labradaensis* Wunderlich, 1991: 296, figs. 47-49 [♀]. Holotype female from Cueva Labrada, El Sauzal, Tenerife, Canary Islands; 12/9/84, G.I.E.T. leg.; num. T-CL-59; Stored at UL. Examined.- Wunderlich, 1991: 284-287.

**Diagnosis.**- Very large species. Carapace, sternum ornamentation scarce. Eyes markedly reduced in size. Chelicerae basal segment dorsal, ventral side densely covered with small granulations; teeth large. Leg 4 largest; legs strongly spinated, presence of spines on fe1, fe2; claws with many slender teeth. Abdominal dorsal hairs short, stick-like, tip enlarged. Endogyne rectangle-like, frontally rounded; twice as wide as long (Fig. 116); VA posterior region mostly sclerotized; ridge at ventral VA, longer than VA; AVD well-developed. S attachment projected under VA; arms as long as DA, slightly curved (Figs. 117-118).

It can be distinguished from similar, sympatric *D. ambulotenta* by presence of all eyes; spination of legs 1,2; VA ventral ridge. Other species hold a VA ridge (Grancanarian *D. arabisenen* Arnedo & Ribera, 1997; *D. tibicensis* Arnedo & Ribera, 1997 and Tenerifean *D. iguanensis* and *D. montanetensis*), but never longer than VA.

**Description.**- *Holotype female* (Figs. 114-120): Carapace (Fig. 114) 8.33 mm long; maximum width 6.58 mm; minimum width 3.78 mm. Brownish orange, frontally darker, becoming lighter towards back; smooth with some small black grains mainly at front; hairy, covered with black hairs mainly at lateral and back borders. Frontal border roughly straight, from 1/2 to 3/5 carapace length; anterior lateral borders slightly convergent; sharpened at maximum dorsal width point, back lateral borders straight; back margin wide, straight. Eyes markedly reduced in size; AME diameter 0.16 mm; PLE 0.14 mm; PME 0.12 mm; AME separation 0.52 mm; AME-PLE separation 0.07 mm; PLE-PME separation 0.2 mm; PME separation 0.09 mm. Labium trapezoid-shaped, base wider than distal part; longer than wide at base (rectangle-like); semicircular groove at tip. Sternum orange, frontally darker, becoming lighter towards back; very slightly wrinkled, mainly between legs, frontal border; uniformly covered in slender black hairs.

Chelicerae (Fig. 115) 3.22 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 2.52 mm; basal segment dorsal, ventral side completely covered with piligerous granulations (small, dense). Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base; D=B>M (large, similar in size); D trapezoid, located roughly at centre of groove; B close to basal lamina; M close to B. Legs dark orange-coloured. Lengths of female described above:

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fe1 7.7 mm (all measurements in mm); pa1 4.9; ti1 7; me1 7.21; ta1 1.12; total 27.93; fe2 7.28; pa2 4.69; ti2 6.72; me2 7; ta2 1.12; total 26.71; fe3 6.3; pa3 3.43; ti3 4.9; me3 6.51; ta3 1.19; total 22.33; fe4 8.4; pa4 4.2; ti4 7.14; me4 9.45; ta4 1.33; total 3.52; fe Pdp 3.92; pa Pdp 2.1; ti Pdp 2.03; ta Pdp 2.38; total 10.43; relative length 4>1>2>3. Spination: palp spineless. Fe1: 3 distal, forward margin. Fe2: 1-2 distal, forward margin. Fe3d spines in two rows: forward 4-3 (distal); backward 2-3 (proximal); pa3 1-0 ventral; tb3d spines arranged in four bands: proximal 1-0.0.0; medial-proximal 1.2-1.1; medial-distal 1.1.0-1; distal 1.0.1; tb3v spines arranged in three bands: proximal 1.1.1; medial-proximal 1.1.1; distal 1.1.1; with two terminal spines. Fe4d spines in two rows: forward 5-6 (2distal); backward 2-3; tb4d spines arranged in four bands: proximal 1.2.1; medial-proximal 1.2.1; medial-distal 1.1.1; distal 1.1.1; tb4v spines arranged in four bands: proximal 1.1.2-1; medial-proximal 0-1.0-1.1; medial-distal 1.1.1; distal 2-1.1.1; with two terminal spines. Dorsal side of frontal legs, ventral side of pedipalp covered with small piligerous grains (slightly). Claws with more than 20 teeth, length twice claw width.

Abdomen 9.8 mm long; cream-coloured; cylindrical. Abdominal dorsal hairs 0.036-0.072 mm long (small, variable); medium-sized, roughly straight, not compressed, blunt, tip enlarged; uniformly, scantily distributed.

Endogyne (Figs. 116-118) rectangle-like in dorsal view, frontally rounded; twice as wide as long; DF wide. MF well-developed; markedly sclerotized along its extent. VA frontal region completely sclerotized; posterior region sclerotized except for most internal area; sclerotized ridge at ventral VA external margin, longer than VA, fused to VA along its extent, back ends bent to internal side. AVD clearly recognizable. S attachment projected under VA; arms as long as DA, slightly curved; ends projected forwards; neck as wide as arms. TB usual shape.

ALS (Figs. 119-120) with PS; remaining piriform spigots more external than MS, arranged in three rows; more than 20 piriform gland spigots; PMS, PLS with 10-15 aciniform gland spigots.

*Male*.- Unknown.

**Material examined.**- *Tenerife: Icod de los Vinos: Cueva del Viento-Sobrado; 1juv.; 30/11/80, J.L.Martín leg.; num. 2522; Stored at UL. 1 juv.; 5/4/81, J.L. Martín*



leg.; num. 2515; Stored at UL. 1 juv.; 17/9/90, J.J. Hernández leg.; num. 2746; Stored at UL. 1 juv.; 17/9/90, J.J. Hernández leg.; num. 2747; Stored at UL. 1 juv.; ?/5/94, J.Sala leg.; num. 2802; Stored at UL. *La Orotava*: Cueva del Bucio; 1 juv.; 4/8/85, Martín & Machado leg.; num. 2743; Stored at UL. *El Sauzal*: Cueva Labrada; 1 ♀ some remains; 21/3/83, J.L. Martín leg.; num. 2531; Stored at UL. 1 ♀; 28/6/86, P. Oromí leg.; num. 2513; Stored at UL.

**Intraspecific variation.**- Female cephalothorax ranges in length from 7.00 mm to 8.33 mm. B larger than M. Spination variability in Table 10.

**Distribution.**- Tenerifean endemic. Known from several lava tubes located on northern slope of the island.

*Dysdera levipes* Wunderlich, 1987

*Dysdera levipes* Wunderlich, 1987: 59-60, fig. 19-22 [♂].- Arnedo *et al.*, in press. Wunderlich, 1991: 301-302 fig. 68-71 [♀].- Wunderlich, 1991: 284-287.- Arnedo *et al.*, 1996: 258-261, figs. 14A-F, 15A-D, 16A-C [♂,♀].- Arnedo & Ribera, 1997.

**Distribution.**- Canarian endemic, found in Tenerife, La Gomera and Gran Canaria. In Tenerife has been reported from two localities on the northern slope and a single locality on middle-southern slope.

**Comments.**- A complete redescription of this species has been published elsewhere (Arnedo *et al.* 1996). *D. levipes* is the only endemic species reported from three different islands: La Gomera, Tenerife and Gran Canaria (a single specimen).

*Dysdera macra* Simon, 1883

(Figs. 121-133)

*Dysdera macra* Simon, 1883: 295-296, fig. 18 [♂] (♂, non ♀). Neotype male, by present designation, from

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- Monte de Santa Ursula, Santa Ursula, Tenerife, Canary Islands; 27/2/97, P. Oromí leg.; num. 3206; Stored at UB.- Simon, 1907: 256-267, 259-260; fig. 3D [♂].- Strand, 1911: 189.- Reimoser, 1919: 200.- Denis, 1941: 108.- Schmidt, 1973: 360-361.- Arnedo et al., 1996: 272.
- D. teneriffensis* Strand, 1908: 772 [♀]. Holotype female from Aguamansa (Aqua Manza), La Orotava, Tenerife, Canary Islands; unknown data, unknown leg.. Probably lost. Not examined. Wunderlich, 1991: 283. New synonymy.
- D. pergrada* Wunderlich, 1991: 305-306, figs. 83-91 [♂, ♀]. Holotype male from close to La Orotava, La Orotava, Tenerife, Canary Islands; in II, M. Knösel leg.; num. 37163; Stored at SMF. Examined. New synonymy.
- D. pseudopergrada* Wunderlich, 1991:306, figs. 94-97 [♂, ♀]. Holotype male from Barranco del Infierno, Adeje, Tenerife, Canary Islands; in II, M. Knösel leg.; num. 37168; Stored at SMF. Examined. New synonymy.
- D. tabaibaensis* Wunderlich, 1991: 308, figs. 103-107 [♂]. Holotype male from Tabaiba, El Rosario, Tenerife, Canary Islands; 25/4/90, C.G. Campos leg.; num. 03863; Stored at UL. Examined. New synonymy.
- D. teideensis* Wunderlich, 1991: 309-310, figs. 112-118 [♂, ♀]. Holotype male from Retamar del Teide, La Orotava, Tenerife, Canary Islands; 21/4/84, C.G. Campos leg.; num. 2772; Stored at UL. Not examined. New synonymy.

**Diagnosis.-** Carapace, sternum ornamentation scarce; frontal border wide; markedly stepped in lateral view (Figs. 121-122). AME separation roughly 1 diameter. Chelicerae basal segment proximal dorsal side scantily covered with granulations; inner groove short; large teeth; D, B similar in size (Fig. 123). Legs very poorly spinated; ventral side of pedipalp covered with small piligerous grains; long, spine-like hairs on posterior tb, fe. Male abdominal dorsal hairs variable in size, usually short, stick-like, tip enlarged; female curved, compressed or not, blunt, tip enlarged. T smaller than DD; DD slightly bent (Fig. 124); ES bend markedly sclerotized. C distal border founded, hardly stepped; L reduced to distal part, external end projected (Fig. 128). P short; distally toothed, few teeth (Fig. 131). Endogyne arch-like, frontally rounded; slightly wider than long (Fig. 125). VA posterior region sclerotized at anterior area. S arms as long as DA, clearly curved (Figs. 126-127).

This species closely resembles *D. brevisetae*, which shares a stepped carapace, as well as several genitalic characters. It differs in AME longer separation,

reduction in cheliceral granulations, shorter inner groove, D not very different from B, and L hardly visible except for distal end.

**Description.- Neotype male** (Figs. 121-124, 128-131): Carapace (Fig. 121) 3.63 mm long; maximum width 2.93 mm; minimum width 2.1 mm. Dark red, uniformly distributed; slightly foveate at borders, wrinkled at middle, covered with small black grains. Frontal border roughly round, about  $3/5$  carapace length; anterior lateral borders slightly convergent; rounded at maximum dorsal width point, back lateral borders straight; back margin narrow, straight; stepped in lateral view (Fig. 122). AME diameter 0.16 mm; PLE 0.14 mm; PME 0.12 mm; AME on edge of frontal border, separated one from another about 1 diameter or more, close to PLE; PME very close to each other, about  $2/5$  PME diameter from PLE. Labium trapezoid-shaped, base wider than distal part; as long as wide at base (triangle-like); semicircular groove at tip. Sternum dark red, uniformly distributed; slightly wrinkled; uniformly covered in slender black hairs.

Chelicerae (Fig. 123) 1.91 mm long, about  $1/3$  of carapace length in dorsal view; fang medium-sized; 1.3 mm; basal segment smooth, with no granulations. Chelicera inner groove short, about  $1/3$  cheliceral length; armed with three teeth and lamina at base;  $D > B > M$  (large, D markedly larger); D trapezoid, located near segment tip; B close to basal lamina; M close to B. Legs dark orange-coloured. Lengths of male described above: fe1 2.42 mm (all measurements in mm); pa1 1.63; ti1 2.19; me1 2; ta1 0.46; total 8.7; fe2 2.19; pa2 1.49; ti2 1.96; me2 1.86; ta2 0.42; total 7.92; fe3 1.77; pa3 1.11; ti3 1.21; me3 1.81; ta3 0.46; total 6.36; fe4 2.37; pa4 1.3; ti4 1.72; me4 2.23; ta4 0.56; total 8.18; fe Pdp 1.68; pa Pdp 0.93; ti Pdp 0.74; ta Pdp 0.79; total 4.14; relative length:  $1 > 4 > 2 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in one band: distal 1.0.0; tb3v 1 terminal spines. Fe4d spineless; tb4d spineless; tb4v 1 terminal spines. Dorsal side of frontal legs smooth; ventral side of pedipalp covered with small piligerous grains; long, spine-like hairs on posterior tb, fe. Claws with 8 teeth or less, robust, length twice claw width.

Abdomen 4.19 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.027 mm long (small); medium-sized, roughly straight, not compressed, blunt, tip enlarged; uniformly, thickly distributed.

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Male copulatory bulbus (Fig. 124) T slightly smaller than DD; external distal border straight; internal sloped backwards. DD slightly bent in lateral view, clearly less than 45°; internal distal border not expanded. ES more sclerotized than IS; IS truncated at DD middle part; ES bend markedly sclerotized. DD tip (Figs. 128-130) straight in lateral view. C present, short; distal end on DD internal tip; well-developed; located close to DD distal tip; proximal border sharply decreasing; distal border rounded, hardly stepped, upper tip not projected, rounded; external side hollowed. AC present. LF absent. L reduced to distal part; external end projected, pointed. AL present, very poorly developed; proximal border in posterior view fused with DH except for its most internal part. P (Fig. 131) fused to T; perpendicular to T in lateral view; lateral length about 1/4 of T width; ridge present, perpendicular to T, not expanded; upper margin markedly toothed, on its distal part, few teeth (4-6); distally slightly projected; back margin not folded.

*Female* (Figs. 125-127): All characters as in male except: Carapace 3.4 mm long; maximum width 2.75 mm; minimum width 2.05 mm. AME diameter 0.16 mm; PLE 0.13 mm; PME 0.12 mm; PME 2/5 diam. from PLE. Sternum dark orange, uniformly distributed; very slightly wrinkled, mainly between legs, frontal border.

Chelicerae 1.86 mm long; fang 1.26 mm. Leg lengths of female described above: fe1 2.33 mm (all measurements in mm); pa1 1.54; ti1 1.96; me1 1.86; ta1 0.46; total 8.15; fe2 2.14; pa2 1.4; ti2 1.82; me2 1.77; ta2 0.42; total 7.55; fe3 1.77; pa3 1.02; ti3 1.21; me3 1.58; ta3 0.46; total 6.04; fe4 2.14; pa4 1.25; ti4 1.72; me4 1.96; ta4 0.51; total 7.58; fe Pdp 1.4; pa Pdp 0.7; ti Pdp 0.56; ta Pdp 0.74; total 3.4; relative length 1>4>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.0.0; distal 1.0.0-1; tb3v 2 terminal spines. Fe4d spineless; tb4d spineless; tb4v 2 terminal spines.

Abdomen 4.19 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.072-0.108 mm long; medium-sized, curved, compressed, blunt, tip enlarged; uniformly, thickly distributed.

Endogyne (Figs. 125-127) arch-like in dorsal view, frontally rounded; slightly wider than long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area. AVD hardly visible. S

attachment not projected under VA; arms as long as DA, clearly curved; tips not projected; neck as wide as arms. TB usual shape.

ALS (Figs. 132-133) with PS; remaining piriform spigots more external than MS, arranged in one row; 4+1 piriform gland spigots; PMS, PLS with 5-10 aciniform gland spigots.

**Material examined.**- Neotype, by present designation 1♂ from Monte de Santa Ursula, Santa Ursula, Tenerife; 27/2/97, P. Oromí leg.; num. 3206; Stored at UB. *Tenerife: Arafo*: 3km N of Arafo, 950m; 2♂; 28/12/94, F. Gasparo leg.; Stored at FG. *Fuente del Joco* (5Km NW of Arafo), 1930m; 1♀; 28/12/94, F. Gasparo leg.; Stored at FG. *Adeje*: Roque del Conde; 1♂; 16/3/96, Oromí leg.; num. 3121; Stored at UB. 1♀; 16/3/96, Oromí leg.; num. 3122; Stored at UB. *Arico*: Barranco del Rio; 1♂, 1♀; 14-21/4/81, J.M. Peraza leg.; num. 2612; Stored at MCNT. 1♂; 16-23/11/84, J.M. Peraza leg.; num. 2609; Stored at MCNT. 1♂; 29/11/93, M.A. Arnedo leg.; num. 2576; Stored at UB. *El Rosario*: Tabaiba, MSS-2; 1juv.; 9/10/90, A.L. Medina leg.; num. 2775; Stored at UL. *La Victoria de Acentejo*: El Diablillo; 1♀; 21/2/97, P. Oromí leg.; num. 3207; Stored at UB. *Las Lagunetas*; 1♂; 28/1/93, P. Oromí leg.; num. 2547; Stored at UL. 1♀; 27/3/95, P. Oromí leg.; num. 4110; Stored at UB. *Guía de Isora*: Above Chío, 750m; 2♂, 1♀; 28/12/94, F. Gasparo leg.; Stored at FG. *Güímar*: Barranco del Agua; 1♀; 14/1/84, P. Oromí leg.; num. 2681; Stored at UL. 1♀; 17/1/97, P. Oromí leg.; num. 3194; Stored at UB. *Barranco de Badajoz* (1900m); 1♀; 18/12/96, P. Oromí leg.; num. 3190; Stored at UB. (1800m); 1♀; 27/12/96, P. Oromí leg.; num. 3195; Stored at UB. *La Orotava*: Base del zig-zag; 2♀; 17/10/84, C.G. Campos leg.; num. 2697; Stored at UL. Close to the Refugio (2200m); 1♂, 1♀; in VI, C.G. Campos leg.; num. 2627; Stored at SMF. *Izaña*; 1♀; /11/94, Arnedo leg.; num. 4827 (T40); Stored at UB. *La Rosa de Piedra*; 1♂; 25/2/96, Oromí & Emerson leg.; num. 3126; Stored at UB. *Las Cañadas del Teide*; 1♂; ?, A. Machado leg.; num. 2808; Stored at UB. 1♀; 17/5/83, C.G. Campos leg.; num. 2686; Stored at UL. 1♀; 14/5/93, P. Oromí leg.; num. 2817; Stored at UB. 1juv.; 12/12/93, Oromí leg.; num. 4837 (T52); Stored at UL. 1♂; 3/6/95, P. Oromí leg.; num. 2969; Stored at UB. 1♀; 11/6/95, P. Oromí leg.; num. 2968; Stored at UB. 1♀; 24/5/96, N. Zurita leg.; num. 3173; Stored at UB. *Teide* (2700m); 1♂; 21/4/84, C.G. Campos leg.; num. 2766; Stored at UL. *Los Realejos*: La Fortaleza; 1♀; 1/7/90, C.G.

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Campos leg.; num. 2760; Stored at UL. 1 juv.; 17/5/96, N. Zurita leg.; num. 3155; Stored at UB. 1 ♀; 17/5/96, A. Camacho leg.; num. 3157; Stored at UB. 1 juv.; 17/5/96, N. Zurita leg.; num. 3158; Stored at UB. 1 ♀; 17/5/96, A. Camacho leg.; num. 3156; Stored at UB. Roque Peral; 1 ♂; 9/11/83, C.G. Campos leg.; num. 2701; Stored at UL. 1 ♂; 19/4/84, C.G. Campos leg.; num. 2718; Stored at UL. 1 ♀; 12/6/84, C.G. Campos leg.; num. 2693; Stored at UL. 2 ♂; 18/6/84, C.G. Campos leg.; num. 2694; Stored at UL. *Santa Ursula*: Barranco del Pino; 1 ♀; 15/11/84, J.P. Peraza leg.; num. 2737; Stored at UL. Monte de Santa Ursula; 3 ♂, 3 ♀; 13/12/96, P. Oromí leg.; num. 3212; Stored at UB. 1 ♀ (description); 27/2/97, P. Oromí leg.; num. 3206; Stored at UB. *Vilafior*: El Pinalito; 1 ♂/1 ♀; 16-23/2/85, J.M. Peraza leg.; num. 2610; Stored at MCNT. 1 ♂; 24-31/5/85, J.M. Peraza leg.; num. 2611; Stored at MCNT. Madre del Agua; 1 ♂; 15/3/90, C.G. Campos leg.; num. 2717; Stored at UL. *D. teideensis*: *Tenerife*: *La Orotava*: Retamar del Teide; 1 ♂ paratype; 21/4/84, C.G. Campos leg.; num. 2624; Stored at SMF. Las Cañadas del Teide; 1 ♀ paratype; 18/10/84, C.G. Campos leg.; num. 2719; Stored at UL. Teide (3050m); 1 ♂ holotype; 21/4/84, C.G. Campos leg.; num. 2703; Stored at UL.

**Intraspecific variation.**- Male cephalothorax ranges in length from 2.75 mm to 3.63 mm, female from 2.93 mm to 3.45 mm. Carapace frontal lateral borders slightly convergent or parallel. AME separation from 2/3 to 1 diam.. PLE-PME separation from 1/3 to 2/3 diam. Sternum ornamentation variable, from smooth to slightly wrinkled. Chelicera relative length from 1/3 to 2/5. Basal segment lacking dorsal granulations, reduced to basal portion, or at distal internal margin. Chelicera inner groove from 1/3 to 2/5 its length. Fang relative size from 1/3 to 2/5. D only slightly larger than or as large as B. P relative size from 1/4 to 2/5. Female abdominal dorsal hair blunt, enlarged at frontal part and becoming pointed, longer to back. Spination variability in Table 11.

**Distribution.**- Tenerifean endemic. A widespread species, collected throughout the island with the exception of Anaga and Teno massifs.

**Comments.**- The distribution of *D. macra* was unknown before the present study. Neither the original description (Simon 1883) nor the redescription of the species (Simon 1907) made any reference to its locality. Moreover, the report of this

species in La Gomera by Strand (1911) has been claimed to be wrong (Arnedo et al. 1996).

The only type material of this species that was available for studying was a juvenile, probably the one originally described by Simon (1883) as the female of *D. macra*. However, in a subsequent article (Simon 1907) the same author transferred this specimen to *D. crocota*. Fortunately, in this particular case both the original description and later redescription allowed the identification of the specimens belonging to this species. Arnedo et al. (1996) considered *D. macra* as a distinctive species on the basis of a double-toothed P. However, reexamination under SEM of some specimens formerly determined as *D. pergrada* and *D. teideensis* showed the presence of this character.

In their original descriptions (Wunderlich 1991), *D. pergrada*, *D. pseudopergrada*, *D. tabaibaensis* and *D. teideensis* were distinguished by: size of abdominal dorsal hairs, distal structures of the copulatory bulbus and curvatures of P. In addition, *D. tabaibaensis* displayed a shorter distance between AME and relatively larger M tooth. Examination of the type material of these species, together with the study of about forty newly available specimens, showed that (1) most of the formerly listed characters are polymorphic within the populations, (2) the suggested differences in the distal structures of the bulbus simply do not exist and (3) the only truly distinguishable character, although present only in a single specimen, is the shorter AME distance of *D. tabaibaensis*, which seems to fit better that of *D. brevisetae*. However, both male genitalia and the remaining somatic characters of *D. tabaibaensis* correspond to those exhibited by the rest of the mentioned species. Finally, because all these species are compatible with the descriptions of *D. macra* and in order to avoid unnecessary proliferation of names, the preferred option has been to synonymize all these species with *D. macra*.

*D. teneriffensis* holotype seems to have been lost. Strand's original description is fully fitted by both *D. brevisetae* and *D. macra*. However, because the type locality (Aguamansa) is located into the distributional range of the second species, *D. teneriffensis* is better considered as a synonym of *D. macra*.

*Dysdera minutissima* Wunderlich, 1991

(Figs. 134-144)

*Dysdera minutissima* Wunderlich, 1991: 299-300, fig. 61-62 [♂]. Holotype male from Aguamansa, La Orotava, Tenerife; 5/3/87, H. Enghoff leg.; num. 2676; Stored at ZMK. Examined.- Wunderlich, 1991: 284-287.

**Diagnosis.-** Small species. Carapace, sternum ornamentation noticeable; frontal border narrow; anterior lateral borders divergent (Fig. 134). Chelicerae, fang short; basal segment dorsal, ventral side covered with spacing, large granulations; teeth equal in size (Fig. 135). Leg 4 largest; legs poorly spinated. Abdominal dorsal hairs curved. T longer than DD; DD bent (Fig. 136). C distal border sloping in its base, external side smooth (Fig. 140). P long; upper margin markedly toothed on its distal part (Fig. 142). Endogyne rectangle-like, frontally pointed; as wide as long (Fig. 137). S attachment projected under VA; arms as long as DA, clearly curved (Fig. 138).

It differs from already small and noticeably foveate species *D. levipes* and *D. gollumi* by: cheliceral granulations, cheliceral groove size, spinated legs, T relative size, non-stepped C, L shape and P shape.

**Description.-** *Holotype male* (Figs. 134-136, 139-142): Carapace (Fig. 134) 1.49 mm long; maximum width 1.14 mm; minimum width 0.74 mm. Dark red, darkened at borders; heavily wrinkled, foveate, covered with tiny granulations; hairy, covered with black hairs mainly at lateral and back borders. Frontal border roughly triangular, markedly smaller than 1/2 carapace length; anterior lateral borders divergent; rounded at maximum dorsal width point, back lateral borders straight; back margin narrow, straight. AME diameter 0.11 mm; PLE 0.09 mm; PME 0.09 mm; AME on edge of frontal border, separated one from another about 1/2 of 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; longer than wide at base (triangle-like); semicircular groove at tip. Sternum dark red, uniformly distributed; heavily wrinkled; uniformly covered in slender black hairs.

Chelicerae (Fig. 135) 0.53 mm long, about 1/4 of carapace length in dorsal view; fang short, 0.32 mm; basal segment dorsal, ventral side completely covered with



large piligerous granulations (spacing). Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base; D=M=B; D trapezoid, located roughly at centre of groove; B close to basal lamina; M close to B. Legs pale yellow, darkened frontal, proximally. Lengths of male described above: fe1 1.26 mm (all measurements in mm); pa1 0.77; ti1 1.01; me1 0.97; ta1 0.35; total 4.36; fe2 1.13; pa2 0.77; ti2 0.9; me2 0.9; ta2 0.32; total 4.02; fe3 0.97; pa3 0.46; ti3 0.61; me3 0.83; ta3 0.3; total 3.17; fe4 1.22; pa4 0.63; ti4 0.99; me4 1.19; ta4 0.37; total 4.33; fe Pdp 0.79; pa Pdp 0.37; ti Pdp 0.39; ta Pdp 0.42; total 1.97; relative length: 1=4>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.0.0; distal 1.0.0; tb3v spines spineless; with two terminal spines. Fe4d spineless; tb4d spines arranged in two bands: proximal 0.0.1; distal 0.0.1; tb4v spines arranged in one band: proximal 0.0-1.0; with two terminal spines. Dorsal side of frontal legs covered with small piligerous grains; ventral side of pedipalp covered with hairs, lacking small grains. Claws with 10-14 teeth, slender, length twice claw width.

Abdomen 1.77 mm long; whitish; globular. Abdominal dorsal hairs 0.036-0.045 mm long; thin, curved (?), compressed (?), pointed; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 136) T slightly longer than DD; external, internal distal border sloped backwards. DD bent about 45° in lateral view; internal distal border not expanded. ES wider, more sclerotized than IS; IS continuous to tip (?). DD tip (Figs. 139-141) straight in lateral view. C present, short; distal end on DD internal tip; well-developed; located far from DD distal tip; proximal border continuously decreasing; distal border sloping in its base, upper tip projected, rounded; external side smooth. AC absent. LF absent. L well-developed; external border not sclerotized, not folded; distal border divergent, continuous. AL absent. P (Fig. 142) fused to T; markedly sloped on its proximal part, perpendicular on distal; lateral length from 1/2 to 2/3 of T width; ridge present, perpendicular to T, not expanded; upper margin markedly toothed, on its distal part, very few teeth (1-3); not distally projected; back margin not folded.

*Female* (Figs. 137-138, 143-144): All characters as in male except: Carapace 1.68 mm long; maximum width 1.26 mm; minimum width 0.74 mm. Dark brownish red.

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AME diameter 0.11 mm; PLE 0.09 mm; PME 0.08 mm; AME separated one from another about 2/3 of diameter. Sternum brownish red; heavily wrinkled.

Chelicerae 0.53 mm long; fang 0.37 mm. Leg lengths of female described above: fe1 1.24 mm (all measurements in mm); pa1 0.7; ti1 1.04; me1 0.99; ta1 0.35; total 4.32; fe2 1.15; pa2 0.77; ti2 0.9; me2 0.95; ta2 0.32; total 4.09; fe3 1.01; pa3 0.51; ti3 0.65; me3 0.86; ta3 0.3; total 3.33; fe4 1.35; pa4 0.65; ti4 1.08; me4 1.28; ta4 0.37; total 4.73; fe Pdp 0.65; pa Pdp 0.37; ti Pdp 0.37; ta Pdp 0.48; total 1.87; relative length 4>1>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.0.0; distal 1.0.0; tb3v spines spineless; with one terminal spine on forward margin. Fe4d spineless; tb4d spines arranged in two bands: proximal 0.0.1; distal 0.0.1; tb4v spines arranged in one band: proximal 0.1-0.0; with two terminal spines.

Abdomen 1.96 mm long; whitish; globular. Abdominal dorsal hairs 0.054-0.063 mm long; thin, curved, compressed, pointed; uniformly, thickly distributed.

Endogyne (Figs. 137-138) arch-like in dorsal view, frontally pointed; as wide as long; DF wide. VA frontal region completely sclerotized. S attachment projected under VA; arms as long as DA, clearly curved; tips dorsally projected; neck as wide as arms. TB usual shape.

ALS (Figs. 143-144) with PS; remaining piriform spigots more external than MS, arranged in one row; 4+1 piriform gland spigots; PMS, PLS with 5-10 aciniform gland spigots.

**Material examined.-** *Tenerife: Santa Ursula:* Barranco del Pino (00289P E1 #T); 1♀ (description); 15-22/11/84, J.M. Peraza leg.; num. 2614; Stored at MCNT. Barranco del Pino (8410 T/C #T); 1♂; 21-28/7/85, J.M.Peraza leg.; num. 2615; Stored at MCNT.

**Intraspecific variation.-** Male cephalothorax ranges in length from 1.49 mm to 1.54 mm. AME separation from 1/2 to 4/5 diam.. PLE-PME from 1/3 to 2/3 diam. apart. Cheliceral teeth very similar in size. D>B> M. Spination variability in Table 12.

**Distribution.-** Tenerifean endemic. Known from two localities on middle-northern slope of the island.

**Comments.-** Female specimens of this species were formerly unknown. Unfortunately, during manipulation of the only available endogyne it was lost. The

character states reported for the endogyne in the present work are based on preliminary drawings made before its loss.

*Dysdera montanetensis* Wunderlich, 1991

(Figs. 145-156)

*Dysdera montanetensis* Wunderlich, 1991: 300-301, fig. 63-64 [♂]. Holotype male from La Montañeta, MSS 6-9, Garachico, Tenerife; 26/4/88, A.L. Medina leg.; num. T-64-17; Stored at UL. Examined.- Wunderlich, 1991: 284-287.

**Diagnosis.-** Carapace ornamentation scarce; frontal border narrow; anterior lateral ones slightly divergent (Fig. 145). Chelicerae fang short; basal segment dorsal, ventral side covered with spacing, large granulations; teeth large; D at segment tip (Fig. 146). Leg 4 largest; legs strongly spinated; claws with many, slender, teeth. Abdominal dorsal hairs slightly curved, stick-like. T longer than DD; DD bent (Fig. 147). C distal border sloping in its base; LF well-developed, distally projected; L laterally markedly folded (Figs. 151-153). P upper margin distinctly expanded, not sclerotized (Figs. 147, 154). Endogyne rectangle-like, frontally rounded (Fig. 148); VA posterior region mostly sclerotized; ventral ridge as long as VA. S attachment projected under VA; arms as long as DA, straight (Figs. 149-150).

*D. gibbifera*, *D. iguanensis* and *D. volcania* share with this species a very similar genitalic pattern. It differs from the first species by smaller size, markedly spinated legs and lack of L sclerotization. From *D. iguanensis* by D at segment tip, spination pattern, L laterally fold and P shape. *D. volcania* shows a markedly foveate carapace, legs poorly spinated and LF not projected.

**Description.-** *Holotype male* (Figs. 145-147, 151-154): Carapace (Fig. 145) 2.98 mm long; maximum width 2.35 mm; minimum width 1.37 mm. Brownish orange, uniformly distributed; slightly foveate at borders, wrinkled at middle, covered with tiny granulations. Frontal border roughly round, markedly smaller than 1/2 carapace length; anterior lateral borders slightly divergent or parallel; rounded at maximum dorsal width

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point, back lateral borders straight; back margin wide, straight. AME diameter 0.18 mm; PLE 0.18 mm; PME 0.12 mm; AME on edge of frontal border, separated one from another about 1/2 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; longer than wide at base (rectangle-like); semicircular groove at tip. Sternum brownish orange, frontally darker, becoming lighter towards back; wrinkled; covered in hairs mainly on margin.

Chelicerae (Fig. 146) 1.21 mm long, about 1/3 of carapace length in dorsal view; fang short, 0.84 mm; basal segment dorsal, ventral side completely covered with large piligerous granulations (spacing). Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base;  $D > B > M$  (large, not very different); D trapezoid, located near segment tip; B close to basal lamina; M at middle of B and D. Legs yellow, frontal slightly darker. Lengths of male described above: fe1 2.75 mm (all measurements in mm); pa1 1.72; ti1 2.42; me1 2.47; ta1 0.74; total 10.1; fe2 2.7; pa2 1.63; ti2 2.28; me2 2.42; ta2 0.74; total 9.77; fe3 2.28; pa3 1.21; ti3 1.64; me3 2.16; ta3 0.7; total 7.98; fe4 3.17; pa4 1.54; ti4 2.47; me4 3.17; ta4 0.79; total 11.09; fe Pdp 1.35; pa Pdp 0.74; ti Pdp 0.93; ta Pdp 0.84; total 3.86; relative length:  $4 > 1 > 2 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spines in one row: 1; tb3d spines arranged in three bands: proximal 1.1.1; medial-proximal 0.2.0-1; distal 1.0.0-1; tb3v spines arranged in two bands: proximal 1.2.1-0; distal 1.0.0-1; with two terminal spines. Fe4d spines in one row: 2-3; tb4d spines arranged in three bands: proximal 0-1.1.1; medial-proximal 1.1-2.1; distal 1.2.1; tb4v spines arranged in four bands: proximal 1.1.1; medial-proximal 1-0.1.0; medial-distal 0.1.0; distal 1.1.1; with two terminal spines. Dorsal side of frontal legs, ventral side of pedipalp covered with small piligerous grains. Claws with more than 15 teeth, slender, length twice claw width.

Abdomen 3.03 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.072 mm long; thick, slightly curved, not compressed, blunt, tip not enlarged; uniformly, scantily distributed.

Male copulatory bulbus (Fig. 147) T slightly longer than DD; external, internal distal border sloped backwards. DD bent about  $45^\circ$  in lateral view; internal distal border not expanded. IS and ES equally developed; IS continuous to tip (?). DD tip

(Figs. 151-153) straight in lateral view. C present, short; distal end on DD internal tip; poorly developed; located far from DD distal tip; proximal border continuously decreasing; distal border sloping in its base, upper tip not projected, pointed; external side hollowed. AC absent. LF present; distally projected; well-developed. L well-developed; external border not sclerotized, laterally markedly folded; distal border divergent, continuous. AL absent. P (Fig. 154) fused to T; markedly sloped on its proximal part, perpendicular on distal; lateral length as long as or longer than T width; ridge present, not sclerotized, perpendicular to T, distinctly expanded, rounded; upper margin smooth; not distally projected; back margin not folded.

*Female* (Figs. 148-150, 155-156): All characters as in male except: Carapace 3.35 mm long; maximum width 2.57 mm; minimum width 1.58 mm. Anterior lateral borders divergent. AME diameter 0.21 mm; PLE 0.2 mm; PME 0.14 mm.

Chelicerae 1.35 mm long, fang 0.93 mm. Leg lengths of female described above: fe1 2.93 mm (all measurements in mm); pa1 1.91; ti1 2.56; me1 2.56; ta1 0.74; total 10.7; fe2 2.89; pa2 1.77; ti2 2.42; me2 2.56; ta2 0.79; total 10.43; fe3 2.28; pa3 1.4; ti3 2.16; me3 2.33; ta3 0.79; total 8.89; fe4 3.54; pa4 1.77; ti4 2.76; me4 3.54; ta4 0.98; total 12.59; fe Pdp 1.54; pa Pdp 0.84; ti Pdp 0.74; ta Pdp 1.16; total 4.28; relative length  $4 > 1 > 2 > 3$ . Spination: palp, leg1, leg2 spineless. Fe3d spines in one row: 1; tb3d spines arranged in three bands: proximal 1.1.1-0; medial-proximal 0.1-2.0-1; distal 1.0.0-1; tb3v spines arranged in two bands: proximal 1.2.0; distal 1.0-1.1-0; with two terminal spines. Fe4d spines in one row: 1-3; tb4d spines arranged in three bands: proximal 0-1.0.1; medial-proximal 1.2.1; distal 1.2.1; tb4v spines arranged in three bands; proximal 1.1.1; medial-proximal 0; medial-distal 0.1-2.0; distal 1.0.1; with two terminal spines.

Abdomen 6.52 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.09 mm long; medium-sized, slightly curved, not compressed, blunt, tip not enlarged; uniformly, scantily distributed.

Endogyne (Figs. 148-150) rectangle-like in dorsal view, frontally rounded; slightly wider than long; DF wide. MF well-developed; sclerotized along its extent. VA frontal region completely sclerotized; posterior region sclerotized except for most internal area; sclerotized ridge at ventral VA external margin, as long as VA. AVD

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clearly recognizable. S attachment projected under VA; arms as long as DA, straight; tips dorsally projected; neck as wide as arms. TB usual shape.

ALS (Figs. 155-156) with PS; remaining piriform spigots no more external than MS, arranged in three rows; 10+1 piriform gland spigots; PMS, PLS with 5-10 aciniform gland spigots.

**Material examined.-** *Tenerife: El Rosario:* Las Raices; 1♀; -/11/93, Arnedo & Ribera leg.; num. 4795; Stored at UB. *La Orotava:* MSS, Aguamansa; 1♂; 4/8/85, J.L.Martín & A.Machado leg.; num. 2580; Stored at UL. *El Sauzal:* Cueva Labrada; 1♀ (description); 28/3/83, J.L.Martín leg.; num. 2519; Stored at UL. 1♀; 4/11/91, J.L.Martín leg.; num. 2516; Stored at UB. *Los Silos:* Monte del Agua; 1♀; 24/2/97, N. Zurita leg.; num. 3209; Stored at UB. *Vilaflor:* Fuente de Mesa; 1♀; 9/3/84, J.M. Peraza leg.; num. 2770; Stored at UL.

**Intraspecific variation.-** Male cephalothorax ranges in length from 2.98 mm to 3.07 mm., female from 2.93 mm to 4.00 mm. AME separation from 1/2 to 2/3 of diam. PLE-PME from 1/3 to 1/2 diam. apart. D markedly larger than or as large as B. Usually, teeth large, not markedly different. In some females (Teno, Labrada) abdomen hairs are compressed and pointed. Endogyne as wide as long. Labrada female specimen 2516 shows carapace frontal lateral margins parallel, long. Carapace, sternum ornamentation nearly smooth. Strong reduction in eye size. D at centre of the chelicera groove. Reduction in leg pigmentation, spination: absence of fe spination and tb medial spination. Spination variability in Table 13.

**Distribution.-** Tenerifean endemic. Known from several localities spread throughout the northern slope excepting Anaga massif, and from a single locality at middle-southern slope.

**Comments.-** Former knowledge of this species was restricted to a single male specimen.

*Dysdera propinqua* Ribera, Ferrández & Blasco, 1985

(Figs.157-169)

- Dysdera propinqua* Ribera, Ferrández & Blasco, 1985: 61-63, fig. 4A-D [♂]. Holotype male from Cueva Honda, Güímar, Tenerife; 15/12/82, J.L. Martín leg.; num. T-CH-14; Stored at UL. Examined. Wunderlich, 1991: 284-287. Examined.
- D. nesiotés* Simon, 1907: 260 (♀, non ♂); Simon, 1883: 297 (*D. insulana* ♀, non ♂). 3 type females, unknown locality, Canary Islands; unknown data, M. Verneau leg.; num. B-536; Stored at MNHN. Examined. Wrong identification.
- D. obscuripes* Wunderlich, 1991: 302-303, figs. 72-76 [♂, ♀]. Holotype male from pine forest close to La Orotava, La Orotava, Tenerife, Canary Islands; in ll., M. Knösel leg.; Stored at SMF. Not examined. New synonymy.

**Diagnosis.-** Carapace, sternum ornamentation noticeable; anterior lateral borders slightly convergent (Fig. 147). Chelicerae long; basal segment proximal dorsal side covered with spacing granulations. Legs poorly spinated; long hairs on back legs as well as on pedipalps. Abdominal dorsal hairs straight, compressed, frontally curved. T smaller than DD; DD slightly bent (Fig. 159); L distally markedly folded, discontinuous, without a fold at the middle (Fig. 163). P markedly toothed along its extent (Fig. 167). Endogyne arch-like, frontally pointed; slightly wider than long (Fig. 160); VA posterior region sclerotized at anterior area; VA tooth-shaped expansion. S arms as long as DA, clearly curved (Figs. 161-162).

Abdominal dorsal hair shape distinguished this species from other foveate species. Moreover, it differs from *D. brevisetae*, *D. gollumi* and *D. levipes* by spinated legs, from *D. cribellata* by cheliceral teeth size and location, and from *D. minutissima* by body length, carapace shape and chelicerae size.

**Description.-** *Holotype male* (Figs. 157-159, 163-167): Carapace (Fig. 157) 4.1 mm long; maximum width 3.4 mm; minimum width 2.17 mm. Dark red, darkened at borders; foveate at borders, slightly wrinkled at middle, covered with small black grains; hairy, covered with black hairs mainly at lateral and back borders. Frontal border roughly triangular, from 1/2 to 3/5 carapace length; anterior lateral borders convergent; rounded at maximum dorsal width point, back lateral borders straight; back margin wide, straight. AME diameter 0.27 mm; PLE 0.25 mm; PME 0.18 mm; AME on edge of frontal border, separated one from another about 2/5 of diameter, close to PLE; PME very close to each other, about 1/3 PME diameter from PLE.

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Labium trapezoid-shaped, base wider than distal part; longer than wide at base (triangle-like); semicircular groove at tip. Sternum dark red, darkened on borders; mostly wrinkled, except in middle part; uniformly covered in slender black hairs.

Chelicerae (Fig. 158) 2.1 mm long, about 2/5 of carapace length in dorsal view; fang medium-sized, 1.47 mm; basal segment dorsal side completely covered with piligerous granulations, ventral side smooth (spacing distally reduced). Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base; D=B>M; D round, located roughly at centre of groove; B close to basal lamina; M close to B. Legs orange. Lengths of male described above: fe1 3.92 mm (all measurements in mm); pa1 2.65; ti1 3.54; me1 3.41; ta1 0.76; total 14.28; fe2 3.36; pa2 2.4; ti2 2.96; me2 3.16; ta2 0.76; total 12.64; fe3 2.6; pa3 1.49; ti3 1.89; me3 2.4; ta3 0.58; total 8.96; fe4 3.46; pa4 1.89; ti4 2.76; me4 3.21; ta4 0.83; total 12.15; fe Pdp 1.25; pa Pdp 1.06; ti Pdp 1.14; ta Pdp 1.08; total 4.53; relative length: 1>2>4>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.0.1; distal 1.0.0-1; tb3v 2 terminal spines. Fe4d spines in two rows: forward 1-0; backward 4-3; tb4d spines arranged in two bands: proximal 0.0.1; distal 0.0.1; tb4v 2 terminal spines. Dorsal side of frontal legs covered with small piligerous grains; ventral side of pedipalp covered with hairs, lacking small grains; very long hairs on back legs as well as on pedipalps. Claws with 8 teeth or less, robust, hardly larger than claw width.

Abdomen 6.02 mm long; cream-coloured; cylindrical. Abdominal dorsal hairs 0.144 mm long; thick, roughly straight, compressed, lanceolate, frontally curved; uniformly, thickly distributed.

Male copulatory bulbus (Fig. 159) T slightly smaller than DD; external; internal distal border sloped backwards. DD slightly bent in lateral view, clearly less than 45°; internal distal border not expanded. IS and ES equally developed; IS truncated at DD middle part. DD tip (Figs. 163, 165-166) straight in lateral view. C present, short; distal end on DD internal tip; well-developed; located close to DD distal tip; proximal border sharply decreasing; distal border stepped, upper tip not projected, rounded; external side hollowed. L well-developed; external border not sclerotized, distally markedly folded; distal border divergent, discontinuous but without a fold at the middle. AL



present, hardly visible except for a small notch; proximal border in posterior view fused with DH except for its most internal part. P (Fig. 167) fused to T; perpendicular to T in lateral view; lateral length from 2/5 to 1/2 of T width; ridge present, perpendicular to T, not expanded; upper margin markedly toothed, along its extent, few teeth; not distally projected; back margin not folded.

*Female* (Figs. 160-162, 168-169): All characters as in male except: Carapace 4.34 mm long; maximum width 3.57 mm; minimum width 2.52 mm. AME diameter 0.23 mm; PLE 0.21 mm; PME 0.16 mm; PME 2/5 diam. from PLE. Sternum brownish red.

Chelicerae 2.03 mm long; fang 1.33 mm. Leg lengths of female described above: fe1 3.43 mm (all measurements in mm); pa1 2.31; ti1 2.87; me1 2.87; ta1 0.66; total 12.14; fe2 3.22; pa2 2.17; ti2 2.52; me2 2.73; ta2 0.63; total 11.27; fe3 2.45; pa3 1.47; ti3 1.82; me3 2.31; ta3 0.63; total 8.68; fe4 3.57; pa4 1.89; ti4 2.73; me4 2.15; ta4 0.77; total 12.11; fe Pdp 2.03; pa Pdp 1.05; ti Pdp 0.84; ta Pdp 1.12; total 5.04; relative length 1>4>2>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.1-0.1; distal 1.0.0; tb3v 2 terminal spines. Fe4d spines in two rows: forward 1; backward 3; tb4d spines arranged in two bands: proximal 0.0.1; distal 0.0.1; tb4v 2 terminal spines.

Abdomen 6.23 mm long; cream-coloured; cylindrical. Abdominal dorsal hairs 0.153 mm long; thick, roughly straight, compressed, lanceolate, frontally curved; uniformly, thickly distributed.

Endogyne (Figs. 160-162) arch-like in dorsal view, frontally pointed; slightly wider than long; DF wide. MF poorly developed. VA frontal region completely sclerotized; posterior region sclerotized at anterior area; tooth-shaped expansion from internal back border, not joined to lateral sclerotization, slightly shorter than DF lateral margins, markedly bent towards lateral area. AVD hardly visible. S attachment not projected under VA; arms as long as DA, clearly curved; tips dorsally projected; neck as wide as arms. TB usual shape.

ALS (Figs. 168-169) with PS; remaining piriform spigots more external than MS, arranged in three rows; 9+1 piriform gland spigots; PMS, PLS with 10-15 aciniform gland spigots.

**Material examined.**- *Tenerife*: ?; ?; 1♂; 24/2/84, N.P. Ashmole leg.; num. 2728;

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Stored at UL. Fuente de Mesa; 2♀; 9/3/84, J.M. Peraza leg.; num. 2770; Stored at UL. Adeje: Roque del Conde; 1♂; 16/3/96, Oromí leg.; num. 3123; Stored at UB. 1♀; 16/3/96, Oromí leg.; num. 3124; Stored at UB. Arafo: Fuente del Joco (5km NW from Arafo), 1930m.; 2♀; 28/12/94, F. Gasparo leg.; Stored at FG. Arico: Barranco del Rio; 1juv.; 22/2/84, P. Ashmole leg.; num. 2685; Stored at UL. 1♂; 15-22/10/84, J.M. Peraza leg.; num. 2772; Stored at UL. 1♂, 1♀; 16-23/11/84, J.M. Peraza leg.; num. 2721; Stored at UL. 1♂, 1♀; 17-26/9/85, J.M. Peraza leg.; num. 2613; Stored at MCNT. Buenavista: Barranco de las Cuevas; 1♀; 4/2/89, H. Enghoff leg.; num. 2642; Stored at ZMK. Casa Blanca close to W Buenavista; 1♀; 4/2/89, H. Enghoff leg.; num. 2650; Stored at ZMK. El Rosario: Las Raices; 1♂; /11/93, Arnedo & Ribera leg.; num. 4796 (T17); Stored at UB. Granadilla: Madre del Agua; 1♀; /11/93, Arnedo & Fluhr leg.; num. 4797 (T22); Stored at UB. 1juv.; /11/93, Arnedo & Fluhr leg.; num. 4798 (T42); Stored at UB. 1♂; /11/93, Arnedo & Fluhr leg.; num. 4813 (T4); Stored at UB. Güímar: Barranco de Badajoz; 4♀; 18/12/96, P. Oromí leg.; num. 3210; Stored at UB. 1♀ (redescription); 27/12/96, P. Oromí leg.; num. 3192; Stored at UB. Cueva Honda; 1♂ holotype; 15/12/82, J.L. Martín leg.; num. 2555; Stored at UL. La Laguna: Bajamar; 1♂; 10/9/85, J.M. Peraza leg.; num. AR-202; Stored at MCNT. El Moquinal; 1♂, 3♀; 23/1/97, P. Oromí leg.; num. 3196; Stored at UB. Monte de las Mercedes; 1♂; 18/3/90, C.G. Campos leg.; num. 2726; Stored at UL. La Orotava: Base zig-zag; 1♂; 17/10/84, C.G. Campos leg.; num. 2696; Stored at UL. El Guanche close to Aguamansa; 1♂; 5/3/87, H. Enghoff leg.; num. 2649; Stored at ZMK. Hierba Pajonera (2050 m); 1♂; 19/6/84, C.G. Campos leg.; num. 2724; Stored at UL. Izaña; 1♀; 13/3/87, H. Enghoff leg.; num. 2641; Stored at ZMK. Las Cañadas del Teide; 1♀; , J. Wunderlich leg.; num. 2629; Stored at JW. 1♂; 1/3/84, C.G. Campos leg.; num. 2761; Stored at UL. 1♂; 19/4/84, C.G. Campos leg.; num. 2763; Stored at UL. (2100 m); 1♀; 18/6/84, C.G. Campos leg.; num. 2725; Stored at UL. 1♀; 19/9/84, C.G. Campos leg.; num. 2762; Stored at UL. (2050 m); 1♀; 10/11/84, C.G. Campos leg.; num. 2722; Stored at UL. 1 juv.; 29/6/95, A. Camacho leg.; num. 3159; Stored at UB. 1♂; 2/5/96, N. Zurita leg.; num. 3171; Stored at UB. Montaña de Los Conejos (2400 m); 1♂; 18/6/84, C.G. Campos leg.; num. 2723; Stored at UL. Pico Viejo; 1♀; 9/11/83, C.G. Campos leg.; num. 2695; Stored at UL. Retamar (3050 m); 1juv.; 19/6/84, C.G. Campos leg.; num.

2765; Stored at UL. Teide (2700 m); 1♂, 1♀; 19/6/84, C.G. Campos leg.; num. 2713; Stored at UL. (3050m); 1juv.; 18/9/84, C.G. Campos leg.; num. 2764; Stored at UL. Ucanca (2100 m); 1♂; 1/7/90, C.G. Campos leg.; num. 2745; Stored at UL. *Santa Cruz de Tenerife*: Bailadero; 1♂; 1/11/93, Arnedo & Ribera leg.; num. 4833 (T47); Stored at UB. Cruz del Carmen, Anaga; 1♂, 1♀; 12/5/96, M. Naranjo leg.; num. 3146; Stored at UB. 1♀; 12/5/96, M. Naranjo leg.; num. 3147; Stored at UB. Taganana; 1♂; Oromí leg.; num. 2932; Stored at UB. *Los Realejos*: La Fortaleza; 1♂; 25/2/83, A. Fox leg.; num. 2727; Stored at UL. 1♂; 26/12/84, C.G. Campos leg.; num. 2699; Stored at UL. Pinar Roque Peral; 1♂; 19/5/84, C.G. Campos leg.; num. 2692; Stored at UL. 1♂; 18/10/84, C.G. Campos leg.; num. 2698; Stored at UL. 1♂, 1juv.; 18/10/84, C.G. Campos leg.; num. 2700; Stored at UL. *Los Silos*: Monte del Agua, Teno; 1♂, 1♀; 1/2/88, J.J. Naranjo leg.; num. 2598; Stored at UL. 1♂, 2♀; 16/2/88, P. Oromí leg.; num. 2683; Stored at UL. 2♀; 1/3/89, P. Oromí leg.; num. 2684; Stored at UL. 1♂; 30/11/93, M.A. Arnedo leg.; num. 3181; Stored at UB. *Santa Ursula*: Barranco del Pino; 4♀; 15/11/84, J.M. Peraza leg.; num. 2720; Stored at UL. Monte de Santa Ursula; 1♀; 13/12/96, P. Oromí leg.; num. 3191; Stored at UB. *Vilafior*: El Pinalito; 1♂, 1♀; 20-27/12/84, J.M. Peraza leg.; num. 2608; Stored at MCNT. 1♀; 16-23/2/85, J.M. Peraza leg.; num. 2607; Stored at MCNT. 1♂/1♀; 16-23/2/85, J.M. Peraza leg.; num. 2610; Stored at MCNT. *D. obscuripes*: *Tenerife*: *Arico*: Barranco del Río; 1♂ paratype; in I, in I leg.; num. 2626; Stored at JW. 1♀ paratype; 27/1/85, Wunderlich leg.; num. 2628; Stored at JW. *La Laguna*: El Moquinal; 1♂; 20/4/90, P. Oromí leg.; num. 2620; Stored at SMF. *La Orotava*: Cañadas del Teide; 1♂ paratype; Wunderlich leg.; num. 2622; Stored at JW.

**Intraspecific variation.**- Male cephalothorax ranges in length from 3.54 mm to 4.43 mm, female from 3.77 mm to 4.69 mm. Sternum ornamentation variable, from hardly wrinkled between coxae to completely wrinkled. Chelicera lacking dorsal distal granulations or somewhat reduced. P 1/3 of T width. One specimen from Teno with well-developed LF (Fig. 164). Endogyne frontally round. Ventral tooth-shaped sclerotization shorter, about 1/3 of DF lateral length. Spination variability in Table 14.

**Distribution.**- Tenerifean endemic. The most widespread species in Tenerife. It has been collected throughout the island, with the exception of the middle-northern slope.

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**Comments.-** Examination of several paratypes of *D. obscuripes* showed that no diagnostic feature exists when compared with *D. propinqua* holotype.

The females used by Simon in the original description of *D. insulana* were also available for study. The author himself (Simon 1907) transferred these females to *D. nesiotetes* Simon, 1907. The study of the specimens revealed that they were neither *D. insulana* nor *D. nesiotetes*, while they perfectly fit those characters of *D. propinqua*.

*Dysdera unguimmanis* Ribera, Ferrández & Blasco, 1985

(Figs. 170-177)

*Dysdera unguimmanis* Ribera, Ferrández & Blasco, 1985: 57-59, fig. 2A-E [♀]. Holotype female from Cueva del Viento-Sobrado, Icod de los Vinos, Tenerife, Canary Islands; 10/2/82, J.L. Martín leg.; num. T-CV-121; Stored at UL. Examined.- Wunderlich, 1991: 284-286.

**Diagnosis.-** Carapace, sternum smooth; frontal border narrow; anterior lateral ones parallel, long. Eyeless (Fig. 170). Chelicerae basal segment proximal dorsal side scantily covered with piligerous granulations at internal margin; B largest, M, D small (Fig. 171). Legs poorly spinated; extraordinarily long; claws markedly bent, teeth in two groups, slender, very long (Fig. 175). Endogyne shape variable; wider than long (Fig. 172); VA posterior region sclerotized at anterior area; VA tooth-shaped expansion. S attachment projected under VA; arms as long as DA, clearly curved (Figs. 173-174).

Unusual claw development, leg elongation and endogyne pattern make this species easily identifiable.

**Description.-** *Holotype female* (Figs. 170-177): Carapace (Fig. 170) 2.73 mm long; maximum width 2.02 mm; minimum width 1.12 mm. Pale yellow, uniformly distributed; smooth with some small black grains mainly at front; hairy, covered with black hairs mainly at lateral and back borders. Frontal border roughly round, markedly smaller than 1/2 carapace length; anterior lateral borders parallel, long; sharpened at maximum dorsal width point, back lateral borders straight; back margin wide, straight. Eyeless. Labium trapezoid-shaped, base wider than distal part; as long as wide at

base (square-like); semicircular groove at tip. Sternum yellow, uniformly distributed; smooth; covered in hairs mainly on margin.

Chelicerae (Fig. 171) 1.23 mm long, about 1/3 of carapace length in dorsal view; fang medium-sized, 0.93 mm; basal segment proximal dorsal side scantily covered with piligerous granulations at internal margin. Chelicera inner groove medium-size, about 2/5 cheliceral length; armed with three teeth and lamina at base; B>D>M (M, D small); D triangular, located roughly at centre of groove; B close to basal lamina; M at middle of B and D. Legs whitish. Lengths of female described above: fe1 3.79 mm (all measurements in mm); pa1 1.64; ti1 3.41; me1 3.29; ta1 1.01; total 13.14; fe2 3.84; pa2 1.64; ti2 3.54; me2 3.03; ta2 1.01; total 13.06; fe3 3.29; pa3 1.39; ti3 2.53; me3 3.03; ta3 1.01; total 11.25; fe4 3.92; pa4 1.52; ti4 3.11; me4 3.41; ta4 1.01; total 12.97; fe Pdp 1.14; pa Pdp 0.76; ti Pdp 0.88; ta Pdp 1.31; total 4.09; relative length 1>2>4>3. Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands: proximal 1.0.0; distal 1.0.1; tb3v 2 terminal spines. Fe4d spineless; tb4d spines arranged in two bands; proximal 1.0.1; distal 1.0.1; tb4v 2 terminal spines. Dorsal side of frontal legs smooth; ventral side of pedipalp smooth. Claws markedly bent; with 10-14 teeth, in two groups, slender, unusually long (Fig. 175).

Abdomen 6.9 mm long; cream-coloured; cylindrical. Abdominal dorsal hairs 0.072-0.09 mm long; thin, curved, compressed, pointed; uniformly, scantily distributed.

Endogyne (Figs. 172-174) rectangle-like (?); wider than long; DF wide. MF well-developed; sclerotized at frontal part. VA frontal region completely sclerotized; posterior region sclerotized at anterior area; tooth-shaped expansion from back border; not joined to lateral sclerotization, about half of DF lateral margins. AVD clearly recognizable. S attachment projected under VA; arms as long as DA, clearly curved; tips not projected; neck as wide as arms. TB usual shape.

ALS (Figs. 176-177) with PS; remaining piriform spigots more external than MS, arranged in one row; 3+1 piriform gland spigots; PMS, PLS with fewer than 5 aciniform gland spigots.

*Male.* - Unknown.

**Material examined.**- *Tenerife: Icod de los Vinos: Cueva de Felipe Reventón;*

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1juv.; 17/3/84, J.J. Hernández leg.; num. 2584; Stored at UL. 1juv.; 10/9/92, P. Oromí leg.; num. 2535; Stored at UB. 1♀; /11/93, Arnedo & Ribera leg.; num. 4829 (T44); Stored at UB. Cueva del Viento-Sobrado; 1juv.; 10/9/92, H. Enghoff leg.; num. 2630; Stored at ZMK. 1juv.; 19/10/94, Arnedo & Ribera leg.; num. 4822 (T33); Stored at UB. 1juv.; 9/6/96, P. Oromí leg.; num. 3174; Stored at UB. *La Orotava*: Cueva del Bucio; 1juv.; 30/10/91, P. Oromí leg.; num. 2540; Stored at UL.

**Intraspecific variation.**- DA arch-like in dorsal view. Spination variability in Table 15.

**Distribution.**- Tenerifean endemic. Known from several lava tubes located on the northern slope of the island.

### *Dysdera volcania* Ribera, Ferrández & Blasco, 1985

(Figs. 178-186)

*Dysdera volcania* Ribera, Ferrández & Blasco, 1985: 59-61, fig. 3A-D [♂] (♂; non ♀, wrong identification).

Holotype male from Cueva de Felipe Reventón, Icod de los Vinos, Tenerife, Canary Islands; 10/2/82, P. Oromí leg.; num. T-FR-106; Stored at UL. Examined.- Wunderlich, 1991: 284-287.

**Diagnosis.**- Carapace, sternum ornamentation noticeable; frontal border narrow; anterior lateral ones divergent (Fig. 178). Cheliceral fang short; basal segment dorsal, ventral side covered with spacing, large granulations; D,B large; D at segment tip (Fig. hairs stick-like. T as long as DD; bent roughly 45° (Fig. 180). LF poorly developed, not projected; L external border not sclerotized, laterally markedly folded (Figs. 181-182). P markedly longer than T width; ridge distinctly expanded, not sclerotized (Fig. 184).

This species is very similar to *D. montanetensis*, from which it differs by: foveate carapace, poorly spinated legs and poorly developed LF lacking distal projection.

**Description.**- *Holotype male* (Figs. 178-186): Carapace (Fig. 178) 3.5 mm long; maximum width 2.5 mm; minimum width 1.44 mm. Dark red, darkened at borders; heavily wrinkled, foveate, covered with tiny granulations. Frontal border roughly round, markedly smaller than 1/2 carapace length; anterior lateral borders divergent; rounded

at maximum dorsal width point, back lateral borders rounded; back margin wide, straight. AME diameter 0.24 mm; PLE 0.21 mm; PME 0.15 mm; AME on edge of frontal border, separated one from another about 1/2 of 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 (rectangle-like); semicircular groove at tip. Sternum dark red, uniformly distributed; wrinkled; covered in hairs mainly on margin.

Chelicerae (Fig. 179) 1.30 mm long, about 1/3 of carapace length in dorsal view; fang short, 0.88 mm; basal segment dorsal, ventral side completely covered with large piligerous granulations (spacing). Chelicera inner groove short, about 1/3 cheliceral length; armed with three teeth and lamina at base;  $D=B>M$  (or  $D$  slightly larger;  $D, B$  large);  $D$  trapezoid, located near segment tip;  $B$  close to basal lamina;  $M$  close to  $B$ . Legs orange. Lengths of male described above: fe1 3.36 mm (all measurements in mm); pa1 1.99; ti1 2.78; me1 2.78; ta1 0.76; total 11.67; fe2 3.16; pa2 1.89; ti2 2.65; me2 2.78; ta2 0.76; total 11.24; fe3 2.65; pa3 1.26; ti3 1.89; me3 2.6; ta3 0.68; total 9.08; fe4 3.67; pa4 1.64; ti4 2.86; me4 3.59; ta4 0.83; total 12.59; fe Pdp 1.77; pa Pdp 0.93; ti Pdp 1.01; ta Pdp 1.06; total 4.77; relative length:  $4>1>2>3$ . Spination: palp, leg1, leg2 spineless. Fe3d spineless; tb3d spines arranged in two bands; proximal 1.0.1; distal 1.0.0; tb3v spines arranged in two bands: proximal 1.1.0; distal 1.0.0; with two terminal spines. Fe4d spineless; tb4d spines arranged in three bands: proximal 0.0.0-1; medial-proximal 1.1.1; distal 1.0.1; tb4v spines arranged in two bands: proximal 1.1.1; distal 1.0.1; with two terminal spines. Dorsal side of frontal legs covered with small piligerous grains; ventral side of pedipalp scarcely covered with small piligerous grains. Claws with more than 20 teeth, slender, length twice claw width.

Abdomen 4 mm long; whitish; cylindrical. Abdominal dorsal hairs 0.063 mm long; medium-sized, roughly straight, not compressed, blunt, tip not enlarged; uniformly, scanty distributed.

Male copulatory bulbus (Fig. 180)  $T$  as long as  $DD$ ; external, internal distal border sloped backwards.  $DD$  slightly bent in lateral view, roughly  $45^\circ$ ; internal distal border not expanded.  $ES$  more sclerotized than  $IS$ ;  $IS$  continuous to tip.  $DD$  tip (Figs.

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181-183) straight in lateral view. C present, short; distal end on DD internal tip; poorly developed; located far from DD distal tip; proximal border continuously decreasing; distal border sloping in its base, upper tip projected, pointed; external side smooth. AC absent. LF present; distally not projected; poorly developed. L well-developed; external border not sclerotized, laterally markedly folded; distal border divergent, continuous. AL present, hardly visible except for a small notch; proximal border in posterior view fused with DH. P (Fig. 184) fused to T; markedly sloped on its proximal part, perpendicular on distal; lateral length markedly longer than T width; ridge present, not sclerotized, perpendicular to T, distinctly expanded, rounded; upper margin smooth; not distally projected; back margin not folded.

ALS (Figs. 185-186) with PS; remaining piriform spigots more external than MS, arranged in two rows; 6+1 piriform gland spigots; PMS, PLS with 10-15 aciniform gland spigots.

*Female.*- Unknown.

**Material examined.**- *Tenerife: Icod de los Vinos:* Cueva de Felipe Reventón; 1♂ holotype; 10/2/82, P. Oromí leg.; num. 2559; Stored at UL. 1♂; 12/4/86, A.L. Medina leg.; num. 2714; Stored at UL.

**Intraspecific variation.**- Male cephalothorax ranges in length from 3.35 mm to 3.50 mm. AME separation from 1/2 to 3/5 of diam.. PLE-PME from 1/3 to 2/5 diam. apart. D markedly larger than B. Spination variability in Table 16.

**Distribution.**- Tenerifean endemic. Known from a single locality, a lava tube located on middle-northern slope of the island.

**Comments.**- Examination of the allotype female specimen used in the original description of *D. volcania*, revealed that it actually corresponded to a *D. cribellata* female specimen.

Schmidt (1975) reported the presence of *Dysdera rugichelis* Simon, 1907 in Tenerife, based on the study of a single male specimen. No other specimen belonging to this species has been documented afterwards, although this is a very abundant and widespread species in La Gomera and La Palma (Arnedo et al. 1996). This record is



considered to be doubtful, probably due to wrong identification. This suggestion is further supported by the proved misidentification of another *D. rugichelis* specimen described by the same author as a new species (Schmidt 1981).

## DISCUSSION

Even though a lot of new material has been available for the present study, several species remain poorly known. In seven out of the twenty-two species discussed one of the sexes is still unknown (*D. chioensis*, *D. curvisetae*, *D. gibbifera*, *D. gollumi*, *D. hernandezi*, *D. labradaensi*, *D. unguimmanis* and *D. volcania*). Besides, some species have been recorded only once, or are known from a single locality. On the other hand, although several expeditions have been conducted with the main goal of collecting *Dysdera* specimens throughout the island, several island regions remain undersampled or poorly known. In spite of incompleteness, present data allow certain discussion on ecological and distributional patterns to be made.

As has been reported for other Canarian islands (Arnedo et al. 1996, Arnedo & Ribera 1997) the level of insular endemism is extremely high: eighteen out of the twenty-one species documented in Tenerife, roughly 85% of the species, are exclusive endemics. Three species are shared with neighbor islands: two are found in Gran Canaria (*D. iguanensis* and *D. insulana*) and a third (*D. levipes*) is found in both La Gomera and Gran Canaria.

Distributional patterns are the result of both ecological factors and geological history. Humidity may be considered as the major ecological factor governing *Dysdera* distribution. Most of the species have been documented to occur on the northern slope of the islands from 400 to 1200 m, which actually is the most humid region of the island. This humid belt can be further extended to include localities on southeastern-western slopes where the summit barely reaches 1200m. Few locations, in spite of being on the dry southern slopes, are actually humid because they are close to nearly

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permanent watercourses (Barranco del Rio) or correspond to the MSS (Barranco del Chorrillo station). Nevertheless, there are some exceptions to the rule and some species have been reported to live in genuinely dry areas. The taxa *D. macra* and *D. propinqua* have widespread distributions that include humid northern locations as well as very dry places at the high-elevation environments from Las Cañadas or at the southwestern slopes. The only species that has been documented exclusively from dry regions is *D. guayota*. Further investigation of possible physiological adaptations of this species remains to be done.

The geological history of Tenerife is very complex, mainly because of the several volcanic processes involved in its formation. Vulcanism in the Canaries unlike other oceanic archipelagos, e.g. Hawaiian Islands, is a recurrent process. Several studies using K-Ar dating, have supplied a large number of data on the age determination of Tenerife (Ancochea et al. 1990 and references herein). They provide a well-documented picture of the volcanic evolution of the island. As recently as 2 My, Tenerife was split into three different islands that roughly corresponded to the present-day Anaga, Teno and Roque Conde massifs (Fig. 1). These primitive islands originated in the late Miocene and after several volcanic pulses, volcanic activity ceased about 3.5-4.5 My ago. Lava flows from a new volcanic cycle, about 1.9 My ago, connected the three massifs and formed Las Cañadas caldera. Volcanic activity in this area has been more or less continuous until historical ages. Finally, between 0.83 and 0.78 My the large 'valleys' of Güímar and La Orotava were formed, probably due to a massive landslide. Anaga, Teno and Roque massifs have been considered by several authors as refugial areas or sources of colonizers (Machado 1976, Cobolli Sbordoni et al. 1991, Oromí et al. 1991, Avanzati et al. 1994, Juan et al. 1996). This hypothesis is mainly based on (a) their original isolation (b) the absence of eruptions during the last 4 My and (c) an extensive surface transformation and habitat destruction in the rest of the island, from 2 My ago until the present. There are many examples of distributions from a wide array of taxa that apparently suit this suggested scenario. Tenerifean *Dysdera* provide additional cases which could fit the former hypothesis. Some species have been found exclusively in one of the massifs: *D. insulana* is known only from Anaga and closer localities, while *D. gibbifera* has been collected

only in Teno massif and proximities. However, the remaining species have wider distributions. Whether these distributions are the result of dispersal events from some of the mentioned massifs remains to be tested, especially by means of a phylogeographic framework.

Sympatry is another outstanding feature of Canarian *Dysdera* species in general, and Tenerifean ones in particular. As many as four species have been collected in the same locality. Besides, it is not strange to find two specimens from different species under the same stone. More surprisingly, with a single exception (Cueva del Chío), all the lava tubes where *Dysdera* troglobitic species have been reported hold more than one species. Obviously, such a pattern can only be the result of strong ecological segregation. No close association between any *Dysdera* species and a particular plant community has been observed. In general, species distribution range over two or more different ecological zones. In addition, some species have been collected in areas where original forest has been disturbed by reforestation or introduction of alien plant species. The genus *Dysdera* has frequently been described as a specialist predator of woodlice (Cooke 1965), although a recent study on *D. crocota* prey-preference (Pollard et al 1995) has shown that this species is better considered as a generalist predator. Whatever taxonomical prey-preference exists in *Dysdera* species, it is clear that this is strongly constrained from a morphological point of view by body and chelicera-fang size. Tenerife harbors both the largest (*D. labradaensis*) and the smallest (*D. minutissima*) *Dysdera* species ever reported. In addition, there is a wide spectrum of chelicera-fang sizes and, in a lesser degree, of shapes. Experimental studies regarding prey-preference segregation will constitute a promising field of investigation.

Troglobitic species deserve further consideration. Seven Tenerifean species have been collected exclusively in lava tubes and show morphological evidence of adaptation to the hypogean environment. The cave-dwelling *D. ratonensis* from La Palma, is the single case of troglomorphism in the Canaries outside Tenerife. Some of the 'a priori' troglomorphic characters held by these species includes: eye reduction

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or loss, appendage elongation and depigmentation. However, these characters are unequally manifested by the different species. For instance, *D. labradaensis* and *D. chioensis* have eyes markedly reduced in size, all of them being present, while *D. unguimmanis* is completely eyeless. In general, the degree of troglomorphism in Canarian species may be considered low, and in most cases it is restricted to eye reduction. In contrast, *D. unguimmanis* is one of the most troglomorphic taxa in the genus described to date. Apart from the absence of eyes, the noticeable leg elongation and nearly complete depigmentation, this species has an unusual development of the leg claws (unguis). This feature has been observed only in Dysderidae cave-dwelling species of the genera *Stalita* and *Folkia* and has been considered as a troglomorphic adaptation in collembolans (Christiansen 1961) and cixiid planthoppers (Howarth 1991).

Even though hypogean *Dysdera* in Tenerife have been found exclusively in lava tubes, several observations suggest that more probably *Dysdera* troglobites originated in, or are at least able to disperse through, the so-called mesocavernous shallow stratum (MSS) (Oromí et al. 1986). This hypothesis is supported by the fact that (a) lava tubes have a geologically short time-span (between 0.3 and 0.5 My), (b) two or more hypogean species usually coexist in the same lava tube and (c) they have relatively wide distributional ranges, as shown by the distance between some of the lava tubes where they have been collected.

Finally, considerations regarding morphological affinities as well as inferences about speciation and adaptations to particular environments, i.e. troglomorphism, are avoided in this paper, since they are better discussed in the light of a cladogram for the species. With this aim, a cladistic analysis of Canarian *Dysdera* is being performed at present.

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