Aphids from the Canary Islands

By HELENE TAMBS-LYCHE
Malmmosevej 83A, 2830 Virum, Denmark

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A survey of the 46 aphid species known from the Canary Islands is given, including 13 species new to the islands. The geographical relations are discussed.

Introduction

During a short visit to the Canary Islands in March–April 1968 the author had the opportunity to collect some aphids. Even if the collection is rather small, consisting of 14 species, a publication seems justified because relatively little is known about the aphid fauna of the islands.

The earliest record which it has been possible to find is in van der Goot (1912). He described a new species from the islands. Juan Gomez-Menor (1960, 1963) recorded in all 30 species from the Canaries. His publications are difficult to find in libraries; and his records are therefore included here. In addition to the authors own finds, some unpublished ones from the British Museum collections are added.

List of species

Eulachnus bluncki Borner, 1940 .

El Palmital (400 m.), Gran Canaria, no host given, 24-VII-1966, leg. K. M. Guichard and P. M. Ward (Brit. Mus. coll.).

World distribution: May be a European species, but also known from U.S.A.

Eulachnus tuberculostemmata (Theobald, 1915)

Above Frontera, (1000 m.), Hierro, no host given, 29-VII-1966, leg. K. M. Guichard and P. M. Ward (Brit. Mus. coll.).

World distribution: The species has a Mediterranean—Middle East distribution. In the British Museum collections are specimens from Egypt, France, Iran, Iraq and Israel. There is also a specimen from China, but the identity may be uncertain.

Tuberolachnus salignus (Gmelin, 1788)

Cruz de la Tejeda (1450 m.), Gran Canaria, no host given, 22-VI-1966. Leg. K. M. Guichard and P. M. Ward (Brit. Mus. coll.).

World distribution: Europe, Asia, Afnca, North and South America, Hawaii. The species is known from the Azores and Madeira.

Chromaphis juglandicola (Kaltenbach, 1843)

Gomez-Menor (1960) published the species from Agua Mansa, Tenerife on *Juglans regia.*

World distribution: East and Central Europe, Israel, Pakistan. Introduced to America.

Hyalopterus pruni (Geoffrey, 1762)

Gomez-Menor (1960) recorded the species from La Perdoma and La Orotava, Tenerife on *Prunus persica, P. amygdalus, P. armeniaca, Arundo donax* and *Phragmites* sp.

World distribution: Originally European, but now found wherever *Prunus* and *Phragmites* occur.

Rhopalosiphum maidis (Fitch, 1856)

Gomez-Menor (1960) published the species as *R. zeae* Bonnafous from La Orotava and Realejo Alto, Tenerife and from Tirajana, Gran Canaria, on *Zea mays.*

World distribution: Cosmopolitan.

Aphis cytisorum Hartig, 1841

Gomez-Menor recorded the species as *Pergandeida c.* from Tacoronte on *Genista* and from Las Cañadas del Teide, Tenerife on *Lupinus.*

World distribution: Europe, Central Asia.

Aphis fabae Scopoli, **1763** -complex.

Gomez-Menor **(1960)** published ***Aphis fabae*** from La Perdoma on ***Foeniculum***.

New localities: Santa Cruz de Tenerife **on** ***Calendula,*** Feb. **1930,** leg. **S. A.** Neave (Brit. Mus. coll.). This may not be a true ***fabae,*** but it belongs to the fabae-complex. Icod, Tenerife on ***Habenaria tridactylidis,*** Jan. **1965,** leg. **R.** B. Benson (Brit. Mus. coll.). This may be ***A. solanella*** Theobald, **1914**. La Laguna, Tenerife on ***Galium aparine*** **3-IV-1968,** leg. **H.** T.-L. These specimens must belong to the ***fabae***-group, but they are not typical ***fabae***.

These records, which may be referred to different species of the ***fabae-group*** are for convenience listed together.

World distribution: ***Aphis fabae*** has been regarded as a cosmopolitan species; this may not be so, and what has been referred to as ***A. fabae*** Scopoli in the tropics may be ***A. solanella*** Theobald. (Eastop in litt.)

? ***Aphis frangulae*** Kaltenbach in Koch, **1855**

The species published as ***Cerosipha frangulae*** by Gomez-Menor **(1960)** seems to differ from a genuine ***A. frangulae,*** but belongs to the same group.

Aphis gomphorocarpi van der Goot **1912**

Van der Goot described this species collected on ***Gomphorocarpus fruticosus*** from Barranca de la Villa, Gomera. He also records the species from Madeira. It has not been refound.

Aphis gossypii Glover, **1854**

Gran Canaria, **no** host given, **1966,** leg. B. M. Gerard (Brit. **Mus.** coll.). La Orotava, Tenerife on ***Hibiscus*** sp. **29-111-1968** and Santa Cruz de Tenerife also on ***Hibiscus*** **31-III-1968,** leg. H. T.-L.

World distribution: Cosmopolitan.

? ***Aphis ilicis*** Kaltenbach, **1843**

Monte las Mercedes on ***Ilex canariensis*** **2-IV-1968,** leg. H. T.-L.

The sample consists of a few larvae, and the identification **is** therefore uncertain.

World distribution: ***Aphis ilicis*** is a European species.

Aphis nerii Boyer de Fonscolombe, **1841**

Gomez-Menor **(1960)** published the species as ***Cerosipha nerii*** from Puerto de la Cruz and La Orotava, Tenerife on ***Nerium oleander.***

New locality: Gran Canaria, **no** host given, **1-V-1966,** leg. B. M. Gerard (Brit. Mus. coll.).

Word distribution: Cosmopolitan in tropical and sub-tropical countries.

? ***Aphis parietaria*** Lichtenstein, **1884**

Gomez-Menor published the species, as ***Cerosipha parietaria*** from La Laguna, Tenerife on ***Parieraria arborea.*** It is uncertain whether this species is the genuine ***A. parietaria*** Lichtenstein, **or** ***A. parietaria*** in Theobald's sense, which **now** is called ***A. parietariella*** Borner, **1940**.

Aphis pomi de Geer, **1773**

Gomez-Menor **(1960)** published the species from La Perdoma and La Orotava, Tenerife on ***Pyrus communis*** as ***Medoralis*** **p.**

World distribution: European, introduced to America.

? ***Aphis ruborum*** Borner, **1931**

Monte las Mercedes on ***Rubus*** sp., **2-IV-1968,** leg. **H.** T.-L.

The sample consists of one aptera and one alate. The aphids are very like ***A. ruborum*** Borner and probably belong to some closely allied species. Compared with European material of ***A. ruborum*** they are slightly bigger, and the siphunculi are shorter in relation to the cauda. The European material has the siph./cauda = 1,5, while the Canarian aphids have siph./cauda = 1,35.

World distribution of ***A. ruborum:*** Europe, Near East.

Aphis spiracola Patch, **1914**

Gran Canaria, no host given, **1966,** leg. G. M. Gerard (Brit. Mus. coll.).

World distribution: The species is originally American, it is now found all over the world in tropical and sub-tropical countries.

Aphis stuchydis Mordvilko, **1929**

La Laguna, Tenerife on ***Stachys arvensis,*** **27-III-1968,** leg. **H.** T.-L.

The sample consists of one aptera and one nymph. With some doubt 1 refer them to ***A. stachydis,*** although the colour of the aphids was dark green, while Borner (1940) described the colour as "hellgrün" and Shaposhnikov **(1964)** as yellowish green. The specimens must belong either to this or some closely related species. With the scanty material at

hand a more precise identification is not possible.

World distribution: *Aphis stachydis* Mordvilko is a European species.

Toxoptera aurantii (Boyer de Fonscolornbe, 1841)

Gomez-Menor (1960) published the species from La Orotava, Tenerife on *Citriis aurantium, C. limonium* and *Buxus* sp.

IVorld distribution: Cosmopolitan in tropical and sub-tropical countries.

Brachycaudus helichrysi (Kaltenbach, 1843)

Santa Cruz de Tenerife on *Calendula,* Feb. 1930, leg. S. A. Neave [Brit. Mus. coll.). Monte las Mercedes Tenerife on *Urospermum picroides* 2-IV-1968, leg. H. T.-L.

World distribution: Originally European, now introduced to most parts of the world. In Asia it is perhaps confused with other species.

Appelia prunicola (Kaltenbach, 1843)

Gornez-Menor (1960) published this species as *A. persicae* (Boyer de Fonscolombe) frorn La Orotava, Tenerife, on *Prunus amygdalus.*

World distribution: Warmer parts of Europe.

Thuleaphis rumexicolens (Patch, 1917)

San Andres, Tenerife on *Rrimex vesicaria* var. *rhodophysa,* 4-IV-1968, leg. H. T.-L.

World distribution: Palaearctic, also in rnountains in Africa and in the Himalayas; introduced to Arnerica.

Brevicoryne brassicae [Linnaeus, 1758)

Gornez-Menor (1963) published the species from Icod Alto, Agua Mansa and La Orotava, Tenerife, and Santa Brigida, Gran Canaria on *Brassica oleracea, Cheiranthus cheiri* and *Sonchus oleraceus.*

World distribution: Cosrnopolitan in temperate and sub-tropical countries.

Chaetosiphon tetrarhodus (Walker, 1849)

Gomez-Menor (1963) published this species as *Passerinia t.* frorn La Orotava on *Rosa* sp.

New locality: La Laguna, Tenerife on *Rosa* sp. 27-III-1968, leg. H. T.-L.

IVorld distribution: Originally European, now also found in Egypt, rnountains of East Africa, Israel, India, Australia and Neiv Zealand.

Cavariella aegopodii (Scopoli, 1763)

Goniez-Menor (1963) published the species from La Perdoma and La Orotava, Tenerife on *Foeniculum vulgare.*

New locality: Cruz de Tejeda (1450 m.), Gran Canaria, no host given, 22-VI-1966, leg. K. M. Guichard and P. M. Ward (Brit. Mus. coll.).

IVorld distribution: Cosrnopolitan. Originally holarctic and introduced to rnountains in Africa and South Arnerica.

Myzus persicae (Sulzer, 1776)

Gomez-Menor (1963) published the species frorn Las Palmas on *Apiiim graveolens, Hibiscus rosasinensis, Ctictirbira maxima* and *Urtica urens,* frorn Santa Brigida on *Datura stramonium, Lavarera arborea, Ferula linkii* and *Piptaterum multiflorum,* frorn Tafira Baja on *Bera* cycla, frorn Valleseco on *Vicia faba, Arum canariensis* and *Lavatera crerica,* frorn Teror on *Capsiciim annuum* and *Malva parviflora,* frorn La Orotava on *Nicotiana tabacum, Bougainvillea* sp., *Salvia* sp. and *Pelargonium* sp. and frorn Santa Cruz de Tenerife on *Tecomaria capensis.*

New locality: San Andres, Tenerife on *Euphorbia obtusifolia* 4-IV-1968, leg. H. T.-L.

World distribution: Cosrnopolitan.

Pentalonia nigronervosa Coquerel, **1859**

Gomez-Menor (1963) recorded the species frorn Realejo Bajo, Tenerife, on *Musa* sp. and other hlusaceae, *Ravenala madagascariensis* and *Pelargonium* (accidentally).

IVorld distribution: Cosmopolitan in tropical and subtropical countries.

Capitophorus inulae (Passerini, 1860)

San Andres, Tenerife on *Odontospermum aquaticum,* 4-IV-1968, leg. H. T.-L.

World distribution: Warrner parts of Europe, Egypt and possibly Central Asia.

Nasonovia ribisnigri (hlosley, 1841)

Monte las Mercedes, Tenerife, on *Andryala pinnitifida,* 24-III-1968, and Punta des Hidalgos on *Echium* sp., 24-III-1968, leg. H. T.-L.

World distribution: Europe. Introduced to America.

Hyperomyzus lactucae (Linnaeus, 1758)

Gomez-Menor (1963) found the species in La Prrdorna, Tenerife and Santa Brigida on *Sonchus* sp.

World distribution: Europe, mountains of Asia, introduced to America and Australia.

Eucarazzia elegans (Ferrari, **1872**)

Gomez-Menor **(1963)** published the species from Las Cañadas del Teide, Tenerife on ***Mentha*** sp. as ***Rhopalosiphoninus salviae*** Hall.

World distribution: Mediterranean. Also fond in mountains in Africa and in the Himalayas.

? ***Acyrthosiphon genisrae*** Mordvilko, 1914

Gomez-Menor **(1963)** published this species from Las Cañadas del Teide, Tenerife on ***Sparrocyrisus nubigens.*** There seems to be some uncertainty about ***A. genistue*** Mordvilko. Gomez-Menor's species may perhaps be ***Acyrthosiphon pisum spartii*** Koch.

Acyrthosiphon pisum (Harris, **1776**)

Gomez-Menor **(1963)** recorded the species from Tacoma, Tenerife on ***Lathyrus odoratus*** as ***A. onobrychis*** (Boyer de Fonscolombe).

World distribution: Common in the holarctic region, less frequent in the tropics.

? ***Aulacorthum pelargonii*** (Kaltenbach, **1843**)

Gomez-Menor (1 **963**) published this species from El Medano, Tenerife on an unidentified host plant. ***A. pelargonii*** (Kaltenbach) is considered synonymous with ***Acyrthosiphon malvae*** (Mosley), but Gomez-Menor's description of the species he had before him does not fit well with this species, which, however, is very variable. Nor does it fit ***Aulacorthum solani*** (Kaltenbach) a species which Mordvilko considered synonymous with Kaltenbachs ***pelargonii.*** It is therefore difficult to say which species Gomez-Menor's record refers to.

Aulacorthum solani [Kaltenbach, **1843**) sensu latiore

Monte las Mercedes, Tenerife, on ***Ranunculus corttisifolius*** and on ***Papaver*** sp., **i·IV-1968,** leg. H. T.-L.

World distribution: Cosmopolitan, but lacking in the tropics below 5000 ft.

(Macrosiphum daphnidis Börner, 1940

Gomez-Menor **(1963)** recorded this species from Agua Mansa and La Orotava, Tenerife on ***Daphne.*** His specimens are **2.4–2.5** mm., while ***M. daphnidis*** is bigger, 3.46–4.04 mm. (Ossiannilsson 1959). Gornez-Menor gives the length of the antennae as about equal to the length of the body, while in ***daphnídis*** the antennae are much longer than the body. The species should therefore be delated from the list of Canarian aphids.)

Macrosiphum euphorbiae (Thomas, **1878**)

Gomez-Menor (1963) published the species as ***M. solanifolii*** (Ashmead) from Puerto de la Cruz and La Orotava, Tenerife, on ***Nicotiana tabacum*** and ***Arundo donax.***

New locality: Agua Mansa (1100 m.), Tenerife on ***Pinus canariensis,*** 5-VII-1966, leg. **K. M.** Guichard and P. M. Ward (Brit. **Mus.** coll.) .

World distribution: Originally North American, introduced to Europe.

Macrosiphum rosae (Linnaeus, 1758)

Gomez-Menor **(1963)** mentioned the species from Las Palmas, Gran Canaria, Agua Mansa and La Orotava, Tenerife, on ***Rosa*** sp.

World distribution: Holarctic and in mountains of Africa and Asia. Introduced to Australia, New Zealand and South America.

Macrosiphum sileneum Theobald, 1913

Gomez-Menor **(1963)** published the species from La Perdoma, Tenerife on ***Silene.***

World distribution: Europe.

Macrosiphum (Sirobion) avenae (Fabricius, 1775)

Gomez-Menor **(1963)** recorded the species from Teror, Gran Canaria, on ***Hordeum vulgare.***

World distribution: Originally European. Introduced to America and India (Himalaya).

Dactynotus picridis (Fabricius, 1775)

La Esperanza, Tenerife, no host given, 4-VII-1966, leg. K. M. Guichard and P. M. Ward (Brit. Mus. coll.).

World distribution: Europe.

Dactynotus sonchi (Linnaeus, **1767**)

Gomez-Menor (1963) recorded the species from Santa Brigida, Gran Canaria and La Perdoma, Tenerife on ***Sonchus oleraceus*** and ***Sonchus*** sp.

New locality: Valvarde (500 m.), Hierro, no host given, 26-VII-1966, leg. K. M. Guichard and P. M. Ward (Brit. Mus. coll.).

World distribution: Europe, Israel, Central

Asia. Introduced to South America, and recently to New Zealand and mountains of East Africa.

Dactynotus tanaceti (Linnaeus, 1758)

Gomez-Menor (1963) published the species from Agua Mansa, Tenerife on *Tanacetum* sp.

World distribution: Europe; intrcduced to India and the Sudan.

Macrosiphoniella sanborni (Gillette, 1908)

Gomez-Menor (1963) published the species from La Orotava, Tenerife on *Chrysanthemum* as *Pyrethromyztis s.*

World distribution: Originally from Japan and China, now spread all over the world on *Chrysanthemum.*

Macrosiphoniella tapuskae Hottes and Frison, 1931

San Andres, Tenerife, on *Chrysanthemiini frutescens* 4-IV-1968, leg. H. T.-L.

World distribution: Warmer parts of the palaearctic region. Introduced to America.

Eriosoma lanigerum (Hausmann, 1802)

Gomez-Menor (1963) found the species at Agua Mansa, Tenerife on *Malus communis.*

World distribiition: Now cosmopolitan, but probably originally from Eastern Asia, introduced to America and from America to Europe. Also introduced to Australia.

Geoica titriciilaria (Passerini, 1856) sensu Roberti, 1939

San Andres, Tenerife on roots of *Lamarckia aurea,* 4-IV-1968, leg. H. T.-L.

According to Zwölfer (1958) *Geoica utricularia* sensu Mordvilko differs from *titriciilaria* sensu Roberti. Zwölfer did not decide which of the two is the true *utricularia* Passerini, because Passerini described the species from *Pistacia,* the primary host, while Mordvilko and Roberti described aphids from secondary hosts.

The specimens from San Andres agree with Roberti's description (Roberti 1939) that the anal plate is covered quite densely with short hairs. while in the case of *utricularia* sensu Mordvilko the anal plate is covered by fewer hairs of uneven length.

World distribution: As far as is known *Geoica utricularia* (Passerini) sensu Roberti is only reported from Italy.

Discussion

The Canary Islands are situated at about 29° N, thus the climate is warm, although the location in the Atlantic Ocean results in cooler summers than usual at this latitude. There is little temperature variation over the year.

There is, however, considerable local climatic variation because of the high rnoiintains on some of the islands (the highest being Teide, on Tenerife, 3707 m.). The humid winds coming from the Ocean result in cloudy zones on the northern slopes of the mountains. The clouds seldom reach the southern slopes which consequently are arid. The coastal zones are also naturally arid, but in some places irrigated by means of water from the mountains and cultivated. Subtropical and even tropical plants may be grown.

In all, 47 species of aphids have been recorded from the Canary Islands. One of these (*Macrosiphum daphnidis*) should be deleted. The 46 species must be a fraction only of the number really occurring on the islands, but still a zoogeographical grouping of them rnay be justified. Eight species are of more or less uncertain identity. These are *Aphis fabae, A. frangulae, A. ilicis, A. parietaria, A. ruboriim, A. stachydis, Acyrthosiphon genistae* and *Aulacorthum pelargonii.* They are omitted in the following discussion.

Many of the remaining 38 species are either cosmopolitan or have a very wide distribution.

True cosmopolitans, i.e. those which may be found all over the world, are: *Rhopalosiphon maidis, Aphis gossypii, Myzus persicne, Aulacorthum solani* sensu latiore, *Macrosiphoniella sanborni* and *Eriosoma lanigerum.*

Cosrnotropic, i.e. species that may be found in tropical and/or subtropical countries all over the world, are: *Aphis nerii, Apliis spiraecola, Toxoptern aurantii* and *Pentalonia nigronervosa.*

Another group of aphids, connected with cultivated plants, is also widespread, although they are not cosmopolitan. They are: *Hyaloptertis pruni, Brachycaudus helichrysi, Aphis poni, Hyperomyzus lactucae, Chaetosiphon tetrarhodus, Acyrthosiphon pisum, Macrosiphum rosae, M. euphorbiae, M. (Sirobion) avenae, Dactynotus sonchi* and *D. tanaceti.* According to its distribution *Tuberolachnus salignus,* which lives on *Salix* spp., belongs to this group.

The remaining 13 species are European. The following six of them are found in most parts of Europe including the north: ***Chromaphis juglandicola, Aphis cytisorum, Appelia prunicola, Eulachnus bltrncki, Thuleaphis rumexicolens*** and ***Macrosiphoniella rapuskae.*** The last three species occur in North America as well. Two of the species seem to be more common in the warmer parts of Europe, namely ***Appelia prunicola*** and ***Macrosiphonielia rapuskae.***

Two species are found in Central and Southern Europe, but not in Scandinavia: ***Dactynotus picridis*** in Central and Southern Europe and ***Macrosiphum sileneum*** in England and Southern Europe.

Four species can be considered Mediterranean: ***Capitophorus inulae*** is found in the warmer parts of Europe and in Egypt, while ***Eucarazzia elegans*** and ***Eulachnus tuberculostemmata*** are typically Mediterranean. ***Geoica utricularia*** probably belongs to the same group.

Aphis gomphorocarpi is as far as known an endemic species for the Canary Islands and Madeira. Such distribution is well known both from the flora and the fauna of these islands. However, more material and a reexamination of the type specimens are desirable before a definite conclusion can be drawn.

A comparison of the known aphid fauna of the Canary Islands with that of Madeira and the Azores (Müller, 1965; Ilharco, 1968) shows that, apart from *A. gomphorocarpi,* they have only cosmopolitan species in common. A comparison with the known species from West Africa (Eastop, 1961) and Marocco (Mimeur, 1941, 1943) gives the same result.

A connection with the warmer parts of Europe and especially with the Mediterranean area seems to be the only relatively pronounced feature of the aphid fauna of the Canaries, as far as can be judged from the rather scanty knowledge of the fauna. It should be noted, however, that a relation to the Mediterranean fauna is also found in groups of insects that are much better known, such as Heteroptera and Cicadina (Lindberg, 1953). Lindberg found that 44.3 % of the species of these groups belong to the Mediterranean fauna. Evers (1966) in a general geographic discussion says that the fauna is "ausgesprochen mediterran".

The flora of the Canary Islands shows the same. More than half of the species of vascular plants belong to the Mediterranean flora, and of the strong element of endemic plants (37 %) about two thirds of the species have their nearest relatives in the Mediterranean area (Sunding, 1970).

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References

BÖRNER, C., 1940. Neue Blattläuse aus Mitteleuropa. (Selbstverlag) Naumburg [Saale). 1–4.

EASTOP, V. F., 1961. A study of the Aphididae (Homoptera) of West Africa. – British Museum (Natural History) London. 1–93.

EVERS, A. M. J., 1966. Probleme der geographischen Verbreitung und der Artbildung auf den atlantischen Inseln. – Dt. ent. Z. (N.F.) 13. Berlin. 299–305.

GOMEZ-MENOR ORTEGA, J., 1960. "Aphidoidea" de las Islas Canarias. I. – Annuario de Estudias Atlanticos. 1960, 6. Madrid. 237–316.

– 1963. "Aphidoidea" de las Islas Canarias II. – Ibid. 1963, 9. 519–605.

GOOT, P. VAN DER, 1912. Über einige wahrscheinlich neue Blattlausarten aus der Sammlung des Naturhistorischen Museums in Hamburg. – Mitt. Naturh. Mus. 29,2. Harnburg. 273-284.

ILHARCO, F. A., 1968. *Penralonia nigronervosa* Coc-querel na ilha da Madeira. – Bocagiana. 1968, 17. Funchal. 1–25.

LINDBERG, H., 1953. Hemiptera Insularum Canariensium. – Commentat. biol. 14,1. Helsingfors. 1–304.

MIMEUR, J. M., 1941. Aphididae et Chermesidae du Maroc. – Bull. Soc. Sa. Nat. Maroc. 21. 71-76.

– 1943. Aphididae de Maroc. – Ibid. 23, 121–123.

MÜLLER, F. P., 1965. Blattläuse (Homoptera, Aphidina) von den Azoren und von Madeira. Bolletin Museo Municipal. 19, 76. Funchal. 5-15.

OSSIANNILSSON, F., 1959. Contributions to the knowledge of Swedish aphids. I. - Kungl. Lantbr. Hogsk. ann. 25. Uppsala. 1–46.

ROBERTI, D., 1939. Contributi alla conoscenza degli d'italia. III. I Fordini. - Boll. Lab. ent. agr. 3. Portici. 34–104.

SHAPOSHNIKOV, G. KH., 1964. Aphidinea in: Keys to the Insects of USSR I. 489–616. (English translation, Jerusalem.)

SUNDING, P., 1970. Elements in the flora of the Canary Islands and theories on the origin of the fauna (in Norwegian). Blyttia 1970, 4. Oslo. 229–259.

ZWÖLFER, H., 1958. Zur Systematik, Biologie und Ökologie untenrdisch lebender Aphiden (Homoptera, Aphidoidea). - Z. angew. Ent. 42,2. Hamburg. 129–172.

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