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ENCYRTIDAE) OF CENTRAL AMERICA, THE WEST INDIES AND BERMUDA

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ABSTRACT

An annotated check-list of the species of Encyrtidae (Hymenoptera: Chalcidoidea) of Central America, the West Indies and Bermuda is presented for the first time. 117 genera and 338 identified species are recorded, although the check-list contains also information about species, determined only to the genus level. Information on encyrtids and scientific names are given according to the present state of taxonomic knowledge of this important family of entomophagous insects. This review also contains a host-parasitoid list, and notes on the state of knowledge and zoogeographical distribution of the encyrtid genera of the region, data on introductions of Encyrtidae into Central America, the West Indies and Bermuda, and recommends the introductions of certain species of encyrtids from this region into Mexico. List of reviewed literature contains 265 references.

Key Words: Hymenoptera, Encyrtidae, Central America, the West Indies, Bermuda, Mexico.

RESUMEN

Se presenta por primera vez una lista documentada de las especies de Encyrtidae (Hymenoptera: Chalcidoidea) de América Central, Indias Occidentales y Bermudas. Se registraron 117 géneros y 338 especies con identificación exacta aunque la lista contiene también información sobre especies, determinadas solo a nivel de género. La información sobre los encértidos de América Central, Indias Occidentales y Bermudas y de casi todos los nombres científicos se revisó de acuerdo con el nivel taxonómico actual del conocimiento de esta importante familia de insectos entomófagos. Esta revisión contiene también una lista de hospederos y sus parasitoides, notas sobre el estado del conocimiento y distribución zoogeográfica de los géneros de Encyrtidae de la región, datos sobre la introducción de encértidos hacia América Central, Indias Occidentales y Bermudas, y propuestas de introducción de algunas especies desde esta región a México. La lista de literatura usada contiene 265 citas.

Palabras Clave: Hymenoptera, Encyrtidae, América Central, Indias Occidentales, Bermudas, México.

PREFACE

In 1996, Trjapitzin & Ruíz published the “Annotated check-list of encyrtids (Hymenoptera: Chalcidoidea: Encyrtidae) of Mexico”, including the list of species known until that year for the Mexican Republic. As the insects do not recognize political borders and because it is necessary to know the species of Encyrtidae recorded for neighboring areas, we present this work.

Moreover, some encyrtids of Central America, the West Indies and Bermuda can be used in biological control programs in México and viceversa. These species also are relevant in countries of other geographical areas with the same crops and similar weather.

In this book, we include 117 genera and 338 species in the check-list. Also a host-parasitoid list and notes on the zoogeographical distribution of the encyrtids genera and on introductions for biocontrol purposes.

The authors are grateful to the late Dr. Gennady V. Gusev (All Union Institute of Plant Protection, St. Petersburg, Russia) and Dr. Gregory A. Evans (Entomology and Nematology Department, University of Florida, Gainesville, Florida, U.S.A) for sending literature, Dr. Evelina M. Danzig (Zoological Institute, Russian Academy of Sciences, St. Petersburg) and Dr. Yair Ben-Dov (Department of Plant Protection, Agricultural Research Organization, The Volcani Center, Bet Dagan, Israel) for consultations on Coccoidea. To Agr. Elisaveta Ya. Chouvakhina (Russian Entomological Society, St. Petersburg) and Dr. Dmitri

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Also to different departments of the “Universidad Autónoma de Tamaulipas”, specially the Research Center of the “UAM Agronomía y Ciencias”.

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CHAPTER 1

INTRODUCTION

The family Encyrtidae is one of the largest in the superfamily Chalcidoidea. According to unpublished data of the senior author, on 1st August 1999, 3,607 species belonging to 461 genera have been described in the world fauna. The encyrtid fauna of the Palaearctic has been studied more thoroughly than Nearctic fauna: in the Palaearctic, 1,381 species in 222 genera, whereas only 433 species in 171 genera are known in the Nearctic. Keys to the species of the Encyrtidae of the Palaearctic Region were published by Trjapitzin (1989a), and a key to the Nearctic genera by Noyes *et al.* (1997). For the Neotropical Region there is the monograph on the Encyrtidae of Argentina, with identification keys and descriptions of 88 species in 64 genera (De Santis, 1964), an important review and a key to the genera of Neotropical encyrtids (Noyes, 1980), and a series of catalogues of Neotropical Encyrtidae (De Santis, 1979, 1981, 1989; De Santis & Fidalgo, 1994). In Mexico, a review of the encyrtids of Nuevo León was published by Rodríguez Pérez & Reyes Villanueva (1990) and an annotated check-list of Encyrtidae species known from México by Trjapitzin & Ruíz Cancino (1996), comprising 85 genera and 79 species. In the end of 2000, according to published data, 112 species of Encyrtidae and 95 genera are known in Mexico. Important

works on the encyrtid fauna of Costa Rica were published by Noyes & Ren (1995), Noyes & Hanson (1996) and Noyes (2000).

In Central America, the West Indies (including Trinidad and Tobago) and Bermuda, are known 338 species and 117 genera of Encyrtidae. Our check-list contains also information about unidentified species. The following 21 species did not acclimatize in the region, or data on their establishment are not conclusive, or doubt exists concerning their correct identification: *Adelencyrtus odonaspidis* Fullaway, *Anagyrus pseudococci* (Girault), *Blepyrus saccharicola* Gahan, *Brethesiella abnormicornis* (Girault), *Comperiella bifasciata* Howard, *Copidosoma truncatellum* (Dalman), *Copidosoma* sp: (*truncatellum* group), *Epitetracnemus intersectus* (Fonscolombe), *Metaphycus angustifrons* Compere, *M. lichtensiae* (Howard), *M. lounsburyi* (Howard), *M. luteolus* (Timberlake), *Ooencyrtus johnsoni* (Howard), *Prochiloneurus io* (Girault), *P. rex* (Girault), *Pseudaphycus angelicus* (Howard), *P. perdignus* Compere et Zinna, *Pseudectroma europaeum* (Mercet), *Pseudococcobius terryi* Timberlake, *Trichomasthus mexicanus* (Girault) and *Xenoencyrtus niger* Riek.

Encyrtids are parasitoids of several different orders of insects, more often species of scale insects (Homoptera: Coccoidea) and ixodid ticks. The role of encyrtids in the natural control of insect pests is considerable, and many species have been utilized as classical biological control and integrated pest management agents.

One of the more effective projects of classical biological control was developed in Africa, against the mealybug *Phenacoccus manihoti* Matile-Ferrero (Homoptera: Pseudococcidae), a very serious pest of cassava, *Manihot esculenta*. The encyrtid parasitoid *Anagyrus lopezi* (De Santis), was introduced in 1981 from

South America and by 1990 was established in 25 African countries, covering an area of 2.7 million km². The cost-benefit ratio of the project has been estimated to be 1:149 (Bellotti, 1999). The use of encyrtids in classical biological control and integrated pest management is especially well developed in USA, the West Indies and some countries of the Mediterranean Region (Israel, Italy, France), mostly on citrus and other subtropical and tropical cultivated plants.

In some islands of the West Indies, such introduced encyrtid species as *Adelencyrtus moderatus* (Howard), *Ageniaspis citricola* Logvinovskaya, *Anagyrus kamali* Moursi, *A. saccharicola* Timberlake, *Gyranusoidea indica* Shafee, Alam et Agarwal and *Pseudaphycus utilis* Timberlake, in Bermuda *Microterys kotinskyi* (Fullaway) and *Neodusmetia sangwani* (Subba Rao) provide economic control. Fewer successes are reported from countries of Central America. Here, it is necessary to note the successful introduction of *Ageniaspis citricola* into Honduras and *Anagyrus kamali* and *Gyranusoidea indica* into Belize. Important projects in the West Indies are connected with such crops as citrus, papaya and sugarcane.

Many species of Encyrtidae arrived in Central America, the West Indies and Bermuda by ecesis, i.e. with their hosts. These include *Anicetus annulatus* Timberlake (Honduras, Haiti, Dominican Republic, Trinidad, Bermuda), *Diversinervus elegans* Silvestri (Cuba), *Encyrtus aurantii* (Geoffroy) (Jamaica, Grenada, Bermuda), *Metaphycus helvolus* (Compere) (Honduras, Cuba), *M. stanleyi* Compere (Honduras), and *Neodusmetia sangwani* (Subba Rao) (Honduras, Costa Rica, Jamaica, Cayman Islands, Puerto Rico).

In view of the importance of the Encyrtidae in the region, the authors have prepared an annotated check-list. We hope that it will be useful to plant protection specialists, who need more information than found in generalized

catalogues. Also, the currently accepted names of encyrtids and their hosts are given by us in their modern concept. Full bibliographical data (266 references) are given in the list of the literature cited.

The discussion of the check-list includes a review of the state of knowledge of the Encyrtidae of Central America, the West Indies and Bermuda, the host-parasitoid index, notes on state of knowledge of encyrtids of the region, a review of successful cases of introduction of encyrtids into the region, and suggestions for the introduction of encyrtids from Central America, the West Indies and Bermuda into Mexico.

In the figures 1 and 2 are shown the map of the region and other of the Caribbean islands.

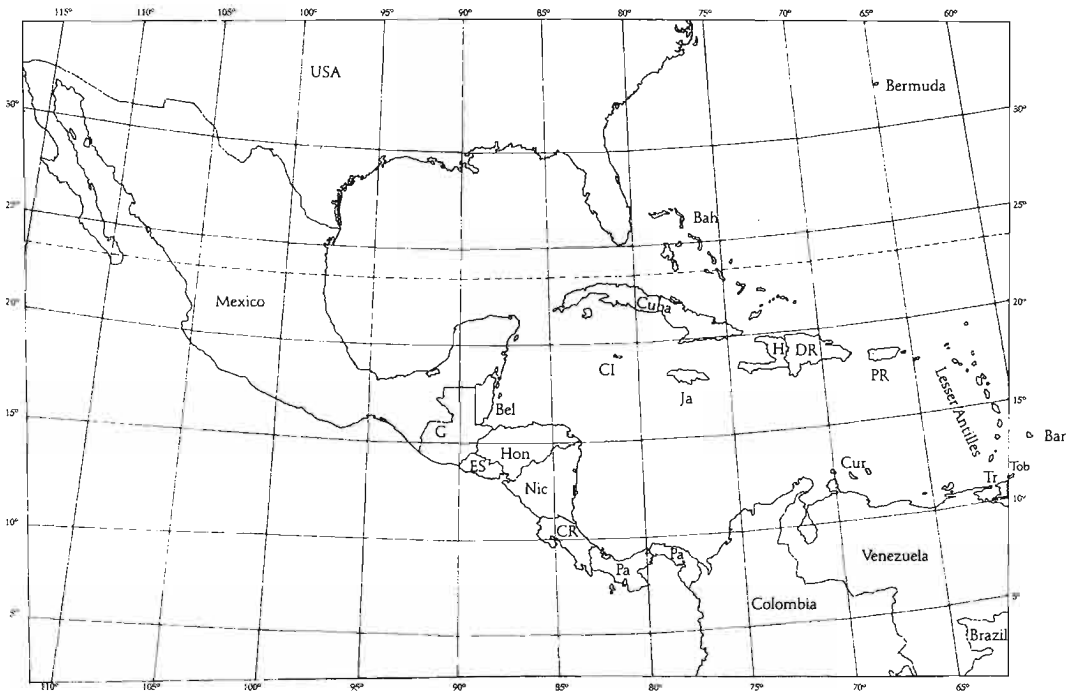


Figure 1. Map of the region. Bah - Bahamas, Bar - Barbados, Bel - Belize, CI - Cayman Islands, CR - Costa Rica, Cur - Curacao, DR - Dominican Republic, ES - El Salvador, G - Guatemala, H - Haiti, Hon - Honduras, Ja - Jamaica, Nic - Nicaragua, Pa - Panama, PR - Puerto Rico, Tob - Tobago, Tr - Trinidad.

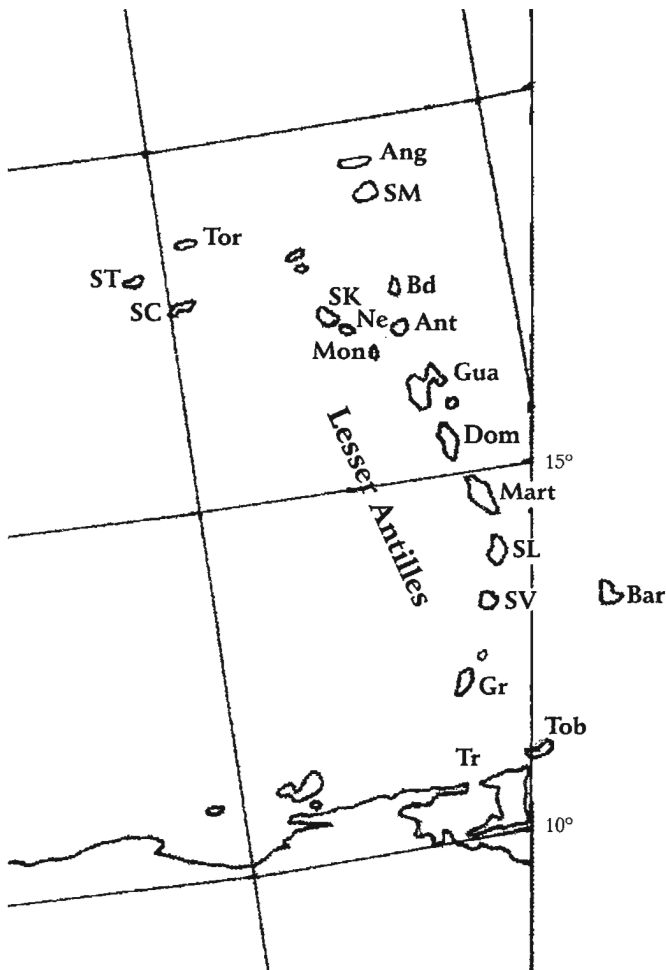


Figure 2. Map of the Caribbean islands. Ang - Anguilla, Ant - Antigua, Bar - Barbados, Bd - Barbuda, Dom - Dominica, Gr - Grenada, Gua - Guadeloupe, Mart - Martinique, Mon - Montserrat, Ne - Nevis, SC - St. Croix, SK - St. Kitts, SL - St. Lucia, SM - St. Martin, ST - St. Thomas, - SV - St. Vincent, Tob - Tobago, Tor - Tortola, Tr - Trinidad.

CHAPTER 2

CHECK-LIST OF ENCYRTIDAE

I. *Acerophagoides*

1. *Acerophagoides almon* Noyes, 2000.

Noyes, 2000: 167-168 (Costa Rica, St. Vincent, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 54 (the same).

2. *A. cypris* Noyes, 2000.

Noyes, 2000: 166-167 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 54 (the same).

3. *A. pycnos* Noyes, 2000.

Noyes, 2000: 164-165 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 54 (the same).

4. *A. triangularis* Blanchard, 1940.

Noyes, 1998b (Trinidad).

5. *A. varro* Noyes, 2000.

Noyes, 2000: 163-164 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 54 (the same).

- *Acerophagoides* sp.

Noyes, 1980: 169 (Trinidad). Probably it is *A. almon* Noyes, 2000.

II. *Acerophagus*

6. *Acerophagus flavus* Rosen, 1969.

Rosen, 1969: 59-61 (Jamaica, *ex* Pseudococcidae on *Acalypha*); De Santis, 1979: 211 (Jamaica, *ex* Pseudococcidae); Noyes, 1998b (Jamaica); Trjapitzin & Ruíz Cancino, 2002: 55 (Jamaica, *ex* Pseudococcidae on *Acalypha*).

7. *A. luteolus* Rosen, 1969.

Rosen, 1969: 53-55 [Trinidad, *ex Ferrisia virgata* Cockerell (Hom.: Pseudococcidae)]; De Santis, 1979: 211 (Trinidad, *ex F. virgata*); Noyes, 1998b (Trinidad); Trjapitzin & Ruíz Cancino, 2002: 55 (the same).

8. *A. nubilipennis* Dozier, 1926.

Dozier, 1926: 101-102 [Puerto Rico, *ex Planococcus citri* Risso and *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae)]; 1927: 267 (Puerto Rico); Fennah, 1947: 6,7 (West Indies, *ex P. citri*; Greater Antilles, *ex P. longispinus*); Wolcott, 1952: 792 (Puerto Rico); Rosen, 1969: 67 (Puerto Rico); De Santis, 1979: 211 (Puerto Rico, *ex Planococcus citri* and *Pseudococcus longispinus*); CIBC, 1979:

52 [Trinidad, ex *Phenacoccus madeirensis* Green (Hom.: Pseudococcidae) on *Acalypha*]; De Santis, 1981: 13 (Trinidad); 1989: 10 (Dominican Republic; Lesser Antilles); Noyes, 1998b (Dominican Republic, Puerto Rico, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 55 (Puerto Rico ex *P. longispinus* and *P. citri*).

9. *A. pallidus* Timberlake, 1918.

Simmonds, 1957: 9 [successful introduction in 1951 from California into Bermuda for control of *Phenacoccus madeirensis* Green [= *P. gossypii* Townsend et Cockerell (Hom.: Pseudococcidae)]; Bennett & Hughes, 1959: 430 (the same; recovered in 1956 in one area); Bartlett, 1978c: 159 (the same; established); Cock, 1985: 141 (Bermuda, ex *P. madeirensis*); De Santis, 1989: 40 (the same); Hilburn *et al.*, 1990: 166 (introduced in 1951 from California into Bermuda for control of *P. madeirensis*; recovered in 1956 in one area); Stiling, 1993: 32 (not established in Bermuda); Noyes & Hayat, 1994: 410 (introduced in 1951 into Bermuda against *P. madeirensis* partial control of the pest); Noyes, 1998b (Bermuda); Trjapitzin & Ruíz Cancino, 2002: 55 (introduced from Hawaii into Bermuda against *P. madeirensis*; established).

- *Acerophagus* spp.

Bennett & Alam, 1985: 62 [Barbados, ex *Planococcus citri* Risso, *Ferrisia virgata* Cockerell and *Phenacoccus gossypii* Townsend et Cockerell (Hom.: Pseudococcidae)]; Kairo *et al.*, 2000: 28 N (reared in Mexico from *Paracoccus marginatus* Williams et Granara de Willink; introduced into St. Thomas, US Virgin Islands, where is in culture); Villanueva Jiménez *et al.*, 2001: 154-155 (Dominican Republic & Puerto Rico; ex *P. marginatus*).

III. *Adelencyrtus*

10. *Adelencyrtus chionaspidis* (Howard, 1896).

Noyes, 1998b (St. Kitts - Nevis).

11. *A. moderatus* (Howard, 1897).

Howard, 1897:152 (Grenada – as *Encyrtus*); Ashmead, 1900: 398 (Grenada – as *Syrphophagus*); Fennah, 1947:60,61 [St. Kitts, *ex Aspidiella hartii* Cockerell (Hom.: Diaspididae)- as *Adelencyrtus chionaspidis* (Howard)]; De Santis, 1979:227 (Trinidad, *ex Saccharicoccus sacchari* Cockerell– as *Adelencyrtus miyarai* Tachikawa); Noyes, 1979:144-145 (St. Vincent, Grenada, Tobago, Trinidad); De Santis, 1981: 15 (St. Vincent, Tobago); Bennett & Alam, 1985: 62 (introduced from Trinidad into Barbados against *A. hartii*; already was present in Barbados); Cock, 1985: 25 [introduction in 1972 from Trinidad into Barbados for control of the yam scale *A. hartii*– as *Adelencyrtus chionaspidis* (Howard)]; De Santis, 1989: 41 (St. Kitts – as *A. chionaspidis*); Trjapitzin, 1989a: 291 (St. Vincent, Grenada, Tobago, Trinidad); Alam, 1985: 238-244 [Barbados, *ex A. hartii* on yam (local population); the same parasitoid (possibly a different strain) was introduced into Barbados from Trinidad, established and highly effective economically]; Alam *et al.*, 1991:57 [Barbados, *ex A. hartii* on yam (local population); the same parasitoid (possibly a different strain) was introduced into Barbados from Trinidad, established and highly effective economically]; De Santis & Fidalgo, 1994: 56 (Trinidad); Noyes & Hayat, 1994: 404 (introduction in 1972 into Barbados against *A. hartii* – as *Adelencyrtus chionaspidis*); Noyes, 1998b (Grenada, St. Vincent, Trinidad); Woodruff *et al.*,

1998: 118 (Grenada, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 58 (St. Vincent, St. Kitts, Grenada, Barbados, Tobago, Trinidad).

12. *A. odonaspidis* Fullaway, 1913.

De Santis, 1981: 15 (Trinidad; probably, erroneous record); Cock, 1985: 134 [introduced in 1971 from Hawaii into Bermuda against *Odonaspis ruthae* Kotinsky (Hom.: Dispididae); not established]; Trjapitzin, 1989a: 291 (Trinidad; probably, erroneous record); De Santis & Fidalgo, 1994: 56 (Bermuda); Noyes & Hayat, 1994: 406 (introduced in 1971 into Bermuda against *O. ruthae*; not established); Noyes, 1998b (Bermuda, Trinidad).

- *Adelencyrtus* sp.

Noyes, 1998b (Barbados).

IV. *Aenasius*

13. *Aenasius advena* Compere, 1937.

Compere, 1937:393-394 [Panama, *ex Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) – as *A. ianthinus* Compere]; Bennett, 1957:569 (Trinidad, *ex F. virgata* on *Theobroma cacao*, *Cocos nucifera*, *Gliricidia sepium*, *Psidium guajava* and *Coccoloba uvifera*); Kerrich, 1967:207-208 (Panama; Puerto Rico, *ex Pseudococcidae*; St. Thomas, *ex F. virgata*; Trinidad, *ex F. virgata* on cacao and coconut, and *ex Ferrisia* sp. on *Gliricidia*); De Santis, 1979:200 (Panama, Puerto Rico, St. Thomas, Trinidad); Noyes & Ren, 1995:127-128 (Costa Rica, Panama; Trinidad, *ex Ferrisia* sp.); Noyes, 1998b (Panama, Puerto Rico, Trinidad, Virgin Islands); Noyes, 2000:

177-178 (Costa Rica, Panama, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 60-61 (Costa Rica, Panama, Puerto Rico, St. Thomas, Trinidad).

14. *A. bolowi* Mercet, 1947.

Mercet, 1947:446-447 (Costa Rica); Kerrich, 1967:196-197 (Guatemala, Panama – as *A. similis* Kerrich); De Santis, 1979:200 (Costa Rica), 202 (Guatemala, Panama – as *A. similis*); Noyes & Ren, 1995:133-135 (Guatemala, Belize, Costa Rica, Panama, Grenada, Trinidad); Noyes, 1998b (Costa Rica, Guatemala, Panama); Noyes, 2000: 185-186 (Guatemala, Belize, Costa Rica, Panama, Grenada, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 61 (the same).

15. *A. caeruleus* Brues, 1910.

Kerrich, 1967: 198-200 [Trinidad, *ex Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) on cacao and *ex Ferrisia* sp. on *Gliricidia* sp. – as *A. personatus* Kerrich], 200 (Panama, Puerto Rico); De Santis, 1979: 201 (Panama, Puerto Rico), 202 (Trinidad, *ex F. virgata*); Noyes & Ren, 1995: 135-136 (Belize, Costa Rica, Panama, Puerto Rico; Trinidad, *ex F. virgata* and *Ferrisia* sp.); Noyes, 1998b (Panama, Puerto Rico, Trinidad); Noyes, 2000: 186-187 (Belize, Costa Rica, Panama, Puerto Rico, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 61 (the same).

16. *A. cirrha* Noyes et Ren, 1995.

Noyes & Ren, 1995:129 (Costa Rica); Noyes, 1998b (the same); Noyes, 2000: 181-182 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 61 (the same).

17. *A. dives* Noyes et Ren, 1995.

Noyes & Ren, 1995:123-124 (Costa Rica); Noyes, 1998b (the same); Noyes, 2000: 174-175 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 61 (the same).

18. *A. flandersi* Kerrich, 1967.

Bennett, 1957:569-571 [Trinidad, *ex Phenacoccus gossypii* Townsend et Cockerell (Hom.: Pseudococcidae) - as *A. phenacocci* Bennett non Ashmead]; Kerrich, 1967: 203-204 (St. Vincent; Trinidad, *ex P. gossypii* and *Phenacoccus* sp. nr. *parvus* Morrison - as *A. phenacocci* Bennett); CIBC, 1978: 55 (Trinidad, *ex Ph. madeirensis* Green on *Lantana camara* and *Acalypha macrostachya* - as *A. phenacocci* Bennett); Noyes & Ren 1995: 125-127 [Costa Rica; Cayman Islands, *ex Ferrisia virgata* Cockerell on *Sida*; St. Vincent; Trinidad, *ex P. gossypii* on *Hibiscus*, *Acalypha* sp. and *Lantana montividentis* and also *ex P. madeirensis* Green on *Cordia curassavica*, and in laboratory culture of this mealybug - as *A. phenacocci* Bennett]; Noyes, 2000: 176-177 (Costa Rica; Cayman Islands; St. Vincent; Trinidad, *ex P. gossypii* on *Acalypha*); Trjapitzin & Ruíz Cancino, 2000a: 57 [Costa Rica; Cayman Islands, *ex F. virgata* on *Sida* sp.; Trinidad, *ex P. gossypii* (probably, an incorrect identification of *Ph. madeirensis*) on *Hibiscus* sp., *Acalypha* sp. and *Lantana montividentis*; *ex P. madeirensis* on *Cordia curassavica* and *Tussaca* sp.]; Trjapitzin & Ruíz Cancino, 2002: 61 (Costa Rica, Cayman Islands, St. Vincent, Trinidad).

19. *A. frontalis* Compere, 1937.

Compere, 1937: 392 (Panama); Bennett, 1957: 569 [Trinidad, *ex Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) on *Theobroma cacao* and *Cocos nucifera*]; Kerrich, 1967:200 (Panama; Trinidad, *ex F. virgata*); De Santis, 1979:201 (Panama,

Trinidad); Noyes & Ren, 1995: 133 (Costa Rica, Panama; Trinidad, *ex F. virgata* on cacao); Noyes, 1998b (Panama, Trinidad); Noyes, 2000: 184-185 (Costa Rica, Panama, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 61 (the same).

20. *A. hyettus* (Walker, 1846).

Walker, 1846: 181 (St. Vincent – as *Encyrtus*); Howard, 1894: 89 (St. Vincent – as *Encyrtus*); 1897: 146 (Grenada – as *Encyrtus*); Compere, 1937: 395-397 (Panama, Grenada); Bennett, 1957: 569 [Trinidad, *ex Ferrisia virgata* Cockerell (Hom: Pseudococcidae) on *Theobroma cacao*, *Cocos nucifera*, *Gliricidia sepium*, *Psidium guajava*, *Coccoloba uvifera* and *Acalypha hispida*]; Kerrich, 1967: 195-196 (St. Vincent, Grenada); De Santis, 1979: 201 (Panama, St. Vincent, Grenada, Trinidad); Noyes, 1998b (Grenada, Panama, St. Vincent, Trinidad); Woodruff *et al.*, 1998: 118 (Panama, St. Vincent, Grenada, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 61 (the same).

21. *A. insularis* Compere, 1937.

Noyes & Ren, 1995: 130 (Costa Rica, Trinidad); Noyes, 2000: 182-183 (Costa Rica, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 61 (Costa Rica, Puerto Rico, Trinidad).

22. *A. kerrichi* Noyes *et Ren*, 1995.

Noyes & Ren, 1995: 130-131 (Costa Rica); Noyes, 1998b (the same); Noyes, 2000: 178-179 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 62 (the same).

23. *A. lepelleyi* (Kerrich, 1953).

Noyes, 1998b (Trinidad).

24. *A. longiscapus* Compere, 1937.

Kerrich, 1967: 213-214 [Trinidad, *ex Ferrisia* sp. (Hom.: Pseudococcidae) on *Gliricidia* sp.], 214 (Puerto Rico – as *A. vadosus* Kerrich), 215 [Trinidad, *ex Dysmicoccus brevipes* Cockerell (Hom.: Pseudococcidae) on cacao – as *A. acuminatus* Kerrich]; De Santis, 1979: 200 (Trinidad, *ex D. brevipes* as - *A. acuminatus*), 201 (Trinidad, *ex Ferrisia* sp.), 202 (Puerto Rico – as *A. vadosus*); Noyes & Ren, 1995: 139-140 (Costa Rica, Puerto Rico; Trinidad, *ex D. brevipes* on cacao); Noyes, 1998b (Puerto Rico, Trinidad); Noyes, 2000: 191-192 (Costa Rica, Puerto Rico, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 62 (the same).

25. *A. lua* Noyes et Ren, 1995.

Noyes & Ren, 1995: 128-129 (Costa Rica); Noyes, 1998b (the same); Noyes, 2000: 178 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 62 (the same).

26. *A. lucidus* (Kerrich, 1967).

Kerrich, 1967: 191 [Cuba, *ex Phenacoccus solani* Ferris (Hom.: Pseudococcidae) – as *Chalcaspis*]; Alayo Dalmau & Hernández, 1978: 59 (Cuba – as *Chalcaspis*); De Santis, 1979: 203 (Cuba – as *Chalcaspis*); Noyes, 1980: 184 (Cuba – as *Chalcaspis*); Trjapitzin & Sitdikov, 1993: 168 (Cuba, *ex P. solani* - as *Ch. lucida*); Noyes, 1998b (Cuba); Trjapitzin & Ruíz Cancino, 2002: 62 (Cuba, *ex P. solani*).

27. *A. maplei* Compere, 1937.

De Santis & Fidalgo, 1994: 49 (Costa Rica). Not included in the review of species of Costa Rican *Aenasius* by Noyes & Ren (1995); Noyes, 1998b (Costa Rica).

28. *A. mitchellae* Noyes et Ren, 1995.

Noyes & Ren, 1995: 138-139 (Costa Rica); Noyes, 1998b (Costa Rica); Noyes, 2000: 190-191 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 62 (the same).

29. *A. paulistus* Compere, 1937.

Noyes & Ren, 1995: 132-133 (Costa Rica); Noyes, 2000: 183-184 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 62 (the same).

30. *A. pelops* Noyes et Ren, 1995.

Noyes & Ren, 1995: 131-132 (Costa Rica); Noyes, 1998b (Costa Rica); 2000: 183 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 62 (the same).

31. *A. philo* Noyes, 2000.

Noyes, 2000: 189-190 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 62 (the same).

32. *A. quezadai* Noyes, 2000.

Noyes, 2000: 180-181 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 62 (the same).

33. *A. regularis* Kerrich, 1967.

Kerrich, 1967: 201 [El Salvador; Trinidad, *ex Ferrisia virgata* (Cockerell) (Hom.: Pseudococcidae) on cacao and *Ferrisia* sp. on guava and *Gliricidia* sp.]; De Santis, 1979: 202 (El Salvador, Trinidad); Noyes, 1998b (El Salvador, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 62 (El Salvador; Trinidad, *ex F. virgata* on cacao).

34. *A. tachigaliae* (Brues, 1922).

Kerrich, 1953: 726 [Trinidad, *ex Dysmicoccus brevipes* (Cockerell) (Hom.: Pseudococcidae) on cacao - as *A. theobromae* Kerrich]; Bennett, 1957: 569 [Trinidad, *ex D. brevipes* on cacao - as *A. cariocus* Compere and *A. theobromae*]; Kerrich, 1967: 216-218 [Panama - as *A. brasiliensis* (Mercet, 1926); Trinidad, *ex D. brevipes* - as *A. cariocus*]; De Santis, 1979: 201 [Panama, Trinidad; as *A. brasiliensis*; 202 - as *A. tachigaliae* (in Panama)]; Noyes & Ren, 1995: 136-138 [Costa Rica: 1) *ex Catanococcus* sp. in stems of *Cecropia insignis* inhabited by the ant *Azteca xanthochroa* Roger - as *A. brasiliensis*; 2) *ex Pseudococcus* sp. nr. *neobrevipes* Beardsley in domatium of *Cordia alliodora*, nest of the ant *Crematogaster curvispinosa* Mayr; Panama; Trinidad; as *A. brasiliensis*]; Noyes, 1998b (Panama); 2000: 187-189 (Costa Rica, *ex D. brevipes* in nests of ants *Crematogaster* sp. and *Paratrechina* sp. on *Cordia allidora*; Trinidad, *ex D. brevipes* on cacao); Trjapitzin & Ruíz Cancino, 2002: 63 (Costa Rica, Panama, Trinidad).

35. *A. vexans* Kerrich, 1967.

Noyes & Ren, 1995: 124-125 [Costa Rica, Tobago; Trinidad, *ex "Phenacoccus hibisci* Hall." [(according to Ben – Dov, 1994 – *nomen nudum*) (Hom.: Pseudococcidae)] on *Hibiscus* sp., Pseudococcidae on *Lantana montividentis* and

Phenacoccus sp. on tomato]; Noyes, 2000: 175-176 (Costa Rica, Trinidad, Tobago); Trjapitzin & Ruíz Cancino, 2002: 63 (the same).

36. *A. zeuxis* Noyes, 2000.

Noyes, 2000: 179-180 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 63 (the same).

- *Aenasius* spp.

Fullaway, 1952: 99 (an attempt of introduction from Panama into Hawaiian Islands against pineapple mealybug in 1931); Bennett, 1957: 571 [Trinidad, *ex* "*Macrocephalicoccus loranthi* Morrison" (Hom.: Pseudococcidae) (according to Ben – Dov, 1994 – *nomen nudum*)]; Noyes, 1998b (Trinidad).

- *Aenasius* spp. A.- T (20 machos).

Noyes & Ren, 1995: 140-144 (Costa Rica).

V. *Aeptencyrtus*

37. *Aeptencyrtus bruchi* (De Santis, 1957).

Noyes, 1980: 171 (St. Vincent, Trinidad); 1998b (St. Vincent, Trinidad); Trjapitzin, 1999: 147-149 (Cuba, St. Vincent, Trinidad); Trjapitzin & Beardsley, 1999: 35-36 (Cuba, St. Vincent, Trinidad).

VI. *Ageniaspis*

38. *Ageniaspis citricola* Logvinovskaya, 1983.

Castro *et al.*, 1996: 77 [successful introduction from Florida into Honduras against the citrus leafminer *Phyllocnistis citrella* Stainton (Lep.: Phyllocnistidae) on grapefruit]; Cave, 1996: 78 (the same); Hoy *et al.*, 1996: 16-18 (introduction from Florida into Bahamas against *P. citrella* and acclimatization with strong economic effect); Hoy & Nguyen, 1997: 9 (the same), 9-10 (successful introduction from Florida into Honduras against *P. citrella*).

- *Ageniaspis* sp.

Wolcott, 1952: 794 (Puerto Rico); Noyes, 1998b (Puerto Rico).

- *Ageniaspis* sp. (= *Holcothorax* sp.).

Bennett & Alam, 1985: 62 [Barbados, *ex* larvae of *Ectomyelois decolor* Zeller (Lep.: Phycitidae)].

VII. *Alamella*

39. *Alamella oxynthes* Noyes, 2000.

Noyes, 2000: 27-28 (Costa Rica).

VIII. *Aloencyrtus*

- *Aloencyrtus* sp.n.

Trjapitzin & Ruíz Cancino, 2001a: 105 (Honduras).

IX. *Amasyxia*

40. *Amasyxia infelix* Noyes, 2000.

Noyes, 2000: 219-220 (Costa Rica).

X. *Ameromyzobia*

41. *Ameromyzobia aphelinoides* Girault, 1916.

Girault, 1916: 233 (St. Vincent), De Santis, 1979: 189 (St. Vincent); Noyes, 1980: 172 [St. Vincent; Trinidad, *ex Odonaspis* sp. (Hom.: Diaspididae)]; 1998b (St. Vincent, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 65 (the same).

42. *A. bulyginskayae* Trjapitzin, 1971.

Trjapitzin, 1971: 289-291 (Cuba); Trjapitzin & Sitdikov, 1993: 167 (Cuba); Noyes, 1998b (Cuba); Trjapitzin & Ruíz Cancino, 2002: 65 (Cuba).

XI. *Ammonoencyrtus*

- *Ammonoencyrtus* sp.

Noyes, 1980: 172 (Trinidad).

XII. *Anagyrus*

43. *A. abatos* Noyes et Menezes, 2000.

Noyes, 2000: 79-80 (Costa Rica).

44. *A. aega* Noyes, 2000.

Noyes, 2000: 91-93 (Costa Rica).

45. *A. ananatis* Gahan, 1949.

Frank & Bennett, 1970: 10 (Jamaica, ex *Dysmicoccus boninsis* Kuwana (Hom.: Pseudococcidae); De Santis, 1979 (Jamaica, Haiti, Puerto Rico); Noyes, 1998b (Haiti, Jamaica, Puerto Rico); 2000: 103-104 [Costa Rica, Jamaica, Haiti; Puerto Rico, ex *D. brevipes* Cockerell (introduced)].

46. *A. aper*

Noyes et Menezes, 2000: 76-78 (Costa Rica).

47. *A. bermudensis* (Kerrich, 1982).

Simmonds, 1957: 9 [Bermuda, ex *Phenacoccus madeirensis* Green (Hom.: Pseudococcidae) – as *Apoanagyrus* sp.]; Kerrich, 1982: 912 (Jamaica; Bermuda, ex *Ph. madeirensis* – as *Apoanagyrus*); De Santis, 1989: 31 (the same); Milburn et al., 1990: 167 (Bermuda – as *Epidinocarsis*); Trjapitzin & Ruíz Cancino, 2000a: 68 [Bermuda, ex *P. gossypii* Townsend et Cockerell (probably, an incorrect identification of *P. madeirensis*) on *Acalypha* sp.); Jamaica - as *Apoanagyrus*].

48. *A. californicus* (Compere, 1947).

Noyes, 2000: 66 (Costa Rica).

49. *A. calyxtoi* Noyes, 2000.

Noyes, 2000: 104-106 (Costa Rica).

50. *A. cepio* Noyes, 2000.

Noyes, 2000: 82-84 (Costa Rica).

51. *A. cercides* Noyes et Menezes, 2000.

Noyes, 2000: 73-74 (Costa Rica).

52. *A. cilla* Noyes et Menezes, 2000.

Noyes, 2000: 97-98 (Costa Rica).

53. *A. coccidivorus* Dozier, 1932.

Dozier, 1932: 7-9 [Haiti, *ex Ferrisia virgata* Cockerell (Hom. Pseudococcidae)];
Noyes, 1998b (Dominican Republic, Haiti, Puerto Rico).

54. *A. cristinae* Noyes et Menezes, 2000.

Noyes, 2000: 44-45 (Costa Rica).

55. *A. dactylopii* (Howard, 1898).

Noyes, 1998b (Barbados); Blumberg & Van Driesche, 2001: 192 (West Indies).

56. *A. diversicornis* (Howard, 1984).

Howard, 1894: 92 (St. Vincent – as *Copidosoma*); Ashmead, 1900: 364 (St. Vincent – as *Litomastix*; Noyes, 1979: 148 (St. Vincent, Tobago, Trinidad; as *Apoanagyrus*); Bennett & Alam, 1985: 62 (Barbados, ex *Phenacoccus gossypii* Townsend et Cockerell – as *Apoanagyrus*); De Santis, 1989: 31-32 (Dominica – as *Epidinocarsis*); Noyes, 2000: 70-72 (Costa Rica; Guadeloupe, ex *Phenacoccus* sp. on cassava; Dominica, ex Pseudococcidae; St. Vincent, ex Pseudococcidae; Barbados, ex *P. gossypii*; Trinidad, ex *Phenacoccus* sp. and Pseudococcidae on *Lantana montividenis*; Tobago; the uniparental form was recorded from *P. herreni* Williams et Cox in the Caribbean); Trjapitzin & Ruíz Cancino, 2000a:71-72 [St. Vincent, ex Pseudococcidae; Dominica, ex Pseudococcidae; Barbados, ex *Ph. gossypii* (probably, an incorrect identification of *P. madeirensis* Green); Tobago; Trinidad - as *Apoanagyrus*].

57. *A. dozieri* Tachikawa, 1956.

Dozier, 1937: 122 (Puerto Rico – as *A. similis* Dozier); Wolcott, 1952: 790 (Puerto Rico – as *A. similis*); Tachikawa, 1956: 148 (Puerto Rico); De Santis, 1979: 186 (Puerto Rico); Noyes, 2000: 61-62 (Costa Rica, Puerto Rico).

58. *A. elpis* Noyes, 2000.

Noyes, 2000: 53-54 (Costa Rica).

59. *A. eudora* Noyes, 2000.

Noyes, 2000: 98-99 (Costa Rica).

60. *A. euroto* Noyes, 2000.

Noyes, 2000: 88-89 (Costa Rica).

61. *A. fusciventris* Girault, 1915.

Simmonds, 1957: 10 [introduction into Bermuda against *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae); established]; Bennett & Hughes, 1959: 430 (introduced in 1951-1953 from California into Bermuda against *P. longispinus* on *Cycas revoluta*, *Nerium oleander* and *Pittosporum*; acclimatized and effective); Burks, 1967a: 236 (West Indies); Beardsley, 1976: 199 (West Indies); Bartlett, 1978c: 165 (introduced from California into Bermuda against *P. longispinus*; established); De Santis, 1979: 186 (Antilles, *ex P. longispinus*); Cock, 1985: 124-125 [Bermuda, introduced from Australia (via California) in 1951-1953 and in 1955 via Hawaii, heavily attacks *P. longispinus*]; De Santis, 1989: 30-31 (Bermuda, *ex P. longispinus*); Hilburn *et al.*, 1990: 166 (imported from Australia via California into Bermuda against *P. longispinus*); Noyes & Hayat, 1994: 121-122 (Costa Rica; Puerto Rico, *ex P. longispinus*; Trinidad, *ex P. longispinus*; Bermuda), 419 (introduced in 1951-1953 and 1955 into Bermuda against *P. longispinus*; partial control of the pest); Noyes, 2000: 80-82 [Costa Rica (introduced); Puerto Rico (introduced), *ex Pseudococcus longispinus* Targioni-Tozzetti on citrus; Trinidad (introduced), *ex P. longispinus*; Bermuda [imported between 1951 and 1955 from Australia (via Hawaii) for the control of *P. longispinus*, a serious pest of sago palm and various ornamentals; at least partial control has been achieved by this species acting together with another encyrtid, *Tetracnemoidea peregrina* (Compere)]; Blumberg & Van Driesche, 2001: 192 (Bermuda, partial control of *P. longispinus*).

62. *A. gaudens* (Kerrich, 1982).

Kerrich, 1982: 413-415 (Trinidad - as *Apoanagyrs*); De Santis 1989: 32 (Trinidad as - *Epidinocarsis*; Noyes, 2000: 59-60 (Costa Rica, Trinidad); Trjapitzin & Ruíz Cancino, 2000a: 68 (Trinidad - as *Apoanagyrs*).

63. *A. gemma* Noyes, 2000.

Noyes, 2000: 50-52 (Costa Rica).

64. *A. hansonii* Noyes et Menezes, 2000.

Noyes, 2000: 55-57 (Costa Rica).

65. *A. hebes* Noyes, 2000.

Noyes, 2000: 106-107 (Costa Rica).

66. *A. insolitus* (Howard, 1897).

Howard, 1897: 150 (Grenada – as *Blastothrix*); Ashmead, 1900: 389 (Grenada – as *B. insolita*); De Santis, 1979: 186 (Grenada); Noyes, 1979: 145-146 (Grenada, Trinidad); De Santis & Fidalgo, 1994: 46 (Nicaragua); Woodruff *et al.*, 1998: 118 (Grenada, Trinidad).

67. *A. juani* Noyes, 2000.

Noyes, 2000: 123-124 (Costa Rica).

68. *A. kamali* Moursi, 1948.

Morais, 1995: 9-11 (it is suggested that *A. kamali* is suitable for release in the

Caribbean); Pollard, 1995: 1-2 [introduced from China into Grenada and Trinidad against *Maconellicoccus hirsutus* Green (Hom.: Pseudococcidae)]; Cross & Noyes, 1-16 (introduction into Trinidad and Tobago against *M. hirsutus*; attacks also *Ferrisia virgata* Cockerell); IIBC, 1996: 10-11 (introduced from China into Grenada against the hibiscus mealybug *M. hirsutus*; established); Meyerdirk, 1997: 8 (introduced from China into the Caribbean; established); IIBC, 1997: 10, 32, 33, 77, 93, 24 [introduced from China (via England) for control of *M. hirsutus* into Trinidad, St. Kitts and St. Lucia]; Etienne *et al.*, 1998: 173-174 (St. Martin, *ex M. hirsutus*); IIBC, 1998: 28-30 (sent from Trinidad to St. Vincent, St. Lucia and Montserrat for the control of *M. hirsutus*; established and providing good control in Trinidad, Grenada, St. Vincent, St. Lucia, St. Kitts and Montserrat); Kairo & Peterkin, 1998: 1-28 (Trinidad, *ex M. hirsutus*); López, 1998: 56-73 (Trinidad, *ex M. hirsutus*); Ram *et al.*, 1998: 89-100 (the same); Readon *et al.*, 1998: 8, 9, 10, 11 (introduced from China into St. Thomas; released in U.S. Virgin Islands, St. Kitts and Puerto Rico against *M. hirsutus*); Sagarra & Vincent, 1999: 51 (introduction from China into Trinidad and Tobago against *M. hirsutus*); Kairo *et al.*, 2000: 27N (introduced into Belize in 1999-2000 against *M. hirsutus* from China and Hawaii via USA; established; introduced into St. Kitts and Nevis and into St. Thomas, St. Croix and Puerto Rico), 28 N (Curacao, probably penetrated with its host *M. hirsutus*); Meyerdirk, 2001: 1 (Belize, St. Kitts and Nevis, US Virgin Islands, Puerto Rico, introduced against *M. hirsutus*).

69. A. *lampe* Noyes et Menezes, 2000.

Noyes, 2000: 124-125 (Costa Rica).

70. *A. lebadeia* Noyes, 2000.

Noyes, 2000: 57-58 (Costa Rica).

71. *A. livens* Noyes, 2000.

Noyes, 2000: 85-86 (Costa Rica).

72. *A. lizanorum* Noyes et Menezes, 2000.

Noyes, 2000: 46-49 (Costa Rica).

73. *A. loeckii* Noyes et Menezes, 2000.

Noyes, 2000: 101-103 (Costa Rica, *ex Dysmicoccus* sp. nr. *hurdi*; St. Kitts, *ex Paracoccus* sp.).

74. *A. maritzae* Noyes, 2000.

Noyes, 2000: 120-121 (Costa Rica, *ex* psyllid gall on *Brosimum* sp.).

75. *A. matho* Noyes, 2000.

Noyes, 2000: 110-111 (Costa Rica).

76. *A. mirtesae* Noyes et Menezes, 2000.

Noyes, 2000: 95-97 (Costa Rica).

77. *A. mycale* Noyes, 2000.

Noyes, 2000: 70-71 (Costa Rica).

78. *A. ocellatus* Noyes et Menezes, 2000.

Noyes, 2000: 84-85 (Costa Rica).

79. *A. odacon* Noyes et Menezes, 2000.

Noyes, 2000: 113-114 (Costa Rica).

80. *A. paralia* Noyes et Menezes, 2000.

Noyes, 2000: 39-42 (Costa Rica).

81. *A. petronae* Noyes, 2000.

Noyes, 2000: 119-120 (Costa Rica).

82. *A. phaena* Noyes et Menezes, 2000.

Noyes, 2000: 42-44 (Costa Rica).

83. *A. phasis* Noyes, 2000.

Noyes 2000: 107-108 (Costa Rica).

84. *A. phya* Noyes et Menezes, 2000.

Noyes, 2000: 75-76 (Costa Rica).

85. *A. procles* Noyes, 2000.

Noyes, 2000: 69-70 (Costa Rica).

86. *A. pseudococci* (Girault, 1915).

Simmonds, 1957: 10 [introduced in 1951-1954 from USA into Bermuda against *Planococcus citri* Risso (Hom.: Pseudococcidae); not established]; Bennett & Hughes, 1959: 430 (unsuccessful attempt of introduction in 1955 from California into Bermuda against *Pseudococcus longispinus* Targioni Tozzetti on *Cycas revoluta*, *Nerium oleander* and *Pittosporum*); Bartlett, 1978c:152 (introduced in 1951-1954 from California into Bermuda against *Planococcus citri*; not established); Cock, 1985: 124-125 [Bermuda, introduced from Brazil (via California in 1954-1955; not established)]; Noyes & Hayat, 1994: 413, 419 (introduced in 1951-1955 into Bermuda against *P. citri*; on *Pseudococcus longispinus*; not established).

87. *A. pulchricornis* (Howard, 1984).

Howard, 1894: 87-88 (St. Vincent – as *Cerchysius*); Ashmead, 1900: 355 (St. Vincent); Dozier, 1937: 123 (Puerto Rico as *A. graminicolens* Dozier); Wolcott, 1950: 142 (Puerto Rico – as *A. graminicolens*; De Santis, 1979: 199 (Jamaica, St. Vincent; as *Cerchysius*); Noyes, 1979: 146 (St. Vincent); 186 (Puerto Rico – as *A. graminicolens*); Kerrich, 1982: 401 (St. Vincent – as *Paranusia*); Noyes & Hayat, 1994: 435 (Jamaica, St. Vincent; parasitoid of *Dysmicoccus boninsis* Kuwana); Noyes, 2000: 45-46 (Costa Rica, Puerto Rico, St. Vincent); Trjapitzin & Ruíz Cancino, 2000a: 63 (St. Vincent); 2000b: 149 (St. Vincent).

88. *A. putonophilus* Compere, 1947.

Noyes, 2000: 122-123 (Costa Rica).

89. *A. rapo* Noyes et Menezes, 2000.

Noyes, 2000: 38-39 (Costa Rica).

90. *A. remotor* Noyes, 2000.

Noyes, 2000: 111-113 (Costa Rica).

91. *A. rhopaloides* Noyes, 2000.

Noyes, 2000: 66-68 (Costa Rica).

92. *A. rifens* Noyes et Menezes, 2000.

Noyes, 2000: 54-55 (Costa Rica).

93. *A. rosichoni* Noyes et Menezes, 2000.

Noyes, 2000: 116-117 (Costa Rica).

94. *A. saccharicola* Timberlake, 1932.

CIBC 1971:20 [introduced in 1970 from Uganda into Barbados for control of *Saccharicoccus sacchari* Cockerell (Hom.: Pseudococcidae) on sugarcane *Saccharum officinarum*; established; introduction from Uganda into Bahamas against the same pest failed]; Alam, 1972: 360-362 (introduction from East Africa into Barbados and establishment); Alam, 1985: 238-240 (introduced from Uganda into Barbados and established, reducing populations of *S. sacchari* by 90%; similar results were noted in St. Vincent and St. Kitts; the parasitoid was sent to Jamaica, but its status is not known); Bennett & Alam, 1985: 62 (introduced from East Africa into Barbados against *S. sacchari*); Cock, 1985: 54-55 (introduced into St.

Kitts, Barbados and Trinidad; established); Alam *et al.*, 1991: 52 (introduced from Uganda into Barbados and established reducing populations of *S. sacchari* by 90%; similar results were noted in St. Vincent and St. Kitts; the parasitoid was sent to Jamaica, but its status is not known); Noyes & Hayat, 1994: 157-158 (Nicaragua, *ex S. sacchari* on sugarcane; Costa Rica; introduction into St. Kitts and Trinidad and establishment), 421-422 (introduced in 1970 into Barbados; partial control of *S. sacchari*); Noyes, 2000: 78-79 (Nicaragua, Costa Rica, Cuba; St. Kitts, Barbados, Trinidad; in last three islands introduced and established on *S. sacchari*); Trjapitzin & Ruíz Cancino, 2000a: 59, 63 [Nicaragua; Costa Rica; St. Kitts and Nevis (introduced); Barbados (introduced); Trinidad (introduced)].

95. *A. salazari* Noyes et Menezes, 2000.

Noyes, 2000: 100-101 (Costa Rica).

96. *A. scaea* Noyes, 2000.

Noyes, 2000: 68-69 (Costa Rica).

97. *A. shahidi* Hayat, 1979.

Noyes, 2000: 74-75 (Costa Rica, Anguilla).

98. *A. sinope* Noyes et Menezes, 2000.

Noyes, 2000: 89-91 (Costa Rica; Bahamas, *ex Phenacoccus* sp. on *Acalypha*; Trinidad, *ex P. grenadensis* on tomatoes, *ex Phenacoccus* sp. on *Tussacia pulchella* and *ex Pseudococcidae* on *Lantana montividenensis*).

99. *A. sophax* Noyes et Menezes, 2000.

Noyes, 2000: 114-116 (Costa Rica).

100. *A. sucro* Noyes, 2000.

Noyes, 2000: 63-65 (Costa Rica).

101. *A. suia* Noyes, 2000.

Noyes, 2000: 58-59 (Costa Rica).

102. *A. surekhae* Noyes et Menezes, 2000.

Noyes, 2000: 109-110 (Costa Rica).

103. *A. telon* Noyes et Menezes, 2000.

Noyes, 2000: 49-50 (Costa Rica).

104. *A. terebratus* (Howard, 1894).

Howard, 1894: 87 (St. Vincent - as *Cerchysius*); Noyes, 1980: 146-148 (St. Vincent).

Trjapitzin & Ruíz Cancino. 2000a: 71 (St. Vincent - as *Apoanagyrus*).

105. *A. theana* Noyes, 2000.

Noyes, 2000: 62-63 (Costa Rica).

106. *A. thoe* Noyes, 2000.

Noyes, 2000: 60-61 (Costa Rica).

107. *A. trinidadensis* (Kerrich, 1953).

Kerrich, 1953: 792-793 (Trinidad *ex Ferrisia virgata* Cockerell on cacao – as *Apoanagyrus*); De Santis, 1979: 187 (Trinidad, *ex F. virgata* - as *Apoanagyrus*); Noyes, 2000: 65-66 (Costa Rica; Trinidad, *ex F. virgata* on cacao and *Ferrisia* sp. on tomato); Trjapitzin & Ruíz Cancino. 2000a: 69 (Trinidad, *ex F. virgata* on cacao and *Ferrisia* sp. on tomato - as *Apoanagyrus*).

108. *A. tyana* Noyes, 2000.

Noyes, 2000: 94-95 (Costa Rica, *ex Pseudococcidae* on *Conostegia xalapensis*).

109. *A. tyMBER* Noyes, 2000.

Noyes, 2000: 93-94 (Costa Rica).

110. *A. villalobosi* Noyes et Menezes, 2000.

Noyes, 2000: 86-88 (Costa Rica).

111. *A. vulso* Noyes et Menezes, 2000.

Noyes, 2000: 52-53 (Costa Rica).

112. *A. zama* Noyes et Menezes, 2000.

Noyes, 2000: 118-119 (Costa Rica).

- *Anagyrus* sp. (*pulchricornis* Howard?).

Frank & Bennett, 1970: 10 [Jamaica, *ex* †*Dysmicoccus boninsis* Kuwana or †*Saccharicoccus sacchari* Cockerell (Hom.: Pseudococcidae)].

- *Anagyrus* spp.

CIBC, 1978: 56 (Bahamas, *ex Phenacoccus* sp. on *Acalypha* sp.); Bennett & Alam, 1985: 62 [Barbados, *ex Nipaecoccus nipae* Maskell and *Ferrisia virgata* Cockerell (Hom: Pseudococcidae)]; Cock 1985: 15 (Trinidad, *ex N. nipae*); Hernández *et al.*; 1989: 81-82 [Cuba, *ex Saccharicoccus sacchari* Cockerell) (Hom: Pseudococcidae) on sugarcane]; Hilburn *et al.*, 1990: 166 (Bermuda); Maes, 1992: 12 (Nicaragua); Noyes, 1998b (Cuba); Kairo *et al.*, 2000: 167 (reared in Mexico from *Paracoccus marginatus* Williams *et* Granara de Willink; introduced into St. Thomas, US Virgin Islands, where are in culture - as *Anagyrus* and *Apoanagyrus*); Villanueva Jiménez *et al.*, 2001: 154 (Puerto Rico, *ex P. marginatus*), 155 (Dominican Republic, *ex P. marginatus*).

XIII. *Anicetus***113. *Anicetus annulatus* Timberlake, 1919.**

Simmonds, 1957: 8 [Bermuda, *ex Coccus hesperidum* Linnaeus (Hom.: Coccidae)]; Dozier, 1937: 124 (Haiti; Dominican Republic, *ex* Coccidae on *Rosa* sp.); De Santis, 1981: 16 (Trinidad); Trjapitzin, 1989a: 302 (Haiti, Dominican Republic, Trinidad); Hilburn *et al.*, 1990: 16 (Bermuda, *ex C. hesperidum*); Cave & Márquez, 1994: 5-6 (Honduras, *ex C. viridis* Green); De Santis & Fidalgo, 1994: 58 (Haiti, Dominican Republic, Bermuda).

- *Anicetus* sp.

Bennett & Hughes, 1959: 431-432 [unsuccessful attempt of introduction in 1956-1957 from India vía California into Bermuda against *Pulvinaria psidii* Maskell

(Hom.: Coccidae)]; Cock, 1985: 127 (Bermuda, same as Bennett & Hughes, 1959, but origin of material from Taiwan via California); Noyes & Hayat, 1994: 399 (introduced in 1957 into Bermuda against *P. psidii*; not established).

XIV. *Apsilophrys*

114. *Apsilophrys capsicum* (Burks, 1967).

Burks, 1967b: 53-55 [Puerto Rico, ex *Gnorimoschema* sp.; Trinidad, ex pepper flower bud moth *Symmetrischema capsicum* Bradley et Povolný (Lep.: Gelechiidae) – as *Copidosoma*]; CIBC, 1973: 79 (shipped from Trinidad to California and India); Des Vignes, 1978: 315 (Trinidad, ex *S. capsicum*); De Santis, 1979: 199 (Puerto Rico, Trinidad); Noyes, 1980: 176; Des Vignes, 1981a: 31-48 (Trinidad); Des Vignes 1981: 50, 53 – 57 (Trinidad, ex *S. capsicum*; an attempt of introduction into California and India); Bennett, 1995: 547 (Puerto Rico, Trinidad, ex *S. capsicum*).

XV. *Archinus*

115. *Archinus occupatus* (Howard, 1897).

Howard, 1987: 155 (Grenada); Ashmead, 1900: 368 (Grenada); De Santis, 1979: 238 (Grenada); Noyes, 1979: 149-150 (Grenada, Trinidad); 1980: 176 (Grenada, Trinidad); De Santis, 1981: 15 (Trinidad); Woodruff *et al.*, 1998: 118 (Grenada, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 70 (the same).

XVI. *Arhopoidiella*

116. *Arhopoidiella carinata* Noyes, 1980.

Noyes, 1980: 177-178 (Trinidad); De Santis, 1981: 13 (Trinidad); Trjapitzin & Ruíz Cancino, 2002: 70 (the same).

- *Arhopoidiella* sp.

Noyes, 1980: 178 (Trinidad).

XVII *Arrhenophagoidea*

- *Arrhenophagoidea* sp.

Noyes, 1980: 178 (Trinidad).

XVIII. *Arrhenophagus*

117. *Arrhenophagus albitibiae* Girault, 1915.

Bennett & Noyes, 1989: 370-373 (the Caribbean).

118. *A. chionaspidis* Aurivillius, 1888.

Townsend, 1912: 256-263 [introduction in 1909-1911 from Barbados into Peru against *Pinnaspis strachani* (Cooley) on cotton and establishment]; Girault, 1915a: 73 (Puerto Rico); Gowdey, 1925: 17-24 (Jamaica); Fennah, 1947: 104-105 (Puerto Rico, Tortola, ex *Pinnaspis temporaria* Ferris (Hom.: Diaspididae); Wolcott, 1952: 7824 (Puerto Rico, ex *Hemichionaspis minor* Maskell; Simmonds, 1957: 4, 5

(Bermuda, *ex Diaspis boisduvalii* Signoret and *Pinnaspis strachani* Cooley); De Santis, 1979: 183-184 (Jamaica, Puerto Rico, Barbados); Noyes, 1980: 179 (the same); Bennett & Alam, 1985: 63 (Barbados, *ex P. strachani* and *Pseudaulacaspis pentagona* Targioni Tozzetti); Trjapitzin, 1989a: 377 (Jamaica); Hilburn *et al.*, 1990: 166 [Bermuda, *ex D. boisduvalii* and *P. strachani* (Hom.: Diaspididae)]; Beingolea G., 1996: 88 (introduced in 1909-1911 from Barbados to Peru against *P. strachani* on cotton, complete control of the pest); Trjapitzin & Ruíz Cancino, 2000a: 77 (Jamaica, Puerto Rico, Barbados); 2002:72 (Jamaica, Puerto Rico, Tortola, Barbados).

XIX. *Aseirba*

119. *Aseirba caudata* Cameron, 1884.

Cameron, 1884: 127-128 (Guatemala); Howard, 1894: 87 (Guatemala – as *Cerchysius*); Ashmead, 1900: 379 (Guatemala – as *Cerchysius*); Kerrich, 1954: 375 (Guatemala – as *Cerchysius cultratus* Kerrich); Noyes, 1980: 179 (Guatemala); Gordh & Trjapitzin, 1981: 5-6 (Guatemala).

XX. *Avernes*

120. *A. gela* Noyes et Woolley, 1994.

Noyes, 2000: 220-221 (Costa Rica).

XXI. *Avetianella*

- *Avetianella* sp.

Noyes, 1980: 179 (Trinidad).

XXII. *Aztecencyrtus*

121. *Aztecencyrtus iceryae* (Howard, 1892).

Howard, 1892: 379 [Jamaica, ex *Palaeococcus rosae* Riley et Howard (Hom.: Margarodidae) – as *Cerchysius*]; Ashmead, 1900: 380 (Jamaica – as *Cerchysius*); Noyes, 1980: 180 (Jamaica).

XXIII. *Bennettisca*

122. *Bennettisca flavigena* Noyes, 1980.

Noyes, 1980: 181-182 (Trinidad); De Santis, 1981: 12 (Trinidad); Sarazin, 1987:84 (Trinidad).

XXIV. *Blepyrus*

123. *B. clavicornis* (Compere, 1939).

Noyes, 2000: 196-197 (Costa Rica, Trinidad); Trjapitzin & Ruíz Cancino, 2002: 76 (the same).

124. *B. deiopea* Noyes, 2000.

Noyes, 2000: 201-202 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002:76 (the same).

125. *B. fabius* Noyes, 2000.

Noyes, 2000: 203-204 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 76 (the same).

126. *B. hansonii* Noyes, 2000.

Noyes, 2000: 205-206 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 76 (the same).

127. *B. insularis* (Cameron, 1886).

Noyes, 2000: 194-195 (Costa Rica; Bahamas, *ex Planococcus citri* Risso on guava; Trinidad, *ex Ferrisia* sp. on *Gliricidia*); Trjapitzin & Ruíz Cancino, 2002: 76 (Bahamas, Trinidad).

128. *B. integer* Noyes, 2000.

Noyes, 2000: 202-203 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 76 (the same).

129. *B. larymna* Noyes, 2000.

Noyes, 2000: 206-207 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002:76 (the same).

130. *B. lunae* Noyes 2000.

Noyes, 2000: 197-198 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 76 (the same).

131. *B. pretiosus* (Timberlake, 1924).

Fullaway, 1952: 100 [introduced in 1935 from Guatemala to Hawaiian Islands to control the pineapple mealybug *Dysmicoccus brevipes* Cockerell – as *Euryrhopalus pretiosa*]; Kerrich, 1967: 236 (Guatemala, *ex D. brevipes* – as *Euryrhopalus*); De Santis, 1979: 204 (Guatemala, *ex D. brevipes*); Trjapitzin & Ruíz Cancino, 2000a: 82 (Guatemala, *ex D. brevipes*); 2002: 76 (the same).

132. *B. pulchrrior* (Kerrich, 1967).

Kerrich, 1967: 238-239 (Jamaica – as *Euryrhopalus*); De Santis, 1979: 205 (Jamaica); Trjapitzin & Ruíz Cancino, 2000a: 84 (Jamaica); 2002:76 (Jamaica).

133. *B. saccharicola* Gahan, 1942.

Simmonds, 1957: 10 (introduced in 1951 – 1954 from USA into Bermuda against *Planococcus citri* Risso; not established); Greathead, 1971: 4 [unsuccessful attempt of introduction in 1954-1955 from Trinidad into Ghana against *Planococcoides njalensis* Laing, a vector of cacao swollen shoot virus]; Bartlett, 1978c: 152 (introduced in 1951-1954 from California into Bermuda against *Planococcus citri*; not established); De Santis, 1989: 34-35 (Bermuda, *ex P. citri*).

134. *B. sappho* Noyes, 2000.

Noyes, 2000: 198-199 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 77 (the same).

135. *B. schwarzi* (Howard, 1898).

Kerrich, 1953: 793-794 [Trinidad, *ex Pseudococcus* sp. and *Dysmicoccus* sp. nr. *brevipes* Cockerell (Hom.: Pseudococcidae) on cacao – as *Neodicodes kirkpatricki* Kerrich]; Kirkpatrick, 1954: 68 (Trinidad – as *N. kirkpatricki*); Kerrich, 1967: 241-242 (Panama; Trinidad, *ex Dysmicoccus* sp. nr. *brevipes* – as *Euryhopalus kirkpatricki*); De Santis, 1979: 204 (Panama, Trinidad, as *B. kirkpatricki*); Noyes, 2000: 200-201 (Costa Rica, Trinidad); Trjapitzin & Ruíz Cancino, 2000a: 85 (Panama; Trinidad *ex Dysmicoccus* sp. ca. *brevipes* on cacao - as *B. kirkpatricki*; 2002: 77 (Costa Rica, Trinidad).

136. *B. zenonis* Noyes, 2000.

Noyes, 2000: 207-208 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 77 (the same).

- *Blepyrus* spp. (2).

Noyes, 1980:1982 (Trinidad).

XXV. *Bothriocraera*

137. *Bothriocraera bicolor* Compere et Zinna, 1955.

Clausen, 1955: 79 [released in 1952-1953 from Trinidad in California against

Planococcus citri Risso – as *Bothriocraera* sp.]; Compere & Zinna, 1955: 101-105 (Trinidad, ex *Ferrisia virgata* Cockerell); Clausen, 1956b: 125 (introduced in 1952-1953 from Trinidad into California against *P. citri*); Bartlett & Lloyd, 1958: 92 (introduced in 1952 from Trinidad into California against mealybugs on citrus; not established); Greathead, 1971: 5 (introduction in 1954-1955 from Trinidad into Ghana to control *Planococcoides njalensis* Laing, a vector of cacao swollen shoot virus); Bartlett, 1978c: 164-165, 167 (introduced from Trinidad into California against *Pseudococcus longispinus* Targioni Tozzetti in 1953 and against *P. maritimus* Ehrhorn in 1954; not established); De Santis, 1979: 209-210 (Trinidad, ex *F. virgata*); CIBC, 1979: 52 [Trinidad, ex *Phenacoccus madeirensis* Green (Hom.: Pseudococcidae) on *Acalypha* sp.]; Bennett & Alam, 1985: 63 (Barbados, ex *Nipaecoccus nipae* Maskell); De Santis & Fidalgo, 1994: 57 (Bermuda), erroneous record; Trjapitzin & Ruíz Cancino, 2002: 77 (Trinidad, ex *F. virgata*).

XXVI. *Bothriothorax*

- *Bothriothorax* sp.

Noyes, 1980: 183 (Trinidad).

XXVII. *Brachyplatycerus*

- *Brachyplatycerus* spp. (2).

Noyes, 1980: 183 (Trinidad).

XXVIII. *Brethesiella*

138. *Brethesiella abnormicornis* (Girault, 1917).

Cock, 1985:5 [introduction in 1961 into Barbados against *Icerya purchasi* Maskell (Hom.: Margarodidae); results unknown]; De Santis & Fidalgo, 1994: 64 (Barbados, Bermuda; the record from Bermuda is erroneous); Noyes & Hayat, 1994:407 (introduced in 1961 into Barbados against *I. purchasi*; results unknown).

- *Brethesiella* spp.

Fennah, 1947:100,101 (Puerto Rico, ex *Icerya montserratensis* Riley et Howard (Hom.: Margarodidae); Noyes, 1980:183 (Trinidad, ex *I. montserratensis*).

XXIX. *Caenohomalopoda*

139. *Caenohomalopoda shikokuensis* (Tachikawa, 1956).

Bennett & Noyes, 1989:370-373 (Grand Cayman, Puerto Rico); De Santis & Fidalgo, 1994: [Cayman Islands, ex *Frogatiella penicillata* Green (Hom.: Diaspididae) on bamboo; Puerto Rico]; Trjapitzin & Ruíz Cancino, 2002: 79 (Cayman Islands, Puerto Rico).

XXX. *Caldencyrtus*

140. *Caldencyrtus acamas* Noyes et Hanson, 1996.

Noyes & Hanson 1996:117-118 [Costa Rica, ex galls of *Trioza* sp. (Hom.: Psylloidea) on fruits of *Phoebe cinnamomifolia*].

141. *C. antander* Noyes et Hanson, 1996.

Noyes & Hanson, 1996:118 (Costa Rica, *ex* galls of *Trioza* sp. on leaves of *Cinnamomun hammelianum* and *Phoebe cinnamomifolia*).

142. *C. mitchelli* Noyes et Hanson, 1996.

Noyes & Hanson, 1996:116 – 117 [Costa Rica, *ex* galls of *Trioza* sp. (Hom.: Psylloidea) on leaves of *Cinnamomum hammelianum* and *ex* triozid gall on fruit of *Phoebe cinnamomifolia*].

XXXI. *Carabunia*

143. *Carabunia myersi* Waterston, 1928.

Waterston, 1928:249 – 251 [Cuba, *ex* nymph of *Clastoptera* sp. (Hom.: Clastopteridae) on *Acalypha wilkesiana*]; Myers, 1930: 341 – 352 (Cuba, *ex* *C. undulata* Uhler and *Clastoptera* sp.; Haití, *ex* *Clastoptera* sp.); Bruner *et al.*, 1945: 33 (Cuba, *ex* *C. undulata* on *Casuarina* sp.); Wolcott, 1952:794 – 795 (Puerto Rico, *ex* *Clastoptera* sp.); Alayo Dalmau, 1973: 71 (Cuba, *ex* *C. undulata* on *Casuarina* sp.); Bruner *et al.*, 1975: 226 (Cuba); Alayo Dalmau & Hernández, 1978: 59 (Cuba); Zayas Muños de, 1981: 38 (Cuba *ex* *C. undulata*); Cruz & Sagarra, 1992: 401 (successful introduction into Puerto Rico against *C. undulata*, but probably refers to the following species which is considered to be native); De Santis & Fidalgo, 1994:64 (Trinidad). Probably, data of Wolcott (1952) from Puerto Rico must be referred to the following species.

144. *C. waterstoni* Subba Rao, 1971.

Dustan, 1960: 9 - 10 (Bermuda, introduced – as *C. myersi* Waterston); Bennett & Hughes, 1963: 49 – 66 (El Salvador; Jamaica, ex *Clastoptera flavidorsa* Metcalf et Bruner (Hom.: Clastopteridae) on *Casuarina equisetifolia*; Puerto Rico, ex *Clastoptera* sp. nr. *diminuta* Ramos on coffee tree; introduced into Bermuda against *C. undulata* Uhler on *Casuarina equisetifolia* – as *Carabunia myersi*); Subba Rao, 1971: 209 – 210 (Jamaica; Puerto Rico, ex *Clastoptera* sp. on coffee); Clausen, 1978b: 49 (successful introduction in 1960 – 1961 from Jamaica into Bermuda – as *Carabunia myersi*); De Santis, 1979: 239 (Jamaica, Puerto Rico); Cock, 1985:121 (introduced into Bermuda from Puerto Rico in 1959 and from Jamaica in 1959-1961 but failed to establish permanently – as *C. myersi*); De Santis, 1989: 36 (Bermuda – as *C. myersi*); Hilburn *et al.*, 1990: 166 (imported from Jamaica into Bermuda against casuarina spittlebug *Clastoptera undulata*); De Santis & Fidalgo, 1994: 67 (Trinidad, Bermuda); Noyes & Hayat, 1994: 395 (introduced into Bermuda against *C. undulata*, but not established; introduced in 1959 – 1961 into Trinidad against *C. undulata*). Data of De Santis (1989) and De Santis & Fidalgo (1994) on the presence of this species in Bermuda are incorrect.

XXXII. *Cerchysiella*

145. *Cerchysiella insularis* (Howard, 1897).

Howard, 1897: 147 (Grenada – as *Bothriothorax*); Ashmead, 1900: 371 (Grenada – as *Bothriothorax*); Subba Rao, 1972: 188 (Dominica, Grenada, Trinidad – as *Zeteticontus*); De Santis, 1979: 238 (Panama, Dominica, Grenada, Trinidad – as *Zeteticontus*); Noyes, 1979: 166 – 167 (Jamaica, Dominica, Grenada, Trinidad –

as *Zeteticontus*); Bennett & Baranowski, 1981: 197 – 198 [Dominica, Trinidad; ex larvae of *Lobiopa insularis* Castelnau (Col.: Nitidulidae) – as *Zeteticontus*]; De Santis, 1981: 17 (Jamaica – as *Zeteticontus*); Trjapitzin, 1988: 156 (Jamaica, Dominica, Grenada, Trinidad); De Santis & Fidalgo, 1994: 61 (Bermuda, erroneous record); Woodruff *et al.*, 1998:118 (Panama, Dominica, Grenada, Trinidad - as *Cerchysius*; Jamaica, Dominica, Grenada, Trinidad - as *Zeteticontus*).

146. *C. scutellata* (Howard, 1897).

Howard, 1897: 156 (Grenada – as *Aratus scutellatus*); Subba Rao, 1972: 189 – 190 (Dominica, Grenada – as *Zeteticontus scutellatus*); CIBC, 1973: 79 (Trinidad, reared from nitidulid larvae in Surinam cherry – as *Z. scutellatus*; De Santis, 1979: 238 (Dominica, Grenada – as *Z. scutellatus*); Noyes, 1979: 167 (Dominica, St. Vincent, Grenada, Tobago, Trinidad – as *Z. scutellatus*); De Santis, 1981: 17 (Dominica, St. Vincent, Tobago, Trinidad – as *Z. scutellatus*); Trjapitzin, 1988: 156 (Dominica, St. Vincent, Grenada, Trinidad); De Santis & Fidalgo, 1994: 61 (Bermuda), erroneous record; Woodruff *et al.*, 1998:119 (Dominica, St. Vincent, Grenada, Tobago, Trinidad - as *Z. scutellatus*).

- *Cerchysiella* sp.

Noyes, 1980: 236 (Trinidad – as *Zeteticontus*).

XXXIII. *Cercobelus*

147. *Cercobelus daphne* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 111 – 112 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 80 (the same).

148. *C. godoyae* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 100 – 111 [Costa Rica, ex *Katacephala* sp. (Hom.: Psylloidea) on *Eugenia carthagensis*]; Trjapitzin & Ruíz Cancino, 2002: 80 (the same).

149. *C. isara* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 108 – 109 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 80 (the same).

150. *C. sithon* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 108 – 110 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 80 (the same).

151. *C. ulixes* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 110 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 80 (the same).

XXXIV. *Cheiloneurus*

152. *Cheiloneurus angulatus* De Santis, 1964.

De Santis & Fidalgo, 1994: 59 (Panama).

153. *C. cupreicollis* (Ashmead, 1886).

Howard, 1897: 148 (Grenada – as *Ch. funiculus* Howard); Ashmead, 1900: 401 (Grenada – as *Ch. funiculus*); De Santis, 1979: 223 (Grenada – as *Ch. funiculus*); Noyes, 1979: 150 – 151 (Anguilla, *ex Planococcus citri* Risso on *Cajanus*; Grenada, Trinidad); De Santis, 1981: 16 (Grenada, Trinidad); Woodruff *et al*, 1998: (Anguilla, Grenada, Trinidad).

154. *C. nigrescens* Howard, 1897).

Howard, 1897: 148 – 149 (Grenada); Ashmead, 1900: 401 (Grenada); De Santis, 1979: 223 (Grenada); Noyes, 1979: 150 – 152 [Grenada; Trinidad, *ex puparia* of *Rhinoleucophenga* sp. (Dipt.: Drosophilidae) predator of *Orthezia* sp. (Hom.: Ortheziidae)]; De Santis, 1981: 16 (Trinidad); Woodruff *et al.*, 118 (Grenada, Trinidad).

155. *C. praenitens* Waterston, 1922).

Waterston, 1922: 49 – 51 (Jamaica, *ex gall* of Psylloidea – as *Chiloneurus*); De Santis, 1979: 223 (Jamaica).

156. *C. pulvinariae* Dozier, 1925.

Dozier, 1925: 363 – 365 [Puerto Rico, ex *Metaphycus flavus* Howard (Hym.: Encyrtidae) and *Coccophagus ceroplastae* Howard (Hym.: Aphelinidae) in *Pulvinaria iceryi* Signoret (Hom., Coccidae)]; Wolcott & Sein, 1933:199 [Puerto Rico, ex *Icerya purchasi* Maskell (Hom.: Margarodidae)]; Fennah, 1947:100,101 (Puerto Rico, ex *I. montserratensis* Riley et Howard); Wolcott, 1952:723 (Puerto Rico); Simmonds, 1957:8 (Bermuda, a secondary parasite in *P. psidii* Maskell); Bennett & Hughes, 1959: 431 (Bermuda, ex *Microterys kotinskyi* Fullaway (Hym.: Encyrtidae) in *P. psidii*); Simmonds, 1959: 7 – 8 (Bermuda, ex *Coccus* sp. on croton; also parasitizes *M. kotinskyi* in *P. psidii*); De Santis, 1964: 347 (Cuba); 1979: 223 (Cuba, Puerto Rico); Bennett, 1981: 46 (Bermuda, ex *M. kotinskyi* in *P. psidii*); De Santis, 1989: 43 (Bermuda); Hilburn et al., 1990: 166 (Bermuda, ex *M. kotinskyi*); Trjapitzin & Sitdikov, 1993: 168 (Cuba; Puerto Rico, ex *Metaphycus flavus* and *C. ceroplastae* in *P. iceryi*).

- *Cheiloneurus* spp.

Wolcott, 1952:793 [Puerto Rico, ex *Asterolecanium bambusae* Boisduval (Hom.: Asterolecaniidae)]. Simmonds, 1957: 9 (Bermuda, ex *Parasaissetia nigra* Nietner (Hom.: Coccidae); hyperparasitoid); Bennett & Alam, 1985:63 [Barbados, reared from collections of *Saccharosydne saccharivora* Westwood (Hom.: Delphacidae)]; Hernández & Ceballos, 1987: 178-182 [Cuba, ex *Saissetia coffeae* Walker (Hom.: Coccidae)]; Hilburn et al., 1990:165 (Bermuda, ex *P. nigra* hyperparasitoid); Cave & Márquez, 1994: 7 [Honduras, hyperparasitoid of *Coccus viridis* Linnaeus (Hom.: Coccidae) via Encyrtidae].

XXXV. *Chrysoplatycerus*

157. *Chrysoplatycerus ixion* Noyes, 2000

Noyes, 2000: 217-218 (Costa Rica).

158. *C. splendens* (Howard, 1888).

Kerrich, 1978: 140-141 (Panama); Noyes, 2000: 215-216 (Costa Rica, Panama, Trinidad).

XXXVI. *Cicoencyrtus*

- *Cicoencyrtus* sp.

Noyes, 1980: 187 (Trinidad).

XXXVII. *Cirrhencyrtus*

- *Cirrhencyrtus* spp.

Noyes, 1980: 187 (Trinidad).

XXXVIII. *Clausenia*

159. *Clausenia senex* Noyes, 2000.

Noyes, 2000: 18-20 (Costa Rica).

XXXIX. *Coccidaphycus*

- *Coccidaphycus* sp.

Noyes, 1980: 187 (Trinidad).

XL. *Coccidencyrtus*

160. *C. ochraceipes* Gahan, 1927.

Simmonds, 1957: 4 (Bermuda); Hilburn *et al.*, 1990: 166 [Bermuda, ex *Diaspis boisduvalii* Signoret (Hom.: Diaspididae)]; De Santis & Fidalgo, 1994: 52 (Bermuda); Trjapitzin & Ruíz Cancino, 2002: 84 (Bermuda, ex *D. boisduvalii*; adventive).

- *Coccidencyrtus* sp.

Noyes, 1980: 188 (Trinidad).

XLI. *Coccidoctonus*

161. *Coccidoctonus dubius* (Girault, 1915).

Alayo Soto & Blahutiak, 1981:2 [Cuba, hyperparasitoid of *Saissetia coffeae* Walker (Hom.: Coccidae) – as *Quaylea whittieri* Girault]; Trjapitzin & Sitdikov, 1993: 3 (Cuba, hyperparasitoid of *S. coffeae*).

162. *C. trinidadensis* Crawford, 1912.

Crawford, 1912:167-168 (Trinidad, ex *Protospulvinaria pyriformis* Cockerell (Hom.:

Coccidae)]; Wolcott, 1952:790-791 (Puerto Rico); Kerrich, 1953: 797 [Barbados, *ex Cryptolaemus* sp. (Col.: Coccinellidae) and Pseudococcidae (Hom.)]; Trinidad, *ex Leptomastix dactylopii* Howard (Hym.: Encyrtidae) in *Planococcus citri* Risso (Hom.: Pseudococcidae) and *ex* Cecidomyiidae (Dipt.) predatory on eggs of *P. citri*]; De Santis, 1979: 240 (Puerto Rico, Barbados, Trinidad); Noyes, 1980: 188 (St. Vincent, Grenada, Barbados, Trinidad); De Santis, 1981: 18 (St. Vincent, Grenada); Matile-Ferrero & Étienne, 1998:142 [Guadeloupe, *ex Diadiplasis coccidarum* Cockerell (Dipt.: Cecidomyiidae) a predator in ovisacs of the mealybug *Paracoccus marginatus* Williams *et* Granara de Willink (Hom.:Pseudococcidae)]; Woodruff *et al.*, 1998:119 (St. Vincent, Grenada, Barbados, Trinidad).

XLII. *Coccidoxenoides*

163. *Coccidoxenoides perminutus* Girault, 1915.

Simmonds, 1957: 10 (introduced in 1951-1954 from USA into Bermuda against *Planococcus citri* Risso (Hom.: Pseudococcidae); established – as *Pauridia peregrina*); Bennett & Hughes, 1959: 430 [introduced in 1951-1953 from California into Bermuda against *Planococcus citri* on croton *Codiaeum variegatum*; established – as *Pauridia peregrina*]; Bartlett, 1978c: 152 (introduction from California into Bermuda and establishment on *Planococcus citri* – as *Pauridia peregrina*); Noyes, 1980: 221 (Bermuda – as *P. peregrina*); Cock, 1985:124 (Bermuda, same data as Bennett & Hughes, 1959 but gives origin as South China via California – as *Coccidoxenoides peregrinus*); De Santis, 1989: 34 (Bermuda – as *C. peregrinus*); Trjapitzin, 1989a: 117 (introduced into Bermuda – as *C. peregrinus*); Hilburn *et al.*, 1990: 166 (introduced in 1951-1953 from South China via California into

Bermuda against *Planococcus citri*; successfully established – as *C. peregrinus*); Noyes & Hayat, 1994: 294, 413 (introduced into Bermuda against *P. citri* on croton; partial control of the pest – as *C. peregrinus*); Noyes, 2000: 169-170 (Nicaragua, ex ♀*P. citri*; Costa Rica; Cuba, ex *Planococcus* sp.; Puerto Rico, ex *Pseudococcus* sp. on *Citrus*); Trjapitzin & Ruíz Cancino, 2000a: 25 (Bermuda, introduced – as *C. peregrinus*).

XLIII. *Coelopencyrtus*

164. *Coelopencyrtus gargaris* (Walker, 1843).

Walker, 1843: 47-48 (St. Vincent – as *Encyrtus*); Howard, 1894: 93 (St. Vincent – as *E. crassus* Howard); Ashmead, 1900: 382 (St. Vincent – as *Ooencyrtus*), 406 – as *Zarhopalus crassus*); Timberlake, 1924: 235 (St. Vincent – not *Zarhopalus*); De Santis, 1979: 229 (St. Vincent – as *Z. crassus*); Noyes, 1979: 152 [St. Vincent; Trinidad, ex larva of *Xylocopa frontalis* Olivier (Hym.: Anthophoridae)].

XLIV. *Comperia*

165. *Comperia merceti* (Compere, 1938).

Alayo Dalmau, 1973: 68 [Cuba, ex *Supella supellectilium* Serville (Blatt.: Blattellidae)]; Alayo Dalmau & Hernández, 1978: 57 (Cuba, ex *S. supellectilium*); De Santis, 1979: 187 (Central America, Cuba, Puerto Rico); Zayas Muñoz de, 1981: 33, 38 (Cuba, ex *S. supellectilium*); Trjapitzin & Sitdikov, 1993: 168 (Cuba, ex *S. supellectilium*); De Santis & Fidalgo, 1994: 66 (Antilles).

XLV. *Comperiella*

166. *Comperiella bifasciata* Howard, 1906.

Simmonds, 1957:5 [attempted introduction in 1955 from USA into Bermuda against *Pseudaulacaspis pentagona* Targioni Tozzetti (Hom.: Diaspididae)]; Bennett & Hughes, 1959: 424 (introduction in 1955 from California into Bermuda to control *P. pentagona*; the parasitoid did not develop on this armoured scale and was not liberated); Rosen & De Bäch, 1978: 121 (the same); Cock, 1985:133 (Bermuda, same data as Bennett & Hughes, 1959 but gives origin as China or Japan *ex* California); Noyes, 1990a: 140 (the same); Noyes & Hayat, 1994: 406 (introduced in 1955 into Bermuda against *P. pentagona*; not established); Trjapitzin & Ruíz Cancino, 2000a: 99, 100 (Haiti, *ex Aspidiotus destructor* Signoret).

XLVI. *Copidosoma*

167. *Copidosoma desantisi* Annecke et Mynhardt, 1974.

De Santis, 1989: 38 (Bermuda).

168. *C. floridanum* (Ashmead, 1900).

Cock, 1985: 47 [introduced in 1975 from India into Barbados against cabbage loopers *Trichoplusia ni* Hübner and *Pseudoplusia includens* Walker (Lep.: Noctuidae); established – as *Litomastix* sp. nr. *truncatella* (Dalman), also recorded from Barbados as parasitoid of *T. ni* and *P. includens* - as *Copidosoma* sp.]; Hilburn *et al.*, 1990: 167 (Bermuda, *ex* larvae of Lepidoptera on potato leaves); Alam,

1992:500 (Barbados, *ex T. ni*; indigenous; also recorded in Jamaica from the some host - as *Copidosoma* sp.); De Santis & Fidalgo, 1994:63-64 (Central America, Antilles, Trinidad); Noyes & Hayat, 1994: 425 (introduced in 1975 into Barbados against *P. includens* and *T. ni*; established); Trjapitzin & Ruíz Cancino, 2000a: 106 (Cuba, Jamaica, Barbados, Trinidad, Bermuda).

169. *C. koehleri* Ev. Blanchard, 1940.

Bennett & Hughes, 1959: 426 [introduced from California into Bermuda against *Phthorimaea operculella* Zeller (Lep.: Gelechiidae); established]; Oatman, 1978: 188 (introduced in 1946 and 1948 from California into Bermuda against *Ph. operculella*; recovered, but establishment has not been reported); Trjapitzin, 1989a: 388 (introduced into Bermuda); De Santis & Fidalgo, 1994: 64 (Bermuda); Noyes & Hayat, 1994: 423 (introduced in 1946, 1948, 1964, 1965-1967 and 1973 into Bermuda against *Ph. operculella*; established but no significant control achieved).

170. *C. truncatellum* (Dalman, 1820).

Bruner *et al.*, 1945: 134, 166 [Cuba, *ex Autographa oo* Cramer (Lep.: Noctuidae)]; Alayo Dalmau, 1973: 69 (Cuba, *ex* larvae of *A. oo*); Bruner *et al.*, 1975: 258-259 (Cuba); Alayo Dalmau & Hernández, 1978: 58 (Cuba); De Santis, 1979: 198 (Cuba, Puerto Rico); Zayas Muñoz de, 1981: 38 (Cuba, *ex A. oo*).

Probably, these data must be referred to *C. floridanum* (Ashmead).

171. *Copidosoma* sp. (*truncatellum* group).

Alam, 1978: 127-135 (introduction from India into Barbados against *Pseudoplusia includens* Walker, established; significant control), 1982: 307 - 320 [introduced

from India into Barbados against the cabbage semi-looper *Trichoplusia ni* Hübner (Lep.: Noctuidae), established; partial control of the pest; introduced also into the Leeward and Windward islands – as *Copidosoma* (= *Litomastix*) *truncatellum* group]: 1985: 8 – 13 (the same); Bennett & Alam, 1985: 63 (Barbados, *ex T. ni* and *P. includens*; introduced from India and local population). Alam *et al.* 1991: 56 (introduced from India into Barbados against *P. includens*; established; significant control); Alam, 1992: 500 (Barbados, *ex T. ni*); Vaughan, 1992: 21 [introduced in 1977 from India into the Caribbean Region against *T. ni* and *P. includens*; established -as *C. truncatellum* (Dalman)].

Possibly, it is *C. floridanum* (Ashmead).

- *Copidosoma* sp.

Anonymous, 1942b: 1-124 (Puerto Rico, *ex Symmetrischema capsicum* Bradley *et* Povolný (Lep.: Gelechiidae); Des Vignes, 1978: 313 (Puerto Rico, *ex S. capsicum*; probably this species is *Apsilophrys capsicum* Burks).

- *Copidosoma* spp.

Noyes, 1980: 190 (the West Indies), 209 (Trinidad – as *Litomastix*); Zayas Muñoz de, 1981: 38 [Cuba, *ex Lineodes* sp. (Lep.: Pyraustidae)]; Cock, 1985: 47 [Barbados, *ex Trichoplusia ni* Hübner and *Pseudoplusia includens* Walker (Lep.: Noctuidae)]. [Possibly, it is *C. floridanum* (Ashmead)]; Hilburn *et al.*; 1990: 167 (Bermuda): Alam, 1992: 500 [Jamaica, *ex Trichoplusia ni* Hübner (Lep.: Noctuidae)]. [Possibly, it is *C. floridanum* (Ashmead)].

XLVII. *Cryptoplatycerus*

172. *Cryptoplatycerus moczari* Trjapitzin, 1982.

Noyes, 2000: 222 (Costa Rica).

XLIII. *Cyderius*

173. *Cyderius urbicola* Noyes, 1980.

Noyes, 1980: 190-191 (Trinidad); De Santis, 1981: 15 (Trinidad).

XLIX. *Discodes*

- *Discodes* sp.

Noyes, 1998 (Puerto Rico); Trjapitzin & Ruíz Cancino, 2001b: 65 (Puerto Rico).

L. *Diversinervus*

174. *Diversinervus elegans* Silvestri, 1915.

Bruner *et al.*, 1945: 134, 166 (Cuba); Alayo Dalmau, 1973: 69 (Cuba); Bruner *et al.*, 1975: 258-259 (Cuba); Blahutiak & Alayo Soto, 1977: 4 (Cuba); Alayo Soto & Hernández, 1978: 58 [Cuba, *ex Saissetia coffeae* Walker (Hom.: Coccidae)]; Alayo Soto & Blahutiak, 1981:2 (Cuba, *ex S. coffeae*); De Santis, 1981:16 (Cuba, *ex S. coffeae*); Trjapitzin, 1989a:316-317 (Cuba, *ex S. coffeae*); Trjapitzin & Sitdikov, 1993:169 (Cuba, *ex S. coffeae* and *S. oleae* Olivier; probably, penetrated by ecesis).

LI. *Encyrtus*

175. *Encyrtus aurantii* (Geoffroy, 1785).

Howard, 1897: 149 (Grenada – as *Comys bicolor* Howard); Dalla Torre, 1898: 239 (Grenada – as *Eucomys bicolor*); Ashmead, 1900: 360 (Grenada – as *Encyrtus bicolor*); Simmonds, 1957: 9 [Bermuda: *ex Parasaissetia nigra* Nietner – as *E. lecanionum* Mayr; *ex Coccus hesperidum* Linnaeus (Hom.: Coccidae) – as *E. lecaniorum* and *E. barbatus* Timberlake]; Frank & Bennett, 1970:10 (Jamaica, *ex* Coccidae – as *E. lecaniorum*). De Santis, 1979: 193 (Bermuda, *ex P. nigra* – as *E. lecaniorum*); Trjapitzin, 1989a: 369 – 370 (Grenada – as *E. lecaniorum*), Hilburn *et al.*, 1990: 167 (Bermuda: *ex P. nigra* – as *E. lecaniorum*, *ex C. hesperidum* - as *E. barbatus*); De Santis & Fidalgo, 1994: 65 – 66 (Bermuda, *ex P. nigra* – as *E. lecaniorum*); Woodruff *et al.*, 1998:119 (St. Vincent, Grenada -as *E. bicolor*).

176. “*E. conformis* Howard, 1897”.

Howard, 1897: 152 – 153 (Grenada); Ashmead, 1900: 376 (Grenada – as *Phaenodiscus*); De Santis, 1979: 239 (Grenada – as *Discodes*); Noyes, 1979: 152 – 154 (Grenada – possibly, a representative of a new genus); 1980: 195 (systematic position uncertain); Woodruff *et al.*, 1998:119 (Grenada).

177. *E. infelix* (Embleton, 1902).

Bruner, 1929: 1 – 38 [Cuba, *ex Saissetia coffeae* Walker (Hom.: Coccidae) – as *Eucomys*]; Wolcott, 1933: 1 – 688 (Cuba, *ex S. coffeae*); Smith, 1942: 21 – 27 (Puerto Rico, *ex S. coffeae*); Bruner *et al.*, 1945: 57 (Cuba, *ex S. coffeae*); Wolcott, 1952:793,794 (Puerto Rico, *ex S. coffeae*) Simmonds, 1957: 9 (Bermuda, *ex S.*

coffaeae); Alayo Dalmau, 1973: 68 – 69 (Cuba, *ex S. coffaeae*); Bruner *et al.*, 1975: 107 (Cuba, *ex S. coffaeae*); Alayo Dalmau & Hernández, 1978: 58 (Cuba, *ex S. coffaeae*); De Santis, 1979: 193 (Cuba, Puerto Rico; *ex S. coffaeae*); Alayo Soto & Blahutiak, 1981: 2 (Cuba, *ex S. coffaeae*); Zayas Muños de, 1981: 39 (Cuba, *ex S. coffaeae* – as *Ooencyrtus*); Trjapitzin, 1989a: 370 (Cuba); Hilburn *et al.*, 1990: 167 (Bermuda, *ex S. coffaeae*). Trjapitzin & Sitdikov, 1993: 169 (Cuba, *ex S. coffaeae*); De Santis & Fidalgo, 1994: 64 (Dominica, Bermuda).

178. *E. kerzhneri* Trjapitzin et Sitdikov, 1993.

Trjapitzin & Sitdikov, 1993: 165 – 167 (Cuba).

179. “*E. quadricolor* Howard, 1894”.

Howard, 1894: 93 – 94 (St. Vincent); Ashmead, 1900: 406 [St. Vincent – as *Zarhopalus* (?)]; Timberlake, 1924: 235 (St. Vincent – not *Zarhopalus*); De Santis, 1979: 229 (St. Vincent – as *Zarhopalus*); Noyes, 1979: 155 (St. Vincent – systematic position uncertain); 1980: 195 (the same).

- *Encyrtus* sp.

Bartlett, 1978b: 65, 66 [unsuccessful attempt of introduction in 1957 – 1958 from India into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae)]; Noyes & Hayat, 1994: 399 (introduced in 1957 – 1958 into Bermuda; results unknown).

LII. *Epiencyrtus*

- *Epiencyrtus* sp.

Noyes, 1980: 195 (Panama).

LIII. *Epitetracnemus*

180. *Epitetracnemus intersectus* (Fonscolombe, 1832).

Bennet & Hughes, 1959: 427 (introduction into Bermuda – as *Anabrolepis zetterstedti* Westwood); Noyes, 1980: 172 (Bermuda? – as *A. zetterstedti*); 1988: 77 – 78 [introduced in 1947 from Italy into Bermuda against *Lepidosaphes newsteadi* Sulc [(Hom.: Diaspididae), but probably did not establish – as *E. zetterstedti*]]; Cock, 1985: 131 (the same); De Santis, 1989: 43 (Bermuda, *ex L. newsteadi* – as *E. zetterstedtii*); Trjapitzin, 1989a:292 (unsuccessful attempt of introduction into Bermuda against *Carulaspis minima* Targioni Tozzetti (Hom.: Diaspididae) – as *E. zetterstedtii*); Noyes, 1990a:160 (introduced in 1947 from Italy into Bermuda against *C. minima*, but there are not certain data about acclimatization – as *E. zetterstedtii*); Noyes & Hayat, 1994: 405, 406 [(introduced in 1947 into Bermuda: 1) against *C. minima*; established?; 2) against *L. newsteadi*; no information on establishment; as *E. zetterstedtii*]].

Several references give *Carulaspis minima* as the target host. By way of explanation its introduction into Bermuda was primarily for control of *Lepidosaphes newsteadi*. Until 1947-48 this introduced diaspid was more serious than the introduced *Carulaspis minima* so initially emphasis was placed on obtaining parasites from other species of *Lepidosaphes*.

- *Epitetracnemus* sp.

Simmonds, 1957: 7 [Bermuda, ex *Morganiella longispina* Morgan (Hom.: Diaspididae) – as *Anabrolepis*]; Hilburn *et al.*, 1990: 167 (Bermuda).

LIV. *Ericydnus*

181. *Ericydnus lamasi* (Domenichini, 1952).

Noyes, 1980: 196 (Panamá); De Santis, 1981: 10 (Panama); Noyes & Hayat, 1994: 467 [Panamá, ex *Pseudococcus elisae* Borchsenius (Hom.: Pseudococcidae)]; Noyes, 2000: 26 (Costa Rica, Panama).

LV. *Forcipestricis*

182. *Forcipestricis portoricensis* Gordh, 1975.

Gordh, 1975: 239 – 241 [Puerto Rico, ex *Forcipomyia fuliginosa* Meigen (Dipt.: Ceratopogonidae)]; De Santis, 1981: 19 (Puerto Rico, ex *F. fuliginosa*).

183. *F. sordidus* (Howard, 1897).

Howard, 1897: 153 – 154 (Grenada – as *Encyrtus*); Ashmead, 1900: 397 (Grenada – as *Epiencyrtus*); Noyes, 1979: 155 – 156 (Grenada); Woodruff *et al.*, 1998: 119 (Grenada).

- *Forcipestricis* spp.

Noyes, 1980: 196 (West Indies).

LVI. *Gahaniella*

184. *Gahaniella saissetiae* Timberlake, 1926.

Timberlake, 1926: 27 – 28 [Virgin Islands, *ex Parasaissetia nigra* Nietner (Hom.: Coccidae)]; Bruner, 1929: 68 (Cuba, *ex Saissetia coffeae* Walker); Bruner *et al.*, 1945: 48, 57, 107 [Cuba, *ex Toumeyella* sp., *Saissetia* sp. and *Coccus* sp. (Hom.: Coccidae)]; Alayo Dalmau, 1973: 68 – 69 (Cuba); Bruner *et al.*, 1975: 107 (Cuba); Alayo Dalmau & Hernández, 1978: 59 (Cuba); Alayo Soto & Blahutiak, 1981: 1 – 3 (Cuba); Zayas Muños de, 1981: 39 (Cuba, *ex Toumeyella* sp., *S. coffeae* Walker and *C. mangiferae* Green); Trjapitzin & Sitdikov, 1993: 169 (Cuba, *ex* the same hosts; St. Croix, *ex P. nigra*); Castellanos *et al.*, 1996: 180 (Cuba, *ex T. cubensis* Heidel *et* Köhler on *Citrus*; 1997: 26-27 (the same).

185. *G. tertia* Kerrich, 1953.

Kerrich, 1953: 800 – 802 [Trinidad, *ex Leptomastix dactylopii* Howard (Hym.: Encyrtidae) in *Planococcus citri* Risso (Hom.: Pseudococcidae)]; De Santis & Fidalgo, 1994: 54 (Honduras).

- *Gahaniella* sp.

Simmonds, 1957: 9 [Bermuda, *ex Parasaissetia nigra* Nietner (Hom.: Coccidae); hyperparasitoid – as *Gahaniella* sp.n. (not *tercia* Kerrich)]; Hilburn *et al.*, 1990: 167 (Bermuda, hyperparasitoid of *P. nigra*).

LVII. *Gavria*

186. *Gavria haplos* Noyes, 2000.

Noyes, 2000: 234 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 91 (the same).

LVIII. *Grissellia*

- *Grissellia* sp.

Noyes, 1980: 199 (St. Vincent).

LIX. *Gyranusoidea*

187. *Gyranusoidea amasis* Noyes, 2000.

Noyes, 2000: 158-160 (Costa Rica).

188. *G. brixia* Noyes, 2000.

Noyes, 2000: 145-146 (Costa Rica).

189. *G. deione* Noyes, 2000.

Noyes, 2000: 149-150 (Costa Rica).

190. *G. dice* Noyes, 2000.

Noyes, 2000: 142-144 (Costa Rica).

191. *G. dispar* (Kerrich, 1953).

Kerrich, 1953: 790-791 [Trinidad, *ex Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) on cacao – as *Leptomastix*]; Noyes, 1980: 206 (Neotropics – as *Leptomastidea*); Kerrich, 1982: 403 (the same); Noyes & Hayat, 1994: 309 (Neotropics); Noyes, 2000: 160-161 (Costa Rica; Trinidad, *ex F. virgata*); Trjapitzin & Ruíz Cancino, 2000a: 115 (Trinidad, *ex F. virgata* on cacao – as *Leptomastidea*).

192. *G. eciton* Noyes, 2000.

Noyes, 2000: 144-145 (Costa Rica).

193. *G. eurybates* Noyes, 2000

Noyes, 2000: 153-154 (Costa Rica).

194. *G. indica* (Shafee, Alam et Agarwal, 1975).

Reardon *et al.*, 1998: 10 - 11 [introduced into St. Thomas from Egypt; liberated on St. Kitts, U.S. Virgin Islands and Puerto Rico against *M. hirsutus*]; Kairo *et al.*, 2000: 27 N [introduced in 2000 into Belize from Egypt (via USA) against *Maconellicoccus hirsutus* Green (Hom.: Pseudococcidae); established; introduced into St. Kitts and Nevis, St. Thomas, St. Croix and into Puerto Rico), 28 N (the species was discovered in Trinidad where it, must probably penetrated with its host; deliberately released in St. Kitts and Nevis, the US Virgin Islands, Puerto Rico and Grenada)]; Meyerdirk, 2001: 1 (Belize, Bahamas, St. Kitts and nevis, US Virgin Islands, Puerto Rico; introduced against *M. hirsutus*).

195. *G. janzeni* Noyes, 2000.

Noyes, 2000: 154-155 (Costa Rica).

196. *G. lagus* Noyes, 2000.

Noyes, 2000: 146-147 (Costa Rica).

197. *G. lamus* Noyes, 2000.

Noyes, 2000: 141-142 (Costa Rica).

198. *G. marsyas* Noyes, 2000.

Noyes, 2000: 151-152 (Costa Rica).

199. *G. pseudococci* (Brèthes, 1924).

Kerrich, 1953: 720 (Trinidad – as *Leptomastix pseudococci* and *L. bahiensis* Compere);
De Santis, 1979: 184 (Barbados, ex *Ferrisia virgata* Cockerell - as *Leptomastidea pseudococci* and *L. bahiensis*);
Bennett & Alam, 1985: 63 (Barbados, ex *F. virgata* – as *L. bahiensis*);
Noyes, 2000: 161-162 (Costa Rica; Barbados, ex *F. virgata* on *Cocos nucifera*).

200. *G. rhodope* Noyes, 2000.

Noyes, 2000: 157-158 (Costa Rica).

201. *G. semele* Noyes, 2000.

Noyes, 2000: 147-149 (Costa Rica).

202. *G. sulmo* Noyes, 2000.

Noyes, 2000: 155-157 (Costa Rica).

203. *G. valeo* Noyes, 2000.

Noyes, 2000: 150-151 (Costa Rica).

- *Gyranusoidea* sp.

Noyes, 1980: 199 (Trinidad).

LX. *Habrolepis*

204. *Habrolepis rouxi* Compere, 1936.

Bennett & Hughes, 1959: 427 (introduction from California into Bermuda against Bermuda cedar scales *Carulaspis minima* Targioni Tozzetti and *Lepidosaphes newsteadi* Sulc (Hom.: Diaspididae) on *Juniperus bermudiana*]; Cock, 1985: 131 [introduced into Bermuda from California (origin South Africa) in 1947 against cedar scales, no evidence of establishment]; De Santis, 1989: 93 (Bermuda, *ex L. newsteadi*); Noyes, 1990a: 154 (introduced from North America into Bermuda in an attempt to control Diaspididae, especially *Aonidiella aurantii* Maskell), 160 (introduced in 1947 from California into Bermuda against *C. minima*; established); Noyes & Hayat, 1994: 405 (introduced in 1947 into Bermuda; ♂ partial control of *C. minima*); Trjapitzin & Ruíz Cancino, 2002: 94 (introduced from California into Bermuda against *C. minima* and *L. newsteadi* and established).

We question the records by Noyes & Hayat (1994) that this species was established and providing^ç partial control in Bermuda particularly because Hilburn *et al.* do not list it.

- *Habrolepis* spp.

CIBC, 1970:77 [a parasitoid of *Frogatiella penicillata* Green (Hom.: Diaspididae) was sent from India to Bermuda for trial on *Odonaspis ruthae* Kotinsky; not released]; Bennett & Alam, 1985:63 [Barbados, *ex Morganiella longispina* Morgan (Hom.: Diaspididae)]; Cock, 1985:134 (introduced in 1968 from Pakistan into Bermuda against *Odonaspis ruthae* Kotinsky; not released; Noyes & Hayat, 1994: 406 (the same as CIBC and Cock).

LXI. *Habrolepoidea*

205. *Habrolepoidea glauca* Howard, 1894.

Howard, 1894: 90 (St. Vincent); Ashmead, 1900: 367 (St. Vincent); De Santis, 1979: 191 (St. Vincent); Noyes, 1979: 156–157 (St. Vincent); Trjapitzin & Gordh, 1984: 1275 (St. Vincent).

LXII. *Hambletonia*

206. *Hambletonia calvifrons* Sharkov et Woolley, 1997.

Sharkov & Woolley, 1997: 198–199 (Costa Rica); Noyes, 2000: 232 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 96 (the same).

207. *H. pilosifrons* Sharkov et Woolley, 1997.

Sharkov & Woolley, 1997: 201-203 (Guatemala, Costa Rica); Noyes, 2000: 229-230 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 96 (Guatemala, Costa Rica).

208. *H. pseudococcina* Compere, 1936.

Compere, 1936: 172 – 174 [an attempt of introduction from Hawaiian Islands into Jamaica against *Dysmicoccus brevipes* Cockerell (Hom.: Pseudococcidae); also introduced from Brazil into Puerto Rico]; Bartlett, 1939: 67 - 72 (Puerto Rico, introduced from Brazil); Annand, 1945: 25 (introduction from Puerto Rico into Florida to control *D. brevipes*); Wolcott, 1952:791 (Puerto Rico); Clausen, 1956a: 7, 38, 106 (introduction into Puerto Rico); Greathead, 1971: 5 [introduction in 1954 – 1955 from Trinidad into Ghana against *Planococcoides njalensis* Laing (Hom.: Pseudococcidae), a vector of cacao swollen shoot virus]; Bartlett, 1978c: 142 (introduced in 1937 – 1938 from Brazil via Hawaii into Puerto Rico against *D. brevipes*, established; imported in 1939 into Jamaica against *D. brevipes*, established); Cock, 1985:85 (imported from Hawaii into Jamaica in 1939 for control of *D. brevipes* on pineapple; a specimen collected on citrus in 1965 suggested establishment had occurred unless it was already present at the time of introduction); De Santis, 1989: (Dominican Republic); Trjapitzin, 1989a: 125 (introduced into Puerto Rico); Bennett, 1991: 32 (introduced in 1938-1939 from South America via Hawaii into Jamaica against *D. brevipes*); Cruz & Sagarra, 1992: 402 (successful introduction into Puerto Rico to control *D. brevipes*); De Santis & Fidalgo, 1994: 49 (Bermuda, Jamaica); Noyes & Hayat, 1994: 409 (introduced in 1937-1938 into Puerto Rico against *D. brevipes*, established); Sharkov & Woolley, 1997: 203-205 [Costa Rica; Jamaica (introduced from

Hawaii)]; Puerto Rico (introduced from Brazil via Hawaii to control *D. brevipes*); Dominica; Trinidad, *ex D. brevipes* on pineapple]; Noyes, 2000: 231-232 [Costa Rica; Jamaica (introduced); Puerto Rico (introduced); Dominica; Trinidad]; Trjapitzin & Ruíz Cancino, 2002: 96 [Costa Rica; Jamaica (introduced); Dominican Republic; Dominica; Puerto Rico (introduced); Trinidad].

Record of this species for Bermuda (De Santis & Fidalgo, 1994) is erroneous.

209. *H. punctifrons* Sharkov et Woolley, 1997.

Sharkov & Woolley, 1997: 205-207 (Costa Rica); Noyes, 2000: 226-227 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 96 (the same).

210. *H. roseni* Sharkov et Woolley, 1997.

Sharkov & Woolley, 1997: 207-211 (Costa Rica, Panama); Noyes, 2000: 228 (Costa Rica, Panama); Trjapitzin & Ruíz Cancino, 2002: 96 (the same).

211. *H. setosifrons* Sharkov et Woolley, 1997.

Sharkov & Woolley, 1997: 212-215 (Costa Rica); Noyes, 2000: 230-231 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 96 (the same).

212. *H. squalicephala* Sharkov et Woolley, 1997.

Sharkov & Woolley, 1997: 212-215 (Costa Rica); Noyes, 2000: 228-229 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002: 96 (the same).

213. *H. undulitibiae* Sharkov et Woolley, 1997.

Sharkov & Woolley, 1997: 215-217 (Costa Rica); Noyes, 2000: 227 (Costa Rica);
Trjapitzin & Ruíz Cancino, 2002: 96 (the same).

- *Hambletonia* sp.

Sharkov & Woolley, 1997: 215-217 (Costa Rica).

LXIII. *Helegonatopus*

214. *Helegonatopus pseudophanes* Perkins, 1906.

Noyes, 1980: 200 (Jamaica, St. Vincent); De Santis, 1981: 13 (St. Vincent); De
Santis & Virla, 1991: 13 (Jamaica, Trinidad); Trjapitzin & Ruíz Cancino, 2002:
99 (Jamaica, St. Vincent, Trinidad).

- *Helegonatopus* sp.

Noyes, 1980: 200 (Trinidad).

LXIV. *Hemencyrtus*

- *Hemencyrtus* spp. (2)

Noyes, 1980: 202 (Panama, Trinidad).

LXV. *Hexacladia*

215. *Hexacladia hilaris* Burks, 1972.

De Santis & Fidalgo, 1994: 67 (Puerto Rico).

216. *H. smithii* Ashmead, 1891.

Burks, 1972: 370 (Trinidad); De Santis, 1979: 195 (Trinidad); De Santis & Fidalgo, 1994: 67 (Puerto Rico).

LXVI. *Hipponactis*

217. *Hipponactis itea* Noyes, 2000.

Noyes, 2000: 243-244 (Costa Rica).

LXVII. *Holcencyrtus*

218. *Holcencyrtus gordhi* (Trjapitzin et S. Trjapitzin).

Trjapitzin & Trjapitzin, 1995: 343-345 (Cuba – as *Coelaspidia*); Trjapitzin, 1998: 187 (Cuba).

219. *H. myrmicoides* (Compere et Zinna, 1955).

Compere & Zinna, 1955: 98-100 [Trinidad, ex *Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) – as *Acroaspidia*]; Clausen, 1956b: 127 [introduced in 1954-1955 from Trinidad into California against *Planococcus citri* Risso (Hom.: Pseudococcidae) – as *Acroaspidia*]; Bartlett & Lloyd, 1958: 92 (unsuccessful

attempt of introduction in 1954 from Trinidad into California against mealybugs on citrus – as *Acroaspida*); Greathead, 1971: 5 (Trinidad, *ex F. virgata* – as *Acroaspida*); Bartlett, 1978c: 156-157 (introduction in 1948-1955 from Trinidad into Ghana to control cacao mealybug *Planococcoides njalensis* Laing, the results being unknown), 164 (introduced in 1954 from Trinidad into California against *Pseudococcus longispinus* Targioni Tozzetti; not established); in both cases – as *Acroaspida*; Kerrich, 1978: 132 (Trinidad – as *Acroaspida*); De Santis, 1979: 200 (Trinidad – as *Acroaspida*); Noyes, 1980:170 (Trinidad – as *Acroaspida*); Trjapitzin, 1998: 187 (Trinidad, *ex F. virgata*).

220. *H. osborni* (Timberlake, 1923).

Noyes, 2000: 236-237 (Costa Rica).

LXVIII. *Homalopoda*

221. *Homalopoda cristata* Howard, 1894.

Howard, 1894: 91 (St. Vincent); Ashmead, 1900: 404 [St. Vincent, *ex Odonaspis secreta* Cockerell (Hom.: Diaspididae)]; Dozier, 1937: 123-124 (Haiti, *ex Ceroplastes giganteus* Dozier (Hom.: Coccidae) on *Ficus rubricosta*; Puerto Rico, St. Vincent]; Wolcott, 1952: 794 (Puerto Rico); Beardsley, 1976: 215 (Cuba; Puerto Rico, St. Vincent); De Santis, 1979: 230 (Haiti, Puerto Rico, St. Vincent); Noyes, 1979: 157-159 (Panama, St. Vincent, Trinidad); De Santis, 1981: 16 (Panama, Trinidad); De Santis & Fidalgo, 1994: 57 (Cuba); Trjapitzin & Ruíz Cancino, 2002: 100 (Panama, Cuba, Haiti, Puerto Rico; St. Vincent, *ex O. secreta*; Trinidad).

LXIX. *Homalotylus*

222. *Homalotylus flaminus* (Dalman, 1820).

De Santis 1979: 205-206 (Bahamas, Puerto Rico); Bennett & Alam, 1985: 63 [Barbados, *ex* larvae of *Cycloneda sanguinea* Linnaeus (Col.: Coccinellidae)].

223. *H. hyperaspidis* Timberlake, 1919.

Noyes & Hanson, 1996: 114 [Costa Rica, *ex* larvae of *Hyperaspis* sp. (Col.: Coccinellidae), predatory on Psylloidea or Coccoidea inside of leaf gall of *Triozia* sp. nr. *maritima* Tuthill (Hom.: Psylloidea) on *Avicennia germinans*].

224. *H. terminalis* (Say, 1828).

Jones, 1915: 19 (Puerto Rico, *ex* *Coleomegilla innotata* Mulsant and *Cycloneda sanguinea* Linnaeus – as *H. obscurus* Howard); Timberlake, 1919: 149-150 [Cuba, *ex* larvae of *Cycloneda* sp. (Col.: Coccinellidae)]; Leonard, 1933: 294 (Puerto Rico); Bruner *et al.*, 1945: (Cuba, *ex* *C. limbifera* Casey); Wolcott, 1952: 796 (Puerto Rico, *ex* *Coleomegilla innotata* and *Cycloneda sanguinea*); Alayo Dalmau, 1973: 69 (Cuba, *ex* *C. limbifera*); Bruner *et al.*, 1975: 107, 199 (Cuba); Alayo Dalmau & Hernández, 1978: 59 (Cuba); De Santis, 1979: 206 (Cuba, Haití, Puerto Rico, Trinidad); Alayo Soto & Blahutiak, 1981: 1-3 (Cuba); De Santis, 1981: 18 (Cuba, *ex* *C. limbifera*); Zayas Muños de, 1981: 39 (Cuba, *ex* *C. limbifera* preying on *Aphis rumicis* on *Phaseolus*); Trjapitzin & Sitdikov, 1993: 169 (Cuba, *ex* *C. limbifera*, *Cycloneda* sp. and *Coleomegilla* sp.); De Santis & Fidalgo, 1994: 52 (Haiti, *ex* *Cycloneda* sp.; Trinidad, *ex* Coccinellidae).

- *Homalotylus* sp.

Noyes, 1980: 203 (Panamá).

LXX. *Homosemion*

225. *Homosemion bennetti* Annecke, 1967.

Annecke, 1967: 157-159 [Trinidad, ex *Icerya montserratensis* Riley et Howard (Hom.: Margarodidae)]; De Santis, 1979: 243 (Trinidad); Noyes, 1980: 203-204 (Trinidad); Cock, 1985:5 (introduction in 1961 into Barbados against *I. purchasi* Maskell; results unknown – as *Anicetus* sp.); Noyes & Hayat, 1994: 407 (the same – as *H. bennetti*).

LXXI. *Iceromyia*

226. *Iceromyia flavifrons* Noyes, 1980.

Noyes, 1980: 205-206 [Trinidad, ex *Icerya montserratensis* Riley et Howard (Hom.: Margarodidae); probably hyperparasitic on other Encyrtidae]; De Santis, 1981: 16 (Trinidad).

LXXII. *Isodromus*

227. *Isodromus iceryae* Howard, 1887.

Bruner *et al.*, 1945: 16 [Cuba, ex larva of *Chrysopa* sp. (Neur.: Chrysopidae) – as *I. nigroaxillae* Girault]; Alayo Dalmau, 1973: 69 (Cuba); Bruner *et al.*, 1975: 277 (Cuba); Alayo Dalmau & Hernández, 1978: 58 (Cuba); De Santis, 1979: 200

(Cuba); Noyes, 1980: 206 (Cuba); Zayas Muños de, 1981: 39 (Cuba, *ex* larvae of *Chrysopa* sp.: Trjapitzin & Sitdikov, 1993: 170 (Cuba, the same); Trjapitzin & Ruíz Cancino, 1999:26,27,32 (Honduras).

- *Isodromus* sp.

Wolcott, 1952:795 [Puerto Rico, *ex* cocoons of *Chrysopa* sp. (Neur.: Chrysopidae), preying on Pseudococcidae on avocado].

LXXIII. *Ixodiphagus*

228. *Ixodiphagus hookeri* (Howard, 1908).

Wolcott, 1923: 60 [Puerto Rico, *ex* *Dermacentor nitens* Newmann (Acarina: Ixodidae) – as *Hunterellus*]; Cooley, 1929: 17-31 (Cuba – as *I. caucurtei* du Buysson); Brumpt, 1930: 1085-1087 [Guadeloupe, *ex* *Rhipicephalus sanguineus* Latreille (Ixodidae) – as *Hunterellus*]; Gahan, 1934: 94 – 95 (Cuba, *ex* Ixodidae; Puerto Rico, *ex* *D. nitens* - as *Hunterellus*); Dozier, 1937: 125 (Puerto Rico, *ex* *R. sanguineus* on dogs – as *Hunterellus*); De Santis, 1979: 233-234 (Cuba, Puerto Rico, Trinidad – as *Hunterellus*); Noyes, 1980: 204 (Cuba, Puerto Rico – as *Hunterellus*); Trjapitzin, 1989a: 288 (Cuba, Puerto Rico, Guadeloupe); Trjapitzin & Sitdikov, 1993: 170 (Cuba); Trjapitzin & Ruíz Cancino, 1998a: 14-16 (the same).

- *Ixodiphagus* sp.

Noyes, 1980: 204 (Trinidad – as *Hunterellus*).

LXXIV. *Lamennaisia*

- *Lamennaisia* sp.

Noyes, 1980: 211 (Panama, Trinidad – as *Mercetencyrtus*):

LXXV. *Leptomastidea*

229. *Leptomastidea abnormis* (Girault, 1915).

Simmonds, 1957: 10 [introduction in 1951-1954 from USA into Bermuda against *Planococcus citri* Risso (Hom.: Pseudococcidae)]; Bennett & Hughes, 1959: 430 (introduced in 1953 from California into Bermuda against *P. citri* on croton *Codiaeum variegatum*; established]; De Santis, 1964: 93 (introduction into Dominican Republic); González & Rojas, 1966: 133-147 (introduced in 1964 into Costa Rica against *P. citri*; established); Molina, 1977: 1-177 (the same); Bartlett, 1978c: 152 (introduced in 1951-1954 from California into Bermuda against *P. citri*; established); De Santis, 1979: 191 (Costa Rica, Dominican Republic); Cock, 1985:124 (the same as Bennett & Hughes, 1959); Edwards *et al.*, 1987: 62 (Trinidad, in culture); De Santis, 1989:33 (Bermuda); Hilburn *et al.*, 1990: 167 (introduced into Bermuda against *P. citri*); Vaughan, 1992: 24 [introduced in 1963 from Chile into Costa Rica to control *Coccus viridis* Green (Hom.: Coccidae); established]; Noyes & Hayat, 1994: 294 (introduced into Bermuda against *P. citri* on croton; established), 414 (introduced in 1964 and 1968 into Costa Rica against *P. citri*; established); Noyes, 2000: 137-138 (Costa Rica, Dominica, Bermuda; introduced accidentally or otherwise); Trjapitzin &

Ruíz Cancino, 2000a: 116 [Costa Rica (introduced from Chile); Dominican Republic; Bermuda].

230. *L. antillicola* Dozier, 1937.

Dozier, 1937: 121-122 [Puerto Rico, ex *Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) on leaves of *Inga inga*]; Wolcott, 1952: 792-794 (Puerto Rico); De Santis, 1979: 191 (Puerto Rico, ex *F. virgata*).

LXXVI. *Leptomastix*

231. *Leptomastix dactylopii* Howard, 1885.

Howard, 1894: 92 (St. Vincent), 149-150 (Grenada); Ashmead, 1900: 253 (St. Vincent, Grenada); Dozier, 1927: 267-268 (Puerto Rico); Russo, 1927: 1-244 (Dominican Republic); Fennah, 1947:6,7 (West Indies, ex *Planococcus citri* Risso (Hom.: Pseudococcidae); Wolcott, 1952:792 (Puerto Rico); Kerrich, 1953:789-790 [Trinidad, ex ?*P. citri* (Hom.: Pseudococcidae); Bermuda]; Kirkpatrick, 1954: 62-71 (Trinidad, ex *P. citri*); Simmonds, 1957: 10 (introduced from USA in 1951-1954 into Bermuda against *P. citri*); Greathead, 1971:5 (Trinidad); Molina, 1977:1-177 (introduced in 1968 into Costa Rica against *P. citri*; established); Bartlett, 1978c: 152 (introduction of South African race in 1951-1954 from California into Bermuda against *P. citri*; recovered, but may be represented by native form); De Santis, 1979: 184 (Jamaica, Dominican Republic, Puerto Rico, Guadeloupe, St. Vincent, Grenada, Barbados, Trinidad); Bennett & Alam, 1985: 63 (Barbados, ex *P. citri*); CIBC, 1985: 3,37,47 (introduction in 1984 from West Indies into Pakistan against *P. citri*); Cock, 1985: 151 (sent from Trinidad to Cyprus in 1966

for control of *P. citri*; released but did not survive, 124-125 -introduced into Bermuda in 1959 but was already present); Edwards *et al.*, 1987: 62 (Trinidad, in culture); Krishnamoorthy & Singh, 1987: 143-148 (introduced in 1983 from West Indies into India against *P. citri*; established); De Santis, 1989: 33 (Lesser Antilles, Bermuda); Trjapitzin, 1989a: 127 (Dominican Republic, Puerto Rico, St. Vincent, Grenada, Trinidad; introduced into Bermuda); Hilburn *et al.*, 1990: 167 (introduced in 1952 from California into Bermuda and established, but apparently already was present; parasitoid of Pseudococcidae); Vaughan, 1992: 24 (introduced in 1963 from Peru into Costa Rica against *P. citri*; not established); Noyes & Hayat, 1994: 294 (introduced into Bermuda against *P. citri* on croton; established), 295 (Jamaica; Puerto Rico, *ex P. citri* in greenhouse; St. Vincent; Barbados, *ex Aspidiella hartii* Cockerell on yam; Trinidad, *ex P. citri* on cacao; in the Caribbean Region - introduced), 415 (introduced in 1968 into Costa Rica against *P. citri*; established); Beingolea, 1996: 88 (introduction in 1984 from Trinidad into Peru to control *P. citri*); Woodruff *et al.*, 1998: 119 (Jamaica, Puerto Rico, Hispaniola, Guadeloupe, St. Vincent, Grenada, Barbados, Trinidad); Anga & Noyes, 1999: 97 (introduced into Bermuda in 1952 for the control of *P. citri*, established but no significant control achieved; introduced in 1968 into Costa Rica against *P. citri*, established but no further information available); Noyes, 2000: 130-131 (Costa Rica, Jamaica, Puerto Rico, St. Vincent, Barbados, Trinidad, Bermuda).

LXXVI. *Lirencyrtus*

- *Lirencyrtus* spp. (4).

Noyes, 1980: 208 (Panama, Jamaica, Dominica, Trinidad).

LXXVII. *Lohiella*

232. *Lohiella flaviclava* (Howard, 1894).

Howard, 1894: 96 (St. Vincent – as *Encyrtus flaviclavus*); Ashmead, 1900: 398 (St. Vincent – as *Syrphophagus flaviclavus*); Noyes, 1979: 154-155 (St. Vincent, as “*E. flaviclavus*”; systematic position not certain); 1980: 209-210 (St. Vincent, Trinidad); De Santis, 1981: 17 (Trinidad).

LXXVIII. *Mahencyrtus*

233. *Mahencyrtus nitidus* (Howard, 1894).

Howard, 1894: 94 (St. Vincent – as *Encyrtus*); 1897: 153 (Grenada – as *E. convexus* Howard); Ashmead, 1900: 381 (Grenada – as *Sceptrophorus convexus*), 396 (St. Vincent – as *Pseudencyrtus*); De Santis, 1979: 208 (Grenada – as *Microterys*); Noyes, 1979: 163-165 (St. Vincent, Grenada, Tobago, Trinidad); 1980: 221 (the same – as *Parechthrodryinus*); De Santis, 1981: 17 (Grenada, Tobago, Trinidad); De Santis & Fidalgo, 1994: 61-62 (Trinidad); Woodruff *et al.*, 1998: 119 (Grenada – as *Microterys convexus*; St. Vincent, Grenada, Tobago, Trinidad – as *Parechthrodryinus*).

LXXIX. *Mariola*

234. *Mariola flava* Noyes, 1980.

Noyes, 1980: 211 (St. Vincent); De Santis, 1981: 12 (St. Vincent).

LXXX. *Meniscocephalus*

235. *Meniscocephalus albosetosus* (Noyes, 1980).

Noyes, 1980: 201-202 (Trinidad – as *Helmecephala albosetosus*); De Santis, 1981: 19 (Trinidad – as *H. albosetosus*).

236. *M. costaricanus* (Trjapitzin, 1982).

Trjapitzin, 1982: 1602-1603 (Costa Rica – as *Helmecephala costaricana*); De Santis, 1989: 36 (Costa Rica).

- *Meniscocephalus* spp. (3).

Noyes, 1980: 202 (Trinidad).

LXXXI. *Metaphycus*

237. *Metaphycus amoenus* (Howard, 1897).

Howard, 1897: 150-151 (Grenada – as *Aphycus*); Ashmead, 1900: 384 (Grenada – as *Aphycus*); Timberlake, 1916: 638 (Grenada – as *Aphycus*); De Santis, 1979: 213 (Grenada); Noyes, 1979: 160 (Grenada); Woodruff *et al.*, 1998: 119 (Grenada).

238. *M. angustifrons* Compere, 1897.

Simmonds, 1957: 8-9 [introduced in 1953-1954 from USA into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae); not established]; Bennett & Hughes, 1959: 431 [unsuccessful attempt of introduction in 1954-1955 from California into Bermuda against *P. psidii* – as *Aphycus* (*Metaphycus*)]; Bartlett, 1978b: 65, 66 (the same, but the introduction was from Taiwan via California); Cock, 1985: 127 (introduced from California, origin Taiwan, into Bermuda in 1954-1955 to control *P. psidii*, not established); De Santis, 1989: 40 (Bermuda, ex *P. psidii*); Noyes & Hayat, 1994: 399 (introduced in 1954-1955 into Bermuda against *P. psidii*; not established).

239. *M. ceroplastae* (Dozier, 1935).

Dozier, 1935: 184-185 [Haiti, ex *Ceroplastes floridensis* Comstock, *C. cirripediformis* Comstock and *C. giganteus* Dozier (Hom.: Coccidae) – as *Coccidoctonus*]; Noyes, 1980: 212 (*Metaphycus*, with some doubts); Bennett & Alam, 1985: 63 (Barbados, ex *Protopulvinaria pyriformis* Cockerell).

240. *M. electra* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 120-121 (Costa Rica, supposedly reared from nymphs of *Trioza* sp. (Hom.: Psylloidea) *mangifoliae* group, although possibly parasitic on scale insects associated with these galls); Blackmer & Hanson, 1997: 1131-1137 (Costa Rica, ex *Trioza* sp. *mangifoliae* group, inducing galls on *Nectandra salicina*).

241. *M. eruptor* (Howard, 1881).

De Santis, 1979: 213 [Puerto Rico, *ex Ceroplastes cirripediformis* Comstock (Hom.: Coccidae)].

242. *M. flavus* (Howard, 1881).

Howard, 1897: 150 (Grenada – as *Aphycus*); Ashmead, 1900: 386 (Grenada – as *Aphycus*); Timberlake, 1916: 634-635 (Trinidad- as *Aphycus*); Dozier, 1925: 362 [Puerto Rico, *ex Pulvinaria iceryi* Signoret (Hom.: Coccidae) – as *Aphycus*]; Wolcott, 1952: 790, 792 (Puerto Rico – as *Aphycus* subgen. *Euaphycus*); Simmonds, 1957: 8-9 (introduced in 1953-1954 from USA into Bermuda against *P. psidii* Maskell; not established; but a strain of *M. flavus* was already present in Bermuda before the USA liberations; reared also from *Saissetia coffeae* Walker); 1959: 5 (Bermuda, *ex P. psidii*; in 1953-1954 the probably different race was imported from USA); Bennett & Hughes, 1959: 431 (introduced in 1953-1954 from California into Bermuda against *P. psidii* Maskell on different plants, including *Hibiscus* and *Citrus*; the species was present in Bermuda prior to the liberation of California specimens); Cohen & Kamburov, 1968: 34 (Trinidad, *ex Ceroplastes floridensis* Comstock); Frank & Bennett, 1970:10 [Jamaica, *ex P. elongata* – as *Aphycus*]; Bartlett, 1978b: 65, 66 (introduction in 1953-1954 from Morocco and Spain via California into Bermuda against *P. psidii*); De Santis, 1979: 231-214 (Jamaica, Puerto Rico, Grenada, Barbados, Trinidad); Bennett & Alam, 1985:63 (Barbados, *ex P. elongata* Newstead and *Ceroplastes cirripediformis* Comstock); Cock, 1985:125-126 [some data as Bennett & Hughes (1959), imported from California from stocks obtained from Mexico and Spain]; De Santis, 1989: 40 (Bermuda); Trjapitzin, 1989a: 243 (Puerto Rico, Lesser Antilles, Trinidad); Hilburn *et al.*,

1990: 167 (introduced into Bermuda); Cave & Márquez, 1994: 5-6 (Honduras, ex *Saissetia coffeae* Walker (Hom.: Coccidae); penetrated by ecesis); Noyes & Hayat, 1994: 399 (introduced in 1953-1954 into Bermuda against *P. psidii*; results unknown). Woodruff *et al.*, 1998:119 (Jamaica, Puerto Rico, Barbados, Trinidad); Guerrieri & Noyes, 2000: 183- 185 (Cuba, ex *Coccus viridis* Green, laboratory culture on *Coffea arabica* cv. *catuai*; Jamaica, Puerto Rico, Barbados; Trinidad, Antilles, Grenada).

243. *M. gallicola* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 119-120 (Costa Rica, reared from pit-galls of *Trioza nomei* Brown *et* Hodkinson (Hom.: Psylloidea) on *Dendropanax* sp.).

244. *M. helvolus* (Compere, 1926).

Bartlett, 1978b: 65, 66 [introduction in 1957 from California into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae); no information about establishment]; Alayo Soto & Blahutiak, 1981: 2 (Cuba ex *Saissetia coffeae* Walker – as *Aphycus*); De Santis, 1989: 40 (Bermuda, ex *P. psidii*); Trjapitzin, 1989a: 233 [Cuba, ex *Saissetia coffeae* Walker (Hom.: Coccidae)]; Trjapitzin & Sitdikov, 1993: 170 (Cuba, ex *S. coffeae*); Cave & Márquez, 1994: 5-6 [Honduras, ex *Coccus viridis* Green (Hom.: Coccidae) and *S. coffeae*; penetrated by ecesis]; Noyes & Hayat, 1994: 399 (introduced in 1957 into Bermuda; results unknown); Guerrieri & Noyes, 2000: 166 (Cuba, Bermuda).

245. *M. lichtensiae* (Howard, 1896).

Bartlett, 1978b: 65, 66 [introduction in 1957-1958 from Pakistan via California into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae); not reported as established]; De Santis, 1989: 40 (Bermuda, *ex P. psidii*); Noyes & Hayat, 1994: 399 (introduced in 1957-1958 into Bermuda; results unknown).

246. *M. lounsburyi* (Howard, 1898).

Bennett & Hughes, 1959: 431 [unsuccessful attempt of introduction in 1953-1954 from California into Bermuda against *Pulvinaria psidii* Maskell, *Coccus* spp. and *Saissetia* spp. (Hom.: Coccidae)]; De Santis, 1989: 41 (Bermuda).

247. *M. luteolus* (Timberlake, 1916).

Simmonds, 1957: 8-9 [introduced in 1953-1954 from USA into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae); not established]; Bennett & Hughes, 1959: 431 [introduction in 1949-1953 into Bermuda against *Coccus hesperidum* Linnaeus (Hom.: Coccidae)]; Simmonds, 1959: 5 (introduced in 1953-1954 from USA into Bermuda against *P. psidii*; results unknown); – as *Aphycus* (*Metaphycus*)]; Bartlett, 1978b: 65, 66 (introduced in 1953-1954 from California into Bermuda; results unknown); Trjapitzin, 1989a: 243-244 (introduced into Bermuda); Noyes & Hayat, 1994: 396, 399 ([introduced into Bermuda in 1951 against *C. hesperidum* and in 1953-1954 against *P. psidii* (Hom.: Coccidae); not established]; Guerrieri & Noyes, 2000: 182 (Bermuda).

248. *M. monticolens* Dozier, 1937.

Dozier, 1937: 124-125 (Puerto Rico); De Santis, 1979:216 (Puerto Rico).

249. *M. portoricensis* (Dozier, 1926).

Dozier, 1926: 100-101 [Puerto Rico, *ex Russelaspis pustulans* Cockerell (Hom.: Asterolecaniidae) on *Cassia fistula* – as *Euaphycus*]; 1933: 96 (Haiti, *ex R. pustulans* on fig and flamboyante – as *Euaphycus*); Bruner *et al.*, 1945: 113 (Cuba, *ex R. pustulans* on *Morus nigra* – as *Euaphycus*); Fennah, 1947: 106 (Puerto Rico, *ex R. pustulans* – as *Euaphycus*); Wolcott, 1952: 793 (Puerto Rico – as *Euaphycus*); Alayo Dalmau, 1973: 113 (Cuba, *ex R. pustulans* – as *Aphycus*); Alayo Dalmau & Hernández, 1978: 58 (Cuba); De Santis, 1979: 216 (Cuba, Puerto Rico); Zayas Muños de, 1981: 38 (Cuba, *ex R. pustulans* - as *Aphycus*); Cock, 1985:123 (introduced into Bermuda from Montserrat, Antigua and Trinidad in 1960-1962 for control of *R. pustulans*); Trjapitzin & Sitdikov, 1993: 170 (Cuba, Puerto Rico); De Santis & Fidalgo, 1994: 55 (Montserrat, Antigua, Trinidad, Bermuda); Noyes & Hayat, 1994: 394 (introduced in 1960-1962 into Bermuda against *R. pustulans*; not established).

250. *M. reticulatus* (Dozier, 1926).

Dozier, 1926: 98-100 [Puerto Rico, *ex Russelaspis pustulans* Cockerell (Hom.: Asterolecaniidae) – as *Mercetiella reticulata*]; 1927: 267 (Puerto Rico – as *M. reticulata*); Wolcott, 1952: 793 (Puerto Rico, as *M. reticulata*); Trjapitzin & Gordh, 1978: 649 (Puerto Rico – as *Metaphycus reticulatus*); De Santis, 1979: 218 (Puerto Rico – as *Mercetiella reticulata*); Noyes, 1980: 212 (Puerto Rico).

251. *M. stanleyi* Compere, 1940.

Simmonds, 1957: 8-9 [introduced in 1953-1954 from USA into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae); established]; Bennett & Hughes, 1959:

431, 435 [introduced in 1953-1954 from California into Bermuda against *Coccus hesperidum* Linnaeus, *Parasaissetia nigra* Nietner, *Saissetia oleae* Olivier and *P. psidii* (Hom.: Coccidae); established – as *Aphycus* (*Metaphycus*)]; Simmonds, 1959:5 (introduced in 1953-1954 from USA into Bermuda against *P. psidii*; appears to become established but is not important); Bartlett, 1978b: 65-66, the same, against *P. psidii*; established); Cock, 1985:127 (introduced into Bermuda from California, origin South Africa, in 1953-1954, well established on *C. hesperidum*, *S. oleae* and *P. nigra*); De Santis, 1989:41 (Bermuda); Trjapitzin, 1989a: 255 (introduced into Bermuda to control *P. psidii*); Cave & Márquez, 1994:5-6 (Honduras, ex *Ceroplastes* sp., *Coccus hesperidum*, *C. viridis* Green and *S. oleae*; penetrated by ecesis); Noyes & Hayat, 1994: 396 (introduced in 1953 into Bermuda against *C. hesperidum*; not established), 399 (introduced in 1953-1954 into Bermuda; established); Guerrieri & Noyes, 2000: 176 (Bermuda).

- *Metaphycus* sp. n. near *galbus* Annecke, 1964.

Guerrieri & Noyes, 2000: 155 (The Caribbean).

- *Metaphycus* spp.

Simmonds, 1957: 8 (Bermuda); Hilburn *et al.*, 1990: 167 [Bermuda, ex *Pulvinaria floccifera* Westwood (Hom.: Coccidae)]; Bennett & Hughes, 1959: 431 – 432 [unsuccessful attempt of introduction in 1956 – 1957 from India via California into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae) – as *Aphycus* (*Metaphycus*)]; Bartlett, 1978a: 47 [introduced in 1961 from Trinidad into Bermuda to control *Russelaspis pustulans* Cockerell (Hom.: Asterolecaniidae) on oleanders; there have been no reports of establishment]; 1978b:55 – 56 (the same

as Bennett & Hughes; Noyes, 1979:160 (Trinidad); [Bennett & Alam, 1985:63; Barbados, *ex Ceroplastes* sp. and *Coccus viridis* Green (Hom.: Coccidae)]; Cock, 1985:123 [introduction in 1961 into Bermuda against *R. pustulans*]; (introduced in 1957 into Bermuda against *P. psidii* and *R. pustulans*, not established); Noyes & Hayat, 1994:394, 399.

LXXXII. *Microterys*

252. *Microterys kotinskyi* (Fullaway, 1913).

Simmonds, 1957: 8-9 [introduction in 1953 from Hawaii and in 1954 from USA into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae); establishment]; Bennett & Hughes, 1959: 431, 434-435 (introduced into Bermuda against *P. psidii* in 1953 from Hawaii and in 1954-1955 from California); Simmonds, 1959: 5-8 (introduced in 1953 from Hawaii into Bermuda against *P. psidii*, and in 1954-1955 from California; well established); 1969: 1-16 (complete biological control of *P. psidii* in Bermuda; Rosen, 1976: 484 (the same; parasitoid has become an important factor in the control of the pest); Bartlett, 1978b: 65-66 (the same); Bennett, 1981:46 (Bermuda, *ex P. psidii*); Cock, 1985:126,127 [imported into Bermuda from Hawaii in 1953 and from California in 1954-1955 to control *P. psidii*; established rapidly and also heavily attacked by hyperparasitoid *Prochiloneurus* which is widespread); Hilburn et al., 1990: 167 (introduced in 1953-1955 from Hawaii and California into Bermuda to control *P. psidii*; well established); Dahlsten & Hall, 1999: 927 (the introduced parasitoid is thought to be important in control of *P. psidii* in Bermuda). Most probably, the record of *Prochiloneurus* by Cock (1985) must be referred to *Cheiloneurus*.

253. *M. nietneri* (Motschulsky, 1859).

Bartlett, 1978b: 60 (introduced in 1949-1953 into Bermuda against *C. hesperidum* Linnaeus (Homoptera: Coccidae); no further records of establishment-as *M. flavus*); De Santis, 1989: 45 (Bermuda – as *M. flavus*).

- *Microterys* sp.

Hernández & Ceballos, 1987: 178-182 [Cuba, *ex Coccus hesperidum* Linnaeus (Hom.: Coccidae)].

LXXXIII. *Moorella*

254. *Moorella compressiventris* (Timberlake, 1925).

Timberlake, 1925: 179-180 [Panama, *ex* cocoon of *Chrysopa* sp. (Neur.: Chrysopidae) – as *Chrysopophilus*]; De Santis, 1979: 241 (Panama – as *Chrysopophilus*); Noyes, 1980: 213 (Panama).

LXXXIV. *Mucencyrtus*

255. *Mucencyrtus dbari* Sharkov, 1996.

Sharkov, 1996: 362-364 (Costa Rica).

256. *M. insulanus* Noyes, 1980.

Noyes, 1980: 214-215 (St. Vincent; Trinidad, *ex Aclerda* sp. (Hom.: Aclerdidae) on sugarcane]; Sharkov, 1996: 365-366 (the same).

LXXXV. *Neococcidencyrtus*

257. *Neococcidencyrtus colynis* Noyes, 1987.

Noyes, 1980:216 (Trinidad – as *Neococcidencyrtus* sp.); 1987: 1001-1002 (Trinidad); De Santis & Fidalgo, 1994:68 (Trinidad).

258. *N. crouzelae* De Santis, 1964.

Noyes, 1987: 1002 (Trinidad); De Santis & Fidalgo, 1994: 68 (Trinidad).

- *Neococcidencyrtus* sp.

Noyes, 1980: 216 (Trinidad).

LXXXVI. *Neodusmetia*

259. *Neodusmetia sangwani* (Subba Rao, 1957).

CIBC, 1969:58 [introduction from Texas into Bermuda in 1968 against *Antonima graminis* Maskell (Hom.: Pseudococcidae)]; established in Bermuda and providing substantial control of *A. graminis* 1974: 8; Cock, 1985:125 (the same, widespread throughout Bermuda and together with *Pseudectroma* sp. – as *P. europaea* (Mercet) (Hym.:Encyrtidae) provides good control]; Bennett, 1990a: 48 (Honduras, Jamaica, Cayman Islands, Puerto Rico; ex *A. graminis*); Hilburn et al., 1990: 167 (introduced from Texas into Bermuda); De Bach & Rosen, 1991: 219 (introduced into Bermuda); Bennett, 1994: 132 (Honduras, Costa Rica, Jamaica, Cayman Islands, Puerto Rico; parasitoid of *A. graminis*; penetrated by ecesis); De Santis & Fidalgo, 1994: 45 (Bermuda); Noyes & Hayat, 1994: 408 (introduced in 1968

into Bermuda; substantial control of *A. graminis*); Trjapitzin & Ruíz Cancino, 1997: 22 (Honduras, Costa Rica, Jamaica, Cayman Islands, Puerto Rico; penetrated by ecesis); Noyes, 2000: 24 [Costa Rica; Cayman Islands, *ex A. graminis*; Bermuda (introduced)].

LXXXVII. *Ooencyrtus*

260. *Ooencyrtus caligo* Noyes, 1985.

Noyes, 1985: 537-539 [Honduras, *ex* eggs of *Caligo* sp. (Lep.: Brassolidae)]; De Santis, 1989: 45 (the same).

261. *O. calpodicus* Noyes, 1985.

Urich, 1932: 300 [Trinidad, *ex* eggs of the arrowroot leafroller *Calpododes ethlius* Stoll (Lep.: Hesperidae) – as *Ooencyrtus* sp.]; Bennett & Hughes, 1959: 429 (introduction in 1953 from Trinidad into Bermuda to control the canna leafroller *C. ethlius*; established – as *Ooencyrtus* sp.); Clausen, 1978c: 192 (introduced in 1950 from Trinidad into Bermuda against *C. ethlius*; not established – as *Ooencyrtus* sp.); Bennett & Alam, 1985: 63 (Barbados, *ex* eggs of *C. ethlius* – as *Ooencyrtus* sp.); Cock, 1985: 90 [Trinidad, *ex* eggs of *C. ethlius* on ornamental cannas – as *Ooencyrtus* sp.; 91 (sent to St. Vincent to control *C. ethlius* on arrowroot *Maranta arundinacea*, is well established (1982); 136,137 (shipped from Trinidad to Bermuda for control of the same pest on cannas in 1953, 1963 and 1964 but no permanent establishment)]; Noyes, 1985: 539-540 (Trinidad, *ex* eggs of *C. ethlius*; introduced in the 1950s into St. Vincent where it has been established and into Bermuda in the 1950s and early 1960s where probably did not establish);

De Santis, 1989: 45 (St. Vincent, Trinidad, Bermuda); Noyes & Hayat, 1994: 424 (introduced in 1953 and 1962-1963 into Bermuda against *C. ethlius*, established but no significant control achieved; introduced in 1950-1951 into St. Vincent against the same pest, established).

262. *O. caribeus* Noyes, 1985.

Noyes, 1985: 540-542 (Trinidad).

263. *O. chrysopae* Crawford, 1913.

Crawford, 1913b: 347 [Trinidad, *ex* eggs of *Chrysopa* sp. (Neur.: Chrysopidae)]; De Santis, 1979: 218 (Trinidad); Noyes, 1980: 217 (Trinidad, *ex* eggs of *Chrysopa* sp.); 1985: 544 (Trinidad).

264. *O. eversi* Noyes, 1985.

Noyes, 1985: 544-546 [Honduras, *ex* eggs of *Opsiphanes cassina fabricii* Boisduval (Lep.: Brassolidae)]; De Santis, 1989: 46: 46 (Honduras).

265. *O. johnsoni* (Howard, 1898).

Bennett & Hughes, 1959: 429 [unsuccessful attempt of introduction from Hawaii into Bermuda against the harlequin bug *Murgantia histrionica* Hahn (Het.: Pentatomidae) on cabbages and mustard plants]; Wilson, 1960: 30 [an attempt of introduction in 1953 from Bermuda into Australia against *Nezara viridula* Linnaeus (Hom.: Pentatomidae); the species was not released]; Clausen, 1978a: 23 (the same, in 1953); De Santis, 1985: 92 (introduced into Bermuda); Noyes, 1985: 546-547 (Antigua, St. Lucia; in Bermuda probably not established); De

Santis, 1989: 46 (Bermuda); Noyes & Hayat, 1994: 393 (introduced into Bermuda to control *M. histrionica*; not established).

266. *O. latiscapus* Gahan, 1927.

Gahan, 1927: 15 [Costa Rica, *ex* eggs of *Hemiceras rava* Schaus (Lep.: Notodontidae)]; De Santis, 1979: 218 (Costa Rica); Noyes, 1985: 547 (Costa Rica).

267. *O. pinguis* Noyes, 1985.

Noyes, 1985: 547-548 (Trinidad); De Santis, 1989: 46 (Trinidad).

268. *O. prenidis* Gahan, 1944.

Gahan, 1944: 137-139 [Puerto Rico, *ex* eggs of *Panoquina* sp. (Lep.: Hesperiiidae)]; Wolcott, 1952:795 (Puerto Rico); De Santis, 1979: 218 [Puerto Rico, *ex* eggs of *Nyctelius nyctelius* Latreille and *Prenes sylvicola* Herrich – Schäffer (Lep.: Hesperiiidae)]; Noyes 1985: 548 (the same).

269. *O. saccharalis* (Gordh et Trjapitzin, 1978).

Bennett & Alam, 1985: 63 [Barbados, hyperparasite of *Saccharosydne saccharivora* Westwood (Hom.: Delphacidae) via *Pseudogonatopus variistriatus* Fenton (Hym.: Dryinidae) – as *Echthrodryinus*].

270. *O. submetallicus* (Howard, 1897).

Howard, 1897: 150 (Grenada – as *Encyrtus*); Ashmead, 1900: 398 (Grenada – as *Syrphophagus*); Gahan, 1927: 17 [St. Vincent, *ex* eggs of *Nezara viridula* Linnaeus (Het.: Pentatomidae)]; Bruner *et al.*, 1945: 102 [Cuba, *ex* eggs of *Anasa scorbutica*

Fabricius (Het.: Coreidae)]; Wilson & Woolcock, 1960: 153 (introduced from Trinidad into Australia to control *Nezara viridula* L.); Wilson, 1960: 30 (an attempt of introduction in 1952-1953 from Trinidad into Australia to combat *N. viridula*; no recoveries); Harrison, 1963a: 87-94 (Costa Rica, *ex* eggs of *Caligo memnon* Felder (Lep.: Brassolidae) – as *Ooencyrtus* sp.); 1963b: 282-285 (Costa Rica, *ex* eggs of *Opsiphanes tamarindi* Felder (Lep.: Brassolidae) – as *Ooencyrtus* sp.); Legner & Bay, 1965a: 556-557 [Puerto Rico, *ex* pupae of *Liohippelates pusio* Loew (Dipt.: Chloropidae); 1965b: 377-385 (the same)]; Davis, 1967: 12-13 (introduction from Trinidad into Hawaii against *N. viridula* var. *smaragdula* Fabricius); Alayo Dalmau, 1973: 70 (Cuba, *ex* eggs of *A. scorbutica*); Bruner *et al.*, 1975: 191 (Cuba); Alayo Dalmau & Hernández, 1978: 58-59 (Cuba); Clausen, 1978a: 25 (introduction in 1962 from Montserrat into Hawaii against *N. viridula* var. *smaragdula*); De Santis, 1979: 218-219 (Cuba, Puerto Rico, St. Vincent, Grenada, Barbados); Lee, 1979: 199-200 (Trinidad, *ex* eggs of *N. viridula*; introduced into a laboratory in Louisiana); Noyes, 1979: 160-163 (Costa Rica, Cuba, Puerto Rico, St. Vincent, Grenada, Barbados, Tobago, Trinidad); De Santis, 1981: 13 (Tobago, Trinidad); Zayas Muños de, 1981: 39 (Cuba, *ex* eggs of *A. scorbutica*); Bennett & Alam, 1985: 63 (Barbados, *ex* eggs of *N. viridula*); Cock, 1985: 33 (Montserrat, Antigua; *ex* eggs of *N. viridula*), 152 [sent from Trinidad to Australia in 1952, to Hawaii in 1962 and for experimental purposes to USA (Florida) in 1973]; De Santis, 1985: 92 (Costa Rica, Cuba, Puerto Rico, St. Vincent, Grenada, Barbados, Tobago, Trinidad); Noyes, 1985: 548-549 (the same); Franqui *et al.*, 1988: 371-374 (Puerto Rico, *ex* eggs of *Mormidea angustata* Still and *Solubea ypsilon* De Geer (Hem.: Pentatomidae); Bennett, 1990b: 681 (introduction in 1962 from Montserrat and Antigua into Hawaii against *N. viridula*); Frank & McCoy, 1993: 25 (introduced

into Florida 1973-1974 from Montserrat via Trinidad into Hawaii as biocontrol agent for *N. viridula*; already was present); Trjapitzin & Sitdikov, 1993: 170 [Costa Rica; Cuba, *ex* eggs of *A. scorbutica* and *Ecpantheria albicornis* Grote (Lep.: Arctiidae); Puerto Rico, St. Vincent, Grenada, Barbados, Tobago, Trinidad]; De Santis & Fidalgo, 1994: 53 (Montserrat, Bermuda), the record from Bermuda is erroneous, possibly on misinterpretation of record in Cock, 1985:152; Woodruff *et al.*, 1998:119 (Costa Rica, Cuba, Puerto Rico, St. Vincent, Grenada, Barbados, Tobago, Trinidad).

271. *O. syrphidis* Noyes, 1985.

Noyes, 1985: 549-552 (St. Vincent; Trinidad, *ex* pupae of Syrphidae on sugarcane); De Santis, 1989: 46 (St. Vincent, Trinidad).

272. *O. trinidadensis* Crawford, 1913.

Crawford, 1913b:347 (Trinidad, *ex* eggs of Pentatomidae); Davis, 1964: 369-375 [Trinidad, *ex* eggs of *Nezara viridula* Linnaeus (Het.: Pentatomidae); unsuccessful attempt of introduction into Hawaii against *N. viridula* var. *smaragdula* Fabricius]; 1967: 12-13 (the same); Clausen, 1978a: 25 (introduction from Montserrat into Hawaii to control *N. viridula* var. *smaragdula*); De Santis, 1979: 219 [Trinidad, *ex* eggs of *Opsiphanes cassina fabricii* Boisduval [Lep.: Brassolidae)]; Noyes, 1980: 217 (Trinidad, *ex* eggs of Pentatomidae); De Santis, 1981: 13 (Montserrat, *ex* eggs of *N. viridula*); Cock, 1985: 33 (Montserrat, Antigua; *ex* eggs of *N. viridula*), 152 (sent from Trinidad to Hawaii in 1962 for laboratory trial on *N. viridula*); De Santis, 1985: 93 (Montserrat, Trinidad); Noyes, 1985: 552 (Trinidad; an attempt of introduction into Hawaii was unsuccessful); Waterhouse & Norris,

1987: 85, 87 (an unsuccessful attempt of introduction in 1962 from West Indies into Hawaii to control *N. viridula*); Bennett, 1990b.: 681 (introduction from Monserrat and Antigua in 1962 into Hawaii against *N. viridula*); Huang & Noyes, 1994: 84 (introduced in 1962 from Trinidad into Hawaii for the control of *N. viridula*, but apparently did not become established).

- *Ooencyrtus* sp.

Bruner *et al.*, 1945: 76 [Cuba, *ex* eggs of *Lymire albipennis* Herrich-Schäffer (Lep.: Arctiidae)]; Alayo Dalmau, 1973: 170 (the same); Zayas Muños de, 1981: 39 (the same); Trjapitzin & Sitdikov, 1993: 39 (the same).

- *Ooencyrtus* spp.

Wolcott, 1952: 795 [Puerto Rico, *ex* Dryinidae (Hym.) infesting *Baldulus maidis* De Long *et* Wolcott (Hom.: Cicadellidae)]; Bennett & Alam, 1985: 63 [Barbados, *ex* eggs of *Calpodes ethlius* Stoll (Lep.: Hesperiiidae)] and *Urbanus viterboana* (Lep.: Hesperiiidae)]; Frank & Bennett, 1970: 10 [Jamaica, *ex* *Pseudogonatopus* sp. (Hym.: Dryinidae) in *Saccharosydne saccharivora* Westwood (Hom.: Delphacidae) – as *Echthrodryinus*] and *ex* *Nyctelius nyctelius* Latreille (Lep.: Hesperiiidae). Probably, it is *O. prenidis* Gahan.

LXXXVIII. *Parablastothrix*

- *Parablastothrix* spp. (2)

Noyes, 1980: 219 (St. Vincent, Trinidad).

LXXXIX. *Parablatticida*

273. *Parablatticida trinidadensis* Noyes et Hayat, 1984.

Noyes, 1980: 192-193 (Trinidad – as *Desobius convexus* Noyes); Noyes & Hayat, 1984: 314 (Trinidad).

- *Parablatticida* spp. (3)

Noyes, 1980:193 (Panama - as *Desobius*; St. Vincent, Trinidad; as *Desobius*).

XC . *Paralitomastix*

- *Paralitomastix* sp.

Fennah, 1947:107 [Puerto Rico, ex *Brachyacma palpigera* Walsingham (Lep.: Gelechiidae)].

XCI. *Peneax*

274. *Peneax deidamia* Noyes, 2000.

Noyes, 2000: 224 (Costa Rica).

XCII. *Pentelicus*

- *Pentelicus* sp.

Noyes, 1980: 202 (Panama – as *Hemaenasius*).

XCI. *Plagiomerus*

275. *Plagiomerus cyaneus* (Ashmead, 1898).

Dozier, 1926: 273-274 [Puerto Rico, *ex Ceroplastes cirripediformis* Comstock (Hom.: Coccidae)]; Bruner *et al.*, 1945: 57 [Cuba, *ex Saissetia oleae* Olivier (Hom.: Coccidae)]; Fenn, 1947:8,9 (West Indies, *ex C. cirripediformis*); Wolcott 1952:793 (Puerto Rico – as *P. cyanea*); Alayo Dalmau, 1973: 70-71 (Cuba); Bruner *et al.*, 1975: 107 (Cuba); Gordh & Lacey, 1976: 140-141 (Trinidad, *ex C. cirripediformis*); Alayo Dalmau & Hernández, 1978: 59 (Cuba); De Santis, 1979: 233 (Cuba, Puerto Rico, Trinidad – as *P. cyanea*); Zayas Muños de, 1981:32 (Cuba, *ex S. coffeae* Walker and *S. oleae*); De Santis, 1989:42 (Lesser Antilles); Trjapitzin & Sitdikov, 1993:171 (Cuba, *ex S. oleae*; Puerto Rico, Trinidad); Castellanos *et al.*, 1996:179 (Cuba, *ex S. oleae*); Trjapitzin & Ruíz Cancino, 2002: 109 (Cuba, Puerto Rico, Trinidad).

276. *P. hospes* Timberlake, 1920.

Gordh & Lacey, 1976: 140 (Trinidad, Bermuda); De Santis, 1989: 42 (Bermuda, *ex Coccoidea* on *Melia* sp.); Trjapitzin & Ruíz Cancino, 2002: 110 (Trinidad, Bermuda).

- *Plagiomerus* spp.

Noyes, 1980: 222 (Trinidad); Hilburn *et al.*, 1990: 167 [Bermuda, *ex Howardia biclavis* Comstock (Hom.: Diaspididae)].

XCIV. *Prionomastix*

277. *Prionomastix nikolskayae* Trjapitzin, 1989.

Trjapitzin, 1989b: 105-106 (Costa Rica); De Santis & Fidalgo, 1994: 66 (Costa Rica); Trjapitzin & Ruíz Cancino, 1998c: 166 (Costa Rica).

- *Prionomastix* sp.

Noyes, 1980: 223 (Trinidad).

XCV. *Prionomitus*

278. *Prionomitus mitratus* (Dalman, 1820).

Noyes & Hanson, 1996: 124-125 (Costa Rica).

XCVI. *Prochiloneurus*

279. *Prochiloneurus dactylopii* (Howard, 1885).

Kerrich, 1953: 798-799 [Trinidad, *ex Leptomastix dactylopii* Howard (Hym.: Encyrtidae) in *Planococcus citri* Risso (Hom.: Pseudococcidae) on cacao – as *Achrysopephagus*]; Bennett, 1957: 572 [Trinidad, *ex Zarhopalus putophilus* Bennett (Hym.: Encyrtidae) in *Puto barberi* Cockerell (Hom.: Pseudococcidae)- as *Achrysopephagus*]; De Santis, 1979: 224-225 (Barbados, Trinidad); Bennett & Alam, 1985: 63 (Barbados, hyperparasite of *Planococcus citri* through *L. dactylopii*); De Santis & Fidalgo, 1994:60 (Dominica).

280. *P. gahani* (Dozier, 1927).

Dozier, 1927: 270-271 [Puerto Rico, *ex Planococcus citri* Risso (Hom.: Pseudococcidae) – as *Achrysoophagus*]; De Santis, 1979: 225 (Puerto Rico – as *Cheiloneurus*); Noyes, 1980:185 (*Cheiloneurus*).

281. *P. io* (Girault, 1920).

De Santis, 1979: 225 (Puerto Rico); Noyes & Hayat, 1994: 460 (probably, an incorrect identification of the species).

282. *P. rex* (Girault, 1920).

De Santis, 1979: 225 (Puerto Rico); Noyes & Hayat, 1994: 460 (probably, an incorrect identification of the species).

283. *P. seini* (Dozier, 1927).

Dozier, 1927: 269 [Puerto Rico, *ex Planococcus citri* Risso (Hom.: Pseudococcidae) – as *Achrysoophagus*]; Kerrich, 1953: 799 [Trinidad, *ex Leptomastix dactylopii* Howard (Hym.: Encyrtidae) in *P. citri* – as *Achrysoophagus*]; De Santis, 1979: 225 (Puerto Rico, Trinidad).

- *Prochiloneurus* sp.

Simmonds, 1957: 7 [Bermuda, a secondary parasite of *Pulvinaria psidii* Maskell (Hom.: Coccidae – as *Procheiloneurus*)]; Bennett & Hughes, 1959: 431 [Bermuda, *ex P. psidii*; probably, 3rd grade parasitoid through *Cheiloneurus pulvinariae* Dozier (Hym.: Encyrtidae)]; Cock, 1985:126: (the same); Simmonds, 1959:7,8 [Bermuda,

ex Microterys kotinskyi Fullaway (Hym.: Encyrtidae) in *P. psidii* – as *Prochiloneurus*]; Hilburn *et al.*, 1990: 168 (Bermuda).

- Trjapitzin note: Most probably, this species belongs to the genus *Cheiloneurus*.

- *Prochiloneurus* spp.

Wolcott, 1952: 792 (Puerto Rico – as *Achrysopephagus*). CIBC, 1978:56 [Bahamas, *ex Anagyrus* sp. (Hymenoptera: Encyrtidae) in *Phenacoccus* sp. (Hom.: Pseudococcidae) on *Acalypha* sp.].

XCVII. *Protyndarichoides*

284. *Protyndarichoides nigriceps* Noyes, 1980.

Noyes, 1980: 224-225 (Tobago, Trinidad); De Santis, 1981: 17 (Tobago, Trinidad).

XCVIII. *Pseudaphycus*

285. *Pseudaphycus angelicus* (Howard, 1898).

Simmonds, 1957: 10 [introduced in 1951 from USA into Bermuda against *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae); not established]; Bennett & Hughes, 1959: 430 [unsuccessful attempt of introduction from California into Bermuda against *P. longispinus*]; Bartlett, 1978c: 165 (the same, in 1951-1955); Cock, 1985:125 (the same, in 1951); De Santis, 1989: 41 (Bermuda, *ex P. longispinus*); Noyes & Hayat, 1994: 419 (introduced in 1951 into

Bermuda to control *P. longispinus*; not established); González Henández, Reimer & Johnson, 1999: 48-49 (introduction in 1958 into Hawaii from Trinidad).

286. *P. angustifrons* Gahan, 1946.

Gahan, 1946: 319 [Cuba, *ex* Pseudococcidae (Hom.), probably *Dysmicoccus brevipes* Cockerell]; Alayo Dalmau, 1973: 70 (Cuba, *ex* *D. brevipes*); Alayo Dalmau & Hernández, 1978: 58 (Cuba); De Santis, 1979: 210 (Cuba); Trjapitzin & Sitdikov, 1993: 171 (Cuba, *ex* *D. brevipes*); Trjapitzin & Ruíz Cancino, 2002: 111 (the same).

287. *P. dysmicocci* Bennett, 1955.

Bennett, 1955: 413-414 [Trinidad, *ex* *Dysmicoccus brevipes* Cockerell (Hom.: Pseudococcidae)]; Greathead, 1971: 5 (Trinidad, *ex* *D. brevipes*; introduction in 1954-1955 into Ghana for the control of *Planococcoides njalensis* Laing (Hom.: Pseudococcidae), vector of swollen shoot virus on cacao]; Bartlett, 1978c: 142 (introduced from Trinidad into Hawaii in 1958; results unknown); De Santis, 1979: 210 (Trinidad, *ex* *D. brevipes*); De Santis & Fidalgo, 1994: 54 (Bermuda), erroneous record; Trjapitzin & Ruíz Cancino, 2002: 111 (Trinidad, *ex* *D. brevipes* on pineapple).

288. *P. ferrisiana*e Bennett, 1955.

Bennett, 1955: 414-415 [Trinidad, *ex* *Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) on cacao; sent to California and Ghana in 1953]; Greathead, 1971: 5 [Trinidad, *ex* *F. virgata*; introduced in 1954-1955 into Ghana against *Planococcoides njalensis* Laing (Hom.: Pseudococcidae), a vector of swollen shoot

virus on cacao]; De Santis, 1979: 210 (Trinidad, *ex F. virgata*); Rosen, 1981: 258-260 (the same); Cock, 1985:151 (the same); De Santis & Fidalgo, 1994: 54 (Bermuda), authors note – erroneous record based on misinterpretation of species record by Cock, 1985:151; Trjapitzin & Ruíz Cancino, 2002: 111 (Trinidad, *ex F. virgata* on cacao).

289. *P. mundus* Gahan, 1946.

Gahan, 1946:321-324 [introduced from Louisiana into Puerto Rico against *Dysmicoccus boninsis* (Kuwana) (Hom.: Pseudococcidae) under the name *Aphycus terryi* Fullaway (= *Pseudococcobias terryi* Fullaway) (Hym.: Encyrtidae) due to contaminated cultures]; Wolcott, 1952:792 (the same, field recoveries made); Frank & Bennett, 1970:10 (Jamaica, *ex D. boninsis* and *Saccharicoccus sacchari* Cockerell); Greathead, 1971:4 [an unsuccessful attempt of introduction in 1954-1955 from Trinidad into Ghana for the control of *Planococcoides njalensis* Laing (Hom.: Pseudococcidae); a vector of swollen shoot virus of cacao]; Alam, 1972:357, 358 (Barbados, *ex Saccharicoccus sacchari* on sugarcane); Bartlett, 1978c:140-141 (introduced from Louisiana into Puerto Rico against *D. boninsis* and established; in Puerto Rico infests also *S. sacchari*); De Santis, 1979:210 (Bahamas, Jamaica, Puerto Rico); Bennett & Alam, 1985:63 (Barbados, *ex S. sacchari*); Cock, 1985:55 (St. Kitts, *ex S. sacchari* on sugarcane); Cruz & Sagarra, 1992:402 (listed as both *P. mundus* and *A. terryi*; introduced into Puerto Rico for control of *D. boninsis*; results unknown); De Santis & Fidalgo, 1994:55 (St. Kitts, Nevis); Trjapitzin & Ruíz Cancino, 2002: 113 [Puerto Rico (successfully introduced from Louisiana against *D. boninsis*); Bahamas, Jamaica; Nevis; in St. Kitts, Puerto Rico and Barbados attacks *S. sacchari* on sugarcane].

290. *P. perdignus* Compere et Zinna, 1955.

Simmonds, 1957: 10 [introduced in 1951 – 1954 from USA into Bermuda against *Planococcus citri* Risso (Hom.: Pseudococcidae); not established]; Bennett & Hughes, 1959:430 (the same, introduced in 1953); Bartlett, 1978c: 152 [introduced in 1951-1954 into Bermuda for the control of *P. citri* (Hom.: Pseudococcidae) on citrus; not established]; Cock, 1985:125 (the same, in 1953-1955); Noyes & Hayat, 1994: 416 (the same, in 1953-1955).

291. *P. utilis* Timberlake, 1923.

Anonym, 1942: 68 [successful introduction into Puerto Rico for the control of *Nipaecoccus nipae* Maskell (Hom.: Pseudococcidae) – as *Pseudaphycus* sp.]; Gahan, 1946: 315-316 (very effective introduction from México into Puerto Rico); Wolcott, 1952:791 (introduced from Hawaii into Puerto Rico in 1939; established quickly and spread rapidly); Bennett, 1955:415-416 (Trinidad, *ex N. nipae* on cacao); Bennett & Hughes, 1959: 425 (unsuccessful attempt of introduction in 1926 from Hawaii into Bermuda against *N. nipae*); Bartlett, 1978c: 146 (introduced in 1938-1939 from Hawaii into Puerto Rico against *N. nipae* and established; introduced in 1926 from Hawaii into Bermuda against the same pest, but did not establish); De Santis, 1979: 211 (Puerto Rico, Trinidad; *ex N. nipae*); Cock, 1985:14 (very effective introduction into Puerto Rico against *N. nipae*; also the parasitoid was introduced from Trinidad into St. Kitts for the control of the same pest, but in this case results are unknown), 124 (introduced from Hawaii into Bermuda in 1926, not established); De Santis, 1989: 41 (Dominican Republic, Bermuda); De Santis & Fidalgo, 1994:55 (St. Kitts, Nevis); Noyes & Hayat, 1994: 408 (introduced in 1932 into Puerto Rico; established),

410 (introduced in 1926 into Bermuda against *N. nipae*, but not established; introduced in 1938-1939 into Puerto Rico against the same pest and established; introduced in 1972 into St. Kitts, results unknown); 2002:114 [Puerto Rico (introduced from Hawaii); Trinidad, *ex N. nipae* on cacao; Dominican Republic].

- *Pseudaphycus* spp.

Fennah, 1947:130,132 [Puerto Rico, *ex Ferrisia virgata* Cockerell (Hom.: Pseudococcidae)]; Wolcott, 1950:166 [Puerto Rico, *ex F. virgata*]; Noyes, 1980: 225 (Trinidad).

XCIX. *Pseudectroma*

292. *Pseudectroma europaeum* (Mercet, 1921).

De Santis, 1981:14 (Trinidad – as *Timberlakia europaea*); Cock, 1985:126 [Bermuda, *ex Antonina graminis* Maskell (Hom.: Pseudococcidae)]; Hilburn *et al.*, 1990:168 (Bermuda, *ex A. graminis*); Trjapitzin & Ruíz Cancino, 2000a: 121-123 [Dominican Republic; Puerto Rico (introduced from Hawaii); Trinidad].

Bennett, 1994: 131 (reported from the Caribbean but considered to be an undescribed Asiatic species of the same genus).

Authors' note: almost certainly these "recovery" records from Bermuda and the Caribbean refer to an undescribed Asiatic species of *Pseudectroma*.

C. *Pseudhomalopoda*

293. *Pseudhomalopoda prima* Girault, 1915.

Girault, 1915b: 171-172 [Jamaica, *ex Chrysomphalus aonidum* Linnaeus (Hom.: Diaspididae) and *Aleurocanthus woglumi* Ashby (Hom.: Aleyrodidae)]; Bruner *et al.*, 1945: 46 (Cuba, *ex Ch. aonidum*); Dozier, 1937: 124 (Haiti and Dominican Republic, *ex C. aonidum*; Puerto Rico); Alayo Dalmau, 1973: 70 (Cuba, *ex C. aonidum*); Bruner *et al.*, 1975: 86 (Cuba); Alayo Dalmau & Hernández, 1978: 59 (Cuba); De Santis, 1979: 230 (Jamaica, Cuba, Haití, Dominican Republic, Puerto Rico); Noyes, 1980: 225 (West Indies); Zayas Muños de, 1981: 39 (Cuba, *ex C. aonidum*); Trjapitzin & Sitdikov, 1993: 171 (Jamaica; Cuba, *ex Ch. aonidum*); Castellanos *et al.*, 1996:177 (Cuba, *ex C. aonidum* on citrus); Trjapitzin & Ruíz Cancino, 1998b: 3 (Jamaica, Cuba, Haiti, Dominican Republic, Puerto Rico; the common host – *C. aonidum*); 2002: 116 (Jamaica, Cuba, Haiti, Dominican Republic, Puerto Rico).

CI. *Pseudleptomastix*

294. *Pseudleptomastix abas* Noyes, 2000.

Noyes, 2000: 133-134 (Costa Rica).

295. *P. squammulata* Girault, 1915.

Noyes, 2000: 134-135 (Costa Rica).

- *Pseudleptomastix* sp.

Villanueva Jiménez *et al.*, 2001: 155 [Dominican Republic, *ex Paracoccus marginatus* Williams *et* Granara de Willink (Hom.: Pseudococcidae).

CII. *Psyllaephagus*

296. *Psyllaephagus alexion* Noyes *et* Hanson, 1996.

Noyes & Hanson, 1996: 136-137 (Costa Rica).

297. *P. creusa* Noyes *et* Hanson, 1996.

Noyes & Hanson, 1996: 130-131 [Costa Rica, *ex Neolithus* sp. (Hom.: Psylloidea), forming closed galls on leaves of *Sapium oligoneuron*].

298. *P. domitius* Noyes *et* Hanson, 1996.

Noyes & Hanson, 1996: 129-130 (Costa Rica).

299. *P. epulo* Noyes *et* Hanson, 1996.

Noyes & Hanson, 1996: 135-135 [Costa Rica, *ex* galls formed by *Trioza* sp. (Hom., Psylloidea) *mangifoliae* group on the fruit of *Cinnamomum hammelianum*].

300. *P. gyces* Noyes *et* Hanson, 1996.

Noyes & Hanson, 1996: 131-132 (Costa Rica); Trjapitzin & Ruíz Cancino, 2002a: 125 (Costa Rica).

301. *P. othrys* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 127-128 [Costa Rica, *ex* nymphs of *Euphalerus certus* Tuthill (Hom.: Psylloidea), forming galls on *Lonchocarpus atropurpureus*].

302. *P. rotundiformis* (Howard, 1897).

Howard, 1894: 97 (St. Vincent – as *Encyrtus tiliaris* Dalman); 1897: 154 (Grenada – as *Encyrtus*); Ashmead, 1900: 396 (Grenada – as *Pseudencyrtus*); Noyes, 1979: 165-166 (St. Vincent, Grenada, Tobago, Trinidad); De Santis, 1981: 15 (St. Vincent, Tobago, Trinidad); Noyes & Hanson, 1996: 137-138 (Belize, Costa Rica, Panamá, Jamaica, St. Vincent, Grenada, Tobago, Trinidad); Woodruff *et al.*, 1998:119 (St. Vincent, Grenada, Trinidad).

303. *P. thonis* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 135-136 (Costa Rica).

304. *P. trioziophagus* (Howard, 1885).

Noyes & Hanson, 1996: 133-134 [Costa Rica, *ex* galls of *Trioza* sp. nr. *maritima* Tuthill (Hom.: Psylloidea) on leaves of *Avicennia germinalis* and *ex* nymphs of *Mastigimas* sp. (Psylloidea) on *Cedrella odorata*; Panamá; Jamaica, *ex* Psylloidea; Cuba, *ex* *Coelocara ernstii* Schwarz (Psylloidea)]; Trjapitzin & Ruíz Cancino, 2002a: 126 (the same).

305. *P. tyche* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 132-133 (Costa Rica).

306. *P. ufens* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 128-129 [Costa Rica, *ex* trioqid galls, almost certainly *Trichoermes magna* Laing (Hom.: Psylloidea) on *Pseudolmedia oxyphillaria*].

307. *P. yaseeni* Noyes, 1990.

Murai, 1986: 1-6 [introduction from the West Indies into Hawaii; parasitoid of *Heteropsylla cubana* Crawford (Hom.: Psylloidea); infests also *H. huasache* Caldwell and *H. fusca* Crawford - as *Psyllaephagus* sp. nr. *rotundiformis*]; Nakahara & Funasaki, 1986:9-12 (West Indies, *ex H. cubana* - as *Psyllaephagus* sp. nr. *rotundiformis*); 1987:11-13 (introduction into Hawaii against *H. cubana* - as *Psyllaephagus* sp. nr. *rotundiformis*); Nakahara *et al.*, 1987: 39-44 (introduced from West Indies into Hawaii for the control of *H. cubana* on *Leucaena leucocephala*; established - as *Psyllaephagus* sp. nr. *rotundiformis*); Waterhouse & Norris, 1987: 39 (introduction from the Caribbean Region into Hawaii - as *Psyllaephagus* sp. nr. *rotundiformis*); Beardsley & Uchida, 1990: 155-156 (introduced from Trinidad and Tobago into Hawaii); Funasaki *et al.*, 1990: 153, 155-158 (Tobago, *ex H. cubana*; introduced into Hawaii in 1985-1987, where it was recovered in 1988 - as *Psyllaephagus* sp. nr. *rotundiformis*); Napompeth, 1990: 48, 49, 50, 51 (the same); Noyes, 1990b: 37-41 (Jamaica, Cuba, Haití; Tobago, *ex H. incisa* Sulc and *H. cubana*); Waage, 1990: 145, 147, 148, 150, 151 (Jamaica, Cuba, Haití, Puerto Rico, Barbados, Trinidad; *ex H. cubana*; introduced from Trinidad and Tobago into Hawaii - as *Psyllaephagus* sp. nr. *rotundiformis*); Patil *et al.*, 1993: 565-577 (Trinidad and Tobago, *ex H. cubana*); De Santis & Fidalgo, 1994: 55- 6 (Jamaica, Cuba, Haití, Tobago, Trinidad; *ex H. cubana*); Noyes & Hanson, 1996: 138-139 (Costa Rica, *ex* Psylloidea on *Pithecellobium arboreum*; Jamaica, Cuba, Haiti, Puerto

Rico, Anguilla, St. Lucia; *ex H. cubana*); Trjapitzin & Ruíz Cancino, 2002a: 126 (Costa Rica, Cuba, Jamaica, Haiti, Puerto Rico, St. Lucia, Tobago, Anguilla).

- *Psyllaephagus* sp.

Bruner *et al.*, 1945: 35 [Cuba, *ex Coelocara ernstii* Schwarz (Hom.: Psylloidea)]; Alayo Dalmau, 1973: 69 (Cuba *ex C. ernstii*); Zayas Muños de, 1981: 39 (Cuba, *ex C. ernstii*); Trjapitzin & Sitdikov, 1993: 171 (Cuba, *ex C. ernstii*).

- *Psyllaephagus* spp. (3)

Noyes, 1980: 226 (Cuba); Hilburn *et al.*, 1990: 168 (Bermuda); Noyes & Hanson, 1996: 128 [Belize, *ex* leaves of *Lonchocarpus rugosus* with galls of *Euphalerus* sp. (Hom.: Psylloidea)].

CIII. *Rhopus*

308. *Rhopus nigroclavatus* (Ashmead, 1902).

Frank & Bennett, 1970:10 (Jamaica, *ex* Coccoidea – as *Xanthoencyrtus*). De Santis, 1979: 231 (Jamaica); Noyes, 2000: 127-128 (Costa Rica).

CIV. *Rhytidothorax*

309. *Rhytidothorax bollowi* (Mercet, 1928).

Mercet, 1928: 10 (Costa Rica – as *Parencyrtus*); Kerrich, 1967: 152 – 153 (Costa Rica – as *Parastenoterys*).

310. *R. flaviclava* De Santis, 1964.

Mercet, 1928: 9 (Costa Rica – as *Parencyrtus brasiliensis* Ashmead).

311. *R. hirtus* (Howard, 1894).

Howard, 1894: 95 – 96 (St. Vincent – as *Encyrtus*); Ashmead, 1900: 381 (St. Vincent – as *Echthroplexis*); Schmiedeknecht, 1909: 237 (St. Vincent – as *Coenocercus*); Noyes, 1979: 159 – 160 (St. Vincent, Trinidad – as *Hunterellus*).

CV. *Sectiliclava*

312. *Sectiliclava isis* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 123 – 124 (Costa Rica); Monrreal Hernández *et al.*, 2001: 33 (Costa Rica).

313. *S. pulchriceps* Noyes et Hanson, 1996.

Noyes, 1980: 209 (Trinidad – as *Lochitoencyrtus gahani* De Santis); De Santis & Fernández, 1989: 30 – 31 (Trinidad – as *L. gahani*); Noyes & Hanson, 1996: 122–123 (Costa Rica, Trinidad); Monrreal Hernández, *et al.*, 2001: 33 (Costa Rica, Trinidad).

CVI. *Shenahetia*

314. *Shenahetia masneri* Noyes, 1980.

Noyes, 1980: 228 (Trinidad); De Santis, 1981: 12 (Trinidad).

- *Shenahetia* sp.

Noyes, 1980: 228 (Trinidad).

CVII. *Syrphophagus*

315. *Syrphophagus aphidivorus* (Mayr, 1876).

Wolcott, 1952:795 (Puerto Rico – as *Aphidencyrtus*).

316. *S. celia* (Girault, 1917).

Girault, 1917: 22 [Puerto Rico, *ex* puparia of *Ocyptamus* sp. (Dipt.: Syrphidae) – as *Habrolepoidea*]; 1920: 177-216 (Puerto Rico – as *Habrolepoidea*); Wolcott, 1952:796 (Puerto Rico – as *Habrolepoidea*); De Santis, 1979: 190 (Puerto Rico, *ex* *Ocyptamus* sp.); Noyes, 1980: 199 – 200 (St. Vincent – as *Habrolepoidea*); Trjapitzin & Gordh, 1984: 1276 (Puerto Rico, *ex* puparia of Syrphidae on sugarcane).

317. *S. quadrimaculatae* (Ashmead, 1881).

Wolcott, 1952: 796 (Puerto Rico, *ex* puparia of Syrphidae – as *S. mesograptae* Ashmead); De Santis, 1979: 220 (the same – as *S. quadrimaculati*).

- *Syrphophagus* spp.

Kirkpatrick, 1954:777-781 [Trinidad, *ex* larvae of *Baccha dimidiata* Fabricius (Dipt.: Syrphidae)]; Noyes, 1980: 175 (St. Vincent, 231 (Trinidad): Frank & Bennett, 1970:10 (Jamaica – as *Aphidencyrtus*; and as *Syrphophagus ex* Syrphidae).

CVIII. *Tachinaephagus*

318. *Tachinaephagus zealandicus* Ashmead, 1904.

Legner, 1978: 350, 351 [introduced in 1967 – 1968 from California (origin – Australia and New Zealand) into Trinidad for the control of house and stable flies, especially *Musca domestica* Linnaeus, *Stomoxys calcitrans* Linnaeus and *Fannia canicularis* Linnaeus (Dipt.: Muscidae); established]; De Santis, 1981: 17 (St. Kitts, Trinidad); Greathead & Monty, 1982: 106 (introduced in 1966-1972 from Trinidad into Mauritius against *S. calcitrans* and *S. nigra* Meigen; recovered); Cock, 1985:105 (consignments were sent from California to Trinidad in 1967-1969, no mention of shipment to Mauritius).

Authors' note: the CIBC annual reports for 1966-1970 do not mention shipment of this species to Mauritius from Trinidad. F.D. Bennett is not certain, despite reports that this species was actually established in Trinidad. Noyes (1980) does not include it.

CIX. *Tetarticlava*

319. *Tetarticlava yoshimotoi* Noyes, 1980.

Noyes, 1980: 232-233 (St. Vincent, Trinidad); De Santis, 1981: 19 (Trinidad); Trjapitzin & Ruíz Cancino, 2002: 120 (St. Vincent, Trinidad).

CX. *Tetracnemoidea*

320. *Tetracnemoidea peregrina* (Compere, 1939).

Simmonds, 1957: 10 [introduced in 1917 from USA into Bermuda for the control of *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae); established – as *Tetracnemus peregrinus*]; Bennett & Hughes, 1959: 430 (the same – as *T. peregrinus*); Bartlett, 1978c: 165 (introduced in 1951-1955 from California into Bermuda against *P. longispinus*; established – as *Hungariella*); Cock, 1985:124,125 (the same – as *Arhopoideus peregrinus*); De Santis, 1989:33 (Bermuda, *ex P. longispinus*); Trjapitzin, 1989a:158-159 [introduced into Bahamas (erroneous indication!)]; Hilburn *et al.*, 1990: 168 (Bermuda, *ex P. longispinus* - as *T. peregrinus*); Noyes & Hayat, 1994: 420 (introduced in 1951 into Bermuda for the control of *P. longispinus*; established; partial control of the pest); Trjapitzin & Ruíz Cancino, 2002: 123 (Bermuda, introduced from California against *P. longispinus*; established).

321. *T. sydneyensis* (Timberlake, 1929).

Simmonds, 1957: 10 [introduced in 1951 from USA into Bermuda against *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae); not established – as *Anarhopus*]; Bennett & Hughes, 1959: 430 [unsuccessful attempt of introduction in 1951-1953 from California into Bermuda for the control of *P. longispinus* on *Cycas revoluta*, *Nerium oleander* and *Pittosporum* – as *Anarhopus*]; Bartlett, 1978c: 165 (unsuccessful attempt of introduction in 1951-1955 into Bermuda – as *Anarhopus*); De Santis, 1979: 236 (Trinidad, *ex P. longispinus*– as *Anarhopus*); Noyes, 1980: 173-174 [Trinidad, introduced (¿) – as *Anarhopus*]; Cock,

1985:125 (the same as Bennett & Hughes, 1959; origin Australia); Trjapitzin, 1989a:160 (introduced into Trinidad); Noyes & Hayat, 1994: 420 (introduced in 1951-1953 and 1954 into Bermuda against *P. longispinus*; not established); Trjapitzin & Ruíz Cancino, 2002: 123 (introduced into Trinidad against *P. longispinus*).

CXI. *Tetracnemus*

322. *Tetracnemus patro* Noyes, 2000.

Noyes, 2000: 21-22 (Costa Rica).

CXII. *Trechnites*

323. *Trechnites merops* Noyes et Hanson, 1996.

Noyes & Hanson, 1996: 112-113 [Costa Rica, *ex Trioza* sp. (Hom.: Psylloidea) on *Clethra* sp.]; Trjapitzin & Ruíz Cancino, 2002: 126 (the same).

CXIII. *Trichomasthus*

324. *Trichomasthus mexicanus* (Girault, 1917).

Cohen & Kamburov, 1968: 34 [Trinidad, *ex Ceroplastes floridensis* Comstock (Hom.: Coccidae – as *Coccidoxenus*)]; Davis, 1974:322-358 [Trinidad, *ex C. floridensis*; introduction into Hawaii for control of *C. cirripediformis* Comstock – as *Coccidoxenus*]; Beardsley, 1976: 208 (introduced in 1967 from Trinidad into Hawaii – as *Coccidoxenus*); Bartlett, 1978b:58 [unsuccessful attempt of

introduction in 1967 from Trinidad into Hawaii for the control of *C. rubens* Maskell – as *Coccidoxenus*); De Santis, 1979:204 (Antilles, Trinidad); Sailer, 1982:22 [*C. cirripediformis*, a pest of passion fruit vines in Hawaii was completely controlled by *Trichomasthus* (= *Coccidoxenus*) *mexicanus* Girault, obtained from Trinidad where it was reared from *C. floridensis*]; Cock, 1985:146,147 (the same, good control of *C. cirripediformis* in Hawaii); De Santis & Fidalgo, 1994:50 (Bermuda), erroneous record.

Authors note: record for Bermuda is based on misinterpretation of record in Cock., 1985:152.

325. *T. nikolskayae* Sugonjaev, 1989.

Sugonjaev, 1989: 94-95 [Trinidad, ex *Parasaissetia nigra* Nietner (Hom.: Coccidae) and *Ceroplastes parkinsonia* [according to Y. Ben-Dov, pers. comm. – *nomen nudum*]]; De Santis & Fidalgo, 1994: 50 (Trinidad, ex *P. nigra*).

Bennet's note: if the specimens of *Trichomasthus nikolskayae* from Trinidad were mine the *nomen nudum* is possibly due to illegible labelling of the specimens or misinterpretation of the collector's label. I reared specimens of *Trichomasthus* from *Ceroplastus floridensis* Comstock on *Parkinsonia aculeata* in Trinidad. The material sent to Hawaii as *Trichomasthus mexicanus* was obtained from the same source (a tree by front door of my house) and hence the records arising from that introduction should be transferred to *Trichomasthus nikolskayae*.

326. *T. portoricensis* (Crawford, 1913).

Crawford, 1913a: 248 [Puerto Rico, ex "wax scale" (Hom.: Coccidae) – as *Coccidoxenus*]; Bruner *et al.*, 1945: 57 [Cuba, ex *Saissetia oleae* Olivier

(Hom.:Coccidae) on coffee – as *Coccidoxenus*]; Simmonds, 1957: 9 (Bermuda, ex *Parasaissetia nigra* Nietner – as *Coccidoxenus*); Alayo Dalmau, 1973: 71 (Cuba – as *Coccidoxenus*); Bruner *et al.*, 1975: 107 (Cuba – as *Coccidoxenus*); Alayo Dalmau & Hernández, 1978: 59 (Cuba – as *Coccidoxenus*); De Santis, 1979: 204 (Cuba, Puerto Rico); Zayas Muños de, 1981; 38 (Cuba, ex *S. oleae* – as *Coccidocyrtus*); Sugonjaev, 1989: 92-93 (Cuba, Puerto Rico, Bermuda); Hilburn *et al.*, 1990: 168 (Bermuda, hyperparasitoid of *P. nigra*); Trjapitzin & Sitdikov, 1993: 172 (Cuba, ex *S. oleae*; Puerto Rico, Bermuda); De Santis & Fidalgo, 1994: 50 (Bermuda, hyperparasitoid of *P. nigra*).

- *Trichomasthus* sp.

Noyes, 1980:234 (Trinidad).

Bennet's note: Should this entry be incorporated into *Trichomasthus nikolskayae* entry. Noyes mentions 2 undetermined species from Trinidad and Brazil, that is probably one from Trinidad and one from Brazil. The one from Trinidad should be *Trichomasthus nikolskayae* (I have not seen Sugonjaev's 1989 paper so cannot check to see whether he records other species from Trinidad , also I do not read Russian).

- *Trichomasthus* spp.

Zayas Muños de, 1981:38 [Cuba, ex *Toumeyella* sp. (Hom.: Coccidae) – as *Coccidoxenus*]; Castellanos *et al.*, 1996:180 (Cuba, ex *T. cubensis* Heidel *et* Köhler on *Citrus* – as *Coccidoxenus*; 1997:26-27 (the same).

CXIV. *Xenoencyrtus*

327. *Xenoencyrtus niger* Riek, 1962.

Cock, 1985: 34, 35. Australian origin [introduced in 1963 from Hawaii via Trinidad into Antigua for the control of *Nezara viridula* Linnaeus (Hem.: Pentatomidae); no recoveries]; Waterhouse & Norris, 1987: 84 (unsuccessful attempt of introduction in 1963 from Australia into Antigua against *N. viridula*); De Santis & Fidalgo, 1994: 53 (Montserrat, Antigua); Noyes & Hayat, 1994: 394 (introduced in 1963 into Antigua; not established).

Authors note: the CIBC annual reports do not record any shipments to Montserrat.

CXV. *Zaomma*

328. *Zaomma argentipes* (Howard, 1894).

Howard, 1894: 95 (St. Vincent – as *Encyrtus*); Ashmead, 1900: 340, 401 (St. Vincent); De Santis, 1979: 234 (St. Vincent); Gordh & Trjapitzin, 1979: 37-38 (St. Vincent); Noyes, 1979: 166 (St. Vincent).

- *Zaomma* spp.

Noyes, 1980: 245 (Trinidad); Bennett & Alam, 1985: 62 [Barbados, *ex Aspidiella hartii* Cockerell (Hom.: Diaspididae) and *Nipaecoccus nipae* Maskell (Hom.: Pseudococcidae) – as *Apterencyrtus*].

CXVI. *Zaplatycerus*

329. *Zaplatycerus cethegi* Noyes, 2000.

Noyes, 2000: 212-213 (Costa Rica).

330. *Z. chalybes* Noyes, 2000.

Noyes, 2000: 210-211 (Costa Rica, Panama).

331. *Z. chorotega* Noyes, 2000.

Noyes, 2000: 212-213 (Costa Rica).

332. *Z. fullawayi* Timberlake, 1925.

Timberlake, 1925: 176-177 [Panama, *ex Dysmicoccus brevipes* Cockerell (Hom.: Pseudococcidae)]; Fullaway, 1952: 99 (introduction from Panama into Hawaii for the control the pineapple mealybug *D. brevipes*); Kerrich, 1978: 152-153 (Panama, *ex D. brevipes*); De Santis, 1979: 240 (the same); Noyes, 2000: 211 (Costa Rica, Panama).

333. *Z. planiscutellum* Kerrich, 1978.

Kerrich, 1978: 153-155 [Trinidad, *ex Planococcus citri* Risso (Hom.: Pseudococcidae)].

CXVII. *Zarhopalus*

334. *Zarhopalus clavatus* Kerrich, 1978.

Kerrich, 1978: 127 [Trinidad, *ex Nipaecoccus nipae* Cockerell (Hom.: Pseudococcidae)]; Cock, 1985: 15 (Trinidad, *ex N. nipae*); De Santis & Fidalgo, 1994: 49 (St. Kitts).

Author's note: The De Santis & Fidalgo record for St. Kitts if based on a misinterpretation of Cock (1985) is erroneous. Cock, 1985:14,15 while recording *Pseudaphycus utilis*, *Zonhopalus clavatus* and *Anagyrus* sp. from Trinidad states that only *P. utilis* was shipped to St. Kitts in 1972.

335. *Z. inquisitor* (Howard, 1881).

Burks, 1967a: 243 (West Indies); De Santis, 1979: 229 (Antilles)

336. *Z. perses* Noyes, 2000.

Noyes, 2000: 240-241 (Costa Rica).

337. *Z. putophilus* Bennett, 1957.

Bennett, 1957: 571-572 [Trinidad, *ex Puto barberi* Cockerell (Hom.: Pseudococcidae) on cacao, *Lantana camara*, *Acalypha wilkesiana*, *Gliricidia sepium* and *Coccolobus uvifera*]; Kerrich, 1978: 126 (Trinidad, *ex P. barberi*); De Santis, 1979: 229 (the same).

CHAPTER 3

HOST – PARASITOID LIST

ARACHNIDA ACARINA

Ixodidae

Dermacentor nitens Newman *Ixodiphagus hookeri* (Howard)
Rhipicephalus sanguineus Latreille *I. hookeri*

INSECTA BLATTODEA

Blattellidae

Supella supellectilium Serville *Comperia merceti* (Compere)

COLEOPTERA

Coccinellidae

Coleomegilla innotata Mulsant *H. terminalis* (Say)
Coleomegilla sp. *H. terminalis*

| | |
|----------------------------------|--|
| <i>Cryptolaemus</i> sp. | <i>Coccidoctonus trinidadensis</i> Crawford* |
| <i>Cycloneda limbifera</i> Casey | <i>H. terminalis</i> |
| | <i>H. flaminus</i> (Dalman) |
| <i>C. sanguinea</i> Linnaeus | <i>H. terminalis</i> |
| <i>Cycloneda</i> sp. | <i>H. terminalis</i> |
| <i>Hyperaspis</i> sp. | <i>H. hyperaspidis</i> Timberlake |
| Coccinellidae gen. sp. | <i>H. terminalis</i> |

Nitidulidae

| | |
|------------------------------------|--|
| <i>Lobiopa insularis</i> Castelnau | <i>Cerchysiella insularis</i> (Howard) |
| Nitidulidae gen. sp. | <i>C. scutellata</i> (Howard) |

DIPTERA

Cecidomyiidae

| | |
|---|---|
| <i>Diadiplosis coccidarum</i> Cockerell | <i>Coccidoctonus trinidadensis</i> Crawford |
| Cecidomyiidae gen. sp. | <i>C. trinidadensis</i> |

Ceratopogonidae

| | |
|--------------------------------------|--|
| <i>Forcipomyia fuliginosa</i> Meigen | <i>Forcipetricis portoricensis</i> Gordh |
|--------------------------------------|--|

Chloropidae

| | |
|---------------------------------|--|
| <i>Liohippelates pusio</i> Loew | <i>Ooencyrtus submetallicus</i> (Howard) |
|---------------------------------|--|

Drosophilidae

Rhinoleucophenga sp.

Cheiloneurus nigrescens (Howard)

Muscidae

Fannia canicularis Linnaeus

Tachinaephagus zealandicus Ashmead

Musca domestica Linnaeus

T. zealandicus

Stomoxys calcitrans Linnaeus

T. zealandicus

Syrphidae

Baccha dimidiata Fabricius

Syrphophagus sp.*

Ocyptamus sp.

S. celia (Girault)*

Syrphidae gen. sp.

*S. celia**

HETEROPTERA

Coreidae

Anasa scorbutica Fabricius

Ooencyrtus submetallicus (Howard)

Pentatomidae

Mormidea angustata Stal

O. submetallicus

Nezara viridula Linnaeus

O. submetallicus

O. trinidadensis Crawford

Solubea ypsilon De Geer

O. submetallicus

Pentatomidae gen. sp.

O. trinidadensis

HOMOPTERA

Cicadellidae

Baldulus maidis De Long et Wolcott *Ooencyrtus* sp.*

Clastopteridae

Clastoptera flavidorsa *Carabunia waterstoni* Subba Rao

Metcalf et Brunner

C. undulata Uhler

C. myersi

C. waterstoni Subba Rao

Clastoptera sp. nr. *diminuta* Ramos *C. waterstoni*

Clastoptera spp.

C. myersi

C. waterstoni

Delphacidae

Saccharosydne saccharivora

Cheiloneurus sp.*

Westwood

Ooencyrtus saccharalis Gordh et Trjapitzin*

Ooencyrtus sp.*

COCCOIDEA

Aclerididae

Aclerda sp.

Mucroncyrtus insulanus Noyes

Asterolecaniidae

Asterolecanium bambusae

Cheiloneurus sp.*

Boisduval

Russelaspis pustulans Cockerell

Metaphycus portoricensis (Dozier)

| | |
|-------------------------------------|--|
| | <i>M. reticulatus</i> (Dozier) |
| Coccidae | |
| <i>Ceroplastes cirripediiformis</i> | <i>Metaphycus ceroplastae</i> (Dozier) |
| Comstock | <i>M. eruptor</i> (Howard) |
| | <i>M. flavus</i> (Howard) |
| | <i>Plagiomerus cyaneus</i> (Ashmead) |
| | Encyrtidae gen. sp. |
| <i>C. floridensis</i> Comstock | <i>Metaphycus ceroplastae</i> (Dozier) |
| | <i>M. flavus</i> (Howard) |
| | <i>Trichomasthus nikolskayae</i> Sugonjaev |
| <i>C. giganteus</i> Dozier | <i>Homalopoda cristata</i> Howard |
| | <i>M. ceroplastae</i> |
| <i>Ceroplastes</i> sp. | <i>M. stanleyi</i> Compere |
| | <i>Metaphycus</i> sp. |
| | <i>Trichomasthus nikolskayae</i> Sugonjaev |
| <i>Coccus hesperidum</i> Linnaeus | <i>Anicetus annulatus</i> Timberlake |
| | <i>Encyrtus aurantii</i> (Geoffroy) |
| | <i>Metaphycus stanleyi</i> Compere |
| | <i>Microterys</i> sp. |
| <i>C. mangiferae</i> Green | <i>Gahaniella saissetiae</i> Timberlake* |
| <i>C. viridis</i> Green | <i>Anicetus annulatus</i> Timberlake |
| | <i>Cheiloneurus</i> sp. * |
| | <i>Metaphycus helvolus</i> (Compere) |
| | <i>M. stanleyi</i> Compere |
| | <i>Metaphycus</i> sp. |

Coccus sp.

Parasaissetia nigra Nietner

Protopulvinaria pyriformis

Cockerell

Pulvinaria elongata Newstead

Pulvinaria floccifera Westwood

P. iceryi Signoret

P. psidii Maskell

Saissetia coffeae Walker

Cheiloneurus sp.

Gahaniella saissetiae Timberlake*

Cheiloneurus sp.*

Encyrtus aurantii (Geoffroy)

Gahaniella saissetiae Timberlake*

Gahaniella sp.*

Metaphycus stanleyi Compere

Trichomasthus nikolskayae Sugonjaev

T. portoricensis (Crawford)

Coccidoctonus trinidadensis Crawford*

Metaphycus ceroplastae (Dozier)

Metaphycus flavus (Howard)

Metaphycus sp.

Cheiloneurus pulvinariae Dozier*

Metaphycus flavus (Howard)

*Ch. pulvinariae**

M. flavus

M. stanleyi Compere

Microterys kotinskyi (Fullaway)

Prochiloneurus sp.*

Cheiloneurus sp.*

Coccidoctonus dubius (Girault)*

Diversinervus elegans Silvestri

Encyrtus infelix (Embleton)

Gahaniella saissetiae Timberlake*

| | |
|---------------------------------------|---|
| | <i>Metaphycus flavus</i> Howard |
| | <i>M. helvolus</i> (Compere) |
| | <i>Plagiomerus cyaneus</i> (Ashmead) |
| <i>S. oleae</i> Olivier | <i>M. stanleyi</i> |
| | <i>P. cyaneus</i> |
| | <i>Trichomasthus portoricensis</i> Crawford |
| <i>Saissetia</i> sp. | <i>Gahaniella saissetiae</i> Timberlake* |
| <i>Toumeyella cubensis</i> | <i>Trichomasthus</i> sp. |
| Heidel <i>et</i> Köhler | |
| <i>Toumeyella</i> sp. | <i>G. saissetiae</i> * |
| | <i>Trichomasthus</i> sp. |
| Coccidae gen. sp. | <i>Anicetus annulatus</i> Timberlake |
| | <i>Encyrtus aurantii</i> (Geoffroy) |
| | <i>Trichomasthus portoricensis</i> (Crawford) |
| Diaspididae | |
| <i>Aspidiella sacchari</i> Cockerell | <i>Adelencyrtus moderatus</i> (Howard) |
| <i>A. hartii</i> Cockerell | <i>A. moderatus</i> |
| <i>Aspidiotus destructor</i> Signoret | <i>Comperiella bifasciata</i> Howard |
| <i>Chrysomphalus aonidum</i> Linnaeus | <i>Pseudhomalopoda prima</i> Girault |
| <i>Diaspis boisduvalii</i> Signoret | <i>Arrhenophagus chionaspidis</i> Aurivillius |
| | <i>Coccidencyrtus ochraceipes</i> Gahan |

Frogatiella penicillata Green

Hemichionaspis minor Maskell

Howardia biclavis Comstock

Morganiella longispina Morgan

Odonaspis ruthae Kotinsky

Odonaspis secreta Cockerell

Odonaspis sp.

Pinnaspis strachani Cooley

P. temporariu Ferris

Pseudaulacaspis pentagona

Targioni Tozzetti

Diaspididae gen. sp.

Caenohomalopoda shikokuensis (Tachikawa)

Arrhenophagus chionaspidis Aurivillius

Plagiomerus sp.

Zaomma sp.*

Epitetracnemus sp.

Habrolepis sp.

Habrolepis sp.

Homalopoda cristata Howard

Ameromyzobia aphelinoides Girault

Arrhenophagus chionaspidis Aurivillius

A. chionaspidis

A. chionaspidis

Ameromyzobia aphelinoides Girault

Margarodidae

Icerya montserratensis

Riley *et* Howard

I. purchasi Maskell

Palaeococcus rosae

Riley *et* Howard

Brethesiella sp.

Iceromyia flavifrons Noyes

Cheiloneurus pulvinariae Dozier*

Aztecencyrtus iceryae (Howard)

Pseudococcidae

Antonina graminis Maskell

Neodusmetia sangwani (Subba Rao)

Pseudectroma sp.n.

| | |
|--|--|
| <i>Catanococcus</i> sp. | <i>Aenasius tachigaliae</i> (Brues) |
| <i>Dysmicoccus boninsis</i> Kuwana | <i>Anagyrus pulchricornis</i> Howard |
| | <i>Pseudaphycus mundus</i> Gahan |
| <i>D. brevipes</i> Cockerell | <i>Aenasius tachigaliae</i> (Brues) |
| | <i>A. longiscapus</i> Compere |
| | <i>Blepyrus pretiosus</i> (Timberlake) |
| | <i>Hambletonia pseudococcina</i> Compere |
| | <i>Pseudaphycus angustifrons</i> Gahan |
| | <i>P. dysmicocci</i> Bennett |
| | <i>Zaplatycerus fullawayi</i> Timberlake |
| | <i>Blepyrus schwarzi</i> (Howard) |
| <i>Dysmicoccus</i> sp. nr. <i>brevipes</i> Cockerell | <i>Aenasius tachigaliae</i> (Brues) |
| <i>Dysmicoccus</i> sp. nr. <i>neobrevipes</i> Beardsley | |
| <i>Ferrisia virgata</i> Cockerell | <i>Acerophagus luteolus</i> D. Rosen |
| | <i>Acerophagus</i> sp. |
| | <i>Aenasius advena</i> Compere |
| | <i>A. caeruleus</i> Brues |
| | <i>A. flandersi</i> Kerrich |
| | <i>A. frontalis</i> Compere |
| | <i>A. hyettus</i> (Walker) |
| | <i>A. regularus</i> Kerrich |
| | <i>Anagyrus coccidivorus</i> Dozier |
| | <i>A. kamali</i> Moursi |
| | <i>Anagyrus trinidadensis</i> (Kerrich) |

Anagyrus sp.

Bothriocraera bicolor Compere et Zinna

Gyranusoidea dispar (Kerrich)

Holcencyrtus myrmicoides (Compere et Zinna)

Leptomastidea antillicola Dozier

*Pseudaphycus ferrisiana*e Bennett

Pseudaphycus sp.

Aenasius advena Compere

A. caeruleus Brues

A. longiscapus Compere

A. regularis Kerrich

Anagyrus kamali Moursi

Gyranusoidea indica Safee, Alam et Agarwal

Aenasius sp.

Anagyrus spp.

Pseudaphycus utilis Timberlake

Zaomma sp.*

Zarhopalus clavatus Kerrich

Acerophagus spp.

Anagyrus loecki Noyes et Menezes

Anagyrus spp.

Pseudleptomastix sp.

Ferrisia spp.

Maconellicoccus hirsutus Green

“Macrocepicooccus loranthi
Morrison”

Nipaecoccus nipae Maskell

Paracoccus marginatus Williams et
Granara de Willink

Phenacoccus gossypii Townsend
et Cockerell

"*P. hibisci* Hall"

P. madeirensis Green

P. solani Ferris

Phenacoccus sp.

Phenacoccus sp.nr. *parvus* Morrison

Planococcus citri Risso

Acerophagus sp.

Aenasius flandersi Kerrich

Anagyrus diversicornis (Howard)

Aenasius vexans Kerrich

Acerophagus nubilipennis Dozier

A. pallidus Timberlake

Aenasius flandersi Kerrich

Anagyrus bermudensis (Kerrich)

Bothriocraera bicolor Compere et Zinna

Aenasius lucidus (Kerrich)

A. vexans Kerrich

Anagyrus sp.

Aenasius flandersi Kerrich

Acerophagus nubilipennis Dozier

Acerophagus sp.

Cheiloneurus cupreicollis (Ashmead)*

Coccidoctonus trinidadensis Crawford*

Coccidoxenoides perminutus Girault

Gahaniella tertia Kerrich*

Leptomastidea abnormis (Girault)

Leptomastix dactylopii Howard

Prochiloneurus dactylopii (Howard)*

P. gahani (Dozier)*

P. seini (Dozier)*

Zaplatycerus planiscutellum Kerrich

| | |
|--|--|
| <i>Planococcus citri</i> Risso | <i>Leptomastix dactylopii</i> (Howard) |
| <i>Pseudococcus longispinus</i> | <i>Acerophagus nubilipennis</i> Dozier |
| Targioni Tozzetti | <i>Anagyrus fusciventris</i> Girault |
| | <i>Tetracnemoidea peregrina</i> (Compere) |
| <i>P. elisae</i> Borchsenius | <i>Ericydnus lamasi</i> (Domenichini) |
| <i>Pseudococcus</i> sp. | <i>Blepyrus schwarzi</i> (Howard) |
| <i>Puto barberi</i> Cockerell | <i>Prochiloneurus dactylopii</i> (Howard)* |
| | <i>Zarhopalus putophilus</i> Bennett |
| <i>Saccharicoccus sacchari</i> Cockerell | <i>Anagyrus saccharicola</i> Timberlake |
| | <i>Anagyrus</i> sp. |
| | <i>Pseudaphycus mundus</i> Gahan |
| Pseudococcidae gen. sp. | <i>Acerophagus flavus</i> D. Rosen |
| | <i>Coccidoctonus trinidadensis</i> Crawford* |
| Coccoidea gen. sp. | <i>Plagiomerus hospes</i> Timberlake |
| | <i>Rhopus nigroclavatus</i> (Ashmead) |

PSYLLOIDEA

| | |
|-------------------------------------|--|
| <i>Coelocara ernstii</i> Schwarz | <i>Psyllaephagus trioziphagus</i> (Howard) |
| | <i>Psyllaephagus</i> sp. |
| <i>Euphalerus certus</i> Tuthill | <i>P. othrys</i> Noyes et Hanson |
| <i>Euphalerus</i> sp. | <i>Psyllaephagus</i> sp. |
| <i>Heteropsylla cubana</i> Crawford | <i>P. yaseeni</i> Noyes |
| <i>H. fusca</i> Crawford | <i>P. yaseeni</i> |
| <i>H. huasache</i> Caldwell | <i>P. yaseeni</i> |
| <i>H. incisa</i> Sulc | <i>P. yaseeni</i> |

| | |
|---|---|
| <i>Katacephala</i> sp. | <i>Caldencyrtus godoyae</i> Noyes et Hanson |
| <i>Mastigimas</i> sp. | <i>Psyllaephagus trioziphagus</i> |
| <i>Neolithus</i> sp. | <i>P. creusa</i> Noyes et Hanson |
| <i>Trichohermes magna</i> Laing | <i>P. ufens</i> Noyes et Hanson |
| <i>Trioza nomei</i> Brown et Hodkinson | <i>Metaphycus gallicola</i> Noyes et Hanson |
| <i>Trioza</i> sp. <i>mangifoliae</i> group | <i>M. electra</i> Noyes et Hanson |
| | <i>Psyllaephagus epulo</i> Noyes et Hanson |
| <i>Trioza</i> sp. nr. <i>maritima</i> Tuthill | <i>P. trioziphagus</i> |
| <i>Trioza</i> spp. | <i>Caldencyrtus acamas</i> Noyes et Hanson |
| | <i>Trechnites merops</i> Noyes et Hanson |
| Psylloidea gen. sp. | <i>Cheiloneurus praenitens</i> (Waterston)* |
| | <i>Psyllaephagus yaseeni</i> Noyes |

HYMENOPTERA

Aphelinidae

| | |
|---------------------------------------|------------------------|
| <i>Coccophagus ceroplastae</i> Howard | <i>Ch. pulvinariae</i> |
|---------------------------------------|------------------------|

Colletidae

| | |
|-----------------------------------|---|
| <i>Xylocopa frontalis</i> Olivier | <i>Coelopencyrtus gargaris</i> (Walker) |
|-----------------------------------|---|

Dryinidae

| | |
|--|--|
| <i>Pseudogonatopus variistriatus</i> Fenton | <i>Ooencyrtus saccharalis</i> (Gordh et Trjapitzin) |
| <i>Pseudogonatopus</i> sp. | <i>Ooencyrtus</i> sp. |

Dryinidae gen. sp.

Ooencyrtus sp.

Encyrtidae

Anagyrus sp.

Prochiloneurus sp.

Cheiloneurus pulvinariae Dozier

Prochiloneurus sp.

Leptomastix dactylopii Howard

Coccidoctonus trinidadensis Crawford

Prochiloneurus dactylopii (Howard)

P. seini (Dozier)

Metaphycus flavus Howard

Cheiloneurus pulvinariae Dozier

Microterys kotinskyi Fullaway

Ch. pulvinariae

Zarhopalus putophilus Bennett

Prochiloneurus dactylopii

Encyrtidae gen. sp.

Cheiloneurus sp.

LEPIDOPTERA

Arctiidae

Ecantheria albicornis Grote

Ooencyrtus submetallicus (Howard)

Lymire albipennis Herrich-Schäffer

Ooencyrtus sp.

Brassolidae

Caligo memnon Felder

O. submetallicus

Caligo sp.

O. caligo Noyes

Opsiphanes cassina fabricii

O. eversi Noyes

Boisduval

O. trinidadensis Crawford

O. tamarindi Felder

O. submetallicus

Gelechiidae

| | |
|--|-------------------------------------|
| <i>Brachyacma palpigera</i> Walsingham | <i>Paralitomastix</i> sp. |
| <i>Gnorimoschema</i> sp. | <i>Apsilophrys capsicum</i> (Burks) |
| <i>Symmetrischema capsicum</i> Bradley | <i>A. capsicum</i> |
| et Povolný | |

Hesperiidae

| | |
|--|------------------------------------|
| <i>Calpodus ethlius</i> Stoll | <i>Ooencyrtus calpodicus</i> Noyes |
| | <i>Ooencyrtus</i> sp. |
| <i>Nyctelius nyctelius</i> Latreille | <i>O. prenidis</i> Gahan |
| <i>Panoquina</i> sp. | <i>O. prenidis</i> |
| <i>Prenes sylvicola</i> Herrich-Schäffer | <i>O. prenidis</i> |
| <i>Urbanus viterboana</i> | <i>Ooencyrtus</i> sp. |

Noctuidae

| | |
|--------------------------------------|--|
| <i>Pseudoplusia includens</i> Walker | <i>Copidosoma floridanum</i> (Ashmead) |
| <i>Trichoplusia ni</i> Hübner | <i>C. floridanum</i> |

Notodontidae

| | |
|------------------------------|-----------------------------------|
| <i>Hemiceras rava</i> Schaus | <i>Ooencyrtus laticapus</i> Gahan |
|------------------------------|-----------------------------------|

Phycitidae

| | |
|-----------------------------------|---|
| <i>Ectomyelois decolor</i> Zeller | <i>Ageniaspis</i> sp. (<i>Holcothorax</i> sp.) |
|-----------------------------------|---|

Phyllocnistidae

Phyllocnistis citrella Stainton

Ageniaspis citricola Logvinovskaya

Encyrtidae gen. sp.

Pyraustidae

Lineodes sp.

Copidosoma sp.

Lepidoptera gen. sp.

Copidosoma floridanum (Ashmead)

NEUROPTERA

Chrysopidae

Chrysopa spp.

Isodromus iceryae Howard

Isodromus sp.

Moorella compressiventris (Timberlake)

Ooencyrtus chrysopae Crawford

CHAPTER 4

STATE OF KNOWLEDGE OF ENCYRTIDAE

As can be clearly seen from Table 1, the Encyrtidae of different countries of Central America and islands of the West Indies (and also Bermuda) have been studied unevenly.

The fauna of Encyrtidae of Costa Rica (175 species) has been studied most thoroughly followed by Trinidad (100 species), Puerto Rico (52 species), St. Vincent (32 species) and Cuba (28 species). It is easy to explain this situation. In the 19th century, chalcidoids collected by M.M. Smith in St. Vincent and Grenada were described by W.H. Ashmead and L.O. Howard (1894,1897). Encyrtids from this collection were reviewed by J.S. Noyes (1979), who collected also in 1976 in St. Vincent and Trinidad. Many species of Encyrtidae were collected in Trinidad by F.D. Bennett. In Puerto Rico, the entomologist H.L. Dozier published descriptions of some new species of Encyrtidae. Now, the encyrtids of Costa Rica are studied intensively by J.S. Noyes (The Natural History Musseum, London), with surprising results (Noyes & Ren, 1995; Noyes & Hanson, 1996; Noyes, 2000).

The Encyrtidae of certain countries and islands are almost unknown. No references have been found in encyrtids of the island Martinique.

NOTES ON ZOOGEOGRAPHY

It is clear that an adequate zoogeographical analysis of faunas is possible only for well studied groups of organisms. For such a poorly studied family as the Encyrtidae, the analysis can be only tentative, allowing only some general conclusions.

Genera of Encyrtidae

The number of species and genera of Encyrtidae known in Central America, the West Indies and Bermuda is shown in Table 1.

An analysis of these data, indicates a high percentage of widely distributed genera (50.8%) and of New World genera (30.7 %) and a very low percentage of Neotropical genera (9.7 %) and of conditional endemics of the region - 7.9% (*Amasyxia* Noyes, *Aseirba* Cameron, *Bennettisca* Noyes, *Gavria* Noyes, *Habrolepoidea* Howard, *Hipponactis* Noyes, *Lohiella* Noyes and *Peneax* Noyes). This situation can be explained by the unsatisfactory knowledge of encyrtids of wild biotopes, as well as by the fact that many genera of Encyrtidae are distributed worldwide.

The most common genera of Encyrtidae of Central America, the West Indies and Bermuda, are (according to the recent data): *Anagyrus* Howard (68 species), *Aenasius* Walker (23 species), *Gyranusoidea* Compere (16 species), *Blepyrus* Howard (14 species), *Ooencyrtus* Ashmead (12 species), *Psyllaephagus* Ashmead (12 species) and *Metaphycus* Mercet (11 species). It is worth to note, that of the world wide genus *Microterys* Thomson only one species, *M. kotinskyi* (Fullaway), is recorded in the region (subendemic of Mexico, introduced into Bermuda).

Some genera of Encyrtidae, very important in Holarctic, have still not been reported in Central America, the West Indies and Bermuda, for example *Aphycus* Mayr, *Blastothrix* Mayr and *Discodes* Foerster.

TABLE 1. Number of species and genera of Encyrtidae known in different countries and islands

| Country or island | Species identified | Genera identified |
|--------------------------|---------------------------|--------------------------|
| Costa Rica | 175 | 39 |
| Trinidad | 100 | 72 |
| Puerto Rico | 52 | 35 |
| St. Vincent | 32 | 27 |
| Cuba | 28 | 25 |
| Bermuda | 23 | 21 |
| Jamaica | 22 | 21 |
| Grenada | 21 | 15 |
| Panama | 17 | 11 |
| Barbados | 16 | 17 |
| Haiti | 10 | 9 |
| Honduras | 10 | 8 |
| Tobago | 10 | 8 |
| Dominican Republic | 9 | 10 |
| Dominica | 7 | 7 |

| Country or island | Species identified | Genera identified |
|--------------------------|---------------------------|--------------------------|
| Bahamas | 5 | 6 |
| St. Kitts | 5 | 4 |
| Belize | 4 | 5 |
| Guadeloupe | 4 | 4 |
| Guatemala | 4 | 4 |
| Nevis | 4 | 4 |
| Montserrat | 4 | 3 |
| Antigua | 4 | 2 |
| St. Thomas | 3 | 4 |
| Anguilla | 3 | 3 |
| Cayman Islands | 3 | 3 |
| St. Lucia | 3 | 3 |
| St. Croix | 3 | 2 |
| El Salvador | 2 | 2 |
| Nicaragua | 2 | 2 |
| St. Martin | 1 | 1 |
| Tortola | 1 | 1 |
| Curacao | 1 | 1 |

Peculiarities of encyrtid faunas of certain countries and islands

Costa Rica

(175 species and 39 genera)

Due to the ongoing investigations of J. S. Noyes, the Encyrtidae of Costa Rica are much better studied than the encyrtids of all other countries of Central America taken together. He discovered a rich fauna of species of the genus *Aenasius* Walker (Noyes & Ren, 1995), *Psyllaephagus* Ashmead (Noyes & Hanson, 1996), and *Anagyrus* Howard, *Blepyrus* Howard and *Gyranusoidea* Compere (Noyes, 2000). Quite unexpected was the discovery of 5 species of the genus *Cercobelus* Walker, parasitoids of psyllids nymphs, and 2 new species of the genus *Sectiliclava* Hoffer, parasitoids of adult psyllids (Noyes & Hanson, 1996). Earlier, only *C. jugaeus* (Walker) and *S. cleone* (Walker) have been described (from the Palaearctic). Noyes and his colleagues confirmed the fact that some species of the genus *Metaphycus* are parasitoids of psyllids: *M. gallicola* Noyes et Hanson and *M. electra* Noyes et Hanson were reared from psyllids in Costa Rica whereas formerly only one such species was known, *M. psyllidis* Compere in California. *Prionomitus mitratus* (Dalman) is an Holarctic element in the encyrtid fauna of Costa Rica. Further investigations by Noyes will certainly enrich greatly the knowledge of the encyrtid fauna of Costa Rica.

Trinidad

(100 species and 72 genera)

The island Trinidad does not belong to the West Indies subregion of the Neotropical Region, but to the Neotropical subregion (Morrone, 1999). Nevertheless, we include encyrtids of Trinidad into our review, because it is included traditionally and economically to the West Indies zone. Most of the identified species of Encyrtidae known on Trinidad are conditional endemics. Probably, *Anicetus annulatus* Timberlake penetrated into Trinidad by ecesis. The Australian parasitoid of mealybugs, *Tetracnemoidea sydneyensis* (Timberlake) might penetrate into Trinidad by ecesis or be introduced purposely; the authors do not have a reliable information about this. Two important species of Encyrtidae have been successfully introduced into the island: *Anagyrus kamali* Moursi from China and *A. saccharicola* Timberlake.

Puerto Rico

(52 species and 35 genera)

Generally, the encyrtid fauna of Puerto Rico is more or less similar to the fauna found in Trinidad and the Antillean Islands. *Caenohomalopoda shikokuensis* (Tachikawa), *Encyrtus infelix* (Embleton) and *Neodusmetia sangwani* (Subba Rao) penetrated into this island by ecesis, and *Hambletonia pseudococcina* Compere, *Anagyrus kamali* Moursi, *Gyranusoidea indica* (Shafee, Alam et Agarwal), *Pseudaphycus mundus* Gahan and *P. utilis* Timberlake have been introduced purposely.

Cuba

(28 species and 25 genera)

Data on Encyrtidae of Cuba are more or less incidental. Three species have been described by Russian entomologists: *Ameromyzobia bulyginskayae* Trjapitzin, *Encyrtus kerzhneri* Trjapitzin et Sitdikov and *Holcencyrtus gordhi* (Trjapitzin et S. Trjapitzin). *Coccidoctonus dubius* (Girault), *Diversinervus elegans* Silvestri, *Encyrtus infelix* (Embleton) and *Metaphycus helvolus* (Compere) entered into the island by ecesis. We have no information about introduction of these species into Cuba.

St. Vincent

(32 species and 27 genera)

The encyrtids known from the island St. Vincent are mainly the same as in Trinidad. *Encyrtus aurantii* (Geoffroy) penetrated there by ecesis, and *Anagyrus kamali* and *A. saccharicola* Timberlake have been introduced to suppress agricultural pests.

Bermuda

(23 species and 21 genera)

Most of the species of Encyrtidae known on Bermuda penetrated into these volcanic islands by ecesis or have been purposely introduced to control pests of agricultural, forest or ornamental plants. It may be assumed that *Anicetus annulatus* Timberlake, *Arrhenophagus chionaspidis* Aurivillius, *Coccidencyrtus ochraceipes* Gahan, *Encyrtus aurantii* (Geoffroy), *E. infelix* (Embleton), *Leptomastix dactylopii* Howard, *Metaphycus flavus* (Howard) and *Pseudectroma* sp. entered

into Bermuda by ecesis, whereas *Acerophagus pallidus* Timberlake, *Anagyrus fusciventris* Girault, *Coccidoxenoides perminutus* Girault, *Copidosoma koehleri* (Ev. Blanchard), *Leptomastidea abnormis* (Girault), *Metaphycus stanleyi* Compere, *Microterys kotinskyi* (Fullaway), *Neodusmetia sangwani* (Subba Rao), *Ooencyrtus calpodicus* Noyes and *Tetracnemoidea peregrina* (Compere) were purposely introduced.

Jamaica

(22 species and 21 genera)

Arrhenophagus chionaspidis Aurivillius, *Encyrtus aurantii* (Geoffroy) and *Neodusmetia sangwani* (Subba Rao) penetrated into the island by ecesis, and *Hambletonia pseudococcina* Compere has been introduced from Hawaii, although probably this species was present in Jamaica before the introduction.

Grenada

(21 species and 15 genera)

The encyrtid species discovered in the island Grenada are mainly the same as in Trinidad, but *Encyrtus aurantii* (Geoffroy) found in Grenada, has been not indicated for Trinidad, Tobago and Barbados. *E. aurantii* is indigenous in Southeast Asia, from where it penetrated by ecesis into many regions of the world. *Anagyrus kamali* Moursi has been successfully introduced into Grenada from China.

Panama

(17 species and 18 genera)

All encyrtid species known in Panama are indigenous.

Barbados

(16 species and 17 genera)

Most of the species of Encyrtidae recorded in Barbados are the same as in Trinidad. However, in Barbados was discovered *Arrhenophagus chionaspidis* Aurivillius attacking the armoured scales *Pinnaspis strachani* Cooley and *Pseudaulacaspis pentagona* Targioni Tozzetti. Probably, *A. chionaspidis* entered Barbados by ecesis in colonial times on roses, because in Europe its principal host is *Aulacaspis rosae* Bouché, whereas *Pinnaspis strachani* and *Pseudaulacaspis pentagona* are supposedly of East Asiatic origin, thus these scales are in Barbados the new hosts for *Arrhenophagus chionaspidis*. The encyrtids *Anagyrus saccharicola* Timberlake and *Adelencyrtus moderatus* (Howard) have been purposely introduced into Barbados. The latter species was however present in Barbados before the introduction from Trinidad, but the Trinidad population of *A. moderatus* apparently has proved to be highly effective in the suppression of yam scale *Aspidiella hartii* Cockerell.

Haiti

(10 species and 9 genera)

Anicetus annulatus Timberlake penetrated into Haiti by ecesis.

Honduras

(10 species and 8 genera)

Anicetus annulatus Timberlake, *Metaphycus flavus* (Howard), *M. helvolus* Compere, *M. stanleyi* Compere and *Neodusmetia sangwani* (Subba Rao)

penetrated into Honduras by ecesis, and *Ageniaspis citricola* Logvinovskaya has been introduced and established.

CHAPTER 5

INTRODUCTION AND ESTABLISHMENT OF ENCYRTIDS IN CENTRAL AMERICA, THE WEST INDIES AND BERMUDA

A review of biological control of pests in the Commonwealth Caribbean and Bermuda up to 1982 was published by Cock (1985). Here we give more recent data on classical biological control of pests in Central America, the West Indies and Bermuda with the use of encyrtids.

1. *Acerophagus pallidus* Timberlake. Successful introduction in 1951 from California into Bermuda for control of *Phenacoccus madeirensis* Green (Hom.: Pseudococcidae); partial control of the pest.
2. *Adelencyrtus moderatus* (Howard). Very successful introduction in 1972 from Trinidad into Barbados against the yam scale *Aonidiella hartii* Cockerell (Hom.: Diaspididae); high economic impact.
3. *Ageniaspis citricola* Logvinovskaya. Successful introduction from Florida into Honduras against citrus leafminer *Phyllocnistis citrella* Stainton (Lep.: Phyllocnistidae) on grapefruit; introduction from Florida into Bahamas against the same host with strong economic impact.

4. *Anagyrus fusciventris* Girault. Introduction in 1951-1953 and 1955 from California into Bermuda against *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae); partial control of the pest.
5. *Anagyrus kamali* Moursi. Recent introduction from China (via England, USA and Hawaii) into Belize, Puerto Rico, St. Croix, St. Thomas, St. Martin, St. Kitts and Nevis, Montserrat, St. Lucia, St. Vincent, Grenada and Trinidad, against *Maconellicoccus hirsutus* Green (Hom.: Pseudococcidae); established and provided as a rule good control.
6. *Anagyrus saccharicola* Timberlake. Introduction in 1970 from Uganda into Barbados for control of *Saccharicoccus sacchari* Cockerell (Hom.: Pseudococcidae) on sugarcane *Saccharum officinarum*; established. The parasitoid reduced pest populations by 90%; similar results were obtained in St. Vincent and St. Kitts; the parasitoid also was sent to Trinidad and established there.
7. *Coccidoxenoides perminutus* Girault. Introduction in 1951-1954 from California into Bermuda against *Planococcus citri* Risso (Hom.: Pseudococcidae) on croton *Codiaeum variegatum*; partial control of the pest.
8. *Copidosoma floridanum* (Ashmead). Introduction in 1975 from India into Barbados against the cabbage loopers *Trichoplusia ni* Hübner and *Pseudoplusia includens* Walker (Lep.: Noctuidae); established but was already present in the island.
9. *Copidosoma koehlerii* (Ev. Blanchard). Introduction in 1946, 1948, 1964, 1965-1967 and 1973 from California into Bermuda against the potato

- tuberworm *Phthorimaea operculella* Zeller (Lep.: Gelechiidae); established, but no significant control of the pest was achieved.
10. *Gyranusoidea indica* Hayat was introduced into Belize and into some Caribbean islands against *Maconellicoccus hirsutus* Green (Hom.: Pseudococcidae); established.
 11. *Hambletonia pseudococcina* Compere. Introduction in 1937-1938 from Brazil via Hawaii into Puerto Rico to control *Dysmicoccus brevipes* Cockerell (Hom.: Pseudococcidae); established.
 12. *Leptomastidea abnormis* (Girault). Introduction in 1935 from California into Bermuda against *Planococcus citri* Risso (Hom.: Pseudococcidae) on croton *Codiaeum variegatum*; established. The parasitoid has been also introduced in 1964 from Chile into Costa Rica against the same pest. In Trinidad there is in culture.
 13. *Leptomastix dactylopii* Howard. Introduction in 1952 from California into Bermuda against Pseudococcidae; established, but apparently was already present. The parasitoid was introduced also into Costa Rica in 1968 against *Planococcus citri* Risso. In Trinidad there is in culture.
 14. *Metaphycus stanleyi* Compere. Introduction in 1953-1954 from California into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae); established.
 15. *Microterys kotinskyi* (Fullaway). Introduction into Bermuda against *Pulvinaria psidii* Maskell (Hom.: Coccidae) in 1953 from Hawaii and in 1954-1955 from California; well established.

16. *Neodusmetia sangwani* (Subba Rao). Introduction in 1968 from Texas into Bermuda; substantial control of *Antonina graminis* Maskell (Hom.: Pseudococcidae) on gramineous plants.
17. *Ooencyrtus calpodicus* Noyes. Introduction in 1953 and 1962-1963 from Trinidad into Bermuda and in 1950-1951 into St. Vincent against arrow-root leafroller *Calpodes ethlius* Stoll (Lep.: Hesperiiidae); established.
18. *Pseudaphycus mundus* Gahan. Introduction in 1932 from Louisiana into Puerto Rico; established. Attacks *Dysmicoccus boninsis* Kuwana and *Saccharicoccus sacchari* Cockerell (Hom.: Pseudococcidae).
19. *Pseudaphycus utilis* Timberlake. Very successful introduction in 1938-1939 from Hawaii into Puerto Rico for the control of *Nipaecoccus nipae* Maskell (Hom.: Pseudococcidae).
20. *Tetracnemoidea peregrina* (Compere). Introduction in 1917 and 1951 from California into Bermuda against *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae); partial control of the pest.

This information shows that the introduced and established species of Encyrtidae constitute, about 6% of species known in Central America, the West Indies and Bermuda.

Ten cases of establishment of encyrtids are reported from Bermuda, 6 from Puerto Rico, 3 from Barbados, 3 from St. Kitts, 3 from St. Vincent, 3 from Trinidad, 2 from Belize, 2 from Grenada, 2 from St. Croix, 2 from St. Thomas and 1 from Bahamas, Honduras, Jamaica, Montserrat, St. Lucia, St. Martin and Tobago.

This discrepancy of results may be explained by more attention paid by plant protection institutions to the classical biological control of pests in Bermuda, Puerto Rico, Barbados and Trinidad, and by an abundance of adventive and introduced exotic plants and pests in Bermuda and certain other islands, and probably by the even climatic conditions on these islands. Nevertheless, we believe that the opportunities for classical biological control in countries in Central America are great, but its use is hindered by a scarcity of experienced specialists and by insufficient attention from official authorities to biocontrol problems.

POSSIBILITIES FOR THE INTRODUCTION OF ENCYRTIDS INTO MÉXICO

A comparison of the list of species of Encyrtidae known in Central America, the West Indies and Bermuda with the list recorded from México (Trjapitzin & Ruíz Cancino, 1996 with subsequent additions) leads us to suggest 12 species of encyrtids as possible candidates for introduction into México for the control of pests of agricultural and forest plants, as well as some other harmful insects.

1. *Acerophagus nubilipennis* Dozier. From Puerto Rico against the mealybugs *Planococcus citri* Risso and *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae) on citrus and many other plants.
2. *Ageniaspis citricola* Logvinovskaya. From Honduras (or from Florida) against citrus leafminer *Phyllocnistis citrella* Stainton (Lep.: Phyllocnistidae) on citrus, specially in southern and western humid regions of Mexico. There is a communication that works on introduction of *A. citricola* are carried out in Colima (Rodríguez del Bosque & Arredondo Bernal, 1999).
3. *Anagyrus fusciventris* Girault. From Bermuda against the long-tailed mealybug *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae) on citrus and other plants.

4. *Bothriocraera bicolor* Compere et Zinna. From Trinidad against the striped mealybug *Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) on citrus and other plants.
5. *Copidosoma koehleri* Ev. Blanchard. From Bermuda against the potato tuberworm *Phthorimaea operculella* Zeller (Lep.: Gelechiidae).
6. *Holcencyrtus myrmicoides* (Compere et Zinna). From Trinidad against the striped mealybug *Ferrisia virgata* Cockerell (Hom.: Pseudococcidae) in citrus and other plants.
7. *Leptomastix dactylopii* Howard. From the West Indies or Costa Rica (or from Florida and California) against the citrus mealybug *Planococcus citri* Risso (Hom.: Pseudococcidae) on citrus and other plants.
8. *Pseudaphycus mundus* Gahan. From the West Indies against the grey sugarcane mealybug *Dysmicoccus boninsis* Kuwana and the pink sugarcane mealybug *Saccharicoccus sacchari* Cockerell (Hom.: Pseudococcidae).
9. *Tetracnemoidea peregrina* (Compere). From Bermuda against the long-tailed mealybug *Pseudococcus longispinus* Targioni Tozzetti (Hom.: Pseudococcidae).
10. *Trichomasthus nilkolskayae* Sugonjaev. From Trinidad against the nigra scale *Parasaissetia nigra* (Nietner) (Hom.: Coccidae) on many plants
11. *Zaplatycerus fullawayi* Timberlake. From Panama against the pineapple mealybug *Dysmicoccus brevipes* (Cockerell) (Hom.: Pseudococcidae) on pineapple and other plants.
12. *Zarhopalus clavatus* Kerrich. From Trinidad against the mealybug *Nipaecoccus nipae* Maskell (Hom.: Pseudococcidae) on various plants.

The hibiscus mealybug *Maconellicoccus hirsutus* Green (Hom.: Pseudococcidae) represents a great potential threat for Mexican citriculture. Its parasitoids *Anagyrus kamali* Moursi and *Gyranusoidea indica* Hayat have been introduced and established in Belize and some Caribbean islands. If *M. hirsutus* invades some regions of Mexico, these parasitoids should be introduced expeditiously.

It is important to note that, before introductions of parasitoids into Mexico, it is necessary to be certain that a target species of pest is present in the country and causes economic damage, and also that the parasitoid proposed to introduction is definitely absent. "First study and then attempt".

CONCLUSION

The present review of such important useful parasitoids shows that encyrtids are still very poorly studied in Central America (except Costa Rica), and in the West Indies. To assist the development of the classical biological control of agricultural and forest pests, and other harmful insects and ticks and of integrated pest management, it is necessary to intensify faunistic studies in the region. For these purposes, additional resources for training and the establishment of biocontrol stations in Mexico and some countries of Central America, are essential.

LITERATURE CITED

- Alam, M.M. 1972. The establishment of *Anagyrus saccharicola* Timb. in Barbados, West Indies, against the sugarcane mealybug, *Saccharicoccus sacchari* (Ckll.) (Hemiptera: Coccoidea). *Entomophaga* 17(4):357 – 363
- Alam, M.M. 1978. Attempts at the biological control of major insect pests of maize in Barbados, W.I. Symposium on maize and peanuts. Proceedings CFCS., Suriname 15:127-135.
- Alam, M.M. 1982. Cabbage pests and their natural enemies in Barbados, W.I. Proceedings CFCS (Barbados) 18: 307-320.
- Alam, M.M. 1985. Biological control of sugarcane, vegetable and other crop pests in Barbados and the Eastern Caribbean islands. Proceedings 21 st CFCS Annual Meeting in Trinidad, September 8-13, 1985:238-244.
- Alam, M.M. 1992. Biological control of insects pests of crucifers in selected West Indian Islands. *Florida Entomologist* 75(4):493-505.
- Alam, M.M., J.C. Reid & G. Muller. 1991. The present status and future needs of biological control in the Caribbean community. Caribbean Meetings on Biological Control, 5-7 November 1990, Guadeloupe, F.W.I. (Eds: Pavis, C. & A. Kermarrec). Paris, Institute Nationale de la Recherche Agronomique. Les Colloques 58:49-61.

- Alayo Dalmau, P. 1973. Catálogo de los Himenópteros de Cuba. La Habana. 212 pp.
- Alayo Dalmau, P. & L.R. Hernández. 1978. Introducción al estudio de los himenópteros de Cuba. Superfamilia Chalcidoidea. La Habana. 105 pp.
- Alayo Soto, R. & A. Blahutiak. 1981. Parásitos y depredadores que atacan a *Saissetia hemisphaerica* Targ. (Homoptera: Coccoidea). Poeyana (La Habana) 226:1-4.
- Anga, J. M. & J.S. Noyes. 1999. A revision of the African and Malagasy species of the genus *Leptomastix* (Hymenoptera, Encyrtidae), parasites of mealybugs (Homoptera: Pseudococcidae). Bulletin of the Natural History Museum, London (Entomology) 68(2): 93-128.
- Annand, P.N. 1945. Report of the Chief of the Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, 1994. Washington, D.C., U.S. Department of Agriculture. 56 pp.
- Annecke, D.P. 1967. The genera *Anicetus* Howard 1898, *Paraceraptocherus* Girault, 1920 and allies, with descriptions of new genera and species (Hymenoptera: Encyrtidae). Transactions of the Royal Entomological Society of London 119:99-169.
- Anonymous. 1942a. Puerto Rico Experimental Station Report for 1940:68.
- Anonymous. 1942b. Biennial Report Univ. Puerto Rico 1941/42. Agr. Exp. Sta., Rio Piedras, Puerto Rico. 124 pp.
- Ashmead, W.H. 1900. On the genera of the chalcid-flies belonging to the subfamily Encyrtinae. Proceedings of the United States National-Museum 22 (1202):323-412.

- Bartlett, B.R. 1978a. Asterolecaniidae (pp. 46-48). In: Clausen, C.P. (ed). 1978. Introduced parasites and predators of arthropod pests and weeds: a world review. U.S. Dept. of Agr. Handbook N 480. Washington: i-vi+ 1-545 pp.
- Bartlett, B.R. 1978b. Coccidae (pp. 57-74). In: Clausen, C.P. (Ed). 1978. Introduced parasites and predators of arthropod pests and weeds: a world review. U.S. Dept. of Agr. Handbook N 480. Washington: i - vi + 1-545 pp.
- Bartlett, B.R. 1978c. Pseudococcidae (pp. 137–170). In: Clausen, C.P. (ed). 1978. Introduced parasites and predators of arthropod pests and weeds: a world review. U.S. Dept. of Agr. Handbook N 480. Washington: i – vi -+ 1 – 545 pp.
- Bartlett, B.R. & D.C. Lloyd. 1958. Mealybugs attacking citrus in California – a survey of their natural enemies and the release of new parasites and predators. *Journal of Economic Entomology* 51(1):90-93.
- Bartlett, K.A. 1939. Introduction and colonization of two parasites of pineapple mealybug in Puerto Rico. *J. Agr. Univ. Puerto Rico* 23:67-72.
- Beardsley, J.W. 1976. A synopsis of the Encyrtidae of the Hawaiian Islands with keys to genera and species (Hymenoptera: Chalcidoidea). *Proceedings of the Hawaiian Entomological Society* 22(2): 181-228.
- Beardsley, J.W. & G.K. Uchida 1990. Parasites associated with the leucaena psyllid, *Heteropsylla cubana* Crawford, in Hawaii. *Proceedings of the Hawaiian Entomological Society* 30:155 – 156.
- Beingolea G., O.D. 1996. El control biológico de plagas en el Perú: avances, perspectivas, aplicación y limitaciones (pp. 78-91), In: Zapater, M. C. (Ed.). *El control biológico en América Latina* (Actas de la III Mesa Redonda en el

- Neotrópico, Río de Janeiro, Brasil, 12-16 de agosto de 1991). Buenos Aires, 142 pp.
- Bellotti, A.C. 1999. Recent advances in cassava pest management. *Annual Review of Entomology* 44:343-370.
- Ben-Dov, Y. 1994. A systematic catalogue of the mealybugs of the world (Insecta: Homoptera: Pseudococcidae and Putoidae) with data on geographical distribution, host plants, biology and economic importance. Andover, Intercept Ltd. 686 pp.
- Bennett, F.D. 1957. Trinidad Encyrtidae II. Some additional mealybug parasites. *Canadian Entomologist* 89(12): 569-572.
- Bennett, F.D. 1981. Chapter 5. Hyperparasitism in the practice of biological control (pp. 43-49). *In*: Rosen, D. (ed). 1981. The role of hyperparasitism in biological control: a symposium. Division of Agricultural Sciences, University of California. Priced Publication 4103.
- Bennett, F.D. 1990a. New distribution records for parasites of Rhodes-grass mealybug *Antonina graminis* (Hemiptera: Pseudococcidae). Abstracts for FES Meeting (August 6-9, 1990), Cancún, México: 48.
- Bennett, F.D. 1990b. Potential for biological control of the stink bug *Nezara viridula*, a pest of macadamias. *Acta Horticulturae. Tropical and Subtropical Fruits* 275:679-684.
- Bennett, F.D. 1991. An overview of classical biological control in the Caribbean and some examples of the utilization of entomophagous insects. *Rencontres Caraïbes en lutte biologique. Guadeloupe (Antilles Françaises), 5-7 nov. 1990. Paris, C. & A. Kermarrec (Eds.) Paris: 25-35.*

- Bennett, F.D. 1994. Rhodesgrass mealybug (pp. 128-133). In: Rosen, D., F.D. Bennett & J.L. Capinera (eds). 1994. Pest management in the subtropics. Biological control- a Florida perspective. Intercept, Andover. U.K. XIV + 737 pp.
- Bennett, F.D. 1995. Encyrtidae from Trinidad, B.W.I. Three species of *Pseudaphycus* reared from mealybugs. Canadian Entomologist 87(9): 413-416.
- Bennett, F.D. 1995. Parasites of the pepper flower-bud moth (Lepidoptera: Gelechiidae) in Florida. Florida Entomologist 78(3): 546-549.
- Bennett, F.D. & M.M. Alam. 1985. An annotated check-list of the insects and allied terrestrial arthropods of Barbados. Caribbean Agricultural Research and Development Institute, Barbados. 81 pp.
- Bennett, F. D. & R.M. Baranowski. 1981. Correction of the host record for *Zeteticontus insularis* (Howard) (Hymenoptera:Encyrtidae). Florida Entomologist 64(1): 197-198.
- Bennett, F.D. & I.W. Hughes. 1959. Biological control of insect pests in Bermuda. Bulletin of Entomological Research 50(3):423-436.
- Bennett, F.D. & I.W. Hughes. 1963. Studies of the life history and biological control of the spittlebug, *Clastoptera undulata* Uhler (Cercopidae; Hemiptera). Entomophaga 8(1): 49-66.
- Bennett, F.D. & J.S. Noyes. 1989. Three chalcidoid parasites of diaspinines and whiteflies occurring in Florida and the Caribbean. Florida Entomologist 72(2): 370-373.
- Blackmer, J.L. & P. Hanson. 1997. Abundance and life-history of two gall-inducing homopterans on *Nectandra salicina* (Lauraceae) in Monte verde, Costa Rica. Revista de Biología Tropical 45(3):1131-1137.

- Blahutiak, A. & R. Alayo Soto. 1977. *Diversinervus elegans* Silvestri (Hymenoptera: Encyrtidae), nuevo reporte para Cuba. *Miscellanea Zoologica* (La Habana) 6:4.
- Blumberg, D. & R.G. Van Driesche. 2001. Encapsulation rates of three encyrtid parasitoids by three mealybug species (Homoptera: Pseudococcidae) found commonly as pests in commercial greenhouses. *Biological Control* 22(2): 191-199.
- Brumpt, E. 1930 Parasitisme latent de l' *Ixodiphagus caururtei* chez larves gorgées et les nymphes a jeun de divers ixodines (*Ixodes ricinus* et *Rhipicephalus sanguineus*). *Comptes Rendus hebdomadaires des Séances Acad. Sci.* 191(22): 1085-1087.
- Bruner, S.C. 1929. Reseña de las plagas del cafeto en Cuba. *Circ. Estac. Agron. Santiago de las Vegas* (Cuba) 68: 1-38.
- Bruner S.C., L.C. Scaramuzza & A.R. Otero. 1945. Catálogo de los insectos que atacan a las plantas económicas de Cuba. *Biol. Estac. Exp. Agron. Santiago de las Vegas* (Cuba) 63:1-246.
- Bruner, S.C., L.C. Scaramuzza & A.R. Otero. 1975. Catálogo de los insectos que atacan a las plantas económicas de Cuba. La Habana. 399 pp.
- Burks, B.D. 1967a. Superfamily Chalcidoidea (pp. 231-282). *In*: Krombein, K.V. & B.D. Burks (eds). 1967. *Hymenoptera of America north of Mexico. Synoptic catalog.* U.S. Department of Agriculture, Agricultural Monograph No. 2. Second Supplement. 584 pp.
- Burks, B.D. 1967b. A new polyembryonic parasite of pepper moth (Hymenoptera: Encyrtidae). *Proceedings of the Entomological Society of Washington* 62(1):53-55.

- Burks, B.D. 1972. The genus *Hexacladia* Ashmead (Hymenoptera:Encyrtidae). *Proceedings of the Entomological Society of Washington* 74(4): 363-371.
- Cameron, P. 1884. *Insecta, Hymenoptera (families Tenthredinidae-Chrysididae)*. *Biologia Centrali-Americana* 1: i-xii + 1-487.
- Cano Vásquez, E. 1996. *Phyllocnistis citrella* y sus parasitoides nativos en Nicaragua. *In: Memoria Reunión Centroamericana sobre el manejo integrado de plagas de los cítricos con énfasis en minador de la hoja*. Managua, Nicaragua. 29 pp.
- Castellanos A., N. Rodríguez, C.González, M.Borges, O.Fernández del Amo, J.Mora Morin & L.F.Pérez. 1996. Principales fitófagos que atacan al cultivo de los cítricos. *Memorias Curso Internacional de Citricultura*. Del 26 al 30 de Marzo de 1996, Cd. Victoria, Tamaulipas, México:157-206.
- Castellanos A., N. Rodríguez, C.González, M.Borges, O.Fernández del Amo, J.Mora Morín & L.F. Pérez. 1997. Principales insectos que atacan al cultivo de los cítricos. II Curso Internacional de Citricultura. Manejo Integral Fitosanitario. *Memorias*. Del 6 al 10 de Mayo de 1997, Centro Cultural Tamaulipas, Cd. Victoria, Tamaulipas, México. Unión Agrícola de Citricultores de Tamaulipas: 19-43.
- Castro M., L. Castillo, B. Chávez & M. López. 1996. Citrus leafminer management in Honduras grape fruit (p. 77). *In: Hoy, M.A. (ed). 1996. Managing the Citrus Leafminer. Proc. Conf., Orlando, Florida, USA, April 23-25, 1996*. Gainesville: Univ. Florida .119 pp.
- Cave, R.D. 1996. Biological control of citrus leafminer in Honduras (p. 78). *In: Hoy, M.A. (ed). 1996. Managing the Citrus Leafminer. Proc. Conf., Orlando, Florida, USA, April 23-25, 1996*. Gainesville: Univ. Florida. 119 p.

- Cave, R.D. & G. Márquez. 1994. Parasitoides de Diaspididae, Coccidae y Aleyrodidae atacando cítricos en Honduras. CEIBA (Tegucigalpa) 35 (1): 3-8
- CIBC. 1969. Report of work carried out during 1968. Commonwealth Institute of Biological Control Commonwealth Agricultural Research Bureau, Slough, UK. 100 pp.
- CIBC. 1970. Report of work carried out during 1969. Commonwealth Institute of Biological Control, Commonwealth Agricultural Research Bureau, Slough, UK 103 pp.
- CIBC. 1971. Report of work carried out during 1970. Commonwealth Institute of Biological Control Commonwealth Agricultural Research Bureau, Slough, UK 100 pp.
- CIBC. 1973. Report of work carried out during 1972. Commonwealth Institute of Biological Control, Commonwealth Agricultural Research Bureau, Slough. UK. 98 pp.
- CIBC. 1974. Report of work carried out during 1973. Commonwealth Institute of Biological Control, Commonwealth Agricultural Research Bureau, Slough, UK 96 pp.
- CIBC. 1978. Report of work carried out during January 1977- March 1978. Commonwealth Institute of Biological Control, Commonwealth Agricultural Research Bureau, Slough, UK. 86 pp.
- CIBC. 1979. Report of work carried out during April 1978 - March 1979. Commonwealth Institute of Biological control, Commonwealth Agricultural Research Bureau, Slough, UK: 55-57.

- CIBC. 1985. CIBC Annual report 1984-85, Commonwealth Agricultural Bureau, Slough, UK. 58 pp.
- Clausen, C.P. 1955. Releases of recently imported insect parasites and predators in California, 1952-53. *Pan-Pacific Entomologist* 31(2): 77-79.
- Clausen, C.P. 1956a. Biological control of insect pests in the continental United States. U.S. Department of Agriculture, Technical Bulletin 1130:1-151.
- Clausen, C.P. 1956b. Releases of recently imported insect parasites and predators in California- 1954-55. *Pan-Pacific Entomologist* 32(3): 125-127.
- Clausen, C.P. 1978a. Pentatomidae (pp. 23-26). *In*: Clausen, C.P. (Ed). 1978. Introduced parasites and predators of arthropod pests and weeds: a world review. U.S. Dept. of Agr., Agr. Handbook N. 480. Washington: i-vi + 1-545 pp.
- Clausen, C.P. 1978b. Cercopidae (pp. 48-49). *In*: Clausen, C.P. (Ed). 1978. Introduced parasites and Predators of arthropod pests and weeds: a world review U.S. Dept. of Agr., Agr. Handbook N 480. Washington: i-vi + 1-545 pp.
- Clausen 1978c. Hesperidae (p. 192). *In*: Clausen, C.P. (ed). 1978. Introduced parasites and predators of arthropod pests and weeds: a world review. U.S. Dept. of Agr., Agr. Handbook N 480. Washington: i-vi + 1-545 pp.
- Cock, M. T.W. (Ed.). 1985. A. review of biological control of pests in the Commonwealth Caribbean and Bermuda up to 1982. Commonwealth Institute of Biological Control, Technical Communication No. 9: vi + 218 pp.
- Cohen, J. & S. Kamburov. 1968. Biological Control Institute, Agrotechnical Division, Citrus Board of Israel, Rehovot, Israel. Tel-Aviv, "Eylon" Printing Press. 43 pp.

- Compere, H. 1936. A new genus and species of Encyrtidae parasitic in the Pineapple Mealybug, *Pseudococcus brevipes* (Ckll.). Proceedings of the Hawaiian Entomological Society 3 (2): 171-174.
- Compere, H. 1937. The species of *Aenasius*, Encyrtid parasites of mealybugs. Proceedings of the Hawaiian Entomological Society 9(3): 383-404.
- Compere, H. & G. Zinna. 1955. Tre nuovi generi e cinque nuove specie di Encyrtidae. Bollettino del Laboratorio di Entomologia Agraria "Filippo Silvestri", Portici 14: 94-116.
- Cooley, R. A. 1929. A summary of tick parasites studies. S. Afr. J. Natur. Hist. 6:266-272.
- Crawford, J. C. 1912. Description of new Hymenoptera, No. 5. Proceedings of the United States National Museum 43:163-188.
- Crawford, J.C. 1913a. Description of new Hymenoptera, No. 6. Proceedings of the United States National Museum 45:241-260.
- Crawford, J.C. 1913b. Description of new Hymenoptera, No. 8. Proceedings of the United States National Museum. 46:343-352.
- Cross, A.E. & J.S. Noyes. 1996. Dossier on *Anagyrus kamali* Moursi, biological control agent for the Pink Mealybug, *Maconellicoccus hirsutus*, in Trinidad and Tobago. 11BC- Ascot, U.K. 16 pp.
- Cruz, C. & A. Sagarra. 1992. Potential for biological control of crop pests in the Caribbean. Florida Entomologist 75(4):400-408.
- Dahlsten, D.L. & R.W. Hall. 1999. Biological control of insects in urban environments (pp. 919-933). In: Bellows T.S. & T. W. Fisher (eds.). 1999. Handbook of biological control. Principles and applications of Biological control. San Diego, etc., Academic Press. 1046 pp.

- Dalla Torre, C.G. de. 1898. *Catalogus Hymenopterorum hucusque descriptorum systematicus et synonymicus*. Lipsiae. Vol 5. VIII + 598 pp.
- Davis, C.J. 1964. The introduction, propagation, liberation and establishment of parasites to control *Nezara viridula* variety *smaragdula* (Fabricius) in Hawaii (Heteroptera: Pentatomidae). *Proceedings of the Hawaiian Entomological Society* 18:369-375.
- Davis, C.J. 1967. Progress in the biological control of the southern green stink bug *Nezara viridula* variety *smaragdula* (Fabricius) in Hawaii (Heteroptera: Pentatomidae). 11th Pacific Science Congress, Symposium No. 28. Tokyo. *Mushi* 39 (Supplement): 9-16.
- Davis, C. J. 1974. Recent introductions for biological control in Hawaii-XVIII. *Proceedings of the Hawaiian Entomological Society*. 21:355-358.
- De Bach P. & D. Rosen. 1991. *Biological control by natural enemies*. 2nd Ed. Cambridge University Press. 440 pp.
- De Santis, L. 1964 (1963). Enciclopedia de la República Argentina (Hymenoptera: Chalcidoidea). *Anales de la Comisión de Investigación Científica*. Provincia de Buenos Aires, *Gobernación* 4: 9-442.
- De Santis, L. 1979. Catálogo de los himenópteros calcidoideos de América al sur de los Estados Unidos. *La Plata* (Argentina). 488 pp.
- De Santis, L. 1981. Catálogo de los himenópteros calcidoideos de América al sur de los Estados Unidos-Primer Suplemento. *Revista Peruana Entomol.* 24(1): 1-38.
- De Santis, L. 1985. Dos notas sobre Himenópteros calcidoideos oofagos de Hemípteros Heterópteros (Insecta). *Revista Chilena Entomol.* 12:91-94.

- De Santis, L. 1989. Catálogo de los himenópteros calcidoideos (Hymenoptera) de América al sur de los Estados Unidos- Segundo Suplemento. Acta Entomológica Chilena 15: 9-90.
- De Santis, L. & G. W. Fernández. 1989. Brazilian parasitoids of gall-forming insects: two new chalcidoid specie and host records. Entomological News 100(1): 29-36.
- De Santis, L. & P. Fidalgo. 1994. Catálogo de himenópteros calcidoideos. Serie de la Academia Nacional de Agronomía y Veterinaria (Buenos Aires) 13: 1-154.
- De Santis, L. & E.G. Virla. 1991. Sobre dos encírtidos parasitoides de driinidos en la República Argentina (Insecta, Hymenoptera). Sesión Ordinaria Academia Nacional de Agronomía y Veterinaria, Republica Argentina 45(3): 5-19.
- Des Vignes, W.G. 1978. Notes on the taxonomy, biology and economic importance of *Symmetrischema capsica* (Bradley & Povolný). Journal of the Agricultural Society of Trinidad & Tobago 78(4): 311-318.
- Des Vignes, W.G. 1981a. Ecology, and natural control of *Symmetrischema capsica* (Bradley & Povolný) a pest of peppers (*Capsicum*). Journal of the Agricultural Society of Trinidad & Tobago 81(1):31-48.
- Des Vignes, W.G. 1981b. Notes on parasites and predator of *Symmetrischema capsica* (Bradley & Povolný) a pest of peppers (*Capsicum* spp.). Journal of the Agricultural Society of Trinidad & Tobago 81(1):50-58.
- Dozier, H.L. 1925. An outbreak of the Red-striped Sugar-cane Scale. J. Dept. Agr. Porto Rico 9 (4):97-102.

- Dozier, H.L. 1926. Some new Puerto Rican scale parasites (Hymenoptera: Encyrtidae). Proceedings of the Entomological Society of Washington 28(5):97-102.
- Dozier, H.L. 1927. Notes on Porto Rican scale parasites. J. Dept. Agr. Porto Rico 10(3-4):267-277.
- Dozier, H.L. 1932. An important encyrtid parasite of the mealy-bug, *Pseudococcus virgatus* (Ckll.). Proceedings of the Entomological Society of Washington 34(1): 7-9.
- Dozier, H.L. 1933. Miscellaneous notes and descriptions of chalcidoid parasites (Hymenoptera). Proceedings of the Entomological Society of Washington 35 (6): 93-103.
- Dozier, H.L. 1935. Descriptions of two new Encyrtid parasites of non-diaspine scales. Proceedings of the Entomological Society of Washington 37(9): 183-185.
- Dozier, H.L. 1937. Descriptions of chalcidoid parasites from Puerto Rico. Journal of Agriculture of the University of Puerto Rico 21(2):121-135.
- Dustan, A.G. 1960. The spittlebug, *Clasoptera undulata* Uhler, in Bermuda. Bermuda Department of Agriculture Bulletin 33:1-11.
- Edwards, D.R., N. C. Leppla & W. A. Dickerson. 1987. Arthropod species in culture. College Park, Md. Entomological Society of America. 49 pp.
- Étienne, J.,D. Matile-Ferrero, F. Leblanc & D. Marival . 1998. Primer signalment de la cochenille *Maconellicoccus hirsutus* (Green) en Guadeloupe; situation actuelle de ce ravageur des cultures dans Antilles francaises (Hem., Pseudococcidae). Bulletin de la Société Entomologique de France 103(2): 173-174.

- Fenn, R.G. 1947. *The insect pests of food crops in the Lesser Antilles*. Department of Agriculture for the Windward Islands and Department of Agriculture for the Leeward Islands, Grenada and Antigua. 407 pp.
- Frank, J.H. & F.D. Bennett. 1970. List of sugar cane arthropods of Jamaica. Technical Bulletin, Sugar Research Department, Mandeville P.O., Jamaica, W.I. SRD 1/70:1-24
- Frank, J.H. & E.D. Mc Coy 1993. Introduction to the behavioral ecology of introduction. The introduction of insects into Florida. Florida Entomologist 76(1): 1-54.
- Franqui, R.A., A.Pantoja & S.M. Gaud. 1988. Natural enemies of pentatomids affecting rice fields in Puerto Rico. Journal of Agriculture of the University of Puerto Rico 72(3): 371-374.
- Fullaway, D.F. 1952. Biological control of insect pests in the Hawaiian Islands since 1925. Hawaii Board Comissioners Agr. and Forestry Bien. Rept. to June 30, 1952:28-105.
- Funasaki G., Po-Yung Lai & L.M. Nakahara. 1990. Status of natural enemies of *Heteropsylla cubana* Crawford (Homoptera: Psyllidae) in Hawaii. "*Leucaena psyllid: problems and management*" (Proc. Int. Workshop, Bogor, Indonesia, Jan. 16-21, 1989). Bangkok, 1990: 153-158.
- Gahan, A.B. 1927. Miscellaneous descriptions of new parasitic Hymenoptera with some synonymical notes. Proceedings of the United States National Museum 71(9):1-39.
- Gahan, A.B. 1934. On the identities of chalcidoid tick parasites (Hymenoptera). Proceedings of the Entomological Society of Washington 36(4):89-97.

- Gahan, A.B. 1944. A new Encyrtid parasite in the eggs of Hesperidae. Journal of Agriculture of the University of Puerto Rico 27:137-139.
- Gahan, A.B. 1946. Eight new species of chalcid-flies of the genus *Pseudaphycus* Clausen, with a key to the species. Proceedings of the United States National Museum 96 (3200): 311-327.
- Girault, A.A. 1915a. Australian Hymenoptera Chalcidoidea-VII. The family Encyrtidae with descriptions of new genera and species. Memoirs of the Queensland Museum 4: 1-184.
- Girault, A.A. 1915b. New genera of chalcidoid Hymenoptera. Journal of the New York Entomological Society 23(3): 165-173.
- Girault, A.A. 1916. A remarkable new genus of Encyrtidae from the West Indies, bearing two ring-joints. Journal of the New York Entomological Society 24: 232-233.
- Girault, A.A. 1917. *Descriptiones stellarum novarum*. Priv. publ. 22 pp.
- Girault, A.A. 1920. New serphidoid, cynipoid and chalcidoid Hymenoptera. Proceedings of the United States National Museum 58 (2332):177-216.
- González, R.H. & R.S. Rojas. 1966. Estudio analítico del control biológico de plagas agrícolas en Chile. *Agricultura Técnica* 26:133-147.
- González-Hernández, H.; N. J. Reimer & M. W. Johnson. 1999. Survey of the natural enemies of *Dysmicoccus* mealybugs in Hawaii. *BioControl* (the Netherlands) 44: 17-58.
- Gordh, G. 1975. A new species of *Forcipestricis* Burks, 1968 (Hymenoptera: Encyrtidae) from Puerto Rico parasitic on *Forcipomyia* (Dipt.: Ceratopogonidae). *Florida Entomologist* 58(4): 239-241.

- Gordh, G. & L. Lacey. 1976. Biological studies of *Plagiomerus diaspidis* Crawford, a primary internal parasite of diaspidid scale insects (Hymenoptera: Encyrtidae; Homoptera: Diaspididae). *Proceedings of the Entomological Society of Washington* 79(2):132-144.
- Gordh, G. & V.A. Trjapitzin. 1979. Notes on the genus *Zaomma* Ashmead, with a key to species (Hymenoptera: Encyrtidae). *Pan-Pacific Entomologist* 55(1):34-40.
- Gordh, G. & V.A. Trjapitzin. 1981. Taxonomic studies of the Encyrtidae with the descriptions of new species and a new genus (Hymenoptera, Chalcidoidea). *University of California Publications in Entomology* 93: 1-55.
- Gowdey, C.C. 1925. Report of Government Entomologist. *Ann. Rept. Dept. Sci. & Agr. Jamaica*, Kingston, 1924:17-24.
- Greathead, D.J. 1971. A review of biological control in the Ethiopian region. *Techn. Comm. Commonwealth Inst. Biol. Control* 5: 1-162.
- Greathead, D.J. & J. Monty. 1982. Biological control of stableflies (*Stomoxys* spp.): results from Mauritius in relation to fly control in dispersed breeding sites. *Biocontrol News and Information*, CIBC 3(2): 105-109.
- Guerrieri, E. & J.S. Noyes. 2000. Revision of European species of the genus *Metaphycus* Mercet (Hymenoptera: Chalcidoidea: Encyrtidae), parasitoids of scale insects (Homoptera: Coccoidea). *Systematic Entomology* 25: 147-222.
- Harrison, J.O. 1963a. On the biology of three banana pests in Costa Rica (Lepidoptera: Limacodidae: Nymphalidae). *Annals of the Entomological Society of America* 56(1): 87-94.

- Harrison, J.O. 1963b. The natural enemies of some banana insect pests in Costa Rica. *Journal of Economic Entomology* 56(3): 282-285.
- Hernández, M. & M. Ceballos. 1987. Nuevos hospedantes para bioreguladores de cóccidos en cítricos. *Revista de Protección Vegetal (Cuba)* 2(2): 178-182.
- Hernández, M., M. Ceballos & M.A. Martínez. 1989. Nuevo bioregulador para *Saccharicoccus sacchari* (Ckll.) (Homoptera: Pseudococcidae), chinche harinosa rosada de la caña de azúcar en Cuba. *Revista de Protección Vegetal (Cuba)* 4(1): 81-82.
- Hilburn D.J., P.M. Marsh & M.E. Schauff. 1990. Hymenoptera of Bermuda. *Florida Entomologist* 73(1):161-176.
- Howard, L.O. 1892. A new *Icerya* parasite. *Insect Life* 4 (11-12): 378-379.
- Howard, L.O. 1894. Report on the Chalcididae of the subfamilies Chalcidinae, Eucharinae, Perilampinae, Encyrtinae, Aphelininae, Pireninae, Elasmrinae, and Elachertinae (pp. 79-108). *In: Riley, C.V., W.H. Ashmead & L.O. Howard. 1894. Report upon the parasitic Hymenoptera of the island of St. Vincent. Journal of the Linnean Society (Zoology)* 25:56-254.
- Howard, L.O. 1897. On the Chalcididae of the Island of Grenada. *B. W.I. Zoological Journal of the Linnean Society (London)* 26:129-178.
- Hoy, M.A. & R. Nguyen. 1997. Classical biological control of the citrus leafminer *Phyllocnistis citrella* Stainton. *Tropical Lepidoptera* 8, Supplement: 1-19.
- Hoy, M.A., S. Johnson & R. Nguyen. 1996. Classical biological control of the citrus leafminer: in theory and practice (pp. 16-18). *In: Hoy, M.A. (ed.). 1996. Managing the citrus leafminer. Proceedings from an International Conference, Orlando, Florida, USA, April 23-25, 1996. Gainesville: Univ. Florida. 119 pp.*

- Huang, D.W. & J.S. Noyes. 1994. A revisión of the Indo-Pacific species of *Ooencyrtus* (Hymenoptera: Encyrtidae), parasitoids of the immature stages of economically important insect species (mainly Hemiptera and Lepidoptera). Bulletin of the Natural History Museum, London (Entomology Series) 63(1): 1-136.
- IIBC. 1996. Annual Report, 1995, International Institute of Biological Control, CAB International Wallingford, U.K. 98 pp.
- IIBC. 1997. Annual Report, 1996. International Institute of Biological Control, CAB International, Wallingford, UK. 132 pp.
- IIBC, 1998. Annual Report, 1997. International Institute of Biological Control, CAB International, Wallingford, UK: 133 pp.
- Jones, T.H. 1915. Aphides or plant-lice attacking sugar-cane in Porto Rico. Bull. Board Comm. Agr. Porto Rico 11:19.
- Kairo M. T. K. & D. D. Peterkin. 1998. Dossier on *Anagyrus kamali* Moursi, an exotic enemy for biological control of the hibiscus mealybug the Caribbean. St. Augustine (Trinidad and Tobago). International Institute of Biological Control. 28 pp.
- Kairo, M., D. Meyerdirk, O. Sosa & Ambrose. 2000. Island-hopping mealybugs. Biocontrol News and Information 21(2): 27 N-28 N.
- Kerrich, G.J. 1953. Report on Encyrtidae associated with mealybugs on cacao in Trinidad, and on some other species related thereto. Bulletin of Entomological Research 44(4): 789-810.
- Kerrich, G.J. 1954. A systematic study of the encyrtid genus *Cerchysius* Westwood (Hym., Chalcidoidea). Annals and Magazine of Natural History (12 ser.) 7(77): 371-379.

- Kerrich, G.J. 1967. On the classification of the anagryine Encyrtidae with a revision of some genera (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History) (Entomology)* 2(5): 143-250.
- Kerrich, G.J. 1978. A revision of the dinocarsiine Encyrtidae with a study of the genus *Pelmatencyrtus* De Santis (Hymenoptera: Chalcidoidea). *Zoological Journal of the Linnean Society* 62(2): 109-159.
- Kerrich, G.J. 1982. Further systematic studies on tetracnemine Encyrtidae (Hymenoptera, Chalcidoidea) including a revision of the genus *Apoanagyrus* Compere. *Journal of Natural History* 16(3): 322-430.
- Kirkpatrick, T.W. 1954. Notes on minor insect pests on cacao in Trinidad. *Rept. Cacao Res., Trinidad*, 1952:62-73.
- Krishnamoorthy, A. & S.P. Singh. 1987. Biological control of the citrus mealybug *Planococcus citri* with an introduced parasite *Leptomastix dactylopii* in India. *Entomophaga* 32:143-148.
- Lee, S. 1979. Evaluation of *Ooencyrtus submetallicus* (Howard) and *Trissolcus basalus* (Wollaston) as egg parasites of *Nezara viridula* (Linnaeus). *Korean Journal of Plant Protection* 18(4):199-200.
- Legner, E.F. 1978. Muscidae (pp. 346-355). *In*: Clausen, C.P. (ed.) 1978. *Introduced parasites and predators of arthropod pest and weeds: a world review*. U.S. Dept. Agr. Handbook N 980. Washington: i – vi + 1-545.
- Legner, E.F. & E.C. Bay. 1965a. *Ooencyrtus submetallicus* Howard in an extraordinary host relationship with *Hippelates pusio* Loew. *Canadian Entomologist* 97:556-557.

- Legner, E.F. & E.C. Bay. 1965b. Predatory and parasitic agents attacking the *Hippelates pusio* complex in Puerto Rico. *Journal of Agriculture of University of Puerto Rico* 49:377-385.
- Leonard, M.D. 1933. A braconid parasite on a coccinellid new to Puerto Rico. *Journal of Economic Entomology* 26(1):294.
- López, V. F. 1998. Laboratory rearing and mass production of the hibiscus mealybug, *Maconellicoccus hirsutus* (Green) and the parasitic wasp, *Anagyrus kamali* at the Caribbean and Latin American Station of the IIBC in Trinidad. Management strategies for the control of the Hibiscus Mealybug. Centeno (Trinidad and Tobago) MA LMR: 56-73.
- Maes, J.-M. 1992. Fauna entomológica de la isla de Ometepe. *Revista Nicaragüense de Entomología* 21: 9-13.
- Matile-Ferrero, D. & B. J. Étienne. 1998. *Paracoccus marginatus* Williams & Granara de Willink, nouvelle introduction en Guadeloupe et a Saint Barthelemy (Hemiptera, Pseudococcidae). *Revue Francaise d' Entomologie (Nouvelle serie)* 20(4):142.
- Mercet, R.G. 1928. Nota sobre Encírtidos americanos. *Eos* 4(1): 5-12.
- Mercet, R.G. 1947. Cuatro especies en un género nuevo de Calcídidos. *Revista de la Real Academia de Ciencias de Madrid* 41:461-468.
- Meyerdirk, D.E. 1997. Look out for the Pink Hibiscus Mealybug. USDA, Animal and Plant Protection Service Program Aid No. 1606. Washington. 11 pp.
- Meyerdirk, D.E. 2001. Biological control of the Pink Hibiscus Mealybug, in the Bahamas. The ESA Meeting - 2001 (San Diego, California, USA), D0349: 1.

- Molina, J.S. 1977. Ciclos de aplicación de insecticidas para combatir la cochinille harinosa del café, *Planococcus citri* (Risso). Tesis, Facultad de Agronomía , Universidad de Costa Rica. 17pp.
- Monrreal Hernández, L. S., V. A. Trjapitzin & E. Ruíz Cancino. 2001. Descripción de *Sectiliclava placidae* sp. nov. (Hymenoptera: Encyrtidae) de México con la clave para especies del género. Acta Zoológica Mexicana, Nueva Serie 84: 27-34.
- Morais, M. 1995. Classical biological control of mealybugs, Pseudococcidae and the prospects for the pink mealybug *Maconellicoccus hirsutus* Green. Tropical Fruits Newsletter 17: 9-11.
- Morrone, J.J. 1999. Presentación preliminar de un nuevo esquema biogeográfico de América del Sur// *Biogeographica* (Paris) 75(1):1-16
- Murai, K. 1986. Host range study of the psyllid parasitoid, *Psyllaephagus* sp. nr. *rotundiformis* (Howard). Report of the Department of Agriculture, Honolulu, Hawaii. 6 pp.
- Myers, J.G. 1930. *Carabunia myersi* Wtrst. (Hym., Encyrtidae), a parasite of nymphal froghoppers (Hom., Cercopidae). Bulletin of Entomological Research 21 (3): 341-351.
- Nakahara, L.M. & G.Y. Funasaki. 1986. Natural enemies of the leucaena psyllid, *Heteropsylla cubana* Crawford (Homoptera: Psyllidae). *Leucaena Research Reports* 7:9-12.
- Nakahara, L.M. & G.Y. Funasaki. 1987. Release of *Psyllaephagus* sp. nr. *rotundiformis* (Howard) (Hymenoptera: Encyrtidae) for the biological control of *Heteropsylla cubana* Crawford (Homoptera: Psyllidae) and other *Heteropsylla* species in Hawaii. *Leucaena Research Reports* 8:11-13.

- Nakahara, L., W. Nagamine, S. Matayoshi & B. Kumashiro. 1987. *Heteropsylla cubana* and its predators. *Leucaena* Research Reports 7(2):32-44.
- Napompeth, B. 1990. *Leucaena* psyllid in Thailand - a country report. "Leucaena psyllid: problems and management" (Proc. Int. Workshop, Bogor, Indonesia, Jan. 16-21,1989). Bangkok. pp. 45-53.
- Noyes, J.S. 1979. The West Indian species of Encyrtidae described by L.O. Howard, 1894 and 1897 (Hymenoptera, Chalcidoidea). *Systematic Entomology* 4(2): 143-169.
- Noyes, J.S. 1980. A review of the genera of Neotropical Encyrtidae (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History). Entomological series* 41(3): 107-253.
- Noyes, J.S. 1985. A review of the Neotropical species of *Ooencyrtus* Ashmead, 1900 (Hymenoptera, Encyrtidae). *Journal of Natural History* 19:533-554.
- Noyes, J.S. 1987. A review of the species of *Neococcidencyrtus* (Hymenoptera: Encyrtidae), parasites of diaspidid scale insects. *Journal of Natural History* 21(4):995-1019.
- Noyes, J.S. 1990a . Encyrtidae (pp. 133-166). *In*: Rosen, D. (ed.).1990. The armoured scale insects, their biology, natural enemies and control. Vol. B. Amsterdam.
- Noyes, J.S. 1990b. A new encyrtid (Hymenoptera) parasitoid of the leucaena psyllid (Homoptera: Psyllidae) from México, Central America and the Caribbean. *Bulletin of Entomological Research* 80(1): 37-41.
- Noyes, J.S. 1998a. Encyrtidae (Insecta:Hymenoptera). *Fauna of New Zealand* 13: 1-188.

- Noyes, J. S. 1998b. Catalogue of Chalcidoidea of the world. The Natural History Museum & ETI Biodiversity Center- CD.
- Noyes, J.S. 2000. Encyrtidae of Costa Rica (Hymenoptera: Chalcidoidea), 1. The subfamily Tetracneminae, parasitoids of mealybugs (Homoptera: Pseudococcidae). *Memoirs of the American Entomological Institute*. 62:1-355.
- Noyes, J. S. & P. Hanson. 1996. Encyrtidae (Hymenoptera: Chalcidoidea) of Costa Rica: the genera and species associated with jumping plant-lice (Homoptera: Psylloidea). *Bulletin of the Natural History Museum (Entomology series)* 65(2): 105-164.
- Noyes, J.S. & M. Hayat. 1994. Oriental mealybug parasitoids of the Anagyrini (Hymenoptera: Encyrtidae) with a world review of Encyrtidae used in classical biological control and an index of encyrtids parasitoids of mealybugs (Homoptera: Pseudococcidae). Wallingford, England, CAB International. viii + 554 pp.
- Noyes, J.S. & H. Ren. 1995. Encyrtidae of Costa Rica (Hymenoptera: Chalcidoidea): the genus *Aenasius* Walker, parasitoids of mealybugs (Homoptera: Pseudococcidae). *Bulletin of the Natural History Museum London (Entomology series)* 64(2):117-163.
- Noyes, J. S., J. B. Woolley & G. Zolnerowich. 1997. Chapter 8. Encyrtidae (Pp. 170-320). *In*: Gibson G.A.P., T. Huber & J. B. Woolley (Eds.). *Annotated keys to the genera of Nearctic Chalcidoidea (Hymenoptera)*. NRC Research Press, Ottawa. xi + 794 pp.

- Rodríguez Pérez, M.A. & F. Reyes Villanueva. 1990. Claves y comentarios adicionales para los géneros de la familia Encyrtidae (Hymenoptera-Chalcidoidea) en el Estado de Nuevo León, México. *Folia Entomológica Mexicana* 79:109-149.
- Rosen, D. 1969. A systematic study of the genus *Acerophagus* E. Smith with descriptions of new species (Hymenoptera: Encyrtidae). *Hilgardia* 40(2): 41-72.
- Rosen, D. 1976. The species of *Microterys* (Hymenoptera:Encyrtidae): an annotated world list. *Annals of the Entomological Society of America* 69(3):479-485.
- Rosen, D. 1981. A new species of *Pseudaphycus* (Hym.: Encyrtidae), with notes on the *angelicus* group. *Entomophaga* 26(3):251-263.
- Rosen, D. & P. De Bach. 1978. Diaspididae (pp. 78-128). *In*: Clausen, C.P. (Ed.) *Introduced parasites and predators of arthropod pests and weeds.: a world review*. U.S. Dept. Agr. Handbook N 480. Washington: i-vi+1-545.
- Russo, G. 1927. Informe de entomología agrícola dominicana. *Estac. Nac. Agr. y Colegio de Moca* 2:1-244.
- Sagarra, L.A. & C. Vincent.1999. Influence of host stage on oviposition, development, sex ratio, and survival of *Anagyrus kamali* Moursi (Hymenoptera: Encyrtidae), a parasitoid of Hibiscus Mealybug, *Maconellicoccus hirsutus* Green (Homoptera: Pseudococcidae). *Biological Control* 15(1):51-56.
- Sailer, R.I. 1981. Progress report on importation of natural enemies of insect pests in the U.S.A. *California Agriculture* 30(5):20-26.

- Sarazin, M.J. 1987. Primary types of Chalcidoidea and Cynipoidea (Hymenoptera) in the Canadian National Collection. Proceedings of the Entomological Society of Washington 98(2): 950-368.
- Schmiedeknecht, O. 1909. Hymenoptera, fam. Chalcididae. Genera Insectorum 97:1-550.
- Sharkov, A.V. 1996. A review of the species of the genus *Mucroncyrtus* Noyes (Hymenoptera: Encyrtidae). Proceedings of the Entomological Society of Washington 98(2):950-368.
- Sharkov, A.V. & J.B. Woolley. 1997. A revision of the genus *Hambletonia* Compere (Hymenoptera: Encyrtidae). Journal of Hymenoptera Research 6(2):191-218.
- Simmonds, F. J. 1957. A list of Coccidae of Bermuda and their parasites. Bulletin Department of Agriculture of Bermuda 30:1-12.
- Simmonds, F.J. 1959. The green shield scale, *Pulvinaria psidii* Mask. (Coccidae), in Bermuda. Bermuda Department of Agriculture Bulletin. 32:1-21.
- Simmonds, F. J. 1969. Brief resume of activities and recent successes achieved. Commonwealth Agricultural Bureaux Publications: 1-16
- Smith, M.R. 1942. The relationships of ants and other organisms to certain scale insects on coffee in Puerto Rico. Journal of Agriculture of the University of Puerto Rico 26(2):21-27.
- Stiling, P. 1993. Why do natural enemies fail in classical biological control programs. American Entomologist 39 (1): 31-37.
- Subba Rao, B.R.1971. New genera and species of Encyrtids (Hymenoptera: Encyrtidae). Journal of Natural History 5 (2): 9:209-224.

- Subba Rao, B.R. 1972. On *Zeteticontus* Silvestri, with descriptions of three new species (Hymenoptera: Encyrtidae). *Entomophaga* 17(2):179-195.
- Sugonjaev, E.S. 1989. Notes on taxonomy of encyrtid-waps (Hymenoptera, Chalcidoidea, Encyrtidae), mainly parasites of soft scales (Homoptera, Coccoidea, Coccidae) in North America and West Indies. *Trudy Zoologicheskogo Instituta AN SSSR* 191:90-102. (In Russian).
- Tachikawa, T. 1956. The encyrtid parasites of *Pseudococcus flavipes* Kanda, with a list of the known species and their hosts of the genera *Anagyrus*, *Leptomastidea* and *Achrysoophagus* of the world (Hymenoptera). *Memoirs of Ehime University, Sect. 6 (Agr.)* 1(2): 137-155.
- Timberlake, P.H. 1916. Revision of the parasitic hymenopterous insects of the genus *Aphycus* Mayr, with notice of some related genera. *Proceedings of the United States National Museum* 50 (2136): 561-640.
- Timberlake, P.H. 1919. Revision of the parasitic chalcidoid flies of the genera *Homalotylus* Mayr and *Isodromus* Howard, with descriptions of two closely related genera. *Proceedings of the United States National Museum* 56 (2293): 133-194.
- Timberlake, P.H. 1924. The parasites of *Pseudococcus maritimus* (Ehrhorn) in California (Hymenoptera: Chalcidoidea). Part I. Taxonomic studies. *University of California Publications in Entomology* 3(2): 223-251.
- Timberlake, P.H. 1925. Descriptions of new chalcid-flies from Panama and Hawaii. *Proceedings of the Hawaiian Entomological Society* 6(1):173-192.

- Timberlake, P.H. 1926. Miscellaneous new chalcid-flies of the hymenopterous family Encyrtidae. Proceedings of the United States National Museum 69(3):1-34.
- Townsend, C. 1912. The work in Perú against the white scale of cotton. Journal of Economic Entomology 5: 256-263.
- Trjapitzin, V.A. 1971. A new species of the genus *Ameromyzobia* (Hymenoptera, Encyrtidae) from the island of Cuba. Zoologicheskii Zhurnal 50(2):289-292. (In Russian).
- Trjapitzin, V.A. 1982. Two species of the genus *Helmecephala* (Hymenoptera, Encyrtidae) from Costa Rica and Indonesia. Zoologicheskii Zhurnal 61(10): 1602-1605. (In Russian).
- Trjapitzin, V.A. 1988. A new species of parasitic Hymenoptera of the genus *Cerchysiella* (Hymenoptera, Encyrtidae) from Brazil. Trudy Vsesoyuznogo Entomologicheskogo Obshchestva 70:155-157. (In Russian).
- Trjapitzin, V.A. 1989a. Parasitic Hymenoptera of the fam. Encyrtidae of Palaearctics. Leningrad, Nauka, Leningrad division. 488 pp. (In Russian).
- Trjapitzin, V.A. 1989b. A brief review of parasitic Hymenoptera of the genus *Prionomastix* Mayr, 1876 (Encyrtidae) with description of a new species from Costa Rica. Trudy Zoologicheskogo Instituta AN SSSR 191:103-108 (In Russian).
- Trjapitzin, V.A. 1998. A new species of genus *Holcencyrtus* from Mexico (Hymenoptera: Encyrtidae). Zoosystematica Rossica 7(1): 185-188.
- Trjapitzin, V.A. 1999. The mymecomorphous encyrtid *Aeptencyrtus bruchi* in the island of Kauai, Hawaii. Zoosystematica Rossica 8 (1): 147-149.

- Trjapitzin, V.A. & J. W. Beardsley. 1999. Discovery of *Aeptencyrtus bruchi* (De Santis) (Hymenoptera: Encyrtidae) in the Hawaiian Islands. Bishop Museum Occasional Papers (Honolulu) 59: 35-36.
- Trjapitzin, V.A. & G. Gordh. 1978. Review of genera of Nearctic Encyrtidae (Hymenoptera, Chalcidoidea). II. Entomologicheskoye Obozreniye 57(3): 636-652. [In Russian; English translation: Entomological Review, Washington 57(3):437-448].
- Trjapitzin, V.A. & G. Gordh. 1984. Taxonomic notes on the Neotropical genus *Habrolepoidea* (Hymenoptera, Encyrtidae) and on species erroneously referred to it. Zoologicheskii Zhurnal 63(8): 1273-1277. (In Russian).
- Trjapitzin, V.A. & E. Ruíz Cancino. 1996 (1995). Annotated check-list of encyrtids (Hymenoptera: Chalcidoidea: Encyrtidae) of México. Folia Entomológica Mexicana 94:7-32.
- Trjapitzin, V.A. & E. Ruíz Cancino. 1997 (1996). *Neodusmetia sangwani* (Subba Rao) (Hymenoptera: Chalcidoidea: Encyrtidae), un parasitoide de la escama algodonosa de los pastos *Antonina graminis* (Maskell) (Homoptera, Coccoidea). BIOTAM (México, Cd. Victoria) 7 (2 y 3): 19-24.
- Trjapitzin, V.A. & E. Ruíz Cancino. 1998a (1996). Los encértidos del género *Ixodiphagus* Howard (Hymenoptera: Chalcidoidea: Encyrtidae), parasitoides de garrapatas. BIOTAM (México, Cd. Victoria) 8(1): 9-20.
- Trjapitzin, V.A. & E. Ruíz Cancino. 1998b (1997). *Pseudhomalopoda prima* Girault (Hymenoptera: Chalcidoidea: Encyrtidae), un parasitoide de la escama roja de Florida *Chrysomphalus aonidum* (Linnaeus) (Homoptera: Coccoidea:

- Diaspididae) en el Estado de Tamaulipas, México. BIOTAM (México, Cd. Victoria). 9(1):1-6.
- Trjapitzin, V.A. & E. Ruíz Cancino 1998c. Descripción de una especie del género *Prionomastix* Mayr (Hymenoptera: Chalcidoidea: Encyrtidae) del Estado de Puebla, México, con una clave para las especies conocidas del género. Acta Zoológica Mexicana, Nueva serie 75:163-169.
- Trjapitzin, V. A. & E. Ruíz Cancino. 1999. Biología y distribución de *Isodromus iceryae* Howard (Hymenoptera: Chalcidoidea: Encyrtidae), un parasitoide de crisópidos (Neuroptera: Chrysopidae) en México. Acta Científica Potosina 14 (1): 26-35.
- Trjapitzin, V. A. & E. Ruíz Cancino. 2000a. Encírtidos (Hymenoptera: Encyrtidae) de importancia agrícola en México. Serie Publicaciones Científicas CIDAFF-UAT (Cd. Victoria, México). No. 2. 163 pp.
- Trjapitzin, V.A. & E. Ruíz Cancino. 2000b. *Anagyrus pulchricornis* (Howard) (Hymenoptera: Encyrtidae) in the State of Tamaulipas, México. Southwestern Entomologist (Texas, USA). 25 (2):149.
- Trjapitzin, V. A. & E. Ruíz Cancino. 2001a. Discovery of the genus *Aloencyrtus* Prinsloo, 1978 (Hymenoptera: Encyrtidae) in Mexico and Honduras. Proceedings of the 13th Entomological Congress, Entomological Society of Southern Africa (Pietermaritzburg, 2-5 July 2001), p. 105.
- Trjapitzin, V. A. & E. Ruíz Cancino. 2001b. Descripción de una nueva especie del género *Discodes* Foerster (Hymenoptera: Chalcidoidea: Encyrtidae) de Baja California Sur, México. BIOTAM (Cd. Victoria, México), n.s. 12 (2): 65-70.
- Trjapitzin, V. A. & E. Ruíz Cancino. 2002. A review of encyrtids (Hymenoptera: Chalcidoidea: Encyrtidae) of the world fauna with reduced number of funicle

- segments of antennae. Serie Publicaciones Científicas CIDAFF-UAT (Cd. Victoria, México). No. 3. 173 pp.
- Trjapitzin, V.A. & A.A. Sitdikov. 1993. Description of a new species of the genus *Encyrtus* Latreille (Hymenoptera, Encyrtidae) from Cuba and a brief account of Cuban encyrtids. *Entomologicheskoye Obozreniye* 72(1):165-173. (In Russian).
- Trjapitzin, V.A. & S.V. Trjapitzin. 1995. A new species of the genus *Coelaspidia* Timberlake 1923 (Insecta Hymenoptera Encyrtidae) from Cuba. *Tropical Zoology* 8(2):341-346.
- Urich, F.W. 1932. The arrowroot leaf roller (*Calpododes ethlius*). *Tropical Agriculture (Trinidad)* 9: 299-300.
- Vaughan, M.A. 1992 (pp. 7-38). International biocontrol cooperation within Latin America. Proceedings of the International Organization for Biological Control (IOBC). Workshop on Opportunities for Implementation of Biocontrol in Latin America (Rio de Janeiro, Brazil, August 12, 1991). Buenos Aires (Eds.: Coulson, J. R. & M.C. Zapater).
- Villanueva Jiménez, J. A., V. M. Zárate Grajález, H. González Hernández, M. E. Schauff & D. E. Meyerdirk. 2001. Avances en el programa de control biológico clásico en el piojo harinoso de la papaya *Paracoccus marginatus* (Homoptera: Pseudococcidae) en el Caribe, con parasitoides procedentes de México. In: Nevárez Morillón, G. Sánchez Martínez & L. N. Muños Castellanos (Eds.). XXIV Congreso Nacional de Control Biológico, Memorias (Chihuahua, Chih., México, 9 y 10 e agosto de 2001), pp. 153-155.

- Waage, J. 1990. Exploration for biological control agents of *Leucaena* psyllid in Tropical America. *Leucaena* psyllid: problems and management (Proc. Int. Workshop, Bogor, Indonesia, Jan. 16-21, 1989). Bangkok, 1990: 144-152.
- Walker, F. 1843. Descriptions of Chalcidites discovered in St. Vincent's Isle by the Rev. Lansdown Guilding. *Annals and Magazine of Natural History* 12 (74): 46-49.
- Walker, F. 1846. Characters of some undescribed species of Chalcidites. *Annals and Magazine of Natural History* 17(11):177-185.
- Waterhouse, D.F. & K.R. Norris. 1987. Biological control, Pacific prospect. Australian Center for Int. Agr. Res. (ACIAR). Incata Press, Melbourne. 454 pp.
- Waterston, J. 1922. On some Chalcidoid parasites of psyllids (Hemiptera, Homoptera). *Bulletin of Entomological Research*. 13 (1): 41-58.
- Waterston, J. 1928. A new Encyrtid (Hym., Chalcid.) bred from *Clastoptera* (Hym., Cercop.). *Bulletin of Entomological Research* 19(3): 249-251.
- Wilson, F. 1960. A review of the biological control of insects and weeds in Australia and Australian New Guinea. Technical Communication, Commonwealth Institute of Biological Control 1:1-102.
- Wilson, F. & L.T. Woolcock. 1960. Temperature determination of sex of a parthenogenetic parasite, *Ooencyrtus submetallicus* (Howard) (Hymenoptera: Encyrtidae). *Australian Journal of Zoology* 8(2): 153-169.
- Wolcott, G.N. 1923. Insectae portoricenses. A preliminary annotated check-list of the insects of Porto Rico with descriptions of some new species. *Journ. Dept. Agr. Porto Rico* 7(1):1-313.

- Wolcott, G.N. 1933. An economic entomology of the West Indies. Proc. Ent. Soc. Puerto Rico Cr. 800. 688 pp.
- Wolcott, G.N. 1950. The insects of Puerto Rico. Journal of Agriculture of the University of Puerto Rico 32:1-224.
- Wolcott, G.N. 1952. The insects of Puerto Rico. Journal or Agriculture of the University of Puerto Rico. 32(4) 749-975.
- Wolcott, G.N. & F. Sein 1933. A year experience with the Cottony Cushion Scale. Journal Dept. Agr. Puerto Rico 17(3): 199-221.
- Woodruff R.E., B. M. Beck, P.E. Skelley, C.Y.L. Schotman & M.C. Thomas. 1998. Checklist and bibliography of the insects of Grenada and The Grenadines. Center for Systematic Entomology, Gainesville, Florida, U.S.A. Memoir 2. 286 pp.
- Zayas Muños, F. de 1981. *Entomofauna cubana*. Tópicos entomológicos a nivel medio para uso didáctico. Sección Oligoneoptera. Orden Hymenoptera. Orden Strepsiptera. Tomo VIII. La Habana, Ministerio de Cultura, Editorial Científico-Técnica: 5-111.

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