

An annotated checklist of the scale insects of Egypt (Hemiptera: Sternorrhyncha: Coccoomorpha: Coccoidea)

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ABSTRACT

An annotated checklist of 211 species belonging to 13 families of scale insects (Hemiptera: Coccoomorpha: Coccoidea) of Egypt including their common names, host plants and additional remarks is provided based on literature records and collections made by the senior author in Egypt. Four species are new to the fauna of Egypt, namely *Adiscodiaspis ericicola* (Marchal), *Dynaspidotus ephedrarum* (Lindinger), *Rhizaspidotus adiscus* Gómez-Menor Ortega (Diaspididae), and *Dactylopius confusus* (Cockerell) (Dactylopiidae). An illustrated key to the families of scale insects of Egypt is provided.

KEYWORDS

scale insects, host plants, key to scale insect families, Egypt

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INTRODUCTION

Scale insects (Hemiptera: Coccoomorpha: Coccoidea) are obligate, sap-sucking plant feeders and comprise many of the major plant pests worldwide. Aside from the damage they cause directly on leaves, twigs, branches, fruit and sometimes roots, many species also produce sticky honeydew which provides a media for the formation of black sooty mold, which reduces the photosynthetic capacity of the plant and decreases the marketability of the commodity. The leaves of plants infested with scale insects often show signs of yellowing, curling, wilting and premature drop; fruit may become blemished and/or discolored. Heavy infestations are often associated with copious amounts of wax and honeydew on the plant which they secrete, sooty mold that forms on the honeydew and ants which feed on the honeydew and protect the scale insects from their natural enemies.

Egypt has a long tradition in coccidology. Newstead (1906–1913), Hall (1922–1927) Bodenheimer (1929–1937) and Ezzat (1958–1987) described 4, 33, 4 and 7 species of scale insects that occur in Egypt, respectively. The first comprehensive checklist of the coccid fauna of Egypt was published by Hall (1926a) containing 125 species. Since that time, Ezzat and Nada (1987), Abd-Rabou (2000) and Mohammad and Ghabbour (2008) published subsequent checklists of the scale insects known to exist in Egypt. Recently, several authors have reported on the scale insects of Egypt (Abd-Rabou, 2000, 2001, 2003, 2012), Abou-Elkhair (2001), Abd-Rabou et al. (2010), Abdel-Razak (2012) and Abd-Rabou and Evans (2018). Currently, the Egyptian scale insect fauna includes 215 species placed in thirteen families (García-Morales et al., 2016). Here we update the annotated checklist of Egypt based on literature data, and in addition provide an identification key for the scale insect families of Egypt with illustrations. For factsheets on each family and a LUCID key to all families of the scale insects known worldwide, readers are referred to Miller et al. (2014).

MATERIAL AND METHODS

The current annotated checklist is based on records from literature published from 1890 to the present year, and the collections made by the senior author in Egypt. Systematics and nomenclature of the species names follow García-Morales et al. (2016), except Ericoccidae s.l., where Kozár et al. (2013) was accepted. Common names of the scale insect species used here follows those of the CABI Invasive Species Compendium and García-Morales et al. (2016). The host plants listed for each species, include only plant species on which the scale insect was collected in Egypt based on literature records and those of the senior author's collections in Egypt. Thus, the host plant of a species is listed as "unknown" when the plant host on which it was collected in Egypt is not known, whereas in most cases, there are host plant records for the species based on collections made in other countries which can be found in ScaleNet (García-Morales et al., 2016). Remarks were added with the data of first report of each species in Egypt. Microscopic slides of these species are deposited in the collection of Scale Insect and Mealybugs Division in Plant Protection Research Institute, Doki, Giza, Egypt.

RESULTS

Our study represents 211 scale insect species from Egypt, belonging to 13 families. The most species rich scale insect family in Egypt is Diaspididae (99 species), followed by Pseudococcidae



(51), Coccidae (35), Monophlebidae (7), Asterolecaniidae (5), Acanthococcidae (4), Aclerdidae (2), Dactylopiidae (2), Halimococcidae (1), Lecanodiaspididae (1), Margarodidae (1), Ortheziidae (1), and Phoenicococcidae (1). Four species proved to be new to the fauna of Egypt, namely *Adiscodiaspis ericicola* (Marchal), *Dynaspidiotus ephedrarum* (Lindinger), *Rhizaspidotus adiscus* Gómez-Menor Ortega (Diaspididae), and *Dactylopius confusus* (Cockerell) (Dactylopiidae).

Notes on taxonomy:

Nomina nuda of taxa reported from Egypt:

Chionaspis crypheaformis Newstead 1907a: 15

Chionaspis gryphaeformis Newstead 1906: 71.

CHECKLIST OF THE SCALE INSECTS (COCCOMORPHA: COCCOIDEA) OF EGYPT

Family ACANTHOCOCCIDAE

Common names: felt scale insects, eriococcids

1. *Neoacanthococcus kaiseri* (Bodenheimer)

Common name: none. Host plants: *Tamarix gallica*. Remarks: First reported in Egypt by Bodenheimer (1929a).

2. *Rhizococcus coccineus* (Cockerell).

Common name: cactus spine scale. Host plants: *Thelocactus bicolor*. Remarks: First reported in Egypt by Marotta and Garonna (1992).

3. *Rhizococcus thymelaeae* (Newstead)

Common name: none. Host plants: unknown. Remarks: First reported in Egypt by Köhler (1998).

4. *Uhlaria araucariae* (Maskell)

Common name: araucaria scale. Host plants: *Araucaria* sp. Remarks: First reported in Egypt by Newstead (1907).

Family ACLERDIDAE

Common names: flat grass scale insects, aclerdids

5. *Aclerda panici* (Hall)

Common name: none. Host plants: *Panicum turgidum*. Remarks: First reported in Egypt by Hall (1926).

6. *Aclerda takahashii* Kuwana

Common name: none. Host plants: *Panicum turgidum*, *Saccharum sacchari*. Remarks: First reported in Egypt by Karam (1991).

Family ASTEROLECANIIDAE

Common names: pit scale insects, asterolecaniids

7. *Bambusaspis bambusae* (Boisduval)

Common name: bamboo pit scale. Host plants: *Acalypha wilkesiana*, *Bambusa vulgaris*, *Dianthus* sp., *Orchidaceae* sp., *Platyclusus orientalis*. Remarks: First reported in Egypt by Hall (1922).



8. *Palmaspis phoenicis* (Ramachandra Rao)

Common name: green date palm pit scale. Host plants: *Phoenix dactylifera*. Remarks: First reported in Egypt by [Mohammad et al. \(1997\)](#).

9. *Pollinia pollini* (A. Costa)

Common name: ornate pit olive scale. Host plants: *Olea europaea*. Remarks: First reported in Egypt by [Hall \(1922\)](#).

10. *Russellaspis pustulans pustulans* (Cockerell)

Common name: fig pit scale. Host plants: *Abelmoschus esculentus*, *Abutilon* sp., *Acacia decurrens*, *Acacia nilotica*, *Albizia lebbek*, *Alternanthera* sp., *Annona squamosa*, *Bauhinia* sp., *Bougainvillea* sp., *Brassica oleracea*, *Caesalpinia*, *Cajanus cajan*, *Carissa macrocarpa*, *Carissa spinarum*, *Cassia fistula*, *Cordia myxa*, *Duranta* sp., *Abutilon* sp., *Eriobotrya* sp., *Eucalyptus* sp., *Ficus benjamina*, *Ficus carica*, *Ficus sycomorus*, *Ficus virens*, *Gossypium* sp., *Guazuma ulmifolia*, *Hibiscus rosa-sinensis*, *Jacaranda* sp., *Malus prunifolia*, *Melia azedarach*, *Morus alba*, *Musa paradisiaca*, *Nerium oleander*, *Olea europaea*, *Passiflora quadrangularis*, *Pithecellobium* sp., *Pittosporum* sp., *Prosopis* sp., *Prunus domestica*, *Prunus persica*, *Pyrus communis*, *Robinia pseudoacacia*, *Rosa* sp., *Salix* sp., *Sambucus* sp., *Sesbania sesban*, *Sideroxylon* sp., *Solanum* sp., *Sterculia* sp., *Tamarindus indica*, *Tecoma* sp., *Viburnum tinus*, *Vitis vinifera*, *Ziziphus* sp. Remarks: First reported in Egypt by [Hall \(1922\)](#).

11. *Trachycoccus tenax* (Bodenheimer)

Common name: tenax pit scale. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by [Bodenheimer \(1929a\)](#).

Family COCCIDAE

Common names: soft scale insects, coccids

12. *Acantholecanium haloxyloni* (Hall)

Common name: none. Host plants: *Haloxylon salicornicum*, *Haloxylon schweinfurthii*. Remarks: First reported in Egypt by [Hall \(1926a\)](#).

13. *Acanthopulvinaria orientalis* (Nasonov)

Common name: Egyptian wax scale. Host plants: *Anabasis articulata*, *Haloxylon salicornicum*. Remarks: First reported in Egypt by [Hall \(1923\)](#).

14. *Ceronema africanum* Macfie

Common name: African wax scale. Host plants: *Acacia arabica*, *Acacia nilotica*, *Acacia* sp., *Caesalpinia pulcherrima*, *Ficus carica*. Remarks: First reported in Egypt by [Hall \(1923\)](#).

15. *Ceroplastes actiniformis* Green

Common name: date palm soft scale. Host plants: *Phoenix dactylifera*. Remarks: First reported in Egypt by [Hall \(1922\)](#).

16. *Ceroplastes actiniformis* Green

Common name: barnacle wax scale. Host plants: *Psidium guajava*. Remarks: First reported in Egypt by [Bakr et al. \(2010\)](#).

17. *Ceroplastes floridensis* Comstock

Common name: citrus wax scale. Host plants: *Citrus* sp., *Cydonia oblonga*, *Eriobotrya japonica*, *Hedera helix*, *Mangifera indica*, *Morus* sp., *Phyllanthus* sp., *Psidium guajava*, *Punica granatum*, *Pyrus communis*, *Schinus terebinthifolia*, *Schinus* sp. Remarks: First reported in Egypt by [Hall \(1922\)](#).



18. *Ceroplastes rubens* Maskell

Common name: red wax scale. Host plants: *Citrus* sp. Remarks: First reported in Egypt by Hall (1924a).

19. *Ceroplastes rusci* (Linnaeus)

Common name: fig wax scale. Host plants: *Citrus* sp., *Crataegus* sp., *Cyperus* sp., *Ficus benjamina*, *Ficus carica*, *Ficus pseudosycamor*, *Ficus sycomorus*, *Ficus virens*, *Lawsonia inermis*, *Musa paradisiaca*, *Musa* sp., *Piper* sp., *Psidium guajava*, *Psorospermum febrifugum*, *Salix babylonica*, *Schinus* sp., *Vitis vinifera*. Remarks: First reported in Egypt by Newstead (1911).

20. *Ceroplastes sinensis* Del Guercio

Common name: citrus wax scale. Host plants: *Citrus* sp. Remarks: First reported in Egypt by Hall (1924a).

21. *Coccus capparidis* (Green)

Common name: capparis soft scale. Host plants: *Panax* sp. Remarks: First reported in Egypt by Hodgson (1968).

22. *Coccus hesperidum* Linnaeus

Common name: Common name: brown soft scale. Host plants: *Acacia* sp., *Adiantum* sp., *Annona* sp., *Bauhinia* sp., *Begonia* sp., *Citrus aurantium*, *Citrus limon*, *Citrus medica*, *Citrus* sp., *Ficus benghalensis*, *Ficus* sp., *Gossypium* sp., *Grevillea* sp., *Lonicera japonica*, *Melia azedarach*, *Musa* sp., *Nerium oleander*, *Olea* sp., *Panax* sp., *Persea americana*, *Phyllanthus* sp., *Pinus sylvestris*, *Plumeria* sp., *Psidium guajava*, *Pyrus communis*, *Ruscus hypophyllum*, *Tecoma* sp., *Toona ciliata*, *Vitis vinifera*. Remarks: First reported in Egypt by Hall (1922).

23. *Coccus longulus* (Douglas)

Common name: long brown soft scale. Host plants: *Acacia nilotica*, *Acacia* sp., *Annona* sp., *Cajanus cajan*, *Dichrostachys cinerea*, *Ficus benjamina*, *Ficus* sp., *Tecoma* sp., *Vitis vinifera*. Remarks: First reported in Egypt by Hall (1922).

24. *Coccus viridis* (Green)

Common name: green coffee scale. Host plants: *Citrus* sp., *Coffea* sp. Remarks: First reported in Egypt by Hall (1924a).

25. *Eucalymnatus tessellatus* (Signoret)

Common name: tessellated soft scale. Host plants: *Caryota* sp., *Sanchezia* sp. Remarks: First reported in Egypt by Hall (1925).

26. *Kilifia acuminata* (Signoret)

Common name: oyster shell mango soft scale. Host plants: *Citrus* sp., *Mangifera indica*, *Psidium guajava*, *Pyrus communis*. Remarks: First reported in Egypt by Ezzat and Hussein (1969).

27. *Milviscutulus mangiferae* (Green)

Common name: mango soft scale. Host plants: *Mangifera indica*. Remarks: First reported in Egypt by Abd-Rabou and Evans (2018).

28. *Parasaissetia nigra* (Nietner)

Common name: nigra soft scale. Host plants: *Ficus carica*, *Ficus sycomorus*, *Mangifera indica*, *Passiflora quadrangularis*, *Piper* sp., *Pittosporum* sp., *Schinus mole*, *Vitis vinifera*, *Ziziphus spinachristi*. Remarks: First reported in Egypt by Hall (1922).

29. *Parthenolecanium corni* (Bouché)

Common name: European fruit lecanium. Host plants: *Cotoneaster microphylla*, *Taxus baccata*. Remarks: First reported in Egypt by Habib (1955).



30. *Parthenolecanium persicae* (Fabricius)

Common name: peach soft scale. Host plants: *Mangifera indica*, *Tamarix* sp., *Vitis vinifera*.

Remarks: First reported in Egypt by Hall (1926a).

31. *Protopulvinaria pyriformis* (Cockerell)

Common name: pyriform soft scale. Host plants: *Schefflera* sp. Remarks: First reported in Egypt by Karam (2013).

32. *Pulvinaria chrysanthemi* Hall

Common name: chrysanthemum soft scale. Host plants: *Chrysanthemum coronarium*, *Chrysanthemum* sp., *Glebionis coronaria*. Remarks: First reported in Egypt by Hall (1923).

33. *Pulvinaria elongata* Newstead

Common name: cottony grass scale. Host plants: *Saccharum officinarum*. Remarks: First reported in Egypt by Karam and Abou-Elkhair (1992).

34. *Pulvinaria floccifera* (Westwood)

Common name: camellia soft scale. Host plants: *Chenopodium album*, *Ficus* sp., *Psidium guajava*, *Rosa* sp., *Solanum melongena*. Remarks: First reported in Egypt by Hall (1922).

35. *Pulvinaria psidii* Maskell

Common name: guava soft scale. Host plants: *Antigonon leptopus*, *Ficus rubiginosa*, *Ficus* sp., *Juncus concinnus*, *Psidium guajava*, *Sanchezia* sp., *Schinus terebinthifolia*. Remarks: First reported in Egypt by Hall (1926a).

36. *Pulvinaria tenuivalvata* (Newstead)

Common name: sugarcane soft scale. Host plants: *Arunda donax*, *Convolvulus arvensis*, *Corchorus olitorius*, *Digitaria sanguinalis*, *Imperata cylindrica*, *Pennisetum purpureum*, *Saccharum officinarum*, *Sorghum vulgare* var. *saccharatum*, *Zea mays*. Remarks: First reported in Egypt by Watson and Foldi (2002).

37. *Pulvinaria urbicola* Cockerell

Common name: urbicola soft scale. Host plants: *Coccoloba uvifera*, *Cordia* sp., *Psidium guajava*, *Sanchezia speciosa*, *Withania somnifera*. Remarks: First reported in Egypt by Abdel-Razak (2012).

38. *Pulvinariella mesembryanthemi* (Vallot)

Common name: ice plant soft scale. Host plants: *Mesembryanthemum* sp. Remarks: First reported in Egypt by Hall (1922).

39. *Rhizopulvinaria artemisiae* (Signoret)

Common name: retama scale, cottony woodworm scale. Host plants: *Artemisia judaica*, *Artemisia monosperma*, *Pituranthos tortuosus*, *Retama raetam*. Remarks: First reported in Egypt by Hall (1923).

40. *Saissetia coffeae* (Walker)

Common name: hemispherical soft scale. Host plants: *Asparagus officinalis*, *Aster* sp., *Bauhinia* sp., *Beaumontia grandiflora*, *Cycas revoluta*, *Ficus* sp., *Hibiscus* sp., *Justicia bracteata*, *Lippia* sp., *Pittosporum tobira*, *Pittosporum* sp., *Thunbergia* sp. Remarks: First reported in Egypt by Hall (1922).

41. *Saissetia oleae* (Olivier)

Common name: Mediterranean soft black scale. Host plants: *Acalypha* sp., *Alcea rosea*, *Antigonon leptopus*, *Bauhinia* sp., *Calotropis procera*, *Helianthus annuus*, *Prunus armeniaca*, *Prunus domestica*, *Prunus* sp., *Psidium guajava*, *Vitis vinifera*. Remarks: First reported in Egypt by Hall (1922).



42. *Saissetia privigna* De Lotto

Common name: coffee soft scale. Host plants: *Citrus aurantium*, *Ficus carica*. Remarks: First reported in Egypt by De Lotto (1976).

43. *Stotzia ephedrae* (Newstead)

Common name: ephedra scale scale. Host plants: *Asparagus* sp., *Ephedra alte*, *Ephedra aphylla*. Remarks: First reported in Egypt by Hall (1922).

44. *Waxiella africana africana* (Green)

Common name: ficus wax scale. Host plants: *Albizia lebbek*. Remarks: First reported in Egypt by Hall (1922).

45. *Waxiella mimosae mimosae* (Signoret)

Common name: acacia wax scale. Host plants: *Acacia nilotica*, *Acacia verticillata*, *Clerodendrum speciosissimum*. Remarks: First reported in Egypt by Cockerell (1894).

46. *Waxiella senegalensis* (Marchal)

Common name: senegalensis wax scale. Host plants: *Acacia nilotica*, *Acacia tortilis*. Remarks: First reported in Egypt by Hodgson and Peronti (2012).

Family DACTYLOPIIDAE

Common names: cochineal scale, dactylopiids

47. *Dactylopius coccus* Costa

Common name: cochineal scale. Host plants: *Opuntia tomentosa*. Remarks: First reported in Egypt by Couturier et al. (1985).

48. *Dactylopius confusus* (Cockerell)

Common name: barbary fig cochineal scale. Host plants: *Opuntia* sp. Remarks: This species is recorded for the first time in Egypt from the Giza Governortae.

Family DIASPIDIDAE

Common names: armored scale insects, diaspidids

49. *Acanthomytilus intermittens* (Hall)

Common name: African fodder cane scale. Host plants: *Imperata cylindrica*, *Pennisetum dichotomum*, *Pennisetum divisum*, *Saccharum spontaneum*. Remarks: First reported in Egypt by Hall (1924).

50. *Acanthomytilus sacchari* (Hall)

Common name: saccharum scale. Host plants: *Arundo donax*, *Imperata cylindrica*, *Phragmites australis*, *Saccharum officinarum*, *Saccharum spontaneum*. Remarks: First reported in Egypt by Hall (1923).

51. *Adiscodiaspis ericicola* (Marchal)

Common name: none. Host plants: unknown. Remarks: This species recorded here for first time from New Valley Governorate.

52. *Aonidia lauri* (Bouche)

Common name: bay scale. Host plants: *Laurus nobilis*. Remarks: First reported in Egypt by Ezzat (1958).

53. *Aonidiella aurantii* (Maskell)

Common name: California red scale. Host plants: *Acacia calamifolia*, *Asparagus officinalis*, *Calendula officinalis*, *Citrus* sp., *Cydonia oblonga*, *Diospyros kaki*, *Erythrina* sp., *Ficus carica*, *Ficus glomeratus*, *Ficus virens*, *Laurus nobilis*, *Malus prunifolia*, *Mangifera indica*, *Melia*



azedarach, *Morus* sp., *Musa acuminata*, *Olea* sp., *Phoenix dactylifera*, *Phyllanthus* sp., *Pinus* sp., *Prunus domestica*, *Pyrus communis*, *Rosa* sp., *Ruscus hypophyllum*, *Salix babylonica*, *Solanum* sp., *Vitis vinifera*. Remarks: First reported in Egypt by Hall (1922).

54. *Aonidiella citrina* (Coquillett)

Common name: yellow scale. Host plants: unknown. Remarks: First reported in Egypt by Abd-Rabou (2000).

55. *Aspidaspis longiloba* (Hall)

Common name: longtailed scale. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by Hall (1923).

56. *Aspidiotus destructor* Signoret

Common name: coconut scale. Host plants: *Ficus* sp. Remarks: First reported in Egypt by Hall (1922).

57. *Aspidiotus nerii* Bouche

Common name: oleander scale. Host plants: *Acacia decurrens*, *Aristolochia* sp., *Glebionis coronaria*, *Jasminum* sp., *Magnolia* sp., *Melia azedarach*, *Morus* sp., *Punica granatum*, *Salvia* sp., *Schinus* sp., *Solanum lycopersicum*, *Urena lobata*. Remarks: First reported in Egypt by Hall (1922).

58. *Aulacaspis crawii* (Cockerell)

Common name: azedarach scale. Host plants: unknown. Remarks: First reported in Egypt by Giliomee (1966).

59. *Aulacaspis rosae* (Bouché)

Common name: rose scale. Host plants: *Cycas* sp., *Dianthus* sp., *Laurus nobilis*, *Rubus idaeus*. Remarks: First reported in Egypt by Archangelskaya (1937).

60. *Aulacaspis tubercularis* Newstead

Common name: white mango scale. Host plants: *Mangifera indica*. Remarks: First reported in Egypt by Hall (1922).

61. *Avidovaspis phoenicis* Gerson and Davidson

Common name: pinnae date palm scale. Host plants: *Phoenix dactylifera*. Remarks: First reported in Egypt by Gerson and Davidson (1974).

62. *Carulaspis juniperi* (Bouché)

Common name: juniper scale. Host plants: *Callitris* sp., *Cryptomeria* sp., *Cupressus* sp., *Libocedrus* sp., *Pinus* sp., *Platycladus* sp., *Sequoia* sp., *Thuja* sp. Remarks: First reported in Egypt by Miller and Davidson (2005).

63. *Carulaspis minima* (Signoret)

Common name: minute cypress scale. Host plants: unknown. Remarks: First reported in Egypt by Hall (1922).

64. *Carulaspis visci* (Schrank)

Common name: mistletoe scale. Host plants: unknown. Remarks: First reported in Egypt by Ezzat (1958).

65. *Chionaspis etrusca* Leonardi

Common name: tamarix scale. Host plants: *Tamarix africanam*, *Tamarix aphylla*, *Tamarix gallica*. Remarks: First reported in Egypt by Balachowsky (1958).

66. *Chortinaspis senapiensis* Ben-Dov

Common name: none. Host plants: *Panicum turgidum*. Remarks: First reported in Egypt by Ben-Dov (1976).



67. *Chrysomphalus aonidum* (Linnaeus)

Common name: Florida red scale. Host plants: *Acacia decurrens*, *Acacia nilotica*, *Acokanthera* sp., *Aloe* sp., *Annona squamosa*, *Bauhinia* sp., *Begonia* sp., *Calendula officinalis*, *Calostemma* sp., *Carissa spinarum*, *caryophyllus* sp., *Ceratonia siliqua*, *Dianthus* sp., *Diospyros kaki*, *Duranta* sp., *Ficus carica*, *Ficus elastica*, *Ficus religiosa*, *Ficus retusa*, *Ficus sycomorus*, *Gossypium* sp., *Haldina cordifolia*, *Hibiscus* sp., *Jasminum* sp., *Latania* sp., *Lawsonia inermis*, *Ligustrum japonicum*, *Magnolia grandiflora*, *Malus prunifolia*, *Morus* sp., *Myrtus communis*, *Phoenix dactylifera*, *Phyllanthus* sp., *Pritchardia* sp., *Prunus domestica*, *Prunus persica*, *Punica granatum*, *Quercus robur*, *Salix babylonica*, *Syzygium jambos*, *Vitis vinifera*. Remarks: First reported in Egypt by Hall (1922).

68. *Chrysomphalus dictyospermi* (Morgan)

Common name: dictyospermum scale. Host plants: *Beaucarnea recurvata*, *Psidium guajava*, *Ruta chalepensis*. Remarks: First reported in Egypt by Hall (1925).

69. *Clavaspidotus apicalis* Takagi

Common name: none. Host plants: *Citrus aurantium*, *Citrus limon*, *Citrus maxima*, *Citrus* sp., *Litsea glutinosa*, *Pangium*. Remarks: First reported in Egypt by Takagi (1974).

70. *Contigaspis bilobis* (Newstead)

Common name: bilobe scale. Host plants: *Ochradenus baccatus*, *Panicum turgidum*, *Pituranthos tortuosus*. Remarks: First reported in Egypt by Hall (1922).

71. *Contigaspis farsetiae* (Hall)

Common name: farsetia scale. Host plants: *Farsetia aegyptiaca*. Remarks: First reported in Egypt by Hall (1926a).

72. *Contigaspis zillae* (Hall)

Common name: zilla scale. Host plants: *Citrullus colocynthis*, *Farsetia* sp., *Ochradenus baccatus*, *Pergularia tomentosa*, *Pituranthos tortuosus*, *Reseda pruinose*, *Telephium sphaerospermum*, *Trichodesma africanum*, *Zilla spinosa*. Remarks: First reported in Egypt by Hall (1923).

73. *Cryptoparlatoresopsis halli* (Bodenheimer)

Common name: Hall scale. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by Bodenheimer (1929).

74. *Cryptoparlatoresopsis meccae* (Hall)

Common name: mecca scale. Host plants: *Diospyros kaki*. Remarks: First reported in Egypt by Danzig and Pellizzari (1998).

75. *Diaspidiotus ancylus* (Putman)

Common name: rhododendron scale. Host plants: *Populus candicans*. Remarks: First reported in Egypt by Abou-Elkhair (2001).

76. *Diaspidiotus cecconii* (Leonardi)

Common name: cecconi scale. Host plants: *Asparagus aphyllus*, *Pituranthos tortuosus*. Remarks: First reported in Egypt by Hall (1926a).

77. *Diaspidiotus pyri* (Lichtenstein)

Common name: fig scale. Host plants: *Ficus carica*, *Olea europaea*. Remarks: First reported in Egypt by Hall (1925).

78. *Diaspis boisduvalii* Signoret

Common name: boisduval scale. Host plants: unknown. Remarks: First reported in Egypt by Hall (1922).



79. *Diaspis bromeliae* (Kerner)

Common name: pineapple scale. Host plants: *Agave vivipara*, *Ocotea* sp. Remarks: First reported in Egypt by Hall (1925).

80. *Diaspis echinocacti* (Bouché)

Common name: cactus scale. Host plants: Cactaceae. Remarks: First reported in Egypt by Newstead (1911).

81. *Duplachionaspis divergens* (Green)

Common name: bunchgrass scale. Host plants: *Arundo donax*, *Chrysopogon zizanioides*, *Poa nemoralis*. Remarks: First reported in Egypt by Hall (1922).

82. *Duplachionaspis monodi* (Rungs)

Common name: none. Host plants: *Stipagrostis pungens*. Remarks: First reported in Egypt by Balachowsky (1954).

83. *Duplachionaspis natalensis* (Maskell)

Common name: buffalo grass scale. Host plants: *Arundo donax*, *Chrysopogon zizanioides*, *Cupressus* sp., *Imperata cylindrica*, *Phragmites australis*. Remarks: First reported in Egypt by Hall (1922).

84. *Duplachionaspis noaeae* (Hall)

Common name: thorny saltwort scale. Host plants: *Anabasis articulate*, *Elegia mucronate*, *Erythrococca atrovirens*, *Noaea mucronata*, *Panicum turgidum*. Remarks: First reported in Egypt by Hall (1925).

85. *Dynaspidiotus britannicus* (Newstead)

Common name: bay tree scale. Host plants: *Ziziphus spina-christi*. Remarks: First reported in Egypt by Hall (1923).

86. *Dynaspidiotus ephedrarum* (Lindinger)

Common name: sandy cherry scale. Host plants: *Ephedra* sp. Remarks: This species is recorded for the first time from the Eastern Desert.

87. *Fiorinia fiorinae* (Targioni Tozzetti)

Common name: fiorina scale. Host plants: unknown. Remarks: First reported in Egypt by Alfieri (1929).

88. *Furchadaspis zamiae* (Morgan)

Common name: cycad scale. Host plants: unknown. Remarks: First reported in Egypt by Hall (1926a).

89. *Gonaspidotus seurati* (Marchal)

Common name: seurat scale. Host plants: *Zilla macroptera*, *Zilla spinosa*. Remarks: First reported in Egypt by Balachowsky (1927).

90. *Hemiberlesia cyanophylli* (Signoret)

Common name: cyanophyllum scale. Host plants: *Ceratonia siliqua*, *Dovyalis caffra*, *Ficus sycomorus*, *Jasminum* sp., *Phyllanthus* sp., *Psidium guajava*. Remarks: First reported in Egypt by Hall (1922).

91. *Hemiberlesia lataniae* (Signoret)

Common name: latania scale. Host plants: *Acacia decurrens*, *Acacia nilotica*, *Albizia lebbbeck*, *Annona squamosa*, *Asparagus officinalis*, *Bignonia* sp., *Caesalpinia bonduc*, *Calostemma* sp., *Chenopodium album*, *Cordia myxa*, *Cydonia oblonga*, *Dalbergia sissoo*, *Diospyros kaki*, *Glebionis coronaria*, *Jasminum* sp., *Latania* sp., *Musa paradisiaca*, *Persea americana*, *Phoenix dactylifera*, *Phyllanthus* sp., *Platanus* sp., *Populus* sp., *Prunus domestica*, *Pyrus communis*, *Robinia*



pseudoacacia, *Saccharum* sp., *Schinus molle*, *Ziziphus* sp. Remarks: First reported in Egypt by Hall (1922).

92. *Hemiberlesia rapax* (Comstock)

Common name: apple scale. Host plants: unknown. Remarks: First reported in Egypt by Ezzat (1958).

93. *Ischnaspis longirostris* (Signoret)

Common name: black thread scale. Host plants: unknown. Remarks: First reported in Egypt by Hall (1922).

94. *Lepidosaphes beckii* (Newman)

Common name: purple scale. Host plants: *Mangifera indica*. Remarks: First reported in Egypt by Newstead (1907).

95. *Lepidosaphes conchiformis* (Gmelin)

Common name: fig scale. Host plants: *Punica granatum*. Remarks: First reported in Egypt by Hall (1922).

96. *Lepidosaphes gloverii* (Packard)

Common name: glover scale. Host plants: unknown. Remarks: First reported in Egypt by Hall (1924a).

97. *Lepidosaphes pallidula* (Williams)

Common name: mango scale. Host plants: *Mangifera indica*. Remarks: First reported in Egypt by Ghabbour and Mohammad (1996).

98. *Lepidosaphes pinnaeformis* (Bouche)

Common name: cymbidium scale. Host plants: unknown. Remarks: First reported in Egypt by Archangelskaya (1937).

99. *Lepidosaphes tapleyi* Williams

Common name: guava long scale. Host plants: *Ceratonia siliqua*, *Dovyalis caffra*, *Eucalyptus* sp., *Ficus benjamina*, *Ficus* sp., *Firmiana diversifolia*, *Jasminum sambac*, *Jasminum* sp., *Laurus nobilis*, *Nerium oleander*, *Olea* sp., *Psidium guajava*, *Rosa* sp., *Tristania* sp. Remarks: First reported in Egypt by Swailem (1972).

100. *Lepidosaphes ulmi* (Linnaeus)

Common name: oyster shell mango scale. Host plants: *Cajanus cajan*, *Pelargonium*, *Populus* sp., *Sesbania* sp. Remarks: First reported in Egypt by Newstead (1906).

101. *Leucaspis pini* (Hartig)

Common name: pine scale. Host plants: *Pinus* sp. Remarks: First reported in Egypt by Hall (1922).

102. *Leucaspis pusilla* Löw

Common name: pusilla scale. Host plants: unknown. Remarks: First reported in Egypt by Hall (1922).

103. *Leucaspis riccae* Targioni Tozzetti

Common name: oyster shell olive scale. Host plants: *Olea europaea*. Remarks: First reported in Egypt by Newstead (1913).

104. *Lindingaspis floridana* Ferris

Common name: floridana scale. Host plants: *Mangifera indica*. Remarks: First reported in Egypt by Hosny and Ezzat (1957).



105. *Lindingaspis greeni* (Brain and Kelly)

Common name: none. Host plants: *Chaetachme aristata*, *Ficus microcarpa*. Remarks: First reported in Egypt by Porcelli and Pellizzari (2019).

106. *Lindingaspis rossi* (Maskell)

Common name: black araucaria scale. Host plants: *Pinus* sp. Remarks: First reported in Egypt by Badr (2014).

107. *Lineaspis striata* (Newstead)

Common name: cypress snow scale. Host plants: *Tetraclinis articulata*. Remarks: First reported in Egypt by Lindinger (1910).

108. *Melanaspis inopinata* (Leonardi)

Common name: deciduous fruit scale. Host plants: *Malus prunifolia*, *Prunus armeniaca*, *Pyrus communis*. Remarks: First reported in Egypt by Hall (1923).

109. *Mercetaspis bicuspis* (Hall)

Common name: cuspid scale. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by Hall (1923).

110. *Mercetaspis halli* (Green)

Common name: Hall scale. Host plants: *Prunus* sp. Remarks: First reported in Egypt by Green (1923).

111. *Mercetaspis isis* (Hall)

Common name: none. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by Hall (1923).

112. *Mongrovaspis quadrispinosa* (Green)

Common name: mangrove scale. Host plants: *Avicennia marina*, *Avicennia officinalis*. Remarks: First reported in Egypt by Green (1934).

113. *Morganella longispina* (Morgan)

Common name: Maskell scale. Host plants: unknown. Remarks: First reported in Egypt by Ezzat (1958).

114. *Mycetaspis personata* (Comstock)

Common name: personata scale. Host plants: unknown. Remarks: First reported in Egypt by Ezzat (1958).

115. *Oceanaspidiotus spinosus* (Comstock)

Common name: avocado. Host plants: *Ficus* spp., *Nerium oleander*. Remarks: First reported in Egypt by Abou-Elkhair (2001).

116. *Odonaspis panici* Hall

Common name: panic scale. Host plants: *Cenchrus ciliaris*, *Panicum turgidum*. Remarks: First reported in Egypt by Hall (1926a).

117. *Odonaspis ruthae* Kotinsky

Common name: Bermuda grass scale. Host plants: *Cynodon dactylon*. Remarks: First reported in Egypt by Hall (1925).

118. *Osiraspis balteata* Hall

Common name: none. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by Hall (1923).

119. *Pallulaspis retamae* (Hall)

Common name: none. Host plants: *Artemisia* sp., *Retama raetam*. Remarks: First reported in Egypt by Hall (1926a).



120. *Parlatoareopsis chinensis* (Marlatt)

Common name: chinese obscure scale. Host plants: unknown. Remarks: First reported in Egypt by [Chen and Wong \(1936\)](#).

121. *Parlatoareopsis longispina* (Newstead)

Common name: pomegranate scale. Host plants: *Agave americana*, *Bauhinia acuminata*, *Jasminum* sp., *Justicia bracteata*, *Nerium oleander*, *Opuntia humifusa*, *Punica granatum*. Remarks: First reported in Egypt by [Newstead \(1911\)](#).

122. *Parlatoria blanchardi* (Targioni Tozzetti)

Common name: parlatoria date scale. Host plants: *Jasminum* sp., *Latania* sp., *Phoenix dactylifera*, *Vinca major*. Remarks: First reported in Egypt by [Newstead \(1906\)](#).

123. *Parlatoria camelliae* Comstock

Common name: camellia parlatoria scale. Host plants: *Camellia* sp., *Magnolia* sp. Remarks: First reported in Egypt by [Danzig and Pellizzari \(1998\)](#).

124. *Parlatoria crotonis* Douglas

Common name: croton parlatoria scale. Host plants: *Citrus aurantium*, *Citrus medica*. Remarks: First reported in Egypt by [Hall \(1925\)](#).

125. *Parlatoria ephedrae* (Lindinger)

Common name: ephedra scale. Host plants: *Ephedra aphylla*. Remarks: First reported in Egypt by [Hall \(1925\)](#).

126. *Parlatoria oleae* (Colvée)

Common name: olive scale. Host plants: *Citrus medica*, *Citrus* sp., *Ficus* sp., *Ligustrum ovalifolium*, *Malus prunifolia*, *Mammillaria* sp., *Nerium oleander*, *Orchis* sp., *Prunus domestica*, *Prunus persica*, *Schinus terebinthifolia*. Remarks: First reported in Egypt by [Newstead \(1906\)](#).

127. *Parlatoria pergandii* Comstock

Common name: chaff scale. Host plants: *Citrus* sp. Remarks: First reported in Egypt by [Hall \(1923\)](#).

128. *Parlatoria proteus* (Curtis)

Common name: proteus scale. Host plants: unknown. Remarks: First reported in Egypt by [Hall \(1922\)](#).

129. *Parlatoria ziziphi* (Lucas)

Common name: black parlatoria scale. Host plants: *Citrus aurantium*, *Citrus maxima*, *Citrus medica*, *Ziziphus* sp. Remarks: First reported in Egypt by [Newstead \(1911\)](#).

130. *Pinnaspis aspidistrae* (Signoret)

Common name: aspidistra scale. Host plants: *Adiantum* sp., *Pandanus* sp., *Tamarix* sp. Remarks: First reported in Egypt by [Hall \(1923\)](#).

131. *Pinnaspis buxi* (Bouché)

Common name: boxwood scale. Host plants: unknown. Remarks: First reported in Egypt by [Ezzat \(1958\)](#).

132. *Pinnaspis strachani* (Cooley)

Common name: cotton white scale. Host plants: *Soleirolia* sp. Remarks: First reported in Egypt by [Abou-Elkhair \(2001\)](#).

133. *Prodiaspis sinensis* (Young)

Common name: none. Host plants: unknown. Remarks: First reported in Egypt by [Ghabbour and Mohammad \(1996\)](#).



134. *Prodiaspis tamaricicola* (Malenotti)

Common name: tamarisk scale. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by [Malenotti \(1916\)](#).

135. *Pseudaonidia trilobitiformis* (Green)

Common name: trilobe scale. Host plants: unknown. Remarks: First reported in Egypt by [Ezzat \(1958\)](#).

136. *Pseudaulacaspis cockerelli* (Cooley)

Common name: false oleander scale. Host plants: *Oleander* sp. Remarks: First reported in Egypt by [Green \(1937\)](#).

137. *Pseudaulacaspis pentagona* (Targioni Tozzetti)

Common name: white peach scale. Host plants: *Acacia nilotica*, *Catalpa* sp., *Geranium* sp., *Pandanus* sp., *Prunus persica*. Remarks: First reported in Egypt by [Alfieri \(1929\)](#).

138. *Pseudotargionia glandulosa* (Newstead)

Common name: Newstead acacia scale. Host plants: *Acacia arabica*, *Acacia nilotica*, *Acacia tortilis*. Remarks: First reported in Egypt by [Newstead \(1911\)](#).

139. *Rhizaspidotus adiscus* Gómez-Menor Ortega

Common name: none. Host plants: unknown. Remarks: *Rhizaspidotus artemisiae adiscus* was distinguished by [Gómez-Menor Ortega \(1968\)](#) from *Rhizaspidotus artemisiae artemisiae* only by the absence of perivulvar disc pores. [Balachowsky \(1951\)](#) showed that this character varies in *Rhizaspidotus artemisiae artemisiae* and the pores may be absent in individuals of the same population. Until the types of *Rhizaspidotus artemisiae adiscus* are studied, this sub-species is raised to species level and retained as a distinct species ([García-Morales et al., 2016](#)). *Rhizaspidotus artemisiae* ([Hall, 1926](#)) which was recorded from Egypt is now *Rhizaspidotus canariensis* ([Lindinger, 1910](#)). This species is recorded for the first time from the western desert.

140. *Rhizaspidotus canariensis* (Lindinger)

Common name: artemisia scale. Host plants: *Achillea fragrantissima*, *Artemisia judaica*, *Artemisia monosperma*. Remarks: First reported in Egypt by [Hall \(1926a\)](#).

141. *Rungaspis capparis* (Bodenheimer)

Common name: capparis scale. Host plants: *Capparis galeata*, *Capparis sinaica*, *Tetraena dumosa*. Remarks: First reported in Egypt by [Bodenheimer \(1929a\)](#).

142. *Salicicola kermanensis* (Lindinger)

Common name: Iranian poplar scale. Host plants: *Populus* sp., *Salix mucronata*. Remarks: First reported in Egypt by [Newstead \(1911\)](#).

143. *Suturaspis pistaciae* (Lindinger)

Common name: pistacia scale. Host plants: *Pistacia* sp. Remarks: First reported in Egypt by [Bodenheimer \(1937\)](#).

144. *Targionia haloxyloni* Hall

Common name: haloxylon scale. Host plants: *Haloxylon salicornicum*, *Haloxylon schweinfurthii*, *Haloxylon tamariscifolium*, *Helianthemum lippii*. Remarks: First reported in Egypt by [Hall \(1926a\)](#).

145. *Targionia nigra* Signoret

Common name: none. Host plants: *Alhagi maurorum*, *Citrullus colocynthis*, *Farsetia* sp., *Launaea spinosa*, *Ochradenus baccatus*. Remarks: First reported in Egypt by [Hall \(1923\)](#).



146. *Unaspis citri* (Comstock)

Common name: citrus snow scale. Host plants: *Euonymus japonicus*. Remarks: First reported in Egypt by Newstead (1907a).

147. *Unaspis euonymi* (Comstock)

Common name: euonymus scale. Host plants: unknown. Remarks: First reported in Egypt by Balachowsky (1954).

Family HALIMOCOCCIDAE

Common names: pupillarial palm scales, halimococcids

148. *Halimococcus thebaicae* Hall

Common name: Egyptian doum palm scale. Host plants: *Hyphaene thebaica*. Remarks: First reported in Egypt by Hall (1923).

Family LECANODIASPIDIDAE

Common names: false pit scales or lecanodiaspidids

149. *Lecanodiaspis africana* (Newstead)

Common name: African scale. Host plants: *Acacia arabica*, *Acacia nilotica*, *Acacia tortilis*, *Casuarina* sp., *Ficus benjamina*, *Ficus carica*, *Ficus virens*, *Ficus* sp., *Lawsonia inermis*, *Psidium guajava*, *Salix* sp., *Ziziphus spina-christi*. Remarks: First reported in Egypt by Newstead (1911).

Family MARGARODIDAE

Common names: ground pearls, margarodids

150. *Porphyrophora hirsutissima* (Hall)

Common name: Egyptian carmine scale insect. Host plants: *Imperata cylindrica*. Remarks: First reported in Egypt by Hall (1924).

Family MONOPHLEBIDAE

Common names: giant scales, monophlebids

151. *Crypticerya aegyptiensis* Foldi

Common name: Egyptian scale. Host plants: *Acacia* sp. Remarks: First reported in Egypt by Foldi (2010).

152. *Crypticerya thibaudi* Foldi

Common scale: none. Host plants: *Acacia tortilis raddiana*. Remarks: First reported in Egypt by Foldi (2010).

153. *Icerya aegyptiaca* (Douglas)

Common name: Egyptian icerya. Host plants: *Acalypha* sp., *Annona squamosa*, *Carissa spinarum*, *Citrus* sp., *Ficus benghalensis*, *Ficus carica*, *Ficus elastica*, *Ficus platyphylla*, *Ficus virens*, *Hibiscus* sp., *Jacaranda* sp., *Lantana* sp., *Latania* sp., *Lawsonia inermis*, *Mangifera indica*, *Melia azedarach*, *Morus alba*, *Myrtus communis*, *Parkinsonia aculeata*, *Phoenix dactylifera*, *Psidium guajava*, *Punica granatum*, *Pyrus communis*, *Rosa* sp., *Salix babylonica*, *Thuja* sp., *Vitis vinifera*, *Ziziphus* sp. Remarks: First reported in Egypt by Douglas (1890).

154. *Icerya purchasi* Maskell

Common name: cottony cushion scale. Host plants: *Acacia nilotica*, *Acalypha* sp., *Alcea rosea*, *Bauhinia* sp., *Cajanus cajan*, *Casuarina equisetifolia*, *Citrus limon*, *Citrus reticulata*, *Dalbergia sissoo*, *Ficus* sp., *Glebionis coronaria*, *Lonicera periclymenum*, *Malus prunifolia*, *Phyllanthus* sp.,



Pittosporum sp., *Punica granatum*, *Pyrus communis*, *Rosa* sp., *Salix babylonica*, *Salvia* sp., *Schinus* sp. Remarks: First reported in Egypt by Hall (1922).

155. *Icerya seychellarum* (Westwood)

Common name: seychellarum mealybug. Host plants: *Dodonaea viscosa*. Remarks: First reported in Egypt by Abd-Rabou (2000).

156. *Monophleboides gymnocarpi* (Hall)

Common name: gymnocarpi mealybug. Host plants: *Gymnocarpus decandrus*, *Haloxylon salicornicum*, *Nitraria retusa*. Remarks: First reported in Egypt by Hall (1926a).

157. *Pseudaspidopectus hyphaeniacus* (Hall)

Common name: none. Host plants: *Hyphaene thebaica*. Remarks: First reported in Egypt by Hall (1925).

Family ORTHEZIIDAE

Common name: ensign scales, ortheziids

158. *Insignorthesia insignis* (Browne)

Common name: greenhouse orthezia. Host plants: unknown. Remarks: First reported in Egypt by Morrison (1952).

Family PHOENICOCOCCIDAE

Common names: Palm scales or phoenicococcids

159. *Phoenicococcus marlatti* Cockerell

Common name: red date palm scale. Host plants: *Washingtonia filifera*. Remarks: First reported in Egypt by Buxton (1920).

Family PSEUDOCOCCIDAE

Common names: mealybugs, pseudococcids

160. *Antonina graminis* (Maskell)

Common name: rhodesgrass mealybug. Host plants: *Cynodon* sp. Remarks: First reported in Egypt by Takahashi (1928).

161. *Antonina natalensis* Brain

Common name: none. Host plants: *Panicum turgium*. Remarks: First reported in Egypt by De Lotto (1958).

162. *Antonina panica* Hall

Common name: none. Host plants: *Panicum turgidum*. Remarks: First reported in Egypt by Hall (1925).

163. *Atrococcus alhagii* (Hall)

Common name: camelthorn mealybug. Host plants: *Alhagi maurorum*, *Artemisia judaica*, *Echinops spinosissimus*, *Zygophyllum eichwaldii*. Remarks: First reported in Egypt by Hall (1926a).

164. *Brevinnia rehi* (Borchsenius)

Common name: rice mealybug. Host plants: *Dactyloctenium aegyptium*. Remarks: First reported in Egypt by Abd-Rabou (2001).

165. *Chaetococcus phragmitis* (Marchal)

Common name: legless reed mealybug. Host plants: *Phragmites communis*. Remarks: First reported in Egypt by Hall (1923).



166. *Crisicoccus delottoi* Ezzat

Common name: pear mealybug. Host plants: *Limonium* sp. Remarks: First reported in Egypt by [Ezzat \(1959\)](#).

167. *Crisicoccus mangrovicus* Ben-Dov

Common name: mangrove mealybug. Host plants: *Avicennia marina*. Remarks: First reported in Egypt by [Ben-Dov \(1975\)](#).

168. *Dysmicoccus angustifrons* (Hall)

Common name: polyphagous mealybug. Host plants: *Ambrosia maritima*, *Ambrosia polystachya*, *Sonchus oleracea*, *Urtica* sp. Remarks: First reported in Egypt by [Hall \(1926a\)](#).

169. *Dysmicoccus boninsis* (Kuwana)

Common name: gray sugarcane mealybug. Host plants: *Saccharum officinarum*. Remarks: First reported in Egypt by [Hall \(1925\)](#).

170. *Dysmicoccus brevipes* (Cockerell)

Common name: pineapple mealybug. Host plants: *Cressa cretica*, *Cynodon dactylon*, *Juncus* sp., *Sporobolus spicatus*. Remarks: First reported in Egypt by [Willcocks \(1922\)](#).

171. *Dysmicoccus trispinosus* (Hall)

Common name: cogon grass mealybug. Host plants: *Arundo donax*, *Ambrosia polystachya*, *Carex comans*, *Chenopodium* sp., *Cladium mariscus*, *Cynodon dactylon*, *Cyperus* sp., *Echinochloa colona*, *Eragrostis pilosa*, *Hordeum vulgare*, *Imperata cylindrica*, *Saccharum officinarum*, *Setaria verticillata*, *Sorghum halepense*, *Zea mays*. Remarks: First reported in Egypt by [Hall \(1923\)](#).

172. *Erimococcus limoniastris* (Priesner and Hosny)

Common name: none. Host plants: *Limonium monopetalus*. Remarks: First reported in Egypt by [Priesner and Hosny \(1935\)](#).

173. *Ferrisia virgata* (Cockerell)

Common name: striped mealybug. Host plants: *Alocasia cuprea*, *Annona squamosa*, *Lantana camara*. Remarks: First reported in Egypt by [Abd-Rabou \(2001\)](#).

174. *Fonscolombia artemisiae* (Hall)

Common name: none. Host plants: *Artemisia monosperma*. Remarks: First reported in Egypt by [Hall \(1926a\)](#).

175. *Heliococcus osborni* (Sanders)

Common name: Osborn mealybug. Host plants: *Crucianella aegyptiaca*, *Onopordum* sp. Remarks: First reported in Egypt by [Ezzat \(1960a\)](#).

176. *Heterococcus cyperi* (Hall)

Common name: none. Host plants: *Cyperus* sp. Remarks: First reported in Egypt by [Hall \(1926a\)](#).

177. *Humococcus mackenziei* Ezzat

Common name: none. Host plants: *Sarcocornia fruticosa*, *Zygophyllum album*, *Zygophyllum* sp. Remarks: First reported in Egypt by [Ezzat \(1959b\)](#).

178. *Kiritshenkella sacchari* (Green)

Common name: none. Host plants: *Agropogon* sp., *Cyperus* sp., *Imperata cylindrica*, *Phragmites australis*, *Saccharum biflorum*, *Saccharum spontaneum*. Remarks: First reported in Egypt by [Hall \(1923\)](#).

179. *Maconellicoccus hirsutus* (Green)

Common name: pink hibiscus mealybug. Host plants: *Acacia nilotica*, *Acalypha* sp., *Albizia lebbek*, *Annona* sp., *Arachis hypogaea*, *Asparagus officinalis*, *Bauhinia* sp., *Bougainvillea* sp.,



Cajanus cajan, *Calostemma* sp., *Ceratonia siliqua*, *Chenopodium album*, *Cosmos* sp., *Dahlia* sp., *Ficus platyphylla*, *Glebionis coronaria*, *Grevillea robusta*, *Helianthus annuus*, *Hibiscus schizopetalus*, *Jacaranda mimosifolia*, *Opuntia* sp., *Psidium guajava*, *Robinia pseudoacacia*, *Tecoma* sp., *Vitis vinifera*, *Zea mays*. Remarks: First reported in Egypt by [Hall \(1922\)](#).

180. *Mirococcus inermis* (Hall)

Common name: harmless mealybug. Host plants: *Cleome arabica*, *Cressa cretica*, *Frankenia pulverulenta*, *Polycarpha repens*, *Zygophyllum simplex*. Remarks: First reported in Egypt by [Hall \(1925\)](#).

181. *Misericoccus imperatae* (Hall)

Common name: imperata mealybug. Host plants: *Imperata cylindrica*, *Polypogon* sp. Remarks: First reported in Egypt by [Hall \(1923\)](#).

182. *Nipaecoccus viridis* (Newstead)

Common name: spherical mealybug. Host plants: *Albizia lebbek*, *Ficus carica*, *Jacaranda mimosifolia*, *Nerium oleander*, *Psidium guajava*, *Vitis vinifera*. Remarks: First reported in Egypt by [Hall \(1923\)](#).

183. *Octococcus salsolicola* (Priesner and Hosny)

Common name: none. Host plants: *Salsola foetida*, *Salsola imbricata*. Remarks: First reported in Egypt by [Priesner and Hosny \(1935\)](#).

184. *Peliococcopsis priesneri* (Laing)

Common name: none. Host plants: *Cynodon dactylon*. Remarks: First reported in Egypt by [Laing \(1936\)](#).

185. *Peliococcus convolvuli* (Ezzat)

Common name: convolvulus mealybug. Host plants: *Convolvulus* sp., *Euphorbia* sp. Remarks: First reported in Egypt by [Ezzat \(1960\)](#).

186. *Peliococcus zillae* (Hall)

Common name: none. Host plants: *Zilla spinosa*. Remarks: First reported in Egypt by [Hall \(1926\)](#).

187. *Phenacoccus arabicus* (Ezzat)

Common name: Arab mealybug. Host plants: *Matthiola* sp. Remarks: First reported in Egypt by [Ezzat \(1960\)](#).

188. *Phenacoccus gypsophila* Hall

Common name: gypsophila mealybug. Host plants: *Gypsophila rokejeka*, *Gypsophila* sp. Remarks: First reported in Egypt by [Hall \(1927\)](#).

189. *Phenacoccus halli* Ezzat

Common name: none. Host plants: *Anthemis* sp. Remarks: First reported in Egypt by [Ezzat \(1962\)](#).

190. *Phenacoccus parvus* Morrison

Common name: gardenia mealybug. Host plants: *Gardenia* sp. Remarks: First reported in Egypt by [Abd-Rabou et al. \(2010\)](#).

191. *Phenacoccus pyramidentis* Ezzat

Common name: none. Host plants: *Gypsophila* sp., Remarks: First reported in Egypt by [Ezzat \(1960\)](#).

192. *Phenacoccus solani* Ferris

Common name: solanum mealybug. Host plants: *Cucurbita* sp. Remarks: First reported in Egypt by [Dewer et al. \(2018\)](#).



193. *Phenacoccus solenopsis* Tinsley

Common name: cotton mealybug. Host plants: *Hibiscus* sp. Remarks: First reported in Egypt by [Abd-Rabou et al. \(2010\)](#).

194. *Planococcus citri* (Risso)

Common name: citrus mealybug. Host plants: *Tecoma capensis*. Remarks: First reported in Egypt by [Hall \(1926a\)](#).

195. *Planococcus ficus* (Signoret)

Common name: vine mealybug. Host plants: *Mangifera indica*, *Punica granatum*, *Vitis vinifera*. Remarks: First reported in Egypt by [Ezzat and McConnell \(1956\)](#).

196. *Planococcus lindingeri* (Bodenheimer)

Common name: none. Host plants: unknown. Remarks: First reported in Egypt by [Hall \(1924\)](#).

197. *Planococcus vovae* (Nasonov)

Common name: juniper mealybug. Host plants: *Cupressus macrocarpa*. Remarks: First reported in Egypt by [Halima-Kamel et al. \(2019\)](#).

198. *Pseudococcus longispinus* (Targioni Tozzetti)

Common name: longtailed mealybug. Host plants: *Jasminum officinale*, *Melia azedarach*. Remarks: First reported in Egypt by [Hall \(1922\)](#).

199. *Rastrococcus invadens* Williams

Common name: mango mealybug. Host plants: *Schefflera* sp. Remarks: First reported in Egypt by [Porcelli and Pellizzari \(2019\)](#).

200. *Saccharicoccus sacchari* (Cockerell)

Common name: pink sugar cane mealybug. Host plants: *Saccharum spontaneum*. Remarks: First reported in Egypt by [Hall \(1922\)](#).

201. *Spilococcus halli* (McKenzie and Williams)

Common name: imperata mealybug. Host plants: *Andropogon* sp., *Cynodon dactylon*, *Imperata cylindrica*. Remarks: First reported in Egypt by [Hall \(1923\)](#).

202. *Trabutina mannipara* (Hemprich & Ehrenberg)

Common name: manna scale. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by [Bodenheimer \(1929\)](#).

203. *Trabutina serpentina* (Green)

Common name: none. Host plants: *Tamarix* sp. Remarks: First reported in Egypt by [Bodenheimer \(1929a\)](#).

204. *Trionymus cressae* (Hall)

Common name: none. Host plants: *Cressa cretica*, *Euphorbia* sp. Remarks: First reported in Egypt by [Hall \(1927\)](#).

205. *Trionymus cynodontis* (Kiritschenko)

Common name: none. Host plants: unknown. Remarks: First reported in Egypt by [Danzig \(1998\)](#).

206. *Trionymus internodii* (Hall)

Common name: node. Host plants: *Andropogon* sp., *Arundo donax*, *Bambusa* sp., *Cyperus* sp., *Echinochloa colona*, *Panicum turgidum*, *Saccharum officinarum*, *Saccharum spontaneum*, *Sporobolus spicatus*, *Zea mays*. Remarks: First reported in Egypt by [Hall \(1923\)](#).

207. *Trionymus masrensis* Hall

Common name: none. Host plants: *Imperata cylindrica*. Remarks: First reported in Egypt by [Hall \(1925\)](#).



208. *Trionymus phragmitis* (Hall)

Common name: Hall's reed mealybug. Host plants: *Arundo donax*, *Phragmites australis*, *Phragmites communis*. Remarks: First reported in Egypt by Hall (1923).

209. *Trionymus polyporus* Hall

Common name: none. Host plants: *Andropogon sorghum*, *Arundo donax*, *Chinochloa colona*, *Cynodon dactylon*, *Cyperus* sp., *Sorghum bicolor*, *Sorghum halepense*, *Sorghum vulgare*. Remarks: First reported in Egypt by Hall (1924).

210. *Trionymus williamsi* Ezzat

Common name: none. Host plants: *Imperata cylindrica*. Remarks: First reported in Egypt by Ezzat (1959a).

211. *Vryburgia amaryllidis* (Bouché)

Common name: crinum mealybug. Host plants: *Arundo* sp., *Cynodon dactylon*, *Cyperus* sp., *Sternbergia* sp. Remarks: First reported in Egypt by Hall (1923).

KEY TO FAMILIES OF SCALE INSECTS (COCCOMORPHA: COCCOIDEA) IN EGYPT (BASED ON ADULT FEMALES)

- 1. Dorsum with a detachable scale cover (Figs 1H and I) that can be turned over exposing a sack-like insect underneath and posteriormost abdominal segments fused together, forming a pygidium (Fig. 1C) in Diaspididae (very common) or dorsum with a hard test (cover), posteriormost segments forming an aleyrodid-like operculum (in 2nd instar) and tubular ducts divided longitudinally in Halimococcidae (rare); legs absent; antennae 1-segmented; species relatively small (body length 1–2 mm).....2
 - Dorsum without a detachable scale cover, but rather covered with a layer of wax; posteriormost abdominal segments not fused together, forming a pygidium or operculum-like structure; legs present or absent; antennae variable, with 1–11 segment; species relatively medium to large (body length usually much greater than 2 mm).....3
- 2. Pygidium (Fig. 1C) usually with a marginal fringe of plates or gland spines (Fig. 1F) and lobes (Fig. 1E), 8-shaped tubular ducts absent; ducts not divided longitudinally; body variable in shape and color but usually not dark brown or black, pyriform, ventrally flat, and somewhat aleyrodid-like; many hosts, very common (Figs 1A–D).**Diaspididae (armored scales)**
 - Posteriormost abdominal segments of 2nd instar forming an aleyrodid-like operculum (Fig. 2E), surrounded by a sclerotized rim, without ducts and a marginal fringe of plates or gland spines and lobes; 8-shaped tubular ducts present (Fig. 2B); tubular ducts divided longitudinally; body generally dark brown or black, normally pyriform, ventrally flat, somewhat aleyrodid-like adult female remaining enclosed with 2nd instar; only found on palms (Arecaceae) and *Pandanus*; rare (Figs 2A–H).....**Halimococcidae (palm scales)**
- 3. Anal opening not covered by sclerotized plate; legs usually present and mobile (legs absent in a few Margarodidae and Pseudococcidae species not usually collected), adult female usually more than 2.5 mm in length and covered with whitish wax; most species elliptical to oval, but some broadly oval or round; 8-shaped pores absent; generally pseudococcid-like in appearance. 4



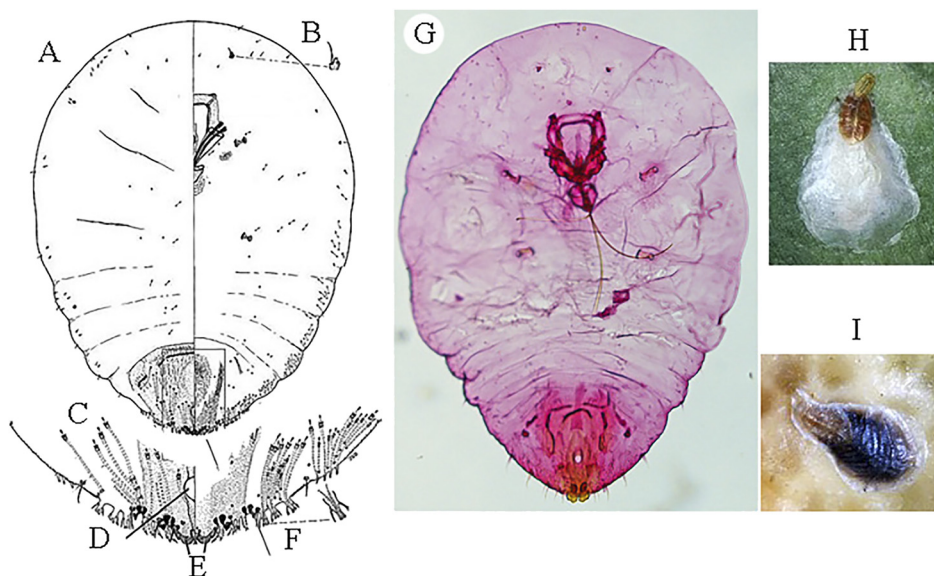


Fig. 1. Diaspididae. A) habitus, B) antenna, C) pygidium, D) anal opening, E) lobes, F) plates, G) slide mounted specimen, H, I) scale covers in nature.

Sources: A–F (modified from [Miller et al., 2014](#)); G–I (USNM specimens)

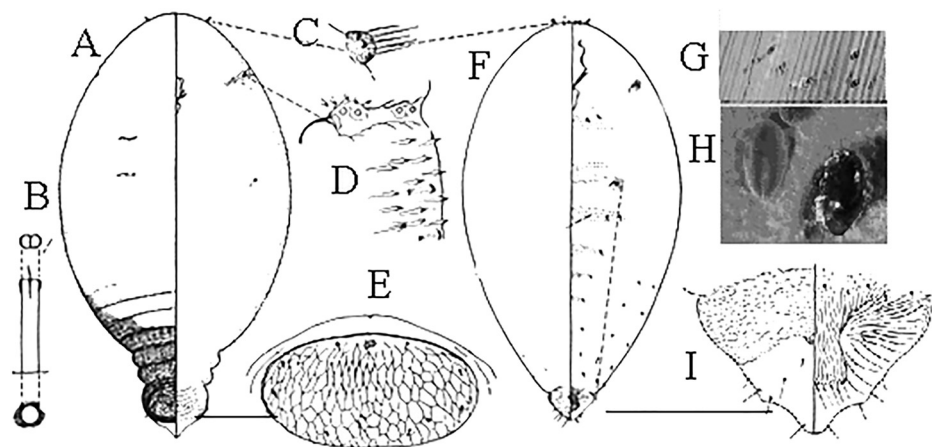


Fig. 2. Halimococcidae. A) 2nd instar habitus, B) 8-shaped tubular duct, C) antenna, D) spiracular opening, E) operculum; F) adult female habitus, G) in nature, H) detail in nature, I) posterior margin.

Sources: A–F, I (modified from [Williams and Watson, 1990](#)); G, H (USDA specimens)



- Anal opening covered by sclerotized plate; legs present or absent, even if legs are present adult female usually sedentary, not very mobile, usually less than 2.5 mm in length and not covered with whitish wax; most species broadly oval to round, but some elliptical to oval; 8-shaped pores present or absent; generally coccid-like in appearance. 9
- 4. Found only on cacti; profuse amounts of waxy secretions present (Fig. 3D); body broadly oval to rotund with dark and ink-like fluid inside; antennae 6–7 segmented; body with several clusters of quinquelocular pores and with many enlarged truncate (top-hat like) setae (Fig. 3B); anal opening usually as a transverse slit, and without pores or setae; without abdominal spiracles, circuli, cerarii or ostioles; fairly common on cacti (Figs 3A–D).
..... **Dactylopiidae (cochineal scales)**
- Not found on cactus, or if so, then anal opening ring-like, with pores and setae; without clusters of quinquelocular pores; usually without truncate (top-hat like) setae; with or without abdominal spiracles, circuli, cerarii or ostioles. 5
- 5. Abdominal spiracles present (Fig. 6B); ostioles, circuli and cerarii absent; antennae sometimes with more than 9 segments; anal opening ring-like, with or without pores and setae or common species often with legs exceptionally large and robust and body covered by bleach white wax, with a grooved waxy ovisac carried by the adult female. 6
- Abdominal spiracles absent; ostioles, circuli and/or cerarii often present; antennae never with more than 9 segments; anal opening ring-like, with pores and setae; body often covered by fine-mealy wax; ovisacs, when present, covered by fibrous filaments of wax. 8
- 6. Anal ring well developed with many cells; antennae 3–8 segmented with a large spine protruding from apical club segment; eyes usually stalked; legs angular (crab-like); ovisac extending about length of body or more in common genus *Insignorthezia*; most species rarely collected, *Insignorthezia insignis* widespread and often collected (Figs 4A–D).
..... **Ortheziidae (ensign scales)**

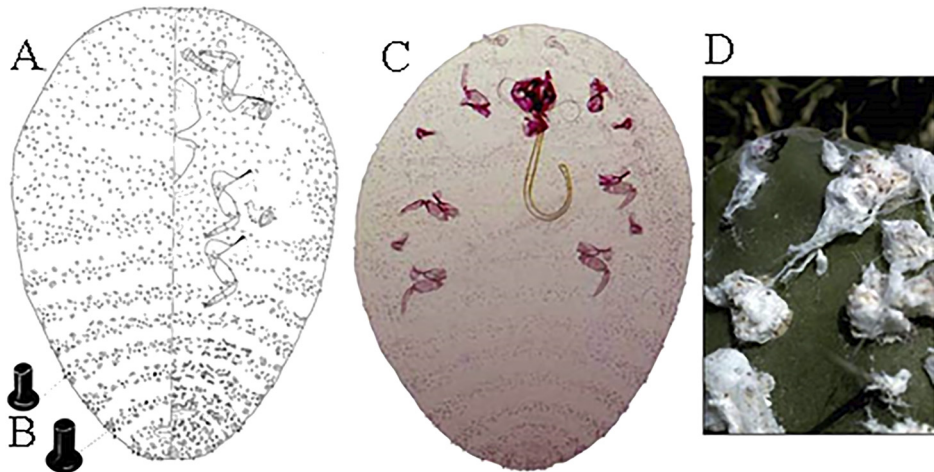


Fig. 3. Dactylopiidae. A) habitus, B) enlarged truncate setae, C) slide mounted specimen, D) in nature.
Source: A (modified from Pérez-Guerra and Kosztarab, 1992); B–D (modified from Miller et al., 2014)



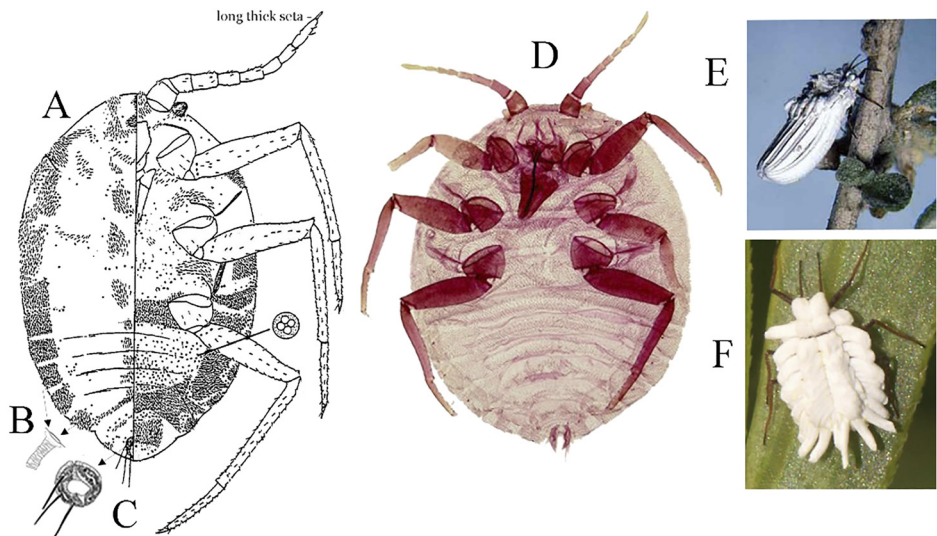


Fig. 4. Ortheziidae. A) habitus, B) abdominal spiracles, C) anal ring, D) slide specimen, E-F) in nature.-
Sources: A-C (modified from Miller et al., 2014); D (photo by Alessandra Rung), E (photo by Ray Gill)

- Anal ring reduced (without cells); antennae 8–11 segmented, without a large spine protruding from apical club segment; eyes rarely stalked; legs not angular (crab-like).....7
- 7. Found underground, usually feeding on roots; anterior legs much larger than other pairs of legs, very stout, fossorial with a heavy claw (Fig. 5B); anal tube absent; rarely collected (Figs 5A–D)..... **Family Margarodidae**
- Usually found on aerial parts of plants; anterior legs, if present, not much larger than other pairs of legs, not very stout, fossorial with a heavy claw; anal tube well developed with a

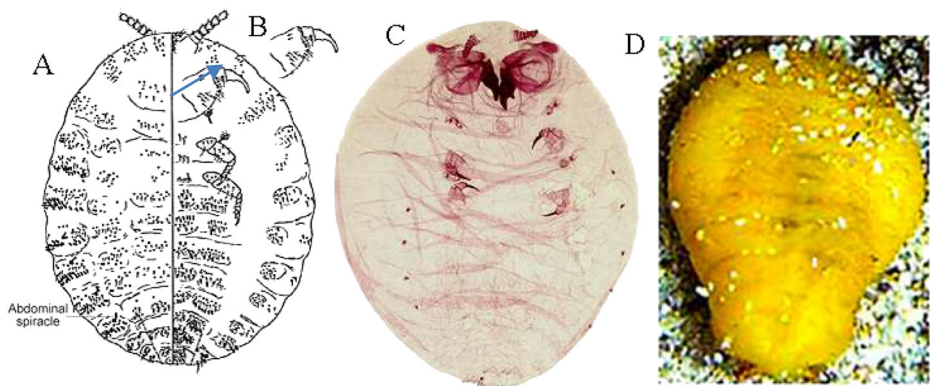


Fig. 5. Margarodidae. A–C) *Dimargarodes meridionalis* A) habitus drawing, B) fossorial leg I, C) slide-mounted specimen, D) *Porphyrophora hiemalis* in situ.
Sources: A–C (modified from Miller et al., 2014); D (photo by Ray Gill)



distinct simple ring or a band of pores at inner end with opening dorsal in position; rarely collected except for *Icerya* and *Crypticerya* species (Figs 6A–E).

- **Monophlebidae (giant mealybugs)**
8. Ostioles (Fig. 7D) almost always present; at least 1 circulus (Fig. 7C) and/or cerarii (Fig. 7B) present in most common species; anal lobes usually not greatly protruding apically; dorsum usually not with modified setae (as below); antennae with 1–9 segments, most commonly with 7–8 segments; body variable, usually covered by white, mealy-like wax; very common (Figs 7A–H). **Pseudococcidae (mealybugs)**
- Ostioles, circuli and cerarii absent; anal lobes (Fig. 8C) greatly protruding (in most common species); dorsum usually with enlarged setae with a wide round base and tapering apex (Fig. 8B); antennae most commonly 6–7 segmented; body usually slender, tapered posteriorly, completely covered in snow white, felt-like ovisac; often associated with grasses and sometimes oak; infrequently collected (Figs 8A–E). **Eriococcidae (felt scales)**
9. Posterior apex of body deeply incised medially and with 2 triangular anal plates, together forming more or less a square (Fig. 9D); 8-shaped pores absent; legs usually present; antennae with 1–9 segments, most commonly with 6–8 segments; very common (Figs 9A–E) **Coccidae (soft scales)**
- Posterior apex not deeply incised medially and without 2 triangular anal plates; legs absent; 8-shaped pores present or absent; antennae 1-segmented (except in Lecanodiaspididae); less common. 10
10. Antennae 7–9 segmented (in most species); anal plate cover wider than long (arch-shaped), either with 2 lateral anal plates or plates fused (Fig. 10A); cribiform plates (Fig. 10B) and 8-shaped pores (Fig. 10C) present; body usually oval, white with dark with stripes along the lateral margins; rare (Figs 10A–E). **Lecanodiaspididae (false armored scales)**

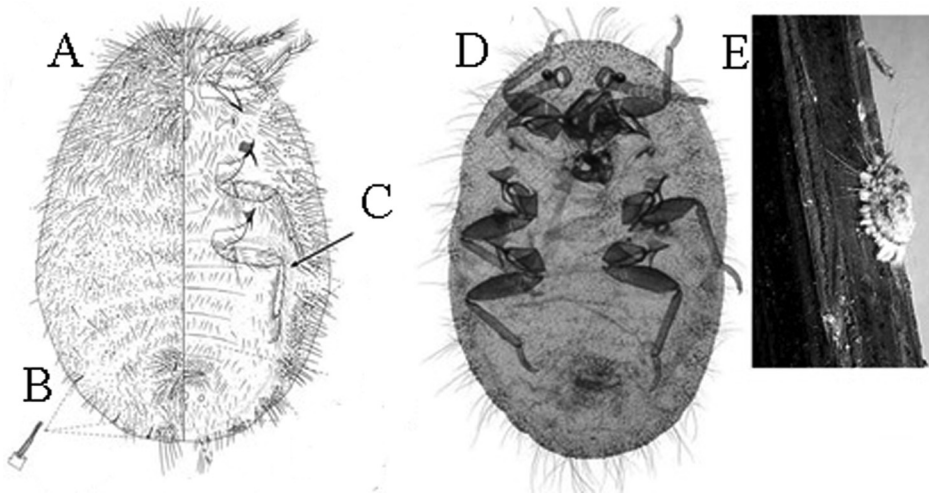


Fig. 6. Monophlebidae: *Icerya purchasi*. A) habitus drawing, B) abdominal spiracles, C) ovisac band, D) slide specimen, E) in nature.
Source: A–E (modified from Miller et al., 2014)



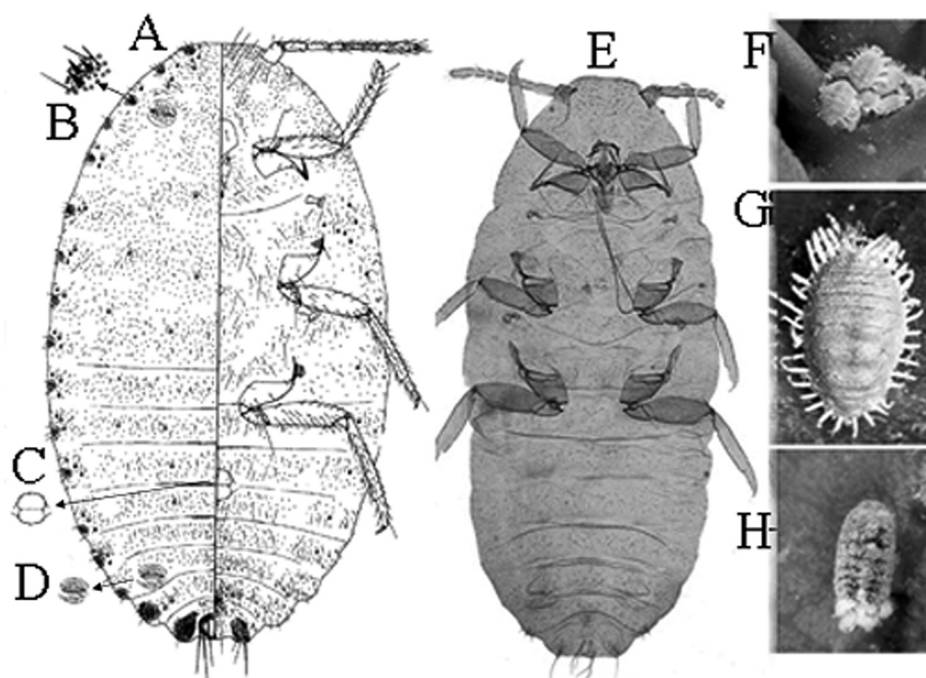


Fig. 7. Pseudococcidae. A) habitus drawing, B) cerarius, C) circulus, D) ostiole, E) slide specimen, F-H) in nature.

Sources: A (modified from Williams, 2004), B-H (Miller et al., 2014)

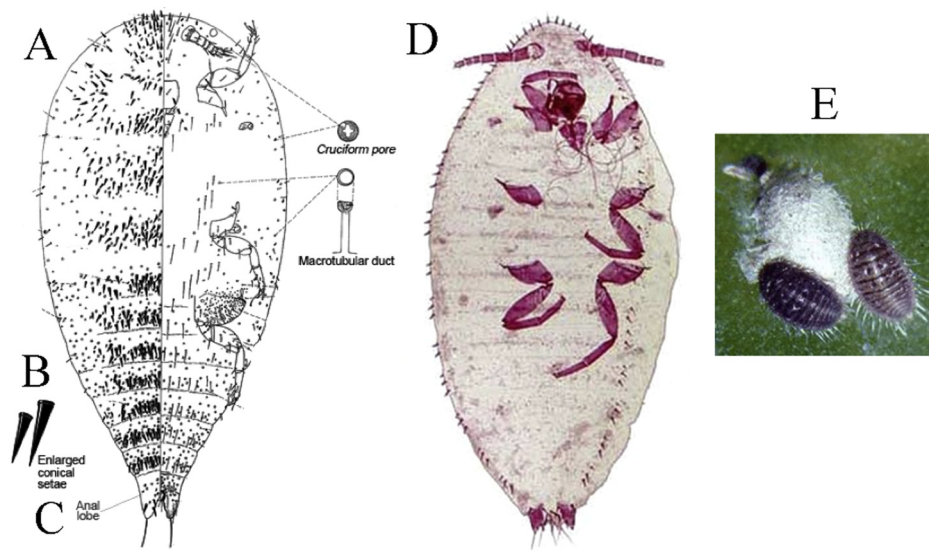


Fig. 8. Eriococcidae. A) habitus drawing, B) enlarged setae, C) anal lobe, D) slide specimen, E) in nature.

Source: A-C, E (modified from Miller et al., 2014); D (photograph by Alessandra Rung)



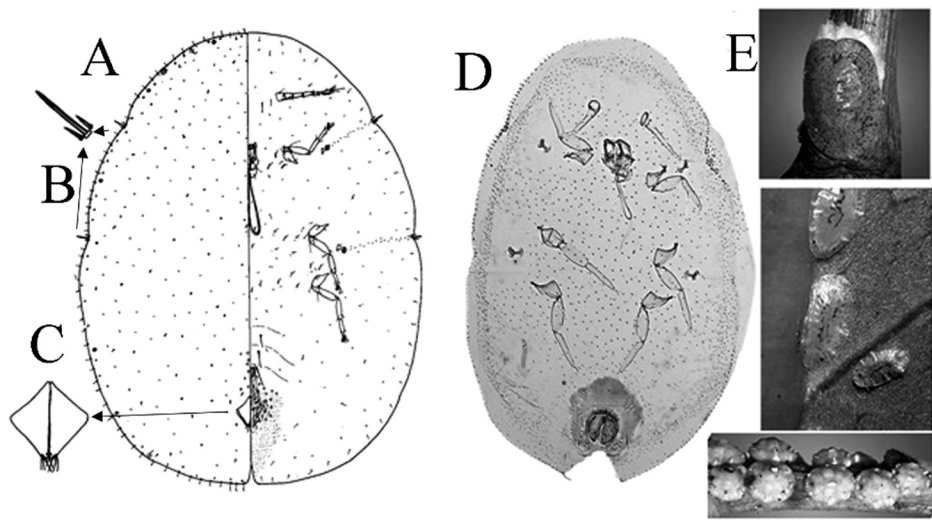


Fig. 9. Coccidae. A) habitus drawing, B) spiracular setae, C) anal plates, D) slide specimen, E) in nature.
Sources: A–C (modified from Hamon and Williams, 1984); D, E (Miller et al., 2014)

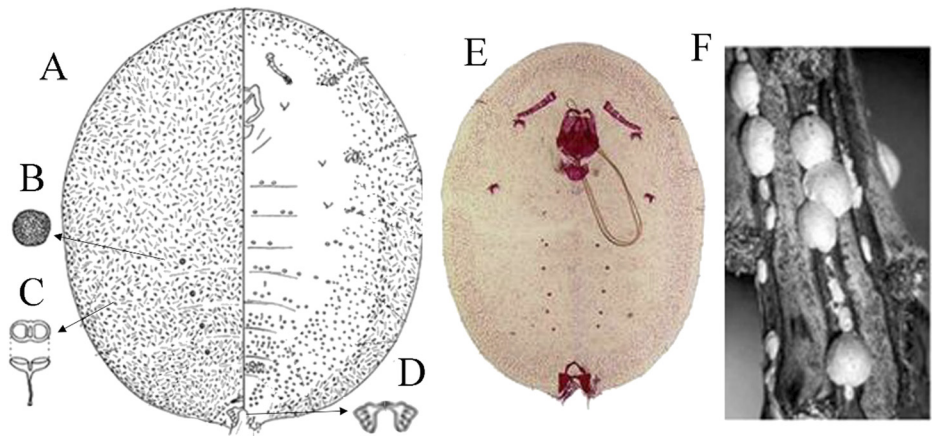


Fig. 10. Lecanodiaspididae. A) habitus drawing, B) cribriform pore, C) eight shaped pore, D) anal plate, E) slide specimen, F) in nature.
Source: A–F (modified from Miller et al., 2014)

- Antennae 1-segmented; anal plate not bow-tie shaped; body elongate slender to round; usually without dark with stripes along the lateral margins; cribriform plates and 8-shaped pores present or absent. 11
- 11. Cribriform plates and 8-shaped pores absent; spiracular furrow absent; body shape generally elongate and flattened and reddish brown; anal plate oval and located at posterior



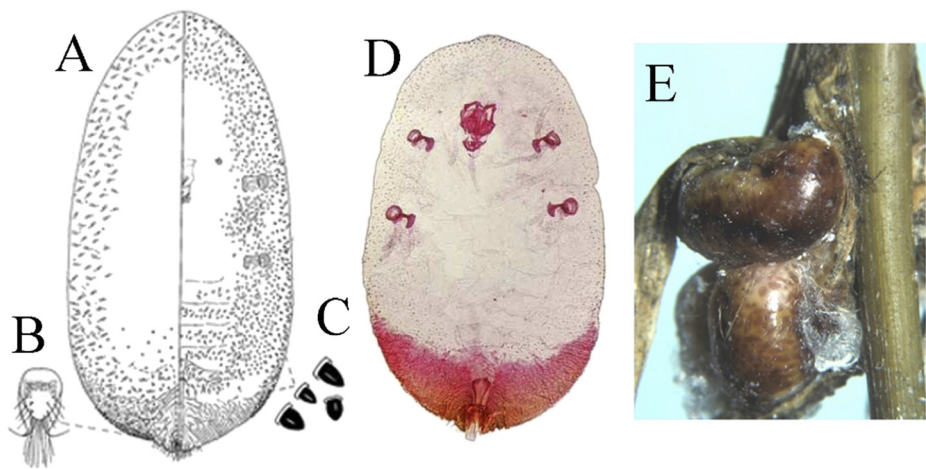


Fig. 11. Aclerididae A) habitus drawing, B) anal plate, C) marginal setae, D) slide specimen, E) in nature.
Source: A–C (modified from Miller et al., 2014); D) photograph by Alessandra Rung; E) USNM photo collection

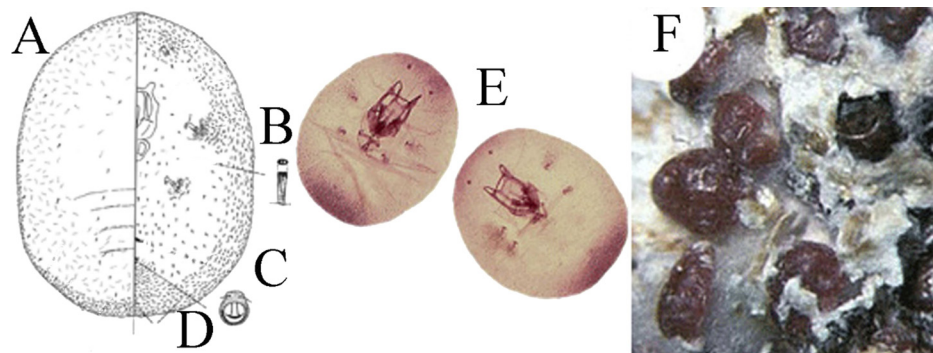


Fig. 12. Phoenicococcidae A) habitus drawing, B) 8-shaped pore, C) anal opening, D) dermal papillae, E) slide specimens, F) in nature.
Source: A–F (modified from Miller et al., 2014)

- apex of body (Fig. 11B); caudal margin with ridges; lateral margin with row of bullet-shaped setae (Fig. 11C); usually found in nodes of grasses (sometimes on *Tillandsia*); not common (Figs 11A–E) **Aclerididae (flat grass scales)**
- Cribriform plates, 8-shaped pores and spiracular furrow usually present; body shape variable but often broadly oval to spherical/round; anal plate not oval and located at apex of body; caudal margin without ridges; lateral margin without a row of bullet-shaped setae; usually on palms and plants other than grasses (except for some asterolecaniid species); 12
12. Found only on palms (occurring on white tissues at base of frond margin); body spherical, red or reddish brown, embedded or nested in white wax; often when rubbed, the red color of



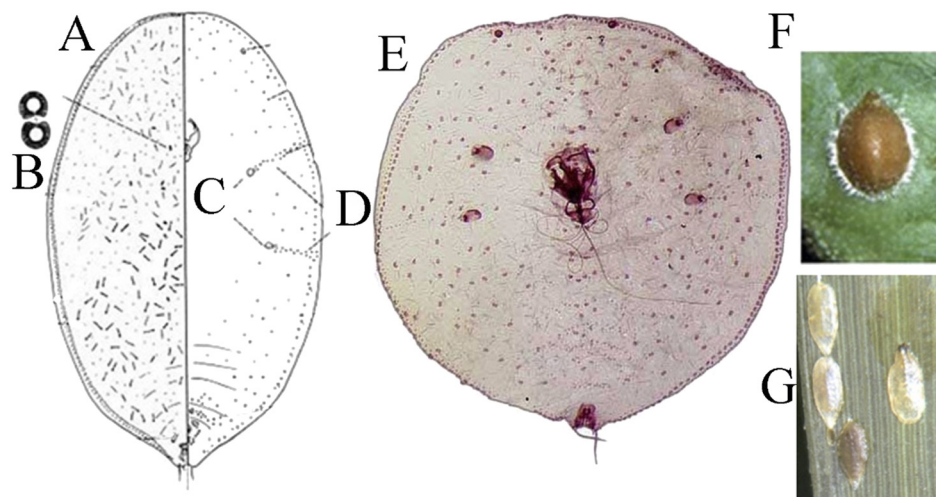


Fig. 13. Asterolecaniidae A) habitus drawing, B) 8-shaped pore, C) spiracles, D) spiracular furrow, E) slide specimen, F–G) in nature.
Sources: A–D (modified from [Miller et al., 2014](#)); E (photo by Alessandra Rung); F–G) photos by Ray Gill)

body contents is exposed; body margin with a series of dermal papillae; not common, 1 species, *Phoenicococcus marlatti*, in family (Figs 12A–F).....
..... **Phoenicococcidae (palm scales)**
- Found on palms and other plants; body generally very convex and surrounded by a thin, glassy wax; occurring on stems or twigs often causing pits or distortions in twigs under their body; without a red color of body contents when rubbed; body margin without a series of dermal papillae; infrequently collected (Figs 13A–G).....
..... **Asterolecaniidae (pit scales)**

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