ARTHROPODS OF FLORIDA
and Neighboring Land Areas

Volume 11

THE SOFT SCALE INSECTS OF FLORIDA
(HOMOPTERA: COCCOIDEA: COCCIDAE)

by Avas B. Hamon and Michael L. Williams

Florida Department of Agriculture & Consumer Services
Doyle Conner, Commissioner

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Contribution No. 600. Bureau of Entomology

Release Date: December 15, 1984

This public document was promulgated at a cost of $26,860.54 or $13.43 per copy. It makes available to all interested persons the results of arthropod faunal studies, emphasizing Florida and the Circum-Caribbean Region.

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FOREWORD

This scholarly treatment of the soft scales of Florida by Hamon and Williams fulfills a need which has grown over a period of many years. It provides a reference useful both for field identification of some species of soft scales and for the accurate identification in the laboratory of all species known to occur or which are likely to be found in Florida. This publication should be useful in the identification of soft scales over an area much greater than Florida, as the dichotomous keys are not restricted to those species known to occur in Florida. This is the first definitive treatment of the soft scales of Florida and neighboring parts of the United States.

The extensive host list, containing more than 1,500 plant names, provides a place to begin for field identifications, and the diagnoses and photographs will facilitate greatly the making of field identifications. However, only properly prepared microscope slides of scale insects are definitive for accurate specific identifications. The highly detailed line drawings of all species of soft scales known to occur in Florida should facilitate identification. The distribution maps include all states of the United States except Alaska and Hawaii. Information included on parasites and predators will be pertinent to the increasing emphasis placed on biological control of scale insects and other insect pests as an alternative to excessive use of pesticides.

Dr. Avas B. Hamon was born in Ripley, West Virginia, on 8 March 1940, son of O. M. and Lucy F. Hamon. One of 6 children, he has 4 sisters and a brother. In 1965 he married Donna F. Newhouse of Sissonville, West Virginia. Avas was educated in the public schools of Jackson County, West Virginia and graduated from Ripley High School. He received the Bachelor of Science degree in Biology from Morris Harvey College, Charleston, West Virginia (now University of Charleston) and the Master of Science degree in Biological Sciences from Marshall University, Huntington, West Virginia. He served in the United States Air Force from 1962 to 1966 as a member of a missile launch crew for advanced ballistics and re-entry systems. From 1969 to 1973 he was employed by the Virginia Department of Agriculture and Commerce as a Regulatory Inspector in Harrisonburg, Virginia. In 1973 he began working toward the Doctor of Philosophy degree in Entomology at Virginia Polytechnic Institute and State University, Blacksburg, Virginia, where he studied under Dr. Michael Kosztarab, a recognized world authority on the biosystematics of scale insects. The degree requirements were completed in October 1976. Since then he has been employed as a Taxonomic Entomologist with the Division of Plant Industry, Florida Department of Agriculture and Consumer Services, in Gainesville, Florida. Dr. Hamon is an Associate Curator of the Florida State Collection of Arthropods, an Adjunct Assistant Professor in the Department of Entomology and Nematology of the University of Florida, and a Courtesy Associate Professor in the Department of Entomology and Structural Pest Control of Florida A & M University. He is a member of the Entomological Society of America, the Florida Entomological Society, American Registry of Professional Entomologists, and has been listed in American Men and Women of Science and in Who's Who in the South. He is a member of Sigma Xi honorary society. He is author or coauthor of 29 scientific publications.

Dr. Michael L. Williams, or "Mike" as he is generally called, was born in Paragould, Arkansas, 11 September 1943. In 1962 he married Carolyn Grace Mack. They have 2 children, Michael Gregory and Kathryn Grace, and a granddaughter, Toni Michelle. Mike received his Bachelor of Science degree in 1967 from Arkansas State University with a major in Biology and a minor in Chemistry; Master of Science (1969) and Doctor of Philosophy degrees (1972) from Virginia Polytechnic Institute and State University with majors in Entomology and minors in Botany. Like Avas, Mike studied under Dr. Michael Kosztarab. While at VPI, Mike held a National Science Foundation traineeship, National Defense Education Act fellowship, and both teaching and research assistantships in the Department of Entomology. In 1969 he was awarded the Sigma Xi Outstanding Graduate Student Research Award from the VPI Chapter for his work on the "Morphology and Systematics

of the First Instar Nymphs of Scale Insects in the Genus *Lecanodiaspis*". Mike was hired by the Maryland Department of Agriculture as Assistant State Entomologist before completing his Ph.D. requirements, and he finished writing his dissertation while on the job. He worked out of the University of Maryland from March 1971 to March 1973, when he took a position with the Department of Zoology-Entomology at Auburn University in Alabama. Since that time Mike has been teaching systematics and morphology of insects and conducting research on scale insects and other pests of ornamental plants at Auburn. He currently holds the position of Associate Professor and Entomology Section Chairman in the Department of Zoology-Entomology.

Dr. Williams is a member of the Entomological Society of America, Entomological Society of Washington, Florida Entomological Society, Georgia Entomological Society, and Alabama Academy of Science. He is a Research Associate of the Florida State Collection of Arthropods. He is a member of several national honor societies: Beta Beta Beta, Gamma Sigma Delta, Phi Kappa Phi, Phi Sigma, and Sigma Xi and has been selected for inclusion in American Men and Women of Science, Personalities of the South, and Who's Who in America. In 1980 Mike was a visiting professor at the University of Guayaquil, Ecuador, and in 1981 he was awarded the Southeastern Branch ESA Distinguished Achievement Award in Teaching.

Dr. Williams is author or coauthor of 68 scientific papers and popular articles. He has given numerous invitational papers and participated in symposia at national and international professional society meetings. Mike's specialty is the soft scale insect group, and he currently provides identification services to various state and federal agencies as well as to other entomologists and the general public. He is interested also in the scale insects of the Galapagos Islands and other areas of South America and has collected and studied scale insects on trips to these islands and the Amazon Basin in Ecuador during 1973, 1975, and 1980.

Howard V. Weems, Jr.
Editor
Bureau of Entomology
Division of Plant Industry
Florida Department of Agriculture
and Consumer Services
1 October 1984

ACKNOWLEDGMENTS

This project was initiated in 1978 and has survived through the encouragement and efforts of many individuals. Premier among these is Darlene Cannon who has persevered with excellence through the original typing and several revisions. Our special thanks and respect are extended to her.

The host list portion of the manuscript was begun with the efforts of Pamela Zwerski and continued by Elaine Sims, Joan Ortagus, Elizabeth Manning, and Pamela Exon. We thank them for their efforts and expertise. For the final corrections we wish to thank Janet Temple and Darlene Cannon.

Our heartfelt respect and admiration are extended to G. W. "Wally" Dekle for his encouragement, smiling face, enthusiasm, and legacy of excellence in scale insect identifications.

Thanks are extended to Ernestine Ostanik, Ladonia Fields, and Scott Yocom for their technical help and expertise in slide preparation. Technical graphics assistance was received from Linda Writer. For expertise in taking many of the photographs and photo reproductions we thank Jane Windsor, the DPI photographer.

Special thanks are due Ray Gill, Bill Gimpel, Jim Howell, and Charles Ray for the use of their original and previously published drawings.

For encouragement, technical material, photos, and the loan of slides, a special thanks is extended to our former major professor and friend, Dr. Michael Kosztarab, Professor of Systematic Entomology, Virginia Polytechnic Institute and State University, Blacksburg, VA.

We are grateful for the support of administrators of the Department of Agriculture and Consumer Services, particularly the Honorable Doyle E. Conner, Commissioner of Agriculture and Consumer Services; H. L. Jones, Director, retired; Dr. S. A. Alfieri, Jr., Director; and H. A. Denmark, Chief of Entomology, of the Division of Plant Industry.

A considerable amount of assistance with plant identifications and host names was received from Dr. Kenneth Langdon. Carlos Artaud reviewed the host list botanical names several times. To them we extend our appreciation.

For review of the manuscript and many helpful suggestions, we extend our thanks to Steve Nakahara, Research Entomologist, USDA, Systematic Entomology Laboratory, Beltsville, MD, and Raymond J. Gill, Systematic Entomologist, California Dept. of Food and Agriculture, Division of Plant Industry, Sacramento, CA.

We wish to thank the Agriculture Products Specialists, of the Division of Plant Industry, for their diligent collections of most of the material, and their cooperation when additional material was requested.

We thank our entomology colleagues at the Division of Plant Industry, Drs. Frank Mead, G. B. Edwards, Robert Woodruff, Lionel Stange, John Heppner, and Howard Weems, Jr. for their encouragement and many helpful suggestions.

Last, but not least, the senior author wishes to thank his wife, Donna, for her encouragement and dedication throughout this entire study.

INTRODUCTION

THE FAMILY COCCIDAE

Early entomologists assigned all scale insects to the family Coccidae. Current workers recognize up to 21 families of scale insects and restrict the family Coccidae to scale insects resembling *Coccus hesperidum*, the type species. Members of the family are commonly referred to as "soft scales".

Soft scales occur in all zoogeographic regions of the world, but most species are native to temperate, subtropical, and tropical environments. Such species as the brown soft scale (*Coccus hesperidum*) and hemispherical scale (*Saissetia coffeae*) have been moved by man to the extent that they are cosmopolitan in distribution.

The family Coccidae is the third largest family of scale insects after the armored scales (Diaspididae) and mealybugs (Pseudococcidae) respectively. Worldwide there are about 1,000 species in approximately 100 genera. In the United States the Coccidae comprise about 85 species in 25 genera. Of these 85 species, 33 have been reported as pests in one or more states.

In this study 49 species in 17 genera are treated from the Southeastern United States. Forty of these species have been reported from Florida. Undescribed species in the genera *Ceroplastes*, *Philephedra*, *Pulvinaria*, and *Toumeyella* are not included.

Soft scales feed on a wide variety of host plants. They may be found on all parts of the plant: leaves (including grass sheaths), stems, bark, crowns and roots. The Virginia pine scale (*Toumeyella virginiana*) has even been found in ant galleries 1.5 inches beneath loblolly pine bark. Some species, such as the brown soft scale and the European fruit lecanium (*Parthenolecanium corni*), attack many different hosts, while others, like the woolly pine scale (*Pseudophilippia quaintancii*) and magnolia scale (*Neolecanium cornuparvum*), are restricted to a few species of plants.

GENERAL BIOLOGY

Most species of soft scales occur outdoors and have one generation per year, but some species, such as pine tortoise scale (*Toumeyella parvicornis*) and brown soft scale, have multiple generations in the warmer southern areas. Under greenhouse conditions, overlapping generations often occur and several developmental stages may be found at any one time. Soft scales reproduce sexually or parthenogenetically, and some species have both bisexual and parthenogenetic strains. Nur (1971) studied the cytology of 33 parthenogenetic scale insects and identified and characterized 7 different types of parthenogenesis. Most species of soft scale are capable of reproducing parthenogenetically.

The females have a simple metamorphosis, whereas the males have a complete metamorphosis. There are 3 or 4 instars in the female and 5 instars in the male. Females are either oviparous or ovoviviparous. The developmental stages can be characterized as follows:

First Instar (male and female) (Fig. 1): The first instar or "crawler" stage is the most active developmental stage in soft scales. Both sexes are similar and share the following characters: eyes present; anal plates present (Fig. 1,H), each plate with a long apical seta; legs well developed and 5 segmented; well-developed 5 or 6-segmented antennae; spiracular setae (Fig. 1,D) usually differentiated from marginal setae; 6 anal ring setae; multilocular pores and tubular ducts absent from abdominal region.

Most soft scale crawlers prefer to feed on the leaves of their host and will usually settle there after hatching. Crawlers feed by inserting their stylet-like mouthparts directly into cells and suck out the cell contents. For those species which feed on deciduous hosts, this requires them to move from the leaves to the twigs or stems of their host before leaf drop in the fall. Some species of *Pulvinaria* begin their development on the leaves, move to the twigs to overwinter, and return to the leaves as adult females in the spring. Most soft scales overwinter as second instars, but some of the wax scales (*Ceroplastes* spp.) overwinter as fertilized adult females which produce eggs very early in the spring. The biology of most species of soft scale has not been studied. Information on the biology of the economically important species is critically needed.

Second Instar Female: Sexual dimorphism is apparent in the 2nd instar. The female lacks the tubular ducts present on the dorsum of 2nd instar males (Fig. 3,G); body shape is oval to nearly circular instead of elongate oval as in the male. Eyes are present, as are anal plates but without the long apical seta. An anal cleft is evident, and the legs and antennae are reduced or well developed. Multilocular pores and tubular ducts

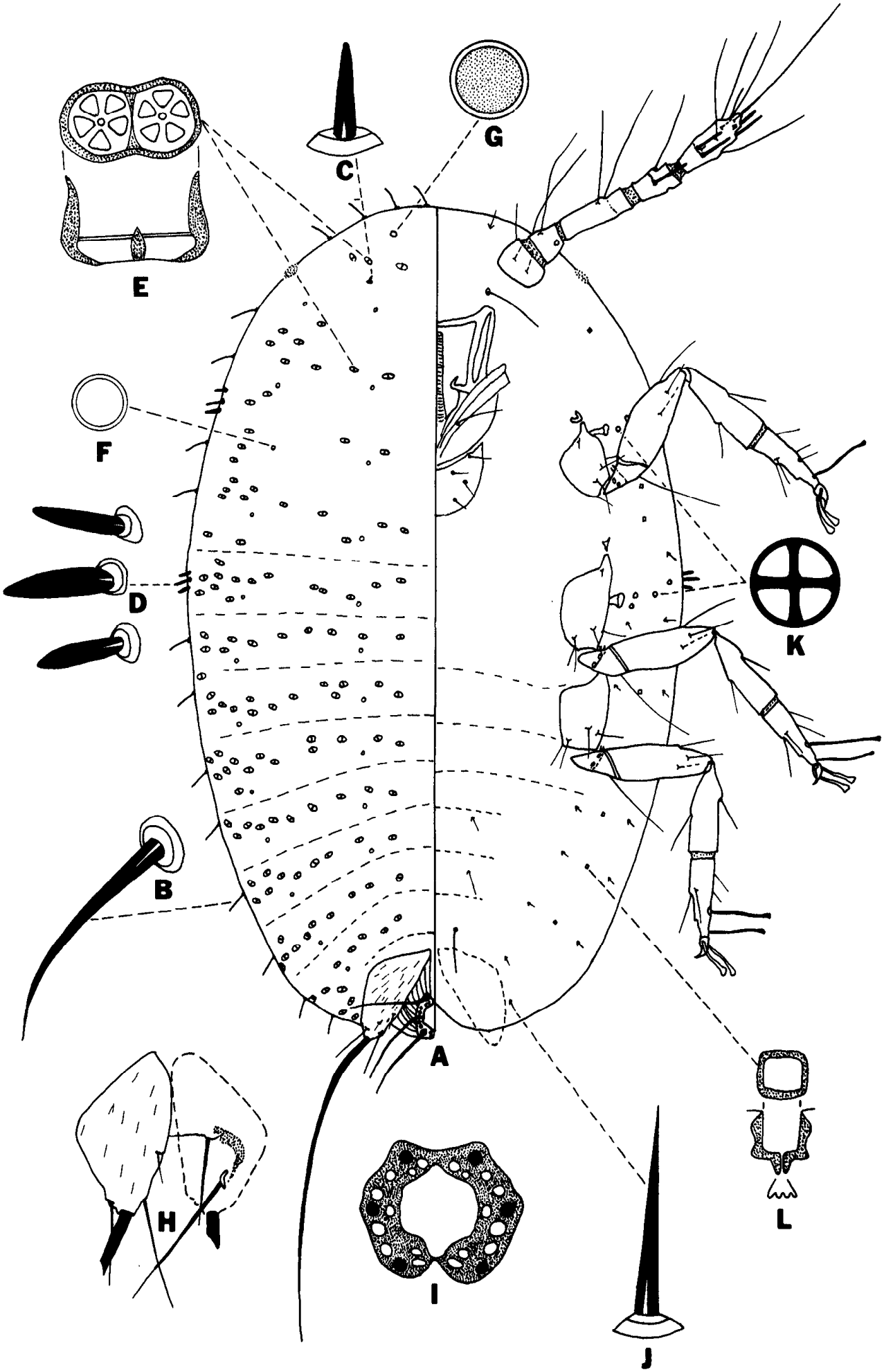


Fig. 1. *Pseudophilippia quaintancii*, 1st instar, from Ray and Williams 1980.

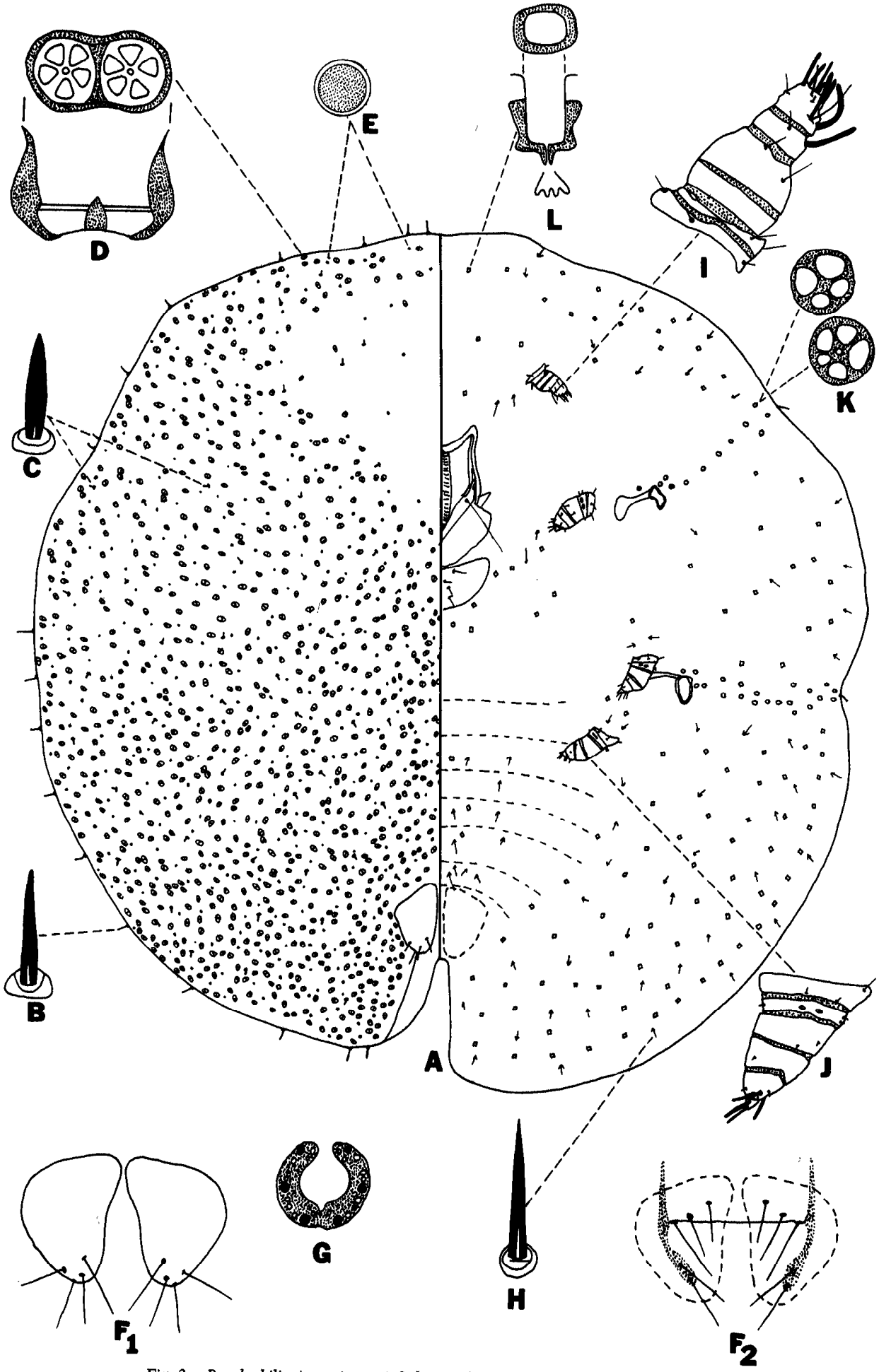


Fig. 2. *Pseudophilippia quaintancii*, 3rd instar female, from Ray and Williams 1980.

are always absent from the venter of the abdomen. Spiracular setae are usually differentiated from the marginal setae.

Third Instar Female: The 3rd instar can either be the adult instar or the last immature instar, depending on the species. The last immature female instar (Fig. 2) resembles the adult female, but has fewer setae and pores, and may have fewer anal ring setae and antennal segments. Multilocular pores are absent from the venter of the abdomen.

The adult female stage (Fig. 8) has more setae and pores. Tubular ducts may be present or absent, but usually present. Multilocular pores are present on the venter of the abdomen. Additional characters of the adult female, whether it be 3rd or 4th instar, are discussed under *General Morphology of the Adult Female.*

Second Instar Male (Fig. 3): Sexual dimorphism is apparent in the 2nd instar. The male is elongate oval in shape, eyes are present, anal plates are present, but the long apical setae are absent. The presence of dorsal tubular ducts (Fig. 3,G) readily distinguishes the 2nd instar male from the 2nd instar female, which lacks dorsal tubular ducts. This stage produces the characteristic glassy wax cover of male soft scales.

Third Instar Male (Prepupa) (Fig. 4): The prepupa is found under the glassy wax cover secreted by the 2nd instar male. In general, the derm is membranous. The anal plates are replaced by 2 quadrate sclerotized lobes, and the anal ring, spiracular setae, eyes, pores, and ducts are absent. The anal opening is near the sclerotized base of the penial sheath, and the penial sheath is short and rounded. Wing buds are present. The legs and antennae are about 1/4 body length and have poorly defined segments.

Fourth Instar Male (Pupa) (Fig. 5): The pupa is similar in appearance to the prepupa male, but the development of the antennae, legs, wings, and genital structures have progressed to a more definable state. The eyes are still absent. The penial sheath is elongate and triangular. The antennae and legs are greater than 1/3 the body length, and segmentation is more distinct.

Fifth Instar Male: The adult male instar is shown in Fig. 6. For detailed information about the morphology and taxonomy of adult male Coccidae, see Giliomee (1967). The body is divided into a head, thorax, and abdomen, with a distinct neck region behind the head. The head is well sclerotized, has 2-5 pairs of simple eyes and a pair of lateral ocelli. The mouthparts are absent. Legs are well developed, usually long, slender, and 5 segmented. The penial sheath is long and generally about 1/4 the body length.

The adult male remains under the wax cover produced by the second instar male until fully developed. It then backs out from beneath the cover and begins to actively search for a female. The adult males are short lived and do not feed; their sole purpose is to mate with the females.

ECONOMIC IMPORTANCE OF THE COCCIDAE

The family Coccidae represents an economically important group of insects. Many species attack agricultural, ornamental, and greenhouse plantings throughout the world. The economic importance of the group is perhaps considerably underestimated. Isolated infestations in ornamental plantings are usually overlooked, and often the death of the plant is attributed to some other cause.

Soft scales remove plant sap by their feeding, and excrete a large amount of honeydew, which is a liquid excretion rich in sugars and nitrogenous compounds. Honeydew adheres to plant surfaces and serves as a medium for the growth of sooty mold fungi. Sooty mold fungi, which are dirty or sooty in appearance, not only inhibit photosynthesis by the plant, but also greatly reduces the aesthetic qualities of the plant.

Most soft scale species of economic importance in the United States belong to the following genera: *Ceroplastes* Gray, *Coccus* Linnaeus, and *Saissetia* Deplanche. Where records are available, the economic importance is discussed under the treatment of each species.

ASSOCIATED INSECTS

Soft scale insects are often found in association with other insects, particularly ants, wasps, and bees. These associations are usually beneficial to both soft scale and associate insects. The ants provide protection to the scale insects by warding off parasites and predators, and in turn are provided with a food source in the form of honeydew excreted by the scale insects. In addition, some species of ants build cartons or tents over colonies of soft scale insects (Fig. 7). These ant tents are generally constructed of soil or debris collected in the vicinity of the colony and are cemented together to form a covering over

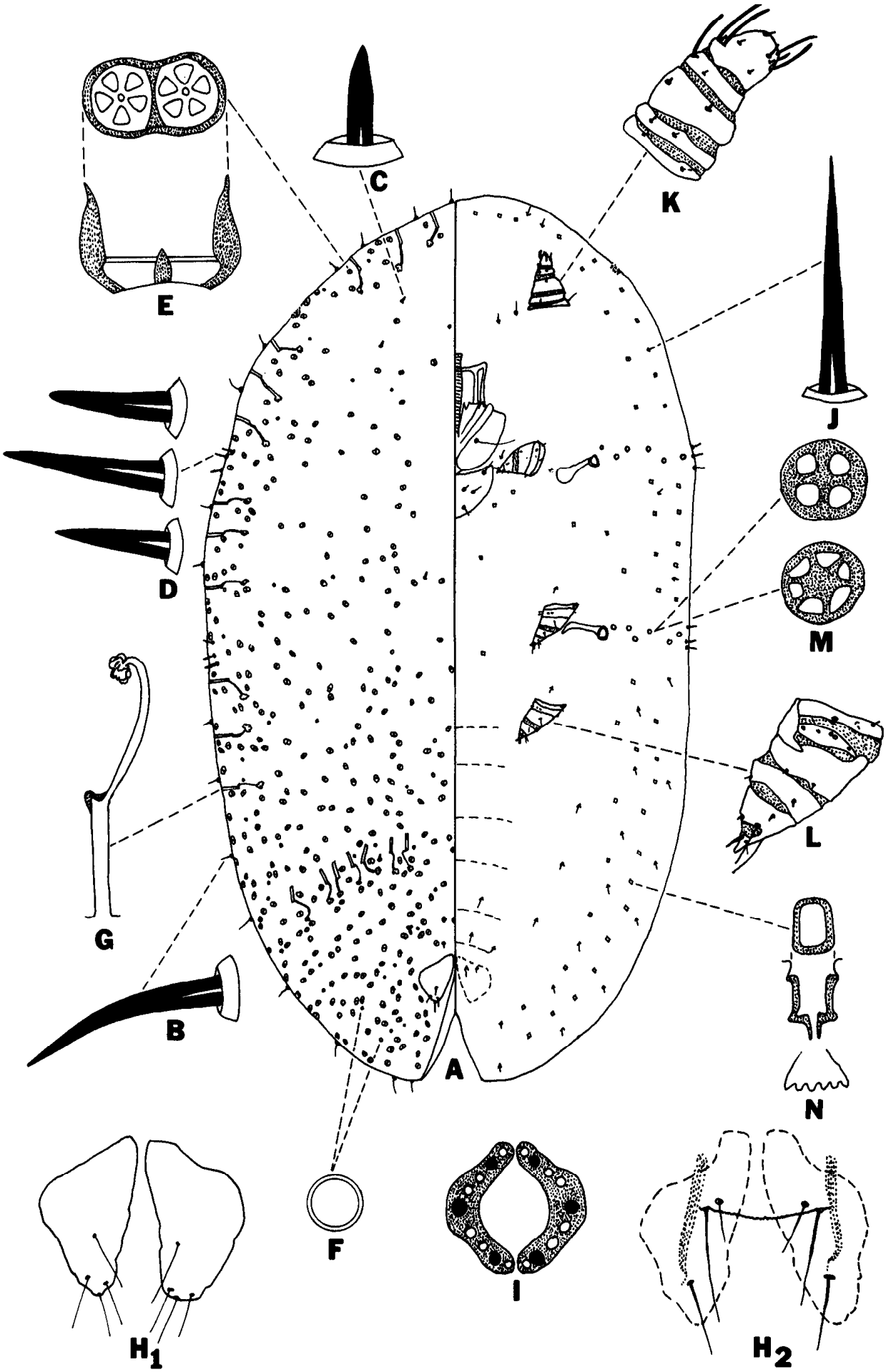


Fig. 3. *Pseudophilippia quaintancii*, 2nd instar male, from Ray and Williams 1980.

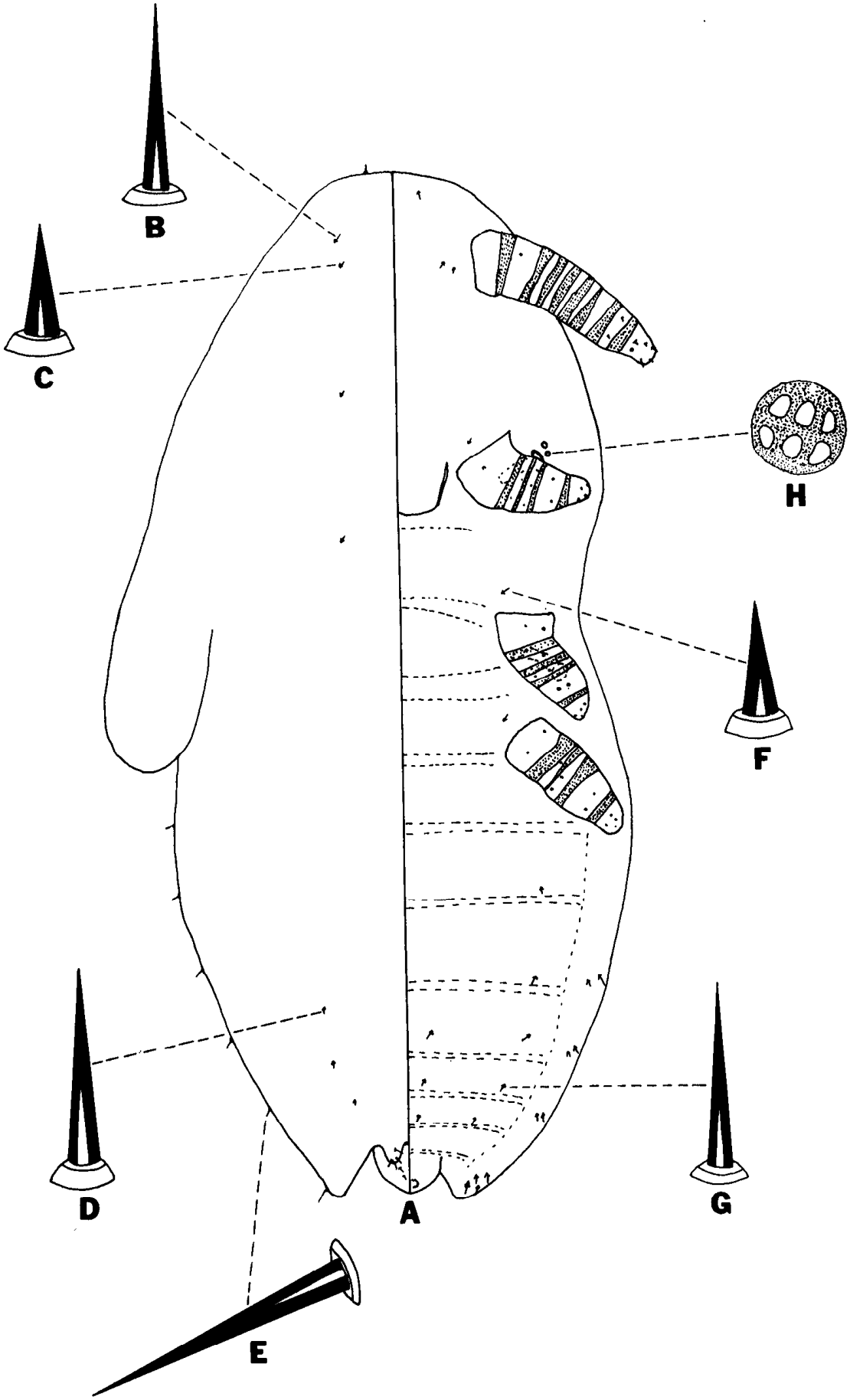


Fig. 4. *Pseudophilippia quaintancii*, prepupal male, from Ray and Williams 1980.

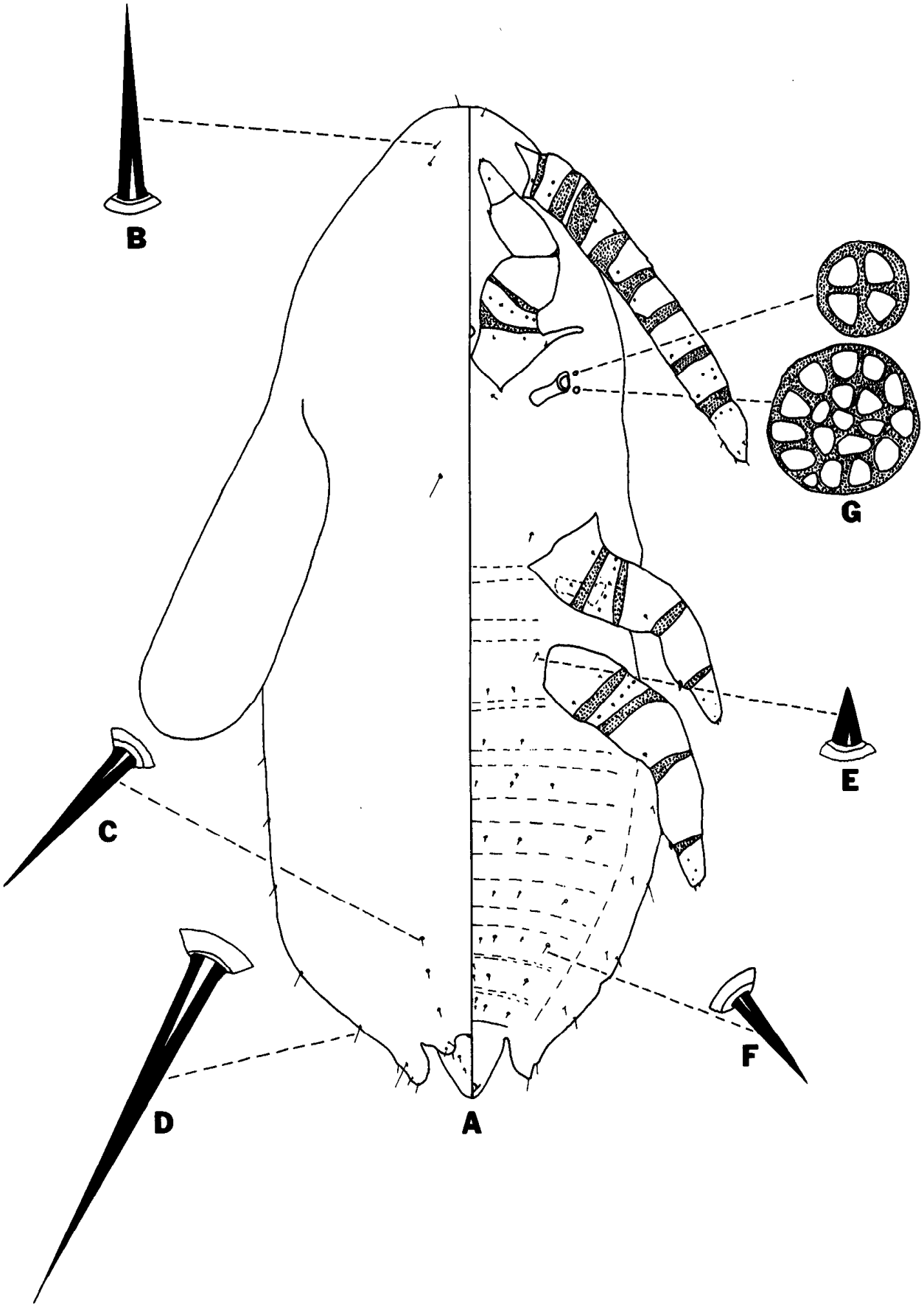


Fig. 5. *Pseudophilippia quaintanciti*, pupal male, from Ray and Williams 1980.

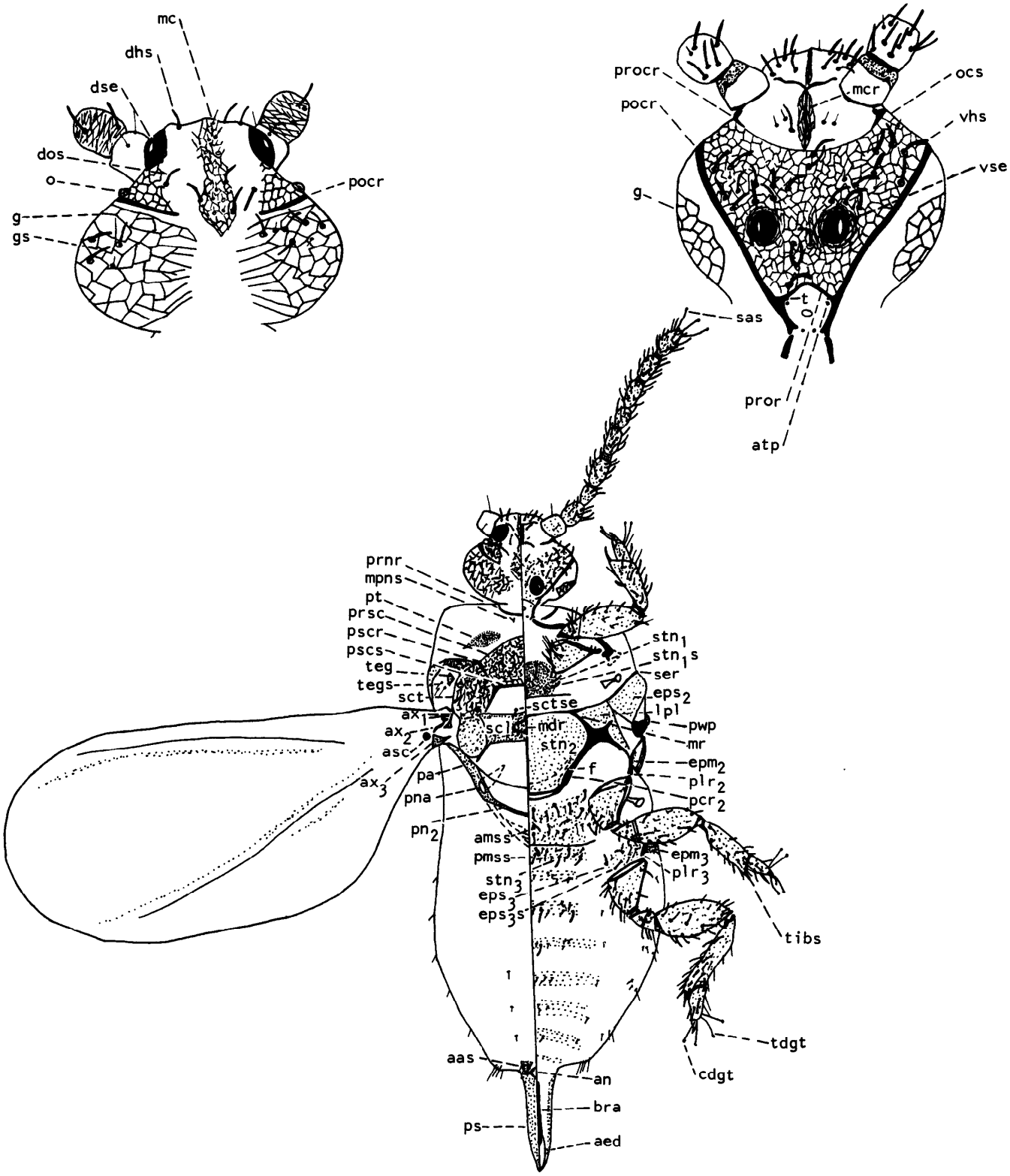


Fig. 6. *Pseudophilippia quaintancii*, adult male, from Ray and Williams 1980.

the scale-infested stem or twig. The ant tent provides some protection from the weather, but more importantly, shields the colony from attack by parasites and predators. In the southeastern United States, fire ants commonly tend soft scale colonies in this fashion.

A more direct benefit of ant tending is the removal of honeydew from the soft scale colony. Honeydew serves as a medium for the growth of sooty mold which often contaminates the colony and can cause a reduction in numbers within the colony. Ants and other hymenopterous insects are often seen feeding on droplets of honeydew excreted by soft scale insects. Ants have been observed "fondling" the soft scale in the area of the anal plates with their antennae. The soft scale reacts to this fondling by slowly extruding a droplet of honeydew from its rectum which the

Fig. 7. Ant tent over a soft scale, DPI Photo 702822-6.

ant consumes. Soft scale colonies which are tended by ants have the problem of sooty mold contamination eliminated in this fashion. In fact, ant-tended soft scale colonies are often larger than colonies of the same soft scale species on the same host that are not ant-tended.

NATURAL ENEMIES

Since the classical success in California of the vedalia beetle, *Rodolia cardinalis* (Mulsant), against the cottony cushion scale, *Icerya purchasi* Maskell, entomologists have looked favorably upon biological control as a valid pest control method (DeBach, 1964). No attempt will be made here to discuss biological control, but rather a list of natural enemies is given for each soft scale where possible. The primary sources for such information have been Peck 1963, DeBach 1964, Clausen 1940, Bartlett *in* Clausen ed. 1978, and Krombein et al. 1979, but many other sources are also available. The greatest number of scale insect natural enemies occurs in the Hymenoptera with lesser numbers in the Lepidoptera, Diptera, Coleoptera, and Neuroptera. In general, only natural enemies occurring in Florida or the southeast United States are listed.

CLASSIFICATION

The family Coccidae is a difficult group to classify, because of the lack of literature and adequate species keys. Many species are polyphagous and often exhibit a wide range of morphological differences from host to host. Such variability led many early workers to describe the same entity from different hosts as separate species. For example, the European fruit lecanium alone has over 130 synonyms.

Borchsenius (1957) divided the family Coccidae into three subfamilies and two tribes based on studies of the adult females. His classification is as follows:

1. Subfamily Filippinae—mature females completely enclosed in an egg sac.
2. Subfamily Ceroplastinae—body of the female covered with a thick layer of dense, opaque, colored wax.
3. Subfamily Coccinae—female not enclosed in an egg sac; if an egg sac is present, it is found behind or under the body of the female. Borchsenius subdivided the Coccinae into the tribes Pulvinariini (eggs deposited in an ovisac behind or beneath the body) and Coccini (eggs deposited under the abdomen which retracts as the eggs are laid, or give birth to living young ovoviviparously.

Giliomee (1967) studied the adult males of 23 species in 19 genera. His work indicated the need for reevaluation of Borchsenius' classification. He identified four natural groups:

1. The Eriopeltis Group including the genera *Eriopeltis* and *Luzulaspis*.
2. The Coccus Group containing *Coccus*, *Ceroplastes*, *Parthenolecanium*, and *Pulvinaria*.
3. The Eulecanium Group containing *Sphaerolecanium*, *Ctenochiton*, *Filippia*, *Physokermes*, and *Eulecanium*.
4. The Inglisia Group of the single genus *Inglisia*.

Ray and Williams (1983) added a fifth natural group, the Toumeyella Group, which includes the genera *Toumeyella*, *Pseudophilippia*, and *Neolecanium*.

It appears that information from the study of all developmental stages needs to be consolidated to form a classification that will be workable for the entire family.

Very few comprehensive studies have been published on the Coccidae in North America. Thro (1903), in his "Distinctive characteristics of the Species of the Genus *Lecanium*", included 12 species of soft scales which are now placed in 6 different genera. Steinweden (1946) revised the genus *Pulvinaria* (13 spp.) in the United States. Richards (1958) published on the *Lecanium* (5

spp.) species of Canada. Williams and Kosztarab (1972) studied 32 species in 11 genera in their "Coccidae of Virginia". In recent years some good revisionary works have been published. These include: Gimpel et al. (1974) on the *Ceroplastes* of the United States (11 spp.); Gill et al. (1977) presented a review of the genus *Coccus* in North America north of Panama (8 spp.); Ray and Williams (1980, 1981, 1982, 1983) published comprehensive descriptions of all developmental stages for species in the genera *Eucalymnatus*, *Neolecanium*, *Protopulvinaria*, and *Pseudophilippia*; and Nakahara (1981) presented a discussion on the placement of 12 species of soft scales assigned to the genus *Lecanium* which are today placed in the genera *Eulecanium*, *Mesolecanium*, *Parthenolecanium*, and *Sphaerolecanium*.

Classification of soft scales by early workers was based largely on the adult females, and chiefly on the gross appearance of the fully mature female. Because of this practice, many species and genera are poorly defined, and therefore, some genera include an assemblage of unrelated species. Using modern microscopic techniques, most species and genera in the United States have been redefined; however, revisionary studies of genera such as *Parthenolecanium* and *Pulvinaria* are urgently needed.

GENERAL MORPHOLOGY OF THE ADULT FEMALE

Body shape: The body as it appears on a prepared microscope slide (Fig. 8) is usually subcircular, elliptical, or pyriform, varying both with the species and the age of the specimens studied. At the posterior end of the body is the anal cleft which extends into the body as far as the anal plates (Fig. 8, G_1, G_2). Usually the anal cleft is only about 1/6 the body length, but in the genus *Protopulvinaria*, the anal cleft extends almost to the center of the body (Fig. 65). Spiracular depressions are usually found on the margin at the spiracular setae. Spiracular setae may be well developed and numerous as in the genus *Ceroplastes* (Fig. 23) or absent as in some species of *Toumeyella* (Fig. 96).

Derm: The derm in immature specimens and young adult females is usually membranous. The dorsal derm of many species becomes heavily sclerotized with age, particularly after oviposition. The appendages, mouth-parts, and anal plates of all species studied were sclerotized in all stages. Often the sclerotized dorsal derm has clear areas around some of the dorsal pores, giving the derm a cell-like appearance (Fig. 84). This character is especially developed in the genus *Saissetia*. In the genera *Eucalymnatus* and *Parasaissetia*, the derm is divided into plate-like areas (Fig. 41) or polygonal reticulations (Fig. 54).

Segmentation: No indication of segmentation is found on the dorsal derm of the Coccidae (Fig. 8). In most species, ventral segmentation is obscure, but usually can be detected in the mid-abdominal and mid-thoracic regions.

Head and thoracic segments of the Coccidae are closely fused. However, certain structures are present which indicate segmentation. The antennae and mouthparts are on the head, and in many species, eyes are also present. The legs, spiracles, spiracular pore bands, and spiracular setae mark the thoracic segments.

The abdominal segments are indicated in the mid-ventral region of most species and are evident except near the anal area.

In the Coccidae the anal opening is found on the 11th abdominal segment, and usually the 11th as well as the 10th segment is reduced. The only fixed abdominal structure is the gonopore (Ferris 1955); therefore the vulva of the Coccidae lies on the 8th abdominal segment. As for the rest of the segmentation, we agree with Sulc (1932), that the 9th segment is composed of the anal plates, the 10th segment is the anal ring and fold, and the 11th segment is the membrane covering the anal opening. Counting forward from the anal ring to the metathorax, segment 2 is the first visible abdominal segment. Apparently segments 1 and 2 are fused.

DORSAL SURFACE AND MARGIN

Setae: Marginal setae (Fig. 8, 0) occur in all Coccidae, although they are difficult to observe in some species. Marginal setae in most species are slender and acute, but in others they are extremely variable (Fig. 9, A), being conical, stout, hair-like, curved or straight, bifid, fringed, or dentate, with apex acute, blunt, or expanded. The numbers of marginal setae around the head between the anterior spiracular setae, and also between the anterior and posterior spiracular setae are of taxonomic value. Body setae (Fig. 8) are normally scattered randomly over the body, but occasionally, as in *Parthenolecanium corni* (Fig. 56), form 1 or 2 longitudinal, mid-dorsal rows. Usually body setae are spine-like, hair-like,

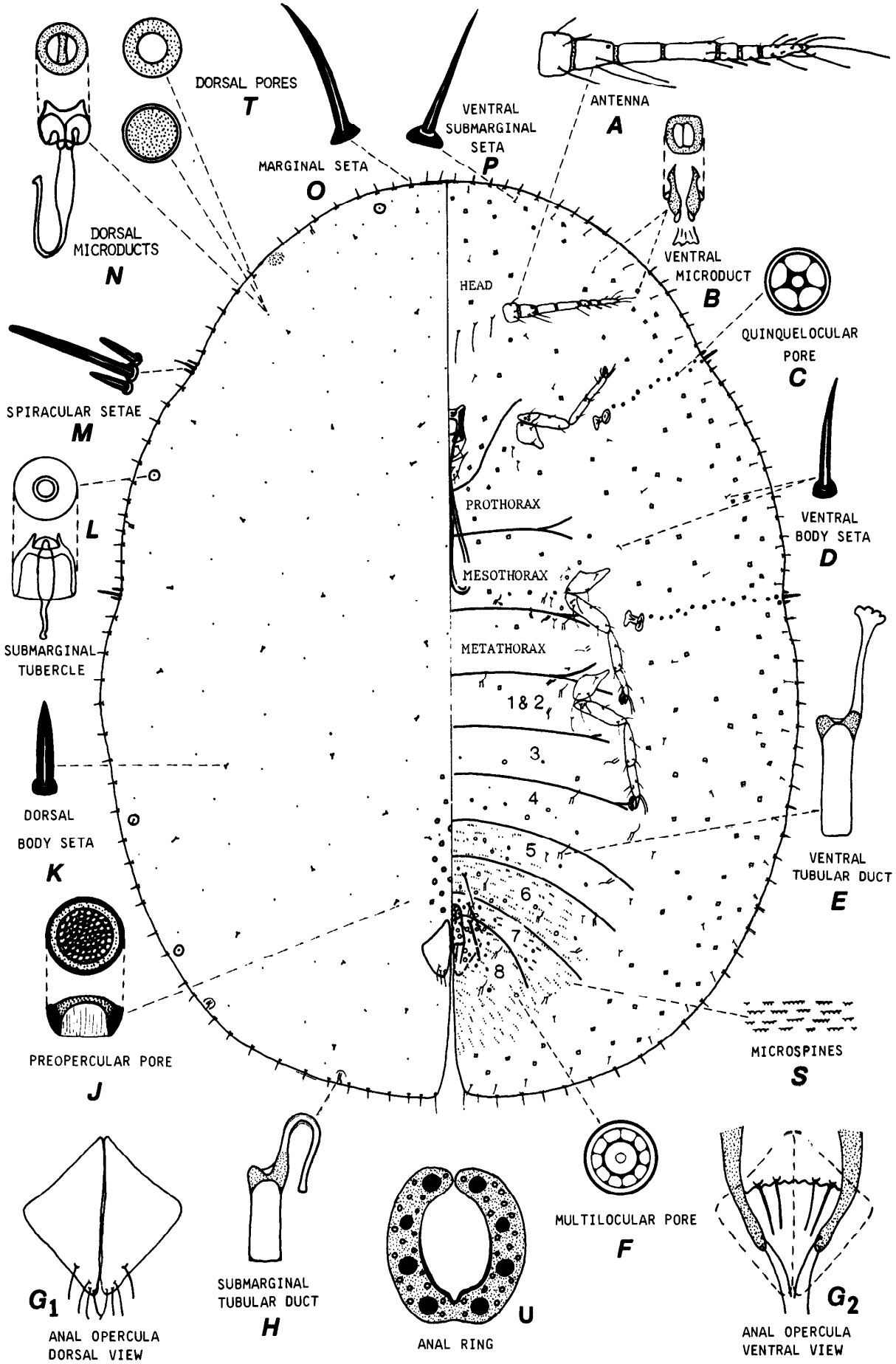


Fig. 8. General morphology of adult female, from Williams and Kosztarab 1972.

or cylindrical with apices pointed, blunt, or capitate (Fig. 9, B).

Spiracular setae (Fig. 8, M): All species studied, except *Pseudophilippia quaintancii* and *Toumeyella parvicornis*, had spiracular setae which could be differentiated from marginal setae. Spiracular setae in most species are in groups of 3, terminating each spiracular pore band, but in the genus *Ceroplastes* (Fig. 11, E), they may number 90 or more. There are various shapes and sizes (Fig. 9, D) throughout the family Coccidae. The shape and number of spiracular setae are of taxonomic importance in separating genera and species.

Submarginal tubercles (Fig. 8, L): These are round tubercles surrounding a central invaginated tube; they occur in the dorsal submarginal area around the body. These tubercles are present in some genera and species, and absent in others. They are usually quite large and vary in number, even within the same species. *Parthenolecanium persicae* (Fig. 59, B) may have up to 20 pairs. The number of submarginal tubercles serves as a good character to separate some species.

Pores: Dorsal pores (Fig. 8, T) are numerous and quite variable. Usually pores are scattered over the entire dorsum; however, in the genus *Ceroplastes*, there is a varying number of large, clear areas on the derm in which pores are apparently absent (Fig. 11). In addition to the pores which occur generally over the dorsum, many species possess discoidal pores in the area around or anterior to the anal plates. Discoidal pores are usually much larger than dorsal pores, and may be simple and rather flat, convex, or even conical (Fig. 9, G). Various types of dorsal pores are illustrated in (Fig. 9, E, F). Types of dorsal pores include: monolecular ring pores (Fig. 13, I), bilocular pores (Fig. 8, N), barred bilocular pores (Fig. 19, G), irregular bilocular pores (Fig. 19, H), 8-shaped pores (Fig. 52, E), triangular trilocular pores (Fig. 13, E), oval or irregular trilocular pores (Fig. 25, F), quadrilocular pores (Fig. 13, F), cruciform pores (Fig. 33, G), quinquelocular pores (Fig. 8, C), simple disc pores (Fig. 33, F), thick rimmed disc pores (Fig. 13, I), and conical disc pores (Fig. 13, J). Specialized types of invaginated pores were found in two species of Coccidae studied: in *Pseudophilippia quaintancii*, the derm is covered with numerous large invaginated bilocular pores (Fig. 67, E_1), and in *Toumeyella parvicornis*, small bilocular pores are invaginated and tend to aggregate into groups or form pore plates (Fig. 96, D) on the derm. The arrangement, number, and types of pores are taxonomic characters used to separate some genera and many species of Coccidae.

Ducts: Tubular ducts (Fig. 8, H) with slender inner filaments are scattered over the dorsum of several species of *Eulecanium*, *Parthenolecanium*, *Luzulaspis*, and *Pulvinaria*. They are occasionally found in limited numbers around the margin of *Coccus hesperidum*. Filamentous ducts (Fig. 13, K) are found around the margin of *Ceroplastes ceriferus* and on the dorsum and margin of *Vinsonia stellifera*.

Anal plates (Fig. 8, G_1, G_2): The anal plates are located at the anterior end of the anal cleft above the opening of the anal tube. They vary in shape but are most often triangular. They are generally supported by two sclerotic, internal processes termed the ventral thickenings. These plates are present in all adult female Coccidae except the genus *Physokermes*.

Setae are found on various parts of the anal plates (Fig. 10, K, L); as apical setae at, or near, the apices; subdiscal setae on the caudolateral margin anterior of the apex; discal setae on the mid-dorsal surface; subapical setae on the ventral surface and ventral thickening; fringe setae along the margin of the fold made by the invagination of the anal tube; and hypopygial setae on the ventral surface of the body just anterior to this fold. Several genera have anal plates or associated setae which are distinctive. *Pseudophilippia* (Fig. 67) has nearly semicircular anal plates. In *Protopulvinaria* (Fig. 65) the anal plates are at least 4 times longer than wide. The anal plates of *Ceroplastes* are borne at the apex of a sclerotized and usually elevated process (Fig. 11). Anal plates in the genus *Saissetia* possess a single large discal seta on each plate.

Anal ring (Fig. 8, U): The anal ring is borne at the inner end of the anal tube which is retracted into the abdomen. The anal tube is eversible and is extended out past the anal plates for waste removal to avoid contamination of the anal area. The anal ring has 6 to 12 setae and numerous translucent wax pores (Fig. 10, H). The setae may all be of the same size, or one pair may be smaller than the others. Generally there are 8 setae, but members of *Neolecanium* and *Toumeyella* have 10. In the genus *Ceroplastes*, the second pair of anal ring setae is near the third pair; thus, only 6 setae are seen on the anal ring, when there are actually 8.

The vulva is located at the 8th abdominal segment, on the ventral side of the body anterior to the anal cleft. In most species, it is very difficult to detect.

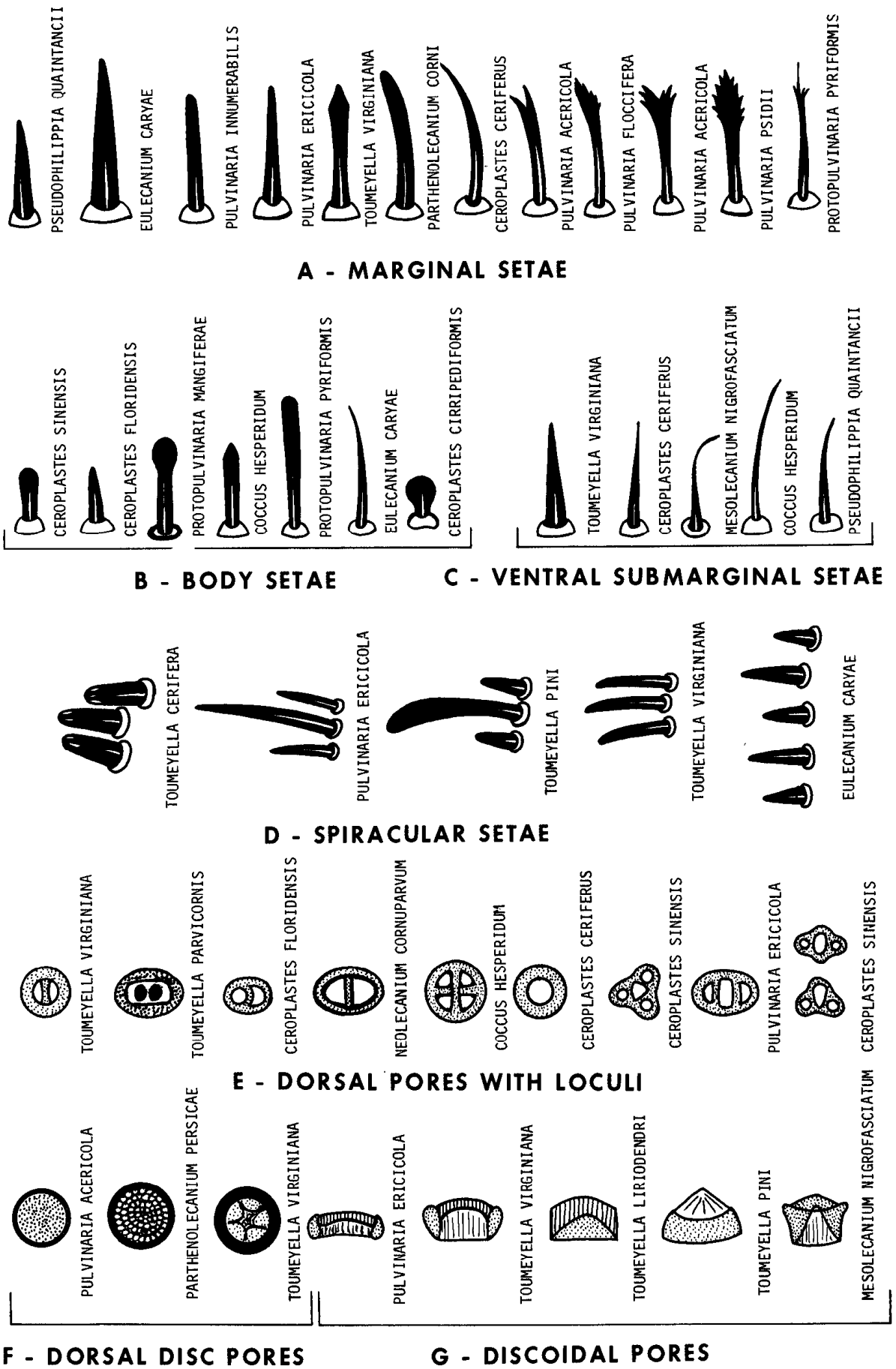


Fig. 9. Morphological details of Coccidae, from Williams and Kosztarab 1972.

VENTRAL SURFACE

Setae: Ventral submarginal setae (Fig. 8, P) are arranged in an even or irregular row around the submargin of body. Although there is some variation in shape and number (Fig. 9, C), most of them are slender and acute; therefore, they are not important as taxonomic characters. Body setae (Fig. 8, D) numerous in some species, sparse in others, usually resemble ventral submarginal setae, and are scattered randomly over the body. However, sometimes several setae are found clustered near the coxa. A varying number of interantennal setae is not normally used as a primary character except for a few taxa such as *Pulvinaria citricola* (Fig. 70, K) which has interantennal setae that often have bulbous expansions near the apex. Interantennal setae, however, are occasionally used as secondary characters. Usually 3 pairs of large setae, termed prevulvar setae, are found anterior to the vulva on abdominal segments 6, 7, and 8; but, in *Ceroplastes, Kilifia,* and *Protopulvinaria* there is only one pair. In *Toumeyella,* the prevulvar setae are variable.

Eyes: Eyes were detected in many of the species studied. They occur on or near the margin anterior to the antennae. They are apparently of no taxonomic importance.

Antennae (Fig. 8, A): In most Coccidae, the antennae are long, fairly slender, 6 to 8-segmented, with the third segment usually longest. The second antennal segment in all species seen has a sensory pore. The terminal or apical segment has several fleshy and several more slender, hair-like setae. The 2 subapical segments usually possess 1 fleshy sensory seta each, which extends toward the antennal apex. Occasionally, the 3rd and 4th segments are partially or completely fused, in 1 or both antennae. Antennae of the Coccidae may be well developed (Fig. 8, A), slightly reduced (Fig. 23, F), or greatly reduced (Fig. 92, K). In *Inglisia vitrea,* the antennae are reduced to 1 segment. The size and number of antennal segments is useful in separating some genera and species.

Clypeolabral shield: Located on the head, between the bases of the anterior legs; often possessing a pair of slender setae.

Labium: Cone-shaped, appears 1-segmented, usually with 3 to 5 setae on each side.

Legs: The legs are 5-segmented and generally well developed in most genera of Coccidae. The trochanter of all species studied had 2 sensory pores on each face, and each tarsus was fitted with a claw. Legs may be well developed, as in *Ceroplastes floridensis* (Fig. 19); slightly reduced, as in *Eulecanium caryae* (Fig. 43); greatly reduced, as in *Toumeyella cerifera* (Fig. 92), or entirely absent, as in *Inglisia vitrea* (Fig. 45). The tibia and tarsus may articulate and have an articulatory sclerosis (Fig. 10, A); the tibia and tarsus may be fused, without a sclerosis (Fig. 10, B); or the tibiotarsal sclerosis may be present, without free articulation (Fig. 10, C). The tarsus and claw of each leg possess a pair of digitules. The tarsal digitules are equal, slender, apically knobbed; the claw digitules may be unequal in shape (Fig. 10, D) or equal in shape (Fig. 10, E). The claw may have a denticle (Fig. 10, D), or may be simple without a denticle (Fig. 10, E). The reduction of legs, the presence or absence of tibiotarsal sclerosis and free articulation, shape of the claw digitules, and presence or absence of a claw denticle are useful taxonomic characters.

Spiracles: The two pairs of spiracles are located on the thorax; the anterior pair believed to be on the borderline between the prothorax and mesothorax, the posterior pair between the mesothorax and metathorax. The posterior pair is normally larger. In most species studied, the spiracles are similar in structure and do not appear to be of use in classification. However, in *Pulvinaria psidii,* each spiracle is surrounded by a sclerotic plate (Fig. 10, F), a character which immediately separates it from other members of the genus. In the genus *Toumeyella,* the spiracles are larger in proportion to the body size than in most other genera. In the genus *Eulecanium,* the peritreme of the thoracic spiracles is longer than the length of the coxae (Fig. 43) and is used as a generic character.

Pores: Quinquelocular pores (Fig. 8, C) are found in the spiracular pore bands and around the spiracles in most species. In the genera *Inglisia, Toumeyella, Pseudophilippia,* and *Neolecanium,* they are also found in the abdominal region (Fig. 94, K) where they replace the multilocular pores found in most species. In *Eulecanium caryae,* quinquelocular pores are also located on the inner margin of the anal cleft (Fig. 43, F). Multilocular pores, most of which are 10-loculed (Fig. 8, F), occur in the anal area, in transverse bands on the abdomen, and occasionally on the thorax near the coxae; sometimes a few occur in the spiracular furrows of some species, but are numerous in *Toumeyella cerifera* (Fig. 92, M). In *Pulvinaria floccifera* (Fig. 75, P) the multilocular pores in the anal area are mostly 7-loculed, and in *P. citricola* (Fig. 70, N), most are 8-loculed. Various types of ventral pores are illustrated in Fig. 10, G. The type, position, and number of pores are useful taxonomic characters.

Ducts: Microducts (Fig. 8, B) were detected

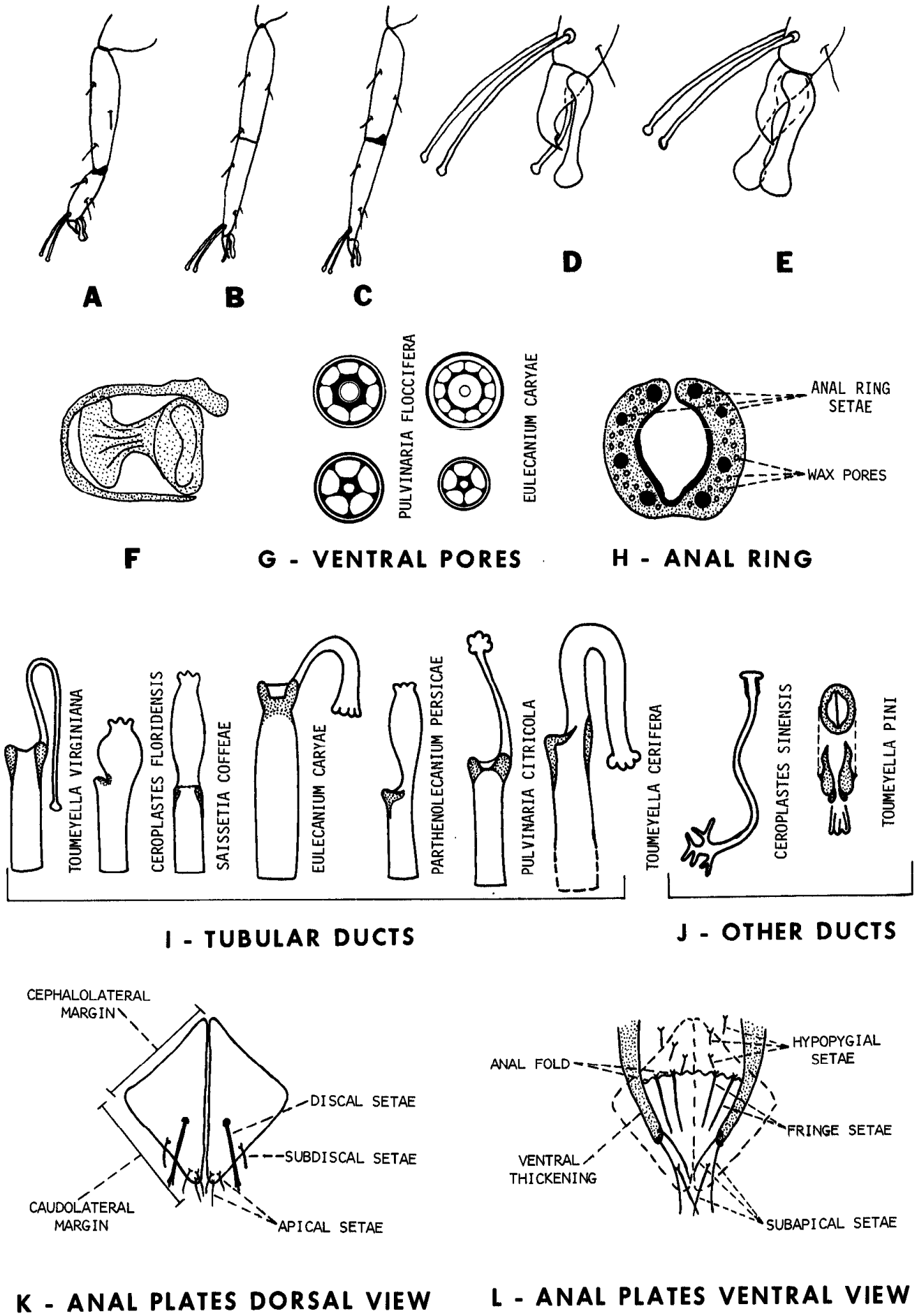


Fig. 10. Morphological details of Coccidae, from Williams and Kosztarab 1972.

in all species studied. They are scattered over the entire ventral surface but are most numerous in the submarginal area of the body. The ducts open to the surface through round, oval, square-shaped, or cruciform orifices. Filamentous ducts (Fig. 13, K) are found in *Ceroplastes ceriferus* in a dorsal and ventral marginal row, and in *C. sinensis* in a ventral marginal row around the body. Tubular ducts (Fig. 8, E) were found in all species studied except *Mesolecanium nigrofasciatum*. Many types of tubular ducts occur in the Coccidae. Three main types can be recognized: tubular ducts with slender, knobbed inner filaments (Fig. 13, T); tubular ducts with flowery tipped inner filaments which are one-fourth to one-half times as wide as the duct itself (Fig. 8, E); and tubular ducts with expanded inner filaments which are as wide as the ducts themselves (Fig. 19, S, and Fig. 84, E). Various types of ducts are illustrated in Fig. 10, I and J. The position or arrangement of the tubular ducts varies between genera and between species. The shape and position of the tubular ducts are important taxonomic characters.

Microspines (Fig. 8, S): Small spine-like projections of the derm occur in all species of Coccidae studied. They are in various patterns on the thorax, abdomen, and along the margin of the anal cleft.

KEY TO THE GENERA OF COCCIDAE IN THE SOUTHEASTERN UNITED STATES (BASED ON SLIDE MOUNTED ADULT FEMALES)

1. Anal plates 1.5 to 4 times as long as wide (part anterior to lateral angles longer than posterior part); body shape pyriform or triangular 2

1′. Anal plates less than 1.5 times as long as wide (plates somewhat quadrate or part posterior to lateral angles longer than anterior part); body shape variable ... 3

2(1). Mesothoracic and metathoracic coxae different in shape than prothoracic coxae (Fig 47); ventral tubular ducts absent ..... *Kilifia*, p. 58

2′. Mesothoracic and metathoracic coxae similar in shape to prothoracic coxae; ventral tubular ducts present .... *Protopulvinaria*, p. 78

3(1). Spiracular setae numerous, stout, conical, hemispherical, or bullet-shaped; derm around anal plates sclerotized or anal plates on a sclerotized anal process (Fig. 11) 4

3′. Spiracular setae usually 0-3 per group, spine-like, occasionally undifferentiated from marginal setae; derm around anal plates membranous or sclerotized, anal process absent 5

4(3). One pair of long setae between antennae. Dorsum with triangular trilocular pores, often with quinquelocular pores . ..... *Ceroplastes*, p. 18

4′. More than 1 pair of long satae between antennae. Dorsum with simple pores ... . *Vinsonia**, p. 128

5(3). Legs absent, vestigial or greatly reduced 6

5′. Legs well developed, at least two times longer than length of thoracic spiracles 9

6(5). Antennae vestigial (one segment); legs absent; with a median band of pores extending from anterior of anal plates to head ..... *Inglisia*, p. 56

6′. Antennae reduced (4-6 segments); legs present, reduced; without median band of pores 7

7(6). Dorsum with dense pattern of invaginated bilocular pores (Fig. 67, E), each locule containing a quinquelocular pore; spiracular setae absent; anal ring with 8 setae ..... *Pseudophilippia*, p. 84

7′. Dorsum without dense pattern of invaginated bilocular pores as above, spiracular setae present (except *Toumeyella parvicornis***); anal ring with 10 setae 8

8(7). Dorsum with dense pattern of small 8-shaped pores (Fig. 52, F); abdominal quinquelocular pores confined to area around vulva ..... *Neolecanium*, p. 65

8′. Dorsum without dense pattern of small 8-shaped pores; abdominal quinquelocular or multilocular pores occurring on anterior segments *Toumeyella*, p. 115

9(5). Anal plate with a large discal seta (Fig. 84, D); dorsal derm with polygonal reticulations or cell-like oval areas, membranous or heavily sclerotized; dorsal setae conical ..... *Saissetia*, p. 106

9′. Without this combination of characters 10

10(9). Dorsum strongly sclerotized with polygonal reticulations (Fig. 54) or divided into plate-like areas (Fig. 41) 11

10′. Dorsum membranous or sclerotized, without polygonal reticulations or plate-like areas 12

11(10). Each polygonal section with a pale area (cell-like); dorsal setae cylindrical or capitate; marginal setae stout and fimbriate ..... *Parasaissetia*, p. 68

11′. Each plate without a pale area; dorsal setae slender, curved; marginal setae slender, simple, or bifid .... *Eucalymnatus*, p. 50

12(10). Ventral submargin with numerous tubular ducts, often in a band 14

12′. Ventral submargin without tubular ducts or only a few present 13

13(12). Ventral tubular ducts present; dorsal setae spine-like, cylindrical, capitate, or clavate; submarginal tubercles present or absent ..... *Coccus*, p. 36

13′. Ventral tubular ducts absent; dorsal setae slender, slightly curved, pointed; submarginal tubercles absent .... *Mesolecanium*, p. 63

14(12). Legs with tibiotarsal sclerosis and free articulation (Fig. 10, A) 15

14′. Legs without tibiotarsal sclerosis and free articulation (Fig. 10, B) 17

15(14). Spiracular setae in groups of 2 .... *Luzulaspis*, p. 61

15′. Spiracular setae in groups of 3 16

16(15). With 12-20 pairs of submarginal tubercles; ventral submarginal tubular ducts with inner filaments as wide or wider than the ducts (Fig. 59, Q) .... *Parthenolecanium*, p. 70

16′. Less than 12 pairs of submarginal tubercles; ventral submarginal tubular ducts with slender inner filaments (Fig. 69, R) ..... *Pulvinaria*, p. 85

17(14). Dorsal setae cylindrical or capitate; marginal setae stout, fimbriate .... *Parasaissetia*, p. 68

17′. Dorsal setae slender, hair-like, or spine-like; marginal setae bristle-like, spine-like, or conical, not fimbriate 18

18(17). Submarginal ventral tubular ducts absent on head, many on median region of abdomen; large discoidal pores extending from anterior of anal plates to head (Fig. 74, H) ..... *Pulvinaria*, p. 85

18′. Submarginal ventral tubular ducts present on head; absent or few present in median region of abdomen; large discoidal pores, if present, confined to abdomen 19

19(18). Peritreme of thoracic spiracles longer than length of coxae (Fig. 43); spiracular setae subequal to or shorter than marginal setae; dorsal setae slender or spine-like ..... *Eulecanium*, p. 52

19′. Peritreme of thoracic spiracles equal to or shorter than length of coxae; one spiracular seta in each group longer than others and longer than marginal setae (Fig. 56, E) .... *Parthenolecanium*, p. 70

**Vinsonia stellifera* (Westwood) is a monotypic species which is very similar to members of the genus *Ceroplastes*, particularly *C. rubens* Maskell. It differs in having a distinctive star-shaped wax covering (Fig. 101).

***Toumeyella parvicornis* (Cockerell) normally does not have spiracular setae which differ from marginal setae, but in a very few specimens, 1 or 2 spiracular setae in each group may be stouter than the marginal setae.

Genus *CEROPLASTES* Gray, 1828

TYPE SPECIES: *Coccus (Ceroplastes) janeirensis* Gray, 1828.

DESCRIPTION: Body round, oval, or irregular in outline, usually convex. Females covered with dense amorphous wax, usually white, and may or may not be divided into plates. Derm heavily sclerotized in adults. Numerous types trilocular pores present. Body setae variable in size, shape, and distribution. Submarginal tubercles absent. Anal plates usually longer than wide, normally at apex of cone-like elevated sclerotized caudal process. Anal plate setae variable. Hypopygial setae present or absent. Anal ring with 8 setae. Antennae 6 to 8-segmented. Legs usually well developed, tibiotarsal sclerosis present or absent. Quinquelocular pores in spiracular furrows. Multilocular pores variable, present in vulvar area, and abdomen. Tubular ducts variable. Marginal setae variable in size, shape, and distribution. Spiracular setae numerous, conical, hemispherical, or bullet-shaped.

NOTES: The eggs are protected by the body of the adult female until they hatch. Species reported in the southeastern United States: *C. brachyurus*, *C. ceriferus*, *C. cirripediformis*, *C. dugesii*, *C. floridensis*, *C. nakaharai*, *C. rubens*, *C. sinensis*, and *C. utilis*.

KEY TO SPECIES OF *CEROPLASTES*

1. Tibiotarsal scleroses present; antennae normally 7-segmented 2

1′. Tibiotarsal scleroses absent; antennae normally 6-segmented 5

2. Spiracular setae present around entire body margin . . . . . *dugesii*

2′. Spiracular setae confined to margin laterad of spiracular furrows 3

3. Filamentous ducts present on ventral submargin; anal plates each with 2 ventral subapical setae . . . . . *sinensis*

3′. Filamentous ducts absent; anal plates each with 1 ventral subapical seta 4

4. Multilocular pores present on thorax; capitate dorsal body setae present . . . . . *cirripediformis*

4′. Multilocular pores absent from thorax; capitate dorsal body setae absent . . . . . *brachyurus*

5. Spiracular setae predominantly with truncate apices 6

5′. Spiracular setae predominantly with rounded or pointed apices 7

6. With 6-9 spiracular setae laterad of each spiracular furrow; with 3 ventral subapical setae on each anal plate; mediodorsal clear area with several setae . . . . . *nakaharai*

6′. With 18-32 spiracular setae laterad of each spiracular furrow; with 1 ventral subapical seta on each anal plate; mediodorsal clear area without setae . . . . . *utilis*

7. Mediodorsal clear area present; ventral tubular ducts absent; legs reduced . . . . . *rubens*

7′. Mediodorsal clear area absent; ventral tubular ducts present; legs well developed 8

8. Claw digitules unequal; spiracular setae arranged in 6 irregular rows; ventral tubular ducts with narrow inner filaments; filamentous ducts present on submargin . . . . . *ceriferus*

8′. Claw digitules equal; spiracular setae arranged in 3 irregular rows; ventral tubular ducts with broad inner filaments; filamentous ducts absent on submargin . . . . . *floridensis*

CEROPLASTES BRACHYURUS Cockerell

SYNONYMS: *Ceroplastes brachyurus* Cockerell 1903b:157, Gimpel et al. 1974:20

SUGGESTED COMMON NAME: brachyuran wax scale

FIELD DESCRIPTION: According to Gimpel et al. (1974), the wet wax is oval in dorsal view, hemispherical laterally, without horn, grayish white, and not divided into plates. Length 2-5 mm; width 1.5-3.0 mm.

DESCRIPTION: (Fig. 11) Adult females elliptical, 1.0-4.5 mm long, 1.0-3.5 mm wide. DORSUM—Derm membranous in young females to sclerotized in older adult females. Numerous triangular trilocular (Fig. 11, A) and oval trilocular pores (Fig. 11, B) scattered over dorsum. Cylindrical and conical setae scattered over

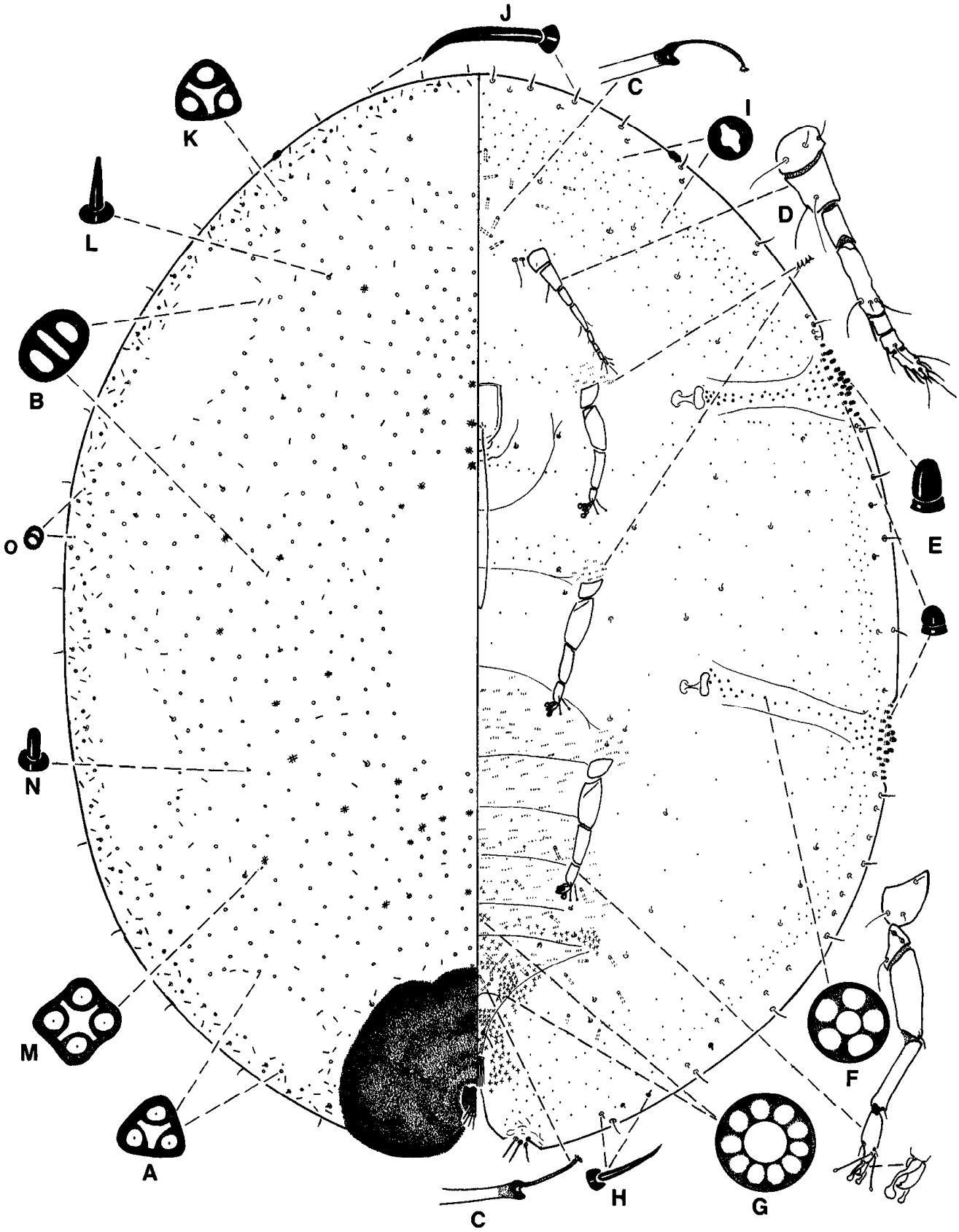


Fig. 11. *Ceroplastes brachyurus*, adult female, from Gimpel, Miller, and Davidson 1974.

dorsum, with the exception of 6 lateral, 1 cephalic, and 1 mediodorsal clear areas. Tubular ducts absent. Anal plates each with 4 dorsal setae, 1 ventral seta. VENTER—Membranous with well developed legs. Antennae 7-segmented, occasionally 6-segmented. Quinquelocular pores in spiracular furrows number 30-90. Tubular ducts (Fig. 11, C) in vulvar area and in cephalic region. Filamentous ducts absent. MARGIN—Spiracular setae hemispherical to bullet-shaped with rounded or truncate apices, ca. 16 in 4 or 5 irregular rows. Marginal setae bristle-shaped, sparse.

DISTRIBUTION: AL, AZ. *Foreign*: Mexico.

BIOLOGY: It is only known that specimens are found on stems.

ECONOMIC IMPORTANCE: Unknown. Possibly a pest of ornamentals according to Gimpel et al. (1974).

REMARKS: *Ceroplastes brachyurus* resembles *C. sinensis* Del Guercio; however, *C. sinensis* has 2 ventral anal plate setae, *C. brachyurus* has 1 on each anal plate, *C. sinensis* has filamentous ducts on the ventral submargin, and they are absent from *C. brachyurus*.

CEROPLASTES CERIFERUS (Fabricius)

SYNONYMS: *Coccus ceriferus* Fabricius 1798: 546
Coccus chilensis Gray, Green 1899:190, Fernald 1903:149
Ceroplastes ceriferus (Fabricius), Walker 1852:1087, DeLotto 1971:133, Gimpel et al. 1974: 23
Ceroplastes australiae Walker, Green 1899:190
Columnea cerifera (Fabricius), Targioni-Tozzetti 1866:144
Ceroplastes ceriferus (Anderson), Signoret 1869:848
Lacca alba Signoret 1869:848.
Gascardia cerifera (Anderson), DeLotto 1965:198

SUGGESTED COMMON NAME: Indian wax scale

FIELD DESCRIPTION: Body covered by thick white or pinkish-white wet wax, convex, circular or irregular in outline, normally with an anteriorly projecting horn (Fig. 12). Plates visible only on older females, without nuclei. Wax bands near both spiracles, anterior bands directed dorsally. Dry wax with filaments as follows: cephalic filament trifurcate; anterolateral and mediolateral simple; posterolateral bifurcate; caudal simple. Length 3.0-12.0 mm, width 3.0-10.0 mm.

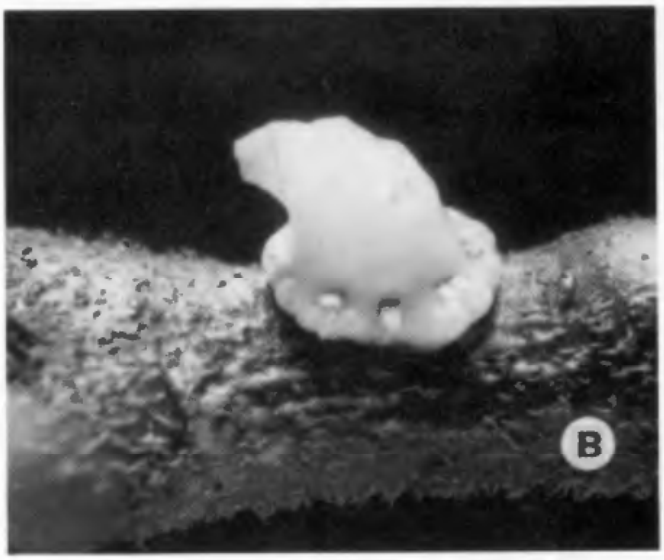


Fig. 12. *Ceroplastes ceriferus*, A) old female, DPI Photo 1381, B) young female, DPI Photo 702263-5.

DESCRIPTION: (Fig. 13) Adult female ovate, dark reddish brown, derm heavily sclerotized in old females. Anal process in old females elongate. Length 3.0-5.0 mm, width 2.0-4.0 mm. DORSUM—Membranous in young adult females, sclerotized in old females. Eleven clear areas in submedian band around body. Dorsal setae (Fig. 13, C) variable in shape, ca. 200 cylindrical setae. Dorsal pores numerous, with ca. 20 biloculars (Fig. 13, H), 420 oval triloculars (Fig. 13, G) evenly distributed, numerous triangular trilocular pores (Fig. 13, E) evenly distributed. Tubular ducts absent. Anal plates (Fig. 13, L_1) each with 1 ventral, 4 dorsal setae. VENTER—Membranous with many cruciform pores (Fig. 13, S) concentrated around the submargin and scattered over other parts of the

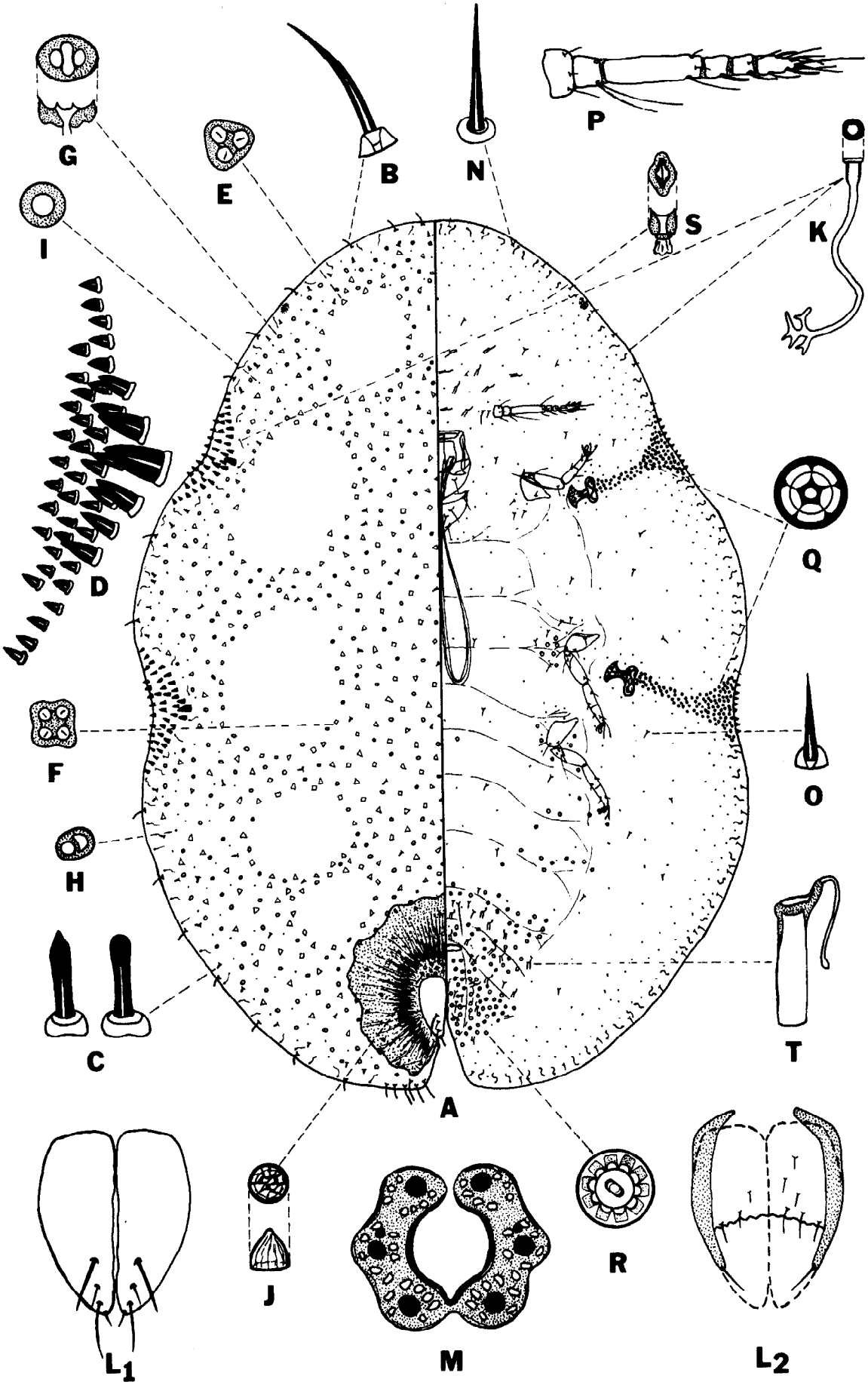
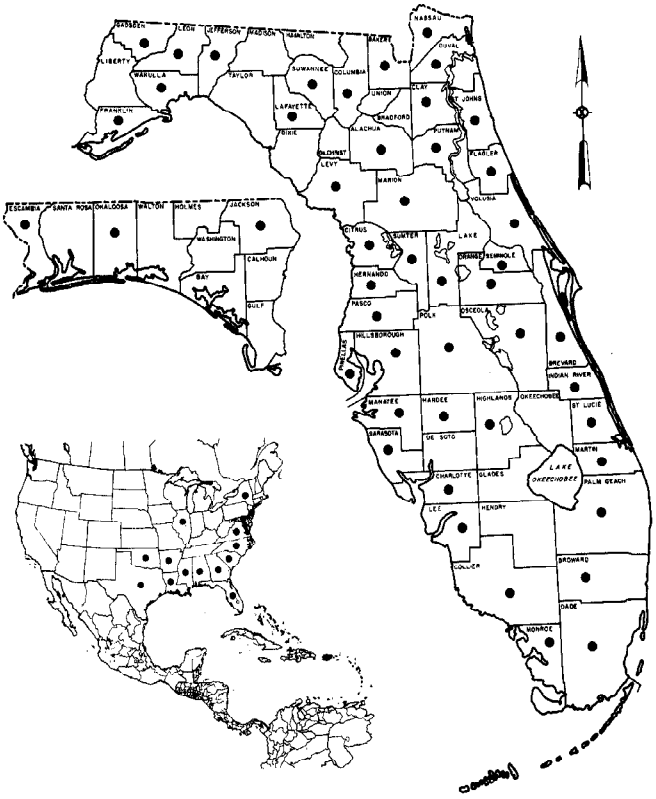


Fig. 13. *Ceroplastes ceriferus*, adult female, from Williams and Kosztarab 1972.

venter, less numerous near meson. Quinquelocular pores (Fig. 13, Q) in irregular bands of 80-150 pores in each spiracular furrow; several pores with more than 5 loculi present. Multilocular pores (Fig. 13, R) on 7th abdominal segment around vulva, fewer on each preceding abdominal segment. Tubular ducts (Fig. 13, T) with inner filament nearly as long and much narrower than basal part of the duct, located in cephalic region, and near vulva. Legs, well developed without tibiotarsal scleroses, unequal claw digitules, claws with denticles. Antennae 6-segmented. MARGIN—Marginal bristle-shaped setae (Fig. 13, B) evenly spaced except where interrupted by spiracular setae. Spiracular setae (Fig. 13, D) bullet-shaped to lanceolate with pointed apices, in 6 irregular rows. Filamentous ducts (Fig. 13, K) in 2 marginal rows.

DISTRIBUTION: Map I. AL, AR, DC, GA, IL, LA, MS, MD, NC, NJ, NY, OK, SC, TX, VA. *Foreign:* Australia, Fiji, India, Indonesia, Japan, Panama, Puerto Rico, and Virgin Islands.



Map I. Distribution of *Ceroplastes ceriferus*.

BIOLOGY: In colder areas, Indian wax scale overwinters as an adult female. In early spring, a thousand or more eggs are laid and hatch in 2 to 3 weeks (Williams & Kosztarab 1972). The first instar nymphs settle on the stems or twigs, and the females develop through 4 instars (Williams & Kosztarab 1972) while the males go through 5. Males are rare and comprise only 2% of the population when they occur (Gimpel et al. 1974).

ECONOMIC IMPORTANCE: *Ceroplastes ceriferus* is an economic pest of ornamental plants in Florida and throughout its U.S. distribution. It secretes large quantities of honeydew which provides a medium for sooty mold. The sooty mold may become so dense that it interferes with photosynthesis.

REMARKS: The anteriorly projecting wax horn (Fig. 12, A) has a tendency to fall over (Fig. 12, B) on old female specimens; however, its presence is always evident on close examination. This horn will separate this species from all other *Ceroplastes* species in Florida. When compared on a world-wide basis, *C. pseudoceriferus* has a similar appearance, but *C. ceriferus* has about 10 marginal setae between the anterior stigmatic furrows and about 3 such setae between each anterior and posterior stigmatic furrow, whereas *C. pseudoceriferus* has 40 between anterior furrows and about 10 between posterior and anterior furrows (Gimpel et al. 1974).

MATERIAL STUDIED: MARYLAND: College Park, 2(2), *Pyracantha coccinea*, 18-VIII-1970, G. W. Dekle; ALABAMA: Auburn, 1(1), *Camellia sasanqua*, 4-XI-1970, H. F. McQueen; FLORIDA: Eustis, 1(1), *Viburnum* sp., 26-II-1970, A. L. Bentley; Leesburg, 2(2), *Platanus* sp., 26-VI-1969, A. L. Bentley; Palatka, 1(1), *Salix* sp., 29-VII-1980, K. Elliott; Winter Haven, 1(1), *Magnolia virginiana*, 28-I-1976, Training Class #32.

CEROPLASTES CIRRIPEDIFORMIS COMSTOCK

SYNONYMS: *Ceroplastes cirripediformis* Comstock 1881:333
Ceroplastes euphorbiae Cockerell, Gimpel et al. 1974:29
Ceroplastes mexicanus Cockerell, Gimpel et al. 1974:29
Ceroplastes plumbaginis Cockerell, Gimpel et al. 1974:29

COMMON NAME: barnacle scale

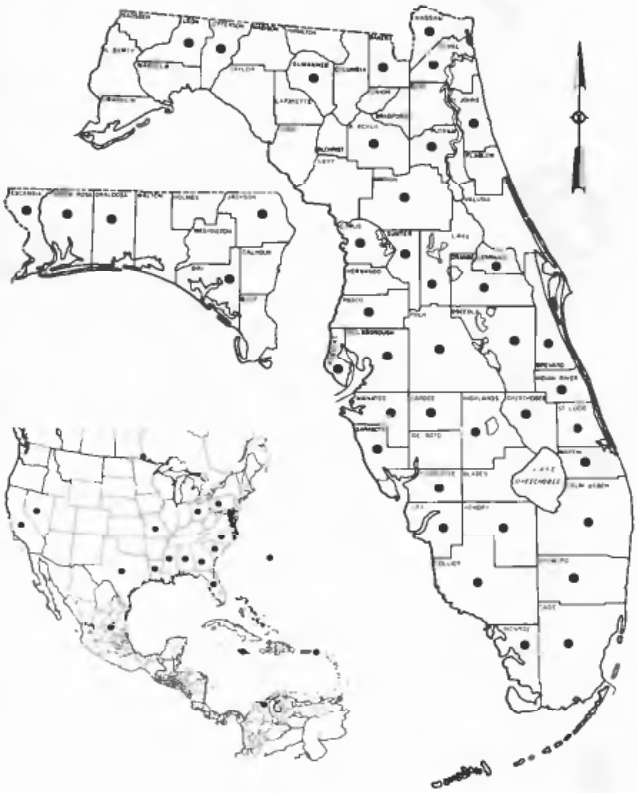
FIELD DESCRIPTION: Wet wax rectangular to oval in dorsal view (Fig. 14), without horn, beige to grayish white, divided into 1 dorsal and 6 lateral plates with nuclei. Dry wax with filaments as follows: cephalic trifurcate, with acute apices; anterolateral bifurcate; caudal with weakly divided bifurcate apices. Spiracular wax bands visible. Length 1.0-7.0 mm, width 1.0-5.0 mm.

Fig. 14. *Ceroplastes cirripediformis*, adult female, DPI Photo 808.

DESCRIPTION: (Fig. 15) Adult female ovate, spiracular depressions distinct. Length 1.0-6.0 mm, width 0.5-5.0 mm. DORSUM—Derm membranous in young adult females, sclerotized in older females. Seven clear areas around submargin, with 1 mid-dorsal clear area. Dorsal setae variable in shape, ca. 35 cylindrical setae with pointed or blunt apices, ca. 45 capitate setae. Dorsal pores numerous, bilocular pores (Fig. 15, D), triangular trilocular pores (Fig. 15, E) evenly distributed. Anal plates with 1 ventral and 3 or 4 dorsal setae. VENTER—Membranous, with numerous cruciform pores (Fig. 15, H) concentrated on submargin, scattered on remainder of venter. Antennae 7-segmented. Quinquelocular pores (Fig. 15, I) in each spiracular furrow number ca. 47. Many multilocular pores (Fig. 15, C) surround vulva, several occur on 7th abdominal segment, decreasing in number on other abdominal segments. Tubular ducts (Fig. 15, J) with slightly asymmetrical cups, each with an inner filament nearly as long and much narrower than basal part of duct. Legs well developed, with tibiotarsal scleroses, equal claw digitules, claws with denticles. MARGIN—Marginal bristle-shaped setae (Fig. 15, G) placed as follows: 6 between eyes, 2 between eye and spiracular furrow, 3 between anterior and posterior spiracular furrows, 10 between posterior spiracular furrow and anal cleft. Spiracular setae (Fig. 15, B) mainly isosceles, occasionally cylindrical with apical 3rd tapering, pointed or slightly rounded, ca. 30 in 3 or 4 rows. Filamentous ducts absent.

DISTRIBUTION: Map II. AL, AZ, CA, DC, GA, HI, LA, MD, MO, MS, NC, OH, PA, SC, TX.

Foreign: Bermuda, Colombia, Galapagos Islands, Italy, Jamaica, Marshall Islands, Mexico, Philippines, Trinidad, Virgin Islands, and Wake Island.



Map II. Distribution of *Ceroplastes cirripediformis*.

BIOLOGY: Overwinter as adult females. Males are known but are very rare. The 1st instar nymphs settle on the leaves of host plants and migrate to the woody tissue soon after molting to the 3rd instar.

ECONOMIC IMPORTANCE: *Ceroplastes cirripediformis* is a minor pest of *Citrus* and many ornamentals in Florida. Heavy populations create an unsightly appearance on ornamental plants in addition to the damage from removal of large quantities of plant sap.

NATURAL ENEMIES: Peck (1963) listed the cosmopolitan parasitoid *Scutellista cyanea* Motschulsky from Florida, and *Metaphycas mexicanus* Howard from Louisiana. According to Bartlett (*in* Clausen ed. 1978), *S. cyanea* was imported into Louisiana from Italy, but it eventually declined because of hyperparasites. However, Krombein et al. (1979) indicated it is so common in North America that it is sometimes assumed to be native. *Scutellista cyanea* is an external egg parasite and is only effective against

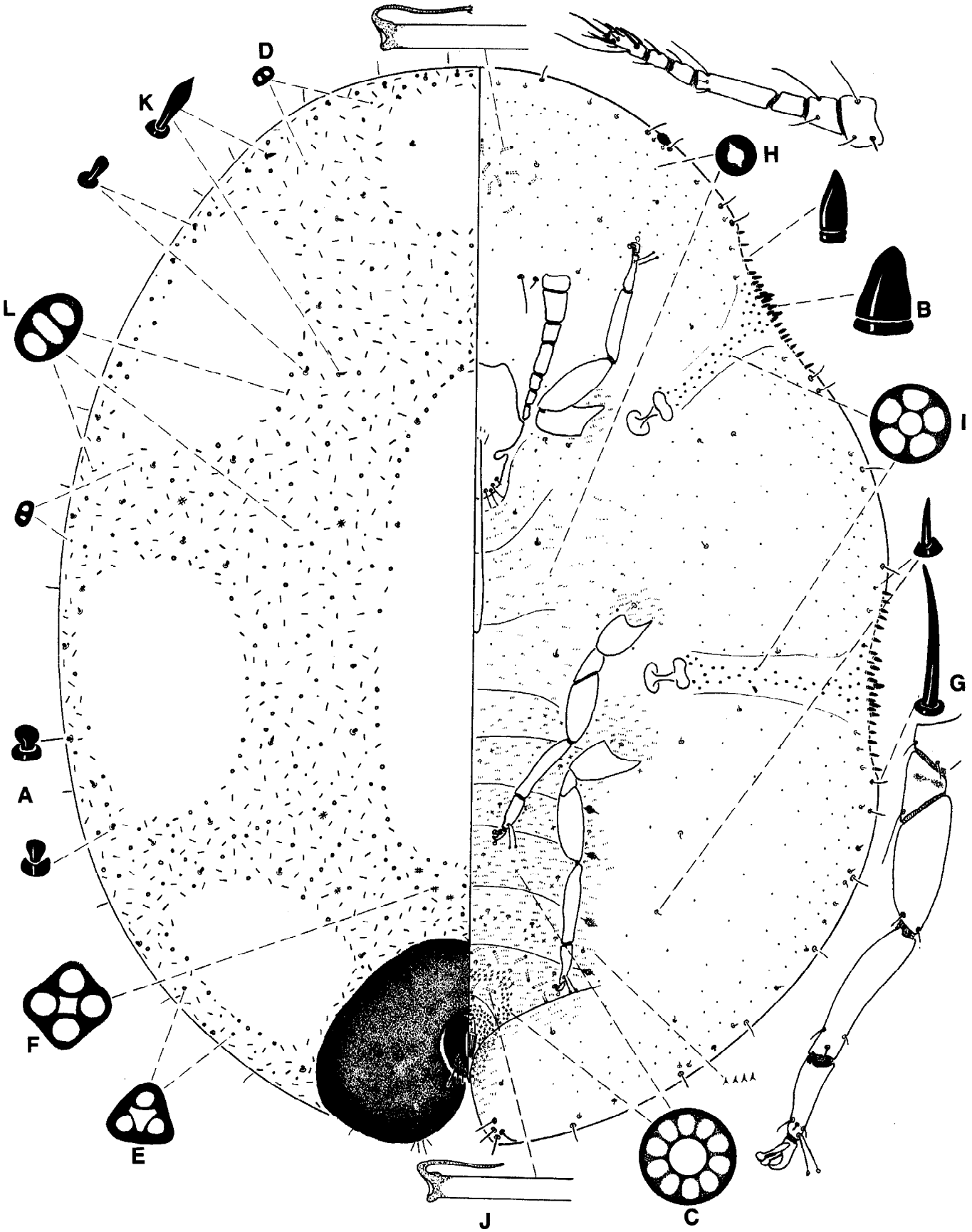


Fig. 15. *Ceroplastes cirripediformis*, adult female, from Gimpel, Miller, and Davidson 1974.

species that produce 500 or less eggs (Clausen 1940).

In Hawaii, the coccinellid predators *Orcus chalybeus* (Boisduval) and *Azya luteipes* Mulsant are reported as feeding on *C. cirripediformis* (Bartlett *in* Clausen, ed. 1978).

REMARKS: In the United States, *C. cirripediformis* most nearly resembles *C. cistudiformis* and *C. sinensis*. In *C. cistudiformis*, the spiracular setae have bluntly rounded or truncate apices in 5 or 6 irregular rows, while in *C. cirripediformis*, they are pointed and in 2 or 3 irregular rows. *Ceroplastes sinensis* differs by lacking capitate dorsal setae, possess a ventral submarginal band of filamentous ducts and lacks multilocular pores on abdominal segments 2 and 3.

MATERIAL STUDIED: FLORIDA: Archer, 1(1), *Viburnum suspensum*, 7-II-1978, C. Lieberman; Astor, 1(1), *Eupatorium capillifolium*, 13-VI-1980, C. R. Roberts; Ft. Lauderdale, 1(1), *Carissa carandas*, 2-V-1974, J. A. Reinert; Key West, 1(1), *Passiflora* sp., 9-X-1974, G. W. Dekle & W. E. Wyles; Lake Park, 1(1), *Parkinsonia aculeate*, 8-XII-1975, G. Swan; Plant City, 2(2), *Ulmus parvifolia*, 17-II-1975, S. A. Fuller; Winter Haven, 1(1), *Agave americana* 'Marginata', 27-I-1976, C. R. Roberts, 1(1), *Ulmus* sp., 28-I-1976, C. R. Roberts, 1(1), *Ulmus pumila*, 3-IV-1981, Training Class #44.

CEROPLASTES DUGESII Lichtenstein

SYNONYMS:
- *Ceroplastes dugesii* Lichtenstein 1885:141
- *Ceroplastes dugesii* Townsend, Cockerell 1893a:100
- *Ceroplastes dugesii* "Lichtenstein m.s. Townsend", Cockerell 1893b:373
- *Ceroplastes roseatus* Townsend & Cockerell, Gimpel et al. 1974:39
- *Ceroplastes dugesii* Lichtenstein, Maxwell-Lefroy 1902:257
- *Ceroplastes roseatus* var. B. Cockerell, Gimpel et al. 1974: 39
- *Ceroplastes townsendi* var. *percrassus* Cockerell, Gimpel et al. 1974:39

SUGGESTED COMMON NAME: Duges wax scale

FIELD DESCRIPTION: Wet wax oval in dorsal view (Fig. 16, A), hemispherical when viewed laterally (Fig. 16, B), without horn, white, without a marginal flange, plates, and nuclei. Dorsal dry wax tilted anteriorly (Gimpel et al. 1974). Spiracular wax bands present near both pairs of spiracles. Length 4.0-12.0 mm, width 3.0-12.0 mm.

Fig. 16. *Ceroplastes dugesii*, A) dorsal view of adult and nymph, B) lateral view of adult female, DPI Photo 700378.

DESCRIPTION: (Fig. 17) Adult female oval, 3.0-8.0 mm long, 1.0-7.0 mm wide. Body light brown, anal process long. DORSUM – Derm membranous in young adult females, sclerotized in old females; with 1 cephalic, 1 mediodorsal, and 6 lateral clear areas. About 180 cylindrical setae (Fig. 17, A), with bluntly rounded to slightly expanded apices. Each anal plate with 3 ventral, 4 dorsal setae. Oval trilocular pores (Fig. 17, E) numerous, prominent. VENTER: Derm mem-

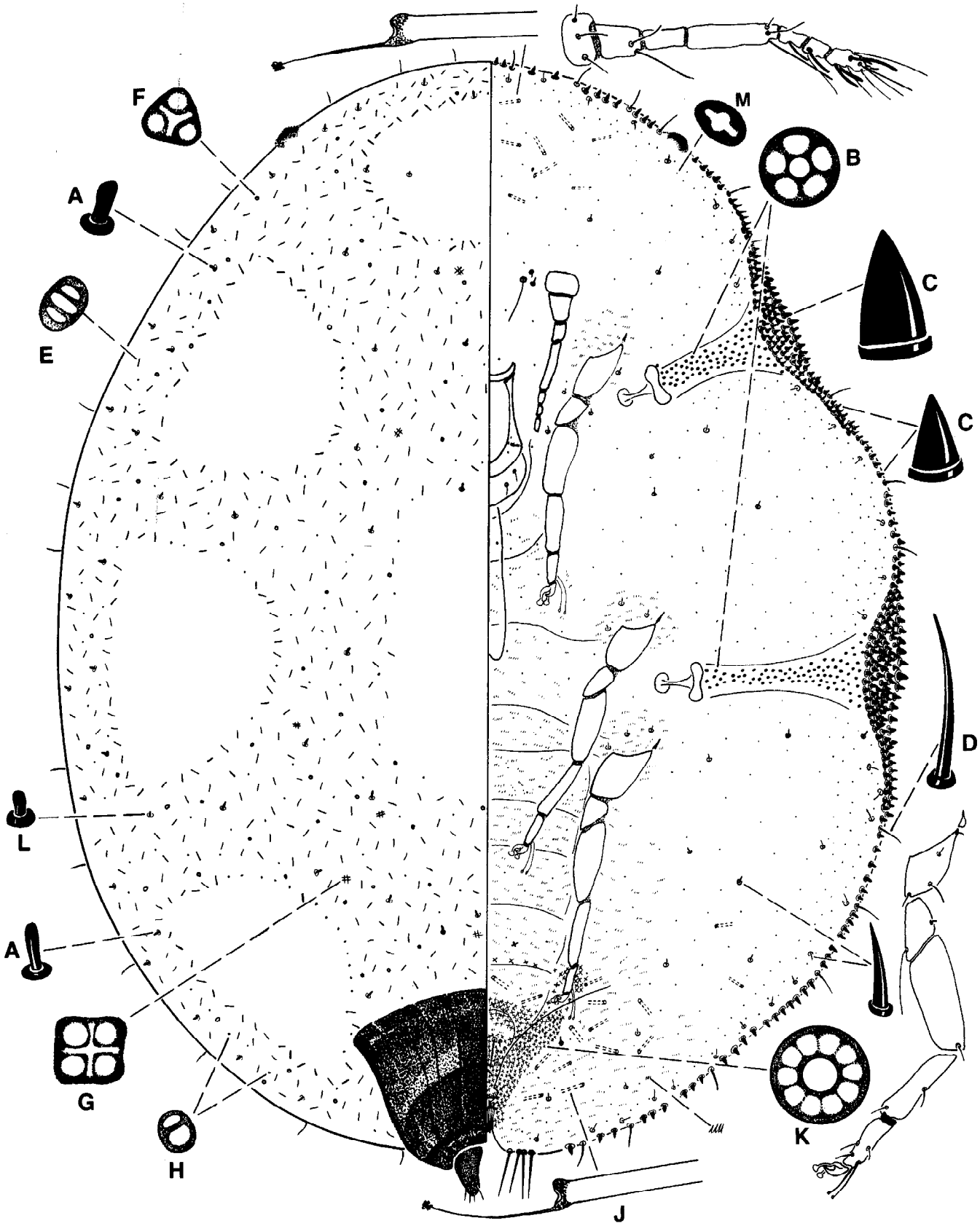


Fig. 17. *Ceroplastes dugesii*, adult female, from Gimpel, Miller, and Davidson 1974.

branous with various setae and pores scattered over surface. About 140 pores (Fig. 17, B) in each spiracular furrow, most pores 4-locular, some with more than 5-loculi. Legs well developed with tibiotarsal scleroses. MARGIN—Spiracular setae (Fig. 17, C) lanceolate to bullet-shaped with pointed apices, length 1-2.5X greater than width at base, in 5-7 irregular rows at each spiracular furrow, and single row around the entire margin. Marginal bristle-shaped setae (Fig. 17, D) located just ventrad of spiracular setae around body margin. Eye tubercles slightly protruding. Filamentous ducts absent from margin.

DISTRIBUTION: Map III. *Foreign*: Cuba, Mexico, Panama, Virgin Islands, and West Indies.

Map III. Distribution of *Ceroplastes dugesii*.

BIOLOGY: According to Gimpel et al. (1974), no biological information is available.

ECONOMIC IMPORTANCE: In Florida, *C. dugesii* is important as an occasional ornamental pest, particularly on *Bursera simaruba* (L.) Sar.

REMARKS: This wax scale was first reported in Florida in 1972. It was collected as early as 1908, but was misidentified as *C. ceriferus* (Gimpel et al. 1974). In the U.S., *C. dugesii* is the only species of *Ceroplastes* with spiracular setae around the entire body margin.

MATERIAL STUDIED: FLORIDA: Ft. Pierce, 4(4), *Bursera simaruba*, 25-VI-1980, E. W. Campbell, E. Collins, & A. B. Hamon; 1(1), *Bursera simaruba*, 28-V-1980, E. W. Campbell; 3(3), *Bursera simaruba*, 14-VII-1972, E. W. Campbell; Walton, 2(2), *Torrubia bracei*, 5-V-1980, E. W. Campbell.

CEROPLASTES FLORIDENSIS Comstock

SYNONYMS: *Ceroplastes floridensis* Comstock 1881:331
Cerostegia floridensis (Comstock), DeLotto 1969b:211, Gimpel et al. 1974:44

COMMON NAME: Florida wax scale

FIELD DESCRIPTION: Wet wax oval in dorsal view (Fig. 18), nearly flat in young females, hemispherical in older specimens if viewed laterally. Without a horn. Color grayish to pinkish-white, without plates and nuclei. Dry wax with cephalic filaments appearing trifurcate with acute apices; anterolateral and mediolateral filaments simple; posterolateral filaments bifurcate; caudal filaments weakly divided with bifurcate apices. Length 2.0-4.0 mm, width 1.0-3.5 mm.

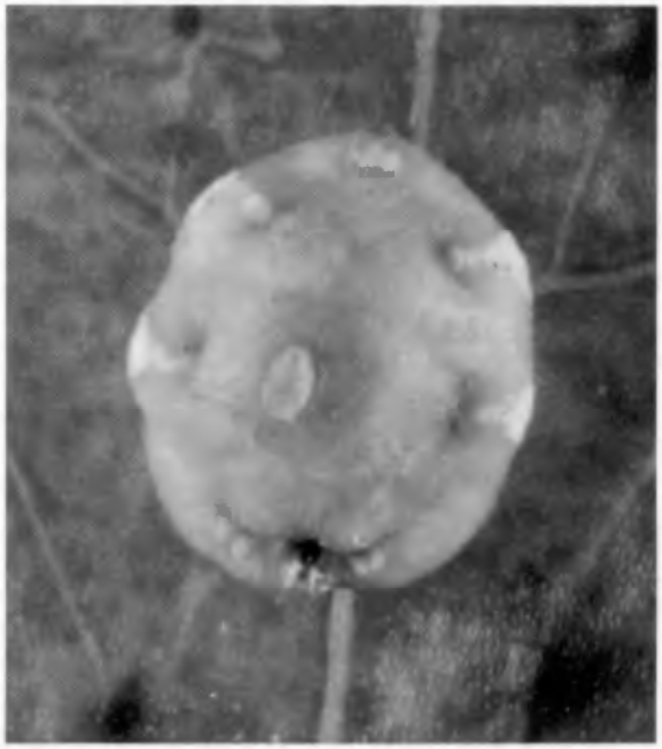
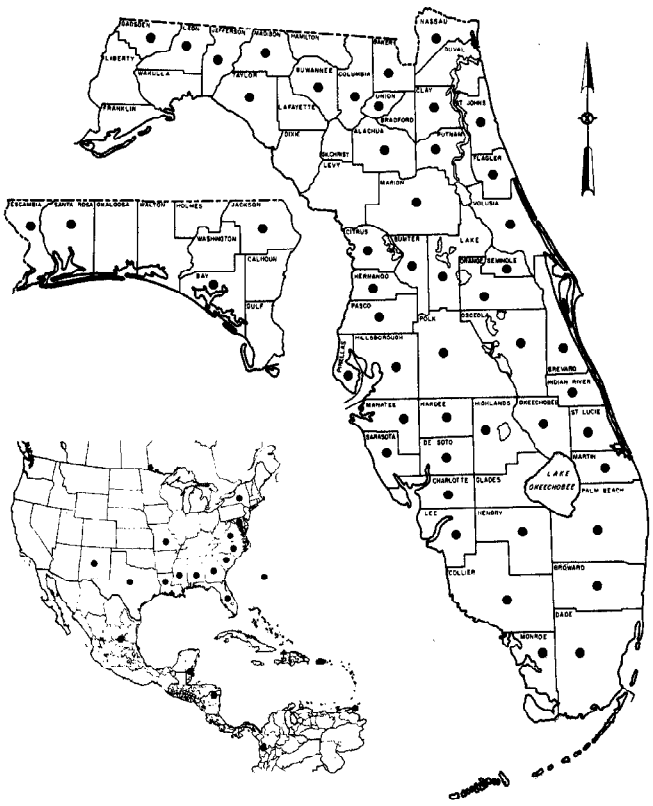


Fig. 18. *Ceroplastes floridensis*, adult female, DPI Photo 783.

DESCRIPTION: (Fig. 19) Adult female elliptical, reddish brown with short anal process. Definite spiracular constrictions at margin. Length 1.0-3.5 mm, width 1.0-2.0 mm. DORSUM—Derm membranous, covered with numerous trilocular (Fig. 19, E) and barred bilocular pores (Fig. 19, G) except for 1 cephalic and 6 lateral clear areas. Each anal plate with 1 ventral

and 3 or 4 dorsal setae. Anal process short, conical, and heavily sclerotized. VENTER—Membranous with cruciform pores concentrated on submargin. Legs well developed. Antennae 6-segmented. About 65 quinquelocular pores (Fig. 19, P) in each spiracular furrow. Tubular ducts (Fig. 19, S) with asymmetrical cups, each duct with the basal portion of filament greatly expanded, in submarginal band, ending anterior to anal cleft and just posterior of eyes. MARGIN—With 20-30 pointed, conical spiracular setae (Fig. 19, D) in 2-3 rows. Marginal setae (Fig. 19, B) bristle shaped, numerous.

DISTRIBUTION: Map IV. AL, DC, GA, LA, MD, MO, MS, NC, NM, NY, SC, TX, VA. *Foreign:* Bermuda, British Honduras, Curacao, Ecuador, Hong Kong, Mexico, Montserrat, Nicaragua, Puerto Rico, and Trinidad.



Map IV. Distribution of *Ceroplastes floridensis.*

BIOLOGY: All stages are found on stems, branches, and leaves of host plants. Males have not been recorded for this species.

ECONOMIC IMPORTANCE: *Ceroplastes floridensis* is an economic pest on many ornamental plants in Florida and throughout its U. S. distribution. When large populations occur, sooty mold may become a problem because large quantities of honeydew are excreted. This scale insect is also a potential economic pest of *Citrus.*

NATURAL ENEMIES: *Coccophagus lycimnia* (Walker) is a cosmopolitan parasite of many Coccoidea (Peck, 1963). *Scutellista cyanea* was introduced into Florida in 1898 against *C. floridensis,* but little is known about its effectiveness (Bartlett *in* Clausen, ed. 1978). According to Krombein et al. (1979), it was successful and is now very common from Delaware south to Florida and west to California. *Metaphycus eruptor* (Howard) also occurs from Virginia south to Florida (Krombein, et al., 1979).

REMARKS: Florida wax scale is without a mediodorsal clear area. The spiracular setae are lanceolate with pointed apices and number about 25. In the U. S. this is the only *Ceroplastes* species which has tubular ducts with an expanded inner filament.

MATERIAL STUDIED: FLORIDA: Delray Beach, 2(2), *Bursera simaruba,* 31-III-1981, R. Garry; Gainesville, 1(1), *Pinus elliottii,* 9-II-1970, A. E. Graham; Key West, 1(1), *Coccoloba diversifolia,* 5-IV-1971, W. H. Pierce; Lake City, 1(1), *Tsuga canadensis,* 7-IX-1978, A. E. Graham; Miami, 1(1), *Ficus* sp., 16-III-1970, J. Halstead; Panama City, 2(2), *Elaeagnus* sp., 30-X-1973, R. Osterlag; Stuart, 1(1), *Eugenia* sp., 31-I-1978, E. W. Campbell; Tampa, 1(1), *Eugenia compacta,* 13-XI-1973, C. W. Hale.

CEROPLASTES NAKAHARAI Gimpel

SYNONYMS: *Ceroplastes nakaharai* Gimpel 1974:52 (in Gimpel et al. 1974)

SUGGESTED COMMON NAME: Nakahara wax scale

FIELD DESCRIPTION: Wet wax (Fig. 20) oval in young females, rectangular in old specimens in dorsal view, nearly flat laterally, ca. 2 mm high. Wax yellowish brown without marginal flange, plate or nuclei. Cephalic dry wax filaments simple, unusually broad, smooth apically on young females, fringed apically on old females. Other filaments apically fringed. Length 2.0-7.0 mm, width 1.0-6.0 mm.

DESCRIPTION: (Fig. 21) Adult female oval, dark purplish brown, anal process short extending forward to mesothorax in old females. Length 5.0 mm, width 4.5 mm. DORSUM—Derm membranous with 1 cephalic, 1 mediodorsal, 6 lateral clear areas. Dorsal setae (Fig. 21, A) variable in shape, scattered over derm with the exception of clear areas. Anal plates each with 3 ventral and 4 dorsal setae. VENTER—Legs well developed, without tibiotarsal scleroses; claw

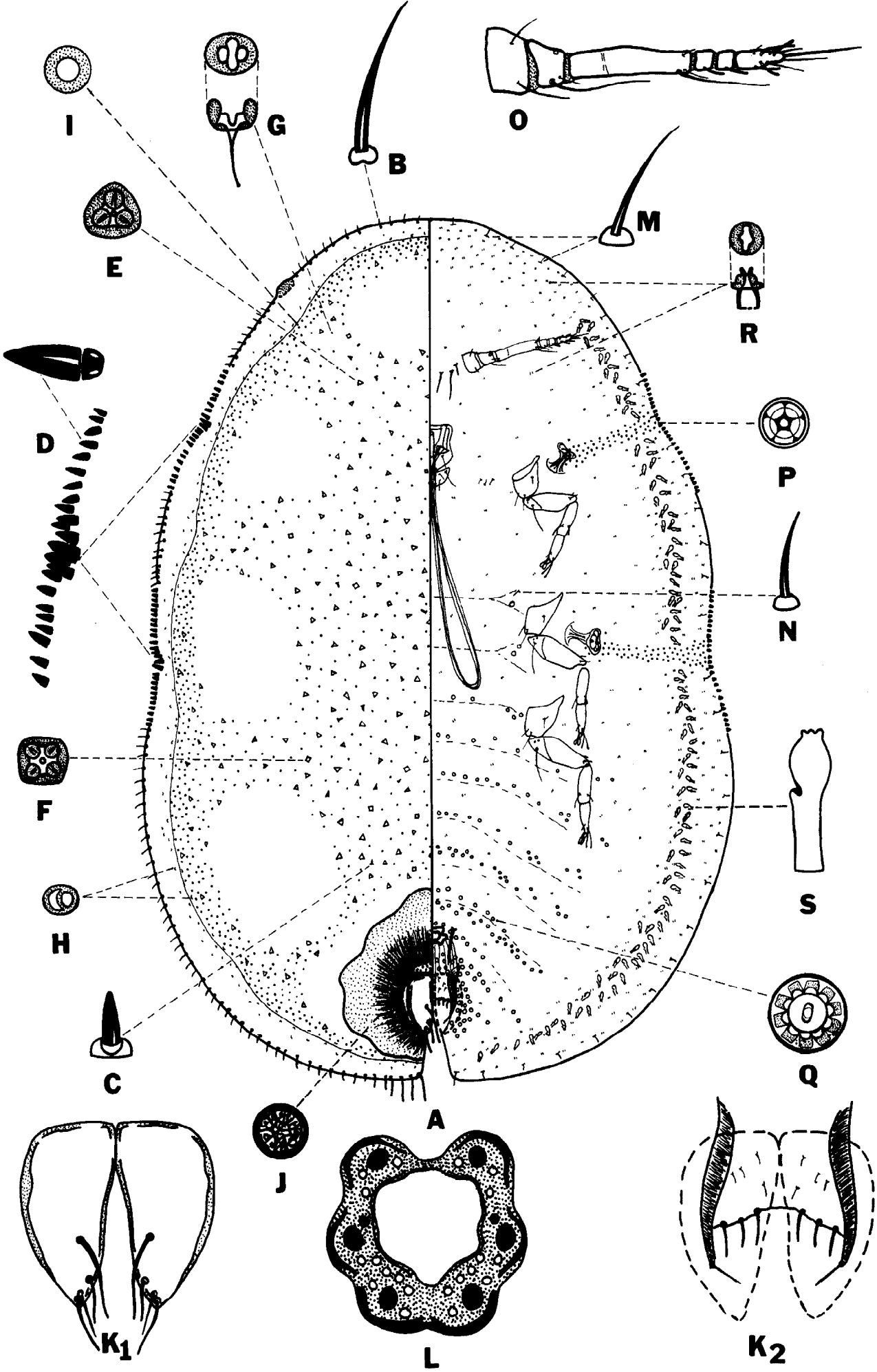


Fig. 19. *Ceroplastes floridensis*, adult female, from Williams and Kosztarab 1972.

Fig. 20. *Ceroplastes nakaharai*, adult female, DPI Photo 700619.

digitules unequal in size. Antennae 6-segmented, sometimes with segmentation indistinct. Spiracular furrows with ca. 65 quinquelocular pores (Fig. 21, B). Tubular ducts (Fig. 21, C, R) with slightly asymmetrical cups, each duct with filament nearly as long as basal part of duct; ca. 16 ducts in cephalic region and 30 in vulvar region. MARGIN—Spiracular setae (Fig. 21, D) cylindrical or barrel-shaped, with smooth or wrinkled truncate apices, in 2 or 3 irregular rows. Filamentous ducts absent.

DISTRIBUTION: Map V. *Foreign:* Cuba.

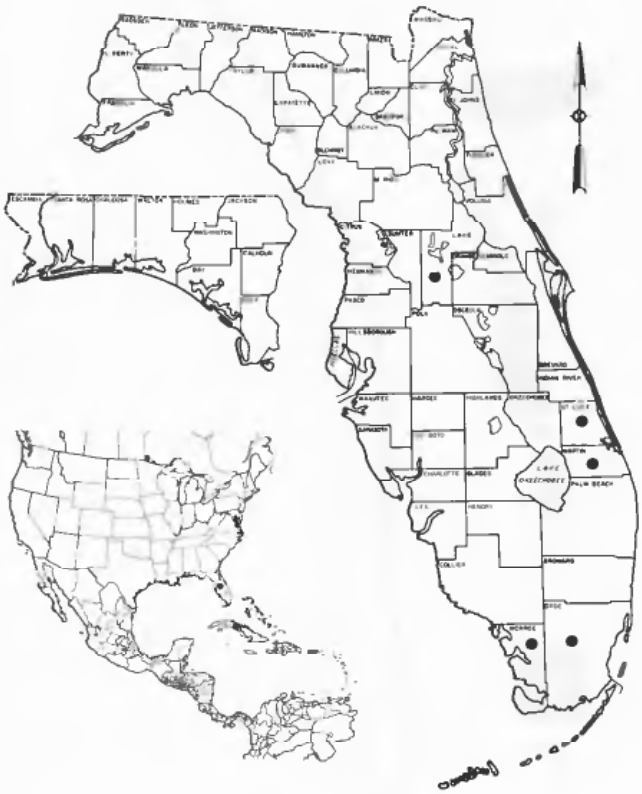
BIOLOGY: Little is known about the biology of this species. Males are not known, and all stages are found on branches and stems.

ECONOMIC IMPORTANCE: *Ceroplastes nakaharai* is apparently not economically important in Florida (Gimpel et al. 1974).

REMARKS: According to Gimpel et al. (1974), this scale insect was first collected in 1895 in Florida and was identified as *Ceroplastes* sp.

The mediodorsal clear area has several setae. The anal process is truncate anteriorly and extends anteriorly to the mesothorax. The spiracular setae are cylindrical with smooth or wrinkled truncate apices. Filamentous ducts are absent from margin. The legs are without tibiotarsal scleroses, and the claw has unequal digitules. The aforementioned characters will separate *C. nakaharai* from other species of *Ceroplastes* in Florida.

MATERIAL STUDIED: FLORIDA: PARATYPE, Tavares, 1(1), *Phoradendron flavescens*, 5-X-1970, H. T. Davis; Floral City, 3(3), *Phoradendron flavescens*, 7-VII-1980, R. H. Phillips; Miami, 1(1), *Coccoloba floridana*, 6-XI-1973, W. H. Pierce; Monroe County, 1(2), *Eugenia myrtoides*, 7-IV-1974, D. R. Miller and R. F. Denno; Tavares, 4(4), *Phoradendron flavescens*, 21-IX-1971, H. T. Davis.



Map V. Distribution of *Ceroplastes nakaharai*.

CEROPLASTES RUBENS Maskell

SYNONYMS: *Ceroplastes rubens* Maskell 1893: 214

Ceroplastes rubens var. *minor* Maskell, Gimpel et al. 1974: 57

COMMON NAME: red wax scale

FIELD DESCRIPTION: Wet wax pentagonal in dorsal view, without horn (Fig. 22), pink to reddish brown. Spiracular wax bands very distinct, anterior bands directed forward, nearly touching anteriorly, posterior bands directed dorsad. Length 2.0-5.0 mm, width 1.0-4.0 mm.

DESCRIPTION: (Fig. 23) Adult female elliptical with short anal process, ca. 2.0 mm long, 1.5 mm wide. DORSUM—Membranous in young adult females, becoming sclerotized in old females.

One cephalic, 1 mediodorsal, and 6 lateral clear areas without setae, tubular ducts or pores, except 4 cylindrical setae in cephalic area and several in mediodorsal area. Many tubular ducts (Fig. 23, A), bilocular and trilocular pores on remainder of dorsum. VENTER—Membranous with bristle-shaped setae (Fig. 23, B), largest number in cephalic area. Ca. 60 quinquelocular pores (Fig. 23, C) in each spiracular furrow. Ca. 200 multilocular pores (Fig. 23, D) in vulvar area,

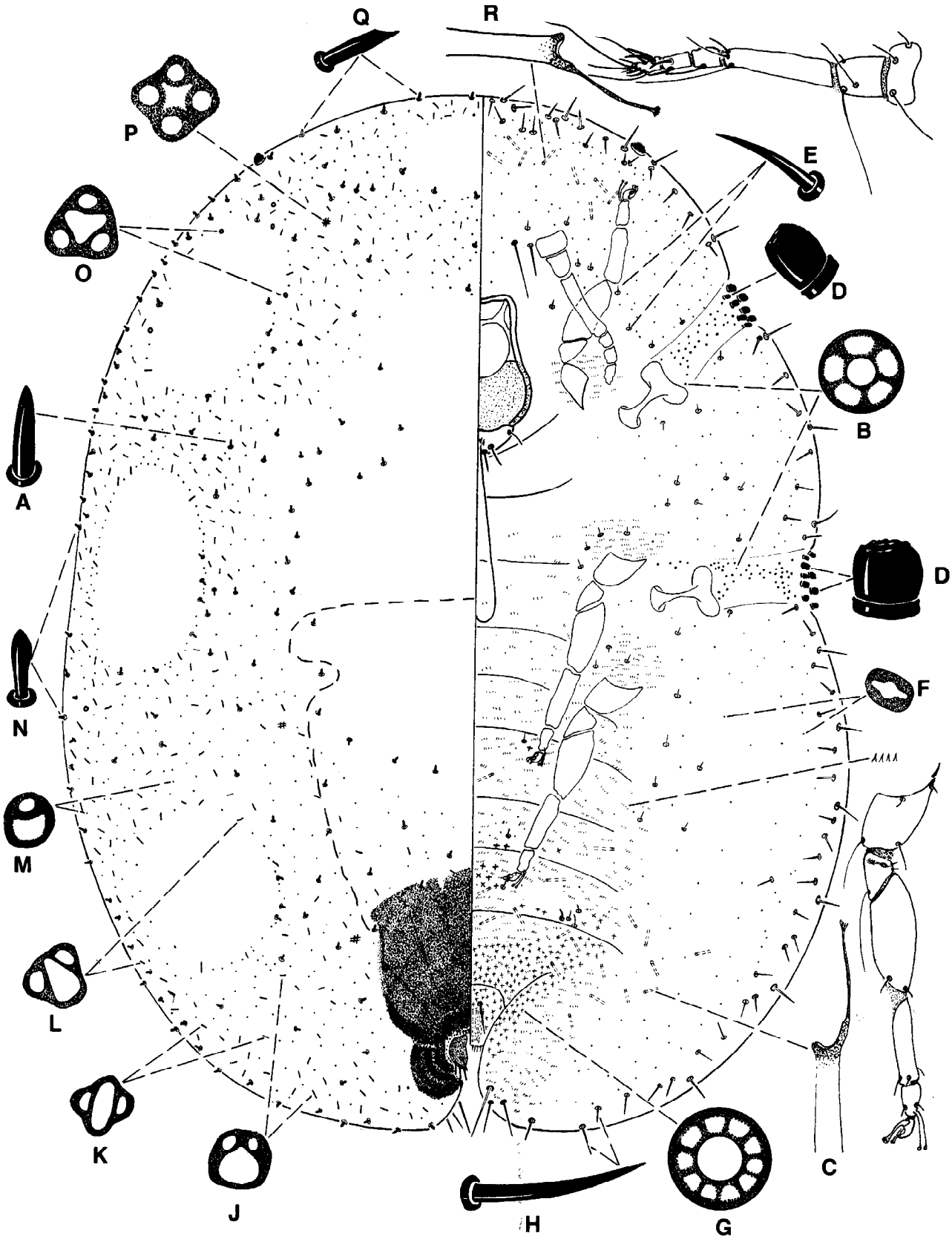
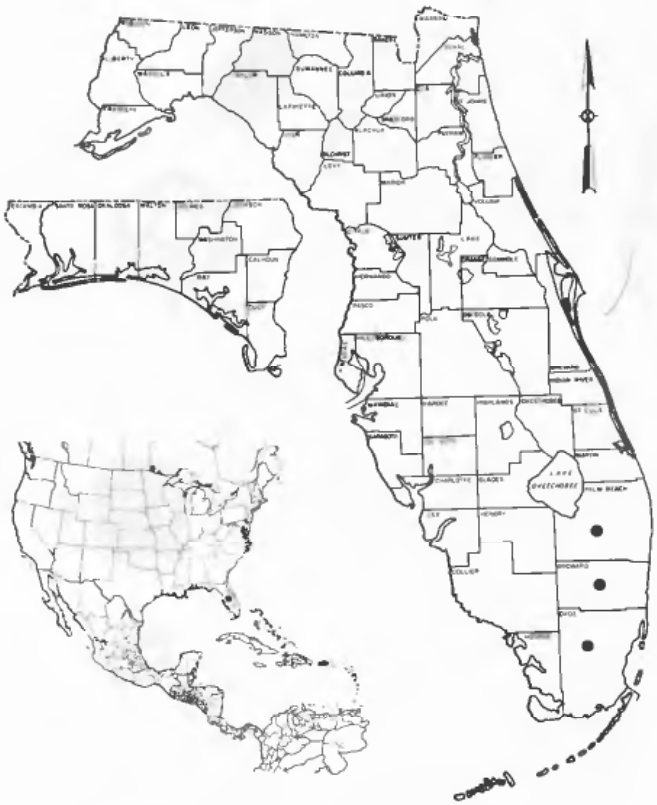


Fig. 21. *Ceroplastes nakaharai*, adult female, from Gimpel, Miller, and Davidson 1974.

rarely on other abdominal segments. Tubular ducts absent. Legs poorly developed, distorted, with unequal claw digitules. Antennae usually 6-segmented. MARGIN – Marginal setae clustered on posterior end of anal cleft. Spiracular setae (Fig. 23, E) in 3 or 4 irregular rows, usually hemispherical, large setae of outer row bullet-shaped.

DISTRIBUTION: Map VI. HI. *Foreign:* Australia, China, Fiji Islands, Guam, Hong Kong, India, Japan, Java, Malaysia, Philippines, Puerto Rico, Rota, Saipan, Samoa, Tahiti, and Taiwan.



Map VI. Distribution of *Ceroplastes rubens*.

BIOLOGY: Found on stems, branches, and leaves of host. Once crawlers have settled all future instars remain at that location on the plant. In Florida, the most common hosts in the nursery are *Aglaonema* spp., and recent dooryard discoveries in the Miami area have been on mango and sapodilla. They seem to prefer the upper leaf surface. Adult females overwinter, and males have been reported in Japan.

ECONOMIC IMPORTANCE: According to Ebeling (1959), *C. rubens* is a major pest of *Citrus* in Australia, Hawaii, and Japan. It also attacks several ornamental plants. Local infestations in Florida have been discovered recently, but populations have been relatively small, and apparently it is a minor pest. It has not been

Fig. 22. *Ceroplastes rubens*, adult female, DPI Photo 700760.

discovered in commercial citrus groves. Current studies indicate it may feed on southern pines.

NATURAL ENEMIES: A parasite known to feed on *C. rubens* in Florida is the cosmopolitan species *Scutellista cyanea* (Bartlett *in* Clausen ed. 1978). *Microterys kotinskyi* Fullaway is present in Bermuda. *Anicetus beneficus* Ishii and Tasumatsy has been reported in Japan by Bartlett (*in* Clausen, ed. 1978).

REMARKS: Red wax scale is not likely to be confused with other species of *Ceroplastes* in Florida. The distinct red color and arrangement of the spiracular wax bands make it very distinct. This is also the only species of *Ceroplastes* in the United States with reduced and distorted legs (Gimpel et al. 1974).

MATERIAL STUDIED: FLORIDA: Boynton Beach, 2(2), *Aglaonema modestum*, 30-X-1978, J. Bennett and K. Stolley; Miami, 1(3), *Aralia elegantissima*, 5-XII-1955, L. J. Daigle; Orlando, 1(5), *Aglaonema tricolor*, 17-X-1955, A. C. Crews; 1(1), *Viburnum* sp., 15-V-1970, F. L. Ware; Samsula, 1(1), *Brassaia actinophylla*, 8-IX-1975, J. N. Pott.

CEROPLASTES SINENSIS Del Guercio

SYNONYMS: *Ceroplastes sinensis* Del Guercio 1900:232, Gimpel et al. 1974:62

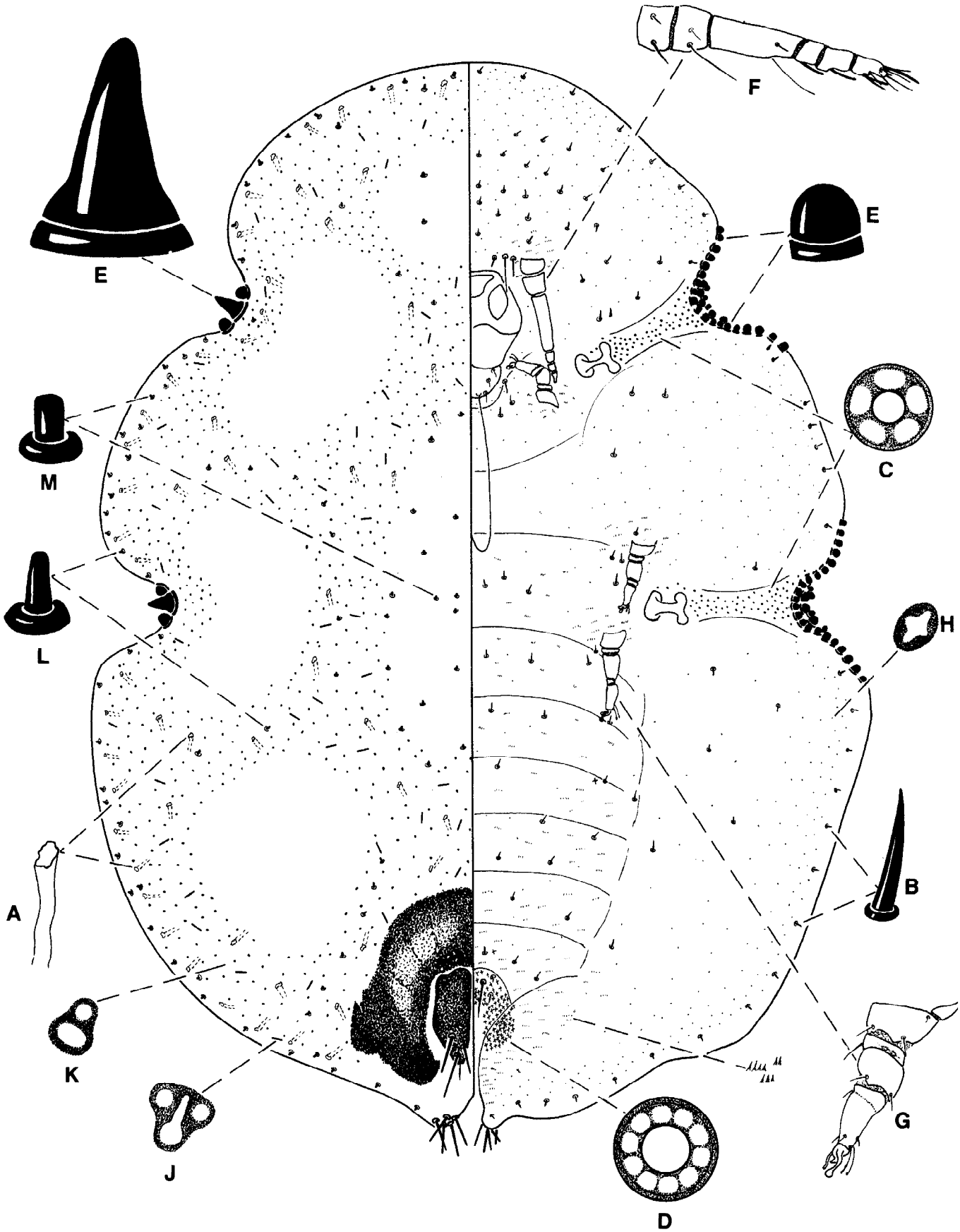


Fig. 23. *Ceroplastes rubens*, adult female, from Gimpel, Miller, and Davidson 1974.

SUGGESTED COMMON NAME: Chinese wax scale

FIELD DESCRIPTION: Wet wax of adult females rectangular in dorsal view, hemispherical in lateral view (Fig. 24), pink or reddish brown in old females, white in young females. Marginal flange small in young females, large in older females. Plates normally absent from old females, present in young females. Length 2.0-7.0 mm, width 2.0-6.0 mm.

DESCRIPTION: (Fig. 25) Adult females ovate, 1.5-4.5 mm long, 1.0-4.0 mm wide. DORSUM—Derm membranous in young adult females, becoming heavily sclerotized with age. Numerous bilocular and trilocular pores (Fig. 25, E, F) on dorsum, absent from 1 cephalic, 6 lateral, and 1 mediodorsal clear areas. Setae stout with rounded apex, (Fig. 25, C) capitate, more numerous near margin. Each anal plate with 4 dorsal and 2 ventral setae. VENTER—Legs well developed, with tibiotarsal scleroses, equal claw digitules, claw with small denticle. Antennae 7-segmented. About 60 quinquelocular pores (Fig. 25, P) in each spiracular furrow. Multilocular pores (Fig. 25, Q) in vulvar area only. Tubular ducts (Fig. 25, T) in head and vulvar region. Long filamentous ducts (Fig. 25, S) in submarginal band around body. MARGIN—Marginal setae bristle-shaped, curved apex. Spiracular setae hemispherical, bullet-shaped, or lanceolate, larger setae sometimes bent, in 3 or 4 irregular rows (Fig. 25, D).

DISTRIBUTION: CA, NC, VA. *Foreign:* Australia, France, Italy, Madeira Islands, Mexico, Morocco, New Zealand, and Spain.

Fig. 24. *Ceroplastes sinensis*, adult female, from Williams and Kosztarab 1972.

BIOLOGY: According to Williams and Kosztarab (1972), only 1 generation per year occurred in Virginia. Nymphs feed on leaves and after the 2nd molt, the young adult females migrate to stems and complete development.

ECONOMIC IMPORTANCE: This scale insect is a pest of *Citrus* spp. and ornamental plants outside the U.S. (Gimpel et al. 1974). Therefore, citrus growers should be aware of its potential pest status, if introduced into Florida.

REMARKS: In the U.S., *C. sinensis* resembles *C. brachyurus* Cockerell which occurs in the southwest U.S. and Mexico. These 2 species can be separated on the presence of filamentous ducts in *C. sinensis*, and the larger number of spiracular setae (18-43) in *C. sinensis* to 13-22 in *C. brachyurus*. *Ceroplastes sinensis* resembles *C. cirripediformis*, but the absence of filamentous ducts from *C. cirripediformis* will separate the 2 species.

MATERIAL STUDIED: VIRGINIA: Franklin, 3(3), *Ilex crenata* 'microphylla', 16-XII-1970, D. R. Gillet; Franklin, 5(5), *Ilex crenata* 'microphylla', ?-?-1972, J. Pierce.

CEROPLASTES UTILIS Cockerell

SYNONYMS: *Ceroplastes utilis* Riley and Howard 1892:139 (Nomen nudum), Fernald 1903:158
Ceroplastes utilis Cockerell 1893c:83.
Ceroplastes dozieri Cockerell & Bucker, Gimpel et al. 1974:67.

SUGGESTED COMMON NAME: candle wax scale

FIELD DESCRIPTION: Wet wax (Fig. 26) oval in dorsal view, hemispherical when viewed laterally, and without horn, translucent green or yellowish in young females and slate gray in old specimens. Length ca. 4.0 mm, width 3.0 mm.

DESCRIPTION: (Fig. 27) Adult female elliptical, reddish brown, with short anal process, ca. 3.5 mm long, 3.0 mm wide. DORSUM—Membranous when young, becoming slightly sclerotized in old females; with 1 mediodorsal, 1 cephalic, and 6 lateral clear areas. Tubular ducts absent. Dorsal pores include bilocular pores near submargin, irregular trilocular pores scattered and trilocular pores scattered. Anal plates each with 1 ventral and 4 dorsal setae. VENTER—Membranous with bristle-shaped setae (Fig. 27, A) of 2 sizes. Many cruciform pores (Fig. 27, B) concentrated on submargin. Pores in spiracular furrows (Fig. 27, C) 5 to 10 loculi. Four multilocular pores near base of meso- and

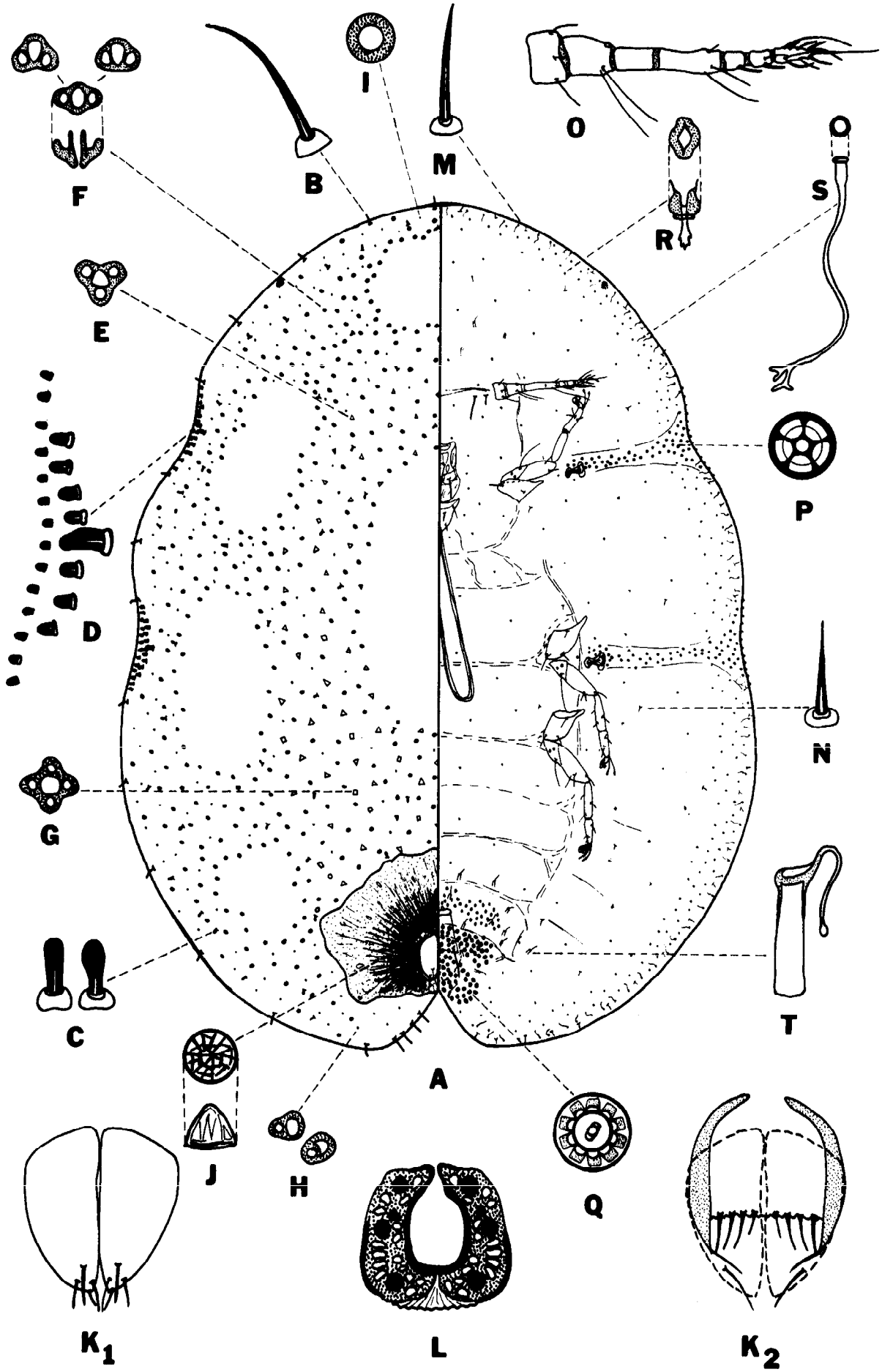
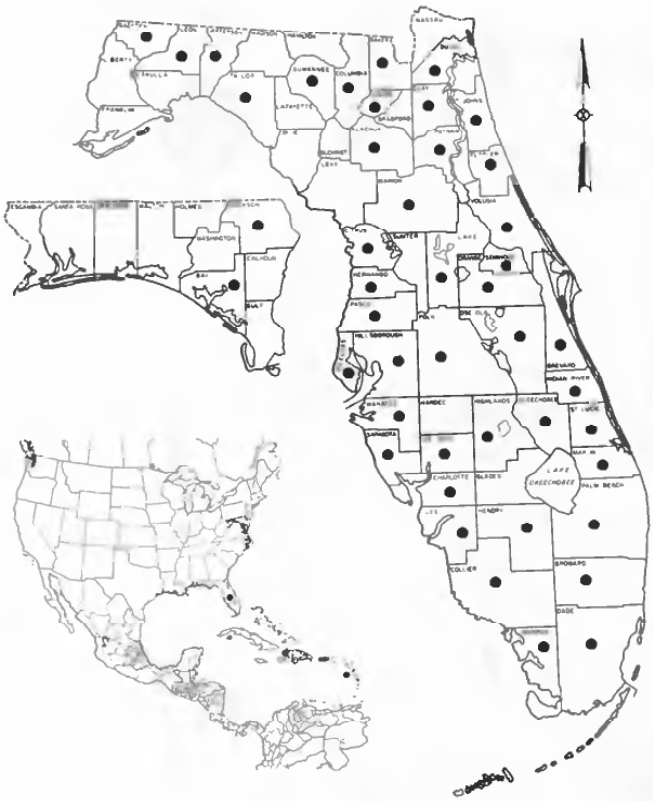


Fig. 25. *Ceroplastes sinensis*, adult female, from Williams and Kosztarab 1972.

metacoxae, absent from prothorax. Tubular ducts (Fig. 27, D) with asymmetrical cups, with inner filament narrow and nearly as long as basal part of duct, in cephalic and vulvar areas. Legs well developed, with unequal claw-digitules, without tibiotarsal scleroses. Antennae 6-segmented. MARGIN—Marginal bristle-shaped setae (Fig. 27, E) similar in length to ventral submarginal setae. Spiracular setae (Fig. 27, F) cylindrical with bluntly rounded to truncate apices, in 2 to 4 irregular rows. Filamentous ducts absent.

DISTRIBUTION: Map VII. *Foreign:* Haiti and West Indies.



Map VII. Distribution of *Ceroplastes utilis*.

BIOLOGY: Occurs on the stems and branches, tends to congregate and completely surround stems when populations are high. Males have not been reported (Gimpel et al. 1974).

ECONOMIC IMPORTANCE: Not known to be economically important in Florida.

REMARKS: According to Gimpel et al. (1974), this species was collected as early as 1940 in Florida, but was identified only as *Ceroplastes* sp. In Florida, *C. utilis* resembles *C. nakaharai* but *C. utilis* has 18-31 spiracular setae in each furrow and *C. nakaharai* has only 5-12 spiracular setae in each furrow.

MATERIAL STUDIED: FLORIDA: Miami, 4(4), *Eugenia* sp., 17-IV-1980, J. West and W. James: Monroe Co. 1(1), *Eugenia myrtoides*, 7-IV-1974, R. F. Denno and D. R. Miller; Tavernier, 4(4), *Eugenia myrtoides*, 10-X-1974, G. W. Dekle and W. E. Wyles.

Fig. 26. *Ceroplastes utilis*, adult female, DPI Photo 700777.

Genus *COCCUS* Linnaeus, 1758

TYPE SPECIES: *Coccus hesperidum* Linnaeus, 1758.

DESCRIPTION: Body form variable, usually flat or only slightly convex. Body of adult female naked or with a mere film of wax, derm membranous or sclerotized. Dorsal body setae sparse, spine-like, cylindrical, capitate or clavate. Anal plates usually triangular with varying numbers of apical and subapical setae. Anal ring with numerous wax pores and 8 anal ring setae. Antennae 3 to 8-segmented, reduced or well developed. Legs reduced or well developed without tibiotarsal sclerotization. Multilocular pores not numerous in vulvar area and few on abdomen; quinquelocular pores in spiracular pore bands. Ventral tubular ducts present or absent, never arranged in distinct submarginal zone. Marginal and spiracular setae variable.

NOTES: The eggs or young are protected by the body of the adult female. Species reported in the southeastern United States: *C. acutissimus*, *C. capparidis*, *C. hesperidum*, *C. longulus*, *C. pseudohesperidum*, and *C. viridis*. Gill et al. (1977) reviewed the genus *Coccus* for America north of Panama.

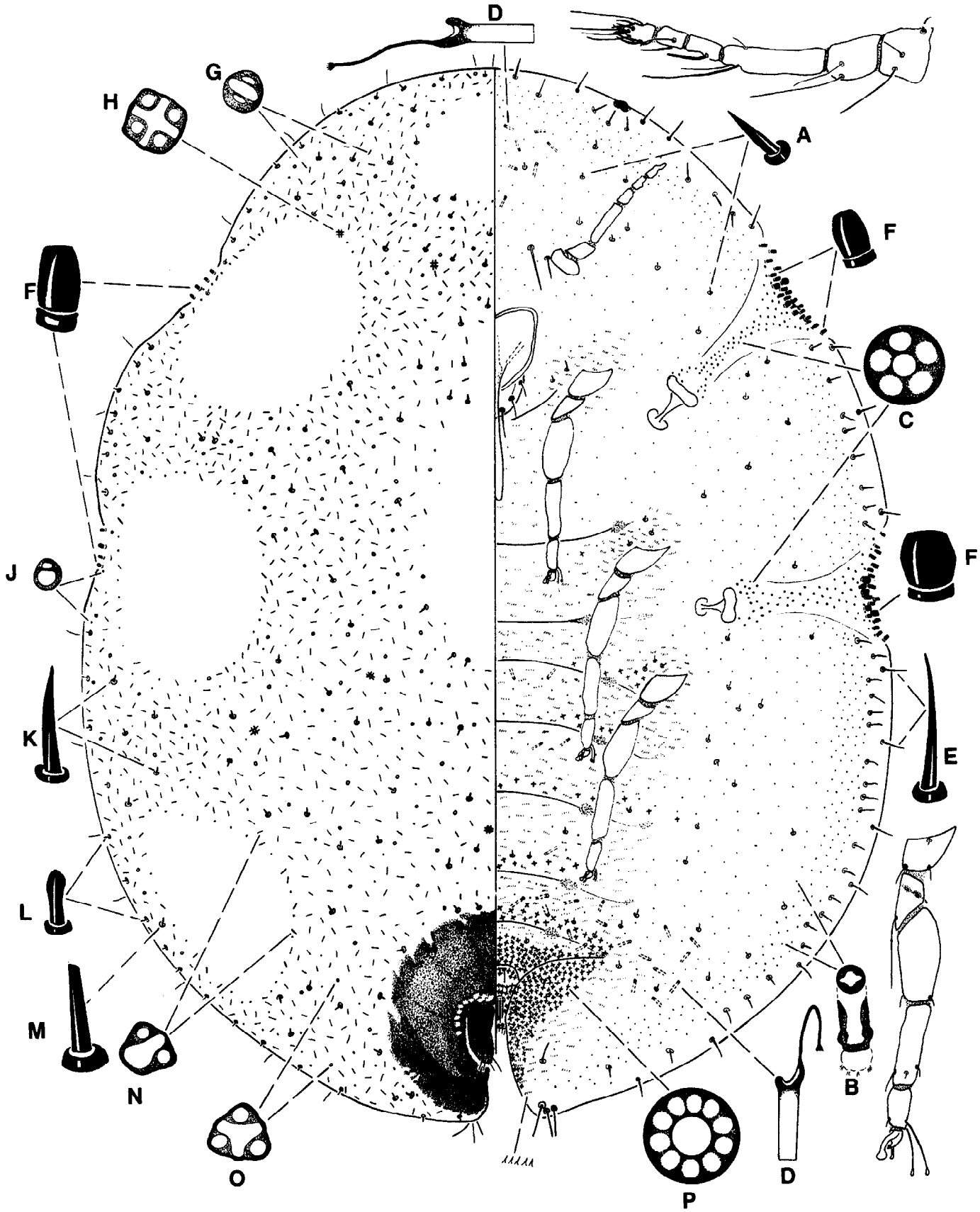


Fig. 27. *Ceroplastes utilis*, adult female, from Gimpel, Miller, and Davidson 1972.

KEY TO SPECIES OF *COCCUS*

1. Dorsal body setae curved, apices pointed or blunt 2

1′. Dorsal body setae straight, spine-like, cylindrical, clavate or capitate 3

2. Legs well developed; anal plates with subdiscal setae; with 7-8 fringe setae . . . . . *longulus*

2′. Legs greatly reduced; anal plates without subdiscal setae; with 4 fringe setae . . . . . *pseudohesperidum*

3. Legs greatly reduced; body slender, extremities pointed; antennae 3-segmented (sometimes appearing 5-segmented) . . . . . *acutissimus*

3′. Legs well developed; body oval, elongate oval, or pyriform; antennae 6, 7 or 8-segmented 4

4. Dorsal body setae spine-like, apically pointed; dorsal submarginal tubular ducts present or absent . . . . . *hesperidum*

4′. Dorsal body setae cylindrical, clavate, or capitate; dorsal submarginal tubular ducts absent 5

5. Ventral thoracic tubular ducts present; tibiotarsal articulatory scleroses present . . . . . *viridis*

5′. Ventral thoracic tubular ducts absent; tibiotarsal articulatory scleroses absent . . . . . *capparidis*

COCCUS ACUTISSIMUS (Green)

SYNONYMS: *Lecanium acutissimum* Green 1896:10, Green 1904:218
Coccus acutissimus (Green), Fernald 1903:168, Steinweden 1929:223, Takahashi 1942:17, Gill et al. 1977:12

SUGGESTED COMMON NAME: banana-shaped scale

FIELD DESCRIPTION: Females elongate, pointed at both ends. Old adult females dark brown (Fig. 28), young females creamy-white to yellowish green. Individuals tend to be located along a major leaf vein and to become asymmetrical.

DESCRIPTION: (Fig. 29) Adult female long and slender, 2.5-5.5 mm long, 1.0-2.0 mm wide (Gill et al. 1977). DORSUM—Derm strongly sclerotized in old females and membranous in young adult females. Small round or oval clear areas usually present. Setae (Fig. 29, K) spine-like with

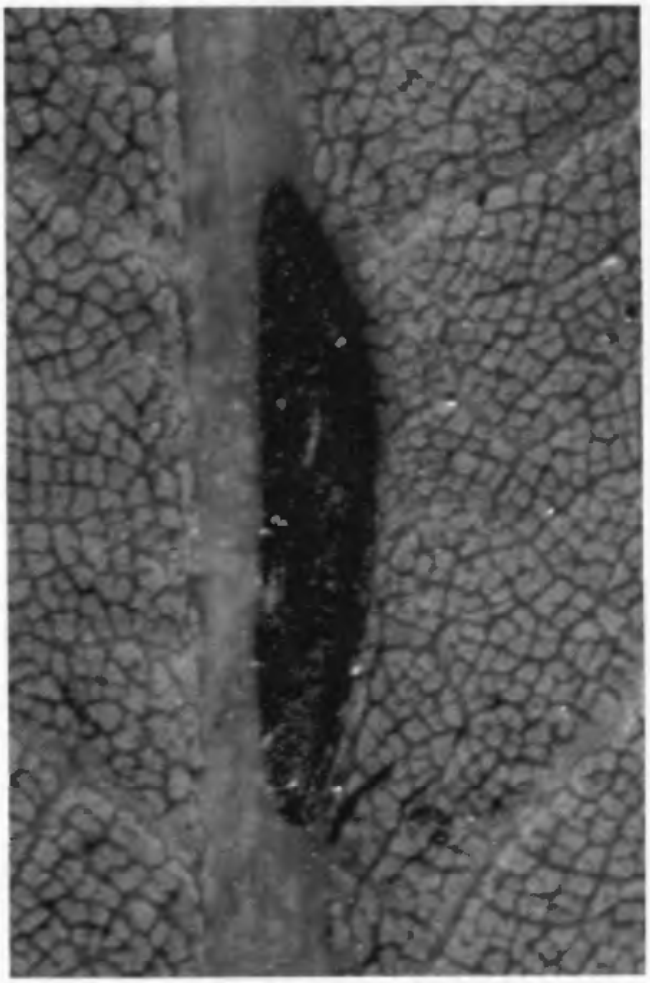


Fig. 28. *Coccus acutissimus*, adult female, DPI Photo by Frank Mead.

pointed or blunt apices. Submarginal tubercles (Fig. 29, L) number 8-19. Pores (Fig. 29, J) anterior to anal plates with sclerotized rims number 8-13. Each anal plate with 2 subapical, 3 apical, and 1 subdiscal setae. VENTER—Membranous, in old females a submarginal thickening around body (Gill et al. 1977). Antennae reduced, 3 to 5 segments. Interantennal setae usually 4 with medial pair longest. Legs reduced with the tibia and tarsus fused or articulated. Spiracular quinquelocular pores (Fig. 29, C) usually in a single row from spiracle to margin. Tubular ducts absent. Multilocular pores (Fig. 29, F) usually 7-loculed, few in vulvar region and preceding 2 or 3 abdominal segments. Prevulvar setae 3 pairs. MARGIN—Marginal setae (Fig. 29, 0) slender, pointed, sparse. Spiracular setae (Fig. 29, M) 3 with median seta ca. 4X longer than laterals.

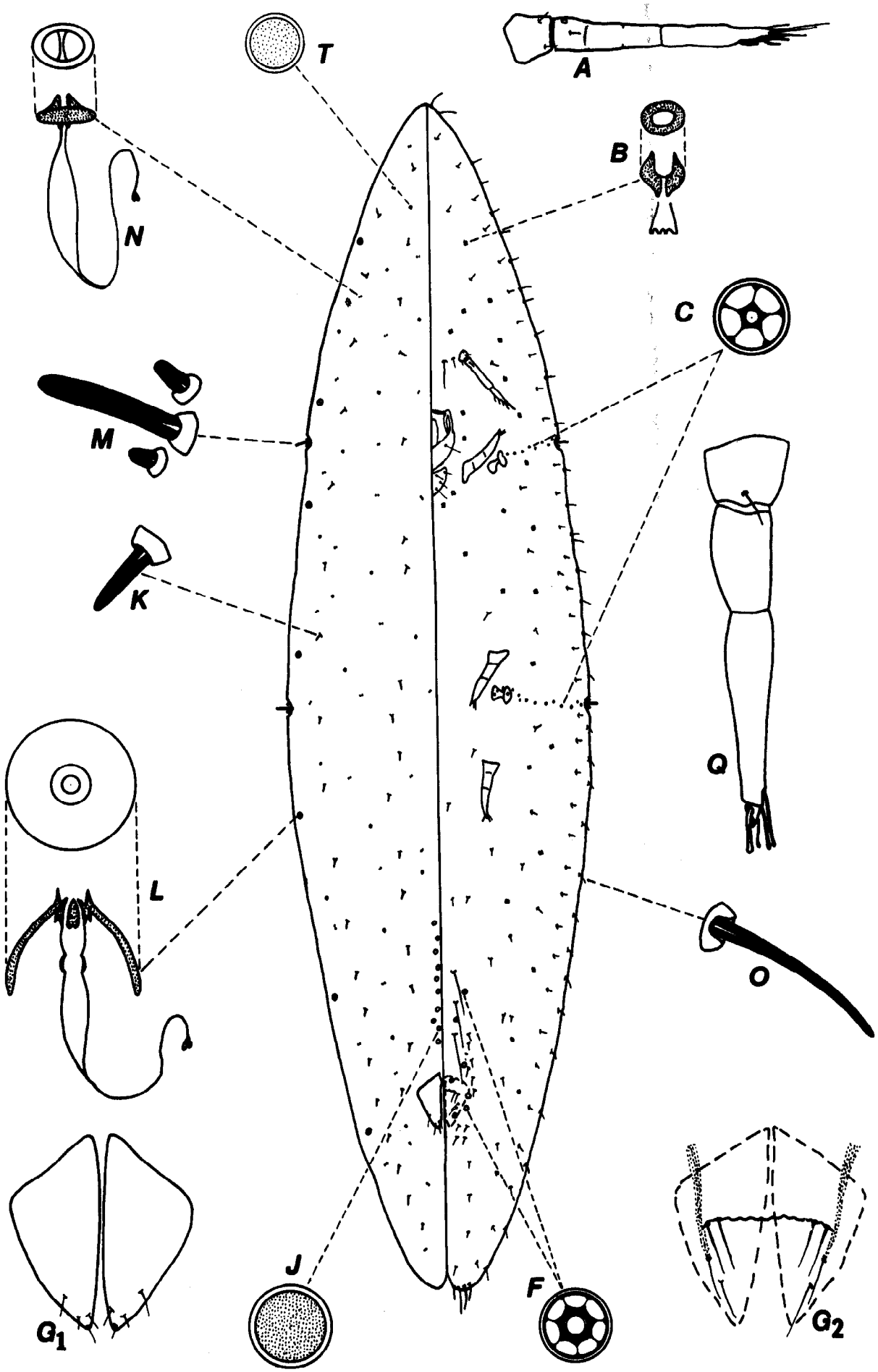


Fig. 29. *Coccus acutissimus*, adult female, from Gill, Nakahara, and Williams 1977.

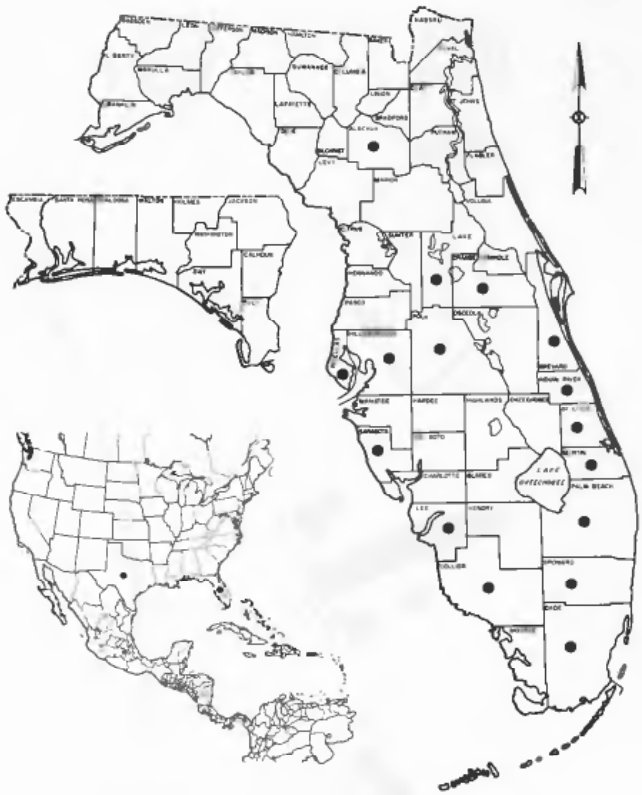
DISTRIBUTION: Map VIII. HI, TX. *Foreign:* India, Indonesia, Kenya, Malaysia, Mauritius, Philippines, Ryukyu Islands, Sri Lanka, Taiwan, Thailand, and Vietnam.

BIOLOGY: Usually found on the undersides of leaves along major veins. Live young are born. The male is unknown.

ECONOMIC IMPORTANCE: Apparently not economically important in Florida.

REMARKS: Gill et al. (1977) agreed with Steinweden (1929) that *C. acutissimus* did not belong in *Coccus* but were uncertain of the generic placement. The distinctive body shape, color, placement on leaf, and reduced appendages usually distinguish this species from all others in Florida.

MATERIAL STUDIED: FLORIDA: Cypress Gardens, 2(2), *Cycas circinalis*, 5-XII-1969, Training Class; Homestead, 1(1), *Licaria triandra*, 2-I-1973, J. Knowles; Miami, 2(2), *Magnolia grandiflora*, 4-III-1969, J. Dillon; 1(1), *Cycas revoluta*, 9-II-1973, P. Pullara; Riviera Beach, 1(1), *Cycas circinalis*, 24-IX-1973, K. Geyer; Winter Haven, 2(2), *Erydrissia* sp., 5-XII-1969, W. P. Henderson.



Map VIII. Distribution of *Coccus acutissimus*.

COCCUS CAPPARIDIS (Green)

SYNONYMS: *Lecanium capparidis* Green 1904:187
Lecanium (Coccus) capparidis Green 1937:229
Coccus capparidis (Green), Fullaway 1938:46, Beardsley 1972:142, Anon. 1975:416, Gill et al. 1977:16

SUGGESTED COMMON NAME: capparis soft scale

FIELD DESCRIPTION: Body broadly oval to deltoid, flat or slightly convex, pale green (Fig. 30) (Gill et al. 1977).

DESCRIPTION: (Fig. 31) Adult female broadly oval to deltoid, ca. 3.0 mm long, 2.0 mm wide. DORSUM—Derm membranous or slightly sclerotized. Eye spots on lateral margin of head. Submarginal tubercles (Fig. 31, L) number 10-16. Dorsal setae (Fig. 31, K) small, clavate to almost capitate, randomly distributed. Microducts usually surrounded by clear area. Preopercular pores (Fig. 31, J) small, number 5-18. Anal plates (Fig. 31, G_1) with caudolateral margin longer than cephalolateral margin. VENTER—Derm membranous. Legs well developed without tibiotarsal scleroses; claw digitules of equal size; claw with small denticle. Antennae (Fig. 31, A) 6 to 7-segmented, when 6-segmented 3rd segment longest. Few tubular ducts (Fig. 31, E) on submarginal area of abdomen. Spiracular quinquelocular pores (Fig. 31, C) in single or double irregular row from spiracle to body margin. Multilocular pores (Fig.

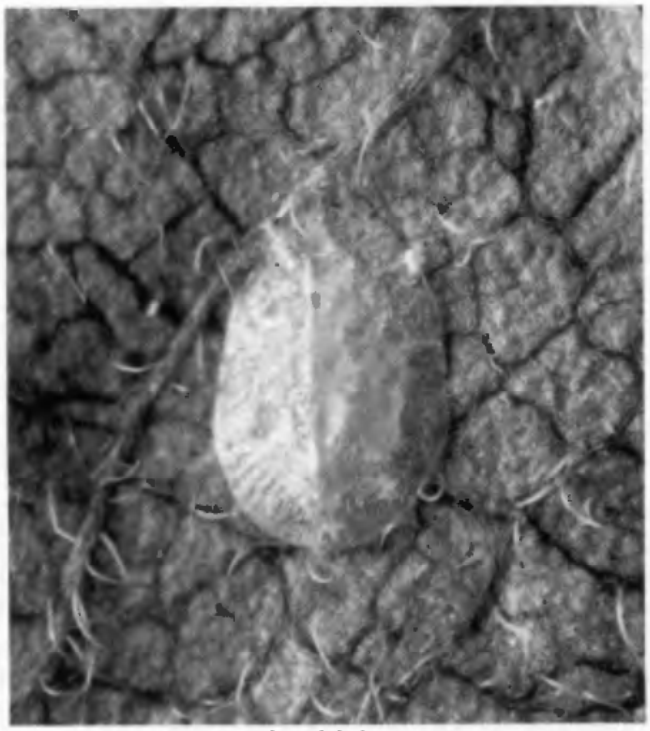
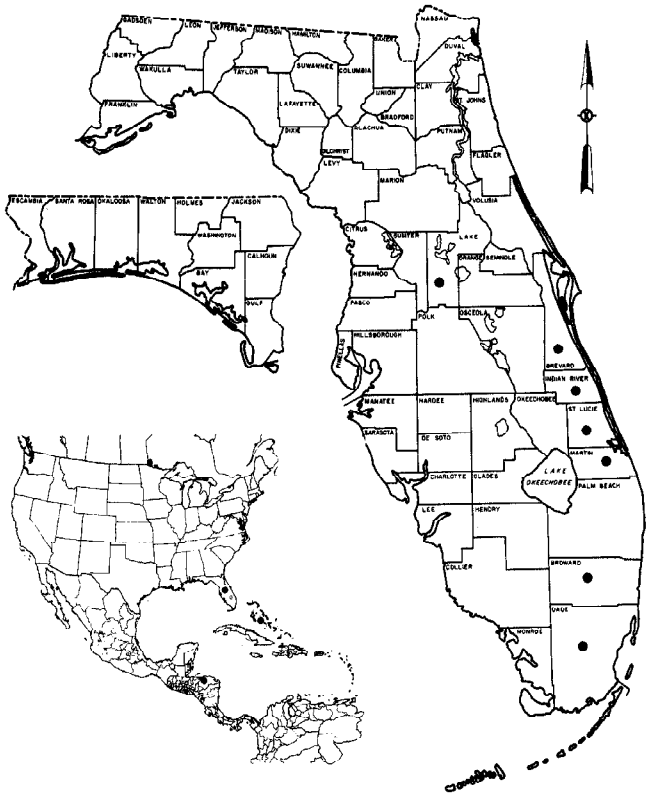


Fig. 30. *Coccus capparidis*, adult female, DPI Photo 702048-10.

31, F) in vulvar area with 7-8 loculi, few on preceding segments. MARGIN—Marginal setae (Fig. 31, 0) slender, pointed, bifid, or slightly fimbriate. Spiracular setae (Fig. 31, M) 3 with median seta about 3X longer than laterals.

DISTRIBUTION: Map IX. HI. *Foreign:* Bahama Islands, Honduras, India, and Sri Lanka.



Map IX. Distribution of *Coccus capparidis*.

BIOLOGY: The only available information is that *C. capparidis* occurs on the underside of leaves.

ECONOMIC IMPORTANCE: Apparently not economically important in Florida.

REMARKS: This species can be separated from other Florida species of *Coccus* because of the shape of anal plates, clavate dorsal setae, the absence of ventral tubular ducts on mid-region of thorax, and the absence of tibiotarsal scleroses.

MATERIAL STUDIED: FLORIDA: Homestead, 1(1), *Aralia balfouriana*, 15-II-1978, A. Hamon and H. von Wald; Miami, 2(2), *Citrus* sp., 9-VII-1974, D. Sager; 1(1), *Nerium oleander*, 7-V-1980, W. P. Henderson and R. E. Burns; St. Lucie Co., 1(1), *Diospyros virginiana*, 29-VII-1980, E. W. Campbell; Stuart, 2(2), *Acrostichum aureum*, 23-VIII-1976, S. P. Beidler; Titusville, 1(1), *Citrus sinensis*, 4-III-1981, R. E. Burns; Walton, 1(1), *Diospyros virginiana*, 22-IX-1980, E. W. Campbell.

COCCUS HESPERIDUM LINNAEUS

SYNONYMS: *Coccus hesperidum* Linnaeus 1758:455.
For a complete list of synonyms see Gill et al. 1977:18

COMMON NAME: brown soft scale

FIELD DESCRIPTION: Females (Fig. 32) oval and slightly convex. Pale yellowish-green to yellowish-brown, often mottled with brown spots.

DESCRIPTION: (Fig. 33) Adult female elongate oval, 1.5-4.0 mm long, 1.0-2.5 mm wide. DORSUM—Derm membranous or at most very slightly sclerotized with small clear areas. Dorsal setae (Fig. 33, C) spine-like with sharply pointed to blunt apices. Submarginal tubercles (Fig. 33, E) number 2-12 around body. Submarginal tubular ducts (Fig. 33, I) present or absent. Preopercular pores (Fig. 33, H) 6-33, often in close groups, indiscernible in sclerotized specimens. Each anal plate (Fig. 33, J_1) with 4 apical setae, with 2 or 3 subapical setae. VENTER—Derm membranous. Antennae 7-segmented. Legs well developed with tibiotarsal scleroses. Tubular ducts (Fig. 33, Q) between mesothoracic and metathoracic legs, sometimes at base of prothoracic legs, always present near attachment of mesothoracic legs. Multilocular pores (Fig. 33, 0) usually with 10 loculi, confined generally to vulvar area, very few on preceding abdominal segments. MARGIN—Marginal setae (Fig. 33, B) slender, simple with few setae fimbriate, often curved. Spiracular setae (Fig. 33, D) 3, median seta 2-4X longer than laterals.

DISTRIBUTION: Map X. Cosmopolitan in tropical and subtropical regions and in greenhouses in northern regions (Gill et al. 1977). In North America, brown soft scale occurs out of doors in the southern states, north to the eastern seaboard of Virginia (Williams & Kosztarab 1972).

BIOLOGY: All stages are found throughout the year in warm areas of Florida in greenhouses. The females are ovoviviparous, and males are rare. They attack leaves and twigs. Young females excrete large amounts of honeydew.

ECONOMIC IMPORTANCE: Talhouk (1975) listed *C. hesperidum* as a major pest of *Citrus* in Peru and Cyprus, and economically important in China, Brazil, Israel, Italy, Mexico, Republic of South Africa, Rhodesia, and the United States (Texas). Only in unusual circumstances is brown soft scale an economic pest of *Citrus* in Florida. It is more often a pest of ornamentals but is usually controlled by natural enemies (Fig. 34).

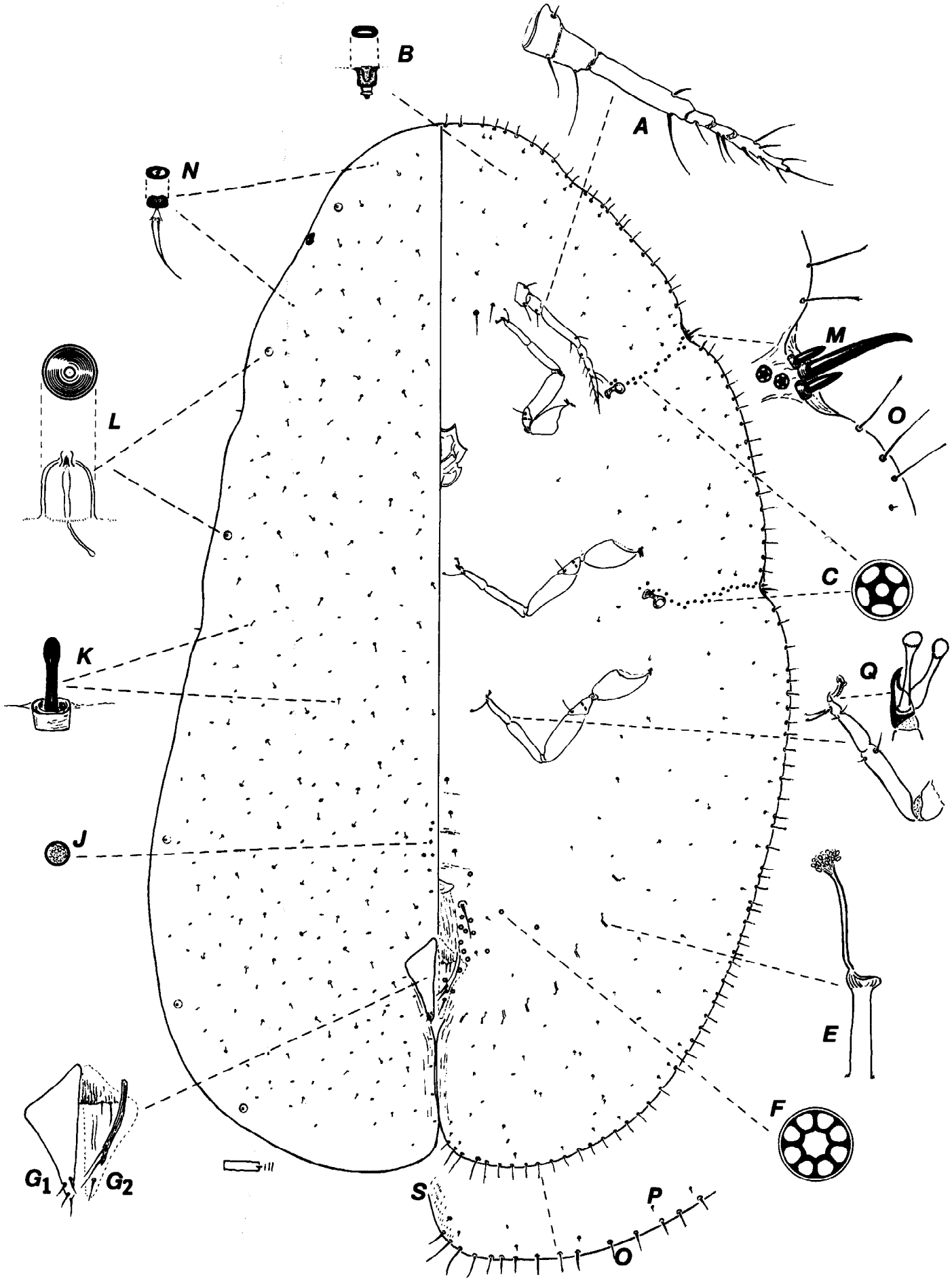
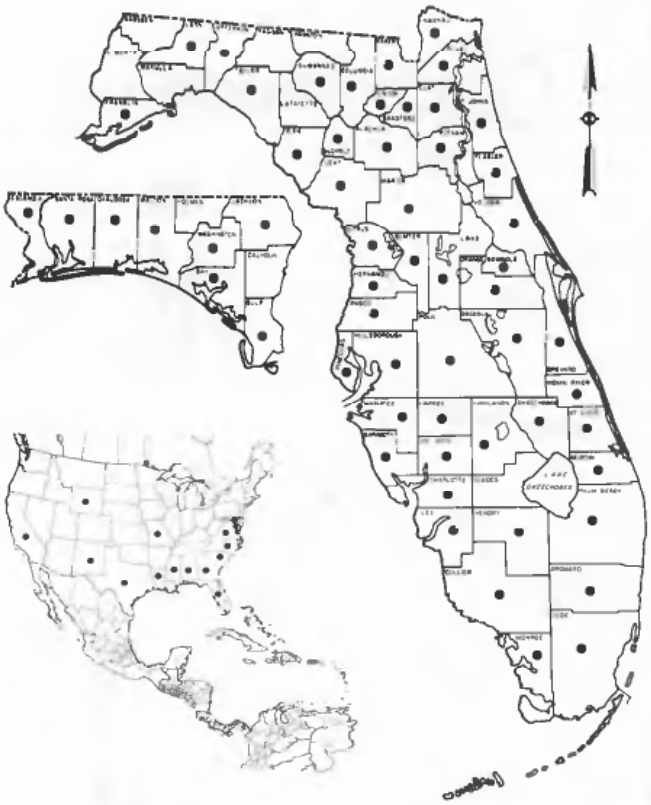


Fig. 31. *Coccus capparidis*, adult female, from Gill, Nakahara, and Williams 1977.



Map X. Distribution of *Coccus hesperidum*.

Fig. 32. *Coccus hesperidum*, adult female and nymphs, DPI Photo 2120.

NATURAL ENEMIES: Numerous parasites are listed for brown soft scale in Peck (1963). Some of those occurring in this area are as follows: *Aneristus ceroplastae* Howard, LA; *A. youngi* Girault, LA, TX; *Aspidiotiphagus citrinus citrinus* (Craw), cosmopolitan; *Coccophagus fraternus* Howard, NY to FL; *C. immaculatus* Howard, FL; *C. lycimnia* (Walker), cosmopolitan; *C. scutellaris* (Dalman), FL; *Eupelmus coccidis* Girault, TX; *Metaphycus eriococci* (Timberlake), FL; *M. flavus* (Howard), FL; *Microterys flavus* (Howard), FL; *Scutellista cyanea* Motschulsky, cosmopolitan.

According to Bartlett (*in* Clausen, ed. 1978) brown soft scale is now completely controlled by *Metaphycus luteolus* Timberlake in California. Also, Krombein et al. (1979) indicated *S. cyanea* was a common parasite of brown soft scale. Additionally, Krombein et al. (1979) listed *Chartocerus niger* (Ashmead), *Encyrtus albicoxa* (Ashmead), and *Gahaniella saissetia* Timberlake as occurring in Florida.

REMARKS: *Coccus hesperidum* is one of the most polyphagous species in the Coccidae (Gill et al. 1977). This species is near *C. gymnospori* from India, but *C. hesperidum* has 7-segmented antennae and *C. gymnospori* has 8-segmented antennae. *Coccus hesperidum* somewhat resembles *C. moestus*, but *C. moestus* has clavate dorsal setae and *C. hesperidum* has acute dorsal setae.

MATERIAL STUDIED: FLORIDA: Apopka, 1(1), *Dizygotheca elegantissima*, 13-VII-1978, D. Remington; Bushnell, 1(1), *Senecio radicans*, 1-VIII-1977, A. L. Bentley; Gainesville, 1(1), *Ilex* sp., 3-I-1977, R. I. Sailer; Homestead, 1(1), *Carica papaya*, 26-IV-1978, R. M. Baranowski; Killarney, 1(1), *Dieffenbachia* sp., 28-IV-1978, F. L. Ware; Lake Park, 2(2), *Tillandsia* sp., 21-III-1977, M. Tiriolo; Suwannee, 1(1), *Citrus limon*, 22-V-1978, F. McHenry.

COCCUS LONGULUS (Douglas)

SYNONYMS: *Lecanium longulum* Douglas 1887b:97

Lecanium chirimoliae Maskell, 1890:137

Lecanium ficus Maskell, Ferris *in* Zimmerman 1948:300

Lecanium wistariae Brain, Gill et al. 1977:24, Ben-Dov 1977: 92

Coccus longulus (Douglas), Fernald 1903:171, Ben-Dov 1977: 89, Gill et al. 1977:24

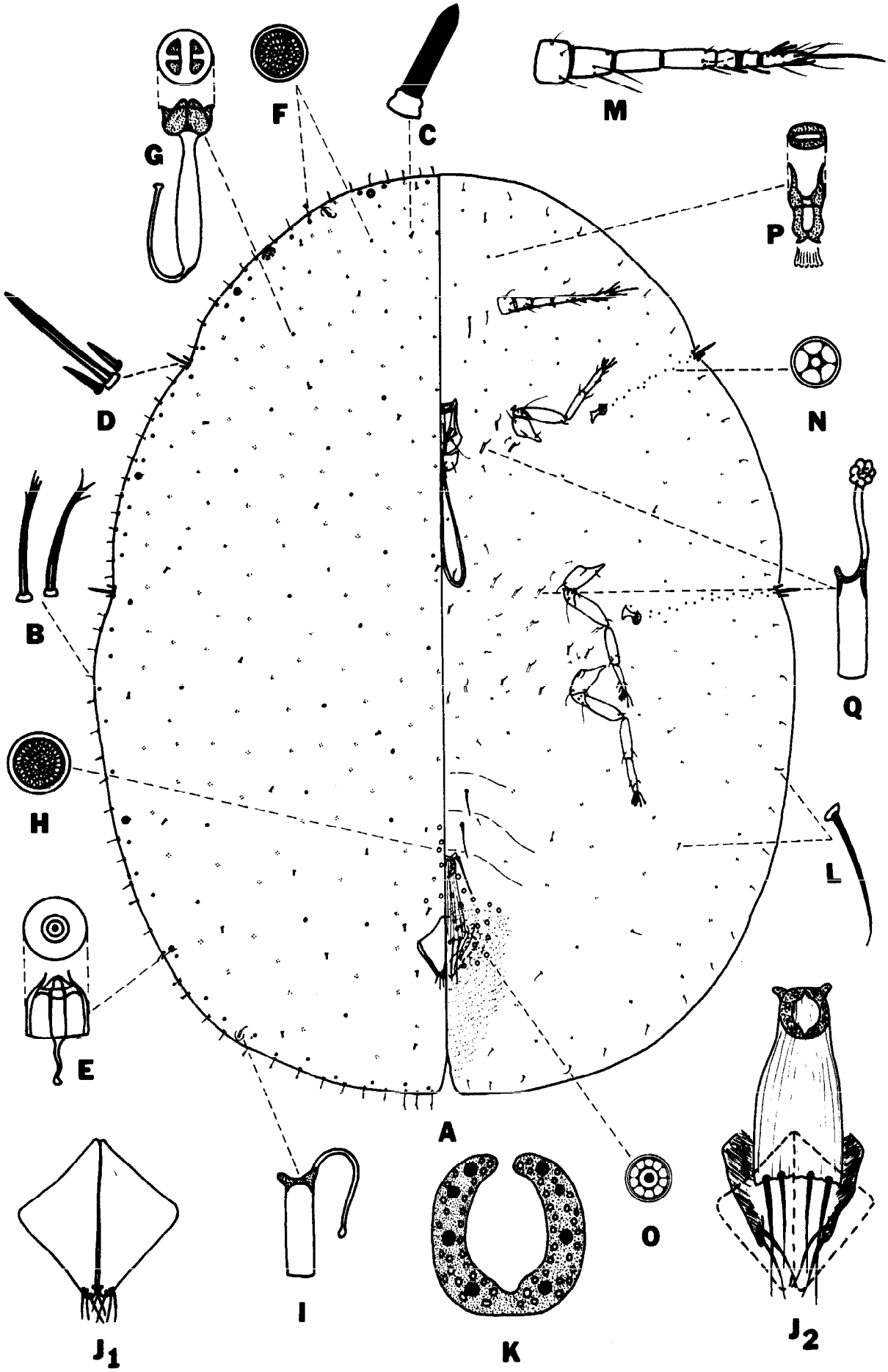


Fig. 33. *Coccus hesperidum*, adult female, from Williams and Kosztarab 1972.

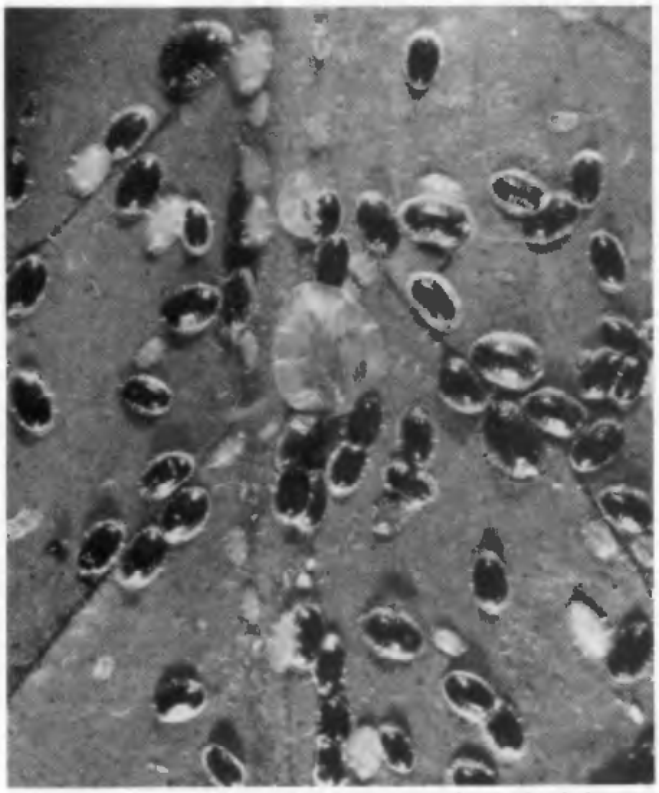


Fig. 34. *Coccus hesperidum*, dark parasitized nymphs, light non-parasitized nymphs, and one adult female in center, DPI Photo 2266.

Lecanium frontale Green, Ben-Dov 1977:92, Gill et al. 1977: 24

Lecanium (Coccus) celtium Kuwana, Gill et al. 1977:24

Coccus elongatus (Signoret), Sanders 1909:438, Zimmerman 1948:300, Merrill 1953: 89, DeLotto 1965:192, Ben-Dov 1977:91

Lecanium kraunhiarum Lindinger, DeLotto 1957:301

Parthenolecanium wistaricola Borchsenius, DeLotto 1965: 192

COMMON NAME: long brown scale

FIELD DESCRIPTION: Adult female (Fig. 35) elongate-oval, moderately convex and smooth. Color yellowish to grayish-brown (Merrill 1953). Eyes usually visible.

DESCRIPTION: (Fig. 36) Adult female elongate, 2.0-6.0 mm long, 1.0-3.0 mm wide (Gill et al. 1977). DORSUM—Derm membranous or slightly sclerotized with many clear areas. Eyespots surrounded by oval pale areas. Submarginal tubercles (Fig. 36, L) number 9-19. Dorsal setae (Fig. 36, K) short, curved, pointed, scattered over surface. Microducts few, usually associated with small clear area. Anal plates (Fig. 36, G_1) with cephalolateral margins usually concave, shorter than caudolateral margins, each plate with 3 subapical, 3 apical, 1 subdiscal setae. VENTER—Derm membranous. Antennae 8-segmented. Legs well developed with tibiotarsal scleroses. Tubular ducts absent. Microducts (Fig. 36, B) sparse, slight concentration alongside mouthparts. Multilocular pores (Fig. 36, F) in vulvar area only, mostly with 6-7 loculi. MARGIN—Marginal setae (Fig. 36, 0) slender, curved, set far apart, mostly acute, few bifurcate, 3-4 fimbriate near anal cleft (Gill et al. 1977). Spiracular setae (Fig. 36, M) 3, with median seta 2-3X longer than laterals.

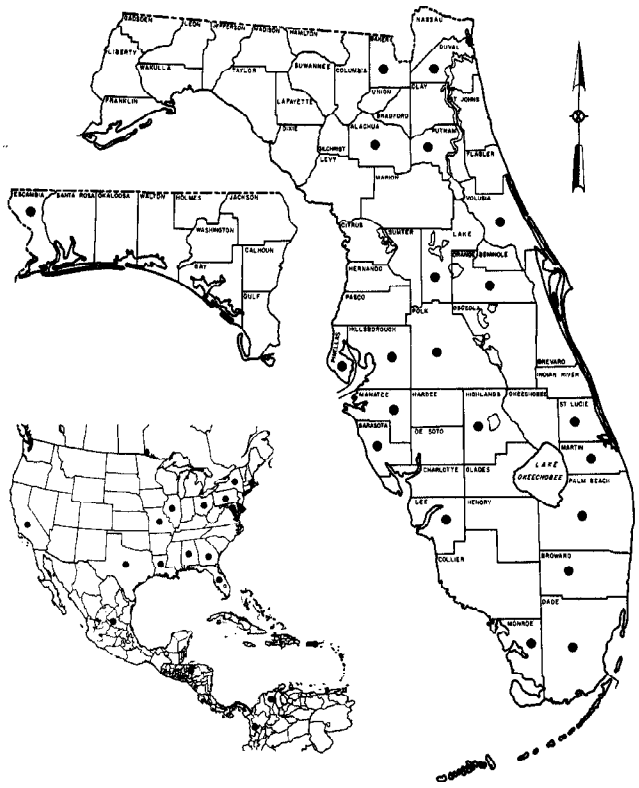
DISTRIBUTION: Map XI. AL, CA, DC, DE, GA, HI, IL, LA, MA, MD, MO, NY, OH, PA, TX. *Foreign*: China, Colombia, Ecuador, Honduras, Lebanon, Mexico, Oceania, Philippines, Puerto Rico, Samoa, Taiwan, and Virgin Islands. Widespread in the tropics and semitropical areas of the world (Gill et al. 1977).

BIOLOGY: According to Gill et al. (1977), little is known about the life history of this species. It is found on the branches, leaves, and stems of host plants.

ECONOMIC IMPORTANCE: Not considered an economic pest in Florida (Merrill, 1953). Only light infestations have been observed during the last few years in Florida.

REMARKS: According to Gill et al. (1977), *C. longulus* may resemble *Eucalymnatus tesselatus* (Signoret) before *E. tesselatus* becomes sclerotized. *Coccus longulus* is less convex and more elongate than brown soft scale (*C. hesperidum*).

Fig. 35. *Coccus longulus*, adult females, DPI Photo 966.



Map XI. Distribution of *Coccus longulus*.

MATERIAL STUDIED: FLORIDA: Cortez, 1(1), *Spathiphyllum cannaefolium*, 11-II-1977, C. J. Bickner; Dunedin, 1(1), *Anthurium scherzerianum*, 15-X-1980, P. Pullara; Honduras via Opa Locka, 1(1), *Spathiphyllum* cv. 'Mauna Loa', 5-XI-1979, D. E. Stokes; Lake Buena Vista, 1(1), *Myrtus* sp., 8-XI-1979, D. Clinton and H. Collins; Lockhart, 1(1), *Spathiphyllum* sp. 'Mauna Loa', 27-V-1971, F. L. Ware; Orange Co., Disney World, 1(1), *Ulmus parvifolia* 'Sempervirens', 7-XI-1972, W. H. Pierce; Palm City, 1(1), *Myrica cerifera*, 14-II-1979, E. W. Campbell; Punta Gorda, 1(1), *Ficus* sp., 13-VI-1972, L. Skipper; Stuart, 1(1), *Myrica cerifera*, 13-VI-1978, E. W. Campbell; Tampa, 1(1), *Citrus paradisi*, 9-X-1972, A. L. Baker.

COCCUS PSEUDOHESPERIDUM (Cockerell)

SYNONYMS: *Lecanium pseudohesperidum* Cockerell 1895a:380

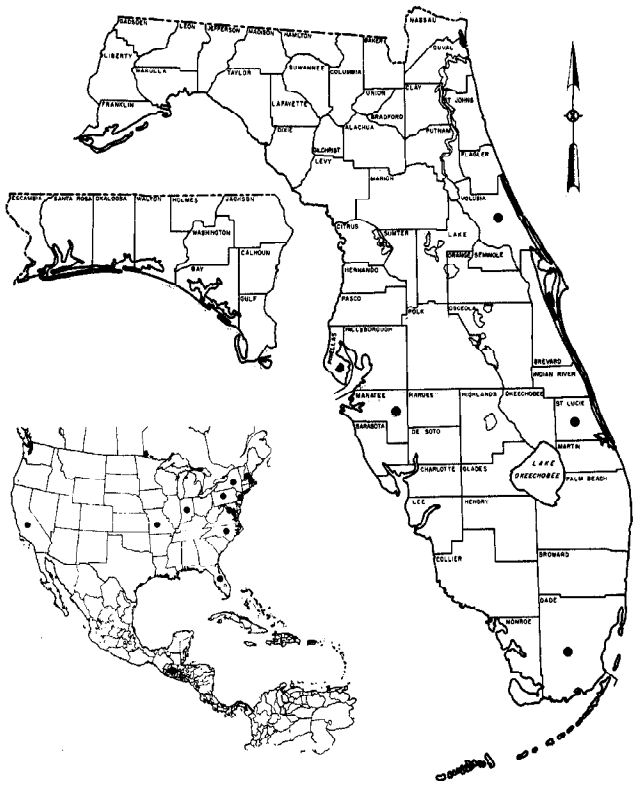
Coccus pseudohesperidum (Cockerell), Fernald 1903: 173, Ferris *in Zimmerman 1948:310, Steinweden 1945: 264, Borschsenius 1957:305, Dekle and Kuitert 1968:24, Gill et al. 1977:30*

SUGGESTED COMMON NAME: orchid soft scale

FIELD DESCRIPTION: Adult female elongate-oval to broadly oval, slightly convex; light to dark brown (Gill et al. 1977).

DESCRIPTION: (Fig. 37) Adult females elongate oval, 4.0-7.0 mm long, 2.0-4.0 mm wide (Gill et al. 1977). DORSUM—Derm strongly sclerotized at maturity, with many pale areas. Microducts in small clear areas. Submarginal tubercles (Fig. 37, L) number 6-17 around body. Setae (Fig. 37, K) bluntly pointed curved, randomly distributed. Discoidal pores (Fig. 37, J) numerous in a longitudinal row extending from anterior of anal plates to prothorax. Anal plates (Fig. 37, G_1, G_2) with 3 subapical, 3 apical setae. VENTER—Derm membranous or only slightly sclerotized. Antennae (Fig. 37, A) reduced to 5 or 6 segments. Legs reduced, tibia and tarsus articulated, partially fused or completely fused. Tubular ducts absent. Multilocular pores (Fig. 37, F) confined to vulvar area, each with 5-8 loculi. MARGIN—Marginal setae simple, curved, set far apart, 7-12 between anterior and posterior spiracular furrows (Gill et al. 1977). Spiracular setae 3, (Fig. 37, M), with median seta 2-3X longer than laterals.

DISTRIBUTION: Map XII. CA, DC, HI, IN, MA, MD, MO, NC, NH, NJ, NY, PA. *Foreign*: Brazil, Canada, England, France, Guatemala, Java, and Latvia.



Map XII. Distribution of *Coccus pseudohesperidum*.

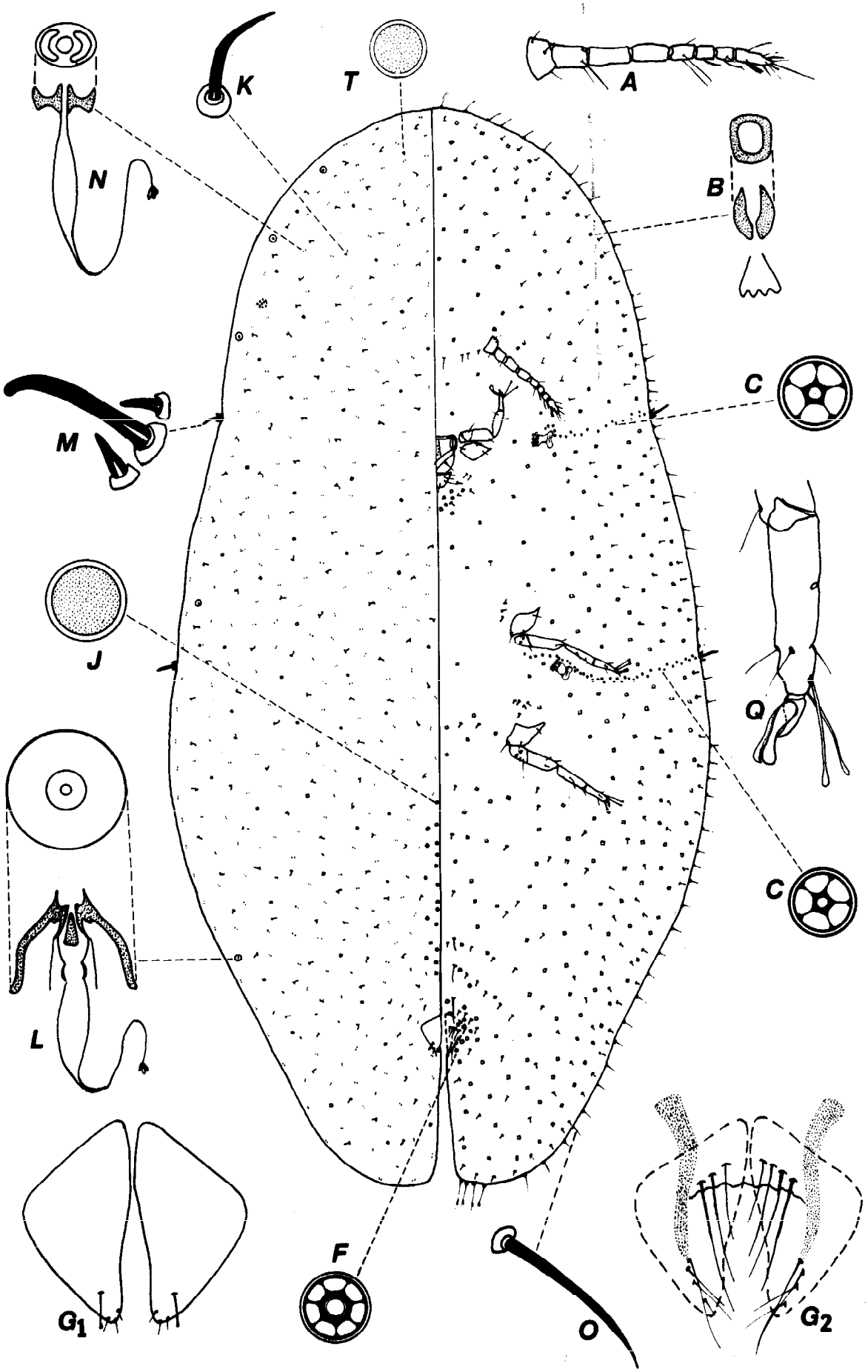


Fig. 36. *Coccus longulus*, adult female, from Gill, Nakahara, and Williams 1977.

BIOLOGY: No information about the biology of this species is known.

ECONOMIC IMPORTANCE: Previously reported as a pest of orchids in California (Steinweden 1945). It has not been collected in California for a number of years (Gill et al. 1977). Dekle and Kuitert (1968) did not consider it an economic pest of orchids in Florida.

REMARKS: According to Gill et al. (1977), this species is not congeneric with *C. hesperidum* but is closely related to members of the New World genus *Mesolecanium* Cockerell.

The strongly sclerotized dorsum, curved dorsal setae, and reduced appendages will separate this species from other Florida soft scale species. Frequently, marginal setae appear to be nearly hooked at the apex.

MATERIAL STUDIED: FLORIDA: Oneco, 3(3), *Cattleyae trianca*, 14-VIII-1922, P. F. Robertson; NEW YORK: Mamaroneck, 1(1), orchid, 2-X-1920, H. Mowry; Jenio, Long Island, 1(1), *Cattleya* M. (orchid), 15-II-1921, A. C. Brown.

COCCUS VIRIDIS (Green)

SYNONYMS: *Lecanium viride* Green 1889: 248.

Coccus viridis (Green), Fernald 1903:174, Miller 1931:18, Fredrick 1943:12, Ferris *in* Zimmerman 1948:311, Wolcott 1948:171, Merrill 1953: 93, Ebeling 1959:227, DeLotto 1960:397, Talhouk 1975:21, Gill et al. 1977:37.

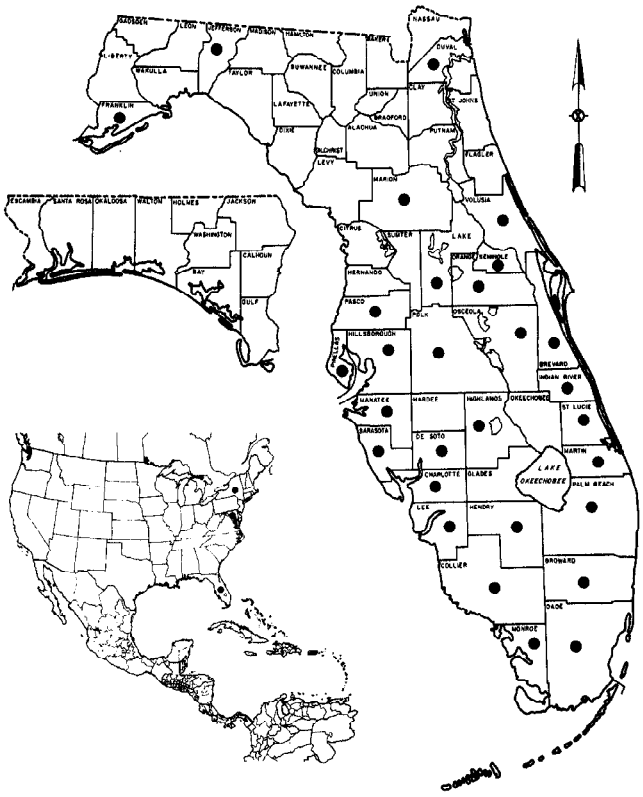
Lecanium (Trechocoris) hesperidum africanum Newstead 1906:73, (nomen nudum) DeLotto 1960:397, Gill et al. 1977:37.

COMMON NAME: green scale

FIELD DESCRIPTION: Adult female (Fig. 38) oval to elongate oval, pale green, slightly transparent, flat to slightly convex; usually with an irregular internal U-shaped gut with black spots (Gill et al. 1977). Eye spots visible on anterolateral margins.

DESCRIPTION: (Fig. 39) Adult female oval to elongate oval, 1.5-3.7 mm long, 1.0-2.2 mm wide. DORSUM—Derm membranous or only slightly sclerotized, with round or oval clear areas. Setae (Fig. 39, K) short, cylindrical to clavate, scattered. Four to 11 submarginal tubercles (Fig. 39, L) around body. Tubular ducts absent. Microducts (Fig. 39, N) usually associated with clear areas. Anal plates (Fig. 39, G_1) each with 2 subapical and 4 short apical setae. VENTER—Derm membranous. Antennae 7-segmented. Legs well developed with tibiotarsal scleroses. Ventral tubular ducts (Fig. 39, E) between meso- and metathoracic legs and across body in mid-region of first abdominal segment. Multilocular pores (Fig. 39, F) with 7 loculi on all abdominal segments. MARGIN—Marginal setae (Fig. 39, 0) short, fimbriated, 6-16 between anterior and posterior spiracular setae. Spiracular setae (Fig. 39, M) 3, with medial seta 2X longer than laterals.

DISTRIBUTION: Map XIII. HI (DC, NY, in greenhouses). *Foreign*: Nearly cosmopolitan in tropical and subtropical areas.



Map XIII. Distribution of *Coccus viridis*.

BIOLOGY: Multiple generations per year are produced (Gill et al. 1977). In Florida, one generation is completed in 50-70 days in the late summer months (Fredrick 1943). On leaves they are usually found on the under surfaces and frequently along the midveins (Gill et al. 1977).

ECONOMIC IMPORTANCE: *C. viridis* is a serious pest of coffee, citrus, and other crops in many tropical areas (Gill et al. 1977). Talhouk (1975) reported it as a pest of *Citrus* in Bolivia, Central America, Colombia, and Venezuela. Ebeling (1959) lists it as a minor pest of *Citrus* in

Florida. The fungus, *Cephalosporium lecanii* Zimmerman, apparently keeps the species under control in Florida (Merrill 1953).

NATURAL ENEMIES: Very little effort has been made in the biological control of green scale (Bartlett *in* Clausen ed. 1978). Krombein et al.

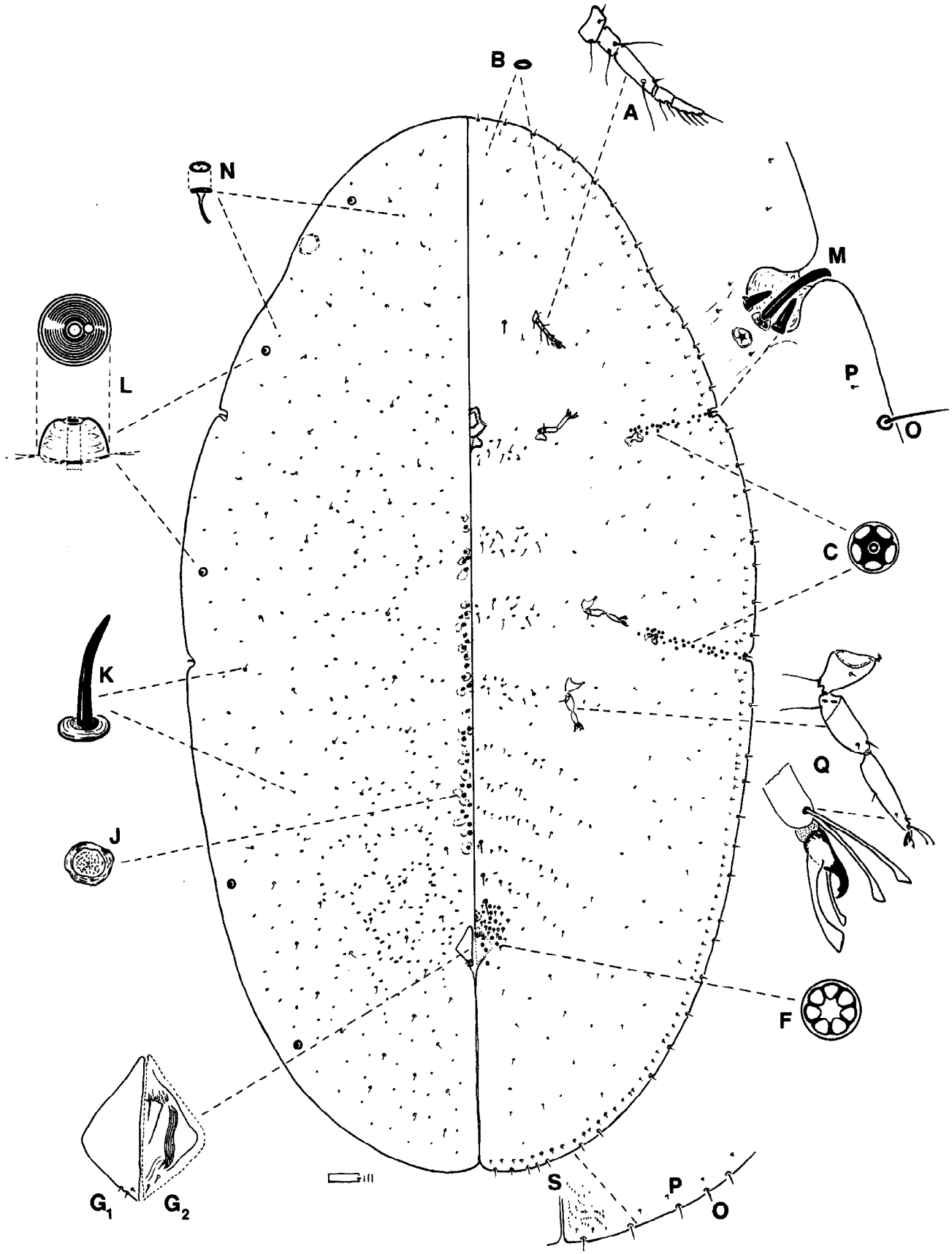


Fig. 37. *Coccus pseudohesperidum*, adult female, from Gill, Nakahara, and Williams 1977.

(1979) listed *Chartocerus fasciatus* (Girault) as occurring in Texas. In Hawaii, the coccinellid *Azya luteipes* Muls. exerts substantial control (Bartlett *in* Clausen ed. 1978).

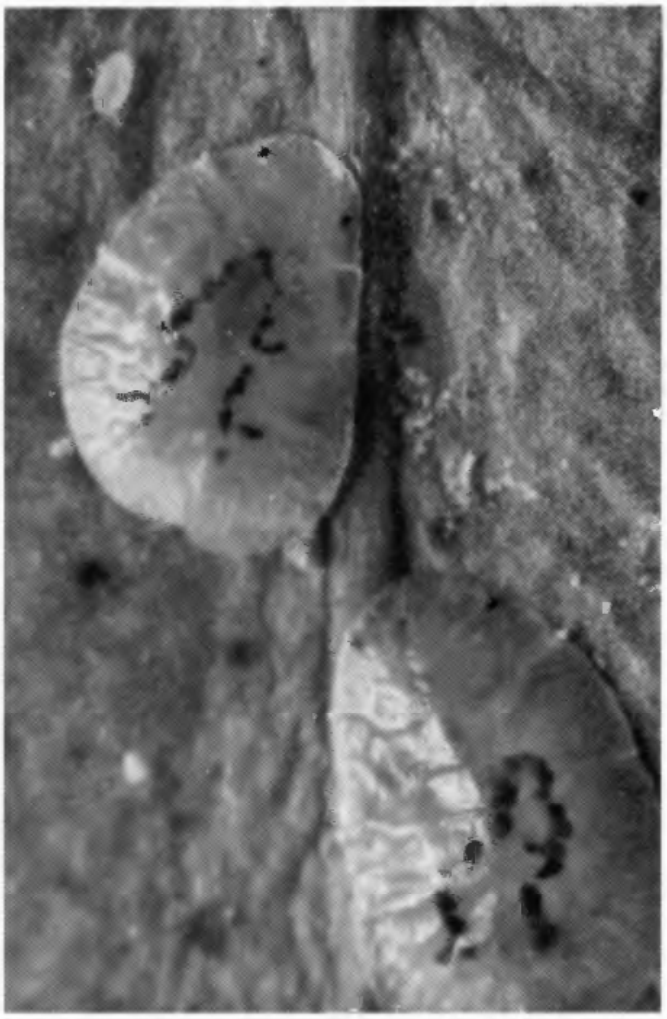


Fig. 38. *Coccus viridis*, adult females, DPI Photo 701923-8.

REMARKS: *Coccus viridis* is one of the few scale insect species that can be identified with certainty in the field because of the pale green color and the dark internal U-shaped gut. However, the U-shaped gut is not visible when specimens are dead.

MATERIAL STUDIED: FLORIDA: Apopka, 1(1), *Dizygotheca elegantissima*, 28-X-1974, R. A. Hamlen; Ft. Lauderdale, 1(1), *Coffea* sp., 2-V-1974, J. A. Reinert; Miami, 1(1), *Citrus* sp., 17-V-1977, T. D. Goodman; 1(1), *Schinus terebinthifolius*, 19-IX-1978, G. Gwin and W. S. Brewton; 1(1), *Ixora* sp., 2-X-1979, E. Pena and R. Ramirez; Stuart, 1(1), *Simaruba glauca*, 15-III-1974, E. W. Campbell; Venice, 1(1), *Citrus paradisi*, 18-VI-1981, D. Culbert; VIRGIN ISLANDS: ST. CROIX: Kingshill, 1(1), *Citrus* sp., 23-III-1973, G. W. Dekle; PUERTO RICO: ISLAVERDE: Santuree, 1(1), *Ixora coccinea*, 18-III-1974, L. F. Martorell.

Genus *EUCALYMNATUS* Cockerell, 1901

TYPE SPECIES: *Lecanium tessellatum* Signoret, 1873.

DESCRIPTION: Body of adult female flat or slightly convex, ovoid or pyriform in outline. Derm heavily sclerotized and divided into plate-like regions. Legs well developed, with tibiotarsal sclerotization and free articulation. Antennae 7 to 8-segmented. Marginal setae numerous, blunt to slightly fringed, usually bent posteriorly. Spiracular setae in groups of 3, median seta longest. Dorsal body setae thick throughout their length, usually bent and with blunt apices. Submarginal tubercles present. Multilocular pores confined to vulvar area. Quinquelocular pores in spiracular furrows and occasionally in vulvar area. Tubular ducts absent. Anal ring with 8 setae.

NOTES: The derm of nymphs and young adults of *Eucalymnatus* is not heavily sclerotized or divided into plates, and they resemble members of the genus *Coccus*. Ray and Williams (1981) described all developmental stages of the tessellated scale. The only species of *Eucalymnatus* in North America is the tessellated scale, *E. tessellatus*. Several other species are known from South America, and one is known from Africa.

EUCALYMNATUS TESSELLATUS (Signoret)

SYNONYMS: *Lecanium tessellatum* Signoret 1873:401.
Lecanium perforatum Newstead, Borchsenius 1957:306
Coccus tessellatus (Signoret), Steinweden 1929:224.
Lecanium (Eucalymnatus) tessellatus (Signoret), Cockerell & Parrott 1901:57

COMMON NAME: tessellated scale

FIELD DESCRIPTION: Adult female (Fig. 40) dark brown, flat, ovate outline, asymmetrical, strongly sclerotized; large triangular, square, and multiangular cells form a reticulate pattern (Borchsenius 1957).

DESCRIPTION: (Fig. 41) Adult females ovate to asymmetrical, 2.5-5.0 mm long, 2.0-3.0 mm wide. DORSUM—Derm heavily sclerotized in older mature females, tessellated with plates separated by membranous derm. Setae slender, curved, with blunt apices. Submarginal

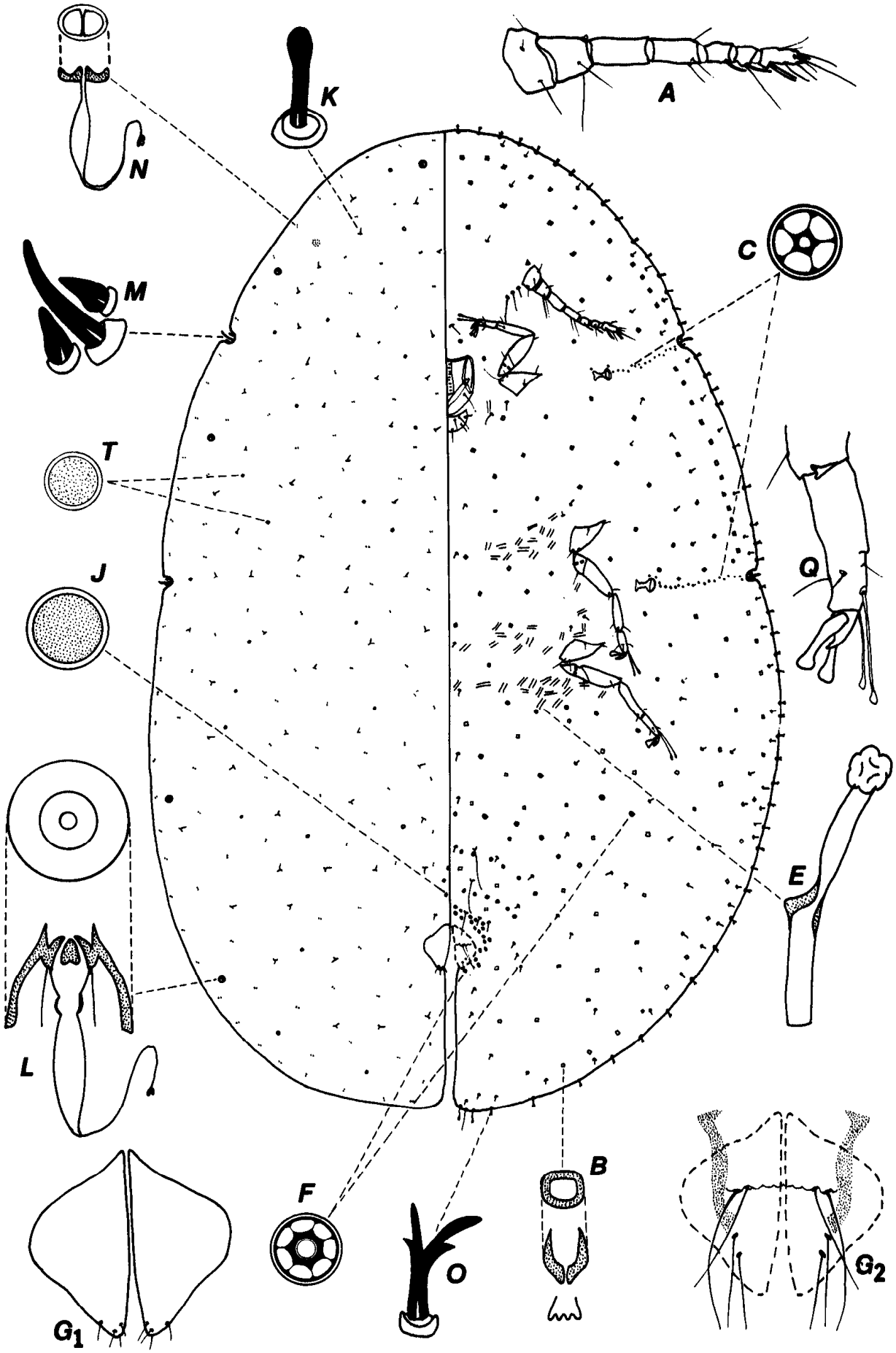


Fig. 39. *Coccus viridis*, adult female, from Gill, Nakahara, and Williams 1977.

Fig. 40. *Eucalymnatus tessellatus*, adult female, DPI Photo 700681.

tubercles (Fig. 41, E) number 10-12. A small cluster of disc pores (Fig. 41, G) anterior to anal plates. The combined anal plates nearly form a square. VENTER—Derm membranous. Antennae (Fig. 41, K) normally 7 or 8-segmented. Legs well developed with tibiotarsal scleroses. Multilocular pores (Fig. 41, N) in vulvar area, each with 5-8 loculi. Spiracular furrows narrow, usually one pore wide, occasionally 2 pores wide. MARGIN—Marginal setae (Fig. 41, B) small, slender, sometimes bifid apically, longer at posterior end of abdomen. Spiracular setae (Fig. 41, D) 3 at each spiracular cleft with median seta ca. 2X length of laterals.

DISTRIBUTION: Map XIV. AL, AR, CA, DC, HI, IL, IN, KS, LA, MA, MD, MO, MS, NJ, NY, OH, PA, SC, TN, TX. *Foreign*: A tropical species whose original home was probably the Neotropical region (Borchsenius 1957). Australia, Ecuador, Europe (western), India, Madeira, Mauritius, North Africa, Samoa, Seychelles, Solomon Islands, Sri Lanka, Taiwan, and Turkey.

BIOLOGY: One or 2 generations occur per year and in greenhouses generations will overlap. Found on leaves and stems. On leaves, individuals will frequently be asymmetrical because of their position near leaf veins. This species is ovoviviparous.

ECONOMIC IMPORTANCE: A minor pest in south Florida when commercial nurseries neglect control programs (Dekle 1973).

NATURAL ENEMIES: *Metaphycus stanleyi* Compere is the only parasite listed by both Peck (1963) and Krombein et al. (1979) for the tessellated scale.

REMARKS: Young females of this scale insect can be confused with brown soft scale. However, the tessellations appear early in the last instar, and this is distinctive (Ferris *in* Zimmerman 1948). According to Gill et al. (1977), the curved dorsal setae of *E. tessellatus* are distinctive from those of *C. hesperidum*, which are spinelike.

MATERIAL STUDIED: FLORIDA: Brooksville, 1(1), *Caryota urens*, 8-I-1970, C. B. Williams; Cedar Key, 1(1), *Persea* sp., 25-IV-1975, R. F. Denno, J. A. Davidson, and D. R. Miller; Crystal River, 1(1), *Baccharis halimifolia*, 1-XII-1980, R. H. Phillips; Everglades Nat. Park, 1(1), *Ilex cassine*, 26-III-1969, D. H. Habeck; Miami, 1(1), *Neodypsis decaryi*, 6-VI-1972, W. H. Pierce; Monticello, 1(1), *Cocos nucifera*, 13-III-1964, R. H. Miller.

Map XIV. Distribution of *Eucalymnatus tessellatus*.

Genus *EULECANIUM* Cockerell, 1893d

TYPE SPECIES: *Coccus tiliae* Linnaeus, 1758

DESCRIPTION: Body of adult female convex to almost spherical, naked, with a thin flaky wax or with powdery pubescence. Derm becoming heavily sclerotized with age. Legs well developed, without tibiotarsal sclerosis. Anten-

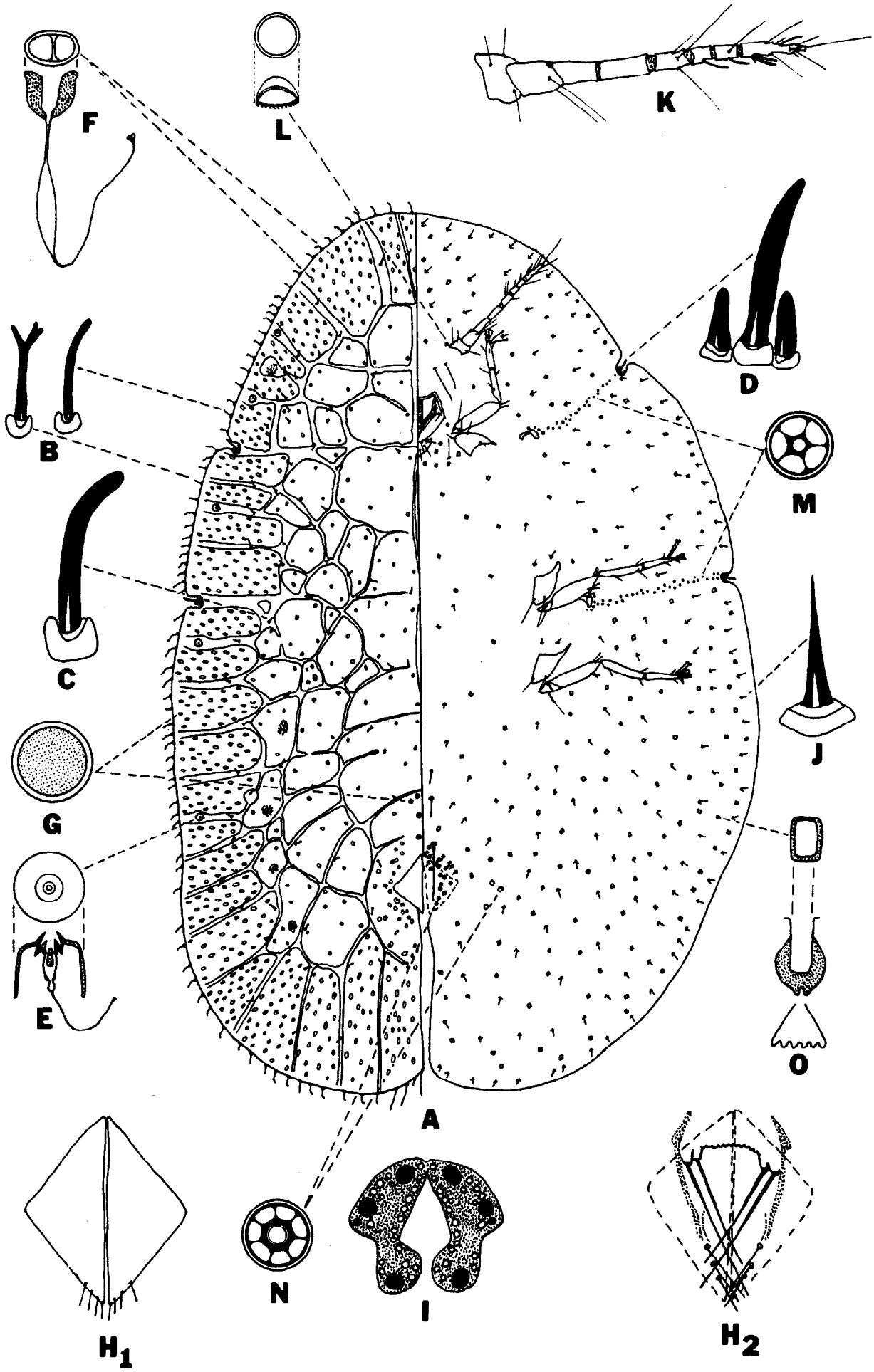


Fig. 41. *Eucalymnatus tessellatus*, adult female, from Ray and Williams 1981.

nae 6 to 7-segmented. Marginal setae spinelike, almost conical in some species. In *E. tiliae* and *E. kunoensis* the spinelike marginal setae become more slender near the ends of the body. Spiracular setae variable, in groups of 2 or 3, subequal, sometimes shorter than marginal setae. Submarginal tubercles absent. Multilocular pores in vulvar area, in transverse bands on abdomen and scattered on thorax. Quinquelocular pores in spiracular furrows and in some species on inner face of anal cleft. Tubular ducts occurring on both dorsum and venter, forming a dense submarginal band on venter. Anal plates with varying numbers of apical and subapical setae. Anal ring with 0 or 8 setae.

NOTES: The genus *Eulecanium* needs revision, because in North America, *E. tiliae* and *E. kunoense* are not congeneric with *E. cerasorum* and *E. caryae*. Members of the genus *Eulecanium* characteristically have the peritreme of the spiracles greater in diameter than the length of the coxae. The eggs are protected by the body of the female until hatching.

The only species of *Eulecanium* in the southeastern United States is *E. caryae*, the large hickory lecanium.

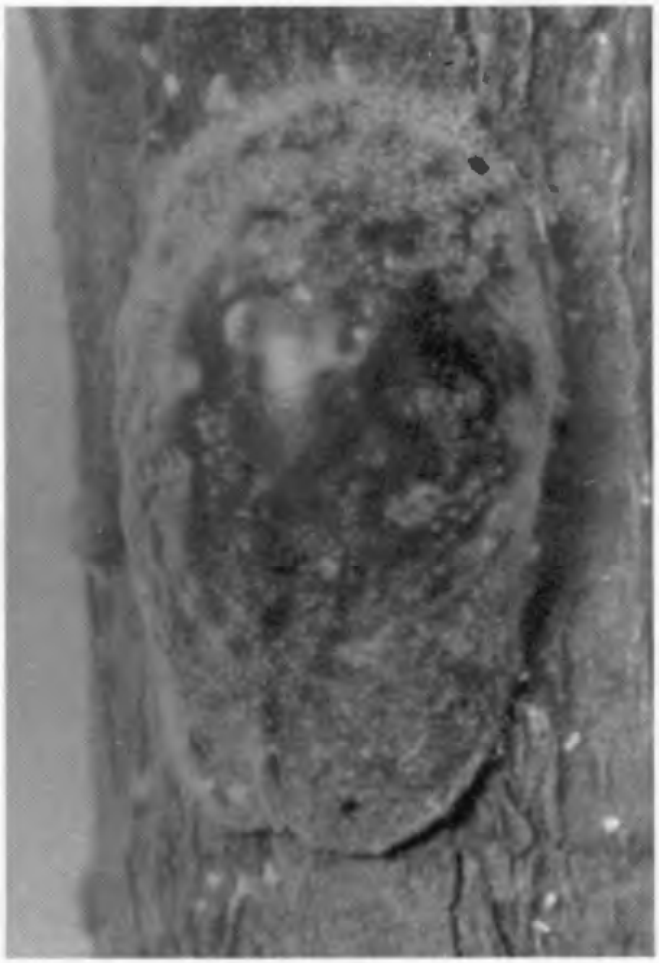


Fig. 42. *Eulecanium caryae*, adult female, from Williams and Kosztarab 1972.

EULECANIUM CARYAE (Fitch)

SYNONYMS: *Lecanium caryae* Fitch 1857:443
Lecanium cockerelli Hunter, Williams & Kosztarab 1972: 70
Lecanium (Eulecanium) caryae Fitch, Cockerell 1896a:332
Eulecanium caryae (Fitch), King 1902c:160, Nakahara 1981: 283

SUGGESTED COMMON NAME: large hickory lecanium

FIELD DESCRIPTION: (Fig. 42) The following statement is taken from Williams & Kosztarab (1972): "*Lecanium caryae* is the largest in size, among the *Lecanium* in the United States, sometimes reaching a length of 15 mm. When on large limbs it is rather flat, but on small limbs it may be more convex and of a smaller size. The cephalic third of the coccid is usually broader than the rear two-thirds. Anal cleft conspicuous. Color usually uniformly brown, although sometimes an orange tint may be noticed. The derm is usually dusted with a waxy pruinose coat."

DESCRIPTION: (Fig. 43) Adult female usually ovate, 7.5-12.0 mm long, 4.0-11.0 mm wide. DORSUM—Derm becoming sclerotized after egg deposition. Body setae (Fig. 43, C) sparse, slender, curved or straight, acute. Numerous small disc pores (Fig. 43, E) scattered over dorsum, absent from 2 clear spots above antennae. Quinquelocular pores (Fig. 43, F) few on inner margin of anal cleft, extending up to dorsum. Tubular ducts (Fig. 43, G), short, evenly scattered over dorsum except absent from 2 clear areas above antennae and anterior to anal plates. Anal plates (Fig. 43, H_1) trapezoidal in outline, lateral and caudal angles rounded, cephalic margin concave, with 4 apical setae, 3 of which are on the inner margin of each plate, 3-4 subapical setae, 3 pair fringe setae. VENTER—Body setae (Fig. 43, K) slender, straight, acute, with a large base. Antennae 7-segmented, slightly reduced in size. Legs well developed, not large, without tibiotarsal scleroses. Quinquelocular pores (Fig. 43, M) widely spaced in spiracular furrows, 30-40 in each furrow. Multilocular pores (Fig. 43, N) with 10 loculi, in vulvar area, in transverse bands on abdomen, few near coxae. Tubular ducts (Fig. 43, P) in a marginal to submarginal

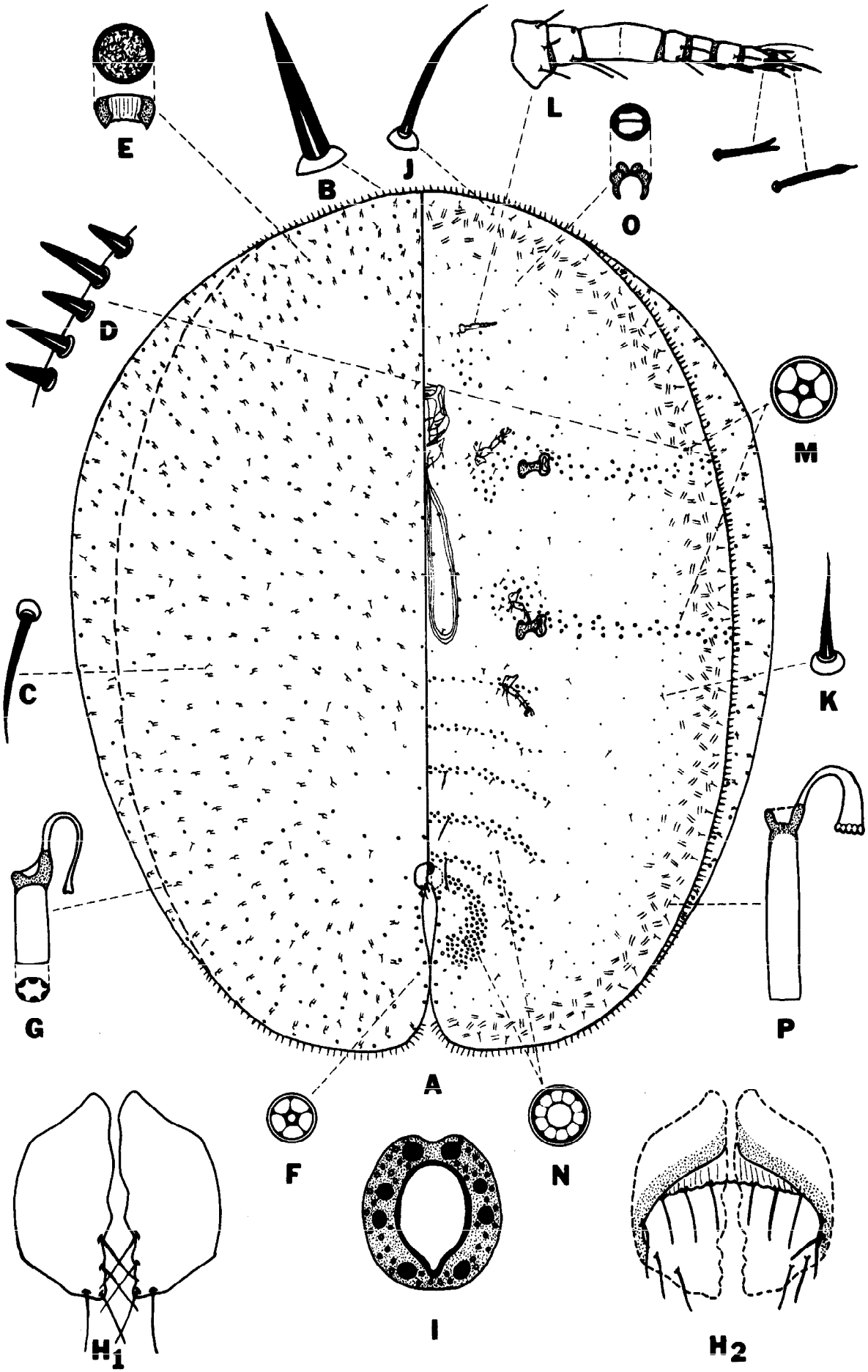
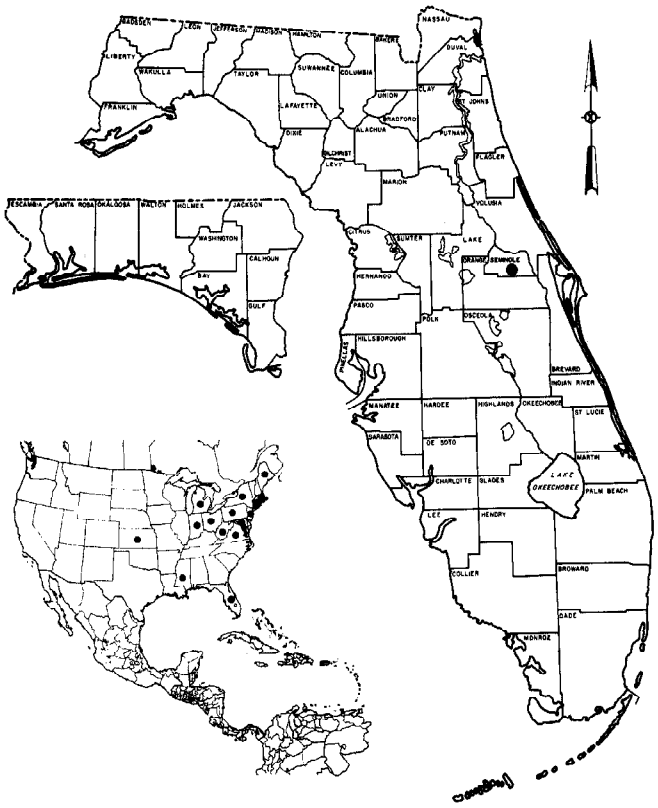


Fig. 43. *Eulecanium caryae*, adult female, from Williams and Kosztarab 1972.

band. MARGIN—Marginal setae (Fig. 43, B) stout, straight, tapering to acute apex. Spiracular setae (Fig. 43, D) shorter and stouter than marginal setae, and usually separated from each other by a single marginal seta.

DISTRIBUTION: Map XV. CT, IN, KS, MA, MD, ME, MI, MS, NJ, NY, OH, PA, VA, WV. *Foreign*: Apparently, large hickory lecanium does not occur outside the U. S.



Map XV. Distribution of *Eulecanium caryae*.

BIOLOGY: Nymphs overwinter on twigs and branches and mature during the spring. Each female lays 100+ eggs beneath her body. The eggs hatch by late June, and the nymphs migrate to the undersides of leaves to feed. In the fall, they return to twigs and branches to overwinter (Wallner 1969).

ECONOMIC IMPORTANCE: Apparently not economically important because of natural controls (Williams & Kosztarab 1972).

NATURAL ENEMIES: *Cheiloneurus albicornis* Howard is listed by both Peck (1963) and Krombein et al. (1979) for Louisiana.

REMARKS: The presence of quinquelocular pores on the inner margin of the anal cleft will separate *E. caryae* from all other *Eulecanium* species in the U. S. In Florida, this scale insect has been reported only on four recent occasions. Only 1 microscope slide of a 1st instar collected at Sanford, Florida, is available to confirm the presence of this scale insect in Florida.

MATERIAL STUDIED: VIRGINIA: Blacksburg, 1(1), *Platanus occidentalis, 13-V-1969, A. D'Ascoli; Blacksburg, 1(1), Quercus* sp., 13-V-1969, D. K. Pollet, VPI.

Genus *INGLISIA* Maskell, 1879

TYPE SPECIES: *Inglisia patella* Maskell, 1879.

DESCRIPTION: Body of adult female somewhat circular in outline, often irregular. Derm in older females sclerotized in median area and extreme margin on dorsum. A longitudinal row or furrow of pores extending from anal plates to cephalothorax on dorsum. Dorsal body setae absent. Anal plates triangular with a large discal seta, 3 apical setae, 10-12 fringe setae. Anal ring with 6 setae. Ventral derm membranous throughout. Antennae reduced to 1 segment. Legs absent in adult female. Quinquelocular pores in spiracular furrows and in small groups posterolateral to vulva on each side. Tubular ducts in a narrow submarginal band around entire venter. Marginal setae stout, tapering to acute apex. Spiracular setae not well differentiated from marginal setae; longer, more slender, usually slightly curved, often with rounded apex; 1 on margin at apex of each spiracular furrow.

NOTES: The above generic description refers only to *I. vitrea* as it is the only species of the genus which occurs in the United States. Many other species included in the genus are not congeneric with the type species and appear to be closer to the genus *Cardiococcus* Cockerell (1903b:155).

INGLISIA VITREA Cockerell

SYNONYMS: *Inglisia vitrea* Cockerell 1894: 308

SUGGESTED COMMON NAME: glassy scale

FIELD DESCRIPTION: Possesses a glassy wax covering with a conspicuous median longitudinal ridge (Fig. 44A, B). According to Merrill (1953), the female cover is circular or ovate, irregular, moderately convex, sometimes indented from margin, surface roughened. The glassy wax has radiating striations and also concentric striations giving this scale insect a very distinctive appearance.

DESCRIPTION: (Fig. 45) Female body shiny red-brown with wax covering removed; 3.0 mm long, 1.5 mm wide. DORSUM—Membranous

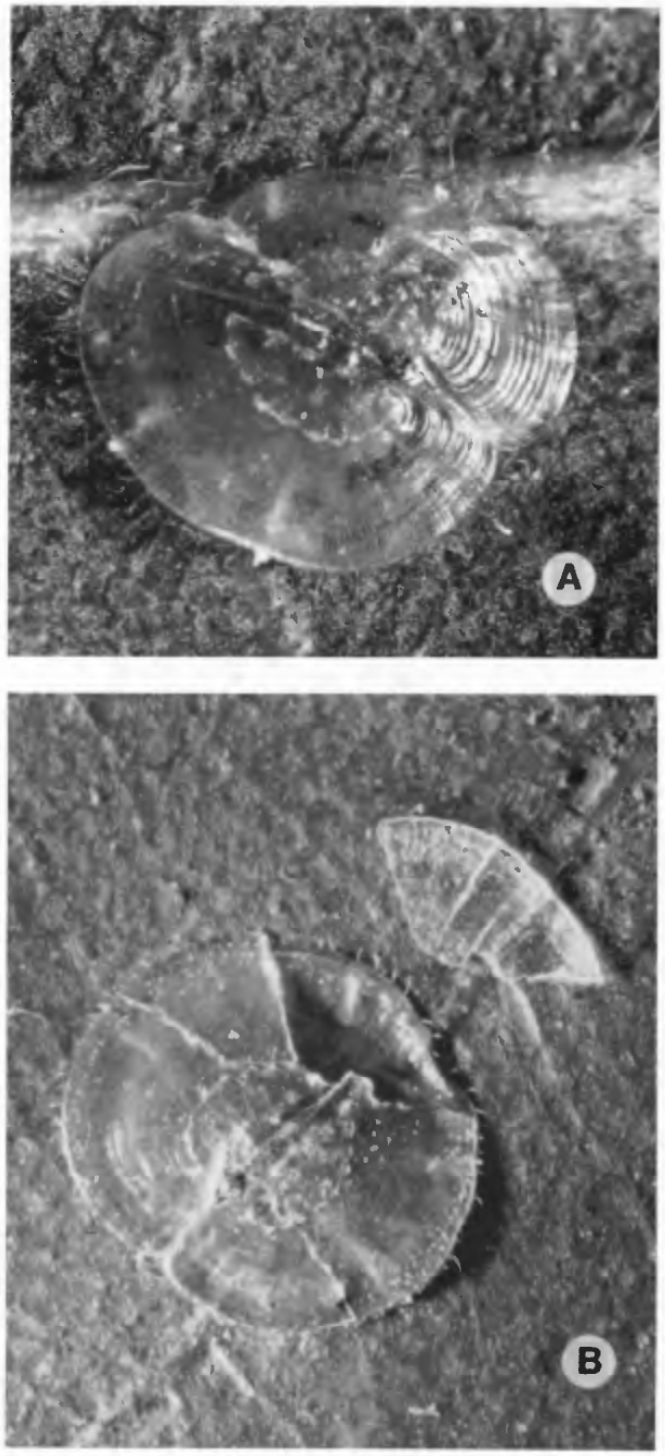
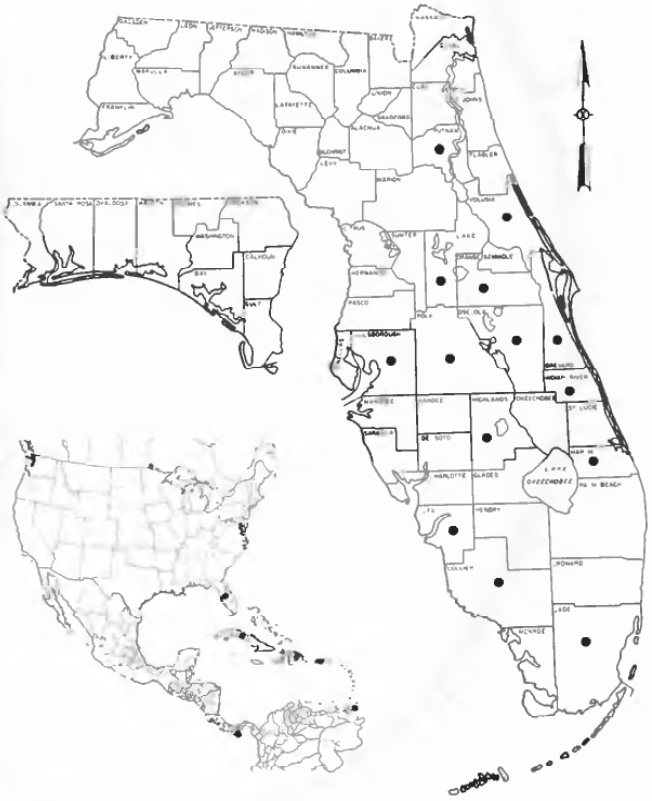


Fig. 44. *Inglisia vitrea*, adult female, A) glassy wax intact, DPI Photo 680757, B) section of glassy wax removed, DPI Photo 701507.

around submargin only; medial dorsal area heavily sclerotized, with many pores, extending from anal plates to cephalothorax. Each anal plate (Fig. 45, B) with a large discal seta. VENTER—Membranous throughout. Antennae 1-segmented (Fig. 45, C), with 4 or 5 setae. Tubular ducts (Fig. 45, D) sparse, in a narrow submarginal band. Spiracular furrows not prominent, small quinquelocular pores ca. 2.5 microns in diameter (Fig. 45, F) in furrows. Small group of quinquelocular pores posterolateral to vulva on each side (Fig. 45, E), often obscured by dorsal sclerotization. MARGIN—Marginal setae (Fig. 45, A) stout, gradually tapering to an acute apex, about 60μ long. Spiracular setae not well differentiated from marginal setae; usually longer, more slender, and slightly curved.

DISTRIBUTION: Map XVI. *Foreign*: Cuba, Dominican Republic, Panama, Puerto Rico, and Trinidad.



Map XVI. Distribution of *Inglisia vitrea*.

BIOLOGY: No information is known except that it occurs on the leaves and is ovoviviparous.

ECONOMIC IMPORTANCE: Apparently not of economic importance in Florida.

NATURAL ENEMIES: No parasite of this scale is reported in the literature, but an unidentified species of hymenopteran parasite is present in Florida.

REMARKS: The glassy wax cover, with radial and circular striations, absence of legs and dorsal setae and vestigial antennae will separate this species from all other soft scale insects in Florida.

MATERIAL STUDIED: FLORIDA: Naples, 2(2), *Calliandra* sp., 15-II-1972, W. A. Padgett; Palm City, 1(1), *Persea borbonia*, 11-IV-1978, E. W. Campbell; Plant City, 2(2), *Myrica cerifera*, 8-VII-1969, O. J. Custead; 2(2) *Myrica cerifera*, 6-X-1970, O. J. Custead; Stuart, 1(1), *Persea borbonia*, 4-XII-1978, E. W. Campbell.

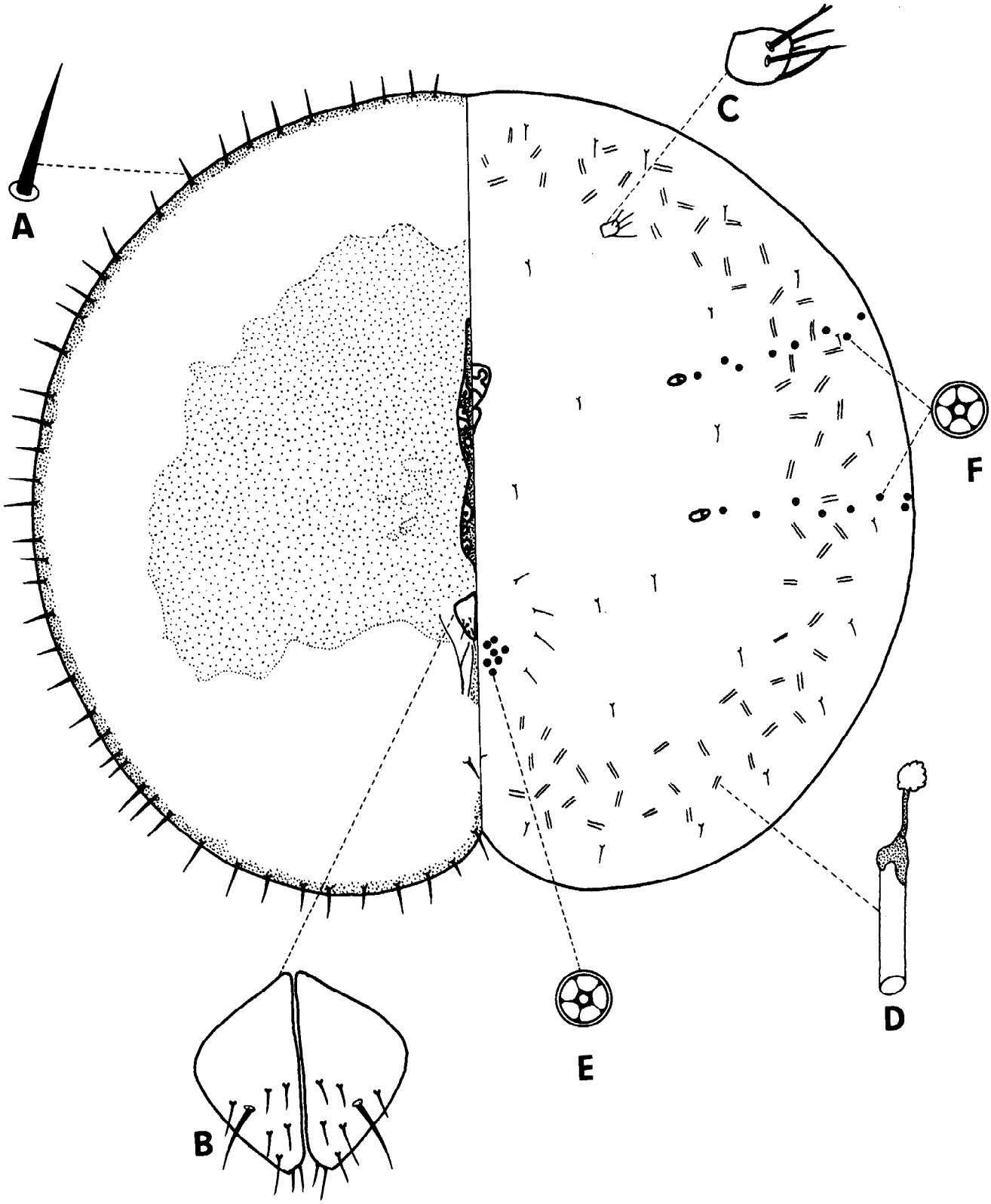


Fig. 45. *Inglisia vitrea*, adult female, original by A. B. Hamon.

Genus *KILIFIA* DeLotto, 1965

TYPE SPECIES: *Lecanium acuminatum* Signoret, 1873.

DESCRIPTION: Adult female flat, broad, pyriform, and often asymmetrical. Dorsal derm membranous in young adult females. Old adult females often with tessellated appearance. Dorsal body setae rod-like or clavate. Submarginal tubercles present. Anal plates elongate. Anal ring with 10 setae. Antennae 5 to 8-segmented. Legs well developed, meso- and metathoracic coxae enlarged and different in shape than prothoracic coxae; tibiotarsal sclerotization and free articula-

tion present. Tubular ducts absent. Quinquelocular pores in spiracular furrows and in vulvar area. Only 1 pair of prevulvar setae. Marginal setae numerous, fimbriate, except for a few near anal cleft; simple in *K. sinensis* Ben-Dov. Spiracular setae in groups of 3, median seta longest.

NOTES: The genus *Kilifia* is a small genus composed of 5 species. The only species found in Florida is the acuminate scale, *K. acuminata* (Signoret); however, *K. americana* Ben-Dov occurs in Texas and Mexico.

KILIFIA ACUMINATA (Signoret)

SYNONYMS: *Lecanium acuminatum* Signoret 1873:397
Coccus acuminatus (Signoret), Kirkaldy 1902:105
Protopulvinaria acuminata (Signoret), Steinweden 1929:223
Platycoccus acuminatus (Signoret), Takahashi 1959:76
Kilifia acuminata (Signoret), DeLotto 1965:208, Gill et al. 1977:11

COMMON NAME: acuminate scale

FIELD DESCRIPTION: Female (Fig. 46) shaped like an irregular triangle with front angle bluntly pointed (Merrill 1953). Flat and relatively thin in profile. Living females pale green to yellowish green.

DESCRIPTION: (Fig. 47) Adult female about 3.0 mm long, 2.0 mm wide. DORSUM—Derm may be slightly sclerotized in females. Dorsal setae (Fig. 47, C) clavate, in reticulate pattern. Submarginal tubercles (Fig. 47, E) number 8-11. Disc pores (Fig. 47, G) in small group anterior of anal plates. Minute bilocular pores in reticulate pattern with dorsal setae. Anal plates (Fig. 47, H_1) situated about one-third body length from posterior margin; anterolateral margins nearly 2X as long as posterolateral margins; each plate with 4 apical setae, 3 subapical setae, anal fold with 4 fringe setae. VENTER—Membranous throughout. Legs well developed; prothoracic legs of normal shape, shorter than mesothoracic and metathoracic legs with peculiarly shaped coxae, parallel-sided femur and very short tarsus. Quinquelocular pores (Fig. 47, N) in spiracular furrows; larger quinquelocular pores (Fig. 47, 0) in vulvar area. Antennae (Fig. 47, L) 8-segmented, occasionally 6 or 7-segmented. MARGIN—Marginal setae (Fig. 47, B) fimbriate, set close together. Spiracular setae (Fig. 47, D) with very short laterals and a long curved medial seta.

DISTRIBUTION: Map XVII. DC, GA, HI, MO, NY, TX. *Foreign*: Antigua, Bahama Islands, Barbados, China, Cuba, England, Fiji, France,

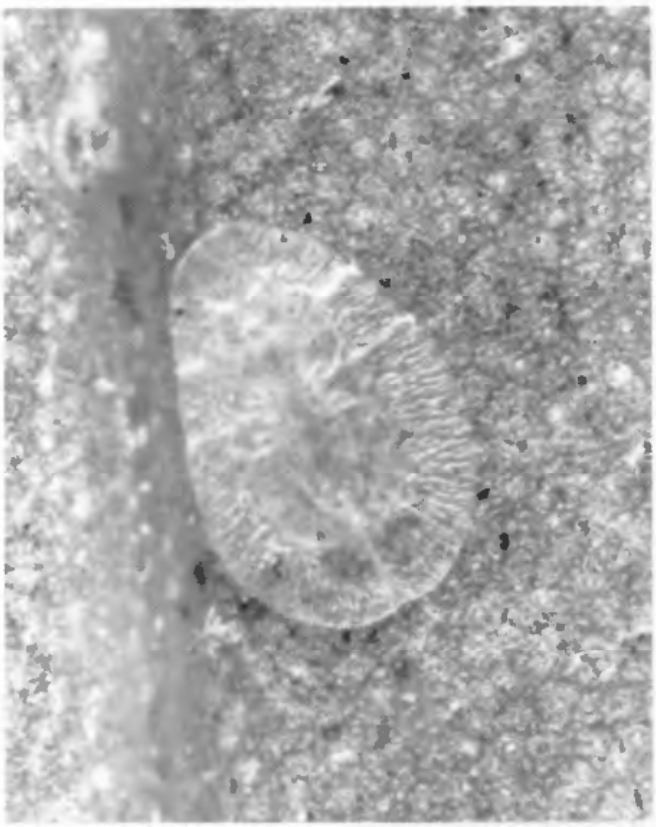
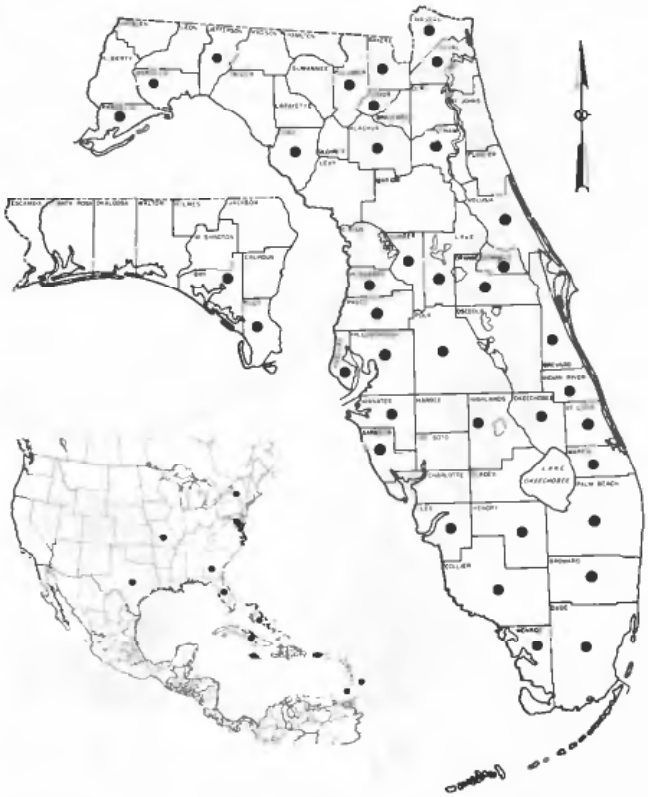


Fig. 46. *Kilifia acuminata*, adult female, DPI Photo 701618.



Map XVII. Distribution of *Kilifia acuminata*.

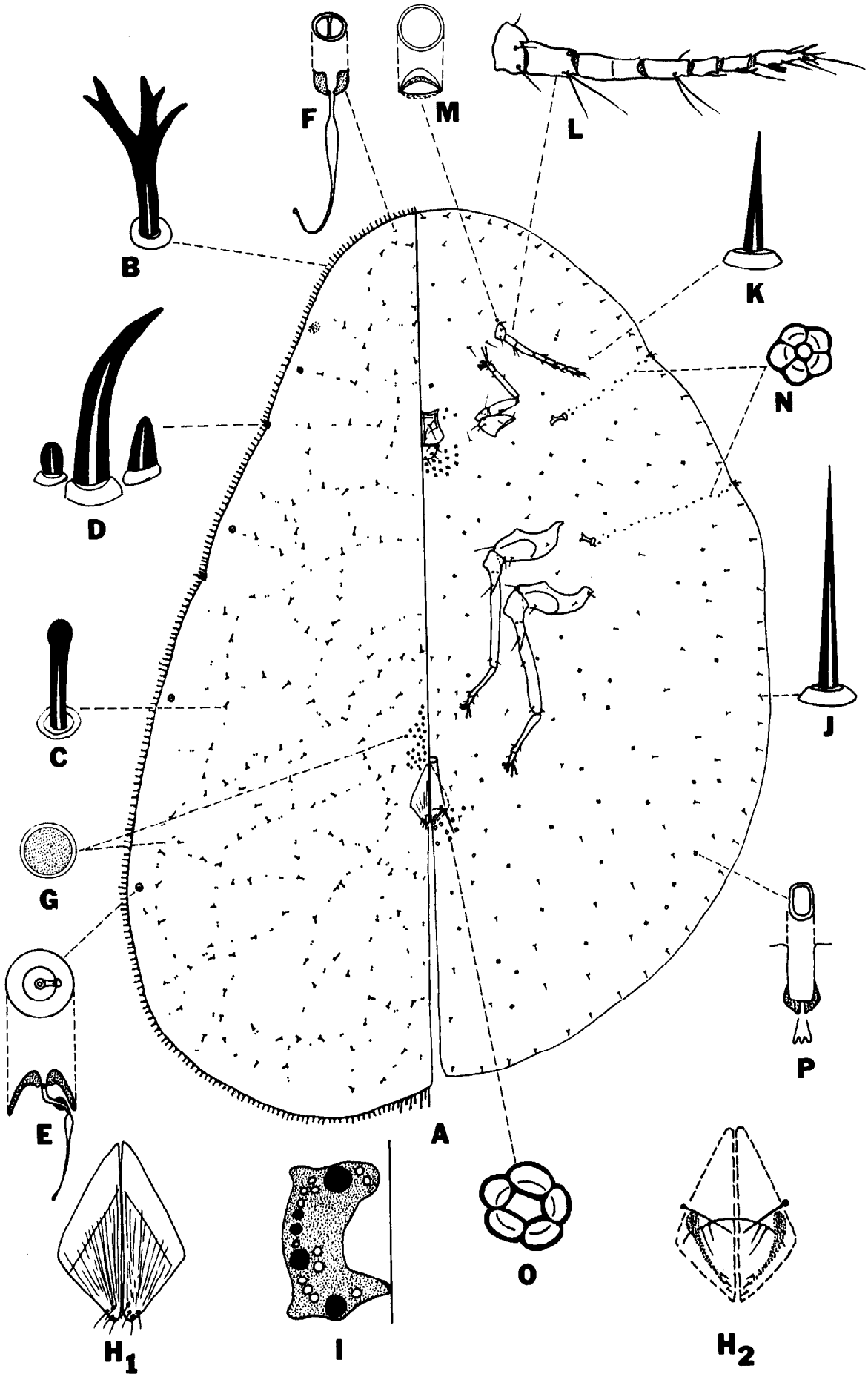


Fig. 47. *Kilifia acuminata*, adult female, original by C. H. Ray, Jr.

Grenada, India, Jamaica, Mauritius, Mexico, New Zealand, Puerto Rico, and Sri Lanka.

BIOLOGY: Occurs on the leaves. Overlapping generations are produced in south Florida.

ECONOMIC IMPORTANCE: According to Merrill (1953), this was a serious pest of ornamentals in Florida. In recent times, it appears to be less economically important with only an occasional heavy infestation observed.

REMARKS: This scale insect appears very similar to mango shield scale, *Protopulvinaria mangiferae* (Green), and the two cannot be separated by field characters. Young females of tessellated scale, *Eucalymnatus tessellatus*, closely resemble *K. acuminata*. A microscope slide is needed to separate *K. acuminata* from *P. mangiferae* and young *E. tessellatus*. The peculiar shape of the meso- and metacoxa and absence of ventral tubular ducts differentiates *K. acuminata* from *P. pyriformis* which has normal coxae and ventral tubular ducts. Normal coxae and quadrate shaped anal plates will separate *E. tessellatus* from *K. acuminata*.

MATERIAL STUDIED: FLORIDA: Alachua Co., 1(1), *Gardenia* sp., 10-IX-1979, F. R. Lawson; Clewiston, 1(1), *Schinus terebinthifolius*, 24-VI-1977, C. E. Nelson; Gainesville, 1(1), *Gordonia lasianthus*, 7-IV-1980, C. Riherd; Homestead, 1(1), *Bischofia* sp., 26-VIII-1975, D. O. Wolfenbarger; Naples, 1(1), *Gardenia jasminoides*, 14-I-1980, K. Delate; Orlando, 1(1), *Gardenia jasminoides*, 14-I-1980, K. Delate; Orlando, 1(1), *Gardenia jasminoides* 'Radicans', 28-VI-1974, G. W. Dekle and D. Graddy; St. Petersburg, 1(1), *Anthurium* sp., 25-X-1978, K. Hickman; Steinhatchee, 1(1), *Ilex* sp., 11-V-1973, A. E. Graham; Suwannee, 1(1), *Ilex vomitoria*, 9-V-1978, F. J. McHenry.

Genus *LUZULASPIS* Cockerell, 1902a

TYPE SPECIES: *Aspidiotus luzulae* Dufour, 1864.

DESCRIPTION: Body of adult female elongate, narrow and convex. Derm membranous except older specimens becoming lightly sclerotized dorsally. Antennae well developed, 8 or 9-segmented. Legs well developed with tibiotarsal sclerotization and free articulation. Marginal and dorsal setae stout and spinelike or conical with rounded or pointed apices. Spiracular setae in groups of 2; subequal, sickle-like, dorsoventrally flattened, larger than marginal setae. Submarginal tubercles absent. Dorsal discoidal pores in series of medial clusters on abdominal segments anterior to anal plates. Multilocular pores of abdominal segments. Quinquelocular pores in spiracular pore bands. Tubular ducts numerous on dorsum and venter. Anal plates triangular with 3-4 apical setae. Fringe setae variable. Well developed anal ring with 6 setae.

NOTES: The eggs are protected by a flocculent white ovisac produced by the adult female. Koteja and Howell (1979) described and illustrated the four North American *Luzulaspis* spp. Only *L. americana* is recorded from the southeastern United States.

LUZULASPIS AMERICANA Koteja and Howell

SYNONYMS: *Luzulaspis americana* Koteja and Howell 1979:335

SUGGESTED COMMON NAME: grass soft scale

FIELD DESCRIPTION: According to Koteja and Howell (1979), adult females are dark pink and protrude from a white flocculent ovisac.

DESCRIPTION: (Fig. 48) Adult female elongate, sides nearly parallel, about 4.8 mm long, 2.0 mm wide (Koteja and Howell 1979). DORSUM—Older specimens have a lightly sclerotized derm. Dorsal setae (Fig. 48, B) conical, sharp pointed, randomly scattered. Anal plates with 4 apical setae. Discoidal pores (Fig. 48, J) in groups near middle of abdominal segments. Numerous tubular ducts on dorsum, except absent from longitudinal submedial areas on head. VENTER—Antennae well developed, 8-segmented; located distinctly nearer clypeolabral shield than to anterior body margin. Quinquelocular pores in spiracular furrows. Multilocular pores (Fig. 48, H) with 8 loculi on abdominal segments 7 and 8 in vulvar region. Infrequently, 2 multilocular pores between posterior coxae. MARGIN—Marginal setae (Fig. 48, D, F) spinelike in well defined row on anterior and posterior margins, less defined on lateral margins. Setae along lateral margins somewhat smaller than those at anterior and posterior. Spiracular setae (Fig. 48, C) as stated for genus.

DISTRIBUTION: Not known in FL; presently, known only from Echols and Clinch counties, GA.

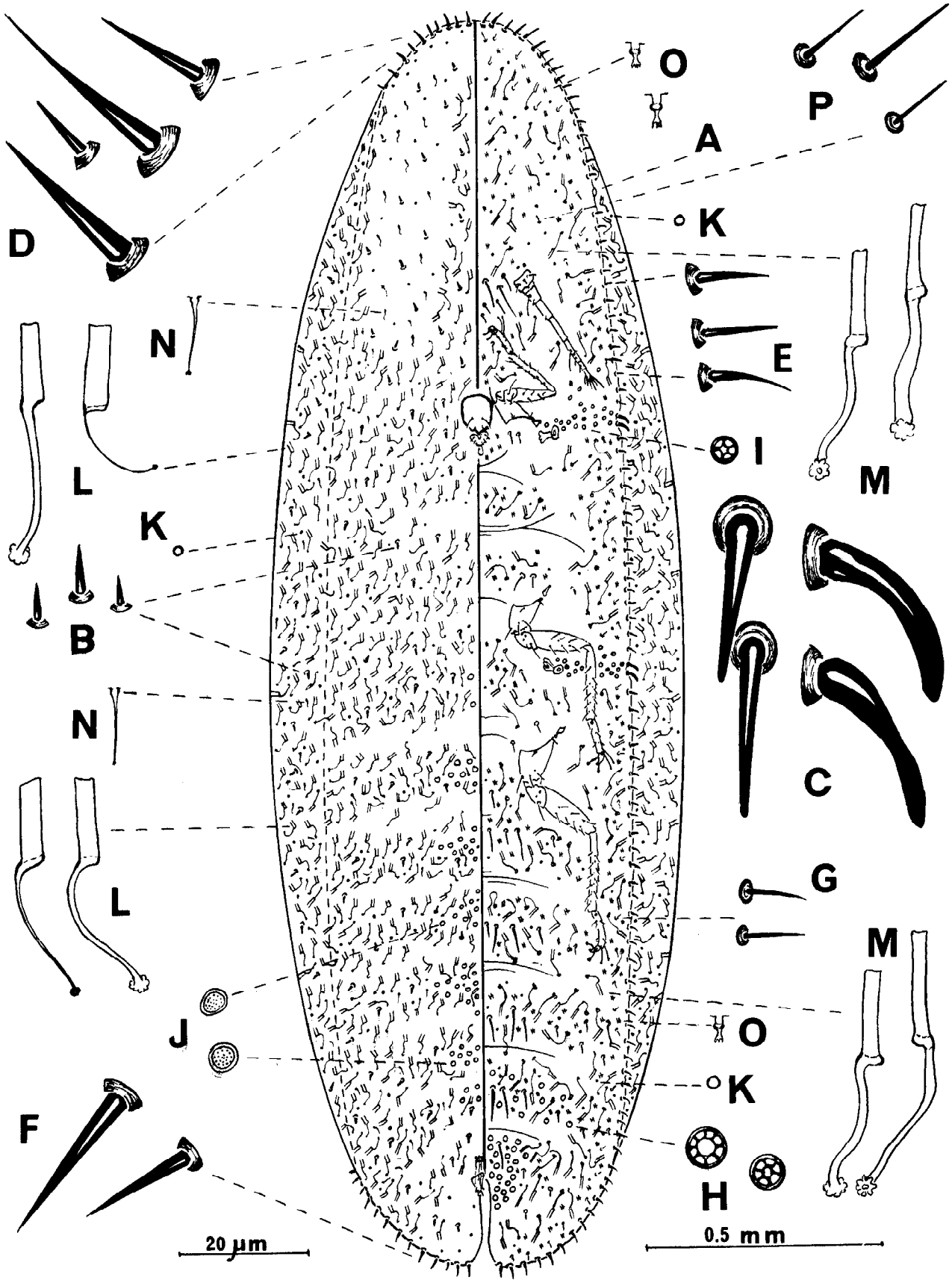


Fig. 48. *Luzulaspis americana*, adult female, from Koteja and Howell 1979.

BIOLOGY: According to Koteja and Howell (1979), adult females are usually found on the underside of leaves, and no more than 5 cm above the soil surface. Possibly 2 generations per year occur in Georgia.

ECONOMIC IMPORTANCE: Of no known economic importance.

REMARKS: *Luzulaspis americana* can be separated from the other American species of *Luzulaspis* by the antennae which are distinctly nearer the front coxae than the anterior end of the body. Known only from unknown grass, unknown sedge, and water pennywort (*Hydrocotyle* sp.) in Georgia.

Genus *MESOLECANIUM* Cockerell, 1902b

TYPE SPECIES: *Lecanium nocturnum* Cockerell and Parrott, 1899.

DESCRIPTION: Body of adult female convex. Derm becoming heavily sclerotized at maturity. Discoidal pores on mid-dorsum, extending from anal plates to above rostrum. Submarginal tubercles absent. Anal ring with 8 setae. Antennae 5 to 7-segmented. Legs with tibia and tarsus articulated, partially fused, or completely fused. Quinquelocular pores in spiracular furrows. Multilocular pores in vulvar area. Marginal setae slender, sharply bent near apex. Spiracular setae in groups of 3, median seta longer than laterals.

NOTES: The only species of *Mesolecanium* recorded from the southeastern United States is *M. nigrofasciatum*. This is a viviparous species. The young remain under the female for a short period of time before moving to the leaves of their host to settle and feed.

MESOLECANIUM NIGROFASCIATUM (Pergande)

SYNONYMS: *Lecanium nigrofasciatum* Pergande 1898:26
L. (Eulecanium) nigrofasciatum Pergande, Cockerell & Parrott 1899:234
Eulecanium nigrofasciatum (Pergande), King 1902c:160
Mesolecanium nigrofasciatum (Pergande), Nakahara 1981: 284

COMMON NAME: terrapin scale

FIELD DESCRIPTION: This scale appears as a reddish hemispherical insect (Fig. 49) about 2 mm in length, mottled with about 24 radiating streaks of black which are conspicuous near the margin. Sometimes the streaks coalesce, forming a sub-dorsal dark band surrounding a central red area. Sometimes entirely red or black individuals are found (Williams and Kosztarab 1972).

Fig. 49. *Mesolecanium nigrofasciatum*, adult female, DPI Photo 701496.

DESCRIPTION: (Fig. 50) Adult females nearly circular, 1.2 mm to 4.2 mm in diameter. DORSUM—Derm becoming heavily sclerotized in older adult females. Body setae (Fig. 50, C) sparse, mostly in submarginal area, slender, slightly curved, apex pointed. Small bilocular pores (Fig. 50, E) with inner filament scattered over dorsum. Crown-shaped discoidal pores (Fig. 50, G) in median row of 9-17 pores extending from anterior of anal plates, to above rostrum. Each anal plate (Fig. 50, H_1) triangular with sclerotized and thickened caudolateral margin. Derm surrounding anal plates usually heavily sclerotized. VENTER—Membranous. Antennae well developed, 6-segmented, (Fig. 50, L) segment III longest. Submarginal setae (Fig. 50, J) slender, acute, curved, with large base. Body setae very similar to submarginal setae. Legs well developed without tibiotarsal scleroses and free articulation. Spiracular furrows each with 12 to 47 quinquelocular pores in rows 1 or 2 pores wide, rows may be 3 or 4 pores wide near margin. Multilocular pores (Fig. 50, N) mostly with 8 loculi. Small microducts (Fig. 50, 0) scattered over venter. MARGIN—Marginal setae (Fig. 50, B) slender, straight at base but curved from about midway to apex. Spiracular setae (Fig. 50,

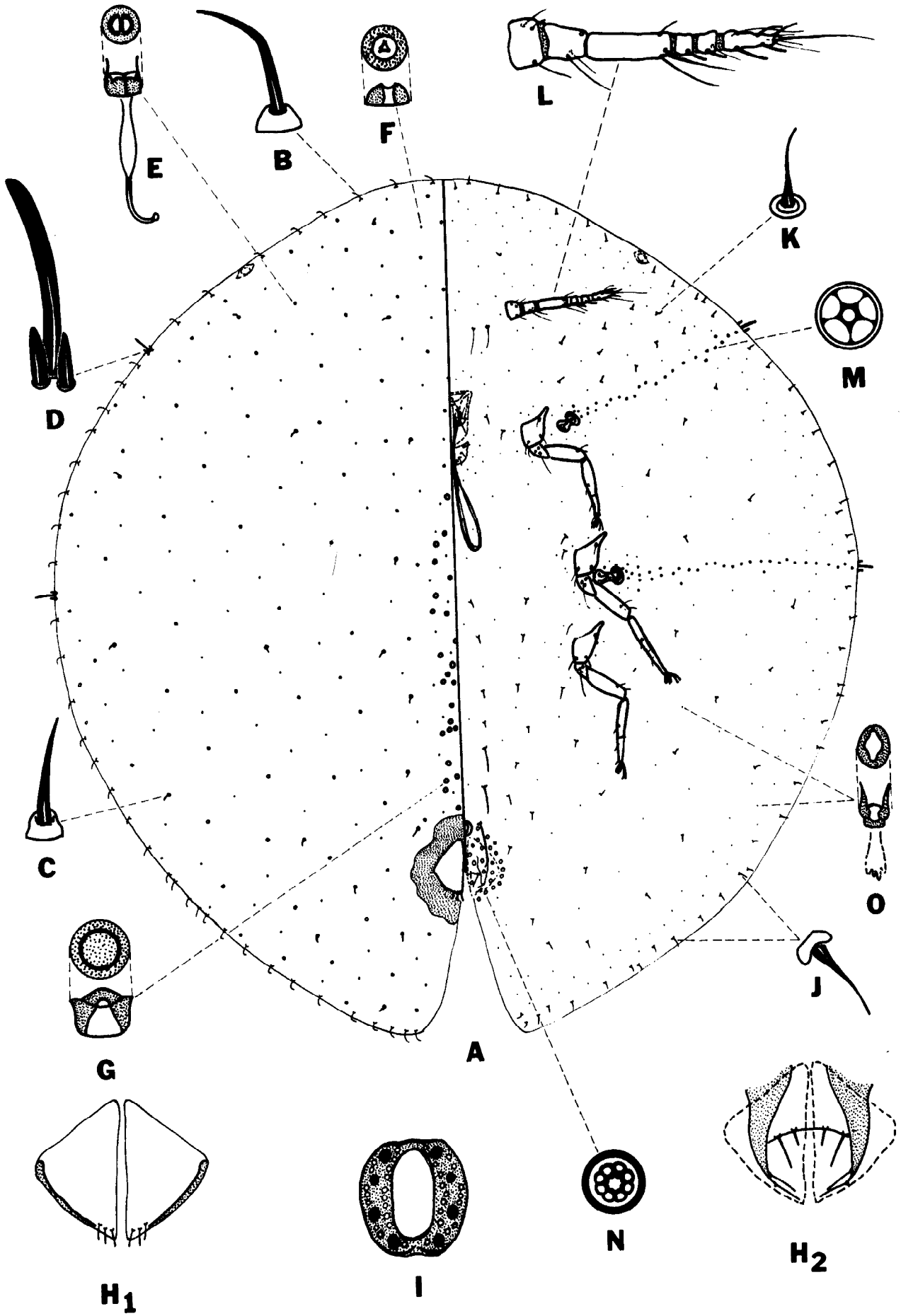
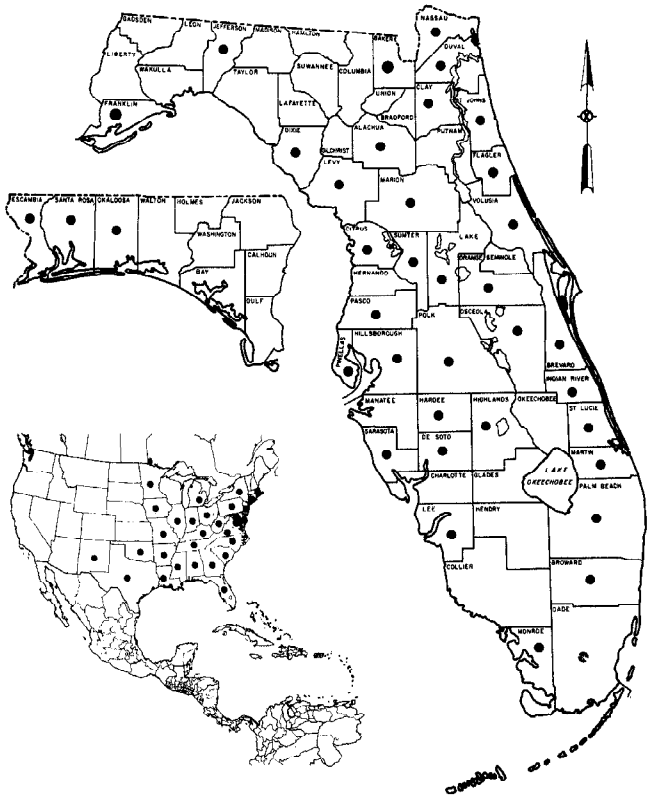


Fig. 50. *Mesolecanium nigrofasciatum*, adult female, from Williams and Kosztarab 1972.

D) in groups of 3 with medial seta 2.5 to 3X longer than laterals.

DISTRIBUTION: Map XVIII. Recorded from every state east of the Mississippi River except Maine, New Hampshire, and Vermont. Also recorded from AR, IA, LA, MN, MO, NM, OK, TX. *Foreign*: There is no indication that this scale occurs outside of North America (Williams & Kosztarab 1972).



Map XVIII. Distribution of *Mesolecanium nigrofasciatum*.

BIOLOGY: According to Williams and Kosztarab (1972) the female terrapin scale reaches maturity in early spring and is viviparous. The 1st instar nymphs remain under the female for 1-3 days, then migrate to leaves where they feed. After about 18 days they molt into a 2nd instar and 18 days later become adult females and move back to twigs. Meanwhile, the males pass through 5 stages, emerge, mate, and then die. Mated females "hibernate" during the winter.

ECONOMIC IMPORTANCE: Simanton (1916) ranked terrapin scale as second among scale insects as a pest of peaches. Symons & Corey (1910) state that the greatest damage was caused to fruit and leaves by fungi growing in the large amounts of honeydew. Although frequently encountered in Florida, it is apparently of little economic consequence.

NATURAL ENEMIES: Numerous parasites are listed by Peck (1963) and Krombein et al. (1979). Some of those are as follows: *Aphycus annulipes* (Ashmead), FL; *Cheiloneurus albicornis* (Howard), LA; *Coccophagus fraternus* Howard, NY to FL; *C. lycimnia* (Walker), cosmopolitan pest of many Coccoidea; *Encyrtus fuscus* (Howard), AL; *Eunotus lividus* Ashmead, FL; *Metaphycus pulvinariae* Howard, cosmopolitan; *Phycus varicornis* (Howard), Canada to FL; *Prospaltella aurantii* Howard, cosmopolitan; *Tetrastichus minutus* (Howard), FL; *Chartocerus pulcher* (Girault), NC, AR.

REMARKS: Terrapin scale is a native North American species and was observed as early as 1872 by Theodore Pergande (Williams & Kosztarab 1972). It was then believed to be European peach scale *Parthenolecanium persicae* (Fab.). *Mesolecanium nigrofasciatum* is likely to be confused with *Parthenolecanium* spp. in Florida.

MATERIAL STUDIED: FLORIDA; Esterno, 2(2), *Vaccinium* sp., 6-I-1979, W. T. Walsh; Fernandina Beach, 1(1), *Persea borbonia*, 13-II-1979, G. T. Smith and W. H. Shirley; Ft. Drum, 1(1), *Liquidambar styraciflua*, 27-X-1980, S. P. Beidler; Inverness, 1(1), *Vaccinium darrowi*, 1-II-1980, R. Phillips; Inverness, 2(2), bay tree, 8-II-1980, R. H. Phillips; St. Augustine, 2(2), *Magnolia virginiana*, 21-IV-1981, K. Miller.

Genus *NEOLECANIUM* Parrott, 1901 (in Cockerell and Parrott 1901)

TYPE SPECIES: *Lecanium imbricatum* Cockerell, 1896c.

DESCRIPTION: Body of adult female convex, naked or dusted with a white powdery wax bloom. Derm sclerotized at maturity. Dorsum with a dense pattern of bilocular pores. Submarginal tubercles absent. Large discoidal pores around anal plates. Anal plates with varying number of apical, subapical, and fringe setae. Anal ring with 10 setae. Antennae 6-segmented. Legs reduced, without tibiotarsal sclerotization. Quinquelocular pores in spiracular furrows, in vulvar area, and on abdomen. Multilocular pores absent. Tubular ducts confined to vulvar area. Marginal setae slender and non-fimbriate. Spiracular setae in groups of 3, short, stout, subequal.

NOTES: The eggs are protected by the body of the adult female. The genus *Neolecanium* was

first proposed as a subgenus of *Lecanium*. Steinweden (1929) concluded that *Neolecanium*, *Pseudophilippia*, and *Toumeyella* constituted a single genus. The generic characters given here refer only to *Neolecanium cornuparvum* (Thro) because it is the only species of the genus which occurs in the United States. The genus *Neolecanium* must be revised before its true relationship to the genus *Toumeyella* can be understood. For a description of the immature stages and adult male of *N. cornuparvum* see Ray and Williams (1982).

NEOLECANIUM CORNUPARVUM (Thro)

SYNONYMS: *Lecanium cornuparvum* Thro 1903:216
Neolecanium cornuparvum (Thro), Fernald 1903:176, Ray and Williams 1983:161

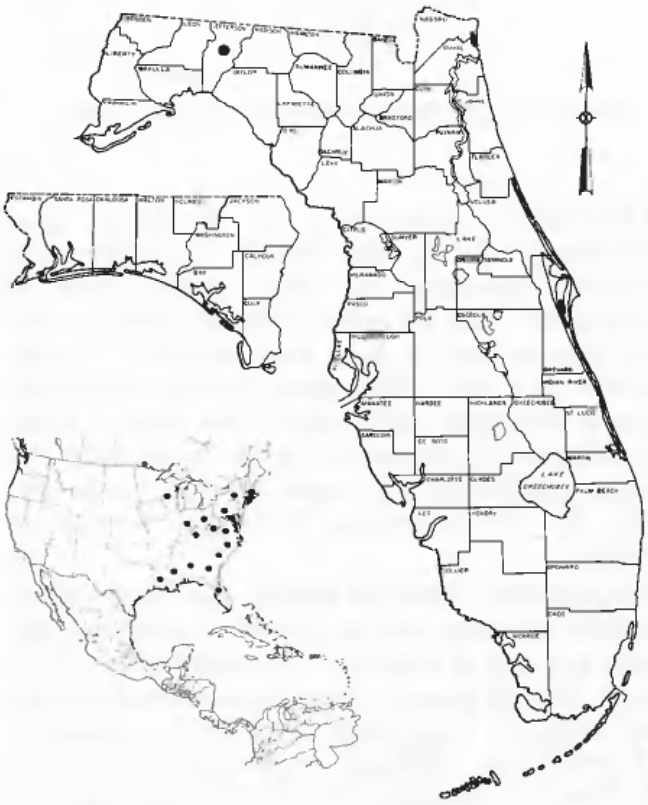
COMMON NAME: magnolia scale

FIELD DESCRIPTION: Williams & Kosztarab (1972) indicated that females are very large, reaching a length of 12.5 mm. The shape is elliptical and flat to convex. Younger, developing females are pink-orange and darker around the margin. Old females are usually covered with a white bloom or mealy wax (Fig. 51); very old females are brown.

Fig. 51. *Neolecanium cornuparvum*, adult female, DPI Photo 702950-6.

DESCRIPTION: (Fig. 52) Adult female oval to irregular, slightly narrower at anterior end; length 4.3-12.4 mm, width 4.0-10.0 mm (Williams & Kosztarab 1972). DORSUM—Older females have slightly sclerotized derm, heavier sclerotization around anal plates. Numerous small 8-shaped pores (Fig. 52, E. F), each in a clear area on dorsal surface. Body setae (Fig. 52, C) short, stout, pointed, randomly scattered. Many small disc pores scattered over dorsum. Large discoidal pores (Fig. 52, H) scattered over derm anterior to anal plates and extending to just above mouthparts. Anal plates (Fig. 52, Ii) triangular with all angles rounded. VENTER—Submarginal setae short, slender, pointed, 9 between spiracular furrows. Antennae short, stout, 6-segmented, segmentation often obscure. Legs short, stout, segmentation frequently obscure. Spiracles longer than legs. Spiracular furrows with band of quinquelocular pores (Fig. 52, N), 15-20 pores wide near margin, becoming narrower near spiracles. Tubular ducts (Fig. 52, P) numerous in vulvar area. Quinquelocular pores (Fig. 52, N) numerous in vulvar area. MARGIN—Marginal setae (Fig. 52, B) slender, pointed, straight or curved at apex, about 16 between anterior and posterior spiracular furrows. Spiracular setae (Fig. 52, D) 3 at apex of each spiracular furrow, each short, stout, conical, sometimes notched at apex; median seta slightly larger than laterals.

DISTRIBUTION: Map XIX. AL, CT, GA, IN, KY, LA, MA, MD, MS, NC, NY, OH, PA, SC, VA, WI, WV.



Map XIX. Distribution of *Neolecanium cornuparvum*.

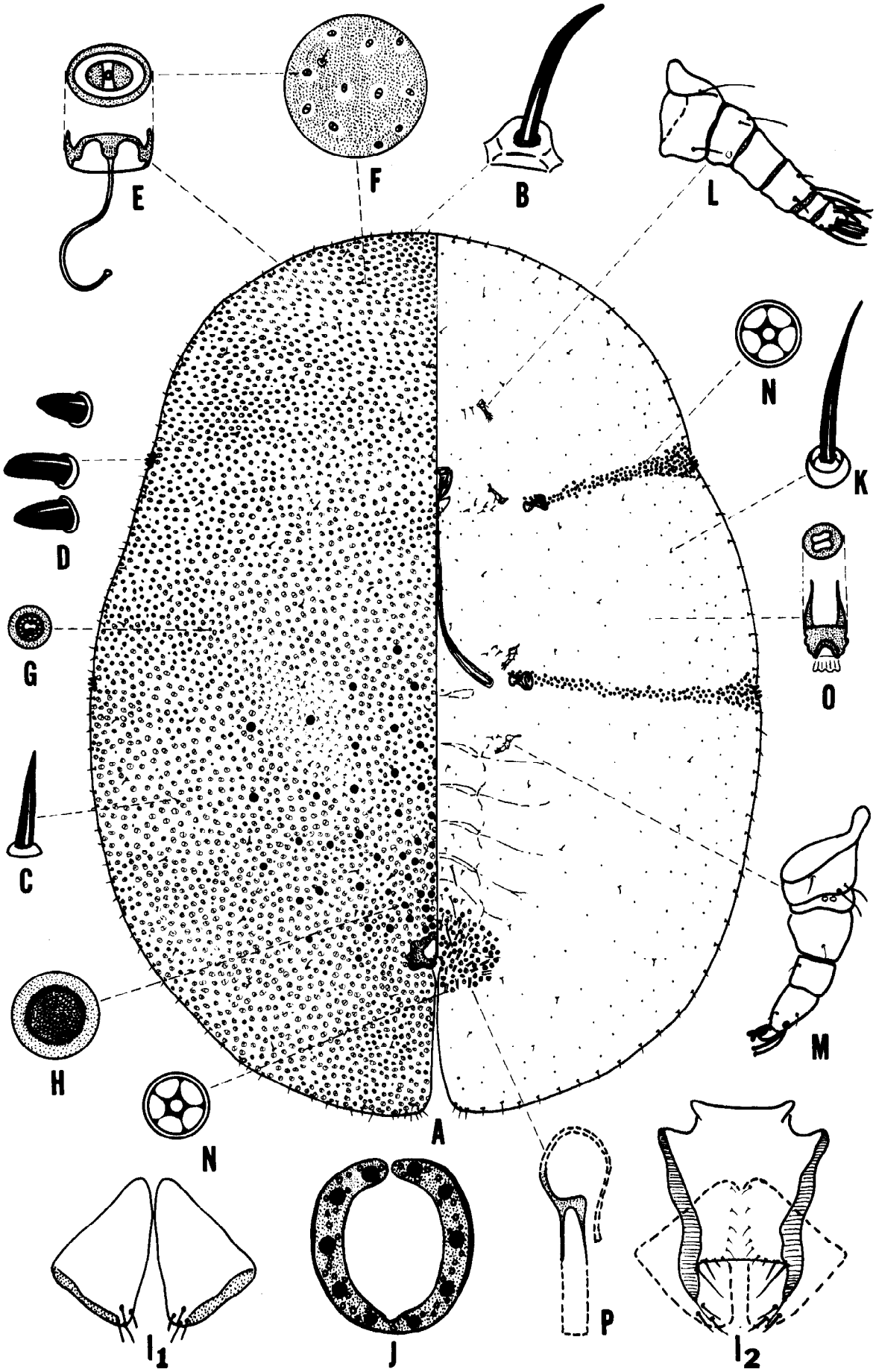


Fig. 52. *Neolecanium cornuparvum*, adult female, from Williams and Kosztarab 1972.

BIOLOGY: The magnolia scale is viviparous, and produces one generation a year in Virginia (Williams & Kosztarab 1972).

ECONOMIC IMPORTANCE: Magnolia scale may cause localized damage, and large amounts of honeydew may attract other noxious insects and promotes the growth of sooty fungus (Williams & Kosztarab 1972).

REMARKS: According to Williams and Kosztarab (1972), magnolia scale is one of the largest scale insects in the United States. The dense pattern of small 8-shaped pores on the dorsum, reduced legs, and reduced antennae will separate this species from all others in Florida.

MATERIAL STUDIED: VIRGINIA; Blacksburg, 1(1), *Magnolia stellata*, 13-VIII-1969, M. Williams, VPI; Pulaska County, 1(1), unknown host, 16-VII-1972, E. Harris, VPI. FLORIDA: Jefferson County, 6(6), *Magnolia grandiflora*, 7-V-1968, W. H. Whitcomb.

Genus *PARASAISSETIA* Takahashi, 1955a

TYPE SPECIES: *Saissetia nigra* Nietner, 1861.

DESCRIPTION: Body of adult female moderately convex and broad when on leaves, highly convex and elongate when on stems. Derm heavily sclerotized, divided into polygonal cell-like reticulations. Dorsal body setae cylindrical or capitate. Submarginal tubercles present. Anal plates without discal setae. Anal ring with 8 setae. Antennae well developed, 7 to 8-segmented. Legs well developed without tibiotarsal sclerosis or free articulation. Quinquelocular pores in spiracular furrows. Multilocular pores in vulvar area and transverse rows on abdomen. Tubular ducts in ventral submarginal band. Marginal setae pointed, blunt, variously frayed, or fringed. Spiracular setae in groups of 3, median seta longest.

NOTES: The eggs are protected by the body of the adult female until hatching. The only species of *Parasaissetia* occurring in North America is the nigra scale, *P. nigra*. Two other species are known from Africa.

PARASAISSETIA NIGRA (Nietner)

SYNONYMS: *Lecanium nigrum* Nietner 1861: 9

Lecanium depressum Targioni, Smith 1944:235.

Lecanium simulans Douglas, Smith 1944:235.

Lecanium depressum Signoret, Douglas 1887a:21

Lecanium begoniae Douglas, Smith 1944:235.

Lecanium (Saissetia) nigrum Nietner, Cockerell & Parrott 1899:163

Lecanium (Saissetia) nigrum var. begoniae (Douglas), Cockerell & Parrott 1899:163.

Saissetia nigra (Nietner), King 1902:296

Saissetia depressa (Targioni), King 1902a:296

Saissetia begoniae (Douglas), King 1902a:296

Coccus nigrum (Nietner), Kirkaldy 1902:105

Saissetia depressa var. *simulans* (Douglas), Fernald 1903:201, Smith 1944:235

Lecanium pseudonigrum Kuwana, Smith 1944:235

Parasaissetia nigra (Nietner), Takahashi 1955a:26

Fig. 53. *Parasaissetia nigra*, adult females, DPI Photo 700497.

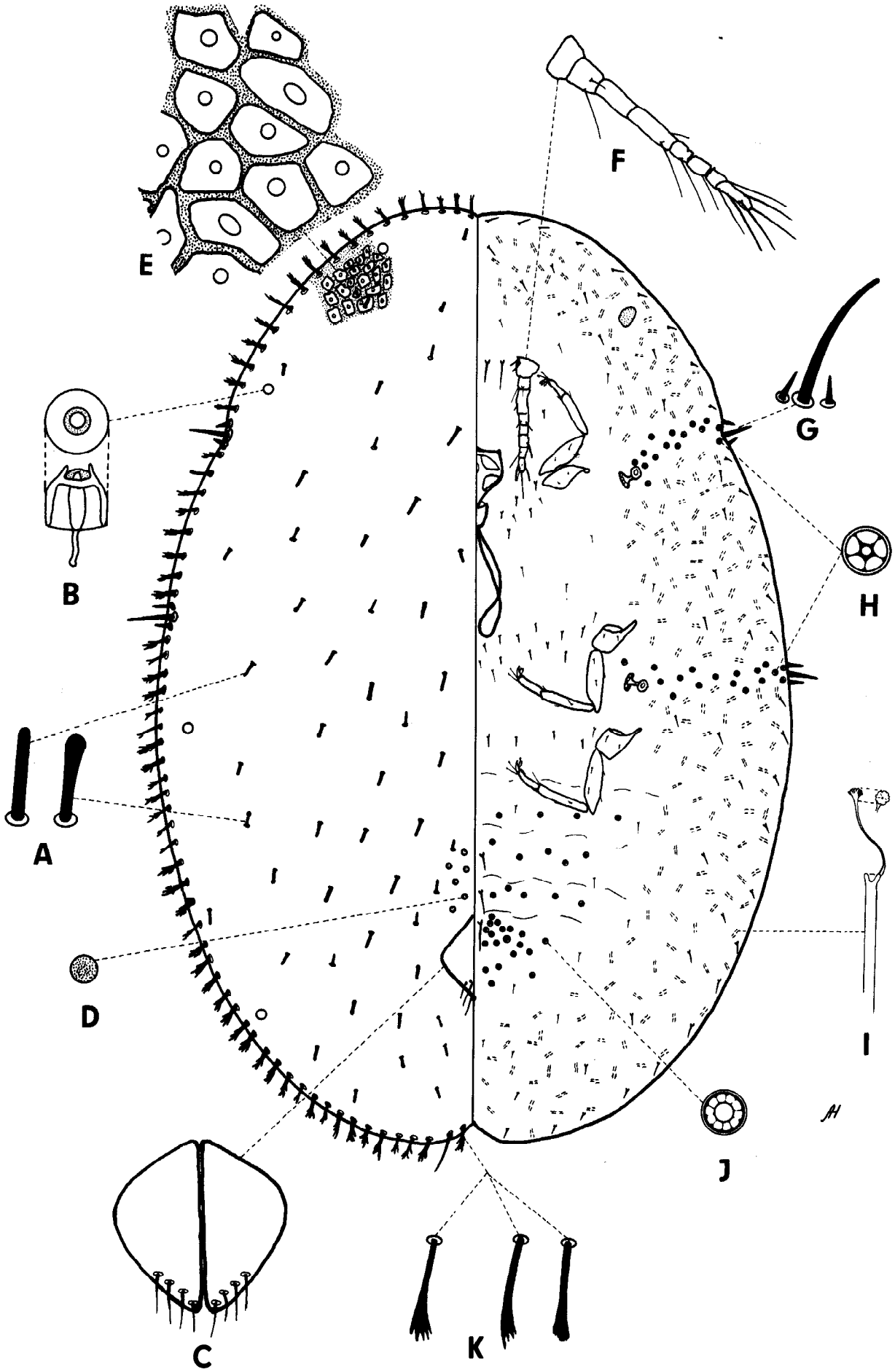


Fig. 54. *Parasaissetia nigra*, adult female, original by A. B. Hamon.

COMMON NAME: nigra scale

FIELD DESCRIPTION: Adult females elongate-oval, somewhat narrowed in front, moderately convex or flat, and sometimes humpbacked at middle (Fig. 53). Length 3.5-4.0 mm. Unsclerotized females opaque white; brown to shiny black in sclerotized females. Dorsal surface smooth or slightly wrinkled transversely.

DESCRIPTION: (Fig. 54) Adult females may reach 5.0 mm in length, usually less (Ferris *in* Zimmerman 1948). DORSUM—Derm heavily sclerotized in old females, with closely set polygonal cell-like reticulations (Fig. 54, E). Dorsal setae (Fig. 54, A) cylindrical or apices swollen. Submarginal tubercles (Fig. 54, B) variable in number. Combined anal plates quadrate (Fig. 54, C). Few discoidal pores (Fig. 54, D) anterior of anal plates. VENTER—Antennae well developed, 8-segmented. Tubular ducts (Fig. 54, I) around submargin, absent from median region. Multilocular pores (Fig. 54, J) most numerous around vulva with few on each abdominal segment. Quinquelocular pores in spiracular furrows. MARGIN—Marginal setae (Fig. 54, K) stout with apex flattened, expanded, clavate, or variously fimbriate. Spiracular setae (Fig. 54, G) in groups of 3, median seta 2.5 to 3X longer than laterals.

DISTRIBUTION: Map XX. AL, CA, DC, KS, LA, MD, MO, NY, OH, OK, PA, TX, VA. *Foreign*: Cosmopolitan.

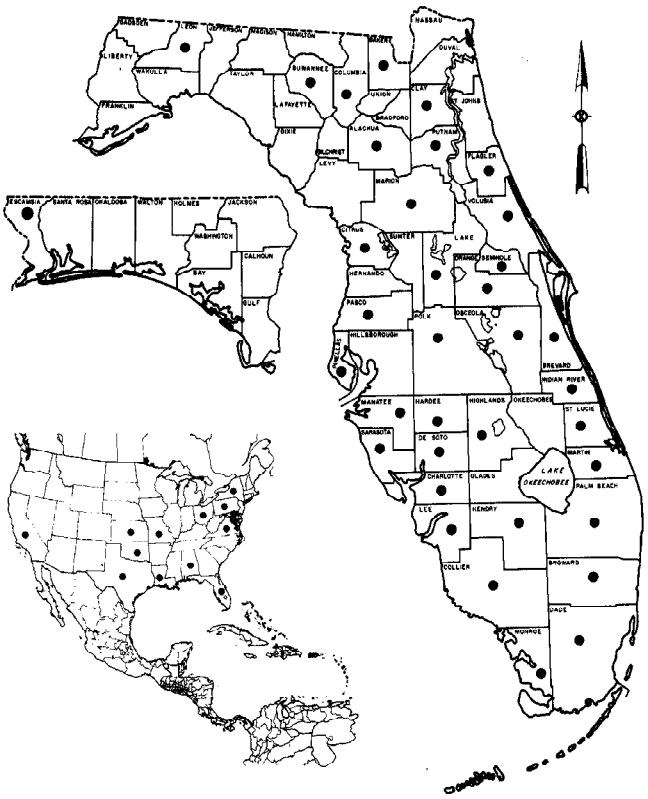
BIOLOGY: Nigra scale has one generation per year outdoors in California. Eggs were laid over a very long period of time, from mid-May to February (Smith 1944). Reproduction is by parthenogenesis. They feed on leaves, twigs, branches, and fruits. The life cycle is very similar under Florida conditions.

ECONOMIC IMPORTANCE: A pest of many ornamental plants in tropical countries. In the U. S., it is usually not a serious pest, but Merrill (1953) reported nigra scale as an occasional economic pest on hibiscus in Florida.

NATURAL ENEMIES: Some of the parasites listed in Peck (1963) and Krombein et al. (1979) are as follow: *Chartocerus fasciatus* (Girault), TX; *Coccophagus cowperi* Girault, TX; *C. lycimnia* Walker, cosmopolitan; *C. ochraceus* Howard, TX; *Lecaniobius capitatus* Gahan, TX; *L. cockerellii* Ashmead, FL; *Scutellista cyanea* Motschulsky, cosmopolitan. In southern California, *Metaphycus helvolus* (Compere) has effectively controlled *P. nigra* (Bartlett *in* Clausen ed. 1978).

REMARKS: In the field nigra scale may be confused with the black scales (*Saissetia* spp.), but the dorsal surface is much smoother and the shape is more elongate in nigra scale than in any of the black scales. Specimens mounted on a microscope slide can be separated from black scales because of the distinctive dorsal setae, dorsal reticulations, and lack of discal setae on the anal plates of nigra scale.

MATERIAL STUDIED: FLORIDA; Apopka, 1(1), *Monstera deliciosa*, 8-III-1979, D. Remington; Groveland, 1(1), *Hibiscus* sp., 23-VI-1970, W. P. Henderson; High Point, 1(1), *Homalocladium platycladum*, 17-XI-1978, P. Pullara; Lake City, 1(1), *Pilea cadierei*, 6-X-1970, H. W. Collins; Miami, 1(1), *Aralia elegantissima*, 8-II-1972, F. J. McHenry; Pompano, 1(1), *Ficus* sp., 7-III-1977, R. Schimmel; Seffner, 1(1), *Hibiscus* sp., 23-II-1970, E. R. Simmons; Seffner, 1(1), *Hibiscus* sp., 18-VIII-1971, D. A. Vaughan.



Map XX. Distribution of *Parasaissetia nigra*.

Genus *PARTHENOLECANIUM* Sulc, 1908

TYPE SPECIES: *Lecanium corni* Bouché, 1844.

DESCRIPTION: Body of adult female usually strongly convex, naked, with a thin flaky wax, or with powdery pubescence. Derm becoming

heavily sclerotized with age. Submarginal tubercles present or absent. Anal plates with varying numbers of apical and subapical setae. Anal ring with 8 setae. Antennae well developed, 6 to 8-segmented. Legs well developed, without tibiotarsal sclerosis (except *Parthenolecanium persicae* (Fabricius)). Quinquelocular pores in spiracular furrows. Multilocular pores in vulvar area, in transverse rows on abdomen, few scattered on thorax up to rostrum. Tubular ducts present or absent ventrally on medial area of abdomen and thorax, in dense submarginal band on venter. Marginal setae spinelike. Spiracular setae in groups of 3, median seta longer than laterals.

NOTES: Some members of this genus are extremely polyphagous, while others tend to be found on only a few plant species. The eggs are protected by the body of the old female until hatching. Species in this genus show host induced variation and are difficult to determine. Many of the type specimens are lost, or are based on old sclerotized adult females in poor condition; therefore, the taxonomy of the genus is not well understood. Some of the species are identified only by their preferred hosts. *Parthenolecanium corni* and *P. quercifex* key to the same couplet because these two species cannot be consistently separated even with slide mounted preparations.

Species reported in the southeastern United States include: *Parthenolecanium corni*, *P. fletcheri*, *P. persicae*, and *P. quercifex*.

KEY TO SPECIES OF PARTHENOLECANIUM

1. With 12-17 pairs of submarginal tubercles; legs with tibiotarsal sclerosis .... *persicae*

1'. With less than 12 pairs of submarginal tubercles; legs without tibiotarsal sclerosis 2

2. Dorsal tubular ducts present; marginal setae in 2 irregular rows; on various hosts ..... *corni, quercifex*

2'. Dorsal tubular ducts absent; marginal setae in a single irregular row; on *Taxus*, *Juniperus*, and *Cupressus* ..... *fletcheri*

PARTHENOLECANIUM CORNI (Bouché)

SYNONYMS: *Lecanium corni* Bouché 1844: 298
Lecanium corylifex Fitch, Comstock 1883:133
Lecanium cynosbati Fitch, Comstock 1883:133
Lecanium fitchii Signoret, Comstock 1883:133
Lecanium juglandifex Fitch, Comstock 1883:133
Eulecanium corni (Bouché), Fernald 1903:185
Parthenolecanium corni (Bouché), Borchsenius 1957: 356, Nakahara 1981:284
For a more extensive list see Kawecki 1958:135

COMMON NAME: European fruit lecanium

FIELD DESCRIPTION: The appearance varies considerably, depending on the host, but as they become older they turn a uniform brown and become very convex (Williams & Kosztarab 1972) (Fig. 55).

Fig. 55. *Parthenolecanium corni*, adult female, DPI Photo 702442-20.

DESCRIPTION: (Fig. 56) Adult female ovoid, 3.0-6.0 mm long, 1.7-5.0 mm wide. DORSUM—Derm of older specimens heavily sclerotized. Body setae spinelike or conical, stout, apex blunt, of 2 sizes: smaller setae (Fig. 56, C) scattered randomly on submedial and submarginal

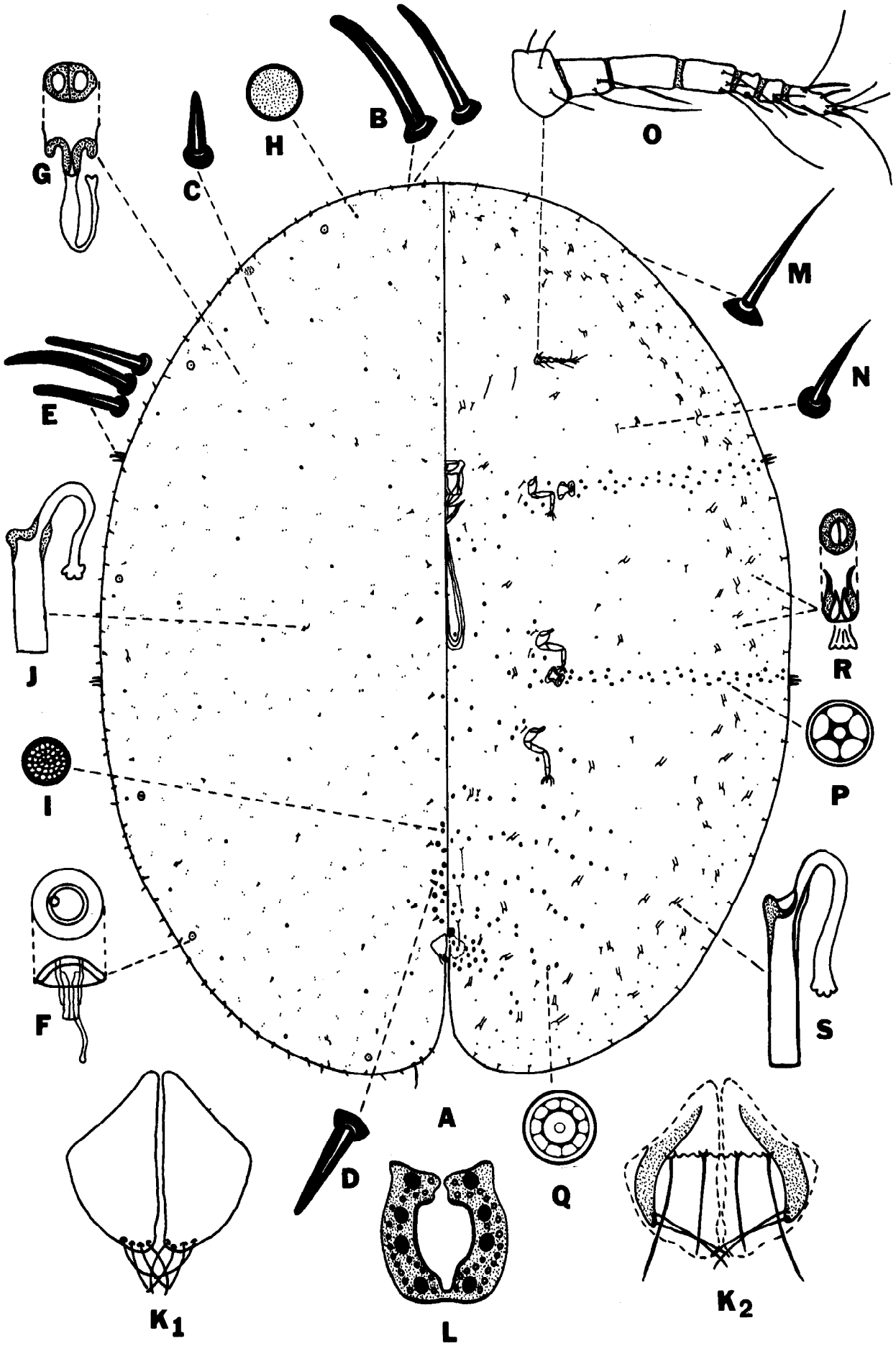
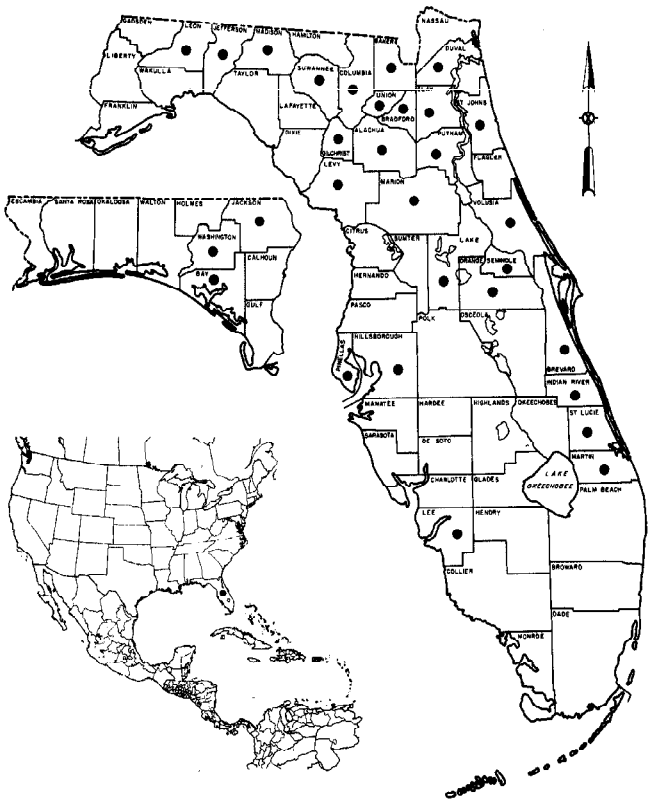


Fig. 56. *Parthenolecanium corni*, adult female, from Williams and Kosztarab 1972.

area; larger setae in medial area from anterior anal plates (Fig. 56, D) to head. Submarginal tubercles (Fig. 56, F) present or absent. Thick rimmed disc pores (Fig. 56, I) anterior of anal plates. Anal plates (Fig. 56, K_1) triangular with the caudal angle rounded, each plate with 4 apical, 2 subapical setae. VENTER—Antennae 6 or 7-segmented (Fig. 56, 0). Legs without tibiotarsal scleroses; Claw digitules unequal. Spiracular furrows 2 or 3 quinquelocular pores (Fig. 56, P) wide, pores widely spaced. Multilocular pores (Fig. 56, Q) in transverse rows on abdomen and in central area of thorax, most with 10 loculi. Tubular ducts (Fig. 56, S) sparse on submargin of abdomen, thorax, and medial area of thorax. MARGIN—Marginal setae, (Fig. 56, B) straight or slightly curved, with blunt apices, some thicker than others. Spiracular setae 3 (Fig. 56, E), median seta 1.5X longer than laterals.

DISTRIBUTION: Map XXI. Found throughout the U. S. *Foreign*: Holarctic, plus Argentina and Australia.



Map XXI. Distribution of *Parthenolecanium corni*.

BIOLOGY: According to Williams and Kosztarab (1972), European fruit lecanium overwinters in the second nymphal instar on the twigs and branches and matures in early spring. In early summer, adult females lay large numbers of eggs beneath their bodies. After the eggs hatch, the nymphs migrate to the underside of leaves where they feed, but before leaf drop they migrate back to twigs and branches where they overwinter.

ECONOMIC IMPORTANCE: Economically important in many situations, especially on ornamentals where the balance of natural controls has been hampered by chemical controls.

NATURAL ENEMIES: Numerous parasites are listed in Peck (1963) and Krombein et al. (1979) for this scale insect. Some of those common to this area are as follows: *Aphycus annulipes* (Ashmead), FL; *Metaphycus pulvinariae* (Howard), cosmopolitan; *Cheiloneurus albicornis* Howard, LA; *Coccophagus lycimnia* (Walker), cosmopolitan; *C. scutellaris* (Dalman), FL; *Encyrtus bicolor* Howard, LA; *E. fuscus* (Howard), AL; *Eunotus lividus* Ashmead, FL; *Microterys flavus* (Howard), FL; *Prospaltella aurantii* (Howard), cosmopolitan; *Scutellista cyanea* Motschulsky, cosmopolitan; *Tetrastichus minutus* (Howard), FL. In northern California and British Columbia, the parasite *Blastothrix sericea* (Dalman) has contributed to a decline in the economic importance of *P. corni* (Bartlett *in* Clausen ed. 1978). It is likely that because of taxonomic confusion in the genus *Parthenolecanium* this list of parasites may not be accurate.

REMARKS: This is one of the most common and widespread scale insects in the U. S. Because it exhibits extreme morphological variation from host to host, many of its host-induced forms have been described as separate species. It is not possible to consistently separate *P. corni* from *P. fletcheri* (Cockerell) and *P. quercifex* (Fitch). Therefore, these 3 species are referred to as the "corni complex" (Williams & Kosztarab 1972).

MATERIAL STUDIED: FLORIDA; Gainesville, 1(1), *Diospyros* sp., 3-IV-1923, G. B. Merrill; Jacksonville, 1(1), *Liquidambar styraciflua*, 3-III-1981, J. Garbark; Lakeland, 2(2), *Pinus* sp., 2-IV-1981, Training Class #44; Live Oak, 1(1), *Prunus* sp., 28-III-1977, O. P. Hatch; Port St. Lucie, 1(1), *Carya* sp., 28-II-1980, E. W. Campbell; Tavares, 1(1), *Quercus nigra*, 2-IV-1981, L. J. Chambliss; White Springs, 2(2), *Myrica cerifera*, 21-III-1980, C. Webb.

PARTHENOLECANIUM FLETCHERI (Cockerell)

SYNONYMS: *Lecanium fletcheri* Cockerell 1893f:221

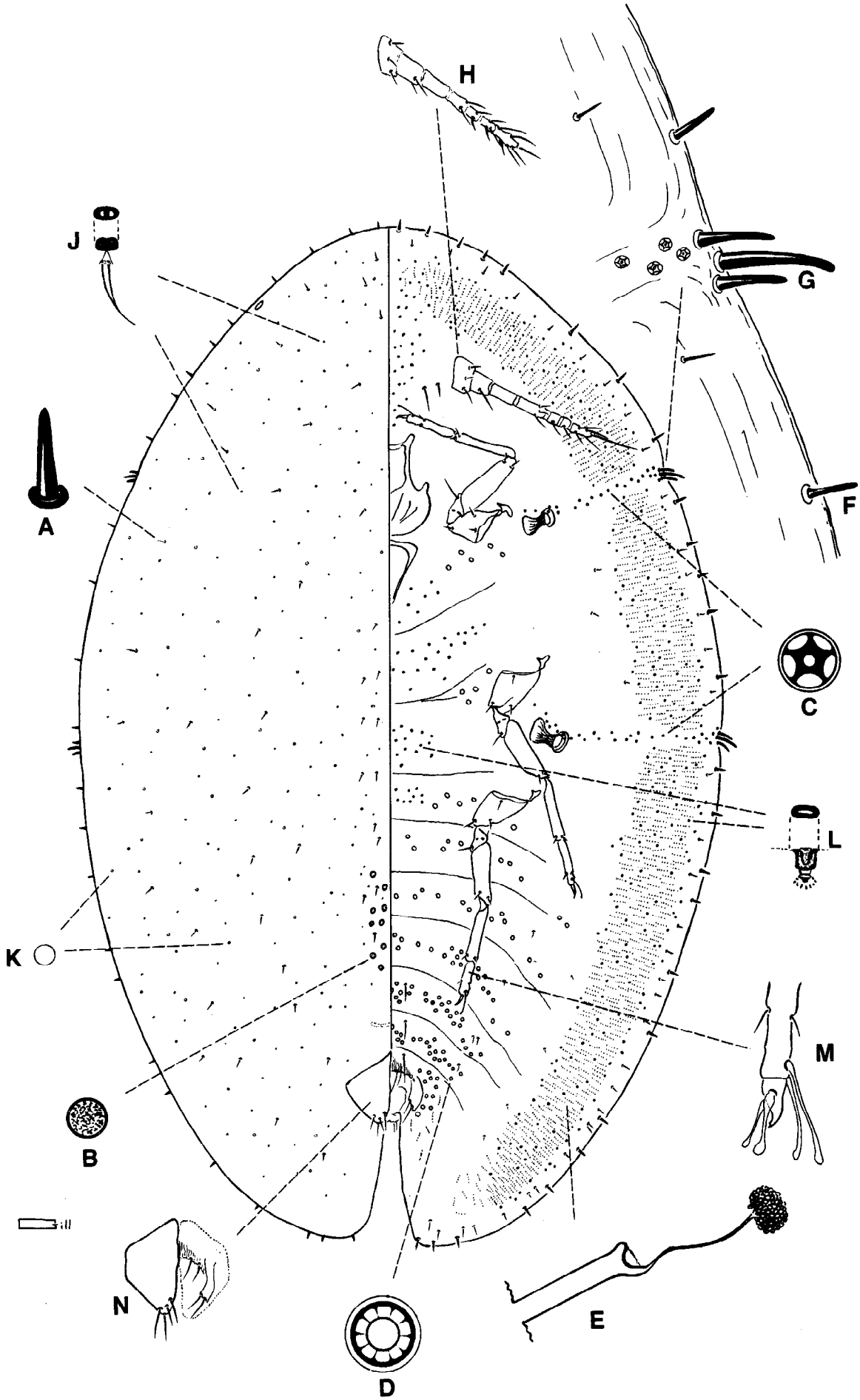


Fig. 57. *Parthenolecanium fletcheri,* adult female, original by R. J. Gill, California Dept. of Food and Agric., Div. of Plant Industry.

Lecanium (Eulecanium) fletcheri (Cockerell), King 1902c: 159
Eulecanium fletcheri (Cockerell), King 1902c:159
Parthenolecanium fletcheri (Cockerell), Borchsenius 1957: 370

COMMON NAME: Fletcher scale

FIELD DESCRIPTION: Adult female body oval, strongly convex, nearly hemispherical, sides bulging, slightly bent under below; the posterior end and to a lesser extent the anterior end of the body projecting below. Dead females brown to yellowish brown, shiny, and with a few marginal indentations (Borchsenius 1957).

DESCRIPTION: (Fig. 57) Adult females oval to subcircular, ca. 3.0 mm long, 2.0 mm wide. DORSUM—Derm heavily sclerotized in older females. Setae spine-like (Fig. 57, A), larger in median area of dorsum. Discoidal pores (Fig. 57, B) in small group anterior of anal plates. Tubular ducts absent. Submarginal tubercles absent. VENTER—Antennae 7 or 8-segmented. Quinquelocular pores (Fig. 57, C) in spiracular furrows 2 to 3 pores wide. Multilocular pores (Fig. 57, D) in clusters mesad of each coxa and in transverse rows on abdominal segments. A large cluster of disc pores anterior to mouth parts. Tubular ducts (Fig. 57, E) in submarginal band on abdomen and thorax, absent from median area of body. MARGIN—Marginal setae (Fig. 57, F) spinelike, apices blunt, sparse, in single irregular row. Spiracular setae (Fig. 57, G) in groups of 3, medial seta ca. 1.5X length of laterals, slightly curved.

DISTRIBUTION: Not reported from Florida. AL, AR, CO, CT, IA, ID, IL, IN, KS, KY, LA, MA, MD, MI, MN, MO, NJ, NY, OH, OK, OR, PA, RI, SC, TX, VA, WA, WI, WV. *Foreign*: Canada, France, Germany, Holland, Poland, Sweden, Switzerland, and USSR.

BIOLOGY: One generation occurs per year. In colder regions, crawlers are present in June and July and settle on twigs and leaves. Fletcher scale overwinters as a second instar and reaches maturity in May.

ECONOMIC IMPORTANCE: Damaging to *Taxus* spp.

NATURAL ENEMIES: Parasites listed by Peck (1963) and Krombein et al. (1979) are as follows: *Metaphycus pulvinariae* (Howard), cosmopolitan; *Cheiloneurus albicornis* Howard, LA; *Coccophagus lycimnia* (Walker), cosmopolitan pest of many Coccoidea; *Encyrtus bicolor* Howard, LA; *Microterys flavus* (Howard), FL.

REMARKS: *Parthenolecanium fletcheri* and *P. corni* share many of the same morphological characters. Williams and Kosztarab (1972) were unable to separate them; however, in the natural state, they appear distinct, and their hosts are apparently quite different.

MATERIAL STUDIED: Authentic Florida material was not available for study.

PARTHENOLECANIUM PERSICAE (Fabricius)

SYNONYMS: *Chermes persicae* Fabricius 1776:304
Lecanium persicae (Fab.), Comstock 1883:134
Eulecanium magnoliarum (Cockerell), Fernald 1903:190
E. magnoliarum var. *hortensiae* Cockerell, Fernald 1903:190
Parthenolecanium persicae (Fab.), Borchsenius 1957:350, Nakahara 1981:284

COMMON NAME: European peach scale.

FIELD DESCRIPTION: (Fig. 58) Body shape and color variable; usually female elongate-oval, not strongly convex, and with medial longitudinal ridge. Young females yellowish, streaked with light brown transverse bands, becoming uniformly reddish brown when older (Williams and Kosztarab 1972).

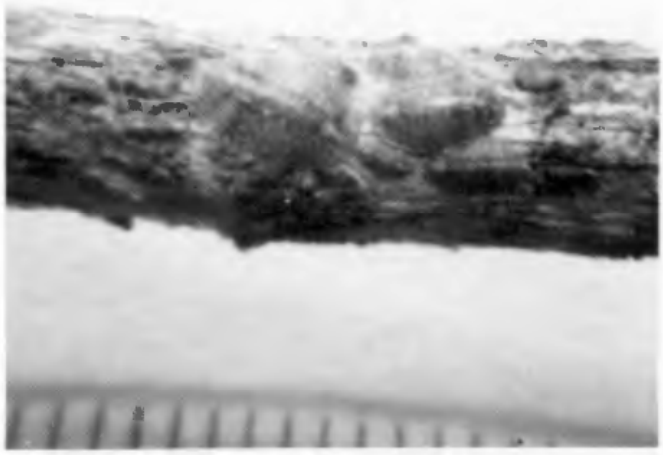


Fig. 58. *Parthenolecanium persicae*, adult female, from Williams and Kosztarab 1972.

DESCRIPTION: (Fig. 59) Adult female ca. 5.0 mm long, 3.0 mm wide. Body constricted at

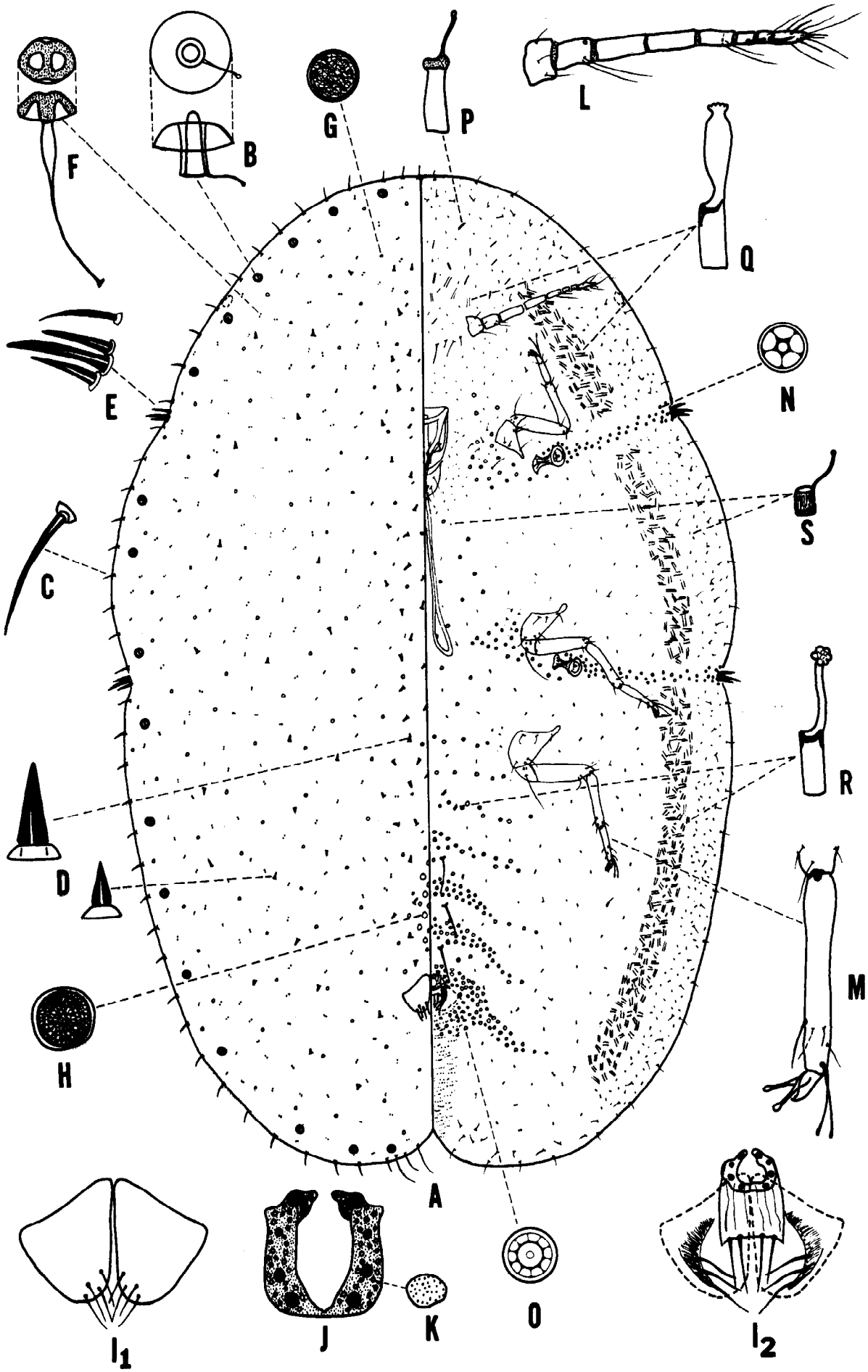


Fig. 59. *Parthenolecanium persicae,* adult female, from Williams and Kosztarab 1972.

spiracular furrows. DORSUM—Derm membranous to slightly sclerotized. Body setae (Fig. 59, D) stout, conical, pointed and of 2 sizes: larger ones located mid-dorsally from anterior of anal plates to near anterior margin; smaller ones randomly scattered over body surface. Submarginal tubercles (Fig. 59, B) number 24-34 around submargin. Numerous bilocular (Fig. 59, F) and disc pores (Fig. 59, G) randomly scattered. Tubular ducts absent. Larger discoidal pores (Fig. 59, H) confined to area anterior of anal plates. Anal plates triangular with caudal angles rounded; each plate with 4 apical and 3 or 4 subapical setae. VENTER—Membranous. Antennae 8-segmented. Legs with tibiotarsal scleroses and free articulation; claw with denticle near apex. Submarginal setae in double row with a group of 4-7 setae near posterior end of anal cleft. Spiracular furrows 3 or 4 quinquelocular pores wide (Fig. 59, N). Multilocular pores (Fig. 59, 0) in vulvar area, in transverse rows on abdomen, in clusters mesad of each coxa. Tubular ducts with broad inner filament in submarginal band on abdomen and cephalothorax (Fig. 59, Q); ducts with slender filaments (Fig. 59, R) in submargin and medial area of abdomen. MARGIN—Marginal setae (Fig. 59, C) long, slender, slightly curved, pointed. Spiracular setae (Fig. 59, E) in groups of 3, about same length as marginal setae, laterals slightly shorter than medial seta.

DISTRIBUTION: Not reported from Florida. AL, CA, DC, ID, IN, MA, MD, MO, MS, NC, NJ, NM, NY, OH, OR, PA, RI, SC, TX, UT, VA. *Foreign*: Algeria, Argentina, Australia, Bulgaria, Corsica, Czechoslovakia, Egypt, France, India, Iran, Italy, Korea, Morocco, New Zealand, Portugal, Sicily, Spain, Switzerland, Turkey, USSR, and Yugoslavia.

BIOLOGY: Polyphagous on leaves, stems, and twigs. According to Williams and Kosztarab (1972), 2nd instars overwinter and mature females begin laying eggs in May. The crawlers hatch and migrate to the underside of leaves and new growth.

ECONOMIC IMPORTANCE: European peach scale is primarily a pest of ornamentals in the U. S. and will kill the host if not controlled (Williams & Kosztarab 1972). Borchsenius (1957) indicated this scale insect was a pest of grapes, fruit crops, and ornamentals in the USSR.

NATURAL ENEMIES: Some of those parasites listed by Peck (1963) and Krombein et al. (1979) are as follows: *Coccophagus fraternus* Howard, FL; *C. lycimniae* (Walker), cosmopolitan; *Encyrtus fuscus* (Howard), AL; *Prospaltella aurantii* (Howard), cosmopolitan; *Tetrastichus minutus* (Howard), FL. In Australia the encyrtid *Metaphycus timberlakei* controlled *P. perseae* (Bartlett *in* Clausen ed. 1978).

REMARKS: This scale insect has been reported in Florida by Merrill and Chaffin (1923) and Merrill (1953); however, we have been unable to confirm these records. The 24-34 submarginal tubercles around the dorsal submargin is a distinguishing character of this scale and will separate it from related species in the U. S.

MATERIAL STUDIED: No Florida material available for study. VIRGINIA: Blacksburg, 1(1), barberry, 22-IV-1969, M. Williams; Blacksburg, 1(2), barberry, 5-V-1969, M. Williams.

PARTHENOLECANIUM QUERCIFEX (Fitch)

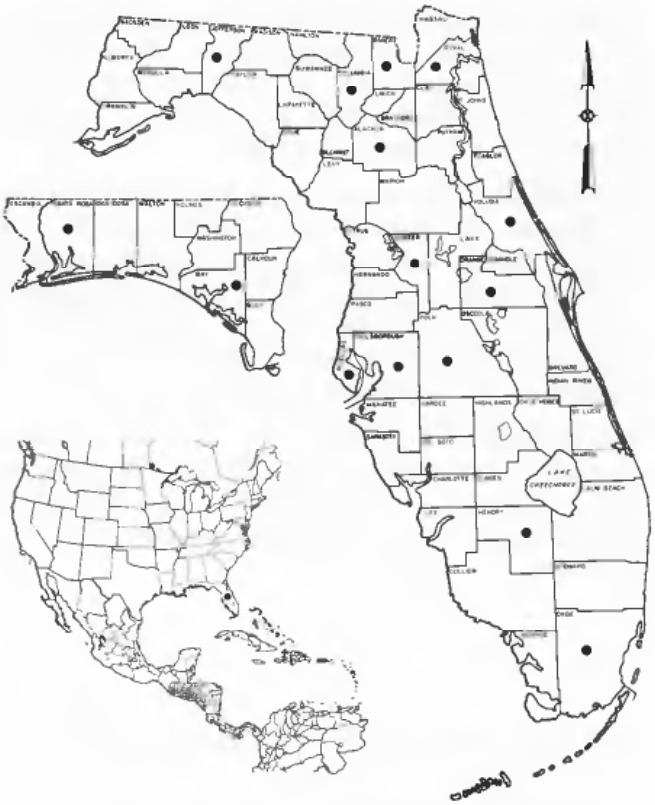
SYNONYMS: *Lecanium quercifex* Fitch 1859: 805
L. quercitronis Fitch, Signoret 1873:426, Williams & Kosztarab 1972:97
L. quercitronis var. *kermoides* Tyrell, Williams & Kosztarab 1972:97
L. (Eulecanium) quercitronis (Fitch), Williams & Kosztarab 1972:97
Eulecanium quercifex (Fitch), Williams & Kosztarab 1972:97
Parthenolecanium quercifex (Fitch), Nakahara 1981:285

COMMON NAME: oak lecanium

FIELD DESCRIPTION: (Fig. 60) According to Merrill (1953), this soft scale is elliptical, quite convex, and more or less tapering at the ends. The color is light to dark brown and nearly always has 2 large lateral humps. In Florida, it is found only on oak trees. Length 4.0-7.0 mm, width 3.0-5.0 mm.

DESCRIPTION: (Fig. 61) Williams and Kosztarab (1972) were unable to consistently separate *P. quercifex* from *P. corni* and because of this placed it in the "corni complex". For a description of *L. quercifex* refer to the description of *Parthenolecanium corni*.

DISTRIBUTION: Map XXII. Probably occurs in most of eastern U. S. and Canada (Merrill 1953).



Map XXII. Distribution of *Parthenolecanium quercifex*.

Fig. 60. *Parthenolecanium quercifex*, adult female with characteristic humps, DPI Photo 701918-14.

BIOLOGY: Apparently very similar to *P. corni*.

ECONOMIC IMPORTANCE: Not known to be economically important in Florida.

NATURAL ENEMIES: Some of the parasites listed by Peck (1963) and Krombein et al. (1979) include *Aenasioidea trimblei* Dozier, PA; *Coccophagus lycimnia* (Walker), cosmopolitan; and *Encyrtus peckhamii* (Ashmead), NC.

REMARKS: Infrequently encountered in very small numbers in FL. Because of the similarity of this species to *P. corni*, only a pictorial separation is possible at this time. Future biosystematic studies may change this.

MATERIAL STUDIED: Authentic material not studied.

Genus *PROTOPULVINARIA* Cockerell, 1894

TYPE SPECIES: *Pulvinaria (Protopulvinaria) pyriformis* Cockerell, 1894.

DESCRIPTION: Body pyriform, more or less acuminate in front, naked or with narrow fringe of cottony secretion. Derm becoming sclerotized at maturity. Dorsal body setae capitate. Submarginal tubercles present. Anal plates extremely long. Anal ring with 10 setae. Anal cleft extending to near center of body. Antennae well developed, 7 or 8-segmented. Legs well developed, with tibiotarsal sclerotization and free articulation. Quinquelocular pores in spiracular furrows. Multilocular pores in vulvar area and in transverse rows on abdomen. Tubular ducts scattered over most of venter, most numerous in submarginal band around body. One pair of large prevulvar setae. Marginal setae fimbriate except few pointed near anal cleft. Spiracular setae in groups of 3, medial seta longer than laterals.

NOTES: Eggs are protected by a short ovisac or under the body of the female until hatching. Two species of *Protopulvinaria* are known from the southeastern United States: *P. mangiferae* and *P. pyriformis*.

KEY TO SPECIES OF *PROTOPULVINARIA*

1. Anal plates at least 4 times longer than wide; tubular ducts of 2 types, numerous submarginally . . . . . *pyriformis*

1′. Anal plates less than 3 times longer than wide; tubular ducts of 1 type, few submarginally . . . . . *mangiferae*

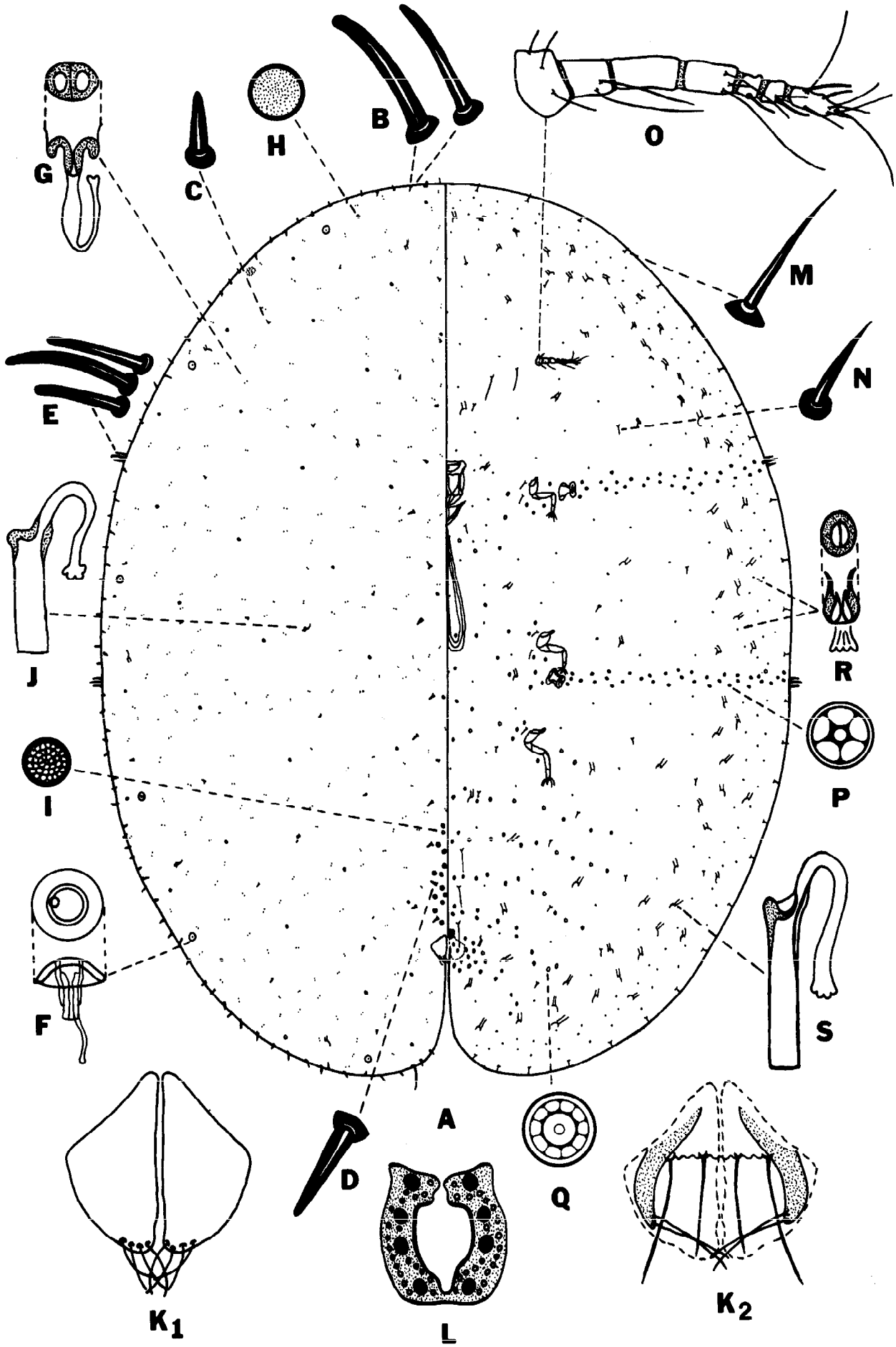


Fig. 61. *Parthenolecanium quercifex*, adult female, modified from Williams and Kosztarab 1972.

PROTOPULVINARIA MANGIFERAE (Green)

SYNONYMS: *Lecanium mangiferae* Green 1889:249
Coccus mangiferae (Green), Fernald 1903:172
Protopulvinaria mangiferae (Green), Steinweden 1929:223

SUGGESTED COMMON NAME: mango shield scale

FIELD DESCRIPTION: Somewhat triangular in shape, irregular, bluntly pointed in front, broadly rounded behind, flat, thin, and

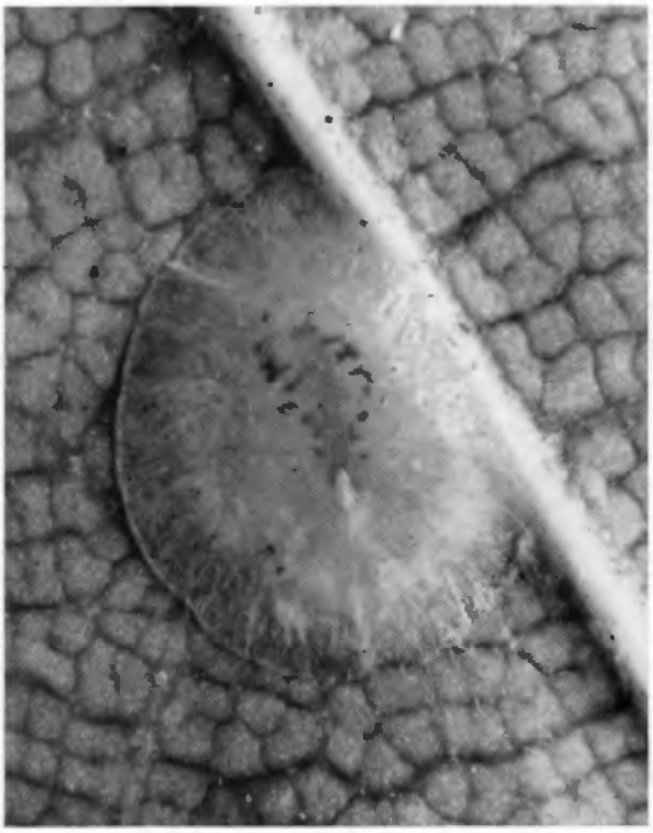
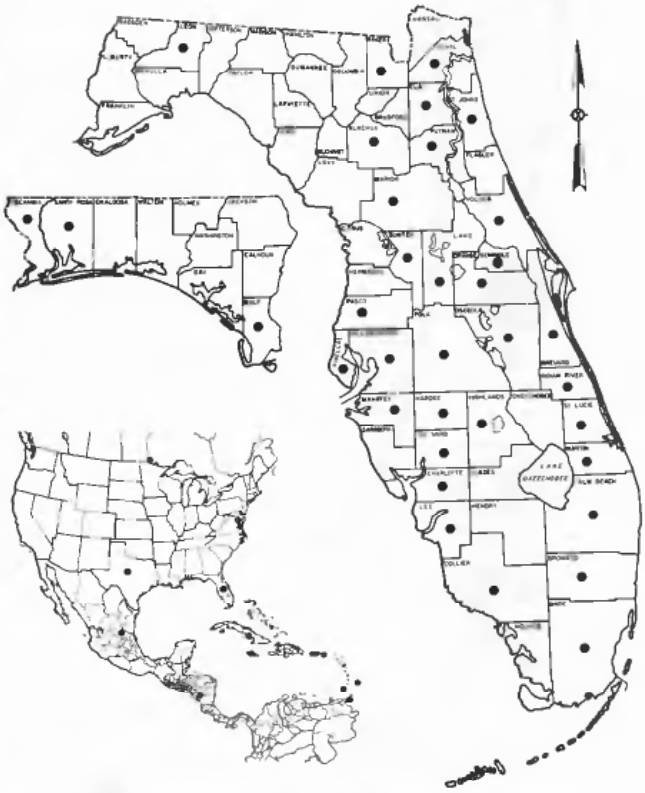


Fig. 62. *Protopulvinaria mangiferae*, adult female, DPI Photo 701678.

yellowish green (Merrill 1953) (Fig. 62). Wrinkling of dead specimens causes formation of little ridges that seem to define polygonal areas (Ferris *in* Zimmerman 1948).

DESCRIPTION: (Fig. 63) Adult female 2.5-4.0 mm long, 2.2-3.5 mm wide. Body broadly pyriform. DORSUM—Derm membranous in young adult females, becoming more sclerotized with age. Scattered clear areas, each with a dark rim; submargin sectioned with membranous lines. Submarginal tubercles (Fig. 63, E) number 9-15 around body. Dorsal setae with swollen apices (Fig. 63, C). Few discoidal pores (Fig. 63, H) anterior to anal plates. Anal plates (Fig. 63, I1) ca. one-third length of body from posterior margin. Anterolateral margins of anal plates ca. 2X longer than posterolateral margins. VENTER—Ventral tubular ducts (Fig. 63, P) on thorax between legs and on abdominal submargin. Legs normally developed. Multilocular pores (Fig. 63, 0) confined to vulvar region. Quinquelocular pores (Fig. 63, N) in spiracular furrows, in single row. Antennae 8-segmented. MARGIN—Marginal setae (Fig. 63, B) closely set, evenly spaced in single row, each seta variously branched or fimbriate at apex. Spiracular setae in groups of 3, with medial seta ca. 3X longer than laterals.

DISTRIBUTION: Map XXIII. HI, TX. *Foreign*: Antigua, Barbados, Burma, Cuba, Egypt, El Salvador, Grenada, Guyana, Israel, Jamaica, Kenya, Madagascar, Martinique, Mauritius, Mexico, Panama, Philippines, St. Lucia, Seychelles, Sri Lanka, Thailand, South Africa, Trinidad, Virgin Islands, and Zanzibar.



Map XXIII. Distribution of *Protopulvinaria mangiferae*.

BIOLOGY: According to Avidov and Harpaz (1969), 3 generations are produced each year in the coastal plains of Israel. Larvae of the first generation appeared in late March and early May, larvae of the 2nd generation in early June, and the 3rd generation in early September. The spring generation lived an average of 74 days, the summer generation 91 days, and the 3rd generation 194 days. The 2nd generation is the most im-

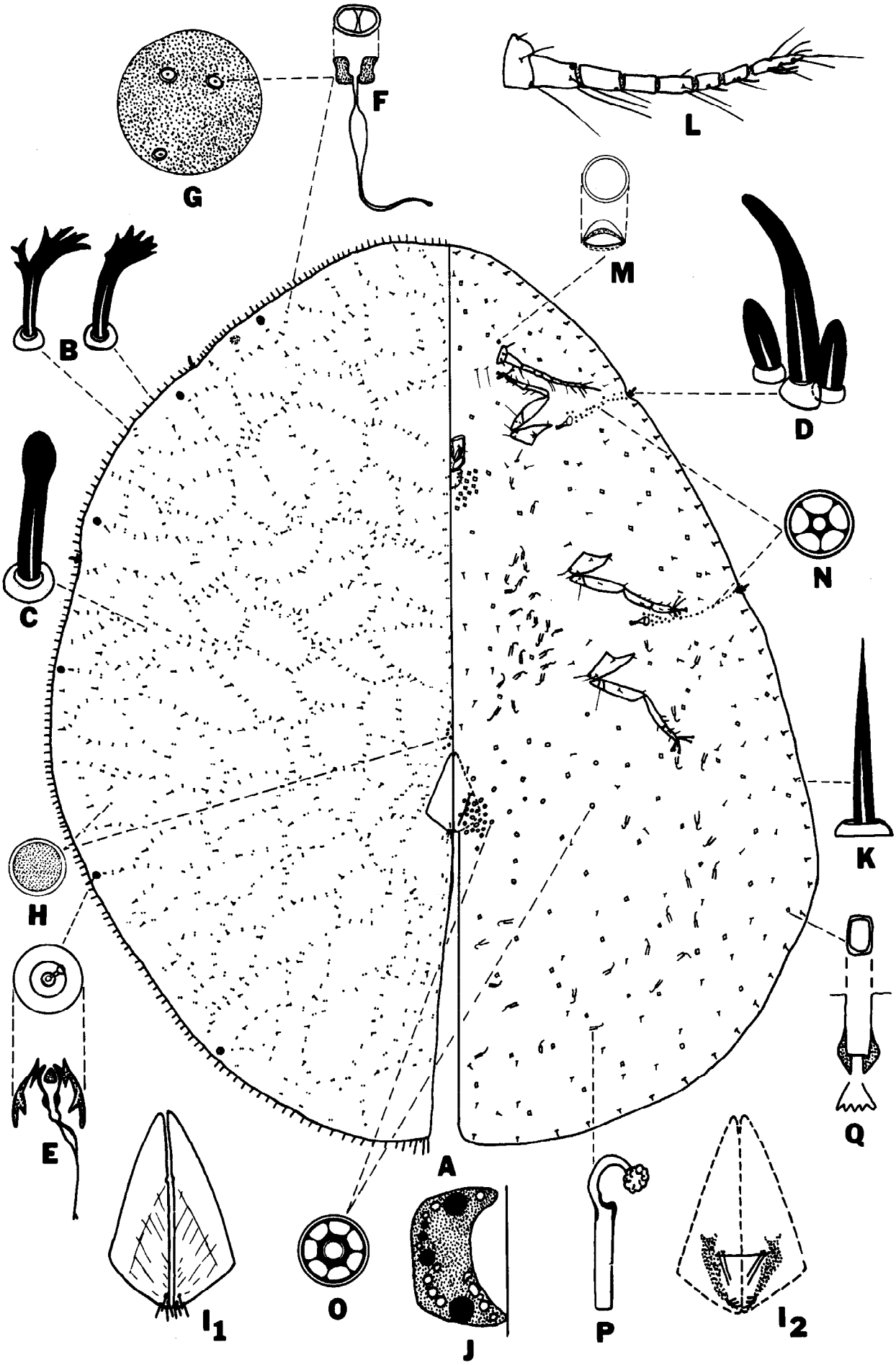


Fig. 63. *Protopulvinaria mangiferae*, adult female, original by M. L. Williams.

portant, since at this season natural reproduction is highest and mortality is at its lowest. The 3rd generation reached a peak between October and November.

ECONOMIC IMPORTANCE: At times, this scale is a serious pest on mangoes in Florida. According to Merrill (1953), this scale is controlled by the fungus *Cephalosporium lecanii* Zimmerman during rainy periods.

REMARKS: Mango shield scale is very similar to acuminate scale, *Kilifia acuminata*, and the two cannot be separated with confidence in the field. On a microslide, the 2 species can be separated readily by comparing the middle and hind coxae of each species. In mango shield scale, these coxae are normal, but, in acuminate scale they have a peculiar shape. These two species have been confused at times, and records are probably inaccurate in some cases. Mango shield scale is very similar in shape to pyriform scale, *Protopulvinaria pyriformis*, but adult females of pyriform scale have a white fringe of an ovisac around the posterior margin. Also, the anal plates of pyriform scale are much longer than those of mango shield scale.

MATERIAL STUDIED: FLORIDA: Miami Beach, 1(1), *Artocarpus communis*, 20-V-1974, D. Sager; Big Pine Key, 1(1), *Artocarpus heterophyllus*, 18-V-1971, J. Knowles; Ft. Lauderdale, 1(1), *Mangifera indica*, 16-IV-1974, K. L. Tyson; Key West, 1(1), *Artocarpus* sp., 10-III-1971, W. H. Pierce; Orlando, 1(1), *Mangifera indica*, 17-VII-1975, G. W. Dekle & C. R. Roberts; Pine Castle, 1(1), *Eugenia* sp., 23-VIII-1932, J. Kerr; Plantation Key, 1(1), *Rapanea quianensis*, 8-III-1978, W. E. Wyles; Tampa, 2(2), *Mangifera* sp., 9-IV-1965, C. W. Hale; Walton, 1(1), *Mangifera indica*, 12-II-1980, E. W. Campbell.

PROTOPULVINARIA PYRIFORMIS (Cockerell)

SYNONYMS: *Pulvinaria (Protopulvinaria) pyriformis* Cockerell 1894: 306, 1896b:307
Pulvinaria pyriformis Cockerell, Cockerell 1899a:311, Fernald 1903:138
Pulvinaria newsteadi Leonardi, Cockerell 1899a:312

COMMON NAME: pyriform scale

FIELD DESCRIPTION: Adult female pyriform, flat, light greenish brown, tan or reddish brown, with darker margins (Fig. 64). A thin white cottony wax fringe around body. Elongate triangular anal plate near center of dorsum.

DESCRIPTION: (Fig. 65) Adult females usually pyriform in shape, about 2.5 mm long, 2.5 mm wide. DORSUM—Derm membranous in young adult females, becoming sclerotized submarginally in older females. Anal plates long and narrow, (Fig. 65, I_1) located near center of dorsum. Body setae (Fig. 65, C) rod-shaped, with blunt apices, randomly scattered over dorsum. Submarginal tubercles (Fig. 65, E) number 6-12

Fig. 64. *Protopulvinaria pyriformis*, adult female with very short ovisac, DPI Photo 700776.

around entire body. Minute bilocular pores (Fig. 65, F) scattered over derm. In heavily sclerotized submarginal derm (Fig. 65, G) one bilocular pore in each clear area. Small disc pores (Fig. 65, H) anterior to anal plates. VENTER—Legs well developed with tibiotarsal scleroses and articulation. Antennae 8-segmented, occasionally 7. Quinquelocular pores (Fig. 65, M) 18-35 in spiracular furrow in rows 1 or 2 pores wide. Multilocular pores (Fig. 65, N) scattered around vulva and in transverse rows on abdomen.

Two types of tubular ducts present: short ones (Fig. 65, 0) with slender filament predominantly near antennae bases, and longer ones (Fig. 65, P) with broader filament in submarginal band around posterior portion of venter. MARGIN—Marginal setae (Fig. 65, B) numerous, fimbriate except few slender, pointed setae near anal cleft. Spiracular setae in groups of 3, medial seta 2.5 to 3X longer than laterals.

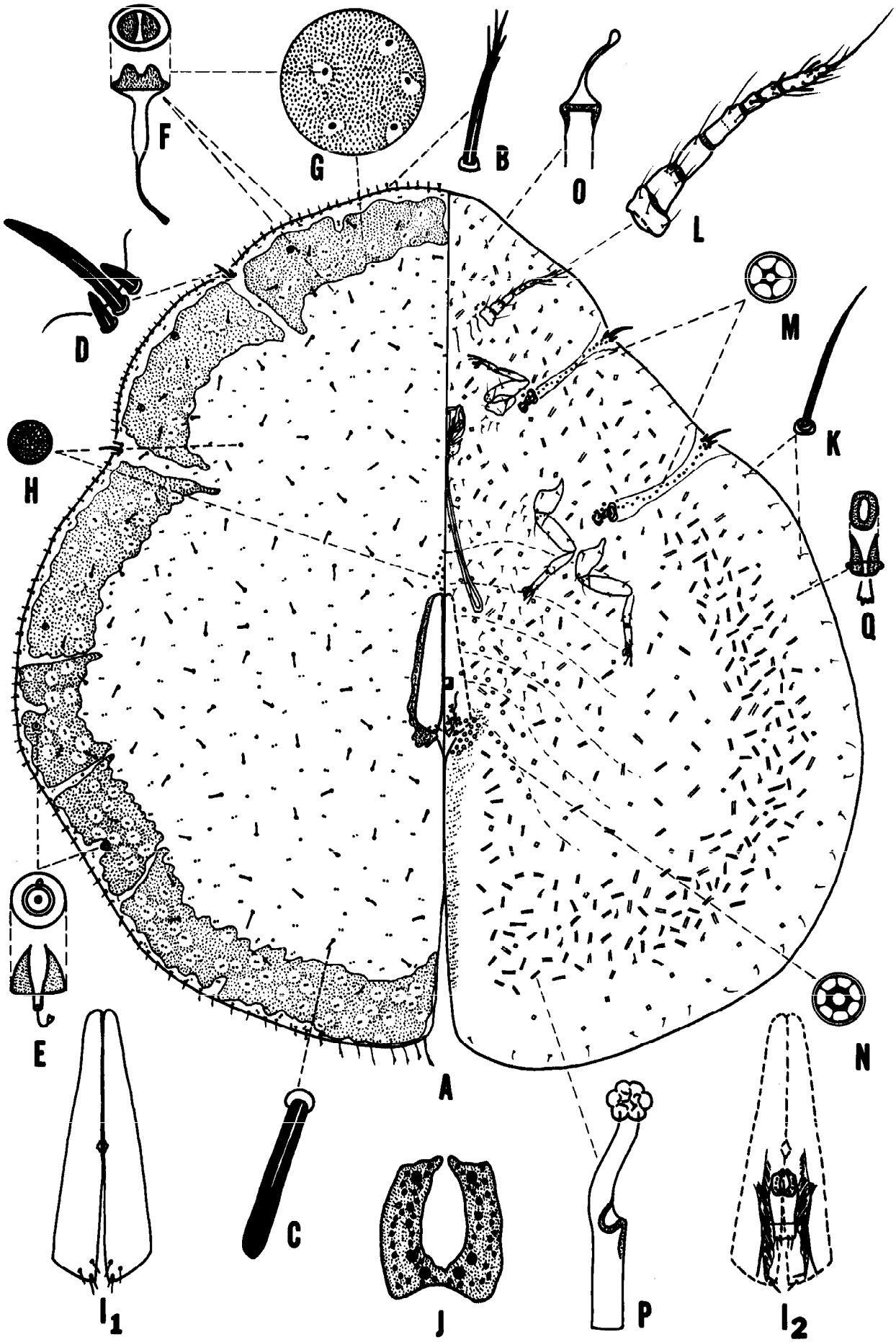
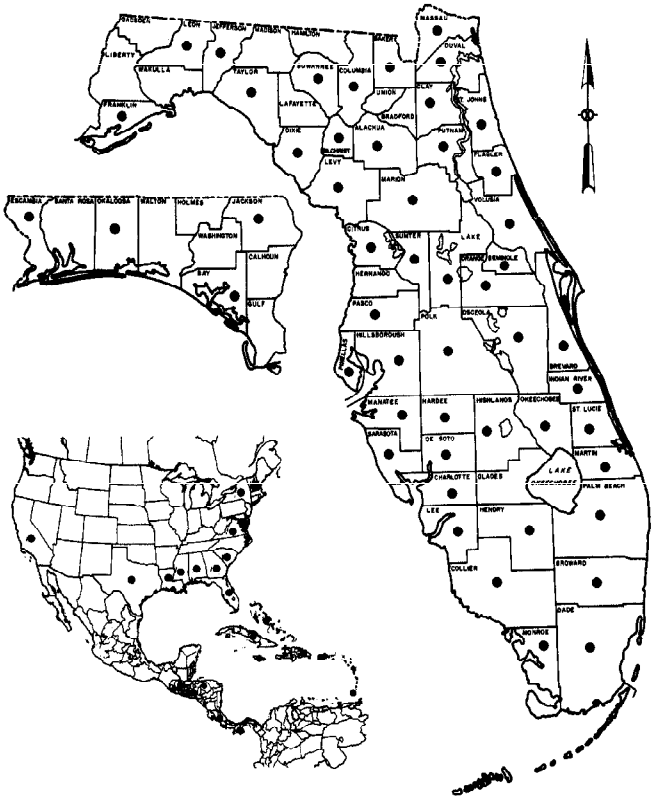


Fig. 65. *Protopulvinaria pyriformis* adult female, from Williams and Kosztarab 1972.

DISTRIBUTION: Map XXIV. AL, CA, DC, GA, LA, MS, NH, NM, NY, SC, TX, VA. *Foreign*: Bermuda, Colombia, Costa Rica, Cuba, Dominican Republic, Grenada, Guatemala, Guyana, Jamaica, Madeira, Mexico, Panama, Puerto Rico, South Africa, Honduras, Tobago, Trinidad, and Venezuela.



Map XXIV. Distribution of *Protopulvinaria pyriformis*.

BIOLOGY: In Florida, several overlapping generations occur. Eggs are deposited under the female, and the white wax fringe around the posterior is a short ovisac. Pyriform scales prefer the underside of leaves.

ECONOMIC IMPORTANCE: Merrill (1953) reported this scale insect as economically important on avocado, gardenia, guava, and some ornamentals in Florida.

REMARKS: In Florida, *Protopulvinaria mangiferae* and *Kilifia acuminata* resemble pyriform scale in the field. However, the longer anal plates, when they can be observed, readily separate pyriform scale from these species. *Protopulvinaria longivalvata* Green in the Caribbean Islands and Central America can be confused with *P. pyriformis*, but the longer marginal and dorsal setae of *P. pyriformis* will separate them.

MATERIAL STUDIED: FLORIDA: Apopka, 1(1), *Hedera helix*, 19-XI-1971, F. L. Ware, 1(1), *Hedera helix*, 29-VI-1972, G. T. Smith; Coral Gables, 1(1) *Brassaia actinophylla*, 23-III-1973, K. Bedat; Miami Beach, 1(1), *Brassaia actinophylla*, 21-XII-1973, W. S. Brewton; Monticello, 1(1), *Gardenia* sp., 5-XII-1972, R. H. Miller; Naples, 1(1), *Fatsia japonica*, 10-II-1977, R. Driggers; Pine Hill, 1(1), *Trachelospermum jasminoides*, 24-VII-1972, F. L. Ware; Port Salerno, 1(1), *Bauhinia* sp., 27-III-1979, E. W. Campbell.

Genus *PSEUDOPHILIPPIA* Cockerell, 1897

TYPE SPECIES: *Pseudophilippia quaintancii* Cockerell, 1897.

DESCRIPTION: Body of adult female convex to globular, often distorted because of crowding at needle bases; with white cottony secretion covering body. Derm heavily sclerotized at maturity. Dorsum with dense pattern of large invaginated 8-shaped tubercles and small monolocular ring pores. Submarginal tubercles absent. Anal plates with 4 apical setae, 3 subapical setae, anal fold with 6 fringe setae. Anal ring with 8 setae. Antennae greatly reduced, 6-segmented. Legs greatly reduced without tibiotarsal sclerotization. Quinquelocular pores in spiracular furrows and vulvar area. Multilocular pores usually absent. Tubular ducts, if present, confined to anal area. Hypopygial setae present. Marginal setae short, bluntly pointed, indistinct. Spiracular setae, if present, not different from marginal setae.

NOTES: The only North American representative of this genus is *Pseudophilippia quaintancii* Cockerell which is only found on pines. A discussion of the generic status of *Pseudophilippia* as well as descriptions of the immature stages and adult male are presented in Ray and Williams (1980).

PSEUDOPHILIPPIA QUAINTANCII Cockerell

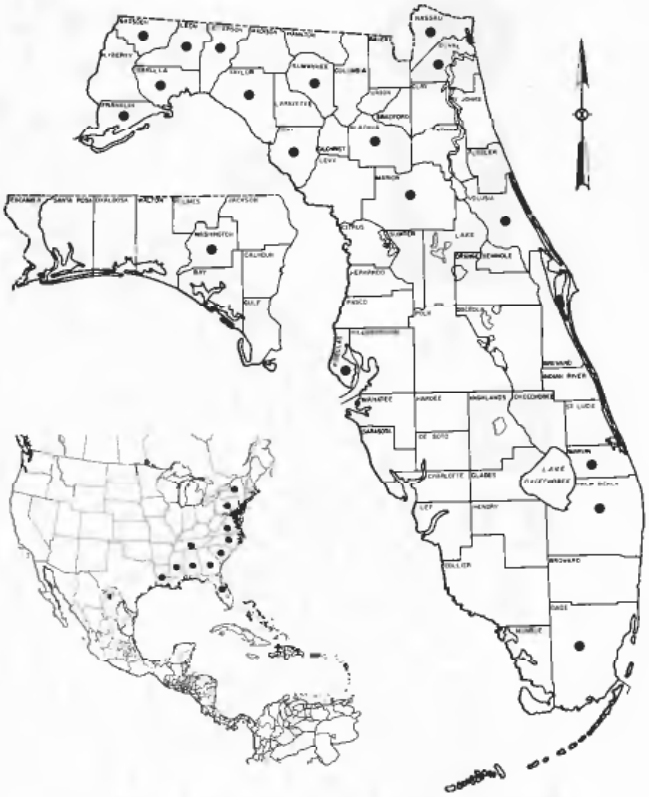
SYNONYMS: *Pseudophilippia quaintancii* Cockerell 1897:89

SUGGESTED COMMON NAME: woolly pine scale

FIELD DESCRIPTION: Adult female oval to hemispherical, 2.0-2.5 mm in diameter. Body yellowish or light brown but covered with a profusion of fluffy, snow white wax (Fig. 66). Usually clustered at the base of pine needles.

DESCRIPTION: (Fig. 67) Adult females subcircular, 1.5-2.5 mm in diameter. Dor-

Fig. 66. *Pseudophilippia quaintancii*, female under cottony mass, DPI Photo 700338.



Map XXV. Distribution of *Pseudophilippia quaintancii*.

SUM—Derm sclerotized in older females, young females membranous with sclerotized area surrounding anal plates. Body setae (Fig. 67, C) scattered over dorsum, short, stout, pointed, thickest near center. Invaginated 8-shaped tubercles (Fig. 67, E, E_1) densely scattered over dorsum. Lateral angles of anal plates not well defined. Anal cleft extends to about one-sixth of body length. VENTER—Legs greatly reduced, occasional specimens with normal segmentation. Antennae reduced to short, stout, 6-segmented stubs; often segmentation not visible. Spiracular furrows with several rows of 2-6-locular pores (Fig. 67, K). About five 3- or 4-locular pores near each antenna base (Fig. 67, L). Few tubular ducts (Fig. 67, 0) with slender filaments around vulva. MARGIN—Marginal setae (Fig. 67, B) number 25-30 around entire margin, stout, rather slender, straight, sharp pointed. Spiracular setae absent or not differentiated from marginal setae.

DISTRIBUTION: Map XXV. AL, GA, LA, MD, MS, NC, NJ, NY, PA, SC, TN, VA. *Foreign*: Apparently does not occur outside the eastern United States.

BIOLOGY: The biology of woolly pine scale has not been studied. April, May, and June are the typical months when large amounts of woolly wax are present in Florida.

ECONOMIC IMPORTANCE: Merrill (1953) did not consider woolly pine scale economically important in Florida; however, in recent years, it has been an occasional problem to ornamental plantings in Florida. Apparently, it is kept under control by parasites and predators.

REMARKS: *Pseudophilippia quaintancii* is similar to *Toumeyella parvicornis* (Cockerell) because both have invaginated 8-shaped pores and lack differentiated spiracular setae; however, in *T. parvicornis*, the invaginated 8-shaped pores are congregated into pore clusters and are randomly scattered in *P. quaintancii*. Also, only *P. quaintancii* has the large profusion of fluffy, snow white, cottony wax.

MATERIAL STUDIED: FLORIDA: Gainesville, 2(2), *Pinus taeda*, 19-IV-1967, G. W. Dekle; 2(2), *Pinus elliottii*, 27-IV-1970, G. W. Dekle; Jacksonville, 1(2), Pinus, 22-IV-1922, H. Mowry; 4(4), *Pinus elliottii*, 20-IV-1981, J. Garbark.

Genus *PULVINARIA* Targioni-Tozzetti, 1866

TYPE SPECIES: *Coccus vitis* Linnaeus, 1758.

DESCRIPTION: Body of young female slightly convex, naked or with thin coating of clear, flaky wax. Derm becoming lightly sclerotized with age. Body setae variable. Dorsal pores of variable

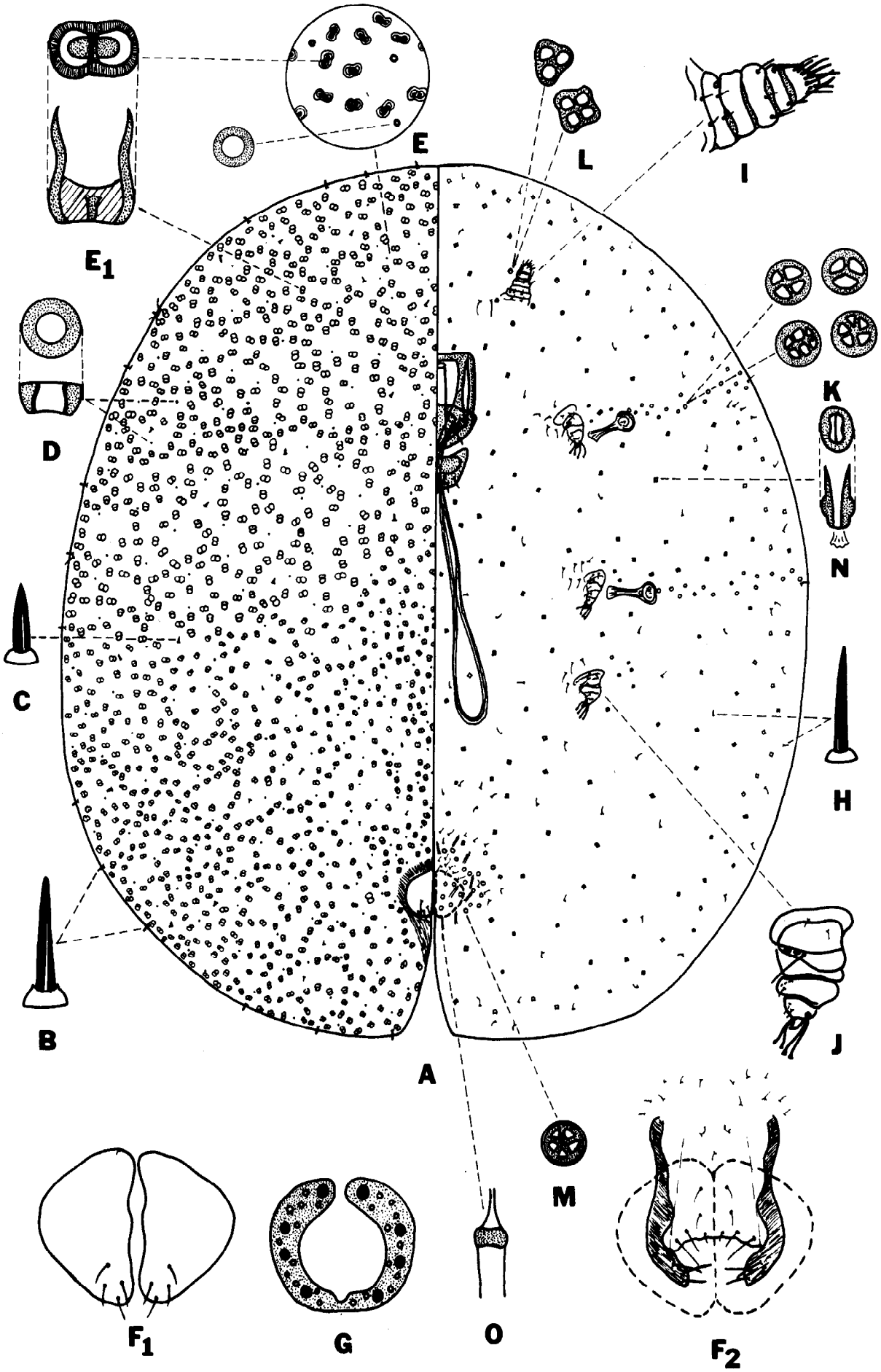


Fig. 67. *Pseudophilippia quaintancii*, adult female, from Williams and Kosztarab 1972.

types. Submarginal tubercles present or absent. Anal plates with varying numbers of apical, subapical, and fringe setae. Antennae well developed, 6 to 8-segmented. Legs well developed with tibiotarsal sclerotization and free articulation (except *Pulvinaria ericicola* McConnell). Quinquelocular pores in spiracular pore bands. Multilocular pores in vulvar area, in transverse bands on abdomen, usually few near each coxae. Tubular ducts present or absent on dorsum; numerous on venter in submarginal band and several scattered elsewhere. Well developed anal ring with numerous wax pores and 8 long setae. Marginal setae variable in shape. Spiracular setae different from marginal setae, usually median seta 2 or 3X longer than lateral setae.

NOTES: Members of this group tend to be polyphagous. The eggs are protected by a "cottony" ovisac secreted by the tubular ducts on the venter of the abdomen. The old female wrinkles up at the anterior end of the ovisac and remains there in most species, but usually falls off in *Pulvinaria floccifera* (Westwood). Steinweden (1946) revised the genus *Pulvinaria* in North America.

Species of *Pulvinaria* recorded from the southeastern United States include: *P. acericola, P. citricola, P. elongata, P. ericicola, P. floccifera, P. hydrangeae, P. innumerabilis, P. psidii* and *P. urbicola.*

KEY TO SPECIES OF *PULVINARIA*

1. Tibiotarsal sclerosis and free articulation present; large discoidal pores absent on dorsum anterior to anal plates 2

1′. Tibiotarsal sclerosis and free articulation absent; with large discoidal pores on dorsum anterior to anal plates . *ericicola*

2(1). Marginal setae stout, usually strongly expanded, fringed, or dentate apically, spiracles surrounded by oval sclerotized plate . . . . . *psidii*

2′. Marginal setae variable, never strongly expanded, fringed, or dentate apically, spiracles not surrounded by oval sclerotized plate 3

3(2). Marginal setae long, stout, spike-like, thick throughout their length, with blunt apices . . . . . *innumerabilis*

3′. Marginal setae not spike-like and thick throughout their length, with apices acute or variously fringed 4

4(3). Dorsal setae lanceolate; ventral tubular ducts in a narrow submarginal band; marginal setae long, slender, set closely to each other; on sugarcane and grasses . . . . . *elongata*

4′. Dorsal setae not lanceolate; ventral tubular ducts in a broad band; marginal setae various; on different hosts 5

5(4). Submarginal tubercles present 6

5′. Submarginal tubercles absent 8

6(5). Anal region of venter with predominantly 10-loculed multilocular pores; many ventral tubular ducts in submarginal area of head . . . . . *acericola*

6′. Anal region of venter with predominantly 6 to 8-loculed multilocular pores; few ventral tubular ducts in submarginal area of head 7

7(6). With 4-11 submarginal tubercles around body; 7-10 long setae between antennal bases . . . . . *floccifera*

7′. With at most 1 or 2 submarginal tubercles around body; 4-7 long setae between antennal bases . . . . . *urbicola*

8(5). Anal plate with subdiscal seta removed about one third from apex on caudolateral margin; with 40-50 dorsal discoidal pores in an elongate cluster anterior to anal plates . . . . . *hydrangeae*

8′. Anal plate without a subdiscal seta; with 0-20 dorsal discoidal pores anterior to anal plates 9

9(8). Marginal setae acute; 1 or 2 setae between antennae with bulbous expansions; dorsal discoidal pores anterior to anal plates absent . . . . . *citricola*

9′. Most marginal setae bifid or fringed; setae between antennae without bulbous expansions; 7-20 dorsal discoidal pores anterior to anal plates . . . . . *urbicola*

PULVINARIA ACERICOLA
(Walsh and Riley)

SYNONYMS: *Lecanium acericola* Walsh & Riley 1868:14
Pulvinaria acericola (Walsh & Riley), Cockerell 1896a:329, Howard 1898:57

SUGGESTED COMMON NAME: cottony maple leaf scale

FIELD DESCRIPTION: Female oval, slightly convex, purplish, with yellow-brown mid-dorsal keel. Body covered with flakes of clear wax, and at maturity the female produces a white, ribbed ovisac which is 2 or 3X the body length (Fig. 68).

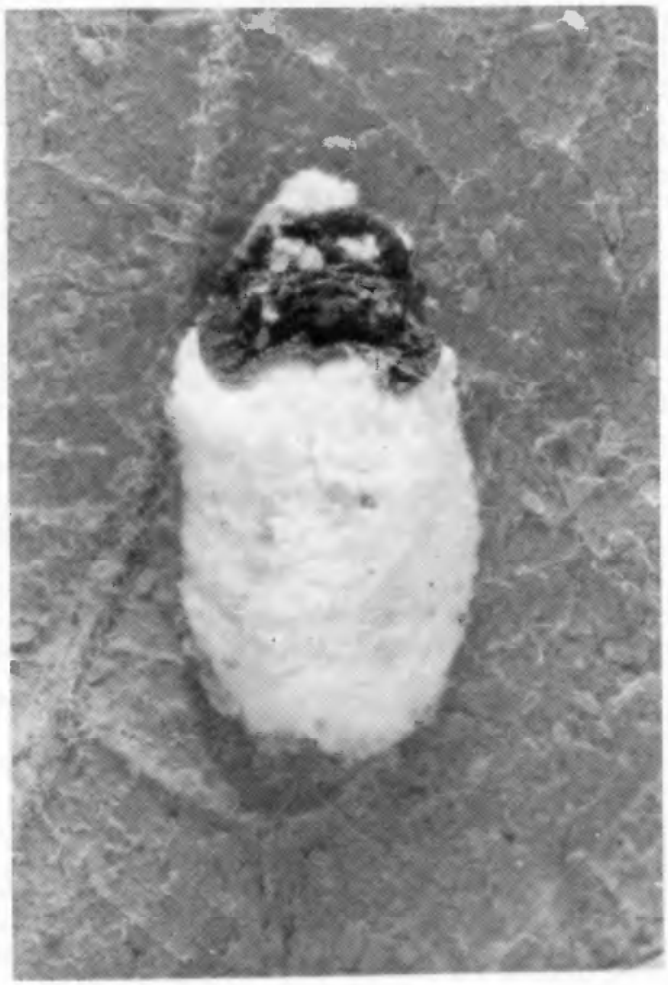
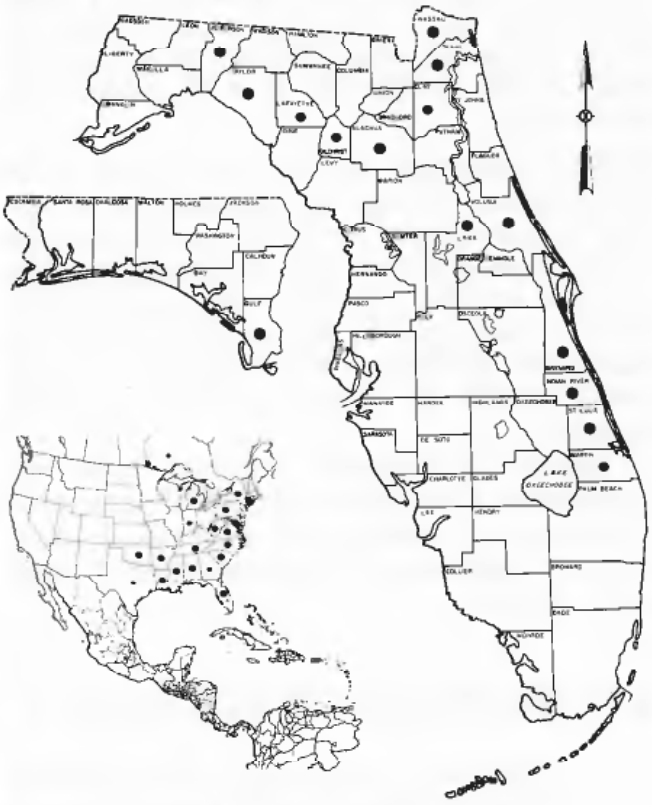


Fig. 68. *Pulvinaria acericola*, adult female with ovisac, DPI Photo 702514-20.

DESCRIPTION: (Fig. 69) Adult females ovate, 2.5-4.5 mm long, 1.0-4.0 mm wide. DORSUM—Derm slightly sclerotized with pattern of closely spaced circular or oval clear areas; each clear area contains a small bilocular pore (Fig. 69, H). Body setae (Fig. 69, D) rather stout, bluntly pointed, scattered over dorsum. Submarginal tubercles (Fig. 69, F) number 1-10 around body. Group of 10-30 disc pores in median area anterior to anal plates. Anal plates triangular with all angles slightly rounded; subdiscal seta, 1 seta removed some distance from the apex. VENTER—Antennae 8-segmented. Legs with tibiotarsal scleroses and free articulation. Each spiracular furrow has 40-90 quinquelocular pores (Fig. 69, N) in band 2 to 3 pores wide. Multilocular pores (Fig. 69, O) most with 10 loculi, in cluster around vulvar area and in transverse rows on the abdomen, several near each coxae. Larger tubular ducts (Fig. 69, R) with large filament, scattered over entire venter. MARGIN—Marginal setae (Fig. 69, C) rather slender, most slightly curved, acute, bifid or fimbriate. Spiracular setae in groups of 3, median seta about 2X longer than laterals.

DISTRIBUTION: Map XXVI. AL, AR, CT, DC, GA, IN, LA, MD, MI, MS, NC, NY, OK, PA, SC, TN, TX, VA, WV. *Foreign*: southern Canada.



Map XXVI. Distribution of *Pulvinaria acericola*.

BIOLOGY: Baerg (1947) published a comprehensive paper on the biology of cottony maple leaf scale in Arkansas. The life cycle is probably very similar in Florida, modified slightly by the milder temperatures. There is one generation per year. Eggs are laid when the adult female is on the leaves. After egg hatch, the nymphs settle on the leaves. The 2nd instar nymphs migrate from leaves to twigs before leaf fall, where they overwinter. Rapid growth occurs in the spring, and males can then be differentiated from the females. In May, the adult males emerge, mate and then die. The mated females migrate back to the leaves to feed and lay eggs.

ECONOMIC IMPORTANCE: Parasites and predators normally keep this scale insect in balance, but occasionally heavy infestations in Virginia cause early leaf drop and even the death

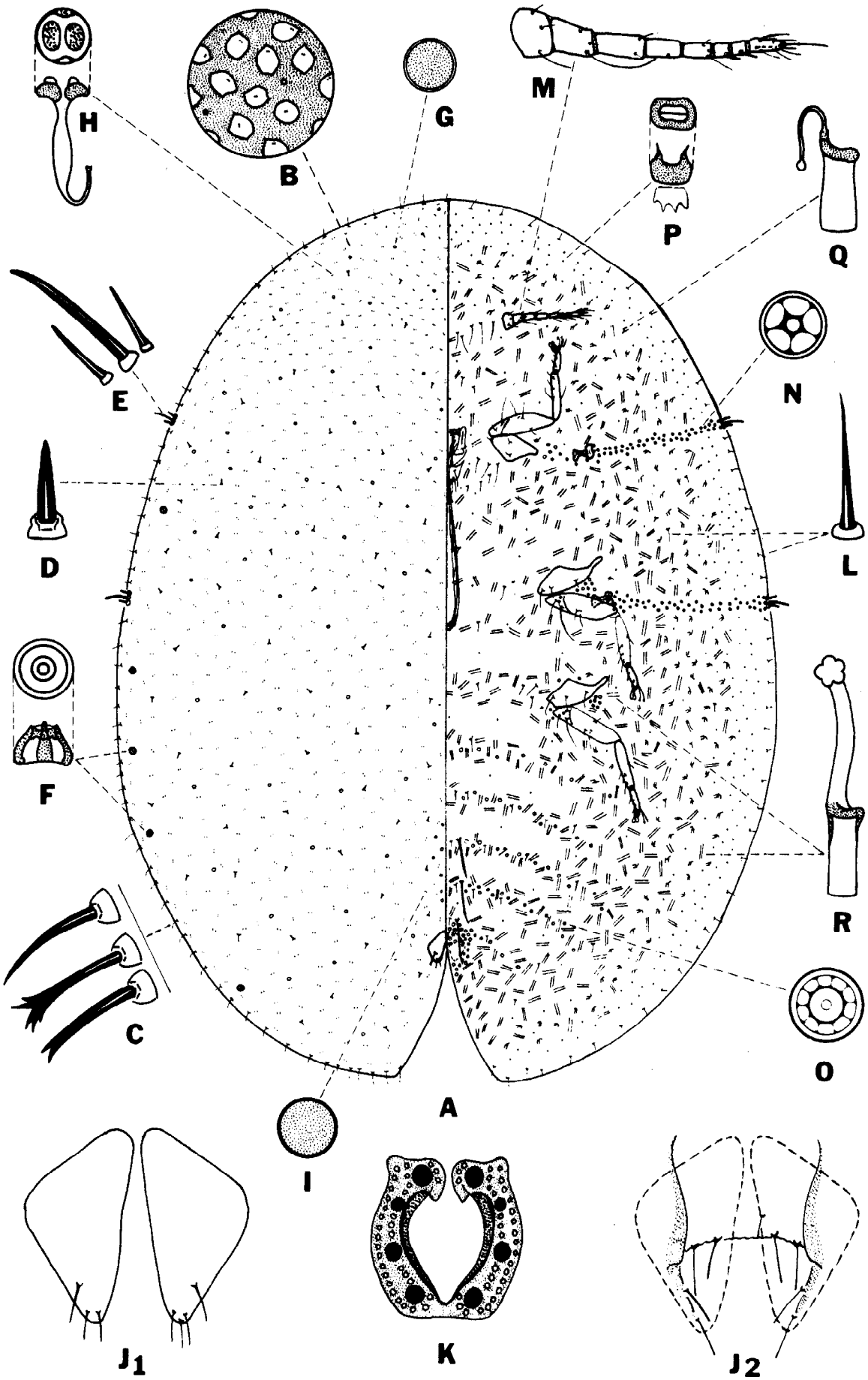


Fig. 69. *Pulvinaria acericola*, adult female, from Williams and Kosztarab 1972.

of twigs and branches (Williams & Kosztarab 1972). In 1933, maple trees were killed by heavy infestations in Arkansas (Baerg 1947). Not an economic pest in Florida.

NATURAL ENEMIES: Parasites listed by Peck (1963) and Krombein et al. (1979) are *Cheiloneurus albicornis* Howard, SC to LA; *Coccophagus fraternus* Howard, FL; *C. lycimnia* (Walker), cosmopolitan; *Metaphycus flavus* (Howard), southeast to TX; and *M. pulvinariae* (Howard), cosmopolitan.

REMARKS: The cottony maple leaf scale and the cottony maple scale (*P. innumerabilis*) were regarded as the same species until Howard (1898, 1900) differentiated the two species. Cottony maple leaf scale is usually collected on the leaves, while cottony maple scale (*P. innumerabilis*) occurs only on stems and is easily distinguished by its stout, spike-like marginal setae (Steinweden 1946). *P. acericola* was considered one of 4 native North American species of the genus *Pulvinaria* by Steinweden (1946).

MATERIAL STUDIED: FLORIDA: Century, 1(1), *Nyssa sylvatica*, 7-V-1980, D. Reese; Green Cove Springs, 3(3), *Vitis* sp., 17-IX-1980, K. Elliott; Pensacola, 2(4), Silver maple, 16-VI-1931, P. F. Robertson; Port St. Joe, 2(2), *Persea borbonia*, 14-II-1979, J. Felty and K. C. Lowery.

PULVINARIA CITRICOLA Kuwana

SYNONYMS: *Pulvinaria citricola* Kuwana 1914:3, Steinweden 1946:5, Takahashi 1955b:149, Williams and Kosztarab 1972:125
Eupulvinaria citricola (Kuwana), Borchsenius 1957:224

SUGGESTED COMMON NAME: cottony citrus scale

FIELD DESCRIPTION: According to Borchsenius (1957), the adult female is elongate oval, moderately convex, light green with a yellow band on top. Older ovipositing females are wrinkled with dark irregular lines near body margin. The ovisac is snowy white, long, with 2 longitudinal furrows.

DESCRIPTION: (Fig. 70) Adult females ca. 3.0 mm long, 2.5 mm wide. DORSUM—Derm membranous with many bilocular (Fig. 70, E) and disc pores (Fig. 70, F). Small, shallow cupped tubular ducts (Fig. 70, C) scattered over entire dorsum. Body setae (Fig. 70, C) stout, bluntly pointed, scattered. Anal plates triangular with the cephalolateral margin usually concave, each plate with 4 apical and 1 subapical seta. Disc pores absent anterior to anal plates. VENTER—Membranous. Antennae 8-segmented. Legs with tibiotarsal scleroses and free articulation, claw without denticle. Submarginal setae (Fig. 70, J) in irregular row, long, slender, straight, acute. Body setae very similar in shape and size to submarginal setae. Interantennal setae (Fig. 70, K) mostly normal, 1 or 2 with bulbous expansion. Spiracular furrows with quinquelocular pores in band 3 or 4 pores wide (Fig. 70, M), extending anterior of spiracle to just below coxae. Multilocular pores (Fig. 70, N) in vulvar area and transverse rows on abdominal segments. Tubular ducts (Fig. 70, R) with broad filaments and some with slender filaments (Fig. 70, Q) scattered over body. MARGIN—Marginal setae (Fig. 70, B) slender, acute, slightly curved. Spiracular setae (Fig. 70, D) in groups of 3, median seta 3 or 4X length of laterals.

DISTRIBUTION: Not known to occur in Florida. CA, MD, VA. *Foreign*: Japan.

ECONOMIC IMPORTANCE: Not of economic importance in the U. S., but it is very serious on citrus in Japan (Kuwana 1914).

REMARKS: The bulbous expansion of at least 1 interantennal seta and the absence of disc pores anterior to the anal plates will separate *P. citricola* from other species of *Pulvinaria*.

MATERIAL STUDIED: Not known in Florida, therefore, authentic Florida material not studied.

PULVINARIA ELONGATA Newstead

SYNONYMS: *Pulvinaria elongata* Newstead 1917a:20, Mamet 1958:74

SUGGESTED COMMON NAME: cottony grass scale

FIELD DESCRIPTION: Occurs on the leaves of host. Body extremely elongate, convex, cephalic region flattened. Color varies from pale crimson to rosy flesh color with 2 irregular longitudinal lines of brighter crimson (Fig. 71). Dry specimens are pale beige. The ovisac is very short, projecting only slightly from beneath the female body.

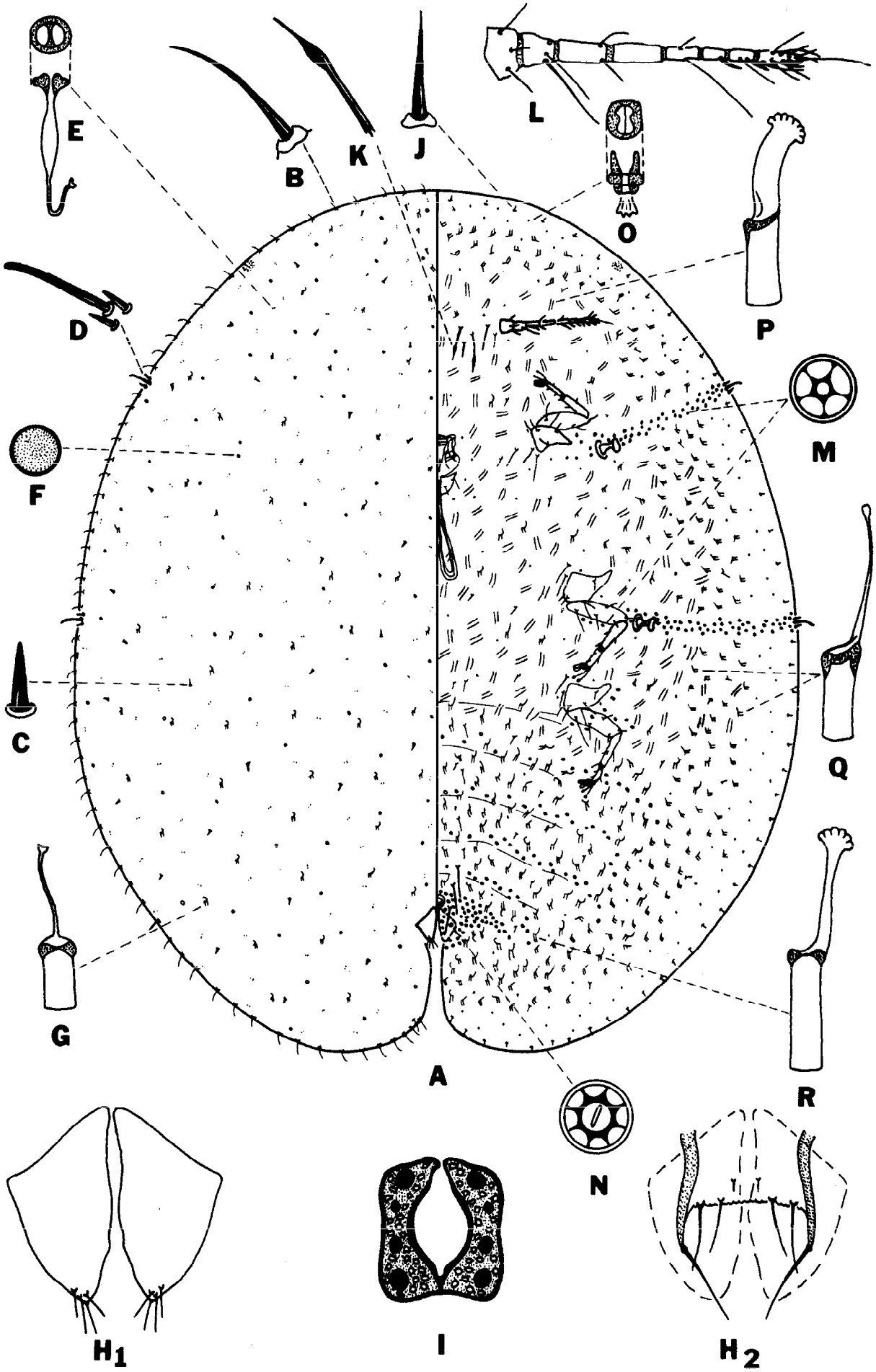


Fig. 70. *Pulvinaria citricola*, adult female, from Williams and Kosztarab 1972.

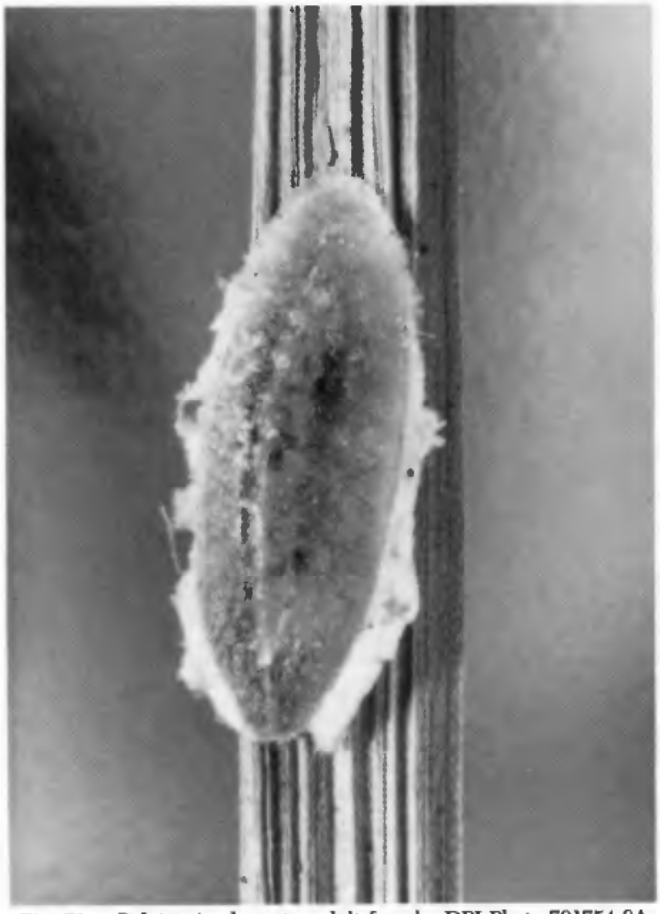


Fig. 71. *Pulvinaria elongata*, adult female. DPI Photo 701754-8A.

DESCRIPTION: (Fig. 72) Adult females 3.0-5.0 mm long, 2.0-3.0 mm wide. DORSUM—Derm slightly sclerotized at maturity. Disc pores in a group of 25-35 anterior to anal plates. Body setae numerous, lanceolate, apex pointed (Fig. 72, B). Anal plates roughly quadrate (Fig. 72, C), cephalolateral and caudolateral margins nearly equal. VENTER—Membranous to slightly sclerotized after oviposition. Small eye spots visible. Multilocular pores (Fig. 72, H, I) numerous around vulva, in transverse rows on abdominal segments as far foreward as mesothorax. Quinquelocular pores (Fig. 72, E) in spiracular furrows. Antennae usually 8-segmented, occasionally 7-segmented. Tubular ducts (Fig. 72, G) in well defined submarginal band; similar ducts few over remainder of derm. Legs slender with tibiotarsal scleroses, and free articulation. MARGIN—Marginal setae (Fig. 72, A) moderately stout, elongate, curved, acute apex, evenly spaced. Spiracular setae in groups of 3, median seta about 2 X longer than laterals.

DISTRIBUTION: Map XXVII. GA, LA. *Foreign*: Guyana.

BIOLOGY: Apparently no biological studies have been undertaken on this species.

ECONOMIC IMPORTANCE: Apparently not economically important in Florida.

REMARKS: *Pulvinaria elongata* can be separated from other species of *Pulvinaria* in Florida because of its shape, short ovisac, and hosts. This species was previously misidentified as *P. iceryi* (Signoret). It differs by the very short ovisac, occurrence of multilocular pores in the mid-region of the meso- and metathorax, and the well defined submarginal band of tubular ducts; whereas, *P. iceryi* has a longer ovisac, lack of multilocular pores in mid-region of thorax, and a much wider band of submarginal ducts.

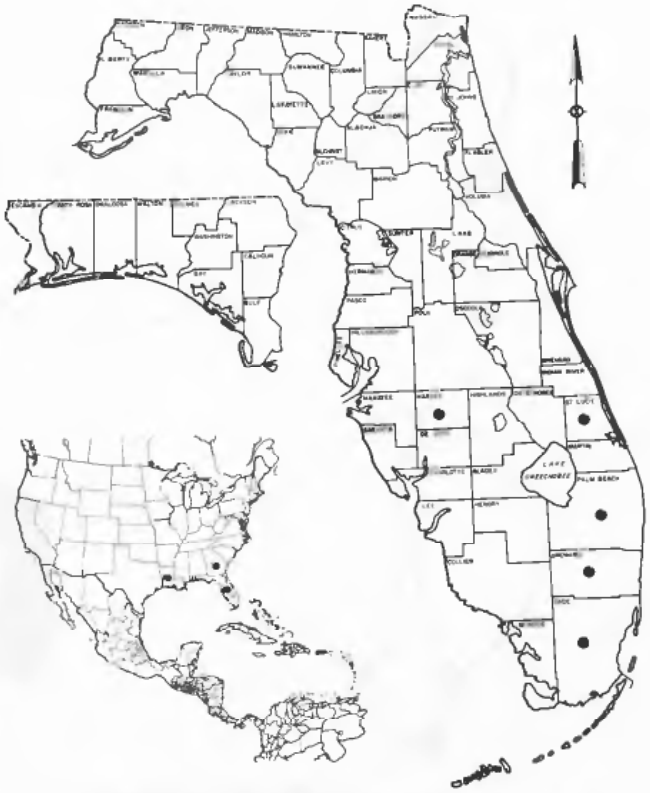
MATERIAL STUDIED: FLORIDA: Canal Point, 2(2), *Saccharum officinarum*, 7-VIII-1973, T. Summers; Indrio, 1(5), *Panicum rhizomatum*, 1-XI-1951, E. W. Campbell; Ona, 3(3), *Paspalum notatum 'Pensacola'*, 28-V-1968 and 10-VII-1968, C. L. Dantzman; Naples, 1(1), *Saccharum officinarum*, 7-VII-1980, K. Delate.

PULVINARIA ERICICOLA McConnell

SYNONYMS: *Pulvinaria ericicola* McConnell 1949:29, Merrill 1953:102

SUGGESTED COMMON NAME: cottony azalea scale

FIELD DESCRIPTION: Female before formation of ovisac (Fig. 73, A) slightly convex,



Map XXVII. Distribution of *Pulvinaria elongata*.

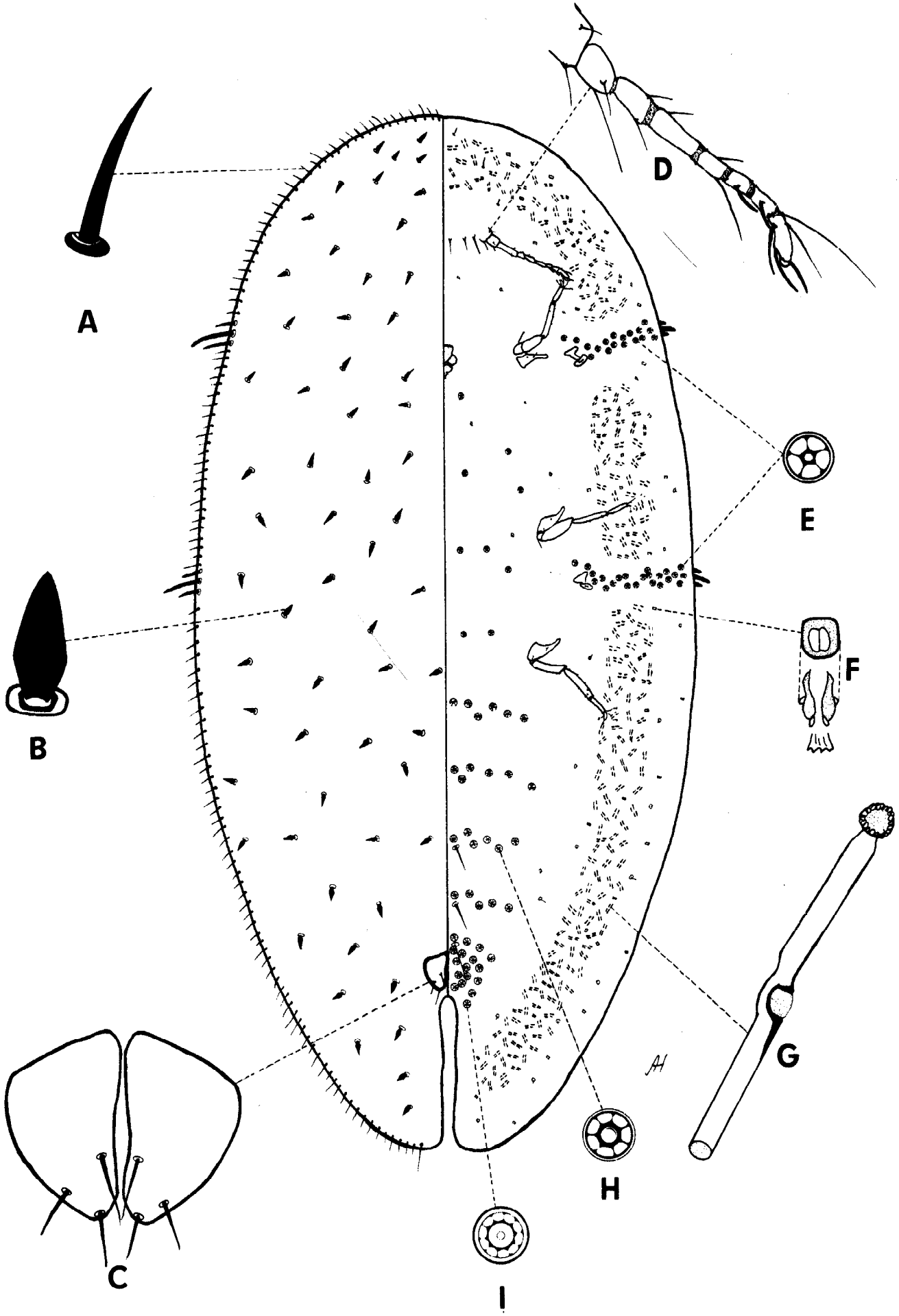


Fig. 72. *Pulvinaria elongata*, adult female, original by A. B. Hamon.

elongate oval and dark red to yellow in color. Derm of female covered with platelets of glassy wax (Fig. 73, B). Fully mature females more rounded, rather flat, wax plates widely spaced, and ovisac 2-4X longer than body.

Fig. 73. *Pulvinaria ericicola*, A) adult female before ovisac, DPI Photo 701615, B) dorsal platelets of glassy wax, DPI Photo 701615.

DESCRIPTION: (Fig. 74) Adult female elongate-oval to round, widest in abdominal region, 1.5-3.5 mm long, 1.0-2.5 mm wide. DORSUM—Derm membranous or only slightly sclerotized. Dorsal body setae (Fig. 74, C) sparse, straight, stout, and bluntly pointed. Submarginal tubercles (Fig. 74, E) prominent, numbering 4-17 around entire body. Small, oval trilocular pores (Fig. 74, F) with inner filament scattered over dorsum. Minute disc pores (Fig. 74, G) scattered over dorsum. Loose longitudinal row of large discoidal pores (Fig. 74, H) extending from anterior of anal plates to anterior of mouth parts. Anal plates triangular, lateral angles pointed or slightly rounded; each plate with 4 apical setae 2 of these along inner margin, 3 subapical setae. VENTER—Antennae 8-segmented. Legs without tibiotarsal scleroses or free articulation. Quinquelocular pores (Fig. 74, 0) in spiracular furrows in band 2 or 3 pores wide, 6 to 10 pores wide near spiracle. Multilocular pores (Fig. 74, P) with 10 loculi in vulvar area, few on preceding abdominal segments. Tubular ducts (Fig. 74, S, R) of 2 types on abdomen and submargin between anterior and posterior spiracular furrows, absent on head. MARGIN—Marginal setae (Fig. 74, B) stout, straight, acute. Spiracular setae (Fig. 74, D) in groups of 3, median seta straight or curved, tapering to rounded point, 2-4X longer than laterals.

DISTRIBUTION: Map XXVIII. AL, DC, MD, NH, NY, VA. *Foreign*: Not known to occur outside the eastern United States.

Map XXVIII. Distribution of *Pulvinaria ericicola*.

BIOLOGY: Fertile, but not fully grown, females overwinter. Females are invariably found near

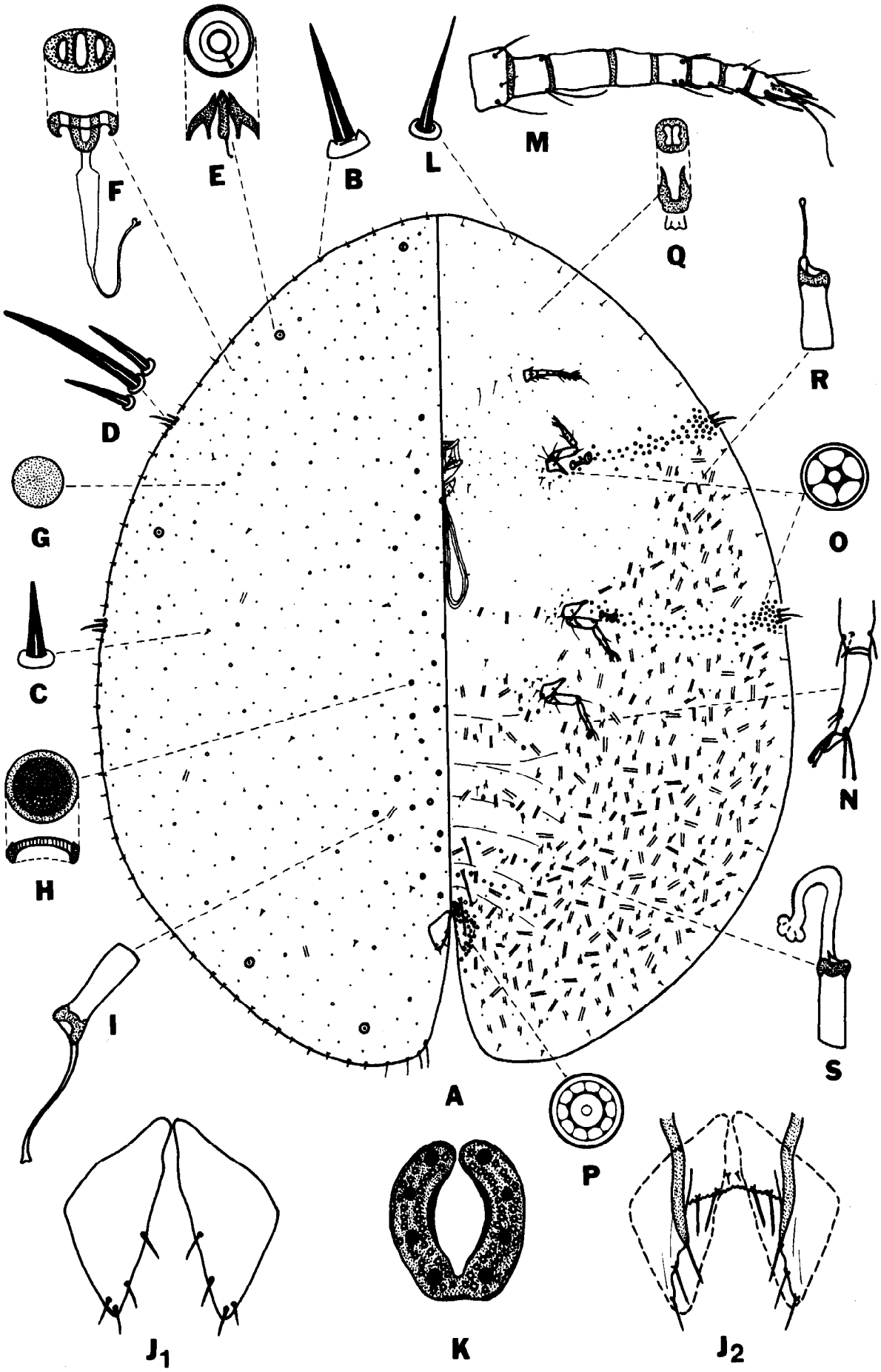


Fig. 74. *Pulvinaria ericicola*, adult female, from Williams and Kosztarab 1972.

the soil line and have been reported on roots. In Maryland, young crawlers that settle above the soil line usually succumb to parasites (McConnell 1949). Ovisac formation and egg deposition begin in early May in Virginia (Williams & Kosztarab 1972). In Maryland young that settle above the soil line usually succumb to parasites (McConnell 1949).

ECONOMIC IMPORTANCE: McConnell (1949) stated that this scale might become an economic pest of azaleas, but Williams and Kosztarab (1972) indicated it was not of great economic importance in Virginia. This scale insect is of no economic importance in Florida.

REMARKS: *Pulvinaria ericicola* can be separated from other species of *Pulvinaria* in Florida because of the absence of tibiotarsal scleroses and free articulation. Large discoidal pores in a loose longitudinal row from anterior of the anal plates to anterior of the mouthparts are also characteristic of this species.

MATERIAL STUDIED: FLORIDA: Brooksville, 1(1), *Vaccinium arboreum*, 18-IV-1980, R. H. Phillips; Gainesville, 2(2), *Vaccinium* sp., 24-I-1975, W. Sherman; Ft. Pierce, 1(1), *Lyonia ferruginea*, 11-I-1979, E. W. Campbell; Oslo, 1(1), *Lyonia* sp., 21-V-1980, E. W. Campbell; Port St. Lucie, 1(1), Huckleberry (unknown genus), 15-XII-1978, E. W. Campbell; Stuart, 1(1), *Lyonia ferruginea*, 6-IV-1978, E. W. Campbell; 1(1), *Lyonia* sp., 19-IX-1978, E. W. Campbell; Winter Garden, 1(1), *Vaccinium* sp., 13-IV-1979, L. J. Chambliss and W. J. Shirley.

PULVINARIA FLOCCIFERA (Westwood)

SYNONYMS: *Coccus floccifera* Westwood 1870:308
Pulvinaria camelicola Signoret, Leonardi 1920:333
Pulvinaria brassiae Cockerell, Cockerell 1895b:135, King 1901a:197
Pulvinaria floccosa (Westwood), Newstead 1900:226
Chloropulvinaria floccifera (Westwood), Borchsenius 1957:205
Pulvinaria floccifera (Westwood), Steinweden 1946:6, Williams and Kosztarab 1972: 135

SUGGESTED COMMON NAME: cottony camellia scale

FIELD DESCRIPTION: Body of female elongate-oval, slightly convex widest near center. Color cream to tan with brown mottling, usually with a brown border. Adults with an elongate ovisac which is straight or curved.

DESCRIPTION: (Fig. 75) Adult female 3.0-4.5 mm long, 2.0-3.0 mm wide. DORSUM—Derm membranous. Body setae (Fig. 75, C) straight, slender, acute, scattered over dorsum. Submarginal tubercles (Fig. 75, E) number 4-11 around entire body. Numerous small bilocular (Fig. 75, F) and disc pores scattered over dorsum. About 25 large disc pores (Fig. 75, H) anterior of anal plates. Tubular ducts (Fig. 75, I) with slender, knobbed filament, scattered over derm. Anal plates triangular, cephalolateral margins concave, caudolateral margins convex with 4 apical, 2 subapical setae. VENTER—Body setae slender, acute, straight or curved, with a large base. Antennae 8-segmented. Legs with tibiotarsal scleroses and free articulation. Quinquelocular pores (Fig. 75, 0) in spiracular furrows, each furrow with 50-70 pores. Multilocular pores (Fig. 75, P) clustered around vulva and in transverse rows on abdomen, most with 7 loculi. Tubular ducts (Fig. 75, T) very dense on abdomen, most with flowery tipped filaments; some ducts with slender knobbed filaments (Fig. 75, S) mostly in submargin of abdomen and thorax; ducts between antennae (Fig. 75, R) with broad flowery tipped filaments. MARGIN—Marginal setae (Fig. 75, B) long, acute, fringed, or bifid, most curved. Spiracular setae in groups of 3 with medial seta about 2.5 X longer than laterals.

DISTRIBUTION: Map XXIX. AL, CA, CT, DC, GA, IL, IN, MA, MD, MO, NC, NJ, OR, RI, SC, TX, VA, WA. *Foreign*: Australia, Canada, Costa Rica, England, Europe, India, Japan, New Zealand, and Trinidad.

BIOLOGY: In Florida, one generation occurs per year. Adult females mature on the stems, but migrate to the leaves for oviposition. Afterwards, the dried female usually falls to the ground. First instars usually settle on leaves, and then migrate to stems as 2nd instars.

ECONOMIC IMPORTANCE: Not economically important in Florida.

NATURAL ENEMIES: Apparently the only parasite reported from *P. floccifera* in North America is *Coccophagus lycimnia* Walker (Peck 1963, Krombein et al. 1979).

REMARKS: *Pulvinaria floccifera* and *P.*

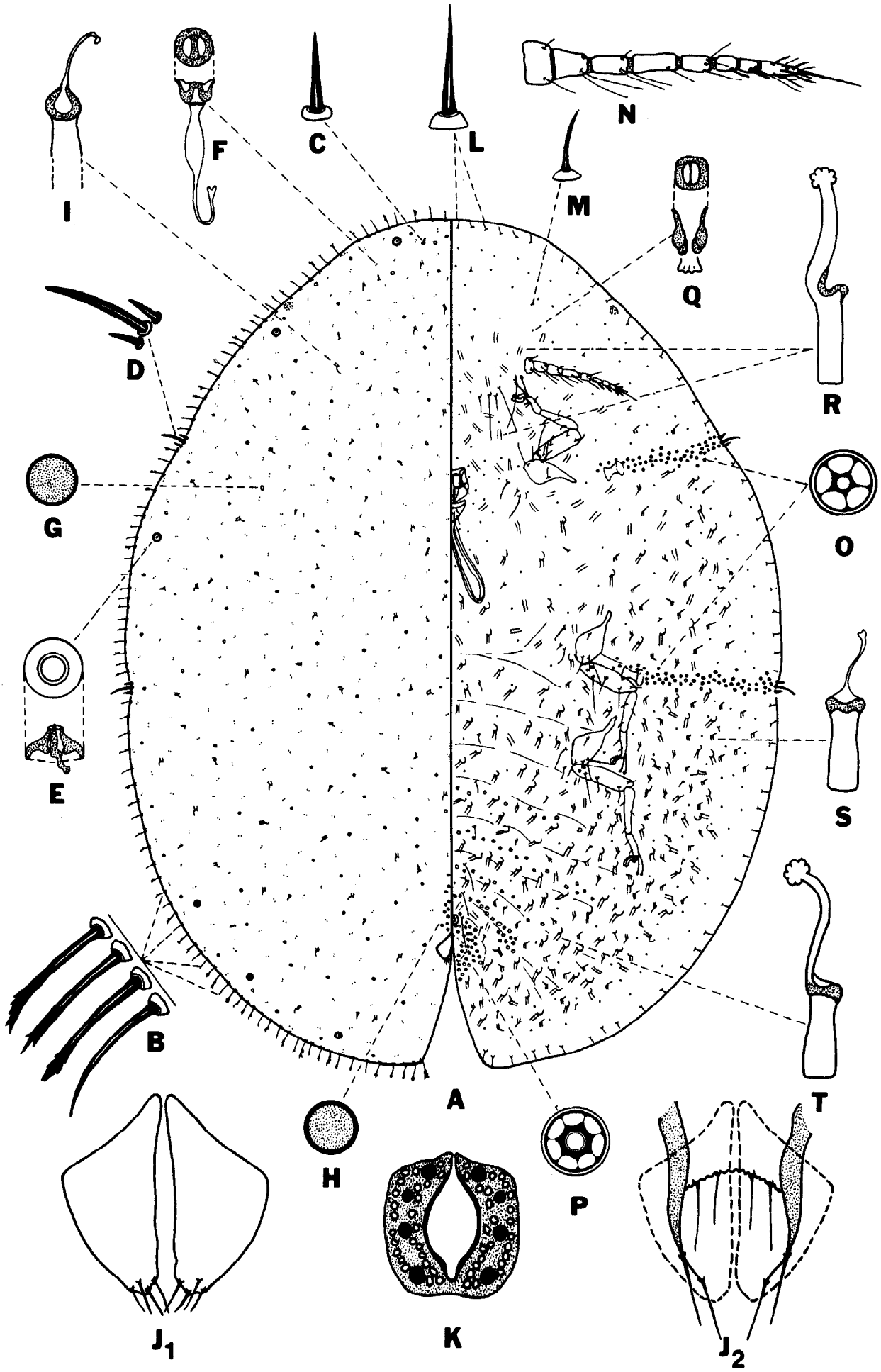
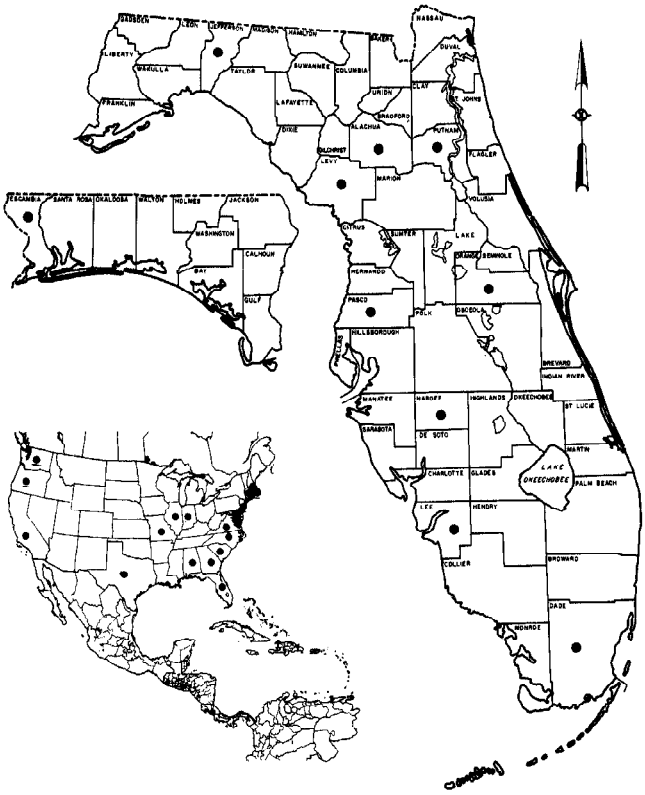


Fig. 75. *Pulvinaria floccifera*, adult female, from Williams and Kosztarab 1972.



Map XXIX. Distribution of *Pulvinaria floccifera*.

hydrangeae Steinweden are very similar; the presence of submarginal tubercles in *P. floccifera* which are absent from *P. hydrangeae* and subdiscal setae on the anal plates of *P. hydrangeae*, which *P. floccifera* lacks, differentiate the 2 species.

MATERIAL STUDIED: ALABAMA: Loxley, 2(4), *Camellia japonica*, 29-IV-1930, L. L. English: FLORIDA: N. Miami, 4(4), *Rhus radicans*, 10-VIII-1976, M. Corman: VIRGINIA: Cape Charles, 1(1), *Rhododendron* sp., 16-V-1968, J. Weidhaas, VPI. GEORGIA: Cordele, 1(1), *Camellia japonica*, 7-IV-1937, Tom O'Neill.

PULVINARIA HYDRANGEAE Steinweden

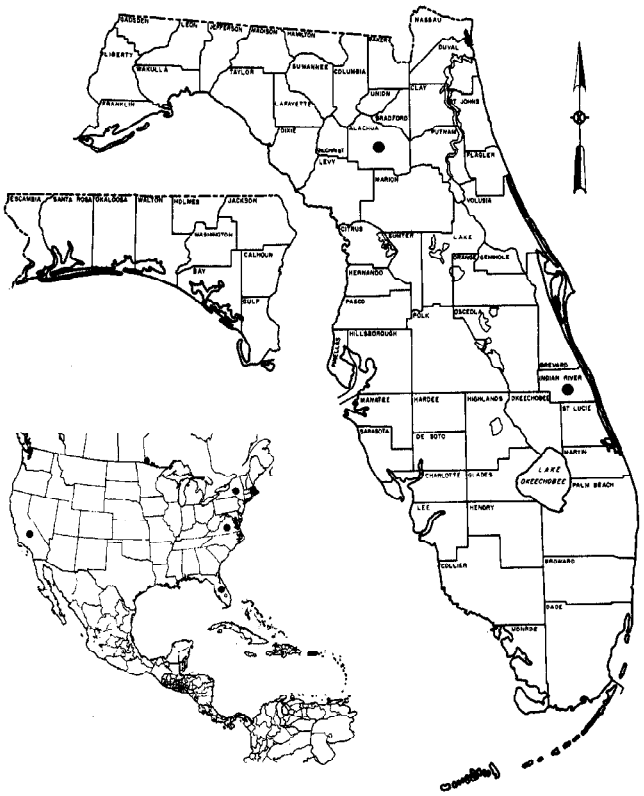
SYNONYMS: *Pulvinaria hydrangeae* Steinweden 1946:7
Eupulvinaria hydrangeae (Steinweden), Canard 1965a: 170, 1965b:411

SUGGESTED COMMON NAME: cottony hydrangea scale

FIELD DESCRIPTION: Female oblong to heart-shaped, 2.0-3.0 mm long, 1.5-2.0 mm wide. Yellowish, mottled with brown, and becoming transversely ridged and dark brown after egg deposition. Ovisac broad, white, ribbed, ca. 3X the body length.

DESCRIPTION: (Fig. 76) Adult female ovoid ca. 4.0 mm long by 3.5 mm wide. DORSUM—Derm membranous. Body setae (Fig. 76, C) straight, tapering to acute points, scattered over body. Small bilocular pores with inner filament (Fig. 76, E) scattered over dorsum. Disc pores (Fig. 76, G) in median area anterior to anal plates. Anal plates (Fig. 76, I_1) with cephalolateral margins concave and caudolateral margins convex, each plate with 3 apical, 1 subdiscal and 3 subapical setae. Submarginal tubercles absent. VENTER—Antennae 8-segmented. Legs with tibiotarsal scleroses and free articulation. Quinquelocular pores (Fig. 76, M) in spiracular furrows, each furrow with 55-70 pores. Multilocular pores (most 7-loculi) (Fig. 76, N) in vulvar area and in transverse rows on abdomen. Tubular ducts (Fig. 76, R, Q, P) numerous over most of ventral surface, with larger concentration in posterior submarginal area. MARGIN—Marginal setae (Fig. 76, B) slender, most acute, few fimbriate, slightly to strongly curved. Spiracular setae (Fig. 76, D) in groups of 3, with medial seta 2.5 to 3X longer than lateral.

DISTRIBUTION: Map XXX. CA, MA, NY, VA. *Foreign*: France and Japan.



Map XXX. Distribution of *Pulvinaria hydrangeae*.

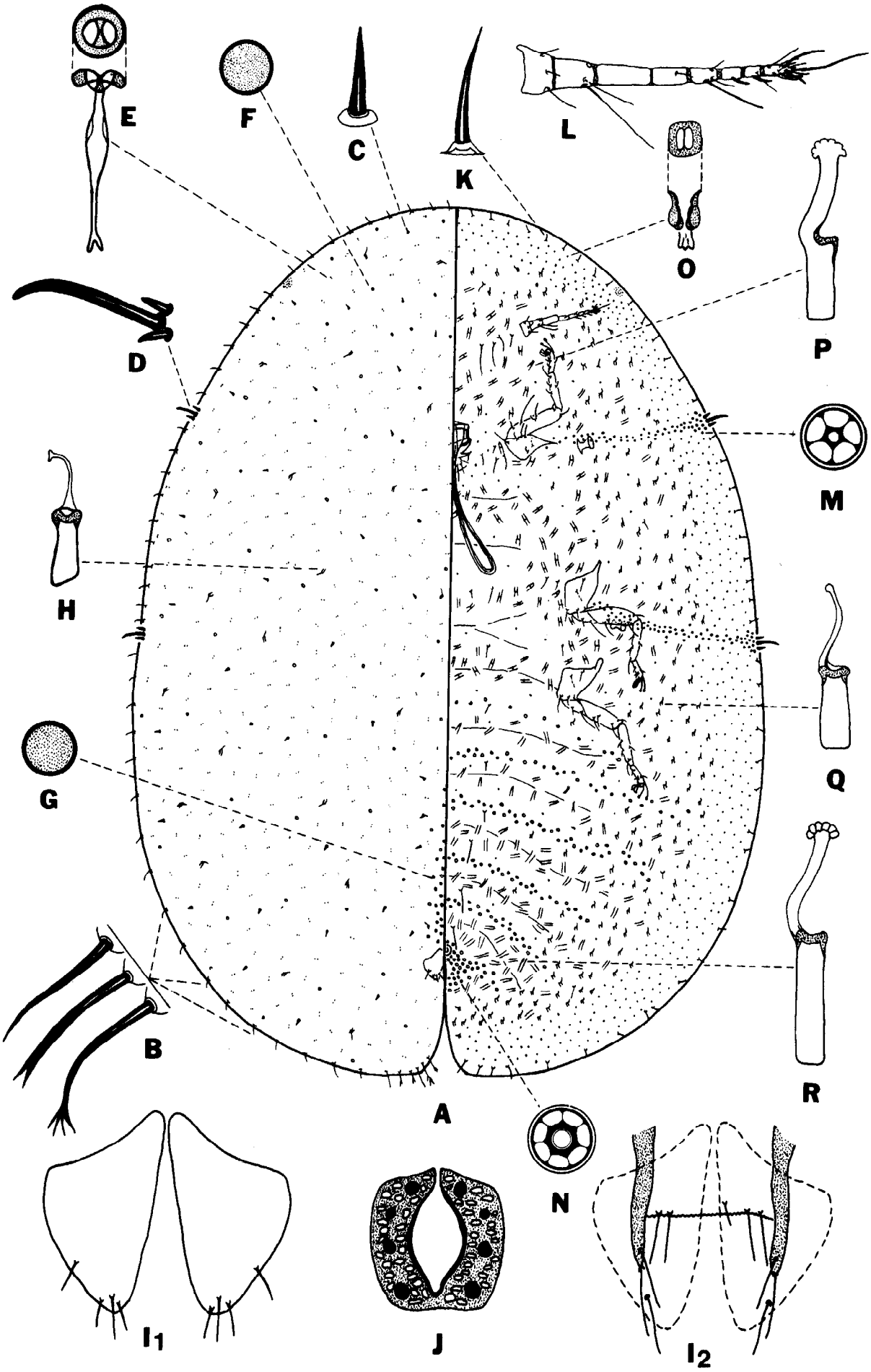


Fig. 76. *Pulvinaria hydrangeae,* adult female, from Williams and Kosztarab 1972.

BIOLOGY: *Pulvinaria hydrangeae* is parthenogenetic and has 1 generation per year in France (Canard 1965b). The female overwinters on the stems and migrates to leaves in the spring where an ovisac is produced for egg deposition.

ECONOMIC IMPORTANCE: This scale insect is not economically important except in localized areas (Williams and Kosztarab 1972). It is not known to be economically important in Florida.

REMARKS: This scale is readily confused with *P. floccifera*. Steinweden (1946) noted specimens of *P. hydrangeae* in collections were misidentified as *P. floccifera*. These two species can be separated by the absence of submarginal tubercles and the presence of a subdiscal seta on the anal plates of *P. hydrangeae*, whereas *P. floccifera* has submarginal tubercles and lacks subdiscal setae.

One 1976 record of this scale insect occurring in Florida is present in the Division of Plant Industry files; however, we have been unable to locate slides or confirm this record.

MATERIAL STUDIED: CALIFORNIA: Guerneville, 1(1), Hydrangea, D. Loukonen, VPI: VIRGINIA: Suffolk, 1(1), Hydrangea, J. C. Smith, VPI.

PULVINARIA INNUMERABILIS (Rathvon)

SYNONYMS: *Coccus innumerabilis* Rathvon 1854:256
Lecanium acericorticis Fitch, Putnam 1880:294
Lecanium acericola Walsh & Riley, Putnam 1880:294 (misidentification)
Pulvinaria innumerabilis (Rathvon), Putnam 1880:293
Pulvinaria tinsleyi King, Steinweden 1946:7
Pulvinaria vitis (Linnaeus), many misidentifications in loc. cit.

COMMON NAME: cottony maple scale

FIELD DESCRIPTION: Body slightly convex, oblong oval. According to Williams & Kosztarab (1972), the color of specimens from red oak, silver maple, and basswood was gray speckled with black and light brown; specimens from hickory and red maple were dark red with a lighter margin. These same color variations apply generally to material observed in Florida (Fig. 77, A). Cottony maple scale occurs on twigs and small limbs of host plants, and when mature, it secretes a broad, white, convex ovisac which is 1-2X the length of its body (Fig. 77, B). Generally, the female body will be tilted at an angle to the host twig or limb because of the ovisac.

Fig. 77. *Pulvinaria innumerabilis*, A) female before formation of ovisac, DPI Photo 70160-6, B) adult female with ovisac about one-third formed, DPI Photo 1670.

DESCRIPTION: (Fig. 78) Adult female ovate, 3.5-7.0 mm long, 2.0-6.0 mm wide. Dor-

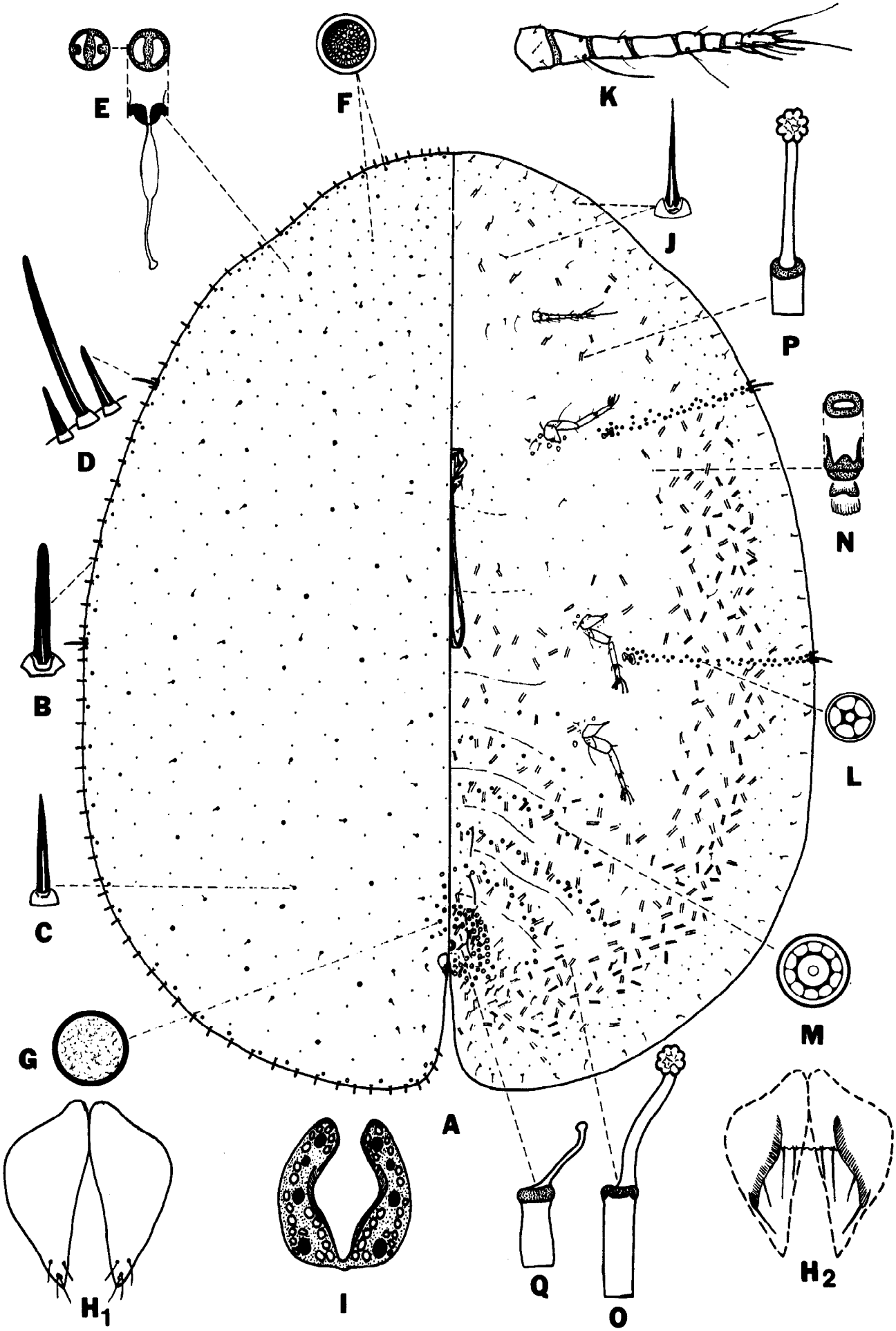
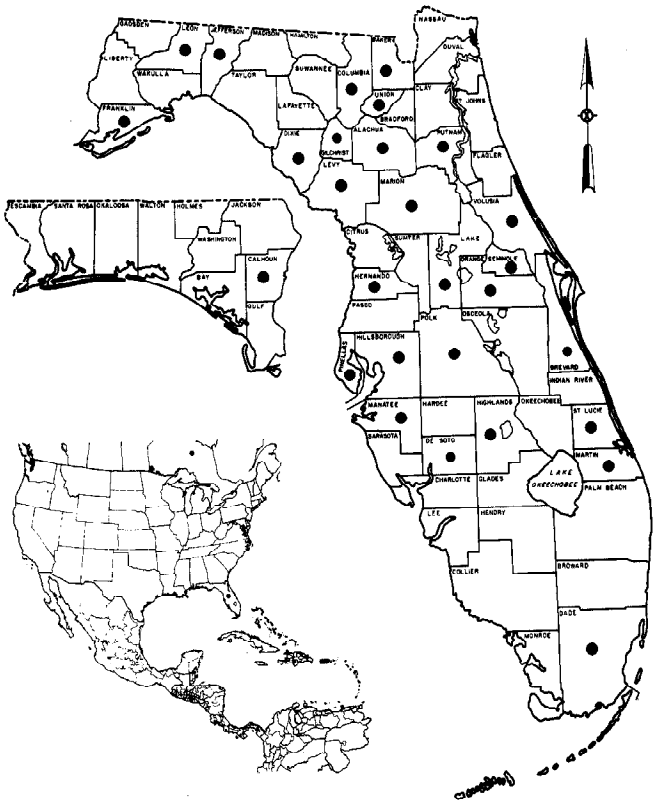


Fig. 78. *Pulvinaria innumerabilis*, adult female, from Williams and Kosztarab 1972.

SUM—Derm slightly sclerotized at maturity. Body setae (Fig. 78, C) with large bases, spinelike, tapering to a sharp point, scattered except for double longitudinal rows on middorsum. Submarginal tubercles absent. Small bilocular pores (Fig. 78, E) scattered over dorsum. Disc pores (Fig. 78, G) anterior to anal plates number 20-30. Anal plates slender, triangular, cephalolateral margin concave, caudolateral margin longest, each plate with 4 apical and 2 subapical setae. VENTER—Antennae 8-segmented. Legs normal, but small in relation to body size; tibiotarsal scleroses and free articulation present. Quinquelocular pores (Fig. 78, L) in spiracular furrows, 30 to 80 pores in each furrow. Multilocular pores (Fig. 78, M) with 10 loculi, in vulvar area and in transverse rows on preceding abdominal segments. Three sizes of tubular ducts; larger ducts (Fig. 78, 0) scattered over abdomen; a submarginal band on abdomen and thorax; and a few ducts on head. MARGIN—Marginal setae (Fig. 78, B) spinelike, stout, blunt apex. Spiracular setae (Fig. 78, D) in groups of 3, medial seta ca. 2.5 X the length of laterals, slightly curved, blunt.

DISTRIBUTION: Map XXXI. Widespread in the United States. *Foreign*: Canada.



Map XXXI. Distribution of *Pulvinaria innumerabilis*.

BIOLOGY: Putnam (1880) studied the biology in detail. Young females overwinter on twigs and branches, and they reach full maturity in early spring. In April and May they secrete a white cottony ovisac. The nymphs migrate to leaves to feed and migrate back to twigs and stems before leaf drop in the fall. Males emerge in the fall, mate with available females, and soon die. Unfertilized females produce eggs, but all progeny are males (Phillips 1962).

ECONOMIC IMPORTANCE: Apparently not economically important in Florida, because of the natural parasite and predator pressures. However, it has been an occasional pest of economic importance in other states.

REMARKS: Cottony maple scale, *P. innumerabilis*, and cottony maple leaf scale, *P. acericola*, have been confused even though they are morphologically quite different. The confusion perhaps resulted from the similarity of common names and hosts. In addition to their distinct morphology, their life history is different. Also, cottony maple scale produces the ovisac on the stems and branches, whereas cottony maple leaf scale produces the ovisac on the leaves.

MATERIAL STUDIED: FLORIDA: Ft. Ogden, 1(1), *Quercus nigra*, 5-II-1981, Z. Smith; Ft. Pickens, 1(1), *Ceratiola ericoides*, 6-V-1980, D. Reese; Gainesville, 1(1), *Quercus laurifolia*, 16-V-1978, L. A. Hetrick; Glen St. Mary, 1(1), *Myrica cerifera*, 12-IV-1978, C. Webb and A. E. Graham; Hobe Sound, 1(1), *Ceratiola ericoides*, 4-V-1978, E. W. Campbell; Port St. Lucie, 2(2), *Ilex glabra*, 12-V-1978, *Solidago* sp., 23-VII-1980, E. W. Campbell; Steinhatchee, 1(1), *Salix* sp., 5-XI-1980, F. McHenry; White City, 1(1), *Amelopsis* sp., 23-VII—1979, E. W. Campbell; Yalaha, 1(1), *Carya* sp., 6-IV-1978, G. T. Smith.

PULVINARIA PSIDII Maskell

SYNONYMS: *Pulvinaria psidii* Maskell 1893: 223
Pulvinaria cupaniae Cockerell, Green 1909:265
Pulvinaria cussoniae Hall, Hodgson 1968:168
Pulvinaria gymnosporiae Hall, Hodgson 1968:168
Chloropulvinaria psidii (Maskell), Borchsenius 1957:217

COMMON NAME: green shield scale

FIELD DESCRIPTION: Female oval, smooth, and moderately convex before egg deposition and deep green, but gradually becomes lighter in

color (Fig. 79, A). After egg deposition, the female gradually shrivels, and the surface forms into ridges and valleys (Fig. 79, B). The ovisac at first projects only to the posterior, but eventually more or less surrounds the adult female on all sides and causes the abdomen to be elevated at an angle of 45 degrees to the ovisac. The ovisac is 2 to 3X the length of female.

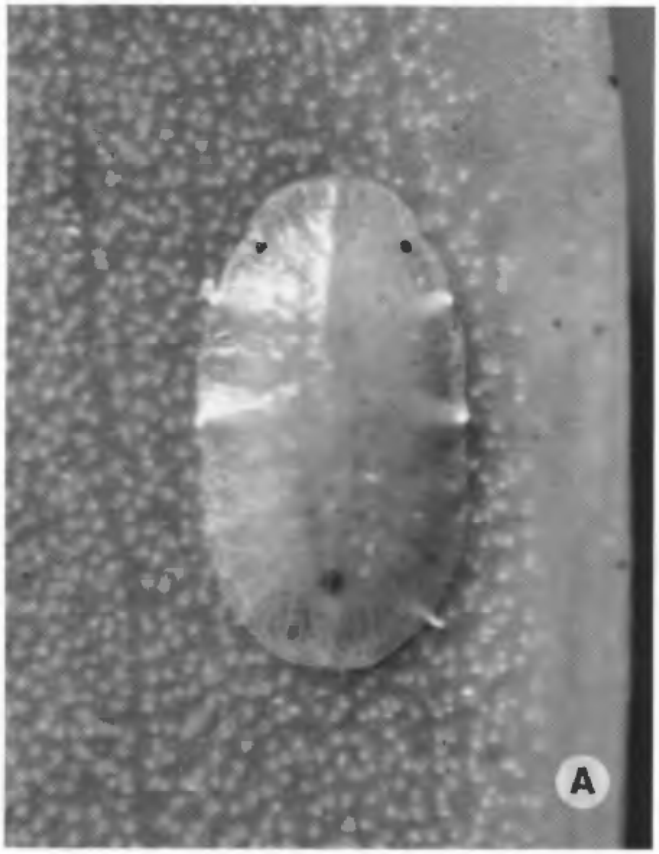


Fig. 79. *Pulvinaria psidii*, A) female before ovisac formation, DPI Photo 701537-3, B) adult female with ovisac about one-half formed, DPI Photo 701558.

DESCRIPTION: (Fig. 80) Adult female 2.0-4.5 mm long, 1.5-3.0 mm wide. DORSUM—Derm membranous to slightly sclerotized with many small clear areas. Body setae short, straight, spinelike with sharp apices. Bitubular pores (Fig. 80, B) scattered over surface. Submarginal tubercles (Fig. 80, D) 0-8 around body. Discoidal pores (Fig. 80, G) in a longitudinal group anterior to anal plates. Anal plates triangular, with nearly equal sides, each plate with 4 apical and 3 subapical setae. VENTER—Antennae 8-segmented. Legs with tibiotarsal scleroses. Tubular ducts (Fig. 80, M, N) scattered over venter; more numerous in submarginal area of abdomen. Multilocular pores (Fig. 80, 0) with 10 loculi concentrated in vulvar area and in transverse rows on preceding abdominal segments. Group of multilocular pores posterolaterad of each coxa. Quinquelocular pores (Fig. 80, K) in spiracular furrows 24-40 pores in each furrow. Spiracles usually enclosed by a sclerotized plate (Fig. 80, J). MARGIN—Marginal setae (Fig. 80, E) expanded and fringed. Spiracular setae (Fig. 80, C) in groups of 3, with medial seta ca. 2.5X the length of laterals.

DISTRIBUTION: Map XXXII. AL, GA, HI, greenhouses in DC, MO, NY. *Foreign*: Australia, Congo, India, Malaysia, New Caledonia, New Guinea, Puerto Rico, South Africa, Sri Lanka, Tanzania, Uganda, USSR.

BIOLOGY: The full life cycle takes 2-3 months. However, the formation of the ovisac and egg deposition takes place in only 5 days. The scales are found on the leaves and young tender stems (Coleman and Kannan 1918).

ECONOMIC IMPORTANCE: Generally considered an economic pest on ornamentals, particularly *Ficus* spp. in Florida.

NATURAL ENEMIES: Miscellaneous parasites and predators were imported into Bermuda for the control of this pest (Bartlett *in* Clausen ed. 1978). Those becoming established included the following: *Microterys kotinskyi* Fullaway, *Metaphycus stanleyi* Compere, and the predator *Azya lutipes* Mulsants (Bartlett *in* Clausen ed. 1978).

REMARKS: In Florida, *Pulvinaria psidii* can be confused with *P. acericola* and *P. floccifera*. However, only on *Diospyros* (persimmon) and

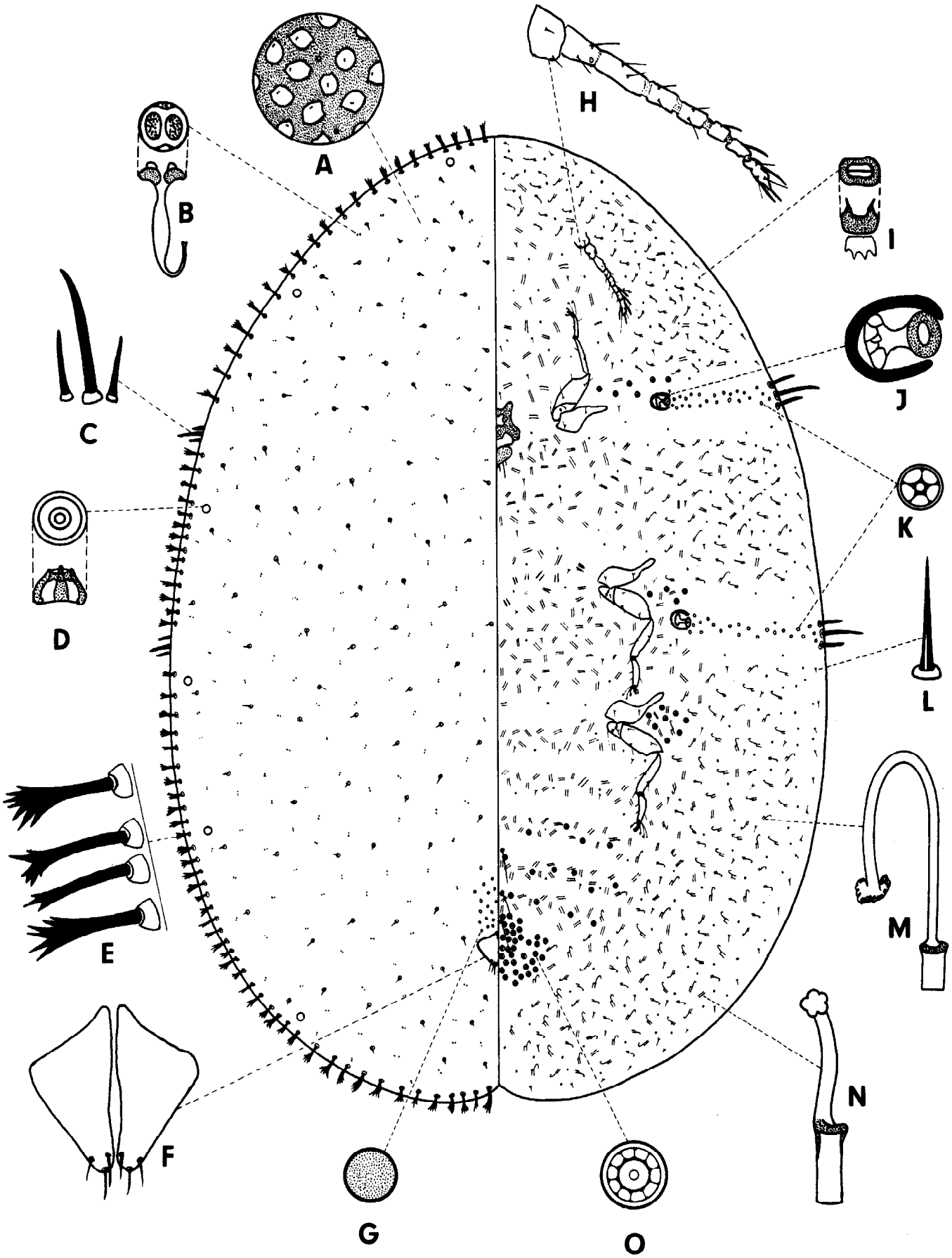


Fig. 80. *Pulvinaria psidii*, adult female, original by A. B. Hamon.

Prunus sp. are *P. acericola* and *P. psidii* reported as occurring on the same host. *Pulvinaria urbicola* and *P. psidii* are frequently reported from the same hosts, but they usually occupy different habitats on the plant. *Pulvinaria psidii* occurs on leaves and small young stems, whereas *P. urbicola* usually occurs on the stems at ground level. The combination of stout, fringed marginal setae, multilocular pores with 10 loculi, numerous dorsal tubular ducts, and usually a sclerotized plate enclosing the spiracles will differentiate *P. psidii* from other members of the genus in Florida.

Map XXXII. Distribution of *Pulvinaria psidii*.

MATERIAL STUDIED: FLORIDA: Bluefield, 1(1), *Eupatorium* sp., 23-X-1980, E. W. Campbell; Ft. Lauderdale, 1(1), *Chrysophyllum oliviforme*, 8-VI-1972, T. L. Fedelem; Ft. Myers, 1(1), *Aralia* sp., 31-VII-1972, W. T. Walsh; Jensen Beach, 1(1), *Stenolobium* sp., 14-VIII-1978, E. W. Campbell; Key West, 2(2), *Psidium guajava*, 16-III-1971, W. H. Pierce; Lakeland, 1(1), *Carissa* sp., 1-VIII-1972, J. W. McLeod; Sanibel Island, 1(1), *Schinus terebinthifolius*, 23-X-1979, J. R. Cassani; St. Petersburg, 1(1), *Anthurium* sp., 25-X-1978, K. Hickman; Windermere, 1(1), *Syzygium jambos*, 21-V-1974, F. L. Ware.

PULVINARIA URBICOLA Cockerell

SYNONYMS: *Pulvinaria urbicola* Cockerell 1893e:160

SUGGESTED COMMON NAME: urbicola soft scale

FIELD DESCRIPTION: Adult female oval, slightly convex, light or dark yellowish green or grayish green (Fig. 81). With the deposition of eggs, the female becomes transversely ridged. Ovisac elongate-oblong, straight or curved, sides parallel, fully ribbed longitudinally. Ovisac 4.0-9.0 mm in length.

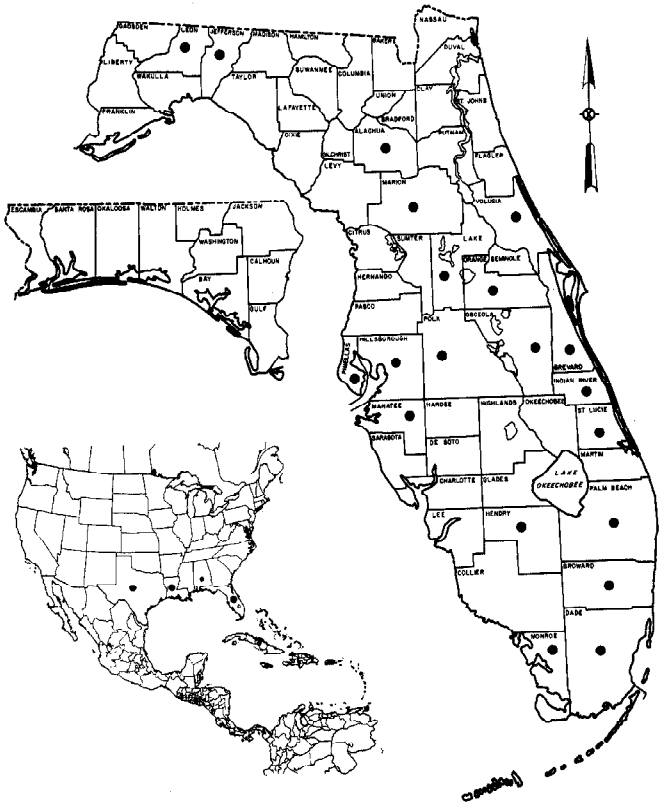
DESCRIPTION: (Fig. 82) Adult female 2.5-4.0 mm long, 1.5-3.0 mm wide. DORSUM—Derm membranous with scattered minute pores. Body setae (Fig. 82, A) spinelike, sharply pointed. Submarginal tubercles usually absent, occasionally 1 or 2 present. Few, small, obscure discoidal pores (Fig. 82, E) anterior to anal plates. Anal plates nearly quadrate, each with 2 fringe setae, 3 subapical setae, and 3 or 4 apical setae. VENTER—Antennae 8-segmented. Legs with tibiotarsal scleroses. Tubular ducts (Fig. 82, K, L) in submarginal band on abdomen; fewer

Fig. 81. *Pulvinaria urbicola*, adult female, DPI Photo 701491.

ducts on thorax; median areas with fewer, but larger ducts than submargin, sparse on submargin of head. Multilocular pores (Fig. 82, M)

with 6-7 loculi concentrated in vulvar area and in transverse rows on preceding abdomen segments, absent from anterior segments; few near coxae of pro- and mesothoracic legs. Quinquelocular pores (Fig. 82, I) in spiracular furrows, each furrow with 28-46 pores. MARGIN—Marginal setae (Fig. 82, D) stout, fringed, or broadened and fringed. Row of smaller, slender, outer setae slightly ventrad of marginal setae (Fig. 82, J). Spiracular setae (Fig. 82, B) in groups of 3, medial seta ca. 2.5X longer than laterals.

DISTRIBUTION: Map XXXIII. AL, HI, LA, TX. *Foreign*: Barbados, Cuba, Galapagos Islands, Jamaica, and Trinidad.



Map XXXIII. Distribution of *Pulvinaria urbicola*.

BIOLOGY: No information is known about the life cycle. Commonly found on lower stems and roots of hosts in Florida.

ECONOMIC IMPORTANCE: Apparently not an economic pest in Florida. It is most commonly found on dogfennel in Florida.

REMARKS: Urbicola soft scale is similar to *P. phaiae* Lull; however, *P. phaiae* has not been reported in Florida. In addition, *P. urbicola* has longer marginal setae and fewer discoidal pores anterior to the anal plates than *P. phaiae*.

MATERIAL STUDIED: FLORIDA: Bayport, 1(1), *Lycium carolinanum*, 10-X-1980, R. H. Phillips; Big Pine Key, 2(2), *Eustoma exaltatum*, 27-IV-1971, W. H. Pierce; Coral Gables, 1(1), *Coccoloba diversifolia*, 2-XII-1980, K. Martin; Ft. Pierce, 1(1), *Psidium guajava*, 14-XI-1979, E. W. Campbell; Gainesville, 1(1), *Catalpa speciosa*, 16-X-1970, Awinash Bhatkar; 1(1), *Mirabilis jalapa*, 19-VIII-1979, B. Munir; Haines City, 1(1), *Polygonella fimbriata*, 27-IX-1972, W. H. Pierce; Nokomis, 1(1), weed (unknown), 6-V-1981, D. Culbert; Salerno, 1(1), *Penstemon multiflorus*, 26-VI-1969, E. W. Campbell.

Genus *SAISSETIA* Deplanche, 1859

TYPE SPECIES: *Lecanium coffeae* Walker, 1852.

DESCRIPTION: Body of adult female convex to hemispherical, often with H-shaped ridges on dorsum. Derm heavily sclerotized at maturity, with pale areas, cellular patterns, or polygonal reticulations. Submarginal tubercles present. Anal plates each with a large discal seta, varying numbers of apical, subapical, and fringe setae. Hypopygial setae absent. Anal ring with 8 setae. Antennae well developed, 7 or 8-segmented. Legs well developed; tibiotarsal sclerosis present or absent. Quinquelocular pores in spiracular furrows. Multilocular pores in vulvar region and in transverse rows on preceding abdominal segments. Tubular ducts ventrally on abdomen, in submarginal band around body. Marginal setae stout, slender, pointed, blunt, or variously frayed. Spiracular setae in groups of 3, median seta longer than laterals.

NOTE: Members of the genus *Saissetia* are polyphagous. Eggs are protected by the female body until they hatch. Species reported in the southeastern United States include: *S. coffeae*, *S. miranda*, *S. neglecta*, and *S. oleae*.

KEY TO SPECIES OF *SAISSETIA*

1. Ventral tubular ducts on submargin of two types; one with inner filaments as wide or wider than ducts, other with slender inner filaments . . . . . *coffeae*

1'. Ventral tubular ducts on submargin of one type; with slender inner filaments . 2

2(1). With 40-60 marginal setae around head between anterior spiracular clefts; tibiotarsal sclerosis present . . . . . *miranda*

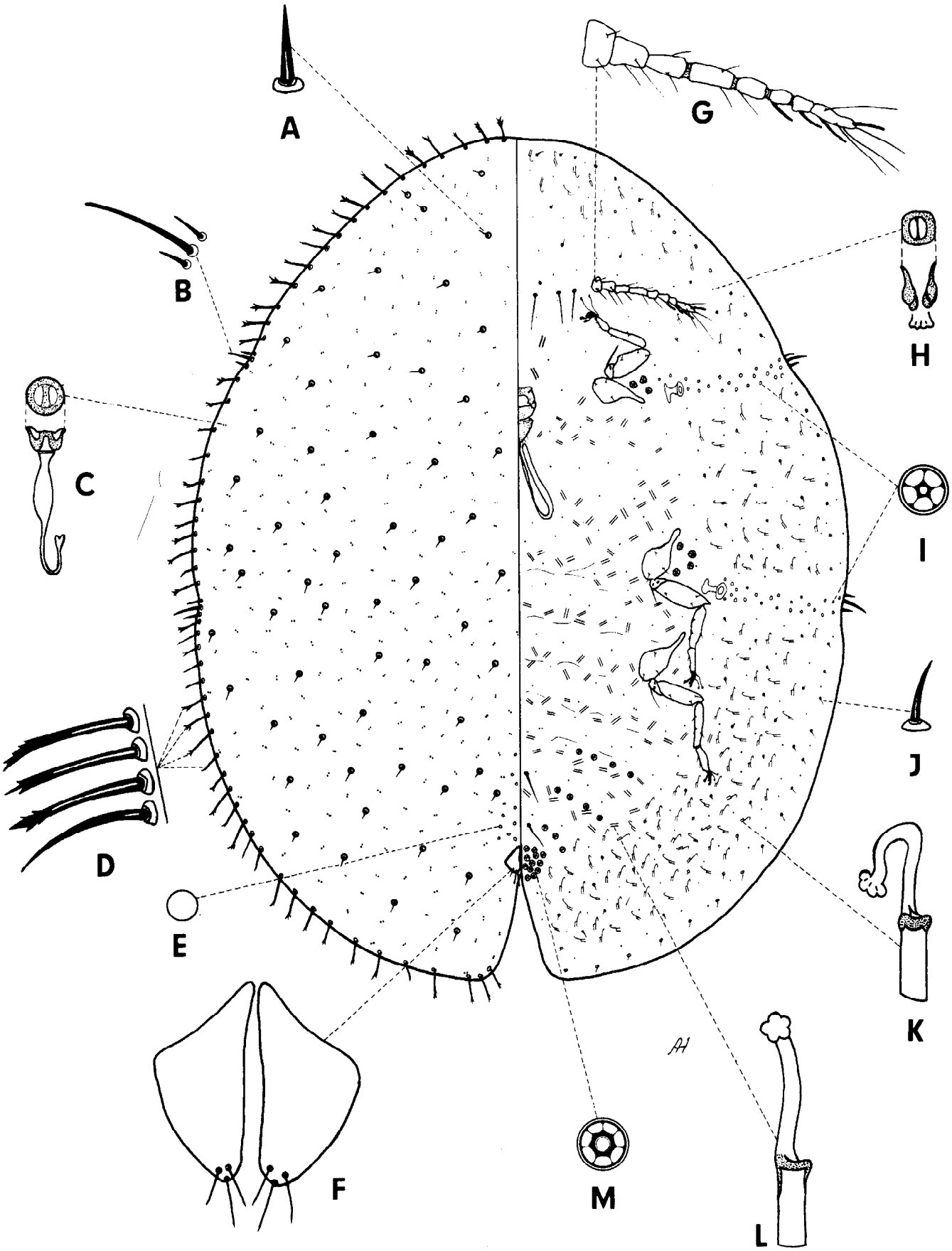


Fig. 82. *Pulvinaria urbicola*, adult female, original by A. B. Hamon.

2'. With less than 30 marginal setae around head between anterior spiracular clefts; tibiotarsal sclerosis present or absent . . 3

3(2). Apices of marginal setae fringed, or expanded and fringed; tibiotarsal sclerosis absent . . . . . *neglecta*

3'. Apices of marginal setae simple, blunt, slightly lobed or with few fringes; tibiotarsal sclerosis usually present . . . . *oleae*

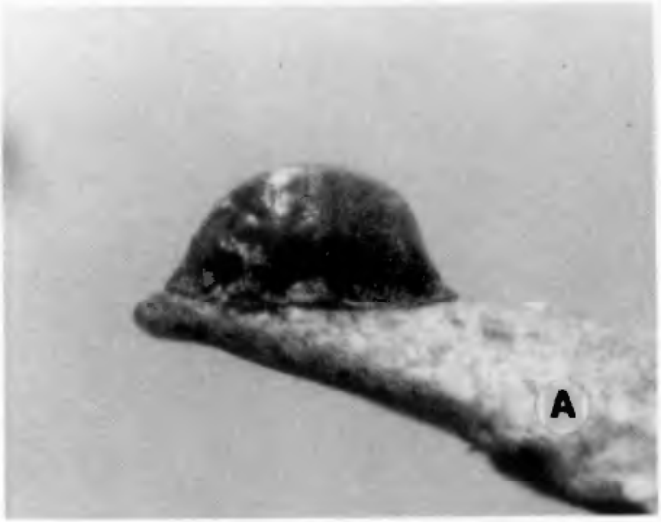
SAISSETIA COFFEAE (Walker)

SYNONYMS: *Lecanium coffeae* Walker 1852: 1079
Lecanium hemisphaericum Targioni-Tozzetti, Williams 1957: 314
Lecanium (Saissetia) hemisphaericum Targioni-Tozzetti, Newstead 1917b:130
Saissetia hemisphaerica (Targioni-Tozzetti), Brain 1920:9
Saissetia coffeae (Walker), Laing 1928:215, Williams 1957:314, DeLotto 1965:221

COMMON NAME: hemispherical scale

FIELD DESCRIPTION: Adult female hemispherical, oval or slightly elongate-oval, surface very convex, smooth, glossy; yellowish brown to dark brown (Fig. 83, A). Ridges absent from dorsum or only very slightly suggested. Nymphs may have a pinkish coloration and H-shaped ridges (Fig. 83, B). Diameter varies from 1.5-3.5 mm; ca. 1.75 mm high (Merrill 1953).

DESCRIPTION: (Fig. 84) Adult females 1.5-4.5 mm long, 1.3-4.5 mm wide. DORSUM—Derm with round or oval clear areas. Dorsal setae (Fig. 84, A) spiniform. Submarginal tubercles (Fig. 84, B) present, variable in number. Discoidal pores (Fig. 84, C) number 9-20 anterior to anal plates. Cephalolateral margins of anal plates shorter than caudolateral margins; each plate (Fig. 84, D) with large, stiff, simple or slightly fimbriate discal seta. VENTER—Antennae 8-segmented. Legs with tibiotarsal scleroses. Tubular ducts of 2 sizes; larger ducts (Fig. 84, E) in submarginal band with filaments expanded to same width as basal portion; smaller ducts (Fig. 84, F, K) normal filaments bordering submarginal band of larger ducts, few in median region of abdomen. Multilocular pores (Fig. 84, G) concentrated in vulvar region; in transverse rows on preceding abdominal segments, few near posterior coxae. Quinquelocular pores (Fig. 84, H) in spiracular furrows. MARGIN—Marginal setae (Fig. 84, I) stout with the apices frayed. Spiracular setae (Fig. 84, J) in groups of 3, medial seta ca. 2.5X longer than laterals.



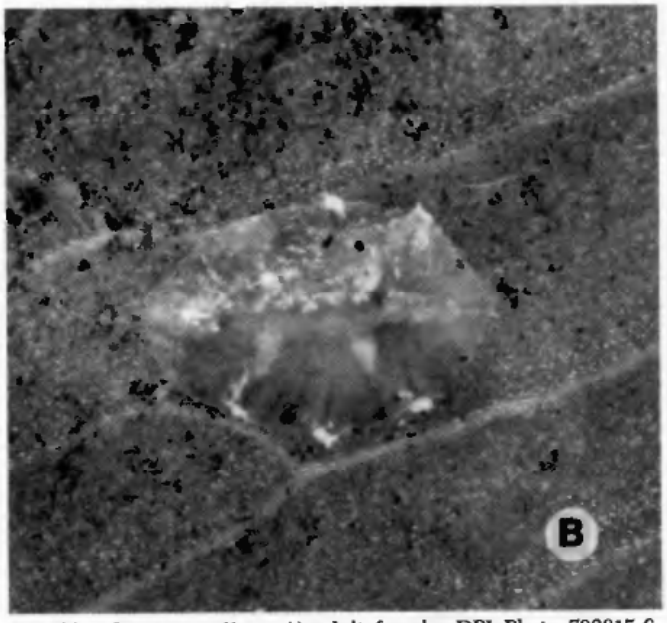


Fig. 83. *Saissetia coffeae*, A) adult female, DPI Photo 702815-6, B) nymph showing H-shaped ridges, DPI Photo 702600-2.

DISTRIBUTION: Map XXXIV. AK, AL, AR, AZ, CA, CO, CT, DC, DE, GA, IL, KS, KY, LA, MA, MD, MI, MN, MO, MS, MT, NB, NC, NH, NJ, NY, OH, OR, PA, SC, TN, TX, UT, VA, WA, WI. *Foreign*: Cosmopolitan.

BIOLOGY: One or 2 generations per year outdoors; in the greenhouse, generations may overlap. In California, the eggs are laid from May to July and hatch soon after being laid (Essig 1915). Occurs on branches, leaves and fruits.

ECONOMIC IMPORTANCE: A pest of many ornamental plants. In Florida, cycads and ferns are frequent hosts.

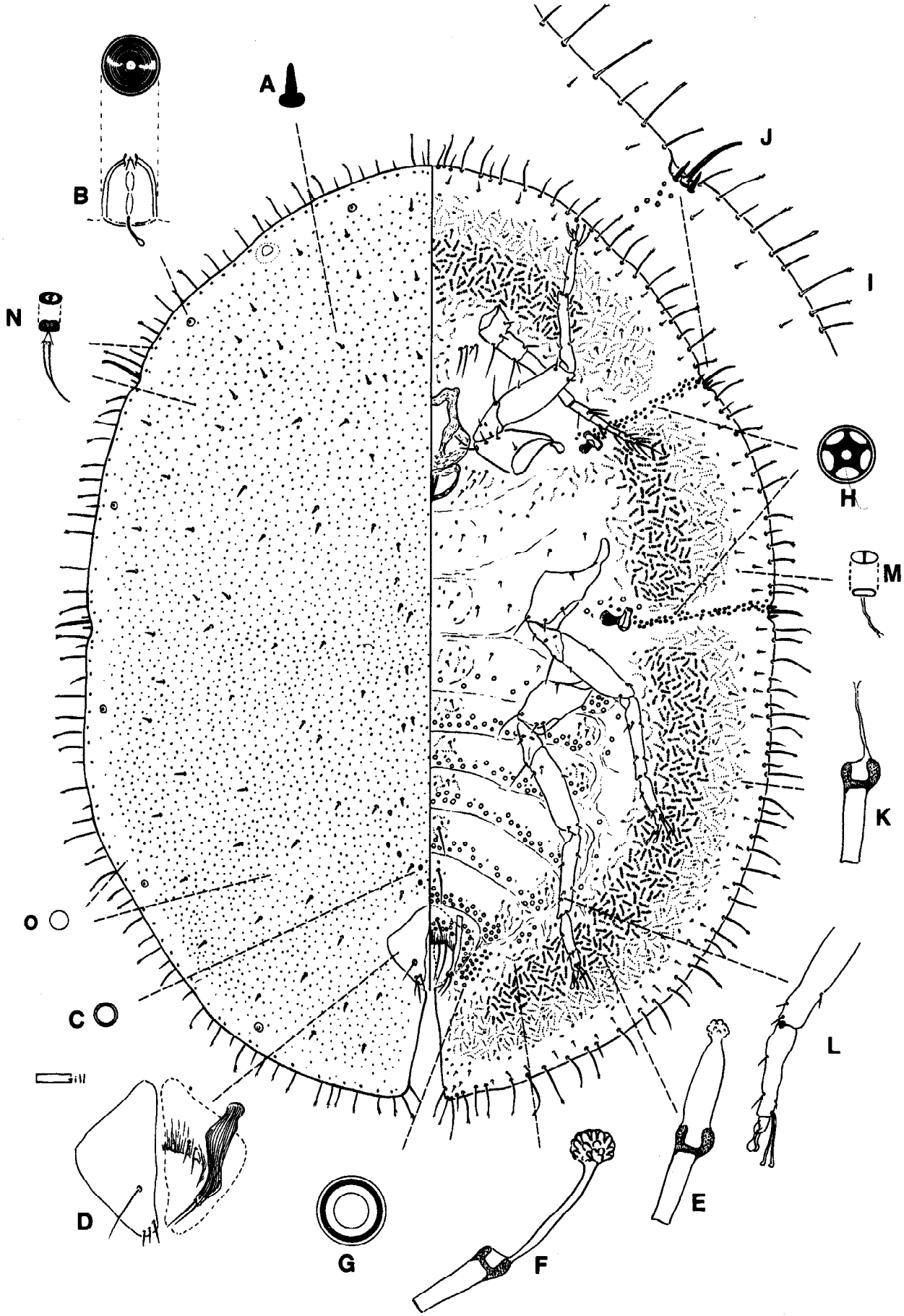
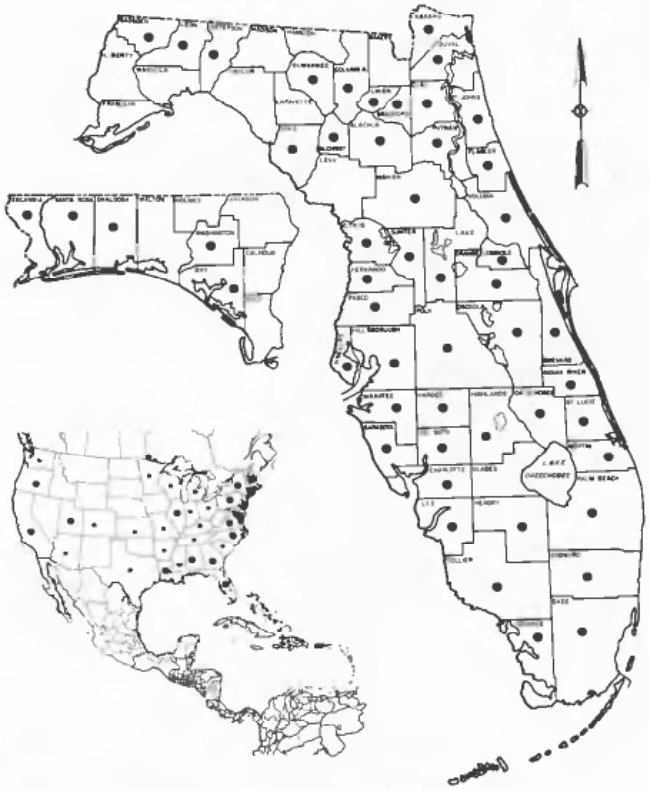


Fig. 84. *Saissetia coffeae*, adult female, original by R. J. Gill, Calif. Dept. of Food and Agric., Div. of Plant Industry.



Map XXXIV. Distribution of *Saissetia coffeae*.

NATURAL ENEMIES: Some of the parasites listed in Peck (1963) and Krombein et al. (1979) are as follows: *Coccophagus immaculatus* Howard, FL; *C. lycimnia* Walker, cosmopolitan; *C. ochraceus* Howard, LA; *C. scutellaris* (Dalman), FL; *Encyrtus fuscus* (Howard), AL; *Metaphycus helvolus* Compere, CA; *Microterys flavus* (Howard), FL; *Scutellista cyanea* Motschulsky, cosmopolitan. The most important parasite of *S. coffeae* in the U. S. and Chile is *Metaphycus helvolus* (Bartlett *in* Clausen ed. 1978). *Scutellista cyanea* is a very common parasite of *S. coffeae* in Florida (Krombein et al. 1979).

REMARKS: In the field, *S. coffeae* can be separated from other species of *Saissetia* in Florida by the absence of the H-shaped ridges on fully mature females, which are present in other species. In slide mounted material, the tubular ducts with expanded filaments and dorsal clear areas (not cell-like) will separate it from all others in Florida.

MATERIAL STUDIED: FLORIDA: Bonita Springs, 1(1), *Zamia floridana*, 17-I-1980, K. Delate; Ft. Lauderdale, 1(1), *Phalaenopsis* X 'Gertrude Beard', 13-V-1977, K. L. Tyson; 1(1), *Gardenia jasminoides*, 20-IX-1979, K. Tyson; Ft. Pierce, 1(1), *Citrus sinensis*, 27-VI-1978, S. P. Beidler; Gainesville, 1(1), *Polypodium phyllitidis*, 9-X-1979, C. Riherd; Lantana, 1(1), *Monstera deliciosa*, 9-X-1979, D. Clinton; Miami, 1(1), *Manilkara zapota*, 9-X-1979, G. Gwin; N. Miami, 1(1), *Polypodium polypodoides*, 6-II-1978, M. Corman; West Palm Beach, 1(1), *Dizygotheca elegantissima*, 24-IV-1979, J. E. Bennett.

SAISSETIA MIRANDA
(Cockerell & Parrott)

SYNONYMS: *Lecanium oleae mirandum* Cockerell & Parrott, *in* Cockerell 1899c:12
Saissetia oleae miranda (Cockerell & Parrott), Fernald 1903: 206
Saissetia oleae (Bernard), Sanders 1909:440 (misidentification)
Saissetia miranda (Cockerell & Parrott), DeLotto 1969a:419

COMMON NAME: Mexican black scale

FIELD DESCRIPTION: Adult female brown to blackish brown, oval to nearly round, surface rough and convex with dorsal H-shaped ridge, and small specks of clear wax (Fig. 85).

DESCRIPTION: (Fig. 86) Adult females 1.5-5.0 mm long, 1.2-4.5 mm wide. DORSUM—Derm with cell-like clear areas, each clear area with single pore. Body setae (Fig. 86, A) conical. Submarginal tubercles (Fig. 86, B) 12 to 20 around

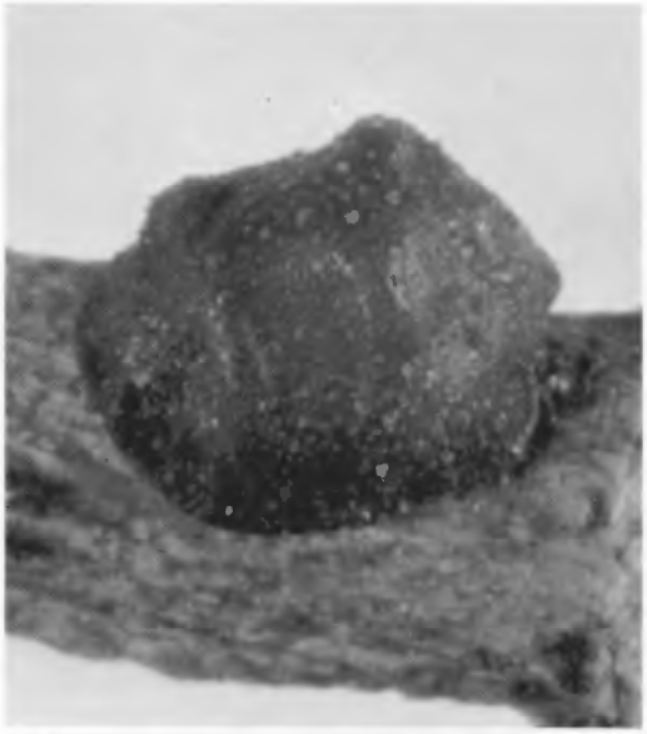


Fig. 85. *Saissetia miranda*, adult female, DPI Photo 771.

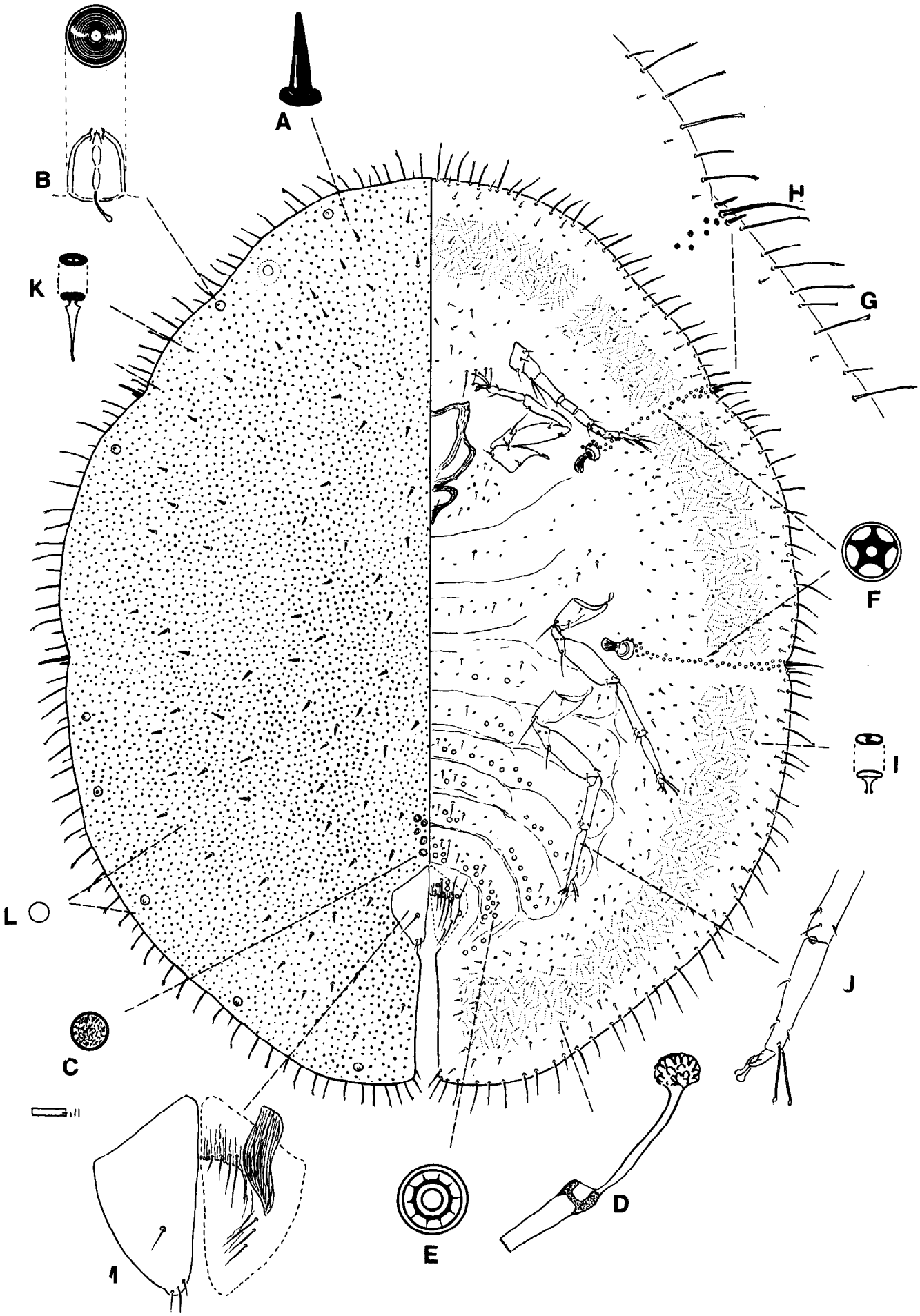
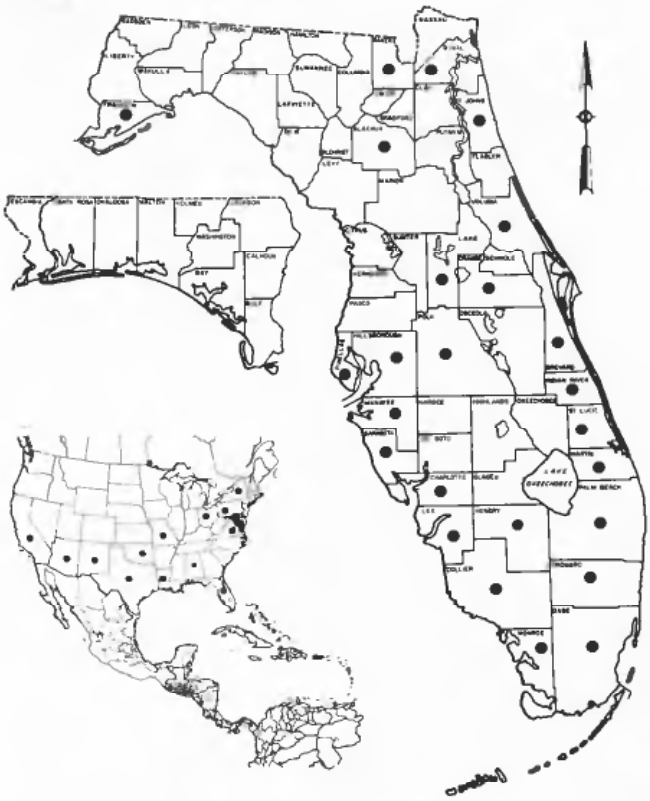


Fig. 86. *Saissetia miranda*, adult female, original by R. J. Gill, Calif. Dept. of Food and Agric., Div. of Plant Industry.

body. Discoidal pores (Fig. 86, C) 4-24 anterior to anal plates. Anal plates each with large discal seta, 3 short apical setae, 4 subapical setae, anal fold with 2-4 fringe setae. VENTER—Antennae 8-segmented. Legs with tibiotarsal scleroses. Tubular ducts (Fig. 86, D) of one size with slender filaments in submarginal band. Multilocular pores (Fig. 86, E) concentrated in vulvar area, in transverse rows on preceding abdominal segments. Quinquelocular pores (Fig. 86, F) in spiracular furrows. MARGIN—Marginal setae (Fig. 86, G) frayed at apices, of 2 sizes; 50-60 marginal setae between anterior spiracular clefts, with 2-25 small. Spiracular setae (Fig. 86, H) in groups of 3, medial seta ca. 2X longer than laterals.

DISTRIBUTION: Map XXXV. AL, AZ, CA, DC, LA, MD, MO, NM, NY, OH, OK, PA, TX, VA. *Foreign*: Because of being misidentified as *Saissetia oleae* (Oliver), the world distribution is unknown.



Map XXXV. Distribution of *Saissetia miranda*.

BIOLOGY: No published information. They produce eggs and the life cycle apparently is similar to other *Saissetia* spp. in Florida.

ECONOMIC IMPORTANCE: Very common on ornamental plants in Florida; however, serious damage has not been observed.

REMARKS: *Saissetia miranda* is very close to S. *oleae* and *Saisettia neglecta* DeLotto but has many more marginal setae than the other 2 species and always has tibiotarsal scleroses.

The nigra scale, *Parasaissetia nigra* (Neitner) appears somewhat similar to the black scales, however, nigra scale is more elongate, usually less convex and is without H-shaped ridges of the black scales. In microslide mounted specimens, nigra scale can be separated from black scales by the absence of a discal seta on the anal plates, which is present in all black scales.

MATERIAL STUDIED: FLORIDA: Apopka, 1(1), *Swietenia mahagoni*, 20-XII-1973, D. Remington; Boca Raton, 1(1), *Malpigiaceae*, 25-X-1979, M. Sanders; Ft. Lauderdale, 1(1), *Ficus lyrata*, 9-V-1979, K. Tyson & R. Buchholz; Largo, 1(1), *Casimiroa edulis* 22-IX-1977, P. Pullara; Miami Beach, 1(1), *Psidium guajava*, 14-IX-1978, W. S. Brewton; Miami, 1(1), *Durio zibethinus*, 6-VI-1979, R. Clark; 1(1), *Psidium guajava*, 16-X-1979, R. Ramirez; Orlando, 1(1), *Pyracantha coccinea*, 13-VI-1978, C. F. Dowling; Stuart, 1(1), *Jussiaea* sp., 12-VII-1978, E. W. Campbell.

SAISSETIA NEGLECTA DeLotto

SYNONYMS: *Saissetia neglecta* DeLotto 1969a:419
Saissetia oleae (Bernard) (numerous misidentifications)

COMMON NAME: Caribbean black scale

FIELD DESCRIPTION: Adult female brown to dark brown, convex, nearly round with dorsal H-shaped ridges (Fig. 87).

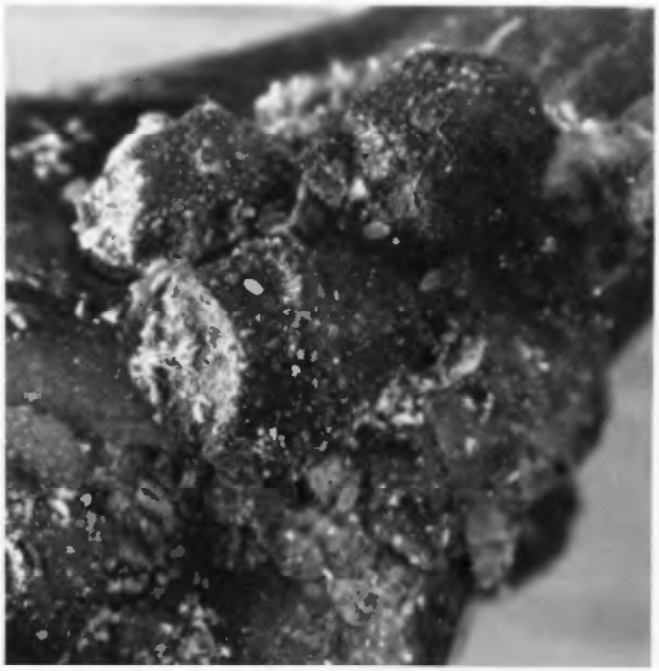


Fig. 87. *Saissetia neglecta*, adult females, DPI Photo 701621.

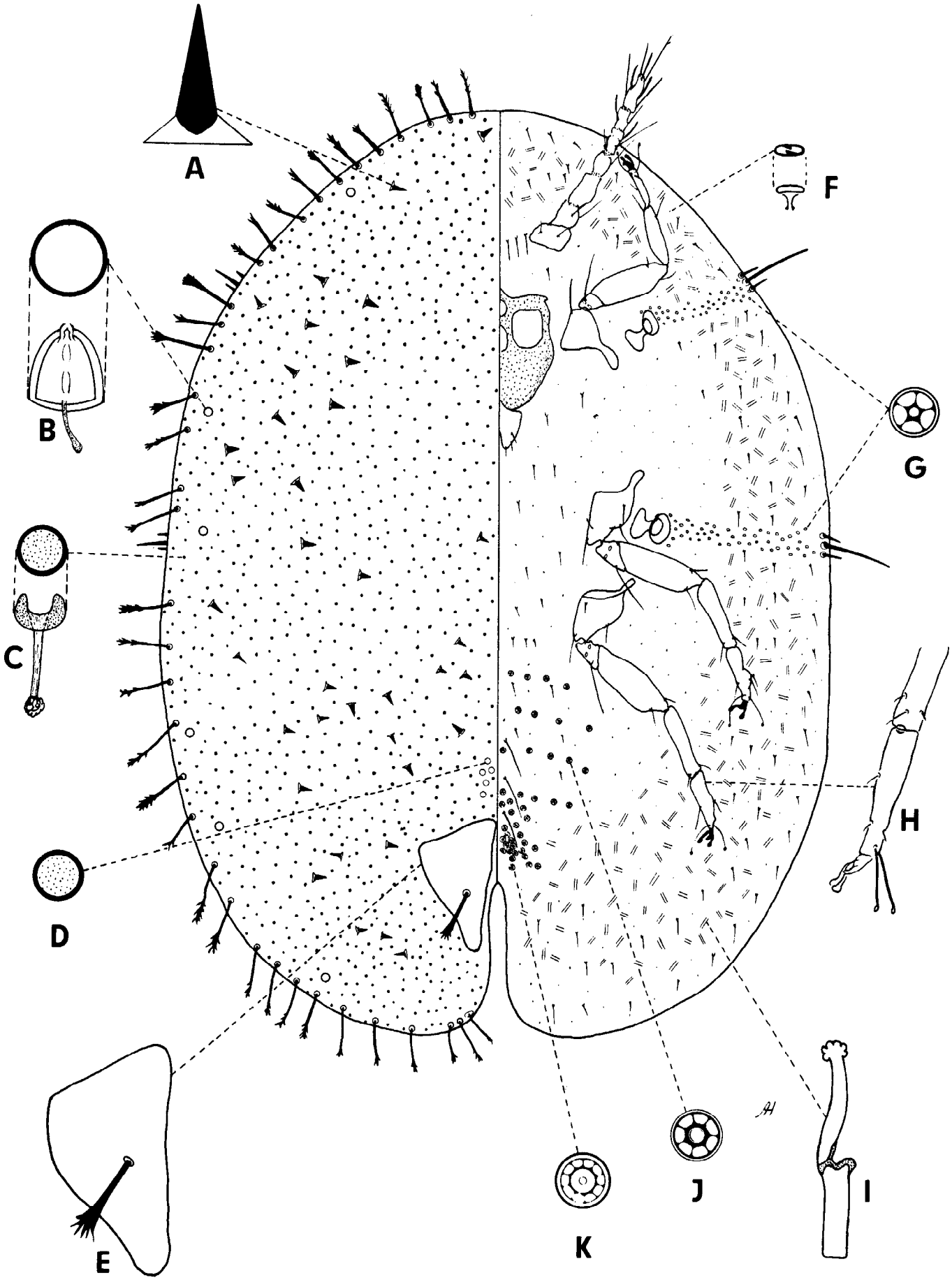
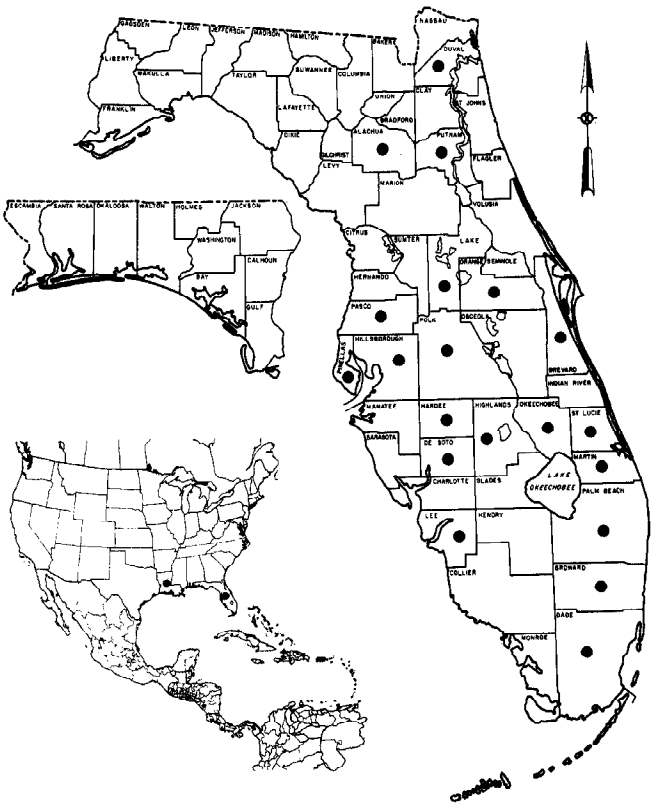


Fig. 88. *Saissetia neglecta*, adult female, original by A. B. Hamon.

DESCRIPTION: (Fig. 88) Adult female 1.5-4.5 mm long, 1.0-4.0 mm wide, broadly oval to nearly circular in outline. DORSUM—Derm with numerous cell-like oval or round clear areas, each clear area with single duct. Dorsal setae robust (Fig. 88, A), strongly conical, scattered. Submarginal tubercles (Fig. 88, B) 13-19 around body. Small irregular group if discoidal pores (Fig. 88, D) anterior of anal plates. Anal plates each with discal setae (Fig. 88, E), similar to marginal setae. VENTER—Antennae 7 or 8-segmented. Legs well developed, without tibiotarsal scleroses. Multilocular pores (Fig. 88, J, K) concentrated around vulvar area, in transverse rows on preceding abdominal segments. Quinquelocular pores (Fig. 88, G) in spiracular furrows, 2 pores wide. Tubular ducts (Fig. 88, I) with slender filaments in submarginal band. MARGIN—Marginal setae flattened, variously frayed at apices, few small setae with frayed apices, 14-30 setae between anterior spiracular clefts. Spiracular setae in groups of 3, medial seta 2.5-3X longer than laterals.



Map XXXVI. Distribution of *Saissetia neglecta*.

DISTRIBUTION: Map XXXVI. LA. *Foreign*: Possibly widely distributed in the Gulf states and Caribbean, but because of past confusion with *S. oleae*, the distribution is unknown.

BIOLOGY: No accurate biological data is known because of the confusion with *S. oleae*; probably similar to other members of the genus.

ECONOMIC IMPORTANCE: McCoy & Selhime (1971) indicated *Saissetia* spp. were the most serious of soft scale pests on *Citrus* spp. in Florida.

REMARKS: Microslide mounted material is necessary to separate *S. neglecta*, *S. miranda*, and *S. oleae* in Florida. *Saissetia miranda* has more marginal setae than *S. neglecta* and *S. oleae*. The marginal setae of *S. neglecta* are flattened and extremely frayed, whereas those of *S. oleae* are blunt or slightly frayed. The tibiotarsal scleroses are absent from *S. neglecta*.

MATERIAL STUDIED: FLORIDA: Ft. Pierce, 1(1), *Laguncularia racemosa*, 19-III-1980, E. W. Campbell; Ft. Myers, 1(1), *Leucophyllum frutescens*, 28-I-1975, S. Kitto; Gainesville, 1(1), *Citrus sinensis*, 10-X-1979, C. Riherd; Hialeah, 2(2), *Dizygotheca elegantissima*, 26-X-1978, D. McKewen; Miami, 1(1), *Tetrapanax papyriferus*, 30-VII-1980, C. Stieger; Oviedo, 1(1), *Citrus sinensis*, 29-VIII-1980, T. Kipp; West Palm Beach, 1(1), *Callicarpa americana*, 20-V-1980, N. Miles; Zolfo Springs, 1(1), *Indigofera* sp., 31-I-1979, J. Felty.

SAISSETIA OLEAE (Olivier)

SYNONYMS: *Coccus oleae* Olivier 1791:95
Lecanium oleae (Bernard), Walker 1852:1070, Fernald 1903:205
Saissetia oleae (Bernard), Cockerell 1901:31

COMMON NAME: black scale

FIELD DESCRIPTION: Mature females dark brown to blackish brown, nearly round, oval, very convex; surface rough, with H-shaped ridges (Fig. 89).

DESCRIPTION: (Fig. 90) Adult female 1.5-4.5 mm long, 1.0-4.0 mm wide. DORSUM—Derm with cell-like clear areas. Dorsal setae (Fig. 90, A) robust, spiniform, slightly blunt at apex, scattered. Submarginal tubercles (Fig. 90, B) 4-16 around body. Discoidal pores (Fig. 90, C) in loose group of 3-46 anterior to anal plates. Each anal plate with large discal seta. VENTER—Antennae 8-segmented. Legs normally without tibiotarsal scleroses, occasionally weakly developed. Multilocular pores (Fig. 90, D) concentrated around vulvar area, in transverse rows on preceding abdominal segments. Quinquelocular pores (Fig. 90, E) in spiracular furrows 1 or 2 pores wide. Tubular ducts (Fig. 90,

Fig. 89. *Saissetia oleae*, adult female, DPI Photo 701963-5.

F) with slender filaments in submarginal band. MARGIN—Marginal setae of 2 sizes, larger ones robust, tapering towards apex, tips rounded or with few minute indentations; smaller setae usually finely pointed. Spiracular setae (Fig. 90, G) in groups of 3, medial seta 2-3.5X longer than laterals.

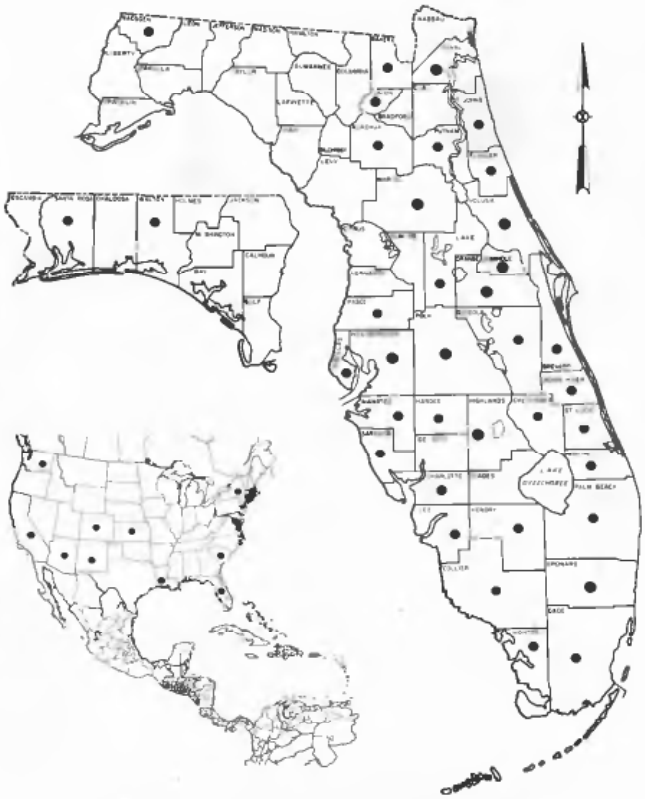
DISTRIBUTION: Map XXXVII. AZ, CA, CO, CT, DC, KS, LA, MA, NJ, NM, NY, SC, WA. *Foreign*: Algeria, Australia, Cyprus, England, France, Italy, Portugal, Sicily, Spain, and Switzerland.

BIOLOGY: Ebeling (1959) reported 1 or 2 generations per year in California. Eggs were laid from April to September, hatching in about 16 days in the summer, but in the winter they may take 6 weeks to hatch. Crawlers settle on the leaves.

ECONOMIC IMPORTANCE: *Saissetia oleae* is the least common species of *Saissetia* in Florida. Apparently, it is not a pest of any significance in Florida, because of its sparse occurrence. It is a pest of citrus, olives, apricots, and other plants in California.

NATURAL ENEMIES: It is probable that parasites listed in Peck (1963) for *S. oleae* are in fact parasites of *S. miranda* or *S. neglecta* in Florida. Both species are more abundant in Florida than *S. oleae*. Many attempts at biological control of *S. oleae* failed because of the imprecise taxonomy.

Some parasites listed by Peck (1963) and Krombein et al. (1979) are as follows: *Chartocerus niger* (Ashmead), FL; *Cheiloneurus inimicus* Compere, FL; *Coccophagus cowperi* Girault, TX; *C. lycimnia* Walker, cosmopolitan; *C. ochraceus* Howard, LA; *C. scutellaris* (Dalman), FL; *Gahaniella saissetia* Timberlake, FL; *Lecaniobius cockerelli* Ashmead, FL; *L. capitatus* Gahan, TX; *Metaphycus flavus* Howard, VA to FL to TX; *Scutellista cyanea* Motschulsky, cosmopolitan; *Tetrastichus minutus* Howard, FL.



Map XXXVII. Distribution of *Saissetia oleae*.

REMARKS: This species is very similar to *S. miranda* and *S. neglecta*. *Saissetia oleae* differs from the other species in the type of marginal setae. The large marginal setae are robust, tapering to a blunt point, or very slightly fringed.

MATERIAL STUDIED: CALIFORNIA: via Jacksonville, 2(2), *Osmanthus heterophyllus*, 29-V-1979, G. Virgona; FLORIDA: Gainesville, 1(1), *Baccharis halimifolia*, 10-IV-1975, G. W. Dekle; Leesburg, 2(2), *Osmanthus americanus*, 12-II-1980, R. Driggers; Martin, 2(2), *Baccharis halimifolia*, 28-III-1980, F. J. McHenry; Miami, 1(1), *Coccoloba uvifera*, 3-IV-1978, W. S. Brewton; Pensacola, 1(1), *Nerium oleander*, 30-VII-1981, D. Reese.

Genus *TOUMEYELLA* Cockerell, 1895c

TYPE SPECIES: *Lecanium mirabile* Cockerell, 1895c.

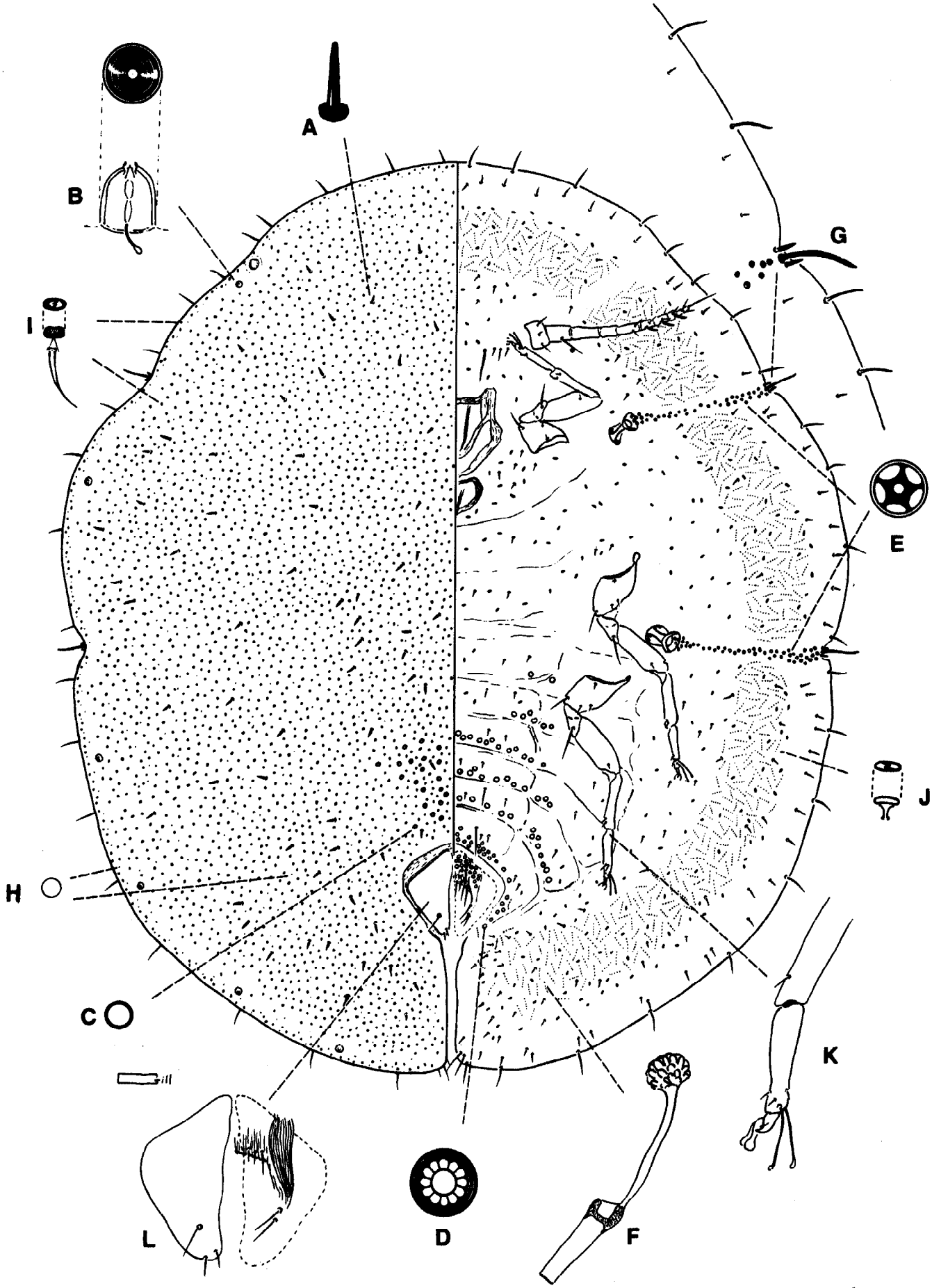


Fig. 90. *Saissetia oleae,* adult female, original by R. J. Gill, Calif. Dept. of Food and Agric., Div. of Plant Industry.

DESCRIPTION: Body of adult female convex to globular, often irregular in outline, naked or with a thin glassy test. Derm heavily sclerotized at maturity. Submarginal tubercles absent. Dorsal pores variable. Large discoidal pores near anal plates. Anal plates with varying numbers of apical, subapical, and fringe setae. Hypopygial setae present. Anal ring with 10 setae. Antennae greatly reduced, 6-segmented although segmentation obscure. Legs greatly reduced, without tibiotarsal scleroses. Quinquelocular pores in spiracular furrows and on abdomen. Multilocular pores in spiracular furrows and on abdomen. Multilocular pores present (*T. cerifera* and *T. mirabilis)* or usually absent from abdomen. Marginal setae slender, stout, pointed, or blunt. Spiracular setae absent (*T. parvicornis)* or in groups of 3, variable in shape.

NOTES: The eggs and young are protected by the sclerotized body of the adult female. Species reported in the southeastern United States include: *Toumeyella cerifera*, *T. liriodendri*, *T. parvicornis*, *T. pini*, *T. turgida*, and *T. virginiana*. It appears that *T. turgida* is a synonym of *T. liriodendri* as the 2 species are inseparable in slide-mounted specimens, but further research is needed to verify this.

KEY TO SPECIES OF *TOUMEYELLA*

1. With aggregations of bilocular pores forming pore plates on dorsum; spiracular setae undifferentiated from marginal setae, rarely 1 or 2 spiracular setae slightly thicker than marginal setae .... *parvicornis*

1′. Without aggregations of bilocular pores forming pore plates on dorsum; spiracular setae well differentiated from marginal setae, normally 3 per group 2

2(1). Multilocular pores in abdominal region predominantly 10-locular; tubular ducts scattered throughout venter of abdomen ..... *cerifera*

2′. Quinquelocular pores in abdominal region; tubular ducts, if present, confined to vulvar area of venter 3

3(2). Anal plates each with 4 dorsal setae; discoidal pores extending anteriorly to above rostrum; on non-coniferous hosts . ..... *liriodendri*

3′. Anal plates each with 4-25 dorsal setae; discoidal pores confined to posterior half of body; on coniferous hosts 4

4(3). Dorsal discoidal pores conical in cross section; anal plates each with 4 dorsal setae; marginal setae slender, curved ... . *pini*

4′. Dorsal discoidal pores flat or only slightly convex in cross section; anal plates each with 15-25 dorsal setae; marginal setae spinelike ..... *virginiana*

TOUMEYELLA CERIFERA Ferris

SYNONYMS: *Toumeyella cerifera* Ferris 1921:90

SUGGESTED COMMON NAME: buttonbush scale

FIELD DESCRIPTION: Adult female strongly convex, reddish brown mottled with black markings (Fig. 91, A, B).

Fig. 91. *Toumeyella cerifera*, A) young adult females and nymph, DPI Photo 702449-2, B) old adult females, DPI Photo 701929.

DESCRIPTION: (Fig. 92) Adult female frequently irregular in outline, 3.0-5.0 mm long, 2.0-4.0 mm wide. DORSUM—Derm heavily sclerotized in anal region only. Numerous

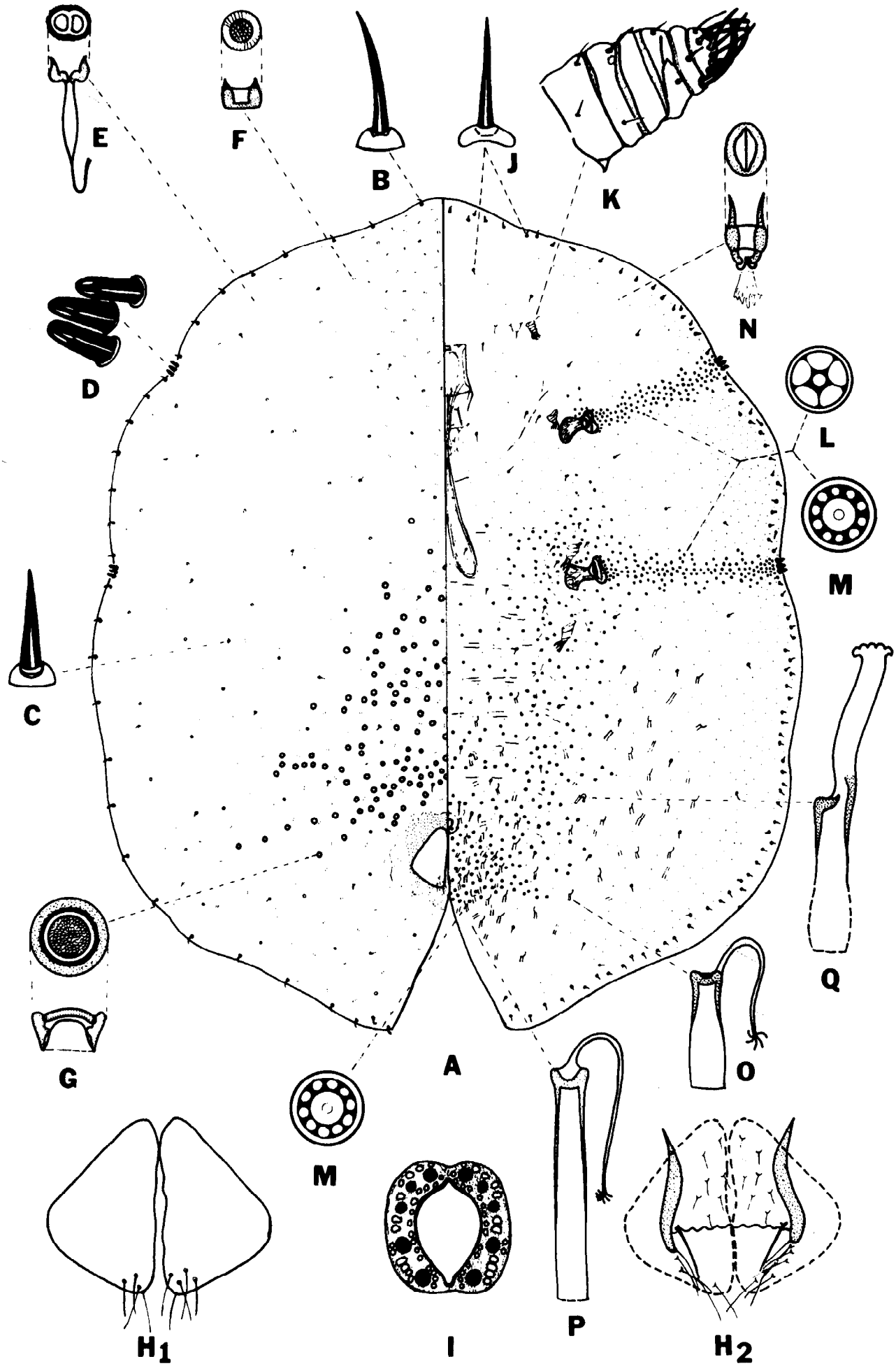
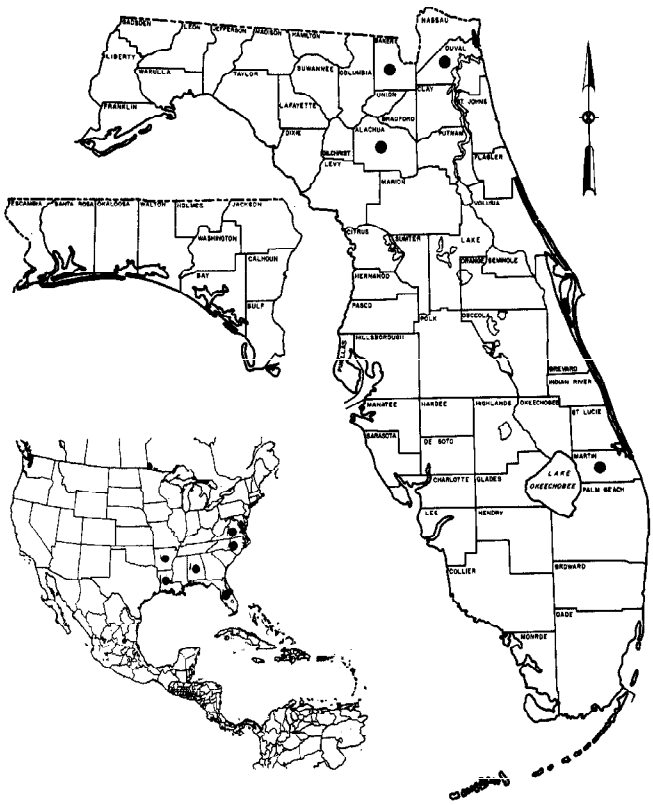


Fig. 92. *Toumeyella cerifera*, adult female, from Williams and Kosztarab 1972.

bilocular (Fig. 92, E) and disc pores (Fig. 92, F) scattered over derm. Body setae (Fig. 92, C) scattered, slender, straight, pointed, base smaller than those of marginal setae. Large discoidal pores (Fig. 92, G) anterior and laterad to anal area. Anal plates triangular; cephalolateral margin longer than caudolateral margin. VENTER—Antennae greatly reduced. Legs greatly reduced. Spiracles larger than legs. Quinquelocular and multilocular pores (Fig. 92, L, M) nearly same size in spiracular furrows, most pores with 10-loculi in vulvar region. Tubular ducts (Fig. 92, O, P, Q) of 2 sizes on abdomen. MARGIN—Marginal setae (Fig. 92, B) few, about 16 between anterior spiracular setae, each seta slender, pointed, with large base. Spiracular setae (Fig. 92, D) normally in groups of 3, occasionally 4 present, setae nearly same size.

DISTRIBUTION: Map XXXVIII. AL, AR, LA, NC, VA. *Foreign*: Mexico.



Map XXXVIII. Distribution of *Toumeyella cerifera*.

ECONOMIC IMPORTANCE: Probably not economically important in Florida.

REMARKS: The first record of this scale in the U. S. was from Virginia (Williams & Kosztarab 1972). Ferris (1921) stated that the original material from Mexico had a distinct ovisac, but was nevertheless a *Toumeyella*. The Virginia material of Williams and Kosztarab (1972) gave birth to live young and produced no ovisac.

Toumeyella cerifera can be separated from the other species of *Toumeyella* in Florida because of 10-loculi multilocular pores in the spiracular furrows and vulvar area.

MATERIAL STUDIED: FLORIDA: Gainesville, 1(1), *Cephalanthus occidentalis*, 1-IV-1975, D. E. Snyder; Port Salerno, 2(2), *Salix* sp., 8-I-1979, E. W. Campbell.

TOUMEYELLA LIRIODENDRI (Gmelin)

SYNONYMS: *Coccus liriodendri* Gmelin 1789: 2220
Lecanium tulipiferae Cook 1878: 192
Lecanium liriodendri Gmelin, Cockerell 1899b:271
Eulecanium tulipiferae Cook, King 1902b:59
Eulecanium (?) *liriodendri* (Gmelin), Fernald 1903:190
Lecanium (Toumeyella) liriodendri (Gmelin), Pettit and McDaniel 1920:10
Toumeyella liriodendri (Gmelin), Sanders 1909:447, Williams & Kosztarab 1972:164

COMMON NAME: tuliptree scale

FIELD DESCRIPTION: Female extremely convex, oval, irregular in outline when crowded on stem. Color extremely variable from grayish-green to a pink-orange to brown or black (Fig. 93, A, B). According to Merrill (1953), they look much like a cattle tick.

DESCRIPTION: (Fig. 94) Adult female subcircular, 2.5-6.0 mm in diameter. DORSUM—Derm heavily sclerotized only around anal plates. Numerous bilocular pores (Fig. 94, D) and small discoidal pores (Fig. 94, E). Body setae spinelike, apically pointed, similar to marginal setae (Fig. 94, B), slightly shorter. Large discoidal pores (Fig. 94, F) scattered in median area from anterior to anal plates, to above rostrum and laterally into submedial areas. Anal plates triangular with cephalolateral margins concave, with 4 apical setae, 5-7 subapical setae; anal fold with 2 pair fringe setae. VENTER—Spiracles larger than legs. Quinquelocular pores (Fig. 94, K) very numerous in spiracular furrows, vulvar area, and in broad submedial band on preceding abdominal segments to posterior spiracle. Tubular ducts (Fig. 94, M) with slender filament, numerous in vulvar area.

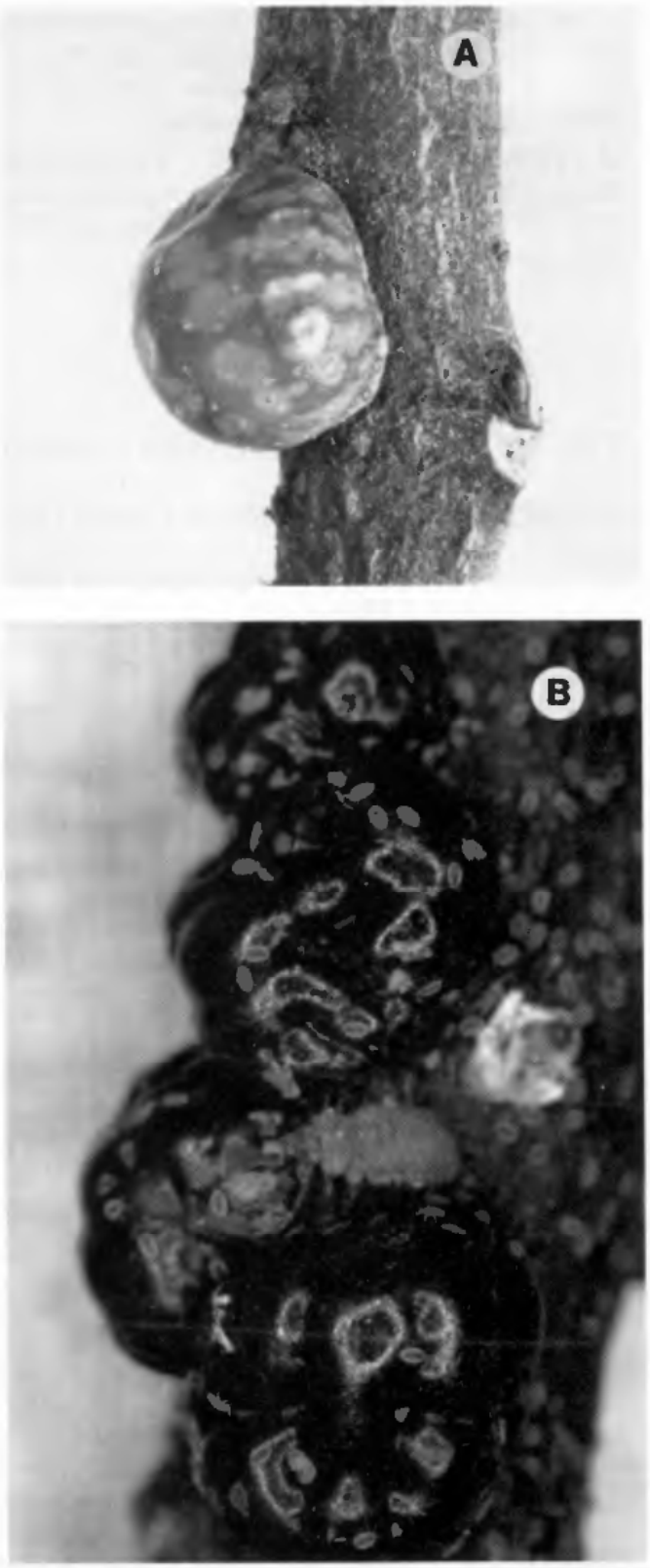
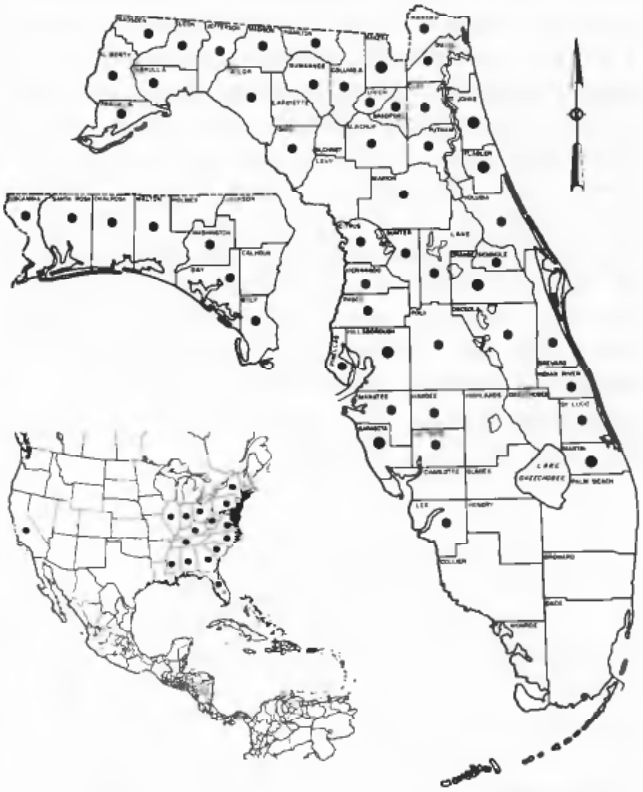


Fig. 93. *Toumeyella liriodendri*, A) young adult female, DPI Photo 702481-3, B) very old adult females and crawlers, DPI Photo 680226.

MARGIN—Marginal setae (Fig. 94, B) numerous, stout, tapered to sharp point, with well formed basal socket. Spiracular setae (Fig. 94, C) in groups of 3, equal in size or nearly so.

DISTRIBUTION: Map XXXIX. Burns and Donley (1970) indicated this scale is probably native to the yellow-poplar (tuliptree) area of North America, which extends roughly from the Mississippi River Valley eastward and northward to Connecticut. It is also found on ornamental tuliptree and magnolias in California (Armitage 1947). *Foreign*: Europe.



Map XXXIX. Distribution of *Toumeyella liriodendri*.

BIOLOGY: In the southern part of its range, tuliptree scale has a continuous life cycle (Burns and Donley 1970). Crawlers are born in August and September in northern areas and overwinter as 2nd instars. The females are very prolific, and more than 3,000 young may be produced during their lifetime.

ECONOMIC IMPORTANCE: Tuliptree scale is a pest of magnolias and yellow poplar (tuliptree) throughout its range. Damage can be relatively swift, because of the scales' large reproductive capacity and large amount of honeydew excreted. In many cases, ants protect the scales from parasites and predators. It is an ornamental pest in Florida.

NATURAL ENEMIES: Parasites listed by Peck (1963) and Krombein et al. (1979) include the following: *Anicetus toumeyellae* Milliron, VA; *Coccophagus flavifrons* Howard, PA to FL to TX; *C. lycimnia* (Walker), cosmopolitan; *Metaphycus flavus* (Howard), NY to FL to TX.

REMARKS: *Toumeyella liriodendri* is similar to *T. cerifera* but can be separated by the 10-locular pores on the abdomen of *T. cerifera* and only 5-locular pores on *T. liriodendri*. There

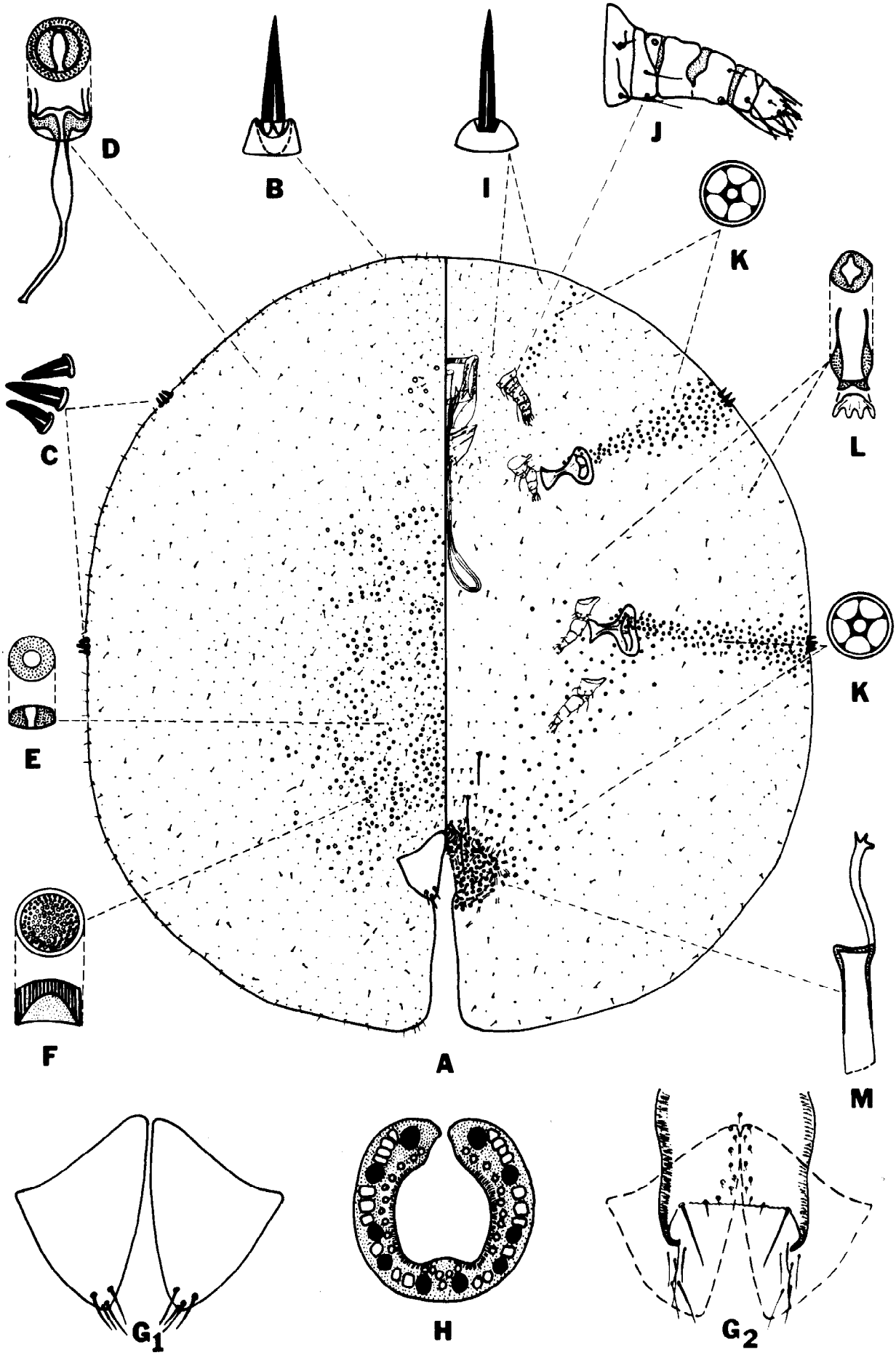


Fig. 94. *Toumeyella liriodendri*, adult female, from Williams and Kosztarab 1972.

is some evidence (unpublished) that *T. turgida* is a synonym of *T. liriodendri* because their morphology is the same in slide mounted material; even though they appear quite different on the host.

MATERIAL STUDIED: FLORIDA: Bowling Green, 1(1), *Carya cordiformis*, 11-VI-1981, J. Felty; Cocoa, 1(1), *Ascyrum tetrapetalum*, 18-III-1981, W. P. Henderson; DeBary, 1(1), *Sida spinosa*, 14-V-1981, C. R. Roberts; Indrio, 1(1), *Ascyrum tetrapetalum*, 23-XII-1980, E. W. Campbell; Lakeland, 1(1), *Ascyrum hypericoides*, 22-X-1980, H. L. Gillis; Loxahatchee, 1(1), *Hypericum* sp., 2-III-1981, S. P. Beidler; Palm City, 1(1), *Hypericum cistifolium*, 16-I-1979, E. W. Campbell; Port Salerno, 1(1), *Ascyrum edisonianum*, 10-IV-1979, E. W. Campbell; Stuart, 1(1), *Cassia fasciculata*, 2-VI-1981, S. P. Beidler.

TOUMEYELLA PARVICORNIS (Cockerell)

SYNONYMS: *Lecanium parvicorne* Cockerell 1897:90
Toumeyella parvicornis (Cockerell), Cockerell 1902b:452
Lecanium (Toumeyella) numismaticum Pettit and McDaniel 1920:8
Toumeyella numismaticum Pettit and McDaniel, Williams and Kosztarab 1972:171

COMMON NAME: pine tortoise scale

FIELD DESCRIPTION: Mature female oval to elongate, convex, reddish brown with black or dark-brown stripes or reddish brown mottled with dark spots (Fig. 95, A) (Williams & Kosztarab 1972). Specimens occurring on the needles are elongate and greenish yellow with mottled gray longitudinal stripes (Fig. 95, B).

DESCRIPTION: (Fig. 96) Adult female oval to elongate, ca. 3.5 mm long, 3.0 mm wide. Specimens from needles relatively longer than wide. DORSUM—Derm sclerotized around anal plates only. Aggregations of bilocular pores (Fig. 96, D) scattered over dorsum. Body setae (Fig. 96, C) similar to marginal setae, smaller, and less tapered. Large discoidal pores (Fig. 96, F) scattered anterior of anal plates. Anal plates triangular, each with 8-12 dorsal and apical setae. VENTER—Spiracles equal to or larger than legs. Quinquelocular pores (Fig. 96, L) in spiracular furrows, vulvar area, and in loose band from vulvar area to posterior spiracles. Tubular ducts (Fig. 96, N) with slender filament confined to vulvar area. MARGIN—Marginal setae (Fig. 96, B) stout, tapering to sharp point, in irregular row around margin, similar to submarginal setae (Fig. 96, I). Spiracular setae absent or indistinguishable from marginal setae.

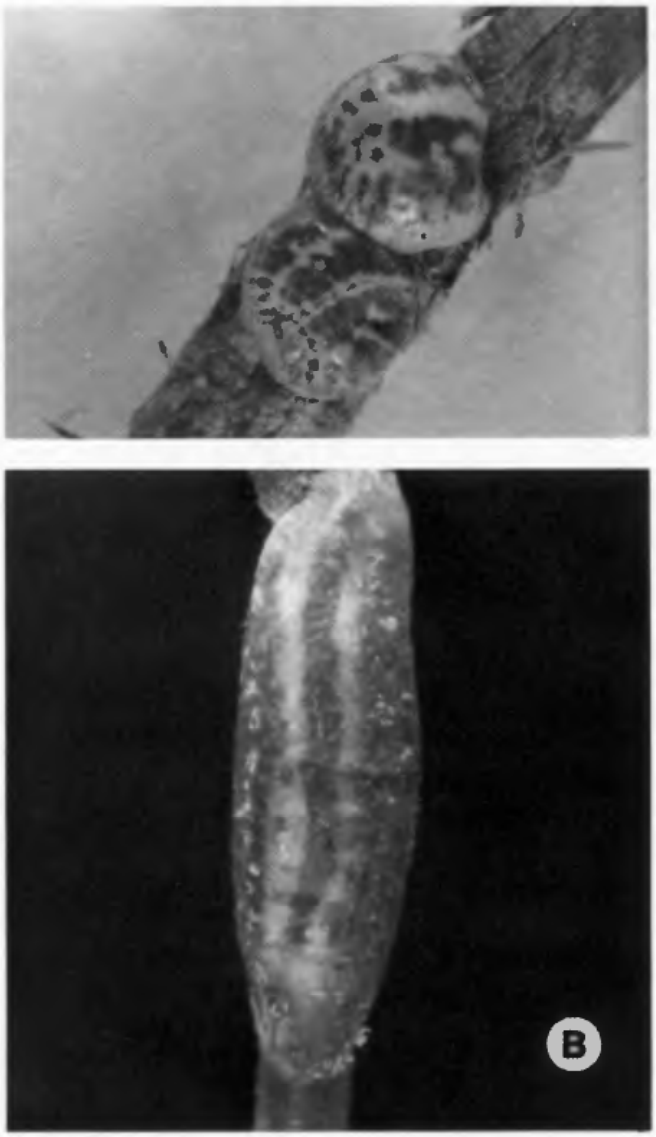


Fig. 95. *Toumeyella parvicornis*, A) adult female, stem form; DPI Photo 1684, B) adult female leaf form (= *numismaticum*), DPI Photo 702631-7.

DISTRIBUTION: Map XL. IA, MN, NB, ND, SD, and probably every state east of the Mississippi River. *Foreign*: Canada.

BIOLOGY: According to MacAloney (1961), only 1 generation occurs in the north, while 2 are produced in the south. In the warmer parts of Florida, continuous and overlapping generations occur.

ECONOMIC IMPORTANCE: MacAloney (1961) indicated that seedlings and young saplings of pine were most severely damaged by *T. parvicornis*. Usually parasites and predators keep populations acceptably low in larger trees.

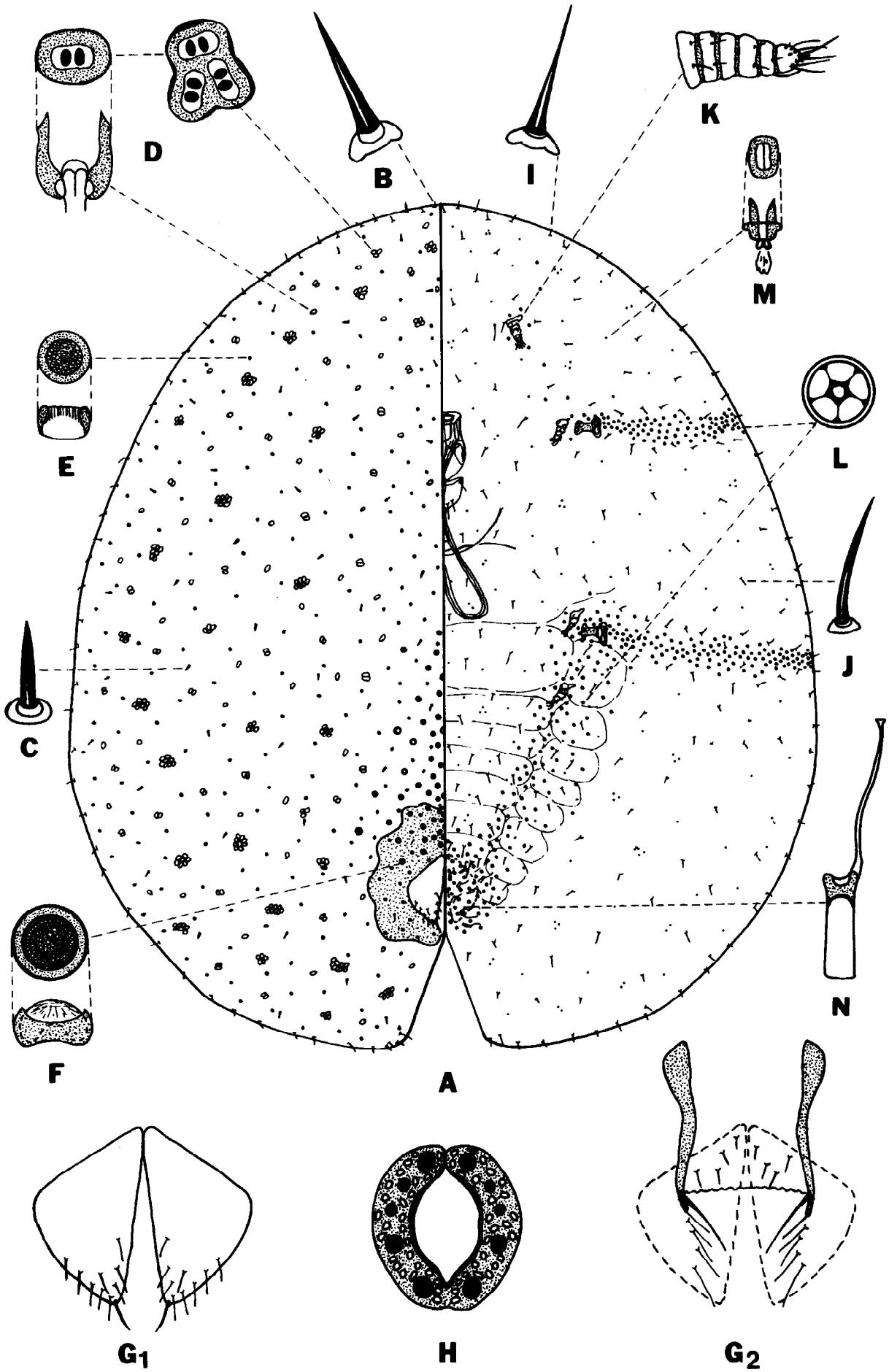
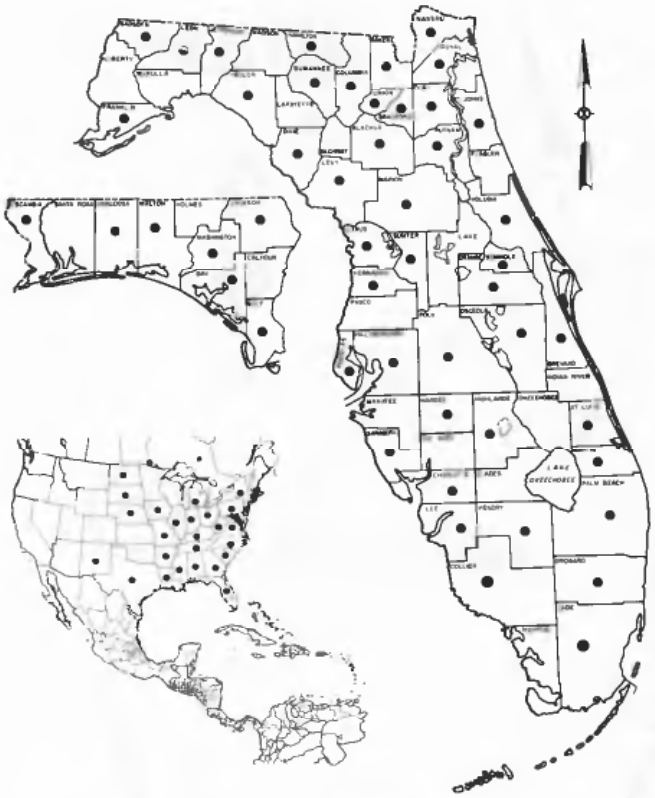


Fig. 96. *Toumeyella parvicornis*, adult female, from Williams and Kosztarab 1972.



Map XL. Distribution of *Toumeyella parvicornis*.

NATURAL ENEMIES: *Microterys fuscicornis* (Howard) parasitizes the leaf form of *T. parvicornis* (= *numismaticum*) in Maryland. Peck (1963) and Krombein et al. (1979) listed *Coccophagus immaculatus* Howard from NY to FL and AL.

REMARKS: *Toumeyella parvicornis* is the only species of *Toumeyella* in Florida with aggregations of bilocular pores.

MATERIAL STUDIED: FLORIDA: Conway, 1(1), *Pinus elliottii*, 25-III-1981, F. L. Ware; Gainesville, 1(1), *Pinus glabra*, 4-II-1975, G. W. Dekle; Jacksonville, 1(1), *Pinus* sp., 7-III-1974, W. B. Wykle; Lake Buena Vista, 1(1), *Pinus elliottii*, 4-XII-1973, F. L. Ware; Olustee, 2(2), *Pinus elliottii*, 26-VII-1978, E. W. Clark; Vernon, 1(1), *Pinus elliottii*, 1-XII-1977, K. Bedat.

TOUMEYELLA PINI (King)

SYNONYMS: *Lecanium pini* King 1901b:334
Lecanium corrugatum Thro, Fernald 1903:179
Toumeyella pini (King), Cockerell 1902b:452, Fernald 1903: 179
Toumeyella corrugatum (Thro), Cockerell 1903a:19

COMMON NAME: striped pine scale

FIELD DESCRIPTION: Female strongly convex, circular in outline, reddish brown with a median, dorsal, longitudinal, white or cream colored stripe, and small black depressions scattered over dorsum (Fig. 97).

Fig. 97. *Toumeyella pini*, adult female, DPI Photo 702596-5.

DESCRIPTION: (Fig. 98) Adult female subcircular to nearly circular, 7.0 mm in diameter. DORSUM—Derm membranous. Body setae (Fig. 98, C) numerous, slender, straight or curved, with acute apices, and with strong base. Numerous bilocular pores of 2 types, scattered. Large cone-shaped discoidal pores (Fig. 98, G) scattered around anal plates, anteriorly to about mid-dorsum, apparently confined to abdomen. Anal plates triangular, with acute lateral angles, each plate with 4 apical, 4 subapical setae. VENTER—Spiracles equal to or larger than legs. Quinquelocular pores (Fig. 98, L) numerous in spiracular furrows, vulvar area, in band from vulvar area to posterior spiracles. Tubular ducts few, 1-5 on each side of vulvar area. MARGIN—Marginal setae (Fig. 98, B) few, slender, curved, with acute apices. Spiracular setae (Fig. 98, D) in groups of 3, medial seta ca. 2.5X length of laterals.

DISTRIBUTION: Map XLI. AL, CT, GA, MD, MI, NY, PA, TX, VA. *Foreign*: unknown.

BIOLOGY: *Toumeyella pini* prefers the outer tips or new growth of its host, and is seldom found on large limbs. Immature scales appear in May in Virginia. It is frequently found in mixed infestations with *T. parvicornis* (Williams and Kosztarab 1972).

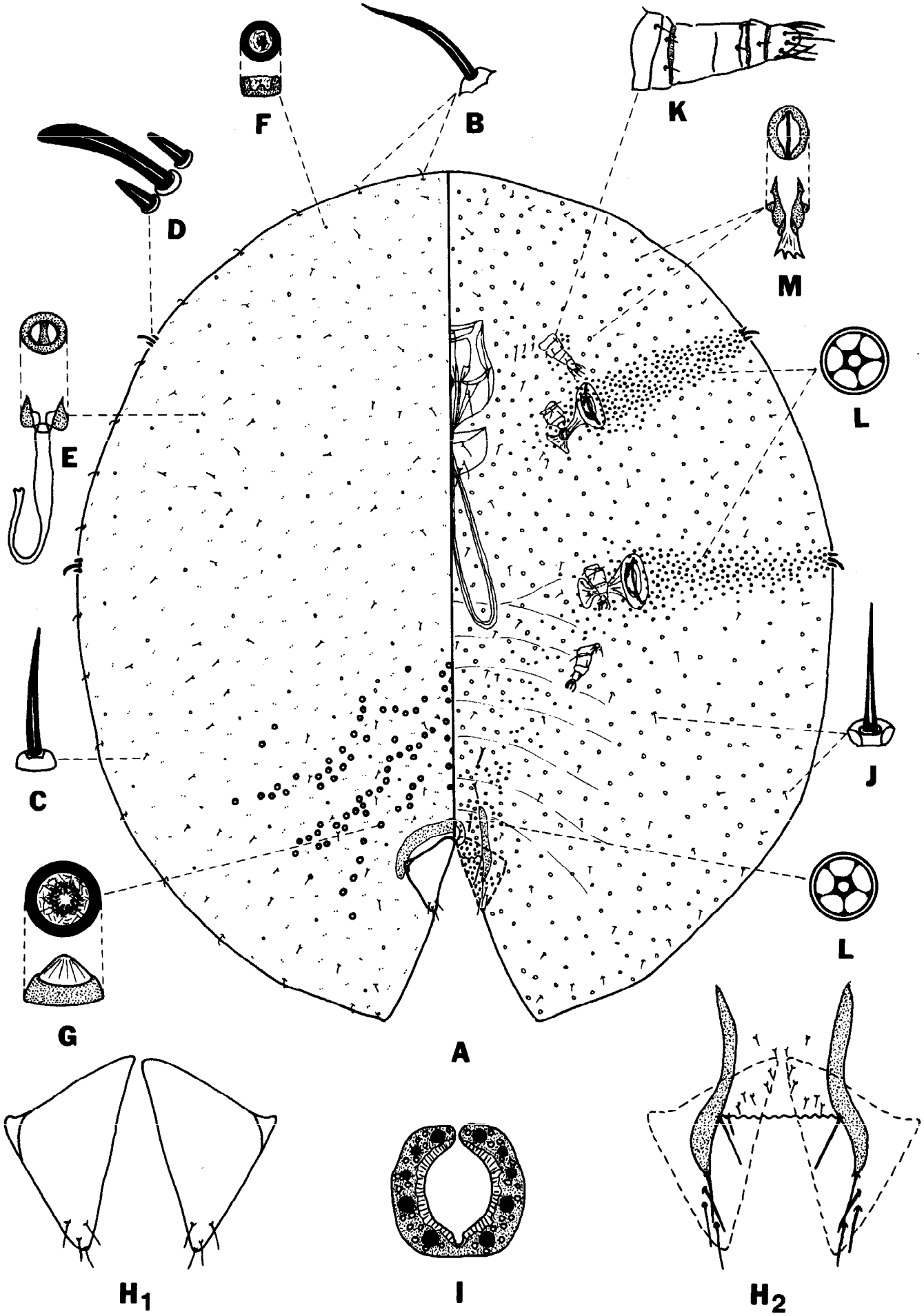
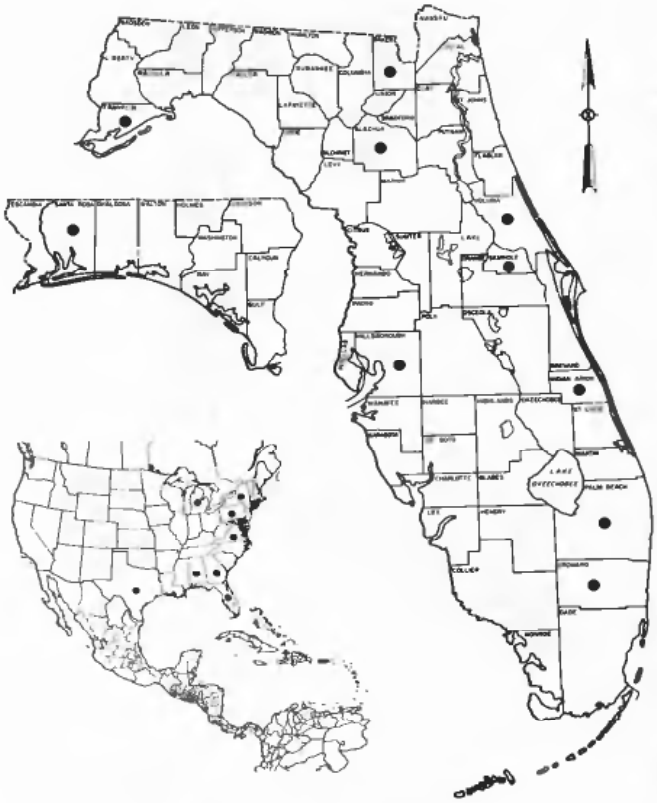


Fig. 98. *Toumeyella pini*, adult female, from Williams and Kosztarab 1972.



Map XLI. Distribution of *Toumeyella pini*.

ECONOMIC IMPORTANCE: Because of the confusion with pine tortoise scale, *T. parvicornis*, the true economic importance of striped pine scale is not known.

REMARKS: According to Williams and Kosztarab (1972), there is a strong possibility that *T. corrugatum neglectum* (Pettit & McDaniel) is a synonym of *T. pini*. *Toumeyella pini* is similar to *T. parvicornis*, but the absence of biocular pore aggregations in *T. pini* readily separates the 2 species.

MATERIAL STUDIED: FLORIDA: Cocoa, 3(3), *Pinus serotina*, 5-II-1981, R. E. Burns; Eastpoint, 2(2), *Pinus* sp., 29-III-1980, Q. Anglin; Okeechobee, 2(2), *Pinus palustris*, 28-X-1980, S. P. Beidler; LOUISIANA: Verdun, 2(2), *Pinus taeda*, 30-VI-1967, D. Pollet; TEXAS: Magnolia Springs, 1(1), *Pinus taeda*, 17-X-1979, R. S. Cameron.

TOUMEYELLA VIRGINIANA
Williams & Kosztarab

SYNONYMS: *Toumeyella virginiana* Williams & Kosztarab 1972:182

SUGGESTED COMMON NAME: Virginia pine scale

FIELD DESCRIPTION: According to Williams and Kosztarab (1972), the female ranges from large and only slightly convex in specimens found under bark, to small and very convex specimens collected on twigs or stems. Color of the adult female varies from salmon-pink to reddish-brown (Fig. 99). Young specimens tend to be light in color. Often ants will build protective coverings over these scale insects.

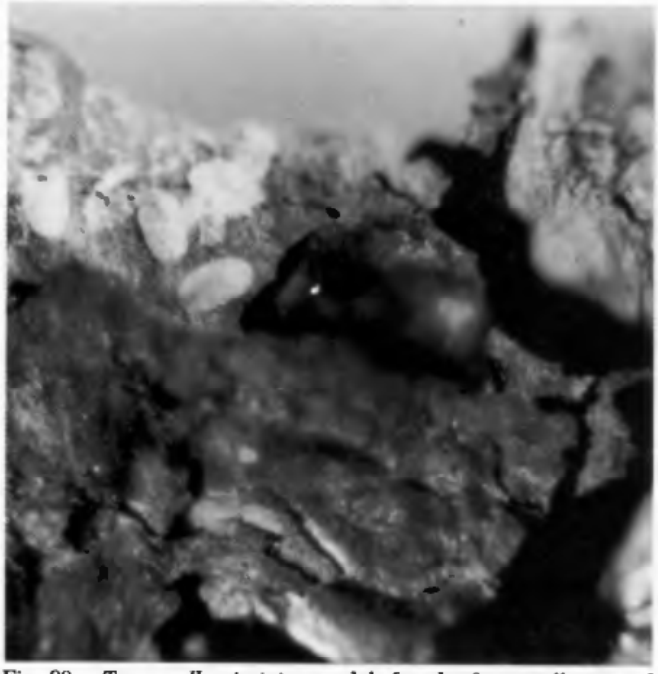


Fig. 99. *Toumeyella virginiana*, adult female, from Williams and Kosztarab 1972.

DESCRIPTION: (Fig. 100) Adult females subcircular, 2.0-6.0 mm in diameter. DORSUM—Derm with a heavily sclerotized area around anal plates, otherwise membranous. Body setae (Fig. 100, C) stout, tapering, bluntly pointed, with large base, scattered. Thick rimmed bilocular pores (Fig. 100, G) numerous. Small discoidal pores (Fig. 100, H) scattered, most numerous in anal area. Large discoidal pores (Fig. 100, I) scattered around anal plates. Anal plates triangular with lateral angles slightly rounded; each plate with total of 14-25 dorsal apical setae and 5 or 6 subapical setae. VENTER—Spiracles larger than legs. Quinquelocular pores (Fig. 100, 0) in spiracular furrow numerous, in band 5 to 12 pores wide; numerous in vulvar area, in loose band from vulvar area to posterior spiracles. Tubular ducts (Fig. 100, Q) with slender filaments confined to vulvar area. MARGIN—Marginal setae (Fig. 100, B) in an irregular row, difficult to distinguish from ventral submarginal setae (Fig. 100, L); sometimes appear slightly expanded and curved near apex. Spiracular setae (Fig. 100, D) in groups of 3, medial seta usually longer than laterals, occasionally subequal.

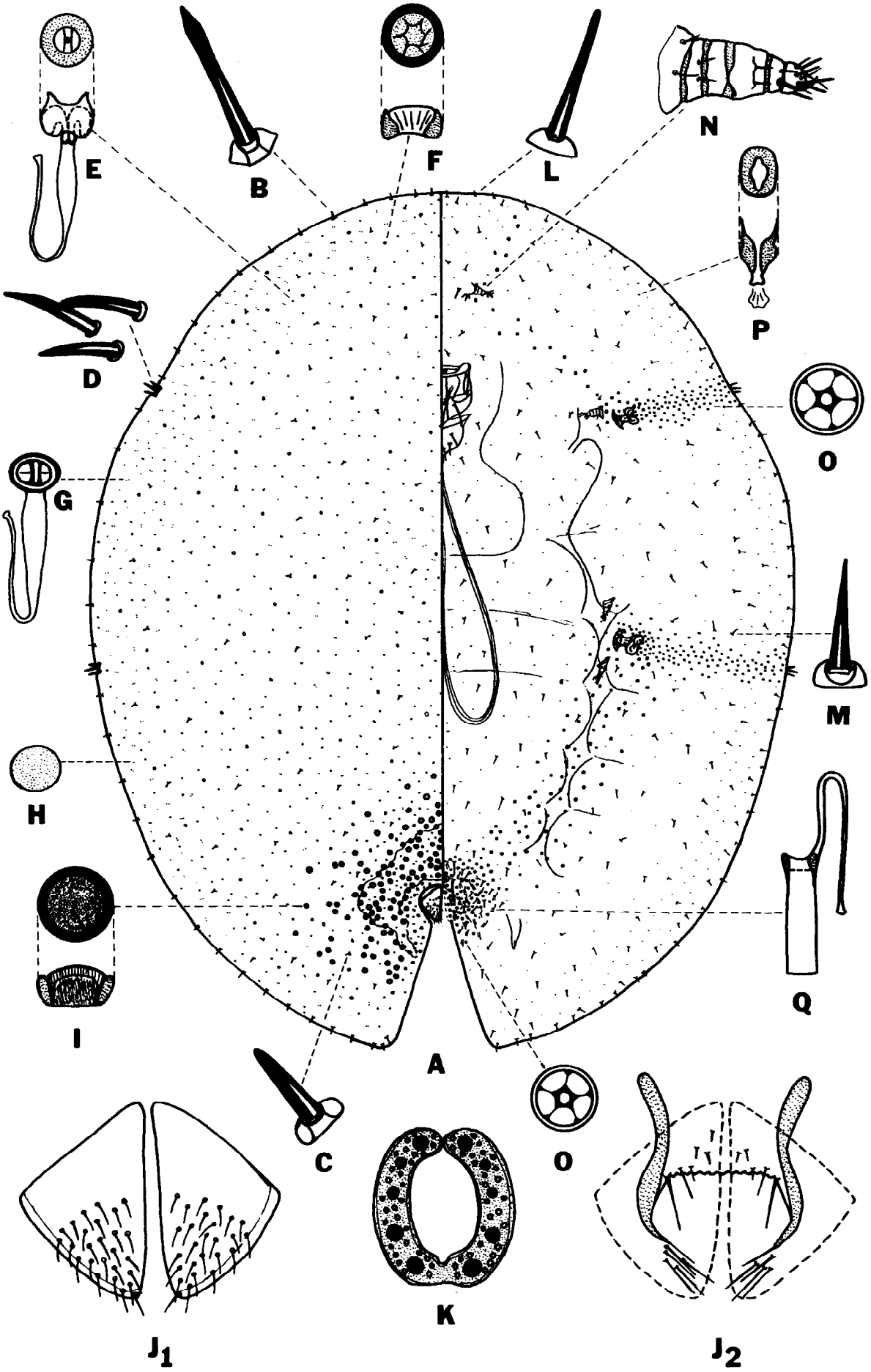
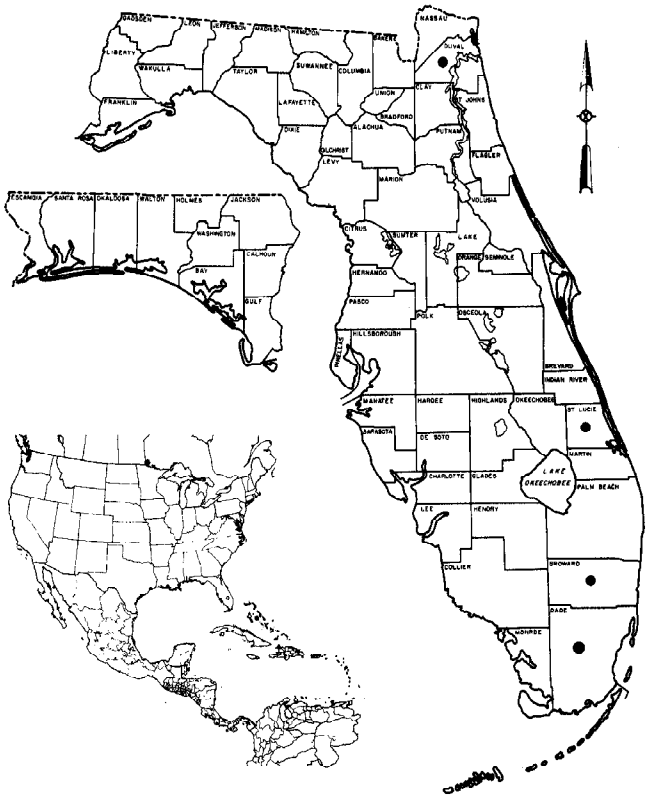


Fig. 100. *Toumeyella virginiana*, adult female, from Williams and Kosztarab 1972.

DISTRIBUTION: Map XLII. AL, GA, MD, VA. *Foreign*: Unknown.

BIOLOGY: According to Williams & Kosztarab (1972), "The coccid may be found under the bark of its host or on the twigs. In all cases known to the authors, ants were associated with the coccids. *Crematogaster clara* Mayr, often builds protective coverings over the scale insects (Fig. 7). These coverings are made of particles of soil, sand, and other debris cemented together forming a 'tent' over the coccids. This covering protects the insects from parasites, predators, and adverse weather conditions. The coccids are bisexual, with mating taking place in early September. The young are born ovoviviparously during October and overwinter as second instar nymphs." Apparently, 2 overlapping generations occur per year.



Map XLII. Distribution of *Toumeyella virginiana*.

ECONOMIC IMPORTANCE: This scale insect has been found only in small populations and is apparently not economically important.

REMARKS: In the past, *T. virginiana* may have been confused with *T. parvicornis* and *T. pini*; however, the 14-25 setae on each anal plate readily separates this species from *T. pini* which has 4 apical setae, and lacks dorsal aggregated bilocular pores of *T. parvicornis*.

MATERIAL STUDIED: FLORIDA: Boca Raton, 1(1), *Pinus clausa*, 10-VII-1980, C. Culbreth; Geneva, 3(3), *Pinus clausa*, 27-VI-1979, W. J. Shirley; Kissimmee, 1(1), *Pinus elliottii*, 10-V-1978, G. T. Smith; Lemon Grove, 1(1), *Pinus elliottii*, 14-VIII-1979, J. Felty & Z. Smith; Okeechobee, 1(1), *Pinus palustris*, 28-X-1980, S. P. Beidler; Quincy, 1(1), *Pinus glabra*, 5-V-1978, Q. Anglin; 2(2), *Pinus taeda*, 5-VI-1978, Q. Anglin.

Genus *VINSONIA* Signoret, 1872

TYPE SPECIES: *Coccus stellifera* Westwood, 1871.

DESCRIPTION: Body of adult female covered by a star-shaped semi-transparent wax. Derm sclerotized in anal area and in cephalic region. Body setae small, acute. Submarginal tubercles absent. Filamentous ducts scattered over dorsum. Anal plates each with 1 discal, 1 subdiscal, and 1 apical seta. Antennae 6-segmented, well developed but small. Legs well developed, usually with tibia and tarsus fused into 1 segment. Quinquelocular pores in spiracular furrows. Multilocular pores confined to vulvar area. Tubular ducts absent. Marginal setae slender, acute, straight, or slightly curved. Spiracular setae in groups of 4-12, with dorsal-most setae largest.

NOTES: Lindinger (1937:198), placed *Vinsonia* in synonymy with *Ceroplastes*, but other authors have accepted it as a distinct genus. The only representative in the genus is the stellate scale, *Vinsonia stellifera* (Westwood). The eggs are protected by the body of the female until they hatch.

VINSONIA STELLIFERA (Westwood)

SYNONYMS: *Coccus stellifera* Westwood 1871:3
Vinsonia pulchella Signoret 1872:34
Coccus stellifera Westwood, Signoret 1877:608
Vinsonia stellifera (Westwood), Douglas 1888:152, Green 1909:280, DeLotto 1965:234, Dekle 1969:1

SUGGESTED COMMON NAME: stellate scale

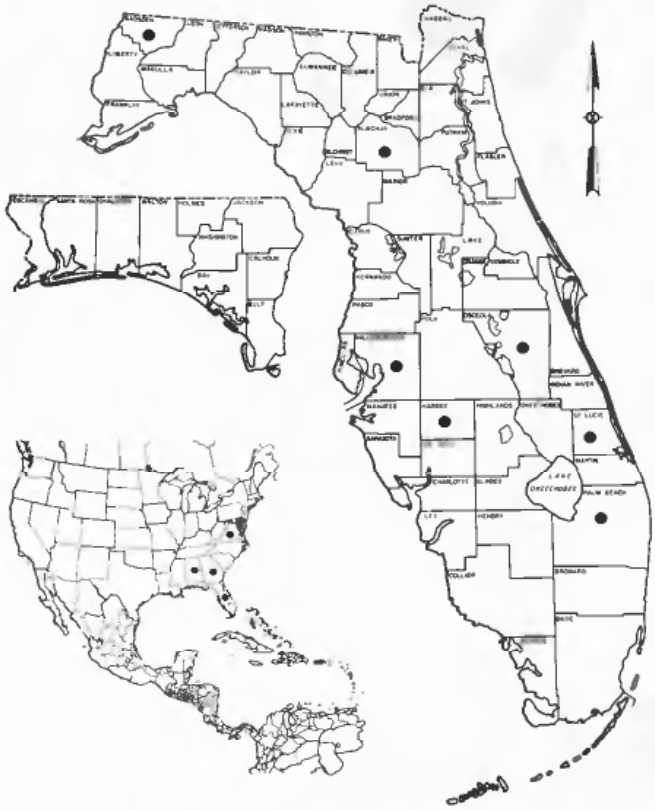
FIELD DESCRIPTION: Adult female star-shaped with 6 or 7 radiating arms of semi-transparent wax (Fig. 101). The size of adult females varies from 3.5-4.5 mm across the rays.

Fig. 101. *Vinsonia stellifera*, adult female and nymphs, DPI Photo 680226.

The color of the living insect is pink to purplish-red which darkens with age. Median area strongly convex above.

DESCRIPTION: (Fig. 102) Adult females 1.0-1.4 mm long and only slightly less in width. DORSUM—Membranous in young adult females, except sparsely areolated around anal plates; heavy sclerotization in older females, additional cephalic sclerotization present. Body setae sparse, very small. Small bilocular pores present. Medial, cephalic, and 6 lateral oval areas without bilocular pores and setae. Filamentous ducts (Fig. 102, C) scattered over dorsum; more numerous in marginal to submarginal area. Anal plates (Fig. 102, D) elongate, each with 1 discal, 1 subdiscal, and 1 apical seta. VENTER—Interantennal setae 16, long, slender. Quinquelocular pores (Fig. 102, G) in spiracular furrows, each furrow ca. 2 pores wide. Multilocular pores (Fig. 102, I) in vulvar area only. MARGIN—Marginal setae (Fig. 102, A) slender, acute, straight, or slightly curved, with well developed base; ca. 18 between anterior spiracular clefts. Spiracular setae (Fig. 102, B, F) in groups of 4-12; usually 2 or 3 dorsal-most setae (Fig. 102, B) much longer than others.

DISTRIBUTION: Map XLIII. Eradicated from Florida as of December 1954 (Dekle 1969). *Foreign*: Africa, Bahama Islands, Borneo, Caribbean Islands, Central America, Fiji, India, Japan, Java, Maritius, Micronesia, Philippines, South America, Sri Lanka, Taiwan, and Thailand; in greenhouses in Europe and the Far East.



Map XLIII. Distribution of *Vinsonia stellifera*.

BIOLOGY: Little information has been published on the biology of this scale.

ECONOMIC IMPORTANCE: Considered a potential threat to Florida because of its occurrence on citrus, mango, and many ornamentals.

REMARKS: This scale insect is very distinctive because of its star-shaped wax cover and is easily distinguished from other wax scales in the genus *Ceroplastes*. *Vinsonia stellifera* has more than 1 pair of interantennal setae, whereas *Ceroplastes* spp. have only 1 pair of interantennal setae.

MATERIAL STUDIED: PUERTO RICO: 1(1), *Sapote achras*, 5-X-1972, L. F. Martorell; VIRGIN ISLANDS: St. Croix, 1(1), *Cocos nucifera*, 21-III-1973, G. W. Dekle.

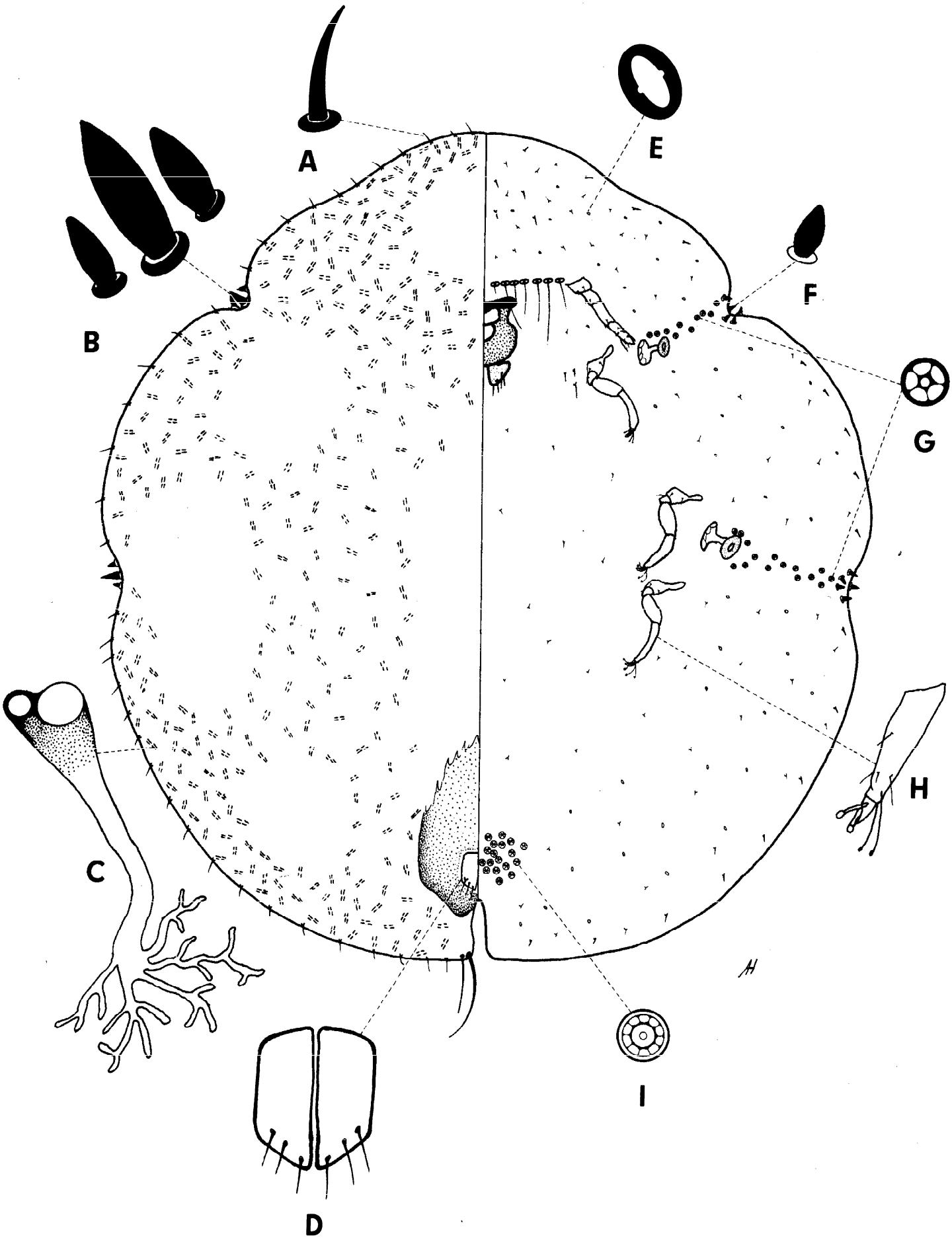


Fig. 102. *Vinsonia stellifera*, adult female, original by A. B. Hamon.

PLATE I

Ceroplastes ceriferus (Fabricius)

Ceroplastes ceriferus (Fabricius), infestation on *Podocarpus*

Ceroplastes dugusii Lichtenstein

Ceroplastes nakaharai Gimpel

Ceroplastes rubens Maskell

Coccus acutissimus (Green)

Coccus capparidis (Green)

Coccus hesperidum Linnaeus

PLATE II

Coccus longulus (Douglas)

Inglisia vitrea Cockerell, with parasite exit holes

Mesolecanium nigrofasciatum (Pergande)

Parthenolecanium corni (Bouché)

Coccus viridis (Green)

Kilifia acuminata (Signoret)

Parasaissetia nigra (Nietner)

Protopulvinaria mangiferae (Green)

PLATE III

Protopulvinaria pyriformis (Cockerell)

Pulvinaria acericola (Walsh & Riley)

Pulvinaria elongata Newstead

Pulvinaria ericicola McConnell

Pulvinaria innumerabilis (Rathvon), before ovisac formation

Pulvinaria innumerabilis (Rathvon), after ovisac formation

Pulvinaria psidii Maskell

Pulvinaria urbicola Cockerell

Saissetia coffeae (Walker)

Saissetia neglecta DeLotto

Saissetia oleae (Olivier)

Toumeyella cerifera Ferris

Toumeyella liriodendri (Gmelin)

Toumeyella parvicornis (Cockerell), leaf form

Toumeyella parvicornis (Cockerell), stem form

Vinsonia stellifera Westwood

PLATE IV

INDEX TO HOST PLANTS OF SOFT SCALES OF FLORIDA

ABELIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
ABRUS PRECATORIUS L. (rosary pea)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
ACACIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
ACACIA AURICULIFORMIS A. Cunn. ex Benth. (eartree, ear-leaf acacia)
Coccus longulus (Douglas) (long brown scale)
ACACIA CORNIGERA (L.) Willd. (bull-horn acacia) [= *A. spadicigera*]
Coccus longulus (Douglas) (long brown scale)
ACACIA FARNESIANA (L.) Willd. (sweet acacia)
Coccus longulus (Douglas) (long brown scale)
ACALYPHA SP. (copper leaf)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Oliver) (black scale)
ACALYPHA HISPIDA Burm. f. (chenille plant) [= *A. Sanderi*; *A. Sanderana*]
Pulvinaria psidii Maskell (green shield scale)
ACALYPHA WILKESIANA Mull. Arg. (Jacob's coat) [= *A. tricolor*]
Coccus hesperidum Linnaeus (brown soft scale)
ACANTHUS MOLLIS L. (artist's acanthus)
Saissetia coffeae (Walker) (hemispherical scale)
ACER SP. (maple)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Saissetia oleae (Olivier) (black scale)
ACER BARBATUM Michx. (Florida maple, southern sugar maple) [= *A. floridanum*]
Ceroplastes floridensis Comstock (Florida wax scale)
ACER RUBRUM L. (red maple)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
ACER SACCHARINUM L. (silver maple)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
ACER SACCHARINUM L. 'Wieri' (weeping maple)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
ACHIMENES SP. (monkey-faced pansy)
Pulvinaria psidii Maskell (green shield scale)
ACHRAS [See *MANILKARA*]
ACMENA SMITHII (Poir.) Merrill & L. M. Perry [= *Eugenia Smithii*]
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
ACOELORRHAPHE WRIGHTII (Griseb. & Wendl.) Wendl. ex Becc. (Silver saw palm) [= *Paurotis Wrightii*]
Ceroplastes floridensis Comstock (Florida wax scale)
ACORUS GRAMINEUS Ait. 'Variegatus' (grassy-leaved sweet flag)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia coffeae (Walker) (hemispherical scale)
ACROCOMIA SP. (gru-gru palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
ACROSTICHUM SP. (swamp fern)
Coccus hesperidum Linnaeus (brown soft scale)
ACROSTICHUM AUREUM L. (leather fern)
Coccus capparidis (Green) (capparis soft scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ACROSTICHUM DANEIFOLIUM Langsd. & Fisch. (leather fern)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ADENANTHERA PAVONINA L. (red sandalwood tree)
Saissetia oleae (Olivier) (black scale)
ADENIUM OBESUM (Forssk.) Roem. & Schult. (desert rose) [= *A. arabicum*]
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ADHATODA SP. [See *JUSTICIA* sp.]
ADIANTUM SP. [maidenhair fern)
Ceroplastes floridensis Comstock (Florida wax scale)

Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Oliver) (black scale)
ADIANTUM ANCEPS Maxon & Morton
Saissetia coffeae (Walker) (hemispherical scale)
ADIANTUM CAPILLUS-VENERIS L. (southern maidenhair)
Saissetia coffeae (Walker) (hemispherical scale)
ADIANTUM HISPIDULUM Swartz (Australian maidenhair fern) [= *A. pubescens*]
Coccus hesperidum Linnaeus (brown soft scale)
ADIANTUM PEDATUM L. (American maidenhair fern)
Coccus hesperidum Linnaeus (brown soft scale)
ADIANTUM POLYPHYLLUM Willd. [= *A. cardiochlaenum*]
Kilifia acuminata (Signoret) (acuminate scale)
ADIANTUM RADDIANUM K. Presl (delta maidenhair)
Saissetia coffeae (Walker) (hemispherical scale)
ADIANTUM TENERUM Swartz (brittle maidenhair)
Saissetia coffeae (Walker) (hemispherical scale)
ADIANTUM TRAPEZIFORME L. (giant maidenhair)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
ADONIDIA [See *VEITCHIA*]
AEGLE MARMELOS (L.) Correa (bael fruit)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
AESCULUS PAVIA L. (red buckeye)
Protopulvinaria pyriformis (Cockerell) (pyriform scale
AFRAEGLE PANICULATA (K. Schum.) Engl. (Nigerian powder-flask)
Coccus hesperidum Linnaeus (brown soft scale)
AGATHAEA SP. [See *FELICIA* SP.]
AGAVE SP. (century plant)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
AGAVE AMERICANA L. (century plant)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
AGAVE AMERICANA L. 'MARGINATA' (century plant)
Ceroplastes cirripediformis Comstock (barnacle scale)
AGAVE ANGUSTIFOLIA Haw. 'MARGINATA WOODROWI'
Coccus hesperidum Linnaeus (brown soft scale)
AGAVE DESMETTIANA Jacobi (dwarf century plant)
Coccus hesperidum Linnaeus (brown soft scale)
AGAVE HARRISII Trel.
Coccus hesperidum Linnaeus (brown soft scale)
AGAVE SISALANA Perrine (sisal hemp)
Vinsonia stellifera (Westwood) (stellate scale)
AGLAIA FORMOSANA Hayata
Coccus viridis (Green) (green scale)
AGLAONEMA SP.
Ceroplastes rubens Maskell (red wax scale)
Saissetia coffeae (Walker) (hemispherical scale)
AGLAONEMA SP. 'PEWTER'
Ceroplastes rubens Maskell (red wax scale)
AGLAONEMA SP. 'SILVER QUEEN'
Ceroplastes rubens Maskell (red wax scale)
AGLAONEMA COMMUTATUM Schott
Ceroplastes rubens Maskell (red wax scale)
AGLAONEMA COMMUTATUM Schott 'PSEUDO-BRACTEATUM'
Ceroplastes rubens Maskell (red wax scale)
AGLAONEMA CRISPUM (Hort. Pitcher & Manda) Nicols. [= *A. Roebelinii*]
Ceroplastes rubens Maskell (red wax scale)
AGLAONEMA PICTUM (Roxb.) Kunth 'TRICOLOR'
Ceroplastes rubens Maskell (red wax scale)
AGLAONEMA TREUBII Engl. [See *A. commutatum* cv. Treubii]
Ceroplastes rubens Maskell (red wax scale)
AIPHANES CARYOTIFOLIA (HBK) H. Wendl. (ruffle palm)
Coccus hesperidum Linnaeus (brown soft scale)
AJUGA REPTANS L. (carpet bugleweed)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
ALBIZIA SP. [= *ALBIZZIA* of some authors]
Coccus longulus (Douglas) (long brown scale)
ALBIZIA JULIBRISSIN Durazz. (silk tree)
Parthenolecanium corni (Bouche) (European fruit lecanium)
ALBIZIA LEBBECK (L.) Benth. (woman's-tongue tree)
Ceroplastes ceriferus (Fabricus) (Indian wax scale)
Coccus longulus (Douglas) (long brown scale)
ALCEA ROSEA L. (hollyhock) [= *Althaea rosea*]
Coccus hesperidum Linnaeus (brown soft scale)
ALECTRYON SUBCINEREUS (A. Gray) Radlk. (smooth rambutan)
Ceroplastes floridensis Comstock (Florida wax scale)
ALLAMANDA SP. (allamanda, pink allamanda)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
ALLAMANDA CATHARTICA L. (common allamanda)
Saissetia coffeae (Walker) (hemispherical scale)
ALLAMANDA NERIIFOLIA Hook. (bush allamanda)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
ALNUS SP. (alder)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
ALOCASIA SP. (elephant's-ear plant)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ALOE SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ALOE ARISTATA Haw. (torch plant)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
ALOE BARBADENSIS Mill. (Barbados aloe) [= *A. vera*]
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ALPINIA SP. (ginger lily)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
ALPINIA ZERUMBET (Pers.) B. L. Burtt & R. M. Sm. (shellflower)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
ALSOPHILA SP. (tree fern)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia coffeae (Walker) (hemispherical scale)
ALSOPHILA AUSTRALIS R. Br. (Australian tree-fern)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

ALSTONIA SCHOLARIS (L.) R. Br. (devil tree)
Vinsonia stellifera (Westwood) (stellate scale)
ALSTROEMERIA SP. (Peruvian lily)
Saissetia coffeae (Walker) (hemispherical scale)
ALTERNANTHERA FICOIDEA (L.) R. Br. ex Roem. & Schult. 'AMOENA'
Ceroplastes cirripediformis Comstock (barnacle scale)

ALTHAEA SP. [See *ALCEA ROSEA*]
AMARANTHUS SPINOSUS L. (spiny amaranth)
Coccus viridis (Green) (green scale)
AMARYLLIS SP. (belladonna lily)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
AMBROSIA SP. (ragweed)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
AMBROSIA ARTEMISIIFOLIA L.
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
AMORPHA FRUTICOSA L. (false indigo)
Coccus longulus (Douglas) (long brown scale)
AMPELOPSIS SP.
Saissetia coffeae (Walker) (hemispherical scale)
AMPELOPSIS ARBOREA (L.) Koehne (pepper vine)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
AMPHICOSMIA [See *ALSOPHILA* sp.]
AMYRIS ELEMIFERA L. (torchwood)
Ceroplastes dugesii Lichtenstein (Duges wax scale)
ANACARDIUM OCCIDENTALE L. (cashew)
Vinsonia stellifera (Westwood) (stellate scale)
ANDROMEDA SP. (bog rosemary)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
ANDROPOGON VIRGINICUS L. (broom sedge)
Coccus viridis (Green) (green scale)
ANEMIA ADIANTIFOLIA (L.) Swartz (pine fern)
Ceroplastes floridensis Comstock (Florida wax scale)
ANGRAECUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
ANNONA SP. (custard apple, sugar apple)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
ANNONA CHERIMOLA Mill. (cherimoya)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
ANNONA MONTANA Macfady. (mountain soursop)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
ANNONA MURICATA L. (soursop, guanabana)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
ANNONA RETICULATA L. (custard apple)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)

ANNONA SPINESCENS Mart.
Coccus longulus (Douglas) (long brown scale)
ANNONA SQUAMOSA L. (sugar-apple, sweetsop)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ANODA CRISTATA (L.) Schlecht.
Coccus pseudohesperidum (Cockerell) (orchid soft scale)
ANTHERICUM SP. (spider plant)
Saissetia coffeae (Walker) (hemispherical scale)
ANTHURIUM SP. (tailflower)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)

Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)

ANTHURIUM ANDRAEANUM Linden (flamingo lily)
Ceroplastes rubens Maskell (red wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ANTHURIUM ANDRAEANUM Linden 'ROSEUM'
Coccus viridis (Green) (green scale)

ANTHURIUM BERRIOZABALENSE Matuda
Ceroplastes floridensis Comstock (Florida wax scale)

ANTHURIUM CLARINERVIUM Matuda
Saissetia coffeae (Walker) (hemispherical scale)

ANTHURIUM CRYSTALLINUM Linden & Andre (crystal anthurium)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)

ANTHURIUM FORTUNATUM Bunt.
Coccus hesperidum Linnaeus (brown soft scale)

ANTHURIUM HOFFMANNII Schott
Saissetia oleae (Olivier) (black scale)

ANTHURIUM HOOKERI Kunth
Ceroplastes rubens Maskell (red wax scale)

ANTHURIUM MAGNIFICUM Linden
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ANTHURIUM SCHERZERANUM Schott (flamingo flower)
Ceroplastes rubens Maskell (red wax scale)
Coccus longulus (Douglas) (long brown scale)

ANTHURIUM WAROCQUEANUM T. Moore
Saissetia coffeae (Walker) (hemispherical scale)

ANTIDESMA SP.
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

ANTIDESMA BUNIUS (L.) K. Spreng. (bignay, Chinese laurel)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Vinsonia stellifera (Westwood) (stellate scale)

ANTIDESMA DALLACHYANUM Baill.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)

ANTIGONON SP.
Ceroplastes floridensis Comstock (Florida wax scale)

ANTIGONON LEPTOPUS Hook. & Arn. (coral vine)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

APHANAMIXIS POLYSTACHYA (Wallich) R. Parker
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

APHELANDRA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

APHELANDRA SQUARROSA Nees (zebra plant)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)

APHELANDRA SQUARROSA Nees 'LEOPOLDII'
Saissetia coffeae (Walker) (hemispherical scale)

APHELANDRA SQUARROSA Nees 'LOUISAE'
Coccus hesperidum Linnaeus (brown soft scale)

ARALIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridus (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

ARALIA BALFORIANA [See *POLYSCIAS BALFOURIANA*]

ARALIA SPINOSA L. (devil's walking stick, prickly ash)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Pulvinaria psidii Maskell (green shield scale)

ARAUCARIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)

ARAUCARIA HETEROPHYLLA (Salisb.) Franco (Norfolk Island pine) [= *A. excelsa*]
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Saissetia coffeae (Walker) (hemispherical scale)

ARCHONTOPHOENIX SP. (king palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ARACHONOTOPHOENIX ALEXANDRAE (F. J. Muell.) H. Wendl. & Drude (Alexandra palm)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ARDISIA SP.
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

ARDISIA CRENATA Sims (coralberry) [= *A. crenulata*]
Saissetia coffeae (Walker) (hemispherical scale)

ARDISIA CRISPA (Thunb.) A. DC.
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia coffeae (Walker) (hemispherical scale)

ARDISIA DENSIFLORA M. S. Bak. (ardisia)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)

ARDISIA ESCALLONIOIDES Cham. & Schlechtend. (marlberry) [= *Icacorea paniculata*]
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)

ARDISIA JAPONICA (Hornst.) Blume (marlberry)
Kilifia acuminata (Signoret) (acuminate scale)

ARDISIA PANICULTATA Roxb. (marlberry)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Inglisia vitrea Cockerell (glassy wax scale)
Pulvinaria floccifera (Westwood) (cottony camellia scale)

ARECA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ARECA CATECHU L. (betel-nut palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ARECASTRUM ROMANZOFFIANUM (Cham.) Becc. (queen palm) [= *Cocos Romanzoffiana*]
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia coffeae (Walker) (hemispherical scale)

ARENGA ENGLERI Becc.
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ARENGA PINNATA (Wurmb) Merrill (sugar plum) [= *A. saccharifera*]
Coccus hesperidum Linnaeus (brown soft scale)

ARGYREIA SP.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

ARGYREIA NERVOSA (Burm. f.) Bojer (woolly morning glory) [= *A. speciosa*]
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

ARISTOLOCHIA SP. (birthwort)
Saissetia coffeae (Walker) (hemispherical scale)

ARISTOLOCHIA DURIOR J. Hill (Dutchman's pipe)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)

ARTABOTRYS HEXAPETALUS (L. f.) Bhand. (climbing ylang ylang)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

ARTOCARPUS SP.
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Saissetia oleae (Olivier) (black scale)

ARTOCARPUS ALTILIS (Parkins.) Fosberg (breadfruit) [= *A. incisus*]
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Saissetia oleae (Olivier) (black scale)

ARTOCARPUS HETEROPHYLLUS Lam. (jackfruit) [= *A. integer*]
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

ARTOCARPUS POLYPHEMA Pers.
Ceroplastes rubens Maskell (red wax scale)

ARUNDINARIA SP. (bamboo)
Coccus viridis (Green) (green scale)

ASCLEPIAS SP. (milkweed)
Coccus viridis (Green) (green scale)

ASCYRUM HYPERICOIDES L. (St. Andrew's-cross)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

ASCYRUM TETRAPETALUM (Lam.) Vail (St. John's wort)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

ASIMINA PARVIFLORA (Michx.) Dunal
Coccus longulus (Douglas) (long brown scale)

ASPARAGUS SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)

ASPARAGUS DENSIFLORUS (Kunth) Jessop 'SPRENGERI' (emerald fern)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

ASPARAGUS FALCATUS L. (sickle thorn)
Saissetia coffeae (Walker) (hemispherical scale)

ASPARAGUS SETACEUS (Kunth) Jessop (asparagus-fern)
Saissetia coffeae (Walker) (hemispherical scale)

ASPIDISTRA SP.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Vinsonia stellifera (Westwood) (stellate scale)

ASPIDIUM [See *POLYSTICHUM*]

ASPLENIUM SP. (spleenwort)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)

ASPLENIUM DAUCIFOLIUM Lam. [= *A. viviparum*]

Saissetia coffeae (Walker) (hemispherical scale)
ASPLENIUM NIDUS L. (bird's-nest fern) [= *A. nidus-avis*]
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
ASTER SP. (Michaelmas daisy)
Coccus viridis (Green) (green scale)
ASTER EXILIS Ell.
Coccus viridis (Green) (green scale)
ASYTASIA GANGETICA (L.) T. Anders. [= *A. coromandeliana*]
Saissetia coffeae (Walker) (hemispherical scale)
ASYSTASIA SCANDENS Hook. (asystasia)
Saissetia coffeae (Walker) (hemispherical scale)
ATALANTIA MISSIONIS Olivier
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ATRIPLEX SP. (saltbush)
Coccus viridis (Green) (green scale)
AUCUBA JAPONICA Thunb. (gold-dust plant, Japanese laurel)
Saissetia coffeae (Walker) (hemispherical scale)
AVICENNIA GERMINANS (L.) L. (black mangrove)
Ceroplastes cirripediformis Comstock (barnacle scale)
BACCAUREA SAPIDA Muell.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
BACCHARIS SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
BACCHARIS ANGUSTIFOLIA Michx. (false willow)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)

BACCHARIS HALIMIFOLIA L. (groundsel bush, salt-bush)
Ceroplastes ceriferus (Fabricus) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
BALANITES AEGYPTIACA Delile
Coccus hesperidum Linnaeus (brown soft scale)
BAMBUSA SP. (bamboo)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
BARLERIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
BARRINGTONIA SP.
Saissetia oleae (Olivier) (black scale)
BARRINGTONIA ASIATICA (L.) Kurz
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
BAUHINIA SP. (mountain ebony, jupiter tree, orchid tree)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
BAUHINIA PURPUREA L. (butterfly tree) [= *B. triandra*]
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
BAUHINIA VARIEGATA L. (mountain ebony, orchid tree)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
BEAUMONTIA SP. (nepal trumpet flower)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
BEAUMONTIA GRANDIFLORA (Roxb.) Wallich. (herald's trumpet)
Pulvinaria urbicola Cockerell (urbicola soft scale)
BEGONIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
BEGONIA REX. Putz. (king begonia, painted-leaf begonia)
Coccus longulus (Douglas) (long brown scale)
BEGONIA SANGUINEA Raddi
Coccus hesperidum Linnaeus (brown soft scale)
BELLIS SP. (daisy)
Coccus viridus (Green) (green scale)
BELOPERONE [See *JUSTICIA*]
BERBERIS SP. (barberry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
BERCHEMIA SCANDENS (J. Hill) C. Koch (rattan vine, supplejack)
Ceroplastes cirripediformis Comstock (barnacle scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)

BIDENS SP. (beggar-ticks)
Ceroplastes floridensis Comstock (Florida wax scale)
BIDENS PILOSA L. Ann. (Spanish needle)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
BIGNONIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
BIGNONIA CAPREOLATA L. (cross vine)
Ceroplastes cirripediformis Comstock (barnacle scale)
BILLBERGIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
BISCHOFIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
BISCHOFIA JAVANICA Blume (toog) [= *B. trifoliata*]
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
BIXA ORELLANA L. (lipstick tree)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
BLIGHTA SAPIDA K. Konig. (akee)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
BOEHMERIA CYLINDRICA (L.) Swartz (false nettle, bog hemp)
Coccus viridis (Green) (green scale)
BOMBAX CEIBA L. (red silk-cotton tree)
Coccus hesperidum Linnaeus (brown soft scale)
BORRERIA LAEVIS (Lam.) Griseb.
Coccus viridis (Green) (green scale)
BOUGAINVILLEA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
BOURRERIA SP. (strongback)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
BOWENIA SERRULATA (Bull) Chamberl.
Saissetia coffeae (Walker) (hemispherical scale)
BOWENIA SPECTABILIS Hook. ex Hook. f. (turnip stem bowenia)
Saissetia coffeae (Walker) (hemispherical scale)
BRACHYCHITON ACERIFOLIUS (A. Cunn.) F. J. Muell. (flame bottle tree)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
BRASSAIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
BRASSAIA ARBORICOLA [See *SCHEFFLERA*]
BRASSAIA ACTINOPHYLLA Endl. (umbrella tree, schefflera) [= *Schefflera actinophylla*]
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
BRASSIA CAUDATA (L.) Lindl. (spider orchid)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia coffeae (Walker) (hemispherical scale)
Vinsonia stellifera (Westwood) (stellate scale)
BRASSIA GIREOUDIANA Rchb. f. & Warsz. (spider orchid)
Vinsonia stellifera (Westwood) (stellate scale)
BROMELIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
BROUGHTONIA SANGUINEA (Swartz) R. Br.
Vinsonia stellifera (Westwood) (stellate scale)
BROUSSONETIA PAPYRIFERA (L.) Venten. (sandpaper mulberry)
Saissetia oleae (Olivier) (black scale)
BRUNFELSIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
BRUNFELSIA AMERICANA L. (lady-of-the-night)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)

Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
BRYOPHYLLUM SP. [See *KALANCHOE*]
BUCIDA SP.
Coccus hesperidum Linnaeus (brown soft scale)
BUCIDA BUCERAS L. (black olive)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
BUCIDA SPINOSA Jennings (spiny bucida)
Saissetia oleae (Olivier) (black scale)
BUMELIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
BUMELIA CELASTRINA HBK var. *ANGUSTIFOLIA* (Nutt.) R. W. Long (buckthorn, saffron palm)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
BUMELIA LANUGINOSA (Michx.) Pers. (chittamwood)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
BUMELIA LYCIOIDES (L.) Pers. (buckthorn)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
BUMELIA RECLINATA (Michx.) Venten.
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
BUMELIA TENAX (L.) Willd. (tough buckthorn)
Ceroplastes floridensis Comstock (Florida wax scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
BURSERA SP. (copal)
Coccus hesperidum Linnaeus (brown soft scale)
BURSERA FAGAROIDES Engl.
Coccus hesperidum Linnaeus (brown soft scale)
BERSERA SIMARUBA (L.) Sarg. (gumbo-limbo)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes dugesii Lichtenstein (Duges wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Saissetia oleae (Olivier) (black scale)
BUTIA CAPITATA (Mart.) Becc. (jelly palm)
Saissetia coffeae (Walker) (hemispherical scale)
BUXUS SP. (boxwood, Japanese boxwood)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
BUXUS MICROPHYLLA Sieb. & Zucc. (boxwood)
Ceroplastes cirripediformis Comstock (barnacle scale)
Parasaissetia nigra (Nietner) (nigra scale)
BUXUS SEMPERVIRENS L. (common boxwood)
Ceroplastes floridensis Comstock (Florida wax scale)
CAESALPINIA SP. (dwarf poinciana)
Coccus longulus (Douglas) (long brown scale)
CAESALPINIA PAUCIFLORA (Griseb.) C. Wright
Coccus longulus (Douglas) (long brown scale)
CAESALPINIA PULCHERRIMA (L.) Swartz (dwarf poinciana)
Coccus longulus (Douglas) (long brown scale)
CAJANUS CAJAN (L.) Huth (pigeon pea)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Saissetia oleae (Olivier) (black scale)
CALADIUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
CALANTHE SP.
Coccus pseudohesperidum (Cockerell) (orchid soft scale)
CALATHEA SP.
Coccus longulus (Douglas) (long brown scale)
Saissetia coffeae (Walker) (hemispherical scale)
CALATHEA ZEBRINA (Sims) Lindl. (zebra plant)
Saissetia coffeae (Walker) (hemispherical scale)
CALLIANDRA CALIFORNICA Benth.
Inglisia vitrea Cockerell (glassy wax scale)
CALLICARPA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Saissetia oleae (Olivier) (black scale)
CALLICARPA AMERICANA L. (French mulberry, beautyberry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia neglecta DeLotto (Caribbean black scale)
CALLISTEMON SP. (bottlebrush)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CALLISTEMON CITRINUS (Curtis) Stapf. (crimson bottlebrush)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
CALLISTEMON VIMINALIS (Soland. ex Gaertn.) Cheel (weeping bottlebrush)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CALLOPSIS VOLKENSII Engl. (miniature calla)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
CALLUNA SP. (heather)
Ceroplastes floridensis Comstock (Florida wax scale)
CALOCARPUM [See *POUTERIA*]
CALODENDRUM CAPENSE (L. f.) Thunb. (Cape chestnut)
Ceroplastes cirripediformis Comstock (barnacle scale)
Saissetia oleae (Olivier) (black scale)
CALONYCTION [See *IPOMOEA*]
CALOPHYLLUM SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
CALOPHYLLUM BRASILIENSE Camb. (Brazil beauty-leaf)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia neglecta DeLotto (Caribbean black scale)
CALOPHYLLUM INOPHYLLUM L. (laurelwood)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
CALOTHAMNUS VILLOSUS R. Br. (woolly netbush)
Coccus hesperidum Linnaeus (brown soft scale)
CALOTROPIS SP.
Saissetia oleae (Olivier) (black scale)
CALYCOPHYLLUM CANDIDISSIMUM (Vahl) DC. (degame)
Parasaissetia nigra (Nietner) (nigra scale)
CALYCOPHYLLUM SPRUCEANUM (Benth.) Hook. f. ex K. Schum.
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
CAMELLIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
CAMELLIA JAPONICA L. (common camellia)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
Pulvinaria psidii Maskell (green shield scale)
CAMELLIA SASANQUA Thunb. (sasanqua camellia)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
CAMELLIA SASANQUA Thunb. 'Cleopatra'
Coccus hesperidum Linnaeus (brown soft scale)
CAMELLIA SINENSIS (L.) O. Kuntze (tea)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
CAMPSIS RADICANS (L.) Seem. ex Bur. (trumpet vine, tecoma)
Ceroplastes cirripediformis Comstock (barnacle scale)
CAMPYLONEURON [See *POLYPODIUM*]
CANANGA ODORATA (Lam.) Hook. f. & T. Thoms. (ilang-ilang) (ylang-ylang)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CANNA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
CANNABIS SP. (hemp)
Coccus hesperidum Linnaeus (brown soft scale)
CAPPARIS CYNOPHALLOPHORA L. (Jamaica caper tree)
Saissetia oleae (Olivier) (black scale)
CAPARIA BIFLORA L.
Coccus viridis (Green) (green scale)
CAPSICUM SP. (pepper)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
CAREX SP. (sedge)
Coccus hesperidum Linnaeus (brown soft scale)
CARICA PAPAYA L. (papaya)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CARISSA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
CARISSA SP. 'Bonsai'
Ceroplastes cirripediformis Comstock (barnacle scale)
CARISSA BISPINOSA (L.) Desf. ex Brenan
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CARISSA CARANDAS L. (karanda)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)

CARISSA GRANDIFLORA (E. H. Mey.) A. DC. (Natal-plum)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CARISSA GRANDIFLORA (E. H. Mey.) A. DC. 'Compacta'
Ceroplastes floridensis Comstock (Florida wax scale)
CARPINUS CAROLINIANA Walt. (hornbeam)
Parthenolecanium corni (Bouché) (European fruit lecanium)
CARYA SP. (hickory)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
CARYA ILLINOINENSIS (Wangenh.) C. Koch (pecan)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
CARYA OVATA (Mill.) C. Koch (shagbark hickory)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
CARYOTA SP. (fishtail palm)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
CARYOTA MITIS Lour. (tufted fishtail palm)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
CARYOTA URENS L. (wine palm)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
CASASIA CLUSIIFOLIA [See *GENIPA CLUSIIFOLIA*]
CASIMIROA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
CASIMIROA EDULIS Llave (white sapote)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
CASSIA SP. (golden shower)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) pyriform scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
CASSIA BICAPSULARIS L.
Coccus hesperidum Linnaeus (brown soft scale)
CASSIA CARNAVAL Speg.
Coccus longulus (Douglas) (long brown scale)
CASSIA CORYMBOSA Lam.
Coccus longulus (Douglas) (long brown scale)
CASSIA FISTULA L. (golden shower tree)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
CASSIA OCCIDENTALIS L. (coffee senna)
Saissetia oleae (Olivier) (black scale)
CASSIA SIAMEA Lam. (kassod tree)
Coccus longulus (Douglas) (long brown scale)
CASSIA SPLENDIDA Vogel (golden wonder)
Coccus longulus (Douglas) (long brown scale)
CASSINE QUADRANGULATA (Schrad.) O. Kuntze [= *Elaeodendron quadrangulatum*]
Coccus hesperidum Linnaeus (brown soft scale)
CASSYTHA FILIFORMIS L. (love vine)
Coccus longulus (Douglas) (long brown scale)
CASTANOSPERMUM AUSTRALE A. Cunn. & C. Fraser (Moreton Bay chestnut)
Coccus hesperidum Linnaeus (brown soft scale)
CASUARINA SP. (Australian pine)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
CATALPA BIGNONIOIDES Walt. (common catawba)
Pulvinaria urbicola Cockerell (urbicola soft scale)
CATALPA SPECIOSA Warder ex Engelm. (catalpa, western catawba)
Pulvinaria urbicola Cockerell (urbicola soft scale)
CATASETUM SP.
Coccus pseudohesperidum (Cockerell) (orchid soft scale)
CATESBAEA PARVIFLORA Sw.
Saissetia oleae (Olivier) (black scale)
CATESBAEA SPINOSA L. (lily thorn)
Saissetia oleae (Olivier) (black scale)
CATTLEYA SP.
Coccus hesperidum Linnaeus (brown soft scale)
CATTLEYA TRIANAEI Lind. & Rchb. f. (Christmas orchid)
Coccus pseudohesperidum (Cockerell) (orchid soft scale)
CEDRELA TOONA Roxb. ex Rottl.
Saissetia oleae (Olivier) (black scale)
CEDRUS SP. (cedar)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
CEDRUS DEODARA (D. Don) G. Don (deodar cedar)

Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)

CEIBA SP. (kapok tree)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)

CEIBA PENTANDRA (L.) Gaertn. (kapok, silk-cotton tree)
Saissetia oleae (Olivier) (black scale)

CELOSIA SP. (cockscomb)
Saissetia coffeae (Walker) (hemispherical scale)

CELTIS SP. (hackberry)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)

CENTAUREA CYANUS L. (cornflower)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

CEPHALANTHUS SP. (buttonbush)
Coccus viridis (Green) (green scale)
Toumeyella cerifera Ferris (buttonbush scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

CEPHALANTHUS OCCIDENTALIS L. (buttonbush)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Toumeyella cerifera Ferris (buttonbush scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

CEPHALOTAXUS SP. (plum yew)
Coccus hesperidum Linnaeus (brown soft scale)

CERATIOLA ERICOIDES Michx. (rosemary)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria innumberabilis (Rathvon) (cottony maple scale)

CERATONIA SP.
Coccus longulus (Douglas) (long brown scale)

CERATONIA SILIQUA L. (St. John's-bread, carob)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)

CERCIS SP. (redbud)
Coccus hesperidum Linnaeus (brown soft scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)

CERCIS CANADENSIS L. (redbud)
Coccus hesperidum Linnaeus (brown soft scale)

CESTRUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saisettia coffeae (Walker) (hemispherical scale)

CESTRUM DIURNUM L. (day jasmine)
Ceroplastes cirripediformis Comstock (barnacle scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

CESTRUM NOCTURNUM L. (night-blooming jasmine)
Ceroplastes floridensis Comstock (Florida wax scale)

CHAENOMELES SP. (flowering quince)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)

CHAMAEDOREA ELEGANS Mart. (parlor palm)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)

CHAMAEDOREA ERNESTI-AUGUSTI H. Wendl.
Eucalymnatus tessellatus (Signoret) (tessellated scale)

CHAMAEDOREA ERUMPENS H. E. Moore (bamboo palm)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

CHAMAEDOREA MICROSPADIX Burret
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)

CHAMAEDOREA TENELLA H. Wendl.
Eucalymnatus tessellatus (Signoret) (tessellated scale)

CHAMAEROPS HUMILIS L. (European fan palm)
Coccus hesperidum Linnaeus (brown soft scale)

CHENOPODIUM SP.
Pulvinaria urbicola Cockerell (urbicola soft scale)

CHENOPODIUM AMBROSIOIDES L. (American wormseed)
Pulvinaria urbicola Cockerell (urbicola soft scale)

CHENOPODIUM BOTRYS L. (Jerusalem oak)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)

CHIOCOCCA ALBA (L.) A. S. Hitchc. (snowberry)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Pulvinaria psidii Maskell (green shield scale)

CHIOCOCCA PINETORUM Britton (snowberry)
Coccus viridis (Green) (green scale)

CHLOROPHYTUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)

CHLOROPHYTUM CAPENSE (L.) Voss
Saissetia coffeae (Walker) (hemispherical scale)

CHLOROPHYTUM COMOSUM (Thunb. Jacq. (spider plant, ribbon plant)
Saissetia coffeae (Walker) (hemispherical scale)

CHRYSALIDOCARPUS SP.
Eucalymnatus tessellatus (Signoret) (tessellated scale)

CHRYSALIDOCARPUS LUTESCENS H. Wendl. (areca palm)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

CHRYSANTHEUM SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Saissetia coffeae (Walker) (hemispherical scale)
CHRYSOBALANUS SP. (gopher plum)
Coccus longulus (Douglas) (long brown scale)
CHRYSOBALANUS OBLONGIFOLIUS [See *LICANIA MICHAUXII*]
CHRYSOPHYLLUM SP.
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
CHRYSOPHYLLUM CAINITO L. (star apple)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
CHRYSOPHYLLUM OLIVIFORME L. (satinleaf)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CINNAMOMUM SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CINNAMOMUM CAMPHORA (L.) J. Presl (camphor tree)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CINNAMOMUM CASSIA (Nees) Nees & Eberm. ex Blume (cassia bark tree)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CINNAMOMUM ZEYLANICUM Blume (cinnamon tree)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CIRSIUM SP. (thistle)
Coccus viridis (Green) (green scale)
CIRSIUM VULGARE (Savi) Ten. (bull thistle)
Saissetia coffeae (Walker) (hemispherical scale)
CISSUS SP.
Coccus longulus (Douglas) (long brown scale)
CISTUS INCANUS L. (rock rose)
Ceroplastes cirripediformis Comstock (barnacle scale)
CITHAREXYLUM SP.
Pulvinaria psidii Maskell (green shield scale)
X *CITROFORTUNELLA MITIS* (Blanco) J. Ingram & H. E. Moore (calamondin)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
X *CITRONCIRUS WEBBERI* J. Ingram & H. E. Moore 'TROYER' (citrange)
Coccus hesperidum Linnaeus (brown soft scale)
CITROPSIS GILLETIANA Swingle & M. Kell. (gillet cherryorange)
Saissetia oleae (Olivier) (black scale)
CITRULLUS LANATUS (Thunb.) Matsum. & Nakai var. *CITROIDES* (Bailey) Mansf. (citron)
Coccus hesperidum Linnaeus (brown soft scale)
CITRUS SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus capparidis (Green) (capparis soft scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
CITRUS AURANTIIFOLIA (Christm.) Swingle (lime)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
CITRUS AURANTIUM L. (sour orange)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
CITRUS AURANTIUM L. subs. *BERGAMIA* (Risso & Poit.) Wight & Arn. (bergamot)
Saissetia coffeae (Walker) (hemispherical scale)
CITRUS LIMON (L.) Burm. f. (lemon)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
CITRUS LIMON (L.) Burm. f. 'MEYER' (Meyer lemon)
Coccus viridis (Green) (green scale)
CITRUS MEDICA L. (citron)
Saissetia coffeae (Walker) (hemispherical scale)

CITRUS X *NOBILIS* Lour. (tangor)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
CITRUS X *PARADISI* Macfady. (grapefruit)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus capparidis (Green) (capparis soft scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
CITRUS RETICULATA Blanco (tangerine)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CITRUS RETICULATA Blanco 'UNSHIU' (satsuma orange, tangerine)
Coccus hesperidum Linnaeus (brown soft scale)
CITRUS SINENSIS (L.) Osbeck (sweet orange)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
CITRUS X *TANGELO* J. Ingram & H. E. Moore (tangelo)
Coccus hesperidum Linnaeus (brown soft scale)
CLAUSENA SP.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CLAUSENA LANSIUM (Lour.) Skeels (wampi)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
CLEMATIS SP. (leather flower)
Coccus hesperidum Linnaeus (brown soft scale)
CLEMATIS PANICULATA J. F. Gmel.
Coccus hesperidum Linnaeus (brown soft scale)
CLEOME SPINOSA Jacq. (spider plant)
Saissetia coffeae (Walker) (hemispherical scale)
CLERODENDRUM SP. (glory-bower)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CLERODENDRUM BUNGEI Steud. (glory-bower)
Ceroplastes cirripediformis Comstock (barnacle scale)
CLERODENDRUM INDICUM (L.) O. Kuntze (tubeflower)
Coccus capparidis (Green) (capparis soft scale)
CLERODENDRUM KAEMPFERI (Jacq.) Siebold
Saissetia oleae (Olivier) (black scale)
CLERODENDRUM PHILIPPINUM Schauer [= *C. fragrans*]
Coccus hesperidum Linnaeus (brown soft scale)
CLEYERA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Kilifia acuminata (Signoret) (acuminate scale)
CLEYERA JAPONICA Thunb. (sakaki)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
CLIFTONIA MONOPHYLLA (Lam.) Britt. ex Sarg. (buckwheat tree)
Ceroplastes floridensis Comstock (Florida wax scale)
CLUSIA ROSEA Jacq. (balsam apple, cupey)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
COCCOLOBA DIVERSIFOLIA Jacq. (pigeon plum)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes dugesii Lichtenstein (Duges wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Vinsonia stellifera (Westwood) (stellate scale)
COCCOLOBA PUBESCENS L. (grandleaf seagrape)
Pulvinaria psidii Maskell (green shield scale)
COCCOLOBA SWARTZII Meisn.
Ceroplastes cirripediformis Comstock (barnacle scale)
COCCOLOBA UVIFERA (L.) L. (seagrape)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes dugesii Lichtenstein (Duges wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)

Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
COCCOTHRINAX CRINITA Becc. (thatch palm)
Coccus hesperidum Linnaeus (brown soft scale)
COCCULUS SP. (snailseed)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
COCCULUS LAURIFOLIUS (Roxb.) DC.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
COCOS NUCIFERA L. (coconut)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tesellatus (Signoret) (tessellated scale)
Inglisia vitrea Cockerell (glassy wax scale)
Vinsonia stellifera (Westwood) (stellate scale)
CODIAEUM SP. (croton)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CODIAEUM VARIEGATUM (L.) Blume var. *PICTUM* (Lodd.) Mull. Arg. (garden croton)
Coccus capparidis (Green) (capparis soft scale)
Coccus longulus (Douglas) (long brown scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
COFFEA SP.
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
COFFEA ARABICA L. (coffee)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
COLEUS SP.
Coccus longulus (Douglas) (long brown scale)
COLUMNEA SP.
Coccus viridis (Green) (green scale)
COLUMNEA MICROPHYLLA Klotzsch & Hanst. ex Orst.
Coccus hesperidum Linnaeus (brown soft scale)
COMBRETUM SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
COMBRETUM ERYTHROPHYLLUM Sond. (bush willow)
Saissetia oleae (Olivier) (black scale)
COMBRETUM GRANDIFLORUM G. Don
Parasaissetia nigra (Nietner) (nigra scale)
COMMELINA SP.
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
CONOCARPUS ERECTUS L. (buttonwood)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia neglecta DeLotto (Caribbean black scale)
CONOCARPUS ERECTUS L. var. *SERICEUS* Fors ex DC. (silver buttonwood)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
CONRADINA CANESCENS (T. & G.) A. Gray
Ceroplastes cirripediformis Comstock (barnacle scale)
COOPERIA [See *ZEPHYRANTHES*]
CORDIA SP.
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CORDIA BOISSIERI A. DC. (anacahuita)
Saissetia oleae (Olivier) (black scale)
CORDIA DENTATA Poir. (jackwood)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CORDIA GLOBOSA (Jacq.) HBK
Ceroplastes cirripediformis Comstock (barnacle scale)
CORDIA OBLIQUA Willd.
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parasaissetia nigra (Nietner) (nigra scale)
CORDIA SEBESTENA L. (geiger-tree)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
CORDIA SUPERBA Cham.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CORDYLINE ARBOREA Goepp.
Ceroplastes floridensis Comstock (Florida wax scale)
CORDYLINE STRICTA Endl. [= *Dracaena stricta*]
Coccus hesperidum Linnaeus (brown soft scale)
COREOPSIS SP. (dye-flowers, tickseed)
Ceroplastes floridensis Comstock (Florida wax scale)
CORIANDRUM SATIVUM L. (Coriander)
Saissetia coffeae (Walker) (hemispherical scale)
CORNUS SP. (dogwood)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
CORNUS FLORIDA L. (flowering dogwood)
Ceroplastes floridensis Comstock (Florida wax scale)

Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
CORNUS SERICEA L. (red-osier dogwood)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
CORNUS STRICTA Lam. (stiff dogwood)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
COSTUS IGNEUS N. E. Br.
Coccus hesperidum Linnaeus (brown soft scale)
COSTUS SPICATUS (Jacq.) Swartz (spiral flag)
Inglisia vitrea Cockerell (glassy wax scale)
COTONEASTER SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia oleae (Olivier) (black scale)
COTONEASTER MICROPHYLLUS Wallich ex Lindl.
Ceroplastes floridensis Comstock (Florida wax scale)
CRATAEGUS SP. (hawthorn)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
CRATAEGUS CRENULATA Roxb.
Ceroplastes floridensis Comstock (Florida wax scale)
CRATAEGUS UNIFLORA Muenchh. (dwarf hawthorn, oneflower)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
CREPIS SP.
Saissetia coffeae (Walker) (hemispherical scale)
CRESCENTIA CUJETE L. (calabash)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
CRINUM SP. (crinum lily)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
CROSSANDRA SP. (firecracker flower)
Saissetia coffeae (Walker) (hemispherical scale)
CROSSANDRA INFUNDIBULIFORMIS (L.) Nees (crossandra)
Ceroplastes cirripediformis Comstock (barnacle scale)
CROTALARIA SP.
Saissetia oleae (Olivier) (black scale)
CROTALARIA PUMILA Ortega
Saissetia oleae (Olivier) (black scale)
CROTALARIA SPECTABILIS Roth (rattlebox)
Saissetia oleae (Olivier) (black scale)
CROTALARIA STRIATA DC.
Saissetia oleae (Olivier) (black scale)
CRYOPHYTUM [See *MESEMBRYANTHEMUM*]
CRYPTOCORYNE SP. (water-trumpet)
Saissetia coffeae (Walker) (hemispherical scale)
CRYPTOSTEGIA SP. (rubber vine)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
CUCURBITA SP.
Saissetia oleae (Olivier) (black scale)
CUCURBITA PEPO L. (pumpkin)
Coccus hesperidum Linnaeus (brown soft scale)
CUNNINGHAMIA SP. (China fir)
Ceroplastes floridensis Comstock (Florida wax scale)
CUPANIOPSIS ANACARDIOIDES (A. Rich.) Radlk. (carrot wood)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
CUPHEA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
CUPHEA HYSSOPIFOLIA HBK (elfin herb, false heather)
Saissetia oleae (Olivier) (black scale)
CUPRESSUS SP. (cypress)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
CURCUMA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
CYATHEA SP. (tree fern)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
CYCAS SP. (sago palm)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
CYCAS CIRCINALIS L. (queen sago)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia coffeae (Walker) (hemispherical scale)
CYCAS MEDIA R. Br. (nut palm)
Saissetia coffeae (Walker) (hemispherical scale)
CYCAS REVOLUTA Thunb. (Japanese sago palm)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
CYDONIA SP. (quince)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
CYDONIA OBLONGA Mill. (common quince) [= *C. vulgaris*]
Ceroplastes floridensis Comstock (Florida wax scale)
CYNANCHUM CUBENSE (Griseb.) Woodson (milkweed)
Saissetia oleae (Olivier) (black scale)
CYPERUS SP.

Coccus viridis (Green) (green scale)
CYPERUS PLANIFOLIUS Richard
Coccus viridis (Green) (green scale)
CYPRIPEDIUM SP. (lady-slipper)
Vinsonia stellifera (Westwood) (stellate scale)
CYRTOMIUM FALCATUM (L.f.) K. Presl (house-holly fern) [= *Aspidium falcatum*]
Coccus hesperidum Linnaeus (brown soft scale)
CYRTOPODIUM PARANAENSES Schltr.
Saissetia coffeae (Walker) (hemispherical scale)
CYRTOPODIUM PUNCTATUM (L.) Lindl. (cow-horn orchid)
Saissetia coffeae (Walker) (hemispherical scale)
DAHLIA SP. (dahlia)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
DALBERGIA SISSOO Roxb. ex DC. (dalbergia)
Coccus hesperidum Linnaeus (brown soft scale)
DANAE RACEMOSA (L.) Moench (Alexandrian laurel)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
DATURA SP.
Pulvinaria urbicola Cockerell (urbicola soft scale)
DATURA X *CANDIDA* (Pers.) Saff. (angel's trumpet)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
DAVALLIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
DAVALLIA FEJEENSIS Hook. (rabbit's-foot fern)
Saissetia coffeae (Walker) (hemispherical scale)
DELONIX SP.
Coccus longulus (Douglas) (long brown scale)
DELONIX REGIA (Bojer) Raf. (royal poinciana)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus longulus (Douglas) (long brown scale)
Saissetia oleae (Olivier) (black scale)
DENDROBIUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
DENDROBIUM FIMBRIATUM Hook. var. *OCULATUM* Hook. (orchid)
Vinsonia stellifera (Westwood) (stellate scale)
DEUTZIA SP.
Pulvinaria psidii Maskell (green shield scale)
DEUTZIA PULCHRA S. Vidal
Pulvinaria psidii Maskell (green shield scale)
DIANTHUS SP.
Coccus hesperidum Linnaeus (brown soft scale)
DIANTHUS BARBATUS L. (sweet William)
Coccus hesperidum Linnaeus (brown soft scale)
DIANTHUS CARYOPHYLLUS L. (carnation)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
DICKSONIA ANTARCTICA Labill. (Tasmanian tree fern)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
DICLIPTERA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
DICTYOSPERMA SP. (princess palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
DICTYOSPERMA ALBUM (Bory) Wendl. & Drude ex Scheff. (common princess palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
DIEFFENBACHIA SP. (dumb cane)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangifera (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
DIEFFENBACHIA SP. 'BURTONSI'
Saissetia oleae (Olivier) (black scale)
DIEFFENBACHIA SP. 'EXOTICA'
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
DIEFFENBACHIA SP. 'HOFFMANNI'
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
DIEFFENBACHIA AMOENA Bull
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
DIEFFENBACHIA X *BAUSEI* Hort. ex. M. T. Mast. & T. Moore (dumb cane)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
DIEFFENBACHIA MACULATA (Lodd.) G. Don 'JENMANNII'
Coccus hesperidum Linnaeus (brown soft scale)
DIEFFENBACHIA X *SPLENDENS* Bull (spotted dumb cane)
Ceroplastes cirripediformis Comstock (barnacle scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)
DIEFFENBACHIA PICTA Schott
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
DIEFFENBACHIA PICTA Schott 'PERFECTION'
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
DIODIA VIRGINIANA L. (buttonweed)
Coccus viridis (Green) (green scale)
DIOON EDULE Lindl. (chestnut dioon)
Saissetia coffeae (Walker) (hemispherical scale)

DIOSCOREA SP. (yam)
Coccus hesperidum Linnaeus (brown soft scale)
DIOSPYROS SP. (persimmon)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
DIOSPYROS EBENUM Konig ex Retz. (ebony)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia oleae (Olivier) (black scale)
DIOSPYROS KAKI L. f. (Japanese persimmon) [= *D. chinensis*]
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
DIOSPYROS MONTANA Roxb. [= *D. cordifolia*]
Saissetia neglecta DeLotto
DIOSPYROS REVOLUTA Poir. (black apple)
Pulvinaria psidii Maskell (green shield scale)
DIOSPYROS VIRGINIANA L. (common persimmon)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
DIPHOLIS SP.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia oleae (Olivier) (black scale)
DIPHOLIS SALICIFOLIA (L.) A. DC. (bustic)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Inglisia vitrea Cockerell (glassy wax scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
DIPLADENIA [See *MANDEVILLA*]
DIPLOGLOTTIS AUSTRALIS Radlk.
Coccus hesperidum Linnaeus (brown soft scale)
DIPLOGLOTTIS CUNNINGHAMII Hook. f.
Coccus hesperidum Linnaeus (brown soft scale)
DIZYGOTHECA SP. (false aralia)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
DIZYGOTHECA ELEGANTISSIMA (Hort. Veitch) Vig. & Guillam. (false aralia)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
DIZYGOTHECA KERCHOVEANA (Hort. Veitch) N. Tayl. (aralia)
Ceroplastes cirripediformis Comstock (barnacle scale)
DIZYGOTHECA VEITCHII (T. Moore) N. Tayl.
Saissetia oleae (Olivier) (black scale)
DODONAEA SP.
Pulvinaria psidii Maskell (green shield scale)
DODONAEA VISCOSA (L.) Jacq. (varnish leaf)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
DOLICHANDRONE HETEROPHYLLA F. J. Muell.
Coccus hesperidum Linnaeus (brown soft scale)
DOMBEYA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Saissetia oleae (Olivier) (black scale)
DOMBEYA SP. 'SEMINOLE'
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
DORYOPTERIS PEDATA (L.) Fee (hand fern)
Saissetia coffeae (Walker) (hemispherical scale)
DOVYALIS HEBECARPA (G. Gardn.) Warb. (Ceylon gooseberry)
Ceroplastes floridensis Comstock (Florida wax scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
DRACAENA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
DRACAENA DEREMENSIS Engl. 'WARNECKII' (striped dracaena)

Pulvinaria psidii Maskell (greeen shield scale)
DRYPETES LATERIFLORA (Sw.) Krug & Urban (Guiana plum)
Saissetia coffeae (Walker) (hemispherical scale)
DURANTA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
DURANTA REPENS L. (golden-dewdrop)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia oleae (Olivier) (black scale)
DURIO ZIBETHINUS J. Murr. (durian)
Saissetia oleae (Olivier) (black scale)
ECHINODORUS SP. (Amazon sword, burhead)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
ECHINODORUS CORDIFOLIUS (L.) Griseb. (Texas mudbaby)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
ECHINODORUS TENELLUS (Mart.) Buchenau (Amazon sword plant)
Saissetia coffeae (Walker) (hemispherical scale)
ECHINOPS SP. (globe thistle)
Coccus viridis (Green) (green scale)
EHRETIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
EHRETIA LAEVIS Roxb. (smooth ehretia)
Coccus hesperidum Linnaeus (brown soft scale)
EHRETIA MICROPHYLLA Lam. (Philippine tea)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
ELAEAGNUS SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ELAEAGNUS ANGUSTIFOLIA L. (wild olive, Russian olive)
Saissetia coffeae (Walker) (hemispherical scale)
ELAEAGNUS COMMUTATA Bernh. (silverberry)
Coccus hesperidum Linnaeus (brown soft scale)
ELAEAGNUS MACROPHYLLA Thunb.
Coccus hesperidum Linnaeus (brown soft scale)
ELAEAGNUS PHILIPPINENSIS Perrottet (lingaro)
Ceroplastes floridensis Comstock (Florida wax scale)
ELAEAGNUS PUNGENS Thunb. (thorny elaeagnus)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
ELAEAGNUS PUNGENS Thunb. 'FRUITLANDII' (thorny elaeagnus)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
ELAEAGNUS PUNGENS Thunb. 'SIMONII'
Coccus hesperidum Linnaeus (brown soft scale)
ELAEIS GUINEENSIS Jacq. (oil palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
ELAEOCARPUS SP.
Coccus hesperidum Linnaeus (brown soft scale)
ELAEOCARPUS OXYPYREN K. & V.
Coccus hesperidum Linnaeus (brown soft scale)
ELAEOCARPUS RETICULATUS Sm.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
ELAEODENDRON QUADRANGULATUM [See *CASSINE QUADRANGULATA*]
ELAPHRIUM [See *BURSERA*]
ENALLAGMA LATIFOLIA (Mill.) Small (black calabash)
Ceroplastes cirripediformis Comstock (barnacle scale)
ENCEPHALARTOS HILDEBRANDTII A. Braun & Bouché (Kafir bread tree)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
ENTEROLOBIUM SP. (earpod tree)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Saissetia coffeae (Walker) (hemispherical scale)
ENTEROLOBIUM CYCLOCARPUM Griseb. (elephant's ear)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
EPIDENDRUM SP. (buttonhole orchid)
Coccus hesperidum Linnaeus (brown soft scale)
EPIDENDRUM SP. 'BOUCES'
Coccus hesperidum Linnaeus (brown soft scale)
EPIDENDRUM COCHLEATUM L. (cockle-shell orchid)
Coccus hesperidum Linnaeus (brown soft scale)
Vinsonia stellifera (Westwood) (stellate scale)
EPIDENDRUM MARIAE Ames
Saissetia coffeae (Walker) (hemispherical scale)
EPIDENDRUM SCHOMBURGKII Lindl.
Saissetia coffeae (Walker) (hemispherical scale)
EPIDENDRUM TAMPENSE Lindl. (butterfly orchid)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Vinsonia stellifera (Westwood) (stellate scale)
EPILOBIUM ANGUSTIFOLIUM L. (fireweed)
Coccus viridis (Green) (green scale)
EPIPHYLLUM SP. (orchid cactus)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
EPIPREMNUM AUREUM (Linden & Andre) Bunt. (pothos)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

EPISCIA SP. (carpet plant)
Coccus hesperidum Linnaeus (brown soft scale)
ERANTHEMUM SP.
Saissetia coffeae (Walker) (hemispherical scale)
ERECHTITES HIERACIFOLIA (L.) Raf. (pilewort, fireweed)
Coccus viridis (Green) (green scale)
EREMOPHILA MACULATA F. J. Muell.
Saissetia coffeae (Walker) (hemispherical scale)
ERIANTHUS GIGANTEUS (Walt.) Muchl. (sugarcane plumegrass)
Coccus viridis (Green) (green scale)
ERIGERON SP. (marsh fleabane)
Saissetia oleae (Olivier) (black scale)
ERIOBOTRYA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
ERIOBOTRYA JAPONICA (Thunb.) Lindl. (loquat)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
ERNODEA LITTORALIS Sw.
Saissetia neglecta DeLotto (Caribbean black scale)
ERNODEA LITTORALIS Sw. var *ANGUSTA* (Small) R. W. Long
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
ERYNGIUM YUCCIFOLIUM Michx. (button snakeroot)
Coccus hesperidum Linnaeus (brown soft scale)
ERYTHRINA SP. (coral tree)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
ERYTHRINA CRISTA-GALLI L. (cockspur coral tree)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
ERYTHRINA FUSCA Lour. (swamp immortelle)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
ERYTHRINA HERBACEA L. (cherokee bean)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
ERYTHRINA POEPPIGIANA (Walp.) O. F. Cook (mountain immortelle)
Saissetia oleae (Olivier) (black scale)
ERYTHRINA VESPERTILIO Benth.
Coccus hesperidum Linnaeus (brown soft scale)
ERYTHROXYLUM COCA Lam. (cocaine plant)
Coccus longulus (Douglas) (long brown scale)
EUCALYPTUS SP. (eucalypt)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
EUCALYPTUS TORELLIANA F. J. Muell.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
EUGENIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes utilis Cockerell (candle wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
EUGENIA AGGREGATA (Vell.) Kiaersk.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
EUGENIA AXILLARIS (Swartz) Willd. (white stopper)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
EUGENIA BRASILIENSIS Lam. (Brazil cherry)
Kilifia acuminata (Signoret) (acuminata scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
EUGENIA CONFUSA DC. (red stopper)
Pulvinaria psidii Maskell (green shield scale)
EUGENIA CURRANII C. B. Robinson
Pulvinaria psidii Maskell (green shield scale)
EUGENIA DICRANA Berg. (twinberry eugenia)
Ceroplastes floridensis Comstock (Florida wax scale)
EUGENIA FOETIDA Pers. (Spanish stopper)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
EUGENIA JAMBOS [See *SYZYGIUM JAMBOS*]
EUGENIA LUSCHNANTHIANA Klotzsch ex. O. Berg. (pitomba)
Coccus acutissimus (Green) (banana-shaped scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
EUGENIA MYRTOIDES Poir. (Spanish stopper)
Ceroplastes nakaharai Gimpel (Nakahara wax scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
EUGENIA UNIFLORA L. (Surinam cherry, pitanga)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Saissetia coffeae (Walker) (hemispherical scale)
EULOPHIA ALTA (L.) Fawc. & Rendle (wild coco)
Saissetia oleae (Olivier) (black scale)
EUONYMUS SP. (spindle tree)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)

Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
EUONYMUS AMERICANA L. (strawberry bush)
Ceroplastes floridensis Comstock (Florida wax scale)
EUONYMUS FORTUNEI (Turcz.) Hand.-Mazz.
Ceroplastes floridensis Comstock (Florida wax scale)
EUONYMUS FORTUNEI (Turcz.) Hand.-Mazz. var. *RADICANS* (Siebold ex Miq.) Rehd.
Ceroplastes floridensis Comstock (Florida wax scale)
EUONYMUS JAPONICA Thunb. (spindle-tree, burning bush)
Ceroplastes floridensis Comstock (Florida wax scale)
EUONYMUS JAPONICA Thunb. 'ALBOMARGINATA' (euonymus, spindle-tree)
Ceroplastes cirripediformis Comstock (barnacle scale)
Saissetia oleae (Olivier) (black scale)
EUONYMUS JAPONICA Thunb. 'MICROPHYLLA'
Ceroplastes floridensis Comstock (Florida wax scale)
EUONYMUS JAPONICA Thunb. 'SILVER QUEEN'
Ceroplastes floridensis Comstock (Florida wax scale)
EUONYMUS KIAUTSCHOVICA Loes.
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
EUPATORIUM SP. (boneset)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
EUPATORIUM AROMATICUM L.
Pulvinaria urbicola Cockerell (urbicola soft scale)
EUPATORIUM CAPILLIFOLIUM (Lam.) Small (dog fennel)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
EUPHORBIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
EUPHORBIA HETEROPHYLLA L. (Mexican fire plant)
Ceroplastes cirripediformis Comstock (barnacle scale)
Saissetia oleae (Olivier) (black scale)
EUPHORBIA MARGINATA Pursh (snow-on-the-mountain)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
EUPHORBIA PULCHERRIMA Willd. ex Klotzsch (poinsettia)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
EUPHORIA LONGAN (Lour.) Steud. (longan)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
EURYA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
EUSTOMA EXALTATUM (L.) Griseb.
Pulvinaria urbicola Cockerell (urbicola soft scale)
EUTERPE SP. (euterpe palm)
Coccus hesperidum Linnaeus (brown soft scale)
EVODIA SUAVEOLENS Schoff.
Saissetia coffeae (Walker) (hemispherical scale)
EXOTHEA PANICULATA (Juss.) Radlk. (inkwood)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
X *FATSHEDERA* SP. (aralia ivy)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
X *FATSHEDERA LIZEI* (Cochet) Guillaum.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
FATSIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
FATSIA JAPONICA (Thunb.) Decne & Planch. (fatsia, paper plant)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
FEIJOA SP.

Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia oleae (Olivier) (black scale)

FEIJOA SELLOWIANA O. Berg. (pineapple guava, feijoa)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria psidii Maskell (green shield scale)

FLEICIA SP.
Coccus hesperidum Linnaeus (brown soft scale)

FICUS SP. (fig)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

FICUS ALTISSIMA Blume (council tree, lofty fig)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)

FICUS ASPERA G. Forst. (clown fig)
Saissetia oleae (Olivier) (black scale)

FICUS AUREA Nutt. (golden fig, strangler fig)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)

FICUS AURICULATA Lour.
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)

FICUS BENGHALENSIS L. (banyan)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret))tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)

FICUS BENGHALENSIS L. 'KRISHNAE' (Krishna-bor)
Coccus hesperidum Linnaeus (brown soft scale)

FICUS BENJAMINA L. (weeping fig) [= *F. nitida*]
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)

FICUS BENJAMINA L. 'EXOTICA'
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)

FICUS CARICA L. (common fig)
Ceroplastes floridensis Comstock (Florida wax scale)

FICUS CITRIFOLIA Mill.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)

FICUS ELASTICA Roxb. ex Hornem. (rubber fig, Indian rubber tree)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)

FICUS ELASTICA Roxb. ex Hornem. 'DECORA' (broad-leaved Indian rubber plant)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)

FICUS LYRATA Warb. (fiddle-leaf fig)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)

FICUS MICROCARPA L. f. var *NITIDA* Thunb. [See *FICUS RETUSA*]

FICUS NEKBUDU Warb. (zulu fig)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)

FICUS PANDURATA (Hance) Corner
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)

FICUS PERFORATA L. (west Indian laurel fig)
Coccus acutissimus (Green) (banana-shaped scale)

Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
FICUS PHILIPPINENSIS Miq.
Pulvinaria psidii Maskell (green shield scale)
FICUS PSEUDOPALMA Blanco (dracaena fig)
Saissetia oleae (Olivier) (black scale)
FICUS PUMILA L. (creeping fig)
Saissetia oleae (Olivier) (black scale)
FICUS RACEMOSA L. (cluster fig)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
FICUS RELIGIOSA L. (sacred fig)
Saissetia oleae (Olivier) (black scale)
FICUS RETUSA L. (Indian laurel, Cuban laurel)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
FICUS RUBIGINOSA Desf. ex Venten
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
FICUS RUBIGNOSA Desf. ex Venten [= *F. australis*]
Saissetia oleae (Olivier) (black scale)
FICUS SUBCORDATA Blume
Ceroplastes floridensis Comstock (Florida wax scale)
FICUS SUPERBA Miq. var *HENEANA* (Miq.) Corner (sea fig)
Pulvinaria psidii Maskell (green shield scale)
FICUS SYCOMORUS L. (sycamore fig)
Pulvinaria psidii Maskell (green shield scale)
FICUS TRIANGULARIS Warb.
Pulvinaria psidii Maskell (green shield scale)
FICUS VIRENS Ait. (spotted fig)
Saissetia oleae (Olivier) (black scale)
FILICIUM DECIPIENS (W. & A.) Thw. (fern tree)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
FITTONIA VERSCHAFFELTII (Lem.) Coem. (mosaic plant, silver-net plant)
Saissetia coffeae (Walker) (hemispherical scale)
FLACOURTIA INDICA (Burm. f.) Merr. (Madagascar plum)
Coccus hesperidum Linnaeus (brown soft scale)
FLACOURTIA JANGOMANS (Lour.) Rauschel (flacourtia)
Kilifia acuminata (Signoret) (acuminate scale)
FLAVERIA LINEARIS Lag. (yellowtop)
Pulvinaria urbicola Cockerell (urbicola soft scale)
FORESTIERA SEGREGATA (Jacq.) Krug & Urban (Florida privet)
Ceroplastes cirripediformis Comstock (barnacle scale)
Saissetia coffeae (Walker) (hemispherical scale)
FORTUNELLA SP. (kumquat)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia neglecta DeLotto (Caribbean black scale)
FORTUNELLA MARGARITA (Lour.) Swingle (Nagami kumquat)
Ceroplastes floridensis Comstock (Florida wax scale)
FRAGARIA SP. (strawberry)
Coccus hesperidum Linnaeus (brown soft scale)
FRANKLINIA ALATAMAHA Marsh. (franklin tree)
Coccus hesperidum Linnaeus (brown soft scale)
FRAXINUS SP. (ash)
Kilifia acuminata (Signoret) (acuminate scale)
FURCRAEA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
GAILLARDIA SP. (blanket flower)
Pulvinaria urbicola Cockerell (urbicola soft scale)
GARBERIA FRUITICOSA (Nutt.) A. Gray
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
GARCINIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
GARCINIA MANGOSTANA L. (mangosteen)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
Vinsonia stellifera (Westwood) (stellate scale)
GARCINIA MESTONI F. M. Bailey
Saissetia coffeae (Walker) (hemispherical scale)
GARCINIA SPICATA Hook. f.
Vinsonia stellifera (Westwood) (stellate scale)
GARDENIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
GARDENIA JASMINOIDES Ellis (cape jasmine, common gardenia)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)

Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

GARDENIA JASMINOIDES Ellis var. *FORTUNIANA* Lindl. (gardenia)
Ceroplastes cirripediformis Comstock (barnacle scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

GARDENIA THUNBERGIA L. f.
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)

GARDENIA TUBIFERA Wallich.
Ceroplastes cirripediformis Comstock (barnacle scale)

GAURA ANGUSTIFOLIA Michx.
Ceroplastes cirripediformis Comstock (barnacle scale)

GAYLUSSACIA SP. (huckleberry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)

GAZANIA SP.
Coccus hesperidum Linnaeus (brown soft scale)

GELSEMIUM SEMPERVIRENS (L.) Ait. f. (yellow jassamine)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)

GENIPA CLUSIIFOLIA (Jacq.) Griseb. (7-year apple)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

GERANIUM SP. (cranesbill)
Saissetia oleae (Olivier) (black scale)

GERBERA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

GERBERA JAMESONII H. Bolus ex Hook. f. (African daisy, Transvaal daisy, Gerber daisy)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)

GILIA RUBRA [See *IPOMOPSIS RUBRA*]

GLADIOLUS SP. (corn flag)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)

GLYCINE MAX (L.) Merrill (soybean)
Coccus hesperidum Linnaeus (brown soft scale)

GLYCOSMIS SP.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

GLYCOSMIS PENTAPHYLLA (Retz.) Correa (Jamaica mandarin orange)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saisseita coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)

GORDONIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

GORDONIA LASIANTHUS (L.) Ellis (loblolly bay)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

GOSSYPIUM SP. (cotton)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)

GRAPTOPHYLLUM SP.
Saissetia coffeae (Walker) (hemispherical scale)

GRAPTOPHYLLUM PICTUM (L.) Griff. (caricature plant)
Ceroplastes cirripediformis Comstock (barnacle scale)
Parasaissetia nigra (Nietner) (Nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)

GREVILLEA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

GREVILLEA ROBUSTA A. Cunn. (silk oak)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Saissetia oleae (Olivier) (black scale)
GUAIACUM SP. (lignum-vitae)
Ceroplastes floridensis Comstock (Florida wax scale)
GUAIACUM SANCTUM L. (lignum-vitae)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
GYNURA SP.
Saissetia coffeae (Walker) (hemispherical scale)
GYNURA AURANTIACA (Blume) DC. (velvet plant, purple passion)
Saissetia coffeae (Walker) (hemispherical scale)
GYNURA AURANTIACA (Blume) DC. 'PURPLE PASSION'
Saissetia coffeae (Walker) (hemispherical scale)
GYNURA PROCUMBENS (Lour.) Merrill (velvet plant)
Saissetia coffeae (Walker) (hemispherical scale)
HAEMANTHUS SP. (blood lily)
Coccus hesperidum Linnaeus (brown soft scale)
HAKEA SP. (pincushion tree)
Ceroplastes floridensis Comstock (Florida wax scale)
HAMELIA SP. (hamelia)
Pulvinaria psidii Maskell (green shield scale)
HAEMELIA PATENS Jacq. (scarlet bush)
Saisstia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
HAPLOPHRAGMA ADENOPHYLLUM (Wallich ex G. Don) Dop
Coccus hesperidum Linnaeus (brown soft scale)
HARPULLIA SP. (tulipwood)
Coccus hesperidum Linnaeus (brown soft scale)
HARPULLIA ARBOREA (Blanco) Radlk. (harpullia)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
HATIORA SALICORNIOIDES (Haw.) Britt. & Rose (spice cactus, drunkard's dream)
Ceroplastes floridensis Comstock (Florida wax scale)
HEDERA SP. (ivy)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
HEDERA CANARIENSIS Willd. 'VARIEGATA' (variegated ivy)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
HEDERA HELIX L. (English ivy)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria floccifera (Westwood) (Cottony camellia scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
HEDYCHIUM SP. (ginger-lily)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus longulus (Douglas) (long brown scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
HELIANTHUS SP. (sunflower)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
HELIANTHUS AGRESTIS Pollard
Pulvinaria urbicola Cockerell (urbicola soft scale)
HELIANTHUS TUBEROSUS L. (Jerusalem artichoke)
Saissetia coffeae (Walker) (hemispherical scale)
HELICONIA SP. (lobster-claw)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
HEMEROCALLIS SP. (daylily)
Coccus hesperidum Linnaeus (brown soft scale)
HEMIGRAPHIS SP.
Ceroplastes floridensis Comstock (Florida wax scale)
HESPERETHUSA CRENULATA (Roxb.) Roem.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
HETEROMELES ARBUTIFOLIA (Ait.) M. J. Roem. (toyon)
Ceroplastes floridensis Comstock (Florida wax scale)
HETEROSPATHE SP.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
HETEROTHECA SP.
Saissetia coffeae (Walker) (hemispherical scale)
HETEROTHECA SUBAXILLARIS (Lam.) Britt. & Rusby (camphor weed)
Pulvinaria urbicola Cockerell (urbicola soft scale)
HEVEA BRASILIENSIS (Willd. ex A. Juss.) Mull. Arg. (Para-rubber tree)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
HIBISCUS SP. (mallow)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)

Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

HIBISCUS ELATUS Swartz (Cuban bast)
Parasaissetia nigra (Nietner) (nigra scale)

HIBISCUS ROSA-SINENSIS L. (Chinese hibiscus)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

HIBISCUS SYRIACUS L. (rose-of-sharon, shrubby althea
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)

HIBISCUS TILIACEUS L. (mahoe)
Coccus longulus (Douglas) (long brown scale)

HIPTAGE SP.
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

HIPTAGE BENGHALENSIS (L.) Kurz
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale

HOFFMANIA SP.
Saissetia oleae (Olivier) (black scale)

HOLMSKIOLDIA SANGUINEA Retz. (Chinese-hat plant)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)

HOMALOCLADIUM SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

HOMALOCLADIUM PLATYCLADUM (F.J. Muell.) L. H. Bailey (centipede plant, tapeworm plant)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

HOSTA SP. (plantain lily)
Ceroplastes floridensis Comstock (Florida wax scale)

HOWEA SP. (sentry palm)
Ceroplastes floridensis Comstock (Florida wax scale)

HOWEA BELMOREANA (C. Moore & F. J. Muell.) Becc. (Belmore sentry palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

HOWEA FORSTERANA (C. Moore & F. J. Muell.) Becc.
Coccus hesperidum Linnaeus (brown soft scale)

HYDRANGEA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)

HYDRANGEA QUERCIFOLIA Bartr. (oak-leaved hydrangea)
Ceroplastes floridensis Comstock (Florida wax scale)

HYDROCOTYLE SP. (water pennywort)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

HYDROCOTYLE UMEBLLATA L. (pennywort)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)

HYDROCOTYLE VERTICILLATA Thunb. (pennywort)
Ceroplastes floridensis Comstock (Florida wax scale)

HYGROPHILA STRICTA (Vahl) Nees
Saissetia coffeae (Walker) (hemispherical scale)

HYMENOCALLIS SP. (spider lily)
Saissetia coffeae (Walker) (hemispherical scale)

HYMENOSPORUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)

HYMENOSPORUM FLAVUM (Hook) F. J. Muell. (sweetshade)
Ceroplastes cirripediformis Comstock (barnacle scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)

HYOPHORBE SP. (pignut palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

HYOPHORBE LAGENICAULIS (L. H. Bailey) H. E. Moore (bottle palm)
Ceroplastes floridensis Comstock (Florida wax scale)

HYOPHORBE VERSCHAFFELTII Wendl. (spindle palm)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

HYPELATE TRIFOLIATA Sw. (white ironwood)
Ceroplastes floridensis Comstock (Florida wax scale)

HYPHAENE CRINITA Gaertn. (gingerbread palm)
Eucalymnatus tessellatus (Signoret))tessellated scale)
Saissetia coffeae (Walker) (hemispherical scale)

HYPOESTES PHYLLOSTACHYA Bak. (polka-dot plant, freckle-face)
Saissetia coffeae (Walker) (hemispherical scale)

ILEX SP. (holly)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)

Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Inglisia vitrea Cockerell (glassy wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

ILEX X *ALTACLARENSIS* (Dallim.) Rehd. 'WILSONI'
Ceroplastes floridensis Comstock (Florida wax scale)

ILEX AQUIFOLIUM L. (English holly)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)

ILEX AQUIFOLIUM L. 'INTEGRIFOLIA'
Ceroplastes floridensis Comstock (Florida wax scale)

ILEX X *ATTENUATA* Ashe 'EAST PALATKA'
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)

ILEX X *ATTENUATA* Ashe 'SAVANNAH' (Savannah holly)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)

ILEX CASSINE L. (Dahoon holly)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Inglisia vitrea Cockerell (glassy wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria innumerabilis (Rathvon) (cottony maple scale)
Saissetia coffeae (Walker) (hemispherical scale)

ILEX CHINENSIS Sims
Pulvinaria urbicola Cockerell (urbicola soft scale)

ILEX CORIACEA (Pursh) Chapm. (large gallberry)
Kilifia acuminata (Signoret) (acuminate scale)

ILEX CORNUTA Lindl. & Paxt. (Chinese holly)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ILEX CORNUTA Lindl. & Paxt. 'BURFORDII' (Burford holly)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia coffeae (Walker) (hemispherical scale)

ILEX CORNUTA Lindl. & Paxt. 'DAZZLER'
Coccus hesperidum Linnaeus (brown soft scale)

ILEX CRENATA Thunb. (Japanese holly)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)

ILEX CRENATA Thunb. 'HELLERI' (dwarf Japanese holly)
Ceroplastes floridensis Comstock (Florida wax scale)

ILEX CRENATA Thunb. forma 'LATIFOLIA'
Kilifia acuminata (Signoret) (acuminate scale)

ILEX GLABRA (L.) A. Gray (gallberry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)

ILEX INTEGRA Thunb. (mochi tree)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ILEX LATIFOLIA Thunb. (luster-leaf holly)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

ILEX MYRTIFOLIA Walt. (myrtle-leafed holly)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)

ILEX OPACA Ait. (American holly)
Ceroplastes floridensis Comstock (Florida wax scale)

ILEX PARAGUARIENSIS St. Hil. (yerba-de-mate)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)

ILEX ROTUNDA Thunb. (Kurogan holly)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Kilifia acuminata (Signoret) (acuminate scale)

ILEX VOMITORIA Ait. (yaupon)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Saissetia oleae (Olivier) (black scale)

ILEX VOMITORIA Ait. 'SCHELLINGS'
Ceroplastes floridensis Comstock (Florida wax scale)

ILEX WILSONI Loes.
Coccus hesperidum Linnaeus (brown soft scale)

ILLICIUM SP. (anise tree)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
ILLICIUM ANISATUM L. (Chinese anise)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
IMPATIENS SP. (balsam)
Coccus hesperidum Linnaeus (brown soft scale)
IMPATIENS BALSAMINA L. (impatiens, garden balsam)
Parasaissetia nigra (Nietner) (nigra scale)
IMPATIENS WALLERANA Hook. f. (busy Lizzy, sultana)
Saissetia oleae (Olivier) (black scale)
INDIGOFERA SP.
Saissetia neglecta DeLotto (Caribbean black scale)
IPOMOEA SP. (morning-glory)
Saissetia coffea (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
IPOMOEA ACUMINATA (Vahl) Roem. & Schult. (blue dawn-flower)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
IPOMOEA ARBORESCENS (Humb. & Bonpl.) Don (morning glory tree)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
IPOMOEA BATATAS (L.) Lam. (sweet potato)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
IPOMOEA FISTULOSA Mart. ex Choisy
Saissetia oleae (Olivier) (black scale)
IPOMOEA HORSFALLIAE Hook. (Brazilian morning glory)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
IPOMOEA LEPTOPHYLLA Torr. (bush morning glory)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
IPOMOEA QUAMOCLIT L. (cypress vine)
Saissetia oleae (Olivier) (black scale)
IPOMOPSIS RUBRA (L.) Wherry (standing cypress, Spanish larkspur)
Coccus hesperidum Linnaeus (brown soft scale)
IRESINE SP. (blood-leaf)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
IRESINE CELOSIOIDES L. (iresine)
Coccus viridis (Green) (green scale)
Parasaissetia nigra (Nietner) (nigra scale)
IRESINE HERBSTII Hook. (chicken gizzard)
Coccus capparidis (Green) (capparis soft scale)
Coccus hesperidum Linnaeus (brown soft scale)
IRESINE LINDENII Van Houtte (bloodleaf plant)
Saissetia coffeae (Walker) (hemispherical scale)
IRIS SP.
Coccus hesperidum Linnaeus (brown soft scale)
ITEA VIRGINICA L. (Virginia willow)
Coccus capparidis (Green) (capparis soft scale)
Coccus hesperidum L. (brown soft scale)
IVA FRUTESCENS L. (marsh elder)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia oleae (Olivier) (black scale)
IXORA SP. (ixora, flame-of-the-woods)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Vinsonia stellifera (Westwood) (stellate scale)
IXORA SP. 'FLORE-LUTEA' (yellow ixora)
Saissetia oleae (Olivier) (black scale)
IXORA CHINENSIS Lam.
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
IXORA COCCINEA L. (flame-of-the-woods)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
IXORA COCCINEA L. 'HARDY PINK'
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
IXORA DUFFII T. Moore
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
IXORA GRANDIFLORA (Blume) Zoll. & Morr.
Coccus viridis (Green) (green scale)
IXORA PARVIFLORA Vahl (giant ixora)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
JACARANDA SP. (green ebony)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)

JACARANDA ACUTIFOLIA Humb. & Bonpl.
Ceroplastes cirripediformis Comstock (barnacle scale)
Pulvinaria psidii Maskell (green shield scale)
JACARANDA CAERULEA (L.) Griseb.
Saissetia coffeae (Walker) (hemispherical scale)
JACQUINIA SP.
Saissetia oleae (Olivier) (black scale)
JACQUINIA ACULEATA (L.) Mez (cudjoe-wood)
Ceroplastes floridensis Comstock (Florida wax scale)
JACQUINIA KEYENSIS Mez (joewood)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
JACQUINIA PUNGENS A. Gray (joewood)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
JASMINUM SP. (jasmine)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
JASMINUM MULTIFLORUM (Burm. f.) Andr. (star jasmine)
Kilifia acuminata (Signoret) (acuminate scale)
JASMINUM NITIDUM Skan (angel-wing jasmine)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
JASMINUM SAMBAC (L.) Ait. (Arabian jasmine)
Kilifia acuminata (Signoret) (acuminate scale)
JASMINUM SIMPLICIFOLIUM G. Forst.
Pulvinaria psidii Maskell (green shield scale)
JASMINUM UNDULATUM Ker-Gawl.
Kilifia acuminata (Signoret) (acuminate scale)
JATROPHA SP. (coral plant)
Coccus hesperidum Linnaeus (brown soft scale)
JATROPHA INTEGERRIMA Jacq. (peregrina)
Coccus capparidis (Green) (capparis soft scale)
Coccus longulus (Douglas) (long brown scale)
JATROPHA PANDURIFOLIA Andr.
Ceroplastes floridensis Comstock (Florida wax scale)
JUGLANS SP. (walnut)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
JUNCUS EFFUSUS L. (soft rush)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
JUNIPERUS CALIFORNICA Carr.
Ceroplastes floridensis Comstock (Florida wax scale)
JUNIPERUS CHINENSIS L. 'HETZII' (hetzi juniper)
Ceroplastes floridensis Comstock (Florida wax scale)
JUNIPERUS CONFERTA Parl. (shore juniper)
Ceroplastes floridensis Comstock (Florida wax scale)
JUSSIAEA SP. [See *LUDWIGIA*]
JUSTICIA SP. (water willow)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
JUSTICIA BRANDEGEANA Wassh. & L. B. Sm. (shrimp plant)
Saissetia coffeae (Walker) (hemispherical scale)
JUSTICIA CARNEA Lindl. (king's crown)
Saissetia coffeae (Walker) (hemispherical scale)
KALANCHOE SP. [= *Bryophyllum* sp.]
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
KALANCHOE PINNATA (Lam.) Pers. (air-plant, life-plant)
Coccus hesperidum Linnaeus (brown soft scale)
KALANCHOE TUBIFLORA (Harv.) Hamet (chandelier plant)
Saissetia oleae (Olivier) (black scale)
KENTIA SP.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
KHAYA SP. (African mahogany)
Coccus viridis (Green) (green scale)
KHAYA NYASICA Stapf ex Bak. f. (Nyasaland mahogany)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
KIGELIA PINNATA (Jacq.) DC. (sausage tree)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellated (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
KOELREUTERIA PANICULATA Laxm. (goldenrain tree, varnish tree)
Ceroplastes cirripediformis (Comstock) (barnacle scale)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
KOLKWITZIA AMABILIS Graebn. (beauty bush)
Ceroplastes floridensis Comstock (Florida wax scale)
KUNZEA PEDUNCULARIS F. J. Muell. (mountain bush)
Ceroplastes floridensis Comstock (Florida wax scale)
LAGERSTROEMIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
LAGERSTROEMIA INDICA L. (crape myrtle)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
LAGERSTROEMIA MICROCARPA Wight
Saissetia oleae (Olivier) (black scale)

LAGERSTROEMIA SPECIOSA (L.) Pers. (queen's crape myrtle)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
LANGUNCULARIA RACEMOSA (L.) Gaertn. f. (white mangrove)
Coccus viridis (Green) (green scale)
Ceroplastes dugesii Lichtenstein (Duges wax scale)
LANTANA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
LANTANA CAMARA L. (yellow sage)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
LATANIA LODDIGESII Mart. (latania fan palm, blue latan)
Saissetia neglecta DeLotto (Caribbean black scale)
LAURUS SP. (bay tree, laurel)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
LAURUS NOBILIS L. (sweet bay tree, laurel)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
Vinsonia stellifera (Westwood) (stellate scale)
LAWSONIA SP. (mignonette tree)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
LAWSONIA INERMIS L. (henna)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
LEDUM SP.
Parasaissetia nigra (Nietner) (nigra scale)
LEIOPHYLLUM BUXIFOLIUM (Bergius) Elliott (sand myrtle)
Ceroplastes floridensis Comstock (Florida wax scale)
LEPIDIUM SP. (pepper weed)
Ceroplastes floridensis Comstock (Florida wax scale)
LEPIDOZAMIA PEROFFSKYANA Regel
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
LEPTOSPERMUM SP.
Saissetia oleae (Olivier) (black scale)
LEPTOSPERMUM SCOPARIUM J. R. Forst. & G. Forst. (tea tree)
Ceroplastes floridensis Comstock (Florida wax scale)
LESPEDEZA ANGUSTIFOLIA (Pursh) Ell. (bush-clover)
Coccus hesperidum Linnaeus (brown soft scale)
LEUCAENA GLAUCA (L.) Benth. (white popinac)
Protopulvinaria mangiferae (Green) (mango shield scale)
LEUCOPHYLLUM SP.
Saissetia oleae (Olivier) (black scale)
LEUCOPHYLLUM FRUTESCENS (Berland.) I. M. Johnston (barometer bush, Texas sage)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
LICANIA MICHAUXII Prance (gopher apple)
Pulvinaria urbicola Cockerell (urbicola soft scale)
LICARIA TRIANDRA (Sw.) Kosterm.
Coccus acutissimus (Green) (banana-shaped scale)
LIGUSTRUM SP. (privet)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
LIGUSTRUM LUCIDUM Ait. (glossy privet)
Ceroplastes floridensis Comstock (Florida wax scale)
LILIUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
LILIUM CUPREUM Leveille
Saissetia oleae (Olivier) (black scale)
LILIUM PARDALINUM Kellogg (leopard lily)
Saissetia coffeae (Walker) (hemispherical scale)
LINDERA SP. (spice bush)
Coccus hesperidum Linnaeus (brown soft scale)
LIPPIA NODIFLORA [See *PHYLA NODIFLORA*]
LIQUIDAMBAR STYRACIFLUA L. (sweet gum)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
LIRIODENDRON TULIPIFERA L. (tulip-tree, poplar)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
LIRIOPE SP. (monkey grass, lilyturf)
Ceroplastes floridensis Comstock (Florida wax scale)
LITCHI SP.
Coccus acutissimus (Green) (banana-shaped scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

Protopulvinaria pyriformis (Cockerell) (pyriform scale)
LITCHI CHINENSIS Sonn. (litchi)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
LIVISTONA CHINENSIS (Jacq.) R. Br. ex Mart. (Chinese fan palm)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus longulus (Douglas) (long brown scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
LONICERA SP. (honeysuckle)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
LONICERA JAPONICA Thunb. 'HALLIANA' (honeysuckle vine)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
LUCUMA [See *POUTERIA*]
LUDWIGIA SP.
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
LUDWIGIA ERECTA (L.) Hara
Ceroplastes floridensis Comstock (Florida wax scale)
LUDWIGIA MICROCARPA Michx.
Coccus viridis (Green) (green scale)
LUDWIGIA OCTOVALVIS (Jacq.) Raven
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus viridis (Green) (green scale)
LUDWIGIA PERUVIANA (L.) Hara (primrose willow, Peru water primrose)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
LYCASTE SP.
Coccus pseudohesperidum (Cockerell) (orchid soft scale)
LYCASTE AROMATICA (R. C. Grah. ex Hook.) Lindl. (orchid)
Coccus hesperidum Linnaeus (brown soft scale)
LYCOPERSICON LYCOPERSICUM (L.) Karst. ex Farw. (tomato) [= *L. esculentum*]
Pulvinaria urbicola Cockerell (urbicola soft scale)
LYGODIUM JAPONICUM Swartz (Japanese climbing fern)
Saissetia coffeae (Walker) (hemispherical scale)
LYONIA FERRUGINEA (Walt.) Nutt. (rusty lyonia)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria ericicola McConnell (cottony azalea scale)
LYONIA LUCIDA (Lam.) C. Koch (fetter-bush, tetter bush)
Parthenolecanium corni (Bouché) (European fruit lecanium)
LYSILOMA LATISILIQUA (L.) Benth. (sabicu)
Coccus longulus (Douglas) (long brown scale)
LYSIMACHIA SP. (swamp primrose)
Coccus hesperidum Linnaeus (brown soft scale)
LYTHRUM ALATUM Pursh (winged-loostrife)
Coccus viridis (Green) (green scale)
LYTHRUM LANCEOLATUM Ell.
Pulvinaria psidii Maskell (green shield scale)
Saissetia neglecta DeLotto (Caribbean black scale)
MACADAMIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
MACADAMIA TERNIFOLIA F. J. Muell. (small-fruited queensland nut)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
MACARANGA SP.
Coccus longulus (Douglas) (long brown scale)
MACFADYENA UNGUIS-CATI (L.) A. Gentry (cat's-claw)
Ceroplastes cirripediformis Comstock (barnacle scale)
MACLURA POMIFERA (Raf.) C. K. Schneid. (osage-orange)
Parthenolecanium corni (Bouché) (European fruit lecanium)
X *MACRANGRAECUM VEITCHII* (Hort. Veitch) Constantin
Coccus hesperidum Linnaeus (brown soft scale)
MACROZAMIA SP.
Saissetia coffeae (Walker) (hemispherical scale)
MACROZAMIA COMMUNIS L. A. S. Johnson
Saissetia coffeae (Walker) (hemispherical scale)
MACROZAMIA FAWCETTII C. Moore
Saissetia coffeae (Walker) (hemispherical scale)
MACROZAMIA MOOREI F. J. Muell.
Saissetia coffeae (Walker) (hemispherical scale)
MACROZAMIA SPIRALIS (Salisb.) Miq.
Saissetia coffeae (Walker) (hemispherical scale)
MAGNOLIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Inglisia vitrea Cockerell (glassy wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Neolecanium cornuparvum (Thro) (magnolia scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria psidii Maskell (green shield scale)

Toumeyella liriodendri (Gmelin) (tuliptree scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
MAGNOLIA GRANDIFLORA L. (bull bay, southern magnolia)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Kilifia acuminata (Signoret) (acuminate scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
MAGNOLIA HEPTAPETA (Buc'hoz) Dandy (Japanese magnolia)
Neolecanium cornuparvum (Thro) (magnolia scale)
MAGNOLIA HYPOLEUCA Sieb. & Zucc.
Coccus hesperidum Linnaeus (brown soft scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
MAGNOLIA QUINQUEPETA (Buc'hoz) Dandy 'NIGRA'
Toumeyella liriodendri (Gmelin) (tuliptree scale)
MAGNOLIA X *SOULANGIANA* Soul.-Bod. (Chinese magnolia)
Neolecanium cornuparvum (Thro) (magnolia scale)
MAGNOLIA X SOULANGIANA Soul.-Bod. 'LENNEI'
Toumeyella liriodendri (Gmelin) (tuliptree scale)
MAGNOLIA STELLATA (Sieb. Zucc.) Maxim. (star magnolia)
Ceroplastes floridensis Comstock (Florida wax scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
MAGNOLIA TRIPETALA L. (umbrella-tree)
Ceroplastes floridensis Comstock (Florida wax scale)
MAGNOLIA VIRGINIANA L. (sweet bay) [= *M. glauca*]
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Neolecanium cornuparvum (Thro) (magnolia scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Saissetia oleae (Olivier) (black scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)

MALACANTHA WARNECKEANA Engl.
Coccus viridis (Green) (green scale)
MALPIGHIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
MALPIGHIA COCCIGERA L. (West Indian cherry, miniature holly)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
MALPIGHIA GLABRA L. (Barbados cherry)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
MALUS SP. (apple)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Kilifia acuminata (Signoret) (acuminate scale)
MALUS ANGUSTIFOLIA (Ait.) Michx. (Southern wild crabapple
Ceroplastes floridensis Comstock (Florida wax scale)
MALUS HALLIANA Koehne (flowering crabapple)
Ceroplastes floridensis Comstock (Florida wax scale)
MALUS SYLVESTRIS Mill. (apple)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
MALVASTRUM AMERICANUM (L.) Torr.
Coccus viridis (Green) (green scale)
MALVASTRUM CORCHORIFOLIUM (Desr.) Britt. ex Small (false mallow)
Parasaissetia nigra (Nietner) (nigra scale)
MALVASTRUM COROMANDELIANUM (L.) Garcke
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
MALVAVISCUS SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
MALVAVISCUS ARBOREUS Cav. (Turk's cap, wax mallow)
Ceroplastes dugesii Lichtenstein (Duges wax scale)
Parasaissetia nigra (Nietner) (nigra scale)
MAMMEA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
MAMMEA AMERICANA L. (mamey, mammee)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
MANDEVILLA LAXA (Ruiz & Pav.) Woodson (Chilean jasmine)

Coccus viridis (Green) (green scale)
MANGIFERA SP.
Coccus acutissimus (Green) (banana-shaped scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
MANGIFERA INDICA L. (mango)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parthenolecanium quercifex (Fitch) (oak lecanium scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
MANIHOT SP.
Saissetia oleae (Olivier) (black scale)
MANILKARA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes utilis Cockerell (candle wax scale)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
MANILKARA BAHAMENSIS (Bak.) Lam. & Meeuse (wild sapodilla, wild dilly)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes utilis Cockerell (candle wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
MANILKARA KAUKI (L.) Dubard
Pulvinaria psidii Maskell (green shield scale)
MANILKARA ROXBURGHIANA (Wight) Dubard (bulletwood) [= *Minusops roxburghiana*]
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
MANILKARA ZAPOTA (L.) Van Royen (sapodilla)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
MARANTA SP.
Coccus longulus (Douglas) (long brown scale)
Pulvinaria psidii Maskell (green shield scale)
MARISCUS SP. [See *CYPERUS* SP.]
MASTICHODENDRON FOETIDISSIMUM (Jacq.) Cronquist (wild mastic)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrot) (Mexican black scale)
MEDINILLA SP.
Ceroplastes rubens Maskell (red wax scale)
MEGASKEPASMA ERYTHROCHLAMYS Lindau (Brazilian red-cloak)
Saissetia coffeae (Walker) (hemispherical scale)
MELALEUCA SP. (honey myrtle)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
MELALEUCA QUINQUENERVIA (Cav.) S. T. Blake (punk tree)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
MELASTOMA SP.
Coccus hesperidum Linnaeus (brown soft scale)
MELIA AZEDARACH L. (Chinaberry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
MELICOCCUS BIJUGATUS Jacq. (Spanish lime)
Ceroplastes cirripediformis Comstock (barnacle scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
MELOTHRIA PENDULA L. (creeping cucumber)
Ceroplastes cirripediformis Comstock (barnacle scale)
MENTHA SP.

Coccus viridis (Green) (green scale)
MENTHA PULEGIUM L. (pennyroyal)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
MERREMIA DISSECTA (Jacq.) H. G. Hall.
Protopulvinaria mangiferae (Green) (mango shield scale)
MERREMIA TUBEROSA (L.) Rendle (wood rose)
Ceroplastes cirripediformis Comstock (barnacle scale)
MESEMBRYANTHEMUM CRYSTALLINUM L. (ice-plant)
Pulvinaria psidii Maskell (green shield scale)
METOPIUM TOXIFERUM (L.) Krug & Urban (poisonwood)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
MICHELIA FIGO (Lour.) K. Spreng. (banana shrub)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
MICONIA CALVESCENS DC. (miconia)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
MICROCITRUS AUSTRALIS (Planch.) Swingle (Australian round lime)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
MICROCOELUM WEDDELLIANUM (H. Wendl.) H. E. Moore (weddel palm)
Coccus hesperidum Linnaeus (brown soft scale)
MICROCYCAS CALOCOMA (Miq.) A. DC. (palma corcho)
Saissetia coffeae (Walker) (hemispherical scale)
MICROLEPIA SPELUNCAE (L.) T. Moore
Coccus hesperidum Linnaeus (brown soft scale)
MIKANIA SP.
Saissetia oleae (Olivier) (black scale)
MIKANIA SCANDENS (L.) Willd. (hemp vine)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
MIMOSA SP.
Coccus longulus (Douglas) (long brown scale)
Saissetia oleae (Olivier) (black scale)
MIMUSOPS SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
MIMUSOPS BALATA (Aubl.) Gaertn.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
MIMUSOPS ELENGI L. (Spanish cherry)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
MIMUSOPS ROXBURGHIANA [See *MANILKARA ROXBURGHIANA*]
MIRABILIS JALAPA L. (four-o'clock)
Coccus hesperidum Linnaeus (brown soft scale)
MOLUCCELLA LAEVIS L. (bells-of-Ireland)
Ceroplastes cirripediformis Comstock (barnacle scale)
MOMORDICA BALSAMINA L. (balsam apple)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
MONODORA MYRISTICA (Gaertn.) Dunal (African nutmeg)
Saissetia oleae (Olivier) (black scale)
MONSTERA SP. (windowleaf)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Kilifia acuminata (Signoret) (acuminate scale)
MONSTERA ADANSONII Schott
Coccus hesperidum Linnaeus (brown soft scale)
MONSTERA DELICIOSA Liebm. (monstera, ceriman)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus longulus (Douglas) (long brown scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
MONTANOA HIBISCIFOLIA (Benth.) c. Koch
Saissetia oleae (Olivier) (black scale)
MORINDA SP.
Pulvinaria psidii Maskell (green shield scale)
MORINDA CITRIFOLIA L. (Indian mulberry)
Pulvinaria psidii Maskell (green shield scale)
MORINDA ROYOC L. (royoc)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
MORRENIA ODORATA Lindl. (milkweed vine)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
MORUS SP. (mulberry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
MORUS AUSTRALIS Poir.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
MORUS RUBRA L. (red mulberry)
Coccus longulus (Douglas) (long brown scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
MUEHLENBECKIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
MURRAYA SP. (mock orange)

Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
MURRAYA PANICULATA (L.) Jack (orange jasmine)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
MUSA SP. (banana)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
MUSA ACUMINATA Colla (plantian)
Saissetia neglecta DeLotto (Caribbean black scale)
MUSA X PARADISIACA L. (banana)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
MUSA SUMATRANA Becc.
Ceroplastes floridensis Comstock (Florida wax scale)
MUSA TEXTILIS Nee (Manila hemp)
Vinsonia stellifera (Westwood) (stellate scale)
MYRCIANTHES DICRANA (Berg) K. A. Wilson
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
MYRCIANTHES SIMPSONII (Small) K. A. Wils. (Simpson stopper)
Saissetia coffeae (Walker) (hemispherical scale)
MYRCIARIA SP.
Kilifia acuminata (Signoret) (acuminate scale)
MYRCIARIA EDULIS (Vell.) Skeels [= *Eugenia edulis*]
Kilifia acuminata (Signoret) (acuminate scale)
MYRICA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Inglisia vitrea Cockerell (glassy wax scale)
Saissetia coffeae (Walker) (hemispherical scale)
MYRICA CERIFERA L. (wax myrtle)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Inglisia vitrea Cockerell (glassy wax scale)
Parthenolecanium corni (Bouche) (European fruit lecanium)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
MYRSINE SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
MYRSINE AFRICANA L. (African boxwood)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)
MYRSINE GUIANENSIS (Aubl.) Kuntze
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
MYRTUS SP. (myrtle)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Inglisia vitrea Cockerell (glassy wax scale)
Parasiassetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
MYRTUS COMMUNIS L. (myrtle)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
MYRTUS COMMUNIS L. 'MICROPHYLLA' (dwarf myrtle)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
NANDINA DOMESTICA Thunb. (heavenly bamboo)
Saissetia coffeae (Walker) (hemispherical scale)
NAUCLEA COADUNATA J. E. Smith
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
NECTANDRA SP.
Coccus viridis (Green) (green scale)
NECTANDRA CORIACEA (Sw.) Griseb. (lancewood)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Inglisia vitrea Cockerell (glassy wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
NEODYPSIS DECARYI Jumelle (triangle palm)

Eucalymnatus tessellatus (Signoret) (tessellated scale)
NEOMARICA GRACILIS (Herb. ex Hook.) Sprague
Ceroplastes floridensis Comstock (Florida wax scale)
NEOPANAX ARBOREOUS (J. Murr.) Allan (five-fingers)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
NEOREGELIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
NEPENTHES SP. (pitcher plant)
Ceroplastes floridensis Comstock (Florida wax scale)
NEPHROLEPSIS SP. (sword fern)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
NEPHROLEPIS BISERRATA (Swartz) Schott 'FURCANS' (Fishtail fern)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
NEPHROLEPIS CORDIFOLIA (L.) K. Presl 'DUFFII'
Saissetia coffeae (Walker) (hemispherical scale)
NEPHROLEPIS EXALTATA (L.) Schott
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
NEPHROLEPIS EXALTATA (L.) Schott 'BOSTONIENSIS' (Boston fern)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
NEPHTHYTIS SP.
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
NERIUM SP. (oleander)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
NERIUM OLEANDER L. (common oleander)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus capparidis (Green) (capparis soft scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
NORONHIA EMARGINATA (Lam.) Thouars ex Hook.
Ceroplastes floridensis Comstock (Florida wax scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
NYSSA SP.
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
NYSSA SYLVATICA Marsh. (pepperidge, black tupelo)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
NYSSA SYLVATICA Marsh. var. *BIFLORA* (Walt.) Sarg. (black gum, swamp tupelo)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
OCHNA SP.
Coccus longulus (Douglas) (long brown scale)
OCHNA MADAGASCARENSIS DC.
Ceroplastes floridensis Comstock (Florida wax scale)
OCHNA MULTIFLORA DC. (bird's-eye bush)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
OCHROSIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
OCHROSIA ELLIPTICA Labill (Easter-egg tree, kopsia)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus pseudohesperidum (Cockerell) (orchid soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia oleae (Olivier) (black scale)
OCIMUM SANCTUM L. (holly basil)
Saissetia coffeae (Walker) (hemispherical scale)
ODONTOGLOSSUM SCHLIEPERANUM Rchb. f.
Coccus hesperidum Linnaeus (brown soft scale)
ODONTONEMA STRICTUM (Nees) O. Kuntze 'VARIEGATUM'
Saissetia coffeae (Walker) (hemispherical scale)
OLEA SP. (olive)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
OLEA EUROPAEA L. (common olive)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia coffeae (Walker) (hemispherical scale)
OLEARIA SP. (daisybush)
Saissetia oleae (Olivier) (black scale)
ONCIDIUM SP. (orchid)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
ONCIDIUM ALTISSIMUM (Jacq.) Swartz
Vinsonia stellifera (Westwood) (stellate scale)
ONCIDIUM PULCHELLUM Hook. (orchid)

Coccus hesperidum Linnaeus (brown soft scale)
ONCIDIUM VARIEGATUM Swartz (orchid)
Saissetia coffeae (Walker) (hemispherical scale)
ONCOBA ROUTLEDGEI T. Sprague
Kilifia acuminata (Signoret) (acuminate scale)
OPHIOPOGON SP. (lily-turf, mondo grass)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
OPUNTIA SP. (prickly pear cactus)
Pulvinaria psidii Maskell (green shield scale)
OREOPANAX SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
ORNITHOGALUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
OSMANTHUS SP.
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia coffeae (Walker) (hemispherical scale)
OSMANTHUS AMERICANUS (L.) A. Gray (wild olive, devilwood)
Kilifia acuminata (Signoret) (acuminate scale)
OSMANTHUS FRAGRANS (Thunb.) Lour. (sweet olive, tea olive)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia coffeae (Walker) (hemispherical scale)
OSMUNDA SP. (osmunda fern)
Saissetia coffeae (Walker) (hemispherical scale)
OSTRYA SP. (hop hornbean)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
OSTRYA VIRGINIANA (Mill.) C. Koch (American hop hornbean)
Ceroplastes cirripediformis Comstock (barnacle scale)
OXALIS DILLENII Jacq.
Coccus hesperidum Linnaeus (brown soft scale)
OXYANTHUS ISTHMIA Hort. ex W. Miller & L. H. Bailey
Saissetia coffeae (Walker) (hemispherical scale)
PACHIRA SP. (shaving-brush tree)
Saissetia coffeae (Walker) (hemispherical scale)
PACHIRA AQUATICA Aubl. (Guiana chestnut)
Saissetia coffeae (Walker) (hemispherical scale)
PACHYPODIUM SP.
Saissetia oleae (Olivier) (black scale)
PACHYPODIUM RUTENBERGIANUM Vatlee
Saissetia coffeae (Walker) (hemispherical scale)
PACHYSTACHYS COCCINEA (Aubl.) Nees (cardinal's guard)
Saissetia coffeae (Walker) (hemispherical scale)
PACHYSTACHYS LUTEA Nees (yellow shrimp plant)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PALIURUS SPINA-CHRISTI Mill. (Christ thorn)
Coccus viridis (Green) (green scale)
PANAX SP. (ginseng)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
PANDANUS SP. (screw pine)
Parasaissetia nigra (Nietner) (nigra scale)
PANDOREA JASMINOIDES (Lindl.) K. Schum. (bower plant)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
PANICUM PURPURASCENS Raddi (Para grass)
Coccus viridis (Green) (green scale)
PANICUM RHIZOMATUM Hitchc. & Chase
Pulvinaria elongata Newstead (cottony grass scale)
PAPHIOPEDILUM CILIOLARE (Rchb. f.) Stein
Coccus hesperidum Linnaeus (brown soft scale)
PAPHIOPEDILUM VENUSTUM (Wallich) Pfitz. (orchid)
Coccus hesperidum Linnaeus (brown soft scale)
PARKINSONIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
PARKINSONIA ACULEATA L. (Jerusalem thorn)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
PARMENTIERA ALATA (HBK) Miers (winged calabash)
Ceroplastes cirripediformis Comstock (barnacle scale)
PARTHENOCISSUS SP. (woodbine)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
PARTHENOCISSUS INSERTA (A. Kern.) Fritsch
Pulvinaria innumerabilis (Rathvon) (cottony maple scale
PARTHENOCISSUS QUINQUEFOLIA (L.) Planch. (Virginia creeper)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
PARTHENOCISSUS TRICUSPIDATA (Siebold & Zucc.) Planch. (Boston ivy)
Coccus hesperidum Linnaeus (brown soft scale)
PASPALUM NOTATUM Flugge (Bahia grass)
Pulvinaria elongata Newstead (cottony grass scale)
PASSIFLORA SP. (passion flower)
Ceroplastes cirripediformis Comstock (barnacle scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
PASSIFLORA SUBEROSA L. (corky-stemmed passion flower)
Pulvinaria psidii Maskell (green shield scale)
PAUROTIS [See *ACOELORRHAPHE*]
PEDILANTHUS SP.
Pulvinaria psidii Maskell (green shield scale)
PEDILANTHUS TITHYMALOIDES (L.) Poit. (ribbon cactus)

Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PELARGONIUM SP. (geranium)
Saissetia oleae (Olivier) (black scale)
PELLAEA ROTUNDIFOLIA (G. Forst.) Hook. (button fern)
Saissetia coffeae (Walker) (hemispherical scale)
PELLAEA VIRIDIS (Forssk.) Prantl (green cliff brake)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PELLIONIA SP.
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PELLIONIA DAVEAUANA (Godefr.) N. E. Br. (trailing watermelon begonia)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PELLIONIA PULCHRA N. E. Br. (satin pellionia, rainbow vine)
Coccus hesperidum Linnaeus (brown soft scale)
PELTANDRA VIRGINICA (L.) Schott & Endl. (green arrow-arum)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
PENSTEMON MULTIFLORUS Chapm. ex Benth. (beard tongue)
Pulvinaria urbicola Cockerell (urbicola soft scale)
PENTAS SP.
Saissetia oleae (Olivier) (black scale)
PEPEROMIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PEPEROMIA CAPERATA Yunck. (emerald-ripple peperomia)
Coccus hesperidum Linnaeus (brown soft scale)
PEPEROMIA GLABELLA (Swartz) A. Dietr. 'VARIEGATA'
Ceroplastes floridensis Comstock (Florida wax scale)
PEPEROMIA OBTUSIFOLIA (L.) A. Dietr. (pepper face)
Coccus hesperidum Linnaeus (brown soft scale)
PERESKIA ACULEATA Mill. (Barbados gooseberry)
Coccus hesperidum Linnaeus (brown soft scale)
PERSEA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
PERSEA AMERICANA Mill. (avocado)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
PERSEA BORBONIA (L.) K. Spreng. (red bay)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Inglisia vitrea Cockerell (glassy wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
PERSEA PALUSTRIS (Raf.) Sarg. (swamp bay)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Toumeyella liriodendri (Gmelin) (tuliptree scale)
PETALOSTEMON FEAYI Chapm. (prairie clover)
Coccus longulus (Douglas) (long brown scale)
PHAIUS SP. (orchid)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
PHAIUS TANKERVILLIAE (Ait.) Blume (nun's orchid) [= *P. grandifolius*]
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia coffeae (Walker) (hemispherical scale)
PHALAENOPSIS SP. (moth orchid)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PHALAENOPSIS SP. 'ELIDAE'
Coccus hesperidum Linnaeus (brown soft scale)
PHALAENOPSIS SP. 'GOLDEN SANDS'
Saissetia coffeae (Walker) (hemispherical scale)
PHALAENOPSIS LUEDDEMANNIANA Rchb. f.
Coccus pseudohesperidum (Cockerell) (orchid soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PHALAENOPSIS SP. 'GERTRUDE BEARD'
Saissetia coffeae (Walker) (hemispherical scale)
PHILODENDRON SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)

Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
PHILODENDRON SP. 'MANDAIANUM'
Parasaissetia nigra (Nietner) (nigra scale)
PHILODENDRON SP. 'ROYAL QUEEN'
Parasaissetia nigra (Nietner) (nigra scale)
PHILODENDRON BIPENNIFOLIUM Schott (fiddle-leaf philodendron)
Coccus hesperidum Linnaeus (brown soft scale)
PHILODENDRON DUBIUM Chodat & Vischer (philodendron)
Saissetia oleae (Olivier) (black scale)
PHILODENDRON GIGANTEUM Schott (giant philodendron)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
PHILODENDRON GLORIOSUM Andre
Coccus hesperidum Linnaeus (brown soft scale)
PHILODENDRON HASTATUM C. Koch & H. Sello
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
PHILODENDRON LACERUM (Jacq.) Schott
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
PHILODENDRON SCANDENS C. Koch & H. Sello subsp. *SCANDENS* forma *MICANS* (C. Koch) Bunt.
Coccus hesperidum Linnaeus (brown soft scale)
PHILODENDRON SELLOUM C. Koch
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
PHLOX SP.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
PHLOX STOLONIFERA Sims (creeping phlox)
Saissetia coffeae (Walker) (hemispherical scale)
PHOENIX SP. (date palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
PHOENIX CANARIENSIS Hort. ex Chabaud (Canary Island date palm)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
PHOENIX ROEBELENII O'Brien (pigmy date palm)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
PHORADENDRON SP. (mistletoe)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
PHORADENDRON SEROTINUM (Raf.) M. C. Johnst. (American mistletoe)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes nakaharai Gimpel (Nakahara wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
PHOTINIA SP.
Saissetia coffeae (Walker) (hemispherical scale)
PHOTINIA SERRULATA Lindl. (photinia)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
PHRAGMITES AUSTRALIS (Cav.) Trin. ex Steud.
Coccus viridis (Green) (green scale)
PHYLA NODIFLORA (L.) Greene
Pulvinaria urbicola Cockerell (urbicola soft scale)
PHYLLANTHUS SP.
Coccus hesperidum Linnaeus (brown soft scale)
PHYLLANTHUS CAROLINIENSIS Walt.
Coccus hesperidum Linnaeus (brown soft scale)
PHYLLANTHUS NIRURI L.
Coccus hesperidum Linnaeus (brown soft scale)
PHYLLITIS SCOLOPENDRIUM (L.) Newm.
Coccus hesperidum Linnaeus (brown soft scale)
PHYTOLACCA SP. (pokeberry)
Coccus viridis (Green) (green scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PHYTOLACCA AMERICANA L. (pokeweed, inkberry)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
PICEA PUNGENS Engelm. (Colorado spruce)
Ceroplastes floridensis Comstock (Florida wax scale)
PICRODENDRON MACROCARPUM (A. Rich.) Britt.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
PILEA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
PILEA SP. 'MOON VALLEY'
Coccus longulus (Douglas) (long brown scale)
PILEA CADIEREI Gagnep. & Guillaum. (aluminum plant)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
PILEA DEPRESSA (Swartz) Blume (baby tears)
Coccus hesperidum Linnaeus (brown soft scale)
PILEA INVOLUCRATA (Sims) Urb. (panamiga, friendship plant)
Saissetia coffeae (Walker) (hemispherical scale)
PILEA MICROPHYLLA (L.) Liebm. (artillery fern)

Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
PILOBLEPHIS RIGIDA (Bartr. ex Benth.) Raf. (penny royal)
Pulvinaria ericicola McConnell (cottony azalea scale)
PIMENTA DIOICA (L.) Merrill (allspice)
Coccus acutissimus (Green) (banana-shaped scale)
Kilifia acuminata (Signoret) (acuminate scale)
PIMPINELLA SP.
Coccus hesperidum Linnaeus (brown soft scale)
PIMPINELLA ANISUM L. (common anise)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
PINUS SP. (pine)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pseudophilippia quaintancii Cockerell (woolly pine scale)
Pulvinaria psidii Maskell (green shield scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
Toumeyella pini (King) (striped pine scale)
PINUS CANARIENSIS Sweet ex K. Spreng. (Canary Island pine)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
PINUS CARIBAEA Morelet (Cuban pine)
Pseudophilippia quaintancii Cockerell (woolly pine scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
PINUS CLAUSA (Chapm.) Vasey (sand pine)
Coccus hesperidum Linnaeus (brown soft scale)
Pseudophilippia quaintancii Cockerell (woolly pine scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
Toumeyella pini (King) (striped pine scale)
Toumeyella virginiana Williams & Kosztarab (Virginia pine scale)
PINUS DENSIFLORA Sieb. & Zucc. (Japanese red pine)
Ceroplastes floridensis Comstock (Florida wax scale)
PINUS ECHINATA Mill. (shortleaf pine)
Ceroplastes floridensis Comstock (Florida wax scale)
Pseudophilippia quaintancii Cockerell (woolly pine scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
Toumeyella pini (King) (striped pine scale)
PINUS ELLIOTTII Engelm. (slash pine)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pseudophilippia quaintancii Cockerell (woolly pine scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
Toumeyella pini (King) (striped pine scale)
Toumeyella virginiana Williams & Kosztarab (Virginia pine scale)
PINUS ELLIOTTII Engelm. var. *DENSA* Little & Dorman (South Florida slash pine)
Pseudophilippia quaintancii Cockerell (woolly pine scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
PINUS GLABRA Walt. (spruce pine)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
PINUS MUGO Turra (Swiss mountain pine)
Toumeyella pini (King) (striped pine scale)
PINUS PALUSTRIS Mill. (longleaf pine)
Ceroplastes floridensis Comstock (Florida wax scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
Toumeyella pini (King) (striped pine scale)
PINUS PINEA L. (Italian stone pine)
Ceroplastes floridensis Comstock (Florida wax scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
PINUS PONDEROSA Dougl. ex P. Laws. & C. Laws. (western yellow pine)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
PINUS PUNGENS Lamb. (table mountain pine)
Pseudophilippia quaintancii (Cockerell) (woolly pine scale)
PINUS RESINOSA Ait. (red pine)
Toumeyella pini (King) (striped pine scale)
PINUS RIGIDA Mill. (pitch pine)
Toumeyella pini (King) (striped pine scale)
PINUS STROBUS L. (eastern white pine)
Ceroplastes floridensis Comstock (Florida wax scale)
PINUS SYLVESTRIS L. (Scotch pine)
Toumeyella pini (King) (striped pine scale)
PINUS TAEDA L. (loblolly pine)
Ceroplastes floridensis Comstock (Florida wax scale)
Pseudophilippia quaintancii Cockerell (woolly pine scale)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
Toumeyella pini (King) (striped pine scale)
PINUS THUNBERGIANA Franco (Japanese black pine)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
PINUS VIRGINIANA Mill. (Virginia pine, Jersey pine)
Toumeyella parvicornis (Cockerell) (pine tortoise scale)
Toumeyella pini (King) (striped pine scale)
PIPER SP. (pepper)
Ceroplastes cirripediformis Comstock (barnacle scale)
PIPER ADUNCUM L. (higuillo)
Saissetia oleae (Olivier) (black scale)
PIPER MAGNIFICUM Trel. (pepper)
Coccus longulus (Douglas) (long brown scale)
PISONIA SP. (cockspur)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
PISONIA DISCOLOR Spreng. var. *LONGIFOLIA* Heimerl
Ceroplastes ceriferus (Fabricius) (Indian wax scale)

PITHECELLOBIUM SP.
Coccus longulus (Douglas) (long brown scale)
Pulvinaria psidii Maskell (green shield scale)
PITHECELLOBIUM DULCE (Roxb.) Benth. (Manila tamarind)
Coccus longulus (Douglas) (long brown scale)
PITTOSPORUM SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
PITTOSPORUM FLORIBUNDUM Wight & Arn.
Coccus hesperidum Linnaeus (brown soft scale)
PITTOSPORUM PHILLYRAEOIDES DC. (willow pittosporum)
Ceroplastes floridensis Comstock (Florida wax scale)
PITTOSPORUM TOBIRA (Thunb.) Ait. (Japanese pittosporum)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
PITTOSPORUM TOBIRA (Thunb.) Ait. 'VARIEGATA' (varigated Japanese pittosporum)
Ceroplastes floridensis Comstock (Florida wax scale)
PITTOSPORUM UNDULATUM Venten (victorian box)
Ceroplastes floridensis Comstock (Florida wax scale)
PITYROGRAMMA TRIANGULARIS (Kaulf.) Maxon (California gold fern)
Saissetia coffeae (Walker) (hemispherical scale)
PLATANUS SP. (sycamore)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
PLATANUS OCCIDENTALIS L. (buttonwood, eastern sycamore)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
PLATYCERIUM SP. (staghorn fern)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia neglecta DeLotto (Caribbean black scale)
PLATYCERIUM BIFURCATUM (Cav.) C. Chr. (common staghorn fern)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PLATYCERIUM BIFURCATUM (Cav.) C. Chr. 'ZIESENHENNE'
Saissetia coffeae (Walker) (hemispherical scale)
PLATYCERIUM CORONARIUM (J. Konig ex O. F. Mull.) Desv.
Saissetia coffeae (Walker) (hemispherical scale)
PLATYCERIUM STEMARIA (Beauvois) Desv. (triangular staghorn fern)
Coccus hesperidum Linnaeus (brown soft scale)
PLATYCERIUM WILLINCKII T. Moore (Java staghorn fern)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia coffeae (Walker) (hemispherical scale)
PLATYMISCIUM SP. (macawood)
Coccus longulus (Douglas) (long brown scale)
PLEIOGYNIUM SP.
Pulvinaria psidii Maskell (green shield scale)
PLEIOGYNIUM CERASIFERUM (F. J. Muell.) R. Parker (Queenslan hog plum)
Coccus longulus (Douglas) (long brown scale)
PLOCOSPERMA SP.
Saissetia coffeae (Walker) (hemispherical scale)
PLUCHEA CAMPHORATA (L.) DC. (marsh fleabane)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
PLUMERIA SP. (frangipani)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Ceroplastes rubens Maskell (red wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
PLUMERIA OBTUSA L.
Kilifia acuminata (Signoret) (acuminate scale)
PLUMERIA RUBRA L. (nosegay, frangipani)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parasaissetia nigra (Nietner) (nigra scale)
PLUMERIA RUBRA L. forma *ACUTIFOLIA* (Poir.) Woodson (pagoda tree)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PODOCARPUS SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
PODOCARPUS ELONGATUS (Ait.) L'Her. ex Pers. (African yellowwood)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
POCOCARPUS GRACILIOR Pilg. (African fern pine)
Coccus hesperidum Linnaeus (brown soft scale)
PODOCARPUS MACROPHYLLUS (Thunb.) D. Don (southern yew)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
PODOCARPUS MACROPHYLLUS (Thunb.) D. Don var. *MAKI* Endl.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)

Coccus hesperidum Linnaeus (brown soft scale)
PODOCARPUS NAGI (Thunb.) Zoll. & Moritzi ex Mak. (broadleaf pine)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
POINCIANA SP. [See *CAESALPINIA* SP.]
POLYGONELLA FIMBRIATA (Ell.) Horton (jointweed)
Pulvinaria urbicola Cockerell (urbicola soft scale)
POLYGONUM SP. (knotweed, smartweed)
Ceroplastes floridensis Comstock (Florida wax scale)
POLYPODIUM SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
POLYPODIUM AUREUM L. (hare's foot fern)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
POLYPODIUM PHYLLITIDIS L. (strapleaf fern)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
POLYPODIUM POLYPODIOIDES (L.) D. Watt (resurrection fern)
Ceroplastes floridensis Comstock (Florida wax scale)
POLYSCIAS BALFOURIANA (Hort. Sander) L. H. Bailey (balfour aralia)
Ceroplastes cirripediformis Comstock (barnacle scale)
POLYSTACHYA FLAVESCENS (Blume) J. J. Sm.
Coccus hesperidum Linnaeus (brown soft scale)
POLYSTICHUM SP. (shield fern)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
POLYSTICHUM LONCHITIS (L.) Roth. (holly fern)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
PONCIRUS TRIFOLIATA (L.) Raf. (trifoliate orange)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia neglecta DeLotto (Caribbean black scale)
PONGAMIA PINNATA (L.) Pierre (poonga-oil tree, karum tree)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
PORTLANDIA SP.
Saissetia coffeae (Walker) (hemispherical scale)
PORTLANDIA GRANDIFLORA L.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
PORTULACA SP. (purslane)
Saissetia coffeae (Walker) (hemispherical scale)
PORTULACA GRANDIFLORA Hook. (rose moss)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia oleae (Olivier) (black scale)
PORTULACA PILOSA L. (pink purslane)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
POSOQUERIA SP.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
POSOQUERIA LATIFOLIA (Rudge) Roem. & Schult. (needle-flower tree)
Saissetia coffeae (Walker) (hemispherical scale)
POUTERIA CAIMITO (Ruiz y Pavon) Radlk.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
POUTERIA CAMPECHIANA (HBK) Baehni (canistel, egg fruit)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
POUTERIA SAPOTA (Jacq.) H. E. Moore & Stearn (sapote)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
PRIMULA SP. (primrose)
Coccus viridis (Green) (green scale)
PROSOPIS JULIFLORA (Swartz) DC. (mesquite)
Saissetia coffeae (Walker) (hemispherical scale)
PRUNUS SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Parthenolecanium quercifex (Fitch) (oak lecanium)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Saissetia oleae (Olivier) (black scale)
PRUNUS AMERICANA Marsh. (wild plum)
Ceroplastes floridensis Comstock (Florida wax scale)
PRUNUS ANGUSTIFOLIA Marsh. (chickasaw plum)
Parthenolecanium corni (Bouché) (European fruit lecanium)

PRUNUS ARMENIACA L. (apricot)
Ceroplastes floridensis Comstock (Florida wax scale)
PRUNUS CAROLINIANA (Mill.) Ait. (Carolina cherry laurel)
Ceroplastes floridensis Comstock (Florida wax scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
PRUNUS DULCIS (Mill.) D. A. Webb var. *DULCIS* (almond)
Coccus hesperidum Linnaeus (brown soft scale)
PRUNUS LAUROCERASUS L. (European cherry-laurel)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
PRUNUS PERSICA (L.) Batsch (peach)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
PRUNUS SALICINA Lindl. (Japanese plum)
Ceroplastes floridensis Comstock (Florida wax scale)
PRUNUS SEROTINA J. F. Ehrh. (black cherry)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
PRUNUS TRILOBA Lindl. (flowering almond)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
PSEUDERANTHEMUM SP.
Saissetia coffeae (Walker) (hemispherical scale)
PSEUDERANTHEMUM ARTROPURPUREUM L. H. Bailey (purple false eranthemum)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PSEUDERANTHEMUM BICOLOR (Schrank) Radlk.
Saissetia coffeae (Walker) (hemispherical scale)
PSIDIUM SP. (guava)
Coccus acutissimus (Green) (banana-shaped scale)
Coccus viridis (Green) (green scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PSIDIUM CATTLEIANUM Sab. (purple guava, cattleya guava)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)
PSIDIUM GUAJAVA L. (common guava)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
Vinsonia stellifera (Westwood) (stellate scale)
PSILOTUM NUDUM (L.) Griseb. (whisk fern)
Coccus hesperidum Linnaeus (brown soft scale)
PSYCHOTRIA SP. (wild coffee)
Kilifia acuminata (Signoret) (acuminate scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
PSYCHOTRIA BACTERIOPHILA Val. (wild coffee)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
PSYCHOTRIA NERVOSA Swartz (wild coffee)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
PSYCHOTRIA SULZNERI Small (wild coffee)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
PTERIDIUM SP. (bracken)
Pulvinaria psidii Maskell (green shield scale)
PTERIDIUM AQUILINUM (L.) Kuhn (bracken fern)
Coccus hesperidum Linnaeus (brown soft scale)
PTERIS SP. 'FAUREI'
Saissetia coffeae (Walker) (hemispherical scale)
PTERIS CRETICA L. (Cretan brake)
Saissetia coffeae (Walker) (hemispherical scale)
PTERIS CRETICA L. 'ALBO-LINEATA'
Ceroplastes cirripediformis Comstock (barnacle scale)
PTERIS CRETICA L. 'MAGNIFICA'
Coccus hesperidum Linnaeus (brown soft scale)
PTERIS CRETICA L. 'WILSONII'
Coccus hesperidum Linnaeus (brown soft scale)
PTERIS ENSIFORMIS Burm. f. (sword brake)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
PTERIS ENSIFORMIS Burm. f. 'EVERGEMIENSIS'
Saissetia coffeae (Walker) (hemispherical scale)
PTERIS ENSIFORMIS Burm. f. 'VICTORIAE'
Coccus hesperidum Linnaeus (brown soft scale)
PTERIS LONGIFOLIA L.
Coccus viridis (Green) (green scale)
PTERIS MULTIFIDA Poir. (spider brake, Chinese fern)
Saissetia coffeae (Walker) (hemispherical scale)
PTEROSPERMUM ACERIFOLIUM (L.) Willd.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia oleae (Olivier) (black scale)
PTERYGOTA ALATA (Roxb.) R. Br.
Coccus hesperidum Linnaeus (brown soft scale)

Coccus longulus (Douglas) (long brown scale)
PUERARIA LOBATA (Willd.) Ohwi (kudzu vine)
Coccus hesperidum Linnaeus (brown soft scale)
PUNICA GRANATUM L. (pomegranate)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia oleae (Olivier) (black scale)
PYRACANTHA SP. (firethorn)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
PYRACANTHA COCCINEA M. J. Roem. (firethorn)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
PYRACANTHA CRENULATA (D. Don) M. J. Roem. (firethorn)
Ceroplastes floridensis Comstock (Florida wax scale)
PYROSTEGIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
PYROSTEGIA VENUSTA (Ker-Gawl.) Miers (flame vine)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
PYRRHOPAPPUS CAROLINIANUS (Walt.) DC.
Pulvinaria urbicola Cockerell (urbicola soft scale)
PYRUS SP. (pear)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus capparidis (Green) (capparis soft scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Saissetia oleae (Olivier) (black scale)
PYRUS COMMUNIS L. (common pear)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
QUAMOCLIT [See *IPOMOEA*]
QUERCUS SP. (oak)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Parthenolecanium quercifex (Fitch) (oak lecanium scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
QUERCUS LAURIFOLIA Michx. (laurel oak)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
QUERCUS NIGRA L. (water oak) [= *Q. aquatica*]
Parthenolecanium quercifex (Fitch) (oak lecanium scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
QUERCUS RUBRA L. (red oak) [= *Q. borealis*]
Parthenolecanium quercifex (Fitch) (oak lecanium scale)
QUERCUS STELLATA Wangenh. (post oak)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
QUERCUS VIRGINIANA Mill. (live oak)
Parthenolecanium quercifex (Fitch) (oak lecanium scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
QUISQUALIS SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
QUISQUALIS INDICA L. (Rangoon-creeper)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
RANDIA ACULEATA L. (white indigo berry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
RANDIA LONGIFLORA Lamb
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
RAPANEA GUIANENSIS [See *MYRSINE GUIANENSIS*]
RAPHIDOPHORA SP.
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
RAPHIDOPHORA CELATOCAULIS (N. E. Br.) F. Knoll (shingle plant)
Saissetia coffeae (Walker) (hemispherical scale)
RAPHIDOPHORA DECURSIVA (Roxb.) Schott
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
RAUVOLFIA SP.
Saissetia oleae (Olivier) (black scale)
RAUVOLFIA LAMARCKII A. DC.
Saissetia oleae (Olivier) (black scale)
RAUVOLFIA SERPENTINA Benth. ex Kurz
Saissetia oleae (Olivier) (black scale)
RAUVOLFIA TETRAPHYLLA L.
Saissetia oleae (Olivier) (black scale)
RAVENALA SP.
Coccus hesperidum Linnaeus (brown soft scale)
RAVENALA MADAGASCARIENSIS Sonn. (traveler's tree)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria psidii Maskell (green shield scale)
RAVENEA SP.
Coccus hesperidum Linnaeus (brown soft scale)
RESEDA SP. (mignonette)
Saissetia oleae (Olivier) (black scale)
RHAMNUS SP. (buckthorn)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus longulus (Douglas) (long brown scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
RHAMNUS CALIFORNICA Eschsch. (coffeeberry tree)
Ceroplastes floridensis Comstock (Florida wax scale)
RHAMNUS CAROLINIANA Walt. (Indian cherry)
Ceroplastes floridensis Comstock (Florida wax scale)
RHAPHIOLEPIS SP.
Ceroplastes floridensis Comstock (Florida wax scale)
RHAPHIOLEPSIS INDICA (L.) Lindl. (Indian hawthorn)
Ceroplastes floridensis Comstock (Florida wax scale)
RHAPHIOLEPIS UMBELLATA (Thunb.) Mak. (yedda-hawthorn)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
RHAPIS SP. (lady palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
RHAPIS EXCELSA (Thunb.) A. Henry (bamboo palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
RHEEDIA SP.
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
RHEEDIA ARISTATA Griseb.
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
RHEEDIA EDULIS Planch. & Triana
Saissetia coffeae (Walker) (hemispherical scale)
RHIPSALIS CRISPATA (Haw.) Pfeiff.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
RHIZOPHORA MANGLE L. (mangrove)
Coccus viridis (Green) (green scale)
RHODODENDRON SP. (azalea)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
RHODOMYRTUS SP. (rose myrtle)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
RHODOMYRTUS TOMENTOSA (Ait.) Hassk. (downy myrtle)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
RHUS SP. (sumac)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
RHUS COPALLINA L. var. *LEUCANTHA* (Jacq.) DC. (southern sumac)
Coccus viridis (Green) (green scale)
RHUS LANCEA L. f. (South African sumac)
Ceroplastes floridensis Comstock (Florida wax scale)
RHUS RADICANS L. (poison ivy)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
Saissetia oleae (Olivier) (black scale)
RHUS TOXICODENDRON L. (poison oak)
Pulvinaria urbicola Cockerell (urbicola soft scale)
RHUS TYPHINA L. (Virginian sumac)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
RIBES SP. (currant, gooseberry)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
RICHARDIA BRASILIENSIS (Moq.) Gomez
Saissetia coffeae (Walker) (hemispherical scale)
RICINUS COMMUNIS L. (castor bean)
Coccus viridis (Green) (green scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia oleae (Olivier) (black scale)
RIVINA HUMILIS L. (rouge-plant)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
ROBINSONELLA CORDATA Rose and Bak. f.
Saissetia oleae (Olivier) (black scale)
ROHDEA SP.
Coccus hesperidum Linnaeus (brown soft scale)
ROSA SP. (rose)

Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
ROSMARINUS OFFICINALIS L. (rosemary)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
ROTHMANNIA MANGANJAE (Hiern) Garcia
Coccus viridis (Green) (green scale)
ROYSTONEA SP. (royal palm)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
ROYSTONEA REGIA (HBK) O. F. Cook (Cuban royal palm)
Coccus capparidis (Green) (capparis soft scale)
Coccus hesperidum Linnaeus (brown soft scale)
RUBUS SP. (blackberry, bramble)
Coccus hesperidum Linnaeus (brown soft scale)
RUBUS URSINUS Cham. & Schlechtend. (youngberry, boysenberry)
Coccus hesperidum Linnaeus (brown soft scale)
RUELLIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
RUELLIA BRITTONIANA E. Leonard
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
RUELLIA CILIOSA Pursh
Saissetia coffeae (Walker) (hemispherical scale)
RUMEX SP. (dock, sorrel)
Coccus viridis (Green) (green scale)
RUMOHRA ADIANTIFORMIS (G. Forst.) Ching (leatherleaf fern)
Ceroplastes floridensis Comstock (Florida wax scale)
RUSSELIA SARMENTOSA Jacq. (leafy coral-blow)
Saissetia coffeae (Walker) (hemispherical scale)
SABAL SP. (palmetto)
Coccus viridis (Green) (green scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
SABAL PALMETTO (Walt.) Lodd. ex. Schult & Schult F. (palmetto palm, cabbage palm)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
SACCHARUM OFFICINARUM L. (sugarcane)
Pulvinaria elongata Newstead (cottony grass scale)
SAINTPAULIA SP. (African violet)
Coccus hesperidum Linnaeus (brown soft scale)
SAINTPAULIA IONANTHA H. Wendl. (African violet)
Coccus hesperidum Linnaeus (brown soft scale)
SALIX SP. (willow)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Saissetia oleae (Olivier) (black scale)
SALIX BABYLONICA L. (weeping willow)
Parasaissetia nigra (Nietner) (nigra scale)
SALIX CAROLINIANA Michx. (coastal plain willow)
Coccus viridis (Green) (green scale)
SALIX DISCOLOR Muhl. (pussy willow)
Saissetia oleae (Olivier) (black scale)
SALVIA SP. (sage)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
SALVIA COCCINEA Juss. ex J. Murr. (scarlet sage)
Saissetia oleae (Olivier) (black scale)
SALVIA FARINACEA Benth. (mealy-cup salvia)
Coccus hesperidum Linnaeus (brown soft scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
SALVIA PACHYPHYLLA Epl. ex Munz.
Coccus hesperidum Linnaeus (brown soft scale)
SALVIA PRIVOIDES Benth.
Coccus longulus (Douglas) (long brown scale)
SAMANEA SAMAN (Jacq.) Merrill (raintree)
Coccus longulus (Douglas) (long brown scale)
SAMBUCUS SP. (elderberry)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
SAMBUCUS SIMPSONII Rehder (Southern elderberry)
Coccus viridis (Green) (green scale)
SANCHEZIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
SANCHEZIA NOBILIS Hook.
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Saissetia neglecta DeLotto (Caribbean black scale)
SANSEVIERIA SP. (bowstring, snake plant)
Saissetia coffeae (Walker) (hemispherical scale)
SAPINDUS SP. (soapberry)
Saissetia neglecta DeLotto (Caribbean black scale)
SAPINDUS MARGINATUS Willd. (wild China)
Pulvinaria floccifera (Westwood) (cottony camellia scale)
SAPINDUS MUKOROSSI Gaertn. (Chinese soapberry)
Saissetia oleae (Olivier) (black scale)
SAPINDUS SAPONARIA L. (false dogwood, soapberry)
Pulvinaria psidii Maskell (green shield scale)
SAPIUM SEBIFERUM (L.) Roxb. (Chinese tallow tree)
Coccus hesperidum Linnaeus (brown soft scale)

SARACA SP. (saraca)
Saissetia oleae (Olivier) (black scale)
SARITAEA MAGNIFICA (T. Sprague ex Steenis) Dug.
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
SARRACENIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
SARRACENIA MINOR Walt. (hooded pitcher plant)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
SASSAFRAS SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
SASSAFRAS ALBIDUM (Nutt.) Nees (sassafras)
Ceroplastes floridensis Comstock (Florida wax scale)
SATUREJA RIGIDA [See *PILOBLEPHIS RIGIDA*]
SCHEFFLERA SP. (umbrella tree)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
SCHEFFLERA ARBORICOLA Hayata (dwarf schefflera)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
SCHEFFLERA DIGITATA J. R. Forst & G. Forst.
Coccus viridis (Green) (green scale)
SCHINUS SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
SCHINUS TEREBINTHIFOLIUS Raddi (Brazilian pepper tree)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Parasassetia nigra (Nietner) (nigra scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
SCHISMATOGLOTTIS SP. (drop tongue)
Ceroplastes rubens Maskell (red wax scale)
SCHOEPFIA SCHREBERI J. F. Gmel. (whitewood)
Coccus viridis (Green) (green scale)
Pulvinaria urbicola Cockerell (Urbicola soft scale)
SCIADOPHYLLUM SP.
Saissetia oleae (Olivier) (black scale)
SCINDAPSUS [See *EPIPREMNUM*]
SECURIDACA LONGIPEDUNCULATA Fresen.
Saissetia coffeae (Walker) (hemispherical scale)
SEDUM SP. (stone crop)
Coccus hesperidum Linnaeus (brown soft scale)
SELAGINELLA SP. (little club moss)
Saissetia coffeae (Walker) (hemispherical scale)
SELAGINELLA PULCHERRIMA Liebm. ex Bak.
Saissetia oleae (Olivier) (black scale)
SENECIO SP. (groundsel)
Ceroplastes cirripediformis Comstock (barnacle scale)
Saissetia oleae (Olivier) (black scale)
SENECIO RADICANS (L. f.) Schultz-Bip. (creeping berries)
Coccus hesperidum Linnaeus (brown soft scale)
SERISSA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
SEVERINIA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
SEVERINIA BUXIFOLIA (Poir.) Ten. (Chinese box-orange)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
SIDA SP.
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
SIDA CARPINIFOLIA L. f. (teaweed)
Coccus viridis (Green) (green scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia oleae (Olivier) (black scale)
SIDA RHOMBIFOLIA L.
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
SIDA SPINOSA L.
Toumeyella liriodendri (Gmelin) (tuliptree scale)
SIDEROXYLON SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Pulvinaria psidii Maskell (green shield scale)
SIMAROUBA GLAUCA DC. (paradise tree)
Coccus viridis (Green) (green scale)

Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
SMILAX LAURIFOLIA L. (laurel-leaved greenbrier)
Coccus viridis (Green) (green scale)
SOLANDRA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Pulvinaria psidii Maskell (green shield scale)
SOLANDRA GRANDIFLORA Swartz
Pulvinaria urbicola Cockerell (urbicola soft scale)
SOLANUM SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
SOLANUM BLODGETTII Chapm. (nightshade)
Coccus viridis (Green) (green scale)
SOLANUM DIPHYLLUM L.
Ceroplastes cirripediformis Comstock (barnacle scale)
SOLANUM MELONGENA L. var. *ESCULENTUM* Nees (eggplant)
Coccus hesperidum Linnaeus (brown soft scale)
SOLANUM PSEUDOCAPSICUM L. 'PATTERSONII' (Jerusalem cherry)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
SOLANUM SEAFORTHIANUM Andr. (Brazilian nightshade)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
SOLIDAGO SP. (goldenrod)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
SOLIDAGO FISTULOSA Mill. (goldenrod)
Coccus viridis (Green) (green scale)
SOLIDAGO LEAVENWORTHII T. & G. (goldenrod)
Pulvinaria urbicola Cockerell (urbicola soft scale)
SOLIDAGO SEMPERVIRENS L. var. *MEXICANA* (L.) Fern
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Parasaissetia nigra (Nietner) (nigra scale)
SOLIDAGO MICROCEPHALA (Green) Bush (flat topped goldenrod)
Coccus viridis (Green) (green scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
SOLIDAGO TENUIFOLIA Pursh (goldenrod)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
SOPHORA JAPONICA L. (Japanese pagoda tree)
Coccus longulus (Douglas) (long brown scale)
SOPHORA TOMENTOSA L. (silverbush)
Coccus longulus (Douglas) (long brown scale)
SPATHIPHYLLUM SP. (spathe flower)
Coccus longulus (Douglas) (long brown scale)
SPATHIPHYLLUM CANNIFOLIUM (Dryand.) Schott
Coccus longulus (Douglas) (long brown scale)
SPATHIPHYLLUM FRIEDRICHSTHALII Schott
Coccus longulus (Douglas) (long brown scale)
SPATHIPHYLLUM LANCIFOLIUM Schott
Coccus longulus (Douglas) (long brown scale)
SPATHIPHYLLUM PATINII (Hogg) N. E. Br.
Coccus longulus (Douglas) (long brown scale)
SPATHODEA SP.
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
SPATHODEA CAMPANULATA Beauvois (African tulip tree)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
SPATHODEA NILOTICA Seem.
Saissetia oleae (Olivier) (black scale)
SPATHOGLOTTIS PLICATA Blume (orchid)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
SPIRAEA SP. (bridal wreath, spirea)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
SPONDIAS SP.
Saissetia oleae (Olivier) (black scale)
SPONDIAS CYTHEREA Sonn. (golden apple, ambarella
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia oleae (Olivier) (black scale)
SPONDIAS MOMBIN L. (hog plum)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
SPONDIAS PURPUREA L. (Spanish plum)
Saissetia neglecta DeLotto (Caribbean black scale)
STANGERIA ERIOPUS (Kuntze) Nash
Saissetia coffeae (Walker) (hemispherical scale)
STENOLOBIUM [See *TECOMA*]
STENOTAPHRUM SECUNDATUM (Walt.) Kuntze (St. Augustine grass)
Saissetia coffeae (Walker) (hemispherical scale)
STEPHANOTIS SP.
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
STEPHANOTIS FLORIBUNDA Brogn. (Madagascar jasmine)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia oleae (Olivier) (black scale)
STERCULIA SP.

Coccus longulus (Douglas) (long brown scale)
Saissetia oleae (Olivier) (black scale)
STIGMAPHYLLON SP.
Eucalymnatus tessellatus (Signoret) (tessellated scale)
STRELITZIA SP. (bird-of-paradise)
Coccus viridis (Green) (green scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
STRELITZIA NICOLAI Regel & Korn. (bird-of-paradise tree)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
STRELITZIA REGINAE Ait. (bird-of-paradise)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
STREPTOCARPUS THYSANOTUS Hilliard & B. L. Burtt
Saissetia coffeae (Walker) (hemispherical scale)
Coccus hesperidum Linnaeus (brown soft scale)
STREPTOSOLEN SP. (firebrush)
Pulvinaria psidii Maskell (green shield scale)
STROBILANTHES SP. (Mexican petunia)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
STROBILANTHES ANISOPHYLLUS (Wallich ex. Lodd.) T. Anderson
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia coffeae (Walker) (hemispherical scale)
STROBILANTHES ISOPHYLLUS (Nees) T. Anderson (bluebill, bedding conehead)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
STRYCHNOS SPINOSA Lam. (Natal orange)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
SWIETENIA SP. (mahogany)
Pulvinaria psidii Maskell (green shield scale)
Siassetia oleae (Olivier) (black scale)
SWIETENIA MAHAGONI (L.) Jacq. (West Indian mahogany)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus viridis (Green) (green scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
SYMPHORICARPOS SP. (snowberry)
Coccus viridis (Green) (green scale)
Saissetia oleae (Olivier) (black scale)
SYMPHORICARPOS ALBUS (L.) S. F. Blake (snowberry, waxberry)
Ceroplastes cirripediformis Comstock (barnacle scale)
SYNGONIUM SP.
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
SYNGONIUM PODOPHYLLUM Schott (nephthytis)
Coccus hesperidum Linnaeus (brown soft scale)
SYNSEPALUM SP.
Saissetia coffeae (Walker) (hemispherical scale)
SYNSEPALUM DULCIFICUM (Schumach. & Thonn.) Daniell ex. S. Bell
Saissetia coffeae (Walker) (hemispherical scale)
SYZYGIUM SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
SYZYGIUM AROMATICUM (L.) Merrill & L. M. Perry (clove)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
SYZYGIUM CUMINI (L.) Skeels (jambolan plum)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
SYZYGIUM JAMBOS (L.) Alston (rose apple) [= *Eugenia jambos*]
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus acutissimus (Green) (banana-shaped scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria mangiferae (Green) (mango shield scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Vinsonia stellifera (Westwood) (stellate scale)
SYZYGIUM PANICULATUM Gaertn. (Australian brush cherry)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)

Protopulvinaria pyriformis Cockerell (pyriform scale)
TABEBUIA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
TABEBUIA ARGENTEA (Bur. & K. Schum.) Britt (silver tabebuia)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
TABEBUIA PALLIDA (Lindl.) Miers (Cuban pink trumpet)
Ceroplastes cirripediformis Comstock (barnacle scale)
TABEBUIA PALMERI Rose
Pulvinaria psidii Maskell (green shield scale)
TABEBUIA ROSEA (L.) (Bertol.) DC. (pink poui)
Saissetia oleae (Olivier) (black scale)
TABEBUIA UMBELLATA (Sond.) Sandw. (trumpet-tree)
Ceroplastes cirripediformis Comstock (barnacle scale)
TABERNAEMONTANA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
TABERNAEMONTANA DIVARICATA (L.) R. Br. (crape jasmine) [= *T. coronaria*]
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
TALINUM SP. (fameflower)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
TALINUM PANICULATUM (Jacq.) Gaertn. (jewels-of-Opar)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
TALINUM PANICULATUM (Jacq.) Gaertn. 'VARIEGATA'
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
TAMARINDUS INDICA L. (tamarind)
Coccus longulus (Douglas) (long brown scale)
TAMARIX SP. (tamarisk)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
TAMARIX APHYLLA (L.) Karst. (athel tamarisk)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
TANACETUM SP. (tansy)
Ceroplastes cirripediformis Comstock (barnacle scale)
Pulvinaria psidii Maskell (green shield scale)
TAXODIUM DISTICHUM (L.) L. Rich. (bald cypress)
Parthenolecanium corni (Bouché) (European fruit lecanium)
TAXUS SP. (yew)
Saissetia oleae (Olivier) (black scale)
TAXUS CUSPIDATA Sieb. & Zucc. (Japanese yew)
Coccus hesperidum Linnaeus (brown soft scale)
TECOMA SP. (trumpet bush)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
TECOMA CASTANIFOLIA (D. Don) Melchior trumpet bush)
Coccus viridis (Green) (green scale)
TECOMA OCHRACEA Cham. (trumpet vine)
Saissetia coffeae (Walker) (hemispherical scale)
TECOMA STANS (L.) HBK (yellow bells, yellow elder)
Coccus viridis (Green) (green scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
TECOMARIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
TECOMARIA CAPENSIS (Thunb.) Spach (cape-honeysuckle)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
TECTONA GRANDIS L. f. (teak)
Pulvinaria psidii Maskell (green shield scale)
TERMINALIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia coffeae (Walker) (hemispherical scale)
TERMINALIA ARJUNA (Roxb.) Beddome (arjan terminalia)
Saissetia oleae (Olivier) (black scale)
TERMINALIA CATAPPA L. (tropical almond)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
TERMINALIA MUELLERI Benth
Saissetia neglecta DeLotto (Caribbean black scale)
TETRAPANAX SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus viridis (Green) (green scale)

Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria psidii Maskell (green shield scale)
TETRAPANAX PAPYRIFERUS (Hook.) C. Koch (Chinese rice paper plant)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia neglecta DeLotto (Caribbean black scale)
Saissetia oleae (Olivier) (black scale)
TETRAZYGIA SP.
Pulvinaria psidii Maskell (green shield scale)
TETRAZYGIA BICOLOR (Mill.) Cogn.
Coccus acutissimus (Green) (banana-shaped scale)
Coccus viridis (Green) (green scale)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)
THELYPTERIS SP.
Ceroplastes rubens Maskell (red wax scale)
Coccus viridis (Green) (green scale)
THELYPTERIS PALUSTRIS Schott (southern marsh fern) [= *Aspidium thelypteris*]
Saissetia coffeae (Walker) (hemispherical scale)
THEOBROMA CACAO L. (chocolate tree, cacao)
Coccus hesperidum Linnaeus (brown soft scale)
THESPESIA SP.
Saissetia oleae (Olivier) (black scale)
THESPESIA POPULNEA (L.) Soland. ex Correa
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (black scale)
Saissetia oleae (Olivier) (black scale)
THEVETIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
THEVETIA PERUVIANA (Pers.) K. Schum. (lucky-nut, yellow oleander)
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
THRYPTOMENE SP.
Ceroplastes floridensis Comstock (Florida wax scale)
THUNBERGIA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
THUNBERGIA ERECTA (Benth.) T. Anders. (king's-mantle)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
THUNBERGIA GRANDIFLORA (Roxb. ex Rottl.) Roxb. (blue trumpet vine)
Kilifia acuminata (Signoret) (acuminate scale)
Pulvinaria psidii Maskell (green shield scale)
TIBOUCHINA SP. (glory bush)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
TIBOUCHINA GRANULOSA (Desr.) Cogn. (princess flower, glory bush)
Ceroplastes cirripediformis Comstock (barnacle scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
TILIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
TILIA AMERICANA L. (American linden or bass-wood)
Saissetia oleae (Olivier) (black scale)
TILLANDSIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
TILLANDSIA FASCICULATA Swartz (air plant, wild pineapple)
Coccus hesperidum Linnaeus (brown soft scale)
TIPUANA TIPU (Benth.) O. Kuntze (rosewood)
Coccus longulus (Douglas) (long brown scale)
TITHONIA ROTUNDIFOLIA (Mill.) S. F. Blake (Mexican sunflower)
Coccus pseudohesperidum (Cockerell) (orchid soft scale)
TOLMIEA MENZIESII (Pursh) Torr. & A. Gray (piggyback plant)
Coccus hesperidum Linnaeus (brown soft scale)
TRACHELOSPERMUM SP.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
TRACHELOSPERMUM JASMINOIDES (Lindl.) Lem. (Confederate jasmine)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Kilifia acuminata (Signoret) (acuminate scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
TRACHYCARPUS SP. (fan palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
TRACHYCARPUS FORTUNEI (Hook.) H. Wendl. (windmill palm)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
TRADESCANTIA SP. (spiderwart)
Saissetia coffeae (Walker) (hemispherical scale)

TREMA SP.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
TREMA LAMARCKIANA (R. & S.) Blume (West Indian trema)
Saissetia oleae (Olivier) (black scale)
TREMA MICRANTHA (L.) Blume (Florida trema)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
Saissetia oleae (Olivier) (black scale)
TREVESIA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
TREVESIA BURCKII Boerl.
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
TREVESIA PALMATA (Roxb.) Vis. (snowflake plant)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
TREVESIA PALMATA (Roxb.) Vis. 'MICHOLITZII'
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
TRICHACHNE INSULARIS (L.) Nees
Parasaissetia nigra (Nietner) (nigra scale)
TRIPHASIA TRIFOLIA (Burm. f.) P. Wils. (lime-berry)
Saissetia oleae (Olivier) (black scale)
TRIPLARIS SP. (hormigo)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
TRIPLARIS AMERICANA L. (long john, ant tree)
Coccus hesperidum Linnaeus (brown soft scale)
TRIPLARIS SURINAMENSIS Cham. (Surinam ant tree)
Saissetia oleae (Olivier) (black scale)
TRISTANIA CONFERTA R. Br. (Brisbane box)
Ceroplastes floridensis Comstock (Florida wax scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
TSUGA SP. (hemlock)
Ceroplastes floridensis Comstock (Florida wax scale)
TSUGA CANADENSIS (L.) Carriere (Canada hemlock)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
TSUGA CAROLINIANA Engelm. (Carolina hemlock)
Ceroplastes floridensis Comstock (Florida wax scale)
Saissetia oleae (Olivier) (black scale)
TULIPA SP. (tulip)
Saissetia oleae (Olivier) (black scale)
TURNERA SP.
Coccus hesperidum Linnaeus (brown soft scale)
TURNERA ULMIFOLIA L. (yellow alder)
Coccus hesperidum Linnaeus (brown soft scale)
TYPHA SP. (cattail)
Coccus hesperidum Linnaeus (brown soft scale)
ULMUS SP. (elm)
Ceroplastes cirripediformis Comstock (barnacle scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
ULMUS ALATA Michx. (wahoo elm, winged elm)
Parthenolecanium corni (Bouché) (European fruit lecanium)
ULMUS AMERICANA L. (American elm)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
ULMUS PARVIFOLIA Jacq. (Chinese elm)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus longulus (Douglas) (long brown scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
URENA LOBATA L. (Caesar weed, bur mallow)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Parasaisstia nigra (Nietner) (nigra scale)
URGINEA MARITIMA (L.) Bak. (sea lion)
Coccus hesperidum Linnaeus (brown soft scale)
VACCINIUM SP. (blueberry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
Protopulvinaria pyriformis (Cockerell) (pyrifom scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
VACCINUM ARBOREUM Marshall (sparkleberry)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
Pulvinaria ericicola McConnell (cottony azalea scale)

VACCINIUM MYRSINITES Lam. (ground huckleberry)
Mesolecanium nigrofasciatum (Pergande) (terrapin scale)
VACCINIUM STAMINEUM L. var *STAMINEUM* (gooseberry)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria ericicola McConnell (cottony azalea scale)
VALLARIS SOLANACEA (Roth.) O. Kuntze
Saissetia oleae (Olivier) (black scale)
VANDA SP.
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Vinsonia stellifera (Westwood) (stellate scale)
VANDA TERES Lindl. (orchid)
Coccus hesperidum Linnaeus (brown soft scale)
VANGUERIA SP.
Saissetia coffeae (Walker) (hemispherical scale)
VEITCHIA MERRILLII (Becc.) H. E. Moore (Christmas palm)
Coccus hesperidum Linnaeus (brown soft scale)
VERBENA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
VERBESINA VIRGINICA L. (white crownbeard)
Parasaissetia nigra (Nietner) (nigra scale)
Pulvinaria urbicola Cockerell (urbicola soft scale)
VERNONIA SP. (ironweed)
Parasaissetia nigra (Nietner) (nigra scale)
VIBURNUM SP. (arrowwood)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
VIBURNUM OBOVATUM Walt. (wild viburnum)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Saissetia coffeae (Walker) (hemispherical scale)
VIBURNUM ODORATISSIMUM Ker-Gawl. (sweet viburnum)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
VIBURNUM PRUNIFOLIUM L. (black haw)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
VIBURNUM SUSPENSUM Lindl.
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
VIBURNUM TINUS L. (laurustinus)
Ceroplastes floridensis Comstock (Florida wax scale)
VINCA SP. (periwinkle)
Ceroplastes cirripedformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia miranda (Cockerell & Parrott) (Mexican black scale)
VINCA MAJOR L. (greater periwinkle)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus viridis (Green) (green scale)
VINCA MAJOR L. 'VARIEGATA'
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia coffeae (Walker) (hemispherical scale)
VIOLA SP. (violet)
Coccus hesperidum Linnaeus (brown soft scale)
VITEX SP. (chaste-tree)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
VITEX QUINATA (Lour.) F. N. Williams
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
VITIS SP. (grape)
Coccus hesperidum Linnaeus (brown soft scale)
Coccus longulus (Douglas) (long brown scale)
Coccus viridis (Green) (green scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
Saissetia oleae (Olivier) (black scale)
VITIS CINEREA Engelm. ex Millardet var. *FLORIDANA* Munson (pigeon grape)
Coccus viridis (Green) (green scale)
VITIS ROTUNDIFOLIA Michx. (muscadine)
Coccus viridis (Green) (green scale)
Pulvinaria acericola (Walsh & Riley) (cottony maple leaf scale)
Pulvinaria innumerabilis (Rathvon) (cottony maple scale)
VITTARIA LINEATA (L.) Swartz (grass fern, shoestring fern)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
WASHINGTONIA SP. (Washington palm)
Ceroplastes floridensis Comstock (Florida wax scale)
Pulvinaria psidii Maskell (green shield scale)
WASHINGTONIA ROBUSTA H. Wendl. (thread palm, Mexican Washingtonia)
Coccus hesperidum Linnaeus (brown soft scale)
WEDELIA TRILOBATA (L.) A. S. Hitchc.
Saissetia coffeae (Walker) (hemispherical scale)
WEIGELA SP.
Ceroplastes cirripediformis Comstock (barnacle scale)
Ceroplastes floridensis Comstock (Florida wax scale)
WISTERIA SP. (wistaria, wisteria)
Coccus hesperidum Linnaeus (brown soft scale)
Parthenolecanium corni (Bouché) (European fruit lecanium)
WISTERIA FRUTESCENS (L.) Poir.
Coccus hesperidum Linnaeus (brown soft scale)

XIMENIA AMERICANA L. (tallow-wood)
Coccus longulus (Douglas) (long brown scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
XYLOSMA SP.
Coccus hesperidum Linnaeus (brown soft scale)
XYLOSMA CONGESTUM (Lour.) Merrill (shiny xylosoma)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
YUCCA SP.
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Saissetia oleae (Olivier) (black scale)
YUCCA ALOIFOLIA L. (Spanish-bayonet)
Coccus hesperidum Linnaeus (brown soft scale)
YUCCA FILAMENTOSA L. (beargrass, Adam's needle)
Coccus hesperidum Linnaeus (brown soft scale)
YUCCA THOMPSONIANA Trel.
Saissetia oleae (Olivier) (black scale)
ZAMIA SP.
Coccus acutissimus (Green) (banana-shaped scale)
Coccus hesperidum Linnaeus (brown soft scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
ZAMIA FISCHERI Miq.
Saissetia coffeae (Walker) (hemispherical scale)
ZAMIA FLORIDANA A. DC. (Coontie)
Saissetia coffeae (Walker) (hemispherical scale)
ZAMIA PUMILA L. [= *Z. angustifolia; Z. furfuracea; Z. integrifolia; Z. umbosa*]
Saissetia coffeae (Walker) (hemispherical scale)
ZAMIA SKINNERI Warsz.
Saissetia coffeae (Walker) (hemispherical scale)
ZANTEDESCHIA SP. (calla lily)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
ZANTHOXYLUM SP. (wild lime, prickly ash)
Ceroplastes floridensis Comstock (Florida wax scale)
Coccus hesperidum Linnaeus (brown soft scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
ZANTHOXYLUM AMERICANUM Mill. (Northern prickly ash, toothache tree)
Ceroplastes cirripediformis Comstock (barnacle scale)
Coccus hesperidum Linnaeus (brown soft scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Saissetia coffeae (Walker) (hemispherical scale)
Saissetia oleae (Olivier) (black scale)
ZANTHOXYLUM CLAVA-HERCULIS L. (prickly ash, toothache tree, Hercules'-club)
Ceroplastes floridensis Comstock (Florida wax scale)
Parasaissetia nigra (Nietner) (nigra scale)
Protopulvinaria pyriformis (Cockerell) (pyriform scale)
Pulvinaria psidii Maskell (green shield scale)
Saissetia oleae (Olivier) (black scale)
ZANTHOXYLUM FAGARA (L.) Sarg. (lime prickly ash, wild lime)
Coccus hesperidum Linnaeus (brown soft scale)
Pulvinaria psidii Maskell (green shield scale)
ZEA MAYS L. (corn, Indian corn)
Saissetia coffeae (Walker) (hemispherical scale)
ZEBRINA PENDULA Schnizl. (wandering jew)
Ceroplastes ceriferus (Fabricius) (Indian wax scale)
ZENOBIA SP. (andromeda)
Parasaissetia nigra (Nietner) (nigra scale)
ZEPHYRANTHES MESOCHLOA Herb. (rain lily)
Coccus hesperidum Linnaeus (brown soft scale)
ZEUXINE STRATEUMATICA (L.) Schltr. (an orchid)
Saissetia coffeae (Walker) (hemispherical scale)
ZINGIBER SP. (ginger)
Eucalymnatus tessellatus (Signoret) (tessellated scale)
ZINGIBER OFFICINALE Roscoe (common ginger, true ginger)
Ceroplastes rubens Maskell (red wax scale)
ZYGOCACTUS TRUNCATUS (Haw.) K. Schum.
Pulvinaria urbicola Cockerell (urbicola soft scale)

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