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A New Species of *Oozetetes* DeSantis (Hymenoptera: Chalcidoidea: Eupelmidae) Attacking Oothecae of *Nyctibora acaciana* Roth (Orthoptera: Blattellidae)

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Abstract.—***Oozetetes nyctiboraphagus* Gibson, new species,** an egg predator in the oothecae of *Nyctibora acaciana* Roth, is described from Costa Rica and Nicaragua. The description of the male is the first for the genus. The species is assigned to the *bucheri* species group of *Oozetetes* and a key is provided to distinguish females of the five described species of this group. Basal regions of the forewing differentiated by convex or concave folds and sometimes setal lines are compared with putatively homologous forewing veins and cells of other Hymenoptera, and a comprehensive set of names is applied to these based on homology and historical usage in chalcid literature.

Oozetetes was established by De Santis (1970) for a single species, *O. bucheri* De Santis, which was reared from oothecae of *Pseudoischnoptera lineata* (Olivier) (Orthoptera: Blattellidae). Gibson (1995) subsequently transferred five species into *Oozetetes* from other genera and recognized two species groups, the *bucheri-* and *compressicornis*-groups, based on structures of the scape and face of females. The *bucheri*-group consists of species with females having a more or less tubular scape (Figs. 13, 14), a distinct parascrobal region along the inner orbit so that the scrobal depression extends to the anterior ocellus (Figs. 1–4), and the interantennal region flat or even slightly depressed above the level of the toruli (Fig. 1). The primary feature characterizing *compressicornis*-group females is a strongly compressed scape, which is correlated with a different structure of the scrobal depression and parascrobal region than for *bucheri*-group females (see discussion and figures in Gibson 1995). Classified in the *bucheri*-group are *O. bucheri* from Argentina, *O. magniclavatus* (Ashmead, 1904) and *O. splendens* (Walker, 1862) from Brazil, and *O. testaceicornis* (Cameron, 1884) from Panama. *Oozetetes compressicornis* (Cameron, 1884) and *O. gigas* (Cameron, 1884), both from Panama, are the only two species classified in the *compressicornis*-group. Males are unrecognized for any of these species. Host information is also lacking for any described species other than the type species, though I saw a female and male of an undescribed species from the ootheca of an unidentified cockroach (Gibson 1995). The same parasitoid species was subsequently reared from a new species of cockroach and information concerning its rearing and possible oviposition behavior was given when the cockroach was described as *Nyctibora acaciana* Roth (Orthoptera: Blattellidae) by Deans and Roth (2003). The rearing of two of seven described species of *Oozetetes* from cockroach oothecae suggests that all members of the genus might use cockroaches as hosts. I have seen females representing numerous species of the genus from tropical and subtropical regions of the New World, as far north as Florida (Gibson 1995). The purpose of this paper is to provide a name for the new species reared

from *N. acaciana* in order to facilitate ongoing behavioral studies. A key to differentiate females of the five described *bucheri*-group species is also provided as an impetus for future taxonomic studies of this potentially important group of parasitoids for biological control of cockroaches.

MATERIALS AND METHODS

This study is based on specimens from the Natural History Museum, London, England (BMNH); Canadian National Collection of Insects, Ottawa, ON, Canada (CNCI); Illinois Natural History Survey, Urbana, IL, USA (INHS); University of California, Davis, CA, USA (UCDC); and National Museum of Natural History, Washington, DC, USA (USNM). Paratypic material is also deposited in the Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica (INBIO) and Museo de Insectos, Universidad de Costa Rica, San José, Costa Rica (MUCR).

All measurements except body length are relative and, unless stated otherwise, comparable based on length of the scape of the female and male both being assigned a base measurement of 10; measurements were taken with a Nikon SMZ-U microscope fitted with an ocular grid having 100 divisions. Length of the costal cell is measured from where the membrane of this cell joins the submarginal vein (basally) to where it joins the base of the marginal vein (apically) (Fig. 17, lcc); head width and interorbital distance are measured in dorsal view.

Terminology follows Gibson (1995, 1997) except as follows for the forewing. Gibson (1997, fig. 5) illustrated a composite chalcid forewing and stated the basal cell is delimited posteriorly by the cubital fold/setal line and apically by an oblique basal fold/setal line. This is an oversimplification of the structure in many chalcids. The structure is often more complex, the forewing basally being subdivided into several regions by setal lines or by convex and concave folds. The regions, folds and setal lines are analogous, if not homologous, to cells and distinct veins in other Hymenoptera as illustrated by Huber and Sharkey (1993, figs. 17–20), and discussed in part by some previous authors (e.g., Burks 1938, Bucher 1948). Because of species-specific differences in setal patterns of the regions within *Oozetetes*, a more precise description of the regions and terminology is needed than is provided by Gibson (1997). The terms used are largely adapted from Huber and Sharkey (1993) except two terms widely used in chalcid literature, basal cell and basal vein/fold/setal line, are retained for the sake of simplicity and stability. I also use 'vannal' instead of 'claval' (see Nichols 1989) to avoid possible confusion with the antennal clava. Synonymous terms used by Huber and Sharkey (1993) are provided in parentheses. In *Oozetetes*, a **basal cell** (= Radial cell) (Fig. 17, **bc**) is differentiated posteriorly by a longitudinal convex fold, the **mediocubital fold** (= M+Cu) (Fig. 17, **mcf**), and apically by an oblique convex fold, the **basal fold** (= M+Rs) (Fig. 17, **bf**), that extends obliquely toward the **submarginal vein** (= Sc+R) (Fig. 17, **smv**). In many chalcids, eupelmids included, the mediocubital fold initially curves toward the submarginal vein and forms part of the basal fold prior to being recurved posteriorly and bifurcating into a longitudinal convex fold in the posterior quarter of the wing, the **cubital fold** (= Cu) (Fig. 17, **cuf**), and a longitudinal concave fold nearer the middle of the wing, the **medial fold** (= M) (Fig. 17, **mdf**). Consequently, a triangular region is differentiated between the two recurved portions, which for simplicity I term the **mediocubital notch** (Fig. 17, **mcn**). The mediocubital fold also forms the anterior margin of an inclined **cubital area** (= 1Cu, First cubital cell) (Fig. 17, **cua**) behind the basal cell. A concave fold parallel to the mediocubital fold, the **vannal fold** (= claval fold) (Fig. 17, **vnf**), further differentiates

the cubital area from the posteriormost basal region of the wing, the **vannal area** (= claval area) (Fig. 17, **vna**), which is reflexed so as to be subhorizontal or inclined relative to the cubital area. Although only inconspicuously developed in *Oozetetes*, many chalcids have another longitudinal convex fold near the posterior margin of the wing. This fold apparently is not homologous with a vein, but can be termed the **subcubital fold** (Fig. 17, **scf**) because, if present, it extends along the **subcubital setal line** *sensu* Gibson (1997, fig. 5). The convex subcubital fold results in the posterior margin of the forewing being curved down and it is this portion onto which the dorsally curved hamuli of the hind wing hook. Because of the various longitudinal folds the surface of the wing is pleated behind the basal cell, often being more or less M-like as if viewed in cross-section (Fig. 17, insert).

Oozetetes De Santis

Oozetetes De Santis 1970: 32–33. Type species: *Oozetetes bucheri* De Santis, by monotypy and original designation.

Diagnosis.—Mandible bidentate, with small ventroapical tooth and broad dorsoapical margin. Eye bare or superficially glabrous, at most only very sparsely and inconspicuously microsetose (Figs. 1–4). Male antenna with pedicel only slightly longer than broad and without row of setae ventrally (Fig. 15); flagellum compact-filiform with short seta and numerous multiporous plate sensilla in several rows (Fig. 16); clava not conspicuously enlarged, only about as long as combined length of apical two funicle segments (Fig. 15). Female propodeum (Fig. 7) with plical region conspicuously sculptured and with callar region convex and almost always largely or entirely sculptured and setose. Female gaster (Fig. 9) dark or yellowish to orange, but without subbasal white band if light-colored; Gt_1 with posterior margin emarginate but Gt_2–Gt_5 with posterior margins straight transverse or only very slightly emarginate; syntergum with apical margin reflexed into transverse flange.

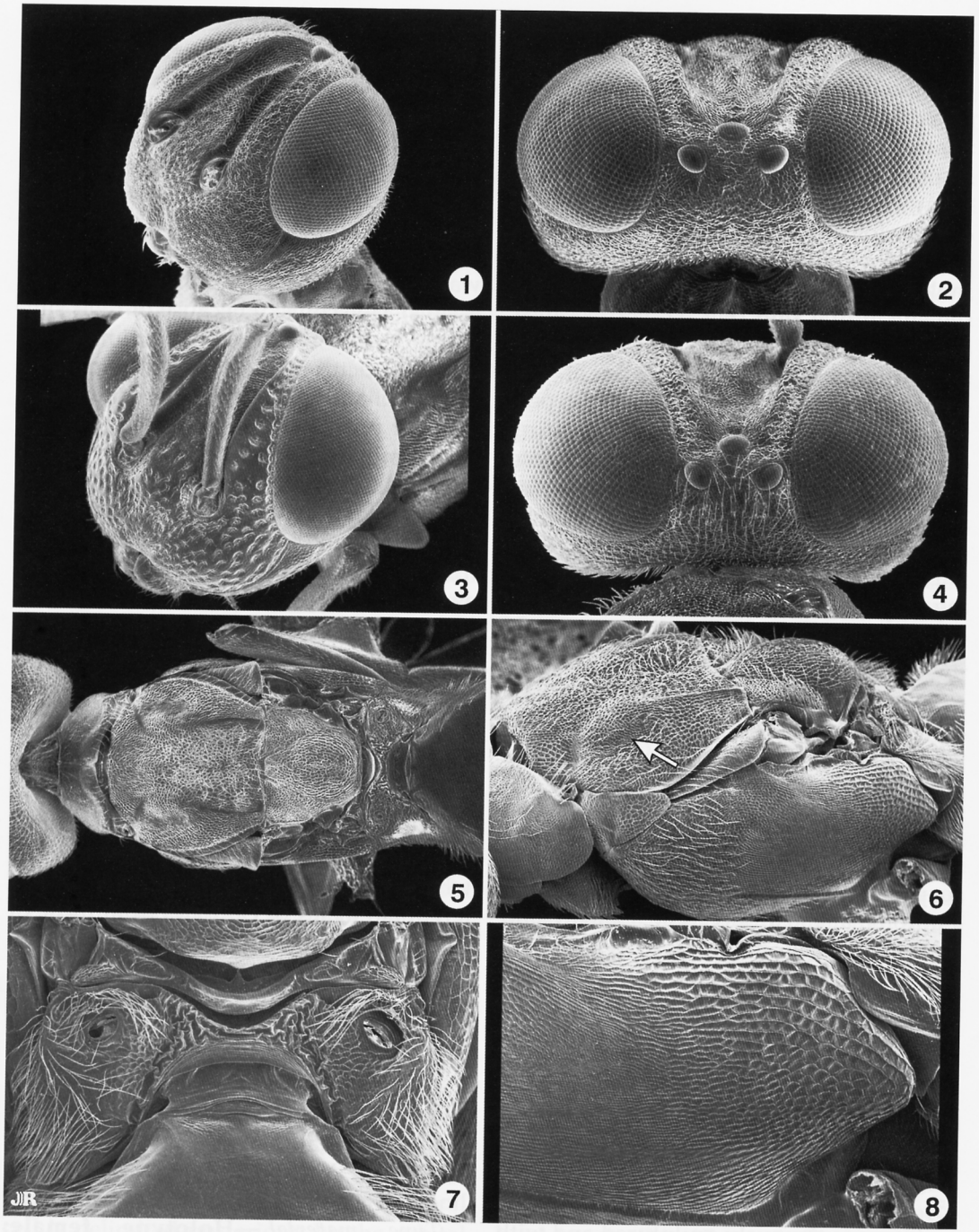
Remarks.—Females of *Oozetetes* can be differentiated from other eupelmine females using Gibson's (1995) key to genera based on females. As for other Eupelminae, the sexes of *Oozetetes* are highly dimorphic and the single male then known was keyed together with males of *A.* (*Anastatus*) Motschulsky because of their similar bidentate mandibles and similar antennal structures. *Anastatus* is a speciose, cosmopolitan genus whose members usually are primary endoparasitoids of eggs of several insect orders. Gibson (1995) suggested that apically broad, bidentate mandibles in Eupelminae may be indicative of an endoparasitoid of eggs. Further, *Oozetetes* may represent a monophyletic lineage having a specialized host relationship with cockroach eggs that renders *Anastatus* paraphyletic. This latter possibility is indicated because the males of the two genera are morphologically very similar, but several features differentiate females of the two taxa. Association of the sexes of species other than *O. nyctiboraphagus*, particularly those of the *compressicornis* group, is necessary prior to determining whether there are reliable features to differentiate males of *Oozetetes* from those of *Anastatus* (see discussion in Gibson 1995).

Oozetetes nyctiboraphagus Gibson, new species

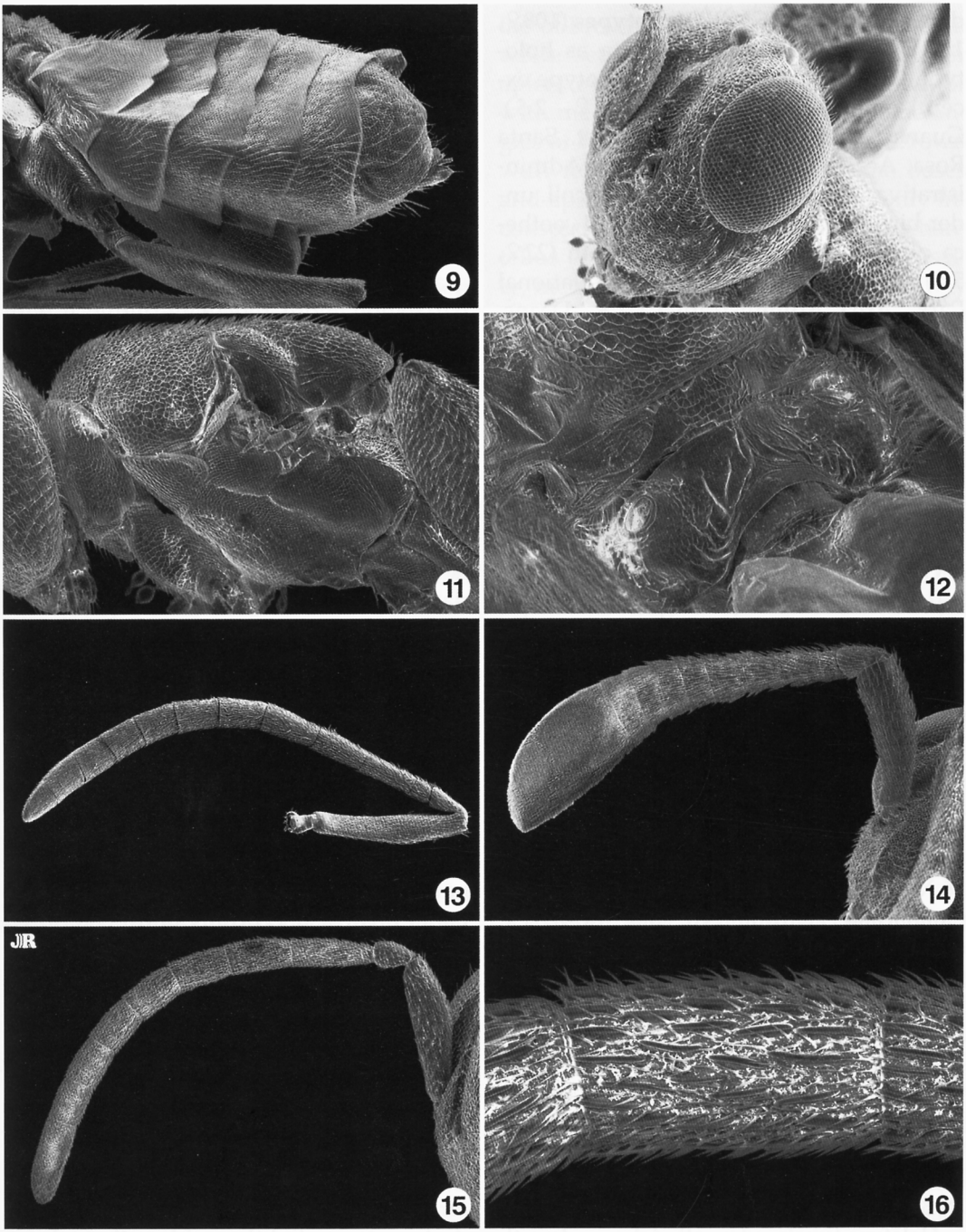
(Figs. 1, 2, 5–13, 15, 16, 18, 19)

Etymology.—The species name is derived from the Greek *phagos* (to eat) and the generic name of its only known host cockroach, *Nyctibora*. *Oozetetes* is masculine and means 'egg searcher' or 'seeker'.

Type material.—**Holotype female:** "COSTA RICA: Guanacaste, Parque Nacional Santa Rosa, Rd to Nicaragua, 1 km N main Rd"; "A.R. Deans, dry forest, coll. 30.VI.2001, em. 18.VII.2001, ex. *Nyctibora* sp. egg case on ant acacia tree" (CNCI Type No. 22872). **Allotype male:** same



Figs. 1–8. *Oozetetes* spp. 1–4, Head (♀). 1 and 2, *O. nyctiboraphagus*. 3, *O. splendens*. 4, *O.* sp. nr *O. nyctiboraphagus*. 5–8, *O. nyctiboraphagus* (♀). 5, Mesosoma (dorsal). 6, Mesosoma (dorsolateral) (arrow points to parapsidal band). 7, Apex of scutellum to base of gaster (dorsal). 8, Posterior half of acropleuron (lateral).



Figs. 9–16. *Oozetetes* spp. 9–13, *O. nyctiboraphagus*. 9, Gaster (♀, dorsolateral). 10, Head (♂, frontolateral). 11, Mesosoma (♂, lateral). 12, Apex of scutellum to base of gaster (♂, posterolateral). 13, Antenna (♂). 14, *O. testaceicornis*, antenna (♂). 15–16, *O. nyctiboraphagus* (♂). 15, Flagellum. 16, Third flagellar segment.

data as holotype (CNCI). **Paratypes** (108♀, 15♂): COSTA RICA: same data as holotype (16♀, 1♂); same data as holotype except emerged 13.VII.2001 (13♀, 2♂). Guanacaste P.N. Santa Rosa Sect. Santa Rosa, Acacia 005, 1.5 km E. Area Administrativa, 25.VI.2001, Andy Deans, coll. under bird nest, emerged 13.VII.2001, ootheca of *Nyctibora acaciana* n. sp. Roth (22♀, 5♂). Guanacaste, Santa Rosa National Park, Area Administrativa, A.R. Deans, ex. *Nyctibora acaciana* (Blattellidae) ootheca glued to *Acacia collinsii* (Fabaceae), ootheca collected VI.2001, ootheca dissected VIII.2002 (13♀, 6♂). Guanacaste Prov. Guanacaste Nat. Pk., sector Santa Rosa, 10°51′N 85°37′W, 250–300m, D. Janzen & I. Gauld [pk. hdqts, young scrubby woodland, 17–27.IV.1985, H-1–0 (1♀); 13.IV-4.V.1986, H-4-C (1♀); 27.IV-11.V.1985, H-3–0 (2♀); 4–24.V.1985, H-1–0 (1♀), H-2-C (2♀); 11.V-1.VI.1985, H-1–0 (4♀), H-3–0 (1♀); 1–22.VI.1985, H-2-C (1♀); 13.VII-3.VIII.1985, H-2-C (4♀), H-4-C (2♀), H-6-C (2♀); 3–24.VIII.1985, H-2-C (2♀); 5–26.X.1985, H-1–0 (1♀)] [Bosque San Emilio, clearing, deciduous forest, 27.IV-11.V.1985, SE-5–0 (1♀); 11.V-1.VI.1985, SE-5–0 (2♀), SE-7–0 (3♀), SE-8-C (2♀); 13.VII-3.VIII.1985, SE-5–0 (1♀); 5–26.X.1985, SE-6-C (1♀)]. Prov. Guanacaste, Guanacaste, Parque Ntl. Sta. Rosa, ex. cockroach eggs on *Acacia*, 9.IV.1977, L.D. Gomez (1♀, 1♂). Guanacaste, Sta. Rosa N.P., D.H. Janzen, MT, 22.VI-13.VII.85, SE-5–0 (1♀), SE-8–0 (1♀); 13.VII-3.VIII.1985, H-3–0 (4♀). Gste. Pr., NW Volcan Orosi, Cerro el Hacha, 300m, 1988 (2♀). NICARAGUA: San Juan del Sur, 11°15′N 85°52′W, 3.V.1988, L.J. Clark, MT (1♀). Paratypes are deposited in BMNH, CNCI, INBIO, INHS, MUCR, UCDC and USNM.

Holotype female.—Length 4.4 mm; length of head: mesosoma: metasoma = 10: 26: 26. Head metallic green with slight cupreous luster under some angles of light, the cupreous luster most distinct adjacent to ocelli, medially within scrobal depression below anterior ocellus and over interantennal region and clypeus; width: height = 19: 16; in dorsal view as in Fig. 2, with interorbital distance 0.32 times head width; OOL 0.7 and POL 1.8 times minimum diameter of posterior ocellus; eye height: eye width: malar space = 11: 7.4: 7.4; scrobal depression bell-shaped, extending to anterior ocellus and reticulate-rugulose to strigose (Fig. 1); lower face granulate to microreticulate and parascrobal region more reticulate-rugulose with setiferous punctures minute and obscure (Fig. 1); face with short, relatively inconspicuous white setae except upper parascrobal regions from about level of apex of interantennal region and vertex with setae dark and distinctly longer than ventrally. Mandibles and palpi dark red to brown. Antenna with scape yellow except brownish dorsoapically, pedicel and flagellum dark brown without metallic luster, but clava with light-colored microsetose region along ventral length; in lateral view (Fig. 13) length of scape (excluding radicle): pedicel: funicular segments: clava = 10: 2.7: 1.5: 3.6: 3.4: 3.8: 2.9: 2.7: 2.3: 2.1: 6.7; flagellum only slightly widened apically, the clava only about 1.6 times as wide as first funicular segment. Pronotum metallic green except for mediolongitudinal white membranous band, and lateral panel brownish ventrally and posteriorly, the dorsal surface with white setae (Fig. 5). Mesoscutum (Figs. 5, 6) metallic green, reticulate-rugulose with reticulations becoming larger and more distinct posteriorly between smooth paralateral ridges, and uniformly setose with white setae except longitudinal parapsidal bands granulate and bare. Scutellar-axillar complex darker than mesoscutum, with purple luster under some angles of light, and with dark setae; slightly wider than long, width: length = 9.7: 8.0; axilla punctate-reticulate; scutellum low convex, longitudinally cristate-strigose centrally. Tegula brown with white setae, coriaceous. Prepectus brown, bare, reticulate. Mesopleurosternum ventrally dark between trans-

episternal lines, otherwise metallic green except microreticulate medial region of acropleuron dark with slight cupreous luster under some angles of light and acropleuron posteriorly dark with slight metallic green or blue luster; acropleuron bare, but mesopleurosternum otherwise with white setae anterior to and ventrally between acropleural sulci; acropleuron (Fig. 6) reticulate-rugulose anteriorly but with region of minute-reticulate to granular sculpture medially below base of wings and with sculpture increasing in coarseness posteriorly to posterodorsal margin of acropleuron where reticulate-punctate (Fig. 8). Forewing with cc: mv: pmv: stv = 15.0: 8.4: 3.6: 2.4; stigmal vein apically curved in same direction as postmarginal vein, about apical half of its anterior margin subparallel with postmarginal vein, and evenly tapered without distinctly differentiated uncus; costal cell with ventral surface setose except along submarginal vein, dorsal surface largely bare except near parastigma, but with single row of scattered setae near submarginal vein over about apical half; basal cell, cubital area and mediocubital notch completely setose but vannal area bare basal to level where mediocubital fold curves into basal fold (Fig. 18); submarginal vein with scattered setae more or less distinctly aligned into 2 or 3 rows basal to more densely setose parastigma; forewing with brown infuscation basally for distance about equal to half length of submarginal vein, including costal cell, cubital and vannal areas, and distinctly infuscate medially between about base of parastigma and apex of postmarginal vein, with brown regions having dark setae and hyaline regions having white setae, except dark setae of cubital area narrowly continuous with dark seta of disc and separating slender longitudinal band of white setae along posterior margin of wing (apical portion of vannal area) from larger region of white setae behind about apical half of submarginal vein excluding parastigma; dark setae of brown regions slightly thicker than white setae and quite dense, with their apices overlapping. Coxae dark brown or with metallic green luster under some angles of light, remainder of legs dark brown with following yellowish: extreme bases and apices of tibiae, the metatibia only inconspicuously so, and trochanter, trochantellus and base of metafemur dorsobasally; metacoxa with exterior surface entirely setose except for concave ventral portion above trochanter. Metanotum (Fig. 7) dark brown; metapleuron brown to metallic green depending on angle of light. Propodeum (Fig. 7) very short medially, with plical region brown, bare and smooth along foramen but otherwise rugulose-strigose; callus metallic green or with bluish luster under some angles of light, reticulate-rugulose and with white setae except bare along oblique band behind spiracle. Metasoma with setal pattern as in Fig. 9, primarily dark brown but lighter brown basally and posterior terga with slight metallic green luster over more coarsely sculptured regions, and with syntergal flange and ovipositor sheaths yellowish; basal gastral terga coriaceous, but sculpture more distinct over posterior terga; hypopygium extending only about two-thirds length of gaster.

Allotype male.—Length 2.5 mm. Head with color and setal pattern similar to female, the following dark with cupreous luster under some angles of light: apex of interantennal region and scrobal depression medially, ocellar triangle and vertex posterior to ocelli; width: height = 22: 20; in dorsal view interorbital distance 0.48 head width; OOL equal to and POL 2.7 times minimum diameter of posterior ocellus; eye height: eye width: malar space = 11.2: 8.4: 8.0; scrobal depression transversely strigose-reticulate and separated from anterior ocellus by about one ocellar diameter, but with short median furrow extending to ocellus (Fig. 10); lower face punctulate-reticulate but interantennal region and parascrobal regions more retic-

ulate-rugulose. Antenna dark brown except scape with metallic luster under some angles of light and first funicular segment yellowish; in lateral view (Fig. 15) ratio of scape (excluding radicle): pedicel: funicular segments: clava = 10: 2.6: 1.0: 5.0: 4.2: 3.2: 3.6: 3.0: 3.0: 6.6. Mesosoma in dorsal view primarily dark with slight cupreous luster under some angles of light except following more distinctly metallic green to bluish: pronotum laterally, convex lateral portion of mesoscutum, and propodeum; mesoscutum with inconspicuous whitish setae and scutellar-axillar complex with dark setae; propodeum with callus setose lateral to level of spiracle and with a few setae between spiracle and bare plical region (Fig. 12). Mesosoma in lateral view metallic green to bluish except following dark without metallic luster: acropleuron, femoral depression, upper portion of mesepisternum and oblique transepisternal line. Forewing hyaline with cc: mv: pmv: stv = 19.6: 9.6: 8.0: 4.4; stigmal vein conspicuously curved and tapered, similar to female; costal cell setose ventrally and bare dorsally except for 4 setae near anterior margin medially; basal cell setose and with continuous line of setae along mediocubital and cubital folds, the two folds only slightly angulate relative to each other; cubital and vannal areas bare; disc with distinct lunate bare region beyond basal cell but region closed posteriorly by line of setae along cubital fold. Legs dark brown with metallic green to blue luster except the following white: trochantelli, knees and apices of tibiae of fore and middle legs, and basal 3 tarsal segments of middle and hind legs (protarsi brownish-white). Metanotum overlain by apex of scutellum (Fig. 11), band-like and coriaceous to reticulate (Fig. 12). Propodeum reticulate-coriaceous with inverted Y-like median carinal complex and with a few oblique rugae extending from posterior margin (Fig. 12). Metasoma in dorsal view primarily dark brown but with metallic green luster basally on Gt_1 and on apical tergum under some angles of light, shiny, and only very finely coriaceous.

Variation and species limits.—Deans and Roth (2003) provided a lateral habitus photograph (fig. 4E) of a female and male. Males I include in the type series are all very similar to one another, except for one reared individual (emerged 13.VII.2001, CNCI). This individual has the head and antenna of a female, but the remainder of the body of a male except the mesopleuron is somewhat "feminized", having a much larger acropleuron and less concave femoral depression than other males.

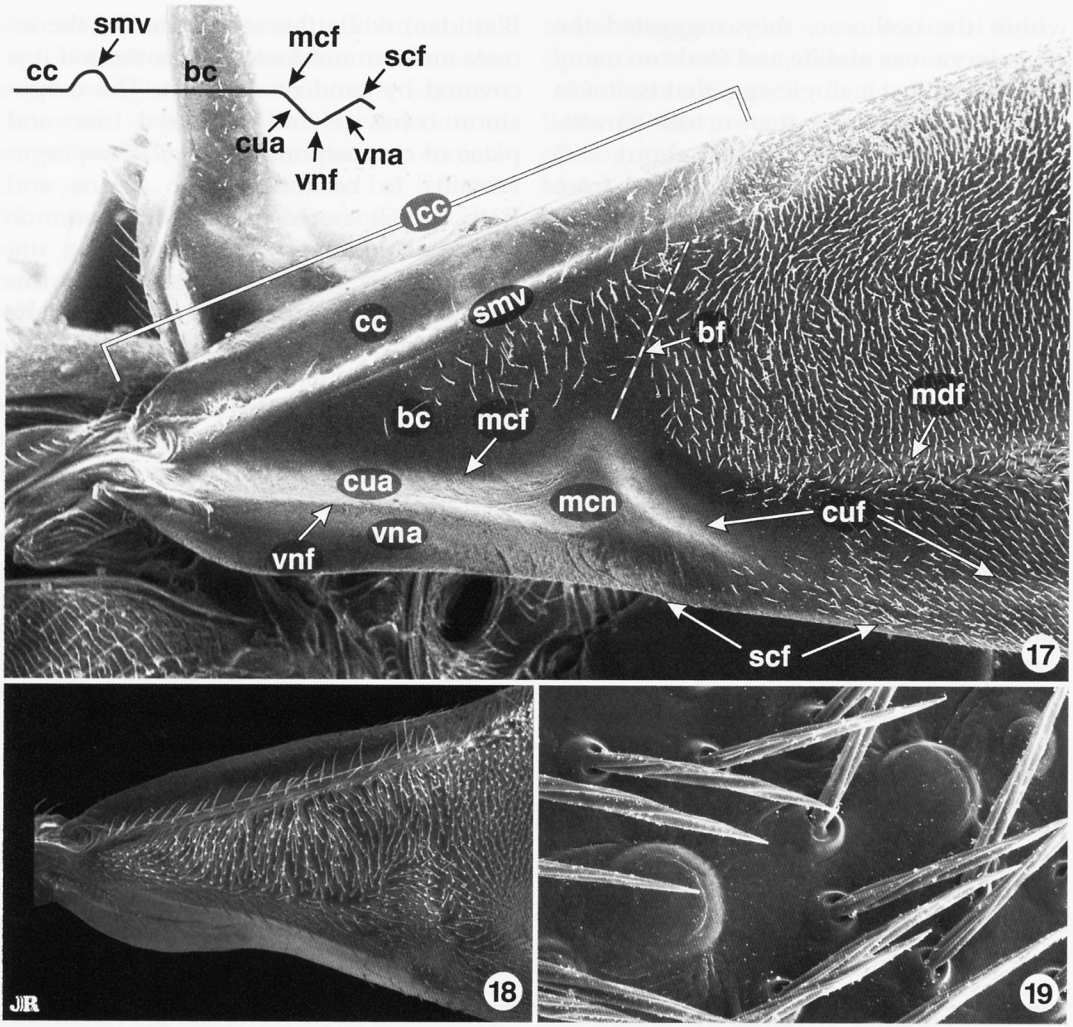
The female reared from the unidentified species of cockroach has Fl_6–Fl_8 yellowish and the other flagellar segments only light brown (left flagellum also misshapen, with Fl_5–Fl_7 fused and constricted near middle). All other females I include in the type series are very similar to the holotype, having the pedicel and flagellum brown as well as the interorbital distance 0.30–0.33 times the width of the head (n = 10, x = 0.31), a short but distinct OOL (Fig. 2), and similar forewing setal and acropleural sculpture patterns. Several females from Belize, Brazil, Costa Rica, Ecuador, Guatemala, Peru and Venezuela are similar to females I recognize as *O. nyctiboraphagus,* but are excluded from the type series based on different combinations of features, including the relative width of the interorbital distance and OOL (e.g. Fig. 4), the extent to which the cubital and vannal areas are setose, the length of the postmarginal vein relative to the stigmal vein, and sculpture of the acropleuron posteriorly. I believe *O. nyctiboraphagus* forms part of a species complex of several very similar species that differ from each other by different combinations of relatively subtle features. Additional rearings and specimens collected from diverse locations are required to test this hypothesis.

Biology.—Deans and Roth (2003) reared *O. nyctiboraphagus* from the oothecae of *Nyctibora acaciana* Roth. Based on the unsystematic arrangement of wasp pupae

within the oothecae, they suggested the wasp larva was mobile and feeds on many rather than just a single egg, that is, it acts more like a predator than a true parasitoid. The wasps emerged about 2–3 months earlier than the cockroaches, from mid-August to late September, with about 25–30 wasps emerging per ootheca through 1–3 holes chewed by emerging adults (Deans and Roth 2003, fig. 4D). Deans was unsuccessful in inducing reared female wasps to oviposit into the oothecae of *N. acaciana*, either by confining females with free oothecae, females with oothecae still attached to female *N. acaciana*, or by placing female wasps on a newly deposited oothecae on an ant-acacia inhabited by *Pseudomyrmex spinicola* (Emery) (Hymenoptera: Formicidae). In one replicate of the latter experiment, a female antennated the ootheca but jumped away at the first contact with an ant. Although oviposition was never observed, the authors suggested *O. nyctiboraphagus* probably oviposits into the ootheca while this is still attached to the female cockroach so as to avoid the hostile ant-protected environment. They noted that *Anastatus floridanus* Roth and Willis oviposits into the ootheca of *Eurycotis floridana* Rehn (Orthoptera: Blattidae) while this is attached to the female and can not locate the ootheca if it is covered by sand or sawdust. The oviposition behavior and preferred time and place of oviposition for *O. nyctiboraphagus* remains to be determined. Deans and Roth (2003) noted that other common cockroach oothecal inhabitants are unknown for *N. acaciana* and suggested this species derives significant protection by developing on ant-acacias. However, if *O. nyctiboraphagus* is the only species that attacks the oothecae, this may indicate it is the only species able to escape ant predation and successfully oviposit into oothecae attached to acacias protected by ants. Gibson (1986) commented on the prodigious jumping ability of female Eupelminae. He correlated this and the extreme sexual dimorphism that characterizes the subfamily with a highly derived mesosomal skeletomusculature in females. Jumping in female Eupelminae does not appear to be for movement from place to place and Gibson (1986) postulated it probably evolved as a rapid escape mechanism from predators, possibly ants and spiders. The ant-wasp interaction noted by Deans demonstrates the ability of *O. nyctiboraphagus* to escape ant predation.

KEY TO FEMALES OF DESCRIBED *BUCHERI*-GROUP SPECIES

1. Flagellum conspicuously clavate (Fig. 14), funicle with apical 4 segments strongly transverse, and clava about as long as combined length of apical 6 segments and about 2.5 times as wide as Fl_1 ..... ***O. magniclavatus* (Ashmead)**
– Flagellum not conspicuously clavate (Fig. 13), funicle with apical 4 segments subquadrate to elongate, and clava shorter than combined length of apical 4 segments and less than twice as wide as Fl_1 2
2. Fore- and middle legs beyond coxae yellowish orange; forewing (De Santis 1970, fig. 1) with following bare: costal cell dorsally except apically near parastigma, basal cell basally and posteriorly, cubital area, mediocubital notch, and vannal area (Fig. 17) ..... ***O. bucheri* De Santis**
– Fore- and middle legs largely dark beyond coxae, brown or with metallic luster; forewing with costal cell sometimes more extensively setose than above, but otherwise only vannal area bare 3
3. Antenna entirely dark, the scape with distinct bluish-purple luster; fore- and hind legs dark, the femora with distinct bluish-purple luster, but middle leg with femur and tibia yellowish-orange; lower face and parascrobal region smooth to finely coriaceous with



Figs. 17–19. *Oozetetes* spp. 17, *O. bucheri*, ♀ holotype forewing, with schematic cross-section (insert) (abbreviations: **bc,** basal cell; **bf,** basal fold; **cc,** costal cell; **cua,** cubital area; **cuf,** cubital fold; **lcc,** length of costal cell; **mcf,** mediocubital fold; **mcn,** mediocubital notch; **mdf,** medial fold; **scf,** subcubital fold; **smv,** submarginal vein; **vna,** vannal area; **vnf,** vannal fold). 18–19, *O. nyctiboraphagus* (♀). 18, Base of forewing. 19, Setae of forewing in region around campaniform sensilla of uncus.

distinct, scattered, setiferous punctures (Fig. 3); interorbital distance about 0.2 times head width; costal cell dorsally with complete band of setae along anterior margin; gaster dark dorsally, but laterally bright metallic green to bluish under some angles of light; forewing uniformly light brown from near base of parastigma to apex ..... ***O. splendens* (Cameron)**

– Antenna either with scape or flagellum yellowish; all legs mostly dark; lower face and parascrobal region reticulate-rugulose with only indistinct, shallow setiferous punctures (Fig. 1); interorbital distance at least 0.3 times head width; costal cell either entirely setose or mostly bare; gaster brownish with only slight metallic luster posteriorly (gaster missing beyond Gt_1 for *O. testaceicornis*); forewing obviously more hyaline apically so as to have distinct medial brownish region 4

4. Forewing (Fig. 18) with costal cell largely bare dorsally except near parastigma, vannal

area apically and mediocubital notch both setose, and basal cell with about apical half having white setae; interorbital distance at least 0.30 times head width (Fig. 2); acropleuron reticulate-strigose medially to distinctly reticulate posteriorly (Fig. 8) ..... ***O. nyctiboraphagus* Gibson**

– Forewing with costal cell entirely setose dorsally, vannal area and mediocubital notch bare (hence with large bare region between basal cell and disc), and basal cell with dark setae except along extreme apical margin (also small region of white setae immediately beyond basal fold and recurved portion of cubital fold); interorbital distance 0.22 times head width; acropleuron coriaceous ventrally to punctulate medially or punctulate-coriaceous posteriorly ..... ***O. testaceicornis* (Cameron)**

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