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Classification, natural history, and evolution of Epiphloeinae (Coleoptera, Cleridae) Part X. The genus *Madoniella* Pic, 1935

by **Weston Opitz**

Abstract. This treatise involves the genus *Madoniella* Pic described in 1935 to accommodate two species. Herein, the genus is expanded to include 74 species, 65 of which are new. The previously described species with their type localities are *Madoniella bilineata* Chevrolat (Cuba), *M. corporaali* Pic (Lesser Antilles: Guadeloupe: Trois Rivieres), *M. dislocata* (Say) (USA: Georgia: Clark Co., Whitehall Forest), *M. erythrocephala* (Gorham) (Panamá: Chiriquí: Volcan de Chiriquí), *M. minor* Pic (Lesser Antilles: Guadeloupe), *M. nebulosa* (Chevrolat) (Greater Antilles: Cuba), *M. orientalis* Zayas (Greater Antilles: Cuba), *M. pici* Lepesme (Lesser Antilles: Guadeloupe: Trois Rivieres), *M. punctata* (Gorham) (Guatemala, El Quinché: Quinché Mountains). The 65 new species included in this work and their type localities are *M. abacula* (México: Oaxaca: 14 km NW Diaz Ordaz), *M. adona* (Dominican Republic: Mt. Diego de Ocampo), *M. aktis* (México: Chiapas: 11.2 km SE Simojovel), *M. anapsis* (Dominica: 8 km E Dublanc), *M. antennatra* (Honduras: Yoro: Pico Pijol), *M. apotoma* (Honduras: Comayagua: 11.2 km E Siguatepeque), *M. apsis* (México: Chiapas: El Aguacero), *M. avina* (Argentina: Salta: El Rey National Park), *M. basilaris* (Dominican Republic: La Vega: 1 km NW Manaboa), *M. basilia* (Cuba: Loma, Pico del Gato), *M. bullalis* (Dominican Republic: Monte Cristi: 8.6 km N Villa Elisa), *M. cardinalis* (Costa Rica: Heredia: Estación Biologia La Selva), *M. careorita* (Costa Rica: Heredia; Estación Biologia La Selva), *M. cavina* (Dominican Republic: Pedernales: 23.5 km N Cabo Rojo), *M. cerviculina* (Dominican Republic: Pedernales: 3.3 km NE Los Arroyos), *M. chiricahua* (USA: Arizona: Cochise Co., Chiricahua Mountains), *M. collata* (Brazil: Chapada), *M. cracentis* (Brazil: Amazonas: 1 km W Taruma Falls), *M. crinis* (México: Tlaxcala: San Francisco Temetzontla), *M. cymatilis* (Haiti: Du Nord: Cap Haitien), *M. dariensis* (Panamá: Darien: Pire, Estación Rancho Frio), *M. disjuga* (México: San Luis Potosi: 40 km W Xilitla), *M. displicata* (Venezuela: Aragua: Ocumare), *M. ebena* (Dominican Republic: La Romana: Hato Major), *M. emblema* (Costa Rica: Heredia; 11 km SE La Virgen), *M. extensiva* (Puerto Rico: Maricao Forest), *M. facis* (Guyana: Iwokrama Research Forest, 6.4 km N of Kurupukari), *M. fonteboa* (Brazil: Amazonas: Fonteboa), *M. gonia* (México: Durango: 4.8 km E El Salto), *M. guana* (British Virgin Islands: Guana Island), *M. howdenorum* (México: Chiapas: 2.6–6 km S La Trinitaria), *M. ignis* (Guatemala: Zacapa: San Lorenzo), *M. infula* (Dominican Republic: La Vega: Cordillera Central, 4.1 km SW El Convento), *M. insignis* (Brazil: Bahia: San Antonio da Barra), *M. knullorum* (USA: Texas: Jeff Davis Co, Davis Mountains), *M. kuehlorum* (Nicaragua: Matagalpa: 10 km NW Matagalpa), *M. latinopsis* (Venezuela: Aragua: El Limón), *M. leona* (México: Nuevo Leon: 14.4 km W Iturbide), *M. linea* (Jamaica: Hardwar Gap), *M. lineola* (Guatemala; San Lorenzo: 2 km S San Lorenzo), *M. lurida* (Dominican Republic: Pedernales: La Abeja), *M. magdalena* (Colombia: Magdalena: Tayrona Pueblito), *M. maxicornis* (México: Veracruz), *M. melina* (Honduras: Yoro: 8 km N La Habana), *M. merga* (México: Durango: 12.5 W El Salto), *M. nana* (USA: Texas: Cameron Co. Sabal Palm Grove), *M. orosiensis* (Costa Rica: Guanacaste: Volcán Orosi), *M. patula* (México: Chiapas: 54 km S Ocosingo), *M. pedalis* (Cuba: Cayamas), *M. pellis* (Cuba: Holguin: Sierra de Nipe), *M. peninsularis* (México: Baja California: Cabo San Lucas), *M. pinicola* (USA: Arizona: Cochise Co., Chiricahua Mountains), *M. plenita* (Costa Rica: Cartago: Turrialba), *M. pumilis* (Colombia: Magdalena: Pueblito), *M. quintana* (México: Quintana Roo, 66 km E Xpujil), *M. rectangularis* (USA: Texas: Hidalgo Co.), *M. redacta* (Costa Rica; Heredia: Estación Biologia La Selva), *M. rubidia* (Brazil: Bahia: Salobro), *M. storea* (Jamaica; Hardwar Gap), *M. tegetis* (Honduras: Copán), *M. texis* (Costa Rica: Cartago: Turrialba), *M. thomasi* (Andros Island: Maidenhair Coppica), *M. vogti* (USA: Texas: Hidalgo Co.), *M. welderi* (USA: Texas: San Patricio Co., Welder Wildlife Refuge), and *M. zonula* (Panamá: Colón: Fort Sherman). A neotype is selected for *Enoplium dislocatum* Say. Lectotypes are selected for *Madoniella corporaali* Pic, *Epiphloeus erythrocephalus* Gorham, *Madoniella minor* Pic, *Madoniella pici* Lepesme, *Epiphloeus punctatus* Gorham, and *Epiphloeus nebulosum* Chevrolat. Madoniellans are lignicolous insects with a predatory role in the process of wood decomposition; their larvae and adults are voracious predators on wood infesting beetles. These beetles are strong flyers, highly cryptic on bark, and apparently capable of perceiving volatile emissions of bark beetle prey and emission products of hardwoods. They congregate in high numbers amidst outbreaks of bark beetles, but after depositing eggs founder predatory adults disperse from the initial bark-beetle infestation site. That is, once these checkered beetle adults have established a predatory population, the initial parents, or their progeny, will not deposit eggs during subsequent outbreaks of the second generation of bark beetles that reinfest the initial tree hosts. Species of *Madoniella* do not appear to be host specific (regarding prey or tree) for they are known to be associated with a variety of wood infesting beetles and trees such as pines, oaks, and mahogany. It is postulated that the common ancestor of *Decorosa* and *Madoniella* evolved in South America with extensive over sea dispersals into Middle America and the Antilles. It is thought that the Greater Antilles fauna has its origin in a Mexo-American founder species that traversed a relatively narrow oceanic gap at a time when the southern component of Hispaniola approximated theYucatán peninsula. The madoniellan Lesser Antilles components probably are derivatives of northern South American elements. The relative abundance of autochthonos islandic species, that phylogenetically traverse species-group lines, is indication that oversea dispersal has been an important characteristic in madoniellan historical and extant biogeography.

Keywords. Coleoptera – Cleridae – *Madoniella* – taxonomy – biogeography – phylogeny

Contents

Introduction

Extensive species diversity is the most unexpected result of this treatise of *Madoniella* Pic, 1935. Examined in detail, these beetles show considerable morphological differences yet superficially they give the impression of structural homogeneity, possibly a manifestation of the relatively consistant body size, body form and, in particular, the presence, albeit in various designs and degrees of expression, of the elytral insignia (Fig. 60). The elytral insignia characteristic is present throughout the genus and its shape is quite consistent throughout the range of species. The elytral insignia is a synapotypic characteristic and defines the monophyly of *Madoniella*.

Repository of specimens

The following abbreviations indicate collections from which specimens were borrowed, and were taken from ARNETT *et al.* (1993). My sincere thanks to the curators of these collections acknowledged in parentheses.

AMNH . . . . . American Museum of Natural History, Department of Entomology, Central Park West at 79th Street, New York, New York 10024-5192 (Lee Herman; herman@amnh.org)

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CDAE . . . . . California Department of Food and Agriculture, Plant Pest Diagnostic/Entomology Laboratory, Entomological Collection. 3294 Meadowview Road, Sacramento, California 95832-1448 (Chuck Bellamy; cbellamy@cdfa.ca.gov)

CHAH . . . . . Henry A. Hespenheide Collection, University of California, Los Angeles, Department of Organismic Biology, Ecology and Evolution, 621 Charles E. Young South, Box 951606, Los Angeles, California 90095-1606 (henryh@biology.lifesci.ucla.edu)

CMNC . . . . . Canadian Museum of Nature, Insect Collection, Post Office Box 3443, Station D, Ottawa, Ontario, Canada K1P 6P4 (Robert S. Anderson; randerson@mus-natur-ca. Francois Genier; fgenier@mus-natur.ca)

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RFMC ..... Roy F. Morris II Collection, 2635 Ewelll Road, Lakeland, Florida 33811 (catchbugs@aol.com)

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SEMC ..... The University of Kansas, Snow Entomological Division, The Natural History Museum of the University of Kansas, Lawrence, Kansas 66045-2454 (Zachary Falin; ksem@ku.edu).

SMTD ..... Staatliches Museum für Tierkunde Abt. Entomologie. Königsbrücker Landrstr. 159, D-01109, Dresden, Germany (Olaf Jäger; olaf,jaeger@snsd.smwk.sachsen.de)

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Methods

This study is based on the external and internal morphology of more than 1,500 adults and 3 immatures. During the early stages of this work, I mailed vials with Pampel's fixative to various colleagues who generously provided liquid preserved specimens for investigations of the visceral organs. I consider Pampel's fixative the finest preservative for insect internal morphological work. After decades, specimens preserved in this fixative retain their pliability and mesodermal internal organs remain preserved with minimal breakage during dissection despite adhesion of the organs of interest to connective tissue or tracheal system entanglements. The chemical composition of Pampel's fixative is: glacial acetic acid, 4 parts; 40% formaldehyde, 6 parts; 95% alcohol, 15 parts; water 30 parts.

Fluid-preserved specimens were dissected in water. Complete beetle disarticulation involved first the removal of elytra and membraneous wings. The latter were placed in a drop of water on a glass slide, then spread out to expose the venation pattern. Next, a Q-tip applicator was used to blot excess water from the slide, which allowed the flattened wing to dry. Then, the dry wing was glued onto a card mount, which was pinned and labeled. To extract the alimentary canal, the beetle was cut with microscissors along each side of the head, which allowed the separation of the foregut from the cranium. Then, the prothorax was severed at the junction between the upper epimeron and pronotum. The pterothorax was cut along the metepimeron to separate the gut from the bulky supply of flight muscles. The preliminary dissection was completed with an incision along the abdominal spiracles. Lastly, the hindgut was separated from its entanglement with the internal reproductive organs.

Techniques of illustrations were similar to those described in Ekis [now Opitz (1977: 6)]. The internal reproductive organs of each gender show only one pair of the gonadal components; one of two ovaries, one of two testes, and one of two pairs of male accessory glands. The figure of the alimentary canal shows only two of four cryptonephridial tubules. The aedeagi are assembled on illustration plates to facilitate their use in the species identification process. When using this structure to establish the identity of a specimen cleridologists often rely on characteristics of the aedeagal apex, which is most conveniently examined when the distal limits are projecting anteriorly.

Measurements of body length and body width were done with a plastic millimeter ruler whereas those concerning proportions of body parts were done with an ocular micrometer through a Wild M5 stereoscopic microscope. Body length measurement involved the lateral aspect of the body and extended from the frons to the posterior extremity of the elytra. Body width involved the greatest width of the elytra in dorsal view. Eye width was measured from the outer margin of the eye to the inner margin in dorsal view, whereas the width of the vertex involved the distance from the proximal margin of the one eye to the proximal margin of the other eye. In the descriptions, the values that compare the eye width with the width of the vertex are presented in such a way that the vertex width is listed first. Length is listed first in comparisons involving the pronotum. The length of an elytron was measured from the humeral margin to the posterior limit of the elytron. Values for elytral width were obtained from measurements across the greatest width of the elytron, which usually involves measurement across the elytral distal two-thirds. The aedeagus of all available males was dissected and after examination was immersed in glycerine, then encased in a plastic vial and pinned beneath the appropriate specimen.

The task of classifying specimens into the species category was daunting at first. There were relatively few specimens to work with. Initially, it seemed that the elytral

insignia (Fig. 60) varied greatly within species as it does in the North American *Madoniella dislocata* (Say) (see Figs 262–265). But, as more and more tropical specimens of these beetles became available, it became obvious that the variation of the elytral insignia, observed in *M. dislocata*, was not characteristic of most other *Madoniella*. Also, characteristics of the aedeagus, particularly the shape of the phallic apex, proved very useful in the discernment of species; aedeagal variations coincided very well with differences in elytral insignia attributes, which is not the case in *M. dislocata.* In the latter species, characteristics of the aedeagus are remarkably homogeneous throughout the species' range.

Once I realized that differences in the elytral insignia, and attributes of the aedeagus, 2° elytral setae, elytral punctations, and body form were useful for predicting species status, I proceeded to organize specimens into presumed species taxa. Then, I dissected all males to check compatibilities and incompatibilities in aedeagal characteristics. Once confident that I assigned the sizable assemblage of specimens into plausible biological species, I proceeded to prepare a species key, which was followed by the preparation of the species descriptions. Next, I reviewed characteristics of outgroup taxa, which involved specimens of *Amboakis* Opitz, *Ellipotoma* Spinola, *Ichnea* Laporte, *Opitzia* Nemesio, *Parvochaetus* Opitz, *Pyticeroides* Kuwert, and *Silveirasia* Nemesio. Variations of 33 morphological characters were arranged into a character matrix (Table 1). The matrix was analysed via Winclad version 1.00.08 (NIXON 2002) in combination with NONA (GOLOBOFF 2003).

Assessments of species-level discontinuities. The biological species concept as presented by STANDFUSS (1896: 115), DOBZHANSKY (1937: 312), and MAYR (1963: 19) is used herein as the theoretical basis for the discernment of species. There has been much discussion about the usefulness of this concept as an operational step in taxonomic aspects of systematics. Advances in the application of molecular biology to systematics have undoubtedly promulgated some of these discussions. Moreover, I suspect that some geneticists may object to the concept of the biological species on the grounds that hybridization studies are not carried out in most invertebrate taxonomic studies. However, scientific research should not be constrained with matters of practicality. Thoughts of STANDFUSS (*l. c.*), DOBZHANSKY (*l. c.*), and MAYR (*l. c.*) about the biological species concepts are explicitly falsifiable and therefore scientific (POPPER 1968).

Admittedly the biological species concept is difficult to apply in practice because of field and laboratory constraints that most invertebrate taxonomists confront. But, when one strives towards the concept with painstaking diligence, irrespective of character suite used, credible character analyses result in an assessment of species-level discontinuities that have a respectable chance of being correct and are always falsifiable.

However, in the case of estimating species-level discontinuities, simply applying the concept of falsifiability is not sufficient because the criterion of falsifiability does not take into consideration how logical or comprehensive one has to be in character analysis and in the application process of establishing relationships. Diligently investigated, character states, irrespective of what part of the research animals gestalt one applies, leads to assessments of species discontinuities that are ultimately testable. The relationship of conspecificity or non-conspecificity between representatives of two populations, or representatives of two morphs (EKIS 1977: 5, MAWDSLEY 1992: 199), may be eventually tested to determine if they meet Mayr's criteria of reproductive isolation in the natural settings of the organisms under study.

There is one other aspect involved in the search for criteria to predict species status and reproductive isolation, and it is that the search inevitably leads to a very gratifying

surge of accomplishment resulting from the discovery of new species. Persons who delve in the diversity of nature whether they are naturalists or taxonomists are bound by a commonality of "having a passion for discovery". I find it satisfying to apply all that I have learned about anatomy, ethology, population genetics, ecology, botany, and zoogeography and then apply the knowledge to decipher what manner of differences expressed in the phenotype represents the kind of genotypic differences among specimens that are reproductively isolated.

In the event that I eventually delve into population-level chemistry of checkered beetle DNA, I still would want to field test the differences in the base sequence of my taxa to verify conspecificity or non-conspecificity according to the biological species concept. For these reasons, I consider the concept of the biological species the most useful and most scientific method to assess the abundance of sexually reproducing species in nature.

Phallobasic rod variations (Fig. 282) have been particularly useful for the discernment of species status of *Madoniella* specimens. But differences in body form, antennae, width of vertex, integumental pubescence, spines on the anterior margin of the front tibiae, elytral form, arrangement of elytral punctations, integumental color, configuration of the elytral insignia (Fig. 60), aedeagal features, and geographic distribution were also helpful. At first I thought that differences in length and shape (whether forked or not) of the phallobasic rod were manifestations of intraspecific variations. However, as sufficient male specimens became available and population samples increased, it became apparent that this seemingly trite character provides differences that were not only constant within populations and correlated well with other character differences, but also remained constant among intraspecific populations that spanned such extensive terrain as the whole of Central America (*sensu* OPITZ 2005: 102).

Assesment of supraspecific-level discontinuities. After the excitement one attains from the discovery of new species subsides, one then becomes occupied by the tedious intricacies in the preparation of their descriptions and attempt to relate them evolutionarily to each other and to noncongeners. Perhaps there is no more daunting task in taxonomic entomology than the one that has to do with the decision about what manner of interspecific discontinuity warrants the recognition of a genus. This last step is particularly agonizing when one deals with a taxon that has undergone considerable "recent" evolutionary diversification and minimal extinction. And, when it comes to insects, one can never be sure that one has a fair representation of extant taxa in tropical environs that for various reasons have not been adequately subjected to faunal sampling. This is particularly true when one researches the Cleridae because most often they are collected in increments of one.

In my work with epiphloeines, I have made the species group my focus in discussions of evolutionary relationships because the extent of anatomical differences at the species level is not suitable for discernment of character polarity. Like many checkered beetles, the epiphloeines represent a commonality of natural selection towards foraging on lignicolous insects. It seems logical to recognize that the genome of these animals would have just so many ways in expressing phenotype that would make them successful predators of insect prey. It also seems logical to recognize that phenotypic variations that do not relate to successful predatory activity might be the result of selection toward such aspects as antipredatory devices (such as mimicry), sex recognition behaviors (involving pheromones for example) not discernable in dried museum specimens, or some other general behavioral phenotype; or perhaps, the result of genetic mechanisms such as pleiotropy. My point is, regardless of the selection

mechanisms responsible for epiphloeine diversity, the results of such selection have not provided diversity in morphology, therefore sister species relationships are difficult or impossible to discern on the basis of pinned specimens alone. Consequently, in my work with recently evolved epiphloeines, I have set my goal of deciphering evolutionary relationships at the species group and genus levels.

I concur with systematists who advocate that higher taxa should be based only on monophyly and I concur with KOLIBÁČ (1998: 128) who advocates that the generic concept within the Cleridae should be based on at least one synapotypic character state. Only monophyletic groups, defined by a methodology that produces refutable evidence of phylogeny (such as HENNIG 1966), justify scientifically based interest in decipherment of taxa evolutionary history. Comprehensive work in the relatedness of organisms helps unfold the immense information that is locked in the genetic library of nature.

For reasons explained in paragraph two, I have had to rely extensively on characteristics that I would define as apotypic, but homoplasic. I have coined the term "homoplasic apotypy" to express the view that in the Cleridae similar anatomical structure, brought about by similar selection pressure towards predatory strategies, often surfaces independently among "less" related taxa. Such anatomical structures (the homoplasic apotypic characteristic) is used to link species into groups that I consider monophyletic. In other words, homoplasic apotypies that, in the absence of evidence to the contrary, represent derived characteristics from different stocks of ancestral genomes do not necessarily have to be considered in issues of paraphyly.

I give credence to the utility of homoplasic characteristics in evolutionary thinking because distantly related genomes, perhaps in the form of several founder or ancestral species, will evolve separate aggregates of monophyletic species in which similar apotypies may have been selected for independently. Several groups of species, each comprising a "species bush", may each be monophyletically defined by characteristics that were repeatedly, yet independently, evolved from relatively "unrelated" genomes. Several stocks of taxa, each represented by a species bush, are each legitimately hypothesized as being monophyletic on the grounds that natural selection has acted upon a different set of ancestral genes (within each ancestral stock) to come to the same morphologic conclusion (that is, evolved the most adaptive morphology for the same predatory life styles) in more than one branch of a phylogenetic tree. This line of reasoning is akin to conventional interpretations involving the locomotory characteristic "ability to fly". The ability to fly represents a homoplasy worthy of consideration as a "homoplasic apotypy" among insects, reptiles, mammals, and birds.

Further, there is a group of genera in the checkered beetle subfamily Peloniinae (such as *Platynoptera* Chevrolat) that have spines along the anterior margin of the protibia. This characteristic also appears in all members of the subfamily Epiphloeinae whose monophyly has been clearly established on the basis of other characteristics (OPITZ 2004: 6). I consider it reasonable to use the tibial-spine characteristic to define the monophyly of two genetically remote groups. I consider the presence of spines on the tibia to be a homoplasic apotypy brought about by the selection of different ancestral genomes to solve a common problem that I presume to involve a "comb-like" arrangement on the protibia to help clean the antenna or some other Integumental components. I do not believe that the two sets of spines are homologous, but evolved as independent phylogenetic useful characteristics that express common ancestry from separate gene pools. I suggest that spines on the protibiae are a homoplasic apotypy for the above mentioned peloniines and for the subfamily Epiphloeinae. These two groups of species are clearly separated by a variety of other phylogenetically useful

characteristics, but it would be too casual to simply ignore these protibial spine considerations when discussing phylogenetic relationships within Peloniinae and Epiphloeinae (Fig. 28). Generalities about the concept of the genus were recently discussed by OPITZ (2010: 48).

Phylogenetic methods. Principles to generate phylogenetic hypotheses included in this work are essentially those used in previous contibution of Epiphloeinae genera (OPITZ 2004: 9, OPITZ 2006: 101, and OPITZ 2007: 85). In short, the canons of Hennigian methodology form the basis for discussions relevant to character state evolution, and form the basis for kinships statements based on sister group relationships. Once evaluated, uniquely derived characteristics were organized into a matrix, which was analysed via Winclada and NONA as described in the section of materials and methods.

Genus *Madoniella* Pic, 1935

Taxonomic history. The nomenclatural history of this group of checkered beetles begins with Thomas Say who in 1825 described *Enoplium dislocatum*. This previously little known group of beetles must have been a considerable enigma to early coleopterists as the vicissitudinous character of the generic placement of its species suggests. Of the nine previously described species, six were previously independently classified under *Notoxus* Fabricius (junior synonym of *Opilo* Latreille), *Phyllobaenus* Spinola (*nec* Dejean, 1837), *Enoplium* Latreille, *Epiphloeus* Spinola, *Aulicus* Spinola, or *Phlogistosternus* Wolcott (junior synonym of *Madoniella* Pic).

The genus *Madoniella* was established by Maurice Pic in 1935 on the basis of two Lesser Antilles species, *M. minor* and *M. corporaali*. Pic aligned *Madoniella* with Corynetini; prompting CORPORAAL (1950: 306) to classify *Madoniella* under Korynetinae. Then, in 1947 Lepesme added *M. pici* to the genus which remained trispecies until OPITZ (1997: 62) synonymized *Phlogistosternus* Wolcott, 1944 with *Madoniella*, which added species taxa, listed by CORPORAAL (1950: 250) under *Phlogistosternus*, to *Madoniella*. Elsewhere, I relegated one species of *Phlogistosternus* to *Parvochaetus* Opitz (OPITZ 2006: 116), and three to *Amboakis* Opitz (OPITZ 2006: 132, 139).

Natural history. All the available evidence suggests that adults and larvae of these epiphloeines are bark beetle predators. Part of the evidence stems from morphology with mouthparts and digestive system contents and structure providing evidence of carnivory. Moreover, I observed, during midmorning hours, adults of *Madoniella crinis* consuming bark beetle adults who, in large numbers, were part of the wood decomposition fauna of a huge, recently-felled trunk of *Manilkara* tree besides Rio Negro, a major river system component of the Amazon Basin.

The most detailed account of the biology of a *Madoniella* species comes from GRUNER (1974) who studied the life history of the West Indies species *Madoniella pici* Lepesme in relation to mahogany decomposition studies. According to Gruner, these checkered beetles occur in large numbers at the onset of an infestation of the bark beetle *Hexacolus guyanensis* Schdl. Moreover, he suggests that there are four larval instars in the life history of this beetle that, in its immature stages, is an aggressive predator in galleries of the aforementioned bark beetle.

Perhaps the most significant observation during this study is that the same adults that established the initial predatory populations did not oviposit during subsequent outbreaks caused by the progeny of the infecting bark beetle population. This implies

that the founder populations of the predator, in a given initial outbreak of bark beetles, disperses after its initial deposition of eggs to aggregate among other ensuing prey outbreaks. This observation may have profound implications in the value of *Madoniella* species as important biological control agents of bark beetles.

Records of predatory activity of the North American *M. dislocata* (Say) come from CHAMPLAIN (1920: 636) who reports that adults feed on the bark beetles of the genus *Pityophthorus* Eichhoff. He further indicates that *dislocata*, found on and flying about logs infested with bark beetles, fed, mated, and oviposited on the log in question. It is reported that the larvae of this checkered beetle are found in galleries of small bark and wood borers where they feed on borer immatures. Additional reports of *M. dislocata* larvae predatory activity involve the cerambycid *Elaphidion villosum* Weed in oak twigs, and on the scolytids *Chramesus hicoriae* LeConte in hickory twigs, *Micrasis* LeConte in redbud, and *Scolytus muticus* Say, and on the buprestid, *Agrilus lecontei* Saunders in hackberry.

A considerable amount of information may be gleaned from the bionomic information on specimen labels. Perhaps the most important information from such a source involves, one, the biomes from which specimens were collected, two, the plants with which they are associated, and three, the reported altitudinal range of the species.

With regard to biomes, these checkered beetles have been collected in primary, secondary, and other successional tropical forests. They have been captured in tropical rain forests, oak pine forests, swamp forests, deciduous forests, wet montane forests, in areas of pine and oak slash, island section of forests amidst pasture terrain, mesquite forests, and amidst coffee groves.

Madoniella species are associated with a vast variety of shrubs and trees among which we can list *Pinus ponderosa* Lawson, *Pinus ayacahuite* Schlechtendahl, *Pinus caribae* Morelet, *Quercus coccinea* Menchh., *Quercus hypoleuka* Englemann, *Quercus cricea* W., *Celtis occidentalis* Linnaeus, *Celtis laevigata* Willdenau, *Clusia longipetiolata* Schery, *Clusia longifolium* Willdenow, *Manilkara bidentata* Chev., *Cercis Canadensis* Linnaeus, *Protium glabrum* (rose) Engl., *Pentaclethra macroloba* Willdenow, *Guarea guara* (Jacq.), *Pouruma minor* Benoist, *Virola koschnyi* Warb, *Meliosma vernicosa* (liebm.) Griseb., *Goethalsia meiantha* Burret, *Spondias morbin* Linnaeus, *Apeiba membranaceae* Spruce, *Anacardin excelsum* Bertero & Balb., *Callophyllum longifolium* Willdenow, *Dendropanax arboreus* (Linnaeus), and *Poulsenia armata* (Miq.) Standl. Common names of plants from which these beetles have been collected include; black spruce, sumac, apple, wild cherry, hickory, basswood, peach, and plum.

There are a variety of lignicolous insects upon which *Madoniella* individuals are reported to feed. Among these we may include *Dendroctonus frontalis* Zimmerman, *Dendroctonus mexicanus* Hopkins, *Tomicus avulses* Eichhoff, *Tomicus cacographus LeConte*, *Polygraphus rufipennis* Kirby, and *Pityophthorous consimillis* LeConte.

Many of the specimens included in this study were collected with Malaise traps, by beating, in light traps, or by the use of other traps involving sticky wire, sugar bait, boll weevil sex attractant, flight intercept, or funnel laced with turpentine. Most specimens were captured at altitudes of 500–2000 m; a few were gathered at higher altitudes to a maximum of 3000 m. Seasonally, these checkered beetles were obtained most frequently during late spring and most infrequently during late fall; from April to October above the Tropic of Cancer, and November to March below the Tropic of Capricorn.

Madoniella Pic, 1935

Madoniella Pic 1935: 10.
Phlogistosternus Wolcott, 1944: 124.
Spinola 1844: 1, *Phyllobaenus*. Leconte 1849: 30, *Phlogistosternus*. Melsheimer 1853: 83, *Phyllobaenus*. Lacordaire 1857: 466, *Phlogistosternus*. Gemminger & Harold 1869: 1747, *Phlogistosternus*. Desmarest 1870: 264, *Phlogistosternus*. Gorham 1877: 246, *Phlogistosternus*. Leconte & Horn 1883: 219, *Phyllobaenus*. Kuwert 1893: 492, *Phlogistosternus*. Lohde 1900: 87, *Phlogistosternus*. Ulke 1902: 23, *Phyllobaenus*. Gahan 1910: 59, 73, *Phlogistosternus*. Schenkling 1903: 86, *Phlogistosternus*; 1910: 113, *Phlogistosternus*. Wolcott 1910: 858, *Phyllobaenus*; 1944: 124, *Phlogistosternus*. Böving 1920: 609, *Phlogistosternus* larva. Leng 1920: 151, *Phyllobaenus*. Bradley 1930: 107, *Phyllobaenus*. Chagnon 1935: 171, *Phyllobaenus*. Lepesme 1947: 169, *Phlogistosternus*. Blackwelder & Blackwelder 1948: 14, *Phlogistosternus*. Corporaal 1950: 250, 306, *Madoniella*. Papp, 1960: 85. Arnett 1960: 604, *Phlogistosternus*. Winkler 1961: 59, *Phlogistosternus*. Barr 1962: 126, *Phlogistosternus*; 1975: 14, *Phlogistosternus*. Ekis & Gupta 1971: 61, *Phlogistosternus* internal anatomy. Crowson 1972: 339, *Phlogistosternus* internal anatomy. Ekis 1975: 47, *Phlogistosternus*. Foster & Lawrence 1991: 451, *Phlogistosternus* larvae. Peck & Thomas 1998: 86, *Madoniella* Opitz 1997: 62, *Madoniella*; 2002: 278, *Madoniella*; 2006: 107, *Madoniella*.

Type species. *Madoniella minor* Pic 1935: 10 (subsequent designation by Corporaal 1950: 306).

Synapotypic characteristics. Vertex narrower than eye, elytral insignia present, epipleural fold incomplete.

Description. Size: Length 3.0–8.0 mm; width 1.0–2.7 mm.

Form (Fig. 1): Elongate, elytral outer margins convex (Figs 22, 23) or parallel (Fig. 21), about three times longer than wide; pronotum deep, transverse (Fig. 11) or shallow, transverse (Fig. 145), pronotal side margins deeply (Fig. 164) or shallowly (Fig. 162) incised, tuberculate (Fig. 138) or not (Fig. 142).

Integument: Cranium dark brown, reddish-brown or red; mouthparts and antennae yellow or brown; pronotal disc entirely dark brown, predominantly dark brown but red or yellow near anterior margin, or predominantly red but dark brown near posterior margin; elytral ground color brown, usually with entire, or some component, of elytral insignia (Fig. 60), with or without angular yellow markings, or with vertical narrow yellow lines (Fig. 269), discal setae dark or light; legs entirely yellow, yellow with brown markings, yellow but with dorsal margin of tibiae infuscated, or femur brown and tibiae and tarsus yellow; abdomen dark brown.

Vestiture: Head with profuse erect setae; legs with long stout setae along anterior margin, with shorter much finer setae in posterior margins, pulvilli densely finely setose (Fig. 123); pronotal vestiture composed of stout variously lengthened setae that arise from punctations, rarely setae decumbent and arranged in whorls, trichobothria prominent (Fig. 122), bothrium partially obscured by bothrial dome; thoracic sternum and abdominal venter with profuse fine decumbent setae; pronotal discal setae decumbent, directed towards middle at sides, directed anteriorly at middle; elytral vestiture comprised of long and thick subvertical setae (= 1° setae) and short and thin decumbent setae (= 2° setae) (Fig. 121), elytral setae implanted in interstitial spaces, they do not originate from within punctures; fifth abdominal tergum bordered posteriorly with a dense row of short stout setae.

Head: Cranial vertex wide (Fig. 2) or narrow (Fig. 3), cranium indented with large oval punctations; frons plane; eyes prominently bulging, finely faceted, frontal margin of eye not deeply incised; antenna (Fig. 118) inserted at lower margin of ocular notch (Fig. 2), scape more than half length of funicle (Fig. 7), pedicel oblong, funicular

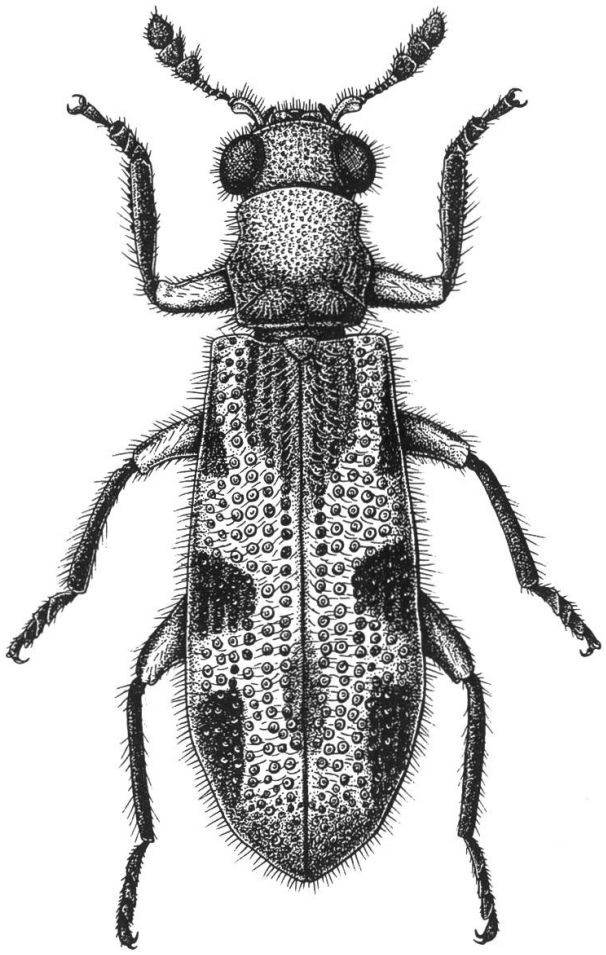


Fig. 1. Habitus of *Madoniella texis* sp.nov.

antennomeres cylindrical, except sixth antennomere slightly expanded along anterior margin, last three antennomeres forming a loose capitulum (Fig. 70), antennal capitulum usually about as long as length of funicle, rarely much longer than funicle, eighth and ninth antennomeres triagonal, tenth antennomere ovoid; labrum (Fig. 5) deeply incised, tormal process transverse and contiguous; mandible (Fig. 4) stout, dentes poorly developed, penicillus poorly developed; maxilla (Fig. 6) well developed, terminal palpomere conate, laterolacinia present; labium (Fig. 8) well developed, terminal palpomere connate; gula (Fig. 9) broadly triangular.

Thorax: Pronotum moderately transverse, lateral tubercle present (Fig. 11) or not (Fig. 137) configuration of side margins variable, from angulate at middle (usually forming lateral tubercle) (Fig. 11) to subparallel (Fig. 167), side margins very wavy (Fig. 11) or not (Fig. 167), deeply (Fig. 11) or not deeply (Fig. 167) incised at anterior fourth, anterior margin arcuate (Fig. 11) or flat (Fig. 152), pronotal arch distinct or not, pronotal collar very narrow, bothrium domed (Figs 119, 122), pronotal projections extended mesally to half width of coxal cavity (Fig. 10), dorsolateral carina terminates at posterior angle of pronotum where it coalesces with pronotal hem; metendosternite without furcal lamina (Fig. 14), elytra oblong rectangulate (Fig. 21), oblong oval (Fig. 23), or oblong suboval (Fig. 22); epipleural fold (Fig. 20) well developed to elytral distal fourth; elytral surface indented with 10 rows of punctations that usually diminish in linear arrangement near elytral apex, punctations large (Fig. 51), small (Fig. 52), binoded, when large always wider than width of interstitial spaces; mesoscutellum transverse (Fig. 15); protibial anterior margin with 1 to 7 spines (Fig. 120); tibial spur formula 0-1-1; tarsal pulvillus formula 3-3-1; metathoracic wing as in Fig. 40.

Abdomen: Six visible sterna; pygidial posterior margin convex (sometimes minutely indented) in males (Fig. 16), truncate in females (Fig. 17); sixth visible sternum posterior margin truncate in females (Fig. 19) slightly indented in males (Fig. 18).

Male Genitalia: Aedeagus narrow long (Fig. 282) or narrow short (Fig. 284); phallobase with phallobasic rod, phallobasic rod bifid (Fig. 283) or not (Fig. 278); spicular fork (Fig. 27) apodeme bifid to distal half; interspicular plate slender and bifid distally; parameres of various lengths.

Female genitalia: Ovipositor of moderate length; dorsal lamina (Fig. 26) with 6 lobes, ventral lamina (Fig. 25) with three lobes.

Alimentary canal (Fig. 29): Proventriculus moderately developed; ventriculus sinuous, swollen at middle, with poorly developed papillae; stomodaeal valve (Fig. 50) with 4 primary folds, dorsal and ventral shorter than narrower lateral lobes, dorsal lobe very broad; four cryptonephridial tubules.

Male Mesodermal Internal Reproductive Organs (Fig. 24): Two pairs of accessory glands, medial pair shorter and thinner than lateral pair; testis comprised of 6 to 12 follicles.

Female Mesodermal Internal Reproductive Organs (Fig. 30): Spermathecal capsule not visibly sclerotized; spermathecal gland attached to subapex of spermathecal capsule; bursa copulatrix saccular.

Distribution. The known distribution of this genus extends from eastern Canada, east of the Rocky Mountains in the USA, and south to Argentina. Speciation has been most profuse in Mexo-America (*sensu* Opitz 2005: 102).

Differential diagnosis. Specimens of *Madoniella* Pic are superficially similar to specimens of *Decorosa* Opitz from which they differ in the abovementioned synapotypic characteristics.

Key to species groups and species of *Madoniella* Pic

1 Elytral punctations large, with interstitial spaces (spaces between punctations) (Fig. 51) clearly narrower than width of punctations, latter arranged in ten rows, row arrangement clearly defined near sutural margin; 2° setae of elytral disc rarely matted. ..... 2.

1' Elytral punctations very small, with interstitial spaces clearly wider than width of punctations, latter subseriate in most of disc, not arranged into straight rows near sutural margin; 2° setae of elytral disc frequently matted. ..... 60.

2(1) Pronotum not concolorous, anterior portion red and posterior portion black or dark brown, red portion is usually transverse or triangular. ... 3.

2' Pronotum concolorous, black, dark brown, reddish brown, or yellow. ... . 22.

3(2) Elytral disc concolorous, dark brown; cranium and anterior two-thirds of pronotum red-yellow, body from oblong-ovoid (Fig. 58); elytral disc without elytral insignia depicted in Fig. 60 (*apsis* group) (México: Chiapas). ..... ***Madoniella apsis*** **sp.nov.**

3' Elytral disc not concolorous, with complete (Fig. 1) or partial (Fig. 195) elytral insignia; body form more flattened (Fig. 59). ..... 4.

4(3') Vertex narrower than eye in dorsal view (Fig. 3). ..... 5.

4' Vertex as wide or wider than eye in dorsal view (Fig. 39) (*cardinalis* group). ..... 11.

5(4) Specimens from Middle America; anterior block and posterior block of elytral insignia connected twice (see Fig. 60, then Figs 231, 251 (*emblema* group) (Costa Rica: Heredia). ... ***Madoniella emblema*** **sp.nov.**

5' Specimens from South America (*fonteboa* group). ..... 6.

6(5') Pronotal anterior transverse depression shallow, pronotal arch slightly elevated, red portion of pronotal anterior region narrow at middle and

slightly expanded at pronotal anterior angles; elytral insignia as in Fig. 228 (Argentina: Salta). ..... ***Madoniella avina*** **sp.nov.**

6' Pronotal anterior transverse depression not shallow, pronotal arch red. .... 7.

7(6') Pronotum uniformly yellow-red; elytral insignia faded, not discernable (Brazil: Bahia). ..... ***Madoniella insignis*** **sp.nov.**

7' Pronotum mostly black; elytral insignia not faded. ..... 8.

8(7') Connecting rod between anterior and posterior insignial block totally absent (for example see Fig. 195). ..... 9.

8' Connecting rod between anterior and posterior insignial block present at least in part, connecting rod may be slightly projecting anteriorly along sutural margin (for example see Fig. 211). ..... 10.

9(8) Pronotal proper with bluish tinge; elytral insignia as in Fig. 207 (Guyana: Rupununi). ..... ***Madoniella facis*** **sp.nov.**

9' Pronotal proper black; elytral insignia as in Fig. 208 (Brazil: Amazonas). ..... ***Madoniella collata*** **sp.nov.**

10(8') Connecting rod between anterior and posterior insignal block complete (Fig. 234) (Venezuela: Aragua). ..... ***Madoniella latinopsis*** **sp.nov.**

10' Connecting rod between anterior and posterior insignial block incomplete (Fig. 248) (Brazil: Amazonas). .... ***Madoniella fonteboa*** **sp.nov.**

11(4') Specimen from Brazil; elytral insignia as in Fig. 236 (Brazil: Bahia). .... ***Madoniella rubidia*** **sp.nov.**

11' Specimens not from Brazil. ..... 12.

12(11') Insignial posterior block bifurcated (see Fig. 60, then Fig. 206). ..... 13.

12' Insignial posterior block not bifurcated. ..... 14.

13(12) Elytral insignia as in Fig. 206 (Honduras: Yoro). .... ***Madoniella melina*** **sp.nov.**

13' Elytral insignia as in Fig. 200 (Panamá: Colón). .... ***Madoniella zonula*** **sp.nov.**

14(12') Insignial posterior block fades to elytral apex (Fig. 1) (Costa Rica: Heredia, Guanacaste, Cartago, Puntarenas. Panamá: Panamá, Coclé). .... ***Madoniella texis*** **sp.nov.**

14' Posterior limit of insignial posterior block does not fade to elytral apex. ..... 15.

15(14') Anterolateral projection of insignial anterior block absent (Fig. 249) (Honduras: Yoro). ..... ***Madoniella antennatra*** **sp.nov.**

15' Anterolateral projection of insignial anterior block present. ..... 16.

16(15') Anterolateral projection of insignial anterior block always reaches humeral margin (as in Fig. 130). ..... 17.

16' Anterolateral projection of insignial anterior block usually not reaches (as in Fig. 220) (specimens from Nicaragua and Costa Rica) or reaches (specimens from Belize) humeral margin. ..... 19.

17(16) Posteroventral extension of insignial posterior block absent (Fig. 230) (Costa Rica: Heredia; Heredia; Cartago; Alajuela; Guanacaste). ..... ***Madoniella careorita* sp.nov.**

17' Posteroventral extension of insignial posterior block present (Fig. 60). ... 18.

18(17') Phallic apex shaped like a narrow diamond; elytral insignia as in Fig. 196 (Costa Rica: Heredia; Guanacaste; Puntarenas; Cartago. Panamá: Panamá). ..... ***Madoniella cardinalis* sp.nov.**

18' Phallic apex narrow lobate; elytral insignia as in Fig. 226 (Panamá: Chiriquí; Colón; Panamá; Canal Zone). ..... ***Madoniella erythrocephala* (Gorham)**

19(16') Posterocentral extension of insignial posterior block short (Fig. 220) (Panamá: Darien). ..... ***Madoniella dariensis* sp.nov.**

19' Posterocentral extension of insignial posterior block long and quadrate (Fig. 60). ..... 20.

20(19') Anterolateral projection of insignial posterior block long, nearly reaching or reaching epipleural margin; posterocentral extension of insignial posterior block quadrate (Fig. 261) (Belize: Cayo. Nicaragua: Matagalpa; Granada. Honduras: Olancho; Comayagua. Costa Rica: San José). ..... ***Madoniella kuehlorum* sp.nov.**

20' Anterolateral projection of insignial posterior block not long, not nearly reaching epipleural margin. ..... 21.

21(20') Punctations deeply impressed at elytral apex; elytral insignia as in Fig. 209 (Costa Rica; Cartago). ..... ***Madoniella plenita* sp.nov.**

21' Punctations not deeply impressed at elytral apex; elytral insignia as in Fig. 198 (Costa Rica: Heredia). ..... ***Madoniella redacta* sp.nov.**

22(2') Cranium and pronotum bright red; elytral disc with long yellow vitta (as in Fig. 269), or with elytral insignia characterized by black spot between anterior extensions of insignial anterior block; Cuba species only (*orientalis* group). ..... 23.

22' Cranium and pronotum not bright red; elytral disc not as described above; species not only from Cuba. ..... 24.

23(22) Elytral disc without typical elytral insignia, instead with long central vitta (Fig. 269) (Cuba: Granma). ..... ***Madoniella bilineata* (Chevrolat)**

23' Elytral disc with typical elytral insignia (Cuba: Guantánamo; Granma; Pinar del Rio; Cienfuegos). ..... ***Madoniella orientalis* (Zayas)**

24(22') Legs banded; pronotum and/or elytral disc somewhat roughened by setal matting. ..... 25.

24' Legs not banded; elytra not roughened by mats of setae. ..... 37.

25(24) Elytral 2° setae form mat of setae over entire surface of elytral disc; elytral insignia as in Fig. 205 (*tegetis* group) (Honduras: Copán). ..... ***Madoniella tegetis* sp.nov.**

25' Elytral 2° setae form only small mats of setae in pale regions of elytra. ..... 26.

26(25') Pronotum and elytra with wisps of silvery setae; elytral insignia as in Fig. 203 and 240 (Cuba: La Habana) (*pedalis* group). ..... ***Madoniella pedalis* sp.nov.**

26' Pronotum and elytra without wisps of silvery setae. ..... 27.

27(26') Elytral anterior third mostly yellow or yellow-brown; West Indies only (*basilaris* group). ..... 28.

27' Elytral anterior third not yellow or yellow-brown; not West Indies only. ..... 31.

28(27) Posterior half of elytra mostly dark brown or yellow. ..... 29.

28' Posterior half of elytra not mostly black or yellow. ..... 30.

29(28) Posterior half of elytra black, at most with yellow fleck (Fig. 254) (Dominican Republic: La Vega: Independencia: Pedernales). ..... ***Madoniella basilaris* sp.nov.**

29' Posterior half of elytra mostly yellow, with small curvate macula extending from outer sides of central yellow region (Figs 244, 245) (Jamaica: Portland; St. Thomas; St. Ann; Trelawney; Westmoreland; Catherine). ..... ***Madoniella storea* sp.nov.**

30(28') Posterior half of elytral disc with one transverse pale marking (Fig. 247) (Guadeloupe: Basse Terre. Dominica: Saint Paul). ..... ***Madoniella anapsis* sp.nov.**

30' Posterior half of elytral disc with two pale markings (Fig. 195) (Cuba: Holguin). ..... ***Madoniella pellis* sp.nov.**

31(27') Antennomeres 8 and 9 broadly triagonal (Fig. 86). ..... 32.

31' Antennomeres 8 and 9 narrow triagonal (Fig. 65). ..... 33.

32(31) Dorsum vested profusely with gold-yellow small setae; elytral insignia fractured into angular and lobate components (Fig. 253) (*ignis* group) (Guatemala: Zacapa). ..... ***Madoniella ignis* sp.nov.**

32' Dorsum not vested profusely with gold-yellow small setae; elytral insignia comprised of disconnected anterior and posterior block (Fig. 238) (*maxicornis* group) (México: San Luis Potosí. Guatemala: Alta Verapaz). ..... ***Madoniella maxicornis* sp.nov.**

33(31') Pronotum not vested profusely with short pale recumbent setae; (*bullalis* group) (Dominican Republic: Monte Cristi). ..... ***Madoniella bullalis* sp.nov.**

33' Pronotum vested profusely with short pale decumbent setae, in aggregate setae give pronotum surface a matted appearance (*thomasi* group). .... 34.

34(32') From South America. ..... 35.

34' From Greater Antilles. ..... 36.

35(34) Antennal club antennomeres longer than wide (Fig. 61); elytra insignia as in Fig. 256 (Colombia: Magdalena). ..... ***Madoniella magdalena* sp.nov.**

35' Antennal club antennomeres about as long as wide (Fig. 62); elytral insignia as in Fig. 227 (Venezuela: Aragua). ..... ***Madoniella displicata* sp.nov.**

36(34') Posterior block of elytral insignia bifid or block may be narrowly confluent with pale macula near elytral apex (Figs 201, 202) (Puerto Rico: Maricao. Dominican Republic: Pedernales). ..... ***Madoniella extensiva* sp.nov.**

36' Posterior block of elytral insignia not bifid, very broadly confluent with large pale region near elytral apex (Bahamas: Andros Island). ..... ***Madoniella thomasi* sp.nov.**

37(24') Pronotum subquadrate (about as in Fig. 271b), spaces between disk punctuations elevated rendering pronotal disc subrugose (*merga* group). ..... 38.

37' Pronotum distinctly transverse (Fig. 271c), spaces between disc punctuations not elevated. ..... 42.

38(36) Posterior block of elytral insignia reduced to diagonal fascia (Fig. 266). ..... 39.

38' Posterior block of elytral insignia not reduced to diagonal fascia, marking more transverse. ..... 40.

39(38) Elytral humerus with pale marking; northwestern México; elytral insignia as in Fig. 250 (México: Durango). ... ***Madoniella merga* sp.nov.**

39' Elytral humerus without pale marking; south central México; elytral insignia as in Fig. 266 (México: Tlaxcala; Morelos; Michoacán). ..... ***Madoniella crinis* sp.nov.**

40(37') Elytral disc without faint yellow macula near elytral apex; elytral insignia as in Fig. 214 (USA: Arizona. México: México). ..... ***Madoniella pinicola* sp.nov.**

40' Elytral disc with 1 or 2 faint small yellow macula near elytral apex (as in Figs 216–217 and 259–260). ..... 41.

41(40') Elytral disc with one yellow small macula near elytral apex; elytral insignia as in Figs 259, 260 (México: Chiapas. Guatemala: El Quiche). ..... ***Madoniella punctata* (Gorham)**

41' Elytral disc with two small yellow macula near elytral disc; elytral insignia as in Figs 216, 217) (USA: Arizona. México: Durango; Chihuahua; Sinaloa). ..... ***Madoniella chiricahua* sp.nov.**

42(37') Cranial vertex with dense aggregate of setae (*abacula* group). ..... 43.

42' Cranial vertex without dense aggregate of setae. ..... 44.

43(42) Elytral insignia fractured into numerous pale markings (Fig. 233) (México: Oaxaca). ..... ***Madoniella abacula* sp.nov.**

43' Elytral insignia not fractured into narrow and punctiform markings, elytral insignia in tact (Fig. 237) (México: Baja California Sur; Sinaloa; Jalisco; Guerrero; Durango). ..... ***Madoniella peninsularis* sp.nov.**

44(42') Elytral disc vested profusely with white 2° setae; specimens usually from southwestern USA (*welderi* group). ..... 45.

44' Elytral disc not vested profusely with white 2° setae; specimens not usually from southwestern USA (*dislocata group*). ..... 49.

45(44) Anterolateral projection of anterior insignial elytral block extended to humeral margin (Fig. 212). ..... 46.

45' Anterolateral projection of anterior insignial elytral block not extended to humeral margin (Fig. 213). ..... 47.

46(45) Pronotal side margin only minutely incised anteriorly (Fig. 189); elytral insignia as in Fig. 212 (USA: Texas). ..... ***Madoniella nana*** **sp.nov.**

46' Pronotal side margin considerably incised anteriorly (Fig. 190); elytral insignia as in Fig. 218 (USA: Texas. México: Nuevo Leon; Coahuila; Tamaulipas). ..... ***Madoniella rectangularis*** **sp.nov.**

47(45') Posterior block of elytral insignia without distinct posterolateral extension (see Fig. 60, then Fig. 70) (USA: Texas). .... ***Madoniella knullorum*** **sp.nov.**

47' Posterior block of elytral insignia with distinct posterolateral extension (see Fig. 60, then Figs 213, 215). ..... 48.

48(47') Phallobasic apodeme abbreviated (Fig. 276); elytral insignia as in Fig. 213 (USA: Texas). ..... ***Madoniella welderi*** **sp.nov.**

48' Phallobasic apodeme not abbreviated; elytral insignia as in Fig. 215 (USA: Texas). ..... ***Madoniella vogti*** **sp.nov.**

49(44') Elytral disc with small yellow streak between anterior and posterior block of elytral insignia (Fig. 210) (México: Chiapas. Guatemala: El Progresso; Zacapa; Baja Verapaz; Sacatepéquez. Honduras: Comayagua). ..... ***Madoniella lineola*** **sp.nov.**

49' Elytral disc without yellow streak between anterior and posterior block of elytral insignia. ..... 50.

50(49') Posterocentral extension of elytral insignial block (Fig. 239) truncate or nearly so. ..... 51.

50' Posterocentral extension of elytral insignial block not truncate, fully formed (Fig. 241). ..... 53.

51(50) Cranium black or dark brown. ..... 52.

50' Cranium red. ..... 54.

52(51) Anterolateral projection of anterior insignial block not extended to humeral margin (Fig. 239) (México: San Lois Potosi; Querétaro). .... ***Madoniella disjuga*** **sp.nov.**

52' Anterolateral projection of anterior insignial block extended to humeral margin (Fig. 197) (México: Nuevo Leon). ..... ***Madoniella leona*** **sp.nov.**

53(50') Posterocentral extension of posterior block of elytral insignia very short, shallow-transverse (Fig. 229) (México: Quintana Roo). .... ***Madoniella quintana*** **sp.nov.**

53' Posterocentral extension of posterior block of elytral insignia long (Figs 222–224) (México: Oaxaca: Chiapas: Quintana Roo, Yucatán. Honduras: Lempira: Francisco Morazán; El Paraíso; Atlantida, Comayagua; Santa Barbara; Cortés; Olancho. Nicaragua: Granada; Matagalpa. Costa Rica: Guanacaste, Puntarenas, San José; Heredia. Panamá; Chiriquí). .... ***Madoniella orosiensis*** **sp.nov.**

54(50') Pronotum red. ..... 55.

54' Pronotum not red. ..... 56.

55(54) Posterocentral extension of posterior block of elytral insignia split (Fig. 241) (Cuba: Oriente). ..... ***Madoniella basilia*** **sp.nov.**

55' Posterocentral extension of posterior block of elytral insignia abbreviated (Fig. 252) (México: Chiapas). ..... ***Madoniella aktis*** **sp.nov.**

56(54') Posterior block of elytral insignia reduced to narrow diagonal fascia (Fig. 242) (México: Durango). ..... ***Madoniella gonia*** **sp.nov.**

56' Posterior block of elytral insignia not reduced to diagonal fascia. ..... 57.

57(56') Anterior and posterior elytral insignial blocks not completely linked by connecting rod (see Fig. 60, then 257) (México: Oaxaca; Chiapas). .... ***Madoniella howdenorum*** **sp.nov.**

57' Anterior and posterior elytral insignial blocks linked by connecting rod. ... 59.

58(57') Phallobasic rod bifid at base of ventral sinus (Fig. 316); (elytral insignia as in Fig. 219) (México: Querétaro; Oaxaca; Veracruz; Chiapas; Yucatán. Guatemala: Suchitepéquez. Belize: Cayo: Belize. Honduras: Cortez: Copán: Ocotepeque: Comayagua). ..... ***Madoniella patula*** **sp.nov.**

58' Phallobasic rod not bifid at base of ventral sinus. ..... 59.

59(57') Aedeagus lanceolate, elongated (Fig. 278); elytral insignia as in Figs 225, 262–265) (USA: East of the Rocky Mountains from Canada to Texas). ..... ***Madoniella dislocata*** **(Say)**

59' Aedeagus not lanceolate, short and broad (Fig. 306); elytral insignia as in Fig. 221) (Honduras: Comayagua). ..... ***Madoniella apotoma*** **sp.nov.**

60(1') Femora and tibiae marked by brown infuscations. ..... 61.

60' Femora and tibiae not marked by brown infuscations. ..... 65.

61(60) Vertex much narrower than width of eye. ..... 62.

61' Vertex wider than width of eye. ..... 63.

62(61) Large specimens, about 7.0 mm; antennal club antennomeres disporportionally small (Fig. 80) (Dominican Republic: La Vega). .... ***Madoniella infula*** **sp.nov.**

62' Smaller specimens, about 5.0 mm; antennal club antennomeres large (Fig. 77); elytral insignia as in Fig. 199) (Cuba: La Habana. Dominican Republic: La Vega). ..... ***Madoniella nebulosa*** **(Chevrolat)**

63(61') Elytral insignia well developed; elytral insignia as in Fig. 243 (Colombia: Magdalena). ..... ***Madoniella pumilis*** **sp.nov.**

63' Elytral insignia obscure. ..... 64.

64(63') Elytral punctations very small, spaces between punctuations clearly wider than width of punctations; elytral insignia faded (Dominica: St. Peter. Guadeloupe). ..... ***Madoniella pici*** **Lepesme**

64' Elytral punctations small; spaces between punctuations narrower than width of Punctations; elytral insignia less faded than in previous species, see Fig. 204) (Montserrat. Guadeloupe). ..... ***Madoniella minor*** **Pic**

65(60') Tibiae not infuscated along dorsal margin, elytral disc with humeral and discal maculae (Fig. 267) (*cracentis* group) (Brazil: Amazonas). .... ***Madoniella cracentis*** **sp.nov.**

65' Tibiae (at least protibiae) infuscated along dorsal margin, or legs completely yellow and remainder of body dark. ..... 66.

66(65') Body form oblong-subovate (Fig. 22). ..... 68.
66' Body form oblong-rectangulate (Fig. 21). ..... 69.

67(66) Anterior insignial block with dark central spot (Fig. 232) (Dominican Republic: Hato Mayor). ..... ***Madoniella adona*** **sp.nov.**
67' Anterior insignial block without dark central spot. ..... 68.
68(67') Elytral insignia usually predominates surface of elytral disc so that most of disc is pale (Fig. 258); specimens from Guana Island or Puerto Rico (British Virgin Island: Guana Island. Puerto Rico: Guánica, San Juan). ... . ***Madoniella guana*** **sp. nov.**
68' Elytral insignia usually does not predominate surface of elytral disc, posterior block usually well developed (Fig. 255); specimens from Guadeloupe or Dominica (Guadeloupe: Basse Terre. Dominica: St. Peter, St. Paul). ..... ***Madoniella corporaali*** **Pic**

69(66') Cranium yellow-red. ..... 70.
69' Cranium black. ..... 72.

70(69) Dorsum predominantly yellow (Dominican Republic: Pedernales). .... ***Madoniella lurida*** **sp.nov.**
70' Dorsum predominantly black. ..... 71.

71(70') Pronotum red-yellow (Dominican Republic: Pedernales). .... ***Madoniella cavina*** **sp.nov.**
71' Pronotum black (Haiti: du Nord). ..... ***Madoniella cymatilis*** **sp.nov.**

72(69') Elytral insignia present, but deformed (Fig. 246) (Dominican Republic: Pedernales). ..... ***Madoniella cerviculina*** **sp.nov.**
72' Elytra insignia absent. ..... 73.

73(72') Elytral disc without vitta (Dominican Republic: Hato Mayor). .... ***Madoniella ebena*** **sp.nov.**
73' Elytral disc with vitta (Figs 268, 269) (Jamaica: Portland: Saint Andrew: Saint Thomas). ..... ***Madoniella linea*** **sp.nov.**

Description of *Madoniella* Pic species

abacula group

Two species comprise this group whose most prominent characteristic is that its members have a setal tuft on the cranial vertex (Fig. 184). The body form of these beetles is oblong-subovate. The vertex is wider than the width of an eye and the pronotum is very transverse and uniformly dark brown or black. Setae are not matted on the pronotum or elytra. Moreover, the pronotal anterior transverse depression is absent on the pronotal disc, the elytral insignia is fully formed or fractured, there is one pale dot at the extremity of the elytral disc, elytral punctations are large and arranged in 10 rows, the elytral disc is profusely vested with 2° seta that in places form small aggregates of pale setal wisps particularly near the elytral posterior extremity, and the posterior third of the epipleural margins is minutely serrate. The combined distribution of the three species involved extends from the southern Baja California, east to the Mexican state of Sinaloa, and south to central Guatemala.

***Madoniella abacula* sp.nov.** Figs 114, 136, 233, 294; Map 2.

Type material. Holotype: Male. MEXICO. Oaxaca: 14 km NW Diaz Ordaz, 2600 m, 15.VI.1979, H. A. Howden (CMNC, 1). (Specimen point mounted, male gender symbol affixed to paper point, support card; locality label; CMNC repository label; holotype label; plastic vial with abdomen.)
Paratypes: One specimen. México: Oaxaca: 4.8 N Suchixtepec, km 144, Rt. 175 S. Oaxaca, 4-6-VI-1971, 2896 m, H. Howden (WOPC, 1).

Description. Size: Length 3.0–4.0mm; width 1.0–1.3 mm. Integument: Cranium reddish brown; pronotal disc dark brown, however anterior margin narrowly yellowish; elytral markings as in Fig. 233; legs predominantly yellow, with brown infuscations on femoral and tibial disc.

Head: Vertex wider than eye (22:12), with two setal tufts; antenna as in Fig. 114. Thorax: Pronotum (Fig. 136), length/width ratio 38:42, lateral tubercle present, disc shallow-convex in anterior half then concave paralaterally, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.6, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, interstitial spaces very elevated, 2° not matted, epipleural margin minutely serrate in posterior third; protibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 294.

Variation: The two specimens examined did not vary appreciably.

Natural history. The beetles examined were collected in June, one at 2600 m and the other at 2896 m.

Distribution (Map 2). This species is known only from southwestern México.

Etymology. The specific epithet stems from the Latin *obaculus* (= inlay of mosaic work). I refer to the tapestry like pattern of the elytral pale markings.

Differential diagnosis. The disassociation of the elytral insignia (Fig. 233) into fragments will distinguish the members of this species from congeners.

***Madoniella peninsularis* sp.nov.** Figs 184, 237; Maps 5, 10.

Type material. Holotype: Female. Mexico, Baja Cal, Cabo San Lucas, Aug 30 1976, E. Giesbert, coll. (FSCA). (Specimen minuten pinned, support card, female gender symbol affixed to support card; locality label; FSCA acronymic label; holotype label.)
Paratypes: Twenty-five specimens. México: Baja California Sur: 14 km S junction of highway 1 & 19, on 1, 30-VIII-1994, R. Turnbow (RHTC, 2; WFBC, 1; WOPC, 2); 27.7 km S San Antonio on highway 1, 8-IX-1988, E. G. Riley (TAMU, 1); 14 km SW La Burrera, 21-VII-1977, Dozier & Wescott (FSCA, 1; WFBC, 1; WOPC, 1); 6.4 km N, 9.6 km E Migrino, 21-IV-1985, R. L. Westcott (WFBC, 1): Sinaloa: 8 km N Mazatlan, 10-VIII-1965, on dead limbs, G. H. Nelson (WFBC, 3; WOPC, 3); 8 km N Mazatlan, 1-VII-1965, J. A. & M. A. Chemsak & E. G. & J. M. Linsley (EMEC, 1); Playa road, 3.2 km E on Mazatlan road, 30-31-VII-1983, F, Hovore (WFBC, 1); 24 km N Mazatlan, 7-VIII-1973, E. Giesbert (FSCA, 1): Jalisco: 17. 6 km N. Chamela, 16-VII-1987, R. Turnbow (RHTC, 1; WOPC, 1); Nevado de Colima road, 11.2 km W highway junction (near Aenquique), 5-VIII-1978, Pitt & Schaffner (TAMU, 1); Chamela, vicinity ESTC UNAM, 9-19-VII-1933, J. Huether (JPHC, 1): Guerrero: Highway 95, 3.6 km S. Zumpango del Rio, 7-VII-1992, G. H. Nelson; Highway 134, 6.9 km NE junction 200, 14-VII-1985, R. Turnbow (RHTC, 1): Durango: 32 km E El Salto, 2439 m, 17-19-VI-1971, H. F. Howden (CNCI, 1). Guatemala: Zacapa: Sierra de las Minas, San Lorenzo road, 9–11 km N of hwy 9, 6-VI-1993, 600 m, UV & MV lights, thorn scrub habitat, W. B. Warner (CMNC, 1): Baja Verapaz: 14.5 km N Salama on Pantin rd., 1620 m, *Quercus* spp., 31-V-1991, H. & N. Howden (CMNC, 1; WOPC, 1); *idem*, 25-V-1991, R. Anderson, dry oak/pine woodland, R. Anderson (CMNC, 2; WOPC, 2); 16 km N Salama on Pantin rd, 1500 m, 1-VI-1991, H. &. A. Howden (WOPC, 1). Honduras: Francisco Morazán: Cerro Uyuca, 5 km W Zamorano, 14°01′36″87°02′52″W, 1100 m, 17-V-2000, m.v. light, A. B. T. Smith & F. Ocampo (USNM, 1); Valle Los Angeles, 29-VI-1995, F. T. Hovore (WOPC, 1): Olancho: PN La Muralla, 30-VI-1-VII-1995, F. T. Hovore (WOPC, 1).

Description. Size: Length 4.0–6.0 mm; width 1.4–2.0 mm. Integument: Cranium dark reddish brown; pronotal disc dark reddish brown; elytral markings as in Fig. 237.

Head: Vertex with distinct setal tuft (Fig. 184), vertex slightly wider than eyes in head dorsal view; antenna similar to one depicted in Fig. 7.

Thorax: Pronotal side margins broadly sinuous, anterior margin rounded; disc evenly convex, slightly depressed around periphery of discal trichobothria; elytral form oblong subovate; elytral punctations large, arranged into 10 seriate rows, pale regions of elytral disc profusely vested with short, decumbent, pale setae; anterior margin of protibia with 5 spines.

Abdomen: Aedeagus very similar to one depited in Fig. 278.

Variation: The shape of the pale markings on the elytral disc varies. The posterior central portion near the sutural margin may be blocky or not. When not blocky, there are two pale punctiform spots instead of the typical one.

Natural history. These beetles have been collected during April, June, July, August, and September; one at 2439 m, and one on dead limbs.

Distribution (Map 5). The known distribution extends from Baja California to southwestern Mexico.

Etymology. The specific epithet refers to the peninsular existence of some populations of this species.

Differential diagnosis From superficially similar specimens of *M. abacula*, these beetles may be distinguished by the relatively complete development of the elytral insignia (Fig. 237).

adona group

There are three species that compose this group primarily characterized by their relatively smaller eyes, very wide vertex, very transverse pronotum, erratically distributed small elytral punctations, and the dorsal margin of the tibiae are dark brown. Body form is oblong-subovate, the elytral insignia is comparatively diffuse, and the minute epipleural serrations are confined to the posterior extremity of the epipleural margin. The species are known from the West Indies on the islands of Hispaniola, Guadeloupe, Monserrat, and Guana of the British Virgin Islands.

Madoniella adona sp.nov. Figs 111, 144, 232, 272; Map 15.

Type material. Holotype: Female. Mt. Diego de Ocampo, Dom. Rep., 4–4,000 ft., July 38, Darlington (MCZC). (Specimen point mounted, female gender symbol affixed to paper point, support card, locality label; MCZC acronymic label; holotype label).

Paratypes: Five specimens. Dominican Republic: Hato Mayor: Parque Los Haitises, 3 km W Cueva de Arena, 19°04′N 69°29′W, 20 m, 2-9-VII-1992, mesic lowland forest, R. Davidson, J. Rawlins, S. Thomson, C. Young (CMNH, 2; WOPC, 1): Santiago: San José de las Matas, day not noted-VI-1938, 305–610 m, Darlington (WOPC, 1): La Vega: 13 km S Loma de Cabrera, 27-V-1972, C. W. O'Brien (WOPC, 1).

Description. Size: Length 4.3–5.5 mm; width 1.6–1.8 mm. Integument: Cranium reddish; pronotal disc black in basal two-thirds, reddish in anterior third, reddish region expanded posteriorly at middle; elytral markings as in Fig. 232; legs predominantly yellow, tibiae dark along dorsal margin.

Head: Vertex wider than eye (31:25); antenna as in Fig. 111.

Thorax: Pronotum (Fig. 144), length/width ratio 68:78, side margin more convex than tuberculate, disc convex, anterior transverse depression absent on disc, anterior

margin convex, setae submatted; elytra, length/width ratio 4.6, form oblong-subovoid, punctations small and shallowly impressed, seriate in nearly all of disc, subseriate near sutural margin, 2° not matted, epipleural margin not minutely serrate; protibial anterior margin with 5 spines.

Abdomen: Aedeagus as in Fig. 272.

Variation: The pale sutural connection between the anterior and posterior block of the elytral insignia is less distinct in one specimen.

Natural history. The available specimens were collected during May, June, and July at altitudes ranging from 20 to1220 m.

Distribution (Map 15). This species is known only from the Dominican Republic.

Etymology. The trivial name is a derivative of the Latin adjectival *adona* (= beauty). I refer to the magnificence of this beetle's color pattern.

Differential diagnosis. The reduction of the posterior block of the elytral insignia will distinguish these beetles from others of the *adona* group (Fig. 232).

Madoniella corporaali Pic, 1935 Figs 103, 143, 255, 279; Maps 19, 19a.

Madoniella corporaali Pic, 1935: 11. Lepesme, 1947: 169. Corporaal, 1950: 306.

Type material. Lectotype: Female (here selected). Trois Rivieres, Guadeloupe, Dufau (MNHN). (Specimen point mounted, female symbol affixed to paper point, support locality label; natural history label, specimen number label-232; MNHN acronymic label; holotype label, plastic vial with aedeagus.
Paralectotypes: One specimen. Guadeloupe: Trois Rivieres, Dufau (MNHN, 1).

Other material examined. Besides the lectotype and paralectotype I examined 11 additional specimens. Guadeloupe: Basse Terre: Deshaies, Marguerite, 8-IV-2003, 400 m, J. Touroult, Trois Rivers, 1904, Leo Dufau; Pto. Do Chateau, 23-X-1977, no collector noted. Dominica: St. Peter: Syndicate Trailhead, 28-VI-2004, R. Turnbow: St. Paul: Springfiels Estate, 31-V-10-Vi-1995, Malaise forest margin, Eden, Steiber & Woolley; L'Anse Noir14-VIII-1965, D. L. Jackson; Centre Hills, Jubilee Heights, 16°45′N 62°12′W, 20-27-VI-2000, M. A. Ivie & K. A. Guerrero. Specimens are deposited in MAIC, MNHN, RHTC, TAMU, and WOPC.

Description. Size: Length 3.7–4.5 mm; width 1.0–1.4 mm. Integument: Cranium light brown; pronotal disc brown at sides, light brown at center and towards anterior margin; elytral markings as in Figs 255; legs predominantly yellow, protibiae and mesotibiae dark along dorsal margin.

Head: Vertex wider than eye (35:20); antenna as in Fig. 103.

Thorax: Pronotum (Fig. 143), length/width ratio 65:69, side margin more convex than tuberculate, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae submatted; elytra, length/width ratio 4.4, form oblong-subovoid, punctations small and shallowly impressed, seriate in nearly all of disc, subseriate near sutural margin, 2° not matted, epipleural margin only faintly serrate at elytral apex; protibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 279; phallic apex large-lobate.

Variation: The light brown color of the pronotum varies in expression, as does the dark streak along the dorsal margin of the protibiae and mesotibiae. There is slight variation of the elytral insignia.

Natural history. The available specimens were collected from May through August, from Dominica at 412 m and from Guadeloupe at 400 m.

Distribution (Maps 19, 19a). This species is known from the Lesser Antilles islands of Guadeloupe and Doninica.

Differential diagnosis. Within the *adona* group, these beetles may be identified by the complete nature of the posterior block of the elytral insignia (Fig. 255).

Madoniella guana sp.nov. Figs 33, 89, 258, 271a, 291; Map 20.

Type material. Holotype: Female. Brit. Virgin Isls, Guana Island, 1–14 July 1984, S. E. & P. M. Miller (USNM). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; MNHN acronymic label; holotype label.)
Paratypes: Twenty-three specimen. British Virgin Islands: Guana Island: 1-14-VII-1984, S. E. & P. M. Miller (USNM, 6; WFBM, 2; WOPC, 1); *idem*, 5-23-VII-1985, S. E. & P. M. Miller (USNM, 1). Puerto Rico: Guánica, Guánica Forest, 29-VII-1969 (CMNC, 1); Guanica, 3-X-1934, R. G. Oakley (SEMC, 1): San Juan: Caribbean National Forest, Toro Negro, 4-VII-1977, J. Michell (WOPC, 1).

Description. Size: Length 3.1–5.0 mm; width 1.2–1.8 mm. Integument: Cranium reddish; pronotal disc black in basal two-thirds, reddish in anterior third, reddish region expanded posteriorly at middle; elytral markings as in Fig. 258; legs predominantly yellow, tibiae dark along dorsal margin, profemora and mesofemora infuscated on dorsum.

Head: Vertex wider than eye (19:35); antenna as in Fig. 89.

Thorax: Pronotum length/width ratio 55:70 (Fig. 33), side margin more convex than tuberculate, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae submatted; elytra, length/width ratio 4.3, form oblong-subovoid, punctations small and shallowly impressed, seriate in nearly all of disc, subseriate near sutural margin, 2° not matted, epipleural margin not minutely serrate; protibial anterior margin with 5 spines.

Abdomen: Aedegus Fig. 291. Male internal reproductive organs: As in Fig. 271a.

Variation: The dark markings on the elytral disc vary in intensity of expression.

Natural history. The available specimens were collected during October and July.

Distribution (Map 20). Known from Guana Island of the British Virgin Islands and Puerto Rico.

Etymology. The trivial name, *guana*, constitutes a noun in apposition and refers to the type locality.

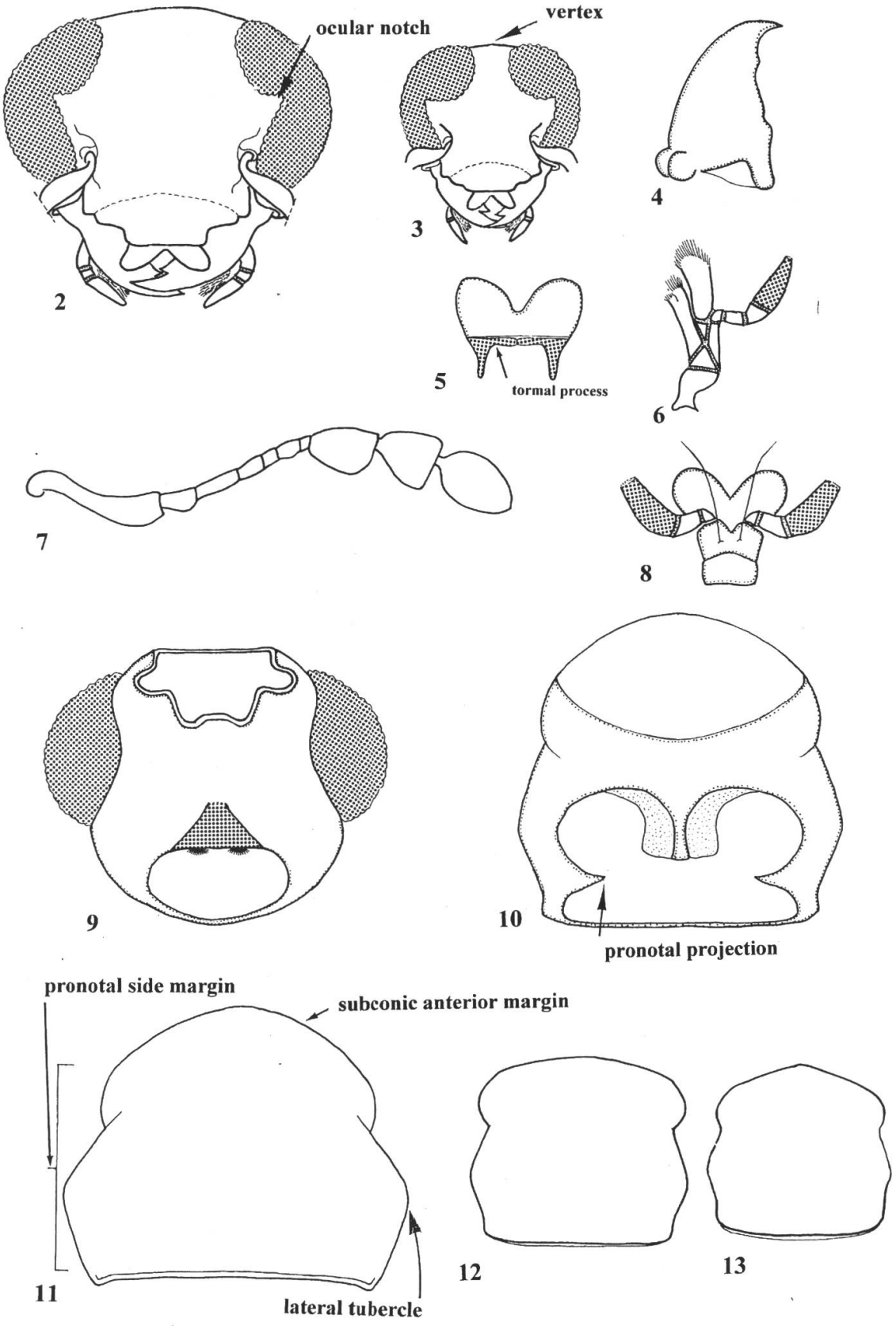
Differential diagnosis. The elytral insignia has defused throughtout the elytral disc with only a small dark macula remaining connected to earch of the humeral angles and to the epipleural margin at midelytron (Fig. 258).

apsis group

Oblong-ovoid body form, predominantly red forebody, and lack of an elytral insignia characterize this monotypic group. These beetles are further characterized by a wide vertex, absence of anterior transverse pronotal depression, large elytral punctations organized in 10 rows, and presence of minute serrations along the posterior third of the epipleural margin. This species is known only from southern México.

Madoniella apsis sp.nov. Figs 23, 58, 173, 296; Map 5.

Type material. Holotype: Male. Mexico: Chiapas: El Aguacero, 6-VI-1991, 510 m, J. Ashe #72, ex: at light (SEMC). (Specimen point mounted, male symbol affixed to paper point, support card; locality label; SEMC repository label; holotype label; plastic vial with abdomen and aedeagus.)



Figs 2–13. Anatomical structures: 2 – *Madoniella cardinalis*. 3 – *M. basilaris*. 4–11 – *M. cardinalis*. 4 – Mandible. 5 – Labrum. 6 – Maxilla. 7 – Antenna. 8 – Labium. 9 – Head (ventral view). 10–11, Pronotum (10, ventral view; 11, dorsal view). 12–13, Pronota (dorsal views): 12 – *M. merga*. 13 – *M. gonia*.

Paratypes: Three specimens. México: Chiapas: El Sumidero, 23-VI-1990, R. Turnbow (RHTC, 1); 17 km W Tuxtla Gutierrez, 1006 m, 1-8-VII-1986, J. E. Wappes (JEWC, 1); 16 km E Ocozocoautla, "El Aguacero", 29-VI-2000, V. H. Toledo (VHTC, 1).

Description. Size: Length 4.0–4.7 mm; width 4.4–4.8 mm. Integument: Cranium red; pronotum predominantly red, basal third black; elytra dark brown, without elytral insignia, legs dark brown.

Head: Vertex wider than eye (26:22); antenna as in Fig. 7.

Thorax: Pronotum (Fig. 173), length/width ratio 46:52, side margins more convex than tuberculate, anterior margin plane, contour of disc convex in anterior half then notably concave paralaterally in posterior half, anterior transverse depression not evident; elytra, length/width ratio 4.5, form oblong-ovoid; elytral punctations large, seriate and arranged into 10 rows, discal setae suberect; anterior border of protibia with 6 spines.

Abdomen: Aedeagus as in Fig. 296.

Variation: The available specimens did not show any noteworthy variation.

Natural history. Specimens have been collected in June and July, one at 510 m, another at 1006 m.

Distribution (Map 5). From the southern Mexican state of Chiapas.

Etymology. The trivial name *apsis* (= arch) is a Latin noun. I refer to the convexity of the elytra.

Differential diagnosis. The red coloration of the cranium and the predominantly red coloration of the pronotum along with the convexity of the elytra (compare Figs 58, 59) will easily distinguish the members of this species from congeners.

basilaris group

This group is comprised of four species whose members have a vertex that is much narrower than the width of one eye and the elytral surface is very roughened. The body form is oblong-subovate, and the pronotum is mostly reddish brown with no evidence of an anterior transverse depression. Also, the elytral insignia is either reduced or diffused, legs are banded, and the posterior third of the epipleural margin is minutely serrate. These West Indian species are found on the islands to Jamaica, Cuba, Guadeloupe, Dominica, and Hispaniola.

Madoniella anapsis sp.nov. Figs 109, 166, 247; Maps 19, 19a.

Type material. Holotype: Female. DOMINICA, 1250′, 5 mi E. Dublanc, 20 Aug. 1986, C. W. & L. O'Brien (FSCA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label.)

Paratypes: Thirty-four specimens. Guadeloupe: Basse Terre: Fefe Forest, near Capesterre, 25-V-1985, C. W. & L. B. O'Brien (JNRC, 1); Baillif, Trianon, 28-VII-2003, J. Touroult colr, larva on Sloanes (MAIC, 4; WOPC, 2); *idem*, 20-30-VI-2003, larvae on Sloanea, J. Touroult (MAIC, 2; WOPC, 1). Dominica: Dominica: 8 km E Dublanc, 16-VIII-1986, 381 m, C. W. & L. O'Brien (MAIC, 4; WOPC, 4); *idem*, 20-VIII-1986, 381 m, C. W. & L. O'Brien (MAIC, 1); *idem*, 20-VIII-1986, C. W. & L. O. O'Brien (MAIC, 2; WOPC, 10): Saint Paul: Springfield Estate, 31-V-10-VI-1995, Malaise trap, forest interior, Eden, Steiber & Woolley (TAMU, 2; WOPC, 1). Locality not found, Hillsborough Estates, 15-III-1965, W. W. Wirth (USNM, 1).

Description. Size: Length 2.8–3.5mm; width 1.0–1.3mm. Integument: Cranium reddish brown; pronotal disc dark brown, pronotal anterior margin narrowly reddish brown; elytral markings as in Fig. 247; profemur pale yellow, with dark discal spot, mesofemur

and metafemur uniformly pale yellow; tibiae pale yellow, basally and with brown spot at middle.

Head: Vertex narrower than eye (16:20); antenna as in Fig. 109.

Thorax: Pronotum (Fig. 166), length/width ratio 41:51, side margins more convex than tuberculate, contour of disc somewhat flattened, anterior transverse depression absent from disc, discal setae submatted; elytra, length/width ratio 4.6, form oblong-subovoid, punctations small, shallowly impressed, seriate, arranged into 10 rows, disc roughly sculptured, 2° setae submatted epipleural margin without minute serrations; anterior margin of protibia with 4 spines.

Abdomen: Aedeagus without phallobasic rod.

Variation: The available specimens did not vary appreciably.

Natural history. Three of the available Dominica beetles were collected in a Malaise trap set in the interior of a forest between the ends of May to about the middle of June. Another specimen was collected in March. The specimens from Guadeloupe were collected in June and July.

Distribution (Maps 19, 19a). Known only from the Lesser Antilles islands of Guadeloupe and Dominica.

Derivation nominis. The specific epithet *anapsis* (= lighting up) is a Greek adjectival. I refer to the glitter of light reflected from the yellow setae on the elytral disc.

Differential diagnosis. The antennal capitulum is bicolored. Antennomere 8 is yellow; antennomeres 9 and 10 are brown. The antennal capitular antennomeres are equally dark among the members of the other species of the *anapsis* group.

Madoniella basilaris sp.nov. Figs 3, 106, 141, 172, 254, 307; Map 15.

Type material. Holotype: Female. Dominican Republic: Prov. La Vega, 1 km NW Manaboa, 6-VI-1994, Coll. M. C. Thomas (FSCA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label.)
Paratypes: Twenty-eight specimens. Dominican Republic: La Vega: 1 km S Manabao, 15-VII-1996, R. Turnbow (RHTC, 1); *idem*, 2.6–6.4 km E. Manabao, 4-VI-1994, T. Turnbow (RHTC, 1); 1.4–2.6 km E Manabao, 5-VI-1994, on *Pinus* sp., R. Turnbow (RHTC, 3; WOPC, 4), *idem*, 6-VI-1994, on *Pinus* sp., R. H. Turnbow (RHTC, 2; WOPC, 1), *idem*, 1.4–2.6 km, 6-VI-1994, M. C. Thomas (FSCA, 4; WOPC, 4); 2 km E Manabao, 18-VII-1996, M. C. Thomas (FSCA, 1); *idem*, 2.6–6.4 km E of Manabao, 4-VI-1994, M. C. Thomas (FSCA, 2; WOPC, 2); *idem*, Mt. Diego de Ocampo, VII-1938, 915–1220 m, Darlington (MCZC, 1): Independencia: ESE Jimani, La Florida, S of Lago Limon, 1-16-IV-1992, Lindgr. Funnel w/turpentine, M. A. Ivie (MAIC, 1): Pedernales: 13.5 km N Cabo Rojo, 18°02′ 71°38′ W, 28-VII-03-VIII-1999, 140 m, Malaise, G. O. Dominici (MAIC, 1).

Description. Size: Length 3.5–4.5 mm; width 1.0–1.5 mm. Integument: Cranium red; pronotal disc dark brown at sides, reddish brown at middle; anterior margin narrowly red; elytral markings as in Fig. 254, basal third yellow brown and dark brown in remainder, with very faint, thin yellow arcuate macula behind middle; femora predominantly yellow, infuscated at middle and at apex, tibiae predominantly yellow, with yellow spot at middle and infuscated at base.

Head: Vertex narrower than eye (10:25); antenna as in Fig. 106.

Thorax: Pronotum (Figs 141, 172), length/width ratio 42:50, side margins more convex than tuberculate, region near anterior angles deeply incised, disc very convex paralaterally behind middle, anterior margin subconic, anterior transverse depression absent from center of disc, setae submatted; elytra, length/width ratio 4.7, form oblong-subovoid, punctations large, seriate, and arranged into 10 somewhat irregularly arranged

rows, 2° setae submatted, epipleuron particularly prominent, epipleural margin minutely serrate in posterior half; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 307, phallobasic apodeme conspicuously short.

Variation: The extent of redness on the pronotal disc varies. There is also slight variation in the expression of the lateral aspects of the pronotal collar (compare Figs 141 and 172).

Natural history. The available specimens were collected during June and July, many on a species on *Pinus*. One specimen was captured from the Cordillera Central at about 1000 m while another was collected in a funnel trap laced with turpentine. Lastly, one of these beetles was captured from the peninsular region of Pedernales, at 140 m.

Distribution (Map 15). Known from the central and southern environs of the Dominican Republic.

Etymology. The trivial name *basilaris* (= at the base) is a Latin adjectival. I refer to the yellow brown marking at the basal third of the elytral disc.

Differential diagnosis. These beetles are separated from those of the other species in the *basilaris* group by coloration of the elytral disc. In *basilaris* beetles, the basal fourth of the elytral disc is red while the remainder of the disc is black. In other members of this group of species the posterior block of the elytral insignia is well developed.

Madoniella pellis sp.nov. Figs 100, 186, 195, 312; Map 16.

Type material. Holotype: Male. CUBA: Holguin, Sierra de Nipe, 23 km S. Mayari, Pinares de Mayari, 650 m, 03 JULY 1990, M. A. Ivie colr (USNM). (Specimen point mounted, male symbol affixed to paper point, support card; locality label; USNM repository label; holotype label.)
Paratypes: Eighteen specimens. Cuba: Holguin: Sierra de Nipe, 23 km S Mayari, Pinares de Mayari, 3-VII-1990, 650 m, M. A. Ivie (MAIC, 11; WOPC 6): La Habana: Cayamas, E. A. Schwarz (USNM, 3).

Description. Size: Length 3.8–4.4 mm; width 1.1–1.6 mm. Integument: Cranium red dark brown; pronotum dark brown; cranium and pronotum vested profusely with short setae that cast a golden hue; elytral markings as in Fig. 195, legs yellow, femoral and tibial middle with a brown spot; elytral disc variegated, basal third with shades of light yellow brown, middle third dark brown, posterior third with star-like yellow marking, yellow setae matted in lighter regions.

Head: Vertex much narrower than eye (10:25); antenna as in Fig. 100.

Thorax: Pronotum (Fig. 186), length/width ratio (46:60), middle of side margin more convex than tuberculate, anterior angle of side margin deeply incised, disc convex in anterior half then convex paralaterally, anterior margin sinuous and subconic at middle, anterior transverse depression absent from center of disc, setae loosely matted; elytra, length/width ratio 4.3, form oblong-subovoid, punctations large, subseriate at base, along sutural margin, and distal fourth, disc roughly contoured, 2° setae submatted in pale regions of disc, epipleural minutely serrate in distal fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 312, phallobasic rod absent.

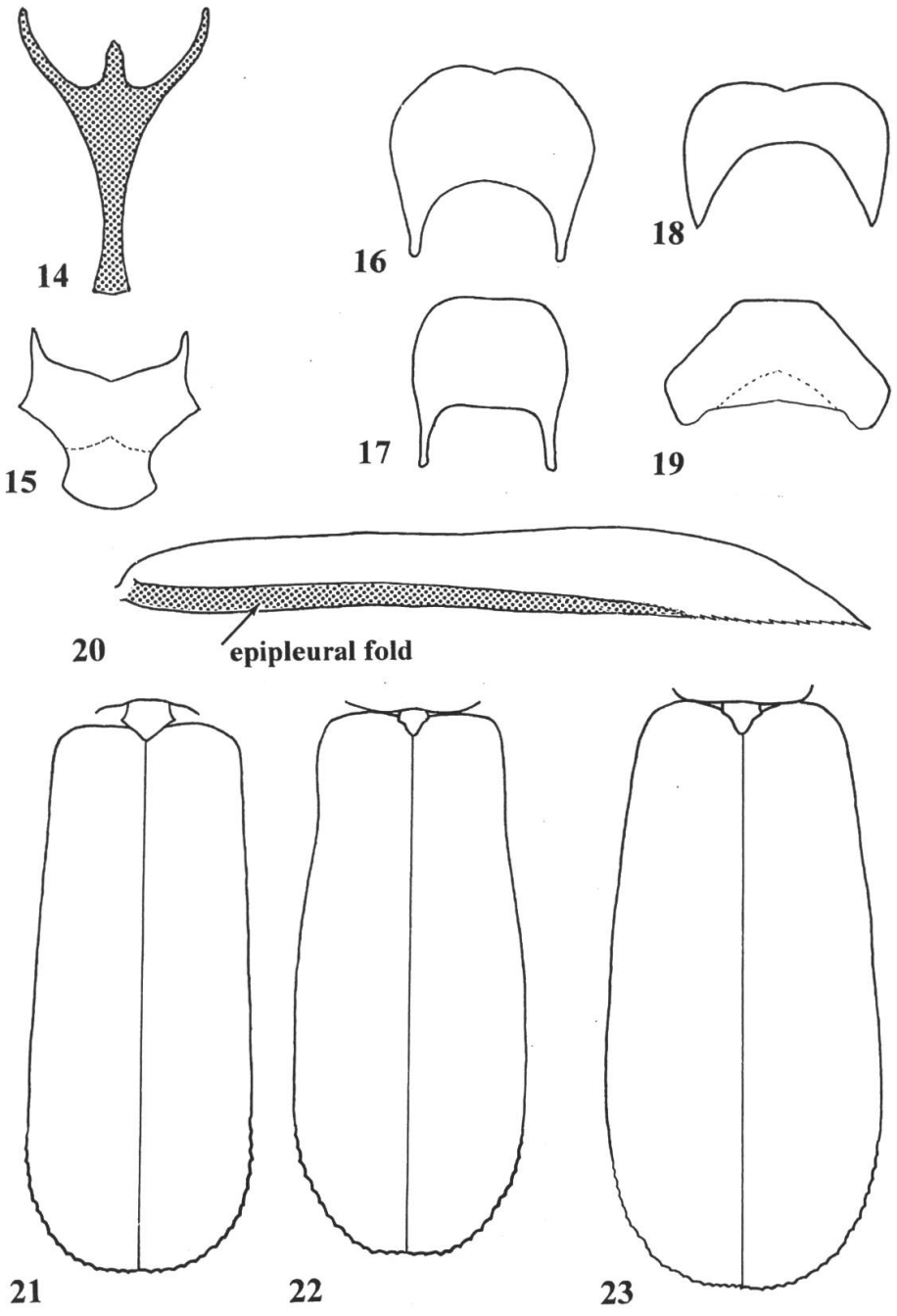
Variation: The coloration of the pronotum varies from reddish brown to dark brown.

Natural history. No information available.

Distribution (Map 16). Known only from Cuba.

Etymology. The trivial name *pellis* (= skin) is a Latin noun. I refer to the roughly sculptured surface of the elytral disc.

Differential diagnosis. The members of this species have the elytral insignia fractured into three transverse pale fasciae (Fig. 195).



Figs 14–23. Anatomical structures: 14–20, *Madoniella cardinalis*. 14 – Metendosternite. 15 – Mesoscutellum. 16–17, Pygidia (16, male; 17, female). 18–19. Sixth visible abdominal sternum (18, male; 19, female). 20 – Elytron (lateral view). 21–23, Elytra (21, *M. linea*; 22, *M. dislocata*; 23, *M. apsis*).

Madoniella storea **sp.nov.** Figs 64, 180, 244, 245, 290; Map 17.

Type material. Holotype: Female. JAMAICA, 4000′, Hardwar Gap, VII-19-1966, Howden & Becker (CNCI). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; CNCI repository label; holotype label.)

Paratypes: Forty-three specimens. Jamaica: Saint Andrew: 10 km N Mavis Bank, 1-VI-1966: Portland: Hardwar Gap, Oakley Trail, 31-III-1991, beating vegetation, Philipe & Geofsky (WOPC, 1); 1.6 km SE Hardwar Gap, 5-XII-1975, C. W.& B. O'Brien (CMNH, 1); Hardwar Gap, 4-VII-1966, 1220 m, Howden &

Becker (CNCI, 1); *idem*, 5-VII-1966 (WOPC, 1); *idem*, 6-VII-1966 (CNCI, 1; WOPC, 1); *idem*, 9-VII-1966 (WOPC, 1); *idem*, 10-VII-1966 (CNCI, 1); *idem*, 11-VII-1966 (CNCI, 1; WOPC, 2); *idem*, 13-VII-1966 (CNCI, 2); 16-VII-1966 (WOPC, 1); *idem*, 18-VII-1966 (CNCI, 1; WOPC, 1); *idem*, 19-VII-1966 (CNCI, 1); 21-VII-1966 (CNCI, 1); *idem*, 23-VII-1966 (CNCI, 1; WOPC, 2); *idem*, 26-VII-1966 (CNCI, 1); *idem*, 29-VII-1966 (CNCI, 3; WOPC, 1); *idem*, 25-VIII-1966, (CNCI, 1); *idem*, VII-1967, T. H. Farr (IJSM, 1); *idem*, 1-VIII-1960 (IJSM, 1): St. Thomas: Whitifield Hall, 28-VII-1966, A. T. Howden (CNCI, 1); *idem*, Blue Mountains, 13-30-VIII-1934, near 1372 m, Darlington (MCZC, 1): St. Ann: Claremont, 22-VII-1960, T. H. Farr (WOPC, 1): Trelawney: Duncan, 13-VIII-1966, Howden & Becker (CNCI, 2); *idem*, Barbecue Bottom, 13-VIII-1966, H. F. Howden (WOPC, 1): Westmorland: Cornwall Mountain, 18-VIII-1966, Howden & Becker (CNCI, 2; WOPC, 1); *idem*, (CNCI, 2; WOPC, 1): St. Catherine: Worthy Park Estates, R. E. Woodruff, 10-13-V-1969, malaise trap (TAMU, 1).

Description. Size: Length 2.5–5.0 mm; width 0.8–1.2 mm. Integument: Cranium red; pronotum dark brown, anterior margin broadly red brown, legs femora yellow, distal limit infuscated; tibiae yellow, spotted at middle; elytra variegated, yellow to reddish brown marking at elytral base extends posteriorly and narrowly along sutural margin, then broadens at elytral apex, disc with pale transverse macula behind middle; elytral markings as in Figs 244, 245.

Head: Vertex narrower than eye (15:20); antenna as in Fig. 64.

Thorax: Pronotum (Fig. 180), length/width ratio 47:57, lateral tubercle present, disc convex, anterior margin subconic, anterior transverse depression absent from center of disc, setae somewhat matted; elytra, length/width ratio 4.3, oblong-subovoid, punctations small, shallowly impressed, seriate, and arranged into 10 rows, 2° setae submatted in pale regions of disc, epipleural margin minutely serrate in posterior half; protibial margin with 3 spines.

Abdomen: Aedeagus as in Fig. 290, phallobasic apodeme very short.

Variation: Pronotal color varies from black to reddish brown and the yellow, reddish brown, and dark brown markings on the elytral disc vary in intensity.

Natural history. Specimens were collected during May, July, and August. The specimens from Hardwar Gap were taken at 1220 m. One specimen was captured in a Malaise trap.

Distribution (Map 17). The available specimens were collected from eastern Jamaica.

Etymology. The trivial name *storea* (= mat) is a Latin noun. I refer to the submatted condition of the 2° setae on the elytral disc.

Differential diagnosis. From congroup specimens, these beetles may be distinguished by the defused anterior block of the elytral insignia (Fig. 244).

bullalis group

This group is comprised of 1 species whose most prominent characteristics involve a proportionally lengthened antenna and narrowed vertex that is as wide as the width of an eye. The body form is oblong-subovate. The antennae are extraordinarily long, the pronotal disc does not show an anterior transverse depression, elytral punctations are large and arranged in 10 rows, and the posterior third of the epipleural margin is minutely serrate. The species is known only from the Dominican Republic.

Madoniella bullalis sp.nov. Figs 65, 167; Map 14.

Type material. H o l o t y p e . Female. DOMINICAN REPUBLIC, Monte Cristi Prov., 8.6 km N Villa Elisa, 26-V-1992, R. Turnbow (FSCA). (Specimen point mounted, female symbol affixed to paper point, support

card; locality label; FSCA repository label; holotype label; plastic vial with abdomen and ovipositor.)
Paratypes: One specimen. Dominican Republic: Pedernales: 25.5 km N. Cabo Rojo, 21-V-1992, R. Turnbow (RHTC, 1).

Description. Size: Length 3.0–3.5 mm; width 1.0–0.9 mm. Integument: Cranium black; pronotum black; elytral insignia well developed, anterior block expanded to cover most of elytral anterior third, with central dark spot, connecting rod broad, posterolateral extensions of posterior block joined with lage yellow maculae of elytral apex; legs yellow.

Head: Vertex narrower than eye (15:20); antenna as in Fig. 65.

Thorax: Pronotum (Fig. 167), length/width ratio 45:48, side margins more shallow convex than tuberculate, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.8, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° not matted, epipleural margin minutely serrate in posterior third; protibial anterior margin with 4 spines.

Abdomen: Aedeagus not available.

Variation: One specimen examined.

Natural history. The available specimen was collected in May.

Distribution (Map 14). Known from northwestern Hispaniola.

Etymology. The specific epithet *bullalis* is a Latin compound name that stems from *bulla* (= ornament) and the suffix *–alis* (= possession of). I refer to the ornate pattern of the elytral insignia.

Differential diagnosis. In these beetles the posterolateral extensions of the posterior block of the elytral insignia are broadly connected to a large pale macula at the elytral apex. This characteristic will distinguish the members of this species from congeners.

cardinalis group

This group is comprised of 13 species whose most prominent characteristic is that a portion of the pronotal disc is bright red; usually there is a red transverse band near the anterior margin that may extend posteriorly at the middle. The body form of these beetles is oblong-subovoid and they have a vertex that is wider than the width of an eye, and very transverse pronotum. The pronotum is not matted with elytral setae. Moreover, the pronotal anterior transverse depression is absent on the pronotal disc, the elytral insignia is fully formed, and the elytral punctations are large and arranged in 10 rows. The members of this group are distributed from southern México to central Panamá. One species is known only from Cuba.

Madoniella antennatra sp.nov. Figs 66, 138, 249, 295; Map 6.

Type material. Holotype: Male. Honduras: Yoro, PN Pico Pijol, V/13/02, J. & M. Huether (FSCA). (Specimen point mounted, antenna affixed to paper point, support card, male symbol affixed to support card; locality label; FSCA repository label; holotype label.)
Paratype: None.

Description. Size: Length 5.3 mm; width 1.8 mm. Integument: Cranium red; pronotal disc dark brown, anterior border and anterior region of disc red; elytral markings as in Fig. 249; legs predominantly dark brown, apex of profemur and base of protibia pale, base and apex of metatibia pale.

Head: Vertex wider than eye (35:22); antenna as in Fig. 66.

Thorax: Pronotum (Fig. 138), length width ratio 63:73, lateral tubercle present, disc convex in anterior half then depressed posterolaterally, anterior margin shallow-convex, anterior transverse depression absent from center of disc, setae not matted; elytra, width/length ratio 4.5, form oblong-subovoid, punctations large, seriate and arranged into 10 rows, 2° setae not matted; epipleural margin minutely serrate in distal fourth; legs, protibial anterior margin with 8 spines.

Abdomen: Aedeagus as in Fig. 295.

Variation: One specimen examined.

Natural history. The holotype specimen was collected in May.

Distribution (Map 6). Known only from the type locality.

Etymology. The specific epithet *antennatra* is a Latin compound noun stemming from the Latin noun *antenna* (= feeler) and the diminutive suffix *–tra*. I refer to the small size of the antennal capitulum.

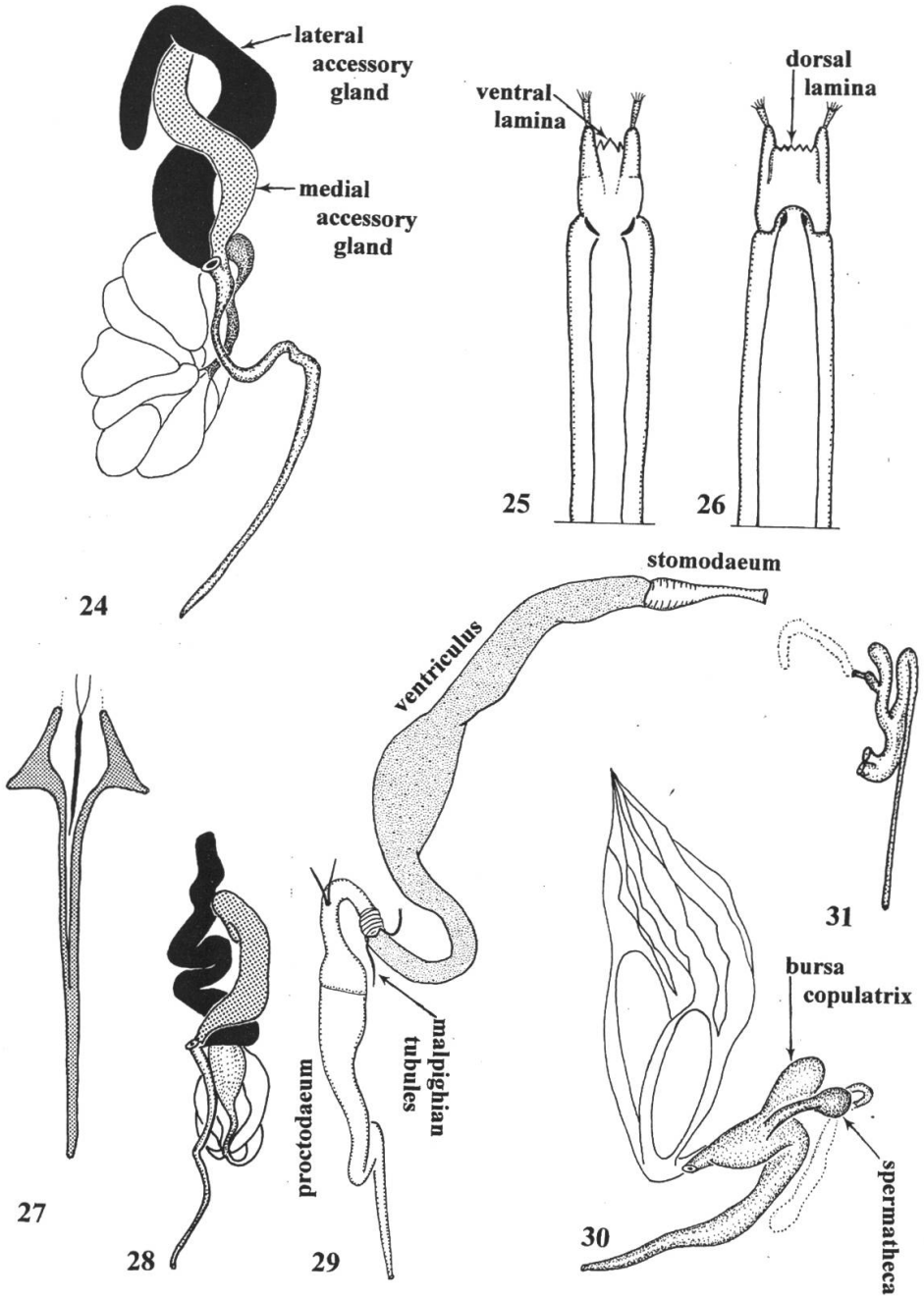
Differential diagnosis. The small size of the antennal capitulum distinguishes the specimens of this species from congeners. Also, the absence of the anterolateral projection of the anterior block of the elytral insignia is diagnostic for members of this species.

Madoniella cardinalis sp.nov.

Figs 2, 4–11, 14–20, 37, 41, 68, 158, 196, 274; Map 1.

Type material. Holotype: Female. COSTA RICA, Heredia, Est Biol La Selva, 50–150 m, 10°26′N 84°01′W, Mar 1993 INBio-OET, 15 Marzo 1993, Bosque Primario, M/07/038, INBIOCR1002271006 (INBC). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; collection date/ecology label, INBC acronymic label, electronic label; holotype label.)

Paratypes: One hundred and six specimens. Costa Rica: Heredia: Estación Biologia La Selva, 10°26N 84°01′W, 2-III-1993, 50–150 m, secondary forest, collector name not noted (INBC, 1); *idem*, 3-III-1993, 50–150 m, secondary forest, collector name not noted (INBC, 1; WOPC, 2); *idem*, 16-III-1993, 50–150 m, primary forest, collector name not noted (INBC, 2; WOPC, 2); *idem*, 1-IV-1993, 50–150, primary forest, collector not noted (INBC, 2; WOPC, 1); *idem*, 2-IV-1993, 50–150 m, primary forest, collector not noted (INBC, 2); *idem*, 3-IV-1993, 50–150 m, primary forest, collector not noted (INBC, 1; WOPC, 1); *idem*, 15-IV-1993, 50–150 m, primary forest, collector not noted (INBC, 1; WOPC, 1); *idem*, 16-IV-1993, 50–150 m, primary forest, collector not noted (WOPC, 1); *idem*, 1-VI-1993, 50–150 m, primary forest, collector not noted (INBC, 3); *idem*, 2-VI-1993, secondary forest, collector not noted (INBC, 2; WOPC, 2); *idem*, 2-VII-1993, 50–150 m, no collector noted (INBC, 1); *idem*, 4-VIII-1993, 50–150 m, secondary forest, no collector noted (INBC, 1); *idem*, 1-III-1994, 50–150 m, secondary forest, primary forest, no collector noted (INBC, 1); *idem*, 31-V-1996, 50–150 m, primary forest, no collector noted (INBC, 1); *idem*, 4-IV-1994, 50–150 m, secondary forest, no collector noted (INBC, 1); *idem*, 30-VI-1995, 50–150 m, secondary forest, no collector noted (INBC, 1); *idem*, 17-VII-1995, 50–150 m, primary forest, no collector noted (INBC, 2); *idem*, 16-VIII-1995, 50–150 m, primary forest, no collector noted (INBC, 1); *idem*, 31-VIII-1995, 50–150 m, primary forest, no collector noted (INBC, 1); *idem*, 14-IX-1995, 50–150 m, primary forest, no collector noted (WOPC, 1); *idem*, 4-I-2000, 50–150 m, *Pouruma minor*, no collector noted (WOPC, 1); La Selva Biological Station, near Puerto Viejo de la Sarapigul, 8-15-V-1989, malaise trap in tree fall gap, B. Brown & D. Feener (WFBC, 1); La Selva Biological Station, 3 km S Puerto Viejo, 10°26′N 84°01′W, 18-VII-1994, H. A. Hespenheide (CHAH, 1); Puerto Viejo, La Selva, days not noted-II-III-1993, 100 m, Hanson & Goday (MUCR, 1); Santa Clara, Hamburg Farm, Revantazon, ebene Limon, 12-IV-1926, an trocknem holtz, nachs, F. Neverman (USNM, 1); *idem*, 13-IV-1926, an trocknem holtz, nachs, F. Neverman (USNM, 3); *idem*, 15-IV-1924, an trocken holtz, nachs, F. Neverman (FMNH, 1); *idem*, 22-I-1926, an trocken holtz, nachs, F. Neverman (FMNH, 1); Hamburg Farm, 27-III-1926, F. Neverman (FMNH, 2): Guanacaste: 3 km SE Rio Naranjo, 21-VII-1993, F. D. Parker (EMUS, 1); *idem*, 14-VIII-1993, F. D. Parker (WOPC, 1); *idem*, day not noted-XII-1991, F. D. Parker (WOPC, 1); *idem*, 1-10-VII-1992, F. D. Parker (EMUS, 1); *idem*, 11-XII-1990, F. D. Parker (EMUS, 1); Lado suroeste del Volcan Cacao, day not noted-III-VIII-1990, 1000–1400 m, Malaise trap, no collector noted (INBC, 2); *idem*, VII-1989-III-1990, 1000–1400 m, Malaise trap, no collector noted (INBC, 2); *idem*, day and month not noted-1990, no



Figs 24–31. Anatomical structures: 24–27. *Madoniella dislocata*. 24 – Male internal reproductive organs. 25–26, Ovipositor (25, ventral view; 26, dorsal view). 27 – spicular fork. 28 – *M. cracentis*, male internal reproductive organs. 29 – *M. dislocata* (Say), alimentary canal. 30 – *Madoniella dislocata*, female internal reproductive organs. 31 – *M. cracentis*, female internal reproductive organs.

collector noted (INBC, 2); *idem*, VII-1989-III-1990, no collector noted (INBC, 1); Estacion Santa Rosa, VIII-1990, 800 m (MUCR, 1); Estacion Pitilla, 9 km S Santa Cicilia, Sendero Mena, day not noted-II-1994, 700 m, Malaise (MUCR, 3; WOPC, 1): Puntarenas: San Luis Valley, 1-VII-1989, F. Hovore (WFBC, 2; WOPC, 1); Golfo Dulce, 24 km W Piedras Blancas, no day noted-XII-1990, 200 m, Hanson (MUCR, 1); Reserva Forestal, Golfo Dulce, 24 km W of Piedras Blancas, 8°46′N 83°24′W, no day noted-XI-1991 (MUCR, 1; WOPC, 1); Monteverde, Hotel Sapo, Dorado, 18-19-V-2003, J. & A. Rifkind, P. Gum (JNRC, 1); Monteverde, 17-19-V-1994, R. L. Penrose, F. T. Hovore, & P. H. Sullivan (WFBC, 1); *idem*, 5-7-V-1985, F. T. Hovore (JNRC, 1;

WOPC, 1); Pension Quetzal, 18-20-1990, F. Hovore (WFBC, 1; WOPC, 2); Cidem, 21-24-VIII-1987, H. & A. Howden (CNCI, 1); *idem*, 28-V-1979, H. & A. Howden (CNCI, 1); *idem*, 21-26-V-1979, J. M. & B. A. Campbell (WOPC, 1); *idem*, 17-18-VIII-1976, E. M. Fisher (WFBC, 1); Peninsula Osa, Puerto Jimenez, 8°32′N, 83°19′W, no day noted-II-1992, 10 m, malaise trap, P. Hanson (INBC, 1); 16 km SSE La Virgen, 1050–1150 m, 10°16′N 84°05′W, 9-IV-2001, 50–150 m, no collector noted (INBC, 1); 11 km ESE La Virgen, 10°21′N 84°03′W, 22-II-2004, 250–350 m, no collector noted (INBC, 2; WOPC, 2); *idem*, 9-III-2004, no collector noted (INBC, 2; WOPC, 1); *idem*, 21-III-2004, no collector noted (INBC, 2); *idem*, 6-IV-2004, no collector noted (INBC, 2; WOPC, 1); *idem*, 18-IV-2004, no collector noted (INBC, 1; WOPC, 3); *idem*, 20-IV-2003, 10°20′ N 84°04′W, no collector noted (INBC, 1): Cartago: Turrialba, 3-VI-1973, Ginter Ekis (WOPC, 1). Panamá: Panamá: 8–11 km N El Llano, 24-I-1993, F. Hovore (WFBC, 1; WOPC, 2).

Description. Size: Length 5.8–5.0mm; width 1.0–1.5 mm. Integument: Cranium red; pronotum with an anterocentral region, remainder of pronotum dark brown; elytral markings as in Fig. 196; legs yellow-brown, dorsal margin light brown.

Head: Vertex slightly wider than eye (23:20); antenna as in Fig. 68.

Thorax: Pronotum (Fig. 158), length/width ratio 50:57, lateral tubercle present, disc convex but somewhat depressed paralaterally, anterior margin subconic; elytra, length/width ratio 4.6, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 274.

Male Internal Reproductive Organs: As in Fig. 41.

Female Internal reproductive Organs: As in Fig. 37.

Variation: In some specimens the red anterocentral region of the pronotum extends to the pronotal anterior angles.

Natural history. Specimens have been collected from the plant *Parcellas sucesionalis*. Many were captured with a Malaise trap in primary and secondary forest with altitudinal ranges involving 50–1500 m. Temporally, specimens were captured from May through August. The specimens from Panamá were captured in January.

Distribution (Map 1). This species is known only from Costa Rica and Panamŕ.

Etymology. The trivial name *cardinalis* (= red) is a Latin adjectival. I refer to the red coloration of the cranium and anterior portion of the pronotal disc.

Differential diagnosis. Males of this species may be distinguished from superficially similar males of *M. erythrocephala* by the narrow diamond shape of the phallic apex. I could not separate females of the two species in question.

Madoniella careorita sp.nov. Figs 69, 132, 230, 317; Map 12.

Type material. Male. Costa Rica, Heredia, est. Biol. La Selva, 50–150 m, 10°26′N 84°01′W, Nov 1954, INBio-OET, a second label that reads, 02 Noviembre 1994, *Pentaclethra macroloba* (INBC). (Specimen point mounted, male symbol affixed to paper point, support card; locality label; collection date/natural history label-INBIOCR1002285720; electronic label; INBC repository label; holotype label.)

Paratypes: Fifty-seven specimens. Costa Rica: Alajuela: 20 km S Upala, 6-XII-1990, F. D. Parker (WOPC, 1); *idem*, 13-XII-1990-9-I-1991, F. D. Parker (WOPC, 1); *idem*, 22-I-1991, F. D. Parker (EMUS, 1); *idem*, 21-31-VII-1991, F. D. Parker (EMUS, 1); 20 km S Upala, 29-I-1991, F. D. Parker (EMUS, 1): Heredia: Estación Biologica La Selva, 10°26′N 84°01′W, 15-III-1993, 50–150 m, secondary forest, no collector noted (INBC, 1; WOPC, 1); *idem*, 1-IV-1993, 50–150 m, primary forest, no collector noted (INBC, 1); *idem*, 16-IV-1993, 50–150 m, primary forest, no collector noted (INBC, 1); *idem*, 2-V-1993, 50–150 m, primary forest, no collector noted (INBC, 3); *idem*, 3-V-1993, 50–150 m, primary forest, no collector noted (INBC, 2); *idem*, 18-V-1993, 50–150 m, primary and second forest, no collector noted (INBC, 3); *idem*, 2-VI-1993, 50–150 m (INBC, 3; WOPC, 1); *idem*; 19-V-1993, 50–150 m, primary forest, no collector noted (INBC, 2); *idem*, 1-IX-1993, 50–150 m, primary forest, no collector noted (INBC, 1); *idem*, 3-I-1994, primary forest, no collector noted (INBC, 1); *idem*, 15-I-1994, 50–150 m, primary forest, no collector noted (INBC, 2); *idem*, 4-IV-1994,

50–150 m, primary forest, no collector noted (WOPC, 1); *idem*, 10-X-1994, 50–150 m, *Ilex skutchi*, no collector noted (WOPC, 1); *idem*, 14-X-1994, 50–150 m, *Pentaclethra macroloba*, no collector noted (WOPC, 1); *idem*, 22-X-1994, 50–150 m, *Pentaclethra macroloba*, no collector noted (INBC, 1); *idem*, 2-XI-1994, 50–150 m, *Pentaclethra macroloba*, no collector noted (INBC, 1; WOPC, 1); *idem*, 4-XI-1994, 50–150, *Prottium glabrun*, no collector noted (WOPC, 1); *idem*, 16-XI-1993, 50–150 m, *Guarea guara*, no collector noted (INBC, 1); *idem*, 14-XII-1995, 50–150 m, no collector noted (WOPC, 1); *idem*, 1-IV-1996, 50–150 m, primary forest (WOPC, 1); *idem*, 23-I-1998, 50–150 m, swamp border, no collector noted (WOPC, 1); *idem*, 14-IV-1998, 50–150 m, swamp border, no collector noted (WOPC, 1); *idem*, 4-VIII-1999, 50–150 m, secondary forest, no collector noted (WOPC, 1); *idem*, 4-I-2000, 50–150 m, *Pouruma minor*, no collector noted (WOPC, 3); *idem*, 8-15-V-1989, 50–150 m, Malaise trap in tree fall gap, B. Brown & D. Feener (WFBC, 2); *idem*, 2-IV-1984, on fallen branch of *Pentaclethra macroloba*. H. A. Hespenheide (WOPC, 2); *idem*, 5-IV-1984, fallen branch of *Pentaclethra macrolobus*, (CHAH, 1); *idem*, 16-IV-1988, H. A. Hespenheide (CHAH, 1); *idem*, 30-III-1988, H. A. Hespenheide (CHAH, 1); *idem*, 18-VII-1994, H. A. Hespenheide (CHAH, 1); *idem*, II-III-1993, 100 m, P. Hanson (JNRC, 1); 11 km ESE La Virgen, 10°21′N 84°03′W, 9-III-2004, 250–350, no collector noted, (INBC, 1); *idem*, 21-III-2004, no collector noted (WOPC, 1): Cartago: Turrialba, CATIE, 16-20-V-1979, J. M. & B. A. Campbell (CNCI, 1): Guanacaste: 3 km SE Rio Naranjo, 1-9-X-1992, F. D. Parker (EMUS, 1).

Description. Size: Length 3.8–5.5 mm; width 1.0–1.8 mm. Integument: Cranium red; pronotal disc dark predominantly brown, anterocentral region reddish; elytral markings as in Fig. 230; legs yellow, dorsal margin light brown.

Head: Vertex slightly wider than eye (26:23); antenna very similar to antenna depicted in Fig. 69.

Thorax: Pronotum (Fig. 132), length/width ratio 60:65, lateral tubercle present, disc convex, anterior margin subconic; elytra, length/width ratio 4.4, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 5 spines.

Abdomen: Aedeagus as in Fig. 317.

Variation: There is some variation in the extent of redness in the anterocentral region of the pronotum.

Natural history. These checkered beetles have been associated with the following plant species: *Ilex skutchi*, *Prottium glabrum, Pentaclethra macroloba, Guarea guara,* and *Pouruma minor*. Temporally, these beetles have been captured throughout the year at altitudes ranging from 50 to 350 m.

Distribution (Map 12). This species is known only from Costa Rica.

Derivatio nominis. The specific epithet is a Latin adjectival derived from *careo* (= be without) and the Latin suffix *–a*. I refer to the absence of the quadrate posterior extension of the elytral insignia.

Differential diagnosis. From congroup beetles these may be distinguished by the absence of the posterocentral extension of the posterior block of the elytral insignia.

Madoniella dariensis sp.nov. Figs 71, 126, 220, 303; Maps 1, 9.

Type material. Holotype: Female. Panama: Pr. Darien, P. N. Darien, Pirre, Est. Rancho Frio, 80 m, 7–16, nov. 200, Malaise, R. C. Cambra, A. Santos (MIUP). (Specimen pin mounted, support card, male symbol affixed to support card; locality label; MIUP repository label; holotype label.)
Paratypes: Three specimens. Panamá: Darien: Rancho Frio, 7-16-XI-2000, 80 m, malaise, R. Cambra & A. Santos (MIUP, 1; WOPC, 1); Parque Nacional, Estación Rancho Frio, Pirre, 9-17-IV-2002, 80 m, R. Cambra & A. Santos (MIUP, 1).

Description. Size: Length 4.5–5.0 mm; width 1.6–2.0 mm. Integument: Cranium red; pronotal disc black, red near anterior margin; elytral markings as in Fig. 220; profemur predominantly yellow, dorsal margin light brown, mesofemur and metafemur yellow, tibiae yellow but with anterior margin light brown.

Head: Vertex wider than eye (25:21) and with loose aggregate of setae; antennae as in Fig. 71.

Thorax: Pronotum (Fig. 126), length/width ratio 52:60, lateral tubercle present, disc convex, anterior margin convex, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width ratio 4.3, form oblong-subovoid, punctations large, seriate and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in distal fourth; legs, protibial anterior margin with 5 spines.

Abdomen: Aedeagus as in Fig. 303.

Variation: The available specimens did not vary appreciably.

Natural history. These beetles were collected during November in a Malaise trap, at 80 m.

Distribution (Map 1). Known only from eastern Panamá.

Etymology. The specific epithet is a compound noun formed from the name of a Panamanian province and the Latin suffix *–ensis*.

Differential diagnosis. These beetles are distinguishable from superficially similar specimens of *M. kuehlorum* by the abbreviated nature of the posterocentral extension of the elytral block (Fig. 220).

Madoniella erythrocephala (Gorham, 1882) Figs 67, 182, 226, 297; Map 9.

Epiphloeus erythrocephalus Gorham, 1882: 167. SCHENKLING, 1903: 87; 1910: 114. GAHAN, 1910: 72. CORPORAAL 1950; 251.

Type material. Lectotype female (here selected). Panamá: Chiriquí: Volcan de Chiriquí. (BMNH). (Specimen card mounted, male symbol affixed to card mount; locality label; round type label; identification label; specimen figured label; BMNH acronymic label; lectotype label; identification label.)
Paralectotype: Gorham (1882: 167) lists specimens from México, Guatemala, Nicaragua, and Panamá. Of these beetles, that is, those presumed to be syntypes. I have examined six that do not belong to this species. They form part of paratypic series elsewhere in this manuscript. Two specimens from the type locality are paralectotypes of this species. Panamá: Chiriquí: Volcan de Chiriquí, collection day not noted, 610–915 m, Champion (BMNH, 2).

Other material eamined. I have examined 15 specimens. Panamá: Chiriquí: Fortuna, 19-IV-1978, O'Brien & Marshall; *idem*, 17-V-1978, C. W. O'Brien; *idem*, 82°15′W 8°44′N 19-V-1978, O'Brien & Marshall: Colón: Fort Sherman, 9°17′N 79°59′W, 15-V-2001, on *Clusia longipetiolata*, F. Ødegaard: Panamá: Altos de Pacora, 4-10 (no year provided), E. Giesbert; 10 km N El Llano, 3-8-VI-1986, 427 m; Cerro Jefe, 9°12′N 79°21′W, 19-VI-1976, H. Stockwell: Canal Zone: 4 km NE, Margarita, 18-III-1974, H. Stockwell; Barro Colorado Island, 9°10′N 79°50′W, 11-IV-1973. Specimens are deposited in FSCA, CHAH, MIUP, STRI, and in WOPC.

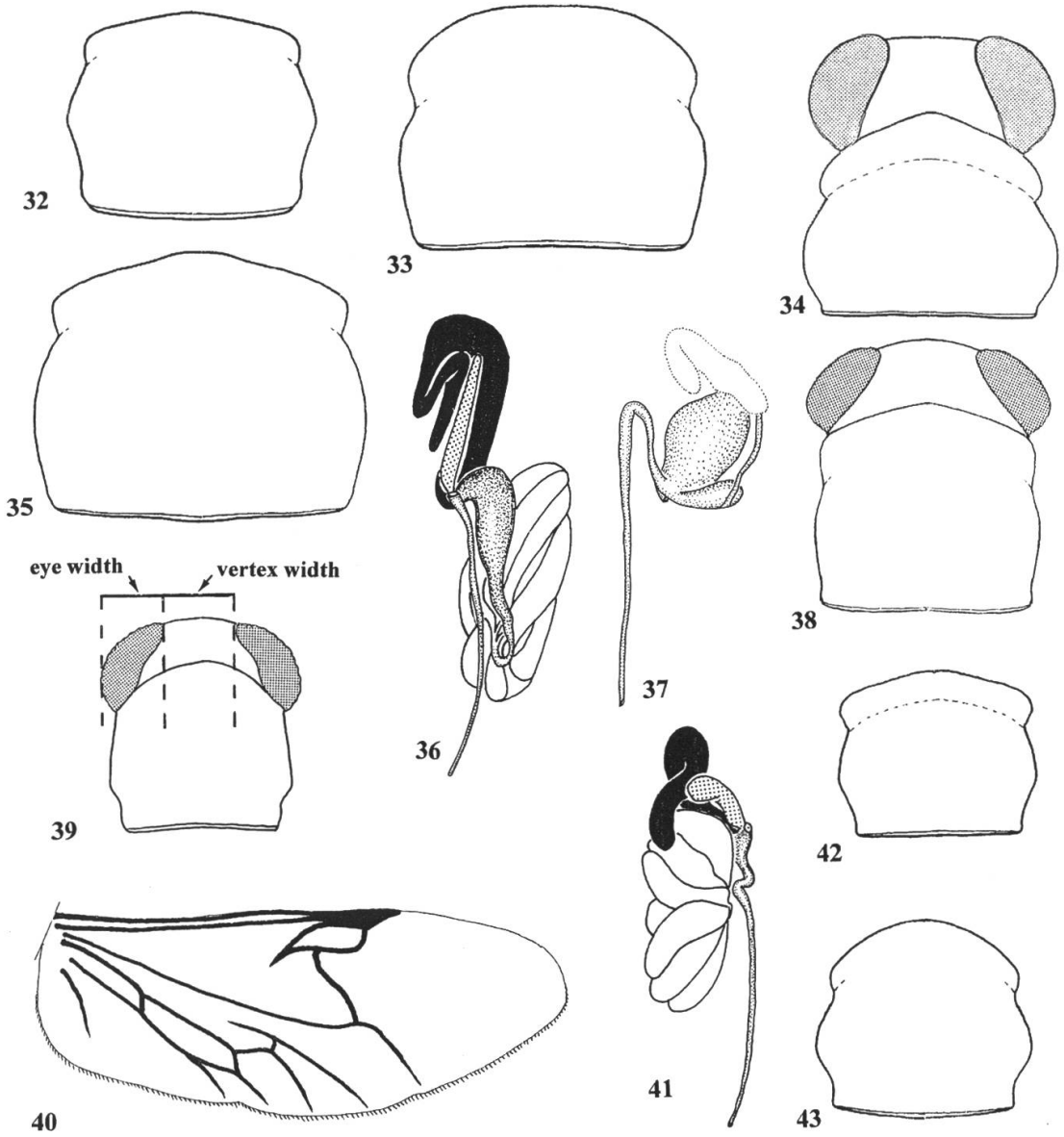
Diagnosis. Size: Length 4.0–5.5 mm; width1.1–1.8 mm. Integument: Cranium red; pronotal disc red in anterior half, dark brown in posterior half; elytral markings as in Fig. 226, legs yellow but slightly infuscated along dorsal margin.

Head: Vertex slightly wider than eye (26:23), antenna very similar to antenna depicted in Fig. 67.

Thorax: Pronotum (Fig. 182), length/width ration 54:64, lateral tubercle present, disc convex in anterior half then concave paralaterally, anterior margin somewhat sharply convex, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width 4.5, form oblong-subovoid, punctations large, seriate and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in distal fourth; legs, protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 297.

Variation: The available specimens do not vary appreciably.



Figs 32–43. Anatomical structures: 32–33, Pronota: 32 – *Madoniella ignis*. 33 – *M. guana*. 34 – *M. facis*, forebody. 35 – *M. cavina*. 36 – *M. kuehlorum*, male internal reproductive organs. 37 – *M. cardinalis*, female internal reproductive organs. 38 – *M. melina*, forebody. 39 – *Madoniella dislocata*, forebody. 40 – *Madoniella dislocata*, methathoracic wing. 41 – *M. cardinalis*, male internal reproductive organs. 42–43, Pronota: 42 – *M. insignis*. 43 – *M. chiricahua*.

Natural history. One specimen was collected in the canopy of *Clusia longipetiolata*. Temporally, these beetles were collected during March, April, and May; one at an altitude of 427 m.

Distribution (Map 9). Known from eastern to central Panamá.

Differential diagnosis. Only males of *erythrocephala* may be separated from males of *cardinalis*. In *erythrocephala* beetles the phallic apex is diamond shaped whereas in *cardinalis* it is lobate. I cannot distinguish females of the two species in question.

Madoniella kuehlorum sp.nov. Figs 36, 107, 130, 153, 261, 273; Map 6.

Type material. Holotype: Female. Nicaragua: Matagalpa: 10 km NW Matagalpa, Selva Negra, 12°59′N 85°54′W, 16-22-IV-2002, 1280 m, beating, Weston Opitz (FSCA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; collection date label; FSCA repository label; holotype label.)
Paratype: Eleven specimens. México: Chiapas: 17 km W Tuxtla Gutierrez, 27-VI-8-VII-1986, 1006 m, E. Giesbert (FSCA, 1); *idem*, 1-8, VII-1986, 1006 m, J. E. Wappes (JEWC, 1). Belize: Cayo: Chaa Creek, 29-VI-1992, on tree branch of boadleaved hardwood, 340 m, J. Rifkind & P. Gum (JNRC, 1); Xunantunich, 14-VIII-1977, O'Brien & Marshall (WOPC, 1). Honduras: Francisco Morazán: Near La Ventana, 30-VI-1995, F. T. Hovore (WOPC, 1); Olancho: La Muralla Parque Nacional, 24-27-V-1995, J. E. Wappes (JEWC, 1; WOPC, 1); *idem*, 31-V-1995, R. Turnbow: *idem*, 31-V-1995, R. Turnbow (RHTC, 1). Comayagua: 1.6 km SW Los Planes, 26-V-2002, R. Turnbow (WOPC, 1). Nicaragua: Granada: Volcan Mombacho, Finca El Progresso, 2-VI-1998, Malaise trap in non organic coffee orchard, J. M. Maes (SEAN, 1; WOPC, 1); *idem*, 30-IV-1998, malaise trap in cloud forest, J. M. Maes (SEAN, 1). Costa Rica: San José: San José, University of Costa Rica Athletic Fields, 19-V-1995, beating tree, J. Rifkind (JNRC, 1).

Description. Size: Length 5.5–7.0 mm; width 1.8–2.0 mm. Integument: Cranium red; pronotal disc predominantly dark brown, with a small red anterocentral triangular region, anterior margin narrowly red; elytral markings as in Fig. 261; profemur brown in anterior fascies and yellow in anterior fascies, mesofemur and metafemur yellow, tibiae brown.

Head: Vertex wider than eye (32:23); antenna as in Fig. 107. *Thorax*: Pronotum (Fig.130), length/width ratio 65:76, lateral tubercle present, disc convex in anterior half then paralaterally concave, anterior transverse depression absent from disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.7, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 6 spines.

Abdomen: Aedeagus as in Fig. 273. Male Internal Reproductive Organs: As in Fig. 36.

Variation: There is variation in the size of the red region of the anterocentral portion of the pronotal disc. The pronotum also varies in expression of the pronotal tubercle (compare Figs 130 and 153). Moreover, the legs are completely black in some specimens. Lastly, some variation was noted in the shape of the phallobasic apodeme.

Natural history. Specimens have been collected from April thru June. The Nicaraguan beetles were captured with a Malaise trap in a grove of non-organic coffee.

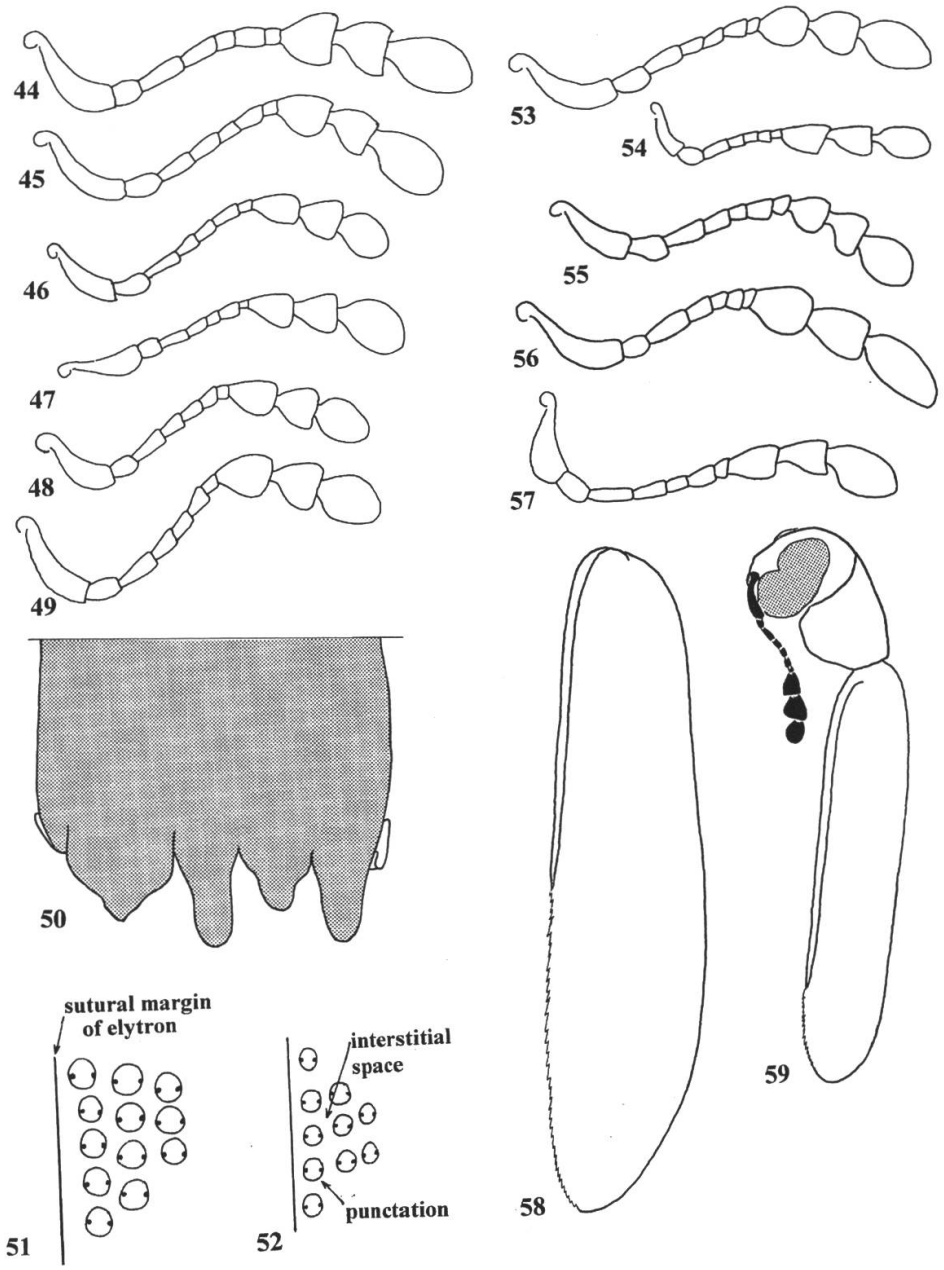
Distribution (Map 6). The known range of this species extends from Honduras to central Costa Rica.

Etymology. The specific epithet is a dedicative patronymic to honor Eddy and Mausi Kühl for their dedication to preserve pristine rain forest habitat and Nicaraguan natural history on the grounds of their very hospitable estate named Selva Negra.

Differential diagnosis. The anterolateral projection of the posterior block of the elytral insignia nearly reaches, or reaches, the epipleural margin. This characteristic will distinguish the members of this species from the superficially members of *M. plenita*.

Madoniella melina sp.nov. Figs 38, 85, 206; Map 6.

Type material. Holotype: Female. HONDURAS: Yoro: 8 km N La Habana, 4 June 2003, R. Turnbow (FSCA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label.)
Paratypes: None.



Figs 44–59. Anatomical structures: 44–49, Antennae: 44 – *Madoniella orientalis*. 45 – *M. rectangularis*. 46 – *M. knullorum*. 47 – *M. nana*. 48 – *M. vogti*. 49 – *M. welderi*. 50 – *M. dislocata*, proventriculus (internal view). 51–52, Elytral punctations (51 – *M. plenita*; 52 – *M. redacta*). 53–57, Antennae: 53 – *M. redacta*. 54 – *M. extensiva*. 55 – *M. linea*. 56 – *M. fonteboa*. 57 – *M. bilineata*. 58 – *M. apsis*, elytron (lateral view). 59 – *M. extensiva*, habitus (lateral view).

Description. Size: Length 5.5 mm; width 2.2 mm. Integument: Cranium red; pronotal disc reddish at middle front, red-brown in remainder; elytral markings as in Fig. 206; legs mostly dark brown, basal region of mesotibia and metatibia yellow.

Head: Vertex much wider than eye (42:23); antenna as in Fig. 85.

Thorax: Pronotum (Fig. 38), length/width ratio 75:82, lateral tubercle present but small, positioned more posterior than usual, disc convex, anterior transverse depression

absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.2, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 7 spines.

Abdomen: Aedeagal information not available.

Variation: One specimen examined.

Natural history. The only available specimen was collected in June.

Distribution (Map 6). Known only from the type locality.

Etymology. The specific epithet *melina* stems from *melinus* (= honey colored) is a Latin adjective; referring to the color of the elytral insignia.

Differential diagnosis. In these insects the posterocentral extension of the posterior block of the elytral insignia is bifurcated, a characteristic that will distinguish the members of this species from congroup members.

***Madoniella plenita* sp.nov.** Figs 51, 87, 159, 209; Map 6.

Type material. Holotype: Female. Costa Rica: Cartago: Turrialba, 600 m, 25-VII-73, V. O. Becker (INBC). (Specimen point mounted, female symbol and antenna affixed to paper point, support card; locality label; INBC repository label; Weston Opitz collection label; holotype label; plastic vial with abdomen and ovipositor.)
Paratypes: None.

Description. Size: Length 5.8 mm; width 1.8 mm.

Integument: Cranium red; pronotal disc predominantly dark brown, anterocentral region red; elytral markings as in Fig. 209; femora yellow; tibiae light brown.

Head: Vertex wider than eye 31:22; antenna as in Fig. 87.

Thorax: Pronotum (Fig. 159), length/width ratio 61:74, lateral tubercle present, disc convex in anterior half then concave paralaterally, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.6, form oblong-subovoid, punctations large (Fig. 51), seriate, and arranged into 10 rows, 2° not matted, epipleural margin minutely serrate in posterior third; protibial anterior margin with 5 spines.

Abdomen: Aedeagus not available.

Variation: One specimen examined.

Natural history. The only available specimen was collected during July at 600 m.

Distribution (Map 6): Known only from central Costa Rica.

Etymology. The specific epithet *plenita* (= fullness) is a Latin adjectival. I refer to the full distribution of exceptionally large elytral punctations to the elytral apex.

Differential diagnosis. Within the *cardinalis* group only in the members of this species are the elytral punctations deeply impressed at the elytral apex.

***Madoniella redacta* sp.nov.** Figs 52, 53, 128, 198, 277; Map 6.

Type material. Holotype: Male. COSTA RICA: Heredia, Pr: La Selva Biol. Sta. 3 km S Pto. Viejo, 10°26′N 84°01′W; second label-18-VII-1994, H. A. Hespenheide (INBC). (Specimen point mounted, male symbol affixed to paper point, support card; locality label; collection date label; INBC repository label; holotype label; plastic vial with abdomen and aedeagus.)
Paratypes: One specimen. Costa Rica: Heredia: vicinity Colonia Palmarena, 30-VIII-1992, F. Hovore (WFBC, 1).

Description. Size: Length 3.9 mm; width 1.1 mm. Integument: Cranium red; pronotal disc red in anterior half and dark brown in posterior half; elytral markings as in Fig. 198; legs yellow except profemur and protibia with infuscated dorsal margin.

Head: Vertex wider than eye (27:20); antenna as in Fig. 53.

Thorax: Pronotum (Fig. 128), length/width ratio 43:50, lateral tubercle present, disc convex in anterior half then shallowly concave paralaterally, anterior margin subconic, setae not matted; elytra, length/width ratio 4.5, form oblong-subovoid, punctations medium size (Fig. 52), seriate, and arranged into 10 rows, 2° not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 277.

Variation: One specimen examined

Natural history. The available specimens were collected in July and August, one from environs of a tropical rain forest.

Distribution (Map 6). Known only from northeastern Costa Rica.

Etymology. The specific epithet stems from the Latin adjectival *redactus* (= reduced). I refer to the reduced length of the phallobasic apodeme.

Differential diagnosis. Distinguishable from superficially similar specimens of *M. plenita* by the diminution of elytral punctations on the elytral apex.

***Madoniella rubidia* sp.nov.** Figs 160, 236; Map 4.

Type material. Holotype: Female. Salobro, provde Bahia, Brésil, E. Gounelle, 6,7, 1885 (MNHN). (Specimen point mounted, female gender label affixed to paper point, support card; locality label; MNHN repository label; holotype label; plastic vial with abdomen and ovipositor.)
Paratypes: None.

Description. Size: Length 4.0 mm; width 1.3 mm. Integument: Cranium red; pronotal disc predominantly dark brown, anterocentral region of disc red; elytral markings as in Fig. 236; legs predominantly yellow, with brown spot on femoral and tibial disc.

Head: Vertex wider than eye (29:19); antenna similar to antenna depicted in Fig. 7.

Thorax: Pronotum (Fig. 160), length/width ratio 50:55, lateral tubercle present, disc convex, anterior transverse depression absent on disc, anterior margin convex, two small paralateral tumescences near pronotal collar, setae not matted; elytra, length/width ratio 4.3, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 3 spines.

Abdomen: Aedeagus not available.

Variation: One specimen examined.

Natural history. The holotype specimen was collected in July.

Distribution (Map 4). Known only from the type locality.

Etymology. The specific epithet is a Latin adjectival that stems from *rubidium* (= reddish); referring to the red color of the anterior region of the pronotal disc.

Differential diagnosis. This species is known only from Brazil. Congroup members are all from Middle America.

***Madoniella texis* sp.nov.** Figs 1, 99, 131; Map 1.

Type material. Holotype: Female. Costa Rica: Cartago, Turrialba, 610 m, I.6.1973 (INBC). (Specimen point mounted, female gender symbol affixed to paper point, support card with metathoracic wing and antenna; support card; locality label; INBC repository label; holotype label.)

Paratypes: Eighty-one specimens. Costa Rica: Alajuela: 20 km S Upala, 22-31-V-1991, F. D. Parker (WOPC, 1): Heredia: La Selva Biological Station, 3 km S Puerto Viejo, 10°26′N 84°01′W, 28-VI-1991, H. A. Hespenheide (CHAH, 1); *idem*, 19-24-VII-1992, 150 m, Malaise trap, second growth, no collector noted (INBC, 1); *idem*, 3-VIII-1993, *Parcellas sucesionales*, no collector noted (INBC, 1); *idem*, 8-X-1994, *Virola koschnyi*, no collector noted (INBC, 1); *idem*, 3-IX-1994, no collector noted, (CHAH, 1); *idem*, 2-IX-1994, *Pentaclethra macioloba*, no collector noted, (INBC, 1); *idem*, day not noted-V-1995, *Parcellas sucesionales*, no collector noted (INBC, 1); *idem*, 10-20-VIII-1995, Louis M. La Pierre (WOPC, 1); *idem*, 29-VII-1997, bosque primario, no collector noted (INBC, 2; WOPC, 1); *idem*, 8-VIII-1997, bosque primario, no collector noted (WOPC, 1); *idem*, 19-I-1998, bosque primario, no collector noted (INBC, 1); *idem*, 3-I-2000, *Meliosma vernicosa*, no collector noted (WOPC, 1); *idem*, 15-V-2000, *Goethalsia meiantha*, no collector noted (INBC, 1); La Selva, no date noted, 75 m, Malaise trap (MUCR, 1): Guanacaste: 3 km SE Rio Naranjo, 11-20-IX-1992, F. D. Parker (EMUS, 1); *idem*, 13-31-VII-1993, F. D. Parker (EMUS, 1; WOPC, 1); *idem*, 1-15-VIII-1993, F. D. Parker (EMUS, 1); *idem*, 1-14-IX-1993, F. D. Parker (EMUS, 1); 9 km S Sta. Cecillia, Est. Pitilla, 700 m, VII-VIII-1992, Malaise trap (INBC, 1): Cartago: Turrialba, 25-VII-1973, 610 m, Ginter Ekis (WOPC, 1), *idem*, 600 m, 25-VII-1973 (CASC, 1; FMNH, 1; JNRC, 1; RGCG, 1; USNM, 1; WFBC, 1; WOPC, 2; ZMAN, 1); *idem*, 9-14-VI-1988, E. Giesbert (FSCA, 1); Suiza, near Turrialba, 23-VII-1986, R. D. Cave (RDCC, 1): Puntarenas: Osa Peninsula, Altos de Mogo, 1-3-VII-1994, F. T. Hovore (WFBC, 1). Panamá: Chiriquí: Volcán de Chiriquí, collection date not noted, 610–915 m, Champion (BMNH, 1); *idem*, below 1220 m, Champion (BMNH, 1): Panamá: Cerro Campana road, 19-V-1991, 588 m, R. Turnbow (RHTC, 1); *idem*, 1-I-1974, H. S. Stockwell (WOPC, 1); Altos de Campana, 13-V-1996, R. Turnbow (RHTC, 1; WOPC, 1); Cerro Campana, 30-VII-1970, 884 m, J. M. Campbel (CNCI, 1); Arraijan, 25-VIII-1971, R. Belzer (DEIG, 1; RGCG, 1); Parque Nacional Metropolitano, 8-IV-1995, on *Spondias morbin*, F. Ødegaard (WOPC, 1); *idem*, 19-IV-1996, on *Anacardiu exelsum*, F. Oedegaard (NINA, 1); *idem*, 4-IV-2001, on *Apeiba membranaceae*, F. Ødegaard (WOPC, 1); *idem*, 15-IV-2001, on *Clusia aff. logipetiolata*, F. Ødegaard (WOPC, 1); *idem*, 26-IV-2001, on *Calophyllum longifolium*, F. Ødegaard (WOPC, 5); *idem*, 26-V-2001, on *Calophyllum longifolium*, F. Ødegaard (NINA, 1); *idem*, 26-V-2001, on *Calophyllum longifolium*, F. Ødegaard (NINA, 1), *idem*, 1-VI-2001, on *Calophyllum longifolium*, from dead branches in canopy, F. Ødegaard (NINA, 8), *idem*, (WOPC, 1), 25-IV-2002, on *Dendropanax arboreus*, F. Ødegaard (NINA, 1); *idem*, 30-IV-2002, on *Poulsenia amata*, from dead branches in canopy, F. Ødegaard (WOPC, 1); *idem*, 9-V-2002, on *Poulsenia armata*, F. Ødegaard (WOPC, 1); 8 km N El Llano, 15-29-VI-1992, Jeane & Keve Ribardo (CASC, 1; STRI, 1); 10 km N El Llano, 427 m, 3-8-VI-1986, E. Giesbert (FSCA, 1); 10-12 km N El Llano, 3-8-VI-1986, E. Giesbert (WOPC, 2); 10 km N El Llano, 16-22-IV-1987, E. Giesbert (FSCA, 1; WOPC, 1); 8–10 km N El Llano, 26-IV-4-V-1992, E. Giesbert (FSCA, 1); 7–10 km N El Llano, 14-22-V-1993, E. Giesbert (FSCA, 1); *idem*, 21-30-IV-1995, E Giesbert (FSCA, 1); Cerro Jefe, 30-V-1-VI- 1992, E. Giesbert (WOPC, 1); 6–8 km N El Llano, on El Llano-Carti Road, 6-VI-1994, F. Andres & A. Gilbert (CDAE, 1); 8–13 km El Llano-Carti road, 10-13-V-1996, Wappes, Huether, & Morris (JEWC, 1); 8–11 km on El Llano-Carti road, 24-V-2-IV-1992, 335 m, J. E. Wappes (JEWC, 1); Cerro Azul, 29-V-1983, J. E. Wappes (JEWC, 1); Cerro Azul, Jefe, 28-I-1992, F. Hovore (WFBC, 1): Coclé: Cerro Gaital, 10-12-VI-1985, E. Riley & D. Rider (TAMU, 1).

Description. Size: Length 5.0–8.0 mm; width 1.5–3.0 mm. Integument: Cranium red; pronotal disc predominantly dark brown, anterior border and anterior region of disc red, red portion of disc somewhat triangular, often tapered to a point posteriorly; elytral markings as in Fig. 1; femora predominantly yellow, dorsal margin light brown; tibiae light brown.

Head: Vertex wider than eye (33:25), with a small cluster of silvery setae; antenna very similar to antenna depicted in Fig. 99.

Thorax: Pronotum (Fig. 131), length/width ratio 70:77, lateral tubercle present, disc convex then depressed paralaterally, anterior margin convex, anterior transverse depression absent from disc, setae not matted; elytra, length/width ratio 4.6, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 4 to 9 spines. *Abdomen*: Aedeagus very similar to one depicted in Fig. 278.

Variation: There is considerable variation of the number of spines on the anterior border of the protibia and some variation in the extent of redness on the pronotal disc.

Natural history. Collectors have associated these beetles with the following species of plants: *Parcellas sucesionales*, *Virola koschnyi*, *Pentaclethra macroloba*, *Meliosma*

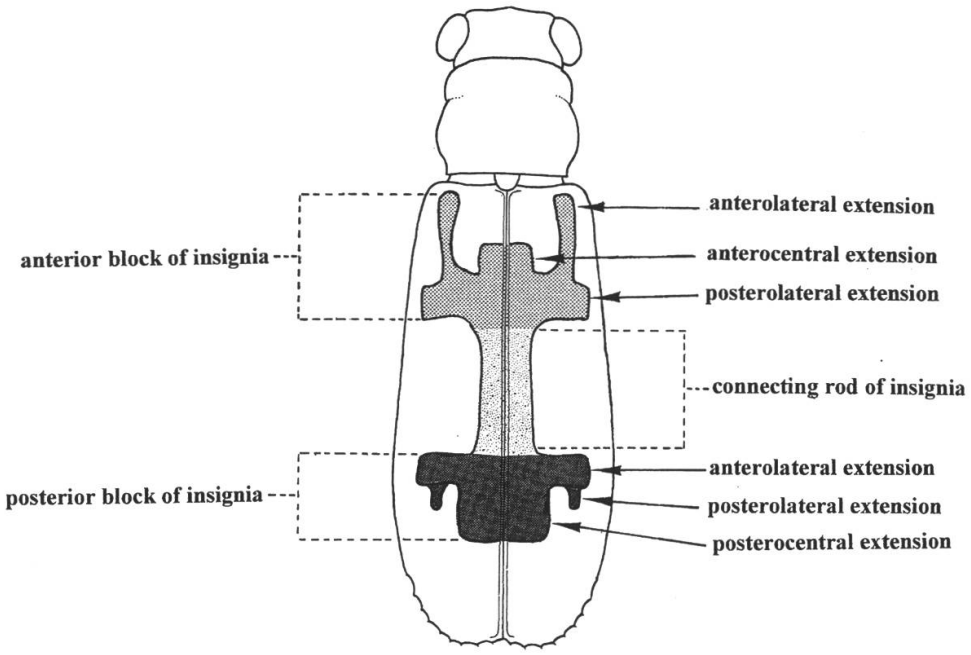


Fig. 60. Components of elytral insignia.

vernicosa, *Goethalsia meiantha*. Frode Ødegaard collected these beetles in Panamá from the canopy of the following flowering tree species: *Spondias morbin*, *Apeiba membranaceae*, *Anacardin exelsum*, *Calophyllum longifolium*, *Clusia longipetiolata*, *C. angipetiolata*, *Callophyllum longifolium*, *Dendropanax arboreus*, and *Poulsenia armata*. Several specimens were also collected from dead branches of the abovementioned trees and some were gathered in a Malaise trap in primary and secondary forests.

Temporally, these checkered beetles were captured in a Costa Rican tropical rain forest during May, July, August, October, November, and January, and from Panamá from April thru August. Attitudinally, specimens were captures at 150 to 884 m.

Distribution (Map 1). Specimens of this species have been collected from central Costa Rica and central Panamá.

Etymology. The trivial name *texis* is a Greek term meaning "dissolution". I refer to the fading of the posterior margin of the elytral insignea.

Differential diagnosis. Only among specimens of this species does the posterior border of the posterior block of the elytral insignia diminish towards the elytral apex (Fig. 1)

Madoniella zonula sp.nov. Figs 97, 124, 134, 200; Map 1.

Type material. Holotype: Female. PANAMÁ, Colon Pr., Fort Sherman, 9°7′N 79°59′W, 27 May 2001, leg F. Ødegaard; second label-On *Manilkara bidentata* (MIUP). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; natural history label, MIUP repository label; holotype label; plastic vial with abdomen and ovipositor.).

Paratypes. Three specimens. Panama: Colón: Fort Sherman, 9°17′N 79°59′W, 15-V-2001, on *Clusia longipetiolata*, F. Ødegaard (WOPC, 1); *idem*, 2-V-2001, on *Milinkara bidentata*, F. Ødegaard (NINA, 1). Colombia: Cauca: PNN Gorgona, El Saman, 02°58′N 78°11′W, 11-XII-2001-18-I-2002, 5 m, Malaise, H. Torres (IAVH, 1).

Description. Size: Length 3.1–3.8 mm; width 1.0–1.2 mm.

Integument: Cranium dark red; pronotal disc predominantly dark brown and with a diffuse reddish anterocentral region; elytral markings as in Fig. 200; legs predominantly yellow, with the dorsal margin of the femora and tibiae slightly infuscated.

Head: Vertex wider than eye (19:16); antenna similar to antenna depicted in Fig. 97. *Thorax*: Pronotum (Figs 124, 134), length/width ratio 40:46, lateral tubercle present but very shallow, disc convex, anterior transverse depression absent from center of disc, anterior margin subconic, setae not matted; elytra, length/width ratio 4.6, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° not matted, epipleural margin minutely serrate in posterior fifth; protibial anterior margin with 5 spines.

Abdomen: Aedeagus not available.

Variation: The central dark spot on the anterior block of the elytral insignia varies in expression.

Natural history. These beetles were collected during May on *Manilkara bidentata* and *Clusia longipetiolata*.

Distribution (Map 1). Known only from central Panamá.

Etymology. The specific epithet stems from the Latin *zona* (= belt). I refer to the broad configuration of the anterior block of the elytral insignia.

Differential diagnosis. The posterocentral extension of the posterior block of the elytral insignia is divided into two clearly defined streaks. This characteristic, along with small size (about 3 mm) will distinguish the members of this species within the *cardinalis* group.

cracentris group

The oblong-rectangulate body form and absence of minute serrations along the epipleural margin are the most outstanding features of this group. The group is also characterized by a narrow vertex, very transverse pronotum, lack of anterior transverse pronotal depression, small elytral punctations that are subseriately arranged proximal to the sutural margin and seriately arranged elsewhere on the elytral disc, and by the fracture of the elytral insignia (Fig. 267). This group is known from Colombia, east to Venezuela, and south across Perú to central Brazil.

Madoniella cracentis sp.nov. Figs 28, 31, 81, 145, 267; Map 4.

Type material. Male. Brazil: Amazonas: 1 km W Taruma Falls, 100 m, 28-II-1981, on Milinkara bark, G. Ekis (MCNZ). (Specimen point mounted, male symbol affixed to paper point, support card; locality label; MCNZ repository label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: Seventeen specimens. Colombia: Putumayo: La Paya, Cabana La Paya, 0°2′S 75°12′W, 5-25-XII-2001, 330 m, Malaise, E. Lozano (IAVH, 1). Venezuela: Bolivar: La Gran Sabana, Chivat on Hotel, 9 km towards Kavanayen, 29-VI-1987, 1310 m, beating, M. A. Ivie (MAIC, 3; WOPC, 1). Perú: Huánuco: Pachitea (BMNH, 2; WOPC, 1). Brazil: Amazonas: Manaus, 1 km W Taruma Falls, 28-II-1981, 100 m, C. Young (CMNH, 3; WOPC, 2); *idem*, on *Manilkara*, G. Ekis (WOPC, 1); Santarem, collection day not noted (CMNH, 1); Chapada, no collection date or collector noted (CMNH, 1): Goias: Jatai, collection day not noted-XI-1972, F. M. Oliveira (WOPC, 1).

Description. Size: Length 3.0–4.0 mm; width 1.2–2.0 mm. Integument: Cranium red-yellow; pronotal disc dark brown; elytral markings as in Fig. 267; legs yellow.

Head: Vertex narrower than eye (17:22), frons densely matted with pale decumbent setae; antenna as in Fig. 81.

Thorax: Pronotum (Fig. 145), length/width ratio 40:58, side margins more convex than tuberculate, disc paralaterally concave behind middle, anterior margin subconic, setae matted; elytra, length/width ratio 5.8, form oblong-rectangulate, punctations small and shallowly impressed, seriate in most of disc but subseriate near sutural margin, epipleural margin not minutely serrate; protibial anterior margin with 6 spines.

Abdomen: Aedeagus not studied. Male Internal Reproductive Organs (Fig. 28): Lateral gland considerably longer than medial gland. Female Internal Reproductive Organs (Fig. 31): Spermathecal capsule not visibly sclerotized; Spermathecal gland attached to apex of spermathecal capsule.

Variation: The available specimens did not vary appreciably.

Natural history. In Venezuela these beetles were collected during June, and in November and February in Brazil. The Specimens from the environs of Manaus were captured on bark of *Manilkara.*

Distribution (Map 4). The species is known from Colombia to central Brazil.

Etymology. The specific epithet stems from the Latin *cracentis* (= slender). I refer to the slender body form of these beetles.

Differential diagnosis. The anterior block of the elytral insignia is C-shaped and the posterior block is reduced to a pale fascia (Fig. 267). These characteristics will distinguish the members of this species from congeners.

dislocata group

This group involves 13 species whose members are characterized by having a vertex that is wider than the width of an eye, the pronotum is very transverse, and does not show an anterior transverse depression, and is uniformly dark brown, black, or yellow- brown. Setae on the pronotum or elytra are not matted. The elytral insignia is usually fully formed, elytral punctations are large and arranged in 10 rows, and the posterior third of the epipleural margin is minutely serrate. The combined distribution of this group extends from Canada to central Panamá.

Madoniella aktis sp.nov. Figs 70, 82, 140, 252; Map 2.

Type material. Holotype: Female. Portugal, 7 mi. SE Simojovel, Chiapas, Mex., VII-17-58, J.A. Chemsak, collector (EMEC). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; collector label; EMEC repository label; holotype label.)
Paratypes: Two specimens. México: Chiapas: 11.2 km SE Simojovel, 17-VII-1958, J.A. Chemsak (EMEC, 1; WOPC, 1).

Description. Holotype: Size: Length 3.2–3.8 mm; 1.2–1.0 width mm. Integument: Cranium red; pronotum reddish brown; elytral markings as in Fig. 252; femora light brown; tibiae yellow.

Head: Vertex wider than eye (19:15); antenna as in Fig. 70.

Thorax: Pronotum (Fig. 140), length/width ratio 36:46, middle of side margin more convex than tuberculate, anterior angle of side margin slightly incised, disc convex, side margins slightly indented at anterior angle, anterior margin subconic, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width ratio 4.7, form oblong- subovoid, punctations large, seriate and arranged into 10 rows, 2° discal setae not matted, epipleural margin minutely serrate in distal fourth; legs, protibial anterior margin with 5 spines.

Abdomen: Aedeagus similar to the one depicted in Fig. 278.

Variation: The intensity of the redness of the pronotum varies.

Natural history. The available specimens were collected in July.

Distribution (Map 2). Known only from the type locality.

Etymology. The trivial name *aktis* is a Greek noun translated as "ray". I refer to the elongated line that comprises the phallobasic rod.

Differential diagnosis. The abbreviated condition of the posterocentral extension of the posterior block of the elytral insignia will distinguish these beetles from superficially similar specimens of *M. basilia* in which the posterocentral extension is split.

Madoniella apotoma sp.nov. Figs 91, 181, 221, 306; Maps 6, 10.

Type material. Holotype: Male. Honduras, Com., 7 km E Siguatepeque, 19.VIII.77, C. O'Brien (FSCA). (Specimen point mounted, male gender symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label; plastic vial with abdomen and aedeagus.)
Paratypes: None.

Description. Size: Length 4.0 mm; width 1.3 mm. Integument: Cranium red; pronotum dark brown, anterior border red; elytral markings as in Fig. 221; legs dark yellow.

Head: Vertex wider than eye (25:20); last antennomere twice as long as penultimate antennomeres (Fig. 91).

Thorax: Pronotum (Fig. 181), length/width ratio 52:62, lateral tubercle present, side margins deeply indented near anterior angles, disc convex, anterior margin shallow-convex, anterior transverse depression absent from center of disc, discal setae not matted; elytral form oblong-subovoid; elytra, length/width ratio 4.5, punctations large, seriate and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in distal fourth; legs, protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 306.

Variation: One specimen examined.

Natural history. The holotype was collected during August.

Distribution (Map 6). Known only from the type locality.

Etymology. The specific epithet *apotomus* is a Greek adjectival meaning abrupt. I refer to the shortness of the aedeagus.

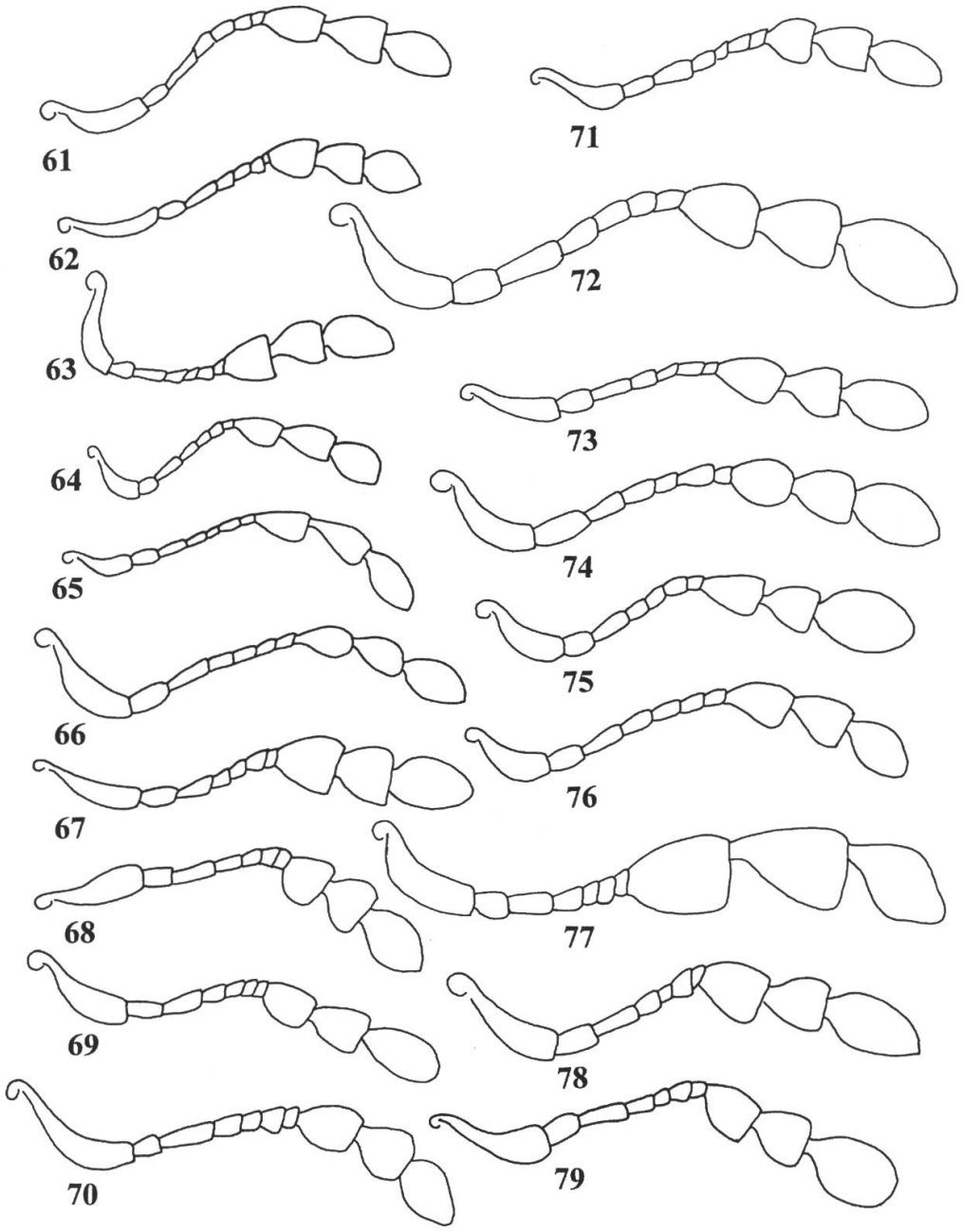
Differential diagnosis. The broad and short form of the aedeagus will distinguish the males of this species from superficially similar males of *M. dislocata* in which the aedeagus is long and slender. I cannot separate the females of the two species in question on the basis of morphology. Noteworthy is the fact that *dislocata* specimens have only been found in North America.

Madoniella basilia sp.nov. Figs 70, 104, 133, 241, 284; Map 16.

Type material. Holotype: Male. CUBA: Loma (Pico) del Gato, Sierra Maestra, May 26–28, 1959, M. W. Sanderson, C 59-5 (INHS). (Specimen point mounted, metathoracic wing mounted on paper point, male symbol label, support card; locality label; INHS repository label; holotype label; plastic vial with aedeagus.)
Paratypes: None.

Description. Size: Length 4.5 mm; width 1.0 mm. Integument: Cranium and pronotum reddish brown; elytral markings as in Fig. 241; legs reddish yellow.

Head: Vertex wider than eye (21:14); antenna as in Fig. 70.



Figs 61–79. Antennae: 61 – *Madoniella magdalena*. 62 – *M. displicata*. 63 – *M. facis*. 64 – M. *storea*. 65 – *M. bullalis*. 66 – *M. antennatra*. 67 – *M. erythrocephala*. 68 – *M. cardinalis*. 69 – *M. careorita*. 70 – *M. aktis*. 71 – *M. dariensis*. 72 – *M. pinicola*. 73 – *M. chiricahua*. 74 – *M. punctata*. 75 – *M. merga*. 76 – *M. pici* Lepesme. 77 – *M. nebulosa*. 78 – *M. collata*. 79 – *M. quintana*.

Thorax: Pronotum (Fig. 133), length/width ratio 35:48, lateral tubercle present, disc convex, anterior margin subconic, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width ratio 4.6, form oblong-subovoid, elytral punctations large, seriate, and arranged into 10 rows, epipleural margin minutely serrate in distal fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 284.

Variation: One specimen examined.

Natural history. The available specimen was captured during May.

Distribution (Map 16). Known only from the type locality.

Etymology. The specific epithet stems from the Latin *basilium* (= royal ornament). I refer to the ornate pale markings on the elytral disc.

Differential diagnosis. The posterocentral extension of the posterior block of the elytral insignia is split, a characteristic that will distinguish the members of this species from superficially similar members of *M. aktis*.

Madoniella disjuga sp.nov. Figs 92 127, 239, 271c, 289; Map 3.

Type material. Holotype: Female. Mex: SLP; 1700 m. 40 Km W. Xilitla, 1.VI-6.VIII.83, S. &. S. Peck, FIT, Pine-oak forest (CMNC). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; CMNC repository label; holotype label.)
Paratypes: One specimen. México: Querretaro: 12.5 km W Xilitla, Rt. 120, 10-11-VI-1971, H. Howden (WOPC, 1).

Description. Size: Length 3.8–4.2 mm; width 1.1–1.3 mm. Integument: Cranium dark brown; pronotum dark brown; elytral markings as in Fig 239; legs brown.

Head: Vertex wider than eye (19:15); antenna as in Fig. 92.

Thorax: Pronotum (Fig. 127), length/width ratio 50:59, lateral tubercle present but very shallow, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.5, form oblong-subovoid oblong-rectangulate, punctations large, seriate, and arranged into 10 rows, 2° setaenot matted, epipleural margin minutely serrate in posterior half; protibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 289.

Variation: The two available specimens do not vary appreciably.

Natural history. The available specimens were collected in June or July; one in an oak-pine forest at 1700 m.

Distribution (Map 3). Known only from central México.

Etymology. The specific epithet is a compound Latin adjectival derived from the prefix *–dis* (= without) and *jugum* (= yoke). I refer to the disjunction between the anterior and posterior block of the elytral insignia.

Differential diagnosis. The anterolateral projection of the anterior block of the elytral insignia does not reach the humeral margin, a characteristic that will distinguish the members of this species from superficially similar members of *M. leona*.

Madoniella dislocata (Say) Figs 22, 24–27, 29, 30, 39, 40, 50, 90, 118, 123, 125, 188, 225, 262–265, 278; Map 18.

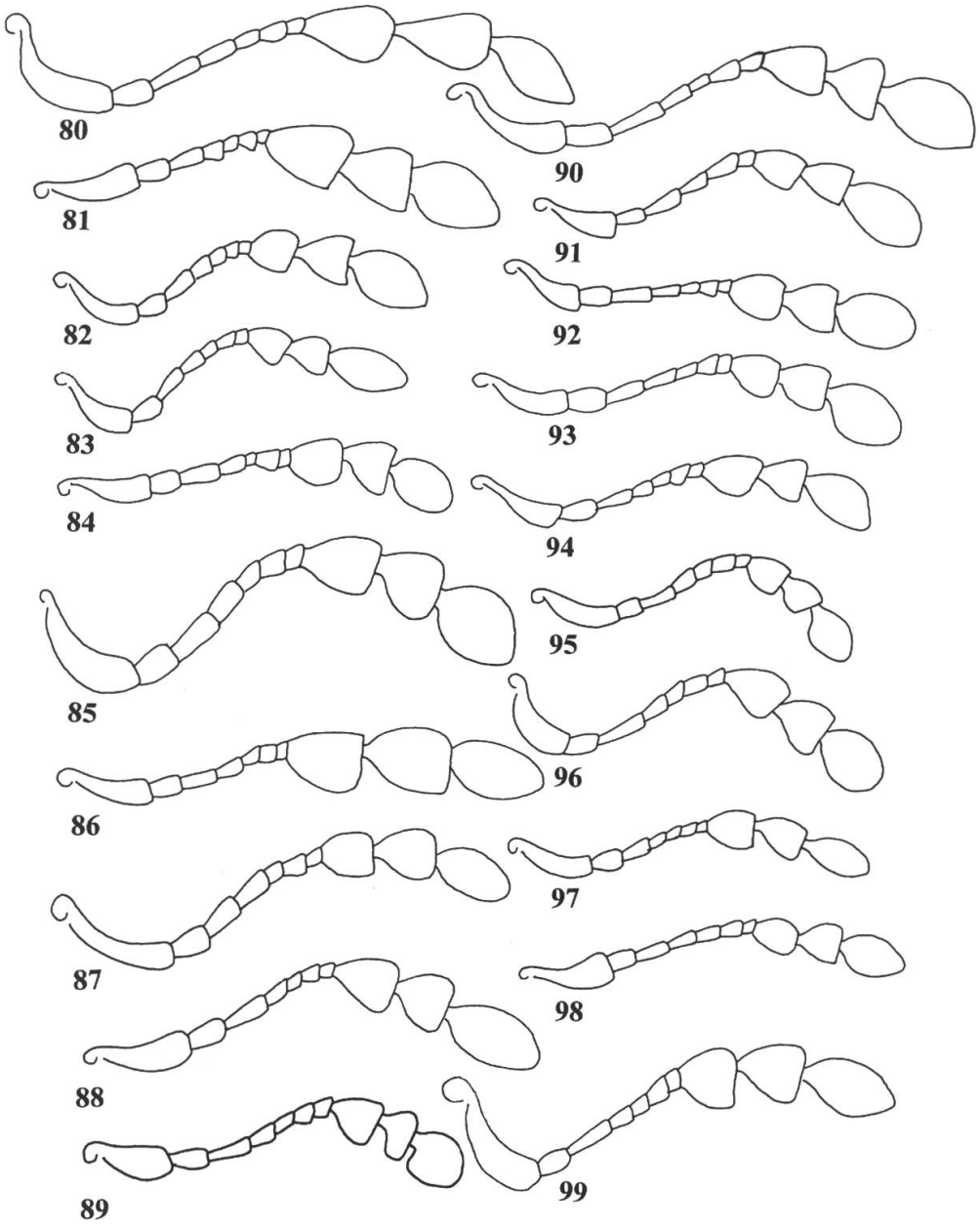
Enoplium dislocatum Say, 1825: 176. KLUG, 1842: 393, *Enoplium*. LECONTE, 1849:30, *Phyllobaenus*. MELSHEIMER, 1853: 83, *Phyllobaenus*. CHITTENDEN, 1890: 155, *Phyllobaenus*. HOPKINS, 1893: 156, *Phyllobaenus*. WICKHAM, 1895: 252, *Phyllobaenus*. ULKE, 1902: 23, *Phyllobaenus*. SMITH, 1909: 303, *Phyllobaenus*. WOLCOTT, 1910: 858, *Phyllobaenus*. CHAPIN, 1917: 29, 31, *Phyllobaenus*. BLACKMAN, 1918: 95, *Phyllobaenus*; 1919a: 90, *Phyllobaenus*; 1919b: 139, *Phyllobaenus*. LENG, 1920: 151, *Phyllobaenus*. BÖVING, 1920: 610, *Phyllobaenus*. CHAMPLAIN, 1920: 636, *Phyllobaenus*. WOLCOTT, 1933: 140, *Phyllobaenus*. BALDUF, 1935: 108, 109, 111; *Phyllobaenus*. CHAGNON, 1935: 172, *Phyllobaenus*. WOLCOTT, 1944: 124, *Phyllobaenus*. CORPORAAL, 1950: 251, *Phlogistosternus*. ARNETT, 1960: 602, *Phyllobaenus*. EKIS & GUPTA, 1971: 61, 74, 81; *Phlogistosternus*. OPITZ, 1997: 86, 87; *Phlogistosternus* [illustrations that should have been identified as belonging to *Madoniella dislocata* (Say)]. PECK & THOMAS, 1998: 86, *Madoniella*. MAWDSLEY, 1999: 44, *Madoniella*. OPITZ, 2002: 273, 278; *Madoniella*

(the correct suffix for the specific epithet should have been *–a*, for *dislocata*). MAJKA, 2006: 41; *Madoniella. Enoplium distrophum* Klug, 1842: 374. MELSHEIMER, 1846: 306, *Clerus*; 1853: 83, *Phyllobaenus*. LACORDAIRE, 1857: 467. LENG, 1920: 51, *Phyllobaenus*. *Phyllobaenus transversalis* Spinola, 1844: 4. LECONTE, 1849: 31. IMHOFF, 1856: 62. LACORDAIRE, 1857: 467, *Phyllobaenus*. MELSHEIMER, 1853: 83; *Phyllobaenus*. DESMAREST, 1870: 264, *Phyllobaenus*. LENG, 1920, *Phyllobaenus*.

Type material. N e o t y p e . Male (here selected). Ga. Clark Co. Whitehall Forest, 4 June 1975, R. Turnbow (MCZC). No specimen of this species has been found among the small assemblage of beetles that survived the destruction of the Say Coleoptera collection (Mawdsley, 1993: 167). The original primary type of this species is therefore presumably lost. Therefore, the selection of a Neotype is warranted to fix the *dislocatum* epithet to a specimen. (Neotype specimen point mounted, gender label affixed to paper point; support card; locality label; MCZC acronymic label; holotype label.)
P a r a t y p e s : No additional type specimens.

Other material examined. I have examined over 380 specimens from: Canada: Ontario: Kent Co., Tilbury, day not noted-VI-1967, K. Stephan; *idem*, day not noted-VI-1960, K. Stephan; Chalk River, 8-VIII-1985, J. V. Chenier; Prince Edward Co., 25-VI-1941, Brimley; *idem*, 17-VII-1940, Brimley; *idem*, 23-VI-1937, Brimley; *idem*, 2-VII-1941, Brimley; *idem*, 15-VII-1922, Brimley; *idem*, 5-VII-1948, Brimley; *idem*, 11-VII-1934, Brimley; *idem*, 24-VII-1921, Brimley; *idem*, 9-VII-1933; *idem*, 31-VIII-1919, Brimley; *idem*, 29-VI-1948, Brimley; *idem*, 29-VII-1923, Brimley; *idem*, 14-VII-1954, Brimley; *idem*, 8-VIII-1985, J. V. R. Chenier; Fonthill, 7-II-1941, S. D. Hicks; Ramore, 7-VII-2001, J. Huether; Pelee Island, 27-VI-1940, W.J. Brown; Thunder Bay, 29-VII-1979, M. Sanborne; Aylmer, 25-VII-1924, A. R. Graham; *idem*, 27-VI-1933, W. J. Brown: Quebec: Lotbiniere Co., Lotbiniere, 30-VII-1985, P. Belanger; Bellechasse Co., St. Neree, 17-VII-1973, J. F. Landry; *idem,* 17-VII-1973, J. F. Landry; *idem*, 17-VII-1973, J. F. Landry; Laniel, 6-VII-1933; Quebec Co., Ste-Foy, 22-VII-1975, Pierre Belanger; Duparquet, 16-VIII-1939, G. Stace Smith; *idem*, 15-VII-1935, G. Stace Smith; Chicoutimi, 22-VII-1972, J. F. Landry; Deux Montagnes, 25-VII-1980, P. Belanger; Cascapedia, 9-VII-1933, W. J. Brown; St. Nicolas County, Levis, 8-VII-2001, H. Lambert: New Brunswick: Tabusintac, 21-VII-1939, W. J. Brown; Boisetown, 13-VII-1921, W. J. Brown; Moncton, 5-VIII-1947, N. R. Brown; *idem,* 5-VIII-1947, N. R. Brown: Nova Scotia: Vicoria County, Baddeck, 14-VIII-1983, G.B. Fairchild. United States of America: Maine: Oxford Co., Paris, 17-VII-1946, C. A. Frost; *idem*, 10-VII-1946, C. A. Frost; Hancock Co., Bar Harbor, 28-VI-1943, A. E. Brower; Mt. Desert, 20-VII-1929, J.N. Belkin; Southport, Bolster, 16-VII-1911; *idem*, 16-VII-1911, Andrews; Cumberland County, Freeport, Merrill Rd., 20-VII-1975, M.F. O'Brien; *idem*, 20-VII-1975, M. F. O'Brien; *idem*, 20-VII-1975, M. F. O'Brien; *idem*, 20-VII-1975, M.F. O'Brien; *idem*, 20-VII-1975, M.F. O'Brien: Massachusetts: Dukes Co., Martha's Vineyard, 12.2 km W of Vineyard Haven, beating oak, 22-VI-1972, C. T. Parson; Hampden Co., Springfield, 4-VII-1902; Belchertown, 7-VII-1998, J. Huether: Connecticut: Litchfield Co., Cornwall, 17-VI-1924, collector not noted; *idem*, 30-VI-1923, C. A. Frost; *idem*, 30-VI-1923, Edith W. Mank; *idem*, 5-VII-1922, Chamberlain; *idem*, 30-VI-1923, Edith W. Mank; *idem*, 22-VI-1922, Chamberlain; New Haven Co., North Madison, 16-VII-1979, tree; *idem,* 5-VIII-1980, tree; *idem,* 8-VII-1980, tree; *idem,* 15-VII-1980, tree; *idem,* 17-VII-1980, tree; *idem,* 24-VII-1980, tree; *idem,* 22-VII-1980, tree; *idem,* 11-VI-1979, ethanol experiment; *idem,* 25-VII-1979, ethanol exp: Rhode Island: Providence, 22-VII-1911: New York: Westchester Co., Yonkers, 16-VI-1935, H. Dietrich; Putnam Co., Brewster, 6-VII-1938, from apple, L. L. Pechuman; *idem*, 7-VII-1941, L. L. Pechuman; Ontario Co., Geneva, day not noted-VII-1922; *idem*, 16-VII-1922; *idem*, 26-VI-1922; Niagara Co., Olcott, 28-VI-1925, H. Dietrich; *idem*, 5-VII-1925, H. Dietrich; *idem*, 20-VI-1920, H. Dietrich; *idem*, 4-VII-1923, H. Dietrich; *idem*, 28-VI-1925, H. Dietrich; *idem*, 1-VII-1923, H. Dietrich; *idem*, 15-VI-1921, H. Dietrich; Greene Co., New Baltimore, 1880; Essex County, Whiteface Mountain, 7-VII-1988, J. Huether; Keene Valley, 28-VII-1926, H. Notman; Ithaca, 24-IV-1911, wild cherry, Cornell University; *idem*, 28-V-1911, Borys Malkin; *idem*, 28-IV-1911, wild cherry, Cornell University; *idem*, 23-V-1911, wild cherry, Cornell University; *idem*, 22-V-1911, wild cherry, Cornell University; *idem*, 1-V-1911, wild cherry, Cornell University; *idem*, 24-IV-1911, Cornell University; Brooklyn, 1-VIII-1903, Shoemaker; *idem*, 25-V-1911, wild cherry, Cornell University; Bronxville, 2-VII-1914, L.B. Woodruff; ; *idem,* 20-VI-1914, L.B. Woodruff; Jay, 6-VII-1999, R. Turnbow; Peekskill, 30-VI-1988: New Jersey: Essex Co., Bloomfield, 27-VII-1929, Fumbahott; Da Costa, 4-VIII-year not noted, H. W. Wenzel; *idem*, 26-VII-1926, Schott; S. Orange, 6-X-1989, C.W. Lang; Montclair, 25-VII-1948, A. Nicolay; *idem,* 25-VI-1922; Salem Co., Centerton, 29-IV-1989, J. Ruether: Pennsylvania: 12.2 km N Cowan's Gap State Park, 10-11-VII-1988, E. Giesbert; Allegheny Co., 16-V-1996, E. A. Klages; *idem*, 10-VI-1906, E. A. Klagen; Berks Co., Stony Creek's Mills, 18-VI-1950, D. G. Kissinger; Northampton Co., Easton, 19-VI-1929, J. W. Green; Franklin Co., 18.3 km W Roxbury, 17-VI-1990, J.E. Wappes; *idem*, 10-VIII-1989, S'bait, J. E. Wappes; Dauphin Co., Hummelstown, 29-V-1919, L.S. Slevin; *idem*, 29-V-1918, J. N. Knull; *idem*, 14-XII-1928, J. N. Knull; *idem*, 19-V-1918, J. N. Knull; *idem*, 25-VIII-1933; *idem*, 24-V-1918, J. N. Knull; *idem*, 1-VIII-1919, J. N. Knull; *idem*, 4-VIII-year not noted, J. N. Knull; *idem*, 19-VIII-year not noted, J. N. Knull; *idem*, 17-VI-1933, J. N. Knull; *idem*, 2-VI-year not noted, J. N. Knull; *idem*, 29-V-1918, J. N. Knull; Clark's Valley, 8-VII-1977, F.T. Hover; Clark's Valley, nearr Harrisburg, 8-10-VII-1977, F. T.

Hovore: Kentucky: Butler Co., 17-VI-1961, J. M. Campbell; *idem,* 7-VI-1960, J. M. Campbell; *idem,* 16-VI-1961, J. M. Campbell; *idem,* 18-VI-1961, J. M. Campbell; Christian Co., 15-VI-1960, beating, J. M. Campbell; *idem,* 21-VI-1961, J. M. Campbell; *idem,* 4-V-1986, John Campbell; Christian Co., Hopkinsville, 4-V-1986, John Campbell; *idem*, 15-VI-1960, beating, J. M. Campbell; *idem*, 21-VI-1961, beating, J. M. Campbell; Butler Co., 17-VI-1961, beating hickory, J. M. Campbell: Maryland: Montgomery Co., Cabin John, 16-VI-1915, A. Nicolay; Plummers, 28-VI-1914, W. L. McAtee; *idem*, 9-VII-1918, E. Shoemaker; Prince Georges Co., Bladensburg, 36-VI-1923, L. L. Buchanan; *idem*, 24-VII-1919, L. L. Buchanan; Anne Arundel Co., Odenton, 11-VI-1922, W. L. McAtee; *idem*, 12-VII-1914, W. L. McAtee; *idem*, 23-VI-1918, H. Dietrich; *idem*, 29-VII-1917, W. L. McAtee; College Park, 27-VII-1949, beating hickory, B.K. Dozier; *idem*, 24-VII-1949, H.F. Howden; Sparrow's Point, 4-VII-1936, J.W. Green; *idem*, 9-VII-1931; Lutherville, 3-VII-1948, Ann E. Thompson & Howden; Ocean City, 2-VII-1958: New Hampshire: Crafton Co., Hubbard Br. Exp. Forest, W. Thornton, 24-VII-1975, M. J. Waskow: Iowa: Polk Co., Brown Woods, 3-VI-1985, reared from basswood, J.E. Wappes; *idem.,* day not noted-VI-1983, J. E. Wappes; Jester Park, 1-4-VI-1985, J. E. Wappes; *idem*, 3-VII-1981, J. E. Wappes; Saylorville Lake, 25-V-1985, Wappes & Schieferstein; *idem*, 25-V-1985, Wappes and Schieferstein; Walnut Woods, 3-VII-1981, J. E. Wappes; Boone Co., Ledges St. Pk., 12-VI-1956, W. L. Downes: Illinois: Calhoun Co., Kampsville, 27-VI-1923, DeLong & Rose; Washington Co., Du Bois, 22-VI-1905, Jarred from peach and plum; Woodford, Spring Bay, 4-VII-1942; Platt Co., Allerton Park, 48.4 km W Monticello, 6-VI-1979, D. M. Webb; Marion Co., Alma, 7-VII-1950, Rose & Sand; Piot Co., Monticello, Sagamon River, 21-VI-1914, Wolcott; La Salle Co., Starved Rock, 19-VI-1980, Floyd C. Werner; McLean Co., Bloomington, 4-VI-1999, A. B. Wolcott; Cook Co., Riverside, day not noted-IX-1937, C. Selinger; *idem*, 8-VI-1915, E. Liljeblad; Shelby Co., 17-VII-1984, P. Skelley; Macon Co., 17-VI-1984, P. Skelley; Mason Co., Mason State Forest, 19-VI-1960, J. M. Campbell; *idem,* 6-VI-1962, J. M. Campbell; Champaign Co.,1-VI-1960, J. M. Campbell; *idem*, 19-VI-1960, J. M. Campbell; Union Co., Pine Hill Field, 15-V-1967, J. M. Campbell; Vermillion Co., Danville, 4-VI-1971, R. K. Zajdel; Muncie, 23-V-1962, G. P. Waldbauer; Maricopa Co., Peoria, 17-VII-1942, sweeping, F. F. Hasbrouck; Rock Island Co., Rock Island, 1880; Clark Co., Clarksville, 8-VIII-1987, Paul Skelley, Rocky Branch Creek, N. of Clarksville, 8-20-VIII-1987, malaise trap, Paul Skelly: Ohio: Pickaway Co., D. J. & J. N. Knull; Ottawa Co., S.W. Nichols, 1-VII-1983, Put-in-Bay, S. W. Nichols; Scioto Co., 9-VI, D. J. & J. N. Knull; Pickaway Co., D. J. & J. N. Knull; Delaware Co., 21-VI, D. J. & J. N. Knull; *idem,* 21-VI-1973, D. J. & J. N. Knull; *idem*, 5-VII, D. J. & J. N. Knull; *idem*, 17-VI, D. J. & J. N. Knull; *idem*, 1-VII, J. N. Knull; Ashland Co., 1-VII-year not noted, D. J. & J. N. Knull; Summit Co., 28-VI-1960, R. E. White; Athens Co., Buchtel, 20-VI-1966, Charles E. White; Greene Co., 11-VII-1959, D. J. & J. N. Knull; *idem*, 13-VI-1961, D. J. & J. N. Knull; *idem*, 15-VI-1955, D. J. & J. N. Knull; *idem,* 20-VI-1955, D. J. & J. N. Knull; 20-VI-1956, D. J. & J. N. Knull; Clifton, 22-V-1942, D. J. & J. N. Knull; Hocking Co., 30-V-1952, D. J. & J. N. Knull; *idem*, 20-VI, D. J. & J. N. Knull; *idem*, 26-V-1938, D. J. & J. N. Knull; Adams Co., 1-VI-1967, Knull; Pickaway Co., D. J. & J. N. Knull; Clifton, 16-VI, D. J. & J. N. Knull; *idem*, 14-VI-1938, D. J. & J. N. Knull; *idem*, 16-VI, J. N. Knull; Franklin Co., 5-VI-1963, F. J. Moore; Columbus, 19-VI-year not noted, J. N. Knull; Clinton Co., 29-VI-1962, F. J. Moore; Highland Co., 16-VII-1961, hickory tree, E. I. Hazard; Fairfield Co., 18-VIII, D. J. & J. N. Knull: Missouri: Randolph Co., Moberly, 5-VII-1984, E. G. Riley; Holt Co., Mound City, 9-VII-1968; *idem*, 4-VI-1968; *idem*, 12-VII-1968; *idem*, 15-VI-1965; *idem*, 7-VI-1963; *idem,* 1-VII-1968; *idem*, 15-VIII-1968, Malaise trap; St. Clair Co., 14-VI-1905, Dr. G. W. Bock; *idem*, 27-V-1905, Dr. G. W. Bock; Jefferson Co., 20-VI-1908, Dr. S. W. Bock; *idem*, 15-V-1904; Dent Co., Clark Nat'l. Forest, 15-VI-1973, J. A. Gagne; Shannon Co., 24.4 km N Hwy NN on Hwy, 10-VII-1999, fresh slash *Quercus coccinea*, T. C. MacRae; St. Louis Co., Chesterfield, 12-VI-1998, on dead, wind-thrown branch, *Celtis occidentalis*, T. C. MacRae; *idem,* 24-VI-1998, on wind-thrown branch, *Celtis occidentalis*, T. C. MacRae; Butler Co., 14.64 km E Hwy W on KK, University Forest, 4-VI-1999, on slash Quercus coccinea, T. C. MacRae: Alabama: Clay Co., Talladega N.F., Skyway Motorway, 28-V-1989, R. Turnbow; Shelby Co., Wilsonville, 20-V-1990, R. Turnbow; Dale Co., 19-V-2003, R. Turnbow; Ft. Rucker Reservoir,1-5-VI-2004, R. Turnbow; *idem*, 7-11-V-1998, sugar bait, R. Turnbow; *idem*, 26-V-1989, R. Turnbow; Madison Co., Monte Sano State Park, 28-V-1984, N. M. Dowmie; Lee Co., Auburn University, 2-VII-1979, D. J. Waters; *idem,* 12-VII-1980, D. J. Waters; *idem*, 15-V-1980, D. J. Waters; Madison Co., 25-V-1984, N. M. Downie; Sheffield, 20-VI-1957, R. E. Woodruff; Elmore Co., Hwy 231, 9.9 km S jct. 14, 9-VI-1989, R. Turnbow; Clark Co., Rt. 84, 61 km W Grove Hill, 12-VI-2003, J. & M. Huether; Jefferson Co., Vestavia, 20-VII-1980, T. King; Jefferson Co., Birmingham, 1-VIII-1977, T. King; *idem*, 24-VII-1969, T. King; *idem*, 9-VI-1969, T. King; *idem*, 2-VI-1969, T. King; Talladega Co., Chandler Springs, 20-VI-1982, T. King: Tennessee: Hardeman Co., Bolivar, 12-IV-1974, emerged from *Cercis canadensis*, R. D. Ward; *idem*, 29-IV-1974, emerged from *Cercis canadensis*, R. D. Ward; *idem,* 7-8-IV-1974, emerged from *Cercis canadensis*, R. D. Ward; *idem*, 17-IV-1974, R. D. Ward; *idem*, 13-IV-1974, R. D. Ward: North Carolina: Buncombe Co., Balsam, 21-VI-1964, W. Rosenberg; Henderson Co., Fletcher, 8-VI-1969, Lester L. Lampert; *idem*, 25-V-1969, Lester L. Lampert; *idem*, 1-VII-1970, Lester L. Lampert; Hendersonville, 16-VII-1953, H. F. Howden; Wake Co., Raleigh, 12-V-1953, H. &



Figs 80–99. Antennae: 80 – *Madoniella infula*. 81 – *M. cracentis*. 82 – *M. aktis*. 83 – *M. gonia*. 84 – *M. lineola*. 85 – *M. melina*. 86 – *M. maxicornis*. 87 – *M. plenita*. 88 – *M. latinopsis*. 89 – *M. guana*. 90 – *M. dislocata*. 91 – *M. apotoma*. 92 – *M. disjuga*. 93 – *M. leona*. 94 – *M. orosiensis*. 95 – *M. ebena*. 96 – *M. cerviculina*. 97 – *M. zonula*. 98 – *M. luridia*. 99 – *M. texis*.

A. Howden; Buncombe Co., Swannanoa, 1-VI-year not noted; Macon Co., Highlands, day not noted-XI-1956, W. J. Brown; *idem*, 19-VI-1978, R. Turnbow: Oklahoma: Latimer Co., day not noted-V-1989, Karl Stephan; *idem*, day not noted-VI-1981, Karl Stephan; *idem*, day not noted-VI-1982, Karl Stephan; *idem,* day not noted-VI-1989, Karl Stephan; *idem,* day not noted-V-1986, Karl Stephan; *idem,* day not noted-VI-1986, Karl Stephan; *idem*, day not noted-IV-1986, *idem*, day not noted-V-1986, Karl Stephan; *idem,* day not noted-V-1988, Karl Stephan; *idem,* day not noted-VI-1988, Karl Stephan; *idem*, day not noted-V-1987, Karl Stephan; *idem*, day not noted-V-1990, Karl Stephan; *idem*, day not noted-VI-1993, Karl Stephan; *idem*, day not noted-VI-1993, Karl Stephan; *idem,* day not noted-VI-1992, Karl Stephan; *idem,* day not noted-VI-1984, Karl Stephan; *idem,* day not noted-VI-1985, beating, lowland forest, Karl Stephan; *idem*, day not noted-VII-1983, Karl Stephan, *idem,* day not noted-V-1985, beating, lowland forest, Karl Stephan; *idem*, day not noted-VI-

1983, Karl Stephan; *idem*, day not noted-V-1989, Karl Stephan; 30.5 km W Red Oak, day not noted-V-1980, Karl Stephan; *idem*, day not noted-V-1981, Karl Stephan; *idem,* 4-IV-1977, K. Stephan; Creek Co., Sapulpa, 8 km S, 6-VII-1993, on pecan grass, Smith-Elkenbary: Louisiana: Grant Parish, 9-17-V-1972, boll weevil sex attractant trap; *idem*, 17-23-V-1972, boll weevil sex attractant trap; *idem*, 23-30-V-1972, boll weevil sex attractant trap; *idem,* 6-13-VI-1972, boll weevil sex attractant trap; Catahoula Parish, 6-13-VI-1972, boll weevil sex attractant trap; Tensas Parish, 23-29-V-1972, boll weevil sex attractant trap; Baton Rouge, DuPlantier Apartments, 15-III-1984, flight trap, E. G. Riley; *idem,* 12-V-1986, E. G. Riley; *idem,* 17-V-1987, E. G. Riley; *idem*, VI-1987, E. G. Riley; *idem*, 3-VI-1986, C. B. Barr; Baton Rouge Parish, Baton Rouge, 12-IV-1985, E. G. Riley; *idem*, 9-V-1973: Florida: Alachua Co., III-1984, sticky wire trap, M. J. Plagens Liberty Co., Torreya State Park, 27-IV-1991, M.C. Thomas; *idem.,* 16-V-1964, R.E. White; Jackson Co., 26-IV-1986, R. Turnbow; *idem,* 27-IV-1986, R. Turnbow; Walton Co., 5-V-1985, R. Turnbow: Virginia: Fairfax Co., Springfield, 5-7-VI-1976, R. D. Ward; *idem*, 12-14-VI-1976, R. D. Ward; *idem,* 4-VI-2000, E. G. Riley; Vienna, 6-V-1927: West Virginia: Greenbrier Co., White Sulphur, Dr. A. Fenyes; Randolph Co., Route US 250, 61 km W Bartow, 24-VI-1968, N. M. Downie; *idem*, 61 km NW Bartow, 24-VI-1988, J. E. Wappes; *idem*, 24-VI-1956: Mississippi: Greene Co., Leakesville, 8-V-1931, H. Dietrich; Smith County, Polkville, 6-X-1989; Tishomingo Co., Tishomingo State Park, 16-VI-1991, T. L. Schiefer; Oktibbetha Co., Starkville, 20-VIII-1991, T. L. Schiefer; *idem*, 26-VIII-1981, W. H. Cross; Lafayette Co., 1973, F. M. Hull; Newton Co., Hickory, 1-VII-1987, R. Morris; Tunica, 23-VI-1983, Paul Skelley; Winston Co., 24-VII-1991, T. L. Schiefer; Grenada Co., 26-VI-1991, T. L. Schiefer: Georgia: White Co., 12-VI-1984, R. Morris II; Harris Co., 25-V-1992, M. S. Strother; Towns Co., 22-V-1987; Clarke Co., Whitehall forest, 14-VII-1976; *idem*, 16-23-VII-1976, window trap, R. Turnbow; *idem,* 26-V-1976, sticky trap, R. Turnbow; *idem*, 21-VI-1976; R. Turnbow; *idem*, 10-V-1976, R. Turnbow; *idem*, 26-V-1976, R. Turnbow; *idem*, 28-VII-1976, sticky trap, R. Turnbow; *idem*, 23-VII-1976; *idem*, 18-23-VI-1976, sticky trap, R. Turnbow; *idem*, 1-V-1976, R. Turnbow; 13-VI-1979, R. Turnbow; *idem*, 4-VI-1975, R. Turnbow; *idem*, 14-VII-1976, R. Turnbow; *idem*, 11-VIII-1976, R. Turnbow; *idem*, 14-VII-1976, R. Turnbow; *idem*, 2-VII-1972, R. Turnbow; *idem*, 10-VIII-1975, R. Turnbow; *idem*, 4-VI-1975, R. Turnbow; *idem,* 21-VI-1979, R. Turnbow; Whitehall Forest, 5-13-VI-1976, sticky trap, R. Turnbow; *idem*, 21-VII-1976, R. Turnbow; *idem*, 11-18-VI-1976, window trap, R. Turnbow; Montgomery Co., 10-VIII-1987, R. Morris; *idem*, 30.5 km W of Uvala, 10-V-1987, R. Morris; Johnson Co., SE Kite, 18-V-1992, R. Morris; Rabun Co., day not noted-VII-year not noted; Henry Co., 4-VIII-1984, R. Beshear; McIntosh Co., Sapelo Island, 10-VI-1983, black light, C. L. Smith; Jackson Co., Hardeman Forest, 28-31-VII-1974, sugar bait, R. Turnbow; Lamar Co., 18-VIII-1984, R. Morris II; Calhoun Co. Leary, 14-VIII-1988, R. Turnbow; *idem*, 14-V-1988, R. Turnbow; Lee Co., Chehaw, 29-V-2004, R. Turnbow; Union Co., Brasstown Balds, 11-VII-1987, R. Turnbow; along Hwy 238A, 4-IV-1989, beating tree, C. W. Mills III; *idem*, 26-V-1990, R. Turnbow; Fort Gaines, 27-V-1989, R. Turnbow; Telfair Co., Jacksonville, 12-VIII-1977, R. Turnbow; Pike Co., 27.45 km SW Concord, 9-VIII-1975, emerged, R. Turnbow; *idem*, 22-V-1975, R. Turnbow: Michigan: St. Joseph Co., 13-VI-1986, J. P. Huether; Klinger Lake, 16-VII-1980, D. C. L. & N. M. Gosling; Tamarack Lake, 2-VII-1976, D. C. L. & N. M. Gosling; *idem*, 10-VII-1976, D. C. L. & N. M. Gosling; *idem*, 13-VI-1980, D. C. L. & N. M. Gosling; *idem*, 17-VII-1976, D. C. L. & N. M. Gosling; *idem*, 19-VI-1980, D. C. L. & N. M. Gosling; *idem*, 22-VI-1980, D. C. L. & N. M. Gosling; *idem*, 25-VI-1980, D. C. L. & N. M. Gosling; *idem*, 26-VI-1980, D. C. L. & N. M. Gosling; *idem*, 27-VI-1980, D. C. L. Gosling; *idem*, 28-VI-1980, D. C. L. Gosling; *idem*, 30-VI-1980, D. C. L. Gosling; Berrien Co., Buchanan, 9-VII-1979, E. Giesbert; *idem*, 21-VI-1980, D. C. L. Gosling; Saginaw Co., St. Charles, 3-VI-1968, rotary trap, James G. Truchan; *idem*, 24-VI-1968, rotary trap, James G. Truchan; *idem*, 1-VII-1968, rotary trap, James G. Truchan; Oakland Co., 19-VII-1925, A. W. Andrews; Ingham Co., Okemoa, 4-VI-1970, S. G. Wellso; Branch Lake Co., 9-VIII-1974, Malaise trap, T. A. Rowling; Livingston Co., Edwin S. George Reserve, 14-V-1933, A. W. Anderson: Indiana: Monroe Co., Bloomington, 13-VI-1988, F. N. Young; *idem*, 16-V-1991, F. N. Young; *idem*, 18-VII-1984, F. N. Young, *idem*, 10-VII-1984, F. N. Young, *idem*, 3-VII-1990, F. N. Young; *idem*, 23-VI-1990, F. N. Young; *idem*, 15-VII-1996, F. N. Young; *idem*, 5-VII-1991, F. N. Young; *idem*, 26-VI-1990, F. N. Young; *idem*, 24-VI-1990, F. N. Young; Tippecanoe Co., Wildcat Creek Hwy 26, 27-VI-1989, N. M. Downie; *idem*, 18-V-1977, R. M. Brattain; *idem*, 3-VI-1985, N. M. Downie; *idem*, 2-VIII-1958, N. M. Downie; *idem*, 2-VIII-1958, N. M. Downie; *idem*, 13-VII-1957, N. M. Downie; *idem*, 27-VI-1989, N. M. Downie; *idem*, 4-VII-1953, N. M. Downie; *idem*, 8-VII-1953, N. M. Downie; *idem*, 17-VII-1983, N. M. Downie; *idem*, 29-VI-1989, N. M. Downie; *idem*, 27-VI-1981, N. M. Downie; *idem*, 18-VI-1961, N. M. Downie; *idem*, 9-VII-1982, N. M. Downie; *idem*, 25-VII-1975; *idem*, 27-VII-1973, N. M. Downie; *idem*, 30-VI-1956, N. M. Downie; *idem*, 3-VII-1992, J. E. Wappes; *idem*, 18-VI-1981, N. M. Downie; Lafayette, 31-V-1988, N. M. Downie; *idem*, 15-IX-1969, N. M. Downie; *idem*, 18-VI-1986, N. M. Downie; Bear Wallow, 7-VI-1975, Charles E. White; *idem*, 3-VII-1965, Charles E. White; Grantsburg, 18-VII-1965, Dianne Eckert; Warren Co., 12-VII-1983, N. M. Downie; Benton Co., Otterbein, 23-V-1988, J. E. Wappes; Posey Co., Hovey Lake, 22-VI-1965, Charles E. White; *idem*, 3-VI-1964, Charles E. White; Howard Co., 24-VI-1986, D. A. Rider; Montgomery Co., Shades State Park, 11-VI-1986, J. Huether; Jasper Co., Pulaski State

Park, 30-VI-1996, R. Morns; *idem*, 6-VII-1996, J. E. Wappes; Jennings Co., Mt. Vernon, 9-VIII-1937: Kansas: Jefferson Co., Perry State Park, 1km SW, off Douglass rd., 39°06′N 95°30′W, 31-V-6-VI-2006, canopy trap, A. Cruz; Douglas Co. Baldwin, 3.2 km NW, between 1550 E & 1600E roads, 38°48′ N 95°10′W, 13-V-2-VI-2006, canopy tree, A. Cruz; Crawford Co, 4.8 NE Pittsburg, 37°26′N 94°37′W, 13-27-VI-2005, canopy trap, G.A. Salsbury; Neosho Co., 3.2 km SE Erie, 37°32′N 95°13′W, 14-V-2-VI-2005, Canopy trap, G.A. Salsbury; Labette Co. Big Hill Reservoir, NW of dam, 37°16′N 95°28′ W, 18-30-V-2006, G.A. Salsbury; Cherokee Co., Galena, 3.2 km S 37°02′N 94°38′W, 6-15-VI-2006, canopy trap; G.A. Salsbury; Bourbon Co., 14.4 km SW Fort Scott, 37°46′N 94°49′W, 14-28-VI-2005, canopy trap, G.A. Salsbury; Sedgwick Co., 0.8 km S of Derby, NE of intersection of K15 & 91st. Street, 37°31′N 97°16′W, 7-21-VI-2005, canopy trap, G. Salsbury; Johnson Co., Overland Park Arboretum, 38°48′N 94°41′W, 12-20-VI-2006, canopy trap, A. CruzGeary; Wabaunsee Co., 16 m SW Alma, 38°56′N 96°26′W, 6-14-VI-2005, canopy trap, B. Hilbert; Shawnee Co., S of intersection Woodring, road & 69th street, 38°56′N 95°30′W, canopy trap, B. Hilbert; Nemaha Co., Onaga, approximately 8 km NNW, 39°34′N 96°12′W, 6-12-VI-2006, canopy trap, A. Cruz; Butler Co., 3.2 km E El Dorado, S of Prallel street, 37°49N 96°48W, 5-23-V-2005, canopy trap, C. Copeland; Kiowa Co., 20.8 km S Greensburg, 37°28′N 99°15′W, 22-27-V-2005, canopy trap, G.A. Salsbury; Geary Co., 16-VII-2002, R. Turnbow: Texas: Hidalgo Co., 7-IV-1950, D. J. & J. N. Knull; Brazos Co., College Station, Lick Creek Park, 2-V-1988, Malaise trap, Wharton; Sabine Co., Beech Bottom, 14.4 km E. Hemphill, 29-IV-1990, Malaise trap, beech-magnolia forest, R. Anderson & E. Morris; *idem*, 22-V-4-VI-1989, Malaise Trap, beech-magnolia forest, R. Anderson & E. Morris; *idem*, 8-21-V-1989, Malaise Trap, beech-magnolia forest, R. Anderson & E. Morris. Specimens are deposited in AMNH, BMNH, CASC, CDAE, CHAH, CMNC, CMNH, CNCI, EMEC, EMUS, FMNH, FSCA, JEWC, JNRC, JPHC, LACM, LSUC, MCZC, MNHN, MSUC, RFMC, RGCG, RHTC, SEMC, SMTD, TAMU, UMSP, UNSM, USNM, WFBM, WOPC, ZMAN, and ZMHB.

Description. Size: Length 3.0–5.5mm; width 1.0–1.7 mm. Integument: Cranium dark brown; pronotal disc dark brown, anterior border narrow-red brown; elytral markings as in Figs 225, 262–265; legs light brown.

Head: Vertex wider than eye (25:17); antenna very similar to antenna depicted in Fig. 90.

Thorax: Pronotum (Figs 125, 188), length/width ratio 45:51, lateral tubercle present, disc convex, anterior margin convex, anterior transverse depression absent from center of disc, discal setae not matted; elytra, length/width ratio 4.7, form oblong-subovoid, punctations large, seriate and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in distal fourth; legs, protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 278.

Variation: There is some variation in the extent of redness expressed in the predominantly brown cranium. Also, there is considerable variation in the configurations of the elytral insignia.

Natural history. These beetles have been collected with the following methods: Beating, Malaise trap, tree-canopy trap, black light, flight intercept trap, sticky wire trap, sugar bait trap, rotary trap, window trap, and with bowl weevil sex attractant trap. They have been either reared or otherwise associated with the following vegetation: Black spruce, sumach, oak, apple, wild cherry, hickory, basswood, peach, plum, *Quercus coccinea*, *Celtis occidentalis*, and *Cercis canadensis*. Moreover, these beetles are reported predators of the bark beetles *Dendroctonus frontalis*, *Tomicus avulsus*, *T. cacographus* larvae, *Polygraphus rufipennis, Pityophthorous consimilis*.

Distribution (Map 18). Specimens of this species have been collected from Canada and the USA.

Differential diagnosis. Perhaps the most reliable characteristic that will identify the members of this species is that specimens have been found exclusively in North America, east of the Rocky Mountains and southwest just across the border into Texas. Note the extensive variation in the elytral insignia (see Figs 225, 262–265).

Madoniella gonia sp.nov. Figs 13, 83, 194, 242, 315; Map 3.

Type material. Holotype: Female. 3 mi. E El Salto, Dgo, Mex, 8400′, 7 July 1964, L. A. Kelton (CNCI). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; CNCI repository label; holotype label.)
Paratypes: Four specimens. México: Durango: 4.8 km E El Salto, 7-VII-1964, 2561 m, L. A. Kelton (CNCI, 2; WOPC, 2).

Description: Size: Length mm 3.0–3.5; width1.0–1.2 mm. Integument: Cranium black; pronotal disc black; elytral markings as in Fig 242; legs light brown.

Head: Vertex wider than eye (20:11); antenna very similar to antenna depicted in Fig. 83.

Thorax: Pronotum (Figs 13, 194), length/width ratio 35:38, lateral tubercle present, disc convex, anterior margin subconic, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width 4.3, form oblong-subovoid, punctations large, seriate and arranged into 10 rows, setae not matted, epipleural margin minutely serrate in distal fourth; legs, protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 315.

Variation: The available specimens were quite homogeneous.

Natural history. Specimens were collected during July at 2561 m.

Distribution (Map 3). Known only from the type locality.

Etymology. The trivial name *gonia* (= angle) is a Greek noun. I refer to the angular configuration of the midelytral fascia.

Differential diagnosis. Specimens from northern México that have the posterior block of the elytral insignia reduced to a slender diagonal fascia belong to this species (Fig. 242).

Madoniella howdenorum sp.nov. Figs 113, 137, 257, 287; Map 3.

Type material. Holotype: Female. Mexico: Chiapas, 2.6–6 km S La Trinitaria, 19 Oct. 1988, R. Turnbow (FSCA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label.)
Paratypes: Seven specimens. Mexico: Chiapas: 22 km W. Tuxtla Gutierrez, 24-30-IX-1930, F. Hovore (WFBC, 1; WOPC, 1); 2.6–6 km La Trinitaria, 19-X-1988, R. Turnbow (RHTC, 1; WOPC, 1): Oaxaca: 12–13 km, S. Miahuatlan, 10-VIII-1986, H. A. Howden (CMNC, 2; WOPC, 1)

Description. Size: Length 3.0–4.0mm; width 1.0–1.4 mm. Integument: Cranium black; pronotal disc black; elytral markings as in Fig. 257; legs yellow, humerus infuscated. Head: Vertex wider than eye (23:19); antenna as in Fig. 113.

Thorax: Pronotum (Fig. 137), length/width ratio 48:62, side margins more convex than tuberculate, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 1.4, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 4 spines.

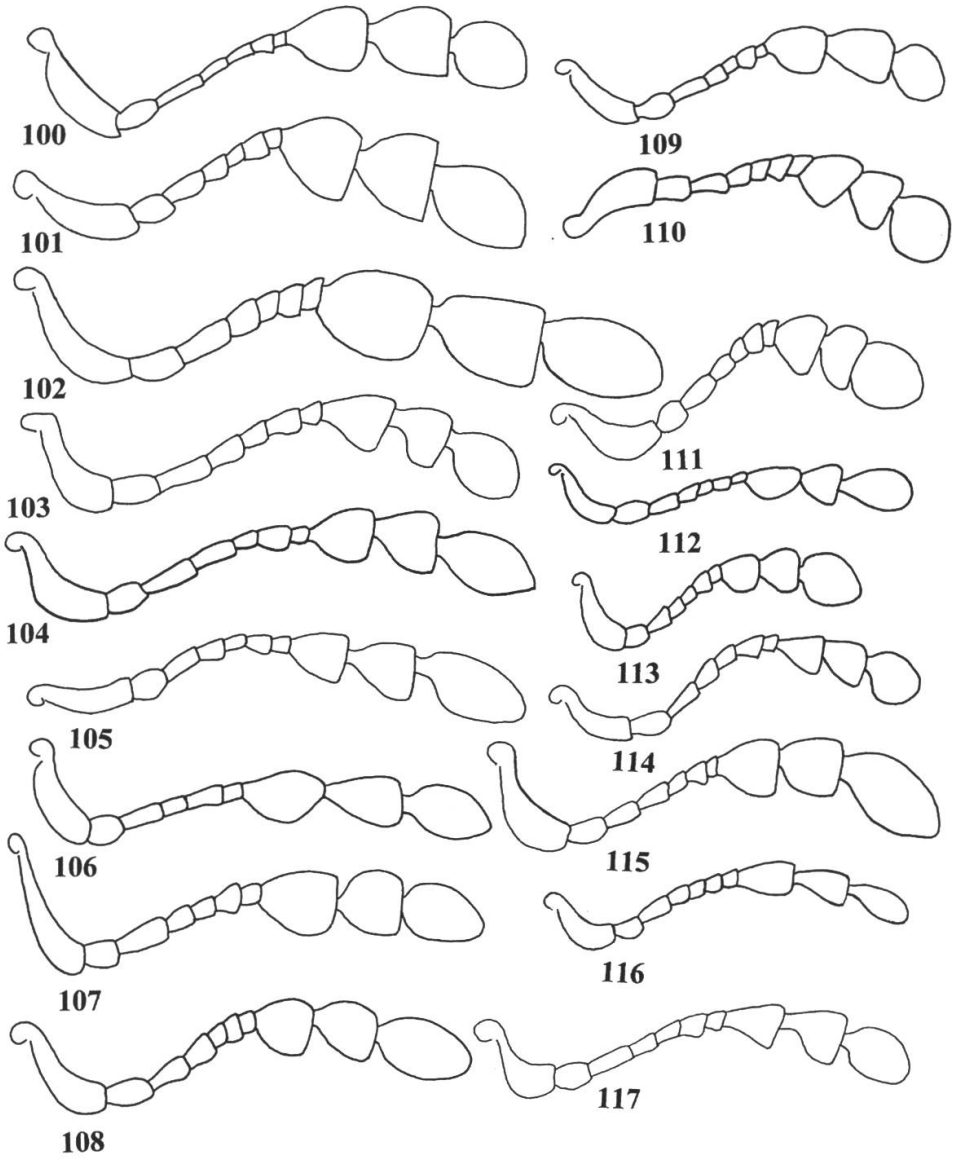
Abdomen: Aedeagus as in Fig. 287.

Variation: The infuscation on the legs varies in expression.

Natural history. Specimens have been collected during August and October.

Distribution (Map 3). This species is known only from southern México.

Etymology. The trivial name is a dedicative patronymic to recognize Henry and Ann Howden for their accomplishment in the field. Their efforts in the collection of checkered beetles has been a very significant component of my research.



Figs 100–117. Antennae: 100. *Madoniella pellis*. 101 – *M. ignis*. 102 – *M. emblema*. 103 – *M. corporaali*. 104 – *M. basilia*. 105 – *M. crinis*. 106 – *M. basilaris*. 107 – *M. kuehlorum*. 108 – *M. avina*. 109 – *M. anapsis*. 110 – *M. cymatilis*. 111 – *M. adona*. 112 – *M. eximia*. 113 – *M. howdenorum*. 114 – *M. abacula*. 115 – *M. tegetis*. 116 – *M. pumilis*. 117 – *M. minor*.

Differential diagnosis. Anterior and posterior blocks of the elytral insignia are not connected by a connecting rod (Fig. 257). This characteristic will distinguish the members of this species from superficially similar members of *M. patula*.

***Madoniella leona* sp.nov.** Figs 93, 142, 197, 288; Map 3.

Type material. H o l o t y p e . Female. Mexico: Nuevo Leon, 9 mi. west Iturbide, July 3, 1974, Clark, Murray, Ashe, Schaffner (TAMU). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; TAMU repository label; holotype label.)

P a r a t y p e s : Five specimens. México: Nuevo Leon: 14.9 km W Iturbide, 3-VII-1974, Clark, Murray, Ashe, Schaffner (WOPC, 1); Chipinque Mesa, near Monterrey, 22-23-VI-1971, 1524 m, H. F. Howden (CMNC, 2; WOPC, 2).

Description. Size: Length 3.8–4.1mm; width 1.2–1.3 mm. Integument: Cranium brown; pronotal disc dark brown; elytral markings as in Fig. 197; legs brown.

Head: Vertex wider than eye (24:18); antenna very similar to antenna depicted in Fig. 93.

Thorax: Pronotum (Fig. 142), length/width ratio 43:50, side margins more convex than tuberculate, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.1, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° not matted, epipleural margin minutely serrate in posterior half; protibial anterior margin with 6 spines.

Abdomen: Aedeagus as in Fig. 288.

Variation: The anterolateral narrow extension of the anterior block of the elytral insignia may be briefly interrupted near the humeral angle.

Natural history. Specimens have been collected in June and July, some at 1524 m.

Distribution (Map 3). Known only from northeastern México.

Etymology. The specific epithet is a patronymic derivative that stems from Nuevo Leon; a state of México.

Differential diagnosis. In these beetle the anterolateral projection of the anterior block of the elytral insignia extends to the humeral margin (Fig. 197). This characteristic will distinguish the members of this species from superficially similar members of *M. disjuga*.

Madoniella lineola sp.nov. Figs 84, 176, 210, 211, 314; Map 2.

Type material. Holotype: Female. GUAT. ZACAPA, 2 KM S SAN LORENZO, 5400′, JUN 3–5, 1989, E. GIESBERT, COLL (FSCA). (Specimen pin mounted; support card with female symbol affixed to card; locality label; repository label; holotype label.)

Paratypes: Twelve specimens. México: Chiapas: San Cristóbal de Las Casas, 20-VII-2007, J. Rifkind (JNRC, 1); 30 km NW Comitán, 20-VI-1990, R. Turnbow RHTC, 1); hwy. 199, 4 km N jct. Hwy. 190, 22-VI-1990, R. Turnbow (RHTC, 1; WOPC, 1); 30 km SE Teopisca, 12-VI-1990, 2000 m, H. &. A. Howden (CMNC, 1); San Cristobal de las Casas, 2-VI-1969, H. F. Howden (CNCI, 1); Chivera Area, NE San Cristobal , 1-X-1986, J. E. Wappes (JEWC, 1). Guatemala: El Pogresso: 12 km N Est. La Virgen, 15°01′N 89°56′W, 5-VI-1991, beating, 1400 m, H. A. Howden (CMNC, 1): Zacapa: vic. San Lorenzo, 10-15-VI-1991, E. Giesbert (FSCA, 1): Baja Verapaz: San Gerónimo, Champion (BMNH, 1): Sacatepéquez: Capetillo, G. C. Champion (BMNH, 1). Honduras: Comayagua: 13 km SE Taulabe, 20-VI-1977, C. W. & Lois O'Brien & Marshall (WOPC, 1).

Description. Size: Length 3.5–4.2 mm; width 1.0–1.5 mm. Integument: Cranium black; pronotal disc black; elytral markings as in Fig. 210; legs predominantly yellow, tibiae infuscated.

Head: Vertex wider than eye (32:20); antenna as in Fig. 84.

Thorax: Pronotum (Fig. 176), length/width ratio 55:65, lateral tubercle present but shallow, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.7, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 314.

Variation: The small pale streak at the side of the elytral disc may be reduced to a punctiform pale macula.

Natural history. Specimens have been captured during June, July, and October at altitudes ranging from 1647 to 2000 m.

Distribution (Map 2). From southern México to eastern Honduras.

Etymology. The specific epithet stems from the Latin *linea* (= line). I refer to the small pale streak at the side of the sutural connection line between the anterior and posterior block of the elytral insignia.

Differential diagnosis. These beetles may be distinguished from congeners by the presence of a small pale streak on the lateral aspects of the elytral disc aside the connecting rod of the elytral insignia (Figs 210, 211).

Notes. The specimens from Capetillo and San Gerónimo, in Guatemala, form part of the syntypic series that was used by H. S. Gorham to describe *Epiphloeus erythrocephalus*.

Madoniella orosiensis sp.nov. Figs 94, 178, 222–224, 310; Maps 11, 12.

Type material. Holotype. Male. Est. Maritza, 600 m, lado O Vol. Orosi, Prov. Guan. COSTA RICA, Tp. Malaise 1988, L-N-326900, 373000, electronic label INBIO CRI 000 686 606 (INBC). (Specimen card mounted, male symbol affixed to card mount; locality label, electronic label; INBC acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: One hundred and ninety-one specimens from: México: Oaxaca: 1.6 km Juquila Mixes, 3-VII-1994, 1982 m, E. Giesbert (FSCA, 1): Chiapas: Vicinity of Chisoasen, near Tuxtla Gutierrez, 20-X-1990, on *Acasia*, F. Hovore (WFBC, 1); 6 km N Litotol, 26-IX-1989, F. Hovore (WFBC, 1: WOPC, 2): Quintana Roo: Vigia Chico,, 6 km NE Carrillo Puerto, 19-X-1991, R. Turnbow (RHTC, 1): Yucatán: 2 km S Xcalacoop, 23-X-1991, (RHTC, 1). Honduras: Lempira: Belen, 6-X-1993, R. H. Turnbow (WOPC, 1): Francisco Morazán: El Espinido, 25-V-1993, 991 m, R. Turnbow (RHTC, 1; WOPC, 1); 5 km E Zamorano, 2-VI-1993, R. Turnbow (WOPC, 1); 30 km ESE Tegucigalpa, Zamorano, 28-V-1994, 830 m, beating, H. & A. Howden (CMNC, 1; WOPC, 1); Tegucigalpa, La Tigra, 19-V-1995, R. Morris (RFMC, 1; WOPC, 1); P. N. La Tigra, day not noted-V-1995, J. Huether (JPHC, 2; WOPC, 2); *idem*, 19-V-1995, J. Huether (JNRC, 1); 1 km W Hatilla, 19-V-1995, R. Turnbow (RHTC, 1); P.N. La Tigra, 29-V-1995, R. Turnbow (RHTC, 10; WOPC, 6); 25 km SW Talnga, 30-XI-1995, R. Turnbow (RHTC, 1); Zamorano, 27-V-2002, R. Turnbow (RHTC, 1): El Paraíso: El Zámorano, Esc. Agric. Pan., 28-VII-1977, L. B. O'Brien (WOPC, 1); Yuscaran, Carro Monserrat, 16-30-XII-1992, R. Ortega (WOPC, 1); 35 km W Danli, 28-V-1995, R. Turnbow (RHTC, 2); 7 km W Danli, 27-XI-1995, R. Turnbow (RHTC, 1); 8.3 km SE Capire, 28-VII-2001, R. Turnbow (RHTC, 4): Atlantida: Tela, Lancetilla, 29-V-1993, R. Cave (RDCC, 1): Comayagua: 9 km N Rio Humuya, 26-VII-1977, O'Brien and Marshall (WOPC, 2); 1.6 km SW Los Planes, 26-V-2002, R. Turnbow (RHTC, 2; WOPC, 1); 2.8 km NNE Los Planes, 26-V-2002, R. Turnbow (RHTC, 1): Santa Barbara: Zacapa, 30-V-1993, R. Turnbow (RHTC, 1): Cortés: hills above San Pedro Sula, 8-XI-1984, C. W. O'Brien (WOPC, 1): Olancho: 14 km N Tegucigalpa, 27-VII-1977, O'Brien and Marshall (WOPC, 1); La Muralla, 24-V-1995, R. Morris (FSCA, 3; RFMC, 2; WOPC, 2); Parque Nacional, La Muralla, 24-27-V-1995, J. Huether (JPHC, 1); *idem*, 24-27-V-1995, J. E. Wappes (JEWC, 2; WOPC, 1); *idem*, 25-V-1995, R. Turnbow (RHTC, 1); *idem*, 1-VI-1995, R. Turnbow (WOPC, 1); *idem*, 2-VI-1995, R. Turnbow (RHTC, 1); *idem*, 28-XI-1995, R. Turnbow (RHTC, 1); Olancho Montana del Mailacate, 27-VII-2001, R. Turnbow (RHTC, 1); *idem*, 12-VI-2003, R. Turnbow (RHTC, 1). Nicaragua: Granada: Volcán Mombacho, Finca Santa Ana, 31-III-1998, organic coffee. 600 m, col. J. M. Maes (SEAN, 1); *idem*, Finca El Progreso, 15-IV-1998, malaise trap in non-organic coffee, J. M. Maes (SEAN, 1); *idem*, Finca El Progreso, 30-IV-1998, malaise trap in non-organic coffee, J. M. Maes (SEAN, 1); *idem*, Finca San Joaquin, 30-IV-1998, malaise trap in organic coffee, J. M. Maes (WOPC, 1); *idem*, Finca San Joaquin, 15-V-1998, malaise trap in organic coffee, J. M. Maes (SEAN, 2; WOPC, 2); Finca El Progreso, 2-VI-1998, malaise trap in non organic coffee, J. M. Maes (WOPC, 1); Finca El Progreso, 2-VI-1998, 340 m, malaise trap in dry forest, J. M. Maes (WOPC, 1); *idem*, Finca Santa Ana, 2-VI-1998, 600 m, malaise trap in organic coffee, J. M. Maes (SEAN, 9; WOPC, 4); Fina San Joaquin, 21-VI-1998, malaise trap in organic coffee, J. M. Maes (SEAN, 4; WOPC, 4); Finca Santa Ana, 30-VII-1998, 600 m, malaise trap in organic coffee, J. M. Maes (SEAN, 3; WOPC, 3): Matagalpa: 10 km NW Matagalpa Selva Negra, 12°59′N 85°54′W, 16-22-IV-2002, beating, 1280 m, Weston Opitz (WOPC, 4). Costa Rica: Guanacaste: Estación Maritza, lado oeste Volcán Orosi, day and month not noted-1988, 600 m, Malaise trap, collector not noted (INBC, 8; WOPC, 4); *idem*, day and Month not noted-1989, 600 m, Malaise trap, (INBC, 2; WOPC 2); *idem*, day and month not noted-1990, 600 m, Malaise trap (INBC, 3; WOPC, 2); *idem*, day and month not noted-1991, 600 m, Malaise trap (INBC, 5); *idem*, day and month not noted-1992, 600 m, Malaise trap (WOPC, 1); Estación Cacao, SW Volcan Cacao, day and month not noted-1988-1989, Malaise trap, 1000-1400 m (INBC, 1; WOPC, 2); Finca Jenny, 30 km. N Liberia, day and month not noted-1989, Malaise trap (WOPC, 1); Estación Cacao, Lado suroeste del volcán, day not noted-VI-1990, 1000-1400 m (INBC, 1); 3 km SE R. Naranjo, day of collection not noted-XII-1991 (WOPC, 1);

idem, 15-22-1991, F. D. Parker(EMUS, 1); *idem*, 20-31-I-1992 (WOPC, 1); *idem*, 12-22-III-1992, F. D. Parker (EMUS, 2); *idem*, 1-11-III-1992, F. D. Parker (EMUS, 1; WOPC, 1); *idem*, 21-III-1992, F. D. Parker (EMUS, 1); *idem*, 1-15-IV-1992, F. D. Parker (EMUS, 1); *idem*, collection date not noted-V-1992, F. D. Parker (EMUS, 1); *idem*, 1-5-V-1992, F. D. Parker (EMUS, 1; WOPC, 1); *idem*, 21-31-VII-1992, F. D. Parker (EMUS, 1); *idem*, 1-10-X-1992, F. D. Parker (EMUS, 1; WOPC, 1); *idem*, 11-20-X-1992, F. D. Parker (EMUS, 1); *idem*, 22-X-1992, F. D. Parker (EMUS, 1; WOPC, 1); *idem*, 25-31-X-1992, F. D. Parker (EMUS, 1); *idem*, 1-10-XI-1992, F. D. Parker (WOPC, 1); *idem*, 21-28-XII-1992, F. D. Parker (EMUS, 7; WOPC, 1); *idem*, 4-8-I-1993, F. D. Parker (EMUS, 1); *idem*, 1-II-1993, F. D. Parker (WOPC, 1); *idem*, 19-22-II-1993, F. D. Parker (EMUS, 1); *idem*, 8-14-II-1993, F. D. Parker (WOPC, 1); *idem*, 11-IV-1993, F. D. Parker (EMUS, 1); *idem*, 18-28-IV-1993, F. D. Parker (WOPC, 2); *idem*, 1-3-VII-1993, F. D. Parker (WOPC, 1); *idem*, 14-15-VII-1993, F. D. Parker (EMUS, 1); *idem*, 21-VII-1993, F. D. Parker (WOPC, 1); *idem*, 24-30-VIII-1993, F. D. Parker (EMUS, 1); Cordillera, Buena Vista Hotel Borinquen, 15-17-V-2003, 605 m, 10°48N 85°W, J. and A. Rifkind, P. Gum (JNRC, 2; WOPC, 1): Puntarenas: San Luis Valley, 1-VII-1989, F. Hovore (WOPC, 1); Monteverde, 4-6-VI-1980, E. Giesbert (FSCA, 2: WOPC, 2); *idem*, 4-6-VI-1980, J. E. Wappes (JEWC, 2; WOPC, 2): San José: University de Costa Rica athletic fields, 23-V-1995, 1000 m, beating, J. Rifkind, H. Lazama (WOPC, 1); *idem*, 29-30-XI-1995, 1190 m, beating, J. Rifkind (WOPC, 1); *idem*, 26-28-V-1995, beating, J. Rifkind (JNRC, 1); *idem*, 19-V-1995, beating trees, J. Rifkind (JNRC, 1); 5 km SW Escaz?, 24-V-1995, 1200 m, beating, J. Rifkind and H. Lezama (JNRC, 1): Heredia: La Selva, 15-II-1994, 10°26′N, 84°01′W, 50–150 m (CHAH, 1). Panamá: Panamá: Cerro Campana, 6-9-VIII-1961, 915 m, J. M. Campbell (WOPC, 1); *idem*, 31-V-1987, P. T. Hovore (WFBC, 1); Metropolitano, 26-II-1995, on *Luhea* seemanni, F. Ødegaard (WOPC, 1); *idem*, 4-V-1995, F. Ødegaard (NINA, 1); *idem*, 15-VI-1995, F. Ødegaard (WOPC, 1): Chiriquí: 2 km W Cerro Punta, 19-23-V-1977, 8°51′ N, 82°36′, 1720 m, H. A. Howden (CMNC, 3; WOPC, 1).

Description. Size: Length 4.0–4.3 mm; width 1.3–1.6 mm. Integument: Cranium red; pronotal disc dark brown, anterior border narrowly red; elytral markings as in Figs 222–224; legs yellow, dorsal margin brown.

Head: Vertex wider narrower than eye 35:29; antenna as in Fig. 94.

Thorax: Pronotum (Fig. 178), length/width ratio 70:85, lateral tubercle present, disc convex, anterior margin subconic; elytra, length/width ratio 4.7, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 5 spines.

Abdomen: Aedeagus as in Fig. 310.

Variation: The female paratype is considerably more melanistic. Her legs are dark brown and the anterolateral extensions of the elytral insignia do not reach the humeral margin. Also, the vertex of the cranium may have a dark spot or the extent of cranial darkness may extend to the frons. Slight variation exists also in the amount of redness near the anterior of the pronotal disc.

Natural history. Specimens of this species have been collected throughout the year the at altitudes ranging from 600 to 1400 m, by beating and with a Malaise trap set in a non-organic or organic fields with coffee plants.

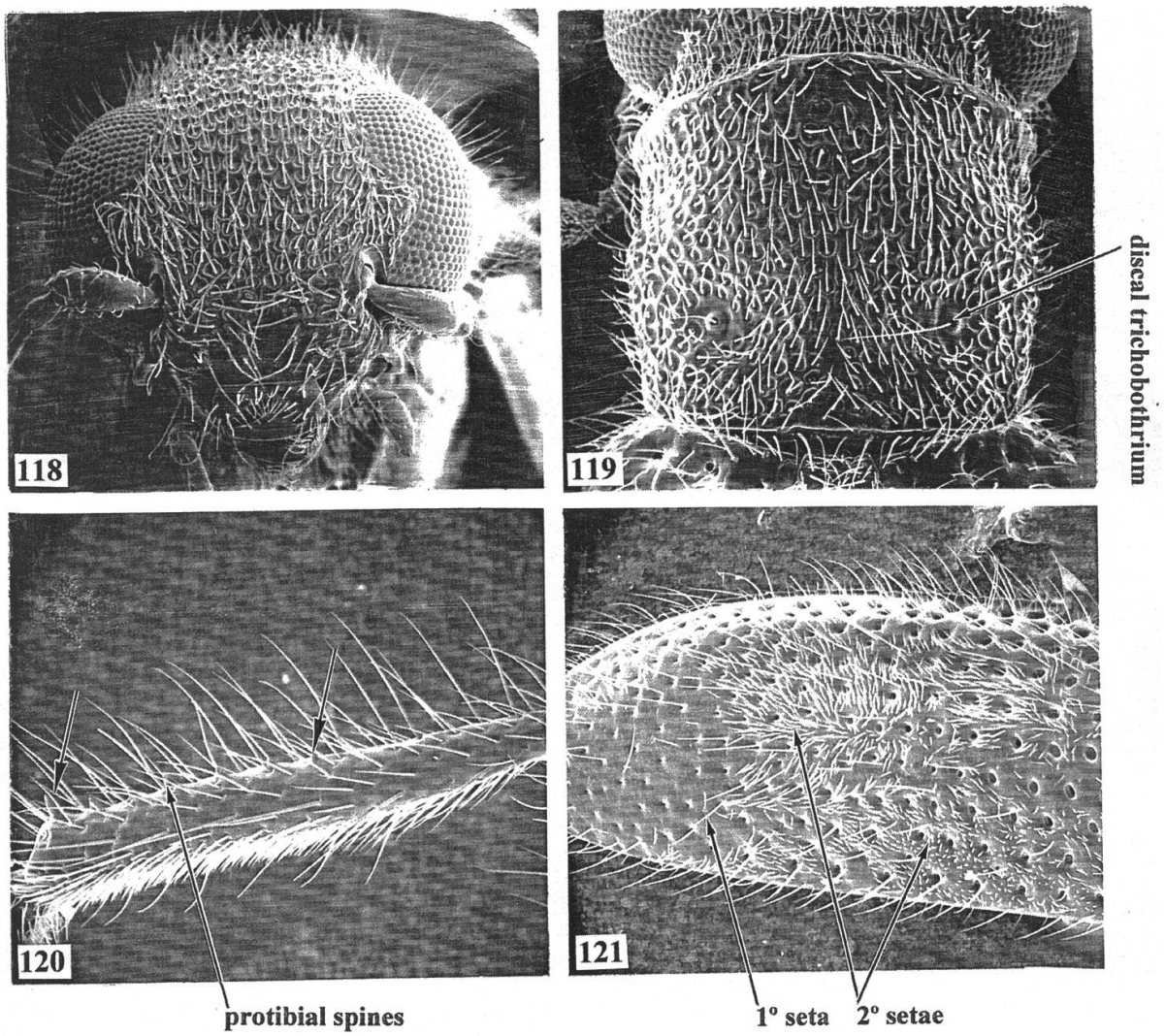
Distribution (Map 11). This species ranges from southern México to western Panamá.

Etymology. The trivial name is a geographical patronymic. The name stems from Volcán Orosi, the type locality of this species.

Differential diagnosis. In these beetles the pronotum is entirely dark brown, approaching black. This characteristic will distinguish these beetles from other members of the *dislacata* group.

Madoniella patula sp.nov. Figs 171, 219, 316; Map 10.

Type material. Holotype: Female. México: Chiapas: 54 km S Ocosingo, 20 June 1990, R. Turnbow (FSCA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label.)



Figs 118–121. *Madoniella dislocata*: 118 – Head. 119 – Pronotum. 120 – Protibia. 121 – Elytron.

Paratypes: I examined 69 specimens from: México: Querretaro: 16 km E Landa de Matamores, 11-VI-1971, 1677 m, D. E. Bright (CNCI, 1); hwy. 120 at km mks. 230-231, 17-VII-1982, R. Turnbow (FSCA, 2; WOPC, 1); *idem*, at km 227, 17-VII-1982, 1494 m, R. Turnbow (FSCA, 1; WOPC, 1): Veracruz: 16 km W Tlapacoyan, 28-VI-1962, J. M. Campbell (CNCI, 1): Oaxaca: 10 km S San Juan Batista, Valle Nacional, 21-VII-1990, 625 m, J. T. Doyen (EMEC, 1): Chiapas: 16 km N Bochil, 4-V-1969, H. F. Howden (CMNC, 1); 8.3 km S Ocosingo, 30-IX-1986, R. Turnbow (WOPC, 1); 8.3 km W Ocosingo, 30-IV-1986, R. Turnbow (WFBM, 1; WOPC, 1); 18 km W Tuxtla Gutierrez, 3-IX-1986, R. Turnbow; 30 km NW Comitán, 20-VI-1990, R. Turnbow (FSCA, 1); 6 km N Jitotal de Zaragoza, 26-IX-1989, R. L. Penrose (WFBM, 2; WOPC, 1); 3.2 km NW Pueblo Nuevo, LLU Biological Station, 12-VII-1965, on *Pinus ayacahuite*, clerid feeding on scolytids, G. H. Nelson (FSCA, 4; WOPC, 5); 30 km SE Teopisca, 12-VI-1990, 2000 m, H. &. A. Howden (CMNC, 4; WOPC, 1); 2.8 km W Parque de Lagunas de Montebello, 21-VI-1990, M. C. Thomas (FSCA, 1); PN Lagunas de Montebello, 21-VI-1990, J. Huether (JPHC, 1); Parque Lagunas de Montebello, 21-VI-1990, R. Turnbow (FSCA, 1); 3 km NW Pueblo Nuevo, LLU Biological Station, on *Pinus ayacahuite*, 12-VII-1965, G.H. Nelson (BMNH, 1; WFBM, 1); *idem*, 15-VII-1965, on *Pinus ayacahuite*, G. H. Nelson (FMNH, 1); 8 km SW El Bosque, 4-VII-1969, Campbell & Bright (CNCI, 1); El Aguacero, 16 km W Ocozocoautla de Espinosa, 5-VI-1990, 680 m, H.&A. Howden (CMNC, 1); Parque de Laguna Montebello, 21-VI-1990, R. Turnbow (FSCA, 1); *idem*, 20-X-1988, R. Turnbow (WOPC, 1): Yucatán: 2 km E Chichen Itza, 16-VI-1990, R. Turnbow (FSCA, 1; WOPC, 1). Guatemala: Suchitepéquez: Los Tarrales Reserve, 9-VI-2005, 700 m, R. Turnbow (RHTC, 1).

Belize: Cayo: Mtn. Pine Ridge, Cooma Cairn rd., 0.0-2.4 km NW Jct. Rd. to Hidden Valley Falls, 24-VI-1992, 812-900 km, beating dead *Pinus caribaea*, J. Rifkind & P. Gum (JNRC, 3); Pine Ridge, Chito Line at Little Vaqueros Creek, broadleaved hardwood forest, beating/sweeping in slash area, J. Rifkind & P. Gum (WOPC, 1); 16 km W. Stann Creek Town, 18-VIII-1977, C. W. O'Brien & G.B. Marshall (USNM, 1; WOPC, 2); 18 km S Cayo, 20-VIII-1977, C.W. O'Brien (WOPC, 1); 18 km S Georgeville, 20-VIII-1977, C. W. O'Brien (TAMU, 1): Belize: km 58 Northern Road, 11-VIII-1977 (CASC, 1). Honduras: Cortez: Merendon, 15°30′N 88°11′W, 18-19-V-2002, J. Huether (JPHC, 1; WOPC, 1): Copán: 58 km NE Copan, 4-VIII-1977, 2104 m, C. W.& L. B. O'Brien & Marshall (WOPC, 1): Ocotepeque: 17.6 km NE Nuevo Ocotepeque, 25-VII-1974, 2104 m, O'Brien & Marshall (CDAE, 1; WFBM, 1; WOPC, 3): Comayagua: 11 km E Siquatepeque, 19-VII-1977, C. W. O'Brien (WOPC, 2; ZMHB, 1).

Description. Size: Length 3.0–4.5 mm; width 1.1–2.2 mm. Integument: Cranium reddish brown, pronotum dark brown, pronotal anterior margin red; elytral markings as in Fig. 219; legs light brown. *Head*: Vertex wider than eye (30:20); antenna similar in form to one depicted in Fig 7.

Thorax: Pronotum (Fig. 171), length/width ratio 56:65, lateral tubercle present, disc convex, anterior margin subconic, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width ratio 4.5, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 316.

Variation: The anterior margin of the pronotum may have various densities of red and the elytral insignia varies slightly from its shape as depicted in Fig. 219.

Distribution (Map 10). This species is known from southern México, Belize, and western Honduras.

Distribution. Specimens of this species have been collected on two species of pine, *Pinus ayacahuite* and by beating branches of *Pinus caribaea*. Some specimens were collected by beating/sweeping in slash areas amidst broadleaved hardwood trees. Temporally, these beetles were collected from May through October.

Etymology. The specific epithet is a Latin adjectival that stems from p*atulus* (= wide). I refer to the unusual width of the phallobasic rod.

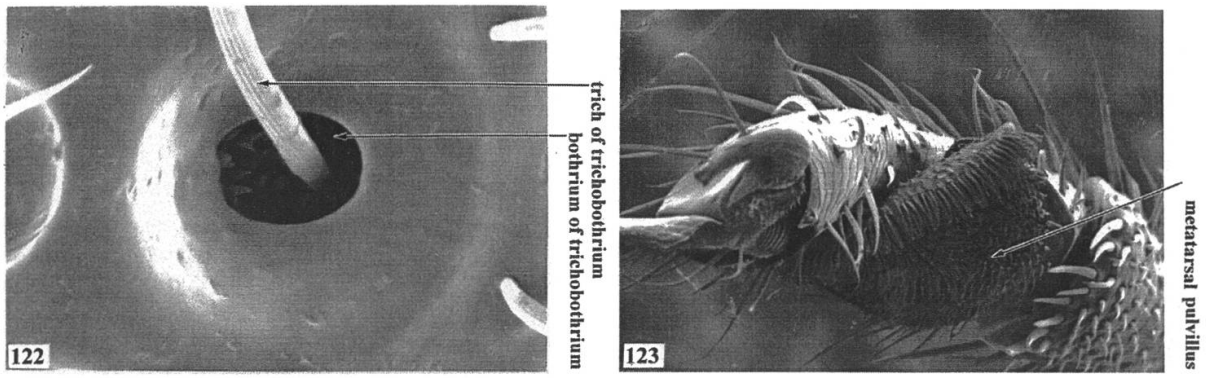
Differential diagnosis. Specimens of this species are very similar to specimens of *M. dislocata*, which are known to occur only in North America. The males of these two species may be separated according to characteristics of the aedeagus. In *patula* males the phallobaic rod is bifid near the base of the ventral sinus, which is not the case in males of *dislocata* (compare Figs 278, 316). Females of these two species cannot be separated according to morphological criteria.

Madoniella quintana sp.nov. Figs 79, 179, 229, 304; Maps 3, 11.

Type material. Holotype: Female. Mexico: Quintana Roo, 66 km E Xpujil, 19-VI-1990, M. C. Thomas (FSCA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label.)
Paratypes: One specimen. Mexico: Quintana Roo: 77 km W Chetumal, 9-VIII-1974, W. & L. O'Brien & Marshall.

Description. Size: Length 3.5–3.7 mm; width1.2–1.4 mm. Integument: Cranium red; pronotum brown; elytral markings as in Fig. 229; legs yellow.

Head: Vertex wider than eye (22:16); antenna very similar to antenna depicted in Fig. 79.



Figs 122–123. *Madoniella dislocata*: 122 – Pronotal trichobothrium (dorsal). 123 – Metatarsus.

Thorax: Pronotum (Fig. 179), length/width ratio 47:55, side margins more convex than tuberculate, disc convex, anterior margin convex, anterior transverse depression absence from disc, setae not matted; elytra, length/width ratio 4.4, punctations large, seriate, and arranged into 10 rows, 2° setae not matted; protibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 304.

Variation: The available specimens did not vary appreciably.

Natural history. The available specimens were collected in June and August.

Distribution (Map 11). Known only from the Mexican state of Quintana Roo.

Etymology. The specific epithet is a noun in apposition and refers to the type locality.

Differential diagnosis. These beetles are very similar to those of *M. orosiensis*. However, in specimens of the later species the posterocentral extension of the posterior block of the elytral insignia is long, whereas in *M. quintana* specimens, the extension is very short (Fig. 229).

emblema group

This monotype group is most conspicuously characterized by its narrow vertex and elaborate configuration of the elytral insignia (Fig. 251). Absence of pronotal transverse depression, large elytral punctations arranged in 10 rows, and minute serrations on the elytral epipleural margin further characterize this species group. The latter is known only from Costa Rica.

Madoniella emblema sp.nov. Figs 102, 129, 231, 251, 282; Maps 1, 11.

Type material. Holotype: Female. COSTA RICA: Prov. Heredia: 11 Km SE La Virgen, 450–550 m, 10°20′N 84°04′W, 20 Abril 2003, INBio-OET-ALAS transect; second label-20 abril 2003, TRANSECT 05/m/15/095; ELECTRONIC LABEL-INBO003240285 (INBC). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; collection date label; electronic label; INBC repository label; holotype label.)

Paratypes: One specimen. Costa Rica: Heredia: 11 km SE La Virgen, 10°20′N 84°04′W, 8-IV-2003, no collector noted (WOPC, 1).

Description. Size: Length 5.3–2.0 mm; width 6.5–2.1mm.

Integument: Cranium red, antenna bicolored, scape yellow, remainder of antennomeres dark brown; pronotal disc predominantly dark brown, anterocentral region red; elytral markings as in Figs 231, 251; legs predominantly light yellow, profemur infuscated dorsally near apex, protibia brown along dorsal margin.

Head: Vertex narrower than eye 20:28; antenna as in Fig. 102. Thorax: Pronotum (Fig. 129), length/width ratio 60:78, lateral tubercle present, disc convex in anterior half then depressed paralaterally, anterior transverse depression absent from disc, anterior margin convex, setae submatted; elytra, length/width ratio 4.4, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 282.

Variation: The legs of the paratypes specimen are entirely yellow and the redness of the pronotum is more diffuse. Also, there is some variation in the size of the dark spots between the connecting rods of the elytral insignia (compare Figs 211 and 251).

Natural history. The two available specimens were captured in April between 450–550 m.

Distribution (Map 11). This species is known only from the more central environs of Heredia, in Costa Rica.

Etymology. The specific epithet *emblema* (= inlaid work) is a Latin noun. I refer to the ornamental pattern of the elytra insignia.

Differential diagnosis. The elytral insignia of these beetles shows an extra lateral connecting line between the anterior and posterior blocks (Fig. 251). This trait will distinguish the members of this species from congeners.

thomasi group

A vertex that is usually narrower than an eye and matted pronotal setae characterize this group of 4 species. Body form is oblong-subovoid, the pronotum is uniformly dark brown, and there is a lack of an anterior transverse depression on the pronotal disc. Elytral punctations are large and arranged in 10 rows, the elytral insignia is well developed, and the posterior third of the epipleuron is minutely serrated. The species are known from the Dominican Republic, Puerto Rico, and the Bahamas, Andros Island, Colombia, and Venezuela.

Madoniella displicata sp.nov. Figs 62, 177, 227; Map 4.

Type material. Holotype: Female. VENEZUELA: Aragua, Ocumare, XI.29.1996, B. K. Dozier (FSCA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label, collector label; FSCA repository label; holotype label.)
Paratypes: None.

Description. Size: Length 4.5 mm; width 1.4 mm. Integument: Cranium red; pronotal disc reddish brown; elytral markings as in Fig. 227; legs yellow.

Head: Vertex narrower than eye in dorsal view (20:24); antenna as in Fig. 62.

Thorax: Pronotum (Fig. 177), length/width ratio 55:63, lateral tubercle present, disc convex, anterior margin subconic, anterior transverse depression absent from center of disc, setae submatted; elytra, length/width ratio 4.4, form oblong-subovoid; punctations large, seriate, and arranged into 10 rows, 2° setae submatted, epipleural margin minutely serrate in distal third; protibial anterior margin with 3 spines.

Abdomen: Aedeagal information not available.
Variation: One specimen examined.

Natural history. The holotype was collected in November.

Distribution (Map 4). Known only from the type locality.

Etymology. The trivial name *displicata* (= scatter) is a Latin adjectival. I refer to the fading out of the pale posterior marking on the elytral disc.

Differential diagnosis. These beetles are superficially very similar to those of *M. magdalena* from which they are distinguishable by the form of the antennal club antennomeres. In *displicata* specimens the antennal capitulum antennomeres are about as long as wide whereas the capitulum antennomeres are longer than wide in *Magdalena* specimens.

Madoniella extensiva **sp.nov.** Figs 54, 59, 156, 201, 202, 285; Maps 13, 20.

Type material. Holotype: Female. Maricao Forest, 2–3,000 ft. P. R., May 30-June 2, '38, Darlington (MCZC). (Specimen point mounted, female symbol fixed to paper point, support card; locality label; MCZC acronymic label; holotype label; plastic vial with abdomen and ovipositor.)
Paratypes: Three specimens. Dominican Republic: Pedernalis: Los Tres Charcos, 13-VII-1996, M. C. Thomas (WOC, 1); 25.5 km N Cabo Rojo, 21-V-1992, R. Turnbow (FSCA, 1). Puerto Rico: Maricao: Maricao Forest, 30-IV-2-VI-1938, 610–915 m, Darlington (WOPC, 1).

Description. Size: Length 2.5–2.7mm; width 0.08–1.0 mm. Integument: Cranium red; pronotal disc red; elytral markings as in Fig. 201 and 202; femora yellow, tibiae predominantly yellow and with brown spot on disc.

Head: Vertex as wide as eye (17:17); antenna as in Fig. 54. *Thorax*: Pronotum (Fig. 156), length/width ratio 44:44, lateral tubercle present, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae matted; elytra, length/width ratio 5.3, form oblong-rectangulate, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin not minutely serrate in posterior fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 285.

Variation: The three specimens examined did not vary appreciably.

Natural history. The type series was collected sometime between May 30 and June 2 at an altitude between 610 and 915 m.

Distribution (Map 20). These beetles are known from the Dominican Republic and Puerto Rico.

Etymology. The specific epithet *extensiva* (= stretched) is a Latin adjectival. I refer to the extraordinary length of the antenna.

Differential diagnosis. These beetles are distinguishable from superficially similar ones of *eximia* by characteristics of the elytral insignia. In *extensiva* specimens the posterior block of the elytral insignia is bifid distally (Fig. 201), which is not the case in specimens of *eximia*.

Madoniella magdalena **sp.nov.** Figs 61, 163, 256; Map 4.

Type material. Holotype: Male. COLOMBIA Magdalena PNN Tayrona Pueblito, 11°20′N 74°02′W, 225 m, Malaise 4–20.xii.2000, R. Henriquez Leg. M.965 (USNM). (Specimen point mounted, antenna and male symbol affixed to paper point, support card; locality label; USNM repository label; holotype label; plastic vial with abdomen and aedeagus.)
Paratypes: None.

Description. Size: Length 5.0 mm; width 2.0 mm. Integument: Cranium red-brown; pronotal disc red-brown; elytral markings as in Fig. 256; legs yellow.

Head: Vertex as wide as eye (25:25); antenna as in Fig. 61.

Thorax: Pronotum (Fig. 163), length/width ratio 52:68, lateral tubercle present but small, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.7, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 5 spines.

Abdomen: Aedeagus not studied.

Variation: One specimen examined.

Natural history. The only available specimen was collected during February at 225 m.

Distribution (Map 4). Known only from the type locality.

Etymology. The specific epithet is a geographical patronymic that refers to the place from which the holotype was collected.

Differential diagnosis. The antennal capitulum antennomeres are longer than wide in the members of this species, a characteristic that distinguishes them from very similar members of *M. displicata*.

***Madoniella thomasi* sp.nov.** Fig. 112, 235; Map 18.

Type material. Holotype: Female. BAHAMAS: Andros Is., Maidenhair Coppice, 9-VI-2004, M. C. Thomas (FSCA). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label.)
Paratypes: None.

Description. Size: Length 3.0 mm; width 1.0 mm. Integument: Cranium red-brown; pronotal disc red-brown; elytral markings as in Fig. 235; legs predominantly yellow, with brown spot on femoral and tibial disc, except metafemora all yellow.

Head: Vertex narrower than eye (10:13); antenna as in Fig. 112.

Thorax: Pronotum, length/width ratio 32:38, side margins more convex than tuberculate, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae matted; elytra, length/width ratio 4.0, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior third; protibial anterior margin with 4 spines.

Abdomen: Aedeagal information not available.

Variation: One specimen examined.

Natural history. The only known specimen of this species was collected in June.

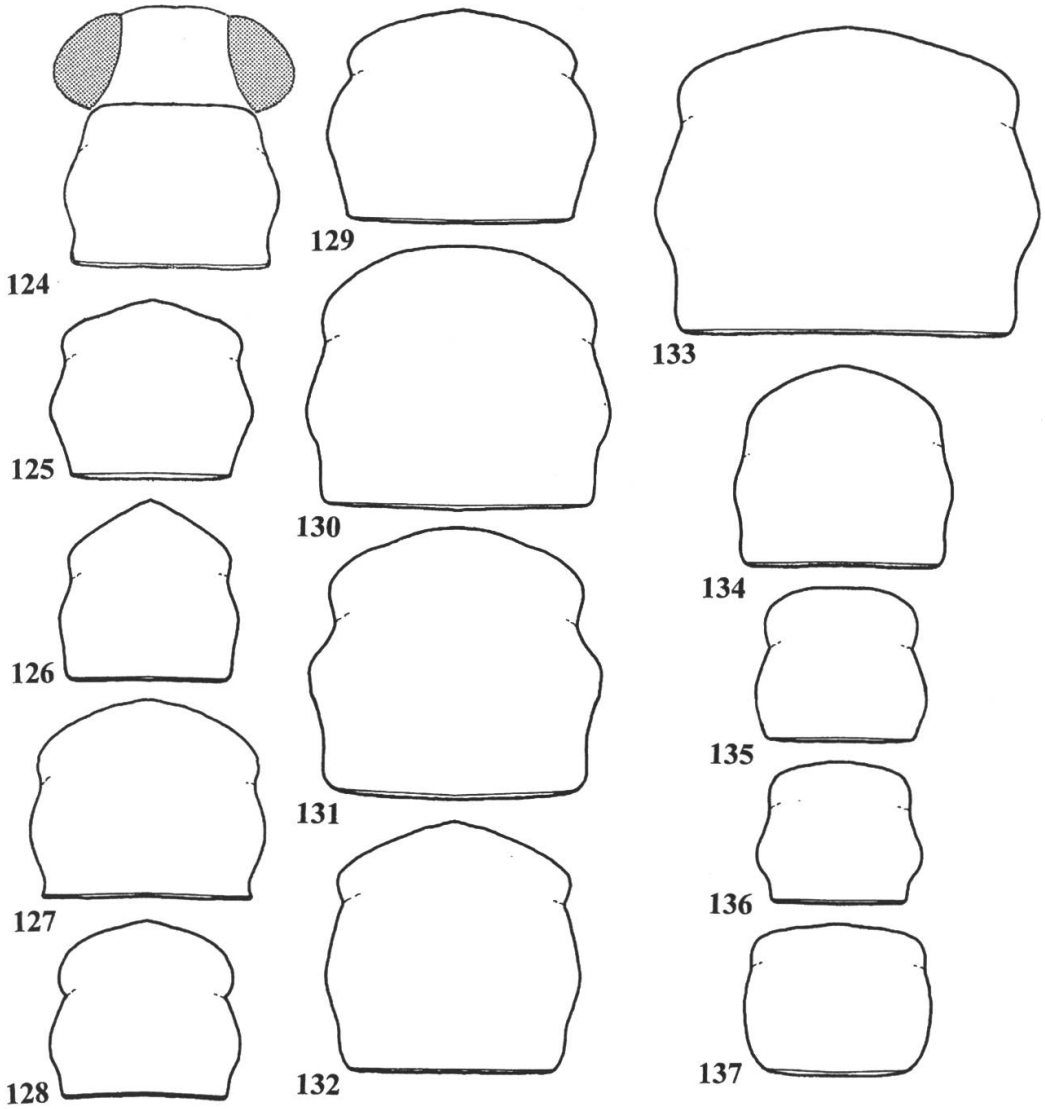
Distribution (Map 18). Known only from the type locality.

Etymology. The specific epithet *thomasi* is a dedicative patronym to express gratitude to Mike C. Thomas for his generous policies in making the FSCA checkered beetles available for study, and for his many contributions to beetle taxonomy.

Differential diagnosis. These beetles are very similar to those of *M. extensiva*, but *thomasi* beetles have the posterior block of the elytral insignia confluent with a pale region on the elytral apex. This is not the case in *extensiva* beetles.

fonteboa group

This group is comprised of 6 species whose members are characterized by having the vertex considerably narrower than the width of an eye. Pronotal sides are deeply



Figs 124–137. 124. *Madoniella zonula*, forebody. 125–137, Pronota: 125 – *M. dislocata*. 126 – *M. dariensis*. 127 – *M. disjuga*. 128 – *M. redacta*. 129 – *M. emblema*. 130 – *M. kuehlorum*. 131 – *M. texis*. 132 – *M. careorita*. 133 – *M. basilia*. 134 – *M. zonula*. 135 – *M. crinis*. 136 – *M. abacula*. 137 – *M. howdenorum*.

incised near the anterior angles, an indication of the presence of a distinguishable pronotal arch and shallow anterior transverse depression on the pronotal disc. The pronotum is also very transverse and bicolorous; the pronotal arch is red and the pronotal proper dark brown, reddish, or black. Pronotal and elytral setae are not matted. The elytral insignia is variously developed, but most often reduced to faint anterior and posterior elements. Elytral punctations are large, arranged in 10 rows and the posterior third of the epipleural margin is minutely serrate. The species of this group are known only from South America, from Venezuela to Argentina.

***Madoniella avina* sp.nov.** Figs 108, 146, 228, 286; Map 4.

Type material. Holotype: Male. ARG: Salta Prov., El Rey Nt. Park, 900 m, Rio La Selva, S & J Peck, 5.XII-87, humid Chaco forest, night beating (CMNC). (Specimen point mounted, male gender symbol affixed to paper point, support card; locality label; CMNC repository label; holotype label.)
Paratypes: None.

Description. Size: Length 5.0 mm; width 1.5 mm. Integument: Cranium yellow-red; pronotal disc predominantly black, pronotal arch predominantly yellow-red but broadly black at middle, a pale spot near each of the posterior angles along the posterior margin; elytral markings as in Fig. 228; legs brown except metafemora yellow.

Head: Vertex narrower than eye (20:23); antenna as in Fig. 108.

Thorax: Pronotum (Fig. 146), length/width ratio 50:61, lateral tubercle present, disc coarsely punctate, deeply concave paralaterally behind middle, with small tuberculate paralateral elevation near posterior margin, anterior transverse depression present on disc, anterior margin convex, setae matted; elytra, length/width ratio 4.4, form oblong-subovoid, punctations large but shallowly impressed, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 5 spines.

Abdomen: Aedeagus as in Fig. 286.

Variation: One specimen examined.

Natural history. The only available specimen was collected during June, at 900 m.

Distribution (Map 4). Known only from the type locality.

Etymology. The trivial name *avina* stems from the Latin *avinus* (= remote). I refer to the fact that this is the most southern distributed species of the known *Madoniella*.

Differential diagnosis. This is the only species of *Madoniella* that is known to occur in Argentina.

***Madoniella collata* sp.nov.** Figs 78, 164, 208; Map 4.

Type material. Holotype: Female. Chapada, Brazil, Nov., Acc. No. 2966. (Specimen point mounted, female symbol affixed to paper point, support card; locality label; CMNH repository label; holotype label.) Paratypes: None.

Description. Size: Length 5.0 mm; width 1.8 mm. Integument: Cranium red-brown; pronotal disc predominantly black, pronotal arch red-brown; elytral markings as in Fig. 208; legs yellow except protibiae and mesotibiae dark along dorsal margin.

Head: Vertex narrower than eye (24:28); antenna as in Fig. 78.

Thorax: Pronotum (Fig. 164), length/width ratio 55:65, lateral tubercle present, disc coarsely punctated, deeply concave paralaterally behind middle, with small tuberculate paralateral elevation near posterior margin, anterior transverse depression present on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.5, form oblong-subovoid, punctations large but shallowly impressed, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 6 spines.

Abdomen: Aedeagal information not available.

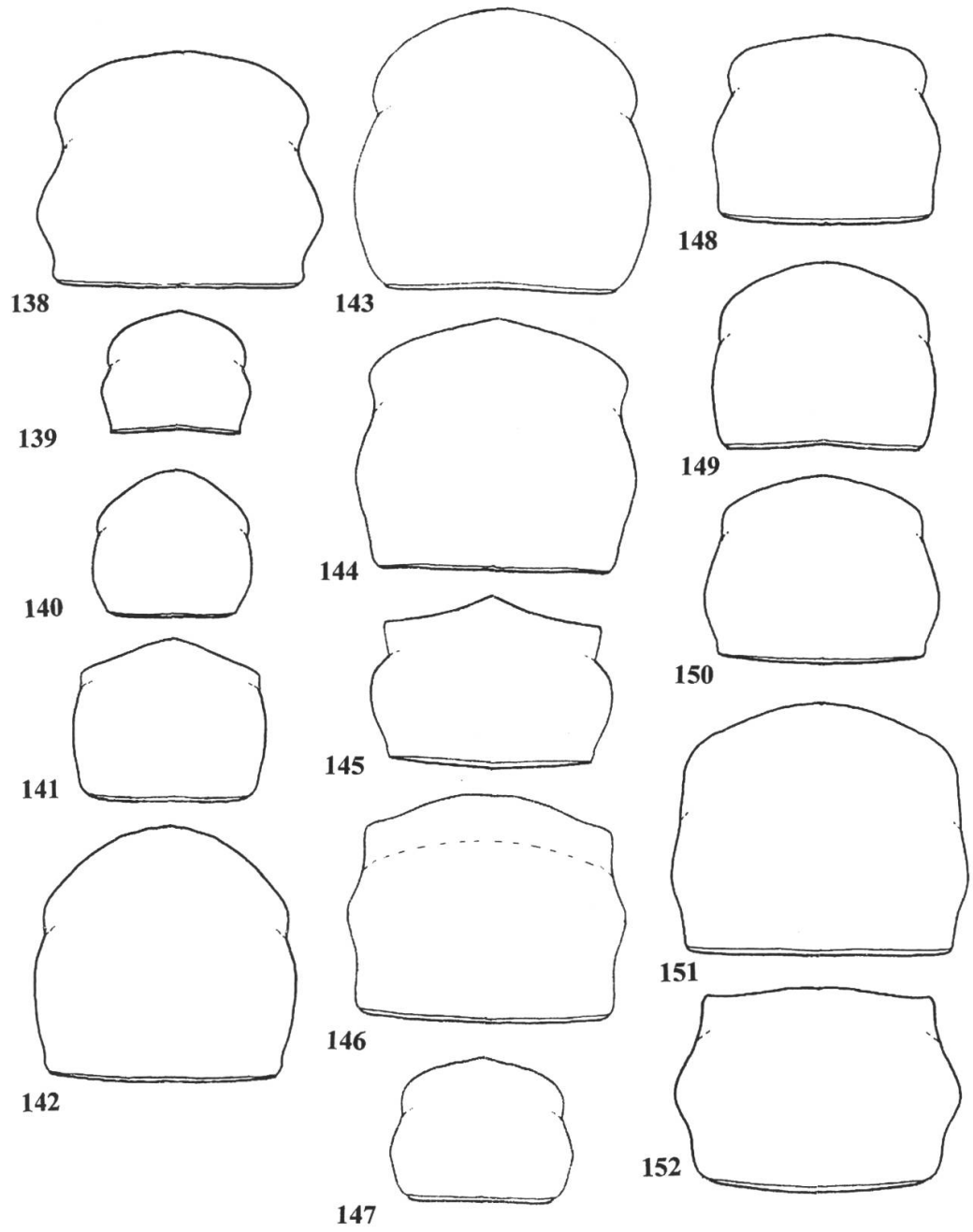
Variation: One specimen examined.

Natural history. The only available specimen was collected in the Amazon basin during November.

Distribution (Map 4). Known only from the type locality.

Etymology. The trivial name *collata* stems from the Latin *collatus* (= extended). I refer to comparatively longer, thinner body form.

Differential diagnosis. Specimens of this species are superficially very similar to those of *M. facis*. However, the pronotum of *collata* specimens is mostly pitchy black whereas pronotal color emits a hue of metallic blue in *facis* specimens.



Figs 138–152. Pronota: 138 – *Madoniella antennatra*. 139 – *M. pumilis*. 140 – *M. aktis*. 141 – *M. basilaris*. 142 – *M. leona*. 143 – *M. corporaali*. 144 – *M. adona*. 145 – *M. cracentis*. 146 – *M. avina*. 147 – *M. infula*. 148 – *M. lurida*. 149 – *M. maxicornis*. 150 – *M. ebena*. 151 – *M. welderi*. 152 – *M. pici*.

Madoniella facis sp.nov. Figs 34, 63, 207; Map 4.

Type material. Holotype: Male. GUYANA: Iwokrama Research Forest, 4 mi ct, N of Kurupukari-a second label reads-13 March 1966, canopy fog sample, high *Mora* swamp forest, B. Jacobus, coll. (CASC). (Specimen point mounted, male symbol affixed to paper point, support card; locality label; CASC repository label; holotype label; plastic vial with abdomen and aedeagus.)
Paratypes: None.

Description. Size: Length 4.0 mm; width 1.2 mm. Integument: Cranium red; pronotal disc black with a bluish tinge, pronotal arch red; elytral markings as in Fig. 207; legs, femora light brown, tibiae dark brown.

Head: Vertex narrower than eye (17:20); antenna as in Fig. 63.

Thorax: Pronotum (Fig. 34), length/width ratio 45:59, lateral tubercle present, disc roughly macrosculptured, anterior transverse depression present on disc, anterior margin subconic, setae not matted; elytra, length/width ratio 4.6, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 5 spines.

Abdomen: Aedeagus vey similar to one depicted in Fig. 278.

Variation: One specimen examined.

Natural history. The holotype was collected during March by fogging in a swamp forest laden with *Mora*.

Distribution (Map 4). Known only from the type locality.

Etymology. The specific epithet *facis* (= flame) is a Latin noun. I refer to the fire red coloration of the cranium.

Differential diagnosis. The metallic blue luster that emits from the pronotum proper of these beetles is diagnostic for this species and distinguishes its members from congeners.

Madoniella fonteboa sp.nov. Figs 56, 168, 248; Map 4.

Type material. Holotype: Male. Amazones, Fonteboa, Dr. Hahnel (ZMHB). (Specimen point mounted, antenna and male gender symbol affixed to paper point, support card; locality label; ZMHB repository label; holotype label.)
Paratypes: One specimen. Brazil: Amazonas: Coroado, Manaus, 23-IV-25-IV-1972, E. G. & E. A. Munroe (CNCI, 1).

Description: Size: Length 4.5–4.7 mm; width 1.5–1.6 mm. Integument: Cranium red; pronotal disc dark brown; pronotal arch red; elytral insignia reduced to an l-shaped anterior block and transverse fascia posterior block, connecting rod short (Fig. 248); femora yellow, tibiae dark brown.

Head: Vertex narrower than width of eye (20:25); antenna as in Fig. 56.

Thorax: Pronotum (Fig. 168), length/width ratio 53:67, lateral tubercle present, disc convex at center then deeply concave paralaterally, anterior margin subconic, anterior transverse depression present in center of disc, setae not matted; elytra, length/width ratio 4.2, form oblong-subovoid; elytral punctations small, shallowly indented, seriate, and arranged into 10 rows, 2° setae not matted, minute serrations along posterior fourth of epipleural margin reduced in size; protibial anterior margin with 4 spines.

Abdomen: Aedeagus very similar to one noted in Fig. 278.

Variation: The two specimens examined are not notably variable.

Natural history. One of the available specimens was collected in May.

Distribution (Map 4). Known from northwestern Brazil.

Etymology. The specific epithet is a noun in apposition and refers to the type locality.

Differential diagnosis. The beetles are very similar to those of *M. latinopsis* from which they may be distinguished by the incomplete nature of the connecting rod of the elytral insignia.

Madoniella insignis sp.nov. Fig. 42; Map 4.

Type material. Holotype: Male. S. Antonio da Barra, Pr. De Bahia, Gounelle, 11.12.88 (MNHN). (Specimen point mounted, male symbol affixed to paper point, support card; locality label; institutional collection label; MNHN repository label; holotype label.)
Paratypes: None.

Description. Size: Length 3.5 mm; width 1.1 mm.

Integument: Cranium red-brown; pronotal disc red-brown; elytral insignea reduced to L-shaped anterior block and diagonal-fasciate posterior block; legs predominantly yellow, with brown spot on femoral and tibial disc.

Head: Vertex narrower than eye (15:18); antenna damaged.

Thorax: Pronotum (Fig. 42), length/width ratio 39:45, lateral tubercle present, disc convex in front of paralateral depressions, anterior transverse depression present on disc, anterior margin subconic, setae not matted; elytra, length/width ratio 4.6, form oblong-rectangulate, punctations small and shallowly impressed, seriate, and arranged into 10 rows, 2°setae not matted, epipleural margin minutely serrate in posterior third; protibial anterior margin with 5 spines.

Abdomen: Aedeagus not available.

Variation: One specimen examined.

Natural history. The holotype specimen was collected in December.

Distribution (Map 4). Known only from the type locality.

Etymology. The specific epithet *insignis* (= notable) is a Latin adjectival. I refer to the chevron-like shape of what remains of the posterior block of the elytral insignia.

Differential diagnosis. Within the *fonteboa* group, only in members of this species is the posterior block of the elytral insignia reduced to a pale diagonal line.

***Madoniella latinopsis* sp.nov.** Figs 88, 165, 234; Map 4.

Type material. Holotype: Female. Venezuela, Aragua, El Limón, 500 m, 10-V-1991, C. J. Rosales (MIZA). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; institutional collection label; MIZA acronymic label; holotype label.)
Paratypes: None.

Description. Size: Length 4.5 mm; width 1.3 mm. Integument: Cranium red; pronotal disc dark brown, pronotal arch red; elytral markings as in Fig. 234; femora yellow, protibiae and mesotibiae brown, metatibiae yellow.

Head: Vertex as wide as eye (20:20); antenna similar to antenna depicted in Fig. 88.

Thorax: Pronotum (Fig. 165), length/width ratio 48:58, lateral tubercle present, disc convex anterior to paralateral depressions, anterior transverse depression present, anterior margin subconic, setae not matted; elytra, length/width ratio 4.2, form oblong-subovoid, punctations large and shallowly impressed, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 7 spines.

Abdomen: Aedeagal information not available.

Variation: One specimen examined.

Natural history. The holotype specimen was collected during May at 500 m.

Distribution (Map 4). Known only from the type locality.

Etymology. The specific epithet is a Latin compound name that stems from *latus* (= broad) and the suffix *–opsis* (= likeness). I refer to the broad yellow fascia that comprised the posterior block of the elytral insignia.

Differential diagnosis. The anterior and posterior blocks of the elytral insignia are connected by an insignial connecting rod. This characteristic will distinguish the members of this species from those of *fonteboa* in which the blocks are disconnected.

ignis group

This monotypic group is most distinctly characterized by the profuse distribution of short, gold-yellow, setae on the dorsum. Vertex wider than eye, absence of the anterior transverse depression on the pronotum, setae submatted on the pronotum, large elytral punctations that are arranged in 10 rows, angularly fractured elytral insignia, and minute serrations on the distal third of the epipleural margin further characterize this monotypic group. The species is known from Guatemala.

Madoniella ignis sp.nov. Figs 32, 101, 253; Map 2.

Type material. Holotype: Female. Guatemala: Zacapa: San Lorenzo, 10-VIII-1994, E. Giesbert (FSCA). (Specimen pin mounted, support card, female symbol and antenna affixed to support card; locality label; FSCA repository label; holotype label.)
Paratype: None.

Description. Size: Length 4.1 mm; width 1.7 mm. Integument: Dorsum vested profusely with gold-yellow short setae; cranium red brown; pronotal disc red brown; elytral markings as in Fig. 253, legs yellow, dorsal margin of tibiae dark.

Head: Vertex wider than eye (25:22), eyes very bulgy; antenna as in Fig. 101.

Thorax: Pronotum (Fig. 32), length/width ratio 44:59, lateral tubercle present, disc convex, anterior margin subconic, anterior transverse depression absent from center of disc, setae slightly matted; elytra, length/width ratio 4.5, form oblong-subovoid; punctations large, seriate and arranged into 10 rows, 2° setae slightly matted in pale regions; epipleural margin minutely serrate in elytral distal fourth; legs, protibial anterior margin with 3 spines.

Abdomen: Aedeagus not available.

Variation: One specimen examined.

Natural history. The holotype specimen was collected in August.

Distribution (Map 2). Known only from the type locality.

Etymology. The trivial name *ignis* (= fire) is a Latin noun. I refer to the fiery color of the forebody.

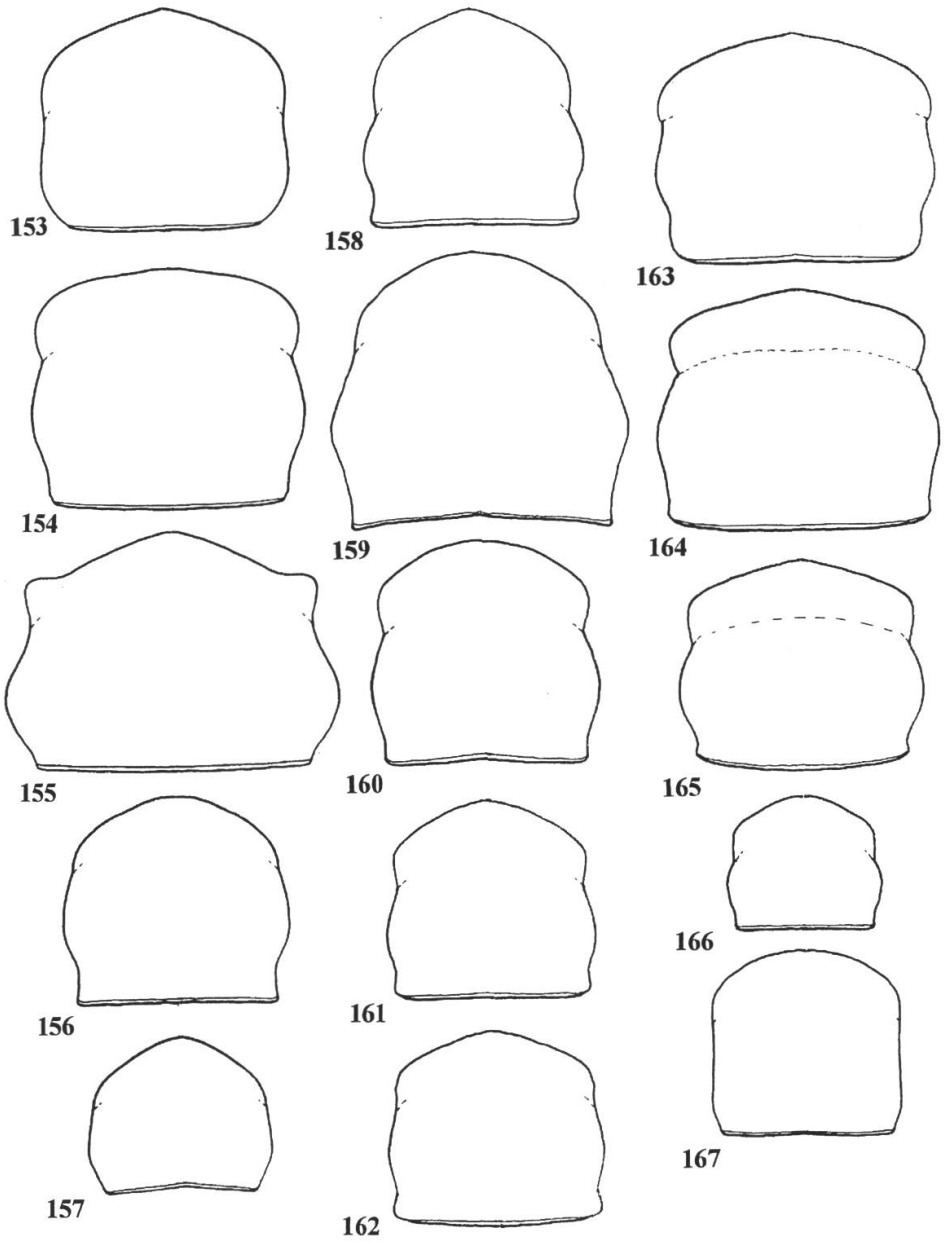
Differential diagnosis. Only in the members of this species is the form of the elytral isignial blocks modified to approximate connected angular streaks (Fig. 253).

linea group

This group is comprised of 6 Greater Antilles species. Oblong-rectangulate body form, vertex wider than one eye, very transverse pronotum, absence of pronotal anterior transverse depression, small elytral punctations that are subseriate near sutural margin but seriate elsewhere on elytral disc, and absence of minute serrations on the epipleural margin characterize this group of species. They are distributed on the islands of Jamaica and Hispaniola.

Madoniella cavina sp.nov. Figs 35, 161, 301; Map 14

Type material. Holotype: Female. DOMINICAN REPUBLIC: Pedernales. 23.5 km N. Cabo Rojo 18°06′N, 71°30′W, 540 m, 13–19 July 1990, L. Masner, J. Rawlins, C. Young, Decidious forest; intercept trap, Carnegie Museum Specimen Number CMNH-391, 776(CMNH). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; date and natural history label; CMNH repository number label; CMNH acronymic label; holotype label.)



Figs 153–167. Pronota: 153 – *Madoniella kuehlorum*. 154 – *M. vogti*. 155 – *M. nebulosa*. 156 – *M. extensiva*. 157 – *M. eximia*. 158 – *M. cardinalis*. 159 – *M. plenita*. 160 – *M. rubida*. 161 – *M. cavina*. 162 – *M. punctata*. 163 – *M. magdalena*. 164 – *M. collata*. 165 – *M. latinopsis*. 166 – *M. anapsis*. 167 – *M. bullalis*.

Paratypes: Four specimens. Dominican Republic: Pedernales: 25.5 km N, Cabo Rojo, 21-V-1992, R. Turnbow (RHTC, 1); 23.5 km N. Cabo Rojo, 18°06′N, 71°38′W, 13-VII-1990, 540 m., J. Rawlins, C. Young, J. Rawlins, S. Thomson (WOPC, 1); *idem*, 13-19-VII-1990, 540 m, deciduous forest, intercept trap, L. Masner, J. Rawlins, C. Young (WOPC, 1); 9.5 km N Cabo Rojo,18°02′N, 71°39′W, 13-19-VII-1990, desert scrub intercept trap, L. Masner, J. Rawlins, C. Young (CMNH, 1).

Description: Size: Length 4.8–5.0 mm; width 1.5–1.2 mm. Integument: Cranium yellow; pronotum yellow; elytra dark brown, with faint paleness behind middle near sutural margin, elytral insignia absent; femora yellow; tibiae mostly yellow, dorsal margin black infuscated.

Head: Vertex wider than eye (30:21); antenna very similar to one depicted in Fig. 96.

Thorax: Pronotum (Fig. 161), length/width ratio 58:75, lateral tubercle present, broad, disc convex in anterior half then depressed posterolaterally, anterior transverse depression absent on disc, anterior margin shallow-convex, setae not sub-matted; elytra, length/width ratio 4.9, form short oblong-rectangular, elytral punctations small and shallowly impressed, seriate in most of disc, not seriate near sutural margin, 2° setae profusely ditributed but not matted, epipleural margin not minutely serrate in posterior fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagal as in Fig. 301.

Variation: The two specimens examined did not vary appreciably.

Natural history. The available specimens were collected during May and July, one with a flight intercept trap in a deciduous forest 540 m.

Distribution (Map 14). Known only from the type locality.

Etymology. The specific epithet is a Latin compound name that stems from *cavus* (= hole) and the diminutive suffix *–ina*; referring to the relatively small punctations on the elytral disc.

Differential diagnosis. Within the *linea* group, the cranium and pronotum are completely yellow in specimens of this species and in those of *M. lurida*. However, in *cavina* specimens the elytra are dark brown whereas in *lurida* specimens they are yellow.

***Madoniella cerviculina* sp.nov.** Figs 96, 246; Map 15.

Type material. Holotype: Female. DOMINICAN REPUBLIC: Pedernales. 3.3 km NE Los Arroyos, 18°15′N, 71°45′W, 1450 m, 16–18 July 1990, L. Masner, J. Rawlins, C. Young, wet montane forest, sweep samples, Carnegie Museum Specimen Number CMNH-392, 053(CMNH). (Specimen point mounted, female symbol affixed to paper point, support card; locality label; date and natural history label; CMNH repository number label; CMNH acronymic label; holotype label; plastic vial with abdomen and ovipositor.)
Paratypes: One specimen. Dominican Republic: Pedernales: 3.3 km NE Los Arroyos, 18°15′N, 71°45′W, 16-18-VII-1990, 1450 m, wet montane forest, sweep samples, L. Masner, J. Rawlins, C. Young (WOPC, 1).

Description. Size: Length 4.0–4.1 mm; width 1.4–1.6 mm. Integument: Cranium black; pronotal disc black; elytral markings as in Fig. 246; legs predominantly yellow, femoral apex and anterior margin of tibiae infuscated. *Head*: Vertex wider than eye (28:17); antenna as in Fig. 96.

Thorax: Pronotum, length/width ratio 49:58, lateral tubercle present, disc convex in anterior half then depressed posterolaterally, anterior transverse depression absent on disc, anterior margin shallow-convex, setae sub-matted; elytra, length/width ratio 5.2, form oblong-rectangular, elytral punctations small and shallowly impressed, seriate in most of disc, not seriate near sutural margin, 2° setae profuse but not matted, epipleural margin not minutely serrate in posterior fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagal information not available.

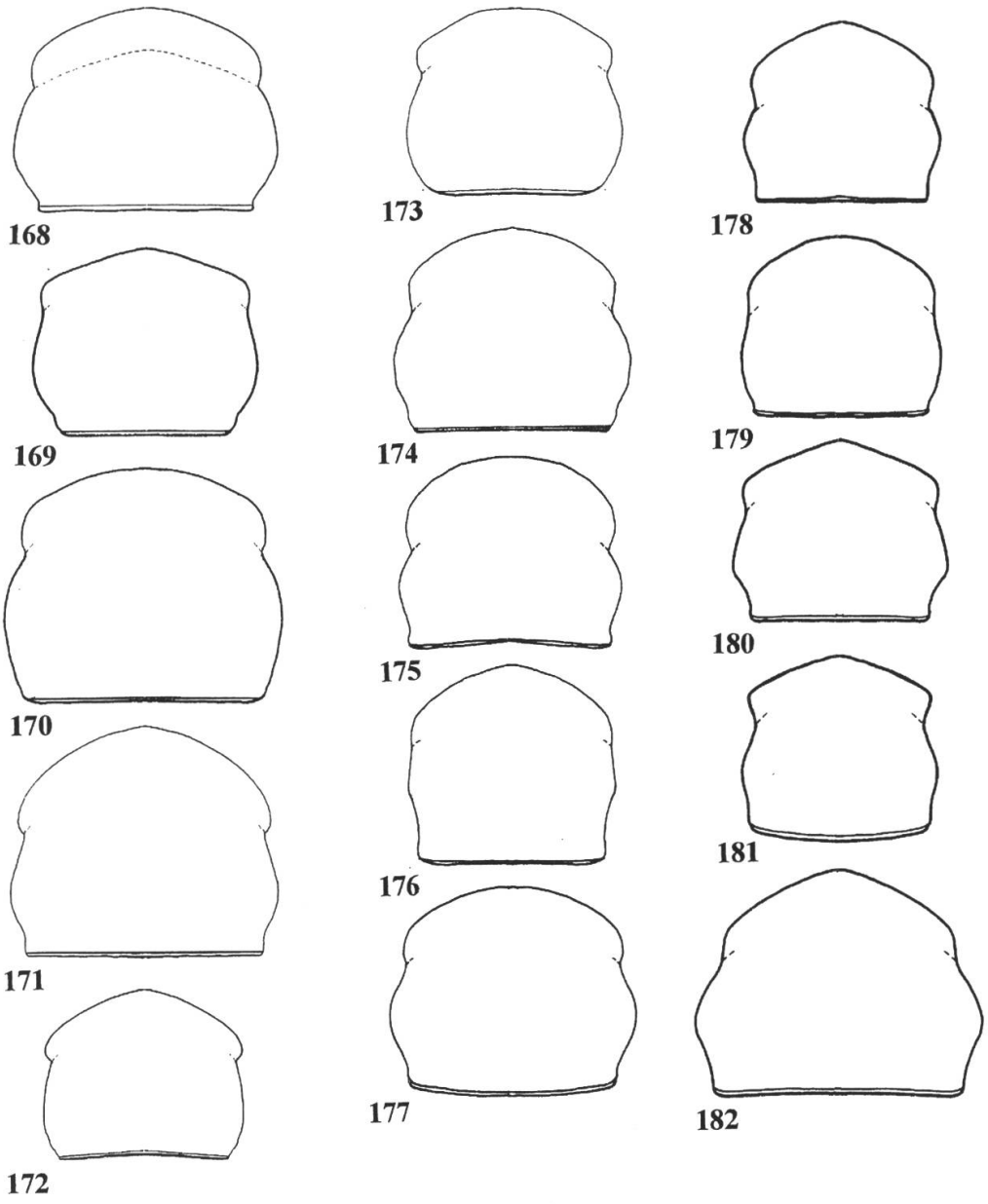
Variation: The two specimens examined did not vary appreciably.

Natural history. The available specimens were collected during July by sweeping in a wet montane forest at 1450 m.

Distribution (Map 15). Known only from the type locality.

Etymology. The trivial name stems from the Latin *cervix* (= neck) and the Latin diminutive suffix *-ina*. I refer to the comparatively narrow pronotum of these specimens.

Differential diagnosis. Within the *linea* group only in members of this species is the posterior block of the elytral insignia reduced to a narrow streak (Fig. 246).



Figs 168–182. Pronota: 168 – *Madoniella fonteboa*. 169 – *M. linea*. 170 – *M. orientalis*. 171 – *M. patula*. 172 – *M. basilaris*. 173 – *M. apsis*. 174 – *M. cymatilis*. 175 – *M. tegetis*. 176 – *M. lineola*. 177 – *M. displicata*. 178 – *M. orosiensis*. 179 – *M. quintana*. 180 – *M. storea*. 181 – *M. apotoma*. 182 – *M. erythrocephala*.

Madoniella cymatilis sp.nov. Figs 110, 174; Map 15.

Type material. Holotype: Female. Haiti: Cap Haitien, Dept. du Nord, May 20, 1959, M. W. Sanderson, H 59-8 (INHS). (Specimen point mounted female gender symbol and metathoracic wing affixed to paper point, support card; locality label; INHS repository label; holotype label.)
Paratypes: None.

Description. Size: Length 4.5 mm; width 1.5 mm. Integument: Cranium reddish brown; pronotal disc black, anterior angles and anterior margin narrowly light brown; elytra dark blue, disc without insignia; legs yellow except tibial dorsal margin light brown.

Head: Vertex wider than width of eye (25:19); antenna as in Fig. 110.

Thorax: Pronotum (Fig. 174), length/width ration 51:58, lateral tubercle present, disc convex, anterior margin convex, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width ratio 4.5, form oblong-subovoid, punctations small and shallowly impressed, predominantly seriate, not seriate proximal to sutural margin, 2° setae not matted, epipleural margin not minutely serrate; protibial anterior margin with 3 spines.

Abdomen: No aedeagal information available.

Variation: One specimen examined.

Natural history. The holotype was collected during May.

Distribution (Map 15). Known only from the type locality.

Etymology. The specific epithet *cymatilis* (= blue) is a Latin adjectival. I refer to the bluish color of the elytra.

Differential diagnosis. The bluish tinge of the elytral surface distinguishes the members of this species from others within the *linea* group.

***Madoniella ebena* sp.nov.** Figs 95, 150, 318; Map 14.

Type material. Holotype: Male. DOMINICAN REPUBLIC: Hato Mayor. Parque Loa Haitises. 3 km W. Cueva de Arena, 19°-04′N, 69°-29′W, 20 m. 7–9 July 1992, R. Davidson, J. Rawlins, S. Thomson, C. Young, mesic lowland forest, Carnegie Museum Specimen Number CMNH 375,974 (CMNH). (Specimen point mounted, antenna and male symbol affixed to paper point, support card; locality label; collection date and natural history label CMNH specimen number label; CMNH acronymic label; holotype label; plastic vial with abdomen and aedeagus.)
Paratypes: None.

Description. Size: Length 3.3 mm; width 1.2 mm.

Integument: Cranium black; pronotal disc black; elytra dark brown, disc without insignia; legs yellow.

Head: Vertex wider than width of eye (18:15); antenna as in Fig. 95.

Thorax: Pronotum (Fig. 150), length/width ration 42:50, lateral tubercle present, disc convex, anterior margin convex, anterior transverse depression absent from center of disc; setae not matted; elytra, length/width ratio 3.8, form oblong-subovoid, punctations small and shallowly impressed, seriate, arranged into 11 rows, seriate proximal to sutural margin, 2° setae not matted, epipleural margin not minutely serrate; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 318.

Variation: One specimen examined.

Natural history. The holotype was collected during July.

Distribution (Map 14). Known only from the type locality.

Etymology. The specific epithet *ebena* (= black) is a Latin adjectival. I refer to the color of the body of this beetle.

Differential diagnosis. This is the only species within the *linea* group whose specimens have a black cranium, pronotum, and elytra.

***Madoniella linea* sp.nov.** Figs 21, 55, 169, 268, 269, 319; Map 17.

Type material. Holotype: Female. Jamaica, 4000′, Hardwar Gap, VII.23.1966, Howden & Becker (CNCI). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; CNCI repository label; holotype label.)
Paratypes: Thirty-six specimens. Jamaica: Portland: Hardwar Gap, 10-VII-1966, 1220 m, Howden & Becker (CNCI, 1); *idem*, 12-VII-1966, 1220 m, Howden & Becker (WOPC, 1); *idem*, 13-VII-1966, 1220 m,

Howden & Becker (WOPC, 2); *idem*, 15-VII-1966, 1220 m, A. T. Howden (CNCI, 1); *idem*, 16-VII-1966, 1220 m, Howden & Becker (CNCI, 1); *idem*, 17-VII-1966, 1220 m, A. T. Howden (CNCI, 4; WOPC, 2); *idem*, 19-VII-1966, 1220 m, Howden & Becker (WOPC, 2); *idem*, 19-VII-1966, 1220 m, A. T. Howden (CNCI, 1); *idem*, 21-VII-1966, 1220 m, 1220 m, Howden & Becker, (CNCI, 1; WOPC, 1); *idem*, 21-VII-1966, 1220 m, A. T. Howden (CNCI, 1); *idem*, 23-VII-1966, 1220 m, Howden & Becker (CNCI, 1); *idem*, 23-VII-1966, 1220 m (CNCI, 1); 25-VII-1966, 1220 m, Howden & Becker (WOPC, 1); *idem*, 25-VIII-1966, H. F. Howden (CNCI, 1); *idem*, VI-1967, H. T. Farr (WOPC, 2); *idem*, 21-VII-1961 (IJSM, 1): Saint Andrew: Stony Hill, 25-VII-1966, H. Howden (CNCI, 1; WOPC, 2); Clydesdale, 18-VII-1966 (WOPC, 1); Morces Gap, 22-VII-1958, sweeping miscellaneous vegetation, M. W. Sanderson (INHS, 1; WOPC, 1): Saint Thomas: Whitfield Hall, 27-VII-1966, A. T. Howden (CNCI, 1; WOPC, 1); *idem*, 28-VII-1966, A. T. Howden (CNCI, 3). Jamaica, Hardwar Gap, 19-VII-1966, Howden & Becker.

Description. Size: Length 3.0–4.5 mm; width 1.0–1.4 mm. Integument: Cranium black; pronotum black except narrowly pale along anterior margin; elytral markings as in Figs 268, 269; legs yellow. *Head*: Vertex wider than eye (28:20); antenna as in Fig. 55.

Thorax: Pronotum (Fig. 169), length/width ratio 49:57, lateral tubercle present, disc convex in anterior half then slightly depresses paralaterally, anterior margin shallow convex, anterior transverse depression absent from center of disc; elytra, length/width ratio 5.5, form oblong-rectangular; elytral punctations small, shallowly impressed, seriate in most of disc except near sutural margin, epipleural margin not minutely seriate in posterior fourth; protibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 319, phallobasic apodeme reduced.

Variation: The anterior region of the pronotal disc varies in color from yellow to black and the pale line on the elytral disc varies in thickness.

Natural history. Specimens have been collected during June, July, and August. The specimens from Hardwar Gap were collected at 1220 m.

Distribution (Map 17). This species is known only from eastern Jamaica.

Etymology. The trivial name *linea* (= line) is a Latin noun. I refer to the configuration of the pale marking on the elytral disc.

Differential diagnosis. Within the *linea* group, only in the members of this species do the elytra have pale longitudinal streaks.

Madoniella lurida sp.nov. Figs 98, 148; Map 14.

Type material. Holotype: Female. DOMINICAN REPUBLIC: Pedernales. La Abeja. 38 km NNW Cabo Rojo, 18°-09′N, 71°38′W, 1250 m, 15 July 1987, J. Rawlins and Robert E. Davidson, Carnegie Museum Specimen Number CMNH-391, 992 (CMNH). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; date and natural history label; CMNH repository number label; CMNH acronymic label; holotype label; plastic vial with abdomen and ovipositor.)
Paratypes: None

Description. Size: Length 3.8 mm; width 1.3 mm. Integument: Cranium yellow; pronotal disc mostly yellow-brown, dark brown on lower sides; elytra predominantly light-yellow, faint infuscations along sutural margin and with a faint punctate infuscation near middle of disc; legs predominantly yellow, anterior margin of tibiae infuscated.

Head: Vertex wider than eye (27:15); antenna as in Fig. 98.

Thorax: Pronotum (Fig. 148), length/width ratio 44:48, lateral tubercle present, disc convex in anterior half then depressed posterolaterally, anterior transverse depression absent on disc, anterior margin shallow-convex, setae sub-matted; elytra, length/width ratio 5.2, form oblong-rectangular, elytral punctations small and shallowly impressed, seriate in most of disc, not seriate near sutural margin, 2°setae profuse but not matted,

epipleural margin not minutely serrate in posterior fourth; protibial anterior margin with 1 spines.

Abdomen: Aedeagal information not available.

Variation: One specimen examined.

Natural history. The available specimen was collected during July at 1450 m.

Distribution (Map 14). Known only from the type locality.

Etymology. The trivial name stems from the Latin *luridus* (= pale-yellow). I refer to the pale-yellow coloration of the pronotum.

Differential diagnosis. These beetles are predominantely yellow in body color, a unique characteristic within the *linea* group.

maxicornis group

This monotypic group is primarily characterized by an extensively long antennal capitulum. Body form is oblong-subovoid, vertex is slightly narrower than the width of an eye, pronotum is uniformly dark brown, and the anterior transverse depression is absent on the pronotal disc. The elytral insignia is present, elytral punctations are grouped in 10 rows, and the posterior third of the epipleural margin is minutely serrated. The known species is from east central México.

Madoniella maxicornis sp.nov. Figs 86, 149, 238; Map 2.

Type material. Holotype: Female. Sn. Rafael, Jicaltepec, V. Cruz, Mex, 6/23 96 (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; F.C. Bowditch collection label; USNM repository label; holotype label; USNM loan number 2035958 label.)
Paratypes: Four specimens. México: San Luis Potosi: 9.6 km N Tamazunchale, 22-VIII-1960, H. Howden (CNCI, 1). Guatemala: Alta Vera Paz: Trece Aguas, 31-III, year not noted, Cacao (USNM, 1; WOPC, 1).

Description. Size: Length 3.8–4.0 mm; width 1.0–1.2 mm. Integument: Cranium red; pronotum reddish brown; elytral markings as in Fig. 238, legs yellow except protibia and mesotibia slightly infuscated along dorsal margin. Head: Vertex narrower than eye (16:20); antenna as in Fig. 86.

Thorax: Pronotum (Fig. 149), length/width ratio 40:49, middle of side margin more convex than tuberculate, anterior angle of side margin slightly incised, anterior margin arcuate, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width ratio 5.8, form oblong-rectangulate; elytral punctations large, seriate and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in distal fourth; protibial anterior margin with 4 spines.

Abdomen: Aedeagal information not available.

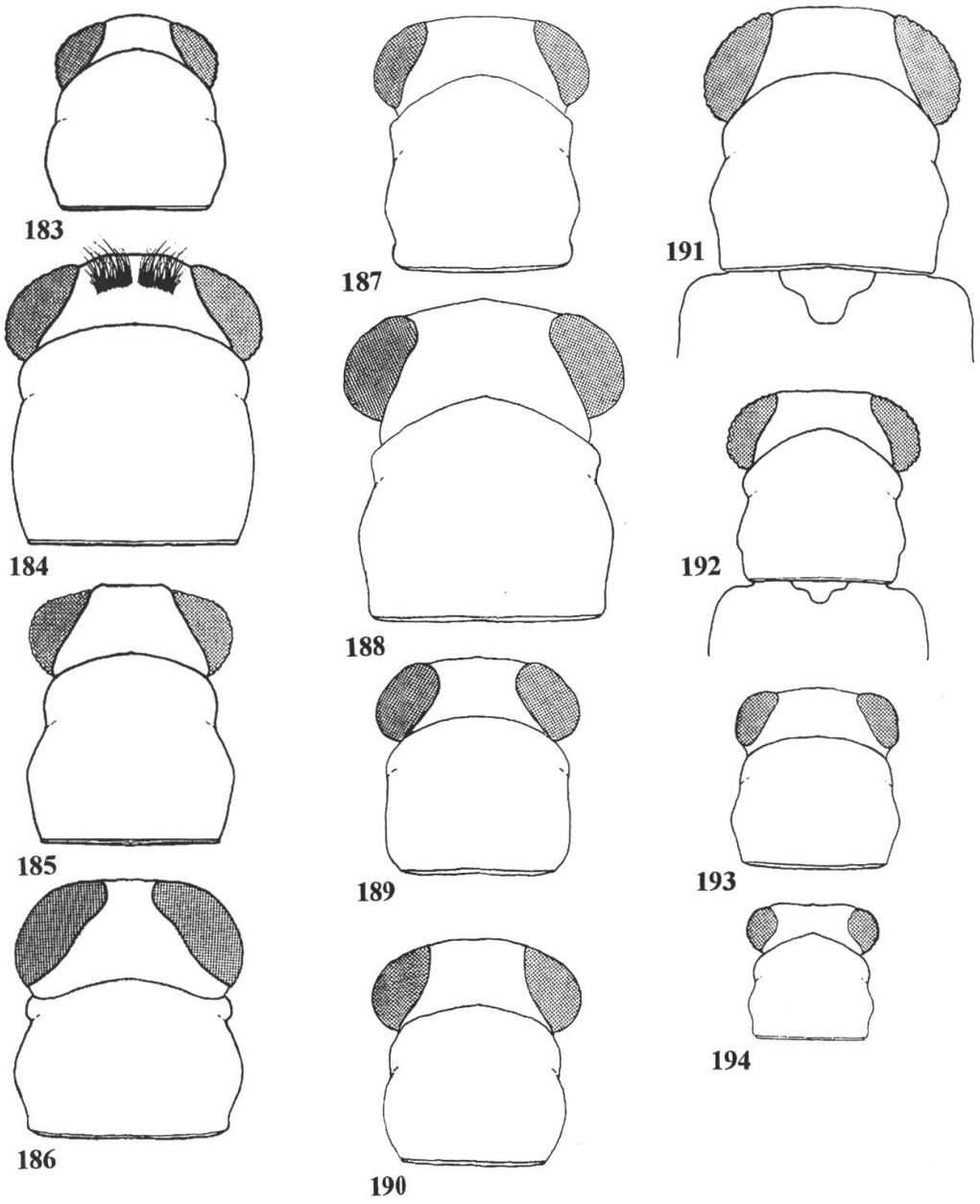
Variation: The available specimens are not notably variable.

Natural history. Mexican specimens were collected during June and August.

Distribution (Map 2). Known only from southeastern México and central Guatemala.

Etymology. The specific epithet is a compound Latin name that stems from *cornu* (= horn) and *maximus* (= greatest). I refer to the large size of the antennal capitulum.

Differential diagnosis. The unusually large form of the antennal capitulum (Fig. 86) will distinguish the members of this species.



Figs 183–194. Forebodies: 183 – *Madoniella pedalis*. 184 – *M. penninsularis*. 185 – *M. bilineata*. 186 – *M. pellis*. 187 – *M. merga*. 188 – *M. disclocata*. 189 – *M. nana*. 190 – *M. rectangularis*. 191 – *M. punctata*. 192 – *M. merga*. 193 – *M. minor*. 194 – *M. gonia*.

merga group

The subquadrate pronotum and roughly macrosculptured pronotal disk are the most outstanding characteristics of this group of 5 species. Body form is oblong-subovoid, elytral insignia is absent, and the pronotal and elytral setae are not matted. The vertex of these beetles is wider than the width of an eye, the pronotal disk is uniformly black, the elytral insignia is reduced, elytral punctations are large and arranged in 10 rows, and the posterior third of the epipleural margin is minutely serrated. The combined distribution of this group of species extends from southwestern United States of America to southern México.

***Madoniella chiricahua* sp.nov.** Figs 43, 73, 216, 217, 313; Maps 5, 8.

Type material. Holotype: Male. Chiricahua M, VII-24-55. Ar., D. J. & J. N. Knull Collrs. (FMNH). (Specimen point mounted, male gender symbol affixed to paper point, support card; locality label; collectors label; acronymic label; holotype label.)

Paratypes: Eighty two specimens. United States of America: Arizona: Cochise: Chiricahua Mountains, 14-VII-1936, J. N. Knull (FMNH, 4); *idem*, 2-VII-1952, D. J. & J. N. Knull (FMNH, 3; WFBC, 2); *idem*, 19-VII-1952, D. J. & J. N. Knull (AMNH, 1); *idem*, 26-VII-1952, D. J. & J. N. Knull (FMNH, 2; WOPC, 1); *idem*, 12-VII-1953, D. J. & J. N. Knull (MCZC, 2); *idem*, 15-VII-1953, D. J. & J. N. Knull (FMNH, 3: WFBM, 1); *idem*, 20-VII-1953, D. J. & J. N. Knull (FMNH, 2); *idem*, 22-VII-1953, D. J. & J. N. Knull (FMNH, 1; UNSM, 1); *idem*, 20-VII-1955, D. J. & J. N. Knull (CASC, 1); *idem*, 24-VII-1955, D. J. & J. N. Knull (CMNH, 2; FMNH, 6; SEMC, 2); *idem*, 29-VII-1955, D. J. & J. N. Knull (FMNH, 4); *idem*, 17-VII-1957, D. J. & J. N. Knull (WOPC, 1); *idem*, 22-VII-1957, D. J. & J. N. Knull (FMNH, 1); *idem*, 22-VII-1957 (FMNH, 1); *idem*, 30-VII-1959, D. J. & J. N. Knull (TAMU, 1); *idem*, 22-VII-1961, D. J. & J. N. Knull (CDAE, 2); *idem*, 29-VI-1968, 1829 m (WOPC, 1); *idem*, 1-Vi-no year given, Hubbard & Scwartz (USNM, 1); *idem*, 3-VII-1947, R. H. Beamer (FSCA,1); *idem*, Palmerlee (AMNH,); *idem*, Palmerlee, 10-VII-year not noted, H. A. Wenzel (FMNH, 1); *idem*, I-VII-year not noted, H. A. Wenzel (FMNH); *idem*, 4.8 km W Portal, 7-VIII-1983, *Quercus*, W. F. Barr (WFBC, 1); *idem*, Portal, South Western Research Station, 4-VII-1956, oak, H.& A. Howden (CMNC, 1); *idem*, Portal, 1-VII-1964, at light, W. E. Ferguson (WFBC, 1); *idem*, Huachuca Mountains (FMNH, 1; WOPC, 1); *idem*, Miller Canyon, 18-VII-1969, beating *Quercus hypoleuca*, (WFBC, 1); *idem*, 13-VII-1975, E. Giesbert (FSCA, 1); *idem*, 20-VII-1937, D. J. J. N. Knull (FMNH, 1); *idem*, 29-VI-1967, H. A. Kaebe (FMNH, 1); *idem*, Guadalupe Canyon, E of Douglas, 18-19-IV-1975, J. M. Cicero (LACM, 2); Santa Cruz Co., Santa Rita Mountains, 10-VII-1930, E. D. Ball (FMNH, 1); Graham Co., Graham Mountains, 20-VII-1974, 1524 m, K. Stephan (FSCA, 1); Coronado National Forest, Pinaleno Mountain, D. J. & J. N. Knull (FMNH, 1); Santa Cruz Co, Nogales, 25-27-VII-1982, N. M. Downie (FMNH, 1); *idem*, Patagonia Mountains, 4-VII-1985, wild grape, *Vitis* sp., W. F. Barr (WFBC, 1). México: Durango: 4.8 km W El Salto, 19-VI-1964, H. F. Howden (CNCI, 2; INHS, 1); *idem*, 25-VI-1964, 2562 m, L. A. Kelton (UCDC, 1); *idem*, 12-VII-1964, H. F. Howden (CNCI. 1); *idem*, 22-VII-1964, H. F. Howden (CNCI, 1); *idem*, 32 km W El Salto, 20-VII-1964, H. F. Howden (CNCI, 1); 12.8 km W El Palmito, 7-VIII-1964, H. F. Howden (WOPC. 1); *idem*, 16 km W El Salto, 29-VI-1964, H. F. Howden (CNCI, 1); 17.6 km SW El Salto, 30-VI-1964, H. F. Howden (CNCI, 1); *idem*, 22-VII-1964, 2744 m, J. A. Chemsak (EMEC, 1); 36.8 km W Durango City, 4-VI-1965, 1829 m, *Phoradendron*, S. L. Wood (WOPC, 1): Chihuahua: Sierra Madre Mountains, near Cree, l4-VII-1972, Derham Guiliani (FMNH, 1; WOPC, 1): Sinaloa: Highway 40, 6 km NE El Batel, 22-VI-1991, J. Rifkind (JNRC, 1); 25 km W El Palmito, 2-VIII-1983, E. Giesbert (FSCA, 1).

Description. Size: Length 3.2–5.5 mm; width 1.0–2.0mm. Integument: Cranium reddish brown; pronotal disc dark brown; elytral markings as in Fig. 216.

Head: Vertex slightly wider than eyes in head dorsal view; antenna as in Fig. 73.

Thorax: Pronotal side margins broadly sinuous (Fig. 43), anterior margin rounded, disc evenly convex, slightly depressed around periphery of discal trichobothria; elytral form oblong; elytral punctations large, arranged into 10 rows; anterior margin of protibia with 6 spines.

Abdomen: Aedeagus as in Fig. 313.

Variation: The punctiform pale spots near the elytral apex vary in expression as does the extent of reddishness in a predominantly dark brown integument.

Natural history. Specimens have been collected during April, June, July, and August, at altitudes ranging from 1524–2562 m, and have been associated with oak, *Quercus hypoleuca*, and *Vitis* species. One specimen was collected at light.

Distribution (Maps 5, 8). The distribution of this species extends from southeastern Arizona to northern portions of México.

Etymology. The trivial name is a geographical patronymic.

Differential diagnosis. The pattern of pale markings on the elytral disc as depicted in Fig. 217 will identify the members of this species (note the two pale spots near the elytral apex). Some specimens of the Mexican *M. peninsularis* superficially resemble the members of this species. However, members of *M. peninsularis* are easily distinguished

from those of the Mexican members of *M. chiricahua* by the presence of a setal tuft on the vertex of individuals of *M. peninsularis*.

Madoniella crinis sp.nov. Figs 105, 135, 266, 271b, 305; Map 3.

Type material. Holotype: Male. Ex. WP Baited Lindgren Trap B5, Near Epidemic Dend. mexicanus infestation, Temetzontla, Mexico, 3 Jun 86 coll. R. Campos, D. Cibrien (FSCA). (Specimen point mounted, male gender symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label.) Paratypes: Seventeen specimens. México: Tlaxcala: San Francisco Temetzontla, 6-V-1986, pheromone trap, D. Cibrien (WFBC, 1); *idem*, 13-V-1986, from baited Lindgren Trap near epidemic of *Dendroctonus mexicanus*, R. Campos, D. Cibrien (WFBC, 1); *idem*, 20-V-1986, from baited Lindgren Trap near epidemic of *Dendroctonus mexicanus*, R. Campos, D. Cibrien (FSCA, 8; WFBC, 2); *idem*, 27-V-1986, from baited Lindgren Trap near epidemic of *Dendroctonus mexicanus*, R. Campos, D. Cibrien (FSCA, 1; WFBC, 1; WOPC, 11); *idem*, 3-VI-1986, from baited Lindgren Trap near epidemic of *Dendroctonus mexicanus*, R. Campos, D. Cibrien (FSCA, 5; WOPC, 10); *idem*, 10-VI-1986, from baited Lindgren Trap near epidemic of *Dendroctonus mexicanus*, R. Campos, D. Cibrien (FSCA, 2; WOPC, 8); *idem*, 17-VI-1986, from baited Lindgren Trap near epidemic of *Dendroctonus mexicanus*, R. Campos, D. Cibrien (FSCA, 7; WOPC, 4); *idem*, 30-VII-1986, from baited Lindgren Trap near epidemic of *Dendroctonus mexicanus*, R. Campos, D. Cibrien (WOPC, 1); *idem*, 6-VIII-1986, from baited Lindgren Trap near epidemic of *Dendroctonus mexicanus*, R. Campos, D. Cibrien (WOPC, 1): Morelos: 12.8 km S Juchiltepec, 19-VI-1982, R. S. Miller (NMNH, 1): Michoacán: 9.6 km N Cheran, 7-8-VII-1985, Jones, Schaeffer (TAMU, 1).

Description. Size: Length 3.2–6.0 mm; width 1.5–1.0 mm. Integument: Cranium black, pronotum black; elytral markings as in Fig. 266; legs dark brown.

Head: Vertex wider than eye (28:17); antenna as in Fig. 105.

Thorax: Pronotum (Fig. 135), length/width ratio 50:55, lateral tubercle present, disc convex in anterior half then concave paralaterally, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 4.5, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 305.

Variation: In the specimen from Michoacán, the anterolateral extension of the anterior block of the elytral insignia is fully expressed.

Natural history. Most of the available specimens were captured amidst an infestation of *Dendroctonus mexicanus*. They were collected with a Baited Lindgren trap during June. The specimen Michoacán was collected during July.

Distribution (Map 3). This species is known from south-central México.

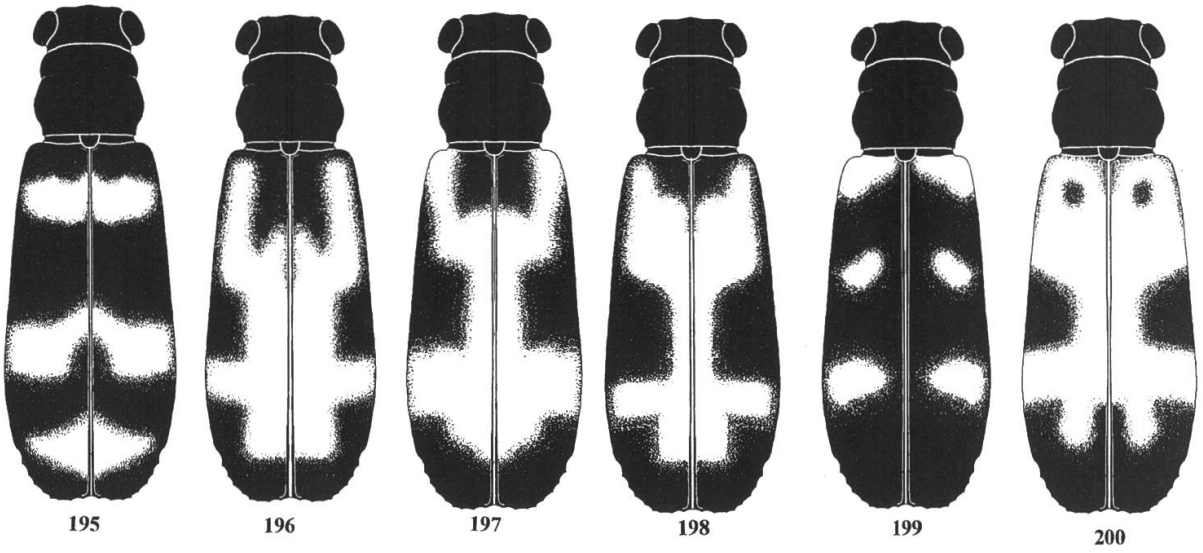
Etymology. The specific epithet *crinis* (= hair) is a Latin noun. I refer to the slightly longer than usual body 1° setae.

Differential diagnosis These beetles are very similar to those of *M. merga* from which they may be distinguished by having a completely dark humerus.

Madoniella merga sp.nov. Figs 12, 75, 187, 192, 250, 293; Map 5.

Type material. Holotype: Female. 20 mi. w. El Salto, Durango, México, VII.20.1964, H. F. Howden (CNCI). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; CNCI repository label; holotype label.)

Paratypes: Twenty-six specimens. México: Durango: 20 km E Ciudad, 6-IX-1992, beating pine slash in pine/oak forest, J. Rifkind & A. Reifschneider (JNRC, 1); 4.8 km E El Salto, 2-VII-1964, 2561 m, L. A. Kelton (WOPC, 1); *idem*, 5-VII-1964, H. F. Howden (CNCI, 1); *idem*, 30-VI-1964, 2561 m, L. A. Kelton (CNCI, 1; WOPC, 1); 11.2 km E El Salto, 25-VI-1964, H. F. Howden (CNCI, 1); *idem*, 32 km E El Salto, 20-VII-1964, H. F. Howden (WOPC, 1). Sinaloa: Highway 40, La Capilla del Taxte, 22-VI-1991, 1159 m, J. Rifkind (JNRC,



Figs 195–200. Body habitus: 195 – *Madoniella pellis*. 196 – *M. cardinallis*. 197 – *M. leona*. 198 – *M. redacta*. 199 – *M. nebulosa*. 200 – *M. zonula*.

1); Highway 40, 6 km NE Santa Lucia, 6-VIII-1990, beating pine slash, 1400 m, J. Rifkind & J. Beierl (JNRC, 2; WOPC, 2); El Batel, 11 km NE Santa Lucia, 6-VIII-1990, beating pine, 1700 m, J. Rifkind & J. Beierl (WOPC, 2); Highway 40, La Capilla del Taxte (Hotel Villa Blanca), 3-6-IX-1992, beating pine slash in pine/oak forest, J. Rifkind & A. Reifschneider (JNRC, 2; WOPC, 4); Highway 40 at Aserradero, El Batel, 4-7-IX-1992, beating fresh pine slash, J. Rifkind & A. Reischneider (JNRC, 4).

Description. Size: Length 3.7–4.1 mm; width 1.0–1.5 mm. Integument: Dark brown. Cranium dark brown; pronotal disc dark brown, dorsal margin narrowly light brown; elytral markings as in Fig. 250.

Head: Vertex wider than eyes in head dorsal view; antenna very similar to antenna depicted in Fig. 75.

Thorax: Pronotum (Figs 12, 187, 192), length/width ratio 49:50, vertex wider than eye (27:15), lateral tubercle present, disc coarsely punctate and convex in anterior half, then concave paralaterally, anterior margin arcuate, anterior transverse depression absent from center of disc, setae not matted; elytra, length/width ratio 5.0, form oblong subovoid, punctations large, seriate, and arranged into 10 rows, interstitial spaces particularly elevated and shiny, 2° setae not matted, epipleural margin minutely serrate in distal fourth; legs, protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 293.

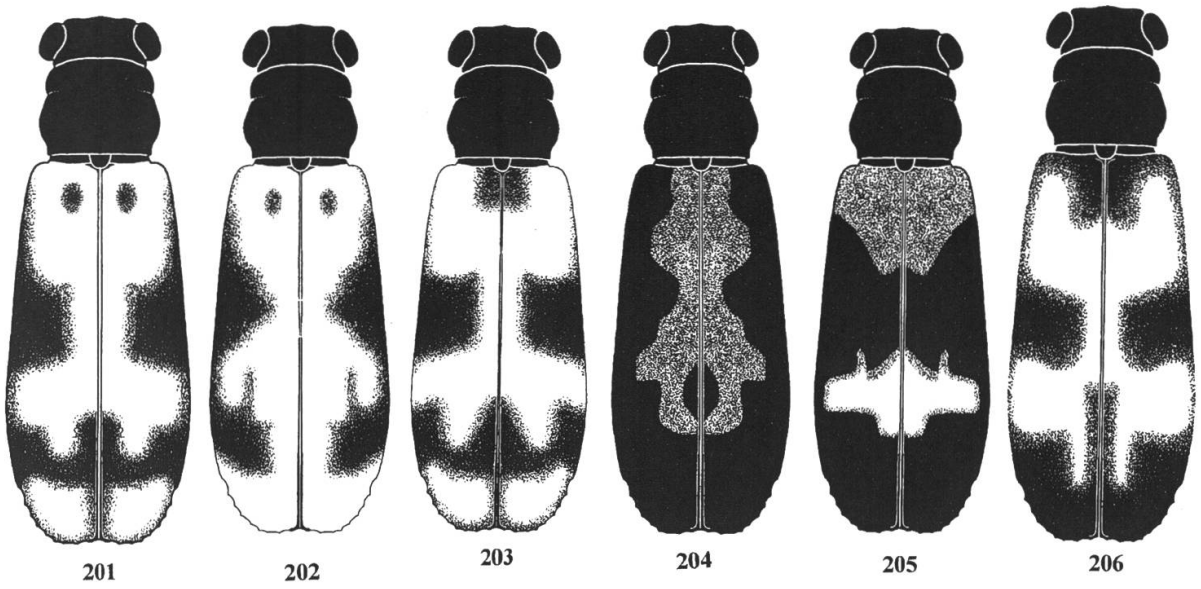
Variation: The paleness along the anterior margin of the pronotum varies in intensity and the elytral humerus may not be pale.

Natural history. The available specimens were collected from June to September. Jacques N. Rifkind collected many specimens by beating pine slash in oak and pine forests at elevations from 1159 to 2561.

Distribution (Map 5). Known only from the environs near the type locality.

Etymology. The trivial name *merga* (= two-pronged pitch fork) is a Latin noun. I refer to the shape of the phallobasic rod.

Differential diagnosis. The pale marking on the elytral humeral angle will distinguish these beetles from superficially similar ones of *M. crinis*.



Figs 201–206. Body habitus: 201 – *Madoniella extensiva*. 202 – *M. extensiva*. 203 – *M. pedalis*. 204 – *M. minor*. 205 – *M. tegetis*. 206 – *M. melina*.

Madoniella pinicola **sp.nov.** Figs 72, 214, 299; Maps 5, 8.

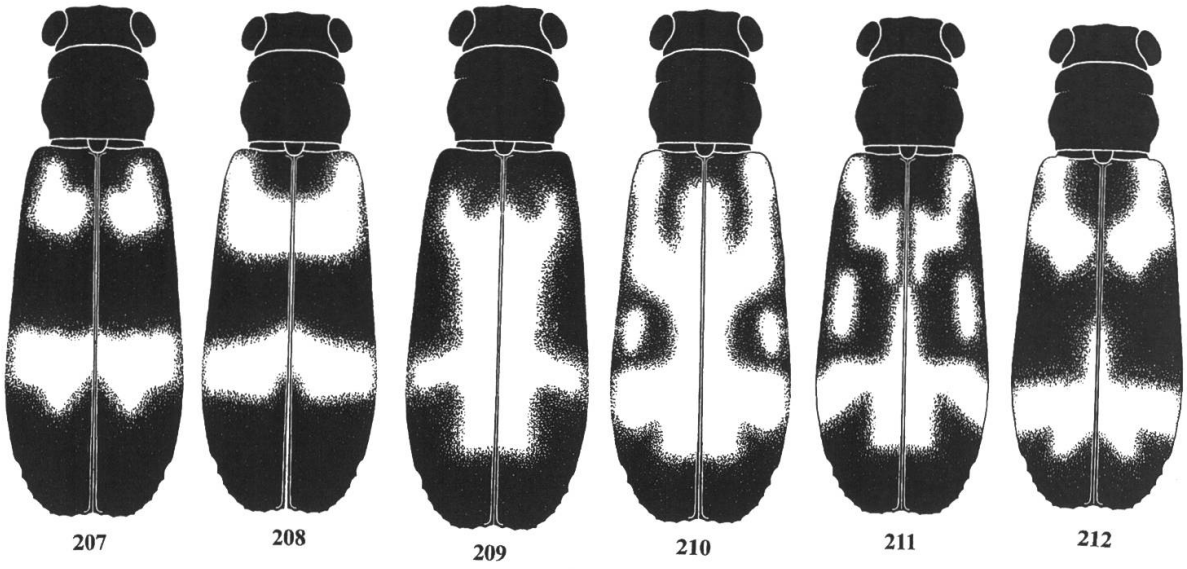
Type material. Holotype: Female. Chiricahua M., 7-22-53. Ar., D. J. & J. N. Knull (FMNH). (Specimen point mounted, female gender label affixed to paper point, support card; locality label; collectors label; FMNH acronymic label; holotype label.)
Paratype: Thirty eight specimens. United States of America: Arizona: Cochise Co., Portal, 12-IX-1961, A. E. Michelbacher (CASC, 1); Chiricahua Mountains, 14-VII-1936, D. J. & J. N Knull (AMNH, 1; CDAE, 1; FMNH, 3); *idem*, 26-VII-1937, D. J. & J. N Knull (FMNH, 2; MCZC, 1; WFBM, 1; WOPC, 1); *idem*, 5-IX-1947, D. J. & J. N. Knull (FMNH, 1); *idem*, 2-VIII-1953, D. J. & J. N. Knull (CMNH, 1; FMNH, 2; WOPC, 1); *idem*, 12-VIII-1952, D. J. & J. N. Knull (BMNH 1; FMNH, 2; SEMC, 1; WOPC, 1); *idem*, 15-VII-1953, D. J. & J. N. Knull (FMNH, 1); *idem*, 29-VII-1055, D. J. & J. N. Knull (FMNH, 1); *idem*, Rustler Park, 3-VIII-1968, on flower of compositae, J. B. Heppner (FSCA, 1); *idem*, Rustlers Peak, I-VIII-1975, on ponderosa pine, G. H. Nelson (WFBC, 1; WOPC, 1); *idem*, 30-VII-1992, 2550 m (CMNC, 1); *idem*, Barfoot, 24-VII-1980, R. Turnbow (RHTC, 1); Pinery Canyon, 28-VIII-1997, R. Turnbow (RHTC, 1); Pima Co., Bear Wallow, Santa Catalina Mountains, 12-17-VII-1916, 2439 m, collector unknown (EMEC, 1); Graham Co., Hospital Flat, Pinaleno Mountains, 2-VIII-1965, 2728 m, Hugh B. Leech (CASC, 1); *idem*, 5-6-VIII-1948, 2744 m, F. Werner & W. L. Nutting (FMNH, 1); Pima Co. Rt. 62, 24-25-VII-1992, J. &. M. Huether (JPHC, 1). Mexico: Sinaloa: 12.8 km W. El Palmito, 4-VIII-1964, H. F. Howden (CNCI, 3; WOPC, 1): México: México: Tejupilco, Temescaltepec, VI-1933, H. E. Hinton & R. L. Usinger (CASC, 1).

Description. Size: Length 3.5–5.0 mm; width 1.1–1.8 mm. Integument: Cranium dark brown; pronotal disc dark brown, anterior border narrowly reddish; elytral markings as in Fig. 214.

Head: Vertex width about as wide as width of eyes in head dorsal view; antenna as in Fig. 72.

Thorax: Pronotal length/width ratio 55:60; pronotum distinctly narrower than width of head across eyes, pronotal side margins very sinuous, side margins deeply incised anteriorly, anterior margin rounded, disc roughly macrosculptured, almost corrugated, two punctiform tumescences evident immediately anterior to pronotal collar; elytral form oblong; elytral punctations large, arranged into 10 rows; anterior margin of protibia with 5 spines.

Abdomen: Aedeagus as in Fig. 299.



Figs 207–212. Body habitus: 207 – *Madoniella facis*. 208 – *M. collata*. 209 – *M. plenita*. 210 – *M. lineola*. 211 – *M. lineola*. 212 – *M. nana*.

Variation: The diagonal pale line extending from the posterior angular pale marking on the elytral disc varies slightly in expression. Also, there is some variation in the roundness of the pronotal tubercle.

Natural history. Specimens of these beetles have been associated with ponderosa pine and compositae flowers. They have been collected at elevations ranging from 378–2728 m.

Distribution (Maps 5, 8). The known distribution of this species involves the mountainous regions of southeastern Arizona.

Derivation nominis. The trivial name *pinicola* is a Latin compound derived from the pine genus name *Pinus* and the Latin *cola* a term that refers to pine with which some specimens of this species are associated.

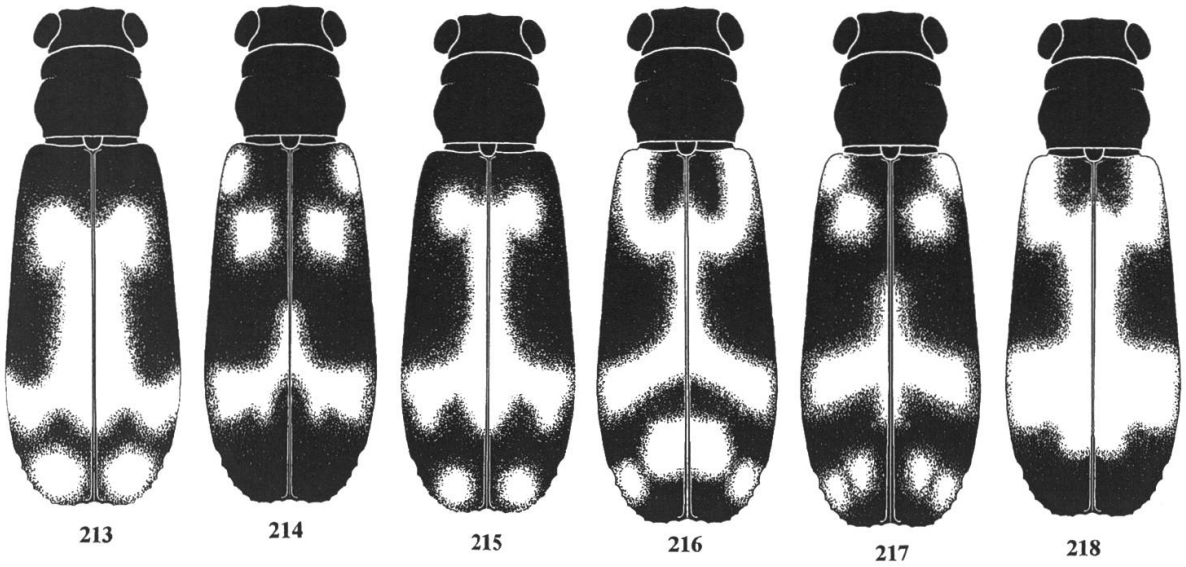
Differential diagnosis. The members of this species are easily distinguished from congeners by the shape of the pale pattern on the elytral disc (Fig. 214). Also, from superficially similar specimens of *M. rectangularis* and *M. nana*, *M. pinicola* beetles can be easily distinguishes by their lack of profusely distributed short pale setae on the elytral disc which are abundantly present in the aforementioned two species.

Madoniella punctata (Gorham) Figs 74, 162, 191, 259, 260, 275; Map 2.

Epiphloeus punctatus Gorham, 1882: 167. SCHENKLING, 1903: 87, *Epiphloeus*; 1910: 114, *Phyllobaenus*. GAHAN, 1910: 72, *Phyllobaenus*. BLACKWELDER, 1945: 388, *Phyllobaenus*. CORPORAAL, 1950: 252, *Phlogistosternus*.

Type material. Lectotype. Male (here designated). Type locality: Guatemala, Quiche Mts., 7–9000 ft., Champion (BMNH). (Specimen point mounted, male gender symbol affixed to paper point; locality label round type label; identification label; type label; BMNH acronymic label; identification label; lectotype label; identification label; plastic vial with aedeagus.)
Paralectotypes: "About a dozen samples have occurred." So is it written in the original description. I have examined eight syntypes. Guatemala: El Quiché: 2134–2744 m, Champion (BMNH, 6; ZMAN, 2).

Other material examined. In addition to the lectotype and six paralectotypes, I examined 21 specimens of this species that range geographically from southern México to western Guatemala. México: Chiapas: San



Figs 213–218. Body habitus: 213 – *Madoniella welderi*. 214 – *M. pinicola*. 215 – *M. vogti*. 216 – *M. chiricahua*. 217 – *M. chiricahua*. 218 – *M. rectangularis*.

Cristóbal de las Casas, vicinity of El Chivero, 3-5-VII-1986, 2439 m, E. Giesbert; 12.8 km SE San Cristóbal de las Casas, 5-VI-1974, C. W. O'Brien & B. Marshall; 9.6 km E San Cristóbal de las Casas, 7-V-1969; 9.6 km SE San Cristóbal de las Casa, 2-VI-1969, H. F. Howden; 5 km E San Cristóbal de las Casas, 27-V-1990, H. & A. Howden; 23 km W San Cristóbal de las Casa, 28-IX-1989, R. L. Penrose; near San Cristóbal de las Casas, 2,378 m, 2-5-VII-1986, J. E. Wappes; Junction of highways 199 & 190, 22-VI-1990, J. Huether; 4 km N junction highway 1990, 22-VI-1990, R. Turnbow. Guatemala: El Quiché: Quiché mountains. Specimens are deposited in BMNH, CMNC, CNCI, FSCA, JEWC, JPHC, WFBC, and in WOPC.

Description. Size: Length 4.0–5.0 mm; width 1.2–1.8mm. Integument: Cranium dark brown; pronotal disc dark brown, anterior border light brown; elytral insignia as in Figs 259, 260; femora progressively more dark brown from profemur to metafemur, tibiae light brown.

Head: Vertex wider than eye (35:15), setae particularly dense and long; antenna very similar to antenna depicted in Fig. 74.

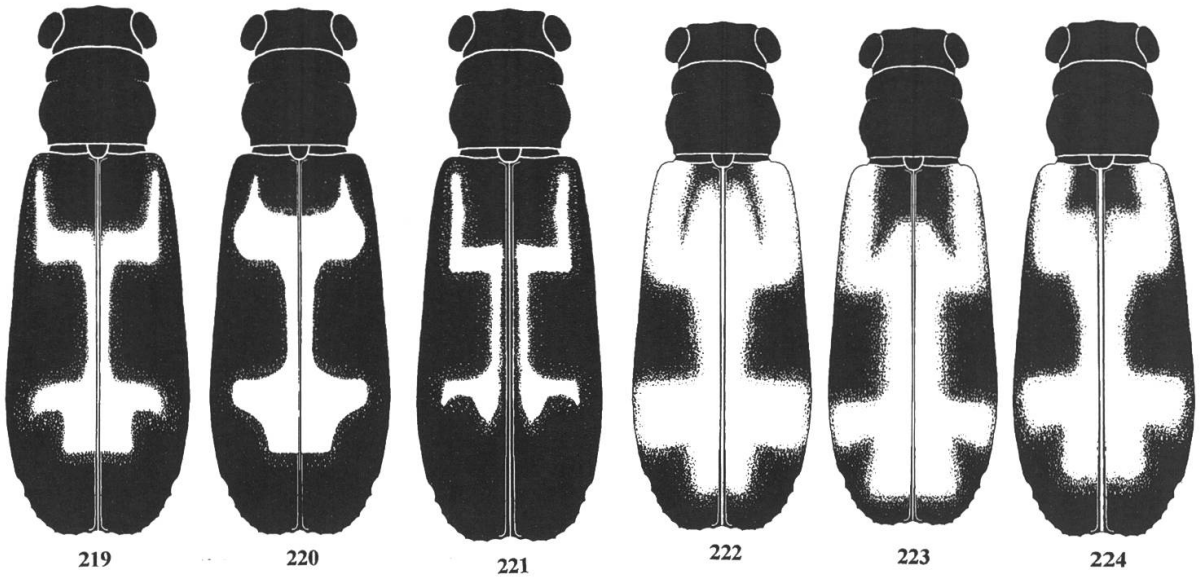
Thorax: Pronotum (Figs 162, 191), length/width ration 60:65, lateral tubercle present, disc convex, very coarsely punctate, anterior margin convex, anterior transverse depression absent from disc, setae not matted; elytra, length/width ratio 4.8, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, interstitial spaces particularly elevated and shiny, epipleural margin minutely serrate in posterior half, 2° setae not matted; protibial anterior margin with 4 spines. *Abdomen*: Aedeagus as in Fig. 275.

Variation: The pronotum and elytra vary in shades of brown. Also, there is some variation in the expression of the pronotal tubercle (compare Figs 162, 191).

Natural history. Specimens have been captured on *Pinus* during May, June, and July; from 2,134 to 2,744 m.

Distribution. (Map 2). Specimens of this species have been collected in Guatemala and México.

Differential diagnosis. These beetles are superficially similar to those of *M. chiricahua* from which they differ by having one pale spot on the elytral apex. In *chiricahua* specimens the elytral apical region shows two spots.



Figs 219–224. Body habitus: 219 – *Madoniella patula*. 220 – *M. dariensis*. 221 – *M. apotoma*. 222 – *M. orosiensis*. 223 – *M. orosiensis*. 224 – *M. orosiensis*.

minor group

This bitypic group is characterized primarily by the flattened pronotal disc that shows matted setae, occurrence of minute serrations only on the most distal extremity of the epipleural margin, wide vertex, and unicolorous pronotum that does not show anterior transverse depression, and small nonseriate elytral punctations. Also, the body form is oblong-subovoid and the elytral insignia is faintly elevated. The two species that comprise this group are found in the Lesser Antilles, on the islands of Guadeloupe, Dominica, and Montserrat.

Madoniella minor Pic — Figs 117, 193, 204, 308; Map 21.

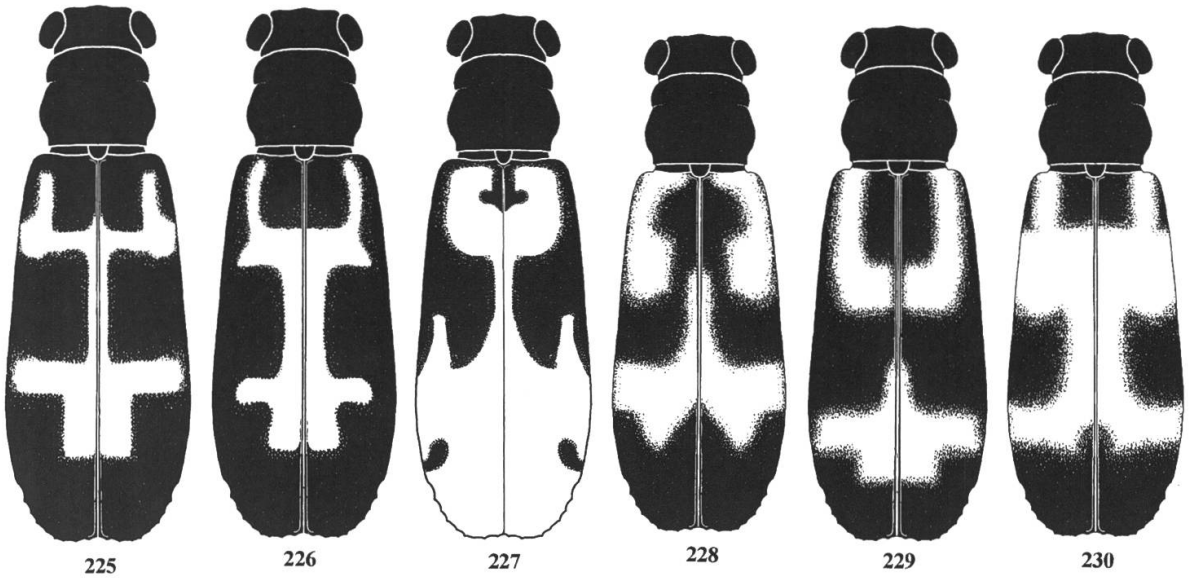
Madoniella minor Pic, 1935: 10. LEPESME, 1947: 169, 170. CORPORAAL, 1950: 306. OPITZ, 1997: 62; 2002: 278.

Type material. Lectotype. Female (here selected). Type locality: Guadeloupe, coll. Madon (MNHN). (Specimen point mounted, support card to which is affixed antenna and female gender label; locality label; identification label; two collection labels glued together; specimen number label; type label; two specimen description labels glued together; Pic collection label; MNHN acronymic label; lectotype label.)
Paralectotypes: Pic does not indicate the number of specimens involved in the original description. There are four paralectotypes in the collection of ZMAN, all are from the type locality. To my knowledge there are no other specimens of this species in the beetle collection of MNHN.

Other material examined. I examined 4 specimens in addition to the type series from Montserrat: Fogerty, 16°46′N 62°12′W, 10-X-2002, canopy fogging at dawn, 373 m, J. Daley & J. Martin. Specimens are deposited in MAIC, MNHN, and WOPC.

Description. Size: Length 3.0–3.8 mm; width 1.2–1.4 mm. Integument: Cranium red-brown; pronotal red-brown; elytral markings as in Fig. 204; legs predominantly yellow, tibiae with brown spot on disc and infuscated basally, tarsi yellow and slightly infuscated.

Head: Vertex wider than eye (26:15); antenna as in Fig. 117.



Figs 225–230. Body habitus: 225 – *Madoniella dislocata*. 226 – *M. erythrocephalus*. 227 – *M. displicata*. 228 – *M. avina*. 229 – *M. quinatana*. 230 – *M. careorita*.

Thorax: Pronotum (Fig. 193), length/width ratio 44:53, disc flat, lateral tubercle present, disc plane, anterior transverse depression absent on disc, anterior margin convex, setae matted; elytra, length/width ratio 4.3, form oblong-subovoid, punctations small and shallowly impressed, subseriate, 2° setae submatted, epipleural minutely serrate at elytral apex only; protibial anterior margin with 4 spines.

Abdomen: Aedeagus as in Fig. 308; phallic apex large-lobate.

Variation: The available specimens did not vary appreciably.

Natural history. The specimens from Montserrat were collected in October by canopy fogging at dawn at 373 m.

Distribution (Map 21). Specimens have been collected on the islands of Guadeloupe and Montserrat.

Differential diagnosis. In these beetles the elytral punctations are about as wide as the width of the interstitial spaces, a characteristic that distinguished them from superficially similar specimens of *M. pici* in which the punctations are notably smaller.

Madoniella pici Lepesme

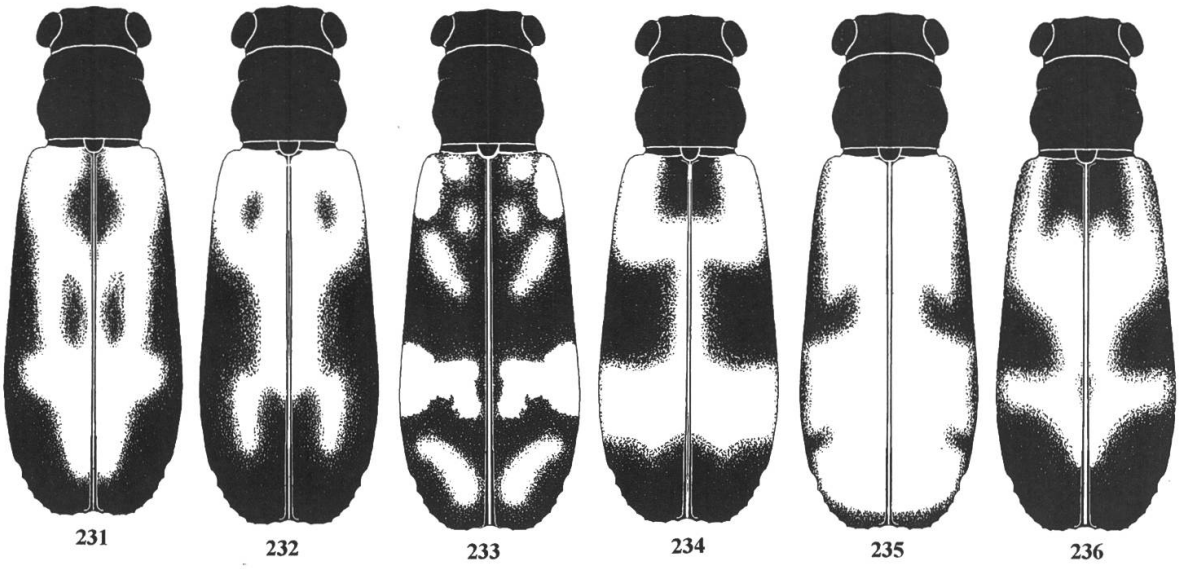
Figs 76, 152, 280; Map 19.

Madoniella pici Lepesme, 1947: 169, 170. Corporaal, 1950: 306. Gruner, 1974: 120.

Type material. Lectotype. Male (here selected). Type locality: Trois Rivieres, Guadeloupe, Dufau (MNHN). (Specimen card mounted, gender label affixed to mount card, support locality label; natural history label, specimen number label-1227; type label; MNHN acronymic label; holotype label, plastic vial with aedeagus.)

Paralectotypes: There is no indication by Lepesme as to the number of specimens that were involved in the description of this species.

Additional material examined. Besides the lectotype, I examined 4 additional specimens. Guadeloupe: Guadeloupe: environs of Trois Rivers, 1904, Leo Dufau (MNHN, 1; WOPC, 1). Dominica: St. Peter: Syndicate Trailhead, 28-VI-2004, R. Turnbow (RHTC, 1).



Figs 231–236. Body habitus: 231 – *Madoniella emblema*. 232 – *M. adona*. 233 – *M. abacula*. 234 – *M. latinopsis*. 235 – *M. eximia*. 236 – *M. rubidia*.

Description. Size: Length 3.5–4.0 mm; width 1.1–1.3 mm. Integument: Cranium dark brown; pronotal disc dark brown; elytral insignia very similar to one depicted in Fig. 204; legs predominantly yellow, profemur with dark spot on anterior disc, mesofemur and metafemur entirely yellow, tibiae with brown spot at middle, tarsi infuscated.

Head: Vertex wider than eye (29:18); antenna as in Fig. 76.

Thorax: Pronotum (Fig. 152), length/width ratio 61:45, disc flat, lateral tubercle present, disc flat, anterior transverse depression absent on disc, anterior margin convex, setae matted; elytra, length/width ratio 4.3, form oblong-subovoid, punctations small and shallowly impressed, subseriate, 2° setae not matted, minutely serrate only at elytral apex; protibial anterior margin with 3 spines.

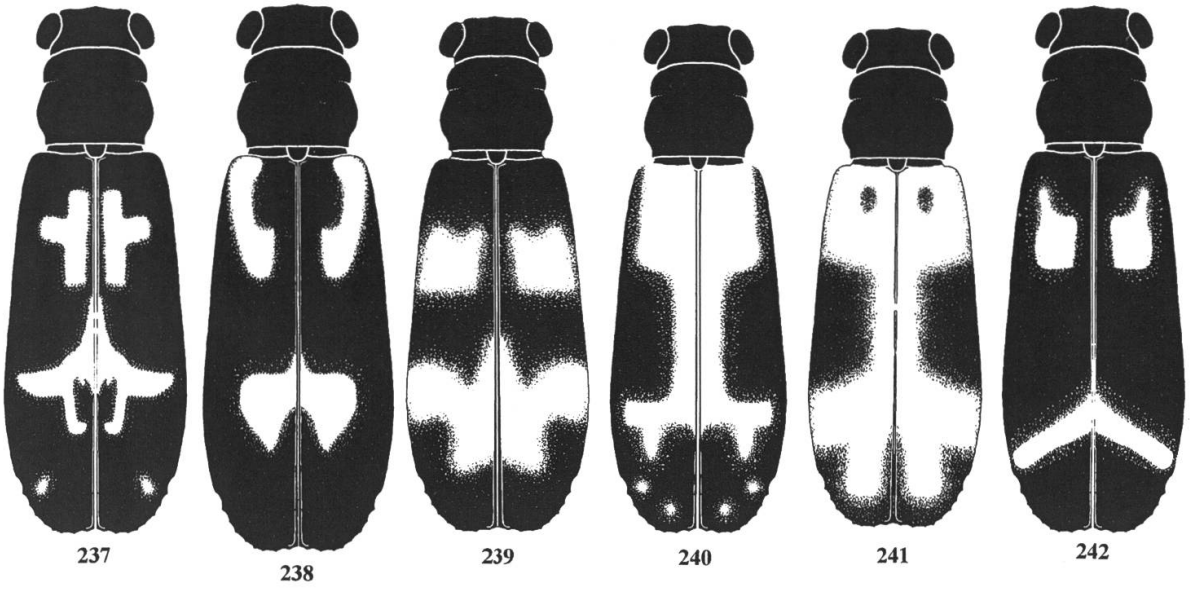
Abdomen: Aedeagus as in Fig. 280; phallic apex large, lobate.

Variation: The cranium and pronotal disc may be slightly reddish.

Natural history. There is minimal information about the natural history of *Madoniella* species, especially of those that occur in the tropics. Therefore, I include herein an approximate translation of the field observations made by Gruner (1974: 120) near the type locality.

In the galleries, some larvae of an undetermined Ostomidae (= Trogositidae) eat the larvae of *Hexacolus guyanensis*, but the presence of the Ostomid is rare. It is much the same for a little Staphylinidae. However, a Cleridae is encountered among large populations of Scolytidae. The clerid involves a species from Guadaloupe described by Lepesme as *Madoniella pici*.

Herein, we describe the larval instars of this relatively unknown species: body much elongated, depressed, membranous and vested with fine pale setae that are few in numbers. The subrectangular head capsule is a quarter longer than wide, is dorsally convex, without notable sculpturing, well sclerotized, and dark brown. The prothorax is subrectangular, slightly longer than wide, and slightly larger than the mesothorax and metathorax. The prothorax shows a well sclerotized dorsal plate. The legs are slightly sclerotized in the last larval instar. The abdomen is membranous except in the first instar



Figs 237–242. Body habitus: 237 – *Madoniella peninsularis*. 238 – *M. maxicornis*. 239 – *M. disjuga*. 240 – *M. pedalis*. 241 – *M. basilia*. 242 – *M. gonia*.

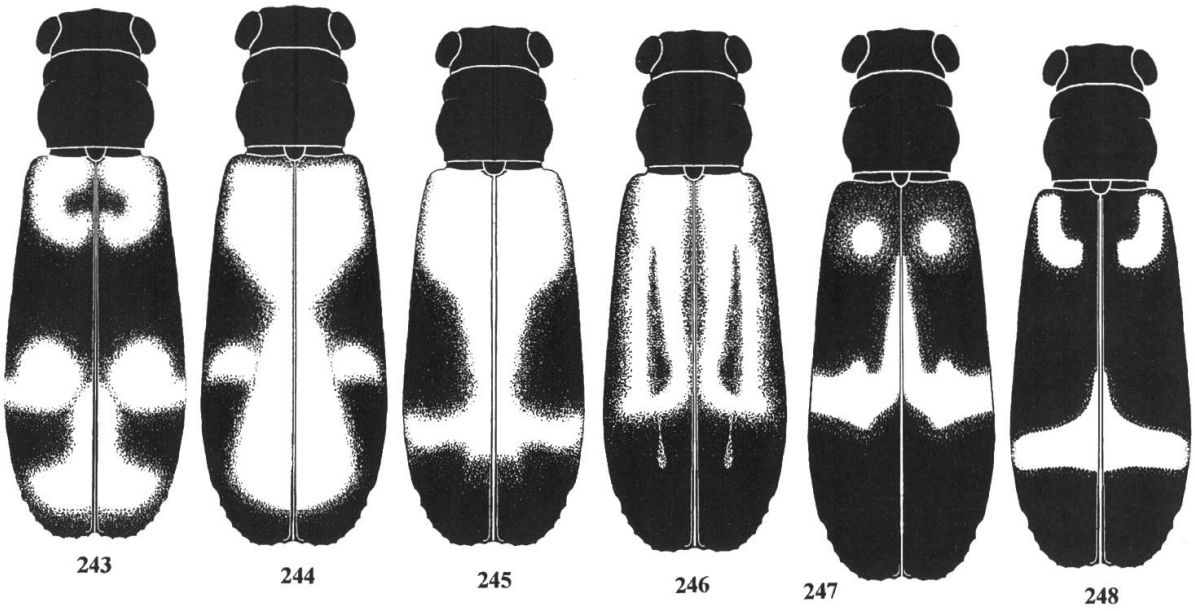
segment nine, the last abdominal segment, shows a sclerotized dorsal plate. The third instar dorsal plate shows four spines, whereas two dorsal abdominal plates, found on the last two abdominal segments, characterize the fourth instar. This modification of morphology of the dorsum, of the last abdominal segment, indicates that the larval life history of this species involves four instars. Reid (1957: 112) made similar observations in his work with *Enoclerus sphegeus*.

Adults of *M. pici* are sometimes numerous on the trunk of mahogany in the course of strong scolytids infestations, especially when it is sunny. During such weather, they run into the galleries to lay their eggs and to capture Scolytidae adults on which they feed. The *M. pici* larvae also occur in the galleries where they feed on the larvae of *Hexacolus guyanensis*. These observations agree with those made on *Enoclerus sphegeus* predator of *Dendroctonus ponderosae* (Reid, 1957) and *Thanasimus undatulus* (Amman, 1972). During this study of *Scolytes* evolutionary biology, relevant to mahogany degradation, we have determined that larvae of *M. pici* play a significant role in the population dynamics of the scolytids that infect the tree trunk of mahogany. These clerids appear at the beginning of the scolytids infestation, which confirms the observations made by CAMORS & PAYNE (1973) who reported that adults of *Thanasimus dubius* arrive in great numbers at the onset of a *Dendroctonus frontalis* infestation.

In the initial scolytids infestation generation many clerids are also produced, however, the same adults of the clerids that established the initial generation of clerid predators did not return to lay additional eggs during subsequent generations of scolytids propagated on the same mahogany trunk.

Distribution (Map 19). Specimens have been collected from the islands of Guadeloupe and Dominica.

Differential diagnosis. In these beetles the elytral puctations are very small with the interstitial spaces wider than the width of punctations. This feature will distinguish these beetles from superficially similar specimens of *M. minor*.



Figs 243–248. Body habitus: 243 – *Madoniella pumilis*. 244 – *M. storea*. 245 – *M. storea*. 246 – *M. cerviculina*. 247 – *M. anapsis*. 248 – *M. fonteboa*.

Notes. There are two specimens, one deposited in MNHN and one in WOPC, which have attached a Pic handwritten label that reads "*Madoniella impressa*, mihi". On one of these specimens Pic added a label that reads *pici* Lepesme. I presume that Pic deferred the description of this species to Lepesme and that the name *Madoniella impressa* has no official nomenclatural standing.

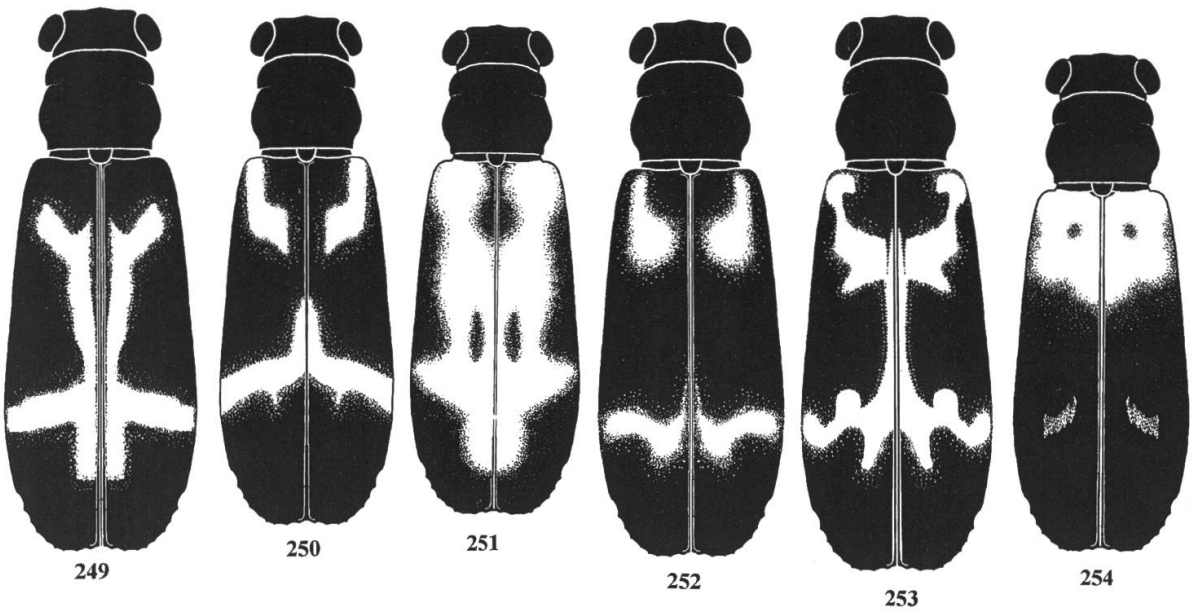
nebulosa group

This group involves 2 West Indies species whose members are characterized by extraordinary large body size, long antennae, very narrow vertex, absence of minute serrations on the posterior portion of the epipleural margin, and banded legs. The body form is oblong-subovoid and the pronotal disc is unicolorous, has several tumescences, a well-developed pronotal arch, anterior transverse depression present on the pronotal disc, and matted pronotal and elytral setae. Elytral punctations are small and subseriate. The 2° elytral setae may be yellow-gold, sliver or have a reddish-brown tinge, which gives the elytral disc a mottled appearance. One of the species in Cuba and southeastern Hispaniola, the other is known only from the Dominican Republic.

Madoniella infula sp.nov. Figs 80, 147; Map 15.

Type material. H o l o t y p e . Gender unknown. DOMINICAN REPUBLIC. La Vega. Cordillera Central, 4.1 km SW El Convento. 18-50-38N, 70-42-51W, 1733 m. 31 May 2003, J. Rawlins, R. Davidson, C. Young, C. Nuńes, P. Acervedo, Montane Forest with pines near pature, malaise trap, Sample 22182, Carnegie Museum Specimen Number CMNH-353.828 (CMNH). (Specimen pin mounted, antenna affixed to support card; locality label; collectors label, CMNH specimen number label; CMNH repository label; holotype label.)
P a r a t y p e s : One specimen examined.

Description. Size: Length 7.0 mm; width 2.0 mm. Integument: Cranium mostly red, vertex infuscated; pronotum dark brown; elytral disc without insignia, humerus and



Figs 249–254. Body habitus: 249 – *Madoniella antennatra*. 250 – *M. merga*. 251 – *M. emblema*. 252 – *M. aktis*. 253 – *M. ignis*. 254 – *M. basilaris*.

three punctiform discal macula yellow; legs mostly yellow, femoral anterior disc, femoral distal extremity, and tibial center with dark spots, tarsae dark.

Head: Vertex narrower than eye (15:43); antenna as in Fig. 80.

Thorax: Pronotum (Fig. 147), length/width ratio 65:92, tubercle present, disc tumescent, anterior margin projecting at middle, anterior transverse depression and pronotal arch present, setae matted; elytra, length/width 5.4, form oblong-subovoid; elytral punctations large, subseriate 2° setae matted, admixture of golden, black, and white setae, epipleural margin not minutely serrate in distal fourth; protibial anterior margin with 2 spines.

Abdomen: Aedeagus not available.

Variation: One specimen examined.

Natural history. The holotype was collected in May at 1733 m with a Malaise trap set in a pine-laden mountain forest near a pasture.

Distribution (Map 15). Known only from the type locality.

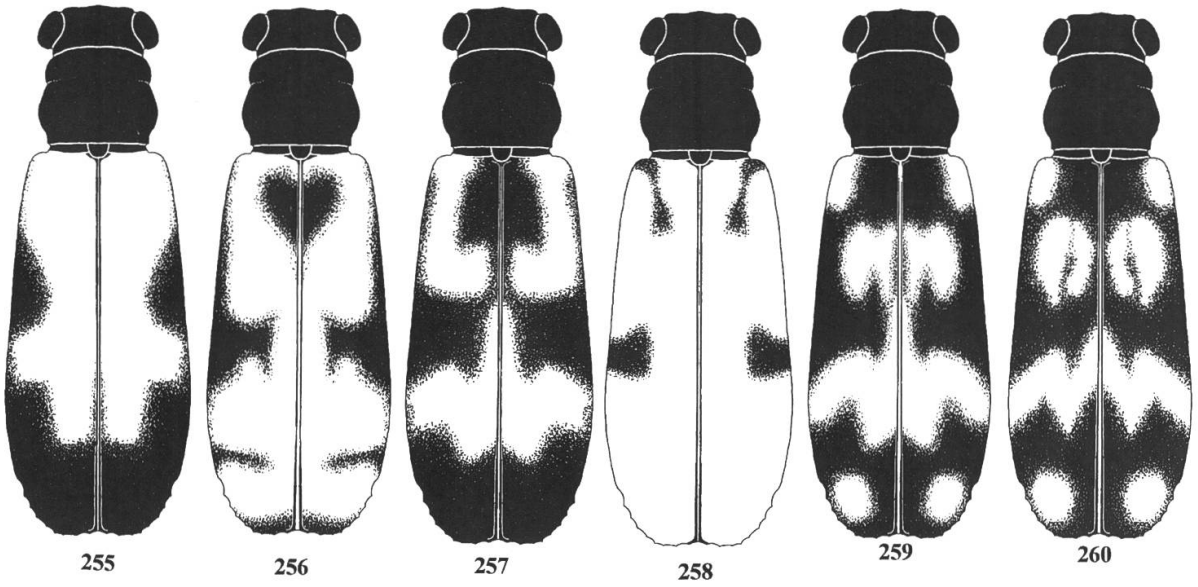
Derivation nominis. The specific epithet *infula* (= band) is a Latin noun. I refer to the dark bands on the femora and tibiae.

Differential diagnosis. Within the *nebulosa* group these beetles may be distinguished by their large size (about 7 mm).

Madoniella nebulosa (Chevrolat) Figs 77, 155, 199, 298; Maps 13, 16.

Epiphloeus nebulosum Chevrolat, 1876: 28. Corporaal, 1950: 254 (*Epiphloeus*). Peck, 2005: 124.

Type material. Lectotype. Female (here selected). Type locality: Cuba (MNHN). (Specimen point mounted, gender label affixed to paper point; locality label; identification label locality/identification label; MNHN collection label; MNHN acronymic label; lectotype label; species identification label.)
Paralectotypes: The existence of a syntypic series is not suggested in the original description.



Figs 255–260. Body habitus: 255 – *Madoniella corporaali*. 256 – *M. magdalena*. 257 – *M. howdenorum*. 258 – *M. guana*. 259 – *M. punctata*. 260 – *M. punctata*.

Other material examined. In addition to the Lectotype I have examined 7 additional specimens from: Cuba: La Habana: Habana. Dominican Republic: Pedernales: 24 km N Cabo Rojo, 21-VIII-1988, 610 m, wet forest, at light and night beating, M. Ivie, Philips & Johnson; *idem*, 9-IX-1988, 610 m, wet forest, at light and night beating, M. Ivie, Philips, & Johnson. Specimens are deposited in MAIC, MNHN, WOPC.

Description. Size: Length 3.8–5.5 mm; width 1.5–2.0 mm. Integument: Cranium reddish; pronotal disc reddish brown; elytra as in Fig. 199; legs predominantly yellow, with brown spot on femoral and tibial disc, tibiae proximally and distally infuscated.

Head: Vertex narrower than eye (11:30); antenna as in Fig. 77.

Thorax: Pronotum (Fig. 155), length/width ratio 52:74, lateral tubercle present, disc subgibbose, anterior transverse depression and pronotal arch present, anterior margin subconic, setae matted; elytra, length/width ratio 4.5, form oblong-subovoid, punctations small and shallowly impressed, subseriate, 2° setae matted, serrations in posterior fourth of epipleural margin not distinctly defined; protibial anterior margin with one large spine and two very small spines.

Abdomen: Aedeagus as in Fig. 298.

Variation: The specimens examined were quite homogeneous.

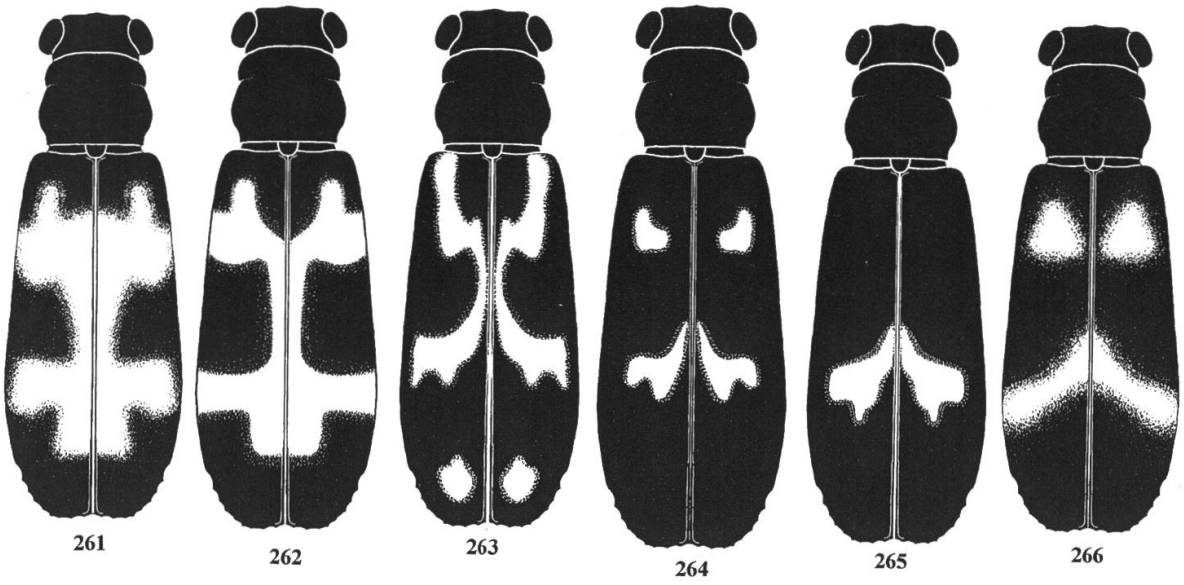
Natural history. Specimens from the Dominican Republic were collected during August and September, in a wet forest, at night, and by light and/or beating.

Distribution (Map 16). Specimens have been collected from Cuba and the Dominican Republic.

Differential diagnosis. Within the *nebulosa* group, the smaller size (about 4 mm) will distinguish these beetles from the larger specimens of *M. infula*.

orientalis group

Oblong-rectangulate body form, vertex wider than width of one eye, absence of pronotal anterior transverse depression, large elytral punctations arranged in 10 rows and



Figs 261–266. Body habitus: 261 – *Madoniella kuehlorum*. 262 – *M. dislacata*. 263 – *M. dislacata*. 264 – *M. dislacata*. 265 – *M. dislacata*. 266 – *M. crinis*.

minute serrations along the posterior third of the epipleural margin are some of the characteristics that define this West Indies group of three species. The species are known from Hispaniola, Puerto Rico, and Cuba.

Madoniella bilineata (Chevrolat) Figs 57, 185, 309; Map 16.

Aulicus bilineatus Chevrolat, 1874: 300. CORPORAAL 1950: 197 (*Aulicus*).

Type material. Cuba. The specimen(s) on which this species is based forms part of the Gundlach collection which is part of an Estate of a Cuban family (GCHC). Chevrolat's description leaves little doubt that the specimens before me belong to this species.
Syntypes: Chevrolat's description does not indicate the number of specimens on which the description of *Aulicus bilineatus* is based.

Other material examined. I have examined nine specimens from Cuba: Granma: Pico Turquino, 16-21-VI-1936, Darlington. Specimens are deposited in MCZC and WOPC.

Description. Size: Length 3.9–4.6 mm; width 1.0–1.6 mm. Integument: Cranium red; pronotum red; elytral disc with broad yellow longitudinal lines that have a short lateral extension at about elytral dital third; legs predominantly yellow, tibiae infuscated.

Head: Vertex wider than eye (32:17); antenna as in Fig. 57.

Thorax: Pronotum (Fig. 185), length/width ratio 53:54, lateral tubercle present, disc convex at middle then concave paralaterally, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 5.5, form oblong-rectangulate, punctations small and shallowly impressed, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior third; protibial anterior margin with 1 spine.

Abdomen: Aedeagus as in Fig. 309.

Variation: The base of the pronotal disc may be red-brown.

Natural history. The available specimens were collected during June from 1524 to 1829 m.

Distribution. (Map 16): Known only from Cuba.

Differential diagnosis. Within the *orientalis* group, these beetles are distinguishable by the pale longitudinal streaks on the elytral disc.

Madoniella orientalis (Zayas) Figs 44, 170; Map 16.

Phlogistosternus orientalis Zayas, 1988: 60. Cuba (FDZC). Syntype series from eastern Cuba. PECK, 2005: 124, *Madoniella.*

Other material examined. I examined five specimens from: Cuba: Guantánamo: Loma del Gato, Cobre Range Oriente, 3-7-1936, about 915 m, Darlington; *idem*, Cobre Range O, 7-8-VII-1936, about 915 m., second label with Cuba 1936, Darlington: Granma: Pico Turquino, 16-21-VI-1936, 1830 m, summit, Darlington: Pinar del Rio: Sierra Maestra, Palma Mocha, 10-20-VII-1922, C.H. Ballou and S.C. Bruner: Cienfuegos: Buenos Aires, Trinidad Mountains, 762–1067 m, Darlington. Specimens are deposited in: MCZC, NMNH, and WOPC.

Description. Size: Length 5.0–6.5 mm; width 1.4–1.8 mm. Integument: Cranium red; pronotal disc red; elements of anterior and posterior block narrowed and lengthened and connected by narrow yellow line at sides; legs predominantly yellow, dorsal margin infuscated.

Head: Vertex wider than eye (25:22); antenna as in Fig. 44. *Thorax*: Pronotum (Fig. 170), length/width ratio 52:62, side margins tuberculate, disc strongly sloped at sides, anterior transverse depression absent on disc, anterior margin convex, setae not matted; elytra, length/width ratio 5.3, form oblong-subovoid, punctations large, seriate, and arranged into 10 rows, 2° setae not matted, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 6 spines.

Abdomen: Aedeagus not available.

Variation: The pronotal disc is predominantly red-brown in the specimen from Pico Turquino. Also, the light posthumeral streak may extend backwards to an extent that it meets the posterolateral arm of the elytral insignia.

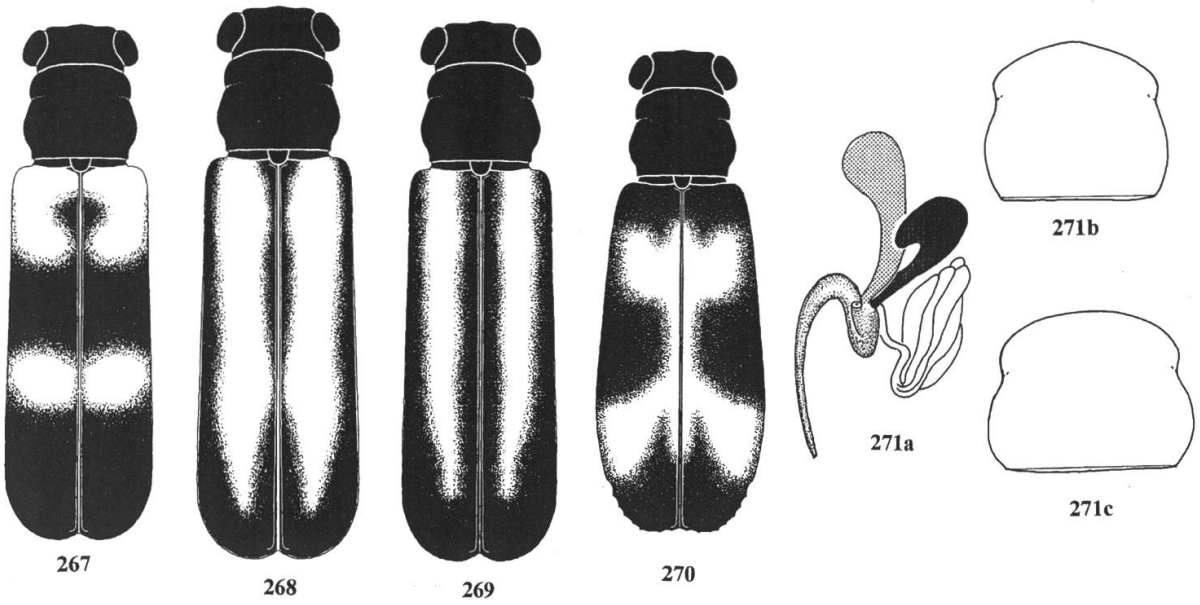
Natural history. Specimens have been collected from May thru July at altitudes ranging from 762 to 1830 m.

Distribution (Map 16). This species is known only from Cuba.

Differential diagnosis. Specimens of this species are conveniently identified by the pattern of the elytral insignia. The insignia is split longitudinally along the sutural margin, the anterocentral extension and anterolateral extensions meet anteriorly, and the anterior and posterior blocks are conjoined by a pale line at the sides of the elytral disc. This characteristic will distinguish the members of this species from those of *M. bilineata*, the only other species in the *orientalis* group. A habitus illustration of *M. orientalis* is included in Zayas (1988: 60).

pedalis group

This group is comprised of one species characterized by abundance of 2° setae on the elytral disc, and the development of such setae into small setal wisps. Oblong-ovate body form, vertex wider than width of an eye, absence of anterior depression on pronotal disc, large elytral punctations arranged in 10 rows and posterior third of the epipleural margin minutely serrate also characterize this monotypic group. The latter is known from Cuba.



Figs 267–271. Forebodies and anatomical structures: 267–270, Body habitus: 267 – *Madoniella cracentis*. 268 – *M. linea*. 269 – *M. linea*. 270 – *M. knullorum*. 271a – *M. guana*, male internal reproductive organs. 271b – *M. crinis*, pronotum 271c – *M. disjuga*, pronotum.

Madoniella pedalis sp.nov. Figs 183, 203, 240, 281; Map 16.

Type material. Holotype. Female. Cayamas, Cuba, E. A. Schwartz (USNM). (Specimen point mounted, female gender label affixed to paper point; support card; locality label; collector label; USNM repository label; holotype label.)
Paratype: Three specimens. Cuba: La Habana: Cayamas, E. A. Schwartz (USNM, 2; WOPC, 1).

Description. Size: Length 3.1–4.1 mm; width 1.0–1.2 mm. Integument: Cranium red; pronotum dark brown, with 4 minute silvery tufts of setae; elytral markings as in Figs 203, 240, disc with small tufts of silvery setae behind posterior limits of elytral pale markings; legs yellow but tibial middle with a brown spot.

Head: Vertex wider than eye (27:18), with two aggregates of stout setae; antenna not observed.

Thorax: Pronotum (Fig. 183), length/width ratio 55:65, middle of side margin more convex than tuberculate, anterior angle of side margin slightly incised, disc convex, anterior margin shallow convex, anterior transverse depression absent from center of disc, setae not matted but four aggregates of decumbent setae at center of discs; elytra, length/width ratio 4.3, form oblong-subovoid; punctations large, seriate, and arranged into 10 rows, 2° setae submatted on pale regions of disc, epipleural margin minutely serrate in posterior fourth; protibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 281.

Variation: Pronotal color varies from reddish brown to dark brown.

Natural history. No information available.

Distribution (Map 16). This species is only known from Cuba.

Etymology. The trivial name *pedalis* (= of the foot) is a Latin compound name. I refer to the brown infuscations on the middle of the tibiae.

Differential diagnosis. The white setal wisps on the pronotum and elytral apical region will distinguish the members of this species from congeners.

pumilis group

This monotypic group is most strikingly characterized by the small size of its specimens. Vertex wider than eye, antennae proportionally long, pronotum transverse and not matted, elytral disc with insignia, elytral punctations small and not seriate, and epipleural margin not minutely serrate are characteristics that also define this group. The latter is known only from northern Colombia.

***Madoniella pumilis* sp.nov.** Figs 116, 139, 243, 311; Map 4.

Type material. Holotype. Male. Colombia: Magdalena: Pueblito, 20-XII-2000-3-I-2001, R. Henriquez, malaise (IAVH). (Specimen point mounted; support card, male symbol and metathoracic wing mounted on support card; locality label; IAVH repository label; holotype label.)
Paratypes: None.

Description. Size: Length 3.0 mm; width 1.2 mm. Integument: Cranium brown; pronotal disc black; pronotum faintly light brown along anterior and posterior margin; elytral markings as in Fig. 243; legs predominantly yellow, femora, tibiae, and tarsi marked with brown spot.

Head: Vertex wider than width of eye (20:15); antenna as in Fig. 116.

Thorax: Pronotum (Fig. 139), length/width ratio 34:41, side margins more convex than tuberculate, disc convex and coarsely punctate, anterior margin convex, anterior transverse depression absent from center of disc, setae not matted; elytral form oblong subovoid; elytra, length/width ratio 4.3, form oblong-subovoid, punctations small, not seriate, epipleural without minute serrations; protibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 311.

Variation: One specimen examined.

Natural history. The holotype specimen was collected in a Malaise trap during December.

Distribution (Map 4). Known only from the type locality.

Derivatio nominis The specific epithet *pumilis* (= dwarfish size) is a Latin adjective. I refer to the small size of these beetles.

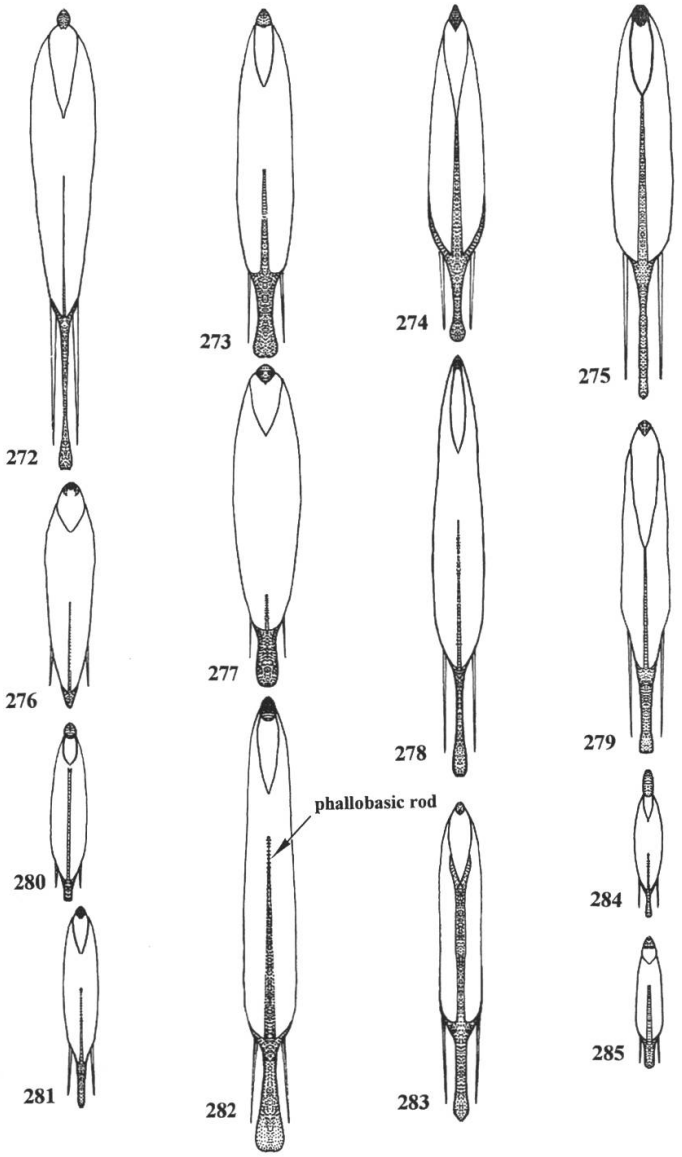
Differential diagnosis. The small size of these beetles (about 3 mm), in combination with the configuration of the elytral insignia (Fig. 243), will distinguish them from congeners.

tegetis group

This monotypic group is most significantly characterized by the extent to which the 2° setae mat the elytral disc. An oblong-subovate body form, vertex that is wider than width of one eye, large seriate elytral punctations, absence of the elytral insignia, banded legs, and minute serrations on the distal third of the epipleural margin further characterize the members of this group. The species is known only from Honduras.

***Madoniella tegetis* sp.nov.** Figs 115, 175, 205, 292; Map 6.

Type material. Holotype. Male. Honduras: Copan, 6 km NW San Agustin V/19-20/02, Huether (FSCA). (Specimen point mounted, male gender symbol affixed to paper point, support card; locality label; FSCA repository label; holotype label; plastic vial with abdomen and aedeagus.)
Paratypes: None.



Figs 272–285. Aedeagi: 272 – *Madoniella adona*. 273 – *M. kuehlorum*. 274 – *M. cardinalis*. 275 – *M. punctata*. 276 – *M. welderi*. 277 – *M. redacta*. 278 – *M. dislacata*. 279 – *M. corporaali*. 280 – *M. pici*. 281 – *M. pedalis*. 282 – *M. emblema*. 283 – *M. rectangularis*. 284 – *M. basilia*. 285 – *M. extensiva*.

Description. Size: Length 4.0 mm; width 1.2 mm. Integument: Cranium reddish brown; pronotal disc reddish-brown; elytral markings as in Fig. 205; legs predominantly yellow, profemur with brown spot on disc, mesofemur and metafemur yellow, tibiae with brown spot at middle.

Head: Vertex wider than eye (25:20); antenna as in Fig. 115.

Thorax: Pronotum (Fig. 175), length/width ratio 43:55, lateral tubercle present, disc convex, anterior transverse depression absent on disc, anterior margin convex, setae submatted; elytra, length/width ratio 4.5, form oblong-subovoid, punctation large, seriate, and arranged into 10 rows, 2° setae matted, epipleural margin minutely serrate in posterior third; tibial anterior margin with 3 spines.

Abdomen: Aedeagus as in Fig. 292.

Variation: One specimen examined.

Natural history. The holotype specimen was collected during May.

Distribution (Map 6). Known only from the type locality.

Etymology. The specific epithet *tegetis* (= mat) Latin noun. I refer to the matted condition of the 2° setae on the elytral disc.

Differential diagnosis. The profuse extent of matting of the 2° elytral setae is the distinguishing characteristic of these beetles within *Madoniella*.

welderi group

This group is comprised of 6 species. Their most outstanding characteristic among most members of this group is that elytra are copiously vested with 2° pale setae. However, neither the pronotal or elytral setae are matted. The body form is oblong-subovoid, the vertex is wider than the width of an eye, the pronotum is very transverse and uniformly dark brown, the anterior transverse depression is absent on the pronotal disc, the elytral insignia is fully formed, and the posterior extremity of the elytral disc has 1 or 2 pale dots. Large elytral punctations arranged in 10 rows and presence of minute serrations along the posterior third of the epipleural margin are additional characteristics of this group of species. The species are primarily distributed in the southwestern environs of the United States of America

Madoniella knullorum sp.nov. Figs 46, 270, 300; Map 7.

Type material. Holotype. Female. Davis Mts, VI-14-58, Tex, D. J. & J. N. Knull Collrs (FMNH). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; FMNH acronymic label; holotype label; plastic vial with abdomen and aedeagus.)
Paratypes: Five specimens. United States of America: Texas: Jeff Davis Co., Davis Mountains, 14-VI-1958, D. J. J. N. Knull (WOPC, 1); *idem*, 23-VI-1968, D. J. J. N. Knull (WFBC, 1); Cameron Co. 25-III-1952, D. J. & J. N. Knull (FMNH, 1); Uvalde Co., 9.6–14.4 km NW Sabinal Route 127, 11-V-1978, J. E. Wappes (JEWC, 1; WOPC, 1).

Description. Size: Length 3.2–5.0 mm; width 1.8–1.1 mm. Integument: Cranium red-dark brown, pronotal disc dark brown, anterior border narrowly reddish brown; elytral markings as in Fig. 270.

Head: Vertex slightly wider than eyes in head dorsal view; antenna comprised of 10 antennomeres, antennomeres 8–10 form abrupt capitulum (Fig. 46).

Thorax: Pronotal side margins broadly sinuous (Fig. 190), anterior margin convex, disc evenly rounded, slightly depressed around periphery of discal trichobothria; elytral form oblong; elytral punctations large, aligned into 10 rows; anterior margin of protibia with 5 spines.

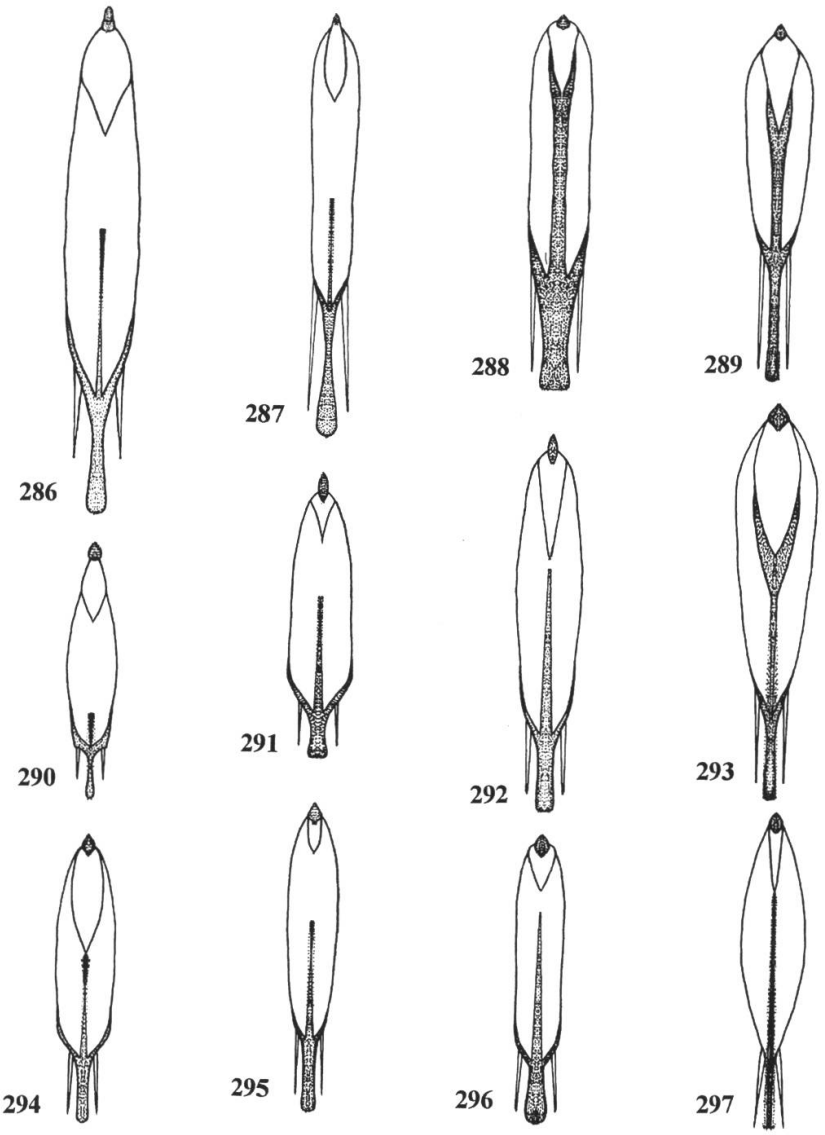
Abdomen: Aedeagus as in Fig. 300.

Variation: The width of the reddish anterior margin of the pronotum varies as does the size of the pale punctiform markings near the elytral apex. The expression of the pale transverse region of the anterior region of the elytra also varies.

Natural history. Specimens have been collected in May and June.

Distribution (Map 7). Known only from the southern border of Texas just north of the Rio Grande. To the west, D. J. and J. N. Knull collected 3 specimens from the highlands of the Davis Mountains.

Etymology. The specific epithet is a patronymic dedicative to honor the Knull's whose collecting efforts greatly enriched the research of North American systematists. Dr. Knull was among the first to gift specimens to me for my beginning research efforts.



Figs 286–297. Aedeagi: 286 – *Madoniella avina*. 287 – *M. howdenorum*. 288 – *M. leona*. 289 – *M. disjuga*. 290 – *M. storea*. 291 – *M. guana*. 292 – *M. tegetis*. 293 – *M. merga*. 294 – *M. abacula*. 295 – *M. antennatra*. 296 – *M. apsis*. 297 – *M. erythrocephala*.

Differential diagnosis. Specimens of this species are superficially similar to those of *M. dislocata* (Say), *M. welderi* sp.nov., and those of *M. vogti* sp.nov. *M. knullorum* specimens may be distinguished from those of *dislocata* by the more rounded margin of the pronotal side margins and from those of *welderi* and *vogti* by the lack of profusely distributed pale, short, and reclinate elytral setae that are profusely distributed in the paler elytral regions of *welderi* and *vogti* specimens.

Madoniella nana sp.nov. Figs 47, 189, 212, 302; Map 7.

Type material. Holotype: Male. USA, TX: Cameron Co, Sabal Palm grove, V-27-1898, D. J. Heffern coll. (FSCA). (Specimen point mounted, male gender symbol affixed to paper point, support card; locality label; FSCA acronymic label; holotype label; plastic vial with abdomen and genitalia.)
Paratypes: One specimen. United States of America: Texas: Cameron Co., Sabal Palm Grove Sanctuary, 27-VII-1991, T. Carlow & E. Riley (WOPC, 1).

Description. Size: Length 2.5–3.3 mm; width 0.9–1.2 mm. Integument: Cranium red dark brown; pronotal disc dark brown, anterior border not reddish brown; elytral insignia as in Fig. 212.

Head: Vertex slightly wider than eyes in head dorsal view; antenna as in Fig. 47. Thorax: Pronotal side slightly sinuous (Fig. 189), anterior margin rounded, disc uniformly convex in contour, only slightly depressed around periphery of discal trichobothria; elytra, length/width ratio 4.1; form oblong; elytral punctations large, arranged into 10 rows, pale regions of elytral disc profusely vested with short, decumbent, pale setae; anterior margin of protibia with 4 spines.

Abdomen: Aedeagus as in Fig. 302.

Variation: The available specimens did not vary appreciably.

Natural history. These beetles have been collected in May and July.

Distribution (Map 7). Known only from the type locality.

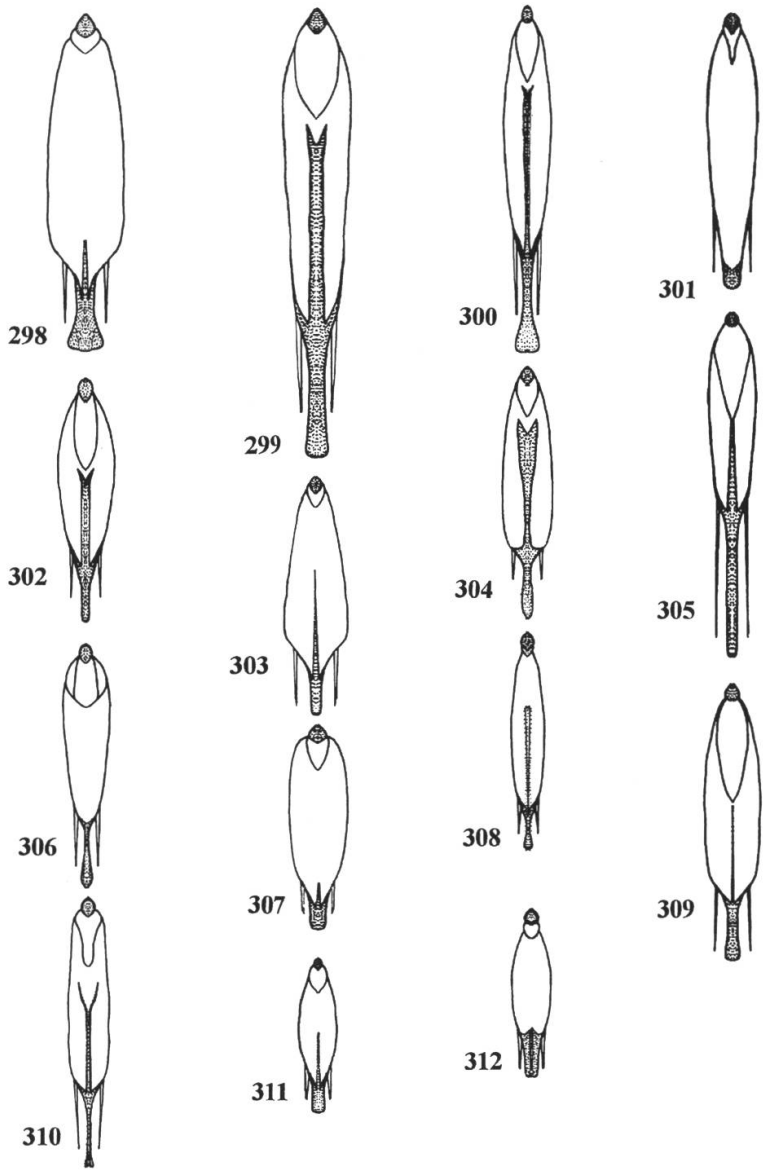
Etymology. The specific epithet *nana* (= dwarf) is a Latin adjectival. I refer to the small size of these beetles.

Differential diagnosis. Members of this species are distinguished from superficially similar specimens of *M. rectangularis* sp.nov., by having only 4 spines on the anterior margin of the protibiae, very small size (about 2.5 m), and by the lack of a pale connection between the anterior and posterior pale angular regions of the elytral disc (see Fig. 2).

Madoniella rectangularis sp.nov. Figs 45, 190, 218, 283; Maps 5, 7.

Type material. Holotype: Female. Hidalgo Co., III-26-1953, Tex., D. J. & J. N. Knull (FMNH). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; collector label; FMNH acronymic label; holotype label.)

Paratypes: Seventy-one specimens. United States of America: Texas: Hidalgo Co., 20-III-1952, D. J. & J. N. Knull (FMNH, 1); *idem*, 4-VII-1961, D. J. & J. N. Knull (FMNH, 4); *idem*, 15-V-1935, D. J. & J. N. Knull (AMNH, 2); *idem*; 22-V-1935, D. J. & J. N. Knull (FSCA, 4); *idem*, 24-III-1959, D. J. & J. N. Knull (USNM, 3); *idem*, 7-IV-1950, D. J. & J. N. Knull (WFBC, 4); *idem*, 7-IV-1950, D. J. & J. N. Knull (MCZC, 2; WOPC, 1; CDAE, 2); *idem*, 7-IV-1950, D. J. & J. N. Knull (CASC, 2; JNRC, 2; INHS, 2); *idem*, 20-III-1952, D. J. & J. N. Knull (SEMC, 2); *idem*, 26-III-1953, D. J. & J. N. Knull (EMEC, 1); *idem*, 24-III-1954, D. J. & J. N. Knull (FMNH, 1); *idem*, 26-III-1954, D. J. & J. N. Knull (FMNH, 1); *idem*, 28-III-1954, D. J. & J. N. Knull (FMNH, 1); *idem*, 26-III-1957, D. J. & J. N. Knull (FMNH, 3); *idem*, 3-IV-1961, D. J. & J. N. Knull (FMNH, 1); *idem*; 31-III-1946, *Celtis laevigata* Wild, on area of live branch barked two weeks ago, George B. Vogt (USNM, 7); *idem*, 17-III-1946, fresh dead tree, under bark of *Celtis laevigata* Wild, George B. Vogt (USNM, 3); *idem*, Santa Ana Refuge, 20-X-1978, J. E. Wappes (FSCA, 1; TAMU, 1); *idem*, 12-V-1980, R. L. Penrose (FSCA, 1); *idem*, Bentsen, Rio Grande State Park, emerged, 12-18-II-1978, R. Turnbow (RHTC, 3; UCDC, 1; WFBM, 1; WOPC, 1); *idem*, 5-V-1982, J. E. Wappes (JEWC, 1); *idem*, 4-V-1976, F. T. Hovore (WFBC, 1); Cameron Co., Brownville, 1-VI-1934, D. J. & J. N. Knull (FMNH, 2); *idem*, 8-VI-1934, D. J. & J. N. Knull (FMNH, 1); 25-V-1934, D. J. & J. N. Knull (FMNH, 3); *idem*, 20-III-1908, McMillan (USNM, 1); *idem*, 30-V-1932, J. O. Martin (CASC, 1); *idem*, 30-V-1932, E. O. Linsley (CASC, 1); *idem*, Palm Grove Sanctuary, 3-6-V-1976, F. T. Hovore (WFBC, 1); *idem*, Sabal Palm Grove, 5-IV-1980, J. E. Wappes (FSCA, 2); *idem*, 13-X-1987, Downie (FSCA, 1); *idem*, 25-26-X-1980, Wappes & Downie (FSCA, 1); *idem*, 8-VII-1978, R. Turnbow (FSCA, 1) ; *idem*, 30-IV-1979, R. Turnbow (FSCA, 1); *idem*, 29-III-1981, R. Turnbow (FSCA, 1); *idem*, 13-VI-1981, R. Turnbow (FSCA, 1); *idem*, 2-V-1982, R. Turnbow (RHTC, 1); *idem*, 21-X-1989, R. Morris (RFMC, 2; WOPC, 1); *idem*, 21-X-1993, J. Huether (JPHC, 1); *idem*, emerged, V-1997, D. Heffern (WFBC, 1); *idem*, 25-X-1978, R. L. Penrose (FSCA, 1); *idem*, 14-V-1980, R. L. Penrose (FSCA, 1); *idem*, 22-VI-1946, George B. Vogt (USNM, 1); San Patricio Co., Welder Wildlife Refuge, 15-IV-1981, S. G. Wellso (WOPC, 1). Mexico: Nuevo Leon: Monterrey, 24-26-VII-1960, H. Howden (CMNC, 1); *idem*, 17 km W Linares, 11-V-1994, J. E. Wappes (JEWC, 1); *idem*, 7.5 km E Galeana, 10-VI-1987, B. K. Dozier (FSCA, 1): Coahuila: 52.8 km SE Saltillo, 2287 m, H. Howden (CNCI, 1): Tamaulipas: Tampico, VII-1912 (UNSM, 1).



Figs 298–312. Aedeagi: 298 – *M.adoniella nebulosa*. 299 – *M. pinicola.* 300 – *M. knullorum*. 301 – *M. avina*. 302 – *M. nana*. 303 – *M. dariensis*. 304 – *M. quintana*. 305 – *M. crinis*. 306 – *M. apotoma*. 307 – *M. basilaris*. 308 – *M. minor*. 309 – *M. bilineata*. 310 – *M. orosiensis*. 311 – *M. pumilis*. 312 – *M. pellis*.

Description. Size: Length 3.0–4.0 mm; width 1.0–1.5 mm. Integument: Cranium dark brown; pronotal disc dark brown; elytral insignia as in Fig. 218.

Head: Vertex slightly wider than eyes in head dorsal view; antenna as in Fig. 45.

Thorax: Pronotal side margins broadly sinuous (Fig. 190), anterior margin rounded, disc convexly contoured, slightly depressed around periphery of discal trichobothria; elytra, length/width ratio 4.3 form oblong; elytral punctations large, arranged into 10 rows, pale regions of elytral disc and subapical regions of elytral disc profusely vested with short, pale, decumbent setae; anterior margin of protibia with 4 spines.

Abdomen: Aedeagus as in Fig. 283.

Variation: The available specimens are quite homogeneous.

Natural history. Specimens have been captured from March through July, and in October; one at 2287 m. George B. Vogt collected these beetle from debarked live *Celtis laevigata.*

Distribution (Map 7). The range of this species extends from southern Texas to northern Mexico.

Etymology. The trivial name refers to the rectangular body form of these beetles.

Differential diagnosis. These beetles are conveniently distinguished from the superficially similar beetles of *M. nana* and *M. pinicola* by the configuration of the pale regions of the elytral disc (compare Figs 212, 214, and 218). Note that only in the members of *M. rectangularis* are the anterior and posterior pale regions of the elytral disc broadly connected.

Madoniella vogti sp.nov. Figs 48, 154, 215; Map 7.

Type material. Holotype: Female. S. E. Hidalgo Co., Tex., P. 20-VII-46, George B. Vogt, cut from branch infested with scolytids, mistletoe on mesquite (USNM). (Specimen point mounted, female gender symbol affixed to paper point, support card; locality label; natural history label, host plant label, USNM acronymic label; holotype label.)

Paratypes: Twenty nine specimens. United States of America: Texas: Hidalgo Co., 20-VII-1946, mistletoe on mesquite, cut from branch infested with scolytids, George B. Vogt (USNM, 1; WFBC, 1, WOPC, 1); *idem*, 7-IV-1959, D. J. & J. N. Knull (FMNH, 1); *idem*, Anzaldusas C. Pk., 8-V-1986, N. M. Downie (FSCA, 1); Uvalde Co., Concan, 12-IV-1990, beating vegetation, W. F. Barr (WFBC, 1); Bexar Co., San Antonio, Fort Sam Huston, 23-II-1992, reared from dying *Phoradendron flavescens*, D. Heffern (WFBC, 1); *idem*, 1-4-III- 1988, from *Phoradendron* sp., R. Turnbow (RHTC, 1; WOPC, 1); *idem*, 28-31-III-1988, on *Phorandendron* sp., R. Turnbow (RHTC, 2; WOPC, 1); *idem*, 1-9-II-1997, T. Turnbow (WFBC, 1); Nueces Co., Lake Corpus Christi, 28-III-1952, D. J. & J. N. Knull (FMNH, 1); *idem*, 30-III-1961, D. J. & J. N. Knull (FMNH, 1; WOPC, 1); Cameron Co., Brownsville, 8-VI-1934, D. J. & J. N. Knull (FMNH, 1); *idem*, 25-V-1934, D. J. & J. N. Knull (WOPC, 1); *idem*, 15-V-1935, D. J. & J. N. Knull (FMNH, 1); *idem*, 31-V-1939, D. J. & J. N. Knull (WFBC, 1; WOPC, 1); Brewster Co., Big Bend National Park, Green Gulch, 3-V-1959, beating gray oak, *Quercus gricea*, Howden & Becker (WOPC, 1); *idem*, 28-V-1959, 1660 m, Howden & Becker (CNCI, 1): "Texas" (INHS, 1). México: Tamaulipas: 78-79 km N. Ciudad Victoria, 6-VI-1987, R. Turnbow (RHTC, 1); *idem*, Alas Cumbres, 19.2 km SW Ciudad Victoria, 4-VII-1986 (TAMU, 1): San Luis Potosi: 4 km W Guadalcazar, 18-VII-1988, R. Turnbow (RHTC, 1); *idem*, highway 70, 42 km E junction 57, 2-VI-1989, R. Turnbow (WOPC, 1).

Description. Size: Length 2.5–3.5mm; width 1.0–1.2 mm. Integument: Cranium dark brown; pronotal disc dark brown, anterior border reddish; elytral insignia as in Fig. 215.

Head: Vertex slightly wider than eyes in head dorsal view; antenna very similar to antenna depicted in Fig. 48.

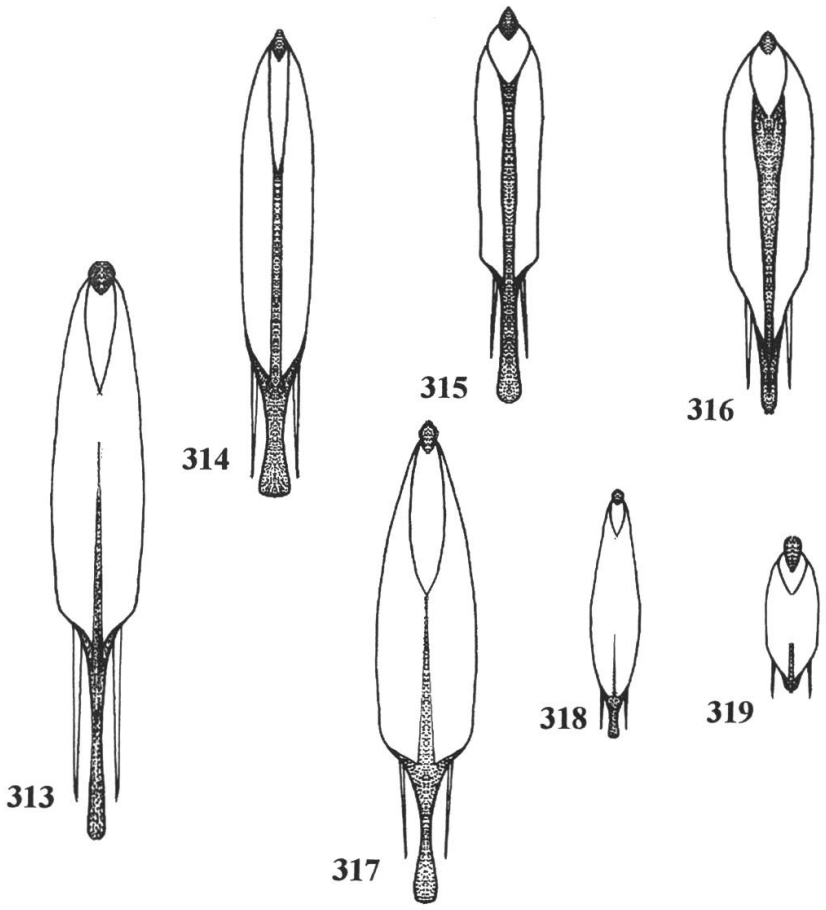
Thorax: Pronotal side margins broadly sinuous (Fig. 154), anterior margin rounded, disc evenly rounded in contour, slight depression around periphery of discal trichobothria; elytra oblong; elytral punctations large; arranged into 10 rows, pale regions of elytral disc profusely vested with short, decumbent, pale setae; anterior margin of protibia with 5 spines.

Abdomen: Aedeagus with thin phallobasic rod and abbreviated phallobasic apodeme.

Variation: The pale connection between the anterior and posterior angular pale elytral marking varies in thickness.

Natural history. These beetle have been collected from the dead branches of mesquite infested with scolytids and by beating branches of gray oak (*Quercus gricea*), and from *Phoradendrum*.

Distribution (Map 7). This species is widely distributed in southern Texas.



Figs 313–319. Aedeagi: 313. *Madoniella chiricahua* 314 – *M. lineola.* 315 – *M. gonia.* 316 – *M. patula.* 317 – *M. careorita.* 318 – *M. ebena.* 319 – *M. linea.*

Etymology. I dedicate the name of this species to the late George B. Vogt, an outstanding field entomologist whose insect collection efforts consistently include rich information about plant/insect relationships.

Differential diagnosis. Distinguishable from very similar specimens of *M. welderi* by geographical distribution and by differences in the aedeagi. In *M. welderi* the aedeagus has a broad phallobasic rod that is bifurcated distally and a phallobasic abbreviated apodeme whereas in *M. vogti* the phallobasic rod is thin and the phallobasic apodeme is well developed.

Madoniella welderi sp.nov. Figs 49, 151, 213, 276; Map 7

Type material. Holotype. Female. Texas, San Patricio Co., Welder Wildlife Refuge, May 10–12 1977, E. Giesbert (FSCA). (Specimen pin mounted, support card, female gender symbol affixed to support card; locality label; FSCA acronymic label; holotype label.)
Paratypes: Four specimens. United States of America: Texas: San Patricio Co., Welder Wildlife Refuge, 10-12-V-1077, E. Giesbert (WFBC, 1; WOPC, 1); *idem*, nr. Sinton, 5-V-1977, R. L. Penrose (FSCA, 1); *idem*, 11.2 km N Sinton, D. J. & J. N. Knull (FMNH, 1).

Description: Size: Length 3.9–5.0 mm; width 1.1–1.8 mm. Integument: Cranium red dark brown; pronotal disc dark brown; elytral insignia as in Fig. 213.

Head: Vertex wider than eyes in head dorsal view; antenna as in Fig. 49.

Thorax: Pronotal side margins broadly sinuous (Fig. 151), anterior margin rounded, disc with convex contour, slightly depressed around periphery of discal trichobothria; elytral form oblong; elytral punctations large, arranged into 10 rows; anterior margin of protibia with 5 spines; pale regions of elytral disc profusely vested with short, decumbent pale setae.

Abdomen: Aedeagus as in Fig. 276.

Variation: The darker regions of the integument have a more reddish hue in one specimen.

Natural history. The available specimens were collected during May.

Distribution (Map 7). Known only from the type locality.

Etymology. The trivial name represents a dedicative patronymic to honor Mr. Robert Hughes Welder for his foresight and dedication to advance education in natural history and for his wisdom in wildlife conservation. Mr. Welder established the Welder Wildlife Refuge in Texas.

Differential diagnosis. No integumental characteristics were found to distinguish adults of this species from those of *M. vogti*. Males of these two species may be readily distinguished by characteristics of the aedeagus. In *M. welderi* specimens the phallobase is without phallobasic apodeme. This structure is well developed in *M. vogti* specimens and the phallic apex is notably larger and the phallobasic rod is shorter in males of *M. welderi*. Also, only specimens of *M. welderi* are known from the Welder Wildlife Refuge.

Evolutionary considerations

Madoniella Pic is the most speciose genus in the subfamily Epiphloeinae. It is also the most widely distributed extending from southeastern Canada to the north, central United States to the west, West Indies to the east, and Argentina to the south. Moreover, although considerably homogeneous within species groups, the taxa are quite diverse in morphology at the species-group level. These factors suggest that the history of *Madoniella* has involved a long line of evolution at the species-group level and considerable recent diversification at species level. Historically, *Madoniella* began probably in South America, where the more primitive members of the genus reside, and has involved multiple dispersals into Middle America (*sensu* OPITZ 2005: 297) and the Antilles.

Our current depauperate understanding of the biology of this genus involves essentially some observations and records of *M. dislocata* (Say) and *M. pici* Lepesme, which shed no light about what manner of selection pressure would have promulgated the notable diversity within the genus. As in other epiphloeine genera, the whole of the madoniellan lifeway seem to be geared towards predation on lignicolous insects in the immature and adult semaphoronts. This leads me to propose that allopatric speciation patterns, via the accepted canons of genetic population dynamics would have been the major factor in the divergence of populations towards speciation. Distributionally, madoniellans seem to follow geographical generalities of other epiphloeines. That is, they are most abundant and diverse in terrain whose geologic history is characterized by periodic orogenic events and vicissitudinous climates.

Characters selected for phylogenetic analysis. Thirty-two adult morphologic and distributional characters of *Madoniella*, and of the outgroup genus *Decorosa* Opitz, are used to predict the derived or primitive states of characters (NIXON & CARPENTER

1993: 423). The hypothesis of phylogenetic relationships among the species groups of *Madoniella* Pic, and between *Madoniella* Pic and its sister genus *Decorosa* Opitz, are presented in Fig. 320. The phylogenetic tree, generated via NONA (GOLOBOFF 1993) in conjunction with Winclada version 1.00.08 (NIXON 2002), consists of 31 steps, index of consistency of 96, and an index of retention of 97. Heuristic analysis [maximum trees (hold)] = 100, number of replications 9 (must) = 100, and multiple TBR = TBR (mult max) was used. Character states designated as "0" are considered plesiotypic whereas those valued at "1" are considered apotypic.

Character states

Character 0. Elytral disc coloration: (0) not ornate; (1) ornate.
Character 1. Pronotal macrosculpture: (0) not coarse; (1) coarse.
Character 2. Seventh row of elytral punctations: (0) fully developed; (1) not fully developed.
Character 3. Labial terminal palpomere: (0) conic; (1) narrow-rectanguate.
Character 4. Elytral punctations: (0) not binoded; (1) binoded.
Character 5. Vertex: (0) wider than eye; (1) narrower than eye.
Character 6. Elytral insignia: (0) absent; (1) present.
Character 7. Epipleural fold: (0) complete; (1) incomplete.
Character 8. Pronotal anterior transverse depression: (0) absent; (1) present.
Character 9. Pronotal disc: (0) undulated; (1) not undulated.
Character 10. Leg color: (0) not patterned; (1) patterned.
Character 11. Leg color pattern: (0) dorsal margin not infuscated; (1) dorsal margin infuscated.
Character 12. Legs spotted: (0) no; (1) yes.
Character 13. Elytral vitta: (0) absent; (1) present.
Character 14. Forebody color: (0) not mostly red; (1) mostly red.
Character 15. Pronotal color: (0) not all reddish-brown; (1) all reddish-brown.
Character 16. Pronotal arc: (0) not bright red; (1) bright red.
Character 17. Posterolateral extension of elytral insignia: (0) not prolonged; (1) prolonged.
Character 18. Posterior block of elytral insignia: (0) not highly angular; (1) highly angular.
Character 19. Elytral punctations: (0) not small; (1) small.
Character 20. Vertex: (0) without setal tuft; (1) with setal tuft.
Character 21. 2° setae: (0) not matted; (1) matted.
Character 22. Geographical distribution: (0) continental; (1) islandic.
Character 23. Vertex width: (0) not very narrow; (1) very narrow
Character 24. Elytral color: (0) not mostly dark; (1) mostly dark.
Character 25. Epipleural margin: (0) not minutely serrulated distally; (1) serrulated distally.
Character 26. Discal elytral apex: (0) without spot; (1) with spot.
Character 27. Forebody color; (0) not totally dark brown; (1) totally dark brown.
Character 28. Length of elytral first degree setae: (0) not exceptionally long; (1) exceptionally long.
Character 29. Body form: (0) not suboval; (1) suboval.
Character 30. Antennal capitulum: (0) small; (1) large.
Character 31. Body; (0) not truncated; (1) truncated.

Tab. 1. The character state matrix.

Characters	0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3
Taxa	0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
Decorosa-outgroup	1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
fonteboa group	1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
linea group	1 0 0 0 0 1 1 1 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
orientalis group	1 0 0 0 0 1 1 1 0 1 1 1 0 0 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
ignis group	1 0 0 0 0 1 1 1 0 1 1 1 0 0 1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
cardinalis group	1 0 0 0 0 1 1 1 0 1 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
adona group	1 0 0 0 0 1 1 1 0 1 1 1 0 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
abacula group	1 0 0 0 0 1 1 1 0 1 1 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
pumilis group	1 0 0 0 0 1 1 1 0 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
tegetis group	1 0 0 0 0 1 1 1 0 1 1 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
nebulosa group	1 0 0 0 0 1 1 1 0 1 1 0 1 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0
basilaris group	1 0 0 0 0 1 1 1 0 1 1 0 1 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0
thomasi group	1 0 0 0 0 1 1 1 0 1 1 0 1 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0
pedalis group	1 0 0 0 0 1 1 1 0 1 1 0 1 0 0 0 0 0 0 0 0 1 1 0 0 1 0 0 0 0 0 0
minor group	1 0 0 0 0 1 1 1 0 1 1 0 1 0 0 0 0 0 0 0 0 1 1 0 0 1 0 0 0 0 0 0
dislocata group	1 0 0 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0
welderi group	1 0 0 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0
bullalis group	1 0 0 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
apsis group	1 0 0 0 0 1 1 1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0
maxicornis group	1 0 0 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
emblema group	1 0 0 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
cracentis group	1 0 0 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
merga group	1 0 0 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Phylogenetic and zoogeographic interpretations

Statements about supraspecific evolution, regardless whether they are made intuitively or with the aid of a computer, involve essentially quesswork. The goodness of such educated quesses, or hypotheses, often depends on the level of thoroughness of the investigator with regard to taxa coverage, level of gestalt analysis, and, in the case of biogeographical statements, inclusion of distributional information from as many specimens as possible of the taxon under consideration.

Checkered beetles are scantily collected (OPITZ 2007: 79). In my experience, the taxonomic process begins with the laborious gathering of specimens, from the field and from stewards of private and museum collections. For me, it takes about five years to gather sufficient materials for credible assessments of the biological species, statements of evolutionary kindships, and generalities about zoogeography. I have "combed" the taxonomic community for madoniellan specimens for seven years, and I believe that this study is based on an extent of taxa coverage and specimen representation that lends credibility to the relationships discussed herein, especially those associated with species-level geographic parameters.

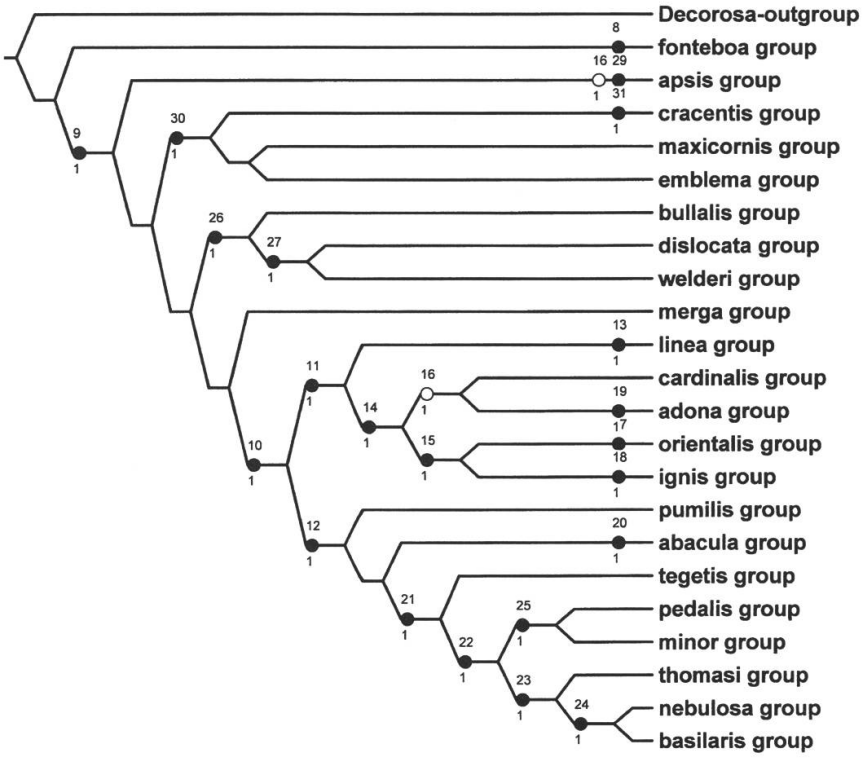


Fig. 320. Phylogenetic tree of *Madoniella* species groups.

The ground plan for the common ancestor of *Decorosa* and *Madoniella* (ancestor A) probably began to evolve in South America during a time when that continent was disjunct from Mexo-America (OPITZ 2004: 102), when volcanism produced portals between the Pacific Ocean and the Caribbean Sea, and a time preceeding the cataclysmic events leading to the Andean uplifts (FORD 2006: 99). Elements of this progenitor, those that would lead to *Decorosa*, traversed oceanic gaps to become established in Mexo-America. Then, the *Decorosa* progenitor would have dispersed to the southern terrain of Hispaniola when that portion of Hispaniola approximated the Yucatán peninsula (ROSEN 1985: 644). The subsequent paleogeographic and speciation events of the *Decorosa* line are discussed by OPITZ (2008: 17).

The *Decorosa* ancestral stock, and the one that led to *Madoniella*, would have abandoned the drab, bark-like elytral coloration and evolved ornate patterns on the elytral disc. Ancestor B generated a diverse number of species that as a group exibit a well-developed elytral insignia. Moreover, this ancestor probably remained in ancestral grounds and evolved a transverse pronotal depression as it advanced to the *fonteboa* species group; this depression is not found elsewhere in *Madoniella*. The progenitor of the *apsis* group (ancestor C) would have been an early offshoot component of ancestral *Madoniella* that traversed Insular Central America (OPITZ 2004: 106) and the Nicaraguan Depression (WHITEHEAD & BALL 1997: 397). Progenitor D, still an inhabitant of South America, generated descendants E and F. The first of these produced the exclusively South American *cracentis* group with the complimentary stock (ancestor F) that yielded the Insular Central American *emblema* group and the Mexo-American *maxicornis* group in which the antennae became substantially enlarged.

It is presumed that ancestral species G was widely distributed in Middle America during a time when tumultuous orogenic events produced a wide array of montane forest habitats, apparently very conducive to speciation events. This ancestor eventually produced progenitor H and I. One line of the former produced the *bullalis* group. The other line produced the forerunner (ancestor I), in which the forebody became totally dark, eventually led to ancestors that generated northern elements now represented by species that are almost exclusively North American; the *dislocata* and *welderi* groups. Presumption of a wide distribution of G is supported by the extant location of a G offshoot now located in the Greater Antilles in the form of *M. bullalis*.

Ancestor J produced a widely distributed *merga* group and ancestral populations that were marked by leg color patterns. In the *linea* to *ignis* assemblage, the dorsal margin of the femora became distinctly infuscated, whereas in the complementary stock the legs, especially the femora and tibiae, became distinctly spotted. The evolutionary progression towards the *cardinalis* and *adona* decendants involved progenitors K-L-M-N, whereas those that led to the *orientalis* and *ignis* groups stem from ancestral K-L-M-O.

Progenitor P produced populations that became widely localized in the Antilles; with only extant members of the *pumilis, abacula*, and *tegetis* groups remaining in ancestral terrains of Middle America (Opitz 2004: 97) and South America. I have observed that madoniellans are very good fliers, a capability that probably provided the ability to distribute across wide oceanic gaps as is suggested by the disjunct distribution between the sister groups, i.e., the *pedalis* group (Greater Antilles) and the *minor* group (Lesser Antilles).

The *thomasi-nebulosa-basilaris* grouping has a distributional pattern that suggests dispersal from ancestral South American terrain, where two species of the *thomasi* group remained, to the Lesser Antilles (one species of the *basilaris* group) and Greater Antilles (3 species from the *basilaris* group and 2 species from the *nebulosa* group). In view of the substantial presence of autochthonous islandic species, one may presume that oversea dispersal, combined with intra-species group ecological vicariance, has been an important characteristic in madoniellan historical and extant biogeography.

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Resumen

Este trabajo revisa el género *Madoniella* Pic descrito en 1935 para incluir dos especies. El género se incrementa a 74 especies, de las cuales 65 son nuevas. Las especies conocidas anteriormente, con sus localidades tipo, son *Madoniella bilineata* (Chevrolat) (Cuba), *M. corporaali* Pic (Antillas Menores: Guadalupe: Trois Rivieres), *M. dislocata* (Say) (USA: Georgia: Clark Co., Whitehall Forest), *M. erythrocephala* (Gorham) (Panamá: Chiriquí: Volcán de Chiriquí), *M. minor* Pic (Antillas Menores: Guadalupe), *M. nebulosa* (Chevrolat) (Cuba), *M. orientalis* Zayas (Cuba), M. *pici* Lepesme (Antillas Menores: Guadalupe: Trois Rivieres), *M. punctata* (Gorham) (Guatemala, El Quinché: Montañas de El Quinché). Las 65 especies nuevas descritas en el presente trabajo, con sus localidades tipo, son las siguientes: *M. abacula* (México: Oaxaca: 14 km NW Díaz Ordaz), *M. adona* (Republica Dominicana: Cerro Diego de Ocampo), *M. aktis* (México: Chiapas: 11.2 km SE Simojovel), *M. anapsis* (Dominica: 8 km E Dublanc), *M. antennatra* (Honduras: Yoro: Pico Pijol), M. *apotoma* (Honduras: Comayagua: 11.2 km E Siguatepeque), *M. apsis* (México: Chiapas: El Aguacero), *M. avina* (Argentina: Salta: Parque Nacional El Rey), *M. basilaris* (Republica Dominicana: La Vega: 1 km NW Manaboa), *M. basilia* (Cuba: Loma, Pico del Gato), *M. bullalis* (Republica Dominicana: Monte Cristi: 8.6 km N Villa Elisa), *M. cardinalis* (Costa Rica: Heredia: Estación Biológica La Selva), *M. careorita* (Costa Rica: Heredia; Estación Biológica La Selva), *M. cavina* (Republica Dominicana: Pedernales: 23.5 km N Cabo Rojo), *M. cerviculina* (Republica Dominicana: Pedernales: 3.3 km NE Los Arroyos), *M. chiricahua* (USA: Arizona: Cochise Co., Chiricahua Mountains), *M. collata* (Brasil: Chapada), *M. cracentis* (Brasil: Amazonas: 1 km W Taruma Falls), *M. crinis* (México: Tlaxcala: San Francisco Temetzontla), *M. cymatilis* (Haití: Du Nord: Cap Haitien), *M. dariensis* (Panamá: Darien: Pire, Estación Rancho Frío), *M. disjuga* (México: San Luis Potosí: 40 km W Xilitla), *M. displicata* (Venezuela: Aragua: Ocumare), *M. ebena* (Republica Dominicana: La Romana: Hato Mayor), *M. emblema* (Costa Rica: Heredia; 11 km SE La Virgen), *M. extensiva* (Puerto Rico: Maricao Forest), *M. facis* (Guyana: Iwokrama Research Forest, 6.4 km N de Kurupukari), *M. fonteboa* (Brasil: Amazonas: Fonteboa), *M. gonia* (México: Durango: 4.8 km E El Salto), *M. guana* (Islas Vírgenes: Isla Guana), *M. howdenorum* (México: Chiapas: 2.6–6 km S La Trinitaria), *M. ignis* (Guatemala: Zacapa: San Lorenzo), *M. infula* (Republica Dominicana: La Vega: Cordillera Central, 4.1 km SW El Convento), *M. insignis* (Brasil: Bahía: San Antonio da Barra), *M. knullorum* (USA: Texas: Jeff Davis Co, Davis Mountains), *M. kuehlorum* (Nicaragua: Matagalpa: 10 km NW Matagalpa), *M. latinopsis* (Venezuela: Aragua: El Limón), *M. leona* (México: Nuevo León: 14.4 km W Iturbide), *M. linea* (Jamaica: Hardwar Gap), *M. lineola* (Guatemala; San Lorenzo: 2 km S San Lorenzo), *M. lurida* (Republica Dominicana: Pedernales: La Abeja), *M. magdalena* (Colombia: Magdalena: Tayrona Pueblito), *M. maxicornis* (México: Veracruz), *M. melina* (Honduras: Yoro: 8 km N La Habana), *M. merga* (México: Durango: 12.5 W El Salto), *M. nana* (USA: Texas: Cameron Co. Sabal Palm Grove), *M. orosiensis* (Costa Rica: Guanacaste: Volcán Orosi), *M. patula* (México: Chiapas: 54 km S Ocosingo), *M. pedalis* (Cuba: Cayamas), *M. pellis* (Cuba: Holguin: Sierra de Nipe), *M. peninsularis* (México: Baja California: Cabo San Lucas), *M. pinicola* (USA: Arizona: Cochise Co., Chiricahua Mountains), *M. plenita* (Costa Rica: Cartago: Turrialba), *M. pumilis* (Colombia: Magdalena: Pueblito), *M. quintana* (México: Quintana Roo, 66 km E Xpujil), *M. rectangularis* (USA: Texas: Hidalgo Co.), *M. redacta* (Costa Rica; Heredia: Estación Biológica La Selva), *M. rubidia* (Brasil: Bahía: Salobro), *M. storea* (Jamaica; Hardwar Gap), *M. tegetis* (Honduras: Copan), *M. texis* (Costa Rica: Cartago: Turrialba), *M. thomasi* (Andros Island: Maidenhair Coppica), *M. vogti* (USA: Texas: Hidalgo Co.), *M. welderi* (USA: Texas: San Patricio Co., Welder Wildlife Refuge), y *M. zonula* (Panamá: Colón: Fort Sherman). Un neotipo es designado para *Enoplium dislocatum* Say. Se designan también lectotipos para las especies *Madoniella corporaali* Pic, *Epiphloeus erythrocephalus* Gorham, *Madoniella minor* Pic, *Madoniella pici* Lepesme, *Epiphloeus punctatus* Gorham, y *Epiphloeus nebulosum* Chevrolat. Las especies de *Madoniella* son lignicolas, con un papel de depredador, sus larvas son depredadores voraces de insectos barrenadores de la madera. Estos coleópteros vuelan muy bien, son muy crípticos sobre la corteza, y aparentemente capaces de percibir olores volátiles, tanto de los Scolytidae que son sus presas potenciales, como de la madera misma. Cuando ocurre un incremento grande de población de Scolytidae en un sitio, se congregan poblaciones altas de adultos de *Madoniella*, que después de poner huevos, se dispersan. Una vez que estos cléridos fundadores establecieron una población depredadora, o sus descendientes, no regresan a poner huevos en el mismo sitio, ni en otro incremento siguiente de población de los Scolytidae. Las especies de *Madoniella* no parecen tener un hospedero específico (insecto o especie de árbol), se encuentran asociados a una buena variedad de coleópteros barrenadores de madera y especies diversas de árboles como pino, roble o caoba. Se presenta la hipótesis de que un ancestro común de *Decorosa* y *Madoniella* evoluciono desde Suramérica con dispersión de través del mar hacia Mesoamérica y las Antillas. Se cree que la fauna de las Antillas Mayores tiene su origen en especies Mesoamericanas que cruzaron un océano relativamente estrecho en aquel tiempo cuando la parte sur de Hispaniola era cercana a la península de Yucatán. Las especies de Madoniella de las Antillas Menores probablemente derivan de elementos del norte de Suramérica. La abundancia relativa de especies endémicas en las islas, que pertenecen a diversas líneas filogenéticas, indican que la dispersión trans-oceánica ha sido una característica importante en la historia de la biogeografía de *Madoniella*.

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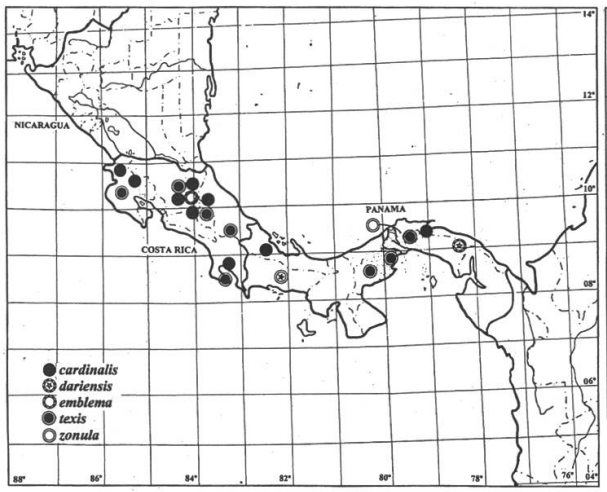
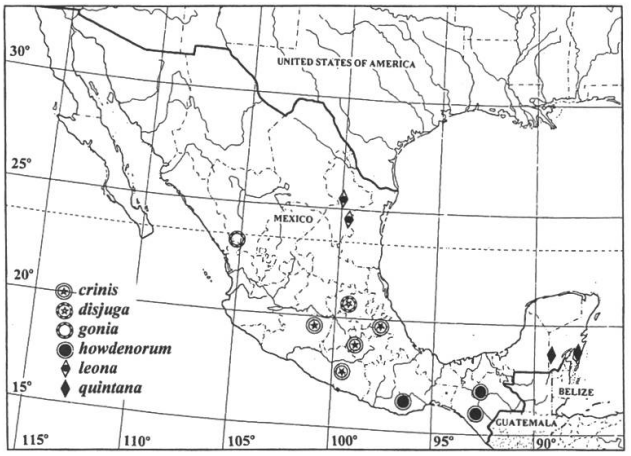
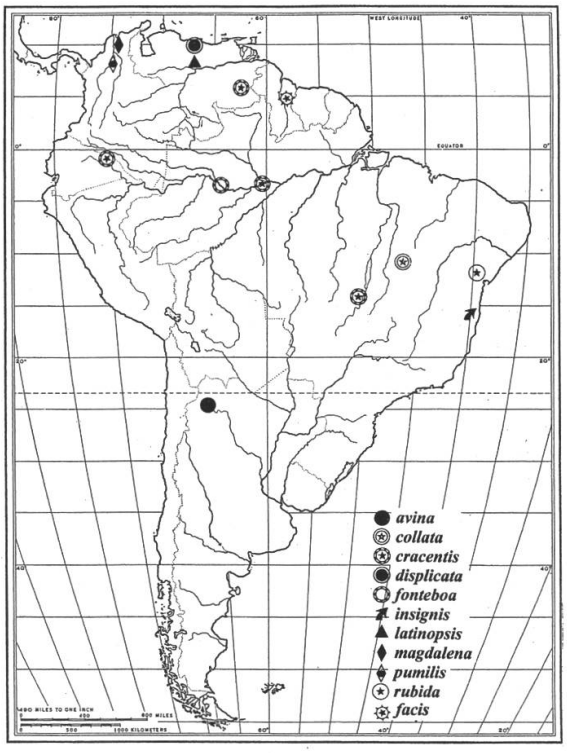


Map 1. Geographic distribution of species as indicated.

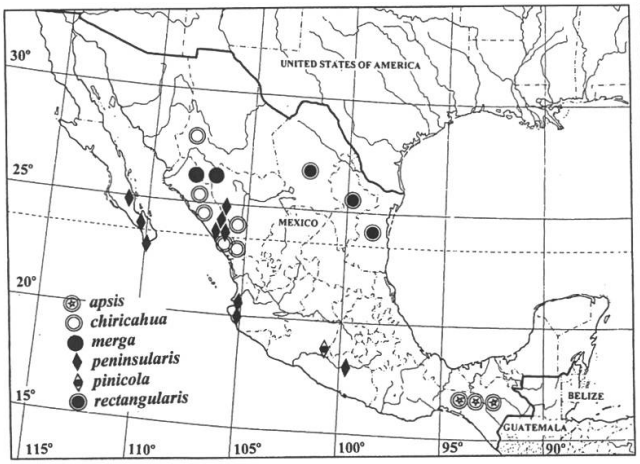
Map 2.



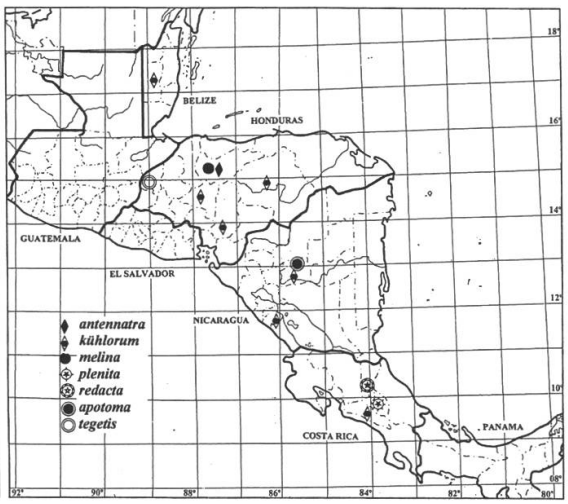
Map 3.



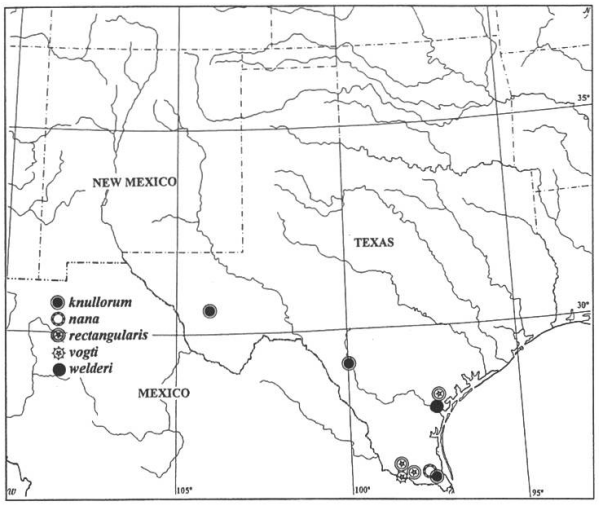
Map 4.



Map 5.



Map 6.



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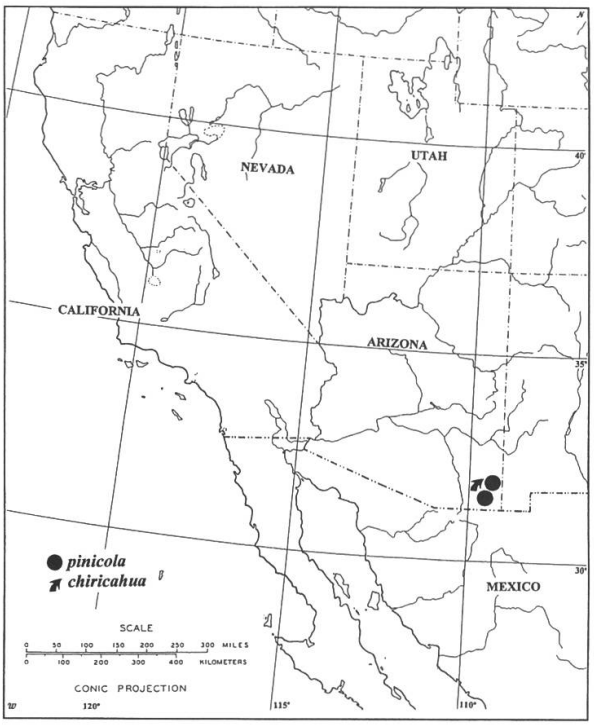

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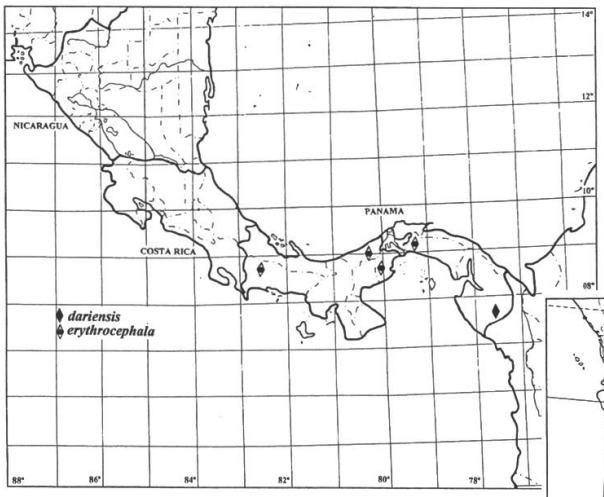

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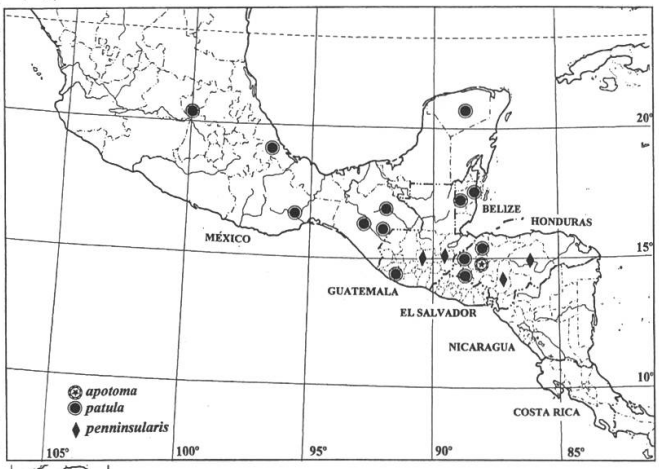
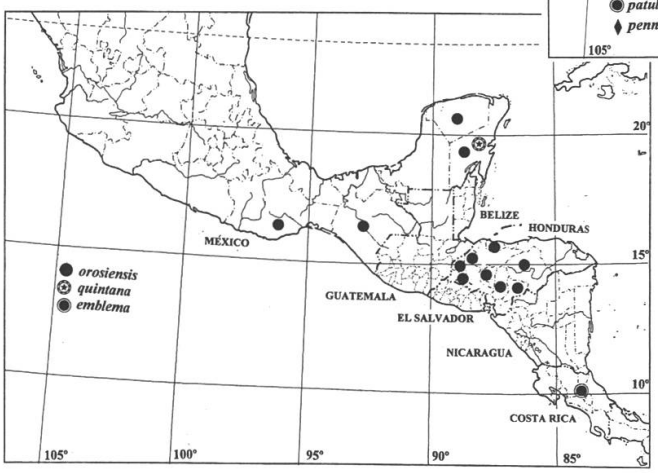
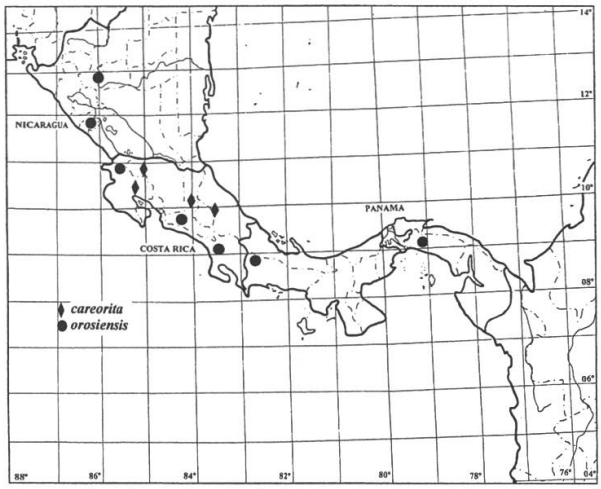


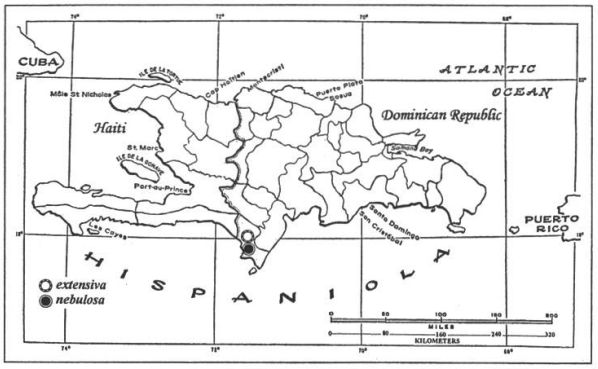
Map 10.



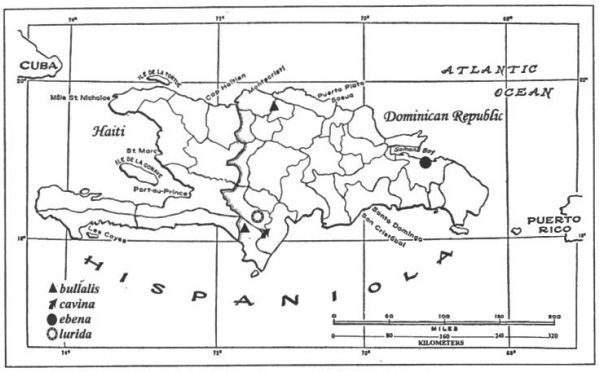
Map 11.



Map 12.



Map 13.



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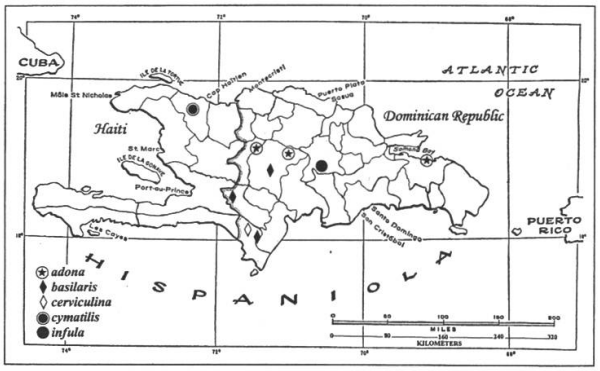

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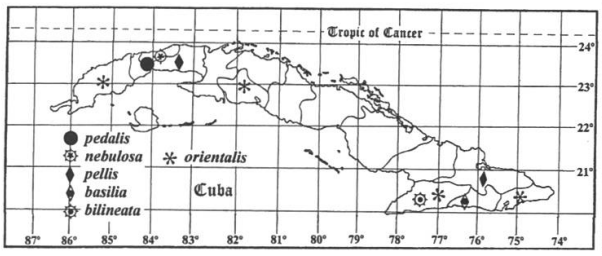
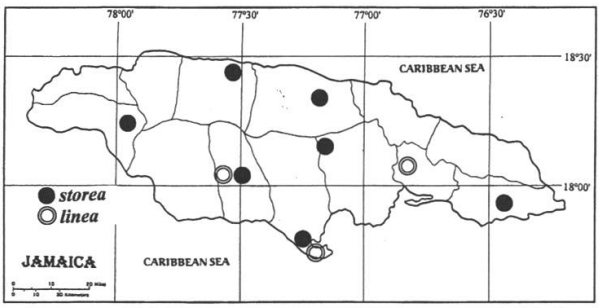
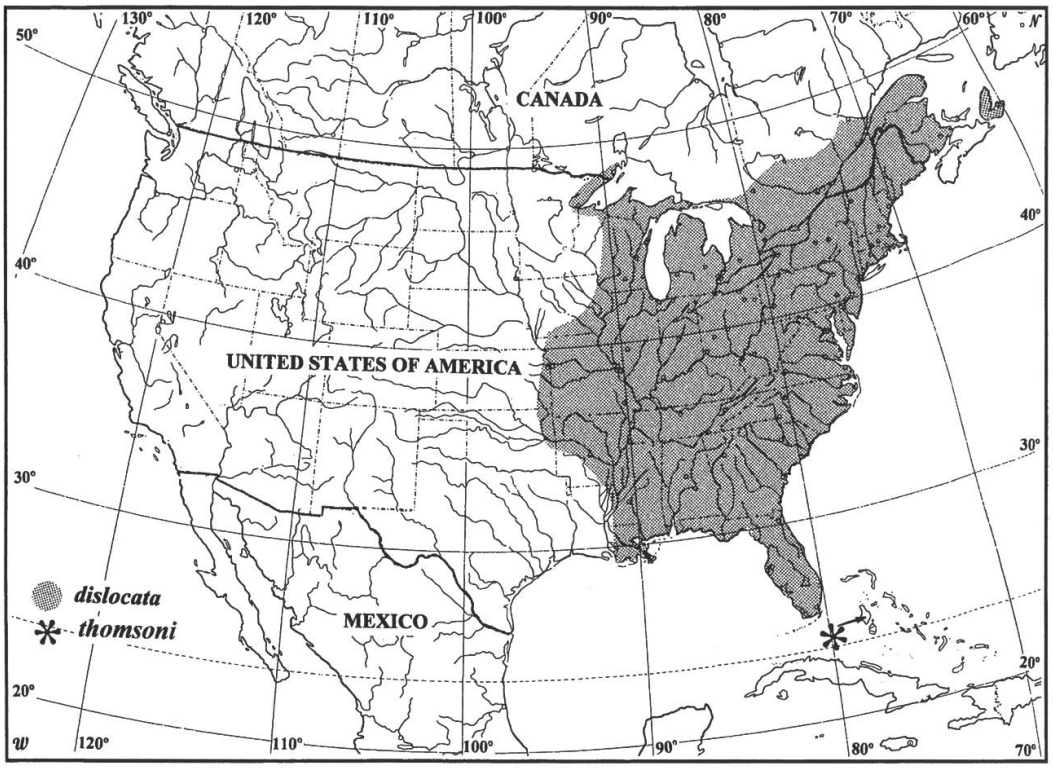


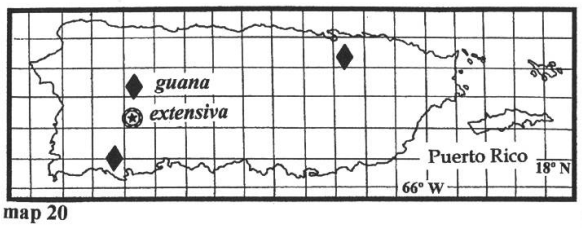
Map 16.



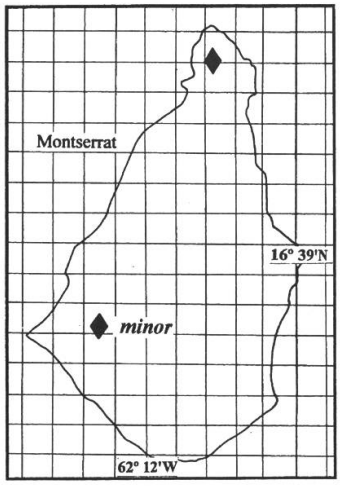
Map 17.



Map 18.

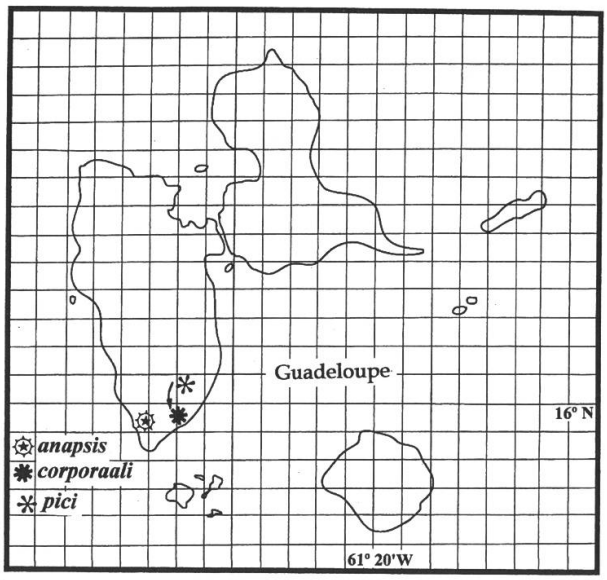


map 20



map 21

Maps 20–21.



Map 19.