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Nylanderia of the World Part III: *Nylanderia* in the West Indies

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Abstract

The diversity of the formicine ant genus *Nylanderia* is currently underestimated and largely undescribed. This includes the faunas of tropical regions where species richness is typically high. Here, the taxonomy of the West Indian *Nylanderia* fauna is revised for the first time. Fourteen new species are described, bringing the total number of species known from the region to 22. The **new species** are: *N. bibadia*, **sp. nov.**, *N. caerula*, **sp. nov.**, *N. coveri*, **sp. nov.**, *N. disatra*, **sp. nov.**, *N. esperanza*, **sp. nov.**, *N. fuscaspecula*, **sp. nov.**, *N. lucayana*, **sp. nov.**, *N. metacista*, **sp. nov.**, *N. pini*, **sp. nov.**, *N. semitincta*, **sp. nov.**, *N. sierra*, **sp. nov.**, *N. wardi*, **sp. nov.**, *N. xestonota*, **sp. nov.**, and *N. zaminyops*, **sp. nov.** There are several introduced species in the region including the globally widespread Old World species *N. bourbonica*. Other introduced species are *N. fulva, N. pubens, N. guatemalensis*, and *N. steinheili*. The following **new synonyms** are proposed: *fulva* Mayr 1862 (= *fulva cubana* Santschi 1930); *steinheili* Forel 1893 (= *steinheili minuta* Forel 1893). An identification key is provided for the workers of *Nylanderia* found in the West Indies. Photomontage images are provided

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for the worker of each species and when available photomontage and SEM images are provided for males. This work represents another step forward in understanding the diversity of this widespread and commonly encountered ant genus.

Key words: ant, Caribbean, Formicinae, genus-group, morphology, new species, taxonomy

Introduction

The Neotropical bioregion is a global center of ant species diversity, with more species than any other. The subfamily Formicinae makes up 16% of the Neotropical fauna (Antweb 2019). Among the formicine ants, one of the most species rich and commonly encountered genera is *Nylanderia* Emery, 1906. Throughout the Neotropics this genus remains taxonomically poorly known. We focus here on the West Indian *Nylanderia* fauna. The West Indies is a particularly important area for ant systematics because it is an interface between the Neotropical and Nearctic regions, and it is subject to the dynamics of island biogeography. This paper is the third installment of a series of papers that aims to revise the genus *Nylanderia* on a global scale (LaPolla *et al*. 2011a; Kallal & LaPolla 2012).

Until relatively recently, *Nylanderia* species were largely placed in the genus *Paratrechina* Motschoulsky, 1863 (LaPolla *et al*. 2010). In the New World, only the invasive *P. longicornis* (Latreille 1802) is a valid *Paratrechina*. Historically, the treatment of *Nylanderia* in the West Indies has consisted of island specific surveys (e.g., Alayo 1974) and isolated species descriptions since Roger (1863) described the first species from the islands. Those initial studies yielded two morphologically unusual species, the small-eyed *N. microps* (Smith 1937) and *N. myops* (Mann 1920). Two of the earliest species reported to be common and widespread in the West Indies are *N. guatemalensis* (Forel 1885) and *N. steinheili* (Forel 1893), which are probably non-native to the region, and likely introduced from either Central or South America. Other non-native *Nylanderia* are frequently encountered in the West Indies, including *N. fulva* (Mayr 1862) and its close relative *N. pubens* (also likely introduced, though some uncertainty exists regarding its native range) and the Old World species *N. bourbonica* (Forel 1886). There is no taxonomic synthesis of the species found in the West Indies.

For most of the last century, the study of *Nylanderia* in the West Indies involved species occurring primarily in lowland and human disturbed habitats, and this certainly limited the number of species that were discovered. Far from being a region of mainly invasive and non-native species, the West Indies are host to quite a few endemic species, but they mainly occur in mountainous areas. The mountains of Cuba and Hispaniola yielded three and seven new species, respectively, in the course of this study. However, even in the relatively well studied mountain rainforests of Puerto Rico, a new species was discovered from El Yunque National Forest, leading us to speculate that more species remain to be discovered throughout the West Indies, especially in the highland forests of Hispaniola and Cuba. While we employ a morphological approach in this study, future studies would certainly benefit by adding molecular data, as there are morphologically very similar species across the West Indies and indeed *Nylanderia* as a whole (e.g., Gotzek *et al*. 2012), and it seems likely that morphology alone is underestimating species diversity.

Most of the native species across the West Indies appear to be primarily ground-dwelling, found in rotten logs and under stones in wooded to densely forested habitats. One known exception is the arboreal, and apparently nocturnal, *N. microps*. Given the diversity of habitats in which *Nylanderia* are found in other parts of the world (Kallal and LaPolla 2012), future studies would benefit by examining other habitat types across the islands. One West Indian fossil species is known from Dominican Amber: *N. vetula* LaPolla & Dlussky, 2010. Based on its overall morphology it appears most similar to the extant *N. fuscaspecula*, **sp. nov.**, a widespread species in the Dominican Republic.

Presented here is the first species-level revision of the West Indian *Nylanderia*, including the description of 14 new species. The high species diversity of *Nylanderia* coupled with the fact there are species that have been spread outside their native range necessitates that only species originally described from the West Indies (i.e., that the holotype or type series is from the West Indies, whether native or not) are treated taxonomically in this study. However, all species known from the region are included in the taxonomic key and species synopsis.

Materials and methods

Sources of material. Specimens examined for this study are deposited in the following institutions and private collections:

JKWC	James K. Wetterer, private collection, Jupiter, Florida, U.S.A.
JTLC	John T. Longino, private collection, Salt Lake City, Utah, U.S.A
LRDC	Lloyd R. Davis, Jr., private collection, Lake Placid, Florida, U.S.A.
NHMB	Naturhistoriches Museum, Basel, Switzerland
NHMW	Naturhistoriches Museum Wien, Vienna, Austria
NMNH	National Museum of Natural History, Washington D.C., U.S.A.
MCZC	Museum of Comparative Zoology, Cambridge, Massachusetts, U.S.A.
MHNG	Muséum d'Histoire Naturelle, Geneva, Switzerland
PSWC	Philip S. Ward, private collection, Davis, California, U.S.A.
UCDC	Bohart Museum of Entomology, University of California, Davis, California, U.S.A.

Measurements and imaging. All measurements were taken using a Leica MZ16 dissecting microscope with a stage micrometer, recorded to the nearest 0.001 mm, and rounded to two decimal places for presentation. For each measurement, the number of specimens measured is designated as *n* in parentheses. Minimum and maximum measurements and indices are presented. All measurements are recorded in millimeters. Digital color images were created using a Q-imaging digital camera and Syncroscopy Auto-Montage software. Imaging includes dorsal, full- face, and lateral views of workers of all species, and full-face and lateral views of males as available. For male specimens, SEM micrographs of dorsal, lateral, and ventral views of the external genitalia are also provided. Each imaged specimen is provided a specimen-level identification number. Measurements and indices used in this study, some of which are modified from LaPolla (2009), LaPolla *et al*. (2011a), and LaPolla *et al*. (2011b), are defined as:

EL (Eye Length): maximum length of compound eye in full-face view.

GL (Gaster Length): length of the gaster in lateral view from the anteriormost point of the first gastral segment (third abdominal segment) to the posteriormost point.

HL (Head Length): length of the head proper, excluding the mandibles; measured in full-face view from the midpoint of the anterior clypeal margin to a line drawn across the posterior margin from its posteriormost points (to accommodate species where the posterior margin is concave).

HW (Head Width): maximum width of the head in full-face view, including the portion of the eyes that extends past the lateral margins of the head where present.

MMC (Mesonotal Macrosetae Count): the number of erect macrosetae on mesonotum to one side of sagittal plane. In males and queens, this count is mesonotum + metanotum.

PMC (Pronotal Macrosetal Count): the number of erect macrosetae on pronotum to one side of sagittal plane.

SL (Scape Length): maximum length of the antennal scape excluding the condylar bulb.

SMC (Scape Macrosetal Count): number of erect macrosetae on the scape visible in full frontal view.

TL (Total Length): HL+WL+GL

WL (Weber's Length): in lateral view, the distance from the posteriormost border of the metapleural lobe to the anteriormost border of the pronotum, excluding the neck.

CI (Cephalic Index): (HW/HL) • 100

REL (Relative Eye Index): (EL/HL) • 100

SI (Scape Index): (SL/HW) • 100

SI2 (Scape index using EL): (SL/EL) • 100 (completed for workers only)

For a discussion on the use of the term macrosetae versus macrochaetae (*sensu* Trager, 1984), see LaPolla *et al*. (2011a). Here, macrosetae are larger erect or suberect hairs with a visible base. Macrosetal counts on scapes are given for number of macrosetae on one scape; on the mesosoma, macrosetal counts are for one side of the sagittal plane. Therefore, to get complete counts for scapes and mesosomal macrosetae the numbers provided in the descriptions should be doubled.

Male genitalia terminology has been changed to follow the recommendations of Boudinot (2018). Therefore, for the purpose of this study, parameres become gonopods and penis or aedeagal valves become penial sclerites. The midline of the penial sclerite is here defined when viewed in lateral view. For example, if the valvura of a penial sclerite is said to be ventral to the midline that means if an imaginary line were drawn across the penial sclerite in lateral view it would be ventral to that imaginary line.

The International Commission on Zoological Nomenclature (1999) requires lectotypes designated after 1999 "contain an express statement of deliberate designation" (amended Article 74.7.3). We use the statement "lectotype here designated" to fulfill this requirement. Lectotypes have been designated for four species (*N. fulva*, *N. pubens*, *N. goeldii*, and *N. steinheili minuta*) from series of unambiguous syntype specimens. We do this to provide nomenclatural stability. Lectotype designation is done in a revisionary context in agreement with the amended Recommendation 74G of the ICZN.

Systematic Treatment

Distinguishing *Nylanderia* from Morphologically Similar Genera in the West Indies

A complete diagnosis of *Nylanderia* is provided by LaPolla *et al*. (2011a). An updated key to the genera of the *Prenolepis* genus-group is provided by Williams & LaPolla (2016). In the West Indies there are three *Prenolepis* genus-group genera present: *Nylanderia*, *Paratrechina,* and *Zatania* LaPolla, Kallal & Brady, 2012. The only *Paratrechina* species in the New World is *P. longicornis*, which is an invasive species from either Africa or Asia (LaPolla *et al*. 2013; LaPolla & Fisher 2014). It is easily separated from *Nylanderia* by possessing a uniquely elongated mesosoma with a low propodeum (typically reaching only the mesonotal height in lateral view) and a long scape that is without macrosetae. *Zatania* is native to the West Indies (LaPolla *et al*. 2012) and can be separated from *Nylanderia* based on mesosomal characteristics: *Nylanderia* possess deep and complete mesonotal and metanotal sutures that divide the posterior part of the mesosoma distinctly into the mesopleuron and propodeum; *Zatania* have shallow and incomplete mesosomal sutures (Williams & LaPolla 2016). Additionally, most of the West Indian *Zatania* have 5 mandibular teeth. The exception is *Z. cisipa* (Smith & Lavigne 1973), which possesses 6 teeth (LaPolla *et al*. 2012); all West Indian *Nylanderia* have 6 mandibular teeth.

Synopsis of Extant *Nylanderia* Species in the West Indies

N. bibadia, **sp. nov.**, Dominican Republic
N. bourbonica (Forel, 1886), widespread across the West Indies
N. caerula, **sp. nov.**, Dominican Republic
N. coveri, **sp. nov.**, Grenada
N. disatra, **sp. nov.**, Dominican Republic
N. esperanza, **sp. nov.**, Dominican Republic
N. fulva (Mayr 1862), widespread across the West Indies
= *N. fulva cubana* (Santschi 1930), **syn. nov.**
N. fuscaspecula, **sp. nov.**, Dominican Republic
N. goeldii (Forel, 1912), Trinidad
N. guatemalensis (Forel 1885), widespread across the West Indies
N. lucayana, **sp. nov.**, Lucayan Archipelago
N. metacista, **sp. nov.**, Dominican Republic
N. microps (Smith 1937), Puerto Rico
N. myops (Mann 1920), Cuba
N. pini, **sp. nov.**, Dominican Republic
N. pubens (Forel 1893), range uncertain, presumably widespread
N. semitincta, **sp. nov.**, Puerto Rico
N. sierra, **sp. nov.**, Cuba

N. steinheili (Forel 1893), widespread across the West Indies
= *N. steinheili minuta* (Forel 1893), **syn. nov.**
N. wardi, **sp. nov.**, Cuba
N. xestonota, **sp. nov.**, Cuba
N. zaminyops, **sp. nov.**, Trinidad

Note on ***Nylanderia fulva cubana***
Figs. 34–36 (worker)

Nylanderia fulva (Mayr, 1862)

=*Paratrechina (Nylanderia) fulva st. cubana* Santschi, 1930: 81 (worker). 6 syntype workers, CUBA: La Habana; Vedalo (Jaume) (NHMB) (examined). Combination in *Nylanderia*: Kempf, 1972: 167; in *Paratrechina*: Brandão, 1991: 366; in *Nylanderia*: LaPolla, Brady & Shattuck, 2010: 127. **SYN. NOV.**

As noted elsewhere in this study, including in the worker-based identification key, workers of *N. fulva* and *N. pubens* cannot be reliably separated based on morphological examination; males are necessary. Since the original description of *N. fulva* by Mayr (1862), eight subspecies of *N. fulva* have been recognized. One of those described from the West Indies, *N. pubens*, was elevated to full species by Trager (1984), but another described from Cuba has remained as a subspecies, *N. fulva cubana*. This subspecies is described only from workers, which conform morphologically to either *N. fulva* or *N. pubens*. Based on their morphology, we consider *N. fulva cubana* to be a synonym of either *N. fulva* or *N. pubens*; since the subspecies is described solely from workers, we place it as a junior synonym of *N. fulva*. As with many of these morphologically similar species on different islands, additional information from males or molecular sequence data may prove useful to future studies interested in deeper analysis of these morphological complexes

Note on ***Nylanderia goeldii***

Prenolepis (*Nylanderia*) *goeldii* Forel, 1912: 68 (worker). 2 syntype workers, BRAZIL: Prov. Espirito Santo (Göldi) (MHNG) (examined; lectotype worker here designated (USNMENT00753651)); 2 workers, BRAZIL: Serra Vermella, Prov. Rio de Janeiro (Göldi) (examined). Combination in *Paratrechina* (*Nylanderia*): Emery, 1925: 222*; in Nylanderia:* Kempf, 1972: 167; in *Paratrechina:* Brandão, 1991: 367; *Nylanderia*: LaPolla *et al.*, 2010: 127.

We identified some worker specimens from Trinidad (10–12th mi., Arima-Blanchisseuse Rd., N.A. Weber, 207.2 (MCZC)) as *N. goeldii*, a first record of the species in the West Indies. We are not formally treating the taxonomy of this species as it was described from Brazil and likely has a wide range in South America. The species has not been treated taxonomically since its original description by Forel and should be examined from across its geographical range before making any taxonomic decisions regarding its status. We here designate a lectotype to assist in future taxonomic treatments of this species and provide an image of one of the worker specimens collected in Trinidad to allow for identification.

Note on ***Nylanderia anthracina***

Prenolepis anthracina Roger, 1863: 161 (worker). CUBA. Type material could not be located for study. Santschi, 1930: 81 (queen and male). Combination in *Nylanderia* (*Nylanderia*): Wheeler, 1913: 501; in *Paratrechina* (*Nylanderia*): Emery, 1925: 221; in *Nylanderia*: Kempf, 1972: 166; in *Paratrechina*: Brandão, 1991: 366; in *Nylanderia*: LaPolla, Brady & Shattuck, 2010: 127.

Despite our best efforts, we could not locate type material of *N. anthracina*. This is problematic because the description by Roger (1863) is insufficient for determining the identity of this species, and we therefore consider it an unidentifiable taxon. Based on the limited species description available it is possible this species is the senior synonym of *N. guatemalensis*, but without examination of type material we cannot make this determination.

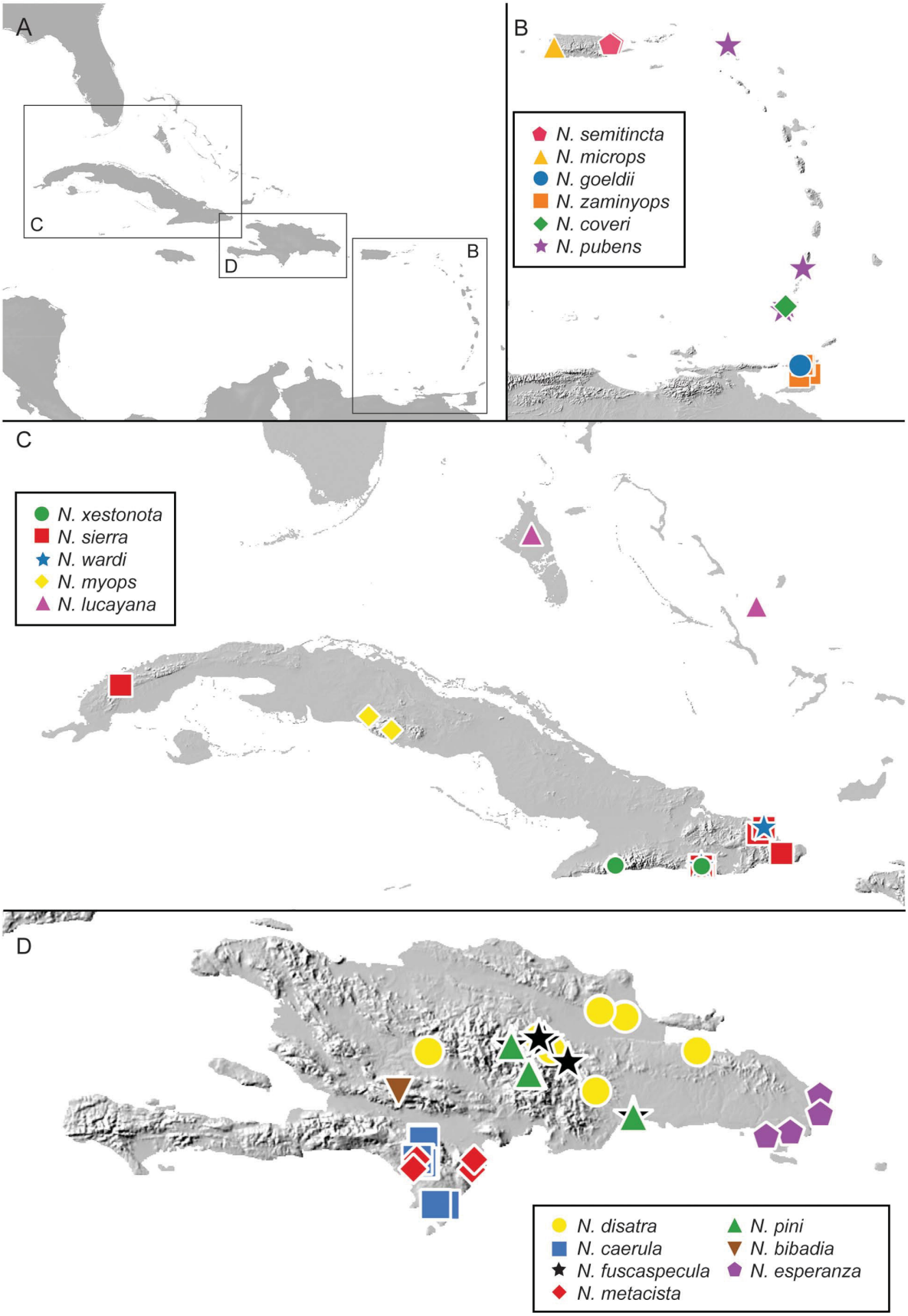


FIGURE 1. Distribution of *Nylanderia* across the West Indies. A, major areas of occurrence in the West Indies. B, distribution in Puerto Rico and the Lesser Antilles. C, distribution in Cuba and the Lucayan Archipelago. D, distribution in Hispaniola. Widespread and putatively invasive species are not shown except for *N. steinheili* and *N. pubens* (two species likely not native to the West Indies) noted on the map are the type localities from which those species were described.

Distribution of *Nylanderia* in the West Indies

For the purposes of this study we consider the West Indies as being the islands of the Greater and Lesser Antilles and the Lucayan Archipelago (fig. 1A).

Nylanderia are found throughout the West Indies from lowlands to elevations of nearly 2,000 m. While lowland and more urban settings are often dominated by non-native and invasive *Nylanderia*, such as *N. bourbonica*, native West Indian *Nylanderia* species can be found in a diverse array of forest habitats from drier scrub forests to rainforests. Most species in the West Indies appear to be ground-dwelling forest species. At this time, it would appear none of the native species are shared between any of the islands of the Greater Antilles despite ancient connections and recent commercial links. It is worth noting there is at least one species endemic to the Lucayan Archipelago, although given that Andros Island and Cuba were linked in the last ice age it would not be surprising to find *N. lucayana*, **sp. nov.**, in Cuba as well. We found a single endemic species in Trinidad (*N. zaminyops*, **sp. nov.**), and this species may range into South America given the often-close affinity of the Trinidadian and South American faunas. Another new species appears to be endemic to Grenada (*N. coveri*, **sp. nov.**).

As relatively large and mountainous tropical islands, the number of *Nylanderia* species of both Hispaniola and Cuba provided here are likely underestimates. It is also worth noting that while we examined *N. guatemalensis* and *N. steinheili* from Jamaica, we did not have *Nylanderia* specimens from less disturbed, more natural areas of the island. Given that the other three islands of the Greater Antilles have endemic species, Jamaica would be a good place to sample for additional new species.

Key to the Workers of Extant *Nylanderia* in the West Indies

1. Extremely small eyes (REL <15); body yellow to orange-yellow 2
- Eyes not small (REL ≥ 20); body color variable, often with contrasting lighter and darker regions. 4
2. Mesosoma covered in abundant macrosetae (fig. 52) (PMC: 24–27; MMC: 5–10) (Puerto Rico) . . . . . *microps*
- Mesosoma not covered in abundant macrosetae (PMC <5; MMC <4) 3
3. Propodeal dorsal face long (relative to declivitous face) (fig. 55) and relatively flat; SI2: 7–9 (Cuba) . . . . . *myops*
- Propodeal dorsal face short (relative to declivitous face) (fig. 104) and distinctly convex; SI2: 11–14 (Trinidad) . . *zaminyops*
4. Most of mesosoma covered with abundant pubescence. 5
- Spare to no pubescence present on mesosoma, or if abundant pubescence present on any areas of mesosoma then it is not present on mesopleuron or lateral portions of propodeum 6
5. Body reddish-brown to yellow; REL less than 30; mesosomal macrosetae long (index of longest pronotal macrosetae/propodeum height at least least 60) . . . . . *fulva* or *pubens**
- Body dark brown to almost black; REL greater than 30; mesosomal macrosetae short (index of longest pronotal macrosetae/propodeum height less than 60) . . . . . *bourbonica*
6. Strongly bicolored; head and gaster, and in one species the pronotum, distinctly darker than mesosoma 7
- Not strongly bicolored; head and gaster not different in color from mesosoma 8
7. Head and gaster dark brown, mesosoma bright yellow (figs. 19–20); macrosetae dark brown to black; SL typically >0.68 mm (Dominican Republic) . . . . . *disatra*
- Head, pronotum, and gaster brown; mesosoma mostly yellow, anterior mesonotum often brown, propodeum often bright yellow (figs. 77–79); macrosetae brown; SL <0.68 mm (Puerto Rico) . . . . . *semitincta*
8. In lateral view, under light microscope examination bright blue iridescence observed on the cuticular surface of the body, especially on the mesopleuron, but also often on lateral and dorsal portions of head and dorsum of the gaster (fig. 11); first and second gastral tergites pubescent (Dominican Republic). . . . . *caerula*
- In lateral view, under light microscope examination bright blue iridescence not observed on the cuticular surfaces of the body or if faint blue iridescence observed then first and second gastral tergites not pubescent 9
9. Mandibular subbasal tooth (tooth immediately following basal tooth) relative to both basal and median teeth large (e.g., the tooth is about as large as the teeth on either side of it) (fig. 41); pale yellow to brownish yellow species; SMC: 22–32 (Lucayan Archipelago). . . . . *lucayana*
- Mandibular subbasal tooth (tooth immediately following basal tooth) relative to both basal and median teeth small (e.g., the tooth is distinctly smaller than teeth on either side of it); color variable but if subbasal tooth large relative to both basal and median teeth then color is dark brown; if yellow to brownish yellow then SMC less than 22 10
10. Gastral tergite I without pubescence; if present it sparsely covers the posterior half of tergite. 11
- Gastral tergite I covered entirely by a fine pubescence 14
11. SL > 0.9, HL > 0.74; propodeal dorsal face with a distinct convex dome-like shape (fig. 34) (Trinidad) . . . . . *goeldii*
- SL < 0.87, HL < 0.74; propodeal dorsal face without a distinct convex dome-like shape. 12
12. Dorsal face of propodeum usually with a distinct fringe of pubescence (fig. 58); SL 0.8–0.86; gastral tergite I pubescence absent on anterior end of segment becoming denser midlength to dense towards posterior end; mesosomal dorsum with pubescence,

especially on mesonotum (Dominican Republic). . . . . *pini*

- Dorsal face of propodeum without a fringe of pubescence; SL < 0.78; gaster without pubescence or with very scattered and sparse pubescence not in pattern described above; mesosomal dorsum without pubescence 13

13. Meso/metacoxae and petiole distinctly lighter in color than mesosoma and gaster (fig. 31); typically lower SMC (measured range: 18–24; average count 23) (Dominican Republic) . . . . . *fuscaspecula*

- Meso/metacoxae and petiole not distinctly lighter in color than mesosoma and gaster (fig. 100); typically higher SMC (measured range: 22–30; average count 27) (Cuba). . . . . *xestonota*

14. Propodeal dorsal face distinctly convex (see figs. 14, 37, and 89); SMC typically less than 20 (measured range: 12–23) . . . 15

- Propodeal dorsal face not distinctly convex; dorsal face flattened in lateral view (see figs. 2, 28, 43, 86, and 97); SMC typically greater than 20 (measured range: 18–38) 17

15. Body and legs bright yellow; distinctly contrasting dark brown mesosomal macrosetae (figs. 14–16) (Grenada). . . . . *coveri*

- Body ranging from dark brown to yellow, but if yellow then mesocoxae and metacoxae white and noticeably lighter than rest of body 16

16. Body color brown to yellow; coxae always lighter than mesosoma, becoming white if specimen is yellow . . . . .*guatemalensis*

- Body color brown to dark brown with meso/metacoxae contrasting bright white to yellow with rest of body . . . . . *steinheili*

17. Body yellow, gaster sometimes brownish-yellow (figs. 28–30); pubescence on head, mesosoma, and gaster white but not contrasting with yellow cuticle; macrosetae brown across body contrasting with yellow cuticle typically across entire body (Dominican Republic) . . . . . *esperanza*

- Body dark brown to yellowish-brown; pubescence on head, mesosoma, and gaster white and contrasting with darker cuticle; macrosetae brown across body, sometimes contrasting on yellow legs and scapes only. 18

18. SL<0.75 mm; WL <0.8mm; REL <25 (Cuba) . . . . . *sierra*

- SL >0.75mm; WL >0.8mm; REL >25 19

19. Dark brown species with posterolateral portions of the head almost always lighter brown than the remainder of the head (fig. 2–4); HL > 0.72mm (0.64–0.75); HW> 0.6mm (0.55–0.7) (Dominican Republic). . . . . *bibadia*

- Color variable, but if dark brown then head uniformly colored; typically HL <0.68mm (0.56–0.68); typically HW <0.6mm (0.48–0.59) 20

20. SMC typically greater than 30 (measured range: 26–38); head in full-face view distinctly ovate with rounded posterolateral corners (fig. 98) (Cuba) . . . . . *wardi*

- SMC typically less than 25 (measured range: 18–25); head in full-face view distinctly quadrate with angled posterolateral corners (fig. 44) (Dominican Republic) . . . . . *metacista*

*Workers of *N. fulva* and *N. pubens* cannot be reliably separated. In order to morphologically identify these two species, male specimens are required.

Species Accounts

The species diagnoses provided apply only for identifying species in the West Indies and are not intended as global diagnoses for *Nylanderia* in other parts of the world. Only species which were described from this region (i.e., the holotype or type series is from the West Indies) have a full species description provided below.

Nylanderia bibadia, sp. nov.

Figs. 2–4 (worker); 5–10 (male)

Holotype worker, DOMINICAN REPUBLIC: Parque Nacional Sierra de Baharuco, 18° 09.073'N, 71° 36.466'W, elev. 1423 m, broadleaf humid rainforest, decayed log, 26.vii.2009, J.S. LaPolla & S.A. Schneider (USNM00753618) (NMNH); 4 paratype workers, 1 paratype queen and 1 paratype male with same locality data as holotype (specimens are from the same nest as holotype) (NMNH & MCZC).

Worker diagnosis: Larger species (in most specimens, HL greater than 0.7 mm; HW greater than 0.6 mm; SL greater than or equal to 0.81 mm); dark brown often with distinct lighter brown undulations in lateral view from posterior portion of head across mesosoma; ocelli present.

Compare with: *N. bourbonica*, *N. fuscaspecula*, *N. metacista*, *N. pini*

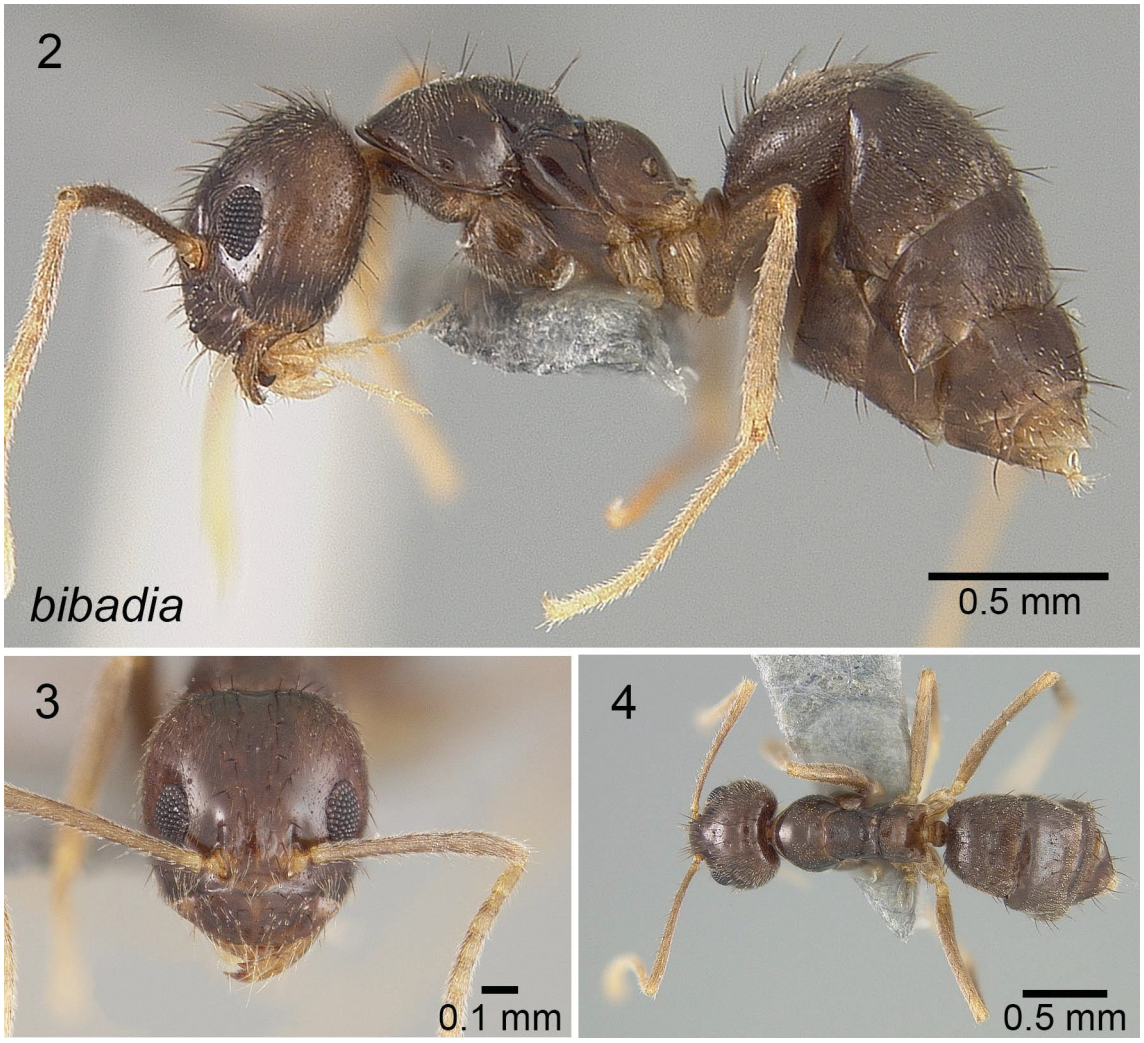
WORKER. *Measurements (n=11)*: TL: 2.70–3.10; HW: 0.55–0.68; HL: 0.64–0.75; EL: 0.15–0.22; SL: 0.75–0.92; WL: 0.81–0.99; GL: 0.96–1.40. SMC: 19–27 PMC: 3–5; MMC: 2–4. *Indices:* CI: 82–91; REL: 23–30; SI: 130–140; SI2: 21–25.

Head: sides of head in full face view rounded and slightly convergent anteriorly; posterolateral corners rounded; posterior margin rounded and slightly emarginate medially; anterior clypeal margin slightly emarginate; three ocelli

present; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area with short flat area anterior to spiracle; dorsal face of propodeum relatively flat immediately posterior to metanotal area; dorsal margin of propodeum in lateral view lower than mesonotum. *Color and pilosity*: dark brown; in lateral view often with undulating lighter brown patches from posterior of head across mesosoma; antenna, mandible, legs mostly lighter brown, procoxa dark brown; cephalic pubescence densest towards posterolateral corners; pronotum, mesonotum and anterior portion of propodeum with moderate pubescence; first and second gastral tergites with dense pubescence.

QUEEN. *Measurements (n=2)*: TL: 4.50–4.54; HW: 0.88–0.92; HL: 0.87–0.88; EL: 0.31–0.33; SL: 0.99–1.01; WL: 1.50–1.56; GL: 2.0–2.1. SMC: 16–18; PMC: 4–7; MMC: 8; MtMC: 3–5. *Indices:* CI: 101–104; REL: 35–37; SI: 109–112. Generally, as in worker with modifications expected for caste.

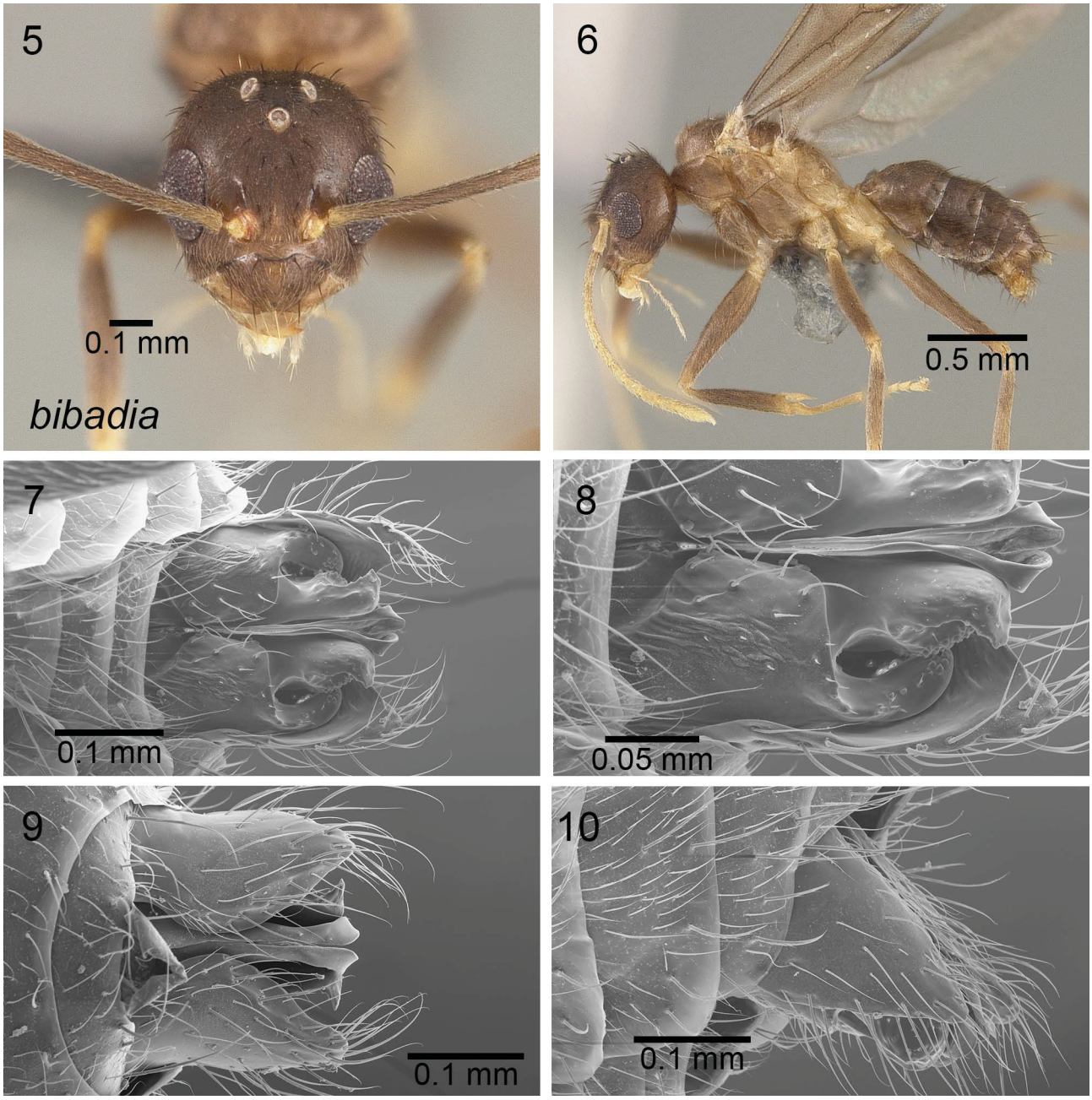
MALE. *Measurements (n=2)*: TL: 2.70; HW: 0.54–0.59; HL: 0.60; EL: 0.23–0.26; SL: 0.79–0.80; WL: 0.98–1.00; GL: 1.17. SMC: 9–12; PMC: 0; MMC: 8–12. *Indices:* CI: 90; REL: 38; SI: 137–146.



FIGURES 2–4. *Nylanderia bibadia* worker USNMENT00753618. Lateral, full-face, and dorsal view of the body.

Head: sides of head in full face view rounded and slightly convergent anteriad; posterior margin rounded and slightly emarginate medially; clypeus emarginate anteriorly; mandible with two teeth; a long apical tooth and much smaller subapical tooth adjacent to apical tooth; basal angle sharp and distinct; *Mesosoma*: in lateral view, dorsal margin of mesoscutum same as height as dorsal margin of mesoscutellum; propodeum steeply sloping without distinct dorsal and declivitous faces. *Genitalia*: gonopod apex coming to triangular point in lateral view; gonopod margin in dorsal view curves away from penial sclerite; digitus with pointed apex that bends away from penial sclerite; cuspis tubular, rounded at apex bending sharply toward digitus; anteroventral process of penial sclerite broadly rounded; valvura of penial sclerite placed ventral to midline (fig. 105). *Color and pilosity*: head and gaster dark brown; posterior portion of mesosoma, petiole, mesocoxa and metacoxa as well as antenna and mandible distinctly

lighter than head and gaster; legs with distinct yellow around joints; head, scape, mesosomal notum, legs and gastral dorsum with dense layer of pubescence.



FIGURES 5–10. *Nylanderia bibadia* male USNMENT00921117. Full-face and lateral of the body; SEM images of external genitalia: ventral, close-up vollsellar lobes, dorsal, and lateral.

Other material examined: DOMINICAN REPUBLIC: nr. Haitian border, 18° 41.607' N, 71° 46.278' W, elev. 1628 m, nr. road in steep forest in moist, rotten log, 24.vii.2009, J.S. LaPolla & S.A. Schneider.

Etymology: Species epithet is a combination of *badius* (L. = brown) with the prefix *bi-* (L. = two), named for the striking alternating pattern of shades of brown found on this species.

Notes: Workers of this species can be separated from *N. bourbonica* based on the amount of pubescence on the mesosoma. In *N. bibadia*, dense pubescence is only located dorsally on the mesosoma as opposed to dorsally and laterally as in *N. bourbonica*. Workers of this species have one of the largest heads (width and length) among the West Indian *Nylanderia* and these measurements are an effective way to separate it from *N. pini* and *N. metacista*, which are the species most likely confused with *N. bibadia*. All but callow workers display this unique pattern. That said, the posterolateral portions of the head are almost always lighter brown than the remainder of the head. This

species is included in the phylogeny of Gotzek et. al (2012) as N. n. sp. 5 DR, and was found as sister to *N. metacista*. See under *N. metacista* notes for further discussion regarding the morphology of *N. bibadia* and *N. metacista* workers and males, including additional diagnostic features for the two species.

***Nylanderia caerula*, sp. nov.**
Figs. 11–13 (worker)

Holotype worker, DOMINICAN REPUBLIC: Parque Nacional Sierra de Baharuco, 18° 18.579'N, 71° 34.668'W, elev. 407 m, humid woodland near stream, under rotten log in thick leaf litter, 25.vii.2009, J.S. LaPolla & S.A. Schneider (USNMENT00754780) (NMNH); 1 paratype worker with same locality data as holotype (specimen is from the same nest as holotype); 5 paratype workers, DOMINICAN REPUBLIC: Parque Nacional Sierra de Baharuco, 18° 17.868'N, 71° 34.144'W, elev. 722 m, mountain dry scrub forest, 25.vii.2009, J.S. LaPolla & S.A. Schneider (NMNH & MCZC).

FIGURES 11–13. *Nylanderia caerula* worker USNMENT00754780. Lateral, full-face, and dorsal view of the body.

Worker diagnosis: Dark brown mesosoma with distinct blue iridescence seen in lateral view under light microscopy on mesopleuron and sides of head and gaster; antenna, mandible and legs distinctly lighter brownish-yellow to yellow, contrasting sharply with dark brown body; gastral tergites I & II with dense pubescence.

Compare with: *N. fuscaspecula*, *N. metacista*, *N. pini*

WORKER. *Measurements (n=8)*: TL: 2.30–2.50; HW: 0.51–0.56; HL: 0.61–0.68; EL: 0.16–0.19; SL: 0.80–0.84; WL: 0.78–0.85; GL: 0.78–1.00; SMC: 23–33 PMC: 2–5; MMC: 2–3. *Indices:* CI: 79–84; REL: 25–28; SI: 150–159; SI2: 19–23.

Head: sides of head in full face view rounded and slightly convergent anteriorly; posterolateral corner rounded; posterior margin straight and slightly emarginate medially; anterior clypeal margin slightly emarginate; ocelli absent; eye well-developed. *Mesosoma*: in lateral view, pronotum subangular; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area with short flat area anterior to spiracle; dorsal face of propodeum distinctly convex; dorsal face of propodeum and mesonotum approximately the same height in lateral view. *Color and pilosity*: body and procoxa dark brown, antenna, mandible, legs, and petiole yellow to brownish-yellow; in lateral view, under light microscope, blue iridescence seen on cuticle, particularly on the mesopleuron; cuticle smooth and shiny; cephalic pubescence sparse; pubescence on pronotum, mesonotum and anterior portion of propodeum; gastral tergites I & II with dense pubescence.

Other material examined: DOMINICAN REPUBLIC: Parque Nacional Sierra de Baharuco, 18° 06.805'N, 71° 37.151'W, elev. 731 m, mountain dry scrub forest, 27.vii.2009, J.S. LaPolla & S.A. Schneider; Parque Nacional Sierra de Baharuco, 18° 09.073'N, 71° 36.466'W, elev. 1423 m, mountain dry scrub forest, 26.vii.2009, J.S. LaPolla & S.A. Schneider; Pedernales Pr., Sierra de Bahoruco NP, 18.14937 -71.62067 +/-30 m, 1350m, 26.III.2014, Lubertazzi, DL03732:001; 16 km ENE Pedernales, 18° 07'N, 71° 37'W, 800 m, 9.ix.1992, P.S. Ward; Pedernales Prov., Jaragua National Park, 9 km S Oviedo (17° 47'7"N, 71° 28'26") 165 m, 30.iii.2012, Gary D. Alpert, dry forest, rocky area with scattered trees, Davis sifter of ground litter, GDA 30-III-2012-8DR; Pedernales, Jaragua National Park, 17.78099 -71.39772 +/- 13m, 16 m, 31-MAR-2012, Lubertazzi, DL03461:002; Pedernales, Jaragua National Park, 17.78537 -17.47385 +/- 22m, 160m, 30-MAR-2012, Lubertazzi, DL03448:003; Pedernales Pr., Sierra de Bahoruco NP, 18.12202 -71.58543 +/- 46m, 1227m, 1-APR-2012, Lubertazzi, DL03488:001; Pedernales Pr., Sierra de Bahoruco NP, 18.14856 -71.62206 +/- 20 m, 1330m, Lubertazzi, DL03704:003.

Etymology: The species epithet is a variation of *caelum* (L. = sky blue), named for this species' bluish iridescence.

Notes: *Nylanderia caerula* workers are most similar to workers of *N. fuscaspecula*, *N. metacista* and *N. pini*. This species is unique in that under light microscopy you can see distinct blue iridescence on the cuticle especially on the mesopleuron, anterolateral portions of the head and the dorsal areas of the first and second gastral tergites. It is important to note that the specimen must be in lateral view and the angle of the specimen may need to be adjusted to easily see the iridescence; otherwise it could be missed. The blue iridescence of *N. caerula* is reliably separates it from *N. fuscaspecula, N. metacista* and *N. pini*. The blue iridescence is interesting because it is reminiscent of what is commonly seen in workers of the Old World genus *Paraparatrechina* (LaPolla *et al*., 2010). Occasionally faint blue iridescence is seen in *N. fuscaspecula*, but it is not nearly as intense as in *N. caerula*. If this occurs separating *N. fuscaspecula* from *N. caerula* is relatively straightforward because the former typically has no gastral pubescence. *Nylanderia fuscaspecula* also has very sparse pubescence on the mesosoma and head in contrast to the more pubescent mesosoma and head of *N. caerula*. This species is included in the phylogeny of Gotzek et. al (2012) as *Nylanderia* n.sp. 1 DR. Unpublished phylogenomics data suggest that *N. caerula* is sister to *N. esperanza*.

***Nylanderia coveri*, sp. nov.**

Figs. 14–16 (worker); 17–18 (male)

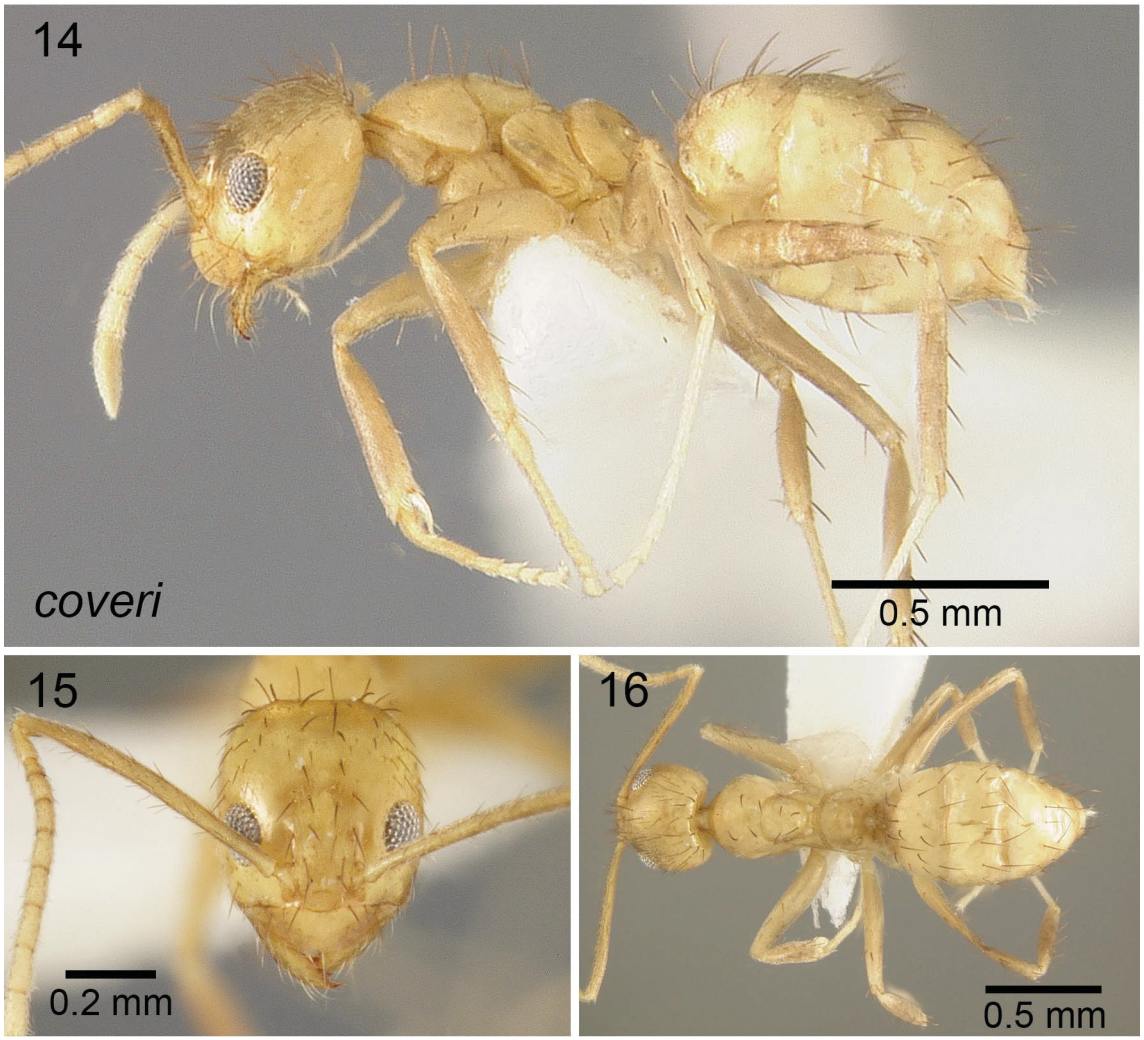
Holotype worker, GRENADA: Saint Andrew Parish, 1.0 mi WNW of Lower Capital on road to Gouave (measured to junction of north-south road), 19-VI-1995, SP Cover, SPC G-148 (MCZC); 7 paratype workers and 2 paratype males with same locality data as holotype (NMNH & MCZC).

Worker diagnosis: Body bright yellow, with sharply contrasting brown macrosetae across body.

Compare with: *N. guatemalensis*

WORKER. *Measurements (n=4)*: TL: 1.98–2.13; HW: 0.46–0.50; HL: 0.59–0.63; EL: 0.15–0.17; SL: 0.68–0.72; WL: 0.69–0.78; GL: 0.85–0.93. SMC: 14–19; PMC: 2; MMC: 2–3. *Indices:* CI: 79–82; REL: 25–28; SI: 140–149; SI2: 22–25.

This appears to be a ground dwelling species, like many *Nylanderia* species. The type series was collected in a nutmeg-banana plantation in a rotten stick partly buried in the leaf litter in the shade.



FIGURES 14–16. *Nylanderia coveri* worker MCZENT00525580. Lateral, full-face, and dorsal view of the body.

FIGURES 17–18. *Nylanderia coveri* male MCZENT00525580. Full-face and lateral of the body.

Head: sides of head in full face view nearly parallel; posterolateral corner rounded; posterior margin straight; anterior clypeal margin evenly rounded; ocelli absent; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area with short flat area anterior of spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum and mesonotum approximately the same height in lateral view. *Color and pilosity*: bright yellow; becoming slightly lighter to almost white distally on funiculus and legs; head, pronotum, mesonotum, propodeal dorsal face and gastral tergite I with abundant pubescence.

MALE. *Measurements (n=2)*: TL: 2.15; HW: 0.39–0.44; HL: 0.49–0.50; EL: 0.22–0.21; SL: 0.72; WL: 0.76–0.77; GL: 0.88. SMC: 3–7; PMC: 0; MMC: 11–20. *Indices:* CI: 78–88; REL: 41–44; SI: 184.

Head: sides of head in full face view rounded; posterior margin rounded; clypeus emarginate anteriorly; mandible with apical tooth and much smaller, often indistinct, subapical tooth adjacent to apical tooth; basal angle sharp and distinct. *Mesosoma*: in lateral view, dorsal margin of mesoscutum same as height as dorsal margin of mesoscutellum. *Genitalia*: gonopod apex nearly triangular in lateral view; gonopods in dorsal view distally divergent with remainder of gaster; digitus with pointed apex that bends away from penial sclerite; cuspis tubular, rounded at apex bending sharply toward digitus; anteroventral process of penial sclerite pointed; valvura of penial sclerite placed slightly ventral to midline (fig. 105). *Color and pilosity*: bright yellow; becoming slightly lighter to almost white distally on funiculi and legs; head, pronotum, mesonotum, dorsal face of propodeum and gaster with abundant pubescence; on gaster macrosetae become more abundant posteriorly.

Other material examined: GRENADA: Grand Etang, South of Lake, 12 Nov 2003 #40, JK Wetterer.

Etymology: Named after myrmecologist Stefan P. Cover (Harvard University, Museum of Comparative Zoology), collector of this species and whose field skills for finding new and unusual ant species are unmatched.

Notes: This species can be confused with *N. guatemalensis* when it is more yellow than brown, but preliminary molecular data clearly separates it from *N. guatemalensis*. The molecular results place *N. coveri* within a clade containing *N. guatemalensis* and *N. steinheili*. This species is another example of a small yellow species having workers that are difficult to separate from the widespread sometimes yellow, but color variable *N. guatemalensis* (the other example being *N. lucayana*). Overall once you have looked at enough *N. guatemalensis* the bright yellow color of *N. coveri* is actually distinctly different, contrasting sharply with the dark brown macrosetae. Generally, *N. guatemalensis* is never this bright yellow. Additionally, even in yellow specimens of *N. guatemalensis* the mesocoxae and metacoxae are always lighter than the remainder of the body. In *N. coveri*, the entire body, including the mesocoxae and metacoxae is bright yellow. Other than molecular data the penial sclerites also support recognition of this species with the proximal ventral extension coming much more to a point than it does in both *N. guatemalensis* and *N. steinheili*.

***Nylanderia disatra*, sp. nov.**

Figs. 19–21 (worker); 22–27 (male)

Holotype worker, DOMINICAN REPUBLIC: near Reserva Científica Ebano Verde, 19°01.10’ N, 70°31.86’ W, elev. 1139 m, coffee plantation, 30.vii.2009, J.S. LaPolla & S.A. Schneider (USNMENT00753609) (NMNH); 5 paratype workers with same locality data as holotype (specimens are from the same nest as holotype) (NMNH & MCZC).

Worker diagnosis: Head and gaster dark brown, contrasting sharply with yellow antennae, mesosoma and legs; macrosetae on mesosoma dark brown contrasting sharply with yellow mesosoma.

Compare with: *N. semitincta*

WORKER. *Measurements (n=11)*: TL: 1.80–2.40; HW: 0.51–0.54; HL: 0.59–0.62; EL: 0.14–0.16; SL: 0.68–0.72; WL: 0.71–0.78; GL: 0.50–0.99. SMC: 20–32 PMC: 2–4; MMC: 2–4. *Indices:* CI: 81–89; REL: 23–27; SI: 129–139; SI2: 20–24.

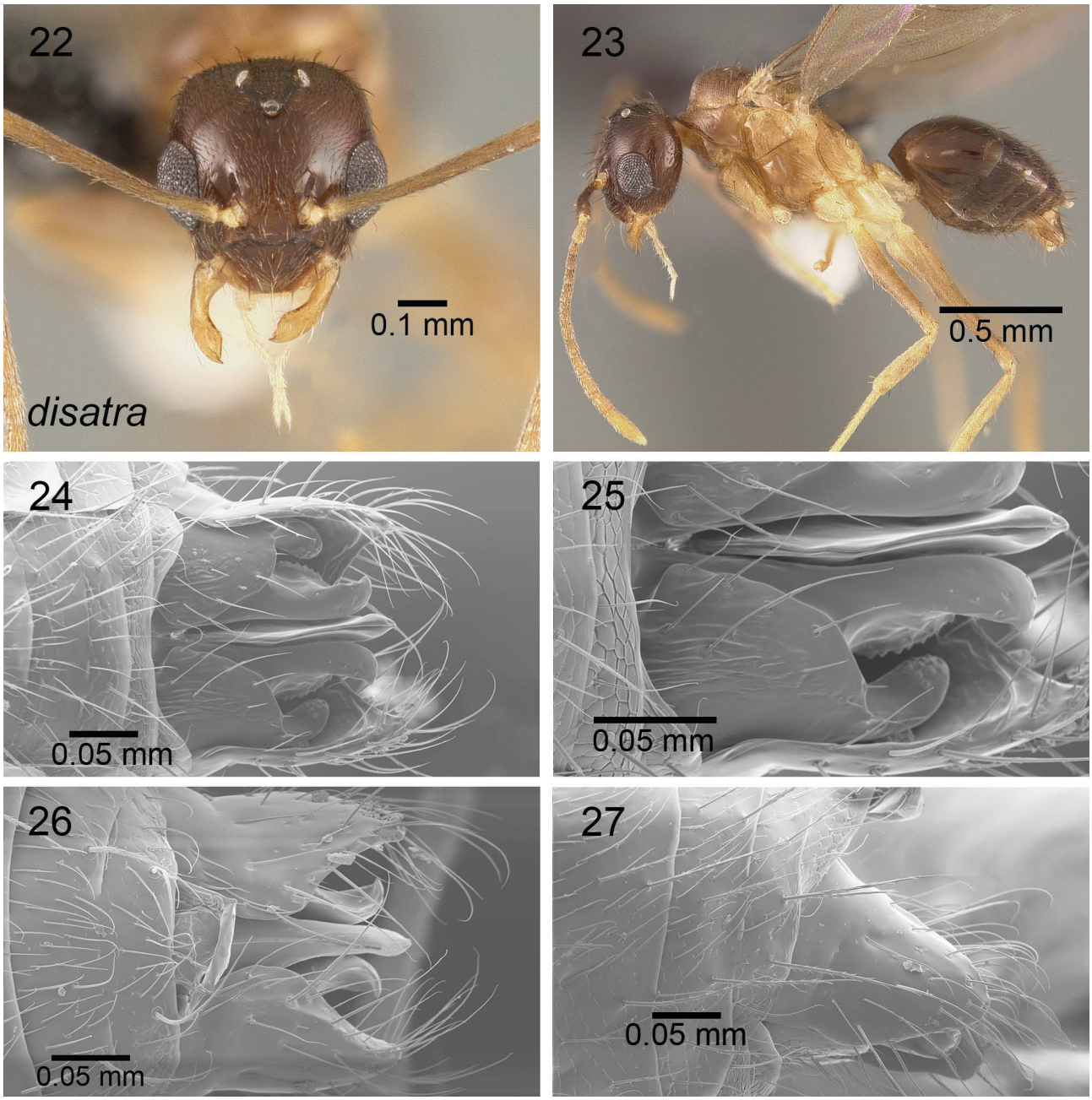
Head: sides of head in full face view rounded and slightly convergent anteriorly; posterolateral corners rounded; posterior margin straight and slightly emarginate medially; anterior clypeal margin evenly rounded; ocelli absent; eye well-developed. *Mesosoma*: in lateral view, pronotum subangular; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area without a short flat area before spiracle; dorsal face of propodeum distinctly convex; dorsal margins of propodeum and mesonotum approximately even in lateral view. *Color and*

pilosity: Head and gaster dark brown to almost black, contrasting strongly with yellow mesosoma and petiole; antenna, mandible and legs yellow to brown-yellow; mesocoxa and metacoxa often whitish-yellow; macrosetae distinctly dark brown; scape and legs with layer of pubescence; head, mesosoma and gaster lack pubescence.

QUEEN. *Measurements (n=1)*: TL: n/a; HW: 0.74; HL: 0.74; EL: 0.27; SL: 0.84; WL: 1.4; GL: n/a. SMC: 16; PMC: 3; MMC: 15. *Indices:* CI: 100; REL: 36; SI: 113. Generally, as in worker with modifications expected for caste and with the following noted differences: mesosoma coloration darker brown than in worker, and with distinct yellow color along segmental margins.

MALE. *Measurements (n=4)*: TL: 2.0–2.1; HW: 0.50–0.52; HL: 0.51–0.53; EL: 0.20–0.22; SL: 0.61–0.65; WL: 0.78–0.87; GL: 0.72–0.75. SMC: 4–9; PMC: 0; MMC: 8–9. *Indices:* CI: 94–102; REL: 36–43; SI: 118–129. *Head*: sides of head in full face view distinctly broader posterior to eyes; posterior margin rounded; clypeus evenly rounded anteriorly; mandible with 2 teeth, a long, distinct apical tooth and much smaller subapical tooth adjacent to apical tooth; basal angle sharp and distinct; *Mesosoma*: in lateral view, dorsal margin of mesoscutum same as height as dorsal margin of mesoscutellum; propodeum without distinct dorsal and declivitous faces. *Genitalia*: gonopod apex triangular but broadly rounded in lateral view; in dorsal view, gonopod margin curves away from penial sclerite; digitus with pointed apex that bends away from penial sclerite; cuspis tubular, rounded at apex bending sharply toward digitus; anteroventral process of penial sclerite coming to a point; valvura of penial sclerite placed approximately at midline (fig. 105). *Color and pilosity*: head and gaster dark brown, contrasting strongly with yellow mesosoma and petiole; antennae, mandibles and legs yellow to brown-yellow; mesocoxae and metacoxae often whitish-yellow; smooth and very shiny; scapes and legs with layer of pubescence; head, mesosomal notum and gastral tergites II-IV with dense pubescence.

FIGURES 19–21. *Nylanderia disatra* worker USNMENT00754777. Lateral, full-face, and dorsal view of the body.



FIGURES 22–27. *Nylanderia disatra* male USNMENT00753690. Full-face and lateral of the body; SEM images of external genitalia: ventral, close-up vollsellar lobes, dorsal, and lateral.

Other material examined: DOMINICAN REPUBLIC: Prov. La Vega: Reserva Cientifica Ebano Verde, elev. 1070m, N 19° 01.95', W070° 32.59', 2 December 2003, in leaf litter, M. Deyrup; La Vega Prov., Jarrabacoa to El Rio, 800–1500m, 5 Feb 1975, shady ravine, WL & DE Brown; La Vega Prov., 10 km NE Jarrabacoa, Raquet Club, 550m, FIT, 20.VII–4.VIII-1995, mixed forest, S+J Peck 95-37; Ma. Tr. Sa., Pr Loma Guaconejo, 19.29965 -69.94937 +/- 50 m, 190m, 21-JUL-2015, Lubertazzi, DL03903; Ma. Tr. Sa., Pr Loma Guaconejo, 19.30356 -69.95433 +/- 50m, 290 m, 22-JUL-2015, Lubertazzi, DL03924; Duarte Prov., Loma Quita Espuela, 19.35222 -70.14871 +/- 20m, 720m, 25-JUL-2015, Lubertazzi, DL03962; Ma. Tr. Sa., Pr Loma Guaconejo, 19.29529 -69.949 +/-60m, 150m, 23/24-July-2015, Lubertazzi/Prebus T4#9; Duarte Prov., Loma Quita Espuela, 19.34636 -70.14869 +/- 60m, 515m, 24/25-July-2015, Lubertazzi/Prebus T5#2; 4 km NNW Villa Altagracia, 18 42'N, 70 11' W, 200 m, 12.ix.1992, P.S. Ward #11770-18; La Vega, betw. Jarabacoa & El Rio, 11.iv.1992, 1150 m, M.A. Ivie *et al*, pine forest Berlesate; Hato Mayor, P.N. Los Haitises, w of Sabana del Mar, 1.iv.1992, misc. litter, MA Ivie *et al*.

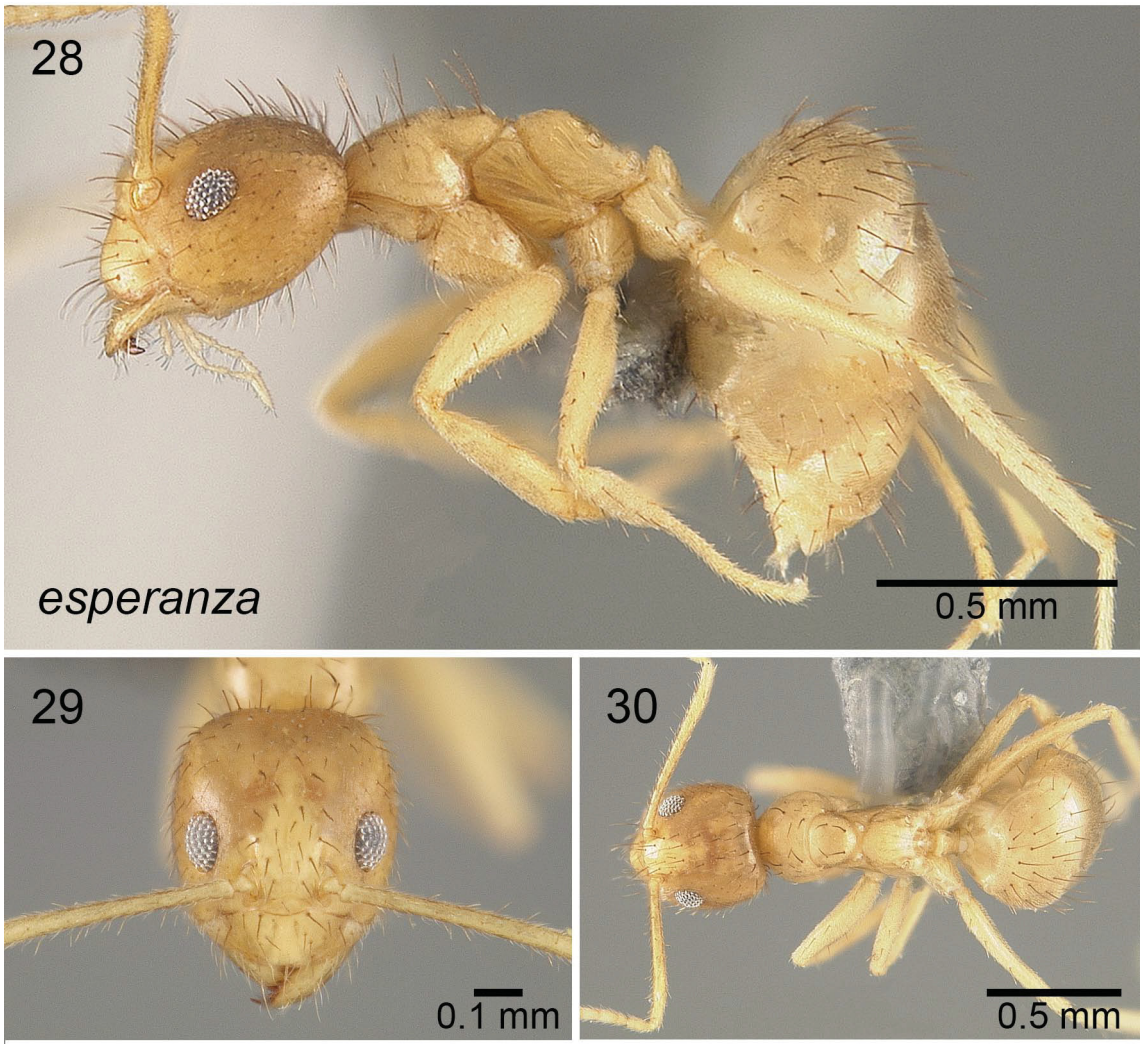
Etymology: Species epithet is a combination of *atratus* (L. = darkened) with the prefix *dis-* (L. = separate), named for the contrasting appearance of this species.

Notes: This is a strikingly colored species (seen in all three castes, but most muted in the queen), and therefore is easy to separate from all other New World *Nylanderia* known to date. *Nylanderia semitincta* from Puerto Rico is similarly colored with the head distinctly darker brown (not as dark as in *N. disatra*), as are the pronotum and gaster, contrasting with the yellow propodeum and legs.

***Nylanderia esperanza*, sp. nov.**

Figs. 28–30 (worker)

Holotype worker, DOMINICAN REPUBLIC: Parque Nacional del Este nr. Boca de Yuma, 18° 21.872'N, 68° 37.077' W, elev. 8 m, sifted soil under rocks, 02.viii.2009, J.S. LaPolla & S.A. Schneider (NMNH), 2 paratype workers same locality data as holotype (specimens are from the same nest as holotype). 3 paratype workers, DOMINICAN REPUBLIC: Parque Nacional del Este, N 18° 19.884, W 68° 48.693', elev. 36m, from sifted litter, 30 March 2004, L.R. Davis (300304-14) (NMNH & MCZC).



FIGURES 28–30. *Nylanderia esperanza* worker USNMENT00921118. Lateral, full-face, and dorsal view of the body.

Worker diagnosis: Brownish-yellow to yellow with distinctly darker brownish-yellow to brown macrosetae; propodeal dorsal face anteriorly flat not rounded or higher than mesonotum.

Compare with: *N. guatemalensis*

WORKER. *Measurements (n=4)*: TL 2.30–2.70; HW: 0.51–0.61; HL: 0.59–0.75; EL: 0.13–0.15; SL: 0.67–

0.76; WL: 0.74–0.88; GL: 0.85–1.04; SMC: 20–29; PMC: 5–6; MMC: 3–4. *Indices:* CI: 81–90; REL: 20–24; SI: 124–137; SI2: 18–21.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin straight and slightly emarginate medially; anterior clypeal margin relatively convex; ocelli absent; eye well-developed. *Mesosoma*: in lateral view, pronotum subangular; anterior margin of mesonotum more or less even with posterior pronotal margin; metanotal area with a short flat area before spiracle; dorsal face of propodeum relatively flat and short immediately posterior to metanotal area; dorsal face of propodeum shorter than declivitous face. *Color and pilosity*: body brownish-yellow; head and gaster sometimes slightly darker yellow; macrosetae on head, mesosoma and gaster distinctly darker brownish-yellow to brown contrasting with body; macrosetae on scapes yellow to white; macrosetae on pronotum abundant and of varying heights; cephalic pubescence sparse; mesosoma with pubescence dorsally on pronotum, mesonotum and anterior portion of propodeum, gastral tergites I & II with dense pubescence.

Other material examined: DOMINICAN REPUBLIC: Parque Ecologica Punta Cana, N 18° 39.803', W 68° 22.721', elev. 49m, from sifted litter, 28 March 2004, L.R. Davis (280304-27); Prov. La Altagracia, 28 March 2004, Punta Cana Resort, Ecol. Preserve, litter, M. Deyrup.

Etymology: Species epithet is a Spanish given name (noun) meaning hope.

Notes: This species is most likely to be confused with *N. guatemalensis*. In fact, for some time, we considered it as variation within *N. guatemalensis*. But upon closer inspection there are two relatively easy ways to distinguish the two species from each other. The propodeal dorsal face of *N. esperanza* is distinctly flat not rounded or higher than the mesonotum as is seen in *N. guatemalensis*. Additionally, *N. esperanza* possesses macrosetae on the pronotum that are both abundant and distinctly of varying heights. In *N. guatemalensis*, the macrosetae are neither as abundant nor of such distinctly varying heights. This species was also included within the phylogeny of Gotzek et. al (2012) (listed as *Nylanderia* n.sp. DR3), where it is nested well within a clade of West Indian *Nylanderia* and sister to a clade of *N. bibadia* + *N. metacista.* More recent unpublished phylogenomics data suggests this species is the sister to *N. caerula*.

***Nylanderia fuscaspecula*, sp. nov.**

Figs. 31–33 (worker)

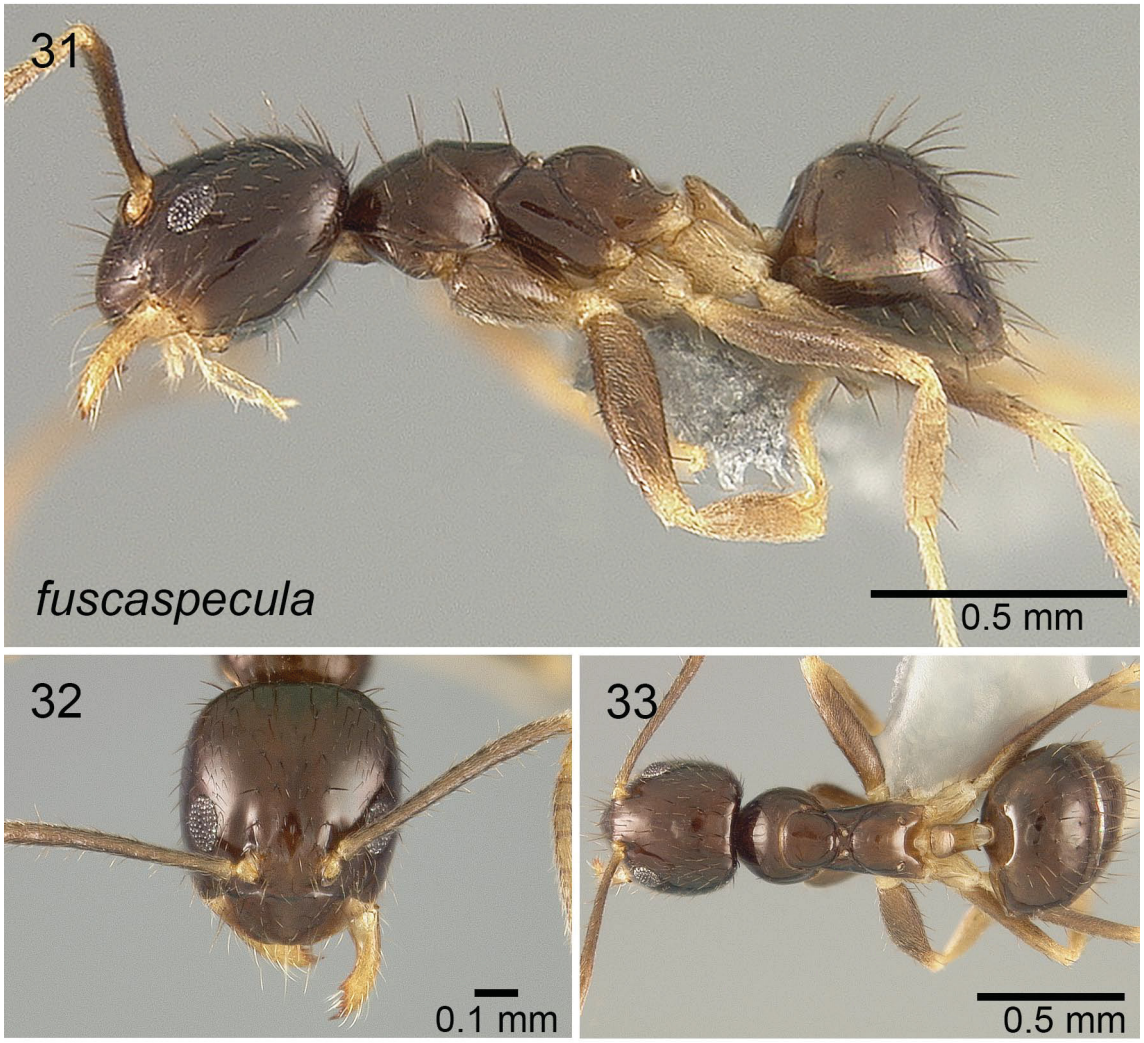
Holotype worker, DOMINICAN REPUBLIC: Salto de Jimenoa, 19° 06.094'N, 70° 35.877'W, elev. 620 m, under stones on coffee plantation, 08.viii.2009, S.A. Schneider (USNMENT00754801) (NMNH). 3 paratype workers and 2 paratype queens with same locality data as holotype (specimens are from the same nest as holotype) (NMNH & MCZC).

Worker diagnosis: Very dark brown with smooth and shining cuticle contrasting with yellow meso/metacoxae, trochanters and leg joints; pubescence sparse to absent across body.

Compare with: *N. bibadia*, *N. caerula, N. metacista*, *N. pini*

WORKER. *Measurements (n=8)*: TL: 1.90–2.30; HW: 0.50–0.54; HL: 0.58–0.61; EL: 0.14–0.15; SL: 0.68–0.73; WL: 0.70–0.78; GL: 0.56–1.0. SMC: 18–24 PMC: 2–4; MMC: 2. *Indices:* CI: 84–88; REL: 23–26; SI: 135–142; SI2: 19–21.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin rounded; anterior clypeal margin emarginate; ocelli absent; eyes well-developed. *Mesosoma*: in lateral view, pronotum subangular; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area without short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum and mesonotum approximately the same height in lateral view. *Color and pilosity*: body very dark brown to black; mandible and antenna lighter brown; apical segments of funiculus yellow; scape with brownish yellow end and dark brown middle portion; trochanters, tarsi, and leg articulations yellowish-brown; femora and tibiae lighter on ends with dark brown middle portions giving legs mottled appearance; pubescence sparse to absent on head (if present than densest under eyes and along posterolateral corners), mesosoma and gaster; some specimens with fringe of pubescence on propodeal dorsal face.



FIGURES 31–33. *Nylanderia fuscaspecula* worker USNMENT00754801. Lateral, full-face, and dorsal view of the body.

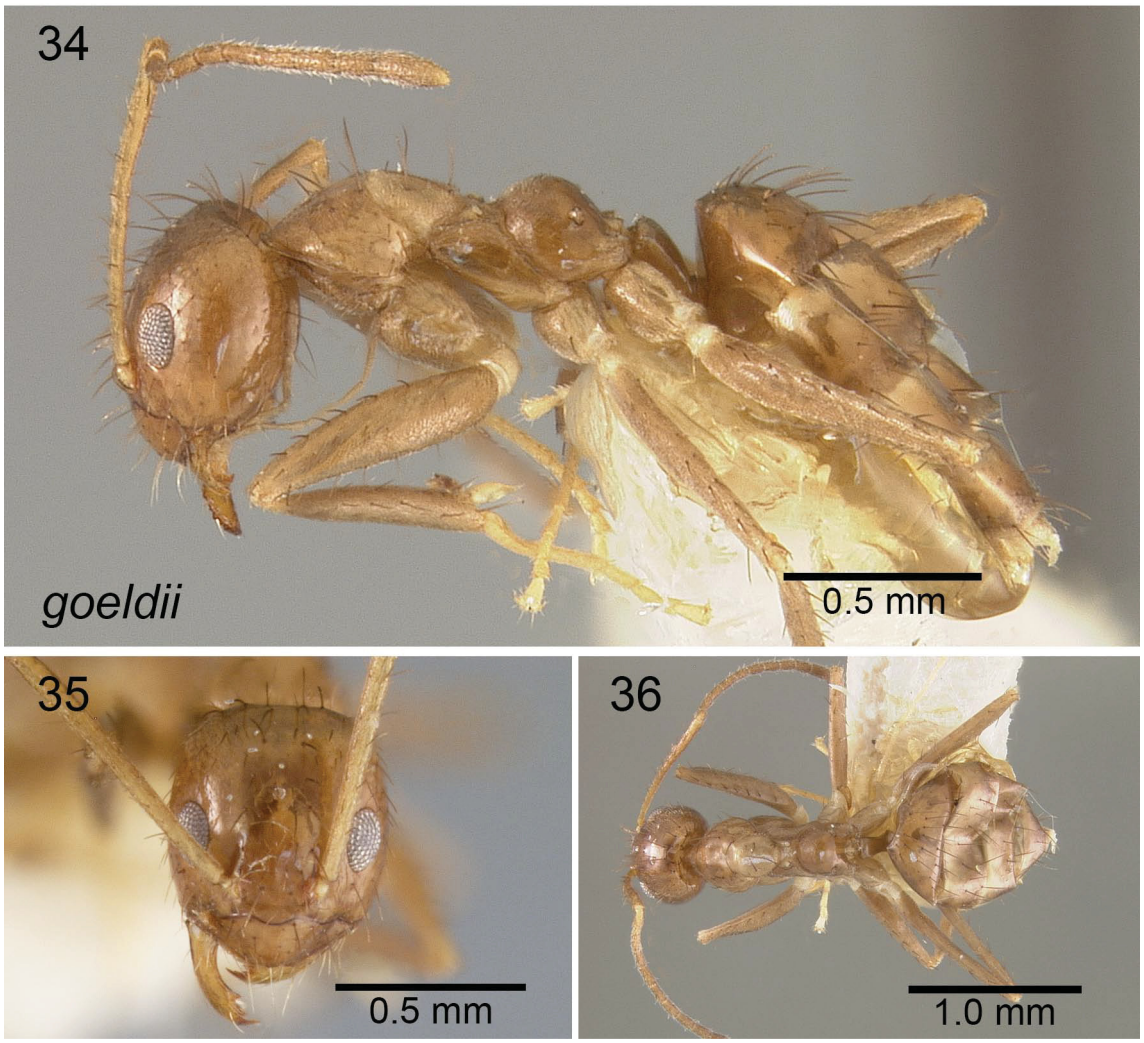
QUEEN. *Measurements (n=2)*: TL: 3.20–3.30; HW: 0.78–0.80; HL: 0.75–0.77; EL: 0.23; SL: 0.80–0.85; WL: 1.30–1.40; GL: 1.70–1.90. SMC: 18 PMC: 3–5; MMC: 7–8; MtMC: 2–3. *Indices:* CI: 101–106; REL: 30–31; SI: 106–111. Generally, as in worker with modifications expected for caste and with the following noted difference: slightly lighter brown than seen in workers.

Other material examined: DOMINICAN REPUBLIC: Parque Nacional Armando Bermúdez, 19° 04.044'N, 70° 51.830'W, elev. 1037 m, moss and soil under tree, 07.viii.2009, S.A. Schneider; Prov. La Vega, La Cienaga, ca. 1100 m, mixed HW-pine valley forest, Feb 1975, WL & DE Brown; La Vega Prov., El Rio; Bonao, km 24, 600–800 m, ravine, Feb 1975, WL & DE Brown; La Vega Prov, 14 km NW Bonao, 19° 02' N, 70°30'W, 1100 m, 12.ix.1992, P.S. Ward 1176; La Vega Prov., 7km SE Jarabacoa, Salta Jimenoa, 800 m, 31.VII.1995, forest litter, S+J Peck, Peck 95-51; La Vega Prov., PN.A. Bermudez, 1km W Cienaga, 2.VIII-1995, 1050 m, forest litter, S+J Peck, Peck 95-53; La Vega Prov., PN.A. Bermudez, 2km SW Cienaga, 2.VIII-1995, 1100 m, forest litter, S+J Peck, Peck 95-52; La Vega Prov., PN.A. Bermudez, Cienaga, 21.VII-1995, 1050 m, evergreen forest litter, S+J Peck, Peck 95-44.

Etymology: Species epithet is a combination of *speculum* (L. = mirror) and *fuscus* (L. = dark), named for the reflective properties of the cuticle.

Notes: Workers of this species are generally shiny and largely free of pubescence, but there are several species that can be confused with *N. fuscaspecula*. *Nylanderia fuscaspecula* can be separated from *N. pini* by possessing a shorter head length (*pini* range: 0.64–0.73) and scape length (*pini* range: 0.82–0.86). Additionally, the posterior margin of the first gastral tergite in *N. pini* possesses abundant pubescence and a distinct fringe of pubescence is typically present along the dorsal face of the propodeum. *Nylanderia fuscaspecula* can be separated from *N. metacista* because the first gastral tergite of *N. metacista* is covered entirely in a dense pubescence. *Nylanderia fus-*

caspecula can also be confused with *N. caerula*. As does *N. caerula*, *N. fuscaspecula* can display blue iridescence on its mesosoma under light microscope examination, but the iridescence is not as intense as in most *N. caerula*. Additionally, *Nylanderia fuscaspecula* has no pubescence on the gastral tergites, unlike *N. caerula* which possesses dense pubescence on gastral tergites I & II.



FIGURES 34–36. *Nylanderia goeldii* worker Weber207.2. Lateral, full-face, and dorsal view of the body.

***Nylanderia lucayana*, sp. nov.**
Figs. 40–42 (worker)

Holotype worker, BAHAMAS: North Andros Island, access road to Stafford Creek south of bridge, 12 Nov 1996, under rock on bank, M. Deyrup & L. Davis (NMNH); 11 paratype workers same locality as holotype (specimens are from the same nest as holotype) (NMNH & MCZC).

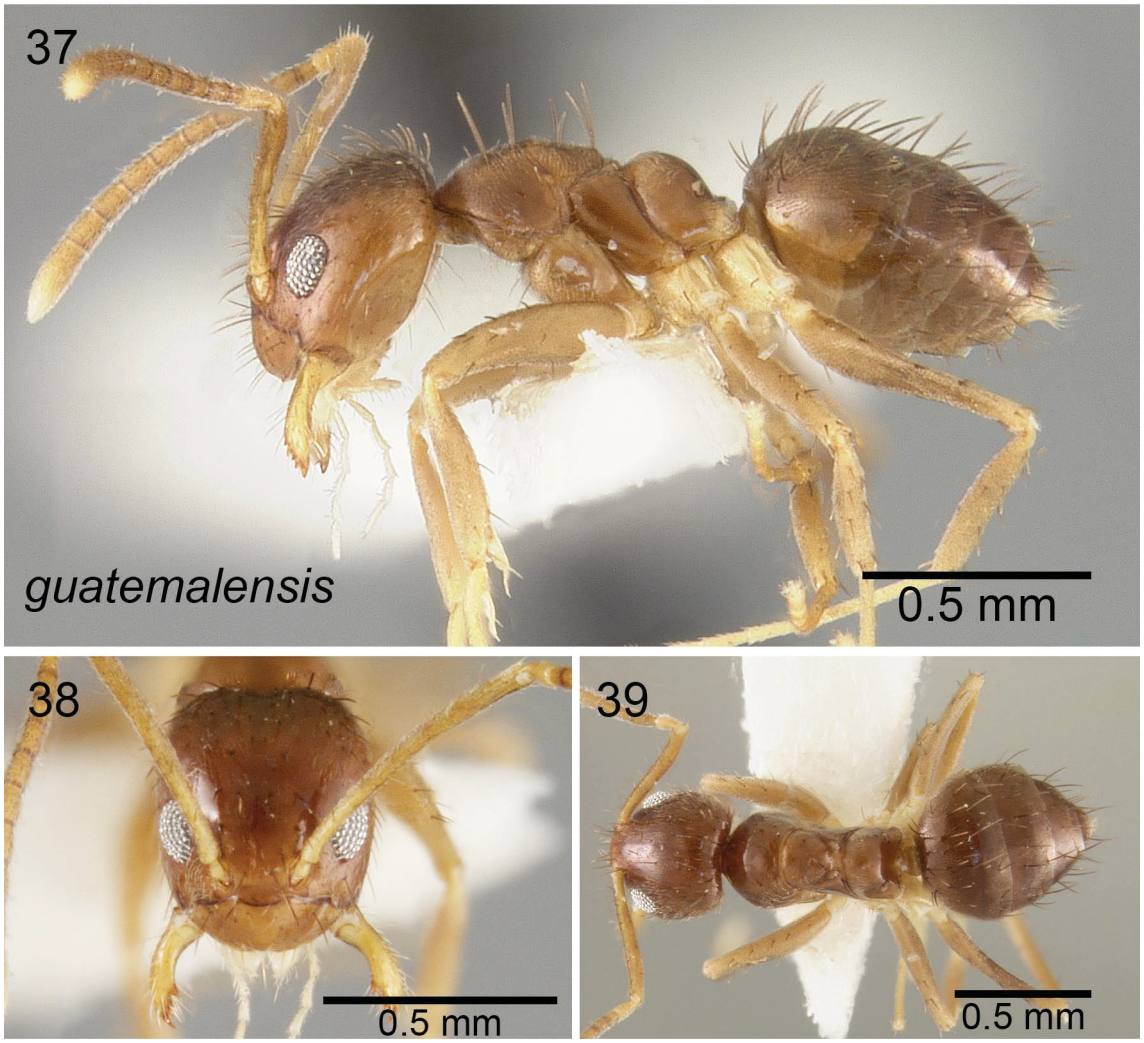
Worker diagnosis: Pale-yellow with REL: 19–23 and SI2: 15–19.

Compare with: *N. guatemalensis.*

WORKER. *Measurements (n=4)*: TL: 2.10–2.20; HW: 0.49–0.55; HL: 0.59–0.65; EL: 0.12–0.14; SL: 0.73–0.77; WL: 0.67–0.74; GL: 0.76–0.85. SMC: 22–32; PMC: 4–3; MMC: 3–4. *Indices:* CI: 82–89; REL: 19–23; SI: 134–151; SI2: 15–19.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin straight and slightly emarginate medially; anterior clypeal margin emarginate; ocelli absent; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum more or less even with posterior pronotal margin; metanotal area without a short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal

face of propodeum lower than dorsal face of mesonotum in lateral view. *Color and pilosity*: pale yellow, gaster sometimes slightly darker yellow; macrosetae across body yellow to white, some darker brownish-yellow towards bases; cephalic pubescence sparse; mesosoma with pubescence dorsally on pronotum and mesonotum; gastral tergites I & II with dense pubescence dorsally.

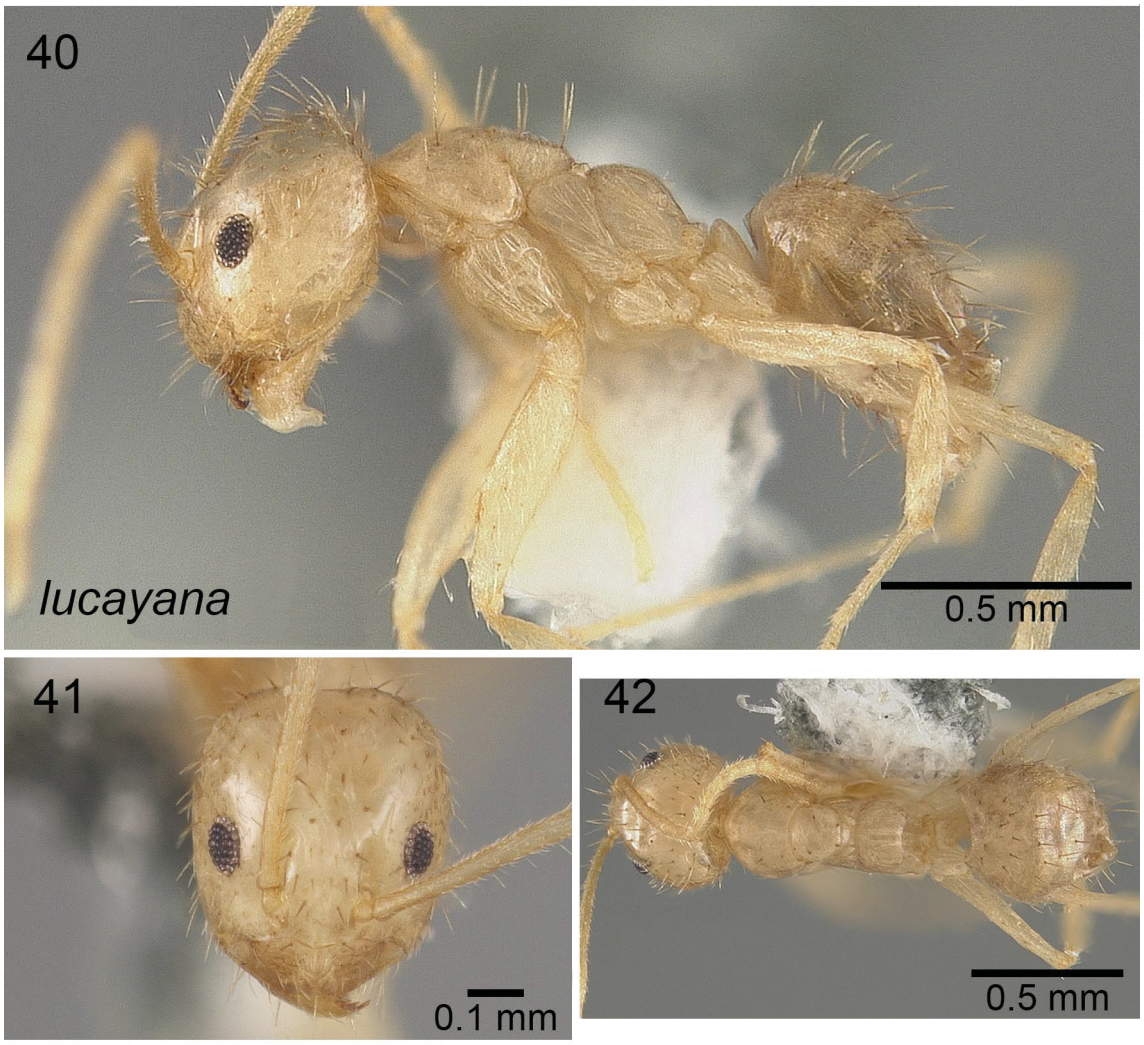


FIGURES 37–39. *Nylanderia guatemalensis* worker USNMENT00413797. Lateral, full-face, and dorsal view of the body.

Other material examined: BAHAMAS: North Andros Island, access road to Stafford Creek south of bridge, 12 Nov 1996, under rock on bank, M. Deyrup & L. Davis; Rum Cay, 11 November 2002, John Mangold.

Etymology: Species epithet is a toponym relating to the Lucayan Archipelago where this species is found.

Notes: Workers of *Nylanderia lucayana* and *N. guatemalensis* are very similar but can be best separated another using eye size. The eye of *N. lucayana* is generally smaller and it has a relative eye index 19–23. In *N. guatemalensis*, the relative eye index is above 21, with most specimens in the mid-20s and some approaching 30. The SI2 index also effectively separates the two species (measured range in *N. lucayana*: 15–19; measured range in *N. guatemalensis*: 18–26). There is also a color difference between the two but it is difficult to appreciate it until one has looked at many specimens of *N. guatemalensis*. *Nyladeria guatemalensis* is never as pale yellow as seen in *N. lucayana*. Finally, *N. lucayana* is putatively an endemic to the Lucayan Archipelago so it is likely only in this area that separating *N. guatemalensis* and *N. lucayana* is necessary. Gotzek *et al*. (2012) clearly show this species (listed as *Nylanderia* n.sp. 83) to be quite distinct phylogenetically from *N. guatemalensis* (Gotzek *et al*. 2012 and unpublished data).



FIGURES 40–42. *Nylanderia lucayana* worker USNMENT00754832. Lateral, full-face, and dorsal view of the body.

***Nylanderia metacista*, sp. nov.**
Figs. 43–45 (worker); 46–51 (male)

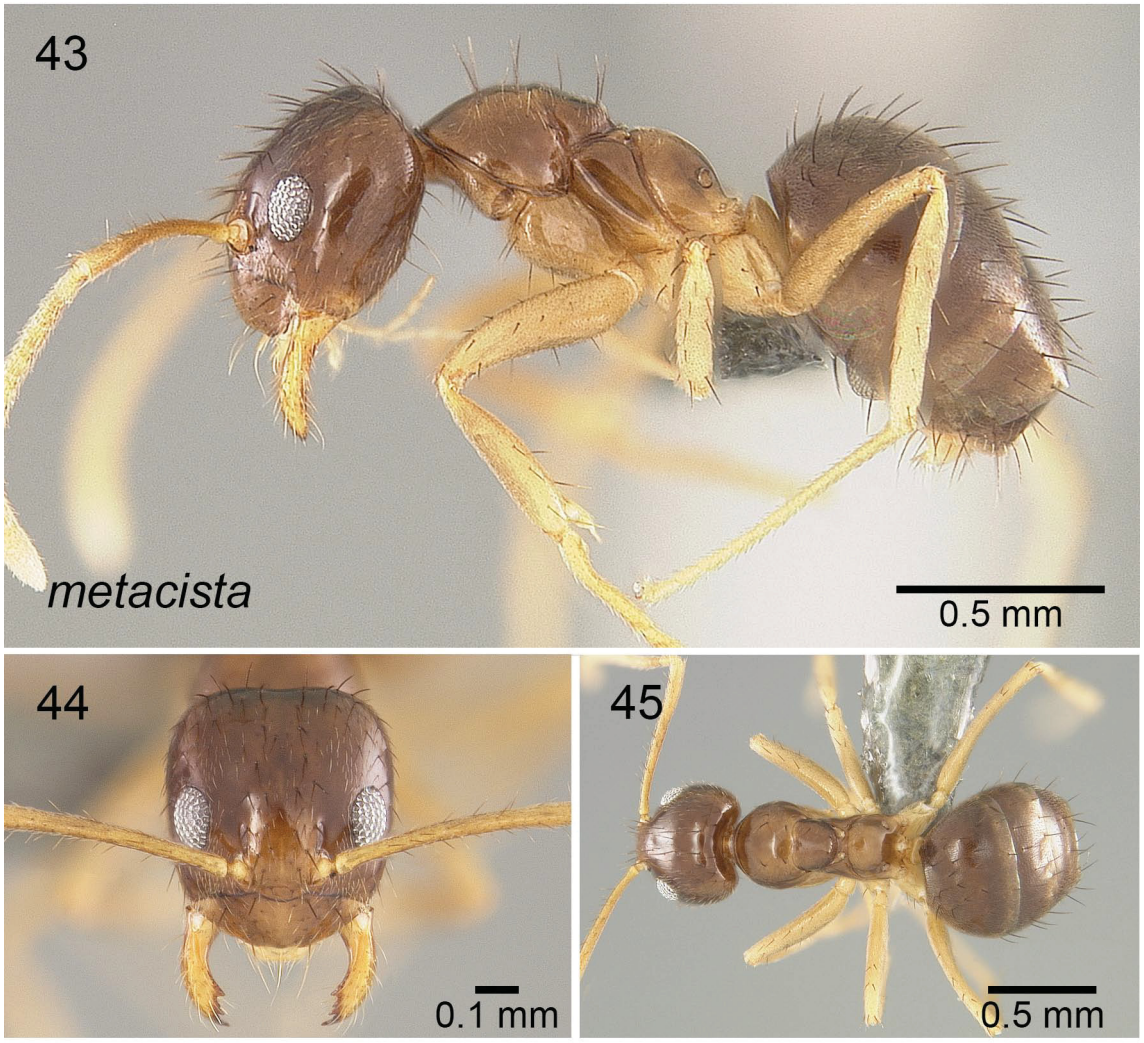
Holotype worker, DOMINICAN REPUBLIC: Cachote Forest, 18° 04.01'N, 71° 10.768'W, elev. 1054 m, cloud forest, nest under bark of rotting, fallen tree, 28.vii.2009, J.S. LaPolla & S.A. Schneider (USNM00754797) (NMNH). 3 paratype workers, 1 paratype male with same locality data as holotype (specimens are from the same nest as holotype) (NMNH & MCZC).

Worker diagnosis: Brown head, mesosoma, and gaster contrasting with yellow legs and antennae; gastral tergites I & II with a dense layer of pubescence.

Compare with: *N. bibadia*, *N. pini*, *N. fuscaspecula*

WORKER. *Measurements (n=7)*: TL: 2.50–2.80; HW: 0.53–0.59; HL: 0.64–0.68; EL: 0.17–0.19; SL: 0.74–0.78; WL: 0.80–0.89; GL: 0.90–1.30. SMC: 18–25; PMC: 3–6; MMC: 2. *Indices:* CI: 83–88; REL: 25–28; SI: 132–142; SI2: 22–24.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin straight, occasionally very slight emarginated medially; anterior clypeal margin emarginate; ocelli absent; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area without short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum and mesonotum approximately the same height in lateral view. *Color and pilosity*: body brown; mandible, scape, legs, mesocoxa and metacoxa lighter brown; cephalic pubescence sparse; pronotum, mesonotum, anterior portion of propodeum with sparse pubescence; gastral tergites I & II with dense pubescence dorsally.



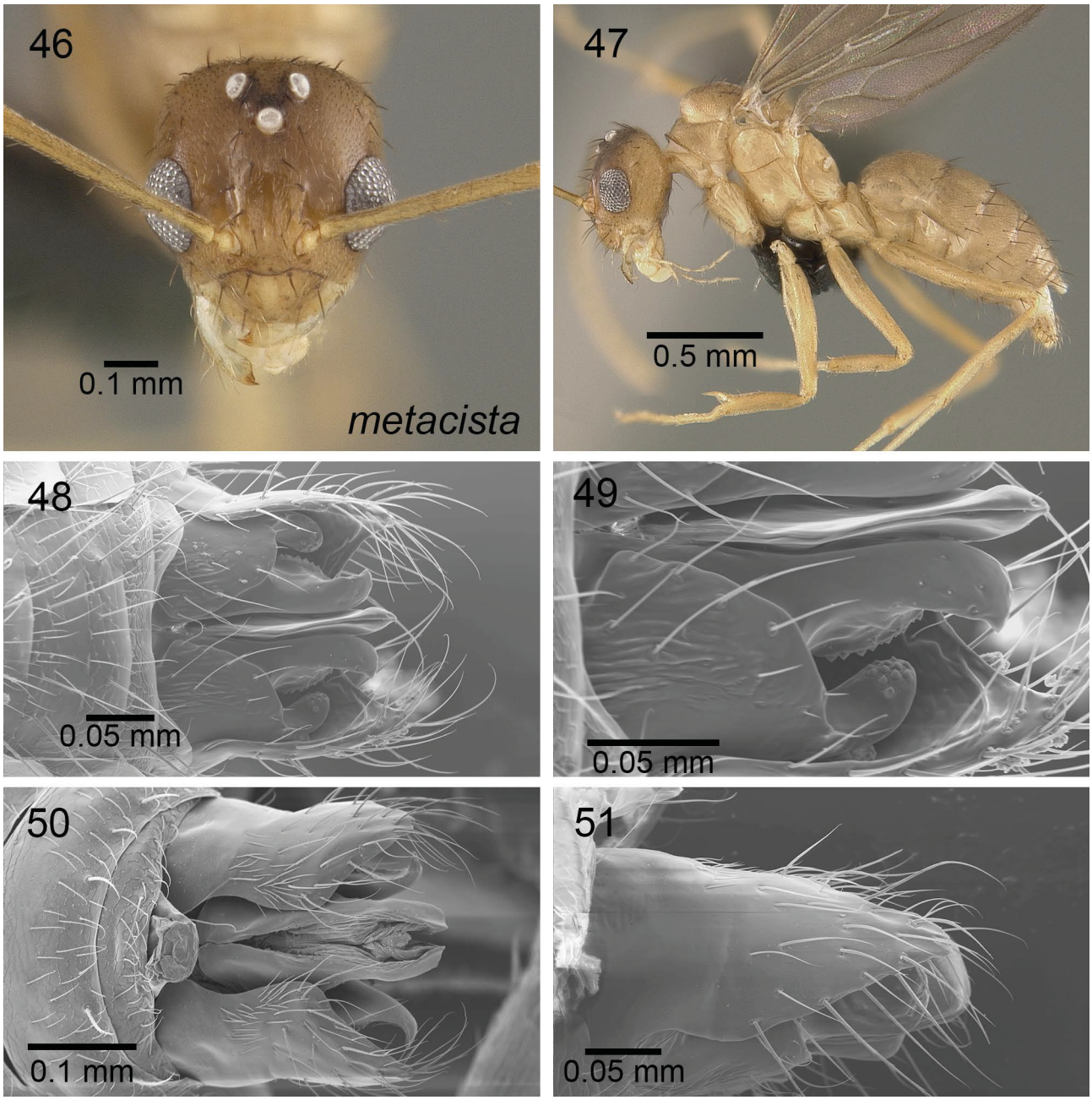
FIGURES 43–45. *Nylanderia metacista* worker USNMENT00921158. Lateral, full-face, and dorsal view of the body.

QUEEN. *Measurements (n=1)*: TL: 4.80; HW: 0.86; HL: 0.87; EL: 0.3; SL: 0.92; WL: 1.6; GL: 2.3. SMC: 8; PMC: 5; MMC: 27. *Indices:* CI: 98; REL: 34; SI: 107. Generally, as in worker with modifications expected for caste and with the following noted difference: lighter brown (to yellow) than seen in workers.

MALE. *Measurement (n=1)*: TL: 2.40; HW: 0.53; HL: 0.56; EL: 0.23; SL: 0.85; WL: 0.85; GL: 1.00. SMC: 4; PMC: 0; MMC: 8. Indices: CI: 94; REL: 41; SI: 161.

Head: sides of head in full face view nearly parallel becoming distinctly broader posterior to eyes; clypeus evenly rounded anteriorly; mandible with distinct apical tooth and much smaller subapical tooth adjacent to apical tooth; basal angle rounded and indistinct. *Mesosoma*: in lateral view, dorsal margin of mesoscutum same as height as dorsal margin of mesoscutellum; propodeum steeply sloping without distinct dorsal and declivitous faces. *Genitalia*: gonopod apex coming to triangular point in lateral view; in dorsal view, gonopod margin curves away from penial sclerite; digitus with pointed apex that bends away from penial sclerite; cuspis tubular, rounded at apex bending sharply towards digitus; anteroventral process of penial sclerite comes to a point with ventral margin of process emarginate; valvura of penial sclerite placed ventral to midline (fig. 105). *Color and pilosity*: yellow to light brown; head darker than remainder of body; head, scapes, mesosomal notum, legs and gastral dorsum with a layer of short pubescence; fine, wispy, silvery pubescence between the ocelli and the compound eyes.

Other material examined: DOMINICAN REPUBLIC: Pedernales Pr., Sierra de Bahoruco NP, 18.14764 -71.162321 +/-70 m, 1320 m, III-2014, Lubertazzi, DL 03720-001; Pedernales Pr., Sierra de Bahoruco NP, 18.15016 -71.62487 +/-110 m, 1290 m, III-2014, Lubertazzi, DL03741:003; Pedernales, Jaragua National Park, 18.07332 -71.65203 +/- 120 m, 400 m, 27-III-2014.



FIGURES 46–51. *Nylanderia metacista* male USNMENT00754794. Full-face and lateral of the body; SEM images of external genitalia: ventral, close-up vollsellar lobes, dorsal, and lateral.

Etymology: Species epithet is a combination of *cista* (L. = box) with the prefix *meta-* (L. = end), named for thickened tips of the penial sclerites found in this species.

Notes: Workers of this species can usually be separated from *N. fuscaspecula* and *N. pini* based on the presence of dense pubescence of the first gastral tergite. Males of *N. metacista* males have a fine, wispy, silvery pubescence between the ocelli and the compound eyes. In contrast, *N. pini* has short, thick, dark brown pubescence and some pubescence free areas between the ocelli and the compound eyes. Separating *N. metacista* from *N. bibadia* can generally be done with color: *N. metacista* has lighter brown workers, with distinct yellow antennae and legs, which contrasts against the darker workers of *N. bibadia*. However, color is not always reliable and can be difficult to qualitatively assess. *Nylanderia metacista* is overall smaller than *N. bibadia* (especially with regards to head length and width).

Male morphology provides some further characters for separating the two species. Males of *N. metacista* are brownish-yellow whereas *N. bibadia* are dark brown. Additionally, in *N. metacista* the gastral pubescence is very

appressed against the cuticle. In contrast *N. bibadia* possess gastral pubescence that is less appressed, the gaster having a shaggy appearance. The anteroventral process of the penial sclerites in *N. metacista* is distinctly emarginate in contrast to the broadly rounded anteroventral process of *N. bibadia*. Uniquely among West Indian *Nylanderia N. bibadia*, *N. metacista* and *N. pubens* have rather elongated penial sclerites. The valvurae of the penial sclerites in all three species are also ventral to the midline of the penial sclerites (fig. 105). It is not surprising that *N. metacista* and *N. bibadia* workers can be challenging to separate from each other because molecular analyses indicate they are sister taxa (Gotzek *et al*. 2012).

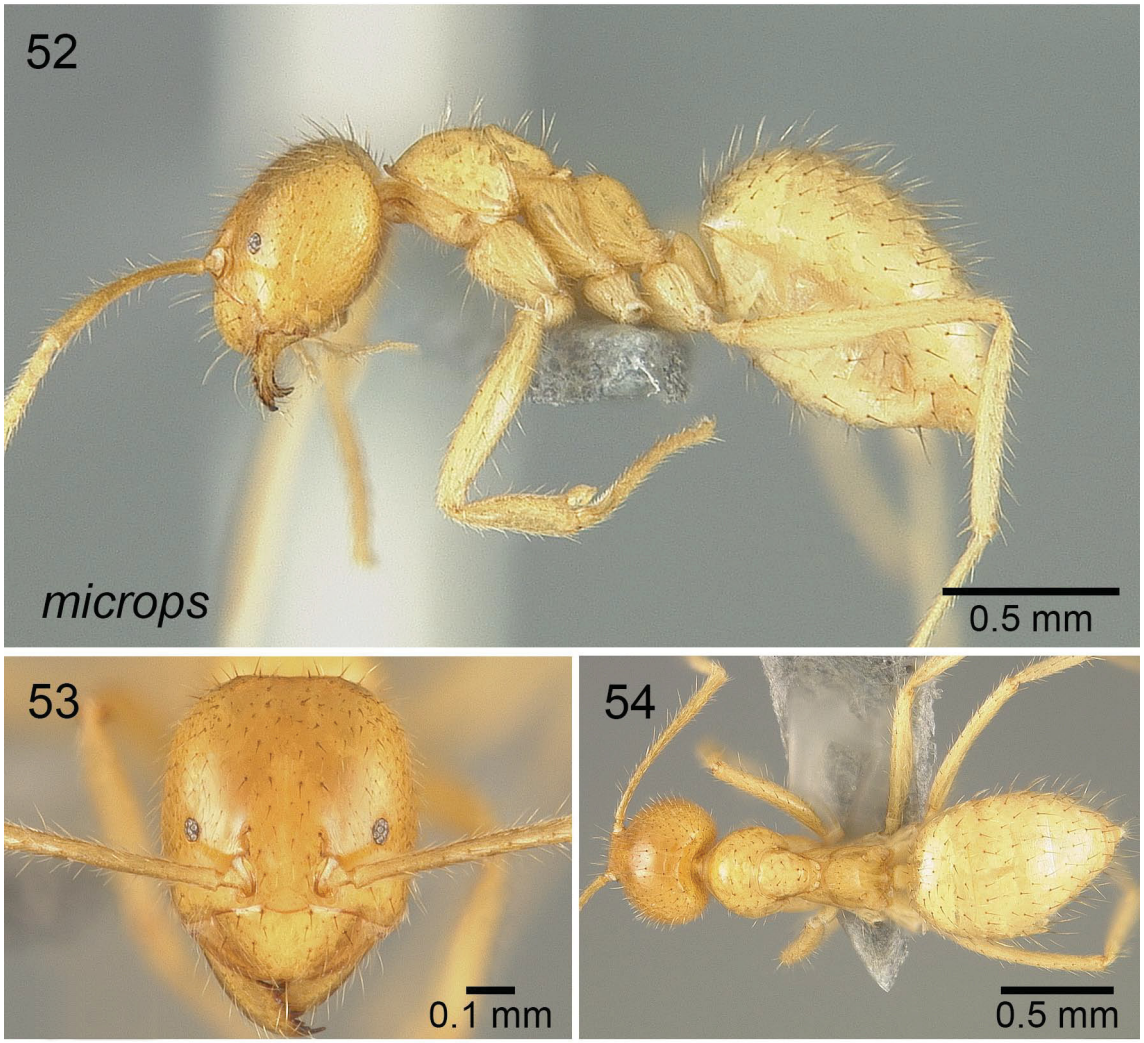
Nylanderia microps (Smith, M.R., 1937)

Figs. 52–54 (worker)

Prenolepis (*Nylanderia*) *microps* Smith M.R., 1937: 868 (worker). Syntype worker, PUERTO RICO: 14 kilometers east of Mayagüez (M.R.S.) (NMNH) (examined). Combination in *Nylanderia*: Kempf, 1972: 167; in *Paratrechina*: Brandão, 1991: 367; in *Nylanderia*: LaPolla, Brady & Shattuck, 2010: 127.

Worker diagnosis: Very small eyes (EL less than 0.1 mm); orange-yellow; entire body with abundant macrosetae (SMC: 38–47; PMC: 24–27) giving species a prickly appearance.

Compare with: *N. myops*, *N. zaminyops*.



FIGURES 52–54. *Nylanderia microps* worker USNMENT00754813. Lateral, full-face, and dorsal view of the body.

WORKER. *Measurements (n=5)*: TL: 2.40–3.20; HW: 0.55–0.73; HL: 0.67–0.81; EL: 0.05–0.08; SL: 0.77–0.93; WL: 0.78–1.00; GL: 0.90–1.50. SMC: 38–47; PMC: 24–27; MMC: 5–10. *Indices:* CI: 82–89; REL: 7–10; SI: 128–139; SI2: 6–9.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin straight, slightly emarginate medially; anterior clypeal margin evenly rounded; ocelli absent; eye small. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area with a short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum lower than mesonotum in lateral view. *Color and pilosity*: body orange-yellow; legs and gaster sometimes slightly lighter, especially ventrally on gaster; scape and legs with abundant pubescence, pubescence sparse to absent across remainder of body; macrosetae distinctly abundant across entire body, with dark setal bases, giving specimens prickly appearance; anterior portion of propodeal dorsal face with fringe of nearly appressed, very short macrosetae (more or less in a line across dorsal face, pointing toward head).

Other material examined: PUERTO RICO: El Verde Field Station, forest in vicinity of field station, N 18 19.295', W 065 49.190', elev. 985 ft., 21 July 2008, J.S. LaPolla.

Notes: Along with *N. myops* and *N. zaminyops*, *N. microps* is another West Indian species with reduced eye size (EL less than 0.1 mm). While all species are light in coloration, *N. myops* and *N. zaminyops* are much paler and do not possess nearly as many macrosetae on the scapes and mesosomal dorsum. Among West Indian *Nylanderia*, *N. microps* is unusually setose. The presence of very short, nearly appressed macrosetae along the anterior portion of the propodeal dorsal face is unusual as well. A similar character state has been observed in *Nylanderia mixta* (Forel, 1897), a species endemic to the Seychelles in the southwest Indian Ocean (LaPolla and Fisher, in prep). It seems reasonable to assume this species is nocturnal given its small eyes and light coloration. One of us (JSL) collected several colonies of *N. microps* around El Verde Field Station, and workers were never observed foraging during the day. Colonies were interestingly found in trees, usually about 1–2 meters off the ground. They were found to nest in rotten pieces of wood and under bark where soil and leaves had accumulated in a groove or flat part of a tree branch. Hundreds of workers were found in the colonies, but unfortunately males were never collected. Interestingly, this species occurs in sympatry with *Zatania cisipa* in the El Yunque National Forest, which also nests in trees and is nocturnal (LaPolla *et al*. 2012). A molecular phylogeny of *Nylanderia* placed this species as sister species to the other Puerto Rican species described here, *N. semitincta* (Gotzek *et al*. 2012).

Nylanderia myops (Mann, 1920)

Figs. 55–57 (worker)

Prenolepis (*Nylanderia*) *myops* Mann, 1920: 432 (w.q.m). 6 syntype workers, CUBA: Mina Carlota, Trinidad Mts. (NMNH) (examined). Combination in *Paratrechina* (*Nylanderia*): Emery, 1925d: 222; in *Nylanderia*: Brown, 1955: 135; in *Paratrechina*: Brandão, 1991: 367; in *Nylanderia*: LaPolla, Brady & Shattuck, 2010: 127.

= *Paratrechina* (*Nylanderia*) *troglodytes* Weber, 1934: 58 (w.) Cuba: Soledad, Cienfuegos, 30 August 1933 (depository unknown, possibly MCZC but not found despite extensive search through collection) (not examined). Junior synonym of *Nylanderia myops*: Brown, 1955: 135.

Worker diagnosis: Uniformly pale yellow with very small eyes (REL: 9–11; SI2: 7–9).

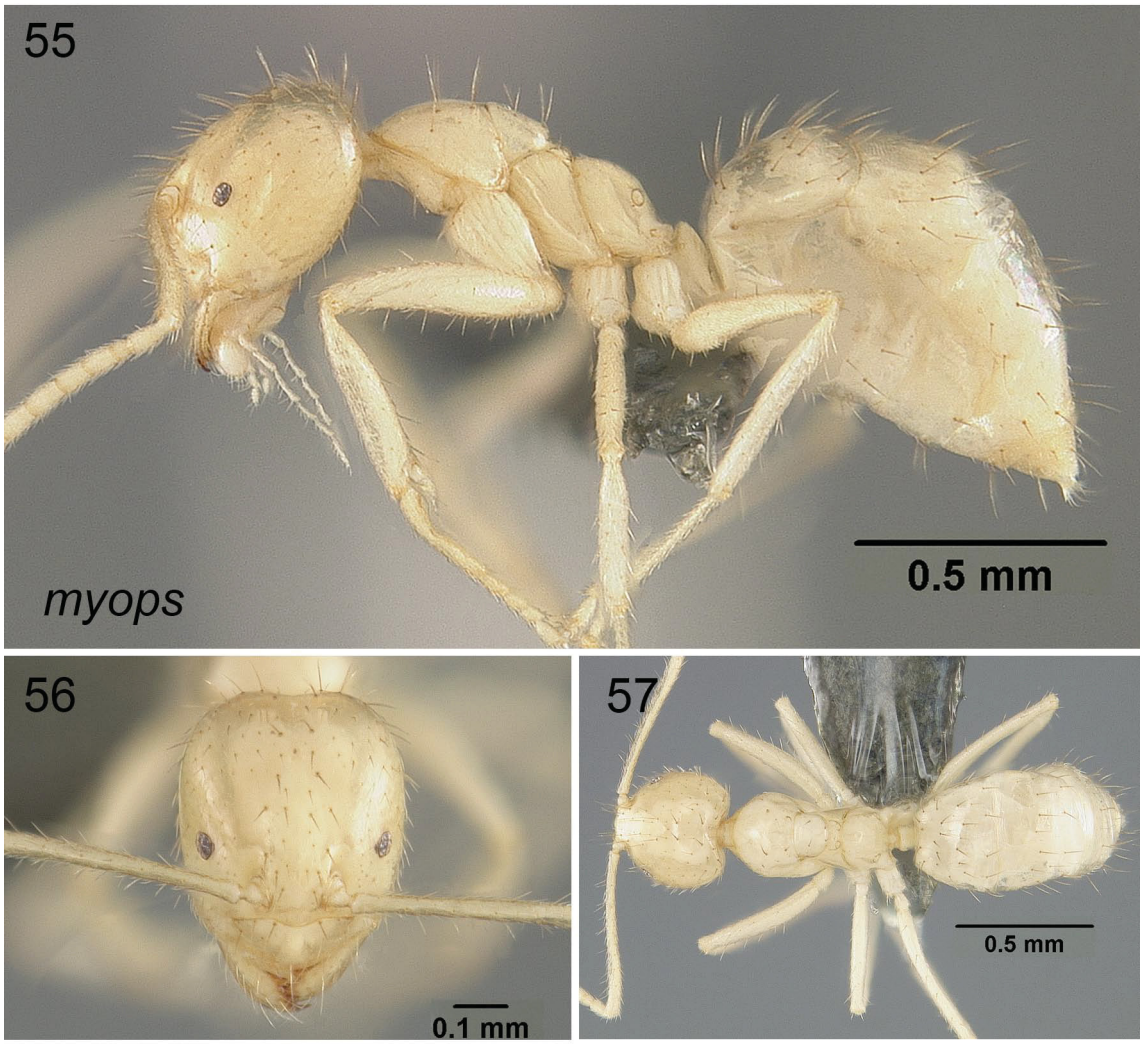
Compare with: *N. myops, N. zaminyops*

WORKER. *Measurements (n=2)*: TL: 2.10–2.20; HW: 0.43–0.44; HL: 0.53–0.55; EL: 0.05–0.06; SL: 0.65–0.67; WL: 0.67–0.69; GL: 0.85–0.98. SMC: 16–19 PMC: 3; MMC: 2. *Indices:* CI: 78–83; REL: 9–11; SI: 147–155; SI2: 7–9.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin straight, slightly emarginate medially; anterior clypeal margin emarginate; ocelli absent; eye small. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area without a short flat area before spiracle; dorsal face of propodeum relatively flat; dorsal face of propodeum lower than mesonotum in lateral view. *Color and pilosity*: uniformly pale yellow; except on scapes with abundant pubescence, pubescence absent to sparse, most abundant on mesonotum and dorsum of gaster.

Other material examined: CUBA: Holguín, 6km S Yamanigüey, 20.55 °, -74.73333°, 2001.VIII.23, P.S. Ward (PSW14431-20); Santiago du Cuba: Parque Nacional Gran Peidra, 20.01.100, -75.67300 +/-150m, 55m, 26 Jan

2012, R.S. Anderson #RSA2012-007; Santiago du Cuba: Parque Nacional Gran Peidra, Trail to Cerro Mogote, 19.99900, -75.58300 +/-150m, 800m, 28 Jan 2012, F. Cala #RSA2012-012; Granma, Parque Nacional Pico Turquino, Aguada de Joachin, 20.01500,-76.8400 +/-150m, 1370m, 3 Feb 2012, R.S. Anderson #RSA2012-023.



FIGURES 55–57. *Nylanderia myops* worker USNMENT00921173. Lateral, full-face, and dorsal view of the body.

Notes: *Nylanderia myops* is quite distinct in its morphological appearance with very small eyes and a uniformly pale-yellow body color. The only other species it could be confused with is *N. zaminyops* which is known from Trinidad. The relative eye index is smaller in *N. myops* (REL 9–11) compared with *N. zaminyops* (REL 13–17). In *N. myops* the dorsal face of the propodeum is relatively flat and long (fig. 55), in contrast to the more rounded and short propodeal dorsal face of *N. zaminyops* (fig. 104).

While little is known about the biology of this species, its morphology (small eyes and very pale coloration) suggests it is either a hypogaeic or nocturnal forager. It has been collected from several localities across Cuba in sifted leaf litter and/or rotten wood. The type series was collected under a stone (Mann, 1920). Male and queen specimens were described by Mann (1920), but unfortunately, we could not locate them for this study despite an extensive search of the MCZ and NMNH collections.

***Nylanderia pini*, sp. nov.**

Figs. 58–60 (worker); 61–66 (male)

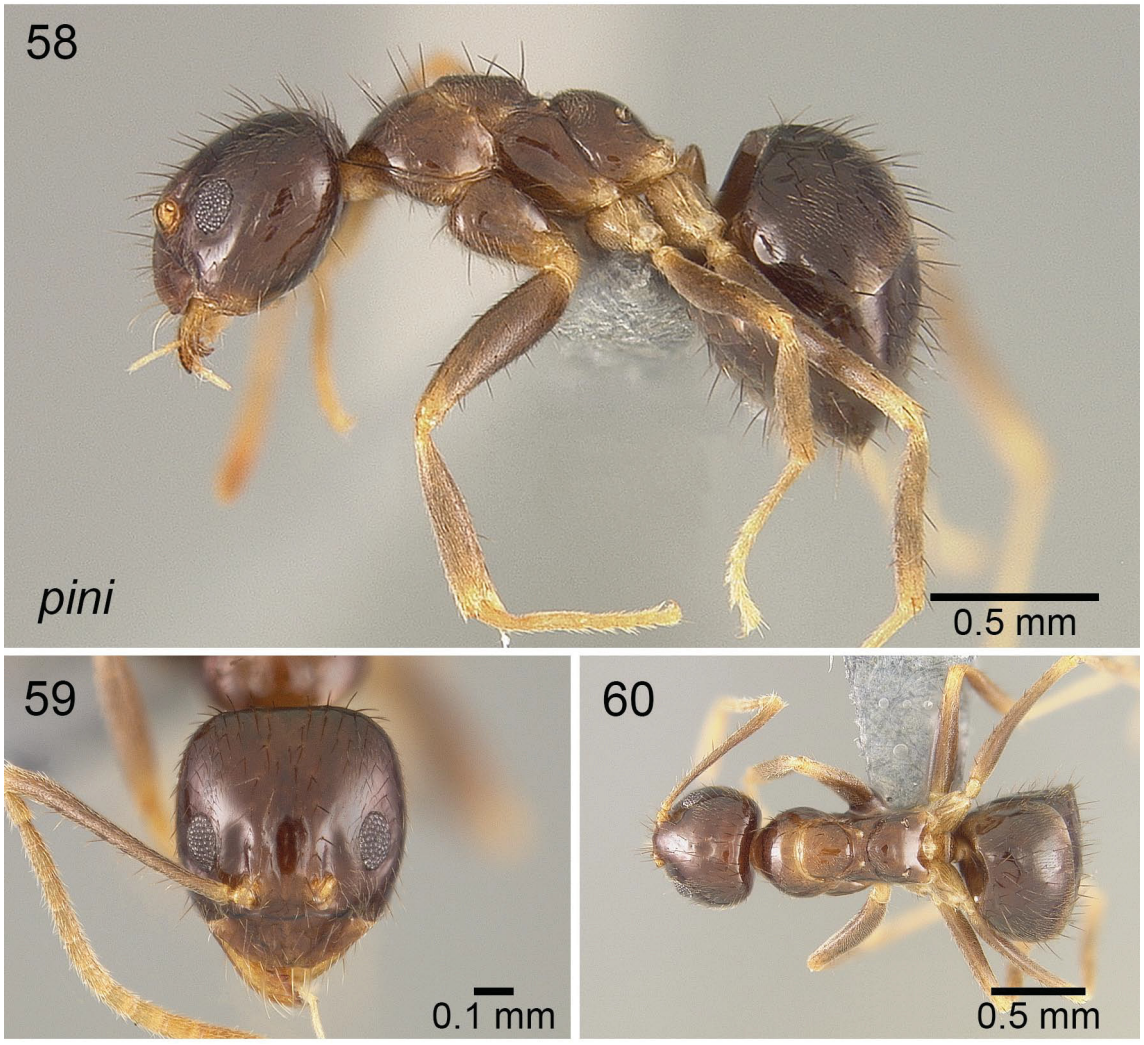
Holotype worker, DOMINICAN REPUBLIC: Parque Nacional Armando Bermúdez; 19° 04.044’N, 70° 51.830’W; elev. 1037 m; moss and soil under tree; 07.viii.2009; S.A. Schneider (USNMENT007544798) (NMNH). 4 paratype

workers, 1 paratype queen and 1 paratype male with same locality data as holotype (specimens are from the same nest as holotype) (NMNH & MCZC).

Worker diagnosis: Generally dark brown; gastral pubescence present only on the mid to posterior end of gastral tergite I, with anterior region of segment without pubescence; dorsal face of propodeum usually with a distinct fringe of pubescence.

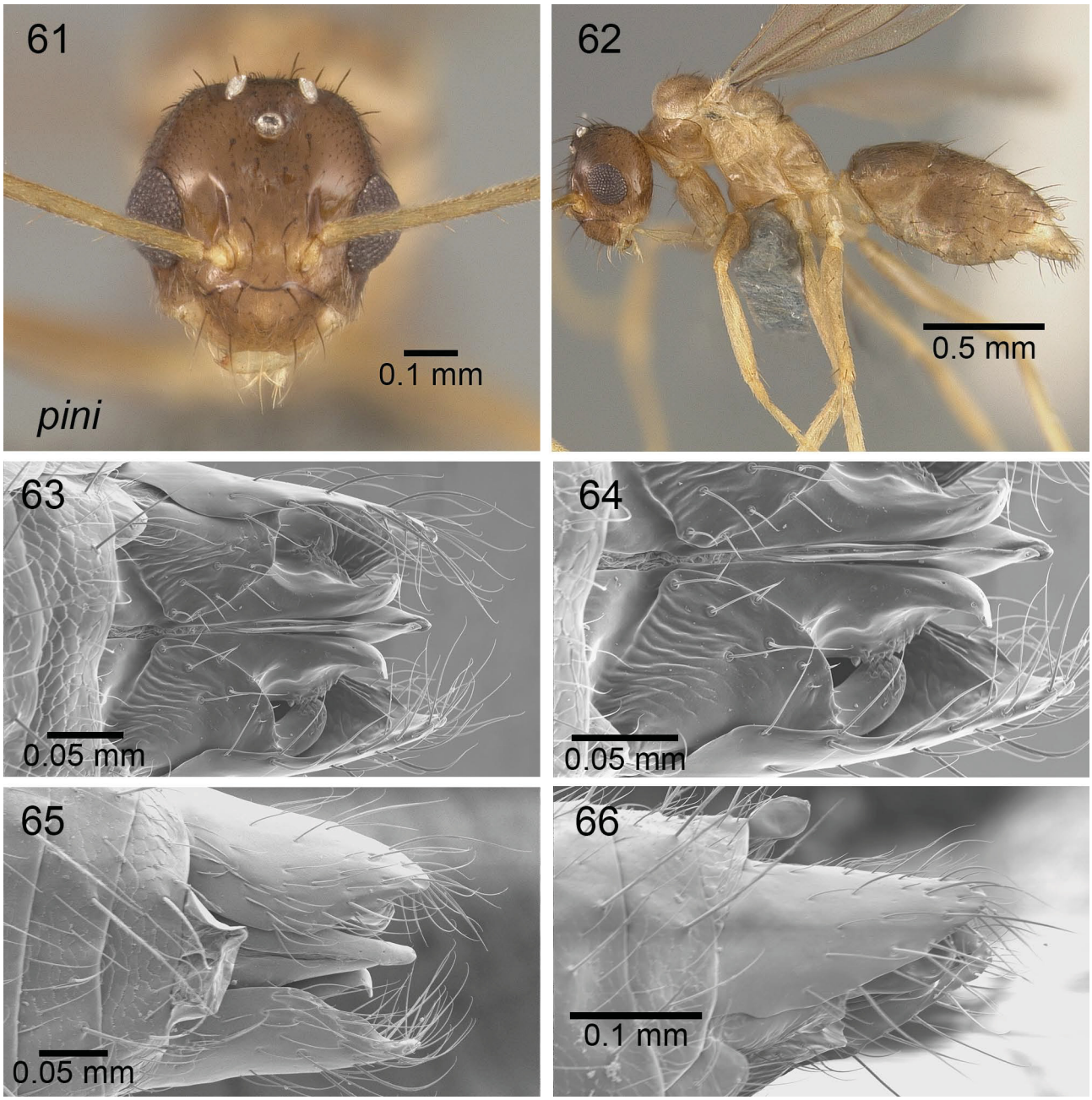
Compare with: *N. bibadia*, *N. fuscaspecula, N. metacista*

WORKER. *Measurements (n=7)*: TL: 2.40–2.80; HW: 0.52–0.62; HL: 0.69–0.73; EL: 0.17–0.18; SL:0.84–0.86; WL:0.91–0.98; GL:0.83–0.9. SMC: 22–27; PMC: 3–6; MMC: 2–3. *Indices:* CI: 84–87; REL:24–27; SI:136–151; SI2: 19–22.



FIGURES 58–60. *Nylanderia pini* worker USNMENT0075478. Lateral, full-face, and dorsal view of the body.

Head: sides of head in full face view rounded and slightly broader posterior to eyes; posterolateral corners rounded; posterior margin relatively straight; anterior clypeal margin emarginate; median ocellus sometimes present; eyes well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum distinctly raised above posterior pronotal margin; metanotal area with a short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum slightly lower than mesonotum in lateral view. *Color and pilosity*: dark brown, with lighter brownish-yellow to yellow funiculus, mandible, mesocoxa/trochanter, metacoxa/trochanter, distal ends of femora and tibiae, and tarsi; occasionally lighter brown around promesonotal junction; cephalic pubescence sparse, denser on posterolateral corners and posterior and anterior of eyes; legs and mesonotum pubescent; dorsal face of propodeum usually with distinct fringe of pubescence; gastral pubescence present only on mid to posterior end of gastral tergite I; anterior portion without pubescence; remaining gastral tergites with abundant pubescence.



FIGURES 61–66. *Nylanderia pini* male USNMENT00921116. Full-face and lateral of the body; SEM images of external genitalia: ventral, close-up vollsellar lobes, dorsal, and lateral.

QUEEN. *Measurements (n=1)*: TL: 4.1; HW: 0.83; HL: 0.83; EL: 0.25; SL: 0.97; WL: 1.5; GL: 2.1. SMC: 14; PMC: 5; MMC: 6; MtMC: 3. *Indices:* CI: 100; REL: 30; SI: 117. Generally, as in worker with modifications expected for caste and with the following noted difference: slightly lighter brown (to yellow) than seen in workers.

MALE. *Measurements (n=3)*: TL: 1.6–2.2; HW: 0.55–0.57; HL: 0.51–0.57; EL: 0.21–0.23; SL: 0.74–0.76; WL: 0.85–1.0; GL: 0.87–1.11. SMC: 10–12 PMC: 0; MMC: 6–12; MtMC: 2–3. *Indices:* CI: 99–107; REL: 40–42; SI: 134–147.

Head: sides of head in full face view rounded; posterior margin rounded; clypeus emarginate anteriorly; mandible with distinct apical tooth and much smaller subapical tooth adjacent to apical tooth; basal angle rounded and indistinct. *Mesosoma*: in lateral view, dorsal margin of mesoscutum same as height as dorsal margin of mesoscutellum; propodeum steeply sloping without distinct dorsal and declivitous faces. *Genitalia*: gonopod apex coming to triangular point in lateral view; in dorsal view, gonopod margin curves away slightly from penial sclerite; digitus

with pointed apex that bends away from penial sclerite; cuspis tubular, rounded at apex bending sharply toward digitus; anteroventral process of penial sclerite coming to a point with ventral margin of process emarginate; valvura of penial sclerite placed ventral to midline (fig. 105). *Color and pilosity*: color brown with darker brown head, pronotum, and gaster; remainder of body yellow to light brown; head, scapes, mesosomal notum, legs and gastral dorsum with a layer of pubescence.

Other material examined: DOMINICAN REPUBLIC: Prov. La Vega, La Cienaga, ca. 1100 m, mixed HW-pine valley forest, Feb 1975, WL & DE Brown; Prov. La Vega, Valle Nuevo Rd, 18° 50.29 N, 070° 41.84 W, elev 1968 m, 3 December 2003, Mark Deyrup; La Vega Prov, Valle Nueva Nat Park, 18.84354 -70.71363 +/-50 m, 1735m, 31-JUL-2015, Lubertazzi, DL04056; La Vega Prov, Valle Nueva Nat Park, 18.84257 -70.7229 +/-40 m, 1585 m, 31-JUL-2015, Lubertazzi DL04066.

Etymology: Species epithet is from the plural form of *pinus* (L. = pine), named for the dominant trees in the forests in which this species was found.

Notes: In our experience *N. pini* and *N. fuscaspecula* can be especially difficult to separate from each other. There are size differences, with *N. pini* being larger especially with regards to scape length (*pini* typically possesses a scape greater than 0.8 mm in length). Additionally, *N. pini* typically possesses a first gastral tergite with abundant pubescence beginning about midlength and continuing to the posterior margin of the segment. A fringe of pubescence is typically present along the dorsal face of the propodeum as well. However, we have seen specimens within nest series where the pubescence patterns do not match perfectly as discussed above and in these cases scape measurements should separate the two species. There was one location where both species occurred sympatrically and in fact were collected on the same day (Prov. La Vega, La Cienaga, ca. 1100 m, mixed HW-pine valley forest, Feb 1975, WL & DE Brown). Among these specimens, differences in worker pubescence and size noted above were easily observed.

Workers of *N. metacista* are also likely to be confused with *N. pini*, but in all specimens we examined *N. metacista* workers always possess a dense layer of pubescence across gastral tergites I and II and this is never the case in *N. pini*.

Nylanderia pubens (Forel, 1893)

Figs. 67–69 (worker); 70–75 (male)

Prenolepis (*Nylanderia*) *fulva* r. *pubens* Forel, 1893: 338 (w.q.m.) 5 workers, 1 queen and 2 male syntypes, ST. VINCENT (MHNG) (examined; lectotype male here designated; specimen on pin with two separate points; point with lectotype marked with small red dot. Combination in *Paratrechina* (*Nylanderia*): Emery, 1925: 222; in *Nylanderia*: Kempf, 1972: 167; in *Paratrechina*: Trager, 1984: 143; in *Nylanderia*: LaPolla, Brady & Shattuck, 2010: 127. Junior synonym of *Nylanderia fulva*: Creighton, 1950: 406. Revived from synonymy and raised to species: Trager, 1984: 143.

Worker diagnosis: Large species (TL: >2.5), brown, and entire body covered in dense pubescence that gives body a dull and shaggy appearance shaggy.

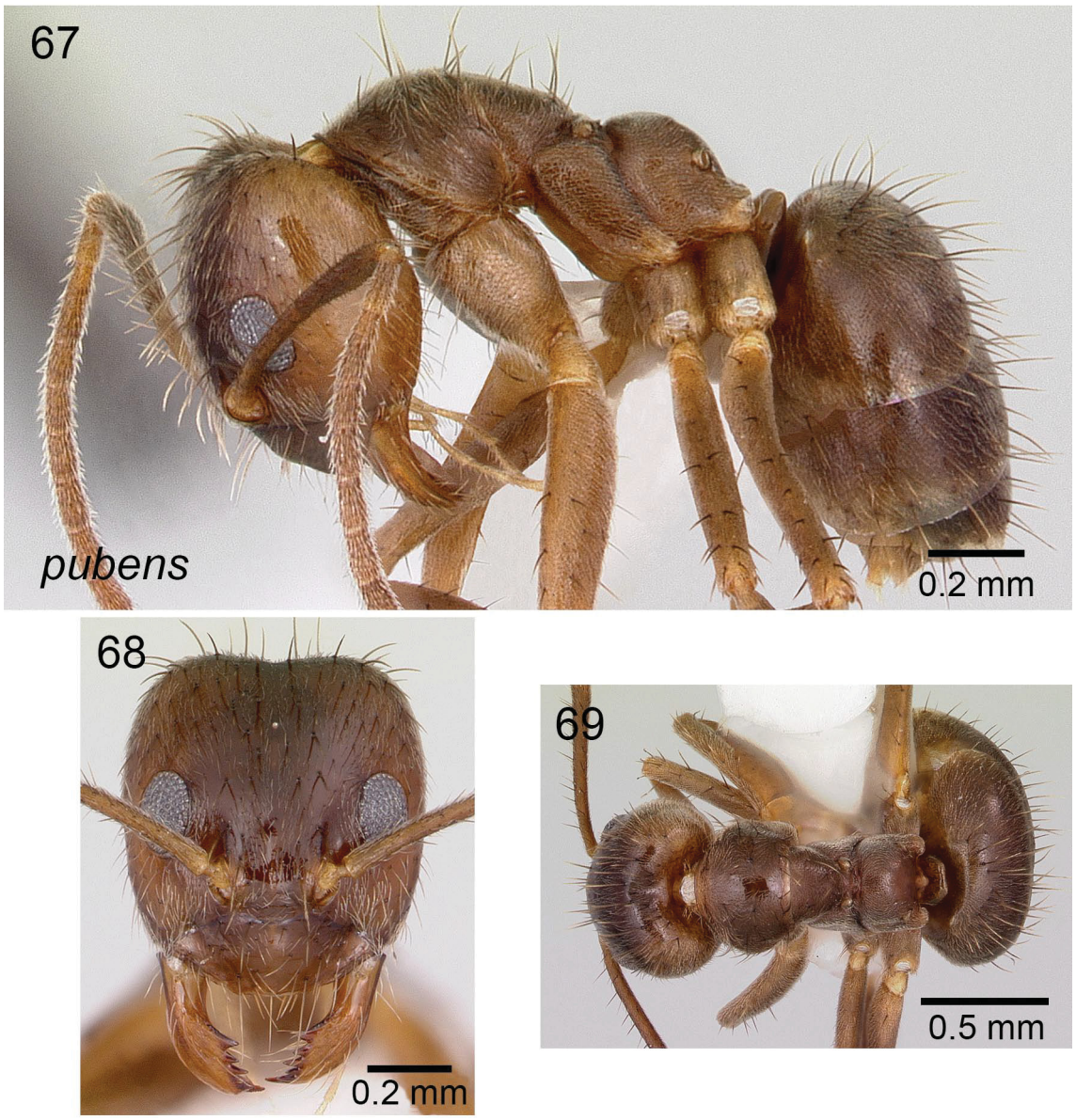
Compare with: *N. bourbonica, N. fulva*

WORKER. *Measurements (n= 2)*: TL: 2.60–2.90; HW: 0.64–0.67; HL: 0.67–0.76; EL: 0.18–0.19; SL: 0.88–0.9; WL: 0.90–0.94; GL: 1.05–1.20. SMC: 18–26; PMC: 4–6; MMC: 2–3. *Indices:* CI: 88–95; REL: 25–28; SI: 133–137; SI2: 20–21.

Head: sides of head in full-face view nearly parallel; posterolateral corners rounded; posterior margin rounded distinctly emarginate medially; anterior clypeal margin emarginate; three ocelli present; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum more or less even with posterior pronotal margin; metanotal area with a short flat area before spiracle; dorsal face of propodeum slightly convex to almost flat in some specimens; dorsal face of propodeum lower than mesonotum in lateral view. *Color and pilosity*: brown; entire body covered with dense pubescence, giving it dull appearance; in many places across the body pubescence becomes decumbent and long, especially on pronotum, mesonotum and gaster giving shaggy appearance.

QUEEN. *Measurements (n=1)*: TL: N/A; HW: 1.04; HL: 0.99; EL: 0.31; SL: 1.1; WL: 1.7; GL: N/A. SMC: 21 PMC: 5; MMC: 23. *Indices:* CI: 105; REL: 32; SI: 106.

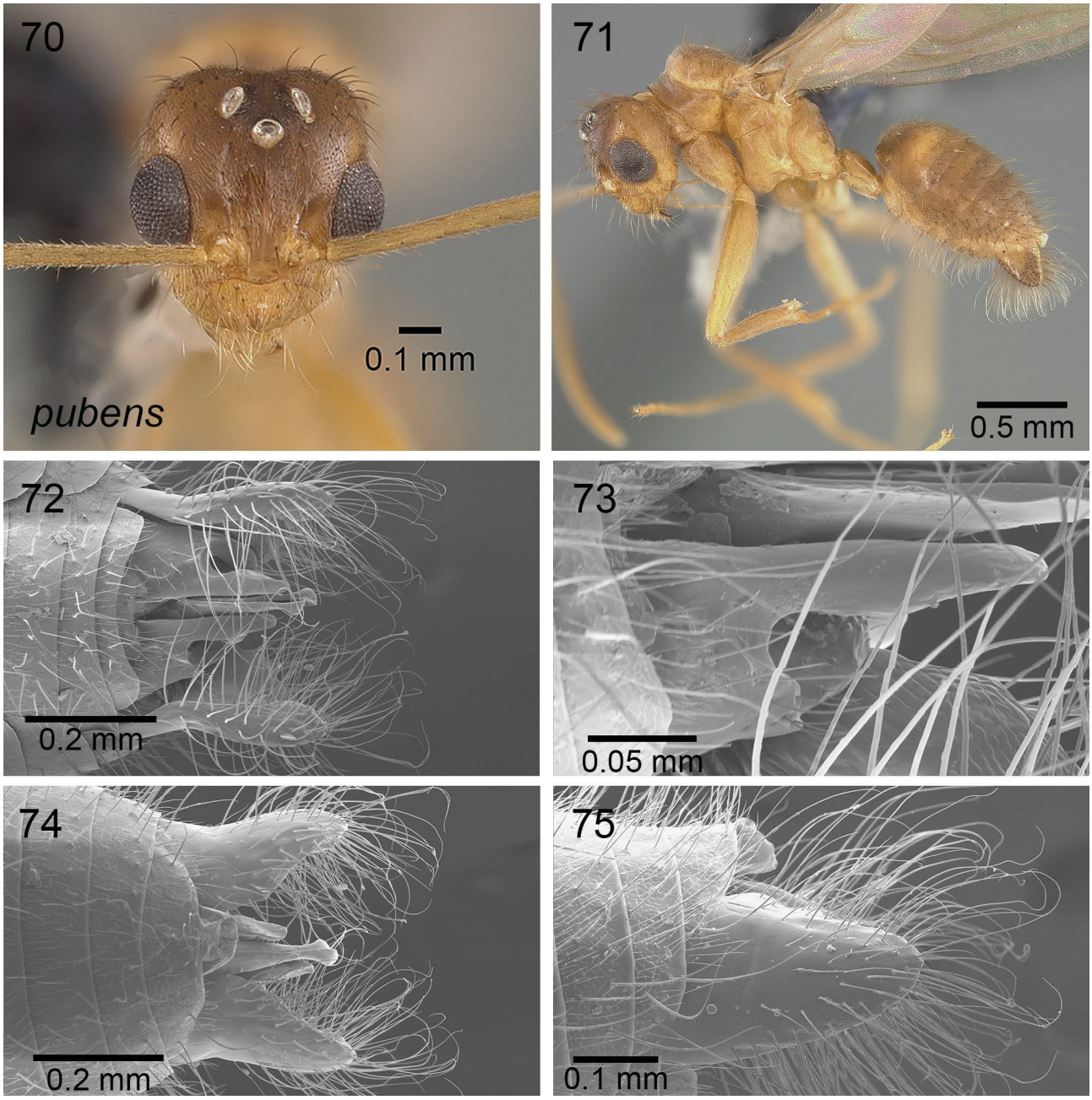
Generally, as in worker with modifications expected for caste.



FIGURES 67–69. *Nylanderia pubens* worker CASENT0104862 (images from www.Antweb.org taken by April Nobile). Lateral, full-face, and dorsal view of the body.

MALE. *Measurements (n=1)*: TL: 2.40; HW: 0.57; HL: 0.63; EL: 0.28; SL: 0.99; WL: 1.10; GL: 1.30; SMC: 10; PMC: 0; MMC: 15. *Indices:* CI: 86; REL: 42; SI: 150.

Head: sides of head in full face view nearly parallel becoming slightly broader posterior to eyes; posterior margin straight to slightly rounded; clypeus emarginate anteriorly; mandible with distinct apical tooth and usually a much smaller subapical tooth adjacent to apical tooth; basal angle sharp and distinct. *Mesosoma*: in lateral view, dorsal margin of mesoscutum same as height as dorsal margin of mesoscutellum; propodeum steeply sloping without distinct dorsal and declivitous faces. *Genitalia*: gonopod apex triangular but broadly rounded in lateral view; in dorsal view, gonopod margin curves away from penial sclerite; digitus with broadly rounded apex nearly parallel with penial sclerite; cuspis tubular, rounded at apex bending sharply toward digitus; anteroventral process of penial sclerite broadly rounded; valvura of penial sclerite placed ventral to midline (fig. 76). *Color and pilosity*: nearly uniform light brown to brown; head, pronotum and gaster often slightly darker with a slightly lighter posterior portion of mesosoma; entire body cover with a layer of dense pubescence.



FIGURES 70–75. *Nylanderia pubens* male USNMENT00751245. Full-face and lateral of the body; SEM images of external genitalia: ventral, close-up vollsellar lobes, dorsal, and lateral.

Other material examined: ANGUILLA: Brimegin, True Eyes Road, 18.236 N, 63.051 W, 21 May 2006, #95, JK Wetterer; GRENADA: Grand Etang, Morne La Bay, 9 Nov 2003 (JK Wetterer); Grand Etang, Lookout Trail, 8 Nov 2003 (JK Wetterer); Coral Cove, 11 Nov 2003 (JK Wetterer).

Notes: This former subspecies of *N. fulva* was elevated to full species by Trager (1984) based primarily on differences in shape and pilosity of the male gonopods. *Nylanderia pubens* has gonopods that are more rounded at the distal apex, and much more setose. These morphological differences, as well molecular markers, were used by Gotzek *et al*. (2012) to support Trager's assertion that *N. fulva* and *N. pubens* are in fact separate species. Based on the Gotzek *et al*. (2012) study, *N. fulva* and *N. pubens* can putatively be considered sister species. Dissection of male *N. fulva* and *N. pubens* genitalia completed in this study revealed significant differences in the shape of the penial sclerites as well as in the shape of the 9th sternites (fig. 76). It is important to note that while we had abundant male *N. fulva* specimens to examine (we dissected 10 specimens from different locations), we only had access to one male *N. pubens* we could dissect. The penial sclerites of *N. pubens* are more elongated than those of *N. fulva* and the 9th

sternite is longer (along its anterior-posterior axis) and more shield-like in overall shape in *N. pubens* compared with *N. fulva*.

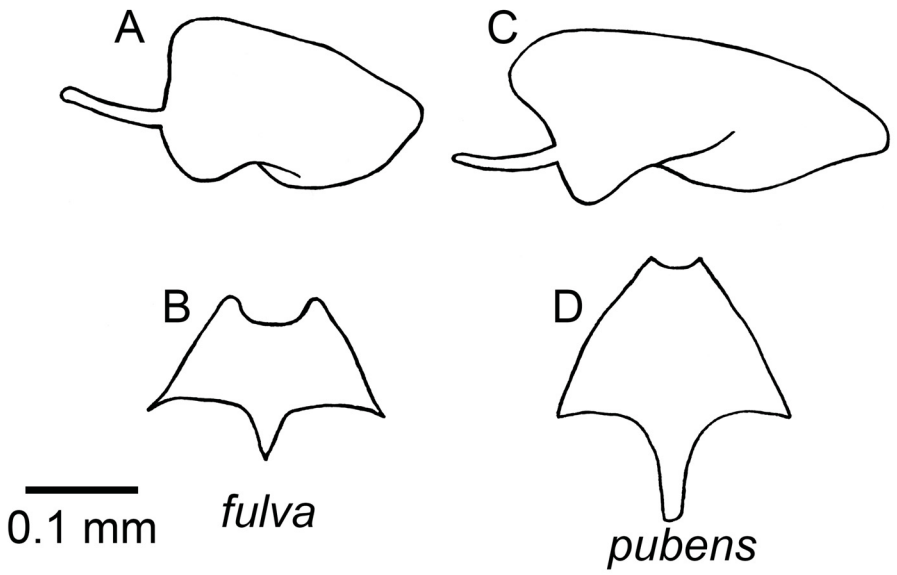


FIGURE 76. A) *Nylanderia fulva* penial sclerite, B) *Nylanderia fulva* 9th sternite, C) *Nylanderia pubens* penial sclerite, B) *Nylanderia pubens* 9th sternite. Note that setae are not shown on the line drawings.

Unfortunately, it does not seem possible to separate workers of the species based on morphology. Despite the fact that Trager (1984) noted some differences in the heads of *N. pubens* workers from those of *N. fulva* stating *N. pubens* had more emarginate posterior margins, less overall pubescence and the head lacking punctation, we have not found that those differences reliably separate the species. It is not uncommon for sister species in *Nylanderia* to display differences in male morphology, while workers are difficult to impossible to distinguish morphologically. A well-known example of this is observed in two widespread North American species, *N. terricola* and *N. vividula* (Kallal & LaPolla, 2012).

There has been much interest in the separation of *N. fulva* and *N. pubens* recently due to the rapid spread of *N. fulva* across the southern United States (Gotzek *et al*. 2012; Kumar *et al*. 2015). While *N. fulva* is the species of recent interest, it is unclear if *N. pubens* is native to the West Indies either. It seems unlikely to be native based on the fact *N. pubens* is always found in lowland, highly disturbed places in the West Indies. Additionally, the fact that *N. pubens* is very likely the sister species to *N. fulva*, which almost certainly is native to southcentral South America, further supports the notion *N. pubens* is South American in origin. At one time populations of *N. pubens* were established in Florida (Trager, 1984), but those populations appear to have since been extirpated from the state. Specimens of *N. pubens* were also found in the National Museum of Natural History collection (Smithsonian Institution) that came from greenhouses in Washington D.C. around the turn of the 20th Century. Why *N. fulva* is now the species primarily being moved around the Western Hemisphere by human activities and not *N. pubens* is an interesting question.

In the interest of nomenclatural stability, a lectotype worker of *Nylanderia fulva* is here designated from the 12 worker syntype series from NHMW that were examined. Label data is: [Brazil] Novara; 1857-59; Reise (USNMENT007553598).

***Nylanderia semitincta*, sp. nov.**
Figs. 77–79 (worker); 80–85 (male)

Holotype worker, PUERTO RICO: El Yunque National Forest, N 18° 16.295', W 65° 45.877', elev. 3054 ft., dwarf forest, nest in rotting wood, 15 July 2008, J.S. LaPolla (USNMENT00754809) (NMNH); 4 paratype workers, 1 paratype queen, 2 paratype males same locality as holotype (specimens are from the same nest as holotype) (NMNH & MCZC).

FIGURES 77–79. *Nylanderia semitincta* worker USNMENT0075809. Lateral, full-face, and dorsal view of the body.

Worker diagnosis: Coloration distinct with head, pronotum, often anterior mesonotum and gaster brown, contrasting with yellow remainder of mesosoma (propodeum especially bright yellow in many specimens) and legs.

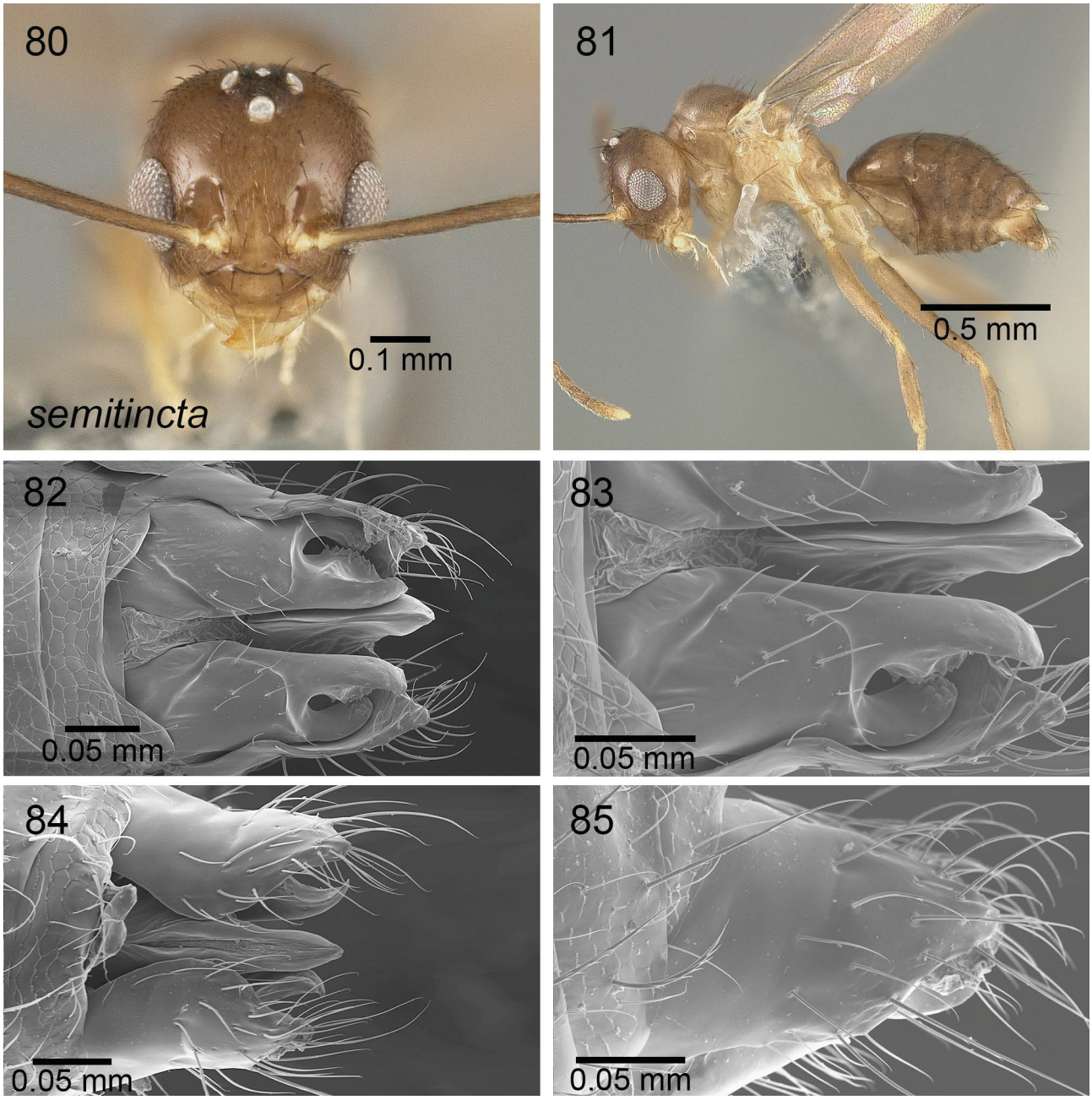
Compare with: *N. disatra*

WORKER. *Measurements (n=3)*: TL: 2.12–2.30; HW: 0.47–0.52; HL: 0.52–0.59; EL: 0.12–0.15; SL: 0.61–0.68; WL: 0.66–0.74; GL: 0.92–1.00. SMC: 20–22 PMC: 2–4; MMC: 2. *Indices:* CI: 85–91; REL: 22–25; SI: 129–136; SI2: 19–22.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin straight and slightly emarginate medially; anterior clypeal margin with slight median emargination; three ocelli present; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area with a short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum slightly lower than mesonotum in lateral view. *Color and pilosity*: head, pronotum, often anterior mesonotum and gaster brown, contrasting distinctly with yellow remainder of mesosoma (propodeum often brightest yellow) and legs; antennae and mandibles lighter brownish-yellow; pubescence sparse except on small patches around eyes; scapes and legs with abundant pubescence.

QUEEN. *Measurements (n=1)*: TL: 4.40; HW: 0.72; HL: 0.71; EL: 0.23; SL: 0.78; WL: 1.4; GL: 2.3. SMC: 8 PMC: 3; MMC: 25. *Indices:* CI: 101; REL: 32; SI: 109. Generally, as in worker with modifications expected for caste.

MALE. *Measurements (n=2)*: TL: 1.90–2.00; HW: 0.46–0.48; HL: 0.43–0.46; EL: 0.17–0.19; SL: 0.54–0.55; WL: 0.70–0.72; GL: 0.78–0.83. SMC: 3–5 PMC: 0; MMC: 5–7. *Indices:* CI: 103–106; REL: 35–43; SI: 114–118.



FIGURES 80–85. *Nylanderia semitincta* male USNMENT00754807. Full-face and lateral of the body; SEM images of external genitalia: ventral, close-up vollsellar lobes, dorsal, and lateral.

Head: sides of head in full face view rounded; posterior margin straight rounded; clypeus evenly rounded anteriorly; mandible distinct apical tooth and much smaller, often very indistinct, subapical tooth adjacent to apical tooth; basal angle sharp and distinct. *Mesosoma*: in lateral view, dorsal margin of mesoscutum same as height as dorsal margin of mesoscutellum; propodeum sloping without distinct dorsal and declivitous faces. *Genitalia*: gonopod apex coming to triangular point in lateral view; in dorsal view, gonopod margin curves away from penial sclerite; digitus with pointed apex that bends away from penial sclerite; cuspis tubular, rounded at apex bending sharply toward digitus; anteroventral process of penial sclerite broadly rounded; valvura of penial sclerite placed approximately at midline (fig. 105). *Color and pilosity*: color as in worker but not as distinctly contrasting (colors closer to each other in tone) with brown head (including antennae), pronotum, mesoscutum, and gaster; remainder of body yellow to light brown; head, scapes and mesonotum with a layer of abundant pubescence.

Other Material Examined: PUERTO RICO: El Yunque National Forest, Baño de Oro trail, 24.vi.1995 (W. & E. MacKay #17131); 3 km N. Las Torres, Rte. 949, 18.248° N, 65.829° W, 7 Oct 2007 #36 (JK Wetterer).

Etymology: Species epithet is a combination of *semi-* (L. = half) and *tincta* (L. = colored), named for the two-toned appearance of this species.

Notes: This species is easily separated from the other native Puerto Rican species, *N. microps*, which is much larger, yellow, covered in many macrosetae across the pronotum and mesonotum and has very small eyes. Both species do occur in sympatry in at least the El Yunque National Forest and possibly other rainforest areas of the island, but *N. semitincta* is currently only known from El Yunque. Although not as strongly contrasting (not as dark brown), the coloration pattern seen in *N. semitincta* is similar to *N. disatra* known from the Dominican Republic. Although in *N. disatra* workers the head is very dark brown and the entire mesosoma is bright yellow. Overall, the male genitalia between the two species are also fairly similar (with some obvious differences in gastral pubescence and shapes of genitalic structures especially the volsellar lobes and the digiti), which may suggest these two species are closely related. This species is included in the phylogeny of Gotzek *et al*. (2012) as *Nylanderia* n.sp. PR1 where it is sister to to *N. microps* and not to *N. disatra*.

***Nylanderia sierra*, sp. nov.**

Figs. 86–88 (worker)

Holotype worker, CUBA: Santiago de Cuba: Parque Nacional Gran Piedra, trail to Cerro Mogote, 19.99900, -75.58300 +/- 150 m, 800 m, 28 Jan 2012, F. Cala #RSA2012-012 (CASENT0630139) (NMNH); 4 paratype workers, CUBA: Santiago de Cuba: Parque Nacional Gran Piedra, Estacion Ecologica Gran Piedra, 20.01000, -75.63700 +/- 150 m, 1080 m, 26 Jan 2012, R.S. Anderson #RSA2012-005 (NMNH & MCZC).

Worker diagnosis: Smaller brown species; SL typically <0.73mm; WL <0.8mm; REL <25.

Compare with: *N. wardi*, *N. xestonota*

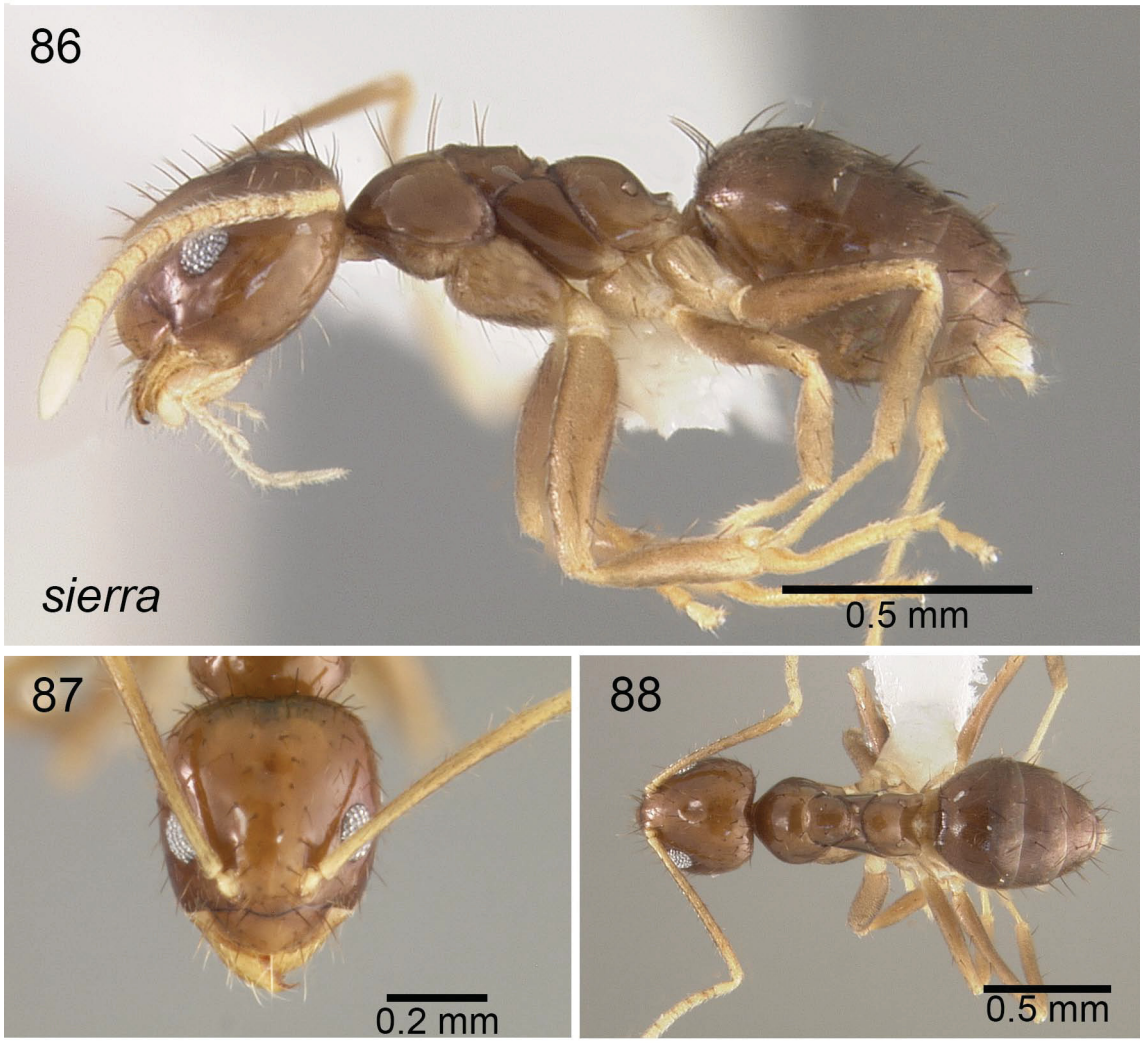
WORKER. *Measurements (n=5)*: TL: 1.94–2.53; HW: 0.45–0.56; HL: 0.55–0.63; EL: 0.14–0.15; SL: 0.63–0.74; WL: 0.61–0.75; GL: 0.78–1.20. SMC: 19–27; PMC: 3–4; MMC: 2. *Indices:* CI: 83–88; REL: 22–26; SI: 112–148; SI2: 19–24.

Head: sides of head in full face view slightly rounded; posterolateral corners rounded or angled; posterior margin slightly rounded; anterior clypeal margin convex; three ocelli present; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum more or less even with posterior pronotal margin; metanotal area without short flat area before spiracle; dorsal face of propodeum slightly convex to nearly flat; dorsal face of propodeum lower than mesonotum in lateral view. *Color and pilosity*: dark brown, with antennae and legs, especially (except procoxae which are dark brown) lighter yellowish-brown; funiculi and legs become more yellowish distally (typically mesocoxa, metacoxa and trochanters are lighter than femora and tibiae); pubescence sparse to absent except for abundant pubescence on mesonotum and gaster; dorsal face of propodeum with fringe of pubescence .

Other material examined: CUBA: Santiago de Cuba: Parque Nacional Gran Piedra, Estacion Ecologica Gran Piedra, 20.01100, -75.63700 +/- 150 m, 1085 m, 26 Jan 2012, R.S. Anderson #RSA2012-006; Santiago de Cuba: Parque Nacional Gran Piedra, near La Isabellica, 20.00400, -75.61900 +/- 150 m, 1130 m, 26 Jan 2012, R.S. Anderson #RSA2012-004; Guantánamo, 1km NE Alto de Cotilla, 20° 11'N, 74° 29' W, 500 m, 24.viii.2001, P.S. Ward #14453-17; Pinar del Rio, 14 km WSW Viñales, 22 34'N, 83 50'W, 150 m, 30.viii.2001, P.S. Ward #14473-18; Holguín, 2 km N La Melba, 20° 28'N, 74° 49' W, 400 m, 22.viii.2001, P.S. Ward #14424-17; CUBA: Holguín, 6 km S Yamanigüey, 20° 33' N, 74° 44'W, 25 m, 23.viii.2001, P.S. Ward #14436 and P.S. Ward #14437-21.

Etymology: Species epithet, *sierra*, is Spanish for mountains or mountain range, in reference to the habitats in which this species holotype specimen was collected.

Notes: Workers of this species are some of the smallest found in Cuba. The abundant pubescence on the mesonotum and gastral tergites make it fairly easy to separate workers of this species from those of *N. xestonota*, which is a Cuban species similar in size but it completely lacks pubescence on the mesonotum and gastral tergites. For details of separating *N. sierra* from *N. wardi*, see notes under *N. wardi*.



FIGURES 86–88. *Nylanderia sierra* worker CASENT0630139. Lateral, full-face, and dorsal view of the body.

Nylanderia steinheili (Forel, 1893)

Figs. 89–91 (worker); 92–96 (male)

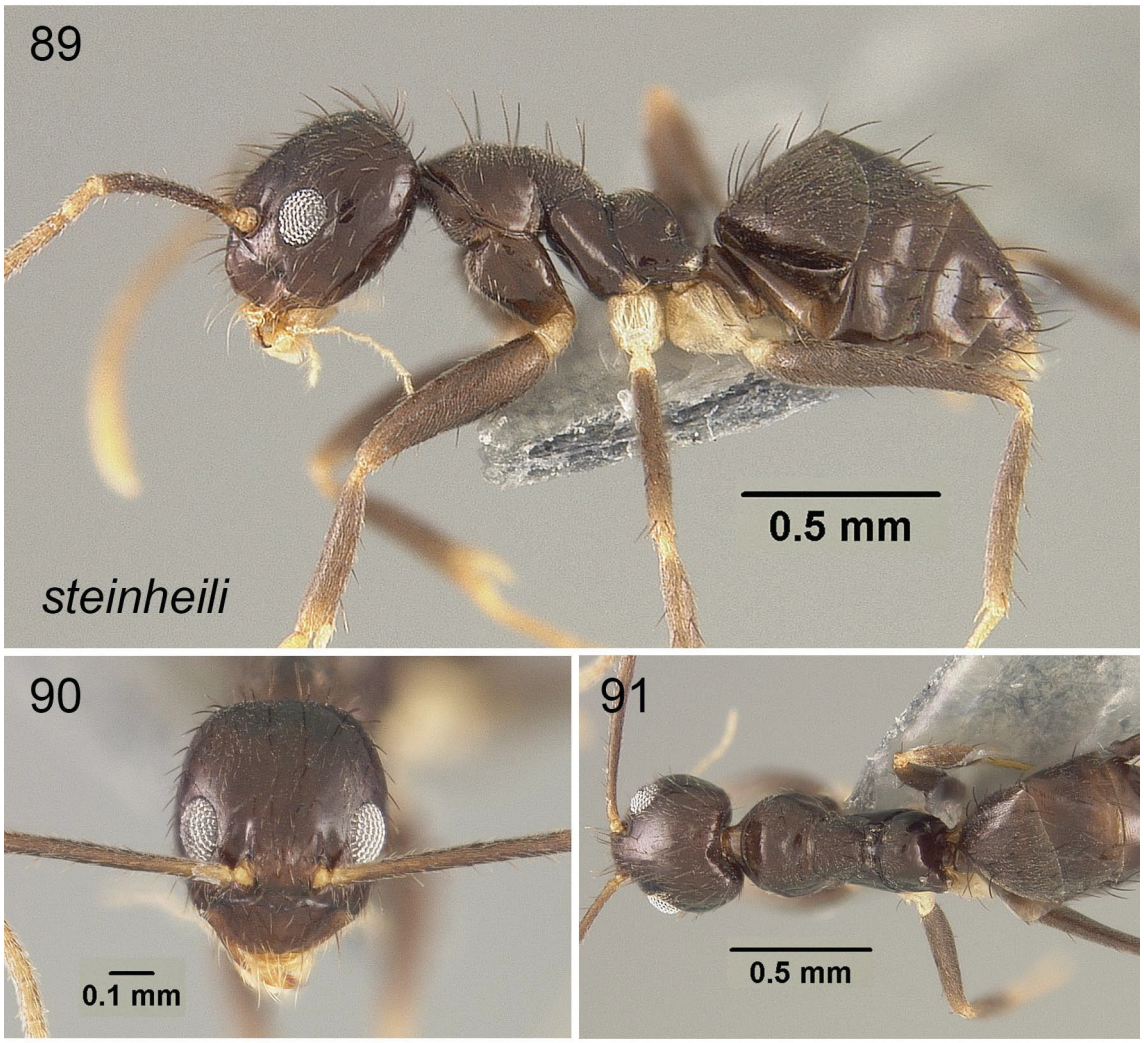
Prenolepis steinheili Forel, 1893: 342 (worker). Lectotype worker, ST. THOMAS, Antilles, 13.X.78 (examined) (MHNG). Forel, 1908: 64 (queen); Forel, 1912: 66 (male). Lectotype designated by Trager, 1984. Combination in *Nylanderia* (*Nylanderia*): Forel, 1912: 66; in *Paratrechina* (*Nylanderia*): Emery, 1925d: 223; in *Nylanderia*: Kempf, 1972: 168; in *Paratrechina*: Brandão, 1991: 367; in *Nylanderia*: LaPolla, Brady & Shattuck, 2010: 127.

Prenolepis steinheili var. *minuta* Forel, 1893: 343 (worker, queen and male). 6 syntype workers, 3 syntype queens and 3 syntype males, ST. VINCENT, Antilles (examined; lectotype worker here designated (USNMENT00754828); specimen on pin with three separate points; point with lectotype marked with small red dot) (MHNG). Combination in *Nylanderia* (*Nylanderia*): Forel, 1912: 66; in *Paratrechina* (*Nylanderia*): Emery, 1925: 223; in *Nylanderia*: Kempf, 1972: 168; in *Paratrechina*: Brandão, 1991: 367; in *Nylanderia*: LaPolla, Brady & Shattuck, 2010: 127. **SYN. NOV.**

Worker diagnosis: Dark brown, contrasting sharply with white trochanters and meso/metacoxae; mesosomal dorsum and gastral tergite 1 with moderate to dense pubescence.

Compare with: *N. guatemalensis*

WORKER. *Measurements (n=12)*: TL:1.70–2.30; HW: 0.49–0.57; HL: 0.57–0.67; EL: 0.14–0.19; SL: 0.63–0.84; WL: 0.71–0.88; GL: 0.69–0.96. SMC: 12–23; PMC: 2–4; MMC: 2–3. *Indices:* CI: 81–91; REL: 22–30; SI: 118–155; SI2: 17–24.



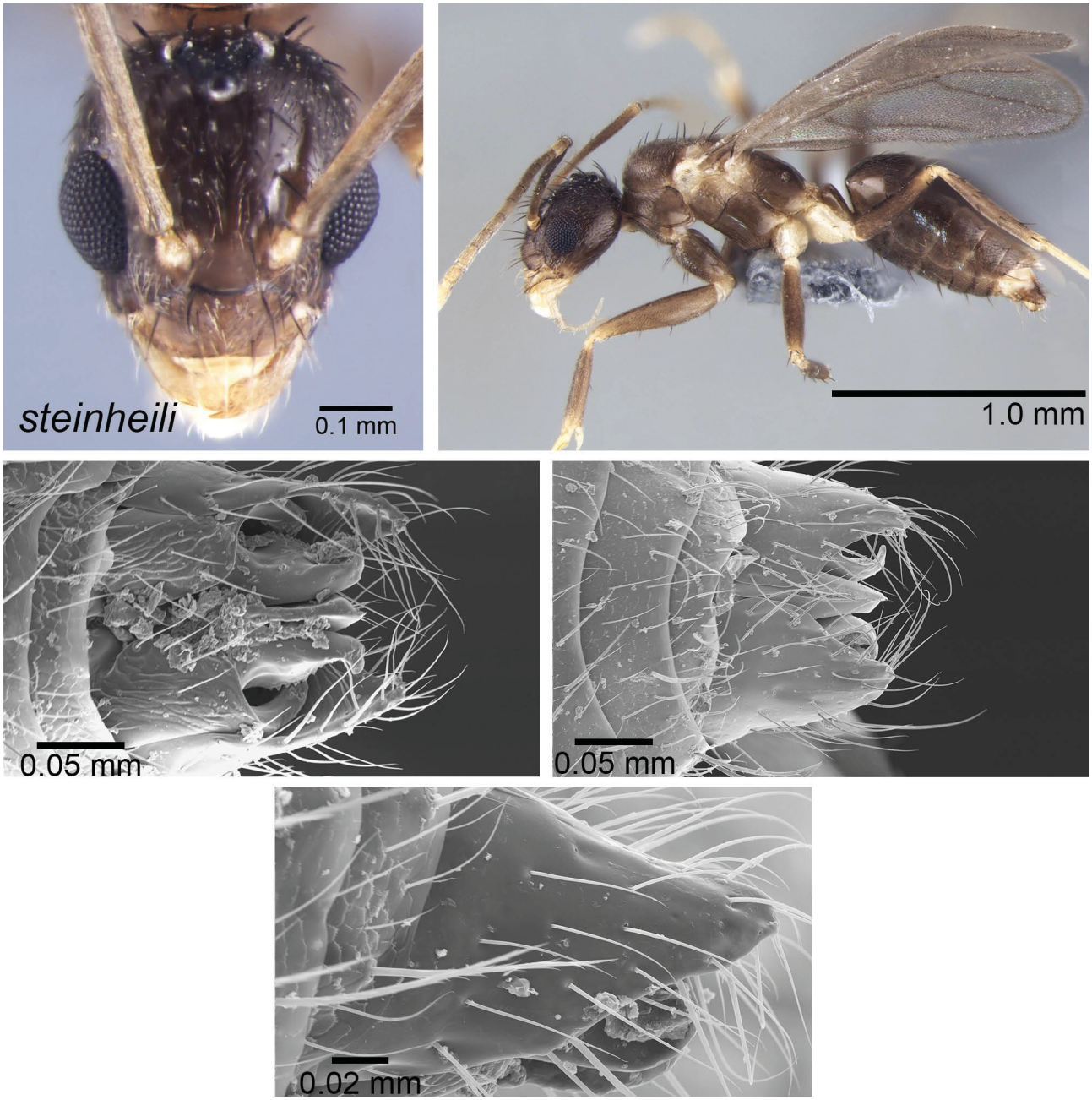
FIGURES 89–91. *Nylanderia steinheili* worker USNMENT00753722. Lateral, full-face, and dorsal view of the body.

Head: sides of head in full face view nearly parallel to rounded; posterolateral corners rounded; posterior margin straight, sometimes slightly emarginate medially; anterior clypeal margin nearly straight to slightly emarginate; median ocellus sometimes present; eyes well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area without short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum and mesonotum approximately the same height or propodeum slightly lower than mesonotum in lateral view. *Color and pilosity*: body dark brown, trochanters, mesocoxa and metacoxae white; antennae and mandible lighter brown than head, mesosoma and gaster; pubescence abundant across body except mesopleuron and lateral portions of pronotum which are without pubescence.

QUEEN. *Measurements (n=3)*: TL: 3.20–3.40; HW: 0.73–0.78; HL: 0.73–0.78; EL: 0.23–0.24; SL: 0.79–0.89; WL: 1.20–1.30; GL: 1.50–1.80. SMC: 10–12; PMC: 3–6; MMC: 11–12. *Indices:* CI: 99–105; REL: 31–33; SI: 107–119.

Generally, as in worker with modifications expected for caste.

MALE. *Measurements (n=3)*: TL: 1.70–1.96; HW: 0.52–0.53; HL: 0.50–0.52; EL: 0.19–0.20; SL: 0.62–0.71; WL: 0.75–0.80; GL: 0.70–0.80. SMC: 8–14; PMC: 0; MMC: 10–16. *Indices:* CI: 99–106; REL: 37–39; SI: 119–133.



FIGURES 92–96. *Nylanderia steinheili* male USNMENT00753664. Full-face and lateral of the body; SEM images of external genitalia: ventral, close-up vollsellar lobes, dorsal, and lateral.

Head: sides of head in full face view rounded; posterior margin rounded; clypeus nearly straight anteriorly; mandible with distinct apical tooth and much smaller, often indistinct, subapical tooth adjacent to apical tooth; basal angle indistinct. *Mesosoma*: in lateral view, dorsal margin of mesoscutum same as height as dorsal margin of mesoscutellum; propodeum steeply sloping without distinct dorsal and declivitous faces. *Genitalia*: gonopod apex coming to triangular point in lateral view; gonopod margin in dorsal view curves away from penial sclerite; digitus with pointed apex that bends away from penial sclerite; cuspis tubular, rounded at apex bending sharply toward digitus; anteroventral process of penial sclerite coming to point with ventral margin of process emarginate; valvura of penial sclerite placed ventral to midline (fig. 105). *Color and pilosity*: body typically dark brown with contrasting yellow-white to yellowish-brown (typically not as light as in workers) trochanters, and mesocoxa and metacoxa; antenna and mandible lighter brown than head, mesosoma and gaster; pubescence abundant across body except on mesopleuron which is without pubescence.

Other material examined: ANGUILLA: Shoal Bay Rd, quarry turnoff, 18.249° N, 63.033° W, 21/May/2006,

#106, JK Wetterer; Windward Point sea grapes on hill, 18.280° N, 62.968° W, 20/May/2006, #86, JK Wetterer; The Quarter, N Tanglewood Rd, 18.217° N, 63.040° W, 20/May/2006, #71, JK Wetterer; Long Bay, scrub, 18.197° N, 63.126° W, 18/May/2006, #46, JK Wetterer; near Abadam Hole, under tree, 18.273° N, 62.975° W, 20/May/2006, #81, JK Wetterer; Lake's Quarry, 18.248° N, 63.037° W, 21/May/2006, #105, JK Wetterer; Meads Bay hotel grounds, 18.183° N, 63.143° W, 17/May/2006, #13, JK Wetterer; Maunday's Bay, sea grapes, 18.171° N, 63.144° W, 21/May/2006, #100, JK Wetterer; Airport, parking, 17.139° N, 61.794° W, 13/Jul/2007, #519, JK Wetterer; Wellings, 10 min up trail, 17.032° N, 61.825° W, 26/May/2007, #374, JK Wetterer; ARUBA: Bubali by sanctuary tower, 12.562° N, 70.048° W, 2/Aug/2007, #735, JK Wetterer; BARBADOS: Trents clump of viny tree, 13.298° N, 59.633° W, 20/Jun/2006, #410, JK Wetterer; Canefield forest patch, 13.193° N, 59.590° W, 16/Jun/2006, #346, JK Wetterer; Lakes Beach, beach, 13.245° N, 59.556° W, 20/Jun/2006, #442, JK Wetterer; Boarded Hall forest, 13.209° N, 59.576° W, 16/Jun/2006, #349, JK Wetterer; Turner's Hall Woods, 26/Nov/2003, #100, Wetterer; Codrington College campus, 13.172° N, 59.479° W, 21/Jun/2006, #446, JK Wetterer; Breedy's scrub forest, 13.251° N, 59.590° W, 16/Jun/2006, #354, JK Wetterer; Bath near route H3, 13.182° N, 59.482° W, 21/Jun/2006, #440, JK Wetterer; Hackleton Cliff base forest, 13.203° N, 59.536° W, 16/Jun/2006, #357, JK Wetterer; BARBUDA: Sand Ground, plantation, 17.602° N, 61.830° W, 8/Jul/2007, #431, JK Wetterer; BRITISH VIRGIN ISLANDS: Tortola, Sabbath Hill, by sewer tank, 18.435° N, 64.598° W, 16/Nov/2005, #379, JK Wetterer; Sage Mtn Rd, parking by park, 18.412° N, 64.656° W, 15/Nov/2005, #356, JK Wetterer; Chalwell Hill, by radio tower, 18.425° N, 64.645° W, 16/Nov/2005, #374, JK Wetterer; Martins Joes Hill, Joes Hill Rd, 18.427° N, 64.638° W, 18/Nov/2005, #397, JK Wetterer; DOMINICA: Concord, Hotel garden, 10/Jun/2004, #167, JK Wetterer; Central For. Res., 7 km SW Concord, 11/Jun/2004, #169, JK Wetterer; La Source, 11/Jun/2004, #186, JK Wetterer; La Plaine, 14/Jun/2004, #208, JK Wetterer; DOMINICAN REPUBLIC: Santo Domingo, Botanical Garden, 9/Dec/2003, Mark Deyrup; Parque Nacional Sierra de Baharuco, 18° 09.310' N, 71° 45.495; W, elev. 277 m; under leaf litter, 27 vii.2009; SA Schieder & JS LaPolla; GRENADA: Grand Etang, Morne La Bay, 9/Nov/2003, #12, JK Wetterer; woodlands, cane by factory, 12.025° N, 61.741° W, 28/Jun/2006, #552, JK Wetterer; Coral Cove, 11/Nov/2003, #32, JK Wetterer; Trant's Bay, W of road by end, 16.753° N, 62.164° W, 19/Jul/2007, #654, JK Wetterer; Old Road Bay, waterfront, 16.742° N, 62.232° W, 16/Jul/2007, #589, JK Wetterer; MONTSERRAT: Cavala Hill by church, 16.779° N, 62.204° W, 20/Jul/2007, #661, JK Wetterer; Mars Hill Oriole trailhead, 16.770° N, 62.207° W, 16/Jul/2007, #594, JK Wetterer; NEVIS: Tower Hill forest, 17.162° N, 62.599° W, 14/May/2007, #170, JK Wetterer; market shop, St George's Church, 17.131° N, 62.571° W, 16/May/2007, #215, JK Wetterer; PUERTO RICO: Vieques: Bunkers, 0.7 km SW bunker 309, 8/Jun/2006, #321, JK Wetterer; Vieques: Playa Grande, sea grape, 18.092° N, 65.509° W, 7/Jun/2006, #319, JK Wetterer; Vieques: Mosquito, S of pier, 18.130° N, 65.510° W, 8/Jun/2006, #334, JK Wetterer; San Juan, international airport, 16/May/2006, #7, JK Wetterer; ST. KITTS: Bayford's, near radio tower, 17.327° N, 62.731° W, 6/May/2007, #32, JK Wetterer; Wingfield, forest by orchard, 17.334° N, 62.801° W, 8/May/2007, #85, JK Wetterer; Camp Bay, scrub N of PR, 17.298° N, 62.751° W, 8/May/2007, #81, JK Wetterer; Rawlins, Plantation, 17.401° N, 62.828° W, 7/May/2007, #53, JK Wetterer; Boguis forest, 17/Nov/2003, #57, JK Wetterer; ST. LUCIA: Ambre, 4.4 km E of 52, 16/Nov/2003, #53, JK Wetterer; Prasin, 16/Nov/2003, #48, JK Wetterer; Choc, 15/Nov/2003, #45, JK Wetterer; ST. MARTIN: La Colombe, Rue de Concordia, 18.062° N, 63.074° W, 24/May/2006, #129, JK Wetterer; French Cul de Sac pasture, 18.107° N, 63.029° W, 23/May/2006, #120, JK Wetterer; La Soufriere trail, trailhead parking, 13.318° N, 61.156° W, 5/Jul/2006, #707, JK Wetterer; Rickmond Bach SW end of beach, 13.319° N, 61.236° W, 1/Jul/2006, #608, JK Wetterer; TRINIDAD: Blanchisseuse Rd, 4 km N Asa Wright, 30/Oct/2003, #213, Wetterer; Victoris Mayare Res., 7 km N gate, 3/Nov/2003, #234, Wetterer; Palmiste, 21/May/2004, #24, JK Wetterer; North Coast Rd, 6 km of Saddle, 30/Jun/2004, #474, JK Wetterer; 2 km NW Howson, 10/Jul/2004, #488, JK Wetterer; 10 km S Rte Clare, 31/Jul/2004, #541, JK Wetterer; Blanchisseuse Rd, 1 km S Asa Wright, 30/Oct/2003, #211, Wetterer; Victoria Mayare Res. 2 km W gate, 3/Nov/2003, #232, Wetterer; Mt Hope, 21/May/2004, #418, JK Wetterer; North Coast Rd, 6 km 2004, #474, JK Wetterer; 2 km SW Cunaripa, 10/Jul/2004, #487, JK Wetterer; TOBAGO: Tobago Forest Res., Gilpin Trace, 14/Oct/2003, #192, Wetterer; U.S. VIRGIN ISLANDS: St Croix, Springfield, 76; 0.5 Km W quarry, 17.732° N, 64.834° W, 9/March/2006, #235, JK Wetterer; St. Croix, Jolly Hill, E of 763; N of 76, 17.732° N, 64.861° W, 3/March/2006, #35, JK Wetterer; St. John, Bordeaux Mtn, 0.5 Km E of peak, 18.339° N, 64.734° W, 9/Nov/2005, #299, JK Wetterer; St. Thomas, Mountaintop by mall, 18.356° N, 64.947° W, 8/Nov/2005, #270, JK Wetterer; St. Thomas, Botany Bay, 1 km N of 30, 18.357° N, 65.027° W, 6/Nov/2005, #245, JK Wetterer.

Notes: Trager (1984) considered two morphological differences to separate *N. steinheili* and *N. steinheili minu-*

ta into distinct species. He noted that the subbasal tooth (tooth 5 counting from apical to basal) in *N. steinheili* is always small relative to the median tooth (tooth 4 counting from apical to basal). Whereas, there are other specimens were the subbasal tooth is distinctly large relative to the median tooth and these would be distinguishable as *N. steinheili minuta*. Differences in coloration were also noted, with *N. steinheili minuta* having the mesocoxae and metacoxae reddish, and *N. steinheili* with mesocoxae and metacoxae that are bright white. Initially, we were able to separate specimens using the above morphological criteria, but the more specimens we examined the more difficult it became as both morphological characters showed considerable variability. Therefore, until other data becomes available we consider *N. steinheili minuta* a synonym of *N. steinheili*.

Nylanderia steinheili is a widespread species, which may or may not be native to the West Indies. There is considerable morphological variation in what we are calling *N. steinheili*. This species is putatively found in Central and South America as well so it is hoped that as revisions of *Nylanderia* in those regions are completed further data for better refinement of the morphological limits of this species will be possible.

Nylanderia steinheili and *N. guatemalensis* are broadly sympatric across the West Indies with both occurring primarily in similarly disturbed habitats. Usually both can be separated relatively easily based on worker body coloration, with *N. steinheili* being dark brown to black and *N. guatemalensis* being yellow to light brown (typically with contrasting dark macrosetae). However, particularly in southern Florida and the Bahamas, *N. guatemalensis* can have a darker body, sometimes approaching dark brown. This can make distinguishing the species difficult. *N. guatemalensis* and *N. steinheili* both occur in Florida in contrast to Kallal and LaPolla (2012) which only reported *N. steinheili*. Apparently, *N. guatemalensis* occurs only in the extreme southern part of the state, whereas *N. steinheili* is more widespread. We found *N. guatemalensis* workers have a SI above 120 while *N. steinheili* worker have a SI below 120, but there is some overlap. Like *N. steinheili*, *N. guatemalensis* putatively ranges into Central and South America.

We did examine the penial sclerites for both *N. steinheili* and *N. guatemalensis* males (fig. 105). Overall the penial sclerites are fairly similar in basic structure but there are some importance differences. The anteroventral process of *N. steinheili* is emarginate, whereas in *N. guatemalensis* it is broadly rounded. Additionally, the penial sclerite vulvurae are ventrally placed in *N. steinheili*; in *N. guatemalensis* they are at the midline of the penial sclerites. As in worker morphology, the male morphology suggests these species are closely related, perhaps even sister taxa. It is important to note we examined a relatively small number of males and both of these species range far outside of the West Indies where male morphology needs to be examined as well.

Nylanderia wardi, sp. nov.

Figs.97–99 (worker)

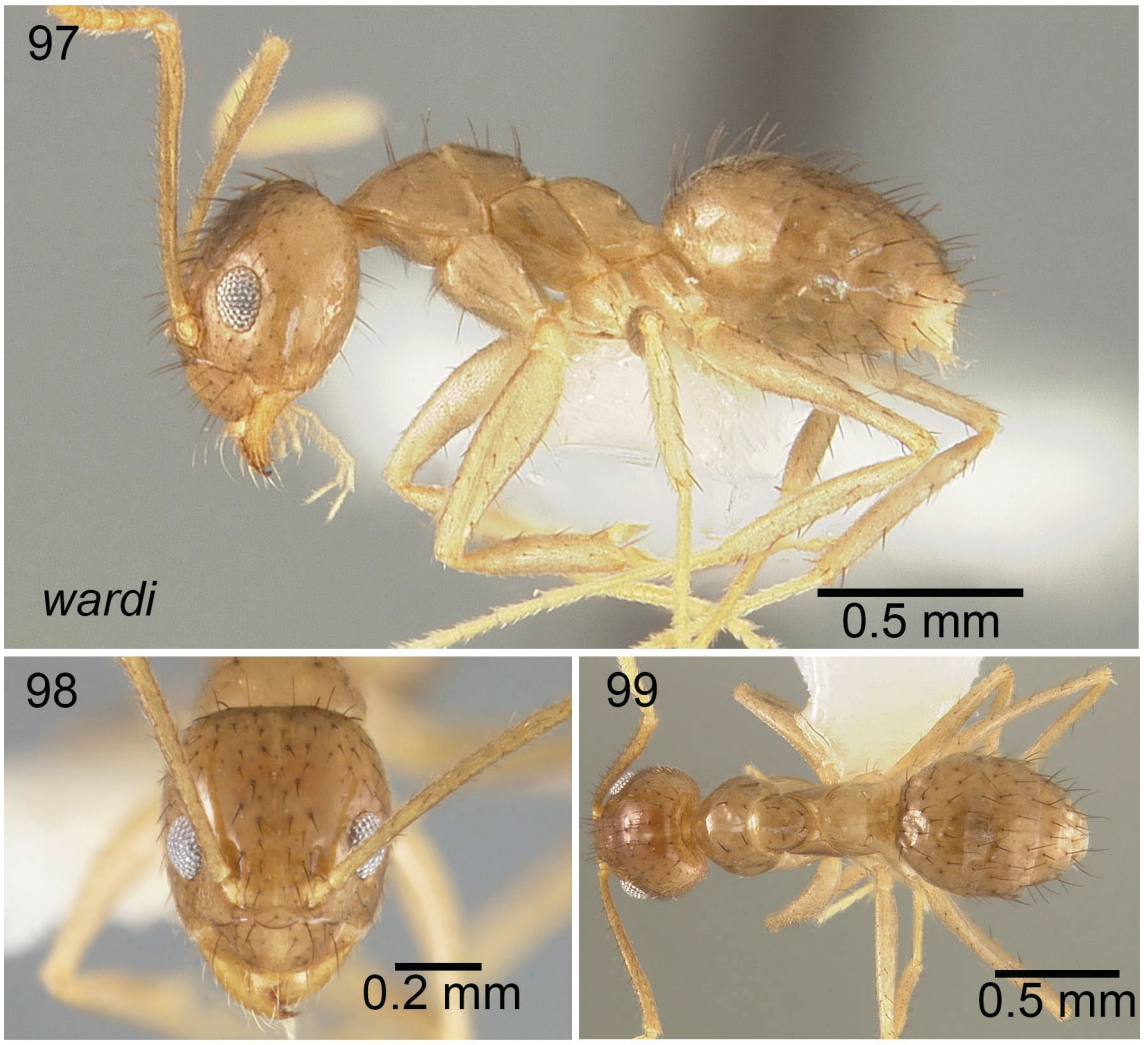
Holotype worker, CUBA: Holguin, 6 km S Yamanigüey, 20° 33’ N, 74° 44’W, 25 m, 23.viii.2001, P.S. Ward #14437-23 (NMNH); 2 paratype workers same locality data as holotype (specimens are from the same nest as holotype); 3 paratype workers same locality data as holotype but different collecting code (P.S. Ward #14436) (NMNH & MCZC).

Worker diagnosis: Larger brown to light brown species (HL: 0.6–0.72); SMC typically greater than 30 (measured range: 26–38); head in full-face view distinctly ovate with rounded posterolateral corners.

Compare with: *N. sierra*, *N. xestonota*

WORKER. *Measurements (n=7)*: TL: 2.20–2.84; HW: 0.54–0.6; HL: 0.60–0.72; EL: 0.15–0.18; SL: 0.78–0.87; WL: 0.76–0.85; GL: 0.82–1.3; SMC: 26–38; PMC: 4–6; MMC: 3–4. *Indices:* CI: 83–90; REL: 24–25; SI: 141–152; SI2: 18–21.

Head: Sides of head in full face view rounded and slightly convergent anteriad; posterolateral corners distinctly rounded; posterior margin straight; anterior clypeal margin emarginate; median ocellus present; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area without short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum lower than mesonotum in lateral view. *Color and pilosity*: color light brown to brownish-yellow; slightly darker dorsally; mesocoxae and metacoxae slightly lighter than the mesosoma; head generally without pubescence, except some sparse pubescence laterally and underneath eyes; mesosoma generally without pubescence, except some sparse pubescence on the mesonotum and a sparse fringe along dorsal face of propodeum; gastral tergites with abundant pubescence.



FIGURES 97–99. *Nylanderia wardi* worker CASENT0280582. Lateral, full-face, and dorsal view of the body.

Other material examined: CUBA: Santiago de Cuba: Parque Nacional Gran Piedra, near La Isabellica, 20.00700, -75.61900 +/- 150 m, 1115 m, 29 Jan 2012, R.S. Anderson #RSA2012-013.

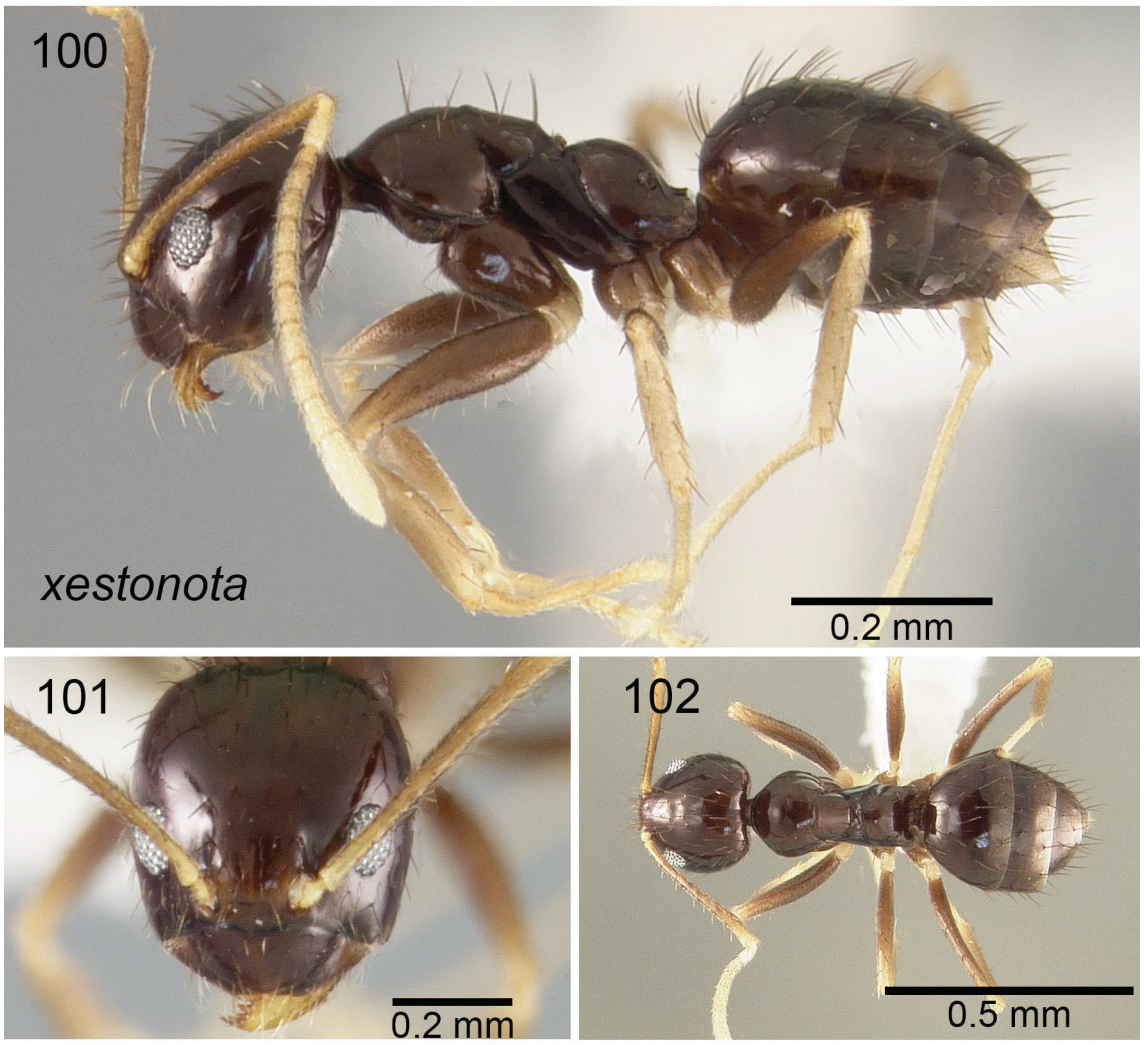
Etymology: Named in honor of Philip S. Ward (University of California—Davis), who not only collected this species, but whose many superb contributions to myrmecology have greatly enriched the field.

Notes: Workers of this species are very similar to *N. sierra*, but *N. wardi* is much larger and the declivity following the mesonotum to the metanotal area is distinctly longer in *N. wardi*. Additionally, *N. wardi* has much more scape macrosetae than *N. sierra*. There were individuals of *N. sierra* collected in sympatry with *N. wardi* and the morphological differences between the two species were maintained.

***Nylanderia xestonota*, sp. nov.**

Figs. 100–102 (worker)

Holotype worker, CUBA: Granma: Parque Nacional Pico Turquino, 20.00800, 076.86500, +/- 150 m, 1200 m, 3 Feb 2012, R.S. Anderson #RSA2012-024 (CASENT0630182) (NMNH); 2 paratype workers, CUBA: Granma: Parque Nacional Pico Turquino, Cerro Joachin Peak, 20.01300, -76.83400 +/- 150 m, 3 Feb 2012, R.S. Anderson #RSA2012-022; 1 paratype worker, CUBA: Granma: Parque Nacional Pico Turquino, Aguada de Joachim, 20.01500, -76.84000 +/- 15 m, 1370 m, 3 Feb 2012, R.S. Anderson #RSA2012-023 (NMNH & MCZC).



FIGURES 100–102. *Nylanderia xestonota* worker CASENT0630182. Lateral, full-face, and dorsal view of the body.

Worker diagnosis: Dark brown and distinctly shiny; gaster without pubescence; mesocoxae and metacoxae and petiole not distinctly lighter in color than mesosoma and gaster.

Compare with: *N. fuscaspecula*, *N. sierra*, *N. wardi*

WORKER. *Measurements (n=5)*: TL: 1.63–2.20; HW: 0.42–0.56; HL: 0.53–0.67; EL: 0.12–0.16; SL: 0.62–0.78; WL: 0.63–0.76; GL: 0.57–0.92. SMC: 22–30 PMC: 3–4; MMC: 2. *Indices:* CI: 81–90; REL: 22–24; SI: 134–145; SI2: 18–20.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin rounded; anterior clypeal margin nearly straight; ocelli absent; eye well-developed. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area without a short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum and mesonotum approximately the same height in lateral view. *Color and pilosity*: dark brown, with scapes, funiculi and legs becoming lighter especially distally; mandibles lighter yellowish-brown; generally, very shiny and without pubescence, except on head especially around eyes and fringe of pubescence on dorsal face of propodeum.

Other material examined: CUBA: Santiago de Cuba: Parque Nacional Gran Piedra, near La Isabellica, 20.00300, -75.61300 +/- 150 m, 1075 m, 27 Jan 2012, R.S. Anderson #RSA2012-008.

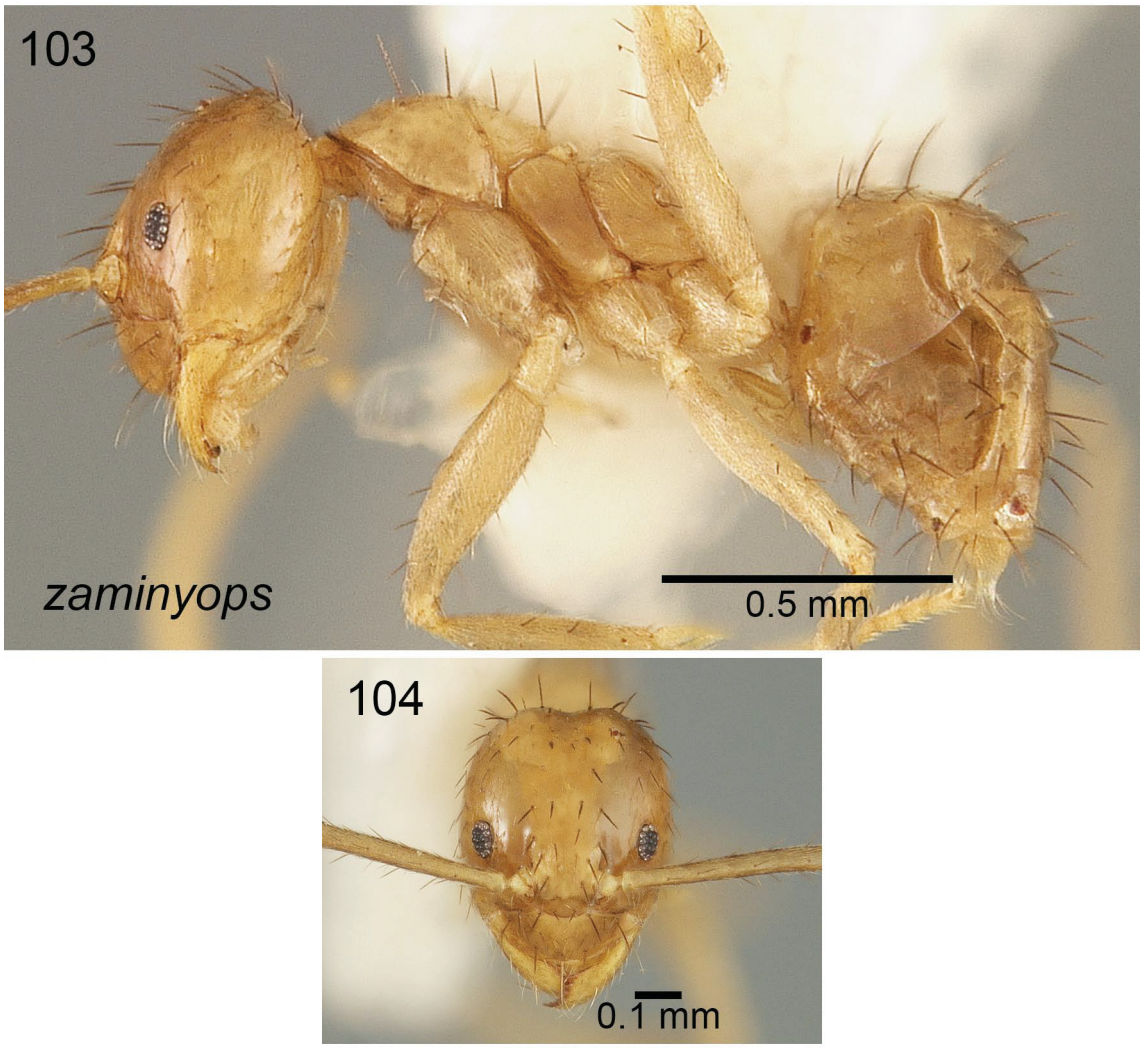
Etymology: The species epithet is a combination of *xesto* (Gr. = polished) and nota (Gr. = back), in reference to the very shiny and smooth appearance of the mesosoma.

Notes: With their dark brown and very shiny appearance, workers of this species should be fairly easy to separate from other Cuban *Nylanderia*. It is similar in size to *N. sierra*, but unlike *N. sierra*, its mesonotum and gaster have no pubescence. In several features, workers of *N. xestonota* are most morphologically similar to workers of *N.*

fuscaspecula from Hispaniola. They can be separated on two main features of the worker. In *N. fuscaspecula* the mesocoxae, metacoxae and petiole are all lighter brown in color and therefore contrasting distinctly with the remainder of the mesosoma. Whereas in *N. xestonota* those structures are dark in color and similar to the overall color of the mesosoma. Additionally, *N. xestonota* scapes typically have more macrosetae on them (range in *N. xestonota* 22–30, with an average of 27 macrosetae; the average macrosetae count in *N. fuscaspecula* is 23 with a range of 18–24).

***Nylanderia zaminyops*, sp. nov.**
Figs. 103–104 (worker)

Holotype worker, TRINIDAD: Mt. Harris, 18 km mark, 21 Nov 2003, J. Wetterer #244 (NMNH). 1 paratype worker same locality as holotype (specimen is from the same nest as holotype); 1 paratype worker, TRINIDAD: Arena Forest, W. Wild Dog Ride, 31 Oct 2003, J. Wetterer #219 (MCZC); 1 paratype worker, TRINIDAD: Aripo Village,1 km SSW, 12 Sept 2003, J. Wetterer #33 (MCZC), 1 paratype worker, TRINIDAD: Blanckisseuse Road, 1 km S Asa Wright, J. Wetterer #211(NMNH).



FIGURES 103–104. *Nylanderia zaminyops* worker USNMENT00921170. Lateral and full-face view.

Worker diagnosis: Eyes distinctly small (EL ≤0.1 mm; REL 13–17; SI2: 11–14); uniformly brownish-yellow.
Compare with: *N. microps, N. myops*

WORKER. *Measurements (n=5)*: TL: 2.10–2.60; HW: 0.54–0.57; HL: 0.58–0.65; EL: 0.08–0.10; SL: 0.69–0.76; WL: 0.73–0.85; GL: 0.70–1.10. SMC: 17–30; PMC: 3–5; MMC: 2–4. *Indices:* CI: 83–88; REL: 13–17; SI: 135–149; SI2: 11–14.

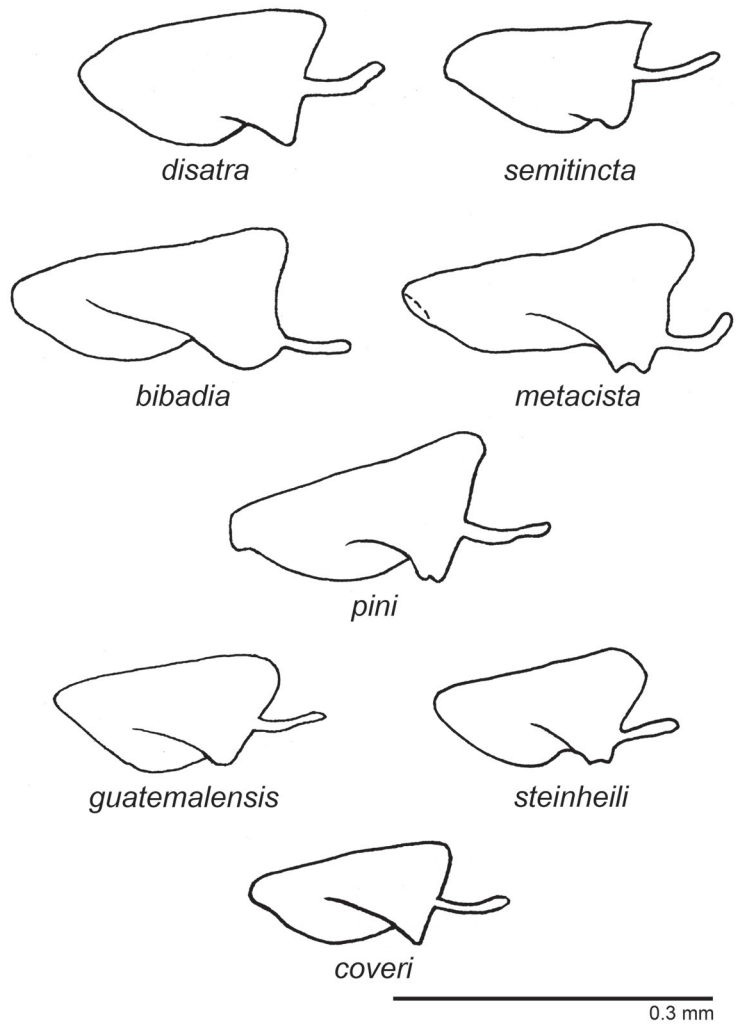


FIGURE 105. Lateral (ectal) view of penial sclerites of various *Nylanderia* species.

Head: sides of head in full face view nearly parallel; posterolateral corners rounded; posterior margin rounded, slightly emarginate medially; anterior clypeal margin slightly emarginated to nearly straight; ocelli absent; eye small. *Mesosoma*: in lateral view, pronotum convex; anterior margin of mesonotum raised slightly above posterior pronotal margin; metanotal area without a short flat area before spiracle; dorsal face of propodeum slightly convex; dorsal face of propodeum and mesonotum approximately the same height in lateral view. *Color and pilosity*: body brownish-yellow; legs sometimes slightly lighter in color; macrosetae distinctly darker than body; scapes and legs with abundant pubescence, dorsum of first and second gastral tergites with scattered pubescence; pubescence sparse to absent across remainder of body.

Etymology: Species epithet is a combination of *za-* (L. = very), *mini-* (L. = minute), and *–ops* (L. = eye), referring to the markedly small eyes of this species.

Notes: This is the third small-eyed *Nylanderia* known from the West Indies (after *N. microps* and *N. myops*). Superficially on first examination this species resembles *N. guatemalensis*, but the eyes are much too small and overall the cuticle is distinctly smooth and shiny. Additionally, the SI2 is much lower in *N. zaminops* (measured range: 11–14; *N. guatemalensis* measured range: 18–26). Given this species is known from Trinidad it would not be surprising if it also occurred in northeastern South America, but to date we have not seen specimens of *N. zaminyops* from that region of the Neotropics.

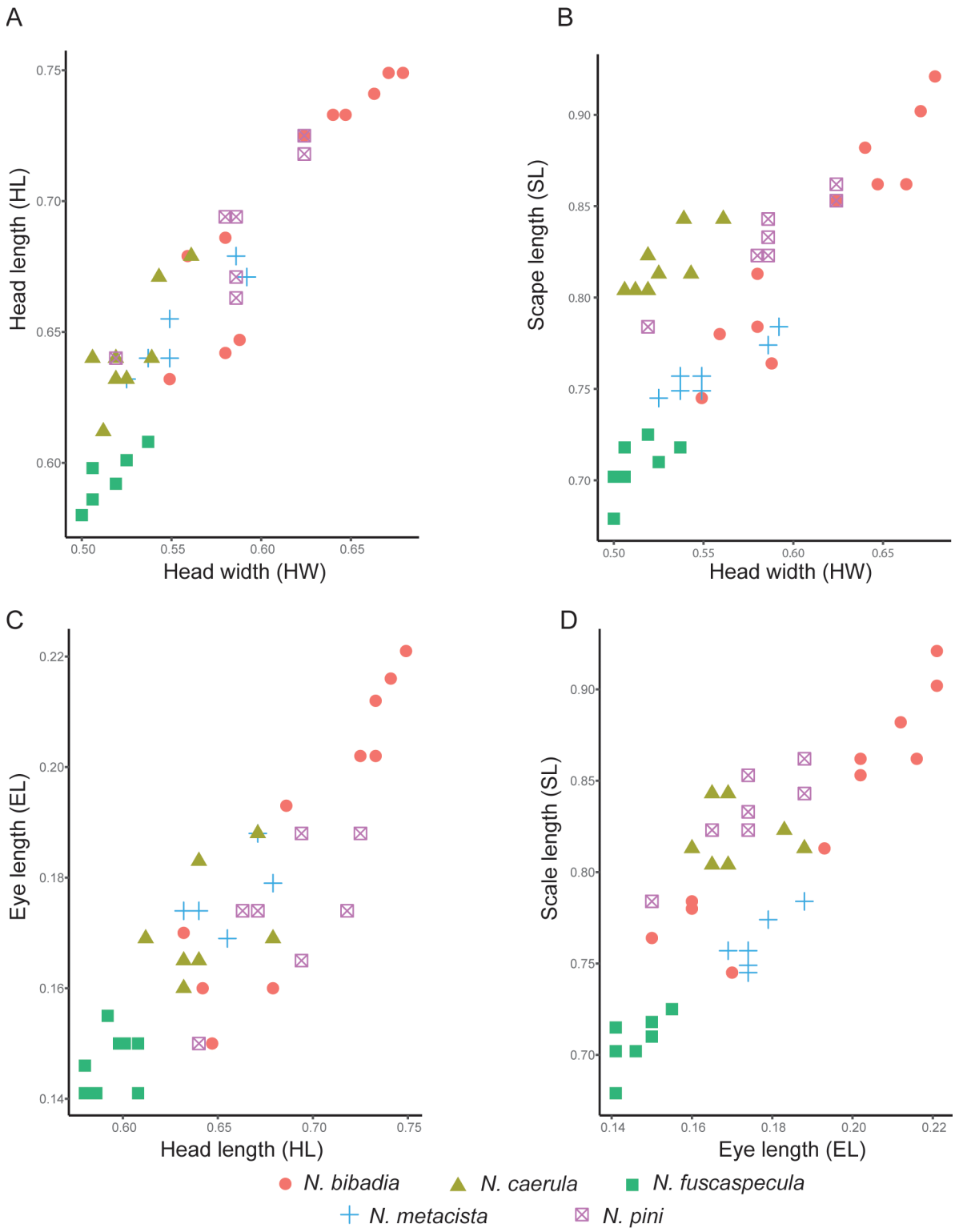


FIGURE 106. Bivariate plots of morphological measurements for *N. bibadia*, *N. caerula*, *N. fuscaspecula*, *N. metacista*, *N. pini*.

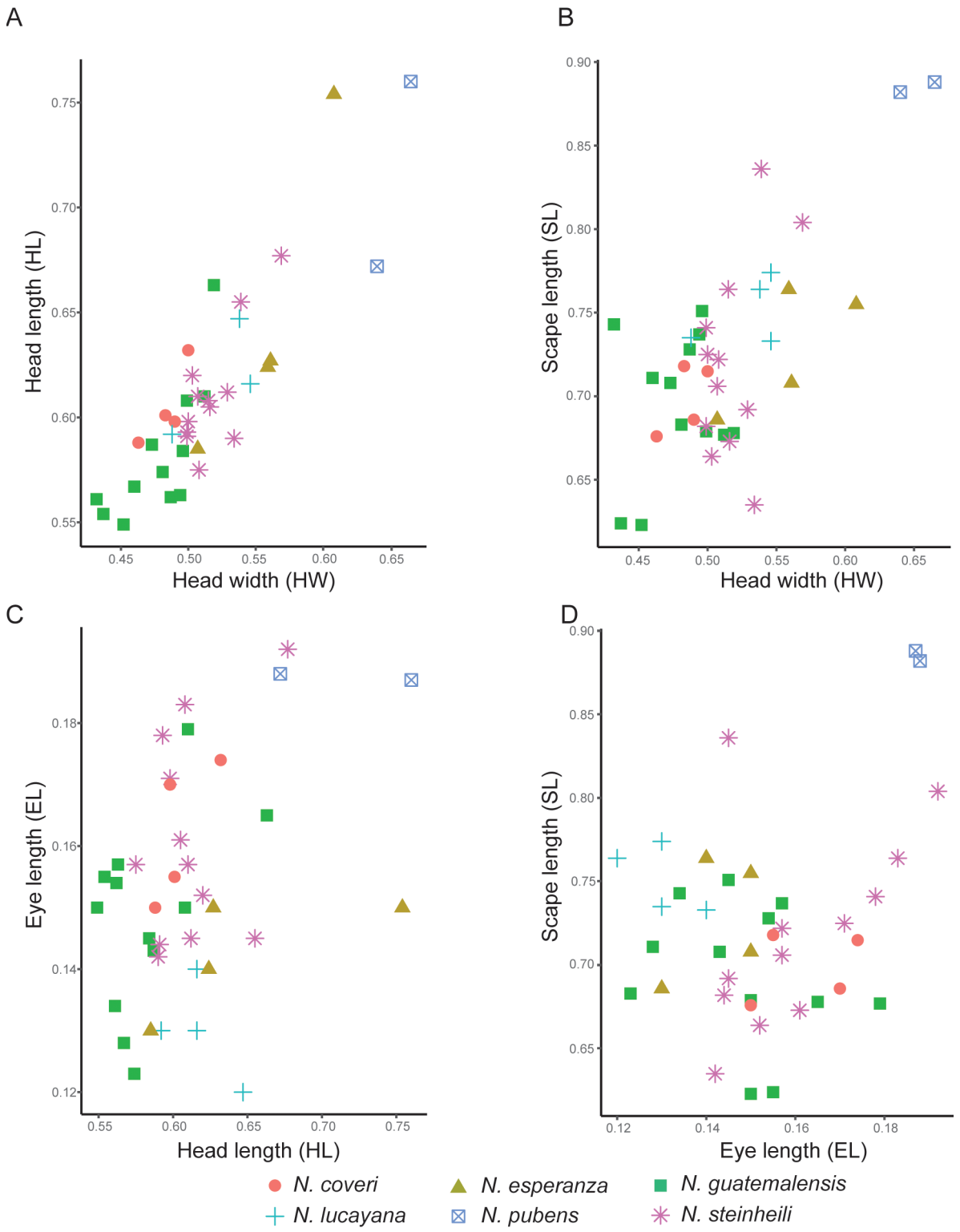


FIGURE 107. Bivariate plots of morphological measurements for *N. coveri*, *N. esperanza*, *N. guatemalensis*, *N. lucayana*, *N. pubens*, *N. steinheili*.

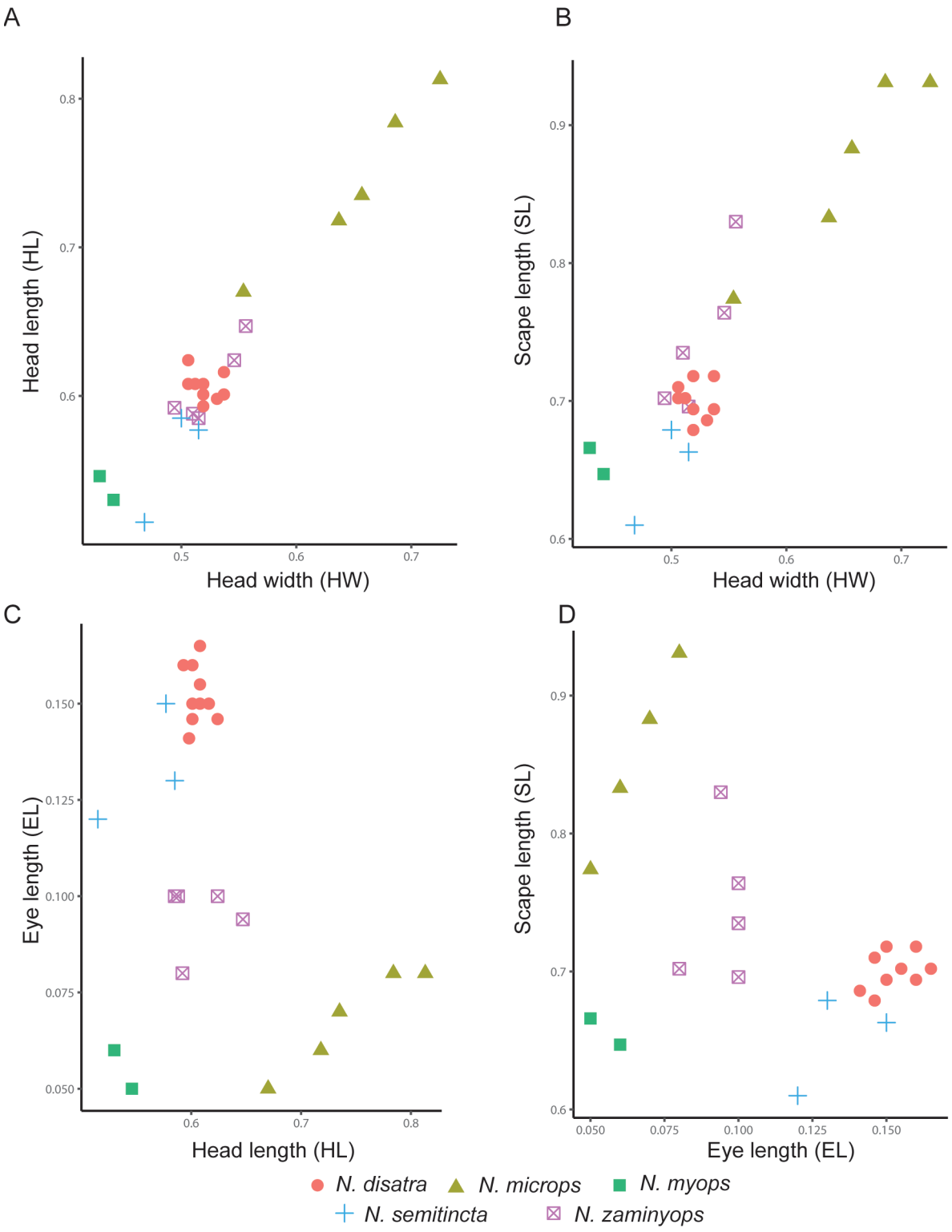


FIGURE 108. Bivariate plots of morphological measurements for *N. disatra*, *N. microps*, *N. myops*, *N. semitincta*, *N. zaminyops*.

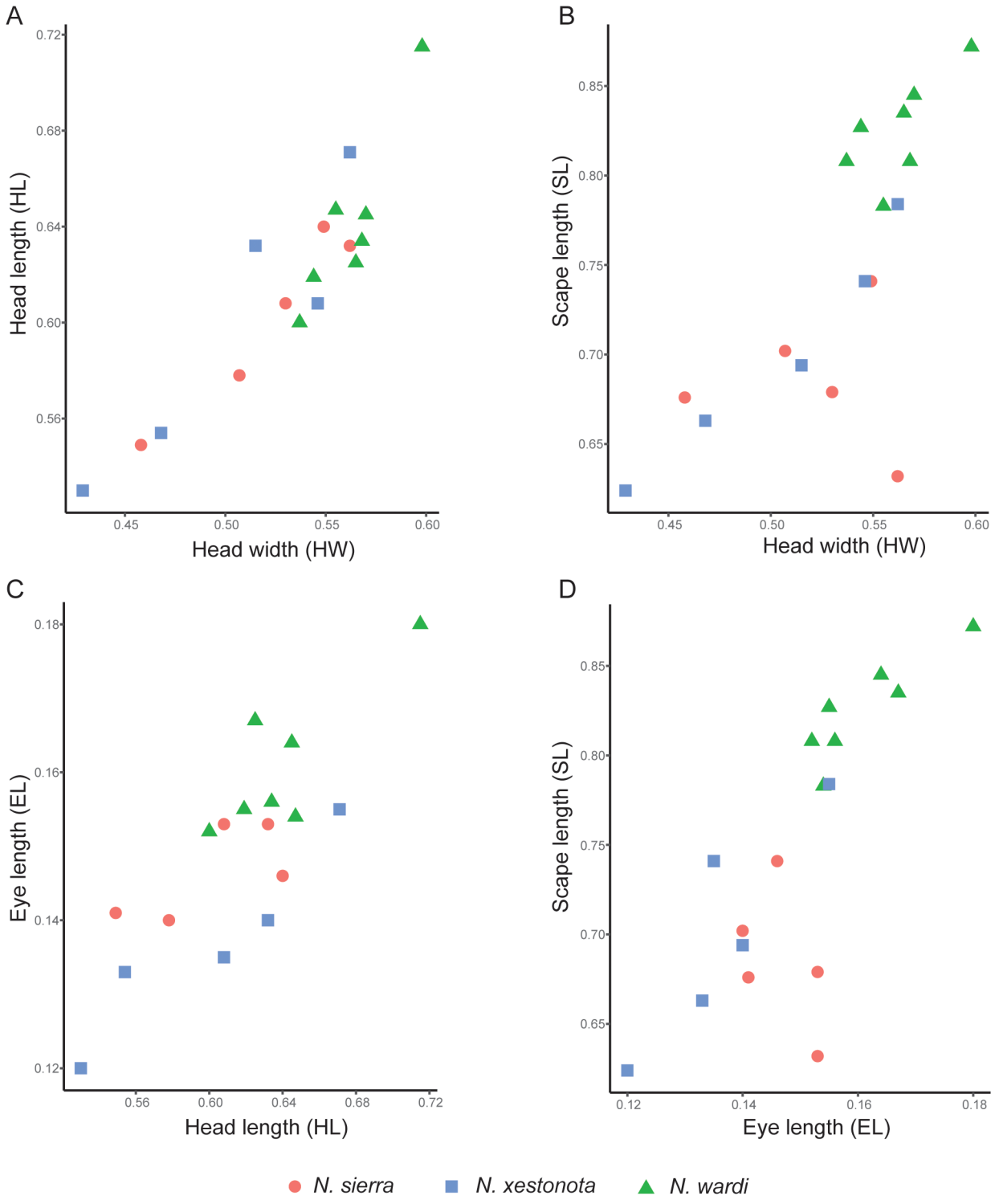


FIGURE 109. Bivariate plots of morphological measurements for *N. sierra*, *N. xestonota*, *N. wardi*.

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