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1 **Molecular and morphological recognition of species boundaries in the**
2 **neglected ant genus *Brachymyrmex* (Hymenoptera: Formicidae): towards a**
3 **taxonomic revision**

4

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6

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12

13 **ABSTRACT**

14 *Brachymyrmex* is a neglected genus of Formicinae because of its small body size, soft mesosoma
15 and superficially monotonous external morphology. These features have complicated the
16 documentation of morphological variation, resulting in poorly-defined and incompletely
17 described species. Consequently, the taxonomy of the genus is complex and problematic, which
18 has impeded research and conservation efforts. Here we integrate molecular and morphological
19 data to recognize species boundaries in *Brachymyrmex* and to guide its long-overdue revision.
20 Specifically, we (1) redefine the limits of all described species, subspecies and varieties based on
21 intra- and interspecific morphological variation in workers; (2) document this variation
22 quantitatively by constructing morphospace occupation and statistically analyzing measurements;
23 (3) synthesize our findings on diagnostic traits in a dichotomous, illustrated identification key,

24 and (4) examine the significance of our morphological identification system with molecular
25 evidence from four genes (EF1aEF1, EF1aEF2, WG and COI). We recognize 40 species, of
26 which four are new to science: *B. bahamensis*, *B. bicolor*, *B. iridescens* and *B. sosai*.
27 Furthermore, *Brachymyrmex attenuatus* and *B. bonariensis* are raised to species, and we propose
28 25 new synonyms. Morphometrics indicated that even poorly distinguishable species pairs show
29 statistically significant differences in some traits, and that taxonomically problematic cases relate
30 to taxa that demonstrate large intraspecific trait variance. Our molecular analysis supports the
31 monophyly of the genus based on increased taxon sampling, and of the 19 species that were
32 included 18 were retrieved as monophyletic. The single case of incongruence was also flagged in
33 morphological analyses and requires extended geographic sampling before it can be resolved. In
34 conclusion, the molecular work corroborates the morphologically-recognized species boundaries.
35 We also document the presence of worker dimorphism and putative worker-queen intercastes in
36 several *Brachymyrmex* species, which indicates that the genus may present a promising study
37 system to understand caste evolution in ants.

38

39 **Keywords.** *Brachymyrmex*, Formicinae, phylogeny, taxonomy, neotropics, morphometrics.

40

41 INTRODUCTION

42 *Brachymyrmex* is a neglected genus of Formicinae that consists of minute ants (maximum length
43 ~3 mm), which are morphologically diagnosed by the presence of an acidopore and antennae
44 with 9 segments lacking a club (Bolton 2003). The combination of their small body size, soft
45 metasoma, and at least superficially monotonous external morphology complicate the observation
46 and interpretation of morphological variation. *Brachymyrmex* is native to America and
47 predominantly Neotropical. It ranges from the south of Canada to Argentina and Chile, including

48 the Caribbean islands (Kempf 1972; Brandão 1991; Bolton 1995; Bolton 2007). Creighton (1950)
49 pointed out that these tiny ants are easily transported with living plants, and beyond the native
50 distribution some species have been introduced to, among others, various places in Africa (Forel
51 1895a; Dejean et al. 2010), Europe (Forel 1874), and Asia (Guénard 2018; Yoshimura pers.
52 comm.). *Brachymyrmex heeri* and *B. longicornis*, for example, were described by Forel (1874;
53 1907) from ant colonies in European greenhouses and *B. cordemoyi* was described from Réunion
54 (Forel 1895a). Some *Brachymyrmex* species, like *B. patagonicus*, are notorious invaders which
55 are considered pests in the southern United States (MacGown et al. 2007) and probably beyond.

56
57 The only complete taxonomic treatment of *Brachymyrmex* was published by Santschi (1923a)
58 and included 27 species and 15 subspecies and varieties. The work was based on worker
59 morphology, but unfortunately the identification key is difficult to use because it includes
60 polytomous steps with strongly overlapping character suites. Furthermore, character descriptions
61 are regularly ambiguous and contain contradictions. As a result, species, subspecies and varieties
62 are often poorly defined and incompletely described (De Zolessi et al. 1978). The small size and
63 taxonomic ambiguity prompted Creighton (1950) to label *Brachymyrmex* as a “miserable little
64 genus” in his treatment of the ants of North America, and for more than a century colleagues
65 (Wheeler 1903; Kusnezov 1959; Wilson and Taylor 1967) have raised warnings on the
66 taxonomic challenges in this genus. Since Santschi (1923a), Alayo (1974) examined the species
67 from Cuba and Wheeler and Wheeler (1978) those from the United States. More recently, Quirán
68 and collaborators (Quirán et al. 2004; Quirán 2005, 2007) reported on the *Brachymyrmex* species
69 from Argentina, and Ortiz and Fernández (2014) reviewed the species with tumuliform
70 metathoracic spiracles. Additionally, Wilson et al. (2016) documented the male genitalia of
71 *Brachymyrmex*. Currently 44 species with 17 subspecies and varieties are attributed to the genus

72 in the online catalog of the ants of the world (Bolton 2018). However, the biology, diversity and
73 phylogeny of the genus remain poorly understood and a comprehensive revision is long-overdue
74 (see Wilson and Taylor 1967).

75
76 A detailed account of opinions on the phylogenetic position of *Brachymyrmex* within Formicinae
77 is provided by Wilson et al. (2016). Agosti (1991) divided the subfamily in four groups based on
78 morphological characters, with *Brachymyrmex* included in the ‘*Pseudolasius* genus group’ based
79 on the widely separated hind coxae, the petiole that is ventrally u-shaped and the simple helcium
80 that is antero-ventrally often concealed by the anteriorly-fused sternite and tergite, which meet
81 laterally. Bolton (2003), also based on morphology, assigned *Brachymyrmex* (and *Pseudolasius*)
82 to the Plagiolepidini, which is one of three tribes of the lasiine group. More recently, Blaimer et
83 al. (2015) obtained strong support for a sister group relationship between *Brachymyrmex* and
84 *Myrmelachista* upon analysis of ultraconserved elements (UCEs), and these genera form a well-
85 supported sister group to all other formicines. Therefore, Ward et al. (2016) resurrected the tribe
86 Myrmelachistini (= Brachymyrmicini) for these two genera. This tribe is morphologically
87 characterized by 9-10 antennal segments, five mandibular teeth, an anteriorly inclined petiole
88 with a long posterior peduncle, and an anterior tergo-sternal fusion of the third abdominal
89 segment.

90
91 Here, we work towards a comprehensive revision of *Brachymyrmex* by 1) redefining the limits of
92 all of the described species, subspecies and varieties in light of intra- and interspecific
93 morphological variation in workers; 2) documenting this variation both qualitatively and
94 quantitatively; 3) summarizing these findings on diagnostic traits with a new, dichotomous,
95 illustrated identification key to increase reproducibility and to make the diversity of

96 *Brachymyrmex* more accessible for future research; and 4) examining the significance of our
97 morphological identification system and the monophyly of the genus in light of molecular
98 evidence. Finally, we also report on the biogeographical distribution of the recognized species
99 and how our taxonomic framework compares with previous studies.

100

101 In summary, we recognize a total of 40 species, four of which are newly described here. We also
102 synonymize 25 previously described species/subspecies and raise two former subspecies to
103 species status. The proposed species delimitations follow a new, dichotomous identification key
104 that is supported by quantitative morphological studies. More importantly, we tested our
105 morphological identification system with molecular data for half of the recognized species and
106 found strong congruence (18 of the 19 included species were retrieved as monophyletic),
107 indicating its overall validity. During our studies, it also became clear that several samples
108 contain specimens that presumably belong to undescribed species, but we prefer to await more
109 material before formal description. This remark includes, but is not limited to, several potentially
110 new species from Central America. We also observed that some species have dimorphic workers
111 and others a possible intercaste between worker and queen. However, confirming the presence of
112 an intercaste necessitates distinguishing it from ergatoid queens, which requires dissections of the
113 ovaries and demographic data (Peeters 1991). Unfortunately, such confirmation is not usually
114 possible based on the museum specimens studied here, but we discuss the issue where relevant.
115 In general, it warrants further study and for now, we highlight such specimens as putative
116 intercastes. If intercastes would be confirmed in the future beyond dimorphic workers,
117 *Brachymyrmex* would present a promising study system to understand caste evolution in ants
118 (Ortiz and Fernández 2014).

119

120 **MATERIAL AND METHODS**

121
122 **Material and repositories.**
123 Authors of previous taxonomic studies of *Brachymyrmex* (e.g. Santschi 1923a; Creighton 1950;
124 Quirán et al. 2004; Quirán 2005, 2007) have mainly or exclusively focused on the morphology of
125 workers, for which abundant material is available in existing museum collections. Consequently,
126 we adopt the same focus here. A comparative framework is largely lacking for queens and males,
127 because they are not available for all species, and even when collections exist they are often
128 poorly preserved. Nevertheless, we provide a genus-level diagnosis of queens and males with
129 selected pictures for illustrative purposes. The morphological terminology used follows Bolton
130 (1994), that for hair inclination Kugler (1994), and for sculpture Harris (1979).

131 We examined a total of 1303 *Brachymyrmex* samples. This material belongs to the following
132 institutions, and it includes all relevant types and many additional specimens; most collection
133 acronyms follow Ward (1989). In some collections not all specimens have individual voucher
134 numbers. In such cases, we assigned an identifier (either a personal code or number, such as
135 CMOS 000032, or a Smithsonian database reference number, such as USNMENT00757197) to
136 the relevant specimen, preceded by the acronym of the proprietary institution. These unique
137 identifiers are used here for traceability.

- 138
- 139 **ALWC** Alex L. Wild Personal Collection, University of Texas, Austin,, TX, USA.
- 140 **CASC** California Academy of Sciences, San Francisco, CA, USA.
- 141 **CPDC** Laboratório de Mirmecologia do Centro de Pesquisas do Cacau, Comissão
142 Executiva do Plano da Lavoura Cacaueira (CEPLAC), Itabuna, Bahia, Brazil.
- 143 **IAvH** Instituto Humboldt, Claustro San Agustín, Villa de Leyva, Boyacá, Colombia.

- 144 **ICN** Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá D.C.,
145 Colombia.
- 146 **INBC** Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica.
- 147 **INSUE** Instituto Superior de Entomología, Universidad Nacional de Tucumán, San Miguel
148 de Tucumán, Argentina.
- 149 **JTLC** John Longino Collection, the University of Utah, Salt Lake City, UT, USA.
- 150 **MACN** Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires,
151 Argentina.
- 152 **MCZC** Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA.
- 153 **MCSN** Museo Civico di Storia Naturale “Giacomo Doria”, Genoa, Italy.
- 154 **MfNB** Museum für Naturkunde, Berlin, Germany.
- 155 **MLP** Museo de La Plata, Buenos Aires, Argentina.
- 156 **MHNG** Muséum d’Histoire Naturelle, Genève, Switzerland.
- 157 **MPEG** Museu Paraense “Emílio Goeldi”. Belém, Pará, Brazil.
- 158 **MZSP** Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil.
- 159 **NHMB** Naturhistorisches Museum, Basel, Switzerland.
- 160 **NHMW** Naturhistorisches Museum, Wien, Austria.
- 161 **PSWC** Philip S. Ward Collection, University of California, Davis, CA USA.
- 162 **RBINS** Royal Belgium Institution of Natural Sciences, Bruxelles, Belgium.
- 163 **UFUC** Universidade Federal de Uberlândia, Uberlândia, Minas Gerais, Brazil.
- 164 **UNMSM** Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima,
165 Peru.
- 166 **USNM** Department of Entomology, National Museum of Natural History Smithsonian
167 Institution, Washington DC, USA.

168 **WEMC** William and Emma MacKay, Personal Collection, El Paso Texas, TX, USA.

169

170 **Georeferencing and mapping.**

171 Although we tried to georeference all studied samples, some were excluded because locality
172 information was too ambiguous for georeferencing (e.g., when only a country name was
173 available). Furthermore, specimens from the same collecting event were sometimes separated
174 over replicate samples. After removing such ‘duplicates’, 747 georeferenced localities remained,
175 of which 736 represented specimens from the native range. These were mapped in R v3.2.1. (R
176 Core Team 2015) using the packages maps v3.0.1. (Brownrigg et al. 2015) and mapdata v2.2-5
177 (Brownrigg 2015), and subsequently projected on the ETOPO1 global topographic map of
178 Amante and Eakins (2009).

179

180 **Images.**

181 Photographs were taken in dorsal, lateral and full-face view. At the MCZC we used an imaging
182 system that consisted of a Leica MZ16 stereomicroscope equipped with a Leica DCF 420 digital
183 camera, software from Leica Application Suite 3.7 and Helicon Focus 5.1 for auto-montage; at
184 the USNM the imaging system consisted of a Leica Z16APO stereomicroscope with a JVC KY-
185 F75U digital camera mounted to the Leica motor-focus system. Composite images made with this
186 system were assembled using Auto-Montage Pro Version 5.03.0018 BETA (Synoptics Ltd.); at
187 the MZSP the imaging system consisted of a Leica M250c stereomicroscope and Auto-Montage
188 Professional software LAS3.6.0. Some images were obtained from www.antweb.org, which is
189 specified in the figure captions. Images were processed with Adobe Photoshop CS5.

190

191 **Analysis of measurements and indices.**

192 Measurements were made using an Advanced Optical microscope, a Leica Z16 APO microscope,
193 and a Zeiss StereoDiscovery V20 in combination with an ocular micrometer. All measurements
194 were taken at 80-120 \times magnification and are reported in mm to an accuracy of 2 decimal places.
195 Indices were calculated from these measurements following Ortiz and Fernández (2014) (Fig. 1).

196
197 *Head Length₁* (HL₁): The maximum length of the head excluding the mandibles in full-face view.
198 HL₁ is measured as the straight-line distance from the mid-point of the anterior margin of the
199 clypeus to the mid-point of the posterior (= vertexal) margin of the head (for major workers the
200 posterior mid-point is located at the middle of the virtual line between the posterior apices of the
201 head).

202
203 *Head Length₂* (HL₂): Distance from the posterior margin of the frontal triangle (see Bolton, 1994,
204 p. 192) to the vertexal margin in full-face view.

205
206 *Head Length₃* (HL₃): Measurement of the gena in lateral view; this measurement equals the
207 distance from the anterior margin of the eye to the posterior edge of the clypeus, parallel to the
208 longest axis of the eye.

209
210 *Head Width* (HW): The maximum width of the head measured in full-face view. Eyes are
211 included in the measurement if they project laterally from the head.

212
213 *Scape Length* (SL): The maximum length of the scape, excluding the basal constriction just distal
214 to the condylar bulb.

215

216 *Eye Length* (EL): Maximum diameter of the compound eye.

217

218 *Weber's Length* (WL): The diagonal length of the mesosoma in lateral view, i.e. from the
219 anterior-most point of the pronotum to the posterior-most basal angle of the metapleuron (this
220 measurement excludes the cervical neck of the pronotum).

221

222 *Pronotum Length* (PnL): The length along the midline between the anterior and posterior edges
223 of the pronotum in dorsal view (this measurement excludes the cervical neck of the pronotum).

224

225 *Pronotum Width* (PnW): The maximum width of the pronotum in dorsal view.

226

227 *Mesonotum Length* (ML): The length between the anterior edge of the mesonotum and the
228 mesometanotal suture in dorsal view.

229

230 *Mesonotum Width* (MW): The maximum width of the mesonotum in dorsal view.

231

232 *Cephalic Index* (CI): $(HW/HL_1) \times 100$.

233 *Scape Index₁* (SI₁): $(SL/HW) \times 100$.

234 *Scape Index₂* (SI₂): $(SL/HL_2) \times 100$.

235 *Ocular Index₁* (OI₁): $(EL/HW) \times 100$.

236 *Ocular Index₂* (OI₂): $(HL_3/HL_1) \times 100$.

237

238 *Ommatidia*: The number of facets in the compound eye along its maximal diameter.

239

240 In total 347 specimens of 38 species were measured. In some cases, it was not possible to reliably
241 measure all features, e.g. because of the preservation of the specimen or the way it was mounted.
242 The ranges of the obtained measurements are described in the systematic treatment, but we also
243 performed a statistical analysis of morphometric variables.

244 First, we ordinated these data with non-metric multidimensional scaling (nmMDS) using
245 functions of *vegan* v2.3-0 (Oksanen et al. 2015) and *MASS* v7.3-41 (Venables and Ripley 2002).
246 As this rank-based method does not allow missing data, we selected only specimens for which all
247 measurements were taken, i.e. a subset of 240 individuals for 38 species. We converted this
248 dataset into a Euclidean distance matrix and ordinated it in two dimensions using 1,000 random
249 starting configurations to find the solution with minimal stress without getting trapped in local
250 minima. The resulting stress value obtained, i.e. the goodness-of-fit, was multiplied by 100 and
251 evaluated using the criteria of Kruskal (1964) and Clarke (1993). We also examined how
252 individual morphometric variables (i.e. the measurements, indices and counts) contributed to the
253 morphospace occupation with the ‘*envfit*’ function of *vegan* using 1,000 permutations.

254
255 Subsequently, we conducted statistical tests for the univariate morphometric variables on all
256 species that were represented with at least 5 specimens, resulting in a subset of 286 specimens for
257 20 species. (Specimens with missing data were allowed for these tests.) Given that the data of
258 several species differed significantly from a normal distribution, we used non-parametric Dunn’s
259 tests to test pairwise differences between species for each measurement and index. These tests
260 were performed in R using functions of the package *dunn.test* v1.3.4. (Dinno 2017), and the
261 resulting *p*-values were adjusted with a Benjamini-Hochberg correction, i.e. using the false
262 discovery rate (Benjamini and Hochberg 1995). These results were represented with boxplots,
263 featuring letters to indicate significance levels of comparisons.

264

265 **Molecular phylogenetics.**

266 We examined the monophyly of the genus with a dataset that has substantially enhanced taxon
267 sampling compared to previous efforts (Brady et al. 2006; Moreau et al. 2006; Blaimer et al.
268 2015), and we examined the molecular support of the here proposed morphological identification
269 system. The specimens used for genetics are indicated in Supplementary material table S1, i.e. 82
270 specimens covering 19 *Brachymyrmex* species and 6 specimens of 5 *Myrmelachista* species (the
271 sister-genus of *Brachymyrmex* [Blaimer et al. 2015]). *Acanthoponera minor*, *Manica rubida* and
272 *Rhytidoponera metallica* were used as outgroups.

273

274 DNA extraction, amplification, and sequencing were carried out at the Laboratories of Analytical
275 Biology (LAB) of the Smithsonian National Museum of Natural History, Washington, DC.

276 Genomic DNA was extracted using the Qiagen DNEasy Tissue Kit. Fragments of four protein-
277 coding genes were amplified, i.e. one fragment for each of the nuclear genes elongation factor 1-
278 alpha paralog F1 (EF1 α F1), elongation factor 1-alpha paralog F2 (EF1 α F2) and wingless (wg),
279 and two of the mitochondrial gene cytochrome oxidase subunit 1 (COI). Primer sequences used
280 for polymerase chain reaction (PCR) amplification are those used by LaPolla et al. (2010). PCR
281 products were sequenced on an ABI sequencer (ABI 377 or ABI 3100) using Big Dye Cycle
282 Sequencing chemistry. Fragments were sequenced bidirectionally, and the resulting chromatograms
283 were assembled and edited with SEQUENCHER v.4.8.

284

285 Furthermore, our dataset includes unpublished sequences that are available in GenBank by the
286 International Barcode of Life Consortium. These sequences are provided without species
287 identification, but they are linked to an image database, and we included specimens for which

288 unambiguous identification was possible based on the available images. Additional sequences
289 with specimen images were kindly provided by David Donoso and John Longino, and we used
290 the same criteria for inclusion as for GenBank sequences.

291
292 Sequences for each gene fragment were aligned using MAFFT v.7 (Kato and Standley 2013)
293 and results were visually inspected in MESQUITE v.2.10 (Maddison and Maddison 2017) to
294 determine codon positions. We tested for substitutional saturation using DAMBE v.5.5.9 (Xia
295 2013) but none of the gene fragments used were saturated. Models of sequence evolution were fit
296 with PARTITION FINDER v.1.1.1 (Lanfear et al. 2012) to individual gene fragments accounting
297 for potential differences between codon positions. The resulting model fit was examined with a
298 corrected Akaike Information Criterion (AICc). Subsequently, the data for the individual
299 fragments was concatenated into a total dataset with seven partitions (Supplementary material
300 table S2) and phylogenetically analysed with maximum parsimony (MP), maximum likelihood
301 (ML) and Bayesian inference (BI). MP analyses were performed in PAUP* v.4.0b0.10 for
302 Windows (Swofford 2002) with gaps treated as fifth state, 10 000 bootstrap replicates and tree-
303 bisection-reconnection branch swapping. ML analyses were performed with the RAxML
304 BlackBox (Stamatakis et al. 2008) with 100 replicates and the implemented GTR + Γ model,
305 individually parameterized for each of the 7 partitions. BI analyses were executed in MrBayes
306 v.3.2.6 (Ronquist et al. 2012) as implemented in CYPRES v.3.3 (Miller et al. 2010). Two
307 independent Markov chain Monte Carlo (MCMC) runs were conducted for 20 million
308 generations and sampled every 1,000 generations. Each run was distributed across four chains
309 with a heating parameter of 0.2 and 25% of the samples were discard as burnin. Convergence
310 between runs was examined using the sump command and by inspecting effective sample sizes
311 for the parameters in TRACER v.1.6 (Rambaut et al. 2013). The maximum clade credibility tree

312 was visualized with FigTree v.1.4.0 (Rambaut 2012) and the bootstrap support for clades
313 retrieved under MP and ML was added. Sequences are deposited in GenBank and accession
314 numbers are indicated in Supplementary table S1.

315

316 **Automated species delimitation.**

317 We identified hypothetical species entities from sequence data with an automated procedure. Our
318 specific aim was to evaluate the congruence of automated species delimitation and our
319 morphological identification system, and thus to test the reliability of that identification system.
320 Multiple such methods exist (Pons et al. 2006; Leliaert et al. 2014; Da Silva et al. 2018) and
321 results may vary considerably among methods (Da Silva et al. 2018) related to the size of the
322 dataset, the methodological procedures adopted, variation in underlying population genetic
323 parameters and evolutionary processes. Many of the potentially influencing biological factors are
324 poorly known for *Brachymyrmex*. We used the automatic barcode gap discovery method (ABGD;
325 Puillandre et al. 2011), i.e. a fast single-locus method, on the barcoding fragment of COI, because
326 of the exceptional suitability of this fragment for species identification as well as species
327 delimitation and discovery in Metazoa (Hebert et al. 2003). The ABGD method is generally
328 considered to be conservative as to the number of hypothetical species lineages it detects (Da
329 Silva et al. 2018). We performed the analysis on the ABGD website
330 (<http://www.wabi.snv.jussieu.fr/public/abgd/abgdweb.html>, accessed 8 October 2018) using default
331 parameters except for relative gap width, which was set to 1.0.

332

333 **RESULTS AND DISCUSSION**

334 **Systematic treatment.**

335 *Brachymyrmex* Mayr

336 *Plagiolepis* (in part): Roger (1863: 162).

337 *Brachymyrmex* Mayr, 1868: 163. Type species: *B. patagonicus*, by monotypy.

338 *Brachymyrmex* subgenus *Brysha* Santschi, 1923a: 652.

339 *Brachymyrmex* senior synonym of *Brysha*: Smith (1979: 1424).

340 *Brachymyrmex*: Kempf (1972), Bolton (1995; 2003; 2018).

341
342 **Diagnosis.** *Brachymyrmex* differs from most other formicine genera by having workers with nine
343 antennal segments. Some species of *Myrmelachista* also have nine antennal segments, but these
344 have a well-defined antennal club, whereas such a club is absent in *Brachymyrmex*. Some
345 *Agraulomyrmex* species from Africa also have 9 antennal segments without club (unpublished
346 results), but *Brachymyrmex* differs from these by the presence of a mesometanotal suture.
347 Workers are monomorphic to dimorphic; some species have a putative worker-queen intercaste.

348
349 **Worker. Head.** Usually longer than wide, cordate in some species, with sparse to dense
350 pubescence and hairs in variable orientation (appressed, decumbent, erect). Mandibles with five
351 teeth, of which intercalar (central) and basal teeth are smaller than the others and the apical tooth
352 is largest. Maxillary palps and labial palps with 6 and 4 segments, respectively. Maxillary palps
353 usually reach the occiput and bear several long ventral hairs. The clypeus has a rounded anterior
354 margin or in some taxa, notably *B. nebulosus*, its medio-anterior portion forms a “lip”. In
355 monomorphic species the clypeus bears five long, erect hairs of which one usually conspicuous
356 hair is near the anterior margin, two are in mediolateral position and the other two close to the
357 toruli; other hairs are markedly shorter and appressed or decumbent. In dimorphic species the
358 clypeus is larger and with a row of long thick hairs near the anterior margin. Toruli either touch

359 the posterior clypeal margin in oblique anterodorsal view or surpass it. Compound eye
360 conspicuous, positioned usually on the cephalic midline or anterior to it; with 3-14 ommatidia
361 along its maximal diameter. Number of ocelli either 0, 1 or 3, but when present often
362 inconspicuous. Antennae with 9 segments, without antennal club; flagelomeres sometimes
363 gradually increasing apically in diameter; scapes variable in length, with appressed, decumbent or
364 erect hairs.

365 **Mesosoma.** With sparse or dense pubescence and hairs in variable orientation. The pronotum and
366 mesonotum typically bear two erect hairs each, but sometimes additional suberect hairs on one or
367 both are present, or erect hairs may be absent from the mesonotum. The pronotum is slightly to
368 strongly convex, and the promesonotal suture, i.e. the line of junction between the pronotum and
369 mesonotum, is always present. The mesonotum may bulge dorsally above the propodeum, and
370 the mesometanotal suture, i.e. the line of junction between the mesonotum and the metanotum, is
371 usually conspicuous, although the mesonotum and metanotum appear fused in some species. The
372 metanotum is reduced to a transverse groove, the metanotal groove, which separates the
373 mesonotum from the propodeum on the mesosomal dorsum. The metanotal groove is variable,
374 from absent to wide and deep. The metathoracic spiracles are dorsal near the midline or
375 dorsolateral, and not, slightly or very strongly protruding, i.e. tumiliform. The propodeal suture,
376 i.e. the line of junction between either the mesonotum (if the metanotal groove is absent) or the
377 metanotal groove anteriorly and the propodeum posteriorly, is present as a dorsal fold with
378 variable lateral extension. Dorsum of the propodeum flat or convex and usually shorter than the
379 propodeal slope. Propodeal spiracles circular and positioned near the posterior propodeal margin.
380 Petiole usually with a low scale, reduced to a narrow subcylindrical segment that is overhung
381 from behind by the gaster, but in dimorphic species the scale of the petiole may be high and
382 visible in dorsal view. Hairs on the legs may be appressed, decumbent or erect.

383 **Gaster.** Of variable size, with five segments that bear sparse or dense pubescence and usually
384 erect hairs, mainly but not exclusively along the posterior edges of the segments.

385 **Color and sculpture.** Body color ranges from light yellow to dark brown and black; most often it
386 is uniform, but some species display markedly contrasting patterns, e.g. with the head and/or the
387 gaster darker than the rest of the body. Body usually smooth and shiny, but in some species the
388 head and/or mesonotum bear microsculpture.

389
390 **Queen (Fig. 2)** Head wider than long, with abundant, fine pubescence, and with long erect hairs;
391 eyes large, located laterally along the cephalic midline; 3 ocelli present; frontal lobes well-
392 developed; scapes usually extending beyond the posterior margin of the head; palpal formula:
393 6,4. Mesosoma with moderately dense, fine pubescence and several erect hairs; anepisternum and
394 katepisternum separated by a distinct suture. Anterior wing with a single dark brown cell, i.e.
395 pterostigma, the first submarginal cell is closed, others open. Posterior wing with five to seven
396 hamuli. Gaster with moderately dense, fine pubescence, and erect hairs along the posterior
397 edges of the segments. Body color ranges from yellow to dark brown, and it is uniform or
398 sometimes with the head and/or gaster darker than the rest of the body.

399
400 **Male (Fig. 3).** Head wider than long, with fine, sparse pubescence, lacking erect hairs except on
401 mouthparts, and with smooth, shiny integument; maxillary palps with four segments, labial palps
402 with two; mandibles unidentate; frontal lobes reduced; ocelli and eyes well-developed; antennae
403 with 10 segments. Mesosoma with sparse pubescence and shiny integument, without erect hairs.
404 Gaster shiny, lacking pubescence, with scattered erect hairs on the last few segments. Head dark
405 brown to almost black, rest of body, including appendages, very light brown or concolorous.
406 Wilson et al. (2016) described the morphology of the male genitalia in detail.

407

408 **Distribution.** Neotropical and Nearctic, with introductions elsewhere. The native distribution of
409 *Brachymyrmex* is illustrated in Fig. 4.

410

411 **Biology.** *Brachymyrmex* is commonly collected from leaf-litter and some species occur in
412 association with epiphytes; nests are found under stones, among plant roots, in trees, in rotten
413 wood (Wheeler 1942; LaPolla and Longino 2006), and in urban buildings (MacGown et al.
414 2007). The biology and natural history of the genus are poorly known although habitat
415 information exists for some species, such as the arboreal *B. nebulosus* (LaPolla and Longino
416 2006). As mentioned, some *Brachymyrmex* species are notorious invaders which are considered
417 pests (MacGown et al. 2007).

418 Interestingly, *Brachymyrmex* species occur sometimes in association with other insects. Santschi
419 (1923a) mentioned associations of *Brachymyrmex depilis*, *B. giardi* and *B. heeri* with mealybugs
420 (Hemiptera: Coccidae) and observed that some species live in or very close to termite nests (*B.*
421 *fiebrigi*, *B. modestus*, *B. myops*, *B. termitophilus*). Moretti et al. (2011), suggested a possible
422 association between *B. cordemoyi* and the cockroach *Pycnoscelus surinamensis* (Blaberoidea:
423 Blaberidae), whereas Delssine (pers. comm.) found a staphylinid beetle in a nest of *B. modestus*
424 in Ecuador.

425

426 **Synonymy of species.**

427 ***B. admotus* Mayr, 1887**

428 = *B. longicornis* var. *immunis* Forel, 1908 **n. syn.**

429 ***B. antennatus* Santschi, 1929**

430 ***B. aphidicola* Forel, 1909**

- 431 = *B. heeri* var. *fallax* Santschi, 1923a
- 432 = *B. longicornis* var. *hemiops* Santschi, 1923a **n. syn.**
- 433 ***B. attenuatus* Santschi, 1929 n. st.**
- 434 ***B. australis* Forel, 1901**
- 435 = *B. australis* var. *curta* Santschi, 1922 **n. syn.**
- 436 = *B. longicornis* Forel, 1907 **n. syn.**
- 437 ***B. bahamensis* n. sp.**
- 438 ***B. bicolor* n. sp.**
- 439 ***B. bonariensis* Santschi, 1933 n. st.**
- 440 ***B. brasiliensis* Ortiz & Fernández, 2014**
- 441 ***B. bruchi* Forel, 1912a**
- 442 = *B. bruchi* var. *rufipes* Forel, 1912a
- 443 = *B. giardi* var. *nitida* Santschi, 1922 **n. syn.**
- 444 = *B. laevis* var. *andina* Santschi, 1923a **n. syn.**
- 445 ***B. cavernicola* Wheeler, 1938**
- 446 ***B. coactus* Mayr, 1887**
- 447 = *B. coactus* var. *nictitans* Emery, 1906 **n. syn.**
- 448 = *B. constrictus* Santschi, 1923a **n. syn.**
- 449 = *B. coactus* var. *robustus* Santschi, 1923b **n. syn.**
- 450 ***B. cordemoyi* Forel, 1895a**
- 451 = *B. laevis* var. *fuscula* Emery, 1906 **n. syn.**
- 452 = *B. brevicornis* Emery, 1906 **n. syn.**
- 453 = *B. patagonicus* var. *brevicornoeides* Forel, 1914 **n. syn.**
- 454 = *B. cordemoyi* var. *nigricans* Santschi, 1916

- 455 = *B. cordemoyi* var. *distinctus* Santschi, 1923a **n. syn.**
- 456 ***B. degener* Emery, 1906**
- 457 = *B. admotus* r. *niger* Forel, 1912a **n. syn.**
- 458 = *B. incisus* Forel, 1912a **n. syn.**
- 459 = *B. luederwaldti* Santschi, 1923a **n. syn.**
- 460 ***B. delabiei* Ortiz & Fernández, 2014**
- 461 ***B. depilis* Emery, 1893**
- 462 = *B. depilis* subsp. *flavescens* Grundmann, 1952
- 463 = *B. nanellus* Wheeler, 1903.
- 464 ***B. donisthorpei* Santschi, 1939**
- 465 ***B. feitosai* Ortiz & Fernández, 2014**
- 466 ***B. fiebrigi* Forel, 1908**
- 467 = *B. fiebrigi* var. *funicularis* Santschi, 1922 **n. syn.**
- 468 = *B. fiebrigi* var. *fumida* Santschi, 1923a **n. syn.**
- 469 ***B. flavidulus* Roger, 1863**
- 470 ***B. gagates* Wheeler, 1934**
- 471 ***B. gaucho* Santschi, 1917**
- 472 ***B. giardi* Emery, 1895**
- 473 = *B. melensis* De Zolessi, Abenante & Gonzalez, 1978 **n. syn.**
- 474 ***B. heeri* Forel, 1874**
- 475 = *B. goeldii* Forel, 1912a **n. syn.**
- 476 = *B. giardi* var. *cordobensis* Santschi, 1929 **n. syn.**
- 477 = *B. physogaster* Kusnezov, 1960 **n. syn.**
- 478 ***B. iridescens* n.sp.**

- 479 *B. micromegas* Emery in Santschi, 1923a
480 *B. minutus* Forel, 1893
481 *B. modestus* Santschi, 1923b
482 *B. musculus* Forel, 1899
483 *B. myops* Emery, 1906
484 *B. nebulosus* LaPolla & Longino, 2006
485 *B. obscurior* Forel, 1893
486 *B. oculatus* Santschi, 1919
487 *B. patagonicus* Mayr, 1868
488 = *B. laevis* Emery, 1895 n. syn.
489 = *B. patagonicus* var. *atratura* Santschi, 1923a
490 *B. pictus* Mayr, 1887
491 = *B. heeri* var. *basalis* Wheeler, 1921. n. syn.
492 = *B. pictus* subsp. *balboae* Wheeler, 1942 n. syn.
493 *B. pilipes* Mayr, 1887
494 *B. santschii* Menozzi, 1927
495 *B. sosai* n. sp.
496 *B. termitophilus* Forel, 1895b
497 *B. tristis* Mayr, 1870

498

499 **Identification key to *Brachymyrmex* species.**

- 500 1 Clypeus with a single long apical hair near the anterior margin, two lateral hairs medially and
501 two hairs near the toruli (**Fig. 5.a1**); monomorphic 2

502 - Clypeus with a row of long thick hairs near the anterior margin (**Fig. 5.a2**), remaining pilosity not
503 as above; dimorphic **39**
504

505 **2(1)** Metathoracic spiracles tumuliform (i.e. strongly protruding dorsally) (**Fig. 6a1**); known only
506 from Brazil **3**
507 - Metathoracic spiracles not (**Fig. 6.a2**) or slightly protruding but not tumiliform (**Fig. 6.a3**);
508 naturally occurring throughout the Neotropics **5**
509

510 **3(2)** Toruli surpassing the posterior clypeal margin in oblique anterodorsal view (**Fig. 5.a3**); head
511 and mesosoma smooth and shiny **4**
512 – Toruli touching the posterior clypeal margin but never surpassing it in oblique anterodorsal view
513 (**Fig. 5.a2**); head and mesosoma finely punctate and opaque *B. brasiliensis*
514

515 **4(3)** Mesosoma without erect hairs; gaster with scattered long erect hairs, except for the first
516 segment which has dense yellowish pubescence *B. feitosai*
517 – Mesosoma with two erect hairs on pronotum and two on mesonotum; gaster with scattered long
518 erect hairs, also on the first segment *B. delabiei*
519

520 **5(2)** Dorsum of the head, mesosoma and gaster with thick erect black hairs (as in *Nylanderia*) that
521 contrast with the body color (head and gaster may be darker than mesosoma) *B. cavernicola*
522 - Dorsum of the head, mesosoma and gaster without hairs, or with thin hairs that do not contrast
523 with the body color..... **6**
524

525 **6(5)** Eyes positioned below the cephalic midline (**Fig. 5.b1**), with 3 or 4 ommatidia along the
526 maximal diameter of the eye (EL) (**Fig. 5.c1**)..... 7
527 - Eyes usually positioned on the cephalic midline (**Fig. 5.b2**), with more than 4 ommatidia along
528 the maximal diameter of the eye (**Fig. 5.c2**) 9
529
530 **7(6)** Mesonotum not bulging dorsally above the pronotum in lateral view (**Fig. 6.b1**)..... 8
531 - Mesonotum bulging dorsally above the pronotum in lateral view (**Fig. 6.b2**)
532 *B. modestus*
533
534 **8(7)** Scapes short, just reaching the posterior margin of the head or surpassing it by a length shorter
535 than the maximal diameter of the eye (**Fig.5.d1,d2**).....
536 *B. donisthorpei*
537 - Scapes long, surpassing the posterior margin of the head by a length approximately equal to the
538 maximal diameter of the eye (**Fig. 5.d3**)..... *B. myops*
539
540 **9(6)** Two erect hairs between the metathoracic spiracles 10
541 - Without erect hairs between the metathoracic spiracles 11
542
543 **10(9)** Scapes surpass the posterior cephalic margin by a length of approximately 1.5× the maximal
544 diameter of the eye (**Fig. 5.d3: 2A ≤ B**); hairs on scapes decumbent; body uniform in color (usually
545 dark brown) *B. admotus*
546 - Scapes surpass the posterior cephalic margin by a length of approximately 1.0× the maximal
547 diameter of the eye (**Fig. 5.d3: 2A > B**); hairs on scapes appressed; head and mesosoma light brown,
548 gaster darker *B. bonariensis n. st.*

549

550 **11(9)** Dorsal margin of the mesosoma having a marked sinusoidal shape (**Fig. 6.c**) **12**

551 - Dorsal margin of the mesosoma not sinusoidal or only of sub-sinusoidal shape (**Figs.**

552 **6.a2,a3,b1,b2,d1,d2,e1,e2**) **13**

553

554 **12(11)** Clypeus with its medial anterior portion forming a “lip” (**Fig. 5.e1**); head and mesosoma

555 partially or completely alveolate (sometimes alveolate-strigate); dorsum of the mesosoma with

556 many erect hairs; body uniform in color *B. nebulosus*

557 -Clypeus without anteromedial “lip” (**Fig. 5.e2**); entire body non-alveolate; dorsum of the

558 mesosoma without erect hairs; head and gaster black; mesosoma yellowish

559 *B. bicolor n. sp.*

560

561 **13(11)** Head with strong alveolate sculpture **14**

562 - Head without alveolate sculpture **15**

563

564 **14(13)** Metanotal groove wider than the diameter of the metathoracic spiracles (**Fig. 6.f1**: $A \leq B$);

565 scapes surpassing the posterior margin of the head by approximately 1.0× the maximal diameter of

566 the eye (**Fig. 5.d3**); gaster with scattered pubescence (**Fig. 6.g1**) *B. santschii*

567 - Metanotal groove narrower than the diameter of the metathoracic spiracles (**Fig. 6.f2**: $A > B$);

568 scapes just reaching the posterior margin of the head (**Fig. 5.d2**); gaster with dense pubescence

569 (**Fig. 6.g2**) *B. iridescens n. sp.*

570

571 **15(13)** Mesometanotal suture inconspicuous (**Fig. 6.d1**) **16**

572 - Mesometanotal suture readily visible (**Fig. 6.d2**) **17**

573

574 **16(15)** Pronotum without erect hairs; scapes short or reaching the posterior margin of the head
575 **(Fig. 5.d1,d2)**; gaster with dense pubescence **(Fig. 6.g2)** *B. flavidulus*
576 - Pronotum with two erect hairs **(Fig. 6.d1)**; scapes surpassing the posterior margin of the head
577 **(Fig. 5.d3)**; gaster without dense pubescence, but with scattered appressed hairs **(Fig. 6.g1)** ..
578 *B. minutus*
579

580 **17(15)** Gaster with dense appressed or decumbent pubescence **(Fig. 6.g2)** **18**
581 - Gaster with sparse pubescence, but with scattered, appressed hairs **(Fig. 6.g1)** **28**
582

583 **18(17)** Metanotal groove absent or when present shallow and narrower than the diameter of the
584 metathoracic spiracles **(Fig. 6.f2: A > B)**..... **19**
585 - Metanotal groove deep and wider than the diameter of the metathoracic spiracles **(Fig. 6.f1: A ≤**
586 **B)**..... **26**
587

588 **19(18)** Mesonotum bulging dorsally above the pronotum in lateral view **(Fig. 6.b1)** **20**
589 - Mesonotum not bulging dorsally above the pronotum in lateral view **(Fig. 6.b2)** **22**
590

591 **20(19)** Scapes just reaching the posterior margin of the head or surpassing it by a length of less
592 than 1.0× the maximal diameter of the eye **(Fig. 5.d2,d3: A > B)** **21**
593 - Scapes surpassing the posterior margin of the head by a length of approximately 1.0× the maximal
594 diameter of the eye **(Fig. 5.d3: A ≈ B)**..... *B. heeri*
595

596 **21(20)** Body usually dark brown; eye with on average 9 ommatidia along its maximal diameter;
597 scapes on average >0.5 mm; known only from South America *B. giardi*
598 - Body yellowish; eye with on average 6 ommatidia along its maximal diameter; scapes on average
599 <0.5 mm; known only from Canada, Mexico, USA *B. depilis*
600
601 **22(19)** Body yellowish **23**
602 - Body dark brown..... **25**
603
604 **23(22)** Scapes not or barely reaching the posterior margin of the head (**Fig. 5.d1,d2**)
605 *B. fiebrigi*
606 - Scapes surpassing the posterior margin of the head (**Fig. 5.d3**) **24**
607
608 **24(23)** About 6 erect hairs on the pronotum and two on the mesonotum, each hair with a length of
609 about 2.0× the maximal diameter of the eye; known only from the Bahamas. *B. bahamensis n. sp.*
610 - Two erect hairs on the pronotum and two on the mesonotum, each with a length shorter than the
611 maximal diameter of the eye; widespread..... *B. termitophilus*
612
613 **25(22)** Dorsum of the head and mesosoma with light-colored, dense pubescence; gaster with dense
614 appressed pubescence; eye with on average 11 ommatidia along its maximal diameter, head on
615 average long (HL1 > 0.5 mm) and wide (HW > 0.4 mm)..... *B. cordemoyi*
616 - Dorsum of the head and mesosoma with less conspicuous dense pubescence; gaster with dense
617 decumbent pubescence; eye with on average 9 ommatidia along its maximal diameter, head on
618 average short (HL1 < 0.5 mm) and narrow (HW < 0.4 mm) *B. obscurior*
619

620 **26(18)** Dorsum of the mesosoma without conspicuous sculpture; metathoracic spiracles fully dorsal
621 in position; dorsal margin of the mesonotum strongly antero-posteriorly inclined (**Fig. 6.e1**) **B.**

622 *sosai* n.sp.

623 - Dorsum of the mesosoma with imbricate sculpture; metathoracic spiracles in dorsolateral
624 position; dorsal margin of the mesonotum not or slightly antero-posteriorly inclined (**Fig. 6.e2**)

625 27

626
627 **27(26)** Second segment of the antennal funiculus shorter than the first antennal segment (**Fig. 5.g1:**
628 $S2 < S1$); scapes with appressed hairs; metathoracic spiracles protruding slightly dorsally, but not
629 tumiliform (**Fig. 6.a3**); hairs lighter in color than the body, which is brownish

630 *B. attenuatus* n.st

631 - Second segment of the antennal funiculus as long or longer than the first antennal segment (**Fig.**
632 **6.g2:** $S2 \geq S1$); scapes with decumbent hairs; methatoracic spiracles not protruding (**Fig. 6.a2**)
633 hairs darker in color than the body, which is yellowish *B. antennatus*

634
635 **28(17)** Eyes large, with a maximal diameter $>1/4$ th of the length of the head (HL_1), usually with
636 >14 ommatidia along their maximal diameter *B. oculus*

637 - Eyes small, with a maximal diameter of approximately $1/4$ th the length of HL_1 , typically with
638 <14 ommatidia along their maximal diameter 29

639
640 **29(28)** Metanotal groove absent, or, when present, shallow and narrower than the diameter of the
641 metathoracic spiracles (**Fig. 6.f2:** $A > B$)..... 30

642 - Metanotal groove deep and wider than the diameter of the metathoracic spiracles (**Fig. 6.f1:** $A \leq$
643 B .) 34

644

645 **30(29)** Head and thorax yellowish; gaster black or yellowish with a black spot, OI_2 usually >27

646 *B. pictus*

647 - Body of uniform color, OI_2 usually <25 **31**

648

649 **31(30)** Body yellowish, usually with a narrow mesonotum (MW ~ 16) and 8-9 ommatids along the

650 maximum diameter of the eye **32**

651 - Body brownish or dark brown, usually with a wide mesonotum (MW ~ 20 or more) and 10 or

652 more ommatids along the maximum diameter of the eye **33**

653

654 **32(31)** Scapes surpassing the posterior margin of the head by a length exceeding the maximal

655 diameter of the eye (**Fig. 5.d3**: $A < B$) *B. aphidicola*

656 -Scapes surpassing the posterior margin of the head by a length smaller than or equal to the maximal

657 diameter of the eye (**Fig. 5.d3**: $A \geq B$) *B. australis*

658

659 **33(31)** Scapes surpassing the posterior margin of the head by a length smaller than the maximal

660 diameter of the eye (**Fig. 5.d3**: $A > B$); usually with two erect hairs on the pronotum and two on

661 the mesonotum *B. patagonicus*

662 - Scapes surpassing the posterior margin of the head by a length approximately equal to the

663 maximal diameter of the eye (**Fig. 5.d3**: $A \approx B$); usually with more than two erect or decumbent

664 hairs on the pronotum and two erect hairs on the mesonotum *B. bruchi*

665

666 **34(29)** Legs and antennae with erect hairs; second segment of the antennal funiculus as long as or

667 longer than the first (**Fig. 5.g2**: $S_2 \geq S_1$) *B. gaucho*

668 - Legs and antennae with decumbent or appressed hairs; second segment of the antennal funiculus
669 shorter than the first (**Fig. 5.g1**: $S2 < S1$) **35**
670
671 **35(34)** Mesonotum not bulging dorsally above the pronotum in lateral view (**Fig. 6.b2**);
672 metathoracic spiracles low, not protruding dorsally (**Fig. 6.a2**) *B. musculus*
673 - Mesonotum bulging dorsally above the pronotum in lateral view (**Fig. 6.b1**); metathoracic
674 spiracles protruding slightly in lateral view but not tumiliform in shape (**Fig. 6.a3**) **36**
675
676 **36(35)** Head and thorax yellow or brown, gaster darker *B. coactus*
677 - Body uniform in color **37**
678
679 **37(36)** Head with dense decumbent pubescence (**Fig. 5.f1**) *B. tristis*
680 - Head with sparse decumbent pubescence (**Fig. 5.f2**) **38**
681
682 **38(37)** Mesonotum laterally extended and therefore oval in dorsal view (**Fig. 6.h1**); body light
683 brown *B. degener*
684 -Mesonotum almost circular in dorsal view (**Fig. 6.h2**); body dark brown or black
685 *B. gagates*
686
687 **39(1)** Mesosoma mostly smooth and shiny, except for longitudinal striations restricted to the
688 metapleura; body uniform light brown *B. micromegas*
689 -Mesosoma entirely covered with fine longitudinal striations; gaster darker than the rest of the
690 body *B. pilipes*
691

692 **Species accounts.**

693 *Brachymyrmex admotus* Mayr

694 (Fig. 7, supplementary material Fig. S1)

695 *Brachymyrmex admotus* Mayr, 1887: 523 (w.q.). **Lectotype worker** (NHMW:
696 USNMENT00757197) and **paralectotype workers, queen** (NHMW: USNMENT00757196,
697 00757198-00757200; **here designated**): 5 workers, 1 queen [examined]. **BRAZIL: Santa**
698 **Catharina**. Other relevant descriptions: Wheeler and Wheeler (1982: 178) (l.). See also: Santschi
699 (1923a: 669); Quirán (2005: 762).
700 =*Brachymyrmex longicornis* var. *immunis* Forel, 1908: 400 (w.q.m.). (MHNG:
701 USNMENT00757148): 2 workers [examined]. **BRAZIL: São Paulo**. See also: Forel (1911: 308);
702 Santschi (1923a: 668) **n. syn.**

703
704 **Additional material examined. ARGENTINA: Misiones:** Est. Ex. Loreto, A.A. Oglobin, 3
705 workers (NHMB: USNMENT00758065 - 00758067). **BRAZIL: Bahia:** Itacaré, -14.30917 -
706 39.01944, 26 June 1998, Santos, J.R.M. dos, 2 workers (CPDC: USNMENT00757769); Ituberá,
707 08 May 1994, 4815, J.H.C. Delabie, 3 workers (CPDC: USNMENT00757772); **Mato Grosso do**
708 **Sul:** 8 km SE Ponta Pora, 15 Oct. 1989, W.P. MacKay #12523, 2 workers (WEMC:
709 USNMENT00759009); **Minas Gerais:** Alfenas, 05 May 2011, 1 worker (ICN:
710 USNMENT00759050); Cristina, Luederwaldt, 9 workers (NHMB: USNMENT00758053,
711 00758059, 00758061); Cristina, MP17192, 2 workers (MZSP: USNMENT00757765, 00757819);
712 Cocais das Estrelas, -19.73333 -43.41667, 19-22 June 2007, D.L. Braga #5512, 1 worker (CPDC:
713 USNMENT00757768); Serra Caraça, 1380 m, Nov. 1961, Kloss, Lemko, 2713, Martins & Silva,
714 9 workers, 3 males (MCZC: USNMENT00757252, 00757253, 00757764); Viçosa, Mata do

715 Paraiso, Dec. 1993-1994, P.S.F. Ferreira, 3 workers (CPDC: USNMENT00757770); **Paraná:**
716 Antonina, Parque Estadual do Pauôco, -25.57597 -48.88875, 6-11 May 2002, R.R. Silva & B.H.
717 Dietz, 24 workers (ICN: MZSP016, 018, 019); Río Negro, Goeldi, 2 workers (MCZC:
718 USNMENT00757235); **Rio de Janeiro:** Reischensperger, 8 workers (NHMB:
719 USNMENT00758056-00758058); Goeldi, 1 worker (NHMB: USNMENT00758050); Floresta de
720 Tijuca, D. Federal, 16 Dec. 1959, C.A.C Seabra, 5 workers (MZSP: USNMENT00757766);
721 Itatiaia, 17 Oct. 1933, 1 worker (NHMB: USNMENT00758068); Petropolis 77 9, T. Borgmeier,
722 5 workers, 1 queen (MCZC: USNMENT00757233, 00757234, 00757236); **Santa Catarina:**
723 Blumenau, Reichensperger, 9 workers (NHMB: USNMENT00758055, 00758060, 00758064);
724 Blumenau, Rev PM Witte, 2 workers (NHMB: USNMENT00758063); Blumenau, Rev Wittz, 19
725 workers (NHMB: USNMENT00758051, 00758052, 00758062); Palhoça, PE Serra do Tabuleiro,
726 -27.74111 -48.69722, 02-10 June 2003, R.R. Silva, B.H. Dietz & A. Tavares, 25 workers (ICN:
727 MZP030, 031, 035, 040); São Bento do Sul, APA Rio Vermelho, -26.36417 -49.27111, 30 Mar.-
728 04 Apr. 2001, R.R Silva & Eberhardt, 27 workers (ICN: MZP043, 134, 137); São Bento do Sul,
729 APA Rio Vermelho, -26.36417 -42.27111, 30 Mar.-04 Apr. 2001, R.R. Silva & R.M. Feitosa, 5
730 workers (ICN: MZP044); **São Paulo:** Agudos, 24 Jan. 1955, W.S. Kempf leg 1337, 3 workers
731 (MZSP: USNMENT00757767); Barueri, n 297, 17 Dec. 1957, K. Lenko, 5 workers (MZSP:
732 USNMENT00757775); Iguape, EE Jureia-Itatins, Nucleo Rio Verde, -24.54417 -47.23556, 5-14
733 Mar. 2001, A.A. Tavares, 13 workers (ICN: MZP157, 158); Ipiranga Ihering, 4 workers
734 (MHNG); Ipiranga (x.60), Ihering, 2 workers (MHNG); Jardim Botânico, Agua Funda, wet
735 Forest, 08 Feb. 1967, W.L. Brown, 5 workers, 1 queen, 1 male (MCZC: USNMENT00757961,
736 00757771, 00757773, 00757774, CMOS00148, 00153); Jundiai, Serra Do Japi, 03 Jan. 2009, S.
737 Diniz, 4 workers (ICN: USNMENT00759039); Miracatu, Serra do Mar, Clube pesca & Cia, 04-
738 07 Sep. 2004, R.M. Feitosa, 11 workers (ICN: MZP092, 097); Picinguaba, PE Serra do Mar, -

739 23.33611 -44.83758, 30 Mar.-04 Apr. 2001, Brandão C.R.F. & Eq, 52 workers, 1 queen (ICN:
740 MZP060 - 062, 064); Picinguaba, PE Serra do Mar, -23.33611 -44.83758, 30 Mar.-04 Apr. 2001,
741 Brandão, Albuquerque & Silva, 15 workers (ICN: MZP063); Piedade, Floresta Atlantica
742 "Theomar", Mar 2010, G. Bieber, 1 worker (ICN: USNMENT00759040); Piedade, Floresta
743 Atlantica, Jurupará, Apr. 2009, G. Bieber, 1 worker (ICN: USNMENT00759041); Serra du
744 Cantareira, Horto Florestel, 20 Feb. 1967, R. Crozier, 9 workers (MCZC: USNMENT00757774,
745 CMOS000089, 000090); **PANAMA: Colon Province:** San Lorenzo Forest, 9-16 Feb. 2004,
746 Springate & Pinzon, 1 worker, (PSWC: USNMENT00757747). **PARAGUAY: Canindeyú:**
747 Reserva Natural, Bosque Mbaracayú, Jejuimi, -24.10000 -55.50421, 15 Aug. 1996, A. Wild
748 #AW0295, 3 workers (ALWC: USNMENT00757763).

749
750 **Diagnosis.** *Brachymyrmex admotus* morphologically resembles *B. bonariensis* **n. st.**, because
751 both species have long scapes, a conspicuous metanotal groove, a pair of thin erect hairs between
752 the metathoracic spiracles, and a gaster with scarce pubescence. However, *B. admotus* is usually
753 more uniform brownish in color, it has longer scapes (i.e. the scapes surpass the posterior
754 cephalic margin with a length of approximately 1.5× the maximal diameter of the eye) with
755 decumbent hairs, and its metathoracic spiracles are positioned more dorsally. *Brachymyrmex*
756 *admotus* also resembles *B. cavernicola* in having a pair of erect hairs between the dorsal
757 metathoracic spiracles, but these hairs are thinner in *B. admotus* and they are not darker in color
758 than the body.

759
760 *Lectotype measurements* (mm). HL₁ 0.51; HL₂ 0.35; HL₃ 0.12; HW 0.45; SL 0.49; EL 0.10; WL
761 0.49; PnL 0.14; PnW 0.31; ML 0.08; MW 0.18; *Indices* CI 88.46; SI₁ 108.70; SI₂ 138.89; OI₁
762 21.74; OI₂ 23.08.

763
764 *Paralectotypes measurements* (mm) (n=3). HL₁ 0.51-0.57; HL₂ 0.35-0.39; HL₃ 0.12-0.14; HW
765 0.45-0.49; SL 0.55-0.59; EL 0.10; WL 0.53-0.59; PnL 0.14-0.21; PnW 0.31-0.35; ML 0.08-0.12;
766 MW 0.18-0.21; *Indices* CI 86.21-92.59; SI₁ 112.00-121.74; SI₂ 140.00-155.60; OI₁ 20.00-21.74;
767 OI₂ 23.08-25.93.

768
769 *Additional material examined measurements* (mm) (n=16). HL₁ 0.46-0.57; HL₂ 0.30-0.43; HL₃
770 0.11-0.14; HW 0.43-0.51; SL 0.47-0.57; EL 0.09-0.13; WL 0.46-0.61; PnL 0.16-0.22; PnW 0.29-
771 0.34; ML 0.09-0.13; MW 0.17-0.21; *Indices* CI 87.72-96.6; SI₁ 105.26-120.00; SI₂ 131.91-
772 155.88; OI₁ 18.87-26.92; OI₂ 21.43-28.30.

773
774 **Description. Head.** Slightly longer than wide in full face view, with scattered appressed hairs
775 except for two frontal rows of erect hairs; posterior cephalic border slightly concave. Dorsum of
776 the head with sparse appressed pubescence. Clypeus with a rounded anterior margin and five
777 long, erect hairs of which a single, usually conspicuous apical hair is near the anterior margin,
778 two lateral hairs in medial position and two more near the toruli; other hairs on the clypeus are
779 markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin in
780 oblique anterodorsal view. Scapes extend beyond the posterior cephalic margin by a length of
781 ~1.5× the maximum eye diameter or more. The scapes typically have appressed, sometimes
782 decumbent, but never erect hairs. A single central ocellus is present, but sometimes
783 inconspicuous. Eyes are positioned on the cephalic midline and have 7-9 ommatidia along their
784 maximal diameter.

785 **Mesosoma.** Usually with two erect hairs on the pronotum and two on the mesonotum; sometimes
786 with additional suberect hairs on both. In lateral view, the mesonotum is not or slightly inflated

787 and it does not or only slightly bulge dorsally above the pronotum. Metanotal groove deep and
788 wider than the diameter of the metathoracic spiracles. Metathoracic spiracles fully dorsal and
789 slightly protruding, they are closer to the propodeal than to the mesometanotal suture, but not
790 touching any suture. Between the metathoracic spiracles two simple erect hairs are present, which
791 are shorter than those on the pronotum and mesonotum. Dorsum of the propodeum flat and
792 ~1/3th of the length of the propodeal slope. Propodeal spiracles circular, positioned ventrally of
793 the posterior propodeal margin slightly posterior of the middle of the propodeal slope. Legs with
794 appressed and scattered hairs. Petiole short and inclined forward.

795 **Gaster.** With scattered pubescence and scattered long suberect hairs.

796 **Color and sculpture.** Body overall smooth and shiny, except for the sometimes slightly imbricate
797 sculpture on the dorsum of the mesosoma; body typically uniform dark brown in color, although
798 in some specimens the head and mesosoma may be light brownish and the gaster darker brown.

799

800 **Distribution (Supplementary material Fig, S1).** *Brachymyrmex admotus* is mainly known
801 from Argentina, Brazil, and Paraguay, but we also examined a specimen from Panamá that
802 appears to belong to this species.

803

804 **Biology.** This species makes nests in rotting wood [USNMENT00757763] and it has been
805 collected from below rocks [USNMENT00759009].

806

807 **Remarks.** We synonymize *B. longicornis* var. *immunis* Forel, 1908 under *B. admotus*, because
808 the workers have all morphological characteristics of *B. admotus*, although they are slightly
809 larger and of somewhat darker color. Forel (1908) did not specify a holotype for *B. longicornis*
810 var. *immunis* but considered it to differ from *B. longicornis* in color, size and the position of the

811 metathoracic spiracles. The similarity between *B. admotus* and *B. longicornis* var. *immunis* was
812 previously pointed out by Santschi (1923a) and Quirán (2005), who suggested that the main
813 difference between both relates to the size and position of the metathoracic spiracles. However,
814 these traits appear to be variable among populations and we have not found consistent differences
815 between both taxa. For example, Santschi's collection (MHNB) includes syntype specimens of *B.*
816 *longicornis* var. *immunis* that match the diagnostic traits of *B. admotus* entirely. Hence,
817 synonymization seems appropriate.
818 Quirán (2005) indicated that *B. admotus* has 3 small ocelli, but in the samples that we studied we
819 only observed one central ocellus, although this trait is inconspicuous.

820

821

822 *Brachymyrmex antennatus* Santschi

823 (Fig. 8, supplementary material Fig. S2)

824 *Brachymyrmex (Brysha) antennatus* Santschi, 1929: 312 (w.q.). **Lectotype worker** (NHMB:
825 USNMENT00758161) and **paralectotype worker, queen** (NHMB: USNMENT00758161; **here**
826 **designated**): 2 workers, 1 queen (without USNMENT number) [examined]. **Brazil:** Paraná, Rio
827 Negro.

828

829 **Additional material examined. ARGENTINA:** Misiones: loc. IGUAZU: PNI, Garganta, 28
830 Feb.-03 Mar. 2009, -25.70323 -54.42992, P.E. Hanisch & C.I Paris, Bait T4S10a, 1 worker
831 (MACN-Bar-Ins-3120). **BRAZIL: Ceará:** Meruoca (Baixa, Gnd), ±970 m, -3.550 -40.467, July
832 2003, Y. Quinet, 3 workers (CPDC: USNMENT00757781). **São Paulo:** Ubatuba, P.E. Serra do
833 Mar, N. Picinguaba, -23.297 -44.789, 800 m, 03-14 Mar. 2008, armadilha subterrânea #4, F.A.
834 Esteves & R.M. Feitosa, 3 workers (MZSP: USNMENT00757777, 00757591). **COLOMBIA:**

835 **Quindío:** Génova, Vereda El Cedral, Finca Buenos Aires, 1600 m, 4.235 -75.775, 26 Oct. 1999,
836 E. Gonzales & J. Sossa, 1 worker (IAvH-E 74166). **ECUADOR: Napo:** Carlos Julio Arosemena
837 Tola, -1.150 -77.883, 500 m, 11 Dec. 2003. A. L. Wild #AW2300, 1 worker (ALWC:
838 USNMENT00757782). **FRENCH GUIANA:** Petit, Satn Basse vie, June-July 2000, S. Durou, J.
839 Delabie, A. Dejean & A. Gibernau, 2 workers (CPDC: USNMENT00757779, 00757780).
840 **PERU: Madre de Dios:** Reserva Nacional Tambopata, Centro Sachacavayoc, -12.85583 -
841 69.36194, 210 m, 19-31 July 2012, 2 workers (ICN: USNMENT00757627). Prov. Tambopata,
842 Cuzco Amazónico, 15 km NE Puerto Maldonado, 24 June 1989, 200 m, S.P. Cover & J.E. Tobin,
843 CA-115, 1 worker, 1 queen (MCZC: USNMENT00757630). **SURINAME:** Maripahewel, IX-
844 1959 14-XX-29 I.v.d. Drift, 1 worker (MZSP: USNMENT00757778).

845
846 **Diagnosis.** *Brachymyrmex antennatus* morphologically resembles *B. gaucho*, because both
847 species have legs and antennae with suberect hairs and both have an antennal funiculus with the
848 second segment as long as or longer than the first. However, they differ from one another because
849 *B. antennatus* has abundant, suberect hairs on the dorsum of the head and mesosoma, its gaster
850 has dense pubescence and its body is lighter and yellowish. *Brachymyrmex antennatus* also
851 resembles *B. cavernicola* in having suberect hairs on the mesosoma that are generally darker in
852 color than the tegument, but *B. antennatus* has a more elongated head, a longer second segment
853 of the antennal funiculus, as mentioned above, thinner hair on its body and denser pubescence on
854 the gaster.

855
856 *Lectotype and paralectotype measurements* (mm) (n=2). HL₁ 0.68-0.71; HL₂ n.a.; HL₃ 0.19-0.23;
857 HW 0.68-0.71; SL 0.68-0.80; EL 0.15; WL 0.87; PnL 0.31-0.33; PnW 0.45; ML 0.21; MW 0.27;
858 *Indices* CI 95.50-95.80; SI₁ 100.00-123.00; SI₂ n.a.; OI₁ 22.22-23.25; OI₂ 27.94-31.41.

859
860 *Additional material examined measurements* (mm) (n=5). HL₁ 0.54-0.60; HL₂ 0.38-0.41; HL₃
861 0.12-0.16; HW 0.54-0.58; SL 0.52-0.63; EL 0.09-0.14; WL 0.60-0.71; PnL 0.15-0.22; PnW 0.35-
862 0.40; ML 0.14-0.18; MW 0.20-0.24; *Indices* CI 92.31-100.00; SI₁ 93.33-130.23; SI₂ 130.23-
863 155.56; OI₁ 15.38-26.67; OI₂ 21.67-29.03.

864
865 **Description. Head.** Longer than wide in full face view; posterior cephalic border concave.
866 Dorsum of the head with scattered decumbent hairs. Clypeus with a rounded anterior margin and
867 five long, erect hairs of which a single, usually conspicuous apical hair is near the anterior
868 margin, two lateral hairs in medial position and two more near the toruli; other hairs on the
869 clypeus are conspicuously shorter and appressed or decumbent. Toruli surpassing the posterior
870 clypeal margin (in oblique anterodorsal view). Scapes surpass the posterior cephalic margin by a
871 length of 1.5× the maximum eye diameter or more. The second segment of the antennal funiculus
872 is as long as the first or longer. The scapes typically have suberect and erect hairs. Three ocelli
873 present. Eyes are positioned on the cephalic midline and have 7-9 ommatidia along their maximal
874 diameter.

875 **Mesosoma.** With conspicuous, thin erect hairs of darker color than the tegument. Pronotum
876 anteroposteriorly elongated. The mesonotum is slightly antero-posteriorly inclined, weakly
877 inflated, and it does not bulge dorsally above the pronotum in lateral view. Metanotal groove
878 deep and wider than the diameter of the metathoracic spiracles. Metathoracic spiracles in
879 dorsolateral position and slightly protruding, closer to the propodeal than to the mesometanotal
880 suture, but not touching any suture. Dorsum of propodeum flat and equal in length to the
881 propodeal slope. Propodeal spiracles circular, situated ventral of the posterior propodeal margin.
882 Legs with suberect and erect hairs. Petiole short and inclined forward.

883 **Gaster.** With dense pubescence and scattered long suberect hairs, mainly at the edges of the
884 segments.

885 **Color and sculpture.** Body typically uniformly light brown, although some specimens may be
886 light brownish with the head and gaster darker brown.

887

888 **Distribution (Supplementary material Fig. S2).** Known from Argentina, Brazil, Colombia,
889 Ecuador, French Guiana, Perú and Suriname.

890

891 **Biology.** Unknown.

892

893 **Remarks.** The ant at the top of pin USNMENT00758161 is designated here as lectotype and the
894 one immediately below as paralectotype. Santschi's collection (MHNB) contains three additional
895 pins with four workers from the same locality but they are not considered to be part of the type
896 collection as they have no type label. Santschi (1929) described the queen from a sample that
897 does not contain any workers but expressed confidence that it belongs to *B. antennatus*; the issue
898 may require verification from independent material. Substantial variation exists in the body size
899 of workers of *B. antennatus* from various locations that were studied here, and the cause of this
900 variation remains uncertain.

901

902

903 ***Brachymyrmex aphidicola* Forel**

904 **(Fig. 9, supplementary material Fig. S3)**

905 *Brachymyrmex heeri* var. *aphidicola* Forel, 1909: 263 (w.). **Lectotype worker** (MHNG:

906 USNMENT00757130) and **paralectotype workers** (MHNG: USNMENT00757129, 00757130,

907 00758121-00718123; **here designated**): 11 workers [examined]. **PARAGUAY**: San Bernardino.
908 Other relevant descriptions: Forel (1912a: 62) (q.). (MHNG: USNMENT00757128): 1 queen.
909 **BRAZIL: Santa Catarina**: Blumenau. Raised to species: Wild (2007: 43).
910 = *B. heeri* var. *fallax* Santschi, 1923a: 665 (w.). (NHMB: USNMENT00757697): 1 worker
911 [examined]. **PARAGUAY**. Junior synonym of *B. aphidicola*: Wild (2007: 43).
912 = *B. longicornis* var. *hemiops* Santschi 1923a: 668 (w.). (NHMB: USNMENT00757188-
913 00757190) 11 workers, 3 queens [examined]. **BRAZIL**: São Paulo, Ypiranga. **n. syn.**
914
915 **Additional material examined. ARGENTINA**: Entre Ríos: 8.63 km W Concordia, -31.42048 -
916 58.11700, 16 m, 27 Dec. 2007, W. & E. MacKay, 1 worker, 1 male (WEMC:
917 USNMENT00757975). **Misiones**: Parque Provincial Cañadón de Profundidad, -27.56020 -
918 55.70988, 160 m, 29 Dec. 2007, W. & E. MacKay leg #22710, #22711, #22712, #22724, #22732,
919 10 workers (WEMC: USNMENT00757617, 00757897, 00757901, 00757924, 00757925,
920 00757929, 00757930, 00757956, 00757992). **BOLIVIA: Santa Cruz**: Parque Nacional Noel
921 Kempff, Mercado, -18.800 -60.383, 700 m, 04 Dec. 1993, P.S. Ward #12285-46, 2 workers, 1
922 queen (PSWC: USNMENT00757910). **BRAZIL: Amazonas**: 61 km N Manaus, om Caracá Rd,
923 “caatinga”, 10 June 1972, W.L. & D.E. Brown, 3 workers (MCZC: UNSMENT00757619).
924 **Goias**: Anapolis, 12 Feb. 1958, W. Kempf, 2 workers (MZSP: USNMENT00757921). Ouro
925 Verde, Faz Boa Vista, -16.29847 -49.21183, 01-07 Aug. 2005, R.R. Silva & R.M. Feitosa, 5
926 workers (ICN: MZSP123). **Mato Grosso**: Chapada dos Guimarães, -15.43333 -55.44874, 740 m,
927 03 Sep. 1996, P.S. Ward leg #13203-7, 3 workers (PSWC: USNMENT00757911). **Mato Grosso**
928 **du Sud**: 24 km W Campo Grande, 07 Oct. 1989, W. MacKay, 2 workers (WEMC:
929 USNMENT00758000). 48 km E Campo Grande, 12 Oct. 1989, S. Porter #12791, 2 workers
930 (WEMC: USNMENT00759011). 8 km SE Punta Bora, 15 Oct. 1989, W.P. MacKay #12508, 2

931 workers (WEMC: USNMENT00759003). Río de Alegría, 17 Oct. 1989, W.P. MacKay #12950, 2
932 workers (WEMC: USNMENT00759022). **Pará:** Melgaço, Caxiuanã-ECFPn, 27 June-03 Dec.
933 2001, I. Andrade, 5 workers (MPEG: USNMENT00757674, 00757927, 00758030, 00759030).
934 Melgaço, Caxiuanã-ECFPn, -1.78155 -51.59758, 30 Oct. 2003, A.Y. Harada, E.P. Fagundes,
935 C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato, 2 workers (MPEG:
936 AYH112, 127). Serra Norte, Calderião, 20 Oct. 1980, 2 workers (MPEG:
937 MPEG_HYM11505158, USNMENT00757902). **Rio de Janeiro:** Teresópolis, P.N. Serra dos
938 Orgãos, -22.45333 -42.99806, 23-28 Nov. 1999, Dietz, Silva & Rocha, 8 workers (ICN:
939 MZSP130). **Rondônia:** Ouro Preto do Oeste, 03 Apr. 1985, Linha 212 N°0375, 339, W. França,
940 4 workers (MPEG: USNMENT00757899,00757914, 00757915, 00758999,). Ouro Preto do
941 Oeste, 04 May 1985, Linha 212 N°0375, 0413, W. França, 3 workers (MPEG:
942 USNMENT00757913, 00757938, 00758038). Ouro Preto do Oeste, 25 Mar. 1985,
943 ResINPA0035, J. Dias, 2 workers (MPEG: USNMENT00757914, 00757936). **São Paulo:**
944 Ipiranga, 2371, 2 workers (MZSP: USNMENT00757926]. Itirapina, Dec. 2008, D.P. Silva, 1
945 worker (MPEG: AYH008). **COLOMBIA: Cundinamarca:** Bogotá-Villavicencio Km 88
946 (Susumuko), 1100 m, 28 June 1976, W.L. & D.E. Brown, 1 worker, 1 queen (MCZC:
947 USNMENT00757746). Caqueza, 29 Dec. 1975, W. & E. MacKay #945, 2 workers (WEMC:
948 USNMENT00757686). **Huila:** 4 km NE Rivera, 30 Dec. 1986, W. & E. MacKay, 3 workers
949 (WEMC: USNMENT00757903). La Vega, A280, 14-17 Jul 1975, W. MacKay, 1 worker, 1 male
950 (WEMC: USNMENT00757912). **Magdalena:** 4 km San Pedro, 10.95 -74.05, 550 m, 14 Aug.
951 1985, P.S. Ward #17912-36, 3 workers (PSWC: USNMENT00757585). **Meta:** San Juan de
952 Arama, RNN La Macarena, Caño La Curía, 580 m, 13 July 1992, Est. U. Nacional, 1 worker
953 (ICN: USNMENT00758035). **Tolima:** Mendez, 15 Nov. 1995, F. Fernández, 1 worker (IAvH:
954 USNMENT00759058). **Valle del Cauca:** Medio Calima, 24 June 1989, E. MacKay #11746

955 (WEMC: USNMENT00758041). **COSTA RICA: Heredia:** Estación biológica La Selva, 10.417
956 -84.000, 50 m, 21 Oct. 1991, J. Longino #3126-s, 1 worker, 1 queen (JTLC:
957 INBIOCRI001238064). **ECUADOR: Loja:** Estación San Francisco, 2200 m, 14 Sep. 2011, 14
958 workers (ICN: USNMENT00759036, 00759037). Estación San Francisco, 17 sep. 2011, 2
959 workers (ICN: USNMENT00759034). **Napo:** 11 km SE Consaga, -0.66667 -77.80000, 1640 m,
960 09 Dec. 2003, A.L. Wild #AW2263, 4 workers (ALWC: USNMENT00757586, 00757928).
961 **GUATEMALA:** Alta Vera Paz, Parque Nacional Las Victorias, 15.47492 -90.37528, 206 m, 18
962 July 2004, W. & E. MacKay, 1 worker (WEMC: USNMENT00758018). **GUYANA: Karto:** Pt.
963 Mazaruni-Potaru Dist. J. Weintraub, 2 workers, 1 queen (MCZC: USNMENT00757931).
964 **MEXICO: Guanajuato:** Highway 57, Km 306, Rancho Jardin, 10 Aug. 1965, Cornell
965 University, 2 workers, 1 queen (MCZC: USNMENT00759002). Yuriria, 03 Feb. 1964, P. Reyes
966 C. & H. Romero, 1 worker (MZSP: USNMENT00757616). **NICARAGUA: Río San Juan:**
967 Bartola, 8 km SE El Castillo, 10.97303 -84.33897, 47 m, 12 July 2003, W. & E. MacKay #20187,
968 2 workers (WEMC: USNMENT00758029). **PANAMA: San Blas:** Nusegandi, 08 June 1992,
969 L.E. Tennant, 1 worker, 1 queen (MZSP: USNMENT00757923). **PARAGUAY: Amambay:**
970 Parque Nacional Cerro Corá, -22.650 -56.017, 13 May 1997, A. Wild #AW0563, 1 worker
971 (ALWC: USNMENT00757625). **Canindeyu:** Reserva Natural del Bosque, Mbaracayù, Jejuimi, -
972 24.1 -55.5, 19 Sep. 1996, A. Wild #AW0563, 6 workers (ALWC: USNMENT00757584,
973 00757895). Reserva Natural del Bosque, Mbaracayù, Jejuimi, -24.1 -55.5, 16-23 May 1996,
974 A.C.F. Costa, 1 worker (ALWC: USNMENT00757868). Reserva Natural del Bosque,
975 Mbaracayù, Jejuimi, -24.1 -55.5, 11 Oct 1996, A. Wild #AW0334, 1 worker (ALWC:
976 USNMENT00757893). Reserva Natural del Bosque, Mbaracayù, Jejuimi, -24.1 -55.5, 28 Jan.
977 1997, A. Wild #AW384, 3 workers (ALWC: USNMENT00757894). Reserva Natural del
978 Bosque, Mbaracayù, Jejuimi, -24.1 -55.5, 12 Mar. 1997, A. Wild #AW0490, 3 workers (ALWC:

979 USNMENT00757896). **PERU: Huanuco:** 42 km E. Tingo Maria, 1100 m, 10 Dec. 1954, 1
980 worker (CASC: CASENT0196020). **Madre de Dios:** Reserva Nacional Tambopata, Centro
981 Sachavacayoc, -12.85583 -69.36194, 19-31 July 2012, Curso de hormigas, 7 workers (ICN:
982 CAB-120725-1). Reserva Nacional Tambopata, Centro Sachavacayoc, casa camping, -12.85583 -
983 69.36194, 198 m, 26 July 2012, GSNMBU, 1 worker (ICN: USNMENT00757613). **USA:**
984 **Lousiana:** East Baton Rouge Par. Baton Rouge, Kennilworth & Perkins Rd. BREC Perkins Park,
985 03 Apr. 2003, S.T. Dash, 1 worker (WEMC: USNMENT00759023). **VENEZUELA: Bolivar:**
986 Canaima, Orchid Is, 14 Oct. 1988, W. MacKay #11159, 1 worker (WEMC:
987 USNMENT00757906).

988
989 **Diagnosis.** *Brachymyrmex aphidicola* is morphologically similar to *B. australis*, *B. minutus* and
990 *B. termitophilus*, because all of them typically have smooth and shiny yellowish bodies, their
991 mesonotum does not bulge dorsally above the pronotum, their eyes are positioned on the cephalic
992 midline, and the metanotal groove is either absent or narrower than the diameter of the
993 metathoracic spiracles. However, *B. aphidicola* differs from *B. australis* by having scapes that
994 surpass the posterior margin of the head by a length longer than the maximal diameter of the eye;
995 from *B. minutus* by having a well-differentiated mesometanotal suture and by the presence of two
996 erect hairs on the pronotum and two on the mesonotum; and from *B. termitophilus* by having
997 scattered pubescence on the gaster.

998
999 *Lectotype measurements* (mm). HL₁ 0.41; HL₂ 0.29; HL₃ 0.10; HW 0.37; SL 0.39; EL 0.10; WL
1000 0.41; PnL 0.10; PnW 0.25; ML 0.08; MW 0.18; *Indices* CI 90.48; SI₁ 105.26; SI₂ 133.33; OI₁
1001 26.32; OI₂ 23.81.

1002

1003 *Paralectotype measurements* (mm) (n=4). HL₁ 0.43-0.45; HL₂ 0.27-0.31; HL₃ 0.10; HW 0.37; SL
1004 0.39-0.41; EL 0.10; WL 0.41-0.43; PnL 0.14-0.17; PnW 0.23-0.29; ML 0.08-0.10; MW 0.16-
1005 0.18; *Indices* CI 82.61-86.36; SI₁ 105.26-110.53; SI₂ 125.00-142.86; OI₁ 26.32; OI₂ 21.74-22.73.

1006
1007 *Additional material examined measurements* (mm) (n=20). HL₁ 0.36-0.55; HL₂ 0.26-0.37; HL₃
1008 0.08-0.13; HW 0.33-0.51; SL 0.32-0.54; EL 0.09-0.12; WL 0.35-0.58; PnL 0.09-0.18; PnW 0.24-
1009 0.36; ML 0.07-0.12; MW 0.14-0.20; *Indices* CI 84.21-95.65; SI₁ 94.74-112.5; SI₂ 117.14-157.89;
1010 OI₁ 21.82-28.57; OI₂ 20.62-28.89.

1011
1012 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin flat or
1013 slightly concave. Dorsum of the head with scattered appressed hairs. Clypeus with a rounded
1014 anterior margin and five long, erect hairs of which a single, usually conspicuous hair is near the
1015 anterior margin, two hairs are in mediolateral position and two more near the toruli; other hairs
1016 on the clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior
1017 clypeal margin in oblique anterodorsal view. The scapes surpass the posterior margin of the head
1018 by a length larger than the maximal diameter of the eye, and typically bear appressed, sometimes
1019 decumbent, but never erect hairs. Three ocelli usually present, but sometimes inconspicuous.
1020 Eyes are positioned on the cephalic midline and have 7-10 ommatidia along their maximal
1021 diameter.

1022 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum. In lateral
1023 view the mesonotum is not or weakly inflated and does not bulge dorsally above the pronotum.
1024 Metanotal groove absent or shallow and narrower than the diameter of the metathoracic spiracles.
1025 Metathoracic spiracles in dorsolateral position, not protruding, and usually touching the
1026 propodeal suture. Dorsum of propodeum slightly convex and ~1/3th of the length of the

1027 propodeal slope. Propodeal spiracles circular, positioned ventrally of the posterior propodeal
1028 margin, and slightly posterior of the middle of the propodeal slope. Legs with appressed and
1029 scattered hairs. Petiole short and inclined forward.

1030 **Gaster.** With scattered pubescence and scattered long suberect hairs, especially along the
1031 posterior edges of the segments.

1032 **Color and sculpture.** Body smooth and shiny, yellowish.

1033
1034 **Distribution (Supplementary material Fig. S3).** *Brachymyrmex aphidicola* is widely
1035 distributed and known from Argentina, the Bermudas, Bolivia, Brazil, Colombia, Costa Rica,
1036 Ecuador, Guatemala, Guyana, Mexico, Nicaragua, Panama, Paraguay, Peru, the United States, and
1037 Venezuela.

1038
1039 **Biology.** Specimens of this species have been found under stones, in rotten wood, on epiphytes
1040 (USNMENT00757619), and on *Conostegia setosa* (USNMENT00757923). *Brachymyrmex*
1041 *aphidicola* nests underground or in organic litter, and it appears to be abundant in Paraguayan
1042 forests (Wild, 2007).

1043
1044 **Remarks.** Some specimens from Argentina have expanded gasters and Forel (1912a) highlighted
1045 a worker identified as *B. aphidicola* from Santa Catharina (Brazil) that also has a somewhat
1046 expanded gaster, but this specimen has not been studied and its identification remains to be
1047 confirmed. The original description of Forel (1909) indicates *B. aphidicola* to occur in both
1048 Paraguay and the Bermudas, however, a type locality is not designated. In the type series of
1049 Forel's collection (NHMG) only specimens from Paraguay are present. Nevertheless, Santschi's
1050 collection (NHMB) contains a decapitated specimen from Bermudas that is labeled as the type of

1051 *B. aphidicola*. Given this complication, only the specimens from Forel's collection are designated
1052 here as lectotype and paralectotypes.

1053 We concur with Wild (2007) that *B. heeri* var. *fallax* is a junior synonym of *B. aphidicola*. The
1054 workers of the type series of this variation have all the diagnostic characteristics of *B. aphidicola*.
1055 The description of *B. longicornis* var. *hemiops* (Santschi, 1923a) only specifies color and the
1056 smaller size of the body and eyes of this variation in comparison to *B. longicornis*, however,
1057 detailed study of the syntype renders it indistinguishable from *B. aphidicola*.

1058

1059

1060 ***Brachymyrmex attenuatus* Santschi NEW STATUS**

1061 **(Fig. 10, supplementary material Fig. S4)**

1062 *Brachymyrmex luederwaldti* st. *attenuatus* Santschi, 1929: 310 (w.). **Lectotype worker** (NHMB:
1063 USNMENT00757177) and **Paralectotype worker** (NHMB: USNMENT00757177; **here**
1064 **designated**) 2 workers [examined]. **BRAZIL**, Santa Catarina, Blumenau.

1065

1066 **Diagnosis.** *Brachymyrmex attenuatus* **n. st.** morphologically resembles *Brachymyrmex degener*,
1067 because both have long scapes that extend beyond the posterior margin of the head, they have
1068 faint sculpture on the mesosomal dorsum, and dorsally positioned, slightly protruding
1069 metathoracic spiracles. *Brachymyrmex attenuatus* **n. st.** differs from *B. degener*, however, by
1070 having a gaster with dense pubescence.

1071

1072 *Lectotype worker measurements* (mm) HL₁ 0.47; HL₂ 0.28; HL₃ 0.11; HW 0.43; SL n.a.; EL
1073 0.12; WL 0.52; PnL 0.09; PnW 0.31; ML 0.12; MW 0.21; *Indices* CI 90.74; SI₁ n.a; SI₂ n.a; OI₁
1074 28.57; OI₂ 23.15.

1075
1076 *Paralectotype worker measurements* (mm) HL₁ 0.43; HL₂ 0.31; HL₃ 0.11; HW 0.39; SL 0.45; EL
1077 0.13; WL 0.46; PnL 0.14; PnW 0.29; ML 0.11; MW 0.15; *Indices* CI 91.84; SI₁ 113.33; SI₂
1078 145.71; OI₁ 33.33; OI₂ 25.51.

1079
1080 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
1081 concave. Dorsum of head with scattered appressed hairs. Clypeus with a rounded anterior margin
1082 and five long, erect hairs of which a single, usually conspicuous hair is near the anterior margin,
1083 two hairs are in mediolateral position and two more near the toruli; other hairs on the clypeus are
1084 substantially shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin
1085 in oblique anterodorsal view. The scapes extend beyond the posterior cephalic margin by a length
1086 approximately equal to the maximum diameter of the eye (and not more than 1.5× this diameter),
1087 and have decumbent hairs. A single central ocellus seems to be present but is inconspicuous.
1088 Eyes are positioned on the cephalic midline and have 7-9 ommatidia along their maximal
1089 diameter.

1090 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum,
1091 sometimes with additional suberect hairs, mainly on pronotum. In lateral view, the mesonotum is
1092 inflated, but it does not bulge dorsally above the pronotum. Metanotal groove deep and wider
1093 than the diameter of the metathoracic spiracles. Metathoracic spiracles fully dorsal in position,
1094 slightly protruding and not touching the mesometanotal or propodeal sutures. Dorsum of
1095 propodeum slightly convex and shorter than the propodeal slope. Propodeal spiracles circular,
1096 positioned ventrally of the posterior propodeal margin, and slightly posteriorly of the middle of
1097 the propodeal slope. Legs with appressed and scattered hairs. Petiole short and inclined forward.
1098 **Gaster.** With appressed dense pubescence and several scattered long erect hairs.

1099 **Color and sculpture.** Body overall smooth and shiny, with faint sculpture on mesosomal dorsum.

1100 Body uniformly light or dark brownish, but the legs and antennae are yellowish.

1101

1102 **Distribution (Supplementary material Fig. S4).** *Brachymyrmex attenuatus* is currently only
1103 known from Brazil.

1104

1105 **Biology.** Unknown.

1106

1107 **Remarks.** Here we designate the lectotype as the specimen closest to the pin

1108 (USNMENT00757177); the paralectotype has lighter brownish color in comparison with the

1109 lectotype. This species was described by Santschi (1929) as a subspecies of *B. luederwaldti* that

1110 has a smaller body size in comparison with *B. luederwaldti*. Additionally, *B. attenuatus* has

1111 weaker sculpture, a shinier body, especially on pronotum, a more concave posterior cephalic

1112 border, smaller eyes and a more convex mesonotum than *B. luederwaldti*. All these

1113 characteristics are somewhat subjective, because they represent differences in intensity rather

1114 than state and as such it is difficult to determine clear boundaries. A more marked difference is

1115 the presence of pubescence on the gaster, which is clearly present in *B. attenatus n. st.*, but absent

1116 in *B. luederwaldti*. The presence or absence of pubescence is an important trait to delimit other

1117 *Brachymyrmex* species, and hence we raise *B. attenatus n. st.* to species level.

1118

1119

1120 *Brachymyrmex australis* Forel

1121 (Fig. 11, supplementary material Fig. S5)

1122

1123 *Brachymyrmex minutus* r. *australis* Forel, 1901b: 302 (w.). **Lectotype worker** (MHNG:
1124 USNMENT00757156) and **paralectotype worker** (MHNG: USNMENT00758102; **here**
1125 **designated**): 2 workers [examined]. **BRAZIL**, Rio Grande do sul, Pelotas. Raised to species:
1126 Santschi (1922: 260). See also: Santschi (1923a: 662).
1127 = *Brachymyrmex australis* var. *curta* Santschi, 1922: 260 (w.q.m.). (NHMB:
1128 USNMENT00757700 - 00757703, 00758069 - 00758071): 17 workers, 2 queens, 7 males
1129 [examined]. **ARGENTINA**: Cordoba, Alta Gracia [Also described as a new variety in Santschi
1130 (1923a: 663)]. **n. syn.**
1131 = *Brachymyrmex longicornis* Forel, 1907: 9 (w.). (MHNG: USNMENT00757144): 2 workers
1132 [examined]. **BRAZIL**: Porto Alegre. Other relevant descriptions: Forel (1912a: 62) (q.).
1133 (MHNG: USNMENT00757145): 1 queen [examined]. **BRAZIL**: São Paulo. **n. syn.**
1134
1135 **Additional material examined. ARGENTINA: Santa Cruz**: O. Bondensköld, 3 workers
1136 (MCZC: USNMENT00759000). **Tucumán**: 11 km N Tafí Viejo, -26.63333 -65.23333, 820 m,
1137 01 Feb. 1995, P.S. Ward #12826-25, 3 workers (PSWC: USNMENT00757628). **BAHAMAS**:
1138 Exumas: unnamed cay, 175 m N of NW tips of Obrien's Cay, 05 May 1995, J. W. Morrison 321-
1139 92, 2 workers (PSWC: USNMENT00758991). **BRAZIL: Bahia**: Ilheus, CEPEC, Antonio 455E,
1140 2 workers, 2 queens (CPDC: USNMENT00757922). Lençóis, Chap. Diamantina, -12.55 -41.38,
1141 25 Mar. 2001, Santos, J.R.M. dos, 2 workers, 1 queen (CPDC: USNMENT00757909). **Goiás**:
1142 Ouro verde, Faz Boa Vista, -16.29847 -49.21183, 01-07 July 2005, R.R. Silva & R.M. Feitosa, 4
1143 workers (ICN: MZSP122). **Minas Gerais**: Alfenas, Porto, 06 Oct. 2011, I.A. Dos Santos, 6
1144 workers (ICN: USNMENT00759048, 00759049). **Pará**: Melgaço, Caxiuanã, ECFPn, -1.73584 -
1145 51.48762, II: transecto (4-600), 23-25 Oct. 2005, Equipe A.Y. Harada, 3 workers (MPEG:
1146 AYH036). **Rio de Janeiro**: Teresópolis, P.N. Serra dos Orgãos, -22.45333 -42.99806, 23-28

1147 Nov. 1999, Dietz, Silva & Rocha, 6 workers (ICN: MZSP130). **Santa Catarina:** São Bento do
1148 Sul, APA Rio Vermelho, -26.36417 -42.99806, 30 Mar.–04 Apr. 2001, R. Silva & Eberhardt, 5
1149 workers (ICN: MZSP134 135). **São Paulo:** Ilha da Vitória, 16-27 Mar. 1964, Exp. Dep. Zool.
1150 3592, 5 workers, 1 queen (MCZC: USNMENT00757932); Itirapina, 10 Feb. 2009, S. Sendoya,
1151 20 workers (ICN: USNMENT00759046); Jundiá, Sierra Do Japi, Apr. 2009, S. Diniz, 3 workers
1152 (ICN: USNMENT00759043); Piedade, Floresta Atlantica, "Cristo", Mar. 2010, G. Bieber, 3
1153 workers (ICN: USNMENT00759045); Tapirai, -24.03208 -47.46556, 08-14 Jan. 2001, R. Silva
1154 & Eberhard, 4 workers (ICN: MZSP170). **COLOMBIA: Bolivar:** Zambrano, Hacienda
1155 Monterrey, 9.617 -74.900, 9-75 m, 04 Aug. 1992, A. Molano, 3 workers (ICN:
1156 USNMENT00757898). **Caldas:** Municipio Aranzazu, Vereda Alegrias, Finca Betania, La
1157 Esperanza, 5.29811 -75.49047, 1990 m, L.E. Franco & J. Cruz, 2 workers (IAvH: IAvH27305);
1158 Municipio Aranzazu, Vereda Alegrias, Finca Villa Rosita, 5.30603 -75.48492, 1825 m, 06-08
1159 Aug. 2003, L.E. Franco & J. Cruz, 1 worker (IAvH: IAvH25467). **Caquetá:** PNN Serranía de
1160 Chiribiquete, Cuñané-Anuí, 26 Feb. 2001, 2 workers (IAvH: IAvH-E71471). **Cauca:** El
1161 Hortigal, Holanda, Mar. 2002, Valderrama, 1 worker (ICN: USNMENT00757937).
1162 **Cundinamarca:** Fusagasugá, 08 Dec. 1975, W. & E. MacKay, 2 workers (WEMC:
1163 USNMENT00757907). **Guajira:** Serrania de Macuira, 6-8 km S Nazareth, 70-200 m, 13 June
1164 1957, W.L. Brown & Kugler, 2 workers (IAvH: IAvH-E74171). **Huila:** 21 Km W La Plata
1165 Gallego, 03 Jan. 1984, W.P. MacKay #7153, 6 workers (WEMC: USNMENT00757623,
1166 00757624, 00759014); Neiva, 05 Dec 1975, W. & E. MacKay, 2 workers (WEMC:
1167 USNMENT00757620). **Magdalena:** PNN Tayrona, Cañaveral, 11.33 -74.03, 30 m, 20-27 Apr.
1168 2000, C. Sarmiento, 1 worker (IAvH: USNMENT00759056). **Meta and Cundinamarca**
1169 **border:** 28 Dec. 1975, W. & E. Mackay, 4 workers (WEMC: USNMENT00757917, 00757939).
1170 **Meta:** Puerto Gaitán, 21 Dec. 1975, W. & E. MacKay #783, 2 workers (WEMC:

1171 USNMENT00757672). **Quindío:** Buenavista, Vereda El Infierno, Finca Guadalajara, 4.3767 -75.
1172 7694, 1160 m, 16 Nov. 1999, E. Gonzalez, 2 workers (IAvH: IAvH-E74165); Municipio
1173 Filandia, Vereda Cruces, Finca Los Micos, 4.70424 75.65917, 12-13 July 2002, E. Jimenez &
1174 L.E. Franco, 1 worker (IAvH: IAvH27232). **Risaralda:** Apia La Felisa, Cafetal de sol (S-I), 5.13
1175 -75.95, 1480 m, 29 Oct. 2001, 1 worker (IAvH: IAvH-E74174). **Valle del Cauca:** Dagua, 07 Jan.
1176 1976, W. & E. MacKay, 5 workers (WEMC: USNMENT00758993); Medio Calima, 24 June
1177 1989, E. MacKay #11740 #11743 #11744, 2 workers (WEMC: USNMENT00757738, 00759005,
1178 00757908, 00759012). **Vichada:** Municipio Cumaribo, Corregimiento Santa Rita, PNN El
1179 Tuparro, 5.3075 -67.9500, 135 m, 14-16 Feb. 2004, I. Quintero & E. Gonzalez, 2 workers (IAvH:
1180 USNMENT00759057). **COSTA RICA: Guanacaste:** Provincia Maritza field Station, 03 May
1181 1995, R. Anderson #17716, 3 workers (WEMC: USNMENT00757671). **Puntarenas:** Pen. Osa.
1182 Par. Nat. Corcovado, Llorona, 8.58 -83.70, 5 m, 30 Dec. 1981, J. Longino, 1 worker (JTLC:
1183 JTLC000005948). **CUBA:** Holguín: 6 km S Yamanigüey, 20.55 -74.73, 25 m, 23 Aug. 2001,
1184 P.S. Ward #14437-19, 3 workers (PSWC: USNMENT00757919). **DOMINICAN REPUBLIC:**
1185 16 km ENE Pedernales, 18.11667 -71.62361, 800 m, 9 Sep. 1992, P.S. Ward #11726-22, 3
1186 workers (PSWC: USNMENT00757959); Prov. La Vega, Jarabacoa to El Rio, shady ravine, 80-
1187 1500 m, Feb. 1975, W.L. & D.E. Brown, 2 workers (MCZC: USNMENT00757736).
1188 **ECUADOR:** Guayaquil, 10 m, Dec. 1997, Forero, 2 workers (IAvH: USNMENT00759054).
1189 **FRENCH GUIANA:** Petit Saut Basse Vie II/III, 2001, A. Dejean, 1 worker (CPDC:
1190 USNMENT00757734); Reserve Naturel de Nouragues- Inselbery forest, Oct. 2009, Sara Groc, 4
1191 workers (ICN: USNMENT00759033). **GUATEMALA: El progreso:** 5 km W El Rancho,
1192 14.91667 -90.06666, 400 m, 17 Nov. 2003, A.L. Wild #AW2002, 3 workers (ALWC:
1193 USNMENT00757957). **Suchitepéquez:** Cocales (Mpio. San Antonio), 14.39206 -91.19347, 242
1194 m, 31 Aug. 2004, W & E. MacKay #20820, 1 worker (WEMC: USNMENT00758995).

1195 **GUYANA:** Demerara-Mahaica: Wales, 6.67 -58.25, 50 m, 23 Jan. 1981, 2 workers, 1 queen
1196 (JTLC: JTLC000005920); Rupununi, Karanambo, 3.75 -59.3, 100 m, 01 Jan. 1981, 1 worker
1197 (JTLC: JTLC000005926). **MAURITIUS:** Mgne. Brise Fer, -20.37 57.43, 600 m, 07 May 1989,
1198 P.S. Ward #10518-2, 3 workers (PSWC: USNMENT00757934). **MEXICO: Chiapas:** 10 km S
1199 Palenque, 30 May 1988, 31 May 1988, W. MacKay #10611 #10613, 8 workers (WEMC:
1200 USNMENT00757588, 00757677, 00757678). **Veracruz:** Los Tuxtlas, 26 July 1974, R.L. Jeanne,
1201 1 worker (MCZC: USNMENT00757735). **Yucatan:** 25.7 km E Progreso, 12 Apr. 1982, Smalley
1202 Thien & Bradburn, 1 worker (MCZC: USNMENT00757618). **PARAGUAY: Boquerón:** Enciso,
1203 -21.20 -61.67, 03-06 Nov 2001, M. LePonce & T. Delsinne, 2 workers (ALWC:
1204 USNMENT00757904). **Central:** Areguá, CHP center, -25.30 -57.38, 01 Oct. 1995, A. Wild
1205 #AW 0059, 1 worker (ALWC: USNMENT00757905). **Presidente Hayes:** Monte Lindo, -
1206 23.86667 -58.46667, 800-1500 m, Feb. 1975, W.L. & D.E. Brown, 2 workers (MCZC:
1207 USNMENT00757736). **PERU: Madre de Dios:** Reserva Nacional Tambopata, Centro
1208 Sachavacayoc, Centre, -12.85583 -69.36194, 209 m, 19-31 Jul 2012, R. Feitosa, 1 worker (ICN:
1209 USNMENT00757611). **URUGUAY:** Montevideo, L. Pastre, 1 worker (CPDC:
1210 USNMENT00757684).

1211

1212 **Diagnosis.** *Brachymyrmex australis* is very similar in morphology to *B. aphidicola*, *B. minutus*
1213 and *B. termitophilus*, because all these species have a mesonotum that does not bulge dorsally
1214 above the pronotum in lateral view, their bodies are smooth, shiny and yellowish, and their eyes
1215 are positioned on the cephalic midline. However, *B. australis* differs from *B. aphidicola* by
1216 somewhat shorter scapes, although they still reach to the posterior margin of the head or surpass
1217 it by a length equal to or smaller than the maximal diameter of the eye; it differs from *B. minutus*
1218 by having a well-marked mesometanotal suture and two erect hairs on the pronotum and two on

1219 the mesonotum; finally, it has scattered pubescence on the gaster whereas that of *B. termitophilus*
1220 is dense.

1221

1222 *Lectotype worker measurements* (mm) HL₁ 0.37; HL₂ 0.27; HL₃ 0.10; HW 0.29; SL 0.29; EL
1223 0.10; WL 0.35; PnL n.a.; PnW 0.23; ML 0.08; MW 0.17; *Indices* CI 78.95; SI₁ 100.00; SI₂
1224 107.14; OI₁ 33.33; OI₂ 26.31.

1225

1226 *Additional material examined measurements* (mm) (n=13). HL₁ 0.32-0.54; HL₂ 0.21-0.38; HL₃
1227 0.08-0.15; HW 0.29-0.53; SL 0.26-0.48; EL 0.08-0.14; WL 0.29-0.55; PnL 0.08-0.20; PnW 0.21-
1228 0.32; ML 0.06-0.11; MW 0.14-0.20; *Indices* CI 82.61-97.09; SI₁ 89.09-104.54; SI₂ 114.29-
1229 135.29; OI₁ 15.38-30.91; OI₂ 19.35-28.33.

1230

1231 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
1232 concave. Dorsum of the head with scattered appressed hairs. Clypeus with a rounded anterior
1233 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
1234 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
1235 clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
1236 margin in oblique anterodorsal view. The scapes extend beyond the posterior margin of the head
1237 by a length equal to or smaller than the maximal diameter of the eye; they typically have
1238 appressed, sometimes decumbent, but never erect hairs. Three inconspicuous ocelli. Eyes on the
1239 cephalic midline, with 7-14 ommatidia along their maximal diameter.

1240 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum. The
1241 mesonotum is not inflated and it does not bulge dorsally above the pronotum in lateral view.
1242 Metanotal groove absent or shallow and narrower than the diameter of the metathoracic spiracles.

1243 Metathoracic spiracles in dorsolateral position, not protruding, and usually touching both the
1244 mesometanotal and propodeal sutures. Dorsum of the propodeum flat or weakly convex and
1245 ~1/3th of the length of the propodeal slope. Propodeal spiracles circular, positioned ventrally of
1246 the posterior propodeal margin slightly posterior of the middle of the propodeal slope. Legs with
1247 appressed and scattered hairs. Petiole short and inclined forward.

1248 **Gaster.** With scattered pubescence and scattered long suberect hairs.

1249 **Color and sculpture.** Body smooth and shiny, uniform yellowish in color.

1250

1251 **Distribution (Supplementary material Fig. S5).** *Brachymyrmex australis* is known from
1252 Argentina, the Bahamas, Brazil, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador,
1253 French Guiana, Guatemala, Guyana, Mexico, Paraguay, Peru and Uruguay. It has also been
1254 introduced in Mauritius.

1255

1256 **Biology.** Some specimens have been found under stones and among leaf litter. The type material
1257 of *B. longicornis* (here considered a junior synonym of *B. australis*) was collected from orchids.

1258

1259 **Remarks.** Forel (1901b) described *B. australis* as a variety of *B. minutus* but did not indicate
1260 diagnostic traits to separate it from typical *B. minutus*. Subsequently, Santschi (1922) raised *B.*
1261 *australis* to species level, described a new variety to it (*B. australis* var. *curta*), again without
1262 clear motivation, although he pointed out morphological similarities between the males of *B.*
1263 *australis* and *B. fiebrigi*. Later, Santschi (1923a) indicated that *B. australis* has a conspicuous
1264 mesometanotal suture, and *B. minutus* does not, and that *B. australis* var. *curta* is smaller and
1265 shinier than typical *B. australis*.

1266 The type material of *B. australis* var. *curta* and *B. longicornis* share the same diagnostic traits and
1267 display only minor variation in body size and the length of the scapes compared with *B. australis*.
1268 Most of the specimens of *B. longicornis* we studied are yellowish, but one was brownish, and the
1269 nature of this variation remains to be documented. In any case, Forel (1907) originally described
1270 *B. longicornis* as “yellowish brown”. Considering our observations *B. australis* var. *curta* and *B.*
1271 *longicornis* are synonymized here to *B. australis*.
1272 Santschi (1923a) identified a specimen (1 worker, NHMB) from a termite nest in Sao Leopoldo,
1273 Rio Grande do Sul, Brazil, i.e. the type locality of *B. termitophilus* (which has also been recored
1274 from termite nests), as *B. australis* but this specimen has the diagnosis traits of *B. fiebrigi*;
1275 additional specimens (2 workers, NHMB) from Uruguay, Nueva Helvetia (Mme.v. Steiger) that
1276 he identified as *B. australis* var. *curta* have the diagnostic traits of *B. termitophilus*.

1277

1278

1279

Brachymyrmex bahamensis NEW SPECIES

1280

(Fig. 12, supplementary material S6)

1281

Holotype worker (MCZC: USNMENT00757689) and **Paratype workers** (MCZC:

1282

USNMENT00757689, PSWC: USNMENT00757726): 5 workers. **BAHAMAS:** Exuma,

1283

unnamed cay, 175 m S of Staniel Cay, 21 May 1990, L.W. Morrison 101-90.

1284

1285

Additional material examined. BAHAMAS, Andros Island, May-June 1904, col. W.M.

1286

Wheeler, 13 workers, 2 queens (MCZC: USNMENT00757690).

1287

1288

Etymology: In reference of the type locality.

1289

1290 **Diagnosis.** *Brachymyrmex bahamensis* resembles *B. termitophilus* because both species have
1291 scapes that are surpass the posterior margin of the head by a length smaller than the maximal
1292 diameter of the eye, their mesonotum does not bulge dorsally above the pronotum, they have
1293 erect or suberect hairs on the mesosoma, a gaster with dense pubescence, and yellowish body
1294 color. However, the unique feature of *B. bahamensis* is that it has approximately 6 erect hairs on
1295 the pronotum and two on the mesonotum that are very long, i.e. about twice the length of the
1296 maximal diameter of the eye. *Brachymyrmex bahamensis* also resembles *B. heeri*, but this latter
1297 species has a mesonotum that bulges out dorsally above the pronotum.

1298
1299 *Holotype measurements* (mm). HL₁ 0.46; HL₂ 0.31; HL₃ 0.13; HW 0.41; SL 0.38; EL 0.09; WL
1300 0.45; PnL 0.13; PnW 0.29; ML 0.09; MW 0.19; *Indices* CI 88.46; SI₁ 91.30; SI₂ 120.00; OI₁
1301 21.74; OI₂ 28.85.

1302
1303 *Paratype measurements* (mm) (n=2). HL₁ 0.47-0.48; HL₂ 0.32; HL₃ 0.14; HW 0.43-0.44; SL
1304 0.39-0.40; EL 0.09-0.10; WL 0.47-0.49; PnL 0.13-0.16; PnW 0.30-0.31; ML 0.09-0.12; MW
1305 0.21; *Indices* CI 90.57-90.74; SI 91.67-91.84; SI₂ 122.22-125.00; OI₁ 22.45-25; OI₂ 27.78-28.30.

1306
1307 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
1308 concave. Dorsum of head with appressed hairs and with two rows of erect hairs. Clypeus with a
1309 rounded anterior margin and five long, erect hairs of which a single, usually conspicuous hair is
1310 near the anterior margin, two hairs are in mediolateral position and two more near the toruli;
1311 other hairs on the clypeus are markedly shorter and appressed or decumbent. Toruli surpassing
1312 the posterior clypeal margin in oblique anterodorsal view. The scapes surpass the posterior
1313 cephalic margin by a length smaller than the maximal diameter of the eye; they typically have

1314 appressed, sometimes decumbent but never erect hairs. Ocelli absent. Eyes are positioned on the
1315 cephalic midline and have 8–9 ommatidia along their maximal diameter.

1316 **Mesosoma.** Approximately 6 long, erect hairs on the pronotum and two on the mesonotum, each
1317 having a length of about twice the maximal diameter of the eye. In lateral view, the mesonotum is
1318 not inflated and it does not bulge dorsally above the pronotum. Metanotal groove absent or
1319 shallow and narrower than the diameter of the metathoracic spiracles. Dorsum of the propodeum
1320 is flat and ~1/3th of the length of the propodeal slope. Metathoracic spiracles in dorsolateral
1321 position, not protruding, and usually touching the propodeal suture, but not the mesometanotal
1322 suture. Propodeal spiracles circular, positioned ventrally of the posterior propodeal margin,
1323 posterior of the middle of the propodeal slope. Legs with appressed and scattered hairs. Petiole
1324 short and inclined forward.

1325 **Gaster.** With dense pubescence and several scattered conspicuous long erect hairs.

1326 **Color and sculpture.** Body usually smooth and shiny, yellowish.

1327

1328 **Distribution (Supplementary material S6).** Currently exclusively known from the Bahamas.

1329

1330 **Biology.** Unknown.

1331

1332 **Remarks.** The holotype is located at the top of pin USNMENT00757689, with the two paratypes
1333 below.

1334

1335

1336 ***Brachymyrmex bicolor* NEW SPECIES**

1337 **(Fig. 13, supplementary material S7)**

1338 **Holotype worker** (USNM: CASENT0615272) and **Paratypes** (USNM: CASENT0615274
1339 (putative worker-queen intercaste); CASENT0615277, 0615294, 0617077 (destroyed) (3
1340 workers); ANTWEB: CASENT0615273 (putative worker-queen intercaste), 0615276 (1 worker),
1341 0615292 (1 queen)): 5 workers, 1 queen, 2 putative worker-queen intercastes. **HONDURAS:**
1342 **Comayagua:** PN Cerro Azul Meambar, 14.87092, -87.89917, 1120 m, 20 May 2010,
1343 LLAMA#Wa-C-04-1-31.

1344

1345 **Etymology:** The epithet *bicolor* reflects the conspicuous body coloration with black head and
1346 gaster and yellow mesosoma.

1347

1348 **Diagnosis.** The conspicuous color pattern allows distinguishing *B. bicolor* from any other
1349 *Brachymyrmex* species.

1350

1351 *Holotype measurements* (mm). HL₁ 0.43; HL₂ 0.30; HL₃ 0.10; HW 0.38; SL 0.44; EL 0.11; WL
1352 0.48; PnL 0.12; PnW 0.28; ML 0.10; MW 0.16; *Indices* CI 88.78; SI₁ 114.94; SI₂ 147.06; OI₁
1353 27.59; OI₂ 22.45.

1354

1355 *Paratype measurements* (mm). HL₁ 0.43; HL₂ n.a.; HL₃ 0.10; HW 0.41; SL 0.45; EL 0.11; WL
1356 0.48; PnL 0.12; PnW 0.28; ML 0.11; MW 0.15; *Indices* CI 94.90; SI₁ 109.68; SI₂ n.a.; OI₁ 25.81;
1357 OI₂ 22.45.

1358

1359 **Worker description. Head.** Slightly longer than wide in full face view; posterior cephalic
1360 margin slightly convex. Dorsum of the head with appressed hairs. Clypeus with a rounded
1361 anterior margin and five long, erect hairs of which a single, usually conspicuous hair is near the

1362 anterior margin, two hairs are in mediolateral position and two more near the toruli; other hairs
1363 on the clypeus are clearly shorter and appressed or decumbent. Toruli surpassing the posterior
1364 clypeal margin in oblique anterodorsal view. The scapes surpass the posterior margin of the head
1365 by a length larger than the maximal diameter of the eye and have appressed pubescence. Three
1366 conspicuous ocelli. Eyes are positioned on the cephalic midline and have 8 ommatidia along their
1367 maximal diameter.

1368 **Mesosoma.** Without erect hairs and in lateral view approximately hour-glass shaped (this
1369 condition is absent in the presumed intercast) with a constriction between the bulging
1370 promesonotum and propodeum. In lateral view, the mesonotum is anteriorly inclined, but it does
1371 not bulge dorsally above the pronotum. Metanotal groove present and wider than the diameter of
1372 the metathoracic spiracles. Dorsum of the propodeum is convex and shorter than the propodeal
1373 slope. Metathoracic spiracles in dorsal position, not protruding, not touching any sutures.
1374 Propodeal spiracles circular, positioned just ventrally of the posterior propodeal margin slightly
1375 posterior of the middle of the propodeal slope. Legs with appressed and scattered hairs. Petiole
1376 short and inclined forward.

1377 **Gaster.** With scarce pubescence and several scattered long erect hairs at the edge of the segments.

1378 **Color and sculpture.** Body smooth and shiny, with a conspicuous bicolored pattern. The head
1379 and gaster are blackish in color, however, the mandibles, the labial and maxillary palps, the bulbi
1380 and bases of the antennae, the terminal antennomeres and hairs are conspicuously yellow in
1381 color. Additionally, the mesosoma and legs are yellowish, with the tibia of the second and third
1382 pairs of legs being dark brownish, like most of the scape.

1383

1384 **Intercaste description.** The presumed worker-queen intercaste differs from the worker mainly
1385 by its larger body size, the shape of the mesosoma in lateral view, and its dense pubescence on

1386 the gaster. The dorsum of the head bears two rows of erect hairs. Eyes have around 10 ommatidia
1387 along their maximal diameter; the promesonotum is bluntly angular, with the mesonotum being
1388 not inflated or bulging out dorsally above the pronotum in lateral view, mesonotum in dorsal
1389 view posteriorly extended along the midline. Metanotal groove absent. Dorsum of the propodeum
1390 is flat and shorter than the length of the propodeal slope. Metathoracic spiracles in dorsolateral
1391 position, not protruding, not touching any sutures. Gaster with dense pubescence and several
1392 scattered long erect hairs at the edges of the segments.

1393

1394 **Distribution (Supplementary material S7).** Currently exclusively known from Honduras.

1395

1396 **Biology.** Specimens were collected from leaf litter in cloud forest.

1397

1398 **Remarks.** Further comments on the putative worker-queen intercaste in *Brachymyrmex* are
1399 provided in the remarks on *B. giardi*.

1400

1401

1402 *Brachymyrmex bonariensis* Santschi NEW STATUS

1403 (Fig. 14, supplementary material Fig. S8)

1404 *Brachymyrmex constrictus* st. *bonariensis* Santschi, 1933: 122 (w.). **Lectotype worker** (NHMB:
1405 USNMENT00757706) and **paralectotype worker** (NHMB: USNMENT00757705; **here**
1406 **designated**): 2 workers [examined]. **ARGENTINA: Buenos Aires:** Buenos Aires, 08 Mar. 1803,
1407 C. Bruch. **n. st.**

1408

1409 **Diagnosis.** *Brachymyrmex bonariensis* n. st. resembles *B. admotus* because they both have
1410 scapes that surpass the posterior margin of the head, a pair of simple erect hairs between the
1411 dorsal methathoracic spiracles, a wide metanotal groove, and a gaster with scarce pubescence.
1412 However, in *B. bonariensis* n. st. the head and mesosoma are light brownish in color, and the
1413 gaster is darker, whereas the body of *B. admotus* is uniformly colored. The scapes of *B.*
1414 *bonariensis* are shorter than those of *B. admotus* and surpass the posterior margin of the head
1415 with a length approximately equal to the maximal diameter of the eyes. The metathoracic
1416 spiracles of *B. bonariensis* are furthermore positioned more laterally and are not protruding. Like
1417 *B. admotus*, *B. bonariensis* could be confused with *B. cavernicola* because this latter species also
1418 has a pair of erect hairs between the methathoracic spiracles, however in *B. cavernicola* these
1419 hairs are very thick, and they are darker in color than the body.

1420
1421 *Lectotype measurements* (mm) HL₁ 0.53; HL₂ 0.36; HL₃ 0.15; HW 0.48; SL 0.49; EL 0.13; WL
1422 0.50; PnL 0.14; PnW 0.31; ML 0.12; MW 0.20; *Indices* CI 90.00; SL₁ 102.78; SL₂ 134.55; OI₁
1423 22.78; OI₂ 27.50.

1424
1425 *Paralectotypes measurements* (mm). HL₁ 0.53; HL₂ 0.35; HL₃ 0.15; HW 0.50; SL 0.50; EL 0.13;
1426 WL 0.53; PnL 0.18; PnW 0.34; ML 0.11; MW 0.18; *Indices* CI 92.59; SL₁ 101.33; SL₂ 143.40;
1427 OI₁ 26.67; OI₂ 27.16.

1428
1429 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
1430 concave. Dorsum of head with scattered, appressed hairs and usually two rows of erect hairs.
1431 Clypeus with a rounded anterior margin and five long, erect hairs of which a single, usually
1432 conspicuous hair is near the anterior margin, two hairs are in mediolateral position, and two more

1433 near the toruli; other hairs on the clypeus are markedly shorter and appressed or decumbent.

1434 Toruli surpassing the posterior clypeal margin in oblique anterodorsal view. The scapes surpass
1435 the posterior margin of the head by a length approximately equal to the maximal diameter of the
1436 eyes. Ocelli appear to be present but are inconspicuous. Eyes are positioned on the cephalic
1437 midline and have 8-9 ommatidia along their maximal diameter.

1438 **Mesosoma.** With two erect hairs on the pronotum and two on the mesonotum. In lateral view, the
1439 mesonotum is somewhat inflated, but it does not bulge dorsally above the pronotum. Metanotal
1440 groove wider than the diameter of the metathoracic spiracles. Metathoracic spiracles in
1441 dorsolateral position, not protruding, but touching the propodeal suture. Between the metathoracic
1442 spiracles two thin erect hairs are present, but they are shorter than those on the pronotum and
1443 mesonotum. Dorsum of the propodeum flat and $\sim 1/3$ th of the length of the propodeal slope.
1444 Propodeal spiracles circular, positioned on the posterior propodeal margin slightly posterior of
1445 the middle of the propodeal slope. Legs with appressed and scattered hairs. Petiole short and
1446 inclined forward.

1447 **Gaster.** With scattered pubescence, and scattered suberect hairs, mainly along the edges of the
1448 segments.

1449 **Color and sculpture.** Body overall smooth and shiny, except for the slightly imbricate sculpture
1450 on the dorsum of the mesosoma in some specimens. Head and mesosoma light brown, gaster
1451 darker in color.

1452

1453 **Distribution (Supplementary material Fig. S8).** Exclusively known from Argentina.

1454

1455 **Biology.** Unknown.

1456

1457 **Remarks.** *Brachymyrmex bonariensis* was first described by Santschi (1933) as a variety of *B.*
1458 *constrictus* because it has the thorax less strongly strangled, a little wider head and more concave
1459 posterior margin of the head in comparison with *B. constrictus*. However, in our opinion *B.*
1460 *bonariensis* is morphologically very different than *B. constrictus*: it has a mesonotum that does
1461 not bulge dorsally above the pronotum in lateral view whereas that of *B. constrictus* does; *B.*
1462 *constrictus* does not have erect hairs between the metathoracic spiracles and moreover it has a
1463 uniformly dark brownish body. As mentioned before, *B. bonariensis* resembles *B. admotus* more
1464 closely (see diagnosis).

1465

1466

1467 ***Brachymyrmex brasiliensis* Ortiz & Fernández**

1468 **(Fig. 15, supplementary material Fig. S9)**

1469 *Brachymyrmex brasiliensis* Ortiz and Fernández, 2014: 22, Figs. 19, 20, 21 (w). **Holotype**
1470 **worker** (MZSP: USNMENT00757748) and **paratype worker** (UFUC: USNMENT00757833): 2
1471 workers. **BRAZIL: Rio de Janeiro:** Nova Friburgo, Fazenda Barreto, -22.161242 -42.524302,
1472 1068 m, 11–12 June 2011, T.M.S. Mesquita

1473

1474 *Additional material examined.* **BRAZIL: Goiás:** Anapolis, 12 Feb. 1958, W. Kempf, 1 worker
1475 (MZSP: USNMENT00757820). **ECUADOR: Zamora:** Chinchipe, -3.98228 -79.083528, 1
1476 worker (RBINS: 4048410).

1477

1478 **Diagnosis.** *Brachymyrmex brasiliensis* differs from other *Brachymyrmex* species by having
1479 tumuliform metathoracic spiracles, in combination with a smooth and shiny gaster as well as an
1480 opaque head and mesosoma.

1481

1482 **Description.** See Ortiz and Fernández (2014).

1483

1484

1485 *Brachymyrmex bruchi* Forel

1486 (Figs. 16, 17, supplementary material Fig. S10)

1487 *Brachymyrmex bruchi* Forel, 1912a: 64 (w.m.). **Lectotype worker** (MHNG:

1488 USNMENT00757159), and **paralectotype workers, males** (MHNG: USNMENT007157-

1489 007159, 00758104, 00758149-00758181; **here designated**): 21 workers, 3 males [examined].

1490 **ARGENTINA: Catamarca:** Aconquija, Filo blanco, 4300 m, Bruch. Santschi (1929: 309) (q.).

1491 = *Brachymyrmex bruchi* var. *rufipes* Forel, 1912a: 65 (w.). (MHNG: USNMENT00757160,

1492 00757161): 3 workers [examined]. **ARGENTINA: Catamarca:** Huasan; synonymy by Quirán et

1493 al. (2004: 279). See also: Santschi (1923a: 660).

1494 = *Brachymyrmex giardi* var. *nitida* Santschi, 1922: 261 (w.). (NHMB: USNMENT00757182): 1

1495 worker [examined]. **CHILE:** Los Lagos, Petrohué, 1922, Schiller. Snelling and Hunt (1975: 114)

1496 as junior synonym of *Brachymyrmex giardi*. **n.syn.**

1497 = *B. laevis* var. *andina* Santschi, 1923a: 659 (w.). (NHMB: USNMENT00758161, 00757186,

1498 00757187; MHNG: USNMENT00758129): 16 workers [examined]. **ARGENTINA: Jujuy:**

1499 Puna, 4000 m, D. Witter. **n. syn.**

1500

1501 **Additional material examined. ARGENTINA: Entre Ríos:** 8.63 km W Concordia, -31.42303 -

1502 58.11672, 16 m, 26 Dec. 2007, W. & E. MacKay, 7 workers, 1 male, 1 queen (WEMC:

1503 USNMENT00757969, 00757997, 00758001, 00758003, 00758004, 00758013, 00759019) **Santa**

1504 **Fe:** 10 km E Santa Fe, -31.6666 -60.5833, 12 Oct. 2002, A.L. Wild & N. Helle, 1 worker

1505 (ALWC: USNMENT00757998). **Tucumán:** Lara, 4000 m, Feb. 2003, G.A. Baer, 2 workers
1506 (MCSN: USNMENT00757709). **BOLIVIA: Santa Cruz:** Perforación, 68 km ESE Charagua, -
1507 19.91667 -62.56667, 470 m, 11 Dec. 1993, P.S. Ward, 3 workers (PSWC:
1508 USNMENT00758008). **BRAZIL:** Brasilia D.F., Aug. 1996, R.M. Oliveira, 6 workers (CPDC:
1509 USNMENT00758011). **CHILE:** Temuco, 24 Nov. 1967, W.W. Kempf, 6 workers (PSWC:
1510 USNMENT00758015-00758022). **COLOMBIA: Quindío:** Génova, Vereda El Cedral, Finca
1511 Venecia, 4.2275 -75.7586, 1800 m, 19 Oct. 1999, E. González & J. Sossa, 1 worker (IAvH:
1512 IAvH-E74162). **COLOMBIA: Risaralda:** Apia, La Clarita, 3.13 -75.95, 1550 m, 26 Oct. 2001,
1513 I. Armbrecht, 1 worker (IAvH: IAvH-E74173). **DOMINICAN REPUBLIC:** 28 km SSE
1514 Constanza, 18.7 -70.9, 2220 m, 11 Nov. 1992, P.S. Ward #11757, 3 workers (PSWC:
1515 USNMENT00758034). **La Vega:** Reserva Valle Nuevo, 18.81667 -70.68333, 2240 m, 01 Sep.
1516 2001, A.L. Wild #AW1348, 2 workers, 1 queen (ALWC: USNMENT00757682); Cervantía,
1517 18.85 -70.70, 1730 m, 01 Sep. 2001, A.L. Wild, 2 workers (ALWC: USNMENT00757988).
1518 **ECUADOR: Napo:** near Dureno, 0.0780 -76.7307, 287 m, 20 July 2005, W. & E. MacKay
1519 #21277, 2 workers (WEMC: USNMENT00759007). **GUATEMALA: Sacatepéquez:** Finca El
1520 Pilar, near Antigua, 14.55 -90.72, 1700 m, 13 Nov. 2003, A.L. Wild, 3 workers (ALWC:
1521 USNMENT00757963). **PARAGUAY: Boquerón:** Filadelfia, -22.35 -60.03, 22 Sep. 1994, B.
1522 Garcete, 1 worker (ALWC: USNMENT00758005). **Canindeyú:** Reserva Natural Bosque
1523 Mbaracayú Lagunita, -24.13 -55.43, 12 Feb. 1997, A. Wild, 3 workers (ALWC:
1524 USNMENT00757999). **Concepción:** Concepción centro, -23.42 -57.35, 7 Feb. 1998, A. Wild, 3
1525 workers (ALWC: USNMENT00757976). **Presidentes Hayes:** Villa Hayes, -25.10 -57.57, 21
1526 Sep. 1994, B. Garcete, 2 workers (ALWC: USNMENT00757996). **UNITED STATES:**
1527 **Arizona:** Pima Co. Tucson International Airport, 32.11667 -110.93333, 800 m, 07 Aug. 2001,
1528 P.S. Ward #14412, 2 workers (PSWC: USNMENT00757972). **Florida:** Florida Gulf Co.

1529 Wewahitchka Steele Rd/GCI Bond, 30.1 -85.2, 13.6 m, 23 Dec. 2000, Corrie Saux, 1 worker
1530 (MCZC: USNMENT00758014). **Louisiana:** Audubon Park, New Orleans, 29 Apr. 1995, A.L.
1531 Wild, 2 workers (ALWC: USNMENT00757979); Baton Rouge, 01 Oct. 2000, B. Raphaël, 5
1532 workers (CPDC: USNMENT00757980); E. Baton Rouge Par. Baton Rouge. Kenniloworth &
1533 Perkins Rd. BREC Perkins Park, 03 Apr. 2003, J. Rosson, 1 worker (CPDC:
1534 USNMENT00757967). Plaquemines Co. St. Bernard St. Pk., 22 Aug. 1987, W. MacKay, 22
1535 Aug. 1987, W. MacKay, 2 workers (WEMC: USNMENT00757970). **Texas:** Austin, Travis Co.,
1536 30.25167 -97.76722, 160 m, 21 Nov. 2006, A.L. Wild, 3 workers (ALWC:
1537 USNMENT00757977). **URUGUAY:** Montevideo, Nov. 2000, L. Pastre, 2 workers (CPDC:
1538 USNMENT00757978). Salto: Salto Parque Municipal Benito Solari, 25 Dec. 2007, W. & E.
1539 MacKay, 1 worker (WEMC: USNMENT00758047).

1540
1541 **Diagnosis.** *Brachymyrmex bruchi* is morphologically most similar to *B. patagonicus* and *B.*
1542 *oculatus* because these species have scapes that surpass the posterior margin of the head,
1543 typically two erect hairs on the mesonotum, their metanotal groove is either absent or narrower
1544 than the diameter of the metathoracic spiracles, their mesonotum does not bulge dorsally above
1545 the pronotum in lateral view, their gaster has several scattered long erect hairs and sparse
1546 pubescence, and they have brownish bodies. However, *B. bruchi* differs from *B. patagonicus* by
1547 having a larger body size, abundant suberect hairs on the dorsum of the pronotum, and scapes
1548 that surpass the posterior margin of the head by a length approximately equal to the maximal
1549 diameter of the eye. It differs from *B. oculatus* by having smaller eyes with less than 14
1550 ommatidia along the maximal diameter, which approximately equal only a quarter of the length
1551 of the head (HL₁).

1552

1553 *Lectotype and paralectotypes measurements* (mm) (n= 4). HL₁ 0.58-0.64; HL₂ 0.41-0.45; HL₃
1554 0.14-0.18; HW 0.57-0.60; SL 0.55-0.62; EL 0.16-0.18; WL 0.64-0.78; PnL 0.20-0.25; PnW 0.39-
1555 0.45; ML 0.18-0.21; MW 0.27-0.31; *Indices* CI 90.63-100.00; SI₁ 93.33-103.45; SI₂ 130.43-
1556 142.86; OI₁ 26.67-31.03; OI₂ 21.88-28.13.

1557
1558 *Additional material examined measurements* (mm) (n=25). HL₁ 0.41-0.61; HL₂ 0.29-0.42; HL₃
1559 0.09-0.16; HW 0.37-0.60; SL 0.31-0.59; EL 0.10-0.20; WL 0.40-0.72; PnL 0.10-0.20; PnW 0.25-
1560 0.44; ML 0.09-0.20; MW 0.16-0.29; *Indices* CI 70.98-96.97; SI₁ 78.13-136.36; SI₂ 106.67-
1561 156.76; OI₁ 23.91-45.45; OI₂ 19.23-28.00.

1562
1563 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
1564 concave. Dorsum of the head with sparse and appressed hairs. Clypeus with a rounded anterior
1565 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
1566 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
1567 clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
1568 margin in oblique anterodorsal view. The scapes surpass the posterior cephalic margin with a
1569 length that approximately equals the maximal diameter of the eye; they typically have appressed
1570 and decumbent hairs. Three inconspicuous ocelli present. Eyes are positioned on the cephalic
1571 midline and have 8–13 ommatidia along their maximal diameter.

1572 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum,
1573 sometimes with additional suberect hairs, mainly on the pronotum. The mesonotum is not inflated
1574 and does not bulge dorsally above the pronotum in lateral view. Metanotal groove absent or
1575 narrower than the diameter of the metathoracic spiracles. Metathoracic spiracles in dorsolateral
1576 position, not protruding, but touching the propodeal suture. Dorsum of the propodeum slightly

1577 convex and shorter than the posterior slope. Propodeal spiracles circular, positioned on the
1578 posterior propodeal margin at the middle of the propodeal slope. Legs with appressed and
1579 scattered hairs. Petiole short and inclined forward.

1580 **Gaster.** With sparse pubescence and several scattered long erect hairs.

1581 **Color and sculpture.** Body overall smooth and shiny, except for the sometimes slightly
1582 imbricate sculpture on the dorsum of the mesosoma; typically brownish.

1583

1584 **Distribution (supplementary material Fig. S10).** *Brachymyrmex bruchi* is known from
1585 Argentina, Bolivia, Brazil, Chile, Colombia, the Dominican Republic, Ecuador, Guatemala,
1586 Paraguay, Uruguay, and the United States.

1587

1588 **Biology.** Unknown.

1589

1590 **Remarks.** The here designated lectotype is the specimen at the top of pin MHNG:
1591 USNMENT00757159, and the ants below are paralectotypes. The type material of *B. bruchi*, *B.*
1592 *giardi* var. *nitida*, *B. laevis* var. *andina*, and *B. bruchi* var. *rufipes* shares a common set of
1593 diagnostic characters, i.e. the brownish body color, scapes that surpass the posterior cephalic
1594 margin by a length that approximately equals the maximal diameter of the eye, the metanotal
1595 groove is lacking or narrow, and scattered pubescence on the gaster. As such, these species and
1596 varieties are synonymized here.

1597 *Brachymyrmex giardi* var. *nitida* was considered to be a junior synonym of *B. giardi* by Snelling
1598 and Hunt (1975), however we disagree with this synonymization taking in account both the
1599 description of Santschi (1922) and our own observations of important differences in diagnostic

1600 traits: *B. giardi* var. *nitida* differs from *B. giardi* by having erect hairs on the pronotum, a darker
1601 body color and scarce pubescence on the body.

1602 Quirán et al. (2004) suggested *B. bruchi* var. *rufipes* to be a junior synonym of *B. bruchi* based on
1603 the original description by Forel (1912a), which only specifies a difference in body color. Quirán
1604 et al. (2004) argued that this difference is not taxonomically informative and therefore they
1605 proposed synonymization. We agree that body color is variable in several *Brachymyrmex* species,
1606 and therefore we follow the suggestion of Quirán et al. (2004) here. Nevertheless, it is
1607 noteworthy that some individuals of *B. bruchi* var. *rufipes* have somewhat denser pubescence on
1608 the gaster than pointed out in our description above (see Fig. 40 d, f). Such moderately dense
1609 pubescence on the gaster has been also observed in some of the examined specimens of *B. laevis*
1610 var. *andina*. Future studies on *B. bruchi* and its geographical variation is required.

1611 Forel (1912a) indicated that *B. bruchi* and *B. patagonicus* are very similar as to their mesosoma,
1612 and Santschi (1923a) likewise compared *B. laevis* var. *andina* with *B. patagonicus* var. *atrátula*,
1613 which has been synonymized with *B. patagonicus* (Quirán et al. 2004). We concur with these
1614 authors that *B. bruchi* and *B. patagonicus*, including their type material, are morphologically very
1615 similar, but as noted in the diagnosis above, consistent differences also exist between both
1616 species. Furthermore, our morphometric and phylogenetic analyses tentatively confirm these taxa
1617 to be distinct, although further studies on the morphology and phylogenetics of these species as
1618 well as their ecology and biology are admittedly needed.

1619 Santschi (1929) and Quirán et al. (2004) also referred specimens from Jujuy: Pueblo Viejo
1620 (Weiser), Catamarca: Aconquija and Tucuman (Argentina) to *B. bruchi*, however, this material
1621 was not studied here.

1622

1623

1624 *Brachymyrmex cavernicola* Wheeler
1625 (Figs. 18, supplementary material Fig. S11)
1626 *Brachymyrmex cavernicola* Wheeler, 1938: 252 (w.m.). **Lectotype worker** (USNM:
1627 USNMENT00529073) and **Paralectotype workers, male** (USNM: USNMENT00529073;
1628 MCZC: M.C.Z. Cotype 17-19 22428, M.C.Z. Cotype 11-13 22428, M.C.Z. Cotype 23-25 22428,
1629 M.C.Z. Cotype 14-16 22428, M.C.Z. Cotype 1-3 22428, M.C.Z. Cotype 5-7 22428, M.C.Z.
1630 Cotype 4 22428; **here designated**): 21 workers, 1 male [examined]. **MEXICO: Yucatan,**
1631 Chichenitza, Balaam Canche Cave, H.S. Pearse, 13 June 1936.
1632
1633 **Additional material examined. BRAZIL: Amazonas:** Manaus, BR.174 km 45 EEST-S1, 12
1634 Nov. 1990, Eq. A. Y. Harada, A. G Baineira, 1 worker (MPEG: USNMENT00757857). **Pará:**
1635 Melgaço, Caxiuanã ECFPn, -1.73584 -51.48762, 12-14 Oct. 2006, Equipe A.Y. Harada, 1 worker
1636 (MPEG: AYH051). Melgaço, Caxiuanã ECFPn, -1.75444 -51.52241, 28 Oct. 2003, A.Y. Harada,
1637 E.P. Fagundes, C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato, 1
1638 worker (MPEG: AYH067). Melgaço, Caxiuanã ECFPn, -1.73584 -51.48762, 30 Oct. 2003, A.Y.
1639 Harada, E.P. Fagundes, C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato,
1640 3 workers (MPEG: AYH086, AYH088, AYH126). Serra Norte, Est. Do. Mang, 6 Sep. 1983, 12
1641 Sep. 1983, 29 Feb. 1984, 12 May 1984, 15 May 1984, 22 May 1984, Lote: 2105, 2108, 2195,
1642 2197, 2208, 2213, 2214, 2223, 2227, 2231, 2232, 2235, 11 workers (MPEG:
1643 MPEG_HYM11505683, 11505907, 11505913, 11505945, 11505960, 11505969, 11505999,
1644 11506007, 11506023, 11506030, 11506036). **COLOMBIA: Cauca:** Isla Gorgona, 17 Sep. 1989,
1645 M. Baena #GQA-05, 1 worker (WEMC: USNMENT00757854). Isla Gorgona, 16 Jan. 1990, M.
1646 Baena #Gacd-19, 2 workers (WEMC: USNMENT00757855, 00757856). **Cundinamarca: La**
1647 Vega, R.N. Natautá, 5.00 -74.33, 1040 m, 10 Nov. 2010, F. Fernández, 2 workers (IAvH:

1648 USNMENT00757859). **Nariño:** Barbacoas, Tajadas, 100 m, 1 worker (ICN:
1649 USNMENT00757858). **Quindío:** Buenavista, Finca Ceilán, Bs., 4.35833 -75.78472, 1100 m, 15
1650 Nov. 1999. E. Gonzalez, 1 worker (IAvH: IAvH-E744170). **COSTA RICA: Guanacaste:** Prov.
1651 Maritza field, Sta., 800 m, 03 May 1995, R. Anderson #17714, 4 workers (WEMC:
1652 USNMENT00757844, 00757845). **Heredia:** Estación Biológica, La Selva, 10.433 -84.017, 50-
1653 150 m, 01 June 1993, INBio-OET, 1 worker (JTLC: INBIOCRI001276875). Puerto Viejo, #733,
1654 25 June 1979, J. Raich, 7 workers (MCZC: USNMENT00757273, 00757275). **ECUADOR:**
1655 **Endesa:** Forest Reserve Pichincha Province, 25 Jan. 1994, L.E. Tennant, 1 worker (MCZC:
1656 USNMENT00757274). **Pichincha:** La Unión del Río Toachi, -0.31889 -78.95442, 770 m, 15
1657 Jul. 2005, W. & E. MacKay #21169, 2 workers (WEMC: USNMENT00757841, 00757842).
1658 **MEXICO: Chiapas:** 8.8 km SE Salto de Agua, 17.51328 -92.29515, 50 m, 14 July 2007, J.L.
1659 Cozar ANTC#4225, 1 worker (JTLC: CASENT0600011). 10 km S Palenque, 30 May 1988, A.
1660 Rabeles, 2 workers (WEMC: USNMENT00757848). 10 km S Palenque, 30 May 1988, W.
1661 MacKay #10563, #10571, #10627, #10674, 15 workers (WEMC: USNMENT00757849,
1662 00757850, 00757851, 00757852, 00757853, 00758028). 10 km S Palenque, 30 May 1988, VIAL,
1663 D. Gonzalez, 1 worker (WEMC: USNMENT00757846). **Veracruz:** Los Tuxtlas, 10 km NNW
1664 Sontecomapan, 18.583 -95.083, 500 m, 21 Mar. 1985, P.S. Ward #7366, 3 workers (PSWC:
1665 USNMENT00757843). **PERU: Madre de Dios:** Prov. Tambopata, Cuzco Amazónico, 15 km
1666 NE Puerto Maldonado, CA-130, 200 m, 13 June 1989, S.P. Cover & J.E. Tobin, 6 workers
1667 (MCZC: USNMENT00757260, 00757269, 00757270). Prov. Tambopata, Cuzco Amazónico, 15
1668 km NE Puerto Maldonado, CA-601 JT79, CA-601 JT80, CA-365, CA-659 JT138, CA-116, CA-
1669 141, June 1989, S.P. Cover & J.E. Tobin, 17 workers (MCZC: USNMENT00757260-00757272).
1670

1671 **Diagnosis.** The feature that allows distinguishing *B. cavernicola* from all other *Brachymyrmex*
1672 species is the presence of conspicuous thick black hairs on the head, mesosoma and gaster, which
1673 contrast strongly with the yellowish body, a condition reminiscent of *Nylanderia*. *Brachymyrmex*
1674 *antennatus* also has erect hairs on the mesosoma that are darker than the tegument, however these
1675 are not as thick as those of *B. cavernicola*, and in other features these species are very different.

1676
1677 *Additional material examined measurements* (mm) (n=10). HL₁ 0.51-0.57; HL₂ 0.35-0.41; HL₃
1678 0.13-0.18; HW 0.45-0.51; SL 0.54-0.63; EL 0.09-0.10; WL 0.51-0.63; PnL 0.19-0.21; PnW 0.29-
1679 0.35; ML 0.10-0.13; MW 0.18-0.22; *Indices* CI 83.33-91.67; SI₁ 118.18-134.62; SI₂ 139.53-
1680 166.67; OI₁ 17.54-20.83; OI₁ 25.00-31.25.

1681
1682 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
1683 concave. Thick hairs cover the front of the head. Clypeus with a rounded anterior margin and five
1684 long, erect hairs of which a single hair is near the anterior margin, two hairs are in mediolateral
1685 position and two more near the toruli; other hairs on the clypeus are markedly shorter and
1686 appressed or decumbent. Toruli surpassing the posterior clypeal margin in oblique anterodorsal
1687 view. The scapes surpass the posterior cephalic margin by a length of approximately 2.0× the
1688 maximal diameter of the eyes and bear appressed or decumbent hairs. Ocelli are absent or one
1689 central ocellus is present. Eyes are positioned on the cephalic midline and have 7-8 ommatidia
1690 along their maximal diameter.

1691 **Mesosoma.** With several thick erect hairs on the promesonotum (>2), and two between the
1692 metathoracic spiracles, but none on the propodeum. The mesonotum is not inflated and does not
1693 bulge dorsally above the pronotum in lateral view. Metanotal groove wider than the diameter of
1694 the metathoracic spiracles. Metathoracic spiracles in dorsolateral position, not protruding, and not

1695 touching any suture. Dorsum of the propodeum is weakly convex and shorter than the posterior
1696 slope. Propodeal spiracles circular, positioned just ventrally of the posterior propodeal margin
1697 slightly posterior of the middle of the propodeal slope. Legs with appressed and scattered
1698 suberect hairs. Petiole short and inclined forward.

1699 **Gaster.** With scarce pubescence but densely covered by thick, erect hairs.

1700 **Color and sculpture.** Body smooth and shiny, except for the dorsum of the mesosoma which
1701 sometimes has slightly imbricate sculpture. The body color is typically yellowish, although the
1702 head and gaster are sometimes darker than the mesosoma. Tegument color contrasts with the
1703 thick black hairs.

1704

1705 **Distribution (Supplementary material Fig. S11).** *Brachymyrmex cavernicola* is known from
1706 Argentina, Brazil, Colombia, Costa Rica, Ecuador, Mexico and Peru.

1707

1708 **Biology.** Nests of this species have been found in the soil under stones.

1709

1710 **Remarks.** The lectotype is the top specimen on pin USNMENT00759073, whereas the
1711 specimens below are the paralectotypes. As indicated in the diagnosis and pointed out before by
1712 Wheeler (1938), *B. cavernicola* resembles *Nylanderia* species by its thick hairs that cover the
1713 entire body.

1714

1715

1716 *Brachymyrmex coactus* Mayr

1717 (Figs. 19, 20, supplementary material Fig. S12)

1718 *Brachymyrmex coactus* Mayr, 1887: 523 (w.q.m.). **Lectotype worker** (NHMW:
1719 USNMENT00757191) and **paralectotype workers, males, queens** (NHMW:
1720 USNMENT00757191- 00757195; **here designated**): 3 workers, 3 males, 2 queens [examined].
1721 **BRAZIL: Santa Catharina** (Hetscko). See also: Santschi (1923a: 669); Santschi (1923b: 272).
1722 = *Brachymyrmex coactus* var. *nictitans* Emery 1906: 178 (w.). (MCSN: USNMENT 00757209):
1723 1 worker [examined]. **COSTA RICA**. See also: Santschi (1923a: 670). **n. syn.**
1724 = *Brachymyrmex constrictus* Santschi 1923a: 671, Figs. 5, 38, 61 (w.). (NHMB:
1725 USNMENT00758087): 1 worker [examined]. **BOLIVIA: La Paz**: Mapiri. **n. syn.**
1726 = *Brachymyrmex coactus* var. *robustus* Santschi 1923b: 272 (w.). (NHMB:
1727 USNMENT00757224): 4 workers [examined]. **BRAZIL: Santa Catharina**: Encano alto;
1728 (NHMB: USNMENT00758085, 00758086): 6 workers [examined]. **BRAZIL: Santa Catharina**:
1729 Blumenau. **n. syn.**
1730
1731 **Additional material examined. ARGENTINA**: “Fives Lile”, 4 workers, 5 queens, 1 male
1732 (NHMB: USNMENT00758083, 00758084). **BRAZIL: Alagoas**: Maceió – Emilia Flores, Hm
1733 For 68, For 91, 18 Mar. 2005, 04 June 2005, #5460, M.C.C. Diniz, 8 workers (CEPLAC:
1734 USNMENT00757552, 00757553, 00757555); **Bahia**: Barreiras, Serra do Mimo, 24 Apr. 2010, S.
1735 Souza & B. Santos, 3 workers (CEPLAC: USNMENT00757564); Esplanada, Baixio, -12.11444 -
1736 37.69944, June– Oct. 2010, M.L.O. Travassos, 1 worker (CEPLAC: USNMENT00757556);
1737 Porto Seguro, Troncoso, 12 June 1991, J. Delabie 4451, 3 workers (CEPLAC:
1738 USNMENT00757559); UNA-ESMAI, Estação Experimental Lemos Maia, Em coqueiro-anão,
1739 Oct. 2005, J.R.M. Santos, 8 workers (CEPLAC: USNMENT00757558, 00757559, 00757562);
1740 **Goiás**: Ouro Verde, Faz Boa Vista, -16.29847 -49.21183, 01-07 July 2005, R.R. Silva & R.M.
1741 Feitosa, 3 workers (ICN: MZSP123); **Santa Catharina**: Blumenau, M. Witte #150, 9 workers

1742 (MCZC: USNMENT00757238, 00757239, 00757251); **Paraíba:** Independencia, Mann & Heath,
1743 -7.15194 -34.90556, 3 workers, 1 queen (MZUSP: USNMENT00757240); **São Paulo:**
1744 ANHEMBI, Faz B. Rio, 14 Feb. 1969, W. Kemf, J.C. Mahalhães, L.T.F., M. Kulmann, 2
1745 workers, 1 queen (MZUSP: USNMENT00757563); Sete Barras, PE Carlos Bothelo, -24.20833 -
1746 47.97056, 200 m, 11-15 May 2009, F. Esteves leg, 2 workers (MZUSP: USNMENT00757560).
1747 **COSTA RICA: Puntarenas:** Sirena, Corcovado National Park, 8.48333 -83.60000, 10 m, 24
1748 Dec. 1981, J. Longino, 1 worker, 1 male (JTLC: JTLC000005905); Peninsula Osa, 8.46667 -
1749 83.58333, 50 m, 24 Dec. 1981, J. Longino, 1 worker, 1 male (MCZC: USNMENT00757243).
1750 **ECUADOR: Zamora-Chinchi:** Copalinga, -4.09122 -69.93591, Jacquemin, Col id 5087, 1
1751 worker (RBINS) **GUYANA: Rupunini:** Kananambo, 16 Jan. 1981, 3.75 -59.3, 100 m, J.
1752 Longino, 1 worker (JTLC: JTLC000005907). **PANAMA: Barro Colorado I:** Canal Zone, B50,
1753 Jan 1960, W.L. Brown, E.S. McCluskey, 3 workers (MCZC: CMOS0000097). **PARAGUAY:**
1754 Fortin mayor infante Rd, trans Chaco locality 1, 01 Oct. 2004, T. Delsinne, 1 worker (RBINS:
1755 Coll.RIScNB SID SPM_ID 30833); **Boquerón:** Enciso, -21.20 -61.67, 3-6 Nov. 2001, M.
1756 LePonce & T. Delsinne, Dry Chaco, Pitfall trap, 3 workers (ALWC: USNMENT00757554);
1757 **Boquerón:** Enciso, -21.20609 -61.65748, 04-06 Nov. 2001, 23-25 Sep. 2004, M. LePonce, T.
1758 Delsinne, Col ID4132, Col ID 13623, 2 workers (RBINS: Coll.RIScNB SID SPM_ID 22607,
1759 ID27462); Nueva Asunción, -20.69190 -61.92925, 02-06 Nov 2001, M. LePonce, Col ID 3948, 1
1760 worker (RBINS: Coll.RIScNB SID SPM_ID 30542); **Canindeyú:** Reserva Natural Bosque
1761 Mbaracayú, Jejuimi, -24.10 -61.67, 02 Apr. 1996, A.L. Wild, 3 workers (ALWC:
1762 USNMENT00757561); **Cordillera:** Caacupé, Camp. J. Noment, -25.36667 -57.08333, 19 Jan.
1763 1994, B. Garcete #AW0395, 1 worker (ALWC: USNMENT00757567); **Misiones:** 8 km SE San
1764 Juan Bautista, -26.71666 -57.06667, 150 m, 10 Dec. 2002, A.L. Wild & B. Garcete #AV1781, 1
1765 worker (ALWC: USNMENT00757570). **PERU: Madre de Dios:** Reserva Nacional Tambopata,

1766 Centro Sachavacayoc, -12.85583 -69.36194, 210 m, 19-31 July 2012, R.M. Feitosa, 2 workers
1767 (ICN: USNMENT00757614, 00757612); Reserva Nacional Tambopata, Centro Sachavacayoc, -
1768 12.82667 -69.37056, 198 m, 26 July 2012, GSNMBU, 2 workers (ICN: USNMENT00757615,
1769 00757838).

1770
1771 **Diagnosis.** *Brachymyrmex coactus* is morphologically very similar to *B. degener* as both species
1772 have scapes that surpass the posterior margin of the head, faint sculpture on the mesosoma, a
1773 mesonotum that is inflated and bulges dorsally above the pronotum in lateral view, a wide
1774 metanotal groove, metathoracic spiracles that are slightly protruding dorsally, and a gaster with
1775 scarce pubescence. However, *B. coactus* has a brown yellowish head and mesosoma, but a darker
1776 gaster, whereas *B. degener* has a uniformly brownish body.

1777
1778 *Lectotype and paralectotypes measurements* (mm) (n=3). HL₁ 0.72-0.84; HL₂ 0.44-0.55; HL₃
1779 0.21-0.25; HW 0.64-0.82; SL 0.68-0.80; EL 0.16-0.21; WL 0.53-0.88; PnL 0.21; PnW 0.43-0.55;
1780 ML 0.14-0.20; MW 0.23-0.35; *Indices* CI 94.29-97.67; SI₁ 97.62-106.06; SI₂ 144.00-152.17; OI₁
1781 24.24-28.57; OI₂ 29.73-31.43.

1782
1783 *Additional material examined measurements* (mm) (n=10). HL₁ 0.52-0.88; HL₂ 0.34-0.60; HL₃
1784 0.16-0.25; HW 0.50-0.82; SL 0.51-0.82; EL 0.13-0.21; WL 0.53-0.98; PnL 0.18-0.25; PnW 0.36-
1785 0.57; ML 0.13-0.23; MW 0.18-0.35; *Indices* CI 93.33-101.45; SI₁ 92.86-105.36; SI₂ 126.67-
1786 165.38; OI₁ 23.53-35.71; OI₂ 26.67-32.5.

1787
1788 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin flat or
1789 slightly concave. Dorsum of the head has scattered appressed hairs. Clypeus with a rounded

1790 anterior margin and five long, erect hairs of which a single, usually conspicuous hair is near the
1791 anterior margin, two hairs are in mediolateral position and two more near the toruli; other hairs
1792 on the clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior
1793 clypeal margin in oblique anterodorsal view. The scapes extend beyond the posterior margin of
1794 the head by a length that is equal to the maximal diameter of the eye or larger, and they bear
1795 appressed and decumbent hairs. Three ocelli are present. Eyes are positioned on the cephalic
1796 midline and have 10-14 ommatidia along their maximal diameter.

1797 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum;
1798 sometimes with additional suberect hairs, mainly on pronotum. Dorsum of the mesosoma with
1799 imbricate sculpture. The mesonotum is inflated and bulges dorsally above the pronotum in lateral
1800 view. Metanotal groove wider than the diameter of the metathoracic spiracles. Metathoracic
1801 spiracles in dorsolateral position, slightly protruding and not touching any sutures. Dorsum of the
1802 propodeum strongly convex and shorter than the propodeal slope. Propodeal spiracles
1803 conspicuous and circular, positioned on the propodeal margin, anterior of the middle of the
1804 propodeal slope. Legs with appressed hairs. Petiole short and inclined forward.

1805 **Gaster.** With scattered pubescence and several scattered long erect hairs.

1806 **Color and sculpture.** Head and gaster are smooth and shiny, but the dorsum of the mesosoma
1807 usually has imbricate sculpture. Head and mesosoma are brown yellowish, whereas the gaster is
1808 darker.

1809
1810 **Distribution (Supplementary material Fig. S12).** *Brachymyrmex coactus* occurs in Argentina,
1811 Bolivia, Brazil, Costa Rica, Guyana, Panama, Paraguay and Peru.

1812

1813 **Biology.** The specimens from UNA-ESMAI in Bahia (Brazil) were found in dwarf coconuts
1814 (CEPLAC: USNMENT00757557, 00757558), those from Canindeyú (Paraguay) on shrubs
1815 (ALWC: USNMENT00757561), and those from St. Catharina underneath bark in association with
1816 a beetle of the genus *Claviger* (Mayr 1887).

1817

1818 **Remarks.** The worker on pin USNMENT00757191 is designated here as lectotype. Emery
1819 (1906) considered *B. coactus* var. *nictitans* to be a separate variety because it has smaller eyes
1820 than *B. coactus*, but he also expressed doubt on the level of consistency of this difference.

1821 Santschi (1923a) did not provide a motivation to distinguish *B. constrictus* from *B. coactus* but
1822 indicated that *B. constrictus* has more finely imbricate sculpture on the mesosoma and smaller
1823 metathoracic spiracles. Subsequently, he (Santschi 1923b) reported that his original description
1824 (Santschi 1923a) of *B. coactus* refers to *B. coactus* var. *robusta*. This variety has a larger body
1825 size, more sculpture on the mesosoma, and a somewhat bigger head than the ‘typical’ form of *B.*
1826 *coactus*. Both varieties of *B. coactus* were described from the same type locality, however.

1827 After examining specimens of all these varieties and *B. constrictus*, we consider the main
1828 morphological differences to relate to variation in body size. This trait is, however, very variable
1829 even within localities (including among specimens mounted on the same pin). As these taxa all
1830 have the same diagnostic features we here synonymize *B. coactus* var. *nictitans*, *B. coactus* var.
1831 *robustus*, and *B. constrictus* with *B. coactus*.

1832

1833

1834 *Brachymyrmex cordemoyi* Forel

1835 (Figs. 21, 22, 23, supplementary material Fig. S13)

- 1836 *Brachymyrmex patagonicus* var. *cordemoyi* Forel, 1895a: 49 (w.). (MHNG) [not examined].
- 1837 **REUNION.** See also: Emery (1906: 180) (q.m.). Raised to species: Emery (1906: 179).
- 1838 Subspecies of *Brachymyrmex patagonicus*: Forel (1908: 399); Forel (1912b: 165); Santschi
- 1839 (1912: 533). Revived status as species: Wheeler (1922: 1036); Emery (1925: 41). See also Forel
- 1840 (1912a: 62).
- 1841 = *Brachymyrmex laevis* var. *fuscula* Emery, 1906: 178 (w.q.). (MCSN: USNMENT00757216,
- 1842 00757217; MHNG00758131 - 00758133): 10 workers, 1 queen [examined]. **ARGENTINA:**
- 1843 **Mendoza:** Mendoza, Punta de vacas; (MCSN: USNMENT00757215): 8 workers [examined].
- 1844 **ARGENTINA: Buenos Aires:** Buenos Aires. **n. syn.**
- 1845 = *Brachymyrmex brevicornis* Emery, 1906: 180, Figs. 38, 40, 41 (w.q.m). (MCSN:
- 1846 USNMENT00757210 - 00757214): 16 workers, 1 queen, 1 male [examined]. **ARGENTINA:**
- 1847 **Buenos Aires:** Santa Catalina. See also Quirán (2005: 765). **n. syn.**
- 1848 = *Brachymyrmex patagonicus* var. *brevicornoeides* Forel, 1914: 287 (w.q.m). (MHNG:
- 1849 USNMENT00758141 - 00758143): 4 workers, 3 males [examined]. **ARGENTINA: Buenos**
- 1850 **Aires:** Tapalquén. Junior synonym of *Brachymyrmex nigricans*: Santschi (1923a: 657).
- 1851 [*Brachymyrmex brevicornoeides* has priority as senior name, *Brachymyrmex nigricans* is its
- 1852 junior synonym: Bolton (1995: 81)]. **n. syn.**
- 1853 = *Brachymyrmex cordemoyi* var. *nigricans* Santschi, 1916: 395 (w.). (NHMB:
- 1854 USNMENT00758081): 3 workers [examined]. **ARGENTINA:** Río de la plata, Isla Martin
- 1855 Garcia; (NHMB: USNMENT00758078, 00758080): 10 workers. **ARGENTINA: Buenos Aires:**
- 1856 Buenos Aires. [First available use of *Brachymyrmex patagonicus cordemoyi nigricans* Santschi
- 1857 (1912: 533) unavailable name]. Raised to species: Santschi (1923a: 657). Junior synonym of
- 1858 *Brachymyrmex nigricans*: Santschi (1923a: 657) [As mentioned above *Brachymyrmex*
- 1859 *brevicorneoides* has priority over *B. nigricans*].

1860 = *Brachymyrmex cordemoyi* var. *distincta* Santschi, 1923a: 658, Figs. 6, 50, 59 (w.q.). (NHMB:
1861 USNMENT00757178, 00757179): 3 workers [examined]. **ARGENTINA: Santa Cruz;**
1862 (NHMB: USNMENT00758089): 9 workers [examined]. **ARGENTINA: Delta del Paraná. n.**
1863 **syn.**
1864
1865 **Additional material examined. ARGENTINA: Buenos Aires:** Buenos Aires, E.V. Steigen, 3
1866 workers (MZUSP: USNMENT00759023); Buenos Aires, Universidad de Buenos Aires, 18
1867 workers (ICN: USNMENT00759032); La Plata, Silvestri, 4 workers (NHMB:
1868 USNMENT00758088), 8 workers (MCZC: USNMENT00757244); **Entre Ríos:** 8.63 km
1869 Concordia, -31.41667 -58.11667, 16 m, 26 Dec. 2007, W. & E. MacKay #22670, 1 worker
1870 (WEMC: USNMENT00757638); Isla frente Puerto Victoria, -32.63333 -60.16667, 10 m, 29 Oct.
1871 2002, A.L. Wild & N. Heller, 1 worker (ALWC: USNMENT00757966); **Misiones:** 48.93 km N
1872 Campinas de America, -25.8565 -53.9939, 360 m, 03 Jan. 2008, W. & E. MacKay #22794, 1
1873 worker (WEMC: USNMENT00757728); **San Juan:** 8.59 km S Villa Aberastain, -31.72528 -
1874 68.55447, 592 m, 10 Jan. 2008, W. MacKay #22879, 1 worker (WEMC: USNMENT00757737).
1875 **BRAZIL: Bahia:** Boa Vista do Tupim, 06 Dec. 2010, V.M.S. Cameiro & J.J. Resende, 1 worker
1876 (CEPLAC: USNMENT00757887); **Mato Grosso do Sul:** ~70 km E Corumbá, Faz. Maria
1877 Bonita, -19.16666 -57.16666, 22 Aug. 1998, A. L. Wild #AW0657, 1 worker (ALWC:
1878 USNMENT00759025); 10 km Posto Chapadao, 18 Oct. 1989, S. Porter, 3 workers (WEMC:
1879 USNMENT00758994); 3 km Anastácio, 17 Oct. 1989, W. MacKay #12605, 3 workers (WEMC:
1880 USNMENT00757652); Passo da Lontra, -19.53333 -57.01667, 80 m, 08 Sep. 1996, P.S. Ward
1881 #13222, 1 worker, 1 male (MCZC: CMOS000020); **Para:** Santarem, Taperinha, -2.9 -54.3, July
1882 1975, R.L. Jeanne, 440, 4 workers (MCZC: CMOS000015, CMOS000016); **Rio Grande do**
1883 **Norte:** Ceará, Mirim, W.M. Mann, 10 workers (MCZC: CMOS000124, CMOS000125);

1884 **Rondonia:** Ji Parana, 27 Aug. 1984, W. Overal, 2 workers (MPEG: USNMENT00757583,
1885 00757964); Ouro Preto do Oeste, 25 Mar. 1985, W. França, Res INPA 0050, 3 workers (MPEG:
1886 USNMENT00757984, 00758043); **São Paulo:** Aguas de São Pedro, May-June 1985, S. Silva, 1
1887 worker (ICN: USNMENT00757670); Caraguatatuba, Res. Florest rain for, 40-80 m 18-22 May
1888 1971, W.L. & D.E. Brown, 6 workers (MCZC: CMOS000017, CMOS000019, CMOS000021);
1889 José Bonifacio, 17 Nov. 1970, J. Diniz, 2 workers, 1 queen (MZUSP: USNMENT00757582).
1890 **COLOMBIA: Caqueta:** Florencia, 2 workers (ICN: LEV127); **Huila:** 17 km NW, La Plata, 03
1891 Jan. 1984, W. & E. MacKay #7138, 2 workers (WEMC: USNMENT00757673); **Meta:** 65 km E
1892 Puerto Lopez, 30 Jan. 1973, W.P. MacKay #7365, 3 workers (WEMC: USNMENT00757636);
1893 Villavicencio, 17 Dec. 1975, W. & E. MacKay, 2 workers (WEMC: USNMENT00757648);
1894 Vista Hermosa, 25 Dec. 1975, W. & E. MacKay #75812, #815, 7 workers, 1 queen, 1 male
1895 (WEMC: USNMENT00757653, 00757675, 00757985). **COSTA RICA: Limón:** Guapiles, R.
1896 Toro Amarillo vic., 15 Feb.-09 Mar. 1966, W.L. Brown, 3 workers (MCZC:
1897 USNMENT00757647); **Puntarenas:** 8 km WNW Potrero Grande, 9.03 -85.26, 200 m, 01 Aug.
1898 1985, P.S. Ward #7791, 3 workers (PSWC: USNMENT00757877). **CUBA: Guantanamo:**
1899 Baracoa, 20.35 -74.5, 20 m, 26 Aug. 2001, P.S. Ward #14462-14, 3 workers (PSWC:
1900 USNMENT00757881); **Pinar del Río:** Viñales del Río, 14 June 1953, E.O. Wilson #11, 3
1901 workers (MCZC: CMOS000018). **DOMINICAN REPUBLIC:** 28 km SSE Constanza, -9.29576
1902 -75.99786, 11 Sep. 1992, P.S. Ward #11757, 1 worker, 1 queen (PSWC: USNMENT00758016).
1903 **ECUADOR: Loja:** Estación San Francisco, 2200 m, 11 & 14 Sep. 2011, F. Fernandez, 46
1904 workers (ICN: USNMENT00759034, 00759036, 00759037); **Napo:** near Dureno, 0.07778 -
1905 76.73056, 287 m, 20 July 2005, W. & E. MacKay #21273 #21277, 4 workers (WEMC:
1906 USNMENT00757581, 00757637); **Pichincha:** Mitad del Mundo, 00.00 -78.45, 2483 m, 07 Dec.
1907 2003, A.L. Wild & J.M. Vieira #AW 2235, 1 worker (ALWC: USNMENT00757888). **EL**

1908 **SALVADOR: La Libertad:** Quezaltepeque, 500 m, 19 June 1963, D.Q. Cavagnaro & M.E.
1909 Irwin, ANTC 10258, 1 worker (CASENT: CASENT0196000). **GUATEMALA: Suchitepéquez:**
1910 Finca Tarrales, 12.3 km N Patulul, 14.52256 -91.13642, 740 m, 30 July 2004, W. & E. Mackay
1911 #20782, 3 workers (WEMC: USNMENT00758045, 00758046). **GUYANA: Kartabo,** July-Aug.
1912 1920, W.M. Wheeler, 16 workers (MCZC: CMOS000022-000027). **MEXICO: Morelos:**
1913 Cuernavaca, 25 May 1989, W. MacKay #11418, 2 workers (WEMC: USNMENT00757981);
1914 **Oaxaca:** 45 km N. San Pedro Pochutla, 1000 m, 03 June 1988, W. MacKay #10755, 6 workers
1915 (WEMC: USNMENT00758032, 00757649); **Veracruz:** Los Tuxtlas, 10 June 1994, L. Quiroz, 2
1916 workers (ICN: USNMENT00757661). **NEW CALEDONIA:** Kuto Penin. Ile des Pins, -22.6666
1917 167.4333, 5 m, 11 May 1980, P.S. Ward #4294-9, 3 workers (PSWC: USNMENT00757882);
1918 Noumea, 0-100 m, N.L.H. Krauss, 1 worker (CASENT: CASENT0196015). **PARAGUAY:**
1919 **Central:** Guarambaré, -25.48 -57.45, 25 Apr. 1997, A. Wild #AW0514, 1 worker (ALWC:
1920 USNMENT00757645); **Guairá:** Roque Gonzalez, -25.88333 -57.28333, 14 Jan. 1995, B.
1921 Garcete #AW0457, 1 worker (ALWC: USNMENT00759028). **PERU: Madre de Dios:**
1922 Tambopata, Cuzco Amazónico, 15 km NE Puerto Maldonado, June 1989, S.P. Cover & J.E.
1923 Tobin, CA-275, 6 workers, 1 queen (MCZC: USNMENT00757276-00757279); **San Martín:**
1924 Con. Mun. Zona Barreal 23 km S Picota, -7.09111 -76.31361, 335 m, 06-15 Mar. 2005, M.E.
1925 Irwin & J.D. Vasquez, ANTC1447, 1 worker (CASENT: CASENT0066404). **SEYCHELLES:**
1926 La Dique Island, 1 m, 09 Nov 1993, Alpert et al., 2 workers (MCZC: USNMENT00757245).
1927 **SOLOMON ISLAND:** Guadalcanal, Honiara, 0-100 m, Mar 1986, N.L.H. Krauss, ANTC
1928 10277, 1 worker (CASENT: CASENT0196019). **SURINAME:** Dirkshoop, May 1959, I. V. d.
1929 Drift, 3 workers (MPEG: USNMENT00757580). **USA: Arizona:** Pima Co. Tucson, 32.23417 -
1930 110.96666, A.L. Wild #AW2826 (ALWC: USNMENT00757958). **VANUATU:** Tafea, Tanna, 0-
1931 100 m, Dec. 1985, N.L.H. Krauss, ANTC 10270, 10271, 2 workers (CASENT:

1932 CASENT0196012, 0196013). **VENEZUELA: Lara:** Barquisimeto, to Carora km 19, 29 June
1933 1971, W.L.& D.E. Brown, 2 workers (MCZC: USNMENT00757884); **Miranda:** D.F Inst Estud.
1934 Avan. Caracas, 10 Oct 1988, W. MacKay #11144-2 #11146-6, 4 workers (WEMC:
1935 USNMENT00757654, 00757744).

1936
1937 **Diagnosis.** *Brachymyrmex cordemoyi* strongly resembles *B. obscurior* and to some extent also *B.*
1938 *patagonicus*. All these species have scapes that reach or surpass the posterior cephalic margin,
1939 but by less than the maximal diameter of the eye; their mesonotum does not bulge dorsally above
1940 the pronotum in lateral view, and the metanotal groove is absent or narrower than the diameter of
1941 methathoracic spiracles. In general, *B. cordemoyi* has a longer pronotum and mesonotum than *B.*
1942 *obscurior* and *B. patagonicus*, but these characters show important intraspecific variation.
1943 Furthermore, it differs from *B. patagonicus* by having considerably denser pubescence on the
1944 gaster, and from *B. obscurior* by having a larger head, more ommatidia along the maximal
1945 diameter of the eye, and lighter-colored pubescence which is denser on the dorsum of the entire
1946 body and appressed on the gaster instead of decumbent in *B. obscurior*.

1947
1948 *Additional material examined measurements* (mm) (n=20). HL₁ 0.39-0.62; HL₂ 0.27-0.41; HL₃
1949 0.10-0.16; HW 0.33-0.59; SL 0.27-0.53; EL 0.08-0.16; WL 0.37-0.60; PnL 0.10-0.20; PnW 0.23-
1950 0.39; ML 0.08-0.18; MW 0.16-0.29; *Indices* CI 84.38-96.78; SI₁ 82.35-106.38; SI₂ 100.00-
1951 142.86; OI₁ 23.33-34.69; OI₂ 20.00-29.63.

1952
1953 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
1954 concave. Dorsal hairs dense and appressed. Clypeus with a rounded anterior margin and five
1955 long, erect hairs of which a single, usually conspicuous hair is near the anterior margin, two hairs

1956 are in mediolateral position and two more near the toruli; other hairs on the clypeus are markedly
1957 shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin in oblique
1958 anterodorsal view. Scapes reach the posterior cephalic margin or surpass it by a length up to the
1959 maximal diameter of the eye; they have appressed hairs. Three inconspicuous ocelli are usually
1960 present. Eyes are positioned on the cephalic midline and have 10-12 ommatidia along their
1961 maximal diameter.

1962 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum;
1963 sometimes with additional suberect hairs, mainly on the pronotum. The mesonotum is not inflated
1964 and does not bulge dorsally above the pronotum in lateral view. Metanotal groove absent or
1965 narrower than the diameter of the metathoracic spiracles. Metathoracic spiracles in dorsolateral
1966 position, not protruding, and typically touching the mesometanotal and propodeal sutures.
1967 Dorsum of the propodeum slightly convex and shorter than the posterior slope. Propodeal
1968 spiracles circular, positioned on the posterior propodeal margin, slightly posterior of the middle
1969 of the propodeal slope. Legs with appressed hairs. Petiole short and inclined forward.

1970 **Gaster.** With dense yellowish pubescence and several scattered and sub-erect hairs, mainly but
1971 not exclusively along the edges of the segments.

1972 **Color and sculpture.** Body smooth, shiny, and brownish in color.

1973
1974 **Distribution (Supplementary material Fig. S13).** *Brachymyrmex cordemoyi* is widespread and
1975 known from Argentina, Brazil, Colombia, the Dominican Republic, Ecuador, El Salvador,
1976 Guatemala, Guyana, Mexico, Paraguay, Peru, Suriname, the United States, Venezuela and it has
1977 been introduced in New Caledonia, Seychelles, Vanuatu, Solomon Island, Saudi Arabia (Sharaf
1978 et al., 2016), Europe and Asia (Ortiz-Sepulveda, pers. obs.).

1979

1980 **Biology.** Some specimens were collected from under stones (PSWC: USNMENT00757877,
1981 00757881; MCZC: CMOS000020), or on cacti (WEMC: USNMENT00757981).

1982

1983 **Remarks.** We refrain from designating a lectotype because we did not come across the type
1984 series of *B. cordemoyi* at the MHNG. However, we studied the original description and the type
1985 series of its varieties (i.e. *distincta*, *nigricans*) (Santschi 1916; Santschi 1923a). Hence, the
1986 taxonomic decisions made here are based on these data together with the overall morphological
1987 framework we developed for the genus.

1988 The type series of *B. cordemoyi* was collected in Reunion, and Forel (1895a) already suggested
1989 that it represents an introduction from the Neotropics. Forel (1895a) indicated that *B. cordemoyi*
1990 resembles *B. patagonicus*, and originally described it as a variety of the latter species that has
1991 more pubescence. Such dense pubescence is also observed in *B. patagonicus* var.

1992 *brevicornoides*. Forel (1914) did not provide diagnostic features to distinguish *B. patagonicus*
1993 var. *brevicornoides* and typical *B. patagonicus*. However, he suggested that the scapes in *B.*
1994 *patagonicus* var. *brevicornoides* resemble those of *B. brevicornis*, but are slenderer, and that *B.*
1995 *patagonicus* var. *brevicornoides* has somewhat larger eyes than *B. brevicornis*. Before, Emery
1996 (1906) had suggested that *B. brevicornis* is closely related to *B. cordemoyi* because they have
1997 similar integument and pubescence, although the integument is slightly more lucid in *B.*

1998 *brevicornis*. Furthermore, the head and antennal funiculi of *B. brevicornis* are somewhat longer
1999 than those of *B. cordemoyi*, the clypeus slightly more prominent, and the eyes smaller. However,
2000 many of these differences could represent geographic variation rather than specific differences. It
2001 is noteworthy that *B. cordemoyi* is variable in most of these features, and therefore we
2002 synonymize *B. patagonicus* var. *brevicornoides* and *B. brevicornis* to it here. Quirán (2005)
2003 redescribed *B. brevicornis* but did not compare or relate it to other *Brachymyrmex* species.

2004 Another example of the variability within *B. cordemoyi* represents *Brachymyrmex cordemoyi* var.
2005 *distinta*, which was obtained from various places in Argentina, and which has somewhat shorter
2006 scapes than specimens of the typical *B. cordemoyi* (Santschi 1923a). Beyond this feature, the only
2007 difference that Santschi (1923a) remarked is the body color of queens. Santschi (1923a) also
2008 synonymized *B. patagonicus* var. *brevicornoeides* with *B. nigricans*, which he previously
2009 (Santschi 1916) considered a variety of *B. cordemoyi*. Studying the type material of *B. nigricans*
2010 we agree with this taxonomic decision, but *brevicornoeides* has taxonomic priority over *nigricans*
2011 (Bolton 1995: 81), so that *B. nigricans* is also synonymized to *B. cordemoyi* here.

2012 The type specimens of *B. laevis* var. *fuscula* are morphologically more similar to *B. cordemoyi*
2013 than they are to *B. laevis*, and the only difference Emery (1906) described between *B. laevis* and
2014 *B. laevis* var. *fuscula* is body color, however, from our observations both differ also in other
2015 traits, notably the pubescence of the gaster, resulting in their synonymization to *B. patagonicus*
2016 and *B. cordemoyi*, respectively.

2017 In summary, *B. cordemoyi* has several diagnostic features, however, we also observed
2018 considerable intraspecific variation in various traits. This variation may hint to a potential species
2019 complex. *Brachymyrmex cordemoyi* is very widespread and a more comprehensive study of the
2020 variation within and between its populations would be required to fully resolve the taxonomic
2021 status of this species.

2022
2023
2024 *Brachymyrmex degener* Emery

2025 (Figs. 24, 25, supplementary material Fig. S14)

2026 *Brachymyrmex coactus* subs. *degener* Emery, 1906: 177 (w.). **Lectotype worker** (MCSN:
2027 USNMENT00757208) and **paralectotype workers** (MCSN: USNMENT 00757207, MCZC:
2028 M.C.Z. Cotype 01435; **here designated**): 4 workers [examined]. **BRAZIL: Matto Grosso:**
2029 Cuiaba. Raised to species: Santschi (1923a: 670).
2030 = *Brachymyrmex admotus* r. *niger* Forel, 1912a: 62 (w.). (MHNG: USNMENT00757162,
2031 00757163, 00758155): 7 workers [examined]. **BRAZIL: Ceara.** Assigned as *B. degener* st. *niger*
2032 by Santschi (1923a: 671). **n. syn.**
2033 = *Brachymyrmex incisus* Forel, 1912a: 63 (w.m.). (MHNG: USNMENT00758134 -00758139,
2034 00757141-00757143; NHMB: USNMENT00758096): 24 workers, 1 male [examined].
2035 **COLOMBIA: Naranjo. n. syn.**
2036 = *Brachymyrmex luederwaldti* Santschi, 1923a: 672, Figs. 36, 66 (w.). (NHMG:
2037 USNMENT00758140; NHMB: USNMENT00758097, 00758098): 6 workers [examined].
2038 **BRAZIL: São Paulo: Alcatrazes. n. syn.**
2039
2040 **Additional material examined. BRAZIL: Bahia:** Canavieiras, -15.69028 -39.00722, 17 July
2041 1998, J.C.S. Carmo & J.R.M. Santos, 4 workers (CEPLAC: USNMENT00757566); **Para:** Serra
2042 Norte, Serraria, -6.08276 -50.16666, 22 Oct. 1984 (MPEG: MPEG_HYM11506088).
2043 **COLOMBIA: Caldas:** Aguadas, Cañón del Río Arma, 5.61472 -75.45972, 1995, C. Sarmiento
2044 CES096, 3 workers (IAvH: USNMENT00757575); **Guajira:** Quebrada Guacoche, nr. Don
2045 Diego, forest, 10.72305 -72.96972, 10 m, 22 July 1976, W.L. Brown & R.C. Kugler, 8 workers
2046 (MCZC: USNMENT00757565, CMOS000094-CMOS000096); **Huila:** 4 km NE Rivera, 30 Dec.
2047 1986, W. MacKay #9023, 3 workers (WEMC: USNMENT00758026); **Tolima:** Cunday, vereda
2048 “El Eden”, 4.08333 -74.66667, 450 m, 01 Oct. 1999, Mejia et al., 2 workers (ICN:
2049 MPUJ_ENT0000416); **Valle del Cauca:** 08 Jan. 1976, W. & E. MacKay, 2 workers (WEMC:

2050 USNMENT00758162). **GUATEMALA: El Progreso:** 5 km W Morazan, 14.93 -90.20, 800 m,
2051 19 Nov. 2003, A.L. Wild #AW2121, 2 workers (ALWC: USNMENT00757576). **FRENCH**
2052 **GUIANA:** Basse Vie-foret, 04 July 1999, S. Durou, 2 workers, 1 queen (CEPLAC:
2053 USNMENT00757568); Petit Saut, May 2003, J. Orivel & J. Le Breton, 3 workers (CEPLAC:
2054 USNMENT00757573). **PANAMA: Barro Colorado,** Canal Zone, Jan. 1960, W.L. Brown &
2055 E.S. McCluskey, 3 workers (MCZC: USNMENT00758033). **PARAGUAY: Amambay:** Parque
2056 Nacional Cerro Corá, -22.65 -56.05, 13 May 1997, A. Wild #AW0576, 3 workers (ALWC:
2057 USNMENT00757569); **Boqueron:** Enciso N.P. (Southern side), -21.20609 -61.65748, 01-02
2058 Oct. 2002, T. Delsinne, 2 workers (RBINS: Coll.RIScNB SID SPM_ID11523); Enciso N.P.
2059 (Southern side), -21.20609 -61.65748, 01-02 Oct. 2002, M. Leponce, 1 worker (RBINS:
2060 Coll.RIScNB SID SPM_ID31985); Estancia Maria Vicenta, -20.92130 -61.39321, T. Delsinne, 1
2061 worker (RBINS: Coll.RIScNB SID SPM_ID26822); **Canindeyú:** Residencias, 6 km N Ygatimi, -
2062 24.06667 -55.63333, 21 Feb. 1997, A. Wild #AW0451, 1 worker (AWLC:
2063 USNMENT00757577). **TRINIDAD AND TOBAGO:** Cumuto, 24 Apr. 1929, Darlinhton, 1
2064 worker (MCZC: USNMENT00757578).

2065
2066 **Diagnosis.** *Brachymyrmex degener* morphologically resembles *B. coactus* as both species have
2067 scapes that surpass the posterior margin of the head, they have faint sculpture on the mesosoma, a
2068 mesonotum that is inflated and that bulges dorsally above the pronotum in lateral view, a wide
2069 metanotal groove, metathoracic spiracles that are slightly protruding dorsally, and their gasters
2070 have sparse pubescence. However, *B. degener* has a uniformly brownish body, whereas the gaster
2071 is conspicuously darker than the rest of the body in *B. coactus*.

2072

2073 *Lectotype and paralectotypes measurements* (mm) (n=3). HL₁ 0.51-0.55; HL₂ 0.35-0.41; HL₃
2074 0.16; HW 0.49-0.55; SL 0.37-0.53; EL 0.12-0.14; WL 0.55-0.68; PnL 0.16-0.20; PnW 0.31-0.37;
2075 ML 0.12-0.16; MW 0.20-0.23; *Indices* CI 96.15-100.00; SI₁ 76.00-96.43; SI₂ 105.56-135.00; OI₁
2076 21.43-25.93; OI₂ 28.57-30.77.

2077
2078 *Additional material examined measurements* (mm) (n=24). HL₁ 0.53-0.70; HL₂ 0.29-0.49; HL₃
2079 0.12-0.20; HW 0.51-0.73; SL 0.55-0.68; EL 0.12-0.20; WL 0.60-0.79; PnL 0.14-0.23; PnW 0.33-
2080 0.50; ML 0.12-0.21; MW 0.20-0.31; *Indices* CI 87.50-112.50; SI₁82.22-117.86; SI₂137.04-
2081 233.33; OI₁ 20.00-30.30; OI₂ 22.22-33.33.

2082
2083 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
2084 concave. Dorsum of the head has scattered appressed hairs. Clypeus with a rounded anterior
2085 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
2086 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
2087 clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
2088 margin in oblique anterodorsal view. The scapes surpass the posterior cephalic margin by a
2089 length smaller or equal to the maximal diameter of the eye, and they bear appressed and
2090 decumbent hairs. Three ocelli are present. The eyes are positioned on the cephalic midline and
2091 have 8-14 ommatidia along their maximal diameter.

2092 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum;
2093 sometimes with additional suberect hairs, mainly on the pronotum. The mesonotum is inflated
2094 and bulges dorsally above the pronotum in lateral view. Metanotal groove wider than the
2095 diameter of the metathoracic spiracles. Metathoracic spiracles in dorsolateral position, slightly
2096 protruding, and not touching any sutures. Dorsum of the propodeum strongly convex and shorter

2097 than the posterior slope. Propodeal spiracles conspicuous and circular, positioned on the
2098 propodeal margin or just dorsal of it, at the anterior margin of the propodeal slope. Legs with
2099 appressed hairs. Petiole short and inclined forward.

2100 **Gaster.** With scattered pubescence and several scattered long erect hairs.

2101 **Color and sculpture.** Body shiny and uniformly brownish in color. Head and gaster smooth
2102 whereas the dorsum of the mesosoma usually bears imbricate sculpture.

2103

2104 **Distribution (supplementary material Fig. S14).** *Brachymyrmex degener* occurs in Brazil,
2105 Colombia, Guatemala, French Guiana, Trinidad and Tobago.

2106

2107 **Biology.** Unknown.

2108

2109 **Remarks.** The lectotype of *B. degener* is the top specimen on pin USNMENT00758155, whereas
2110 the others on that pin are paralectotypes.

2111 *Brachymyrmex degener* was first described as a subspecies of *B. coactus* by Emery (1906) and
2112 Santschi (1923a) subsequently raised it to species. *Brachymyrmex degener* indeed resembles *B.*
2113 *coactus* closely, and in retrospect we are uncertain that it represents a separate species. However,
2114 the issue of *B. degener* and *B. coactus* is taxonomically very complex and involves several other
2115 previously described species and subspecies that warrant synonymization too. Perhaps this
2116 process is best performed incrementally, which is the approach taken here.

2117 One of these other taxa involved is *B. admotus* r *niger* which was described by Forel (1912a)
2118 with the following diagnostic traits: the metanotal groove is deep, the mesonotum bulges out
2119 dorsally above the pronotum (in lateral view), the body is shiny and the head and gaster smooth
2120 whereas faint sculpture is present on the mesosoma. Upon examination, the type specimens of *B.*

2121 *admotus* r *niger* have the diagnostic traits of *B. degener*, but lack some of those for *B. admotus*,
2122 such as the presence of a pair of thin erect hairs between the methathoracic spiracles, which are
2123 positioned fully dorsal instead of dorsolaterally, and the absence of sculpture on the mesosoma.
2124 These criteria that motivated Santschi (1923a) to reclassify the race as *B. degener* st. *niger*, and
2125 whereas we agree with this reclassification, we do not consider there to be sufficient differences
2126 to prevent synonymization of *niger* to *B. degener*.

2127 In the description of *B. incisus* Forel (1912a) likewise indicated similarities to *B. coactus* and *B.*
2128 *admotus*, but again some of the diagnostic traits of *B. admotus* are absent. Moreover, whereas the
2129 specimens resemble *B. coactus* closely they do not have a gaster that is conspicuously darker in
2130 color than the head and mesosoma, and hence *B. incisus* is here synonymized to *B. degener*.

2131 As to *B. luederwaldti*, Santschi (1923a) indicated similarities to *B. coactus*, and even more so to
2132 *B. admotus* r. *niger* (Forel 1912a), from which he distinguished *B. luederwaldti* mainly by its
2133 fainter propodeal suture. We consider this variation to be intraspecific here and consequently also
2134 synonymize *B. luederwaldti* to *B. degener*.

2135 Upon describing *degener* as a variety of *B. coactus*, Emery (1906) indicated that this variety
2136 differs from typical *B. coactus* mainly in body and eye size, which are traits with a lot of
2137 intraspecific variation as we already indicated in the remarks of *B. coactus*. We did not find
2138 consistent differences in body size, nor in the number of ommatidia along the maximal diameter
2139 of the eye between both taxa. Emery (1906) further emphasized that the medial antenomereres are
2140 somewhat longer than wide in *B. degener*, and vice versa in *B. coactus*. However, we cannot
2141 confirm this putative difference from the type material of both species. Although some putatively
2142 diagnostic differences between *B. coactus* and *B. degener* are indicated in the diagnosis, the
2143 taxonomic importance of these differences remains to be examined. Our morphometric
2144 measurements confirm the difficulty to establish consistent differences between both taxa, and

2145 furthermore our phylogenetic analyses (see below) recovered *B. degener* nested within *B.*
2146 *coactus*. However, a deep phylogenetic branch separates *B. degener* from *B. coactus* as is also
2147 recognized by in the ABGD analysis (see below), and given the taxonomic complexity
2148 surrounding *B. coactus* it is possible that the one specimen identified as *B. coactus* that renders
2149 the species paraphyletic in fact belongs to a distinct taxon. With the sampling that is currently
2150 available, this issue cannot be resolved and therefore we do not further synonymize *B. coactus*
2151 and *B. degener* here.

2152

2153

2154 *Brachymyrmex delabiei* Ortiz & Fernández

2155 (Fig. 26, supplementary material Fig. S15)

2156 *Brachymyrmex delabiei* Ortiz and Fernández, 2014: 24, Figs. 22, 23, 24 (w). **Holotype worker**
2157 (MZSP: USNMENT00757718) and **paratype workers** (CPDC: USNMENT00757719, ICN:
2158 USNMENT00757720, USNM: USNMENT00757721): 4 workers. **BRAZIL: São Paulo:**
2159 Tapiraí, -24.03208 -47.65556, 08-14 Jan. 2001, R.R. Silva & Eberhardt.

2160

2161 *Additional material examined.* **BRAZIL: Bahia:** Boa Nova, João Mata, 13 Aug. 2003, J.R.M.
2162 Santos & J.C.S. Carmo, 1 worker (CPDC: USNMENT00757610); A61 Camacan, 27 Aug. 1999,
2163 -15.60111 -39.52111, col. J.R.M. dos Santos, 1 worker (CPDC: USNMENT00757837); **Santa**
2164 **Catharina:** Palhoça, PE Serra do Tabuleiro, 02–10 Nov. 2003, -27.74111 -48.69722, R.R. Silva,
2165 B.H. Dietz and A. Tavares, 1 worker (MZSP: USNMENT00757725); **São Paulo:** São Bernardo
2166 do Campo, 01 June 1971, W.L. & D.E. Brown, 1 worker (MCZC: USNMENT00757835).

2167

2168 **Diagnosis.** *Brachymyrmex delabiei* is most similar in morphology to *B. brasiliensis* and *B.*
2169 *feitosai*, because they all have tumuliform metathoracic spiracles, however, it differs from *B.*
2170 *brasiliensis* by its entirely smooth and shiny body, and from *B. feitosai* by the presence of two
2171 erect hairs on the pronotum and two on the mesonotum, the lack of dense pubescence on the first
2172 segment of the gaster and the yellowish body.

2173

2174 **Description.** See Ortiz and Fernández (2014).

2175

2176

2177 *Brachymyrmex depilis* Emery

2178 (Fig. 27, supplementary material Fig. S16)

2179 *Brachymyrmex heeri* subsp. *depilis* Emery, 1893: 635 (w.q.). **Lectotype worker** (MCSN:
2180 USNMENT00757228) and **paralectotype workers, queen, male** (MCSN: USNMENT00757225
2181 - 00757232; **here designated**): 37 workers, 1 queen, 10 males [examined]. **USA: District of**
2182 **Columbia:** Georgetown College, 10 Aug. 1885, leg. Pergrande. Wheeler and Wheeler (1953:
2183 139) (l.). Raised to species: Santschi (1923a: 663).
2184 = *Brachymyrmex nanellus* Wheeler, 1903: 102, Fig. 7b (w.m.). (MCZC: MCZ Cotype 22939): 5
2185 workers [examined]. **USA: Texas:** Austin, 25 May 1901. Synonymy by Creighton (1950: 359).
2186 = *Brachymyrmex depilis* subsp. *flavescens* Grundmann, 1952: 117 (w.). (USNM:
2187 USNMENT00529204): 3 workers [examined]. **USA: Utah:** near Salt Lake City. Lower portion
2188 of Big Cottonwood Canyon, 24 June 1947. Synonymy by Cole (1953: 266).

2189

2190 **Additional material examined. CANADA: Nova Scotia:** Halifax, 15 m, 44.63333 -63.61667,
2191 25 Oct. 1996, P.S. Ward #13234, 2 workers, 1 queen (PSWC: USNMENT00757818). **MEXICO:**
2192 **Tamaulipas:** Gomez Parias, 25 Sep. 1987, W. MacKay #10073, 2 workers (WEMC:
2193 USNMENT00757816); **Veracruz:** Las Hamacas, 17 km. N Santiago Tuxtla, 26-28 Aug. 1953,
2194 E.O. Wilson, 5 workers, 1 queen (MCZC: CMOS000114 - 000115); Los Tuxtlas, 10 km NNW
2195 Sontecomapan, 18.58333 -95.08333, 200 m, 20 Mar. 1985, P.S. Ward #7333-55, 3 workers
2196 (PSWC: USNMENT00757815). **UNITED STATES: Alabama:** Marshall Co. JCT 420 7 km S
2197 Morgna city, 34.41111 -86.52361, 09 June 1998, MacKay fam. #188203, 2 workers (WEMC:
2198 USNMENT00757813); **Arkansas:** Cross Co. Village Cr. St. Pk. 14 Aug. 1988, R. Anderson, 3
2199 workers (WEMC: USNMENT00757805 - 00757807); **California:** 8 km S, Brans. Wiask, 10 Feb.
2200 1943, W.S. Ross, ANTC10266, 4 workers (CASENT: CASENT0196008); Santa Barbara Co,
2201 Figueroa Crk., Sedgwick Ranch, 34.71667 -120.03333, 350 m, 02 Mar. 1996, P.S. Ward #12963,
2202 3 workers (PSWC: USNMENT00757590); **District of Columbia:** Washington D.C. 25 May
2203 1948, F. Bonet #1718, 3 workers (MZUSP: USNMENT00757798). **Florida:** Highlands Co.
2204 Archbold Biol. Station, 22 Aug. 1995, A. Wild, 5 workers (ALWC: USNMENT00757817);
2205 **Kentucky:** Floyd Co. Jennie Wiley St. Pk., 07 July 1968, S. Peck Ber #134, 1 worker (MCZC:
2206 CMOS000028); **Louisiana:** Tammany Par. Abita, Springs, Money Hills Golf Course, 30.55156 -
2207 89.95488, 08 Sep. 2000, A.M. Pranschke, 2 workers (CEPLAC: USNMENT00757801); **New**
2208 **Mexico:** Sandoval Co, Bandelier, Nat. Mon, 21 Aug. 1986, W. & E. MacKay #8784, 2 workers
2209 (WEMC: USNMENT00757814); **New York:** Newark, Morris Farm, U. Delaware,
2210 Liriadendrofagus, 18 Apr. 1976, S. Handel, 2 workers (MCZC: CMOS000116, 000117); Ontario
2211 Co. Gannet Hill, 42.7 -77.4, 640 m, 27-29 Aug 2003, A.L. Wild #AW1970, 2 workers, 1 queen
2212 (ALWC: USNMENT00757799); Ontario Co. Gannet Hill, 42.7 -77.4, 640 m, 10 Sep. 1995, A.L.
2213 Wild #AW0719, 3 workers (ALWC: USNMENT00757799); **Texas:** 16 km S San Antonio, 18

2214 Feb. 1942, E.S. Ross, ANTC10267, 3 workers (CASENT: CASENT0196009); Houston Co. Big
2215 Stough Wild Area, 09 May 1988, R. Anderson #12760, 4 workers (WEMC:
2216 USNMENT00757811 - 00757812, 00758040); Sabino Co. 14.5 K E Nerwphill, 11 May 1988, R.
2217 Anderson #12763, #12763, 6 workers (WEMC: USNMENT00757808 - 00757810); **Vermont:**
2218 Nr. Burlington, Temperate Forest, Nov 2001, R. Blatrix, 9 workers (CEPLAC:
2219 USNMENT00757802 - 00757804).

2220

2221 **Diagnosis.** *Brachymyrmex depilis* resembles *B. heeri* and *B. giardi* as all three taxa have the
2222 mesonotum bulging dorsally above the pronotum in lateral view, and a gaster with dense
2223 pubescence. However, *B. depilis* differs from *B. heeri* by its shorter scapes and the lack of erect
2224 hairs on the mesosoma, and from *B. giardi* by its smaller eyes, its appressed hairs on the dorsum
2225 of the mesosoma, its yellowish color and its Nearctic distribution, i.e from the South of Canada to
2226 the North of Mexico.

2227

2228 *Lectotype and paralectotypes measurements* (mm) (n=10). HL₁ 0.47-0.49; HL₂ 0.33-0.37; HL₃
2229 0.10-0.18; HW 0.39-0.45; SL 0.35-0.41; EL 0.08-0.12; WL 0.39-0.51; PnL 0.12-0.20; PnW 0.27-
2230 0.33; ML 0.10-0.14; MW 0.20-0.21; *Indices* CI 80.00-92.00; SI₁ 85.71-100.00; SI₂ 100.00-
2231 117.65; OI₁ 18.18-30.00; OI₁ 20.00-36.00.

2232

2233 *Additional material examined measurements* (mm) (n=10). HL₁ 0.31-0.50; HL₂ 0.19-0.35; HL₃
2234 0.05-0.14; HW 0.29-0.46; SL 0.27-0.42; EL 0.08-0.10; WL 0.31-0.46; PnL 0.08-0.18; PnW 0.22-
2235 0.31; ML 0.07-0.13; MW 0.17-0.22; *Indices* CI 88.89-94.74; SI₁ 85.71-95.74; SI₂ 110.71-142.86;
2236 OI₁ 19.57-30.30; OI₂ 17.14-30.00.

2237

2238 **Description. *Head.*** Slightly longer than wide in full face view; posterior cephalic margin slightly
2239 concave. Clypeus with a rounded anterior margin and five long, erect hairs of which a single,
2240 usually conspicuous hair is near the anterior margin, two hairs are in mediolateral position and
2241 two more near the toruli; other hairs on the clypeus are markedly shorter and appressed or
2242 decumbent. Toruli surpassing the posterior clypeal margin in oblique anterodorsal view. The
2243 scapes are short, usually barely reaching the posterior margin of the head, and never surpassing it
2244 by a length that equals the maximal diameter of the eye. Ocelli are absent. Eyes are small and
2245 positioned on the cephalic midline; they have 6-8 ommatidia along their maximal diameter.

2246 ***Mesosoma.*** Not bearing any erect hairs. The mesonotum is inflated and bulges dorsally above the
2247 pronotum in lateral view. Metanotal groove absent or narrower than the diameter of the
2248 metathoracic spiracles. Metathoracic spiracles are small, in dorsolateral position, not protruding,
2249 but touching the propodeal suture. Dorsum of the propodeum is weakly convex and much shorter
2250 than the propodeal slope. Propodeal spiracles are circular, positioned on the posterior propodeal
2251 margin at the middle of the propodeal slope. Legs with appressed hairs. Petiole short and inclined
2252 forward.

2253 ***Gaster.*** With dense pubescence and scattered long erect hairs at the edges of the segments.

2254 ***Color and sculpture.*** Body opaque with inconspicuous sculpture. Body yellowish, sometimes
2255 with the gaster a bit darker than the mesosoma.

2256

2257 **Distribution (supplementary material Fig. S16).** *Brachymyrmex depilis* is known from Canada,
2258 México, and the United States.

2259

2260 **Biology.** Grundmann (1952) collected a nest of *B. depilis* subsp. *flavescens* from among the roots
2261 of the scrub oak *Quercus gambelii* and suggested that this species is subterranean and tends

2262 aphids and coccids on the roots of plants. This association was also highlighted by Yensen et al.
2263 (1980) and Wheeler and Wheeler (1986). Small colonies of *B. depilis* were found in the soil
2264 under stones or in rotting wood in a wide variety of habitats: open forest, dense moist forest,
2265 grass lands, and dry fields (Wheeler and Wheeler 1986). Surprisingly, Yensen et al. (1980)
2266 reported *B. depilis* from an intertidal halophyte-covered mud flat in the Gulf of California in
2267 Mexico, where colonies are regularly inundated by sea water. The authors suggest that the
2268 mechanisms that allow the species to survive heavy rains elsewhere may have preadapted their
2269 survival in this unusual habitat. Page (1982) reported on copulatory behavior and observed a
2270 queen of *B. depilis* with attached to her abdomen three motionless males, that she dragged around.
2271 As such he suggested that *B. depilis* seems to have multiple copulations but whether insemination
2272 occurs by several partners is unknown.

2273

2274 **Remarks.** The lectotype is designated here as the worker on pin USNMENT00757229 and the
2275 other specimens are paralectotypes.

2276 *Brachymyrmex depilis* was originally described as a subspecies of *B. heeri* by Emery (1893), and
2277 he distinguished it from typical *B. heeri* because *B. depilis* lacks erect hairs on the mesosoma.
2278 Santschi (1923a) raised the subspecies to species but did not provide criteria to support his
2279 decision. Nevertheless, we consider this decision justified given the differences we mention here
2280 in the diagnosis.

2281 In the original description of *B. nanellus* Wheeler (1903) reported a comparison of his material to
2282 alleged specimens of *B. depilis*, and he described a series of differences to support the status of *B.*
2283 *nanellus* as a separate species. Santschi (1923a) accepted this taxonomic decision, but as
2284 Creighton (1950) pointed out the comparative material unlikely belonged to *B. depilis*, and after a

2285 further comparison of both taxa he synonymized *B. nanellus* with *B. depilis*, which we support
2286 here after re-examining the material.
2287 *Brachymyrmex depilis* subsp. *flavescens* was originally distinguished from *B. depilis* by having a
2288 lighter body color, smaller eyes, an opaquer body due to its shriveled integument, scarcer
2289 pubescence and hairs (Grundmann 1952). However, after examining this material we agree with
2290 the conclusion of Cole (1953) that these specimens appear to be part of an incipient colony,
2291 which adequately explains all these morphological differences outlined by Grundmann (1952).
2292 Fisher and Cover (2007) suggested that *B. depilis* may constitute a complex of several species.
2293 The material studied here is perhaps to limited to accurately comment on this issue, however, we
2294 did not find consistent morphological differences between samples, except perhaps in body size.
2295

2296

2297 *Brachymyrmex donisthorpei* Santschi

2298 (Fig. 28, supplementary material Fig. S17)

2299 *Brachymyrmex donisthorpei* Santschi, 1939: 320, Figs. 4, 5 (w.). **Lectotype worker** (NHMB:
2300 USNMENT00757183) and **paralectotype workers** (NHMB: USNMENT00757184-00757185;
2301 **here designated**): 3 workers [examined]. **COLOMBIA**, Mar. 1937, Paul Robá, leg.

2302

2303 **Additional material examined. BRAZIL: Bahia:** Vargito, -15.40 -39.55, 22 Mar. 1999, J.R.M.
2304 dos Santos, 1 worker (CEPLAC: USNMENT00757839); **São Paulo:** Iguape, E.E. Jureia-Itatins,
2305 Nucleo Rio verde, -24.54417 -47.23556, 5-14 Mar. 2001, A.A. Tavares, 1 worker (ICN:
2306 MZSP158). **COLOMBIA: Magdalena:** El Campano, 11.12 -74.10, 1300 m, 13 Aug. 1985. P.S.
2307 Ward #7891-23, 2 workers, 1 queen (PSWC: USNMENT00757840); **Nariño:** territorio Kofan,

2308 0.47481 -77.17913, 1000 m, 28 Sep. 1998, 1 worker (IAvH). **ECUADOR: Zamora-Chinchi:**
2309 Copalinga, -4.09122 -78.96069, 17-19 Oct. 2009, Jacquemin, 1 worker (RBIN: Coll.RIScNB SID
2310 SPM_ID3753921). **PARAGUAY: Boquerón:** Enciso N.P. (Southern side), -21.20298 -
2311 61.65909, 04-06 Nov. 2001, M. Leponce.

2312

2313 **Diagnosis.** *Brachymyrmex donisthorpei* morphologically resembles *B. modestus* and *B. myops*
2314 because they all have dense, short pubescence over the entire body, scapes with short suberect
2315 hairs, eyes that are positioned below the cephalic midline, a metanotal groove that is either
2316 absent or narrower than the diameter of the metathoracic spiracles, and yellowish body color.
2317 *Brachymyrmex donisthorpei* differs from *B. modestus* and *B. myops* by its short scapes that
2318 approximately reach the posterior margin of the head or surpass it by less than the maximal
2319 diameter of the eye.

2320

2321 *Lectotype and paralectotype measurements* (mm) (n=2). HL₁ 0.39-0.41; HL₂ 0.25-0.27; HL₃
2322 0.08; HW 0.33-0.35; SL 0.27-0.29; EL 0.05; WL 0.39; PnL 0.10; PnW 0.27-0.29; ML 0.10; MW
2323 0.20; *Indices* CI 85.00-85.71; SI₁ 82.35-83.33; SI₂ 107.14-107.69; OI₁ 13.89-14.71; OI₂ 19.05-
2324 20.00.

2325

2326 *Additional material examined measurements* (mm) (n=4). HL₁ 0.32-0.38; HL₂ 0.22-0.29; HL₃
2327 0.07-0.09; HW 0.26-0.33; SL 0.24-0.29; EL 0.04; WL 0.27-0.38; PnL 0.11-0.12; PnW 0.20-0.23;
2328 ML 0.06-0.09; MW 0.13-0.16; *Indices* CI 80.55-86.05; SI₁ 86.49-96.55; SI₂ 96.97-112.00; OI₁
2329 13.51-16.67; OI₂ 22.22-23.26.

2330

2331 **Description. Head.** Substantially longer than wide in full face view; posterior cephalic margin
2332 slightly concave. Clypeus with a rounded anterior margin and five long, erect hairs of which a
2333 single, usually conspicuous hair is near the anterior margin, two hairs are in mediolateral position
2334 and two more near the toruli; other hairs on the clypeus are markedly shorter and appressed or
2335 decumbent. Toruli surpassing the posterior clypeal margin in oblique anterodorsal view. Dorsum
2336 of the head has conspicuous appressed pubescence and several suberect hairs. The scapes
2337 approximately reach the posterior margin of the head or surpass it by a length smaller than the
2338 maximal diameter of the eye, and they have appressed and decumbent hairs. Ocelli absent. The
2339 eyes are positioned below the cephalic midline and have only 3-4 ommatidia along their maximal
2340 diameter.

2341 **Mesosoma.** With several short appressed and sub-erect hairs. The mesonotum is not inflated and
2342 does not bulge dorsally above the pronotum in lateral view. Metanotal groove absent or narrower
2343 than the diameter of the metathoracic spiracles. Metathoracic spiracles dorsolateral in position,
2344 not protruding, and touching the propodeal suture. Dorsum of the propodeum flat and much
2345 shorter than propodeal declivity. Propodeal spiracles circular, small and inconspicuous,
2346 positioned on the posterior propodeal margin, slightly posterior of the middle of the propodeal
2347 slope. Legs with appressed and sub-erect hairs. Petiole short and inclined forward.

2348 **Gaster.** With appressed dense pubescence and some sub-erect hairs near the edges of the
2349 segments.

2350 **Color and sculpture.** Body yellowish, with imbricate sculpture on the dorsum of the mesosoma.

2351

2352 **Distribution (supplementary material Fig. S17).** *Brachymyrmex donisthorpei* is known from
2353 Brazil, Colombia, Ecuador and Paraguay.

2354

2355 **Biology.** Unknown.

2356

2357 **Remarks.** No specific geographic information is available on the type material beyond

2358 Colombia.

2359

2360

2361 *Brachymyrmex feitosai* Ortiz & Fernández

2362 (Figs. 29, supplementary material Fig. S18)

2363 *Brachymyrmex feitosai* Ortiz and Fernández, 2014: 27, Figs. 25, 26, 27 (w). **Holotype worker**

2364 and **paratype workers** (MZSP: USNMENT00757694): 3 workers. **BRAZIL: Rio de Janeiro:**

2365 Floresta de Tijuca, D. Federal. 16 Dec. 1959, C.A: Campos Seabra.

2366

2367 **Additional material examined. BRAZIL: Minas Gerais:** Lavras, Ijaci e Perdões, -21.24528 -

2368 44.99972, Fragmento, 06 Dec. 2002, M.S. Santos & N.S. Dias, 4 workers (CPDC:

2369 USNMENT00757836, 00759008); **São Paulo:** Piedade, Floresta Atlantica "Theomar", -23.73846

2370 -47.38957, 16 Nov. 2008, G. Bieber, 3 workers (ICN: USNMENT00759038); Sete Barras, PE

2371 Carlos Botelho, 600 m, -24.20833 -47.97056, 11–15 May 2009, armadilha subterrânea #18, F.

2372 Esteves et al., 1 worker (MZSP: ANTWEB CASENT0217326).

2373

2374 **Diagnosis.** *Brachymyrmex feitosai* resembles *B. brasiliensis* and *B. delabiei* because they all have

2375 tumuliform metathoracic spiracles. However, *B. feitosai* differs from *B. brasiliensis* by its

2376 entirely smooth and shiny body, that is more brownish, and by the dense yellowish pubescence

2377 on the first gastral segment. It differs from *B. delabiei* by the presence of many suberect hairs on
2378 the pronotum and mesonotum and its dense yellowish pubescence on the first gastral segment.

2379

2380 **Description.** See Ortiz and Fernández (2014).

2381

2382

2383 *Brachymyrmex fiebrigi* Forel

2384 (Figs. 30, 31, supplementary material Fig. S19)

2385 *Brachymyrmex fiebrigi* Forel, 1908: 400 (w.). **Lectotype worker** (MHNG:

2386 USNMENT00757164) and **paralectotype workers** (MHNG: USNMENT00757164-00757165;

2387 **here designated**): 4 workers [examined]. **PARAGUAY:** San Bernardino, Fiebrig leg. Santschi

2388 (1922: 260) (q.m.). See also: Santschi (1923a: 661).

2389 = *Brachymyrmex fiebrigi* var. *funicularis* Santschi, 1922: 260 (w.). (NHMB:

2390 USNMENT00757180-007581, 00758094): 22 workers [examined]. **ARGENTINA: Córdoba:**

2391 Alta Gracia. **n. syn.**

2392 = *Brachymyrmex fiebrigi* var. *fumida* Santschi, 1923a: 661 (w.). (MHNB: USNMENT00757704,

2393 00758157): 4 workers [examined]. **ARGENTINA: Buenos Aires:** Cerro “Ruinas”; (MHNB:

2394 USNMENT00758093, NHMG: USNMENT00758153): 3 workers [examined]. **ARGENTINA:**

2395 **Cordoba:** La Cabana. **n. syn.**

2396

2397 **Additional material examined. ARGENTINA: Cordoba:** Alta Gracia, Bruchi, 2 workers

2398 (MZUSP: USNMENT00757548). **BRAZIL: Bahia:** Canavieiras, -15.56361 -39.01722, 24 Aug.

2399 1998, J.C.S. Carmo & J.R.M. Santos, 1 worker (CEPLAC: USNMENT00757962; Esplanada

2400 Baixio, -12.11444 -37.69694, June-Oct. 2010, M.L.O. Travassos, #5644, 1 worker (CEPLAC:
2401 USNMENT00757545). **Minas Gerais:** Lavras, 06-12 2002, M.S. Santos, N.S. Dias, 2 workers
2402 (CEPLAC: USNMENT00759008). **São Paulo:** Iguape, EE Jureia-Itatins, Nucleo Rio verde, -
2403 24.54417 -47.23556, 05-14 Mar. 2001, A.A. Tavares, 1 worker (ICN: MZSP158). **COSTA**
2404 **RIKA: Heredia:** Cantarrana, 11 km ESE La Virgen, 10.33516 -84.04856, 300 m, 26 Feb. 2007,
2405 Marcos-Deimer-Joel, 1 worker (JTLC: INBIO0003646597); **Limón:** Casa Verde, Tortuguero,
2406 10.58333 -83.51667, 5 m, 24 June 1988, J. Longino #2154, 3 workers (JTLC:
2407 INBIOCRI001280321, 001280326, 001280331); **Puntarenas:** 8 km WNW Potrero grande, 9.03 -
2408 85.25, 200 m, 01 Aug. 1985, P.S. Ward #7792, 3 workers (PSWC: USNMENT00757549); La
2409 Pita, rd. To Monteverde 10.16667 -84.91667, 120 m, 13 July 1984, J. Longino, 1 worker (JTLC:
2410 JTLC000005902). **CUBA: Viñales:** Pinar del Rio, 14 June 1953, E.O. Wilson #10, 2 workers, 1
2411 male (MCZC: USNMENT00757546). **MEXICO: Quintana Roo:** Municipio Leona Vicario,
2412 Reserva Ecológica "El Edén", 21.21667 -87.18333, 03 July 1997, G.M. Daniel, 1 worker (ICN:
2413 USNMENT00757626); **PARAGUAY: Boquerón:** Garrapatal, -21.44306 -61.87500, 04-06 Nov.
2414 2001, M. Leponce, 1 worker (RBIN: Coll.RIScNB SID SPM_ID14544); Garrapatal, -21.43965 -
2415 61.48899, 05-06 Nov. 2001, M. Leponce, 1 worker (RBIN: Coll.RIScNB SID SPM_ID25159);
2416 Enciso, -21.20 -61.67, 03-06 Nov. 2001, M. Leponce & T. Delsinne #4123-9/3, 3 workers
2417 (ALWC: ANTWEB CASENT0173481); Enciso N.P. (Southern side), -21.19978 -61.66084, 17-
2418 18 Sep. 2003, T. Delsinne, 1 worker (RBIN: Coll.RIScNB SID SPM_ID31851); Enciso N.P.
2419 (Southern side), -21.19978 -61.66084, 04-06 Nov. 2003, M. Leponce, 1 worker (RBIN:
2420 Coll.RIScNB SID SPM_ID32154); Fortín Mayor Infante Rivarola, -21.67146 -62.41312, 02-06
2421 Nov. 2001, M. Leponce, 1 worker (RBIN: Coll.RIScNB SID SPM_ID30618); Mister Long, -
2422 20.60386 -62.05053, 05-06 Nov. 2001, M. Leponce, 1 worker (RBIN: Coll.RIScNB SID
2423 SPM_ID25477); Mister Long, -20.60386 -62.05053, 17-18 Sep. 2003, T. Delsinne, 2 workers

2424 (RBIN: Coll.RIScNB SID SPM_ID 26023, Coll.RIScNB SID SPM_ID27108); Mister Long, -
2425 20.60386 -62.05053, 01-04 Oct 2004, T. Delsinne, 1 worker (RBIN: Coll.RIScNB SID
2426 SPM_ID30953); Nueva Asunción, -20.68896 -61.92886, 17-18 Sep. 2003, Delsinne (RBIN:
2427 Coll.RIScNB SID SPM_ID27184); **Central:** Capiata, -25.35 -57.42, 22 Feb. 1994, B. Garcete
2428 #ibn 197, 1 worker (ALWC: USNMENT00757544); **Itapúa:** Isla Yacyretá E Melgarejo, -22.42 -
2429 56.50, 11 Nov. 1997, B. Barrios #ibn 217, 2 workers (ALWC: USNMENT00757891).
2430 **SURINAME:** Paramaribo, Apr. 1959, I.v.d. Drif, 3 workers (MZUSP: USNMENT00757547).

2431
2432 **Diagnosis.** *Brachymyrmex fiebrigi* morphologically resembles *B. depilis*, because they both have
2433 short scapes that do not or just reach the posterior margin of the head, a gaster with dense
2434 pubescence, a yellowish body and eyes that are positioned on the cephalic midline.
2435 *Brachymyrmex fiebrigi* differs from *B. depilis* by its mesosoma, which usually bears several erect
2436 hairs, two on the pronotum and two on the mesonotum and by its geographic distribution, which
2437 ranges from the South of Mexico until Paraguay, including Cuba.

2438
2439 *Lectotype and paralectotypes measurements* (mm) (n=3). HL₁ 0.35-0.37; HL₂ 0.23; HL₃ 0.08-
2440 0.10; HW 0.31; SL 0.25-0.29; EL 0.08-0.10; WL 0.27-0.31; PnL 0.12; PnW 0.20-0.25; ML 0.06;
2441 MW 0.16-0.20; *Indices* CI 87.21-88.89; SI₁ 81.25-93.75; SI₂ 108.33-125.00; OI₁ 25.00-31.25;
2442 OI₂ 21.05-27.78.

2443
2444 *Additional material examined measurements* (mm) (n=12). HL₁ 0.32-0.46; HL₂ 0.22-0.34; HL₃
2445 0.07-0.13; HW 0.27-0.41; SL 0.22-0.36; EL 0.08-0.10; WL 0.26-0.40; PnL 0.09-0.14; PnW 0.20-
2446 0.28; ML 0.06-0.11; MW 0.15-0.20; *Indices* CI 75.71-88.46; SI₁ 80.00-93.75; SI₂ 96.77-115.38;
2447 OI₁ 21.74-33.33; OI₂ 20.00-28.85.

2448

2449 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin flat.

2450 Dorsum of the head with appressed hairs. Clypeus with a rounded anterior margin and five long,

2451 erect hairs of which a single, usually conspicuous hair is near the anterior margin, two hairs are in

2452 mediolateral position and two more near the toruli; other hairs on the clypeus are markedly

2453 shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin in oblique

2454 anterodorsal view. The scapes are short, usually approximately reaching the posterior margin of

2455 the head, and they bear appressed and decumbent hairs. Ocelli apparently absent. Eyes are

2456 positioned on the cephalic midline and have 6-9 ommatidia along their maximal diameter.

2457 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum. The

2458 mesonotum is not inflated and does not bulge dorsally above the pronotum in lateral view.

2459 Metanotal groove absent or narrower than the diameter of the metathoracic spiracles.

2460 Metathoracic spiracles dorsolateral in position, not protruding, and touching the propodeal suture.

2461 Dorsum of the propodeum flat and much shorter than the posterior slope. Propodeal spiracles

2462 circular, small and inconspicuous, positioned on the posterior propodeal margin slightly posterior

2463 of the middle of the propodeal slope. Legs with appressed hairs. Petiole short and inclined

2464 forward.

2465 **Gaster.** With dense pubescence and scattered suberect hairs at the edges of the segments.

2466 **Color and sculpture.** Body usually smooth, shiny and yellowish.

2467

2468 **Distribution (supplementary material Fig. S19).** *Brachymyrmex fiebrigi* is known from

2469 Argentina, Brazil, Costa Rica, Cuba, Mexico, Paraguay and Suriname.

2470

2471 **Biology.** Some specimens have been collected from below stones (PSWC:
2472 USNMENT00757549); Forel (1908) suggested that this species nests in dry branches of bushes.
2473
2474 **Remarks.** The lectotype is the second ant from the top on pin USNMENT00757164, whereas the
2475 other specimens on that pin are paralectotypes. Santschi (1922) considered *B. fiebrigi* var.
2476 *funicularis* as a variety of *B. fiebrigi* mainly based on its darker-colored funiculus and posterior
2477 segments of the gaster, but otherwise the type specimens of this variety are very similar in
2478 measurements, head shape, and gastric pubescence compared to the type material of *B. fiebrigi*.
2479 Overall, we consider these differences to represent intraspecific variation.
2480 Santschi (1923a) considered *B. fiebrigi* var. *fumida* as a variety that only differs from the typical
2481 *B. fiebrigi* by its somewhat darker body color, and the overall light yellowish scapes and tibia. As
2482 for *B. fiebrigi* var. *funicularis* we consider these differences to represent intraspecific variation
2483 and both varieties are synonymized here.

2484

2485

2486 *Brachymyrmex flavidulus* (Roger)

2487 (Supplementary material Fig. S20)

2488 *Plagiolepis flavidula* Roger, 1863: 162 (w.). **Lectotype worker** (MfNB: 19185: GBIF-
2489 D/FoCol2900; GBIF-D/FoCol2910; **here designated**): 1 worker [examined]. **CUBA.** Attributed
2490 to *Brachymyrmex* by Smith (1955: 99).

2491

2492 **Additional material examined. COLOMBIA: Valle del Cauca:** Bosque Yotoco, 1575 m, 25
2493 June 1989, W.P. MacKay #11562, 2 workers (WEMC: USNMENT00757634). **COSTA RICA:**
2494 **Puntarenas:** Monteverde, 10.29564 -84.79009, 1540 m, 10 Dec. 1987, J. Longino #1975-s, 1

2495 worker, 1 queen (JTL: JTL0000005251). **JAMAICA: Trelawny:** 5 km N Quick Step,
2496 18.26667 -77.71667, 360 m, A.L. Wild #AW1382, 1 worker (ALWC: USNMENT00757658).

2497
2498 **Diagnosis.** *Brachymyrmex flavidulus* resembles *B. fiebrigi*, *B. giardi* and *B. depilis* in that they all
2499 have short scapes that approximately reach the posterior margin of the head or surpass it by less
2500 than one maximal diameter of the eye, their gaster bears dense pubescence, their eyes are located
2501 on the cephalic midline and their bodies are yellowish. *Brachymyrmex flavidulus* differs from *B.*
2502 *depilis* and *B. giardi* by its mesonotum that does not bulge dorsally above the pronotum in lateral
2503 view, and from *B. fiebrigi* by the absence of erect hairs on the pronotum and mesonotum.

2504
2505 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
2506 convex. Clypeus with a rounded anterior margin and five long, erect hairs of which a single,
2507 usually conspicuous hair is near the anterior margin, two hairs are in mediolateral position and
2508 two more near the toruli; other hairs on the clypeus are markedly shorter and appressed or
2509 decumbent. Toruli surpassing the posterior clypeal margin in oblique anterodorsal view. The
2510 scapes are short and barely reach the posterior margin of the head. Ocelli apparently absent. Eyes
2511 are positioned on the cephalic midline and have 7-9 ommatidia along their maximal diameter.

2512 **Mesosoma.** Without erect hairs. The mesonotum does not bulge dorsally above the pronotum in
2513 lateral view. Metanotal groove absent. Metathoracic spiracles dorsolateral in position, not
2514 protruding, and touching the propodeal suture. Dorsum of the propodeum shorter than posterior
2515 slope. Propodeal spiracles circular, positioned on the posterior propodeal margin, slightly
2516 posterior of the middle of the propodeal slope. Legs with appressed hairs. Petiole short and
2517 inclined forward.

2518 **Gaster.** With dense pubescence.

2519 **Color and sculpture.** Body usually smooth, shiny and yellowish.

2520

2521 **Distribution (Supplementary material Fig. S20).** This species is known from Colombia, Costa
2522 Rica, Cuba and Jamaica.

2523

2524 **Biology.** Unknown.

2525

2526 **Remarks.** *Brachymyrmex flavidulus* is a problematic species for several reasons. It was described
2527 by Roger (1863) as a species of *Plagiolepis*. Smith (1955) transferred it to *Brachymyrmex*,
2528 seemingly based in geographic reasons, i.e. that *Plagiolepis* is not native to the neotropics. We
2529 agree with the attribution to *Brachymyrmex* because the type of *Brachymyrmex flavidulus* has 9
2530 antennal segments, which is a diagnostic trait of *Brachymyrmex*, whereas *Plagiolepis* has 11
2531 antennal segments (Bolton 2003). The type series consist of a single individual of which the
2532 mesosoma and gaster are mounted on a pin, and the head is prepared on a microscope slide. This
2533 preservation hampers us to document the arrangement of hairs on scapes, head, and clypeus as
2534 well as the number of ommatidia in the maximal diameter of the eye.

2535 The worker on pin JTLC0000005251 is unusual in comparison to the other specimens of *B.*

2536 *flavidulus* in having sparser gastral pubescence and somewhat longer scapes. Additional material
2537 from Costa Rica would be required to adequately characterise the morphological variation in
2538 these populations, and to verify its species attribution.

2539 This species is morphologically very similar to *B. fiebrigi*. *Brachymyrmex flavidulus* lacks the
2540 erect hairs on the mesosoma that are present in *B. fiebrigi*, but as the number of specimens
2541 available of *B. flavidulus* is very limited we cannot currently comment on the consistency of this

2542 difference. An in-depth comparison with *B. fiebrigi* is required when more specimens of *B.*
2543 *flavidulus* become available, especially from Cuba, where both species occur.

2544

2545

2546 *Brachymyrmex gagates* Wheeler

2547 (Fig. 32, supplementary material Fig. S21)

2548 *Brachymyrmex gagates* Wheeler, 1934: 206 (w.). **Lectotype worker** (USNM:

2549 USNMENT00529454) and **paralectotype workers** (USNM: USNMENT00529454; MCZC:

2550 M.C.Z. Cotype 1-3 21436, M.C.Z. Cotype 4-6 21436; **here designated**): 9 workers [examined].

2551 **MEXICO: Veracruz:** Mirador, 20 Apr. 1929.

2552

2553 **Additional material examined. PANAMA: Colon:** San Lorenzo Forest, 9.28333 -79.97194, J.

2554 Schmidt & J. Bail, fogging, 2 workers (ICN: USNMENT00759031).

2555

2556 **Diagnosis.** *Brachymyrmex gagates* resembles *B. degener* and *B. gaucho* in morphology, because
2557 they all have smooth, shiny, and dark brown or black bodies, scapes that surpass the posterior
2558 margin of the head, and a gaster with scarce pubescence. *Brachymyrmex gagates* differs from *B.*
2559 *degener* by its darker body and by having a mesonotum that is almost circular in dorsal view and
2560 that does not bulge above the pronotum in lateral view. It differs from *B. gaucho* by having a
2561 slightly concave posterior cephalic margin, scapes with decumbent hairs, a second segment of the
2562 antennal funiculus that is conspicuously shorter than the first antennal segment, and its almost
2563 circular mesonotum in dorsal view that does not bulge above the pronotum in lateral view.

2564

2565 *Lectotype measurements* (mm). HL₁ 0.59; HL₂ 0.39; HL₃ 0.18; HW 0.55; SL 0.51; EL 0.16; WL
2566 0.59; PnL 0.18; PnW 0.39; ML 0.16; MW 0.20; *Indices* CI 93.33; SI₁ 92.86; SI₂ 130.00; OI₁
2567 28.57; OI₂ 30.00.

2568

2569 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic border slightly
2570 concave. Dorsum of the head with scattered appressed hairs. Clypeus with a rounded anterior
2571 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
2572 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
2573 clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
2574 margin in oblique anterodorsal view. The scapes bear decumbent hairs and surpass the posterior
2575 margin of the head by a length smaller than the maximal diameter of the eye. Three ocelli
2576 present. Eyes are positioned slightly posteriorly to the cephalic midline and have 10-12
2577 ommatidia along their maximal diameter.

2578 **Mesosoma.** Typically bearing two erect hairs on the pronotum and two on the mesonotum,
2579 sometimes with some additional appressed hairs on the dorsum of the mesonotum. The
2580 mesonotum is inflated but does not bulge dorsally above the pronotum in lateral view; it is almost
2581 circular in dorsal view. Metanotal groove wider than the diameter of the metathoracic spiracles.
2582 Metathoracic spiracles in dorsolateral position, protruding slightly, and either just or just not
2583 touching the propodeal suture. Dorsum of the propodeum convex and somewhat shorter than the
2584 posterior declivity. Propodeal spiracles circular, positioned on the posterior propodeal margin,
2585 anterior of the middle of the propodeal slope. Legs have appressed hairs. Petiole short and
2586 inclined forward.

2587 **Gaster.** With scattered pubescence and several scattered long erect hairs.

2588 **Color and sculpture.** Head and gaster are smooth and shiny, whereas the dorsum of the
2589 mesosoma is slightly imbricate. Body uniformly dark brown, apart from the terminal segments
2590 of the tarsus and the hairs, which are lighter.

2591

2592 **Distribution (Supplementary material Fig. S21).** *Brachymyrmex gagates* is known from
2593 Mexico and Panama.

2594

2595 **Biology.** The type specimens were collected from an epiphytic bromelia (*Tillandsia*
2596 *streptophylla*) (Wheeler 1934).

2597

2598 **Remarks.** The lectotype is the ant at the top of pin USNM: USNMENT00529454, whereas the
2599 others on that pin are paralectotypes. Wheeler (1934) pointed out that *B. gagates* is similar to but
2600 nevertheless different from *B. incisus* (which is here synonymized to *B. degener*) of which he had
2601 specimens from Panama in his collection. He reported that *B. gagates* has a wider head, a much
2602 more prominent mesonotum, a more distinct and impressed promesonotal suture, longer funicular
2603 joints and darker body color. We are uncertain as to what he exactly implied about the
2604 promesonotal suture, because it is very distinctive in all *Brachymyrmex* species, and the
2605 mesonotum bulges dorsally above the pronotum in lateral view in *B. degener* whereas it does not
2606 in *B. gagates* (see diagnosis). We agree that generally *B. incisus* (and thus *B. degener*) generally
2607 have much lighter body color than *B. gagates*, but as mentioned in the remarks of *B. degener* and
2608 *B. coactus* the variation in body color in these species requires more detailed documentation.

2609

2610

2611 *Brachymyrmex gaucho* Santschi

2612 (Fig. 33, supplementary material Fig. S22)

2613 *Brachymyrmex gaucho* Santschi, 1917: 283 (w.). (NHMB) [examined, but the type is severely
2614 damaged]. **ARGENTINA: Córdoba:** Unquillo, M. Birabén. Combination in *Brachymyrmex*
2615 (*Brysha*) by Santschi (1923a: 674). See also: Quirán (2005: 767).

2616

2617 **Diagnosis.** *Brachymyrmex gaucho* is morphologically similar to *B. antennatus* because both have
2618 legs and antennae with erect hairs and a second segment of the antennal funiculus that is as long
2619 as or longer than the first. However, *B. gaucho* differs from *B. antennatus* by having a flat
2620 posterior cephalic margin, a dark brown body, erect hairs on the scape and the dorsum of the
2621 head, a mesonotum that bulges dorsally above the pronotum, and a gaster with scarce
2622 pubescence.

2623

2624 **Description. Head.** Almost equally wide as long in full face view; the posterior cephalic margin
2625 is flat and the posterior side of the head is wider than the anterior side. Dorsum of the head bears
2626 scattered erect hairs. Clypeus with a rounded anterior margin and five long, erect hairs of which a
2627 single, usually conspicuous hair is near the anterior margin, two hairs are in mediolateral position
2628 and two more near the toruli; other hairs on the clypeus are clearly shorter and decumbent. Toruli
2629 surpassing the posterior clypeal margin in oblique anterodorsal view. The scapes surpass the
2630 posterior cephalic margin by a length smaller than 1.5× the maximal diameter of the eye and have
2631 erect hairs. The second segment of the antennal funiculus is as long as or longer than the first.
2632 Three ocelli are present. Eyes are positioned on the cephalic midline and have 13-14 ommatidia
2633 along their maximal diameter.

2634 **Mesosoma.** With several thin, erect hairs. The mesonotum is inflated, anteroposteriorly inclined
2635 and bulges dorsally above the pronotum in lateral view. Metanotal groove usually absent, but
2636 when present narrower than the diameter of the metathoracic spiracles. Metathoracic spiracles in
2637 dorsolateral position, slightly protruding, and near the propodeal suture. Dorsum of the
2638 propodeum flat and equal in length to the propodeal slope. Propodeal spiracles circular,
2639 positioned just dorsally of the posterior propodeal margin and slightly posterior of the middle of
2640 the propodeal slope. Legs have suberect and erect hairs. Petiole short and inclined forward.

2641 **Gaster.** With scattered pubescence and several scattered long erect hairs.

2642 **Color and sculpture.** Head and gaster are smooth and shiny, whereas the dorsum of the
2643 mesosoma is imbricate. Body uniformly dark brown.

2644

2645 **Distribution (Supplementary material Fig. S22).** *Brachymyrmex gauchoi* is currently only
2646 known from Argentina.

2647

2648 **Biology.** Unknown.

2649

2650 **Remarks.** The type specimen in the NHMB is damaged but Quirán deposited 3 workers
2651 belonging to this species from Argentina, Córdoba II-2001, E. Quirán, leg. at the NHMB, which
2652 we also examined. These specimens come from the same state as the type material, but they are
2653 no types. We studied these specimens, one of which is illustrated in Fig. 33. More type material
2654 would exist at the MACN (5 workers) and the MLP (1 worker) (Quirán 2005), but it is not
2655 studied here.

2656

2657

2658 *Brachymyrmex giardi* Emery
2659 (Fig. 34, supplementary material Fig. S23)
2660 *Brachymyrmex giardi* Emery, 1895: 215 (w.q.). **Lectotype worker** (MSNG:
2661 USNMENT00757220) and **paralectotype workers, putative worker-queen intercaste, queen,**
2662 **male** (MSNG: USNMENT00757218 - 00757220, MHNG: USNMENT00758105-00758109;
2663 **here designated**): 6 workers, 9 putative worker-queen intercastes, 1 queen, 1 male [examined].
2664 **CHILE:** Santiago de Chile. Emery (1906: 178) (m.).
2665 = *Brachymyrmex melensis* De Zolessi et al., 1978: 26 (w.q.l.). **URUGUAY: Cerro Largo: Melo.**
2666 [not examined]. **n. syn.**
2667
2668 **Additional material examined. CHILE:** Valparaiso, 2 workers (MCZC: M.C.Z. Cotype22940).
2669
2670 **Diagnosis.** *Brachymyrmex giardi* resembles *B. depilis* and *B. heeri* as these species have a
2671 mesonotum that bulges dorsally above the pronotum in lateral view, and a gaster with dense
2672 pubescence. Additionally, *B. giardi* and *B. depilis* have bodies without erect hairs; they can be
2673 distinguished because *B. giardi* has dense decumbent pubescence on the head and mesosoma,
2674 usually a dark brownish body, and it is geographically restricted to Chile and Uruguay.
2675 Furthermore, *B. giardi* differs from *B. heeri* by having short scapes, and no erect hairs on the
2676 pronotum or mesonotum.
2677
2678 *Lectotype and paralectotype measurements* (mm) (n=8). HL₁ 0.45-0.68; HL₂ 0.29-0.42; HL₃
2679 0.10-0.32; HW 0.35-0.68; SL 0.33-0.59; EL 0.10-0.18; WL 0.39-0.89; PnL 0.10-0.21; PnW 0.25-
2680 0.57; ML 0.08-0.35; MW 0.16-0.52; *Indices* CI 78.26-105.00; SL₁ 84.85-100.00; SL₂ 113.33-
2681 142.86; OI₁ 23.53-33.33; OI₂ 21.74-50.00.

2682

2683 **Worker description. Head.** Slightly longer than wide in full face view; posterior cephalic
2684 margin is flat. Dorsum of the head has dense appressed hairs. Clypeus with a rounded anterior
2685 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
2686 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
2687 clypeus are clearly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
2688 margin in oblique anterodorsal oblique view. The scapes surpass the posterior cephalic margin by
2689 a length smaller than the maximal diameter of the eye and have decumbent hairs. Three ocelli
2690 appear to be present. Eyes are positioned on the cephalic midline and have 7-9 ommatidia along
2691 their maximal diameter.

2692 **Mesosoma.** Without erect hairs. The mesonotum is inflated and bulges dorsally above the
2693 pronotum in lateral view. Metanotal groove usually absent, or narrower than the diameter of the
2694 metathoracic spiracles. Metathoracic spiracles in dorsolateral position, not protruding, and
2695 touching the propodeal suture. Dorsum of the propodeum slightly convex and shorter than the
2696 posterior propodeal margin. Propodeal spiracles circular, positioned on the posterior propodeal
2697 margin slightly posterior of the middle of the propodeal slope. Legs with appressed hairs. Petiole
2698 short and inclined forward.

2699 **Gaster.** With dense pubescence and scattered long erect hairs along the edges of the segments.
2700 Some specimens have the same morphology as a regular worker as to the head and mesosoma,
2701 but have a gaster that is somewhat expanded, i.e. they are somewhat physogastric.

2702 **Color and sculpture.** Body smooth and shiny, usually dark brownish with yellowish legs and
2703 pubescence.

2704

2705 **Intercaste description.** The morphology of the putative worker-queen intercaste differs from
2706 that of the worker by its larger size, the eyes that have around 9 ommatidia along their maximal
2707 diameter, the pronotum that bears several semi-erect hairs, the enlarged mesonotum that does
2708 not bulge dorsally above the pronotum in lateral view, and that does not bear erect but several
2709 subdecumbent hairs, the sharper posterior ending of the mesonotum in dorsal view, the deep
2710 metanotal groove that is wider than the metathoracic spiracles, the almost laterally positioned
2711 metathoracic spiracles, that do not protrude and do not touch any suture, and the uniform
2712 yellowish body color (albeit with lighter-colored legs).

2713

2714 **Distribution (Supplementary material Fig. S23).** *Brachymyrmex giardi* is known to occur in
2715 Chile and Uruguay.

2716

2717 **Biology.** The biology of *B. giardi* has not recently been studied, however Emery (1895) indicated
2718 that Prof. Giard observed an association between *B. giardi* and the coccid *Margadores vitium*. As
2719 to the biology of *B. melensis*, which we synonymize here with *B. giardi*, De Zolessi et al. (1978:
2720 39) provided detailed habitat information including specifications on the landscape, soil and
2721 vegetation. Their nest was subterranean, with several chambers between 15 and 50 cm deep, each
2722 chamber being about 3 cm high and 3 to 5 cm long and wide. Some repletes were found hanging
2723 from the roof together with normal workers as is observed in *Mymecocystus hortideorum*.

2724

2725 **Remarks.** The second ant from the top in pin MSNG: USNMENT00757220 is designated here as
2726 lectotype, whereas the other specimens are paralectotypes. In the original description of *B. giardi*
2727 Emery (1895: 215) described a worker, a replete and a queen, and the replete is what we consider
2728 here as a putative worker-queen intercaste, because a regular queen was also reported by Emery

2729 (1895). Note that this queen was indicated to be wingless, however, after studying the material
2730 we confirm that it represents a real queen rather than an ergatoid, and the replete has, as
2731 mentioned above, a hybrid morphology between queen and worker. Upon dissection of the
2732 abdomen of the replete Emery (1895: 215) reported that the crop is full of honey-like liquid, but
2733 also that the ovaries are more developed than in normal workers, and that these repletes likely
2734 have a reproductive function. Nevertheless, he considered nourishment their primary function, as
2735 is confirmed by De Zolessi et al. (1978). In summary, the exact affinity of these repletes is
2736 uncertain: if it were ergatoid queens we would not expect a regular queen to be present (Peeters
2737 1991), which points to an intercaste, because intercastes co-exist with a regular queen. However,
2738 intercastes do not usually participate in reproduction (Peeters 1991). Given all the available data,
2739 we consider these specimens for now to be a putative worker-queen intercaste, as mentioned
2740 before, but the intriguing issue of the repletes in *B. giardi* requires further study.

2741 We have not been able to locate the type material of *B. melensis* and have therefore studied it
2742 from the detailed work of De Zolessi et al. (1978). These authors subdivided the putative worker-
2743 queen intercaste into two categories: the first for specimens that resemble normal workers but
2744 have the gaster somewhat expanded, and the second for the putative intercaste, which displays a
2745 strongly enlarged gaster with the ability to store liquids. De Zolessi et al. (1978) indicate that
2746 *B. melensis* resembles *B. physogaster* Kusnezov (1960) most, a species here synonymized to *B.*
2747 *heeri*, but that both differ in size and in the number of ocelli (see additional differences in the
2748 diagnosis above). These authors did not compare *B. melensis* and *B. giardi*, but upon doing so we
2749 did not find any trait that allows distinguishing these taxa and hence we synonymize *B. melensis*
2750 here. *Brachymyrmex giardi* and *B. heeri* are indeed quite similar, not in the least by the presence
2751 of a putative worker-queen intercaste, and further in-depth study of both species is required.

2752 *Brachymyrmex giardi* var. *nitida* was previously suggested to be a junior synonym of *B. giardi*
2753 (Snelling and Hunt 1975), but in our opinion, it is a junior synonym of *B. bruchi* (see above).
2754 *Brachymyrmex giardi* var. *cordobensis* on the other hand appears to be a junior synonym of *B.*
2755 *heeri* (see below).

2756
2757

2758 ***Brachymyrmex heeri* Forel**

2759 **(Figs. 35, 36, supplementary material Fig. S24)**

2760 *Brachymyrmex heeri* Forel, 1874: 91, Figs. 16, 20 (w.). **Lectotype worker** (MHNG:
2761 USNMENT00757169) and **paralectotype workers, males, queen** (MHNG:
2762 USNMENT00757167-00757171, USNMENT00758116-00758120); **here designated**): 15
2763 workers, 3 males, 1 queen [examined]. **SWITZERLAND: Zurich:** Serra des orchidiées. Forel
2764 (1876: 52) (q.m.). See also: Santschi (1923a: 664).
2765 = *Brachymyrmex goeldii* Forel, 1912a: 65 (w.). (MHNG: USNMENT00757166): 1 worker
2766 [examined]. **BRAZIL: São Paulo:** Botucatu. **n. syn.**
2767 = *Brachymyrmex giardi* var. *cordobensis* Santschi, 1929: 309 (w.). (NHMB:
2768 USNMENT00757698, 00757699, CASENT0911600): 23 workers [examined]. **ARGENTINA:**
2769 **Cordoba:** Alta Gracia. **n. syn.**
2770 = *Brachymyrmex physogaster* Kusnezov, 1960: 382, Figs.1-4 (w.). (INSUE): 7 workers
2771 [examined]. **ARGENTINA: Salta:** National park Estancia El Rey. **n. syn.**

2772

2773 **Additional material examined. ARGENTINA: Misiones:** Loreto, C. Bruch, 1 worker (NHMB:
2774 USNMENT00758095). **BOLIVIA: Santa Cruz:** 10 km NW Terevinto, -17.67 -63.45, 380 m, 09
2775 Dec. 1993, P.S. Ward #12314-61, 2 workers (MCZC: USNMENT00757940); Buena Vista, -

2776 17.45 -63.67, 350 m, 18 Dec. 1993, P.S. Ward #12438-79, 3 workers (PSWC:
2777 USNMENT00757745); Las Gamas, Parque Nacional Noel Kempff Mercado, -14.80 -60.38, 700
2778 m, 04 Dec. 1993, 6 workers (PSWC: USNMENT00757941, 00758024). **BRAZIL: Goiás:**
2779 Campo Limpo, faz conceição, -16.33083 -49.16367, 01-07 July 2005, R.R. Silva & R.M. Feitosa,
2780 8 workers (ICN: MZSP120, 121); **Minas Gerais:** Serra Caraça, 1380 m, Oct. 1961, Martins &
2781 Silva, 2 workers, 3 putative worker-queen intercastes (MZSP: USNMENT00757603); Serra
2782 Caraca, Kloss, Lenko, Nov. 1961, Martins & Silva, 3 workers, 1 putative worker-queen intercaste
2783 (MCZC: USNMENT00757598); **Pará:** Melgaço, Caixiuanã, ECFPn, -1.77803 -51.42694, 27
2784 Nov.- 03 Dec. 2001, 2 workers (MPEG: USNMENT00757592, 00757550); Melgaço, Caixiuanã,
2785 ECFPn, -1.70661 -51.45909, 25-27 Oct. 2005, Equipe A.Y. Harada, 11 workers (MPEG:
2786 AYH057); Melgaço, Caixiuanã, ECFPn, -1.75444 -51.52241, 24-26 Jan. 2006, Equipe A.Y.
2787 Harada, 5 workers (MPEG: AYH023); Melgaço, Caixiuanã, ECFPn, -1.75444 -51.52241, 28 Oct.
2788 2003, A.Y. Harada, E.P. Fagundes, C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P.
2789 Souza, C. Renato, 8 workers (MPEG: AYH083); **Santa Catarina:** São Bento do Sul, APA Rio
2790 Vermelho, -26.36417 -49.27111, 30 Mar.-04 Apr. 2001, R.R. Silva & Everhardt, 2 workers (ICN:
2791 MZSP043); **São Paulo:** Barueri, K. Lenko, 4 workers, 1 queen (MZSP: USNMENT00757602);
2792 Caraguatatuba, Reserva Florestal, 13 July 1965, Exp. Dep. Zool. 3487, 4 workers, 1 queen
2793 (MZSP: USNMENT00757597); Cunha, PE Serra do Mar, Nucleo Cunha-Indara, -23.25083 -
2794 45.00722, 21-22 Apr. 2001, A.A. Tavares & R.R. Silva, 15 workers (ICN: MZSP151).
2795 **COLOMBIA: Caldas:** Aranzazu, Vereda Cuatro Esquinas, Finca Tres Esquinas, 5.31870 -
2796 75.48947, 1837 m, 06-08 Aug. 2003, L.E. Franco & J. Cruz, 2 workers (IAvH: IAvH27322);
2797 Aranzazu, Vereda La Guaira, Finca Alto Bonito, 5.27883 -75.48461, 2056 m, 25-26 July 2003,
2798 L.E. Franco & J. Cruz, 1 worker (IAvH: IAvH27303); Aranzazu, Vereda Sabana Larga, Finca
2799 Las Colinas de Zega, 5.31713 -75.47556, 2000 m, 25-27 July 2003, L.E. Franco & J. Cruz, 5

2800 workers, 1 queen (IAvH: IAvH25458, 25459); Salamina, Vereda El Cedrito, Finca El Cedrito,
2801 5.33117 -75.46744, 1960 m, 27-29 Aug. 2002, L.E. Franco & J. Cruz, 1 worker (IAvH:
2802 IAvH25465); **Huila**: 8 km S. Neiva, 20 Mar. 1976, W. & E. MacKay, 4 workers (WEMC:
2803 USNMENT00757948, 00757949); Neiva: 23 Mar. 1976, W. & E. MacKay, 4 workers, 1 queen, 1
2804 male (WEMC: USNMENT00757733, 00757946, 00757947); **Nariño**: Altaquer, Barro Ñambi, C.
2805 Sanda #22, 2 workers (ICN: USNMENT00757633); **Quindío**: Calarcá, Vereda Pradera Baja,
2806 Finca La Holanda, 4.55694 -75.63917, 1575 m, 29 Nov. 1999, E. Gonzalez & J. Sossa, 1 worker
2807 (IAvH: IAvH-E74153); Calarcá, Vereda Santo Domingo, Finca Santa Librada, 4.55694 -
2808 75.63917, 1575 m, 16 Mar. 2000, J. Sossa, 1 worker (IAvH: IAvH-E74154); Filandia, Vereda
2809 Cruces, Finca Pavas, 4.70422 -76.63250, 1900 m, 04-06 June 2002, E. Jimenez & M.F. Reina, 2
2810 workers (IAvH: IAvH27228); Génova, Vereda El Cedral, Finca Buenos Aires, 4.235 -75.77556,
2811 1600 m, 26 Oct. 1999, E. Gonzalez & J. Sossa, 2 workers (IAvH: IAvH-E74166, 74167);
2812 **Risaralda**: Apia, La María, Cafetal de sol (S-III), 3.13 -75.95, 1405 m, 28 Jan. 2002, L. Rivera, 1
2813 worker (IAvH: IAvH-E74175); Pereira Vereda La Suiza, SFF Otún Quimbaya, 4.72800 -
2814 75.57744, 1900 m, 24-26 Nov. 2002, M. Reina & L.E. Franco, 2 workers, 1 putative worker-queen
2815 intercaste (IAvH: IAvH27279); Pereira, Vereda La Suiza, Finca Pez Fresco, 1890 m, 22-24 Nov.
2816 2002, E. Jimenez & M.F. Reina, 1 worker (IAvH: IAvH27285); **Valle del Cauca**: Cairo, Vereda
2817 Llano Grande, Finca Encanto, 4.73603 -76.21698, 1650 m, 03 Apr. 2003, J. Henao, 1 worker
2818 (IAvH: IAvH25147); Medio Calima Campamento DR., C.H.M. Aldana, 1 worker (ICN:
2819 USNMENT00757551). **COSTA RICA: Guanacaste**: Cerro Cacao, 10.92682 -85.46823, 1100
2820 m, 09 Feb. 1989, J. Longino #2342, 1 worker (INBIOCRI001280503); **Heredia**: 16 km N Vol.
2821 Barba, 10.283 -84.083, 950 m, 12 July 1986, J. Longino #1367, 1 worker, 1 queen (JTLC:
2822 JTLC000005274); 16 km SSE La Virgen, 10.26871 -84.08572, 1100 m, 09 Mar. 2001, 1 worker
2823 (JTLC: INBIO0003205132); coffee farms vic. Heredia, 1100 m, 01 July 1991, I. Perfecto, 1

2824 worker (JTLC: LACM ENT 139924); **Puntarenas:** Monteverde, 10.3 -84.8, 1500 m, 17 May
2825 2001, S. Yanoviak & J. Gering, 1 worker, 1 queen (JTLC: JTLC000002089, JTLC000002253);
2826 Monteverde, 10.301 -84.806, 1500 m, 14 July 1984, J. Longino 1556, 1 worker, 1 queen (JTLC:
2827 JTLC000005268); 3 km SE Monteverde, 10.283 -84.783, 1200 m, 02 Mar. 1994, J. Longino
2828 #3578-s, 1 worker (JTLC: INBIO CRI001282749); 4 km S San Vito, 8.783 -82.967, 1200 m, 30
2829 June 1995, J. longino #3702-s, 1 worker (JTLC: INBIOCRI001280752); Sirena, Parque Nacional
2830 Corcovado, 8.467 -83.583, 0-100 m, 23 Sep. 1982, J. Longino, 1 worker (JTLC:
2831 JTLC000005266); **ECUADOR:** 3.2-13 km N of Puyo, Napo, Pastaza, 953 m, 09 Feb. 1955, R.I.
2832 Schlinger & E.S. Ross, ANTC10200, 1 worker (CASENT: CASENT0196022); **Pichincha:**
2833 Maquipucuna, 5km ESE Nanegal, 0.116 -78.633, 1500 m, 17 Aug. 1991, P.S. Ward #11503-19, 2
2834 workers, 1 queen (PSWC: USNMENT00757596); **Zamora-Chinchipe:** Copalinga, -4.09122 -
2835 78.96069, 1000 m, 01-03 Oct. 2009, Delsinne & Arias. **FRENCH GUIANA:** Basse Vie (Petit
2836 Saut), Aug. 1999, S. Dorou, 3 workers, 2 males (CPDC: USNMENT00757952).
2837 **GUATEMALA: El Progreso,** 20 km N Estancia de la Virgen, 1800-1900 m, 08 June 1991, R.S.
2838 Anderson, 1 worker (JTLC: CASENT0601427); Sololá, 1 km N San Andrés, Semetabaj, 14.75 -
2839 91.13, 1840 m, 16 Nov. 2003, A.L. Wild #AW2059, A.L. Wild #AW 2059, 3 workers (ALWC:
2840 USNMENT00757942). **MEXICO: Chiapas :** 15.1 km N.W. Bochil, 17.09120 -92.99138, 1930
2841 m, 24 Sep. 1992, R.S. Anderson, 1 worker (JTLC: CASENT0603200); 29 km E La Trinitaria,
2842 16.106 -91.772, 1520 m, 21 July 2007, J. Longino #6100, 1 worker (JTLC: JTLC000010323); 3.8
2843 km ESE Custepec, 15.71205 -92.93387, 1900 m, 18 July 2007, J. Longino #6072-2, 2 workers, 1
2844 queen, 1 male (JTLC: JTLC000010342, 000010343); **Jalisco:** 6.76 km SW Mazamitla, 19.89222
2845 -103.07722, 1997 m, 22 June 2000, W. & E. MacKay, 1 worker, 1 male (WEMC:
2846 USNMENT00757739); **Nuevo León:** nr Monterrey, Mesa de Chipinque, 1365 m, 16-18 July
2847 1965, 2 workers, 1 queen (MCZC: USNMENT00757666); **Veracruz:** 2.7 km N Teocelo, 1128

2848 m, 22-24 July 1973, A. Newton, 2 workers (WEMC: USNMENT00757945, 00757607); Km 38
2849 on Fortin-Huatusco road, Cornell Iniversity, 1965, 2 workers, 1 queen (MCZC:
2850 USNMENT00757954); Las Hamacas, 17 km N Santiago Tuxtla, 26-28 Aug. 1853, E.O. Wilson
2851 #357, 2 workers (MCZC: USNMENT00757951); Los Tuxtlas, 10 km NNW Sontecomapan,
2852 18.58333 -95.08333, 500 m, 21 Mar. 1985, P.S. Ward #7364; 5.5 km NE Coscomatepec, 05 June
2853 1988, W. MacKay #10844, 2 workers, 1 male (PSWC: USNMENT00757950); 5.5 km NE
2854 Coscomatepec, 05 June 1988, W. MacKay #10844, 2 workers, 1 male (WEMC:
2855 USNMENT00757944). **NICARAGUA: Granada:** Mombacho Volcano, 11.93394 -85.97858,
2856 1150 m, 18 July 2003, W. & E. Mackay, 2 workers, 1 queen (WEMC: USNMENT00758042).
2857 **PANAMA: Canal zone:** 3 km NW Gamboa, 9.13333 -79.71667, 40 m, 10 Dec. 1983, P.S. Ward
2858 #6391-14, 3 workers (PSWC: USNMENT00757542); **Chiriqui:** Parque Nacional Volcan Baru
2859 Boquete, 1850 m, 18 June 1995, R. Anderson #17810, 1 worker (WEMC:
2860 USNMENT00757943). **PARAGUAY: Canindeyú,** Reserva Natural Bosque Mbaracayú,
2861 Jejuimini, -24.1 -55.5, 24 July 1996, A. Wild #AW0235, 2 workers, 1 queen (ALWC:
2862 USNMENT00758025); Reserva Natural Bosque Mbaracayú, Jejuimini, -24.1 -55.5, 11 Mar.
2863 1997, A. Wild #AW0477, #AW0478, 3 workers, 1 queen (ALWC: USNMENT00757543,
2864 00757955). **VENEZUELA: Aragua:** Parque Nacional Henri Pittier, La Toma, 10.59233 -
2865 68.14031, 1169 m, 09-19 Aug. 2008, 1 worker (ICN: USNMENT00757740); **Lara:** 9 km SE
2866 Barbacoas, 9.77 -70.06, 2000 m, 22 Aug. 1987, P.S. Ward #8922, 2 workers, 1 queen (PSWC:
2867 USNMENT00757953).
2868
2869 **Diagnosis.** *Brachymyrmex heeri* resembles *B. depilis* and *B. giardi* closely, because all three
2870 species have a mesonotum that bulges above the pronotum in lateral view, and a gaster with

2871 dense pubescence. However, *B. heeri* differs from *B. depilis* and *B. giardi* by having scapes that
2872 surpass the posterior margin of the head.

2873
2874 *Lectotype and paralectotypes measurements* (mm) (n=5). HL₁ 0.39-0.43; HL₂ 0.27-0.30; HL₃
2875 0.10; HW 0.35-0.41; SL 0.37-0.39; EL 0.10-0.11; WL 0.39-0.45; PnL 0.10; PnW 0.25-0.31; ML
2876 0.08-0.12; MW 0.16-0.20; *Indices* CI 90.00-100.00; SI₁ 90.48-111.11; SI₂ 126.67-142.86; OI₁
2877 23.81-27.78; OI₂ 22.72-25.00.

2878
2879 *Additional material examined measurements* (mm) (n=5). HL₁ 0.41-0.60; HL₂ 0.27-0.39; HL₃
2880 0.10-0.13; HW 0.40-0.66; SL 0.36-0.52; EL 0.09-0.19; WL 0.35-0.68; PnL 0.11-0.16; PnW 0.27-
2881 0.45; ML 0.09-0.21; MW 0.18-0.35; *Indices* CI 93.75-110.81; SI₁ 78.05-93.62; SI₂ 114.29-
2882 135.71; OI₁ 21.74-29.27; OI₂ 16.22-28.00.

2883
2884 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
2885 concave. Clypeus with a rounded anterior margin and five long, erect hairs of which a single,
2886 usually conspicuous hair is near the anterior margin, two hairs are in mediolateral position and
2887 two more near the toruli; other hairs on the clypeus are markedly shorter and appressed or
2888 decumbent. Toruli surpassing the posterior clypeal margin in oblique anterodorsal view. The
2889 scapes surpass the posterior margin of the head by a length smaller than the maximal diameter of
2890 the eye; they bear decumbent hairs. Ocelli absent. Eyes are positioned on the cephalic midline
2891 and have 6-7 ommatidia along their maximal diameter.

2892 **Mesosoma.** With several decumbent hairs and usually two erect hairs on the pronotum and two
2893 on the mesonotum, but sometimes those on the mesonotum or on both are absent. The
2894 mesonotum is inflated and bulges dorsally above the pronotum in lateral view. Metanotal groove

2895 absent or narrower than the diameter of the metanotal spiracles. Metathoracic spiracles in
2896 dorsolateral position, not protruding, and touching the propodeal suture. Dorsum of the
2897 propodeum convex and shorter than the propodeal slope. Propodeal spiracles circular, positioned
2898 on the posterior propodeal margin, slightly posterior of the middle of the propodeal slope. Legs
2899 with appressed hairs. Petiole short and inclined forward.

2900 **Gaster.** With dense pubescence and scattered long erect hairs at the edges of the segments. Some
2901 specimens of *B. heeri* resemble the regular worker in head and mesosoma, but they have a
2902 strongly expanded gaster (physogastry).

2903 **Color and sculpture.** Head and gaster smooth, dorsum of the mesosoma with imbricate sculpture,
2904 body opaque and yellowish, sometimes with a somewhat darker gaster.

2905
2906 **Distribution (Supplementary material Fig. S24).** We have studied *B. heeri* from localities in
2907 Argentina, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Mexico,
2908 Nicaragua, Panama, Paraguay, Uruguay, Venezuela and from populations that were introduced in
2909 Switzerland. Santschi (1923a) also reported this species from Puerto Rico, Jamaica, Haiti and
2910 Guyana, but we have not studied this material.

2911
2912 **Biology.** *Brachymyrmex heeri* was originally described from specimens collected in a tropical
2913 orchid greenhouse in Switzerland (Forel 1874). The species was found climbing on various
2914 plants, and was associated with aphids, but the nest was not located. Santschi (1929) reported that
2915 the nest of the type specimens of *B. giardi* var. *cordobensis* was found at the base of a tree, and *B*
2916 *physogaster* was collected in the heavily humic, finely loamy soil in the shadow of trees, where
2917 both excessive moisture and eventual drought are unlikely (Kusnezov 1960).

2918

2919 **Remarks.** The lectotype is designated here as the ant in the middle of their holder MHNG:
2920 USNMENT00757169, whereas the other specimens are paralectotypes. Forel (1874) described
2921 the worker of *B. heeri*, but did not indicate physogastry in his description, and Santschi (1923a)
2922 did not comment on this issue neither. In the description of *B. giardi* var. *cordobensis* (which is
2923 here synonymized under *B. heeri*) Santschi (1929) referred to physogastric specimens, and also to
2924 ‘worker-queens’ with a strongly expanded gaster. He does not provide any additional description
2925 of these worker-queen specimens, but upon examination of this material and other samples of *B.*
2926 *heeri* we exclusively found worker-like specimens with a normal or robust mesosoma and an
2927 expanded gaster. These specimens do not have morphological features reminiscent of a queen,
2928 but rather differ from regular workers by having a larger body size, a subquadrate head, with the
2929 posterior cephalic margin slightly concave to almost flat, scapes that barely reach the posterior
2930 margin of the head, three ocelli, eyes that have approximately 11 ommatidia along their maximal
2931 diameter, a deep metanotal groove that is wider than the diameter of the metathoracic spiracles,
2932 and as already mentioned, a strongly expanded gaster. To exclude the possibility that the museum
2933 samples we studied reflect a mixture of two species, we sequenced specimens of both morphs,
2934 and found them to be genetically very similar. In summary, *B. heeri* either has dimorphic
2935 workers, or a putative worker-queen intercaste, and whereas we consider the first scenario more
2936 likely (because we did not find specimens with a hybrid worker-queen morphology), the issue
2937 requires more study. These observations also apply to *B. physogaster*, and this species and *B.*
2938 *giardi* var. *cordobensis* are synonymized here with *B. heeri* because they contain all its
2939 morphological features. Forel (1912a) distinguished *B. goeldii* from other *Brachymyrmex* species
2940 principally based on the form of the head, and he mainly compared it with *B. bruchi*, however,
2941 this material appears to belong to a ‘robust worker’ of *B. heeri*. Interestingly, as for *B. heeri*
2942 before, Forel (1912a) does not mention physogastry.

2943 Two varieties have been assigned to *B. heeri*, namely *B. heeri* var. *fallax*, and *B. heeri* var.
2944 *basalis*. As indicated before, *B. heeri* var. *fallax* is attributed here to *B. aphidicola*, and *B. heeri*
2945 var. *basalis* is synonymized under *B. pictus* (see below) here.

2946 It is noteworthy that *B. heeri* has a wide geographic distribution and a study of the morphological
2947 variation within the species in a molecular and geographic context would be required. Likewise,
2948 it would be interesting to study the biology of the various morphs within a colony, including the
2949 underlying developmental processes and their distribution and behavior within the colony.

2950 Indeed, some colleagues (Kusnezov 1960) have labeled physogastric specimens here assigned to
2951 *B. heeri* as honey pot workers and have observed them hanging from the ceiling of the chambers
2952 of the nest, as in *Myrmecocystus*, and *B. melensis* (see *B. giardi* above). However, why
2953 physogastry is present in some *Brachymyrmex* species, but not in others remains unclear.

2954 Kusnezov (1960) suggested that it may relate to a trophobiotic lifestyle, whereas others suggested
2955 it is an adaptation to periodically arid conditions or food scarcity (Forel 1902; Wheeler 1910).
2956 However, Creighton (1950), argued exactly the opposite by suggesting that physogastry may
2957 develop when a xerophyte species encounters and adapts to less arid and more resource-rich
2958 habitats. Clearly, more work on this issue is required, but as mentioned above, the habitat from
2959 which *B. physogaster* was reported by Kusnezov (1960) does not appear to confirm the ‘scarcity
2960 hypothesis’. This future work should perhaps also consider potential intrinsic causes of
2961 physogastry beyond the putative environmental drivers discussed above.

2962

2963

2964

***Brachymyrmex iridescens* NEW SPECIES**

2965

(Fig. 37, supplementary material Fig. S25)

2966 **Holotype worker** (MZSP: USNMENT00757758) and **paratype workers** (MZSP:
2967 USNMENT00757757): 5 workers. **BRAZIL: Santa Catharina**, Chapecó, July 1960, F.
2968 Plaumann 9878.

2969
2970 **Additional material examined. ARGENTINA: Misiones:** Parque Nacional Iguazú, -25.71847 -
2971 54.43319, 23 Sep. 1999, Leponce, Roisin & Theunis, 1 worker (MACN: MACN_En 18283,
2972 MACN_En 18201, MACN_En 18242); Parque Nacional Iguazú, 1 worker (RBINS: Coll.
2973 RISCNB SID SPM_ID01612). **BRAZIL: Parana:** Londrina, Nov. 2004, D.T. Lopes, 1 worker
2974 (CPDC: USNMENT00757755); **Santa Catharina:** Teutônia, June 1961, F. Plaumann, 8219, 3
2975 workers (MZSP: USNMENT00757756).

2976
2977 **Etymology:** The epithet *iridescens* refers to the conspicuous iridescent appearance of this species
2978 under stereoscope illumination.

2979
2980 **Diagnosis.** *Brachymyrmex iridescens* morphologically resembles *B. santschii*, because both have
2981 conspicuous, strongly alveolate sculpture on the head and mesosoma. However, they differ from
2982 one another because *B. iridescens* has a metanotal groove that is narrower than the diameter of
2983 the metathoracic spiracles, scapes that approximately reach the posterior margin of the head, and
2984 a gaster with dense pubescence.

2985
2986 *Holotype and paratype measurements* (mm) (n=2). HL₁ 0.40-0.43; HL₂ 0.29 - 0.30; HL₃ 0.09;
2987 HW 0.35 - 0.37; SL 0.30-0.34; EL 0.09-0.10; WL 0.39-0.40; PnL 0.13; PnW 0.22-0.25; ML 0.09
2988 - 0.11; MW 0.13-0.16; *Indices* CI 85.42-86.67; SI₁80.95-82.5; SI₂ 100.00; OI₁ 23.81-25.00; OI₂
2989 23.81-25.00.

2990
2991 *Additional material examined measurements* (mm) (n=2). HL₁ 0.37-0.42; HL₂ 0.26-0.30; HL₃
2992 0.07-0.11; HW 0.29-0.38; SL 0.28-0.30; EL 0.09; WL 0.39-0.42; PnL 0.12 - 0.13; PnW 0.22-
2993 0.22; ML 0.09-0.11; MW 0.13-0.18; *Indices* CI 78.57-89.36; SI₁ 80.95-93.94; SI₂ 100.00-106.90;
2994 OI₁ 23.81-30.30; OI₂ 19.05-25.53.

2995
2996 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
2997 concave or flat. Dorsum of the head with decumbent hairs. Clypeus with a rounded anterior
2998 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
2999 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
3000 clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
3001 margin in oblique anterodorsal view. The scapes are short and approximately reach the posterior
3002 margin of the head; they have decumbent and suberect hairs. Three ocelli are present. Eyes are
3003 positioned on the cephalic midline and have 8-9 ommatidia along their maximal diameter.

3004 **Mesosoma.** With several decumbent hairs, and on the pronotum some suberect hairs. The
3005 mesonotum is inflated and bulges dorsally above the pronotum. The metanotal groove is
3006 narrower than the diameter of the metathoracic spiracles. Metathoracic spiracles dorsal, slightly
3007 protruding, and not touching the mesonotal nor propodeal suture. Dorsum of the propodeum
3008 slightly convex and shorter than the propodeal slope. Propodeal spiracles circular, positioned on
3009 the posterior propodeal margin at the middle of the propodeal slope. Legs with appressed hairs.
3010 Petiole short and inclined forward.

3011 **Gaster.** With decumbent, dense pubescence and several scattered long erect hairs.

3012 **Color and sculpture.** Head and thorax finely alveolate, gaster smooth and shiny. The body is
3013 uniformly brownish.

3014
3015 **Distribution (supplementary material Fig. S25).** *Brachymyrmex iridescens* is known from
3016 Argentina and Brazil.
3017
3018 **Biology.** Unknown.
3019
3020 **Remarks.** *Brachymyrmex iridescens* resembles *B. santschii*, but their distributions are strongly
3021 disjunct: *B. iridescens* is only known from Brazil and Argentina, whereas *B. santschii* from Costa
3022 Rica and Panama.

3023
3024
3025 *Brachymyrmex micromegas* Emery

3026 (Fig. 38, supplementary material Fig. S26)

3027 *Brachymyrmex (Brysha) micromegas* Emery in Santschi, 1923a: 675, Figs. 30, 32 (w.).
3028 **Lectotype minor worker** (MCSN: USNMENT00757222) and **paralectotype minor workers,**
3029 **major workers** (MCSN: USNMENT00757222-00757223; MZSP: USNMENT00758145-
3030 00758146, 00757825-00757827, 00757830; NHMG: USNMENT00758145-00758146): 4 major
3031 workers, 5 minor workers [examined]. **BRAZIL: São Paulo:** São Paulo city, Ipiranga. See also:
3032 Ortiz and Fernández (2014: 16, Figs. 1-6).

3033
3034 *Additional material examined.* **BRAZIL: São Paulo:** Agudos, 05 Nov. 1967, W. Kempf, 1 minor
3035 worker (MZSP: USNMENT00757830); Anhembi, Faz B. Rico, 14 Feb. 1969, W. Kempf, J.C.
3036 Magalhães, L.T.F.M. Kulman, 1 minor worker (MZSP: USNMENT00757834).

3037
128

3038 **Diagnosis.** *Brachymyrmex micromegas* morphologically resembles *B. pilipes* because both
3039 species have a dimorphic worker caste, a clypeus with a row of long thick hairs near the anterior
3040 margin, toruli that touch the posterior clypeal margin, but never surpass it in oblique anterodorsal
3041 view, and tumuliform metathoracic spiracles. However, *B. micromegas* differs from *B. pilipes* by
3042 having a smooth and shiny body, with very fine longitudinal striations restricted to the
3043 metapleura.

3044
3045 **Description.** See Ortiz and Fernández (2014).

3046
3047 *Brachymyrmex minutus* Forel

3048 (Fig. 39, supplementary material Fig. S27)

3049 *Brachymyrmex minutus* Forel, 1893: 346 (w.q.). **Lectotype worker** (MHNG:
3050 USNMENT00757150) and **paralectotype workers, queen** (MHNG: USNMENT00757149-
3051 00757151; USNMENT00758110-00758112; **here designated**): 15 workers, 1 queen [examined].
3052 **ANTILLES:** Saint Vincent. See also: Santschi (1923a: 667).

3053
3054 **Additional material examined. BOLIVIA: Santa Cruz:** Aserradero Moira, -14.57 -61.20, 180
3055 m, 27 Nov. 1993, P.S. Ward #12174-49, 3 workers (PSWC: USNMENT00757587), 3 workers
3056 (MCZC: USNMENT00757305); 10 km NW Terevinto, -17.67 -63.45, 380 m, 09 Dec. 1993, P.S.
3057 Ward #12314-62, #12314-63, 2 workers (PSWC: USNMENT00757870), 5 workers (MCZC:
3058 USNMENT00757303-00757304); 35 km SSE Flor de Oro, -13.833 -60.867, 450 m, 29 Nov.
3059 1993, P.S. Ward #12199-73, 7 workers (MCZC: USNMENT00757301 - 00757302); Las Gamas,
3060 Parque Natural Noel Kempff Mercado, -14.80 -60.38, 700 m, 03 Dec. 1993, P.S. Ward #12266-
3061 43, 4 workers (MCZC: USNMENT00757299-00757300); Las Gamas, Parque Natural Noel

3062 Kempff Mercado P, -14.80 -60.38, 700 m, 04 Dec. 1993, P.S. Ward #12266-45, 6 workers
3063 (MCZC: USNMENT00757297-00757298). **BRAZIL: Ceará:** Guaramiranga (Pq. Tr.), -4.267 -
3064 38.933, 900 m, 22 Feb. 2002, Y. Quinet, 1 worker (CPDC: USNMENT00757874); **Goias:**
3065 Campo Limpo, faz conceição, -16.33083 -49.16367, 20-24 Jan. 2005, R.R. Silva, 9 workers
3066 (ICN: MZSP071); Campo Limpo, faz conceição, -16.33083 -49.16367, 01-07 July 2005, R.R.
3067 Silva & R.M. Feitosa, 15 workers (ICN: MZSP120 - MZSP121); **Pará:** Belem, 07 Aug. 1962,
3068 P.F. Doulington. B.F. 14, 1 worker (MCZC: USNMENT00757256); Melgaço, Caxiuanã ECFPn,
3069 -1.70661 -51.45909, 10-12 Oct. 2006, Equipe A.Y. Harada, 1 worker (MPEG: AYH018); 10-11
3070 Oct. 2006, 1 worker (MPEG: AYH019); 10-12 Oct. 2005, 7 workers (MPEG: AYH041); 24-26
3071 Jan. 2007, 6 workers (MPEG: AYH003, 069, 115, 122, 124); 28-30 Jan. 2006, 5 workers
3072 (MPEG: AYH001, 007); 23-25 Apr. 2007, 1 worker (MPEG: AYH005); A.Y. Harada, E.P.
3073 Fagundes, C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato, 3 workers
3074 (MPEG: AYH076); -1.72484 -51.42979, 26 Oct. 2006, A.Y. Harada, E.P. Fagundes, C.J.M.
3075 Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato, 45 workers 1 Queen (MPEG:
3076 AYH005, 016, 032, 052, 053, 068, 070, 078, 087, 093, 097, 100, 102, 106, 113, 136); 12-14 Oct.
3077 2006, Equipe A.Y. Harada, 1 worker (MPEG: AYH045); 20-22 July 2006, 2 workers (MPEG:
3078 AYH095); 20-22 Oct. 2005, 2 workers (MPEG: AYH082, 105); 21-23 Oct. 2005, 1 workers
3079 (MPEG: AYH006); 22-24 Apr. 2005, 2 workers (MPEG: AYH082, 105); 23-25 Feb. 2006, 1
3080 worker (MPEG: AYH033); 24-26 July 2003, 10 workers (MPEG: AYH066, 084, 108, 119, 133,
3081 135); 26-28 Nov. 2003, A.Y. Harada, E.P. Fagundes, C. Renato, 1 worker (MPEG: AYH117);
3082 07-09 Feb. 2003, 1 worker (MPEG: AYH060); Melgaço, Caxiuanã ECFPn, -1.73360 -51.51054,
3083 27 Oct. 2003, Equipe A.Y. Harada, 3 workers (MPEG: AYH014, 061); Melgaço, Caxiuanã
3084 ECFPn, -1.73360 -51.51053, 27 Oct. 2003, A.Y. Harada, E.P. Fagundes, C.J.M. Ribeiro, C.E.D.
3085 Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato, 3 workers (MPEG: AYH101, 035, 050); 14-16

3086 Oct. 2006, Equipe A.Y. Harada, 15 workers, 2 queens (MPEG: AYH107, 081, 116); 23-25 July
3087 2006, 1 worker (MPEG: AYH104); 12-14 Oct. 2006, Equipe A.Y. Harada, 3 workers (MPEG:
3088 AYH051); Melgaço, Caxiuanã ECFPn, -1.73584 -51.48762, 30 Oct. 2003, A.Y. Harada, E.P.
3089 Fagundes, C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato, 1 worker
3090 (MPEG: AYH091); 13-15 Oct. 2005, Equipe A.Y. Harada, 5 workers (MPEG: AYH031, 056);
3091 15-17 Jan. 2006, 1 worker (MPEG: AYH132); 21 Apr. 2006, 1 worker (MPEG: AYH080); 22-24
3092 July 2006, 1 worker (MPEG: AYH121); 23-25 Oct. 2005, 3 workers (MPEG: AYH017, 027,
3093 030); 23-28 Oct. 2005, 1 worker (MPEG: AYH022); 25-27 Jan. 2006, 1 worker (MPEG:
3094 AYH128); 26-28 Jan. 2007, 2 workers (MPEG: AYH075); -1.75444 -51.52241, 28 Jan. 2003,
3095 AY Harada, E.P. Fagundes, C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C.
3096 Renato, 1 worker (MPEG: AYH011); 28 Oct. 2003, 10 workers (MPEG: AYH028, 079, 089,
3097 092, 118); 01-03 Nov. 2004, Equipe A.Y. Harada, 1 worker (MPEG: AYH020); 01-05 Nov.
3098 2004, 1 worker (MPEG: AYH004); 19-21 Oct. 2007, 1 worker (MPEG: AYH026); 20-22 July
3099 2007, 3 workers (MPEG: AYH025, 065); 22-24 Oct. 2003, 1 worker (MPEG: AYH085); 22-24
3100 Oct. 2005, 2 workers (MPEG: AYH110, 123); 24-26 Oct. 2006, 1 worker (MPEG: AYH040);
3101 Melgaço, Caxiuanã ECFPn, -1.78155 -51.59197, 24-26 Oct. 2007, 1 worker (MPEG: AYH009);
3102 30 July-01 Aug. 2003, 2 workers (MPEG: AYH010); 02 Oct. 2006, A.Y. Harada, E.P. Fagundes,
3103 C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato, 2 workers (MPEG:
3104 AYH077); 30 Oct. 2003, 2 workers (MPEG: AYH125, 130); 02 Nov. 2003, 1 worker (MPEG:
3105 AYH120); 12-14 Oct. 2006, Equipe A.Y. Harada, 1 worker (MPEG: AYH054); 14-16 Oct. 2006,
3106 1 worker (MPEG: AYH043); 15-17 Oct. 2006, 1 worker (MPEG: AYH055); 15-17 Oct. 2010, 16
3107 workers (MPEG: AYH013, 024); 23-25 Apr. 2003, 1 worker (MPEG: AYH096); 23-25 July
3108 2007, 6 workers (MPEG: AYH002, 042, 072); 23-25 May 2003, 1 worker (MPEG: AYH114);
3109 24-26 July 2006, 2 workers (MPEG: AYH015); 25-27 Jan. 2007, 2 workers (MPEG: AYH064,

3110 090); 25-27 June 2007, 1 worker (MPEG: AYH012); 30 July-01 Aug. 2003, 3 workers (MPEG:
3111 AYH103, 131); 30 July-01 Aug. 2003, A.Y. Harada, E.P. Fagundes, C. Renato, 2 workers
3112 (MPEG: AYH098, 109); **Rondônia:** Ouro Preto do Oeste, 04 Apr. 1985, F.F. Ramos, Res. INPA
3113 N°0388, 2 workers (MPEG: USNMENT00757865, 00757866); São Paulo, Jundiá, Serra Do
3114 Japi, Jan. 2009, S. Diniz, 3 workers (ICN: USNMENT00759044); **São Paulo:** Tapirai, -24.03208
3115 -47.46556, 08-14 Jan. 2001, R.R. Silva & Everhardt, 1 worker, 2 males (ICN: MZSP172).
3116 **COLOMBIA: Amazonas:** Leticia, 1 worker (ICN); Parque Nacional Natural Amacayacu,
3117 Matamata, -3.68 -70.25, 150 m, 23 Oct. 2000, 1 worker (ICN); **Cundinamarca:** La Vega,
3118 Reserva Natural Natautá, 5.00 -74.33, 1040 m, 10 Nov. 2010, F. Fernández, 1 worker (ICN:
3119 USNMENT00757873); **Magdalena:** 4 km N San Pedro, 10.95 -74.05, 550 m, 14 Aug. 1985, P.S.
3120 Ward #7912-35, 3 workers (PSWC: USNMENT00757863); **Norte de Santander:** 2 km N
3121 Barrancabermeja, Dec. 1962, leafmodd Berles. J. Archer; **Quindío:** Buenavista, Vereda El
3122 infierno, Finca Guadalajara, 4.37667 -75.76944, 1160 m, 16 Nov. 1999, E. Gonzalez, 3 workers
3123 (IAvH: IAvH-E74164); Calarca, Vereda Santo Domingo, Finca Santa Librada, 4.55694 -
3124 75.63917, 1575 m, 16 Jan. 2000, J. Sosa, 5 workers, 1 queen (IAvH: IAvH-E74163, 74157);
3125 Circasia, Vereda Buenavista, Finca Calamar, 4.59806 -75.69861, 1450 m, 12 Oct. 1999, E.
3126 Gonzalez, 2 workers (IAvH: IAvH-E74168); **Risaralda:** La Celia, 5.00361 -76.00444, 1900 m,
3127 27 Jan. 2011, Gustavo Zabala, 2 workers (ICN); **Valle del Cauca:** Cairo, Vereda Vallecitos,
3128 Finca El Maladero, 4.75803 -76.22732, 1850 m, 29 Mar. 2003, J. Henao, 1 worker (IAvH:
3129 IAvH25152); **Vichada:** Cumaribo, Corregimiento Santa Rita, PNN El Tuparro, 5.3075 -67.9500,
3130 135 m, 14-16 Feb. 2004, I. Quintero & E. Gonzalez, 1 worker (IAvH: USNMENT00759055).
3131 **COSTA RICA: Heredia:** Estación Biológica La Selva, 10.43691 -84.01374, 50 m, 19 Mar. 93,
3132 J. Longino, 1 worker (JTLC: JTLC000007845); La Selva, 12 June 1991, L.E. Tennant, 2 workers
3133 (MCZC: USNMENT00757284, 00757285); **Puntarenas:** Estación Biológica Los Llanos,

3134 10.30487 -84.83735, 1150 m, 28 Feb. 2004, J. Longino #5249-s, 1 worker (JTLC:
3135 JTLC000004545); Peninsula Osa, Parque Natural Corcovado, Sirena, 8.467 -83.583, 11 Aug.
3136 1980, J. Longino, 1 worker (MCZC: USNMENT00757289); Parque Natural Corcovado, Sirena,
3137 8.48333 -83.60000, 10 m, 27 June 1982, J. Longino, 1 worker (JTLC: JTLC000005929); **San**
3138 **José**: San Jose, 9.933 -84.083, 1100 m, 14 June 1999, J. Longino #4040-s, 1 worker (JTLC:
3139 LACM ENT 143521). **CUBA: Holguín**: 2 km N La Melba, 20.467 -74.817, 400 m, 22 Aug.
3140 2001, P.S. Ward #14424-16, 3 workers (PSWC: USNMENT00757862); **Manicaragua**: Trinidad
3141 Mts, 01 Aug. 1953, E. O. Wilson #65, 3 workers, 1 queen (MCZC: USNMENT00757295).
3142 **DOMINICAN REPUBLIC**: 16 km ENE Pedernales, 18.1167 -71.6167, 800 m, 10 Sep. 1992,
3143 P.S. Ward #11751-16, 3 workers (PSWC: USNMENT00757872). **ECUADOR: Pichincha**:
3144 Reserva Forestal ENDESA, 0.083 -79.033, 25 Jan. 1994, L.E. Tennant, 3 workers MCZC:
3145 USNMENT00757293, 00757869); Reserva Forestal ENDESA, 0.13 -79.05, 600 m, 05 Dec.
3146 2003, A. L. Wild #AW2195, 1 worker (ALWC: USNMENT00757861); **Zamora-Chinchi**:
3147 Copalinga, -4.09122 -78.96069, 1000 m, 28-30 Sep. 2009, Delsinne/Arias, col id 35155, 35161,
3148 15 workers (RBINS: Coll.RIScNB SID SPM_ID3515505, 3516111); 30 Sep.– 02 Oct. 2009,
3149 Delsinne/Arias, col id 34651, 39654, 3 workers (RBINS: Coll.RIScNB SID SPM_ID3465109,
3150 3465404); 01-03 Oct. 2009, Delsinne/Arias, col id34663, 34671, 34673, 14 workers (RBINS:
3151 Coll.RIScNB SID SPM_ID3466304, 3467107, 3467305); 07 Oct. 2009, Delsinne/Arias, col Id
3152 34715, 34733, 29 workers (RBINS: Coll.RIScNB SID SPM_ID3471501, 3473311); 04-06 Oct.
3153 2009, Delsinne/Arias, col id34695, 34703-34705, 34709), 19 workers (RBINS: Coll.RIScNB SID
3154 SPM_ID3469506, 3470305, 3470405, 3470504, 3470909); 05-07 Oct. 2009, Delsinne/Arias, col
3155 id34746, 34751, 34753, 5 workers (RBINS: Coll.RIScNB SID SPM_ID3474605, 3475106,
3156 3475305). **FRENCH GUIANA**: Araguez, Inselbery forest, Sara Groc, 3 workers (ICN:
3157 USNMENT00757864); Kaw Mountains, Oct. 2008, Sara Groc, 2 workers (ICN:

3158 USNMENT00757867); Oct. 2009, Sara Groc, 6 workers (ICN: USNMENT00759035).

3159 **GUATEMALA: Zacapa:** 8.5 km NE Tuculután, 15.058717 -89.67638, 1100 m, 06 July 2001, J.

3160 Longino #6016-s, 1 worker (JTLC: JTLC000009864). **MEXICO: Oaxaca:** 7.2 km S Valle

3161 Nacional, 490 m, 11-18 Aug. 1973, A. Newton, 2 workers (MCZC: USNMENT00757286,

3162 00757287); **Veracruz:** Los Tuxtlas, 10 km NNW Sontecomapan, 18.583 -95.083, 500 m, 21

3163 Mar. 1995, P.S. Ward #1369-39, 2 workers (PSWC: USNMENT00757871); Sa. Teviscocla, nr.

3164 Cuichapa to 1600 m trop. For w. coffe, 04 Aug. 1965, Cornell Univ. Mexico Field Party, 6

3165 workers, 1 queen (MCZC: USNMENT00757290, 00757291, 00757296). **PANAMA:** Barro

3166 Colorado I., Canal Zone, Jan. 1960, m-16 Strays, W.L. Brown, E.S. McCluskey, 1 worker

3167 (MCZC: USNMENT00757288); **PARAGUAY: Canindeyú:** Reserva Natural del Bosque,

3168 Mbaracayú, Jejuimi, -24.1 -55.5, 02 May 1996, A. Wild #0132, 3 workers, 1 queen (ALWC:

3169 USNMENT00757601); 11 Feb. 1997, A. Wild #AW 0409, 1 worker (ALWC:

3170 USNMENT00757860). **PERU: Madre de Dios:** Reserva Nacional Tambopata, Centro

3171 Sachavacayoc, -12.85583 -69.36194, 19-31 July 2012, curso de hormigas, 7 workers (ICN:

3172 JSC120726-LS01). **SURINAME:** Tambahredjo, June 1959, I. V. d. Drift, 1 worker (MPEG:

3173 USNMENT00757876). **VENEZUELA: Aragua:** Parque Nac. Henri Pittier, La Toma, 10.34924

3174 -67.68251, 1169 m, 09-19 Aug. 2008, Ant Course, 3 workers, 1 queen (ICN:

3175 USNMENT00757600, 00758023); Rancho Grande, 1100 m, 23-27 June 1967, W.L. Brown, 1

3176 worker (MCZC: USNMENT00757294); 12 Aug. 1967, R.W. Poole, 3 workers (MCZC:

3177 USNMENT00757875).

3178

3179 **Diagnosis.** *Brachymyrmex minutus* morphologically resembles *B. australis*, *B. aphidicola* and *B.*

3180 *termitophilus*, because all these species have eyes located on the cephalic midline, a mesonotum

3181 that does not bulge dorsally above the pronotum in lateral view, and yellowish body color.

3182 *Brachymyrmex minutus* differs from the three other species, or any other *Brachymyrmex* species
3183 for that matter, by having a very inconspicuous mesometanotal suture, giving the impression that
3184 the mesonotum and metanotum are fused. Additionally, *B. minutus* differs from *B. termitophilus*
3185 by having scattered pubescence on the gaster, from *B. aphidicola* by the presence of only two
3186 erect hairs on the pronotum and from *B. australis* by having scapes that surpass the posterior
3187 margin of the head by a length that is smaller than the maximal diameter of the eye.

3188
3189 *Lectotype and paralectotypes worker measurements* (mm) (n=4). HL₁ 0.37-0.40; HL₂ 0.25-0.31;
3190 HL₃0.07-0.10; HW 0.32-0.36; SL 0.32-0.36; EL 0.08-0.11; WL n.a.; PnL n.a.; PnW 0.20-0.24;
3191 ML 0.06-0.07; MW 0.14-0.15; *Indices* CI 85.88-89.29; SI₁ 92.59-108.00; SI₂ 107.14-126.67; OI₁
3192 26.03-29.63; OI₂ 20.00-25.27.

3193
3194 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin weakly
3195 convex. Dorsum of the head with sparse hairs. Clypeus with a rounded anterior margin and five
3196 long, erect hairs of which a single, usually conspicuous hair is near the anterior margin, two hairs
3197 are in mediolateral position and two more near the toruli; other hairs on the clypeus are markedly
3198 shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin in oblique
3199 anterodorsal oblique view. The scapes surpass the posterior margin of the head by a length that is
3200 smaller than the maximal diameter of the eye; they have appressed pubescence. Ocelli absent.
3201 Eyes are positioned on the cephalic midline and have 8-9 ommatidia along their maximal
3202 diameter.

3203 **Mesosoma.** Typically with two erect hairs on the pronotum and without erect hairs on the
3204 mesonotum. The mesonotum is not inflated and does not bulge dorsally above the pronotum in
3205 lateral view. Mesometanotal suture inconspicuous, giving the impression that the mesonotum and

3206 metanotum are fused. Metanotal groove absent or narrower than the diameter of the metathoracic
3207 spiracles. Metathoracic spiracles in dorsolateral position, not protruding, and touching the
3208 propodeal suture. Dorsum of the propodeum slightly convex and shorter than the propodeal slope.
3209 Propodeal spiracles circular, positioned on the posterior propodeal margin, just dorsally at the
3210 middle of the propodeal slope. Legs with appressed and scattered hairs. Petiole short and inclined
3211 forward.

3212 **Gaster.** With scarce pubescence and several scattered long suberect hairs.

3213 **Color and sculpture.** Body smooth, or finely granulated and shiny, sometimes with some
3214 imbricate sculpture on the dorsum of the mesosoma. Body usually yellowish, but sometimes
3215 reddish.

3216

3217 **Distribution (Supplementary material Fig. S27).** *Brachymyrmex minutus* is known to occur in
3218 Bolivia, Brazil, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, French Guiana,
3219 Guatemala, Mexico, Panama, Paraguay, Peru, Suriname and Venezuela.

3220

3221 **Biology.** Forel (1893) found several colonies subterraneous at the roots of sod, usually where it
3222 overgrows rocks, typically within the forest and/or nearby streams. The nest of *B. minutus*
3223 consists of large tunnels with small chambers at intervals. Colonies contain ~50 to 100
3224 individuals, with a single queen.

3225

3226 **Remarks.** The lectotype is designated here as the second ant counting from the top of pin
3227 MHNG: USNMENT00757150, whereas the other specimens on that pin are paralectotypes.

3228 Forel (1893) admitted having confused this species for *B. heeri* before but provided several
3229 morphological differences. However, *B. minutus* is morphologically more similar to the species
3230 indicated here in the diagnosis.

3231

3232 *Brachymyrmex modestus* Santschi

3233 (Fig. 40, supplementary material Fig. S28)

3234 *Brachymyrmex modestus* Santschi, 1923b: 271 (w.). **Lectotype worker** (NHMB:
3235 USNMENT00758099) and **paralectotype workers** (NHMB: USNMENT00758099, 00758100;
3236 **here designated**): 3 workers [examined]. **BRAZIL: Santa Catarina:** Blumerau, A.
3237 Reinchensperguer leg.

3238

3239 **Additional material examined. BRAZIL: Santa Catarina:** Palhoça, PE Serra do Tabuleiro, -
3240 27.74111 -48.69722, 02-10 June 2003, R.R. Silva, B.H. Dietz & A. Tavares, 1 worker (ICN:
3241 MZSP033); São Bento do Sul, APA Rio Vermelho, -26.36417 -49.27111, 30 Mar.-04 Apr. 2004,
3242 R. Silva & Eberhardt, 8 workers (ICN: MZSP138); **São Paulo:** Cunha, PE Serra do Mar, Nucleo
3243 Cunha-Indara, -23.25083 -45.00722, 21-22 Apr. 2001, A.A. Tavares & R.R. Silva, 12 workers
3244 (ICN: MZSP149); Praia grande, PE Serra do Mar, nucleo pilhões-Cubatão, -23.9753 -46.5400,
3245 26-27 May 2001, A.A. Tavares & R.R. Silva, 5 workers (ICN: MZSP165). **COLOMBIA:**
3246 **Amazonas:** Leticia, Reserva Forestal del Rio Calderón, Estación Biológica El Zafre, -4.00583, -
3247 69.89861, 150 m, 02-04 Dec. 2007, L.E. Franco & S. Florez, 2 workers (IAvH); **Caldas:**
3248 Aranzazu, Vereda Chambery, Finca Los Planes, 5.29231 -75.47283, 1910 m, 01-03 Aug. 2003,
3249 L.E. Franco & Cruz, 1 worker (IAvH: IAvH27307); Finca maranduba, 5.30731 -75.47250, 2050
3250 m, 30 July–01 Aug. 2003), L.E. Franco & Cruz, 2 workers (IAvH: IAvH27288); Vereda La
3251 Guaira, Finca Villa Ofelia, 5.286 -75.465, 1965 m, 01-03 Aug. 2003, L.E. Franco & Cruz, 1

3252 worker, 1 queen (IAvH: IAvH27320); Vereda Sabana Larga, Finca Cañada Brujas, 5.30883 -
3253 75.47281, 1920 m, 31 July-02 Aug. 2003, L.E. Franco & Cruz, 3 workers (IAvH: IAvH55442);
3254 **Quindío:** Circasia, Finca Calamar, 4.60 -75.70, 1450 m, 12 Oct. 1999, E. Gonzalez, 1 worker
3255 (IAvH: IAvH 74169); Filandia, Vereda Cruces, Finca Aranjuez, 4.70826 -75.64679, 1750 m, 13-
3256 15 July 2002, E. Jiménez & L.E. Franco, 2 workers (IAvH: IAvH27261); Finca La Cha, 4.70468
3257 -75.60982, 1920 m, 28-30 Aug. 2002, E. Jiménez & L.E. Franco, 1 worker, 1 queen (IAvH:
3258 IAvH27233); 4.69617 -75.61056, 1920 m, 28-30 Aug. 2002, E. Jiménez & L.E. Franco, 2
3259 workers (IAvH: IAvH27239); **Risaralda:** Pereira, Vereda El Manzano, Finca Santa Isabel,
3260 4.70515 -75.62377, 1860 m, 15-17 July 2002, E. Jiménez & L.E. Franco, 3 workers (IAvH:
3261 IAvH27234); Vereda La Suiza, Finca El Amparo de Niños, 4.74624 -75.59830, 1810 m, 28-30
3262 Nov. 2002, L.E. Franco, 3 workers (IAvH: IAvH27273); 4.75013 -75.60278, 1780 m, 26-28 Nov.
3263 2002, L.E. Franco & E. Londoño, 2 workers (IAvH: IAvH27281); Finca Pez Fresco, 4.73838 -
3264 75.58016, 1910 m, 22-24 Nov. 2002, E. Jiménez & M.F. Reina, 1 worker, 1 queen (IAvH:
3265 IAvH27275); Finca Tesorito, 4.72141 -75.56186, 1940 m, 27-29 Nov. 2002, E. Jiménez, L.E.
3266 Franco & E. Londoño, 2 workers, 1 queen (IAvH: IAvH27280); Santuario, 26 Feb. 2003, 1
3267 worker (IAvH: IAvH27286). **ECUADOR: Pichincha:** Maquipucuna, 5 km, ESE Nanegal,
3268 0.11667 -78.63333, 1500 m, 17 Aug. 1991, P.S. Ward #11503-19, 5 workers (MCZC:
3269 USNMENT00757255, 00757283).

3270

3271 **Diagnosis.** *Brachymyrmex modestus* morphologically resembles *B. donisthorpei* and *B. myops*
3272 because these species have short dense hairs on the head and the mesosoma, short suberect hairs
3273 on the scapes, eyes below the cephalic midline of the head, the metanotal groove is either absent
3274 or narrower than the diameter of the metathoracic spiracles, their gaster bears dense pubescence,
3275 and their bodies are yellowish. *Brachymyrmex modestus* differs from *B. donisthorpei* by having

3276 scapes that surpass the posterior margin of the head, and from *B. myops* by having a mesonotum
3277 that bulges dorsally above the pronotum in lateral view.

3278
3279 *Lectotype and paralectotypes measurements* (mm) (n=3) HL₁ 0.49-0.51; HL₂ n.a.; HL₃ 0.14-0.16;
3280 HW 0.45; SL 0.43; EL 0.08-0.09; WL 0.49-0.55; PnL 0.10-0.14; PnW 0.29-0.39; ML 0.08-0.16;
3281 MW 0.20-0.25; *Indices* CI 88.46 - 92.00; SI₁ 95.65; SI₂ n.a.; OI₁ 17.39-19.57; OI₂ 20.00-25.27.

3282
3283 *Additional material examined measurements* (mm) (n=3). HL₁ 0.41-0.46; HL₂ 0.29-0.32; HL₃
3284 0.11-0.12; HW 0.38-0.45; SL 0.38-0.40; EL 0.06-0.07; WL 0.45-0.49; PnL 0.12-0.13; PnW 0.22-
3285 0.28; ML 0.10-0.12; MW 0.18-0.22; *Indices* CI 91.49-100.00; SI₁ 90.00-97.78; SI₂ 120.00-
3286 133.33; OI₁ 15.56-18.61; OI₂ 23.53-27.66.

3287
3288 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin flat.
3289 Dorsum of the head with appressed and several suberect hairs. Clypeus with a rounded anterior
3290 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
3291 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
3292 clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
3293 margin in oblique anterodorsal view. The scapes surpass the posterior margin of the head by a
3294 length approximately equal to the maximal diameter of the eye and bear decumbent hairs. Ocelli
3295 appear to be absent. Eyes are positioned below the cephalic midline and have 3-4 ommatidia
3296 along their maximal diameter.

3297 **Mesosoma.** Usually with two erect hairs on the pronotum and two on the mesonotum; sometimes
3298 additional decumbent hairs are present, mainly on the pronotum. The mesonotum is inflated,
3299 somewhat anteriorly inclined, and bulges dorsally above the pronotum in lateral view. Metanotal

3300 groove usually absent or narrower than the diameter of the metathoracic spiracles. Metathoracic
3301 spiracles small and in dorsolateral position, not protruding, and touching the proprodeal suture.
3302 Dorsum of the propodeum convex and shorter than the propodeal slope. Propodeal spiracles
3303 circular and positioned on the posterior propodeal margin, ventrally and slightly posterior of the
3304 middle of the propodeal slope. Legs with appressed hairs. Petiole short and inclined forward.

3305 **Gaster.** With dense pubescence and some long erect hairs at the edges of the segments.

3306 **Color and sculpture.** Head and gaster smooth and shiny, dorsum of the mesosoma slightly
3307 imbricate. Body yellowish, with the gaster sometimes being darker in color.

3308

3309 **Distribution (Supplementary material Fig. S28).** *Brachymyrmex modestus* is known from
3310 Brazil, Colombia and Ecuador.

3311

3312 **Biology.** The type material of *B. modestus* was collected in association with termites (Santschi
3313 1923b).

3314

3315 **Remarks.** The here designated lectotype is the specimen without expanded gaster on pin NHMB:
3316 USNMENT00758099, whereas the other specimen is one of the paralectotypes.

3317 Santschi (1923b) mentioned the presence of physogastric workers in *B. modestus*, and we also
3318 observed some physogastric individuals in other samples (ICN: MZSP138, 149). These
3319 specimens are characterized by having a larger body in comparison to regular workers, and they
3320 have shorter scapes that barely reach the posterior margin of the head.

3321

3322

3323 *Brachymyrmex musculus* Forel

3324 (Fig. 41, supplementary material Fig. S29)

3325 *Brachymyrmex tristis* r. *musculus* Forel, 1899: 124 (w.). **Lectotype worker** (MHNG:

3326 USNMENT00757155) and **paralectotype workers** (MHNG: USNMENT00757153-00757155;

3327 USNMENT00758113-00758115; MCSN: USNMENT00757152; **here designated**): 16 workers

3328 [examined]: **COSTA RICA:** Pittier; Forel (1901a: 135) (q.). Raised to species: Forel (1901a:

3329 135). See also: Santschi (1923a: 673).

3330

3331 **Additional material examined. ARGENTINA: Mendoza:** 22.81 km W Villa Seca, -33.58515 -

3332 69.41708, 1835 m, 06 Jan. 2008, W. MacKay, 1 worker (WEMC: USNMENT00757974); **Santa**

3333 **Cruz:** 12 km S Bajo Caracoles, 640 m, E.I. Schlinger & M.E. Trwin, ANTC10276, 1 worker

3334 (CASC: CASENT0196018). **COLOMBIA: Quindio:** Filandia, Vereda Cruces, Finca Los

3335 Micos, 4.70239 -75.64665, 1800 m, 12-14 July 2002, E. Jimenez & L.E. Franco, 1 worker

3336 (IAvH: IAvH27235). **COSTA RICA: Puntarenas:** Monteverde, 10.301 -84.806, 1500 m, 27

3337 June 1984, J. Longino, 2 workers, 1 queen (JTLC: JTLC000005951, JTLC000005953).

3338 **MEXICO:** Mexico, 6.5 km E Chalma, 26 May 1988, W.P. MacKay #10386, 1 worker, 2 males,

3339 1 queen (WEMC: USNMENT00759016). **PARAGUAY: Amambay:** Pedro Juan Caballero, -

3340 22.567 -55.617, 20 Aug. 1998, A. Wild #AW0642, 1 worker (ALWC: USNMENT00757965).

3341 **VENEZUELA: Lara:** 9 km SE Barbacoas, 9.77 -71.06, 2000 m, 22 Aug. 1987, P.S. Ward

3342 #8923, 3 workers (PSWC: USNMENT00757589).

3343

3344 **Diagnosis.** *Brachymyrmex musculus* morphologically resembles *B. bruchi*, *B. patagonicus* and *B.*

3345 *oculatus*, because all four species have scapes that surpass the posterior margin of the head, a

3346 mesonotum that does not bulge dorsally above the pronotum in lateral view, a gaster with

3347 scattered pubescence and a brownish body. However, *B. musculus* differs from the three other

3348 species by having a metanotal groove that is wider than the diameter of the metathoracic
3349 spiracles.

3350
3351 *Lectotype and paralectotype measurements* (mm) (n=5). HL₁ 0.43-0.48; HL₂ 0.30-0.33; HL₃
3352 0.10-0.11; HW 0.39-0.42; SL 0.39-0.42; EL 0.10-0.12; WL 0.42-0.46; PnL 0.11; PnW 0.25-0.29;
3353 ML 0.08-0.10; MW 0.18-0.20; *Indices* CI 87.16-91.26; SI₁ 98.92-100.00; SI₂ 117.65-136.76; OI₁
3354 23.16-30.00; OI₂ 21.10-23.81.

3355
3356 *Additional material examined measurements* (mm) (n=3) HL₁ 0.48-0.51; HL₂ 0.33-0.37; HL₃
3357 0.10-0.12; HW 0.44-0.47; SL 0.43-0.47; EL 0.12-0.14; WL 0.35-0.51; PnL 0.10-0.14; PnW 0.30-
3358 0.32; ML 0.10-0.12; MW 0.19-0.20; *Indices* CI 89.09-92.59; SI₁ 97.87-102.04; SI₂ 125.00-
3359 131.58; OI₁ 26.00-30.61; OI₂ 21.15-24.07.

3360
3361 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
3362 concave. Dorsum of the head has sparse appressed hairs. Clypeus with the medial anterior margin
3363 somewhat forming a lip and five long, erect hairs of which a single, usually conspicuous hair is
3364 near the anterior margin, two hairs are in mediolateral position and two more are near the toruli;
3365 other hairs on the clypeus are markedly shorter and appressed or decumbent. Toruli surpassing
3366 the posterior clypeal margin in oblique anterodorsal view. The scapes surpass the posterior
3367 cephalic margin with a length up to the maximal diameter of the eye; with appressed hairs. Three
3368 ocelli are present but inconspicuous. Eyes are positioned on the cephalic midline with 9-11
3369 ommatidia along their maximal diameter.

3370 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum;
3371 sometimes with additional suberect hairs mainly on the pronotum. The mesonotum is not inflated

3372 and does not bulge dorsally above the pronotum in lateral view. Metanotal groove wider than the
3373 diameter of the metathoracic spiracles. Metathoracic spiracles in dorsolateral position, not
3374 protruding, and close to the propodeal suture. Dorsum of the propodeum convex and shorter than
3375 the posterior propodeal slope. Propodeal spiracles circular, positioned on the posterior propodeal
3376 margin at the middle of the propodeal slope. Legs with appressed hairs. Petiole short and inclined
3377 forward.

3378 **Gaster.** With scattered pubescence and several scattered long erect hairs.

3379 **Color and sculpture.** Body overall smooth and shiny, except for the sometimes slightly imbricate
3380 sculpture on the dorsum of the mesosoma. Body typically brownish, however, the bulbi of the
3381 antennae are whitish, and the antenna and legs, especially the tarsi, are somewhat lighter in color
3382 than the body.

3383

3384 **Distribution (Supplementary material Fig. S29).** *Brachymyrmex musculus* is known from
3385 Argentina, Colombia, Costa Rica, Mexico, Paraguay and Venezuela.

3386

3387 **Biology.** Unknown.

3388

3389 **Remarks.** The lectotype is here designated as the ant at the top of pin MHNG:

3390 USNMENT00757155, whereas the other specimens in the pin are paralectotypes.

3391 Forel (1899) originally described *B. musculus* as a race of *B. tristis*, but later indicated that the
3392 difference in size urged him to elevate it to a separate species (Forel 1901a). We agree with this
3393 decision, because *B. tristis* differs from *B. musculus* by having dense decumbent hairs on the
3394 head and the dorsum of the mesosoma, a mesonotum that bulges dorsally above the pronotum,
3395 and metathoracic spiracles that protrude slightly.

3396

3397

3398

Brachymyrmex myops Emery

3399

(Fig. 42, supplementary material Fig. S30)

3400 *Brachymyrmex myops* Emery, 1906: 182, footnote, Fig. 42 (w.m.). **Lectotype worker** (NHMB:

3401 USNMENT00757221) and **paralectotype male** (NHMB: USNMENT00757221; **here**

3402 **designated**): 1 worker, 1 male [examined]. **BRAZIL: Santa Catarina:** Joinville, J. P. Schmalz,

3403 leg. See also: Santschi (1923a: 663).

3404

3405 **Additional material examined. BOLIVIA: Santa Cruz:** 35 km SSE Flor de Oro, -13.833 -

3406 60.867, 450 m, 29 Nov. 1993, P.S. Ward #12199-74, 5 workers (MCZ: USNMENT00757254,

3407 00757892), 3 workers (PSWC: USNMENT00758027); **BRAZIL: Amazonia:** Rondonia, Jerau,

3408 R.M. Feitosa, 5 workers (ICN: MZSP178); **Pará:** Belém, 07 Aug. 1962, P.F. Doulington. B.F.

3409 14, 1 worker (MCZC: USNMENT00757257); 14 Aug. 1962, P.F. Doulington. B.F. 19, 2 workers

3410 (MCZC: USNMENT00757258); 14 Aug. 1962, P.F. Doulington. B.F. 19, 1 worker (MCZC:

3411 USNMENT00757259); Melgaço, Caxiuanã ECFPn, -1.70661 -51.45909, 01 Nov. 2003, A.Y.

3412 Harada, E.P. Fagundes, C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R. Moura, J.L.P. Souza, C. Renato,

3413 1 worker (MPEG: AYH094); 10-12 Oct. 2006, Equipe A.Y. Harada, 1 worker (MPEG:

3414 AYH046); 10-12 Oct. 2007, Equipe A.Y. Harada, 2 workers (MPEG: AYH038); 20-22 Oct.

3415 2006, Equipe A.Y. Harada, 8 workers (MPEG: AYH058); 20-22 Oct. 2007, Equipe A.Y. Harada,

3416 4 workers (MPEG: AYH021, 047, 059); 25-27 Oct. 2007, Equipe A.Y. Harada, 3 workers

3417 (MPEG: AYH039, 048, 099); -1.73584 -51.48762, 13-15 Oct. 2005, Equipe A.Y. Harada, 5

3418 workers (MPEG: AYH037); 25-27 Jan. 2007, Equipe A.Y. Harada, 1 worker (MPEG: AYH111);

3419 -1.78155 -51.59753, 15-17 Oct. 2007, Equipe A.Y. Harada, 3 workers (MPEG: AYH013, 044);

3420 24-26 Oct. 2007, Equipe A.Y. Harada, 1 worker (MPEG: AYH029); 25-27 Jan. 2007, Equipe
3421 A.Y. Harada, 1 worker (MPEG: AYH062); 27-29 Jan. 2006, Equipe A.Y. Harada, 5 workers
3422 (MPEG: AYH034); 30 July-01 Aug. 2003, Equipe A.Y. Harada, 13 workers (MPEG: AYH134);
3423 A.Y. Harada, E.P. Fagundes, C. Renato, 3 workers (MPEG: AYH129). **COLOMBIA: Cauca:**
3424 PNN Gorgona, Mancora, 2.967 -78.183, 60 m, 02 Feb. 2000, D. Campos, 16 workers (IAvH).

3425
3426 **Diagnosis.** *Brachymyrmex myops* morphologically resembles *B. donisthorpei* and *B. modestus*
3427 because all three species have dense short hairs on the head and mesosoma, scapes with short
3428 suberect hairs, eyes that are positioned below the cephalic midline of the head, a metanotal
3429 groove that is absent or narrower than the diameter of the metathoracic spiracles, a gaster with
3430 dense pubescence, and yellowish body color. However, *B. myops* differs from *B. donisthorpei* by
3431 having scapes that surpass the posterior margin of the head and from *B. modestus* by having a
3432 mesonotum that does not bulge dorsally above the pronotum.

3433
3434 *Lectotype measurements* (mm) HL₁ 0.41; HL₂ 0.29; HL₃ 0.12; HW 0.37; SL 0.35; EL 0.06; WL
3435 0.41; PnL 0.14; PnW 0.25; ML 0.12; MW 0.20; *Indices* CI 90.48; SI₁ 94.74; SI₂ 120.00; OI₁
3436 15.79; OI₂ 28.57.

3437
3438 *Additional material examined measurements* (mm) (n=3). HL₁ 0.37-0.38; HL₂ 0.27-0.30; HL₃
3439 n.a.; HW 0.33-0.34; SL 0.34-0.36; EL 0.05-0.06; WL 0.36; PnL 0.09-0.10; PnW 0.22-0.23; ML
3440 0.06-0.07; MW 0.15-0.18; *Indices* CI 88.10-88.37; SI₁ 102.70-105.40; SI₂ 111.76-130.00; OI₁
3441 15.79-18.92; OI₂ n.a.

3442

3443 **Description. *Head.*** Slightly longer than wide in full face view; posterior cephalic margin slightly
3444 concave. Dorsum of the head with appressed and several suberect hairs. Clypeus with a rounded
3445 anterior margin and five long, erect hairs of which a single, usually conspicuous hair is near the
3446 anterior margin, two hairs are in mediolateral position and two more are near the toruli; other
3447 hairs on the clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the
3448 posterior clypeal margin in oblique anterodorsal view. The scapes surpass the posterior margin of
3449 the head by a length approximately equal to the maximal diameter of the eye and have decumbent
3450 and suberect hairs. Ocelli absent. Eyes are positioned below the cephalic midline and have 3-4
3451 ommatidia along their maximal diameter.

3452 ***Mesosoma.*** Usually two erect hairs on the pronotum and two on the mesonotum; sometimes
3453 decumbent hairs are present, mainly on the pronotum. The mesonotum is somewhat inflated, but
3454 it does not bulge dorsally above the pronotum in lateral view. Metanotal groove absent or
3455 narrower than the diameter of the metathoracic spiracles. Metathoracic spiracles inconspicuous,
3456 in dorsolateral position, not protruding, and not touching any suture. Dorsum of the propodeum
3457 weakly convex and much shorter than the propodeal slope. Propodeal spiracles circular but
3458 inconspicuous, positioned on the posterior propodeal margin, slightly posterior of the middle of
3459 the propodeal slope. Legs with appressed hairs. Petiole short and inclined forward.

3460 ***Gaster.*** With dense pubescence and several long erect hairs, mainly along the edges of the
3461 segments.

3462 ***Color and sculpture.*** Head and gaster smooth and shiny, dorsum of the mesosoma slightly
3463 imbricate. Body usually uniformly yellowish, but sometimes with a darker gaster

3464

3465 **Distribution (Supplementary material Fig. S30).** *Brachymyrmex myops* is known from Bolivia,
3466 Brazil and Colombia.

3467
3468 **Biology.** Emery (1906) described *B. myops* from specimens that were collected in the nest of the
3469 termite *Anoplotermes ater*.

3470
3471 **Remarks.** The worker on pin NHMB: USNMENT00757221 is designated here as the lectotype.
3472 *Brachymyrmex myops* has been described from one worker and a male, which makes it currently
3473 impossible to determine the intraspecific variation. *Brachymyrmex modestus* has also been
3474 collected from termite nests, has a very similar geographic distribution as *B. myops*, and both
3475 species resemble one another morphologically (see diagnosis). They differ in whether the
3476 mesonotum bulges dorsally above the pronotum in lateral view, which is a trait of diagnostic
3477 value to delimit several *Brachymyrmex* species, however, the conditions in *B. myops* and *B.*
3478 *modestus* are not strongly different, and both species may be conspecific.

3479

3480

3481 ***Brachymyrmex nebulosus* LaPolla & Longino**

3482 **(Fig. 43, supplementary material Fig. S31)**

3483 *Brachymyrmex nebulosus* LaPolla and Longino, 2006: 299, Fig. 1 (w.). **COSTA RICA:**

3484 **Puntarenas:** 6 km south of Monteverde, 10.25 -84.82, 800 m, 22 June 1999, J. Longino #4050,
3485 LACM ENT 143550 (INBC).

3486

3487 **Paratype examined. COSTA RICA: Puntarenas:** Ojo de agua, rd to Monteverde, 800 m, 05
3488 July 1991, J. Longino, leg. (JTLC #2965), 2 workers (INBIO).

3489

3490 **Additional material examined. MEXICO: Chiapas:** Sierra Morena, 16.15427 -93.58961, 1150
3491 m, 11 May 2008, J. Longino #6218-s, 2 workers (JTLC: JTLC0000007379; CASENT0609689).

3492
3493 **Diagnosis.** *Brachymyrmex nebulosus* differs from other *Brachymyrmex* species in having a
3494 clypeus with its medial portion forming a conspicuous “lip”, its hour-glass shaped mesosoma and
3495 it has portions of the head and mesosoma that bear alveolate sculpture. *Brachymyrmex musculus*
3496 is the only other *Brachymyrmex* species known to date that has a clypeus with a somewhat
3497 developed medial lip, but it is less conspicuous than in *B. nebulosus*.

3498
3499 *Paratype measurements* (mm). HL₁ 0.67; HL₂ 0.40; HL₃ 0.24; HW 0.63; SL 0.62; EL 0.18; WL
3500 0.80; PnL 0.29; PnW 0.45; ML 0.26; MW 0.23; *Indices* CI 94.67; SI₁ 97.18; SI₂ 153.33; OI₁
3501 28.17; OI₂ 36.00.

3502
3503 *Additional material examined measurements* (mm) (n=1). HL₁ 0.80; HL₂ 0.49; HL₃ 0.23; HW
3504 0.73; SL 0.72; EL 0.20; WL 0.92; PnL 0.31; PnW 0.50; ML 0.12; MW 0.27; *Indices* CI 91.11;
3505 SI₁ 98.78; SI₂ 111.76; OI₁ 15.79; OI₂ n.a.

3506
3507 **Description.** See LaPolla and Longino (2006).

3508
3509 **Distribution** (supplementary material Fig. S31). This species is known from Costa Rica and
3510 Mexico.

3511
3512 **Biology.** *Brachymyrmex nebulosus* was collected from sites at about 800 m elevation in moist
3513 forest at the transition between lowland dry forest and cloud forest. All collected workers were

3514 obtained from open scrubby vegetation. In the field, these ants look and behave remarkably like
3515 *Crematogaster* (LaPolla and Longino 2006).

3516
3517 **Remarks.** *Brachymyrmex nebulosus* has been originally described from Costa Rica, but during
3518 our studies we came across two specimens from Mexico that very strongly resemble this species.
3519 The only differences are that the Mexican specimens have a more squared head, and stronger
3520 alveolate sculpture on the head and the dorsum of the mesosoma. Considering these differences
3521 and the geographical distribution, these Mexican specimens may be a variety of *B. nebulosus*, or
3522 potentially a different species, although more material and further study would be required to
3523 resolve this issue.

3524

3525 *Brachymyrmex obscurior* Forel

3526 (Fig. 44, supplementary material Fig. S32)

3527 *Brachymyrmex heeri* var. *obscurior* Forel, 1893: 345 (w.q.m.). **Lectotype worker** (MHNG:
3528 USNMENT00757132) and **paralectotype workers, queens, males** (MHNG:
3529 USNMENT00757132-00757135; USNMENT00758124-00758128; **here designated**): 16
3530 workers, 3 queens, 3 males [examined]. **ANTILLES:** Saint Vincent. Subspecies of
3531 *Brachymyrmex heeri*: Forel (1897: 298); Forel (1912a: 62). Raised to species: Wilson and Taylor
3532 (1967: 92). See also Santschi (1923a: 666).

3533

3534 **Additional material examined. ARGENTINA: Chubut:** 3 km N. Puerto Lobos, 20 m, 14 Dec.
3535 1966, E.I. Schlinger & M. Irwin, ANTC 10275, 1 worker (CASC: CASENT0196017). **BRAZIL:**
3536 **Bahia:** CEPEC, 11 Nov. 1997, L.S. Ramos, 1 worker (CPDC: USNMENT00757668); **São**
3537 **Paulo:** Caraguatatuba, Reserva Florestal, 40-80 m, 12-22 May 1971, W.L. & D.E. Brown, 2

3538 workers, 1 queen (MCZC: USNMENT00757659); Itirapina, cerrado, Dec. 2008, D.P. Silva, 3
3539 workers (ICN: USNMENT00759042); Ubatuba, Picinguaba, July 2011, 2 workers (ICN:
3540 USNMENT00759051). **CHILE:** Santiago, Nov. 1996, C. Errard, 3 workers (CPDC:
3541 USNMENT00757683). **COLOMBIA: Córdoba:** Monteria, Finca Betania, 29 June 2009, Juan
3542 C. Abadia, 4 workers (IAvH); Valencia, Villa Mary, 02 June 2009, Juan C. Abadia, 4 workers
3543 (IAvH); **Huila:** 17 km NW La Plata, 03 Jan. 1984, W.P. MacKay #7133, 1 worker (WEMC:
3544 USNMENT00759021); 17km N La Plata, 03 Jan. 1984, W.P. MacKay #7139, 1 worker 1 queen
3545 (WEMC: USNMENT00758996); **Magdalena:** Parque Nacional Natural Tayrona, Cañaveral,
3546 11.33 -74.03, 30 m, 18-20 Aug. 2002, M. Sharkey, P. Arias & E. Torres, 7 workers (IAvH);
3547 **Valle del Cauca:** Cairo, vereda Llano Grande, Finca Encanto, 4.73620 -76.21698, 1550 m, 31
3548 Mar. 2003, R. Garcia, 1 worker (IAvH: IAvH25144). **DOMINICAN REPUBLIC: La Vega:** 12
3549 km NW Bona, 19.03333 -70.48333, 890 m, 31 Aug. 2001, A.L. Wild #AW1324, 2 workers
3550 (ALWC: USNMENT00757987); 5 km N El Río, 19.02 -70.60, 1230 m, 01 Sep. 2001, A.L. Wild
3551 #AW1339, 1 worker (ALWC: USNMENT00757657); Casabito For. El Rio - Bona Km 8, 07 Feb.
3552 1975, W.L.& D.E. Brown, 2 workers (MCZC: USNMENT00757664). **FRENCH GUIANA:** 20
3553 km Sinnamary, 12 Feb 1994, A. Dejean #17025, 2 workers (ICN: USNMENT00757660).
3554 **GUATEMALA: El Progreso:** 5 km El Rancho, 14.9167 -90.0667, 400 m, 17 Nov. 2003, P.S.
3555 Ward #15076-3, 3 workers (PSWC: USNMENT00757667); **Escuintla:** Escuintla, 30 Dec. 1911,
3556 W.M. Wheeler, 3 workers (MCZC: USNMENT00759001). **JAMAICA:** Manchester, Gourie
3557 Forest Res., 18.20 -77.52, 860 m, 10 Sep. 2001, A.L. Wild #AW1375, 1 worker (ALWC:
3558 USNMENT00757669). **MEXICO: Chiapas:** Custepec, 15.72196 -92.95037, 1530 m, 19 May
3559 2008, J. Longino #6280, 1 worker, 1 queen (JTLC: JTLC000007437, JTLC 000007438); **Jalisco:**
3560 7 km SW Tamazula, 19.68056 -103.32194, 992 m, 22 June 2000, W. & E. Mackay, 2 workers
3561 (WEMC: USNMENT00757729). **NEW CALEDONIA:** Road to My. Koghi, Dec. 1985, N.L.H.

3562 Krauss, ANTC10279, 1 worker (CASC: CASENT0196021). **UNITED STATES: Florida:**
3563 Sarasota Co. Longino Ranch. T38S, R22E Sect, 27.15 -82.12, 20 m, 07 June 1981, J. Longino, 2
3564 workers (JTLC: JTLC0000005943); **Texas:** Del Mar, 26.01167 -97.31861, 26 Sep. 1972, W.S.
3565 Ross, ANTC 10263 10264, 2 workers (CASC: CASENT0196005, 0196006).

3566
3567 **Diagnosis.** *Brachymyrmex obscurior* morphologically resembles *B. cordemoyi* and *B.*
3568 *patagonicus* because all three species have a metanotal groove that is absent or narrower than the
3569 diameter of metathoracic spiracles, their mesonotum does not bulge dorsally above the pronotum,
3570 their scapes usually surpass the posterior margin of the head, and their bodies are brownish.
3571 *Brachymyrmex obscurior* and *B. cordemoyi* differ from *B. patagonicus*, however, because they
3572 have dense pubescence on the gaster. *Brachymyrmex obscurior* differs from *B. cordemoyi* by
3573 having less conspicuous dense pubescence on the dorsum of the head and the mesosoma, dense
3574 decumbent pubescence on the gaster, and eyes with fewer ommatidia along their maximal
3575 diameter (on average 9 instead of 10-12).

3576
3577 *Lectotype and paralectotypes workers measurements* (mm) (n=8). HL₁ 0.39-0.47; HL₂ 0.27-0.35;
3578 HL₃ 0.10-0.12; HW 0.35-0.48; SL 0.35-0.45; EL 0.10-0.15; WL 0.31-0.53; PnL 0.09-0.15; PnW
3579 0.23-0.30; ML 0.06-0.14; MW 0.15-0.23; *Indices* CI 79.17-106.67; SI₁ 96.59-115.79; SI₂ 125.71-
3580 1146.67; OI₁ 25.00-31.25.

3581
3582 *Additional material examined measurements* (mm) (n=2). HL₁ 0.44-0.47; HL₂ 0.30-0.32; HL₃
3583 0.11-0.12; HW 0.37-0.42; SL 0.38-0.41; EL 0.11-0.12; WL 0.42-0.47; PnL 0.11-0.13; PnW 0.26-
3584 0.30; ML 0.11; MW 0.18-0.19; *Indices* CI 84.34-88.89; SI₁ 96.25-102.86; SI₂ 126.32-128.33; OI₁
3585 28.57-28.75; OI₂ 24.10-24.44.

3586

3587 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
3588 concave. Dorsum of the head with sparse appressed hairs. Clypeus with a rounded anterior
3589 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
3590 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
3591 clypeus are clearly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
3592 margin in oblique anterodorsal view. The scapes surpass the posterior cephalic margin by a
3593 length up to the maximal diameter of the eye, and they have appressed hairs. Ocelli absent. Eyes
3594 are positioned on the cephalic midline and have 8-10 ommatidia along their maximal diameter.

3595 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum. The
3596 mesonotum is not inflated and does not bulge dorsally above the pronotum in lateral view.
3597 Metanotal groove absent or narrower than the diameter of the metathoracic spiracles.
3598 Metathoracic spiracles in dorsolateral position, not protruding, and typically touching the
3599 mesometanotal and propodeal sutures. Dorsum of the propodeum convex and shorter than the
3600 propodeal slope. Propodeal spiracles circular and positioned on the posterior propodeal margin,
3601 slightly anterior of the middle of the propodeal slope. Legs with appressed hairs. Petiole short and
3602 inclined forward.

3603 **Gaster.** With decumbent dense pubescence and several scattered long erect hairs.

3604 **Color and sculpture.** Body smooth and shiny, except for the dorsum of the mesosoma which is
3605 sometimes slightly imbricate. Body uniformly brownish, but with slightly lighter antenna and
3606 legs.

3607

3608 **Distribution (supplementary material Fig. S32).** *Brachymyrmex obscurior* is widespread and
3609 known from the Antilles, Argentina, Brazil, Chile, Colombia, the Dominican Republic, French

3610 Guiana, Guatemala, Hawaii, Jamaica and Mexico. It has also been introduced in New Caledonia,
3611 the United States and other colleagues have reported it from Samoa and Hawaii (Wilson and
3612 Taylor, 1967), but we did not examine this material.

3613
3614 **Biology.** In the original description, Forel (1893) mentioned that this species forms colonies of a
3615 few hundred individuals. Nests are usually constructed on open ground, typically under a stone,
3616 or at the roots of grass and weeds. The nest consists of only one or two simple chambers that are
3617 connected with a short passage. Forel (1893) indicated that *B. obscurior* occurs from sea level up
3618 to 800 m of altitude, but here we report new records from localities above 800 m.

3619
3620 **Remarks.** The specimen at the top of pin MHNG: USNMENT00757132 is designated here as the
3621 lectotype, whereas the other ants are paralectotypes. Forel (1893) described *B. obscurior* as a
3622 variety of *B. heeri* and indicated that it differs from typical *B. heeri* by having a brownish instead
3623 of yellowish body and slightly denser pubescence on the gaster. We observed that both species
3624 can readily be distinguished as to whether or not the mesonotum bulges dorsally above the
3625 pronotum in lateral view. Forel (1893) also reported that *B. obscurior* resembles *B. patagonicus*
3626 but that both taxa differ as to the presence or absence of ocelli, in body size, as to pubescence and
3627 the length of the scapes. He further considered *B. obscurior* to be a difficult “form” that
3628 represents a morphological transition between *B. patagonicus* and *B. heeri* (Forel 1912a). We
3629 agree that *B. obscurior* and *B. patagonicus* are morphologically very similar (see diagnosis), and
3630 molecular studies of both taxa will be required to examine whether they are distinct species.
3631 Wilson and Taylor (1967) recognized *B. heeri* var. *obscurior* as a distinct species as a provisional
3632 measure in anticipation of a full-scale revision of the genus. We agree with this decision, based
3633 on the morphological differences indicated above, but we cannot for now comment on their

3634 proposed synonymization of *B. heeri* var. *aphidicola* Wheeler, 1934 to *B. obscurior*, as this
3635 material from Hawaii was not available to us.

3636

3637 *Brachymyrmex oculatus* Santschi

3638 (Fig. 42, supplementary material Fig. S33)

3639 *Brachymyrmex oculatus* Santschi, 1919: 55 (w.). **Lectotype worker** (NHMB:
3640 USNMENT00758101) and **paralectotype workers** (NHMB: USNMENT00758101; **here**
3641 **designated**): 6 workers [examined]. **ARGENTINA: Buenos Aires:** Sierra de las Ventanas,
3642 Bruch leg. Quirán et al. (2004: 282) (m).

3643

3644 **Additional material examined. ARGENTINA: Entre Ríos:** Vilcaguay, Bruchi, 3 workers
3645 (MZSP: USNMENT00757776); **Santa Fé:** Fives Lilles, Wisser, 6 workers (MCZC:
3646 USNMENT00757250).

3647

3648 **Diagnosis.** *Brachymyrmex oculatus* morphologically resembles *B. bruchi* and *B. patagonicus*,
3649 because all three species have scapes that surpass the posterior margin of the head, they usually
3650 have two erect hairs on the mesonotum, their mesonotum does not bulge dorsally above the
3651 pronotum in lateral view, a metanotal groove is absent or narrower than the diameter of the
3652 metathoracic spiracles, their gaster has scarce pubescence and several scattered long erect hairs
3653 and their body is brownish. *Brachymyrmex oculatus* differs from *B. bruchi* and *B. patagonicus*,
3654 however, by having larger eyes, with a maximal diameter that approximates a third of the length
3655 of the head (HL₁). They usually have more than 14 ommatidia along their maximal diameter.

3656

3657 *Lectotype and paralectotypes worker measurements* (mm) (n=4). HL₁ 0.45-0.50; HL₂ 0.35-0.41;
3658 HL₃ 0.11-0.14; HW 0.48-0.58; SL 0.45-0.50; EL 0.15-0.18; WL 0.53-0.61; PnL 0.15-0.17; PnW
3659 0.30-0.39; ML 0.14-0.20; MW 0.23-0.27; *Indices* CI 106.67-115.15; SI₁ 86.84-93.75; SI₂ 122.22-
3660 133.33; OI₁ 31.25-34.29; OI₂ 21.88-27.27.

3661

3662 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic border flat.

3663 Dorsum of the head with sparse appressed hairs. Clypeus with a rounded anterior margin and five
3664 long, erect hairs of which a single, usually conspicuous hair is near the anterior margin, two hairs
3665 are in mediolateral position and two more near the toruli; other hairs on the clypeus are markedly
3666 shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin in oblique
3667 anterodorsal view. The scapes surpass the posterior cephalic margin by a length that is shorter
3668 than the maximal diameter of the eye; they have appressed hairs. Ocelli absent. Eyes are
3669 positioned on the cephalic midline and usually have more than 14 ommatidia along their maximal
3670 diameter.

3671 **Mesosoma.** Dorsum of the mesosoma with sparse appressed hairs, and typically with two erect
3672 hairs on the pronotum and two on the mesonotum; sometimes with additional suberect hairs,
3673 mainly on pronotum. The mesonotum is not inflated and does not bulge dorsally above the
3674 pronotum in lateral view. Metanotal groove absent or narrower than the diameter of the
3675 metathoracic spiracles. Metathoracic spiracles in dorsolateral position, not protruding, and
3676 touching the propodeal suture. Dorsum of the propodeum slightly convex and shorter than the
3677 propodeal slope. Propodeal spiracles circular, positioned on the posterior propodeal margin, at the
3678 middle of the propodeal slope. Legs with scattered appressed hairs. Petiole short and inclined
3679 forward.

3680 **Gaster.** With scattered pubescence and several scattered long erect hairs, mainly at the edges of
3681 the segments.

3682 **Color and sculpture.** Body overall smooth and shiny, with the dorsum of the mesosoma slightly
3683 imbricate. Body uniformly brownish.

3684
3685 **Distribution (Supplementary material Fig. S33).** *Brachymyrmex oculatus* is exclusively known
3686 from Argentina. Quirán et al. (2004) examined material from additional localities throughout the
3687 country.

3688
3689 **Biology.** Unkown.

3690
3691 **Remarks.** The specimen at the top of pin NHMB: USNMENT00757132 is here designated as
3692 lectotype, whereas the other ants in that pin are paralectotypes. Santschi (1919) suggested that *B.*
3693 *oculatus* can be confused with *B. bruchi* based on overall similarity. *Brachymyrmex patagonicus*
3694 is also very similar, and as mentioned in the diagnosis *B. oculatus* differs mainly from these
3695 species by its larger eyes. Whereas *B. patagonicus* has two erect hairs on the pronotum and *B.*
3696 *bruchi* usually more than two, the number of erect hairs on the pronotum is variable in *B.*
3697 *oculatus*.

3698 Quirán et al. (2004) designated a male to be the lectotype of *B. oculatus*, because it was labelled
3699 as “typus”, and the associated workers were designated to be paralectotypes. However, the
3700 original description by Santschi (1919) exclusively described the worker morphology, and
3701 therefore logic dictates that the lectotype should be a worker. As such, we redesignated a worker
3702 of Santschi (1919) type series as lectotype here.

3703

3704

3705

Brachymyrmex patagonicus Mayr

3706

(Figs. 46, 47, supplementary material Fig. S34)

3707 *Brachymyrmex patagonicus* Mayr, 1868: 164 (w.m.). (NHMW), Emery (1906: 178) (q.).

3708 **ARGENTINA: Buenos Aires:** Rio Negro. See also: Santschi (1923a: 657).

3709 = *Brachymyrmex patagonicus* var. *atrátula* Santschi, 1923a: 657, Fig. 3 (w.). (NHMB:

3710 USNMENT00757695): 2 workers [examined] **ARGENTINA: Jujuy:** Alfarito; synonym

3711 proposed by Quirán et al. (2004: 275). See also: Santschi (1923a: 657).

3712 = *Brachymyrmex laevis* Emery, 1895: 216 (w.). (MSNG: USNMENT00757205, 00757206;

3713 MHNG: USNMENT00758130): 4 workers [examined] **CHILE:** Valdivia. See also: Forel (1908:

3714 400); Forel (1912a: 62); Santschi (1923a: 659). **n. syn.**

3715

3716

3717 **Additional material examined. ARGENTINA: Entre Rios:** 8.63 km W Concordia, -31.42303 -

3718 58.11672, 16 m, 26 Dec. 2007, W. MacKay #22667, 1 worker (WEMC: USNMENT00758002);

3719 **Las Heras:** Agua de las zorras, Paramillo de Uspallata, 13 km NW of Villavicencio, -32.48011 -

3720 69.16467, 2750 m, 3 workers 1 queen (MCZC: USNMENT00759011); **Mendoza:** 22.81 km W

3721 Villa Seca, -33.58515 -69.41708, 1835 m, 06 Jan. 2008, W. MacKay, 4 workers, 1 queen

3722 (WEMC: USNMENT 00757968, 00757973, 00759018, 00759020); **Santiago del Estero:** 2

3723 workers (ICN: USNMENT00759047). **BRAZIL: Pará:** Melgaço, Caxiuanã ECFPn, -1.73584 -

3724 51.48762, 23-25 Oct. 2005, Equipe A.Y. Harada, 5 workers (MPEG: AYH036); -1.72484 -

3725 51.42979, 26 Oct. 2003, A.Y. Harada, E.P. Fagundes, C.J.M. Ribeiro, C.E.D. Sanhudo, C.A.R.

3726 Moura, J.L.P. Souza, C. Renato, 2 workers (MPEG: AYH053); Santarem, Taperinha, -2.90 -

3727 54.33, July 1975, R. L. Jeanne, 3 workers (MCZC: USNMENT00757990); **São Paulo:**

3728 Cananéia, P.E. Ilha Do Cardoso, -22.30 -47.88, 02 Nov. 2007, C. Bottcher & E.R. Pereira, 1
3729 worker (ICN: USNMENT00757730); Itirapina: 11 Feb. 2009, S. Sendoya, 23 workers (ICN:
3730 USNMENT00759052). **COLOMBIA: Caldas:** Aranzazu, Vereda Alegrías, Finca Betania, La
3731 Esperanza, 5.29831 -75.49053, 1990 m, 08-09 Aug. 2003, L.E. Franco & J. Cruz, 3 workers
3732 (IAvH: 55576); Finca Villa Rosita, 5.30603 -75.48489, 1825 m, 06-08 Aug. 2003, L.E. Franco &
3733 J. Cruz, 2 workers (IAvH: IAvH25467, 25468); Vereda Buenavista, Naranjal Finca Bizerta,
3734 5.28431 -75.48942, 2065 m, 25-27 July 2003, L.E. Franco & J. Cruz, 1 worker (IAvH:
3735 IAvH25471); 4.285 -75.489, 2065 m, 25-27 July 2003, L.E. Franco & J. Cruz, 2 workers, 1
3736 queen (IAvH: IAvH27267); Finca La Herradura, 5.27936 -75.49744, 2020 m, 5-7 Aug. 2003,
3737 L.E. Franco & J. Cruz, 1 worker (IAvH: IAvH27291); Vereda Chambery, Finca Las Garzas,
3738 5.29481 -75.47292, 1980 m, 5-6 July 2003, L.E. Franco & J. Cruz, 3 workers (IAvH:
3739 IAvH55563); Vereda Chupaleros, Finca Alegrias, 5.30633 -75.50028, 1960 m, 27-29 July 2003,
3740 L.E. Franco & J. Cruz, 3 workers (IAvH: IAvH25466); Veredada El Eden, Finca Los
3741 Guayacanes, 5.29606 -75.49428, 1984 m, 26 July 2003, L.E. Franco & J. Cruz, 1 worker, 1 male
3742 (IAvH: IAvH27294); Vereda San José, Finca Casa Roja 5.33348 -75.48892, 1777 m, 07-09 Aug.
3743 2003, L.E. Franco & J. Cruz, 2 workers (IAvH: IAvH25462, 25463); Salamina, Vereda El
3744 Cedrito, Finca El Cedrito, 5.33197 -75.46785, 1960 m, 27-28 July 2003, L.E. Franco & J. Cruz, 3
3745 workers (IAvH: IAvH25470, 25472); **Córdoba:** Monteria, 29 June 2009, Juan C. Abadia, 3
3746 workers (ICN); **Cundinamarca:** Villeta, Conjunto Residencial Las Acacias, 5.01361 -74.47306,
3747 11 Jan. 2010, C.M. Ortiz, 8 workers (ICN); **Quindío:** Filandia, Vereda Cruces, Finca Los Micos,
3748 4.70452 -75.64665, 1800 m, 12-14 July 2002, E. Jimenez & L.E. Franco, 2 workers (IAvH:
3749 IAvH27227, 27240); **Valle del Cauca:** bosque Yotoco, 1575 m, 23 June 1989, W.P.MacKay
3750 #11720, 1 worker (WEMC: USNMENT00757995); Medio Calima, 24 June 1989, E. MacKay
3751 #11744, 3 workers, 1 queen (WEMC: USNMENT00759012, 00759013). **COSTA RICA:**

3752 **Alajuela:** Juan Santa Maria airport, 9.98 -84.20, 900 m, 09 Jan. 1999, J. Longino #3958-s, 1
3753 worker (JTLC: LACM ENT 142311); **Heredia:** Estación Biológica la Selva, 10.433 -84.017,
3754 May 1994, J. Longino #3625, 1 worker (JTLC: INBIOCRI001260979); 10.423 -84.001, 50 m, 04
3755 Aug. 2004, W. & E. Mackay #20890, 1 worker (WEMC: USNMENT00758039); 06 Aug. 2004,
3756 W. & E. Mackay #20917, 1 worker (WEMC: USNMENT00757982); **Limon:** 3 km SSE Cahuita,
3757 9.71667 -82.83333, 70 m, 24 Dec. 1983, P.S. Ward #6530-40, 3 workers (PSWC:
3758 USNMENT00758007); **Puntarenas:** Estación Biológica Los Llanos, 10.30487 -84.83735, 1150
3759 m, 28 Feb. 2004, J. Longino, 1 worker (JTLC: JTLC000005287); 6 km S Monteverde, 10.25 -
3760 84.82, 800 m, 22 June 1999, J. Longino, 1 worker, 1 queen (JTLC: LACM ENT 143543).
3761 **ECUADOR: Chimborazo:** Huigra, -2.29417 -78.98861, 1200 m, 18 Feb. 2004, Roger Vila I-
3762 457, 2 workers (ICN: USNMENT00758037). **GUATEMALA: El Progreso:** 3.8 km E. San
3763 Cristobal, 14.91850 -90.04075, 302 m, 19 July 2004, W. & E. MacKay #20586, 3 workers
3764 (WEMC: USNMENT00759006); **Santa Rosa:** 5 km SW Cuilapa, 14.23333 -90.33333, 575 m,
3765 14 Nov. 2003, A.L. Wild #AW2030, 1 worker (ALWC: USNMENT00758009); **Suchitepéquez:**
3766 Finca Tarrales, 12.3 km N Patulul, 14.52256 -91.13642, 740 m, 30 July 2004, W. & E. Mackay
3767 #20782, 2 workers (WEMC: USNMENT00757688, 00757983). **HONDURAS:** La Lima, 23 Jan.
3768 1960, C. Evers, UFC-217-35 (6871), 5 workers, 1 male (MZSP: USNMENT00757621,
3769 00757622). **JAPAN:** Hyogo, Kob, Port Island, 34.67 135.20, 18 Sep. 2007, M. Yoshimura, 1
3770 worker (ICN: MY1862-12). **MEXICO: Federal:** Mexico City, 6.5 km E Chalma, 26 May 1998,
3771 W. MacKay #10386, 1 worker, 2 males (WEMC: USNMENT00757993); **Guanajuato:** Highway
3772 57, km 306, Rancho Jardin, 21.14224 -100.95341, 10 Aug. 1965, Cornell University, 1 worker
3773 (MCZC: USNMENT00759002); **Jalisco:** 6 km N El Tuito, 20.3667 -105.3167, 730 m, 31 Dec.
3774 1987, P.S. Ward #9327-11, 2 workers (PSWC: USNMENT00757679); **Nuevo Leon:** 8 km W.
3775 Iturbide, 09 Nov. 1946, W.S. Ross, ANTC10261, 2 workers (CPDC: CASENT0196003);

3776 **Nayarit:** 19.3 km S Rosamorada, 21.94389 -105.20639, 51 m, 19 June 2000, W. & E. MacKay
3777 #19126, 2 workers (WEMC: USNMENT00757983); **Oaxaca:** 148 km NE Oaxaca Rt175,
3778 17.02647 -96.71947, 1210 m, 04 June 1988, W. MacKay #10825, 3 workers (WEMC:
3779 USNMENT00757732); 1.6 km E Reforma, near Tuxtepec, 18.08078 -96.13677, 12-15 Aug.
3780 1973, A. Newton, 1 worker (MCZC: USNMENT00757680); **Puebla:** 6.5 km W Izucar
3781 Matamoros, 1220 m, 26 May 1988, W. MacKay, 1 worker, 1 male (WEMC:
3782 USNMENT00757991); **San Luis de Potosi:** 10 km S San Luis Potosi, 21 May 1988, W.P.
3783 MacKay #10307 #10308, 6 workers, 2 males, 1 queen (WEMC: USNMENT00757685,
3784 00759015, 00759017); 16 km S San Luis Potosi, 21 May 1988, W.P. MacKay #10307, 2
3785 workers, 1 male (WEMC: USNMENT00758006); 11 km N Cardenas, 1720 m, 09 June 1988, W.
3786 MacKay #1095, 1 worker, 2 males (WEMC: USNMENT00759027); **Tamaulipas:** 32.3 km SE
3787 Ciudad Victoria, 23.49161 -96.97775, 289 m, 24 Mar. 2008, W. & E. MacKay #22930, 2 workers
3788 (WEMC: USNMENT00757681, 00757687); Gomez Farias, 25 Sep. 1987, A. Rebeles #10096, 1
3789 worker (WEMC: USNMENT00757994); **Veracruz:** Los Tuxlas, July 2001, A. Pezon, 1 worker
3790 (CPDC: USNMENT00757989); Xalapa, V. Rico Gray #17209, 4 workers (MCZC:
3791 USNMENT00759026, 00758044). **PARAGUAY: Canindeyú:** Reserva Natural Bosque
3792 Mbaracayú, Aguara Ñu, -24.18333 -55.28333, 240 m, 16 Nov. 2002, A. L. Wild, 1 worker
3793 (ALWC: USNMENT00757971); **Itapúa:** Isla Yacyretá, -27.41667 -56.75417, 25 Sep. 1997, B.
3794 Barrios #ibn 216, 1 worker (ALWC: USNMENT00757683); **Presidente Hayes:** 5 km SSE Pozo
3795 Colorado, -23.55 -58.77, 140 m, 05 Dec. 2002, A.L. Wild #AW1764, 1 worker (ALWC:
3796 USNMENT00758010). **URUGUAY: Salta:** Salta, Parque Municipal Benito Solari, 25 Dec.
3797 2007, W. & E. MacKay #22634, 1 worker (WEMC: USNMENT00757731).
3798

3799 **Diagnosis.** *Brachymyrmex patagonicus* morphologically resembles *B. bruchi* and *B. oculatus*,
3800 because all three species have scapes that surpass the posterior margin of the head by a length
3801 approximately equal to the maximum diameter of the eye or less, they usually have two erect
3802 hairs on the mesonotum, which does not bulge dorsally above the pronotum in lateral view, the
3803 metanotal groove is absent or narrower than the diameter of the metathoracic spiracles, their
3804 gaster has scarce pubescence and several scattered long erect hairs, the body is uniformly
3805 brownish. *Brachymyrmex patagonicus* differs from *B. bruchi*, however, by usually having two
3806 erect hairs on the pronotum and two on the mesonotum and from *B. oculatus* by having smaller
3807 eyes, with a maximal diameter of approximately 1/4th of the length of the head (HL₁) and usually
3808 with less than 14 ommatidia along their maximal diameter.

3809
3810 *Types measurements* (mm) (n=2). HL₁ 0.45-0.53; HL₂ 0.33-0.37; HL₃ 0.10-0.13; HW 0.38-0.49;
3811 SL 0.40-0.48; EL 0.14-0.17; WL 0.38-0.51; PnL 0.11-0.15; PnW 0.26-0.33; ML 0.07-0.11; MW
3812 0.17-0.24; *Indices* CI 85.29-92.50; SI₁ 97.30-103.45; SI₂ 120.00-128.57; OI₁ 33.78-36.21; OI₂
3813 22.06-25.00.

3814
3815 *Additional material examined measurements* (mm) (n=13). HL₁ 0.40-0.59; HL₂ 0.28-0.39; HL₃
3816 0.07-0.16; HW 0.33-0.51; SL 0.35-0.49; EL 0.09-0.14; WL 0.35-0.55; PnL 0.09-0.20; PnW 0.23-
3817 0.35; ML 0.07-0.14; MW 0.15-0.23; *Indices* CI 81.40-93.33; SI₁ 92.00-128.95; SI₂ 116.22-
3818 163.33; OI₁ 22.22-32.5; OI₂ 18.18-28.57.

3819
3820 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
3821 concave. Dorsum of head with sparse appressed hairs. Clypeus with a rounded anterior margin
3822 and five long, erect hairs of which a single, usually conspicuous hair is near the anterior margin,

3823 two hairs are in mediolateral position and two more near the toruli; other hairs on the clypeus are
3824 markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin in
3825 oblique anterodorsal view. The scapes surpass the posterior cephalic margin by a length that is
3826 shorter than the maximal diameter of the eye; they have appressed hairs. At least one central
3827 ocellus is present. Eyes are positioned on the cephalic midline and have 8-12 ommatidia along
3828 their maximal diameter.

3829 **Mesosoma.** Dorsum of the mesosoma with sparse appressed hairs, typically with two erect hairs
3830 on the pronotum and two on the mesonotum. The mesonotum is not inflated and does not bulge
3831 dorsally above the pronotum. Metanotal groove absent or narrower than the diameter of the
3832 metathoracic spiracles. Metathoracic spiracles in dorsolateral position, not protruding, and
3833 touching the propodeal suture. Dorsum of the propodeum slightly convex and shorter than the
3834 propodeal slope. Propodeal spiracles circular, situated on the posterior propodeal margin, at the
3835 middle of the propodeal slope. Legs with appressed and scattered hairs. Petiole short and inclined
3836 forward.

3837 **Gaster.** With scattered pubescence and several scattered long erect hairs, mainly at the edges of
3838 the segments.

3839 **Color and sculpture.** Body overall smooth and shiny, except for the sometimes slightly imbricate
3840 sculpture on the dorsum of the mesosoma, and typically uniformly brownish.

3841
3842 **Distribution (supplementary material Fig. S34).** *Brachymyrmex patagonicus* is widespread and
3843 known from Argentina, Brazil, Colombia, Chile, Costa Rica, Ecuador, Guatemala, Honduras,
3844 Mexico, Paraguay, Uruguay and it has been introduced in Japan (Ortiz-Sepulveda pers. obs.) and
3845 the United States (MacGown et al. 2007).

3846

3847 **Biology.** MacGown et al. (2007) indicated that *B. patagonicus* nests in a variety of habitats, both
3848 natural and disturbed, ranging from pine forests over mixed forest and prairie to urban
3849 environments. Colonies may contain many hundreds of workers packed into a small sheltered
3850 area. Where this species is found, colonies are often abundant and within a few centimeters from
3851 one another. Nests can be found in loose tree bark, at the base of plants, in soil, dead wood and
3852 organic litter, or below natural and man-made objects. The species is considered a nuisance pest,
3853 as both alates and foraging workers may enter man-made structures to forage and/or nest
3854 (MacGown et al. 2007).

3855
3856 **Remarks.** As Quirán et al. (2004) already indicated Mayr (1868) described *B. patagonicus* based
3857 on specimens from Argentina. However, the specimens in the NHMW: USNMENT00757201-
3858 00757204 that were examined and identified as types by Mayr are from Chile. Either the locality
3859 indicated in the original description may be wrong, or specimens from Argentina may be lacking
3860 from the collection, and as such we do not designate a lectotype here.

3861 Emery (1895), upon describing *B. laevis* (which is sometimes misspelled as *B. levis*, e.g. Emery
3862 (1906: 178); Santschi (1923a: 659)), indicated that it is closely related to *B. patagonicus* and to
3863 the dark forms of *B. heeri*, but he considered *B. laevis* distinct by having a smooth and shiny
3864 tegument of the head. However a description of the species is not provided, and after examining
3865 the type material of *B. laevis* we have not identified any consistent morphological differences
3866 compared to *B. patagonicus* so that we synonymize the species here.

3867 *Brachymyrmex patagonicus* displays variation in color from light to dark brown; *B. patagonicus*
3868 var. *atrátula* was described by Santschi (1923a) as a variety with darker, almost black tegument,
3869 and a smooth and shiny body. Evaluating these morphological differences Quirán et al. (2004)

3870 suggested that *B. patagonicus* var. *atratura* is a junior synonym of *B. patagonicus*, and we agree
3871 with this decision.

3872 Guénard (2018) reports the first record of *B. patagonicus* from continental Asia (Hong Kong),
3873 however, the specimen illustrated in the paper does not display the diagnostic features of this
3874 species, but rather those of *B. cordemoyi*. It is noteworthy that *B. patagonicus* is very abundant
3875 and geographically widespread, but its morphological variation and genetic diversity as well as
3876 other biological features remain poorly studied. An in-depth study of these features in a
3877 geographic context would be required to determine if *B. patagonicus* is a distinct species, a
3878 species complex, or conspecific with some other taxa, e.g. *B. bruchi* and *B. obscurior*.

3879

3880

3881 *Brachymyrmex pictus* Mayr

3882 (Figs. 48, supplementary material Fig. S35)

3883 *Brachymyrmex pictus* Mayr, 1887: 522 (w.q.). **Lectotype worker** (NHMW: ANTWEB

3884 CASENT0915735) and **para lectotype worker** (NHMW; MHNG: USNMENT00758144; **here**
3885 **designated**): 3 workers [examined]. **BRAZIL: Santa Catharina.**

3886 = *B. heeri* var. *basalis* Wheeler, 1921: 166 (w.). [not examined]. **GUYANA:** Kartabo, Puruni
3887 trail. **n. syn.**

3888 = *B. pictus* subsp. *balboae* Wheeler, 1942: 253 (w.q.m.). (MCZC: M.C.Z. Cotype 1-3, 4-6, 7-9,
3889 21438): 2 workers, 8 queens, 2 males [examined]. **PANAMA:** Balboa. **n. syn.**

3890

3891 **Additional material examined. BOLIVIA: Santa Cruz:** 35 km SSE Flor de Oro, -13.83333 -
3892 60.87763, 450 m, 01 Dec. 1993, P.S. Ward #12232, 3 workers, 1 male (MCZC: CMOS000012,
3893 CMOS000013). **BRAZIL: Amazonas:** 11 Sep. 1962, W.L. Brown, 3 workers (MCZC:

3894 CMOS000002); Aleixo nr. Manaus, 11 Sep. 1962, W. L. Brown, 8 workers, 2 males, 6 queens
3895 (MCZC: CMOS000004, CMOS000006, CMOS000009-0000011); Peredão Rd. S. of Manaus, 02
3896 Sep. 1962; W. L. Brown, 12 workers (MCZC: CMOS000003, CMOS000005, CMOS000007,
3897 CMOS000008); **Bahia:** Ilheus, 27 Mar. 1997, C.S.F. Mariano, 4 workers (CPDC:
3898 USNMENT00757794); **Espirito Santo:** Nov. 1977, M. Alvarenga, 4 workers (MZSP:
3899 USNMENT00757785); **São Paulo:** Caraguatatuba, Reserva Florestal, 40 m, 22 May-01 June
3900 1962, Exp. Dep. Zool. 2056, 8 workers (MZSP: USNMENT00757676, 00757783); Ilha dos
3901 Pescadores (Ilha da Vitoria), 24 Mar. 1964, 2 workers, 2 queens (MZSP: USNMENT00757604);
3902 Ubatuba, Picinguaba, July 2011, 9 workers (ICN: USNMENT00759053). **COLOMBIA: Cauca:**
3903 Isla Gorgona, 11 Sep. 1989, M. Baena #GQA-05, 3 workers (WEMC: USNMENT00757796,
3904 00757797); **Magdalena:** 2 km ESE Minca, 11.13 -74.10, 780 m, 13 Aug. 1985, P.S. ward #7895,
3905 2 workers, 1 queen (PSWC: USNMENT00757792); **Putumayo:** Parque Nacional Natural La
3906 Paya, Cabaña La Paya, -0.03, -75.20, 330 m, 15-30 Sep. 2002, A. Morales, 1 worker (IAvH).
3907 **COSTA RICA: Puntarenas:** Parque Natural Corcovado, Sirena, 8.483 -83.583; 23 Apr. 1981, J.
3908 Longino, 1 worker, 1 queen (JTLC000005913, 000005914); 14 June 1982, J. Longino, 2 workers
3909 (MCZC: USNMENT00757793); Reserva Biologica Carara, 9.78 -84.60, 30 m, 24 July 1985, P.S.
3910 Ward #7615, 2 workers, 1 queen (PSWC: USNMENT00757784); Reserva Biologica Carara,
3911 Estación Quebrada Bonita, 9.78 -84.60, 30 m, 24 July 1985, J. Longino #0562, 1 worker, 1 queen
3912 (JTLC: JTLC000006051). **ECUADOR: Esmeraldas:** 6.1 km E Rio Verde, 1.07694, -79.41389,
3913 13 July 2005, W. & E. MacKay #21098, 1 worker (WEMC: USNMENT00757791); **Manabí:** 20
3914 km NE Chone, 300 m, 1976, S. & J. Peck, 2 workers (MCZC: CMOS000014); **Pichincha:**
3915 Cotopaxi, 19 km ENE La Maná, -0.88 -79.05, 1100 m, 10 Aug. 1991, P.S. Ward #11418-23, 1
3916 worker (MCZC: USNMENT00758017). **FRENCH GUIANA:** Saint Elie-K, 4.82261, -53.27649,
3917 Apr. 2002, J. Orivel & J. Le Breton, 6 workers, 1 queen (CPDC: USNMENT00757786,

3918 00757787). **GUATEMALA: Petén:** Finca Ixobel, 83 km SE Flores, 16.30367, -89.42353, 365
3919 m, 25 July 2004, W. & E. MacKay #20694, 1 worker, 1 male, 1 queen (WEMC:
3920 USNMENT00758998); **GUYANA:** Rupununi, Apoteri, 4.08333 -58.58333, 100 m, 12 Jan. 1981,
3921 J. Longino, 1 worker (JTLC: JTLC000005918). **JAMAICA: Saint Andrew:** Cinchona, 18.067 -
3922 76.650, 1450 m, 19 Mar. 1984, 1 worker (JTLC: JTLC000005924). **PANAMA:** Gamboa,
3923 Parque, 9.11722 -79.69972, 24 Apr. 1988, D. Quintero #1, 2 workers (WEMC:
3924 USNMENT00757795). **PERU: Madre de Dios:** Tambopata, 15 km NE Puerto Maldonado, June
3925 1989, S.P. Cover & J.E. Tobin, JT 219 CA-740, 2 workers (MCZC: CMOS000032).
3926 **VENEZUELA: Bolívar:** Canaima, Orchid Is., 14 Oct. 1988, W. MacKay #11165, 8 workers, 3
3927 males, 1 queen (WEMC: USNMENT0075778800757790, 00757960, 00758997).

3928
3929 **Diagnosis.** The unique feature for *B. pictus* is a conspicuous color difference between the head
3930 and thorax, which are yellow and the gaster, which is black, or yellow with (a) black spot(s).

3931
3932 *Additional material examined measurements* (mm) (n=1). HL₁ 0.43; HL₂ n.a.; HL₃ 0.08; HW
3933 0.38; SL 0.38; EL 0.11; WL 0.44; PnL n.a.; PnW n.a.; ML 0.09; MW 0.18; *Indices* CI 89.58; SI₁
3934 100.00; SI₂ n.a.; OI₁ 26.83; OI₂ 28.57.

3935
3936 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin flat.
3937 Dorsum of the head has sparse appressed hairs. Clypeus with a rounded anterior margin and five
3938 long, erect hairs of which a single, usually conspicuous hair is near the anterior margin, two hairs
3939 are in mediolateral position and two more near the toruli; other hairs on the clypeus are markedly
3940 shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin in oblique
3941 anterodorsal view. The scapes surpass the posterior cephalic margin by a length that is smaller

3942 than the maximal diameter of the eye; they have appressed hairs. Three ocelli present. Eyes are
3943 positioned on the cephalic midline and have 7-10 ommatidia along their maximal diameter.

3944 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum. The
3945 mesonotum is not inflated and does not bulge dorsally above the pronotum in lateral view. The
3946 mesometanotal suture is directly visible, however, there is no marked constriction between the
3947 mesonotum and metanotum, and as a result the metanotal groove is absent. Metathoracic
3948 spiracles widely separated in dorsolateral position, not protruding, and touching the propodeal
3949 suture. Dorsum of the propodeum flat and shorter than the propodeal slope. Propodeal spiracles
3950 circular, situated slightly ventral to the posterior propodeal margin, and slightly posterior of the
3951 middle of the propodeal slope. Legs with appressed and scattered hairs. Petiole short and inclined
3952 forward.

3953 **Gaster.** With scattered pubescence and several scattered long erect hairs.

3954 **Color and sculpture.** Body smooth and shiny. The head and thorax are yellowish whereas the
3955 gaster is either totally black or yellowish with one or more black spots.

3956
3957 **Distribution (Supplementary material Fig. S35).** *Brachymyrmex pictus* is known to occur in
3958 Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guatemala, Guyana, Jamaica, Panama, Peru
3959 and Venezuela.

3960
3961 **Biology.** The colony of *B. heeri* var. *basalis* reported by Wheeler (1921) and Wheeler (1942) was
3962 small but nevertheless contained brood. It was found in hollow petioles of a small *Tachigalia*
3963 *paniculata* tree on the Puruni trail at Kartabi, Guyana. Several colonies of *B. pictus* subsp.
3964 *balboae* were found to be nesting in hollow twigs of *Tripalis americana* at Balboa, Panama

3965 (Wheeler 1942). No biological information exists on typical *B. pictus*, but it seems this species is
3966 arboreal.

3967

3968 **Remarks.** One of the specimens determined as a syntype of *B. pictus* (NHMW:
3969 CASENT0915734) displays the diagnostic features of *B. admotus*. Given that both species were
3970 described by Mayr (1887) in the same publication from the same type locality, we consider the
3971 identification of this specimen to be a labeling mistake. Upon describing *B. pictus*, Mayr (1887)
3972 did not provide any information on the diagnostic features he considered relevant to distinguish
3973 *B. pictus* from other *Brachymyrmex* species. Wheeler (1921) described *B. heeri* var. *basalis*, but
3974 he did not provide any morphological description for his typical *B. heeri* specimens nor for the
3975 variety. The only feature described for *B. heeri* var. *basalis* is its yellow body with a black first
3976 segment of the gaster (which to our knowledge only fits with the characters of *B. pictus*). Other
3977 complications are that the material has not been illustrated, that both the typical form and the
3978 variety were found on the same tree species and the same locality, and that we have not been able
3979 to locate the material. Later, Wheeler (1942) continued to consider his specimens of *B. heeri* and
3980 *B. heeri* var. *basalis* to be distinct of *B. pictus*. Given the information available we consider it
3981 likely that *B. heeri* var. *basalis* belongs to *B. pictus*, but we cannot comment on the taxonomic
3982 status of his typical *B. heeri* specimens for now.

3983 Fortunately, Wheeler (1942) provided a description of *B. pictus* subsp. *balboae*, which indicates
3984 that it differs from the typical *B. pictus* only by being smaller. It is indeed somewhat smaller (1.0-
3985 1.2 mm) than the typical form described by Mayr (1887; 1.3-1.6 mm), however, after studying
3986 the material we consider this difference to likely represent geographic variation, and we
3987 synonymize this subspecies here, although a better characterization of the variation in *B. pictus* is
3988 required.

3989

3990

3991

Brachymyrmex pilipes Mayr

3992

(Fig. 49, supplementary material Fig. S36)

3993

Brachymyrmex pilipes Mayr, 1887: 524 (q.m.). **Lectotype queen** (NHMW) and **paralectotype**

3994

queen, male (NHMW): 2 queens, 1 male [examined]. **BRAZIL: Santa Catharina.** Santschi

3995

(1929: 310) (w.). (NHMB): 2 major workers, 2 minor workers, 1 queen [examined]. **BRAZIL:**

3996

Parana: Río Negro. Combination in *Brachymyrmex (Brysha)*: Santschi (1923a: 674). See also:

3997

Ortiz and Fernández (2014: 19, Figs. 7-12).

3998

3999

Diagnosis. *Brachymyrmex pilipes* morphologically resembles *B. micromegas* because both

4000

species have a dimorphic worker caste, tumuliform metathoracic spiracles, toruli that touch the

4001

posterior clypeal margin, but never surpass it (best observed in oblique anterodorsal view) and a

4002

clypeus with a row of long thick hairs near the anterior margin. However, *B. pilipes* differs from

4003

B. micromegas by the fine, longitudinal striations on most of the mesosoma, and by usually

4004

having a gaster of darker color than the rest of the body.

4005

4006

Description. See Ortiz and Fernández (2014).

4007

4008

4009

Brachymyrmex santschii Menozzi

4010

(Fig. 50, supplementary material Fig. S37)

4011

Brachymyrmex santschii Menozzi, 1927: 338, Fig. 5 (w.). [not examined]. **COSTA RICA: San**

4012

José.

4013
4014 **Additional material examined. COSTA RICA: Cartago:** 2 km N Cervantes, 1600 m, Jan.
4015 1973, W.L. Brown, 4 workers, 2 putative worker-queen intercastes (MCZC: CMOS000098,
4016 USNMENT00757750-00757751); **Guanacaste:** Rincon de la Vieja, Las Pailas 7676, 10.77556 -
4017 85.34528, 1400 m, 18 Feb. 1996, R. Anderson, 2 workers (WEMC: USNMENT00757753,
4018 00757754); **Puntarenas:** Monteverde, 10.30 -84.83, 1400 m, Apr.-May 1987, S. Little, 1 worker
4019 (JTLC: JTLC000005243); Monteverde, 10.2964 -84.7831, 1550 m, 18 Jan. 2003, L.A.
4020 Schonberg, 1 worker (JTLC: JTLC000005055); **San José:** Cerros de Escazu, 2 km S Antonio,
4021 1650 m, 13 June 1997, R. Anderson #186880C, 1 worker (WEMC: USNMENT00757593).
4022 **PANAMA: Chiriqui:** Volcan Hartman`s, Finca #17815, 1450 m, 14 June 1996, R.S. Anderson,
4023 1 worker (WEMC: USNMENT00757752).

4024
4025 **Diagnosis.** *Brachymyrmex santschii* morphologically resembles *B. iridescens*, because both
4026 species have the head and the mesosoma with strongly alveolate sculpture. However, they can be
4027 distinguished from one another because *B. santschii* has a metanotal groove that is wider than the
4028 diameter of the metathoracic spiracles, scapes that surpass the posterior margin of the head, and a
4029 gaster with scattered pubescence.

4030
4031 *Additional material examined measurements* (mm) (n=4). HL₁ 0.40-0.44; HL₂ 0.29-0.30; HL₃
4032 0.08-0.10; HW 0.37-0.40; SL 0.39-0.42; EL 0.09-0.11; PnL 0.11-0.13; PnW 0.24-0.28; ML 0.09;
4033 MW 0.13-0.17; *Indices* CI 89.80-91.82; SI₁ 102.27-109.76; SI₂ 136.36-138.24; OI₁ 24.39-26.84;
4034 OI₂ 20.00-24.44.

4035

4036 **Worker description. Head.** Longer than wide in full face view; posterior cephalic margin flat or
4037 slightly concave. Dorsum of the head with subdecumbent hairs. Clypeus with a rounded anterior
4038 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
4039 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
4040 clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
4041 margin in oblique anterodorsal view. The scapes surpass the posterior margin of the head by a
4042 length approximately equal to the maximal diameter of the eye; they bear appressed hairs. Three
4043 conspicuous ocelli are present. Eyes are positioned on the cephalic midline and have 8-9
4044 ommatidia along their maximal diameter.

4045 **Mesosoma.** Dorsum subsinusoidal in lateral view. Without erect hairs, but with decumbent hairs
4046 on the promesonotum. The mesonotum is variable, typically not or weakly inflated, and not or
4047 slightly bulging dorsally above the pronotum in lateral view. Metanotal groove wider than the
4048 diameter of the metathoracic spiracles. Metathoracic spiracles in dorsal position, not protruding
4049 and not touching any sutures. Dorsum of the propodeum slightly convex and shorter than the
4050 propodeal slope. Propodeal spiracles circular, positioned on the posterior propodeal margin, at the
4051 middle of the propodeal slope. Legs with appressed hairs. Petiole short and inclined forward.

4052 **Gaster.** With scattered pubescence and long erect hairs at the edges of the segments.

4053 **Color and sculpture.** Head and dorsum of the mesosoma finely alveolate, those parts that are not
4054 sculptured, including the gaster, are smooth and shiny. The body is brownish, but sometimes the
4055 antennae, tarsi, and articulations of the legs are more yellowish.

4056

4057 **Intercaste description.** The morphology of the putative worker-queen intercaste differs from
4058 that of the worker by its larger body size, the eyes that have around 10 ommatidia along their
4059 maximal diameter, its strongly expanded mesonotum, the absence of a metanotal groove, the

4060 dorsolateral position of the metathoracic spiracles, the less convex dorsum of the propodeum, and
4061 a markedly expanded gaster with dense pubescence.

4062

4063 **Distribution (Supplementary material Fig. S37).** *Brachymyrmex santschii* is known from
4064 Costa Rica and Panama.

4065

4066 **Biology.** Unknown.

4067

4068 **Remarks.** Menozzi (1927) considered *B. santschii* to differ from any other *Brachymyrmex*
4069 species by its sculpture and pubescence. He described the sculpture as strongly punctuate-
4070 reticulate, however, following the terminology of Harris (1979) we consider it rather alveolate.
4071 We do not designate a lectotype here, as we have not studied the type series, which would be
4072 deposited at the German Entomological Institute in Berlin-Dahlem.

4073

4074

4075 ***Brachymyrmex sosai* NEW SPECIES**

4076 **(Fig. 51, supplementary material Fig. S38)**

4077 **Holotype worker** (UNMSM: USNMENT00757760) and **paratype workers** (USNM:
4078 USNMENT00759061, 00759062): 3 workers. **PERU: Cusco:** Paucartambo, Kcosñipata, Predio
4079 Los Wayqechas, ACCA [Asociacion para la Conservacion de la Cuenca Amazonica], -13.17956 -
4080 71.60556, 2825 m, Andean Forest, J. Sosa-Calvo, JSC040920-04.

4081

4082 **Additional material examined. BOLIVIA: Santa Cruz:** 32.8 km N Comparapa, Kara Huasi, -
4083 18.05972 -63.91056, 21 Jan. 1999, R. Anderson #18567, 1 worker (WEMC:

4084 USNMENT00759024); **PERU: Lima:** Zárate forest, 2850 m, N. Valencia, I. Frank, 16 workers
4085 (MCZC: USNMENT00757314-00757320).

4086

4087 **Etymology:** In honor of Dr. Jeffrey Sosa-Calvo, the collector, for his unconditional support and
4088 friendship.

4089

4090 **Diagnosis.** *Brachymyrmex sosai* n. sp. does not have a specific unique feature but rather a unique
4091 combination of features that render it distinct: its scapes surpass the posterior margin of the head
4092 by a length approximately equal to the maximal diameter of the eye, the dorsum of the mesosoma
4093 does not have conspicuous sculpture, a metanotal groove is present, the metathoracic spiracles are
4094 in dorsal position, and the dorsal margin of the mesonotum is strongly antero-posteriorly inclined.
4095 Some features of this species are reminiscent of *B. antennatus*, however, *B. sosai* differs from this
4096 species in body color, the color of the hairs, the length of the scapes, and in having an antennal
4097 funiculus with the second segment shorter than the first.

4098

4099 *Holotype measurements* (mm) HL₁ 0.57; HL₂ 0.35; HL₃ 0.16; HW 0.53; SL 0.59; EL 0.14; WL
4100 0.68; PnL 0.21; PnW 0.33; ML 0.16; MW 0.21; *Indices* CI 93.10; SI₁ 111.11; SI₂ 166.67; OI₁
4101 25.93; OI₂ 27.59.

4102

4103 *Paratypes measurements* (n=3) HL₁ 0.60-0.62; HL₂ 0.41-0.43; HL₃ 0.16-0.20; HW 0.57-0.60; SL
4104 0.59-0.62; EL 0.14-0.16; WL 0.68-0.72; PnL 0.20-0.23; PnW 0.41; ML 0.18-0.20; MW 0.14-
4105 0.27; *Indices* CI 93.55-96.88; SI₁ 103.23-103.45; SI₂ 142.86-145.45; OI₁ 22.58-27.59; OI₂ 25.81-
4106 31.25.

4107

4108 **Description. *Head.*** Slightly longer than wide in full face view; posterior cephalic margin flat or
4109 slightly concave. Dorsum of the head with scattered appressed hairs. Clypeus with a rounded
4110 anterior margin and five long, erect hairs of which a single, usually conspicuous hair is near the
4111 anterior margin, two hairs are in mediolateral position and two more near the toruli; other hairs
4112 on the clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior
4113 clypeal margin in oblique anterodorsal view. The scapes surpass the posterior margin of the head
4114 by a length that exceeds the maximal diameter of the eye. Ocelli typically appear to be absent but
4115 some workers have a central ocellus. Eyes are positioned on the cephalic midline and have 9-10
4116 ommatidia along their maximal diameter.

4117 ***Mesosoma.*** With several semi-erect hairs on the pronotum and scattered decumbent hairs on the
4118 promesonotum. The mesonotum is slightly inflated, antero-posteriorly inclined, and it bulges
4119 dorsally above the pronotum in lateral view. Metanotal groove present and wider than the
4120 diameter of the metathoracic spiracles. Metathoracic spiracles in fully dorsal position, not
4121 protruding, and not touching any sutures. Dorsum of the propodeum weakly convex and shorter
4122 than the propodeal slope. Propodeal spiracles circular, positioned slightly ventral of the posterior
4123 propodeal margin; they are posterior of the middle of the propodeal slope. Legs with appressed
4124 hairs. Petiole short and inclined forward.

4125 ***Gaster.*** With dense pubescence and scattered long hairs at the edges of the segments.

4126 ***Color and sculpture.*** Body smooth and shiny, and usually dark brown, but with conspicuously
4127 lighter hairs. Additionally, the bulbi of the antennae, the terminal funiculus, the tarsi and the
4128 articulations of the legs are conspicuously yellowish.

4129

4130 **Distribution (Supplementary material Fig. S38).** *Brachymyrmex sosai* is known from Bolivia
4131 and Peru.

4132

4133 **Biology.** This species was collected from sandy soil, from below a rock.

4134

4135 **Remarks.** The single specimen of *B. sosai* known from Bolivia (WEMC: USNMENT00759024)
4136 differs in color from the specimens from Peru: its head and thorax are more yellowish than brown
4137 and the gaster is darker than the rest of the body. We consider it to be part of *B. sosai* as all other
4138 traits match. Currently *B. sosai* is only known from three localities, and more specimens from
4139 additional localities will be required to characterize the intraspecific variation in body color.

4140

4141

4142 *Brachymyrmex termitophilus* Forel

4143 (Fig. 52, supplementary material Fig. S39)

4144 *Brachymyrmex heeri* var. *termitophilus* Forel, 1895b: 179 (w.). **Lectotype worker** (MHNG:
4145 USNMENT00757137) and **paralectotype workers, queen** (MHNG: USNMENT00757136-
4146 00757138; NHMB: USNMENT00758159; MSNG: USNMENT00757139; **here designated**): 6
4147 workers, 1 queen [examined]. **BRAZIL: Rio Grande do Sul:** San Leopoldo, col. Wasmann.
4148 Raised to species: Wild (2007: 44).

4149

4150 **Additional material examined. BRAZIL: São Paulo:** Tapirai, -24.03208 -47.46556, 08-14 Jan.
4151 2001, R.R. Silva & Everhardt, 2 workers (ICN: MZSP170). **COLOMBIA: Norte de Santander:**
4152 Parque Nacional Natural Tamá, Vereda El Diamante, Alto Herrera, 7.12278 -72.23472, 1000 m,
4153 26 Nov. 1999, 1 worker (IAvH: USNMENT00759060). **COSTA RICA: Guanacaste:** Maritza

4154 field Station, 10.95694 -85.49389, 03 May 1995, R. Anderson #17716, 3 workers (WEMC:
4155 USNMENT00757632); **DOMINICAN REPUBLIC: Pedemales:** Parque Nacional Sierra
4156 Baoruco, "Las Abejas", 18.15 -71.62, 1320 m, 02 Sep. 2001, A.L. Wild #AW1359, 1 worker, 1
4157 male, 1 queen (ALWC: USNMENT00757918). **MEXICO: Puebla:** 17 km NE Teztlutlán, 1940
4158 m, 07 June 1988, W. MacKay #10879, 1 worker, 1 queen (WEMC: USNMENT00758036).
4159 **PARAGUAY: Itapúa:** San Miguel Potrero, c/Villa Yacyreta, -27.03 -56.20, 17 Jan. 1996, N.E.
4160 Lopez #ibn 227, 1 worker (ALWC: USNMENT00757662). **UNITED STATES: Texas:** Sabino
4161 Co., 14.5 km E Nempfil, 11 May 1988, R. Anderson #12763, 1 worker (WEMC:
4162 USNMENT00758031).

4163
4164 **Diagnosis.** *Brachymyrmex termitophilus* morphologically resembles *B. aphidicola*, *B. australis*,
4165 *B. cordemoyi* and *B. obscurior* because these species have scapes that are usually surpassing the
4166 posterior cephalic margin, their eyes are positioned on the cephalic midline, they have two erect
4167 hairs on the pronotum and two on the mesonotum, and their mesonotum does not bulge dorsally
4168 above the pronotum in lateral view. *Brachymyrmex termitophilus* differs from *B. australis* and *B.*
4169 *aphidicola*, however, by having dense pubescence on the gaster, and from *B. cordemoyi* and *B.*
4170 *obscurior* by having a yellowish body instead of brownish. *Brachymyrmex termitophilus* also
4171 resembles *B. bahamensis* somewhat, but *B. termitophilus* typically bears two erect hairs on the
4172 pronotum whereas *B. bahamensis* approximately six that are moreover much longer.

4173
4174 *Lectotype and paralectotype measurements* (mm) (n=2). HL₁ 0.45; HL₂ 0.29-0.31; HL₃ 0.10-
4175 0.12; HW 0.39; SL 0.41-0.43; EL 0.10; Pnl 0.12; PnW 0.25-0.27; ML 0.08; MW 0.18; *Indices* CI
4176 89.96; SI₁ 105.00-110.00; SI₂ 131.25-146.67; OI₁ 25.00; OI₂ 21.74-26.09.

4177

4178 *Additional material examined measurements* (mm) (n=2). HL₁ 0.43-0.44; HL₂ 0.30; HL₃ 0.10;
4179 HW 0.38-0.39; SL 0.33-0.40; EL 0.10; WL 0.42; PnL 0.12; PnW 0.25-0.27; ML 0.08-0.09; MW
4180 0.16-0.18; *Indices* CI 89.80-90.00; SI₁ 85.23-101.11; SI₂ 110.29-133.82; OI₁ 25.56-26.14; OI₂
4181 22.00-22.45.

4182

4183 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin flat.
4184 Dorsum of the head with sparse appressed hairs. Clypeus with a rounded anterior margin and five
4185 long, erect hairs of which a single, usually conspicuous hair is near the anterior margin, two hairs
4186 are in mediolateral position and two more near the toruli; other hairs on the clypeus are markedly
4187 shorter and appressed or decumbent. Toruli surpassing the posterior clypeal margin in oblique
4188 anterodorsal view. The scapes surpass the posterior margin of the head by a length equal to the
4189 maximal diameter of the eye or less; they have appressed hairs. Ocelli inconspicuous. Eyes are
4190 positioned on the cephalic midline and have 7-9 ommatidia along their maximal diameter.

4191 **Mesosoma.** Typically with two erect hairs on the pronotum and two on the mesonotum. The
4192 mesonotum is not inflated and does not bulge dorsally above the pronotum in lateral view.
4193 Metanotal groove absent or narrower than the diameter of the metathoracic spiracles.
4194 Metathoracic spiracles in dorsolateral position, not protruding, and usually touching the
4195 propodeal sutures. Dorsum of the propodeum is convex and shorter than the propodeal slope.
4196 Propodeal spiracles circular, positioned slightly ventral of the posterior propodeal margin, at the
4197 middle of the propodeal slope. Legs with appressed and scattered hairs. Petiole short and inclined
4198 forward.

4199 **Gaster.** Usually with dense pubescence, and scattered long erect hairs, among others at the edges
4200 of the segments.

4201 **Color and sculpture.** Body smooth, shiny and yellowish.

4202

4203 **Distribution (Supplementary material Fig. S39).** *Brachymyrmex termitophilus* is known from
4204 Brazil, Colombia, Costa Rica, the Dominican Republic, Mexico, Paraguay and the United States.
4205

4206 **Biology.** Forel (1895b) indicated that this species was collected in association with termites.
4207

4208 **Remarks.** The type material of *B. termitophilus* at the MHNG is somewhat problematic and may
4209 have caused confusion as to the diagnostic traits of the species (see below). This material consists
4210 of specimens mounted on three pins of which one (USNMENT00757136) holds an undescribed
4211 queen; the second (USNMENT00757137) holds a brownish worker with dense pubescence on
4212 the gaster, which is here designated as lectotype, and the gaster of another worker of which the
4213 rest of the body is missing; the third pin (USNMENT00757138) holds two workers with
4214 yellowish heads and mesosoma, and a darker gaster which bears scarce pubescence.

4215 Originally, Forel (1895b) described *B. termitophilus* as a variety of *B. heeri* that is slightly
4216 smaller than the typical form, that has longer scapes, and a somewhat sparser pubescence but
4217 denser, thicker erect hairs, mainly on the gaster. Wild (2007) subsequently elevated *B.*
4218 *termitophilus* to species level reporting two differences with *B. heeri*, i.e. the length of the scapes
4219 and the lateral morphology of the mesosoma. The first trait is suspect, however, as he reports the
4220 scapes of *B. termitophilus* to barely reach the posterior margin of the head, which contrasts
4221 strongly with the original statement by Forel (1895b). We believe that this error caused Wild
4222 (2007) to suggest that *B. termitophilus* may be conspecific with *B. fiebrigi*. The latter species has
4223 indeed scapes that do not reach the posterior margin of the head. Rather than *B. fiebrigi*, *B.*
4224 *termitophilus* resembles the species here mentioned in the diagnosis. The status of *B.*
4225 *termitophilus* is unclear: Several of the specimens in the type series of *B. termitophilus*

4226 morphologically resemble *B. australis* and *B. aphidicola* in having scarce pubescence on the
4227 gaster. Additionally, Santschi (1923a) mentioned that *B. termitophilus* and *B. australis* are both
4228 found in association with termites. As mentioned in the diagnosis also the differences with *B.*
4229 *cordemoyi* and *B. obscurior* are limited, and *B. termitophilus* may be conspecific with one or
4230 several of these four species mentioned in the diagnosis. We tentatively preserve the current
4231 status of *B. termitophilus* awaiting more material and study.

4232

4233

4234 *Brachymyrmex tristis* Mayr

4235 (Figs. 53, supplementary material Fig. S40)

4236

4237 *Brachymyrmex tristis* Mayr, 1870: 389 (w.). **Lectotype worker** (NHMW: ANTWEB
4238 CASENT0915737; **here designated**): 1 worker [examined]. **COLOMBIA**: Santafé de Bogotá.
4239 See also: Santschi (1923a: 673).

4240

4241 **Additional material examined. COLOMBIA: Boyacá:** Chinquinquirá, 07 Dec. 1975, W. & E.
4242 MacKay #572, 2 workers (WEMC: USNMENT00757574); **Cundinamarca:** Mosquera to La
4243 Mesa, km 8, >2600 m, arid slope, under rock, 30 June 1976, W.L. & D.E. Brown, 18 workers, 2
4244 queens, 3 males (MCZC: USNMENT00757280-00757282, 00757306-00757311).

4245

4246 **Diagnosis.** *Brachymyrmex tristis* morphologically resembles *B. degener* and *B. coactus*, because
4247 all three species have scapes that surpass the posterior margin of the head, they have faint
4248 sculpture on the mesosoma, their mesonotum bulges dorsally above the pronotum in lateral view,
4249 their metanotal groove is wider than the diameter of the metathoracic spiracles, the metathoracic

4250 spiracles slightly protrude, and the gaster has sparse pubescence. *Brachymyrmex tristis* differs
4251 from *B. coactus* by having a uniform body color and dense decumbent hairs on the head. It differs
4252 from *B. degener* by having many decumbent hairs on the head.

4253
4254 *Lectotype worker measurements* (mm). HL₁ 0.61; HL₂ 0.38; HL₃ 0.15; HW 0.56; SL 0.61; EL
4255 0.15; WL 0.70; PnL 0.17; PnW 0.39; ML 0.17; MW 0.30; *Indices* CI 92.50; SI₁108.11; SI₂
4256 160.00; OI₁ 27.03; OI₂ 25.00.

4257
4258 **Description. Head.** Slightly longer than wide in full face view; posterior cephalic margin slightly
4259 concave. Dorsum of the head with dense decumbent pubescence. Clypeus with a rounded anterior
4260 margin and five long, erect hairs of which a single, usually conspicuous hair is near the anterior
4261 margin, two hairs are in mediolateral position and two more near the toruli; other hairs on the
4262 clypeus are markedly shorter and appressed or decumbent. Toruli surpassing the posterior clypeal
4263 margin in oblique anterodorsal view. The scapes surpass the posterior margin of the head by a
4264 length up to 1.5× the maximal diameter of the eye; they have appressed hairs. Three ocelli are
4265 present. Eyes are positioned on the cephalic midline and have 10-12 ommatidia along their
4266 maximal diameter.

4267 **Mesosoma.** With two erect hairs on the pronotum and usually also two on the mesonotum. The
4268 mesonotum is slightly inflated and bulges dorsally above the pronotum in lateral view. Metanotal
4269 groove wider than the diameter of the metathoracic spiracles. Metathoracic spiracles in
4270 dorsolateral position, slightly protruding, and not touching any sutures. Dorsum of the
4271 propodeum slightly convex and shorter than propodeal slope. Propodeal spiracles circular,
4272 positioned ventral of the posterior propodeal margin, at the middle of the propodeal slope. Legs
4273 with appressed hairs. Petiole short and inclined forward.

4274 **Gaster.** With scattered pubescence and several scattered long erect hairs.

4275 **Color and sculpture.** Head and gaster are smooth and shiny, whereas the mesosoma has faint
4276 sculpture; body uniformly dark brown apart from the tarsi of the legs which are lighter in color.

4277

4278 **Distribution (supplementary material Fig. S40).** *Brachymyrmex tristis* is only known from
4279 Colombia.

4280

4281 **Biology.** Unknown.

4282

4283 **Remarks.** *Brachymyrmex tristis* is as mentioned morphologically very similar to *B. degener* and
4284 *B. coactus* and further studies are required to assess whether these species are distinct or
4285 conspecific. For now, we follow previous authors in maintaining them as separate species.
4286 Forel (1899) initially considered *B. musculus* to be a race of *B. tristis*, however, we agree with his
4287 later decision to consider *B. musculus* distinct (Forel 1901a). Santschi (1923a) also considers *B.*
4288 *musculus* to be closely related to *B. tristis*, however, the first species has a mesonotum that does
4289 not bulge dorsally above the pronotum in lateral view, and its metathoracic spiracles are not
4290 protruding.

4291

4292 **Additional taxonomic remarks.**

4293 We could not include information on *B. longicornis* var. *pullus* Santschi, 1933 in the above
4294 because the type series consists of a single, destroyed worker (NHMB). As such, we could only
4295 re-examine the morphological descriptions of Santschi (1933), from which we conclude that *B.*
4296 *longicornis* var. *pullus* seems to be morphologically similar to *B. patagonicus* and *B. bruchi*.
4297 *Brachymyrmex longicornis* var. *pullus* has a shiny body that is black or dark brownish, the scapes

4298 surpass the posterior margin of the head, it has large eyes that occupy a third of the sides of the
4299 head, and the thorax would have been similar to that of *B. longicornis* which indicates that the
4300 mesonotum did not bulge dorsally above the pronotum in lateral view. Santschi (1933) did not
4301 describe the pubescence on the gaster, and so in the above we consider the pubescence to be
4302 similar to that of typical *B. longicornis* (here synonymized to *B. australis*), *B. longicornis* var.
4303 *hemiops* (here synonymized to *B. aphidicola*) and *B. longicornis* var. *immunis* (here synonymized
4304 to *B. admotus*). If this assumption were not true *B. longicornis* var. *pullus* would resemble *B.*
4305 *cordemoyi* and *B. obscurior* more than *B. bruchi* and *B. patagonicus*.

4306

4307 **Morphometric measurements.**

4308 Although the abovementioned identifications mention morphometric measurements, indices and
4309 count data, our identification system and the key were constructed before analysis of quantitative
4310 data, and thus somewhat independent from the quantitative comparison that follows. Here, we
4311 examine how well measurements corroborate the established identification system.

4312 The morphospace occupation of the various species is displayed in Fig. 54. The stress associated
4313 with nmMDS is small (5.70), indicating that this ordination is reliable and the risk of drawing
4314 false inferences very limited. The contribution of the individual morphometric variables
4315 (measurements, indices and counts) to the morphospace is indicated with a biplot. Permutation
4316 tests revealed that all variables contributed significantly to the morphospace occupation of taxa,
4317 apart from OI_1 , and therefore we excluded this index from further statistical tests. Overall, many
4318 of the 38 species included occupy very similar regions of the morphospace, which testifies to the
4319 cryptic nature of morphological differences among these taxa, and therefore to the legacy of
4320 difficulties with species identifications that have plagued workers of *Brachymyrmex* (see Wheeler

4321 1903; Santschi 1923a; Creighton 1950; Kusnezov 1959; Wilson and Taylor 1967). Indeed, the
4322 observation that several species overlap in the central region of the morphospace suggests that the
4323 genus is overall characterized by a large degree of morphological conservatism. However, upon
4324 more detailed examination we also perceive that most taxa occupy rather restricted regions of the
4325 morphospace, despite measurements typically deriving from specimens obtained from distant
4326 localities. For example, even widespread species, such as *B. patagonicus* occupy a rather
4327 restricted region of the morphospace. One notable exception is *B. bruchi*, which displays large
4328 variation on both nmMDS1 and 2, and which is difficult to characterize morphologically
4329 (although molecular analyses suggest our identification system works well for this species too
4330 [see below]). Beyond the measured traits, the first nmMDS axis also reflects general differences
4331 in body size, with small species (*B. depilis*, *donisthorpei*, *fiebrigi*, *iridescens*, and *feitosai*)
4332 plotting along the most negative and large species (*B. admotus*, *cavernicola*, and *degener*) along
4333 the most positive values. The overall restricted morphospace occupation of individual species
4334 testifies to the possibility to distinguish many species in one-on-one comparisons, and we
4335 examine this issue for univariate variables, because such univariate comparisons may be more
4336 helpful than multivariate comparisons for colleagues aiming to identify specimens directly in the
4337 field.

4338
4339 Boxplots (Figs. 55, 56) highlight similarities and differences among 20 *Brachymyrmex* species
4340 for the 16 univariate variable (after exclusion of OI_1) with statistical pairwise comparisons. Here
4341 we will not exhaustively compare all these species for each of the variables, as this would lead to
4342 3040 pairwise comparisons. Rather, we will focus on comparing five species pairs that are
4343 difficult to distinguish, i.e. *aphidicola-australis*, *bruchi-patagonicus*, *coactus-degener*,
4344 *cordemoyi-obscurior* and *donisthorpei-modestus*, with the aim to find additional criteria that may

4345 allow differentiating these taxa. *Brachymyrmex aphidicola-australis* differ significantly in SI₁
4346 and SI₂, but not in other variables. *Brachymyrmex bruchi-patagonicus* display significant
4347 differences in HL₁, HL₂, HW, SL, EL, WL, PnL, and PnW suggesting that the main difficulty
4348 differentiating these taxa relates to the very variable nature of *B. bruchi*, as already highlighted
4349 above. *Brachymyrmex coactus* and *B. degener* are effectively very difficult to distinguish as the
4350 only significant difference we found is in OI₂, which was admittedly very variable for *B. degener*.
4351 Although *B. cordemoyi* and *B. obscurior* overlapped strongly in morphospace occupation, they
4352 can nevertheless be distinguished based on HL₁, HL₂, HL₃, HW, EL, PnL, PnW, MI, MW, SI₁,
4353 and the number of ommatidia. For several of these variables, *B. obscurior* showed limited
4354 variation, despite the inclusion of 10 specimens from 4 different countries, which may have
4355 driven statistical significance. Finally, *B. donisthorpei* and *B. modestus* differed significantly in
4356 HL₁, HL₃, HW, SL, WL, MW, CI, and OI₂. In summary, the morphometric variables confirm
4357 significant morphological differences for all five species pairs. Interestingly, as we will document
4358 in the next section, the two species pairs with the most limited number of differences, i.e.
4359 *aphidicola-australis* and especially *coactus-degener* are phylogenetically closely related (see
4360 below).

4361

4362 **Phylogenetic inference.**

4363 Our phylogenetic analyses with maximum parsimony (MP), maximum likelihood (ML) and
4364 Bayesian Inference (BI) on five gene fragments (three nuclear, two mitochondrial) for 19
4365 *Brachymyrmex* species, 5 species of its sister clade *Myrmelachista* and outgroups retrieved
4366 *Brachymyrmex* and *Myrmelachista* as a well-supported monophyletic clade (MP = 98, ML = 100,
4367 BPP=1.00; Fig.57). This finding agrees with recent studies of the deep phylogenetic relationships
4368 within the subfamily Formicinae based on UCEs (ultraconserved elements: Blaimer et al. 2015;

4369 Ward et al. 2016), however, this previous study contained only two *Brachymyrmex* and one
4370 *Myrmelachista* species. Under expanded taxon sampling *Brachymyrmex* and *Myrmelachista* were
4371 found to be reciprocally monophyletic, with high support for each genus (MP = 98, ML = 100,
4372 BPP = 1.00 and MP = 96, ML = 82, BPP=1.00, respectively). This finding suggests that the
4373 morphological criteria currently used to delimit these genera are unambiguous autapomorphies.
4374 Examining *Brachymyrmex* in more detail, many of the nodes of intermediate depth are poorly
4375 supported, indicating that more markers are required, or at least more complete sampling of
4376 markers across taxa, to reveal the phylogenetic relationships between individual *Brachymyrmex*
4377 species. Given that our analysis includes half of the currently recognized *Brachymyrmex* species,
4378 increased taxon sampling may also help to resolve phylogenetic relationships among the species.
4379
4380 Despite ambiguity as to interspecific relationships, species-level nodes (indicated in bold in Fig.
4381 57) are overall well-supported, and of the 14 *Brachymyrmex* species that were sampled with 2-15
4382 specimens, 13 proved to be monophyletic. This finding largely confirms our assessment of
4383 intraspecific and interspecific components of morphological variation, the phylogenetic value of
4384 the morphological traits used, and thus the significance of our proposed morphological system of
4385 species delimitations. The only species that was not retrieved as monophyletic is *B. coactus*,
4386 which included the monophyletic *B. degener*. *Brachymyrmex coactus* and *B. degener* are
4387 morphologically very similar (as indicated already above in the taxonomic treatment and
4388 morphometrics), and they mainly differ in body color, which may be a trait with large
4389 intraspecific variation. Significant differences between both species were also found in OI₂,
4390 although *B. degener* is very variable as to this index. On the other hand, the genetic
4391 differentiation between *B. coactus* and *B. degener* is substantial, as indicated by the branch
4392 lengths in Fig. 57, suggesting that both may be part of a larger clade with cryptic diversity, and

4393 that the observed bimodal distribution in body color may hint at interspecific differences.
4394 Considering the substantial genetic differentiation, we do not synonymize both species but rather
4395 postpone our assessment until more specimens become available, especially of *B. coactus* from
4396 Brazil. Another possible indication of cryptic species diversity relates to *B. cavernicola*, which
4397 contains two well-supported subclades, one with specimens from Central America, and the other
4398 clade with specimens from South America. More in-depth studies are required to test whether this
4399 split relates to different species, or rather variation between geographically-separated
4400 populations. The hypothesis of cryptic diversity is furthermore supported by the ABGD analysis
4401 (see below).

4402 For *B. feitosai*, *B. nebulosus*, *B. pilipes*, *B. brasiliensis* and *B. bicolor* **n. sp.** only a single
4403 individual per species was included in the phylogenetic analyses so that it is difficult to make
4404 conclusions on the integrity of these species, however, all these species are deeply split from
4405 other *Brachymyrmex* species, suggesting that they are truly distinct. It was particularly important
4406 for us to include *B. pilipes*, because this species has very distinctive and different morphological
4407 traits (see species description) in comparison to most other *Brachymyrmex* species. Interestingly,
4408 the species seems to have a basal position in our phylogeny and revealing its position in the
4409 future may yield important insights into trait evolution within the genus. Nevertheless, our
4410 phylogenetic analysis confirms that *B. pilipes* is part of *Brachymyrmex*, rather than an
4411 independent lineage.

4412

4413 **Automated species delimitation.**

4414 A total of 24 hypothetical species entities were retrieved within *Brachymyrmex* upon analyzing
4415 the barcoding fragment of COI (658 basepairs) with ABGD. Overall these entities are in good
4416 agreement with the morphologically-recognized species indicated in Fig. 57, and the differences

4417 are limited to the potential further subdivision of morphologically recognized species by ABGD.
4418 Within *B. heeri* four groups are recognized, with each group containing the specimens from one
4419 country in the phylogeny. *Brachymyrmex antennatus* is subdivided in two groups, with one group
4420 consisting of specimen CX81 from Peru and the other contains the additional specimens.
4421 *Brachymyrmex cavernicola* was subdivided in two groups also, along the main subdivision
4422 observed in Fig. 57 and discussed above, indicating that differentiation and perhaps cryptic
4423 speciation is taking place along a geographic gradient. The final difference relates to the *B.*
4424 *coactus/degener* clade. The ABGD analysis recognized three groups: one group containing only
4425 specimen CX37 from Brazil, the remainder of *B. coactus* as a second group, and the third group
4426 contains the specimens identified as *B. degener*. In summary, the ABGD analysis corroborates
4427 our morphological classification system. It suggests that this classification is conservative and
4428 that more cryptic diversity may exist within *Brachymyrmex*.

4429

4430 **CONCLUSIONS**

4431 For over a century the ant genus *Brachymyrmex* has been in dire need of revision, and here we
4432 present such a revision based on the morphology of workers, validated with morphometric and
4433 molecular data. Currently the strategy to focus on workers is the most effective solution to revise
4434 the genus, because other castes (queens and males) are poorly known for most *Brachymyrmex*
4435 species. We studied 1303 samples that have been assigned to 40 species based on the established
4436 morphological identification system as represented in a dichotomous identification key, which we
4437 tested with previous and new material. Additionally, this key was tested independently by several
4438 colleagues (Fabiana Cuezco (Argentina), John Lattke and Livia Pires do Prado (Brazil)), and the
4439 obtained identifications were in good agreement with our own diagnoses, suggesting that it
4440 effectively allows discerning interspecific differences from intraspecific variation. Beyond these

4441 qualitative tests we also complemented our identifications with measurements to reconstruct the
4442 distribution of species in morphospace, and we statistically analyzed individual measurements as
4443 univariate variables. These efforts suggest that even species pairs that are qualitatively difficult to
4444 discern can be separated statistically, and they illustrated that taxonomically problematic cases
4445 relate to taxa that have high intraspecific trait variance. The species pair that was most difficult to
4446 discern based on measurements proved to be *B. coactus* and *B. degener*, and interestingly, these
4447 taxa represent the only disagreement between our morphological identification system and our
4448 phylogenetic analysis based on five gene fragments. *Brachymyrmex degener* was nested within *B.*
4449 *coactus* but considering the deep phylogenetic splits in the *coactus-degener* clade and the results
4450 from automated species delimitation, we await more material to resolve the status of the
4451 morphospecies in this clade. In summary, 13 of the 14 morphologically-identified species that
4452 were included in molecular work with 2-15 individuals each were recovered as monophyletic,
4453 indicating the overall robustness of our proposed morphological identification system, and by
4454 extension our taxonomic revision. Finally, we have reported dimorphic workers for some
4455 *Brachymyrmex* species and the existence of a putative worker-queen intercaste in others. As such,
4456 the genus altogether may represent a promising system to study caste evolution in ants.

4457

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4472

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4485

4486 **CONFLICT OF INTEREST**

4487 The authors declare that they have no conflict of interest.

4488

4489 **DATA AVAILABILITY**

4490 Sequence data is deposited in NCBI Genbank [upon acceptance of the manuscript], and Genbank
4491 accession numbers are indicated in Supplementary Table S1. Measurement data are provided as an
4492 online supplementary file.

4493

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- 4774

4775 **FIGURE CAPTIONS**

4776

4777 **Fig. 1** Morphological measurements for *Brachymyrmex* workers. See text for details

4778 **Fig. 2** Habitus of a selection of queens of *Brachymyrmex*: head and lateral view of **(a,b)** *B.*

4779 *admotus*; **(c,d)** *B. antennatus*; **(e,f)** *B. aphidicola* and **(g,h)** *B. giardi*

4780 **Fig. 3** Habitus of a selection of males of *Brachymyrmex*: head and lateral view of **(a,b)** *B.*

4781 *coactus*; **(c,d)** *B. myops*; **(e,f)** *B. longicornis* var. *immunis* (junior synonym of *B. admotus*) and

4782 **(g,h)** *B. australis* var. *curta* (= *B. australis*)

4783 **Fig. 4** The native distribution range of *Brachymyrmex* as reconstructed from the unique

4784 georeferenced localities of the here studied material (black circles) and the *Brachymyrmex*

4785 records available in the Global Ant Biodiversity Informatics database (Guénard et al. 2017) as

4786 viewed in www.antmaps.org (Janicki et al. 2016; shaded area)

4787 **Fig. 5** Morphological characteristics of the head of *Brachymyrmex*. **(a1)** clypeus with five hairs of

4788 which a single long apical hair is positioned near the anterior margin, two in mediolateral

4789 position and two near the toruli (black arrow); **(a2)** clypeus with a row of long, thick hairs near

4790 the anterior margin (black arrow), toruli touching but not surpassing the posterior clypeal margin

4791 in oblique anterodorsal view (grey arrow); **(a3)** toruli surpassing the posterior clypeal margin in

4792 oblique anterodorsal view (grey arrow); **(b1)** eyes below the cephalic midline; **(b2)** eyes on

4793 cephalic midline; **(c1)** eyes with 3 or 4 ommatidia along the maximal diameter of the eye; **(c2)**

4794 eyes with more than 4 ommatidia along the maximal diameter of the eye; **(d1)** scapes short and

4795 not reaching the posterior margin of the head; **(d2)** scapes just reaching the posterior margin of

4796 the head; **(d3)** scapes long and surpassing the posterior margin of the head; the length by which

4797 the scapes surpass this margin is compared to the length of the maximal diameter of the eye; **(e1)**

4798 anterior clypeal margin with the medial portion forming a “lip”; **(e2)** anterior clypeal margin

4799 evenly convex without antero-medial “lip”; (**f1**) head with dense pilosity; (**f2**) head with sparse
4800 decumbent hairs; (**g1**) second segment of the antennal funiculus shorter than the first; (**g2**) second
4801 segment of the antennal funiculus as long or longer than the first

4802 **Fig. 6** Morphological characteristics of the mesosoma and gaster of *Brachymyrmex*. (**a1**)
4803 metathoracic spiracles tumiliform; (**a2**) metathoracic spiracles not protruding; (**a3**) metathoracic
4804 spiracles slightly protruding, but not tumiliform; (**b1**) mesonotum inflated and bulging dorsally
4805 above the pronotum in lateral view; (**b2**) mesonotum not inflated or bulging dorsally above the
4806 pronotum in lateral view; (**c**) dorsal margin of the mesosoma of conspicuous sinusoidal shape;
4807 (**d1**) mesometanotal suture inconspicuous (dashed line); (**d2**) mesometanotal suture directly
4808 visible; (**e1**) mesonotum strongly antero-posteriorly inclined and thus elongated in lateral view;
4809 (**e2**) mesonotum weakly antero-posteriorly inclined in lateral view; (**f1**) metanotal groove deep
4810 and wider than the diameter of the metathoracic spiracles; (**f2**) metanotal groove shallow and
4811 narrower than the diameter of the metathoracic spiracles; (**g1**) gaster with scattered pubescence;
4812 (**g2**) gaster with dense pubescence, in both cases illustrated with long erect hairs near the edges of
4813 the segments; (**h1**) mesonotum laterally extended and oval in dorsal view; (**h2**) mesonotum
4814 almost circular in dorsal view

4815 **Fig. 7** *Brachymyrmex admotus*: (**a,c,e**) head, dorsal and lateral view of the lectotype worker;
4816 (**b,d,f**) = *B. longicornis* var. *immunis* **n. syn.**: head, dorsal and lateral view of a syntype worker

4817 **Fig. 8** *Brachymyrmex antennatus*: (**a,b,c**) head, dorsal and lateral view of the lectotype worker

4818 **Fig. 9** *Brachymyrmex aphidicola*: (**a,d,g**) head, dorsal and lateral view of the lectotype worker;
4819 (**b,e,h**) = *B. heeri* var. *fallax*: head, dorsal and lateral view of a syntype worker; (**c, f**) = *B.*

4820 *longicornis* var. *hemiops* **n. syn.**: head and dorsal view of a syntype worker

4821 **Fig. 10** *Brachymyrmex attenuatus*: head, dorsal and lateral view of the lectotype worker (**a,b,c**)

- 4822 **Fig. 11 *Brachymyrmex australis*:** (a,d,g) head, dorsal and lateral view of the lectotype worker;
4823 (b,e,h) =*B. australis* var. *curta* **n. syn.:** head, dorsal and lateral view of a syntype worker; (c,f)
4824 =*B. longicornis* **n. syn.:** head and dorsal view of a syntype worker
- 4825 **Fig. 12 *Brachymyrmex bahamensis* n.sp.:** (a,b,c) head, dorsal and lateral view of the holotype
4826 worker
- 4827 **Fig. 13 *Brachymyrmex bicolor* n. sp.:** (a,c,e) head, dorsal and lateral view of a paratype worker;
4828 (b,d,f) head, dorsal and lateral view of a syntype specimen of the putative worker-queen inter-
4829 caste. (from www.AntWeb.org; photographer: Ryan Perry)
- 4830 **Fig. 14 *Brachymyrmex bonariensis* n. st.:** (a,b,c) head, dorsal and lateral view of the lectotype
4831 worker
- 4832 **Fig. 15 *Brachymyrmex brasiliensis*:** (a,b,c) head, dorsal and lateral view of the holotype worker
- 4833 **Fig. 16 *Brachymyrmex bruchi*:** (a,c,e) head, dorsal and lateral view of the lectotype worker;
4834 (b,d,f) =*B. giardi* var. *nitida*: head, dorsal and lateral view of a syntype worker
- 4835 **Fig. 17 *Brachymyrmex bruchi*:** (a,c,e) =*B. laevis* var. *andina*: head, dorsal and lateral view of a
4836 syntype worker; (b,d,f) =*B. bruchi* var. *rufipes*: head, dorsal and lateral view of a syntype worker
- 4837 **Fig. 18 *Brachymyrmex cavernicola*:** (a,b,c) head, dorsal and lateral view of a worker (from
4838 www.AntWeb.org; photographer: Estella Ortega)
- 4839 **Fig. 19 *Brachymyrmex coactus*:** (a,c,e) head, dorsal and lateral view of the lectotype worker,
4840 (b,d,f) =*B. coactus* var. *nictitans* **n. syn.:** head, dorsal and lateral view of a syntype worker
- 4841 **Fig. 20 *Brachymyrmex coactus*:** (a,c,e) =*B. constrictus* **n. syn.:** head, dorsal and lateral view of a
4842 syntype worker; (b,d,f) =*B. robustus*: head, dorsal and lateral view of a syntype worker
- 4843 **Fig. 21 *Brachymyrmex cordemoyi*:** (a,c,e) =*B. laevis* var. *fuscula* **n. syn.:** head, dorsal and lateral
4844 view of a syntype worker; (b,d,f) =*B. cordemoyi* var. *nigricans*: head, dorsal and lateral view of a
4845 syntype worker

4846 **Fig. 22 *Brachymyrmex cordemoyi*: (a,b,c) =*B. brevicornis* n. syn.**: head, dorsal and lateral view
4847 of a syntype worker

4848 **Fig. 23 *Brachymyrmex cordemoyi*: (a,c,e) =*B. brevicornoides* n. syn.**: head, dorsal and lateral
4849 view of a syntype worker (from www.AntWeb.org; photographer: Zach Lieberman); **(b,d,f) =*B.***
4850 ***cordemoyi* var. *distincta* n. syn.**: head, dorsal and lateral view of a syntype worker

4851 **Fig. 24 *Brachymyrmex degener*: (a,c,e)** head, dorsal and lateral view of the lectotype worker;
4852 **(b,d,f) =*B. admotus* r. *niger* n. syn.** head, dorsal and lateral view of a syntype worker

4853 **Fig. 25 *Brachymyrmex degener*: (a,c,e) =*B. incisus* n. syn.**: head, dorsal and lateral view of a
4854 syntype worker; **(b,d,f) =*B. luederwaldti* n. syn.**: head, dorsal and lateral view of a syntype
4855 worker

4856 **Fig. 26 *Brachymyrmex delabiei*: (a,b,c)** head, dorsal and lateral view of the holotype worker

4857 **Fig. 27 *Brachymyrmex depilis*: (a,c,e)** head, dorsal and lateral view of the lectotype worker;
4858 **(b,d,f) =*B. depilis* subsp. *flavescens*:** head, dorsal and lateral view of a syntype worker

4859 **Fig. 28 *Brachymyrmex donisthorpei*: (a,b,c)** head, dorsal and lateral view of the lectotype
4860 worker

4861 **Fig. 29 *Brachymyrmex feitosai*: (a,b,c)** head, dorsal and lateral view of a worker (from
4862 www.AntWeb.org; photographer: Erin Prado)

4863 **Fig. 30 *Brachymyrmex fiebrigi*: (a,c,e)** head, dorsal and lateral view of the lectotype worker;
4864 **(b,d,f) =*B. fiebrigi* var. *fumida* n. syn.**: head, dorsal and lateral view of a syntype worker

4865 **Fig. 31 *Brachymyrmex fiebrigi*: (a,b,c) =*B. fiebrigi* var. *funicularis* n. syn.**: head, dorsal and
4866 lateral view of a syntype worker

4867 **Fig. 32 *Brachymyrmex gagates*: (a,b,c)** head, dorsal and lateral view of the lectotype worker

4868 **Fig. 33 *Brachymyrmex gaucho*: (a,b,c)** head, dorsal and lateral view of a worker

4869 **Fig. 34 *Brachymyrmex giardi*: (a,c,e)** head, dorsal and lateral view of the lectotype worker;
4870 **(b,d,f)** head, dorsal and lateral view of a putative worker-queen intercaste

4871 **Fig. 35 *Brachymyrmex heeri*: (a,c,e)** head, dorsal and lateral view of the lectotype worker;
4872 **(b,d,f) =*Brachymyrmex* var. *goeldii* n. syn.:** head, dorsal and lateral view of a syntype worker

4873 **Fig. 36 *Brachymyrmex heeri*: (a,c,e) =*B. giardi* var. *cordobensis*:** head, dorsal and lateral view
4874 of a syntype worker; **(b,d,f)** head, dorsal and lateral view of a syntype of the putative worker-
4875 queen intercaste

4876 **Fig. 37 *Brachymyrmex iridiscens* n. sp.:** **(a,b,c)** head, dorsal and lateral view of the holotype
4877 worker

4878 **Fig. 38 *Brachymyrmex micromegas*: (a,c,e)** head, dorsal and lateral view of the lectotype
4879 worker; **(b,d,f)** head, dorsal and lateral view of a soldier

4880 **Fig. 39 *Brachymyrmex minutus*: (a,b,c)** head, dorsal and lateral view of the lectotype worker

4881 **Fig. 40 *Brachymyrmex modestus*: (a,b,c)** head, dorsal and lateral view of the lectotype worker

4882 **Fig. 41 *Brachymyrmex musculus*: (a,b,c)** head, dorsal and lateral view of the lectotype worker

4883 **Fig. 42 *Brachymyrmex myops*: (a,b,c)** head, dorsal and lateral view of the lectotype worker

4884 **Fig. 43 *Brachymyrmex nebulosus*: (a,b,c)** head, dorsal and lateral view of a worker (from
4885 www.AntWeb.org; photographer: Ryan Perry)

4886 **Fig. 44 *Brachymyrmex obscurior*: (a,b,c)** head, dorsal and lateral view of the lectotype worker

4887 **Fig. 45 *Brachymyrmex oculatus*: (a,b,c)** head, dorsal and lateral view of the lectotype worker

4888 **Fig. 46 *Brachymyrmex patagonicus*: (a,c,e)** head, dorsal and lateral view of the lectotype
4889 worker; **(b,d,f) =*B. laevis* n. syn.:** head, dorsal and lateral view of a syntype worker

4890 **Fig. 47 *Brachymyrmex patagonicus*: (a,b,c) =*B. patagonicus* var. *atratura*:** head, dorsal and
4891 lateral view of a syntype worker

4892 **Fig. 48** *Brachymyrmex pictus*: (a,b,c) head, dorsal and lateral view of a syntype worker (from
4893 www.AntWeb.org; photographer: Zach Lieberman)

4894 **Fig. 49** *Brachymyrmex pilipes*: (a,c,e) head, dorsal and lateral view of the minor worker
4895 lectotype; (b,d) head, dorsal and lateral view of a major worker

4896 **Fig. 50** *Brachymyrmex santschii*: (a,c,e) head, dorsal and lateral view of a worker (from
4897 www.AntWeb.org; photographer: Will Ericson); (b,d,f) head, dorsal and lateral view of a
4898 putative worker-queen intercaste

4899 **Fig. 51** *Brachymyrmex sosai* n. sp.: (a,b,c) head, dorsal and lateral view of the holotype worker

4900 **Fig. 52** *Brachymyrmex termitophilus*: (a,b,c) head, dorsal and lateral view of the lectotype
4901 worker (from www.AntWeb.org; photographer: Zach Lieberman)

4902 **Fig. 53** *Brachymyrmex tristis*: (a,b,c) head, dorsal and lateral view of the lectotype worker

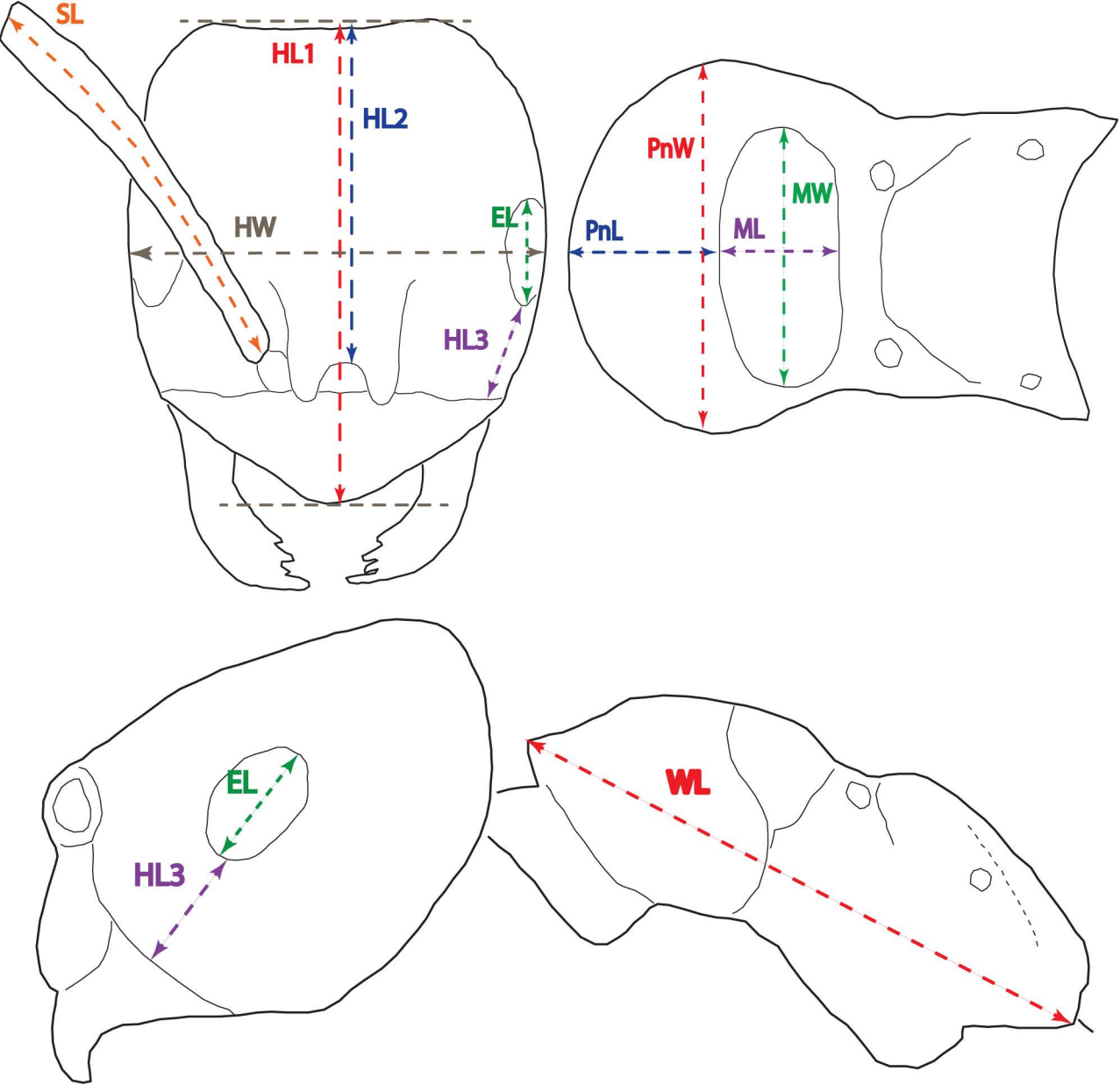
4903 **Fig. 54** Morphospace occupation of 38 of the here studied *Brachymyrmex* species as
4904 reconstructed with non-metric multidimensional scaling. The limited stress (5.70) indicates that
4905 the ordination is robust and the biplot displays how the various morphometric variables
4906 contribute to the morphospace occupation. OI₁ is indicated in gray, as this variable did not
4907 contribute significantly to the morphospace

4908 **Fig. 55** Boxplots representing intraspecific variation and interspecific differences for eight
4909 morphometric traits. Interspecific differences are tested with Benjamini-Hochberg corrected
4910 pairwise Dunn's tests, with significance levels indicated by letter codes (if species carry at least
4911 one identical letter than observed differences are insignificant, if they carry no identical letter, the
4912 observed differences for the studied trait are significant)

4913 **Fig. 56** Boxplots representing intraspecific variation and interspecific differences for eight
4914 morphometric traits. Interspecific differences are tested with Benjamini-Hochberg corrected
4915 pairwise Dunn's tests, with significance levels indicated by letter codes (if species carry at least

4916 one identical letter than observed differences are insignificant, if they carry no identical letter, the
4917 observed differences for the studied trait are significant)

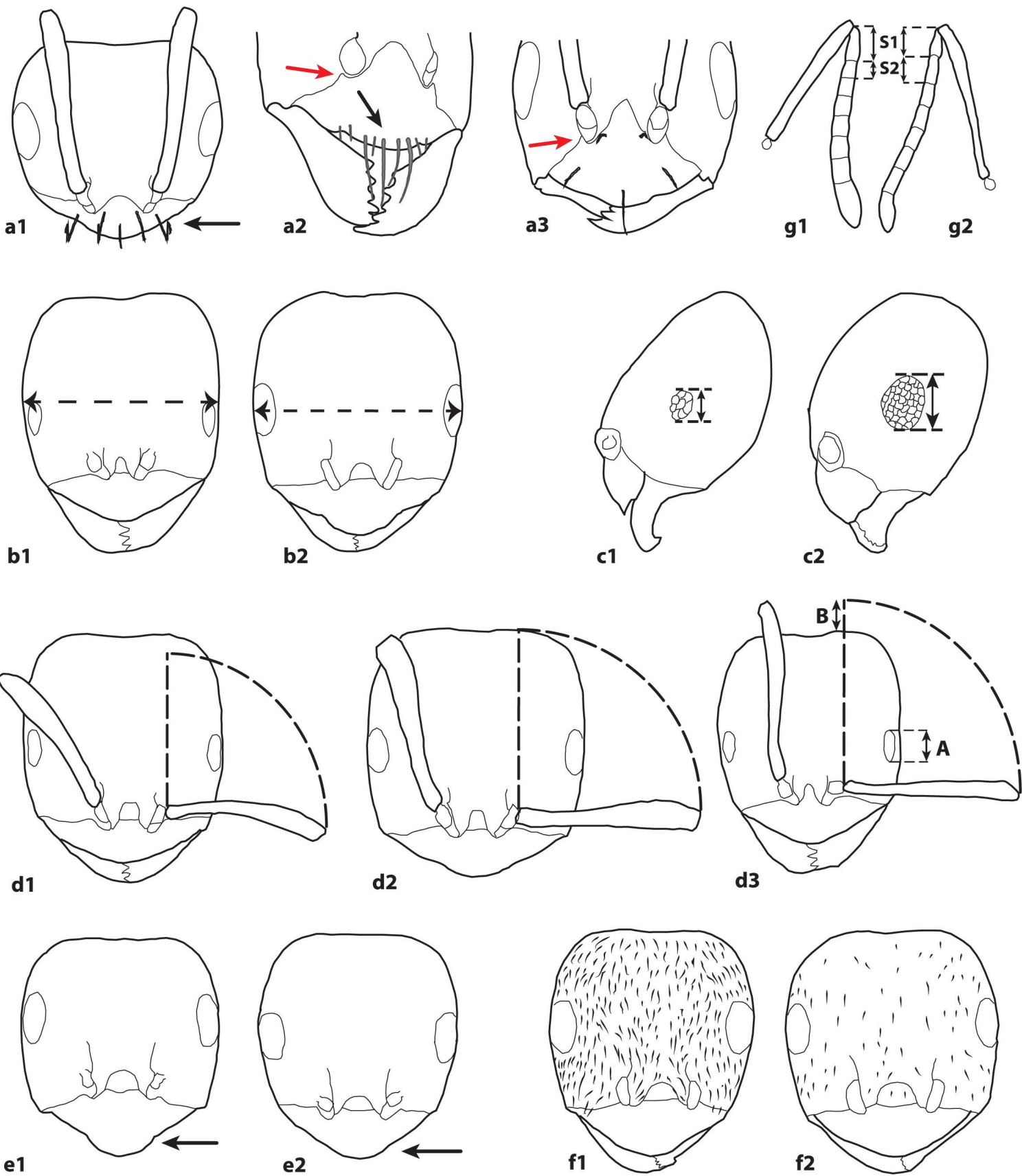
4918 **Fig. 57** Maximum clade credibility tree of *Brachymyrmex* and *Myrmelachista* based on five gene
4919 fragments (see Supplementary material Table S1). Analyses were run under maximum parsimony
4920 (MP), maximum likelihood (ML) and Bayesian inference (BI) with bootstrap support values and
4921 Bayesian posterior probabilities indicated above nodes (MP/ML/BI). Support for species-level
4922 clades is indicated in bold; specimens were assigned to clades based on the morphological
4923 identification system, which proves to be overall in good agreement with the genealogy, apart
4924 from *B. degener* and *B. coactus*

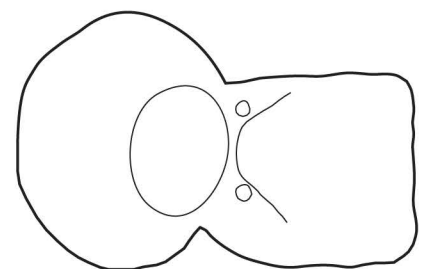
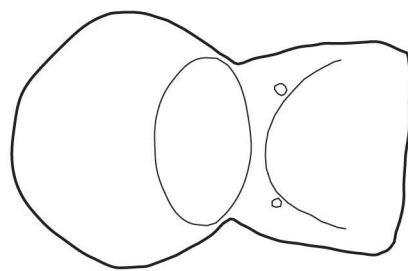
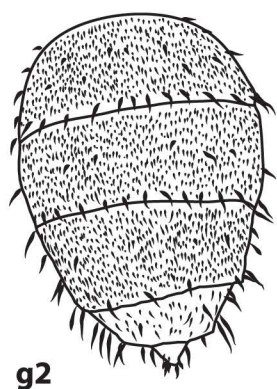
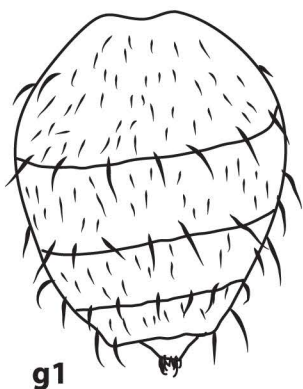
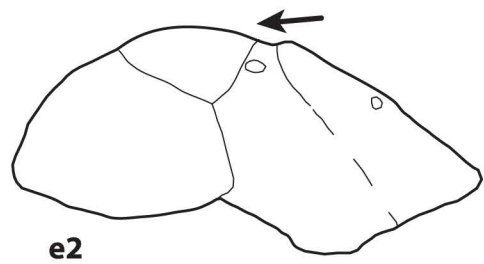
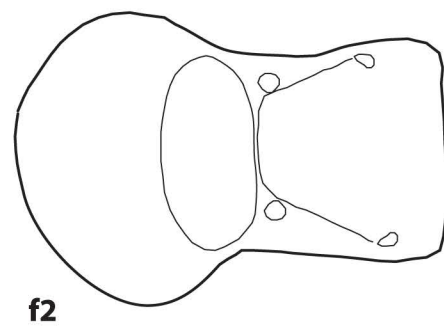
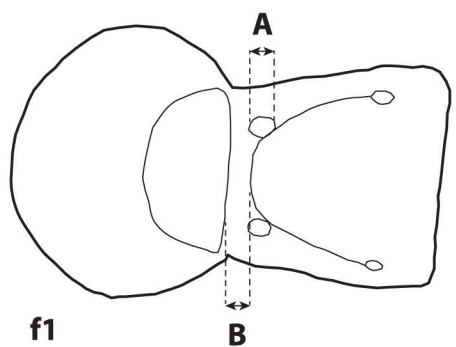
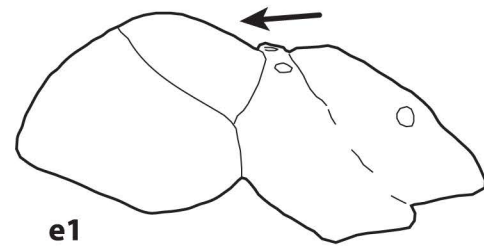
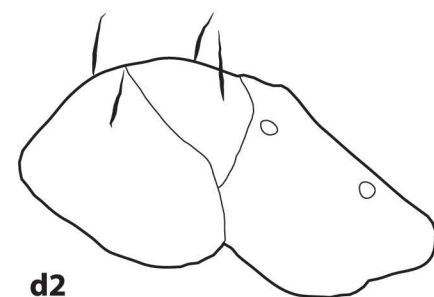
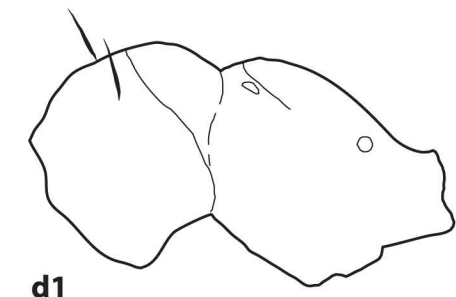
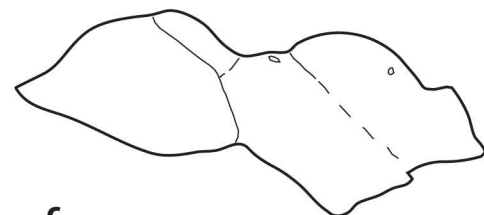
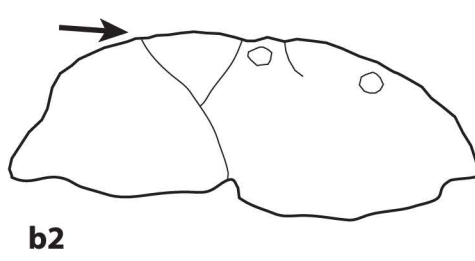
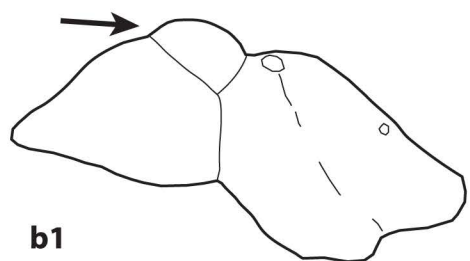
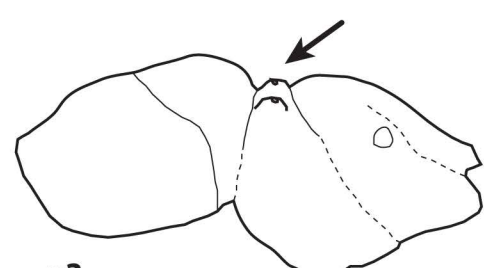
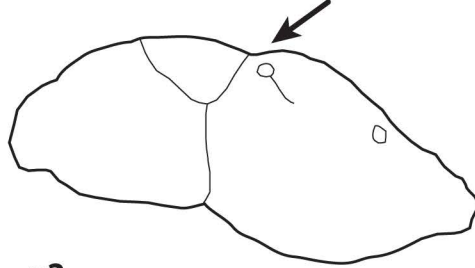
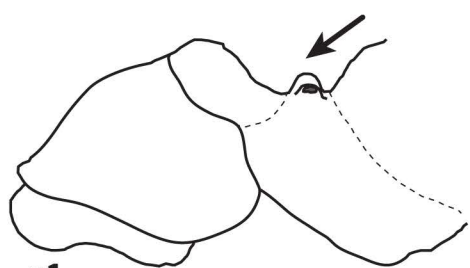








































a

0.1 mm



b

0.1 mm



c

0.5 mm



d

0.5 mm



e

0.5 mm



f

0.5 mm



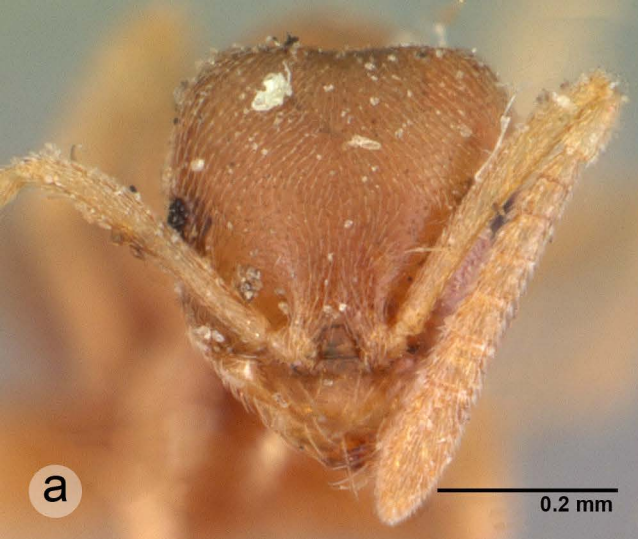




















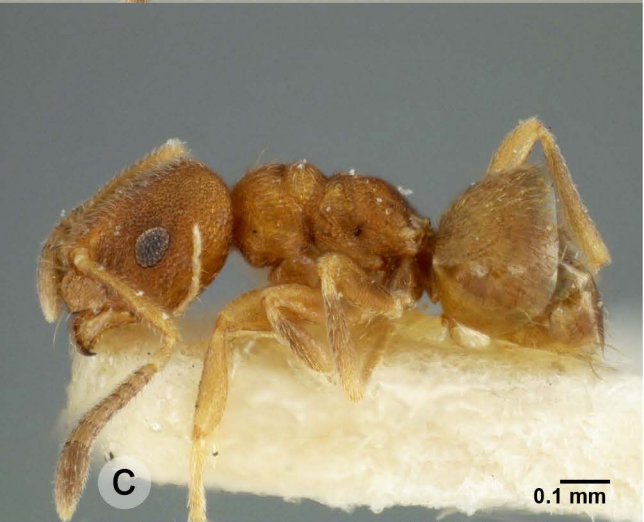
























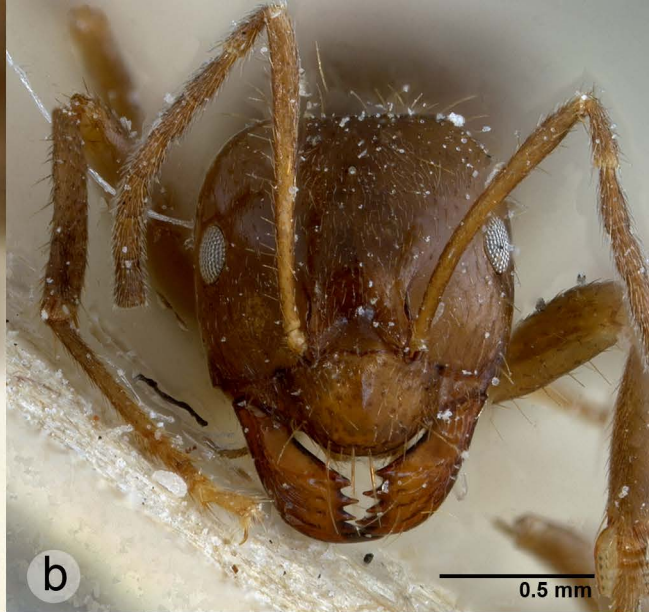
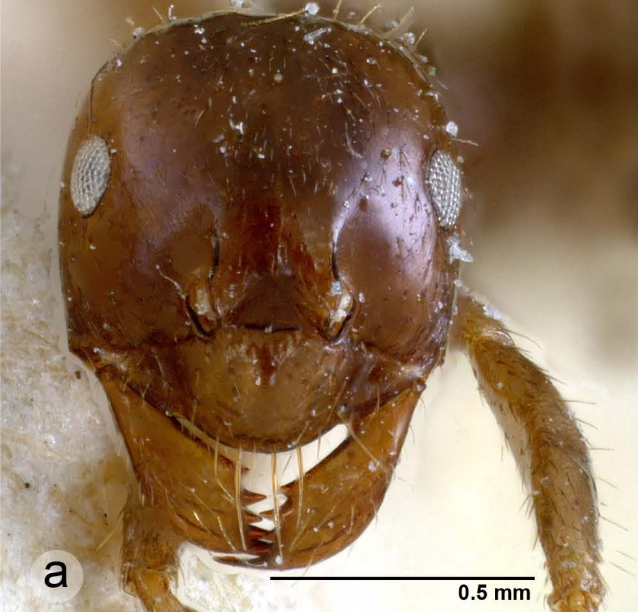










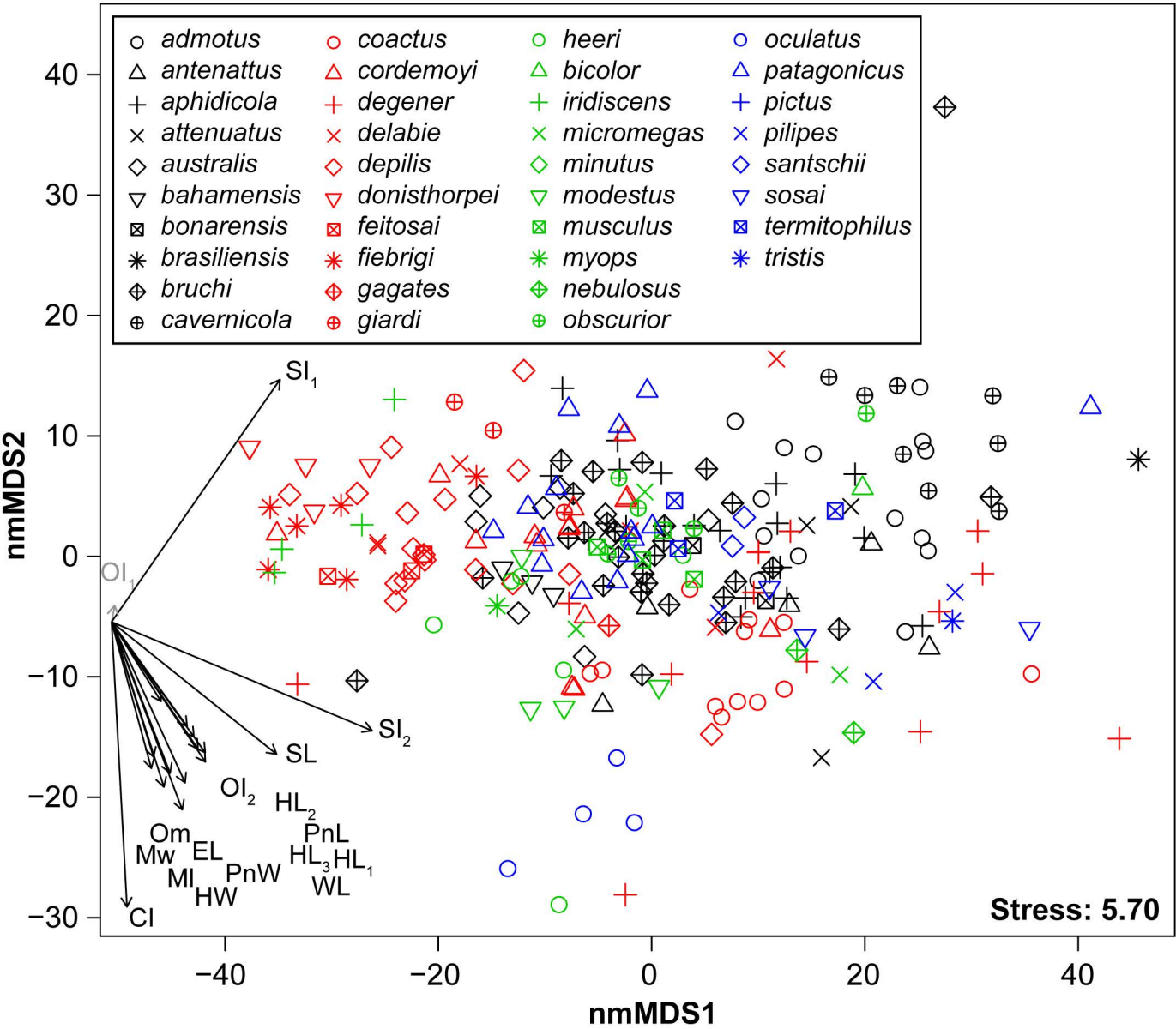


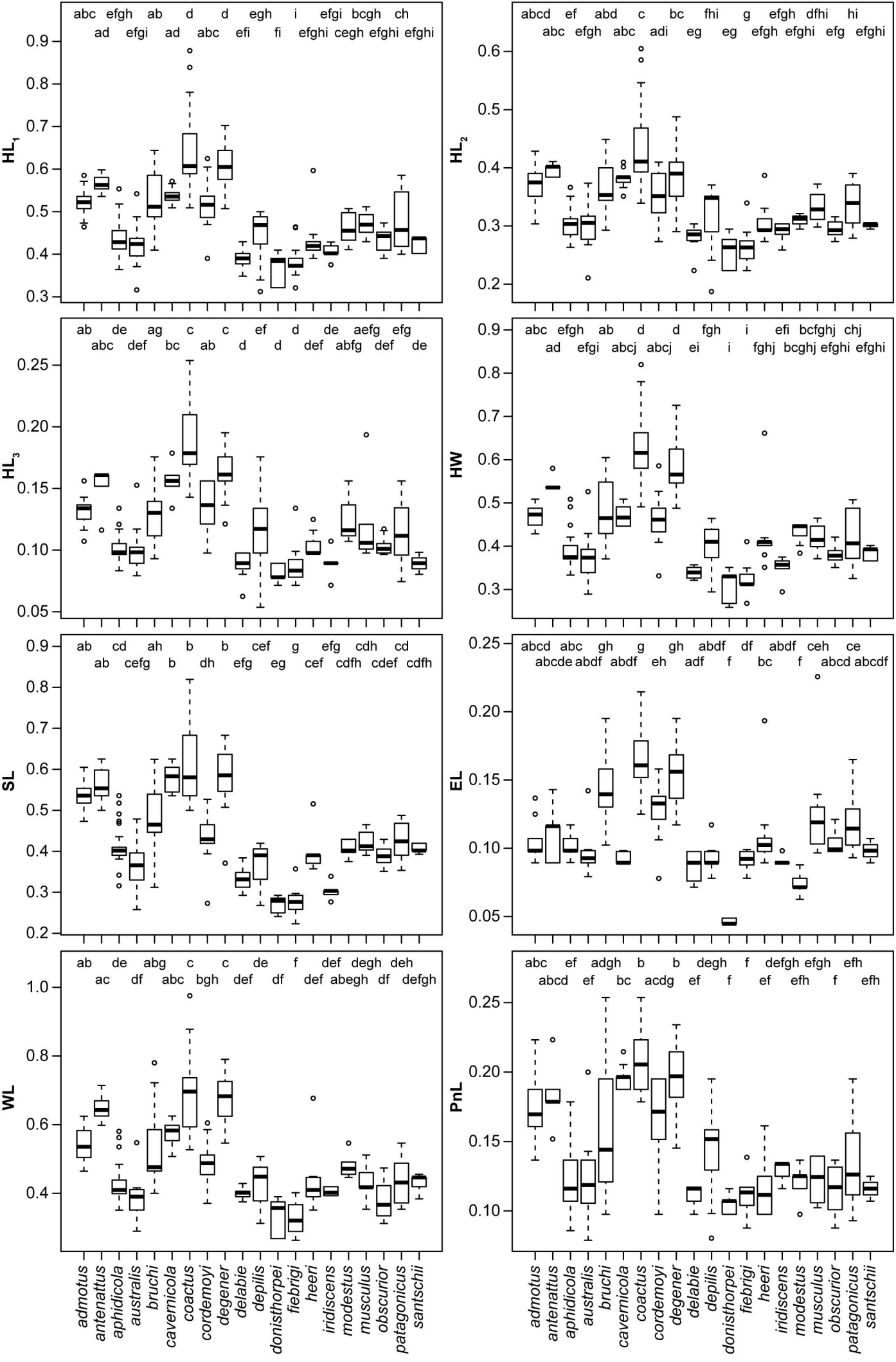


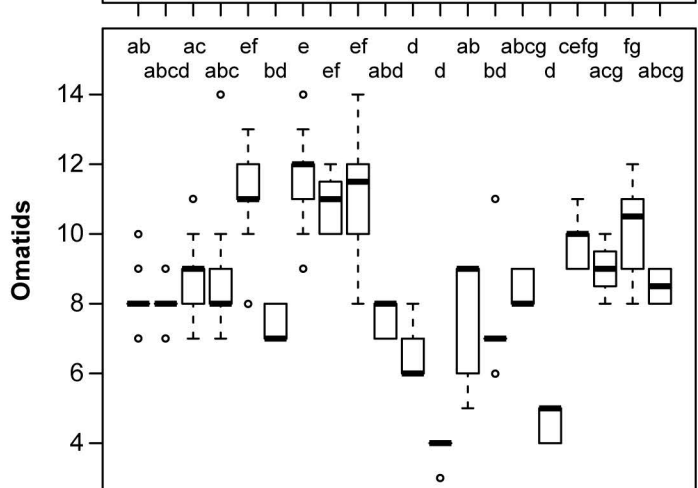
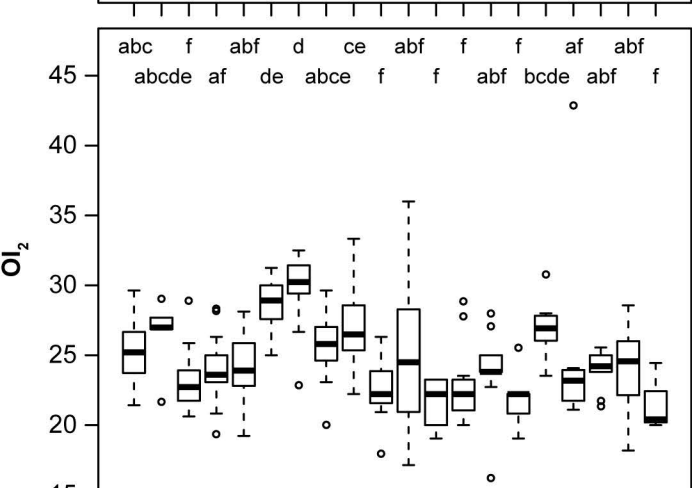
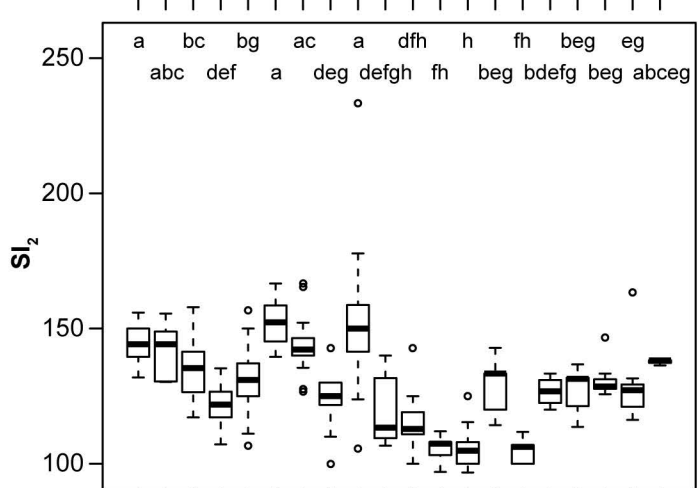
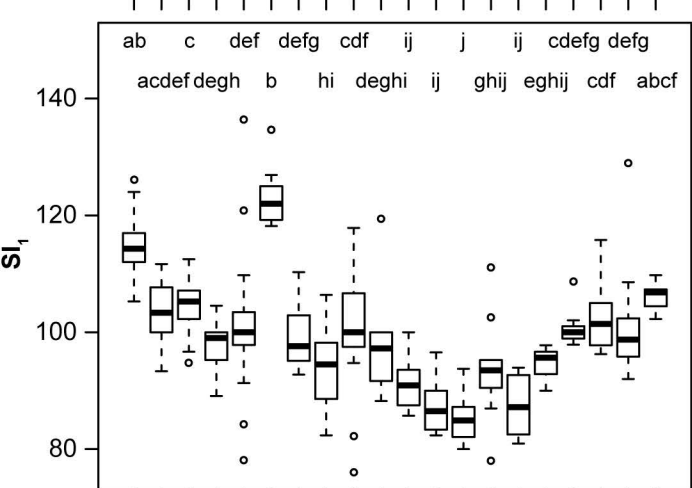
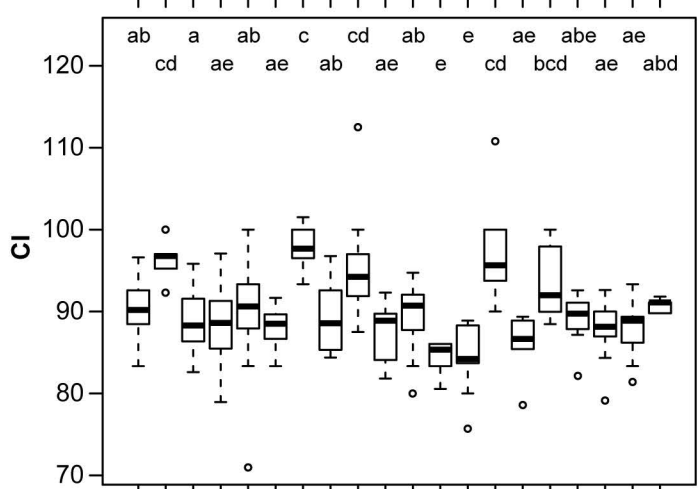
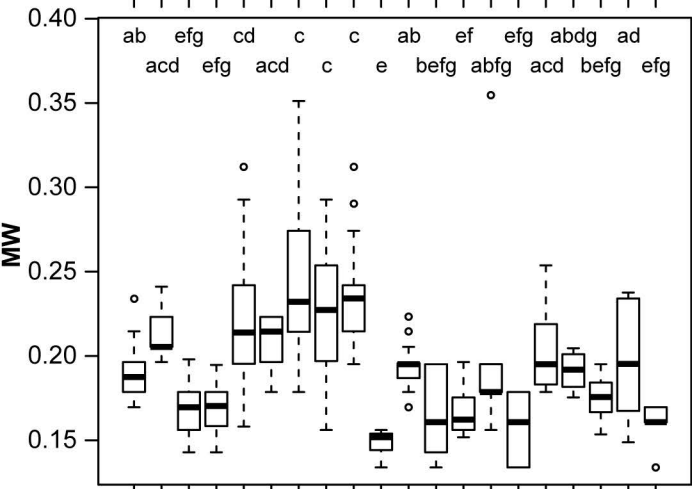
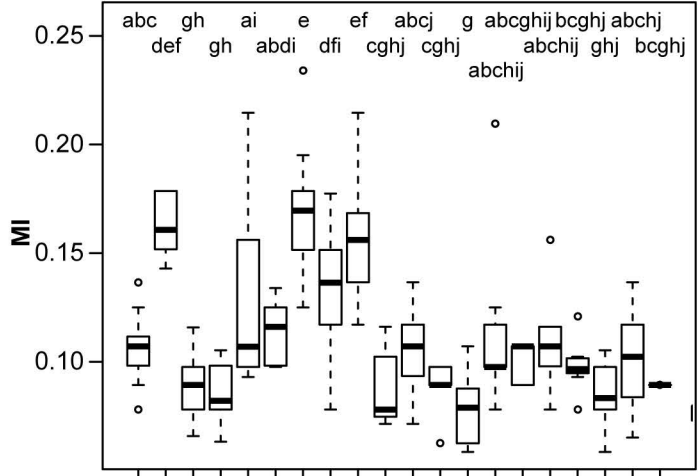
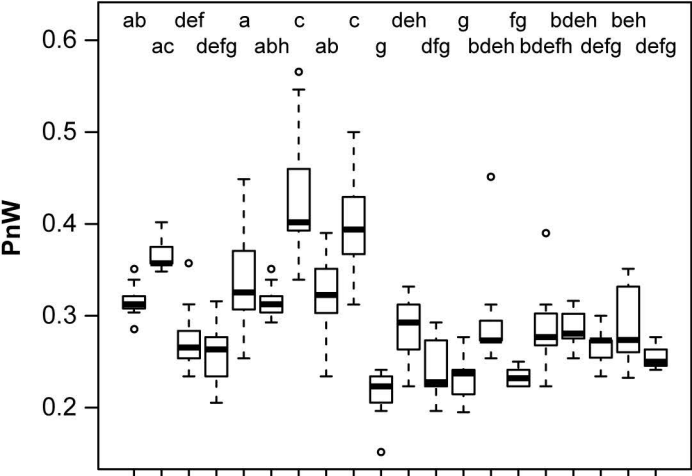












admotus *antenattus* *aphidicola* *australis* *bruchi* *cavernicola* *coactus* *cordermoyi* *degener* *delabie* *depilis* *donisthorpei* *fiebrigi* *heeri* *iridiscens* *modestus* *musculus* *obscurior* *patagonicus* *santschii*

0.05

