front) to greatest node width (viewed in profile) between 4:3 and 1:1; anteroventral petiolar process absent or vestigial; height ratio of petiole to postpetiole between 4:3 and 1:1; height–length ratio of postpetiole about 1:1; postpetiole dorsal sector shining and smooth, basal sector microreticulate.

GASTER: Pilosity of first gastral tergite consisting of well-spaced, semi-erect setae interspersed with a few appressed setulae.

GENERAL CHARACTERS: Color chocolate, tibiae and tarsi pale brown to off-white.

MALE MEASUREMENTS: HML 1.75–2.02 HL 0.49–0.52 HW 0.51–0.54 CeI 104–106 SL 0.16–0.18 SI 30–33 PW 0.54–0.62 (n=3).

REMARKS.— *Monomorium sakalavum* is part of a complex of very common and taxonomically difficult Malagasy ants that are also well-represented in southern and east Africa (the *rhopalocerum* complex). Typically, this species can be distinguished from its relatives by its distinctive glassy, brick-red mesosoma that contrasts with the light chocolate head and brown gaster. The mesosoma in profile is straight, the mesopleuron has weak to strong sculpture, and the propodeum is vaguely angulate. The petiolar node is cuneate. However, smaller, paler specimens have a more rounded mesosoma and may be mistaken for *M. termitobium* ('*imerinense*') and *M. xuthosoma*. In such cases the reddish to orange color of the mesosoma will help differentiate *M. sakalavum* from the former and its relatively much longer antennal scape will separate it from the latter. *Monomorium sakalavum* has been collected by a variety of methods in drier forested areas, mainly in western parts of Madagascar. Nest series have been collected from rotted twigs, sticks and logs on the ground as well as above ground.

Monomorium termitobium Forel

Figs. 24, 93–99.

Monomorium termitobium Forel, 1892b:522. Syntype ☿ (lectotype here designated), MADAGASCAR: (?)Mangaroafa (MHNG) [examined].

Monomorium minutum r. *imerinense* Forel, 1892c:257. Syntype ♀s, ♂ (lectotype ♀ here designated), MADAGASCAR: Andrangoloaka (MHNG) [examined]. Syn. nov.

Monomorium minutum subsp. *imerinense* Wheeler, W.M. 1922:1027.

Monomorium imerinense Dalla Torre, 1893:67.

Monomorium exchao Santschi, 1926: 235 Syntype ☿s (lectotype here designated), SOUTH AFRICA: Paradise Kloof, Graham Town, Cape Colony (NHMB) [examined]. Syn. nov.

Monomorium binatu Bolton, 1987: 380, fig. 78 (☿). Holotype ☿, ZIMBABWE: Vumba Mts., nr. Umtali (NHMB) [examined]. Syn. nov.

MATERIAL EXAMINED.— ***M. termitobium***: LECTOTYPE: ☿, Madagascar, (?)Mangoroafa (MHNG). (Published locality Amparafaravantsiv.) The publication implies this species was collected by P. Sikora, though his name does not appear on any of the labels. The length is given as a range, indicating that more than one specimen was examined by Forel. This species is taxonomically confusing: the lectotype fixes the name for populations with yellow, biconvex workers with rather hairy mesosomas. Lectotype measurements have not been taken as the lectotype lacks a head. ***M. imerinense***: LECTOTYPE: ♀, Madagascar, Andrangoloaka, [P.] Sikora (MHNG). The lectotype fixes the taxon name for populations with uniformly brown queens (with *M. termitobium s. str.* the queens have lighter-colored mesosomas). PARALECTOTYPES: (i) Two queens, same data as above (MHNG). (The two queens occupied the same pin as the lectotype: they have been repinned, along with photocopies of the original labels). (ii) One male, Andrangoloaka, [P.] Sikora (MHNG). ***M. exchao***: LECTOTYPE: ☿, South Africa, Paradise Kloof, Graham Town, Cape Colony (NMHB Reg. No. 203). The lectotype (worker on LHS when seen from rear) fixes the name for populations with yellow workers whose gasters are often diffusely infuscated, particularly on the sides of the first gastral tergite. PARALECTOTYPE: One damaged worker mounted on same rectangle as lectotype (RHS), and with same data (NMHB). ***M. binatu***: HOLOTYPE: ☿, Zimbabwe ('Rhodesia') Vumba Mts, nr Umtali, 11.iii.[19]69 W.L. Brown, (MCZ). PARATYPES:

Six workers, with same data as the holotype (MCZ). (Relevant measurements of the holotype and paratypes are provided in Bolton 1987).

OTHER MATERIAL EXAMINED: **Prov. Antananarivo:** 3 km 41 NE Andranomay, 11.5 km 147 SSE Anjozorobe 5–13.xii.2000 Fisher *et al*. (44☿, 5♀, 24♂); Rés Ambohitantely, 20.9 km 72 NE Ankazobe 17–22.iv.2001 Rabeson *et al*. (38☿, 3♀); Rés Ambohitantely, 24.1 km 59 NE Ankazobe 17–22.iv.2001 Rabeson *et al*. (16☿). **Prov. Antsiranana:** Ampasindava, Ambilanivy, 3.9 km 181 S Ambaliha 4–9.iii.2001 Fisher *et al*. (31☿, 2♀, 17♂); 12.2 km WSW Befingotra, Res. Anjanaharibe-Sud, 25.xi.1994 (11☿), 26.xi.1994 (5☿, 2♀); B.L. Fisher; Forêt Anabohazo, 21.6 km 247 WSW Maromandia 11–16.iii.2001 Fisher *et al*. (25☿, 1♀); Forêt Orangea, 3.6 km 128 SE Remena 22–28.ii.2001 Fisher *et al*. (42☿, 6♀, 2♂); Montagne Français, 7.2 km 142 SE Diego Suarez 22–28.ii.2001 Fisher *et al*. (3☿); Nosy Be, Rés. Lokobe, 6.3 km 112 ESE Hellville 19–24.iii.2001 Fisher *et al*. (29☿, 1♀, 1♂); Nosy Be, P.N. Lokobe, 5 km 125 ESE Hellville 13–16.ii.2003 Fisher *et al*. (2☿); P.N. Montagne Ambre, 3.6 km 235 SW Joffreville 20–26.i.2001 Fisher *et al*. (11☿, 1♂); P.N. Montagne Ambre, 12.2 km 211 SSW Joffreville 2–7.ii.2001 Fisher *et al*. (76☿, 10♀, 1♂); Réserve Spéciale Ambre, 3.5 km 235 SW Sakaramy 26–31.i.2001 Fisher *et al*. (60☿, 5♀); Rés. Spéc. Ankarana, 22.9 km 224 SW Anivorano Nord 10–16.ii.2001 Fisher *et al*. (46☿, 4 ergatoids, 5♀); Rés. Spéc. Ankarana, 13.6 km 192 SSW Anivorano Nord 16–21.ii.2001 Fisher *et al*. (34☿, 8♀); R.S. Manongarivo, 14.5 km 220 SW Antanambao 20.x.1998 (2☿), 21.x.1998 (11☿) B.L. Fisher; R.S. Manongarivo, 17.3 km 218 SW Antanambao 27.x.1998 B.L. Fisher (1☿); R.S. Manongarivo, 10.8 km 229 SW Antanambao 8.xi.1998 B.L. Fisher (51☿, 1♀); 1 km W Sakalava Beach 23–27.i.2001 R. Harin Hala (1♂). **Prov. Fianarantsoa:** 38 km S Ambalavao, Res Andringitra 23.x.1993 B.L. Fisher (6☿, 1♀); 29 km SSW Ambositra, Ankazomivady, 7.i.1998 B.L. Fisher (6☿); 28 km SSW Ambositra, Ankazomivady, 8.i.1998 (2☿, 1♀), 14.i.1998 (1☿) B.L. Fisher; 29 km SSW Ambositra, Ankazomivady 14.i.1998 B.L. Fisher (1☿); 27.4 km SSW Ambositra, 15.i.1998 B.L. Fisher (6☿); Forêt Analalava, 29.6 km 280 W Ranohira 1–5.ii.2003 Fisher *et al*. (28☿, 11♀); Forêt Antsirakambiaty, 7.6 km 285 WNW Itremo 22–26.i.2003 Fisher *et al*. (19☿, 2♀); Ivohibe, 8.0 km E Ivohibe, 15–21.x.1997 B.L. Fisher (3☿); P.N. Andringitra, Forêt Ravaro, 12.5 km SW Antanitotsy 10–15.i.2000 S. Razafimanimby (30☿); P.N. Isalo, 9.1 km 354 N Ranohira 27–31.i.2003 Fisher *et al*. (3☿, 4♀); P.N. Isalo, 9.1 km 354 N Ranohira 27–31.i.2003 Fisher *et al*. (16☿, 1♀); P.N. Isalo, Sahanafa Riv., 29.2 km 351 N Ranohira R. S. 10–13.ii.2003 Fisher *et al*. (11☿, 1♀); P.N. Ranomafana, Vatoharanana 4.1 km 231 SW Ranomafana 27–31.iii.2003 Fisher *et* al. (1☿, 1♀); P.N. Ranomafana, Sahamalaotra, 6.6 km 310 31.iii.2003 Fisher *et al*. (6☿); 4.1 km 231 SW Ranomafana 27–31.iii.2003 Fisher *et* al. (1☿); Rés. Andringitra, Plateau d'Andohariana, base of Pic d'Ivangomena 3–9.ix.1995 Goodman (1☿, 1♀); Rés. Andringitra, Plateau d'Andohariana, cuvette du Pic Boby, 9–15.ix.1995 Goodman (1☿, 1♀); Rés. Andringitra, 8.5 km SE Antanitotsy 6.iii.1997 B.L. Fisher (12☿, 5♂); R.S. Ivohibe, 6.5 km ESE Ivohibe, 24–30.x.1997 B.L. Fisher (1☿). **Prov. Mahajanga:** Forêt de Tsimembo 11.0 km 346 NNW Soatana 21–25.xi.2001 Fisher *et* al. (17☿, 1♀); Forêt de Tsimembo 8.7 km 336 NNW Soatana 21–25.xi.2001 Fisher *et* al. (11☿); Mahavavy River, 6.2 km 145 SE Mitsinjo 1–5.xii.2002 Fisher *et al*. (2☿, 3♀); P.N. Ankarafantsika, Ampijoroa, 40 km 306 NW Andranofasika 26–31.iii.2001 Fisher *et al*. (4☿); P.N. Ankarafantsika, Ampijoroa, 5.4 km 331 NW Andranofasika 30.iii.2001 Rabeson *et al*. (80☿, 21♀); P.N. Ankarafantsika, Ankoririka, 9–14.iv.2001 10.6 km 13 NE Tsaramandroso Rabeson *et al*. (4☿); P.N. Ankarafantsika, Tsimaloto, 2–8.iv.2001 18.3 km 46 NE Tsaramandroso Rabeson *et al*. (21☿, 3♀); P.N. Baie de Baly, 12.4 km 337 NNW Soalala 26–30.xi.2002 Fisher *et* al. (7☿, 1♀); P.N. Namoroka, 9.8 km 300 WNW Vilanandro, 4–8.xi.2002 Fisher *et al*. (1☿, 1♀); P.N. Namoroka, 17.8 km 329 WNW Vilanandro, 8–12.xi.2002 Fisher *et al*. (6☿); P.N. Namoroka, 16.9 km 117 NW Vilanandro, 12–16.xi.2002 Fisher *et al*. (3☿); P.N. Tsingy de Bemaraha, 3.4 km 93 E Bekopaka 6–10.xi.2001 Fisher *et al*. (61☿, 7♀); P.N. Tsingy de Bemaraha, 2.5 km 62 ENE Bekopaka 11–15.xi.2001 Fisher *et al*. (39☿,1♀); P.N. Tsingy de Bemaraha, 10.6 km 123 ESE Antsalova 16–20.xi.2001 Fisher *et al*. (129☿, 1♀); Rés Ambohitantely, 20.9 km 72 NE Ankazobe 17–22.iv.2001 Rabeson *et al*. (1☿, 13♀); Res. Bemarivo, 23.8 km 223 SW Besalampy 19–21.xi.2002 (4☿), 19–23.xi.2002 (17☿); Fisher *et al*. **Prov. Toamasina:** 6.9 km NE Ambanizana 2.xii.1993 B.L. Fisher (6☿, 1♀); F. C. Andriantantely 4–7.xii.1998 (2☿) 7–10.xii.1998 (2☿) H.J. Ratsirarson; F. C. Didy, 16–23.xii.1998 H.J. Ratsirarson (4☿, 2♂); F. C. Sandranantitra 18–21.i.1999 H.J. Ratsirarson (6☿, 1♀); Mont Anjanaharibe, 18.0 km 21 NNE Ambinanitelo 8–12.iii.2003 Fisher *et* al. (3☿, 3♀); Mont Anjanaharibe, 19.5 km 27 NNE Ambinanitelo 12–16.iii.2003 Fisher *et al*. (2☿, 1♀); Mont. Akirindro, 7.6 km 341 NNW Ambinanitelo 17–21.iii.2003 Fisher *et* al. (2☿, 2♀); P.N. Mantadia,

28.xi–1.xii.1998 (4☿), 4–10.xii.1998 (1♂) H.J. Ratsirarson; P.N. Masoala, 39.4 km 150 SSE Maroantsetra 28.xi–3.xii.2001 Fisher *et al*. (1☿). **Prov. Toliara:** Cap Sainte Marie, 12.3 km 262 W Marovato 11–15.ii.2002 Fisher *et al.* (9☿); Cap Sainte Marie, 14.9 km 261 W Marovato 13–19.ii.2002 Fisher *et al*. (12☿, 3♀, 1♂); 11 km NW Enakara, Rés. Andohahela 17.xi.1992 B.L. Fisher (2☿); Forêt Analavelona, 33.2 km 344 NNW Mahaboboka 12–26.ii.2003 Fisher *et* al. (19☿, 4♀); Forêt Analavelona, 29.2 km 343 NNW Mahaboboka 18–22.ii.2003 Fisher *et* al. (11☿); Forêt Analavelona, 29.4 km 343 NNW Mahaboboka 21.ii.2003 Fisher *et* al. (8☿); Forêt Beroboka, 5.9 km 131 SE Ankidranoka 12–16.iii.2002 Fisher *et al*. (28☿, 12♀); Forêt Mahavelo, Isantoria Riv., 5.2 km 44 NE Ifotaka 28.i–1.ii.2002 Fisher *et al*. (6☿, 4♀); Forêt Mahavelo, Isantoria Riv., 5.5 km 37 NE Ifotaka 31.i.2002 Fisher *et al*. (68☿, 9♀); Forêt Mite, 20.7 km 29 WNW Tongobory 27.ii–3.iii.2002 Fisher *et al*. (37☿, 10♀); Forêt de Petriky, 12.5 km W 272 Tolagnaro 22.xi.1998 B.L. Fisher (67☿, 15♀); Forêt Tsinjoriaka ['Tsinjoriaky'], 6.2 km 84 E Tsifota 6–10.iii.2002 Fisher *et al*. 1(1☿, 8♀); southern Isoky-Vohimena Forest, 21.i.1996 B.L. Fisher (1☿); Kirindy, 15.5 km 64 ENE Marofandilia 28.xi–3.xii.2001 Fisher *et al*. (20☿); "MAD99/001" (Lakata Zafera) 30.vi.1999 H. Steiner (1☿); Mahafaly Plateau, 6.2 km 74 ENE Itampolo 25.ii.2002 Fisher *at al*. (2☿); 6.1 km 182 S Marovato 14.ii.2002 Fisher *et al*. (7☿); P.N. Andohahela, 3.8 km 113 ESE Mahamavo 21–25.i.2002 (23☿, 5♀, 3♂) 24.i.2002 (3☿) B.L. Fisher *et al*.; P.N. Andohahela, Manantalinjo, 7.6 km 99 E Hazofotsy 12–16.i.2002 Fisher *et al*. (6☿, 4♀); P.N. Andohahela, 1.7 km 61 ENE Tsimelahy 16–20.i.2002 Fisher *et al*. (51☿, 6♀, 3?); P.N. Kirindy Mite, 16.3 km 127 SE Belo sur Mer 6–10.xii.2001 Fisher *et al*. (8☿, 2♀); P.N. Tsimanampetsotsa, Bemanateza, 6.7 km 130 SE Efoetse 18–22.iii.2002 Fisher *et al*. (37☿, 11♀); P.N. Tsimanampetsotsa, Bemanateza, 23.0 km 131 SE Beheloka 22–26.iii.2002 Fisher *et al*. (2☿); P.N. Tsimanampetsotsa, Mitoho, 6.4 km 77 ENE Efoetse 18–22.iii.2002 Fisher *et al*. (28☿, 9♂); P.N. Zombitse, 19.8 km 84 E Sakaraha 5–9.ii. 2003. Fisher *et al*. (13☿, 3♀); P.N. Zombitse, 17.7 km 98 E Sakaraha 8.ii. 2003 Fisher *et al*. (3☿); Rés. Ambohijanahary, 35.2 km 312 NW Ambaravaranala 13–17.i.2003 Fisher *et al*. (7♀); Rés. Ambohijanahary, 34.6 km 314 NW Ambaravaranala 16.i.2003 Fisher *et al*. (4☿, 1♀); Rés. Berenty, Forêt Anjapolo, 21.4 km 325 NW Amboasary 7.ii.2002 Fisher *et al*. (1☿); Rés. Berenty, Forêt Bealoka, 14.6 km 329 NNW Amboasary 3–8.ii.2002 Fisher *et al*. (22☿, 2♀); Rés. Berenty, Forêt Bealoka, 8.6 km 314 NNW Amboasary 6.ii.2002 Fisher *et al*. (31☿, 10♀); S. F. Mandena, 8.4 km NNE 30 Tolagnaro 20.xi.1998 B.L. Fisher (17☿); 2.7 km WNW 302 Ste Luce, 9–11.xii.1998 B.L. Fisher (34☿, 1♀).

Worker description.— Head: Head square, or, rectangular; vertex planar or weakly concave; frons shining and smooth except for piliferous pits; pilosity of frons a mixture of well-spaced, distinctly longer erect and semi-erect setae interspersed with shorter decumbent setae or setulae. Eye moderate (rarely, small), eye width 1–1.5× greatest width of antennal scape; (in full-face view) eyes set below midpoint of head capsule; (viewed in profile) eye set around midline of head capsule, or, set posteriad of midline of head capsule; eye elliptical, curvature of inner eye margin may be more pronounced than that of its outer margin. Antennal segments 12; antennal club three-segmented. Clypeal carinae well-defined, weakly defined, or indistinct; anteromedian clypeal margin of variable appearance, ranging from broadly convex, or, narrowly convex between weakly ridged clypeal carinae, to straight, or, straight between strongly divergent clypeal carinae with clypeus descending almost vertically to horizontal arc of mandibles and sometimes transversely carinate below level of antennal insertions. Clypeus may also be emarginate, clypeal carinae indistinct or present and terminating in blunt angles. Paraclypeal setae moderately long and fine, curved; posteromedian clypeal margin extending slightly beyond level of posterior margin of antennal fossae. Anterior tentorial pits situated nearer antennal fossae than mandibular insertions. Frontal lobes sinuate, divergent posteriad. Psammophore absent. Palp formula 2,2. Mandibular teeth four, with basal tooth only slightly smaller than preceding three teeth, or, three, plus minute, apical denticle or angle; mandibles with sub-parallel inner and outer margins, smooth (except for piliferous pits); masticatory margin of mandibles approximately vertical or weakly oblique, to strongly oblique; basal tooth approximately same size as t3 (four teeth present), or, a small to minute denticle or angle, much smaller than t3 (four teeth present).

Mesosoma: Promesonotum shining and either completely smooth, or, with faint punctation or

striolae on lower anterior mesopleuron; (viewed in profile) promesonotal outline ranging from broadly convex to anterior promesonotum smoothly rounded, thereafter more-or-less flattened, with promesonotum on same plane as propodeum; promesonotal setae very variable, from seven or eight to more than a dozen; standing promesonotal setae a mixture of well-spaced, distinctly longer, erect and semi-erect setae which are curved distally and often paired, interspersed with much shorter, incurved, decumbent setae; appressed promesonotal setulae very sparse or absent. Metanotal groove strongly impressed, with distinct transverse costulae or weakly impressed, with faint costulae or costulae lacking. Propodeum shining and smooth, metapleuron with a few weak to strongly defined, longitudinal, hair-like striolae; propodeal dorsum convex to flat throughout most of its length; smoothly rounded or with indistinct angle; standing propodeal setae either (i) consisting of one prominent pair anteriad, with other shorter setae very sparse or absent, or, (ii) consisting of one prominent pair anteriad, with a few to many erect to decumbent setae on/around dorsal and declivitous faces of propodeum, or, (iii) consisting of two or more prominent pairs anteriad, often with another pair of prominent setae posteriad, and other smaller setae on/around dorsal and declivitous surfaces of propodeum; appressed propodeal setulae very sparse or absent; propodeal spiracle nearer metanotal groove than declivitous face of propodeum, or, equidistant from metanotal groove and declivitous face of propodeum; vestibule of propodeal spiracle absent or not visible; propodeal lobes either present as rounded flanges, or, present as vestigial flanges or small strips of cuticle only.

PETIOLE AND POSTPETIOLE: Petiolar spiracle lateral or laterodorsal and situated within anterior sector of petiolar node. Node (viewed in profile) cuneate with vertex tapered or rounded, or, conical with vertex tapered or rounded; appearance of node shining and smooth throughout; ratio of greatest node breadth (viewed from front) to greatest node width (viewed in profile) between 1:1 and 3:4. Anteroventral petiolar process either present as a thin flange tapering posteriad, or, absent or vestigial; ventral petiolar lobe present. Height ratio of petiole to postpetiole between 3:2 and 1:1; height–length ratio of postpetiole between 3:2 and 1:1; postpetiole shining and smooth; postpetiolar sternite not depressed at midpoint, its anterior end either an inconspicuous lip or small carina, or, this structure lacking or vestigial.

GASTER: Pilosity of first gastral tergite consisting of well-spaced, erect and semi-erect setae interspersed with a few appressed setulae, or, consisting of a mixture of incurved, semi-erect setae and slightly shorter decumbent setae.

GENERAL CHARACTERS: Color of foreparts yellow to chocolate, gaster of same color or darker, appendages yellowish to brown or bicolored (but not darker than mesosoma). Worker caste monomorphic.

LECTOTYPE MEASUREMENTS (*M. termitobium*): Not taken, as the lectotype is headless.

LECTOTYPE MEASUREMENTS (*M. exchao*): HML 1.22 HL 0.48 HW 0.37 CeI 77 SL 0.34 SI 92 PW 0.24.

WORKER MEASUREMENTS (non-types): HML 0.86–1.54 HL 0.32–0.59 HW 0.25–0.50 CeI 74–90 SL 0.22–0.44 SI 76–109 PW 0.15–0.32 (n=200)

QUEEN DESCRIPTION.— HEAD: Head square to rectangular; vertex weakly concave or planar; frons either completely shining and smooth except for piliferous pits, or, shining and smooth with a few striolae around antennal sockets and frontal carinae; pilosity of frons a mixture of well-spaced, distinctly longer erect and semi-erect setae interspersed with shorter setae or setulae, which are decumbent or appressed, longer setae thickest on vertex. Eye either more-or-less circular, or, elliptical, curvature of inner eye margin may be more pronounced than that of its outer margin; (in full-face view) eyes set at about midpoint to below midpoint of head capsule; (viewed in profile) eyes set around midline of head capsule to set posteriad of midline of head capsule.

MESOSOMA: Pronotum and anterior mesoscutum smoothly rounded, thereafter more-or-less

flattened; mesoscutum and mesopleuron shining and mainly smooth, vestigial striolae, if present, confined to anterior katepisternum; length–width ratio of mesoscutum and scutellum combined between 7:3 and 3:2. Axillae variable, separation of axillae can range from width of at least one axilla to axillae contiguous, or nearly so. Standing pronotal/mesoscutal setae a mixture of well-spaced, distinctly longer, erect and semi-erect setae which are curved distally, interspersed with much shorter, incurved, decumbent setae; appressed pronotal, mescoscutal and mesopleural setulae few, mainly on sides of pronotum and mesopleuron. Propodeum shining and smooth, with multiple hair like striolae on metapleuron; propodeum smoothly rounded, with indistinct angle, or, angulate, propodeal angle blunt; propodeal dorsum either convex, or, flat throughout most of its length, or, slightly elevated anteriad and sloping away posteriad, propodeal angles not raised; standing propodeal setae consisting of up to a dozen or more longer erect and shorter sub-erect setae; appressed propodeal setulae very sparse or absent; propodeal spiracle nearer metanotal groove than declivitous face of propodeum, or, equidistant from metanotal groove and declivitous face of propodeum; propodeal lobes present as well-developed, rounded flanges, or, present as vestigial flanges only, or absent.

WING: Wing veins predominantly depigmented (wing membrane itself may have smoky tinge), with distal segments reduced to vestigial lines; vein m–cu always absent; vein cu–a absent.

PETIOLE AND POSTPETIOLE: Petiolar spiracle lateral and situated within anterior sector of petiolar node, or, lateroventral and situated within anterior sector of petiolar node; node, in profile, very variable, ranging from cuneate, vertex tapered or rounded, or, cuneate, vertex rounded and node inclined posteriad, to conical, vertex tapered or rounded; appearance of node shining and smooth, or, shining, with vestigial sculpture, or, shining and weakly striolate posteriad; ratio of greatest node breadth (viewed from front) to greatest node width (viewed in profile) between 3:2 and 1:1. Anteroventral petiolar process present as a thin flange tapering posteriad, or, absent or vestigial; height ratio of petiole to postpetiole between 3:2 and1:1; height–length ratio of postpetiole between 3:2 and1:1; postpetiole shining and smooth, or, shining, with vestigial sculpture, or, shining and weakly striolate posteriad; postpetiolar sternite not depressed, its anterior end an inconspicuous lip or small carina or this structure vestigial.

GASTER: Pilosity of first gastral tergite consisting of well-spaced, erect and semi-erect setae interspersed with a few appressed setulae, or, consisting of a mixture of incurved, erect and semi-erect setae and slightly shorter decumbent setae.

GENERAL CHARACTERS: Color of head and mesosoma yellow to chocolate, gaster yellowish to chocolate, sometimes with variable lighter bands or pale patches or maculae near base of first gastral tergite. Brachypterous alates not seen. Ergatoid or worker-female intercastes seen.

LECTOTYPE MEASUREMENTS (*M. imerinense*): HML 2.36 HL 0.68 HW 0.67 CeI 99 SL 0.53 SI 79 PW 0.54.

OTHER QUEEN MEASUREMENTS: HML 1.61–2.53 HL 0.49–0.72 HW 0.42–0.65 CeI 83–98 SL 0.36–0.65 SI 77–94 PW 0.32–0.73 (n=62).

MALE DESCRIPTION.— HEAD: Head width–mesosoma width ratio between 1:1 and 3:4; frons smooth to finely striolate, or, vestigial, consisting of micropunctation and fine striolae, or, finely micropunctate. Compound eyes protuberant and elliptical; margin of compound eye clearly separated from posterior margin of clypeus. Ocelli turreted. Ratio of length of first funicular segment of antenna to second funicular segment between 1:1 and 1:2. Maximum number of mandibular teeth and denticles four.

MESOSOMA: Mesoscutum broadly convex; pronotum and mesoscutum shining and mainly smooth, vestigial striolae, if present, confined to lower anterior mesopleuron, or, shining and faintly striolate throughout, striolae becoming more deeply impressed on posterior mesopleuron, or,

shining, with dorsum faintly striolate. Parapsidal furrows distinct to vestigial or absent; notauli denoted by a central groove, or, absent. Axillae separated by width of at least one axilla to narrowly separated (i.e., less than width of one axilla).

WING: Wing veins predominantly depigmented (though wing membrane itself may have a smoky tinge), with distal segments reduced to vestigial lines; vein m–cu absent; vein cu–a absent.

PETIOLE AND POSTPETIOLE: Petiolar spiracle lateral and situated within anterior sector of petiolar node. Node (viewed in profile) highly variable, being either conical, with vertex tapered or rounded, or, evenly tumular to roundly conical, to tumular, inclined posteriad, with vertex also tapered posteriad; appearance of node also variable, from shining and smooth to completely shagreenate; ratio of greatest node breadth (viewed from front) to greatest node width (viewed in profile) between 4:3 and 3:4. Anteroventral petiolar process absent or vestigial. Height ratio of petiole to postpetiole between 4:3 and 1:1; height–length ratio of postpetiole between 7:3 and 1:1; postpetiole shining, with vestigial sculpture, or, shining and smooth anteriad, micropuncate posteriad.

GASTER: Pilosity of first gastral tergite consisting of well-spaced, semi-erect setae, or, consisting of a mixture of incurved, semi-erect setae and slightly shorter decumbent setae.

GENERAL CHARACTERS: Color yellowish-brown to chocolate, legs paler in some specimens.

MALE MEASUREMENTS: HML 1.50–2.36; HL 0.39–0.60; HW 0.38–0.72; CeI 88–120; SL 0.12–0.24; SI 28–44; PW 0.43–0.78 (n=63).

REMARKS.— *Monomorium termitobium*, as it is here understood, is not only the most abundant *Monomorium* species on Madagascar, often representing 80–90% of the *Monomorium* specimens in a given sample, but one that is almost intractable to taxonomic analysis based purely on morphology. What I recognize here is the best that I can currently make of the available material, which includes hundreds of queens and many males, as well as thousands of workers. While the amount of CAS material available for study has been daunting, most specimens, unfortunately, have been taken by bulk sampling methods (especially pitfall trapping and from sifted litter) rather than directly from colonies. Collection of nest series is vitally important for taxonomically difficult species (or species complexes) such as this one, to enable the researcher to associate workers with reproductives. In the case of taxa whose workers are without distinctive physical features (such as many small *Monomorium*), such reproductives may provide valuable additional characters as well as being significant in their own right for a good understanding of the taxonomy of a species. Undoubtedly, a more definitive diagnosis of *M. termitobium* will require molecular analysis.

However the species may finally be interpreted, *Monomorium termitobium* is unquestionably highly variable in appearance, and the provisional synonyms here include two African forms currently described as good species. Workers that can be associated together on the basis of shared morphological features often vary in their color, which ranges from bright yellow to deep chocolate. In many cases involving brown specimens, or specimens with a yellow mesosoma and a brown head, the antenna has a brown scape and a yellow funiculus. In workers with light colored foreparts the gaster can be completely yellow, infuscated to varying degrees, or completely black. The clypeal carinae can be strongly defined and parallel or subparallel, weakly defined or completely lacking, the anteromedian sector of the clypeus in the latter being somewhat bulging in appearance (as in *M. micrommaton*). The anteromedian clypeal margin is mostly emarginate in workers with strongly defined clypeal carinae and in a few bicolored workers with dark heads, but without strongly defined clypeal carinae, and straight or convex in the others. The promesonotum, viewed in profile, ranges from roundly convex to quite straight. The propodeum, also viewed in profile, may be rounded, roughly square or elongate. The petiolar node is most commonly broadly conical and tending to circular in cross-section, but may be narrowly cuneate or low, conical and tapered. Pilosity varies, the number of pairs of erect promesonotal setae ranging from three, e.g., brown and

yellow specimens of '*binatu*' from Toliara Province, to seven or more (the additional setae often being simply shorter and appressed rather than actually absent in the less 'shaggy' forms). Clinal patterns of color and morphology may exist but are difficult to anatomize, in view of the overwhelming number of specimens that have to be considered (around half-a-dozen packed drawers of pinned specimens, and much wet material besides).

This array of diverse forms has a few worker characters that separate them from similar but more easily recognized species. The mandible always has four teeth, and the basal tooth is usually about the same size as or slightly smaller than the preceding tooth, rarely being reduced to a minute denticle (unlike *M. flavimembra*). The diameter of the eye is between one and one-and-a-half times the greatest width of the antennal scape and has 10 or more ommatidia in all except a tiny handful of specimens with a brownish cast to their head capsules (distinguishing workers of this species from those of *M. micrommaton*). Commonly, there is a peripheral ring of ommatidia with a central row of two or three ommatidia, but two or more rows may be present. Workers with a light-colored head and mesosoma and dark gaster always have narrowly separated and well-defined clypeal carinae, setting them apart from *M. lepidum*.

The material I have examined clusters around about half-a-dozen forms, which I consider most likely to constitute good species if a future revision involving molecular analysis should indicate that *M. termitobium* is a complex. As far as I can see, however, the characters that distinguish clusters of these specimens are not fixed for the entire gene pool, and intermediate forms occur. The most salient morphotypes are:

Monomorium termitobium sensu stricto. Workers conforming closely to the lectotype are bright lemon yellow to a dusky brownish-yellow, often without any gastral infuscation whatever. In some populations the sides of the first gastral tergite have black markings, which may give the gaster a bimaculate appearance in dorsal view (*Monomorium termitobium* form '*exchao*'), or the entire gaster may be a pale, shiny brown, almost iridescent in some lights. Several long series from Antsiranana are light brown with very pale, depigmented tibiae and tarsi. The head of pale '*termitobium*' is often of darker hue than the mesosoma in dorsal view. The clypeal carinae are highly variable in form, being well-defined in some individuals and completely absent in others. The promesonotum, in profile, varies from broadly convex to rather flattened. Standing setae number at least four pairs, often more. The infrahumeral setae are usually well-developed and longer than half the length of the humeral setae, but can be shorter, tending to appressed. The petiolar node is conical and well-rounded, and the preceding peduncle is short and sculptured just before the node. Overall size is very variable, from about 1.3mm to at least 2 mm (i.e., HML 1.00–1.65mm). This form is dispersed throughout the island.

The queen is pale orange or yellow with a brownish gaster (rarely, variegated light brown and orange) and hairy in appearance, with many semi-erect and decumbent setae on the frons and promesonotum. The first gastral tergite may have two small, pale, oval areas near its base. The mesosoma is relatively small in relation to the head and seen to be laterally compressed when viewed dorsally. The male is usually of a light brown and conspicuously hairy. The wings are always brown, and densely covered with small setae. The wing veins are relatively well-developed and sector Rs of the radial vein and the cross-vein connecting it to the pterostigma may have a silvery sheen.

Monomorium termitobium form '*imerinense*'. Workers are more streamlined in appearance than the former morphotype, and typically light- to yellowish-brown with a darker head and gaster. They can, however, be yellow, though the head usually has a brownish tint. The clypeal carinae are usually distinct, but weak, and the head capsule in full-face view has decidedly convex sides. Also included under this head are very many series of mainly much smaller, brown to chocolate work-

ers with distinct clypeal carinae between which the median sector of the clypeus is shallowly excavate so as to form a groove. In these workers, the clypeal carinae tend not to be complete, with the result that the groove also does not reach the anterior clypeal margin, which is narrowly rounded. The head capsule usually has straight sides. Both groups are connected by a few specimens of intermediate size and morphology. In large workers the mesosoma is more flattened than in typical '*termitobium*', and the conical node, which is often broad and low, is more narrowly rounded dorsally. Small workers have a slightly convex to distinctly flattened mesosoma, and a node similar to '*termitobium*'. The pilosity is like that of *termitobium*. The appearance of large '*imerinense*' workers is very suggestive of *M. flavimembra*, but the basal tooth is well-developed in '*imerinense*', and the anteromedian clypeal margin is less depressed. The HML of larger specimens, i.e., the 'typical form', ranges from 1.29 mm to 1.54 mm, and the HML of small, compact specimens of similar appearance is 0.93 mm to 1.13 mm. A smaller number of nondescript brown workers are of intermediate size.

The queen associated with larger workers is brown and the male is glossy and deep reddish-brown, almost black. Both queen and male are distinctly less hairy than the corresponding reproductives of '*termitobium*'. The wings have well-defined veins whose outlines are often brown, but the wings are only lightly to moderately pilose. Queens associated with smaller workers are similar, but reduced in size. Nb. *Monomorium imerinense* was described from Andrangoloaka in Province Antananarivo from a queen and a male. These correspond well to queens and males recently collected from Antsiranana.

Monomorium termitobium form '*binatu*'. With a very elongate mesosoma, a straight propodeum, long antennal scape (SI mostly > 100) and frequent count of only three pairs of erect promesonotal setae, worker samples of this morphotype (here defined as a distinctive form of a taxon) from the south of Madagascar in Toliara Province appear at first glance sufficiently distinctive to warrant separate species status. The situation is complicated by the fact that slightly more northern populations from Fianarantsoa Province are less elongate, often have four or more pairs or erect promesonotal setae, and tend to merge in morphology with the smaller, yellow '*termitobium*'. The color of '*binatu*' is also variable throughout its range, concolored specimens being yellow or brown with other workers being yellow with an infuscated or even black gaster. A large series of brown workers from St Luce, Toliara Province, have the three erect pairs of setae, but in terms of shape of node, etc., seem to form an intermediate cluster between the yellow '*binatu*' (HML 1.05–1.30 mm) and larger '*imerinense*'.

Most collections of this morphotype have been taken from Toliara Province, and the further south they have been collected, in general, the more their appearance conforms to that of the Zimbabwean holotype of *M. binatu*. The queen is relatively large with orange foreparts and a dark brown to black gaster. The petiolar node is thin, tending to squamiform, and wide, contrasting with the thick, dorsally rounded node of '*imerinense*'. The node of '*termitobium*' is intermediate. The male of '*binatu*' has not been recognized among the CAS material.

Monomorium termitobium dark-headed form. Differences between this morphotype and the quite distinct species *Monomorium floricola* are noted above. Workers in which the chocolate head contrasts with a pale yellow mesosoma, nodes and gaster are among the most spectacular small *Monomorium* on Madagascar. If the color is ignored, however, it will be seen that the morphology of these workers is the same as that of brown or yellow workers of sympatric populations of '*termitobium*' or '*imerinense*', and varies as they vary. Also, if an array of workers of increasingly dark mesosoma color is placed together, they will be found to merge into '*imerinense*'. Distinct within this morphotype is a small number of workers and queens in which the anteromedian clypeal margin is emarginate, though the clypeal carinae are not developed. This character is variable, appears

to relate purely to the individual or to a particular nest, and to be without taxonomic significance. The intensification of color in the head capsule appears to be a variable feature throughout all populations of *M. termitobium*, and the strikingly bicolored form may represent a different allele or alleles, or the result of a different mix of the proteins that control this expression of color in the worker. The queen is brown with yellow bands on the gaster, and has pale wings and brownish wing veins, but otherwise is similar in appearance to '*termitobium*. No male has been associated with this form.

Monomorium termitobium small yellow form. The worker is pale yellow, minute (HML 0.75–0.94mm) with a very long antennal scape (SI 91–103). The appearance and morphology are those of a very small *binatu*, and, as with that morphotype, this form usually has appressed or very short erect infrahumeral setae. The clypeal carinae are sharply defined, the node is always low, conical and the queen is visibly smaller than, though morphologically similar to, the queen of other morphotypes of *M. termitobium*. The male is unknown. This form has some claims to being a separate, cryptic species, since it does not vary in its appearance in its wide range through the island. However, in Mahajanga Province, where it is most abundant, the appearance of the worker is convergent with that of the very small '*termitobium'* that occurs there. The small '*termitobium*' generally has more weakly defined clypeal carinae, four or more prominent pairs of erect promesonotal setae and a more robust petiolar node. However, workers of both morphotypes often have a fleck of brown pigment on the gena between eye and mandibular insertion. The pattern of infuscation on the sides of the gaster in the small yellow form, moreover, matches that found in most '*termitobium*'.

Known from a few series from Tsimanampetsotsa, Toliara Province, is a handsome morphotype in which the workers are bright orange with a very flat promesonotum. The gaster has distinct brown bands, and the petiolar peduncle is very short. The male, but not the queen, is known. That insect is light brown and smooth with minimal pilosity. The wings are of a milky, pale appearance, the veins being almost invisible against a pale background. This morphotype tends to merge with surrounding populations of '*binatu*'.

The impression I am left with, after many hours of examination of these specimens, is that a single founder species of African origin has given rise to branches in which speciation at this point of time is almost, but not quite complete. Although some worker and queen morphotypes include distinctive individuals or populations of individuals, this does not hold true for the members of all populations of that morphotype, and the distinctions therefore cannot be expressed in a taxonomic key. Differences between the known males, however, are greater and may be significant. With all of the preceding aspects in mind, I am provisionally synonymizing *Monomorium binatu* Bolton, *Monomorium exchao* Santschi and *Monomorium imerinense* Forel under the earliest name, *Monomorium termitobium* Forel. The affinities of *M. termitobium* in its various incarnations seem to lie with the *M. rhopalocerum* group, but I am ascribing to the latter a greater degree of morphological variability than expressed by Bolton (1987). The species is ubiquitous in all situations and has been collected by all the methods commonly used by myrmecologists and their teams.

***Monomorium versicolor* Heterick, sp. nov.**
Figs. 25, 67–68.

ETYMOLOGY.— Latin 'of various colors'.

MATERIAL EXAMINED.— HOLOTYPE: ☿, **Prov. Toliara**, Rés. Berenty, Forêt Malaza, 8.6 km 314 NW Amboasary 25º00'S, 46º18'E 40m, 6.ii.2002 Fisher *et al* BLF #/ex rotten log, gallery forest/CASENT 0042524 5434 (CAS). PARATYPES: **Prov. Toliara** (all specimens with same collection data as holotype): 2☿, 1♂ (ANIC); 12☿ + 2☿ + 12♂ (BMNH); 3☿, 1♂ (CAS); 22☿ + 1☿ + 13☿ (MCZ).