Published August 20, 2013 Klapalekiana, **49**: 23–38, 2013
ISSN 1210-6100

Two new species and additional records of the genus *Philonthus* from Madagascar (Coleoptera: Staphylinidae: Staphylininae)

Dva nové druhy a nové nálezy rodu *Philonthus* z Madagaskaru (Coleoptera: Staphylinidae: Staphylininae)

Jiří JANÁK

CZ-417 62 Rtyně nad Bílinou 4, Czech Republic; e-mail: jiri.janak@heineken.com

Taxonomy, distribution, new species, Coleoptera, Staphylinidae, Staphylininae, *Philonthus*, Madagascar

Abstract. *Philonthus lecoqi* sp. nov. from the *Philonthus rufus* group and *Philonthus tergobimaculatus* sp. nov. from the *P. bicoloripennis* group, both new species from Madagascar are described, illustrated and distinguished from similar species. Additional records and identification keys for species of both groups from Madagascar are presented. Distribution of *Philonthus rufus* and *Philonthus bicoloripennis* groups in Madagascar are summarised and mapped.

INTRODUCTION

The genus *Philonthus* Stephens, 1829 currently contains more than 1,350 species occuring in all zoogeographical regions except the polar areas. In Madagascar, the genus is represented by only ca. 30 species, whilst more than 450 valid species are hitherto known from sub-Saharan Africa (author‘s unpublished checklist).

The *Philonthus rufus* group was defined by Janák & Lecoq (2005) and hitherto contained 10 species, all endemic to Madagascar. The *Philonthus bicoloripennis* group was defined by Hromádka (2010) and hitherto contained 40 Afrotropical species and 1 subspecies, with only 1 Madagascan species. Since these contributions, more material (about 400 specimens) of both groups has become available, collected mainly by R. Harin’Hala, Brian Fisher (CAS), David Kavanaugh (CAS) and Petr Baňař (MZM) with their teams, Ruth Müller (TMP), Jaroslav Bašta (Brno, Czech Republic), David Hauck (České Budějovice, Czech Republic), Ivo Jeniš (Náklo, Czech Republic) and Jiří Moravec (Adamov, Czech Republic). The material yielded two species new for science, from the two species groups mentioned above. It also included additional records forother species of these groups.

MATERIAL AND METHODS

The material examined is deposited in the following collections:

CAS – Californian Academy of Sciences, San Francisco, USA (David H. Kavanaugh),
FMNH – Field Museum of Natural History, Chicago, USA (Margaret K. Thayer),
JJRC – Jiří Janák – private collection, Rtyně nad Bílinou, Czech Republic,
LHPC – Lubomír Hromádka – private collection, Praha, Czech Republic,
MMB – Moravské zemské museum, Brno, Czech Republic (Petr Baňař),
TMP – Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa (Ruth Müller).

Dry-mounted specimens were studied using an MBS 10 binocular stereomicroscope. Line drawings were made using the ocular grid of a Zeiss Laboval compound microscope in transmitted light. Measurements were taken with

both the above mentioned microscopes using a graticule. Microsculpture was observed at 56 × magnification. The labels of type specimens are given verbatim, the labels of other specimens are given in simplified way. Some localities were identified using the list published by Viette (1991).

The following abbreviations are used: ht = holotype, pt = paratype, m = mean, n = number of measured specimens, NP = National Park.

RESULTS

Philonthus rufus species group

Philonthus lecoqi sp. nov.
(Figs 1–11)

Type material. Holotype ♂: "Madagascar: Province Diego-Suarez, Montagne Francais, elev 150 m, 15 Feb-6 March 2001 / 12° 18' 8" S, 49° 38' 51" E, R. Harin'Hala coll. malaise along forested limestone ridge, MA-01-06-06" (CASENT: 8037522, CAS).

Paratypes (59 specimens): same data as holotype, (CASENT: 8037487-8, 8037495, 8037497, 8037500, 8037505, CAS), 2 ♂♂, 4 ♀♀, (CASENT: 8037483, 8037523, JJRC), 2 ♂♂, (CASENT: 8037478, LHPC), 1 ♂; "Madagascar: Province d'Antananarivo, 7 km SE of Andasibe National Park headquarters, 7 - 22 Jan 2001 / 18° 55.76' S, 48° 27.16' E, collector: R. Harin'Hala, California Acad. of Sciences, malaise trap in tropical forest, elev 1050 m, MA-01-08A-01" (CASENT: 8037980, CAS), 1 ♀; same data, but "27 Jan - 9 March 2001, MA-01-08A-02" (CASENT: 8026375-7, CAS), 2 ♂♂, 1 ♀, (CASENT: 8026372, FMNH), 1♂; same data, but "9-23 March 2001, MA-01-08A-03" (CASENT: 8038479, CAS), 1 ♀; same data, but "7-9 Apr 2001, MA-01-08A-05" (CASENT: 8038361, JJRC), 1♂, (CASENT: 8038362, FMNH), 1 ♂; same data, but "9-23 April 2001, MA-01-08A-06" (CASENT: 8026625, CAS), 1 ♂, (CASENT: 8038478, FMNH), 1 ♀; "Madagascar: Province d'Antananarivo, botanic garden near the entrance to Andasibe National Park, 23-30 April 2001 / 18° 55.58' S, 48° 24.47' E, collector: R. Harin'Hala, California Acad. of Sciences, malaise trap-tropical forest, elev 1025 m, MA-01-08B-01" (CASENT: 8026726, 8026728-9, CAS), 2 ♂♂, 1 ♀; same data, but "30 April-14 May 2001, MA-01-08B-02" (CASENT: 8026481-2, CAS), 1 ♂, 1 ♀; same data, but "14-21 May 2001, MA-01-08B-03" (CASENT: 8040433, CAS), 1 ♂; same data, but "21 May - 4 June 2001, MA-01-08B-04" (CASENT: 8037668, JJRC), 1 ♂, (CASENT: 8037665-6, 8037669, CAS), 3 ♀♀; same data, but "4-18 June 2001, MA-01-08B-05" (CASENT: 8037741, CAS), 1 ♀; same data, but "18-29 June 2001, MA-01-08B-06" (CASENT: 8039012, FMNH), 1 ♂, (CASENT: 8040725, 8040729, CAS), 1 ♂, 1 ♀; same data, but "29 June - 14 July 2001, MA-01-08B-07" (CASENT: 8026318), 1 ♂ (CAS); same data, but "14-31 July 2001, MA-01-08B-08" (CASENT: 8026803, CAS), 1 ♂; same data, but "31 July-15 Aug 2001, MA-01-08B-09" (CASENT: 8026576, FMNH), 1 ♀, (CASENT: 8026582, 8026585, 8026592-3, CAS), 2 ♂♂, 2 ♀♀; same data, but "15 Aug - 1 Sept 2001, MA-01-08B-10" (CASENT: 8026669, CAS), 1 ♀; "Madagascar: Province d'Antsiranana, Parc National Montagne d'Ambre, 960 m / 12 Feb to 4 April 2001, 12° 30' 52 S", 49° 10' 53" E, R. Harin'Hala collector, malaise trap, MA-01-01A-07" (CASENT: 8039160, 8039163, CAS), 1 ♂, 1 ♀; "Madagascar: Province d'Antsiranana, Parc National Montagne d'Ambre, 975 m, 25 Jan to 11 Feb 2001/ 12° 31' S, 49° 11' E, M.E. Irwin, E.I. Schlinger & R. Harin'Hala collectors, malaise trap, MA-01-01B-04" (CASENT: 8037778, 8037802, 8037808, 8037812, 8037823, CAS), 3 ♂♂, 2 ♀♀, (CASENT: 8037777, 8037779, JJRC), 2 ♀♀; "Madagascar: Province



Figs 1–2. *Philonthus lecoqi* sp. nov., holotype ♂, 1 – habitus; 2 – head and pronotum.
Obr. 1–2. *Philonthus lecoqi* sp. nov., holotypus ♂, 1 – habitus; 2 – hlava a štít.

Diego-Suarez, dry forest 7 km N of Joffreville, 360 m / 20 March - 7 April 2001, 12° 20' S, 49° 15' E, R. Harin'Hala collector, malaise trap, MA-01-07-09" (CASENT: 8046067, CAS), 1 ♂; "Madagascar: Province Diego-Suarez, dry forest 7 km N of Joffreville, 360 m, 7-27 April 2001 / 12° 20' S, 49° 15' E, R. Harin'Hala collector, malaise trap, MA-01-07-10" (CASENT: 8026194, 8026216, 8026243, 8026265, 8026277, CAS), 4 ♂♂, 1 ♀, (CASENT: 8026231, JJRC), 1 ♂; "Madagascar: Province Diego-Suarez, Sakalava Beach, dwarf littoral forest, 10m, 31 May-7 June 2001 / 12° 15' 46" S, 49° 23' 51" E, R. Harin'Hala collector, malaise trap - across sandy trail, MA-01-04B-11" (CASENT: 8044473, JJRC), 1 ♂; "Madagascar: Province Diego-Suarez, Sakalava Beach, dwarf littoral forest, 10 m, 20 - 28 Aug 2001 / 12° 15' 46" S, 49° 23' 51" E, R. Harin'Hala collector, malaise trap - across sandy trail, MA-01-04B-18" (CASENT: 8044408, JJRC), 1 ♂.

Description (n = 20: 10 males and 10 females)**.** Body length 7.3–9.8 mm (m = 8.6 mm, ht = 8.8 mm), length of forebody (from tip of closed mandibles to end of elytra) 3.9–5.1 mm (m = 4.4 mm, ht = 4.9 mm). Winged. Light reddish–yellow, antennomeres 4–11 darkened, 4, 5 and 9–11 reddish brown, 6–8 brown, tergite 7 in the middle with black oval or half-circle shaped black spot, never reaching to anterior, posterior margin or paratergites (Fig. 1).

Head (Fig. 2) transverse (width/length in males = 1.34–1.69, m = 1.52, ht = 1.51, in females = 1.24–1.31, m = 1.27), between eyes with 4 moderately coarse punctures, distance between medial punctures slightly larger than distance between medial and lateral punctu-

re. Posterior margin of each eye with 4 coarse punctures, internal temporal area each with two additional coarse punctures. Eyes longer than temples (length of eye/length of temple 1.28–1.69, m = 1.41, ht = 1.51), temples narrowed posteriad, posterior angles largely rounded. Dorsal surface with hardly visible, extremely fine transverse waves.

Antennae moderately long, reaching posterior sixth of pronotum when reclined, antennomere 5 on average as long as wide (length/width = 0.82–1.11, m = 0.96, ht = 1.03), antennomere 10 markedly transverse (length/width = 0.62–0.87, m = 0.73, ht = 0.77).

Pronotum approximately as long as wide (length/width = 0.95–1.01, m = 0.98, ht = 0.97), slightly narrowed anteriad. Each dorsal row with 6 punctures (exceptionally unilaterally with 5 punctures), distance between punctures variable, each sublateral row with 2 punctures. Surface without microsculpture. Scutellum coarsely and moderately densely punctured, interspaces among punctures in transverse direction on average as large as diameter of puncture. Surface with hardly visible, extremely fine transverse waves.

Elytra mostly slightly transverse (length/width 0.85–1.05, m = 0.92, ht = 0.91), markedly longer and larger than pronotum (length of elytra/length of pronotum 1.13–1.32, m = 1.21, ht = 1.24; width of elytra/width of pronotum 1.24–1.33, m = 1.29, ht = 1.33). Puncturation sparse and fine. Basal pubescence yellow, adjacent, with several long brown, erect setae arranged in five rows (one sutural row reaching to base, two dorsal rows, and two lateral rows at the deflexed side of elytra). Surface without microsculpture.

Abdomen finely and sparsely punctured, with yellow pubescence and several brown setae, more frequent on last tergites. Elevated area between two basal lines on first three visible tergites with 4–6 fine punctures. Surface with hardly visible, extremely fine transverse waves.

Legs. Metatibia about one tenth longer than metatarsus, meso- and metatibia with several long setae on external side. Metatarsomere 5 about a third longer than metatarsomere 1.

Male: protarsomeres 1–3 slightly dilated and sub-bilobed, each covered with modified pale setae ventrally, protarsomere 4 markedly narrower than preceding ones. Aedeagus length 1.03–1.24 mm (m = 1.14 mm, ht = 1.20 mm), median lobe with maximal width in apical third, moderately narrowed apicad, paramere long, narrower than median lobe with about 15–25 sensory peg setae arranged in two longitudinal series and about 7 short fine setae (Figs 3–6). Sternite 8 with wide emargination (Fig. 7). Sternite 9 deeply emarginate (Fig. 8). Tergite 10 with two strong bristles, subtruncate apically (Fig. 9).

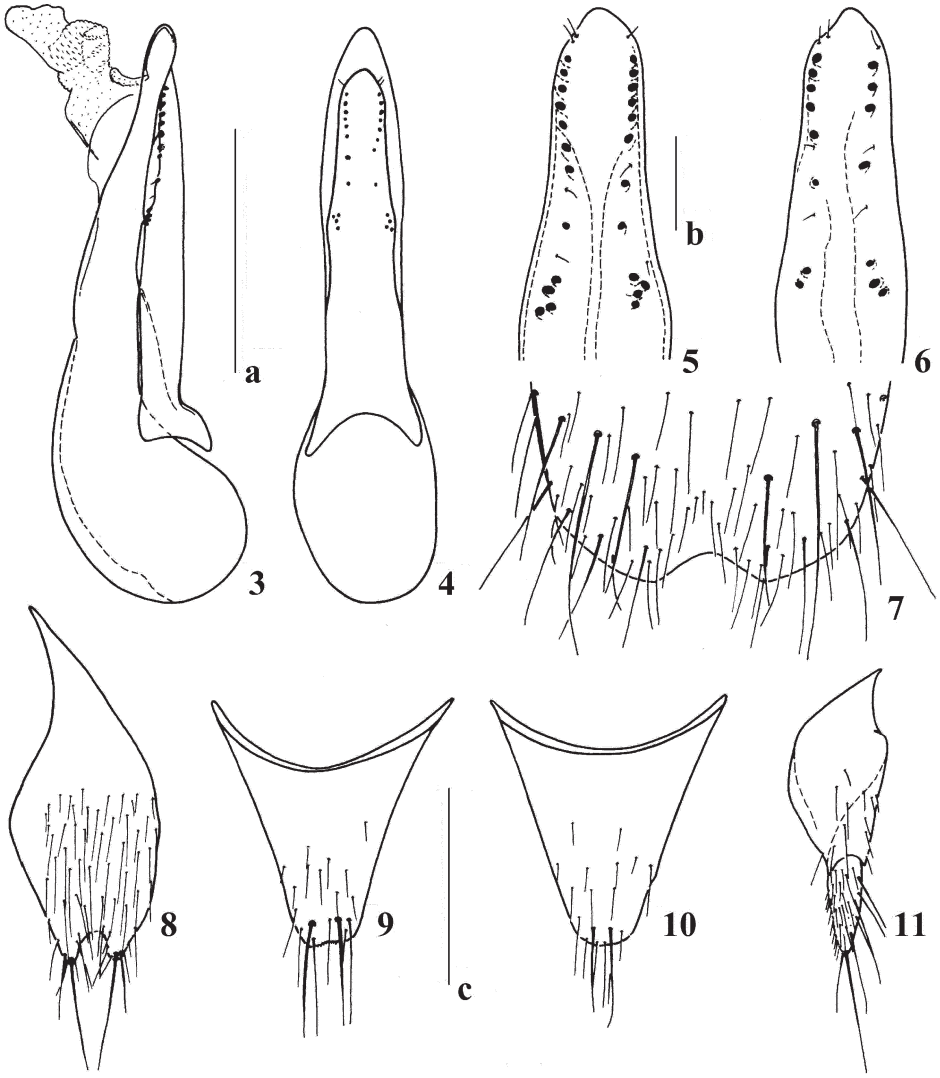
Female: protarsomeres 1–3 less dilated than those in male, each covered with modified pale setae ventrally, tergite 10 rounded apically (Fig. 10), gonocoxites relatively wide (Fig. 11).

Comparative notes. The new species belongs to the *P. rufus* group (Janák & Lecoq 2005) because it possesses the following characters: dorsal row with 6 punctures, coloration of body mostly reddish-yellow, infraorbital ridge absent, frontal ridge absent, mandibles long and narrow, meso- and metatarsi narrow, not flattened. It differs from all species of the group by light reddish-yellow head and scutellum and by the different shape of the aedeagus including the distribution of sensory pegs on the paramere.

Bionomics. All type specimens were collected in Malaise traps between January and September in tropical humid, dry and dwarf littoral forests.

Distribution. Madagascar: Provinces Diego Suarez (= Antsiranana): Montagne Francais NP, Montagne d'Ambre, Sakalava Beach, env. Joffreville, and Antananarivo: Andasibe NP.

Etymology. The new species is dedicated to Jean-Claude Lecoq on the occassion of his 75th birthday.



Figs 3–11. *Philonthus lecoqi* sp. nov. 3–5, 7–9: holotype ♂; 6: paratype ♂; 10, 11 paratype ♀; 3 – aedeagus, lateral; 4 – aedeagus, ventral; 5, 6 – apex of paramere with sensory peg setae, ventral; 7 – apical portion of male sternite 8; 8 – male sternite 9; 9 – male tergite 10; 10 – female tergite 10; 11 – gonocoxite of female genital segment. Scales: a, c = 0.5 mm (3 = 4, 7 = 8–11), b = 0.1 mm (5 = 6).

Obr. 5–13. *Philonthus lecoqi* sp. nov. 3–5, 7–9: holotypus ♂; 6: paratypus ♂; 10, 11 paratypus ♀; 3 – aedeagus laterálně; 4 – aedeagus ventrálně; 5, 6 – špice paramery s tuberkulami, ventrálně; 7 – apikální část samčího sternitu 8; 8 – samčí sternit 9; 9 – samčí tergit 10; 10 – samičí tergit 10; 11 – gonocoxit samičího genitálního segmentu. Měřítka: a, c = 0,5 mm (3 = 4, 7 = 8–11), b = 0,1 mm (5 = 6).

Philonthus fasciiventris Lecoq, 1997

Material examined. Madagascar: Province d'Antananarivo, 7 km SE of Andasibe National Park headquarters, 7–22.i.2001, 18°55.76'S, 48°27.16'E, collector: R. Harin'Hala, Malaise trap in tropical forest, elev. 1050 m, 1 ♂ (JJRC); 22.i.–9.iii.2001, 1 ♀ (CAS); 7–9.iv.2001, 1 ♀ (CAS); 9–23.iv.2001, 6 ♂♂, 3 ♀♀ (CAS, JJRC); botanic garden near the entrance to Andasibe National Park, 23–30.iv.2001, 18°55.58'S, 48°24.47'E, collector: R. Harin'Hala, Malaise trap-tropical forest, elev. 1025 m, 1 ♂ (CAS); 30.iv.–14.v.2001, 1 ♀ (CAS); 21.v.–4.vi.2001, 1 ♀ (CAS); 18–29.vi.2001, 2 ♂♂, 2 ♀♀ (CAS, FMNH); 14–31.vii.2001, 1 ♂, 1 ♀ (CAS, JJRC);1–5.ix.2001, 1 ♂ (JJRC); 5–19.ix.2001, 1 ♀ (CAS); Province Diego-Suarez, dry forest 7 km N of Joffreville, 360 m, 7–27.iv.2001, 12°20'S, 49°15'E, R. Harin'Hala collector, Malaise trap, 18 ♂♂, 18 ♀♀ (CAS, FMNH, JJRC); Montagne Francais, elev. 150 m, 15.ii.–6.iii.2001, 12°18'08''S, 49°38'51''E, R. Harin'Hala coll., Malaise along forested limestone ridge, 5 ♂♂, 3 ♀♀ (CAS, JJRC); Parc National Montagne d'Ambre, 975 m, 25.i.–11.ii.2001, 12°31'S, 49°11'E, M. E. Irwin, E. I. Schlinger & R. Harin'Hala collectors, Malaise trap, 3 ♂♂, 6 ♀♀ (CAS, JJRC); Parc National Montagne d'Ambre, 960 m, 4–12.iii.2001, 12°30'52''S, 49°10'53''E, R. Harin'Hala collector, Malaise trap, 1 ♂ (CAS); Sakalava Beach, dwarf littoral forest, 10 m, 31.v.–7.vi.2001,12°15'46''S, 49°23'51''E, R. Harin'Hala collector, Malaise trap - across sandy trail, 2 ♂♂, 1 ♀ (CAS, JJRC); 20–28.vii.2001, 5 ♂♂, 3 ♀♀ (CAS, FMNH, JJRC); 28.vii.–13.viii.2001, 2 ♀♀ (JJRC); 13 –20.viii.2001, 2 ♂♂, 4 ♀♀ (CAS).

Philonthus flaviventris Lecoq, 1997

Material examined. Madagascar: Province d'Antananarivo, botanic garden near the entrance to Andasibe National Park, 23–30.iv.2001, 18°57.76'S, 48°27.16'E, collector: R. Harin'Hala, Malaise trap-tropical forest, elev. 1050 m, 6 ♂♂ (CAS, FMNH, JJRC); 18–29.vi.2001, 1 ♂, 1 ♀ (CAS, FMNH); 14–31.vii.2001, 1 ♂ (CAS); 15.viii.–1.ix.2001, 2 ♂♂ (CAS, JJRC); 19–26.ix.2001, 1 ♂ (JJRC); 7 km SE of Andasibe National Park headquarters, 23.iii.–7.iv.2001, 18°57.76'S, 48°27.16'E, collector: R. Harin'Hala, Malaise trap-tropical forest, elev. 1050 m, 1 ♂ (CAS); 7–9.iv.2001, 1 ♂ (CAS); 9–23.iv.2001, 3 ♂♂, 4 ♀♀ (CAS, JJRC); Province Diego-Suarez, dry forest 7 km N of Joffreville, 360 m, 20.iii.–7.iv.2001, 12°20'S, 49°15'E, R. Harin'Hala collector, Malaise trap, 2 ♂♂, 3 ♀♀ (CAS, JJRC); 7–27.iv.2001, 21 ♂♂, 19 ♀♀ (CAS, FMNH, JJRC); Montagne Francais, elev. 150 m, 15.ii.–6.iii.2001, 12°18'08''S, 49°38'51''E, R. Harin'Hala coll.,Malaise trap along forested limestone ridge, 19 ♂♂, 8 ♀♀ (CAS, FMNH, JJRC); Parc National Montagne d'Ambre, 975 m, 25.i.–11.ii.2001, 12°31'S, 49°11'E, M. E. Irwin, E. I. Schlinger & R. Harin'Hala collectors, Malaise trap, 21 ♂♂, 18 ♀♀ (CAS, FMNH, JJRC); Sakalava Beach, dwarf littoral forest, 10 m, 13–20.viii.2001, 12°15'46''S, 49°23'51''E, R. Harin'Hala collector, Malaise trap - across sandy trail, 2 ♂♂, 1 ♀ (CAS, JJRC); 20–28.viii.2001, 4 ♂♂, 6 ♀♀ (CAS, FMNH, JJRC).

Philonthus fungicelebrans Janák et Lecoq, 2005

Material examined. Madagascar: Province d'Antananarivo, Ambohitantely Spec. Res., 18°11'48.6''S, 47°17'05.7''E, 1535m, FIT in dense forest, 17.–25.xi.2001, P. Baňař lgt., 3 ♂♂, 8 ♀♀ (MZM, JJRC).

Philonthus laticornis Bernhauer, 1906

Material examined. Madagascar: Province Fianarantsoa, Ranomafana National Park, Talatakely research laboratory area, blacklight - mercury vapor, 940 m, 21°14'53.5''S, 47°25'36.9''E, 31.x.–20.xii.1998, V.F. Lee, K.J. Ribardo leg., 1 ♀ (CAS).

Philonthus nigroscutellatus Lecoq, 1997

Material examined. Madagascar: Province d'Antananarivo, 7 km SE of Andasibe National Park headquarters, 9–23.iii.2001, 18°55.76'S, 48°27.16'E, collector: R. Harin'Hala, Malaise trap in tropical forest, elev. 1050 m, 1 ♀ (CAS); 23.iii.–7.iv.2001, 1 ♂, 1 ♀ (CAS); 7–9.iv.2001, 1 ♀ (CAS); 9–23.iv.2001, 1 ♂ (CAS); botanic garden near the entrance to Andasibe National Park, 23–30.iv.2001, 18°55.58'S, 48°24.47'E, collector: R. Harin'Hala, Malaise trap-tropical forest, elev. 1025 m, 1 ♂ (CAS); 14–21.v.2001,1 ♂, 3 ♀♀ (CAS, JJRC); 4–18.vi.2001 (CAS, JJRC); 18–29.vi.2001, 3 ♂♂, 1 ♀ (CAS); 31.vii.–15.viii.2001, 2 ♂♂ (CAS, JJRC); Province Diego-Suarez, dry forest 7 km N of Joffreville, 360 m, 20.iii.–7.iv.2001, 12°20'S, 49°15'E, R. Harin'Hala collector, Malaise trap, 1 ♂, 3 ♀♀ (CAS); 7–27.iv.2001, 6 ♂♂, 4 ♀♀ (CAS, FMNH, JJRC); Montagne Francais, elev. 150 m, 15.ii.–6.iii.2001, 12°18'08''S, 49°38'51''E, R. Harin'Hala coll. Malaise along forested limestone ridge, 2 ♂♂, 2 ♀♀ (CAS, JJRC); Parc National Montagne d'Ambre, 975 m, 25.i.–11.ii.2001, 12°31'S, 49°11'E, M. E. Irwin, E. I. Schlinger & R. Harin'Hala collectors, Malaise trap, 1 ♂, 6 ♀♀ (CAS, FMNH, JJRC); Sakalava Beach, dwarf littoral forest, 10 m, 13–20.viii.2001, 12°15'46''S, 49°23'51''E, R. Harin'Hala collector, Malaise trap - across sandy trail, 2 ♂♂, 1 ♀ (CAS); 28.vii.–13.viii.2001, 2 ♀♀ (CAS, JJRC); Province Toliara, Parc National d'Andohahela, col du Sedro, 3.8 km 113° ESE Mahamavo, 37.6 km 341° NNW Tolagnaro, 21–25.i.2002, 24°45'50''S, 46°45'06''E, coll: Fisher, Griswold et al., Malaise trap - in montane rain-forest, elev. 900 m, 1 ♀ (CAS); Réserve Spéciale de Cap Sainte Marie, 12.3 km 262° W Marovato, elev. 200m, 11–15.ii.2002, 25°34'54''S, 45°10'06''E, coll: Fisher, Griswold et al., beating low vegetation, spiny forest thicket, 1 ♂ (CAS).

Philonthus rufus Fauvel, 1898

Material examined. Madagascar: Province d'Antananarivo, Andasibe (Périnet),18°56'S, 48°25'E, 6.xii.1998, E-Y:3355, groundtraps, leg. R. Müller, 1 ♂, 2 ♀♀ (TMP, JJRC); 7 km SE of Andasibe National Park headquarters, 22.i.–9.iii.2001, 18°55.76'S, 48°27.16'E, collector: R. Harin'Hala, Malaise trap in tropical forest, elev. 1050 m, 1 ♀ (FMNH); botanic garden near the entrance to Andasibe National Park, 23–30.iv.2001,18°55.58'S, 48°24.47'E, collector: R. Harin'Hala, Malaise trap-tropical forest, elev. 1025 m, 1 ♂ (FMNH); 1–5.ix.2001, 1 ♀ (CAS); 21.v.–4.vi.2001, 1 ♂ (CAS); 14–31.vii.2001, 1 ♂ (CAS); 31.vii.–15.viii.2001, 1 ♂ (CAS); Province Fianarantsoa: Ranomafana N.P., 16.iv.2011, ~1125m, sifting forest litter on old road, Winkler app. extraction, P. Bañař lgt., 1 ♂ (JJRC); Ranomafana National Park, Talatakely area, 900 m, mixed tropical forest,2–22.i.2001, 21.25041°S, 47.41945°E, D.H. & K.M. Kavanaugh, R.I. Brett, E. Elsom, F. Vargas, R. Rasoamananana, T.J. Ravelomanana and H.C. Raveloson collectors, 4 ♂♂, 2 ♀♀ (CAS, JJRC); Province Diego-Suarez, Montagne Francais, elev. 150 m, 30.i.–15.ii.2001, 12°18'08''S, 49°38'51''E, R. Harin'Hala coll., Malaise along

forested limestone ridge, 1 ♂ (CAS); 15.ii.–6.iii.2001,1 ♂ (JJRC); Parc National Montagne d'Ambre, 960 m, 12.ii.–4.iii.2001, 12°30'52''S, 49°10'53''E, R. Harin'Hala collector, Malaise trap, 1 ♀ (CAS); Sakalava Beach, dwarf littoral forest, 10 m, 28.vii.–13.viii.2001, 12°15'46''S, 49°23'51''E, R. Harin'Hala collector, Malaise trap - across sandy trail, 1 ♀ (CAS).

Philonthus tergomaculatus Lecoq, 1997

Material examined. Madagascar: Province Diego-Suarez, dry forest 7 km N of Joffreville, 360 m, 16–31.v.2001, 12°20'S, 49°15'E, R. Harin'Hala collector, Malaise trap, 1 ♂, 1 ♀ (CAS); Antsahampano env., W Antsiranana, 18.i.2003, Ivo Jeniš leg.,1 ♂ (JJRC).

Philonthus vadoni Lecoq, 1997

Material examined. Madagascar: Province d'Antananarivo, botanic garden near the entrance to Andasibe National Park, 4–18.vi.2001, 18°55.58'S, 48°24.47'E, collector: R. Harin'Hala, Malaise trap-tropical forest, elev. 1025 m, 1 ♀ (CAS); 31.vii.–15.viii.2001, 1 ♂ (JJRC); Province Diego-Suarez, dry forest 7 km N of Joffreville, 360 m, 20.iii.– 7.iv.2001, 12°20'S, 49°15'E, R. Harin'Hala collector, Malaise trap, 1 ♂ (CAS); 7–27.iv.2001, 2 ♂♂, 1 ♀ (CAS, JJRC); Montagne Francais, elev. 150 m, 30.i.–15.ii.2001, 12°18'08''S, 49°38'51''E, R. Harin'Hala coll. Malaise along forested limestone ridge, 1 ♀ (CAS).

Key to species of *Philonthus rufus* group

1. Head and pronotum reddish-yellow. 2
- Head black or dark brown. 4
2. Scutellum reddish. Tergite 7 with transverse oval or half-circle shaped black maculation (Fig. 1). Aedeagus as in Figs 5–6. ..... *P. lecoqi* sp. nov.
- Scutellum black or dark brown. Tergite 6 unicoloured reddish-yellow, only tergite 7 with transverse black strip. Paramere of aedeagus wider or slightly narrower than median lobe. 3
3. Tergite 7 with transverse black strip overlapping distinctly reflexed sides of sternite 7. Paramere of aedeagus narrowed towards the tip, moderately shorter than median lobe (Lecoq 1997: figs 9–11). ..... *P. tergomaculatus* Lecoq, 1997
- Tergite 7 with transverse black strip overlapping only slightly the reflexed sides of sternite 7. Paramere of aedeagus very wide, racquet-shaped, longer than median lobe (Lecoq 1997: fig. 21) ..... *P. robinsoni* Lecoq, 1997
4. Scutellum black or dark brown. 5
- Scutellum reddish-yellow. 6
5. Tergite 7 with wide transverse black strip. 7
- Tergite 7 with wide transverse elliptic black maculation of variable size, rarely tergite 7 unicoloured reddish-yellow. Aedeagus as in figs 1–3 in Lecoq (1997). ..... *P. nigroscutellatus* Lecoq, 1997
6. Tergite 7 with transverse black strip overlapping distinctly reflexed sides of sternite 7. Paramere of aedeagus slightly shorter than median lobe, tip rounded or with short point. Paramere of aedeagus large, with numerous peg setae forming two irregular series (Janák & Lecoq 2005: figs 1–4). ..... *P. fungicelebrans* Janák et Lecoq, 2005
- Tergite 7 with transverse black strip overlapping only slightly the reflexed sides of sternite 7. Paramere of aedeagus distinctly shorter than median lobe, fishtail-shaped, with peg setae distributed only at posterior margin (Lecoq 1997: figs 12, 13). ..... *P. fasciiventris* Jarrige, 1948
7. Tergite 7 with more or less large transverse elliptic black maculation. 8
- Tergite 7 unicoloured reddish-yellow. 9

8. Paramere of aedeagus moderately shorter and narrower than median lobe, lateral margins slightly sinuous and sub-parallel, le tip rounded or slightly pointed, most of sensory peg setae arranged in two lateral groups reached nearly to the middle of paramere (Lecoq 1997: figs6–8). ..... *P. rufus* Fauvel, 1898
- Paramere of aedeagus much shorter than median lobe, narrowed in the middle and dilated apicad, most of sensory peg setae located in apical third and accumulated closely to the margin (Lecoq 1997: fig. 17). .... *P. kremeni* Lecoq, 1997
9. Base of first abdominal tergites scarcely punctured. Antennomeres 6–10 hardly transverse. Aedeagus with paramere slightly narrower than median lobe with large number of peg setae (Lecoq 1997: figs 4, 5). .... *P. flaviventris* Jarrige, 1948
- Base of first abdominal tergites densely punctured. Antennomeres 6–10 distinctly transverse. 10
10. Antennomeres 5–10 black, segment 11 reddish-yellow. Paramere of aedeagus distinctly shorter and narrower than median lobe, which is regularly narrowed toward the tip. Sensory peg setae less numerous, about twelve, located apically (Lecoq 1997: figs18–20). ..... *P. laticornis* Bernhauer, 1906
- Antennae reddish-yellow, middle segments slightly darkened. Paramere of aedeagus distinctly longer, at least as wide as apically trunctate median lobe. Sensory peg setae more numerous, arranged in reverse Y-shaped area (Lecoq 1997: figs14–16) . ..... *P. vadoni* Lecoq, 1997

Philonthus bicoloripennis species group

Philonthus tergobimaculatus sp. nov. (Figs 12–21)

Type material. Holotype ♂: "SW Madagascar, Morondava distr., Kirindy Forest, 5.-8.1.2002, D. Hauck lgt." (JJRC). Paratype ♀: same data as holotype (JJRC).

Description (ht, pt)**.** Body length 7.1–8.4 mm (ht = 7.1 mm), length of forebody (from tip of closed mandibles to end of elytra) 3.7–4.4 mm (ht = 3.7 mm). Light reddish brown to dark reddish yellow, basal area of tergites 3–5 sometimes slightly darkened, tergite 6 with transverse black spot, tergite 7 with transverse black strip overlapping distinctly reflexed sides of sternite 7, abdominal segment 8 light orange-yellow, scutellum black, legs and mouthparts yellow, antennomeres 4–11 darkened, 4 and 10 partly brownish, 5–9 brown.

Head transverse (width/length = 1.25 (pt) – 1.31 (ht), between eyes with 4 coarse equidistant punctures. Eyes longer than temples (length of eye/length of temple 1.74 (pt) – 1.91 (pt), temples slightly narrowed posteriad, posterior angles largely rounded. Posterior margin of each eye with 4–5 coarse punctures, internal temporal area each with 3–4 additional coarse punctures. Infraorbital ridge present. Dorsal surface with hardly visible, extremely fine transverse waves.

Antennae relatively short, reaching only posterior quarter of pronotum when reclined, antennomere 5 moderately transverse (length/width = 0.68 (pt) – 0.78 (ht)), antennomere 10 markedly transverse (length/width = 0.60 (ht) – 0,61 (pt)).

Pronotum slightly transverse (length/width = 0.93 (pt) – 0.95 (ht), slightly narrowed anteriad. Each dorsal row with 6–8 punctures, each sublateral row with 2–3 punctures, between each dorsal and sublateral row in posterior half of pronotum sometimes additional 1–2 punctures. Surface without microsculpture. Scutellum coarsely and densely punctured, interspaces among punctures in transverse direction often smaller than diameter of puncture. Surface with hardly visible, extremely fine transverse waves.

Elytra markedly transverse (length/width 0.87 (pt) – 0.88 (ht)), longer and larger than pronotum (length of elytra/length of pronotum 1.11 (ht, pt); width of elytra/width of pronotum 1.19 (ht, pt)). Puncturation moderately sparse and coarse. Surface without microsculpture.



Figs 12–13. *Philonthus tergobimaculatus* sp. nov., paratype ♀, 12 – habitus; 13 – head and pronotum.
Obr. 12–13. *Philonthus tergobimaculatus* sp. nov., paratypus ♀, 12 – habitus; 13 – hlava a štít.

Abdomen finely and sparsely punctured, punctures on base of tergite 3 moderately coarse. Elevated area between two basal lines on first three visible tergites with 4–6 fine punctures. Surface with hardly visible, extremely fine transverse waves.

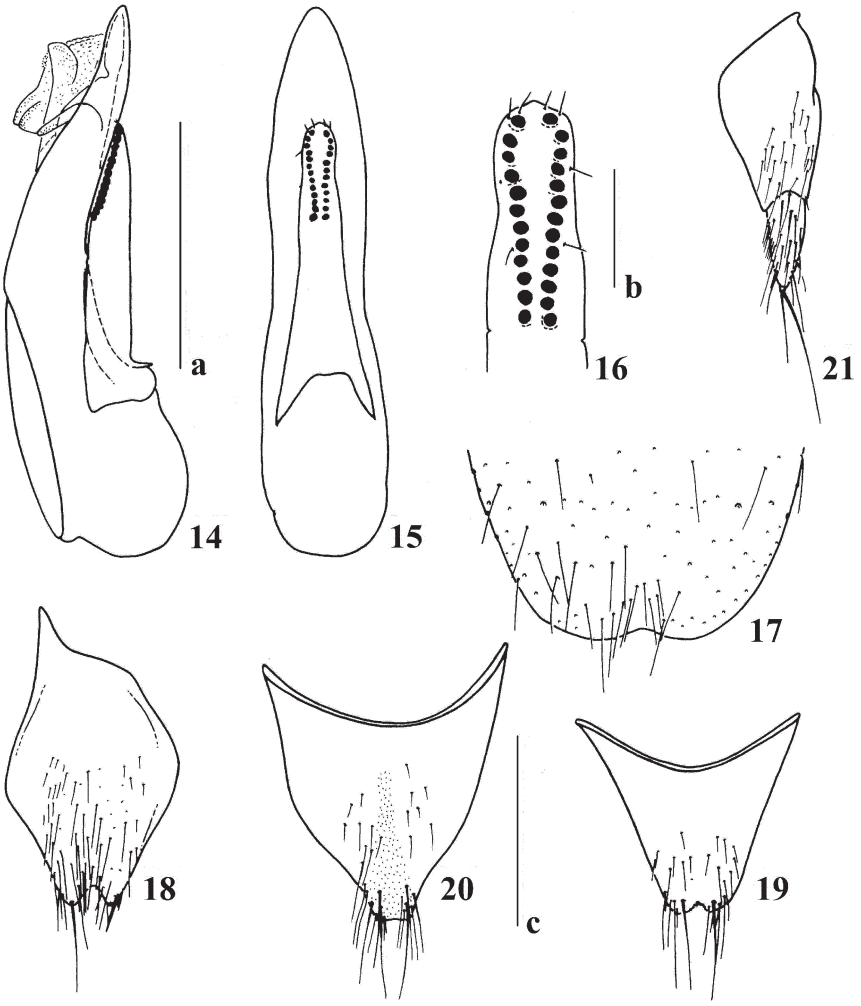
Legs. Metatibia about as long as metatarsus, meso- and metatibia with several long setae on external side. Metatarsomere 5 about a third longer than metatarsomere 1.

Male: protarsomere 1–3 slightly dilated and sub-bilobed, each covered with modified pale setae ventrally, protarsomere 4 markedly narrower than preceding ones. Aedeagus length 1.1 mm, median lobe with maximal width in apical third, moderately narrowed apicad, paramere moderately long, narrower than median lobe, with 25 sensory peg setae arranged in two longitudinal series and 8 short fine setae (Figs 14–16). Sternite 8 slightly emarginate (Fig. 17). Sternite 9 deeply emarginate (Fig. 18). Tergite 10 with two strong bristles, emarginate apically (Fig. 19).

Female: protarsomere 1–3 less dilated than those in male, each covered with modified pale setae ventrally, tergite 10 wide, subtruncate apically (Fig. 20), gonocoxites relatively wide (Fig. 21).

Comparative notes. The new species belongs to the *Philonthus bicoloripennis* group (Hromádka 2010), which is characterised by presence of infraorbital ridge and differs from all species of the group by reddish head, by the different shape of aedeagus and distribution of sensory pegs on the paramere.

Bionomics. Both type specimens were collected in January in dry forest.
Distribution. Madagascar: Province Morondava: Kirindy forest.
Etymology. The name of the new species refers to two spots on abdominal tergites.



Figs 14–21. *Philonthus tergobimaculatus* sp. nov. 14–19: holotype ♂; 20, 21 paratype ♀; 14 – aedeagus, lateral; 15 – aedeagus, ventral; 16 – apex of paramere with sensory peg setae, ventral; 17 – apical portion of male sternite 8; 18 – male sternite 9; 19 – male tergite 10; 20 – female tergite 10; 21 – gonocoxite of female genital segment. Scales: a, c = 0.5 mm (14 = 15, 17 = 18–21), b = 0.1 mm (16).
Obr.14–21. *Philonthus tergobimaculatus* sp. nov. 14–19: holotypus ♂; 20, 21 paratypus ♀; 14 – aedeagus laterálně; 15 – aedeagus ventrálně; 16 – špice paramery s tuberkulami, ventrálně; 17 – apikální část samčího sternitu 8; 18 – samčí sternit 9; 19 – samčí tergit 10; 20 – samičí tergit 10; 21 – gonocoxit samičího genitálního segmentu. Měřítka: a, c = 0,5 mm (14 = 15, 17 = 18–21), b = 0,1 mm (16).

Philonthus syncerus Hromádka, 2005

Material examined. Madagascar Ouest, Katsepy (Majunga), 5.ii.2002, leg. J. Bašta, 1 ♀ (JJRC); same data, but 24–31.xii.1997, leg. J. Moravec, 2 ♀♀ (JJRC). All det. L. Hromádka.
Distribution. Angola, Botswana, Chad, Ethiopia, Malawi, Namibia, South Africa, Zambia, Zimbabwe (Hromádka 2005, 2010). First record from Madagascar.
Bionomics. Most specimens from Africa south of Sahara were collected at light. Specimens from Madagascar were very probably collected at light as well.

Philonthus taphozous Hromádka, 2010
(Fig. 22)

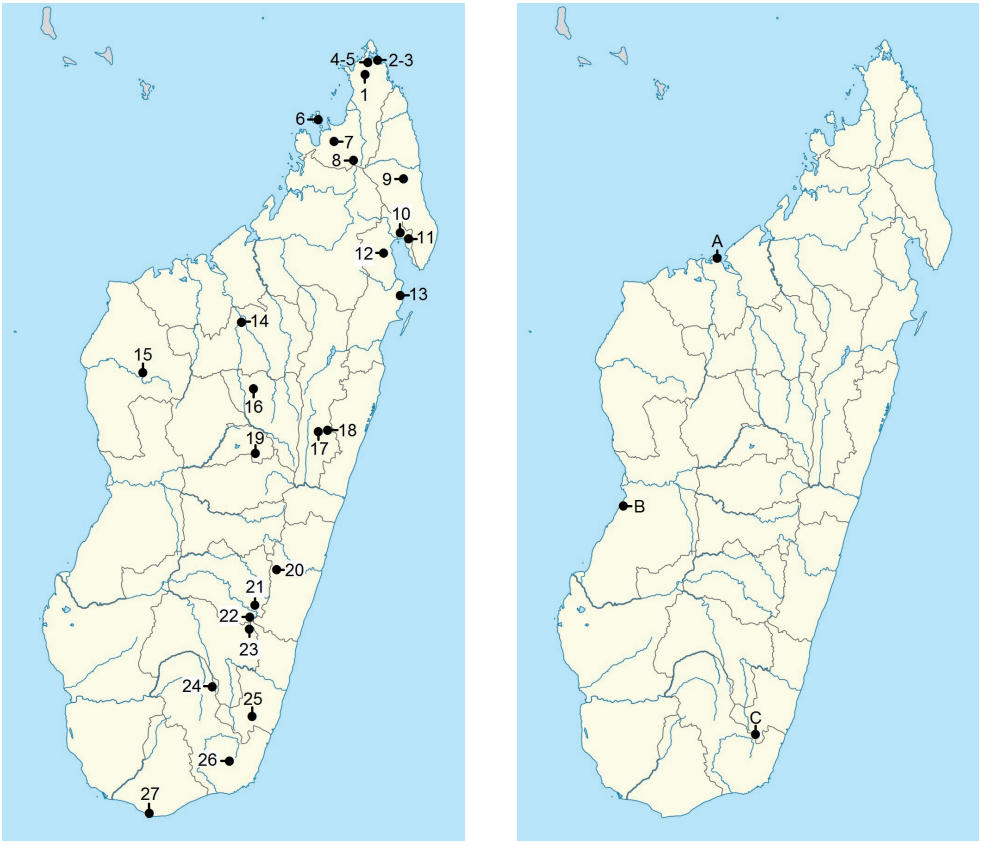
Type material. Holotype ♀: SE Madagascar: 21 km NE of Esira, Col de Marotaolana env., 800–1200 m, 13.ii.2004, 24° 14' S, 48° 53' E, J. Janák lgt. (JJRC).
Distribution. Madagascar: Province Fort Dauphin: Col de Marotaolana env. (southern slopes of Chaînes Anosyennes).
Bionomics. The holotype was collected in droppings of Zebu (Madagascan cattle) in a pasture situated on southern slopes of Mt. Marotaolana together with a species of the genus *Thyreocephalus* Guérin-Méneville, 1844 (Fig. 22).
Note. The depository of holotype published in Hromádka (2010) was erroneous.



Fig. 22. Southern slopes of Mt. Marotaolana (Chaînes Anosyennes) – type locality of *Philonthus taphozous* Hromádka, 2010. Arrow indicate a place, where the holotype was collected.
Obr. 22. Jižní svah vrchu Marotaolana (Anosyenský hřeben) – typická lokalita *Philonthus taphozous* Hromádka, 2010. Šipka ukazuje místo, kde byl nalezen holotyp.

Key to Madagascan species *Philonthus bicoloripennis* group

1. Head reddish. Aedeagus as in Figs 14–15. ..... *P. tergobimaculatus* sp. nov.
- Head black. 2
2. Elytra with shoulders black and posterior half reddish, pronotum reddish brown. Aedeagus as in fig. 151, female tergite 10 as in fig. 156 in Hromádka (2010). ..... *P. syncerus* Hromádka, 2005
- Elytra and pronotum yellowish. Male unknown, female tergite 10 as in fig. 159 in Hromádka (2010). .... *P. taphozous* Hromádka, 2010



Figs 23–24. 23 – Distribution of *Philonthus rufus* group; 24 – Distribution of Madagascan species of *Philonthus bicoloripennis* group (A – *P. syncerus* Hromádka, 2005; B – *P. tergobimaculatus* sp. nov.; C – *P. taphozous* Hromádka, 2010).
Obr. 23–24. 23 – Rozšíření skupiny *Philonthus rufus*; 24 – Rozšíření malgašských druhů skupiny *Philonthus bicoloripennis* (A – *P. syncerus* Hromádka, 2005; B – *P. tergobimaculatus* sp. nov.; C – *P. taphozous* Hromádka, 2010).

DISCUSSION

Distribution of the *Philonthus rufus* group

The hitherto known distribution of the *Philonthus rufus* group is mapped in Fig. 23 with localities numbered and listed below. The low number of records of *P. rufus* group in relation to the number of localities where Staphylinidae have been collected in Madagascar is noteworthy. From most localities where this species group was recorded, there were records of several species.

List of species and localities

1 – Montagne Ambre; 2 – Montagne Francais; 3 – Sakalava Beach; 4 – Antsahampano; 5 – Joffreville; 6 – Nosy Be; 7 – Ambodidimaka; 8 – Tsaratanana; 9 – Marojejy; 10 – Ambodivoangy; 11 – Ambohitsitondriona; 12 – Beanana; 13 – Antanambe; 14 – Maevatanana; 15 – Morafenobe; 16 – Ambohitantely; 17 – Moramanga ; 18 – Andasibe (= Périnet); 19 – Manjakatompo; 20 – Ranomafana; 21 – Ambondrombe; 22 – Andringitra; 23 – Ivohibe; 24 – Vohitrosa; 25 – Midongy Sud; 26 – Andohahela; 27 – Cap St. Marie.

P. fasciiventris Jarrige, 1948	1, 2, 3, 5, 16, 18, 22
P. flaviventris Jarrige, 1948	1, 2, 3, 5, 8, 18
P. fungicelebrans Janák et Lecoq, 2005	16, 24
P. kremeni Lecoq, 1997	20
*P. laticornis*Bernhauer, 1906	9, 12, 19, 20, 21, 23
P. lecoqi sp. nov.	1, 2, 3, 5, 18
P. nigroscutellatus Lecoq, 1997	1, 2, 3, 5, 17, 18, 20, 25, 26, 27
P. robinsoni Lecoq, 1997	6
P. rufus Fauvel, 1898	1, 2, 3, 10, 11, 12, 13, 15, 17, 18, 20
P. tergomaculatus Lecoq, 1997	1, 4, 5, 6, 8, 10, 14
P. vadoni Lecoq, 1997	1, 2, 5, 18

Comments on the bionomics and phenology of the *Philonthus rufus* group

Specimens collected by hand and sifting are usually taken from fungi or forest litter with fungal mycelium (Janák & Lecoq 2005, personal observations and Ivo Jeniš, pers. comm.). A lot of recently collected specimens were taken in Malaise traps. In Andasibe National Park the Malaise traps were exposed continuously from 7 January to 26 September, the number of collected specimens per trap is recorded in Fig. 25. Most specimens were collected at the end of the rainy season and the beginning of the dry season (April–June).

Distribution of the Madagascan species of the *Philonthus bicoloripennis* group

The hitherto known distribution is mapped in Fig. 24. Each species is only known from one locality. Two localities are situated at the west coast, the third one is on the southern slope of Chaînes Anosyennes in south-eastern part of Madagascar.

ACKNOWLEDGEMENTS. The author thanks all colleagues mentioned in the Materials and Methods section for the loan of material under their care: Margaret Thayer (Field Museum, Chicago, USA) for sorting and sending the specimens from CAS, and Jaroslav Bašta (Brno, Czech Republic), David Hauck (České Budějovice, Czech Republic), Ivo Jeniš (Náklo, Czech Republic) and Jiří Moravec (Adamov, Czech Republic) for donating Madagascan Staphylinidae from their trips. Special thanks are due to Pavel Krásenský (Chomutov, Czech Republic) for digital photography of the type specimens and Pavel Vonička (Liberec, Czech Republic) for the picture of the type locality of *P. taphozous*. Alexey Solodovnikov (Natural History Museum of Denmark, Copenhagen, Denmark) as referee and Jan Růžička (Czech University of Life Sciences Prague, Prague, Czech Republic) as editor, provided critical comments on the final version of the manuscript. Their support is gratefully acknowledged.

REFERENCES

HROMÁDKA L. 2005: New species of the genus Philonthus Stephens, 1829 from Aftrotropical region (Coleoptera, Staphylinidae, Philonthini). *Coleoptera* **9**: 109–116.

HROMÁDKA L. 2010: Revision of the Afrotropical species of the Philonthus (Philonthus) bicoloripennis species group (Coleoptera: Staphylinidae: Philonthina). *Klapalekiana* **46**: 3–68.

JANÁK J. & LECOQ J. C. 2005: Une nouvelle espèce et de nouvelles récoltes des espèces du groupe de Philonthus rufus Fauvel de Madagascar (Coleoptera, Staphylinidae, Philonthina). *Nouvelle Revue d'Entomologie (Nouvelle Série)* **21** (2004): 287–291.

LECOQ J.-C. 1997: Les "Philonthus jaunes" de Madagascar. Révision et description de nouvelles espèces (Coleoptera, Staphylinidae). *Bulletin de la Société Entomologique de France* **102**: 279–286.

VIETTE P. 1991: Principales localités où des Insectes ont été recuiellis à Madagascar. *Faune de Madagascar, supplément 2*. Privately published by the author. 88 pp.

SOUHRN

Rod *Philonthus* Stephens, 1829 v současné době tvoří více než 1350 druhů, vyskytujících se ve všech zoogeografických oblastech (s výjimkou polárních oblastí). Na Madagaskaru je tento rod zastoupen pouze asi 30 druhy, zatímco z tropické Afriky (jižně od Sahary) je známo více než 450 druhů (nepublikovaný autorův checklist).

V článku jsou popsány dva nové druhy, jeden ze skupiny *Philonthus rufus*, která byla definována Janákem & Lecoqem (2005) a zahrnuje do současné doby 10 převážně červenožlutě zbarvených druhů, žijích pouze na Madagaskaru. Druhý druh je popisován ze skupiny *Philonthus bicoloripennis*, definované Hromádkou (2010) a vyznačující se zejména výraznou brázdou lemující spodní okraj oka a pokračující směrem k zadním rohům hlavy. Tato skupina dosud obsahuje 40 afrotropických druhů a 1 poddruh, z nichž pouze 1 druh byl dosud znám z Madagaskaru. V poslední době byl získán další materiál obou těchto skupin z Madagaskaru (kolem 400 exemplářů), sbíraný především R. Harin'Halou, Brianem Fisherem (CAS), Davidem Kavanaughem (CAS), Petrem Baňařem (MZM) a jejich spolupracovníky, dále Ruth Müllerovou (TMP), Jaroslavem Baštou (Brno), Davidem Hauckem (České Budějovice), Ivo Jenišem (Náklo) a Jiřím Moravcem (Adamov).

Philonthus lecoqi sp. nov. patřící do skupiny *P. rufus* se liší od všech ostatních druhů skupiny světle červenožlutou hlavou a štítkem a rovněž odlišným tvarem aedeagu a rozmístěním tuberkul na parameře. Všechny typické exempláře byly sbírány pomocí Malaiseho pastí od ledna do září ve vlhkých tropických, suchých a pobřežních lesích v provinciích Diego Suarez (Montagne Francais NP, Montagne d'Ambre, Sakalava Beach, env. Joffreville) a Antananarivo (Andasibe NP). Tento druh je věnován kolegovi Jean-Claudu Lecoqovi u příležitosti jeho 75. narozenin.

Philonthus tergobimaculatus sp. nov. patřící do skupiny *P. bicoloripennis* se liší od všech ostatních druhů skupiny červenavou hlavou a odlišných tvarem aedeagu a rozmístěním tuberkul na parameře. Oba typové exempláře byly nalezeny v lednu v suchém lese Kirindy, ležícím v provincii Morondava. Tento druh byl pojmenován podle skvrn na dvou zadečkových segmentech.

V článku je rovněž shrnuto a zmapováno rozšíření obou druhových skupin na Madagaskaru. Druhy skupiny *P. rufus* jsou známy z celkem 27 identifikovatelných lokalit (obr. 23), přičemž z jedné lokality je známo často několik (až 7) druhů. Oproti tomu každý ze tří druhů skupiny *P. bicoloripennis* je znám na Madagaskaru pouze z jediné lokality. *P. syncerus* Hromádka, 2005 byl dosud znám pouze z tropické Afriky a v článku je poprvé uveden nález z Madagaskaru.

Zatímco druhy skupiny *P. rufus* mají určitý vztah k houbám a kromě Malaiseho pastí byly sbírány individuálně na houbách a v prosevech lesní hrabanky s houbami nebo podhoubím, druhy skupiny *P. bicoloripennis* byly kromě sběru na světlo sbírány rovněž v exkrementech madagaskarského skotu – zebu.

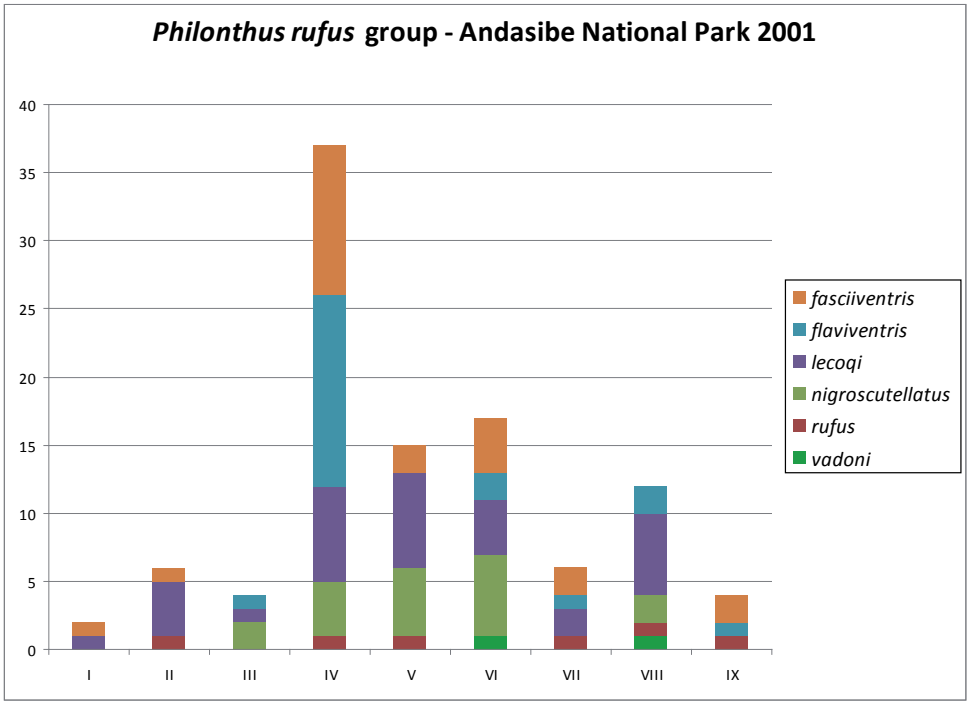


Fig. 25. Number of specimens of *P. rufus* group collected in Malaise traps in Andasibe National Park in 2001.
Obr. 25. Počet exemplářů skupiny *P. rufus* sbíraných do Malaiseho pastí v národním parku Andasibe v roce 2001.