

A review of subtribe Boettcheriscina Verves 1990 (Diptera: Sarcophagidae), with descriptions of a new species and genus from China

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Abstract. A review of subtribe Boettcheriscina with a key to genera is present. Subtribe consists from 18 genera and 72 species, widely distributed in all zoogeographical regions, except Antarctic. The description of a new genus, *Fanzideia*, **n. gen.**, with type species *Fanzideia cygnocerca*, **n. sp.**, is presented. 14 new combinations of specific names are given: *Boettcherisca krathonmai* (Pape & Bänzinger 2000), **n. comb.**; *B. talomoensis* (Magpayo & Kano 1986), **n. comb.**; *B. yuwanensis* (Sugiyama 1990), **n. comb.**; *Johnstonimyia paineiana* (Baranov 1934), **n. comb.**; *Lioproctia (Coonorina) aureolata* (Pape & Kurahachi 2000), **n. comb.**; *L. (C.) kurahashii* (Shinonaga & Tumrasvin 1979), **n. comb.**; *L. (C.) saprianovae* (Pape & Bänzinger 2000), **n. comb.**; *L. (C.) serracudo* (Pape & Kurahachi 2004), **n. comb.**; *L. (C.) sumbaensis* (Shinonaga 2004), **n. comb.**; *L. (C.) sundaensis* (Shinonaga 2004), **n. comb.**; *L. (C.) vietnamensis* (Shinonaga & Thinh 2003), **n. comb.**; *Rosellea suthep* (Pape & Banziger 2003), **n. comb.**; *Latystyla czernyi* (Böttcher 1912), **n. comb.**; *L. paulamaudi* (Lehrer 1981), **n. comb.** 16 new synonyms are established, among them 3 generic: *Macabiella* Lehrer 1994, **n. syn.** = *Latistyla* Strukan 1970; *Leigongshanophaga* Lehrer & Wei 2010, **n. syn.** = *Rosellea* Rohdendorf 1937; *Ussuriphalla* Lehrer 2010, **n. syn.** = *Takanoa* Rohdendorf 1965, and 13 specific: *Burmanomyia parvatia* Lehrer 2008, **n. syn.** = *Sarcophaga beelsoni* Senior-White 1924; *Burmanomyia guanyina* Lehrer & Wei 2010, **n. syn.** = *Sarcophaga beelsoni* Senior-White 1924; *Liproctia kunlunea* Lehrer 2008, **n. syn.** = *Sarcophaga pattoni* Senior-White 1924; *Phallosphaera huangdina* Lehrer 2008, **n. syn.** = *Sarcophaga gravelyi* Senior-White 1924; *Phallosphaera jimmuana* Lehrer 2008, **n. syn.** = *Sarcophaga gravelyi* Senior-White 1924; *Rosellea fuxingia* Lehrer 2010, **n. syn.** = *Sarcophaga khasiensis* Senior-White 1924; *Rosellea manipuriella* Lehrer 2010, **n. syn.** = *Sarcophaga khasiensis* Senior-White 1924; *Rosellea longwangiana* Lehrer & Wei 2010, **n. syn.** = *Sarcophaga khasiensis* Senior-White 1924; *Sarcophaga (Johnstonimyia) hugoi* Pape 1996, **n. syn.** = *Johnstonimyia lopesi* Shinonaga et Kano 1990; *Sarcophaga gorokaensis* Sugiyama, Shinonaga & Kano 1988, **n. syn.** = *Johnstonimyia gressitti* Kano & Lopes 1981; *Sarcophaga (Lioproctia) imita* Pape 1996, **n. syn.** = *Johnstonimyia imitatrix* Lopes 1959; *Takanoa vervesiana* Lehrer 2010, **n. syn.** = *Sarcophaga hakusana* Hori 1954; *Ussuriphalla qirimia* Lehrer 2010, **n. syn.** = *Takanoa rugosa* Rohdendorf 1969.

Résumé. Une revue de la sous-tribu Boettcheriscina Verves 1990 (Diptera: Sarcophagidae), avec la description d'une nouvelle espèce d'un nouveau genre de Chine. Une révision de la sous-tribu Boettcheriscina est présentée, ainsi qu'une clef des genres. Cette sous-tribu comprend 18 genres et 72 espèces largement distribuées dans toutes les régions zoogéographiques, sauf l'Antarctique. La description d'un nouveau genre, *Fanzideia*, **n. gen.**, est présentée, avec *Fanzideia cygnocerca*, **n. sp.** comme espèce-type. 14 nouvelles combinaisons de noms spécifiques sont apportées : *Boettcherisca krathonmai* (Pape & Bänzinger 2000), **n. comb.**; *B. talomoensis* (Magpayo & Kano 1986), **n. comb.**; *B. yuwanensis* (Sugiyama 1990), **n. comb.**; *Johnstonimyia paineiana* (Baranov 1934), **n. comb.**; *Lioproctia (Coonorina) aureolata* (Pape & Kurahachi 2000), **n. comb.**; *L. (C.) kurahashii* (Shinonaga & Tumrasvin 1979), **n. comb.**; *L. (C.) saprianovae* (Pape & Bänzinger 2000), **n. comb.**; *L. (C.) serracudo* (Pape & Kurahachi 2004), **n. comb.**; *L. (C.) sumbaensis* (Shinonaga 2004), **n. comb.**; *L. (C.) sundaensis* (Shinonaga 2004), **n. comb.**; *L. (C.) vietnamensis* (Shinonaga & Thinh 2003), **n. comb.**; *Rosellea suthep* (Pape & Banziger 2003), **n. comb.**; *Latystyla czernyi* (Böttcher 1912), **n. comb.**; *L. paulamaudi* (Lehrer 1981), **n. comb.** 16 nouvelles synonymies sont établies, parmi lesquelles 3 génériques, *Macabiella* Lehrer 1994, **n. syn.** = *Latistyla* Strukan 1970; *Leigongshanophaga* Lehrer & Wei 2010, **n. syn.** = *Rosellea* Rohdendorf 1937; *Ussuriphalla* Lehrer 2010, **n. syn.** = *Takanoa* Rohdendorf 1965; et 13 spécifiques : *Burmanomyia parvatia* Lehrer 2008, **n. syn.** = *Sarcophaga beelsoni* Senior-White 1924; *Burmanomyia guanyina* Lehrer & Wei 2010, **n. syn.** = *Sarcophaga beelsoni* Senior-White 1924; *Liproctia kunlunea* Lehrer 2008, **n. syn.** = *Sarcophaga pattoni* Senior-White 1924; *Phallosphaera huangdina* Lehrer 2008, **n. syn.** = *Sarcophaga gravelyi* Senior-White 1924; *Phallosphaera jimmuana* Lehrer 2008, **n. syn.** = *Sarcophaga gravelyi* Senior-White 1924; *Rosellea fuxingia* Lehrer 2010, **n. syn.**

= *Sarcophaga khasiensis* Senior-White 1924; *Rosellea manipuriella* Lehrer 2010, **n. syn.** = *Sarcophaga khasiensis* Senior-White 1924; *Rosellea longwangiana* Lehrer & Wei 2010, **n. syn.** = *Sarcophaga khasiensis* Senior-White 1924; *Sarcophaga (Johnstonimyia) hugoi* Pape 1996, **n. syn.** = *Johnstonimyia lopesi* Shinonaga et Kano 1990; *Sarcophaga gorokaensis* Sugiyama, Shinonaga & Kano 1988, **n. syn.** = *Johnstonimyia gressitti* Kano & Lopes 1981; *Sarcophaga (Lioproctia) imita* Pape 1996, **n. syn.** = *Johnstonimyia imitatrix* Lopes 1959; *Takanoa vervesiana* Lehrer 2010, **n. syn.** = *Sarcophaga hakusana* Hori 1954; *Ussuriphalla qirimia* Lehrer 2010, **n. syn.** = *Takanoa rugosa* Rohdendorf 1969.

Keywords: Sarcophagidae, review, *Fanzideia cygnocerca*, descriptions.

Subtribe Boettcheriscina had been established by Verves (1990: 540). It belongs to tribe Sarcophagini and subfamily Sarcophagidae. 18 genera and 72 known species of this subtribe widely distributed in all zoogeographical regions, exceptly Antarctic. There are grey flies of middle or great sizes (5.0–20.0 mm). In both sexes *acr* [acrostichal bristles] 0+1; *dc* [dorsocentral bristles] 2+3–4+7, the anterior postsutural pairs sometimes rather weak and distinctly shorter than posterior ones. The main differences from other subtribes are based on such specific features of male postabdomen: - VII+VIII segment not more than 1.5x as long as wide; - hind ventral angle of epandrium not elongate; - cerci and different parts of aedeagus often covered with small spines; - vesica well developed; - juxta well developed, with or without lateral arms; - lateral styli widened and have different appendages, often covered by spines.

Larvae are shizophagous in general, but can be facultative parasites or predators of different invertebrate (terrestrial snails, insects etc.) and vertebrate animals. Terminology follows Merz & Haenni (2000) with few modifications proposed by Povolný & Verves (1997), Verves (2000), Verves & Khrokalo (2006, 2009).

Key to the genera and subgenera of Boettcheriscina

1. 5th abdominal sternite with ventral protuberance 2
 - 5th abdominal sternite without ventral protuberance 3
2. Protuberance of 5th sternite digitate (Fig. 13, a). Lateral styli with short spines (Fig. 13, c) *Phallosphaera* Rohdendorf
 - Protuberance of 5th sternite conic (Fig. 15, a). Lateral styli haired, without spines (Figs 15, c–d) *Rosellea* Rohdendorf
3. Antennae, palpi and legs red. Lateral styli spinous; parastyli well developed (Figs 14, a–b) ... *Robackina* Lopes
 - Antennae, palpi and legs black 4
4. Abdomen with black spots and bands, wings with 3 black spots. Apical part of cerci narrow and pointed. Juxtal filament widened, bilobed, without lateral processes (Fig. 3) *Dasysceloctis* Enderlein
 - Abdomen with checkering pattern or longitudinal medial black stripe, wings without spots 5
5. Juxtal filament distinctly shortened than elongate lateral styli 6
 - Juxtal filament so long or longer than lateral styli 8
6. Ventral processes elongate and narrow, hook-shaped, parastyli present (Fig. 18, a, c) *Sclerophalla* Rohdendorf
 - Ventral processes short or poor developed, parastyli absent 7
7. Apical part of cerci with spines (Fig. 5, a). Lateral styli directed apically (Figs 5, c–d) *Johnstonimyia* Lopes
 - Apical part of cerci without spines. Lateral styli directed ventrally (Fig. 12) *Nyikamyia* Lehrer
8. Ventral processes elongate and narrow, bristle-shaped 9
 - Ventral processes short and wide or poor developed 11
9. Vesica petiolate, trilobed. Pregonites bifurcated apically. Juxta well sclerotized. Ventral processes elongate, narrow, strongly curved, with a pair of apical digitate appendages. Apical part of cerci with dorsal row of spines (Figs 16, a–c) *Sabiella* Verves
 - Vesica not petiolate. Pregonites hook-shaped. Juxta poorly sclerotized, membranous. Apical part of cerci haired, without spines 10
10. Lateral juxtal processes narrow, bristle-shaped. Vesica straight, lancet-shaped (Fig. 20, b) ... *Ziminisca* Rohdendorf
 - Lateral juxtal processes very widened at basis, triangle. Vesica curved, claw-shaped (Fig. 17, d–e) *Saputaramyia* Verves
11. Cerci short and wide 12
 - Cerci narrow and elongate 13
12. Cerci spinous in apical part (Fig. 6, a–b). Lateral styli and vesica covered with numerous spines; juxtal processes short (Fig. 6, d–e). Propleuron haired *Kramerea* Rohdendorf
 - Cerci without spines, covered with hairs (Fig. 4, d–e). Lateral styli and vesica without spines; juxtal processes elongated and bifurcated (Fig. 4, a). Propleuron bare *Fanzideia* **n. gen.**
13. Lateral styli short, parastyli well developed, skittles-shaped (Fig. 19, b–c). 4th abdominal sternite with long erected hairs. Propleuron bare *Takanoa* Rohdendorf
 - Lateral styli elongate; if shortened, than parastyli absent. 4th sternite shortly haired 14
14. Juxta without spines 15
 - Juxta with numerous spines. Ventral processes short or absent; vesica without spines 17
15. Vesica wide, covered with numerous spines 16
 - Vesica narrow, hook-like, without spines (Fig. 11). Propleuron bare *Latistyla* Strukan

16. Paraphallus almost straight (Fig. 1, a). Propleuron more or less haired *Boettcherisca* Rohdendorf
- Apical tip of paraphallus hook-like, curved dorsally (Fig. 10). Propleuron bare *Lucyphalla* Lehrner
17. Vesica paired, petiolate, widened apically (Fig. 2, b–c). Cerci with a tuft of short spines on subapical dorsal protuberance (Fig. 2, a). Abdomen without checkering pattern, with golden pollinosity and longitudinal median dark stripe at tergites. Propleuron bare
- *Chrysosarcophaga* Townsend
 - Vesica not petiolate. Cerci haired, without spines Figs 7, a–b). Abdomen with gray checkering pattern
 - *Lioproctia* Enderlein
- a. Genae entirely white haired. Ventral processes absent; vesica well sclerotized, multipointed (Figs 7, d–e). Propleuron more or less haired, sometimes bare
- *s/g Burmanomyia* Fan
 - Genae in fore parts black haired. Ventral processes well developed; vesica bipointed. Propleuron haired
- b. Juxta so long as lateral styli. Medial stylus very short (Fig. 8). Head with white or silver pollinosity, parafacials covered with irregular hairs
- *s/g Coonorio* Fan
 - Juxta distinctly longer than shortened lateral styli. Medial stylus elongate, spinous apically (Figs 9, a–c). Head with golden pollinosity, parafacials with a distinct row of short setae
 - *s/g Lioproctia* s. str.

Review of the genera and species

Genus *Boettcherisca* Rohdendorf 1937

Rohdendorf 1937: 51, 270.

Type species: *Myophona peregrina* Robineau-Desvoidy 1830, by original designation.

Boettcherisca: Fan 1992: 688; 2002: 86; Fan & Pape 1996: 248; Hardy 1932a: 45; Kano *et al.* 1967: 17; Kano & Shinonaga 1977: 32; Kano & Sugiyama 1983: 43; Kurahashi & Kano 1984: 27; Kurahashi & Ohtaki 1989: 291; Lehrner 2003: 37, 126; Lopes 1961a: 69; Lopes *et al.* 1977: 565; Nandi 1992a: 34; 2002: 204; Rohdendorf 1963: 3, 10; 1965: 684, 694; Verves 1986a: 161; 1990: 541; Verves & Khrokalo 2006: 77, 175.

Notochaetomima Rohdendorf 1937: 273, as subgenus of *Boettcherisca*.

Type species: *Boettcherisca septentrionalis* Rohdendorf 1937, by original designation.

Athyrsiola Baranov 1938: 174. Type species: *Athyrsia atypica* Baranov 1934 [= *Sarcophaga invaria* Walker 1859], by original designation.

Sarcophaga (*Boettcherisca*): Pape 1996: 309.

16 species are distributed in Palaearctic, Oriental, Australasian/Oceanian and Madagascan regions.

Boettcherisca bengalensis Nandi 1992

Boettcherisca bengalensis Nandi 1992a: 35. Type locality: India: West Bengal: Midnapore, Arabari Forest. Holotype (♂) deposited in Zoological Survey of India, Kolkata, India.

Boettcherisca bengalensis: Nandi 2002: 221; Verves 2001: 242.

Sarcophaga (*Boettcherisca*) *bengalensis*: Pape 1996: 309.

Oriental region: India: Gujarat, Maharashtra, West Bengal.

Flies were collected by bush-sweeping.

Boettcherisca cabrerai Kano & Sugiyama 1983.

Boettcherisca cabrerai Kano & Sugiyama 1983: 43. Type locality: Philippines: Luzon: Los Banos, Mt. Maquiling. Holotype (♂) deposited in National Science Museum, Tokyo, Japan.

Boettcherisca cabrerai: Verves 1990: 542.

Sarcophaga (*Boettcherisca*) *cabrerai*: Pape 1996: 309.

Oriental region: Philippines: Luzon.

The adult flies were found in mountain jungle at altitude about 500 m a. s. l. and attracted by dead fish and meat.

Boettcherisca dumoga (Sugiyama & Kurahashi 1988)

Sarcophaga (*Boettcherisca*) *dumoga* Sugiyama & Kurahashi 1988: 49. Type locality: Indonesia: Sulawesi: Sulawesi Utara, Toraut, Taman National Park, Dumoga-Bone. Holotype (♂) deposited in Bogor Museum, Java, Indonesia.

Sarcophaga (*Boettcherisca*) *dumoga*: Pape 1996: 309.

Sarcophaga dumoga: Blackith & Blackith 1988: 301.

Boettcherisca dumoga: Verves 1990: 542.

Oriental region: Indonesia: Sulawesi.

The flies were reared from spoiled meat baited with fly trap which was set for canopy sampling at 40 m above ground. Development from newborn 1st stage larva to adult is continued 15–19 days.

Boettcherisca formosensis Kirner & Lopes 1961

Boettcherisca formosensis Kirner & Lopes 1961: 65. Type locality: China: Taiwan: 20th km of Taipei-Taokian road. Holotype (♂) deposited in Institute Oswaldo Cruz, Rio de Janeiro, Brazil.

Boettcherisca formosensis: Fan 1992: 690; 2002: 86; Fan & Pape 1996: 248; Kano & Sugiyama 1983: 46; Lopes 1961a: 79; So & Dudgeon 1989a: 349; 1989b: 113; 1990: 337; Verves 1986a: 161; 1990: 542.

Sarcophaga (*Boettcherisca*) *formosensis*: Lin & Chen 1999: 117; Pape 1996: 310; Sugiyama *et al.* 1987: 70.

Oriental region: China: Guangdong, Taiwan, Zhejiang.

Larvae necrophagous; adult flies were collected at altitudes to 1000 m a. s. l.

Boettcherisca invaria (Walker 1859)

Sarcophaga invaria Walker 1859: 103. Type locality: Indonesia: Maluku: Aru Is. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Sarcophaga invaria: Blackith & Blackith 1988: 301; Sugiyama *et al.* 1988a: 284.

Sarcophaga (*Boettcherisca*) *invaria*: Pape 1996: 310; Shinonaga 2004: 282.

Boettcherisca invaria: Kano & Sugiyama 1983: 45; Kurahashi & Kano 1984: 27; Lopes & Kano 1979a: 305; Verves 1990: 542.

Athyrsiola atypica Baranov 1934: 183. Type locality: Solomon Is.: Santa Isabel I., Festiva. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Athyrsiola atypica: Baranov 1938: 174.

Boettcherisca atypica: Lopes 1961a: 81; 1967: 165.

Oriental region: Indonesia: Sulawesi. Australasian/Oceanian region: Indonesia: Maluku (Aru Is.); Papua

New Guinea: Bismarck Arch. (Manus, New Ireland), New Guinea; Solomon Is.: Santa Isabel I., Tulagi I.

Flies attracted to destroyed animal matters in the forests and not more than 3 km inside of them. Larvae necrophagous; development from newborn 1st stage larva to adult is continued 15–19 days.

***Boettcherisca javanica* Lopes 1961**

Boettcherisca javanica Lopes 1961a: 79. Type locality: Indonesia: Java: Soekaboemie, "Croisiere du Nirvana". Holotype (♂) deposited in Institute Oswaldo Cruz, Rio de Janeiro, Brazil.

Boettcherisca javanica: Kano & Sugiyama 1983: 45; Verves 1990: 542.

Sarcophaga (Boettcherisca) javanica: Bänzinger & Pape 2004: 1677; Pape 1996: 310; Shinonaga 2004: 282.

Oriental region: Indonesia: Bali, Java, Kalimantan, Sumatra; Malaysia: West Malaysia; Singapore; Philippines; Thailand.

Flies were collected in evergreen forests.

***Boettcherisca karnyi* (Hardy 1927)**

Sarcophaga karnyi Hardy 1927: 454. Type locality: Indonesia: Java: Bogor [as "Buitenzong"]. Holotype (♂) deposited in Bogor Museum, Java, Indonesia.

Sarcophaga karnyi: Blackith & Blackith 1988: 301; Hardy 1932a: 45; Ho 1938: 115; Pape 1990: 110; Senior-White 1931: 74; Senior-White *et al.* 1940: 273.

Sarcophaga (Boettcherisca) karnyi: Bänzinger & Pape 2004: 1677; Pape 1996: 310; Shinonaga 2004: 282.

Boettcherisca karnyi: Kano & Sugiyama 1983: 47; Kurahashi & Kano 1984: 27; Lopes 1958: 17; 1961a: 78; 1967: 165; Lopes *et al.* 1977: 565; Nandi 1990: 117; 2002: 208; Verves 1990: 542; 2001: 243.

Sarcophaga fuscicauda: Senior-White 1924: 252; in part [misidentification: not *Sarcophaga fuscicauda* Böttcher 1912].

Sarcophaga peregrina: Hall & Bohart 1940: 129 [misidentification: not *Sarcophaga peregrina* Robineau-Desvoidy 1830]

Sarcophaga "near *peregrina*": Bohart & Gressitt 1951: 136.

Oriental region: Cocos Is.: West I.; India: Andaman Is.; Indonesia: Bali, Java, Kalimantan, Sulawesi, Sumatra; Malaysia: West Malaysia, East Malaysia (Sarawak); Myanmar; Philippines: Tawi Tawi; Thailand. Australasian/Oceanian region: Guam I.; Indonesia: Moluccas (Ambon, Ceram); Marshall Is.: Ailinglapalap, Ebon, Majuro, Namorik, Ujelang; Marianas: Agrihan, Pagan, Rota, Tinian; Micronesia: Caroline Is. (Elato, Ifaluk, Kusaie, Lukunor, Ngulu, Nomwin, Pingelap, Ponape, Pulo Anna, Ulithi), Truk Is. (Wena), Yap Is. (Map, Yap); Palau Is.: Angaur, Babelthuap, Koror, Malakal, Ngaiangl, Ngerkabesang, Ngurukdabel, Peleliu, Ulebseheli; Wake I.

Flies attracted to destroyed animal matters in the forests and not more than 3 km inside of them, and on sand beach. Larvae developed in decaying vegetable, dead terrestrial snails, insects (orthopteran *Grylotalpa* sp. and beetle *Xylotrupes* sp.), fishes, frogs, lizards, and beef. Larvae development from newborn 1st stage larva to adult is continued 16 days in general.

***Boettcherisca koimani* Kano & Shinonaga 1977**

Boettcherisca koimani Kano & Shinonaga 1977: 323. Type locality:

Indonesia: Flores Is.: Maumere, 10 m a. s. l. Holotype (ff) deposited in Bogor Museum, Java, Indonesia.

Boettcherisca koimani: Kano & Sugiyama 1983: 45; Verves 1990: 542.

Sarcophaga (Boettcherisca) koimani: Pape 1996: 310.

Oriental region: Indonesia: Flores Is.

Adult flies prefer the forests; larvae are developed on decayed meat and fishes in laboratory conditions.

***Boettcherisca krathonmai* Pape & Bänzinger 2000, n. comb.**

Sarcophaga (Boettcherisca) krathonmai Pape & Bänzinger 2000: 204. Type locality: Thailand: Ranong Province, Phya Nak Falls, Khlong Naka Wildlife Sanctuary. Holotype (♂) deposited in Museum of Natural History, Stockholm, Sweden.

Sarcophaga krathonmai: Bänzinger & Pape 2004: 1677.

Oriental region: Malaysia: West Malaysia (Perak); Thailand.

Flies were collected from flowers of *Rafflesia cantleyi* Solms-Laubach 1910 and *Sapria ram* Bänzinger & B. Hansen 1997 in lowland evergreen forests. Female are registered during larviposition on carrion; larvae bred on liver in laboratory conditions.

***Boettcherisca nathani* Lopes 1961**

Boettcherisca nathani Lopes 1961a: 79. Type locality: India: Tamil Nadu: Korumbagaram. Holotype (♂) deposited in Institute Oswaldo Cruz, Rio de Janeiro, Brazil.

Boettcherisca nathani: Fan & Pape 1996: 248; Kano & Sugiyama 1983: 45; Kano *et al.* 1999: 135; Kurahashi & Kano 1984: 27; Kurahashi & Ohtaki 1989: 291; Kurahashi *et al.* 1991: 111; Kurahashi *et al.* 1995: 573; Nandi 1992b: 187; 2002: 205; Verves 1990: 542; 2001: 243.

Sarcophaga nathani: Bänzinger & Pape 2004: 1677; Sugiyama & Kano 1984: 351; Sugiyama *et al.* 1988b: 360.

Sarcophaga (Boettcherisca) nathani: Pape 1996: 310; Pape & Bänzinger 2000: 206; Shinonaga & Thinh 2003: 332.

Boettcherisca chianshanensis Ma 1964: 58. Type locality: China: Liaoning, Chianshan. Holotype (♂) deposited in University of Liaoning, China.

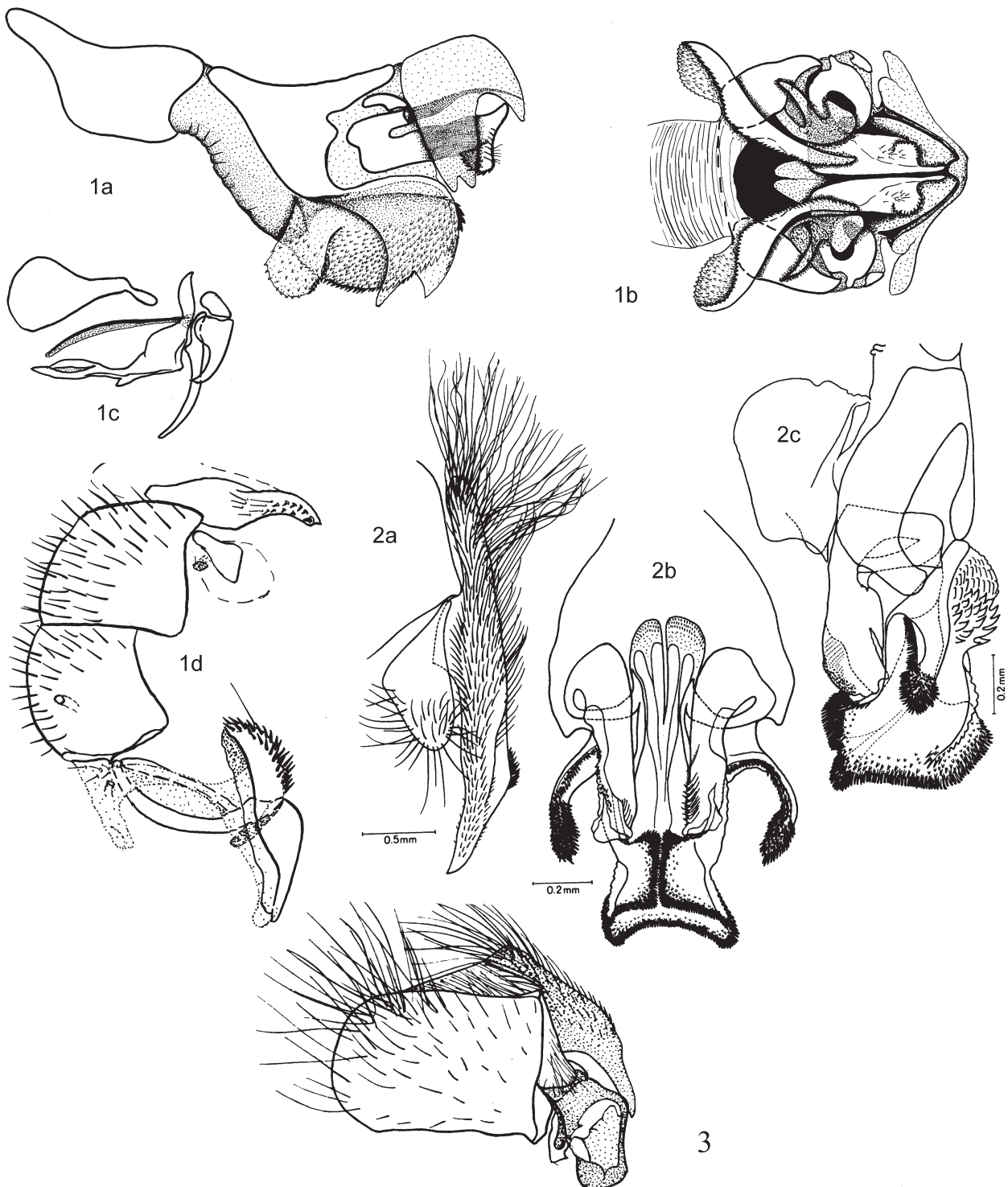
Palaeartic region: China: Liaoning. Oriental region: China: Yunnan; India: Gujarat, Karikal, Maharashtra, Tamil Nadu, West Bengal; Indonesia: Java, Kalimantan, Sumatra; Malaysia: West Malaysia; Nepal; Pakistan; Philippines: Palawan; Thailand; Vietnam.

Hemisyntropic species; larvae are developed in decaying animal matter and human faeces, responsible for intestinal myiasis of man (Kurahashi *et al.* 1995). Adult flies feed on flowers of *Sapria ram*; known to be mechanical transmitters of agents of disease.

***Boettcherisca nepalensis* Kano & Sugiyama 1983**

Boettcherisca nepalensis Kano & Sugiyama 1983: 45. Type locality:

Nepal: Bara, Ratanpur. Holotype (♂) deposited in National Science Museum, Tokyo, Japan.



Boettcherisca nepalensis: Nandi 2002: 218; Verves 1990: 542.

Sarcophaga birganjensis Sugiyama 1988 in: Sugiyama *et al.* 1988b: 357.

Figures 1–3

1, Male genitalia of *Boettcherisca peregrina* (**a**, aedeagus, lateral view; **b**, distiphallus, ventral view; **c**, gonites, lateral view; **d**, epandrium, cercus & surstylus, lateral view); orig. **2**, Male genitalia of *Chrysosarcophaga superba* (**a**, cercus & surstylus, lateral view; **b**, aedeagus, lateral view; **c**, distiphallus, ventral view); after Lopes & Kano 1978. **3**, Male genitalia of *Dasyseleotia congensis*, lateral view; after Curran 1934.

Unnecessary new name for *Boettcherisca nepalensis* Kano & Sugiyama 1983.

Sarcophaga (*Boettcherisca*) *birganjensis*: Pape 1996: 309.

Oriental region: Nepal.

Adult flies were collected in the garden of native house in jungle and attracted by human feces.

***Boettcherisca peregrina* (Robineau-Desvoidy 1830) (Fig. 1, a–d).**

Myophora peregrina Robineau-Desvoidy 1830: 356. Type locality:

Australia: New South Wales: Port Jackson near Sydney. Holotype (♂) deposited in National Museum of Natural History, Paris, France; probably lost.

Boettcherisca peregrina: Artamonov 1980a: 32; 1987: 179; Buei *et al.* 1978: 125; Cantrell 1981: 237; Early & Goff 1986: 520; Evenhuis 1985: 385; Fan 1992: 689; 2002: 86; Fan & Pape 1996: 248; Feng *et al.* 1990: 63; Ferrar *et al.* 1975: 10; Goff *et al.* 1989: 91; 1991: 537; Jiang 2002: 1445; Kamimura & Arakawa 1986: 163; Kani & Iwata 1981: 13; Kani *et al.* 1981: 173; Kano *et al.* 1967: 17; Kano & Sugiyama 1983: 47; Kano *et al.* 1999: 136; Kurahashi & Kano 1984:27; Kurahashi & Ohtaki 1989: 291; Lehrer 2003: 126; Lopes 1958: 29; 1961a: 71; 1961b: 422; Lopes *et al.* 1977: 565; Mihara *et al.* 1988: 131; Nandi 1992a: 36; 2002: 212; Park 1977: 253; Rohdendorf 1937: 270; 1963: 10; 1964: 81; Rudzinski & Kozanek 1991: 330; Sakurai 1979: 263; Smithers 1998: 27; Sun & Ren 1995: 50; Verves 1986a: 161; 1986b: 547; 1990: 542; 2001: 243; 2003: 10; 2007: 75; Verves & Khrokalo 2006: 123; 2009: 276, 291.

Sarcophaga peregrina: Blackith & Blackith 1988: 301; Chigusa *et al.* 1994: 153; 2005a: 355; 2005b: 249; Hall & Bohart 1948: 127; Hanski 1981: 197; Hardy 1927: 453; 1932a: 45; Ho 1938: 115; Hori 1951: 3; 1952: 77; 1967: 60; James 1947: 55; Johnston & Hardy 1923: 121; Johnston & Tieg 1922a: 87; 1922b: 182; 1922c: 177; Joshi 1973: 77; Kano 1950: 854; 1951: 225; 1957: 291; Kano *et al.* 1951: 115; Lopes 1939: 561; 1941: 55; Maeda 1960: 67; Moribayashi *et al.* 2001: 643; Mungomery 1947: 35; Otranto & Stewens 2002: 1347; Park 1962: 39; Quo 1952: 76; Salem 1946: 186; Sankaran & Syed 1972: 57; Séguy 1941: 131; Sherman *et al.* 2000: 58; Sugiyama *et al.* 1987: 75; 1988a: 290; 1988b: 361; Zumpt 1964: 61.

Sarcophaga (*Parasarcophaga*) *peregrina*: Hardy 1943: 29.

Sarcophaga (*Prionophalla*) *peregrina*: Reed 1974: 195.

Sarcophaga (*Boettcherisca*) *peregrina*: Bänzinger & Pape 2004: 1677; Kano & Shinonaga 1994: 263; Lin & Chen 1999: 117; Pape 1996: 310; Shinonaga & Thinh 2003: 332; Yoneda *et al.* 1998: 51.

Sarcophaga fuscicauda Böttcher 1912b: 169. Type locality: China: Taiwan. Holotype (♂) deposited in German Entomological Institute, Berlin-Dahlem, Germany.

Sarcophaga fuscicauda: Bezzi 1928: 189; Böttcher 1913: 379; Bryan 1934: 417; Buxton 1929: 145; Eysell 1915: 2; 1926: 4; Greene 1925: 11; Hennig 1941: 185; Ho 1934: 31; 1936: 264; 1938: 119; Illingworth 1926: 263; Johnston & Tieg 1922b: 182; Kang 1988a: 211; 1988b: 217; Malloch 1930: 483; Patton & Evans 1929: 484; Senior-White 1924: 252; 1927: 77; 1930: 74; Senior-White *et al.* 1940: 272.

Sarcophaga husoni Parker 1923: 127. Type locality: Sri Lanka: Peradeniya. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Sarcophaga meriani Zumpt 1951: 182. Type locality: Seychelles. Holotype (♂) deposited in South African Institute for Medical Research, Johannesburg, South Africa.

Sarcophaga meriani: Oran 1962: 1.

Sarcophaga (*Prionophalla*) *meriana*: Reed 1974: 195; incorrect subsequent spelling of *Sarcophaga meriani* Zumpt 1951.

Palaeartic region: China: Anhui, Beijing, Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin,

Liaoning, Neimenggu, Ningxia, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Tianjin, Xizang; Japan: Hashido Is., Hokkaido, Honshu, Kyushu, Shikoku, Tsushima Is.; North Korea; Russia: Far East (Southern Primorye); South Korea. Oriental region: Bangladesh; Bhutan; Cambodia; China: Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan, Zhejiang; India: Andaman Is., Assam, Bihar, Dadra and Nagar Haveli, Delhi, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Nicobar Is., Orissa, Pondicherry, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal; Indonesia: Java, Kalimantan, Riou Arch., Sulawesi; Japan: Ryukyu Is.: Okinawa (Yaeyama I.); Malaysia: Borneo (Sarawak, Sabah), West Malaysia (Perak); Laos; Myanmar; Nepal; Singapore; Sri Lanka; Thailand; Vietnam. Australasian/Oceanian region: Australia: New South Wales, Northern Territory, Queensland, South Australia, Western Australia; Bonin [= Ogasawara] Is.: Chihhi Jima, Myianohama, Ogiura, Okumara, Omura, Sakaiura; Eastern Samoa; Fiji; French Polynesia: Society Is.; Guam; Hawaiian Is.: Hawaii, Kauai, Lanai, Maui, Molokai; Indonesia: Irian Jaya; Kiribati: Gilbert Is.; Marianas: Saipan I.; New Zealand: North I.; Niue I.; Norfolk I.; Papua New Guinea: Bismarck Arch. (New Britain), New Guinea; Volcano Is.: Iwo Jima I.; Western Samoa. Madagascan: Mauritius; Reunion; Seychelles: Aride I., Mahe I., North I., Poivre I., Silhouette I.

The larvae bred from dead vertebrate and invertebrate (insects, snails) animals, garbage, animal dung and human feces. They are occasional parasites of living earthworms, and locust *Chortoicetes terminifera* (Walker 1870); facultative predators of lepidopteran pupae: nymphalid, *Euploea corinna* MacLeay 1827, and pyralid, *Crocidolomia binotalis* Zeller 1852; produced facultative aural, nasal, nasocomial, urogenital, and wound myiasis (sometimes larvae are developed in different cancerous growths) of men and tissue myiasis of mammals (Chigusa *et al.* 1994, 2005a, b; James 1947; Jiang 2002; Kamimura & Arakawa 1986; Kani & Iwata 1981; Kani *et al.* 1981; Nandi 2002; Patton & Evans 1929; Segal *et al.* 1968; Senior-White 1924; Senior-White *et al.* 1940; Sun & Ren 1995; Uni *et al.* 2006; Verves & Khrokalo 2006, 2009; Yoneda *et al.* 1998). Larvae develop during 4–7 days in summer and 7–11 days in winter, pupae – 8–11 days in summer and 1–15 days in winter in India. Larvae are the members of arthropod succession patterns in corpses and have an important forensic value. Flies feed on garbage, corpses, feces, flowers and fallen fruits. Adult flies extensively distributed in the eusynanthropic as well as the semisynanthropic and asynanthropic zones

at altitudes to 1300 m a. s. l.; known as a mechanical carrier of pathogenic microorganisms.

***Boettcherisca septentrionalis* Rohdendorf 1937**

Boettcherisca (Notochaetomima) septentrionalis Rohdendorf 1937: 273.

Type locality: Russia: Primorskiy Krai: environs of Vladivostok, Iman. Holotype (♂) deposited in Zoological Institute, St Petersburg, Russia.

Boettcherisca septentrionalis: Artamonov 1980a: 32; 1987: 110; 1992: 48; Chigusa *et al.* 2006: 139; Fan 1992: 690; Fan & Pape 1996: 248; Kano *et al.* 1967: 19; Kano & Sugiyama 1983: 46; Kurahashi & Kano 1984: 27; Kurahashi & Suenaga 1996: 247; Lopes 1961a: 78; Mitsui 2002: 275; Nandi 2002: 216; Verves 1986a: 161; 1990: 542; Verves & Khrokalo 2006: 175.

Sarcophaga septentrionalis: Kano 1951: 223; Shinonaga 2006: 265.

Sarcophaga (Boettcherisca) septentrionalis: Pape 1996: 311.

Palearctic region: China: Liaoning; Japan: Hachido Is., Honshu, Kyushu; Russia: Far East (South Kurily Is., South Primorye); South Korea. Oriental region: Bhutan.

The time of larval development in corpses of small mammals and birds, rarely feces, is continued 5–6 days, and pupal development in soil – 11–38 days. A case of wound myiasis of *Emberiza elegans* Temminck 1836 nestling and hospital-acquired oral human myiasis due to larvae of this species were registered too (Chigusa *et al.* 2006). Adult flies prefer forests and bushes along river banks at altitudes to 1000 m a. s. l.

***Boettcherisca talomoensis* (Magpayo & Kano 1986), n. comb.**

Sarcophaga (Boettcherisca) talomoensis Magpayo & Kano 1986: 75. Type locality: Philippines: Mindanao: Davao, Mt Talomo. Holotype deposited in Tokyo Medical & Dental University, Tokyo, Japan.

Sarcophaga (Boettcherisca) talomoensis: Pape 1996: 311.

Oriental region: Philippines: Mindanao.

***Boettcherisca timorensis* Kano & Shinonaga 1977**

Boettcherisca timorensis Kano & Shinonaga 1977: 324. Type locality: Indonesia: Timor I., Kupang. Holotype (♂) deposited in Bogor Museum, Java, Indonesia.

Boettcherisca timorensis: Kano & Sugiyama 1983: 45; Verves 1990: 542.

Sarcophaga (Boettcherisca) timorensis: Pape 1996: 311.

Oriental region: Indonesia: Timor.

The adults were in the forests using decayed meat and fishes at bait, and colonized in the laboratory.

***Boettcherisca yuwanensis* (Sugiyama 1990), n. comb.**

Sarcophaga yuwanensis Sugiyama 1990: 421. Type locality: Japan: Ryukyu Is., Amami-Oshima I., Kagoshima Prefecture, Mt Yuwan. Holotype (♂) deposited in the National Science Museum (Natural History), Tokyo, Japan.

Sarcophaga (Boettcherisca) yuwanensis: Pape 1996: 311.

Oriental region: Japan: Ryukyu Is. (Amami-Oshima I.).

Genus *Chrysosarcophaga* Townsend 1932

Townsend 1932: 441.

Type species: *Chrysosarcophaga superba* Townsend 1932, by original designation.

Chrysosarcophaga: Lopes & Kano 1978: 223; Townsend 1938: 19; Verves 1990: 542.

Sarcophaga (Chrysosarcophaga): Pape 1996: 313.

A single species is distributed in Australasian/Oceanian region.

***Chrysosarcophaga superba* Townsend 1932 (Fig. 2, a–c).**

Chrysosarcophaga superba Townsend 1932: 441. Type locality: Papua New Guinea: Bougainville I. Holotype (♀) deposited in American Museum of Natural History, New York, USA.

Chrysosarcophaga superba: Curran 1936: 62; Lopes & Kano 1978: 223; Townsend 1938: 19; Verves 1990: 542.

Sarcophaga (Chrysosarcophaga) superba: Pape 1996: 313.

Australasian/Oceanian region: Papua New Guinea: Bougainville I.; Solomon Is.: Guadalcanal I., Malaita I., Suta I.

Flies were collected in mountains at altitudes to 1200 m a. s. l.

Genus *Dasysceloctis* Enderlein 1928

Enderlein 1928: 35.

Type species: *Dasysceloctis maculipennis* Enderlein 1928; by original designation.

Dasysceloctis: Dear 1980: 807; Lehrer 2002: 50; 2003: 164; Townsend 1931: 377; Zumpt 1972: 206.

Mufindia Verves 1990: 541. Type species: *Sarcophaga tanzaniae* Zumpt 1972, by original designation.

Mufindia: Lehrer 2002: 48.

Sarcophaga (Dasysceloctis): Pape 1995:6; 1996: 314.

Sarcophaga (Mufindia): Pape 1996: 364.

Three species are distributed in Afrotropical region.

***Dasysceloctis congensis* Curran 1934 (Fig. 3)**

Poecilometopa congensis Curran 1934: 23. Type locality: Democratic Republic of Congo: Burunga, 1°30'S, 29°18'E. Holotype (♂) deposited in American Museum of Natural History, New York, USA.

Poecilometopa congensis: Zumpt 1953a: 16;

Dasysceloctis congensis: Arnaud & Owen 1981: 185; Lehrer 2003: 164;

Dasysceloctis maculipennis [misidentification: not *Dasysceloctis maculipennis* Enderlein 1928]: Dear 1980: 807 (in part); Townsend 1938: 54 (in part); Zumpt 1953a: 16; 1972: 206 (in part).

Sarcophaga (Dasysceloctis) maculipennis: Pape 1995: 20 (in part); 1996: 314 (in part).

Afrotropical region: Democratic Republic of Congo; Kenya; Tanzania.

***Dasysceloctis longanota* Lehrer 2005**

Dasysceloctis longanota Lehrer 2005: 14. Type locality: Kenya: Mt.

Elgon, 10250 ft [= Mt. Longanot, 2700 m a. s. l.], 1°05'N, 34°40' E. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Afrotropical region: Kenya.

***Dasyscelotus maculipennis* Enderlein 1928**

Dasyscelotus maculipennis Enderlein 1928: 35. Type locality: Tanzania: Lake Nyasa, Langenburg. Lectotype (♂; designated by Zumpt 1972: 208) deposited in Museum für Naturkunde der Humboldt Universität, Berlin, Germany.

Dasyscelotus maculipennis: Dear 1980: 807 (in part); Lehrer 2003: 167 (holotype examined); Townsend 1938: 54 (in part); Zumpt 1953a: 16; 1972: 206 (in part).

Sarcophaga (Dasyscelotus) maculipennis: Pape 1995: 20 (in part); 1996: 314 (in part).

Poecilometopa maculipennis: Rohdendorf 1963: 13.

Sarcophaga (Liopygia) tanzaniae Zumpt 1972: 174. Type locality: Tanzania: Mufindi. Holotype (♂) deposited in South African Institute for Medical Researches, Johannesburg, South Africa.

Sarcophaga (Liopygia) tanzaniae: Dear 1980: 813.

Mufindia tanzaniae: Verves 1990: 542.

Sarcophaga (Mufindia) tanzaniae: Pape 1996: 364.

Afrotropical region: Democratic Republic of Congo; Tanzania.

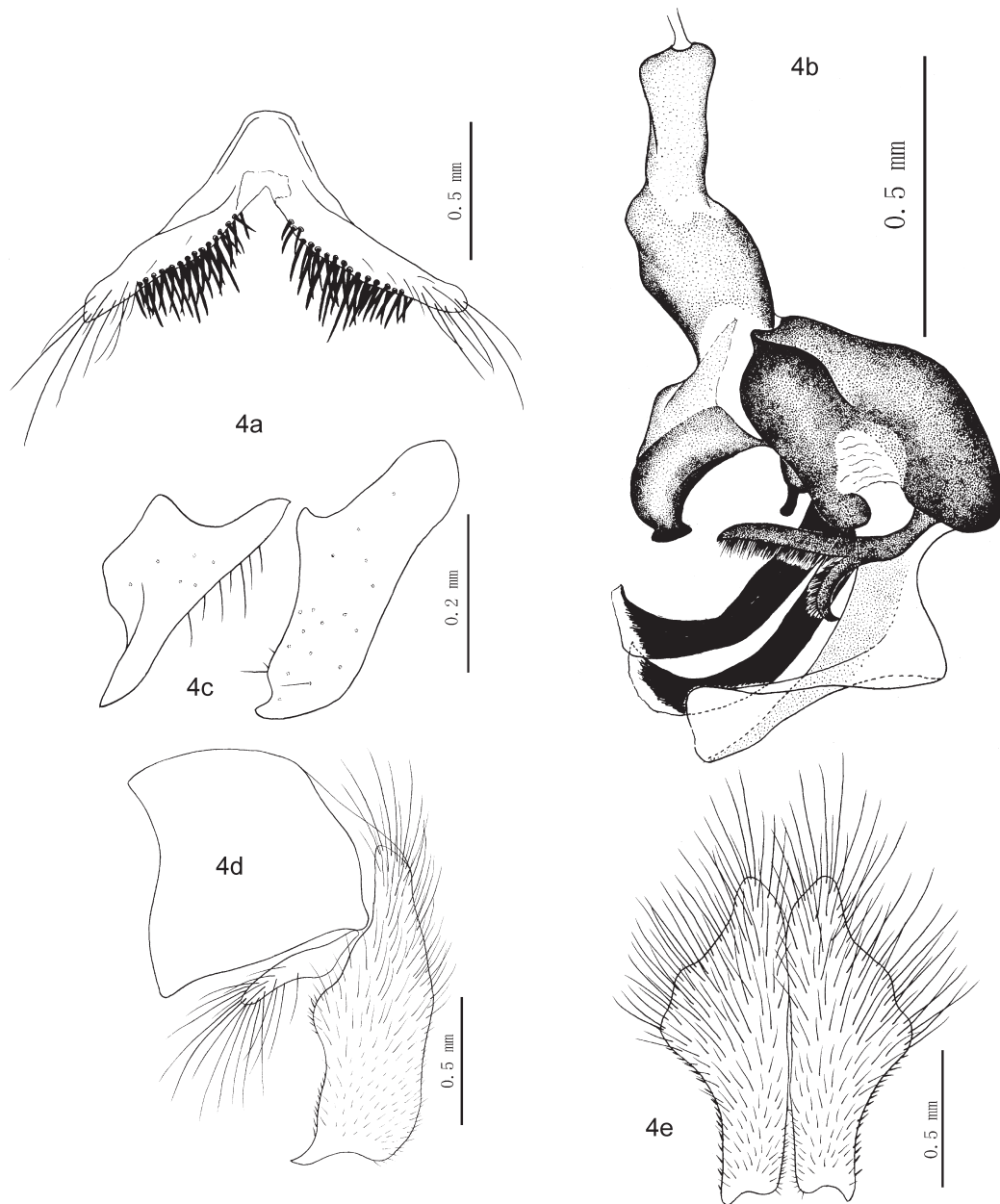


Figure 4

Male genitalia of *Fanzideia cygnocerca* (a, 5th abdominal sternite, ventral view; b, aedeagus, lateral view; c, gonites, lateral view; d, cercus & surstylus, lateral view; e, cerci, dorsal view); orig.

Genus *Fanzideia* n. gen.

Type species: *Fanzideia cygnocerca* n. sp.

Etymology. The generic name *Fanzideia* is referring to Prof. Fan Zide, in honor of his contribution on entomology.

Diagnosis. Antennae elongate; 1st flagellomere about 4.5 times as long as pedicel; 4 pairs of posterior *dc*, 6 rows of hair-like *pre acr*, and only one prescutellar pair of *post acr* developed; katepisternal setae 1+1+1; middle hollow of propleuron bare, 3rd costal section is subequal to 5th one in the length; vein *R*₁ bare, costal spine absent; posterior surfaces of hind coxae haired; 3rd abdominal tergite without median marginal setae. ♂: 4th abdominal sternite without dense setae on posterior half, 5th abdominal sternite broad and shortened, without medial processes, its lateral lobes slender and elongate, at inner margins with 2–3 rows of spine-like setae. Cerci in profile straight and broad, vesica and lateral styli strongly sclerotized, medial process membranous, enlarged; juxtal processes elongated and bifurcated.

Remarks. This genus belongs to subtribe Boettcheriscina by widened styli and a presence of 4 pairs of posterior *dc*. It differs from all other genera of this subtribe by such features: propleuron bare; 5th abdominal sternite shortened and wide; juxta without spines, with elongated and bifurcated lateral arms; vesica strongly sclerotized, lateral styli elongated, band-shaped, and distinctly widened at apex.

A single species is distributed in Oriental region (south China).

Fanzideia cygnocerca n. sp. (Fig. 4, a–e).

Etymology. This specific name is formed from the Greek words, *cygn* - swan and *cerca* - cercal plate, referring to male cercal plate swan-head shaped distally.

Description. ♂. Body length 10.0–10.5 mm. **Head.** Eyes bare; frons about 2.8 times as wide as antenna; frontal vitta black, about 2.0 times as wide as fronto-orbital plate; both interfrontal and ocellar setae short, inner vertical seta well developed, *fr* 10 pairs, proclinate *orb* absent; fronto-orbital plate and parafacial with golden pruinosity; one row of parafacial setae presents; parafacial about 1.2–1.4 times as wide as antenna; antenna black; arista long plumose, the longest hairs about 1.8 times as wide as 1st flagellomere; vibrissal angle situated behind frontal angle in profile; genal height about 2/7 of eye height, gena with bluish gray pruinosity, genal hairs black; 3 rows of black postocular setae present; occiput covered by yellowish-white hairs; proboscis shortened, prementum about 3.0 times as long as broad, palpus black, slightly longer than prementum.

Thorax. Black in ground color, with gray pruinosity, scutum with three longitudinal black vittae; *acr* 0+1, *dc* 4+4, *ial* 0+3, *pra* subequal to posterior notopleural seta in length; lateral margins of scutellum with black hairs; subapical and basal scutellar setae well developed; middle hollow of propleuron bare; katepisternal setae 1+1+1.

Wings. Hyaline, veins fuscous, basicosta yellowish to white, dorsal and ventral surfaces of *R*₄₊₅ from base to crossvein *r-m* with short hairs; cell *r*₄₊₅ open; both calypters white to yellowish; halter brown, orange at base.

Legs. Wholly black; fore tibia with 2 short *ad* in basal part, and 1 *pv* near the middle; mid femur with a row of short and strong *av*, becoming pectinated apically, 2 rows of long fringe-like *pv* in basal half, those cilia in distal half short and pectinated; mid tibia with 1 *ad*, 2 *pd* and 1 *p*; hind femur with a complete row of *av*, shorter than its diameter, only with a short and thin setae row on posteroventral surface, without distinct *pv*; hind tibia with a row of 7 *av* in middle part, in preapical part with a distinct *av*, 2 *ad*, and 2 *pd*, with a row of long hairs at distal 3/5 of posteroventral surface, and with apical *pv*; tarsi slightly longer than tibiae, 4th tarsomere shortened, claws and pulvilli elongate, distinctly longer than 5th tarsomere.

Abdomen. Black in ground color, elongate oviform in dorsal view, with chessboard shaped versicolor patches; tergite 3 without median marginal setae, tergite 4 with distinct median marginal bristles. Cercus broad in lateral view, its distal half slightly swan-head, cerci sharply shopped off at apex in dorsal view; surstylus slender; pregonite wide at base and with apical knee-shaped edge; basiphallus short; distiphallus as wide as long; paraphallus broad; ventral processes absent; harpes small, but well developed, stock-shaped; distal part of vesica bottle-plug shaped; juxtal filament broad, elongate and membranous, its lateral margin reversed; juxtal processes well sclerotized and bifurcated, inner margin of bifurcation with numerous fine hairs; lateral styli long and mid broad, distinctly widened at apex.

♀. Unknown.

Holotype. ♂, China: Jianfengling, 1412 m a. s. l., Hainan Province, 21. V. 2004 (Chun-tian Zhang). **Paratype.** China: ♂, same data as holotype. Both type specimens (holotype and paratype) were deposited in collection of Institute of Entomology, Shenyang Normal University, China.

Genus *Johnstonimyia* Lopes 1959

Lopes 1959: 48.

Type species: *Sarcophaga kappa* Johnston & Tiegs 1921, by original designation.

Johnstonimyia: Kano & Lopes 1981a: 295; Verves 1990: 542.

Sarcophaga (*Johnstonimyia*): Pape 1996: 338.

10 species are distributed in Oriental and Australasian/Oceanian regions.

Johnstonimyia bezzii Kano & Lopes 1981 (Fig. 5, a–d).

Johnstonimyia bezzii Kano & Lopes 1981a: 295. Type locality: Vanuatu: Santo I. Holotype (♂) deposited in Museu Nacional, Rio de Janeiro, Brazil.

Johnstonimyia bezzii: Lopes & Kano 1979b: 659.

Sarcophaga (*Johnstonimyia*) *vanuatu* Pape 1991: 215 [unnecessary new name for *Johnstonimyia bezzii* Kano & Lopes 1981], **n. syn.**

Sarcophaga (*Johnstonimyia*) *vanuatu*: Pape 1996: 340.

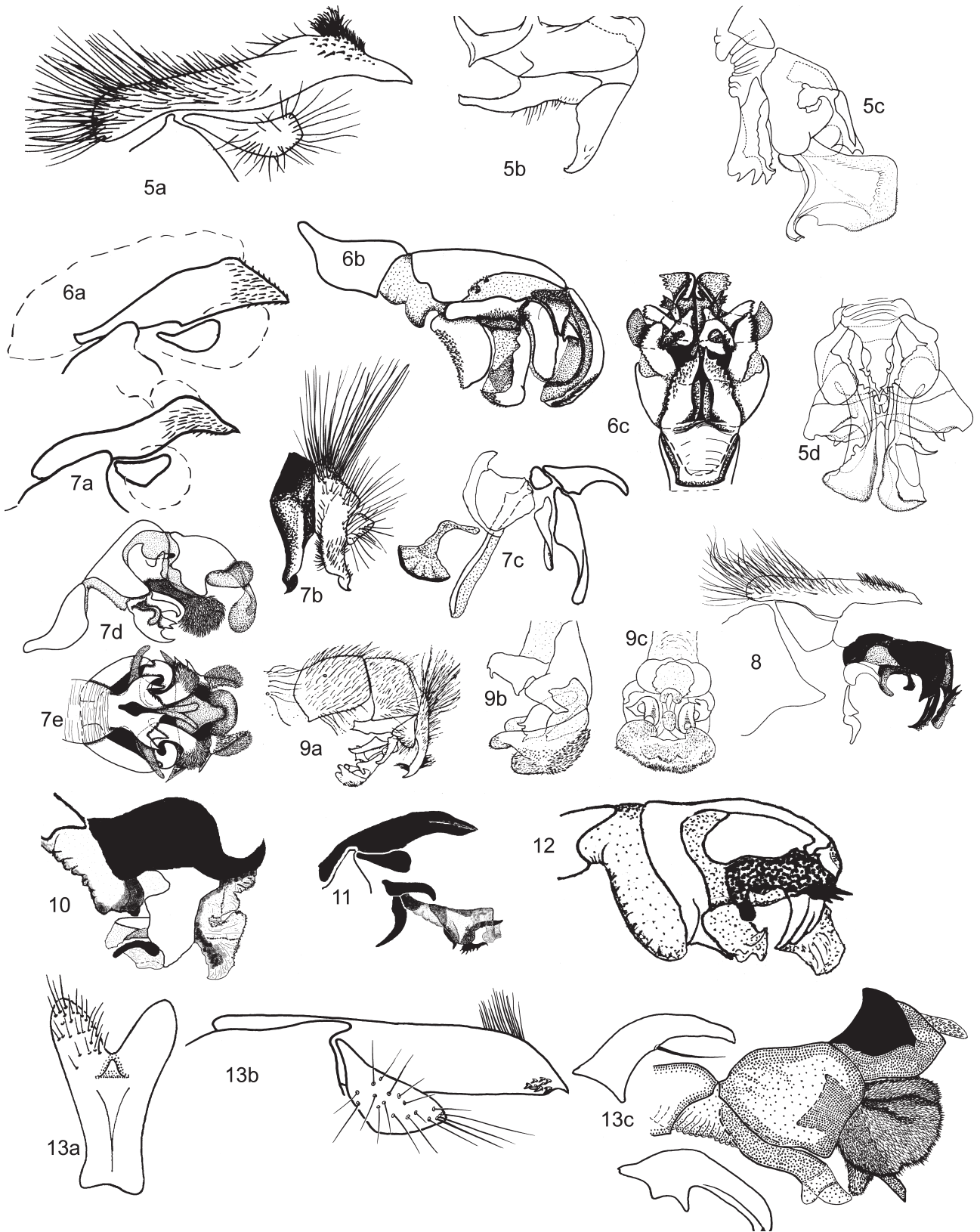
Australasian/Oceanian region: Vanuatu: Espiritu Santo I., Santo I.

Johnstonimyia fatua Lopes 1967

Johnstonimyia fatua Lopes 1967: 147. Type locality: Papua New Guinea: Bismarck Arch.: Manus I., Lorengau. Holotype (♂) deposited in Zoological Museum, Copenhagen, Denmark.

Sarcophaga (*Johnstonimyia*) *fatua*: Pape 1996: 339.

Australasian/Oceanian region: Papua New Guinea: Bismarck Archipelago (Manus I.).



***Johnstonimyia gressitti* Kano & Lopes 1981**

Johnstonimyia gressitti Kano & Lopes 1981a: 297. Type locality: Papua New Guinea: NE New Guinea: Karimui, S of Goroka. Holotype (♂) deposited in P. B. Bishop Museum, Honolulu, Hawaii, USA.

Johnstonimyia gressitti: Verves 1990: 542.

Sarcophaga gorokaensis Sugiyama, Shinonaga & Kano 1988a: 288 [unnecessary new name for *Johnstonimyia gressitti* Kano & Lopes 1981], **n. syn.**

Sarcophaga gorokaensis: Pape 1996: 339.

Australasian/Oceanian region: Papua New Guinea: New Guinea.

Flies were collected at altitudes to 1000 m a. s. l.

***Johnstonimyia kappa* (Johnston & Tiegs 1921)**

Sarcophaga kappa Johnston & Tiegs 1921: 81. Type locality: Australia: Queensland: Brisbane. Holotype (♂) deposited in Queensland Museum, Brisbane, Australia.

Sarcophaga kappa: Hardy 1934: 50; Johnston & Hardy 1923: 124; Johnston & Tiegs 1922b: 181; Sugiyama *et al.* 1988a: 285, 289.

Sarcophaga (Johnstonimyia) kappa: Pape 1996: 339.

Sarcophaga (Parasarcophaga) kappa: Hardy 1943: 28.

Johnstonimyia kappa: Brown & Shipp 1978: 179; Kano & Lopes 1981a: 297; Lopes 1959: 50; Verves 1990: 542.

Sarcophaga illingworthi Parker 1922: 6. Type locality: Australia: Queensland: Gordonvale near Cairns. Holotype (♂) deposited in American Museum of Natural History, New York, USA.

Australasian/Oceanian region: Australia: New South Wales, Northern Territory, Queensland, Western Australia; Papua New Guinea: New Guinea.

Larvae are developed in carrion.

***Johnstonimyia lincta* Lopes 1959**

Johnstonimyia lincta Lopes 1959: 52. Type locality: Australia: Queensland: Springsure. Holotype (♂) deposited in Division of Entomology, Canberra, Australia.

Johnstonimyia lincta: Kano & Lopes 1981a: 297; Verves 1990: 542.

Sarcophaga (Johnstonimyia) lincta: Pape 1996: 339.

Australasian/Oceanian region: Australia: Queensland.

Figures 5–13

5, Male genitalia of *Johnstonimyia bezzii* (a, cercus & surstylus, lateral view; b, gonites, lateral view; c, aedeagus, lateral view; d, distiphallus, ventral view); after Kano & Lopes 1981. 6, Male genitalia of *Kramerea schuetzei* (a, cercus & surstylus, lateral view; b, aedeagus, lateral view; c, distiphallus, ventral view); orig. 7, Male genitalia of *Lioproctia (Burmanomyia) besoni* (a, cercus & surstylus, lateral view; b, ibid., dorsal view; c, gonites, lateral view; d, aedeagus, lateral view; e, distiphallus, ventral view); orig. 8, Male genitalia of *Lioproctia (Coonorina) sumbaensis*, lateral view; after Shinonaga 2004. 9, Male genitalia of *Lioproctia* (s. str.) *imitatrix* (a, genitalia, lateral view; b, aedeagus, lateral view; c, distiphallus, ventral view); after Lopes 1959. 10, Male genitalia of *Lucyphalla nuzzacii*, lateral view; orig. 11, Male genitalia of *Latistyla czernyi*, lateral view; orig. 12, Distiphallus of *Nyikamyia barracloughiana*, lateral view; orig. 13, Male genitalia of *Phallosphaera graveleyi* (a, 5th abdominal sternite, ventral view; b, cercus & surstylus, lateral view; c, distiphallus and gonites, lateral view); after Povolný & Verves 1997 and Verves & Khrokalo 2006.

***Johnstonimyia lopesi* Shinonaga & Kano 1990**

Johnstonimyia lopesi Shinonaga & Kano 1990: 487. Type locality: Vanuatu: Efate, 10 km NW of Vila. Holotype (♂) deposited in National Science Museum, Tokyo, Japan.

Sarcophaga (Johnstonimyia) hugoi Pape 1996: 339, **n. syn.** [unnecessary new name for *Johnstonimyia lopesi* Shinonaga & Kano 1990].

Australasian/Oceanian region: Vanuatu: Efate I.

***Johnstonimyia multicolor* (Johnston & Tiegs 1922)**

Sarcophaga multicolor Johnston & Tiegs 1922c: 187. Type locality: Papua New Guinea: Bismarck Archipelago, New Britain I., Rabaul. Holotype (♂) deposited in Australian Museum, Sydney, Australia.

Sarcophaga multicolor: Hardy 1927: 456; Sugiyama *et al.* 1988a: 290.

Sarcophaga (Lioproctia) multicolor: Pape 1996: 345.

Johnstonimyia multicolor: Lopes 1959: 55; Verves 1990: 542.

Australasian/Oceanian region: Indonesia: Maluku (Aru Is.); Papua New Guinea: Bismarck Archipelago (New Britain I.), New Guinea.

***Johnstonimyia notabilis* (Kano & Lopes 1969)**

Burmanomyia notabilis Kano & Lopes 1969: 521. Type locality: Malaysia: Selangor: Ulu Langat. Holotype (♂) deposited in B. P. Bishop Museum, Honolulu, Hawaii, USA.

Burmanomyia notabilis: Lopes *et al.* 1977: 567.

Johnstonimyia notabilis: Kano & Lopes 1981a: 297; Verves 1990: 542.

Lioproctia notabilis: Lopes & Kano 1979b: 658.

Sarcophaga (Lioproctia) notabilis: Bänzinger & Pape 2004: 1677; Pape 1996: 345; Pape & Bänzinger 2000: 201.

Oriental region: Malaysia: West Malaysia (Selangor), Sarawak; Thailand: south part.

Flies were collected in lowland evergreen and upland mixed deciduous forests at altitudes to 500 m a. s. l.; they are pollinators of flowers *Bulbophyllum putidum* (Teijsmann & Binnendijk 1862) J. J. Smith 1912 and *Sapria ram*. Larviposition was discovered on carrion.

***Johnstonimyia paineiana* (Baranov 1934), n. comb.**

Lioproctia paineiana Baranov 1934: 184. Type locality: Solomon Is.: Guadalcanal I., Tenaru. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Lioproctia paineiana: Sabrosky & Crosskey 1970: 429.

Sarcophaga (Lioproctia) paineiana: Pape 1996: 345.

Australasian/Oceanian region: Solomon Is.: Guadalcanal I.

***Johnstonimyia taiwanensis* (Kano & Lopes 1969).**

Burmanomyia taiwanensis Kano & Lopes 1969: 522. Type locality: China: Taiwan: Pen-ch'i-hu [= Fenchihu], Chia-i-Hsien. Holotype (♂) deposited in Tokyo Medical & Dental University, Japan.

Burmanomyia taiwanensis: Lopes *et al.* 1977: 566.

Johnstonimyia taiwanensis Kano & Lopes 1981a: 297; Verves 1990: 542.

Lioproctia taiwanensis: Fan & Pape 1996: 251.

Sarcophaga (Lioproctia) taiwanensis: Lin & Chen 1999: 117; Pape 1996: 345; Sugiyama *et al.* 1987: 77.

Oriental region: China: Taiwan.

Genus *Kramerea* Rohdendorf 1937

Rohdendorf 1937: 274.

Type species: *Sarcophaga schuetzei* Kramer 1909, by original designation.

Kramerea: Fan & Pape 1996: 251; Verves 1986a: 162; Verves 1990: 542; Verves & Khrokalo 2006: 175.

Sarcophaga (Kramerea): Pape 1996: 341.

Kramerea schuetzei (Kramer 1909) (Fig. 6, a–c)

Sarcophaga schuetzei Kramer 1909: 83. Type locality: Germany: Oberlausitz, Koenigsholz. Lectotype (♂; designated by Povolný 1988: 13) deposited in Staatliche Museum für Naturkunde, Görtlich, Germany.

Sarcophaga schuetzei: Böttcher 1912a: 733; Hori 1953: 83; Séguy 1941: 143; Shinonaga 2006: 265; Sugiyama *et al.* 1987: 76.

Sarcophaga (Kramerea) schuetzei: Lin & Chen 1999: 117; Pape 1996: 341.

Kramerea schuetzei: Artamonov 1980a: 32; 1987: 111; 1992: 52; Boldaruev 1952: 56; Egorov 1962: 294; Fan 1992: 665; Fan & Pape 1996: 251; Kano *et al.* 1967: 34; Lehrer & Dobrivojević 1970: 95; Mitsui 2002: 275; Novotný *et al.* 1998; Park 1977: 255; Rohdendorf 1937: 275; Rohdendorf & Verves 1978: 257; Verves 1986a: 162; 1998: 54; Tereshkin & Lobodenko 1997; Verves & Khrokalo 2006: 176; Zinovyev 1962: 30.

Thyrsocnema schuetzei: Enderlein 1928: 43.

Palearctic region: Austria; Azerbaijan; Bulgaria; Byelorussia; China: Beijing, Gansu, Heilongjiang, Henan, Jilin, Liaoning, Neimenggu, Shaanxi, Shanxi; Croatia; Czech Republic: Bohemia, Moravia; France; Germany; Hungary; Japan: Hokkaido, Honshu, Kyushu, Shikoku; Kazakhstan; Macedonia; Moldova; Mongolia: Central aimak, East aimak, Uvs Nur aimak; Netherlands; North Korea; Poland; Russia: *European part*: Bashkortostan, Belgorod, Kaliningrad, Leningrad, Lypetzk, Moscow, Voroniezkh regions, *West Siberia*: Altay, Tuva regions, *East Siberia*: Buryatia, Chita regions, *Far East*: Amur, Khabarovsk, S Kurily Is., Primorye, Sakhalin regions; Serbia; Slovakia; South Korea; Switzerland; Ukraine: Cherkasy, Chernigiv, Crimea, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytskyi, Kyiv, Zakarpattia, Zhytomyr regions. Oriental region: China: Taiwan.

Larvae are developed in corpses of different invertebrate (snails, insects etc) and small vertebrate animals (mice, birds, fishes), decomposing meat, and known as facultative predators of lepidopteran pupae: *Aporia crataegi* L. 1758, *Arctia* sp., *Cosmotriche potatoria* (L. 1758), *Dasychira albodentata* (Bremer 1864), *Dendrolimus pini* (L. 1767), *D. segregatus* (Butler 1877), *D. sibiricus* (Tschetverikov 1908), *D. spectabilis* (Butler 1877), *Dictyoploca japonica* (Moore 1872), *Lymantria dispar* (L. 1758), *L. monacha* (L. 1758), *Orgyia antiqua* (L. 1758), *Pygaera anastomosis* (L. 1758), *Selenephera*

lunigera (Esper 1784). The time of larval development is 8–12 days, pupal development in soil – 10–18 days. Adult flies feed on garbage, corpses, feces, sweat of man, mucous secrets from mouth and nose of hoof animals, at haemolymph of wounded insects, destroyed fruits, human food and flowers. They prefer borders of forests, bushes, meadows, parks, gardens, and settlements.

Genus *Latistyla* Strukan 1970, *n. stat.*

Strukan 1970: 96, as subgenus of *Parasarcophaga* Johnston & Tiesg 1921.

Type species: *Sarcophaga czernyi* Böttcher 1912, by original designation & monotypy.

Macabiella Lehrer 1994a: 15, *n. syn.* Type species: *Parasarcophaga paularnaudi* Lehrer 1981, by original designation.

Sarcophaga (Macabiella): Pape 1996: 360.

Two species are distributed in Palearctic (East Mediterranean area) region.

Latistyla czernyi (Böttcher 1912), *n. comb.* (Fig. 11)

Sarcophaga czernyi Böttcher 1912a: 731. Type locality: Croatia: Dalmatia, Dubrovnik [= Raguza]. Holotype (♂) deposited in German Entomological Institute, Berlin-Dahlem, Germany.

Sarcophaga czernyi: Séguy 1941: 96.

Sarcophaga (Macabiella) czernyi: Pape 1996: 360.

Thyrsocnema czernyi: Enderlein 1928: 43.

Parasarcophaga (Latistyla) czernyi: Strukan 1970: 96.

Parasarcophaga (Rosellea) czernyi: Verves 1986a: 172.

Rosellea czernyi: Verves 1990: 542.

Palearctic region: Croatia; Greece.

Latistyla paularnaudi (Lehrer 1994), *n. comb.*

Parasarcophaga paularnaudi Lehrer 1981: 185. Type locality: Lebanon: Btarran, El Coura, 70 miles SE of Beirut. Holotype (♂) deposited in Department of Entomology, Californian Academy of Sciences, San Francisco, USA.

Parasarcophaga (Rosellea) paularnaudi: Verves 1986a: 172.

Macabiella paularnaudi: Lehrer 1994a: 15; 1998: 43; 2006b: 18.

Rosellea paularnaudi: Verves 1990: 542.

Palearctic region: Israel; Lebanon.

Genus *Lioproctia* Enderlein 1928

Enderlein 1928: 26.

Type species: *Lioproctia aurifrons* sensu Enderlein 1928, by original designation [= *Lioproctia enderleini* Kano & Lopes 1970], misidentification: not *Sarcophaga aurifrons* Doleshall 1858.

Lioproctia: Fan & Pape 1996: 251; Kano & Lopes 1970: 313; Lopes *et al.* 1977: 566; Nandi 2002: 197; Pape 1995: 9; Verves 1986a: 162; 1990: 541.

Sarcophaga (Lioproctia): Pape 1996: 343.

16 species are distributed in Palearctic, Oriental and Australasian/Oceanian regions.

Subgenus *Burmanomyia* Fan 1964

Fan 1964: 305, 316, as genus.

Type species: *Sarcophaga beesoni* Senior-White 1924, by monotypy.

Two species are distributed in Palaearctic, Oriental and Australasian/Oceanian regions.

***Lioproctia (Burmanomyia) alcicornis*
(Hardy 1932b)**

- Sarcophaga alcicornis* Hardy 1932b: 275. Type locality: Australia: Queensland, Brisbane. Holotype (♂) deposited in University of Queensland, Brisbane, Australia.
Sarcophaga alcicornis: Hardy 1934: 50; Lopes 1939: 560; Sugiyama *et al.* 1988a: 285.
Sarcophaga (Chrysosarcophaga) alcicornis: Hardy 1943: 26.
Sarcophaga (Lioproctia) alcicornis: Pape 1996: 344.
Tricholioproctia alcicornis: Brown & Shipp 1978: 179; Lopes 1955: 249.
Lioproctia alcicornis: Lopes & Kano 1979b: 658;
Lioproctia (Burmanomyia) alcicornis: Verves 1990: 542.

Australasian/Oceanian region: Australia: New South Wales, Queensland; Indonesia: Irian Jaya; Papua New Guinea: New Guinea.

Larvae bred in corn, dead grubs, and scrub. Adult flies were collected on altitudes to 1000 m a. s. l.

***Lioproctia (Burmanomyia) beesoni*
(Senior-White 1924) (Fig. 7, a–e).**

- Sarcophaga beesoni* Senior-White 1924: 243. Type locality: Myanmar [as “Burma”]: Mohnyin. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.
Sarcophaga beesoni: Bänzinger & Pape 2004: 1677; Kano & Shinonaga 1994: 263; Lin & Chen 1999: 116; Senior-White *et al.* 1940: 248; Sugiyama *et al.* 1987: 65.
Sarcophaga (Lioproctia) beesoni: Pape 1996: 344.
Burmanomyia beesoni: Fan 1964: 305; 1992: 663; Kano *et al.* 1967: 30; Weng & Zhou 1995: 147.
Johnsonimyia beesoni: Kano & Shinonaga 1965: 16, pl. 73.
Lioproctia beesoni: Fan & Pape 1996: 251; Kano *et al.* 1999: 133; Lopes *et al.* 1977: 567; Nandi 2002: 232; Verves 1986a: 162.
Lioproctia (Burmanomyia) beesoni: Verves 1990: 542; 2001: 243.
Burmanomyia parvatia Lehrer 2008: 12, *n. syn.* Type locality not given, type material absent.
Burmanomyia guanyina Lehrer & Wei 2010a: 1, *n. syn.* Type locality: China: Guizhou, Longli forest farm, Longli, 1000 m a. s. l. Holotype (♂) deposited in Center for Disease Prevention and Control, Guizhou, China.

Palaearctic region: China: Anhui, Henan, Hubei, Hunan, Jiangsu, Shanghai, Sichuan; Japan: Kyushu. Oriental region: China: Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan, Zhejiang; India: West Bengal; Myanmar; Nepal; Thailand; Vietnam.

Larvae bred in pupae of moth *Dendrolimus punctatus* (Walker 1855). Adult flies were collected on leaves along mountains path and tops of hills.

Taxonomical notes: The original description and drawings of ♂ genitalia of male *Burmanomyia guanyina* are very detailed and practically not differentiated from similar descriptions and drawings of ♂ genitalia of *Lioproctia beesoni* by Fan 1992; Kano *et al.* 1967; Nandi 2002; Rohdendorf 1966; Senior-White 1924

etc. Description of ♂ *Burmanomyia parvatia* is based at drawings of ♂ genitalia of *Lioproctia beesoni* from Nandi 2002. The differences in drawings are very petty and reflected the different styles of painters; they can not be used as reason for designation of two new species.

Subgenus *Coonorina* Fan 1964

- Fan 1964: 305, 316, as subgenus of *Burmanomyia*.
 Type species: *Sarcophaga pattoni* Senior-White 1924, by original designation.

9 species are distributed in Oriental and Australasian/Oceanian regions.

Lioproctia (Coonorina) aureolata* (Pape & Kurahachi 2000), *n. comb.

- Sarcophaga (Lioproctia) aureolata* Pape & Kurahachi 2000: 519. Type locality: Indonesia: Timor: Nusa Tenggara Timor, Soe. Holotype (♂) deposited in Puslitbang Biologi LIPI, Cibining, Indonesia.
Sarcophaga aureolata: Pape & Kurahachi 2004: 160.
 Oriental region: Indonesia: Timor.

Flies were collected in forest at latitude 800 m a. s. l.

***Lioproctia (Coonorina) kurahashii*
(Shinonaga & Tumrasvin 1979), *n. comb.***

- Phallosphaera kurahashii* Shinonaga & Tumrasvin 1979: 141. Type locality: Thailand: Kanchana Buri: Sai Yok. Holotype (♂) deposited in National Science Museum, Tokyo, Japan.
Phallosphaera kurahashii: Kano & Lopes 1981b: 575.
Sarcophaga kurahashii: Bänzinger & Pape 2004: 1677.
Sarcophaga (Lioproctia) kurahashii: Shinonaga & Thinh 2003: 335.
Sarcophaga (Phallosphaera) kurahashii: Pape 1996: 378.

Oriental region: Thailand: south-east part.

Flies were collected in upland evergreen forests.

***Lioproctia (Coonorina) lothianensis* Sinha & Nandi 2002**

- Lioproctia lothianensis* Sinha & Nandi 2002: 39. Type locality: India: West Bengal: Sundarbans Biosphere Reserve. Holotype (♂) deposited in Department of Zoology, Presidency College, Kolkata, India.
 Oriental region: India: West Bengal.

***Lioproctia (Coonorina) pattoni*
(Senior-White 1924)**

- Sarcophaga pattoni* Senior-White 1924: 242. Type locality: India: Tamil Nadu: Nilgiri Hills, Coonor. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.
Sarcophaga pattoni: Kano & Shinonaga 1994: 263; Lin & Chen 1999: 117; Senior-White *et al.* 1940: 248; Shinonaga 2004: 283; Sugiyama *et al.* 1987: 75; 1988b: 361.
Sarcophaga (Lioproctia) pattoni: Bänzinger & Pape 2004: 1677; Pape 1996: 345; Pape & Bänzinger 2000: 201.
Burmanomyia (Coonorina) pattoni: Fan 1964: 305; 1992: 663.
Tricholioproctia pattoni: Lopes 1955: 274.

Lioproctia pattoni: Fan & Pape 1996: 251; Kano *et al.* 1999: 133; Lopes & Kano 1979b: 658; Lopes *et al.* 1977: 567.

Lioproctia (Coonorina) pattoni: Nandi 2002: 239; Verves 1990: 542; 2001: 243.

Sarcophaga pilipluris Salem 1946: 191. Type locality: Indonesia: Java: Jakarta [as "Batavia"]. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Lioproctia kunlunea Lehrer 2008: 16, *n. syn.* Type locality not given, type material absent.

Palearctic region: China: Henan, Hubei, Sichuan.
Oriental region: China: Taiwan, Yunnan; India: Mizoram, Nagaland, Sikkim, Tamil Nadu, Tripura; Indonesia: Java, Sumatra; Malaysia: West Malaysia; Nepal; Philippines; Singapore; Thailand; Vietnam.

Larvae bred in dead mammals (rabbits etc), occasionally in human feces. Flies were collected at altitudes to 1600 m a. s. l., in most types of forests and synanthropic habitats. Adults feed on decomposed animal matters and flowers of *Sapria ram*.

Taxonomical notes: Description of ♂ *Burmanomyia parvatia* is based at drawings of ♂ genitalia of *Lioproctia pattoni* from Fan 1965, 1992 and Nandi 2002. The differences in drawings are very petty and reflected the different styles of painters; they can not be used as reason for designation of a new species.

***Lioproctia (Coonorina) saprianovae*
(Pape & Bänzinger 2000), n. comb.**

Sarcophaga (Lioproctia) saprianovae Pape & Bänzinger 2000: 202. Type locality: Thailand: Ranong Province: Phya Nak Falls, Khlong Naka Wildlife Sanctuary. Holotype (♂) deposited in Swedish Museum of Natural History, Stockholm, Sweden.

Sarcophaga (Lioproctia) saprianovae: Bänzinger & Pape 2004: 1677.

Oriental region: Thailand: central-west & south parts.

Flies were collected in lowland evergreen and upland mixed deciduous forests at altitudes to 810 m a. s. l. Adults feed on flowers of *Sapria ram*. Female larviposition on carrion was registered.

***Lioproctia (Coonorina) serracudo*
(Pape & Kurahachi 2004), n. comb.**

Sarcophaga (Lioproctia) serracudo Pape & Kurahachi 2004: 174. Type locality: Indonesia: Timor I. Holotype (♂) deposited in Indonesian Institute of Sciences, Gibinong, Indonesia.

Sarcophaga (Lioproctia) serracuda: Shinonaga 2004: 287; incorrect subsequent spelling of *serracudo*.

Oriental region: Indonesia: Timor I.

***Lioproctia (Coonorina) sumbaensis*
(Shinonaga 2004), n. comb. (Fig. 8)**

Sarcophaga (Lioproctia) sumbaensis Shinonaga 2004: 288. Type locality: Indonesia: Sumba I.: Praikalittu, Lewapaku, Sumba Timur. Holotype (♂) deposited in National Science Museum, Tokyo, Japan.

Sarcophaga (Lioproctia) sumbawensis: Shinonaga 2004: 287; incorrect original spelling of *sumbaensis*.

Oriental region: Indonesia: Sumba I.

***Lioproctia (Coonorina) sundaensis*
(Shinonaga 2004), n. comb.**

Sarcophaga (Parasarcophaga) sundaensis Shinonaga 2004: 291. Type locality: Indonesia: Timor I.: Kupang. Holotype (♂) deposited in National Science Museum, Tokyo, Japan.

Oriental region: Indonesia: Lombok I., Timor I.

***Lioproctia (Coonorina) vietnamensis*
(Shinonaga & Thinh 2003), n. comb.**

Sarcophaga (Lioproctia) vietnamensis Shinonaga & Thinh 2003: 334. Type locality: Vietnam: Thua Thien Hue Province: Bach Ma. Holotype (♂) deposited in National Science Museum, Tokyo, Japan.

Oriental region: Vietnam.

Flies were collected in mountains at altitudes 1000–1200 m a. s. l.

Subgenus *Lioproctia* (s. str.)

5 species are distributed in Australasian/Oceanian region.

***Lioproctia* (s. str.) *aurescens* (Lopes 1967).**

Johnstonimyia aurescens Lopes 1967: 148. Type locality: Papua New Guinea: Bismarck Arch.: New Britain I., Yalom. Holotype (♂) deposited in Zoological Museum, Copenhagen, Denmark.

Lioproctia aurescens: Kano & Lopes 1970: 313; Verves 1990: 542.

Sarcophaga (Lioproctia) aurescens: Pape 1996: 344.

Sarcophaga compta Walker 1859: 102 [junior primary homonym of *Sarcophaga compta* Wiedemann 1830]. Type locality: Indonesia: Aru Is. Holotype (♀) deposited in Natural History Museum, London, United Kingdom.

Lioproctia compta: Lopes & Kano 1979a: 306.

Australasian/Oceanian region: Indonesia: Moluccas: Aru Is.; Papua New Guinea: Bismarck Arch. (New Britain I.).

Flies were collected at altitude about 1000 m a. s. l.

***Lioproctia* (s. str.) *enderleini*
(Kano & Lopes 1970)**

Johnstonimyia enderleini Kano & Lopes 1970: 313 [new name for *Lioproctia aurifrons* sensu Enderlein 1928]. Type locality: Indonesia: Maluku: Ambon I. Holotype not designated.

Lioproctia (s. str.) *enderleini*: Verves 1990: 542.

Lioproctia aurifrons sensu Enderlein 1928: 26 [misidentification: not *Sarcophaga aurifrons* Doleshall 1858]; Lopes *et al.* 1977: 567.

Sarcophaga (Lioproctia) ambon Pape 1995: 5 [unnecessary new name for *Lioproctia enderleini* Kano & Lopes 1970].

Sarcophaga (Lioproctia) ambon: Pape 1996: 344.

Australasian/Oceanian region: Indonesia: Maluku Arch.: Ambon I.

***Lioproctia* (s. str.) *imitatrix* (Lopes 1959)
(Fig. 9, a–c)**

Johnstonimyia imitatrix Lopes 1959: 49, 56. Type locality: Australia: Queensland: Cairns. Holotype (♂) deposited in Instituto Oswaldo Cruz, Rio de Janeiro, Brazil.

Lioproctia (s. str.) *imitatrix*: Verves 1990: 542.

Sarcophaga spinifera: Lopes 1939: 562 [misidentification: not *Sarcophaga spinifera* Hardy 1932].

Sarcophaga (Lioproctia) imita Pape 1996: 58, 344, **n. syn.** [unnecessary new name for *Lioproctia imitatrix* Lopes 1959].

Australasian/Oceanian region: Australia: Queensland; Indonesia: Irian Jaya; Papua New Guinea: Bismarck Arch., New Guinea.

Lioproctia (s. str.) spinifera (Hardy 1932)

Sarcophaga spinifera Hardy 1932b: 277. Type locality: ♂: Australia: Queensland: Brisbane. Holotype (♂) deposited in Queensland University, Brisbane, Australia.

Sarcophaga spinifera: Hardy 1934: 50; 1943: 31.

Lioproctia (s. str.) spinifera: Verves 1990: 542.

Johnstonimyia spinifera: Lopes 1959: 49, 57.

Sarcophaga (Lioproctia) spinifera: Pape 1996: 345.

Australasian/Oceanian region: Australia: Queensland.

Lioproctia (s. str.) torvida (Lopes 1959)

Johnstonimyia torvida Lopes 1959: 49, 54. Type locality: Australia: Western Australia: S estuary of Fortescue River, Mardie. Holotype (♂) deposited in Division of Entomology, Canberra, Australia.

Johnstonimyia torvida: Brown & Shipp 1978: 179.

Lioproctia (s. str.) torvida: Verves 1990: 542.

Sarcophaga (Lioproctia) torvida: Pape 1996: 345.

Australasian/Oceanian region: Australia: Western Australia.

Genus *Lucyphalla* Lehrer 2004

Lehrer 2004: 116.

Type species: *Lucyphalla nuzzacii* Lehrer 2004, by original designation.

A single species is distributed in Afrotropical region.

Lucyphalla nuzzacii Lehrer 2004 (Fig. 10)

Lucyphalla nuzzacii Lehrer 2004: 116. Type locality: Benin: Porto Novo. Holotype (♂) deposited in Laboratory of Zoology, Tel Aviv University, Israel.

Afrotropical region: Benin.

Genus *Nyikamyia* Lehrer 1994

Lehrer 1994b: 213.

Type species: *Nyikamyia barracloughiana* Lehrer 1994, by original designation.

Nyikamyia: Lehrer 2003: 36, 343.

Sarcophaga (Nyikamyia): Pape 1996: 371.

A single species is distributed in Afrotropical region.

Nyikamyia barracloughiana Lehrer 1994b (Fig. 12)

Nyikamyia barracloughiana Lehrer 1994b: 213. Type locality: Malawi: Nyila National Park, Chilinda Camp Riverine scrub. Holotype (♂) deposited in Natal Museum, Pietermaritzburg, South Africa.

Nyikamyia barracloughiana: Lehrer 2003: 343.

Sarcophaga (Nyikamyia) barracloughiana: Pape 1996: 371.

Afrotropical region: Malawi.

Genus *Phallosphaera* Rohdendorf 1938

Rohdendorf 1938: 107.

Type species: *Phallosphaera konakovi* Rohdendorf 1938, by original designation.

Phallosphaera: Fan 1964: 305, 316; 1992: 665; Fan & Pape 1996: 254; Kano *et al.* 1967: 91; Kano & Lopes 1981b: 575; Lopes *et al.* 1977: 572; Nandi 2002: 198, 351; Rohdendorf 1965: 685, 694; Verves 1986a: 173; 1990: 541; Verves & Khrokalo 2006: 77, 176.

Yunnanomyia Fan 1964: 305, 316, as subgenus of *Phallosphaera* Rohdendorf 1938. Type species: *Sarcophaga graveleyi* Senior-White 1924, by original designation.

Sarcophaga (Phallosphaera): Pape 1996: 378.

Four species are distributed in Palaearctic (east part) and Oriental regions.

Phallosphaera amica Ma 1964

Ma 1964: 62. Type locality: China: Liaoning: Ch'ienshan. Holotype (♂) deposited in University of Liaoning, China.

Phallosphaera amica: Fan 1992: 665; Fan & Pape 1996: 254; Kano & Lopes 1981b: 577; Verves 1986a: 174; 1990: 542.

Sarcophaga (Phallosphaera) amica: Pape 1996: 378.

Palaearctic region: China: Liaoning.

Phallosphaera graveleyi (Senior-White 1924) (Fig. 13, a–c)

Sarcophaga graveleyi Senior-White 1924: 229. Type locality: India: Tamil Nadu: Nilgiri Hills, Kallar (as "Kulla"). Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Sarcophaga graveleyi: Bänzinger & Pape 2004: 1677; Kano & Shinonaga 1994: 263; Lin & Chen 1999: 117; Senior-White *et al.* 1940: 224; Shah *et al.* 2006: 222; Sugiyama *et al.* 1987: 70; 1988b: 356, 359.

Sarcophaga (Phallosphaera) graveleyi: Pape 1996: 378; Shinonaga 2004: 283; Shinonaga & Thinh 2003: 332.

Phallosphaera graveleyi: Artamonov 1978: 54; 1980a: 32; Fan 1992: 664; Fan & Pape 1996: 254; Hsien 1958: 79; Kano *et al.* 1967: 91; 1999: 134; Kano & Lopes 1981b: 575; Lopes *et al.* 1977: 573; Mitsui 2002: 275; Nandi 2002: 352; Park 1977: 267; Verves 1986a: 174; 1990: 542; 2001: 243; Verves & Khrokalo 2006: 177.

Phallosphaera (Yunnanomyia) graveleyi: Fan 1964: 305, 316.

Sarcophaga longicornis Böttcher 1912b: 166 [junior primary homonym of *Sarcophaga longicornis* Macquart 1843]. Type locality: China: Taiwan: Dafulin (as "Taihorinsho"). Holotype (♂) deposited in German Entomological Institute, Berlin-Dahlem, Germany.

Sarcophaga formosana Senior-White 1924: 243 [new name for *Sarcophaga longicornis* Böttcher 1912].

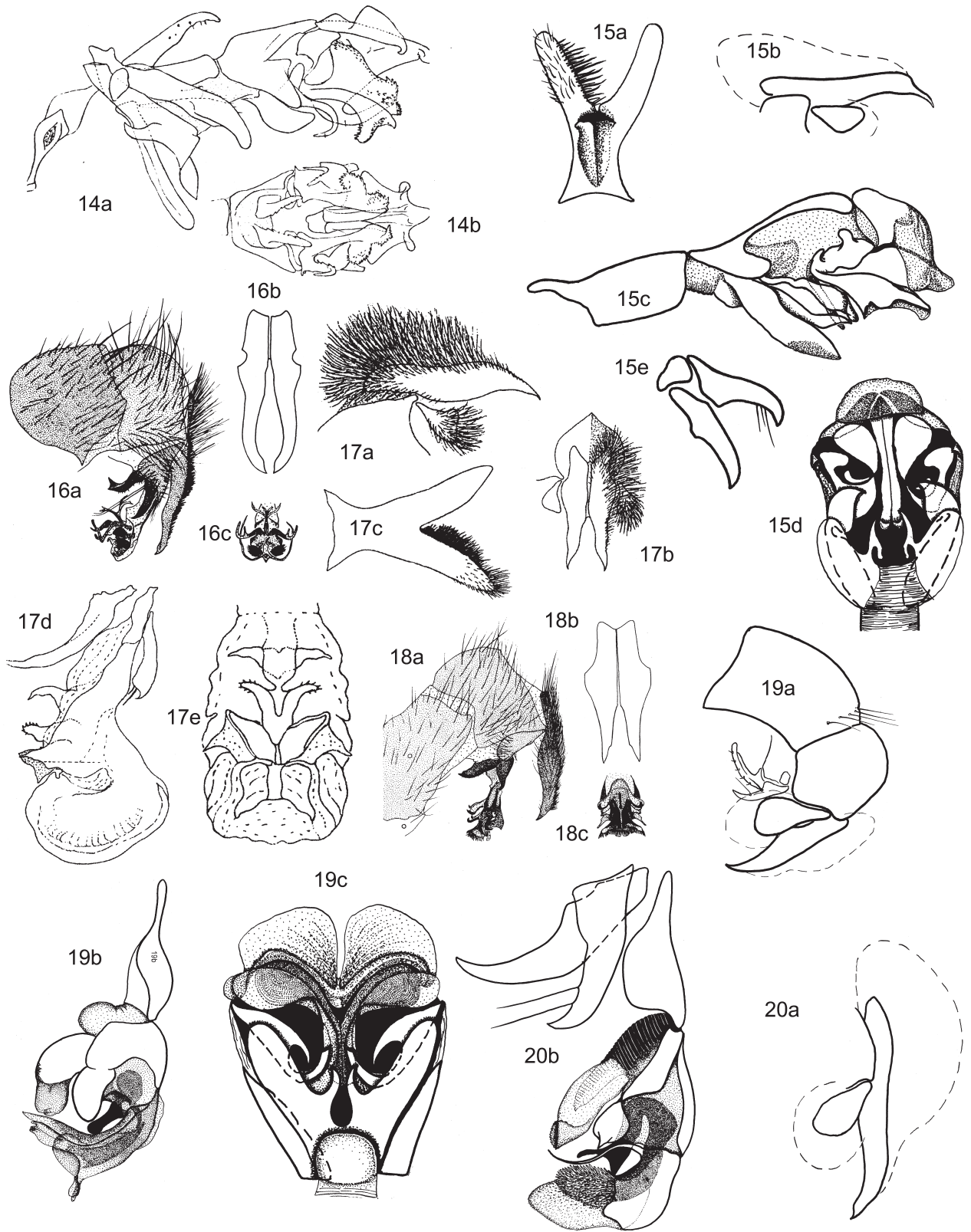
Sarcophaga formosana: Baranov 1934: 41; Senior-White *et al.* 1940: 250.

Sarcophaga kinoshitai Hori 1954: 45. Type locality: Japan: Honshu: Ishikawa Prefecture, Mt Shiritaka. Holotype (♂) deposited in Museum of Kanazawa University, Japan.

Phallosphaera huangdinia Lehrer 2008: 17, **n. syn.** Type locality not given, type material absent.

Phallosphaera jimmuana Lehrer 2008: 18, **n. syn.** Type locality not given, type material absent.

Palaearctic region: China: Hubei, Liaoning, Shaanxi, Sichuan; Japan: Honshu, Kyushu; Korea; Russia: Kurily Is. (Kunashir I.). Oriental region: China: Fujian, Guangdong, Guizhou, Hunan, Taiwan, Yunnan, Zhejiang; India: Andhra Pradesh, Tamil Nadu; Indonesia: Java; Japan: Ryukyu Is.; Nepal; Pakistan: Punjab; Thailand; Vietnam.



Larvae are developed in dead invertebrate and small vertebrate animals, sometimes as predators of pupae of saturniid butterfly *Samia cynthia* (Drury 1773). Adult flies prefer borders of forest and bush inhabitates at altitudes to 1300 m a. s. l.; feed on corpses, feces, decomposed fruits and aphid excreta.

Taxonomical notes: Description of ♂ *Phallosphaera huangdinia* is based at drawings of ♂ genitalia of *Phallosphaera gravelyi* from Fan 1965, 1992, and Verves & Khrokalo 2006; description of ♂ *Phallosphaera jimmuana* is based at drawings of ♂ genitalia of *Phallosphaera gravelyi* from Kano *et al.* 1967. The differences in drawings are very petty and reflected the different styles of painters; they can not used as reason for designation of both new species.

Phallosphaera konakovi Rohdendorf 1938

Phallosphaera konakovi Rohdendorf 1938: 107. Type locality: Russia: Primorye: Sikhote-Alin' State Reservation. Holotype (♂) deposited in Zoological Institute, Russian Academy of Science, St Petersburg, Russia.

Phallosphaera konakovi: Artamonov 1980a: 32; 1985: 19; 1987: 116; 1988: 31; Fan 1992: 664; Fan & Pape 1996: 254; Kano *et al.* 1967: 93; Kano & Lopes 1981b: 577; Lopes *et al.* 1977: 573; Verves 1986a: 174; 1990: 542; Verves & Khrokalo 2006: 177.

Sarcophaga (Phallosphaera) konakovi: Pape 1996: 378; Shinonaga & Thinh 2003: 332.

Sarcophaga konakovi: Bänzinger & Pape 2004: 1677; Shinonaga 2000: 476; 2001: 359.

Sarcophaga shiroganensis Kano & Okazaki 1956: 73. Type locality: Japan: Honshu: Tokyo, Hirayama Park. Holotype (♂) deposited in Tokyo Medical and Dental University, Tokyo, Japan.

Palearctic region: China: Heilongjiang, Jilin, Liaoning, Neimenggu, Shaanxi, Sichuan; Japan: Hokkaido, Honshu, Kyushu; North Korea; Russia: *Far East*: Kurily Is., Southern Primorye. Oriental region: China: Yunnan; Malaysia: Sabah, West Malaysia; Thailand; Vietnam.

Larvae are developed in dead fishes and river crustaceans, sometimes as predators of butterfly pupae (*Lymantria dispar*); larval cannibalism was registered

too. Adult flies prefer forests, parks and bushes along river shores at altitudes to 1000 a. s. l.; feed on corpses, feces, decomposed fruits and aphid excreta.

Phallosphaera metzgeri Kano & Shinonaga 1964

Phallosphaera metzgeri Kano & Shinonaga 1964: 213. Type locality: Japan: Hokkaido: Sapporo, Maruyama Park. Holotype (♂) deposited in Tokyo Medical and Dental University, Tokyo, Japan.

Phallosphaera metzgeri: Kano *et al.* 1967: 94; Kano & Lopes 1981b: 577; Verves 1986a: 174; 1990: 542; Verves & Khrokalo 2006: 177.

Sarcophaga (Phallosphaera) metzgeri: Pape 1996: 378.

Palearctic region: Japan: Hokkaido, Honshu; South Korea. Mountainous species.

Genus *Robackina* Lopes 1975

Lopes 1975: 159.

Type species: *Sarcophaga triplasia* Wulp 1896, by original designation.

Robackina: Pape 1996: 366 [as synonym of *Neobellieria* Blanchard 1939]; Verves 1990: 542.

Two species are distributed in Nearctic and Neotropical regions.

Robackina sternalis Reinhard 1939

Emblemasma sternalis Reinhard 1939: 62. Type locality: USA: Texas:

Donna. Holotype (♂) deposited in Canadian National Collection of insects and related arthropods, Ottawa, Canada.

Archimimus sternalis: Downes 1965: 942.

Robackina sternalis: Lopes 1988: 921; Lopes & Tibana 1988: 325.

Sarcophaga (Neobellieria) sternalis: Pape 1996: 367.

Nearctic region: USA: Texas.

Robackina triplasia (Wulp 1896) (Fig. 14, a, b)

Sarcophaga triplasia Wulp 1896: 269. Type locality: Mexico: Guerrero: Amula. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Sarcophaga triplasia: Downes 1965: 960.

Sarcophaga (Neobellieria) triplasia: Pape 1996: 367.

Robackina triplasia: Lopes 1975: 159; 1980: 229; Verves 1990: 542.

Sarcophaga nigra Parker 1914: 38, as var. of *Sarcophaga fulvipes* Walker 1853 [junior secondary homonym of *Myophora nigra* Robineau-Desvoidy 1830]. Type locality: USA: New York: Niagara Falls. Deposited in Massachusetts Agricultural College, Boston, USA.

Sarcophaga dissidua Parker 1917: 157 [New name for *Sarcophaga fulvipes nigra* Parker 1914].

Sarcophaga fulvipes [misidentification; not *Sarcophaga fulvipes* Macquart 1842 and Walker 1853]: Aldrich 1916: 182.

Nearctic region: Canada: Ontario, Quebec; Mexico: Durango, Nuevo Leon; USA: Arizona, Arkansas, Florida, Georgia, Indiana, Iowa, Kentucky, Louisiana, Maryland, Mississippi, Missouri, New Mexico, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Virginia.

Genus *Rosellea* Rohdendorf 1937

Rosellea Rohdendorf 1937: 242, as subgenus of *Parasarcophaga* Johnston & Tiegs 1921. Type species: *Sarcophaga aratrix* Pandellé 1896; by original designation.

Figures 14–20

14, Male genitalia of *Robackina triplasia* (a, aedeagus and gonites, lateral view; b, distiphallus, ventral view); after Lopes 1975. 15, Male genitalia of *Rosellea aratrix* (a, 5th abdominal sternite, ventral view; b, cercus & surstylus, lateral view; c, aedeagus, lateral view; d, distiphallus, ventral view; e, gonites, lateral view); orig. 16, Male genitalia of *Sabiella freyi* (a, genitalia, lateral view; b, cerci, dorsal view; c, distiphallus, anterior view); after Zumpt 1972. 17, Male genitalia of *Saputaramyia saputaraensis* (a, cercus & surstylus, lateral view; b, ibid., dorsal view; c, 5th abdominal sternite, ventral view; d, aedeagus and gonites, lateral view; e, distiphallus, ventral view); after Nandi 1992. 18, Male genitalia of *Sclerophalla santosdiasi* (a, genitalia, lateral view; b, cerci, dorsal view; c, distiphallus, anterior view); after Zumpt 1972. 19, Male genitalia of *Takanoa rugosa* (a, hypandrium, cercus, surstylus & gonites, lateral view; b, aedeagus, lateral view; c, distiphallus, ventral view); orig. 20, Male genitalia of *Ziminisca semenovi* (a, cercus & surstylus, lateral view; b, aedeagus & gonites, lateral view); orig.

Parasarcophaga (Rosellea): Verves 1986a: 172.

Rosellea: Fan & Pape 1996: 256; Lehrer & Martínez-Sánchez 2000: 259; Lopes *et al.* 1977: 573; Nandi 2002: 197, 372; Peris *et al.* 1999: 121; Povolný & Verves 1997: 226; Verves 1990: 542; Verves & Khrokalo 2006: 77, 177.

Sarcophaga (Rosellea): Pape 1996: 386.

Coeisca Rohdendorf 1966: 459, as subgenus of *Boettcherisca* Rohdendorf 1937. Type species: *Sarcophaga khasiensis* Senior-White 1924, by monotypy.

Leigongshanophaga Lehrer & Wei 2010b: 8, *n. syn.* Type species: *Sarcophaga catoptosa* Wei & Yang 2007, by original designation.

Seven species are distributed in Nearctic, Palaearctic and Oriental regions.

Rosellea aratrix (Pandellé 1896) (Fig. 15, a–e)

Sarcophaga aratrix Pandellé 1896: 191. Type locality: France: Hautes-Pyrénées: Tarbes. Lectotype (♂; designated by Pape 2004: 23) deposited in Muséum Nationale d'Histoire Naturelle, Paris, France.

Sarcophaga aratrix: Allen 1966: 228; Baudet 1985: 176; Bezzi 1907: 471; Böttcher 1912a: 730; Kramer 1909: 83; Pape & Merz 1998: 339; Séguy 1941: 75;

Sarcophaga (Rosellea) aratrix: Kara & Pape 2002: 295; Pape 1996: 386; 2004: 23; Pape *et al.* 2002: 219; Papp 2001: 436.

Parasarcophaga (Rosellea) aratrix: Artamonov 1980a: 31; 1987: 112; Blackith & Blackith 1984: 255; 1990: 699; Blackith *et al.* 1994: 427; Fan 1992: 711; Pape 1987: 162; Rognes 1986: 12; Rohdendorf 1937: 243; 1975: 201; Salaas 1943: 23; Verves 1986a: 172.

Rosellea aratrix: Artamonov 1993: 226; Fan & Pape 1996: 256; Peris *et al.* 1999: 121; Povolný 1997: 100; 1999: 19; Povolný & Verves 1997: 226; Verves 1990: 542; 1998: 54; Verves & Khrokalo 2006: 178.

Villeneuveella aratrix: Baranov 1942: 570; Enderlein 1928: 34.

Sarcophaga kuntzei Kramer 1905: 13. Type locality: Germany: Oberlausitz. Holotype (♂) deposited in Staatliche Museum für Naturkunde, Görlitz, Germany.

Sarcophaga pseudaratrix Baranov 1925: 2. Type locality: Serbia: Topčider near Belgrade. Lectotype (♂; designated by Sabrosky & Crosskey 1970: 432) deposited in U. S. National Museum, Washington, D. C., USA.

Sarcophaga pseudaratrix: Sabrosky & Crosskey 1970: 432.

Rosellea naumanni Lehrer & Martínez-Sánchez 2000: 258. Type locality: Spain: Alicante: Sierra Salinas (Villena). Holotype (♂) deposited in Unidad de Entomología, Departamento de Ciencias Ambientales y Recursos Naturales, Universidad de Alicante, Spain.

Nearctic region: Canada: Manitoba; USA: Alaska. Palaearctic region: Albania; Armenia; Austria; Azerbaijan; Belgium; Bulgaria; Byelorussia; China: Liaoning, Neimenggu; Croatia; Czech Republic: Bohemia, Moravia; Denmark; Estonia; Finland; France; Germany; Gruzia (including Abkhazia); Hungary; Ireland; Italy: continental part, Corsica & Sicily; Kazakhstan; Kosovo; Latvia; Lithuania; Moldova; Norway; Poland; Romania; Russia: *European part*: Bashkortostan, Ivanovo, Krasnodar, Leningrad, Lipetzk, Moscow, Stavropol', Voroniez regions, *West Siberia*: Altay, Tomsk, Tuva regions, *East Siberia*: Buryatia, Irkutsk regions, *Far East*: Amur, Kamchatka, Khabarovsk, Magadan regions; Serbia; Slovakia; Slovenia; Spain; Sweden; Switzerland; Turkey; Ukraine: Cherkasy, Chernigiv, Chernivtsi, Crimea, Ivano-Frankivsk, Kharkiv, Kherson,

Kirovograd, Kyiv, Mykolayiv, Odesa, Poltava, Sumy, Vinnytsya, Volyn', Zakarpattya, Zaporizhzhya, Zhytomyr regions; United Kingdom.

Larvae are predators of another maggots, developing in small carcasses (insects, snails, birds, mice etc.), and also known as facultative predators of pupae of dendrophilous butterflies (*Lymantria monacha*) and parasites of adult cerambycid beetle *Prionus coriarius* (L. 1758). The adult flies visit the corpses, feces, flowering plants and decaying fruits. Flies prefer suburban gardens, humid forests and bogs at altitudes to 2000 m a. s. l. and tend towards culturophily.

Rosellea beckiana Lehrer 1996

Rosellea beckiana Lehrer 1996: 265. Type locality: Israel: Be'er Sheva.

Holotype (♂) deposited in Institute of Systematics and Biology of University of Amsterdam, The Netherlands.

Rosellea beckiana Lehrer 2006b: 19.

Palaearctic region: Israel.

Rosellea catoptosa (Wei & Yang 2007), *n. comb.*

Sarcophaga catoptosa Wei & Yang 2007: 531. Type locality: China: Guizhou: Leigongshan National Nature Reserve, 800-1000 m a. s. l. Holotype (♂) deposited in Centre for Disease Prevention and Control, Anshun City, Guizhou, China.

Leigongshanophaga catoptosa: Lehrer & Wei 2010b: 8.

Oriental region: China: Guizhou.

Rosellea gigas (Thomas 1949)

Sarcophaga gigas Thomas 1949: 166. Type locality: China: Sichuan: Chungking, Koloshan. Holotype (♂) deposited in National Institute of Health, Nanking, China.

Sarcophaga (Rosellea) gigas: Pape 1996: 386.

Parasarcophaga (Rosellea) gigas: Kano *et al.* 1967: 69; Park 1977: 264; Verves 1986a: 172.

Rosellea gigas: Fan 1992: 711; Fan & Pape 1996: 256; Verves 1990: 542; Verves & Khrokalo 2006: 123.

Sarcophaga koreaensis Park & Kano 1961: 116. Type locality: South Korea: Taegu, Mt Palgong. Holotype (♂) deposited in Tokyo Medical and Dental University, Japan.

Palaearctic region: China: Heilongjiang, Henan, Hubei, Jangsu, Liaoning, Sichuan; Russia: *Far East*: South Primorye; South Korea. Oriental region: China: Yunnan, Zhejiang.

Flies were collected at borders of mountain forests.

Rosellea khasiensis (Senior-White 1924)

Sarcophaga khasiensis Senior-White 1924: 246. Type locality: India: Assam: Cherrapunji, Khasi Hills. Holotype (♂) deposited in Natural History Museum, London, United Kingdom.

Sarcophaga khasiensis: Bänzinger & Pape 2004: 1677; Kano & Shinonaga 1994: 261; Senior-White *et al.* 1940: 225; Sugiyama *et al.* 1988b: 357, 360.

Sarcophaga (Rosellea) khasiensis: Pape 1996: 387;

Tricholioproctia khasiensis: Lopes 1955: 274;

Boettcherisca (Coeisca) khasiensis: Rohdendorf 1966: 459;

Parasarcophaga (Rosellea) khasiensis: Fan 1992: 711; Kano *et al.* 1967: 70; 1999: 139;

Rosellea khasiensis: Fan & Pape 1996: 256; Lopes *et al.* 1977: 573; Nandi 1991: 40; 2002: 372; Verves 1990: 542; 2001: 243.

Rosellea longwangiana Lehrer & Wei 2010a: 2, *n. syn.* Type locality: China: Guizhou: Ziyun, Bandang, 800 m, 15.07.1984. Holotype (♂) deposited in Center for Disease Prevention and Control, Guishou, China.

Rosellea fuxingia Lehrer 2010a: 4, *n. syn.* Type locality not given, type material absent.

Rosellea manipuriella Lehrer 2010a: 6, *n. syn.* Type locality not given, type material absent.

Palearctic region: China: Sichuan. Oriental region: Bhutan; China: Guizhou, Yunnan; India: Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim; Nepal; Thailand; Vietnam.

Flies were collected on altitudes about 500–2500 m a. s. l., from bushes and mixed forests.

Taxonomical notes: The original description and drawings of genitalia of male *Rosellea longwangiana* are very detailed and practically are not differentiated from similar descriptions and drawings of ♂ genitalia of *Rosellea khasiensis* by Fan 1992; Kano *et al.* 1967; Nandi 2002; Rohdendorf 1966; Senior-White 1924 etc. Description of ♂ *Rosellea manipuriella* is based at drawings of ♂ genitalia of *Rosellea khasiensis* from Fan 1992, and the same of ♂ *Rosellea fuxingia* - at drawings of ♂ genitalia of *Rosellea khasiensis* from Nandi 2002. The differences in drawings are very petty and reflected the different styles of painters; they can not used as base for designations of the new species.

Rosellea spinipenis (Shinonaga & Tumrasvin 1979)

Parasarcophaga spinipenis Shinonaga & Tumrasvin 1979: 144. Type locality: Thailand: Kanchana Buri: near Sai York. Holotype (♂) deposited in National Science Museum, Tokyo, Japan.

Sarcophaga spinipenis: Pape 1996: 419 (not assigned to subgenus).

Sarcophaga spinipes: Bänzinger & Pape 2004: 1687, incorrect subsequent spelling of *spinipenis*.

Rosellea spinipenis: Verves 1990: 542.

Oriental region: Thailand. Flies were collected in forest by using the decaying meat bait.

Rosellea suthep (Pape & Bänzinger 2003), *n. comb.*

Sarcophaga (Rosellea) suthep Pape & Bänzinger 2003: 52. Type locality: Thailand: Chiang Mai: Doi Suthep, above Sangwal School. Holotype (♂) deposited in Swedish Museum of Natural History, Stockholm, Sweden.

Sarcophaga (Rosellea) suthep: Bänzinger & Pape 2004: 1677.

Sarcophaga (Parasarcophaga) suthep: Shinonaga & Thinh 2003: 332.

Parasarcophaga (Rosellea) aratrix: Kano *et al.* 1999: 138 (misidentification: not *Sarcophaga aratrix* Pandellé 1896).

Oriental region: Thailand; Vietnam.

Flies were collected at altitudes 1000–1300 m a. s. l., in evergreen hill forests.

Genus *Sabiella* Verves 1990

Verves 1990: 541. Type species: *Sarcophaga freyi* Zumpt 1953, by original designation.

Sabiella: Lehrer 2002: 53; 2003: 38, 404.

Sarcophaga (Sabiella): Pape 1996: 387.

Two species are distributed in Afrotropical region.

Sabiella freyi (Zumpt 1953) (Fig. 16, a–c)

Sarcophaga freyi Zumpt 1953b: 77. Type locality: South Africa: Transvaal [now: Mpumalanga]: Sabie. Holotype (♂) deposited in South African Institute for Medical Research, Johannesburg, South Africa.

Sarcophaga (Prionophalla) freyi: Dear 1980: 814; Zumpt 1972: 46, 51, 77.

Sarcophaga (Sabiella) freyi: Pape 1996: 387;

Sabiella freyi: Lehrer 2003: 404; 2006a: 23; Verves 1990: 542.

Parasarcophaga (Liosarcophaga) freyi: Rohdendorf 1963: 9.

Afrotropical region: South Africa: Eastern Cape, KwaZulu-Natal, Mpumalanga, Western Cape.

Sabiella mandelania Lehrer 2005

Sabiella mandelania Lehrer 2005: 40. Type locality: South Africa: KwaZulu-Natal: Itala Game Reserve, Louwsburg. Holotype (♂) deposited in Museum für Naturkunde der Humboldt-Universität, Berlin, Germany.

Afrotropical region: South Africa: KwaZulu-Natal.

Genus *Saputaramyia* Verves 2001

Verves 2001: 243. Type species: *Parasarcophaga saputaraensis* Nandi 1992, by original designation.

A single species is distributed in Oriental region.

Saputaramyia saputaraensis (Nandi 1992) (Fig. 17, a–e).

Parasarcophaga (Liosarcophaga) saputaraensis Nandi 1992b: 189. Type locality: India: Gujarat: Saputara. Holotype (♂) deposited in Zoological Survey of India, Kolkata, India.

Parasarcophaga (Liosarcophaga) saputaraensis: Nandi 2002: 253.

Sarcophaga (Ziminisca) saputaraensis: Pape 1996: 415.

Saputaramyia saputaraensis: Verves 2001: 243.

Oriental region: India: Gujarat.

Genus *Sclerophalla* Rohdendorf 1963

Sclerophalla Rohdendorf 1963: 5, 9, as subgenus of *Parasarcophaga*. Type species: *Sarcophaga santosdiasi* Zumpt 1951, by original designation.

Sclerophalla: Lehrer 2002: 56; 2003: 42, 414; Verves 1990: 541.

A single species is distributed in Afrotropical region.

Sclerophalla santosdiasi (Zumpt 1951) (Fig. 18, a–c)

Sarcophaga santosdiasi Zumpt 1951: 180. Type locality: Mozambique: Maputo. Holotype (♂) deposited in South African Institute for Medical Research, Johannesburg, South Africa.

Sarcophaga (Prionophalla) santosdiasi: Dear 1980: 813;

Sarcophaga (Liopygia) santosdiasi: Pape 1996: 348; Zumpt 1972: 44, 63, 180.

Parasarcophaga (Sclerophalla) santosdiasii: Rohdendorf 1963: 9.

Sclerophalla santosdiasii: Lehrer 2003: 414; Verves 1990: 542.

Afrotropical region: Mozambique; South Africa: Kwazulu-Natal.

Genus *Takanoa* Rohdendorf 1965

Takanoa Rohdendorf 1965: 690, 694. Type species: *Sarcophaga hakusana* Hori 1954, by monotypy.

Takanoa: Kano *et al.* 1967: 161; Verves 1986a: 178; 1990: 541; Verves & Khrokalo 2006: 77, 178.

Sarcophaga (Takanoa): Pape 1996: 410.

Ussuriphalla Lehrer 2010b: 12, *n. syn.* Type species: *Takanoa rugosa* Rohdendorf 1969, by original designation.

Two species are distributed in southeastern part of Palaearctic region.

Takanoa hakusana (Hori 1954)

Sarcophaga hakusana Hori 1954: 49. Type locality: Japan: Honshu: Ishikawa Prefecture, Mt. Hakusan. Holotype (♂) deposited in Kanazawa University, Japan.

Takanoa hakusana: Fan & Pape 1996: 257; Kano *et al.* 1967: 31; Park 1974: 24; 1977: 254; Rohdendorf 1965: 694; Verves 1986a: 178; 1990: 542; Verves & Khrokalo 2006: 178.

Sarcophaga (Takanoa) hakusana: Pape 1996: 410.

Takanoa vervesiana Lehrer 2010b: 12, *n. syn.* Type locality not given, type material absent.

Palaearctic region: China: Liaoning; Japan: Honshu, Kyushu; South Korea.

Flies were collected in mountain regions.

Taxonomical notes: Description of ♂ *Takanoa vervesiana* is based at drawings of ♂ genitalia of *Takanoa hakusana* from Verves & Khrokalo 2006. The differences with other drawings of ♂ genitalia of *T. hakusana* are very petty and reflected the different styles of painters; they can not be used as base for description of a new species.

Takanoa rugosa Rohdendorf 1969 (Fig. 19, a–c)

Takanoa rugosa Rohdendorf 1969: 947. Type locality: Russia: Southern Primorye: Shkotov District. Holotype (♂) deposited in Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

Takanoa rugosa: Artamonov 1980a: 31; 1988: 30; Verves 1986a: 178; 1990: 542; Verves & Khrokalo 2006: 178.

Sarcophaga (Takanoa) rugosa: Pape 1996: 410.

Takanoa kolomyietzi Artamonov 1980b: 151. Type locality: Russia: Far East: Primorye, Ussuriysk District, environs of Kamenushka. Holotype (♂) deposited in Institute of Biology, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia.

Ussuriphalla qirimia Lehrer 2010b: 13, *n. syn.*

Palaearctic region: Russia: Far East: Southern Primorye.

Larvae developed in dead fishes, freshwater crustaceans and mollusks on shores of natural freshwater reservoirs. Flies were collected on shores of streams, rivers and lakes.

Taxonomical notes: Description of ♂ *Ussuriphalla*

qirimia is based at drawings of ♂ genitalia of *Takanoa rugosa* from Verves & Khrokalo 2006. The differences with other published drawings of ♂ genitalia of *T. rugosa* are very petty and reflected the different styles of painters; they can not be used as base for designation of a new species.

Genus *Ziminisca* Rohdendorf 1965

Ziminisca Rohdendorf 1965: 689, as subspecies of *Parasarcophaga* Johnston & Tiegs 1921. Type species: *Sarcophaga semenovi* Rohdendorf 1925, by original designation.

Parasarcophaga (Ziminisca): Verves 1986a: 173.

Ziminisca: Verves 1990: 541.

Sarcophaga (Ziminisca): Pape 1996: 415.

One species is distributed in Palaearctic (Central Asia) region.

Ziminisca semenovi (Rohdendorf 1925) (Fig. 20, a, b)

Sarcophaga semenovi Rohdendorf 1925: 121. Type locality: Kazakhstan: "Kulandy-Aral, Turkestan, Aralsee". Holotype (♂) deposited in Zoological Museum of Moscow Lomonosov University, Russia.

Sarcophaga (Ziminisca) semenovi: Pape 1996: 415.

Parasarcophaga (Liosarcophaga) semenovi: Rohdendorf 1937: 207.

Parasarcophaga (Ziminisca) semenovi: Fan 1992: 703; Rohdendorf 1965: 689; Rohdendorf & Verves 1977: 726; 1978: 256; Verves 1986a: 173.

Ziminisca semenovi: Fan & Pape 1996: 257; Verves 1990: 542.

Sarcophaga linearis Villeneuve 1936: 8. Type locality: China: Xinjiang: Djungaria, Bugas. Holotype (♂) deposited in Stuttgarter Museum zur Naturkunde, Germany.

Palaearctic region: China: Gansu, Jilin, Ningxia, Xinjiang; Kazakhstan; Kyrgyzstan; Mongolia: Bayan-Ulegey aimak; Russia: North Caucasus (Dagestan); Turkmenistan; Uzbekistan.

Larvae developed in decaying meat in laboratory conditions.

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References

- Aldrich J.M.** 1916. *Sarcophaga and allies in North America*. Thomas Say Foundation 1. Entomological Society of America, La Fayette, Indiana, 302 p. + 16 pls + index.
- Allen A.A.** 1966. *Sarcophaga* sp. (Dipt., Calliphoridae) in a London suburban garden. *Entomologist's Monthly Magazine* 102 (1229-1331): 228.

- Arnaud P.H. Jr., Owen T.S. 1981.** Charles Howard Curran (1894-1972). *Myia* 2: i-vi + 1-393.
- Artamonov S.D. 1978.** Sarkofagidy (Diptera, Sarcophagidae) ostrova Kynashyr [Sarcophagids (Diptera, Sarcophagidae) of Kunashir Island]. *Trudy Biologo-Pochvennogo Instituta Dal'nevostochnogo Tsentra Akademii Nauk SSSR [Transactions of the Biological Soil Institute of the Far Eastern Centre of Academy of Sciences of USSR]* 50: 153-157 [in Russian with English subtitle].
- Artamonov S.D. 1980a.** Landshaftno-biotopicheskiye priurochennost I pishevyeh svyazi dalnevostochnyh sarkofagid [Landscape-biotopical arrangement and food relations of Far Eastern sarcophagids]. *Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR. Sveriya Biologicheskikh Nauk [Transactions of the Siberian Branch of Academy of Sciences of USSR. Series of Biological Sciences]* 2: 29-36 [in Russian with English subtitle].
- Artamonov S.D. 1980b.** Novye vidy sarkofagid (Diptera, Sarcophagidae) iz yuznogo Primorya [New species of sarcophagids (Diptera, Sarcophagidae) from southern Primorye] p. 149-155 in: **Cherepanov A.I. (ed.), Sistematika i Ekologiya Zhivotnykh. Novye i Maloizvestnye Vidy Fauny Sibiri [Systematic and ecology of animals. New and little known species of Siberian fauna]. Vol. 14.** Nauka, Novosibirsk, 168 p. [in Russian with English summary].
- Artamonov S.D. 1985.** Hishnye i paraziticheskie sarkofagidy (Diptera, Sarcophagidae) yuga Dalnego Vostoka [Predaceous and parasitic sarcophagids (Diptera, Sarcophagidae) from south of [Soviet] Far East], p. 11-24 in: **Arefin V.S. (ed.), Fauna i Ekologiya Nasekomykh Primorya i Kamchatki: vrediteli i entomofagi [Fauna and ecology of insects of Primorye and Kamchatka: pests and entomophags].** Akademiya Nauk SSSR, Vladivostok 121 (224), 124 p. [in Russian with English summary].
- Artamonov S.D. 1987.** Serye myasnye muhi (Sem. Sarcophagidae) [The grey flesh flies (Fam. Sarcophagidae)], p. 102-119 in: **Soboleva R.G. (ed.), Nasekomye i Kleshchi Dal'nego Vostoka, imeyushchie Mediko-veterinarnoye Znachenie [Insects and mites of the Far East, with medical and veterinary importance].** Nauka, Leningrad [in Russian].
- Artamonov S.D. 1988.** Sarkofagidy (Diptera, Sarcophagidae) Ussuriyskogo Zapovennika [Sarcophagids (Diptera, Sarcophagidae) of Ussuriysk Reserve], p. 26-34 in: **Arefin V.S. (ed.), Rol' nasekomykh v biotzenozakh sovetskogo Dal'nego Vostoka [The role of insects in biocoenoses of the Soviet Far East].** Academia Nauk SSSR, Dal'nevostochnoe otdelenie, Institut biologii i pochvovedeniya, Vladivostok [in Russian with English subtitle].
- Artamonov S.D. 1992.** Osobennosti ekspluatatsii pishevykh resursov dvukrylymi semeystva Sarcophagidae (Insecta: Diptera) v usloviyakh Dalnevostochnogo regiona [The peculiarities of the exploitation of food resources by two-winged flies from family Sarcophagidae (Insecta: Diptera) in the conditions of the Far East Region]. *Zhivotnyy i Rastennyy Mir Dal'nego Vostoka [Animal and Plant World of the Far East]* 1: 43-54 [in Russian with English summary].
- Artamonov S.D. 1993.** Sarkofagidy (Diptera, Sarcophagidae) Nizhnego Amura [Sarcophagids (Diptera, Sarcophagidae) of the Lower Amur], p. 222-228. in: **Artamonov S.D. (ed.), Biologicheskie Issledovaniya na Gorno-Tayezhnoy Stantsii [Biological Investigations at Mountain Taiga Station]. Vol. 1.** Ussuriysk Pedagogical Institute Press, Ussuriysk [in Russian].
- Bänzinger H., Pape T. 2004.** Flowers, faeces and cadavers: natural feeding and laying habits of flesh flies in Thailand (Diptera: Sarcophagidae, *Sarcophaga* spp.). *Journal of Natural History* 38: 1677-1694.
- Baranov N. 1925.** Neue Dipteren aus Serbien. *Letopis poljoprivredne, ogleadne i kontrolne stanice u Topčideru, Belgrade* (1): 1-11.
- Baranov N. 1934.** Zur Kenntnis der Raupenfliegenfauna der Salomon-Inseln (Dipt., Tachinidae). *Stylops* 3 (8): 181-184.
- Baranov N. 1938.** Weiteres über die Tachiniden (s. l.) der Salomon-Inseln. *Veterinarski arhiv* 8: 170-174.
- Baranov N. 1942.** Sarcophagen in unabhängigen Staate Kroatien. *Veterinarski Arhiv. Mjesečnik Veterinarskog Fakulteta Zagrebu* 12 (12): 497-659.
- Baudet J.L. 1985.** Particularités morphologiques et fonctionelles du chorion des oeufs de *Sarcophaga* (insectes, diptères), en relation avec l'ovoviviparité. *Bulletin de la Société des Sciences Naturelles de l'Ouest de la France (N. S.)* 7 (4): 176-184.
- Bezzi M. 1907.** Sarcophagini, p. 467-521 in: **Becker T., Bezzi M., Kertesz K., Stein P. (eds.), Katalog der paläarktischen Dipteren. 3.** Wesselényi, Budapest.
- Bezzi M. 1928.** *Diptera Brachycera and Athericera of the Fiji Islands based on material in the British Museum (Natural History).* British Museum (Natural History), London [1927], viii + 220 p.
- Blackith R.M., Blackith R.E. 1984.** Larval aggression in Irish flesh-flies (Diptera: Sarcophagidae). *Irish Naturalists Journal* 21 (6): 255-257.
- Blackith R.M., Blackith R.E. 1988.** Sarcophagini from northern Sulawesi (Indonesia), including four new species (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* 39 (3): 301-311.
- Blackith R.E., Blackith R.M. 1990.** Insect infestation of small corpses. *Journal of Natural History* 24: 699-709.
- Blackith R.E., Blackith R.M., O'Connor, J.P. 1994.** A check-list of Irish flesh-flies (Diptera: Sarcophagidae: Sarcophagini) and their known distribution. *Irish Naturalists Journal* 24 (11): 427-434.
- Böttcher G. 1912a.** Die männlichen Begattungswerkzeuge bei dem Genus *Sarcophaga* Meig. und ihre Bedeutung für die Abgrenzung der Arten. *Deutsche entomologische Zeitschrift* (6): 705-736.
- Böttcher G. 1912b.** H. Sauters Formosa-Ausbeute. Genus *Sarcophaga* (Dipt.). *Entomologische Mitteilungen* 1: 163-170.
- Böttcher G. 1913.** H. Sauters Formosa-Ausbeute. Einige neue *Sarcophaga*-Arten. *Annales historico-naturales Musei Nationalis Hungarici* 11: 374-381.
- Bohart G.E., Gressitt J.L. 1951.** Filth-inhabiting flies of Guam. *Bulletin of Bernice P. Bishop Museum* 204: I-VII, 1-152.
- Boldaruev V.O. 1952.** Parazity sibirskogo shelkopryada (*Dendrolimus sibiricus* Tschetv.) v Vostochnoy Sibiri [The parasites of Siberian moth (*Dendrolimus sibiricus* Tschetv.) in Eastern Siberia]. *Entomologicheskoe Obozrenie* 32: 56-68 [in Russian with English subtitle].
- Brown K.R., Shipp E. 1978.** Wing morphometric analysis of Australian Sarcophaginae (Diptera: Sarcophagidae). *Systematic Entomology* 3 (3): 179-188.
- Bryan E.H. Jr. 1934.** A review of the Hawaiian Diptera, with descriptions of new species. *Proceedings of the Hawaiian Entomological Society* 8 (3): 399-468.
- Buei K., Park S.H., Yamugi H. 1978.** Bionomics of three species of fleshflies, *Boettcherisca peregrina*, *Parasarcophaga similis* and *P. crassipalpis*, with reference to the effects of temperature on the development and fecundity. *Japanese Journal of Sanitary Zoology* 29 (2): 125-132.
- Buxton P.A. 1929.** Sarcophagidae, p. 141-150 in: *Insects of Samoa and others terrestrial Arthropoda.* Pt. 6, fasc. 3. Diptera. Trustees of the British Museum 1927-1935, London.
- Cantrell B.K. 1981.** The immature stages of some Australian *Sarcophaginae* (Diptera: Sarcophagidae). *Journal of the Australian Entomological Society* 20 (3): 237-248.
- Chigusa Y., Kawakami K., Shimada M., Kurahashi H., Matsuda H. 2006.** Hospital-acquired oral myiasis due to *Boettcherisca septentrionalis* (Diptera: Sarcophagidae) in Shimane Prefecture, Japan. *Medical Entomology and Zoology* 57 (2): 139-143.
- Chigusa Y., Kirinoki M., Matsuda H. 2005a.** Nosocomial myiasis due to *Sarcophaga peregrina* in an intensive care unit (ICU) in Japan. *Medical Entomology and Zoology* 56: 355-358.

- Chigusa Y., Shinonaga S., Honda M., Kanma W., Kakinuma H., Kirinoki M., Matsuda H. 2005b. Vaginal myiasis due to *Sarcophaga peregrina* (Diptera: Sarcophagidae) on a patient with atrial fibrillation, cerebral infarction and leg amputation. *Medical Entomology and Zoology* 56: 247-249.
- Chigusa Y., Tanaka K., Yokoi H., Matsuda Y., Sasakai Y., Ikadatsu Y., Baba K. 1994. Two cases of otomyiasis caused by *Sarcophaga peregrina* and *S. similis* (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* 45: 153-157.
- Curran C.H. 1934. Sarcophaginae of the American Museum Congo Expedition (Diptera). *American Museum Novitates* 727: 1-31.
- Curran C.H. 1936. Diptera in: The Templeton Crocker Expedition to Western Polynesian and Melanesian islands, 1933, No 30. *Proceedings of the Californian Academy of Sciences* (Ser. 4) 22 (1): 1-66.
- Dear J.P. 1980. Family Sarcophagidae, p. 801-818 in: Crosskey R. W. (ed.), *Catalogue of the Diptera of the Afrotropical Region*. British Museum (Natural History), London.
- Downes W.L. Jr. 1965. Family Sarcophagidae, p. 933-961 in: Stone A., Sabrosky C.W., Wirth W.W., Foote R.H., Coulson J.R. (eds), *A catalog of the Diptera of America north of Mexico*. Agricultural Handbook 276. United State Department of Agriculture, Washington, DC.
- Early M., Goff M.L. 1986. Arthropod succession patterns in exposed carrion on the island of O'ahu, Hawaiian Islands, U.S.A. *Journal of Medical Entomology* 23: 520-531.
- Egorov N.N. 1962. K biologii *Pygaera anastomosis* L. (Lepidoptera, Notodontidae)[On the biology of *Pygaera anastomosis* L. (Lepidoptera, Notodontidae)]. *Entomologicheskoye obozreniye* 41: 294-299 [in Russian with English summary].
- Enderlein G. 1928. Klassifikation der Sarcophagiden. Sarcophagiden-Studien I. *Archiv für klassifikatorische und phylogenetische Entomologie* 1 (1): 1-56.
- Evenhuis N.L. 1985. Checklist of the Diptera of Niue Island. *International Journal of Entomology* 27 (4): 382-386.
- Eysell A. 1915. *Sarcophaga fuscicauda* Böttcher, ein Dermoparasit des Menschen (Dipt.). *Archiv für Schiffs- und tropischen Hygiene* 19: 2-7.
- Eysell A. 1926. *Sarcophaga fuscicauda* Böttcher, ein Dermoparasit des Menschen (Dipt.). *Entomologische Mitteilungen* 4: 4-8.
- Fan Z. 1964. Descriptions of some new Sarcophagini from China (Diptera: Sarcophagidae). *Acta zootaxonomica sinica* 1 (2): 305-319 [in Chinese with English summary].
- Fan Z. 1965. *Key to common synanthropic flies of China*. Chinese Academy of Science, Peking [= Beijing], xv + 330 p. [in Chinese].
- Fan Z. 1992. *Key to the common flies of China*. 2nd ed. Shanghai Institute of Entomology, Academia sinica, xlvi + 991 p. + 40 pls [in Chinese with English summary].
- Fan Z. 2002. Sarcophagidae, p. 81-95, 184-185 & color pl. 5 in: Zhang S.H., Jia F. (eds) [2000], *Medical insects and control of Shenzhen*. Hunan Science and Technology Publication, Changsha, Hunan [in Chinese with English subtitle].
- Fan Z., Pape T. 1996. Checklist of Sarcophagidae (Diptera) recorded from China. *Studia dipterologica* 3 (2): 237-258.
- Feng Y., Liu G. L., Yang S.B., Shi P. 1990. Studies on the breeding places of flies in Yaan prefecture in Sichuan Province, China. *Acta entomologica sinica* 31 (1): 53-63.
- Ferrari P., Standfast H.A., Dyce A.L. 1975. A survey of blood-sucking and synanthropic Diptera and dung insects on Norfolk Island, South Pacific. *Journal of the Australian Entomological Society* 14 (1): 7-13.
- Goff M. L., Brown W.A., Hewadikaram K.A., Omori A.I. 1991. Effect of heroin in decomposing tissues on the development rate of *Boettcherisca peregrina* (Diptera: Sarcophagidae) and implications of this effect on estimation of postmortem intervals using arthropod development patterns. *Journal of Forensic Sciences* 36 (2): 537-542.
- Goff M.L., Omori A.I., Goodbrod J.R. 1989. Effect of cocaine in tissues on the development rate of *Boettcherisca peregrina* (Diptera: Sarcophagidae). *Journal of Medical Entomology* 26 (2): 91-93.
- Greene C.T. 1925. The puparia and larvae of sarcophagid flies. *Proceedings of the United States National Museum* 66 (29): 1-26, 9 pls.
- Hall D.G., Bohart G.E. 1948. The Sarcophagidae of Guam (Diptera). *Proceedings of the Entomological Society of Washington* 50: 127-135.
- Hanski I. 1981. Carrion flies (Calliphoridae) in tropical rain forests in Sarawak, South-East Asia. *Journal of the Sarawak Museum* 29: 191-200.
- Hardy G.H. 1927. Notes on Australian and exotic sarcophagid flies. *Proceedings of the Linnean Society of New South Wales* 52 (4): 447-459.
- Hardy G.H. 1932a. Notes on the *Sarcophaga peregrina* group (Dipt.). *Bulletin of Entomological Research* 23: 45-48.
- Hardy G.H. 1932b. Some new Australian sarcophagid flies and notes on others. *Australian Zoologist* 7 (3): 275-281.
- Hardy G.H. 1934. Notes on sarcophagid flies (Diptera). *Australian Zoologist* 8 (1): 50-53.
- Hardy G.H. 1943. The Sarcophaginae of Australia and New Zealand. *Proceedings of the Linnean Society of New South Wales* 68 (1-2): 17-32.
- Hennig W. 1941. Verzeichnis der Dipteren von Formosa. *Entomologische Beibefte aus Berlin-Dahlem* 8: I-IX, 1-239.
- Ho C. 1934. Notes on a collection of sarcophagid flies from Chekiang and Kiangsu with descriptions of two new species. *Bulletin of Fan Memorial Institute of Biology* 5: 31-39.
- Ho C. 1936. On the genus *Sarcophaga* from Hainan. *Bulletin of Fan Memorial Institute of Biology* 6: 207-215, 259-267.
- Ho C. 1938. On some species of *Sarcophaga* from Java and its neighboring islands. *Annals of the Tropical Medicine and Parasitology* 32 (2): 115-127, 12 figs.
- Hori K. 1951. Morphological studies on muscoid flies of medical importance in Japan. III, A. Some common species of Sarcophaginae (Dipt., Sarcophagidae) from Japan. *Scientific Reports of the Kanazawa University* 1 (2): 1-11 [in Japanese with English summary].
- Hori K. 1952. On some flies of medical importance obtained from Korea and adjacent district. *Japanese Journal of Applied Zoology* 17 (1-2): 77-82 [in Japanese with English summary].
- Hori K. 1953. Morphological studies on muscoid flies of medical importance in Japan. IV. On eleven species of Sarcophaginae (Dipt., Sarcophagidae) from Japan. *Scientific Reports of the Kanazawa University* 2 (1): 75-85 [in Japanese with English summary].
- Hori K. 1954. Morphological studies on muscoid flies of medical importance in Japan. VII. Descriptions of six new species of subfamily Sarcophaginae (Diptera, Sarcophagidae) from Japan. *Scientific Reports of the Kanazawa University* 2 (2): 43-50 [in Japanese with English summary].
- Hori K. 1967. The dipteran visitors to *Stapelia grandiflora* flowers. *Kontyû* 35: 60-61.
- Hsien L.K. 1958. Notes on the families Calliphoridae, Sarcophagidae and Muscidae in Amoy with descriptions of three new species. *Acta entomologica sinica* 8 (1): 77-84 [in Chinese with English summary].
- Illingworth J.F. 1926. Notes on *Sarcophaga fuscicauda* Böttcher (Diptera). *Proceedings of the Hawaiian Entomological Society* 6: 263-265.
- James M.T. 1947. The flies that cause myiasis in man. *Miscellaneous Publications of the United States Department of Agriculture* 631: 1-175.
- Jiang C.P. 2002. A collective analysis on 54 cases of human myiasis in China from 1995-2001. *Chinese Medical Journal* 115 (10): 1445-1447 [in Chinese with English summary].
- Johnston T.H., Hardy G.H. 1923. A revision of the Australian Diptera belonging to the genus *Sarcophaga*. *Proceedings of the Linnean Society of New South Wales* 48 (2): 94-129.
- Johnston T.H., Tieggs C.W. 1921. New and little-known sarcophagid flies from south-eastern Queensland. *Proceedings of the Royal Society of Queensland* 33 (4): 46-90.

- Johnston T.H., Tieggs C.W. 1922a.** Notes on the biology of some of the more common Queensland muscoid flies. *Proceedings of the Royal Society of Queensland* **34**: 77-104.
- Johnston T.H., Tieggs C.W. 1922b.** New and known Australian sarcophagid flies. *Proceedings of the Royal Society of Queensland* **34**: 181-190.
- Johnston T.H., Tieggs C.W. 1922c.** Sarcophagid flies in the Australian Museum collection. *Records of Australian Museum* **13**: 175-188 + 1 pl.
- Joshi B.G. 1973.** A study of the cephalopharyngeal skeleton and the spiracles of the larva of *Sarcophaga peregrina* Robineau-Desvoidy (Diptera: Cyclorrhapha: Sarcophagidae). *Journal of University of Poona* **44**: 77-89.
- Kamimura K., Arakawa R. 1986.** A case report on nasal myiasis due to the flesh fly, *Boettcherisca peregrina*. *Japanese Journal of Sanitary Zoology* **37** (2): 163-164 [in Japanese with English summary].
- Kang Y.B. 1988a.** Classification and identification of the blow fly *Lucilia sericata* and the flesh fly *Sarcophaga fuscicauda* with particular reference to animal health in Korea. 1. Scanning electron microscopy on spiracles in larvae. *Korean Journal of Veterinary and Public Health* **12**: 211-216.
- Kang Y.B. 1988b.** Classification and identification of the blow fly *Lucilia sericata* and the flesh fly *Sarcophaga fuscicauda* with particular reference to animal health in Korea. 2. Scanning electron microscopy on head parts and wing venations. *Korean Journal of Veterinary and Public Health* **12**: 217-222.
- Kani A., Iwata S. 1981.** A case report of external myiasis of *Boettcherisca peregrina*. *Japanese Journal of Sanitary Zoology* **32** (1): 23-28 [in Japanese with English summary].
- Kani A., Nakamura O., Ono H., Nagase K., Totani T., Morishita T., Koyama K., Iwata S. 1981.** A case of myiasis for papillary adenocarcinoma of parotid gland. *Acta dermatologica* **76** (3): 173-178 [in Japanese with English summary].
- Kano R. 1950.** Notes on the flies of medical importance in Japan (Part I). Flies of Hokkaido. *Japanese Journal of Experimental Medicine* **20**: 823-831.
- Kano R. 1951.** Notes on the flies of medical importance in Japan (Part IV). Flies of Hachijo area. *Japanese Journal of Experimental Medicine* **21**: 223-227.
- Kano R. 1957.** Notes on the flies of medical importance in Japan. Part XIII. Descriptions of sarcophagid flies collected on the Yaeyama Island, Ryukyu. *Bulletin of Tokyo Medical and Dental University* **4** (3): 287-294.
- Kano R., Field G., Shinonaga S. 1967.** Sarcophagidae (Insecta: Diptera). *Fauna Japonica, Vol. 7.* Biogeographical Society of Japan, Tokyo, xii + 168 p. + 41 pls.
- Kano R., Lopes H.S. de. 1969.** Two new species of *Burmanomyia* Fan (Diptera: Sarcophagidae). *Pacific Insects* **11** (3-4): 521-523.
- Kano R., Lopes H.S. de. 1970.** Notes on types of Oriental and Neotropical species of Sarcophagidae described by G. Enderlein (Diptera). *Revista brasileira de biología* **30** (2): 313-316.
- Kano R., Lopes H.S. de. 1981a.** On *Johnstonimyia* Lopes with descriptions of two new species from Australian region (Diptera, Sarcophagidae). *Revista brasileira de biología* **41** (2): 295-298.
- Kano R., Lopes H.S. de. 1981b.** On the genus *Phallosphaera* Rohdendorf, 1938 (Diptera: Sarcophagidae). *Revista brasileira de biología* **41** (3): 575-578.
- Kano R., Okazaki T. 1956.** Notes on the flies of medical importance in Japan. Part X. Descriptions of four new species and one newly found species of *Sarcophaga* from Tokyo. *Bulletin of Tokyo Medical and Dental University* **3** (1): 73-80.
- Kano R., Sato K., Tange H. 1951.** Notes on the flies of medical importance in Japan (Part II). The larvae of *Sarcophaga* known in Japan. *Japanese Journal of Experimental Medicine* **21**: 115-131 [in Japanese with English summary].
- Kano R., Shinonaga S. 1964.** Notes on the flies of medical importance in Japan. Part XXII. Descriptions of three new species of sarcophagid flies. *Japanese Journal of Sanitary Zoology* **15** (4): 213-219.
- Kano R., Shinonaga S. 1965.** Illustrated keys to the adult filth flies of Japan. *Addendum Annual Professional Report 1965*, **406**, 30 p., 138 pls.
- Kano R., Shinonaga S. 1977.** Two new species belonging to the genus *Boettcherisca* Rohd. from Lesser Sunda Islands in Indonesia. *Japanese Journal of Sanitary Zoology* **28** (3): 323-326.
- Kano R., Shinonaga S. 1994.** Studies on the sarcophagid flies from Nepal (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* **45** (supplement): 253-275.
- Kano R., Sugiyama E. 1983.** Two new species of the genus *Boettcherisca* Rohdendorf, 1937, with a taxonomic key to species of the genus (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* **34** (1): 43-48.
- Kano R., Thinh T.H., Kurahashi H. 1999.** The flesh-flies (Diptera, Sarcophagidae) from the northern part of Vietnam. *Bulletin of National Scientific Museum (A)* **25** (2): 129-141.
- Kara K., Pape T. 2002.** Check list of Turkish Sarcophagidae (Insecta, Diptera) with new records. *Mitteilungen der Museum für Naturkunde* **49** (2): 291-295.
- Kirner S.H., Lopes H.S. de. 1961.** A new species of *Boettcherisca* Rohdendorf, 1937 from Formosa (Diptera, Sarcophagidae). *Memórias do Instituto Oswaldo Cruz* **59** (1): 65-67.
- Kramer H. 1905.** Artgrenze von *Sarcophaga carnaria* Mg. (L.) und 2 neue *Sarcophaga* Arten. *Zeitschrift für systematische Hymenopterologie und Dipterologie* **5**: 12-16.
- Kramer H. 1909.** Nonnenparasiten aus der Gattung *Sarcophaga*. *Entomologische Rundschau* **26**: 83-88.
- Kurahashi H., Kano R. 1984.** Phylogeny and geographical distribution of the genus *Boettcherisca* Rohdendorf (Diptera: Sarcophagidae). *Japanese Journal of Medical Science and Biology* **37**: 27-34.
- Kurahashi H., Ohtaki T. 1989.** Geographical variation in the incidence of pupal diapause in Asian and Oceanian species of the flesh flies *Boettcherisca* (Diptera: Sarcophagidae). *Physiological Entomology* **14** (4): 291-298.
- Kurahashi H., Shudo C., Moribayashi A., Ohtaki, T. 1995.** Altitudinal variation of pupal diapause in the flesh fly, *Boettcherisca nathani* (Diptera: Sarcophagidae) from the Nepalese Himalaya. *Japanese Journal of Entomology* **63** (3): 573-577.
- Kurahashi H., Shudo C., Moribayashi A., Ohtaki, T. 1991.** Geographical distribution of diapausing species of *Boettcherisca* in the Indian subcontinent (Diptera: Sarcophagidae). *Proceedings of the 1st Asia-Pacific Conference of Entomology (APCE) (Chiang Mai, 1989)* **1**: 111-114.
- Kurahashi H., Suenaga O. 1996.** Life history of the flesh fly, *Boettcherisca septentrionalis* in Nagasaki, Western Japan. *Medical Entomology and Zoology* **47** (3): 247-254.
- Lehrer A.Z. 1981.** *Parasarcophaga paularnaudi* n. sp. nouvelle sarcophagine du Proche-Orient (Diptera, Sarcophagidae). *Bulletin et annales de la Société royale entomologique de Belgique* **117** (7-9): 185-188.
- Lehrer A.Z. 1994a.** Deux nouveaux genres paléarctiques de parasarcophages et la réhabilitation du genre *Varirosellea* Hsue (Insecta: Diptera: Sarcophagidae). *Revue roumaine de biologie. Série de biologie animale* **39** (1): 13-18.
- Lehrer A.Z. 1994b.** Deux nouveaux genres pour la faune des sarcophagines afrotropicales (Insecta; Diptera, Sarcophagidae). *Reichenbachia* **30** (36): 211-216.
- Lehrer A.Z. 1996.** Trois Sarcophagines méditerranéennes nouvelles (Diptera, Sarcophagidae). *Mitteilungen der Schweizerischen entomologischen Gesellschaft* **69** (2): 261-270.
- Lehrer A.Z. 1998.** Le présence de *Macabiella paularnaudi* (Lehrer, 1981) dans la faune d'Israël (Diptera, Sarcophagidae). *Bulletin de la Société entomologique de Mulhouse* (juillet-septembre): 43-45.

- Lehrer A. Z. 2002.** Le système taxonomique des Sarcophaginae afrotropicales (Diptera, Sarcophagidae). *Entomologica* [2000] **34**: 41-63.
- Lehrer A. Z. 2003.** Sarcophaginae de l'Afrique (Insecta, Diptera, Sarcophagidae). *Entomologica* **37**: 5-528.
- Lehrer A. Z. 2004.** Six taxons africaines nouveaux de Sarcophaginae (Diptera: Sarcophagidae). *Entomologica* **38**: 115-126.
- Lehrer A. Z. 2005.** Nouveaux Sarcophaginae afrotropicaux et orientaux (Diptera, Sarcophagidae). *Entomologica* **39**: 5-59.
- Lehrer A. Z. 2006a.** Contributions zoogéographiques sur les Sarcophaginae afrotropicaux (Diptera, Sarcophagidae). *Fragmenta dipterologica* **2**: 19-23.
- Lehrer A. Z. 2006b.** Liste des Sarcophaginae et Paramacronychiinae du Proche Orient, identifiés dans les collections de TAU (Diptera, Sarcophagidae). *Fragmenta dipterologica* **3**: 14-22.
- Lehrer A. Z. 2008.** Etablissement des identités taxonomiques de certains homonymes de la faune asiatique des Sarcophagides (Diptera, Sarcophagidae). *Fragmenta dipterologica* **17**: 10-19.
- Lehrer A. Z. 2010a.** Deux espèces orientales nouvelles du genre *Rosellea* Rohdendorf (Diptera, Sarcophagidae). *Fragmenta dipterologica* **26**: 4-6.
- Lehrer A. Z. 2010b.** Taxonomie du genre *Takanoa* Rohdendorf et établissement d'un nouveau genre et de deux nouvelles espèces paléarctiques (Diptera, Sarcophagidae). *Fragmenta dipterologica* **26**: 11-14.
- Lehrer A. Z., Dobrivojević K. 1970.** Morphological and biological study of entomophagous Diptera of Yugoslavia. *Journal for Scientific Agricultural Research* [1969] **22** (77): 99-117.
- Lehrer A. Z., Martínez-Sánchez A. 2000.** Zwei neue Sarcophaginae-Arten der spanischen Fauna (Diptera: Sarcophagidae). *Entomologische Zeitschrift* **110** (9): 258-261.
- Lehrer A. Z., Wei L. 2010a.** Deux espèces nouvelles de Sarcophagides de la faune de Chine (Diptera, Sarcophagidae). *Fragmenta dipterologica* **26**: 1-4.
- Lehrer A. Z., Wei L. 2010b.** Un nouveau genre oriental de Sarcophagidae (Diptera). *Fragmenta dipterologica* **27**: 8-11.
- Lin F. J., Chen C. S. 1999.** The name list of Taiwan Diptera. *The Taiwan fauna*, 1. Institute of Zoology, Academia Sinica, Taipei, 125 p.
- Lopes H. S. de. 1939.** Sobre um Rhinophoridae e varios Sarcophagidae da coleção do "Deutsches Entomologisches Institut" em Berlin-Dahlem. *Memórias do Instituto Oswaldo Cruz* [1938] **33** (4): 555-566 + 4 pls.
- Lopes H. S. de. 1941.** Hawaiian Sarcophagidae. *Proceedings of the Hawaiian Entomological Society* **11** (1): 53-56.
- Lopes H. S. de. 1955.** Contribution to the knowledge of the Australian sarcophagid flies belonging to genus "*Tricholioproctia*" Baranov, 1938 (Diptera). *Anais da Academia brasileira de ciências* [1954] **26** (2): 235-276.
- Lopes H. S. de. 1958.** Diptera: Sarcophagidae. *Insects of Micronesia* **13** (2): 15-49.
- Lopes H. S. de. 1959.** A revision of Australian Sarcophagidae (Diptera). *Studia entomologica* **2** (1-4): 33-67.
- Lopes H. S. de. 1961a.** A contribution to the knowledge of the genus *Boettcherisca* Rohdendorf, 1937 (Diptera, Sarcophagidae). *Memórias do Instituto Oswaldo Cruz* **59** (1): 69-82.
- Lopes H. S. de. 1961b.** Hawaiian Sarcophagidae (Diptera). *Proceedings of Hawaiian Entomological Society* **17** (3): 419-427.
- Lopes H. S. de. 1967.** (Noona Dan Papers No 44). Some Sarcophagidae (Diptera) from the Bismarck Islands and the Philippines. *Entomologische Meddelerser* **35** (2): 143-176.
- Lopes H. S. de. 1975.** On some North American Sarcophagidae with red legs (Diptera). *Revista brasileira de biologia* **35** (1): 155-164.
- Lopes H. S. de. 1980.** Notes on *Robackina triplasia* (Wulp) (Diptera: Sarcophagidae). *Revista brasileira de biologia* **40** (2): 229-230.
- Lopes H. S. de. 1988.** On Johnsoniini (Diptera: Sarcophagidae), with *Notochaetisca* new name, and descriptions of eight new species. *Revista brasileira de biologia* **48** (2): 315-332.
- Lopes H. S. de, Kano R. 1978.** On the monotypic genus *Chrysosarcophaga* (Diptera: Sarcophagidae). *Pacific Insects* **18** (3-4): 223-226.
- Lopes H. S. de, Kano R. 1979a.** On the types of some Oriental species of Sarcophagidae (Diptera) described by Francis Walker. *Revista brasileira de biologia* **39** (2): 305-317.
- Lopes H. S. de, Kano R. 1979b.** Notes on *Sarcorobdendorfia* with key of the species (Diptera: Sarcophagidae). *Revista brasileira de biologia* **39** (3): 657-670.
- Lopes H. S. de, Kano R., Shinonaga S., Kurahashi H. 1977.** Family Sarcophagidae, p. 557-583 in: **Delfinado M. D., Hardy D. E. (eds)**, *A catalog of the Diptera of the Oriental Region. Vol. 3. Cyclorrhapha (including division Aschiza)*. University Press of Hawaii, Honolulu, 854 p.
- Lopes H. S. de, Tibana R. 1988.** On American Sarcophagidae (Diptera), with descriptions of a new genus and three new species. *Revista brasileira de biologia* **48** (4): 915-924.
- Ma Z. Y. 1964.** Notes on Sarcophagidae (Diptera) from Liaoning, China. Descriptions of three new species. *Acta zootaxonomica sinica* **1** (1): 55-64.
- Maeda O. 1960.** Some notes on the biology of *Sarcophaga peregrina* with reference to the mass-breeding for bioassay of insecticides. Endemic Diseases. *Bulletin of the Nagasaki University* **2** (1): 67-72 [in Japanese with English summary].
- Magpayo F. R., Kano R. 1986.** A new species of sarcophagine fly collected in Mindanao, Philippines (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* **37** (1): 75-78.
- Malloch J. R. 1930.** Exotic Muscaridae (Diptera). XXIX. *Annals and Magazine of Natural History* [10] **5**: 465-484.
- Merz B., Haenni J. P. 2000.** Morphology and terminology of adult Diptera (other than terminalia), p. 21-51 in: **Papp L., Darvas B. (eds)**, *Contributions to a Manual of Palaearctic Diptera (with special reference to flies of economic importance)*. Vol. 1, *General and applied dipterology*. Science Herald Press, Budapest.
- Mihara M., Shono T., Yamanaka S. 1988.** Infectivity of entomogenous nematodes (*Steinernema* and *Heterorabditis*) to *Boettcherisca peregrina* and *Musca domestica*. *Japanese Journal of Sanitary Zoology* **39**: 131-139.
- Mitsui H. 2002.** Habitat preference of carrion-breeding calliphorid and sarcophagid flies in central Japan. *Medical Entomology and Zoology* **53** (suppl. 2): 275-278.
- Moribayashi A., Shudo C., Kurahashi H. 2001.** Latitudinal variation in the incidence of pupal diapause in Asian and Oceanian populations of the flesh fly, *Boettcherisca peregrina* (Diptera: Sarcophagidae). *Medical Entomology and Zoology* **52** (4): 463-468.
- Mungomery R. W. 1947.** Report of the Division of Entomology and Pathology. *Reports of Bureau of Sugar Experimental Station of Queensland* **47**: 35-45.
- Nandi B. C. 1991.** Sarcophagid flies (Diptera: Sarcophagidae) from Meghalaya, India. *Journal of Bengal Natural History Society* **10** (2): 38-49.
- Nandi B. C. 1992a.** Genus *Boettcherisca* Rohdendorf from India with description of one new species (Diptera: Sarcophagidae). *Journal of Bengal Natural History Society* **11** (1): 34-40.
- Nandi B. C. 1992b.** Sarcophagid flies (Diptera: Sarcophagidae) from Gujarat, India. *Proceedings of the Zoological Society* **45** (2): 187-196.
- Nandi B. C. 2002.** Diptera Sarcophagidae. *Fauna of India and the Adjacent Countries*, 10, Zoological Survey of India, Kolkata, XXIV + 608 p.
- Novotný J., Turčáni, M., Zúbrík M. 1998.** System of gypsy moth population regulation in the Slovak Republic, p. 269-277 in: **Liebold A. M., McManus M. L. (eds)**, *Population dynamics, impacts, and integrated management of forest defoliating insects*. General Technical Report NE-247. USDA Forest Service, Northeastern Research Station, Hamden, 291 p.

- Orian A. J. E. 1962.** A list of Diptera recorded from Mauritius. *Mauritius Department of Agriculture* **94**: 1-31.
- Otranto D., Stewens J. R. 2002.** Molecular approaches to the study of myiasis-causing larvae. *International Journal for Parasitology* **32** (11): 1345-1360.
- Pandellé L. 1896.** Études sur les muscides de France. II^e partie (suite). *Revue d'Entomologie* **15**: 1-230.
- Pape T. 1987.** The Sarcophagidae (Diptera) of Fennoscandia and Denmark. *Fauna entomologica scandinavica* **19**: 1-203 + 2pl.
- Pape T. 1991.** New names for *Sarcophaga bezzii* Salem, 1946 and *Johnstonimyia bezzii* Kano & Lopes, 1981 (Diptera, Sarcophagidae). *Japanese Journal of Entomology* **59**: 215-216.
- Pape T. 1995.** A catalogue of the Sarcophagidae (Insecta: Diptera) described by G. Enderlein. *Steenstrupia* **21** (1): 1-30.
- Pape T. 1996.** Catalogue of the Sarcophagidae of the world (Insecta: Diptera). *Memoirs of Entomology, International*, **8**, Associated Publishers, Gainesville, Florida, U.S.A., 558 p.
- Pape T., Bänzinger H. 2000.** Two new species of *Sarcophaga* (Diptera: Sarcophagidae) among pollinators of newly discovered *Sapria ram* (Rafflesiaceae). *Raffles Bulletin of Zoology* **48** (2): 201-208.
- Pape T., Bänzinger H. 2003.** Three new species of *Sarcophaga* Meigen found during ecological studies on flesh flies (Diptera: Sarcophagidae) in Thailand. *Entomological Science* **6**: 49-56.
- Pape T., González-Mora D., Peris S. V., Báez M. 2002.** Sarcophagidae, p. 218-221 in: **Carles-Tolrá Hjorth-Andersen M. (coordinator)**, *Monografías Sociedad Entomológica Aragonesa* **8**. Catálogo de los Diptera de España, Portugal y Andorra (Insecta). SEA, Zaragoza, 323 p.
- Pape T., Kurahashi H. 2000.** A new species of *Sarcophaga* (*Lioproctia*) from Timor, Indonesia (Diptera: Sarcophagidae). *Entomological Science* **3** (3): 519-522.
- Pape T., Kurahashi H. 2004.** Three new species of *Sarcophaga* (Insecta: Diptera, Sarcophagidae) from Timor, with a lectotype designation for *Myophora peronii*. *Species Diversity* **9**: 165-185.
- Pape T., Merz B. 1998.** Sarcophagidae, p. 338-341 in: **Merz B., Bächli G., Haenni J. P., Gonseth, Y. (eds)**, *Fauna Helvetica 1. Diptera - checklist*. Schweizerische Entomologische Gesellschaft, Neuchâtel, 370 p.
- Papp L. 2001.** Sarcophagidae, p. 426-437 in: **Papp L. (ed.)**, *Check list of the Diptera of Hungary*. Hungarian Natural History Museum, Budapest, 550 p.
- Park S. H. 1962.** Studies on flies in Korea. 2. Three unreported species of Sarcophagidae and *Lucilia*. *Korean Journal of Zoology* **5** (2): 39-42.
- Park S. H. 1974.** On the hitherto unreported species in Korea. *Korean Journal of Zoology* **17** (1): 23-36.
- Park S. H. 1977.** Studies on flies in Korea. 11. Taxonomical studies on sarcophagid flies (Diptera). *Bulletin of Tokyo Medical and Dental University* **24** (4): 249-284.
- Park S. H. & Kano R. 1961.** Description of *Sarcophaga koreaensis* n. sp. (Sarcophagidae, Diptera) collected in Taegu, Korea. *Japanese Journal of Sanitary Zoology* **12**: 116-118.
- Parker R. R. 1914.** Sarcophagidae of New England: males of the genera *Ravinia* and *Böttcheria*. *Proceedings of the Boston Society of Natural History* **35**: 1-77 + 8 pls.
- Parker R. R. 1917.** A new *Sarcophaga* from New York. *Canadian Entomologist* **49**: 157-161.
- Parker R. R. 1922.** Australian Sarcophagidae; new species and data concerning others (Diptera). *Canadian Entomologist* **54**: 4-9.
- Parker R. R. 1923.** New Sarcophagidae from Asia, with data relating to the *dux* group. *Annual Magazine of Natural History* [9] **11** (61): 123-129.
- Patton W. S., Evans A. M. 1929.** *Insects, ticks, mites and venomous animals of medical and veterinary importance. Part I.* Medical University Press, Croydon, X + 786 p.
- Peris S. V., González-Mora D., Mingo E. 1999.** The Parasarcophagina of the Iberian Peninsula (Diptera, Sarcophagidae). *Boletín de la Real Sociedad de Historia Natural (Sección Biológica)* **95** (1-2): 115-134.
- Povolný D. 1988.** Typenbezeichnung und heutiger taxonomischer Stand der von Heinrich Kramer beschriebenen Sarcophagini (Diptera, Sarcophagidae). *Abhandlungen und Berichte des Naturkundemuseums Görlitz* **62** (6): 1-16.
- Povolný D. 1997.** Sarcophagidae, p. 98-100 in: **Chvala M. (ed.)**, *Check list of Diptera (Insecta) of the Czech and Slovak Republics*. Karolinum Charles University Press, Prague, 130 p.
- Povolný D. 1999.** Three new Mediterranean taxa of flesh-flies and additional notes on their synecology (Diptera, Sarcophagini). *Acta Universitatis agriculturae et silviculturae mendelianae brunensis* **67** (1): 7-21.
- Povolný D., Verves Yu. G. 1997.** The flesh-flies of Central Europe (Insecta, Diptera, Sarcophagidae). *Spixiana* **24**: 1-264.
- Quo F. 1952.** On the species of *Sarcophaga* Meigen occurring in the Shanghai region. *Acta entomologica sinica* **2** (1): 60-86 [in Chinese with English summary].
- Reed J. P. 1974.** A revision of the Sarcophaginae of the Madagascan zoogeographical region, with a description of a new species (Diptera: Sarcophagidae). *Zeitschrift für angewandte Zoologie* **61** (2): 191-211.
- Reinhard H. J. 1939.** New genera and species of muscoid Diptera. *Bulletin of Brooklyn Entomological Society* **34**: 61-74.
- Rognes K. 1986.** The Sarcophagidae (Diptera) of Norway. *Fauna norvegica* (Ser. B) **33**: 1-26.
- Robineau-Desvoidy J. B. 1830.** Essai sur les Myodaires. *Mémoires présentés par divers Savans à l'Académie Royale des Sciences de l'Institut de France* **2** (2): 1-813.
- Rohdendorf B. B. 1925.** Eine neue *Sarcophaga*-Art aus Zentral-Asien (Dipt.). *Entomologische Mitteilungen* **14** (2): 121-123.
- Rohdendorf B. B. 1937.** *Sem. Sarcophagidae. Chast' I. [Fam. Sarcophagidae. Part I.]*. *Fauna SSSR. Nasekomye Drukrylye [Faune de l'URSS. Insectes diptères]* **19** (1), Akademiya Nauk SSSR, Moscou-Leningrad, XV + 51 p. [in Russian with French subtitle and German summary].
- Rohdendorf B. B. 1938.** Novye vidy Sarcophaginae, sobrannye K. Ya. Gruninym v Sihote-Alinskoy gosudarstvennoy zapovednike [New species of Sarcophaginae from the Sikhote-Alin' State Reserve Territory, collected by K. Ya. Grunin]. *Trudy Sikhote-Alinskogo Gosudarstvennogo Zapovednika* **2**: 101-110 [in Russian with English summary].
- Rohdendorf B. B. 1963.** Über das System der Sarcophagen der äthiopischen Fauna. *Stuttgarter Beiträge zur Naturkunde* (A) **124**: 1-22.
- Rohdendorf B. B. 1964.** O seryh myasnyh muhah iz Yuznogo Kitaya (Diptera, Sarcophagidae) [Some data on grey flesh-flies from south China (Diptera, Sarcophagidae)]. *Entomologicheskoye obozreniye* **43** (1): 80-85 [in Russian with English subtitle].
- Rohdendorf B. B. 1965.** Sostav triby Sarcophagini (Diptera, Sarcophagidae) Evrazii [Composition of the tribe Sarcophagini (Diptera, Sarcophagidae) of Eurasia]. *Entomologicheskoye obozreniye* **44** (3): 676-695 [in Russian with English summary].
- Rohdendorf B. B. 1966.** Diptera from Nepal. Sarcophagidae. *Bulletin of British Museum (Natural History)*. *Series B. Entomology* **17** (10): 457-464.
- Rohdendorf B. B. 1969.** Nekotorye novye vidy Sarcophaginae (Diptera, Sarcophagidae) iz Azii [Some new species of Sarcophaginae (Diptera, Sarcophagidae) from Asia]. *Entomologicheskoye obozreniye* **48** (4): 943-950 [in Russian with English summary].
- Rohdendorf B. B. 1975.** Some Sarcophagidae from southern Spain. *Steenstrupia* **3** (19): 197-204.
- Rohdendorf B. B., Verves Yu. G. 1977.** K faune Sarcophagidae (Diptera) Mongol'skoy Narodnoy Respubliki. I. Sarcophaginae i Sarcotachininae [On the fauna of Sarcophagidae (Diptera) of the Mongolian People's Republic. I. Sarcophaginae and Sarcotachininae], p. 716-730 in: **Kerzhner I. M. (ed.)**, *Nasekomye Mongolii [Insects of Mongolia]*. Vol. 5. Nauka, Leningrad. [in Russian with English subtitle].

- Rohdendorf B.B., Verves Yu. G. 1978. Sarcophaginae (Diptera, Sarcophagidae) from Mongolia (Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei, No 434). *Annales historico-naturales Musei nationalis Hungarici* 70: 241-258.
- Rudzinski H. G., Kozanek M. 1991. Sarcophagidae from Korea (Diptera). *Entomologische Zeitschrift mit Insektenbörse* 101 (17): 330-332.
- Sabrosky C.W., Crosskey R.W. 1970. The type-material of Muscidae, Calliphoridae, and Sarcophagidae described by N. Baranov (Diptera). *Proceedings of the Entomological Society of Washington* 72 (4): 425-436.
- Sakurai H. 1979. Oviviparous process and the effect of hemp in the fleshfly, *Boettcherisca peregrina*. *Japanese Journal of Sanitary Zoology* 30: 263-270 [in Japanese with English summary].
- Salaas U. 1943. *Parasarcophaga atratrix* Pand. (Dipt., Tachinidae) in Körper von *Prionus coriarius* entwickelt. *Annales entomologici fennici* 9 (1): 23-28.
- Salem H. . 1946. New species of *Sarcophaga* (Diptera - Sarcophagidae) from the Australasian Region and its neighbouring islands. *Bulletin de l'Institut d'Egypte* 27: 183-213.
- Sankaran T., Syed R.A. 1972. The natural enemies of bagworms on oil palms in Sabah, East Malaysia. *Pacific Insects* 14: 57-71.
- Segal D.B., Humphrey J.M., Edwards S.J., Kirby M.D. 1968. Parasitological reviews. Parasites of man and domestic animals in Vietnam, Thailand, Laos, and Cambodia. *Experimental Parasitology* 23: 412-464.
- Séguy, E. 1941. Études sur les mouches parasites. Tome 2. Calliphorines (suite), sarcophagines et rhinophorides de l'Europe occidentale et meridionale. Recherches sur la morphologie et la distribution géographique des Diptères à larves parasites. *Encyclopédie entomologique Sér. A* 21: 1-436.
- Senior-White R.A. 1924. A revision of the sub-family Sarcophaginae in the Oriental Region. *Records of Indian Museum* 26 (3): 193-283.
- Senior-White R.A. 1927. Notes on the Oriental species of the genus *Sarcophaga*. *Spolia Zeylandica* 14 (1): 77-83.
- Senior-White R.A. 1930. Distributional records of Indian muscoids, with descriptions of two new species. *Records of Indian Museum* 32: 65-75.
- Senior-White R.A. 1931. Distributional records of Indian muscoids, with descriptions of two new species. *Records of Indian Museum* [1930] 32: 65-75.
- Senior-White R.A., Aubertin D., Smart J. 1940. Diptera. Family Calliphoridae. *The Fauna of British India, including the remainder of the Oriental region*, 6, Taylor & Francis, Ltd., London, XIII + 288 p.
- Shah Z.A., Yasin S. & Kallu A.A., 2006. Calliphorid and sarcophagid fly fauna of district Faisalabad. *Pakistan Journal of Zoology* 38 (3): 221-224.
- Sherman R.A., Hall M.J.R., Thomas S. 2000. Medicinal maggots: An ancient remedy for some contemporary afflictions. *Annual Review of Entomology* 45: 55-81.
- Shinonaga S. 2000. Calypterate Muscoid flies of the Imperial Palace, Tokyo. *Memoirs of the National Science Museum* 36: 469-479 [in Japanese with English summary].
- Shinonaga S. 2001. Dipterous insects collected in the Institute for Nature Study, National Science Museum, Munato-ku, Tokyo. *Miscellaneous Reports of Institute for Nature Study* 33: 345-362 [in Japanese with English summary].
- Shinonaga S. 2004. Record of the Sarcophagid flies collected in Indonesia (Diptera, Sarcophagidae, Sarcophaginae). *Japanese Journal of Systematic Entomology* 10 (2): 281-296.
- Shinonaga S. 2006. Dipterous insects from the Imperial Palace, Tokyo. *Memoirs of the National Science Museum* 43: 255-267 [in Japanese with English summary].
- Shinonaga S., Kano R. 1990. A new species of *Johnstonimyia* Lopes from Vanuatu (New Hebrides) (Diptera, Sarcophagidae). *Memórias do Instituto Oswaldo Cruz* [1989] 84 (Suppl. 4): 487-489.
- Shinonaga S., Thinh T.H. 2003. Records of the sarcophagid flies (Diptera: Sarcophagidae) from Vietnam. *Medical Entomology and Zoology* 54 (4): 331-335.
- Shinonaga S., Tumrasvin W. 1979. Two new genera and ten new species of the sarcophagid flies from Thailand (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* 30 (2): 135-145.
- Sinha S.K., Nandi B.C. 2002. A new species of *Lioproctia* Enderlein (Diptera: Sarcophagidae) from Sundarbans Biosphere Reserve, India. *Proceedings of the Zoological Society* 55 (2): 39-41.
- Smithers C.N. 1998. A species list and bibliography of the insects recorded from Norfolk Island. *Technical Reports of the Australian Museum* 13: 1-55.
- So P.M., Dudgeon D. 1989a. Life-history responses of larviparous *Boettcherisca formosensis* (Diptera: Sarcophagidae) to larval competition for food, including comparisons with oviparous *Hemipyrellia ligurriensis* (Calliphoridae). *Ecological Entomology* 14 (3): 349-356.
- So P.M., Dudgeon D. 1989b. Larval growth dynamics of *Hemipyrellia ligurriensis* (Calliphoridae) and *Boettcherisca formosensis* (Diptera: Sarcophagidae) in crowded and uncrowded cultures. *Researches of Population Ecology* 31 (1): 113-122.
- So P.M., Dudgeon D. 1990. Interspecific competition among larvae of *Hemipyrellia ligurriensis* (Calliphoridae) and *Boettcherisca formosensis* (Sarcophagidae) (Diptera). *Researches of Population Ecology* 32 (2): 337-348.
- Strukan D. 1970. Parasarcophagina Jugoslavije (Sarcophagidae-Diptera). *Zbornik za prirodne nauke, Matica srpska* 38: 91-114.
- Sugiyama E. 1990. A new species of *Sarcophaga* (Diptera, Sarcophagidae) from Amami-Oshima Is., Japan. *Japanese Journal of Entomology* 58 (2): 421-423.
- Sugiyama E., Kurahashi H. 1988. A new flesh fly *Sarcophaga dumoga* from Sulawesi, Indonesia (Diptera, Sarcophagidae). *Japanese Journal of Sanitary Zoology* 39 (1): 49-51.
- Sugiyama E., Shinonaga S., Kano R. 1987. Sarcophaginae in Taiwan (Diptera: Sarcophagidae). *Sieboldia* (Suppl.): 61-81.
- Sugiyama E., Shinonaga S., Kano R. 1988a. The tribe Sarcophagini from New Guinea with the description of a new species (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* 39 (3): 283-292.
- Sugiyama E., Shinonaga S., Kano R. 1988b. Sarcophagine flies from Nepal with the description of a new species (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* 39 (4): 355-362.
- Sun R.L., Ren S.J. 1995. Urethral myiasis caused by *Boettcherisca peregrina* (Robineau-Desvoidy, 1930). *Chinese Journal of Parasitic Diseases Control* 8: 50 [in Chinese with English subtitle].
- Tereshkin A.M., Lobodenko Y.S. 1997. Rezultaty vyvedenia nasekomyh-entomofagov v Belarusi [Some results on rearing of entomophagous insects in Byelarus *Izvestiya Belorusskoy Akademii nauk. Seriya Biologicheskikh nauk* [Proceedings of the Byelarusian Academy of Sciences. Series of Biological Sciences] 3: 99-103 [in Russian with Byelorussian and English summaries].
- Thomas H.T. 1949. New species of Oriental *Sarcophaga* Meigen (Diptera: Sarcophagidae) with a note on the systematic importance of the postsutural dorsocentral bristles in that genus. *Proceedings of the Royal Entomological Society of London* (B) 18 (9-10): 163-174
- Townsend C.H.T. 1931. Notes on Old-World Oestromuscoid types. Part I. *Annals and Magazine of Natural History* [10] 8: 369-391.
- Townsend C.H.T. 1932. New genera and species of Old World oestromuscoid flies. *Journal of New York Entomological Society* 40: 439-479.
- Townsend C.H.T. 1938. *Manual of myiology in twelve parts. Part VI. Muscoid generic diagnoses and data. Stephanostomatini to Moriniini*. Charles Townsend & Fihos, Itaquaquecetuba, São Paulo, Brazil, 309 p.
- Uni S., Nakagawa K., Shibata T., Fukunaga A. 2006. Two *Sarcophaga* wound myiasis in Japan: *S. peregrina* at a trichophytosis sore of an inpatient and *S. crassipalpis* in a post-surgical wound of a home convalescent. *Medical Entomology and Zoology* 57 (3): 235-240.

- Verves Yu. G. 1986a.** Family Sarcophagidae, p. 58-193 in: **Soos A., Papp L. (eds).** *Catalogue of Palaearctic Diptera. Vol. 12. Calliphoridae – Sarcophagidae.* Academy Press, Budapest, Amsterdam, New York.
- Verves Yu. G. 1986b.** Sarcophagidae i Calliphoridae (Diptera) fauny Respubliki Seyshelskie ostrova [Sarcophagidae and Calliphoridae (Diptera) in the fauna of Seyshelles Republic]. *Zoologicheskii zhurnal* **65** (4): 540-550 [in Russian with English summary].
- Verves Yu. G. 1990.** Prof. Hugo de Souza Lopes and the modern system of Sarcophagidae (Diptera). *Memórias do Instituto Oswaldo Cruz* [1989] **84** (Suppl. 4): 529-545.
- Verves Yu. G. 1998.** A checklist of species of the Ukrainian Sarcophagidae (Diptera) with a description of a new species. *Journal of Ukrainian Entomological Society* **4** (3-4): 49-57.
- Verves Yu. G. 2000.** Rational nomenclature of the male genitalia of Sarcophagidae (Diptera). *An International Journal of Dipterological Research* **11** (3): 117-127.
- Verves Yu. G. 2001.** The annotated list of Sarcophagidae (Diptera) of Indian peninsula. *An International Journal of Dipterological Research* **12** (4): 233-248.
- Verves Yu. G. 2003.** A preliminary list of species of Calliphoridae and Sarcophagidae (Diptera) of the Republic of Seychelles. *Phelsuma* **11** (Suppl. A): 1-16.
- Verves Yu. G. 2007.** The new faunistic data on Calliphoridae and Sarcophagidae (Diptera) of the Republic of Seychelles. *Phelsuma* **15**: 71-81.
- Verves Yu. G., Khrokalo L. A. 2006.** 123. Sem. Sarcophagidae – sarkofagidy [123. Fam. Sarcophagidae – sarcophagids], p. 64-178 in: **Sidorenko V. S. (ed.).** *Opređelitel' Nasekomykh Dal'nego Vostoka Rossii [Key to Insects of Russian Far East]. Vol. 6. Diptera v Siphonaptera. Pt. 4.* Dal'nauka, Vladivostok. [in Russian with English summary].
- Verves Yu. G., Khrokalo L. A. 2009.** 14. Superfamily Oestroidea. Family Sarcophagidae, p. 270-303 in: **Gerlach J. (ed.).** *The Diptera of the Seychelles islands. Pensoft series faunistica, 85,* Pensoft Publishers, Sofia, Moscow, 432 p.
- Villeneuve J. 1936.** 52. Diptera. 16. Muscidae. Schwedlisch-chinensische wissenschaftliche Expedition nach den nordwestlichen Provinzen Chinas, unter Leitung von Dr. Sven Hedin und Prof. Sü Pin-fang. *Arkiv för Zoologi* **27 A** (34): 1-13.
- Walker F. 1859.** Catalogue of the dipterous insects collected at Makassar in Celebes, by Mr. A. R. Wallace, with descriptions of new species [part]. *Journal and Proceedings of Linnean Society of London. Zoology* [1860] **4**: 90-144.
- Wei L., Yang Z. 2007.** Sarcophagidae, p. 526-539 in: **Li Z., Yang M., Jin D. (eds).** *Insects from Leigongshan Landscape.* China Scientific Book Service, Beijing, 759 p. [in Chinese with English subtitle].
- Weng Z., Zhou C. 1995.** Studies of the tachinid flies of pine caterpillar. 1: natural parasitic dynamic. *Natural Enemies of Insects* **17** (4): 147-152 [in Chinese with English summary].
- Wulp F. M. van der. 1896.** Fam. Muscidae [part], p. 273-344 in: **Godman F. D., Salvin O. (eds).** *Biologia Centrali-Americana. Class Insecta. Diptera, Pt. 2.* London.
- Xue W. Q. 1998.** Sarcophagidae, p.1518-1660 in: **Xue W. Q., Chao C. M. (eds.),** *Flies of China. Volume 2.* Liaoning Science and Technology Press, Shenyang, p. 1366-2425 [in Chinese with English summary].
- Yoneda Y., Shinonaga S., Kumashiro H., Fukuma T. 1998.** Eleven cases of human myiasis since 1990. *Medical Entomology and Zoology* **49** (1): 51-56 [in Japanese with English summary].
- Zinovyev G. A. 1962.** O sibirskom shelkopyrade *Dendrolimus sibiricus* Tshtv. (Lepidoptera, Lasiocampidae) i ego parazitah v Srednem Preduralie [On the Siberian lasiocampid *Dendrolimus sibiricus* Tshtv. (Lepidoptera, Lasiocampidae) and its parasites in the Middle Ural]. *Entomologicheskoye obozreniye* **41** (1): 50-53 [in Russian with English summary].
- Zumft F. 1951.** New *Sarcophaga* species from the Ethiopian Region (Diptera, Calliphoridae). *Journal of Entomological Society of Southern Africa* **14** (2): 171-199.
- Zumft F. 1953a.** Notes on Enderlein's types of Sarcophaginae from the Ethiopian and Madagascan regions with remarks on his system of classification. *Anais do Instituto de Medicina Tropical* **10** (1): 15-23.
- Zumft F. 1953b.** Some hitherto undescribed higher flies from southern Africa (Diptera, Calliphoridae). *Revista ecuatoriana de entomologia y parasitologia* **1** (3): 69-85 + 2 pls.
- Zumft F. 1964.** The Calliphoridae of the Madagascan Region (Diptera). Part II: Miltogramminae and Sarcophaginae. *Verhandlungen des naturforschenden Gesellschaft in Basel* **75**: 47-77.
- Zumft F. 1972.** Calliphoridae (Diptera Cyclorrhapha). Part IV. Sarcophaginae. *Exploration du Parc National des Virunga. Mission G. F. de Witte (1933-1935), Bruxelles* **101**: 1-264.