

## Horse flies (Diptera: Tabanidae) collected in Central African Republic, Gabon and Liberia with comments on their updated distribution

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**Abstract:** A zoogeographical review summarized the current distribution of 28 morphologically determined horse fly species recently collected in three Western Africa countries. In Malaise trap collections, the family Tabanidae was represented by three subfamilies, Pangoniinae, Chrysopsinae and Tabaninae (tribes Philolichini, Chrysopsini, Tabanini and Haematopotini), and six genera: *Philoliche* Wiedemann, 1828 (1 species), *Chrysops* Meigen, 1803 (3 species), *Ancala* Enderlein, 1922 (2 species), *Euancala* Enderlein, 1922 (1 species), *Tabanus* Linnaeus, 1758 (13 species) and *Haematopota* Meigen, 1803 (8 species). Information contained in the principal publication The Catalogue of the Diptera of the Afrotropical Region 1980 is complemented by newly published studies on horse flies in Sub-Saharan Africa.

**Key words:** Taxonomy, faunistics, horse fly, Tabanids, distribution, CAR, Gabon, Liberia, Afrotropical Region

### Introduction

In the Afrotropical Region, the family Tabanidae is represented by approximately 800 species in 35 genera (Chainey 2017). Many horse fly species have medical and veterinary importance as vectors of human and livestock pathogens causing various diseases (e.g., asana-plasmosis, anthrax, animal trypanosomiasis, bovine viral leukosis, filarial worms, tularaemia, hog cholera, vesicular stomatitis). Traditional taxonomic tools based on morphological diagnostic characters and descriptions are limited in contrast to modern molecular approaches. However, only the combination of both these methods can provide relevant information and continuity with previous publications. The horse fly fauna of tropical Africa is still poorly known and in some geographical areas was not studied for decades. This study summarizes the results of tabanid collections made in three West African countries, the Central African Republic (CAR), Gabon and Liberia, from where only very sparse information was previously available.

### Material and methods

The abundant horse fly samples were collected by J. Votýpka and J. Brzoňová by using Malaise traps (Figs 1-4) and sweep netting in three Western Africa countries: CAR – September 2012, Gabon – May to July 2014, and Liberia – September/October 2016 (localities and coordinates are mentioned in the text). All specimens conserved in ethanol (see Votýpka *et al.*, 2019) were identified by the first author by using Carl Zeiss stereomicroscope (Citoval 2). However, the content of this faunistic study represents only 171 (170 females and one male) pinned specimens arranged into a small comparative dry collection deposited in the National Museum in Prague (NMPC).

The morphological identification was made mainly based on the historical works of Oldroyd, with crucial descriptions, figures and photographs (monographs of African horse flies with keys – 1952, 1954, 1957). The nomenclature of the family Tabanidae was mainly used sensu Moucha (1976), and partially sensu Chainey & Oldroyd (1980). The molecular part of the study including DNA barcoding of morphologically determined horse flies, their intra- and interspecific divergences and pathogen occurrence were published by Votýpka *et al.* (2019).



**Figs 1-4:** **1** - A tent-like Malaise trap with a black and dark-blue striped central wall localized in a clearing near the Viro camp located in primary dense forest near the border of Sapo NP, Liberia. The trap is complemented by a wall (made from palm leaves) that directs flying insects into the central part. **2** - A Malaise trap localized in a clearing of the dense forest, Dzanga-Sangha Protected Areas (DSPA), the Central African Republic (CAR). **3** - A Malaise trap with a black and dark-blue striped central wall localized in a huge clearing (a “bai”) of the primary forest, Dzanga-Sangha Protected Areas (DSPA), the Central African Republic (CAR). **4** - A Malaise trap, surrounded by a secondary forest, is localized on the Sinoe River bank forming the border of Sapo NP, Liberia (photos made by David Modrý and Jan Votýpka).

## Results

### TABANIDAE PANGONIINAE PHILOLICHINI

*Philoliche* Wiedemann, 1828: Aussereur. Zweifl. Ins., 1: 95.

*Subpangonia* Surcouf, 1908: Bull. Mus. Hist. Nat. Paris, 14: 283.

1. *Philoliche (Subpangonia) gravoti* Surcouf, 1908: Bull. Mus. Hist. Nat. Paris, 14: 283.

**Material examined:** Liberia, VIRO camp, Sapo NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 4 ♀♀, ix./x. 2016, MT, J. Votýpka leg. Liberia, Jelay x VIRO, 5°20'14.92"N, 8°47'58.44"W, 125 m a.s.l., river, forest, 2 ♀♀, ix./x. 2016, MT, J. Votýpka leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1957): former Belgian Congo, French Equatorial Africa, the Camerouns, French Guinea (adapted); Nigeria. Moucha (1976): former Equat. Africa (adapted). Chainey & Oldroyd (1980): Gabon, Ghana, Guinea, Nigeria, former Cameroun, Congo and Zaire (adapted). Morita (2008): Gabon.

**Distribution** (only verified precise location from the last period): Cameroon, Congo Republic, DRC, Gabon, Ghana, Guinea, Nigeria. Published as new for Liberia by Votýpka *et al.* (2019).

CHRYSOPSINAE  
CHRYSOPSINI

*Chrysops* Meigen, 1803: Illig. Mag., 2: 267.

2. *Chrysops dimidiatus* Wulp, 1885: Notes Leyden Mus., 7: 80.

**Material examined:** CAR, Dzanga-Sangha NP, Bayanga, Bai Hokou, camp, 1 ♀, 25-30.ix.2012, SW, J. Votýpka leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1957): S.W. Africa; former Congo, British and French Cameroons, Guinea (adapted), Benin, Nigeria. Leclercq (1961): former Congo (adapted). Moucha (1976): Ethiopian Region. Chainey & Oldroyd (1980): former Cameroun, Congo and Zaire (adapted), Angola, Central African Republic, Ghana, Guinea, Nigeria. Gouteux *et al.* (1989), Noireau & Gouteux (1989), Noireau *et al.* (1990 a,b), Noireau *et al.* (1991), Caubère *et al.* (1990), Caubère & Noireau (1991): Congo Republic and DRC (adapted). Pinder (1991), Wahl *et al.* (1995), Kelly- Mavoungou *et al.* (2012): Gabon. Dias (1994): Angola. Dias (1996), Hope *et al.* (2012): CAR. Chippaux *et al.* (2000), Demanou *et al.* (2001): Cameroon. Cheke *et al.* (2003): Bioko Island - Equatorial Guinea Republic. Iboh *et al.* (2012): Nigeria.

**Distribution** (only verified precise location from the last period): Angola, Benin, Bioko Island - Equatorial Guinea Republic, Cameroon, CAR, Congo Republic, DRC, Gabon, Ghana, Guinea, Nigeria.

3. *Chrysops longicornis* Macquart, 1838: Dipt. exot., 1: 156.

**Material examined:** CAR, Dzanga-Sangha NP, Bayanga, Bai Hokou, camp, 1 ♀, 26.ix.2012, SW, J. Votýpka leg.; same, Bai-Gubunga, 5 ♀♀, 1 ♂, 28.ix.2012, MT, J. Votýpka leg.; Gabon, Loango NP, Ndouani, 4 ♀♀, 11.-15.vi.2014, hand collecting, J. Brzoňová leg.; same, 2 ♀♀, 12.vi.-9.vii.2014, NZI tsetse trap, J. Brzoňová leg. (dry, pinned, NMPC). Liberia, VIRO camp, Sapo NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 1 ♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1957): Ethiopian Region, Cape Province – Natal, Zanzibar, Pemba Island (Zanzibar Archipelago), former British Cameroons (adapted). Leclercq (1961): former Congo (adapted). Leclercq (1965): Liberia. Moucha (1976): Ethiop. Region. Chainey & Oldroyd (1980): Senegal; widespread Afrotrop. reg. (incl. Pemba and Zanzibar), Sierra Leone. Goodwin (1982, 1985): Mali. Raymond *et al.* (1984): Senegal. Dias (1987, 1994): Angola. Inaoka *et al.* (1988), Hayakawa *et al.* (1989), Itina *et al.* (2013): Nigeria. Chainey & Cheke (1994): Togo. Taylor & Chainey (1994), Acapovi *et al.* (2001): Ivory Coast. Dias (1996): CAR. Sasaki & Nishida (1999), Sasaki (2005): Tanzania. Schacht (2000): Gambia. Dia *et al.* (2004), Koné *et al.* (2011): Burkina Faso. Esterhuizen (2006): Natal Province, South Africa.

**Distribution** (only verified precise location from the last period): Angola, Burkina Faso, Cameroon, CAR, Congo Republic, DRC, Gambia, Ivory Coast, Liberia, Mali, Natal Province – South Africa, Nigeria, Pemba Island, Senegal, Sierra Leone Republic, Tanzania, Togo. Published as new for Gabon by Votýpka *et al.* (2019).

4. *Chrysops silaceus* Austen, 1907: Ann. Mag. nat. Hist. 20(7): 509.

**Material examined:** CAR, Dzanga-Sangha NP, Bai Hokou, camp, 8 ♀♀, 25.-30.ix.2012, SW, J. Votýpka leg.; same, 1 ♀, 13.ix.2014, MT, A. Mihalica and D' Amico leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1957): S. and N. Nigeria, Sudan, former Gold Coast, Cameroons and Belgian Congo (adapted). Moucha (1976): Ethiop. Region. Chainey & Oldroyd (1980): Angola, Central African Republic, Fernando Póo, Ghana, Nigeria, Sudan, former Congo, Cameroun and Zaire (adapted). Inaoka *et al.* (1988), Hayakawa *et al.* (1989), Iboh *et al.* (2012), Itina *et al.* (2013): Nigeria. Gouteux *et al.* (1989), Noireau & Gouteux (1989), Caubère *et al.* (1990), Caubère & Noireau (1991), Noireau *et al.* (1990 a,b), Noireau *et al.* (1991): Congo Republic, DRC (adapted). Pinder (1991), Wahl *et al.* (1995), Mavoungou *et al.* (2012): Gabon. Dias (1994): Angola. Dias (1996), Kelly-Hope *et al.* (2012): CAR (adapted). Chippaux *et al.* (2000), Demanou *et al.* (2001), Wanji *et al.* (2002): Cameroon (adapted). Cheke *et al.* (2003): Bioko Island - Equatorial Guinea Republic.

**Distribution** (only verified precise location from the last period): Angola, Bioko Island and Fernando Póo Island – Equatorial Guinea Republic, Cameroon, CAR, Congo Republic, DRC, Gabon, Ghana, Nigeria, Sudan.

TABANINAE.  
TABANINI

*Ancala* Enderlein, 1922: Mitt. zool. Mus. Berlin, 10: 346.

5. *Ancala fasciata* (Fabricius, 1775): Syst. Ent., p. 789.

**Material examined:** Gabon, Loango NP, Petit Loango, 2 ♀♀, 10.-17.v.2014, 17.-19.vi.2014, MT, J. Brzoňová leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): West African sub-region of Chapin. Leclercq (1965): former Congo (adapted). Moucha (1976): W. Africa. Chainey & Oldroyd (1980): Sierra Leone; widespread throughout West African subregion and surrounding savanas. Dusbábek *et al.* (1980): Uganda. Goodwin (1982): Mali. Dias (1987, 1992): Guinea Bissau (adapted). Hayakawa *et al.* (1989): Nigeria. Amsler *et al.* (1994), Dia *et al.* (2004), Koné *et al.* (2011): Burkina Faso. Chainey & Cheke (1994): Togo. Dias (1994): Angola. Taylor & Chainey (1994), Acapovi *et al.* (2001): Ivory Coast. Dias (1996): CAR. Mavoungou *et al.* (2012): Gabon.

**Distribution** (only verified precise location from the last period): Angola, Burkina Faso, CAR, Congo Republic, DRC, Gabon, Guinea Bissau, Ivory Coast, Mali, Nigeria, Sierra Leone Republic, Togo, Uganda.

6. *Ancala fasciata* f. *mixta* (Surcouf, 1914): Rev. Zool. Afr., 3: 472.

**Material examined:** CAR, Dzanga-Sangha NP, Bai Hokou, 1 ♀, 13.ix.2014, MT, A. Mihalica and D' Amico leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): West African sub-region of Chapin. Moucha (1976): W. Africa. Chainey & Oldroyd (1980): former Zaire (adapted).

**Distribution** (only verified precise location from the last period): DRC. Published as new for CAR by Votýpka *et al.* (2019), however, some sibling species in the case of *Ancala fasciata* are discussed here.

*Euancala* Enderlein, 1922: Mitt. zool. Mus. Berlin, 10: 346.

7. *Euancala irrorata* (Surcouf, 1909): Bull. Mus. Hist. Nat. Paris, 15: 355.

**Material examined:** Gabon, Loango NP, Petit Loango, 1 ♀, 10.-17.v.2014, MT, J. Brzoňová leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): Sierra Leone to Uganda, former Gabon and Belgian Congo (adapted). Moucha (1976): S. Leone to Uganda. Chainey & Oldroyd (1980): Gabon; Angola, from Sierra Leone to Uganda & former Zaire (adapted). Dias (1994): Angola. Dias (1996): CAR.

**Distribution** (only verified precise location from the last period): Angola, CAR, Congo Republic, DRC, Gabon, Sierra Leone Republic, Uganda.

*Tabanus* Linnaeus, 1758: Syst. Nat., ed. 10: 601.

8. *Tabanus argenteus* Surcouf, 1907: Bull. Mus. Hist. Nat. Paris, 13: 263.

**Material examined:** Liberia, VIRO camp, Sapu NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 4 ♀♀, ix./x. 2016, MT, J. Votýpka leg. Same, Jelay x VIRO, 5°20'14.92"N, 8°47'58.44"W, 125 m a.s.l., river, forest, 1 ♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): from Sierra Leone to the former Belgian Congo (adapted). Leclercq (1965): Liberia. Moucha (1976): former Congo (adapted). Chainey & Oldroyd (1980): Gabon, from Guinea and Sierra Leone to Central African Republic and former Zaire (adapted). Inaoka *et al.* (1988): Nigeria. Dias (1994): Angola. Taylor & Chainey (1994): Ivory Coast. Dias (1996): CAR. Cheke *et al.* (2003): Bioko Island - Equatorial Guinea Republic.

**Distribution** (only verified precise location from the last period): Angola, Bioko Island – Equatorial Guinea Republic, CAR, Congo Republic, DRC, Gabon, Guinea, Ivory Coast, Liberia, Nigeria, Sierra Leone Republic.

9. *Tabanus boueti* Surcouf, 1907: Bull. Mus. Hist. Nat. Paris, 13: 333.

**Material examined:** Liberia, VIRO camp, Sapu NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 6 ♀♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): Guinean Forest area, from former

Gold Coast through the Ivory Coast to former Dahomey and Belgian Congo (adapted). Moucha (1976): W. and C. Africa. Chainey & Oldroyd (1980): Ivory Coast, southern W. Afr. from Guinea and Liberia to former Zaire (adapted). Taylor & Chainey (1994), Acapovi *et al.* (2001): Ivory Coast.

**Distribution** (only verified precise location from the last period): Benin, Congo Republic, DRC, Ghana, Guinea, Ivory Coast, Liberia.

10. *Tabanus fraternus* Macquart, 1846: Dipt. exot. Suppl., 1: 31.

**Material examined:** CAR, Dzanga-Sangha NP, Bai Hokou, 2 ♀♀, 22.ix.2014, MT, A. Mihalica and D'. Amico leg.; same, Bayanga, Bai Hokou, camp, 1 ♀, 26.ix.2012, MT, J. Votýpka leg.; same, Bai-Gubunga, 3 ♀♀, 28.ix.2012, MT, J. Votýpka leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): from the former Cape Colony to Kenya and to former Belgian Congo, former Abyssinia and Senegambia, Eritraea, Sudan, Tanganyika (adapted). Moucha (1976): Ethiopian Region. Chainey & Oldroyd (1980): South Africa; S.-E. Afr. from Kenya and Burundi to sthn Afr. (incl. Angola), ? W. Afr. Wiesenhütter (1980): Tanzania. Dias (1994): Angola.

**Distribution** (only verified precise location from the last period): Angola, Burundi, Congo Republic, DRC, Eritraea, Ethiopia, Gambia, JAR, Kenya, Senegal, Sudan, Tanzania. Published as new for CAR by Votýpka *et al.* (2019).

11. *Tabanus ianthinus* Surcouf, 1907: Bull. Mus. Hist. Nat. Paris, 13: 212.

**Material examined:** Liberia, VIRO camp, Sapu NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 10 ♀♀, ix./x. 2016, MT, J. Votýpka leg. Same, Jelay x VIRO, 5°20'14.92"N, 8°47'58.44"W, 125 m a.s.l., river, forest, 16 ♀♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): former Belgian Congo, French Congo, Cameroun Français; Angola, Sierra Leone and Senegal (adapted). Moucha (1976): Angola, former Congo and Cameroons (adapted). Chainey & Oldroyd (1980): Angola, Senegal, Sierra Leone, former Congo and Zaire (adapted). Raymond *et al.* (1984): Senegal. Dias (1987, 1994): Angola. Dias (1996): CAR.

**Distribution** (only verified precise location from the last period): Angola, Cameroon, CAR, Congo Republic, DRC, Senegal, Sierra Leone Republic. Published as new for Liberia by Votýpka *et al.* (2019).

12. *Tabanus obscurehirtus* Ricardo, 1908: Ann. Mag. nat. Hist., (8)1: 274.

**Material examined:** CAR, Dzanga-Sangha NP, Bai-Gubunga, 3 ♀♀, 28.ix.2012, MT, J. Votýpka leg.; same, Bayanga, Bai Hokou, camp, 1 ♀, 26.ix.2012, MT, J. Votýpka leg.; same, Mongambe, camp, 2 ♀♀, 22.ix.2012, SW, J. Votýpka leg.; same, Bai Hokou, 1 ♀, 20.ix.2014, MT, A. Mihalica and D'. Amico leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): Guinean Forest area, Liberia, S. Nigeria, Southern Cameroons; former French and Belgian Congo, French Equatorial Africa (adapted). Moucha (1976): Equat. Africa. Chainey & Oldroyd (1980): southern W. Afr. from Liberia to Nigeria, Angola, Central African Republic, former Congo and Zaire (adapted). Dias (1987, 1994): Angola. Dias (1996): CAR. Mavoungou *et al.* (2012): Gabon.

**Distribution** (only verified precise location from the last period): Angola, Cameroon, CAR, Congo Republic, DRC, Gabon, Guinea, Liberia, Nigeria.

13. *Tabanus par* Walker, 1854: List Dipt. Brit. Mus. 5, Suppl. 1: 235.

**Material examined:** CAR, Dzanga-Sangha NP, Bai-Gubunga, 3 ♀♀, 28.ix.2012, MT, J. Votýpka leg.; Gabon, Loango NP, Petit Loango, 2 ♀♀, 10.-17.v.2014, 22.-25.v.2014, MT, J. Brzoňová leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): from the Gambia to Natal, Uganda, former Belgian Congo (adapted). Leclercq (1961): former Congo (adapted). Leclercq (1965): Angola. Moucha (1976): Gambia to Natal. Chainey & Oldroyd (1980): South Africa; throughout Afrotrop. Africa but mainly outside Congo basin. Dusbábek *et al.* (1980): Uganda. Goodwin (1982, 1985), Djiteye *et al.* (1998): Mali. Raymond *et al.* (1984): Senegal. Amsler *et al.* (1994), Dia *et al.* (2004): Burkina Faso. Dias (1985): Guinea Bissau. Dias (1994): Angola. Dias (1996): CAR. Acapovi *et al.* (2001): Ivory Coast. Ahmed *et al.* (2005): Nigeria. Esterhuizen (2006): Natal Province, South Africa. Mavoungou *et al.* (2012), Bitome Essono *et al.* (2015): Gabon.

**Distribution** (only verified precise location from the last period): Angola, Burkina Faso, CAR, Congo Republic, DRC, Gabon, Gambia, Guinea Bissau, Ivory Coast, Mali, Natal Province - South Africa, Nigeria, Senegal, Uganda.

14. *Tabanus rufipes* Palisot de Beauvois, 1806: Pl. Diptères I, fig. 3

**Material examined:** Liberia, VIRO camp, Sapo NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 9 ♀♀, 1 M, ix./x. 2016, MT, J. Votýpka leg.; same, Jelay x VIRO, 5°20'14.92"N, 8°47'58.44"W, 125 m a.s.l., river, forest, 11 ♀♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): from the former Gold Coast (adapted) through the Katanga to Nyasaland and Angola, Sudan (as *ruficrus*). Leclercq (1965): Liberia and Guinea (as *ruficrus*). Moucha (1976): former Congo (adapted), Uganda (as *ruficrus*). Chainey & Oldroyd (1980): Nigeria, through southern W. Afr. to Congo basin, Sudan, Uganda, Malawi and Angola (as *rufipes*), Gabon (as *deyrollei* and *dilutius*), Zambia (as *grandissimus*). Dias (1994): Angola (as *ruficrus*). Taylor & Chainey (1994): Ivory Coast (as *ruficrus*).

**Distribution** (only verified precise location from the last period): Angola, Congo Republic, DRC, Gabon, Ghana, Guinea, Ivory Coast, Liberia, Malawi, Nigeria, Sudan, Uganda, Zambia.

15. *Tabanus secedens* Walker, 1854: List Dipt. Brit. Mus. 5, Suppl. 1: 224.

**Material examined:** CAR, Dzanga-Sangha NP, Bayanga, Bai Hokou, camp, 4 ♀♀, 26.ix.2012, MT, J. Votýpka leg.; Gabon, Loango NP, Petit Loango, 2 ♀♀, 10.-17.v.2014, 1 F 22.-25.v.2014, MT, J. Brzoňová leg. (dry, pinned, NMPC). Liberia, VIRO camp, Sapo NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 4 ♀♀, ix./x. 2016, MT, J. Votýpka leg.; same, Jelay x VIRO, 5°20'14.92"N, 8°47'58.44"W, 125 m a.s.l., river, forest, 5 ♀♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): from Sierra Leone to Uganda, Nigeria and Sudan, the former Belgian Congo and Cameroons (adapted). Leclercq (1961): former Congo (adapted). Leclercq (1965): Liberia. Moucha (1976): S. Leone to former Congo (adapted). Chainey & Oldroyd (1980): throughout West African subregion from Sierra Leone to Uganda, also into Sudan, Malawi and Angola. Dias (1987, 1994): Angola. Hayakawa *et al.* (1989, Itina *et al.* (2013), Ahmed *et al.* (2005): Nigeria (second author as *seledens*). Taylor & Chainey (1994): Ivory Coast. Dias (1996): CAR. Mavoungou *et al.* (2012): Gabon.

**Distribution** (only verified precise location from the last period): Angola, Cameroon, CAR, Congo Republic, DRC, Gabon, Ivory Coast, Liberia, Malawi, Nigeria, Sierra Leone Republic, Sudan, Uganda.

16. *Tabanus secedens* f. *regnaulti* Surcouf, 1912: Bull. Soc. ent. France, p. 183.

**Material examined:** Gabon, Loango NP, Petit Loango, 4 ♀♀, 10.-17.v.2014, 1 ♀, 22.-25.v.2014, all MT, J. Brzoňová leg. (dry, pinned, NMPC). Liberia, VIRO camp, Sapo NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 2 ♀♀, ix./x. 2016, MT, J. Votýpka leg.; same, Jelay x VIRO, 5°20'14.92"N, 8°47'58.44"W, 125 m a.s.l., river, forest, 5 ♀♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): Sierra Leone, former Gold Coast, Belgian Congo and British Cameroons, as syn. of *secedens*, however, bona species? (adapted). Moucha (1976): S. Leone to former Congo, as syn. of *secedens* (adapted). Chainey & Oldroyd (1980): former Congo, as syn. of *secedens*. Dias (1994): Angola. Taylor & Chainey (1994): Ivory Coast.

**Distribution** (only verified precise location from the last period): Angola, Cameroon, Congo Republic, DRC, Ghana, Ivory Coast, Sierra Leone Republic. Published as new for Gabon and Liberia by Votýpka *et al.* (2019). A genetic heterogeneity of *Tabanus secedens* complex was discussed in the mentioned paper.

17. *Tabanus taeniola* Palisot de Beauvois, 1807: Ins. rec. Afr. Amer., 1: 56.

**Material examined:** CAR, Dzanga-Sangha NP, Bai-Gubunga, 3 ♀♀, 28.ix.2012, MT, J. Votýpka leg.; Gabon, Loango NP, Petit Loango, 3 ♀♀, 10.-17.v.2014, 1 ♀, 22.-25.v.2014, 1 ♀, 17.-19.vi.2014, MT; same, Ndouani, 1 ♀, 11.-15.vi.2014, hand collecting, all J. Brzoňová leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): Unusual distribution, see the map 26, p. 282, mainly old literary data; e.g. Senegal, Angola, Eritrea, Somalilands, Cape Colony, Rhodesias, former Abyssinia, Belgian Congo and French Equatorial Africa (excessively adapted). Steyskal & El-Bialy (1967), Morsy & Habib (2001), Mohamed (2002): Egypt. Moucha (1976) Ethiopian Region. Chainey & Oldroyd (1980): Nigeria; almost entire Afrotropical Region (incl. Aldabra and Madagascar) but mainly riverine in Congo basin. Dusbábek *et al.* (1980): Uganda. Karim (1980), Mahmoud & Osman (1979): Sudan.. Wiesenhütter (1980), Sasaki & Nishida (1999), Sasaki (2005): Tanzania. Goodwin (1982, 1985), Djiteye *et al.* (1998): Mali. Raymond *et al.* (1984): Senegal. Dias (1987): Guinea, Guinea Bissau. Inaoka *et al.* (1988), Ahmed *et al.* (2005): Nigeria. Amoudi & Leclercq (1988, 1992, 1996), Amoudi (1989), Leclercq (2000), Al-Dhafer *et al.* (2009): Saudi Arabia. Dirie *et al.* 1989): Somalia. Turnbull *et al.* (1992): Ethiopia. Amsler *et al.* (1994), Solano & Amsler-Delafosse (1995), Desquesnes & Dia (2003), Dia *et al.* (2004), Koné *et al.* (2011):

Burkina Faso. Chainey & Cheke (1994): Togo. Dias (1994): Angola. Taylor & Chainey (1994), Acapovi *et al.* (2001): Ivory Coast. Dias (1996): CAR. Al-Houty (1997): Kuwait. Mihok (2002): Kenya. Schacht (2002): Gambia. Abdesalam *et al.* (2003): Chad. Esterhuizen (2006): Natal Province - South Africa. Müller *et al.* (2011): Jordan. Müller *et al.* (2012): Sinai Peninsula and Israel. Abu El-Hasan *et al.* (2010, 2013): Egypt. Abu El-Hasan *et al.* (2013): Mozambique. Baldacchino *et al.* (2014): Africa and Middle East. Bitome Essono *et al.* (2015): Gabon.

**Distribution** (only verified precise location from the last period): Africa and Middle East, Aldabra Island, Angola, Burkina Faso, Cape Province – Natal, Cameroon, CAR, Chad, Congo Republic, DRC, Egypt, Eritrea, Ethiopia, Gabon, Gambia, Guinea, Guinea Bissau, Israel, Ivory Coast, Kenya, Kuwait, Madagascar, Mali, Mozambique, Natal Province – South Africa, Nigeria, Rhodesia, Saudi Arabia, Senegal, Sinai Peninsula, Somalia, Sudan, Tanzania, Togo, Uganda.

18. *Tabanus thoracinus* Palisot de Beauvois, 1807: Ins. rec. Afr. Amer., p. 55.

**Material examined:** Gabon, Loango NP, Petit Loango, 3 ♀♀, 10.-17.v.2014, 1 ♀ 22.-25.v.2014, MT, J. Brzoňová leg. (dry, pinned, NMPC). Liberia, VIRO camp, Sapo NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 1 ♀, ix./x. 2016, MT, J. Votýpka leg.; same, Jelay x VIRO, 5°20'14.92"N, 8°47'58.44"W, 125 m a.s.l., river, forest, 2 ♀♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): from Sierra Leone to former Portuguese East Africa, and across to Angola (adapted). Leclercq (1961): former Congo (adapted). Moucha (1976): Ethiop. Region. Chainey & Oldroyd (1980): Nigeria; throughout Afrotrop. Reg. (excl. Malagasian subregion), Ivory Coast. Dusbábek *et al.* (1980): Uganda. Goodwin (1982): Mali. Raymond *et al.* (1984): Senegal. Dias (1987): Lunda Tchokwe (adapted). Hayakawa *et al.* (1989): Nigeria. Dias (1994): Angola. Dias (1996): CAR. Sasaki & Nishida (1999), Sasaki (2005): Tanzania, Mihok (2002): Kenya.

**Distribution** (only verified precise location from the last period): Angola, CAR, Congo Republic, DRC, Ivory Coast, Kenya, Mali, Nigeria, Senegal, Sierra Leone Republic, Tanzania, Uganda. Published as new for Gabon and Liberia by Votýpka *et al.* (2019).

19. *Tabanus triquetronatus* Carter, 1915: Ann. Trop. med. Paras., 9: 173.

**Material examined:** CAR, Dzanga-Sangha NP, Bai Hokou, Makumba, nest, 1 ♀, 26.ix.2012, J. Votýpka leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): Nigeria, Sierra Leone, former Belgian Congo, British and French Cameroons (adapted). Moucha (1976): W. and C. Africa. Chainey & Oldroyd (1980): Nigeria; Angola, Ivory Coast, Liberia, Sierra Leone, former Zaire, Cameroun and Congo (adapted). Inaoka *et al.* (1988): Nigeria. Dias (1994): Angola. Taylor & Chainey (1994): Ivory Coast.

**Distribution** (only verified precise location from the last period): Angola, Cameroon, Congo Republic, DRC, Ivory Coast, Liberia, Nigeria, Sierra Leone Republic. Published as new for CAR by Votýpka *et al.* (2019).

20. *Tabanus variabilis* Loew, 1858: Öfv. Kongl. Vet.-Akad. Forh., 14: 340.

**Material examined:** CAR, Dzanga-Sangha NP, Bayanga, Bai Hokou, camp, 1 ♀, 26.ix.2012, MT, J. Votýpka leg.; same, Bai-Gubunga, 2 ♀♀, 28.ix.2012, MT, J. Votýpka leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1954): from the former Cape Colony to Uganda, Kenya and the southern Sudan, westwards to Sierra Leone, Gambia and former French Equatorial Africa (adapted). Moucha (1976): S. and E. Africa. Chainey & Oldroyd (1980): South Africa; widespread W. Afr. to Sudan, E. Afr. and southern Afr., ? former Congo (adapted). Raymond *et al.* (1984): Senegal. Dias (1994): Angola. Dias (1996): CAR. Esterhuizen (2006): Natal Province - South Africa.

**Distribution** (only verified precise location from the last period): Angola, CAR, Congo Republic, DRC, Gambia, Kenya, Natal Province – South Africa, Senegal, Sierra Leone Republic, Sudan, Uganda.

## HAEMATOPOTINI

*Haematopota* Meigen, 1803: Illig. Mag. Ins., 2: 267.

21. *Haematopota albihirta* Karsch, 1887: Berl. ent. Zeit., 31: 371.

**Material examined:** Gabon, Loango NP, Petit Loango, 1 ♀, 22.-25.v.2014, MT, J. Brzoňová leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1952): Somaliland, Abyssinia, Sudan, Uganda, Kenya, Tanganyika, Transvaal, Natal, former Zululand, Basutoland, S. Rhodesia, Nyasaland, Port. E. Africa, Belgian Congo and Portuguese Guinea (adapted). Leclercq (1961): former Congo (adapted). Moucha (1976): E., C. and S. Africa. Chainey & Oldroyd (1980): Tanzania; Angola, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Rhodesia, Somalia, South Africa, Sudan, Uganda, Zambia, former Zaire (adapted). Phelps & Holloway (1990): Zimbabwe. Turnbull *et al.* (1992): Ethiopia. Dias (1994): Angola. Sasaki (2005): Tanzania.

**Distribution** (only verified precise location from the last period): Angola, Congo Republic, DRC, Ethiopia, Guinea Bissau, Kenya, Lesotho, Malawi, Mozambique, Rhodesia, Somalia, South Africa, Sudan, Tanzania, Uganda, Zambia, Zimbabwe. Published as new for Gabon by Votýpka *et al.* (2019).

22. *Haematopota bowdeni* Oldroyd, 1952: Horse-flies Ethiop. Reg., 1: 95.

**Material examined:** Gabon, Loango NP, Akaka, 1 ♀, 28.vi.-9.vii.2014, MT, J. Brzoňová leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1952): Liberia, former Gold Coast (adapted). Leclercq (1965): Liberia. Moucha (1976): Ghana, Liberia. Chainey & Oldroyd (1980): Ghana, Liberia. Taylor & Chainey (1994): Ivory Coast.

**Distribution** (only verified precise location from the last period): Ghana, Ivory Coast, Liberia. Published as new for Gabon by Votýpka *et al.* (2019).

23. *Haematopota brucei* Austen, 1908: Ann. Mag. nat. Hist., (8) 1: 413.

**Material examined:** CAR, Dzanga-Sangha NP, Bai Hokou, Makumba, 1 ♀, 26.ix.2012, nest (SW ?), J. Votýpka leg.; Gabon, Loango NP, Petit Loango, 1 ♀, 10.-17.v.2014, MT, J. Brzoňová leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1952): Uganda, S. Sudan, former Belgian Congo (adapted). Moucha (1976): Sudan, Uganda, former Congo (adapted). Chainey & Oldroyd (1980): Uganda; Ivory Coast, Sudan, former Zaire (adapted). Dias (1996): CAR.

**Distribution** (only verified precise location from the last period): CAR, Congo Republic, DRC, Ivory Coast, Sudan, Uganda. Published as new for Gabon by Votýpka *et al.* (2019).

24. *Haematopota ciliatipes* Bequaert, 1930: Harvard-Afr. Exp. Liberia, 36: 956.

**Material examined:** CAR, Dzanga-Sangha NP, Bai-Gubunga, 2 ♀♀, 28.ix.2012, MT, J. Votýpka leg. (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1952): Cameroon, former Belgian Congo, Sudan (adapted). Moucha (1976): Sudan, former Congo, Cameroon (as *ciliatipennis*, adapted). Chainey & Oldroyd (1980): former Zaire; Cameroon, Sudan (adapted). Dias (1996): CAR.

**Distribution** (only verified precise location from the last period): Cameroon, CAR, Congo Republic, DRC, Sudan.

25. *Haematopota furians* Edwards, 1916: Bull. ent. Res., 7: 157.

**Material examined:** Liberia, Jelay town (Jatia town), 5°21'11.23"N, 8°48'39.59"W, 120 a.s.l., village, secondary forest, 1 ♀, ix./x. 2016, MT, J. Votýpka leg.; same, VIRO camp, Sapu NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 2 ♀♀, ix./x. 2016, MT, J. Votýpka leg. (all dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1952): Sierra Leone, Liberia, Senegal, former French Guinea (adapted). Moucha (1976): W. Africa. Chainey & Oldroyd (1980): Sierra Leone, Guinea, Guinea-Bissau, Liberia, Mali, Senegal. Raymond *et al.* (1984): Senegal.

**Distribution** (only verified precise location from the last period): Guinea, Guinea Bissau, Liberia, Mali, Senegal, Sierra Leone Republic.

26. *Haematopota griseicoxa* Oldroyd, 1952: Horse-flies Ethiop. Reg., 1: 52.

**Material examined:** CAR, Dzanga-Sangha NP, Bai-Gubunga, 2 ♀♀, 28.ix.2012, MT, J. Votýpka leg.; same, Bai Hokou, Makumba, nest, 1 ♀, 26.ix.2012, J. Votýpka leg. (all dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1952): S. Sudan, former Belgian Congo and British Cameroons (adapted), Moucha (1976): C. Africa. Chainey & Oldroyd (1980): Cameroon; Ivory Coast, Nigeria, Sudan, former Congo and Zaire (adapted). Dias (1996): CAR.

**Distribution** (only verified precise location from the last period): Cameroon, CAR, Congo Republic, DRC, Ivory Coast, Nigeria, Sudan.



27. *Haematopota guineensis* Bigot, 1891: Bull. Soc. zool. France, 16: 76.

**Material examined:** Liberia, VIRO camp, Sapo NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 1 ♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1952): Angola, Ivory Coast, S. Nigeria, Uganda, former Gold Coast, Cameroons, French Congo, Belgian Congo (adapted). Leclercq (1965): Liberia. Moucha (1976): Ethiop. Region. Chainey & Oldroyd (1980): Ivory Coast, Angola, Cameroon, Central African Republic, Ghana, Guinea, Liberia, Nigeria, Uganda, former Congo and Zaire (adapted). Hayakawa *et al.* (1989): Nigeria. Dias (1994): Angola. Dias (1996): CAR.

**Distribution** (only verified precise location from the last period): Angola, CAR, Cameroon, Congo Republic, DRC, Ghana, Guinea, Ivory Coast, Liberia, Nigeria, Uganda.

28. *Haematopota torquens* Austen, 1908: Ann. Mag. Nat. Hist. 1(8): 409.

**Material examined:** Liberia, VIRO camp, Sapo NP, 5°18'39.89"N, 8°46'53.07"W, 130 a.s.l., dense forest, 1 ♀, ix./x. 2016, MT, J. Votýpka leg., (dry, pinned, NMPC).

**Chronology of selected important zoogeographical views.** Oldroyd (1952): Sierra Leone, Liberia, former Gold Coast (adapted). Moucha (1976): Sierra Leone, Liberia, Ghana. Chainey & Oldroyd (1980): Ghana, Angola, Ivory Coast, Liberia, Sierra Leone, former Zaire (adapted). Dias (1994): Angola. Taylor & Chainey (1994): Ivory Coast.

**Distribution** (only verified precise location from the last period): Angola, DRC, Ghana, Ivory Coast, Liberia, Sierra Leone Republic.



**Figs 5-8:** Documentary photos of: **5** - *Philoliche (Subpangonia) gravoti* Surcouf, 1908 from Liberia, **6** - *Tabanus argenteus* Surcouf, 1907 from Liberia, **7** - *Tabanus boueti* Surcouf, 1907 from Liberia, **8** - *Haematopota furians* Edwards, 1916 from Liberia (all photos made by D. Modrý).

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