Updating the taxonomy, phylogeny and biogeography of the aberrant genus *Coenosopsia* Malloch (Diptera: Anthomyiidae)

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Supplementary material

Table S1. List of material examined for the phylogenetic analysis.

Family	Species	Label information
Anthomyiidae	*Anthomyia pluripunctata* (Albuquerque, 1959)	Brazil, Santa Catarina, Nova Teutônia, v.1970, F. Plaumann, 1♂; viii.1967, 1♀ (MZUSP)
Anthomyiidae	*Calythea comis* (Stein, 1911)	Chile, Valparaíso, x.1969, L. Peña, 2♂♂ and 2♀♀ (MZUSP)
Anthomyiidae	*Coenosopsia albuquerquei* Bortolanza et al., 2006	Brazil, Paraná, Telêmaco Borba, 25.vii.1988, Lev. Ent. PROFAUPAR, 1♂ (Holotype) (DZUP); 24.vii.1987, 1♀ (DZUP)
Anthomyiidae	*Coenosopsia azteca* sp. nov.	Mexico, Morelos, 8. xii.1978, J. Butze, 1♂ (Holotype) (CNIN).
Anthomyiidae	*Coenosopsia brasiliensis* Michelsen, 1991	Brazil, Rio de Janeiro, Serviço Febre Amarela M. E. S. Bras., x.1938, 1♂ (Holotype) (MNRJ) and 1♀ (Paratype) (MNRJ)
Anthomyiidae	*Coenosopsia ferrari* Nihei & de Carvalho, 2004	Brazil, Distrito Federal, 9.xii.1997, I. R. Diniz, 1♂ (Holotype) (DZUP) and 1♀ (Paratype) (DZUP)
Anthomyiidae	*Coenosopsia floridensis* Michelsen, 1991	Mexico, Veracruz, Est. Biol. Los Tuxtlas, A. Ibarra et al., 17-18.iv.1986, 1♂ (CNIN); Córdoba, L. Delgado, 17.ii.1999, 1♀ (IEXA)
Anthomyiidae	*Coenosopsia limeirai* sp. nov	Brazil, Ceará, Parque Nac. de Ubajara, 18-30.xi.2012, F. Limeira-de-Oliveira, et al., 1♂ (Holotype) (CZMA); 1♀ (Paratype) (CZMA)
Anthomyiidae	*Coenosopsia mexicana* Michelsen, 1991	Mexico, Veracruz. Coatepec, S. Ibañez & F. A. Pech, 19.iii.2004, 1♂ and 2♀♀ (IEXA)
Anthomyiidae	*Coenosopsia michelseni* Nihei & Carvalho, 2004	Brazil, Distrito Federal, 13.v.1997, I. R. Diniz, 1♂ (Holotype) (DZUP) and 1♀ (Paratype) (DZUP)
Anthomyiidae	*Coenosopsia peruviana* Michelsen, 1991	Brazil, Amazonas, Autaz-Mirim, 26.viii.1994, J. Vidal, 1♂ (INPA); Manaus, 09-16.iii.1989, Y. Camara & J. E. Binda, 1♀ (INPA)
Anthomyiidae	*Coenosopsia prima* Malloch, 1924	Costa Rica. Puntarenas, M. Lobo, 3-6.v.1998, 1♂ (INBIO); Panama, Canal Zone, 9.iii.1967, Roger D. Akre, 1♀ (Paratype) (WSU)
Anthomyiidae	*Coenosopsia ribeiroi* sp. nov.	Brazil,Rio Grande do Sul, Arroio Grande, 30.viii.2002, P. B. Ribeiro, 1♂ (Holotype) (DZUP); 1♀ (Paratype) (DZUP)

Anthomyiidae	*Delia platura* (Meigen, 1826)	England, Oxford, Burguess Field Park, 23.viii.2003, S. S. Nihei, 2♂♂; Oxon, Henley, 18.vi.1992, C. Carvalho, 1♀ (DZUP)
Anthomyiidae	*Fucellia tergina* (Zetterstedt, 1845)	Brazil, Rio de Janeiro, Angra dos Reis, H. S. Lopes, 23.vi.1972, 2♂♂; 27.vi.1972, 2♀♀ (DZUP)
Anthomyiidae	*Hydrophoria ruralis* (Meigen, 1826)	England, Oxford, Brasenose Wood, 14.ix.2003, S. S. Nihei, 1♂ (DZUP)
Anthomyiidae	*Leucophora maculipennis* (Albuquerque, 1953)	Brazil, Paraná, São José dos Pinhais, 04.xi.1986, Lev. PROFAUPAR, 1♂; 31.x.1986, 1♀ (DZUP)
Anthomyiidae	*Pegomya poeciloptera* Malloch, 1921	Brazil, Rio Grande do Sul, Morro Redondo, 26.vii.2002, R. F. Krüger, 1♂ (DZUP); 09.v.2003, 1♀ (DZUP)
Anthomyiidae	*Phaonantho benevola* Couri, 1979	Brazil, Mato Grosso, Sinop, x.1976, Alvarenga & Roppa, 1♂ (Holotype) (MNRJ); x.1975, 1♀ (Paratype) (MNRJ)
Anthomyiidae	*Phaonantho mallochi* (Curran, 1934)	Brazil, Paraná, Jundiaí do Sul, 16.xi.1987, 1♂ (DZUP); 03.xi.1986, 1♀ (DZUP)
Anthomyiidae	*Phaonantho sordilloae* Pamplona & Couri, 1993	Brazil, Rio de Janeiro, xi.1988, C. M. O. Sordillo, 1♂ (Holotype) (MNRJ); 1♀ (Paratype) (MNRJ)
Scathophagidae	*Scathophaga stercoraria* (Linnaeus, 1758)	England, Oxford, 20.xii.1984, C. Elias, 1♂ and 1♀ (DZUP)

Table S2. Matrix of characters of *Coenosopsia* species and outgroup. Non-applicability of characters to taxa is indicated by "–".

Species	**0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 4 4 4** **1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2**
Scathophaga stercoraria	1 0 0 0 1 0 1 1 0 1 0 1 1 0 0 1 0 0 1 0 1 0 2 0 – 2 0 – 0 0 2 0 – 0 1 0 1 0 0 0 1 0
Anthomyia pluripunctata	1 1 0 1 1 0 0 1 0 0 1 0 1 1 2 0 1 0 1 0 1 1 2 1 1 0 0 – 0 0 1 0 – 1 0 – 0 0 0 1 1 0
Calythea comis	0 0 1 1 0 – 0 1 0 0 1 0 0 1 1 1 1 0 0 – 1 3 1 1 1 1 0 – 0 0 1 0 – 0 1 0 0 0 0 1 1 1
Delia platura	0 0 1 0 1 0 0 1 0 0 1 1 0 0 1 1 1 0 0 – 1 1 2 1 0 1 0 – 0 0 0 0 – 0 0 – 0 0 0 0 1 0
Fucellia tergina	0 0 1 1 1 0 1 1 0 1 3 1 0 0 2 1 0 0 0 – 1 0 2 1 7 2 0 – 0 0 1 0 – 0 0 – 0 0 1 0 1 0
Hydrophoria ruralis	2 1 1 0 1 0 0 1 0 0 1 1 0 1 3 0 1 0 1 1 1 2 2 1 0 1 0 – 0 0 0 0 – 0 1 0 1 0 0 1 1 0
Leucophora maculipennis	2 0 1 1 1 2 0 0 – 0 3 1 0 0 1 1 1 0 0 – 1 1 2 1 6 2 0 – 0 0 0 0 – 0 0 – 0 0 1 0 1 0
Pegomya poeciloptera	0 1 0 0 1 0 0 1 1 0 1 0 1 1 3 1 1 0 1 0 1 1 1 1 6 2 0 – 0 0 1 0 – 0 1 0 0 0 0 1 1 0
Phaonantho benevola	2 2 1 0 1 1 0 1 1 0 1 0 0 1 1 0 1 1 1 1 0 3 1 1 2 2 1 0 0 1 0 0 – 1 1 1 0 0 1 0 0 0
Phaonantho mallochi	2 2 1 0 1 1 0 1 1 0 0 0 0 1 1 1 1 0 1 1 0 3 1 1 2 2 1 0 0 1 1 0 – 1 1 1 0 0 1 0 0 0
Phaonantho sordilloae	2 2 1 0 1 1 0 1 1 0 2 0 0 1 1 0 1 1 1 1 0 3 2 1 2 2 1 0 0 1 2 0 – 1 1 1 0 0 1 0 0 0
Coenosopsia albuquerquei	2 2 1 1 1 0 1 1 0 1 1 1 0 1 1 1 0 0 1 1 0 2 0 1 3 0 1 3 1 0 1 1 0 0 1 0 1 1 1 0 1 0
Coenosopsia azteca	2 2 1 1 1 0 1 1 0 1 0 1 0 1 1 1 0 0 1 1 0 2 0 1 4 0 1 2 1 1 0 1 1 0 1 0 1 0 1 0 1 0
Coenosopsia brasiliensis	2 2 1 1 1 0 1 1 0 1 2 1 0 1 1 1 0 0 1 1 0 2 0 1 4 0 1 1 1 1 0 1 0 0 1 0 0 0 1 0 1 1
Coenosopsia ferrari	2 2 1 1 1 0 1 1 0 1 1 1 0 1 1 1 0 0 1 1 0 2 0 1 3 0 1 3 1 0 1 1 0 0 1 0 0 1 1 0 1 0
Coenosopsia floridensis	2 2 1 1 1 0 1 1 0 1 2 1 0 1 1 1 0 0 1 1 0 2 0 1 4 0 1 2 1 2 2 1 1 0 1 0 1 0 1 0 1 0
Coenosopsia limeirai	2 2 1 1 1 0 1 1 0 1 2 1 0 1 1 1 0 0 1 1 0 2 0 1 5 0 1 4 1 1 0 1 0 0 1 0 1 0 1 0 1 1
Coenosopsia mexicana	2 2 1 1 1 0 1 1 0 1 0 1 0 1 1 1 0 0 1 1 0 2 0 1 4 0 1 2 1 2 2 1 1 0 1 0 1 0 1 0 1 0
Coenosopsia michelseni	2 2 1 1 1 0 1 1 0 1 2 1 0 1 1 1 0 0 1 1 0 2 0 1 4 1 1 2 1 2 1 1 1 0 1 0 1 0 1 0 1 0
Coenosopsia peruviana	2 2 1 1 1 0 1 1 0 1 2 1 0 1 1 1 0 0 1 1 0 2 0 1 4 0 1 1 1 1 0 1 0 0 1 0 1 0 1 0 1 1
Coenosopsia prima	2 2 1 1 1 0 1 1 0 1 1 1 0 1 1 1 0 0 1 1 0 2 0 1 4 1 1 1 1 1 0 1 1 0 1 0 1 0 1 0 1 0
Coenosopsia ribeiroi	2 2 1 1 1 0 1 1 0 1 1 1 0 1 1 1 0 0 1 1 0 2 0 1 4 1 1 1 1 1 1 1 0 0 1 0 1 1 1 0 1 0

Table S3. Values of the constant of concavity (*k*) applied in the analysis with implied weighting with their respective number of steps (L), consistency index (IC), retention index (IR), fit value and number of trees generated.

k	L	IC	IR	fit	trees
-	116	55	75	29.59405	1
1	118	54	74	23.60833	2
2	117	54	74	27.40794	1
3	117	54	74	29.66071	1
4	117	54	74	31.14618	1
5	117	54	74	32.20833	1
6	116	55	75	32.01212	1
7	116	55	75	33.64755	1
8	116	55	75	34.15853	1
9	116	55	75	34.57887	1
10	116	55	75	34.93103	1
15	116	55	75	36.08516	1
20	116	55	75	36.72667	1
30	116	55	75	37.42001	1
60	116	55	75	38.17399	1