

Supplementary Table 1. Comparison of diagnostic characters and number of species of all pheretimoid genera

Genus	Type species	Type locality of the type species	Male pore structure	Clitellum	Calciferous glands and esophageal pouches	No. of intestinal caeca/starting segment	Nephridia on spermathecal duct	Testes	Other characters	No. of species (including subspecies, as of 2023)	References
<i>Amyntas</i> Kinberg, 1867	<i>Amyntas aeruginosus</i> Kinberg, 1867	Guam	Superficial	13 (rarely), 14–16	Absent	1 pair/27, rarely 25, 26	Absent; rarely present in some species	Holandric, metandric or proandric	-	~820	Sims and Easton (1972), Blakemore (2020), Aspe et al. (2021)
<i>Archipheretima</i> Michaelsen, 1928	<i>Megascolex iris</i> Michaelsen, 1892	Loquilocun, Samar, the Philippines	Superficial	12, 13–16, 17, ½18	Calciferous lamellae vertical in lateral esophageal pouches 11–13	3–6 pairs/29–31	Absent	Holandric	Paired supraesophageal vessels with connectives to the calciferous lamellae; heart 13 attached post-septally	11	James (2009)
<i>Begemius</i> Easton, 1982	<i>Begemius jamiesoni</i> Easton, 1982	Lockerbie East, Cape York, Queensland, Australia	Superficial	14–16	Calciferous lamellae in paired dorsal esophageal pouches often present in 10, occasionally in 11–13	1 pair/25, 26	Absent	Metandric	Lateral crescentic genital markings usually associated above and/or below the male pores	10	Easton (1982), Blakemore (2020)
<i>Dendropheretima</i> James, 2005	<i>Dendropheretima banahawensis</i> James, 2005	Upper montane forest on Mt. Banahaw, Tayabas municipality, Batangas Province, the Philippines	Superficial	13, 14–17	Calciferous lamellae on lateral expansions of the esophageal wall in the region of 11–13, 14	1 pair/25	Absent	Holandric, testes free of sacs	Last hearts in 12	2	James (2005)

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<i>Duplodicrodrilus</i> Blakemore, 2008	<i>Megascolex schmardae</i> Horst, 1883	Japan	Within copulatory pouches, eversible as large inflatable and doubled intromittant organs or pseudo-penes	14–16	Absent	1 pair/26, 27	Absent	Holandric	Genital markings lacking	3	Blakemore (2008, 2020)
<i>Isarogoscolex</i> James, 2005	<i>Isarogoscolex abiadae</i> James, 2005	Lower montane forest arboreal habitats on Mt. Isarog, Camarines Sur Province, the Philippines	Superficial	14–17	Calciferous glands stalked with vertical or horizontal lamellae in esophageal pouches, opening individually to oesophagus 11–13.	2 pairs/29, 30	Absent	Holandric	Meronephric in pre-intestinal segments; one pair astomate nephridia per segment 17 to the end of body	2	James (2005)
<i>Manus</i> Blakemore, 2010	<i>Pheretima koellikeri</i> Michaelsen, 1928	Japan	On penes within copulatory pouches	14–16	Absent	1 pair/27	Absent	Holandric	Secretory diverticulum opening adjacent to prostate gland on male pore with penial seta internally	1	Blakemore, (2010, 2020)
<i>Metapheretima</i> Michaelsen, 1928	<i>Perichaeta neoguineensis</i> Michaelsen, 1892	New Guinea	Occasionally on penes and sometimes within copulatory pouches	14–16; rarely in 13, 17	Calciferous glands absent; occasionally a pair of dorsal esophageal pouches in 10, 11	Absent	Absent	Usually holandric, occasionally metandric, rarely proandric	Crescentic markings usually around male pores	51	Easton (1979), Blakemore (2020)

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<i>Metaphire</i> Sims & Easton, 1972	<i>Rhodopis javanica</i> Kinberg, 1867	Tjibodas, Java, Indonesia	Within copulatory pouches, often with stalked glands	14–16	Absent	1 pair/27 and nearby segments	Absent	Holandric, rarely proandric or metandric	-	~310	Sims and Easton (1972), Blakemore (2020)
<i>Pheretima</i> Kinberg, 1867	<i>Pheretima montana</i> Kinberg, 1867	Tahiti	Within copulatory pouches	14–16	Absent	1 pair/27	Present	Holandric	-	~170	Blakemore (2020), Aspe et al. (2021)
<i>Pithemera</i> Sims & Easton, 1972	<i>Perichaeta bicincta</i> Perrier, 1875	Mindoro, the Philippines	Superficial, copulatory pouches rarely present	14–16	Absent	Single or 1 pair/21–23, rarely 24	Absent	Holandric or metandric	-	35	Aspe and James (2016), Blakemore (2020)
<i>Planapheretima</i> Michaelsen, 1934	<i>Pheretima moultoni</i> Michaelsen, 1913	Mt. Poi, Sarawak, North Borneo, Malaysia	Superficial, on small penes on porophores, or in shallow copulatory pouches	13, 14–16, 17	Absent	Mostly absent, intestinal walls often with glandular areas	Absent	Holandric	Body mainly flattened dorsoventrally forming creeping sole with ventrally crowded setae	17	Easton (1979), Blakemore (2020)

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<i>Pleionogaster</i> Michaelsen, 1892	<i>Pleionogaster jagori</i> Michaelsen, 1892	Daraga, Luzon, the Philippines	Superficial	½13, 14–16, 17	Absent	Absent	Absent	Holandric	Reduced esophageal gizzard in 8; intestinal gizzards in 24–32; paired enteric stomate meganephridia and regular ranks of exoic micronephridia in post-clitellate segments; prostatic ducts united with vasa deferentia near the ental end of the duct	21	Easton (1979), James (2004, 2006)
<i>Polypheretima</i> Michaelsen, 1934	<i>Perichaeta stelleri</i> Michaelsen, 1892	Sangihe Island, Indonesia	On circular porophores, occasionally within copulatory pouches, lacking penes	14–16	Absent	Absent	Absent	Mostly holandric	Crescentic genital markings absent	94	Easton (1979), Blakemore (2020), Aspe et al. (2021)

Supplementary Table 2. The status of type materials of some taxa in this study checked via the collection database of each respective museum (as of August 2024)

No.	Taxa	Type status	Institution	Specimen no.	Specimen data page	References
1	<i>Archipheretima iris</i> (Michaelsen, 1892)	Syntypes	ZMB	No. 565	http://zmb.sesam.senckenberg.de/	ZMB Berlin (2024)
2	<i>Archipheretima zonata</i> (Michaelsen, 1922)	Holotype	RMNH	RMNH.VER.OL.1816	https://bioportal.naturalis.nl/en/specimen/RMNH.VER.OL.1816	Naturalis Bioportal (2024)
3	<i>Begemius cyclops</i> (Cognetti de Martiis, 1911)	Syntype	RMNH	ZMA.V.OL.251	https://bioportal.naturalis.nl/en/specimen/ZMA.V.OL.251	Naturalis Bioportal (2024)
4	<i>Begemius gavini</i> Easton, 1982	Holotype	QMBA	GH197	https://biocache.ala.org.au/occurrences/87562244-0848-4ca8-8378-206e976f851e	Atlas of Living Australia (2024)
		Paratypes	QMBA	GH198	https://biocache.ala.org.au/occurrences/16b7d2d2-450b-447c-999f-2043cfac614b	
		Paratypes	NHM	NHMUK 1980.46.1	https://data.nhm.ac.uk/object/f4d76bbe-9840-45d3-ace0-a08e054eb44e	Natural History Museum Data Portal (2024)
		Paratypes	NHM	NHMUK 1980.46.2–8	https://data.nhm.ac.uk/object/2bd4b751-f7bd-48d9-9d00-24307b56f319	
5	<i>Begemius jamiesoni</i> <i>hornensis</i> Easton, 1982	Holotype	QMBA	GH191	https://biocache.ala.org.au/occurrences/175e1f79-ae02-450c-a70d-d6bcace4b6f1	Atlas of Living Australia (2024)
		Paratype	QMBA	GH192	https://biocache.ala.org.au/occurrences/eee458e5-e839-4417-af6e-6ee9233047d4	
		Paratype	QMBA	GH193	https://biocache.ala.org.au/occurrences/2faad53e-884d-4c99-83da-2b8c08939ad2	
		Paratypes	NHM	NHMUK 1980.46.29–30	https://data.nhm.ac.uk/object/66b008cc-15df-4354-a7e0-276137a995b8	Natural History Museum Data Portal (2024)
		Paratype	NHM	NHMUK 1980.46.31	https://data.nhm.ac.uk/object/9bd1289d-a388-444a-b131-a5bde29ec11c	
		Paratype	NHM	NHMUK 1980.46.32	https://data.nhm.ac.uk/object/7cfb6f6e-d147-421a-9f5d-de848a16a25a	
		Paratypes	NHM	NHMUK 1980.46.33–39	https://data.nhm.ac.uk/object/5d0aefba-233d-4458-bafc-fb8ccb745a38	

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6	<i>Begemius jamiesoni</i> <i>jamiesoni</i> Easton, 1982	Holotype	QMBA	GH194	https://biocache.ala.org.au/occurrences/2a077eaf-722b-4e5a-8c38-8e80c54a652c	Atlas of Living Australia (2024)
		Paratype	QMBA	GH195	https://biocache.ala.org.au/occurrences/6bb4f3c9-4ed3-4a20-b7f5-7ed729994595	
		Paratype	QMBA	GH196	https://biocache.ala.org.au/occurrences/ebcf9de4-bd68-46b0-a298-7976307c851f	
		Paratype	NHM	NHMUK 1980.46.16	https://data.nhm.ac.uk/object/9877c590-4f52-4e32-b9cf-814ba8377acf	Natural History Museum Data Portal (2024)
		Paratype	NHM	NHMUK 1980.46.17	https://data.nhm.ac.uk/object/dbd8e4c6-5e27-4fab-b546-1337fb266e6e	
		Paratypes	NHM	NHMUK 1980.46.18–20	https://data.nhm.ac.uk/object/526d41ec-159e-445f-84d0-b7708a0ec6d9	
		Paratype	NHM	NHMUK 1980.46.21	https://data.nhm.ac.uk/object/dcff764a-ae83-4c32-a40d-94b0486a9274	
		Paratypes	NHM	NHMUK 1980.46.22–27	https://data.nhm.ac.uk/object/38505128-697b-46b6-a95c-15fb10c2de4c	
		Paratype	NHM	NHMUK 1980.46.28	https://data.nhm.ac.uk/object/0aa2c8ed-43f4-408f-8d9e-6aae5e16d026	
7	<i>Begemius lockerbiensis</i> Easton, 1982	Holotype	QMBA	GH186	https://biocache.ala.org.au/occurrences/27a5e491-a2ac-4581-90a4-31b84aab6fc1	Atlas of Living Australia (2024)
		Paratypes	QMBA	GH187	https://biocache.ala.org.au/occurrences/4d5d1820-ba82-4d73-9c1a-8981332d7a84	
		Paratypes	NHM	NHMUK 1980.46.40–43	https://data.nhm.ac.uk/object/156f1121-0c32-4b22-a175-a10c849aebcb	Natural History Museum Data Portal (2024)
8	<i>Begemius queenslandicus</i> (Fletcher, 1887)	Syntypes	AMSS	W2399	https://biocache.ala.org.au/occurrences/739d9ebf-11ef-4221-ac6a-7a210cdc9e42	Atlas of Living Australia (2024)
9	<i>Begemius raveni</i> Easton, 1982	Holotype	QMBA	GH199	https://biocache.ala.org.au/occurrences/805ef29d-33c4-4904-a4db-68173e641ca9	Atlas of Living

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		Paratypes	QMBA	GH200	https://biocache.ala.org.au/occurrences/83c2c515-ee00-4c06-80f8-4ccbe1b87864	Australia (2024)
		Paratypes	NHM	NHMUK 1980.46.112–120	https://data.nhm.ac.uk/object/9ce14f3b-0908-437b-af13-09b62f8d05a5	Natural History Museum Data Portal (2024)
10	<i>Begemius yorkensis</i> Easton, 1982	Holotype	QMBA	GH184	https://biocache.ala.org.au/occurrences/fbf1167b-9f92-4369-9fd2-7424beeabf5a	Atlas of Living Australia (2024)
		Paratype	QMBA	GH185	https://biocache.ala.org.au/occurrences/068ce6fd-1876-44f1-8d43-7426822c6c58	
		Paratypes	NHM	NHMUK 1980.46.151–153	https://data.nhm.ac.uk/object/8f2bb899-5755-4404-9583-1e17bed687a3	Natural History Museum Data Portal (2024)
11	<i>Duplodicrodrius schmardae schmardae</i> (Horst, 1883)	Syntypes of “ <i>Megascolex schmardae</i> Horst, 1883”	RMNH	RMNH.VER.OL.1818	https://bioportal.naturalis.nl/en/specimen/RMNH.VER.OL.1818	Naturalis Bioportal (2024)
12	<i>Planapheretima ambulatrix</i> (Michaelsen, 1934)	Syntypes	NHM	NHMUK 1933.10.6.6	https://data.nhm.ac.uk/object/85b6b509-3f01-4eff-ac4b-78f786fb4438	Natural History Museum Data Portal (2024)
13	<i>Planapheretima hasselti</i> (Horst, 1883)	Syntypes of “ <i>Megascolex hasselti</i> Horst, 1883”	RMNH	RMNH.VER.OL.1853	https://bioportal.naturalis.nl/en/specimen/RMNH.VER.OL.1853	Naturalis Bioportal (2024)
		Syntypes of “ <i>Pheretima (Planapheretima) frondicola</i> Michaelsen, 1934”	NHM	NHMUK 1933.10.6.9	https://data.nhm.ac.uk/object/243130fc-cb3f-43c8-8b21-cdf823d5c663	Natural History Museum Data Portal (2024)
14	<i>Planapheretima nieuwenhuisi</i> (Michaelsen, 1922)	Syntypes	RMNH	RMNH.VER.OL.1811	https://bioportal.naturalis.nl/en/specimen/RMNH.VER.OL.1811	Naturalis Bioportal (2024)
15	<i>Planapheretima sera</i> Easton, 1979	Holotype	NHM	NHMUK 1977.21.1	https://data.nhm.ac.uk/object/f57b7b30-b21e-44f8-8712-61d95f106392	Natural History

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		Paratype	NHM	NHMUK 1977.21.2	https://data.nhm.ac.uk/object/bede5bcc-5b01-4663-ab96-6e043afd2a72	Museum Data Portal (2024)
16	<i>Pleionogaster horsti</i> (Beddard, 1886)	Syntype of “ <i>Perichaeta horsti</i> Beddard, 1886”	NHM	NHMUK 1974.1.86–89	https://data.nhm.ac.uk/object/9a2d05c6-1cd8-4b50-b559-083024f6868d	Natural History Museum Data Portal (2024)
		Syntypes of “ <i>Pleionogaster sivickisi</i> Stephenson, 1933”	NHM	NHMUK 1930.12.26.5–7	https://data.nhm.ac.uk/object/be961054-9256-4490-b521-b8507d202ef6	
17	<i>Pleionogaster samariensis</i> Michaelsen, 1892	Syntype	ZMB	No. 567	http://zmb.sesam.senckenberg.de/	ZMB Berlin (2024)

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