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Supplementary material

Placing the forgotten: on the positions of *Euenchytraeus* and *Chamaedrilus* in an updated enchytraeid phylogeny (Clitellata : Enchytraeidae)

Svante Martinsson, Klára Dózsa-Farkas, Emilia Rota and Christer Erséus

[A]Systematics and Biodiversity, Department of Biological and Environmental Sciences, University of Gothenburg, Box 463, SE-405 30 Göteborg, Sweden.

[B]Eötvös Loránd University, Department of Systematic Zoology and Ecology, H-1117 Budapest, Pázmány Péter sétány 1/C, Hungary.

[C]Department of Physics, Earth and Environmental Sciences, University of Siena, Via P.A. Mattioli 4, IT-53100 Siena, Italy.

[D]Corresponding author. Email: svante.martinsson@bioenv.gu.se

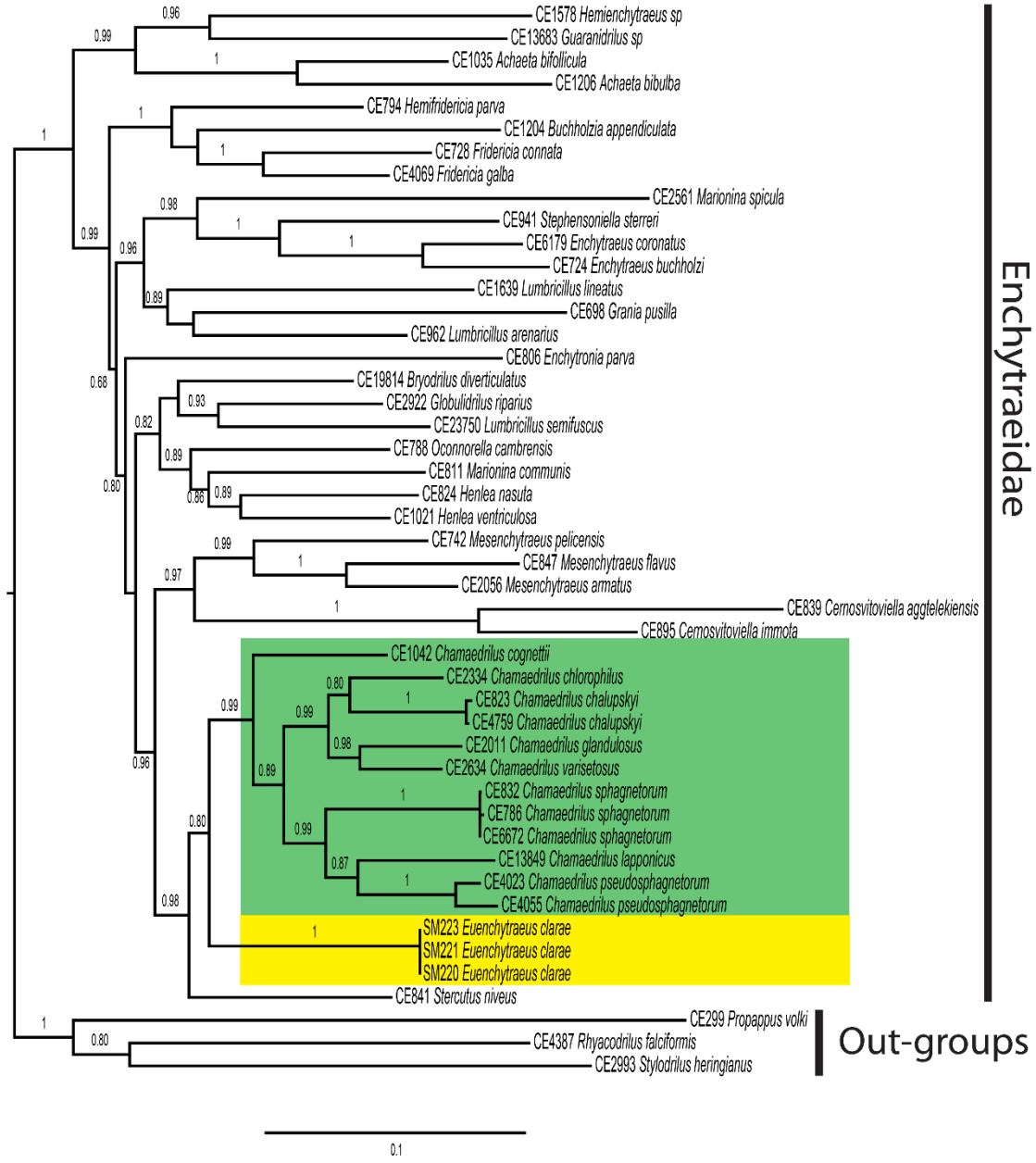

Figure S1. Tree from Maximum Likelihood analysis performed in PhyML. The positions of *Euenchytraeus clarae* (yellow marking) and *Chamaedrilus* (green marking) are highlighted. Values at branches are SH-like aLRT nodal support; only values above 0.50 are shown. Scale bar represents expected number of substitutions per site.

Table S1. List of specimens used in this study, with collection data, specimen identification numbers, voucher numbers, and GenBank accession numbers. Country codes: At, Austria; AU, Australia; BR, Brazil; DK, Danmark; HU, Hungary; NO, Norway; RU, Russia; SE, Sweden; US, United States of America. GenBank accession numbers in bold are new sequences generated in this study.

Species		**Locality**	**Museum**	**GenBank accession numbers**						
Ingroup	**spm nos.**	**(country, province, locality)**	**voucher nos.**	**COI**	**16S**	**12S**	**18S**	**28S**	**H3**	**U2**
Euenchytraeus clarae (Bauer, 1993)	SM220	AT, Niederösterreich, Mt. Rax	SMNH155444	-	**KX618756**	**KX618737**	**KX618774**	**KX618788**	-	**KX618814**
Eu. clarae (Bauer, 1993)	SM221	HU, Vas, Mts. Kőszeg	SMNH155445	**KX618736**	**KX618757**	**KX618738**	**KX618775**	**KX618789**	-	**KX618813**
Eu. clarae (Bauer, 1993)	SM223	HU, Vas, Mts. Kőszeg	SMNH155445	-	**KX618758**	**KX618739**	**KX618776**	**KX618790**	-	**KX618812**
Chamaedrilus cognettii (Issel, 1905)	CE1042	SE, Halland, Hallandsås	SMNH108410	GU902044[1]	GU901781[1]	GU901688[1]	GU901866[1]	GU901952[1]	KF672469[2]	**KX618833**
Ch. chalupskyi Martinsson, Rota & Erséus, 2014	CE4759	SE, Bohuslän, Bokenäs	-	KF672408[2]	KF672454[2]	**KX618746**	**KX618782**	**KX618809**	KF672491[2]	**KX618821**
Ch. chalupskyi Martinsson, Rota & Erséus, 2014	CE823	SE, Västergötland, Hällekis	MCZR0188	KF672410[2]	KF672456[2]	**KX618752**	**KX618783**	**KX618806**	KF672493[2]	**KX618843**
Ch. chlorophilus Friend, 1913	CE2334	SE, Skåne, Vallerum	SMNH133668	KF672412[2]	KF672459[2]	**KX618749**	**KX618779**	**KX618803**	KF672495[2]	**KX618827**
Ch. glandulosus (Michaelsen, 1888)	CE2011	SE, Västergötland, Vårgårda	SMNH133613	KF672372[2]	KF672435[2]	**KX618751**	**KX618778**	**KX618805**	KF672475[2]	**KX618829**
Ch. lapponicus (Numrinen, 1965)	CE13849	SE, Lappland, Gällivare	SMNH133621	KF672380[2]	KF672441[2]	-	**KX618787**	**KX618808**	KF672479[2]	**KX618817**
Ch. Pseudosphagnetorum Martinsson, Rota & Erséus, 2014	CE4023	SE, Skåne,Skanör	SMNH TYPE-8686	KF672419[2]	KF672465[2]	**KX618747**	**KX618781**	**KX618798**	KF672501[2]	**KX618824**
Ch. pseudosphagnetorum Martinsson, Rota & Erséus, 2014	CE4055	SE, Blekinge, Olofström	SMNH133691	KF672422[2]	KF672467[2]	**KX618748**	-	**KX618797**	KF672503[2]	**KX618823**
Ch. sphagnetorum (Vejdovský, 1878)	CE6672	SE, Västergötland,Vårgårda	SMNH133639	KF672396[2]	KF672448[2]	-	**KX618786**	**KX618792**	KF672485[2]	**KX618819**
Ch. sphagnetorum (Vejdovský, 1878)	CE786	SE, Västergötland,Anten	-	KF672397[2]	KF672449[2]	**KX618753**	**KX618777**	**KX618807**	KF672486[2]	**KX618840**
Ch. sphagnetorum (Vejdovský, 1878)	CE832	SE, Västergötland, Lerum	-	GU902045[1]	GU901782[1]	GU901689[1]	GU901867[1]	GU901953[1]	**KX644873**	**KX618841**
Ch. varisetosus Martinsson, Rota & Erséus, 2015	CE2634	SE, Öland, Södra Greda	SMNH133600	KF672367[2]	KF672431[2]	**KX618750**	**KX618780**	**KX618801**	KF672471[2]	**KX618825**
Achaeta bibulba Graefe, 1989	CE1206	SE, Västergötland, Hisingen	-	GU902031[1]	GU901767[2]	GU901672[1]	GU901854[1]	GU901938[1]	**KX644874**	-
A. bifollicula Chalupský, 1992	CE1035	SE, Skåne, Hasslöv	-	GU902032[1]	GU901768[1]	GU901673[1]	GU901855[1]	GU901939[1]	**KX644886**	**KX618834**
Buchholzia appendiculata (Buchholz, 1863)	CE1204	SE, Västergötland	SMNH108407	GU902038[1]	GU901775[1]	GU901681[1]	GU901860[1]	GU901946[1]	**KX644875**	**KX618832**
Bryodrilus diverticulatus Černosvitov, 1929	CE19814	NO, Hedmark, Engerdal	SMNH155448	**KX618735**	**KX618759**	**KX618745**	**KX618773**	**KX618791**	-	**KX618816**
Cernosvitoviella immota (Knöllner, 1935)	CE895	SE, Bohuslän, Öddö	-	GU902042[1]	GU901779[1]	GU901686[2]	GU901864[1]	GU901950[1]	KF672504[2]	**KX618837**
Ce. aggtelekiensis Dózsa-Farkas, 1970	CE839	SE, Västergötland, Lerum	-	GU902040[1]	GU901777[1]	GU901684[1]	GU901862[1]	GU901948[1]	KF672505[2]	**KX618839**
Enchytraeus coronatus Nielsen & Christensen, 1959	CE6179	SE, Västergötland, Mölndal	SMNH155447	**KX618734**	**KX618760**	**KX618740**	**KX618768**	**KX618794**	**KX644877**	**KX618820**
En. buchholzi Vejdovský. 1979	CE724	RU, Siberia, Krasnoyarsk	-	GU902048[1]	GU901786[1]	GU901694[1]	GU901871[1]	GU901957[1]	**KX644876**	**KX618849**
Enchytronia parva Nielsen & Christensen, 1959	CE806	SE, Västergötland, Anten	-	GU902056[1]	GU901794[1]	GU901702[1]	GU901879[1]	GU901965[1]	-	-

Fridericia connate Bretscher, 1902	CE728	SE, Södermanland, Kila	SMNH108414	GU902061[1]	GU901799[1]	GU901707[1]	GU901884[1]	GU901970[1]	**KX644879**	**KX618848**
F. galba (Hoffmeister, 1843)	CE4069	SE, Skåne, Bromölla	SMNH155449	**KX618733**	**KX618761**	**KX618744**	**KX618771**	**KX618796**	**KX644878**	**KX618822**
Globulidrilus riparius(Bretscher, 1899)	CE2922	SE, Öland, Melösavik	SMNH155450	**KX618732**	**KX618762**	**KX618743**	**KX618770**	**KX618800**	-	-
Grania pusilla Erséus, 1974	CE698	SE, Bohuslän, Kosterfjord	-	GU473676[3]	GU902136[4]	GU902122[4]	GU902150[4]	GU902163[4]	KU894278[9]	**KX618850**
Guaranidrilus sp.	CE13683	BR, Paraná, Garatuva	-	**KX618731**	**KX618765**	-	**KX618772**	**KX618793**	**KX644881**	**KX618818**
Hemienchytraeus sp.	CE1578	AU, Queensland, Lizard Is.	SMNH108419	GU902080[1]	GU901820[1]	GU901729[1]	GU901905[1]	GU901991[1]	**KX644880**	**KX618831**
Hemifridiericia parva Nielsen & Christensen. 1959	CE794	SE, Västergötland, Hällekis	-	GU902081[1]	GU901821[1]	GU901730[1]	GU901906[1]	GU901992[1]	**KX644882**	**KX618845**
Henlea ventriculosa (d'Udekem, 1854)	CE1021	SE, Bohuslän, Ingalsröd	SMNH108422	GU902085[1]	GU901825[1]	GU901734[1]	GU901910[1]	GU901996[1]	KU894281[9]	**KX618835**
He. nasuta (Eisen, 1878)	CE824	SE, Västergötland,Hällekis	-	GU902083[1]	GU901823[1]	GU901732[1]	GU901908[1]	GU901994[1]	**KX644883**	**KX618842**
Lumbricillus arenarius (Michaelsen, 1889)	CE962	SE, Västergötland, Hovås	SMNH108423	GU902086[1]	GU901826[1]	GU901736[1]	GU901911[1]	GU901998[1]	KU894228[9]	-
L. semifuscus (Claparède, 1861)	CE23750	NO, Nordland,Bognes	ZMBN107908	KU894097[9]	KU862722[9]	KU862720[9]	KU862788[9]	KU862822[9]	KU894215[9]	**KX618815**
L. lineatus (Müller, 1774)	CE1639	SE, Bohuslän, Tjärnö	SMNH152741	KU894044[9]	KU862754[9]	KU862710[9]	KU862810[9]	KU862838[9]	KU894264[9]	**KX618830**
Marionina spicula (Leuckart, 1847)	CE2561	SE, Västergötland, Göteborg	SMNH155451	**KX618730**	**KX618763**	**KX618755**	**KX618769**	**KX618802**	**KX644887**	**KX618826**
Ma. communis Nielsen & Christensen, 1959	CE811	SE, Västergötland, Varnhem	-	GU902098[1]	GU901839[1]	GU901748[1]	GU901923[1]	GU902011[1]	KU894286[9]	**KX618844**
Mesenchytraeus flavus (Levinsen, 1884)	CE847	SE, Västergötland, Lerum	-	GU902100[1]	GU901843[1]	GU901752[1]	GU901926[1]	GU902015[1]	KU894212[9]	-
Me. armatus (Levinsen, 1884)	CE2056	SE, Västergötland. Torslanda	SMNH133693	KF672423[2]	KF672468[2]	**KX618742**	**KX618785**	**KX618804**	KF672506[2]	**KX618828**
Me. pelicensis Issel, 1905	CE742	DK, East Jutland, Mols Lab	-	GU902101[1]	GU901844[1]	GU901753[1]	GU901927[1]	GU902016[1]	**KX644884**	**KX618847**
Oconorella cambrensis (O'connor, 1963)	CE788	SE, Västergötland, Vårgårda	-	GU902105[1]	GU901848[1]	GU901757[1]	GU901931[1]	GU902021[1]	**KX644885**	**KX618846**
Stephensoniella sterreri (Lasserre & Erséus, 1976)	CE941	US, Florida, Fort Pierce	-	GU902111[1]	GU901851[1]	GU901762[1]	GU901934[1]	GU902026[1]	**KX644888**	**KX618836**
Stercutus niveus Michaelsen, 1888	CE841	SE, Västergötland, Lerum	-	GU902112[1]	GU901935[1]	GU901763[1]	GU901935[1]	GU902027[1]	KF672507[2]	**KX618838**
Outgroups										
Rhyacodrilus falciformis Bretscher, 1901	CE4387	SE, Östergötland, Omberg	SMNH130514	KF267916[5]	**KX618764**	**KX618754**	**KX618767**	**KX618795**	KF267948[5]	**KX618810**
Stylodrilus heringianus Claparède, 1862	CE2993	SE, Öland, Dröstorp	SMNH126490	JX993896[7]	**KX618766**	**KX618741**	**KX618784**	**KX618799**	KC117603[8]	**KX618811**
Propappus volki Michaelsen, 1916	CE299	SE, Blekinge, Bräkneån	-	GU902109[1]	AY340475[7]	GU901761[1]	AY365457[6]	AY340412[7]	-	-

[1]From Erséus *et al.* (2010); [2]From Martinsson and Erséus (2014); [3]From De Wit and Erséus (2010); [4]From De Wit *et al.* (2011); [5]From Martinsson *et al.* (2013); [6]From Erséus and Källersjö (2004); [7]From Rousset *et al.* (2007); [8]From Achurra and Erséus (2013); [9]From Klinth *et al.* (2016).

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Table S2. List of PCR-primers and programs used in the study.

Primer	Sequence 5'-3'	Reference	PCR-program
COI			
LCO1490	GGTCAACAAATCATAAAGATATTGG	Folmer *et al.* (1994)	95°C for 5 min, 35 cycles each of 95°C for
HCO2198	TAAACTTCAGGGTGACCAAAAAATCA	Folmer *et al.* (1994)	40 sec, 45°C for 45 sec and 72°C for 60 sec,
COI-E	TATACTTCTGGGTGTCCGAAGAATCA	Bely and Wray (2004)	finally, 72°C for 8 min.
12S			95°C for 5min, 43 cycles each of 95°C for
12SE1	AAAACATGGATTAGATACCCRYCTAT	Jamieson *et al.* (2002)	40 sec, 45°C for 45 sec and 72°C for 1min,
12SH	ACCTACTTTGTTACGACTTATCT	Jamieson *et al.* (2002)	finally 72°C for 8min
16S			
16SAR-L	CGCCTGTTTATCAAAAACAT	Palumbi *et al.* (1991)	95°C for 5min, 35 cycles each of 95°C for
16SBRH	CCGGTCTGAACTCAGATCACGT	Palumbi *et al.* (1991)	30 sec, 45°C for 30 sec and 72°C for 1min,
Ann16SF	GCGGTATCCTGACCGTRCWAAGGTA	Sjölin *et al.* (2005)	finally 72°C for 8min
Ann16SR	TCCTAAGCCAACATCGAGGTGCCAA	Sjölin *et al.* (2005)	
28S			95°C for 5min, 35 cycles each of 95°C for
28SC1'	ACCCGCTGAATTTAAGCAT	Jamieson *et al.* (2002)	40 sec, 52°C for 40 sec and 72°C for 1min,
28SC2	TGAACTCTCTCTTCAAAGTTCTTTTC	Le *et al.* (1993)	finally72°C for 8min
18S			95°C for 5min, 30 cycles each of 95°C for
TimA	AMCTGGTTGATCCTGCCAG	Norén and Jondelius (1999)	30sec, 54°C for 30 sec, and 72°C for 1min
TimB	TGATCCATCTGCAGGTTCACCT	Norén and Jondelius (1999)	and 30sec, finally 72°C for 8min
1100R	GATCGTCTTCGAACCTCTG	Norén and Jondelius (1999)	95°C for 5min, 30 cycles each of 95°C for
660F	GATCTCGGGTCCAGGCT	Erséus *et al.* (2002)	30sec, 60°C for 30sec, 72°C for 1min and 30
600F	GGTGCCAGCMGCCGCGGT	Norén and Jondelius (1999)	sec, finally 72°C for 8min.
H3			95°C for 2min, 35 cycles of each 95°C for
H3F	ATGGCTCGTACCAAGCAGACVGC	Colgan *et al.* (1998)	30 sec, 50°C for 30 sec and 72°C for 30 sec
H3R	ATATCCTTRGGCATRATRGTGAC	Colgan *et al.* (1998)	min, finally 72°C for 5min
U2			95°C for 2min, 35 cycles each of 95°C for
U2F	TCTCGGCCT WW T GGC TAA	Colgan *et al.* (1998)	30 sec, 55°C for 30 sec and 72°C for 15 sec,
U2R	GMGGTASTGCAATACCGG	Colgan *et al.* (1998)	finally 72°C for 5min

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