
Supplementary information

**Phylogenomics reveals the origin of
mammal lice out of Afrotheria**

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Supplemental Table 1: Overlap of earliest divergence within mammal lice with earliest divergence within Afrotheria

Overall root age constraint	Earliest mammal louse node CI	Overlapping with Afrotheria divergence estimate ¹
92 mya	47.3–59.5 mya	-
131 mya	65.9–84.1 mya	2, 3, 4, 5, 6
171 mya	85.9–109.5 mya	1, 2, 5

¹Dates for earliest Afrotheria divergence (95% CI) from prior mammal dating studies

- 1) 90.4–96.4 mya (Bininda-Emonds et al. 2007)
- 2) 74.4–96.5 mya (Meredith et al. 2011)
- 3) 68–72 mya (Dos Reis et al. 2012)
- 4) 61–74 mya (Ronquist et al. 2016)
- 5) 64–98 mya (Upham et al. 2019)
- 6) 66.2–78.2 mya (Álvarez-Carretero et al. 2021)

Supplemental Table 2. Samples in study

Genus	species	Host	Country	Total Reads	NCBI SRA
<i>Antarctophthirus</i>	<i>carlinii</i>	<i>Leptonychotes weddelli</i>	Antarctic SPA	78,108,912	SRR5809348*
<i>Antarctophthirus</i>	<i>ogmorhini</i>	<i>Hydrurga leptonyx</i>	Antarctic SPA	94,667,776	SRR5809350*
<i>Antarctophthirus</i>	<i>lobodontis</i>	<i>Lobodon carcinophaga</i>	Antarctic SPA	90,011,482	SRR5809349*
<i>Antarctophthirus</i>	<i>microchir</i>	<i>Otaria flavescens</i>	Argentina	104,403,830	SRR5088465*
<i>Antarctophthirus</i>	<i>microchir</i>	<i>Neophoca cinerea</i>	Australia	87,301,866	SRR5809347*
<i>Proechinophthirus</i>	<i>fluctus</i>	<i>Callorhinus ursinus</i>	USA	104,648,914	SRR5308138*
<i>Echinophthirus</i>	<i>horridus</i>	<i>Pusa hispida saimensis</i>	Finland	171,128,324	SRR8145948
<i>Lepidophthirus</i>	<i>macrorhini</i>	<i>Mirounga leonina</i>	Antarctic SPA	95,956,158	SRR5809351*
<i>Haematopinus</i>	<i>eurysternus</i>	<i>Bos taurus</i>	Egypt	64,236,000	SRR5308123*
<i>Hoplopleura</i>	<i>arboricola</i>	<i>Tamias amoenus</i>	USA	174,420,882	SRR5088468*
<i>Linognathoides</i>	<i>marmotae</i>	<i>Marmota flaviventris</i>	USA	93,380,082	SRR8582576
<i>Linognathus</i>	<i>spicatus</i>	<i>Connochaetes taurinus</i>	Zimbabwe	42,855,056	SRR5308129*
<i>Prolinognathus</i>	sp.	<i>Procavia capensis</i>	RSA	76,551,864	SRR9693815
<i>Enderleinellus</i>	<i>marmotae</i>	<i>Marmota monax</i>	Canada	71,451,540	SRR8582566
<i>Neohaematopinus</i>	<i>pacificus</i>	<i>Tamias minimus</i>	USA	154,952,566	SRR5088469*
<i>Polyplax</i>	sp.	<i>Lophuromys aquilus</i>	Malawi	99,289,648	SRR8334274
<i>Pediculus</i>	<i>humanus</i>	<i>Homo sapiens</i>	Honduras	147,704,686	SRR5088472*
<i>Pediculus</i>	<i>schaeffi</i>	<i>Pan troglodytes</i>	Kenya	118,534,590	SRR5088473*
<i>Pthirus</i>	<i>gorillae</i>	<i>Gorilla gorilla</i>	Uganda	120,850,588	SRR5088474*
<i>Pthirus</i>	<i>pubis</i>	<i>Homo sapiens</i>	USA	91,120,738	SRR5088475*
<i>Pedicinus</i>	<i>badii</i>	<i>Procolobus rufomitratu</i>	Uganda	49,099,090	SRR5308136*
<i>Lemurphthirus</i>	sp.	<i>Galago deemidoff</i>	DRC	130,509,532	SRR8334263
<i>Neolinognathus</i>	sp.	<i>Elephantulus edwardii</i>	RSA	61,714,382	SRR9693823
<i>Pthirpediculus</i>	sp.	<i>Eulemur macaco</i>	Madagascar	97,946,058	SRR8582589
<i>Geomydoecus</i>	<i>aurei</i>	<i>Thomomys bottae</i>	USA	116,680,800	SRR5308121*
<i>Neotrichodectes</i>	<i>mephitidis</i>	<i>Mephitis mephitis</i>	Canada	77,141,180	SRR8582577
<i>Stachiella</i>	<i>larseni</i>	<i>Mustela vison</i>	USA	38,023,782	SRR5308143*
<i>Eutrichophilus</i>	<i>setosus</i>	<i>Erethizon dorsatum</i>	Canada	85,600,626	SRR5308156
<i>Bovicola</i>	<i>ovis</i>	<i>Ovis aries</i>	Australia	55,528,452	SRR8582559
<i>Damalinia</i>	<i>sika</i>	<i>Cervus nippon</i>	Japan	110,178,166	SRR8582565
<i>Tricholipeurus</i>	<i>lipeuroides</i>	<i>Odocoileus virginianus</i>	USA	80,671,762	SRR8582604
<i>Procavicola</i>	sp.	<i>Procavia capensis</i>	RSA	63,991,442	SRR9693814
<i>Haematomyzus</i>	<i>elephantis</i>	<i>Elaphas maximus</i>	Thailand	94,800,010	SRR5308122*
<i>Echinophilopterus</i>	<i>claytoni</i>	<i>Northiella haematogaster</i>	Australia	61,015,492	SRR5308360*
<i>Meropoecus</i>	sp.	<i>Merops ornatus</i>	Australia	65,254,844	SRR5308363*
<i>Nyctibicola</i>	<i>longirostris</i>	<i>Nyctibius jamaicensis</i>	Mexico	62,948,748	SRR5308388*
<i>Struthiolipeurus</i>	<i>struthionis</i>	<i>Struthio camelus</i>	United Kingdom	66,838,096	SRR5308365*
<i>Osculotes</i>	<i>curta</i>	<i>Opisthocomus hoazin</i>	Peru	81,287,340	SRR5308133*
<i>Strongylocotes</i>	<i>lipoganus</i>	<i>Rhynchotus rufescens</i>	Bolivia	68,077,110	SRR5308142*
<i>Goniodes</i>	<i>ortygis</i>	<i>Colinus virginianus</i>	USA	91,028,250	SRR5308120*
<i>Penenirmus</i>	<i>zumpti</i>	<i>Lybius torquatus</i>	RSA	62,994,248	SRR9693832
<i>Degeeriella</i>	<i>rufa</i>	<i>Falco berigora</i>	Australia	95,242,930	SRR5308223*
<i>Lipeurus</i>	<i>caponis</i>	<i>Gallus gallus</i>	Galapagos	56,279,502	SRR5308373*
<i>Chelopistes</i>	<i>texanus</i>	<i>Ortalis vetula</i>	USA	61,406,098	SRR5308114*
<i>Oxylipeurus</i>	<i>chiniri</i>	<i>Ortalis vetula</i>	USA	71,982,724	SRR5308134*

<i>Aquanirmus</i>	<i>occidentalis</i>	<i>Aechmophorus occidentalis</i>	Canada	92,913,330	SRR5308392*
<i>Anatoecus</i>	<i>keymeri</i>	<i>Phoenicopterus chilensis</i>	Argentina	98,579,854	SRR5308381*
<i>Ardeicola</i>	<i>expallidus</i>	<i>Bubulcus ibis</i>	USA	75,255,050	SRR5308391*
<i>Fulicoffula</i>	<i>longipila</i>	<i>Fulica americana</i>	USA	52,765,362	SRR5308119*
<i>Docophoroides</i>	<i>brevis</i>	<i>Diomedea exulans</i>	South Georgia	54,250,984	SRR5308117*
<i>Halipeurus</i>	<i>diversus</i>	<i>Puffinus tenuirostris</i>	Australia	52,500,588	SRR5308124*
<i>Falcolipeurus</i>	<i>marginalis</i>	<i>Cathartes aura</i>	USA	46,795,498	SRR5308118*
<i>Ibidoecus</i>	<i>bisignatus</i>	<i>Plegadis chihi</i>	USA	42,590,904	SRR5308126*
<i>Acidoproctus</i>	<i>rostratus</i>	<i>Dendrocygna viduata</i>	Argentina	72,086,096	SRR5308389*
<i>Bothriometopus</i>	<i>macrocnemis</i>	<i>Chauna torquata</i>	Argentina	125,502,194	SRR5088466*
<i>Nesiotinus</i>	<i>demersus</i>	<i>Aptenodytes patagonicus</i>	Crozet Island	66,130,276	SRR9693831
<i>Trichophilopterus</i>	<i>babakotophilus</i>	<i>Propithecus verreauxi</i>	Madagascar	38,735,400	SRR5308144*
<i>Dahlehornia</i>	<i>asymmetrica</i>	<i>Dromaius novaehollandiae</i>	Australia	65,382,868	SRR5308359*
<i>Carduiceps</i>	<i>zonarius</i>	<i>Calidris fuscicollis</i>	Brazil	94,568,642	SRR5308206
<i>Craspedonirmus</i>	<i>immer</i>	<i>Gavia immer</i>	Canada	54,000,574	SRR5308116*
<i>Austrogoniodes</i>	<i>waterstoni</i>	<i>Eudypytula minor</i>	Australia	84,049,742	SRR5308390*
<i>Columbicola</i>	<i>fortis</i>	<i>Otidiphaps nobilis</i>	PNG	100,810,266	SRR3161925*
Outgroup					
<i>Colimenopon</i>	<i>urocolius</i>	<i>Colius colius</i>	RSA	75,550,994	SRR8145884
<i>Menopon</i>	<i>gallinae</i>	<i>Gallus gallus</i>	Ghana	82,592,176	SRR8145978
<i>Hoazineus</i>	<i>armiferus</i>	<i>Opisthocomus hoazin</i>	Peru	110,538,602	SRR8145964
<i>Hohorstiella</i>	<i>radovskyi</i>	<i>Otidiphaps nobilis</i>	PNG	87,468,720	SRR8145960
<i>Plegadiphilus</i>	<i>plegadis</i>	<i>Plegadis chihi</i>	USA	113,649,182	SRR8146002
<i>Eidmaniella</i>	<i>pustulosa</i>	<i>Morus bassanus</i>	USA	126,502,044	SRR8145949
<i>Kurodaia</i>	<i>haliaeeti</i>	<i>Pandion haliaetus</i>	Canada	166,078,532	SRR8145968
<i>Holomenopon</i>	sp.	<i>Anas strepera</i>	USA	127,903,488	SRR8145961
<i>Demyus</i>	<i>pascoliae</i>	<i>Cypseloides senex</i>	Brazil	67,714,918	SRR8145899
<i>Myrsidea</i>	<i>minuscula</i>	<i>Philepitta castanea</i>	Madagascar	94,274,962	SRR8145981
<i>Chapinia</i>	<i>lophocerus</i>	<i>Tockus erythrorhynchus</i>	Ghana	106,462,524	SRR8146024
<i>Aotiella</i>	<i>hershkovitzi</i>	<i>Aotus trivirgata</i>	unknown	178,740,112	SRR8172494
<i>Macrogyropus</i>	<i>costalimai</i>	<i>Cuniculus paca</i>	Peru	65,940,856	SRR5308130*
<i>Chinchillophaga</i>	<i>clayae</i>	<i>Dolichotis patagonum</i>	Czech Republic	154,685,588	SRR8582564
<i>Cummingsia</i>	<i>maculata</i>	<i>Lestoros inca</i>	Peru	66,405,676	SRR5308146*
<i>Laemobothrion</i>	<i>atrum</i>	<i>Fulica americana</i>	Canada	111,244,660	SRR8145969
<i>Laemobothrion</i>	<i>tinnunculi</i>	<i>Falco longipennis</i>	Australia	86,487,406	SRR5308127*
<i>Ricinus</i>	sp.	<i>Bleda syndactyla</i>	Ghana	95,874,914	SRR8146010
<i>Trichilophagus</i>	<i>angustrifrons</i>	<i>Thaluria colombica</i>	Panama	102,704,548	SRR8146023
<i>Trinoton</i>	<i>nigrum</i>	<i>Cygnus atratus</i>	Australia	92,431,498	SRR8146021
<i>Heterodoxus</i>	<i>spiniger</i>	<i>Canis lupus</i>	India	84,240,242	SRR5308125*

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