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Appendix 1

Table A1. A detailed summary of the feathers collected from each individual host. Date refers to date of feather collection. Status of host refers to whether the host was alive or dead when mites were collected. Feather(s) refers to which feather tract (P: primary; R: rectrix) and which feather (P: 1-9; R: 1-6) the mite came from. An asterisk (*) next to the GenBank Accession number denotes samples sequenced in this study (unique to this study); others listed were used as outgroups in phylogeny construction. The phylogeny ID refers to the name of the sample that is included in phylogenies.

Host species	State or federal subject	Country	Date (m/d/y)	Host status	Feather Tract	Feather(s)	GenBank Accession	Feather mite lineage	Phylogeny ID
<i>Geothlypis trichas</i>	Pennsylvania	USA	6/7/15	Live	Rectrices	R5	KY491607*	<i>Amerodectes hribari</i>	AM107_Amerodectes_hribari_ex_Geothlypis_trichas_COYE096B
<i>Geothlypis trichas</i>	Arkansas	USA	10/1/15	Dead	Rectrices	R4	KY491625*	<i>Amerodectes hribari</i>	AM110_Amerodectes_hribari_ex_Geothlypis_trichas_COYE164C
<i>Geothlypis formosa</i>	Arkansas	USA	5/6/15	Live	Primaries	P7	KY491620*	<i>Amerodectes seiurus</i>	AM196_Amerodectes_seiurus_ex_Geothlypis_formosa_KEWA064A
<i>Geothlypis formosa</i>	Missouri	USA	5/19/15	Live	Primaries	P6	KY491610*	<i>Amerodectes seiurus</i>	AM122_Amerodectes_seiurus_ex_Geothlypis_formosa_KEWA094A
<i>Geothlypis formosa</i>	Missouri	USA	5/19/15	Live	Rectrices	R5	KY491627*	<i>Amerodectes seiurus</i>	AM126_Amerodectes_seiurus_ex_Geothlypis_formosa_KEWA094B
<i>Geothlypis formosa</i>	Missouri	USA	5/21/16	Live	Primaries	P8	KY491606*	<i>Amerodectes seiurus</i>	AM123_Amerodectes_seiurus_ex_Geothlypis_formosa_KEWA349A
<i>Geothlypis formosa</i>	Missouri	USA	5/21/16	Live	Rectrices	R5	KY491617*	<i>Amerodectes seiurus</i>	AM128_Amerodectes_seiurus_ex_Geothlypis_formosa_KEWA349B
<i>Geothlypis formosa</i>	Missouri	USA	5/21/16	Live	Rectrices	R5	KY491619*	<i>Amerodectes seiurus</i>	AM129_Amerodectes_seiurus_ex_Geothlypis_formosa_KEWA350B
<i>Geothlypis formosa</i>	Missouri	USA	5/22/16	Live	Primaries	P8	KY491617*	<i>Amerodectes seiurus</i>	AM124_Amerodectes_seiurus_ex_Geothlypis_formosa_KEWA351A
<i>Seiurus aurocapilla</i>	Arkansas	USA	5/1/14	Dead	Primaries	P10	KY491620*	<i>Amerodectes seiurus</i>	AM210_Amerodectes_seiurus_ex_Seiurus_aurocapilla_OVEN031P10
<i>Seiurus aurocapilla</i>	Arkansas	USA	9/20/15	Live	Primaries	P8	KY491605*	<i>Amerodectes seiurus</i>	AM136_Amerodectes_seiurus_ex_Seiurus_aurocapilla_OVEN165A
<i>Seiurus aurocapilla</i>	Arkansas	USA	10/6/15	Dead	Rectrices	R2	KY491629*	<i>Amerodectes seiurus</i>	AM140_Amerodectes_seiurus_ex_Seiurus_aurocapilla_OVEN179
<i>Seiurus aurocapilla</i>	Arkansas	USA	9/28/14	Dead	Primaries	P8	KY491621*	<i>Amerodectes seiurus</i>	AM200_Amerodectes_seiurus_ex_Seiurus_aurocapilla_OVEN191A
<i>Seiurus aurocapilla</i>	Arkansas	USA	ND	Dead	Primaries	P8	KY491630*	<i>Amerodectes seiurus</i>	AM139_Amerodectes_seiurus_ex_Seiurus_aurocapilla_OVEN194A
<i>Seiurus aurocapilla</i>	Tennessee	USA	9/22/15	Live	Rectrices	R5	KY491635*	<i>Amerodectes seiurus</i>	AM142_Amerodectes_seiurus_ex_Seiurus_aurocapilla_OVEN251A
<i>Seiurus aurocapilla</i>	Arkansas	USA	4/27/16	Dead	Rectrices	R4, R5	KY491591*	<i>Amerodectes seiurus</i>	AM143_Amerodectes_seiurus_ex_Seiurus_aurocapilla_OVEN318C
<i>Vireo hypochryseus</i>	Jalisco North	Mexico	5/19/08	-	-	-	KU203223	<i>Amerodectes sp n</i>	AD1203_Amerodectes_sp_n_ex_Vireo_hypochryseus
<i>Empidonax minimus</i>	Carolina	USA	5/25/05	-	-	-	KU203224	<i>Amerodectes sp n aff caribaeus</i>	AD1040_Amerodectes_sp_n_aff_caribaeus_ex_Empidonax_minimus

<i>Setophaga pensylvanica</i>	North Carolina	USA	5/4/06	-	-	-	KU203220	<i>Amerodectes sp n aff geothlypis</i>	AD1046_Amerodectes_sp_n_aff_geothlypis_ex_Setophaga_pensylvanica
<i>Setophaga caerulescens</i>	Pennsylvania	USA	5/25/15	Live	Primaries	P7	KY491606*	<i>Amerodectes</i> sp1 (this study)	AM84_Amerodectes_sp1_ex_Setophaga_caerulescens_BTBW151A
<i>Setophaga caerulescens</i>	Pennsylvania	USA	5/25/15	Live	Rectrices	R4	KY491618*	<i>Amerodectes</i> sp1 (this study)	AM88_Amerodectes_sp1_ex_Setophaga_caerulescens_BTBW151C
<i>Setophaga caerulescens</i>	Pennsylvania	USA	5/28/15	Live	Rectrices	R4	KY491622*	<i>Amerodectes</i> sp1 (this study)	AM89_Amerodectes_sp1_ex_Setophaga_caerulescens_BTBW152B
<i>Setophaga caerulescens</i>	Pennsylvania	USA	6/22/15	Live	Rectrices	R5	KY491596*	<i>Amerodectes</i> sp1 (this study)	AM90_Amerodectes_sp1_ex_Setophaga_caerulescens_BTBW153C
<i>Setophaga caerulescens</i>	Pennsylvania	USA	6/22/15	Live	Rectrices	R5	KY491598*	<i>Amerodectes</i> sp1 (this study)	AM91_Amerodectes_sp1_ex_Setophaga_caerulescens_BTBW154B
<i>Setophaga cerulea</i>	Missouri	USA	5/18/15	Live	Primaries	P8	KY491585*	<i>Amerodectes</i> sp1 (this study)	AM190_Amerodectes_sp1_ex_Setophaga_cerulea_CERW065A
<i>Setophaga cerulea</i>	Missouri	USA	4/25/15	Live	Rectrices	R3	KY491605*	<i>Amerodectes</i> sp1 (this study)	AM100_Amerodectes_sp1_ex_Setophaga_cerulea_CERW072C
<i>Setophaga cerulea</i>	Arkansas	USA	5/5/15	Live	Rectrices	R5	KY491602*	<i>Amerodectes</i> sp1 (this study)	AM101_Amerodectes_sp1_ex_Setophaga_cerulea_CERW075C
<i>Setophaga discolor</i>	Pennsylvania	USA	2016	Live	Primaries	P3	KY491588*	<i>Amerodectes</i> sp1 (this study)	AM151_Amerodectes_sp1_ex_Setophaga_discolor_PRAW380A
<i>Setophaga pensylvanica</i>	Pennsylvania	USA	6/14/16	Live	Rectrices	R5	KY491635*	<i>Amerodectes</i> sp1 (this study)	AM118_Amerodectes_sp1_ex_Setophaga_pensylvanica_CSWA367B
<i>Setophaga ruticilla</i>	Pennsylvania	USA	6/5/15	Live	Primaries	P7	KY491614*	<i>Amerodectes</i> sp1 (this study)	AM73_Amerodectes_sp1_ex_Setophaga_ruticilla_A_MRE139A
<i>Setophaga ruticilla</i>	Pennsylvania	USA	6/22/15	Live	Rectrices	R5	KY491612*	<i>Amerodectes</i> sp1 (this study)	AM80_Amerodectes_sp1_ex_Setophaga_ruticilla_A_MRE147
<i>Vermivora chrysoptera</i>	Pennsylvania	USA	2016	Live	Primaries	P9	KY491589*	<i>Amerodectes</i> sp1 (this study)	AM175_Amerodectes_sp1_ex_Vermivora_chrysoptera_GWWA388A
<i>Setophaga cerulea</i>	Arkansas	USA	4/26/15	Live	Primaries	P9	KY491590*	<i>Amerodectes</i> sp1 haplotype 2 (this study)	AM192_Amerodectes_sp1_haplotype_2_ex_Setophaga_cerulea_CERW074A
<i>Setophaga discolor</i>	Pennsylvania	USA	2016	Live	Primaries	P6	KY491596*	<i>Amerodectes</i> sp2 (this study)	AM146_Amerodectes_sp2_ex_Setophaga_discolor_PRAW375A
<i>Setophaga discolor</i>	Pennsylvania	USA	2016	Live	Rectrices	R5	KY491597*	<i>Amerodectes</i> sp2 (this study)	AM147_Amerodectes_sp2_ex_Setophaga_discolor_PRAW375C
<i>Setophaga discolor</i>	Pennsylvania	USA	2016	Live	Primaries	P8	KY491598*	<i>Amerodectes</i> sp2 (this study)	AM148_Amerodectes_sp2_ex_Setophaga_discolor_PRAW376A
<i>Setophaga discolor</i>	Pennsylvania	USA	2016	Live	Rectrices	R5	KY491599*	<i>Amerodectes</i> sp2 (this study)	AM149_Amerodectes_sp2_ex_Setophaga_discolor_PRAW376B
<i>Setophaga dominica</i>	Arkansas	USA	4/17/15	Live	Primaries	P5	KY491591*	<i>Amerodectes</i> sp2 (this study)	AM168_Amerodectes_sp2_ex_Setophaga_dominica_YTWA100A
<i>Setophaga dominica</i>	Arkansas	USA	4/17/15	Live	Rectrices	R3	KY491592*	<i>Amerodectes</i> sp2 (this study)	AM169_Amerodectes_sp2_ex_Setophaga_dominica_YTWA100C
<i>Setophaga dominica</i>	Tennessee	USA	6/9/15	Live	Rectrices	R4	KY491585*	<i>Amerodectes</i> sp2 (this study)	AM170_Amerodectes_sp2_ex_Setophaga_dominica_YTWA262A
<i>Setophaga dominica</i>	Missouri	USA	4/30/16	Live	Primaries	P4	KY491590*	<i>Amerodectes</i> sp2 (this study)	AM171_Amerodectes_sp2_ex_Setophaga_dominica_YTWA329A
<i>Setophaga dominica</i>	Missouri	USA	4/30/16	Live	Rectrices	R4	KY491615*	<i>Amerodectes</i> sp2 (this study)	AM172_Amerodectes_sp2_ex_Setophaga_dominica_YTWA329C
<i>Protonotaria citrea</i>	Arkansas	USA	4/17/15	Live	Rectrices	R2	KY491631*	<i>Amerodectes</i> sp3 (this study)	AM70_Amerodectes_sp3_ex_Protonotaria_citrea_PRAW090B

<i>Protonotaria citrea</i>	Arkansas	USA	6/9/15	Live	Rectrices	R1, R3, R4	KY491636*	<i>Amerodectes</i> sp3 (this study)	AM154_Amerodectes_sp3_ex_Protonotaria_citrea_PROW267A
<i>Protonotaria citrea</i>	Arkansas	USA	4/9/16	Live	Rectrices	R2	KY491591*	<i>Amerodectes</i> sp3 (this study)	AM155_Amerodectes_sp3_ex_Protonotaria_citrea_PROW310A
<i>Protonotaria citrea</i>	Arkansas	USA	4/15/16	Live	Primaries	P9	KY491631*	<i>Amerodectes</i> sp3 (this study)	AM55_Amerodectes_sp3_ex_Protonotaria_citrea_PROW313A
<i>Protonotaria citrea</i>	Arkansas	USA	4/15/16	Live	Rectrices	R2	KY491635*	<i>Amerodectes</i> sp3 (this study)	AM56_Amerodectes_sp3_ex_Protonotaria_citrea_PROW313C
<i>Protonotaria citrea</i>	Arkansas	USA	5/3/16	Live	Primaries	P9	KY491635*	<i>Amerodectes</i> sp3 (this study)	AM153_Amerodectes_sp3_ex_Protonotaria_citrea_PROW330A
<i>Parkesia noveboracensis</i>	Illinois	USA	9/8/14	Dead	Primaries	P1-P9	KY491606*	<i>Amerodectes</i> sp4 (this study)	AM131_Amerodectes_sp4_ex_Parkesia_noveboracensis_NOWA305A
<i>Cardellina pusilla</i>	Veracruz	Mexico	5/5/08	-	-	-	KU203134	<i>Proctophyllodes aff dendroicae</i>	AD1147_Proctophyllodes_aff_dendroicae_ex_Cardellina_pusilla_quadratus_group
<i>Icteria virens</i>	Arkansas	USA	5/17/16	Live	Primaries	P8	KY491632*	<i>Proctophyllodes aff trisetosus</i>	AM163_Proctophyllodes_aff_trisetosus_ex_Icteria_virens_YBCH345A
<i>Icteria virens</i>	Arkansas	USA	5/17/16	Live	Rectrices	R5	KY491589*	<i>Proctophyllodes aff trisetosus</i>	AM165_Proctophyllodes_aff_trisetosus_ex_Icteria_virens_YBCH345C
<i>Bombycilla cedrorum</i>	Michigan	USA	6/2/06	-	-	-	KU203131	<i>Proctophyllodes ampelidis</i>	AD645_Proctophyllodes_ampelidis_ex_Bombycilla_cedrorum_glandarinus_group
<i>Vermivora chrysoptera</i>	Pennsylvania	USA	6/14/16	Live	Primaries	P8	KY491621*	<i>Proctophyllodes basal quadratus</i>	AM174_Proctophyllodes_basal_quadratus_ex_Vermivora_chrysoptera_GWWA383A
<i>Vermivora chrysoptera</i>	Pennsylvania	USA	2016	Live	Primaries	P9	KY491582*	<i>Proctophyllodes basal quadratus</i>	AM176_Proctophyllodes_basal_quadratus_ex_Vermivora_chrysoptera_GWWA389A
<i>Vermivora chrysoptera</i>	Pennsylvania	USA	2016	Live	Primaries	P9	KY491582*	<i>Proctophyllodes basal quadratus</i>	AM177_Proctophyllodes_basal_quadratus_ex_Vermivora_chrysoptera_GWWA390A
<i>Troglodytes troglodytes</i>	Kaliningradskaya Oblast	Russia	4/24/11	-	-	-	KU203200	<i>Proctophyllodes microstylifer</i>	AD1465_Proctophyllodes_microstylifer_ex_Troglodytes_troglodytes_stylifer_group
<i>Motacilla alba</i>	Kaliningradskaya Oblast	Russia	9/20/06	-	-	-	KU203126	<i>Proctophyllodes motacillae</i>	AD822_Proctophyllodes_motacillae_ex_Motacilla_alba_anthi_group
<i>Oreothlypis peregrina</i>	Arkansas	USA	ND	Dead	Rectrices	R5	KY491628*	<i>Proctophyllodes quadratus</i>	AM160_Proctophyllodes_quadratus_ex_Oreothlypis_peregrina_TEWA167C
<i>Oreothlypis peregrina</i>	Illinois	USA	ND	Dead	Primaries	P7	KY491629*	<i>Proctophyllodes quadratus</i>	AM157_Proctophyllodes_quadratus_ex_Oreothlypis_peregrina_TEWA283A
<i>Oreothlypis peregrina</i>	Illinois	USA	9/28/13	Dead	Primaries	P1, P2, P6	KY491630*	<i>Proctophyllodes quadratus</i>	AM158_Proctophyllodes_quadratus_ex_Oreothlypis_peregrina_TEWA284A
<i>Oreothlypis peregrina</i>	Illinois	USA	ND	Dead	Primaries	P6-P9	KY491631*	<i>Proctophyllodes quadratus</i>	AM159_Proctophyllodes_quadratus_ex_Oreothlypis_peregrina_TEWA294A
<i>Oreothlypis peregrina</i>	Veracruz	Mexico	5/5/08	-	-	-	KU203135	<i>Proctophyllodes quadratus</i>	AD1148_Proctophyllodes_quadratus_ex_Oreothlypis_peregrina_quadratus_group
<i>Parkesia noveboracensis</i>	Arkansas	USA	9/14/15	Dead	Rectrices	R1-R6	KY491590*	<i>Proctophyllodes quadratus</i>	AM64_Proctophyllodes_quadratus_ex_Parkesia_noveboracensis_NOWA301B
<i>Parkesia noveboracensis</i>	Arkansas	USA	4/15/16	Live	Primaries	P8	KY491627*	<i>Proctophyllodes quadratus</i>	AM132_Proctophyllodes_quadratus_ex_Parkesia_noveboracensis_NOWA316A
<i>Setophaga caerulescens</i>	Pennsylvania	USA	5/28/15	Live	Primaries	P7	KY491624*	<i>Proctophyllodes quadratus</i>	AM85_Proctophyllodes_quadratus_ex_Setophaga_caerulescens_BTBW152A
<i>Setophaga pensylvanica</i>	Pennsylvania	USA	6/4/16	Live	Primaries	P8	KY491625*	<i>Proctophyllodes quadratus</i>	AM116_Proctophyllodes_quadratus_ex_Setophaga_pensylvanica_CSWA386A
<i>Setophaga ruticilla</i>	Pennsylvania	USA	6/21/15	Live	Primaries	P8, P9	KY491623*	<i>Proctophyllodes quadratus</i>	AM72_Proctophyllodes_quadratus_ex_Setophaga_ruticilla_AMRE138A
<i>Loxia curvirostra</i>	Kaliningradskaya Oblast	Russia	4/24/11	-	-	-	KU203130	<i>Proctophyllodes sp n</i>	AD1466_Proctophyllodes_sp_n_ex_Loxia_curvirostraglandarinus_group

<i>Setophaga caerulescens</i>	North Carolina	USA	6/17/06	-	-	-	KU203132	<i>Proctophyllodes sp n aff breviquadratus</i>	AD1047_Proctophyllodes_sp_n_aff_breviquadratus_ex_Setophaga_caerulescens_quadratus_group
<i>Setophaga magnolia</i>	Veracruz	Mexico	4/30/08	-	-	-	KU203133	<i>Proctophyllodes sp n aff breviquadratus</i>	AD1140_Proctophyllodes_dendroicae_ex_Setophaga_magnolia_quadratus_group
<i>Tiaris olivaceus</i>	Veracruz Kaliningradskaya Oblast	Mexico	5/11/08	-	-	-	KU203143	<i>Proctophyllodes sp n aff gularis</i>	AD1242_Proctophyllodes_sp_n_aff_gularis_ex_Tiaris_olivaceus_musicus_group
<i>Hirundo rustica</i>		Russia	9/22/06	-	-	-	KU203219	<i>Pterodectes rutilus</i>	AD760_Pterodectes_rutilus_ex_Hirundo_rustica

Appendix 2

Figure A1. Cophylogenetic analysis between the *Amerodectes* species tree and Parulidae host phylogenies, generated by Jane ver 4. under a tuned cost analysis. Jane recovered no cospeciation events, two duplications (red circles), three duplications with host switches (red [no other placement has a lower cost] and yellow [there is another placement with equal cost] circles with arrows), 13 losses (dashed lines), and seven failures to diverge (jagged lines).

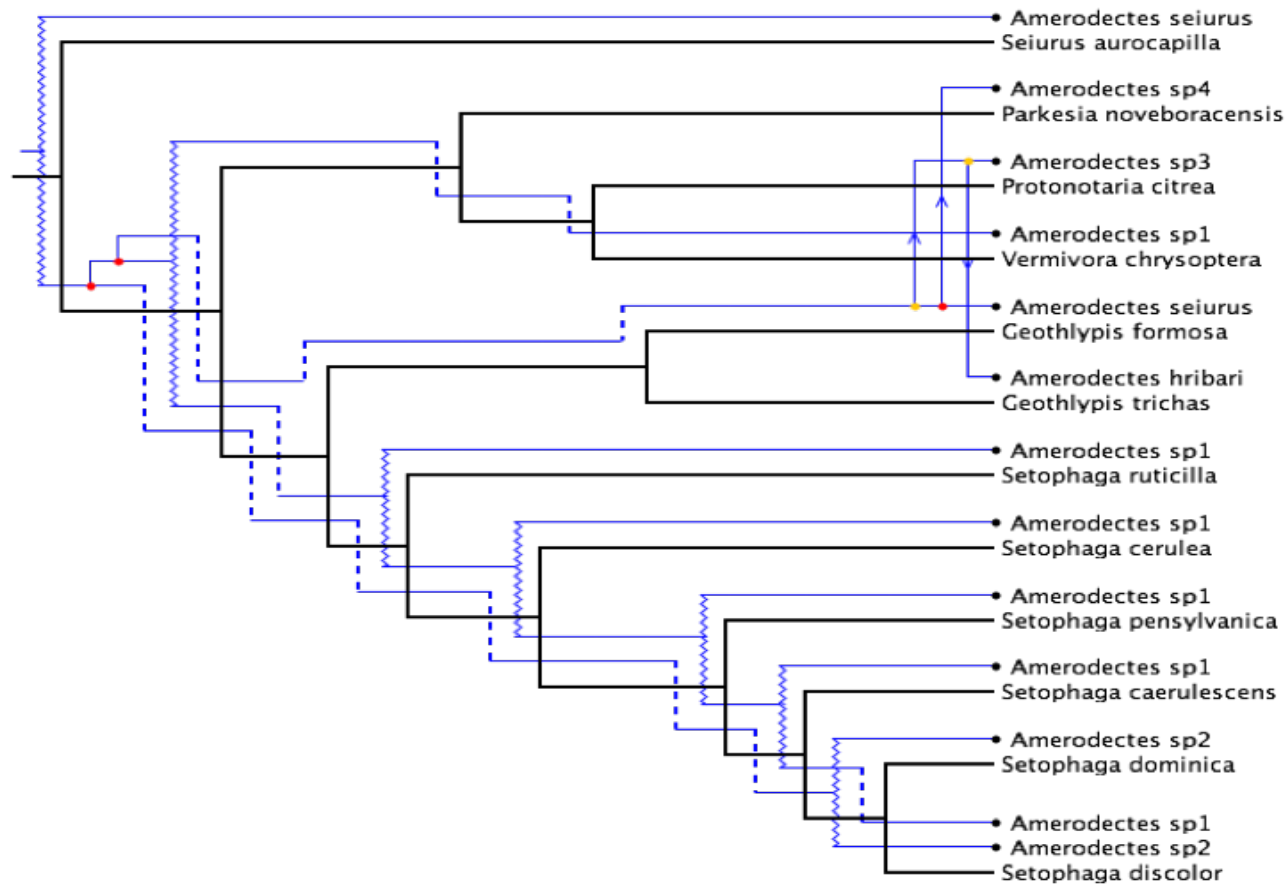


Figure A2. Cophylogenetic analysis between the *Amerodectes* gene tree and Parulidae host phylogenies, generated by Jane ver 4. under a tuned cost analysis. Jane recovered no cospeciation events, 11 duplications (red circles), 21 duplications with host switches (red [no other placement has a lower cost] and yellow [there is another placement with equal cost] circles with arrows), no losses (dashed lines), and no failures to diverge (jagged lines).

