

**Supplementary material**

**Appendix 1.** Supplementary Tables and Figures referenced in the main body of the paper.

**Supplementary Table A1.**

Glossary of terms used to describe evolutionary interactions among hosts and parasites in this paper. Definitions are adapted from the references cited in the table.

	<b>Definition</b>	<b>Reference</b>
Coevolution	The evolution of reciprocal adaptations in interacting hosts and parasites.	Janzen 1980, Page 2003
Diffuse coevolution	The evolution of reciprocal adaptations in one or more host species with one or more parasite species that are interacting non-exclusively in a community, and generate selective pressure as groups.	Janzen 1980, Johnson and Stinchcombe 2007

Co-diversification	Contemporaneous diversification among interacting host and parasite clades over macroevolutionary time, involving exclusive or non-exclusive interactions. When parasite lineages are host-specific, co-diversification is likely to involve co-speciation.	Johnson and Stinchcombe 2007
Co-speciation	Contemporaneous cladogenesis in a host lineage and its host-specific parasite due to the same underlying mechanism (e.g. joint isolation). Expected to frequently result in matched phylogenetic branching patterns, termed co-phylogeny.	Page 2003
Diffuse co-diversification	Contemporaneous diversification of host and parasite clades in which interactions are non-exclusive over macroevolutionary time, resulting from non-host-specific parasites and/or periodic host-shift events.	This study

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## Supplementary Table A2

Number of haemosporidian lineages and number of total infections (in parentheses) in each house wren clade. We used rarefaction in EcoSim (Gotelli and Entsminger 2012) to test for differences in haemosporidian lineage richness between host clades 1 and 3. Lineage richness was higher in clade 3 (average richness following rarefaction: 9.47, 95% CI: 8.0 – 11.0) than in clade 1 (7 lineages,  $p < 0.001$ ).

	<i>Leucocytozoon</i>	<i>Haemoproteus</i>	<i>Plasmodium</i>	Total
Clade 1	3 (6)	3 (5)	1 (2)	7 (13)
Clade 2	0	2 (2)	1 (1)	3 (3)
Clade 3	4 (6)	5 (5)	2 (5)	11 (16)
Clade 4	1 (1)	1 (1)	1 (1)	3 (3)
Clade 5	3 (3)	1 (1)	1 (1)	5 (5)
Clade 6	1 (1)	0	2 (5)	3 (6)
Clade 7	1 (1)	0	0	1 (1)

### Supplementary Table A3.

Haemosporidian infection rate in house wrens across environments in Peru. Environment descriptions refer to the distinct bioclimatic clusters identified using discriminant analysis of principal components (see methods). A chi-squared test was conducted for overall haemosporidian infection rate; Fisher's exact tests were used for comparisons within individual haemosporidian genera due to one or more low expected values in contingency tables. Because *Haemoproteus* and *Plasmodium* were amplified simultaneously, we could not determine the generic identity of *Haemoproteus/Plasmodium* infections that did not successfully sequence. As a result, the combined infection rates of each individual genus do not equal the overall infection rate.

	Warm, dry	Cold, wet	Warm, wet	$\chi^2$	df	p-value
Overall	0.30	0.51	0.44	5.52	2	0.06
<i>Leucocytozoon</i>	0.03	0.26	0.05	-	-	< 0.001
<i>Haemoproteus</i>	0.05	0.11	0.22	-	-	0.08
<i>Plasmodium</i>	0.13	0.06	0.16	-	-	0.28

#### Supplementary Table A4

Environment associations of three house wren clades that are distributed parapatrically across the main Andean ridge in southern Peru. Environment descriptions represent the three bioclimatic clusters that we identified using PCA (see methods). Clade-environment associations are significantly non-random (Fisher's exact test  $P < 0.0001$ ).

	Warm, Dry	Cold, Wet	Warm, Wet
Clade 1	37	28	0
Clade 3	0	27	2
Clade 4	0	0	10

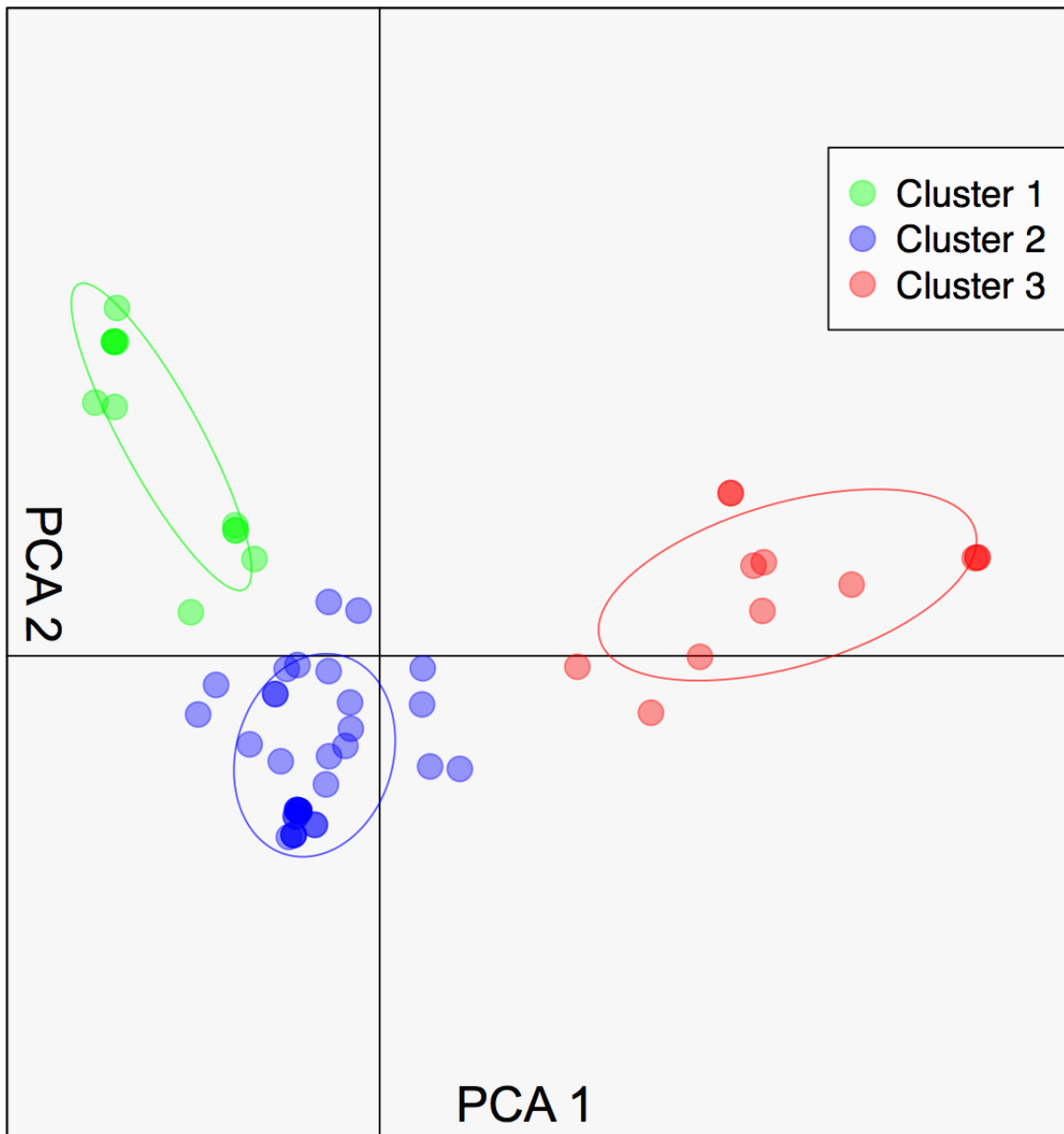
### Supplementary Table A5

Observed and Chao2 estimated richness of haemosporidian genera in this study. We used the program EstimateS v. 8.2 (Colwell 2005) to calculate the Chao2 estimate of species richness separately for *Leucocytozoon*, *Haemoproteus*, and *Plasmodium* in our sample. This statistic estimates the expected species richness of an assemblage given the number of haemosporidian species found only once or only twice in a sample.

	Observed richness	Chao2 richness	SD
<i>Leucocytozoon</i>	9	22.1	12.7
<i>Haemoproteus</i>	9	32.5	31.1
<i>Plasmodium</i>	5	4.5	1.3

**Supplementary Figure A1.**

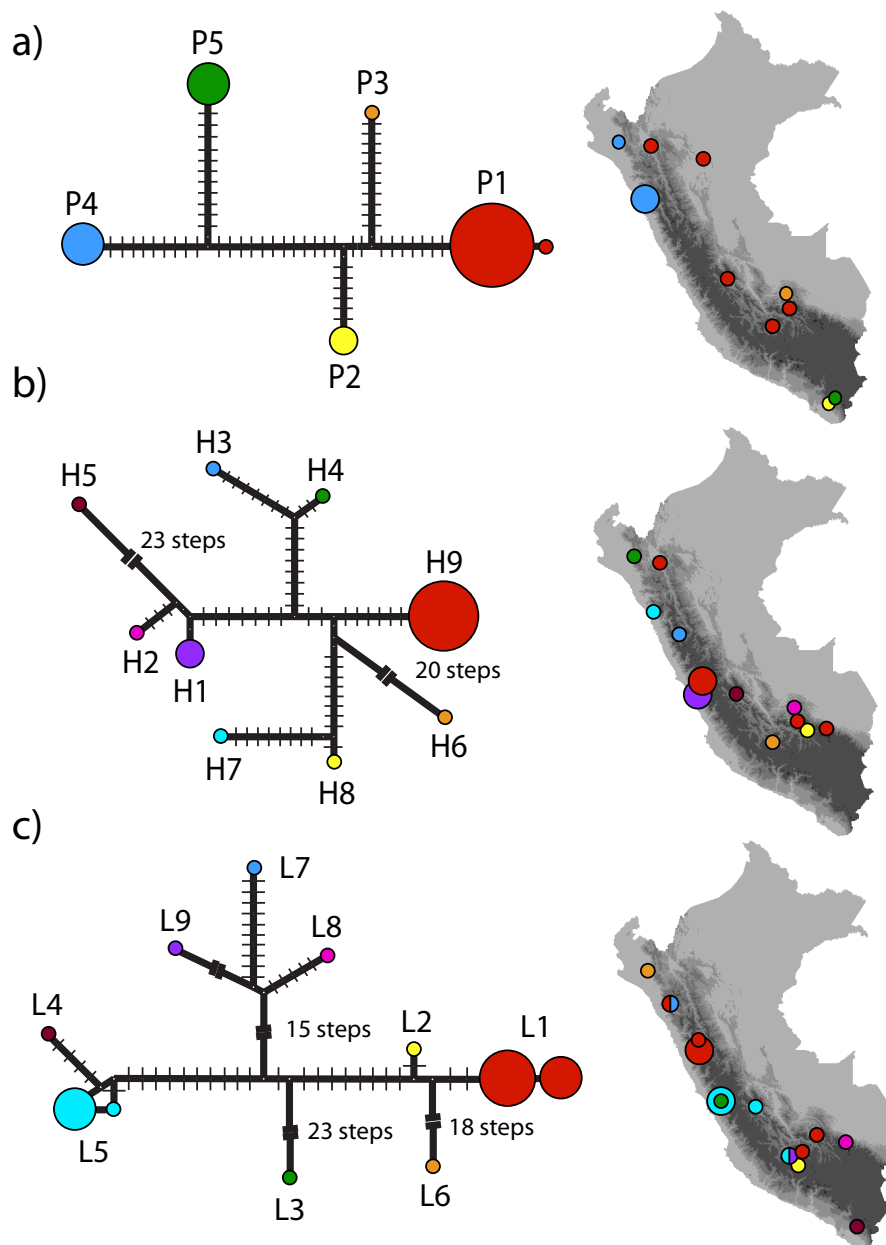
PCA1 vs. PCA2 derived from 19 bioclimatic variables for each sampling site included in this study. The three distinct environmental clusters identified by DAPC are labeled by color: warm dry (red), cold montane (blue), and warm wet (green).





### Supplementary Figure A2.

Haplotype network and distribution of each haemosporidian genus based on samples in this study. The size of each circle indicates the number of times we detected a given haplotype, from once (smallest circle) to five times (largest circle). (a) *Plasmodium*, (b) *Haemoproteus*, (c) *Leucocytozoon*. The color schemes are specific to each genus and are intended solely for matching nodes on the haplotype network with the sampling map.



## References for Supplementary materials

- Colwell, R.K. 2005. EstimateS: Statistical estimation of species richness and shared species from samples. Version 8.2.
- Gotelli, N.J. and Entsminger, G.L. 2012. EcoSim 7.72. Acquired Intelligence, Inc.  
<http://www.uvm.edu/~ngotelli/EcoSim/EcoSim.html>
- Janzen, D.H. 1980. When is it coevolution? – *Evolution* 34: 611-612.
- Johnson, M.T.J., and Stinchcombe, J.R. 2007. An emerging synthesis between community ecology and evolutionary biology. *TREE* 22: 250-257.
- Page, R.D.M. 2003. *Tangled trees: Phylogeny, cospeciation and coevolution.* – The University of Chicago Press, Chicago, I.L., USA.

**Appendix 2.** House wren samples used in this study with Museum of Southwestern Biology catalog weblink and sampling details.

Catalog no. with embedded weblink	NK	Day	Month	Elevation (m)	Department	Latitude	Longitude	Clade	Genbank accession no.
<a href="#">MSB:Bird:27052</a>	159705	30	October	3040	Lima	-11.76	-76.58	1	KF420201
<a href="#">MSB:Bird:27596</a>	162008	3	June	366	Lima	-12.01	-76.92	1	KF386228
<a href="#">MSB:Bird:27606</a>	162022	3	June	366	Lima	-12.01	-76.92	1	KF386218
<a href="#">MSB:Bird:27609</a>	162025	3	June	366	Lima	-12.01	-76.92	1	KF386232
<a href="#">MSB:Bird:31418</a>	162982	8	January	372	Lima	-12	-76.92	1	KF386210
<a href="#">MSB:Bird:31425</a>	162989	8	January	351	Lima	-12	-76.92	1	KF386216
<a href="#">MSB:Bird:31433</a>	162997	8	January	372	Lima	-12	-76.92	1	KF386250
<a href="#">MSB:Bird:31450</a>	163014	9	January	352	Lima	-12.01	-76.92	1	KF420158
<a href="#">MSB:Bird:31454</a>	163018	9	January	352	Lima	-12.01	-76.92	1	KF420165
<a href="#">MSB:Bird:31456</a>	163020	9	January	352	Lima	-12.01	-76.92	1	KF386253
<a href="#">MSB:Bird:31459</a>	163023	9	January	352	Lima	-12.01	-76.92	1	KF386237
<a href="#">MSB:Bird:31469</a>	163033	12	January	3967	Lima	-11.63	-76.43	1	KF386168
<a href="#">MSB:Bird:31482</a>	163046	12	January	3959	Lima	-11.63	-76.43	1	KF386245
<a href="#">MSB:Bird:31489</a>	163053	13	January	3973	Lima	-11.63	-76.43	1	KF386244
<a href="#">MSB:Bird:31498</a>	163062	13	January	3981	Lima	-11.63	-76.43	1	KF420169
<a href="#">MSB:Bird:31503</a>	163067	14	January	3967	Lima	-11.63	-76.43	1	KF386183
<a href="#">MSB:Bird:31739</a>	163411	7	May	3750	Lima	-11.76	-76.55	1	KF386242
<a href="#">MSB:Bird:31756</a>	163428	21	May	2400	Lima	-11.74	-76.61	1	KF420173
<a href="#">MSB:Bird:31766</a>	163438	24	May	2400	Lima	-11.74	-76.61	1	KF420157
<a href="#">MSB:Bird:31767</a>	163439	24	May	2400	Lima	-11.74	-76.61	1	KF420161
<a href="#">MSB:Bird:32902</a>	168074	15	October	935	Lima	-12.03	-76.65	1	KF386249
<a href="#">MSB:Bird:32909</a>	168081	15	October	935	Lima	-12.03	-76.65	1	KF386190
<a href="#">MSB:Bird:32910</a>	168082	15	October	935	Lima	-12.03	-76.65	1	KF420177
<a href="#">MSB:Bird:32922</a>	168094	16	October	935	Lima	-12.03	-76.65	1	KF386239

<a href="#">MSB:Bird:32923</a>	168095	16	October	935	Lima	-12.03	-76.65	1	KF386235
<a href="#">MSB:Bird:32943</a>	168115	18	October	352	Lima	-12.01	-76.92	1	KF420167
<a href="#">MSB:Bird:32950</a>	168122	18	October	352	Lima	-12.01	-76.92	1	KF386257
<a href="#">MSB:Bird:32966</a>	168138	18	October	352	Lima	-12.01	-76.92	1	KF386182
<a href="#">MSB:Bird:32967</a>	168139	18	October	352	Lima	-12.01	-76.92	1	KF386184
<a href="#">MSB:Bird:32969</a>	168141	18	October	352	Lima	-12.01	-76.92	1	KF386230
<a href="#">MSB:Bird:32982</a>	168154	19	October	352	Lima	-12.01	-76.92	1	KF386247
<a href="#">MSB:Bird:32988</a>	168160	19	October	352	Lima	-12.01	-76.92	1	KF386231
<a href="#">MSB:Bird:32991</a>	168163	19	October	352	Lima	-12.01	-76.92	1	KF386246
<a href="#">MSB:Bird:33001</a>	168173	19	October	352	Lima	-12.01	-76.92	1	KF386248
<a href="#">MSB:Bird:33006</a>	168178	19	October	352	Lima	-12.01	-76.92	1	KF386233
<a href="#">MSB:Bird:33008</a>	168180	19	October	352	Lima	-12.01	-76.92	1	KF386211
<a href="#">MSB:Bird:33310</a>	168529	4	September	4056	Lima	-11.77	-76.53	1	KF386180
<a href="#">MSB:Bird:33329</a>	168548	6	September	3910	Lima	-11.76	-76.54	1	KF386189
<a href="#">MSB:Bird:33351</a>	168570	9	September	3907	Lima	-11.77	-76.53	1	KF386191
<a href="#">MSB:Bird:33370</a>	168589	12	September	3905	Lima	-11.77	-76.53	1	KF386188
<a href="#">MSB:Bird:33416</a>	168635	17	September	4056	Lima	-11.77	-76.53	1	KF386205
<a href="#">MSB:Bird:34736</a>	171462	3	July	309	La Libertad	-8.39	-78.65	1	KF386238
<a href="#">MSB:Bird:34739</a>	171465	3	July	309	La Libertad	-8.39	-78.65	1	KF386185
<a href="#">MSB:Bird:34763</a>	171489	4	July	309	La Libertad	-8.39	-78.65	1	KF386186
<a href="#">MSB:Bird:34830</a>	171556	8	July	2972	Ancash	-8.75	-78.05	1	KF386236
<a href="#">MSB:Bird:34832</a>	171558	8	July	2972	Ancash	-8.75	-78.05	1	KF386215
<a href="#">MSB:Bird:34892</a>	171618	11	July	2972	Ancash	-8.75	-78.05	1	KF386167
<a href="#">MSB:Bird:34903</a>	171629	12	July	357	La Libertad	-8.69	-78.38	1	KF420175
<a href="#">MSB:Bird:34907</a>	171633	13	July	357	La Libertad	-8.69	-78.38	1	KF420176
<a href="#">MSB:Bird:34916</a>	171642	13	July	357	La Libertad	-8.69	-78.38	1	KF386187
<a href="#">MSB:Bird:34920</a>	171646	14	July	357	La Libertad	-8.69	-78.38	1	KF420190
<a href="#">MSB:Bird:34921</a>	171647	14	July	357	La Libertad	-8.69	-78.38	1	KF386240

<a href="#">MSB:Bird:34953</a>	171679	16	July	3439	Ancash	-9.34	-77.51	1	KF386220
<a href="#">MSB:Bird:34965</a>	171691	17	July	3439	Ancash	-9.34	-77.51	1	KF386170
<a href="#">MSB:Bird:34966</a>	171692	17	July	3439	Ancash	-9.34	-77.51	1	KF386181
<a href="#">MSB:Bird:34967</a>	171693	17	July	3439	Ancash	-9.34	-77.51	1	KF386171
<a href="#">MSB:Bird:35007</a>	171733	21	July	3714	Ancash	-9.1	-77.87	1	KF386217
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<a href="#">MSB:Bird:35538</a>	172264	8	August	3200	Arequipa	-15.81	-72.67	1	KF420193
<a href="#">MSB:Bird:36014</a>	173845	18	May	3740	Ancash	-8.74	-78.04	1	KF386172
<a href="#">MSB:Bird:36049</a>	173880	23	May	3740	Ancash	-9.02	-77.54	1	KF386219
<a href="#">MSB:Bird:36081</a>	173912	30	May	3350	Ancash	-8.84	-77.93	1	KF386243
<a href="#">MSB:Bird:36568</a>	175520	22	October	4000	Lima	-11.77	-76.53	1	KF420178
<a href="#">MSB:Bird:36573</a>	175525	24	October	4116	Lima	-11.77	-76.53	1	KF386169
<a href="#">MSB:Bird:36574</a>	175526	24	October	4123	Lima	-11.77	-76.53	1	KF386229
<a href="#">MSB:Bird:32351</a>	167523	15	July	2052	Amazonas	-6.1	-78.34	2	KF420174
<a href="#">MSB:Bird:32619</a>	167791	22	July	2066	Amazonas	-6.1	-78.34	2	KF386193
<a href="#">MSB:Bird:32855</a>	168027	28	July	2073	Amazonas	-6.1	-78.34	2	KF386192
<a href="#">MSB:Bird:32862</a>	168034	29	July	2073	Amazonas	-6.1	-78.34	2	KF420170
<a href="#">MSB:Bird:33894</a>	169120	26	December	143	Lambayeque	-5.9	-79.79	2	KF420168
<a href="#">MSB:Bird:34057</a>	169283	22	December	2215	Piura	-5.84	-79.51	2	KF386195
<a href="#">MSB:Bird:34076</a>	169302	23	December	2215	Piura	-5.84	-79.51	2	KF386194
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<a href="#">MSB:Bird:27066</a>	159722	26	November	3120	Cusco	-13.63	-71.72	3	KF386255
<a href="#">MSB:Bird:27076</a>	159732	27	November	3120	Cusco	-13.63	-71.72	3	KF386254
<a href="#">MSB:Bird:27083</a>	159740	28	November	3120	Cusco	-13.63	-71.72	3	KF420180
<a href="#">MSB:Bird:27131</a>	159789	4	December	4300	Cusco	-13.2	-72.16	3	KF386251
<a href="#">MSB:Bird:27132</a>	159790	4	December	4300	Cusco	-13.2	-72.16	3	KF386226
<a href="#">MSB:Bird:27154</a>	159814	8	December	3380	Cusco	-13.25	-72.17	3	KF420179

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<a href="#">MSB:Bird:31835</a>	163507	18	June	3710	Junin	-11.98	-74.93	3	KF386223
<a href="#">MSB:Bird:33119</a>	168338	12	March	4030	Cusco	-13.19	-72.23	3	KF420159
<a href="#">MSB:Bird:33650</a>	168876	4	December	3573	Apurimac	-14.41	-73.09	3	KF420164
<a href="#">MSB:Bird:33659</a>	168885	5	December	3548	Apurimac	-14.41	-73.09	3	KF386225
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<a href="#">MSB:Bird:34085</a>	169311	9	January	4454	Apurimac	-14.06	-73	3	KF420163
<a href="#">MSB:Bird:34089</a>	169315	9	January	4375	Apurimac	-14.06	-73.01	3	KF386227
<a href="#">MSB:Bird:34106</a>	169332	9	January	4384	Apurimac	-14.06	-73.01	3	KF386221
<a href="#">MSB:Bird:34109</a>	169335	10	January	4375	Apurimac	-14.06	-73.01	3	KF386224
<a href="#">MSB:Bird:34114</a>	169340	10	January	4401	Apurimac	-14.06	-73.01	3	KF386260
<a href="#">MSB:Bird:34202</a>	169428	14	January	4363	Apurimac	-14.06	-73	3	KF386258
<a href="#">MSB:Bird:34295</a>	171021	30	May	1500	Cuzco	-12.65	-72.32	3	KF420188
<a href="#">MSB:Bird:34359</a>	171085	3	June	1500	Cuzco	-12.65	-72.32	3	KF420189
<a href="#">MSB:Bird:35522</a>	172248	8	August	3200	Arequipa	-15.81	-72.67	3	KF420192
<a href="#">MSB:Bird:35700</a>	172426	28	September	2671	Apurimac	-14.17	-73.32	3	KF420196
<a href="#">MSB:Bird:35822</a>	172637	5	August	3201	Cusco	-13.08	-72.37	3	KF386259
<a href="#">MSB:Bird:35907</a>	172722	21	September	2672	Apurimac	-14.17	-73.32	3	KF386256
<a href="#">MSB:Bird:35908</a>	172723	21	September	2671	Apurimac	-14.17	-73.32	3	KF386197
<a href="#">MSB:Bird:28029</a>	162535	20	June	322	San Martín	-6.65	-76.07	4	KF386175
<a href="#">MSB:Bird:33581</a>	168807	19	November	2500	Cuzco	-13.56	-70.88	4	KF420200
<a href="#">MSB:Bird:36130</a>	173961	13	June	1673	San Martin	-7.42	-76.29	4	KF420186
<a href="#">MSB:Bird:36909</a>	176089	23	June	292	Madre de Dios	-11.71	-69.21	4	KF386204
<a href="#">MSB:Bird:37014</a>	176194	26	June	297	Madre de Dios	-11.71	-69.21	4	KF386176

<a href="#">MSB:Bird:37084</a>	176264	28	June	297	Madre de Dios	-11.71	-69.21	4	KF420184
<a href="#">MSB:Bird:37149</a>	176329	30	June	290	Madre de Dios	-11.71	-69.21	4	KF420185
<a href="#">MSB:Bird:37202</a>	176382	1	July	297	Madre de Dios	-11.71	-69.21	4	KF386178
<a href="#">MSB:Bird:37318</a>	176498	4	July	297	Madre de Dios	-11.71	-69.21	4	KF386174
<a href="#">MSB:Bird:37341</a>	176521	5	July	297	Madre de Dios	-11.71	-69.21	4	KF386173
<a href="#">MSB:Bird:33720</a>	168946	15	December	133	Lambayeque	-5.9	-79.79	5	KF386201
<a href="#">MSB:Bird:33725</a>	168951	15	December	133	Lambayeque	-5.9	-79.79	5	KF420156
<a href="#">MSB:Bird:33758</a>	168984	16	December	129	Lambayeque	-5.9	-79.78	5	KF420166
<a href="#">MSB:Bird:33778</a>	169004	18	December	133	Lambayeque	-5.9	-79.79	5	KF386200
<a href="#">MSB:Bird:33779</a>	169005	18	December	133	Lambayeque	-5.9	-79.79	5	KF420162
<a href="#">MSB:Bird:33844</a>	169070	21	December	133	Lambayeque	-5.9	-79.79	5	KF386196
<a href="#">MSB:Bird:33889</a>	169115	25	December	143	Lambayeque	-5.9	-79.79	5	KF386199
<a href="#">MSB:Bird:34698</a>	171424	2	July	309	La Libertad	-8.39	-78.65	5	KF420191
<a href="#">MSB:Bird:34699</a>	171425	2	July	309	La Libertad	-8.39	-78.65	5	KF420198
<a href="#">MSB:Bird:34893</a>	171619	11	July	2972	Ancash	-8.75	-78.05	5	KF386198
<a href="#">MSB:Bird:35250</a>	171976	13	July	2500	Cajamarca	-7.4	-78.78	5	KF420183
<a href="#">MSB:Bird:35330</a>	172056	17	July	2550	Cajamarca	-7.4	-78.78	5	KF386202
<a href="#">MSB:Bird:35393</a>	172119	21	July	2550	Cajamarca	-7.4	-78.78	5	KF420197
<a href="#">MSB:Bird:35402</a>	172128	22	July	2550	Cajamarca	-7.4	-78.78	5	KF386203
<a href="#">MSB:Bird:35035</a>	171761	30	July	740	Tacna	-17.56	-70.67	6	KF386206
<a href="#">MSB:Bird:35043</a>	171769	31	July	740	Tacna	-17.56	-70.67	6	KF386213
<a href="#">MSB:Bird:35046</a>	171772	31	July	740	Tacna	-17.56	-70.67	6	KF386208
<a href="#">MSB:Bird:35047</a>	171773	31	July	740	Tacna	-17.56	-70.67	6	KF386212
<a href="#">MSB:Bird:35057</a>	171783	1	August	740	Tacna	-17.56	-70.67	6	KF386207
<a href="#">MSB:Bird:35442</a>	172168	1	August	2200	Tacna	-17.39	-70.35	6	KF420160
<a href="#">MSB:Bird:35476</a>	172202	3	August	2975	Tacna	-17.32	-70.25	6	KF420194
<a href="#">MSB:Bird:35491</a>	172217	4	August	2975	Tacna	-17.32	-70.25	6	KF420195
<a href="#">MSB:Bird:35493</a>	172219	4	August	2975	Tacna	-17.32	-70.25	6	KF386214

<a href="#">MSB:Bird:35507</a>	172233	4	August	2975	Tacna	-17.32	-70.25	6	KF386209
<a href="#">MSB:Bird:35512</a>	172238	5	August	2975	Tacna	-17.32	-70.25	6	KF420199
<a href="#">MSB:Bird:31626</a>	163191	29	January	2798	Huánuco	-9.73	-76.11	7	KF386177
<a href="#">MSB:Bird:35697</a>	172423	27	November	-	Ancash	-	-	7	KF386179



**Appendix 3.** *Haemoproteus* lineages included in the regional analysis, with GenBank accession number, MalAvi name, and geographic region of origin.

<b>Accession No.</b>	<b>MalAvi Name</b>	<b>Geographic Region</b>
EF153646	APSPI02	Andes
EF153648	ZOCAP02	Andes
EF153650	PHALA01	Andes
EF153653	PHFRU02	Andes
EF153654	PHFRU01	Andes
JQ988105	-	Andes
JQ988106	-	Andes
JQ988107	-	Andes
JQ988117	-	Andes
JQ988167	-	Andes
JQ988123	-	Andes
JQ988134	-	Andes
JQ988135	-	Andes
JQ988136	-	Andes
JQ988144	-	Andes
JQ988147	-	Andes
JQ988206	-	Andes
JQ988220	-	Andes
JQ988254	-	Andes
JQ988255	-	Andes
JQ988256	-	Andes
JQ988257	-	Andes
JQ988295	-	Andes
JQ988305	-	Andes
JQ988310	-	Andes
JQ988323	-	Andes
JQ988342	-	Andes
JQ988355	-	Andes
JQ988370	-	Andes
JQ988371	-	Andes
JQ988384	-	Andes
JQ988393	-	Andes
JQ988404	-	Andes
JQ988414	-	Andes
JQ988426	-	Andes
JQ988430	-	Andes
JQ988446	-	Andes



JQ988222	-	Andes and North America
JQ988571	-	Andes and North America
JN819385	TASCH01	Andes and North America
JX029900	ELALB01	Andes and South America
JX029915	-	Andes and South America
JX029905	-	Andes and South America
DQ241539	CHASPI01	Andes and South America
GQ141568	COFLA06	Antilles
GQ395652	COFLA07	Antilles
GQ141562	COFLA03	Antilles
GQ395638	COFLA05	Antilles
GQ141561	PHAPAL01	Antilles
GQ141565	PHAPAL02	Antilles
GQ141571	ICTLEU01	Antilles
GQ141597	-	Antilles
GQ141579	MAFUS04	Antilles
GQ141599	MIMGIL01	Antilles
GQ141563	SPIDOM01	Antilles
GQ141573	COFLA08	Antilles
GU256263	LOXPOR01	Antilles
GU256261	-	Antilles
GU251992	-	Antilles
AF465579	COFLA01	Antilles
GU251995	-	Antilles
AF465569	LOXNOC01	Antilles
AF465565	MAFUS03	Antilles
GU251991	SALAU01	Continental North America
GQ141557	ANACRE01	Continental North America
GQ141589	DENPEN02	Continental North America
GQ141575	DENMAG01	Continental North America
GQ141581	CARCAR01	Continental North America
GQ141584	TUMIG06	Continental North America
GQ395668	TABI02	Continental North America
GU256262	-	Continental North America
EU627829	BNOW01	Continental North America
EU627838	BNOW02	Continental North America
EU627830	BNOW03	Continental North America
AF465573	COBRA01	Continental North America
JQ314226	CYGNUS01	Continental North America
GQ141606	BUTJAM12	Continental North America
EU328178	GEOTRI04	Continental North America
AF465590	MALERY01	Continental North America
JX073258	MODO1	Continental North America

GU252004	-	Continental North America
GU252005	-	Continental North America
GU252006	-	Continental North America
AF254977	PARUS1	Continental North America
AF465583	PIOLI01	Continental North America
AF465582	PIRUB01	Continental North America
AF465594	POLPLA01	Continental North America
EU328179	SIAMEX01	Continental North America
AY393806	SISKIN1	Continental North America
JN788938	-	Continental North America
JN819388	TURDUS2	Continental North America
JN819379	-	Continental North America
JN819345	TASCH01	Continental North America
JN819370	-	Continental North America
JN819387	-	Continental North America
JN819369	-	Continental North America
JN819373	-	Continental North America
AF465589	STVAR01	Continental North America
EU627834	STVAR03	Continental North America
JN792136	-	Continental North America
JN792141	-	Continental North America
JN792139	-	Continental North America
JN792142	-	Continental North America
JN792140	-	Continental North America
JN792147	-	Continental North America
JN792143	-	Continental North America
AF465570	TATHA01	Continental North America
AY099034	VIOLI01	Continental North America
JN819399	-	Continental North America
JN819393	COLL2	Continental North America
JN819383	TURDUS2	Continental North America
JN819378	-	Continental North America
GU252009	-	Continental North America
GQ141576	MAFUS02	Continental NA and Antilles
HM222472	-	Continental NA and Antilles
AF465564	TOXRUF01	Continental NA and Antilles
AF465577	VIGRI02	Continental NA and Antilles
JX029902	-	South America
JX029917	-	South America
DQ241546	ICTCAY02	South America
DQ241544	MOLBAD01	South America
DQ241550	MONGUT02	South America
JX029914	-	South America

JX029906	-	South America
JX029911	PACPEC02	South America
JX029907	-	South America
JX029912	-	South America
JX029913	-	South America
JX029919	-	South America
DQ241541	PSAVIR02	South America
JX029910	-	South America
AF465568	TIABIC01	South America
JX029908	-	South America
JX029916	-	South America
JX029918	-	South America
JX029920	-	South America
JX029903	-	South America
GU085190	EMCIR01	South America
JX029901	-	South America
DQ241542	LAMMEL01	South America
DQ241553	ARAPER01	South America

**Appendix 4.** Haemosporidian lineages encountered in this study and their global distributions, number of host species each has been found to infect, GenBank accession numbers, and catalog number for lineages that were identified by microscopy on blood smears.

Novel lineages are indicated by asterisks.

Lineage	MalAvi Name	Global distribution	No. of host species	Genbank accession no.	Catalog no. with embedded weblink
L1	TROAED01, TROAED02	Chile, Peru	34	KF767426, KF767431- KF767436	
L2*	TROAED03	Peru	1	KF767439	
L3	TROAED04	Peru	2	KF767429	<a href="#">MSB:Para:19028</a>
L4	TROAED05	Peru	2	KF767440	
L5	TROAED06, TROAED07	Peru	7	KF767437, KF767438, KF767441, JQ988531	
L6	TROAED08	Peru	3	KF767427	
L7*	TROAED09	Peru	1	KF767430	
L8	TROAED10	Peru	2	KF767442	
L9*	TROAED11	Peru	1	KF767428	
H1*	TROAED12	Peru	1	KF767421, KF767422	
H2*	TROAED13	Peru	1	KF767419	
H3*	TROAED14	Peru	1	KF767418	
H4*	TROAED15	Peru	1	KF767417	
H5*	TROAED16	Peru	1	KF767424	
H6*	TROAED17	Peru	1	KF767416	
H7	TROAED18	Peru	11	KF767423	
H8*	TROAED19	Peru	1	KF767425	
H9	TROAED20	Peru	45	KF767420, JQ988488, JQ988538, JQ988487, JQ988406	
P1	BAEBIC02,	Costa Rica, Peru, U.S.A.	33	KF767413, JQ988550,	

	TROAED21			JQ988539, JQ988537, JQ988540, JQ988551	
P2	TUMIG03	Chile, Costa Rica, Peru, Uruguay, U.S.A	13	KF767414, KF767415	
P3	TROAED22	Peru	2	KF767412	
P4	PADOM09	Brazil, Chile, Costa Rica, Peru, Uruguay, U.S.A	14	KF767409-KF767411	<a href="#">MSB:Para:19029</a>
P5	CATUS05	Peru, U.S.A.	3	KF767406-KF767408	