

**Additional File 6** Model rankings exploring factors affecting detection probability ( $p$ ) and prevalence ( $\psi$ ) of *Haemoproteus* parasites in Red-breasted Nuthatches.

<b>Model</b>	<b>K</b>	<b><math>\Delta AICc</math></b>	<b><math>w_i</math></b>	<b>Deviance</b>
$\sigma(.) + p(.) + \psi(\text{BCI})$	3	0.00	0.69	31.50
$\sigma(.) + p(.) + \psi(.)$	2	2.21	0.24	36.42
$\sigma(.) + p(.) + \psi(\text{sex})$	3	4.90	0.07	36.40

Model set and rankings exploring the importance of factors affecting the detection probability ( $p$ ) and prevalence ( $\psi$ ) of *Haemoproteus* blood parasites in Red-breasted Nuthatches captured and sampled at a high-elevation valley in northern Colorado during 2017-2018. ‘PCR run’ indicates the 3 PCR replicates carried out for each sample. The number of parameters (K), model weights ( $w_i$ ), and deviance are shown for each model and the models are ranked by their AICc differences relative to the best model in the set ( $\Delta AICc_i$ ). Sigma ( $\sigma$ ) was a random effect included in every model to account for unmodeled heterogeneity.