## **Supporting Information**

## Maia et al. 10.1073/pnas.1220784110

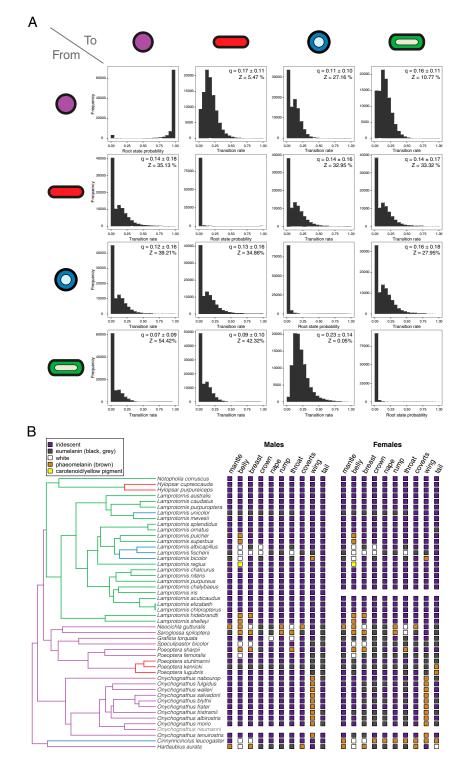


Fig. S1. (A) Posterior probabilities for the transition rates (off-diagonal) and root ancestral states (diagonal) for the different melanosome morphologies obtained from the reversible-jump Markov chain Monte Carlo analysis. Mean and SD for transition rates (q), as well as the frequency that the parameter was estimated to be zero (Z), are shown for each transition. (B) Maximum clade credibility tree for the African starlings, showing the melanosome regime used in evolutionary models for all color patches (Table S2) and the color phenotype observed for each sex of each species. Onychognathus neumanni and females of Lamprotornis iris were not sampled and therefore are not included in analyses.

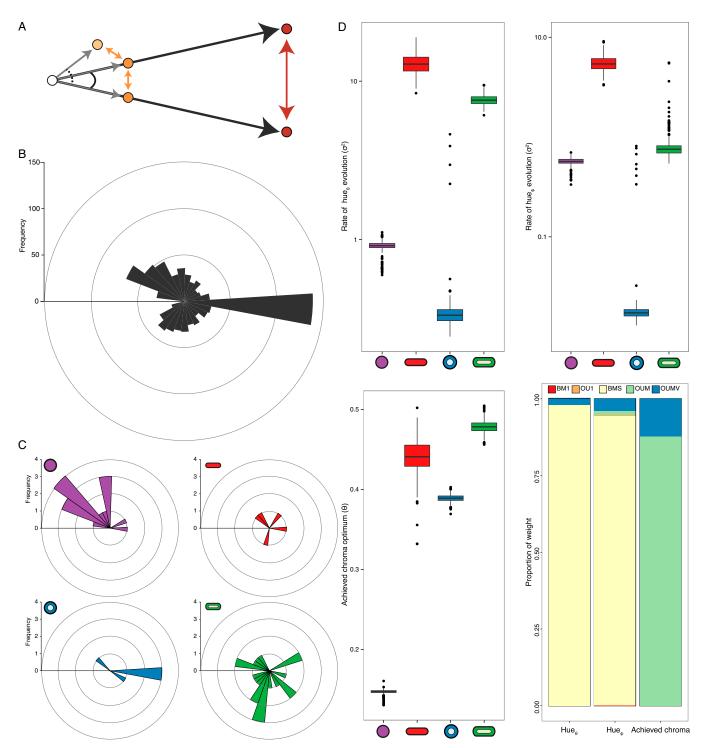


Fig. 52. Problems in using univariate descriptors of hue and saturation in describing color diversification. (A) In the tetrachromatic colorspace model, hue is described as the angles between the color point, the achromatic center (white circle), and either the sml cones plane ( $Hue_{\theta}$ ) or the u vertex ( $Hue_{\phi}$ ) and saturation as the distance between the color point and the achromatic center (black and gray arrows). If we define phenotypic disparity as the distance between points in colorspace, for a given hue difference (angle solid line), two color points can be very similar if close to the achromatic center (orange circles) or very different if these colors have higher chroma (i.e., distant from the achromatic center, red circles). Similarly, points with considerably different hue distances (dashed and solid angle lines) can be equidistant from each other (i.e., similar level of morphological disparity) depending on their distance from the achromatic center (as shown in the distance between the two dark orange circles and the light orange circles). (B) Further, as hue is described by angular variables, treating it as a linear variable results in an overestimation of the hue differences between points found near the zero angle (black line), which are treated as being at the extremes of a linear variable circular histogram of  $Hue_0$  angles for the iridescent colors across all body patches of African starlings, for both sexes. If measured colors spanned a restricted range of angles, treating this variable as a linear variable would be less problematic, but colors observed range across nearly all possible angles. (C) Circular histograms of  $Hue_0$  for the upper back of male African starlings by melanosome morphology, showing that this broad hue span is present even when a single body patch is considered. Therefore, the interactive effects of independent color descriptors were considered by summarizing color disparity in terms of multivariate orthogonal principal components for our analyses. (D) Paramet

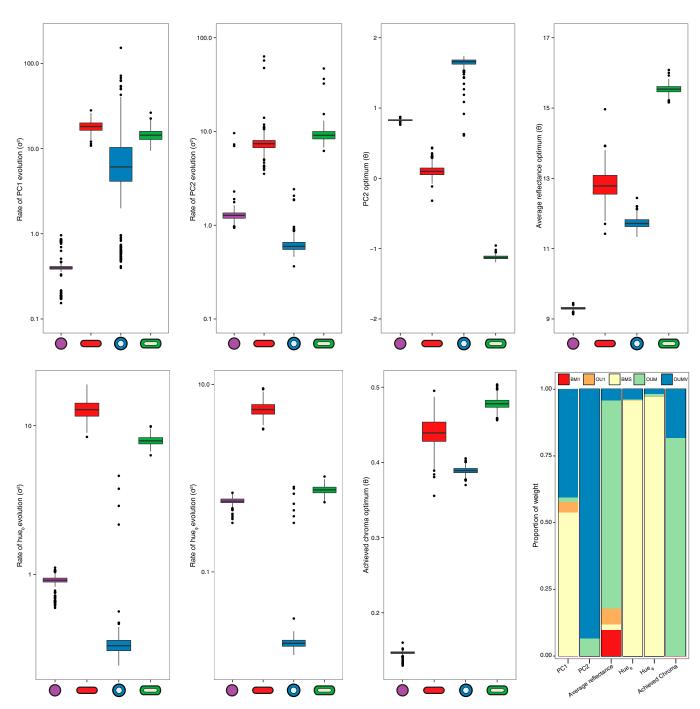


Fig. S3. Parameter estimates and model selection results under the best models for the principal components and univariate color descriptors for the male mantle patch color evolution across the 500 trees sampled from the posterior distribution, excluding *Lamprotornis elisabeth*.

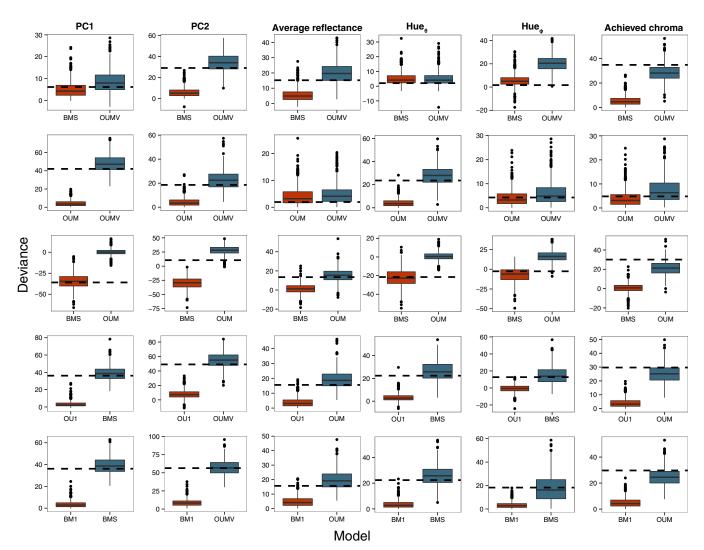


Fig. 54. Phylogenetic Monte Carlo results for the pairwise comparisons of evolutionary models for the male mantle patch variables, excluding *Lamprotornis elisabeth*. Boxes indicate the deviance value calculated by comparing the two models in the comparison after data were simulated under the respective model given the estimated maximum-likelihood estimates obtained from the maximum clade credibility tree (Fig. S1B). The dashed line indicates the deviance calculated from the maximum-likelihood models. Values below the line indicate low support for that model, and values that fall within the distribution obtained from a simulated model indicate a high probability of obtaining such deviance values under data simulated under that model. If the line falls within the distribution of both models, there is low power to distinguish between them, resulting from parameter estimates for different melanosome morphologies being similar for the parameters that distinguish both models (Table S2).

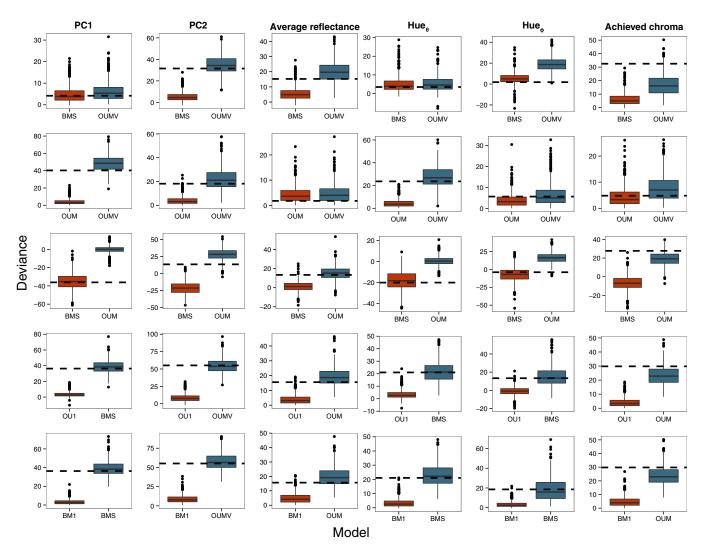


Fig. S5. Phylogenetic Monte Carlo results for the pairwise comparisons of evolutionary models for the male mantle patch variables. Boxes indicate the deviance value calculated by comparing the two models in the comparison after data were simulated under the respective model given the estimated maximum-likelihood estimates obtained from the maximum clade credibility tree (Fig. S1B). The dashed line indicates the deviance calculated from the maximum-likelihood models. Values below the line indicate low support for that model, and values that fall within the distribution obtained from a simulated model indicate a high probability of obtaining such deviance values under data simulated under that model. If the line falls within the distribution of both models, there is low power to distinguish between them, resulting from parameter estimates for different melanosome morphologies being similar for the parameters that distinguish both models (Table S2).

Table S1. Principal component analysis loadings and the variance explained by each component, obtained from the four cone stimuli that characterize avian color vision

		Componer	nt loadings	
Variable	PC1	PC2	PC3	PC4
Qu	0.52	0.46	-0.47	-0.54
Qs	0.46	-0.58	0.48	-0.48
Qm	-0.48	-0.52	-0.57	-0.41
QI	-0.53	0.43	0.47	-0.56
Variance, %	64.43	31.22	04.35	< 0.01

The first two components were used in the analyses. PC, principal component.

Model selection results for the evolutionary models under the maximum clade credibility tree for all color patches and both sexes, including and excluding Lamprotornis Table S2. elisabeth

BM1, OU1, BM5   OUM, OUMN,   COUM, OUMN,   COUM, OUMN,   COUN, OUMN, OUMN, OUMN,   COUN, OUMN, OUMN, OUMN,   COUN, OUMN, O				All iride	All iridescent species, AICc	cies, AICc			_	log(Lik)			Exclud	ing <i>Lam</i> µ	Excluding Lamprotornis Elisabeth, AICc	Elisabeth,	AICc			log(Lik)		
PCC   1939   1962.8   165.44   203.7   170.22   94.65   -94.71   -53.65   -94.77   -73.29   195.87   195.87   164.71   150.53   171.99   -95.64     PCC   143.10   145.40   126.75   145.61   106.81   106.71   145.61   106.87   103.71   153.83   116.88   108.87   105.87   103.71   115.8   105.71   115.8   106.87   103.71   105.87   103.71   103.83   106.82   103.71   105.83   103.83   105.83   10	Sex		BM1, k = 2	oU1, k = 3	BMS, k = 5	OUM, k = 6	OUMV, $k = 9$	BM1	001	BMS	Muo	OUMV	BM1, k = 2	oU1, k = 3	BMS, k = 5		OUMV, $k = 9$	BM1	OU1	BMS	MUO	OUMV
PCZ         133.81         16.64         16.94         -57.51         -58.77         -58.75         18.75         <	Males																					
POCT         1431 (1942)         1264 (1944)         1264 (1942)	Mantle	PC1	193.98	196.28	163.44	203.75	170.92	-94.85	-94.85	-75.95	-94.77	-73.89		197.87	164.71	205.39	171.98	-95.64	-95.63	-76.56	-95.56	-74.34
PCT         18.58         18.39         1		PC2	143.10	145.40	126.17	114.86	106.41	-69.41	-69.41	-57.31	-50.32			140.93	128.35	116.98	108.62	-70.87	-67.17	-58.38	-51.35	-42.66
PCT         18.56         18.34         18.54         18.54         18.54         18.54         18.55         18.54         18.54         18.56         18.54         18.56         18.56         18.50         18.54         1		Brightness	-16.72	-14.52	-12.09	-23.56	-16.28	10.50	10.55	11.81	18.88	•	•	-10.03	-8.09	-18.77	-11.53	8.30	8.31	9.84	16.52	17.41
POZ         (138)         903         803         904         51         404         3-40         -64         -70         -14         -14         -14         -14         -14         -14         -14         -14 </th <th>Belly</th> <th>PC1</th> <th>136.96</th> <th>139.41</th> <th>106.15</th> <th>146.40</th> <th>108.23</th> <th>-66.27</th> <th>-66.27</th> <th>-46.92</th> <th>-65.52</th> <th></th> <th></th> <th>128.16</th> <th>100.06</th> <th>134.53</th> <th>112.00</th> <th>-60.64</th> <th>-60.64</th> <th>-43.83</th> <th>-59.51</th> <th>-42.71</th>	Belly	PC1	136.96	139.41	106.15	146.40	108.23	-66.27	-66.27	-46.92	-65.52			128.16	100.06	134.53	112.00	-60.64	-60.64	-43.83	-59.51	-42.71
PCZ         117.21         11.94         11.04         18.32         19.56         -5.27         -4.05         -1.02         18.33         11.35         10.43         11.35         -1.02         -1.02         11.02		PC2	103.87	99.02	89.89	104.29	97.61	-49.73	-46.09	-38.79	-44.47	-35.71		109.11	92.12	106.29	99.53	-51.11	-51.11	-39.86	-45.40	-36.48
PCT         177.21         179.21         179.22 <th></th> <th>Brightness</th> <th>23.73</th> <th>17.40</th> <th>20.42</th> <th>8.33</th> <th>0.51</th> <th>99.6-</th> <th>-5.27</th> <th>-4.05</th> <th>3.51</th> <th>12.84</th> <th>11.93</th> <th>12.01</th> <th>13.11</th> <th>4.21</th> <th>13.55</th> <th>-3.75</th> <th>-2.56</th> <th>-0.36</th> <th>5.64</th> <th>6.51</th>		Brightness	23.73	17.40	20.42	8.33	0.51	99.6-	-5.27	-4.05	3.51	12.84	11.93	12.01	13.11	4.21	13.55	-3.75	-2.56	-0.36	5.64	6.51
PCZ         117.12         119.47         106.64         11.234         106.64         11.234         106.64         11.234         106.64         11.234         106.64         11.234         10.65         -56.40         -56.34         -8.66         -1.57         11.07	Breast	PC1	177.32	179.66	138.20	184.37	135.59	-86.49	-86.49	-63.19	-84.87	-55.69	178.09	180.45	138.78	148.34	132.21	-86.88	-86.87	-63.45	-66.82	-53.89
Brightness         1142         16.02         14.95         -10.25         -8.54         -46.7         -115         12.00         15.05         3.51         -9.98         -7.00         -7.00           PCT         187.21         165.68         175.62         175.68         -914.6         -91.70         -91.01         -7.62         174.14         176.44         165.84         165.86         165.85         165.95         165.86         165.95         165.95         165.97         17.02 <th></th> <th>PC2</th> <th>117.12</th> <th>119.47</th> <th>106.84</th> <th>112.34</th> <th>106.96</th> <th>-56.40</th> <th>-56.39</th> <th>-47.51</th> <th>-48.86</th> <th>-41.38</th> <th></th> <th>115.06</th> <th>105.05</th> <th>111.55</th> <th>106.94</th> <th>-54.18</th> <th>-54.18</th> <th>-46.59</th> <th>-48.42</th> <th>-41.26</th>		PC2	117.12	119.47	106.84	112.34	106.96	-56.40	-56.39	-47.51	-48.86	-41.38		115.06	105.05	111.55	106.94	-54.18	-54.18	-46.59	-48.42	-41.26
PCC   18721   18551   16568   19622   17568   9146   9146   7707   9100   76.27   174.14   1764   1564   1825   16554   9425   94251   94638   19342   11757   13247   11037   11032   24.26   24.25   24.11   27.79   26.03   13062   10906   1269   10555   04525   95.25		Brightness	21.42	16.02	14.97	-10.77	-7.35	-8.54	-4.67	-1.57	12.70	15.78	6.95	7.65	3.51	-9.98	-7.00	-1.30	-0.47	4.18	12.35	15.72
PCZ         146.88         139.48         117.97         13.24         110.37         71.05         -66.45         -53.25         -59.13         130.65         130.65         100.60         150.50         130.38         17.15         20.05         -73.75         -16.59         13.39         11.25         20.38         -20.75         -74.2         -16.59         19.37         19.08         19.39         11.25         20.38         -20.75         -74.0         19.27         19.37         19.39         11.25         30.38         -30.89         -20.21         -10.20         13.27         19.30         19.2	Crown	PC1	187.21	189.51	165.68	196.22	175.68	-91.46	-91.46	-77.07	-91.01	-76.27			156.34	182.85	166.54	-84.92	-84.92	-72.38	-84.29	-71.62
Projective services         52.8         51.82         56.8         47.40         31.35         -22.67         -7.42         -16.59         -41.1         57.9         56.40         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         11.35         31.39         31.39         12.39         12.39         13.34         31.39         11.35         31.39         13.39 <td></td> <td>PC2</td> <td>146.38</td> <td>139.48</td> <td>117.97</td> <td>132.47</td> <td>110.37</td> <td>-71.05</td> <td>-66.45</td> <td>-53.22</td> <td>-59.13</td> <td>-43.61</td> <td>129.31</td> <td>130.62</td> <td>109.06</td> <td>126.96</td> <td>106.55*</td> <td>-62.51</td> <td>-62.01</td> <td>-48.74</td> <td>-56.35</td> <td>-41.63</td>		PC2	146.38	139.48	117.97	132.47	110.37	-71.05	-66.45	-53.22	-59.13	-43.61	129.31	130.62	109.06	126.96	106.55*	-62.51	-62.01	-48.74	-56.35	-41.63
PCT   131-04   133.33   171.55   20.042   182.25   -93.38   -93.03   -95.02   193.13   -79.65   187.57   189.87   188.69   186.95   179.71   -91.64     PCT   131-04   132.34   113.46   107.04   112.44   118.04   107.04   112.44   118.04   107.04   112.44   118.04   118.04   107.04   118.0		Brightness	52.81	51.92	26.38	47.40	31.36	-24.26	-22.67	-7.42	-16.59	-4.11	57.79	56.40	31.39	51.25	34.86	-26.75	-24.90	-9.91	-18.49	-5.78
PCZ         135.05         137.34         123.36         18.40         107.04         -65.39         -55.93         -52.12         -42.02         132.79         123.04         182.00         107.50         -67.7         -47.7           Brightness         13.42         14.24         18.24         18.24         18.27         -65.37         -65.67         -88         16.6         6.77         -87.7         -67.8         -67.8         4.77         -87.7         -67.8         -67.8         4.77         -67.9         -67.7         -67.6         -67.8         18.2         -68.8         1.66.8         18.2         18.2         -68.8         1.66.8         18.2         -68.8         1.66.9         18.2         -68.8         -67.4         -67.1	Nape	PC1	191.04	193.33	171.55	200.42	182.25	-93.38	-93.38	-80.02	-93.13	-79.62	187.57	189.87	168.69	196.95	179.71	-91.64	-91.64	-78.57	-91.37	-78.28
PCT   140.2   150.2   140.2   180.4   170.0   182.4   180.4		PC2	135.05	137.34	123.36	118.40	107.04	-65.39	-65.38	-55.93	-52.12	-42.02	132.78		123.04	118.20	107.50	-64.25	-63.10	-55.75	-51.99	-42.18
PCT         196.37         166.00         162.08         205.55         164.20         -99.71         -75.27         -95.67         -70.69         178.44         180.74         152.77         142.21         182.71         18.68         -89.84         -55.34         -83.82         -56.87         -70.69         178.44         180.75         -16.66         -34.66         -25.97         15.64         -80.00           pCZ         151.24         182.7         18.21         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.22         18.24         18.22         18.24         18.22         18.24         18.22         18.24         18.22         18.24         18.22         18.24         18.24         18.24         18.2		Brightness	16.49	14.14	17.00	13.24	18.74	-6.11	-3.79	-2.75	0.46	2.13	-5.12	-2.83	0.16	0.57	6.77	4.71	4.71	5.69	6.82	8.19
PCZ         174.02         157.27         142.21         181.85         136.86         -84.87         -75.34         -65.34         -83.82         -56.88         156.98         133.91         165.11         133.18         -76.04           Brightness         -22.14         -22.84         -25.84         -80.55         -13.95         -15.66         -13.97         -16.67         -13.97         -16.67         -13.97         -16.67         -13.99         -15.84         15.28         -25.97         -13.97         -13.99         -13.97         -13.99	Rump	PC1	196.37	166.00	162.08	205.55	164.52	-96.04	-79.71	-75.27	-95.67	-70.69	178.44		152.37	187.27	156.47	-87.07	-87.07	-70.40	-86.50	-66.59
Brightness         -32.14         -29.84         -25.68         -31.94         -13.64         -25.97         -13.61         -34.66         -25.97         -13.61         -34.66         -25.97         -13.61         -25.97         -13.61         -25.97         -13.64         -25.97         -13.64         -25.97         -13.64         -25.97         -13.64         -25.97         -13.64         -25.97         -25.94         -25		PC2	174.02	157.27	142.21	181.85	136.86	-84.87	-75.34	-65.34	-83.82	-56.86	156.38	158.69	133.91	163.11	133.18	-76.04	-76.04	-61.16	-74.42	-54.94
FC         168.38         170.69         148.70         166.50         157.46         -82.05		Brightness	-32.14	-29.84	-25.48	-40.55	-31.96	18.21	18.21	18.51	27.38	27.55			-19.61	-34.66	-25.97	15.28	15.28	15.60	24.46	24.63
PCZ         151.46         153.76         129.82         123.13         109.81         -73.59         -73.59         -59.14         -54.46         -43.31         120.41         122.72         116.60         105.52         100.11         -58.06           Brightness         6.86         5.12         4.84         -14.10         -7.42         -1.29         -3.46         -6.79         3.35         14.15         15.28         13.04         16.66         0.73         3.35         14.15         15.28         13.04         16.66         0.73         3.35         14.15         15.29         3.40         16.66         0.75         17.29         3.49         3.25         13.04         16.66         0.75         17.29         13.49         16.67         0.75         0.73         3.35         14.15         15.29         17.20         10.93         13.25         13.04         17.20         10.20 <td< td=""><td>Coverts</td><td>PC1</td><td>168.38</td><td>170.69</td><td>148.70</td><td>166.50</td><td>157.46</td><td>-82.05</td><td>-82.05</td><td>-68.58</td><td>-76.14</td><td>-67.16</td><td></td><td></td><td>142.67</td><td>163.84</td><td>154.49</td><td>-78.42</td><td>-75.24</td><td>-65.54</td><td>-74.78</td><td>-65.60</td></td<>	Coverts	PC1	168.38	170.69	148.70	166.50	157.46	-82.05	-82.05	-68.58	-76.14	-67.16			142.67	163.84	154.49	-78.42	-75.24	-65.54	-74.78	-65.60
Brightness         6.86         5.12         4.84         -14.10         7.42         -1.29         0.73         3.35         14.15         15.28         2.79         3.49         3.25         -13.04         -6.26         0.75           t         PCI         191.21         135.25         166.15         200.50         169.38         -93.45         -77.24         -93.65         -72.98         193.14         166.86         200.15         17.181         -93.25           PCI         191.21         135.25         126.25         131.64         116.66         -66.91         -66.94         -93.65         -72.88         193.94         -17.69         -17.99         120.93         132.93         132.94         137.7         148.06         141.66         -66.91         -66.92         -59.85         -66.53         -58.23         140.37         140.37         140.39         137.9         122.93         140.37         140.38         140.32         14		PC2	151.46	153.76	129.82	123.13	109.81	-73.59	-73.59	-59.14	-54.46				116.60	105.52	100.11	-58.06	-58.06	-52.51	-45.62	-38.41
PCZ         191.21         193.52         166.15         200.50         169.58         -93.45         -77.24         -93.05         -72.98         190.81         193.14         166.68         200.15         171.81*         -93.25           PCZ         143.23         145.55         125.52         131.64         146.66         -69.46         -55.43         -86.2         -65.91         132.52         143.62         140.20         140.22         129.93         132.52         113.06         -70.9         -72.72         -66.83         36.03         37.64         33.83         140.22         140.22         140.22         140.32 <t< td=""><td></td><td>Brightness</td><td>98.9</td><td>5.12</td><td>4.84</td><td>-14.10</td><td>-7.42</td><td>-1.29</td><td>0.73</td><td>3.35</td><td>14.15</td><td>15.28</td><td>2.79</td><td>3.49</td><td>3.25</td><td>-13.04</td><td>-6.26</td><td>0.75</td><td>1.56</td><td>4.16</td><td>13.66</td><td>14.78</td></t<>		Brightness	98.9	5.12	4.84	-14.10	-7.42	-1.29	0.73	3.35	14.15	15.28	2.79	3.49	3.25	-13.04	-6.26	0.75	1.56	4.16	13.66	14.78
PCZ         143.23         145.55         122.52         131.64         116.66         -69.46         -69.46         -55.43         -58.62         -46.52         129.39         132.25         115.83         126.28         133.06         -62.94         -69.46         -69.46         -59.43         -58.62         -46.53         122.21         -66.83         130.25         15.32         15.32         15.32         15.33         13.78         17.69           PCZ         13.29         13.26         140.58         131.77         140.66         -66.91         -66.91         -67.93         -67.97         142.73         132.75         150.39         37.69	Throat	PC1	191.21	193.52	166.15	200.50	169.58	-93.45	-93.45	-77.24	-93.05	-72.98	190.81		166.68	200.15	171.81	-93.25	-93.24	-77.48	-92.84	-74.00
PCI         138.19         140.58         131.77         148.06         141.66         -66.90         -59.85         -66.53         -58.21         140.73         133.72         133.72         150.32         147.81         170.32         140.58         131.77         148.06         141.66         -66.90         -59.85         -66.53         -58.21         140.73         133.72         150.32         142.36         -67.97           PCI         13.63         113.66         101.46         95.73         93.94*         -61.01         -53.44         -44.69         -66.31         -58.21         140.23         142.73         153.81         165.91         165.93         -67.93         -66.91         -66.90         -59.85         -66.91         -66.90         -59.85         -66.91         -66.91         -66.90         -59.82         -66.53         -58.23         140.32         140.32         140.32         140.32         140.32         140.32         140.32         140.32         140.32         140.32         140.32         140.33         140.33         140.33         140.33         140.33         140.33         140.33         140.33         140.33         140.33         140.33         140.33         140.33         140.33         140.33		PC2	143.23	145.55	122.52	131.64	116.66	-69.46	-69.46	-55.43	-58.62	-46.52	129.93	132.25	115.83	126.28	113.06	-62.81	-62.80	-52.06	-55.91	-44.63
PC1         138.19         140.58         131.77         148.06         141.66         -66.91         -66.99         -59.85         -66.53         -58.23         140.32         142.73         133.72         150.32         142.36         -67.91           PC2         126.39         113.66         101.46         95.73         93.94*         -61.01         -53.44         -44.69         -40.37         -13.47         15.88         100.39         95.13         93.01*         -59.54           Brightness         -9.66         -7.26         -4.59         -17.84         -7.73         -5.32         -2.84         -8.50         1.87         -5.54         -6.09         -6.99         -6.91         -6.93         -7.73         -7.73         -7.73         -		Brightness	60.32	45.90	50.24	38.81	36.98	-28.01	-19.63	-19.29	-12.21	-6.68	39.69	37.09	37.64	33.58	34.78	-17.69	-15.22	-12.96	-9.55	-5.49
PCZ         126.39         113.66         101.46         95.73         93.94*         -61.01         -53.44         -44.69         -40.37         -34.37         123.47         125.88         100.39         95.13         93.01*         -59.54           Brightness         -9.66         -7.26         -4.59         -11.35         -4.69         -40.37         -34.37         123.47         125.84         -8.50         95.13         95.07         -59.54         -69.18         163.63         162.28         -8.50         -1.87         -5.94         -8.90         -59.54         -69.18         163.63         162.28         -8.50         17.53         165.19         160.85         -79.67         60.68         -79.69         -79	Wing	PC1	138.19	140.58	131.77	148.06	141.66	-66.91	-66.90	-59.85	-66.53	-58.23	140.32	142.73	133.72	150.32	142.36	-67.97	-67.96	-60.79	-67.60	-58.43
Brightness         -9.66         -7.26         -4.59         -11.35         -4.55         7.02         7.02         8.33         13.18         14.88         -7.73         -5.32         -2.84         -8.50         -1.87         6.06           PC1         167.50         163.18         165.23         165.19         161.23         -81.61         -78.31         -70.42         -75.54         -69.18         163.23         162.28         165.20         167.50         167.50         163.18         167.50         167.80         17.50         18.60         96.34         97.50         -24.21         -13.58         36.22         38.51         39.15         44.41         48.58         -15.90         97.50         -24.21         -13.58         36.22         38.51         39.15         44.41         48.58         -15.90           PC2         190.14         192.34         13.48         13.48         13.48         14.85 <td></td> <td>PC2</td> <td>126.39</td> <td>113.66</td> <td>101.46</td> <td>95.73</td> <td>93.94*</td> <td>-61.01</td> <td>-53.44</td> <td>-44.69</td> <td>-40.37</td> <td>-34.37</td> <td>123.47</td> <td>125.88</td> <td>100.39</td> <td>95.13</td> <td>93.01*</td> <td>-59.54</td> <td>-59.54</td> <td>-44.12</td> <td>-40.01</td> <td>-33.75</td>		PC2	126.39	113.66	101.46	95.73	93.94*	-61.01	-53.44	-44.69	-40.37	-34.37	123.47	125.88	100.39	95.13	93.01*	-59.54	-59.54	-44.12	-40.01	-33.75
PC1         167.50         163.18         152.30         165.19         161.23         -81.61         -78.31         -70.42         -75.54         -69.18         163.63         162.28         162.20         162.28         162.20         162.20         162.20         167.50         163.18         162.20         163.62         160.88         -75.64         -60.83         -36.09         117.53         16.81         85.57         118.98         91.40         -56.62           Brightness         86.02         68.18         76.96         62.51         50.03         -40.87         -32.75         -24.21         -13.58         36.22         38.51         39.15         44.41         48.58         -15.97           e         PC1         191.29         193.63         159.69         -93.49         -75.66         -92.45         -67.94         44.85         24.62         46.20         17.53         16.70         17.11         152.57         -80.38           PC2         190.14         192.88         159.69         -93.49         -92.91         -63.46         -52.42         42.44         44.41         48.58         -15.97           Brightness         -20.31         -17.98         -34.79         -29.40         13.48 </td <td></td> <td>Brightness</td> <td>99.6</td> <td>-7.26</td> <td>-4.59</td> <td>-11.35</td> <td>-4.55</td> <td>7.02</td> <td>7.02</td> <td>8.33</td> <td>13.18</td> <td>14.88</td> <td>-7.73</td> <td>-5.32</td> <td>-2.84</td> <td>-8.50</td> <td>-1.87</td> <td>90.9</td> <td>90.9</td> <td>7.49</td> <td>11.80</td> <td>13.69</td>		Brightness	99.6	-7.26	-4.59	-11.35	-4.55	7.02	7.02	8.33	13.18	14.88	-7.73	-5.32	-2.84	-8.50	-1.87	90.9	90.9	7.49	11.80	13.69
PC2         182.33         135.34         117.85         135.76         95.05         —89.03         —64.39         —53.19         —60.83         —36.09         117.53         116.81         85.57         118.98         91.40         —56.62           Brightness         86.02         68.18         76.96         62.51         50.03         —40.87         —32.75         —24.21         —13.58         36.22         38.51         39.15         44.41         48.58         —15.97           e         PC1         191.29         193.63         163.04         199.38         159.69         —93.49         —75.66         —92.45         —67.94         165.08         167.41         147.98         171.16         152.57         —80.38           PC2         190.14         192.88         159.69         —93.49         —95.66         —92.47         156.86         167.41         147.98         171.16         152.57         —80.38           PC2         190.14         192.89         193.00         —92.91         —92.91         —92.94         —13.48         14.85         24.62         165.08         167.41         147.98         171.14         18.38         171.71         171.52         —13.48         13.48         14.85 <td>Tail</td> <td>PC1</td> <td>167.50</td> <td>163.18</td> <td>152.30</td> <td>165.19</td> <td>161.23</td> <td>-81.61</td> <td>-78.31</td> <td>-70.42</td> <td>-75.54</td> <td>-69.18</td> <td>163.63</td> <td>162.28</td> <td>150.22</td> <td>164.60</td> <td>160.85</td> <td>-79.67</td> <td>-77.86</td> <td>-69.36</td> <td>-75.22</td> <td>-68.92</td>	Tail	PC1	167.50	163.18	152.30	165.19	161.23	-81.61	-78.31	-70.42	-75.54	-69.18	163.63	162.28	150.22	164.60	160.85	-79.67	-77.86	-69.36	-75.22	-68.92
PCJ         191.29         193.63         163.04         193.84 <td></td> <td>PC2</td> <td>182.33</td> <td>135.34</td> <td>117.85</td> <td>135.76</td> <td>95.05</td> <td>-89.03</td> <td>-64.39</td> <td>-53.19</td> <td>-60.83</td> <td>-36.09</td> <td>117.53</td> <td>116.81</td> <td>85.57</td> <td>118.98</td> <td>91.40</td> <td>-56.62</td> <td>-55.12</td> <td>-37.03</td> <td>-52.41</td> <td>-34.20</td>		PC2	182.33	135.34	117.85	135.76	95.05	-89.03	-64.39	-53.19	-60.83	-36.09	117.53	116.81	85.57	118.98	91.40	-56.62	-55.12	-37.03	-52.41	-34.20
e PC1 191.29 193.63 163.04 199.38 159.69 -93.49 -75.66 -92.45 -67.94 165.08 167.41 147.98 171.16 152.57 -80.38 PC2 190.14 192.48 138.67 98.95 91.00 -92.91 -63.48 -42.24 -33.60 145.47 124.66 116.31 95.78 88.33 -70.57 PC1 136.39 99.44 116.44 96.75 129.04 -65.96 -46.24 -51.91 -40.47 -50.79 121.84 124.36 108.06 130.29 114.43 -58.68 PC2 77.54 76.31 62.70 81.71 71.52 -36.54 -34.67 -25.05 -22.02 80.23 78.76 65.25 84.17 73.99 -37.87 Brightness 16.60 11.25 15.49 -4.99 -9.28 -6.07 -2.15 -1.44 10.40 18.38 9.82 9.01 11.80 -3.06 -7.04 -2.67 Brightness 16.50 12.3 126.01 97.65 100.23 82.68 -59.63 -59.63 -42.83 -42.67 -28.88 108.99 111.38 9.30 99.17 81.93 -52.31 Brightness 10.57 8.81 13.05 5.89 13.53 -3.10 -1.03 -0.53 4.50 5.70 15.61 13.72 18.14 10.12 18.27 -5.62 -5.63 -5.60 -5.70 15.61 13.72 18.14 10.12 18.27 -5.62		Brightness	86.02	68.18	96.92	62.51	50.03	-40.87	-30.81	-32.75	-24.21	-13.58	36.22	38.51	39.15	44.41	48.58	-15.97	-15.97	-13.83	-15.13	-12.79
PC1         191.29         193.63         163.04         199.38         159.69         -93.49         -75.66         -92.45         -67.94         165.08         167.41         147.98         171.16         152.57         -80.38           PC2         190.14         192.48         138.67         98.95         91.00         -92.91         -63.48         -42.24         -38.0         145.47         124.66         116.31         95.78         88.33         -70.57           Brightness         -20.31         -17.98         -34.79         -29.40         13.48         14.85         24.63         26.00         -20.02         -17.68         -16.92         -31.77         -27.32         12.17           PC1         136.39         99.44         116.44         96.75         129.04         -65.96         -46.24         -51.91         -40.47         -50.79         121.84         124.36         18.36         130.29         114.43         -58.68           PC2         77.54         76.31         62.70         80.25         78.76         65.25         84.17         73.99         -37.87           Brightness         16.60         11.25         15.49         -4.99         -9.28         -6.07         -21.44	Females																					
PCZ         190.14         192.48         138.67         98.95         91.00         -92.91         -63.48         -42.24         -33.60         145.47         124.66         116.31         95.78         88.33         -70.57           Brightness         -22.65         -20.31         -17.98         -34.79         -29.40         13.48         13.48         14.85         26.60         -20.02         -17.68         -16.92         -31.77         -27.32         12.17           PCI         136.39         99.44         116.44         96.75         129.04         -65.96         -46.24         -51.91         -40.47         -50.79         121.84         124.36         130.29         114.43         -58.68           PCZ         77.54         76.31         62.76         -22.02         80.23         78.76         65.25*         84.17         73.99*         -37.87           Brightness         16.60         11.25         15.49         -4.99         -9.28         -6.07         -21.44         10.40         18.38         9.82         9.01         11.80         -3.06         -2.04         -2.07         11.81         9.32         87.86         87.81         13.96         65.25*         84.17         73.99*	Mantle	PC1	191.29	193.63	163.04	199.38	159.69	-93.49	-93.49	-75.66	-92.45				147.98*	171.16	152.57	-80.38	-80.37	-68.11	-78.31	-64.29
Brightness         22.65         20.31         -17.98         -34.79         -29.40         13.48         14.85         24.63         26.00         -20.02         -17.68         -16.92         -31.77         -27.32         12.17           PC1         136.39         99.44         116.44         96.75         129.04         -65.96         -46.24         -51.91         -40.47         -50.79         121.84         124.36         130.29         114.43         -58.68           PC2         77.54         76.31         62.76         81.71         71.52*         -36.54         -34.67         -25.05         -22.02         80.23         78.76         65.25*         84.17         73.99*         -37.87           Brightness         16.60         11.25         15.49         -4.99         -9.28         -6.07         -2.15         -1.44         10.40         18.38         9.82         9.01         11.80         -3.06         -2.04         -2.67           PC1         165.98         168.37         142.89         173.44         143.35         -80.81         -80.81         -7.92         -5.21         159.59         161.98         139.66         163.54         -7.761           PC2         123.63		PC2	190.14	192.48	138.67	98.95	91.00	-92.91	-92.91	-63.48	-42.24				116.31	95.78	88.33	-70.57	-58.99	-52.27	-40.62	-32.16
PC1 136.39 99.44 116.44 96.75 129.04 -65.96 -46.24 -51.91 -40.47 -50.79 121.84 124.36 108.06 130.29 114.43 -58.68 PC2 77.54 76.31 62.70* 81.71 71.52* -36.54 -34.67 -25.05 -32.95 -22.02 80.23 78.76 65.25* 84.17 73.99* -37.87 Brightness 16.60 11.25 15.49 -4.99 -9.28 -6.07 -2.15 -1.44 10.40 18.38 9.82 9.01 11.80 -3.06 -7.04 -2.67 PC1 165.98 168.37 142.89 173.44 143.35 -80.81 -80.81 -80.54 -79.27 -59.21 159.59 161.98 139.66 166.42 143.54 -77.61 PC2 123.63 126.01 97.65 100.23 82.68 -59.63 -59.63 -42.83 -42.67 -28.88 108.99 111.38 90.30 99.17 81.93 -52.31 Brightness 10.57 8.81 13.05 5.89 13.53 -3.10 -1.03 -0.53 4.50 5.70 15.61 13.72 18.14 10.12 18.27 -5.62		Brightness	-22.65	-20.31	-17.98	-34.79	-29.40	13.48	13.48	14.85	24.63	•	-		-16.92	-31.77	-27.32	12.17	12.17	14.34	23.16	25.66
PC2 77.54 <b>76.31 62.70*</b> 81.71 <b>71.52*</b> -36.54 -34.67 -25.05 -32.95 -22.02 80.23 <b>78.76 65.25*</b> 84.17 <b>73.99*</b> -37.87 Brightness 16.60 11.25 15.49 -4.99 -9.28 -6.07 -2.15 -1.44 10.40 18.38 9.82 9.01 11.80 -3.06 - <b>7.04</b> -2.67 PC1 165.98 168.37 <b>142.89</b> 173.44 143.35 -80.81 -80.81 -65.44 -79.27 -59.21 159.59 161.98 <b>139.66</b> 166.42 143.54 -77.61 PC2 123.63 126.01 97.65 100.23 <b>82.68</b> -59.63 -59.63 -42.83 -42.67 -28.88 108.99 111.38 90.30 99.17 <b>81.93</b> -52.31 Brightness 10.57 8.81 13.05 <b>5.89</b> 13.53 -3.10 -1.03 -0.53 4.50 5.70 15.61 13.72 18.14 <b>10.12</b> 18.27 -5.62	Belly	PC1	136.39	99.44	116.44	96.75	129.04	-65.96	-46.24	-51.91	-40.47	-50.79	121.84	124.36	108.06	130.29	114.43	-58.68	-58.68	-47.67	-57.14	-43.22
Brightness 16.60 11.25 15.49 -4.99 -9.28 -6.07 -2.15 -1.44 10.40 18.38 9.82 9.01 11.80 -3.06 -7.04 -2.67 PCI 165.98 168.37 142.89 173.44 143.35 -80.81 -80.81 -65.44 -79.27 -59.21 159.59 161.98 139.66 166.42 143.54 -77.61 PC2 123.63 126.01 97.65 100.23 82.68 -59.63 -59.63 -42.83 -42.67 -28.88 108.99 111.38 90.30 99.17 81.93 -52.31 Brightness 10.57 8.81 13.05 5.89 13.53 -3.10 -1.03 -0.53 4.50 5.70 15.61 13.72 18.14 10.12 18.27 -5.62		PC2	77.54	76.31	62.70*	81.71	71.52*	-36.54	-34.67	-25.05	-32.95	-22.02	80.23	78.76	65.25*	84.17	73.99*	-37.87	-35.88	-26.26	-34.09	-23.00
PC1 165.98 168.37 <b>142.89</b> 173.44 143.35 -80.81 -80.81 -65.44 -79.27 -59.21 159.59 161.98 <b>139.66</b> 166.42 143.54 -77.61 PC2 123.63 126.01 97.65 100.23 <b>82.68</b> -59.63 -59.63 -42.83 -42.67 -28.88 108.99 111.38 90.30 99.17 <b>81.93</b> -52.31 Brightness 10.57 8.81 13.05 <b>5.89</b> 13.53 -3.10 -1.03 -0.53 4.50 5.70 15.61 13.72 18.14 <b>10.12</b> 18.27 -5.62		Brightness	16.60	11.25	15.49	-4.99	-9.28	-6.07	-2.15	-1.44	10.40		9.82	9.01	11.80	-3.06	-7.04	-2.67	-1.00	0.46	9.53	17.52
123.63 126.01 97.65 100.23 <b>82.68</b> -59.63 -59.63 -42.83 -42.67 -28.88 108.99 111.38 90.30 99.17 <b>81.93</b> -52.31 htness 10.57 8.81 13.05 <b>5.89</b> 13.53 -3.10 -1.03 -0.53 4.50 5.70 15.61 13.72 18.14 <b>10.12</b> 18.27 -5.62	Breast	PC1	165.98	168.37	142.89	173.44	143.35	-80.81	-80.81	-65.44	-79.27				139.66	166.42	143.54	-77.61	-77.60	-63.79	-75.71	-59.17
10.57 8.81 13.05 <b>5.89</b> 13.53 -3.10 -1.03 -0.53 4.50 5.70 15.61 13.72 18.14 <b>10.12</b> 18.27 -5.62		PC2	123.63	126.01	97.65	100.23	85.68	-59.63	-59.63	-42.83	-42.67			111.38	90.30	99.17	81.93	-52.31	-52.30	-39.11	-42.08	-28.37
		Brightness	10.57	8.81	13.05	5.89	13.53	-3.10	-1.03	-0.53	4.50	5.70	15.61	13.72	18.14	10.12	18.27	-5.62	-3.47	-3.04	2.44	3.47

Table S2. Cont.

			All irides	All iridescent species, AICc	ies, AICc			_	log(Lik)			Exclud	ing <i>Lam</i> ⊧	rotornis	Excluding Lamprotornis Elisabeth, AICc	AICc			log(Lik)		
ğ		BM1, k = 2	BM1, OU1, $k = 2$ $k = 3$	BMS,	OUM,	OUMV, $k = 9$	RM1	5	RMS	2	ÀMI IO	BM1,	OU1, $k=3$	BMS,	OUM,	OUMV, $k = 9$	RM1	5	RMS	2	) N
× > >		1	1	1		1		3				1 1	1	1			2	5			2
	PC1	190.44	192.77	162.49		160.24	-93.06	-93.06	-75.39	-66.27	-68.22	149.38	146.08	139.54	153.05	144.79	-72.53	-69.71	-63.89	-69.25	-60.40
Crown																					
	PC2	183.00		115.67	112.66	86.12	-89.34	-56.69	-51.98	-49.09	-31.16	106.96	106.37	74.55	106.20	79.32	-51.32	-49.85	-31.39	-45.83	-27.66
	Brightness	41.02	36.76	40.33	37.29	39.22	-18.35	-15.06	-14.31	-11.41	-7.71	41.85	39.05	41.14	40.03	42.07	-18.76	-16.19	-14.69	-12.74	-9.03
Nape	PC1	192.08		167.58	199.82	177.06	-93.89	-93.89	-77.96	-92.71	-76.72	154.94	157.27	146.97	146.12	137.50	-75.31	-75.31	-67.63	-65.82	-56.85
	PC2	185.47		117.85	101.58	75.89	-90.58	-59.11	-53.09	-43.59	-26.13	115.33	111.51	83.83	98.50	73.35*	-55.51	-52.43	-36.06	-42.01	-24.77
	Brightness	6.07	6.19	13.23	12.85	21.75	-0.88	0.22	-0.78	0.78	0.94	5.38	7.03	11.38	14.16	22.79	-0.53	-0.19	0.17	0.16	0.51
Rump	PC1	223.51	225.86	173.91	232.76	184.85	-109.60	-109.60	-81.10	-109.14	-80.52	153.04	141.45	136.61	136.69	129.68	-74.36	-67.39	-62.42	-61.07	-52.84
	PC2	192.17	194.52	130.36	131.29	125.57	-93.93	-93.93	-59.32	-58.41	-50.88	123.10	125.44	96.36	121.10	98.44	-59.39	-59.38	-42.30	-53.28	-37.22
	Brightness	-3.37	-1.99	-3.16	-16.73	-12.32	3.84	4.32	7.44	15.60	18.06	-5.73	-3.42	-4.83	- 16.06	-12.04	5.03	5.04	8.30	15.30	18.02
Coverts	PC1	187.70	190.04	155.04	196.49	161.61	-91.69	-91.69	-71.66	-91.01	-68.90	131.09	133.43	124.56	130.66	130.69	-63.38	-63.38	-56.40	-58.06	-53.34
	PC2	155.94	158.27	122.59	92.97	91.30	-75.81	-75.81	-55.44	-39.25	-33.75	97.92	100.26	94.99	78.55	82.10	-46.80	-46.80	-41.61	-32.00	-29.05
	Brightness	-0.09	0.65	1.26	-12.89	-4.98	2.20	3.00	5.23	13.68	14.39	-9.37	-7.03	-3.02	-16.20	-6.87	6.85	6.85	7.39	15.37	15.43
Throat	PC1	178.52	180.89	154.24	186.19	150.47	-87.09	-87.09	-71.18	-85.74	-63.02	162.79	164.80	145.98	168.97	142.39	-79.22	-79.04	-67.02		-58.86
	PC2	156.37	118.36	99.35	111.98	76.02*	-76.01	-55.83	-43.74	-48.64	-25.79	113.26	110.21	76.75	109.17	73.56	-54.46	-51.74	-32.41	-47.18	-24.44
	Brightness	40.82	30.96	47.15	35.79	44.98	-18.24	-12.13	-17.64	-10.54	-10.27	45.91	34.98	52.46	39.61	49.06	-20.78	-14.12	-20.26	-12.40	-12.20
Wing	PC1	123.23	125.69	117.70	132.00	115.24	-59.40	-59.40	-52.65	-58.25	-44.33	123.47	125.95	118.31	132.30	117.64	-59.51	-59.51	-52.90	-58.33	-45.32
	PC2	109.62	112.08	90.91	83.74	66.32	-52.60	-52.60	-39.25	-34.12	-19.87	103.68	97.65	88.23	83.33	66.22*	-49.62	-45.36	-37.86	-33.84	-19.61
	Brightness	-12.58	-10.12	-9.38	-15.36	-5.26	8.51	8.51	10.89	15.43	15.92	-6.37	-3.90	-2.82	-9.05	1.36	5.41	5.41	7.66	12.35	12.82
Tail	PC1	185.61	187.93	142.65	191.32	130.27	99.06-	99.06-	-65.51	-88.49	-53.41	139.05	136.93	121.51	126.84	119.34	-67.37	-65.15	-54.92	-56.22	-47.86
	PC2	166.33	120.87	104.51	118.63	80.36	-81.01	-57.13	-46.45	-52.15	-28.45	109.48	105.80	77.06	108.39	81.10	-52.59	-49.58	-32.70	-46.99	-28.74
	Brightness	28.32	30.63	30.85	36.20	39.42	-12.01	-12.01	-9.61	-10.93	-7.98	32.65	34.98	35.05	40.58	43.67	-14.17	-14.17	-11.69	-13.09	-10.02

Bold values indicate best-supported models. AICc, second-order Akaike information criteria.
\*In some cases, the sample size for some melanosome morphologies (after excluding noniridescent colors) did not allow the reliable estimation of all parameters in the model, and therefore the next best model was used for parameter estimates presented in Tables S3 and S4.

Table S3. Parameter estimates (and SEs) for the best model under the maximum clade credibility tree for all color patches and both sexes, as determined from AICc comparison (Table S2)

		α					ָ ט	2							θ				
Sex		Estimate	SE	Rod estimate	SE	Flat estimate	SE	Hollow estimate	SE	Platelet estimate	SE	Rod estimate	SE	Flat estimate	SE	Hollow estimate	SE	Platelet estimate	SE
																			Ī
Males	Č			0	,	,	,	i C	Ċ	,	,	0	0	0	6	0	0	0	6
Mantle	Z (		,	0.39	0.14	20.16	13.60	5.86	6.39	13.32	4.33	0.90	0.30	0.96	0.30	0.96	0.30	0.96	0.30
	Ž :	4.06	7.18	1.45	0./3	4.28	4.89	0.60	0.54	9.32	3.68	0.84	0.12	0.39	0.66	1.68	0.23	-1.23	0.29
	Brightness	2.23	0.99	0.14	0.02	0.14	0.02	0.14	0.02	0.14	0.02	2.23	90.0	2.54	0.25	2.49	0.13	2.76	90.0
Belly	PC1			0.17	0.07	5.45	3.84	9.11	27.45	16.07	2.67	0.78	0.22	0.78	0.22	0.78	0.22	0.78	0.22
	PC2			0.43	0.18	0.39	0.32	0.11	15.57	5.94	2.03	0.63	0.31	0.63	0.31	0.63	0.31	0.63	0.31
	Brightness	370.84	0.01	25.36	10.81	87.62	55.42	0.01	0.01	32.04	11.70	2.04	90.0	2.05	0.15	2.80	0.01	2.46	0.05
Breast	PC1	2.87	1.36	0.58	0.35	10.59	2.66	0.31	0.43	17.26	4.48	0.98	0.11	3.22	1.37	-3.31	0.97	0.62	0.54
	PC2			0.31	0.12	3.07	2.22	0.35	0.64	4.14	1.29	0.71	0.26	0.71	0.26	0.71	0.26	0.71	0.26
	Brightness	57.74	88.77	3.64	5.54	3.64	5.54	3.64	5.54	3.64	5.54	2.10	0.05	2.08	80.0	2.70	0.10	2.65	0.04
Crown	PC1			69.0	0.23	16.34	11.64	13.62	13.45	10.51	3.25	0.27	0.34	0.27	0.34	0.27	0.34	0.27	0.34
	PC2			0.20	0.07	2.91	2.07	2.13	2.15	5.18	1.56	0.65	0.18	0.65	0.18	0.65	0.18	0.65	0.18
	Brightness			0.02	0.02	1.92	1.38	0.01	0.09	0.36	0.12	2.09	0.08	5.09	80.0	5.09	0.08	2.09	0.08
Nape	PC1			0.79	0.27	23.53	16.28	13.48	17.57	9.08	2.91	0.39	0.37	0.39	0.37	0.39	0.37	0.39	0.37
	PC2	2.93	0.93	1.13	0.54	3.98	2.81	0.19	0.16	89.9	2.70	0.72	0.13	0.53	0.90	1.95	0.18	-1.06	0.32
	Brightness	2.57	1.36	0.36	0.17	0.36	0.17	0.36	0.17	0.36	0.17	2.11	0.08	2.29	0.34	2.43	0.19	2.58	0.09
Rump	PC1			0.38	0.14	9.47	6.59	2.56	2.19	16.73	5.01	0.76	0.27	0.76	0.27	0.76	0.27	0.76	0.27
	PC2	1.46	0.71	0.65	0.30	06.0	0.68	0.85	0.70	14.43	4.97	0.75	0.16	1.83	1.39	2.43	0.53	-0.65	0.82
	Brightness	1.09	0.70	90.0	0.02	90.0	0.02	90.0	0.02	90.0	0.05	2.12	90.0	2.60	0.32	2.50	0.14	2.68	0.07
Coverts	PC1			0.46	0.16	12.90	8.68	9.83	10.75	6.15	1.94	0.89	0.32	0.89	0.32	0.89	0.32	0.89	0.32
	PC2	3.84	0.94	1.25	0.54	8.76	7.62	0.22	0.18	9.61	3.35	0.76	0.12	-0.05	0.91	1.88	0.16	-1.20	0.30
	Brightness	4.74	1.71	0.33	0.13	0.33	0.13	0.33	0.13	0.33	0.13	2.12	0.02	2.46	0.16	2.60	0.11	2.71	0.05
Throat	PC1			0.57	0.22	10.39	7.41	3.61	4.17	19.03	5.79	99.0	0.34	99.0	0.34	99.0	0.34	99.0	0.34
	PC2	2.72	0.93	1.30	0.75	1.68	1.55	0.09	0.10	12.45	5.59	0.59	0.16	2.03	0.91	2.39	0.13	-0.31	0.47
	Brightness	6.65	3.68	0.37	0.25	1.06	0.87	1.50	1.33	2.39	1.47	1.89	0.02	1.91	0.19	2.30	0.20	2.42	0.10
Wing	PC1			0.51	0.30	1.28	1.12	7.74	7.45	8.37	2.59	-0.09	0.40	-0.09	0.40	-0.09	0.40	-0.09	0.40
	PC2	8.16	4.22	10.56	2.80	10.56	2.80	10.56	2.80	10.56	2.80	0.73	0.33	-0.38	0.48	1.10	0.45	-1.17	0.19
	Brightness	1.56	0.97	0.13	90.0	0.13	90.0	0.13	90.0	0.13	0.06	2.02	0.09	2.89	0.34	2.46	0.16	2.58	0.08
Tail	PC1			0.70	0.23	1.07	0.80	10.62	9.84	6.18	2.04	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
	PC2	60.85	80.09	9.11	12.40	0.77	1.12	172.18	251.45	178.46	231.32	0.53	0.02	0.75	0.04	0.41	0.53	-0.17	0.28
	Brightness	200.67	883.16	127.51	562.53	4.05	18.13	7.91	34.75	44.97	194.70	2.08	0.14	1.98	0.04	2.64	90'0	2.48	0.08
Females					i		1					i	(	,	;		,		
Mantle	2	4.03	7.07	5.46	3.6	78.67	15.99	1.04	1.03	19.04	5.31	0.51	0.73	1.53	<u>4</u> .	-2.44	0.64	0.12	0.47
	PC2	252.59	427.46	75.56	131.49	162.77	305.97	17.89	32.54	420.77	704.49	0.68	0.10	-0.39	0.33	0.57	0.09	-1.08	0.21
	Brightness	1.60	0.78	0.08	0.03	0.08	0.03	0.08	0.03	0.08	0.03	2.12	0.05	2.59	0.21	2.39	0.19	2.70	90.0
Belly	PC1	111.72	225.63	218.63	434.60	218.63	434.60	218.63	434.60	218.63	434.60	0.05	0.30	90.0	0.57	-1.57	0.99	1.23	0.27
	PC2	1.45	0.87	2.92	1.25	2.92	1.25	2.92	1.25	2.92	1.25	0.04	0.29	0.04	0.29	0.04	0.29	0.04	0.29
	Brightness	370.84	0.01	50.66	8.81	20.18	16.47	0.01	0.01	25.27	9.55	1.96	0.02	2.39	0.10	2.76	0.01	2.42	0.02
Breast	PC1			0.74	0.30	1.75	2.12	0.34	0.54	21.45	6.63	-0.39	0.41	-0.39	0.41	-0.39	0.41	-0.39	0.41
	PC2	26.25	98.35	4.04	15.46	25.63	97.78	0.82	3.60	62.92	225.89	0.32	0.08	0.77	0.40	0.53	0.07	-0.81	0.27
	Brightness	7.00	5.35	0.70	0.54	0.70	0.54	0.70	0.54	0.70	0.54	2.20	0.07	2.17	0.15	2.75	0.16	2.59	90.0
Crown	PC1	107.99	164.70	326.60	494.67	326.60	494.67	326.60	494.67	326.60	494.67	-0.47	0.30	2.02	0.71	-1.67	0.87	-0.25	0.29

		α					פי								θ				
				Rod		Flat		Hollow		Platelet		Rod		Flat		Hollow		Platelet	
Sex		Estimate	SE	estimate	SE	estimate	SE	estimate	SE	estimate	SE	estimate	SE e	stimate	SE	estimate	SE	stimate	SE
	PC2	237.01	705.63	26.76	80.35	396.76	1232.93	8.78	27.48	580.81	1721.92	0.40	90.0	0.48	0.53	0.59	0.10	99.0-	0.26
	Brightness	1.81	0.87	0.58	0.23	0.58	0.23	0.58	0.23	0.58	0.23	2.24	0.09	2.24	0.09	2.24	0.09	2.24	60.0
Nape	PC1			1.08	0.38	15.58	15.47	0.53	0.54	19.84	6.03	-0.38	0.44	-0.38	0.44	-0.38	0.44	-0.38	0.44
	PC2	338.42	0.10	20.67	17.98	72.88	59.22	8.12	5.69	641.27	206.77	0.48	0.07	0.31	0.19	0.47	0.05	-1.00	0.23
	Brightness			0.13	0.03	0.13	0.03	0.13	0.03	0.13	0.03	2.31	0.13	2.31	0.13	2.31	0.13	2.31	0.13
Rump	PC1			0.64	0.23	9.07	9.21	0.25	0.25	49.17	14.82	0.05	0.36	0.02	0.36	0.02	0.36	0.02	0.36
	PC2	1.60	0.79	0.31	0.15	0.02	90.0	0.87	0.85	25.99	8.14	0.67	0.11	0.19	0.46	1.61	2.34	-0.82	1.04
	Brightness	2.93	1.17	0.19	0.08	0.19	0.08	0.19	0.08	0.19	0.08	2.08	0.05	2.50	0.18	2.71	0.18	2.65	90.0
Coverts	PC1			0.57	0.20	5.33	5.58	0.63	0.62	21.49	95.9	0.20	0.32	0.20	0.32	0.20	0.32	0.20	0.32
	PC2	205.49	403.07	61.21	122.20	472.51	1003.09	46.71	97.76	223.24	432.43	0.62	0.10	-0.97	0.62	0.71	0.17	-1.21	0.17
	Brightness	3.42	1.79	0.24	0.12	0.24	0.12	0.24	0.12	0.24	0.12	2.09	0.05	2.48	0.17	2.58	0.17	2.69	0.05
Throat	PC1	1.48	0.77	1.87	0.92	2.55	2.77	0.02	0.03	24.34	8.13	-0.88	0.30	0.88	1.58	-3.84	2.37	0.79	1.08
	PC2			90.0	0.02	0.13	0.18	0.03	0.04	12.31	3.71	0.35	0.12	0.35	0.12	0.35	0.12	0.35	0.12
	Brightness	3.67	1.94	0.94	0.49	0.94	0.49	0.94	0.49	0.94	0.49	2.23	0.07	2.23	0.07	2.23	0.07	2.23	0.07
Wing	PC1	1.41	0.80	0.73	0.52	0.01	0.01	0.25	0.36	13.49	2.67	-0.49	0.22	-2.89	69.0	-3.01	1.72	0.46	0.79
	PC2	37.40	66.44	1.35	2.53	145.43	284.36	0.57	1.15	44.60	77.11	0.71	0.05	-0.71	0.81	0.55	0.05	-1.12	0.18
	Brightness	96.0	1.21	0.08	0.05	0.08	0.05	0.08	0.05	0.08	0.05	2.04	0.08	2.88	0.29	5.69	0.27	2.60	0.08
Tail	PC1	4.10	1.71	2.50	1.42	1.78	1.86	0.31	0.31	24.42	9.28	-0.29	0.14	0.12	0.51	-2.08	0.65	1.21	0.46
	PC2	61.56	96.79	7.24	11.57	3.34	5.91	5.30	8.89	181.70	280.99	0.55	90.0	0.99	0.10	-0.26	0.10	-0.19	0.29
	Brightness			0.21	0.05	0.21	0.05	0.21	0.05	0.21	0.05	2.22	0.17	2.22	0.17	2.22	0.17	2.22	0.17
Excluding L	Excluding Lamprotornis elisabeth	elisabeth																	
Mantle	PC			0.39	0.14	20.47	14.02	7.50	5.89	14.09	4.71	96.0	0.29	96.0	0.29	96.0	0.79	96.0	0.79
	PC2	4.30	1.35	1.59	0.85	5.13	6.48	0.67	0.69	10.41	4.45	0.84	0.12	0.36	0.67	1.65	0.23	-1.23	0.29
	Brightness	2.21	1.01	0.14	90.0	0.14	90.0	0.14	90.0	0.14	0.06	2.23	90.0	2.54	0.25	2.49	0.13	2.76	90.0
Belly	PC.			0.17	0.07	5.41	3.78	12.61	27.27	10.52	3.84	0.78	0.22	0.78	0.22	0.78	0.22	0.78	0.22
	PC2			0.42	0.17	0.38	0.31	0.10	26.52	6.40	2.28	0.63	0.31	0.63	0.31	0.63	0.31	0.63	0.31
	Brightness	2.83	1.35	0.26	0.12	0.26	0.12	0.26	0.12	0.26	0.12	1.98	0.08	2.12	0.26	3.49	0.46	2.46	0.08
Breast	PC1	3.04	1.51	0.61	0.38	14.81	10.45	0.33	0.46	30.52	12.47	0.98	0.11	3.08	1.55	-3.20	1.18	0.61	0.68
	PC2			0.33	0.14	3.19	2.39	0.40	0.79	3.51	1.17	0.69	0.27	0.69	0.27	0.69	0.27	69.0	0.27
,	Brightness	7.98	2.06	0.49	0.33	0.49	0.33	0.49	0.33	0.49	0.33	2.09	0.05	2.06	0.11	2.71	0.12	2.65	0.04
Crown	PCI			0.72	0.25	16.10	11.36	16.32	16.58	6.28	1.99	0.28	0.35	0.28	0.35	0.28	0.35	0.28	0.35
	: : ۲			0.20	0.07	2.83	.9/	7.77	70.7	3.17	0.99	0.64	0.18	0.64	0.18	0.64	0.18	0.64	0.18
:	Brightness			0.05	0.02	1.90	1.35	0.01	0.08	0.37	0.12	2.09	0.08	2.09	0.08	2.09	0.08	2.09	0.08
Nape		i i	0	 	0.28	25.92	05.51	9.7 8 1	× × ×	20.7	2.55	0.40	0.37	0.40	0.37	0.40	0.37	0.40	0.37
	Z :	7.66	0.93	1.02	0.48	3.75	2.65	0.1/	0.14	5.91	2.48	0./3	0.13	0.54	0.97	1.97	0.18	-1.06	0.33
	Brightness			0.0	0.02	0.09	0.02	0.09	0.05	0.09	0.05	2.24	0.11	2.24	0.11	2.24	0.11	2.24	0.11
Rump	PC1			0.38	0.14	9.40	6.50	2.87	7.64	10.28	3.19	0.76	0.27	0.76	0.27	0.76	0.27	0.76	0.27
	PC2	1.01	0.71	0.54	0.25	0.87	0.67	0.87	0.80	9.24	3.47	0.76	0.18	1.92	1.69	2.46	0.62	-0.59	0.82
	Brightness	1.11	0.71	90.0	0.02	90.0	0.02	90.0	0.02	90.0	0.02	2.12	90.0	2.60	0.32	2.50	0.14	2.68	0.07
Coverts	PC1			0.45	0.16	12.92	8.73	8.92	7.33	4.38	1.46	0.89	0.31	0.89	0.31	0.89	0.31	0.89	0.31
	PC2	2.59	1.08	0.91	0.45	5.61	5.95	0.17	0.14	4.22	1.84	0.78	0.13	-0.10	1.09	1.94	0.17	-1.16	0.29
	Brightness	3.83	1.41	0.25	0.10	0.25	0.10	0.25	0.10	0.25	0.10	2.12	0.02	2.48	0.18	2.58	0.12	2.71	0.05

Table S3. Cont.

		δ					ο <sub>2</sub>	<u>.</u> .							θ				
				Rod		Flat		Hollow		Platelet		Rod		Flat	-	Hollow		Platelet	
Sex		Estimate	SE	estimate	SE	estimate	SE	estimate	SE	estimate	SE (	estimate	SE e	stimate	SE e	stimate	SE (	stimate	SE
Throat	PC1	0.01	0.01	0.54	0.20	9.80	6.72	0.05	0.04	20.65	6.16	0.56	0.35	3.66	5.75	3.31	98.0	2.34	2.17
	PC2	1.92	0.93	0.87	0.51	1.39	1.22	0.07	0.07	7.40	3.41	0.63	0.17	2.20	1.15	2.43	0.15	-0.27	0.48
	Brightness	3.47	1.43	0.68	0.29	0.68	0.29	0.68	0.29	0.68	0.29	1.87	0.10	1.88	0.33	2.24	0.22	2.42	0.09
Wing	<u> </u>	70,7	כרכ	0.48	0.26	1.38	1.30	9.77	11.30	8.69	2.75	-0.11	0.38	-0.11	0.38	-0.11	0.38	-0.11	0.38
	Rrightness	1.07	0.63	0.03	0.05	0.03	4.40 70.07	0.00	0 + 40 0 - 70	0.00	4.40 7.07	20.7	0.52	-0. <del>44</del>	0.50	2.45	0.40	757	9 0
Tail	PC1	<u>†</u>		0.70	0.23	1.06	0.80	11.81	10.01	5.14	1.72	0.35	0.34	0.35	0.34	0.35	0.34	0.35	0.34
	PC2			0.12	0.04	0.05	0.04	2.25	1.64	2.37	0.74	0.61	0.14	0.61	0.14	0.61	0.14	0.61	0.14
	Brightness			0.22	0.05	0.22	0.05	0.22	0.05	0.22	0.05	2.30	0.17	2.30	0.17	2.30	0.17	2.30	0.17
Females																			
Mantle	PC1	0.42	0.81		0.68	27.99	23.92	0.71	0.76	8.69	3.22	0.27	0.34	3.22	5.11	-5.86	5.66	0.54	1.15
	PC2	138.84	20518.88		6105.23	89.55	13251.68	9.92	1465.40	223.81	33082.33	0.68	0.10	-0.39	0.33	0.57	0.09	-1.05	0.21
	Brightness	1.26	0.76	90.0	0.03	90.0	0.03	90.0	0.03	90.0	0.03	2.11	90.0	2.63	0.23	2.36	0.20	2.70	0.07
Belly	PC1			0.56	0.24	11.98	11.39	18.00	36.81	12.50	4.75	-0.21	0.39	-0.21	0.39	-0.21	0.39	-0.21	0.39
	PC2	1.56	0.91	3.10	1.39	3.10	1.39	3.10	1.39	3.10	1.39	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28
	Brightness	124.92	176.67	96.98	10.33	6.78	11.05	0.01	0.00	8.52	12.54	1.96	0.02	2.39	0.10	2.76	0.00	2.41	0.05
Breast	PC1			0.73	0.29	1.63	1.85	0.31	0.45	18.49	5.94	-0.38	0.40	-0.38	0.40	-0.38	0.40	-0.38	0.40
	PC2	86.20	2604.19	13.11	396.39	83.52	2523.61	5.66	79.81	205.78	6219.72	0.32	0.08	0.77	0.40	0.53	0.07	-0.79	0.26
	Brightness	10.01	13.49	1.03	1.39	1.03	1.39	1.03	1.39	1.03	1.39	2.20	0.07	2.20	0.14	2.73	0.14	2.59	90.0
Crown	PC1			0.81	0.29	22.51	67.51	9.90	13.44	5.75	2.02	-0.59	0.37	-0.59	0.37	-0.59	0.37	-0.59	0.37
	PC2			0.07	0.05	4.37	3.72	1.23	2.56	2.24	0.73	0.50	0.11	0.50	0.11	0.50	0.11	0.50	0.11
	Brightness	1.64	0.86	0.53	0.22	0.53	0.22	0.53	0.22	0.53	0.22	2.23	0.10	2.23	0.10	2.23	0.10	2.23	0.10
Nape	PC1	7.48	3.91	7.90	4.92	62.84	57.31	0.97	0.76	30.33	19.94	-0.15	0.19	1.89	1.30	-1.59	0.23	-0.08	0.35
	PC2			0.10	0.04	1.16	1.23	0.10	0.11	3.45	1.06	0.58	0.13	0.58	0.13	0.58	0.13	0.58	0.13
	Brightness			0.11	0.02	0.11	0.02	0.11	0.05	0.11	0.02	2.31	0.12	2.31	0.12	2.31	0.12	2.31	0.12
Rump	PC1	10.18	3.48	10.21	4.71	28.66	27.35	0.65	0.50	41.08	21.10	0.40	0.18	0.48	0.72	-1.50	0.13	1.22	0.34
	PC2			0.16	90.0	0.04	0.05	0.86	1.09	4.53	1.50	0.65	0.18	0.65	0.18	0.65	0.18	0.65	0.18
	Brightness	2.25	96'0	0.14	0.05	0.14	0.05	0.14	0.02	0.14	0.05	2.07	90.0	2.53	0.20	2.73	0.20	2.65	90.0
Coverts	PC1			0.59	0.22	6.27	7.66	5.91	6.10	3.60	1.23	0.25	0.32	0.25	0.32	0.25	0.32	0.25	0.32
	PC2	0.97	0.82	0.88	0.38	0.88	0.38	0.88	0.38	0.88	0.38	0.74	0.24	-1.18	1.04	3.36	0.87	-1.14	0.29
	Brightness	1.58	0.88	0.11	0.04	0.11	0.04	0.11	0.04	0.11	0.04	2.09	90.0	2.55	0.25	2.45	0.23	2.68	0.07
Throat	PC1	1.73	0.87	2.09	1.08	3.18	4.11	18.27	7.09	0.02	0.03	-0.87	0.29	-0.87	0.29	-0.87	0.29	-0.87	0.29
	PC2	127.22	116895.87	7.69	7067.89	256.92	208567.69	1.25	1151.83	348.89	320654.93	0.31	0.05	1.36	0.55	0.54	0.04	-0.54	0.28
	Brightness	4.25	2.65	1.10	0.69	1.10	69.0	1.10	0.69	1.10	0.69	2.23	0.07	2.23	0.07	2.23	0.07	2.23	0.07
Wing	PC1	0.75	0.82	0.49	0.37	0.01	0.01	0.23	0.33	10.84	4.50	-0.49	0.24	-3.66	0.91	-3.64	2.21	0.52	96.0
	PC2	389.03	0.01	434.83	112.28	434.83	112.28	434.83	112.28	434.83	112.28	0.71	0.31	-0.71	0.43	0.55	0.43	-1.11	0.18
	Brightness	1.20	1.37	0.09	90.0	0.09	90.0	0.09	90.0	0.09	90.0	2.04	0.08	2.84	0.27	5.69	0.26	2.60	0.07
Tail	PC1	2.01	2.14	1.17	1.26	1.25	1.33	0.23	0.24	7.88	5.78	-0.37	0.16	0.22	0.84	-3.46	1.03	1.19	0.49
	PC2			0.09	0.03	0.14	0.18	0.35	0.36	5.69	0.85	0.53	0.13	0.53	0.13	0.53	0.13	0.53	0.13
	Brightness			0.21	0.02	0.21	0.05	0.21	0.05	0.21	0.05	2.22	0.17	2.22	0.17	2.22	0.17	2.22	0.17
						,													

Results are shown for all iridescent species and excluding Lamprotornis elisabeth.

Table S4. Results from the maximum-likelihood multistate speciation and extinction (MuSSE) models under different combinations of parameters

Single	Melanosome model	Transitions	Speciation rates	Speciation through time	log(Lik)	×	AICc	ΔAICc	7	ζ,	λ,	7	λslope	<b>q</b> 12	<b>Q</b> 13	<b>Q</b> 14	q <sub>21</sub> q	Q <sub>23</sub> q	Q <sub>24</sub> q	<b>Q</b> 31 <b>Q</b>	<b>9</b> 32 <b>9</b> 34	44 <b>Q</b> 41	1 942	2 <b>Q</b> 4	m
Single         Defined         Linear         312.5         31.6	Irreversible	Single	Derived	Linear	-3158	4	77 17	c	-0.24	-	-	۱_	5 44		1.						`	_		. 0	~
cycle         Symmetry         Cycle         Linear         -315         5         426         17         11 <td>Full</td> <td>Single</td> <td>Derived</td> <td>Linear</td> <td>-32.65</td> <td>1 4</td> <td>74.26</td> <td>2,14</td> <td>-0.24</td> <td>: [</td> <td>= =</td> <td></td> <td>5.43</td> <td>11</td> <td></td> <td>11.0</td> <td>11 0</td> <td></td> <td>: =</td> <td>1 0</td> <td></td> <td>. [</td> <td>-</td> <td></td> <td>) <del>-</del></td>	Full	Single	Derived	Linear	-32.65	1 4	74.26	2,14	-0.24	: [	= =		5.43	11		11.0	11 0		: =	1 0		. [	-		) <del>-</del>
explice         Single         Inpart         -314 G         57 SA         37 SA         18 SA         0.64 G         0.64 G         0.64 G         0.10 SA         0.10 SA <td>Irreversible</td> <td>Asymmetric</td> <td></td> <td>Linear</td> <td>-31.52</td> <td>. 7</td> <td>74.51</td> <td>2.39</td> <td>-0.24</td> <td></td> <td><u> </u></td> <td></td> <td>5.42</td> <td>_</td> <td></td> <td>).11 C</td> <td>0</td> <td>_</td> <td>16 0</td> <td>Ö</td> <td>_</td> <td>0 9</td> <td>. 0</td> <td>0.1</td> <td>. 9</td>	Irreversible	Asymmetric		Linear	-31.52	. 7	74.51	2.39	-0.24		<u> </u>		5.42	_		).11 C	0	_	16 0	Ö	_	0 9	. 0	0.1	. 9
visiole         Full         Unear         1314         6         78.9         48.9         6.8         11         11.1         11.1         5.4         0.1 <t< td=""><td>Irreversible</td><td>Single</td><td></td><td>Linear</td><td>-34.69</td><td>m</td><td>75.94</td><td>3.82</td><td>0.64</td><td>0.64</td><td>0.64</td><td>0.64</td><td>4.69</td><td>0.13</td><td></td><td>J.13 C</td><td>0</td><td>_</td><td>.13 0</td><td>0</td><td>_</td><td>0 8</td><td>0.13</td><td>3 0.13</td><td>m</td></t<>	Irreversible	Single		Linear	-34.69	m	75.94	3.82	0.64	0.64	0.64	0.64	4.69	0.13		J.13 C	0	_	.13 0	0	_	0 8	0.13	3 0.13	m
Single         Single<	Irreversible	Single	- E	Linear	-31.44	9	76.99	4.87	-0.24	1.3	0.45		5.45			J.13 C	.0	_	.13 0	0	_	3	0.	_	m
wispe         Derived         Univer         -93,2         3         55,2         -02,2         107         10,1         10,1         0.1	Full	Asymmetric		Linear	-31.52	9	77.15	5.03	-0.24	1.	<del>[</del>		5.42			0.11	0		.16	0	_	0 9	0.16	_	9
Single         Fille         Linear         38.56         3         78.0         65.4         66.4	Stepwise	Single		Linear	-34.21	4	77.37	5.25	-0.22	1.07	1.07		5.38			_	_	_		_	_	0	0.19	Ŭ	6
explication         Symmetric         Illinear         345.9         4         781.2         6         God         664.4         66.4         66.4         66.4         66.4         66.4         66.4         66.4         66.4         66.4         66.4         66.4         66.4         66.4         66.1         61.0         0.1	Full	Single	Single	Linear	-35.76	m	78.07	5.95	0.64	0.64	0.64	-	4.69				_	_		.11 0.	11 0.1	1 0.1	1 0.11	_	_
Single         Hall         Linear         -332.2         5         70.2         41.0         10.1         10.1         0.1	Irreversible	Asymmetric		Linear	-34.59	4	78.12	9	0.64	0.64	0.64	-	4.69			0.11 (	.0	_	.16 0	0	_	0 9	0.16	0.16	9
eyele         Ayymmetric         full         linear         -3459         73         0.24         1.05         1.05         1.05         1.05         1.05         0.15         0.05	Full	Single	Full	Linear	-32.52	9	79.13	7.01	-0.24	1.31	0.46		5.44					_			_	11 0.11	1 0.11	1 0.11	_
Ayymmetri Single         Linear         -347.3         8 80.78         8 10 64         0.64 0.64 4.64 4.69 0.10 10.11 0.11 0.11 0         0.16 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Irreversible	Asymmetric		Linear	-31.39	7	79.65	7.53	-0.24	1.3	0.45		5.43			0.12 (	0.	_	.16 0	0	_	0 9	0.16	_	9
wise         Single         Funear         -27.11         3         8         6         0.64         0.64         0.64         4.66         4.66         4.66         0.64         0.64         0.64         4.66         1.66         1.66         0.64         1.66         0.64         1.66         0.61         0.19         0.	Full	Asymmetric		Linear	-34.59	2	80.63	8.51	0.64	0.64	0.64		4.69				_	_			_	0 9	0.16	_	9
wise         Single         Full         Linear         340.5         6         225.5         10.4         0.24         11.0         10.1         10.1         Linear         340.6         6         225.5         10.4         0.24         13.0         0.3         11.0         0.13	Stepwise	Single	Single	Linear	-37.11	m	80.78	8.66	0.64	0.64		•	4.69		0.19	0	0.19	0		.19 0	0.	0 6	0.19	_	6
Asymmetric Fulli Chrosart -3139 8 8256 1044 -024 11 6 14 6 14 0 14 0 14 0 14 0 14 0 14	Stepwise	Single		Linear	-34.02	9	82.13	10.01	-0.21	0.84								_				0 6	0.1	_	6
exible         Single         Constant         -40.5         2         85.28         13.1         2.1         2.1         2.1         0.13	Full	Asymmetric		Linear	-31.39	∞	82.56	10.44	-0.24	1.3		1.16				0.12 (	0.		.16 0	0		0 9	0.16		9
exible         Single         Derived         Constant         4.99         3         66.33         15.23         1.75         2.46         2.46         2.46         0.41         0.11	Irreversible	Single	Single	Constant	-40.5	7	85.28	13.16	2.1	2.1		2.1	0			0.13 (	.0	_	.13 0	0		3	0.	_	$^{\circ}$
ersible         Ayanmetric         Single         Constant         -404         3         73-25         21-21         21-1         0.1         0.11 <td>Irreversible</td> <td>Single</td> <td>Derived</td> <td>Constant</td> <td>-39.9</td> <td>m</td> <td>86.35</td> <td>14.23</td> <td>1.76</td> <td>2.46</td> <td></td> <td>2.46</td> <td>0</td> <td></td> <td></td> <td>0.13 (</td> <td>0.</td> <td>_</td> <td>.13 0</td> <td>o.</td> <td></td> <td>3</td> <td>0.13</td> <td>_</td> <td><math>^{\circ}</math></td>	Irreversible	Single	Derived	Constant	-39.9	m	86.35	14.23	1.76	2.46		2.46	0			0.13 (	0.	_	.13 0	o.		3	0.13	_	$^{\circ}$
Single         Single         Constant         41,57         2         87,41         15,29         21         21         21         21         0.11 <th< td=""><td>Irreversible</td><td>Asymmetric</td><td></td><td>Constant</td><td>-40.4</td><td>m</td><td>87.35</td><td>15.23</td><td>2.1</td><td>2.1</td><td></td><td>2.1</td><td>0</td><td></td><td></td><td>0.11 (</td><td>0</td><td></td><td></td><td></td><td></td><td>0 9</td><td>0.16</td><td></td><td>9</td></th<>	Irreversible	Asymmetric		Constant	-40.4	m	87.35	15.23	2.1	2.1		2.1	0			0.11 (	0					0 9	0.16		9
Single         Derived         Constant         -40-96         3         88-48         16-36         176         246         246         246         0	Full	Single	Single	Constant	-41.57	7	87.41	15.29	2.1			2.1	0					_							_
exible         Ayymmetri         Derived         Constant         -39,78         4         88,51         16,39         17,91         276         246         246         0         011         0.11	Full	Single	Derived	Constant	-40.96	m	88.48	16.36	1.76			2.46	0									11 0.11			_
wise         full         Derived         Linear         -29.88         11         71.91         -1.17         1.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         55.1         0.17         0.17         0.18         0.18         0.18         0.19	Irreversible	Asymmetric		Constant	-39.78	4	88.51	16.39	1.76			2.46	0			0.11 (	0		.16	Ö		0 9	0.16	0.16	9
Asymmetric         Single         Constant         40.4         4         75.2         2.1         2.1         2.1         0.11         0.11         0.11         0.11         0.10         0.15         0.15         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.11	Stepwise	Full	Derived	Linear	-29.88	=	89.31	17.19	-0.28			1.17				0	0		0	0		34 0	0		œ
wise         Single         Full         Constant         -42,92         2         90.11         17.99         2.1         2.1         2.1         0.19	Full	Asymmetric		Constant	-40.4	4	89.74	17.62	2.1			2.1	0									0 9	0.16		9
ersible         Single         Full         Constant         395.4         5         90.53         R41         1.77         2.13         1.45         2.66         0         0.13	Stepwise	Single	Single	Constant	-42.92	7	90.11	17.99	2.1			2.1	0									0	0.19		6
wise         Full         Single         Linear         -32.38         10         90.87         18.75         0.64         0.64         0.64         6.64         6.64         6.64         0.64	Irreversible	Single	Full	Constant	-39.54	2	90.53	18.41	1.77			5.66				_			.13	Ö		0	0.13	3 0.13	$^{\circ}$
Asymmetric         Derived         Constant         -39.78         5         91.02         17.6         246         246         0.11	Stepwise	Full		Linear	-32.38	10	90.87	18.75	0.64			0.64							.57 0	0		0	0		9
wise         Single         Derived         Constant         -42.31         3         91.19         19.07         1.76         245         245         0         0.18         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0         0.18         0 <th< td=""><td>Full</td><td>Asymmetric</td><td></td><td>Constant</td><td>-39.78</td><td>2</td><td>91.02</td><td>18.9</td><td>1.76</td><td>2.46</td><td></td><td>2.46</td><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0 9</td><td>0.16</td><td></td><td>9</td></th<>	Full	Asymmetric		Constant	-39.78	2	91.02	18.9	1.76	2.46		2.46	0									0 9	0.16		9
Fingle         Full         Constant         40.61         5 92.67         20.55         1.78         2.13         1.46         2.66         0         0.11	Stepwise	Single	Derived	Constant	-42.31	m	91.19	19.07	1.76	2.45		2.45	0				_	_				0 8	0.18		$\infty$
ersible         Full         Derived         Linear         -29,88         12         92,93         20.81         -027         1.15         1.15         5.49         0.15         0.25         0	Full	Single	Full	Constant	-40.61	2	92.67	20.55	1.78	2.13		5.66	0			_						1.0.1	1 0.11	1 0.11	_
ersible         Asymmetric         full         Constant         -39.42         6         92.93         20.81         1.77         2.12         1.44         2.66         0         0.11         0.11         0.11         0.17         0.17         0.19         0.19         0.19         0.19         0.19         0.19         0.19         0.11         0.17         0.17         0.17         2.12         1.44         2.66         0         0.11         0.11         0.11         0.11         0.11         0.11         0.11         0.11         0.11         0.11         0         0.11         0         0.11         0 <th< td=""><td>Irreversible</td><td>Full</td><td></td><td>Linear</td><td>-29.88</td><td>12</td><td>92.93</td><td>20.81</td><td>-0.27</td><td>1.15</td><td></td><td>1.15</td><td>5.49</td><td></td><td></td><td>0</td><td>0</td><td>_</td><td>0</td><td>0</td><td></td><td>22 0</td><td>0</td><td></td><td>œ</td></th<>	Irreversible	Full		Linear	-29.88	12	92.93	20.81	-0.27	1.15		1.15	5.49			0	0	_	0	0		22 0	0		œ
wise         Single         Full         Constant         -41.89         5 95.24         23.12         1.77         2.19         1.38         2.69         0         0.19         0.19         0         0.19         0         0.19         0	Irreversible	Asymmetric		Constant	-39.42	9	92.93	20.81	1.77	2.12		5.66	0				_				_	0 /	0.17	_	7
ersible         Full         Single         Linear         -32.94         11         95.43         23.31         0.64         0.64         0.64         4.69         0.21         0.08         0         0         1.14         0         0           wise         Full         Full         Linear         -29.81         13         96.65         24.53         -0.21         0.74         2.66         0.01         0.11	Stepwise	Single	Full	Constant	-41.89	2	95.24	23.12	1.77	2.19		5.69	0	_	0.19	0	0.19	O			_	0 6	0.19	_	6
Asymmetric         Full         Constant         -39.42         7         95.7         23.58         1.77         2.12         1.44         2.66         0         0.11         0.11         0.11         0.11         0         0.17         0.17         0         0.17           wise         Full         Linear         -29.81         13         96.65         24.53         -0.21         0.79         0.4         1.26         5.38         0.21         0.09         0	Irreversible	Full		Linear	-32.94	=	95.43	23.31	0.64			0.64	4.69		80.0	0	0		.14 0	0		0	0	0.3,	_
wise         Full         Linear         -29.81         13         96.65         24.53         -0.21         0.79         0.4         1.26         5.38         0.21         0.09         0         0         1.15         0           wise         Full         Derived         Constant         -36.06         10         98.23         26.11         1.28         2.63         2.63         0.0         0         0         0         0         0.175         0	Full	Asymmetric		Constant	-39.42	7	95.7	23.58	1.77			5.66	0		0.11	0.11 (	0	_	.17 0	Ö	_	1 0	0.	7 0.17	7
wise         Full         Derived         Constant         -36.06         10         98.23         26.11         1.28         2.63         2.63         2.63         0.0         0         0.0         0.0         0.0         1.73         0         0.53         0           wise         Full         Single         Constant         -38.19         9         99.24         27.12         2.1         2.1         2.1         0.0         0         0.0         0         0.0         0.0         0         0.0         0         0.0         0         0         0.0         0         0.0         0	Stepwise	Full	Full	Linear	-29.81	13	96.65	24.53	-0.21			1.26	5.38		60.0	0	0	<del>-</del>	.15 0	0		0	0	0.32	7
wise         Full         Single         Constant         -38.19         9         24         27.12         2.1         2.1         2.1         0         0         0.6         0         1.55         0         0.57         0           ersible         Full         Full         Linear         -29.81         14         100.74         28.62         -0.21         0.79         0.4         1.26         5.38         0.21         0.09         0         0         1.15         0         0           ersible         Full         Constant         -38.75         10         103.62         31.5         2.1         2.1         2.1         2.1         0         0.21         0.09         0         0         1.14         0         0           wise         Full         Full         Constant         -35.56         12         104.3         32.18         0         3.76         3.86         1.75         2.46         2.46         0	Stepwise	Full	Derived	Constant	-36.06	10	98.23	26.11	1.28			2.63	0	0	80.0	, 0	.73 0	0	.53 0	0	0	0	0	0.33	$^{\circ}$
ersible         Full         Linear         -29.81         14         100.74         28.62         -0.21         0.79         0.4         1.26         5.38         0.21         0.09         0         0         1.15         0           ersible         Full         Constant         -38.75         10         103.62         31.5         2.1         2.1         2.1         2.1         0.2         0.2         0.0         0         0         1.14         0         0           wise         Full         Full         Constant         -35.56         12         104.3         32.16         0.27         1.15         1.15         1.15         2.46         0         <	Stepwise	Full	Single	Constant	-38.19	6	99.24	27.12	2.1			2.1	0		90.0	, 0	.55 0	O	.57 0	0	0	0	0	0.3	9
ersible         Full         Single         Constant         -38.75         10         103.62         31.5         2.1         2.1         2.1         0.1         0.21         0.08         0         0         1.14         0         0           wise         Full         Full         Constant         -35.56         12         104.3         32.18         0         3.76         3.86         1.78         0         0         0.43         0	Irreversible	Full	Full	Linear	-29.81	4	100.74	28.62	-0.21			1.26	5.38	_	60.0	0	0		.15 0	0	0	0	0	0.32	7
wise Full Full Constant –35.56 12 104.3 32.18 0 3.76 3.86 1.78 0 0 0.43 0 3.29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Irreversible	Full	Single	Constant	-38.75	10	103.62	31.5	2.1			2.1	0	_	80.0	0	0	_	.14 0	0		0	0	0.31	_
Full Derived Linear –29.88 15 105.24 33.12 –0.27 1.15 1.15 5.49 0.15 0.25 0 0 0 0 0.08 ersible Full Derived Constant –38.11 11 105.77 33.65 1.75 2.46 2.46 0 0.2 0.09 0 0 0 1.14 0 0 0 0 0.08 Evill Single Linear –32.34 14 105.8 33.68 0.64 0.64 0.64 6.64 6.64 6.69 0 0 0 1.43 0.11 0.54 0 0 0 0 0 0 1.48 0.11 0.54 0 0 0 0 0 0 1.48 0.11 0.54 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Stepwise	Full	Full	Constant	-35.56	12	104.3	32.18	0			1.78	0		0.43	0	1.29 0	0	0	0		12 0	0	0.0	9
rersible Full Derived Constant –38.11 11 105.77 33.65 1.75 2.46 2.46 2.46 0 0.2 0.09 0 0 0 1.14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Full	Full	Derived	Linear	-29.88	12	105.24	33.12	-0.27		1.15	1.15	5.49		0.25	0	0	0	0	Ö		52 0	0	0.4	œ
Full Single Linear –32.34 14 105.8 33.68 0.64 0.64 0.64 4.69 0 0 0 1.43 0.11 0.54 0 0 0 ersible Full Full Constant –37.56 13 112.16 40.04 1.72 2.24 4.03 1.51 0 0.1 0.2 0 0 0 0 0 0	Irreversible	Full	Derived	Constant	-38.11	=	105.77	33.65	1.75	2.46	2.46	2.46	0	0.2	60.0	0	0	<del>-</del>	.14 0	0	0	0	0	0.3	_
Full Full Constant –37.56 13 112.16 40.04 1.72 2.24 4.03 1.51 0 0.1 0.2 0 0 0 0 0 0 3	Full	Full	Single	Linear	-32.34	14	105.8	33.68	0.64	0.64	0.64	0.64	4.69	0	0	.,	.43 0.	.11	.54	0	0	0	0	0.3	2
	Irreversible	Full	Full	Constant	-37.56	13	112.16	40.04	1.72	2.24	4.03	1.51	0	0.1	0.2	0	0	0	0	0	ć.	32 0	0.	0 9	

Table S4. Cont.

Melanosome model	Transitions	Speciation rates	Speciation through time	log(Lik)	×	AICc	ΔΑΙζ	7	$\lambda_2$	$\lambda_{\mathfrak{s}}$	74	Aslope	912	913	914 6	<b>9</b> 21 9	q <sub>23</sub> q	9 <sub>24</sub> 9	q <sub>31</sub> q <sub>32</sub>	32 <b>9</b> 34	34 <b>9</b> 41	11 942	2 943
Full	Full	Derived	Constant	-36,06		113.24	41.12	1.28	2.63										0	0	0	0	0.33
Full	E In	Single	Constant	-38.15	. 5	113.32	41.2	2.1	2.1			0	0		0	1.43 0	0.11 0.	0.54 0	0	0	0	0	0.35
Full	Full	. III	Linear	-29.81		114.72	42.6	-0.21	0.79				_					.15 0	0	0	0	0	0.32
Full	Full	Full	Constant	-35.37		120.88	48.76	0	3.76	3.83	1.77			0.33		3.17 0	0.12 0	0	0	3.39	39 0	0	0.09
Excluding Lam	Excluding Lamprotornis elisabeth	peth																					
Irreversible	Single	Derived	Linear	-31.55	4	72.06			0.82			5.82	0.13	0.13 (	0.13 0	0	_	.13 0	ò	13 0.13	3 0	0.	
Full	Single	Derived	Linear	-32.63	4	74.2			0.81	0.81		5.85	0.11		0.11 0	11.0	0.11 0.	0.11 0.	11 0.11		<u>.</u>	1 0.11	Ŭ
Irreversible	Asymmetric	Derived	Linear	-31.49	2	74.44			0.81			5.84	0.11	_	0.11.0	0		.16 0	Ò.	_	0 9	0.	
Irreversible	Single	Single	Linear	-33.98	m	74.52			0.31			5.62	0.13	_	0.13 0	0			Ī		3 0	0.13	
Full	Single	Single	Linear	-35.05	m	76.65			0.31			5.62	0.11	_	0.11 0	.11	_	_	0.11 0.11		<u>.</u>	1 0.11	_
Irreversible	Asymmetric	Single	Linear	-33.88	4	76.71			0.31			5.62	0.11	_	0.11.0	0	_	0.16 0	ö	0.16 0.16	0 9	0.16	
Irreversible	Single	Full	Linear	-31.43	9	96.92			1.25			5.9	0.13	_	0.13 0	0		0.13 0	0.13		3 0	0.1	_
Full	Asymmetric	Derived	Linear	-31.49	9	77.08			0.81			5.84		_	0.11 0	0			_	0.16 0.16	0 9	0.16	_
Stepwise	Single	Derived	Linear	-34.15	4	77.25			0.78			5.81		0.19 (	0	0.19 0			0.19 0	0.1	0 6	0.	
Full	Single	Full	Linear	-32.5	9	79.1			1.25			5.89		_	_	0.11.0			_		.0	1 0.1	
Full	Asymmetric	Single	Linear	-33.88	2	79.22			0.31						0.11 0				0.16		0 9	9.	
Stepwise	Single	Single	Linear	-36.4	m	79.36			0.31				0.19			0.19 0			_		0 6	0.	
Irreversible	Asymmetric	Full	Linear	-31.36	7	9.62			1.24						0.11 0					0.16 0.1	0 9	0.	
Stepwise	Single	Full	Linear	-34.08	9	82.26			0.78						_	0.19 0		0.19 0.	0.19 0		0 6	0.	_
Full	Asymmetric	Full	Linear	-31.36	∞	82.52			1.24			5.85			0.11 0	0			_		0 9	0.	
Irreversible	Single	Single	Constant	-41.23	7	86.73			5.06			0			0.13 0	0	0.13 0.	0.13 0	0.13		3 0	0.13	_
Irreversible	Single		Constant	-40.77	m	88.1			2.36		2.36	0			0.13 0	0		.13 0	0.13		3 0	0.	
Irreversible	Asymmetric	Single	Constant	-41.12	m	88.81			5.06		2.06	0			0.11 0	0			_	16 0.16	0 9	0.	
Full	Single	Single	Constant	-42.29	7	88.86			5.06			0		_	0.11 0	0.11			0.11 0.11			1.0.1	
Stepwise	Full	Derived	Linear	-29.91	=	89.37			0.87			5.91	0.17	0.26 (	0			0	0	œ.	32 0	0	
Stepwise	Full	Single	Linear	-31.67	10	89.45			0.31					90.0	1				_		0	0	
Full	Single	Derived	Constant	-41.84	m	90.23			2.36					_		0.11 0			0.11 0.11		<u>.</u>	1 0.1	
Irreversible	Asymmetric	Derived	Constant	-40.65	4	90.26			2.37					_	0.11 0	0		.16 0	0.16		0 9	0.	
Full	Asymmetric	Single	Constant	-41.12	4	91.2	19.14	5.06	5.06	5.06		0	0.11		0.11 0		0.16 0.	0.16 0	0.16	16 0.16	0 9	0.	0.16
Stepwise	Single	Single	Constant	-43.65	7	91.57			5.06					_	_	0.19 0			0.19 0		0	9.	
Irreversible	Single	Full	Constant	-40.49	2	92.44			2.13					_	0.13 0	0		0.13 0			3 0	-0	
Full	Asymmetric	Derived	Constant	-40.65	2	92.77	20.71		2.37		2.37	0		_	0.11 0				0 0.16		0 9	0.	
Stepwise	Single	Derived	Constant	-43.19	m	92.93	20.87	1.76	2.36					0.19 (	0	0.19 0			_		0	9.	
Irreversible	Full	Derived	Linear	-29.89	12	92.95	20.89		0.85			2.87	0.14	0.24 (	0	0	0	0	O	0.15 3.11	0	0	
Irreversible	Full	Single	Linear	-32.23	=	94.01	21.95		0.31					0.08	0						0	0	
Full	Single	Full	Constant	-41.55	2	94.57	22.51	1.78	2.13							0.11	0.11 0.	0.11 0.	0.11 0.11		<u>.</u>	1 0.1	
Irreversible	Asymmetric	Full	Constant	-40.37	9	94.83	22.77	1.77	2.13			0	0.11	_	0.11 0	0		.17 0	0.17		17 0	9.	
Stepwise	Full	Full	Linear	-29.8	13	96.63	24.57	-0.35	1.32			5.89		0.26 (	0 0	0	0		0	3.3	35 0	0	
Stepwise	Single	Full	Constant	-42.85	2	97.16	25.1	1.77	2.2		2.55	0	0.19	0.19 (	0	.19 0	0		0.19 0	0.19	0 6	0.1	
Full	Asymmetric	Full	Constant	-40.37	7	9.76	25.54	1.77	2.13		2.54	0		0.11	0.11 0	0	.17 0	.17 0	0.17		17 0	.0	
Stepwise	Full	Derived	Constant	-37.01	10	100.13	28.07	1.28	2.55		2.55 (	0		0.08	1	.72 0	0	0.53 0	0	0	0	0	0.33
Stepwise	Full	Single	Constant	-38.92	6	100.7	28.64	5.06	5.06			0	0	90.0	1	.55 0	0	.57 0	0	0	0	0	
Irreversible	Full	Full	Linear	-29.8	14	100.72	28.66	-0.35	<del>.</del> .	66.0		5.9	0.15	0.25	0	0	0	0	0.0	3.2	3 0	0	0.45
Full	Full	Single	Linear	-31.63	14	104.38	32.32	0.31	0.31			5.62	0	0		.43 0	11 0	0.54 0	0	0	0	0	0.35

Table S4. Cont.

		Speciation																					
Melanosome Transitions	Speciation ions rates		loa(Lik)	×	AICc	AAICc	ž	ટ્	~	2	Jelong	<b>Q</b> 12	<b>α</b> 13	Ω <sub>1,2</sub>	<b>Q</b> 21	<b>Q</b> 23	<b>Q</b> 37	Ø31	Q <sub>33</sub>	037	<b>Q</b> 21	<b>Q</b> 42	<i>α</i> ν <sub>3</sub>
		}	()E	:		; ;	-	7	c:	į	adois.	717	112	†	176	723	124	101	7 32	134	<del>-</del>	744	147
ible Full	Single	Constant	-39.48	10	105.08	33.02	5.06	2.06	2.06	2.06	0	0.21	0.08	0	0	0	1.14	0	0	0	0	0	0.31
se Full	Full	Constant	-36.01	12	105.2	33.14	0	3.76	3.99	1.37	0	0	0.43	0	3.29	0	0	0	0	3.46	0	0	0
Full Full	Derived	Linear	-29.89 15	15	105.26	33.2	-0.34	0.85	0.85	0.85	5.87	0.14	0.24	0	0	0	0	0	0.15	3.11	0	0	0.49
sible Full	Derived	Constant	-38.99	Ξ	107.52	35.46	1.75	2.37	2.37	2.37	0	0.2	0.08	0	0	0	1.14	0	0	0	0		0.31
sible Full	Full	Constant	-37.86	13	112.75	40.69	1.72	2.26	4.16	1.17	0	0.1	0.2	0	0	0	0	0	0	3.46	0	0.16	0
Full	Full	Linear	-29.8	17	114.7	45.64	-0.35	<del>.</del> .	0.99	0.7	5.9	0.15	0.25	0	0	0	0	0	0.09	3.23	0		0.45
Full	Single	Constant	-38.88	13	114.78	42.72	5.06	2.06	2.06	5.06	0	0	0	0	1.43	0.11	0.54	0	0	0	0	0	0.35
Full	Derived	Constant	-37.01	4	115.14	43.08	1.28	2.55		2.55	0	0	0.08	0	1.72	0	0.53	0	0	0	0	0	0.33
Full	Full	Constant	-35.81	16	121.76	49.7	0	3.76		1.36	0	0	0.33	0	3.17	0.12	0	0	0	3.43	0	0	0

Estimates represent the maximum-likelihood estimates obtained under each model after 5,000 optimization procedures starting at different points. Melanosome models considered were full (all transitions estimated), irreversible (transitions back to the ancestral state set to zero), and stepwise (transitions involving both a change in shape and hollowness set to zero); transition models considered were full (all rates different), asymmetric (two transition rates, with transitions between derived morphologies different from transitions to from ancestral morphology), and single (all transition rates, with transition rates equal); speciation rate morphologies share the same speciation rate), derived (derived melanosomes share the same speciation rate, which is different from the ancestral melanosome speciation rate), and full (rates different for all four melanosome morphologies); and speciation through time models were constant and linear over time. Results are shown for all species and excluding Lamprotornis elisabeth.