

**Supplementary material**

## Appendix 1

**Table A1.** Breeding status and stage was assessed based on the presence and development of brood patches, respectively. Expected sensitivity to flight performance and available foraging time are scored as low, moderate and high across breeding stages, based on flight requirements and restriction to foraging, respectively.

<b>Patch score</b>	<b>Patch development</b>	<b>Breeding stage</b>	<b>Sensitivity to Flight performance</b>	<b>Available foraging time</b>
<b>0</b>	No brood patch	Not breeding	Moderate	High
<b>1</b>	De-feathering breast and belly region	Nest building	High	Moderate
<b>2</b>	Vascularisation of breast and belly region/ loose skin	Egg laying	Moderate	Moderate
<b>3</b>	Moderate and marked oedema/ breast muscle obscure and swollen.	Incubation/hatching/ chick brooding	Low	Low
<b>4</b>	No oedema/ skin stretched with marked wrinkles.	Nestling feeding/ fledging	High	Low
<b>5</b>	Re-feathering (white feathers and pins)/ tighter skin.	“Post nesting phase”	Moderate	Moderate

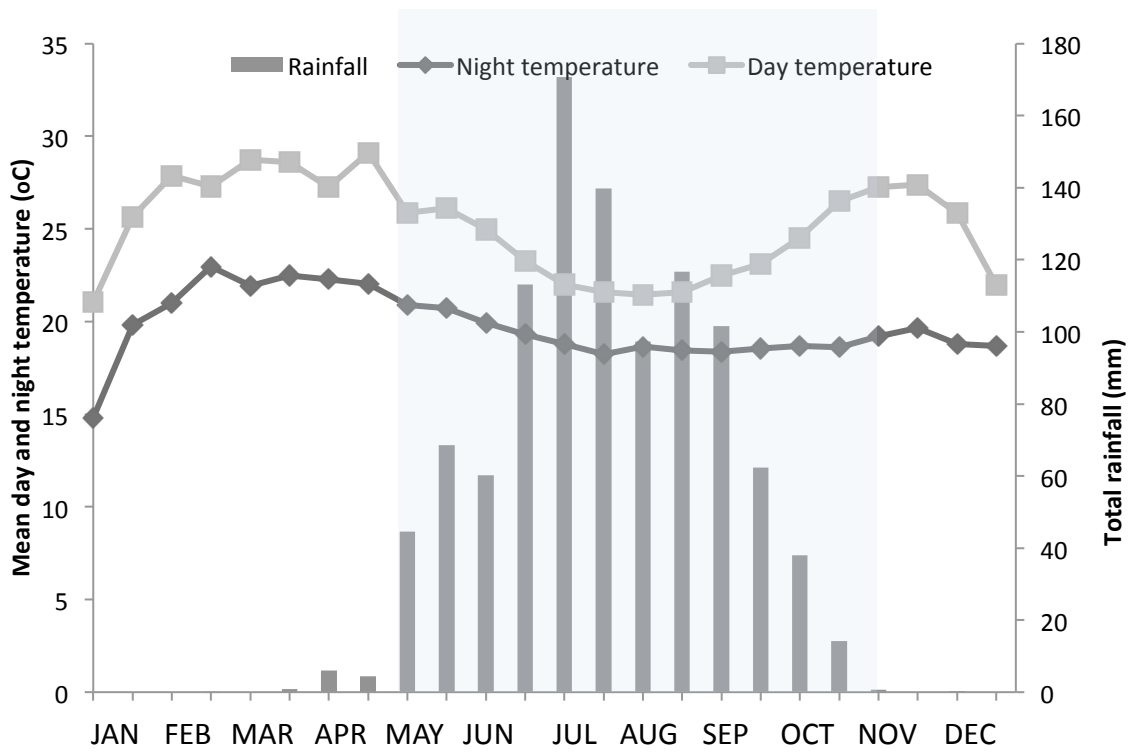
Scoring of brood patches were carried out using a six-stage scoring system according to Redfern (2008, 2010) with confirmation from field observations on the Common Bulbuls *Pycnonotus barbatus*.

**Table A2.** Pairwise comparison of body mass between breeding stages, based on brood patch occurrence in female Common Bulbuls *Pycnonotus barbatus* in a tropical savannah environment. Variation in body mass was modelled by Linear Mixed-effects Model fit by Restricted Maximum Likelihood (Table 1), followed by a multi-comparison of breeding stages using Tukey test from the Multcomp package.

Parameters	Estimate	Error	z	p
Brood patch score 1 - Brood patch score 0	0.60	0.79	0.8	0.97
Brood patch score 2 - Brood patch score 0	0.76	0.51	1.5	0.65
Brood patch score 3 - Brood patch score 0	2.94	0.61	4.8	<b>&lt;0.001</b>
Brood patch score 4 - Brood patch score 0	1.81	0.68	2.7	0.08
Brood patch score 5 - Brood patch score 0	1.44	0.52	2.8	0.06
Brood patch score 2 - Brood patch score 1	0.16	0.83	0.2	1.00
Brood patch score 3 - Brood patch score 1	2.34	0.90	2.6	0.09
Brood patch score 4 - Brood patch score 1	1.21	0.94	1.3	0.78
Brood patch score 5 - Brood patch score 1	0.84	0.84	1.0	0.91
Brood patch score 3 - Brood patch score 2	2.18	0.66	3.3	<b>0.01</b>
Brood patch score 4 - Brood patch score 2	1.05	0.73	1.4	0.69
Brood patch score 5 - Brood patch score 2	0.68	0.58	1.2	0.84
Brood patch score 4 - Brood patch score 3	-1.13	0.80	-1.4	0.71
Brood patch score 5 - Brood patch score 3	-1.50	0.67	-2.2	0.21
Brood patch score 5 - Brood patch score 4	-0.37	0.73	-0.5	1.00

Random effects: Year (N=15); overall sample size = 196; sample size per brood patch score: 0 = 69, 1 = 12, 2 = 40, 3 =23, 4 = 18, 5 = 37. Significant p-values are given in bold.

**Figure A1.** Variation in rainfall and temperature across the annual cycle of the Common Bulbul *Pycnonotus barbatus* in a tropical Savannah environment, calculated from local weather data collected between 2012 and 2015 in the Amurum Forest Reserve, north-central Nigeria. Means per 2-week intervals. Blue shading indicates the wet season.



**Figure A2.** Annual cycle processes in the Common Bulbul *Pycnonotus barbatus* in a tropical savannah environment. Top panel – mean monthly body mass of female Common Bulbuls across the year. Middle panel – mean proportion of suspended molts and proportion of molting birds per 2-week interval. Bottom panel – mean proportion of breeding females based on occurrence of brood patches and proportion of juvenile birds in total captures per 2-week interval. All data were collected between 2001 and 2015 in the Amurum Forest Reserve, North central Nigeria. The wet season is indicated by the shaded area.

