

Shaw, P. Rainfall, leafing phenology and sunrise time as potential *Zeitgeber* for the bimodal, dry season laying pattern of an African rain forest tit (*Parus fasciiventer*)

ESM Table 1 Tree and shrub species monitored as part of the Gorilla Food Plant Study (GFPS: 2004-2013) or the Extended Phenology Study (EPS: 2011-2013). Taxa that could not be identified to species level or for which fewer than 10 observations were made per calendar month, have been excluded from the list

Species	Tree or Shrub ^[1]	Abundance ^[2]	Monitoring programme	
			GFPS	EPS
<i>Agauria salicifolia</i>	T	VC		✓
<i>Alangium chinense</i>	T	C	✓	✓
<i>Allophylus abyssinicus</i>	T/S	VC	✓	✓
<i>Allophylus macrobotrys</i>	T	S	✓	
<i>Bersama abyssinica</i>	S/T	C		✓
<i>Bridelia micrantha</i>	T	S	✓	✓
<i>Cassipourea gummiflua</i>	T	S	✓	
<i>Chrysophyllum (albidum) pruniforme</i>	T	S	✓	
<i>Chrysophyllum gorungosanum</i>	T	S	✓	✓
<i>Croton macrostachyus</i>	T	C	✓	✓
<i>Dombeya goetzenni</i>	T	S	✓	
<i>Dombeya torrida</i>	T	S		✓
<i>Drypetes gerrardii</i>	T	S	✓	
<i>Erica (Phillipia) benguelensis</i>	S	VC		✓
<i>Faurea saligna</i>	T	VC		✓
<i>Ficalhoa laurifolia</i>	T	C		✓
<i>Ficus densistipulata</i>	T	S	✓	
<i>Ficus pilosula</i>	T	S	✓	
<i>Harungana madagascariensis</i>	T	S	✓	
<i>Ilex mitis</i>	T	C		✓
<i>Lepidotrichilia volkensii</i>	T	S		✓
<i>Macaranga (kilimandscharica) capensis</i>	T	VC	✓	✓
<i>Maesa lanceolata</i>	S/T	VC	✓	✓
<i>Myrianthus holstii</i>	T	S	✓	✓
<i>Mystroxydon aethiopicum</i>	T	S	✓	
<i>Neoboutonia macrocalyx</i>	T	C	✓	✓
<i>Nuxia congesta</i>	T	VC		✓
<i>Olea capensis</i>	T	C	✓	✓
<i>Olinia rochetiana</i>	T	VC	✓	✓
<i>Pittosporum (spathicalyx) viridiflorum</i>	T	VC		✓
<i>Podocarpus (milanjianus) latifolius</i>	T	S	✓	✓
<i>Prunus africana</i>	T	VC	✓	✓
<i>Psychotria mahonii</i>	T	C	✓	✓
<i>Rapanea melanophloeos</i>	T	C	✓	✓
<i>Strombosia scheffleri</i>	T	C	✓	✓
<i>Symphonia globulifera</i>	T	S	✓	
<i>Syzygium cordatum</i>	T	S	✓	
<i>Syzygium guineense</i>	T	S	✓	✓
<i>Tabernaemontana (holstii) pachysiphon</i>	T	C	✓	✓
<i>Vepris (Teclea) nobilis</i>	T	S	✓	✓
<i>Xymalos monospora</i>	S/T	VC	✓	✓
<i>Zanthoxylum gillettii</i>	T	S		✓

¹ Present in both forms. 'T/S': more common as a tree than as a shrub. 'S/T': more common as a shrub

² Subjective assessment of abundance at study site. VC: very common; C: common; S: scarce (R. Barigiyira pers. comm. 2014)

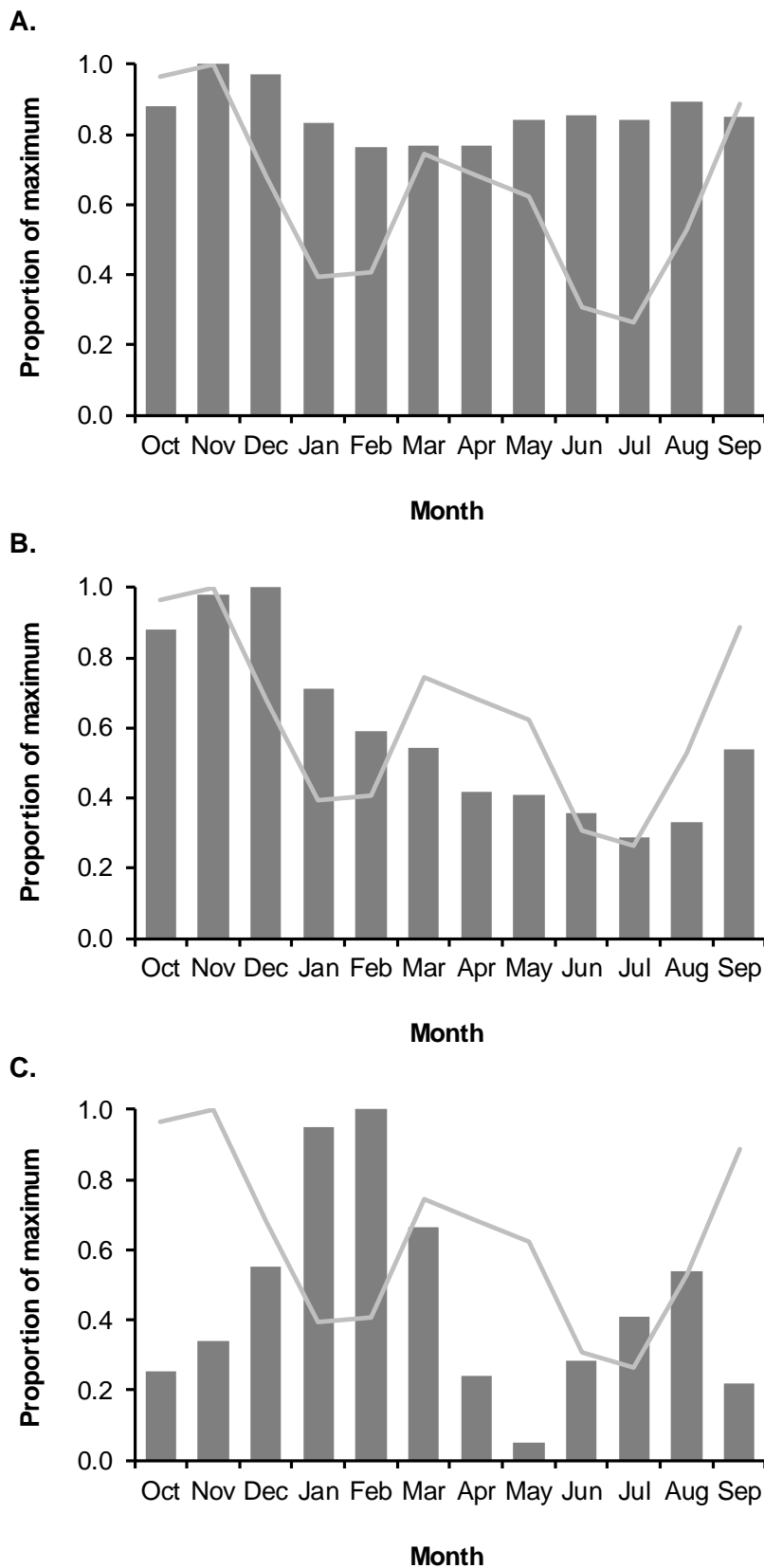
ESM Table 2 Time intervals ('lag-times') separating the median laying date of first clutches in each half-year, from the preceding minimum and maximum sunrise and sunset times. Differences in the median lag-time evident in the first- and second half of the breeding year were tested using general linear mixed-models, in which study year and female identity were entered as random effects. First clutch dates were recorded for 17 marked females in 12 years ($n = 46$ female-years). In all cases, lag times differed significantly between the two half-years

Factor	Event	Half-year	Lag time (d) ^[1]	Difference in lag-time (d)	t	P	Effect ^[2]	±SE
Sunrise	Maximum	First	151.0					
		Second	110.0	41.0	-5.483	<0.001	-37.23	6.791
Sunrise	Minimum	First	47.5					
		Second	22.5	25.0	-3.127	<0.002	-21.23	6.791
Sunset	Maximum	First	149.5					
		Second	115.0	34.5	-4.526	<0.001	-30.73	6.791
Sunset	Minimum	First	53.0					
		Second	20.0	23.0	-4.305	<0.001	-29.23	6.791

¹ Median interval between laying and previous maximum or minimum sunrise or sunset time, as specified

² Estimated difference in lag-time (in days) during second half year with respect to first half-year.

ESM Figure 1 Examples of tree species showing contrasting patterns of leaf production. A. *Neoboutonia macrocalyx*: little seasonal variation. B. *Allophyllus abyssinicus*: unimodal, peaking after the September–November wet season. C. *Entandrophragma excelsum*: bimodal, peaking during/after each dry season. Mean monthly rainfall (—) has been superimposed



ESM Figure 2 Mean scores for the first axis of a Principal Component Analysis of leaf production indices. Leaf production data were collected for 23 tree or shrub species monitored during 2004–2013, as part of the Gorilla Food Plant Study. Nine additional species were excluded, due to missing data

