Table 1

BEHAVIOR	CODE	DEFINITION	
Primary behaviors		Mutually exclusive state behaviors; hierarchy S>M>F>R	
Social (Social/Maternal Contact)	S (C/S)	Interacting with other individuals (gorilla or human). (C/S used only as to Kibibi, and only when she is interacting and in contact with Mandara.)	
Move (Move/Maternal Contact)	M (C/M)	Traveling from one location to another via walking, running, crawling, climbing, sliding, jumping, etc. Movements must be greater than one body length/height. (C/M used only as to Kibibi, and only when she is moving and in contact with Mandara.)	
Feed/Forage (Feed/Forage/Maternal Contact)	F (C/F)	Searching, handling, manipulating, or ingesting food items such as primate chow, biscuits, fruits, vegetables, natural vegetation, or food-related enrichment. Includes foraging through bedding or other materials in search of desired food items (C/F used only as to Kibibi,and only when she is feeding or foraging while in contact with Mandara.)	
Rest (Rest/Maternal Contact)	R (C/R)	Remaining stationary while not actively engaged in any of the other primary behaviors. Includes locomotion <1 body length, self-play, and self-groom. (C/R used only as to Kibibi,and only when she is resting in contact with Mandara.)	
Out of Sight	OOS	Cannot see focal animal.	
Unknown	UNK	Can see focal animal but activity it is engaged in is unknown or otherwise unidentifiable.	
Secondary behaviors			Primary
Affiliative	AF	Creating gentle contact with another gorilla. Includes direct touching with the hands, embracing, carrying, and passive touching occurring when two animals sit or sleep in contact with one another (Bashaw *et al.*, 2010). Can occur through mesh. Includes social grooming, social play, or maternal contact.	S
Aggressive -Contact -Non-Contact	AG (AG-C) (AG-NC)	 Biting, slapping, hitting, bumping, etc. Non-play chasing, threat vocalizing, charging, etc..	S
Eat Food	EF	Ingesting food items. Includes ingesting R/R and feces – score also as abnormal in such instances and note in *ad lib*.	F
Drink Water	DW	Ingesting water from pool, tub, licker device, other source.	F
Inactive	IN	Sleeping, sitting quietly, laying down, or in another still position. If IN, list position (SI = sitting, LY = lying down, ST = standing)	R
Other	OTH	Small movements, including self-play and grooming.	R
All occurrence (1/0 sampling behavior)			
Self-directed behavior	SD	Self-grooming, self-scratching, hair-pulling, nose picking, etc.	
Human-directed behavior	HD	Touch/bang barrier, interact with staff, charge directly at barrier where human is, etc.	
Abnormal behavior	AB	R/R, pacing, eat feces/drink urine, other stereotypies.	

Table 2

GROUP	INDIVIDUAL	FECAL MARKER
Mixed Sex	Mandara	7ml green dye
	Calaya	1.5 tbsp millet
	Kibibi	7ml green dye & 1.5 tbsp millet
	Baraka	none
Bachelor	Kojo	7ml green dye
	Kwame	none

Table 3

A. Effect of Observation Period (pre-ZL, ZL, post-ZL) on Proportion Time Resting. note: insufficient data for Kwame and Kojo.							
Analysis	***Observation Period***	***Proportion time***	***95% CI***	***Overall GLMM***			***Post-hoc comparisons***
				χ2	***df***	***P***	
Overall	Pre-ZL †	0.968	0.942-0.982	15.136	2	**< 0.001**	**pre > ZL**: χ^2 = 14.834, df = 1, **P < 0.001**
	ZL	0.878	0.830-0.914				ZL < post: χ^2 = 2.961, df = 1, P = 0.085
	Post-ZL	0.929	0.883-0.958				**post < pre**: χ^2 = 3.859, df = 1, **P < 0.049**
Baraka	Pre-ZL †	0.994	0.922-0.999	9.755	2	**0.008**	pre > ZL: χ^2 = 3.577, df = 1, P = 0.059
	ZL	0.927	0.900-0.947				**ZL < post:** χ^2 = 6.818, df = 1, **P = 0.009**
	Post-ZL	0.969	0.946-0.982				post < pre: χ^2 = 1.427, df = 1, P = 0.232
Calaya	Pre-ZL †	0.943	0.873-0.976	44.476	2	**< 0.001**	**pre > ZL**: χ^2 = 10.271, df = 1, **P = 0.001**
	ZL	0.789	0.751-0.822				**ZL < post :** χ^2 = 37.843, df = 1, **P < 0.001**
	Post-ZL	0.944	0.916-0.963				post > pre: χ^2 = 0.000, df = 1, P = 1.000
Mandara	Pre-ZL †	0.937	0.865-0.972	16.355	2	**< 0.001**	**pre > ZL**: χ^2 = 3.997, df = 1, **P = 0.046**
	ZL	0.858	0.825-0.886				**ZL < post** : χ^2 = 14.244, df = 1, **P < 0.001**
	Post-ZL	0.939	0.910-0.959				post > pre: χ^2 = 0.004, df = 1, P = 0.950
Kibibi	Pre-ZL †	0.988	0.926-0.998	2.860	2	0.239	
	ZL	0.941	0.917-0.959				
	Post-ZL	0.949	0.923-0.967				
B. Effect of Evening (modal) GAH Crowd Size on Proportion Time Resting							
Analysis	***Observation Period***	***Proportion time***	***95% CI***	***χ2***	***df***	***P***	***Post-hoc comparisons***
Overall	0 †	0.967	0.950-0.979	387.549	2	**<0.001**	**0 > ≤15:** χ2 = 358.152, df = 1, **P < 0.001**
	≤15	0.822	0.751-0.877				**≤15 < >15**: χ2 = 116.951, df = 1, **P < 0.001**
	>15	0.905	0.860-0.936				**>15 < 0**: χ2 = 128.517, df = 1, **P < 0.001**

† = Reference category for categorical GLMM

Table 4A

Analysis	*Observation Period*	*Proportion time*	*95% CI*	*Overall GLMM*			*Post-hoc comparisons*
				χ^2	*df*	*P*	
Overall	Pre-ZL †	0.496	0.405-0.587	50.687	2	**<0.001**	**pre < ZL**: χ^2 = 33.777, df = 1, **P < 0.001**
	ZL	0.529	0.438-0.618				ZL < post: χ^2 = 3.493, df = 1, P = 0.062
	Post-ZL	0.536	0.445-0.625				**post > pre**: χ^2 = 50.449, df = 1, **P < 0.001**
Baraka	Pre-ZL †	0.582	0.523-0.639	6.334	2	**0.042**	pre > ZL: χ^2 = 0.385, df = 1, P = 0.535
	ZL	0.561	0.527-0.594				**ZL < post**: χ^2 = 6.254, df = 1, **P = 0.012**
	Post-ZL	0.619	0.588-0.649				post > pre: χ^2 = 1.211, df = 1, P = 0.271
Calaya	Pre-ZL †	0.595	0.536-0.651	2.662	2	0.264	
	ZL	0.593	0.562-0.624				
	Post-ZL	0.560	0.530-0.590				
Mandara	Pre-ZL †	0.624	0.565-0.679	10.501	2	**0.005**	**pre < ZL**: χ^2 = 10.116, df = 1, **P = 0.001**
	ZL	0.724	0.695-0.751				ZL > post: χ^2 = 0.535, df = 1, P = 0.552
	Post-ZL	0.712	0.684-0.738				**post > pre**: χ^2 = 7.917, df = 1, **P = 0.005**
Kibibi	Pre-ZL †	0.457	0.399-0.516	4.828	1	0.089	**pre < ZL**: χ^2 = 4.765, df = 1, **P = 0.029**
	ZL	0.532	0.500-0.564				ZL < post: χ^2 = 0.976, df = 1, P = 0.323
	Post-ZL	0.510	0.480-0.540				post > pre: χ^2 = 2.420, df = 1, P = 0.120
Kwame	Pre-ZL †	0.432	0.378-0.489	1.284	2	0.526	
	ZL	0.408	0.378-0.439				
	Post-ZL	0.432	0.400-0.466				
Kojo	Pre-ZL †	0.287	0.238-0.340	10.465	2	**0.005**	**pre < ZL**: χ^2 = 4.694, df = 1, **P = 0.030**
	ZL	0.355	0.325-0.386				ZL < post: χ^2 = 2.339, df = 1, P = 0.126
	Post-ZL	0.389	0.358-0.421				**post > pre**: χ^2 = 10.207, df = 1, **P = 0.001**

Table 4B

Analysis	*Observation Period*	*Proportion time*	*95% CI*	*Overall GLMM*			*Post-hoc comparisons*
				χ^2	*df*	*P*	
Overall	Pre-ZL †	0.048	0.028-0.081	91.193	2	**<0.001**	**pre < ZL**: χ^2 = 10.821, df = 1, **P < 0.001**
	ZL	0.057	0.033-0.094				**ZL < post**: χ^2 = 53.671, df = 1, **P < 0.001**
	Post-ZL	0.070	0.042-0.116				**post > pre**: χ^2 = 61.860, df = 1, **P < 0.001**
Baraka	Pre-ZL †	0.037	0.020-0.066	36.369	2	**<0.001**	**pre > ZL**: χ^2 = 9.448, df = 1, **P = 0.002**
	ZL	0.008	0.004-0.017				**ZL < post**: χ^2 = 33.547, df = 1, **P < 0.001**
	Post-ZL	0.077	0.062-0.096				**post > pre**: χ^2 = 5.261, df = 1, **P = 0.022**
Calaya	Pre-ZL †	0.079	0.052-0.117	6.697	2	**0.035**	**pre < ZL**: χ^2 = 6.631, df = 1, **P = 0.010**
	ZL	0.137	0.117-0.161				ZL > post: χ^2 = 0.914, df = 1, P = 0.339
	Post-ZL	0.123	0.105-0.144				**post > pre**: χ^2 = 4.213, df = 1, **P = 0.040**
Mandara	Pre-ZL †	0.027	0.013-0.054	12.842	2	**0.002**	**pre < ZL**: χ^2 = 9.539, df = 1, **P = 0.002**
	ZL	0.084	0.068-0.104				**ZL > post**: χ^2 = 5.719, df = 1, **P = 0.017**
	Post-ZL	0.057	0.044-0.073				**post > pre**: χ^2 = 3.910, df = 1, **P = 0.048**
Kibibi	Pre-ZL †	0.109	0.077-0.152	11.712	2	**0.003**	pre > ZL: χ^2 = 2.776, df = 1, P = 0.096
	ZL	0.077	0.062-0.096				**ZL < post**: χ^2 = 11.650, df = 1, **P < 0.001**
	Post-ZL	0.124	0.105-0.145				post > pre: χ^2 = 0.447, df = 1, P = 0.504
Kwame	Pre-ZL †	0.019	0.008-0.042	0.356	2	0.837	
	ZL	0.015	0.009-0.025				
	Post-ZL	0.018	0.011-0.029				
Kojo	Pre-ZL †	0.019	0.008-0.043	2.247	2	0.325	
	ZL	0.014	0.008-0.024				
	Post-ZL	0.024	0.016-0.036				

Table 4C

Analysis	*Observation Period*	*Proportion time*	*95% CI*	*Overall GLMM*			*Post-hoc comparisons*
				χ^2	*df*	*P*	
Overall	Pre-ZL †	0.003	0.001-0.006	77.931	2	**<0.001**	**pre < ZL**: χ^2 = 30.716, df = 1, **P < 0.001**
	ZL	0.008	0.004-0.016				**ZL > post**: χ^2 = 59.205, df = 1, **P < 0.001**
	Post-ZL	0.004	0.002-0.007				post > pre: χ^2 = 2.054, df = 1, P = 0.152
Baraka	Pre-ZL †	0.004	0.001-0.025	0.255	2	0.880	
	ZL	0.004	0.002-0.012				
	Post-ZL	0.006	0.002-0.013				
Calaya	Pre-ZL †			Insufficient data			
	ZL						
	Post-ZL						
Mandara	Pre-ZL †	0.004	0.000-0.025	2.164	2	0.339	
	ZL	0.000	0.000-0.013				
	Post-ZL	0.005	0.002-0.012				
Kibibi	Pre-ZL †			Insufficient data			
	ZL						
	Post-ZL						
Kwame	Pre-ZL †	0.003	0.000-0.023	5.278	2	0.071	pre < ZL: χ^2 = 2.587, df = 1, P = 0.108
	ZL	0.017	0.011-0.028				ZL > post: χ^2 = 3.349, df = 1, P = 0.067
	Post-ZL	0.007	0.003-0.016				post > pre: χ^2 = 0.564, df = 1, P = 0.453
Kojo	Pre-ZL †	0.004	0.001-0.024	14.026	2	**<0.001**	pre < ZL: χ^2 = 3.781, df = 1, P = 0.052
	ZL	0.025	0.016-0.037				**ZL > post**: χ^2 = 11.084, df = 1, **P < 0.001**
	Post-ZL	0.002	0.001-0.009				post < pre: χ^2 = 0.285, df = 1, P = 0.593

Table 4D

Analysis	*Observation Period*	*Proportion time*	*95% CI*	*Overall GLMM*			*Post-hoc comparisons*
				χ2	*df*	*P*	
Overall	Pre-ZL †	0.012	0.005-0.028	3.394	2	0.183	
	ZL	0.011	0.005-0.026				
	Post-ZL	0.013	0.006-0.030				
Baraka	Pre-ZL †	0.000	0.000-0.111	1.448	2	0.485	
	ZL	0.006	0.002-0.014				
	Post-ZL	0.003	0.001-0.010				
Calaya	Pre-ZL †	0.010	0.003-0.032	5.594	2	.061	pre > ZL: χ^2 = 2.000, df = 1, P = 0.083
	ZL	0.000	0.000-0.013				ZL < post: χ^2 = 0.671, df = 1, P = 0.413
	Post-ZL	0.002	0.000-0.007				post < pre: χ^2 = 3.565, df = 1, P = 0.059
Mandara	Pre-ZL †	0.002	0.000-0.028	1.994	2	0.369	
	ZL	0.003	0.001-0.010				
	Post-ZL	0.007	0.003-0.014				
Kibibi	Pre-ZL †	0.025	0.012-0.052	1.967	2	0.374	
	ZL	0.019	0.012-0.030				
	Post-ZL	0.014	0.008-0.023				
Kwame	Pre-ZL †	0.021	0.009-0.044	8.518	2	**0.014**	pre < ZL: χ^2 = 0.776, df = 1, P = 0.378
	ZL	0.030	0.021-0.043				ZL < post: χ^2 = 0.279, df = 21, P = 0.597
	Post-ZL	0.052	0.039-0.069				**post > pre**: χ^2 = 4.895, df = 1, **P = 0.027**
Kojo	Pre-ZL †	0.014	0.005-0.036	4.929	2	0.085	pre > ZL: χ^2 = 0.394, df = 1, P = 0.530
	ZL	0.010	0.005-0.019				**ZL > post**: χ^2 = 4.101, df = 1, **P = 0.043**
	Post-ZL	0.001	0.000-0.008				**post < pre**: χ^2 = 4.929, df = 1, **P = 0.026**