Supplemental Data

Appendix 1A. *ANOVA table used to calculate the repeatability values and their upper and lower 95% confidence limits for each of the components of the cyclic patterns, as well as comparable components across all three of the cyclic patterns, metabolic rate, frequency and body mass*

Components	Source of variation	d.f.	SS	MS	*F*-ratio	*P*	r	Lower confidence limit	Upper confidence limit
DGC volume									
C-period [$\log_{10}(+2)$]	Among groups	8	1.01×10^{-7}	1.26×10^{-8}	2.29	0.03	0.16	0.01	0.47
	Within groups	53	2.92×10^{-7}	5.51×10^{-9}					
	Total	61	3.93×10^{-7}						
F-period ($\log_{10}$)	Among groups	8	4.32	0.54	5.37	5.78×10^{-5}	0.40	0.19	0.70
	Within groups	53	5.33	0.10					
	Total	61	9.65						
O-period ($\log_{10}$)	Among groups	8	1.76	0.22	13.13	3.2×10^{-10}	0.65	0.44	0.85
	Within groups	53	0.89	0.02					
	Total	61	2.65						
DGC duration									
C-period	Among groups	8	1.58×10^{6}	1.97×10^{5}	2.49	0.02	0.18	0.03	0.50
	Within groups	53	4.21×10^{6}	7.94×10^{4}					
	Total	61	5.79×10^{6}						
F-period	Among groups	8	2.19×10^{6}	2.74×10^{5}	6.92	3.34×10^{-6}	0.47	0.26	0.75
	Within groups	53	2.09×10^{6}	3.95×10^{4}					
	Total	61	4.28×10^{6}						
O-period ($\log_{10}$)	Among groups	8	0.94	0.12	6.77	4.41×10^{-6}	0.47	0.25	0.75
	Within groups	53	0.92	0.02					
	Total	61	1.86						
DGC emission rate									
C-period	Among groups	8	1.42×10^{-8}	1.78×10^{-9}	7.38	1.52×10^{-6}	0.49	0.27	0.76
	Within groups	53	1.28×10^{-8}	2.41×10^{-10}					
	Total	61	2.70×10^{-8}						
F-period ($\log_{10}$)	Among groups	8	1.13	0.14	5.81	2.55×10^{-5}	0.42	0.21	0.71
	Within groups	53	1.29	0.02					
	Total	61	2.42						
O-period	Among groups	8	3.38×10^{-6}	4.32×10^{-7}	14.07	9.93×10^{-11}	0.66	0.46	0.86
	Within groups	53	1.59×10^{-6}	3.01×10^{-8}					
	Total	61	4.97×10^{-6}						
Interburst–Burst volume									
Burst ($\log_{10}$)	Among groups	10	5.23	0.52	10.09	2.76×10^{-11}	0.50	0.32	0.74
	Within groups	93	4.82	0.05					
	Total	103	10.05						
Interburst ($\log_{10}$)	Among groups	10	21.99	2.20	13.22	4.14×10^{-14}	0.57	0.39	0.79
	Within groups	93	15.46	0.17					
	Total	103	37.45						
Interburst–Burst duration									
Burst	Among groups	10	3.39×10^{6}	3.39×10^{5}	5.93	6.92×10^{-7}	0.35	0.19	0.61
	Within groups	93	5.31×10^{6}	5.71×10^{4}					
	Total	103	8.70×10^{6}						
Interburst	Among groups	10	6.74×10^{6}	6.74×10^{5}	2.64	7.00×10^{-3}	0.15	0.04	0.39
	Within groups	93	2.37×10^{7}	2.55×10^{5}					
	Total	103	3.05×10^{7}						
Interburst–Burst emission rate									
Burst ($\log_{10}$)	Among groups	10	5.30	0.53	29.28	1.51×10^{-24}	0.76	0.61	0.89
	Within groups	93	1.68	0.02					
	Total	103	6.98						
Interburst	Among groups	10	4.26×10^{-6}	4.26×10^{-7}	92.14	0	0.91	0.84	0.96
	Within groups	93	4.30×10^{-7}	4.62×10^{-9}					
	Total	103							

Components	Source of variation	d.f.	SS	MS	*F*-ratio	*P*	r	Lower confidence limit	Upper confidence limit
Pulsation volume									
Burst (log_{10})	Among groups	8	13.75	1.72	83.15	0	0.59	0.42	0.81
	Within groups	541	11.19	0.02					
	Total	549	24.94						
Interburst (log_{10})	Among groups	8	18.80	2.35	9.09	9.0×10^{-12}	0.12	0.06	0.31
	Within groups	541	1.39×10^{2}	0.26					
	Total	549	1.58×10^{2}						
Pulsation duration									
Burst	Among groups	8	4.33×10^{3}	5.41×10^{2}	5.68	6.0×10^{-7}	0.08	0.03	0.21
	Within groups	541	5.16×10^{4}	95.38					
	Total	549	5.59×10^{4}						
Interburst (log_{10})	Among groups	8	42.19	5.27	11.95	9.0×10^{-16}	0.16	0.08	0.37
	Within groups	541	2.39×10^{2}	0.44					
	Total	549	2.81×10^{2}						
Pulsation emission rate									
Burst (log_{10})	Among groups	8	5.51	0.69	39.79	0	0.40	0.25	0.67
	Within groups	541	9.37	0.02					
	Total	549	14.88						
Interburst (log_{10})	Among groups	8	13.42	1.68	12.27	3.0×10^{-16}	0.16	0.08	0.38
	Within groups	541	73.66	0.14					
	Total	549	87.08						
Metabolic rate									
(males and females)	Among groups	19	3.47	0.18	6.25	2.01×10^{-9}	0.51	0.35	0.69
(log_{10})	Within groups	80	2.33	0.03					
	Total	99	5.80						
(females) (log_{10})	Among groups	16	2.57	0.16	5.67	1.57×10^{-7}	0.48	0.32	0.67
	Within groups	68	1.93	0.03					
	Total	84	4.50						
Frequency	Among groups	19	1.98×10^{4}	1.04×10^{3}	3.37	5.9×10^{-5}	0.31	0.15	0.52
(males and females)	Within groups	87	2.69×10^{4}	3.10×10^{2}					
	Total	106	4.68×10^{4}						
(females)	Among groups	16	1.58×10^{4}	9.87×10^{2}	2.78	0.001	0.25	0.10	0.45
	Within groups	76	2.69×10^{4}	3.55×10^{2}					
	Total	92	4.27×10^{4}						
Mass	Among groups	19	0.64	0.03	15.12	3.93×10^{-19}	0.74	0.61	0.85
(males and females)	Within groups	80	0.18	2.0×10^{-3}					
	Total	99	0.82						
Flutter period and interbursts for the three cyclic patterns (males and females)									
Volume	Among groups	19	2.54×10^{-4}	1.34×10^{-5}	24.13	0	0.33	0.22	0.49
	Within groups	754	4.17×10^{-4}	5.53×10^{-7}					
	Total	773	6.71×10^{-4}						
Duration	Among groups	19	5.87×10^{7}	3.09×10^{6}	50.82	0	0.51	0.38	0.68
	Within groups	754	4.59×10^{7}	6.08×10^{4}					
	Total	773	10.46×10^{7}						
Emission rate	Among groups	19	6.64×10^{-6}	3.49×10^{-7}	5.65	2.88×10^{-13}	0.09	0.05	0.18
	Within groups	754	4.66×10^{-5}	6.18×10^{-8}					
	Total	773	5.32×10^{-5}						

Components	Source of variation	d.f.	SS	MS	*F*-ratio	*P*	r	Lower confidence limit	Upper confidence limit
Open period and bursts for the three cyclic patterns (males and females)									
Volume (log_{10})	Among groups	19	1.87×10^2	9.86	63.99	0	0.57	0.43	0.72
	Within groups	754	1.16×10^2	0.15					
	Total	773	3.04×10^2						
Duration (log_{10})	Among groups	19	2.10×10^2	11.0	89.83	0	0.65	0.52	0.79
	Within groups	754	92.7	0.12					
	Total	773	3.03×10^2						
Emission rate (log_{10})	Among groups	19	10.34	0.55	28.52	0	0.37	0.25	0.54
	Within groups	754	14.47	0.02					
	Total	773	24.81						
Flutter period and interbursts for the three cyclic patterns (females)									
Volume	Among groups	16	2.56×10^2	16.01	31.52	0	0.43	0.31	0.61
	Within groups	700	3.55×10^2	0.51					
	Total	716	6.11×10^2						
Duration	Among groups	16	3.09×10^2	19.32	33.99	0	0.45	0.33	0.63
	Within groups	700	3.98×10^2	0.57					
	Total	716	7.07×10^2						
Emission rate	Among groups	16	31.43	1.96	15.12	0	0.26	0.17	0.42
	Within groups	700	90.88	0.13					
	Total	716	1.22×10^2						
Open period and bursts for the three cyclic patterns (females)									
Volume (log_{10})	Among groups	16	1.39×10^2	8.71	52.87	0	0.57	0.43	0.72
	Within groups	700	1.15×10^2	0.17					
	Total	716	2.54×10^2						
Duration (log_{10})	Among groups	16	1.60×10^2	10.01	77.30	0	0.66	0.53	0.79
	Within groups	700	90.64	0.13					
	Total	716	2.50×10^2						
Emission rate (log_{10})	Among groups	16	10.46	0.65	33.45	0	0.45	0.32	0.63
	Within groups	700	13.68	0.02					
	Total	716	24.14						

Data were log_{10} transformed in some cases to normalize the distributions.
Repeatabilities were calculated for females unless indicated otherwise.
Sample sizes for individuals used for each pattern are given in Table 1.

Appendix 1B. *ANOVA table used to calculate the repeatability values and their upper and lower 95% confidence limits for each of the components of the cyclic patterns, as well as comparable components across all three of the cyclic patterns, metabolic rate, frequency and body mass, with body mass included as a covariate*

Components	Source of variation	d.f.	SS	MS	*F*-ratio	*P*	r	Lower confidence limit	Upper confidence limit
DGC volume									
F-period	Among groups	8	2.05	0.26	3.03	0.007	0.23	0.06	0.55
	Within groups	52	4.40	0.08					
	Total	60	6.45						
DGC duration									
C-period	Among groups	8	2.02×10^{6}	2.53×10^{5}	3.59	0.002	0.28	0.10	0.60
	Within groups	52	3.66×10^{6}	7.03×10^{4}					
	Total	60	5.68×10^{6}						
F-period	Among groups	8	1.50×10^{6}	1.87×10^{5}	5.05	1.14×10^{-4}	0.38	0.17	0.68
	Within groups	52	1.93×10^{6}	3.71×10^{4}					
	Total	60	3.43×10^{6}						
Interburst–Burst volume									
Burst ($\log_{10}$)	Among groups	10	1.50	0.15	3.63	4.18×10^{-4}	0.22	0.09	0.48
	Within groups	92	3.80	0.04					
	Total	102	5.30						
Interburst–Burst duration									
Burst	Among groups	10	3.86×10^{6}	3.86×10^{5}	7.34	1.9×10^{-8}	0.41	0.24	0.67
	Within groups	92	4.84×10^{6}	5.26×10^{4}					
	Total	102	8.70×10^{6}						
Interburst–Burst emission rate									
Interburst	Among groups	10	1.85×10^{-6}	1.85×10^{-7}	42.73	2.85×10^{-30}	0.82	0.70	0.92
	Within groups	92	3.99×10^{-7}	4.34×10^{-9}					
	Total	102	1.27×10^{2}						
Pulsation volume									
Burst ($\log_{10}$)	Among groups	8	14.45	1.8	93.68	0	0.62	0.42	0.81
	Within groups	540	10.41	0.02					
	Total	548	24.86						
Interburst ($\log_{10}$)	Among groups	8	20.86	2.61	10.27	2.08×10^{-13}	0.14	0.07	0.34
	Within groups	540	1.37×10^{2}	0.25					
	Total	548	1.58×10^{2}						
Pulsation duration									
Burst	Among groups	8	4.14×10^{3}	5.18×10^{2}	5.49	1.12×10^{-6}	0.07	0.03	0.21
	Within groups	541	5.10×10^{4}	94.38					
	Total	549	5.52×10^{4}						
Interburst ($\log_{10}$)	Among groups	8	47.40	5.93	13.99	1.48×10^{-18}	0.19	0.08	0.37
	Within groups	540	2.30×10^{2}	0.42					
	Total	548	2.77×10^{2}						
Emission rate									
Interburst ($\log_{10}$)	Among groups	8	13.37	1.67	12.59	1.23×10^{-16}	0.17	0.10	0.41
	Within groups	540	71.41	0.13					
	Total	548	84.78						
Metabolic rate									
(males and females)	Among groups	19	1.97	0.05	2.39	0.004	0.22	0.07	0.42
($\log_{10}$)	Within groups	79	1.69	0.02					
	Total	98	2.66						
(females) ($\log_{10}$)	Among groups	16	0.92	0.06	3.05	7.14×10^{-4}	0.29	0.12	0.52
	Within groups	67	1.27	0.02					
	Total	83	2.19						

Components	Source of variation	d.f.	SS	MS	*F*-ratio	*P*	r	Lower confidence limit	Upper confidence limit
Frequency									
(males and females)	Among groups	19	2.11×10^{4}	1.11×10^{3}	3.76	1.25×10^{-5}	0.35	0.19	0.55
	Within groups	86	2.55×10^{4}	2.96×10^{2}					
	Total	105	4.66×10^{4}						
(females)	Among groups	16	1.71×10^{4}	1.07×10^{3}	3.16	3.96×10^{-4}	0.29	0.13	0.51
	Within groups	75	2.54×10^{4}	3.39×10^{2}					
	Total	91	4.25×10^{4}						
Flutter period and interbursts for the three cyclic patterns (males and females)									
Volume	Among groups	19	2.54×10^{-3}	1.34×10^{-4}	42.45	0	0.47	0.35	0.63
	Within groups	753	2.4×10^{-3}	3.19×10^{-6}					
	Total	772	4.94×10^{-3}						
Duration	Among groups	19	6.12×10^{7}	3.22×10^{6}	54.35	0	0.53	0.41	0.68
	Within groups	753	4.47×10^{7}	5.90×10^{4}					
	Total	772	10.59×10^{7}						
Emission rate	Among groups	19	2.63×10^{-5}	1.38×10^{-6}	15.60	0	0.24	0.16	0.38
	Within groups	753	6.67×10^{-5}	8.86×10^{-8}					
	Total	772	9.30×10^{-5}						
Open period and bursts for the three cyclic patterns (males and females)									
Volume ($\log_{10}$)	Among groups	19	1.29×10^{2}	6.81	69.04	0	0.59	0.47	0.73
	Within groups	753	74.24	0.10					
	Total	772	2.03×10^{2}						
Duration ($\log_{10}$)	Among groups	19	2.20×10^{2}	11.6	138.12	0	0.74	0.64	0.85
	Within groups	753	63.22	0.08					
	Total	772	2.83×10^{2}						
Flutter period and interbursts for the three cyclic patterns (females)									
Volume	Among groups	16	3.95×10^{2}	24.68	43.14	0	0.51	0.39	0.68
	Within groups	700	3.99×10^{2}	0.57					
	Total	716	6.11×10^{2}						
Duration	Among groups	16	3.45×10^{2}	21.54	38.29	0	0.48	0.36	0.66
	Within groups	700	3.93×10^{2}	0.56					
	Total	716	7.07×10^{2}						
Emission rate	Among groups	16	34.94	2.18	14.23	0	0.25	0.16	0.41
	Within groups	700	90.88	0.15					
	Total	716	1.07×10^{2}						
Open period and bursts for the three cyclic patterns (females)									
Volume ($\log_{10}$)	Among groups	16	1.10×10^{2}	6.94	74.25	0	0.65	0.52	0.79
	Within groups	700	65.39	0.09					
	Total	716	1.75×10^{2}						
Duration ($\log_{10}$)	Among groups	16	1.67×10^{2}	10.47	121.93	0	0.75	0.65	0.86
	Within groups	700	60.13	0.09					
	Total	716	2.27×10^{2}						

Data were $\log_{10}$ transformed in some cases to normalize the distributions.
Repeatabilities were calculated for females unless indicated otherwise.
Sample sizes for individuals used for each pattern are given in Table 1.