

**Table S6. Mitochondrial genome comparisons of Phasmatodea species.**

Family	Subfamily	Species	Full length (bp)	A (%) (+)	T (%) (+)	C (%) (+)	G (%) (+)	A+T (%) (+)	G+C (%) (+)	AT-skew (+)	GC-skew (+)
Pseudophasmatidae	Pseudophasmatinae	<i>Peruphasma schultei</i>	15,896	44.3	32.3	13.9	9.5	76.6	23.4	0.16	-0.19
Timematidae	Timematinae	<i>Timema californicum</i>	14,387	38.9	33.2	16.4	11.4	72.1	27.8	0.08	-0.18
Phylliidae	Phylliinae	<i>Cryptophyllum tibetense</i>	18,248	48	28	14.2	9.8	76	24	0.26	-0.18
Phylliidae	Phylliinae	<i>Pulchriphyllum giganteum</i>	13,980	47	27.6	15.5	9.9	74.6	25.4	0.26	-0.22
Phylliidae	Phylliinae	<i>Cryptophyllum westwoodii</i>	17,222	49.2	28.4	13.4	9	77.6	22.4	0.27	-0.19
Bacillidae	Bacillinae	<i>Bacillus rossius</i>	14,152	45.9	31.7	13	9.4	77.6	22.4	0.18	-0.16
Bacillidae	Bacillinae	<i>Bacillus atticus</i>	14,141	45.9	32.2	12.9	9.1	78.1	22	0.18	-0.17
Heteropterygidae	Dataminae	<i>Orestes mouhotii</i>	16,223	44.6	29.7	16.1	9.6	74.3	25.7	0.20	-0.25
Heteropterygidae	Heteropteryginae	<i>Heteropteryx dilatata</i>	16,618	45.1	31	14.4	9.5	76.1	23.9	0.19	-0.21
Heteropterygidae	Dataminae	<i>Orestes guangxiensis</i>	16,869	44.9	30.7	14.8	9.5	75.6	24.3	0.19	-0.22
Lonchodidae	Lonchodinae	<i>Phraortes elongatus</i>	16,456	45.7	31.9	13.1	9.3	77.6	22.4	0.18	-0.17
Lonchodidae	Necrosciinae	<i>Micadina phluctainoides</i>	16,507	45.7	32.7	11.8	9.7	78.4	21.5	0.17	-0.10
Lonchodidae	Necrosciinae	<i>Sipyloidea sipyus</i>	17,001	45.6	31.7	13.4	9.3	77.3	22.7	0.18	-0.18
Lonchodidae	Lonchodinae	<i>Megalophasma granulatum</i>	15,275	43.8	31	14.9	9.7	74.8	24.6	0.17	-0.21
Lonchodidae	Lonchodinae	<i>Phraortes</i> sp. Miyako Island	14,913	45.8	31.8	13.2	9.2	77.6	22.4	0.18	-0.18
Lonchodidae	Lonchodinae	<i>Eurycantha calcarata</i>	16,280	45	33.2	13.3	8.5	78.2	21.8	0.15	-0.22
Lonchodidae	Necrosciinae	<i>Calvisia medogensis</i>	16,107	44.9	31.8	13.5	9.2	76.7	22.7	0.17	-0.19
Lonchodidae	Necrosciinae	<i>Neohirasea japonica</i>	15,305	45.8	33.6	12	8.5	79.4	20.5	0.15	-0.17
Lonchodidae	Lonchodinae	<i>Phraortes</i> sp. Iriomote Island	16,867	46.6	32.2	12.1	9.1	78.8	21.2	0.18	-0.14
Lonchodidae	Lonchodinae	<i>Phraortes</i> sp. 1 NS-2020	14,207	44.9	30.8	13.3	9.3	75.7	22.6	0.19	-0.18
Lonchodidae	Necrosciinae	<i>Micadina brachyptera</i>	15,879	45.1	31.1	13.8	9.7	76.2	23.5	0.18	-0.17
Phasmatidae	Clitumninae	<i>Pharnaciini</i> sp. NS-2020	15,192	46.1	31.9	12.7	9.2	78	21.9	0.18	-0.16
Phasmatidae	Clitumninae	<i>Phryganistria guangxiensis</i>	17,005	44.6	32.2	13.8	9.4	76.8	23.2	0.16	-0.19
Phasmatidae	Megacraniinae	<i>Megacrania alpheus</i>	17,124	46.2	30.6	13.9	9.3	76.8	23.2	0.20	-0.20
Phasmatidae	Clitumninae	<i>Entoria nuda</i>	16,910	43.8	32.2	13.8	10.2	76	24	0.15	-0.15
Phasmatidae	Clitumninae	<i>Phobaeticus serratipes</i>	16,182	45.9	31.1	14	9	77	23	0.19	-0.22
Phasmatidae	Clitumninae	<i>Ramulus hainanense</i>	15,590	43	30.1	16.3	10.6	73.1	26.9	0.18	-0.22

Phasmatidae	Clitumninae	<i>Ramulus mikado</i>	16,633	43.2	32.8	13.3	10.7	76	24	0.14	-0.11
Phasmatidae	Extatosomatinae	<i>Extatosoma tiaratum</i>	16,537	45.6	30.3	15.1	8.9	75.9	24	0.20	-0.26
Phasmatidae	Phasmatinae	<i>Dryococelus australis</i>	16,604	44.8	32.6	13	9.5	77.4	22.5	0.16	-0.6

---