

Table S6. Twenty-five *Phrynocephalus* mitogenomes analyzed in gene rearrangement with their GenBank accession numbers.

Taxon	GenBank accession number	Size (bp)	Rearrangement type
<i>P. albolineatus</i>	KP279760	16,808	V
<i>P. axillaris</i>	KC119493	17,937	V
<i>P. axillaris</i>	MK284224	15,883	V
<i>P. erythrurus erythrurus</i>	MF039065	16,456	V
<i>P. erythrurus parva</i>	KJ630904	16,379	VI
<i>P. forsythii</i>	KP232959	16,143	V
<i>P. forsythii</i>	KP126516	17,542	VII
<i>P. forsythii</i>	MK284225	16,060	VII
<i>P. frontalis</i>	MF039064	17,041	X
<i>P. grumgrzimaloi</i>	KM093859	16,301	V
<i>P. guinanensis</i>	KJ885621	16,279	V
<i>P. helioscopus varius I</i>	KM093858	16,249	V
<i>P. helioscopus varius II</i>	OL493803	17,253	IX
<i>P. helioscopus cameranoi</i>	OL493804	17,102	IX
<i>P. mystaceus</i>	KC578685	16,660	V
<i>P. przewalskii</i>	KF572032	16,892	VIII
<i>P. putjatai</i>	KJ830752	16,283	V
<i>P. theobaldi orientalis</i>	KJ551842	16,608	VII
<i>P. theobaldi orientalis</i>	MF039062	17,129	VII
<i>P. theobaldi theobaldi</i>	MF039063	16,365	VII
<i>P. versicolor</i>	KJ749841	16,429	IX
<i>P. vlangalii vlangalii</i>	MF039058	16,319	V
<i>P. vlangalii pylzowi</i>	MF039059	16,442	V
<i>P. vlangalii pylzowi</i>	MF039060	16,725	V
<i>P. vlangalii nanschanica</i>	MF039061	15,251	VI

Note: the rearrangement type (V-IX) followed Liu et al. [18]; a novel rearrangement type was identified and numbered as X.