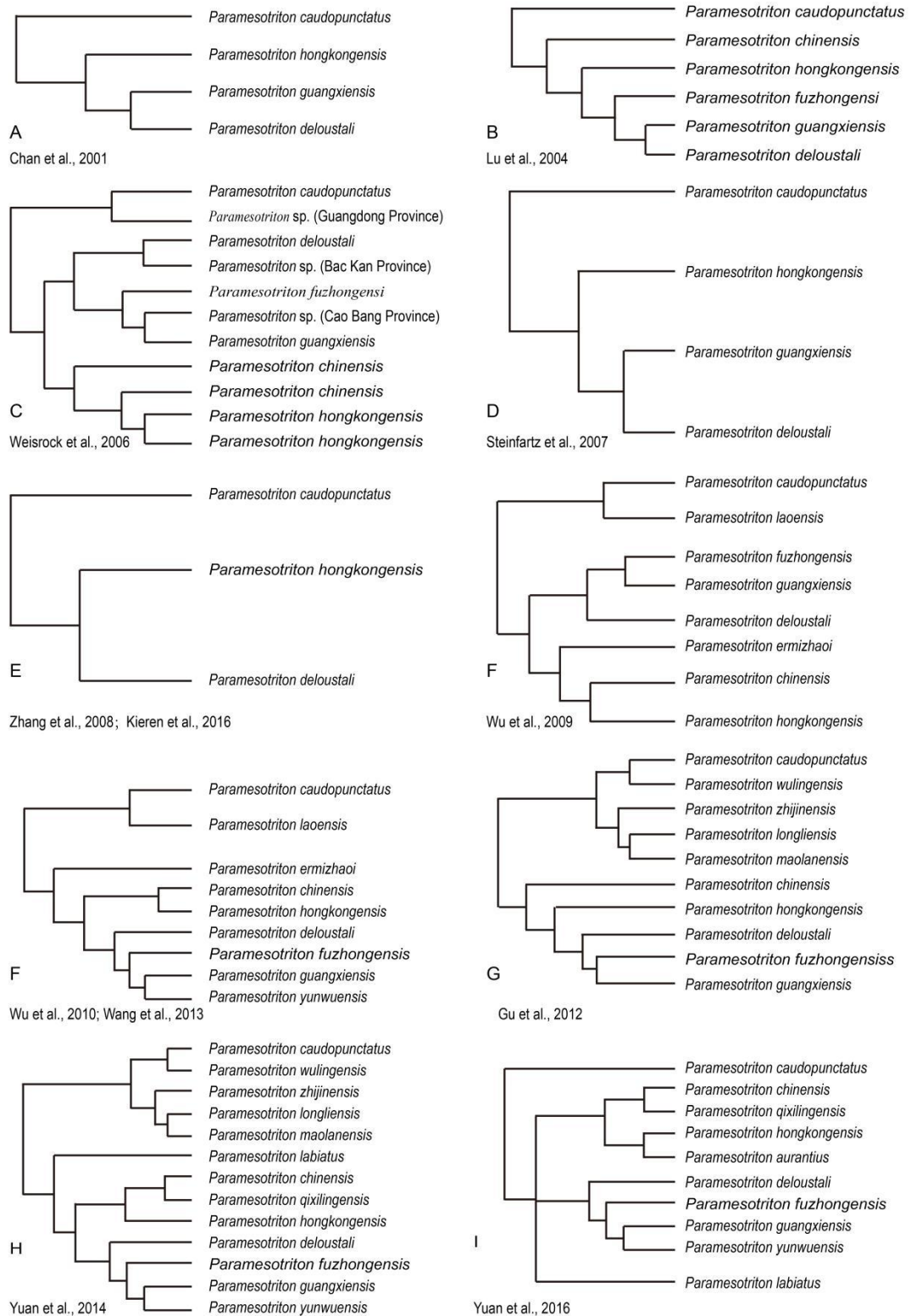
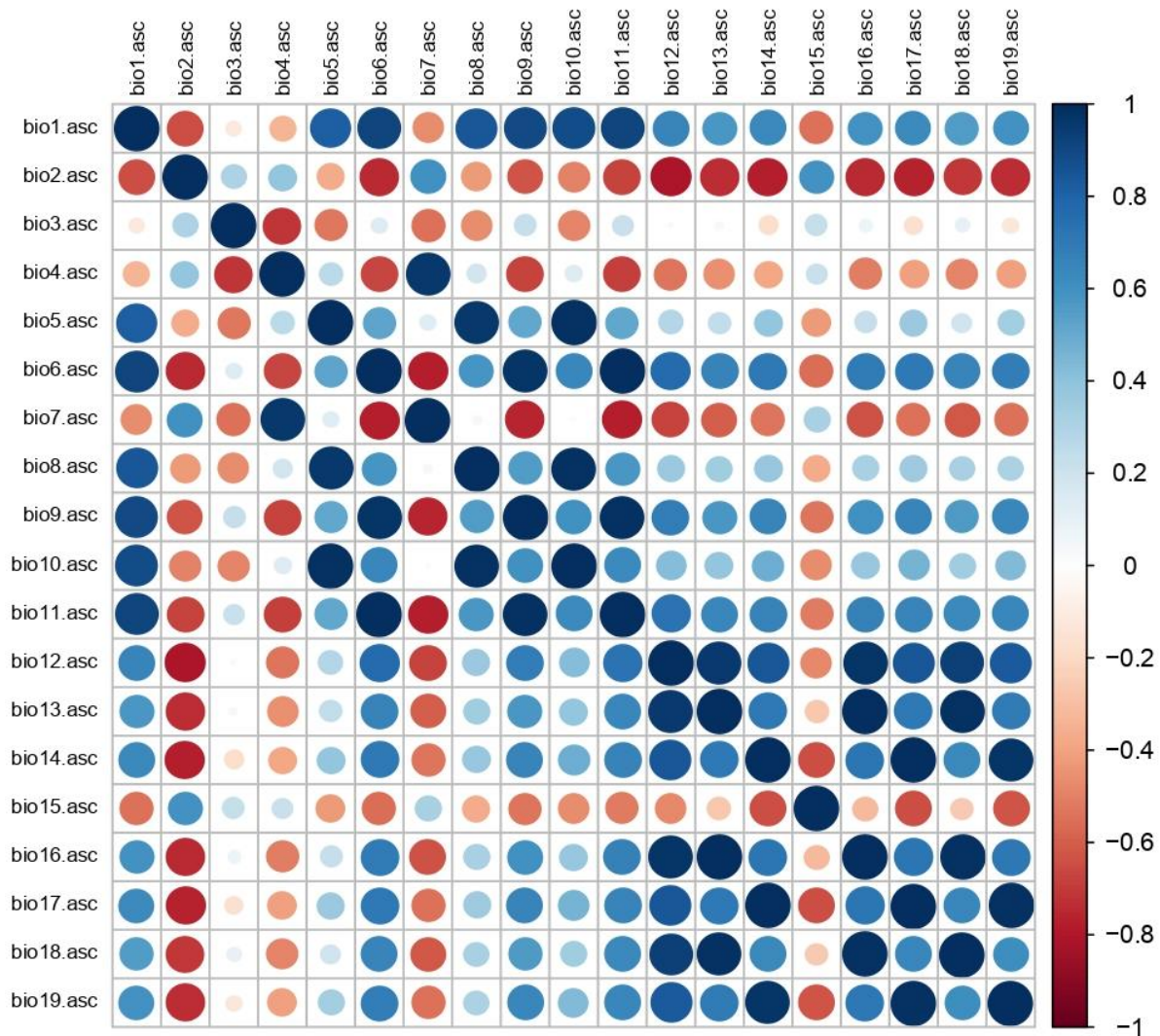


Supplementary Material



Supplementary Figure S1 Alternative hypotheses of phylogenetic relationships within *Paramesotriton* obtained from molecular sequence data.



Supplementary Figure S2 Pearson correlation matrix of 19 environmental variables and elevation.

Supplementary Table S1 Classification history of *Paramesotriton* species groups or subgenera included in this study.

Classification history of species group or subgenera, genus

Species	Freytag (1983)	Pang et al. 1992	Fei et al. 2006	Dubois & Raffaelli 2009	Fei & Ye, 2016	Current classification + Reference	
						Subgenus (Fei & Ye, 2016)	Specis group (Yuan et al., 2016)
<i>Paramesotriton caudopunctatus</i>	genus <i>Allomesotriton</i>	subgenus <i>Allomesotriton</i>	<i>Paramesotriton caudopunctatus</i> group	subgenus <i>Allomesotriton</i>	subgenus <i>Allomesotriton</i>	subgenus <i>Allomesotriton</i>	<i>Paramesotriton caudopunctatus</i> group
<i>Paramesotriton chinensis</i>	—	—	<i>Paramesotriton chinensis</i> group	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	<i>Paramesotriton chinensis</i> group
<i>Paramesotriton hongkongensis</i>	—	—	<i>Paramesotriton chinensis</i> group	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	<i>Paramesotriton chinensis</i> group
<i>Paramesotriton guangxiensis</i>	—	—	<i>Paramesotriton chinensis</i> group	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	<i>Paramesotriton chinensis</i> group
<i>Paramesotriton deloustali</i>	—	—	—	subgenus <i>Paramesotriton</i>	—	—	<i>Paramesotriton chinensis</i> group
<i>Paramesotriton fuzhongensis</i>	—	—	—	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	<i>Paramesotriton chinensis</i> group
<i>Paramesotriton longliensis</i>	—	—	—	subgenus <i>Paramesotriton</i>	subgenus <i>Karstotriton</i>	subgenus <i>Karstotriton</i>	<i>Paramesotriton caudopunctatus</i> group
<i>Paramesotriton zhijinensis</i>	—	—	—	subgenus <i>Paramesotriton</i>	subgenus <i>Karstotriton</i>	subgenus <i>Karstotriton</i>	<i>Paramesotriton caudopunctatus</i> group
<i>Paramesotriton aurantius</i>	—	—	—	—	—	—	<i>Paramesotriton chinensis</i> group
<i>Paramesotriton labiatus</i>	—	—	—	—	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	<i>Paramesotriton chinensis</i> group
<i>Paramesotriton maolanensis</i>	—	—	—	—	subgenus <i>Karstotriton</i>	subgenus <i>Karstotriton</i>	<i>Paramesotriton caudopunctatus</i> group
<i>Paramesotriton qixilingensis</i>	—	—	—	—	—	—	<i>Paramesotriton chinensis</i> group
<i>Paramesotriton wulingensis</i>	—	—	—	—	subgenus <i>Allomesotriton</i>	subgenus <i>Allomesotriton</i>	<i>Paramesotriton caudopunctatus</i> group
<i>Paramesotriton yunwuensis</i>	—	—	—	—	subgenus <i>Paramesotriton</i>	subgenus <i>Paramesotriton</i>	<i>Paramesotriton chinensis</i> group

Supplementary Table S2 Localities, voucher information, and GenBank accession numbers for all samples used.

ID	Species	Localities (* type localities)	Voucher	mtDNA	BPTF	CAND-1	DET-1	DISP-1	DNAH-3	DOLK
1	<i>Paramesotriton longliensis</i>	Longli County, Guizhou, China*	GZNU20191022002	ON357921	ON364673	ON364700	ON364716	ON364752	ON364771	ON364783
2	<i>Paramesotriton longliensis</i>	Huishui County, Guizhou, China	GZNU20180618011	ON357922	ON364672	ON364697	ON364715	ON364749	ON364772	ON364781
3	<i>Paramesotriton longliensis</i>	Huishui County, Guizhou, China	GZNU20180618015	MW524141	ON364657	ON364683	ON364725	ON364735	ON364759	ON364792
4	<i>Paramesotriton longliensis</i>	Pingtang County, Guizhou, China	GZNU20200917001	ON357923	ON364656	ON364684	ON364726	ON364733	ON364758	ON364791
5	<i>Paramesotriton maolanensis</i>	Libo County, Guizhou, China*	GZNU2006030003	ON357924	/	/	/	/	/	/
6	<i>Paramesotriton zhijinensis</i>	Zhijin County, Guizhou, China*	GZNU20190417007	ON357925	ON364681	ON364682	ON364724	ON364732	ON364780	ON364790
7	<i>Paramesotriton longliensis</i>	Dafang County, Guizhou, China	GZNU20180709003	MW524142	ON364658	ON364686	ON364728	ON364734	ON364760	ON364794
8	<i>Paramesotriton longliensis</i>	Dafang County, Guizhou, China	GZNU20190417045	ON357926	ON364663	ON364688	ON364707	ON364740	ON364764	ON364797
9	<i>Paramesotriton longliensis</i>	Zunyi County, Guizhou, China	GZNU20180709004	MW524143	ON364659	ON364685	ON364727	ON364736	ON364761	ON364793
10	<i>Paramesotriton longliensis</i>	Xianfeng County, Hubei, China	GZNU20201017001	ON357927	ON364670	ON364695	ON364713	ON364747	ON364769	ON364802
11	<i>Paramesotriton wulingensis</i>	Jiangkou County, Guizhou, China	GZNU20070710001	ON357928	ON364677	ON364703	ON364720	ON364755	ON364777	ON364786
12	<i>Paramesotriton wulingensis</i>	Youyang County, Chongqing, China*	GZNU20070710002	ON357929	ON364678	ON364705	ON364721	ON364754	ON364776	ON364785
13	<i>Paramesotriton caudopunctatus</i>	Leishan County, Guizhou, China*	GZNU20191022001	ON357930	ON364674	ON364699	ON364717	ON364751	ON364773	ON364782
14	<i>Paramesotriton deloustali</i>	Hekou, Yunnan, China	Tissue ID: GZNU35	ON357931	ON364665	ON364690	ON364710	ON364742	ON364766	ON364800
15	<i>Paramesotriton guangxiensis</i>	Shiwandashan, Guangxi, China	Tissue ID: GZNU36	ON357932	ON364668	ON364693	ON364712	ON364745	/	ON364804
16	<i>Paramesotriton yunwuensis</i>	Xinyi City, Guangdong, China	GZNU20201018003	ON357933	ON364679	ON364704	ON364722	ON364757	ON364779	ON364788
17	<i>Paramesotriton labiatus</i>	Dayaoshan, Jinxiu, Guangxi	GZNU20210531001	ON357934	ON364676	ON364702	ON364719	ON364753	ON364775	ON364787
18	<i>Paramesotriton fuzhongensis</i>	Zhongshan County, Guangxi, China*	GZNU20070520002	ON357935	ON364667	ON364694	ON364711	ON364744	ON364767	ON364801
19	<i>Paramesotriton hongkongensis</i>	Chaoshan, Guangdong, China	GZNU20080815036	ON357936	ON364661	ON364687	ON364731	ON364739	ON364763	ON364795
20	<i>Paramesotriton hongkongensis</i>	Hong Kong, China*	Tissue ID: GZNU37	ON357937	ON364671	ON364698	ON364714	ON364748	ON364770	ON364805
21	<i>Paramesotriton qixilingensis</i>	Yongxin County, Jiangxi, China	Tissue ID: GZNU38	ON357938	ON364675	ON364701	ON364718	ON364750	ON364774	ON364784
22	<i>Paramesotriton aurantius</i>	Jingning County, Zhejiang, China*	GZNU20201018001	ON357939	ON364662	ON364689	ON364730	ON364738	ON364765	ON364798
23	<i>Paramesotriton chinensis</i>	Ningbo, Zhejiang, China	Tissue ID: GZNU39	ON357940	ON364680	ON364706	ON364723	ON364756	ON364778	ON364789
24	<i>Pachytriton feii</i>	Huangshan, Anhui	Tissue ID: 2020.8.4	ON357942	ON364666	ON364692	ON364709	ON364743	ON364768	/
25	<i>Pachytriton inexpectatus</i>	Danzhai County, Guizhou, China	GZNU20180706001	ON422325	ON364660	ON364691	ON364729	ON364737	ON364762	ON364796
26	<i>Cynops orientalis</i>	Mingtang Mountain, Anqing, Anhui	Tissue ID: 2016.4.14	ON357943	ON364664	KC165079	ON364708	ON364741	KC165144	ON364799
27	<i>Tylototriton kweichowensis</i>	Nayong County, Guizhou, China	GZNU20180516035	ON357941	ON364669	ON364696	/	ON364746	/	ON364803
28	<i>Paramesotriton deloustali</i>	southern Yunnan, China	CAU1507046	KY744236	/	/	/	/	/	/
29	<i>Paramesotriton chinensis</i>	Zhejiang, China	/	KY609177	/	/	/	/	/	/
30	<i>Paramesotriton deloustali</i>	/	MVZ223628	EU880327	/	/	/	/	/	/
31	<i>Paramesotriton caudopunctatus</i>	/	MVZ236252	EU880326	/	/	/	/	/	/
32	<i>Paramesotriton aurantius</i>	Wangdongyang, Lishui, Zhejiang, China	LSU20200810WDY01	MW056201	/	/	/	/	/	/
33	<i>Paramesotriton hongkongensis</i>	/	/	AY458597						
34	<i>Tylototriton asperrimus</i>	/	/	EU880340	KC165071	KC165091	KC165113	KC165135	KC165157	KC165175

Table S2. Continued.

ID	DSEL	ENC1	EXTL-3	FAT-4	FICD	GRM2	HYP	KBTBD2	KCNF1	KIAA1239	KIAA2013	LIG-4	LPHN-2
1	ON364822	ON364847	ON364861	ON364896	ON364922	ON364948	ON364962	ON364997	ON365390	ON365023	ON365049	ON365074	ON365100
2	ON364821	ON364846	ON364862	ON364895	ON364921	ON364947	ON364963	ON364996	ON365389	ON365022	ON365048	ON365073	ON365099
3	ON364807	ON364832	ON364869	ON364880	ON364906	ON364932	ON364972	ON364983	ON365374	ON365008	ON365033	ON365059	ON365084
4	ON364806	ON364831	ON364870	ON364879	ON364905	ON364931	ON364973	ON364982	ON365373	ON365007	ON365032	ON365058	ON365083
5	/	/	/	/	/	/	/	/	/	/	/	/	/
6	ON364830	ON364855	ON364856	ON364904	ON364930	ON364956	ON364957	ON365006	ON365397	ON365031	ON365057	ON365082	ON365108
7	ON364808	ON364833	ON364868	ON364881	ON364907	ON364933	ON364971	ON364984	ON365375	ON365009	ON365034	ON365060	ON365085
8	ON364812	ON364838	ON364865	ON364886	ON364912	ON364938	ON364966	ON364988	ON365380	ON365014	ON365039	ON365065	ON365090
9	ON364809	ON364834	ON364867	ON364882	ON364908	ON364934	ON364970	ON364985	ON365376	ON365010	ON365035	ON365061	ON365086
10	ON364819	ON364844	ON364863	ON364893	ON364919	ON364945	ON364964	ON364994	ON365387	ON365020	ON365046	ON365071	ON365097
11	ON364826	ON364851	ON364859	ON364900	ON364926	ON364952	ON364960	ON365002	ON365394	ON365027	ON365053	ON365078	ON365104
12	ON364827	ON364852	ON364858	ON364901	ON364927	ON364953	ON364959	ON365003	ON365395	ON365028	ON365054	ON365079	ON365105
13	ON364823	ON364848	ON364860	ON364897	ON364923	ON364949	ON364961	ON364998	ON365391	ON365024	ON365050	ON365075	ON365101
14	ON364813	ON364839	ON364874	ON364888	ON364914	ON364940	ON364979	ON364989	ON365382	ON365015	ON365041	ON365066	ON365092
15	ON364817	ON364842	/	ON364891	ON364917	ON364943	ON364978	ON364990	ON365385	ON365018	ON365044	ON365069	ON365095
16	ON364828	ON364853	ON364857	ON364902	ON364928	ON364954	ON364958	ON365004	/	ON365029	ON365055	ON365080	ON365106
17	ON364825	ON364850	ON364876	ON364899	ON364925	ON364951	ON364981	ON365001	ON365393	ON365026	ON365052	ON365077	ON365103
18	ON364816	ON364841	ON364864	ON364890	ON364916	ON364942	ON364965	ON364992	ON365384	ON365017	ON365043	ON365068	ON365094
19	ON364810	ON364836	ON364875	ON364884	ON364910	ON364936	ON364980	ON364987	ON365378	ON365012	ON365037	ON365063	ON365088
20	ON364820	ON364845	ON364871	ON364894	ON364920	ON364946	ON364974	ON364995	ON365388	ON365021	ON365047	ON365072	ON365098
21	ON364824	ON364849	ON364872	ON364898	ON364924	ON364950	ON364976	ON365000	ON365392	ON365025	ON365051	ON365076	ON365102
22	ON364811	ON364837	ON364866	ON364885	ON364911	ON364937	ON364967	ON364999	ON365379	ON365013	ON365038	ON365064	ON365089
23	ON364829	ON364854	/	ON364903	ON364929	ON364955	ON364975	ON365005	ON365396	ON365030	ON365056	ON365081	ON365107
24	ON364815	ON364840	ON364878	ON364889	ON364915	ON364941	ON364969	ON364991	ON365383	ON365016	ON365042	ON365067	ON365093
25	ON364814	ON364835	ON364877	ON364883	ON364909	ON364935	ON364968	ON364986	ON365377	ON365011	ON365036	ON365062	ON365087
26	KC165184	KC165206	KC165229	ON364887	ON364913	ON364939	KC165313	KC165336	ON365381	KC165378	ON365040	KC165421	ON365091
27	ON364818	ON364843	ON364873	ON364892	ON364918	ON364944	ON364977	ON364993	ON365386	ON365019	ON365045	ON365070	ON365096
28	/	/	/	/	/	/	/	/	/	/	/	/	/
29	/	/	/	/	/	/	/	/	/	/	/	/	/
30	/	/	/	/	/	/	/	/	/	/	/	/	/
31	/	/	/	/	/	/	/	/	/	/	/	/	/
32	/	/	/	/	/	/	/	/	/	/	/	/	/
33													
34	KC165197	KC165219	KC165242	KC165264	KC165284	KC165304	KC165326	KC165349	KC165371	KC165390	KC165413	KC165433	KC165455

Next page.....

Table S2. Continued.

ID	LRRN1	MGAT4C	MIOS	PANX-2	PDP-1	PPL	SACS	ZBED-4	POMC	RAG-1	BDNF	TTN	RAG-2
1	ON365125	ON365150	ON365175	ON365200	ON365224	ON365249	ON365273	ON365298	ON365324	ON365344	ON365364	ON365414	ON365435
2	ON365124	ON365149	ON365174	ON365199	ON365223	ON365248	ON365272	ON365297	ON365323	ON365339	ON365363	ON365413	ON365434
3	ON365110	ON365135	ON365160	ON365185	ON365210	ON365234	ON365259	ON365282	ON365308	ON365335	ON365349	ON365399	ON365424
4	ON365109	ON365134	ON365159	ON365184	ON365209	ON365233	ON365258	ON365281	ON365307	ON365334	ON365348	ON365398	ON365423
5	/	/	/	/	/	/	/	/	ON365333	/	/	/	/
6	ON365133	ON365158	ON365183	ON365208	ON365232	ON365257	ON365280	ON365306	ON365332	ON365347	ON365372	ON365422	ON365439
7	ON365111	ON365136	ON365161	ON365186	ON365211	ON365235	ON365260	ON365283	ON365309	ON365336	ON365350	ON365400	ON365425
8	ON365116	ON365140	ON365166	ON365191	ON365217	ON365239	ON365265	ON365288	ON365313	ON365340	ON365355	ON365405	ON365430
9	ON365112	ON365137	ON365162	ON365187	ON365212	ON365236	ON365261	ON365284	ON365310	/	ON365351	ON365401	ON365426
10	ON365122	ON365147	ON365172	ON365197	ON365222	ON365246	ON365270	ON365295	ON365321	ON365343	ON365361	ON365411	ON365433
11	ON365129	ON365154	ON365179	ON365205	ON365228	ON365253	ON365276	ON365302	ON365328	/	ON365368	ON365418	ON365437
12	ON365130	ON365155	ON365180	ON365206	ON365229	ON365254	ON365277	ON365303	ON365329	/	ON365369	ON365419	ON365438
13	ON365126	ON365151	ON365176	ON365201	ON365225	ON365250	ON365274	ON365299	ON365325	ON365345	ON365365	ON365415	/
14	ON365117	ON365142	ON365167	ON365192	ON365218	ON365240	ON365266	ON365290	ON365315	/	ON365356	ON365406	/
15	ON365120	ON365145	ON365170	ON365195	ON365220	ON365244	ON365268	ON365293	ON365319	/	ON365359	ON365409	/
16	ON365131	ON365156	ON365181	ON365203	ON365230	ON365255	ON365278	ON365304	ON365330	ON365346	ON365370	ON365420	/
17	ON365128	ON365153	ON365178	ON365204	ON365227	ON365252	/	ON365301	ON365327	/	ON365367	ON365417	/
18	ON365119	ON365144	ON365169	ON365194	ON365219	ON365243	ON365267	ON365292	ON365318	ON365341	ON365358	ON365408	ON365431
19	ON365114	/	ON365164	ON365189	ON365214	ON365237	ON365263	ON365286	ON365311	/	ON365353	ON365403	ON365428
20	ON365123	ON365148	ON365173	ON365198	ON365215	ON365247	ON365271	ON365296	ON365322	/	ON365362	ON365412	/
21	ON365127	ON365152	ON365177	ON365202	ON365226	ON365251	ON365275	ON365300	ON365326	/	ON365366	ON365416	ON365436
22	ON365115	ON365139	ON365165	ON365190	ON365216	ON365238	ON365264	ON365287	ON365312	ON365338	ON365354	ON365404	ON365429
23	ON365132	ON365157	ON365182	ON365207	ON365231	ON365256	ON365279	ON365305	ON365331	/	ON365371	ON365421	/
24	ON365118	ON365143	ON365168	ON365193	/	ON365242	/	ON365291	ON365317	/	ON365357	ON365407	/
25	ON365113	ON365138	ON365163	ON365188	ON365213	ON365241	ON365262	ON365285	ON365316	ON365337	ON365352	ON365402	ON365427
26	KC165463	ON365141	KC165504	KC165527	KC165548	KC165570	KC165629	ON365289	ON365314	/	/	KC165649	/
27	ON365121	ON365146	ON365171	ON365196	ON365221	ON365245	ON365269	ON365294	ON365320	ON365342	ON365360	ON365410	ON365432
28	/	/	/	/	/	/	/	/	/	/	/	/	/
29	/	/	/	/	/	/	/	/	/	/	/	/	/
30	/	/	/	/	/	/	/	/	/	/	/	/	/
31	/	/	/	/	/	/	/	/	/	/	/	/	/
32	/	/	/	/	/	/	/	/	/	/	/	/	/
33													
34	KC165475	KC165496	KC165517	KC165539	KC165560	KC165582	KC165641	KC165683	/	KC165601	/	KC165661	KC165622

Supplementary Table S3 Primers used in PCR and sequencing.

Marker	Primer name and sequence (5'-3')	Product size (base pairs) ~	Annealing temp (°C)	Source
MIOS	KC165517-F: TATGACCCAGAGTGCCTCTTG	945	57	This study
	KC165517-R: AGAGCTAGTCTTCACTTCTTCC			
BPTF	MIOS-KC165504-F: GTGCCTCTTGGCAGTTGG	918	56	This study
	MIOS-KC165504-R: TCTTCTGTGCACTCATACAAGT			
CAND1	KC165059-F: GAGATGCACATAGCGCTTTTGA	507	53	This study
	KC165059-R: TTTATTTTTTTGGATTTCCGGG			
DET1	CAND1-KC165079-F: TCTGAGGCCCTCTTGTTAC	1153	53	This study
	CAND1-KC165079-R: ATGCAGAGCCAATTATTTCTTT			
DISP1	DET1-KC165100-F: GCAGCAGAGGATCTCTTGCAT	711	59	This study
	DET1-KC165100-R: CTGCCTGAGCTGGTCAAAGTAC			
DNAH3	DISP1-KC165122-F: CTGAAACGGTTAGCATCACCCCT	990	55	This study
	DISP1-KC165122-R: GGTATCGTTTGTATCAAACCTA			
DOLK	DNAH3-KC165144-F: CGTCTTAAAGAAGCTGAAGATG	885	55	This study
	DNAH3-KC165144-R: CAGCCCAAGTGGAGTAATCAT			
DSEL	DOLK-KC165166-F: GTGGTATCAGCTTTGTTCTCAA	734	57	This study
	DOLK-KC165166-R: CACTCCACAGTAGGGAACGAG			
ENCL	DSEL-KC165184-F: GAAGATACAGAGTGTGAGTGAA	1234	52	This study
	DSEL-KC165184-R: AAAATCAATATCCAGATTGTGG			
EXTL3	ENCL-KC165206-F: CGTGCGCAGAGTTTCTAGAGA	1053	57	This study
	ENCL-KC165206-R: CTGTGTAGCGCCAAGGTTGT			
FAT4	EXTL3-KC165229-F: CGACTTTTGCCAGAGAAAGACA	1245	55	This study
	EXTL3-KC165229-R: ATCCCCATTGTCAGCCATATTA			
FICD	FAT4-KC165250-F: GCTTTGTTATTTTTGAGAATGT	724	51	This study
	FAT4-KC165250-R: GCATTCCCTGAGATGATAGTATA			
GRM2	FICD- KC165272-F: ACTTTATCTCTATCTGAAATCAGG	508	53	This study
	FICD- KC165272-R: CCATTTCCAGAGCATCATAATA			
HYP	GRM2-KC165292-F: TGCCAGCCTTCCAGTATCTC	671	57	This study
	GRM2-KC165292-R: TTGAAGGCATAGACCGTGCATA			
KBTBD2	HYP-KC165313-F: CCAGATTCTGATTCATCATATC	1255	53	This study
	HYP-KC165313-R: CTTGGTGTAAATAATCCCCCTTA			
KCNF1	KBTBD2-KC165336-F: ATGTCCTGGCTGGAGTACAACA	1071	56	This study
	KBTBD2-KC165336-R: ATCATACTGGTAGATGGCGTAT			
KIAA1239	KCNF1-KC165358-F: GTTGACCTGTTGGATGACTGCT	737	57	This study
	KCNF1-KC165358-R: ATGGCCCACCAAAGGAGTG			
KIAA2013	KIAA1239-KC165378-F: GTTCCTTTGCACTCTTCTATGG	1376	55	This study
	KIAA1239-KC165378-R: GATATTCTTTGCCCGTTTATGC			
LIG4	KIAA2013-KC165400-F: TGGCCTGAGAATATTAGCAGTG	520	55	This study
	KIAA2013-KC165400-R: TCTGCTTTGCCATGTGCTCT			
LPHN2	LIG4-KC165421-F: ATTGAAGTGCTAGGTTTACCTA	1017	52	This study
	LIG4-KC165421-R: CTTTACCATGATTCCTTCTTCT			
	LPHN2-KC165442-F: CACTTCGAAACGGGGACTACA	575	57	This study
	LPHN2-KC165442-R: CCTGCTGATCTGGTAATACATC			

LRRN1	LRRN1-KC165463-F: TTGACAAGTATGCTCTTGATAA LRRN1-KC165463-R: TACGTGATATGCGGGTTATCG	802	53	This study
MGAT4C	MGAT4C-KC165484-F: TTGTAGTGGTCGTACACTTAGC MGAT4C-KC165484-R: TTTGCTTATCTTAATGGGTTTT	770	52	This study
PANX2	PANX2 -KC165527-F: GAACTCAAAGATGCGTTGCC PANX2 -KC165527-R: CATCGCAAGAATGTTAATATCA	744	53	This study
PDP1	PDP1- KC165548-F: TGTTTGCAGACTAGAGGGATGC PDP1- KC165548-R: CCGCATTCTGGTCTTCAAAC	1036	57	This study
PPL	PPL-KC165570-F: CTGCTAGAACAAGAGCGAAAGT PPL-KC165570-R: GTCTTTGTCCTGGGATATTTTC	1311	55	This study
RAG1	RAG1- KC165590-F: GAGAAGGCCCTGTTGCCA RAG1- KC165590-R: CTTGTTACCTGATTCGTTGCCT	1380	57	This study
RAG2	RAG2-KC165610-F: GAACTCTCCCACAGAATGTACG RAG2-KC165610-R: CATCGTCTGAATTATAAGCGTC	892	56	This study
SACS	SACS-KC165629-F: GATATACCAAGGAGGGTAGCAG SACS-KC165629-R: CCATGGTGTATGTAATCTGCTG	961	57	This study
TTN	TTN-KC165649-F: GCCTTTGGAGAGTGAACCAGTA TTN-KC165649-R: ACAGTGATATTTGATGTGGGAC	957	56	This study
ZBED4	ZBED4-KC165670-F: GCACTTGATCTTCAGCCATATT ZBED4-KC165670-R: TCATGAATAGTTGAGGATAGCC	998	54	This study
BDNF	F: ACCATCCTTTTCCTKACTATGG R: CTATCTTCCCCTTTTAATGGTC	700	55	Wang et al., 2018
POMC	F: ACTGCAGGAAATAAGAGAGAAG R: GAGTCATTAGAGGTGTTTACT	500	48	Luo et al., 2021

Supplementary Table S4 Information on geographical distribution records of two *Paramesotriton* species groups collected in this study.

Species group	Longitude	Latitude	Source
<i>P. caudopunctatus</i> species group (West)	108.197737	26.481252	In this study
<i>P. caudopunctatus</i> species group (West)	108.261	26.396008	In this study
<i>P. caudopunctatus</i> species group (West)	108.197866	26.304053	In this study
<i>P. caudopunctatus</i> species group (West)	108.59222	26.434043	In this study
<i>P. caudopunctatus</i> species group (West)	108.313297	25.580852	In this study
<i>P. caudopunctatus</i> species group (West)	108.281119	26.293106	In this study
<i>P. caudopunctatus</i> species group (West)	108.14186	26.275929	In this study
<i>P. caudopunctatus</i> species group (West)	108.243171	26.463758	In this study
<i>P. caudopunctatus</i> species group (West)	108.13585	26.376318	In this study
<i>P. caudopunctatus</i> species group (West)	106.778913	25.714375	In this study
<i>P. caudopunctatus</i> species group (West)	106.777046	25.72002	In this study
<i>P. caudopunctatus</i> species group (West)	106.808503	25.801611	In this study
<i>P. caudopunctatus</i> species group (West)	106.730917	25.818368	In this study
<i>P. caudopunctatus</i> species group (West)	106.851289	26.01872	In this study
<i>P. caudopunctatus</i> species group (West)	106.547835	26.086494	In this study
<i>P. caudopunctatus</i> species group (West)	106.444538	26.039134	In this study
<i>P. caudopunctatus</i> species group (West)	106.813352	26.154783	In this study
<i>P. caudopunctatus</i> species group (West)	106.796808	26.387353	In this study
<i>P. caudopunctatus</i> species group (West)	106.92034	26.952888	In this study
<i>P. caudopunctatus</i> species group (West)	106.625217	26.244392	In this study
<i>P. caudopunctatus</i> species group (West)	105.804262	27.396384	In this study
<i>P. caudopunctatus</i> species group (West)	105.98227	27.364926	In this study
<i>P. caudopunctatus</i> species group (West)	105.985183	27.363249	In this study
<i>P. caudopunctatus</i> species group (West)	106.045162	27.367432	In this study
<i>P. caudopunctatus</i> species group (West)	107.03001	28.456279	In this study
<i>P. caudopunctatus</i> species group (West)	107.036362	28.622501	In this study
<i>P. caudopunctatus</i> species group (West)	107.346039	28.188546	In this study
<i>P. caudopunctatus</i> species group (West)	108.954313	29.297053	In this study
<i>P. caudopunctatus</i> species group (West)	109.009839	29.51392	In this study
<i>P. caudopunctatus</i> species group (West)	109.095225	29.620923	In this study
<i>P. caudopunctatus</i> species group (West)	104.812976	23.139141	In this study
<i>P. caudopunctatus</i> species group (West)	107.916352	25.185239	In this study
<i>P. caudopunctatus</i> species group (West)	108.616785	27.849239	In this study
<i>P. caudopunctatus</i> species group (West)	108.770935	27.929957	In this study
<i>P. caudopunctatus</i> species group (West)	108.729865	27.888523	In this study
<i>P. caudopunctatus</i> species group (West)	108.68547	27.7829	In this study
<i>P. caudopunctatus</i> species group (West)	108.734136	27.967721	In this study
<i>P. caudopunctatus</i> species group (West)	108.772759	27.847652	In this study
<i>P. caudopunctatus</i> species group (West)	108.716509	28.948837	In this study
<i>P. caudopunctatus</i> species group (West)	108.954313	29.297053	In this study
<i>P. caudopunctatus</i> species group (West)	108.898846	28.731923	In this study
<i>P. caudopunctatus</i> species group (West)	105.840558	26.553565	In this study
<i>P. caudopunctatus</i> species group (West)	105.774983	26.6645	In this study
<i>P. caudopunctatus</i> species group (West)	105.839378	26.680173	In this study
<i>P. caudopunctatus</i> species group (West)	105.865524	26.756264	In this study

<i>P. caudopunctatus</i> species group (West)	105.759212	26.837709	In this study
<i>P. caudopunctatus</i> species group (West)	108.314679	25.579765	In this study
<i>P. caudopunctatus</i> species group (West)	108.233159	25.639275	In this study
<i>P. caudopunctatus</i> species group (West)	108.318819	25.70709	In this study
<i>P. caudopunctatus</i> species group (West)	107.911596	25.184853	In this study
<i>P. caudopunctatus</i> species group (West)	107.943123	25.185942	In this study
<i>P. caudopunctatus</i> species group (West)	105.390437	27.099267	In this study
<i>P. caudopunctatus</i> species group (West)	105.727726	27.104621	In this study
<i>P. caudopunctatus</i> species group (West)	105.820525	27.177789	In this study
<i>P. caudopunctatus</i> species group (West)	105.756279	27.345541	In this study
<i>P. caudopunctatus</i> species group (West)	105.790186	27.159943	In this study
<i>P. caudopunctatus</i> species group (West)	107.40546	28.146517	In this study
<i>P. caudopunctatus</i> species group (West)	107.016735	28.546227	In this study
<i>P. caudopunctatus</i> species group (West)	108.995019	29.373804	In this study
<i>P. caudopunctatus</i> species group (West)	109.104593	29.61865	In this study
<i>P. caudopunctatus</i> species group (West)	108.88535	28.723806	In this study
<i>P. caudopunctatus</i> species group (West)	109.303778	25.86536	In this study
<i>P. caudopunctatus</i> species group (West)	108.150215	25.602191	In this study
<i>P. caudopunctatus</i> species group (West)	107.946652	25.208668	In this study
<i>P. caudopunctatus</i> species group (West)	108.340834	25.617008	In this study
<i>P. caudopunctatus</i> species group (West)	111.041723	25.01041	In this study
<i>P. caudopunctatus</i> species group (West)	108.667422	26.559867	In this study
<i>P. caudopunctatus</i> species group (West)	106.864634	26.862467	In this study
<i>P. caudopunctatus</i> species group (West)	105.746287	26.514114	In this study
<i>P. caudopunctatus</i> species group (West)	105.666287	26.454114	In this study
<i>P. chinensis</i> species group (East)	119.994415	27.196719	Yuan Z, Wu Y, Zhou J, Che J. 2016. A new species of the genus <i>Paramesotriton</i> (Caudata: Salamandridae) from Fujian, southeastern China. <i>Zootaxa</i> , 4205(6), 549-563.
<i>P. chinensis</i> species group (East)	118.947252	25.479307	http://www.taihainet.com/news/fujian/puti/2015-04-30/1406281.html
<i>P. chinensis</i> species group (East)	119.663086	26.529565	https://fj.qq.com/a/20150506/045708.htm
<i>P. chinensis</i> species group (East)	119.821886	28.194358	Liu RL, Zhou JJ, Liu KC, Jin W, Ye WJ, Xu XW. 2019. <i>P. aurantius</i> (Caudata: Salamandridae) Found in Zhejiang Province. <i>Chinese Journal of Zoology</i> , 54(01):117-122. (in Chinese)
<i>P. chinensis</i> species group (East)	121.53944	30.03518782	http://nb.zjол.com.cn/system/2016/03/23/021078566.shtml
<i>P. chinensis</i> species group (East)	118.5411072	29.72741488	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. <i>Fauna Sinica, Amphibia Anura</i> , vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	118.01239	29.740532	In this study
<i>P. chinensis</i> species group (East)	118.161546	30.12454	In this study
<i>P. chinensis</i> species group (East)	117.824073	30.478658	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. <i>Fauna Sinica, Amphibia Anura</i> , vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	120.926514	29.077776	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. <i>Fauna Sinica, Amphibia Anura</i> , vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	120.105286	30.223475	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. <i>Fauna Sinica, Amphibia Anura</i> , vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	121.43	29.288	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. <i>Fauna Sinica, Amphibia Anura</i> , vol. 1. Beijing, China: Science Press. (in Chinese)

<i>P. chinensis</i> species group (East)	121.039124	28.782104	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. Fauna Sinica, Amphibia Anura, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	121.033726	28.373936	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. Fauna Sinica, Amphibia Anura, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	119.696045	28.618282	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. Fauna Sinica, Amphibia Anura, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	120.926514	28.256006	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. Fauna Sinica, Amphibia Anura, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	119.415894	30.2733	https://www.slideserve.com/ailani/amphibia
<i>P. chinensis</i> species group (East)	119.9131698	29.60996014	https://weibo.com/2129611710/K9MGUwrja
<i>P. chinensis</i> species group (East)	118.415	29.137101	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. Fauna Sinica, Amphibia Anura, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	119.276	28.592101	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. Fauna Sinica, Amphibia Anura, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	119.745483	29.71191	In this study
<i>P. chinensis</i> species group (East)	121.637878	29.396534	Fei L, Hu SQ, Ye CY, Huang YZ. 2006. Fauna Sinica, Amphibia Anura, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (East)	120.521661	28.15511274	http://www.yjnet.cn/system/2008/05/24/01093503.shtml
<i>P. chinensis</i> species group (East)	120.0059995	30.42837021	https://m.gmw.cn/2021-03/08/content_1302154067.htm?source=sohu
<i>P. chinensis</i> species group (East)	118.4172021	29.14828966	https://zj.qq.com/a/20160522/014484.htm
<i>P. chinensis</i> species group (East)	120.019069	30.439184	https://www.360kuai.com/pc/9ba1961a1731e30fl?cota=3&kuai_so=1&tj_url=so_vip&sign=360_57c3bbd1&refer_scene=so_1
<i>P. chinensis</i> species group (East)	111.560318	24.636065	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	111.140442	24.790475	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	111.791382	24.495897	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	110.134643	24.067398	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	109.988251	25.853044	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	110.03036	25.904891	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	111.702907	25.873165	Shen YH. 2014. Fauna Hunan,Amphibia.Changsha,China: Hunan Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	111.642052	25.768409	Shen YH. 2014. Fauna Hunan,Amphibia.Changsha,China: Hunan Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	111.334076	25.479232	Shen YH. 2014. Fauna Hunan,Amphibia.Changsha,China: Hunan Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (East)	119.504813	27.899915	In this study
<i>P. chinensis</i> species group (East)	119.31743	27.72443	https://www.sohu.com/a/486038039_22611

<i>P. chinensis</i> species group (East)	118.882751	28.35553782	https://ishare.ifeng.com/c/s/v002wRMktNCWB1Apb3Bv0jS7hLB5cPxyku3j--5bMXNgeng
<i>P. chinensis</i> species group (East)	118.765395	28.269922	https://ishare.ifeng.com/c/s/v002wRMktNCWB1Apb3Bv0jS7hLB5cPxyku3j--5bMXNgeng
<i>P. chinensis</i> species group (East)	119.723842	28.61655	In this study
<i>P. chinensis</i> species group (East)	120.164994	28.505667	https://www.sohu.com/a/193875306_694517
<i>P. chinensis</i> species group (East)	121.053905	29.327741	https://www.sohu.com/a/314191081_165022
<i>P. chinensis</i> species group (East)	120.83812	28.72526	https://baijiahao.baidu.com/s?id=1621984588053844301
<i>P. chinensis</i> species group (East)	120.016229	30.433685	https://www.163.com/dy/article/G5R029II05373HF6.html
<i>P. chinensis</i> species group (South)	107.163784	22.043904	Fei L, Ye CY. 2016. Amphibians of China, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (South)	107.88207	21.882411	In this study
<i>P. chinensis</i> species group (South)	111.171734	22.613892	In this study
<i>P. chinensis</i> species group (South)	111.24606	22.081429	https://www.163.com/dy/article/G6BUFD060534T3AQ.html
<i>P. chinensis</i> species group (South)	114.02916	22.57217	In this study
<i>P. chinensis</i> species group (South)	114.215134	22.577706	Fei L, Ye CY. 2016. Amphibians of China, vol. 1. Beijing, China: Science Press. (in Chinese)
<i>P. chinensis</i> species group (South)	113.070944	22.517583	In this study
<i>P. chinensis</i> species group (South)	112.212982	22.178503	In this study
<i>P. chinensis</i> species group (South)	114.165802	22.893888	https://mp.weixin.qq.com/s/IKy-8UN2UOkwUIB-rufMWg
<i>P. chinensis</i> species group (South)	114.417	23.1107	Zhou FS, Ye GF. 2016. Guangdong Lusheng Jizhui Dongwu Fengbu Minglu. Guangzhou, China: Guangdong Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (South)	112.002869	21.973614	In this study
<i>P. chinensis</i> species group (South)	111.791	22.1703	https://www.bilibili.com/video/av22569571
<i>P. chinensis</i> species group (South)	116.623	23.6564	In this study
<i>P. chinensis</i> species group (South)	114.5483887	22.5220512	https://mp.weixin.qq.com/s/JPW8n50LPbosPWLksMmRqg
<i>P. chinensis</i> species group (South)	114.151003	22.469651	https://mp.weixin.qq.com/s/LvCZ5d5ZyieO1waq4c6wWw
<i>P. chinensis</i> species group (South)	114.177818	22.428167	https://www.sohu.com/a/195626718_256054
<i>P. chinensis</i> species group (South)	114.225403	22.904548	https://www.sohu.com/a/156646302_170981
<i>P. chinensis</i> species group (South)	113.774384	22.875507	https://my2.xizi.com/user/login?referrer=htp%3A%2F%2Fbbs.xizi.com%2Fread.php%3Ftid%3D4297268%26page%3D1%26fpag e%3D318
<i>P. chinensis</i> species group (South)	112.043108	22.242791	https://www.thepaper.cn/newsDetail_forward_16420924
<i>P. chinensis</i> species group (South)	107.853109	21.874356	In this study
<i>P. chinensis</i> species group (South)	107.926508	21.874697	In this study
<i>P. chinensis</i> species group (South)	107.654684	21.783162	In this study
<i>P. chinensis</i> species group (South)	107.132363	22.039103	In this study
<i>P. chinensis</i> species group (South)	107.178405	22.036842	In this study
<i>P. chinensis</i> species group (South)	111.103802	22.076421	In this study
<i>P. chinensis</i> species group (South)	111.129976	22.100215	In this study
<i>P. chinensis</i> species group (South)	111.232769	22.146377	https://www.bilibili.com/video/av22569571
<i>P. chinensis</i> species group (South)	111.154818	22.64058	Zhou FS, Ye GF. 2016. Guangdong Lusheng Jizhui Dongwu Fengbu Minglu.

<i>P. chinensis</i> species group (South)	111.251008	22.573836	Guangzhou, China:Guangdong Science and Technology Press. (in Chinese) Zhou FS, Ye GF. 2016. Guangdong Lusheng Jizhui Dongwu Fengbu Minglu. Guangzhou, China:Guangdong Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (South)	111.166358	22.565448	https://www.bilibili.com/video/av22569571
<i>P. chinensis</i> species group (South)	112.007914	21.939779	https://www.bilibili.com/video/av22569571
<i>P. chinensis</i> species group (South)	111.525954	21.90837	https://www.bilibili.com/video/av22569571
<i>P. chinensis</i> species group (South)	111.1411	22.079787	http://news.sohu.com/2004/03/23/59/news_19555934.shtml
<i>P. chinensis</i> species group (South)	111.164895	22.526602	In this study
<i>P. chinensis</i> species group (South)	110.371166	22.895299	In this study
<i>P. chinensis</i> species group (South)	110.259355	22.827711	In this study
<i>P. chinensis</i> species group (South)	110.174885	24.124011	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (South)	110.049269	23.91325	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (South)	112.9943848	24.91508593	Xu J,Zhou PZ.,Wen CY,Chen JR.2000. An Investigation on Amphibia Fauna in the Nanling Area , Guangdong. Acta Scieniarum Naturalium Universitatis Sunyatseni. 39(2): 78-81.
<i>P. chinensis</i> species group (South)	106.771529	22.322979	In this study
<i>P. chinensis</i> species group (South)	107.414959	21.771801	In this study
<i>P. chinensis</i> species group (South)	107.58462	21.698668	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (South)	107.69995	21.820868	In this study
<i>P. chinensis</i> species group (South)	108.034978	21.89067	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (South)	108.056387	21.766403	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (South)	108.146208	21.785544	Mo YM,Wei ZY., Chen WC. 2014. Colored Atlas of Guangxi Amphibians. Nanning, China: Guangxi Science and Technology Press. (in Chinese)
<i>P. chinensis</i> species group (South)	107.547509	21.772892	In this study
<i>P. chinensis</i> species group (South)	107.958679	21.720603	In this study
<i>P. chinensis</i> species group (South)	108.176965	21.956676	In this study
<i>P. chinensis</i> species group (South)	112.3516846	22.54807432	https://www.bilibili.com/video/av22569571
<i>P. chinensis</i> species group (South)	112.0523071	22.49225722	https://www.bilibili.com/video/av22569571

Supplementary Table S5 Nineteen environmental variables downloaded from WorldClim database.

Variable	Description
BIO1	Annual Mean Temperature
BIO2	Mean Diurnal Range
BIO3	Isothermality
BIO4	Temperature Seasonality
BIO5	Max Temperature of Warmest Month
BIO6	Min Temperature of Coldest Month
BIO7	Temperature Annual Range
BIO8	Mean Temperature of Wettest Quarter
BIO9	Mean Temperature of Driest Quarter
BIO10	Mean Temperature of Warmest Quarter
BIO11	Mean Temperature of Coldest Quarter
BIO12	Annual Precipitation
BIO13	Precipitation of Wettest Month
BIO14	Precipitation of Driest Month
BIO15	Precipitation Seasonality
BIO16	Precipitation of Wettest Quarter
BIO17	Precipitation of Driest Quarter
BIO18	Precipitation of Warmest Quarter
BIO19	Precipitation of Coldest Quarter

Supplementary Table S6 Six environmental variables used to train Maxent models and percentage contribution of environmental variables.

Variable	<i>P. caudopunctatus</i> species group (West)	<i>P. chinensis</i> species group (East)	<i>P. chinensis</i> species group (South)
Bio1	9.3	2.8	22.2
Bio4	26.1	2.0	6.3
Bio6	0.6	8.0	9.5
Bio13	2.3	31.3	3.1
Bio17	52.2	45.5	17.4
Bio19	9.5	10.4	41.5

Supplementary Table S7 Model performance under optimal parameters with respect to regularization multipliers (RM), feature classes (FC), and predictor sets (Pred.Sets) for two *Paramesotriton* species groups. Delta AICc of models with default settings is relative to selected models. Bold numbers indicate final models that met statistical significance and omission rate criteria during evaluation with independent data.

Species group	RM	FC	Pred. Sets	Mean AUC ratio	Pval pROC	Omission rate 5%	AICc	Delta AICc	Weight AICc	Number of parameters	AUC
<i>P. caudopunctatus</i> species group (West)	1.2	lq	Set 1	1.98	0.00	0.00	1185.31	0.00	0.78	9.00	0.988
	0.20	lq	Set 1	1.91	0.00	0.00	933.56	0.00	1.00	6.00	0.987
	0.40	1	Set 1	1.91	0.00	0.00	933.92	0.36	0.46	6.00	/
<i>P. chinensis</i> species group (East)	0.60	1	Set 1	1.91	0.00	0.00	934.29	0.73	0.27	6.00	/
	0.80	1	Set 1	1.91	0.00	0.00	934.78	1.22	0.18	6.00	/
	1.00	1	Set 1	1.91	0.00	0.00	935.24	1.68	0.12	6.00	/
<i>P. chinensis</i> species group (South)	0.20	lq	Set 1	1.95	0.00	0.08	872.00	0.00	1.00	10.00	0.991

linear = l, quadratic = q, AUC=correlations of area under the curve.

Supplementary Table S8 Sequence information (a) and results of model selection by PartitionFinder (b).**(a)**

Sequence name	Sequence length	Variable sites	Parsimony-informative sites
mtDNA			
<i>rrnL</i>	1567	438	334
<i>rrnS</i>	940	225	167
<i>tRNAs</i>	1549	437	295
<i>atp6</i>	681	289	239
<i>atp8</i>	165	77	56
<i>cox1</i>	1548	538	452
<i>cox2</i>	687	223	183
<i>cox3</i>	783	283	235
<i>cytb</i>	1137	460	389
<i>nad1</i>	966	423	344
<i>nad2</i>	1041	502	395
<i>nad3</i>	345	154	131
<i>nad4L</i>	294	133	115
<i>nad4</i>	1377	624	501
<i>nad5</i>	1812	749	614
<i>nad6</i>	516	219	173
nuclear DNA			
<i>RAG1</i>	1371	85	59
<i>PDP1</i>	984	47	30
<i>LRRN1</i>	774	47	30
<i>KCNF1</i>	711	58	43
<i>ENC1</i>	1023	69	45
<i>CAND1</i>	1032	64	44
<i>DET1</i>	678	46	1
<i>DISP1</i>	909	45	37
<i>RAG2</i>	846	100	65
<i>PANX2</i>	708	43	36
<i>KBTBD2</i>	948	50	38
<i>GRM2</i>	645	45	37
<i>LPHN2</i>	549	33	26
<i>EXTL3</i>	1131	89	62
<i>DNAH3</i>	840	58	12
<i>ZBED4</i>	873	55	42
<i>LIG4</i>	912	80	5
<i>FAT4</i>	696	60	48

<i>KIAA1239</i>	1248	59	42
<i>KIAA2013</i>	507	36	25
<i>BDNF</i>	725	45	11
<i>BPTF</i>	477	20	4
<i>DOLK</i>	705	57	45
<i>DSEL</i>	1134	89	58
<i>FICD</i>	483	32	22
<i>HYP</i>	1143	74	57
<i>MGAT4C</i>	729	54	43
<i>MIOS</i>	870	43	36
<i>POMC</i>	444	35	9
<i>PPL</i>	1176	84	54
<i>SACS</i>	846	47	37
<i>TTN</i>	906	78	47

(b)

Subset	Partitions	Sites	Best fit model
1	rrnL, rrnS	2507	GTR+I+G
2	tRNAs	1549	HKY+I+G
3	ND2, ATP8, ND5, ND3, ND4, ND1, ATP6, COIII, ND4L, Cyt b	8601	GTR+I+G
4	COII, COI	2235	GTR+G
5	ND6	516	HKY+I+G
6	FICD, BPTF, PDP1, DET1, MIOS, KBTBD2, CAND1, KIAA1239, DISP1, LIG4, PANX2, DSEL, MGAT4C, FAT4, DNAH3, ZBED4, SACS, LPHN2, TTN BDNF, ENC1, LRRN1, KCNF1, EXTL3, RAG1, GRM2, DOLK, KIAA2013, HYP	15822	TRN+I+G
7	RAG2, POMC	8735	K80+I+G
8	PPL	1290	TRNEF+I+G
9		1176	HKY+G

Supplementary Table S9 Species information corresponding to numbers at tip of branches of the phylogenetic trees in Figure 2 and Figure 3.

ID	Species	Localities (* type localities)	Voucher
1	<i>Paramesotriton hongkongensis</i>	/	/
2	<i>Paramesotriton hongkongensis</i>	Chaoshan, Guangdong, China	GZNU20080815036
3	<i>Paramesotriton hongkongensis</i>	Hong Kong, China*	Tissue ID: GZNU37
4	<i>Paramesotriton aurantius</i>	Wangdongyang, Lishui, Zhejiang, China	LSU20200810WDY01
5	<i>Paramesotriton aurantius</i>	Jingning County, Zhejiang, China*	GZNU20201018001
6	<i>Paramesotriton chinensis</i>	Zhejiang, China	/
7	<i>Paramesotriton chinensis</i>	Ningbo, Zhejiang, China	Tissue ID: GZNU39
8	<i>Paramesotriton qixilingensis</i>	Yongxin County, Jiangxi, China	Tissue ID: GZNU38
9	<i>Paramesotriton labiatus</i>	Dayaoshan, Jinxiu, Guangxi	GZNU20210531001
10	<i>Paramesotriton deloustali</i>	southern Yunnan, China	CAU1507046
11	<i>Paramesotriton deloustali</i>	Hekou, Yunnan, China	Tissue ID: GZNU35
12	<i>Paramesotriton deloustali</i>	/	MVZ223628
13	<i>Paramesotriton guangxiensis</i>	Shiwandashan, Guangxi, China	Tissue ID: GZNU36
14	<i>Paramesotriton yunwuensis</i>	Xinyi City, Guangdong, China	GZNU20201018003
15	<i>Paramesotriton fuzhongensis</i>	Zhongshan County, Guangxi, China*	GZNU20070520002
16	<i>Paramesotriton longliensis</i>	Dafang County, Guizhou, China	GZNU20180709003
17	<i>Paramesotriton longliensis</i>	Dafang County, Guizhou, China	GZNU20190417045
18	<i>Paramesotriton longliensis</i>	Zunyi County, Guizhou, China	GZNU20180709004
19	<i>Paramesotriton maolanensis</i>	Libo County, Guizhou, China*	GZNU2006030003
20	<i>Paramesotriton longliensis</i>	Huishui County, Guizhou, China	GZNU20180618011
21	<i>Paramesotriton longliensis</i>	Longli County, Guizhou, China*	GZNU20191022002
22	<i>Paramesotriton longliensis</i>	Xianfeng County, Hubei, China	GZNU20201017001
23	<i>Paramesotriton longliensis</i>	Pingtang County, Guizhou, China	GZNU20200917001
24	<i>Paramesotriton longliensis</i>	Huishui County, Guizhou, China	GZNU20180618015
25	<i>Paramesotriton zhijinensis</i>	Zhijin County, Guizhou, China*	GZNU20190417007
26	<i>Paramesotriton caudopunctatus</i>	/	MVZ2236252
27	<i>Paramesotriton caudopunctatus</i>	Leishan County, Guizhou, China*	GZNU20191022001
28	<i>Paramesotriton wulingensis</i>	Jiangkou County, Guizhou, China	GZNU20070710001
29	<i>Paramesotriton wulingensis</i>	Youyang County, Chongqing, China*	GZNU20070710002
30	<i>Pachytriton feii</i>	Huangshan, Anhui	Tissue ID: 2020.8.4
31	<i>Pachytriton inexpectatus</i>	Danzhai County, Guizhou, China	GZNU20180706001
32	<i>Cynops orientalis</i>	Mingtang Mountain, Anqing, Anhui	Tissue ID: 2016.4.14
33	<i>Tylototriton kweichowensis</i>	Nayong County, Guizhou, China	GZNU20180516035
34	<i>Tylototriton asperrimus</i>	/	MVZ237103