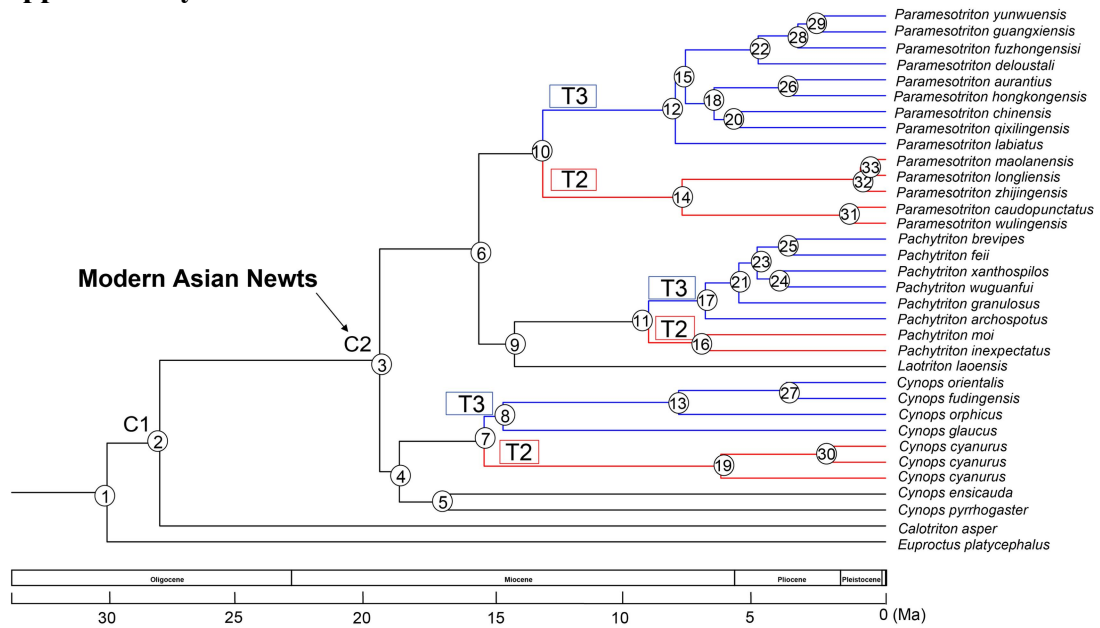
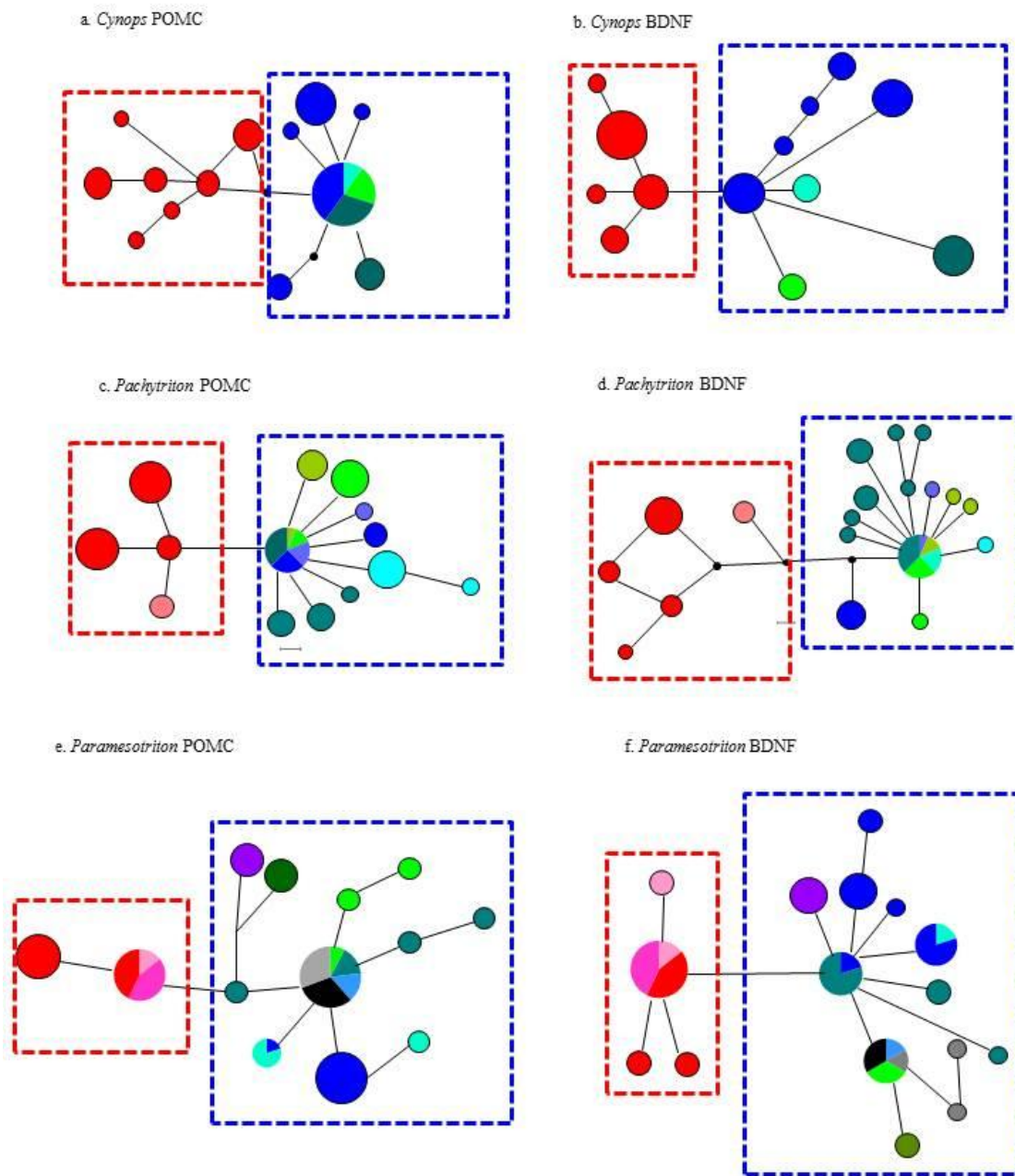


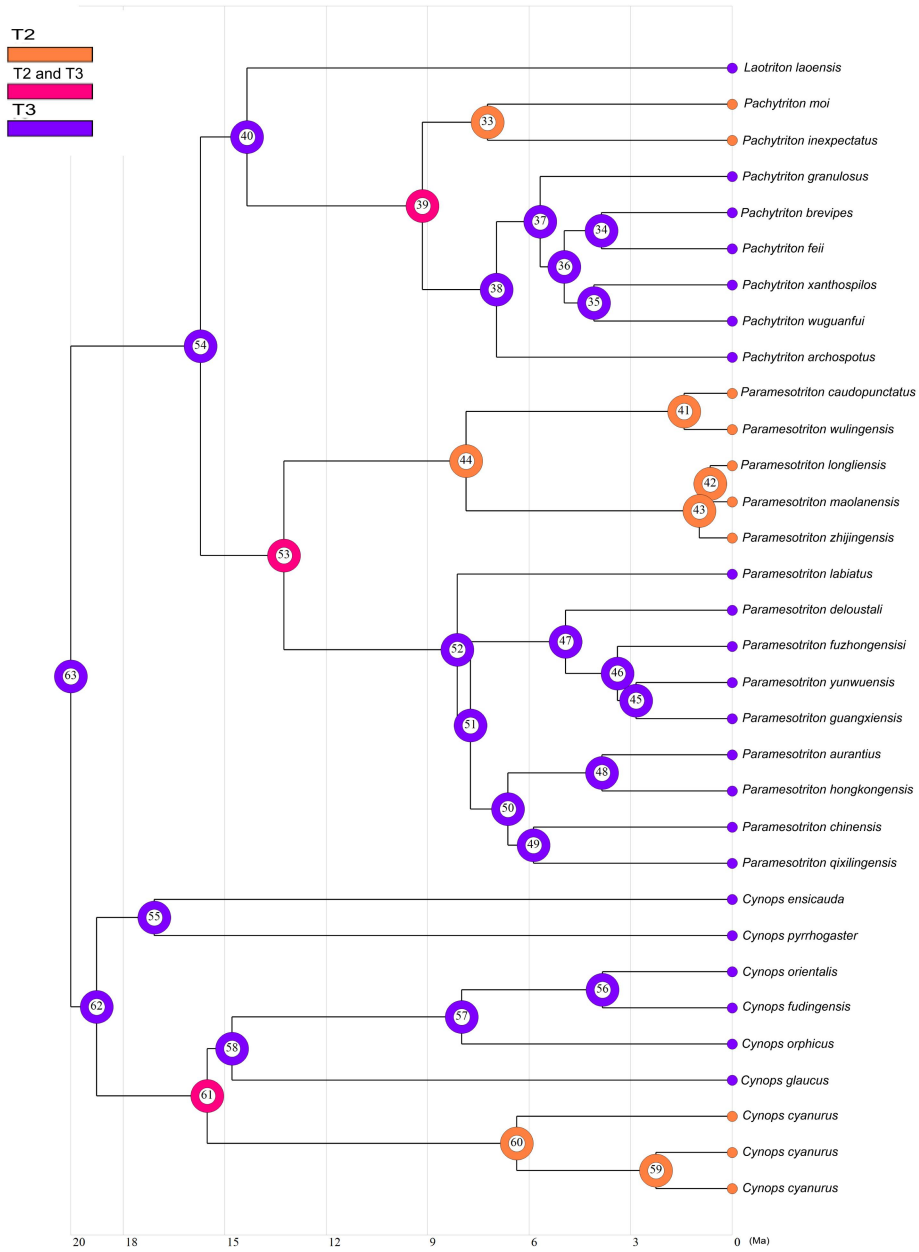
## Supplementary Materials

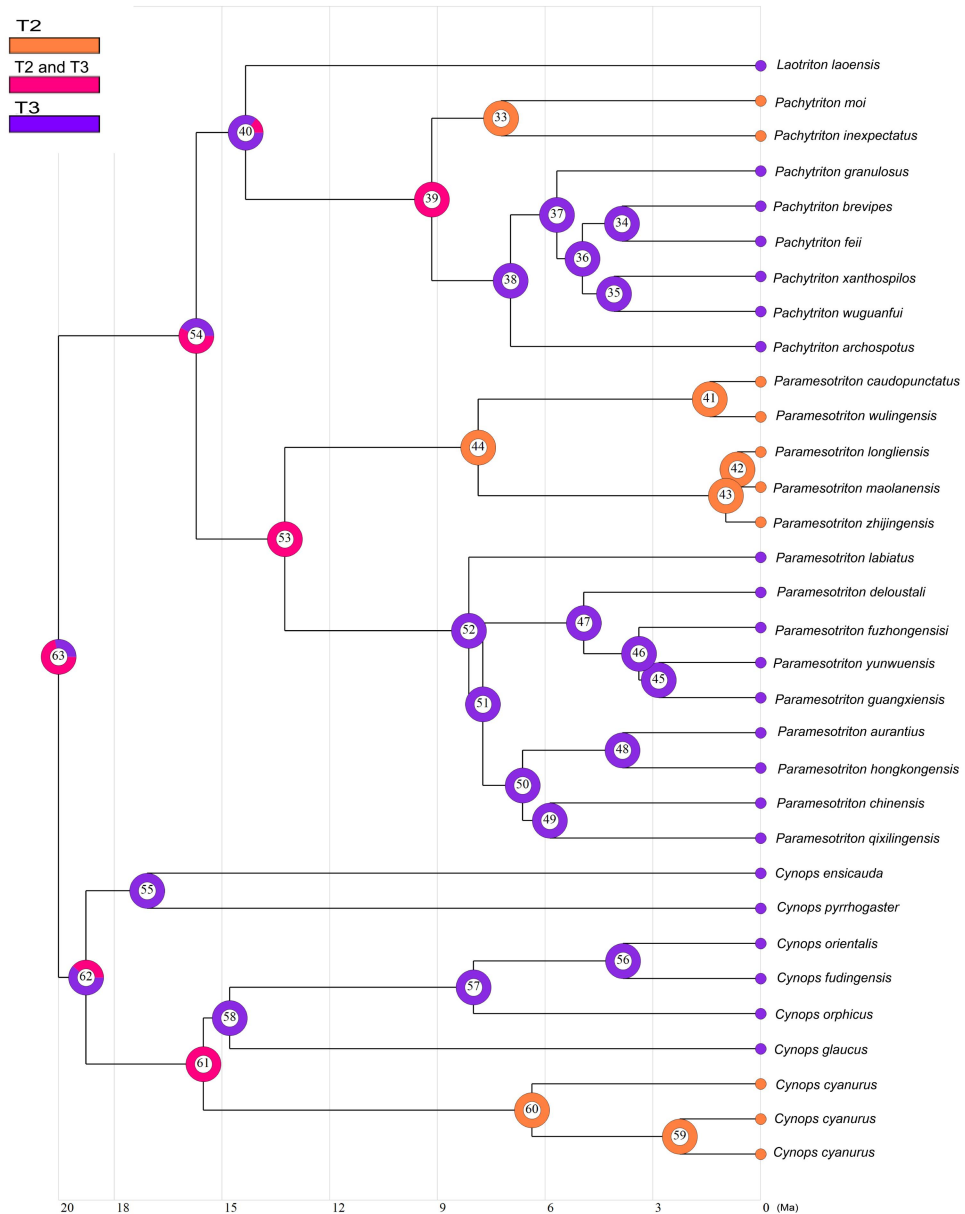


**Supplementary Figures S1** Time tree of the extant modern Asian newts derived from a BEAST analysis of a reduced data set (Supplementary Table S1). C1 and C2 indicate calibration points. Branch lengths are proportional to divergence times. Supplementary Table S2 gives dates for numbered nodes. Red branches indicate T2 and blue branches T3.

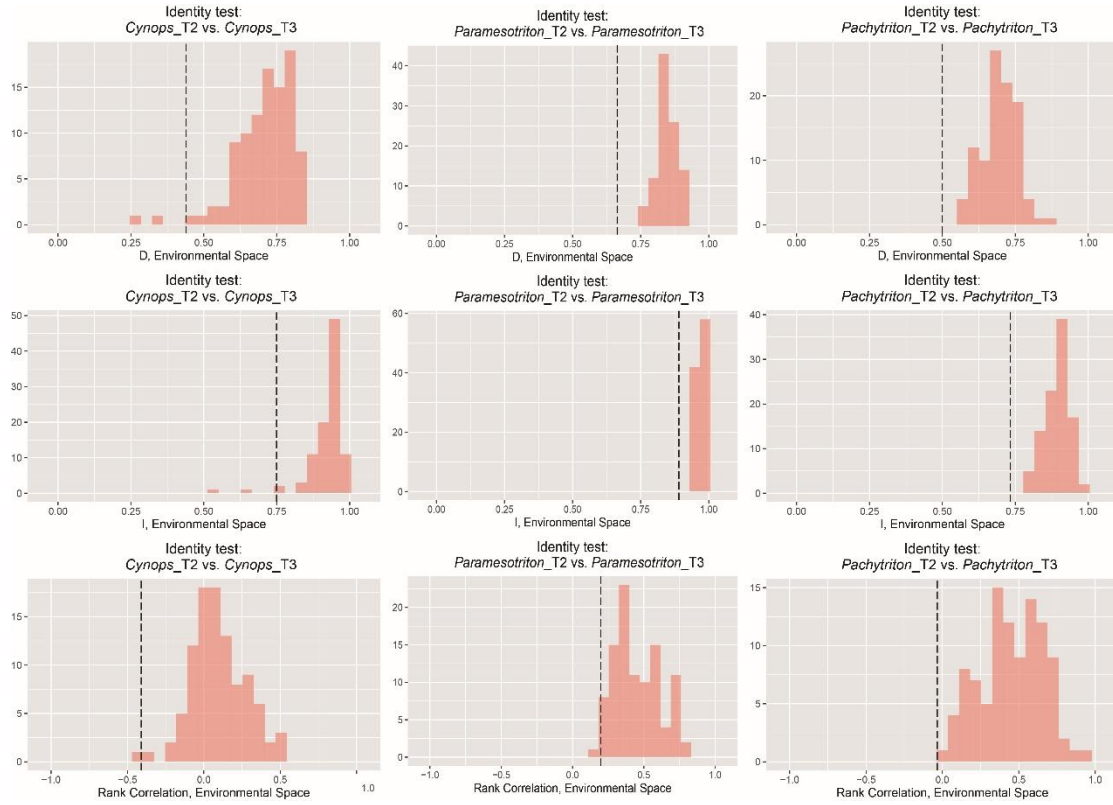


**Supplementary Figures S2** Median-joining networks of *POMC* and *BDNF* for *Cynops* (a, b), *Paramesotriton* (c, d) and *Pachytriton* (e, f). Colours of the haplotypes correspond to those in Figures 3 - 5. The red and blue dotted square represent the T2 and T3 of each genus, respectively.

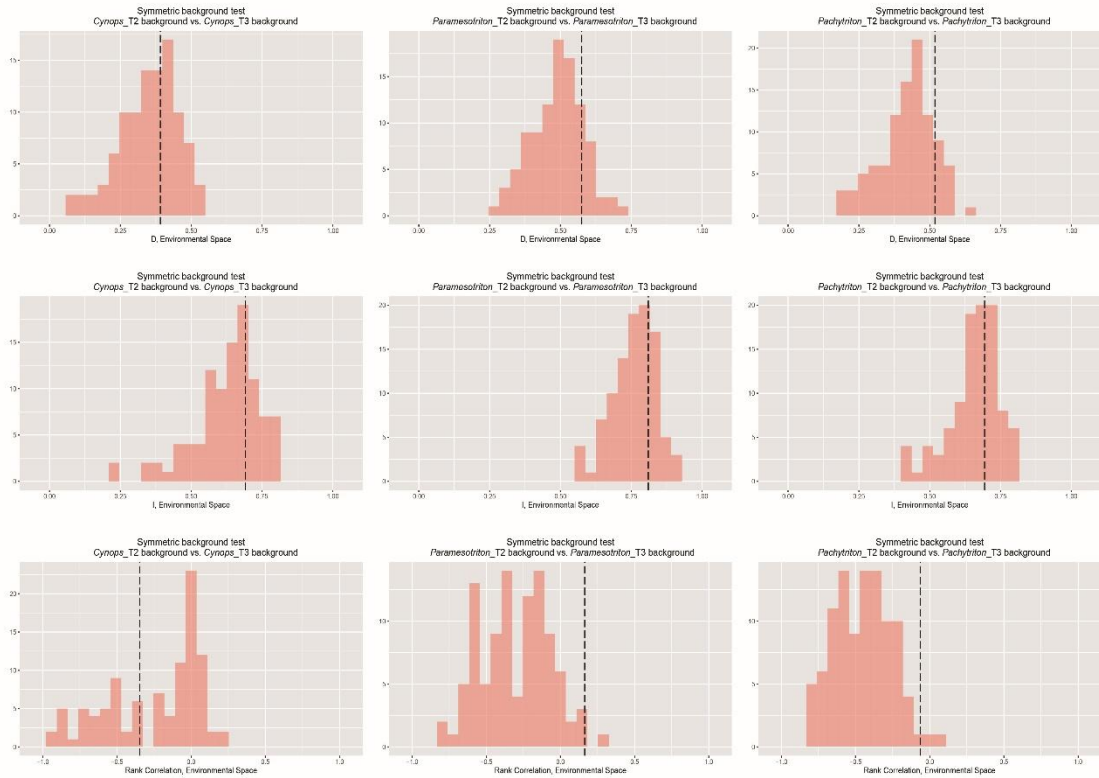




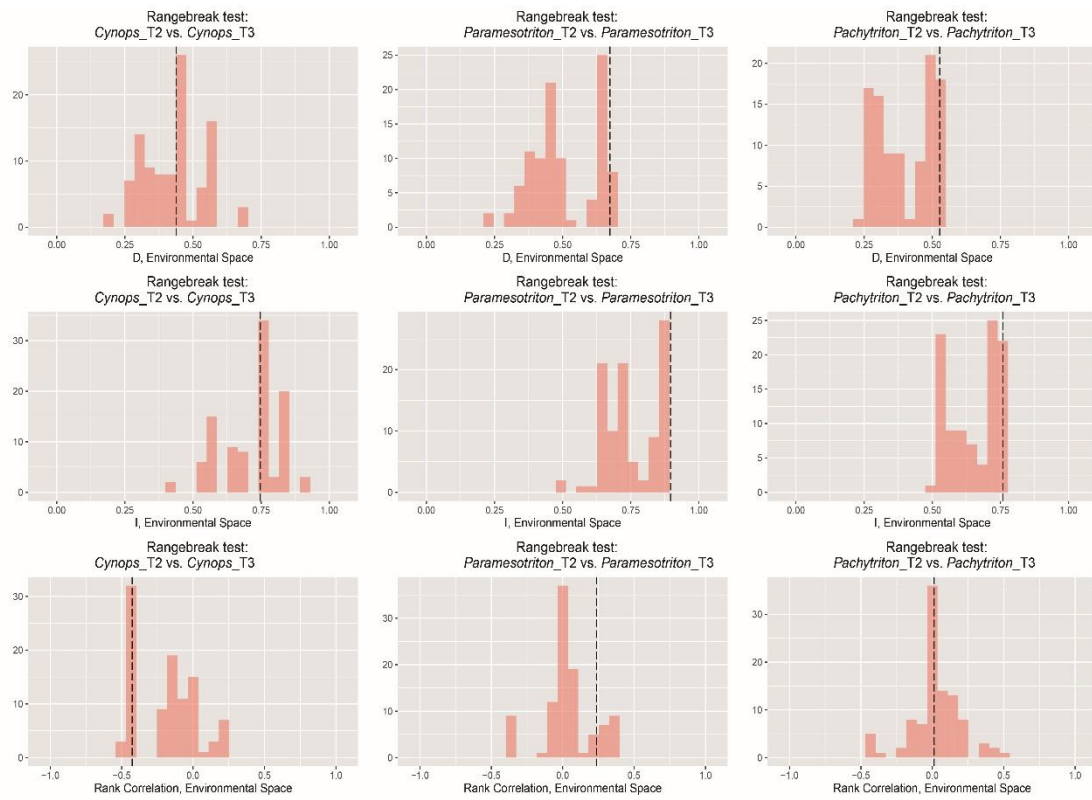
**Supplementary Figures S3** Ancestral distributions reconstructed by the Statistical dispersal – vicariance analysis (S-DIVA, A) and Bayes – Lagrange Statistical dispersal – extinction – cladogenesis (S-DEC, B) model performed in Reconstruct Ancestral State in Phylogenies (RASP) 3.2. Time tree of modern Asian newts generated by BEAST. The distribution areas of extant the modern Asian newts are marked T2 and T3 corresponds to the Terrains II and III of southern China, respectively. The green and blue circles indicate the vicariance and dispersal events obtained from the RASP analysis, respectively.



**Supplementary Figures S4** Results of the Identity tests performed with 99 replicates for each species pair in T2 and T3 using contemporary, noncorrelated bioclimate data.



**Supplementary Figures S5** Results of the Symmetric background tests performed with 99 replicates for each species pair in T2 and T3 using contemporary, noncorrelated bioclimate data.



**Supplementary Figures S6** Results of the rangebreak tests performed with 99 replicates for each species pair in T2 and T3 using contemporary, noncorrelated bioclimate data.

**Supplementary Table S1** Sampling information including location number, localities, voucher specimens, GenBank accession numbers, and identified lineages for this study. KIZ = Kunming Institute of Zoology; MVZ = Museum of Vertebrate Zoology (Berkeley, USA); GZNU = Guizhou Normal University; CIB = Chengdu Institute of Biology; FMNH = Field Museum of Natural History, Chicago; TP-MVZ and TP-MVDBW-MV are to be catalogued in the MVZ. Location numbers were indicated in Figure 1–5. Sequences used to estimates of divergence times for extant modern Asian newts are indicated by asterisk.

Genus name	Species name	Voucher	Locality	GenBank Accession No.				Source	
				ND2	cyt <i>b</i>	<i>POMC</i>	<i>BDNF</i>		
<b>Ingroup</b>									
<i>Cynops</i>	<i>cyanurus</i>	KIZ 01445	Banshan, Puer, Yunnan, China	1	ON793756	ON793714	ON793777	ON793665	this study
		KIZ 03631	Banshan, Puer, Yunnan, China	1	ON793746	ON793703	/	/	this study
		KIZ 03900	Banshan, Puer, Yunnan, China	1	ON793747	ON793704	ON793770	ON793660	this study
		KIZ 03901	Banshan, Puer, Yunnan, China	1	ON793748	ON793705	ON793771	ON793661	this study
		KIZ 021922	Zijing, Chuxiong, Yunnan, China	2	ON793749	ON793706	ON793772	ON793662	this study
		KIZ 021923	Zijing, Chuxiong, Yunnan, China	2	ON793750	ON793707	/	/	this study
		KIZ 022157	Huahongdong, Kunming, Yunnan, China	3	ON793751	ON793708	ON793773	ON793663	this study
		KIZ 022160	Gulu, Kunming, Yunnan, China	3	ON793752	ON793709	/	/	this study
		KIZ 022161	Gulu, Kunming, Yunnan, China	3	ON793753	ON793710	/	/	this study
		KIZ 02330	Shuicheng, Guizhou, China	4	/	ON793711	ON793774	ON793664	this study
	KIZ 02331	Shuicheng, Guizhou, China	4	ON793754	ON793712	ON793775	/	this study	
	KIZ 02332	Shuicheng, Guizhou, China	4	ON793755	ON793713	ON793776	/	this study	
	<i>ensicauda</i>	KIZ 09756	Japan	/	ON793700	/	/	this study	
		KIZ 09758	Japan	/	ON793702	/	/	this study	
	<i>fudingensis</i>	KIZ 012918	Zherong, Fuding, Fujian, China	10	ON793745	ON793698	ON793769	ON793659	this study
		KIZ 012214	Qingyu, Ningde, Fujian, China	9	ON793743	ON793696	/	/	this study
		KIZ 012217	Qingyu, Ningde, Fujian, China	9	ON793744	ON793697	/	/	this study
<i>glaucus</i>	KIZ 09793	Mianyang, Meizhou, Guangdong, China	5	ON793715	ON793668	ON793757	ON793666	this study	



<i>orientalis</i>	KIZ 09799	Mianyang, Meizhou, Guangdong, China	5	ON793716	ON793669	/	/	this study	
	KIZ 09800	Mianyang, Meizhou, Guangdong, China	5	ON793717	ON793670	/	/	this study	
	KIZ 06358	Jinhua, Zhejiang, China	11	ON793718	ON793671	ON793758	ON793650	this study	
	CIB 97919	Quzhou, Zhejiang, China	14	GU301790	/	/	ON793651	Wu et al. (2010a)	
	KIZ 012940	Shiliang, Tiantai, Zhejiang, China	12	ON793731	ON793684	ON793763	/	this study	
	KIZ 012941	Shiliang, Tiantai, Zhejiang, China	12	ON793732	ON793685	ON793764	ON793654	this study	
	KIZ 012944	Shiliang, Tiantai, Zhejiang, China	12	ON793733	ON793686	/	/	this study	
	MVZ 230345	Hanzhou, Zhejiang, China	13	EU880311	EU880311	EU880311	EU880311	Zhang et al. (2008)	
	CIB 97867	Wannian, Jiangxi, China	17	GU301788	/	/	/	Wu et al. (2010a)	
	CIB 97864	Wannian, Jiangxi, China	17	GU301789	/	/	/	Wu et al. (2010a)	
	KIZ 013017	Jigong mountain, Henan, China	20	ON793734	ON793687	/	/	this study	
	KIZ 013018	Jigong mountain, Henan, China	20	ON793735	ON793688	/	/	this study	
	KIZ 013021	Jigong mountain, Henan, China	20	ON793736	ON793689	ON793765	ON793655	this study	
	Tissue ID: YPX 25002	Wuyuan, Jiangxi, China	15	ON793740	ON793694	/	/	this study	
	KIZ 020536	Jiujiang, Jiangxi, China	18	ON793738	ON793692	ON793767	ON793657	this study	
	KIZ 020539	Jiujiang, Jiangxi, China	18	ON793739	ON793693	ON793768	ON793658	this study	
	<i>orphyicus</i>	KIZ 021961	Dafu, Xiuling, Anhui, China	16	/	ON793690	/	/	this study
		KIZ 021962	Dafu, Xiuling, Anhui, China	16	ON793737	ON793691	ON793766	ON793656	this study
KIZ 021843		Dafu, Xiuling, Anhui, China	16	ON793741	/	/	/	this study	
KIZ 021844		Shangtushi, Anhui, China	19	ON793742	ON793695	/	/	this study	
KIZ 021848		Shangtushi, Anhui, China	19	/	ON793648	ON793647	ON793649	this study	
KIZ 09816		Fenghuang, Shantou, Guangdong, China	6	ON793719	ON793672	ON793759	/	this study	
KIZ 09819		Fenghuang, Shantou, Guangdong, China	6	ON793720	ON793673	ON793760	/	this study	
KIZ 09820		Fenghuang, Shantou, Guangdong, China	6	ON793721	ON793674	/	ON793652	this study	
KIZ 09821		Fenghuang, Guangdong, China	6	ON793722	ON793675	/	/	this study	

		KIZ 09839	Daiyun mountain,Dehua, Fujian, China	7	ON793723	ON793676	ON793761	ON793653	this study
		KIZ 09841	Daiyun mountain,Dehua, Fujian, China	7	ON793724	ON793677	ON793762	ON793667	this study
		KIZ 09843	Daiyun mountain,Dehua, Fujian, China	7	ON793725	ON793678	/	/	this study
		KIZ 09844	Daiyun mountain,Dehua, Fujian, China	7	ON793726	ON793679	/	/	this study
		KIZ 09845	Daiyun mountain,Dehua, Fujian, China	7	ON793727	ON793680	/	/	this study
		KIZ 09905	Yongtai, Fujian, China	8	ON793728	ON793681	/	/	this study
		KIZ 09906	Yongtai, Fujian, China	8	ON793729	ON793682	/	/	this study
		KIZ 09908	Yongtai, Fujian, China	8	ON793730	ON793683	/	/	this study
	<i>pyrrhogaster</i>	KIZ 09755	Japan		/	ON793699	/	/	this study
		KIZ 09757	Japan		/	ON793701	/	/	this study
		EU 880310	Japan		EU880310	EU880310	EU880310	EU880310	this study
		TP-MVZ 03	Japan		EU880313	EU880313	EU880313	EU880313	Zhang et al. (2008)
<b><i>Laotriton</i></b>	<i>laoensis</i>	FMNH 255452			EU880328	EU880328	EU880328	EU880328	Zhang et al. (2008)
<b><i>Pachytriton</i></b>	<i>archospotus</i>	CIB 95950	Qiyun mountain, Guidong, Hunan, China	62	GQ303629	Q303666	/	/	Wu et al. (2010b)
		CIB 95949	Qiyun mountain, Guidong, Hunan, China	62	GQ303630	Q303667	/	/	Wu et al. (2010b)
		KIZ 07068	Jingang mountain, Jiangxi, China	61	ON793910	ON793845	/	/	this study
		KIZ 07072	Jingangs mountain, Jingangshan, Jiangxi, China	61	ON793911	ON793846	/	/	this study
		KIZ 04563	Bamian mountain, Guidong, Hunan, China	59	ON793883	ON793817	/	/	Wu et al. (2013)
		KIZ 04564	Bamian mountain, Guidong, Hunan, China	59	ON793884	ON793818	KU375036	ON793782	this study
		CIB 97914	Luxi, Pingxiang, Jiangxi, China	60	JX907838	JX907935	/	/	Wu et al. (2013)
		CIB 97915	Luxi, Pingxiang, Jiangxi, China	60	JX907839	JX907936	/	/	Wu et al. (2013)
		KIZ 021781	Guanyindong, Guangdong, China	63	ON793936	ON793872	KU375038	ON793807	this study
		KIZ 021779	Guanyindong, Guangdong, China	63	ON793935	ON793871	/	/	this study
	<i>brevipes</i>	CIB 95926	Junfengshan, Nanfeng, Jiangxi, China	69	GQ303626	GQ303663	/	/	Wu et al. (2010a); Wu et al. (2010b)

	CIB 95930	Junfengshan, Nanfeng, Jiangxi, China	69	GQ303627	GQ303664	/	/	Wu et al. (2010b)
	KIZ 08926	Tongmu, Wuyishan, Fujian, China	70	ON793903	ON793838	/	/	this study
	KIZ 08927	Tongmu, Wuyishan, Fujian, China	70	ON793904	ON793839	/	/	Wu et al. (2013)
	KIZ 08928	Tongmu, Wuyishan, Fujian, China	70	ON793905	ON793840	KU375039	ON793794	this study
	KIZ 08968	Tongmu, Wuyishan, Fujian, China	70	ON793906	ON793841	/	/	this study
	CIB 97858	Chebaling, Shixing, Guangdong	64	JX907851	JX907949	/	/	Wu et al. (2013)
	CIB 97859	Chebaling, Shixing, Guangdong	64	JX907852	JX907950	/	/	Wu et al. (2013)
	N/A	Jiulianshan, Qunan, Jiangxi, China	65	DQ517796	/	/	/	Weisrock et al. (2006)
	CIB 97940	Liangyeshan, Wuping, Fujian, China	66	JX907857	JX907955	/	/	Wu et al. (2013)
	CIB 97946	Liangyeshan, Wuping, Fujian, China	66	JX907858	JX907956	/	/	Wu et al. (2013)
	CIB 97930	Jigongdong, Ninghua, Fujian, China	67	JX907860	JX907958	/	/	Wu et al. (2013)
	CIB 97934	Jigongdong, Ninghua, Fujian, China	67	JX907861	JX907959	/	/	Wu et al. (2013)
	CIB 97890	Tiangongshan, Longyan, Fujian, China	68	JX907854	JX907952	/	/	Wu et al. (2013)
	CIB 97891	Tiangongshan, Longyan, Fujian, China	68	JX907855	JX907953	/	/	Wu et al. (2013)
<i>xanthospilos</i>	KIZ 06750	Mangshan, Hunan, China	57	ON793907	ON793842	KU375048	ON793795	this study
	KIZ 06751	Mangshan, Hunan, China	57	ON793908	ON793843	/	/	Wu et al. (2013)
	KIZ 06752	Mangshan, Hunan, China	57	ON793909	ON793844	KU375047	ON793809	this study
	KIZ 021812	Dabu, Guangdong, China	58	ON793937	ON793873	ON793962	ON793808	this study
	KIZ 021813	Dabu, Guangdong, China	58	ON793938	ON793874	/	/	this study
	KIZ 021814	Dabu, Guangdong, China	58	ON793939	ON793875	/	/	Wu et al. (2013)
<i>feii</i>	KIZ 04228	Huang mountain, Anhui, China	78	ON793879	ON793813	KU375037	ON793779	this study
	KIZ 04229	Huang mountain, Anhui, China	78	ON793880	ON793814	ON793943	ON793780	this study
	KIZ 04230	Huang mountain, Anhui, China	78	ON793881	ON793815	/	ON793781	this study
<i>granulosus</i>	KIZ 06296	Jinyun, Lishui, Zhejiang, China	46	ON793886	ON793821	/	/	this study
	KIZ 06297	Jinyun, Lishui, Zhejiang, China	46	ON793887	ON793822	/	/	this study

KIZ 06293	Jinyun, Lishui, Zhejiang, China	46	ON793888	ON793823	/	/	this study
KIZ 06294	Jinyun, Lishui, Zhejiang, China	46	ON793889	ON793824	/	/	this study
KIZ 012973	Yongjia, Wenzhou, Zhejiang, China	44	ON793917	ON793853	/	/	this study
KIZ 012974	Yongjia, Wenzhou, Zhejiang, China	44	ON793918	ON793854	/	/	Wu et al. (2013)
KIZ 012975	Yongjia, Wenzhou, Zhejiang, China	44	ON793919	ON793855	KU375042	ON793800	this study
KIZ 012977	Shiliang, Tiantai, Zhejiang, China	12	ON793920	ON793856	/	/	this study
KIZ 013015	Simingshan, Ningbo, Zhejiang, China	76	ON793926	ON793862	ON793960	ON793804	this study
CIB 95997	Dapanshan, Jinhua, Zhejiang, China	75	GQ303624	GQ303661	/	/	Wu et al. (2010b)
CIB 95996	Dapanshan, Jinhua, Zhejiang, China	75	GQ303625	GQ303662	/	/	Wu et al. (2010b)
KIZ 06360	Longwangshan, Anji, Zhejiang, China	49	ON793890	ON793825	/	/	Wu et al. (2013)
KIZ 06364	Longwangshan, Anji, Zhejiang, China	49	ON793892	ON793827	KU375043	ON793786	this study
KIZ 06363	Longwangshan, Anji, Zhejiang, China	49	ON793891	ON793826	ON793946	ON793785	this study
CIB88145	Xi'tianmu, Lin'an, Zhejiang, China	77	GQ303606	GQ303643	/	/	Wu et al. (2010b)
CIB88137	Xi'tianmu, Lin'an, Zhejiang, China	77	GQ303607	GQ303644	/	/	Wu et al. (2010b)
KIZ 012989	Yushan, Nanping, Fujian, China	73	ON793924	ON793860	/	/	this study
KIZ 012991	Yushan, Nanping, Fujian, China	73	ON793925	ON793861	/	/	this study
KIZ 012846	Feiluan, Ningde, Fujian, Zhejiang, China	42	ON793940	ON793849	/	/	this study
KIZ 012848	Feiluan, Ningde, Fujian, Zhejiang, China	42	ON793914	ON793850	ON793954	ON793798	this study
KIZ 012920	Wencheng, Wenzhou, Zhejiang, China	43	ON793915	ON793851	ON793955	ON793799	this study
KIZ 012924	Wencheng, Wenzhou, Zhejiang, China	43	ON793916	ON793852	/	/	this study
KIZ 012982	Fengshan, Xianyou, Fujian, China	71	ON793921	ON793857	ON793957	ON793801	this study
KIZ 012983	Fengshan, Xianyou, Fujian, China	71	ON793922	ON793858	ON793958	ON793802	this study
KIZ 012985	Fengshan, Xianyou, Fujian, China	71	ON793923	ON793859	ON793959	ON793803	this study
CIB 88207	Meixian, Youxi, Fujian, China	72	GQ303620	GQ303657	/	/	Wu et al. (2010b)
CIB 88189	Meixian, Youxi, Fujian, China	72	GQ303621	GQ303658	/	/	Wu et al. (2010b)
KIZ 012769	Daiyun mountain, Dehua, Fujian, China	7	ON793912	ON793847	ON793952	ON793796	this study

	KIZ 012772	Daiyun mountain, Dehua, Fujian, China	7	ON793913	ON793848	ON793953	ON793797	this study
	CIB 95964	Longquan mountain, Longquan, Zhejiang	74	JX907844	JX907942	/	/	Wu et al. (2013)
	CIB 95960	Longquan mountain, Longquan, Zhejiang	74	JX907845	JX907943	/	/	Wu et al. (2013)
<i>inexpectatus</i>	KIZ 08711	Dajiangyuan, Jiangyong, Hunan, China	54	ON793899	ON793834	KU375044	ON793790	this study
	KIZ 08716	Dajiangyuan, Jiangyong, Hunan, China	54	ON793900	ON793835	ON793949	ON793791	this study
	KIZ 021713	Dajiangyuan, Jiangyong, Hunan, China	54	ON793932	ON793868	ON793961	ON793806	this study
	KIZ 021714	Dajiangyuan, Jiangyong, Hunan, China	54	ON793933	ON793869	/	/	this study
	KIZ 021715	Dajiangyuan, Jiangyong, Hunan, China	54	ON793934	ON793870	/	/	this study
	KIZ 05203	Dayao mountain, Jinxiu, Guangxi, China	33	ON793885	ON793819	KU375045	ON793783	this study
	KIZ 05204	Dayao mountain, Jinxiu, Guangxi, China	33	ON793941	ON793820	ON793945	ON793784	this study
	Tissue ID: 1.p.1	Leigong mountain, Leishan, Guizhou, China	27	ON793876	ON793810	ON793942	ON793778	this study
	Tissue ID: 3.p.1	Leigong mountain, Leishan, Guizhou, China	27	ON793877	ON793811	/	/	this study
	Tissue ID: 5.p.1	Leigong mountain, Leishan, Guizhou, China	27	ON793878	ON793812	/	/	this study
	CIB 88162	Leigong mountain, Leishan, Guizhou, China	27	GQ303598	GQ303635	/	/	Wu et al. (2010b)
	CIB 88148	Leigong mountain, Leishan, Guizhou, China	27	GQ303600	GQ303637	/	/	Wu et al. (2010b)
	CIB 88170	Leigong mountain, Leishan, Guizhou, China	27	GQ303601	GQ303638	/	/	Wu et al. (2010b)
	KIZ 07766	Maoer mountain, Ziyuan, Guangxi, China	53	ON793894	ON793829	ON793947	ON793787	this study
	KIZ 07765	Maoer mountain, Ziyuan, Guangxi, China	53	ON793893	ON793828	/	/	this study
	KIZ 07619	Maoer mountain, Ziyuan, Guangxi, China	53	ON793897	ON793832	/	/	this study
	KIZ 07620	Maoer mountain, Ziyuan, Guangxi, China	53	ON793898	ON793833	ON793948	ON793789	this study

		CIB 95935	Linkou, Tongdao, Hunan, China	52	JX907832	JX907929	/	/	Wu et al. (2013)
		CIB 95933	Linkou, Tongdao, Hunan, China	52	JX907833	JX907930	/	/	Wu et al. (2013)
		CIB 95938	Xuefeng mountain, Hongjiang, Hunan, China		JX907835	JX907932	/	/	Wu et al. (2013)
			51						
		CIB 95941	Xuefeng mountain, Hongjiang, Hunan, China		JX907836	JX907933	/	/	Wu et al. (2013)
			51						
		KIZ 04530	Shaping, Taoyuan, Hunan, China	50	ON793882	ON793816	ON793944	/	this study
		KIZ 021618	Rongshui, Guangxi, China	28	ON793927	ON793863	/	/	this study
		KIZ 021619	Rongshui, Guangxi, China	28	ON793928	ON793864	/	/	this study
	<i>moi</i>	KIZ 07767	Maoer mountain, Ziyuan, Guangxi, China	53	ON793895	ON793830	/	/	this study
		KIZ 07768	Maoer mountain, Ziyuan, Guangxi, China	53	ON793896	ON793831	KU375046	ON793788	this study
	<i>wuguanfui</i>	KIZ 08756	Hezhou, Guangxi, China	55	ON793901	ON793836	ON793950	ON793792	this study
		KIZ 08761	Hezhou, Guangxi, China	55	ON793902	ON793837	KU375040	ON793793	this study
		KIZ 021705	Daoxian, Hunan, China	56	ON793929	ON793865	/	/	this study
		KIZ 021706	Daoxian, Hunan, China	56	ON793930	ON793866	KU375041	ON793805	this study
		KIZ 021707	Daoxian, Hunan, China	56	ON793931	ON793867	/	/	this study
	<i>Paramesotriton caudopunctatus</i>	KIZ 03903	Leigong mountain, Leishan, Guizhou, China		ON794069	ON794003	ON794131	ON793968	this study
			27						
		KIZ 03906	Leigong mountain, Leishan, Guizhou, China		ON794070	ON794004	ON794132	ON793969	this study
			27						
		KIZ 021635	Rongshui, Guangxi, China	28	ON794081	ON794015	/	/	this study
		KIZ 021636	Rongshui, Guangxi, China	28	ON794082	ON794016	/	/	this study
		KIZ 021637	Rongshui, Guangxi, China	28	ON794083	ON794017	ON794139	ON793976	this study
	<i>chinensis</i>	KIZ 06335	Panan, Jinhua, Zhejiang, China	45	ON794119	ON794053	/	ON793988	this study
		KIZ 06304	Jinyun, Lishui, Zhejiang, China	46	ON794109	ON794043	ON794154	/	this study
		KIZ 012961	Yongjia, Wenzhou, Zhejiang, China	44	ON794101	ON794035	ON794150	ON793983	this study

	KIZ 012962	Yongjia, Wenzhou, Zhejiang, China	44	ON794102	ON794036	ON794151	ON793984	this study
	KIZ 013006	Yongjia, Wenzhou, Zhejiang, China	44	ON794105	ON794039	ON794152	ON793985	this study
	KIZ 012963	Shiqiao, Tiantai, Zhejiang, China	47	ON794103	ON794037	/	/	this study
	KIZ 012965	Shiqiao, Tiantai, Zhejiang, China	47	ON794104	ON794038	/	/	this study
	KIZ 013007	Baixi, Ningbo, Zhejiang, China	48	ON794106	ON794040	/	/	this study
	KIZ 013008	Baixi, Ningbo, Zhejiang, China	48	ON794107	ON794041	ON794153	ON793986	this study
	KIZ 013010	Baixi, Ningbo, Zhejiang, China	48	ON794108	ON794042	/	/	this study
<i>deloustali</i>	MVZ 223627	Vinh Yen District, Tam Dao, Viet Nam	30	/	ON794060	ON794160	ON793993	this study
	MVZ 223629	Vinh Yen District, Tam Dao, Viet Nam	30	FJ744600	GQ303669	/	/	Wu et al. (2010b)
<i>fuzhongensis</i>	KIZ 08568	Chaodong, Guangxi, China	29	ON794073	ON794007	ON794134	ON793971	this study
	KIZ 08572	Chaodong, Guangxi, China	29	ON794074	ON794008	ON794135	ON793972	this study
<i>guangxiensis</i>	KIZ 09285	Ningming, Guangxi, China	31	ON794071	ON794005	ON794133	ON793970	this study
	KIZ 09286	Ningming, Guangxi, China	31	ON794072	ON794006	/	/	this study
	KIZ 022189	Banba, Fangchenggang, Guangxi, China	32	ON794062	ON793996	ON794125	/	this study
	KIZ 022190	Banba, Fangchenggang, Guangxi, China	32	ON794063	ON793997	ON794126	ON793963	this study
<i>hongkongensis</i>	KIZ 09807	Datian, Enping, Guangdong, China	35	ON794091	ON794025	ON794143	ON793978	this study
	KIZ 09808	Datian, Enping, Guangdong, China	35	ON794092	ON794026	/	/	this study
	KIZ 09809	Datian, Enping, Guangdong, China	35	ON794093	ON794027	ON794144	ON793979	this study
	KIZ 09788	Zijing, Heyuan, Guangdong, China	39	ON794089	ON794023	/	/	this study
	KIZ 09789	Zijing, Heyuan, Guangdong, China	39	ON794090	ON794024	/	/	this study
	KIZ 09810	Zijing, Heyuan, Guangdong, China	39	ON794094	ON794028	/	/	this study
	KIZ 09811	Zijing, Heyuan, Guangdong, China	39	ON794095	ON794029	/	ON793980	this study
	KIZ 013526	Xiegang, Dongguan, Guangdong, China	38	ON794114	ON794048	/	/	this study
	KIZ 013530	Xiegang, Dongguan, Guangdong, China	38	ON794115	ON794049	/	/	this study
	KIZ 013508	Luohu, Shenzheng, Guangdong, China	37	ON794112	ON794046	/	/	this study
	KIZ 013510	Luohu, Shenzheng, Guangdong, China	37	ON794113	ON794047	/	/	this study

	KIZ 01576	Damao mountain, Hongkong, China	36	ON794110	ON794044	ON794155	ON793987	this study
	KIZ 01577	Damao mountain, Hongkong, China	36	ON794111	ON794045	/	/	this study
<i>labiatus</i>	KIZ 08769	Dayao mountain, Jinxiu, Guangxi, China	33	ON794077	ON794011	ON794137	ON793974	this study
	KIZ 08771	Dayao mountain, Jinxiu, Guangxi, China	33	ON794078	ON794012	ON794138	ON793975	this study
<i>longliensis</i>	KIZ 03343	Gujiao, Longli, Guizhou, China	23	ON794064	ON793998	/	/	this study
	KIZ 03344	Gujiao, Longli, Guizhou, China	23	ON794084	ON794018	ON794140	ON793977	this study
	KIZ 03345	Gujiao, Longli, Guizhou, China	23	ON794085	ON794019	/	/	this study
	Tissue ID: YPX 18250	Xianfeng, Hubei, China	22	ON794065	ON793999	ON794127	ON793964	this study
	Tissue ID: YPX 18251	Xianfeng, Hubei, China	22	ON794066	ON794000	ON794128	ON793965	this study
<i>maolanensis</i>	GZNU 2006030004	Maolan, Libo, Guizhou, China	24	JF438993	JX480887	/	/	Gu et al. (2012)
	GZNU 2006030005	Maolan, Libo, Guizhou, China	24	JF438994	JX480888	/	/	Gu et al. (2012)
<i>aurantius</i>	KIZ 012879	Zherong, Fuding, Fujian, China	10	ON794099	ON794033	ON794148	ON793981	this study
	KIZ 012883	Zherong, Fuding, Fujian, China	10	ON794100	ON794034	ON794149	ON793982	this study
	KIZ 012817	Feiluan, Ningde, Fujian, Zhejiang, China	42	ON794096	ON794030	ON794145	/	this study
	KIZ 012819	Feiluan, Ningde, Fujian, Zhejiang, China	42	ON794097	ON794031	ON794146	/	this study
	KIZ 012820	Feiluan, Ningde, Fujian, Zhejiang, China	42	ON794098	ON794032	ON794147	/	this study
	Tissue ID: YPX 6114	Longwangshan, Anji, Zhejiang, China	49	ON794061	ON793995	/	/	this study
	KIZ 013535	Dongzhen, Putian, Fujian, China	41	ON794116	ON794050	/	/	this study
	KIZ 013536	Dongzhen, Putian, Fujian, China	41	ON794117	ON794051	/	/	this study
	KIZ 013538	Dongzhen, Putian, Fujian, China	41	ON794118	ON794052	/	/	this study
	KIZ 06240	Wencheng, Wenzhou, Zhejiang, China	43	/	ON794054	ON794156	ON793992	this study



<i>qixilingensis</i>	KIZ 022289	Qixiling, Jiangxi, China	40	ON794120	ON794055	ON794157	/	this study
	KIZ 022290	Qixiling, Jiangxi, China	40	ON794121	ON794056	/	/	this study
	KIZ 022291	Qixiling, Jiangxi, China	40	ON794122	ON794057	ON794158	ON793989	this study
<i>wulingensis</i>	KIZ 21898	Jiangkou, Guizhou, China	26	ON794079	ON794013	/	/	this study
	KIZ 21899	Jiangkou, Guizhou, China	26	ON794080	ON794014	/	/	this study
	KIZ 03102	Qinghua, Youyang, Chongqing, China	25	ON794123	ON794058	ON794159	ON793994	this study
	KIZ 03104	Qinghua, Youyang, Chongqing, China	25	ON794124	ON794059	/	/	this study
	KIZ 08633	Chaodong, Guangxi, China	29	ON794075	ON794009	/	/	this study
<i>yunwuensis</i>	KIZ 08634	Chaodong, Guangxi, China	29	ON794076	ON794010	ON794136	ON793973	this study
	KIZ 09676	Luoding, Guangdong, China	34	ON794086	ON794020	ON794141	ON793990	this study
	KIZ 09677	Luoding, Guangdong, China	34	ON794087	ON794021	ON794142	ON793991	this study
	KIZ 09678	Luoding, Guangdong, China	34	ON794088	ON794022	/	/	this study
<i>zhijingensis</i>	Tissue ID: YPX 6178	Zhijing, Guizhou, China	21	ON794067	ON794001	ON794129	ON793966	this study
	Tissue ID: YPX 6179	Zhijing, Guizhou, China	21	ON794068	ON794002	ON794130	ON793967	this study
<b>Outgroup</b>								
<i>Calotriton</i>	<i>asper</i>	Vieites 01	unkown	EU880307	EU880307	/	/	Zhang et al. (2008)
<i>Euproctus</i>	<i>platycephalus</i>	DBW-MVZ 01	unkown	EU880317	EU880317	/	/	Zhang et al. (2008)

**Supplementary Table S2** Divergence time means and 95% confidence intervals calculated by BEAST. Letters for nodes are corresponding to Appendix S2 A. Divergence time means and 95% confidence intervals calculated by BEAST. Letters for nodes are corresponding to Appendix S4 A.

<b>Nodes</b>	<b>Mean Time (Ma)</b>	<b>95% C.I. (Ma)</b>
1	30.12	27.65-33.72
2	28.04	26.56-29.02
3	19.55	18.61-20.46
4	18.79	17.34-20.09
5	17.09	14.20-19.25
6	15.71	14.03-17.66
7	15.51	14.06-17.23
8	14.78	13.07-16.10
9	14.34	12.13-16.62
<b>10</b>	13.25	12.34-15.01
<b>11</b>	9.16	7.64-11.09
12	8.13	6.53-9.89
13	8.01	5.72-10.42
14	7.96	5.47-10.32
15	7.73	6.19-9.31
16	7.24	5.35-8.88
17	6.97	5.63-8.27
18	6.62	5.11-8.34
19	6.63	4.08-8.80
20	5.87	4.21-7.58
21	5.71	4.42-6.99
22	4.96	3.55-6.43
23	4.92	3.77-6.18
24	4.01	2.80-5.43
25	3.86	2.63-5.20
26	3.85	2.40-5.40
27	3.84	2.26-5.75
28	3.39	2.35-4.66
29	2.84	1.85-4.07
30	2.25	1.23-3.47
31	1.41	0.73-2.29
32	0.97	0.57-1.51
33	0.65	0.32-1.07

**Supplementary Table S3** Localities of modern Asian newts used for ecological niche comparison.

Genus	Group	Longitude	Latitude
<i>Cynops</i>	T2	100.9690	22.7700
		101.2900	25.7100
		102.5915	25.0400
		104.9020	26.5400
		101.5167	25.0167
		104.9578	26.5468
<i>Cynops</i>	T3	115.8000	23.6600
		116.6300	23.8600
		118.8070	25.9750
		118.0800	25.6300
		119.9400	27.2500
		120.4030	29.0500
		121.0600	29.2700
		120.1500	30.2800
		117.0560	28.6950
		117.8600	29.2540
		114.0800	31.9400
		120.1667	30.25
		116.5667	30.6333
		118.2218	25.6608
115.9927	23.6216		
116.6445	23.9560		
<i>Paramesotriton</i>	T2	110.4660	25.9190
		108.1800	26.4070
		110.4660	25.9190
		111.4800	28.6900
		110.0800	26.2400
		110.2900	27.1700
		109.1650	25.4210
		111.3330	25.4760
		107.8817	25.4817
		108.0667	26.3833
		108.1984	26.3909
109.0866	29.6221		
<i>Paramesotriton</i>	T3	112.1433	22.3779
		114.1354	22.4128
		114.1972	22.9517
		114.1984	22.5910
		115.4218	23.3250
		118.8607	25.5392

		119.3848	30.4639
		119.6664	26.5448
		119.8220	27.8624
		119.9434	27.2489
		120.2613	28.5075
		120.5024	28.9855
		120.5690	28.1995
		120.5887	28.2061
		107.1300	22.0100
		111.1660	22.6200
		110.2100	24.1200
		111.4800	24.6000
		111.1024	24.7609
		111.1930	24.6500
		119.6690	29.8090
		114.1500	22.2830
		114.1833	22.2500
		111.1698	22.6233
		111.5448	24.5792
		113.8503	23.6370
		113.9500	22.2500
		114.1890	22.2618
		114.1917	22.3396
		114.2000	22.2594
		114.2500	22.3500
		114.5681	22.5421
		119.6690	29.8090
		120.4967	29.0035
		120.5960	28.3519
		121.1669	29.7872
		110.1610	24.1150
		111.3330	25.4760
		119.9900	27.2000
		114.1700	26.7500
<i>Pachytriton</i>	T2	110.4660	25.9190
		110.1610	24.1150
		108.1800	26.4070
		110.4660	25.9190
		111.4800	28.6900
		110.0800	26.2400
		110.2900	27.1700
		109.1650	25.4210
		111.3330	25.4760
		108.2564	26.3995

		109.9863	26.2986
		110.1950	27.1584
		110.2311	24.1062
		110.4768	25.8567
		110.4908	25.8462
<i>Pachytriton</i>	T3	111.5300	24.6400
		112.8900	24.9700
		113.6800	25.9400
		114.1000	26.5400
		116.3600	27.2200
		117.6400	27.7300
		118.2100	25.6400
		118.5800	25.5800
		118.5700	26.9100
		119.6800	26.5700
		119.8300	27.8700
		120.3800	28.2300
		119.4800	30.2600
		120.2100	28.5300
		121.0600	29.2700
		119.4300	30.4100
		117.9200	29.9100
		114.1000	25.1200
		113.1400	24.5400
		114.2440	27.4839
		114.0128	25.8852
		114.2558	24.7654
		116.1440	25.1027
		116.6180	26.2180
		117.0660	25.2520
		118.2240	26.2520
		119.2800	28.1500
		119.4300	30.3600
		111.7890	25.2150
		114.1040	25.1170
		113.0826	24.9223
		119.9400	29.1900
		114.0112	25.9016
		114.0396	25.1307
		114.1652	27.4380
		114.1917	24.7444
		114.2118	26.5919
		116.1702	25.1745
		116.3406	27.2058

116.4086	26.0348
116.6002	25.7227
116.8984	26.7752
117.1332	25.3026
117.5830	30.0670
117.6353	27.7447
117.7283	30.1119
117.8326	28.5717
118.0870	30.1207
118.1276	25.9516
118.1482	26.3004
118.1736	26.6450
118.1740	26.6450
118.2218	25.6608
118.2427	30.1424
118.6987	30.9257
118.7644	29.1539
118.8747	28.4098
119.1722	27.9064
119.4171	30.3672
119.6996	29.7063
119.7510	27.8174
119.9014	29.0898
120.2407	28.5169
120.4906	29.0125
121.0733	28.3554
121.1764	29.2679

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