

Field observations, morphometrics and a new locality for *Tylototriton uyenoii* in Chiang Mai Province, Thailand.

CHRISTOPHER J. MICHAELS

Harrison Institute, Bowerwood House, St. Botolph's Road, Sevenoaks, Kent, TN13 3AQ, UK
Corresponding author email: c.j.michaels44@gmail.com

The newt genus *Tylototriton* is distributed across southern and southeast Asia (Rafaelli, 2013; Sparreboom, 2014). Several new species have recently been described (see Nishikawa et al., 2013; Rafaelli, 2013), including *Tylototriton uyenoii* Nishikawa et al. (2013), which has a fragmented highland range in northern Thailand (Pomchote et al., 2008; Nishikawa et al., 2013). At Chiang Dao Wildlife Sanctuary (19.367° N 98.833°E; 1200m a.s.l.; 10/07/2007) newts were collected at night in a pond among bamboo scrub at the forest edge, and during the day under wads of cut grass, both in the vicinity of Khun Huay Mae Kok Guard Station. The pond was shallow and sparsely vegetated with a deep substrate of reddish silt. Water quality, which may be useful for captive husbandry and habitat identification, was measured in this pool using a Tetra Test 5 in 1 (Tetra) dip test kit. At Doi Inthanon National Park (approximately 19.385°N 98.841°E; above 1000m a.s.l.; 15/07/2007) an adult female was collected at night in disturbed pine and grassy scrub near to a campsite.

Newts were restrained and the following characters were measured, using callipers: snout-to-vent length (SVL), from the tip of the snout to the posterior margin of the cloaca; tail length (TL), from the posterior margin of the cloaca to the tip of the tail; axilla-groin distance (AGD), from the posterior margin of the shoulder joint to the anterior margin of the hip joint; maximum head width (MXHW), the width of the head at its widest point; head length (HL), from the snout tip to the line of the posterior margin of paratoids; interocular distance (IOD), between the medial margins of the eyes. Data for all sixteen animals (twelve males, three females and one juvenile) are presented in Table 1. Figure 1 show animals from Chiang Dao and from Doi Inthanon. A single larva was also found in the pond at Chiang Dao. Water quality in this pond was pH: 6.4; GH : 3°d; KH: 3°d; NO₂- : 0mg/l; NO₃- : 0 mg/l. These animals were similar in size to those reported by Pomchote et al. (2008) and Nishikawa et al. (2013) and in appearance to those pictured by Gerlach (2012). Like the former two authors, females (n=3; mean SVL = 79.59 mm (75.04 – 84.41 mm) were found to be larger than males (n=12; mean SVL = 75.74 mm (71.03 – 83.26 mm) and females (n=3; TL:SVL = 0.89 (0.85 – 0.93)) had proportionately shorter tails than males (n=11, TL:SVL=0.98 (0.87-1.14)). Aquatic males (n=9) also had longer tails on average than terrestrial males (n=2) (TL:SVL = 0.99 (0.91-1.14) and 0.95 (0.87-1.03), respectively). These figures exclude the juvenile



Figure 1. A. Adult male *T. uyenoii*, terrestrial phase. B. Juvenile *T. uyenoii*. C. Adult female *T. uyenoii*, the single animal from Doi Inthanon. D. Adult male *T. uyenoii*. E. Aquatic phase *T. uyenoii* males in collecting container.

and, for comparisons of tails, an adult male with a damaged tail tip. The juvenile (Fig. 1B), collected at Chiang Dao, was more brightly coloured, had more rugose skin and a considerably shorter tail (TL:SVL = 0.49; Table 1) than adults. Pomchote et al. (2008), Gerlach (2012) and Nishikawa et al. (2013) report *T. uyenoii* in similar habitat, and breeding from May to July, which concurs with my observations. However, the larva reported herein was found earlier than dates reported for larval presence by Pomchote et al. (2008) and Nishikawa et al. (2013) (from August), but the observation is consistent with Gerlach (2012) who found well developed larvae in mid-July. The newts collected from Chiang Dao represent a new locality for this species. Chiang Dao is within the cluster of mountains reported as hosting *T. uyenoii* (Pomchote et al., 2008; Gerlach, 2012; Nishikawa et al. (2013) and so its presence here is unsurprising.

Locality	Sex	Age	SVL	TL	AGD	MXHW	HL	IOD
Chiang Dao, terrestrial	-	J	40.66	19.75	19.97	8.76	9.48	3.69
	F	A	75.04	63.55	38.55	17.63	21.72	7
	F	A	79.32	73.93	42.33	18.08	22.47	7.57
	M	A	71.79	62.54	36.62	14.91	18.42	6.39
	M	A	71.89	74	35.22	15.27	16.71	6.91
Chiang Dao, aquatic	M	A	83.26	84.74	39.31	17.95	19.76	7.91
	M	A	77.32	75.07	32.36	16.32	20.33	7.5
	M	A	75.35	85.64	36.66	16.9	21.1	8.38
	M	A	81.08	73.08*	36.73	17.04	21.31	7.9
	M	A	76.36	71.76	37.59	17.46	21.06	7.62
	M	A	77.78	73.2	37.13	17.2	21.35	7.94
	M	A	71.77	69.81	36.19	16.6	20.08	7.57
	M	A	74.4	78.31	37.8	16.67	21.69	8.2
	M	A	76.9	71.44	37.85	17.34	21.65	8.08
	M	A	71.03	64.95	33.36	15.4	19.64	7.5
	Doi Inthanon, terrestrial	F	A	84.41	74	46.17	18.82	21.92

Table 1. Morphometric measurements from *T. uyenoii* newts collected at Doi Inthanon and Chiang Dao National Parks, Chiang Mai, Thailand. All measurements are in millimetres. See the text for definitions of measurements. * indicates a damaged tail tip.

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