

Short Communications

**A NEW AND HIGHEST RECORD OF *Tylototriton notialis*  
(Amphibia: Urodela: Salamandridae)**

**Kanto Nishikawa<sup>1,2,\*</sup>, Daosavanh Sanamxay<sup>3</sup>, Takaki Kurita<sup>4</sup>,  
Masatoshi Hibino<sup>1</sup>, Teppei Jono<sup>5</sup>, Nguyen Thien Tao<sup>6,7</sup>**

<sup>1</sup>Graduate School of Human and Environmental Studies, Kyoto University, Yoshida  
Nihonmatsu-cho, Sakyo-ku, Kyoto 606-8501, Japan

<sup>2</sup>Graduate School of Global Environmental Studies, Kyoto University, Yoshida Hon-machi,  
Sakyo-ku, Kyoto 606-8501, Japan

<sup>3</sup>Faculty of Environmental Sciences, National University of Laos, Dong Dok Campus, P.O.  
Box: 7322, Xaythany District, Vientiane Capital, Lao PDR

<sup>4</sup>Natural History Museum and Institute, Chiba. Aoba-cho 955-2,  
Chuo-ku, Chiba 260-8682, Japan

<sup>5</sup>Tropical Biosphere Research Center, University of the Ryukyus,  
Senbaru 1, Nishihara, Okinawa 903-0213, Japan

<sup>6</sup>Vietnam National Museum of Nature, VAST, Vietnam

<sup>7</sup>Graduate University of Science and Technology, VAST, Vietnam

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\*Corresponding author email: nihsikawa.kanto.8v@kyoto-u.ac.jp

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*Tylototriton notialis* was originally described from Nakai-Nam Theun National Protected Area, Boualapha District, Khammouan Province, central Lao PDR (980 to 1000 m asl.) (Stuart et al., 2010) and later confirmed from Pu Hoat, Nghe An Province, northern Vietnam (Nishikawa et al., 2013) (956 m asl. [Nguyen Thien Tao unpublished data]). Here we report a new record of the species found very close (8.1 km) to the type locality but located at an altitude highest among the known localities (detailed locality information was not shown from the conservational view).

The survey was conducted on 31 May 2018 at 19:46 h. DS, KN, and TK climbed Mt. Jeung,

Boualapha District, Khammouan Province and made a camp near the summit of the mountain (altitude 1,320 m asl.). Within the camp site, two adult males were captured (Fig. 1) using a dip net (65.0 cm wide and 13.5 cm long) in a small stream surrounded by evergreen shrubs and bamboo grass (Fig. 2). Sex was confirmed by direct observation of dissected gonads. The specimens were active and walking at the stream bottom. No other individuals and eggs were found. The weather was clear. At the time of collection, air and water temperature were 23.1 °C and 22.4 °C respectively. Adults and eggs of *Limnonectes* cf. *gyldenstolpei* and tadpoles of *Rhacophorus* sp. were found in the same stream.

The captured newts were fully anesthetized using Chloretone solution (a small amount of hydrous chlorobutanol crystal in 1L water). After taking muscle and liver tissues for molecular analyses, the specimens were fixed with 10% formalin and then transferred to 70% ethanol for preservation. The two individuals were deposited as voucher specimens in the Zoological Collection of Faculty of Environmental Sciences, National University of Laos with collection number FES.RA.18.001 and FES.RA.18.002. The

snout-vent length (from the tip of snout to the anterior end of the vent) and body weights of the two individuals were 67.9 mm and 67.6 mm and 10.6 g and 10.1 g, respectively. The morphological characters of these two specimens were similar to the original description (Stuart et al., 2010), i.e., with orange color markings on posterior parotoids. It seems that the only morphological difference between the populations from Laos and Vietnam is the presence or absence of the colorful markings (Nishikawa et al., 2013).

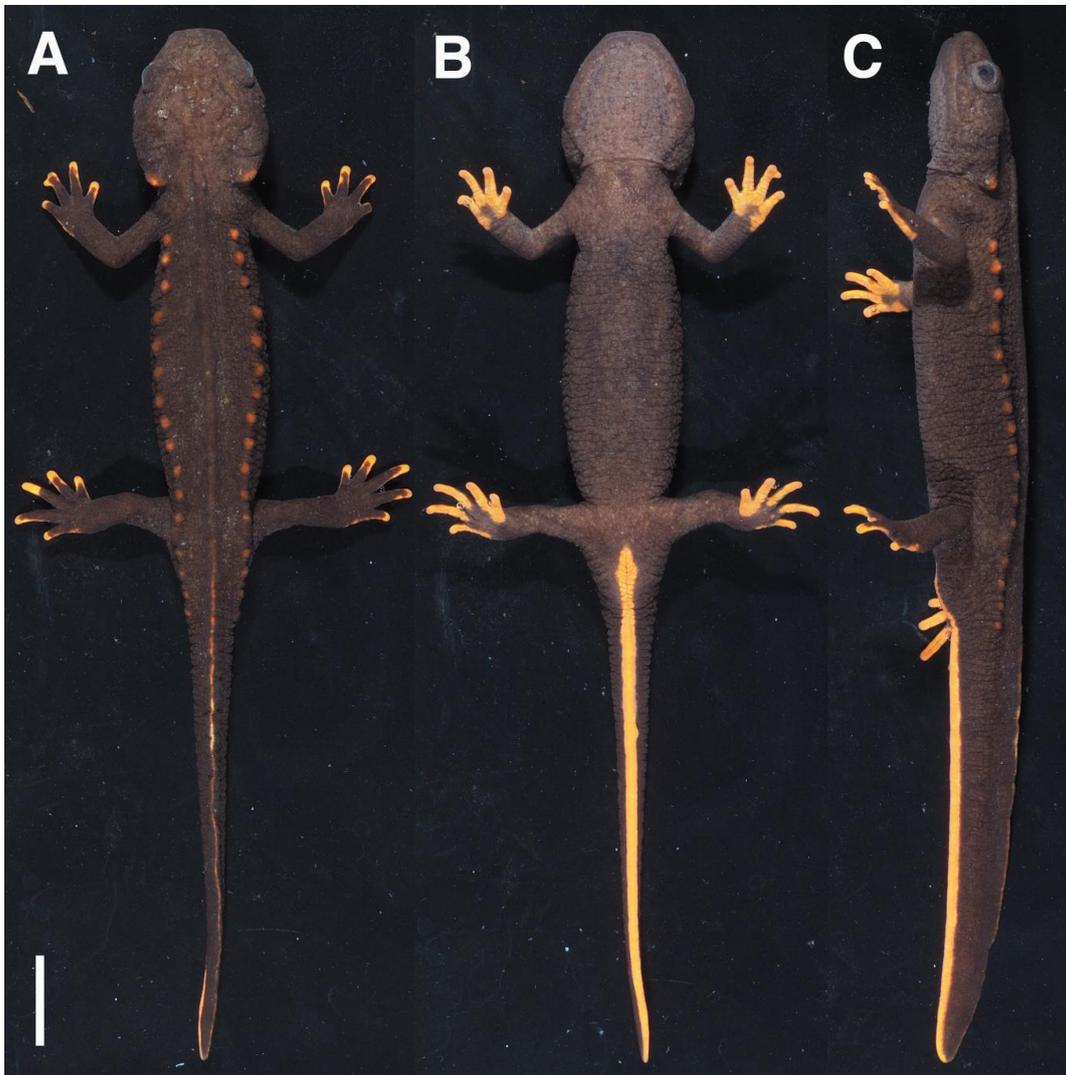


Figure 1. Adult male of *Tylototriton notialis* (FES.RA.18.001). A: dorsal view, B: ventral view, and C: left lateral view



Figure 2. Breeding habitat of *Tylototriton notialis*

The ND2 region of the mitochondrial DNA of the two individuals were sequenced and confirmed to be of the same haplotype. The data were deposited in GenBank (accession numbers: LC522466). The experimental conditions were the same as the preceding study (Nishikawa et al., 2013). Sequence divergences (uncorrected p-distance) between the present samples and those from the type locality were 0.5–0.6% and between the present samples and those from Vietnam was 3.0%. These small values validated our identification of the newts as *T. notialis*.

This third record of the species occurred the highest altitude reported. There should be more undiscovered populations of this species between central Laos and northern Vietnam, similar to *Tylototriton anguliceps*, and frogs such as *Leptobranchium masatakasatoi*, *Rana johnsi*, *Rhacophorus spelaeus*, *Theloderam lateriticum* (Stuart [2005] and our personal observations). Because the distribution is quite restricted, conservation of this

vulnerable species (IUCN, 2015), especially its unprotected habitat reported here, is urgent.

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