

# The first record of *Kiricephalus pattoni* Stephens, 1908 as a parasite of *Lycodon ruhstrati ruhstrati* Fischer, 1886 from Chiayi County, Taiwan

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**Abstract.** The pentastomid *Kiricephalus pattoni* is a fairly common parasite, which infects a variety of amphibians, lizards, and snakes in Australia, India, and South-east Asia. On the 15<sup>th</sup> of August, 2008 an adult male *Lycodon ruhstrati ruhstrati* was collected from the outskirts of Chiayi City, central western Taiwan. After careful examination of the snake, it was found that it was infected by a *K. pattoni* nymph. This appears to be the first report of *L. r. ruhstrati* being a host of *K. pattoni*.

**Keywords.** Mountain wolf snake, pentastome, subcutaneous parasite.

Pentastomids, commonly known as tongue worms, are primitive wormlike parasites that are usually found in the respiratory system of vertebrates (Roberts & Janovy, 2005). These parasites migrate as larvae from the intestinal tract and undergo extensive organ migration, which is why they can sometimes be found in subcutaneous tissue (Klingenberg, 1993). The major pathology induced by these parasites is focal tissue damage at the site of their attachment to the host (Frye, 1991). Although adult pentastomids are primarily parasites of lizards and snakes, a few have also been reported from amphibians, crocodylians, sea-birds, and canines and felines (Roberts & Janovy, 2005).

The pentastomid *Kiricephalus pattoni* (Stephens, 1908) Sambon 1922, occurs in Australia, India, and South-east Asia, where it is fairly common (Riley & Self, 1980). Adults of *K. pattoni* have been reported in only a few snakes; *Calliophis bibroni*, *Chrysopelea ornata*, *Elaphe carinata*, and *Ptyas korros*, *P. mucosa* (formerly *Ptyas mucosus*), and *Zaocys dhumnades* (Riley & Self, 1980), while the nymphs have been reported in a wide range of amphibians; *Bufo bufo*,

*B. melanostictus*, *Rana limnocharis* (Riley and Self, 1980), and *Platymantis pelewensis* (Bursey & Goldberg, 2004), lizards; *Hemidactylus frenatus*, *Japalura swinhonis* (Riley & Self, 1980), and *Norops sagrei* (Norval et al. in press), and snakes; *Amphiesma sauteri*, *A. stolatum*, *Boiga kraepelini*, *Bungarus multicinctus*, *Deinagkistrodon acutus* (formerly *Agkistrodon acutus*), *Cyclophiops major* (formerly *Opheodrys major*), *Dinodon rufozonatum*, *Elaphe porphyracea*, *Enhydris chinensis*, *E. plumbea*, *Morelia spilotos*, *Naja naja*, *Plectrurus perroteli*, *Protobothrop mucrosquamatus* (formerly *Trimeresurus mucrosquamatus*), *Psammodynastes pulverulentus*, *Rabdophis swinhonis*, *Sinonatrix annularis* (formerly *Natrix annularis*), *S. percarinata suriki* (formerly *Natrix percarinata suriki*), *Vipera ammodytes*, *V. russellii* (synonym *Daboia russellii*), *Viridovipera stejnegeri* (formerly *Trimeresurus stejnegeri* and synonym *Trimeresurus gramineus*), *Xenochrophis piscator* (Riley & Self, 1980), and *Sibynophis chinensis chinensis* (Norval et al. 2008). In a study using the following snakes from a snake meat market in Taiwan: *Bungarus multicinctus*, *Deinagkistrodon acutus*, *Elaphe carinata*, *Elaphe taeniura friesei*, *Naja atra*, *Protobothrop mucrosquamatus*, and *Ptyas mucosa*, *K. pattoni* was found in *B. multicinctus*, *E. t. friesei*, *P. mucosa*, and *P. mucrosquamatus*, and of the 135 examined snakes, 11.85% were infected by adults of *K. pattoni*, while 7.69% were infected by nymphs (Lai, et al. 2004). Here, we report *Lycodon ruhstrati ruhstrati* as a new host of *K. pattoni* nymphs.

The mountain wolf snake (*Lycodon ruhstrati ruhstrati*) is an endemic subspecies in Taiwan, and according to

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**Figure 1.** The *Kiricephalus pattoni* as it is removed from the flank of the *Lycodon ruhstrati ruhstrati* after a small incision was made.

Lue *et al.* (2002) it inhabits cultivated areas and foothill forests, and is distributed throughout the island. It usually occurs below 500m above sea level, but may occasionally reach elevations up to 1500m. According to Kuntz (1963) this species is found in low mountainous wooded areas, as well as in shrubs adjacent to rice paddies and gardens, while Lee (2005) reported this species up to 1427m (mean 1127m) above sea level, in natural forests, plantation forests, secondary forests, and agricultural areas.

On the 15<sup>th</sup> of August, 2008 an adult male *Lycodon ruhstrati ruhstrati* (SVL – 573mm, TL – 183mm, Mass – 21.8g) was captured near Lantan Reservoir, on the outskirts of Chaiyi City (N23°28.849' E120°29.501' Alt – 157m.), central western Taiwan, and was given to GN.

The habitat surrounding the locality where the snake was found is a typical foothill betel nut palm (*Areca catechu* L.) plantation, with a few mango trees (*Mangifera indica* L.) among them, forming a sparse crown cover. The understorey is densely overgrown by *Alocasia macrorrhiza* (L.) Schott & Endl., *Bidnes pilosa* L. var. *radiata* Schultz-Bip., *Ipomoea cairica* (L.) Sweet, *Mikania micrantha* Kunth. and *Panicum maximum* Jacq. A few isolated stands of bamboo (*Dendrocalamus latiflorus* Munro) occur along the path that leads through the habitat.

A close inspection of the snake revealed a bulge at about half way down the body, on the left lateral side. A small incision was made, and a subcutaneous parasite was removed (Fig.1).

The parasite was identified as a *Kiricephalus pattoni* nymph, and subsequently deposited in the United States Parasite Collection, USNPC, Beltsville, Maryland as USNPC 101414. To date, the only other reported parasite for *L. ruhstrati ruhstrati*, is the pentastomid *Raillietiella orientalis* (Norval *et al.* 2009). Thus, this finding appears to be the first report of *L. r. ruhstrati* being a host of *K. pattoni*.

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