



Monograph

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Review of the systematics, morphology and distribution of Asian Clawed Salamanders, genus *Onychodactylus* (Amphibia, Caudata: Hynobiidae), with the description of four new species

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Abstract

We describe four new species of Asian Clawed salamanders of the genus *Onychodactylus* (Caudata: Hynobiidae), based on fresh material collected during fieldwork in Japan, Korea, the Russian Far East and northeastern China between 2003 and 2010, as well as older voucher specimens deposited in several museums. Our analyses comprise all species currently recognized within this genus across its entire distribution range. We follow an integrative taxonomic approach by combining detailed morphological comparative analyses with molecular phylogenetic analyses. We find significant differences among species in this genus, based on morphological and molecular data, which resulted in the recognition and description of four new species within this genus. The new species have uncorrected molecular divergences of over 4.5–7.4% and 1.9–4.1% to their closest relatives in the mitochondrial COI and 16S rRNA genes respectively. In the molecular analyses, we found two very divergent lineages in Korea and Japan that need further investigation, as detailed morphological data are not available for them. We also discuss our approach to delimit species on salamanders. For the new species described in this group we evaluate their threat status according to IUCN criteria: *O. koreanus* sp. nov. Min, Poyarkov & Vieites and *O. nipponoborealis* sp. nov. Kuro-o, Poyarkov & Vieites are classified as Least Concern, while *O. zhaoermii* sp. nov. Che, Poyarkov & Yan and *O. zhangyapingi* sp. nov. Che, Poyarkov, Li & Yan are classified as Vulnerable (Vu2a).

Keywords: Caudata, Hynobiidae, *Onychodactylus*, integrative taxonomy, Asia, salamander, *Onychodactylus koreanus*, *Onychodactylus nipponoborealis*, *Onychodactylus zhaoermii*, *Onychodactylus zhangyapingi*, new species