

# A New Genus of Coral Snake from Japan (Serpentes:Elapidae).

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## ABSTRACT

This paper reviews new phylogenetic studies of the Coral Snakes recently placed in the genus *Sinomicrurus* Slowinski et. al., 2001.

The species *japonicus* is found to be sufficiently divergent from congeners to warrant being placed in its own genus.

As a result, this taxon is placed within the new genus *Funkelapidus* gen. nov, which is herein formally named and defined in accordance with the Zoological Code.

**Keywords:** Taxonomic revision; new genus; species; *Funkelapidus*; *Sinomicrurus*; *japonicus*; systematics.

## INTRODUCTION

Numerous studies have recently been completed in terms of the so-called Asian Coral snakes.

Slowinski et. al. (2001) decided to split them all between three genera, namely *Calliophis* Gray, 1834, (into which they subsumed the genus *Maticora* Gray, 1834), *Hemibungarus* Peters, 1862, (which they made monotypic for *Hemibungarus calligaster* Weimann, 1835) and for five species they created a new genus named *Sinomicrurus* Slowinski et. al., 2001.

The currently recognized species within this now widely recognized genus are, *Sinomicrurus macclellandi* (Reinhardt, 1844) (the type species), *S. hatori* (Takahashi, 1930), *S. japonicus* (Günther, 1868), *S. kelloggi* (Pope, 1928) and *S. sauteri* (Steindachner, 1913).

Due to the small size, similar habits and their relatively inoffensive nature, these five species of snake have not come to the attention of taxonomists from the point of view of close studies and investigation of differences at the level between species within the single genus.

Ota et. al. (1999) has recently investigated *S. japonicus* and in 1999 described a subspecies of this taxon.

Studies of the snakes as a group have tended to be in terms of relationships to other snakes (other genera) rather than between each other and whether they should or should not be split up within the group.

This view is clearly obvious by the comments made in the published results of studies like Lawson et. al. (2005), Pyron et.al. (2011) and Slowinski et. al. (2001).

However within this genus as currently recognized, there are two clear and phylogenetically distinct groups of snakes. These are the Japanese Coral Snake, currently known as *Sinomicrurus japonicus* (including subspecies and variants), versus all the others in the group; see Cox, et. al. (1998), Mori (1982), Orlov.

et. al. (2003), Ota (2000). Ota et. al. (1999), Pope (1935), Stejneger (1907), Stejneger (1910), Wall (1908a), Wall (1908b), Whitaker and Ashok (2004), Zhao and Adler (1993), Ziegler et. al. (2007).

Most recently the deep divergence between these superficially physically similar snakes was highlighted in the results of the molecular phylogenetic analysis of Pyron et. al. 2011.

However a revisiting of the mtDNA data by Slowinski et. al. (2001) yielded a similar result (see fig 2. page 236) the relevant data of which seems to have been overlooked by both themselves and other herpetologists.

This may in part be due to the conflicting diagram based on certain morphological characters, seen in Fig 1, p. 236 of Slowinski et. al. (above and on the very same page) which showed *japonica* well inside the cluster of other species placed within their newly erected genus *Sinomicrurus*.

However, the morphological convergence of these small elapids has almost certainly masked the actually divergent histories of the relevant taxa.

Both the Fig 2 diagram in Slowinski et. al. (2001) and Fig C on page 336 of Pyron et. al. (2011) clearly and unmistakably showed the species *japonica* to be widely divergent of the other species now classified within the genus *Sinomicrurus*, which as a group, clustered very closely in both diagrams, based on the mtDNA evidence.

In terms of distance apart, in Slowinski et. al.'s results they found *Micruroides euryxanthus* and *Micrurus fulvius* to be closer together than the taxon *japonicus* and the other species within *Sinomicrurus*.

It should also be stressed herein that *Micrurus* and *Micruroides* are two widely recognized separate genera, (refer for example to Campbell and Lamar 2004) who's status is not in dispute among taxonomists.

Pyron et. al's results of 2011 found the divergences between *Micruroides euryxanthus* and *Micrurus fulvius* to be about the same as that between the species *japonica* and the other taxa within *Sinomicrurus*.

Based on the results of Pyron et. al (2011), similar (near identical) earlier published results published in Campbell and Lamar (2004) and obvious physical differences within the relevant snakes (morphology, hemipenes and colouration), the new world genus *Micrurus* has been further split (Hoser 2012).

As a result of the compelling differences within *Sinomicrurus sensu lato* as shown by the various relevant studies, it is clear that the genus *Sinomicrurus* as currently recognized needs to be split into two. It would also be inconsistent not to split the genus *Sinomicrurus* as currently recognized.

The *maccllelandi* group remains within *Sinomicrurus* as it contains the type species, while the species *japonicus* is herein placed in a new genus that is diagnosed and named.

#### GENUS FUNKELAPIDUS GEN. NOV.

**Type species:** *Hemibungarus japonicus* Günther, 1868  
(Known currently as *Sinomicrurus japonicus*)

**Diagnosis:** The snakes of this genus (monotypic for the species *japonicus*) are easily separated from all those remaining in the genus *Sinomicrurus* on the basis of dorsal coloration of the head and neck.

In *Funkelapidus* gen. nov. there is no prominent white or yellowish-white crossband running across the back of the head or nearby neck.

In snakes of the genus *Sinomicrurus*, the white crossband or nape is usually wider than the eye or wider. It usually runs across the head either from about the eye, or slightly further back, depending on both species and local variation.

In *Funkelapidus* gen. nov. the snake usually has an orange body with medium to thick black bands (slightly white etched), and a dark head (especially at front), although this is of medium or mottled colour in some individuals. There is no white bar on the head, and the only light on the head may be some longitudinally spreading from the neck on either side of the spinal column.

Orange parts are at least 3-4 times wider than black and a distinct black vertebral stripe runs down the mid-body.

Some specimens are completely striped with longitudinal stripes running the length of the body, with the stripes commencing in the region of the back of the head or neck, but not possibly able to be confused with the broad crossband or nape seen in snakes remaining in *Sinomicrurus*.

Adults range between 30-60 cm, with any larger specimens being rare.

In other words these are small snakes.

The tail ends sharp and this is diagnostic for the genera *Sinomicrurus* and *Funkelapidus*.

Snakes of the genera *Sinomicrurus* and *Funkelapidus* can be separated from the other locally occurring Asian Coral snakes, known often as either the "Long-glanded Coral Snakes" and/or Slender Coral Snakes (Genus *Calliophis*) by several means.

Slowinski et. al. 2001 provided a diagnosis to separate the taxon *japonicus* from the other snakes in the genus *Sinomicrurus* and all others in the genera *Calliophis* and *Hemibungarus*. It is paraphrased here as part of this new genus diagnosis to properly identify and separate the taxon *japonicus*.

The diagnosis exclusive for the taxon *japonicus* is: 13 mid-body scale rows, divided anal, pattern is not characterized by small black spots on the dorsum with two black bands or rings on tail, 7 supralabials, maxillary teeth behind the fangs, temporals 1+1, no uninterrupted pale crossband on back of head.

Another similar (in appearance species) snake from the same general region is the Philippine Coral Snake *Hemibungarus calligaster* (monotypic for that genus, Slowinski et. al. 2001), and it is easily separated by colour pattern.

Its dominant dorsal colour is black, with numerous thin white

rings along the body length, an appearance never seen in *Funkelapidus*. In *Hemibungarus* orange is confined to the front, rear or flanks and usually presents as blotches.

Three subspecies of *F. japonicus* have been described. These are:

*F. japonicus boettgeri* (Fritze, 1894)

*F. japonicus japonicus* (Günther, 1868)

*F. japonicus takarai* (Ota, et. al., 1999).

**Distribution:** This species is endemic to Japan, and is found on the Amami and Okinawa groups of the central Ryukyu Islands (Ota 2010). The total land area of the Ryukyu Islands is 3,090 km<sup>2</sup>, but the area in which this species is distributed is estimated to be 2,631 km<sup>2</sup>.

**Conservation:** Deforestation is occurring within this species' relatively restricted known range, causing continuing declines in habitat quality on some of the islands. While, based on its island distribution, the species is likely to occur in more than ten locations, the population should be monitored in the event of decline.

An unexpected decline would be most likely in the event of some form of pest species becoming established in the snake's habitat as opposed to direct human impact through collecting, killing or even habitat loss.

It would be prudent for captive populations of the snake to be established to protect the species from an unforeseen natural calamity that may affect wild stocks.

**Common name:** Japanese Coral Snake.

**Etymology:** Named in honor of well-known herpetologist and reptile veterinarian, Dr. Richard Funk, who as of March 2012, was aged 67, still in good health and playing with snakes, living and working in Mesa, Arizona, USA.

He is depicted on the front cover of this journal in recognition of his work.

Of note is that he gave expert evidence in a Victorian court tribunal, called VCAT in February 2012. He repeatedly gave evidence as a globally recognised expert witness who had performed over 200 snake de-venomizing surgeries (venomoid surgery). His evidence was that Raymond Hoser's venomoids were totally safe, he had free handled them himself and inspected them prior to the hearing and that it was simply not possible for them to regenerate venom as claimed by Hoser's business competitors.

Funk's evidence was backed up by video evidence of the venomoids biting people with no ill effect and various experimental test results, autopsies of snakes that had died some years post surgery and so on.

He also said that all the Hoser snakes were in immaculate health, properly handled and treated.

and that they were all properly treated and handled.

The government side who were both competitors of the Snakebusters reptile education business and regulators of Snakebusters, were using their position as regulator to remove a competitor that they could not match in standard.

They had no one with any expertise whatsoever in venomoid surgery, but ran their case that the Hoser venomoids were a major public hazard, even though Snakebusters were alone in their business arena with a perfect safety record.

The corrupt Judge, named Pamela Jenkins, biased against Hoser from the outset and close associate of Felicity Hampel, now a judge and adversely named in several chapters of the book *Victoria Police Corruption* (Volume 2) (Hoser 1999), later issued two corrupt written judgments making bizarre and totally false claims.

Included was that "Mr Fink", (yes she called him this repeatedly) thought Hoser's venomoids were dangerous and that he ("Fink") would never free handle them (the photo on the cover of this journal taken before the hearing proves the second statement to be a lie).

She then went on to say in writing that "No weight could be given to the evidence of Mr Fink" a point she forcefully repeated in both written judgments (Jenkins 2012a, 2012b).

Instead she relied on an anonymous post on the "Snakegetters" website at: <http://www.snakegetters.com/demo/vet/venomoid-faq.html>, sponsored by "tongs.com", tendered by Melbourne Zoo reptile keepers (part of the DSE umbrella) to allege that all the Hoser venomoids were a serious public risk and highly dangerous.

That post by an anonymous author claimed that venom glands may regenerate after being removed. However the merit of the claim would be immediately doubted as it was made on a site selling snake tongs, a cruel and brutal device used to handle (and injure) dangerously venomous snakes, the device of which is made redundant if the snakes in question are rendered harmless by venomoid surgery.

In other words, the commercial self-interest in the claims on the site would be obvious to all!

On 9 March 2012, Jenkins summarily shut down the successful Snakebusters business, not only depriving numerous clients of reptile education shows and the like, but also putting Victorians at risk because of the unavailability of alternative reptile educators of the same expertise and standard.

On 26 April 2012, Jenkins repeated her generally false claims in her second written judgment and demanded Raymond Hoser pay \$20,000 compensation to the government as punishment for losing the proceedings, even though she had stripped him (myself) of all income and the tribunal (VCAT) is one where the rules are written that each side bears their own costs, making her money demand highly illegal.

For the record, Jenkins has previously been found guilty by the Supreme Court of Victoria for making false statements in a judgment.

The case on the public record was when she attacked a corruption whistleblower, the previous case being where she improperly found solicitor Mark Morgan guilty of contempt of court in September 2007.

The conviction was overturned when the appeal court judges found she had totally misrepresented one or more statements by another judge to twist their meaning to be different to that intended in order to convict Morgan when he shouldn't have been.

Morgan had been a lawyer acting on behalf of people bashed in their own home by corrupt Victorian Police.

Of note in terms of Dr Funk, is that he was forced to wait for the best part of a week in the courthouse foyer in Melbourne, Australia for the best part of a week before he was made to give "evidence". When in the witness box in the court room, the corrupt judge Pamela Jenkins was rude and abusive to Dr. Funk and treated him with hatred and contempt.

In spite of this incredibly harsh treatment, Dr. Funk never complained about his mistreatment and time wasting once!

**Species remaining in the genus *Sinomicrurus* Slowinski et al. 2001.**

*Sinomicrurus macclellandi* (Reinhardt, 1844) (the type species),  
*Sinomicrurus hatori* (Takahashi, 1930),  
*Sinomicrurus kelloggi* (Pope, 1928),  
*Sinomicrurus sauteri* (Steindachner, 1913).

#### REFERENCES CITED

Campbell, J. A. and Lamar, W. W. 2004. *The Venomous Reptiles of the Western Hemisphere*. Comstock, Ithaca, USA.  
 Cox, M. J., Van Dijk, P. P., Jarujin, N. and Thirakhupt, K. 1998. *A Photographic Guide to Snakes and Other Reptiles of Peninsular Malaysia, Singapore and Thailand*. Ralph Curtis:144 pp.  
 Fritze, A. 1894. Die Fauna der Liu-Kiu-Insel Okinawa. *Zool. Jahrb. Syst.* 7:852-926.  
 Günther, A. 1868. Sixth account of new species of snakes in the collection of the British Museum. *Ann. Mag. nat. Hist.* (4)1:413-429.

Hoser, R. T. 1999. *Victoria Police Corruption* (2 Vols):1536 pp.

Hoser, R. T. 2012. A reclassification of the Rattlesnakes; species formerly exclusively referred to the Genera *Crotalus* and *Sistrurus* and a division of the elapid genus *Micrurus*. *Australasian Journal of Herpetology* 11:2-24.

Jenkins, P. 2012a. Legal judgement, DSE versus Raymond Hoser, 9 March 2012.

Jenkins, P. 2012b. Legal judgement, DSE versus Raymond Hoser, 26 April 2012.

Lawson, R., Slowinski, J. B., Crowther, B. I. and Burbink, F. T. 2005. Phylogeny of the colubroidea (Serpentes): New evidence from the mitochondrial and nuclear genes. *Molecular phylogenetics and evolution* 37:581-601.

Mori, M. 1982. *Japans Schlangen, Vols. 1-3* (80, 102, 123 pp.). Tokyo (Igaku-Shoin Ltd.) [bilingual edition in German and Japanese]

Orlov, N., Ananjeva, A., Ryabov, S. and Rao, D. Q. 2003. Venomous snakes in Southern China. *Reptilia* (GB)(31):22-29.

Ota, H. 2010. *Sinomicrurus japonicus*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2. (online at: <http://www.iucnredlist.org/apps/redlist/details/177491/0>).

Ota, H. 2000. Current status of the threatened amphibians and reptiles of Japan. *Popul. Ecol.* 42: 5-9.

Ota, H., Akiko, I. and Jun-Tsong, L. 1999. Systematic review of the Elapid snakes allied to *Hemibungarus japonicus* (Günther, 1868) in the East Asian Islands, with description of a new subspecies from the central Ryukyus. *Journal of Herpetology* 33(4):675-687.

Pope, C. H. 1928. Seven new reptiles from Fukien Province, China. *American Museum Novitates* 320:1-6.

Pope, C. H. 1935. *The Reptiles of China. Turtles, Crocodylians, Snakes, Lizards*. Amer. Mus. Nat. Hist., New York, Nat. Hist. Library:604 pp.

Pyron, R. A., et al. 2010. The phylogeny of advanced snakes (Colubroidea), with discovery of a new subfamily and comparison of support methods for likelihood trees. *Mol. Phylogenet. Evol.* 58:329-342.

Reinhardt, J. T. 1844. Description of a new species of venomous snake, *Elaps macclellandi*. *Calcutta Journal of Natural History* 4:532-534.

Ride, W. D. L. (ed.) et. al. (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature*. The Natural History Museum - Cromwell Road, London SW7 5BD, UK (also commonly cited as "ICZN 1999").

Steindachner, F. 1913. Über zwei neue Schlangenarten aus Formosa. *Anz. Kaiserl. Akad. Wiss. Wien, Math.-Nat. Ser.* 50:218-220.

Stejneger, L. H. 1907. Herpetology of Japan and adjacent territory. *Bull. US Natl. Mus.* 58: xx, 1-577.

Stejneger, L. H. 1910. The batrachians and reptiles of Formosa. *Proc. US Natl. Mus.* 38:91-114.

Wall, F. 1908a. Remarks on some recently acquired snakes. *J. Bombay Nat. Hist. Soc.* 18:778-784.

Takahashi, S. 1930. *Synopsis of the terrestrial snakes of Japan* [in Japanese]. Shunyo-do, Tokyo.

Wall, F. 1908b. Notes on a collection of snakes from the Khasi Hills, Assam. *J. Bombay nat. Hist. Soc.* 18: 312-337.

Whitaker, R. and Ashok, C. 2004. *Snakes of India*. Draco Books:500 pp.

Zhao, E. and Adler, K. 1993. *Herpetology of China*. SSAR, Oxford/Ohio:522 pp.

Ziegler, T., Hendrix, R., Thanh, V. N., Vogt, M., Forster, B. and Kien, D. N. 2007. The diversity of a snake community in a karst forest ecosystem in the central Truong Son, Vietnam, with an identification key. *Zootaxa* 1493:1-40.