

# A revision of *Lycodon ruhstrati* (Fischer 1886) auctorum (squamata colubridae), with the description of a new species from thailand and a new subspecies from the Asian mainland

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**Abstract:** The Asian colubrid species related to *Lycodon ruhstrati* (Fischer 1886) are revised on the basis of their morphology, pattern and colouration, in combination with DNA analyses. *Lycodon ruhstrati* auctorum is revealed to be a species complex. We restrict this specific nomen to populations of Taiwan. The mainland populations thus far gathered under this name form two taxa. For the first one, with dorsal scales entirely smooth, the name *Lycodon futsingensis* (Pope 1928) is available. The second taxon is described here as *Lycodon ruhstrati abditus* n. subsp. This subspecies is genetically close to the nominate form restricted here to Taiwan but differs by some morphological characters. In addition to the differences in ventral and subcaudal scale counts, and maxillary teeth formula, *Lycodon ruhstrati abditus* n. subsp. has keeled vertebral scales whereas in *L. futsingensis* all dorsal scales are unkeeled. Another new taxon is described here as *Lycodon ophiophagus* n. sp. to accommodate an isolated population on the Thai Peninsula. It is distinguishable by its ventral and subcaudal scale counts, the long posterior maxillary teeth, the colouration and by having keeled dorsal scale rows. *Lycodon pauci-fasciatus* is a valid species, redefined on the basis of new material from central Vietnam. *Lycodon multifasciatus*, until recently regarded as a subspecies of *Lycodon ruhstrati*, is also considered to be a valid species.

**Author Keywords:** *L. futsingensis*; *L. multifasciatus* new Comb.; *L. paucifasciatus*; *Lycodon ophiophagus* n. sp.;

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References:

- BOULENGER G. A. 1893. Catalogue of the snakes in the British Museum (Natural History). I. Containing the families Typhlopidae, Glauconiidae, Boidae, Ilysiidae, Uropeltidae, Xenopeltidae and Colubridae aglyphae, part. London: British Museum [Natural History], xiii + 448 pp., pls 1-28BOULENGER G. A. 1896. Catalogue of the snakes in the British Museum (Natural History). III. Containing the Colubridae (Opisthoglyphae and Proteroglyphae), Amblycephalidae and Viperidae. London, British Museum [Natural History], xiv + 727 pp., pls 1-25BOULENGER G. A. 1899. On a collection of reptiles and batrachians made by Mr. J. D. La Touche in N. W. Fokien, China. Proceedings of the Zoological Society of London: 159-172, 4 plsBOURRET R. 1934. Notes herpétologiques sur l'Indochine française. II. Sur quelques serpents des montagnes du Tonkin. Bulletin Général de l'Instruction Publique (13e Année, 8 avril) : 149-157 (reprint: 3-11)BOURRET, R., Les Serpents de Chapa (1935) Bulletin Général de l'Instruction Publique, pp. 239-251. , Notes herpétologiques sur l'Indochine française. IX, 14e Année, 7 mars, reprint: 5-17
- BOURRET R. 1935b. Notes herpétologiques sur l'Indochine française. X. Les serpents de la station d'altitude du Tam-Dao. Bulletin Général de l'Instruction Publique (14e Année, 8 avril) : 259-271 (reprint: 1-13)BOURRET, R., Les serpents de l'Indochine. II. Catalogue systématique descriptif. (1936) Toulouse: Henri Basuyau et Cie, , 505 pp
- BOURRET R. 1937. Notes herpétologiques sur l'Indochine française. XV. Lézards et serpents reçus au Laboratoire des Sciences Naturelles de l'Université au cours de l'année 1937. Descriptions de deux espèces et de deux variétés nouvelles. Bulletin Général de l'Instruction Publique (4 décembre), Annexe: 57-80BOURRET R. 1939a. Notes herpétologiques sur l'Indochine française.

- XVII. Reptiles et batraciens reçus au Laboratoire des Sciences Naturelles de l'Université au cours de l'année 1938. Description de trois espèces nouvelles. Bulletin Général de l'Instruction Publique (18e Année, 6 février), Annexe: 13-34, 1 pBOURRET R. 1939b. Notes herpétologiques sur l'Indochine française. XVIII. Reptiles et batraciens reçus au Laboratoire des Sciences Naturelles de l'Université au cours de l'année 1939. Descriptions de quatre espèces et d'une variété nouvelles. Bulletin Général de l'Instruction Publique (19e Année, 4 décembre), Annexe: 5-39, 1 pBOURRET R. 1939c. Notes herpétologiques sur l'Indochine française. XIX. La faune herpétologique des stations d'altitude du Tonkin. Bulletin Général de l'Instruction Publique (19e Année, 4 décembre), Annexe: 41-47BOURRET R. 1939d. Notes herpétologiques sur l'Indochine française. XX. Liste des reptiles et batraciens actuellement connus en Indochine française. Bulletin Général de l'Instruction Publique (19e Année, 4 décembre), Annexe: 49-60CHANG, J.Y., LIN, W.L., HSU, H.J., JHONG, Y.J., TSENG, C.M., JUANG, G.H., HSIEH, Y.S., LAI, C.C., Discovering Pinglin Natural Museum (2003) Pinglin Township Government, Taipei County, , in Chinese, 254 pp
- The amphibian and reptilian fauna of Anhui (1991) Hefei, Anhui: Anhui Publishing House of Science and Technology, , CHEN B. H, Edit, 408 pp, 4 pls [in Chinese]
  - CHEN Y. L. 2006. Reptiles, pp. 65-93. In: Yang J. C., Edit. Wildlife of Taipei and Keelung. Taiwan: Endemic Species Research Institute, Nantou [in Chinese]CHU H. R 2000. Reptiles, pp. 75-107. In: Pong G. D., Edit. Reptiles and amphibians of Taiwan. Nantou: Taiwan Endemic Species Research Institute [in Chinese]CHU, S.P., LEE, L.H., LIN, C.F., HSU, F.S., CHEN, Y.L., CHEN, J.C., WUN, I.J., TSAI, S.H., Fauna and flora resources guide of Tanayiku (1998) Taiwan Endemic Species Research Institute and Chiayi County, , Government Press, 167 pp, in Chinese
  - CREER, S., MALHOTRA, A., THORPE, R.S., CHOU, W.H., Multiple causation of phylogeographical pattern as revealed by nested clade analysis of the Bamboo Viper (*Trimeresurus stejnegeri*) within (2001) Taiwan. Molecular Ecology, 10 (8), pp. 1967-1981
  - DALTRY, J.C., WÜSTER, W., A new species of Wolf Snake (Serpentes: Colubridae: *Lycodon*) from the Cardamon Mountains, southwestern Cambodia (2002) Herpetologica, 58 (4), pp. 498-504
  - DAVID, P., VOGEL, G., VIJAYAKUMAR, S.P., VIDAL, N., A revision of the *Trimeresurus puniceus*-complex (Serpentes: Viperidae: Crotalinae) based on morphological and molecular data (2006) Zootaxa, 1293, pp. 1-78
  - DEUVE, J., Serpents du Laos. (1970) Paris: ORSTOM, Mémoires, 39, pp. 1-251
  - DOWLING, H.G., A proposed standard system of counting ventrals in snakes (1951) British Journal of Herpetology, 1 (5), pp. 97-99
  - FENG X. Y. 1991. Serpentiformes, pp. 237-278. In: Wang X. T., Edit. Vertebrate fauna of Gansu, Lanzhou. Gansu Publishing House of Science and Technology [in Chinese]FISCHER J. G. 1886. Herpetologische Notizen. Abhandlungen des Naturwissenschaftlichen Vereins in Hamburg 9: 1-19, taf. 1 & 2. FUHRMANN K. & KUCHARZEWSKI C. 2008 (2007). Die herpetologische Sammlung im Landesmuseum für Natur und Mensch, Oldenburg (Amphibia et Reptilia). Museumsjournal für Natur und Mensch, Oldenburg 2007 (3) : 7-35GAULKE, M., A new species of *Lycodon* from Panay Island, Philippines (Reptilia, Serpentes, Colubridae) (2002) Spixiana, 25 (1), pp. 85-92
  - GORIS, R.C., MAEDA, N., Guide to the amphibians and reptiles of Japan (2004) Malabar, Florida: Krieger Publishing Company, , vii, 285 pp
  - GREENE, H.W., Snakes: The evolution of mystery in nature (1997) California: University of California Press, , 351 pp
  - GRISMER, L.L., OTA, H., TANAKA, S., Phylogeny, classification, and biogeography of *Goniurosaurus kuriowae* (Squamata: Eublepharidae) from the Ryukyu Archipelago, Japan, with description of a new subspecies (1994) Zoological Science, 11, pp. 319-335
  - GROSSMANN, W., TILLACK, F., Bemerkungen zur Herpetofauna des Khao Lak, Phang Nga, thailändische Halbinseln. Teil I: Einführung

- Amphibia: Sauria. (2000) Sauria, 22 (4), pp. 23-38
- GROSSMANN, W., TILLACK, F., Bemerkungen zur Herpetofauna des Khao Lak, Phang Nga, thailändische Halbinseln. Teil II: Reptilia: Serpentes
- Testudines
- Diskussion. (2001) Sauria, 23 (1), pp. 25-40
- GROSSMANN, W., TILLACK, F., Bemerkungen zur Herpetofauna des Khao Lak, Phang Nga, thailändische Halbinseln. Teil III: Ergebnisse der Jahre 1999 und 2000. (2001) Sauria, 23 (3), pp. 21-34
- GÜNTHER, A.C.L.G., Sixth account of new species of snakes in the collection of the British Museum (1868) Annals and Magazine of Natural History, 4 (1), pp. 413-429. , pls 17-19
- HALL T. A. 1999. BioEdit: a user-friendly biological sequence alignment editor and analysis program for Windows 95/98/NT. Nucleic Acids Symposium Series 41: 95-98 HIKIDA, T., OTA, H., KURAMOTO, M., TOYAMA, M., Zoogeography of amphibians and reptiles in East Asia (1989) Current Herpetology in East Asia, pp. 278-281. , Matsui M. et al, Edits, Kyoto. Herpetological Society of Japan
- HONG D. M. 1999. Reptiles, pp. 65-100. In: Pong G. D., Edit. The animals of Taichung County and City, 3rd edition. Nantou: Taiwan Endemic Species Research Institute [in Chinese] HOSO, M., Predation on a gecko, *Lepidodactylus lugubris*, by the colubrid snake, *Lycodon ruhstrati multifasciatus* (2007) Akamata, 18, pp. 9-11. , in Japanese
- HUANG, M.H., Fauna of Zhejiang. Amphibia Reptilia (1990) Hangzhou: Zhejiang Science and Technology Publishing House, pp. 153-282. , in Chinese
- INGER, R.F., MARX, H., The systematics and evolution of the Oriental colubrid snakes of the genus *Calamaria* (1965) Fieldiana: Zoology, 49, pp. 1-304. , Chicago
- KARSEN, S.J., LAU, M.W.N., BOGADEK, A., Hong Kong Amphibians and Reptiles (1998) Hong Kong: SAR The Provisional, , 2nd Edition, Urban Council, 186 pp
- KUNTZ, R.E., Snakes of Taiwan (1963) Quarterly Journal of the Taiwan Museum, Taipei, 16, pp. 1-79
- LANZA, B., A new species of *Lycodon* from the Philippines, with a key to the genus (Reptilia Serpentes Colubridae) (1999) Tropical Zoology, 12, pp. 89-104
- LEE, T.H., Ecological patterns of distribution on gradients of elevation and species diversity of snakes in southern Taiwan (2005) Amphibia-Reptilia, 26, pp. 325-332
- LIN, H.C., Reptiles of Nantou County, Taiwan (1996) Chi-chi, Taiwan: Taiwan Endemic Species, , Research Institute [in Chinese]
- LIN H. C. 1997. Reptiles, pp. 69-79. In: Pon K. T., Edit. Wildlife of Changhua. Nantou: Taiwan Endemic Species Research Institute [in Chinese] LUE, K.Y., CHEN, S.H., CHEN, S.L., Taiwan snakes (1989) Taiwan: Provincial Department of Education, , R. O. C, 148 pp
- LUE, K.Y., TU, M.C., HSIANG, K.S., A field guide to amphibians and reptiles of Taiwan (1999) Taipei: S. W. A. N, , 343 pp
- MAKI, M., A monograph of the snakes of Japan (1931) Tokyo: Dai-ichi Bhobo, , 247 pp
- MAKI, M., A monograph of the snakes of Japan (1933) Tokyo: Dai-ichi Bhobo, , pls I-LXXXV, 1
- MAO J. J., NORVAL G., HSU C. L., CHEN W. H. & GER R. (in prep.) A note on predation by a many-banded krait (*Bungarus multicinctus multicinctus*) on two snakes from a mountainous region in Taiwan with a review on the dietary differentiation of this species within different habitats MAO, J.J., WANG, Y.S., HUANG, H.T., Wu, M.Y., Inventory of the herpetofauna of Da-Jiou-Shi Experimental Forest (2008) Ilan University Journal of Bioresources, 4 (1), pp. 15-23. , in Chinese
- MELL, R., Beiträge zur Fauna sinica. I Die Vertebraten Südchinas
- Feldlisten und Feldnoten der Säuger, Vögel, Reptilien, Batrachier (1922) Archiv für Naturgeschichte, Berlin (A), 80, pp. 1-134

- MORI, M., Japans Schlangen 2 (1984) Tokyo: Igaku-shoin Ltd, , 102 pp
- MOU S. J., Yu J. M., CHIU Y. J., HSU J. W., HSU F. S., CHANG L. H., CHANG-CHEN L. W., CHEN Y. L., PONG J. J., YANG Y. L., LIU Y.-C, JHENG S. C. & HAN C. C. 2002. KANAKANAVU domestic monograph - A guidebook and introduction to the resources of Nanzihsian River, Kaoshiung County. Taiwan Endemic Species Research Institute and Sanmin Township Office of Kaoshiung County Press, 223 pp. [in Chinese]
- MUKHERJEE, D., BHUPATHY, S., A new species of Wolf Snake (Serpentes: Colubridae: *Lycodon*) from Anaikatti Hills, Western Ghats, Tamil Nadu, India (2007) Russian Journal of Herpetology, 14 (1), pp. 21-26
- NGUYÉN, V.S., Ho, T.C., NGUYÉN, Q.T., Danh lue ech nhái và bò sát Việt Nam. A checklist of amphibians and reptiles of Vietnam (2005) Hanoi: Nhà Xuất bdn Nông Nghiệp, , in Vietnamese, 180 pp
- NORVAL, G., BURSEY, C.R., GOLDBERG, S.R., MAO, J.J., The first record of *Kiricephalus pattoni* Stephens, 1908 as a parasite of *Lycodon ruhstrati* ruhstrati Fischer, 1886 from Chiayi County, Taiwan (2009) Herpetology Notes, 2, pp. 79-80
- NORVAL, G., BURSEY, C.R., GOLDBERG, S.R., MAO, Wu, J.H., *Lycodon ruhstrati* ruhstrati (Mountain Wolf Snake) endoparasite (2009) Herpetological Review, 40 (1), p. 99
- NORVAL, G., HUAng, S.C., MAO, J.J., Mountain Wolf Snake (*Lycodon r. ruhstrati*) predation on an exotic lizard, *Anolis sagrei*, in Chiayi County, Taiwan (2007) Herpetological Bulletin, 101, pp. 13-17
- NORCAL, G., MAO, J.J., Mountain Wolf Snake (*Lycodon ruhstrati ruhstrati*) : A description of the defensive behavior (2006) Sauria, 28 (4), pp. 47-50. , Note: the surname of the first author is a typo for Norval
- NORVAL, G., MAO, J.J., Ein Fall von arboricolem Erbeuten eines braunen *Anolis* (*Norops sagrei* Duméril & Bibron, 1837) durch eine Berg-Wolfszahnnatter (*Lycodon ruhstrati ruhstrati* [Fischer, 1886]). (2008) Sauria, 30 (1), pp. 59-62
- NORVAL, G., MAO, J.J., An instance of *Japalura swinhonis* as prey of *Lycodon ruhstrati ruhstrati* in Chiayi County, Taiwan (2008) Sauria, 30 (3), pp. 34-45
- NORVAL, G., MAO, J.J., CHU, H.P., Oviposition and early growth of unfed neonates of the Mountain Wolf Snake *Lycodon ruhstrati ruhstrati* (Squamata: Colubridae) (2007) Current Herpetology, 26 (1), pp. 49-51
- ORLOV, N.L., MURPHY, R.W., PAPENFUSS, T.J., List of snakes of Tam-Dao mountain ridge (Tonkin, Vietnam) (2000) Russian Journal of Herpetology, 7 (1), pp. 69-80
- ORLOV, N.L., RYABOV, S.A., NGUYEN, V.S., NGUYEN, Q.T., New records and data on the poorly known snakes of Vietnam (2003) Russian Journal of Herpetology, 10, pp. 217-240
- OTA, H., Taxonomic notes on *Lycodon ruhstrati* (Colubridae: Ophidia) from East Asia (1988) Journal of Taiwan Museum, 41 (1), pp. 85-91
- OTA, H., Systematics and biogeography of terrestrial reptiles of Taiwan (1991) Proceedings First International Symposium on Wildlife Conservation, Republic of China, December, pp. 47-112. , Lin Y.-S. & Chang K. H, Edits, Taipei: Council of Agriculture
- OTA, H., Ross, C.A., Four new species of *Lycodon* (Serpentes: Colubridae) from the Northern Philippines (1994) Copeia, 1, pp. 159-174
- PALUMBI, S.R., MARTIN, A., ROMANO, S., MCMILLAN, W.O., STICE, L., GRABOWSKI, G., The simple fool's guide to PCR (1991) Hawaai: Department of Zoology and Kewalo Marine Laboratory, , 47 pp
- PAUWELS, O.S.G., DAVID, P., CHIMSUNCHART, C., THIRAKHUPT, K., Reptiles of Phetchaburi Province, western Thailand: A list of species, with natural history notes, and a discussion on the biogeography at the Isthmus of Kra (2003) Natural History Journal of Chulalongkorn University, 3 (1), pp. 23-53
- PAUWELS, O.S.G., LAOHAWAT, O.-A., DAVID, P., Bour, R., DANGSEE, P., PUANGJIT, C., CHIMSUNCHART, C., Herpetological investigations in Phang-Nga Province, southern peninsular Thailand, with a list of reptile species and notes on

- their biology (2000) Dumerilia, 4 (2), pp. 123-154
- PAUWELS, O.S.G., LAOHAWAT, O.-A., DAVID, P., DANGSEE, P., PUANGJIT, C., CHIMSUNCHART, C., BOUR, R., Zoogeographical affinities and richness of the herpetofauna of Phang-Nga Province, southern peninsular Thailand (2000) Abstracts, Fourth Asiatic Herpetological Conference, p. 137. , Chengdu, China, July 16-20
  - PAUWELS, O.S.G., LAOHAWAT, O.-A., NAAKTAE, W., PUANGJIT, C., WISUTHAROM, T., CHIMSUNCHART, C., DAVId, P., Reptile and amphibian diversity in Phang-nga Province, southern Thailand (2002) Natural History Journal of Chulalongkorn University, 2 (1), pp. 25-30
  - PAUWELS, O.S.G., SUMONTHA, M., Geographic distribution. *Ahaetulla fasciolata* (Speckled-head Whip Snake) (2007) Herpetological Review, 38 (2), p. 220
  - PAUWELS, O.S.G., SUMONTHA, M., DAVID, P., CHAN-ARD, T., Vogel, G., First record of *Lycodon cardamomensis* from Thailand, with a key to Thai Lycodon (Serpentes: Colubridae) (2005) Natural History Bulletin of the Siam Society, 53 (1), pp. 79-86
  - PAUWELS, O.S.G., SUMONTHA, M., MATSUI, M., Geographic distribution. *Nyctixalus pictus* (White-spotted Tree Frog) (2004) Herpetological Review, 35 (3), p. 283
  - POPE, C.H., Seven new reptiles from Fukien Province, China (1928) American Museum Novitates, 320, pp. 1-6
  - POPE, C.H., Notes on reptiles from Fukien and other Chinese provinces (1929) Bulletin of the American Museum of Natural History, 58 (8), pp. 335-487. , pls 17-20
  - POPE C. H. 1935. The reptiles of China. Turtles, crocodilians, snakes, lizards. Natural History of central Asia, X. American Museum of Natural History, New York: i-lii + 604 pp. + pls 1-27SHANG, G., Natural Portraits of the Herpetofauna of Shei-Pa National Park (2007) Hsinchu, Shei-Pa National Park Press, , in Chinese, 197 pp
  - SIEGEL, S., Nonparametric statistics for the behavioral sciences (1956) New York, Toronto, London and Tokyo, , McGraw-Hill Kogakusha, xvii, 312 pp
  - SLOWINSKI J. B., PAWAR S. S., HTUN WIN, THIN THIn, SAI WANNA GYi, SAN LWIN O0 & Hla TUN 2001. A new Lycodon (Serpentes: Colubridae) from northeast India and Myanmar (Burma). Proceedings of the California Academy of Sciences 52 (20) : 397-405SMITH M. A. 1943. The Fauna of British India, Ceylon and Burma, including the whole of the Indo-chinese subregion. Reptilia and Amphibia. III, Serpentes. London: Taylor & Francis, xii + 583 ppSTEJNEGER L. H. 1907. Herpetology of Japan and adjacent territory. United States National Museum Bulletin 58: 1-xx + 577 pp., pls 1-35STUART, B.L., CHUAYNKERN, Y., A new *Opisthotropis* (Serpentes: Colubridae: Natricinae) from Northeastern Thailand (2007) Current Herpetology, 26 (1), pp. 35-40
  - SZYNDLAR, Z., NGUYEN, V.S., Terrestrial snake fauna of Vietnam: Distributional records (1996) The Snake, 27 (2), pp. 91-98
  - TODA, M., A record of the snake *Lycodon ruhstrati multifasciatus*, collected on the coast of Iriomosejima Island, the Yaeyama Islands (1987) Akamata, 4, p. 25
  - TORIBA, M., Taxonomic status of Saki-shima Plum-blossom snake (1982) Nippon Herpetological Journal, 23, p. 46. , in Japanese
  - TORIBA, M., HIKIDA, T., Gender of the genus *Dinodon* (Colubridae: Serpentes) (1999) Bulletin of the Herpetological Society of Japan, 1, pp. 1-2
  - TOYAMA M. 1985. The herpetology of the Ryukyu Archipelago, pp. 54-152. In: W. W. F. Japan/Scientific Committee, Edits. Conservation of the Nansei Shoto, Part II. Tokyo: World Wildlife FundTU, M.-C., Amazing snakes (2004) Taipeh: Yuan-Liou Publishing Co, , in Chinese, 280 pp
  - UCHIYAMA, R., MAEDA, N., NUMATA, K., SEKI, S., A photographic guide

- amphibians and reptiles in Japan (2002) Japan: Heibonsha, , 337 pp
- VIDAL, N., DELMAS, A.-S., DAVID, P., CRUAUD, C., COULOUX, A., HEDGES, S.B., The phylogeny and classification of caenophidian snakes inferred from seven nuclear protein-coding genes (2007) Comptes-Rendus Biologies, 330, pp. 182-187
- VOGEL, G., BRACHTEL, N., Contribution to the knowledge of *Lycodon ruhstrati* (Fischer, 1886) in Vietnam. Taxonomy and biology of a little-known species (2008) Salamandra, 44 (4), pp. 207-224
- VOGEL G. & DAVID P. 2006. On the taxonomy of the *Xenochrophis piscator* complex, pp. 241-246. In: Vences M. et al., Edits. Herpetologia Bonnensis II. Proceedings of the 13th Congress of the Societas Europaea HerpetologicaVOGEL, G., van ROOIJEN, J., A new species of *Dendrelaphis* (Serpentes: Colubridae) from Southeast Asia (2007) Zootaxa, 1394, pp. 25-45
- WALSH, P.S., METZGER, D.A., HIGUCHI, R., Chelex 100 as a medium for simple extraction of DNA for PCR-based typing from forensic material (1991) BioTechniques, 10 (4), pp. 506-513
- WU, L., Li, D.J., LIU, J.S., Reptilian fauna of Guizhou (1985) Guiyang: Guizhou People Press, iv + 436 S, pi, pp. 1-67. , in Chinese
- WÜSTER W., WARRELL D. A., Cox M. J., JINTAKUNE P. & NABHITABHATA J. 1997. Redescription of *Naja siamensis* (Serpentes: Elapidae), a widely overlooked spitting cobra from S. E. Asia: geographic variation, medical importance and designation of a neotype. Journal of Zoology 243 (4) : 771-788Coloured atlas of Sichuan reptiles (2002) Beijing: China Forestry Publishing House, i-vii, pp. 1-292. , ZHAO E, Edit
- ZHAO, E., China] (2006) Hefei, Anhui Province: Anhui Science and Technology Publishing House PubL, 1. , Zhongguo Shelei [Snakes of, 372 pp, II, 279 pp
- ZHAO, E., AdLER, K., Herpetology of China (1993) Society for the Study of Reptiles and Amphibians: Contributions to Herpetology, 10. , 522 pp
- ZHAO E. M., HUANG M. H., ZONG Y., ZHENG J., HUANG Z. J., YANG D. T. & Li D. J. (Edits) 1998. Fauna Sinica. Reptilia 3. Squamata Serpentes. Beijing: Science Press, XVII + 522 pp. + pls 1-8 + color plates 1-4 [in Chinese]ZHAO E. & YANG D. (Edits) 1997. The Series of the Scientific Expedition to the Hengduan Mountains, Qinghai-Xizang Plateau. Amphibians and Reptiles of the Hengduan Mountains Region. The Comprehensive Scientific Expedition to the Qinghai-Xizang Plateau, Chinese Academy of Sciences. Beijing: Science Press, (1-2), i-xiv + 303 pp., pls I-VIIIIZIEGLER, T., Die Amphibien und Reptilien eines Tieflandfeuchtwald-Schutzgebietes in Vietnam. (2002) Münster: Natur und Tier - Verlag GmbH, , 342 pp
- ZCIEGLER, T., HCENDRIX, R., Vu, N.T., VOGT, M., FORSTER, B., DANG, N.K., The diversity of a snake community in a karst forest ecosystem in the central Truong Son, Vietnam, with an identification key (2007) Zootaxa, 1493, pp. 1-40
- ZIEGLER, T., HERRMANN, H.-W., VU, N.T., LCE, K.Q., NGUYEN, T.H., CAO, X.C., LUU, M.T., DINH, H.T., The amphibians and reptiles of the Phong Nha-Ke Bang National Park, Quang Binh Province, Vietnam (2004) Hamadryad, 28, pp. 19-42