

Molecular systematics and phylogeny of Old and New World ratsnakes, *Elaphe* auct., and related genera (Reptilia, Squamata, Colubridae)

Russian journal of Herpetology
Vol. 9, No. 2, 2002, pp.105-124

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Abstract

The phylogenetic relationships of the Holarctic ratsnakes (*Elaphe* auct.) are inferred from portions of two mitochondrial genes, 12S rRNA and COI. *Elaphe* Fitzinger is made up of ten Palearctic species.

Natrix longissima Laurenti (type species) and four western Palearctic species (*hohenackeri*, *li*, *neatus*

,
persicus
, and
situla

) are assigned to *Zamenis* Wagler. Its phylogenetic affinities with closely related genera, *Coronella* and *Oocatochus*, remain unclear. The East Asian *Coluber porphyraceus* Cantor is referred to a new genus. This taxon and the western European *Rhinechis scalaris* have an isolated position among Old World ratsnakes. Another new genus is described for four Oriental species (*cantoris*

,
hodgsonii
,
moellendorffi
, and
taeniurus

). New World ratsnakes and allied genera are monophyletic. *Coluber flavirufus* Cope is referred to *Pseudelaphe* Mertens and Rosenberg. *Pantherophis* Fitzinger is revalidated for *Coluber guttatus*

L. (type species) and further Nearctic species (*bairdi*, *obsoletus*, and *vulpinus*). *Senticolis triaspis* is the sister taxon of New World ratsnakes including the genera *Arizona*, *Bogertophis*,

Lampropeltis, Pituophis, and Rhinocheilus. The East Asian Coluber conspicillatus Boie and Coluber mandarinus Cantor form a monophyletic outgroup with respect to other Holarctic ratsnake genera and are referred to Euprepiophis Fitzinger. Three Old World species, viz.

Elaphe

(sensu lato)

bella

,

E.

(s.l.)

frenata

, and

E.

(s.l.)

prasina

remain unassigned. The various groups of ratsnakes (tribe

Lampropeltini

) show characteristic hemipenis features.

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