

# Hemipenial morphology of the South American xenodontine snakes: with a proposal for a monophyletic Xenodontinae and a reappraisal of colubroid hemipenes.



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## Hemipenial morphology of the South American xenodontine snakes with a proposal for a monophyletic Xenodontinae and a reappraisal of colubroid hemipenes. Bulletin of the AMNH ; no. 240 Zaher, Hussam.

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### Abstract:

"The New World xenodontine 'colubrids' represent two immunologically distinct assemblages--the Central American and South American lineages, neither of which has been well diagnosed to date. I follow this nomenclature and recognize the Central American lineage as containing 22 genera. This clade is supported by the synapomorphies: a sulcus spermaticus bifurcating within or at the base of the capitulum (Cadle, 1984; Myers and Cadle, 1996). The remaining xenodontines constitute a total of 68 presently recognized genera, of which 41 are placed in the subfamily Xenodontinae sensu stricto. The other 27 genera are considered incertae sedis, pending further research. The Xenodontinae sensu stricto are hypothesized as being monophyletic on the basis of the following hemipenial synapomorphies: (1) presence of enlarged lateral spines on the hemipenial body, and (2) distinctly ornamented regions on the lobes, the asulcate surface bearing enlarged spinulate or papillate calyces (= body calyces). Some taxa recognized as Xenodontinae sensu stricto lack body calyces but have a nude surface at the same topographical position (e.g., *Psomophis*, *Tropidodryas*). This pattern is viewed as the result of a secondary loss. The rationale for this conclusion is based on the hypothesis that body calyces are homologous to the enlarged capitular calyces of the asulcate/medial surfaces of the lobes. In the Xenodontinae, the body calyces are almost always separated from the calyces of the capitulum by a more or less developed overhang (except in the *Psomophis* genera). This overhang is generally retained on the hemipenes where the asulcate/medial surfaces of the lobes are nude (e.g., *Psomophis*), which supports the view that the body calyces were secondarily lost. Body calyces are also found on the surface of the hemipenial body in its asulcate side (e.g., *Philodryas*, *Pseudis*).

Xenoxybelis). Because body calyces are interpreted as modified 'capitular calyces,' which are restricted to the lobular region and crotch, the presence of these structures far on the hemipenial body is here viewed as a derived state where the body calyces extend from the lobes to the body. Various presumably monophyletic taxa are defined within the Xenodontinae sensu stricto. Conophis, Heterodon, and Farancia are clearly assigned to Xenodontinae sensu stricto. The hemipenial morphology of various suprageneric 'colubrid' taxa are described and compared. The variation of some hemipenial features within the colubroid radiation, as well as the variation on the higher level phylogeny of colubroids, is investigated" --P. 3.

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