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Morphological variation and systematics of *Dipsas catesbyi* (Sentzen, 1796) and *Dipsas pavonina* Schlegel, 1837 (Serpentes: Dipsadinae)

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Abstract

The genus *Dipsas* includes approximately 32 species, distributed from Mexico to South America (Brazil, Argentina, Paraguay, Bolivia and Peru). High variability in color pattern and scalation has made it difficult to define limits among *Dipsas* species and to interpret patterns of geographic variation. We analyzed 14 meristic and 18 morphometric characters of 483 specimens of *D. catesbyi* and 129 specimens of *D. pavonina*, as well as their color pattern, coloration, hemipenis, cephalic glands and geographic distribution. We describe variation in meristic and morphometric characters and incorporate new characters into revised diagnoses. The results indicate a greater morphological similarity between *D. catesbyi* and species of *Sibynomorphus* than with the other species of *Dipsas*. More morphological studies should be done to evaluate current phylogenetic proposals for relationships within the tribe Dipsadini.

Key words: *Dipsas catesbyi*, *Dipsas pavonina*, *Dipsadinae*, hemipenes, variation

Introduction

Neotropical snakes of the genus *Dipsas* Laurenti, 1768 comprise approximately 32 species, distributed from Mexico into South America, including Brazil, Argentina, Paraguay, Bolivia and Peru (Peters & Orejas-Miranda 1970; Kofron 1982; Giraudo 2001). Species of *Dipsas* are thin snakes with a short and prominent head, large eyes, vertical pupils, and without a mental groove (Peters 1960).

Many South American species of *Dipsas* remain poorly known because they are represented by few specimens and/or they exhibit complex morphological variation in characters (Harvey & Embert 2008) typically used to infer species limits in snakes such as color patterns and scalation (e.g., Cadle 2005). This large and complex variation has made it difficult to define the limits among the species and to interpret patterns of geographic variation, especially in species that occur in low population densities (Cadle & Myers 2003).

In the most detailed revision of the dipsadine snakes, Peters (1960) used numbers of scales and color patterns to define seven species groups: *articulata*, *catesbyi*, *indica*, *oreas*, *polylepis*, *pratti*, and *variegata*, although, the *polylepis* group was considered artificial by Peters (1970). Since Peter's publication, authors continued to address some remaining problems. Most species of the *polylepis* group were referred to other genera or synonymized with species in other groups (Harvey & Embert 2008).

The *castebyi* group is distributed from Andean slopes of Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, and through northern Brazil (Peters 1960). According to Peters (1960), this group includes four species: *D. catesbyi* (Sentzen 1796); *D. copei* (Günther 1872); *D. pavonina* Schlegel, 1837*; and D.*

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