

A four-way division of the skink genus *Chalcides* Laurenti, 1768 (Squamata: Sauria: Scincidae).

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Received 16 March 2012, Accepted 12 April 2012, Published 30 June 2012.

ABSTRACT

The Skink genus *Chalcides* Laurenti, 1768 has been the subject of detailed morphological and molecular studies.

A recent analysis by Carranza et. al. (2008) found the genus as currently understood comprised four distinct clades. This included the three species formerly included in the genus *Sphenops* Wagler, 1830, which split between two different clades within the totality of *Chalcides*.

The authors chose to merge the widely used *Sphenops* within *Chalcides* to create in effect a supergenus.

Revisiting the data of Carranza et. al. (2008) and other authors, this paper chooses the sensible alternative position and one consistent with recent splits of the closely related genus *Eumeces* (see Griffith et. al. 2000 and Schmitz et. al. 2004), to split *Chalcides* Laurenti, 1768 in four ways.

Effectively copying the phylogenetic arrangement of Carranza et. al. 2008, but including taxa not tested by them, the split is done by using existing and available names for three groups, namely *Chalcides*, *Sphenops* and *Allodactylus* Lataste, 1876.

A new genus is named and defined according to the Zoological Code, namely *Elfakhariscincus* gen. nov. for the so-called *ocellatus* species group.

Keywords: Taxonomic revision; new genus; skink; *Elfakhariscincus*; *Chalcides*; *Sphenops*; *Allodactylus*; *ocellatus*.

INTRODUCTION

The old-world genus of skinks *Chalcides* Laurenti, 1768 is found in southern Europe, northern Africa and across to nearby parts of Asia.

Component species are fairly typical of skinks in that they are small to medium sized lizards, with large smooth and shiny scales. The head is smallish to medium, the body slightly to very elongate and the neck relatively thick. They feed on a variety of items mainly including invertebrates.

The species within the genus *Chalcides* range from terrestrial species with five-digitated feet to elongate burrowing species with reduced limbs and number of digits.

Due to the variable nature of the group, some generic names have been proposed for given species. Notably these include,

Sphenops Wagler, 1830 for the burrowing form *sepsoides* (with two phenotypically similar species later added to the genus) and *Allodactylus* Lataste, 1876 for the species *Allodactylus delisii* Lataste, 1876, physically intermediate in many respects to the nominate form for *Chalcides* and the species *Lacerta ocellata* Forskal 1775, since placed in the genus *Chalcides*.

For most of the 1900's the only genera recognized were *Chalcides* and *Sphenops*, with *Allodactylus* disappearing into the synonymy of *Chalcides* almost as soon as the name was proposed.

More recently however there have been a number of phlogenys proposed for the genus *Chalcides* sensu lato, dividing the genus into up to five groups based on morphological characteristics, including Pasteur (1981) and then Caputo (2000).

Some recent molecular studies on limited numbers of taxa within the genus *Chalcides* as generally understood yielded ambiguous results that didn't in any significant way yield a dissenting position (e.g. Brandley et. al. 2005), although closer scrutiny of these results did show that while the taxon *ocellata* was close to other *Chalcides* and grouped closest to these lizards as opposed to any others, an argument could have been raised to place *ocellata* into another genus on the grounds of consistency with other genera tested.

Carranza et. al. (2008) did a broad study of *Chalcides* and *Sphenops* as popularly defined in 2008 and found that the three species assigned to *Sphenops*, namely *sepsoides*, *boulengeri* and *sphenopsiformis* all were phylogenetically nested within *Chalcides* species. More significantly, *sphenopsiformis* was placed within a separate species group within *Chalcides*.

Carranza et. al. (2008) found *Chalcides* had four well-defined phylogenetic groups, including the two containing *Sphenops* species and a third containing the type for *Chalcides*.

"*Chalcides ocellatus*" was treated as a single species, listed in their paper as a "species complex" and it alone consisted the fourth phylogenetic lineage.

Rather than divide the genus *Chalcides* along the four obvious divisions that they detected, the authors merged *Sphenops* into *Chalcides* to create one extremely large genus.

Separately and earlier the closely related genus *Eumeces* Weigmann, 1834 was reviewed by two groups of authors (Griffith et. al. 2000 and Schmitz et. al. 2004) and who both chose to split the obviously paraphyletic genus.

To maintain the obviously paraphyletic assemblage *Chalcides* is clearly inconsistent in terms of the above and therefore there is a strong argument to split the group up.

In terms of the species *ocellatus*, it is clearly a composite group of taxa (more than one species) including those forms recognized below. Therefore the arguments against creating a monotypic genus for a single species effectively evaporate.

As a result a new genus is created for the taxon *ocellatus* and all other closely related species, named and defined according to the Zoological Code (Ride et. al. 1999).

As the other three named genera have already been defined previously and the definition of the new genus for *ocellatus*, namely *Elfakharsincus* gen. nov., separates the taxa within the new genus from all the other species, there is no need to redefine those other genera here. Therefore I merely list component species within each of the other groups for the benefit of those wanting to know which species have been assigned to which genus.

However contemporary diagnoses for each of the other genera, based on molecular data is effectively provided by Carranza et. al. (2008).

Other important published studies and publications in terms of the classification of the skinks in the genus *Chalcides sensu lato* including specifically in relation to the type species for the four genera listed below, include, Anderson (1896), Boulenger (1920), Boulenger (1887, 1890, 1896, 1898, 1918), Brown et. al. (2000), Caputo (1993, 2003, 2004), Caputo et. al. (1995, 1999, 2000), Carranza et. a. (2008), Duméril and Bibron (1839), Forskål (1775), Giacomini (1891, 1906), Geniez et. al. (2004), Greenbaum (2005), Greenbaum et. al. (2006), Greer (1991), Greer et. al. (1998), Lanza (1957), Loveridge (1936), Mermer (1996), Pasteur (1981), Pollo (1997), Rösler and Wranik (2009), Schleich et. al. (1996), Schlüter (2006), Sindaco and Jeremcenko (2008), Smith (1935), Vigni (2006), Werner (1968).

Below the formal description of *Elfakharsincus* gen. nov. is a list of the three other species groups (by genus name) that were formally in the genus *Chalcides*.

It should however be noted that a number of described forms, many named as subspecies, but in fact full species have been omitted from the lists. Furthermore, as indicated by Carranza

et. al. (2008) and others, there are numerous undescribed species within the group of lizards formerly included within *Chalcides sensu lato*.

GENUS *ELFAKHARSINCUS* GEN. NOV.

Type species: *Lacerta ocellata* Forskal, 1775

(Known in most contemporary texts as *Chalcides ocellatus* or the Ocellated Skink).

Diagnosis: Some authors have regarded the type species as either one species or a so-called "species complex", although recent studies by Carranza et. al. (2008) and others have confirmed that there are several species within this taxon as generally recognized.

Many have been formally described and named and those generally recognized are placed in the genus content list below.

All lizards within genus *Elfakharsincus* gen. nov. are physically similar and have a more stout body than all other species within *Chalcides sensu lato*. In reflection of this physical reality, Caputo et. al. (2000), found they had considerably larger ova (relative size) than all (other) *Chalcides* species and produced a considerably smaller number of young (1-6), versus 2-22 in the other species.

Those numbers are notable noting that *Elfakharsincus* gen. nov. are larger lizards and based on other variables would otherwise be expected to have larger litters.

As adults, *Elfakharsincus* gen. nov. reach about 15-30 cm (6-12 inches) in length, with variation by location both within species and between species. They are recognizable by their small head, moderately elongated and cylindrical body and pentadactyl limbs, all of which contrasts with most other species formerly placed within the genus *Chalcides sensu lato*, which are considerably more elongate and tend to have reduced limbs and number of digits to enable them to burrow more easily.

Elfakharsincus gen. nov. is separated from all other skinks formerly placed in the genus *Chalcides sensu lato* by having 34-44 presacral vertebrae, as opposed to 47-63 in all other species within *Chalcides sensu lato*.

Elfakharsincus gen. nov. is further separated from all other skinks formerly placed in the genus *Chalcides sensu lato* by the following suite of characters: Up to 30 cm in length, of which the complete tail may be about half, although is sometimes less. The tail is noticeably considerably thinner than the rest of the body and also diagnostic of this genus. The loreal scale borders the second and third labials and is considerably larger than the adjacent supralabials, there are 28-38 mid-body scale rows.

Color varies considerably geographically, but ranges from buff, pale brown or grey, with or without a pattern of dark-edged ocelli or short pale streaks bordered by dark pigment. The dark areas often join together to produce irregular crossbands. Some specimens have a pale dorso-lateral stripe on each side, bordered by a dark streak on the flank.

These skinks are very agile and are prefer dry to arid habitats. These lizards are often commensals of humans, liking to hide under man-made rubbish such as sheet metal, remains of broken buildings and the like. There is reason to believe that populations in many areas of the current distribution have been founded from specimens moved about by humans (Carranza et. al. 2008).

As inferred already, coloration varies between species and individuals within a species, including in terms of localities.

The genus is found in southern Europe to the Middle-east and adjacent parts of Asia and also northern Africa. The status of the species *Sphenocephalus pentadactylus* Beudantic, 1870 from the Western Ghats of India is uncertain and it has only provisionally been placed in the genus *Elfakharsincus* gen. nov..

The genus *Sphenocephalus* Agassiz, 1838 identifies an extinct genus of ray-finned fish that lived during the Cretaceous period. Therefore that name is not available for this genus of lizards.

Etymology: Named in honor of three brothers, Moses, Danny and Ackram El-Fahkri of Northcote, Melbourne, Victoria, Australia for numerous services to the Victorian Taxi Industry and for extremely brave efforts in fighting corruption within the Victorian Taxi Directorate (VTD) and predecessor Vicroads in the 1980's and 1990's including against corrupt VTD lawyers Terry O'Keefe, David Robby and John Connell, and their army of corrupt and dishonest "enforcement officers", better described as violent thugs, who broke every conceivable rule, including George Olsen, Roger Bowman, John Brentnall, John Perry, Len Hodgins, Gordon Alliston, Geoffrey Goodson, Derry Ashton, Andrew Pingo and Arnold Howard (see Hoser 1995 for details).

Content of Genus *Elfakhariscincus* gen. nov.

Elfakhariscincus ocellatus (Forskål, 1775) (Type species).

Elfakhariscincus bottegi (Boulenger, 1898).

Elfakhariscincus ragazzii (Boulenger, 1890).

Elfakhariscincus ebneri (Werner, 1931).

Elfakhariscincus levitoni (Pasteur, 1978).

Elfakhariscincus pulchellus (Mocquard, 1906).

Elfakhariscincus thierryi (Tornier, 1901).

Elfakhariscincus pentadactylus (Beddome, 1870).

Content of Genus *Allodactylus* Lataste, 1876

Allodactylus delislei Lataste, 1876 (Type species).

Allodactylus coeruleopunctatus (Salvador, 1975).

Allodactylus manueli (Hediger, 1935).

Allodactylus mionecton (Böttger, 1874).

Allodactylus montanus (Werner, 1931).

Allodactylus polylepis (Boulenger, 1890).

Allodactylus sexlineatus (Steindachner, 1891).

Allodactylus viridanus (Gravenhorst, 1851).

Allodactylus armitagei (Boulenger, 1920).

Allodactylus sphenopsiformis (Duméril, 1856).

Content of Genus *Chalcides* Laurenti, 1768

Chalcides chalcides (Linnaeus, 1758) (Type species).

Chalcides guentheri Boulenger, 1887.

Chalcides mertensi Klausewitz, 1954.

Chalcides minutus Caputo, 1993.

Chalcides pseudostratus Caputo, 1993.

Chalcides striatus (Cuvier, 1829).

Chalcides mauritanicus (Duméril and Bibron, 1839).

Content of Genus *Sphenops* Wagler, 1830

Chalcides sepsoides (Audouin, 1829) (Type species).

Chalcides bedriagai (Bosca, 1880).

Chalcides colosii (Lanza, 1957).

Chalcides boulengeri (Anderson, 1892).

Chalcides parallelus (Doumergue, 1901).

Chalcides lanzai (Pasteur, 1967).

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ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

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