



The identity of twelve scincid generic names proposed by Cope in 1892 (Squamata: Scincidae)

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Abstract

The twelve generic names proposed by Cope in 1892, which were created without included species, are linked to existing taxa by recognition that Cope's key is a simple modification of the previous skink generic key by Boulenger in 1887, splitting existing genera of Boulenger in accordance with the morphology of the species included in those genera. This insight allows for Cope's generic names *Dicloniscus*, *Dimeropus*, *Haploscincus*, *Ollochirus*, *Oncopus*, *Podoclonium* and *Tridentulus* to be linked to single species in Boulenger's treatment, and thus those species are identified as the types of those genera, resulting in synonymy of *Dicloniscus* with *Chalcides*, *Dimeropus* with *Larutia*, *Haploscincus* with *Lipinia*, *Podoclonium* with *Scelotes*, and *Ollochirus*, *Oncopus* and *Tridentulus* with *Lerista*. *Furcillus*, *Mesomycterus*, *Monophorus* and *Monophyaspsis* are associated with multiple species in Boulenger's classification, and type species are designated that minimize change to existing nomenclature but facilitate application of the names to otherwise unnamed lineages in case future divisions are considered warranted. *Furcillus* becomes a synonym of *Lerista*, *Mesomycterus* becomes a synonym of *Brachyseps*, *Monophorus* becomes a synonym of *Phoboscincus* and *Monophyaspsis* becomes a synonym of *Trachylepis*. *Lepidothyryus*, for which a type species was previously identified, is a synonym of *Mochlus*. Reversal of precedence is invoked to avoid the need for use of the senior synonyms *Dimeropus* and *Monophorus* over the frequently used *Larutia* and *Phoboscincus*, however, *Mesomycterus* is a senior synonym of *Brachyseps*, and replaces that recently created name.

Key words: *Dicloniscus*, *Dimeropus*, *Furcillus*, *Haploscincus*, *Lepidothyryus*, *Mesomycterus*, *Monophorus*, *Monophyaspsis*, *Oncopus*, *Ollochirus*, *Podoclonium*, *Tridentulus*

Edward Drinker Cope (b. 28 July 1840, d. 12 April 1897) was a major figure in 19th century reptile biology. Best known in popular culture for his rivalry with Othniel Charles Marsh in describing dinosaurs and other Mesozoic megafauna (Davidson 1997), he also contributed many papers on Recent reptiles, culminating in his posthumous monograph, *The Crocodilians, Lizards, and Snakes of North America* (Cope 1900). In particular, his anatomical studies strongly influenced the classification of lizards for many years, being the basis for the classification used by Boulenger (1885a,b, 1887), which would become the major reference work on the lizards for nearly half a century after.

In a work exploring limb reduction in lizards, Cope (1892) provided a key to the skinks, concentrating on those with limb reduction. In this, he first proposed a number of new generic names: *Dicloniscus*, *Dimeropus*, *Furcillus*, *Haploscincus*, *Lepidothyryus*, *Mesomycterus*, *Monophorus*, *Monophyaspsis*, *Oncopus*, *Ollochirus*, *Podoclonium* and *Tridentulus*. This key and the names therein were republished in Cope (1900) and were listed by Dunn & Dunn (1940), who did not consider the names valid as they were not originally published with any included species. However, under the current Code of Zoological Nomenclature generic names proposed without included species are validly published and available (Article 11.4.1), and their application awaits nomination of type species (Article 67.2.2).

It has not been previously noted that Cope's key is based on that of Boulenger (1887) for skinks, using the same major characters in the same order and hierarchy. This, together with the stepped morphological characters used in both keys, allows for identification of the species by comparison of the species listed by Boulenger with those character states, within those Boulengerian genera and subgenera that were divided by Cope. Cope's additional

divisions within the framework provided by Boulenger were largely based on number of digits (recognizing generic boundaries for every combination of digits, where Boulenger's genera and subgenera had included taxa with varying combinations of digits on front and hind limbs) and the fusion of the frontoparietal scales.

In this paper, I use a comparison of Cope's and Boulenger's keys, together with Boulenger's species taxonomy, to determine the species that comprised Cope's new genera, and select type species for those genera to allow assignment of the generic names in a modern taxonomy. The validity of this approach is validated by the one instance where Cope (1900) subsequently mentioned a species in one of his new genera, *Lepidothyris*. This is the only one of Cope's 12 generic names that has been subsequently used, by Wagner *et al.* (2009), and the listed species, *Tiliqua fernandi* Burton 1836, fits the diagnosis provided by Cope, and its placement in Boulenger's classification matches the placement of the genus in Cope's classification.

Where there are differences in numbering/labelling of the steps in the two keys, I provide Cope's character identifiers first, then Boulenger's in square brackets. Cope's key provided authorships for genera, but these are lacking in Boulenger's key (Boulenger instead provided authorships in the generic accounts). Where Cope abbreviates author names, I give the full name for the first use of the abbreviation, again in square brackets.

Both Boulenger's and Cope's keys begin with the following characters and genera, constituting subdivisions within the first character pair of the position of the nostril, a set of character states that largely distinguishes skinks of the subfamilies Lygosominae and Scincinae in modern day taxonomy.

I. Nostril pierced in the nasal, or between the nasal and supra- or post-nasal or first upper labial, not touching the rostral.

A. Palatine bones separated on the median line of the palate; no supranasal shields.

No azygos occipital shield; *Egernia* Gray.

An azygos occipital shield in contact with the interparietal; tail prehensile; *Corucia* Gray.

AA. (B.) Palatine bones in contact on the median line of the palate.

1. Tympanum, if distinct, more or less deeply sunk.

a. Pterygoid bones separated on the median line of the palate, the palatal notch extending anteriorly to an imaginary line connecting the centre of the eyes.

α. No supranasals

Lateral teeth with obtuse or spheroidal crowns; an azygos occipital in contact with the interparietal; subdigital lamellae divided; *Trachysaurus* Gray.

Lateral teeth with obtuse or spheroidal crowns; subdigital lamellae undivided; *Tiliqua* Gray.

An enormous crushing tooth on each side of each jaw; *Hemisphaeriodon* Ptrs. [Peters]

β. Supranasals present.

Lateral teeth with compressed, denticulated crowns; a series of suborbital shields; *Macrosцинus* Bocage.

Lateral teeth conical; two frontoparietals; *Mabuia* Fitz. [Fitzinger]

Lateral teeth conical; one frontoparietal; *Monophyasps* Cope.

Boulenger does not list the last line, but instead gives the line leading to *Mabuia* as "Lateral teeth conical; *Mabuia*". Hence, *Monophyasps* represents a division of Boulenger's *Mabuia* on the basis of frontoparietals fused into a single scale, leaving those species with paired frontoparietals in *Mabuia*.

The keys then continue:

b. Pterygoids in contact (at least quite anteriorly) mesially, the palatal notch not extending anteriorly to between the centre of the eyes.

* Eyelids moveable; digits with non-retractile claws.

In Boulenger's key, this last line leads to the genus *Lygosoma*, a large genus for which a separate key recognises 11 subgenera. The diagnostic characters for these subgenera extensively use combinations of three characters: supranasal scales present or absent, lower eyelid scaly or with a transparent window, and ear opening present, or covered by scales. The same three characters, with the addition of digital formulae and fusion of frontoparietals,

are extensively used in the next section of Cope's key, which is not paralleled by keys in Boulenger, but clearly represents a division of Boulenger's *Lygosoma*:

- * Eyelids moveable; digits with non-retractile claws.
 - † Supranasal plates present (tympanum not concealed)
 - ‡ Lower eyelid with a transparent disk.
 - § Frontoparietal single.
 - Digits 5-5; *Emoa* Gray.
 - Digits 5-4; *Hagria* Gray.
 - Digits 4-4; *Chiamela* Gray.
 - §§ Two frontoparietals.
 - Digits 5-5; *Riopa* Gray.
 - Digits 2-3; *Eumecia* Bocage.
 - ‡‡ Lower eyelid scaly
 - § Frontoparietal single.
 - Digits 5-5; *Monophorus* Cope.
 - §§ Two frontoparietals.
 - Digits 5-5; *Lepidothyris* Cope.

The combination of supranasal scales present and ear not concealed corresponds to Boulenger's subgenera *Otosaurus*, *Emoa*, most *Riopa* and some *Keneuxia* within his *Lygosoma*. With *Emoa* already recognised by Cope, the rest of the genera he recognises (*Hagria*, *Chiamela*, *Riopa*, *Eumecia*, *Monophorus* and *Lepidothyris*) and their diagnostic combinations, fit the species in Boulenger's *Riopa*, a name under which Boulenger subsumed the type species of *Hagria*, *Chiamela* and *Eumecia*. The key to Boulenger's subgenus *Riopa*, which consisted of 21 species, makes a primary division into species that are pentadactyle, and those that have reduced numbers of digits (with the three permutations 5-4, 4-4 and 2-3 being the same possible permutations for this group as Cope), and then among the pentadactyle species, into those with single frontoparietal vs two frontoparietals, and then those with windowed lower eyelid as against a scaly lower eyelid, characters again used by Cope though in different order. The few species in Boulenger's *Otosaurus* and those of his *Keneuxia* with supranasal scales would fall into Cope's *Lepidothyris*, by definition having an unscaled tympanum, supranasal scales, a scaly lower eyelid, unfused frontoparietals and pentadactyle limbs, along with a few species of Boulenger's *Riopa* (those in his subset (VI)(A)(2)(b)(a)). This latter group includes *Riopa fernandi*, which Cope (1900) later listed as belonging to *Lepidothyris*.

The next part of Cope's key, still with reference to the content of Boulenger's *Lygosoma*, reads:

- †† Supranasal plates wanting.
 - ‡ Lower eyelid with a transparent disc.
 - // Tympanum not concealed.
 - § Frontoparietal plate single.
 - Digits 5-5; *Mocoo* Gray.
 - Digits 4-5; *Heteropus* D. & B. [Duméril & Bibron]
 - Digits 1-2; *Brachystopus* D. & B.
 - Digits 1-2; *Oncopus* Cope.
 - Digits 0-2; *Ollochirus* Cope.
 - Digits 0-1; *Soridia* Gray.
 - §§ Frontoparietal plate double.
 - Digits 5-5; *Lioplepisma* D. & B.
 - Digits 3-3; *Tridentulus* Cope.
 - Digits 1-2; *Furcillus* Cope.
 - // // Tympanic meatus closed.
 - § Frontoparietal single.
 - Digits 5-5; *Haploscincus* Cope.
 - §§ Frontoparietals distinct.

Digits 4-4; *Tetradactylus* Merr. [Merrem]
Digits 3-3; *Hemiergus* Wagl. [Wagler]
Digits 2-2; *Chelomeles* D. & B.

Within this section, the first division (supranasal plates wanting) fits Boulenger's subgenera *Hemiergus*, *Hinulia*, *Homolepida*, *Liolepisma* [a misspelling of *Leiolopisma* Duméril & Bibron], *Rhodona* and *Siaphos*, along with one species of *Keneuxia*. Of these, *Hemiergus*, *Liolepisma*, *Rhodona* and some *Siaphos* fit the subcategory lower eyelid with a transparent disk. The next criterion, tympanum not concealed, reduces this list to *Liolepisma* and *Rhodona*. Cope's defining characters for his group of genera split both of Boulenger's *Liolepisma* and *Rhodona*, both of which show variation in digital formula and fusion of frontoparietals. Cope's genera *Heteropus*, *Mococa* and *Liolepisma* are names subsumed under Boulenger's *Liolepisma* and hence represent Cope's division of that subgenus. This means that Cope's *Brachystopus*, *Furcillus*, *Oncopus*, *Ollochira*, *Soridia* and *Tridentulus* fit Boulenger's *Rhodona*. The type species of *Brachystopus* and *Soridia* are within Boulenger's *Rhodona*, and the combinations of digital formulae used by Cope for the six genera match exactly the nine species included by Boulenger in his subgenus. Therefore, the new generic names *Furcillus*, *Ollochira*, *Oncopus* and *Tridentulus* represent divisions of *Rhodona*.

Cope's diagnosis of lower eyelid with a transparent disc, tympanic meatus closed and frontoparietal single (*Haploscincus*), fits only a single Boulengerian species, one which he included in his subgenus *Siaphos* (the only species of *Siaphos* identified as having a windowed eyelid).

The group of three genera with the tympanic meatus closed and paired frontoparietals uniquely matches Boulenger's subgenus *Hemiergus*, and Cope's three genera within this group exactly match the three permutations of digital formulae in that lineage, for which the generic names *Tetradactylus* and *Chelomeles* already existed.

The next part of Cope's key covers the remaining parts of Boulenger's *Lygosoma*:

‡‡ Lower eyelid scaly.
// Tympanic meatus not closed.
§ Frontoparietal single.
Digits 5-5; *Lygosoma* Gray.
§§ Frontoparietals two.
Digits 5-5; *Homolepida* Gray.
/// Tympanic meatus closed.
§ Frontoparietal single.
Digits 5-5; *Cophoscincus* Pet. [Peters]
Digits 3-1; *Anomalopus* D. & B.
§§ Frontoparietals distinct.
Digits 5-5; *Nannoscincus* Günth. [Günther]
Digits 3-3; *Siaphus* Gray.
Digits 2-2; *Dimeropus* Cope.
Digits 1-1; *Coloscincus* Pet.
Digits 0-0; *Opheoscincus* Pet.

This section of Cope's key covers Boulenger's subgenera *Homolepida*, *Lygosoma*, and the remainder of *Siaphos* (which Cope misspells as *Siaphus*, with both Boulenger and Cope misspelling Gray's (1831) original *Saiphos*), which again show combinations of fusion of frontoparietal scales and scaly ear within those subgenera. Cope's *Homolepida* corresponds almost completely with that subgenus of Boulenger, with only one of Boulenger's species having fused frontoparietals. Cope's genus *Lygosoma* agrees with the first division of Boulenger's subgenus *Lygosoma* (those with a distinct ear) while the other five species of Boulenger's subgenus, with a scaly ear, correspond to Cope's *Anomalopus*, *Dimeropus*, *Coloscincus* and *Opheoscincus* (a misspelling of *Ophioscincus* Peters 1874), with the modern day concepts of *Anomalopus* and *Ophioscincus*, the latter incorporating the generic name *Coloscincus*, and the digital formulae 3-1, 2-2, 1-1 and 0-0 corresponding exactly to the permutations in the species recognised by Boulenger in his subgenus (although in defining *Anomalopus* as having fused frontoparietals, Cope may have been confused with Boulenger's account of the only species of *Anomalopus* then known, *A. verreauxii* Duméril & Duméril 1851, which confuses frontoparietals with prefrontals). The six species of Boulenger's *Siaphos* can be

allocated exactly to Cope's definitions of *Cophoscincus* and *Nannoscincus* (those which are pentadactyle and have either fused or paired frontoparietals), and *Siaphus* (the one tridactyle species), and the existing generic names used by Cope have type species that were part of Boulenger's subgenus *Siaphos*.

The remainder of Cope's key, with Boulenger's *Lygosoma* now dealt with, returns to matching Boulenger's generic key, beginning with the ablepharine genera. This next section of Cope's key is:

** eyelids immovable, transparent, covering the eye.

† Supranasals present. Two frontoparietals; ear exposed.

Digits 5-5; *Panaspis* Cope.

†† No supranasals.

// Two frontoparietals (ear not closed).

Digits 5-5; *Ablepharus* Fitz.

Digits 4-4; *Miculia* Gray.

Digits 3-3; *Phaneropsis* Fischer.

Digits 2-3; *Lerista* Gray.

// // One frontoparietal.

§ Ear exposed.

Digits 5-5; *Cryptoblepharus* Wieg. [Wiegmann]

Digits 4-5; *Menetia* Gray.

Digits 4-4; *Blepharactisis* Hallow. [Hallowell]

§§ Ear concealed.

Digits 5-5; *Blepharosteres* Stolicz. [Stoliczka]

*** Eyelids moveable; claws retractile into a sheath.

Digits 4-5; *Ristella* Gray.

2. Tympanum exposed and superficial.

Head normal. *Tropidophorus* D. & B.

Head a bony casque, well separated from the neck; *Tribolonotus* D. & B.

The only deviation of this part of Cope's key from that of Boulenger is to divide Boulenger's *Ablepharus* ("eyelid immovable, transparent, covering the eye") into multiple genera, including *Panaspis* Cope, a genus previously defined by him (Cope 1869), again on the basis of combinations of digital formulae, ear exposure and frontoparietal fusion, and with the permutations of digital formula matching exactly those combinations present in Boulenger's *Ablepharus*.

The final section of Cope's key deals with what are considered at the present time to constitute the subfamily Scincinae.

AAA. [C]. Palatine bones separated on the median line; supranasal shields present

Nostril pierced in the nasal; pterygoid bones toothed; limbs pentadactyle, the digits not denticulated laterally; *Eumeces* Wieg.

Nostril pierced in a very small nasal, between the rostral, the first labial, the supranasal, and sometimes a postnasal; palate toothless; digits 5-5; limbs short; *Senira* Gray.

Like *Senira*, but limbs rudimentary, undivided; *Brachymeles* D. & B.

Nostril pierced between an upper and a lower nasal; limbs pentadactyle, the digits denticulated laterally; *Scincus* Laur.

Nostril pierced between the nasal and supranasal; digits 4-3; *Zygnopsis* Blfd. [Blandford]

Like *Zygnopsis*, but digits 3-3; *Sphenoscincus* Pet.

Like *Zygnopsis*, but digits 3-2; *Hemipodium* Steind. [Steindachner]

Like *Zygnopsis*, but limbs absent; *Opheomorus* D. & B.

II. Nostril pierced in the posterior border of the rostral, or between a nasal or a labial and the rostral.

A. Palatine bones in contact on the median line.

Nostril pierced between the rostral and a very small nasal, which may be reduced to a narrow ring.

Digits 5-5; frontoparietal distinct; *Thyrus* Gray.
 Digits 5-5; no frontoparietals or prefrontals; *Amphiglossus* D. & B.
 Digits 3-3; *Sepomorphus* Pet.
 No fore limbs; hind limbs didactyle; *Scelotes* Fitz.
 No fore limbs; hind limbs undivided; *Podoclonium* Cope.
 No limbs externally; *Herpetosaura* Pet.

AA. Palatine bones separated on the median line.

1. Supranasals present; first upper labial not touching the nostril.

* Nostril pierced between the rostral and a very small nasal in an emargination of the former shield.

a. Labial border rounded.

Digits 5-5; *Gongylus* Wagl. [Wagler]
 Digits 4-4; *Gongyloseps* Boettg. [Boettger]
 Digits 3-4; *Allodactylus* Lataste.
 Digits 2-4; *Anisoterma* Dum.
 Digits 2-3; *Heteromeles* D. & B.
 Digits 1-1 (limbs undivided); *Dicloniscus* Cope.

aa. Labial border projecting; acute.

Digits 5-5 – 4-4; *Sphaenops* Wagl.

** Nostril pierced between the rostral and a very small nasal, which is situated between the former shield and the first labial.

No limbs; *Herpetoseps* Blgr. [Boulenger]

2. Supranasals present; first upper labial entering the nostril.

* Nostril pierced between the rostral, the supranasal, the postnasal, and the first labial; no frontoparietals.

Digits 5-5; *Mesomycterus* Cope.

Digits 4-4; *Rhinoscincus* Peters.

Digits 3-3; *Sepsina* Bocage.

No fore limbs; hind limbs undivided; *Dumerilia* Bocage.

** Nostril pierced between the rostral, the supranasal, and the first labial; frontoparietals present.

Limbs absent; *Sepophis* Bedd. [Beddome]

3. No supranasals; nostril entirely in the rostral.

Digits 4-4; *Chalcidoseps* Blgr.

This final segment corresponds exactly with Boulenger's key, except for expansion at three points, and an apparent lapsus in omitting Boulenger's *Melanoseps* after *Dumerilia* (restored in the version of Cope 1900). *Senira* is distinguished from *Brachymeles* (with the addition of a new line for the character distinguishing *Brachymeles* from *Senira*). The group of genera *Zygnopsis*, *Sphenoscincus*, *Hemipodium* and *Opheomorus* [= *Ophiomorus* Duméril & Bibron 1839] represent divisions of Boulenger's *Ophiomorus*, which is diagnosed in the latter key by the statement "nostril pierced between the nasal and the supranasal; limbs rudimentary or absent". The group of genera *Thyrus*, *Amphiglossus*, *Sepomorphus*, *Scelotes*, *Podoclonium* and *Herpetosaura* similarly represent divisions of Boulenger's *Scelotes*, with the latter reached at the statement "nostril pierced between the rostral and a very small nasal, which may be reduced to a narrow ring", and the type species of *Thyrus*, *Amphiglossus*, *Sepomorphus* and *Herpetosaura* being incorporated in Boulenger's *Scelotes*. The group of genera *Gongylus*, *Gongyloseps*, *Allodactylus*, *Anisoterma*, *Chalcides*, *Heteromeles*, *Dicloniscus* and *Sphaenops* represent divisions of Boulenger's *Chalcides*, with the latter reached at the statement "nostril pierced between the rostral and a very small nasal, in an emargination of the former shield", and the type species of *Gongylus*, *Gongyloseps*, *Allodactylus*, *Anisoterma* and *Heteromeles* being incorporated in his *Chalcides*. The group of genera *Mesomycterus*, *Rhinoscincus*, *Sepsina* and *Dumerilia* represent divisions of Boulenger's *Sepsina*, with the latter reached at the statement "nostril pierced between the rostral, the supranasal, the postnasal, and the first labial; no frontoparietals", and the type species of *Rhinoscincus* and *Dumerilia* being incorporated in Boulenger's *Sepsina*. Hence, Cope's *Podoclonium* represents the sole species of Boulenger's *Scelotes* with a digital formula 0-1, *Dicloniscus* represents the sole species of Boulenger's *Chalcides* with digital formula 1-1, and *Mesomycterus* represents the five species of Boulenger's *Sepsina* which are pentadactyle.

Selection of type species for Cope's generic names

Several of the new generic names represent only single species in Boulenger's (1887) catalogue, and hence the selection of type species is simple.

The type species of *Dicloniscus* (misspelt as *Dicloniseus* by Cope 1900) is the single species of Boulenger's *Chalcides* with a digital formula of 1-1: *Chalcides guentheri* Boulenger 1887. The type species of *Dimeropus* is the only species in Boulenger's *Lygosoma* (*Lygosoma*) with paired frontoparietals, scaly ear and digital formula 2-2: *Chelomeles sumatrensis* Bleeker 1860. The type species of *Haploscincus* is the sole species of Boulenger's *Siaphos* reported as having a windowed lower eyelid, scaled ear, single frontoparietal, and 5-5 digits: *Cophoscincus infralineolatus* Günther 1873. The type species of *Ollochirus* is the single species of Boulenger's *Rhodona* with fused frontoparietals and digital formula of 0-2: *Rhodona bipes* Fischer 1882. The type species of *Oncopus* is the only species of Boulenger's *Rhodona* with fused frontoparietals and 1-1 digits: *Soridia miopus* Günther 1867. The type species of *Podoclonium* is the single species of Boulenger's *Scelotes* with a digital formula of 0-1: *Scelotes guentheri* Boulenger 1887.

The type species of *Tridentulus* is slightly less clear, but it must be a species of *Rhodona* with digital formula 3/3. There is only one species of Boulenger's *Rhodona* with that digital formula, *Rhodona fragilis* Günther, 1876. However, Cope diagnoses his genus *Tridentulus* as also having paired frontoparietals, while *R. fragilis* has fused frontoparietals. However, in that there is no tridactyle *Rhodona* with unfused frontoparietals in Boulenger's classification, and Cope does not have a category for a tridactyle species among those genera with fused frontoparietals, it is presumed that Cope erred in including the character state paired frontoparietals for his *Tridentulus*, and designate *R. fragilis* as the type species of *Tridentulus*.

While it is now clear that Cope's concept of *Lepidothyryus* included several species from Boulenger's *Lygosoma*, the inclusion of only *fernandi* in combination with the generic name by Cope (1900) qualifies as a definition of type species under the Code (Article 67.2.2).

For the remaining four Cope genera, more than one species fits the generic diagnosis, and a choice is required to be made.

Furcillus represents the species of Boulenger's *Rhodona* with paired frontoparietals and digital formula 1-2. The two species with this combination (Boulenger's consecutive *Lygosoma* species 146 and 147) are *Rhodona gerrardii* Gray 1864 and *Rhodona punctatovittata* Günther 1867. Of the two, Boulenger reported variation in the digital formula of the former (both 1-2 and 2-2), but no variation in the latter. Hence, I designate *Rhodona punctatovittata* Günther 1867 as the type species of *Furcillus*, the species best fitting his diagnosis at the time of description.

Monophorus represent the species of Boulenger's *Riopa* with scaly lower eyelid, single frontoparietal and pentadactyle limbs. Boulenger lists two species fitting this diagnosis: *Eumeces microlepis* Duméril & Bibron 1839 and *Eumeces garnieri* Bavay 1869 (Boulenger's consecutive *Lygosoma* species 100 and 101), with a third species, *Eumeces bocourti* Brocchi 1876, tentatively considered a synonym of *E. garnieri*. The three species are currently distributed across two genera described subsequent to Cope, and hence the choice of type species will determine which generic name *Monophorus* becomes a senior synonym of, either *Tachygyia* Mittleman 1952 (type species *Eumeces microlepis*) or *Phoboscincus* Greer 1974 (type species *Eumeces bocourti*, but with *E. garnieri* also referred to that genus at the time it was created). I select *E. garnieri* Bavay 1869 as the type species of *Monophorus*. This will allow that name to be used if *garnieri* is ever considered to not be congeneric with *bocourti*, avoiding the need for creation of a new generic name for *garnieri*.

Monophyasps represents those species of Boulenger's *Mabuia* (now divided into multiple genera within a tribe Mabuuyini, the tribe representing the former *Mabuia/Mabuya*) with a single frontoparietal. Boulenger lists six species in his *Mabuia* with single frontoparietals: *Euprepes delalandii* Duméril & Bibron 1839, *Mabuia vaillantii* Boulenger 1887, *Emoea frenata* Cope 1862, *Mabuia gravenhorstii* Duméril & Bibron 1839, *Euprepes bayonii* Bocage 1872 and *Euprepes isselii* Peters 1871. Of these, *E. delalandii* and *M. vaillantii* are now in the genus *Chioninia* Gray 1845 (type species *E. delalandii*), *E. frenata* is the type species of the monotypic genus *Notomabuya* Hedges & Conn 2012, and *M. gravenhorstii*, *E. bayonii* and *E. isselii* are currently in the genus *Trachylepis* Fitzinger 1843 (type species *Euprepes savignyi* Duméril & Bibron, 1839; = *T. quinquetaeniatus* Lichtenstein 1823; Bauer 2003), with *E. isselii* considered a junior synonym of *T. varia* (Peters 1867). Utility of the name (as a potential generic name should other genera be split) while avoiding supplanting the existing name *Notomabuya* would be best served by designating as type one of the species currently in the speciose genus *Trachylepis*. A recent genetic

phylogeny for *Trachylepis* by Weinell *et al.* (2021) places these three species in three different sublineages of the genus, two of which represent the major lineage for which the name *Oxytropus* Fitzinger 1843 is already available. Hence, I designate *Mabuia gravenhorstii* Duméril & Bibron 1839 as the type species of *Monophyaspsis*, providing an available generic name should the Malagasy mabuyins be considered to warrant separate status in the future.

Mesomycterus represents the pentadactyle species of Boulenger's *Sepsina*: *Gongylus gastrostictus* O'Shaughnessy 1879, *Gongylus splendidus* Grandidier 1872, *Gongylus macrocercus* Günther 1882, *Gongylus melanurus* Günther 1877, and *Gongylus johanna* Günther 1880. These species are currently spread over two genera, the recently described (Erens *et al.* 2017) *Flexiseps* (*johanna* and *melanurus*, with *melanurus* the type of *Flexiseps*) and *Brachyseps* (*gastrostictus*, *macrocercus* and *splendidus*, with *macrocercus* the type of *Brachyseps*, and *gastrostictus* possibly synonymous with *macrocercus*). Choice of a type species will therefore supplant one of these two genera, both too recently described to invoke the Code's reversal of precedence articles for preservation. I select *Gongylus splendidus* Grandidier 1872 as the type of *Mesomycterus*. This species was only tentatively included in *Brachyseps* by Erens *et al.* (2017), with its genetic placement being outside both *Brachyseps* and *Flexiseps*, but with low support. Hence, it may prove to represent a lineage distinct from both genera with further work.

Synonymy of the Cope genera

With the identification of type species, it is now possible to assign these generic names in a modern taxonomic framework.

The genera *Furcillus*, *Ollochirus*, *Oncopus* and *Tridentulus* are junior subjective synonyms of *Lerista* Bell 1833. *Dicloniscus* is a junior subjective synonym of *Chalcides* Laurenti 1768. *Monophyaspsis* becomes a junior subjective synonym of *Trachylepis* Fitzinger 1843. *Podoclonium* is a junior subjective synonym of *Scelotes* Fitzinger 1826. *Haploscincus* is a junior subjective synonym of *Lipinia* Gray 1845 on current taxonomy. However, *Lipinia* has recently been shown to be polyphyletic (Pyron *et al.* 2013; Rodriguez *et al.* 2018). The earliest generic name for the lineage to which the type species of *Haploscincus* belongs is *Cophoscincus* Peters 1867 (Shea 2017), and it remains a junior synonym in that genus. *Lepidothyryus* was resurrected by Wagner *et al.* (2009) for a genus of West African lygosomines, but that genus was recently synonymized (Freitas *et al.* 2019) with *Mochlus* Günther 1864.

The remaining three genera are senior synonyms of existing names, although it is possible to avoid the need to supplant the names in current use for two of these. The International Code of Zoological Nomenclature requires a senior synonym to not be used when two conditions are met:

Article 23.9.1.1. the senior synonym or homonym has not been used as a valid name after 1899, and

Article 23.9.1.2. the junior synonym or homonym has been used for a particular taxon, as its presumed valid name, in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years.

Other than *Lepidothyryus*, which was validated by being used in combination with a species by Cope (1900) and then resurrected by Wagner *et al.* (2009), the names proposed by Cope (1892) have appeared only three times. Cope (1900) reprinted the key he created in 1892. Although this paper appeared one year after the cutoff date for Article 23.9.1.1, it was published posthumously, appearing three years after Cope's death in 1897, and the names only appear in the key, without any indication of species, or application of the names other than *Lepidothyryus*. Hence, I do not consider these names to have been used in that publication, the key being merely replicated from the earlier pre-1900 paper. Dunn & Dunn (1940) listed them in creating a catalogue of the generic names created by Cope, but did not treat the names as available. Neave (1939–1940) lists them in his *Nomenclator Zoologicus*, but names in nomenclators are specifically excluded from consideration as usage under the Code (Article 23.9.6).

Monophorus is a senior subjective synonym of *Phoboscincus* Greer 1974. *Phoboscincus* has been used as the name for a genus consisting of *bocourtii* and *garnieri* by the following 25 papers by more than 10 authors in the past 50 years, and over a period of not less than 10 years: Sadlier (1987); Bauer & Vindum (1990); Bauer & Sadlier (1993, 2000); Adler *et al.* (1995); Sadlier & Bauer (1997a,b); Greer (2001); Ineich (2006, 2009); Greer & Chong (2007); Smith *et al.* (2007); Meiri (2008); Mittermeier *et al.* (2009); Beolens *et al.* (2011); Caut *et al.* (2013); Geneva *et al.* (2013); Hedges (2014); Ineich *et al.* (2014); Daza *et al.* (2015); Langner & Sound (2016); Thibault *et al.* (2017); Sadlier *et al.* (2019); Rodda (2020); O'Shea (2021).

Dimeropus is a senior subjective synonym of *Larutia* Böhme 1981. *Larutia* has been used as the valid name for that genus by the following 25 papers by more than 10 authors in the past 50 years, over a period of not less than 10 years: Lang & Böhme (1990); Greer (1997, 2002); Manthey & Grossmann (1997); Chan-ard *et al.* (1999, 2011a,b); Das & Lim (2001); J. Grismer *et al.* (2003, 2004); Greer *et al.* (2006); L. Grismer *et al.* (2010, 2011); Teynié *et al.* (2010); L. Grismer (2011); Norhayati *et al.* (2011); Hedges (2014); Goldberg *et al.* (2015, 2019a,b); Quah *et al.* (2018); Chan *et al.* (2019); L. Grismer & Quah (2019); Ibuki *et al.* (2019); Chan & L. Grismer (2021).

Hence, in both cases, I invoke Article 23.9 to reverse the precedence of the names, so that *Monophorus* may not be used while it is considered congeneric with *Phoboscincus*, and *Dimeropus* may not be used while it is considered congeneric with *Larutia*. Both names remain available for use if *Phoboscincus* and *Larutia* are split in the future.

Mesomycterus is a senior subjective synonym of *Brachyseps* Erens, Miralles, Glaw, Chatrou & Vences 2017. However, the evidence for the placement of the type species of *Mesomycterus* in *Brachyseps* is weak, and it may be possible in the future to separate the two into different genera. *Brachyseps* has only been in use for four years, too short a time for reversal of precedence to be used.

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