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A critical review of Hoser's writings on Draconinae, Amphibolurinae, *Laudakia* and Uromastycinae (Squamata: Agamidae)

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Abstract. We analyzed four papers on agamid lizards by self-proclaimed Australian herpetologist Raymond Hoser with respect to the presentation of diagnostic characters as well as their taxonomic and nomenclatural merits. In most cases the taxonomic concepts were lifted from earlier phylogenetic publications and the diagnoses were copied from other authors. Copied text in Hoser's diagnostic section within the analyzed papers amounts to a staggering 83% for Draconinae, 82% for Amphibolurinae, 77% for *Laudakia* and 78% for Uromastycinae, respectively. We found a number of plagiarized paragraphs, sometimes half a page long. Hoser hardly ever makes any effort to attribute statements to the original author and in some cases he even omitted to cite the relevant source. With respect to nomenclature, we found that Hoser proposed names that were preoccupied or unavailable, that a *nomen oblitum* was resurrected incorrectly, *nomina nuda* were produced, a type locality was restricted incorrectly and a questionable holotype was designated for a new species. With respect to taxonomy, we found examples of wrong diagnoses, falsely attributed species, omission of taxa and a lack of understanding or misinterpretation of previously published taxonomic studies on agamid lizards. Furthermore relevant literature on taxonomy and nomenclature has been overlooked or disregarded.

Key words. Plagiarism, IZCN rules, nomina nuda, questionable type specimen designation, ambiguous diagnoses

INTRODUCTION

For the past few years now the *Australasian Journal of Herpetology* (hereafter *AJH*) has been produced in print and as an online journal where pdfs can be downloaded. At the time of writing, 29 issues of the *AJH* have been produced. The editor of and sole contributor to the journal appears to be Raymond Hoser who mainly writes about reptile classification. These articles are an area of controversy and most herpetologists as well as herpetological journals and societies worldwide have recorded their objection to Hoser's works (see Items for Action & Acknowledgments in Kaiser 2013); the scientific community currently appears almost unanimous in their approach not to use Hoser's nomenclature.

Albeit that the majority of herpetologists appears to be in agreement on the suggested suppression of names proposed by Hoser, it has to be noted that this action may not be in agreement with The International Code of Zoological Nomenclature (ICZN, 1999 & 2012; hereafter "the *Code*"), a set of regulation every zoologist is obligated to follow and should wish to uphold. The *Code* is served by the International Commission on Zoological Nomenclature (hereafter, ICZN), which adjudicates instances where taxon names may lead to confusion, are improperly presented or formed, or where published works threaten the stability of the nomenclature in a given discipline. The service of the ICZN includes a recently developed, formal taxon name registration service in the form of Zoobank (accessible at zoobank.org), where authors of taxon names may formally establish a claim to their names or other nomenclatural acts. Hoser registers all names proposed by him with Zoobank and as a consequence the names are available in the sense of the *Code*. However, it must be noted that the Zoobank website does not have any provision to prevent the registration of invalid nomenclatural acts, thus anyone can register and contribute presumed valid scientific names. In its current version,

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Zoobank can only be considered as provisional until there are rules implemented that prevent misuse of this databank.

The *Code* has no provisions for the quality of publication in which taxonomic and nomenclatural acts are proposed. In particular, there is no need for a journal to have an editorial board or have a peer review process in place to validate a proposed name. As has been noted, "the quality of taxonomic descriptions does not make a name unavailable there being no requirement as such in the *Code*…" (Thomson 2014), i.e. for the ICZN nomenclature and taxonomy are not dependent upon each other. A proposed taxonomy may be inconsistent, ambiguous or even false and every herpetologist can choose to follow it or not, but a proposed taxon name, if produced in accordance with the *Code*, becomes available immediately.

There exist only a few prerequisites for a journal to comply with the *Code* in order to validate and make available a proposed name. One such prerequisite (ICZN, Article 8) is that the journal is widely available (for example in public libraries) "providing a public and permanent scientific record" and "numerous identical and durable copies" have to be assured. Typically 25 copies (Recommendation 8b) constitute a sufficiently available edition. In order to prove that sufficient copies have been printed Hoser typically publishes a tax invoice in each issue of *AJH* stating that 50 copies were printed. Distribution is, however, not proven, but presumably at least some copies are sent to libraries (all issues of the journal can be found in the National Library of Australia online catalogue) and distributed among subscribers to the journal. Additionally, all issues or individual articles within a given issue are presented online as downloadable pdfs a month after the print version has been in circulation. Every nomenclatural act is registered with Zoobank and hence the proposed names may be considered published in accordance with the *Code* and therefore available for the purposes of nomenclature.

Editorial boards and high profile referees (reviewers) of manuscripts are usually a measure for the quality of a journal and their names may even be published periodically (e.g. *Journal of Herpetology*). The *AJH* does not have an editorial board to oversee standards of publication or for undisclosed reasons has decided not to present that information in any issues of *AJH*. However, according to Hoser (2012: 41) manuscripts submitted to the journal are refereed by four independent reviewers. This extensive peer review process should assure that all taxonomic and nomenclatural decisions presented "[stand] up to the most robust of scrutiny" (Hoser 2012: 41). Additionally this level of peer review should provide an assurance that the article adheres to commonly accepted editorial standards, including ethical considerations such as avoidance of plagiarism or the inclusion of derogatory comments.

Plagiarism is generally defined as passing off ideas or text from other publications as one's own, whether or not the source is cited (for definitions see plagiarism.org). Copying text into one's own work without citing its source is the most flagrant form of plagiarism and in many countries is a violation of intellectual property rights and illegal. Even copying a substantial part of a previous publication and citing the source is still a form of plagiarism, if the copied text is not produced within quotation marks or other means to make the reader aware that the original research or text is not the work of the current author. Similarly, minor modification of the original text such as rearrangement of phrases or the substitution of a few words is still plagiarism, when the original author is not attributed in an appropriate manner.

Derogatory criticism of other authors in any scientific publication must be avoided. Providing counterarguments relating to scientific opinions of a certain author or a group of authors is a well-established way in science to encourage discussion about the matter in question. However, personal attacks or defamations must be avoided by all means and are not a part of a scientific (or other) publication.

In the following discussion we will analyze four of Hoser's (Hoser 2012a, 2013, 2014b & 2014c) publications on agamid lizards and discuss our findings in taxonomic and nomenclatural terms.

MATERIALS & METHODS

The papers were downloaded from the *AJH* website. Hoser's texts were analyzed with respect to their taxonomic and nomenclatural decisions as well as to generally accepted editorial standards of scientific publications. Previous publications by other authors containing diagnostic characters and descriptions were compared to the diagnoses used by Hoser. Any copied or plagiarized text was marked and attributed to the original source including page number. Hoser's diagnoses do not follow Linnean telegraphic style and frequently contain long introductory sentences that do not further the knowledge about a taxon. We, therefore, accounted for any copied or plagiarized text identified in Hoser's diagnoses in two different ways: 1) as a percentage of the whole diagnosis including introductory sentences and 2) as a percentage of the presented text comprising diagnostic characters only. This was done by accounting for lines of overall text vs. lines of copied text in a way that favoured any originality in Hoser's text, i.e. a line, even if only half printed, was typically counted as full, while in the case of copied text two half lines were counted as one. Total lines in the publication about Amphibolurinae (Hoser 2013) were counted, those of the other publications discussed here were estimated as follows: typically each page in the *AJH* contained about 140 lines (70 lines per column). Abstracts and titles were printed in

full lines and the actual number of lines was therefore doubled as if they had been in two columns. In the case of the other papers the overall sum of lines was not counted but calculated by assuming that each column contains 70 lines.

One of the sources referenced by Hoser (2013) is Cogger (2000). Here we present the results in comparison to Cogger (1983) in order to show that nearly all of the diagnostic characters used for the classification of amphibolurine lizards are considerably older than claimed. Some diagnostic characters could not be accounted for by comparison to earlier publications. Where the source was unclear an internet search was performed and if identified (e.g. Wikipedia, Reptile Database etc.) parts were marked accordingly. Obviously we do not know precisely which sources were actually used by Hoser (original description, review works, catalogues, web pages etc.) and therefore we relate identified text passages to the publication where we looked for and found identical phrases. As we cannot reproduce every single character or paragraph for direct comparison the respective pages where sets of characters or a full description can be found are given together with the number of copied lines and the respective source. At the end of each section we give a summary of our findings with informations on Hoser's taxonomical approach and sources used.

DISCLAIMER

As a general rule Hoser's new taxon names are not used in this paper and the respective taxon named by Hoser will be mentioned as "new tribe / genus to accommodate / contain the following XY" or by a similar phrase where the placeholders are substituted by currently accepted names. This is done to prevent accidental validation of Hoser's names, which subsequently could become available under the rules of the *Code*. If, by accident, a new taxon name proposed by Hoser is used herein that paragraph shall be treated as not published and the name shall be considered as not available for the purposes of nomenclature. This disclaimer is in compliance with Article 8.2 of the *Code*.

RESULTS & DISCUSSION

A) Hoser (2014b) on Draconinae

As printed in the header of the paper, the Draconinae manuscript was received by the journal on 10 November 2013, accepted on 1 June 2014 and published on 1 July 2014. According to the tax invoice, Issue 22 of the *AJH*, which includes the Draconinae paper, appears to have been planned before October 2013, which is the date of the invoice (Hoser 2013: 36, Hoser 2014a: 5; invoice date 3 October 2013, several weeks before the publisher initially received the manuscript). This could indicate that Hoser pays in advance for the printing of issues, which would imply that manuscripts may already be in hand, or that some of the publication dates are otherwise manipulated.

The paper contains the following sections or headings: *Title, Abstract* (including *Keywords*)*, Introduction, Unlawful Theft of Material and Data*, and *Notes on Taxa Named Herein*, followed by the actual taxonomic and nomenclatural part, a *Conflict of Interest* section, and a *References Cited* section. The publication additionally contains a table depicting the proposed nomenclature.

The introduction to the paper is mainly concerned with the phylogenetic and morphological data presented by earlier authors, which serve as the basis for Hoser's taxonomic and nomenclatural decisions. As in most of his recent papers, Hoser includes personal criticism of recent and past herpetologists. Similarly, Hoser directly insults several herpetologists in his *Unlawful Theft of Material and Data* section of the paper. In this part we are also made to believe that most of his research files had been confiscated and that his ideas were repeatedly used by recent authors in order to rename taxa and produce junior synonyms.

Overall, in this paper Hoser describes one new species, proposes eight new genera, resurrects three names for subgenera, and erects 22 subgenera, ten new tribes and six subtribes. His diagnosis of the genus *Lyriocephalus* Merrem, 1820 may serve as an example how he defines a genus and how we analyzed his statements. The following is a true copy from Hoser (2014a: 38):

"*Lyriocephalus* Merrem, 1820 is defined by the following suite of characters: Mouth large; teeth erect in both jaws. Incisors small and conical. No praeanal or femoral pores (as opposed to the callous pore-like swelling of the preanal scales of the males in the genera *Agama* Daudin, 1802, *Uromastix* Merrem, 1820 and *Xenagama* Boulenger, 1895); tympanum hidden. Five toes. A dorsal crest; a V-shaped gular fold; a bony supraorbital arch. Body compressed, covered with small scales intermixed with enlarged ones. A nuchal and a dorsal crest. A gular sac and a V-shaped gular fold. Adult with a globular hump on the nose. Pre and post-orbital bones forming an arch limiting a supraorbital fossa."

The first set of characters "Mouth large … arch" is a copy from Boulenger's synopsis leading to *Lyriocephalus* (Boulenger, 1885: 251–252). The part in brackets "callous … genera" is taken from a footnote in Boulenger (1885: 251), where it only refers to *Agama* and *Aporoscelis* [= *Xenagama*]. The part containing *Uromastix* [sic] and *Xenagama* could not be identified, but is presumably taken from another comparatively old publication as the genus name *Uromastyx* is written in its historically used form. The second set of characters "Body … fossa" mirrors

Boulenger's (1885: 281) diagnosis of the genus. It is quite obvious that copying has been done without giving it much further consideration. The V-shaped gular fold appears twice as does the dorsal crest. The characters "supraorbital arch" and "supraorbital fossa" are repeated without comment; when a supraorbital arch is formed, this leads to a supraorbital fossa between the arch and the dorsal outer ridge of the eye socket. Hoser cites Moody (1980) in his bibliography. Had he looked at this publication he would have found that as a matter of fact the supraorbital arch in *Lyriocephalus* is formed by prefrontal and postorbital and not as claimed by Hoser (2014a: 38) by "pre and post-orbital bones".

Most taxonomic concepts proposed by Hoser have been published by earlier authors (and cannot be repeated here in full for comparison) but without taking the step of assigning genus names to species groups (e.g., *Gonocephalus* Kaup, 1825; *Draco* Linnaeus, 1758; *Japalura* Gray, 1853) or to species where only insufficient material and/or data exist. In the following we will first provide evidence that the taxonomic scheme proposed by Hoser is either based on previously published concepts or constitutes mere naming of more or less supported nodes in phylogenetic publications concerned with Draconinae. In the second part we will have a closer look at the diagnoses of genera and compare those to previously published material. We will discuss each group in the same sequence as published by Hoser. In our analysis below we will not discuss all of Hoser's diagnoses in such great detail as the one of *Lyriocephalus* and only point out inconsistencies in taxonomy and nomenclature where we feel it should be done for clarity.

The first genus Hoser deals with is *Gonocephalus* which he proposes to divide into five subgenera along with the erection of two new genera. His subgeneric classification follows the species group assignment proposed by Manthey & Denzer (1991) and Denzer & Manthey (2009, part). Denzer & Manthey (l.c.) combined the Philippine species with their *bornensis*/*bellii* species group, which they had considered a separate species group in the earlier publication, based on morphological similarities. Hoser elevates two species to genus rank, namely *G. robinsonii* (Boulenger, 1908) and *G. mjobergi* Smith, 1925. This had already been suggested by Manthey (2010) where *G. robinsonii* was treated as (*Gonocephalus incertae sedis*) *robinsonii* and by Denzer & Manthey (l.c.) where it was suggested that *G. mjobergi* should be referred to as Genus A within a *Gonocephalus* s. l. complex. Owing to insufficient material (only a single female specimen has ever been collected) Denzer & Manthey (l.c.) abstained from proposing a genus name for *G. mjobergi* until more material will become available. They further stated that one autapomorphic character in particular (longitudinal gular folds) constituted a synapomorphy for the genus group *G. mjobergi*, *Mantheyus* Ananjeva & Stuart, 2001 and *Ptyctolaemus* Peters, 1864. With respect to *G. robinsonii* Hoser states in his introductory part to the genus *Gonocephalus* that "no one has bothered to assign the taxon *Gonocephalus robinsonii* … to a genus of its own". As will be discussed below Hoser has taken on this task but fails to deliver as not a single of his characters is of any value to diagnose his newly proposed genus (i.e., differentiate from other genera or species groups).

Initially Hoser characterizes the genus *Gonocephalus*. His diagnosis comprises seven lines and is copied from Boulenger (1885: 282, 3.5 lines) and Denzer & Manthey (2009: 255–256, 3.5 lines). His subgenus to accommodate the *chamaeleontinus* group as defined by Manthey & Denzer (1991) is characterized by a single character copied from Boulenger (1885) and separated from other proposed subgenera by comparison in a way that their full diagnoses are repeated. Hoser considers the *chamaeleontinus* group as the nominate form. Next Hoser proposes a subgenus to accommodate *G. grandis* (Gray, 1845). For this species he resurrects an available name proposed by Gray (1845). The diagnostic character section amounts to approximately 25 lines, all of which are a copy of Boulenger's (1885: 298) description of the species. This is followed by proposing a new subgenus for the Philippine species group by using three characters (two lines) taken from Boulenger (1885). The next new subgenus comprises the *bornensis* group. The diagnostic characters are mainly taken from Boulenger (1885) but rearranged and slightly modified without copying directly. The name he gives the subgenus is different from the name he uses in the keywords to the paper, the latter of which therefore becomes a *nomen nudum*. The last new subgenus proposed contains the Sumatran *megalepis* species group and is characterized initially by two lines copied from Boulenger's (1885) synopsis [key] to the genus followed by Boulenger's (1885: 291) full description of *G. tuberculatus* (= *G. megalepis*). This last part comprises 24 copied lines and ends with citing Boulenger (1885). However, Hoser does not make clear that the whole description is copied by, for example, using quotation marks.

Gonocephalus robinsonii is removed from its synonymy with the genus and a new genus is proposed. This new genus is diagnosed by three characters: karyotype, a "greatly enlarged gular fold" and "a distinctive white lower jaw". The karyotype section is a copy from Diong et al. (2000: 74, 6 lines); the other two characters are supposedly based on Hoser's own research. We would like to note that the karyotype can even vary within a species (e.g., see Ota, 1988 for data on *Japalura swinhonis* Guenther, 1864), the enlarged gular fold is a false character as *G. robinsonii* is the only *Gonocephalus* species without a gular fold, if one considers *G. mjobergi* as not congeneric and the colour of the lower jaw constitutes a variable character in *G. robinsonii* which is dependant on age (see photographs in Manthey 2010).

Gonocephalus mjobergi is accommodated in a new genus. This is done by copying the full description from Denzer & Manthey (2009, 40 lines) including the abovementioned paragraph about the autapomorphy of longitudinal gular folds. Despite using the complete character set including that a large gular sac "partially conceals the *Gonocephalus*-type typical gular fold" Hoser earlier claims that *G. robinsonii* and *G. mjobergi* have an "enlarged gular fold." Additionally this quote shows that Hoser apparently intended to amend the original statement but ended up doubling an adjective. The original phrase reads: "partially conceals the *Gonocephalus* typical gular fold" (Manthey & Denzer 2009: 257).

Hoser often uses brackets for the author of a taxon and the year of description where he seems to interpret the *Code* in his own way (e.g. he uses brackets for *Gonocephalus robinsonii*, Boulenger, 1908, *G. beyschlagi* Boettger, 1892, *G. doriae* Peters, 1871). The use of brackets for the author/year of a taxon is determined by the ICZN rules (Article 51.3 [Use of parentheses], see ICZN Code for an example). The *Code* prescribes brackets if the allocation of a species changes with respect to a genus. This is not the case here. Boulenger and the other authors decided that the correct spelling should be *Gonyocephalus* (an emendation introduced by Wagler [1830]) albeit that Kaup originally used *Gonocephalus* and later amended it to *Goniocephalus*, but the latter emendation and *Gonyocephalus* are not available under ICZN rules as the original name has to be preserved.

The genus *Japalura* Gray, 1853 is broken up into three genera, two of them divided additionally into two subgenera each. *Japalura* has for a long time been a matter of taxonomic changes and only in recent years are we beginning to understand their phylogenetic relationships. A division into three genera can be derived from molecular phylogenetic analyses, where results indicate that the clades containing *J. variegata* Gray, 1853 / *J. tricarinata* (Blyth, 1853), *J. polygonata* (Hallowell, 1861), and *J. splendida* Barbour & Dunn, 1919 / *J. flaviceps* Barbour & Dunn, 1919 are only very remotely related (e.g., Pyron et al. 2013). Stuart-Fox & Owens (2003) considered *Japalura* as comprised of "two widely divergent goups," named in their analysis as *Japalura* India / *J. variegata*-group and *Japalura* SE Asia / *J. splendida*-group (SE for Southeast). They even mention that they consider both as separate genera. Mahony (2009: 55) refers to the latter species group as "eastern clade". In an earlier publication by Macey et al. (2000) they are referred to as Himalayan and East Asian clades, respectively. Kästle & Schleich (1998) proposed that the species of the Western clade with a visible tympanum should be regarded as a separate genus, for which the name *Oriotiaris* Günther, 1864 was available. Hoser mostly follows these previously published results to propose his taxonomic scheme.

Firstly he deals with *Japalura* species of the nominate genus. Here he seems to accept Mahony's view (2009) that *Japalura* and *Oriotiaris* are congeneric. *Japalura variegata* (type species of *Japalura*) and *J. tricarinata* (type species of *Oriotiaris*) are phylogenetically sufficiently close (Pyron et al., l.c., papers cited in Mahony, l.c.) that Mahony (2009) already suggested to synonymize both genera and treat *Oriotiaris* (resurrected by Kästle & Schleich (1998)) as a junior synonym of *Japalura*. Hoser treats both as subgenera of *Japalura*.

The nominate genus *Japalura* is diagnosed in seven lines which are copied from Boulenger (1885: 307) and Mahony (2010: 4, definition of *Japalura* s.l.) with approximately half of the text from each author. The genus is further divided into a nominate subgenus and by resurrecting an available name for the second subgenus. Hoser first defines *Oriotiaris*. His diagnostic characters for this subgenus are copied from Günther (1864: 150, five lines) and Mahony (2009: 56, five lines). No other characters are given. In the case of one character taken from Mahony (2009) Hoser even copies a typographic error, "…possession of a small gular pouch in the later" [sic!].

The subgenus *Japalura* is diagnosed as follows: "The diagnosis for the nominate subgenus *Japalura* is simply a reversal of the diagnosis for *Oriotiaris*." Hoser distinguishes *Japalura* from his subgenus *Oriotiaris* as follows: "*Oriotiaris* is further separated from the nominate subgenus *Japalura* by the absence (vs. presence) of dorsal chevrons and presence (vs. absence) of a coloured gular region, concealed tympanum, large crest spines in males and erectile nuchal crest (roach), in members of *Japalura*." *Japalura tricarinata* is highly variable and capable of changing colour. There exist photographs of completely green individuals without any chevron pattern (see for example Manthey 2010: 98, Fig RA02806-4). On the other hand, *J. planidorsata* Jerdon, 1870 does not have an erectile nuchal crest nor does *J. sagittifera* Smith, 1940 both of which are placed by Hoser in the nominate subgenus.

For *Japalura polygonata* Hoser resurrects its original name *Diploderma polygonatum* Hallowell, 1861. Phylogenetic studies showed that *J. polygonata* is only remotely related to other *Japalura* but seems to be the sister taxon of *Gonocephalus robinsonii* (Pyron et al. 2013). *Diploderma polygonatum* was already suggested by Mahony (2009: 55) in case the eastern clade (see below) should turn out to be monophyletic. The genus is diagnosed with four lines, all of which are copied from Boulenger (1885: 307).

Having already dealt with the *variegata* group, Hoser proceeds to define a new genus for the eastern species group, which he splits into two subgenera. The new genus to accommodate all East Asian *Japalura* species is defined in the space of approximately nine lines, seven of which are directly copied from Boulenger (1885: 307–308). One

character is the negation of a Boulenger character and the rest are slightly amended but not identically copied from Mahony (2009). No new characters are introduced by Hoser. This genus is split into two subgenera on the basis of Boulenger's synopsis (1885:308) the differences being the length of the tibia and presence or absence of a longitudinal fold. For *J. swinhonis,* Hoser claims that the "tibia is as long as the skull". Already Stejneger (1907: 183) pointed out that in two old males he had studied "the tibia is decidedly shorter than the skull". With respect to the second character we would like to note that *J. chapaensis* Bourret, 1937, *J. fasciata* Mertens, 1926, *J. grahami* (Stejneger, 1924) and *J. micangshanensis* Song, 1987 do not have a longitudinal fold as claimed by Hoser. They would therefore have to be transferred to his first subgenus.

The genus *Calotes* Daudin, 1802 is divided into three genera, of which two are further divided into subgenera (the nominate genus into five and a newly proposed genus into four subgenera). The basis for this taxonomic scheme appears to be the result of the extensive molecular biological studies presented by Zug et al. (2006) and Pyron et al. (2013). The proposed scheme clearly reflects the nodes in previously published phylogenetic trees. A division into three groups was already proposed by Smith (1935) who differentiated between a *C. versicolor* group, a *C. liocephalus* group and a group comprising *C. rouxi* Duméril & Bibron, 1837 and *C. ellioti* Günther, 1864. The first and last of Smith's groups are elevated to genus level by Hoser, the *liocephalus* group is considered by Hoser as a subgenus.

Initially the genus *Calotes* is diagnosed by a copy of Boulenger's diagnosis (1885:314, four lines) and subsequently compared to his newly erected genera (see below). The first subgenus described within *Calotes* serves to accommodate *C. calotes* (Linnaeus, 1758) and *C. htunwini* Zug & Vindum, 2006. Their close relationship was discovered in phylogenetic studies despite the fact that their distribution is rather disjunct. The nominate subgenus is defined by Hoser by initially repeating Boulenger's key (1885: 315–316, 3.5 lines) leading to *C. ophiomachus* (= *C. calotes*) and subsequently by a complete copy of Boulenger's description of the species (Boulenger 1885:327, approximately 18 lines). By stating that all of these characters define the subgenus Hoser renders his diagnosis false. *C. htunwini* does not have a nuchal crest where the height "equals or exceeds the diameter of the orbit" nor does it have a "dorso-nuchal crest composed of closely set lanceolate spines" nor is this species green above. Additionally we like to note that already Boulenger's description contains a mistake in stating that in *C. calotes* a "gular sac is not developed". This has been copied by Hoser; however, male *C. calotes* actually have a reasonably well developed gular sac during the breeding season as have *C. htunwini* but to a lesser extent.

Next Hoser proposes a new subgenus containing species allied to *Calotes versicolor* (Daudin, 1802) by copying 1.5 lines from Boulenger's synopsis (Boulenger 1885: 314–315) followed by an entirely copied description of *C. versicolor* from Boulenger (1885: 312, 20 lines). Here also Hoser repeats Boulenger's statement that in *C. versicolor* the "gular pouch [is] not developed" which is not true for male specimens during the breeding season (Smith 1935; numerous photographs on the internet). Hoser does not present any new characters for the *C. versicolor* group. Subsequently Hoser erects a new subgenus containing two closely related species from the Western Ghats, namely *C. nemoricola* Jerdon, 1853 and *C. grandisquamis* Günther, 1875. To diagnose the genus he initially copies four lines from Boulenger's synopsis (1885: 315) leading to these species followed by the reproduction of Boulenger's description (1885: 326) of *C. nemoricola* (approximately 20 lines). No additional or new characters are presented by Hoser.

Species allied to *Calotes liolepis* Boulenger, 1885 (*C. nigrilabris* Peters, 1860 and *C. desilvai* Bahir & Maduwage, 2005) are the content of a subgenus that is initially defined by repeating in full Hallermann's key (2000: 161–162) leading to *C. nigrilabris* and *C. liolepis*, respectively (3.5 lines each), followed by a copy of Boulenger's descriptions (1885: 327–328) of *C. nigrilabris* (approximately 22 lines) and *C. liolepis* (approximately 15 lines). No other characters are presented in the diagnosis.

Species related to *Calotes liocephalus* Günther, 1872 are placed by Hoser into a new subgenus which again is defined by the characters given in Hallermann's key (2000) here for *C. liocephalus* and *C. ceylonensis* Müller, 1887 (3.5 lines each) followed by the respective descriptions copied from Boulenger (1885: 329) for *C. liocephalus* (18 lines) and Boulenger (1890: 139–140) for *C. ceylonensis* (13 lines) without presenting any further characters.

The last subgenus within *Calotes* proposed by Hoser is monotypic and contains only *C. aurantolabium* Krishnan, 2008. Diagnostic characters are given in the space of 13 lines all of which are a copy of Krishnan (2008).

After having dealt with the species he considers *Calotes* sensu stricto. Hoser proceeds to erect a new genus to accommodate species related to *C. mystaceus* Duméril & Bibron, 1837. This genus is further divided into four subgenera. The definition of the genus comprises approximately 13 lines, which are a copy from Boulenger (1885: 315) or may partially have been taken from Hallermann (2000: 162). Initially Hoser gives a short diagnosis for the genus (2.5 lines) followed by the sentence: "In addition to this, each of the relevant subgenera are further diagnosed and separated from the other genera by one or other of: A/ [diagnosis subgenus A] or B/ [diagnosis subgenus B] or C/ [diagnosis subgenus C]". This is followed by separating the genus from *Calotes* and another genus containing *C. rouxii* Duméril & Bibron, 1837 and *C. ellioti* Gün-

ther, 1864. The presentation of his diagnoses for the subgenera here is peculiar if not unique: the diagnostic characters including comparisons presented for the nominate subgenus and two other subgenera are absolutely identical to that of the genus!

The last subgenus is monotypic and erected for *Calotes nigriplicatus* Hallermann, 2000. Here he repeats the full description as given by Hallermann (2000: 156, 158, approximately 30 lines) only adapted in places where a comparison is made to one of his newly erected subgenera (i.e. the name *Calotes* is replaced by Hoser's new name). This is followed by repeating again his diagnostic characters for the already defined subgenera and genera. In the space of two pages he uses the same 22 lines five times. In all of this Hoser does not present a single new character.

Next he defines a new genus to accommodate *Calotes rouxii* and *C. ellioti*. The diagnosis comprises two lines and is copied from Hallermann's key (2000: 162).

The last genus Hoser proposes is again monotypic and only contains what he calls *Calotes andamanensis*, currently considered as *Pseudocalotes andamanensis* (Boulenger, 1891). While Harikrishnan & Vasudevan (2013: 11) state: "…these differences are not sufficiently pronounced to justify the recognition of a new genus. In the absence of a molecular phylogeny and based on external morphology alone, it is most appropriate to consider this species as a member of *Pseudocalotes*…" Hoser opposes this by writing "is also sufficiently divergent to warrant being placed in a separate genus". Hoser's initial diagnosis is a complete copy (31 lines) from Krishnan's description (2008: 533) of the species, only substituted with Hoser's nomenclature in places where Krishnan made comparisons with *Calotes*. This is followed by the description of *Pseudocalotes andamanensis* (14 lines) given by Harikrishnan & Vasudevan (2013: 11) and subsequently by yet another short description of this species including comparisons with *Calotes* Daudin, 1802, *Bronchocela* Kaup, 1827, *Complicitus* Manthey in Manthey and Grossmann, 1997, *Salea* Gray, 1845, and *Dendragama* Doria, 1888 (17 lines) as produced on the Reptile Database website (original publication not identified). We note that also the first two descriptions are available on the Reptile Database website. Hence Hoser could have copied the whole diagnosis from there without even consulting the original publications. This assumption is viable as Harikrishnan & Vasudevan (l.c.) are cited in an identical place to that on the website and Krishan's description stays without a citation as this is also the case on the website. Altogether he "describes" the species three times in 65 lines of which 62 lines are copied from other sources and the remaining lines are introductory sentences.

The genus *Ceratophora* Gray, 1835 is divided into three genera including two subgenera reflecting the molecular and morphological (rostral horn appendage) phylogeny of Schulte et al. (2002). The nominate genus contains the species related to *C. stoddartii* Gray, 1834 which is divided subsequently into two subgenera. Hoser's description of the nominate genus is presented in 6.5 lines all of which are taken from Boulenger (1885: 277) with only minor changes. This is followed by a separation from his other proposed subgenus and the other two proposed genera (12 lines). The complete text to describe the diagnostic character is copied from Boulenger (1885: 277) and Pethiyagoda & Manamendra-Arachchi (1998: 1, 4). The definition of his subgenus to accommodate *C. tennentii* Günther, 1861 comprises approximately four lines all of which are taken from Boulenger's synopsis (1885: 277). The nominate subgenus is defined by four lines again from Boulenger (1885: 277).

Next Hoser erects a new genus for *Ceratophora aspera* Günther, 1864, which is initially defined by two lines from Boulenger (1885: 277) followed by characters taken from Pethiyagoda & Manamendra-Arachchi (1998: 44, 46, six lines, all copied) to separate it from the other proposed genera by Hoser. Even the distributional data are copied verbatim from Pethiyagoda & Manamendra-Arachchi (1998: 44).

The last genus Hoser proposes for this group of lizards only contains *Ceratophora karu* Pethiyagoda & Manamendra-Arachchi, 1998. This is presented including comparisons within approximately eight lines, all of which are a copy from Pethiyagoda & Manamendra-Arachchi (1998: 44) and can partially be found in an identical way on the Reptile Database website.

Next Hoser deals with the lizards of the genus *Bronchocela* Kaup, 1827. He initially gives an introduction where he seems to restrict the type locality of *B. cristatella* (Kuhl, 1820) and to resurrect *B. moluccana* (Lesson, 1830) (see discussion below). The genus is divided into two subgenera the first of which contains *B. jubata* (Duméril & Bibron, 1837) and *B. orlovi* Hallermann, 2004. The first three lines of the diagnosis are taken from Boulenger (1885: 314 all copied) and a full description (approximately 20 lines) of *B. jubata* is presented by a copy of Hallermann's description (2005: 171–172). Two more lines of characters concerning the scales at the base of the dorsal crest could have been taken from de Rooij (1915: 123). One character cannot be retraced to earlier publications and presumably comes from Hoser's research: "The dorsal crest gives the appearance as if it is composed of tiny hairs as opposed to scales (as seen in *Bronchocela*)" [sensu Hoser]. We note that adult males of *B. jubata* have one of the most developed dorsal crests among *Bronchocela,* consisting of lanceolate scales.

The only new species described by Hoser within the Draconinae paper is a member of *Bronchocela* Kaup, 1827 and refers to material collected on Halmahera Island, Maluku Province, Indonesia. His description of this species is purely based on colouration and an elongated scale between the nasal and the rostral. We note that most

– if not all – *Bronchocela* species are capable of extreme colour changes. A typically brightly green coloured *B. cristatella* (Kuhl, 1820) may become completely black when disturbed or during copulation (WD pers. obs.). Hoser's choice of holotype (USNM 237431) is – to put it mildly – slightly confusing. The specimen he chose actually has a bifurcated tail something that should have been noted in the diagnosis (see collections.si.edu/search/results.htm?q=record_ID:nmnhvz_6091296). We further note that the gender of *Bronchocela* is female but Hoser creates a species name with a masculine ending. The description of his new *Bronchocela* species contains copied sections from Boulenger (1885: 314, 316–317, approximately 26 lines) for *B. cristatella*.

In his comparison of the new species to other species of the genus *Bronchocela* the author also often refers to *B. moluccana* (Lesson, 1830) which is currently considered a synonym of *B. cristatella* (Kuhl, 1820). Interestingly he does not include *B. moluccana* in his species list (table at the end of his taxonomic section) although it is stated in his introduction to the genus that he regards *B. moluccana* "as being a separate species". We note that the original name given would be *Agama moluccana* Lesson, 1830 and the combination *B. moluccana* was only used by Peters (1867 as *Bronchocele*), Stoliczka (1870) and Peters & Doria (1878), all of which were in later publications considered to be *B. cristatella*. Theobald (1876) used the name *B. moluccana* in his *Reptiles of British India* for a specimen from the Nicobars as a synonym of *Pseudocalotes archiducissae* Fitzinger, 1860, which again turns out to be a synonym of *B. cristatella*. *Bronchocela moluccana* constitutes a *nomen oblitum* and resurrection should have been made clear with reference to the type species and holotype.

Furthermore Hoser refers several times to Java as the type locality for *B. cristatella*. In his original description Kuhl (1820) never mentions a type locality and ever since it has been unknown and never been restricted by any author (see for example Diong & Lim, 1998). One could argue that Hoser's statement "West Java (herein treated as terra typica)" is meant to be the newly defined type locality. This is an unfortunate choice under current conditions, as the actual phylogenetic status of the Javanese populations still needs further research as also pointed out by Hoser. Additionally Hoser does not refer to a particular specimen from his type locality and hence the restriction is not valid.

The genus *Phoxophrys* Hubrecht, 1881 is divided into three subgenera. In the introduction to the genus Hoser claims that "as there has never been a definition or diagnosis of *Pelturagonia*" Mocquard, 1890 he will "provide one herein for the first time". Hoser's diagnosis only comprises two characters while that of Mocquard (1890) is written in French, and longer with several characters. To diagnose the genus Hoser uses approximately 20 lines, all of which are copied from Inger (1960: 221) and include a comparison to *Japalura*, the genus several *Phoxophrys* species belonged to until Inger's revision.

Hoser's nominate subgenus is defined by a minimally rephrased diagnosis of *Phoxophrys tuberculata* Hubrecht, 1881 again taken from Inger (1960: 225, seven lines). The diagnosis of the subgenus to accommodate *P. cephalum* (Mocquard, 1890) only comprises two lines with two characters ("presence of nuchal crest … and an absence of a supraciliary spine"). The last subgenus only contains *P. spiniceps* Smith, 1925. This is defined within seven lines, all copied but slightly rearranged from Inger (1960: 224–225).

The next genus Hoser is concerned with comprises the lizards of the genus *Aphaniotis* Peters, 1864. The genus is divided into two subgenera on the basis of whether a "protrusion on the snout" is present or absent. The genus and nominate subgenus diagnoses are identical and each constitute a copy from Boulenger (1885: 274, four lines). The other subgenus is defined by approximately four additional lines that have been copied from the internet (www.ecologyasia.com) or a source that we have not identified.

The genus *Ptyctolaemus* Peters, 1864 currently consists of two species, which Hoser considers to be two subgenera. The nominate subgenus containing *P. gularis* Peter, 1864 is initially defined within 15 lines copied from Schulte et al. (2004: 230) followed by a comparison to *P. collicristatus* Schulte & Vindum, 2004 (Schulte et al. 2004) taken from the same source (five lines). The definition of the subgenus for *P. collicristatus* is precisely the other way round, i.e Hoser first uses the same five lines from the comparison betwee *P. gularis* and *P. collicristatus* to define the species and then the definition of the genus (all copied from Schulte et al. 2004: 230).

The genus *Salea* Gray, 1845 is currently considered to contain two species (see below) and one highly questionable species (*S. gularis* Blyth, 1854). In his introduction to the genus Hoser states that "neither the genus … or the subgenus being properly defined to date … this is done herein for the first time". He does however not present a single character to do so that has not been the result of a copying process from Boulenger (1885). Hoser breaks up the genus into two subgenera based on the respective descriptions of *S. horsfieldii* Gray, 1835 and *S. anamallayana* (Beddome, 1878) taken from Boulenger (1885: 251–252, 312–314) with 36 lines (annotated as "modified from Boulenger" but actually constituting a verbatim copy) and 22 lines, respectively. For the latter species he resurrects its original name proposed by Beddome (1878).

The last genus Hoser deals with in this part of the paper is *Draco* Linnaeus, 1758 which has been a matter of intensive morphological studies in the 1980s by Inger (1983) and Musters (1983). In recent years phylogenetic studies by McGuire & Alcala (2000), McGuire & Kiew

(2001) and McGuire et al. (2007) completed the picture. Hoser mainly uses these phylogenetic results and the tree of Pyron et al. (2013) to divide the genus into nine subgenera and copies their respective diagnoses from Boulenger (1885) or the morphology based publications mentioned before. Not a single new character is introduced by Hoser. Hoser's general description of the genus is given in 4.5 lines all taken from Boulenger (1885: 253). Only the phrase "much-produced" is replaced by "much-expanded".

The first new subgenus Hoser proposes serves to accommodate members of the *Draco lineatus* group (minus *D. lineatus* which is placed in its own monotypic subgenus, see below). Initially Hoser copies seven lines from McGuire et al. (2007: 181) to define the group including a statement related to a statistical analysis. However, Hoser does neither use nor refer to a statistical method in his section on methods. Subsequently he produces four lines form the same source to define his subgenus further (McGuire et al., 2007: 181) followed by a short description of *D. bimaculatus* Günther, 1864 taken from Muster (1983: 40) to distinguish this species from his subgenus. The last part of Hoser's diagnosis serves to separate *D. lineatus* Daudin, 1802 from his proposed subgenus of the remaining *lineatus* group species. This is done by copying the diagnosis comprising ten characters provided by McGuire et al. (2007: 199). At the end of this paragraph Hoser annotates "adapted from McGuire et al. (2007)" although he actually produces a complete verbatim copy from that source. This goes so far that Hoser even has the typographical error "posnuchal" [sic!] in the same place.

The new monotypic subgenus to accommodate *Draco bimaculatus* initially repeats the four lines taken from Musters (s. above) followed by a copy (ten lines) from McGuire et al. (l.c.) as given under the previously defined subgenus. Next Hoser uses again the "adapted" diagnosis for *D. lineatus* provided by McGuire et al. (2007: 199, 16 lines including typographical error, see above) and finally describes the species by copying Boulenger (1885:263, 19 lines) which again is annotated as having been "adapted" albeit constituting a word-for-word copy.

Draco modiglianii Vinciguerra, 1892 is placed by Hoser into its own new subgenus on the basis of a short diagnosis (3.5 lines) that has been copied from Musters (1983: 45).

Species related to *Draco blanfordii* Blanford, 1878 are combined in yet another new subgenus which he defines by copying three sets of characters originally from Boulenger (1885: 255, synopsis to the species, approximately nine lines). No other characters are presented.

Species related to *Draco maculatus* (Gray, 1845) are contained in a new subgenus that is entirely defined by 18 lines coming from Boulenger (1885: 262). The nominate subgenus is diagnosed in approximately three lines copied from Inger (1983: 17).

Then Hoser defines *Draco lineatus* Daudin, 1802 in pretty much the same way he did to diagnose the *lineatus*-group (s. above). Initially he uses McGuire et al. (l.c.) to define the *lineatus*-group (approximately nine lines copied); this is followed by separating *D. bimaculatus* from that group and the proposed subgenus by copying Musters (1983: 40, 4.5 lines). Finally Hoser reproduces the full set of characters as given by McGuire et al. (2007: 199) for the species annotated as adapted but actually copied. For this subgenus Hoser resurrects an old available name from Fitzinger (1843).

Species related to *Draco fimbriatus* Kuhl, 1820 are placed into a subgenus for which another name proposed by Fitzinger (l.c.) is resurrected. The subgenus is defined in approximately three lines and subsequently separated from *D. maculatus* (again three lines), all copied from Boulenger (1885: 254–255).

The last subgenus Hoser erects serves to accommodate the Indian species *Draco dussumieri* Duméril & Bibron, 1837. To name the subgenus Hoser resurrects another of Fitzinger's names (l.c.). The diagnosis consists of four lines taken from Boulenger's synopsis (1885: 255) followed by approximately 17 lines of description copied from the same source (Boulenger 1885: 268).

After having defined his genera and subgenera Hoser endeavours to divide the subfamily into tribes and subtribes. Hoser proposes ten tribes and six subtribes, which will be numbered numerically in the following in order to prevent accidental validation; genus names are given here in their currently accepted form.

Tribe 1 only contains lizards of the genus *Draco*. Tribe 2 contains the genera *Japalura* [in part] and *Pseudocalotes* (subtribe 2.1), *Sitana* and *Otocryptis* (subtribe 2.2), *Acanthosaura* and *Oriocalotes* (subtribe 2.3) and *Salea* (subtribe 2.4). Tribe 3 only contains *Calotes*. Tribe 4 is represented by *Gonocephalus robinsonii* and *Japalura polygonata*. Tribe 5 consists of *Ceratophora*, *Cophotis*, *Pseudocophotis* and *Lyriocephalus* (subtribe 5.1), *Gonocephalus mjobergi* (subtribe 5.2), *Gonocephalus*, *Bronchocela*, *Complicitus*, *Hypsicalotes*, *Coryphophylax* and *Aphaniotis* (subtribe 5.3). Tribe 6 comprises *Japalura* [in part, including *Oriotiaris*] and *Ptyctolaemus*. The remaining tribes contain a single genus each: Tribe 7 *Lophocalotes*, Tribe 8 *Phoxophrys*, Tribe 9 *Mantheyus* and Tribe 10 *Dendragama.*

The nodes produced in Pyron et al. (2013) are given in the following as A –H with corresponding tribe numbers (as given above) from Hoser in brackets: A(1) – *Draco*, B(2) – *Japalura* Eastern clade, *Pseudocalotes*, *Sitana*, *Otocryptis*, *Acanthosaura*, *Salea*, C(3) – *Calotes*, D(4) – *Japalura polygonata* & *Gonocephalus robinsonii*, E(5) – *Ceratophora*, *Cophotis*, *Lyriocephalus*, *Gonocephalus*, *Bronchocela*, *Coryphophylax*, *Aphaniotis*, F(6) – *Ptyctolaemus* and *Japalura variegata* clade, G(8) – *Phoxophrys* and H(9) – *Mantheyus.*

As can be seen Hoser's taxonomic scheme essentially reproduces the clades resulting from the phylogenetic analysis by Pyron et al. (2013). His subtribes can be derived in a similar way. *Lophocalotes* (Hoser's Tribe 7) and *Dendragama* (Hoser's Tribe 10) are not included in Pyron's analysis nor are *Harpesaurus*, *Thaumatorhynchus*, and *Psammophilus*. The first two are recognized by Hoser in their own monotypic tribes, the other three are not dealt with at all. Other genera also not included in Pyron et al. (l.c.) such as *Oriocalotes*, *Hypsicalotes*, and *Complicitus* are assigned to a tribe but without giving a reason for doing so. However, with a bit of nomenclatural research one could find possible reasons for his groupings: *Oriocalotes paulus* was considered by Boulenger as *Acanthosaura minor*, hence Hoser's pairing of these two genera. In his introductory sentence to the genus *Complicitus* he states that it was "formerly placed in *Bronchocela*". In the same publication (Malkmus 1994, a paper written in German) *Hypsicalotes* is also considered to be a member of the genus *Bronchocela*. This is presumably Hoser's reasoning behind grouping these two genera in the same tribe along with *Bronchocela* and several other species from the same node in Pyron et al. (l.c.). Had Hoser decided to follow the majority of earlier publications, all of which are cited by him, he would likely have included these two genera in the tribe containing *Calotes*, their original genus name.

Hoser's division of the subfamily Draconinae can only be understood and followed if Pyron's paper is at hand for comparison. His classification scheme is poor-quality if not worthless as most tribes and subtribes are not diagnosed by shared characters but only through their content. In Hoser's words:"…tribe is best defined by diagnosis of the component genera" or a similar wording. Such a definition may comprise the character sets of 13 genera as given in the first section of his paper where the genera are defined. All diagnoses are copied and no additional data or characters are given. Some genera were not defined in their own right in Hoser's first section of the paper. These genera are therefore diagnosed by him as a character set defining a tribe or subtribe. In the following we will briefly analyze these additional diagnoses:

Hypsicalotes Denzer & Manthey, 2000 is diagnosed by repeating entirely the diagnosis including comparisons to other genera as given in Denzer & Manthey (2000, approximately 60 lines). *Coryphophylax* Fitzinger, 1869 is defined in the space of six lines copied from Boulenger (1885: 282). *Cophotis* Peters, 1861 is diagnosed by copying Boulenger (1885: 251–252, three lines; 275, three lines). *Pseudocophotis* Manthey in Manthey & Grossmann, 1997 is a copy of Boulenger's description of *Cophotis sumatrana* (= *Pseudocophotis sumatrana*). *Complicitus* Manthey in Manthey & Grossmann, 1997 is defined in approximately two lines taken from the Reptile Database website (primary source not identified). *Lophocalotes* Günther, 1872 is diagnosed in approximately eight lines of which four lines each are from Boulenger (1885: 251) and de Rooij (1915: 116) or partially from Hallermann (2004). The genus *Phoxophrys* Hubrecht, 1881 is defined for a second time but this time using Boulenger (1885: 251, 280, six lines copied) instead of using Inger (1960). The definition of *Dendragama* Doria, 1888 has been copied (approximately three lines) from de Rooij (1915: 117–118).

Summary Section A

Apart from some minor alterations the phylogentic tree published by Pyron et al. (2013) serves as Hoser's main basis for his classification scheme of the Draconinae.

In our analysis of Hoser's proposed taxonomy for the subfamily Draconinae most characters were identified and can be attributed to other sources. Hoser gives his diagnoses in the space of 2430 lines where 1884 lines constitute the actual characters of which 1560 lines have been identified as identical copies. If only diagnostic characters are taken into account approximately 83% are a copy and if the full diagnoses are considered this percentage still comes to approximately 64%. If the full paper is taken into account (7140 lines, estimated) the copied text still amounts to approximately 22%. At the end of his paper Hoser cites several hundred references in a space of close to 16 pages. However, according to our analysis he only used approximately 30 of those to produce his proposed taxonomy, the bibliography of which could probably have been printed in the space of two pages. If this is taken into account the percentage of copied text in relation to the full paper rises by yet another 5%.

Hoser's main source for descriptive characters was Boulenger (1885). Additionally he copied sections from Inger (1960) for *Phoxophrys*, Denzer & Manthey (2000) for *Hypsicalotes*, Hallermann (2004) for *Bronchocela*, McGuire et al. (2007) for *Draco*, Denzer & Manthey (2009) for *Gonocephalus*, Mahony (2009) for *Japalura*, Zug et al. (2006), Krishnan (2008) and Hallermann (2000) for *Calotes*, Harikrishnan & Vasudevan (2013) for *Pseudocalotes,* Pethiyagoda & Manamendra-Arachchi (1998) for *Ceratophora* and Schulte et al. (2004) for *Ptyctolaemus*. Several genera such as *Harpesaurus*, *Thaumatorhynchus*, and *Psammophilus* are not treated at all.

B) Hoser (2013) on Amphibolurinae

We note that the manuscript on Amphibolurinae was received by *AJH* on 20 July 2013, accepted for publication on 4 October 2013, and published on 20 October 2013. However, a tax invoice printed at the end of the publication (p. 36) states that the journal was printed on 3 October 2013, implying printed copies may have existed before the paper was accepted.

The paper comprises the following sections or headings: *Title*, *Abstract* (including *Keywords*), *Introduction*, followed by the description of two genera and seven tribes, *References Cited*, and a statement about *Conflict of Interest*. An explicit section for Materials is missing (but see below) and one has to assume that the description of the new taxa constitutes a combined Results/Discussion/Conclusion section.

The introductory part of a publication typically includes a brief overview and often the author's motivation for writing the paper, as well as his ideas about the subject. In standard practice, reviewers of manuscripts in mainstream journals would not spend much effort in correcting this part unless false statements are presented. However, in the case of this particular introduction, it is instructive for a better understanding of the broader picture of Hoser's works to mention several paragraphs.

Hoser begins by providing a reason for why the Australasian Amphibolurinae Wagler, 1830 are so well studied. According to Hoser this "has arisen due to a combination of circumstances **relatively unusual** to Australia" (emphasis added). The two factors alluded to are a "stable political and economic situation" including a transport infrastructure that facilitates access to even the most remote parts and "well-funded government paid herpetologists and relatively wealthy … private herpetologists … able to travel to the most remote parts of the continent…".

A significant portion of the *Introduction* deals with the publications by Wells and Wellington (1983, 1985), which are considered highly controversial papers in their own right and still do not find full acceptance within the herpetological community. One part of a paragraph reads as follows (Hoser 2013: 34): "I have found myself resurrecting names proposed by earlier authors. This includes a number of effectively unused Wells and Wellington names such as *Intellagama* Wells & Wellington, 1985, *Gowidon* Wells & Wellington, 1983 …" However, at the time of this paper's publication (October 2013) the genus name *Intellagama* had already been validated by Amey et al. (2012) and the genus name *Gowidon* in the combination *G. longirostris* (Boulenger, 1883) was made available by Melville et al. (2011). Both publications were not cited by Hoser (2013).

One of the paragraphs in Hoser's *Introduction* would never pass standard review of any formal publication in science and would be removed by editors as it is against ethical standards of publication. A group of herpetologists (one named in particular) that is highly critical of Hoser's papers is called "a mob of criminals and ratbags" (Hoser 2013: 34).

At the end of the *Introduction*, Hoser uncritically lists 14 publications, five of which are his own, "and sources cited therein" that apparently constitute the source material for his research. However, major publications on Australian agamids relevant to taxonomy and nomenclature, such as Melville et al. (2011), Hugall & Lee (2004), Hugall et al. (2008), Schulte et al. (2003), or Macey et al. (2000a,b) are not mentioned at all and the reader would need to refer to the few cited papers and their bibliographies to determine how Hoser derived some of his ideas. While this paragraph could be regarded as a Materials section, it should be noted that not a single museum specimen is referenced, nor is there any mention that museum material was examined. Earlier in the *Introduction* Hoser (2013: 33) notes: "In terms of the materials and methods, this was based on my own field and lab work involving most species as well as a review of the relevant literature spanning the last 200 years." With respect to "lab work," the reader does not get any further explanation of what this entailed, making the process non-transparent and non-reproducible. The list of references given in the *References Cited* section of the paper comprises only 16 citations, five of which are Hoser's own publications. Of those, at least Hoser (1998) on *Acanthophis* and Hoser (2012) on *Afronaja* are entirely irrelevant to agamid lizard taxonomy.

Only Joger (1991) and Pyron et al. (2013) are referenced as publications that include original molecular phylogenetic research that is indispensible to Hoser's arguments. However, Joger's paper (l.c.) only includes *Amphibolurus vitticeps* (Ahl, 1926) (= *Pogona vitticeps*) and *Physignathus temporalis* (Günther, 1867) (= *Lophognathus temporalis*) in the analysis, making it of only peripheral interest for a detailed phylogenetic analysis of Australian taxa (Joger 1991, Material Examined). Joger (1991: 619) even notes: "Because of the lack of antisera for East Asian and Australian agamids, the position of their three lineages – *Amphibolurus*/*Physignathus*, *Calotes*/*Acanthosaura*, and *Gonocephalus* – relative to each other could not be determined." It is important to note that Joger did not study the genera *Physignathus* Cuvier, 1829 and *Amphibolurus* Wagler, 1830, but two specimens of populations that were considered members of these genera at that time, but are assigned to different genera today. Additionally, no nomenclatural decisions were proposed by Joger (l.c.).

It therefore stands to reason that Pyron et al. (2013) serves as the basis for Hoser's taxonomic and nomenclatural proposals. This becomes particularly obvious in the grouping of *Moloch* Gray, 1841 and *Chelosania* Gray, 1845 within a single tribe. Without recent molecular phylogenies it is unlikely that any morphologically-oriented herpetologist would group a thorny devil (whose vernacular name illustrates a key aspect of the species' scale morphology) with a lizard that has a completely homogeneous dorsal scalation. The phylogeny of Pyron et al. (2013) is also reflected in acknowledging the difference between *Physignathus* and *Intellagama*, the splitting of *Hypsilurus* into several genera, the erection of a tribe for the genus *Ctenophorus*, and combining *Amphibolurus*, *Chlamydosaurus*, *Diporiphora*, *Gowidon* (*Lophognathus*), *Pog-*

ona, *Rankinia*, and *Tympanocryptis* within one tribe, albeit using a different nomenclature.

The *Introduction* is followed by a section that serves to erect two new genera and seven tribes. New tribes are presented in random order without presenting necessary information on possible phylogenetic relationships. Our analysis will mainly follow Hoser's order but for reasons of clarity the tribe containing the genera related to *Amphibolurus* and the tribe containing all *Ctenophorus* will be dealt with last.

The first genus described in the paper is meant to accommodate only *Diporiphora superba* Storr, 1974. The actual diagnostic characters account for approximately nine lines of text, of which eight can be accounted for in Cogger (1983: 238, key leading to *D. superba*; 1983: 243, description of *D. superba*). Differences include changing "gular fold absent" to "no gular fold" and replacing the % sign by "percent," as well as replacing the numeric "4" by the word "four." The unaccounted text consists mainly of introduced verbs and a slightly modified description of the colouration.

The second genus described deals with *Hypsilurus spinipes* (Duméril & Bibron, 1851). The diagnostic character section accounts for approximately 12 lines and is annotated as "adapted from Cogger, 2000." About 11 lines are the result of directly repeating Cogger's description of *H. spinipes* (Cogger 1983: 245–46, as *Gonocephalus spinipes*) and the only differences are the introduction of a few verbs and conjunctions.

The new genus containing *Hypsilurus spinipes* is subsequently placed into a newly erected tribe that additionally contains *Tiaris* Duméril & Bibron, 1837 (see below). The diagnosis for the tribe contains two sets of characters. The first part (ca. seven lines) is a copy of Cogger's key leading to *Hypsilurus* (Cogger 1983: 217, as *Gonocephalus*) apart from a few introduced verbs and conjunctions (one line). The second part (eight lines) states the characters shared by *Hypsilurus* species and is a copy (six lines) of the genus diagnosis given by Manthey & Denzer (2006). The latter paper is not cited, and the diagnosis was most probably retrieved from the Reptile Database (Uetz & Hošek 2015), where it is publicly available (cited, and with approval of the authors). The genus *Tiaris* is not characterized at all in Hoser's paper, nor is the reader informed which species it contains. In Hoser's paper the name stands on its own and is therefore a *nomen nudum* according to the *Code*. It should also be noted that *Tiaris* Duméril & Bibron, 1837 is not available for any agamid genus as it is preoccupied by *Tiaris* Swainson, 1827 (Aves, Passeriformes) [see Manthey & Denzer (2006)].

According to Hoser an agamid genus *Tiaris* is of Australian origin and "the only genus it is likely to be confused with" is the one newly erected for *Hypsilurus spinipes*. The only other *Hypsilurus* species in Australia that Hoser could refer to is *H. boydii* (MacLeay, 1884), albeit that it is actually quite difficult to confuse these two species. *Hypsilurus boydii* is known from older literature as *Tiaris boydii* (e.g., MacLeay 1884). Hence, we assume that Hoser meant to include this species in the same tribe as *H. spinipes*. However, *H. boydii* is morphologically (Manthey & Denzer 2006) and genetically (Pyron et al. 2013) closely related to *H. dilophus* (Duméril & Bibron, 1837), which Hoser places into a different tribe.

The next tribe is erected to accommodate the genus *Hypsilurus*, assigning *Lophura* (*Hypsilurus*) *godeffroyi* Peters, 1867 as the terminal taxon. Hoser's introduction to the tribe starts with the sentence "Currently most widely known as *Hypsilurus dilophus* (Duméril & Bibron, 1837)." It is not clear whether Hoser here expresses his view that *H. godeffroyi* (a well-defined and valid species) is identical to (conspecific with) *H. dilophus*. His statement is even more confusing considering that *H. dilophus* is actually the type species of the genus *Tiaris* Duméril & Bibron, 1837, a genus he assigned a paragraph earlier to a different tribe (for synonymy of *Hypsilurus* see Manthey & Denzer 2006). Additionally there exist no objective reasons to combine *H. dilophus* and *H. godeffroyi* into one group. Morphologically, they are very different species that were even placed into different species groups by Manthey & Denzer (2006). In his genus description to accommodate *H. spinipes*, Hoser states that *Tiaris* (*nomen nudum*, see above) and all *Hypsilurus* species have a "longitudinal row of grossly enlarged scales on the throat." This is actually a character used by Cogger (1983) to differentiate between *H. spinipes* and *H. boydii*, which should read, "median longitudinal line of … similar to those in the nuchal crest." The statement holds true if only Australian species are considered, as is the case with Cogger (l.c.), but when including taxa outside of Australia, as Hoser's analysis does, it is false, as most species of *Hypsilurus* outside Australia actually lack a median line of enlarged scales on the gular pouch. These are only well developed in *H. boydii* and *H. dilophus*, and to a lesser extent in *H. hikidanus* Manthey & Denzer, 2006. As already pointed out by Manthey & Denzer (2006), *H. dilophus*, *H. boydii*, and *H. spinipes* may be considered as a species group, and if considered as a separate genus only the name *Lophosaurus* Fitzinger, 1843 would be available but not *Tiaris*. The diagnostic character section for *Hypsilurus* comprises 15 lines of which 13 lines are copied from Cogger (l.c.) and Manthey & Denzer (2006).

Subsequently, Hoser deals with the water dragons from Australia and Southeast Asia. The relationship, biogeography, and nomenclature of *Physignathus cocincinus* Cuvier, 1829 and *Intellagama lesueurii* (Gray, 1831) has been a matter of intense discussion, and since the advent of molecular phylogeny there have been several publications to address the issues (e.g., Schulte et al. 2003, Macey et al. 2000a,b). Still Hoser makes no mention of this and erects

two new tribes. His claim to have resurrected the genus name *Intellagama* has already been dealt with (see above). The diagnostic characters to define the tribe for *I. lesueurii* account for ca. five lines of text, three of which are copied from Cogger's key (Cogger 1983: 217). The remaining part of the description deals with colouration, but not as one would expect, with a description of the colouration of *I. lesueurii*. Hoser instead merely states that the colouration is not that of *P. cocincinus*.

The tribe containing the latter species is again initially diagnosed via Cogger's key (l.c.), with three lines out of four being copied. The remaining part of the diagnosis deals with the colouration of *Physignathus cocincinus*. Apart from the dorsal ground colour (one line) the patterns and colourations (three lines) were copied from Wikipedia, with no primary source identifiable. The Wikipedia page already provided this description of the colouration in 2012 (accessed August 2014, file history checked for December 2012), i.e. before Hoser's paper was published.

Next Hoser introduces a tribe to accommodate the genera *Moloch* and *Chelosania*. The two diagnostic sections consist of two lines and four lines, respectively, of which approximately four lines are copied text (Cogger 1983: 217).

Another tribe is erected to accommodate the genus *Ctenophorus*. The diagnostic characters are presented in roughly sixteen lines, ten of which are copied from Cogger (1983) and three from Cogger (1993). One set of characters regarding the supralabial scales could not be accounted for and is potentially the only part of an original description in the entire paper. From the lack of methodology, it is not possible to determine how these observations were made or which specimens were used, rendering the data non-reproducible. Furthermore, the copied part contains several mistakes that need to be addressed.

The diagnosis for the new tribe containing the genus *Ctenophorus* is at best confusing, and perhaps of no taxonomic value entirely. Part of Hoser's definition reads as follows (emphasis added): "nuchal crest and/or series of enlarged keeled vertebral scales present or absent and if **absent present** along at least the anterior two thirds of the **body; enlarged** strongly keeled or spinose scales are present elsewhere on the dorsum." The diagnostic characters are identical those used in Cogger's key to the genera (1983: 217), apart from the conflicting phrase "absent present" and the placement of the semicolon. The use of both "absent" and "present" in close combination makes it unclear how this character is to be scored. In common usage, placing a semicolon will not change a diagnosis significantly. However, in this case only the part directly preceding the semicolon relates to the character of "enlarged keeled vertebral scales present or absent". The character after the semicolon "enlarged strongly keeled scales … present … on the dorsum" stands on its own. This way all *Ctenophorus* without this character are excluded from the genus! Cogger (1983: 217) included this particular set of characters as a full statement in the diagnosis for the genus *Amphibolurus*. There it reads, "nuchal crest and/or vertebral keel may be present, but if the latter is present on at least the anterior two-thirds of the body then enlarged, strongly-keeled or spinose scales are present elsewhere on the dorsum", giving it a completely different meaning. It should be noted that a key matching this part of Hoser's diagnosis, including the (wrong) placement of the semicolon, can be found in another earlier publication (Cogger 1993: 163, or in the online version on page 10, character 9a). A further character to define the tribe presented by Hoser is described on the basis of the online publication (page 11) but introducing yet another mistake. Hoser's character reads: "a row of enlarged scales from below the eye to above the eye" instead of "to above the ear"!

The genus- and species-richest tribe introduced in the paper contains the genera *Amphibolurus*, *Chlamydosaurus*, *Caimanops*, *Cryptagama*, *Diporiphora*, *Gowidon* (*Lophognathus*), *Pogona*, *Rankinia*, and *Tympanocryptis*, as currently accepted by most Australian herpetologists (here listed according to Cogger 2014; it should be noted that *Gowidon* is not yet generally accepted). However, according to Hoser's compilation the genus *Lophognathus* no longer exists. Hoser instead uses *Gowidon*, a name available for *L. longirostris*, but ignores *L. burnsi* Wells & Wellington, 1985, *L. gilberti* Gray, 1842, and *L. temporalis* (Günther, 1867). For this reason the reader has to assume that Hoser considers these species as congeneric or even conspecific. However, in this case the name *Gowidon* would not be available since the genus name *Lophognathus* has nomenclatural priority over it, with *L. gilberti* being the type species of the genus.

If Hoser had been consistent in following the data of Pyron et al. (2013), then *Tympanocryptis* Peters, 1863 should also be a member of this tribe. However, Hoser does not include it here or in any other tribe, nor does he use a different taxonomy to pinpoint where the species of this genus might be grouped, perhaps as part of one of the other genera used in the revised classification scheme. It appears that, just as some members of *Lophognathus*, the genus *Tympanocryptis* was simply disregarded or forgotten. *Tympanocryptis* is an available name that should be used, the type species being *T. lineata* Peters, 1863.

Hoser recognizes *Caimanops* Storr, 1974 and two genera proposed by Wells & Wellington (1983, 1985) containing *Diporiphora* species. One of these genera was erected to accommodate *D. albilabris albilabris* Storr, 1974 and *D. albilabris sorbia* Storr, 1974. The second was erected for *D. linga* Houston, 1977 and *D. winneckei* Lucas & Frost, 1896. We assume that Hoser resurrects these genera from their synonymy with *Diporiphora*, albeit without mentioning it specifically or giving a reason for

doing so. These genera were formally synonymized with *Diporiphora* by Doughty et al. (2012), owing to their close phylogenetic relationship, and were included by Pyron et al. (l.c.) under *Diporiphora*. It appears that Hoser overlooked the publication by Doughty et al. (2012). *Caimanops* has so far been considered a monotypic genus, with *C. amphiboluroides* as the sole species. If Hoser had properly followed Pyron et al. (l.c.), he should also have assigned *D. australis* to *Caimanops* as these two species form a clade.

The diagnostic characters employed by Hoser to group the above genera into a new tribe are as follows: Initially he singles out *Chlamydosaurus* by repeating Cogger (1983 two out of two lines copied) but introducing a mistake. Hoser's character reads, "a large loose frill or skin around the neck" but it should read, "… frill of skin …". Hoser then proceeds to define the general characters of this diverse group (Cogger 1983; four out of four lines copied). In his last part of defining the tribe he excludes the genus *Ctenophorus* in an identical way as he defined the tribe containing the genus, including all the mistakes discussed above. Overall Hoser's diagnostic character section of this tribe comes to 22 lines of which 16 lines are a result of copying.

Summary Section B

Hoser's classification scheme for amphibolurine lizards mostly reflects the nodes in the phylogenetic tree published by Pyron et al. (2013). Additionally several genera proposed in the highly controversial papers by Wells & Wellington (1983, 1985) are accepted as valid.

Hoser gives his diagnoses in the space of 153 lines, of which 121 lines constitute the actual characters, with 100 lines clearly identifiable as copied. If only diagnostic characters are taken into account this amounts to 82% copied material, with the full diagnoses included it is still 65%. If the full paper is taken into account (438 lines) the copied text amounts to 23%.

All but a single character can be identified and attributed to secondary sources (Cogger 1983, 2000; Manthey & Denzer 2006; Anonymous on Wikipedia; Uetz & Hošek 2015).

Most characters used to describe genera are taken directly from Cogger (1983 or subsequent editions). Several important publications on Australian agamid lizards such as Melville et al. (2011), Hugall & Lee (2004), Hugall et al. (2008), Schulte et al. (2003), or Macey et al. (2000a,b) have been omitted. The genera *Lophognathus* and *Tympanocryptis* are not treated at all.

C) Hoser (2012a) on *Laudakia* Gray, 1845

The manuscript was received on 13 March 2012, accepted on 8 April 2012 and the paper was published on 30 June 2012. Hoser's paper is presented in the following way: *Abstract* (including *Keywords*), *Introduction*, description of taxa, and *References Cited*. The second to fifth paragraphs of the *Introduction*, describing the general appearance and behaviour of the group, contain 13 lines of copied material from an online source (www.sauria.co.uk). The rest of the *Introduction* deals with the nomenclature and phylogeny of *Laudakia* Gray, 1845 and *Phrynocephalus* Kaup, 1825. His nomenclatural arguments refer mainly to Henle (1995) and are misinterpreted (see comments for the *stellio* group).

Hoser's "five-way division" of *Laudakia* Gray, 1845 mainly reflects the phylogenetic schemes published by Macey et al. (1998, 2000b, 2006), who identified nodes supporting a *L. tuberculata* group, a *L. caucasia* group with *L. lehmanni* as the sister taxon (proposed as a new subgenus by Hoser), as well as nodes supporting the monophyly of *L. stellio* (Linnaeus, 1758) and *L. sacra* (Smith, 1935). Hoser's fifth group comprises *Phrynocephalus* Kaup, 1825, a genus of lizards that has never been in the synonymy of *Laudakia*. Macey et al. (2000b) found *Phrynocephalus* to be a sister taxon to both the clade containing the *L. caucasia* group and *L. stellio*. However, in a later publication by Melville et al. (2009), the monophyly of the genus *Laudakia* was confirmed and *Phrynocephalus* emerged as the sister taxon to the whole clade. Apparently, Hoser and his supposed reviewers overlooked this important publication, which is not cited in his bibliography.

The first genus Hoser deals with is that of *Phrynocephalus* Kaup, 1825, which he considers "similar in most respects to *Laudakia* sensu lato" (Hoser 2012: 18), a statement most herpetologists would disagree with. Hoser does not present a meaningful definition of the genus apart from "lacking of an obvious tympanum" to distinguish *Phrynocephalus* from *Laudakia* and a "dorsoventrally depressed" body to distinguish it "from all other other Agamids in the region where these groups of lizards occur." This entire diagnosis holds no definitive value as there are other agamid genera in the area under consideration that have a dorsoventrally depressed body shape (e.g., *Brachysaura* Blyth, 1856, *Bufoniceps* Arnold, 1992, and *Trapelus* Cuvier, 1829). Another interesting fact is that Hoser only recognizes 26 species within the genus *Phrynocephalus* while the actual number had already surpassed 40 species by the time his paper was published. This is certainly something any expert reviewer would have been able to point out, even by a simple search of the Reptile Database (Uetz & Hošek 2015).

Hoser moves on to define what he considers to be the actual genus *Laudakia*. This is represented by the *tuber-*

culata group and hence *L. tuberculata* (Gray, 1827) becomes the type species. Initially he uses tympanum presence and body shape to distinguish it from *Phrynocephalus* and other genera of agamid lizards in the region. This is followed by a short description (eight lines) mostly copied from a key to the species of agamid lizards of Pakistan (six lines; Khan 2002: 100 & 101). The same key is available on the Internet as part of Khan's undated eBook *Herpetology of Pakistan*. Neither of these two publications are cited by Hoser! Based on the idiosyncratic character "fifth toe extends beyond second" we have no doubts that Khan's publication is the source; other authors make a comparison to the first toe. Hoser's further characters include the dentition and the number of whorls in each tail segment. Both characters are from Baig (1992) but the writing has been sufficiently altered that they do not constitute copied material. The entire diagnosis of the genus comprises 32 lines (18 lines of diagnostic characters) of which six lines are copied, presumably from Khan (2002).

The next genus proposed by Hoser serves to accommodate the *Laudakia caucasia* (now *Paralaudakia caucasia*, see below) group. Up to this point we have mostly abstained from judging Hoser's diagnoses but the poor quality of this one requires analysis. It begins with an essentially copied general diagnosis from earlier in the paper, but "excluding those genera formerly placed within *Laudakia* sensu lato" by which Hoser means the other genera he proposed (see above). Subsequently, he copies from Khan (2002): "tympanum is large,… fifth toe extends beyond second; caudal scales in distinct annuli," which is unfortunately a character set that still defines the entire genus. Up to this point, no character has been listed that could be used to define the new genus. Next, Hoser states that "the scales of dorsal rows are smooth," "the premaxilla has two teeth in the [new] genus versus three in *Laudakia* [= *L. tuberculata* group]," and "lizards in this [new] genus have 14–15 molars, versus 14–15 [sic!] in *Laudakia*." The author then once more repeats the general paragraph to differentiate *Phrynocephalus* and other agamids. He then separates his new genus from *L. sacra* by providing a full description of this species that is identical to the one found in Ananjeva et al. (1990). To summarize this for clarity: the only diagnostic characters presented to define his new genus –other than those characters which are common to all genera concerned– are "scales of dorsal rows are smooth," "premaxilla has two teeth," and presumably the number of molar teeth.

The definition for the new genus is, unfortunately for Hoser, not cohesive because the vertebral scales of *Paralaudakia caucasia* (Eichwald, 1831), the proposed type species of the new genus, are actually keeled and those of *P. himalayana* (Steindachner, 1867) and *P. badakhshana* (Anderson & Leviton, 1969) are smooth (Boulenger 1885; Khan 2002; Baig et al. 2012). We are not aware – and it is outside the scope of this paper to investigate further – how many teeth are present in the premaxilla and how many molars the other genera possess, in order to verify or falsify these two characters, nor is Hoser apparently. To our knowledge there are no publications dealing with the dentition of all genera in question. In total his diagnosis of this genus comprises about 56 lines, of which 27 are copied from Ananjeva et al. (1990). Three lines describing diagnostic characters are taken from Baig (1992) and Khan (2002), but not copied directly. Baig et al. (2012) established the genus *Paralaudakia* Baig, Wagner, Ananjeva & Böhme, 2012 to accommodate species related to *caucasia* and *himalayana* as well as *lehmanni* and *stoliczkana*.

For the *Laudakia stellio* (now *Stellagama stellio*, see below) species group, which Hoser considers to be monotypic, the author resurrects *Plocederma* Blyth, 1854. This can only be explained by misinterpreting Henle (1995) who proposed to use this genus name for the *stellio* group, which he considered to comprise *L. stellio, L. caucasia, L. erythrogastra, L. himalayana, L. lehmanni, L. nupta*, and *L. melanura*. The type species for the genus *Plocederma* is *L. melanura*. Only if this species were included in Hoser's *stellio* group (which it is not) would the name be available for the group. Because the *stellio* group as it is considered nowadays (i.e. monotypic) did not have any previous available name disposable, Baig et al. (2012) established the name *Stellagama* Baig, Wagner, Ananjeva & Böhme, 2012.

The new genus to accommodate *Stellagama stellio* is initially only defined by repeating his general description (two characters: "distinct tympanum" and "dorsoventrally depressed" body) followed by two lines taken from Khan (2002) and a description of "*Laudakia stellio*" (approximately 14 lines, all copied) taken from a website (Göçmen, www.bayramgocmen.com/album/picture.php?/1012/category/345, accessed September 2014). The full diagnosis comprises 26 lines (18 lines of diagnostic characters), of which 16 are copied.

To define his newly proposed monotypic subgenus to accommodate *Laudakia lehmanni* (Nikolsky, 1896), Hoser presents diagnostic characters in the space of approximately 38 lines, all of which come straight from Baig's description (1992) of *L. lehmanni*. The order of characters is slightly different from the original and in a few places verbs or conjunctions have been added. The diagnosis is followed by distributional data and habitat description, which constitutes (apart from one sentence) a copy of the text produced on the IUCN RedList webpage (six lines out of seven copied). The whole diagnosis comprises 42 lines of which 38 lines constitute diagnostic characters all of which are a copy from Baig (1992).

Hoser lists four papers by Baig and co-authors in the *References Cited* section, but none of these contains a description of *L. lehmanni* (now *Paralaudakia lehmanni*, see

below). A detailed description of *P. lehmanni* that is very similar to the one used by Hoser – but with characters in a different order – was first given in Baig's PhD thesis (Baig, 1992: 130 & 132, not cited by Hoser) which was completed under the supervision of WB. Since Baig's thesis has to be considered unpublished, Böhme and coworkers (Baig et al. 2012) posthumously published a paper based on the thesis to preserve Baig's extensive taxonomic work and to make it available for scientists working on this subject. In the latter publication Baig's description is repeated with minor changes and with pretty much the same wording seen in Hoser (2012a). Baig et al. (2012) was published in print on 18 July 2012 and Hoser (2012a) was published in print 30 June 2012. Both papers were accepted for publication by the respective journals in April 2012. We also note that Baig et al. (2012) was made available in advance online on the publisher's website on 6 July 2012, appearing a week after Hoser's publication. The most likely way by which Hoser would have been able to retrieve Baig's text would have been by downloading the thesis from a governmental website in Pakistan (Pakistan Research Repository, http://eprints.hec.gov.pk/2407/1/2262.htm). Although it is difficult to proof, but based on the exact wording, we are convinced that Baig's thesis was available to Hoser, who did not consider it necessary to reference it. However, even if not published a PhD thesis constitutes intellectual property belonging to the candidate and his thesis supervisor. In any case the precise repetition of wording from a thesis without appropriate clarification, attribution and referencing constitutes a violation of authorship rights. Any use of a verbatim copy of excerpts from a thesis needs permission by either the author, his thesis supervisor or the university department where the candidate studied for the degree. However, a reader who does not know about Baig's thesis might suppose that Hoser's diagnosis has precedence, with Baig et al. (2012) copying Hoser's ideas and wording when the opposite is the case. In this instance, Hoser clearly uses the intellectual property of another and passes it off as his own. Such behaviour would even be seen as plagiarism if Hoser obtained the description from a third source, which we have not identified. In a recent paper Hoser (2015) even claims priority and that "they [Baig et al. (2012)] did however remanufacture theirs [morphological evidence] as "new" data, which in itself is fraudulent". Hoser (l.c.) clearly states that data were available from earlier studies but again does not disclose or cite the source. Not only did Hoser plagiarize Baig (1992), he even considers his actions as justifiable and additionally accuses the true original author of fraudulent behaviour!

The last genus Hoser proposes is monotypic for *Laudakia sacra* (Smith, 1935). His diagnosis is given within 27 lines, of which 25 are a direct copy from the description of *L. sacra* by Ananjeva et al. (1990; see also Uetz & Hošek 2015) and two lines are copied from Khan (2002). The only two other characters are those used previously ("a distinct tympanum" and "the body is dorsolaterally depressed"), repeating nearly the entire general paragraph for the fifth time. The diagnosis of this genus is given in 33 lines, with 30 lines presenting the actual diagnostic characters, of which 27 lines are copied.

Summary Section C

The taxonomic basis for Hoser's proposals on *Laudakia* can be found in their entirety in Macey et al. (1998, 2000b, 2006). Most of Hoser's proposed classification additionally reflects nodes in the phylogeny published by Pyron et al. (2013).

In total, Hoser's paper on *Laudakia* comprises an estimated 980 lines, of which 420 lines constitute his *References Cited* section (560 lines pure text including *Title* and *Abstract*). We would like to mention that already his introductory part contains at least 13 lines that can be found on websites (not taken into account here as copied text) and that we further identified several diagnostic characters Hoser used but without copying directly. His diagnoses come to 180 lines of which 148 lines constitute diagnostic characters. With respect to the latter we found that 114 lines (77%) were copied from previously published research papers or reviews. Hoser's main sources are Ananjeva et al. (1990), Baig (1992), Khan (2002) and Baig et al. (2012). Hoser (2015) even claims priority with respect to the data albeit that his taxonomic scheme and all his characters have been copied from Baig (1992) and subsequent publications.

D) Hoser (2014c) on Uromastycinae

The manuscript of this paper was received by the journal on 2 November 2013, accepted on 15 May 2014, and finally published on 30 August 2014. It is presented in the following way: *Abstract* (including Keywords), *Introduction*, *Notes on the taxa named herein* followed by the description of taxa, *Conflict of Interest*, and *References Cited*. In total Hoser newly describes or resurrects within this publication two tribes, five genera, and four subgenera. Five of these taxa are monotypic.

The *Introduction* is relatively short and summarizes the taxonomic history of *Uromastyx* and gives Hoser's view on taxonomy, without any identified copied parts. However, two extraordinary statements should be discussed here. In terms of material used for his study, Hoser refers to the "inspection of live specimens at various facilities since 1993." Many *Saara* or *Uromastyx* species inhabit political unstable areas and it is very unlikely that there are live specimens of many important species, such as *S. asmussi* (Strauch, 1863), available at any facility Hoser might have visited since 1993. Therefore it is very probable that most of the data he presents are not from ex-

amined material, but from published sources. These sources are cited in the *Introduction* as "Significant studies relevant to the taxonomy of the Uromastycinae …" and include for example Hall (1999) and Swofford (2002), two general publications about statistical phylogenetic methods without any significance to the taxonomy of the group at all.

In his *Abstract* and *Introduction*, Hoser gives the impression that he is the first to use the approach by Pyron et al. (2013) to distinguish between Uromastycinae Theobald, 1868 and Leiolepidinae Fitzinger, 1843 on the subfamily level, but mentioning in passing that "some authors have already taken this step." This concept was used more than a decade ago by Macey et al. (2000a), in a paper not cited by Hoser. Instead, Hoser cites Macey et al. (2000b) on the trans-Tethys migration, which has hardly any relevance to uromasticine / leiolepidine taxonomy (only one species of *Uromastyx* and two species of *Leiolepis* were included in the study). We also note that the terms Uromastycinae and Leiolepidinae were used synonymously by different authors (e.g., Wilms & Böhme 2007: 436).

The entire first definition of Uromastycinae used by Hoser is identically phrased to Wilms et al. (2009:67; four lines), followed by the definitions of his two new tribes copied from the same source. The further detailed definition for this subfamily is not fully copied, but obviously taken from Boulenger's synopsis (Boulenger 1885: 405; 14 lines). All diagnosing parts of the subsequent definition of *Uromastyx* are entirely taken from various parts (text and key) of Wilms et al. (2009).

The first taxon Hoser describes is the subgenus *Uromastyx* (within *Uromastyx*) and the given diagnosis is taken from Wilms et al. (2009: 67 & 82; 35 lines copied for the genus *Uromastyx*, seven for the subgenus *Uromastyx*, of which 3.5 lines are within quotation marks). For his second, monotypic subgenus diagnosis, erected to accommodate *U. occidentalis* Mateo, Geniez, Lopez-Jurado & Bons, 1999, he uses eight lines directly copied from Wilms et al. (l.c.).

Even though Hoser quotes Wilms et al. (l.c., 3.5 lines) in the following diagnosis of *Aporoscelis*, the parts not directly quoted are also copied from that reference (two lines).

For his first new genus description Hoser is using a differential diagnosis separating his new taxon by the diagnosis of other taxa. Here, Hoser is summarizing the information given in the diagnostic key by Wilms et al. (2009: 82), followed by a description taken from Boulenger (1885: 405) with 26 lines copied. Also the diagnosis of the same taxon at a different rank (subgenus) is taken from Wilms et al. (2009, 11 lines copied). Within his new genus, Hoser describes two additional new subgenera. Even here all mentioned characters diagnosing these taxa are identical to Wilms et al. (2009: 82; 22 lines copied).

Diagnosing his second new genus, Hoser is following the same scheme of presenting a differential diagnosis. And again, all given characters, especially meristic characters (e.g., scale or whorl counts) are exactly the same as given in Wilms et al. (l.c.) and no other additional characters are provided. This description is followed by the subgenera to be included in the previously described genus. Again, all mentioned characters are exclusively taken from Wilms et al. (l.c.). The new genus is described by copying 14 lines from Wilms et al. (2009: 82–83), and subsequently three new subgenera are proposed using 44 lines from the same source.

While redescribing the genus *Saara* according to his new taxonomy, Hoser provides several characters to distinguish his new tribe, including *Saara*, from the tribe that includes *Uromastyx*. Here he is exclusively using the characters provided by Wilms et al. (2009: 81–82; 15 lines) for the three species forming the genus *Saara*. However, Hoser is splitting this genus into three distinct monotypic genera, including in addition to *Saara* the genus *Centrotrachelus* Strauch, 1863, which he resurrects to accommodate *S. asmussi*, and a new genus that only contains *S. loricatus* Blanford, 1874. In order to describe these two genera Hoser again uses Wilms et al. (2009: 81–82; 32 lines copied).

Finally, Hoser erects two new tribes to accommodate his proposed genera. The first tribe is described using three lines from Wilms et al. (2009:67) and 13 lines from Boulenger (1885:405). The second tribe is solely defined by characters given by Wilms et al. (2009: 67, 82 & 83; 15 lines).

In the *References Cited* section Hoser lists 154 references (three-and-a-half pages), giving the impression of a well-conducted, literature-based study. However, none of the references is cited in the running text (other than a lengthy list of general references as part of the *Introduction*), 78 of the references do not refer to *Uromastyx* taxonomy or distribution (several are concerned with *Leiolepis*, others with maintenance of *Uromastyx*), and 48 references do not refer to *Uromastyx* at all (including description of statistical methods, herpetofaunal lists outside the distribution of *Uromastyx*). The only references Hoser appears to actually use are those by Boulenger (1885) and Wilms et al. (2009), from which many lines are copied verbatim without appropriate attribution.

Summary Section D

The taxonomic basis for Hoser's proposals on Uromastycinae is a representation of nodes taken fron the phylogeny published by Pyron et al. (2013).

In total, Hoser's paper on *Uromastyx* contains an estimated 1490 lines, of which 490 lines are referenced publications and 1000 lines are text (inclusive of title and abstract). His diagnoses contribute 556 lines, of which 326

lines are diagnostic characters. With respect to the latter, of all diagnostic characters mentioned, 255 lines (78%) were identically phrased or copied from previously published research papers or reviews, with Wilms et al. (2009) and Boulenger (1885) being the main sources.

SUMMARY & CONCLUSIONS

We analyzed four of Hoser's publications on agamid lizards and found in all cases significant amounts of copied or plagiarized text to present the diagnostic characters (83% for Draconinae, 82% for Amphibolurinae, 77% for *Laudakia*, 78% for Uromastycinae). There is no harm per se in repeating diagnostic characters from the older literature and using them in order to define a genus. A species of *Draco* has a certain number of elongated ribs in the patagium and the nostrils are directed sidewards or upwards. Similarly, species of *Gonocephalus* have a gular fold and *Chlamydosaurus kingi* possess a frill. There exist only a limited number of different expressions to present certain character sets. However, we think that Hoser's approach is on a different level that most scientists and editors would consider a sort of plagiarism. We found paragraphs that clearly show that Hoser's presentation of the diagnosis is a result of a copy-and-paste procedure with typographical errors in exactly the same place in his text where they occurred in the original publication. Furthermore, the direct uses of statements from the older literature lack attribution; merely including titles in a bibliography is not attribution. Meristic characters or statistical values tend to be given with the identical numbers of a source paper (for examples, see the sections on *Draco* or *Uromastyx*) although it is clear that Hoser neither took any measurements nor conducted a statistical analysis, as he would not have had access to the same specimens (or any specimens for that matter).

By pure repetition of character sets, which are often as old as 125 years, several of Hoser's diagnoses are rendered inaccurate, inconsistent, or even false. Often a diagnosis consists of more than one character set taken verbatim from two different publications; sometimes as much as half a page is copied in full, or long descriptions are taken directly from a previous publication. In at least three cases (*Laudakia*, *Paralaudakia lehmanni*, *Hypsilurus*), sets of characters that were copied by Hoser had been published in an identical or near-identical manner before, but the original sources are not cited at all!

We were able to identify the sources of most (~ 90%) of the diagnostic characters used by Hoser (2012a, 2013, 2014b, c). If the percentage of word-for-word copying of Hoser's diagnostic characters section is evaluated, this amounts to approximately 80% of his presentation. Even if the whole diagnoses are taken into account for which Hoser typically uses long sentences that have nothing to do with the actual definition of the taxon, the percentage still stands at over 60%. With respect to Hoser's full publications considered here, approximately 20% (*Laudakia* paper 11%) of the text constitutes a verbatim copy from other sources. In several cases copied sections exceed 100 lines of identical text, and often full descriptions of species or excerpts from publications concerned with the phylogeny or taxonomy of agamid lizards are repeated word-for-word.

Hoser's papers often contain an exhaustive bibliography which gives the impression of a properly performed literature search. However, we found that actually fewer than 50 publications (out of several hundred referenced) were used. Three publications used are not referenced at all, and none of the publications by his fellow Australian Jane Melville (authored or co-authored) was cited or used, although these contain phylogenies of *Laudakia* and *Diporiphora* as well as nomenclatural proposals preceding those of Hoser. The use of unreferenced material is a clear breach of commonly accepted editorial standards and should be avoided by all means. Hoser's papers should not have passed any peer review based on the amount of copied text and in our opinion his work constitutes in several cases a form of plagiarism.

Analysing Hoser's proposed nomenclature we can identify cases where a name is preoccupied and unavailable, where a name is being resurrected that was resurrected before, where names are used that had been very recently synonymized with other genera but for which the literature was overlooked or disregarded. In one case Hoser assigns a name to a genus that does not include the type species which he places into another genus. In other cases, he produces *nomina nuda* or resurrects a *nomen oblitum* incorrectly. He further restricts a type locality without identifying a type specimen from that area and selects a holotype for a newly described species that has a bifurcated tail without any mentioning of this particular feature.

With respect to taxonomy, in each of the four papers we find examples of wrong diagnoses, falsely attributed species, and misinterpretation of previously published taxonomic studies. Furthermore, Hoser omitted several genera in his classification schemes (e.g. *Harpesaurus*, *Thaumatorhynchus*, *Psammophilus* and *Tympanocryptis*) as well as many species (e.g. species of *Phrynocephalus* and *Lophognathus*). Presented as they are, Hoser's taxonomic schemes for the subfamilies Amphibolurinae and Draconinae, as well as his division of the genera *Laudakia* and *Uromastyx*, just constitute a grouping and naming exercise within the confines of a particular published phylogeny he chooses to follow. The slightest changes in these phylogenies will render them false, in particular as molecular data have not been used to study all genera and species under consideration. Hence, Hoser's taxonomies and nomenclature acts are highly unstable and little help-

ful for species assigment. A herpetologist trying to assign a newly collected specimen or an existing museum voucher to a specific taxon will still have to look for the original or subsequent publications where keys are available, and would have to revert to Hoser's paper(s) only to determine his proposed nomenclature – if those names were available. Kaiser et al. (2013) and Kaiser (2013) suggested a suppression of all Hoser names to prevent such case and produced a list with recommended appropriate names. With respect to the taxa dealt with in the present paper we propose to suppress Hoser's names completely and recommend the usage of generally accepted names which can be found in the Reptile Database (Uetz & Hošek 2015).

While available names have to be used according to the *Code*, a taxonomy does not necessarily have to be accepted. If we were to work in the same way as Hoser does we could claim here that *Gonocephalus mjobergi* and *Ptyctolaemus* share a common character, namely longitudinal gular folds. We could further claim to consider this a synapomorphy not shared by the *Japalura variegata* / *Oriotiaris* group, propose a new tribe excluding *Japalura* / *Oriotiaris* with *Ptyctolaemus gularis* (Peters, 1864) as the type species and name it accordingly. While our tribe would have a common character to define it, two of Hoser's tribe diagnoses, which are defined by their content rather than common characters, would become invalid. Equally we could claim that *Hypsicalotes kinabaluensis* (de Grijs, 1937) has a unique set of characters (which it has) that distinguishes the genus from all other Draconinae and remove it from Hoser's tribe, only to name a new tribe.

Although this paper is mainly meant to analyze Hoser's taxonomy and nomenclature we have to address some issues with regard to the *Code*. There is no requirement for a publication to be peer-reviewed or to comply with any other commonly accepted editorial standards. The ethics recommended by the *Code* do not have to be adhered to. Even a photograph and short description of the colouration followed by a new name published in a daily newspaper would qualify as valid and therefore the name would be considered available. Zoobank is the official registry of the ICZN. Everyone can register with Zoobank (a viable approach and we hope it will stay like this) and subsequently register nomenclatural acts. However, Zoobank is not curated and there is no review process in place to check the correctness of submitted data. This literally invites pure naming exercises by "harvesting" nodes (nomenclatural vandalism) from a previously published phylogenetic tree. At the end of November 2015, Hoser had 873 nomenclatural acts registered with Zoobank, which on the face of it leads to two different nomenclatures for many reptilian taxa as his names are not accepted by the overwhelming majority of the herpetological community.

The ICZN needs to implement provisions to prevent unscientific and unethical publication of nomenclatural proposals to become available. We are convinced that Hoser is abusing the system. The preceding examples provide sufficient evidence to demonstrate his abuses. We strongly recommend that the ICZN uses their plenary power to suppress all of Hoser's nomenclatural acts published in the *Australasian Journal of Herpetology*. We feel that, if this step is not taken, a large part of the herpetological community will – with great respect for the ICZN and with great regret – continue to use the alternative nomenclatural system of the Reptile Database as a reference for available names.

CONFLICT OF INTEREST

All four authors have submitted taxonomic papers on agamid lizards including nomenclatural changes without acknowledging Hoser's nomenclature or referencing his publications. Our own publications have been extensively used verbatim by Hoser without asking for permission to do so. The authors therefore have a personal interest to put this on public record.

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BIBLIOGRAPHY

Amey AP, Couper PJ, Shea GM (2012) *Intellagama lesueurii* (Gray, 1831), the correct binomial combination for the Australian Eastern Water Dragon (Sauria, Agamidae). Zootaxa 3390: 65–67

Ananjeva NB, Peters G, Macey JR, Papenfuss TJ (1990) *Stellio sacra* (Smith 1935) – a distinct species of Asiatic Rock Agamid from Tibet. Asiatic Herpetological Research 3: 104–115

Baig KJ (1992) Systematic studies of the *Stellio*-Group of Agama (Sauria: Agamidae). PhD Dissertation Quaid-i-Azam University, Islamabad, 287 pp

Baig KJ, Wagner P, Ananjeva NB, Böhme W (2012) A morphology-based taxonomic revision of *Laudakia* Gray, 1845 (Squamata: Agamidae). Vertebrate Zoology 62: 213–260

Beddome RH (1878) Description of a new genus of Tree-Lizards from the higher ranges of the Anamallays. Proceedings of the Zoological Society of London 1878: 153–154, pl. XIV

Boulenger GA (1885) Catalogue of the lizards in the British Museum (Natural History). I. Geckonidae, Eublepharidae, Uroplatidae, Pygopodidae, Agamidae. 575 pp. Trustees British Museum, London

Boulenger GA (1890) The fauna of British India, including Ceylon and Burma. Reptilia and Batrachia. xviii+541pp. Taylor & Francis, London

Cogger HG (1983) Reptiles and Amphibians of Australia. 660 pp, 3rd ed. Ralph Curtis Publishing, Sanibel, USA

Cogger HG (1993) Amphibia & Reptilia. 439 pp in: Glasby CG, Ross GJB, Beesley PL (eds) Fauna of Australia Volume 2A Part 1,; AGPS Publishing, Canberra. Online (Volume. 2A, Chapter 23) at www.environment.gov.au/node/13758 (last accessed 15th July 2015)

Cogger HG (2000) Reptiles and Amphibians of Australia. 808 pp, 6th ed. Ralph Curtis Publishing, Sanibel, USA

Cogger HG (2014) Reptiles and Amphibians of Australia. 1064 pp, 7th ed. CSIRO Publishing, Canberra, Australia

Denzer W, Manthey U (2009) Remarks on the type specimen of *Gonocephalus mjobergi* Smith, 1925 (Sauria: Agamidae). Bonner zoologische Beiträge 56: 255–258

Diong CH, Lim SS (1998) Taxonomic review and morphometric description of *Bronchocela cristatella* (Kuhl, 1829) (Squamata: Agamidae) with notes on other species in the genus. The Raffles Bulletin of Zoology 46: 345–359

Diong CH, Low M-H, Tan E-C, Yong H-S, Hikida T, Ota H (2000) On the monophyly of the Agamid genus *Gonocephalus* Kaup, 1825 (Reptilia: Squamata) – A Chromosomal Perspective. Current Herpetology 19: 71–79

Doughty P, Kealley L, Melville J (2012) Taxonomic assessment of *Diporiphora* (Reptilia: Agamidae) dragon lizards from the western arid zone of Australia. Zootaxa 3518: 1–24

Duméril AM, Bibron G (1837) Erpétologie générale ou Histoire Naturelle complète des Reptiles. ii+572pp. Librarié Encyclopedique de Roret, Paris

Fitzinger LJ (1843) Systema Reptilium. Fasciculus Primus. Amblyglossae. 106 pp. Braumüller & Seidel Bibliopolas, Wien

Gray JE (1845) Catalogue of the specimens of Lizards in the collection of the British Museum. xxviii+289. British Museum Natural History, London

Günther ACLG (1864) The Reptiles of British India. xxvii+452, pl. 1–26. The Ray Society, London

Hall TA (1999) BioEdit: a user-friendly biological sequence alignment editor and analysis program for Windows 95/98/NT. Nucleic Acids Symposium Series 41: 95–98

Hallermann J (2000) A new species of *Calotes* from the Moluccas (Indonesia), with notes on the biogeography of the genus (Sauria: Agamidae). Bonner Zoologische Beiträge 49: 155–163

Hallermann J (2004) A new species of the genus *Bronchocela* from the tropical Rain Forest of Southern Vietnam. Russian Journal of Herpetology 11: 30–34

Hallermann J (2005) A taxonomic review of the genus *Bronchocela* (Squamata: Agamidae), with description of a new species from Vietnam. Russian Journal of Herpetology 12: 168–183

Hallermann J, Böhme W (2000) A review of the genus *Pseudocalotes* (Squamata: Agamidae), with description of a new species from West Malaysia and comments on the generic concept for South East Asian arboreal agamids. Reptilia-Amphibia 21: 193–210

Hallowell E (1860) Report upon the Reptilia of the North Pacific Exploring Expedition, under command of Capt. John Rogers, U.S.N. Proceedings of the Academy of Natural Science of Philadelphia: 480–509

Harikrishnan S, Vasudevan K (2013) Rediscovery of *Calotes andamanensis* Boulenger, 1891, and assessment of its generic allocation (Squamata: Sauria: Agamidae). Herpetozoa 26: 3–13

Henle K (1995) A brief review of the origin and use of '*stellio*' in herpetology and a comment on the nomenclature and taxonomy of agamids of the genus *Agama* (sensu lato). Herpetozoa 8: 3–9

Hoser RT (2012a) A five-way division of the agamid genus *Laudakia* Gray, 1845 (Squamata: Sauria: Agamidae). Australasian Journal of Herpetology 14: 17–23

Hoser RT (2012b) Robust taxonomy and nomenclature based on good science escapes harsh factbased criticism, but remains unable to escape an attack of lies and deception. – Australasian Journal of Herpetology 14: 37–64

Hoser RT (2013) A seven way division of the Amphibolurinae (Squamata: Sauria: Agamidae). Australasian Journal of Herpetology 21: 33–36

Hoser RT (2014a) A break up of the genus *Acrochordus* Hornstedt, 1787, into two tribes, three genera and the description of two new species (Serpentes: Acrochordidae). Australasian Journal of Herpetology 22: 2–8

Hoser RT (2014b) A logical new taxonomy for the Asian subfamily Draconinae based on obvious phylogenetic relationships and morphology of species (Squamata: Sauria: Agamidae: Draconinae). Australasian Journal of Herpetology 22: 9–59

Hoser RT (2014c) A long overdue taxonomic rearrangement of the Uromastycinae (Squamata: Sauria: Agamidae). Australasian Journal of Herpetology 23: 54–64

Hoser RT (2015) PRINO (Peer reviewed in name only) journals: When quality control in scientific publication fails. Australasian Journal of Herpetology 26: 3–64

Hugall AF, Lee SY (2004) Molecular Claims of Gondwanan Age for Australian Agamid Lizards are Untenable. Molecular Biology and Evolution 21: 2102–2110

Hugall AF, Foster R, Hutchinson M, Lee MS (2008) Phylogeny of Australasian agamid lizards based on nuclear and mitochondrial genes: implications for morphological evolution and biogeography. Biological Journal of the Linnean Society 93: 343–358

ICZN (1999 & 2012) *International code of Zoological Nomenclature*. The Natural History Museum, London

Inger RF (1960) A review of the agamid lizards of the genus *Phoxophrys* Hubrecht. Copeia (3): 221–225

Inger RF (1983) Morphological and ecological variation in the flying lizards (Genus *Draco*). Fieldiana Zoology New Ser. 18: 1–35

Joger U (1991) A molecular phylogeny of agamid lizards. Copeia (3): 616–622

Kästle W, Schleich HH (1998) Notes on Comparative Ethology and Taxonomy of the Genus *Japalura*, Pp 233–246 in: Schleich HH, Kästle W (eds.) Contributions to the Herpetology of South-Asia (Nepal India). Veröffentlichungen aus dem Fuhlrott-Museum, Wuppertal

Kaiser H (2013) The Taxon Filter, a novel mechanism designed to facilitate the relationship between taxonomy and nomenclature, vis-à-vis the utility of the *Code's* Article 81 (the Commission's plenary power). Bulletin of Zoological Nomenclature 70: 293–302

Kaiser H, Crother BI, Kelly CMR, Luiselli L, O'Shea M, Ota H, Passo P, Schleip WD, Wuester W (2013) Best Practises: In the 21st Century, Taxonomic decisions in herpetology are acceptable only when supported by a body of evidence and published via peer-review. Herpetological Review 44: 8–23

Khan MS (2002) Key and checklist to the lizards of Pakistan (Reptilia: Squamata: Sauria). Herpetozoa 15: 99–119

Krishnan S (2008) New species of *Calotes* (Reptilia: Squamata: Agamidae) from the Southern Western Ghats, India. Journal of Herpetology 42: 530–535

Kuhl H (1820) Beiträge zur Kenntnis der Amphibien, Pp 75–132 in: Kuhl H (ed.): Beiträge zur Zoologie und vergleichenden Anatomie. Hermannsche Buchhandlung, Frankfurt a. M.

Macey JR, Ananjeva NB, Larson A, Rastegar-Pouyani N, Shammakov SM, Papenfuss TJ (1998) Phylogenetic Relationships among Agamid Lizards of the *Laudakia caucasia* Species Group: Testing Hypotheses of Biogeographic Fragmentation and an Area Cladogram for the Iranian Plateau. Molecular Phylogenetics and Evolution 10: 118–131

Macey JR, Schulte II JA, Larson A, Ananjeva NB, Wang Y, Pethiyagoda R, Rastegar-Pouyani N, Papenfuss TJ (2000a) Evaluating Trans-Tethys migration: An example using acrodont lizard phylogenetics. Systematic Biology 49: 233–256

Macey JR, Schulte II JA, Larson A (2000b) Evolution and phylogenetic information content of mitochondrial genomic structural features illustrated with acrodont lizards. Systematic Biology 49: 257–277

Macey JR, Schulte II JA, Fong JJ, Das I, Papenfuss TJ (2006) The complete mitochondrial genome of an agamid lizard from the Afro–Asian subfamily agaminae and the phylogenetic position of *Bufoniceps* and *Xenagama*. Molecular Phylogenetics and Evolution 39: 881–886

Macleay W (1884) Notes on some reptiles from the Herbert River, Queensland. Proceedings of the Linnean Society New S. Wales 8: 432–436

Mahony S (2009) A new species of *Japalura* (Reptilia: Agamidae) from northeast India with a discussion of the similar species *Japalura sagittifera* Smith, 1940 and *Japalura planidorsata* Jerdon, 1870. Zootaxa 2212: 41–61

Mahony S (2010) Systematic and taxonomic revaluation of four little known Asian agamid species, *Calotes kingdonwardi* Smith, 1935, *Japalura kaulbacki* Smith, 1937, *Salea kakhienensis* Anderson, 1879 and the monotypic genus *Mictopholis* Smith, 1935 (Reptilia: Agamidae). Zootaxa 2514: 1–23

Malkmus R (1994) Herpetologische Beobachtungen am Mt. Kinabalu, Nord-Borneo. IV. Mitteilungen des Zoologischen Museums Berlin 70: 217–249

Manthey U, Denzer W (1991) Die Echten Winkelkopfagamen der Gattung *Gonocephalus* Kaup (Sauria: Agamidae) I. Die *megalepis*-Gruppe mit *Gonocephalus lacunosus* sp. n. aus Nord-Sumatra. Sauria 13: 3–10

Manthey U, Denzer W (1991) Die Echten Winkelkopfagamen der Gattung *Gonocephalus* Kaup (Sauria: Agamidae) II. Allgemeine Angaben zur Biologie und Terraristik. Sauria 13: 19–22

Manthey U, Denzer W (1991a) Die Echten Winkelkopfagamen der Gattung *Gonocephalus* Kaup (Sauria: Agamidae) III. *Gonocephalus grandis* (Gray, 1845). Sauria, 13: 3–10

Manthey U, Denzer W (1992) Die Echten Winkelkopfagamen der Gattung *Gonocephalus* Kaup (Sauria: Agamidae) IV. *Gonocephalus mjoebergi* Smith, 1925 und *Gonocephalus robinsonii* Boulenger, 1908. Sauria 14: 15–19

Manthey U, Denzer W (1993) Die Echten Winkelkopfagamen der Gattung *Gonocephalus* Kaup (Sauria: Agamidae) VI. Die *chamaeleontinus*-Gruppe. Sauria 15: 23–28

Manthey U, Denzer W (2000) Description of a new genus, *Hypsicalotes* gen nov. (Sauria: Agamidae) from Mount Kinabalu, North Borneo, with remarks on the generic identity of *Gonocephalus schultzewestrumi* Urban, 1999. Hamadryad 25: 13–20

Manthey U, Denzer W (2006) A revision of the melanesian-australian Angle Head lizards of the genus Hypsilurus (Sauria: Agamidae: Amphibolurinae), with description of four new species and one new subspecies. Hamadryad 30: 1–40

Manthey U, Grossmann W (1997) Amphibien & Reptilien Südostasiens. 512 pp. Natur und Tierverlag, Münster

Manthey U (2010) Agamid Lizards of Southern Asia – Draconinae 2, Leiolepidinae. 168 pp, Chimaira, Frankfurt/M

McGuire JA, Alcala AC (2000) A taxonomic revision of the flying lizards (Iguania: Agamidae: *Draco*) of the Philippine Islands, with a description of a new species. Herpetological Monographs 14: 81–138

McGuire JA, Kiew BH (2001) Phylogenetic systematics of Southeast Asian flying lizards (Iguania: Agamidae: *Draco*) as inferred from mitochondrial DNA sequence data. Biological Journal of the Linnaean Society 72: 203–229

McGuire JA, Dudley R (2005) The Cost of Living Large: Comparative Gliding Performance in Flying Lizards (Agamidae: Draco). The American Naturalist 166: 93–106

McGuire JA, Brown R, Mumpini RA, Andayani N (2007) The Flying Lizards of the *Draco lineatus* group (Squamata: Iguania: Agamidae): A taxonomic revision with descriptions of two new species. Herpetological Monographs 21: 179–212

Melville J, Hale J, Mantziou G, Ananjeva NB, Milto K (2009) Historical biogeopgraphy, phylogenetic relationships and intraspecific diversity of agamid lizards in the Central Asian deserts of Kazakhstan and Uzbekistan. Molecular Phylogenetics and Evolution 53: 99–112

Melville J, Ritchie EG, Chapple SN, Glor RE, Schulte II JA (2011) Evolutionary origins and diversification of dragon lizards in Australia's tropical savannas. Molecular Phylogenetics and Evolution 58: 257–270

Mocquard F (1890) Recherches sur la faune herpetologique des îles de Borneo et de Palawan. Nouvelles Archives du Muséum National d'Histoire Naturelle, Ser. 3: 115–168, 5pls

Moody SM (1980) Phylogenetic and historical biogeographical relationship of the genera in the family Agamidae (Reptilia: Lacertilia). Ph.D. Thesis, University of Michigan, 373 pp

Musters CJ (1983) Taxonomy of the genus *Draco* L. (Agamidae, Lacertilia, Reptilia). Zoologische Verhandelingen 199: 1–120

Ota H (1988) Karyotypic differentiation in an agamid lizard, *Japalura swinhonis swinhonis*. Experientia 44: 66–68

Peters W, Doria G (1878) Catalogo die rettili e die Batraci racoolti da O. Beccari, L.M. D'Albertis e A.A. Bruijn nella sotto-regione Austro-Malese. Annali del Museo Civico di Storia Naturale di Genova ser. 1: 323–450, pls 1–7

Pethiyagoda R, Manamendra-Arachchi K (1998) A revision of the endemic Sri Lankan agamid lizard genus *Ceratophora* Gray, 1835, with description of two new species. Journal of South Asian natural History 3: 1–50

Pyron RA, Burbrink FT, Wiens JJ (2013) A phylogeny and revised classification of Squamata, including 4161 species of lizards and snakes. BMC Evolutionary Biology 13: 1–53

Rooij N de (1915) The reptiles of the Indo - Australian Archipelago. I. Lacertilia, Chelonia, Emydosauria. xiv+384 pp, Taylor & Francis, Leiden

Schulte II JA, Macey JR, Pethiyagoda R, Larson A (2002) Rostral horn evolution among Agamid Lizards of the genus *Ceratophora* endemic to Sri Lanka. Molecular Phylogenetics and Evolution 22: 111–117

Schulte II JA, Melville J, Larson A (2003) Molecular phylogenetic of ancient divergence of lizard taxa on either side of the Wallace's Line. Proceedings of the Royal Society of London B270: 597–603

Schulte II JA, Vindum JV, Win H, Thin T, Lwin KS, Shein AK (2004) Phylogenetic relationships of the genus *Ptyctolaemus* (Squamata: Agamidae), with a description of a new species from the Chin Hills of Western Myanmar. Proceedings of the California Academy of Sciences 55: 222–247

Smith, MA (1935) The fauna of British India, Ceylon and Burma. Reptilia and Amphibia. Vol. II Sauria. xiii+440 pp, Taylor & Francis, London

Stejneger, L (1907) Herpetology of Japan and adjacent territory. Bulletin of the United States National Museum 58: xx+577 pp

Stoliczka, F (1870) Observations on some Indian and Malayan Amphibia and Reptilia. Journal of the Asiatic Society of Bengal 39: 124–228

Stuart-Fox DM, Owens IPF (2003) Species richness in agamid lizards: chance, body size, sexual selection or ecology? Journal of Evolutionary Biology 16: 659–669

Swofford DL (2002) PAUP*. Phylogenetic Analysis Using Parsimony (*and Other Methods). Version 4.0b10. Sinauer Associates, Sunderland, Massachusetts, USA

Theobald W (1876) Descriptive catalogue of the reptiles of British India. xiii+238 pp + xxxviii+xii. Thacker Spink & Co, Calcutta (Kolkata)

Thomson S (2014) Comment on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, Elapidae): request for confirmation of the availability of the generic name and for nomenclatural validation of the journal in which it was published (Case 3601). Bulletin of Zoological Nomenclature 71: 133–135

Uetz P, Hošek J (eds): The Reptile Database. Online at http://www.reptile-database.org last accessed July 30, 2015

Wells RW, Wellington CR (1983) A synopsis of the class Reptilia in Australia. Agamidae. Australian Journal of Herpetology 1: 73–129

Wells RW, Wellington CR (1985) A classification of the Amphibia and Reptilia of Australia. Australian Journal of Herpetology, Suppl. Ser. (1): 64 pp

Wilms TM, Böhme W (2007) Review of the taxonomy of the spiny-tailed lizards of Arabia (Reptilia: Agamidae: Leiolepidinae: *Uromastyx*. Fauna of Arabia 23: 435–468

Wilms TM, Böhme W, Wagner P, Lutzmann N, Schmitz A (2009 "2007") On the Phylogeny and Taxonomy of the Genus *Uromastyx* Merrem, 1820 (Reptilia: Squamata: Agamidae: Uromastycinae) – Resurrection of the Genus *Saara* Gray, 1845. Bonner zoologische Beiträge 56: 55–99

Zug GR, Brown HH, Schulte II JA, Vindum JV (2006) Systematics of the Garden Lizards, *Calotes versicolor* Group (Reptilia, Squamata, Agamidae), in Myanmar: Central Dry Zone Populations. Proceedings of the California Academy of Sciences, Ser. 4, 57: 35–68