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Holotype of *Podarcis mohamedmissoumi sp. nov.* (see relevant paper on pages 28-52). Photographed by Mohamed Missoum.

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Are they too dangerous to look at? … Scalation of Coastal Taipans *Oxyuranus scutellatus* (Peters, 1867).

LSIDURN:LSID:ZOOBANK.ORG:PUB:2B4F727F-E256-4D29-8C5F-69152FDA1054

RAYMOND T. HOSER
LSIDURN:LSID:ZOOBANK.ORG:AUTHOR:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
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ABSTRACT

It has been widely reported in the published literature for many decades, that Taipans, genus *Oxyuranus* Kinghorn, 1923, a group of snakes from Australia and New Guinea, all have all divided subcaudals (Hoser, 1989, Cogger 2014).

This is not regarded as exceptional as all members of the associated genus *Pseudonaja* Günther, 1858, have (as far as is known) all subcaudals strictly divided except for the subspecies *Pseudonaja textilis bicucullata* McCoy, 1879, being of the Murray / Darling basins of south-east Australia and immediately adjacent southern Victoria (Hoser, 2003).

However, in the recent past, three hatchling Coastal Taipans *Oxyuranus scutellatus* (Peters, 1867) bred from parents obtained immediately south of Iron Range, Queensland were raised by this author.

One of the trio had four single anterior subcaudals placed behind the first past the vent that was divided.

Another had one single anterior subcaudal also behind a single paired one anterior to it.

The third snake had all divided subcaudals, that being the typical form for the species.

With two snakes from the same litter having single subcaudals, this implies that the character state may be common, at least in some areas and that the reported cases are not just one-off anomalies.

This observation highlights the need for herpetologists to revisit long accepted facts with regards to common species as quite often what is thought to be correct or a general rule, simply is not.

Keywords: Taxonomy; Systematics; Taipan; Snake; Australia; Elapidae; *Oxyuranus*; *scutellatus*; scalation; subcaudals; single; divided.

INTRODUCTION

Coastal Taipans *Oxyuranus scutellatus* (Peters, 1867) are an iconic Australasian snake.

Being the longest Australasian elapid snake and often regarded as one of the most dangerously venomous, it is a stalwart of elapid keepers and major collections across Australia.

Hence it is a commonly kept, bred, raised and well-known snake.

So much so that basics such as general appearance, scalation and other attributes as reported in the literature has not changed in decades.

In line with all other members of the genus *Oxyuranus* Kinghorn, 1923, Coastal Taipans have long been known to have strictly divided subcaudals.

This "fact" has been so well known and for so long that herpetologists and reptile keepers gave up looking at the tail scalation of these snakes decades ago.

Because Coastal Taipans are regarded as highly strung, jumpy and deadly, most keepers of them keep at arms lengths, handle only with sticks and tongs and therefore keepers rarely even get the opportunity to even casually observe the subcaudal scales, except of course when dealing with sloughed skins.

Elapid snakes held at our facility are unique in Australia in being the only ones in the country that are surgically devenomized. These are best known as venomoids as described in Hoser (2024a, 2024b).

Added to the fact that they are handled daily for training dogs to avoid snakes, as the trademarked *Snake Avoidance*, for live reptile shows, including at the trademarked *reptile parties* and so on, our elapids are closely handled and inspected daily, even if by way of observations when being moved around by hand from cage to box.

In addition, most snake keepers with Taipans are not taxonomists and would either not be aware of the scalation details of taipans, remember what is or is not normal, or even care.

Hence, if scalation anomalies were to occur in any of the large numbers of Coastal Taipans in captivity in Australia, chances are they would be overlooked.

In this case, this is not what happened.

Our animals are closely monitored in all senses of the word. They are kept indoors, singly and under strict control in order to maintain optimal health, 24 hours a day access as required for reptile shows and so on.

Furthermore, having been working as a taxonomist for decades including auditing the entire Australasian herpetofauna, I would notice scalation anomalies in elapids held here.

Hence when I noticed that one of the Taipans here had single subcaudals, I knew it was apparently something out of the ordinary.

A check of the literature showed that single subcaudals had never been previously reported in this genus and hence this paper.

MATERIALS, METHODS AND RESULTS

The three Coastal Taipans relevant to this paper were obtained from a well-known breeder in Queensland, with parents being legally wild caught from near Iron Range in far north Queensland.

All were males and held at our facility in Melbourne, Australia and kept in our standard cages at one snake per cage in strict compliance with the "*Code of Practice for the Welfare of Animals - Private Keeping of Reptiles – Victoria*" (see image of an exact cage in Hoser 2009 on page 24).
A complaint that our cages did not comply with the "*Code of Practice for the Welfare of Animals - Private Keeping of Reptiles – Victoria*" that was maliciously pursued by the Victorian Government Wildlife Department (by Kate Gavens, calling herself the "conservation regulator" – an oxymoron) in the Supreme Court of Victoria in 2024 failed.

That is, our cages were wholly legal and the relevant "Direction Notice" of 7 December 2023 was found to be illegal and illegally issued.

On 29 May 2024, Judge Jacinta Forbes found that thug-like wildlife officers operating at the instigation of Kate Gavens, had acted unlawfully and had by way of unlawful directions sought to kill the relevant reptiles (Forbes 2024).

She ordered the Wildlife Department to pay our legal costs and as of 2025, and the time this paper was written and published, this money had not been paid (Forbes 2024).

The relevant Taipans were raised from hatchlings at our facility to adulthood (taking about 2-3 years to get to full size at about 180 cm long total length for each).

They were trouble free and totally normal as captives and remained alive and well at the time of writing and publishing this paper as of June 2024 (date of final draft for submission).

Inspection of the trio showed them to be "normal" in all other ways.

One had four single anterior subcaudals with a divided one anterior to them, one had a single anterior subcaudal also with a divided subcaudal anterior to it (as in between the vent and the single ones) and the third snake had no single subcaudals.

All the rest of the subcaudals were strictly divided in the normal way, to the tail tips.

DISCUSSION

With two snakes from the same litter having single subcaudals (4 and 1 of the totals), this implies that the character state may be common, at least in some areas and that the two reported instances are not just one-off anomalies.

This observation highlights the need for herpetologists to revisit long accepted facts with regards to common species as quite often what is thought to be correct or a general rule, simply is not or not always so.

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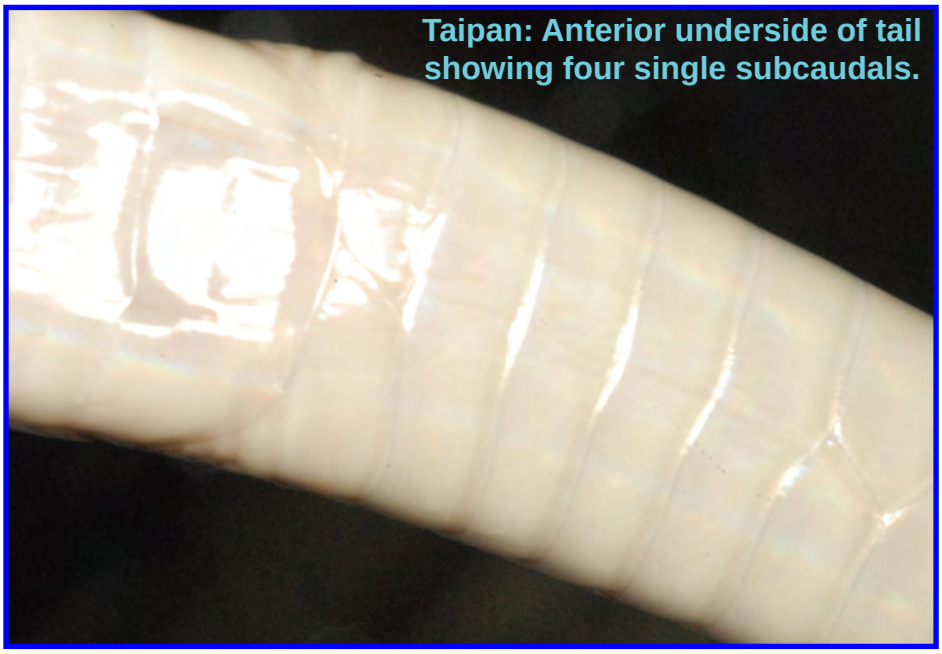
CONFLICT OF INTEREST

None.



Taipan: Anterior underside of tail showing four single subcaudals.

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New tribes, genera and species within the North-west African and Iberian Lacertidae.

LSIDURN:LSID:ZOOBANK.ORG:PUB:6E0C87F0-77AE-461E-B572-226E06A73D53

RAYMOND T. HOSER
LSIDurn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
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ABSTRACT

The purpose of this paper is to describe some obviously unnamed lizards from North-west Africa and the Iberian Peninsula.

Until now the putative species *Atlantolacerta andreanskyi* (Werner, 1929) of Morocco has been treated as monotypic for the genus by all publishing authors.

In spite of this, it has been known for the last decade that there are species-level divisions within the putative taxon (Barata *et al*. 2012, 2015, Harris *et al.* 2023).

This paper formally recognizes and names three divergent lineages as new species (thereby assigning names to the four main clades) and flags at least three more that should ultimately be formally named as new species.

Additionally, a new tribe Atlantolacertaini *tribe nov*. is created to accommodate the genus *Atlantolacerta* Arnold, Arribas and Carranza, 2007.

This action is taken due to its significant divergence, estimated at about 20 MYA from the rest of the nearest related members in the subfamily Lacertinae.

The genus *Psammodromus* Fitzinger, 1826 is split two ways, with the new genus *Anwarsadatus gen. nov.* erected to accommodate the divergent *Lacerta algira* Linnaeus, 1766 complex, with two species recognized herein, one formally named for the first time as *A. menachembegini sp. nov*..

A new tribe Anwarsadatini *tribe nov*. with *Anwarsadatus gen. nov.* as the type genus and also including *Psammodromus* Fitzinger, 1826 is erected to accommodate the two most divergent genera within the subfamily Gallotiinae.

Psammodromus microdactylus (Boettger, 1881) is formally split, with the divergent southern population named as a new species.

Psammodromus blanci (Lataste, 1880) is formally split with the population from Tunisia and far east Algeria formally named as a new species.

Psammodromus occidentalis Fitze, Gonzalez-Jimena, San-Jose, San Mauro and Zardoya, 2012 is split three ways, with two new species formally named for the first time.

The genus *Gallotia* Boulenger, 1920, type species *Lacerta galloti* Oudart in Webb and Berthelot, 1839 is split three ways with two highly divergent groups formally named as new genera being *Magnuscaput gen. nov*. and *Aquavariaparte gen. nov.*.

Keywords: Morocco; Tunisia; Algeria; Lizard; Lacertidae; *Atlantolacerta*; *Gallotia*; *Psammodromus*; *Lacerta*; Africa; *andreanskyi*; *algira*; *blanci*; *microdactylus*; *occidentalis*; *galloti*; *stehlini*; Atlas Dwarf Lizard; new tribe; Atlantolacertaini; Anwarsadatini; new genus; *Anwarsadatus*; *Magnuscaput*; *Aquavariaparte*; new species; *romani*; *maxinehoserae*; *lenhoseri*; *menachembegini*; *sahliatlatifa*; *tamaaltaghadieanha*; *comonosperdimoseste*; *unbuendescubrimiento*.

INTRODUCTION

It has now become an accepted mantra of scientists that undiscovered species of vertebrate must be sought out, formally described and named as soon as possible in order to avert a potential extinction catastrophe caused by the effects of human overpopulation.

There is absolutely no doubt at all that there is a serious human caused mass extinction of vertebrate species going on at the present time in the planet's history.

There are few places in the world, where this urgent need to describe potentially threatened forms is greater, than in the Muslim countries of north Africa, where human birth rates remain at historical highs.

With the benefits of oil money and modern technologies, populations have in the 20th century exploded in these countries.

According to
https://www.worldometers.info/world-population/morocco-population/
on 3 March 2025, the population stood at about 38,315,602, being up from 8,935,450 in 1950.

According to
https://www.worldometers.info/world-population/algeria-population/
Algeria on 3 March 2025 had a population of about 47,230,461, being up from up from 11.42 million in 1950.

According to
https://www.worldometers.info/world-population/tunisia-population/
Tunisia on 3 March 2025 had a population of about 12,325,056, being up from up from 3,682,100 in 1950.

In all three counties, the population had tripled in 75 years and was likely to triple again in each over the following 100 years.

In a finite system such as planet earth and north Africa in particular, infinite human population growth can only spell disaster in terms of other species inhabiting these lands.

The purpose of this paper is to describe obviously unnamed forms in Morocco, Algeria, Tunisia and the Iberian Peninsula in south-west Europe.

For completeness sake, I also mention the ongoing population increases (of people) on the Iberian Peninsula.

According to
https://www.worldometers.info/world-population/spain-population/
Spain's population was 28,077,049 in 1950 and on 3 March 2025 was 47,896,673, or almost double the number of 75 years earlier.

According to
https://www.worldometers.info/world-population/portugal-population/
Portugal's population was 8,418,877 in 1950 and on 3 March 2025 was 10,416,221, which is the best result of all the relevant countries, but still represents an enormous increase in number of people in a small country of just 92,152 square km area in total.

Compare this to say 227,444 km for the Australian State of Victoria, a densely populated southern state in Australia claiming 7 million people (over 5 million of these in the greater Melbourne city area), giving it just half the population pressure on the local wildlife (assuming all other things to be equal, which they obviously are not).

Victoria's population density is also far greater than any other Australian state.

Until now the putative Moroccan Lacertid lizard species *Atlantolacerta andreanskyi* (Werner, 1929) has been treated as monotypic for the genus by all publishing authors.

However, it has been known for at least the last decade that there are species-level divisions within the putative taxon (Barata *et al*. 2012, 2015, Harris *et al.* 2023).

With the entire species complex range restricted and endemic to Morocco and each species-level lineage even more restricted, it is important that each be formally named and managed as separate biological entities.

This paper formally recognizes and names three divergent lineages as new species and flags that there are at least three more that should ultimately be formally named as new species as spelt out explicitly in the paper of Harris *et al.* (2023).

Additionally, a new tribe Atlantolacertaini *tribe nov*. is created to accommodate the genus *Atlantolacerta* Arnold, Arribas and Carranza, 2007 based on divergences outlined by Pyron *et al.* (2013) and other more recent works.

More recent calibrated works have estimated a divergence of about 20 MYA from the rest of the nearest related members in the subfamily Lacertinae.

The genus *Psammodromus* Fitzinger, 1826 is split two ways, with the new genus *Anwarsadatus gen. nov.* erected to accommodate the divergent *Lacerta algira* Linnaeus, 1766 complex.

A new tribe Anwarsadatini *tribe nov*. with *Anwarsadatus gen. nov.* as the type genus and also including *Psammodromus* Fitzinger, 1826 is erected to accommodate the two most divergent genera within the subfamily Gallotiinae.

Psammodromus microdactylus (Boettger, 1881) is formally split, with the divergent southern population named as a new species. This taxon was flagged as a divergent species by Mendez *et al*. (2017) who claimed a 1.94 MYA divergence between the two forms.

Psammodromus blanci (Lataste, 1880) is formally split with the population from Tunisia and far east Algeria formally named as a new species.

This taxon was flagged as a divergent species by Mendez *et al*. (2017) who claimed a 3.56 MYA divergence between the two forms.

The genus *Gallotia* Boulenger, 1920, type species *Lacerta galloti* Oudart in Webb and Berthelot, 1839 of the Canary Islands is split three ways with two highly divergent groups formally named as new genera.

These are the *Lacerta galloti var. stehlini* Schenkel, 1901 group believed to have diverged from the others about 14.5 MYA and the *Lacerta atlantica* Peters and Doria, 1882 group believed to have diverged from the others about 10 MYA (See Cox *et al.* 2010 at Fig.3 at about 10 MYA or Mendez *et al.* 2017 who found a divergence of 8.66 MYA at their Fig3).

MATERIALS AND METHODS

Available specimens of all species within the putative genera *Atlantolacerta* Arnold, Arribas and Carranza, 2007, *Gallotia* Boulenger, 1920 and *Psammodromus* Fitzinger, 1826 were inspected as were quality photographs available online.

They were checked for morphological divergences and/or obvious biogeographical barriers separating the populations, including those flagged in papers such as those listed above and below.

Specimens inspected included dead and live specimens as well as images with good locality data.

Molecular studies involving species within the preceding genera and other similarly distributed reptiles and frogs from across north-west Africa's mountainous regions were also reviewed to flag likely speciation points for wider-ranging putative taxa.

Published references and taxonomic treatments relevant to the preceding three putative genera (*sensu lato*) being *Atlantolacerta* Arnold, Arribas and Carranza, 2007, *Gallotia* Boulenger, 1920 and *Psammodromus* Fitzinger, 1826 and the taxa within them and those relevant to the taxonomic and nomenclatural conclusions in this paper included Arnold (1973), Arnold *et al.* (2007), Bannert (1998), Barata *et al.* (2012, 2015), Bauer and Günther (1995), Bedriaga (1886), Bischoff (1982, 1984, 1985a-d, 2005, 2007), Bischoff and in den Bosch (1991), Bloor and Dávila (2008), Bloor *et al.* (2006, 2008), Boettger (1881, 1883), Böhme (2014), Böhme and Bings (1977), Boulenger (1887, 1889, 1891, 1916, 1920), Busack and Lawson (2006), Busack *et al*. (2006), Castro-Exposito *et al*. (2021), Carretero (2002), Civantos *et al*. (1999), Comas (2020), Corti and Cascio (2002), Cox *et al*. (2010), Crochet *et al*. (2004), Díaz *et al*. (2005), Doumergue (1901), Duméril and Bibron (1839), El Bouhissi *et al*. (2019), Fischer (1887), Fitze *et al.* (2012), Fitzinger (1826a-b), Geniez *et al*. (1993), González *et al*. (1996), Harris *et al*. (2023), Helmdag (1992a-b, 1993, 1995), Hernández *et al.* (2000), Hoser (2015g,

2025), in den Bosch (1986, 2005), Kramer (1979), Lataste (1880), Lehrs (1909), Linnaeus (1758), López-Jurado (1991), López-Jurado *et al.* (1995), Lutzmann and Hulbert (2002), Malkmus (1981), Martín and Lopez (1998), Martínez del Mármol *et al*. (2019), Mayer and Bischoff (1996), Mediani *et al*. (2015), Mellado and Dakki (1988), Mellado and Mateo (1992), Mendes *et al*. (2017), Mertens (1928), Molina-Borja (2003), Molina Borja and Rodriguez-Dominguez (2004), Peters and Doria (1882), Reguera *et al.* (2014), Rivero-Suárez *et al*. (2016), Rouag *et al*. (2024), Santos *et al.* (2024), Schäberle and Schäberle (2019), Schenkel (1901), Schleich *et al*. (1996), Schlüter (2003, 2004), Sindaco and Jeremcenko (2008), Steindachner (1891), Thorpe (1985), Valido and Nogales (2003), Verdú-Ricoy *et al*. (2010), Werner (1894, 1929, 1931, 1935), Zawadzki (2013), Zulueta (1909) and sources cited therein.

RESULTS

These have been summed up already in both abstract and introduction.

In effect the review of the literature combined with the associated review of available or unavailable synonym names, followed up with inspections of relevant taxon specimens, gave rise to the results already spelt out.

Species named herein are readily identified as new and distinct species based on the combination of molecular divergence estimated at more than 1.5 MYA, geographic allopatric populations with intervening areas of apparently unsuitable habitat and/or competing species as well as consistent morphological divergence allowing the easy identification of the newly named species and separation from the nearest relative.

The three species formally named, previously treated as *Atlantolacerta andreanskyi* (Werner, 1929) correspond to the green, purple and yellow clades identified in the paper of Harris *et al*. (2023), making the four main clades identified having formal names.

The study of Barata *et al.* (2015) found that the relevant lizards were divided into six genetically distinct lineages, which appeared to have diverged between 7.6 and 2.4 million years ago, making all species-level taxa (as in six separate species). Harris *et al.* (2023) found a seventh divergent lineage.

Psammodromus microdactylus (Boettger, 1881) is formally split, with the divergent southern population named as a new species.

This taxon was flagged as a divergent species by Mendez *et al*. (2017) who claimed a 1.94 MYA divergence between the two forms.

Significantly in his detailed paper, in den Bosch (2005) spelt out the differences between the southern and northern taxa, which he mistakenly treated as being of the same species.

The differences spelt out in that paper form the basis of the morphological diagnosis for the new species.

The type locality for *P. microdactylus* is "*prope urbes Casablanca, Tetuan, Tanger*". This is in the far north of Morocco, making the southern taxon that which needed to be named.

I am surprised that no one else has until now done what seems in hindsight obvious, and married the papers of in den Bosch (2005) with Mendez *et al*. (2017) to diagnose and name the southern species as new.

Psammodromus blanci (Lataste, 1880) is formally split with the population from Tunisia and far east Algeria formally named as a new species.

This taxon was flagged as a divergent species by Mendez *et al*. (2017) who claimed a 3.56 MYA divergence between the two forms.

The type locality for *P. blanci* is Algiers, Algeria, corresponding to the western form of the species.

As for the splitting of *P. microdactylus*, I am surprised that putative *P. blanci* had not been split earlier.

The genus *Psammodromus* Fitzinger, 1826 is split two ways, with the new genus *Anwarsadatus gen. nov.* erected to accommodate the divergent *Lacerta algira* Linnaeus, 1766 complex, with two species recognized herein, one formally named for the first time as *A. menachembegini sp. nov*..

In terms of this taxon from south-east Spain Verdú-Ricoy *et al*. (2010) correctly wrote:

"*the eastern lineage of P. algirus might represent a separate species*."

See also the phylogenetic results of Cox *et al*. (2010) at Fig. 3.

Mendez *et al.* (2017) shows a 12.9 MYA divergence between the groups *Psammodromus* Fitzinger, 1826 and *Anwarsadatus gen. nov.*.

A new tribe Anwarsadatini *tribe nov*. with *Anwarsadatus gen. nov.* as the type genus and also including *Psammodromus* Fitzinger, 1826 is erected to accommodate the two most divergent genera within the subfamily Gallotiinae.

As mentioned above, *Psammodromus microdactylus* (Boettger, 1881) is formally split, with the divergent southern population named as a new species.

Also as mentioned above, *Psammodromus blanci* (Lataste, 1880) is formally split with the population from Tunisia and far east Algeria formally named as a new species.

Psammodromus occidentalis Fitze, Gonzalez-Jimena, San-Jose, San Mauro and Zardoya, 2012 is split three ways, with two new species formally named for the first time, one with a divergence in excess of 2 MYA from nearest relatives and the other at over 3 MYA.

The genus *Gallotia* Boulenger, 1920, type species *Lacerta galloti* Oudart in Webb and Berthelot, 1839 of the Canary Islands is split three ways with two highly divergent groups formally named as new genera.

These are the *Lacerta galloti var. stehlini* Schenkel, 1901 group believed to have diverged from the others about 14.5 MYA and the *Lacerta atlantica* Peters and Doria, 1882 group believed to have diverged from the others about 10 MYA (See Cox *et al.* 2010 at Fig.3).

A new tribe Atlantolacertaini *tribe nov*. is herein created to accommodate the genus *Atlantolacerta* Arnold, Arribas and Carranza, 2007 based on divergences outlined by Pyron *et al.* (2013) and other more recent works, estimated as being in excess of 20 MYA.

As already stated, the genus *Psammodromus* Fitzinger, 1826 is split two ways, with the new genus *Anwarsadatus gen. nov.* erected to accommodate the divergent *Lacerta algira* Linnaeus, 1766 complex.

A new tribe Anwarsadatini *tribe nov*. with *Anwarsadatus gen. nov.* as the type genus and also including *Psammodromus* Fitzinger, 1826 is erected to accommodate the two most divergent genera within the subfamily Gallotiinae and with a divergence estimated at about 20 MYA from *Gallotia* Boulenger, 1920 and associated genera formally named herein.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

There is no conflict of interest in terms of this paper, or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked as are relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal descriptions, spelling of names should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature (Ride *et al.* 1999 and ICZN 2012).

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 3 March 2025, unless otherwise stated and were accurate in terms of the context cited herein as of that date.

Unless otherwise stated explicitly, colour descriptions apply to living adult male specimens of generally good health and not under any form of stress by means such as excessive cool, heat, dehydration, excessive aging or abnormal skin reaction to chemical or other input.

Note that there is ordinarily some sexual dimorphism between

adults of species within the relevant genera.
References to tails are of original ones unless otherwise stated.
While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant species has already been spelt out and/or is done so within each formal description and does not rely on material within publications not explicitly cited herein.
In the unlikely event any "first reviser" seeks to merge two or more newly named taxa into one, then the name to be retained is that which is first by page priority as listed in the abstract keywords.
Some material within descriptions is repeated to ensure each fully complies with the *International Code of Zoological Nomenclature* (Ride *et al*. 1999) and the 2012 amendments (ICZN 2012).
The "version of record" is the printed version and not pdf version. Both are identical in all materially relevant ways except for the fact that the images in the printed version may be in black and white, as opposed to colour as seen in the pdf version.
The people who assisted with provision of photos and other materials used within this paper are also thanked for their assistances, for which they sought nothing in return.

CONSERVATION

Human overpopulation and its consequences are without doubt the greatest long-term threat to the relevant species as outlined in Hoser (1989, 1991, 1993 and 1996). Delays in recognition of these species could jeopardise the long-term survival of the taxa as outlined by Hoser (2019a, 2019b) and sources cited therein.
Some of these species are range restricted at high altitude locations (and more so than previously thought as there are more micro-endemic taxa involved) and therefore they are at particularly high risk of decline through global warming, even in the event of no obvious direct human impacts on the species.
Therefore attempts by taxonomic vandals, paedophiles, serial rapists, animal abusers and wildlife traffickers like the members of the Adam Britton and Wolfgang Wüster gang via Kaiser (2012a, 2012b, 2013, 2014a, 2014b) and Kaiser *et al.* (2013) (as frequently amended and embellished, e.g. Rhodin *et al.* 2015, Naish 2013, as regularly altered and amended, Thiele *et al.* 2020, Hammer and Thiele 2021, Wüster *et al*. 2021, Foley and Rutter 2020) to unlawfully suppress the recognition of these taxa on the basis they have a personal dislike for the person who formally named it/them should be resisted (e.g. Ceriaco *et al*. 2023, Cogger 2014, Dubois *et al*. 2019, Hoser 2001a, Mosyakin 2022, Wellington 2015, ICZN 2021).
Claims by the Wüster gang against this paper and the descriptions herein will no doubt be no different to those the gang have made previously, including for instance against Wells and Wellington (1984, 1985), (see for example Shine 1987, Shea 1987, Shea and Sadlier 1999), all of which were discredited long ago as outlined by Ceraico *et al*. (2023), Cogger (2014), Cotton (2014), Dubois *et al*. (2019), Hawkeswood (2021), Hołyński (1994, 2020), Hoser, (2001, 2007, 2009, 2012a-b, 2012d, 2013, 2015a-f, 2019a-b, 2020a-b, 2021a-b, 2023, 2024a-b), ICZN (1991, 2001, 2021), Jiménez-Mejías *et al*. (2024), Kok (2023), Mosyakin (2022), Pethigayoda (2023), Wellington (2015), Winkler (2024), Zheng and Gold (2020) and sources cited therein.
Attempts to engage in acts of scientific fraud to try to rename any of these newly named taxa should be exposed and dealt with appropriately, as was done with David Williams, when in 2001 he attempted to rename and/or claim name authority for the species *Pailsus rossignolii* Hoser, 2000 (see Hoser 2000a).
He did this in the first instance in 2001, by altering versions of his online "paper" (as seen in Williams and Starkey 1999a, 1999b and 1999c), all of which were different and changed versions of a single paper originally published in the first form in 1999, claiming (without any evidence) to refute the existence of the species *Pailsus pailsei* Hoser, 1998 (see Hoser 2001a for details).
Claims by Shea and Sadlier (1999) and similar elsewhere by the Wüster gang to the effect that earlier published names are unavailable for zoological nomenclature are patently false and the making of these false claims is seriously counter to wildlife conservation (Hoser, 2007, Ceriaco *et al*. 2023, Cogger 2014, Cotton 2014, and so on).
Significantly, in terms of the relevant taxa, there are for most species are very few or alternatively no voucher specimens in museums around the world.
This seriously hampers ongoing and future research.
Noting that all relevant species appear to be locally abundant in their main areas of habitation (at the present time at least), it would be prudent for one or more targeted expeditions to be mounted to secure numbers of specimens of all candidate putative species for museums, collected judiciously and without causing significant long-term damage to currently viable and healthy populations.
I note that limited take from wild for captive breeding in Europe has not adversely impacted populations to date.
In recent years (the post 2000 period being the relevant time), the Moroccan authorities have been quite amenable to scientific take of specimens from their jurisdiction thereby assisting with conservation and research, with Morocco being the epicentre for many of the taxa discussed in this paper.
The desperate need for more voucher specimens of relevant taxa has also been stated recently by Santos *et al*. (2024).
Santos *et al*. (2024) noted for example a total of just 37 putative *Psammodromus occidentalis* in the four major natural history collections of Portugal.
Vert net (at: http://portal.vertnet.org/search) showed none in their entire database on 3 March 2025).
There were just 4950 reptile specimens (of all kinds) across all four major national museum facilities in Portugal.
The situation for the National collection in Morocco is particularly dire, with for example no *Atlantolacerta* held there at all!
The curators at these places all agreed that the lack of voucher specimens could hamper conservation efforts in future years.
Of course, the need for voucher specimens also depends on curatorial staff at these facilities not swapping holotype specimens and engaging in other unlawful conduct as recently exposed involving senior staff at the previously esteemed Australian Museum in Sydney (Hoser, 2025).

ATLANTOLACERTA ROMANI SP. NOV.

LSIDurn:lsid:zoobank.org:act:0B5BE184-3194-4D23-8BB7-998AA97590BC

Holotype: A preserved male specimen at the Reptiles and Amphibians collection (RA) of the Muséum national d'Histoire Naturelle, Paris, France, specimen number MNHN RA 1939.156 collected in 1938 from Djebel Targuedit, Morocco, (Eastern High Atlas Mountains) at 3,500 metres ASL.
This government-owned facility allows access to its holdings.
Diagnosis: Until now *Atlantolacerta andreanskyi* (Werner, 1929) has been treated by all publishing authors as a single species occupying the High Atlas Mountains of Morocco, Africa.
With the molecular data of (Barata *et al*. 2012, 2015, Harris *et al.* 2023) all showing deep divergences between proximal but separated populations, it is not tenable to treat all as a single species.
While it is reasonable to infer at least seven species are included within putative *A. andreanskyi*, within this paper and herein, four species are recognized and identified, thereby assigning names to the four main clades.
These are the nominate form of *Atlantolacerta andreanskyi* (Werner, 1929), with a type locality of "*Tachdirt, Grand Atlas, 2500 m*" in Morocco. It is located about 4 km south of Oukaimeden and 10 km north of Jbel Toubkal, with this species known to occupy this entire area where suitable habitat exists.
Atlantolacerta romani sp. nov. is the species that occurs in the area generally near Djebel Targuedit, Morocco on the north-east part of the High Atlas Mountains.
Atlantolacerta lenhoseri sp. nov. is the species that occurs around and south of Jbel Awlime at the southern end of the High Atlas Mountains.

Atlantolacerta maxinehoserae sp. nov. is known from the type locality of Jbel Ayache, south-east to Outabati in the east High Atlas Mountains.

The three species and *Atlantolacerta andreanskyi* are separated from one another by the following unique combinations of characters:

For *Atlantolacerta romani sp. nov.* adult males are generally a light chocolate brown colour all over top and flanks, with tiny scattered semi-distinct black spots, slightly more prominent dorsally and slightly more numerous along the vertebral line.

There is no dark line of any sort from snout, through eye and continuing along the flank and tail.

There are a few widely scattered small spots on the top or sides of the head.

The rectangular ventral plates on the body and anterior tail are white, each with a large oval shaped black spot within. Those under the chin and neck are not marked this way. Posterior (ventral) chin shields have tiny black dots only, while those of the neck (underside) are mainly all white.

On the anterior part of the (original) tail the underside has white scales, each with prominent black spots at the anterior edge.

Upper surfaces of limbs are brown with irregularly shaped black spots.

Although there is a large black dot on the anal plate, it is no larger than other large spots proximal to it and therefore it is not prominent as seen in some other species.

The undersides of the hind limbs at the proximal parts have a series of raised scales with orange keels forming lines along the ventral edge, which contrast sharply with the otherwise mainly white adjoining plates.

Tiny black spots are only on some of the rear upper labials, most being white only.

Atlantolacerta lenhoseri sp. nov. adult males are a light brown colour all over top, with a single row of black spots running down the vertebral line, commencing posterior to the pelvic girdle and continuing onto the anterior part of the original tail, where the spots merge to form a proper line. At this point the colouration is dark brown, rather than black.

There are no paravertebral spots or lines.

There is a well-defined chocolate brown line running from snout, through eye and across the top half of the ear opening, completely above the axilla of the front leg and along the upper flank and onto the anterior part of the (original) tail, whereupon it becomes lighter in colour and thinner in diameter.

From behind the eye to the hind leg, the lower edge is bound by a thin and well-defined creamy white line, which is also distinct on the lower edge where the colour below is a very different greyish white.

Behind the ear and along the body is a similar, but slightly thinner yellow-white line on the upper edge of the upper flank band, forming a dorsolateral line on that edge.

This line ends near but before the pelvic girdle.

At the anterior end, the tail has a thin dark brown stripe along the vertical edge and slightly thicker ones along each side.

Otherwise, the colour is a light brownish beige colour.

The upper surface of the head is brown with a small number of scattered and well-defined black spots.

Upper labials are white, with most having small irregularly shaped black spots.

Upper surfaces of the limbs are light brown with dark pigment forming one or two dark stripes running longwise down the proximal part of the limb.

Ventrally, there is a general absence of spotting in or on any of the scales on the body belly.

Posteriorly only, some scales have scattered black spots on the edge, these being confined to the area along the edge of the two middle scale rows (taken as running longitudinally down the body).

On the lower body of the belly, lower surfaces of the hind limbs and underneath the anterior of the tail, there is a strong yellow colour of the scales.

This starts as a sort of wash through the posterior part of the belly on the middle scales and intensifies anterior to the anal plate. The colour is strongly yellow distally from the anterior plate on the underside of the tail and also under the hind limbs.

There is a single large black dot on the anal plate.

Atlantolacerta maxinehoserae sp. nov. is similar in most respects to *A. romani sp. nov.* as just described above, but is separated from that taxon by the fact that in females there is no vertebral line, there is a light line on the dorsolateral edge and there are few if any obvious spots on the upper surfaces of the head, versus an intense spotted pattern dorsally, laterally and ventrally, continuous or discontinuous bright dorsolateral lines and intense spotting on the anal plate in *A. romani sp. nov.*.

Atlantolacerta andreanskyi males are generally a greyish to slightly brown colour all over the upper surfaces, with three rows of spots running down the dorsum, one on the vertebral line and the other two (uneven in nature), running down either side of the vertebral line but not on the dorsolateral edge (paravertebral arrangement).

This spotting is not on each scale (in series) and the spotting is of irregular shape as well.

The upper flank (slightly more than the top half) is dark brown, being a continuation of a stripe that starts at the snout, runs to the eye (this part is narrow and poorly defined), beyond which it is wide, runs over the top half of the ear opening, completely above the axilla of the front leg and along the upper flank and onto the anterior part of the (original) tail, whereupon it fades rapidly, making the tail a generally light greyish colour.

Below and above, this brown stripe on the upper flank is bounded by semi distinct whitish colour, but not in the form of a well-defined line, but rather as a rapid lightening of nearby scales.

Scattered black spots on the upper surfaces of the head are poorly defined, but those on the creamish white upper labials are on all labials and well defined.

Upper surfaces of the limbs are dark brown with poorly defined black spotting, while the lower surfaces are whitish with prominent and well-defined black markings comprised of black spots, often joined, forming a bar-like arrangement.

Ventrally, the middle two rows of plates are mainly unspotted, as in no well-defined black spots in the middle of each scale. Some scales may have small, irregularly positioned and dull black or dark brown spotting.

In each row to the sides of the mid two rows (being the only other fully ventral plates on the body) each scale has a small, ill-defined brownish spot, usually irregularly placed, but generally near the outer edge.

Under the anterior tail, some, but not all plates have ill-defined dark spots or blotches, being irregular in shape and position.

Under the chin and neck, the plates are generally immaculate white, except for a row across the chest, slightly anterior to the front limbs and behind the lower neck fold.

Each or most of these scales has a series of small, moderately well-defined, irregularly shaped black markings (spots of sorts, being one per scale) more or less in the centre of each scale.

The large plates under the anterior and anterior sides of the chin are not immaculate white, but rather also have poorly defined small black spots or marks on the prominent edges of each scale.

The four described species of *Atlantolacerta* Arnold, Arribas and Carranza, 2007 are separated from other members of the *Eremiadini* within the family Lacertidae by the following unique combination of characters:

Lacking a derived condition of the ulnar nerve, an armature and folded lobes in the hemipenis and from all other species except those in the genus *Omanosaura* Lutz, Bischoff and Mayer, 1986 in possessing a clavicle loop that is sometimes interrupted behind, and A and B-type caudal vertebrae. Other features that in combination help to distinguish *Atlantolacerta* from other genera of Eremiadini and of Lacertini include the following characters: Small body size, often high numbers of presacral vertebrae (26-

28 in males, 29 in females), sternal fontanelle sometimes weakly heart-shaped, edge of parietal scale reaching lateral border of parietal table both posteriorly and anteriorly, one postnasal scale, supranasal scale contacting anterior loreal above the nostril; narrow light supraciliary stripes often present; no blue spots on outer ventral scales; outer sulcal lips on lobes of hemipenis are large. Other more widely distributed features in Eremiadini and Lacertini include: Head and body not strongly depressed and supraocular osteoderms complete in adults, seven premaxillary teeth in adults, inscriptional ribs often present, tail brightly coloured in hatchlings, hemipenial microornamentation includes hook-shaped spines (derived from Arnold *et al.* 2007).
Atlantolacerta andreanskyi is depicted in life online at:
https://en.wikipedia.org/wiki/Atlas_dwarf_lizard#/media/File:Atlantolacerta_andreanskyi.jpg
and
https://www.flickr.com/photos/alberto_herpetology/28660787022/
and
https://www.flickr.com/photos/alberto_herpetology/28688785871/
and
https://www.flickr.com/photos/alberto_herpetology/28660787642/
and
http://www.moroccoherps.com/en/ficha/atlantolacerta_andreanskyi/
and
https://www.inaturalist.org/observations/200325797
and
https://www.inaturalist.org/observations/253862641
and
https://www.inaturalist.org/observations/253862693
Atlantolacerta romani sp. nov. is depicted in life in Harris *et al.* (2023) on page 133 in Fig 3 a and b.
Atlantolacerta lenhoseri sp. nov. is depicted in life in Harris *et al.* (2023) on page 133 in Fig 3 c and d.
Distribution: *Atlantolacerta romani sp. nov.* is the species that occurs in the area generally near Djebel Targuedit, Morocco on the north-east part of the High Atlas Mountains.
However, until further work is done on the genus, this species should be taken as including all morphologically and genetically similar populations that occur in an area bounded by Toumliline in the north-east, Jbel Azourki in the north-west, Tizi n'Tichka in the south-west and Lake Tamda in the south-east.
Etymology: *Atlantolacerta romani sp. nov.* is named in honour of our family's Great Dane dog, aged about 20 months as of Feb 2025, named "Roman" in honour Roman Hulimka, a man who made a significant contribution to herpetology (who has a genus of elapid Australian snakes named in his honour, *Hulimkai* Hoser, 2012).
The dog "Roman" provides a valuable service in that he protects our research facility from thieves.

ATLANTOLACERTA MAXINEHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:40C83E2A-C17F-4AD3-8B6F-A4C315781D8A

Holotype: A preserved male specimen at the Reptiles and Amphibians collection (RA) of the Muséum national d'Histoire Naturelle, Paris, France, specimen number MNHN RA 1939.155 collected in 1938 from Djebel Ayachi, Morocco, Latitude 32.4778 N., Longitude 4.9269 W., (Eastern High Atlas Mountains) at an altitude of between 3600 and 3800 metres above sea level.
This government-owned facility allows access to its holdings.
Diagnosis: Until now *Atlantolacerta andreanskyi* (Werner, 1929) has been treated by all publishing authors as a single species occupying the High Atlas Mountains of Morocco, Africa.
With the molecular data of (Barata *et al*. 2012, 2015, Harris *et al.* 2023) all showing deep divergences between proximal but separated populations, it is not tenable to treat all as a single species.
While it is reasonable to infer at least seven species included within putative *A. andreanskyi*, within this paper and herein, four species are recognized and identified, thereby assigning names to the four main clades.
These are the nominate form of *Atlantolacerta andreanskyi* (Werner, 1929), with a type locality of "*Tachdirt, Grand Atlas, 2500 m*" in Morocco. It is located about 4 km south of Oukaimeden and 10 km north of Jbel Toubkal, with this species known to occupy this entire area where suitable habitat exists.
Atlantolacerta romani sp. nov. is the species that occurs in the area generally near Djebel Targuedit, Morocco on the north-east part of the High Atlas Mountains.
Atlantolacerta lenhoseri sp. nov. is the species that occurs around and south of Jbel Awlime at the southern end of the High Atlas Mountains.
Atlantolacerta maxinehoserae sp. nov. is known from the type locality of Jbel Ayache, south-east to Outabati in the east High Atlas Mountains.
The three species and *Atlantolacerta andreanskyi* are separated from one another by the following unique combinations of characters:
For *Atlantolacerta romani sp. nov.* adult males are generally a light chocolate brown colour all over top and flanks, with tiny scattered semi-distinct black spots, slightly more prominent dorsally and slightly more numerous along the vertebral line.
There is no dark line of any sort from snout, through eye and continuing along the flank and tail.
There are a few widely scattered small spots on the top or sides of the head.
The rectangular ventral plates on the body and anterior tail are white, each with a large oval shaped black spot within. Those under the chin and neck are not marked this way. Posterior (ventral) chin shields have tiny black dots only, while those of the neck (underside) are mainly all white.
On the anterior part of the (original) tail the underside has white scales, each with prominent black spots at the anterior edge.
Upper surfaces of limbs are brown with irregularly shaped black spots.
Although there is a large black dot on the anal plate, it is no larger than other large spots proximal to it and therefore it is not prominent as seen in some other species.
The undersides of the hind limbs at the proximal parts have a series of raised scales with orange keels forming lines along the ventral edge, which contrast sharply with the otherwise mainly white adjoining plates.
Tiny black spots are only on some of the rear upper labials, most being white only.
Atlantolacerta lenhoseri sp. nov. adult males are a light brown colour all over top, with a single row of black spots running down the vertebral line, commencing posterior to the pelvic girdle and continuing onto the anterior part of the original tail, where the spots merge to form a proper line. At this point the colouration is dark brown, rather than black.
There are no paravertebral spots or lines.
There is a well-defined chocolate brown line running from snout, through eye and across the top half of the ear opening, completely above the axilla of the front leg and along the upper flank and onto the anterior part of the (original) tail, whereupon it becomes lighter in colour and thinner in diameter.
From behind the eye to the hind leg, the lower edge is bound by a thin and well-defined creamy white line, which is also distinct on the lower edge where the colour below is a very different greyish white.
Behind the ear and along the body is a similar, but slightly thinner yellow-white line on the upper edge of the upper flank band, forming a dorsolateral line on that edge.
This line ends near but before the pelvic girdle.
At the anterior end, the tail has a thin dark brown stripe along the vertical edge and slightly thicker ones along each side.
Otherwise, the colour is a light brownish beige colour.
The upper surface of the head is brown with a small number of scattered and well-defined black spots.
Upper labials are white, with most having small irregularly shaped black spots.
Upper surfaces of the limbs are light brown with dark pigment

forming one or two dark stripes running longwise down the proximal part of the limb.
Ventrally, there is a general absence of spotting in or on any of the scales on the body belly.
Posteriorly only, some scales have scattered black spots on the edge, these being confined to the area along the edge of the two middle scale rows (taken as running longitudinally down the body).
On the lower body of the belly, lower surfaces of the hind limbs and underneath the anterior of the tail, there is a strong yellow colour of the scales.
This starts as a sort of wash through the posterior part of the belly on the middle scales and intensifies anterior to the anal plate. The colour is strongly yellow distally from the anterior plate on the underside of the tail and also under the hind limbs.
There is a single large black dot on the anal plate.
Atlantolacerta maxinehoserae sp. nov. is similar in most respects to *A. romani sp. nov.* as just described above, but is separated from that taxon by the fact that in females there is no vertebral line, there is a light line on the dorsolateral edge and there are few if any obvious spots on the upper surfaces of the head, versus an intense spotted pattern dorsally, laterally and ventrally, continuous or discontinuous bright dorsolateral lines and intense spotting on the anal plate in *A. romani sp. nov.*.
Atlantolacerta andreanskyi males are generally a greyish to slightly brown colour all over the upper surfaces, with three rows of spots running down the dorsum, one on the vertebral line and the other two (uneven in nature), running down either side of the vertebral line but not on the dorsolateral edge (paravertebral arrangement).
This spotting is not on each scale (in series) and the spotting is of irregular shape as well.
The upper flank (slightly more than the top half) is dark brown, being a continuation of a stripe that starts at the snout, runs to the eye (this part is narrow and poorly defined), beyond which it is wide, runs over the top half of the ear opening, completely above the axilla of the front leg and along the upper flank and onto the anterior part of the (original) tail, whereupon it fades rapidly, making the tail a generally light greyish colour.
Below and above, this brown stripe on the upper flank is bounded by semi distinct whitish colour, but not in the form of a well-defined line, but rather as a rapid lightening of nearby scales.
Scattered black spots on the upper surfaces of the head are poorly defined, but those on the creamish white upper labials are on all labials and well defined.
Upper surfaces of the limbs are dark brown with poorly defined black spotting, while the lower surfaces are whitish with prominent and well-defined black markings comprised of black spots, often joined, forming a bar-like arrangement.
Ventrally, the middle two rows of plates are mainly unspotted, as in no well-defined black spots in the middle of each scale. Some scales may have small, irregularly positioned and dull black or dark brown spotting.
In each row to the sides of the mid two rows (being the only other fully ventral plates on the body) each scale has a small, ill-defined brownish spot, usually irregularly placed, but generally near the outer edge.
Under the anterior tail, some, but not all plates have ill-defined dark spots or blotches, being irregular in shape and position.
Under the chin and neck, the plates are generally immaculate white, except for a row across the chest, slightly anterior to the front limbs and behind the lower neck fold.
Each or most of these scales has a series of small, moderately well-defined, irregularly shaped black markings (spots of sorts, being one per scale) more or less in the centre of each scale.
The large plates under the anterior and anterior sides of the chin are not immaculate white, but rather also have poorly defined small black spots or marks on the prominent edges of each scale.
The four described species of *Atlantolacerta* Arnold, Arribas and Carranza, 2007 are separated from other members of the *Eremiadini* within the family Lacertidae by the following unique combination of characters:
Lacking a derived condition of the ulnar nerve, an armature and folded lobes in the hemipenis and from all other species except those in the genus *Omanosaura* Lutz, Bischoff and Mayer, 1986 in possessing a clavicle loop that is sometimes interrupted behind, and A and B-type caudal vertebrae. Other features that in combination help to distinguish *Atlantolacerta* from other genera of Eremiadini and of Lacertini include the following characters: Small body size, often high numbers of presacral vertebrae (26-28 in males, 29 in females), sternal fontanelle sometimes weakly heart-shaped, edge of parietal scale reaching lateral border of parietal table both posteriorly and anteriorly, one postnasal scale, supranasal scale contacting anterior loreal above the nostril; narrow light supraciliary stripes often present; no blue spots on outer ventral scales; outer sulcal lips on lobes of hemipenis are large. Other more widely distributed features in Eremiadini and Lacertini include: Head and body not strongly depressed and supraocular osteoderms complete in adults, seven premaxillary teeth in adults, inscriptional ribs often present, tail brightly coloured in hatchlings, hemipenial microornamentation includes hook-shaped spines (derived from Arnold *et al*. 2007).
Atlantolacerta andreanskyi is depicted in life online at:
https://en.wikipedia.org/wiki/Atlas_dwarf_lizard#/media/File:Atlantolacerta_andreanskyi.jpg
and
https://www.flickr.com/photos/alberto_herpetology/28660787022/
and
https://www.flickr.com/photos/alberto_herpetology/28688785871/
and
https://www.flickr.com/photos/alberto_herpetology/28660787642/
and
http://www.moroccoherps.com/en/ficha/atlantolacerta_andreanskyi/
and
https://www.inaturalist.org/observations/200325797
and
https://www.inaturalist.org/observations/253862641
and
https://www.inaturalist.org/observations/253862693
Atlantolacerta romani sp. nov. is depicted in life in Harris *et al.* (2023) on page 133 in Fig 3 a and b.
Atlantolacerta lenhoseri sp. nov. is depicted in life in Harris *et al.* (2023) on page 133 in Fig 3 c and d.
Distribution: *Atlantolacerta maxinehoserae sp. nov.* is the species that occurs in the area generally near Djebel Ayachi, Morocco, Latitude 32.4778 N., Longitude 4.9269 W, (Eastern High Atlas Mountains) at an altitude of between 3600 and 3800 metres above sea level southwest to about Outabati in the east High Atlas Mountains.
Etymology: *Atlantolacerta maxinehoserae sp. nov.* is named in honour my cousin Maxine Hoser, originally of Margate, United Kingdom, but who has spent the past two decades in Israel, in recognition of her contributions to herpetology in the 1960's. More recently in 2024, her home, 3 km south of the Lebanese border was obliterated by a missile fired by Hezbollah terrorists. Fortunately, she was out shopping when the missile hit. People she knew were also murdered in the 7 October 2023 terrorist attack on Israel, by Hamas terrorists who attacked from the Gaza strip and killed over 1,000 Israeli and foreign citizens. Terrorism, practiced by non-State and State actors alike is something that simply should not be tolerated!
ATLANTOLACERTA LENHOSERI SP. NOV.
LSIDurn:lsid:zoobank.org:act:7933ECC0-94F2-4D0D-A5EF-01475C318A02
Holotype: The live male specimen depicted in the image in Harris *et al.* (2023) on page 133 in Fig 3 c and d.
It was collected from Jbel Awlime (AKA Jbel Aoulime), Morocco, Latitude 30.8197 N., Longitude 8.8036 W. at the southern end of the High Atlas Mountains.

As far as is known, no natural history museums have any vouchers of this species.

Diagnosis: Until now *Atlantolacerta andreanskyi* (Werner, 1929) has been treated by all publishing authors as a single species occupying the High Atlas Mountains of Morocco, Africa.

With the molecular data of (Barata *et al*. 2012, 2015, Harris *et al.* 2023) all showing deep divergences between proximal but separated populations, it is not tenable to treat all as a single species.

While it is reasonable to infer at least seven species included within putative *A. andreanskyi*, within this paper and herein, four species are recognized and identified, thereby assigning names to the four main clades.

These are the nominate form of *Atlantolacerta andreanskyi* (Werner, 1929), with a type locality of "*Tachdirt, Grand Atlas, 2500 m*" in Morocco. It is located about 4 km south of Oukaimeden and 10 km north of Jbel Toubkal, with this species known to occupy this entire area where suitable habitat exists.

Atlantolacerta romani sp. nov. is the species that occurs in the area generally near Djebel Targuedit, Morocco on the north-east part of the High Atlas Mountains.

Atlantolacerta lenhoseri sp. nov. is the species that occurs around and south of Jbel Awlime at the southern end of the High Atlas Mountains.

Atlantolacerta maxinehoserae sp. nov. is known from the type locality of Jbel Ayache, south-east to Outabati in the east High Atlas Mountains.

The three species and *Atlantolacerta andreanskyi* are separated from one another by the following unique combinations of characters:

For *Atlantolacerta romani sp. nov.* adult males are generally a light chocolate brown colour all over top and flanks, with tiny scattered semi-distinct black spots, slightly more prominent dorsally and slightly more numerous along the vertebral line.

There is no dark line of any sort from snout, through eye and continuing along the flank and tail.

There are a few widely scattered small spots on the top or sides of the head.

The rectangular ventral plates on the body and anterior tail are white, each with a large oval shaped black spot within. Those under the chin and neck are not marked this way. Posterior (ventral) chin shields have tiny black dots only, while those of the neck (underside) are mainly all white.

On the anterior part of the (original) tail the underside has white scales, each with prominent black spots at the anterior edge.

Upper surfaces of limbs are brown with irregularly shaped black spots.

Although there is a large black dot on the anal plate, it is no larger than other large spots proximal to it and therefore it is not prominent as seen in some other species.

The undersides of the hind limbs at the proximal parts have a series of raised scales with orange keels forming lines along the ventral edge, which contrast sharply with the otherwise mainly white adjoining plates.

Tiny black spots are only on some of the rear upper labials, most being white only.

Atlantolacerta lenhoseri sp. nov. adult males are a light brown colour all over top, with a single row of black spots running down the vertebral line, commencing posterior to the pelvic girdle and continuing onto the anterior part of the original tail, where the spots merge to form a proper line. At this point the colouration is dark brown, rather than black.

There are no paravertebral spots or lines.

There is a well-defined chocolate brown line running from snout, through eye and across the top half of the ear opening, completely above the axilla of the front leg and along the upper flank and onto the anterior part of the (original) tail, whereupon it becomes lighter in colour and thinner in diameter.

From behind the eye to the hind leg, the lower edge is bound by a thin and well-defined creamy white line, which is also distinct on the lower edge where the colour below is a very different greyish white.

Behind the ear and along the body is a similar, but slightly thinner yellow-white line on the upper edge of the upper flank band, forming a dorsolateral line on that edge.

This line ends near but before the pelvic girdle.

At the anterior end, the tail has a thin dark brown stripe along the vertical edge and slightly thicker ones along each side.

Otherwise, the colour is a light brownish beige colour.

The upper surface of the head is brown with a small number of scattered and well-defined black spots.

Upper labials are white, with most having small irregularly shaped black spots.

Upper surfaces of the limbs are light brown with dark pigment forming one or two dark stripes running longwise down the proximal part of the limb.

Ventrally, there is a general absence of spotting in or on any of the scales on the body belly.

Posteriorly only, some scales have scattered black spots on the edge, these being confined to the area along the edge of the two middle scale rows (taken as running longitudinally down the body).

On the lower body of the belly, lower surfaces of the hind limbs and underneath the anterior of the tail, there is a strong yellow colour of the scales.

This starts as a sort of wash through the posterior part of the belly on the middle scales and intensifies anterior to the anal plate. The colour is strongly yellow distally from the anterior plate on the underside of the tail and also under the hind limbs.

There is a single large black dot on the anal plate.

Atlantolacerta maxinehoserae sp. nov. is similar in most respects to *A. romani sp. nov.* as just described above, but is separated from that taxon by the fact that in females there is no vertebral line, there is a light line on the dorsolateral edge and there are few if any obvious spots on the upper surfaces of the head, versus an intense spotted pattern dorsally, laterally and ventrally, continuous or discontinuous bright dorsolateral lines and intense spotting on the anal plate in *A. romani sp. nov.*.

Atlantolacerta andreanskyi males are generally a greyish to slightly brown colour all over the upper surfaces, with three rows of spots running down the dorsum, one on the vertebral line and the other two (uneven in nature), running down either side of the vertebral line but not on the dorsolateral edge (paravertebral arrangement).

This spotting is not on each scale (in series) and the spotting is of irregular shape as well.

The upper flank (slightly more than the top half) is dark brown, being a continuation of a stripe that starts at the snout, runs to the eye (this part is narrow and poorly defined), beyond which it is wide, runs over the top half of the ear opening, completely above the axilla of the front leg and along the upper flank and onto the anterior part of the (original) tail, whereupon it fades rapidly, making the tail a generally light greyish colour.

Below and above, this brown stripe on the upper flank is bounded by semi distinct whitish colour, but not in the form of a well-defined line, but rather as a rapid lightening of nearby scales.

Scattered black spots on the upper surfaces of the head are poorly defined, but those on the creamish white upper labials are on all labials and well defined.

Upper surfaces of the limbs are dark brown with poorly defined black spotting, while the lower surfaces are whitish with prominent and well-defined black markings comprised of black spots, often joined, forming a bar-like arrangement.

Ventrally, the middle two rows of plates are mainly unspotted, as in no well-defined black spots in the middle of each scale. Some scales may have small, irregularly positioned and dull black or dark brown spotting.

In each row to the sides of the mid two rows (being the only other fully ventral plates on the body) each scale has a small, ill-defined brownish spot, usually irregularly placed, but generally near the outer edge.

Under the anterior tail, some, but not all plates have ill-defined dark spots or blotches, being irregular in shape and position. Under the chin and neck, the plates are generally immaculate white, except for a row across the chest, slightly anterior to the front limbs and behind the lower neck fold.
Each or most of these scales has a series of small, moderately well-defined, irregularly shaped black markings (spots of sorts, being one per scale) more or less in the centre of each scale. The large plates under the anterior and anterior sides of the chin are not immaculate white, but rather also have poorly defined small black spots or marks on the prominent edges of each scale.
The four described species of *Atlantolacerta* Arnold, Arribas and Carranza, 2007 are separated from other members of the *Eremiadini* within the family Lacertidae by the following unique combination of characters:
Lacking a derived condition of the ulnar nerve, an armature and folded lobes in the hemipenis and from all other species except those in the genus *Omanosaura* Lutz, Bischoff and Mayer, 1986 in possessing a clavicle loop that is sometimes interrupted behind, and A and B-type caudal vertebrae. Other features that in combination help to distinguish *Atlantolacerta* from other genera of Eremiadini and of Lacertini include the following characters: Small body size, often high numbers of presacral vertebrae (26-28 in males, 29 in females), sternal fontanelle sometimes weakly heart-shaped, edge of parietal scale reaching lateral border of parietal table both posteriorly and anteriorly, one postnasal scale, supranasal scale contacting anterior loreal above the nostril; narrow light supraciliary stripes often present; no blue spots on outer ventral scales; outer sulcal lips on lobes of hemipenis are large. Other more widely distributed features in Eremiadini and Lacertini include: Head and body not strongly depressed and supraocular osteoderms complete in adults, seven premaxillary teeth in adults, inscriptional ribs often present, tail brightly coloured in hatchlings, hemipenial microornamentation includes hook-shaped spines (derived from Arnold *et al*. 2007).
Atlantolacerta andreanskyi is depicted in life online at:
https://en.wikipedia.org/wiki/Atlas_dwarf_lizard#/media/File:Atlantolacerta_andreanskyi.jpg
and
https://www.flickr.com/photos/alberto_herpetology/28660787022/
and
https://www.flickr.com/photos/alberto_herpetology/28688785871/
and
https://www.flickr.com/photos/alberto_herpetology/28660787642/
and
http://www.moroccoherps.com/en/ficha/atlantolacerta_andreanskyi/
and
https://www.inaturalist.org/observations/200325797
and
https://www.inaturalist.org/observations/253862641
and
https://www.inaturalist.org/observations/253862693
Atlantolacerta romani sp. nov. is depicted in life in Harris *et al.* (2023) on page 133 in Fig 3 a and b.
Atlantolacerta lenhoseri sp. nov. is depicted in life in Harris *et al.* (2023) on page 133 in Fig 3 c and d.
Distribution: *Atlantolacerta lenhoseri sp. nov.* occurs around and south of Jbel Awlime (AKA Jbel Aoulime), Morocco, Latitude 30.8197 N., Longitude 8.8036 W. at the southern end of the High Atlas Mountains.
Etymology: *Atlantolacerta lenhoseri sp. nov.* is named in honour my late father Leonard Donald Hoser, AKA Len Hoser in recognition of many contributions to herpetology, mainly unrecognised, in the period from the late 1960's to the 1990's.
ATLANTOLACERTAINI *TRIBE NOV.*
LSIDurn:lsid:zoobank.org:act:FBCD0C1F-3CA5-4610-ADBA-3ED73FF45C77
Type genus: *Atlantolacerta* Arnold, Arribas and Carranza, 2007.
Diagnosis: The four described species of *Atlantolacerta* Arnold *et al*., 2007, being the entirety of this tribe, are separated from other members of the *Eremiadini* within the family Lacertidae by the following unique combination of characters: Lacking a derived condition of the ulnar nerve, an armature and folded lobes in the hemipenis and from all other species except those in the genus *Omanosaura* Lutz, Bischoff and Mayer, 1986 in possessing a clavicle loop that is sometimes interrupted behind, and A and B-type caudal vertebrae. Other features that in combination help to distinguish *Atlantolacerta* from other genera of Eremiadini and of Lacertini include the following characters: Small body size, often high numbers of presacral vertebrae (26-28 in males, 29 in females), sternal fontanelle sometimes weakly heart-shaped, edge of parietal scale reaching lateral border of parietal table both posteriorly and anteriorly, one postnasal scale, supranasal scale contacting anterior loreal above the nostril; narrow light supraciliary stripes often present; no blue spots on outer ventral scales; outer sulcal lips on lobes of hemipenis are large. Other more widely distributed features in Eremiadini and Lacertini include: Head and body not strongly depressed and supraocular osteoderms complete in adults, seven premaxillary teeth in adults, inscriptional ribs often present, tail brightly coloured in hatchlings, hemipenial microornamentation includes hook-shaped spines (derived from Arnold *et al*. 2007).
Distribution: Endemic to The High Atlas region of Morocco, Africa.
Content: *Atlantolacerta* Arnold, Arribas and Carranza, 2007.
ANWARSADATUS GEN. NOV.
LSIDurn:lsid:zoobank.org:act:3CB6794E-DB41-49B1-B20C-33A2154AE945
Type species: *Anwarsadatus menachembegini sp. nov.*
Diagnosis: Lizards in the genus *Anwarsadatus gen. nov.* are readily separated from the species within the genus *Psammodromus* Fitzinger, 1826 by having the following unique combination of characters: No obvious collar (either absent or indistinct), ventral scales that are homogeneous, rounded and strongly imbricated; 200 mm or more in total adult length (to 310 mm) (vs under 150 mm in all species within the genus *Psammodromus* Fitzinger, 1826, being under 120 mm for all species except for *Psammodromus sahliatlatifa sp. nov.*).
In lizards in the genus *Psammodromus* Fitzinger, 1826 (as defined herein) the ventral scales are always rounded with a polygonal shape, slightly imbricated and the two middle rows are smaller than the outer ones.
The two preceding genera *Anwarsadatus gen. nov.* and *Psammodromus* Fitzinger, 1826 previously grouped by publishing authors into *Psammodromus* Fitzinger, 1826, are readily separated from all other Lacertid lizards (as defined by Boulenger 1887 on pages 1-2) by the following combination of characters:
Head-shields normal. Nostril pierced between two nasals, in contact with the first labial or separated only by a narrow rim. Lower eyelid scaly. Collar absent or very feebly marked; a short fold in front of the arm. Back covered with large, rhombic, strongly keeled and imbricate scales; ventral shields smooth. Digits slightly compressed, with tubercular or keeled lamellae underneath. Digits not fringed laterally. Femoral pores. Tail cylindrical. Snout moderately long, obtuse; three supraoculars, first largest, third smallest; a small additional shield is usually present, separating the first supraocular from the loreal; supraciliaries in contact with the supraoccipital is usually smaller than the interparietal; temporal scales irregular, smooth or obtusely keeled; an enlarged tympanic plate; no auricular denticulation; one or two loreals; subocular usually reaching the lip between the fourth and fifth labials. Gular scales strongly imbricate, gradually increasing in size towards the pectoral plates; the three anterior pairs of chin-shields in contact. Lateral scales passing gradually into the ventrals, which are in six straight longitudinal series. A large preanal plate, bordered by one or two series of smaller ones (modified from Boulenger, 1887).

None of the available names *Algira* Cuvier, 1829, *Aspistis* Wagler, 1830, *Notopholis* Wiegmann, 1830, *Psammuros* Wagler, 1830, *Zerzoumia* Lataste, 1880 have the relevant species of *Lacerta algira* Linnaeus, 1766 as their type species and so all are unavailable as prior existing names for *Anwarsadatus gen. nov.*.

Distribution: Northwest Africa and the Iberian Peninsula in south-west Europe, extending slightly north-west near the coast.

Etymology: *Anwarsadatus gen. nov.* is named in recognition of Anwar Sadat Anwar El-Sadat (25 December 1918 - 6 October 1981), a military officer and former president of Egypt.

He served as the third president of Egypt, from 15 October 1970 until his assassination by fundamentalist army officers on 6 October 1981. Sadat was a senior member of the Free Officers who overthrew King Farouk I in the Egyptian Revolution of 1952, and a close confidant of President Gamal Abdel Nasser, under whom he served as vice president twice and whom he succeeded as president in 1970. In 1978, Sadat and Menachem Begin, Prime Minister of Israel, signed a peace treaty in cooperation with United States President Jimmy Carter, for which they were recognized with the Nobel Peace Prize.

Significant in the year of 2025, a period of warfare between Jews and Arabs in the Middle East is that two supposedly hard-line politicians on either side (Sadat and Begin) were able to broker a peace deal between two bitter enemies at war.

This action for better or worse avoided Egypt and Israel being at war for some decades after (to at least 2025) the result being the saving of a great many human lives and the avoidance of associated human misery that comes with modern state to state warfare.

Content: *Anwarsadatus menachembegini sp. nov.*; *Anwarsadatus algira* (Linnaeus, 1766).

ANWARSADATUS MENACHEMBEGINI SP. NOV.

LSIDurn:lsid:zoobank.org:act:CA5D25EB-BF7B-4B4E-B95F-1C598CF8F447

Holotype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, specimen number MCZ Herp R-15746 collected from Godelleta, Valencia, Spain, Europe, Latitude 39.4236 N., Longitude -0.6880 W.

This facility allows access to its holdings.

Paratypes: Three preserved specimens at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, specimen numbers MCZ Herp R-15749, MCZ Herp R-15754 and MCZ Herp R-15755 all collected from Godelleta, Valencia, Spain, Europe, Latitude 39.4236 N., Longitude -0.6880 W.

Diagnosis: Until now *Anwarsadatus menachembegini sp. nov*. has been treated by all authors as an eastern population of *Anwarsadatus algira* (Linnaeus, 1766).

However, the published evidence supporting species-level recognition is compelling.

Carretero (2002) published a significant paper detailing consistent morphological differences between putative *A. algira* from north-east Spain, versus all other populations.

These results were largely ignored by all other publishing herpetologists and the paper has been ignored by most authors publishing on the putative species in the two decades following.

Perhaps taxonomists were thrown "of the scent" so to speak, when Carretero (2002) tried to explain his observed morphological differences by stating:

"*A hypothesis invoking differences in social system is proposed to explain the striking differences between these populations and those from Central Spain*."

Verdú-Ricoy *et al*. (2010) in their molecular study found species-level divergence between the East Iberian population and all other *A. algira.*

In their paper they found little divergence between all formally named populations of *A. algira*, so they synonymised all into *A. algira*.

However, based on the greater divergence of the unnamed eastern lineage they stated:

"*the eastern lineage of P. algirus might represent a separate species*."

They also did not take the matter further.

Mendes *et al.* (2017) effectively sealed the case in favour of naming the eastern population of putative *A. algira* when they estimated a 2.4 MYA divergence between these lizards and the populations from the west, including those from North Africa (see page 7 at Fig. 3 in that paper).

They were not however doing any reclassification of the genus *Psammodromus* Fitzinger, 1826 *sensu lato.*

Significantly Mendes *et al.* (2017) only found a 1.43 MYA divergence between west Iberian and north west African *A. algira*, a finding in line with the morphological similarities of the populations.

A. menachembegini sp. nov. is readily separated from *A. algira* by the following combination of characters:

The head colour in adults of *A. menachembegini sp. nov*. of both sexes is yellow, versus orange in adult male *A. algira* and yellow in the females. When orange is present in adult male *A. menachembegini sp. nov*. it is restricted to the rear infralabial scales in only the largest of males. In *A. menachembegini sp. nov*. the males and females are of similar size. By contrast the adult males are consistently much larger than females in *A. algira.*

Redish brown, pink or orange flushes seen around the upper surfaces of the pelvic region in adult male *A. algira* are not seen in adult male *A. menachembegini sp. nov*..

The two species, *A. menachembegini sp. nov*. and *A. algira* as defined herein form the entirety of the genus *Anwarsadatus gen. nov.*.

Lizards in the genus *Anwarsadatus gen. nov.* are readily separated from the species within the closely allied genus *Psammodromus* Fitzinger, 1826 by having the following unique combination of characters: No obvious collar (either absent or indistinct), ventral scales that are homogeneous, rounded and strongly imbricated; 200 mm or more in total adult length (to 310 mm) (vs under 150 mm in all species within the genus *Psammodromus* Fitzinger, 1826, being under 120 mm for all species except for *Psammodromus sahliatlatifa sp. nov.*).

In lizards in the genus *Psammodromus* Fitzinger, 1826 (as defined herein) the ventral scales are always rounded with a polygonal shape, slightly imbricated and the two middle rows are smaller than the outer ones.

The two preceding genera *Anwarsadatus gen. nov.* and *Psammodromus* Fitzinger, 1826 previously grouped by publishing authors into *Psammodromus* Fitzinger, 1826, are readily separated from all other Lacertid lizards (as defined by Boulenger 1887 on pages 1-2) by the following combination of characters:

Head-shields normal. Nostril pierced between two nasals, in contact with the first labial or separated only by a narrow rim. Lower eyelid scaly. Collar absent or very feebly marked; a short fold in front of the arm. Back covered with large, rhombic, strongly keeled and imbricate scales; ventral shields smooth. Digits slightly compressed, with tubercular or keeled lamellae underneath. Digits not fringed laterally. Femoral pores. Tail cylindrical. Snout moderately long, obtuse; three supraoculars, first largest, third smallest; a small additional shield is usually present, separating the first supraocular from the loreal; supraciliaries in contact; with the supraoccipital usually smaller than the interparietal; temporal scales irregular, smooth or obtusely keeled; an enlarged tympanic plate; no auricular denticulation; one or two loreals; subocular usually reaching the lip between the fourth and fifth labials. Gular scales strongly imbricate, gradually increasing in size towards the pectoral plates; the three anterior pairs of chin-shields in contact. Lateral scales passing gradually into the ventrals, which are in six straight longitudinal series. A large preanal plate, bordered by one or two series of smaller ones (modified from Boulenger, 1887).

A. menachembegini sp. nov. is depicted in life online at:

https://www.inaturalist.org/observations/227531004
and
https://www.inaturalist.org/observations/126372072
and
https://www.inaturalist.org/observations/253678144
and
https://www.inaturalist.org/observations/254309934
and
http://reptilesofaustralia.com/Reptiles_of_the_World/Lacertas/Psammodromus_algirus.html
A. algira is depicted in life online at:
https://www.inaturalist.org/observations/27716895
and
https://www.inaturalist.org/observations/216793665
and
https://www.inaturalist.org/observations/228662261
Distribution: An accurate distribution map for *Anwarsadatus menachembegini sp. nov.* is published in Verdú-Ricoy *et al*. (2010) in Fig 1, on page 577, where it is identified as the "eastern lineage".
In summary *A. menachembegini sp. nov.* is found throughout most of the eastern half of Spain, generally east of Gibraltar and east of Madrid, which both have populations of *A. algira* (Linnaeus, 1766). *A. menachembegini sp. nov.* extends to nearby parts of far south-east France and potentially one or more relatively isolated populations in Italian territory.
In turn *A. algira* occurs throughout most of the western half of the Iberian Peninsula and also North Africa including Tunisia to Morocco, generally near the coastal ranges.
Etymology: *A. menachembegini sp. nov*. is named in recognition of Menachem Begin (16 August 1913 - 9 March 1992) who was an Israeli politician, founder of both Herut and Likud political parties and the sixth Prime Minister of Israel.
Before the creation of the state of Israel in May 1948, Begin was the leader of the Zionist militant group Irgun, the Revisionist breakaway from the larger Jewish paramilitary organization Haganah. He proclaimed a revolt, on 1 February 1944, against the British mandatory government, which was opposed by the Jewish Agency. As head of the Irgun, he targeted the British in Palestine, with a notable attack being the King David Hotel bombing. Later, the Irgun fought the Arabs during the 1947-48 Civil War in Mandatory Palestine and, as its chief, Begin was described by the British government as the "*leader of the notorious terrorist organisation*".
Begin was elected to the first Knesset (the Israeli parliament), as head of Herut, the party he founded, and was at first on the political fringe, embodying the opposition to the Mapai-led government and Israeli establishment. He remained in opposition in the eight consecutive elections (except for a national unity government around the Six-Day War) but became more acceptable to the political center. His 1977 electoral victory and premiership ended three decades of Labor Party political dominance.
Begin's most significant achievement as Prime Minister was the signing of a peace treaty with Egypt in 1979, for which he and Anwar Sadat shared the Nobel Peace Prize. He ultimately died from heart failure.
See also the etymology for *Anwarsadatus gen. nov*. in this paper.
ANWARSADATINI *TRIBE NOV.*
LSIDurn:lsid:zoobank.org:act:C104FAAD-61A5-41D0-94E1-B0956039B134
Type genus: *Anwarsadatus gen. nov.*
Diagnosis: The genera *Anwarsadatus gen. nov.* and *Psammodromus* Fitzinger, 1826 previously grouped by publishing authors into *Psammodromus* Fitzinger, 1826, form the entirety of the tribe Anwarsadatini *tribe nov*., being within the subfamily Gallotiinae.
The species in this tribe are readily separated from all other Lacertid lizards (as defined by Boulenger 1887 on pages 1-2) by the following combination of characters:
Head-shields normal. Nostril pierced between two nasals, in contact with the first labial or separated only by a narrow rim. Lower eyelid scaly. Collar absent or very feebly marked; a short fold in front of the arm. Back covered with large, rhombic, strongly keeled and imbricate scales; ventral shields smooth. Digits slightly compressed, with tubercular or keeled lamellae underneath. Digits not fringed laterally. Femoral pores. Tail cylindrical. Snout moderately long, obtuse; three supraoculars, first largest, third smallest; a small additional shield is usually present, separating the first supraocular from the loreal; supraciliaries in contact with the supraoccipital, which is usually smaller than the interparietal; temporal scales irregular, smooth or obtusely keeled; an enlarged tympanic plate; no auricular denticulation; one or two loreals; subocular usually reaching the lip between the fourth and fifth labials. Gular scales strongly imbricate, gradually increasing in size towards the pectoral plates; the three anterior pairs of chin-shields in contact. Lateral scales passing gradually into the ventrals, which are in six straight longitudinal series. A large preanal plate, bordered by one or two series of smaller ones (modified from Boulenger, 1887).
Lizards in the genus *Anwarsadatus gen. nov.* are readily separated from the species within the genus *Psammodromus* Fitzinger, 1826 by having the following unique combination of characters: No obvious collar (either absent or indistinct), ventral scales that are homogeneous, rounded and strongly imbricated; 200 mm or more in total adult length (to 310 mm) (vs under 150 mm in all species within the genus *Psammodromus* Fitzinger, 1826, being under 120 mm for all species except for *Psammodromus sahliatlatifa sp. nov.*).
In lizards in the genus *Psammodromus* Fitzinger, 1826 (as defined herein) the ventral scales are always rounded with a polygonal shape, slightly imbricated and the two middle rows are smaller than the outer ones.
Distribution: The Iberian Peninsula in south-west Europe, including slightly north-east of there along the coast and north-west Africa from Tunisia in the east to Morocco in the west, generally near the coast and ranges.
Etymology: As for the genus *Anwarsadatus gen. nov.*.
Content: *Anwarsadatus gen. nov.* (type genus); *Psammodromus* Fitzinger, 1826.
PSAMMODROMUS SAHLIATLATIFA SP. NOV.
LSIDurn:lsid:zoobank.org:act:939C0BDB-4EE8-4352-AF62-4CB6E183E9E0
Holotype: The male specimen in Fig. 1, in the top image of page 2 of in den Bosch (2025).
That paper is cited herein as:
in den Bosch, H. 2005. *Psammodromus microdactylus* (Boettger, 1881), a rare lizard species? *Podarcis* 6(1/2):2-35).
The male is the top lizard in the image.
Paratype: The female specimen depicted in the same image in in den Bosch (2005) is the first and only paratype.
Details of types: The two adult (as depicted) lizards were collected from Azilal, Morocco, Africa, Latitude 31.9627 N., Longitude 6.5681 W.
The relevant publication of in den Bosch (2025) is also available online at:
https://www.lacerta.de/AF/Bibliografie/BIB_2538.pdf
There do not appear to be any voucher specimens in any Museums on the planet.
Diagnosis: Until now, *Psammodromus sahliatlatifa sp. nov.* known only from the type locality of Azilal, Morocco, Africa, Latitude 31.9627 N., Longitude -6.5681 W. has been treated as a southern population of the relatively rare and little-known taxon *Psammodromus microdactylus* (Boettger, 1881), with a type locality of "*prope urbes Casablanca, Tetuan, Tanger*" in the far north of Morocco.
Mendes *et al*. (2017) showed a 1.94 MYA divergence between the two and combined with well-defined morphological divergence outlined by in den Bosch (2005) the need to recognize the two as separate species is compelling.
The hitherto unnamed southern form from Azilal, Morocco is

therefore formally named as *P. sahliatlatifa sp. nov.*.
P. sahliatlatifa sp. nov. is readily separated from the closely related *P. microdactylus* by the following combination of characters:
Dorsum in breeding season is brown with thick lime green lines on the vertebral and dorsolateral lines, being bold and prominent in males and dull in females, versus an olive-coloured dorsum with small black spots in *P. microdactylus* (both sexes); somewhat blunted keels on the upper parts of the body, flanks and anterior of original tail as opposed to the more jagged keels on the upper parts of the body, flanks and anterior of original tail in *P. microdactylus*; 22-24 dorsal scale rows, versus 28-30 in *P. microdactylus*; 12-13, versus 11-13 femoral pores on each side; adults 126 to 148 mm in total length versus 112-118 in adult *P. microdactylus;* 13-14 mm length of the front legs (adults) versus 15-16 mm length of the front legs (adults) in *P. microdactylus* which is significant as adult size in the latter is much smaller; four supraoculars, comprising a tiny anterior one, two large ones and a smaller descending fourth one at the rear, versus three in *P. microdactylus*; a small gular fold, versus none in *P. microdactylus*; 3-6 larger scales and an additional 0-4 smaller scales, all forming a sort anterioventral quarter ring around the ear opening, versus 2 slightly erected granular scales in *P. microdactylus* (mainly derived and modified from in den Bosch 2005).
P. sahliatlatifa sp. nov. and *P. microdactylus* are in turn separated from their next nearest relatives *P. blanci* (Lataste, 1880) and *P. tamaaltaghadieanha sp. nov.* (a taxon until now treated as an outer eastern population of *P. blanci*) by the absence of a distinct collar, versus presence in the other two species; an absence of bright lime green stripes on the vertebral and upper lateral lines during breeding season and the lack of a central series of strongly enlarged scales in the lower eyelid, versus present in *P. blanci* and *P. tamaaltaghadieanha sp. nov.*.
All other species within the genus *Psammodromus* Fitzinger, 1826 (as defined herein) are separated from the preceding species by the combination of the presence of a well-defined collar and digits that are sharply keeled inferiorly.
The two species within the newly named (and associated genus) *Anwarsadatus gen. nov.* are readily separated from the species within the genus *Psammodromus* Fitzinger, 1826 by having the following unique combination of characters: No obvious collar (either absent or indistinct), ventral scales that are homogeneous, rounded and strongly imbricated; 200 mm or more in total adult length (to 310 mm) (vs under 150 mm in all species within the genus *Psammodromus* Fitzinger, 1826, being under 120 mm for all species except for *Psammodromus sahliatlatifa sp. nov.*).
In lizards in the genus *Psammodromus* Fitzinger, 1826 (as defined herein) the ventral scales are always rounded with a polygonal shape, slightly imbricated and the two middle rows are smaller than the outer ones.
The genera *Anwarsadatus gen. nov.* and *Psammodromus* Fitzinger, 1826 previously grouped by publishing authors into *Psammodromus* Fitzinger, 1826, form the entirety of the tribe Anwarsadatini *tribe nov*., being within the subfamily Gallotiinae.
The species in this tribe are readily separated from all other Lacertid lizards (as defined by Boulenger 1887 on pages 1-2) by the following combination of characters:
Head-shields normal. Nostril pierced between two nasals, in contact with the first labial or separated only by a narrow rim. Lower eyelid scaly. Collar absent or very feebly marked; a short fold in front of the arm. Back covered with large, rhombic, strongly keeled and imbricate scales; ventral shields smooth. Digits slightly compressed, with tubercular or keeled lamellae underneath. Digits not fringed laterally. Femoral pores. Tail cylindrical. Snout moderately long, obtuse; three supraoculars, first largest, third smallest; a small additional shield is usually present, separating the first supraocular from the loreal; supraciliaries in contact with the supraoccipital and it is usually smaller than the interparietal; temporal scales irregular, smooth or obtusely keeled; an enlarged tympanic plate; no auricular denticulation; one or two loreals; subocular usually reaching the lip between the fourth and fifth labials. Gular scales strongly imbricate, gradually increasing in size towards the pectoral plates; the three anterior pairs of chin-shields in contact. Lateral scales passing gradually into the ventrals, which are in six straight longitudinal series. A large preanal plate, bordered by one or two series of smaller ones (modified from Boulenger, 1887).
P. sahliatlatifa sp. nov. is depicted in life online (as *P. microdactylus*) at:
https://www.inaturalist.org/observations/1268282
and
http://www.moroccoherps.com/en/ficha/psammodromus_microdactylus/
and
https://www.lacerta.de/AF/Bibliografie/BIB_2538.pdf
see page 2, page 6 on the right side and page 7 at top.
Distribution: *P. sahliatlatifa sp. nov.* is only known from the type locality of Azilal, Morocco, Africa, Latitude 31.9627 N., Longitude -6.5681 W. It is presumably found in other areas of suitable habitat nearby, but the limits of distribution are obviously not known.
This is a state of affairs that needs to be rectified urgently. Obviously in the wake of proper survey work, a conservation assessment of this species can be made by suitably qualified people.
It is noted that populations previously recorded of putative "*P. microdactylus*" at the locations of western Toukbal, Tadlest, Aremd, Jbel Tichka all to the south of Azilal are all probably of this taxon.
The status of populations recorded in the Atlas Mountains regions between the type localities for *P. sahliatlatifa sp. nov.* and *P. microdactylus* and the exact distribution limits of each is obviously not known at the present time.
There are limited numbers of museum voucher specimens of *P. microdactylus* (about 10) held globally and as far as I can make out, none of *P. sahliatlatifa sp. nov.*.
This is a situation that requires remedy as soon as practicable. Obviously it would be preferable for relevant specimens to be taken into captivity for study and held till death (with studies and results properly published) before lodgement at publicly accessible museums so as to maximize benefit from these relatively scarce specimens.
Further research is required to properly assess the conservation status of both *P. sahliatlatifa sp. nov.* and *P. microdactylus* and to devise any appropriate management plans.
The explosive human population growth and intensification of agriculture in the relevant regions (as outlined earlier in this paper), including over grazing by goats and other livestock remains a cause for concern.
Etymology: To help remedy the relative under representation of Arabs and their culture in the sciences in the past century, I have given this taxon an Arabic name.
"*Sahliat latifa*" in Arabic means "*a nice lizard*", being an apt description for adult males in particular which in breeding season have a dorsum sporting three bold lime green stripes on an otherwise even brown body.
PSAMMODROMUS TAMAALTAGHADIENHA SP. NOV.
LSIDurn:lsid:zoobank.org:act:D287C635-2120-4523-A2D8-5B96C4EB7161
Holotype: A preserved specimen at the Reptiles and Amphibians collection (RA) of the Muséum national d'Histoire Naturelle, Paris, France, specimen number MNHN RA 1908.79 collected from Tunisia, Africa in 1908.
This facility allows access to its holdings.
Diagnosis: Until now *Psammodromus tamaaltaghadieanha sp. nov.* has been treated as an eastern population of *Psammodromus blanci* (Lataste, 1880) originally described as "*Zerzoumia blanci* Lataste, 1880" with a type locality of Algiers, Algeria, Africa (Type: BMNH 1946.9.4.22 (and possibly additional

specimens).
Mendes *et al*. (2017) found a species-level divergence of 3.56 MYA between the two relevant populations and so the eastern form is herein formally named as *Psammodromus tamaaltaghadieanha sp. nov.*.
Psammodromus blanci is separated from the morphologically similar *P. tamaaltaghadieanha sp. nov.* by the fact that in breeding males, the yellow of the venter extends to the white lines on the upper flanks (themselves being yellowish), versus not so in *P. tamaaltaghadieanha sp. nov.* and the black spots on the back are either square or tending to be forming rectangle shapes and always well defined, versus round and/or circular and generally ill-defined in *P. tamaaltaghadieanha sp. nov.*.
The closely related species, *P. sahliatlatifa sp. nov.* and *P. microdactylus* are as a pair, separated from their next nearest relatives *P. blanci* (Lataste, 1880) and *P. tamaaltaghadieanha sp. nov.* (a taxon until now treated as an outer eastern population of *P. blanci*) by the absence of a distinct collar, versus presence in the other two species; an absence of thick bright lime green stripes on the vertebral and upper lateral lines during breeding season and the lack of a central series of strongly enlarged scales in the lower eyelid, versus present in *P. blanci* and *P. tamaaltaghadieanha sp. nov.*.
All other species within the genus *Psammodromus* Fitzinger, 1826 (as defined herein) are separated from the preceding species by the combination of the presence of a well-defined collar and digits that are sharply keeled inferiorly.
The two species within the newly named (and associated genus) *Anwarsadatus gen. nov.* are readily separated from the species within the genus *Psammodromus* Fitzinger, 1826 by having the following unique combination of characters: No obvious collar (either absent or indistinct), ventral scales that are homogeneous, rounded and strongly imbricated; 200 mm or more in total adult length (to 310 mm) (vs under 150 mm in all species within the genus *Psammodromus* Fitzinger, 1826, being under 120 mm for all species except for *Psammodromus sahliatlatifa sp. nov.*).
In lizards in the genus *Psammodromus* Fitzinger, 1826 (as defined herein) the ventral scales are always rounded with a polygonal shape, slightly imbricated and the two middle rows are smaller than the outer ones.

The genera *Anwarsadatus gen. nov.* and *Psammodromus* Fitzinger, 1826 previously grouped by publishing authors into *Psammodromus* Fitzinger, 1826, form the entirety of the tribe Anwarsadatini *tribe nov*., being within the subfamily Gallotiinae. The species in this tribe are readily separated from all other Lacertid lizards (as defined by Boulenger 1887 on pages 1-2) by the following combination of characters:
Head-shields normal. Nostril pierced between two nasals, in contact with the first labial or separated only by a narrow rim. Lower eyelid scaly. Collar absent or very feebly marked; a short fold in front of the arm. Back covered with large, rhombic, strongly keeled and imbricate scales; ventral shields smooth. Digits slightly compressed, with tubercular or keeled lamellae underneath. Digits not fringed laterally. Femoral pores. Tail cylindrical. Snout moderately long, obtuse; three supraoculars, first largest, third smallest; a small additional shield is usually present, separating the first supraocular from the loreal; supraciliaries in contact with the supraoccipital, which is usually smaller than the interparietal; temporal scales irregular, smooth or obtusely keeled; an enlarged tympanic plate; no auricular denticulation; one or two loreals; subocular usually reaching the lip between the fourth and fifth labials. Gular scales strongly imbricate, gradually increasing in size towards the pectoral plates; the three anterior pairs of chin-shields in contact. Lateral scales passing gradually into the ventrals, which are in six straight longitudinal series. A large preanal plate, bordered by one or two series of smaller ones (modified from Boulenger, 1887).
P. tamaaltaghadieanha sp. nov. is depicted in life online at:
https://www.flickr.com/photos/marhi_226/50904189092/
and
https://www.inaturalist.org/observations/524416
P. blanci is depicted in life online at:
https://www.inaturalist.org/observations/200730242
and
https://www.inaturalist.org/observations/10311227
and
https://www.inaturalist.org/observations/111088152
and
https://www.inaturalist.org/observations/103112276
and

https://www.inaturalist.org/observations/49449053
and
https://www.inaturalist.org/observations/18425835
and
https://www.inaturalist.org/observations/134068615
Distribution: *Psammodromus tamaaltaghadieanha sp. nov.* is currently only known from Tunisia and adjoining far eastern parts of Algeria, generally near to the Mediterranean Coast.
P. blanci appears to be found from about Ain Beda in Algeria and west to about Nador in north Morocco, occupying the northern Atlas Mountains.
Etymology: To help remedy the relative under representation of Arabs and their culture in the sciences in the past century, I have given this taxon an Arabic name.
"*tama altaghadi eanha*" in Arabic means "*completely overlooked*", being an apt description for a taxon obviously known to local inhabitants, but until now has been effectively overlooked by modern science.
PSAMMODROMUS COMONOSPERDIMOSESTE SP. NOV.
LSIDurn:lsid:zoobank.org:act:E920145D-E0D7-40D5-8CD3-70957B373719
Holotype: A live specimen depicted in an image taken by Pascal Dubois and shown adjacent to the text of this formal description (shown on the previous page, as in page 17 of this paper) and also seen in the same image at:
https://www.inaturalist.org/observations/37534609
photographed on 23 May 2016 from a few km east of the Portugal and Spain border, about 65 km north-west of Zamora, Spain.
There appear to be few, if any voucher specimens of this taxon held in natural history museums globally, which is a sad state of affairs for a relatively common south European species.
Paratypes: 1/ A live specimen photographed in September 2024 depicted in an image and shown within or adjacent to the text of this formal description and also seen in the same image at:
https://www.inaturalist.org/observations/244359313
photographed by Isaac Benito Gómez González and also collected near the same collection location as the holotype, but about 10 km to the east.
2/ Another live specimen depicted in the image at:
https://www.inaturalist.org/observations/240630550
photographed by Albert Ros near Marcao, Portugal in September 2024.
3/ A third live specimen depicted in the image at:
https://www.inaturalist.org/observations/24582001
Photographed by "Guliao" on 3 May 2019 bout 70 km north-west of Zamora, Spain, on the border of Portugal.
Diagnosis: Mendes *et al*. (2017) flagged species-level divergences within three putative populations of *Psammodromus occidentalis* Fitze, Gonzalez-Jimena, San-Jose, San Mauro and Zardoya, 2012, with a type locality of Colmenar del Arroyo (west north-west of Madrid, Spain, Latitude 40.272214 N., Longitude -4.102836 W.).
Previously *P. occidentalis* was treated as a western form of *Psammodromus hispanicus* Fitzinger, 1826.
The two relevant unnamed forms are also morphologically divergent and apparently allopatric and hence are formally named herein as new species.
Psammodromus comonosperdimoseste sp. nov. is clearly the most divergent of the unnamed forms and has until now been treated as *P. occidentalis* from the hilly region of the north-east border of Portugal and Spain.
Mendez *et al*. (2017) found that it had diverged from nominate *P. occidentalis* and all other closely related taxa 3.14 MYA.
The other unnamed form, herein formally named as *P. unbuendescubrimiento sp. nov*. occurs in the hilly country on the Portugal and Spain border generally east of Nazaré, Portugal.
Mendez *et al*. (2017) found that it had diverged from nominate *P. occidentalis* over 2 MYA and from *comonosperdimoseste sp. nov*. some 3.14 MYA..
P. unbuendescubrimiento sp. nov. is also more

morphologically alike to *P. occidentalis* than is *Psammodromus comonosperdimoseste sp. nov*..
The three preceding species are readily separated from one another by the following identified character traits and combinations.
Psammodromus comonosperdimoseste sp. nov. is readily separated from the other two species by an adult male colouration with reduced white on the dorsum of the body.
While there is a tendency to form into lines, the pigment is best described as a series of separated whitish spots along the paravertebrtal lines and slightly better defined for the lines on the lateral edges.
In *P. occidentalis* the whitish grey paravertebral lines are bold and well defined, this arising from elongate white spots being joined by a continuum of light whitish powder grey along the same axis or alternatively the white lines being almost continuous in some specimens.
P. unbuendescubrimiento sp. nov. is more like nominate *P. occidentalis* but the white on the paravertebral lines are expanded slightly to form irregular edged lines and more noticeably, the light whitish powder grey along the same axis has an appearance of being smudged across the adjoining scales, these being obvious interspaces between the white.
On the anterior dorsum of *P. occidentalis* the dark blackish-brown markings form well-defined moderately thick cross bands.
Dark dorsal markings on the anterior part of *P. unbuendescubrimiento sp. nov*. are reduced in size, of less intensity (as in not strongly contrasting) and not obviously forming any bands.
On *P. comonosperdimoseste sp. nov*. the dark markings on the upper dorsum take the form of small black spots. Between each are lines of dark brown pigment, creating a series of partially formed narrow and broken bands on the forepart of the upper body. On the lower half of the dorsum of the body, black spotting is reduced and there are no brown interspaces, giving this part of the lizard's body a somewhat spotted appearance.
In *P. occidentalis* the dorsal markings on the body are well defined and less so on the flanks. This is reversed in *P. unbuendescubrimiento sp. nov*..
P. unbuendescubrimiento sp. nov. males do when in breeding colours, have significant amounts of aqua blue spotting along the anterior flank, versus usually only one, two or three tiny spots of aqua in the other two species.
The three species *P. comonosperdimoseste sp. nov*., *P. unbuendescubrimiento sp. nov*. and *P. occidentalis* are also diagnosed as having the following distinctive characters:
20-29 ventral scale rows, no supralabial scale below the subocular scale, 15-26 throat scales, 0-3 collar scales, 9-15 femoral pores, a snout shape of 0.96-2.51, 0-5 ocelli, and a nuptial coloration score of 0-4.
As a trio, the three preceding species can be separated from the closely associated east Iberian species *Psammodromus edwarsianus* Dugès, 1829 by the absence of a supralabial scale

below the subocular scale, lower femoral pore numbers (on average), more extended nuptial coloration, and slightly bigger snout shape values.

As a trio, the same three preceding species can be separated from the closely associated east Iberian species, *Psammodromus hispanicus* Fitzinger, 1826 by bigger snout shape values, corresponding to a less pointed snout (as in a blunter snout), higher number of femoral pores (on average), and higher number of ocelli.

All the preceding species can be readily separated from *Psammodromus blanci* (Lataste, 1880) and *Psammodromus tamaaltaghadieanha sp. nov.* a related species that until now has been treated as an eastern population of *P. blanci* by a clearly present gular fold, absence of imbricate or rounded ventral scales, two narrower central ventral rows (compared to the adjoining ventral rows), by rarely existing solid lateral lines, and by a brown grayish dorsal ground colour (Schleich *et al*. 1996).

As a trio, the original three preceding species can be separated from *P. microdactylus* (Boettger, 1881) and *Psammodromus sahliatlatifa sp. nov.* a closely associated more southern species known only from the type locality of Azilal, Morocco, Africa, Latitude 31.9627 N., Longitude -6.5681 W., by the combination of the presence of a gular fold, distinct collar scales, a brown greyish dorsal ground colour, two dashed lateral lines, absence of pointed or rounded central ventral rows, presence of two narrower central ventral rows, and absence of greenish or dark olive dorsal ground colour or a green stiped dorsum in breeding males.

As a trio, the original three preceding species can be separated from *Anwarsadatus algirus* (Linnaeus, 1766) and the associated newly named taxon *Anwarsadatus menachembegini sp. nov*., both until now also placed in the genus *Psammodromus* Fitzinger, 1826 by the following character combination of the smaller body size, being under 120 mm versus 200 mm or more in total adult length (to 310 mm) in *Anwarsadatus gen. nov*., a shorter tail length that rarely exceeds 2 times the snout-vent length (in adult individuals with original tail: mean = 1.5 x ± 0.02; range = 0.7 – 2.4; *A. algirus* > 2 times the snout-vent length), absence of pterygoid teeth (Arnold 1989), presence of a gular fold and distinct collar scales, absence of imbricated and pointed ventral scales, and presence of two central ventral rows of clearly narrower scales compared to scales of adjoining rows (modified from Schleich *et al.* 1996 and Fitze *et al*., 2012).

The genera *Anwarsadatus gen. nov.* and *Psammodromus* Fitzinger, 1826 previously grouped by publishing authors into *Psammodromus* Fitzinger, 1826, form the entirety of the tribe Anwarsadatini *tribe nov*., being within the subfamily Gallotiinae. The species in this tribe are readily separated from all other Lacertid lizards (as defined by Boulenger 1887 on pages 1-2) by the following combination of characters:

Head-shields normal. Nostril pierced between two nasals, in contact with the first labial or separated only by a narrow rim. Lower eyelid scaly. Collar absent or very feebly marked; a short fold in front of the arm. Back covered with large, rhombic, strongly keeled and imbricate scales; ventral shields smooth. Digits slightly compressed, with tubercular or keeled lamellae underneath. Digits not fringed laterally. Femoral pores. Tail cylindrical. Snout moderately long, obtuse; three supraoculars, first largest, third smallest; a small additional shield is usually present, separating the first supraocular from the loreal; supraciliaries in contact with the supraoccipital which is usually smaller than the interparietal; temporal scales irregular, smooth or obtusely keeled; an enlarged tympanic plate; no auricular denticulation; one or two loreals; subocular usually reaching the lip between the fourth and fifth labials. Gular scales strongly imbricate, gradually increasing in size towards the pectoral plates; the three anterior pairs of chin-shields in contact. Lateral scales passing gradually into the ventrals, which are in six straight longitudinal series. A large preanal plate, bordered by one or two series of smaller ones (modified from Boulenger, 1887).

Psammodromus comonosperdimoseste sp. nov. is depicted in life online at:
https://www.inaturalist.org/observations/24582001
and
https://www.inaturalist.org/observations/37534609
and
https://www.inaturalist.org/observations/244359313
P. unbuendescubrimiento sp. nov. is depicted in life online at:
https://www.inaturalist.org/observations/97165871
and
https://www.inaturalist.org/observations/240630550
and
https://www.flickr.com/photos/pedroamalves/50075079356/
and
https://www.flickr.com/photos/pedroamalves/50075079581/
P. occidentalis of the type form from north-west of Madrid in Spain is depicted in life online at:
https://www.inaturalist.org/observations/216878701
and
https://www.inaturalist.org/observations/216878738
and
https://www.inaturalist.org/observations/197256372

Distribution: *P. comonosperdimoseste sp. nov*. occurs generally near the type locality in north-east Portugal and adjoining parts of Spain and extending in a line north-east into Spain in a band about 100 km wide and 150 km long.

Etymology: The scientific name *P. comonosperdimoseste sp. nov*. derives from the Spanish words of "*cómo nos perdimos este*", which means in English, "*how did we miss this one*", being in reference to Spanish and other European herpetologists probably reading this paper in 2025 and asking themselves "*how could we miss discovering this species of lizard literally sitting under our noses*".

This is what a number of European herpetologists asked themselves in the wake of the publication of Hoser (2015g), a paper that named three Iberian and three northwest African viper species in the *Vipera latastei* Bosca, 1878 species complex, or earlier in 2012 when Hoser (2012e) published a global revision of Blindsnakes and making a statement of the obvious in assigning a new genus to the divergent European species.

For the record, I note the following inalienable facts:

Vipera monticola saintgironsi Martinez-Frying, Freitas, Veil-Anton, Lucchini, Fahd, Larbes, Folders, Santos and Brito, 2021 is an unlawfully coined junior synonym of *Vipera hoserae* Hoser, 2015,

Vipera latastei arundana Martinez-Frying, Freitas, Veil-Anton, Lucchini, Fahd, Larbes, Folders, Santos and Brito, 2021 is an illegally coined junior synonym of *Vipera wellingtoni* Hoser, 2015 and,

Xerotyphlops Hedges *et al*., 2014 is an illegally coined junior synonym of *Lenhosertyphlops* Hoser, 2012.

The authors who recklessly and deliberately coined the illegal junior synonym names are nothing more than taxonomic vandals and their dishonest actions prove they are not scientists in any

realistic measure of the term.
They are better described as thieves in that they try to steal "name authority" from others.

PSAMMODROMUS UNBUENDESCUBRIMIENTO SP. NOV.
LSIDurn:lsid:zoobank.org:act:920D673E-CD3E-400D-ADE9-01BEADC70A79

Holotype: A live specimen depicted in an image at top of page 21in this paper and online at:
https://www.inaturalist.org/observations/153672103
photographed by Paulo Alves in April 2023 at or near Portalegre, Portugal, Latitude 39.2967 N., Longitude -7.4285 W.
There appear to be few, if any voucher specimens of this taxon held in natural history museums globally, which is a sad state of affairs for a relatively common south European species.

Paratypes: 1/ A live specimen depicted in an image at:
https://www.inaturalist.org/observations/240630550
photographed at Castelo de vide, Latitude 39.4146 N., Longitude -7.4541 W. also in Portugal.
2/ A live specimen depicted in an image at:
https://www.flickr.com/photos/pedroamalves/50075079356/
photographed at Malpica do Tejo, Castelo Branco, Portugal, Latitude 39.8197 N., Longitude -7.4965 W.
3/ A live specimen depicted in an image at:
https://www.inaturalist.org/observations/97165871
being photographed wild at Portalegre, Portugal, Latitude 39.2967 N., Longitude -7.4285 W, being about 3 km south of Castelo de vide, Latitude 39.4146 N., Longitude 7.4541 W. also in Portugal.
4/ A live specimen depicted in an image at:
https://www.inaturalist.org/observations/156778922
photographed by Paulo Alves in April 2023 at or near Portalegre, Portugal, Latitude 39.2967 N., Longitude -7.4285 W.

Diagnosis: Mendes *et al*. (2017) flagged species-level divergences within three putative populations of *Psammodromus occidentalis* Fitze, Gonzalez-Jimena, San-Jose, San Mauro and Zardoya, 2012, with a type locality of Colmenar del Arroyo (west north-west of Madrid, Spain, Latitude 40.272214 N., Longitude -4.102836 W.).
Previously *P. occidentalis* was treated as a western form of *Psammodromus hispanicus* Fitzinger, 1826.
The two relevant unnamed forms are also morphologically divergent and apparently allopatric and hence are formally named herein as new species.
Psammodromus comonosperdimoseste sp. nov. is clearly the most divergent of the unnamed forms and has until now been treated as *P. occidentalis* from the hilly region of the north-east border of Portugal and Spain.
Mendez *et al*. (2017) found that it had diverged from nominate *P. occidentalis* and all other closely related taxa 3.14 MYA.
The other unnamed form, herein formally named as *P. unbuendescubrimiento sp. nov*. occurs in the hilly country on the Portugal and Spain border generally east of Nazaré, Portugal.
Mendez *et al*. (2017) found that it had diverged from nominate *P. occidentalis* over 2 MYA and from *comonosperdimoseste sp. nov*. some 3.14 MYA..
P. unbuendescubrimiento sp. nov. is also more morphologically alike to *P. occidentalis* than is *Psammodromus comonosperdimoseste sp. nov*..
The three preceding species are readily separated from one another by the following identified character traits and combinations.
Psammodromus comonosperdimoseste sp. nov. is readily separated from the other two species by an adult male colouration with reduced white on the dorsum of the body.
While there is a tendency to form into lines, the pigment is best described as a series of separated whitish spots along the paravertebrtal lines and slightly better defined for the lines on the lateral edges.
In *P. occidentalis* the whitish grey paravertebral lines are bold and well defined, this arising from elongate white spots being joined by a continuum of light whitish powder grey along the same axis or alternatively the white lines being almost continuous in some specimens.
P. unbuendescubrimiento sp. nov. is more like nominate *P. occidentalis* but the white on the paravertebral lines are expanded slightly to form irregular edged lines and more noticeably, the light whitish powder grey along the same axis has an appearance of being smudged across the adjoining scales, these being obvious interspaces between the white.
On the anterior dorsum of *P. occidentalis* the dark blackish-brown markings form well-defined moderately thick cross bands.
Dark dorsal markings on the anterior part of *P. unbuendescubrimiento sp. nov*. are reduced in size, of less intensity (as in not strongly contrasting) and not obviously forming any bands.
On *P. comonosperdimoseste sp. nov*. the dark markings on the upper dorsum take the form of small black spots. Between each are lines of dark brown pigment, creating a series of partially formed narrow and broken bands on the forepart of the upper body. On the lower half of the dorsum of the body, black spotting is reduced and there are no brown interspaces, giving this part of the lizard's body a somewhat spotted appearance.
In *P. occidentalis* the dorsal markings on the body are well defined and less so on the flanks. This is reversed in *P. unbuendescubrimiento sp. nov*..
P. unbuendescubrimiento sp. nov. males do when in breeding colours, have significant amounts of aqua blue spotting along the anterior flank, versus usually only one, two or three tiny spots of aqua in the other two species.
The three species *P. comonosperdimoseste sp. nov*., *P. unbuendescubrimiento sp. nov*. and *P. occidentalis* are also diagnosed as having the following distinctive characters:
20-29 ventral scale rows, no supralabial scale below the subocular scale, 15-26 throat scales, 0-3 collar scales, 9-15 femoral pores, a snout shape of 0.96-2.51, 0-5 ocelli, and a nuptial coloration score of 0-4.
As a trio, the three preceding species can be separated from the closely associated east Iberian species *Psammodromus edwarsianus* Dugès, 1829 by the absence of a supralabial scale below the subocular scale, lower femoral pore numbers (on average), more extended nuptial coloration, and slightly bigger snout shape values.
As a trio, the same three preceding species can be separated from the closely associated east Iberian species, *Psammodromus hispanicus* Fitzinger, 1826 by bigger snout shape values, corresponding to a less pointed snout (as in a blunter snout), higher number of femoral pores (on average), and higher number of ocelli.
All the preceding species can be readily separated from *Psammodromus blanci* (Lataste, 1880) and *Psammodromus tamaaltaghadieanha sp. nov.* a related species that until now has been treated as an eastern population of *P. blanci* by a clearly present gular fold, absence of imbricate or rounded ventral scales, two narrower central ventral rows (compared to the adjoining ventral rows), by rarely existing solid lateral lines, and by a brown grayish dorsal ground colour (Schleich *et al*. 1996).
As a trio, the original three preceding species can be separated from *P. microdactylus* (Boettger, 1881) and *Psammodromus sahliatlatifa sp. nov.* a closely associated more southern species known only from the type locality of Azilal, Morocco, Africa, Latitude 31.9627 N., Longitude -6.5681 W., by the combination of the presence of a gular fold, distinct collar scales, a brown greyish dorsal ground colour, two dashed lateral lines, absence of pointed or rounded central ventral rows, presence of two narrower central ventral rows, and absence of greenish or dark olive dorsal ground colour or a green stiped dorsum in breeding males.
As a trio, the original three preceding species can be separated from *Anwarsadatus algirus* (Linnaeus, 1766) and the associated newly named taxon *Anwarsadatus menachembegini sp. nov*., both until now also placed in the genus *Psammodromus*

***Psammodromus unbuendescubrimiento sp. nov.* holotype in life.**

Photographed by Paulo Alves in April 2023 at or near Portalegre, Portugal, Latitude 39.2967 N., Longitude -7.4285 W.

Fitzinger, 1826 by the following character combination of the smaller body size, being under 120 mm versus 200 mm or more in total adult length (to 310 mm) in *Anwarsadatus gen. nov*., a shorter tail length that rarely exceeds 2 times the snout-vent length (in adult individuals with original tail: mean = 1.5 x ± 0.02; range = 0.7 – 2.4; *A. algirus* > 2 times the snout-vent length), absence of pterygoid teeth (Arnold 1989), presence of a gular fold and distinct collar scales, absence of imbricated and pointed ventral scales, and presence of two central ventral rows of clearly narrower scales compared to scales of adjoining rows (modified from Schleich *et al.* 1996 and Fitze *et al*., 2012).

The genera *Anwarsadatus gen. nov.* and *Psammodromus* Fitzinger, 1826 previously grouped by publishing authors into *Psammodromus* Fitzinger, 1826, form the entirety of the tribe Anwarsadatini *tribe nov*., being within the subfamily Gallotiinae. The species in this tribe are readily separated from all other Lacertid lizards (as defined by Boulenger 1887 on pages 1-2) by the following combination of characters:

Head-shields normal. Nostril pierced between two nasals, in contact with the first labial or separated only by a narrow rim. Lower eyelid scaly. Collar absent or very feebly marked; a short fold in front of the arm. Back covered with large, rhombic, strongly keeled and imbricate scales; ventral shields smooth. Digits slightly compressed, with tubercular or keeled lamellae underneath. Digits not fringed laterally. Femoral pores. Tail cylindrical. Snout moderately long, obtuse; three supraoculars, first largest, third smallest; a small additional shield is usually present, separating the first supraocular from the loreal; supraciliaries in contact with the supraoccipital which is usually smaller than the interparietal; temporal scales irregular, smooth or obtusely keeled; an enlarged tympanic plate; no auricular denticulation; one or two loreals; subocular usually reaching the lip between the fourth and fifth labials. Gular scales strongly imbricate, gradually increasing in size towards the pectoral plates; the three anterior pairs of chin-shields in contact. Lateral scales passing gradually into the ventrals, which are in six straight longitudinal series. A large preanal plate, bordered by one or two series of smaller ones (modified from Boulenger, 1887).

Psammodromus comonosperdimoseste sp. nov. is depicted in

life online at:
https://www.inaturalist.org/observations/24582001
and
https://www.inaturalist.org/observations/37534609
and
https://www.inaturalist.org/observations/244359313
P. unbuendescubrimiento sp. nov. is depicted in life online at:
https://www.inaturalist.org/observations/97165871
and
https://www.inaturalist.org/observations/240630550
and
https://www.flickr.com/photos/pedroamalves/50075079356/
and
https://www.flickr.com/photos/pedroamalves/50075079581/
P. occidentalis of the type form from north-west of Madrid in Spain is depicted in life online at:
https://www.inaturalist.org/observations/216878701
and
https://www.inaturalist.org/observations/216878738
and
https://www.inaturalist.org/observations/197256372
Distribution: *P. unbuendescubrimiento sp. nov*. occurs in the hilly country on the Portugal and Spain border generally east of Nazaré, Portugal. It presumably also occurs over much of the eastern part of Portugal as well.
Etymology: The scientific name *P. unbuendescubrimiento sp. nov*. derives from the Spanish words of "*un buen descubrimiento*", which means in English "*a good discovery*". This is the first and original time this taxon has been formally named as new and so it is a good discovery.
For the record, I note the following alleged "good discoveries" were not in fact as alleged.
Vipera monticola saintgironsi Martinez-Frying, Freitas, Veil-Anton, Lucchini, Fahd, Larbes, Folders, Santos and Brito, 2021 is not a good discovery as it is in fact an unlawfully coined junior synonym of *Vipera hoserae* Hoser, 2015,
Vipera latastei arundana Martinez-Frying, Freitas, Veil-Anton, Lucchini, Fahd, Larbes, Folders, Santos and Brito, 2021 is also not a good discovery as it is in fact an illegally coined junior synonym of *Vipera wellingtoni* Hoser, 2015 and,
Xerotyphlops Hedges *et al*., 2014 is furthermore not a good discovery as it is in fact an illegally coined junior synonym of *Lenhosertyphlops* Hoser, 2012.
The authors who recklessly and deliberately coined the illegal junior synonym names are nothing more than taxonomic vandals and their dishonest actions prove they are not scientists making actual discoveries in any realistic measure of the term.
They are better described as thieves in that they try to steal "name authority" from others and claim the work of others as their own good discoveries.
MAGNUSCAPUT GEN. NOV.
LSIDurn:lsid:zoobank.org:act:10C63728-8C84-4040-A297-B6307F06D470
Type species: *Lacerta galloti var. stehlini* Schenkel, 1901
Diagnosis: Until now, the species generally known as *Gallotia stehlini* (Schebkel, 1901), originally described as "*Lacerta galloti var. stehlini* Schenkel, 1901" has been treated as the largest and most divergent member of the genus *Gallotia* Boulenger, 1920, type species *Lacerta galloti* Oudart in Webb and Berthelot, 1839.
The taxon is divergent both genetically and morphologically and so is formally placed in a newly erected genus called *Magnuscaput gen. nov.*.
Cox *et al.* 2010 at Fig.3 found this species diverged from other *Gallotia* 14.5 MYA.
Another species group also included in *Gallotia sensu lato* is the *Lacerta atlantica* Peters and Doria, 1882 group believed to have diverged from the others about 10 MYA (See Cox *et al.* 2010 at Fig.3 at about 10 MYA or Mendez *et al.* 2017 who found a divergence of 8.66 MYA at their Fig3).
That group is herein placed in the new genus *Aquavariaparte gen. nov*..
Magnuscaput gen. nov. are separated from other members of *Gallotia sensu lato*, including the newly erected genus *Aquavariaparte gen. nov*. by the following unique combination of characters:
Ventrals in 16 to 20 longitudinal rows, the rows discontinuous or oblique; 33 to 36 dorsal midbody scale rows; two or three large upper temporals, first in contact with the fourth supraocular; collar
formed of 10 to 17 plates. There are 79 to 93 scales across the middle of the body; collar entire or feebly serrated; temple granulate, with a more or less distinct masseteric shield; rostral not touching the nostril (modified from Boulenger 1920).
Aquavariaparte gen. nov. are separated from other members of *Gallotia sensu lato* including *Magnuscaput gen. nov.* by the following unique combination of characters:
Anterior border of ear with teeth like lobules; dorsal scales rather large, rhombic and diagonally keeled; 17 to 23 femoral pores; 24 to 30 lamellae under the fourth toe; 4 upper labials anterior to subocular; 44 to 52 midbody scale rows; ventrals in 8 or 10 straight longitudinal and 26 to 30 transverse series; collar serrated, formed of 6 to 10 plates; parietals strongly bent down on the temple, which is granulate, without a masseteric shield (modified from Boulenger 1920).
All species within *Gallotia sensu lato* including those within the two genera *Magnuscaput gen. nov.* and *Aquavariaparte gen. nov*. are separated from all other Lacertid lizards by the following unique combination of characters:
Ventral plates in 8 to 20 longitudinal series, transverse series with a nearly rectilinear border; ventrals in eight longitudinal series, anterior border of ear with teeth like lobules; a single postnasal; 17 to 35 femoral pores; 24 to 37 lamellae under the fourth toe; pterygoid teeth present (modified from Boulenger 1920).
Distribution: Gran Canaria, Canary Islands and introduced into Fuerteventura island.
Etymology: *Magnuscaput gen. nov.* comes directly from the Latin words "*magnus caput*" which means "big head", in reflection of the extreme macrocephaly of the majority of aged adult males.
Content: *Magnuscaput stehlini* (Schenkel, 1901) (monotypic).
AQUAVARIAPARTE GEN. NOV.
LSIDurn:lsid:zoobank.org:act:95F2E0E3-9C57-4C97-BD11-81DC2CBB82A4
Type Species: *Aquavariaparte atlantica* (Peters and Doria, 1882) (monotypic).
Diagnosis: Until now, the species generally known as *Lacerta atlantica* Peters and Doria, 1882 or *Gallotia atlantica* (Peters and Doria, 1882) has been treated as one of the most divergent members of the genus *Gallotia* Boulenger, 1920, type species *Lacerta galloti* Oudart in Webb and Berthelot, 1839.
Cox *et al.* 2010 at Fig.3 found this species diverged from other *Gallotia* about 10 MYA.
See Cox *et al.* 2010 at Fig.3 at about 10 MYA or Mendez *et al.* 2017 who found a divergence of 8.66 MYA at their Fig3.
As a result of this genetic divergence and obvious morphological differences, the *G. atlantica* complex is herein placed in the hew genus called *Aquavariaparte gen. nov*..
Aquavariaparte gen. nov. are separated from other members of *Gallotia sensu lato* including *Magnuscaput gen. nov.* (described in this paper already) by the following unique combination of characters:
Anterior border of ear with teeth like lobules; dorsal scales rather large, rhombic and diagonally keeled; 17 to 23 femoral pores; 24 to 30 lamellae under the fourth toe; 4 upper labials anterior to subocular; 44 to 52 midbody scale rows; ventrals in 8 or 10 straight longitudinal and 26 to 30 transverse series; collar serrated, formed of 6 to 10 plates; parietals strongly bent down on the temple, which is granulate, without a masseteric shield (modified from Boulenger 1920).
Another Canary Islands species *Gallotia stehlini* (Schebkel, 1901), originally described as "*Lacerta galloti var. stehlini* Schenkel, 1901" has been treated as the largest and most

divergent member of the genus *Gallotia* Boulenger, 1920, type species *Lacerta galloti* Oudart in Webb and Berthelot, 1839. The taxon is divergent both genetically and morphologically and so is formally placed in this paper in a newly erected genus called *Magnuscaput gen. nov.*.

Cox *et al.* 2010 at Fig.3 found this species diverged from other *Gallotia* 14.5 MYA.

Magnuscaput gen. nov. are separated from other members of *Gallotia sensu lato*, including the newly erected genus *Aquavariaparte gen. nov*. by the following unique combination of characters:

Ventrals in 16 to 20 longitudinal rows, the rows discontinuous or oblique; 33 to 36 dorsal midbody scale rows; two or three large upper temporals, first in contact with the fourth supraocular; collar

formed of 10 to 17 plates. There are 79 to 93 scales across the middle of the body; collar entire or feebly serrated; temple granulate, with a more or less distinct masseteric shield; rostral not touching the nostril (modified from Boulenger 1920).

All species within *Gallotia sensu lato* including those within the two genera *Magnuscaput gen. nov.* and *Aquavariaparte gen. nov*. are separated from all other Lacertid lizards by the following unique combination of characters:

Ventral plates in 8 to 20 longitudinal series, transverse series with a nearly rectilinear border; ventrals in eight longitudinal series, anterior border of ear with teeth like lobules; a single postnasal; 17 to 35 femoral pores; 24 to 37 lamellae under the fourth toe; pterygoid teeth present (modified from Boulenger 1920).

Distribution: Canary Islands including Lanzarote, La Graciosa, Montaöa Clara and Roque del Este, (Alegranza), Canary Islands, Fuerteventura and Lobos and introduced into Fast Gran Canaria.

Etymology: *Aquavariaparte gen. nov.* comes directly from the Latin words "*aqua varia parte*" which means "*aqua spotted side*", in reflection of the large and bright green or aqua blue spots and blotches that adorn the sides of larger specimens.

Content: *Aquavariaparte atlantica* (Peters and Doria, 1882) (monotypic).

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CONFLICTS OF INTEREST

None.

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Historical reality … Europeans invade each other … Tweaking the lizard genus *Podarcis* Wagler, 1830 *sensu lato* with five new genera, a subgenus and five new species from Iberia and north-west Africa.

LSIDURN:LSID:ZOOBANK.ORG:PUB:6DB6E47D-A752-44DF-8604-51E026644E7A

RAYMOND T. HOSER
LSIDurn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
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ABSTRACT

So called “Wall Lizards” within the genus *Podarcis* Wagler, 1830 *sensu lato* are familiar to most European herpetologists.

They have been studied extensively for hundreds of years.

Lineages are also known to have crossed from Europe to Africa and vice-versa across the Mediterranean.

In spite of two centuries of intensive taxonomic studies and severe “over-splitting” by herpetologists, there remain unnamed groups and forms in this group.

Without revisiting the taxonomy and nomenclature of the entire group and rehashing what is already known and not in contention, this paper takes the obvious step of naming some remaining well-known and obviously unnamed forms.

The genus *Podarcis* Wagler, 1830 *sensu lato* is also divided into various genera and subgenera.

Recognised herein are *Podarcis* Wagler, 1830 (type species: *Seps muralis* Laurenti, 1768) and *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name.

Five new genera, all at least 10 MYA divergent from nearest relatives (as identified by Yang *et al*. 2021) are formally named for the first time in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended ICZN (2012), as well as one newly named subgenus being about 10 MYA divergent from nearest relatives.

In addition, two taxa from Spain and three from northwest Africa all well known as being distinct species, but not yet formally named are herein named as new species.

They have generally been treated by herpetologists as variants of either “*Podarcis hispanicus* (Steindachner, 1870)” or “*Podarcis vaucheri* (Boulenger, 1905)”, although most recent authors have treated all as being of the latter.

Each form named herein is believed to be at least 1.5 MYA divergent from nearest relative.

Keywords: Lizards; taxonomy; nomenclature; Europe; Africa; Spain; Algeria; Tunisia; *Podarcis*; *Phenax*; *hispanicus*; *vaucheri*; new genus; *Hosersaureea*; *Thierryfreteyius*; *Wellslacerta*; *Hellassaurus*; *Wellingtonlacerta*; new subgenus; *Sardiniacorsicaensis*; new species; *thierryfreteyi*; *alainduboisi*; *karimdaouesi*; *kheloufii*; *mohamedmissoumi*.

INTRODUCTION

Lizards within the genus *Podarcis* Wagler, 1830 *sensu lato* are familiar to most European herpetologists.

They are known to most people as “Wall Lizards”

They have been studied extensively for hundreds of years.

Lineages are known to have crossed from Europe to Africa and vice-versa across the Mediterranean, which forms the centre of distribution for the group.

In spite of two centuries of intensive taxonomic studies and severe “over-splitting” by herpetologists at the species and subspecies level, there remain unnamed groups and forms in this group.

Without revisiting the taxonomy and nomenclature of the

entire group and rehashing what is already known and not in contention, this paper takes the obvious step of naming some remaining well-known and obviously unnamed forms.

The genus *Podarcis* Wagler, 1830 *sensu lato*, currently comprising roughly 30 recognised species and numerous subspecies (quite a number of which should be elevated to full species) is also divided into seven genera and one additional subgenus.

These newly named groups are split based on morphological and genetic divergence.

Recognised herein are *Podarcis* Wagler, 1830 (type species: *Seps muralis* Laurenti, 1768) and the largely unused genus name *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name.

Five new genera, all at least 10 MYA divergent from nearest relatives (as identified in the paper by Yang *et al*. 2021) are formally named for the first time in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended ICZN (2012), as well as one newly named subgenus.

Herein, I note that Keroglidou *et al*. (2024) find divergences in the order of two thirds that estimated by Wang *et al.* (2021) but these results still make genus or subgenus level recognition of each relevant group a favourable classification/nomenclatural option.

In addition, two taxa from Spain and three from northwest Africa all well known as being distinct species, but not yet formally named are herein named as new species.

Rather than these unnamed forms being in “limbo” indefinitely, they are formally named based on identified morphological differences and a divergence of at least 1.5 MYA from nearest relatives.

MATERIALS AND METHODS

Available specimens of all relevant species and groups as identified in the abstract and introduction within the putative genus *Podarcis* Wagler, 1830 *sensu lato* were inspected as were quality photographs available online.

They were checked for morphological divergences and/or obvious biogeographical barriers separating the populations, including those flagged in papers such as those listed above and below.

Specimens inspected included dead and live specimens as well as images with good locality data.

Molecular studies involving species within the putative genus *Podarcis* Wagler, 1830 *sensu lato*

and other similarly distributed reptiles and frogs from across the Mediterranean basin were also reviewed to flag likely speciation points for wider-ranging putative taxa.

This included those more archaic speciation events and divergences, worthy of genus-level recognition.

Published references and taxonomic treatments relevant to *Podarcis* Wagler, 1830 *sensu lato* and the identified component species and those relevant to the taxonomic and nomenclatural conclusions in this paper included Arnold (1973), Arnold *et al*. (2007), Arntzen and Sá-Sousa (2007), Bannert (1998), Barata *et al.* (2012, 2015), Bassitta *et al*. (2020), Bea *et al.* (1986), Bedriaga (1879a-b), Berroneau (2010), Bibron and Bory de Saint-Vincent (1833), Bolkay (1919), Boscá (1883, 1916), Boulenger (1887, 1889, 1891, 1905a-b, 1918, 1920), Braun (1877, 1886), Buchholz (1960), Busack and Lawson (2008), Capula (1994), Carretero (2008), Castiglia *et al.* (2021), Castilla *et al.* (1998), Clover (1979), Escoriza (2017), Fitzinger (1826a, 1826b, 1843), Georgi (1801), Geniez and Crochet (2023), Geniez *et al*. (2007, 2008, 2014), Gistel (1868), Gmelin (1989), Grossmann (2019), Guerro-Casado *et al.* (2022), Guillaume and Geniez (1986), Guilherme *et al.* (2018), Günther (1874), Harris and Sá-Sousa (2001), Harris *et al*. (2002), Hoser (2015g), ICZN (2012), Kaliontzopoulou *et al*. (2011, 2012), Keroglidou *et al.* (2024), Klemmer (1959, 1964), Kwet (2010), Kwet and Trapp (2014), Laurenti (1768), Lehrs (1902), Lymberakis *et al.* (2008), Mediani *et al.* (2015), Mertens (1952, 1955), Mertens and Müller (1940), Oefinger (2017), Oliverio *et al.* (2000), Oskyrko *et al*. (2022), Pallas (1814), Pérez-Mellado (1981a-b, 1986), Poulakakis *et al*. (2003, 2005a-b), Psonis *et al*. (2016, 2021), Rafinesque Schmaltz (1810), Rato *et al*. (2021), Renoult *et al.* (2010a, 2010b), Ride *et al*. (1999), Rivera *et al.* (2009), Rouag *et al.* (2024), Santos *et al.* (2024), Schlüter (2003, 2012), Sindaco and Jeremcenko (2008), Steindachner (1870), Valakos *et al*. (2007), Veríssimo and Carretero (2009), Wagler (1830), Werner (1830), Yang *et al*. (2020, 2021, 2022) and sources cited therein.

RESULTS

These have been summed up already in both abstract and introduction.

The review found seven obvious genus-level groupings within *Podarcis* Wagler, 1830 *sensu lato.*

Besides *Podarcis* with *Seps muralis* Laurenti, 1768) as its type species and the largely unused genus name *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name, there were no other available genus-level names.

Podarcis and *Phenax* identify two obvious groups and are used for each.

Five new genera, all at least 10 MYA divergent from nearest relatives (as identified in the paper by Yang *et al*. 2021) are formally named for the first time in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended ICZN (2012), as well as one newly named subgenus.

These are as follows:

1/ *Hosersaureea gen. nov*., type species *Zootoca lilfordi* Günther, 1874. As a cohort of species, all diverged more than 16 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

Within this genus, is a subgenus *Sardiniacorsicaensis gen. nov*. with type species *Lacerta tiliguerta* Gmelin in Linnaeus, 1789. As a cohort of species, all diverged about 10 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

2/ *Thierryfreteyius gen. nov*., type species *Thierryfreteyius thierryfreteyi sp. nov.* is a group generally encompassing species with a centre of distribution on the Iberian Peninsula and regions to the immediate south and north-east.

As a cohort of species, all diverged more than 10 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

3/ *Wellslacerta gen. nov*., type species *Lacerta sicula* Rafinesque-Schmaltz, 1810, with a distribution centred on Italy and countries to the east of the there.

As a cohort of species, all diverged more than 16 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

4/ *Hellassaurus gen. nov*., type species *Lacerta peloponnesiaca* Bibron and Bory de Saint-Vincent, 1833 with a centre of distribution including the Greek islands and areas immediately north.

As a cohort of species, all diverged more than 10 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

5/ *Wellingtonlacerta gen. nov*. type species *Podarcis waglerianus* Gistel, 1868, with a centre of distribution including south Italian islands and Malta.

As a cohort of species, all diverged more than 13 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

In terms of the preceding genus and subgenus groups, I note that Keroglidou *et al*. (2024) found divergences in the order

of two thirds that estimated by Wang *et al.* 2021), but these divergences are still in effect making genus or subgenus level recognition of each relevant group a favourable classification and nomenclatural option.

New species named in this paper are all forms that have until now been treated as variants of *T. vaucheri* (Boulenger, 1905).

These include two divergent lineages from southern Spain, two from north Algeria and a third from Tunisia and immediately adjacent far north-east Algeria.

All are believed to have diverged from closest common ancestors at least 1.5 MYA.

The five newly named species taxa are:

Thierryfreteyius thierryfreteyi sp. nov. from the south of the Iberian Peninsula, with a centre of distribution being Andalucia, Spain and pretty much of the same area.

Thierryfreteyius alainduboisi sp. nov. from the immediate vicinity of the hilly areas in and around Alcala la Real, Jaen Province, Spain. It is a divergent and yet range-restricted taxon.

Thierryfreteyius karimdaouesi sp. nov. from north-west Tunisia and immediately adjacent north-east Algeria.

Thierryfreteyius kheloufii sp. nov. known only from the immediate vicinity of Batna, north-east Algeria.

Thierryfreteyius mohamedmissoumi sp. nov. known only from the immediate vicinity of Azazgah, Algeria.

I also note that the three (mainly) east Algerian species (the last three above) as a cohort are all very divergent from all others in the *T. vaucheri* complex, which in effect form a sister group, more than 2 MYA divergent based on the phylogenies published to date.
Each appears to be about 1.5 MYA or more divergent from one another and can be easily separated from one another morphologically.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

There is no conflict of interest in terms of this paper, or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked as are relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal descriptions, spelling of names should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature (Ride *et al.* 1999 and ICZN 2012).

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 13 March 2025, unless otherwise stated and were accurate in terms of the context cited herein as of that date.

Unless otherwise stated explicitly, colour descriptions apply to living adult male specimens of generally good health and not under any form of stress by means such as excessive cool, heat, dehydration, excessive aging or abnormal skin reaction to chemical or other input.

Note that there is ordinarily some sexual dimorphism between adults of species within the relevant genus.

References to tails are of original ones unless otherwise stated.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant species has already been spelt out and/or is done so within each formal description and does not rely on material within publications not explicitly cited herein.

In the unlikely event any “first reviser” seeks to merge two or more newly named taxa into one, then the name to be retained is that which is first by page priority as listed in the abstract keywords.

Some material within descriptions is repeated to ensure each fully complies with the *International Code of Zoological Nomenclature* (Ride *et al*. 1999) and the 2012 amendments (ICZN 2012).

The people who assisted with provision of photos and other materials used within this paper are also thanked for their valuable assistances, for which they sought nothing in return.

The “version of record” is the printed version and not pdf version. Both are identical in all materially relevant ways except for the fact that the images in the printed version may be in black and white, as opposed to colour as seen in the pdf version.

CONSERVATION

The relevant comments in Hoser (1989, 1991, 1993, 1998, 2007, 2009, 2012a-b, 2013, 2015a-f, 2019a-b, 2020a-b, 2021a-b, 2023, 2024a-b, 2025) and sources cited therein apply to the genera and species formally named within this paper in addition to other members of *Podarcis* Wagler, 1830 *sensu lato* as defined by previous cited authors.

Species within the relevant group (*Podarcis* Wagler, 1830 *sensu lato*) compete directly with one another and with human mediated dispersals, some species are in decline and even extinct, in the face of advances and invasions by other European or north African species.

Each relevant species therefore needs to be properly monitored and conserved by government, NGO’s and concerned individuals working collaboratively and not combatively.

***PODARCIS* WAGLER, 1830**

Type species: *Seps muralis* Laurenti, 1768.

Diagnosis: Species within the genus *Podarcis* Wagler, 1830, *sensu stricto* as defined herein are separated from all other species formerly placed within *Podarcis sensu lato* and all other Lacertini by the following unique combination of characters:

This is the only Lacertini genus to have the oviducts inserting into the genital sinus near the tips of the lobes.

This genus also has the following unique features, which in combination separate it from all other Lacertini: maxillary-jugal suture often stepped; usual numbers of presacral vertebrae is 26-27 in males; sternal fontanelle quite strongly heart-shaped in most cases; pattern of tail vertebrae C-type; nearly always a single postnasal scale; outer edge of parietal scale reaching lateral border of parietal table both posteriorly and anteriorly; dorsal scales, if distinctly hexagonal and keeled are never larger than the laterals; 6 (rarely 8) ventral plates in a longitudinal series with a rectilinear or nearly rectilinear border; sexual dimorphism in dorsal colouring usually stark, with narrow light stripes often present in females; 12 to 31 femoral pores; toes are more-or-less compressed with 19-36 lamellae under the fourth toe; hemipenal lobes long with large outer sulcal lips.

Other features, seen in this genus and others that are closely related include: head and body not strongly depressed; usually seven premaxillary teeth in adults; inscriptional ribs often present; tail occasionally brightly coloured in hatchlings, hemipenal micro-ornamentation of hook-shaped spines; ventral plates smooth; collar strongly marked; digits not serrated laterally; subdigital lamellae smooth or tubercular; nostril pierced between two or free nasals and the first upper labial or separated from the latter by a narrow rim; dorsal scales small or moderate, juxtaposed or subimbricate (modified from Arnold *et al.* 2007 and Boulenger, 1920).

Distribution: Turkey/Ukraine in the east and west Spain in the West, including most of Europe, except for the plains in the north as well as not including most nearby major Mediterranean islands.

Content: *Podarcis muralis* (Laurenti, 1768) (type species).

The species *Podarcis muralis* (Laurenti, 1768) as treated herein is a complex of about 7 closely related species for which there are available names. See for example divergences of lineages more than 1.5 MYA cited in Keroglidou *et al*. (2024) and sources.

***PHENAX* FITZINGER, 1843**

Type species: *Lacerta taurica* Pallas, 1814.

Diagnosis: Species within the genus *Phenax* Fitzinger, 1843 as defined herein are separated from all other species formerly placed within *Podarcis sensu lato* and all other Lacertini by the following unique combination of characters:

Ventral plates smooth; collar strongly marked; digits not serrated laterally; subdigital lamellae smooth or tubercular; nostril pierced between two or free nasals and the first upper labial or separated from the latter by a narrow rim; dorsal scales small or moderate, juxtaposed or subimbricate. Transverse series of ventral plates with rectilinear or nearly rectilinear border, in longitudinal series 6 or 8 in number; 12 to 31 femoral pores; toes more or less compressed, with 19 to 29 fourth digit lamellae; normally a single postnasal; pterygoid teeth constantly or nearly constantly present; an incomplete series of granules between the supraoculars and the superciliaries (rarely reduced to 2 to 5); frontal tricuspid at the front, the three processes extend far forward between the head shields in front of it; collar serrated; dorsal scales usually diagonally keeled; caudal scales more or less pointed behind; never more than 80 mm snout vent length or 240 mm total length.

Lizards in the closely associated genus *Hellassaurus gen. nov.* are readily separated from those in the genus *Phenax* (as defined above) by having a smooth-edged collar (instead of serrated). *Hellassaurus gen. nov*. are also larger in size, attaining over 85 mm snout vent and 250 mm total length (versus never more than 80 mm snout vent and 240 mm total).

Both genera also have a high head, broad neck and relatively long extremities. Supraciliary granules may be in a closed or interrupted row.

Otherwise, both *Hellassaurus gen. nov.* and *Phenax* are morphologically similar.

As defined herein the cohort of species within *Phenax* all diverged more than 10 MYA from their nearest named relatives, based on the phylogeny published by Yang *et al.* (2021) at Fig. 2, those being the species within the genus *Hellassaurus gen. nov.*. As a pair, these two genera diverged from their next nearest relatives in *Wellingtonlacerta gen. nov*. over 13 MYA, based on the phylogeny published by Yang *et al.* (2021) at Fig. 2.

In turn these three genera diverged from their next nearest relatives in *Hosersaureea gen. nov*. more than 15 MYA based on the phylogeny published by Yang *et al.* (2021) at Fig. 2.

Distribution: Mainly Greece and immediately north, but essentially confined to east Europe, well south of the main north European plain.

Content: *Phenax taurica* (Georgi, 1801) (type species); *P. gaigeae* (Werner, 1930); *P. ionicus* (Lehrs, 1902); *P. melisellensis* (Braun, 1877); *P. milensis* (Bedraiga, 1882).

HOSERSAUREEA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:48DEF514-24A8-41B7-9936-2A9C4A97FD9F

Type species: *Zootoca lilfordi* Günther, 1874.

Diagnosis: Species within *Hosersaureea gen. nov*. of the nominate subgenus are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

Ventral plates smooth; collar strongly marked; digits not serrated laterally; subdigital lamellae smooth or tubercular; nostril pierced between two or free nasals and the first upper labial or separated from the latter by a narrow rim; dorsal scales small or moderate, juxtaposed or subimbricate.

Rostral usually narrowly separated from the nostril or sometimes just entering it and rarely well entering it; frontal as long as or shorter than its distance from the end of the snout; series of granules between the supraoculars and the supraciliaries complete or incomplete, the first superciliary often in contact with the second supraocular; suture between the first and second superciliaries usually oblique, sometimes vertical; parietal is 1.0 to 1.4 times as long as broad, in contact with the upper postocular; occipital very variable in size, usually longer and broader than the interparietal, but sometimes slightly shorter; rarely 2 post nasals.

Subocular narrower beneath than above; upper temporal shields entirely absent or broken up into a series of small shields; temple covered with granular scales; masseteric shield is usually distinct.

30 to 41 scales on a line between the symphysis of the chin-shields and the median collar-plate; gular fold distinct. Collar even edged, usually formed of small or very small plates, being 9 to 15 in number.

Scales granular, round, roundish-hexagonal or oval, smooth or sometimes with faint keels; 55 to 90 mid-body rows the body; 35 to 62 transverse series, in the middle of the back, correspond to the length of the head, 3, 4 and 5 (rarely 5) on the side correspond to a ventral plate.

Ventral plates in 25 to 30 transverse series in males, 27 to 31 in females.

Preanal plate moderate or rather large, sometimes small, bordered by one or two series of small

plates. Scales on upper surface of tibia finely granular, smooth, smaller than the dorsals.

17 to 25 femoral pores (usually 19 to 24); 22 to 32 lamellae under the fourth toe; foot 1 to 1.4 times as long as the head; tail 1.4 to 2 times the length of head and body, often of equal thickness in its anterior third; markings on the tail never forming crossbars; 50-80 mm snout-vent length.

Upper caudal scales not, or slightly, oblique, more or less strongly keeled, truncate or very obtusely pointed behind; the whorls subequal in length, the fourth behind the postanal granules containing 30 to 46 scales.

Head 1.21 to 1.6 times as long as broad, moderately depressed, its depth equalling the distance between the anterior corner or the centre of the eye and the tympanum; snout usually decidedly pointed; cheeks swollen in males. Neck as broad as or broader than the head.

Body moderately depressed. Hind limb reaching the shoulder, the collar, or a little beyond the latter in males, reaching the axil or the shoulder in females.

The colour of the back varies from yellow, brown to olive, bright grass-green, or blue green; the sides are brown or reddish brown with paler brown or pale green spots and the lizard is commonly generally darker dorsally than most other species within *Podarcis* Wagler, 1830 *sensu lato.*

Three stripes of dark brown or blackish spots or vermiculations extend along the back, but it frequently happens that these stripes lighten in the centre and that their borders become converted into lines, such specimens having six fine dark lines along the back; other specimens may have dark marblings or vermiculations all over the back, and such is the case in some young specimens where the upper surface of the head and tail have small blackish spots.

The lower parts vary from orange to salmon-red, copper-colour, or brick-red, with small black spots which may form a regular longitudinal series; a series of turquoise-blue spots are commonly, but not always on each side of the belly; throat spotted or marbled with reddish brown or blackish pigment.

Females often have a light dorsolateral streak, beginning from the superciliary edge, sometimes bordered by fine black lines, sometimes with a black vertebral streak.

Upper surface of head in both sexes is spotted or vermiculated with black; tail has dark and light markings, forming more or less regular longitudinal series.

Young have 6 light streaks on the body. Belly is yellow, orange, or red, without markings, except on the outer row of ventral plates, which bear large blue spots and also occasionally small

black ones.

Adult *H. lilfordi* (Günther, 1874) are as adults a uniform deep shiny black or dark brown above and of a beautiful sapphire-blue beneath. Some may have pale bluish green or turquoise-blue spots on the sides of the lapis-blue belly, which has small black spots.

Young *H. lilfordi* are brown above, with dark spots and lines, dark brown or black on the sides, with numerous blue spots, tail dark green; the belly is greenish in the middle, black spotted with blue on the sides.

Species within *Hosersaureea gen. nov*. of the subgenus *Sardiniacorsicaensis subgen. nov*. are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

As for the nominate subgenus *Hosersaureea gen. nov*. just summarised, but with the following differences:

Head is strongly depressed (versus moderately depressed), the occiput quite flat or even slightly concave; anterior upper temporal shield often in contact with fourth supraocular; belly usually without small black spots on the sides (versus with).

As defined herein the cohort of species, *Hosersaureea gen. nov*. all diverged more than 10 MYA from their nearest named relatives based on the phylogeny published by Yang *et al.* (2021) at Fig. 2, those being the species within the genus *Hellassaurus gen. nov.*.

As a pair, these two genera diverged from their next nearest relatives in *Wellingtonlacerta gen. nov*. over 13 MYA, based on the phylogeny published by Yang *et al.* (2021) at Fig. 2.

Hosersaureea gen. nov. diverged from their next nearest relatives more than 15 MYA based on the phylogeny published by Yang *et al.* (2021) at Fig. 2.

Those genera were (as identified herein), *Wellingtonlacerta gen. nov*., *Hellassaurus gen. nov*. and *Phenax* Fitzinger, 1843.

Distribution: North-west Mediterranean islands between Italy and Spain.

Etymology: *Hosersaureea gen. nov*. is named in honour of my mother, Katrina Hoser, of Lane Cove, New South Wales, Australia in recognition of her services to herpetology spanning nearly 60 years. The spelling is deliberate and created to avoid creation of any homonyms with similar names, so should not be altered or amended.

Content: *Hosersaureea* (*Hosersaureea*) *lilfordi* (Günther, 1874) (type species); *H.* (*Sardiniacorsicaensis*) *contii* (Lanza and Brizzi, 1977); *H.* (*Hosersaureea*) *pityusensis* (Bosca, 1883); *H.* (*Sardiniacorsicaensis*) *tiliguerta* (Gmelin in Linnaeus, 1789).

SARDINIACORSICAENSIS SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:AE8B7AD5-735C-49C3-9273-FABB49BA0E28

Type species: *Lacerta tiliguerta* Gmelin in Linnaeus, 1789.

Diagnosis: Species within *Hosersaureea gen. nov*. of the nominate subgenus are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

Ventral plates smooth; collar strongly marked; digits not serrated laterally; subdigital lamellae smooth or tubercular; nostril pierced between two or free nasals and the first upper labial or separated from the latter by a narrow rim; dorsal scales small or moderate, juxtaposed or subimbricate.

Rostral usually narrowly separated from the nostril or sometimes just entering it and rarely well entering it; frontal as long as or shorter than its distance from the end of the snout; series of granules between the supraoculars and the supraciliaries complete or incomplete, the first superciliary often in contact with the second supraocular; suture between the first and second superciliaries usually oblique, sometimes vertical; parietal is 1.0 to 1.4 times as long as broad, in contact with the upper postocular; occipital very variable in size, usually longer and broader than the interparietal, but sometimes slightly shorter; rarely 2 post nasals.

Subocular narrower beneath than above; upper temporal shields entirely absent or broken up into a series of small shields; temple covered with granular scales; masseteric shield is usually distinct.

30 to 41 scales on a line between the symphysis of the chin-shields and the median collar-plate; gular fold distinct. Collar even edged, usually formed of small or very small plates, being 9 to 15 in number.

Scales granular, round, roundish-hexagonal or oval, smooth or sometimes with faint keels; 55 to 90 mid-body rows the body; 35 to 62 transverse series, in the middle of the back, correspond to the length of the head, 3, 4 and 5 (rarely 5) on the side correspond to a ventral plate.

Ventral plates in 25 to 30 transverse series in males, 27 to 31 in females.

Preanal plate moderate or rather large, sometimes small, bordered by one or two series of small

plates. Scales on upper surface of tibia finely granular, smooth, smaller than the dorsals.

17 to 25 femoral pores (usually 19 to 24); 22 to 32 lamellae under the fourth toe; foot 1 to 1.4 times as long as the head; tail 1.4 to 2 times the length of head and body, often of equal thickness in its anterior third; markings on the tail never forming crossbars; 50-80 mm snout-vent length.

Upper caudal scales not, or slightly, oblique, more or less strongly keeled, truncate or very obtusely pointed behind; the whorls subequal in length, the fourth behind the postanal granules containing 30 to 46 scales.

Head 1.21 to 1.6 times as long as broad, moderately depressed, its depth equalling the distance between the anterior corner or the centre of the eye and the tympanum; snout usually decidedly pointed; cheeks swollen in males. Neck as broad as or broader than the head.

Body moderately depressed. Hind limb reaching the shoulder, the collar, or a little beyond the latter in males, reaching the axil or the shoulder in females.

The colour of the back varies from yellow, brown to olive, bright grass-green, or blue green; the sides are brown or reddish brown with paler brown or pale green spots and the lizard is commonly generally darker dorsally than most other species within *Podarcis* Wagler, 1830 *sensu lato.*

Three stripes of dark brown or blackish spots or vermiculations extend along the back, but it frequently happens that these stripes lighten in the centre and that their borders become converted into lines, such specimens having six fine dark lines along the back; other specimens may have dark marblings or vermiculations all over the back, and such is the case in some young specimens where the upper surface of the head and tail have small blackish spots.

The lower parts vary from orange to salmon-red, copper-colour, or brick-red, with small black spots which may form a regular longitudinal series; a series of turquoise-blue spots are commonly, but not always on each side of the belly; throat spotted or marbled with reddish brown or blackish pigment.

Females often have a light dorsolateral streak, beginning from the superciliary edge, sometimes bordered by fine black lines, sometimes with a black vertebral streak.

Upper surface of head in both sexes is spotted or vermiculated with black; tail has dark and light markings, forming more or less regular longitudinal series.

Young have 6 light streaks on the body. Belly is yellow, orange, or red, without markings, except on the outer row of ventral plates, which bear large blue spots and also occasionally small black ones.

Adult *H. lilfordi* (Günther, 1874) are as adults a uniform deep shiny black or dark brown above and of a beautiful sapphire-blue beneath. Some may have pale bluish green or turquoise-blue

spots on the sides of the lapis-blue belly, which has small black spots.

Young *H. lilfordi* are brown above, with dark spots and lines, dark brown or black on the sides, with numerous blue spots, tail dark green; the belly is greenish in the middle, black spotted with blue on the sides.

Species within *Hosersaureea gen. nov*. of the subgenus *Sardiniacorsicaensis subgen. nov*. are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

As for the nominate subgenus *Hosersaureea gen. nov*. just summarised, but with the following differences:

Head is strongly depressed (versus moderately depressed), the occiput quite flat or even slightly concave; anterior upper temporal shield often in contact with fourth supraocular; belly usually without small black spots on the sides (versus with).

As defined herein the cohort of species, *Hosersaureea gen. nov*. all diverged more than 10 MYA from their nearest named relatives based on the phylogeny published by Yang *et al.* (2021) at Fig. 2, those being the species within the genus *Hellassaurus gen. nov.*.
As a pair, these two genera diverged from their next nearest relatives in *Wellingtonlacerta gen. nov*. over 13 MYA, based on the phylogeny published by Yang *et al.* (2021) at Fig. 2.

Hosersaureea gen. nov. diverged from their next nearest relatives more than 15 MYA based on the phylogeny published by Yang *et al.* (2021) at Fig. 2.

Those genera were (as identified herein), *Wellingtonlacerta gen. nov*., *Hellassaurus gen. nov*. and *Phenax* Fitzinger, 1843.

Distribution: The subgenus occurs on the islands of Sardinia and Corsica in the middle Mediterranean.

Etymology: The subgenus name *Sardiniacorsicaensis subgen. nov*. is derived from the locations the species in the subgenus occurs, namely the islands of Sardinia and Corsica in the middle Mediterranean.

Content: *Hosersaureea* (*Sardiniacorsicaensis*) *tiliguerta* (Gmelin in Linnaeus, 1789) (type species); *H.* (*Sardiniacorsicaensis*) *contii* (Lanza and Brizzi, 1977).

THIERRYFRETEYIUS GEN. NOV.

LSIDurn:lsid:zoobank.org:act:22B92680-649C-4DBD-8B31-748848143B75

Type species: *Thierryfreteyius thierryfreteyi sp. nov.*

Diagnosis: Species within *Thierryfreteyius gen. nov.* are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

Dorsal scales smooth to moderately keeled, 51 to 76 midbody rows; ventral plates smooth; upper caudal scales smooth or feebly keeled; collar strongly marked; digits not serrated laterally; subdigital lamellae smooth or tubercular; 21 to 29 subdigital lamellae under the fourth toe; nostril pierced between two or free nasals and the first upper labial or separated from the latter by a narrow rim; dorsal scales small or moderate, juxtaposed or subimbricate; collar-plates very small; 13 to 22 femoral pores; masseteric shield usually very small or absent. Very flattened head, sharply pointed snout, and either a conspicuously striated body colour pattern or such pattern absent but whatever pattern is present, it is not vivid green or with vivid green as part of the pattern.

Adult snout-vent length is 50-65 mm.

The species in the genus *Thierryfreteyius gen. nov.* diverged from nominate *Podarcis* Wagler, 1830, with a type species of *Seps muralis* Laurenti, 1768, more than 10 MYA based on the published phylogeny of Yang *et al.* (2021).

Distribution: *Thierryfreteyius gen. nov.* species primarily occupy Iberia in south-west Europe and outlier populations in nearby parts of south-west Europe (France) and nearby North-west Africa (Morocco, Algeria, Tunisia).

Etymology: *Thierryfreteyius gen. nov.* is named in honour of Thierry Frétey of Association RACINE, 5 allée des Cygnes, 35750 Saint-Maugan, France in recognition of his standing up to pressure and harassment from members of the Adam Britton / Wolfgang Wuster gang of thieves and sexual perverts who were trying to unlawfully induce Thierry Frétey to engage in ICZN Code destroying acts of taxonomic vandalism and other serious acts of misconduct (see for example in Hoser 2019a, 2019b).

Content: *Thierryfreteyius thierryfreteyi sp. nov.* (type species); *T. alainduboisi sp. nov.*; *T. atratus* (Bosca, 1916); *T. bocagei* (Lopez-Seoane, 1885); *T. carbonelli* (Perez-Mellado, 1981); *T. guadarramae* (Bosca, 1916); *T. hispanicus* (Steindachner, 1870); *T. karimdaouesi sp. nov.; T. kheloufii sp. nov.; T. liolepis* (Boulenger, 1905); *T. lusitanicus* (Geniez, Sa-Souza, Guillaume, Cluchier and Crochet, 2014); *T. mohamedmissoumi sp. nov*.; *T. vaucheri* (Boulenger, 1905); *T. virescens* (Geniez, Sa-Souza, Guillaume, Cluchier and Crochet, 2014).

WELLSLACERTA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:53D8FE6F-F437-47DD-A289-592F43570D26

Type species: *Lacerta sicula* Rafinesque-Schmaltz, 1810.

Diagnosis: Species within *Wellslacerta gen. nov*. are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* and all other Lacertidae by the following unique combination of characters:

Ventral plates smooth; collar strongly marked; collar with an even or feebly serrated edge, composed of 8-12 plates; digits not serrated laterally; subdigital lamellae smooth or tubercular; nostril pierced between two or free nasals and the first upper labial or separated from the latter by a narrow rim; dorsal scales small or moderate, juxtaposed or subimbricate.

There are 5 or 4 transverse series of scales on the side that correspond to a ventral plate, 36 (males) to 51 (females) rows of scales in the middle of the back, to the length of the head. Ventral plates in 6 longitudinal and 25 to 30 transverse series being 25 to 28 in males, 28 to 30 in females; the plates of the second series from the median line are the broadest. Preanal plate is moderately large, bordered by two semicircles of small plates, rarely by one. Scales on the upper surface of tibia are keeled and smaller than the dorsals.

27 to 33 lamellae are under the fourth toe (usually 28 to 30); 19 to 22 femoral pores are on each side.

With adults attaining up to 260 mm in total length and a robust, but flattened body structure, unusually long and flat head; species in *Wellslacerta gen. nov*. match *Hellassaurus gen. nov.* in being larger than any other species in *Podarcis* Wagler, 1830 *sensu lato*.

There is a pattern including a semi-distinct and broad dorsolateral band or stripes and usually a green, black-spotted back, a largely unnotched collar and light dorsal stripes are often found in these species usually being clearly reticulated on the back and flanks; a small massetericum; there is no bright and intense dorsolateral band (superciliary stripe) or bright colored belly.

Young specimens have spots on the underside but no obvious white spots on the sides of the tail. (modified from Henle and Klaver 1986 and Boulenger 1920).

The species in the genus *Wellslacerta gen. nov.* diverged from nominate *Podarcis* Wagler, 1830, with a type species of *Seps muralis* Laurenti, 1768, and *Thierryfreteyius gen. nov.* type species *Thierryfreteyius thierryfreteyi sp. nov.* more than 16 MYA based on the published phylogeny of Yang *et al.* (2021).

Distribution: Mainly Italy and nearby islands, Slovenia and Croatia, as well as scattered locations, outside this area in adjacent parts of Europe, some or all of these populations likely to be the result of geologically recent human translocations.

Etymology: *Wellslacerta gen. nov.* is named in honour of

eminent Australian herpetologist, Richard Walter Wells of Drake, (about 44 km east of Tenterfield), New South Wales, Australia, who in conjunction with fellow herpetologist, Cliff Ross Wellington of Ramornie, (about 40 km west of Grafton), New South Wales, Australia has formally identified and named most genera of Australian reptiles.

Content: *Wellslacerta siculus* (Rafinesque-Schmaltz, 1810) (type species); *W. latastei* (Bedraiga, 1879).

HELLASSAURUS GEN. NOV.

LSIDurn:lsid:zoobank.org:act:D8672DC8-734C-43EF-A9AD-8D965A4B1DD4

Type species: *Lacerta peloponnesiaca* Bibron and Bory de Saint-Vincent, 1833.

Diagnosis: *Hellassaurus gen. nov.* is closely associated with and morphologically similar to the genus *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name for the relevant group of lizards.

The two genera are best defined and separated from other species within *Podarcis* Wagler, 1830, *sensu lato* with a type species of *Seps muralis* Laurenti, 1768 in the same description that follows, which includes separation of the two genera (*Hellassaurus gen. nov.* and *Phenax*) from each other.

Hellassaurus gen. nov. and *Phenax* are separated from other species within *Podarcis* Wagler, 1830, *sensu lato* as follows:

Species within the genus *Phenax* Fitzinger, 1843 as defined herein are separated from all other species formerly placed within *Podarcis sensu lato* and all other Lacertini by the following unique combination of characters:

Ventral plates smooth; collar strongly marked; digits not serrated laterally; subdigital lamellae smooth or tubercular; nostril pierced between two or free nasals and the first upper labial or separated from the latter by a narrow rim; dorsal scales small or moderate, juxtaposed or subimbricate.

Transverse series of ventral plates with rectilinear or nearly rectilinear border, in longitudinal series 6 or 8 in number; 12 to 31 femoral pores; toes more or less compressed, with 19 to 29 fourth digit lamellae; normally a single postnasal; pterygoid teeth constantly or nearly constantly present; an incomplete series of granules between the supraoculars and the superciliaries (rarely reduced to 2 to 5); frontal tricuspid at the front, the three processes extend far forward between the head shields in front of it; collar serrated; dorsal scales usually diagonally keeled; caudal scales more or less pointed behind; never more than 80 mm snout vent length or 240 mm total length.

Lizards in the closely associated genus *Hellassaurus gen. nov.* are readily separated from those in the genus *Phenax* by having a smooth-edged collar (instead of serrated). *Hellassaurus gen. nov*. are also larger in size, attaining over 85 mm snout vent and 250 mm total length (versus never more than 80 mm snout vent and 240 mm total).

Both genera also have a high head, broad neck and relatively long extremities. Supraciliary granules may be in a closed or interrupted row.

Otherwise, both *Hellassaurus gen. nov.* and *Phenax* are morphologically similar.

As defined herein the cohort of species within *Hellassaurus gen. nov.* all diverged more than 10 MYA from their nearest named relatives, based on the phylogeny published by Yang *et al.* (2021) at Fig. 2, those being the species within the genus *Phenax.*

As a pair, these two genera diverged from their next nearest relatives in *Wellingtonlacerta gen. nov*. over 13 MYA, based on the phylogeny published by Yang *et al.* (2021) at Fig. 2.

In turn these three genera diverged from their next nearest relatives in *Hosersaureea gen. nov*. more than 15 MYA based on the phylogeny published by Yang *et al.* (2021) at Fig. 2.

Distribution: Greece and some immediately adjacent areas.

Etymology: With a distribution centred on Greece, it is appropriate that the genus be named *Hellassaurus gen. nov.*.

Content: *Hellassaurus peloponnesiaca* (Bibron and Bory de Saint-Vincent, 1833) (type species); *H. cretensis* (Wettstein, 1952); *H. erhardii* (Bedraiga, 1882); *H. levendis* (Lymberakis, Poulakakis, Kaliontzopoulou, Valakos and Mylonas, 2008); *H. thais* (Buchholz, 1960)

WELLINGTONLACERTA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:BEE3EC71-D66B-465B-8D6C-06E09D4EA124

Type species: *Podarcis waglerianus* Gistel, 1868.

Diagnosis: Species within the genus *Wellingtonlacerta gen. nov.* as defined herein are separated from all other species formerly placed within *Podarcis sensu lato* and all other Lacertini by the following unique combination of characters:

Ventral plates smooth; collar strongly marked; digits not serrated laterally; subdigital lamellae smooth or tubercular; nostril pierced between two or free nasals and the first upper labial or separated from the latter by a narrow rim; dorsal scales small or moderate, juxtaposed or subimbricate. Maximum total length of 250 mm. These lizards have a strong tendency to be almost or completely black, except for the species *W. filfolensis,* where many specimens are not at all melanistic.

These are not melanistic as seen in insular populations of other Lacertidae and *Podarcis sensu lato* species, but rather the dark colouration is formed by the dark markings becoming either more numerous, more intense of simply larger in terms of size of spots or blotches. Lighter specimens also have expanded white spots along with a lighter dorsal colour (usually brown, grey often heavily green dorsally) as seen in particular in *W. filfolensis* (Bedraiga, 1876).

On the venter are two well-defined longitudinal rows of blue spots. The number of teeth is reduced as compared to other species within *Podarcis sensu lato*, being a maximum of 42 in the upper jaw (usually no more than 40) and no more than 39 in the lower jaw (mainly modified from Bischoff 1986).

The species in the genus *Wellingtonlacerta gen. nov.* as defined herein diverged from nominate *Podarcis* Wagler, 1830, with a type species of *Seps muralis* Laurenti, 1768 more than 18 MYA.

Likewise in terms of *Thierryfreteyius gen. nov.* type species *Thierryfreteyius thierryfreteyi sp. nov.* based on the published phylogeny of Yang *et al.* (2021) at Fig. 2.

Wellingtonlacerta gen. nov. diverged from its nearest relatives, being in the genera *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name and *Hellassaurus gen. nov*., type species *Lacerta peloponnesiaca* Bibron and Bory de Saint-Vincent, 1833 more than 13 MYA based on the published phylogeny of Yang *et al.* (2021) at Fig. 2.

Distribution: Sicily and islands adjacent to the north and south the latter being between Sicily and Africa.

Etymology: *Wellingtonlacerta gen. nov.* is named in honour of eminent Australian herpetologist, Cliff Ross Wellington (AKA Ross Wellington) of Ramornie, (about 40 km west of Grafton), New South Wales, Australia, who in conjunction with fellow herpetologist, Richard Walter Wells of Drake, (about 44 km east of Tenterfield), New South Wales, Australia has formally identified and named the majority of genera of Australian reptiles.

Content: *Wellingtonlacerta waglerianus* (Gistel, 1868) (type species); *W. filfolensis* (Bedraiga, 1876); *W. raffonei* (Mertens, 1952).

THIERRYFRETEYIUS THIERRYFRETEYI SP. NOV.

LSIDurn:lsid:zoobank.org:act:353DB4E9-F8C7-421A-BA99-0EC014237AAB

Holotype: A preserved male specimen at the Herps Collection in the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA, specimen number 54233, collected from between 10 and 21 km east on CA-221 (CA-7200 in 2013) from

Facinas, Cadiz Province, Andalusia, Spain, Europe, Latitude 36.1446 N., Longitude -5.7017 W.

This government-owned facility allows access to its holdings.

Paratypes: 1/ Three preserved specimens at the Herps Collection in the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA, specimen numbers 52182, 52183 and 52185 all collected from 3 miles west of Algar on CA-521, Cádiz, Andalucía, Spain, Latitude 36.6586 N., Longitude -5.6546 W.

2/ Three preserved specimens at the Museum of Natural History, London, UK, being specimen number 1957.1.9.6 (one animal) collected from Coto Donana, Andalucía, Spain, Latitude 37.0427 N., Longitude -6.4344 W. and specimen number 1965.1011-1012 (two animals) collected from Malaga, Spain, Latitude 36.7178 N., Longitude -4.4256 W.

Diagnosis: The genus *Podarcis* Wagler, 1830 *sensu lato* has been divided into various genera and subgenera in this paper.

Recognised herein are *Podarcis* Wagler, 1830 (type species: *Seps muralis* Laurenti, 1768) and *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name. The genus *Thierryfreteyius gen. nov*., type species *Thierryfreteyius thierryfreteyi sp. nov.* is a group generally encompassing species formerly within genus *Podarcis* Wagler, 1830, and in the case of *Thierryfreteyius gen. nov*. is with a centre of distribution on the Iberian Peninsula and regions to the immediate south and north-east, including relevant to this paper, north-west Africa.

As a cohort of species, all diverged more than 10 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

Five newly named species, all until now treated as being divergent populations of *T. vaucheri* (type locality Tanger, North-west Africa) are within this paper formally named as follows:

Thierryfreteyius thierryfreteyi sp. nov. from the south of the Iberian Peninsula, with a centre of distribution being Andalucia, Spain and pretty much of the same area.

Thierryfreteyius alainduboisi sp. nov. from the immediate vicinity of the hilly areas in and around Alcala la Real, Jaen Province, Spain. It is a divergent and yet range-restricted taxon.

Thierryfreteyius karimdaouesi sp. nov. from north-west Tunisia and immediately adjacent north-east Algeria.

Thierryfreteyius kheloufii sp. nov. known only from the immediate vicinity of Batna, north-east Algeria.

Thierryfreteyius mohamedmissoumi sp. nov. known only from the immediate vicinity of Azazga, Algeria. Hilly areas south of here are occupied by the type form of *T. vaucheri.*

The six relevant (above-named) species are separated from one another by the following unique combinations of characters:

T. vaucheri is separated from the other species by the combination of average adult size 50 mm or more in snout-vent length, 61-73 midbody rows, 30 or less gular scales in a longitudinal series, 23-26 subdigital lamellae under the fourth toe.

T. vaucheri has small or tiny spots on the upper flank and larger ones below on the lower flank as well as a dominance of white or cream spotting or scales on the (original) tail, versus black.

T. thierryfreteyi sp. nov. is separated from the other species by the combination of an average adult size 48 mm or less in snout-vent length, 75-77 midbody rows, 31 or more gular scales in a longitudinal series, 27-29 subdigital lamellae under the fourth toe.

T. thierryfreteyi sp. nov. is separated from *T. vaucheri* by having medium sized spots on the upper flank and larger ones below, versus small on the upper flank and larger below in *T. vaucheri.*

T. thierryfreteyi sp. nov. has a dominance of black spotting or scales on the (original) tail, versus white or cream.

T. alainduboisi sp. nov. are readily separated from both *T. vaucheri* and *T. thierryfreteyi sp. nov.* by the presence of a strong reddish-brown rinse across the shoulder region and upper back. This same rinse is either absent or feint in the other two species.

In both *T. vaucheri* and *T. thierryfreteyi sp. nov.* there are closely spaced light spots along the dorso-lateral edge forming lines. In some specimens, these merge to form complete lines.

In *T. alainduboisi sp. nov.* the same lines are well-defined and thick, with no obvious sign of being derived from dots or the merging of dots.

The three north east Algerian taxa (also entering Tunisia), being *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*) are all easily separated as a group from the three above taxa from Morocco, north-east and central north Algeria and the south of Iberia (*T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*) by the obvious absence of any well-defined line or stripe (either composed of close spots or as a line in some form) running along the dorsolateral edge.

Instead, the dorsum colouration is continuous to the outer edge of the dorsolateral edge.

The three species *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* have a well-defined black or blackish coloured band running along the upper third of the flank, which contrasts with the same band being usually poorly defined in the other three species, with the same band also occupying half the flank in *T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*, rather than the far narrower top third only in the three north east Algerian taxa.

T. karimdaouesi sp. nov. is readily separated from *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* by the fact that in breeding males, the dark of the upper flanks intrudes onto the dorsum, the result being significant reduced green colouration. In *T. karimdaouesi sp. nov.* the head is a similar colour to that of the greenish-body and there are large irregularly shaped black blotches on the head, especially posteriorly. In *T. karimdaouesi sp. nov.* the dark on the back forms large well defined paired patches, running paravertebrally. The dorsum is not greenish with numerous tiny dark flecks or spots.

Breeding males in both *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* are readily separated from those of *T. karimdaouesi sp. nov.* by having light brown upper surfaces of the head, in stark contrast to the greenish dorsal surface of the body.

T. kheloufii sp. nov. is readily separated from both *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a green dorsum which has numerous tiny greyish-brown semi-distinct flecks all over it.

Breeding male *T. mohamedmissoumi sp. nov.* are somewhat intermediate in colour between *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a reduced amount of green on the dorsum and the dark colouration is not in the form of numerous tiny spots or flecks.

Instead it is the form of semidistinct dark marbling (the areas of dark being of moderate size), entirely on the dorsum and not entering or coming from the lateral edge or flanks (as is seen in *T. karimdaouesi sp. nov.*).

The original tail of adult *T. karimdaouesi sp. nov.* has prominent dark pigment on the top and sides, versus not so in *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*. The latter two species do have dark pigment on their original tails as adults, but this is faded and reduced in size and intensity.

Light green, yellow or white spots on the upper flanks of breeding adult male *T. mohamedmissoumi sp. nov.* are large and prominent, versus small to medium and not very bold in *T. kheloufii sp. nov.*.

The upper flank of adult breeding male *T. karimdaouesi sp. nov.* is generally blackish in colour all over. However, where spotting would have been there is instead a barely discernible medium to dark brown smudging of pigment on the otherwise blackish surface.

The six preceding species, until now all treated as populations of *Podarcis vaucheri* Boettger, 1883 are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following

unique combination of characters:

Distinctive on a glance from the smallish body scales and the absence of a dark vertebral streak or series of spots, this latter feature only shared with *T. bocagei* (Lopez-Seoane, 1885) and some south-west Asian forms.

Head is fairly short, not more than 1.5 times as long as broad, and moderately depressed, its depth equalling the distance between the anterior corner of the eye and the tympanum.

(Note that in contrast *T. bocagei* (Lopez-Seoane, 1885) has a strongly depressed head, with its depth equalling the distance between the centre or the posterior border of the eye and the tympanum).

Hind limb reaches the shoulder in males, the elbow in females; foot is one and one sixth to one and one third times the length of the head.

Tail is one and two thirds to two times as long as the head and body.

Head-shields are typical as for all *Podarcis sensu lato* species, but parietals are shorter than usual,

usually barely longer than broad; the series of granules between the supraoculars and the superciliaries is complete, or first superciliary is in contact with the second supraocular; parietal in contact with the upper postocular; usually 4 upper labials anterior to the subocular, which is narrower beneath than above; masseteric shield is present which may be divided into two or three.

Scales are finely granular, distinctly keeled, with 61 to 76 mid body rows; the 36 to 57 transverse series, in the middle of the back, correspond to the length of the head; 3 and 4 on the side correspond

to the ventral plate.

Ventral plates in 24 to 27 transverse series in males, 30 to 32 in females.

Preanal shield moderately large bordered by one or two semicircles of small shields.

Scales on upper surface of tibia a little smaller than dorsals. 13-20 femoral pores on each side.

23 to 28 lamellae under the fourth toe.

Caudal scales rather oblique, forming subequal whorls or alternately longer and shorter, upper ones are moderately or strongly keeled, truncate or very obtusely pointed behind; 25 to 35 scales in the fourth or fifth whorl.

Olive-grey above, with small black spots or reticulations; a more or less defined dark lateral band, bordered above by a whitish streak or series of white spots; no dark vertebral streak or series of spots; limbs with round light, dark-edged spots; upper surface of head more or less spotted or marbled with black; two series of white, black-edged spots along each side of the tail. Belly white or pale orange, uniform or with a few scattered black dots; throat with black dots (modified from Boulenger 1920).

Images of *Thierryfreteyius thierryfreteyi sp. nov.* in life are depicted online at:

https://www.inaturalist.org/observations/13751111

photographed at Cadiz, Spain by Yeray Seminario on 24 June 2018,

and

https://www.inaturalist.org/observations/151583094

photographed at Cádiz, Spain by Yvonne Nielsen on 17 March 2023,

and

https://www.inaturalist.org/observations/41722746

photographed by Juan Manuel Palmero Sánchez at Cadiz, Spain on 14 March 2015,

and

https://www.inaturalist.org/observations/68803857

photographed by Phil Benstead on 16 March 2016 at Benaoján, Málaga, Spain.

Images of *T. alainduboisi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/262281244 (holotype depicted in this paper)

photographed by Elyas Granero 17 February 2025 at Jaén, Spain and at:

https://www.inaturalist.org/observations/71629215

photographed by Tom Hickey at Puente de la Sierra, Jaén, Spain on 20 March 2021,

and

https://www.inaturalist.org/observations/66964643

photographed by Tom Hickey at Jaén, Spain on 23 December 2020,

and

https://www.inaturalist.org/observations/61558843

photographed by Luis González at La Guardia de Jaén, Spain on 3 October Oct 2020,

and

https://www.flickr.com/photos/50873760@N02/33236281548

photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on 15 February 2019,

and

https://www.flickr.com/photos/50873760@N02/31942862957/

photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on January 26, 2019.

Images of *T. karimdaouesi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/217141768

photographed by Gintautas Steiblys at Aïn Draham, Tunisia on 12 May 2024,

and

https://www.inaturalist.org/observations/231257907

photographed by Wouter Beukema at Aïn Draham, Tunesia on 14 May 2009,

and

https://www.inaturalist.org/observations/149281553

photographed by “probreviceps” at Ayn Darahim, Tunisia on 10 October 2004.

Images of *T. kheloufii sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/116524695 (holotype depicted in this paper)

photographed by Abdenour Kheloufi within 5 km of Batna, Algeria,

and

https://www.inaturalist.org/observations/80743727

photographed by Axel Castiel at Inoughissen, (30 km SE of Batna) Algeria on 28 May 2021.

Images of *T. mohamedmissoumi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/142127346 (holotype depicted in this paper)

photographed by Mohamed Missaum at Yakouren, Algeria (5 km east of Azazga, Algeria) on 22 July 2022,

and

https://www.inaturalist.org/observations/119701269

photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 25 April 2014,

and

https://www.inaturalist.org/observations/134054787

photographed by Mohamed Missaum at Aghrib, Algeria (12 km north northeast of Azazga, Algeria) on 4 April 2014,

and

https://www.inaturalist.org/observations/142127313

photographed by Mohamed Missaum at Akerrou, Algeria (12 km

northeast of Azazga, Algeria) on 18 June 2014.

Distribution: *Thierryfreteyius thierryfreteyi sp. nov.* is a taxon from the south of the Iberian Peninsula, with a centre of distribution being Andalucia, Spain and pretty much of the same area and not including anywhere else in Iberia except for a few immediately adjacent parts of Spain.

Etymology: *Thierryfreteyius thierryfreteyi sp. nov.* is named in honour of Thierry Frétey of Saint-Maugan, France, for services to herpetology. The spelling and construction of the generic name and species name should not be amended unless absolutely mandatory.

THIERRYFRETEYIUS ALAINDUBOISI SP. NOV.

LSIDurn:lsid:zoobank.org:act:9B06ACEC-DFB7-4B81-9FCE-8DD617BA4932

Holotype: A live adult male specimen depicted in the image and shown below on this page and also seen in the same image at:

https://www.inaturalist.org/observations/262281244

taken at Pegalajar, Jaén, Spain, Latitude 37.7406 N., Longitude -3.6458 W. (8 km east of Jaén city). by Elyas Granero on 17 February 2025 (online as of 13 March 2025).

Paratypes: The following five specimens depicted in the images posted online (as of 13 March 2025) as listed below:

https://www.inaturalist.org/observations/71629215
photographed by Tom Hickey on 20 March 2021,
and
https://www.inaturalist.org/observations/66964643
photographed by Tom Hickey on 23 December 2020,
and
https://www.inaturalist.org/observations/61558843
photographed by Luis González on 3 October 2020,
and
https://www.flickr.com/photos/50873760@N02/33236281548
photographed by Ray Hamilton on 15 February 2019,
and
https://www.flickr.com/photos/50873760@N02/31942862957/
photographed by Ray Hamilton on 26 January 2019,
all seen and photographed at or immediately adjacent to Jaén, Spain.

Diagnosis: The genus *Podarcis* Wagler, 1830 *sensu lato* has been divided into various genera and subgenera in this paper. Recognised herein are *Podarcis* Wagler, 1830 (type species: *Seps muralis* Laurenti, 1768) and *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from

synonymy as an available name. The genus *Thierryfreteyius gen. nov*., type species *Thierryfreteyius thierryfreteyi sp. nov.* is a group generally encompassing species with a centre of distribution on the Iberian Peninsula and regions to the immediate south and north-east, including relevant to this paper, north-west Africa.

As a cohort of species, all diverged more than 10 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

Five newly named species, all until now treated as being divergent populations of *T. vaucheri* (type locality Tanger, North-west Africa) are within this paper formally named as follows:

Thierryfreteyius thierryfreteyi sp. nov. from the south of the Iberian Peninsula, with a centre of distribution being Andalucia, Spain and pretty much of the same area.

Thierryfreteyius alainduboisi sp. nov. from the immediate vicinity of the hilly areas in and around Alcala la Real, Jaen Province, Spain. It is a divergent and yet range-restricted taxon.

Thierryfreteyius karimdaouesi sp. nov. from north-west Tunisia and immediately adjacent north-east Algeria.

Thierryfreteyius kheloufii sp. nov. known only from the immediate vicinity of Batna, north-east Algeria.

Thierryfreteyius mohamedmissoumi sp. nov. known only from the immediate vicinity of Azazga, Algeria. Hilly areas south of here are occupied by the type form of *T. vaucheri.*

The six relevant (above-named) species are separated from one another by the following unique combinations of characters:

T. vaucheri is separated from the other species by the combination of average adult size 50 mm or more in snout-vent length, 61-73 midbody rows, 30 or less gular scales in a longitudinal series, 23-26 subdigital lamellae under the fourth toe.

T. vaucheri has small or tiny spots on the upper flank and larger ones below on the lower flank as well as a dominance of white or cream spotting or scales on the (original) tail, versus black.

T. thierryfreteyi sp. nov. is separated from the other species by the combination of an average adult size 48 mm or less in snout-vent length, 75-77 midbody rows, 31 or more gular scales in a longitudinal series, 27-29 subdigital lamellae under the fourth toe.

T. thierryfreteyi sp. nov. is separated from *T. vaucheri* by having medium sized spots on the upper flank and larger ones below, versus small on the upper flank and larger below in *T. vaucheri.*

T. thierryfreteyi sp. nov. has a dominance of black spotting or scales on the (original) tail, versus white or cream.

T. alainduboisi sp. nov. are readily separated from both *T. vaucheri* and *T. thierryfreteyi sp. nov.* by the presence of a strong reddish-brown rinse across the shoulder region and upper back. This same rinse is either absent or feint in the other two species.

In both *T. vaucheri* and *T. thierryfreteyi sp. nov.* there are closely spaced light spots along the dorso-lateral edge forming lines. In some specimens, these merge to form complete lines.

In *T. alainduboisi sp. nov.* the same lines are well-defined and thick, with no obvious sign of being derived from dots or the merging of dots.

The three north east Algerian taxa (also entering Tunisia), being *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*) are all easily separated as a group from the three above taxa from Morocco, north-east and central north Algeria and the south of Iberia (*T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*) by the obvious absence of any well-defined line or stripe (either composed of close spots or as a line in some form) running along the dorsolateral edge.

Instead, the dorsum colouration is continuous to the outer edge of the dorsolateral edge.

The three species *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* have a well-defined black or blackish coloured band running along the upper third of the flank, which contrasts with the same band being usually poorly defined in the other three species, with the same band also occupying half the flank in *T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*, rather than the far narrower top third only in the three north east Algerian taxa.

T. karimdaouesi sp. nov. is readily separated from *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* by the fact that in breeding males, the dark of the upper flanks intrudes onto the dorsum, the result being significant reduced green colouration. In *T. karimdaouesi sp. nov.* the head is a similar colour to that of the greenish-body and there are large irregularly shaped black blotches on the head, especially posteriorly. In *T. karimdaouesi sp. nov.* the dark on the back forms large well defined paired patches, running paravertebrally. The dorsum is not greenish with numerous tiny dark flecks or spots.

Breeding males in both *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* are readily separated from those of *T. karimdaouesi sp. nov.* by having light brown upper surfaces of the head, in stark contrast to the greenish dorsal surface of the body.

T. kheloufii sp. nov. is readily separated from both *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a green dorsum which has numerous tiny greyish-brown semi-distinct flecks all over it.

Breeding male *T. mohamedmissoumi sp. nov.* are somewhat intermediate in colour between *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a reduced amount of green on the dorsum and the dark colouration is not in the form of numerous tiny spots or flecks.

Instead, it is the form of semidistinct dark marbling (the areas of dark being of moderate size), entirely on the dorsum and not entering or coming from the lateral edge or flanks (as is seen in *T. karimdaouesi sp. nov.*).

The original tail of adult *T. karimdaouesi sp. nov.* has prominent dark pigment on the top and sides, versus not so in *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*. The latter two species do have dark pigment on their original tails as adults, but this is faded and reduced in size and intensity.

Light green, yellow or white spots on the upper flanks of breeding adult male *T. mohamedmissoumi sp. nov.* are large and prominent, versus small to medium and not very bold in *T. kheloufii sp. nov.*.

The upper flank of adult breeding male *T. karimdaouesi sp. nov.* is generally blackish in colour all over. However, where spotting would have been there is instead a barely discernible medium to dark brown smudging of pigment on the otherwise blackish surface.

The six preceding species, until now all treated as populations of *Podarcis vaucheri* Boettger, 1883 are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

Distinctive on a glance from the smallish body scales and the absence of a dark vertebral streak or series of spots, this latter feature only shared with *T. bocagei* (Lopez-Seoane, 1885) and some south-west Asian forms.

Head is fairly short, not more than 1.5 times as long as broad, and moderately depressed, its depth equalling the distance between the anterior corner of the eye and the tympanum.

(Note that in contrast *T. bocagei* (Lopez-Seoane, 1885) has a strongly depressed head, with its depth equalling the distance between the centre or the posterior border of the eye and the tympanum).

Hind limb reaches the shoulder in males, the elbow in females; foot is one and one sixth to one and one third times the length of the head.

Tail is one and two thirds to two times as long as the head and body.

Head-shields are typical as for all *Podarcis sensu lato* species, but parietals are shorter than usual,

usually barely longer than broad; the series of granules between the supraoculars and the superciliaries is complete, or first superciliary is in contact with the second supraocular; parietal in contact with the upper postocular; usually 4 upper labials anterior to the subocular, which is narrower beneath than above; masseteric shield present which may be divided into two or three.

Scales are finely granular, distinctly keeled, with 61 to 76 mid body rows; the 36 to 57 transverse series, in the middle of the back, correspond to the length of the head; 3 and 4 on the side correspond

to the ventral plate.

Ventral plates in 24 to 27 transverse series in males, 30 to 32 in females.

Preanal shield moderately large bordered by one or two semicircles of small shields.

Scales on upper surface of tibia a little smaller than dorsals. 13-20 femoral pores on each side.

23 to 28 lamellae under the fourth toe.

Caudal scales rather oblique, forming subequal whorls or alternately longer and shorter, upper moderately or strongly keeled, truncate or very obtusely pointed behind; 25 to 35 scales in the fourth or fifth whorl.

Olive-grey above, with small black spots or reticulations; a more or less defined dark lateral band, bordered above by a whitish streak or series of white spots; no dark vertebral streak or series of spots; limbs with round light, dark-edged spots; upper surface of head more or less spotted or marbled with black; two series of white, black-edged spots along each side of the tail. Belly white or pale orange, uniform or with a few scattered black dots; throat with black dots (modified from Boulenger 1920).

Images of *Thierryfreteyius thierryfreteyi sp. nov.* in life are depicted online at:

https://www.inaturalist.org/observations/13751111

photographed at Cadiz, Spain by Yeray Seminario on 24 June 2018,

and

https://www.inaturalist.org/observations/151583094

photographed at Cádiz, Spain by Yvonne Nielsen on 17 March 2023,

and

https://www.inaturalist.org/observations/41722746

photographed by Juan Manuel Palmero Sánchez at Cadiz, Spain on 14 March 2015,
and
https://www.inaturalist.org/observations/68803857

photographed by Phil Benstead on 16 March 2016 at Benaoján, Málaga, Spain.

Images of *T. alainduboisi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/262281244 (holotype depicted in this paper)

photographed by Elyas Granero 17 February 2025 at Pegalajar, Jaén, Spain, Latitude 37.7406 N., Longitude -3.6458 W. (8 km east of Jaén city), and

https://www.inaturalist.org/observations/71629215

photographed by Tom Hickey at Puente de la Sierra, Jaén, Spain on 20 March 2021,

and
https://www.inaturalist.org/observations/66964643

photographed by Tom Hickey at Jaén, Spain on 23 December 2020,

and

https://www.inaturalist.org/observations/61558843

photographed by Luis González at La Guardia de Jaén, Spain on 3 October Oct 2020,

and

https://www.flickr.com/photos/50873760@N02/33236281548

photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on 15 February 2019,

and

https://www.flickr.com/photos/50873760@N02/31942862957/

photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on January 26, 2019.

Images of *T. karimdaouesi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/217141768

photographed by Gintautas Steiblys at Aïn Draham, Tunisia on 12 May 2024,

and

https://www.inaturalist.org/observations/231257907

photographed by Wouter Beukema at Aïn Draham, Tunesia on 14 May 2009,

and

https://www.inaturalist.org/observations/149281553

photographed by “probreviceps” at Ayn Darahim, Tunisia on 10 October 2004.

Images of *T. kheloufii sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/116524695 (holotype depicted in this paper)

photographed on 22 May 2022 by Abdenour Kheloufi within 5 km of Batna, Algeria,

and

https://www.inaturalist.org/observations/80743727

photographed by Axel Castiel at Inoughissen, (30 km SE of Batna) Algeria on 28 May 2021.

Images of *T. mohamedmissoumi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/142127346 (holotype depicted in this paper)

photographed by Mohamed Missaum at Yakouren, Algeria (5 km east of Azazga, Algeria) on 22 July 2022,
and

https://www.inaturalist.org/observations/119701269

photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 25 April 2014,
and

https://www.inaturalist.org/observations/134054787

photographed by Mohamed Missaum at Aghrib, Algeria (12 km north northeast of Azazga, Algeria) on 4 April 2014,
and

https://www.inaturalist.org/observations/142127313

photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 18 June 2014.

Distribution: *Thierryfreteyius alainduboisi sp. nov.* is a taxon from the immediate vicinity of the hilly areas in and around Alcala la Real, Jaen Province, Spain.

It is a divergent and yet range-restricted taxon.

Etymology: *Thierryfreteyius alainduboisi sp. nov.* is named in honour of Alain Dubois of Paris, France, who for many years has been a curator at Muséum national d’Histoire Naturelle, Paris, France for his services to herpetology and zoological nomenclature more widely.

THIERRYFRETEYIUS KARIMDAOUESI SP. NOV.

LSIDurn:lsid:zoobank.org:act:F5829F8D-52FC-40E0-A69B-2A23BBADA0BE

Holotype: A preserved specimen at the herpetology collection of the California Academy of Sciences, San Francisco, California, USA, specimen number CAS HERP 247033 collected from Ain Draham, Suq al Arba a, Tunisia, Africa, Latitude 36.47 N., Longitude 8.42 E.

This facility allows access to its holdings.

Paratypes: 1/ A preserved specimen at the herpetology collection of the California Academy of Sciences, San Francisco, California, USA, specimen number CAS HERP 247034 collected from Suq al Arba a (close to Tabarka), Tunisia, Africa, Latitude 36.95 N., Longitude 8.75 E.

2/ A preserved specimen at the herpetology collection of the California Academy of Sciences, San Francisco, California, USA, specimen number CAS HERP 247036 collected from Tabarka, Jundubah Gov., Tunisia, Africa, Latitude 36.9455 N., Longitude 8.7455 E.

3/ Ten preserved specimens at the Museum of Natural History, London, UK, specimen numbers BMNH 1965.413-422 collected from Dougga, Tunisia, Africa, Latitude 36.4229 N., Longitude 9.2193 E.

4/ A preserved specimen at the herpetology collection of the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA, specimen number CM Herps 58413 collected from Annaba, 6 km north of Saraidi on the road to Plage De Saraidi, Algeria, Africa.

Diagnosis: The genus *Podarcis* Wagler, 1830 *sensu lato* has been divided into various genera and subgenera in this paper.

Recognised herein are *Podarcis* Wagler, 1830 (type species: *Seps muralis* Laurenti, 1768) and *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name. The genus *Thierryfreteyius gen. nov*., type species *Thierryfreteyius thierryfreteyi sp. nov.* is a group generally encompassing species with a centre of distribution on the Iberian Peninsula and regions to the immediate south and north-east, including relevant to this paper, north-west Africa.

As a cohort of species, all diverged more than 10 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

Five newly named species, all until now treated as being divergent populations of *T. vaucheri* (type locality Tanger, North-west Africa) are within this paper formally named as follows:

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Thierryfreteyius karimdaouesi sp. nov. from north-west Tunisia and immediately adjacent north-east Algeria.

Thierryfreteyius kheloufii sp. nov. known only from the immediate vicinity of Batna, north-east Algeria.

Thierryfreteyius mohamedmissoumi sp. nov. known only from the immediate vicinity of Azazga, Algeria. Hilly areas south of here are occupied by the type form of *T. vaucheri.*

The six relevant (above-named) species are separated from one another by the following unique combinations of characters:

T. vaucheri is separated from the other species by the combination of average adult size 50 mm or more in snout-vent length, 61-73 midbody rows, 30 or less gular scales in a longitudinal series, 23-26 subdigital lamellae under the fourth toe.

T. vaucheri has small or tiny spots on the upper flank and larger ones below on the lower flank as well as a dominance of white or cream spotting or scales on the (original) tail, versus black.

T. thierryfreteyi sp. nov. is separated from the other species by the combination of an average adult size 48 mm or less in snout-vent length, 75-77 midbody rows, 31 or more gular scales in a longitudinal series, 27-29 subdigital lamellae under the fourth toe.

T. thierryfreteyi sp. nov. is separated from *T. vaucheri* by having medium sized spots on the upper flank and larger ones below, versus small on the upper flank and larger below in *T. vaucheri.*

T. thierryfreteyi sp. nov. has a dominance of black spotting or scales on the (original) tail, versus white or cream.

T. alainduboisi sp. nov. are readily separated from both *T. vaucheri* and *T. thierryfreteyi sp. nov.* by the presence of a strong reddish-brown rinse across the shoulder region and upper back. This same rinse is either absent or feint in the other two species.

In both *T. vaucheri* and *T. thierryfreteyi sp. nov.* there are closely spaced light spots along the dorso-lateral edge forming lines. In some specimens, these merge to form complete lines.

In *T. alainduboisi sp. nov.* the same lines are well-defined and thick, with no obvious sign of being derived from dots or the merging of dots.

The three north east Algerian taxa (also entering Tunisia), being *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*) are all easily separated as a group from the three above taxa from Morocco, north-east and central north Algeria and the south of Iberia (*T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*) by the obvious absence of any well-defined line or stripe (either composed of close spots or as a line in some form) running along the dorsolateral edge.

Instead, the dorsum colouration is continuous to the outer edge of the dorsolateral edge.

The three species *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* have a well-defined black or blackish coloured band running along the upper third of the flank, which contrasts with the same band being usually poorly defined in the other three species, with the same band also occupying half the flank in *T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*, rather than the far narrower top third only in the three north east Algerian taxa.

T. karimdaouesi sp. nov. is readily separated from *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* by the fact that in breeding males, the dark of the upper flanks intrudes onto the dorsum, the result being significant reduced green colouration. In *T. karimdaouesi sp. nov.* the head is a similar colour to that of the greenish-body and there are large irregularly shaped black blotches on the head, especially posteriorly. In *T. karimdaouesi sp. nov.* the dark on the back forms large well defined paired patches, running paravertebrally. The dorsum is not greenish with numerous tiny dark flecks or spots.

Breeding males in both *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* are readily separated from those of *T. karimdaouesi sp. nov.* by having light brown upper surfaces of the head, in stark contrast to the greenish dorsal surface of the body.

T. kheloufii sp. nov. is readily separated from both *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a green dorsum which has numerous tiny greyish-brown semi-distinct flecks all over it.

Breeding male *T. mohamedmissoumi sp. nov.* are somewhat intermediate in colour between *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a reduced amount of green on the dorsum and the dark colouration is not in the form of numerous tiny spots or flecks.

Instead it is the form of semidistinct dark marbling (the areas of dark being of moderate size), entirely on the dorsum and not entering or coming from the lateral edge or flanks (as is seen in *T. karimdaouesi sp. nov.*).

The original tail of adult *T. karimdaouesi sp. nov.* has prominent dark pigment on the top and sides, versus not so in *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*. The latter two species do have dark pigment on their original tails as adults, but this is faded and reduced in size and intensity.

Light green, yellow or white spots on the upper flanks of breeding adult male *T. mohamedmissoumi sp. nov.* are large and prominent, versus small to medium and not very bold in *T. kheloufii sp. nov.*.

The upper flank of adult breeding male *T. karimdaouesi sp. nov.* is generally blackish in colour all over. However, where spotting

would have been there is instead a barely discernible medium to dark brown smudging of pigment on the otherwise blackish surface.

The six preceding species, until now all treated as populations of *Podarcis vaucheri* Boettger, 1883 are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

Distinctive on a glance from the smallish body scales and the absence of a dark vertebral streak or series of spots, this latter feature only shared with *T. bocagei* (Lopez-Seoane, 1885) and some south-west Asian forms.

Head is fairly short, not more than 1.5 times as long as broad, and moderately depressed, its depth equalling the distance between the anterior corner of the eye and the tympanum.

(Note that in contrast *T. bocagei* (Lopez-Seoane, 1885) has a strongly depressed head, with its depth equalling the distance between the centre or the posterior border of the eye and the tympanum).

Hind limb reaches the shoulder in males, the elbow in females; foot is one and one sixth to one and one third times the length of the head.

Tail is one and two thirds to two times as long as the head and body.

Head-shields are typical as for all *Podarcis sensu lato* species, but parietals are shorter than usual,

usually barely longer than broad; the series of granules between the supraoculars and the superciliaries is complete, or first superciliary is in contact with the second supraocular; parietal in contact with the upper postocular; usually 4 upper labials anterior to the subocular, which is narrower beneath than above; masseteric shield present which may be divided into two or three.

Scales are finely granular, distinctly keeled, with 61 to 76 mid body rows; the 36 to 57 transverse series, in the middle of the back, correspond to the length of the head; 3 and 4 on the side correspond

to the ventral plate.

Ventral plates in 24 to 27 transverse series in males, 30 to 32 in females.

Preanal shield moderately large bordered by one or two semicircles of small shields.

Scales on upper surface of tibia a little smaller than dorsals. 13-20 femoral pores on each side.

23 to 28 lamellae under the fourth toe.

Caudal scales rather oblique, forming subequal whorls or alternately longer and shorter, upper moderately or strongly keeled, truncate or very obtusely pointed behind; 25 to 35 scales in the fourth or fifth whorl.

Olive-grey above, with small black spots or reticulations; a more or less defined dark lateral band, bordered above by a whitish streak or series of white spots; no dark vertebral streak or series of spots; limbs with round light, dark-edged spots; upper surface of head more or less spotted or marbled with black; two series of white, black-edged spots along each side of the tail. Belly white or pale orange, uniform or with a few scattered black dots; throat with black dots (modified from Boulenger 1920).

Images of *Thierryfreteyius thierryfreteyi sp. nov.* in life are depicted online at:

https://www.inaturalist.org/observations/13751111

photographed at Cadiz, Spain by Yeray Seminario on 24 June 2018,

and

https://www.inaturalist.org/observations/151583094

photographed at Cádiz, Spain by Yvonne Nielsen on 17 March 2023,

and

https://www.inaturalist.org/observations/41722746

photographed by Juan Manuel Palmero Sánchez at Cadiz, Spain on 14 March 2015,

and

https://www.inaturalist.org/observations/68803857

photographed by Phil Benstead on 16 March 2016 at Benaoján, Málaga, Spain.

Images of *T. alainduboisi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/262281244 (holotype depicted in this paper)

photographed by Elyas Granero 17 February 2025 at Pegalajar, Jaén, Spain, Latitude 37.7406 N., Longitude -3.6458 W. (8 km east of Jaén city), and

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photographed by Tom Hickey at Puente de la Sierra, Jaén, Spain on 20 March 2021,

and

https://www.inaturalist.org/observations/66964643

photographed by Tom Hickey at Jaén, Spain on 23 December 2020,

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https://www.inaturalist.org/observations/61558843

photographed by Luis González at La Guardia de Jaén, Spain on 3 October Oct 2020,

and

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photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on 15 February 2019,

and

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photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on January 26, 2019.

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photographed by by Wouter Beukema at Aïn Draham, Tunesia on 14 May 2009,

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Images of *T. kheloufii sp. nov.* are depicted in life online at:

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photographed by Axel Castiel at Inoughissen, (30 km SE of Batna) Algeria on 28 May 2021.

Images of *T. mohamedmissoumi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/142127346 (holotype depicted in this paper)

photographed by Mohamed Missaum at Yakouren, Algeria (5 km east of Azazga, Algeria) on 22 July 2022,

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photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 25 April 2014,

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photographed by Mohamed Missaum at Aghrib, Algeria (12 km north northeast of Azazga, Algeria) on 4 April 2014,
and

https://www.inaturalist.org/observations/142127313

photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 18 June 2014.

Distribution: *Thierryfreteyius karimdaouesi sp. nov.* is a taxon from north-west Tunisia and immediately adjacent north-east Algeria, generally close to the coast and mountains.

Etymology: *Thierryfreteyius karimdaouesi sp. nov.* is named in honour of Karin Daoues of Paris, France, owner of Ferme Tropicale a major educational resource for herpetologists in Paris and those who come to visit from elsewhere.

He has pioneered the successful keeping of numerous species of reptiles and amphibians for decades.

THIERRYFRETEYIUS KHELOUFII SP. NOV.

LSIDurn:lsid:zoobank.org:act:29946267-EE6E-4539-A117-553566BB8BCD

Holotype: A live adult male specimen depicted in the image and shown within or adjacent to the text of this formal description, being on page 43 of this paper and also seen in the same image at:

https://www.inaturalist.org/observations/116524695 (online as of 13 March 2025)

photographed by Abdenour Kheloufi within 5 km of Batna, Algeria, Africa, (Latitude 35.5446 N., Longitude 6.1597 E.) on 10 May 2022, location of specimen photo being at Latitude 35.579974 N., Longitude 6.076526 E.

Paratype: An adult male specimen depicted in the image at https://www.inaturalist.org/observations/80743727 (online as of 13 March 2025)

photographed by Axel Castiel at Inoughissen, Algeria, Africa, Latitude 35.3048 N., Longitude 6.5490 E. on 28 May 2021 (30 km SE of Batna, Latitude 35.5446 N., Longitude 6.1597 E.).

Diagnosis: The genus *Podarcis* Wagler, 1830 *sensu lato* has been divided into various genera and subgenera in this paper.

Recognised herein are *Podarcis* Wagler, 1830 (type species: *Seps muralis* Laurenti, 1768) and *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name. The genus *Thierryfreteyius gen. nov*., type species *Thierryfreteyius thierryfreteyi sp. nov.* is a group generally encompassing species with a centre of distribution on the Iberian Peninsula and regions to the immediate south and north-east, including relevant to this paper, north-west Africa.

As a cohort of species, all diverged more than 10 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

Five newly named species, all until now treated as being divergent populations of *T. vaucheri* (type locality Tanger, North-west Africa) are within this paper formally named as follows:

Thierryfreteyius thierryfreteyi sp. nov. from the south of the Iberian Peninsula, with a centre of distribution being Andalucia, Spain and pretty much of the same area.

Thierryfreteyius alainduboisi sp. nov. from the immediate vicinity of the hilly areas in and around Alcala la Real, Jaen Province, Spain. It is a divergent and yet range-restricted taxon.

Thierryfreteyius karimdaouesi sp. nov. from north-west Tunisia and immediately adjacent north-east Algeria.

Thierryfreteyius kheloufii sp. nov. known only from the immediate vicinity of Batna, north-east Algeria.

Thierryfreteyius mohamedmissoumi sp. nov. known only from the immediate vicinity of Azazga, Algeria. Hilly areas south of here are occupied by the type form of *T. vaucheri.*

The six relevant (above-named) species are separated from one another by the following unique combinations of characters:

T. vaucheri is separated from the other species by the combination of average adult size 50 mm or more in snout-vent length, 61-73 midbody rows, 30 or less gular scales in a longitudinal series, 23-26 subdigital lamellae under the fourth toe.

T. vaucheri has small or tiny spots on the upper flank and larger ones below on the lower flank as well as a dominance of white or cream spotting or scales on the (original) tail, versus black.

T. thierryfreteyi sp. nov. is separated from the other species by the combination of an average adult size 48 mm or less in snout-vent length, 75-77 midbody rows, 31 or more gular scales in a longitudinal series, 27-29 subdigital lamellae under the fourth toe.

T. thierryfreteyi sp. nov. is separated from *T. vaucheri* by having medium sized spots on the upper flank and larger ones below, versus small on the upper flank and larger below in *T. vaucheri.*

T. thierryfreteyi sp. nov. has a dominance of black spotting or scales on the (original) tail, versus white or cream.

T. alainduboisi sp. nov. are readily separated from both *T. vaucheri* and *T. thierryfreteyi sp. nov.* by the presence of a strong reddish-brown rinse across the shoulder region and upper back. This same rinse is either absent or feint in the other two species.

In both *T. vaucheri* and *T. thierryfreteyi sp. nov.* there are closely spaced light spots along the dorso-lateral edge forming lines. In some specimens, these merge to form complete lines.

In *T. alainduboisi sp. nov.* the same lines are well-defined and thick, with no obvious sign of being derived from dots or the merging of dots.

The three north east Algerian taxa (also entering Tunisia), being *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*) are all easily separated as a group from the three above taxa from Morocco, north-east and central north Algeria and the south of Iberia (*T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*) by the obvious absence of any well-defined line or stripe (either composed of close spots or as a line in some form) running along the dorsolateral edge.

Instead, the dorsum colouration is continuous to the outer edge of the dorsolateral edge.

The three species *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* have a well-defined black or blackish coloured band running along the upper third of the flank, which contrasts with the same band being usually poorly defined in the other three species, with the same band also occupying half the flank in *T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*, rather than the far narrower top third only in the three north east Algerian taxa.

T. karimdaouesi sp. nov. is readily separated from *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* by the fact that in breeding males, the dark of the upper flanks intrudes onto the dorsum, the result being significant reduced green colouration. In *T. karimdaouesi sp. nov.* the head is a similar colour to that of the greenish-body and there are large irregularly shaped black blotches on the head, especially posteriorly. In *T. karimdaouesi sp. nov.* the dark on the back forms large well defined paired patches, running paravertebrally. The dorsum is not greenish with numerous tiny dark flecks or spots.

Breeding males in both *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* are readily separated from those of *T. karimdaouesi sp. nov.* by having light brown upper surfaces of the head, in stark contrast to the greenish dorsal surface of the body.

T. kheloufii sp. nov. is readily separated from both *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a green dorsum which has numerous tiny greyish-brown semi-distinct flecks all over it.

Breeding male *T. mohamedmissoumi sp. nov.* are somewhat intermediate in colour between *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a reduced amount of green on the dorsum and the dark colouration is not in the form of numerous tiny spots or flecks.

Instead, it is the form of semidistinct dark marbling (the areas

Holotype in life of *Thierryfreteyius kheloufii sp. nov.* photographed by Abdenour Kheloufi within 5 km of Batna, Algeria, Africa, (Latitude 35.5446 N., Longitude 6.1597 E.) on 10 May 2022, location of specimen photo being at Latitude 35.579974 N., Longitude 6.076526 E.

of dark being of moderate size), entirely on the dorsum and not entering or coming from the lateral edge or flanks (as is seen in *T. karimdaouesi sp. nov.*).

The original tail of adult *T. karimdaouesi sp. nov.* has prominent dark pigment on the top and sides, versus not so in *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*. The latter two species do have dark pigment on their original tails as adults, but this is faded and reduced in size and intensity.

Light green, yellow or white spots on the upper flanks of breeding adult male *T. mohamedmissoumi sp. nov.* are large and prominent, versus small to medium and not very bold in *T. kheloufii sp. nov.*.

The upper flank of adult breeding male *T. karimdaouesi sp. nov.* is generally blackish in colour all over. However, where spotting would have been there is instead a barely discernible medium to dark brown smudging of pigment on the otherwise blackish surface.

The six preceding species, until now all treated as populations of *Podarcis vaucheri* Boettger, 1883 are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

Distinctive on a glance from the smallish body scales and the absence of a dark vertebral streak or series of spots, this latter feature only shared with *T. bocagei* (Lopez-Seoane, 1885) and some south-west Asian forms.

Head is fairly short, not more than 1.5 times as long as broad, and moderately depressed, its depth equalling the distance between the anterior corner of the eye and the tympanum.

(Note that in contrast *T. bocagei* (Lopez-Seoane, 1885) has a strongly depressed head, with its depth equalling the distance between the centre or the posterior border of the eye and the tympanum).

Hind limb reaches the shoulder in males, the elbow in females; foot is one and one sixth to one and one third times the length of the head.

Tail is one and two thirds to two times as long as the head and body.

Head-shields are typical as for all *Podarcis sensu lato* species, but parietals are shorter than usual,

usually barely longer than broad; the series of granules between the supraoculars and the superciliaries is complete, or first superciliary is in contact with the second supraocular; parietal in contact with the upper postocular; usually 4 upper labials anterior to the subocular, which is narrower beneath than above; masseteric shield present which may be divided into two or three.

Scales are finely granular, distinctly keeled, with 61 to 76 mid body rows; the 36 to 57 transverse series, in the middle of the back, correspond to the length of the head; 3 and 4 on the side correspond

to the ventral plate.

Ventral plates in 24 to 27 transverse series in males, 30 to 32 in females.

Preanal shield moderately large bordered by one or two semicircles of small shields.

Scales on upper surface of tibia a little smaller than dorsals. 13-20 femoral pores on each side.

23 to 28 lamellae under the fourth toe.

Caudal scales rather oblique, forming subequal whorls or alternately longer and shorter, upper moderately or strongly keeled, truncate or very obtusely pointed behind; 25 to 35 scales in the fourth or fifth whorl.

Olive-grey above, with small black spots or reticulations; a more or less defined dark lateral band, bordered above by a whitish streak or series of white spots; no dark vertebral streak or series of spots; limbs with round light, dark-edged spots; upper surface of head more or less spotted or marbled with black; two series of white, black-edged spots along each side of the tail. Belly white or pale orange, uniform or with a few scattered black dots; throat with black dots (modified from Boulenger 1920).

Images of *Thierryfreteyius thierryfreteyi sp. nov.* in life are depicted online at:

https://www.inaturalist.org/observations/13751111

photographed at Cadiz, Spain by Yeray Seminario on 24 June 2018,

and

https://www.inaturalist.org/observations/151583094

photographed at Cádiz, Spain by Yvonne Nielsen on 17 March 2023,

and

https://www.inaturalist.org/observations/41722746

photographed by Juan Manuel Palmero Sánchez at Cadiz, Spain on 14 March 2015,

and

https://www.inaturalist.org/observations/68803857

photographed by Phil Benstead on 16 March 2016 at Benaoján, Málaga, Spain.

Images of *T. alainduboisi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/262281244 (holotype depicted in this paper)

by Elyas Granero 17 February 2025 at Pegalajar, Jaén, Spain, Latitude 37.7406 N., Longitude -3.6458 W. (8 km east of Jaén city), and,

https://www.inaturalist.org/observations/71629215

photographed by Tom Hickey at Puente de la Sierra, Jaén, Spain on 20 March 2021,

and

https://www.inaturalist.org/observations/66964643

photographed by Tom Hickey at Jaén, Spain on 23 December 2020,

and

https://www.inaturalist.org/observations/61558843

photographed by Luis González at La Guardia de Jaén, Spain on 3 October Oct 2020,

and

https://www.flickr.com/photos/50873760@N02/33236281548

photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on 15 February 2019,

and

https://www.flickr.com/photos/50873760@N02/31942862957/

photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on January 26, 2019.

Images of *T. karimdaouesi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/217141768

photographed by Gintautas Steiblys at Aïn Draham, Tunisia on 12 May 2024,

and

https://www.inaturalist.org/observations/231257907

photographed by Wouter Beukema at Aïn Draham, Tunesia on 14 May 2009,

and

https://www.inaturalist.org/observations/149281553

photographed by “probreviceps” at Ayn Darahim, Tunisia on 10 October 2004.

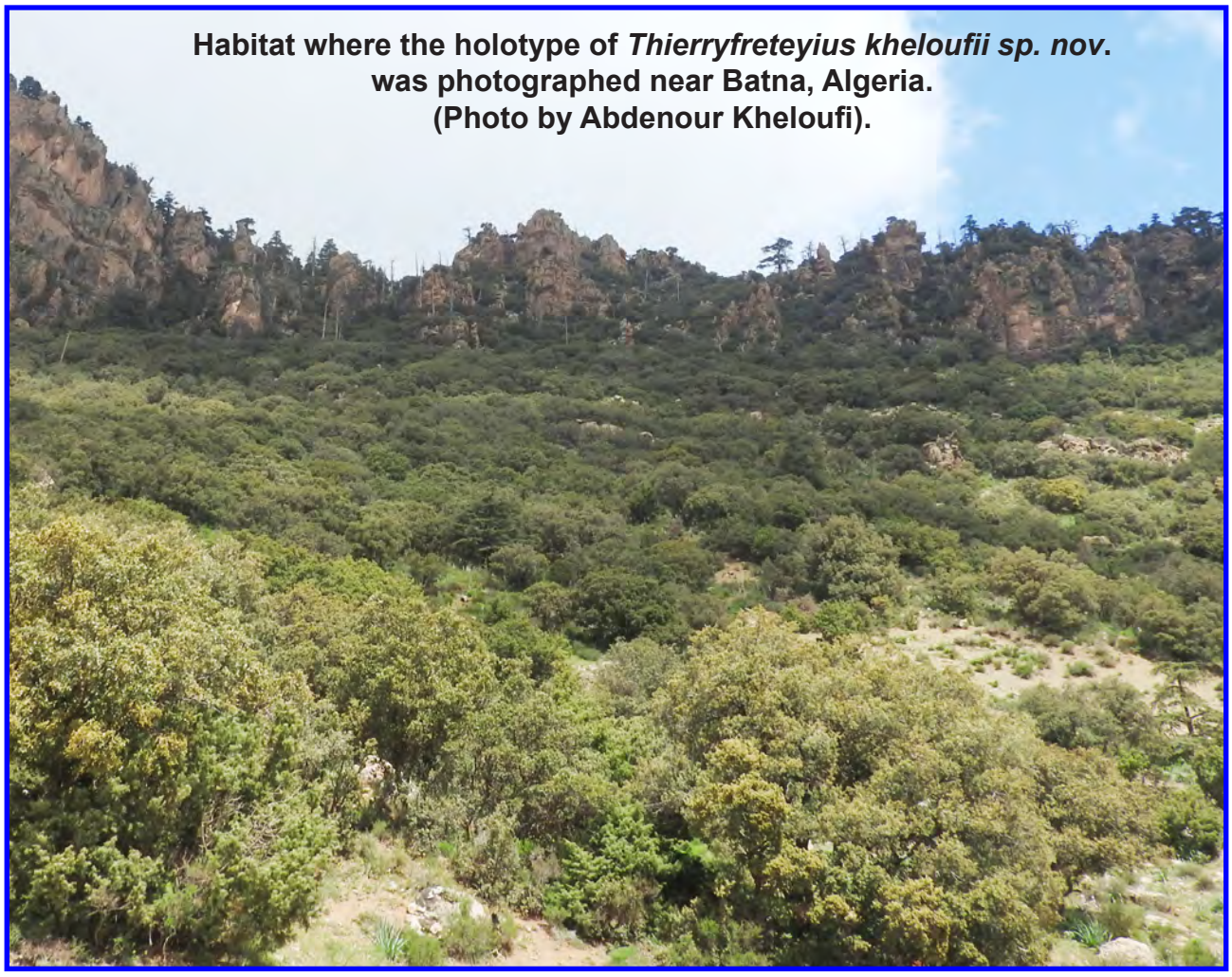
Images of *T. kheloufii sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/116524695 (holotype depicted in this paper)

photographed by Abdenour Kheloufi within 5 km of Batna, Algeria on 10 May 2022,

and

https://www.inaturalist.org/observations/80743727



Habitat where the holotype of *Thierryfreteyius kheloufii sp. nov*. was photographed near Batna, Algeria. (Photo by Abdenour Kheloufi).

photographed by Axel Castiel at Inoughissen, (30 km SE of Batna) Algeria on 28 May 2021.

Images of *T. mohamedmissoumi sp. nov.* are depicted in life online at:

https://www.inaturalist.org/observations/142127346 (holotype depicted in this paper)

photographed by Mohamed Missaum at Yakouren, Algeria (5 km east of Azazga, Algeria) on 22 July 2022,
and

https://www.inaturalist.org/observations/119701269

photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 25 April 2014,
and

https://www.inaturalist.org/observations/134054787

photographed by Mohamed Missaum at Aghrib, Algeria (12 km north northeast of Azazga, Algeria) on 4 April 2014,
and

https://www.inaturalist.org/observations/142127313

photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 18 June 2014.

Distribution: *Thierryfreteyius kheloufii sp. nov.* is only known from the immediate vicinity of Batna, north-east Algeria.

Etymology: *Thierryfreteyius kheloufii sp. nov.* is named in honour of Dr. Abdenour Kheloufi, lecturer at Maître de Conférences (HDR), Department of Ecology and Environment, University of Batna, Algeria, Africa in recognition of his services to zoology and wildlife conservation.

THIERRYFRETEYIUS MOHAMEDMISSOURMI SP. NOV.

LSIDurn:lsid:zoobank.org:act:A869DF46-A058-4040-A171-D30FC9FC67B1

Holotype: A live adult male specimen depicted in the image and shown within or adjacent to the text of this formal description, being on the top of page 47 in this paper and also seen in the same image at:

https://www.inaturalist.org/observations/142127346 (online as of 13 March 2025)

photographed by Mohamed Missaum at Yakouren, Algeria, Africa, Latitude 36.7346 N., Longitude 4.4390 E., (5 km east of Azazga, Algeria) on 22 July 2022.

Paratypes: 1/ A live immature specimen depicted in the image online at:

https://www.inaturalist.org/observations/119701269

photographed by Mohamed Missaum at Akerrou, Algeria, Africa, Latitude 36.8187 N., Longitude 4.4454 E. (12 km northeast of Azazga, Algeria) on 25 April 2014,
and 2/ two live specimens depicted in the image online at:

https://www.inaturalist.org/observations/134054787

photographed by Mohamed Missaum at Aghrib, Algeria, Africa, Latitude 36.8066 N., Longitude 4.3200 E. (12 km north northeast of Azazga, Algeria) on 4 April 2014,
and 3/ a live adult male specimen depicted in the image online at:

https://www.inaturalist.org/observations/142127313

photographed by Mohamed Missaum at Akerrou, Algeria, Africa, Latitude 36.8187 N., Longitude 4.4454 E. (12 km northeast of

Azazga, Algeria) on 18 June 2014.

Diagnosis: The genus *Podarcis* Wagler, 1830 *sensu lato* has been divided into various genera and subgenera in this paper.

Recognised herein are *Podarcis* Wagler, 1830 (type species: *Seps muralis* Laurenti, 1768) and *Phenax* Fitzinger, 1843 (type species: *Lacerta taurica* Pallas, 1814), being resurrected from synonymy as an available name. The genus *Thierryfreteyius gen. nov*., type species *Thierryfreteyius thierryfreteyi sp. nov.* is a group generally encompassing species with a centre of distribution on the Iberian Peninsula and regions to the immediate south and north-east, including relevant to this paper, north-west Africa.

As a cohort of species, all diverged more than 10 MYA from their nearest named relatives. This includes all those species within what is left of *Podarcis* Wagler, 1830 *sensu lato.*

Five newly named species, all until now treated as being divergent populations of *T. vaucheri* (type locality Tanger, North-west Africa) are within this paper formally named as follows:

Thierryfreteyius thierryfreteyi sp. nov. from the south of the Iberian Peninsula, with a centre of distribution being Andalucia, Spain and pretty much of the same area.

Thierryfreteyius alainduboisi sp. nov. from the immediate vicinity of the hilly areas in and around Alcala la Real, Jaen Province, Spain. It is a divergent and yet range-restricted taxon.

Thierryfreteyius karimdaouesi sp. nov. from north-west Tunisia and immediately adjacent north-east Algeria.

Thierryfreteyius kheloufii sp. nov. known only from the immediate vicinity of Batna, north-east Algeria.

Thierryfreteyius mohamedmissoumi sp. nov. known only from the immediate vicinity of Azazga, Algeria. Hilly areas south of here are occupied by the type form of *T. vaucheri.*

The six relevant (above-named) species are separated from one another by the following unique combinations of characters:

T. vaucheri is separated from the other species by the combination of average adult size 50 mm or more in snout-vent length, 61-73 midbody rows, 30 or less gular scales in a longitudinal series, 23-26 subdigital lamellae under the fourth toe.

T. vaucheri has small or tiny spots on the upper flank and larger ones below on the lower flank as well as a dominance of white or cream spotting or scales on the (original) tail, versus black.

T. thierryfreteyi sp. nov. is separated from the other species by the combination of an average adult size 48 mm or less in snout-vent length, 75-77 midbody rows, 31 or more gular scales in a longitudinal series, 27-29 subdigital lamellae under the fourth toe.

T. thierryfreteyi sp. nov. is separated from *T. vaucheri* by having medium sized spots on the upper flank and larger ones below, versus small on the upper flank and larger below in *T. vaucheri.*

T. thierryfreteyi sp. nov. has a dominance of black spotting or scales on the (original) tail, versus white or cream.

T. alainduboisi sp. nov. are readily separated from both *T. vaucheri* and *T. thierryfreteyi sp. nov.* by the presence of a strong reddish-brown rinse across the shoulder region and upper back. This same rinse is either absent or feint in the other two species.

In both *T. vaucheri* and *T. thierryfreteyi sp. nov.* there are closely spaced light spots along the dorso-lateral edge forming lines. In some specimens, these merge to form complete lines.

In *T. alainduboisi sp. nov.* the same lines are well-defined and thick, with no obvious sign of being derived from dots or the merging of dots.

The three north east Algerian taxa (also entering Tunisia), being *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.*) are all easily separated as a group from the three above taxa from Morocco, north-east and central north Algeria and the south of Iberia (*T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*) by the obvious absence of any well-defined line or stripe (either composed of close spots or as a line in some form) running along the dorsolateral edge. Instead, the dorsum colouration is continuous to the outer edge of the dorsolateral edge.

The three species *T. karimdaouesi sp. nov.*, *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* have a well-defined black or blackish coloured band running along the upper third of the flank, which contrasts with the same band being usually poorly defined in the other three species, with the same band also occupying half the flank in *T. vaucheri, T. thierryfreteyi sp. nov.* and *T. alainduboisi sp. nov.*, rather than the far narrower top third only in the three north east Algerian taxa.

T. karimdaouesi sp. nov. is readily separated from *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* by the fact that in breeding males, the dark of the upper flanks intrudes onto the dorsum, the result being significant reduced green colouration. In *T. karimdaouesi sp. nov.* the head is a similar colour to that of the greenish-body and there are large irregularly shaped black blotches on the head, especially posteriorly. In *T. karimdaouesi sp. nov.* the dark on the back forms large well defined paired patches, running paravertebrally. The dorsum is not greenish with numerous tiny dark flecks or spots.

Breeding males in both *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov.* are readily separated from those of *T. karimdaouesi sp. nov.* by having light brown upper surfaces of the head, in stark contrast to the greenish dorsal surface of the body.

T. kheloufii sp. nov. is readily separated from both *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a green dorsum which has numerous tiny greyish-brown semi-distinct flecks all over it.

Breeding male *T. mohamedmissoumi sp. nov.* are somewhat intermediate in colour between *T. karimdaouesi sp. nov.* and *T. mohamedmissoumi sp. nov.* in that breeding adult males have a reduced amount of green on the dorsum and the dark colouration is not in the form of numerous tiny spots or flecks.

Instead, it is the form of semidistinct dark marbling (the areas of dark being of moderate size), entirely on the dorsum and not entering or coming from the lateral edge or flanks (as is seen in *T. karimdaouesi sp. nov.*).

The original tail of adult *T. karimdaouesi sp. nov.* has prominent dark pigment on the top and sides, versus not so in *T. kheloufii sp. nov.* and *T. mohamedmissoumi sp. nov..* The latter two species do have dark pigment on their original tails as adults, but this is faded and reduced in size and intensity.

Light green, yellow or white spots on the upper flanks of breeding adult male *T. mohamedmissoumi sp. nov.* are large and prominent, versus small to medium and not very bold in *T. kheloufii sp. nov..*

The upper flank of adult breeding male *T. karimdaouesi sp. nov.* is generally blackish in colour all over. However, where spotting would have been there is instead a barely discernible medium to dark brown smudging of pigment on the otherwise blackish surface.

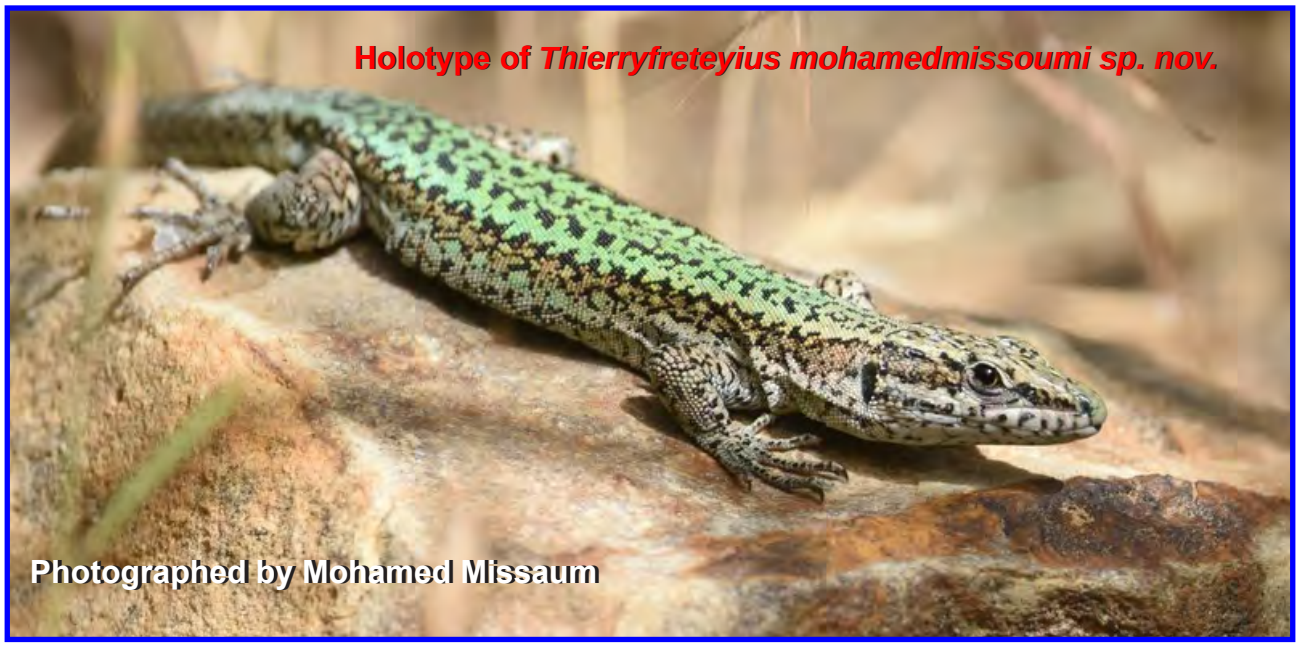
The six preceding species, until now all treated as populations of *Podarcis vaucheri* Boettger, 1883 are separated from all other species within *Podarcis* Wagler, 1830 *sensu lato* by the following unique combination of characters:

Distinctive on a glance from the smallish body scales and the absence of a dark vertebral streak or series of spots, this latter feature only shared with *T. bocagei* (Lopez-Seoane, 1885) and some south-west Asian forms.

Head is fairly short, not more than 1.5 times as long as broad, and moderately depressed, its depth equalling the distance between the anterior corner of the eye and the tympanum.

(Note that in contrast *T. bocagei* (Lopez-Seoane, 1885) has a strongly depressed head, with its depth equalling the distance between the centre or the posterior border of the eye and the tympanum).

Hind limb reaches the shoulder in males, the elbow in females;



foot is one and one sixth to one and one third times the length of the head.

Tail is one and two thirds to two times as long as the head and body.

Head-shields are typical as for all *Podarcis sensu lato* species, but parietals are shorter than usual,

usually barely longer than broad; the series of granules between the supraoculars and the superciliaries is complete, or first superciliary is in contact with the second supraocular; parietal in contact with the upper postocular; usually 4 upper labials anterior to the subocular, which is narrower beneath than above; masseteric shield present which may be divided into two or three.

Scales are finely granular, distinctly keeled, with 61 to 76 mid body rows; the 36 to 57 transverse series, in the middle of the back, correspond to the length of the head; 3 and 4 on the side correspond

to the ventral plate.

Ventral plates in 24 to 27 transverse series in males, 30 to 32 in females.

Preanal shield moderately large bordered by one or two semicircles of small shields.

Scales on upper surface of tibia a little smaller than dorsals. 13-20 femoral pores on each side.

23 to 28 lamellae under the fourth toe.

Caudal scales rather oblique, forming subequal whorls or alternately longer and shorter, upper moderately or strongly keeled, truncate or very obtusely pointed behind; 25 to 35 scales in the fourth or fifth whorl.

Olive-grey above, with small black spots or reticulations; a more or less defined dark lateral band, bordered above by a whitish streak or series of white spots; no dark vertebral streak or series of spots; limbs with round light, dark-edged spots; upper surface of head more or less spotted or marbled with black; two series of white, black-edged spots along each side of the tail. Belly white or pale orange, uniform or with a few scattered black dots; throat with black dots (modified from Boulenger 1920).

Images of *Thierryfreteyius thierryfreteyi sp. nov.* in life are depicted online at:

https://www.inaturalist.org/observations/13751111

photographed at Cadiz, Spain by Yeray Seminario on 24 June 2018,

Hoser 2025 - Australasian Journal of Herpetology 74:28-52.

and
https://www.inaturalist.org/observations/151583094
photographed at Cádiz, Spain by Yvonne Nielsen on 17 March 2023,
and
https://www.inaturalist.org/observations/41722746
photographed by Juan Manuel Palmero Sánchez at Cadiz, Spain on 14 March 2015,
and
https://www.inaturalist.org/observations/68803857
photographed by Phil Benstead on 16 March 2016 at Benaoján, Málaga, Spain.

Images of *T. alainduboisi sp. nov.* are depicted in life online at:
https://www.inaturalist.org/observations/262281244 (holotype depicted in this paper)
by Elyas Granero 17 February 2025 at Pegalajar, Jaén, Spain, Latitude 37.7406 N., Longitude -3.6458 W. (8 km east of Jaén city), and
https://www.inaturalist.org/observations/71629215
photographed by Tom Hickey at Puente de la Sierra, Jaén, Spain on 20 March 2021,
and
https://www.inaturalist.org/observations/66964643
photographed by Tom Hickey at Jaén, Spain on 23 December 2020,
and
https://www.inaturalist.org/observations/61558843
photographed by Luis González at La Guardia de Jaén, Spain on 3 October Oct 2020,
and
https://www.flickr.com/photos/50873760@N02/33236281548
photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on 15 February 2019,
and
https://www.flickr.com/photos/50873760@N02/31942862957/
photographed by Ray Hamilton near Alcala la Real, Jaen Province, Spain, on January 26, 2019.

Images of *T. karimdaouesi sp. nov.* are depicted in life online at:
https://www.inaturalist.org/observations/217141768
photographed by Gintautas Steiblys at Aïn Draham, Tunisia on 12 May 2024,
and
https://www.inaturalist.org/observations/231257907
photographed by Wouter Beukema at Aïn Draham, Tunesia on 14 May 2009,
and
https://www.inaturalist.org/observations/149281553
photographed by “probreviceps” at Ayn Darahim, Tunisia on 10 October 2004.

Images of *T. kheloufii sp. nov.* are depicted in life online at:
https://www.inaturalist.org/observations/116524695 (holotype depicted in this paper) photographed by Abdenour Kheloufi within 5 km of Batna, Algeria on 10 May 2022,
and
https://www.inaturalist.org/observations/80743727
photographed by Axel Castiel at Inoughissen, (30 km SE of Batna) Algeria on 28 May 2021.

Images of *T. mohamedmissoumi sp. nov.* are depicted in life online at:
https://www.inaturalist.org/observations/142127346 (holotype depicted in this paper)
photographed by Mohamed Missaum at Yakouren, Algeria (5 km east of Azazga, Algeria) on 22 July 2022,
and
https://www.inaturalist.org/observations/119701269
photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 25 April 2014,
and
https://www.inaturalist.org/observations/134054787
photographed by Mohamed Missaum at Aghrib, Algeria (12 km north northeast of Azazga, Algeria) on 4 April 2014,
and
https://www.inaturalist.org/observations/142127313
photographed by Mohamed Missaum at Akerrou, Algeria (12 km northeast of Azazga, Algeria) on 18 June 2014.

Distribution: *Thierryfreteyius mohamedmissoumi sp. nov.* is known only from the immediate vicinity of Azazga, Algeria. Hilly areas south of here are occupied by the type form of *T. vaucheri.*

Etymology: *Thierryfreteyius mohamedmissoumi sp. nov.* is named in honour of Mohamed Missoum an Algerian Naturalist associated with the Algerian Wildlife Watching Association for services to science and conservation.

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CONFLICTS OF INTEREST

None.

SPECIES LIST WITHIN THE ASSEMBLAGE OF *PODARCIS* WAGLER, 1830 *SENSU LATO*.

(A number of species identified herein are actually species complexes)

HELLASSAURUS GEN. NOV.

Hellassaurus peloponnesiaca (Bibron and Bory de Saint-Vincent, 1833) (type species)

H. cretensis (Wettstein, 1952)

H. erhardii (Bedraiga, 1882)

H. levendis (Lymberakis, Poulakakis, Kaliontzopoulou, Valakos and Mylonas, 2008)

H. thais (Buchholz, 1960)

HOSERSAUREEA GEN. NOV.

Hosersaureea lilfordi (Günther, 1874) (type species)

H. pityusensis (Bosca, 1883)

SARDINIACORSICAENSIS SUBGEN. NOV.

Hosersaureea (*Sardiniacorsicaensis*) *tiliguerta* (Gmelin in Linnaeus, 1789) (type species)

H. (*Sardiniacorsicaensis*) *contii* (Lanza and Brizzi, 1977)

***PHENAX* FITZINGER, 1843**

Phenax tauricus (Georgi, 1801) (type species)

P. gaigeae (Werner, 1930)

P. ionicus (Lehrs, 1902)

P. melisellensis (Braun, 1877)

P. milensis (Bedraiga, 1882)

***PODARCIS* WAGLER, 1830**

Podarcis muralis (Laurenti, 1768) (type species) (a complex of an estimated 5-7 species)

THIERRYFRETEYIUS GEN. NOV.

Thierryfreteyius thierryfreteyi sp. nov.. (type species)

T. alainduboisi sp. nov.

T. atratus (Bosca, 1916)

T. bocagei (Lopez-Seoane, 1885)

T. carbonelli (Perez-Mellado, 1981)

T. guadarramae (Bosca, 1916)

T. hispanicus (Steindachner, 1870)

T. karimdaouesi sp. nov.

T. kheloufii sp. nov.

T. liolepis (Boulenger, 1905)

T. lusitanicus (Geniez, Sa-Souza, Guillaume, Cluchier and Crochet, 2014)

T. mohamedmissoumi sp. nov.

T. vaucheri (Boulenger, 1905)

T. virescens (Geniez, Sa-Souza, Guillaume, Cluchier and Crochet, 2014)

WELLINGTONLACERTA GEN. NOV.

Wellingtonlacerta waglerianus (Gistel, 1868) (type species)

W. filfolensis (Bedraiga, 1876)

W. raffonei (Mertens, 1952)

WELLSLACERTA GEN. NOV.

Wellslacerta siculus (Rafinesque-Schmaltz, 1810) (type species)

W. latastei (Bedraiga, 1879)

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Four new gecko species within the Moroccan genus *Quedenfeldtia* Boettger, 1883 (Gekkota: Sphaerodactylidae).

LSIDURN:LSID:ZOOBANK.ORG:PUB:6B532933-A50A-4300-8FF7-CB62995C2AB1

RAYMOND T. HOSER
LSIDurn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
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ABSTRACT

Until now, the genus *Quedenfeldtia* Boettger, 1883 type species *Gymnodactylus trachyblepharus* Boettger, 1873 has been treated by most publishing authors as comprising one, or two formally named taxa.

These are *Q. trachyblepharus* (Boettger, 1873) and *Q. moerens* (Chabanaud, 1916).

Most publishing authors recognized only *Q. trachyblepharus* (synonymising the latter) until Arnold (1990) recognized both as valid taxa.

Since then a number of authors have shown both of the preceding putative species to be composite (e.g. Barata *et al.* 2012 and Harris *et al*. 2017).

However, in the eight years since 2017, no one has taken the obvious step of formally recognising the obviously unnamed taxa.

Rather than having these species being at risk from extinction due to bureaucratic indifference, this paper makes the critically important first step towards their long-term conservation by naming four of the obviously unnamed forms.

These are *Q. obscuratamaculis sp. nov.* from the Oukaïmedèn area of the High Atlas Mountains region, until now treated as *Q. trachyblepharus*, the geographically proximal *Q. multismaculisnigris sp. nov.* also until now treated as a central High Atlas population of *Q. trachyblepharus, Q. obscurusdorso sp. nov.* formerly treated as an eastern population of *Q. moerens* and Q. *minimaalba sp. nov.* formerly treated as a far southern population of *Q. moerens.*

Keywords: Gecko; Morocco; Sphaerodactylidae; *Quedenfeldtia*; *trachyblepharus*; *moerens*; High Atlas Mountains; new species; *obscuratamaculis*; *multismaculisnigris*; *obscurusdorso*; *minimaalba.*

INTRODUCTION

Until now, the Sphaerodactylidae gecko genus *Quedenfeldtia* Boettger, 1883, type species *Gymnodactylus trachyblepharus* Boettger, 1873 has been treated by most publishing authors as comprising one, or more recently two formally named taxa.

These are *Q. trachyblepharus* (Boettger, 1873) and *Q. moerens* (Chabanaud, 1916).

The two taxa have their centers of distribution in the High Atlas region and nearby parts of Morocco.

Most publishing authors recognized only *Q. trachyblepharus* (synonymising the latter) until Arnold (1990) recognized both as valid taxa.

Since then, a number of authors shown both of the preceding putative species to be composite (e.g. Barata *et al.* 2012 and Harris *et al*. 2017) with no contradictory information published.

However, in the eight years since the publication of Harris *et al.* (2017) no one has taken the obvious step of formally recognising the obviously unnamed taxa.

This is a seriously concerning situation.

As of 7 March 2025, according to:
https://www.worldometers.info/world-population/morocco-population/
Morocco's human population stood at 38,319,245 up from 35,446,392 in 2017, or about 3 million more people in the intervening 8 years since Harris *et al*. (2017) was published.

Noting the land area of Morocco is just 446,300 square km, this means an average of an extra 6 people and their domesticated animals are attacking the resources and habitat in each and every square km of habitat in this impoverished country over and above what was already happening.

Therefore, the prognosis for many local wildlife species cannot be viewed as good.

Rather than having these lizard species at risk from extinction due to bureaucratic indifference or a charade that the relevant species do not even exist, this paper makes the critically important first step towards their long-term conservation and management by naming four of the obviously unnamed species.

These are *Q. obscuratamaculis sp. nov.* from the Oukaïmedèn area of the High Atlas Mountains region, until now treated as *Q. trachyblepharus*, the geographically proximal *Q. multismaculisnigris sp. nov.* also until now treated as a central High Atlas population of *Q. trachyblepharus, Q. obscurusdorso sp. nov.* formerly treated as an eastern Atlas Mountains region population of *Q. moerens* and Q. *minimaalba sp. nov.* formerly treated as a far southern population of *Q. moerens*, this taxon being found generally south of Tafraoute, Morocco, Latitude 29.7210° N., Longitude -8.9736 W. extending south to about the border of Western Sahara.

To make it clear, what are the currently recognized forms and their approximate distributional limits, based on the phylogenetic results of Barata *et al.* (2012) and Harris *et al*. (2017), the following is the case.

Q. trachyblepharus has a type locality of Djebel Hadid, near Mogador, Morocco, Latitude 31.42 N., Longitude -9.32 W. and occurring in high altitude habitats east to about Imoulass, Morocco, Latitude 30.7496 N., Longitude -8.7609 W..

Q. moerens has a type locality of Telouet, Imi n´Tahout, Morocco, Latitude 31.2888 N., longitude -7.2397 W, and extending in distribution west and south-west to Agadir, Morocco, Latitude 30.4280 N., Longitude -9.5925 W. and Taroudant, Morocco, Latitude 30.4727 N., Longitude -8.8749 W.

As already alluded to in the abstract, from Tafraoute, Morocco, Latitude 29.7210° N., Longitude -8.9736 W. extending south to about the border of Western Sahara, one finds the closely related species Q. *minimaalba sp. nov.*.

MATERIALS AND METHODS

Available specimens of all species within the putative genus *Quedenfeldtia* Boettger, 1883 were inspected as were quality photographs available online.

They were checked for morphological divergences and/or obvious biogeographical barriers separating the populations, including those flagged in papers such as those listed above and below.

Specimens inspected included dead and live specimens as well as images with good locality data.

Molecular studies involving species within the preceding genera and other similarly distributed reptiles and frogs from across north-west Africa's mountainous regions were also reviewed to flag likely speciation points for wider-ranging putative taxa.

Published references and taxonomic treatments relevant to the preceding genus and the identified component species and those relevant to the taxonomic and nomenclatural conclusions in this paper included Arnold (1990), Avella *et al*. (2019), Barata *et al*. (2011, 2012), Barts and Hulbert (2004), Blouin-Demers *et al*. (2013), Boettger (1873, 1883), Bons (1959), Boone (2001), Bouazza *et al*. (2016), Boulenger (1885, 1891), Chabanaud (1916), Comas (2014), Geniez *et al*. (2004), Grossmann (2019), Harris *et al*. (2010, 2017), ICZN (2012), Knappe (2005), Leptien (2009), Loveridge (1936, 1947), Malkmus (1981, 1983), Martínez del Mármol *et al.* (2019), Mertens (1967), Modry (1997), Mouadi *et al.* (2020, 2021), Ride *et al.* (1999), Rösler (1995, 2018), Schleich *et al*. (1996), Schlüter (2005, 2015), Sindaco and Jeremcenko (2008), Werner (1931) and sources cited therein.

RESULTS

These have been summed up already in the abstract and alluded to in the introduction.

In effect the review of the literature combined with the associated review of available or unavailable synonym names, followed up with inspections of relevant taxon specimens, gave rise to the results already spelt out.

These are species named herein in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999 and ICZN 2012) as part of the permanent scientific record, in line with all other papers by myself as published in *Australasian Journal of Herpetology* issues 1-73 and my earlier papers dealing with herpetological taxonomy and nomenclature.

These four new species are readily identified as new and distinct species based on the combination of molecular divergence estimated at more than 1.5 MYA per taxon, geographically allopatric populations with intervening areas of apparently unsuitable habitat and/or competing species as well as consistent morphological divergence allowing the easy identification of the newly named species and separation from the nearest relatives.

The newly identified and formally named species are as follows:
1/ *Q. obscuratamaculis sp. nov.* from the Oukaïmedèn area of the High Atlas Mountains region, until now treated as *Q. trachyblepharus*,
2/ The geographically proximal *Q. multismaculisnigris sp. nov.* also until now treated as a central High Atlas population of *Q. trachyblepharus,*

3/ *Q. obscurusdorso sp. nov.* formerly treated as an eastern Atlas Mountains region population of *Q. moerens* and,

4/ Q. *minimaalba sp. nov.* formerly treated as a far southern population of *Q. moerens*, this taxon being found generally south of Tafraoute, Morocco, Latitude 29.7210° N., Longitude -8.9736 W. extending south to about the border of Western Sahara.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

There is no conflict of interest in terms of this paper, or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked as are relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal descriptions, spelling of names should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature (Ride *et al.* 1999 and ICZN 2012).

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 7 March 2025, unless otherwise stated and were accurate in terms of the context cited herein as of that date.

Unless otherwise stated explicitly, colour descriptions apply to living adult male specimens of generally good health and not under any form of stress by means such as excessive cool, heat, dehydration, excessive aging or abnormal skin reaction to chemical or other input.

Note that there is ordinarily some sexual dimorphism between adults of species within the relevant genus.

References to tails are of original ones unless otherwise stated.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant species has already been spelt out and/or is done so within each formal description and does not rely on material within publications not explicitly cited herein.

In the unlikely event any "first reviser" seeks to merge two or more newly named taxa into one, then the name to be retained is that which is first by page priority as listed in the abstract keywords.

Some material within descriptions is repeated to ensure each fully complies with the *International Code of Zoological Nomenclature* (Ride *et al*. 1999) and the 2012 amendments (ICZN 2012).

The "version of record" is the printed version and not pdf version. Both are identical in all materially relevant ways except for the

fact that the images in the printed version may be in black and white, as opposed to colour as seen in the pdf version.

The people who assisted with provision of photos and other materials used within this paper or for research by me are also thanked for their assistances, for which they sought nothing in return.

CONSERVATION

The relevant comments in Hoser (1989, 1991, 1993, 1998, 2007, 2019a-b) and sources cited therein apply to the four species formally named within this paper in addition to *Q. trachyblepharus* and *Q. moerens.*
A paper in this same journal issue by myself (Hoser, 2025) referred to herein as:
Hoser, R. T. 2025. *New tribes, genera and species within the North-west African and Iberian Lacertidae*, *Australasian Journal of Herpetology* 74:5-27.
has further references with comments applicable to the gecko species discussed and/or formally named in this paper.

QUENDENFELDTIA OBSCURATAMACULIS SP. NOV.

LSIDurn:lsid:zoobank.org:act:FE2CE26B-BC7C-4576-830F-7CCCE21EE869

Holotype: A preserved male specimen at the Reptiles and Amphibians collection (RA) of the Muséum national d'Histoire Naturelle, Paris, France, specimen number MNHN RA 1990.1672 collected from Oukaïmedèn, Morocco, (Eastern High Atlas Mountains), Latitude 31.2027 N., Longitude -7.8586 W. at about 2,442 metres ASL.

This government-owned facility allows access to its holdings.

Paratypes: 1/ 15 preserved specimens in the herpetology collection of the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, 15213, USA, specimen numbers 55055, 55057, 55058, 55059, 55060, 55061, 55062, 55067, 55068, 55069, 55071, 55072, 55074, 55078 and 55079 all collected from Oukaïmedèn, Morocco, Latitude 31.2027 N., Longitude -7.8586 W. at about 2,442 metres ASL.

2/ 25 preserved specimens in the herpetology collection of the Museum of Vertebrate Zoology, University of California, Berkeley, California, 94720, USA, specimen numbers MVZ:Herp 178121, 178122, 17812, 178124, 178125, 178126, 178127, 178128, 178129, 178130, 178131, 178132, 178133, 178134, 178135, 178136, 178137, 178138, 178139, 178140, 178141, 178142, 178143, 178144 and 178145, all collected 1-8 km north of Oukaïmedèn, Morocco, Latitude 31.2027 N., Longitude -7.8586 W. at about 2,442 metres ASL.

Diagnosis: Until now, *Quedenfeldtia obscuratamaculis sp. nov.* from Oukaïmedèn, Morocco and immediately adjacent high altitude areas (these extending 5 km east, 20 km west, 25 km north and 25 km south of Oukaïmedèn has been treated as a population of *Quedenfeldtia trachyblepharus* (Boettger, 1873) with a type locality of Djebel Hadid, near Mogador, Morocco, Latitude 31.42 N., Longitude -9.32 W. and occurring (as this taxon) in high altitude habitats east to about Imoulass, Morocco, Latitude 30.7496 N., Longitude -8.7609 W.

The same applies in terms of *Q. multismaculisnigris sp. nov.* also until now treated as a central High Atlas population of *Q. trachyblepharus* that is found south at Jbel Sirwa, Morocco, Latitude 30.70416 N., Longitude -7.62166 W. and (mainly) east of *Q. obscuratamaculis sp. nov.* in nearby parts of the High Atlas Mountains outside the boundaries given above.

Q. obscuratamaculis sp. nov. is separated from *Q. trachyblepharus* and *Q. multismaculisnigris sp. nov.* by the combination of indistinct blackish spotting on the dorsum and sides and a tail that is mainly dark in colour with indistinct light patches, but not in any way forming or giving the appearance of faint cross bands or in males the spotting is only on the anterior dorsum of the body and not the entire body. Upper surfaces of the limbs have a sprinkling of tiny, semi-distinct whitish spots on an otherwise brown and grey background, the colours of which are not strongly contrasting.

Q. trachyblepharus is essentially similar to the preceding but instead has indistinct yellowish crossbands on the visible surfaces of the tail.

Q. multismaculisnigris sp. nov. is separated from both *Q. obscuratamaculis sp. nov.* and *Q. trachyblepharus* by having a dorsum in adult males that has numerous well-defined, relatively even-spaced dark spots on the dorsum (including to the pelvic girdle and the upper surfaces of the limbs), including the flank and anterior upper parts of the tail, being the only one of the preceding species to have this extent of well-defined spotting on the body; combined with markings on each side of the anterior and mid tail that are in the form of elongated lighter spots, giving the view of alternating bands.

Upper surfaces of the hind limbs of adult males are light grey in colour but with dark brown markings forming a reticulatum, while the forelimbs are dark brown with large and well defined, evenly sized, moderately-sized orange spots.

By contrast in both *Q. obscuratamaculis sp. nov.* and *Quedenfeldtia trachyblepharus* the upper surfaces of the hind limbs are light grey with scattered tiny moderately well-defined black dots, or otherwise a mottling of undefined markings of various colours, while the upper surfaces of the forelimbs have unevenly sized (tiny and moderately large) yellow spots on a darker brownish to orange background.

A double scale under the fourth hindlimb toe is a trait of *Q. obscuratamaculis sp. nov.* that separates it from the distributionally proximal *Quedenfeldtia multismaculisnigris sp. nov.* where the double scale under the fourth hindlimb toe is absent.

The three preceding species are all separated from nominate *Quedenfeldtia moerens* (Chabanaud, 1916) of the southern Atlas Mountains region and the related (named herein as new taxa) *Q. obscurusdorso sp. nov.* formerly treated as an eastern Atlas Mountains region population of *Q. moerens* and Q. *minimaalba sp. nov.* formerly treated as a far southern population of *Q. moerens*, this taxon being found generally south of Tafraoute, Morocco, Latitude 29.7210° N., Longitude -8.9736 W. extending south to about the border of Western Sahara, by the following combination of characters:

Having 24-25 presacral vertebrae (versus 22-23), proximal autotomic caudal vertebrae with long, backwardly directed transverse processes; a large and prominent cloacal tubercle, especially in males (versus not so), first upper labial scale usually reaching nostril, or only separated by a narrow rim, and often fused to lower postnasal scale; and a grey-brown, rather than red-brown iris in the eye.

There is strong sexual dichromatism (versus not so in the other three species). Males are pale with many red or dark brownish spots that are often more frequent or darker, or both, on the flanks and sides of the neck, and frequently the head as well; females are dark brownish or greyish with darker markings that often form longitudinal series of line-like markings; there is no yellow or otherwise light patch or border attached to the posterior border of each of the two or more pairs of large dark spots at the back of the neck and pelvic region; dark colouring on the posterior underside of males does not extend to lower hind limbs. (modified from Arnold 1990).

Q. *minimaalba sp. nov.* is separated from *Q. moerens* by the fact that the yellow or otherwise light patch or border attached to the posterior border of each of the two or more pairs of large dark spots at the back of neck and pelvic region is reduced to be merely a highlighted (light) rear border of the black spots, versus an enlarged light area in same zone giving the spot an eye-like appearance in *Q. moerens*. In the relatively rare specimens with the light spots similar to those seen in male *Q. moerens* these are as a rule separated from the dark blotches and more in the form of separate yellowish spots.

The hind legs of *Q. minimaalba sp. nov.* do not have the semi-distinct ocelli-like markings on the upper surfaces as seen in *Q.*

moerens or *Q. obscurusdorso sp. nov.*.

Q. obscurusdorso sp. nov. of the north-east Moroccon Atlas Mountains region is separated from both Q. *minimaalba sp. nov.* and *Q. moerens* by having 10 or more well-defined dark brown spots of medium size on the upper surfaces of the neck and forebody, with another five spots of similar intensity on the dorsal region level with the pelvic girdle. There is no light border or blotch attached to the posterior edges of any of these spots.

The original tail has semidistinct ocelli that have sometimes merged or are partially joined together on either side, running along the tail in a longitudinal manner. On the tail, there are no darker spots arranged in a cross-band like manner, which is seen in both the two preceding species (Q. *minimaalba sp. nov.* and *Q. moerens*).

Lizards in the genus *Quedenfeldtia* Boettger, 1883 (Sphaerodactylidae) are separated from other Sphaerodactylidae geckoes by the combination of the following characters:

Stone or Sand-Geckos with long slender digits and the dorsal scales are small, uniform, round and juxtaposed, being largest on the snout; there are no enlarged tubercles either on the back or on the tail; tail is depressed, slender but not swollen, covered above with uniform small scales, inferiorly with a median series of enlarged transverse plates; border of the eyelid with prominent spine-like scales.

Lizards in the genus *Quedenfeldtia* are further characterised by the following suite of characters:

Head rather broad and depressed; snout rounded; ear-opening transversely oval. Limbs slender; digits long and slender; upper eyelid with several projecting triangular scales on its free border; rostral pentagonal, nearly twice as broad as high, with median cleft above; nostril between the rostral, the first labial, and four nasals; seven upper and six lower labials; mental scale large and subtriangular; chin-shields are very small. Abdominal scales largeish, sub hexagonal. No femoral nor preanal pores. General dorsal colour is usually earthy brown, olive or reddish. Spots and markings may be either distinct, or obscured; tail may or may not have semi-distinct cross-bands (modified from Boulenger 1885).

Quedenfeldtia obscuratamaculis sp. nov. from Oukaïmedèn, Morocco is depicted in life online at:

https://www.flickr.com/photos/antoniogonalves/9228841985/

and

https://www.flickr.com/photos/markferris/52915492598/

and

https://www.inaturalist.org/observations/253862690

and

https://www.inaturalist.org/observations/9470530

and

https://www.inaturalist.org/observations/242667073

Q. multismaculisnigris sp. nov. from the central High Atlas region of Morocco about 50-70 km straight-line east of Oukaïmedèn, Morocco is depicted in life online at:

https://www.inaturalist.org/observations/259368733

and

https://www.inaturalist.org/observations/192462486

The type form of *Q. moerens* is depicted online at:

https://www.inaturalist.org/observations/10302718

and

https://www.inaturalist.org/observations/119489595

and

https://www.inaturalist.org/observations/37652431

Q. obscurusdorso sp. nov. is depicted in life online at:

https://www.inaturalist.org/observations/249780538

Q. *minimaalba sp. nov.* is depicted in life online at:

https://www.inaturalist.org/observations/257268011

and

https://www.inaturalist.org/observations/1212570

Distribution: *Quedenfeldtia obscuratamaculis sp. nov.* is known from Oukaïmedèn, Morocco and immediately adjacent high altitude areas (these extending 5 km east, 20 km west, 25 km north and 25 km south of Oukaïmedèn and is believed not likely to extend far beyond those limits. It is in effect a range-restricted endemic, but presently abundant in this area.

Etymology: The species name *Quedenfeldtia obscuratamaculis sp. nov.* comes from the Latin words "*obscurata maculis*" meaning obscured spots, which sums up the most common dorsal colour form of adults of this species.

QUENDENFELDTIA MULTISMACULISNIGRIS SP. NOV.

LSIDurn:lsid:zoobank.org:act:3DC2F27B-BBB4-4CEE-884E-9FB17E1D3D8E

Holotype: A live adult male specimen depicted in the image and shown on page 57 of this paper within or adjacent to the text of this formal description and also seen in the same image at:

https://www.inaturalist.org/observations/259368733

that was photographed in May 2023 by Joël Blanchemain at Col d'Azwin , at 2300 metres ASL, Tigheli, Tessaout, High Atlas (Morocco) about 30 km south of Denmat (AKA Denmate), Morocco, (Denmat, Latitide 31.7321 N., Longitude -7.0115 W.).

Paratype: A live adult male specimen depicted in the image taken in March 2023 by Leonardo Cifuentes and shown on page 57 of this paper, within or adjacent to the text of this formal description and also seen in the same image at:

https://www.inaturalist.org/observations/192462486

that was photographed about 25 km south of Denmat (AKA Denmate), Morocco, (Denmat, Latitide 31.7321 N., Longitude -7.0115 W.).

Diagnosis: Until now, *Quedenfeldtia obscuratamaculis sp. nov.* from Oukaïmedèn, Morocco and immediately adjacent high altitude areas (these extending 5 km east, 20 km west, 25 km north and 25 km south pf Oukaïmedèn has been treated as a population of *Quedenfeldtia trachyblepharus* (Boettger, 1873) with a type locality of Djebel Hadid, near Mogador, Morocco, Latitude 31.42 N., Longitude -9.32 W. and occurring (as this taxon) in high altitude habitats east to about Imoulass, Morocco, Latitude 30.7496 N., Longitude 8.7609 W.

The same applies in terms of *Quedenfeldtia multismaculisnigris sp. nov.* also until now treated as a central High Atlas population of *Q. trachyblepharus* that is found proximally south at Jbel Sirwa, Morocco, Latitude 30.70416 N., Longitude -7.62166 W. and (mainly) east of *Q. obscuratamaculis sp. nov.* in nearby parts of the High Atlas Mountains outside the boundaries given above.

Q. obscuratamaculis sp. nov. is separated from *Q. trachyblepharus* and *Q. multismaculisnigris sp. nov.* by the combination of indistinct blackish spotting on the dorsum and sides and a tail that is mainly dark in colour with indistinct light patches, but not in any way forming or giving the appearance of faint cross bands or in males the spotting is only on the anterior dorsum of the body and not the entire body. Upper surfaces of the limbs have a sprinkling of tiny, semi-distinct whitish spots on an otherwise brown and grey background, the colours of which are not strongly contrasting.

Q. trachyblepharus is essentially similar to the preceding but instead has indistinct yellowish crossbands on the visible surfaces of the tail.

Q. multismaculisnigris sp. nov. is separated from both *Q. obscuratamaculis sp. nov.* and *Q. trachyblepharus* by having a dorsum in adult males that has numerous well-defined, relatively even-spaced dark spots on the dorsum (including to the pelvic girdle and the upper surfaces of the limbs), including the flank and anterior upper parts of the tail, being the only one of the preceding species to have this extent of well-defined spotting on the body; combined with markings on each side of the anterior and mid tail that are in the form of elongated lighter spots, giving the view of alternating bands.

Holotype of *Quedenfeldtia multismaculisnigris sp. nov.* in life.

Photographed in May 2023 by Joël Blanchemain at Col d'Azwin , at 2300 metres ASL, at Tigheli, Tessaout, High Atlas (Morocco) about 30 km south of Denmat (AKA Denmate), Morocco, (Denmat, Latitide 31.7321 N., Longitude -7.0115 W.).

Upper surfaces of the hind limbs of adult males are light grey in colour but with dark brown markings forming a reticulatum, while the forelimbs are dark brown with large and well defined, evenly sized, moderately-sized orange spots.

By contrast in both *Q. obscuratamaculis sp. nov.* and *Quedenfeldtia trachyblepharus* the upper surfaces of the hind limbs are light grey with scattered tiny moderately well-defined black dots, or otherwise a mottling of undefined markings of various colours, while the upper surfaces of the forelimbs have unevenly sized (tiny and moderately large) yellow spots on a darker brownish to orange background.

A double scale under the fourth hindlimb toe is a trait of *Q. obscuratamaculis sp. nov.* that separates it from the distributionally proximal *Quedenfeldtia multismaculisnigris sp. nov.* where the double scale under the fourth hindlimb toe is absent.

The three preceding species are all separated from nominate *Quedenfeldtia moerens* (Chabanaud, 1916) of the southern Atlas Mountains region and the related (named herein as new taxa) *Q. obscurusdorso sp. nov.* formerly treated as an eastern Atlas Mountains region population of *Q. moerens* and Q. *minimaalba sp. nov.* formerly treated as a far southern population of *Q. moerens*, this taxon being found generally south of Tafraoute, Morocco, Latitude 29.7210° N., Longitude -8.9736 W. extending south to about the border of Western Sahara, by the following combination of characters:

Having 24-25 presacral vertebrae (versus 22-23), proximal autotomic caudal vertebrae with long, backwardly directed transverse processes; a large and prominent cloacal tubercle, especially in males (versus not so), first upper labial scale usually reaching nostril, or only separated by a narrow rim, and often fused to lower postnasal scale; and a grey-brown, rather than

First and only paratype of *Quedenfeldtia multismaculisnigris sp. nov.* in life.

Photographed in March 2023 by Leonardo Cifuentes about 25 km south of Denmat (AKA Denmate), Morocco, (Denmat, Latitide 31.7321 N., Longitude -7.0115 W.).

red-brown iris in the eye.

There is strong sexual dichromatism (versus not so in the other three species). Males are pale with many red or dark brownish spots that are often more frequent or darker, or both, on the flanks and sides of the neck, and frequently the head as well; females are dark brownish or greyish with darker markings that often form longitudinal series of line-like markings; there is no yellow or otherwise light patch or border attached to the posterior border of each of the two or more pairs of large dark spots at the back of neck and pelvic region; dark colouring on the posterior underside of males does not extend to lower hind limbs. (modified from Arnold 1990).

Q. *minimaalba sp. nov.* is separated from *Q. moerens* by the fact that the yellow or otherwise light patch or border attached to the posterior border of each of the two or more pairs of large dark spots at the back of neck and pelvic region is reduced to be merely a highlighted (light) rear border of the black spots, versus an enlarged light area in same zone giving the spot an eye-like appearance in *Q. moerens*. In the relatively rare specimens with the light spots similar to those seen in male *Q. moerens* these are as a rule separated from the dark blotches and more in the form of separate yellowish spots.

The hind legs of *Q. minimaalba sp. nov.* do not have the semi-distinct ocelli-like markings on the upper surfaces as seen in *Q. moerens* or *Q. obscurusdorso sp. nov.*.

Q. obscurusdorso sp. nov. of the north-east Moroccon Atlas Mountains region is separated from both Q. *minimaalba sp. nov.* and *Q. moerens* by having 10 or more well-defined dark brown spots of medium size on the upper surfaces of the neck and forebody, with another five spots of similar intensity on the dorsal region level with the pelvic girdle. There is no light border or blotch attached to the posterior edges of any of these spots.

The original tail has semidistinct ocelli that have sometimes merged or are partially joined together on either side, running along the tail in a longitudinal manner. On the tail, there are no darker spots arranged in a cross-band like manner, which is seen in both the two preceding species (Q. *minimaalba sp. nov.* and *Q. moerens*).

Lizards in the genus *Quedenfeldtia* Boettger, 1883 (Sphaerodactylidae) are separated from other Sphaerodactylidae geckoes by the combination of the following characters:

Stone or Sand-Geckos with long slender digits and the dorsal scales are small, uniform, round and juxtaposed, being largest on the snout; there are no enlarged tubercles either on the back or on the tail; tail is depressed, slender but not swollen, covered above with uniform small scales, inferiorly with a median series of enlarged transverse plates; border of the eyelid with prominent spine-like scales.

Lizards in the genus *Quedenfeldtia* are further characterised by the following suite of characters:

Head rather broad and depressed; snout rounded; ear-opening transversely oval. Limbs slender; digits long and slender; upper eyelid with several projecting triangular scales on its free border; rostral pentagonal, nearly twice as broad as high, with median cleft above; nostril between the rostral, the first labial, and four nasals; seven upper and six lower labials; mental scale large and subtriangular; chin-shields are very small. Abdominal scales largeish, sub hexagonal. No femoral nor preoanal pores. General dorsal colour is usually earthy brown, olive or reddish. Spots and markings may be either distinct, or obscured; tail may or may not have semi-distinct cross-bands (modified from Boulenger 1885).

Quedenfeldtia obscuratamaculis sp. nov. from Oukaïmedèn, Morocco is depicted in life online at:

https://www.flickr.com/photos/antoniogonalves/9228841985/

and

https://www.flickr.com/photos/markferris/52915492598/

and

https://www.inaturalist.org/observations/253862690

and

https://www.inaturalist.org/observations/9470530

and

https://www.inaturalist.org/observations/242667073

Q. multismaculisnigris sp. nov. from the central High Atlas region of Morocco about 50-70 km straight-line east of Oukaïmedèn, Morocco is depicted in life online at:

https://www.inaturalist.org/observations/259368733

and

https://www.inaturalist.org/observations/192462486

The type form of *Q. moerens* is depicted online at:

https://www.inaturalist.org/observations/10302718

and

https://www.inaturalist.org/observations/119489595

and

https://www.inaturalist.org/observations/37652431

Q. obscurusdorso sp. nov. is depicted in life online at:

https://www.inaturalist.org/observations/249780538

Q. *minimaalba sp. nov.* is depicted in life online at:

https://www.inaturalist.org/observations/257268011

and

https://www.inaturalist.org/observations/1212570

Distribution: *Quedenfeldtia multismaculisnigris sp. nov.* is known only from a central High Atlas population around the type locality being some 30 km south of Denmat (AKA Denmate), Morocco, (Denmat, Latitide 31.7321 N., Longitude -7.0115 W.) and the nearby paratype location 25 km south of Denmat (AKA Denmate), Morocco, (Denmat, Latitide 31.7321 N., Longitude -7.0115 W.) as well as another apparently disjunct population at Jbel Sirwa, Morocco, Latitude 30.70416 N., Longitude -7.62166 W.

Etymology: The species name *Quedenfeldtia multismaculisnigris sp. nov.* comes from the Latin words "*multis maculis nigris*" which means "numerous black spots" summing up the most common dorsal colour form of adult males of this species.

QUENDENFELDTIA OBSCURUSDORSO SP. NOV.

LSIDurn:lsid:zoobank.org:act:3A898A3E-19C3-4A60-8B75-DD9C648861A1

Holotype: A live adult male specimen depicted in the image taken on 30 October 2024 by Simon Wogram and shown within or adjacent to the text of this formal description at page 59 of this paper, (top right) and also seen in the same image at:

https://www.inaturalist.org/observations/249780538

being photographed at Iknioueen, Drâa-Tafilalet, Morocco, Latitude 31.1736 N., Longitude -5.6734 W.

Diagnosis: Until now, *Quedenfeldtia obscuratamaculis sp. nov.* from Oukaïmedèn, Morocco and immediately adjacent high altitude areas (these extending 5 km east, 20 km west, 25 km north and 25 km south pf Oukaïmedèn has been treated as a population of *Quedenfeldtia trachyblepharus* (Boettger, 1873) with a type locality of Djebel Hadid, near Mogador, Morocco, Latitude 31.42 N., Longitude -9.32 W. and occurring (as this taxon) in high altitude habitats east to about Imoulass, Morocco, Latitude 30.7496 N., Longitude -8.7609 W.

The same applies in terms of *Q. multismaculisnigris sp. nov.* also until now treated as a central High Atlas population of *Q. trachyblepharus* that is found proximally south at Jbel Sirwa, Morocco, Latitude 30.70416 N., Longitude -7.62166 W. and (mainly) east of *Q. obscuratamaculis sp. nov.* in nearby parts of the High Atlas Mountains outside the boundaries given above.

Q. obscuratamaculis sp. nov. is separated from *Q. trachyblepharus* and *Q. multismaculisnigris sp. nov.* by the combination of indistinct blackish spotting on the dorsum and sides and a tail that is mainly dark in colour with indistinct light patches, but not in any way forming or giving the appearance of

faint cross bands or in males the spotting is only on the anterior dorsum of the body and not the entire body. Upper surfaces of the limbs have a sprinkling of tiny, semi-distinct whitish spots on an otherwise brown and grey background, the colours of which are not strongly contrasting.

Q. trachyblepharus is essentially similar to the preceding but instead has indistinct yellowish crossbands on the visible surfaces of the tail.

Q. multismaculisnigris sp. nov. is separated from both *Q. obscuratamaculis sp. nov.* and *Q. trachyblepharus* by having a dorsum in adult males that has numerous well-defined, relatively even-spaced dark spots on the dorsum (including to the pelvic girdle and the upper surfaces of the limbs), including the flank and anterior upper parts of the tail, being the only one of the preceding species to have this extent of well-defined spotting on the body; combined with markings on each side of the anterior and mid tail that are in the form of elongated lighter spots, giving the view of alternating bands.

Upper surfaces of the hind limbs of adult males are light grey in colour but with dark brown markings forming a reticulatum, while the forelimbs are dark brown with large and well defined, evenly sized, moderately-sized orange spots.

By contrast in both *Q. obscuratamaculis sp. nov.* and *Quedenfeldtia trachyblepharus* the upper surfaces of the hind limbs are light grey with scattered tiny moderately well-defined black dots, or otherwise a mottling of undefined markings of various colours, while the upper surfaces of the forelimbs have unevenly sized (tiny and moderately large) yellow spots on a darker brownish to orange background.

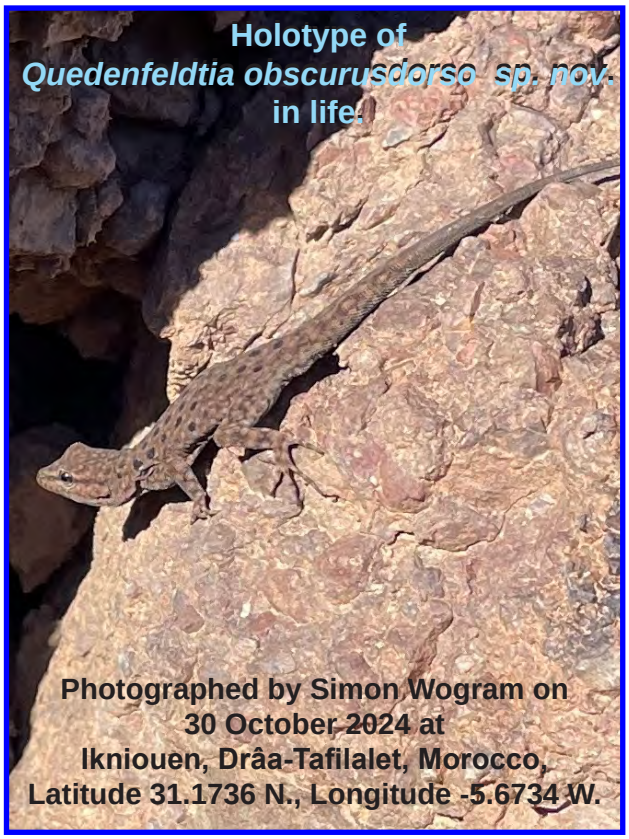
A double scale under the fourth hindlimb toe is a trait of *Q. obscuratamaculis sp. nov.* that separates it from the distributionally proximal *Quedenfeldtia multismaculisnigris sp. nov.* where the double scale under the fourth hindlimb toe is absent.

The three preceding species are all separated from nominate *Quedenfeldtia moerens* (Chabanaud, 1916) of the southern Atlas Mountains region and the related (named herein as new taxa) *Q. obscurusdorso sp. nov.* formerly treated as an eastern Atlas Mountains region population of *Q. moerens* and Q. *minimaalba sp. nov.* formerly treated as a far southern population of *Q. moerens*, this taxon being found generally south of Tafraoute, Morocco, Latitude 29.7210° N., Longitude -8.9736 W. extending south to about the border of Western Sahara, by the following combination of characters:

Having 24-25 presacral vertebrae (versus 22-23), proximal autotomic caudal vertebrae with long, backwardly directed transverse processes; a large and prominent cloacal tubercle, especially in males (versus not so), first upper labial scale usually reaching nostril, or only separated by a narrow rim, and often fused to lower postnasal scale; and a grey-brown, rather than red-brown iris in the eye.

There is strong sexual dichromatism (versus not so in the other three species). Males are pale with many red or dark brownish spots that are often more frequent or darker, or both, on the flanks and sides of the neck, and frequently the head as well; females are dark brownish or greyish with darker markings that often form longitudinal series of line-like markings; there is no yellow or otherwise light patch or border attached to the posterior border of each of the two or more pairs of large dark spots at the back of neck and pelvic region; dark colouring on the posterior underside of males does not extend to lower hind limbs. (modified from Arnold 1990).

Q. *minimaalba sp. nov.* is separated from *Q. moerens* by the fact that the yellow or otherwise light patch or border attached to the posterior border of each of the two or more pairs of large dark spots at the back of neck and pelvic region is reduced to be merely a highlighted (light) rear border of the black spots, versus an enlarged light area in same zone giving the spot an eye-like appearance in *Q. moerens*. In the relatively rare specimens with



Holotype of *Quedenfeldtia obscurusdorso sp. nov.* in life.

Photographed by Simon Wogram on 30 October 2024 at Iknouen, Drâa-Tafilalet, Morocco, Latitude 31.1736 N., Longitude -5.6734 W.

the light spots similar to those seen in male *Q. moerens* these are as a rule separated from the dark blotches and more in the form of separate yellowish spots.

The hind legs of *Q. minimaalba sp. nov.* do not have the semi-distinct ocelli-like markings on the upper surfaces as seen in *Q. moerens* or *Q. obscurusdorso sp. nov.*.

Q. obscurusdorso sp. nov. of the north-east Moroccon Atlas Mountains region is separated from both Q. *minimaalba sp. nov.* and *Q. moerens* by having 10 or more well-defined dark brown spots of medium size on the upper surfaces of the neck and forebody, with another five spots of similar intensity on the dorsal region level with the pelvic girdle. There is no light border or blotch attached to the posterior edges of any of these spots.

The original tail has semidistinct ocelli that have sometimes merged or are partially joined together on either side, running along the tail in a longitudinal manner. On the tail, there are no darker spots arranged in a cross-band like manner, which is seen in both the two preceding species (Q. *minimaalba sp. nov.* and *Q. moerens*).

Lizards in the genus *Quedenfeldtia* Boettger, 1883 (Sphaerodactylidae) are separated from other Sphaerodactylidae geckoes by the combination of the following characters:

Stone or Sand-Geckos with long slender digits and the dorsal scales are small, uniform, round and juxtaposed, being largest on the snout; there are no enlarged tubercles either on the back or on the tail; tail is depressed, slender but not swollen, covered above with uniform small scales, inferiorly with a median series of enlarged transverse plates; border of the eyelid with prominent spine-like scales.

Lizards in the genus *Quedenfeldtia* are further characterised by the following suite of characters:

Head rather broad and depressed; snout rounded; ear-opening transversely oval. Limbs slender; digits long and slender; upper eyelid with several projecting triangular scales on its free border; rostral pentagonal, nearly twice as broad as high, with median cleft above; nostril between the rostral, the first labial, and four

nasals; seven upper and six lower labials; mental scale large and subtriangular; chin-shields are very small. Abdominal scales largeish, sub hexagonal. No femoral nor preoanal pores. General dorsal colour is usually earthy brown, olive or reddish. Spots and markings may be either distinct, or obscured; tail may or may not have semi-distinct cross-bands (modified from Boulenger 1885).

Quedenfeldtia obscuratamaculis sp. nov. from Oukaïmedèn, Morocco is depicted in life online at:

https://www.flickr.com/photos/antoniogonalves/9228841985/

and

https://www.flickr.com/photos/markferris/52915492598/

and

https://www.inaturalist.org/observations/253862690

and

https://www.inaturalist.org/observations/9470530

and

https://www.inaturalist.org/observations/242667073

Q. multismaculisnigris sp. nov. from the central High Atlas region of Morocco about 50-70 km straight-line east of Oukaïmedèn, Morocco is depicted in life online at:

https://www.inaturalist.org/observations/259368733

and

https://www.inaturalist.org/observations/192462486

The type form of *Q. moerens* is depicted online at:

https://www.inaturalist.org/observations/10302718

and

https://www.inaturalist.org/observations/119489595

and

https://www.inaturalist.org/observations/37652431

Q. obscurusdorso sp. nov. is depicted in life online at:

https://www.inaturalist.org/observations/249780538

Q. *minimaalba sp. nov.* is depicted in life online at:

https://www.inaturalist.org/observations/257268011

and

https://www.inaturalist.org/observations/1212570

Distribution: *Q. obscurusdorso sp. nov.* is an eastern Atlas Mountains region taxon found at the type locality of Iknioun, Drâa-Tafilalet, Morocco, Latitude 31.1736 N., Longitude -5.6734 W, extending generally north to about Âit Tadder Morocco, Latitude 32.13 N., Longitude -5.30 W.

Etymology: *Q. obscurusdorso sp. nov.* comes from the Latin words "*obscurus dorso*" which means "*large spots on back*", which characterises the dorsal colour pattern adult males of this species.

QUENDENFELDTIA MINIMAALBA SP. NOV.

LSIDurn:lsid:zoobank.org:act:3C51A828-DE00-440F-9FD9-376ACA449B13

Holotype: A preserved female specimen at the Reptiles and Amphibians collection (RA) of the Muséum national d'Histoire Naturelle, Paris, France, specimen number MNHN RA 1990.1717 collected from Tafraoute, Morocco, Africa, Latitude 29.7210° N., Longitude -8.9736 W.

Paratypes: 1/ 5 preserved specimens at the Reptiles and Amphibians collection (RA) of the Muséum national d'Histoire Naturelle, Paris, France, specimen numbers MNHN RA 1990.1718, 1990.1719, 1990.1720, 1990.1722 and 1990.1721, the first four being males and the fifth a female, all collected from Tafraoute, Morocco, Africa, Latitude 29.7210° N., Longitude -8.9736 W.,

2/ 4 preserved specimens at the Reptiles and Amphibians collection (RA) of the Muséum national d'Histoire Naturelle, Paris, France, specimen numbers MNHN RA 1990.1700, 1990.1702, 1990.1701, 1990.1703, the first two being males and the second two females, all collected from on or near the road between Tiznite and Tafraoute, Morocco, Africa.,

3/ 2 preserved specimens at the Reptiles and Amphibians collection (RA) of the Muséum national d'Histoire Naturelle, Paris, France, specimen numbers MNHN RA 1990.1689 and MNHN RA 1990.1693 both females collected from on or near the road between Tafraoute and Timguilcht, Morocco, Africa.

Diagnosis: Until now, *Quedenfeldtia obscuratamaculis sp. nov.* from Oukaïmedèn, Morocco and immediately adjacent high altitude areas (these extending 5 km east, 20 km west, 25 km north and 25 km south pf Oukaïmedèn has been treated as a population of *Quedenfeldtia trachyblepharus* (Boettger, 1873) with a type locality of Djebel Hadid, near Mogador, Morocco, Latitude 31.42 N., Longitude -9.32 W. and occurring (as this taxon) in high altitude habitats east to about Imoulass, Morocco, Latitude 30.7496 N., Longitude -8.7609 W.

The same applies in terms of *Q. multismaculisnigris sp. nov.* also until now treated as a central High Atlas population of *Q. trachyblepharus* that is found proximally south at Jbel Sirwa, Morocco, Latitude 30.70416 N., Longitude -7.62166 W. and (mainly) east of *Q. obscuratamaculis sp. nov.* in nearby parts of the High Atlas Mountains outside the boundaries given above.

Q. obscuratamaculis sp. nov. is separated from *Q. trachyblepharus* and *Q. multismaculisnigris sp. nov.* by the combination of indistinct blackish spotting on the dorsum and sides and a tail that is mainly dark in colour with indistinct light patches, but not in any way forming or giving the appearance of faint cross bands or in males the spotting is only on the anterior dorsum of the body and not the entire body. Upper surfaces of the limbs have a sprinkling of tiny, semi-distinct whitish spots on an otherwise brown and grey background, the colours of which are not strongly contrasting.

Q. trachyblepharus is essentially similar to the preceding but instead has indistinct yellowish crossbands on the visible surfaces of the tail.

Q. multismaculisnigris sp. nov. is separated from both *Q. obscuratamaculis sp. nov.* and *Q. trachyblepharus* by having a dorsum in adult males that has numerous well-defined, relatively even-spaced dark spots on the dorsum (including to the pelvic girdle and the upper surfaces of the limbs), including the flank and anterior upper parts of the tail, being the only one of the preceding species to have this extent of well-defined spotting on the body; combined with markings on each side of the anterior and mid tail that are in the form of elongated lighter spots, giving the view of alternating bands.

Upper surfaces of the hind limbs of adult males are light grey in colour but with dark brown markings forming a reticulatum, while the forelimbs are dark brown with large and well defined, evenly sized, moderately-sized orange spots.

By contrast in both *Q. obscuratamaculis sp. nov.* and *Quedenfeldtia trachyblepharus* the upper surfaces of the hind limbs are light grey with scattered tiny moderately well-defined black dots, or otherwise a mottling of undefined markings of various colours, while the upper surfaces of the forelimbs have unevenly sized (tiny and moderately large) yellow spots on a darker brownish to orange background.

A double scale under the fourth hindlimb toe is a trait of *Q. obscuratamaculis sp. nov.* that separates it from the distributionally proximal *Quedenfeldtia multismaculisnigris sp. nov.* where the double scale under the fourth hindlimb toe is absent.

The three preceding species are all separated from nominate *Quedenfeldtia moerens* (Chabanaud, 1916) of the southern Atlas Mountains region and the related (named herein as new taxa) *Q. obscurusdorso sp. nov.* formerly treated as an eastern Atlas Mountains region population of *Q. moerens* and *Q. minimaalba sp. nov.* formerly treated as a far southern population of *Q. moerens*, this taxon being found generally south of Tafraoute, Morocco, Latitude 29.7210° N., Longitude -8.9736 W. extending south to about the border of Western Sahara, by the following combination of characters:

Having 24-25 presacral vertebrae (versus 22-23), proximal autotomic caudal vertebrae with long, backwardly directed transverse processes; a large and prominent cloacal tubercle, especially in males (versus not so), first upper labial scale usually reaching nostril, or only separated by a narrow rim, and often fused to lower postnasal scale; and a grey-brown, rather than red-brown iris in the eye.

There is strong sexual dichromatism (versus not so in the other three species). Males are pale with many red or dark brownish spots that are often more frequent or darker, or both, on the flanks and sides of the neck, and frequently the head as well; females are dark brownish or greyish with darker markings that often form longitudinal series of line-like markings; there is no yellow or otherwise light patch or border attached to the posterior border of each of the two or more pairs of large dark spots at the back of neck and pelvic region; dark colouring on the posterior underside of males does not extend to lower hind limbs. (modified from Arnold 1990).

Q. *minimaalba sp. nov.* is separated from *Q. moerens* by the fact that the yellow or otherwise light patch or border attached to the posterior border of each of the two or more pairs of large dark spots at the back of neck and pelvic region is reduced to be merely a highlighted (light) rear border of the black spots, versus an enlarged light area in same zone giving the spot an eye-like appearance in *Q. moerens*. In the relatively rare specimens with the light spots similar to those seen in male *Q. moerens* these are as a rule separated from the dark blotches and more in the form of separate yellowish spots.

The hind legs of *Q. minimaalba sp. nov.* do not have the semi-distinct ocelli-like markings on the upper surfaces as seen in *Q. moerens* or *Q. obscurusdorso sp. nov.*.

Q. obscurusdorso sp. nov. of the north-east Moroccon Atlas Mountains region is separated from both Q. *minimaalba sp. nov.* and *Q. moerens* by having 10 or more well-defined dark brown spots of medium size on the upper surfaces of the neck and forebody, with another five spots of similar intensity on the dorsal region level with the pelvic girdle. There is no light border or blotch attached to the posterior edges of any of these spots.

The original tail has semidistinct ocelli that have sometimes merged or are partially joined together on either side, running along the tail in a longitudinal manner. On the tail, there are no darker spots arranged in a cross-band like manner, which is seen in both the two preceding species (Q. *minimaalba sp. nov.* and *Q. moerens*).

Lizards in the genus *Quedenfeldtia* Boettger, 1883 (Sphaerodactylidae) are separated from other Sphaerodactylidae geckoes by the combination of the following characters:

Stone or Sand-Geckos with long slender digits and the dorsal scales are small, uniform, round and juxtaposed, being largest on the snout; there are no enlarged tubercles either on the back or on the tail; tail is depressed, slender but not swollen, covered above with uniform small scales, inferiorly with a median series of enlarged transverse plates; border of the eyelid with prominent spine-like scales.

Lizards in the genus *Quedenfeldtia* are further characterised by the following suite of characters:

Head rather broad and depressed; snout rounded; ear-opening transversely oval. Limbs slender; digits long and slender; upper eyelid with several projecting triangular scales on its free border; rostral pentagonal, nearly twice as broad as high, with median cleft above; nostril between the rostral, the first labial, and four nasals; seven upper and six lower labials; mental scale large and subtriangular; chin-shields are very small. Abdominal scales largeish, sub hexagonal. No femoral nor preoanal pores. General dorsal colour is usually earthy brown, olive or reddish. Spots and markings may be either distinct, or obscured; tail may or may not have semi-distinct cross-bands (modified from Boulenger 1885).

Quedenfeldtia obscuratamaculis sp. nov. from Oukaïmedèn, Morocco is depicted in life online at:

https://www.flickr.com/photos/antoniogonalves/9228841985/
and
https://www.flickr.com/photos/markferris/52915492598/
and
https://www.inaturalist.org/observations/253862690
and
https://www.inaturalist.org/observations/9470530
and
https://www.inaturalist.org/observations/242667073

Q. multismaculisnigris sp. nov. from the central High Atlas region of Morocco about 50-70 km straight-line east of Oukaïmedèn, Morocco is depicted in life online at:

https://www.inaturalist.org/observations/259368733
and
https://www.inaturalist.org/observations/192462486

The type form of *Q. moerens* is depicted online at:

https://www.inaturalist.org/observations/10302718
and
https://www.inaturalist.org/observations/119489595
and
https://www.inaturalist.org/observations/37652431

Q. obscurusdorso sp. nov. is depicted in life online at:

https://www.inaturalist.org/observations/249780538

Q. *minimaalba sp. nov.* is depicted in life online at:

https://www.inaturalist.org/observations/257268011
and
https://www.inaturalist.org/observations/1212570

Distribution: *Q. minimaalba sp. nov.* which was formerly treated as a far southern population of *Q. moerens* is found generally south of Tafraoute, Morocco, Latitude 29.7210° N., Longitude -8.9736 W. extending south to about the border of Western Sahara mainly on the western half of that part of Morocco.

Etymology: *Q. minimaalba sp. nov.* comes from the Latin words "*minima alba*" which means "*tiny white spots*", which characterises the dorsal colour pattern in adult males of this species.

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CONFLICT OF INTEREST

None.

Holotype of *Quedenfeldtia obscurusdorso sp. nov.* in life and habitat, photographed by Simon Wogram on 30 October 2024 at Iknioueen, Drâa-Tafilalet, Morocco, Latitude 31.1736 N., Longitude -5.6734 W.

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