

A new species and new subspecies of Viper from the Middle-east.

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ABSTRACT

In spite of numerous taxonomic works on the Viperidae by numerous herpetologists over the past 200 years, unnamed forms have been formally named as recently as in the past 20 years.

Scrutiny of populations in the Levant by myself flagged potentially unnamed forms, leading to scrutiny of both *Montivipera bornmuelleri* (Werner, 1898) and *Maxhoservipera palaestinae* (Werner 1938) across their known ranges.

The Mount Hermon population of putative *Montivipera bornmuelleri* is divergent morphologically to the Mount Lebanon, type form for that species. This morphological divergence is consistent and evidence of a separation measured in millions of years (probably just under one) as opposed to 20 thousand years or less as would be the case if the populations met at the last glacial maximum.

The Litani River basin is a known biogeographical barrier between the Mount Lebanon and Anti Lebanon ranges and on the basis of this obvious separation, the Mount Hermon population is formally named herein as a new species.

It was determined that the recently identified Turkish population of *Maxhoservipera palaestinae* was morphologically divergent from the nominate form of *Maxhoservipera palaestinae*, type locality of Haifa, Israel and in the absence of firm evidence of allopatry or isolation I determined that it should be formally identified as a new subspecies.

Both taxa are formally named in accordance with *the International Code of Zoological Nomenclature* (Ride *et al.* 1999) herein as part of the permanent scientific record.

Keywords: Taxonomy; nomenclature; viper; Lebanon; Israel; Syria; *Maxhoservipera*; *Daboia*; *Montivipera*; new species; *shalomsalam*; yes.

INTRODUCTION

In spite of numerous taxonomic works on the Viperidae by numerous herpetologists on a regular basis over the past 200 years, unnamed forms of true vipers have been formally named as recently as in the past 20 years (e.g. Hoser, 2013a-b, 2015g, 2016, 2022, 2023).

Scrutiny of populations in the Levant by myself flagged potentially unnamed forms, leading to scrutiny of both *Montivipera bornmuelleri* Werner, 1898 and *Maxhoservipera palaestinae* Werner 1938 across their known ranges.

The task and questions were quite simple.

1/ Are all putative *Montivipera bornmuelleri* wholly conspecific?

2/ Are all putative *Maxhoservipera palaestinae* wholly conspecific?

Before explaining the process involved in dividing the relevant taxa or at least attempting to, it is worth mentioning the basis for the investigation.

Parallel studies of the family Typhlopidae by myself had brought Levant species into scrutiny, including putative "*Typhlops*

syriacus Jan, 1864", regarded by most authors since as synonymous with *Lenhosertyphlops vermicularis* (Merrem, 1820).

Molecular and morphological analysis, including the works of Kornilios *et al.* (2011, 2012 and 2020) effectively showed that putative "*Typhlops syriacus* Jan, 1864" included five actual species as outlined in a separate paper published by myself in 2025.

The relevant biogeographical barriers for that taxon included low-lying flattish areas such as the Litani River basin, including the Bekaa Valley in Lebanon.

The distribution of putative *Montivipera bornmuelleri* Werner, 1898 was also split by this biogeographical barrier (populations in high country on either side) and so it came onto the radar as perhaps including more than one species, so it was properly investigated.

Before going further, it was immediately ascertained that the species as recognised had only been named once, so if one population was separate to the other, it would in effect be an unnamed taxon.

In terms of the species *Maxhoservipera palaestinae* the flag was raised when a specimen was encountered in southern Turkey, quite some distance from the known range of the species, that until then only extended to mid-west Syria on the coast.

That specimen appeared morphologically divergent and so the entire species as recognised was placed under investigation.

MATERIALS AND METHODS

A multidisciplinary approach was taken to resolve the two questions put.

These were:

Are all putative *Montivipera bornmuelleri* wholly conspecific?

As well as, are all putative *Maxhoservipera palaestinae* wholly conspecific?

Available specimens, papers and photos of the relevant putative species were inspected.

They were checked for differences between populations in all aspects of morphology.

They were checked for morphological divergences and/or any obvious biogeographical barriers separating the populations.

Disjunct distributions were checked for absences caused by non-collection versus absences of collection caused by absence of specimens.

Noting the many thousands of years of human activities in the region, possibilities of translocation of specimens could not be discounted and was factored in the assessment.

Distributions were also mapped against rock and soil types to see if these also affected the relevant taxa.

East Mediterranean Sea depths were assessed for the past 10 MYA as was the entire geological history of the region.

Added to this was an assessment of climate oscillations between glacial and interglacial periods, including impacts on vegetations, drainages and habitats overall, to assess the potential creation of migratory pathways for the relevant putative species, be this along a coastal strip, through elevated habitats or across what are presently intensively farmed valley areas.

Also assessed were habitat constraints preceding human activities over the past 5K years as well as the interplay of other species including similar competing forms, including those from the same or other closely related genera.

In terms of ascertaining the provenance of the type specimens of each putative species, it was necessary to investigate the political and social histories of the areas in order to confirm the general location of the relevant type material.

Specimens inspected included dead and live specimens as well as images with good locality data including photo sharing sites online like "Inaturalist", "Twitter" (AKA "X"), "Flickr", "Facebook" and "Instagram".

A sweep of the published literature and museum databases, photo sharing sites and the like was done to properly ascertain relevant distributions of all known populations of the two putative species and all that is currently known about them in terms of morphology, genetics, distribution and so on.

References relevant to the taxonomic and nomenclatural decisions herein included Ahmadi *et al.* (2021, 2024), Akman *et al.* (2020), Boettger (1898), Disi *et al.* (2001), Gocmen *et al.* (2018), Failloux (2005), Gray (1845, 1849), Herrmann *et al.* (1992), Hoser (2012, 2013a-b, 2015g, 2016, 2022, 2023), Hraoui-Bloquet *et al.* (2002), ICZN 2012, Jan (1864), Kornilios (2017), Kornilios *et al.* (2011, 2012, 2020), Lenk *et al.* (2001), Mallow *et al.* (2003), Mertens (1952, 1967), Nilson and Andren (1984, 1985, 1986), Nilson *et al.* (1990), Obst (1983), Ride *et al.* (1999), Stümpel and Joger (2009), Thorpe *et al.* (2007), Volynchik (2001), Werner (1898, 1902, 1922, 1935, 1938, 1939), Werner (2016) and sources cited therein.

Online references relied upon were most recently checked as correct in terms of content cited on 17 May 2025.

RESULTS

That the extant populations of putative *Montivipera bornmuelleri*

are geographically disjunct is beyond doubt.

The two populations are as follows:

The first is from the Mount Lebanon Ranges west of the Bekaa Valley and north of the Litani River in the south, wholly within Lebanon.

The second is in the Golan Heights/Mount Hermon area of the Anti-Lebanon Mountains being the highest part of these ranges. Significantly, although the Litani River drainage and associated Bekaa Valley is narrowest between the Golan Heights/Mount Hermon area and the Mount Lebanon Ranges to the west, there is no evidence of these populations being joined at any recent time in the past few thousand years.

As mentioned earlier, putative "*Typhlops syriacus* Jan, 1864", now within the genus *Lenhosertyplops* Hoser, 2012 has been unable to traverse the Litani basin for about 1.2 MYA as detailed in the works of Kornilios *et al.* (2011, 2012 and 2020).

However, that this basin forms a barrier for one taxon that prefers elevated areas, does not preclude another species with a preference for elevated areas traversing this same basin.

As with "*Typhlops syriacus* Jan, 1864" and the competing floodplain species *Trioanotyphlops simoni* (Boettger, 1879) having a near mutually exclusive distribution in terms of one another, a similar investigation was undertaken with respect of putative *Montivipera bornmuelleri*.

In this case the mutually exclusive (as a rule) species was the mainly lower hill and lowland dwelling taxon *Maxhoservipera palaestinae*.

Molecular evidence has indicated that this taxon has been in the region for up to 10 MYA and has therefore long been in a state of competitive exclusion with putative *Montivipera bornmuelleri* and associated taxa, likely to have been in the region for half that time (see for example the papers cited in Hoser (2012) for *Maxhoservipera palaestinae* and Amadi *et al.* 2021 at Fig 1 for *Montivipera bornmuelleri*).

The distribution of the Golan Heights/Mount Hermon population of putative *Montivipera bornmuelleri* to the exclusion of other known locations in the Anti Lebanon Range, combined with the relatively narrow contact with the Mount Lebanon Range at this part of the Bekaa Valley implies that the Golan Heights/Mount Hermon population crossed that valley at this area.

To the south and west of Mount Hermon, *Maxhoservipera palaestinae* are common and putative *Montivipera bornmuelleri* is absent, further implying division of the two *Montivipera bornmuelleri* populations.

Significantly putative *Montivipera bornmuelleri* have not yet been collected in the parts of the Mount Lebanon Range adjacent to the Golan Heights/Mount Hermon area and it is likely they have not been there in the Holocene.

If the divergence of the two populations was recent, as in during the Holocene and as an artefact of the activities of an increasing human population, the two populations of putative *Montivipera bornmuelleri* would be similar.

Now to make it clear, known specimens of *Montivipera bornmuelleri* from the Mount Lebanon Range appear to be found east and north of Beirut, extending almost to the Syrian border, which in turn is an area of lowlands not suited to these vipers.

The coastal range of Syria, largely separated from both the Mount Lebanon Range and the Turkish ranges to the north by lowland zones has another viper species, being *Montivipera bulgardaghica* instead (Ahmadi *et al.* 2021).

Significantly *Montivipera bulgardaghica* (Nilson and Andren, 1985) extends to the Turkish ranges in the north and is genetically closer to *Montivipera albizona* (Nilson, Andren and Flardh, 1990) and *Montivipera wagneri* (Nilson and Andren, 1984) than to *Montivipera bornmuelleri* (Ahmadi *et al.* 2021).

Ahmadi *et al.* (2021) in their supplementary data found that the Golan Heights/Mount Hermon population diverged from that in the Mount Lebanon Range slightly under 1 MYA which normally would be treated as subspecies level divergence.

However, as both populations are allopatric, morphologically divergent and evolving separately as independent units I have chosen to formally describe the unnamed one as a new species.

The next problem to solve was which of these populations was in fact of the type form.

The type locality for "*Vipera bornmuelleri* Werner, 1898" was "Libanon" = Lebanon. In his original description he described a single type specimen from Lebanon and others from the west Syrian coastal range as one species making them a type series. In 1922 Werner restricted the type locality to "Libanon" making the sole specimen he had described from Lebanon as his holotype and the type for the species "*Vipera bornmuelleri* Werner, 1898".

Werner's description implied that his specimen was of the Mount Lebanon Range form (based on his colour description that matched these fully), but a small percentage (my estimate is about 25%) of specimens from the Golan Heights/Mount Hermon area also match the configuration he described making it far from certain the provenance of his specimen based on his description. However, this uncertainty was removed when I investigated the history of Lebanon in the relevant period that Werner published his description in 1898 and then restricted the type locality in 1922.

In the 1800's, what we now know as Lebanon was part of the Ottoman Empire, with vaguely defined borders encompassing the Mount Lebanon region and its surrounding areas, not extending beyond the Bekaa Valley, thereby meaning that the Golan Heights/Mount Hermon area could not have been where Werner's type specimen came from. The specific boundaries for modern Lebanon, which were extended westwards to encompass the west side of the Anti-Lebanon Range were not clearly established until after World War I, with the creation of Greater Lebanon under French mandate in 1920.

With it now established that Golan Heights/Mount Hermon area population of putative *Montivipera bornmuelleri* is the one without a formal name, I do within this paper formally name it as *Montivipera shalomsalam* sp. nov..

Gocmen *et al.* (2018) detailed the first ever recorded specimen of *Maxhoservipera palaestinae* type locality of Haifa, Israel from Alahan village, Antakya district, Hatay province, southern Turkey, being a first record for that country and a range extension of about 103 km by road (Google maps) to the north of the previous northernmost locality which had been reported by them as the southern parts of Latakia, Syria.

Maxhoservipera palaestinae which are mainly found in the populated parts of Israel and southern Lebanon are very abundant where they occur. Records north of this area are patchy, but this may be an artefact of limited collection, especially in Syria and south Turkey.

Even if they are absent from large coastal tracts between southern Turkey and Israel now, it is likely that large swathes of suitable habitat was present along the entire west Mediterranean strip of land as recently as the last glacial maxima just 25 KYA.

If that was the case and populations were continuous as recently as then, there is no case for species-level recognition of the Turkish animals as being distinct from those of Israel.

However, a viewing of the images of the specimen published by Gocmen *et al.* (2018) raised an alert because it had traits not seen in any other specimens that I had seen, so a full review of the putative species was conducted.

The differences were consistent between the single specimen and the entire viewable (to me) population of the rest of the putative *Maxhoservipera palaestinae* species.

Those differences implied significant time and space divergence of the northern (Turkey) population and so in the absence of molecular data it is formally named herein as a new subspecies being *Maxhoservipera palaestinae yes subsp. nov.*

The preceding facts also negated another possible explanation for the Turkish record of *Maxhoservipera palaestinae*, this being

it was merely a recently translocated specimen from elsewhere (south).

If it were simply translocated from Israel or somewhere nearby, then it should match those animals exactly, which it did not.

As a rule, translocated snakes are usually of specific kinds (those that climb) and are mainly translocated to trade hubs as in the centres of cities and the like. The likelihood of a non-climber species being translocated to a relatively remote place is low.

I know this because I have been a government-licensed snake catcher in Australian cities for over 40 years and catch thousands of snakes.

Only a small percentage are translocated and as a rule they fit the profile just given.

Both taxa, namely *Montivipera shalomsalam* sp. nov. and *Maxhoservipera palaestinae yes subsp. nov.* are formally named in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) herein as part of the permanent scientific record.

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 17 May 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.

This includes the descriptions of the snakes not including pre-sloughing snakes, which are often significantly different to the usual colouration for the specimen or species, being usually more whitish or dull.

Note that there is ordinarily some sexual dimorphism between adults of species within the relevant viper taxa and colour changes from young to adult.

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.

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.

The use of provocative and interesting etymologies is deliberate and designed to further public interest in the relevant species, which will aid conservation outcomes and/or to highlight other matters of public importance that may otherwise be overlooked.

The conservation status of both newly named taxa is thought to be stable and secure as can be in the modern world, but this is by no means certain.

Immediate recognition of and monitoring of the new taxa will be

the best way to secure them into the future. Each are significant units for conservation management.

The relevant comments of Hoser (2015a-f, 2019a-b) and sources cited therein apply.

MONTIVIPERA SHALOMSALAM SP. NOV.

LSIDDurn:lsid:zoobank.org:act:FAA16ED4-E9A9-4FB3-9CAA-E02C1BBCE934

Holotype: A preserved specimen at the Steinhardt Museum of Natural History, Tel Aviv University, Israel, specimen number SMNHTAU-R.20768 collected from Mount Hermon, Israel, Latitude -33.3060 S., Longitude 35.7856 N.

Paratypes: 13 preserved specimens at the Steinhardt Museum of Natural History, Tel Aviv University, Israel, specimen numbers SMNHTAU-R.7082, SMNHTAU-R.8575, SMNHTAU-R.10559, SMNHTAU-R.10781, SMNHTAU-R.13507, SMNHTAU-R.13611, SMNHTAU-R.16644, SMNHTAU-R.17388, SMNHTAU-R.19211, SMNHTAU-R.19512, SMNHTAU-R.19513, SMNHTAU-R.20252 and SMNHTAU-R.20253, all collected from Mount Hermon, Israel.

Diagnosis: Until now *Montivipera shalomsalam* sp. nov. confined to the Mount Hermon region of the Anti-Lebanon Mountains has been treated as a population of *Montivipera bornmuelleri* (Werner, 1898) type locality "Libanon", of the Mount Lebanon Ranges in Lebanon.

Montivipera bornmuelleri has terra typica restricta: Bcharré, Mount Liban, Lebanon (Mertens 1967).

M. shalomsalam sp. nov. is separated from *M. bornmuelleri* by the following combination of five characters:

- 1/ 4 chinshields versus six in *M. bornmuelleri*,
- 2/ 8 interocular rows between the supraoculars versus 7 interocular rows between the supraoculars in *M. bornmuelleri*,
- 3/ 15-16 intercanthals, versus 13-14 in *M. bornmuelleri*,
- 4/ A lower canthal stripe that is of the same or nearly the same width anterior and posterior to the eye or faded anteriorly, versus a consistently bold and sharp edged, dark well-defined lower canthal stripe that is narrow and pointed anteriorly (near the eye) that obviously widens significantly triangularly posteriorly and,
- 5/ A dorsal colouration that is of semi distinct markings and blotches on the top and sides of the body in males and females versus sharp-edged, well-defined prominent markings and blotches on the top and sides of the body in all female and most male *M. bornmuelleri*.

The two preceding species are separated from all others in the *M. xanthina* (Gray, 1849) species group by having a much-reduced dorsal pattern. This pattern is split up into small irregular bars and blotches, normally between 47 and 64 on the body. In young specimens the pattern is more similar to that in the *M. Xanthina* (Gray, 1849) group of species as defined by Hoser (2016), while the central part of each dorsal blotch fades away during early growth, thus leaving only the dark edges of the blotches left. This results in an irregularly spotted or crossbanded pattern. Belly is finely dotted without dark blotches.

The snakes themselves are of small to medium size, often not exceeding 50 cm length in the wild, but can grow bigger.

Usually 23 midbody scale rows (rarely 21). Comparatively short tail with only 23 to 26 subcaudals in females and 28 to 31 in males, compared to more than 27 in female *M. xanthina* group species and between 30 and 37 in male *M. xanthina* group species.

Further they differ from *M. xanthina* group species in having a lower average ventral count (142 to 153, $x = 147.8$ in females compared to between 148 and 169 in female *M. xanthina* group species and around 161 in female *M. wagneri*; and 144 to 152, $x = 148.4$, in males compared to between 151 and 167 in male *M. xanthina* group species). *M. bornmuelleri* and *M. shalomsalam* sp. nov. often have three apicals in contact with the rostral while other *M. xanthina* group species have two. There are nine supralabials on each side, while other *M. xanthina* group species regularly have ten.

Exceptional within the *M. xanthina* group as outlined in the description above is *M. bulgardaghica* which in most respects is morphologically similar to *M. bornmuelleri* and *M. shalomsalam* sp. nov..

M. bornmuelleri and *M. shalomsalam* sp. nov. differs from *M. bulgardaghica* (Nilson and Andren, 1985) by not having the upper preocular in contact with nasal, in having 21 or more scales in the first circumocular rings (counted together), and 25 or more in the second rings (21 or less in first and 25 or less in second circumocular rings in *M. bulgardaghica*), and in having 2 scale rows between eye and supralabials (one in *M. bulgardaghica*).

M. bornmuelleri and *M. shalomsalam* sp. nov. are also separated from other *M. xanthina* group species including *M. bulgardaghica* by having a higher average number of intercanthals and inter-supraoculars (42-60 counted together, compared to between 30 and 50 in the latter taxa) (modified from Nilson and Andren 1986).

The subgenus *Apexvipera* Hoser, 2016 are separated from the nominate subgenus *Montivipera* Nilson *et al.* 1999 by having a complete circumocular ring of scales. By contrast in *Montivipera* this ring is divided by the supraocular.

Vipers in the genus *Montivipera* are separated from other true viper genera by the following unique suite of characters: Supraocular shield large, erectile, the free border angular, separated from the eye by a series of small scales; nostril in a single nasal, which is partially fused with the naso-rostral; 23 mid-body rows; 150-180 ventrals.

Snakes in the tribe Viperini, as defined by Hoser (2013), which includes *Montivipera*, are separated from all other true vipers by the following suite of characters: pupil is elliptical, adults of the snakes are generally small (subtribes Viperina and Montiviperina) to medium or large (subtribe Maxhoserviperina) and more or less stoutly built. The head is distinct from the neck, of triangular shape, and covered with small scales in many species, although some have a few small plates on top. The dorsal scales are strongly keeled, the anal plate is divided, as are the subcaudals. Importantly this group are defined by the characteristic zig-zag pattern or similar running down their back, more-or-less along the dorsal midbody line, this pattern sometimes becoming a series of blotches or spots running longitudinally along the body (as in the genus *Daboia*).

All are viviparous (live bearing). They are distributed in Eurasia and adjacent parts of North Africa.

Ahmadi *et al.* (2021) in their supplementary data found that the Golan Heights/Mount Hermon population of putative *M. bornmuelleri* diverged from that in the Mount Lebanon Range slightly under 1 MYA which normally would be treated as subspecies level divergence.

However, as both populations are allopatric, morphologically divergent and evolving separately as independent units I have chosen to formally describe the unnamed one from Mount Hermon as a new species.

Distribution: *Montivipera shalomsalam* sp. nov. appears to be confined to the Mount Hermon and Golan Heights area in what is currently as of 2025 land controlled by Israel.

Etymology: The scientific name *Montivipera shalomsalam* sp. nov. is a name that is a direct take on the Hebrew and Arabic words for peace, a relevant concept for this part of the world in 2025.

MAXHOSERVIPERA PALAESTINAE YES SP. NOV.

LSIDDurn:lsid:zoobank.org:act:C02D3D63-6992-47F5-8C49-6102E92E6619

Holotype: The adult specimen depicted in the 8 images in Fig. 2 on page 89 of the paper:

Gocmen, B., Karis, M., Ozmen, E. and Oguzi, M. A. 2018. First record of the Palestine Viper *Vipera palaestinae* (Serpentes: Viperidae) from Anatolia. *South Western Journal of Horticulture, Biology and Environment* 9(2):87-90.

The authors described the snake as male, but from the images it appears that the snake is female.

It was collected from Alahan village, Antakya District, Hatay, Turkey, Latitude 36.3319 N., Longitude 36.1840 E.

Diagnosis: *Maxhoservipera palaestinae yes subsp. nov.* is so far only known from the holotype specimen from southern Turkey and is believed to be an allopatric population of *Maxhoservipera palaestinae* (Werner, 1938) a species with a type locality of Haifa, Israel and generally confined to mainly Israel north of the arid zone, southern Lebanon and immediately adjacent parts of Syria, where records are best described as patchy.

M. palaestinae yes subsp. nov. is separated from the nominate form of *M. palaestinae* by differences in colouration, based on the sole available holotype.

M. palaestinae has a dorsum and near flanks consisting of well-defined sharp-edged blotches on a beige to grey background. The blotches themselves are blackish at the outer edges and sometimes bounded with white or white flecks. Overall, the dorsal colouration is bold.

By contrast *M. palaestinae yes subsp. nov.* has a dorsum in which the dorsal blotches are somewhat faded with reduced dark at the outer edges. Some of the side blotches are reduced to mere peppering on an otherwise lighter background. The side blotches are narrower, tending to be broken more by the light interspace areas and not obvious as compared to the bold and distinct side blotches in nominate *M. palaestinae*.

Except for under the head or neck, the venter of *M. palaestinae yes subsp. nov.* is wholly a salmon pink colour with scattered semi-distinct greyish flecks, but otherwise an even pink colour.

Pink bellies in nominate *M. palaestinae* are rare and when they are seen, there are invariably numerous white intrusions and spots on the pinkish belly.

The two preceding taxa comprise the entirety of the subgenus *Maxhoservipera* Hoser, 2012, within the genus *Maxhoservipera* Hoser, 2012.

The two preceding taxa are separated from the species within the other subgenus *Laidlawus* Hoser, 2012 by configuration of the blotch running to the eye. In these taxa it is of continuous thickness from the labial to the eye, narrowing slightly from the rear as one moves towards the eye.

By contrast, in the other two taxa *M. deserti* and *M. mauritanica* (being the subgenus *Laidlawus* Hoser, 2012) one has the blotch narrowing considerably as it meets the eye giving it a triangular appearance.

The diagnosis separating all *Maxhoservipera* Hoser, 2012 species from all other vipers is the following:

They are separated from all other vipers by the following suite of characters: generally large (average 70-90 cm total length as adults), never more than 150 cm total length as adults, of very thick-set viperine build (stout and heavy); and keeled dorsal scales, with the keels forming a series of ridges running longitudinally along the body; the lowest row of scales (before the ventrals) does not have keels, the tail is short; the head is large, thick and triangular in shape; vertically elliptical pupil in a distinct medium-sized eye, the body pattern usually being in a chain-like configuration, usually with darker diamonds along the spine and broken bands on the flanks, over a lighter ground-type colour; 10-12 supralabials with 3-4 rows of scales separating the supralabials from the eyes; 25-33 mid body rows, 140-180 ventrals, 40-50 all divided subcaudals, two pairs of chin shields, the front ones noticeably enlarged; separated from all other vipers except the Russell's viper group of species (Genus *Daboia* Shaw and Nodder, 1797 *sensu* Hoser 2012) by the presence of a dark blotch or stripe running vertically from the top of the mouth into the eye, although this may appear faded in large snakes; separated from the Russell's viper group by the less thick-set build of the Russell's viper group and the fact that the dark blotch running into the eye is considerably wider than the eye, as opposed to being roughly the same width. The Russell's viper group is further separated by its dorsal pattern which is not in the

zig-zag configuration seen in this genus. The pattern in *Daboia* is a colour pattern consisting of a deep yellow, tan or brown ground colour, with three series of dark brown spots that run the length of its body. Each of these spots has a black ring around it, the outer border of which is intensified with a rim of white or yellow, but giving an impression of ovals, smooth circles or similar as opposed to the more typical viperine pattern. The dorsal spots, which usually number 23-30, may grow together, while the side spots may break apart.

Vipers are distinctive, usually thick-set snakes with a well-developed venom apparatus and large retractable fangs that fold into the mouth when not in use. The thick-set build relates to the ambush predator feeding plan on the snakes. They have large fangs used to hold prey when bitten and a heavy body with which to hold down struggling prey, usually by force of weight and holding with a stiff neck as the prey is bitten and subdued.

The subgenus (*Laidlawus* Hoser, 2012) is distributed in the North Africa region only.

The subgenus *Maxhoservipera* Hoser, 2012 is confined to the Israel/Lebanon area and immediately adjacent parts of surrounding countries, now extending to south Turkey near the Mediterranean.

Distribution: *Maxhoservipera palaestinae yes subsp. nov.* is known only from the type locality of Alahan village, Antakya District, Hatay, Turkey, Latitude 36.3319 N., Longitude 36.1840 E.

Etymology: The word "yes" is a common exclamation when herpetologist is in the field and finds themselves a viper. The name is also short and easy to remember.

REFERENCES CITED

- Ahmadi, M., Hemami, M. R., Kaboli, M., Nazarizadeh, M., Malekian, M., Behrooz, R., Geniez, P., Alroy, J. and Zimmermann, N. E. 2021. The legacy of Eastern Mediterranean mountain uplifts: rapid disparity of phylogenetic niche conservatism and divergence in mountain vipers. *BMC Ecology and Evolution* 21(130) (online only):13 pp.
- Ahmadi, M., Hemami, M. R., Kaboli, M., Ghane-Ameleh, S. and Malekian, M. 2024. Conservation Biogeography of Mountain Vipers: A Phylogenetic Niche Modelling Approach. *Diversity and Distributions* 2025:31:e13955 (online only):15 pp.
- Akman, B., Çakmak, M. and Yıldız, M. Z. 2020. On the Herpetofauna of the Central Anatolian Province of Kırkkale (Turkey) (Amphibia; Reptilia). *Acta Biologica Turcica* 33(2):70-79.
- Boettger, O. 1879. Die Reptilien und Amphibien von Syrien, Palaestina und Cypern. *Bericht über die Senckenbergische Naturforschende Gesellschaft in Frankfurt am Main*, 1879-1880:132-219.
- Disi, A. M., Modry, D., Necas, P. and Rifai, L. 2001. *Amphibians and Reptiles of the Hashemite Kingdom of Jordan*. Edition Chimaira, Frankfurt, Germany:408 pp.
- Gocmen, B., Karis, M., Ozmen, E. and Oguzi, M. A. 2018. First record of the Palestine Viper *Vipera palaestinae* (Serpentes: Viperidae) from Anatolia. *South Western Journal of Horticulture, Biology and Environment* 9(2):87-90.
- Failloux, A. 2005. Molecular phylogeny of *Vipera* Laurenti, 1768 and the related genera *Macrovipera* (Reuss, 1927) and *Daboia* (Gray, 1842), with comments about neurotoxic *Vipera aspis aspis* populations. *Molecular Phylogenetics and Evolution* 35(1):35-47.
- Gray, J. E. 1845. *Catalogue of the specimens of lizards in the collection of the British Museum*. Trustees of the British Museum/Edward Newman, London, UK: xxvii+289 pp.
- Gray, J. E. 1849. *Catalogue of the specimens of snakes in the collection of the British Museum*. Trustees of the British Museum/Edward Newman, London, UK:i-xv;1-125.
- Herrmann, H. W., Joger, U. and Nilson, G. 1992. Phylogeny and systematics of viperine snakes. III.: Resurrection of the genus *Macrovipera* (Reuss, 1927) as suggested by biochemical evidence. *Amphibia-Reptilia*:375-392.
- Hoser, R. T. 2012. A taxonomic revision of the *Vipera palaestinae*

Werner, 1938 species group, with the creation of a new genus and a new subgenus. *Australasian Journal of herpetology* 11:53-55.

Hoser, R. T. 2013a. African Adders (*Bitis* Gray, 1842), reviewed, including, two new subgenera, five new species of Puff Adder, all formerly *Bitis arietans* (Merrem, 1820) subspecific division of *Bitis caudalis* (Smith, 1839) and division of the Berg Adders *Bitis atropos* (Linnaeus, 1758) (Serpentes: Viperidae: Bitisini). *Australasian Journal of Herpetology* 19:3-24.

Hoser, R. T. 2013b. A formal five-way division of the Gaboon Viper Species Complex: *Bitis* (*Macrocerastes*) *gabonica* (Duméril, Bibron and Duméril, 1854) and a two-way division of the Nose-horned Viper species complex *Bitis* (*Macrocerastes*) *nasicornis* (Shaw, 1802) (Serpentes: Viperidae: Bitisini). *Australasian Journal of Herpetology* 19:25-31.

Hoser, R. T. 2015a. Dealing with the "truth haters" ... a summary! Introduction to Issues 25 and 26 of *Australasian Journal of Herpetology*. including "A timeline of relevant key publishing and other events relevant to Wolfgang Wüster and his gang of thieves." and a "Synonyms list". *Australasian Journal of Herpetology* 25:3-13.

Hoser, R. T. 2015b. The Wüster gang and their proposed "Taxon Filter": How they are knowingly publishing false information, recklessly engaging in taxonomic vandalism and directly attacking the rules and stability of zoological nomenclature. *Australasian Journal of Herpetology* 25:14-38.

Hoser, R. T. 2015c. Best Practices in herpetology: Hinrich Kaiser's claims are unsubstantiated. *Australasian Journal of Herpetology* 25:39-64.

Hoser, R. T. 2015d. PRINO (Peer reviewed in name only) journals: When quality control in scientific publications fails. *Australasian Journal of Herpetology* 26:3-64.

Hoser, R. T. 2015e. Rhodin *et al.* 2015, Yet more lies, misrepresentations and falsehoods by a band of thieves intent on stealing credit for the scientific works of others. *Australasian Journal of Herpetology* 27:3-36.

Hoser, R. T. 2015f. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see BZN 70: 234-237; comments BZN 71:30-38, 133-135). *Australasian Journal of Herpetology* 27:37-44.

Hoser, R. T. 2015g. A new taxonomy for the *Vipera latastei* species complex (Serpentes: Viperidae). *Australasian Journal of Herpetology* 30:28-36.

Hoser, R. T. 2016. *Montivipera xanthina* divided and a new subgenus of Eurasian Vipers for the *Vipera raddei* Boettger, 1890. species group (Squamata: Serpentes: Viperidae). *Australasian Journal of Herpetology* 33:12-19.

Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian Journal of Herpetology* 39:23-52.

Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian Journal of Herpetology* 39:53-63.

Hoser, R. T. 2022. African viper taxonomy revisited. The classification of Hoser (2013) stands the tests of new technology and time; with a new subgenus and a new species from Southern Africa formally named (Serpentes: Viperidae). *Australasian Journal of Herpetology* 56:57-63.

Hoser, R. T. 2023. *Bitis* (*Macrocerastes*) *hoserae* Hoser, 2013 split. *Australasian Journal of Herpetology* 63:61-62.

Hraoui-Bloquet, S., Sadek, R. A., Sindaco, R. and Venchi, A. 2002. The Herpetofauna of Lebanon: new data on distribution.

Zoology in the Middle East 27:35-46.

International Commission of Zoological Nomenclature (ICZN).

2012. Amendment of Articles 8, 9, 10, 21 and 78 of the *International Code of Zoological Nomenclature* to expand and refine methods of publication. *Zootaxa* (PRINO) (Online) 3450:1-7.

Jan, G., 1864. *Iconographie générale des ophiidiens*. 3. Livraison. Iconogr. gén. Ophid., 1 (3. livr.):3.

Kornilios, P. 2017. Polytomies, signal and noise: revisiting the mitochondrial phylogeny and phylogeography of the Eurasian blindsnake species complex (Typhlopidae, Squamata). *Zoologica Scripta* 46:665-674.

Kornilios, P., Ilgaz, C., Kumlutas, Y., Giokas, S., Fraguadakis-Tsolis, S. and Chondropoulos, B. 2011. The role of Anatolian refugia in herpetofaunal diversity: an mtDNA analysis of *Typhlops vermicularis* Merrem, 1820 (Squamata, Typhlopidae). *Amphibia-Reptilia* 32(3):351-363.

Kornilios, P., Ilgaz, H., Kumlutas, Y., Lymberakis, P., Moravec, J., Sindaco, R., Rastegar-Pouyani, N., Afroosheh, M., Giokas, S., Fraguadakis-Tsolis, S. and Chondropoulos, B., 2012. Neogene climatic oscillations shape the biogeography and evolutionary history of the Eurasian blindsnake. *Molecular Phylogenetics and Evolution* 62:856-873.

Kornilios, P., Jablonski, D., Sadek, R. A., Kumlutaş, Y., Olgun, K., Avci, A. and Ilgaz, C. 2020. Multilocus species-delimitation in the *Xeratyphlops vermicularis* (Reptilia: Typhlopidae) species complex. *Molecular Phylogenetics and Evolution* 152 (Online only):16 pp. (including supplementary data).

Lenk, P., Kalyabina, S., Wink, M. and Joger, U. 2001. Evolutionary relationships among the true vipers (Reptilia: Viperidae) inferred from mitochondrial DNA sequences. *Molecular Phylogenetics and Evolution* 19(1):94-104.

Mallow, D., Ludwig, D. and Nilson G. 2003. *True Vipers: Natural History and Toxinology of Old World Vipers*. Krieger Publishing Company, Malabar, Florida, USA:410 pp.

Mertens, R. 1952. Türkiye amfibi ve reptilleri hakkında. Amphibien und Reptilien aus der Türkei. *Istanbul Üniversitesi Fen Fakültesi Mecmuası* 17:41-75.

Mertens, R. 1967. Über *Lachesis libanotica* und den Status von *Vipera bommuelleri*. *Senckenbergiana biologica* 48(3):153-159.

Nilson, G. and Andren, C. 1984. Systematics of the *Vipera xanthina* complex (Reptilia: Viperidae). 2. An overlooked viper within the *xanthina* species-group in Iran. *Bonner Zoologische Beiträge* 35(1-3):175-184.

Nilson, G. and Andren, C. 1985. Systematics of the *Vipera xanthina* complex (Reptilia: Viperidae). 3. Taxonomic status of the Bulgar Daghi viper in south Turkey. *Journal of Herpetology* 19(2):276-283.

Nilson, G. and Andren, C. 1986. The mountain vipers of the Middle East - the *Vipera xanthina* complex (Reptilia: Viperidae). *Bonner Zoologische Monographien* 20:1-90.

Nilson, G., Andren, C. and Flardh, B. 1990. *Vipera albizona*, a new mountain viper from central Turkey, with comments on isolating effects of the Anatolian 'Diagonal'. *Amphibia-Reptilia* 11(3):285-294.

Obst, F. J. 1983. Zur Kenntnis der Schlangengattung *Vipera*. *Zoologische Abhandlungen Staatliches Museum Tierkunde Dresden* 38:229-235.

Ride, W. D. L. (ed.) *et al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International Code of Zoological Nomenclature*. The Natural History Museum - Cromwell Road, London SW7 5BD, UK (also commonly cited as "The Rules", "Zoological Rules" or "ICZN 1999").

Stümpel, N. and Joger, U. 2009. Recent advances in phylogeny and taxonomy of Near and Middle Eastern Vipers - an update. *ZooKeys* 31:179-191.

Thorpe, S., Pook, R., Catharine, E. and A. Malhotra, 2007. Phylogeography of the Russell's viper (*Daboia russelii*) complex in relation to variation in the colour pattern and symptoms of

envenoming. *Herpetological Journal* 17(4):209-218.

Volynchik, S. 2011. Morphology of *Vipera palaestinae*: Intraspecific Variability and Sexual Dimorphism. *Russian Journal of Herpetology* 18(4):260-272.

Werner, F. 1898. Über einige neue Reptilien und einen neuen Frosch aus dem cilicischen Taurus. *Zoologischer Anzeiger* 21(555):217-223.

Werner, F. 1902. Die Reptilien- und Amphibienfauna von Kleinasien. Sitzungsber. *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Mathematisch-Naturwissenschaftliche Klasse* (1) 111:1057-1121.

Werner, F. 1922. Synopsis der Schlangenfamilien der Amblycephalidae und Viperidae nebst Uebersicht über die kleineren Familien und die colubriden der Acrochordinegruppe auf Grund des Boulengerschen Schlangenkatalogs (1893-1896).

Archiv für Naturgeschichte 8A:185-244.

Werner, F. 1935. Reptilien der Ägäischen Inseln. *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Mathematisch-Naturwissenschaftliche Klasse* Wein 144:81-117.

Werner, F. 1938. Eine verkannte Viper (*Vipera palaestinae* n. sp.). *Zoologischer Anzeiger* 122 (11/12): 313-318.

Werner, F. 1939. Die Amphibien und Reptilien von Syrien. *Abhandlungen Berlin Museum Naturkunde Vorgesch.* Magdeburg 7:211-223.

Werner, Y. L. 2016. *Reptile Life in the Land of Israel with Comments on Adjacent Regions*. Edition Chimaira, Frankfurt, Germany:494 pp.

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