Informal synonymy of the *Lacerta kulzeri* group (Lacertidae, Reptilia)

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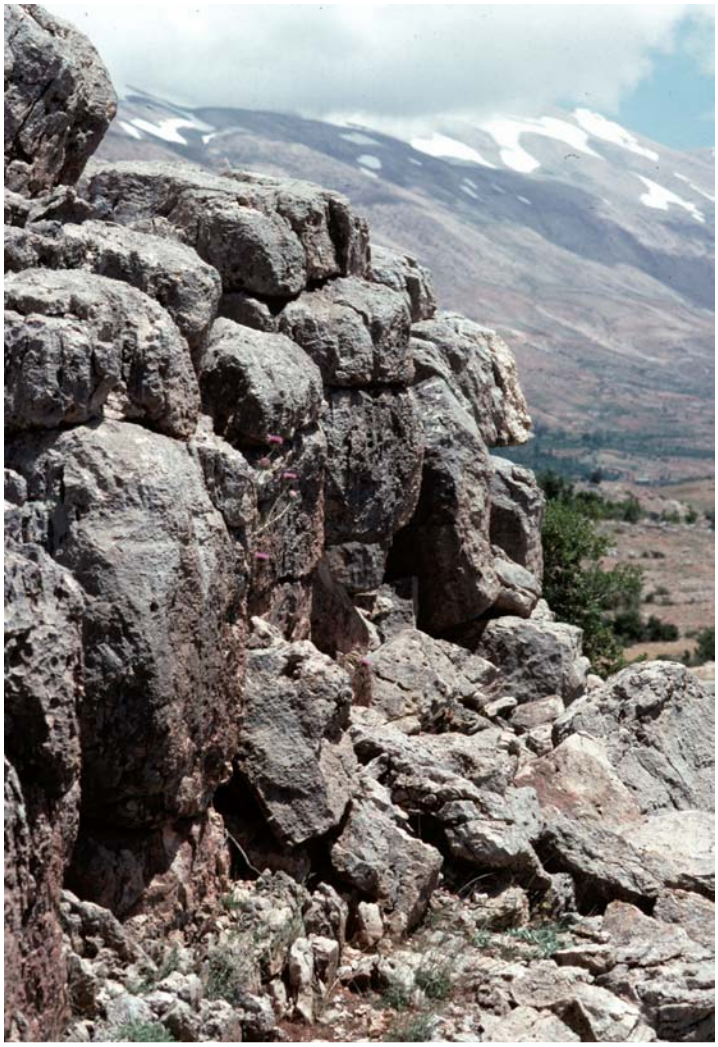
INTRODUCTION

In recent years the *Lacerta kulzeri* group from the Middle East has received a lot of attention and it has become increasingly clear that several forms in this assemblage deserve a separate taxonomic status (e.g. BISCHOFF & SCHMIDTLER, 1997; IN DEN BOSCH & ZANDEE, 2001; ODIERNA et al., 1998; OLMO et al., 2001).
MÜLLER & WETTSTEIN (1932) described the first species, that names the group, from the renowned cedar wood at 1900 m near Bcharré in northern Lebanon. Representatives are found at higher elevations in Syria, Lebanon, Israel, and Jordan, all of which effectively form island populations. As most of the newly discovered forms are not yet officially described but are the subject of an increasing number of publications, it seems helpful at this time to list not only the scientific names used to refer to these various taxa, but also the more informal ones. Hopefully this will help avoid confusion and aid future researchers.



Habitat of *Lacerta k. kulzeri* (Sannin Mts.).

Indisputably *Lacerta kulzeri* is closely related to *Lacerta laevis* (see below), but the first to notice that two of the now acknowledged *L. kulzeri* forms differed from *L. laevis* (i.c. Mt. Hermon and Petra), was BARBOUR (1914). He assigned these *L. kulzeri* forms to *Lacerta danfordi* but did not explain this denotation. Relatively few Middle Eastern lizards had been described at this point, so it seems likely that the closest physical match for his specimens would have been *L. danfordi*. We should also bear in mind that at the time *Lacerta laevis* Gray, 1838 – under its synonym *Lacerta judaica* Camerano, 1877 – was considered closely related to *L. danfordi* (Günther, 1876) and (according to EISELT & SCHMIDTLER (1987: 291)) was even synonymised with this latter species in BEDRIAGA (1880).

If hardly similar to this Turkish species when seen alive, and though BOULENGER (1916) had already re-merged Hermon and Petra with *L. laevis*, combinations with *danfordi* persisted (HOOFIEN, 1968, 1969, 1972; WERNER & AVITAL, 1980). Even the authors of *L. kulzeri* just one year after the original description (MÜLLER & WETTSTEIN, 1933) referred to their form as *Lacerta danfordii kulzeri*. EISELT & SCHMIDTLER (1987) determined that the southernmost limit of *L. danfordi* was in the Turkish Amanus mountains, and conditionally designated the Lebanese form described from the Bcharré cedar wood as *L. laevis kulzeri*, which caused later authors to use this name for Mt. Hermon and Petra (e.g. WERNER, 1988).

Lacerta d. danfordi (a courtship scene, during which the male bites in the female's flank).

The objective of the current contribution is to clarify the resulting combinations for the various *L.* cf. *kulzeri* forms. An additional result will be a bibliography of the group.

It seems a good idea to begin by trying to distinguish between *L. laevis* and lizards in the *L.* cf. *kulzeri* complex. Members of the latter group never have any blue spots on the marginalia, and usually lack a large massetericum. The *L.* cf. *kulzeri* complex also share certain courtship details (IN DEN BOSCH & ZANDEE, 2001). Some examples would be: a long introduction, a remnant of the mating march remains (*vs*. a complete march in *L. laevis*), motion of the forelimbs of the female are seen in the introduction, and the male does not remain put as in *L. laevis* but walks away afterward. Karyological data (ODIERNA et al., 1998: e.g. one NOR copy in *L. laevis* and two in *L. kulzeri*), and ecological parameters (the comparatively robust and ground dwelling *L. laevis* is distributed from sea level up to 1500 meters and can therefore be active for most of the year, the more slender and wary *Lacerta kulzeri* s.l. prefer rocky outcrops in comparatively dry zones with sparser vegetation, in altitudes ranging roughly from 1300-2000 m, and are thus active only during the warmer months (pers. obs.)) also help to differentiate between the two complexes.

Lacerta l. laevis male (Tyre, Lebanon). Note the large masseteric, and the blue spots on the outer ventrals, always lacking in *Lacerta* cf. *kulzeri*.

MATERIAL AND METHODS

The synonymy given here is based on all eight populations known at the time which proved to be seven distinct entities in analyses of courtship and chromosomal characteristics (IN DEN BOSCH & ZANDEE, 2001; IN DEN BOSCH et al., in prep.), and classic pholidosis investigations using seven samples (BISCHOFF & SCHMIDTLER, 1999). Three Jordanian localities (Al Iraq, Kerak, and Ramm Mountains) were discovered recently and thus not included in the present studies; they appear to be similar to Petra. Refer to Remarks under Petra.
The synonymies are listed in chronological order; the locality data is listed alphabetically and then chronologically. Where necessary to avoid confusion, geographical denotations have been

translated (e.g. the German Chouf-Zedern into Chouf cedars; Arz Barouk and Cèdres du Barouk into Barouk cedars). Both literature data and field data are used. Detailed localities and most ecological data will be published elsewhere.

SYNONYMIES

Barouk
Lacerta danfordii (Günther) 1876 – HRAOUI-BLOQUET, 1981: 96. [partim]
Lacerta laevis cf. *kulzeri* Mueller and Wettstein, 1932 – HOOFIEN, SIVAN & WERNER, 1990: 97.
L. kulzeri – BISCHOFF & SCHMIDTLER, 1997: 6.
simili a *L. kulzeri* – IN DEN BOSCH in ODIERNA et al., 1998: 61.
Lacerta kulzeri – IN DEN BOSCH, 1998: 12, 14. [partim]
L. cf. *kulzeri* – IN DEN BOSCH, BISCHOFF & SCHMIDTLER, 1998: 25.
Lacerta kulzeri (Dj. Barouk) – BEYERLEIN & MAYER, 1999: 183.
L. cf. *kulzeri* / Djebel Barouk – BISCHOFF & SCHMIDTLER, 1999: 215.
Barouk – IN DEN BOSCH & ZANDEE, 2001: 265.

Female Barouk in Maasser ech Chouf.

Range — Higher regions (1500-1900 m) of Jabal Barouk (Lebanon).
Remarks — Amazingly, the two specimens HUJ 14958-9 (Gebel Baruch, ca. 1900 m, vi1984) bear a contemporary label *Lacerta* cf. *laevis kulzeri* at a time when there was still much confusion around the complex and the name *kulzeri* was practically forgotten, and indeed were already cited as such by HOOFIEN, SIVAN & WERNER (1990).
The first observed sympatric occurrence of *L*. cf. *kulzeri* and *L. laevis* on the east flank of Jabal el Barouk (approx. 1500 m, obs. Bischoff, In den Bosch & Schmidtler, 20-21v1997) with the former living on rocks, the latter more ground-dwelling, convincingly argued in favour of the specific identity of the forms. Remarkably, the *L*. cf. *kulzeri* living just a few hundred meters higher in the Maasser ech Chouf forest are mainly ground-dwelling, though occasionally found on boulders, tree stumps, or fallen trees, but are certainly not as saxicolous as its relatives that seem to prefer large, cracked rocks.

Druze
Lacerta cf. *kulzeri* / Dj. Druz – BISCHOFF & SCHMIDTLER, 1996: 8.
simili a *L. kulzeri* – IN DEN BOSCH in ODIERNA et al., 1998: 61.
Dj. Druz-Eidechsen – BISCHOFF , IN DEN BOSCH & SCHMIDTLER, 1998: 1.
Lacerta cf. *kulzeri* – BISCHOFF , IN DEN BOSCH & SCHMIDTLER 1998: 4.
L. cf. *kulzeri* / Djebel Druz – BISCHOFF & SCHMIDTLER, 1999: 215.
Druze – IN DEN BOSCH & ZANDEE, 2001: 265.

Range — Higher elevations (>1250-1600 m) of Jabal Druze (Syria). We did not find any specimens higher up, and none near the top of 1800 m.

Male (top) and female Druze.

Remarks — The lizards live on stone walls and rocky outcrops. They have a range of up to 25 m. Jabal Druze consists of dark, volcanic material. In comparison with other *L*. cf. *kulzeri* habitats the region is quite humid, with small streams, puddles and marshy areas, and supports an abundant vegetation (e.g. *Quercus*, *Crataegus*). Some lizards voluntarily swam a short distance through puddles, which were remnants of a stream.

Hermon
Lacerta danfordii (Günther) – BARBOUR, 1914: 84.
Lacerta laevis – BOULENGER, 1916: 69.
L. laevis – HAAS, 1951: 79.
Lacerta danfordi (Günther) 1876 – HOOFIEN, 1968: 199.
Lacerta danfordi (Günther) 1876 – HOOFIEN, 1972: 3.
L. danfordi – ARNOLD, 1973: 353.
Lacerta laevis sspp. – WERNER & AVITAL, 1980: 193.
"*Lacerta danfordi* 1400-2814 m; *L. laevis* NDG" – cited as such by WERNER & AVITAL, 1980: 193 referring to HURVITZ (1980).
Lacerta danfordi (Guenther) – HURVITZ 1980: 230.
Lacerta laevis cf. *kulzeri* (Mueller & Wettstein, 1932) – WERNER, 1988: 361.
Lacerta laevis cf. *kulzeri* Mueller and Wettstein, 1932 – HOOFIEN, SIVAN & WERNER, 1990: 97.
Hermon lizard – HOOFIEN, SIVAN & WERNER, 1990: 97.
Lacerta laevis laevis – HOOFIEN, SIVAN & WERNER, 1990: 105.
L. l. cf. *kulzeri* (Müller & Wettstein, 1933) – SIVAN & WERNER, 1992: 201. [*l.* = *laevis*]
L. laevis kulzeri Müller & Wettstein, 1932 – BISCHOFF & FRANZEN, 1993: 28.
L. l. kulzeri – ESTERBAUER, 1993: 645. [*l.* = *laevis*]
Lacerta kulzeri – IN DEN BOSCH, 1998: 12, 14. [partim]
Mt.-Hermon-*kulzeri* – IN DEN BOSCH, 1999: 68.
Mt.-Hermon-Eidechsen – IN DEN BOSCH, 1999: 72.
L. cf. *kulzeri* vom Mt. Hermon – IN DEN BOSCH, 1999: 72.
L. cf. *kulzeri* / Mt. Hermon – BISCHOFF & SCHMIDTLER, 1999: 215.
Hermon – IN DEN BOSCH & ZANDEE, 2001: 265.

Male (below) and female Mt. Hermon.

Range — Higher regions of Mt. Hermon (Lebanon, Syria, Israel). Confirmed localities lie between 1600-2000 m; possibly up to 2184 m (WERNER & AVITAL, 1980).
Remarks — HAAS (1951: 78-79) already noted that the specimens from Petra and Shiba (on Mt. Hermon) described by BARBOUR (1914) as *L. danfordii*, were tentatively reunited with *L. laevis* by BOULENGER (1916: 69; 1920: 312): "should be compared with *L. laevis*". Later (Israeli) authors, on the suggestion of EISELT & SCHMIDTLER (1987) – who again referred to HOOFIEN (1968) – commenced treating the form as a subspecies of *L. laevis*.
Re-examination of the MCZ specimens seems in order, as Shiba (presently the Lebanese Chebaa) is located at an altitude of 1250 m, which is considerably lower than the 1600 m where I found the first *L*. cf. *kulzeri* on the Israeli occupied part of Mt. Hermon (IN DEN BOSCH, 1999). It may well be that the collection of 1914 contains both *L*. cf. *kulzeri* as the, more commonly found at lower altitudes, *L. laevis*. In 1993 I had the opportunity to study these specimens in the US, but only later had the chance to acquaint myself with live lizards of the various *L.* cf. *kulzeri*. From a purely visual impression (*L.* cf. *kulzeri* being more slender and elegantly built) MCZ 9670 and MCZ 9675 appeared to be *L.* cf. *kulzeri* and the others *L. laevis*. Based on a confusing set of characters HOOFIEN (1968) apparently came to the same conclusion, i.e. MCZ 9670 and 9675 are not *L. laevis* but '*L. danfordi*", thus *L.* cf. *kulzeri*.

Ma'alula
L. laevis laevis – ESTERBAUER, 1993: 645 (and fig. 2).
Lacerta (cf.) *kulzeri* Müller & Wettstein, 1932 – BISCHOFF & SCHMIDTLER, 1994: 15.
Felsen-Eidechsen aus dem Antilibanon – BISCHOFF & SCHMIDTLER, 1994: 18.
Lacerta cf. *kulzeri* / Antilibanon – BISCHOFF & SCHMIDTLER, 1996: 8.
Ma'alula – IN DEN BOSCH & BISCHOFF, 1996: 38.
Eidechsen aus dem Antilibanon – IN DEN BOSCH & BISCHOFF, 1996: 38.
Lacerta cf. *kulzeri* – BISCHOFF & SCHMIDTLER, 1997: 6.
Ma'alula-Eidechsen – IN DEN BOSCH, 1997b: 54.
Lizards from Ma'alula – IN DEN BOSCH, 1997b: 54.
simili a *L. kulzeri* – IN DEN BOSCH in ODIERNA et al., 1998: 61.
Lacerta kulzeri – IN DEN BOSCH, 1998: 12, 14. [partim]
Lacerta kulzeri – *L*. cf. *kulzeri* – IN DEN BOSCH, BISCHOFF & SCHMIDTLER, 1998: 22.

A copulation of Ma'alula in the lab.

"Antilibanon-Eidechse" – IN DEN BOSCH, BISCHOFF & SCHMIDTLER, 1998: 22.
Lacerta kulzeri (Ma'alula) – BEYERLEIN & MAYER, 1999: 183.
L. cf. *kulzeri* / Antilibanon – BISCHOFF & SCHMIDTLER, 1999: 215.
Ma'alula – IN DEN BOSCH & ZANDEE, 2001: 265.

Range — Higher regions (1450-1700 m) of the Anti Lebanon Mountains (Lebanon and Syria).
Remarks — Our find near Aarsâl in the Anti Lebanon Mountains was the first confirmation of the striped Ma'alula *L*. cf. *kulzeri* form for Lebanon. During cloudy, relatively cool and windy weather, a specimen was found under a stone next to a rocky ridge close to the entrance of the village in roughly tended wine groves.

A female Northern Lebanon in its natural surroundings.

Northern Lebanon
Lacerta kulzeri – IN DEN BOSCH, 1998: 12, 14. [partim]
Lacerta kulzeri – *L*. cf. *kulzeri* – IN DEN BOSCH, BISCHOFF & SCHMIDTLER, 1998: 22.
L. cf. *kulzeri* / northern Lebanon – BISCHOFF & SCHMIDTLER, 1999: 214, 215.
Northern Lebanon – IN DEN BOSCH & ZANDEE, 2001: 265.

Range — Higher altitudes (>1300 m) of Jabal Akroum (Akkar region, Lebanon).
Remarks — Unique among the *L.* cf. *kulzeri* is that the animals from Northern Lebanon show a thermally dependent tail colour change.

Petra / *Lacerta kulzeri petraea* Bischoff & Müller, 1999
Lacerta danfordii (Günther) – BARBOUR, 1914: 84. [partim]
Lacerta laevis Gray "the Syrian specimen mentioned by Barbour" – BOULENGER, 1916: 69.
Lacerta laevis Gray – HAAS, 1943: 12.
"may prove to be referable to a distinct local race" – WETTSTEIN in HAAS, 1943: 12.
"slightly aberrant *L. laevis*" – WETTSTEIN in HAAS, 1951: 79.
Lacerta danfordi (Günther) 1876 – HOOFIEN, 1969: 39.

Lacerta laevis cf. *kulzeri* Mueller and Wettstein, 1932 – HOOFIEN, SIVAN & WERNER, 1990: 97.
Lacerta danfordi danfordi – SINDACO, 1990 (fide SINDACO, FEDRIGHINI & VENCHI, 1995: 394).
Lacerta laevis kulzeri (Müller & Wettstein, 1932) – DISI 1991: 27. [partim: restricted to Petra by MÜLLER & BISCHOFF, 1994: 18]
L. laevis cf. *kulzeri* – BISCHOFF & FRANZEN, 1993: 28.
Lacerta laevis kulzeri (Muller & Wettstein) – AMR, AL-ORAN & DISI, 1994: 44. [partim]
Eidechsen von Petra – MÜLLER & BISCHOFF, 1994: 10.
Lacerta cf. *kulzeri* – MÜLLER & BISCHOFF, 1994: 18.
Lacerta laevis kueltzeri Müller & Wettstein – SINDACO, FEDRIGHINI & VENCHI, 1995: 394. [ex errore]
Lacerta cf. *kulzeri* – MÜLLER, 1995: 18.
Petra – IN DEN BOSCH & BISCHOFF, 1996: 38.
Lacerta cf. *kulzeri* Müller & Wettstein, 1932 – MÜLLER, 1996: 7.
Petra-Eidechsen – IN DEN BOSCH, 1997a: 25.
Lacerta cf. *kulzeri* in Petra – IN DEN BOSCH, 1997a: 25.
Lacerta kulzeri Müller & Wettstein, 1932 – DISI & AMR, 1998: 55.
Lacerta kultzeri – MODRÝ & NEÇAS, 1998: 35. [ex errore; moreover, the picture shows *Acanthodactylus tristrami*]
simili a *L. kulzeri* – IN DEN BOSCH in ODIERNA et al., 1998: 62.
L. cf. *kulzeri* / Petra – BISCHOFF & SCHMIDTLER, 1999: 215.
Lacerta kulzeri petraea ssp.n. – BISCHOFF & MÜLLER, 1999: 246.
Lacerta kulzeri Müller & Wettstein, 1932 – DISI et al., 2001: 193.
Dana + Petra – IN DEN BOSCH & ZANDEE, 2001: 265.

A young couple *Lacerta kulzeri petraea* (captive specimens).

Range — Known from Al Iraq, Al Kerak, Petra, Dana, and Ramm Mountains (DISI et al., 2001) in western Jordan.

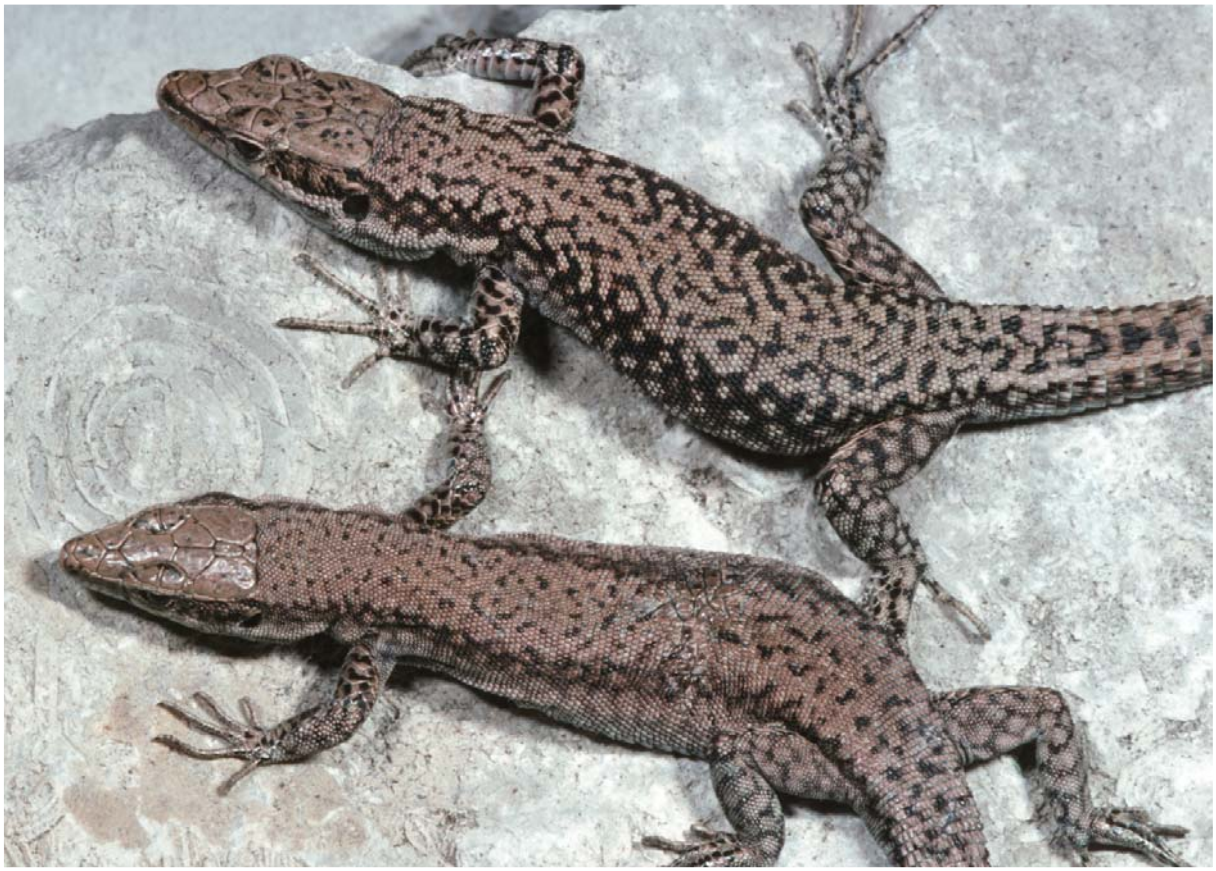
Remarks — HOOFIEN (1969) considered the lizards to be similar to the Mt. Hermon lizards, which cannot be confirmed on ethological grounds (IN DEN BOSCH & ZANDEE, 2001).

While BISCHOFF & FRANZEN (1993) accepted *Lacerta laevis kulzeri* Müller & Wettstein, 1932 for the Makmel Mountains in Lebanon, they doubt the correctness of the same designation by HOOFIEN et al. (1990) for Petra lizards. By so doing, they in effect anticipated a later (BISCHOFF & MÜLLER, 1999) subspecific distinction for this lizard.

On fairly befuddled grounds DISI (1991) reported *L. laevis kulzeri* for Jordan, though *L. laevis* to our present knowledge only lives in the northwestern part of the country, and he did not distinguish between *L. laevis* and *L. kulzeri*. Probably the outdated assumption that *L. kulzeri* has some relation to *L. danfordi* made DISI & AMR (1998) incorrectly extend the species range to South Turkey, and then cite CLARK & CLARK (1973) who supposedly reported that *L. kulzeri* occupies more broken, rocky grounds in Turkey, often around piles of stones and around boulders. However, CLARK & CLARK (1973) never mentioned *L. kulzeri*; the habitat quote seems to be based on their ecological remarks concerning *L. danfordi*.

The most southern of the Jordanian forms – living in the Ramm Mountains, almost bordering Saudi Arabia and possibly even extending into the latter country – is to be described as a new subspecies (Bischoff, pers. comm). DISI et al. (2001: 194) refer to it as *Lacerta* cf. *kulzeri* from Wadi Ramm.

DISI et al. (2001) list common names (Kulzer's Rock Lizard, Kulzers (or Petra) Eidechse, Lézard de Kulzer) most of which have never before been used, and again confusingly suggest that *L. kulzeri* also occurs in Turkey.



Male (top) and female *Lacerta k. kulzeri* from the Sannin Mts. near Faraïya.

Sannin / *Lacerta kulzeri kulzeri* Müller & Wettstein, 1932
Lacerta kulzeri Müller & Wettstein, 1932: 219.
Lacerta danfordii kulzeri L. Müller & O. Wettst. – MÜLLER & WETTSTEIN, 1933: 141.
L. danfordi kulzeri – WERNER, 1935: 226.
Lacerta danfordi kulzeri L. Müller u. O. Wettst. – WERNER, 1939: 216.
Lacerta danfordii (Günther) 1876 – HRAOUI-BLOQUET, 1981: 96. [partim]
Lacerta laevis kulzeri Müller & Wettstein 1932 comb. nov. – EISELT & SCHMIDTLER, 1986: 292.
Lacerta laevis cf. *kulzeri* Mueller and Wettstein, 1932 – HOOFIEN, SIVAN & WERNER, 1990: 97.
L. laevis kulzeri Müller & Wettstein, 1932 – BISCHOFF & FRANZEN, 1993: 28.
Lacerta kulzeri – IN DEN BOSCH & BISCHOFF, 1996: 38.
L. l. kulzeri – SADEK & SAID, 1997: 181. [*l.*=*laevis*]
Lacerta kulzeri / Sannin – IN DEN BOSCH & BISCHOFF, 1996: 38.
L. kulzeri sensu stricto – IN DEN BOSCH in: ODIERNA et al., 1998: 61.
Lacerta kulzeri – IN DEN BOSCH, 1998: 12, 14. [partim]
Lacerta kulzeri – IN DEN BOSCH, BISCHOFF & SCHMIDTLER, 1998: 25.
Lacerta kulzeri – HARRIS, 1999: 173.
L. kulzeri / central Lebanon – BISCHOFF & SCHMIDTLER, 1999: 215.
Central Lebanon (= *L. kulzeri* s.str.) – BISCHOFF & SCHMIDTLER, 1999: 220.
Sannin – IN DEN BOSCH & ZANDEE, 2001: 265.

Range — Higher regions (1400-2100 m) of the Sannin and Makmel mountains, which form the northern part of the Lebanon Mountain range (Lebanon).
Remarks — WERNER (1935) was not absolutely sure that the lizard he saw disappearing in the wall near the Bcharré cedar forest was indeed this species. I am certain it was, because –

though we did not find it there – *L*. cf. *kulzeri* tends to behave very carefully and when disturbed will stay out of sight for a long time, which is exactly as WERNER (1935) reported. This is in direct contrast to the only local alternative, *L. laevis*.
The taxon *L. laevis kulzeri* Müller & Wettstein, 1932 which BISCHOFF & FRANZEN (1993: 28) recognise for "the higher regions of the Lebanon mountains", should be interpreted more strictly than it might appear, as at the time only the form in the Bcharré cedar grove (in the Makmel Mountains) was known to the authors from museum specimens. It is therefore now listed under Sannin, which includes populations in both the Sannin and Makmel mountains, but excluding the Barouk Mountains, which form the southern extension of the Lebanon Mountains sensu stricto. (On Lebanese maps the spelling Sannine is sometimes used; this is the French spelling of Sannin.)
The animals used by SADEK & SAID (1997) presumably hail from the Sannin Mountains, because of their proximity to Beirut and the sympatric occurrence of *L. fraasii* (known from this area), and are therefore mentioned here.
In the HUJ catalogue in Jerusalem I noticed three specimens collected by Zinner "*Lacerta*, Faraya, 1800 m, 7vi1966", which regrettably could not be traced in the collection. It is quite possible that these lizards belong under this heading. The same goes for his also untraceable "*Lacerta*, Laklouk, vi1966" HUJ-R 10631-4, because near this latter locality heights up to 1920 m are reached, therefore indeed a likely area for *L*. *kulzeri*. But my repeated visits (1997-1999), as well as a visit to the nearby seemingly attractive habitat of Arz Tannourine (alt. 1600-1750 m), never brought to light any specimens. Arz Tannourine does however harbour *L. laevis*; the area is moderately moister than the somewhat comparable Barouk cedars where *L*. cf. *kulzeri* is found.
The lizards found near Aayoun Urghouch (2050-2100 m, obs. Bischoff, In den Bosch & Schmidtler, 30v1997) at the moment represent the highest confirmed record of lizards in the *L. kulzeri* group.

Habitat of *Lacerta* cf. *kulzeri* in the Barouk Mts.

DISCUSSION

To avoid taxonomic confusion beforehand some researchers (e.g. IN DEN BOSCH & BISCHOFF, 1996) used the locality names of the *kulzeri*-forms in their papers in anticipation of rapid taxonomic descriptions. Not only did description of these lizards take longer than expected, but with increasing finds of *L*. cf. *kulzeri* this proved to be an imperfect solution when the localities themselves had to be re-grouped (e.g. specimens of Dana and Petra show identical ethological traits: IN DEN BOSCH & ZANDEE, 2001), nor was this method employed consistently. Sometimes a deliberate comprehensive naming (e.g. IN DEN BOSCH, BISCHOFF & SCHMIDTLER (1998): *Lacerta kulzeri – L*. cf. *kulzeri* as well as *Lacerta* cf. *kulzeri* Müller & Wettstein, 1932) with the intention of encompassing described (lizards from the Makmel Mountains, to which those from Sannin probably also belong) besides as yet unnamed forms, turned out to be confusing to the non-initiated.
The current synonymy listing is based on seven taxa arrived at after ethological and genetic analyses. Two of these units have been properly described in a taxonomic sense: *L. k. kulzeri*

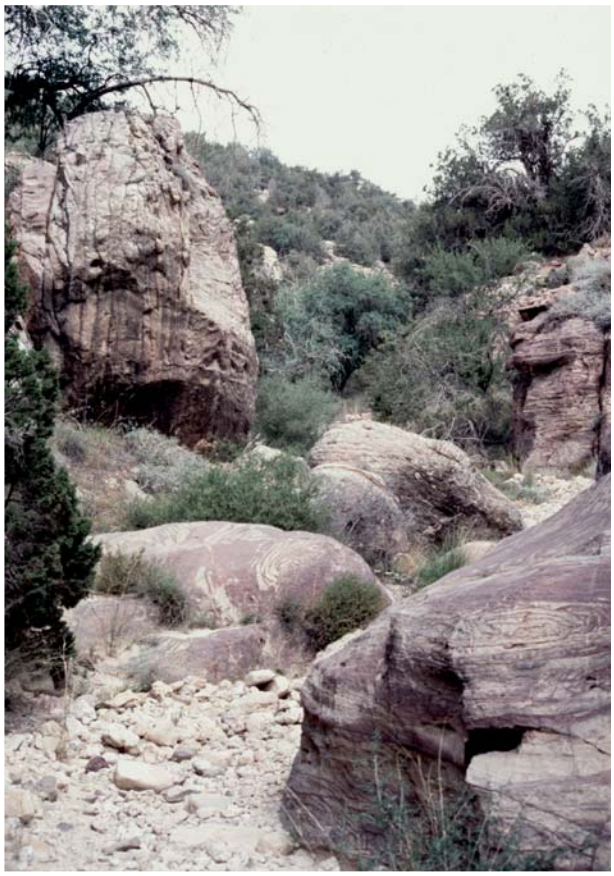
and *L. k. petraea* (with the description of *L. kulzeri petraea* Bischoff & Müller, 1999 the nominotypic form from the Makmel mountains automatically became *L. k. kulzeri*). Five others (Barouk, Druze, Hermon, Ma'alula and Northern Lebanon) still only bear an informal name. Even so, the classification as such could be regarded as tentative, especially with regard to the taxonomic ranks of the taxa.

A male *Lacerta* cf. *kulzeri* Dana (Jordan).

Photo: D. Modrý

Because of missing locality data it was occasionally impossible to determine which *L*. cf. *kulzeri* populations were sampled (HARRIS et al., 1999; SADEK et al., 1999 ["various regions in Lebanon"]). Such publications could not be treated in the synonymy.

It is difficult to list the synonymy in HOOFIEN et al. (1990) since each of their two groups (*Lacerta laevis* cf. *kulzeri* and *Lacerta laevis laevis*) appears to be a mix of *Lacerta kulzeri* s.l. and *Lacerta laevis* when analysed by locality. In the former group, lizards from Cedars of Lebanon, Jabal al Baruk 1900 m, and Petra are almost certainly *L. kulzeri* (although *L. laevis* do live in the little ski resort (alt. 1850 m) just 500 m W of the celebrated Cedars (pers. obs., 1995); the Lebanese and Israeli Mt. Hermon specimens "above 1400 m" could be a mix as I found *L.* cf. *kulzeri* only above 1600 m there (IN DEN BOSCH, 1999); and finally the lower altitude Bayrut and the Israeli localities, at relatively low altitudes, H. Se'adim (Judean Hills) and Qiyat Tiv'on (HUJ 7740 and HUJ 13635) seem quite improbable for *L. kulzeri*. The *Lacerta laevis laevis* group of HOOFIEN et al. (1990) likewise may contain a mixture (Mt. Hermon above 1400 m).



A gorge in the Dana nature reserve (Jordan), home to a *Lacerta* cf. *kulzeri* form.

Photo: D. Modrý

DISI (1991) did not distinguish between *L. laevis* and *L. kulzeri* for Jordan, which also means that material from other countries (Turkey, Syria, Lebanon, Palestine [=Israel]) is – at least partly – incorrectly listed in his publication. Certainly SMF 11938 (Ba'albek, Lebanon, 1881) has more than likely nothing to do with *L. kulzeri* as we only found *L. laevis* in the relatively low-altitude city (approx. 1200 m) and its surroundings.

Similarly the *L.* cf. *kulzeri* Ba'albek reports by HRAOUI-BLOQUET (1981), and a specimen from Beirut (HUJ 10099) (the unilaterally present masseteric also suggesting *L. laevis*) by HOOFIEN et al. (1990) are mistaken.

The terra typica of *L. kulzeri* was initially given as "Zedernwald bei Bcharré" (cedar

grove near Bcharré) by MÜLLER & WETTSTEIN (1932). One year later (MÜLLER & WETTSTEIN, 1933) restricted this to "beim Zedernwald-Hotel, 1900 m, bei Bcharré" (near the cedar wood hotel). We searched the area of the hotel repeatedly in 1995 and 1997 (IN DEN BOSCH et al., 1998) but perplexingly enough found no trace of the lizards. Of the Hotel des Cèdres only the foundations remain, and according to locals had been in this condition for a very long time. IZZARD & IZZARD (1959) mention visiting it as a functioning establishment in 1957, but in 1970 it was no longer listed in the Lebanese hotel guide (ANONYMOUS, 1970).

Al Iraq, a locality where *Lacerta* cf. *kulzeri* is found in Jordan.

Photo: D. Modrý

As the frequent mix-up of *L. kulzeri* with *L. laevis* in literature and collections already seems to indicate, a close relationship exists between the two species, a connection we have pointed out from the beginning (e.g. IN DEN BOSCH & BISCHOFF, 1996), and which later papers using a restricted number of *L. kulzeri* forms confirmed (e.g. ODIERNA et al., 1998, HARRIS, 1999; BEYERLEIN & MAYER, 1999). In spite of this, allusions to *L. kulzeri* based on a presumed phenetic resemblance to Cypriot *L. l. troodica* are either based on misconceptions in the literature (e.g. GÖÇMEN et al., 1995; TOSUNOĞLU et al., 1999), or are of a purely hypothetical nature (BÖHME, 1995, 1996). These quotations will be dealt with elsewhere (IN DEN BOSCH & ODIERNA, in prep.).

It remains unclear what the lizards from Deir ez Zor (in the garden of the hotel Wal Waha) as reported by ESTERBAUER (1993) represent, as the collected specimens have been lost. He presumed these to be *L. laevis* (as initially reported in litt. to Bischoff & Schmidtler), but later (also in litt. to Bischoff & Schmidtler) were stated to show a similarity to Ma'alula *L. kulzeri*. The latter would be very surprising indeed for a representative of a saxicolous, higher altitude group, and also very much outside the known range of *L. kulzeri* s.l., as well as outside the range of *L. laevis*.

It should be verified if the "high-altitude *Lacerta laevis*" used in cytological work by HRAOUI-BLOQUET (1985, 1987) and HRAOUI-BLOQUET et al. (1999) really were *L. laevis* or actually *L. k. kulzeri*, or at least a mix of the two species because the specimens were collected at Mahrouka (near the village of Sannine, Sannin Mountains) between 1800-1900 m. Only very occasionally is *L. laevis* found so high up in the mountains as the species usually ends at 1400-

1600 m in Lebanon and at higher altitudes is replaced by *L*. cf. *kulzeri*. This is also true in the Sannin Mountains (pers. obs.). These aforementioned results were again used by Hraoui-Bloquet and collaborators in comparisons (HRAOUI-BLOQUET, 1988; HRAOUI-BLOQUET & BLOQUET, 1988) with data on lowland, genuine *Lacerta laevis* (collected near Jounieh, max. alt. 100 m) so that the results may be flawed. This practical example also indicates that the production of synonymy lists is not just about nit-picking concerning a few letters in a name, but has actual biological relevance.
The suggestion by DISI et al. (2001) that "*L. kulzeri* … ranges more or less continuously from Petra to Syria and Lebanon" must be firmly rejected, as lizards of the *L. kulzeri* group clearly favour higher altitudes which in the Middle East inevitably means an island-like, disjunct distribution.

AUB	American University of Beirut, Beirut.
BM(NH)	Natural History Museum, London.
HUJ-R	Herpetological Collection, Zoological Museum, Hebrew University of Jerusalem.
MCZ	Museum of comparative Zoology, Harvard, USA.
TAU	Tel-Aviv University, Tel-Aviv.
UL	Université libanaise, Beirut.

Table: Acronyms material museums

SUMMARY

A synonymy of the presently known forms of the *Lacerta kulzeri* group is presented, and pertinent literature is analyzed.

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