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Correspondence

In dubio pro *Salamandra*. On the generic allocation of Laurenti's (1768) *Proteus tritonius* (Caudata: Salamandridae): Response to Gollman & Gollmann (2026)

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This paper is aimed to reconsider the neotype designation for Laurenti's (1768) *Proteus tritonius* which we (Mutz & Böhme 2025) had carried out, among else to set a sign against the excavation and revalidation of forgotten names (nomina oblita), and to respond to the critique on our designation recently published by Gollmann & Gollmann (2026).

In his famous work "Systema Reptilium" Laurenti (1768) described three species of his new genus *Proteus*, encompassing representatives of two "Ordines" (= orders), viz. "Salientia" and "Gradientia", meaning anuran and urodelan amphibians (see also Stejneger 1936). The first of these three species is a member of his order Salientia: *Proteus raninus* Laurenti, 1768 based on pl. 78, vol. I of the great pre-Linnean work by Seba (1734) where the figures clearly show the giant tadpoles of the pseudid frog *Pseudis paradoxa* (Linnaeus, 1758) from Suriname, while the other two belong to his Gradientia; the second species being *Proteus tritonius* Laurenti, 1768, based on the drawing of an ambiguous salamandrid larva from a lake "in alpe Etscher", Austria (Laurenti 1768: pl. II, fig. 2), while the third is *Proteus anguinus* Laurenti, 1768, based on the unmistakable drawing of a cave olm (Laurenti, 1768, pl. 4, fig. 3).

While it was not clear from Laurenti's work which of these three taxa should be considered as the type species of the genus, this question was subsequently implicitly answered by Merrem (1820) who regarded the third species as such (see Stejneger 1936), so that it is the only one of Laurenti's (1768) three *Proteus* species which still keeps its original name combination (Mertens & Wermuth 1960); a great gift for nomenclatural stability, because in case the first species would have been considered the type species of *Proteus*, this genus would change into a frog, since it antedates *Pseudis* Wagler, 1830 for 62 years!

The Case

Main subject of this note is Laurenti's (1768) second species of *Proteus*, viz. his *P. tritonius*, because its taxonomic allocation and subsequent assignment to the obscure, hiddenly published and nearly never used genus name *Ichthyosaura* Sonnini & Latreille, 1801 or 1802[1] by Schmidtler (2004, 2009) provoked some controversy referring to (1) to the drawing, (2) the diagnosis, (3) the type locality and (4) the generic assignment. These four points will be discussed in the following text.

1. Interpretation of Laurenti's drawn figure

The first point of disagreement is Laurenti's (1768) drawing (see Fig. 1 below) which, as admitted even by Schmidtler (2009) himself (see also Böhme 2023, Mutz & Böhme 2025)

[1] The publication year was not "claimed to be 1802 by Mutz & Böhme (2025)" as criticized by Gollmann & Gollmann (2026) but generally cited as such by several earlier authors including Schmidtler (2004) while he cited the year 2001 in his 2009 paper! Since Frétey's (2025) correction of this date appeared in the same year as our paper, we were unable to consider it in time.

and also by Gollmann & Gollmann (2010, 2026): "does not allow an unequivocal assignment of this larva to a certain species". Schmidtler (2004: 15 and references therein) discussed it as a larva of either *Triturus vulgaris*, or of *Salamandra salamandra* or *Triturus alpestris*, with a tendency towards the latter. Five years later, however, Schmidtler (2009) assigned it with certainty to *T. alpestris* and made it thus the type species of *Ichthyosaura*, a genus name coined by Sonnini & Latreille (1801) to distinguish Laurenti's *P. tritonius* from his two other *Proteus*-taxa: the Cave Olm and the pseudid frog. The diagnostic character perceived from Laurenti's drawing was the "nageoire sur le dos" (= the dorsal skin membrane). Interpreting this drawing, Gollmann & Gollmann (2026) laid the focus on the shape of this membrane arguing that it begins in the nape in water newt larvae, but more behind in *Salamandra* larvae. On this old drawing this is only a very slight difference.

On the other hand, all the newt larvae mentioned above have acuminate tail tips (see also Fig. 2 in Gollmann & Gollmann 2026) while Laurenti's figure clearly shows a broadly rounded tail tip corresponding more with the tail shape in *Salamandra* larvae. Gollmann & Gollmann (2026) tried to explain this with a regeneration process after an injury which is pure speculation. This underlines the statement cited above that an unequivocal specific assignment of this larva is not possible, its identity remaining thus doubtful. A species name based on this drawing (an "iconotype") is therefore a nomen dubium.

2. The diagnosis

Next to the drawing, also the accompanying diagnosis is not very clear: on p. 37 it reads: "Pedibus posticis gradientibus; capite gulloso, occulato; trunco brevi; dorso pinna membranacea", and on p. 140: "Capite guloso oculato; pedibus posticis gradientibus, trunco brevi, dorso pinna membranacea". The translation by Kuzmin (2005) reads on both sites (pp. 52 and 156) with the same wording: "Hind legs walking; head fused with neck, body short; membraneous fin on back". This translation is problematic insofar, as "gulosus" means "greedy", and "oculatus" means "able to see", while "gullosus" and "occulatus" are not present in classical Latin dictionaries (e.g. Georges 1880, 1913). So "gulosus"

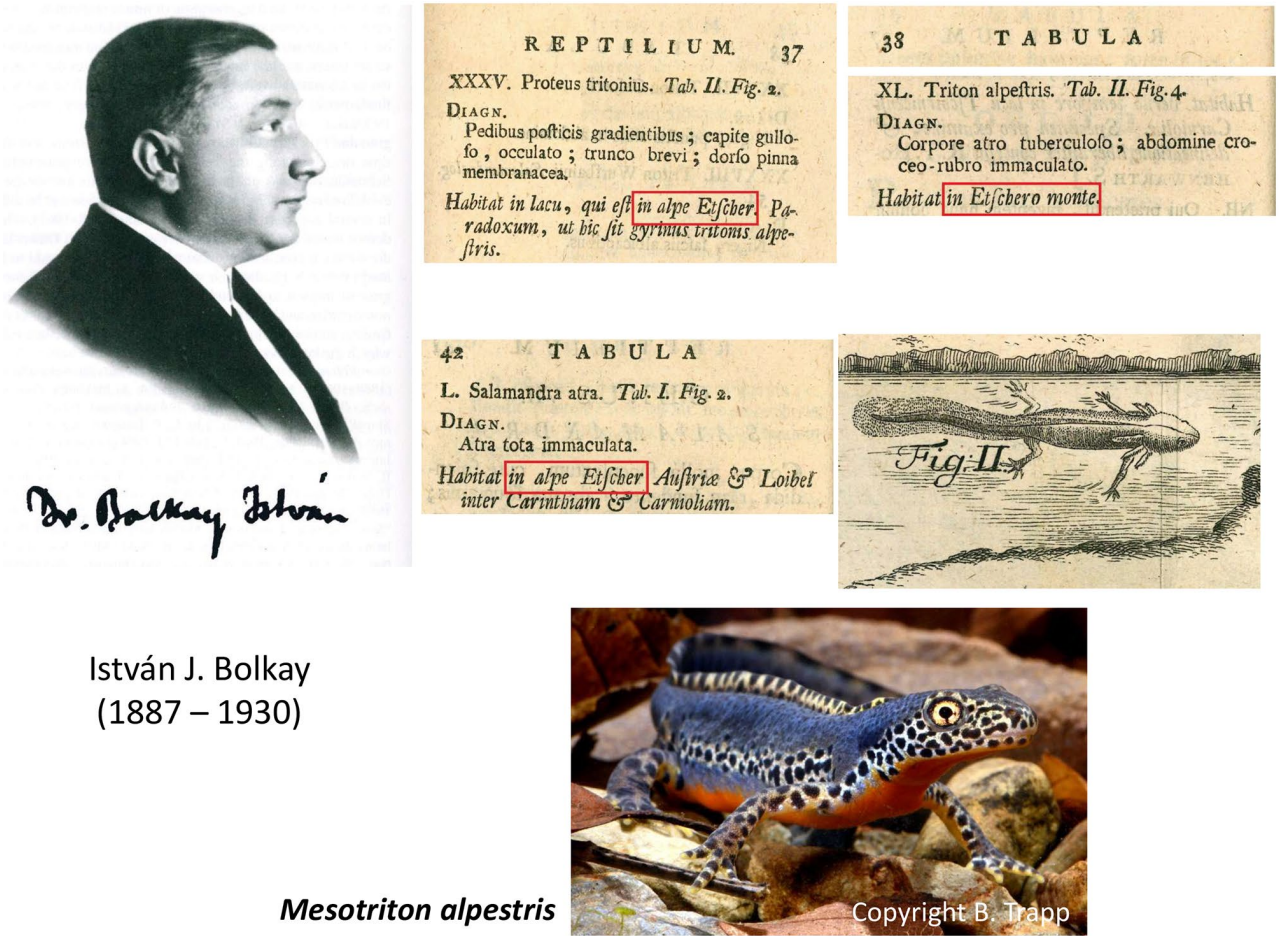

Fig. 1. Summarizing slide on the *Mesotriton/Ichthyosaura* problem from WB's plenary talk on the History of Herpetology in the Balkan Peninsula, held at the 21th SEH congress in Belgrade, September 2022.

could refer to the relatively wide head enabling the larva to devour larger food items, and "oculatus" could refer to the developed eyes, both in contrast to Laurenti's (1768) subsequently described *Proteus anguinus*! The hint on the walking hindlegs should distinguish this animal from *Proteus raninus* (= *Pseudis paradoxa*) with its long, jumping hindlegs. So, the diagnostic characters do not seem to be meant as diagnosing this species against the other salamandrids (*Triton, Salamandra*) described by Laurenti (1768) on the following pages of the same work but rather against the two other presumed congeners, the frog and the olm.

Given that this assumption is correct, Laurenti's (1768) figure did not primarily aim to represent a particular species but just a urodelan (salamandrid) larva different from the presumably congeneric frog and cave olm. Laurenti (1768) himself considered briefly the possibility of his *P. tritonius* being the larva of his simultaneously described *Triton alpestris* but rejected this possibility immediately afterwards (Laurenti 1768: 140). He would, however, be open for better arguments, so leaving space for different conclusions. This underlines the ambiguity of the identification of this "iconotype". Under this aspect, also Laurenti's (1768: 140) additional description given in the second part of his book, particularly the middorsal skin membrane starting at the nape, should not be overinterpreted; although it begins a bit more anteriorly in the three newt larvae being currently generically different from each other, than in a larva of the fire salamander (see Fig. 5 in Mutz & Böhme 2025).

Already Daudin (1802) corrected Laurenti's assignment to the genus *Proteus* ("Proté") towards a "Salamandre aquatique", i.e. a salamandrid newt larva. Merrem (1820: 187, footnote) regarded it more specifically as a larva of his *Molge alpestris*, described by Laurenti (1768) simultaneously as *Triton alpestris*.

3. The type locality

Laurenti (1768: 37) gave as the type locality of his *Proteus tritonius*: "Habitat in lacu, qui est in alpe Etscher". The species from the same area, described by Laurenti (1768) as *Triton alpestris*, was, however, equipped with the type locality "Habitat in Etschero monte". His *Salamandra atra*, however, described in the same work a few pages later, was located as "Habitat in alpe Etscher Austriae et Loibel inter Carinthiam et Carnioliam". Kuzmin (2005) translated these topographic data constantly as "in Escher Mountain", however, Laurenti should have had a reason to use the two different terms "in alpe Etscher" and "in Etschero monte". Gollman & Gollmann (2026) interpreted the word "alpe" in the modern German sense as a high-altitude meadow ("Alpe, Alm"), visited the mountain, found a cold high-altitude lake containing only Alpine Newts and concluded that this would perfectly fit Laurenti's (1768) locality "lacus in alpe Etscher". However, the numerous *Bufo bufo* tadpoles found in this water argue against a very cold lake.

In Latin the term "in alpe" can also mean a plural form and refer to a region of the Alps as a whole rather than to a single mountain (Georges 1880, 1913), as a so-called Ablativus loci which opens the possibility of a wider area around Mount Ötscher including many more spawning waters for more amphibian species and thus weakening Gollmann & Gollmann's (2010) argumentation, however, without disproving it. There remained only some doubts on this localization which were first expressed by Böhme (2023) in a paper based on an invited lecture at the 21st SEH congress in Belgrade, Serbia, in September 2022, where one of us (WB) used a slide to explain the case reproduced here (Fig. 1) and interpreted the type locality as a presumed error of translating the Latin type locality ("in alpe" versus "in monte"). This was discussed in more detail by Mutz & Böhme (2025) and briefly summarized by Böhme et al. (2025). Also, Laurenti's (1768) statement on *S. atra* "Habitat in alpe Etscher Austriae & Loibel inter Carinthiam et Carnioliam" would also allow the translation "Lives in the Ötscher Alps of Austria and in the Loibl pass region between Carinthia and Carniola", so that the type locality of *P. tritonius* is at least open for a dual interpretation.

Laurenti's (1768) further ecological information on his type locality (accessibility of the "very cold lake", season of the year, pastures, cattle, alpine inhabitants) will not be reviewed here in details. Only one point, used as an argument also by Gollmann & Gollmann (2026) to exclude *S. salamandra* from being considered was Laurenti's (1768) statement that he did not find "*Salamandra maculosa*" (= *S. salamandra*), is again a dubious one. Just in case of the fire salamander: If one does not see any in the field, this is by no means a proof for its absence. This has nicely been described by Fejérváry (1917) for a neighboring part of the northern Limestone Alps (Rax and Schneeberg): "Despite numerous efforts und numerous excursions during rainy weather, we were unable to detect adult specimens of this species" (our translation). Its larvae, in contrast, were easily found. During more than thirty student excursions to the Schneeberg over three decades one of us (WB) found repeatedly, but rarely adult fire salamanders on the Schneeberg, where Fejérváry (1917) had missed them. Moreover, the proof of the lower-altitude occurrence of *Salamandra salamandra* has been provided by our neotype designation.

4. Subsequent generic assignment

Eiselt (1958) in his great monograph on the fire salamander treated *Proteus tritonius* Laurenti, 1768 as a synonym of *S. salamandra*, obviously mislead by the type locality "in alpe Etscher", which he referred to the South Tyrolian (Italian) river Etsch (= Adige) and designated "Meran" (= Merano) as the type locality. This error was repeated by Mertens & Wermuth (1960) and is therefore irrelevant for the discussion of the generic assignment of *Proteus tritonius*.

In his paper dealing with the generic assignment of the Central European newts, ranging from *Lacerta, Salamandra, Triton, Molge* to *Triturus*, Schmidtler (2004) emphasized his discovery that Sonnini & Latreille (1801) had coined a genus name for Laurenti's (1768) *Proteus tritonius*, viz. *Ichthyosaura*. He assigned it in a table to *Triturus vulgaris* (with a question mark) but in the text to *T. alpestris* and qualified this name himself as a nomen oblitum which means a nomenclaturally invalid name according to Art. 23.9.2 (ICZN 1999), since it was virtually unused from the middle of the 19th century to 2004. However, five years later, the same author (Schmidtler 2009) reinstated *Ichthyosaura* officially as the new genus name for the Alpine Newt and termed it "ein Lehrbeispiel in Sachen Nomenklatur" (= a textbook example for nomenclature). Here, he revoked the status of a nomen oblitum of *Ichthyosaura* and termed *Mesotriton* Bolkay, 1927 (sometimes cited also as a subsequent reference: Bolkay 1928 [e.g. Raffaelli 2007, Schmidtler 2009]) a name used after its first description "seemingly only a few times as a (questionable) subgenus name (Thorn 1968, Jehle & Faber 2003)" (our translation). But there are considerably more sources having used *Mesotriton* as the valid genus name for the Alpine Newt after 2004, among them also important works, e.g. Raffaëlli (2007), Jehle & Sinsch (2007), Sotiropoulos (2007, 2008), Ćirović et al. (2008), Denoël et al. (2009), to name just a few, documenting its emerging common usage.

The question whether the genus-group nomen *Mesotriton* should be ascribed to Bolkay's paper from 1927 or 1928 came up because it was three times mentioned by Bolkay (1927 a, b, 1928), always defined as being composed of *Triton crocatus* and *T. alpestris*, but the typification was left open. According to Art 24.2. (ICZN 1999) we follow Garcia Paris et al. (2004) as the first revising authors who fixed *T. alpestris* as the type species of *Mesotriton* and regarded the paper by Bolkay (1927 a) as the valid first description.

A generally dubious authorship?

When speaking about doubtful aspects in Laurenti's (1768) work, at least as far as his *Proteus tritonius* is concerned, it may be added that two early authors, Cloquet (1819) and Fitzinger (1823), both cited after Adler (2014), have even casted doubt on his own authorship of his whole work. It was claimed that Laurenti's fellow student in Vienna, Jacob Joseph Winterl (1732–1809), who had studied medicine, botany, and chemistry, would have been the true author of this work but was forced, from financial reasons, to sell his manuscript to Laurenti who published it under his name. This legend was repeated by several subsequent prominent authors, e.g. Leydig (1872), Fejérváry (1917) or Stejneger (1936), but regarded as false in both more recent biographies on Laurenti published by Adler (2014) and Bischoff & Hallmann (2001). According to these authors, it seems more likely that Winterl assisted Laurenti either in some of his experiments or afterwards with the publication process. His name is mentioned only once in Laurenti's (1768) work, viz. on p. 213.

Winterl's name, however, has been nomenclaturally preserved by the Viennese amateur herpetologist Erich Sochurek (1923–1987) who named an Austrian local "race" of the Alpine newt (*Triturus alpestris winterli*) after him (Sochurek 1956), a clear synonym of the nominotypic form of *Mesotriton alpestris*. But the doubts on Winterl's authorship instead of that of Laurenti (1768) can certainly be denied! They are cited here only for completeness sake.

Conclusion

All the controversial aspects discussed here do not lead to an unequivocal result. Neither the diagnosis of *Proteus tritonius* by Laurenti (1768) nor its drawn iconotype, nor the type locality can be unequivocally identified. Consequently, this is also true for the nomen *Ichthyosaura* which is based on this dubious iconotype. So, as in other doubtful cases, there are two possibilities to decide. We (Mutz & Böhme 2025) decided to set a sign and to lay a marker against the excavation of old, forgotten names to replace younger, but already commonly used names ("literary archeology" according to Mayr 1969). We chose the arguments of the *Salamandra*-like tail shape of Laurenti's (1768) drawing and the linguistic possibility that "in alpe Etscher" refers to a wider area and a larger number of breeding waters than just to the mountain itself, and designated a larva of *Salamandra salamandra* from the Ötscher region as the neotype for *Proteus tritonius*, making thus *Ichthyosaura* Sonnini & Laterille, 1802 a younger synonym of *Salamandra* Laurenti, 1768, thus making *Mesotriton* Bolkay, 1927 as a nomen protectum according to Art. 23.9.2. (ICZN 1999) again the valid genus name for the Alpine Newt (Mutz & Böhme 2025). And just because of this our sign against literary archeology, the example of *Mesotriton* vs. *Ichthyosaura* was also included in the recently published overview of other such cases in herpetology (Böhme et al. 2025).

In our paper (Mutz & Böhme 2025), we cited the critical paper by Vences (2015) who had expressed already some concern whether a reversal of the use from *Ichthyosaura* back to *Mesotriton* would be realistic, in view of numerous publications since 2009 which adopted Schmidtler's (2004, 2009) recovery, next to the sources cited in Mutz & Böhme (2025) here exemplified by vicariously citing the work by Dubois & Raffaëlli (2009), which made the fact again forgotten that *Ichthyosaura* was a forgotten name for more than 150 years!

Ultimately, the International Commission of Zoological Nomenclature in London will have to decide about the application announced by Gollmann & Gollmann (2026) to invalidate our neotype designation in favor of *Ichthyosaura*. However, contrary to the statement by Landler (2026), our nomenclatural act remains valid at least until this decision by the Commission will be made.

Very recently, a new, multi-authored paper corroborated that the Alpine Newt is a species complex rather than one polytypic species and revealed five distinct clades weighed as hidden species within this complex (Koster et al. 2026). All thirty authors of this study obviously agreed in selecting *Mesotriton* Bolkay, 1927 as the genus name of this species complex.

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