

Manuscript #65159 entitled "A new and very spiny lizard (Gymnophthalmidae: *Echinosaura*) from the Andes in northwestern Ecuador".

Dear Editor and authors,

This study presents a new species of *Echinosaura* from Ecuador, using four methodological approaches to recognize and validate the new species (meristics/morphometrics; molecular; osteology; hemipenial morphology). The manuscript is well written, clear, and it was my pleasure to read it. I strongly suggest its publication. Below I present minor suggestions. Congratulations to the authors.

Marco A. Ribeiro-Junior

Line 41: "Description" is better than "erection", since the authors are mentioning the genus and not the species. New genera were described to erect the species.

Lines 77-78: I missed here a short description of what it would be "substantial and consistent differences between populations". The authors used four different approaches to describe the new species (meristics/measurements; osteology; hemipenial morphology; molecular). Please, describe how the results of these methods were combined to support de Queiroz's concept of unified species.

Lines 102-105: Vásquez-Restrepo et al 2020 did not include descriptions of how characters were collected. I suggest the authors to include short descriptions here, because this kind of information is extremely useful to create a standardized way to collect morphological data. For example, trunk length was measured considering the anterior insertion of forelimbs/hind limbs, posterior insertion of them, or the central point above them? Please, include for all of the characters.

Line 114: Nunes et al. 2012 did not include any differences or updates in the terminology of hemipenes in their study. Since they also followed previous studies, I suggest you to give credits to the original sources for hemipenial terminology.

Lines 136-137: In this paragraph, I suggest the association of the accession numbers with the new samples used in the tree and vouchers. Then readers will know from which samples each accession number refers to.

Fig. 1: Please, include at least in the Supplementary Material the phylogeny of Cercosauriae in high resolution (the small tree in Fig. 1). It is as interesting as the close-up of *Echinosaura*. And in the paragraph mentioning Fig. 1 (lines 170-180) the authors refer to the new species as *Echinosaura* sp. nov., but in the figure as *Echinosaura fischerorum* sp. nov. Since the new species is described after this paragraph, I suggest correcting the tree instead of the text (*Echinosaura* sp. nov. instead of *Echinosaura fischerorum* sp. nov.).

Line 184: Please, include higher taxonomic classification before *Echinosaura fischerorum* sp. nov.

Lines 204–207: Is this paragraph really needed? "Based on morphology" followed by "e.g.". I suggest deleting it (it doesn't add any information here). But If authors decide to keep it, please, include all the diagnostic characters that characterize the genus, distinguishing it from other gymnophthalmids, not only "e.g.".

Lines 212-215: The character numbered as 11 actually comprises more than one character. Please, split it to fit to the diagnosis.

Line 233: ... in having...

Line 234: ... infralabial...

Lines 236–238: Please, rephrase from “scales between vertebral” to “homogeneous in size)”, because the character is not clear. From “with enlarged scales forming” to “to form chevrons” there is not a comparison with the referred species. If this condition is not relevant here for comparisons, just delete it.

Line 243–245: Last sentence should be moved to another heading. Maybe to Remarks. Since it is a suggestion, it doesn't fit this paragraph.

Lines 247–285: The description of the holotype is a single, extremely long sentence. I suggest you splitting it in a few sentences, according to the surfaces of the body. It is easy to get lost reading it as it is now, as it is not easy to follow when you start describing another region of the body.

I'm not sure I could understand differences between grooved and rugose.

What does “sub” mean when using as “subpentagonal”?

When describing lateral head scales, I would prefer using “tall” than “high” (e.g., as long as high, in line 259).

Line 317: Figure 7 is missing the letters (A, B, C, and D). Examining the figure, it is clear the hemipenis is not fully everted. In the text authors mentioned it is “almost completely everted”, but because the authors prepared only one organ, it is difficult to get this conclusion. Comparisons would be needed to say it is almost completely everted. I would just mention that the lobes are not fully everted, avoiding the affirmative sentence that you are not missing any relevant structure or masking the fully everted apical shape.

Lines 328-330: I'm not sure I could understand this description. Please, rephrase to make it clear. Please check: “ventral to the flounces”, “about 41” (it is only one organ, right? Why using “about”?).

Lines 333 and 341: *fischerorum* sp. nov. or just *fischerorum*. Check the text to have only one way to mention the new species.

Cranial osteology: Great descriptions.

Lines 620-621: There are many other species occurring in that area, right? The ones you listed are the endemic ones? Please, clarify.

Line 657: I missed a discussion about the hemipenial morphology, as the authors did for osteology. I also missed hemipenial characters that could distinguish the new species from other taxa (if not comparing with other species, at least general comparisons with other related genera). Nunes 2011 (Morfologia hemipeniana dos lagartos microteídeos) presents a description of the hemipenial morphology of *Echinosaura*, including *palmeri*, *panamensis* and *horrida*. Nunes also presents photographs of the hemipenis of them, including *E. horrida* (Fig. 43 in Nunes) the closest related species to the new species described here. You can also use them for species comparisons. I suggest to the authors to include a paragraph to discuss hemipenial morphology, as well as to include the characters in the species comparisons in lines 232-245.

Lines 669-670: To evaluate the conservation status of a species, several criteria needs to be considered before classifying it as threatened. See

https://nc.iucnredlist.org/redlist/content/attachment_files/RedListGuidelines.pdf.

I agree with the authors that information about the habitat, threatens, human activities and others related to the species conservation needs to be mentioned

in the text. But followed by a suggestion that the species needs to have its conservation status evaluated in further studies, or even its status should be prioritized for evaluation by IUCN specialist group. I would not categorize it now based on the information available in the text.

Line 677: Echinosauro, rather than E.

Table 2: Is the word “number” really needed in this table?

Figure 3: Beautiful plates!