

To the editor in chief and the associated editor

We hope that this updated version will meet most of the suggestions and corrections from the reviewers. We are immensely grateful for the important contributions that made it possible to significantly raise the quality of our manuscript. We have carefully read the comments and have revised the manuscript accordingly. We take advantage of this letter to report that in one of the files there are no comments or suggestions (file peerj-reviewing-79790-v0). Our responses are dealt below.

Referee 1:

All the suggestions made by the reviewer 1 were incorporated directly in the manuscript and on the plates

Referee 2:

Most of the suggestions made by the reviewer 2 were incorporated directly in the manuscript. It was not possible to visualize the entire content of some comments (in the comment boxes). This reviewer made some questions and our responses are dealt below

Point 1: “Sclerotised, you mean sclerotised cuticle I presume, cannot be “internal”, clarify please. “

There are some structures on the genitalia that are internal and sclerotized. For example we can cite the bursa copulatrix and ductus bursae in the females, and the cornute on the aedeagus in males.

Point 2: “Please suggest the “scale” definition you prefer. I presume butterflies scales are not modified setae in this text.”

Definition provided according Scoble (2005)

Point 3: “Thorax sclerites shall be external, please reply with you interpretation and references, please. “

Indeed they are external, but they are often covered by scales, that is the meaning of “hidden” in the text

Point 4: DO you mean: “notoriously need”? In the case detail the rise for the need. Alternatively let me suggest a phrase like: “Lithosiini, or Lichen moths , is a species-rich insect lineage with complex taxonomy, embedding abundant incertae sedis genera names”

The deatail is included in the next 2 sentences: “The tribe includes approximately 3150 species, classified in 457 genera ... Of these, 345 genera are classified as incertae sedis ..., and new species are described constantly”.

Commented [F1]: Sorry not to agree with your suggestion. Cuticle is an external secretion due to an epidermis. In the case of many cuticular linings, we may consider the external cuticle-lined surfaces retracted. I.e. foregut, hindgut, and genitalia lumina are channels limited by the epidermis and cuticular secretion. Until an explicit or implicit cuticular secretion protects an ectodermic-originating tissue, we can refer to them as external insect surfaces. Moreover, a doubt may exists for female genitalia, but cornuti are clearly pertaining to external eversible organ, the pars inflabilis penis.

Commented [F2]: Scale definition is from Kristensen & Simosen 2003 (in text and ref). Cannot find Scoble (2005) in the resubmitted draft. Please solve the issue.

Commented [F3]: Or “sheltered”?

Point 5: *It is not really clear to me whether you used any kind of sample preparation before CT analysis (e.g. fixation, drying...) or not. In the latter case, it would be useful to highlight and clarify the reasons of your choice (maybe to simulate the same condition of working with a very rare specimen as you mentioned in the introduction?). However, drying is crucial in micro-CT and allows less noisy and more defined acquisition.*

The only procedure that the specimens underwent was the wing spreading. Then the specimens were dried at room temperature for 2 weeks.

Commented [F4]: May the %RH is a more relevant parameter to reply the Referee comment

Point 6: *Which was the angular acquisition step?*

The angular step was 0.0804 degrees and a total scan time of 2h 29m 18s. Shading correction of 5m 23s and x-ray tube warm-up of 15m was performed before the scans

Point 7: *... In this regard, you should use a color-bar for all of your CT pseudo-colored renderings in order to let readers understand density variations (actually, also other images deserve a metric scale).*

We added color scale and improved the micro-ct images, we also added metric scale on photographs.

Referee 3

Most of the suggestions made by the “reviewer 2” were incorporated directly in the manuscript. It was not possible to visualize some insertions (highlighted in blue) that the reviewer made in the manuscript, but we intuitively made improvements on the marked sentences.