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Rebuttal to review of #12701

Dear Mr. Michael Wink,

We thank you and the reviewers for the comments on our manuscript and have edited the manuscript to address most of their concerns.

We added a map with the known distribution of the new species and included the ML tree in the supplementary material, as recommended by Reviewer 1.

We further included pictures of the only two other species of the genus *Tantilla* from Peru to show coloration differences, as recommended by Reviewer 2. However, with respect to the anonymous Reviewer 2, we fear that she/he misunderstood the objective of our manuscript. She/he suggested some major changes (e.g. to produce a phylogeny with at least the 12 species of the genus *Tantilla* from South America; to analyze the cranium of all 12 species occurring in South America), which are simply not feasible and not necessary. The new species is easily distinguished from all congeners based on outer morphological traits. The reason for including a phylogenetic analysis and micro-ct scans of the cranium of 3 *Tantilla* species was to confirm the assignment of our new species to the genus *Tantilla*.

We believe that the manuscript is now suitable for publication in PeerJ.

Cordially,

Dr. Claudia Koch

On behalf of the authors.

10.10.2016

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Reviewer 1 (Carina Carneiro de Melo Moura)

Basic reporting

This study describes a new species of Tantilla for the Peruvian Andes. The information provided by the authors is really important, because besides the importance of the studied area, few studies have been conducted about the herpetofauna of this locality. Overall, the authors' style is clear and the English language is suitable for the journal, however a minor English review is recommended to correct typos and grammar mistakes.

Information about the systematic implication within Tantilla genus can be added in the introduction.

Experimental design

Methods and analysis are robust, though I suggest including a better description of the area and the authors might include a map with a schematic range of the recognized species of Tantilla for Peruvian Andes and the new species locality.

I missed some statistical analysis to verify if the morphological biometric variation among male and female specimens are significant different.

I would like also to see a statistical test to verify the morphological variation among the three different Tantilla's species from Peru.

Validity of the findings

The manuscript is original and brings new information to the scientific community. It is valuable and interesting for the conservation of the area and snake species.

Comments for the Author

After few corrections the manuscript can be accepted to the journal. The overall quality and contents are good.

Annotated manuscript

P.5~ L 12-14 A new colubrid species of the genus Tantilla from the dry forest of the Northern Peruvian Andes is described on the basis of two specimens, which exhibit a conspicuous sexual dimorphism.

- Sentence was changed to the recommendation of the reviewer

P.5~ L 19-20 *This sentence is not clear, please rewrite it.*

- Sentence was rephrased to: Conservation efforts are urgently needed in the inter-Andean valley of the Marañón River.

P.5~ L 22 (Key words) *There is no need to repeat the same words from the title in the key words. I suggest to remove Colubridae.*

- “Colubridae” was removed from the key words

P.5~ L 22 (Key words) *Hemipenes as key word? I think all the snakes have hemipenis, why did you choose this word?*

- Key word was changed to “hemipenes morphology”

P.5~ L 26 *What about the systematic implications within Tantilla?*

- Please see new last paragraph of the introduction, where we make clear that it is a new species within the genus *Tantilla*.

P.6~ L 65 *Insert information about the new sp. in contrast with the other species from the genus Tantilla here.*

- In our opinion the comparison with other species of the genus should be part of the Results section and not be placed in Materials and Methods. We added some more general information about the whole genus *Tantilla* in the new last paragraph of the Introduction and a more detailed comparison with the South American members of the genus is given in the Results section under “Diagnosis and definition”. We think this should be sufficient.

P.6~ L 67 *Methods and analysis are robust, though I suggest including a better description of the area and the authors might include a map with a schematic range of the recognized species of Tantilla for Peruvian Andes and the new species locality. I missed some statistical analysis to verify if the morphological biometric variation among male and female specimens are significant different. I would like also to see a statistical test to verify the morphological variation among the three different Tantilla's species from Peru.*

- Regarding a better description of the area, we added the following information to the Introduction:”...., where it extends southward in two small stripes. One stripe continues along the coast west of the Andes, whereas the other penetrates the valley of the Marañón River and its tributaries. This North-to-South oriented valley is located in the Central Andes and bordered to the West and East by the

Cordillera Occidental and the Cordillera Central, respectively. The inter-Andean dry forest expands from the Huancabamba Depression in the North along the flanks of the Chinchipe, Chamaya, Huancabamba and Utcubamba rivers and tributaries (Departments of Piura, Cajamarca, Amazonas) southward along the deep and narrow valley of the Marañón River to the Department of La Libertad.. According to Linares-Palomino (2006) this region is home to 184 woody plant species, including 69 Peruvian endemics. Characteristic representatives of this xeric vegetation are drought-resistant trees (e.g. *Acacia*, *Ceiba*, *Cordia*, *Eriotheca*, *Hura*, *Prosopis*), cacti plants (e.g. *Armatocereus*, *Browningia*, *Espostoa*), dense shrubs (e.g. *Mimosa*, *Croton*) and ground vegetation layer (e.g. *Opuntia*, Poaceae).”

- A distribution map showing the known localities of the new species was included (Figure 9).
- Regarding statistical analysis: The two type specimens mentioned herein are so far the only specimens available in collections. Of these, one is a female and the other a male, hence a statistical analysis regarding sex differences would simple not make any sense, as we would need more specimens of each sex for such an analysis. Also, a statistical test to verify morphological variation among this new species with the other species of *Tantilla* from Peru does not make sense as long as we have only two specimens of the new species to include in such an analysis. Of course, it would always be better to have more material at hand for describing a new species, and with more material also statistical analysis would be become more feasible. Nevertheless, this species is far from being cryptic and can easily be differentiated from all of its South American congeners as shown in the diagnosis. Considering the threats, the habitat of the new species is facing, we think it is far more important to characterize the composition and conservation status of the flora and fauna of this region as soon as possible, than spending a long time on trying to seek more material of this species to have a better sample size, until the species will be “baptized”.

P.6~ L 68 I suggest to keep this information in the supplementary data.

- It is actually required by the authors guidelines of PeerJ to provide this information in the Methods section.

P.7~ L 81-83 Insert the museum ID number of the specimens deposited in both collections.

- The sentence was changed to: Finally the holotype (CORBIDI 7726) was deposited in the herpetological collection of the Centro de Ornitología y Biodiversidad, Lima, Peru (CORBIDI) and the paratype (ZFMK 95238) was deposited in the collection of the Zoologisches Forschungsmuseum Alexander

Koenig, Bonn, Germany (ZFMK).

P.7/8~ L 95-109 This can be placed in the supplementary data.

- We slightly changed the sentence to “Data on morphological traits of other South American colubrid species and genera were taken from...”. The comparison with the morphological data provided in all these references was also part of the process of finding the right genus for our species. This was not very easy from the outer morphology alone as it is an untypical species of the genus *Tantilla*. Thus we think that this information can stay in the “Materials and Methods” section.

P.9~ L 164-165 This is not necessary. You can exclude.

- Ok, we deleted this part of the sentence

P.10~ L 188-189 Unnecessary.

- Deleted

P.11~ L 205 Where is the ML tree? Include in the supplementary material.

- ML tree was included in the supplementary material

P.16~ L 378 Do you have information about the micro-habitat of the new species?

- All information we have about the micro-habitat of the new species is already provided in this paragraph

P.17~ L 415-416 Highlighted in yellow

- Sentence was changed to: “Thus, *Tantilla* could benefit from a thorough taxonomic treatment involving a stronger genomic sampling component. Such a revision would test species concepts, update their known distributions, reveal their genetic diversity and give some clues about their evolutionary history. Furthermore, with robust molecular data generic designation could be proposed with more confidence.”

P.17~ L 422-424 Improve grammar here.

- Sentence was changed to: “Unless these strategies are implemented the biodiversity found in this unique habitat, including the new, endemic species described here, may fall into serious decline.”

Reviewer 2 (Anonymous)

Basic reporting

*The aim of this manuscript is the description of a new species of the snake genus *Tantilla* by the use of different sources of evidence, such as morphology, morphometrics and molecular data. However, the authors do not clearly provide evidence for the existence of a new taxon because very few species of the genus were analyzed for comparison. The examined specimens may very well belong to a new species, though. But the differences should be more explicitly presented by the use of a more robust database than the one presented by the authors. Of the 61 species of the genus only 4 were included in phylogenetic analyses – only ONE of the two species that occur in Peru was analyzed. In the morphometric analysis only three specimens were analyzed by X-ray analysis and again only one of the two species from Peru. For the description of a new species it is important to show evidence that the specimen collected does not belong to any previously described species. The necessary evidence is not adequately presented by the authors.*

Experimental design

*Although different sources of evidence were used for the description of the new species, few species of the genus *Tantilla* were analyzed. The minimum expected for this description would be a comparative analysis among the taxon novum and the other 12 species having distribution in South America. See comments in the reviewer material.*

- In the “Diagnosis and definition” section we compared the new species morphologically to all(!!!) known species of the genus. We further gave a more detailed comparison with all species of *Tantilla* from South America and with those species (of the whole genus) that shared some of their especially striking characters such as the comparatively large size and the transversely-banded color pattern.

Validity of the findings

There seems to be distinct morphology, i.e., size and differences of color of scales of the Taxon novum. The genetic analysis and tridimensional morphometry are insufficient; a robust comparison to other species of the genus is necessary.

- We don't think that such a comparison is necessary as the uniqueness of the new species is very clear and it is easily distinguished from its congeners based on outer morphology.

Comments for the Author

*I suggest that all 12 species of the genus *Tantilla* occurring in South America be sequenced and analyzed by X-ray.*

- Please see also my comments below. It is simply not possible to sequence and

X-ray all 12 species in the genus. At least four of the Southamerican species are known only from the holotype which were collected between 29-101 years ago. Of many other species no fresh material is available and it would be a massive work to try to get a specimen from each species for X-ray analysis. The aim of our publication is not a detailed morphological and phylogenetic study on all South American members of the genus *Tantilla*. Instead, it is a species description of a species that is easily distinguished from its congeners based on outer morphological characters. X-ray images are just used to further corroborate its assign it to the genus *Tantilla* and to include a detailed description of the skull morphology of the new species.

Annotated manuscript

P.5~ L 31 I suggest to give a better characterization of the disjunct forests of neotropical region, for example, the two largest areas of open vegetation are located on the periphery of the Amazon Basin – to the north, the Gran Sabana (state of Roraima in Brazil, Venezuela, and Guyana) and to the south, the dry corridor of the Brazilian Shield (Cerrado, Caatinga and Pantanal). Isolated scattered patches of savanna, considered to be remains from periods of drought during the Pleistocene, exist as throughout the Amazon rainforest. For a recent reference on biogeography of snakes from the Caatinga I recommend: “Biogeography, vicariance and conservation of snakes of the neglected and endangered Caatinga region, north-eastern Brazil, Journal of Biogeography, 2014, DOI:10.1111/jbi.12272

- We added the following information to the Introduction:”....., where it extends southward in two small stripes. One stripe continues along the coast west of the Andes, whereas the other penetrates the valley of the Marañón River and its tributaries. This North-to-South oriented valley is located in the Central Andes and bordered to the West and East by the Cordillera Occidental and the Cordillera Central, respectively. The inter-Andean dry forest expands from the Huancabamba Depression in the North along the flanks of the Chinchipe, Chamaya, Huancabamba and Utcubamba rivers and tributaries (Departments of Piura, Cajamarca, Amazonas) southward along the deep and narrow valley of the Marañón River to the Department of La Libertad.. According to Linares-Palomino (2006) this region is home to 184 woody plant species, including 69 Peruvian endemics. Characteristic representatives of this xeric vegetation are drought-resistant trees (e.g. *Acacia*, *Ceiba*, *Cordia*, *Eriotheca*, *Hura*, *Prosopis*), cacti plants (e.g. *Armatocereus*, *Browningia*, *Espostoa*), dense shrubs (e.g. *Mimosa*, *Croton*) and ground vegetation layer (e.g. *Opuntia*, Poaceae).”

P.5~ L 33 I'm sure that there are more recent references than Miles et al. 2006

- We further added the references: Linares-Palomino, 2006; DRYFLOR, 2016;

Lees et al., 2016

P.5~ L 34 (Jansen, 1988) I suggest to cite more recent references here. There are several publications on deforestation of "Dry Forests" in the Neotropical region.

- We further added the references: Miles et al., 2006; Pennington et al., 2006; Linares-Palomino et al., 2011; DRYFLOR, 2016

P.6~ L 58 This paragraph seems out of place and the introduction ends without making clear to the reader that the aims of this article is a description of a new species.

- We deleted the word "new" in L 53 and added a short paragraph at the end of the introduction, making clear that the aim of the article is to describe a new species

P.6~ L 69 Is it a new species? Why you don't mention here "The new species" rather than "The specimens were detected"

- We changed "The specimens were detected" to "The new species was detected"
- Also see new last paragraph of the introduction, where we make clear that it is a new species.

P.7~ L 79 Please, describe the method of tissue preservation

- We slightly changed the sentences to: Tissue samples were extracted from the muscle of the lateral body and stored in 96% ethanol. Specimens were placed in 10% formalin for fixation for about 12 hours, and ultimately stored in 70% ethanol.

P.7~ L 95 What kind of data?

- The sentence was changed to: "Data on morphological traits of other South American colubrid species and genera were taken from..."

*P.9~ L 169 Why to use 48 species and 27 genera to show that the collected specimens represent new species? To demonstrate that the specimens represent new taxa it would be necessary to produce a phylogeny with all species of the genus *Tantilla* or at least the 12 species of the genus *Tantilla* from South America and not other genera. The present study included only 4 species of *Tantilla* and only one of the two species that occur in Peru. The database of sequences is poor and it is not enough to show the existence of a new taxon.*

- It was never the idea to demonstrate the presence of the new species with the phylogeny we used. The only objective for this phylogeny was to correctly assign the new species to the genus *Tantilla*. We never stated that the phylogeny

was used to show the existence of a new species. Instead we wrote:

- In the Introduction: “However, a phylogenetic analysis based on 12S and 16S rRNA together with a comparison of the skull morphology via micro-computed tomography (micro-CT) scans revealed sufficient evidence to place it in the genus *Tantilla* Baird & Girard, 1853.”
 - In the Results: “...the four species of *Tantilla* formed a well-supported clade including our two specimens (CORBIDI 7726 and ZFMK 95238).”
 - And in the Discussion: “In order to get a general idea of the phylogenetic position of the new species described herein, we performed phylogenetic analyses based on 12S rRNA and 16S rRNA. We did not attempt to conduct a taxonomically extensive analysis of South American Colubridae, instead we preferred to include only those species, for which the two gene regions sequenced in this study were available in GenBank. Our phylogenetic tree based on mitochondrial DNA (Fig. 1) corroborates the assignment of our new species into the genus *Tantilla*. Both the monophyly of the sampled *Tantilla* and the conspecificity of our two dimorphic specimens are well supported by the analyses.”
- It was never our objective to resolve the phylogenetic relationships among the genus *Tantilla*. For this reason we also did not mention something with this respect in the title of our manuscript. We did not intend to give a taxonomic revision of the genus.
 - Our new species is easily differentiated from its congeners on the basis of morphological traits and a phylogenetic analysis to further demonstrate that it is actually a new species is not necessary.
 - Besides not being necessary, it is simply not possible to provide a phylogeny of all 12 Southamerican species in the genus. At least four of the Southamerican species are known only from the holotype which were collected between 29-101 years ago. It would not be possible to get tissue samples from this species.

P.10~ L 201 poorly worded sentence. Anyway, not to find differences between specimens of the same species is expected regarding the RAG gene, which is more informative for analysis at the genus level. It is not clear why the authors use the RAG gene.

- The sentences was rephrased, as this part of the analysis was just used to confirm that both specimens represent the same species: “Fragments of the mitochondrial gene 16S (526 bps) and nuclear gene RAG1 (1050 bps) of both specimens were compared. 16S showed no differences between specimens, and RAG1 revealed only a single base pair variation. The strong genetic similarity coupled with the weak morphological variation suggests these specimens are

the same species. “

- To better advise the reader of the morphological differences of both specimens (these differences are the justification for our pairwise analysis of 16S and RAG1 of both specimens, to confirm that they belong to the same species) we, we added some information at the end of “Morphological analyses” under “Results”: “Scalation characteristics and dorsal color pattern are very similar in both specimens. Nevertheless, they show conspicuous differences in body size and ventral coloration which are most likely due to sexual dimorphism and/or age difference.”

P.16~ L 393 To my knowledge the RAG gene is not the best marker to demonstrate variation at species level. I suggest to cite a publication demonstrating the use of the RAG gene in phylogenetic studies at the level of species. This would strengthen the assumptions of the authors.

- We just used the RAG1 gene to support the assumption that the two specimens belong to the same species, they further share several morphological traits, but also some differences in size and ventral coloration.

P.17~ L 401 The aim of this study is the description of a new taxon. However, sequences available in Genbank are not sufficient to show evidence of a new taxon, nor the phylogenetic position of the specimens, since the closest species were not included in the phylogeny.

- As said before the intention of our phylogenetic tree based on mitochondrial DNA was to corroborate the assignment of our new species into the genus *Tantilla*.
- Our new species is easily differentiated from its congeners on the basis of morphological traits and a phylogenetic analysis to further demonstrate that it is actually a new species is not necessary.

P.17~ L 404 Intrageneric relationships are not the issue of this paper. Then, it is needless to say that intrageneric relationships remain dubious due to the few species with genetic data available.

- Although it was not the issue of this paper, we think that mentioning this fact

further emphasizes the need of more genetic data to resolve the intrageneric relationships. This information may inspire others to decide to work on this issue.

- But if still desired, we can delete this sentence.

*P.17~ L 410 If “pretty much nothing concrete is known about the phylogenetic relationships within the genus *Tantilla*”, then this study contributes very little to it. So, it is not possible to show the existence of a new taxon. With the data presented how is it possible to know whether the sequenced samples may belong to a taxon that is already described and not included in the phylogenetic analysis presented by the authors?*

- It was never our objective to resolve the phylogenetic relationships among the genus *Tantilla*. For this reason we also did not mention something with this respect in the title of our manuscript.
- Our new species is easily differentiated from its congeners on the basis of morphological traits and a phylogenetic analysis to further demonstrate that it is actually a new species is not necessary.

*P.23~ Figure 3 I would like to see differences between the new species and other nearby species of the genus *Tantilla**

- The differences are explained in the “Diagnosis and definition” section of the Results.
- We added pictures of *T. capistrata* and *T. melanocephala* to the plate and changed the figure legend accordingly: “Figure 3. Dorsal (left) and ventral (right) views of the species of *Tantilla* from Peru: *T. tjiasmantoi* sp. nov. female holotype CORBIDI 7726 (A, B) and male paratype ZFMK 95238 (C, D); *T. melanocephala* (E, F) from Bahuaja-Sonene, Madre de Díos (photographs by Roy Santa Cruz); *T. capistrata* (G, H) from near Santa Catalina de Chongoyape, Lambayeque.”

P.26~ Figure 6 This figure does not clarify the differences between the new species and the other two species of the genus. I suggest to point out the differences with arrows. Anyway, it would be more appropriate that the cranium of all 12 species occurring in South America were analyzed, or at least both species from Peru.

- We added micro-ct scans of the head of a specimen of *T. melanocephala*.
- The intention of Figure 6 was never to show the differences between the new species and other species of the genus, and at no place we wrote something like this. In contrast we wanted to use Figure 6 to demonstrate the great similarity of our new species with other species of the genus, which we also pointed out in the text:
 - In the Results section: “A comparison with three other congeners (*T. capistrata*, *T. melanocephala* and *T. relictata*) reveals great similarity to

our new species with only minor differences in the shape or size of some bones (Fig. 6).”

- In the discussion: “Both the monophyly of the sampled *Tantilla* and the conspecificity of our two dimorphic specimens are well supported by the analyses. However, intrageneric relationships remain dubious due to the few species with genetic data available. Moreover, scutellation characteristics and the comparison of the skull morphology via micro-CT scans (Fig. 6) strongly support this hypothesis.”

Reviewer 3 (Gunther Köhler)

Basic reporting

There are a few minor language problems - see my comments in the attached pdf.

Experimental design

n.a.

Validity of the findings

good

Comments for the Author

Nice article on a beautiful species. Congratulations! I have a few comments in the attached pdf - all minor issues.

Annotated manuscript

P.5~ L 12 small caps

- Done

P.5~ L 23 (Key words) repetitive - see title

- Deleted

P.5~ L 23 (Key words) repetitive - see title

- Deleted

P.5~ L 30 delete hyphen, should read northeastern

- Done

P.5~ L 31 inter-andean valley spelled with small aps in key words

- Changed to inter-Andean valley in keywords and abstract

P.5~ L 35 change to southern

- Done

P.6~ L 50 spelled otherwise with hyphen and large caps in Andean: inter-Andean

- Changed to inter-Andean valley

P.6~ L 50 northern needs to be small caps

- Done

P.6~ L 54 change "hardly" to "not"?

- Sentence was changed to "... which was difficult to assign to..."

P.6~ L 55 change to "traits of external morphology"

- Done

P.6~ L 60 delete komma after 1875

- Done

P.6~ L 61 change "plain-colored" to "uniformly colored"

- Done

P.7~ L 74 this information is not available to the readers of this article! Thus, this statement is useless!

- Sentence was deleted

P.7~ L 78 very nice, but how did you achieve this?

- Paragraph was changed to: “All the necessary research and collecting (0020-2009-AG-DGFFS-DGEFFS, 0424-2010-AG-DGFFS-DGEFFS) and export permits (003983-AG-DGFFS) for this study were issued by the Ministerio de Agricultura of the government of Peru (Ministerio de Agricultura). Both specimens were collected by hand, photographed in live and subsequently euthanized with the narcotic T61[®].”

P.8~ L 113 change to snout-vent length (there should be an n-dash between snout and vent)

- Done

P.8~ L 115 change to tail length to be consistent

- Done

P.8~ L 115 head width

- Done

P.8~ L 116 head length

- Done, and “height of head” was changed to “head height”

P.8~ L 118 eye diameter

- Done

P.8~ L 123 change "light binocular" to "dissecting microscope"

- Done

P.11~ L 221 use n-dashes for all ranges throughout manuscript!

- “-“ were replaced by n-dashes in all ranges in L 221-238 (P. 11/12) and L 270 (P. 13)

P.11~ L 224 change anal to cloacal. Snake do not have an anus!

- Done

P.12~ L 239 see above for correct spelling and format. Also, you introduced the abbreviation SVL before. So why not use it here by itself?

- Section was changed to: “**Description of holotype.** an adult female with a SVL of 513 mm; TL 125 mm; HL 16.3 mm; HW 12.2 mm; HH 6.1 mm; TL/Total Length 0.2; SVL/HL 31.5; SVL/HW 42.1; SVL/HH 84.1; HW/HL 0.75; HH/HL 2.7; ED 1.5 mm; HL/ED 10.9; HW/ED 8.1; MBD 11.5 mm; SVL/MBD 44.6; DSN 1.5 mm; DNE 3 mm; MTD 2.9 mm.”
- Table 2 was changed accordingly

P.12~ L 249 claocal!

- Done

P.12~ L 250 change "horizontally compressed" to "depressed". "compressed" indicates laterally!

- Done

P.13~ L 286 you could have made good use of my "Color Catalogue for Field Biologists" here"

- The color catalogue is a good tool to use it in the field when the animals are still alive. Unfortunately, we did not have the catalogue at hand while we were in the field. From the photographs it is not possible to decide e.g. which exact tone of yellow the holotype exhibits. Also the color in the pictures may vary slightly with different settings used during photographing and image editing. Thus, we think in this case it is better to not use to precise information regarding coloration.

P.16~ L 388 insert a space before km

- Done

P.17~ L 407 New World needs o be with larged caps

- Done

P.17~ L 411 replace less with fewer

- Done

P.17~ L 414 I don't think numerical is the correct word here

- Sentence was changed to: “Thus, *Tantilla* could benefit from a thorough taxonomic treatment involving a stronger genomic sampling component. Such a revision would test species concepts, update their known distributions, reveal their genetic diversity and give some clues about their evolutionary history. Furthermore, with robust molecular data generic designation could be proposed with more confidence.”

P.17~ L 418 insert a komma after activities

- Done

P.18~ L 431 insert a komma after Peru

- Done

P.31~ L 565 change to Köhler

- Done

P.32~ L 597 change to 1st

- Done

Further changes:

- “on the basis of mtDNA sequence divergence and” was deleted from the Abstract, as mtDNA was primarily used to assign the species to its genus instead of trying to differentiate it from its congeners
- Information on number of ventral scales of *T. impensa* (162–172) was added to the “Diagnosis and definition” section of the Results
- Legend of figure 8 was slightly changed: “Figure 8. Habitat and localities of the holotype of *Tantilla tjiasmantoi* sp. nov. CORBIDI 7726 near Laguna de Pías, La Libertad, Peru (A), and male paratype ZFMK 95238 near Santa Rosa de Marcamachay, La Libertad, Peru (B).”
- GenBank accession numbers for RAG1, 12S and 16S of our specimens were included in the Table 1
- The following References were added to the Reference list
 - Wilson & Mata-Silva, 2014 (cited in new last paragraph of introduction)
 - Wilson, 1999 (cited in new last paragraph of introduction)
 - Townsend et al., 2013 (cited in new last paragraph of introduction)

- Pennington et al., 2006 (cited in the introduction)
- Linares-Palomino, 2006 (cited in the introduction)
- Linares-Palomino et al., 2011 (cited in the introduction)
- Lees et al., 2016 (cited in the introduction)
- DRYFLOR, 2016 (cited in the introduction)