Many thanks for handling the revision of our MS, to facilitate the revision process, we have recorded our responses below the reviewers' (in dark blue).

The updated version of the MS can be found at
https://www.preprints.org/manuscript/201902.0215/v3

Reviews

Reviewed by anonymous reviewer, 2019-08-22 09:45

The authors did a very good job in the revision, I really like the new Table 2.

>>Thanks

Just some minor things:

1. You may want to add Nyman et al. 2019 (Early wasp plucks the flower: disparate extant diversity of sawfly superfamilies (Hymenoptera: 'Symphyta') may reflect asynchronous switching to angiosperm hosts.) to #6 in Table 2 – to add to the butterflies also a sawfly/hymenoptera study.

>> Thanks, reference to this publication was added in table 2.

We also added other recent references : (Maron, Agrawal & Schemske, 2019) line 112 , (Hsu et al 2018) line 246, (Winter, et al. 2017) line 257, (Hernández-Vera,et al 2019) line 286, (Letsch et al. 2018) line 518 in order to update the previous version.

Figure 2 is cool - a possible problem with c) scenario H1 and H2 is that H1 may still show adaptive radiations in morphology even if shifts in diversification are not detected – following your definition of adaptive radiation in the glossary (although it looks like all recent clades will show a diversification rate shift as compared to the background rate). And similarly, H2 would possibly show the fastest rate of diversification in the range 3 clade (opposite of what is suggested), because of the long branch suggesting extinction but also fast speciation (high turnover), whereas range 1 and 2 show gradual accumulation of diversity – and thus not necessarily adaptive radiation.

>> Thanks for the attention given to the figure. We have redrawn figure 2c (see uploaded document). We have redrawn H1 so it shows steady accumulation of diversity in all lineages, and we have redrawn H2 so it shows faster accumulation in lineages associated with ranges 1 and 2. Concerning the definition of adaptive radiation in the glossary, it does stipulate: "rapidly multiplying lineage" and following your comment, we now added "fast" and "multiple" in "the fast divergence of an ancestral species into multiple descendants", so according to our definition acceleration in diversification rates must be observed in an adaptive radiation.

. Last, for the radiation to be adaptive, one would have to show that within the range there is partitioning of resources (e.g. through the reconstruction of traits related to this partitioning – comparable to the beak-size in Darwin finches), something that is currently missing

>> We agree that to fully demonstrate adaptive radiation one would also have to show that there is partitioning of resources in addition to acceleration of speciation rates. We present here on fig 2c, phylogenies that are **compatible** with H2 and H3 (i.e. hypotheses involving adaptive radiations following transitions in host uses): we agree that shifts in diversification as represented on this figure are a necessary but not sufficient condition to definitely conclude that an adaptive radiation has occurred. Our aim here is not to present an exhaustive overview of the tests that are necessary to verify **all** the predictions of the macroevolutionary scenarios. Diversification analyses alone cannot fully demonstrate adaptive radiation but they can test some of the predictions of adaptive radiation. The partitioning of resources is actually represented in fig 2a.

References

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Hernández-Vera G, Toševski I, Caldara R, Emerson BC. 2019. Evolution of host plant use and diversification in a species complex of parasitic weevils (Coleoptera: Curculionidae). *PeerJ* **7:** e6625.

Hsu YH, Cocroft RB, Snyder RL, Lin CP. 2018. You stay, but I Hop: Host shifting near and far co-dominated the evolution of Enchenopa treehoppers. *Ecology and Evolution* **8:** 1954-1965.

Letsch H, Gottsberger B, Metzl C, Astrin J, Friedman ALL, McKenna DD, Fiedler K. 2018. Climate and host-plant associations shaped the evolution of ceutorhynch weevils throughout the Cenozoic. *Evolution* **72:** 1815-1828.