Peer J submission: Spintharus flavidus in the Caribbean – a 30 million year biogeographical history and radiation of a 'widespread species' by Dziki, Binford, Coddington and Agnarsson

Critique by Jason Ali (Hong Kong)

As my basic expertise is in the field of geology, I am not qualified to evaluate the detailed analytical work associated with the proposed phylogenetic scheme, but I trust that appropriate experts have been asked to comment. The study appears sound and I can think of no reason why the work should not be published. The only problem (minor) I have is when the discussion turns to the GAARlandia land-bridge hypothesis.

First, the authors fail to separate those authors who are strong advocates of the feature, namely its proponents, Manuel Iturralde-Vinent and Ross MacPhee, and those who are highly skeptical, that is Blair Hedges and myself. In this context, the following sentence is problematic (lines 306-309)

> Among relatively poor dispersers, however, evidence mounts for an important, temporary (35-30 mya) overland dispersal route, the GAARLandia landbridge (Ali 2012; Hedges 1996b; Hedges 2006; Iturralde-Vinent 1998; Iturralde-Vinent & MacPhee 1999; Iturralde-Vinent 2006).

This statement gives the impression that Hedges and myself support the theory when we do not. Second, in the various papers that Iturralde-Vinent and MacPhee have advocated the land-bridge theory, nowhere have they presented biological evidence in support of the structure's existence, that is, the animal and plant groups having associated radiations that are rooted at ~34 Ma. It is other people who have presented the supporting evidence, e.g. Alonso et al. (2011).

To this end, I suggest the following change:

> Among relatively poor dispersers, however, evidence mounts for an important, temporary (35-30 mya) overland dispersal route (Alonso et al. 2011; XXXX), the GAARLandia landbridge that was proposed by Manuel Iturralde-Vinent and Ross MacPhee (e.g. Iturralde-Vinent 1998; Iturralde-Vinent & MacPhee 1999; Iturralde-Vinent 2006). It must be acknowledged, however, that others have criticized the proposal (Ali 2012; Hedges 1996b; Hedges 2006) on the basis of….. (then re-write/-phrase some of the text towards the end of the 2012 Ali commentary).

In a related vein, the following (lines 55-58), should be edited to remove Ali 2012 and instead to call a few refs that champion the proposal.

> Over the last 40 million years, the Greater Antilles landmasses have emerged, moved, sometimes amalgamated, and perhaps, connected to South America via a former land bridge; the Greater Antilles and Aves Ridge Land Bridge (GAARLandia) hypothesis (Ali 2012; Iturralde-Vinent & MacPhee 1999).

Another issue is that the GAARLandia hypothesis concerns the timing and duration of the pathway's opening. It supposedly corresponds with regional tectonic compression event AND the dramatic fall in eustatic sea-level associated with the Eo-Oligocene boundary – see Houben et al. (2012). That boundary is currently dated as 33.9 Ma. If the GAARLAndia hypothesis is to

gain traction, then we need to stick to the facts and have the land-bridge accessible for the ~1 m.y. at 34 m.y. Saying it is 35-30 Ma strikes me as a little sloppy.

Minor

In the acknowledgements, there are many “for organizing fieldwork in XXXX” statements – these could be streamlined.

Referencess

Alonso, R., Crawford, A.J. & Bermingham, E. 2011. Molecular phylogeny of an endemic radiation of Cuban toads (Bufonidae: Peltophryne) based on mitochondrial and nuclear genes. Journal of Biogeography, doi: 10.1111/j.1365-2699.2011.02594.x.

Houbena, A.J.P., van Mourik C.A., Montanari, A., Coccioni, R. & Brinkhuism H. 2012. Cenozoic Evolution of Antarctic Climates, Oceans and Ice Sheets. Palaeogeography, Palaeoclimatology, Palaeoecology, 335–336, 75–83.