OSTEOCEPHALUS PLANICEPS COPE (AMPHIBIA: HYLIDAE): ITS DISTRIBUTION IN COLOMBIA AND SIGNIFICANCE

by

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Resumen


Existen tres hipótesis biogeográficas que se aplican para los bosques de tierras bajas al oriente de los Andes colombianos y los datos de la distribución de Osteocephalus planiceps no coinciden. Existen otros datos para la distribución de una rana arborícola (Hypsiboas hutchinsi) que sí lo están para una pero no para las otras dos. Las tres hipótesis requieren estudios serios para determinar que al menos una es consistente con los datos que se obtienen en las bases de datos disponibles en los museos colombianos.

Palabras clave: Anuros, biogeografía, Cuenca Amazónica, evidencia.

Abstract

Three biogeographic hypotheses are available for the forested lowlands of eastern Colombia and the distributional data for Osteocephalus planiceps are contrary to each hypothesis. The distributional data for another uncommon treefrog (Hypsiboas hutchinsi) are acceptable for one of the three hypotheses but not the other two. These biogeographic hypotheses require serious study to decide if any one of them is consistent with a rich database available in Colombian museums.

Key words: Amazonian basin, Anurans, biogeography, evidence.

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The treefrog genus *Osteocephalus* is particularly diverse in Colombia (preserved Colombian vouchers are available in the amphibian collection of the Instituto de Ciencias Naturales for *O. buckleyi*, *O. cabrerai*, *O. carri*, *O. deridens*, *O. heyeri*, *O. mutabor*, *O. oophagus*, *O. planiceps*, *O. taurinus*, *O. verruciger*, and *O. yasuni*) and all known species are distributed east of the Andes (Acosta, 2000). Most of these are large frogs and apparently pass much of the year as residents of the canopy but descending to ground level to breed (personal observation, 2000). In contrast, the proposal of *Morrone* (2000) ignores political boundaries. Although the proposals of *Hernández et al.* (1992) and *Morrone* (2000) are each hierarchical, the hierarchical aspect of the proposal of *Morrone* is for regions outside of the focus of this article.

Of the three proposals, only that of *Morrone* (2000) makes any effort to include biological data in the form of distributions of organisms as part of a justification for a biogeographic entity. Morrone’s methodology requires that the panbiogeographic track of at least one species conform to the limits of a biogeographic entity (in his case, a subregion). For the other two proposals, the areas were identified without recourse to biological data. In that case, one cannot help but wonder why the authors considered these units to be “biogeographical” (in the European tradition, the term is chorological).

With Platnick (1991), I would argue that recognition of some area in terms of biogeography requires at least a single coincidence. That coincidence is defined as a minimum of two biological distributions, each of which defines the same area. *Morrone’s* (2000) reliance upon a single endemic species (endemic to one of his subregions) does not generate anything that might be recognized as a pattern.

Considering amphibian species, I know of no pair of species that conforms to any of *Hernández et al.* (1992) “biogeographic” districts or to *Fandiño & Wyngaarden’s* (2005) chorological types (however, including reptiles as well, tc 62 [Isla Malpelo] can be sustained with evidence). These generally small districts or chorological types are perhaps appropriate for Andean species because, at least for amphibians, Andean distributions are small whereas in the lowlands, the distributions are much more extensive (*Lynch & Duellman*, 1997). Assuming that *Morrone* has at least one species’ distribution that conforms to each of his subregions, the relevant question is: Are there more?

Borrowing a famous phrase, or quote, from Charles Darwin, concerning that evidence is either for or against a particular hypothesis (taken from a letter by Darwin to Asa Gray in 1857, Ghiselin, 1969), the data from biological distributions, imperfect though they may be, are pertinent to the acceptance or rejection of specific scientific proposals (curiously, also a quote from his less-famous co-discoverer of evolution, Alfred Wallace [see Brooks, 1874]).
The distribution of *Osteocephalus planiceps* in Colombia

In the collections of the Instituto de Ciencias Naturales, there are preserved vouchers for *O. planiceps* from 11 localities in the Departamentos de Amazonas, Caquetá and Vaupés (Fig. 1A). The absence of vouchers from Depto. Putumayo is probably the result of the lack of serious inventory work in the lowlands of Putumayo when our focus is upon a frog species that normally occupies the canopy.

Beyond the documented vouchers, I have a photograph of *O. planiceps* from the southern edge of the Serranía de la Macarena in Depto. Meta.

The data for the distribution of *O. planiceps* do not support any of the three proposals (and are contrary to each proposal). Given that neither the Hernández *et al.* (1992) nor the Fandiño & Wyngaarden (2005) proposal has the minimum quantity of data to support any of their “biogeographical” entities, the negative data for *O. planiceps* assume greater importance. If the Morrone proposal has minimal data to support its three “biogeographic” subregions, a species with a wide-spread...

Another treefrog described from southeastern Colombia [*Hypsiboas hutchinsi* (Pyburn & Hall)] offers data (Fig. 2) that are consistent with Morrone’s (2000) proposal and at the same time serve to reject the proposals of Hernández et al. (1992) and Fandiño & Wyngaarden (2005). *Hypsiboas hutchinsi* is known only from Colombia (Deptos. de Amazonas, Caquetá, and Vaupés) and adjacent Brasil. The southernmost records lie within the upland forests and do not include localities within the *varzea* (recognized as a different subregion by Morrone, 2000).

**Discussion**

Given that few investigators have developed arguments pertinent to biogeographic hypotheses, the pertinence of the data for *O. planiceps* remains ambiguous. As a first approximation, it is sufficient to raise serious doubts as to the degree to which any of these biogeographic hypotheses merits even tentative acceptance. The data for *Hypsiboas hutchinsi* are equally negative for the hypotheses of Hernández et al. (1992) and Fandiño & Wyngaarden (2005). These observations do not support (nor deny) the possibility that a robust hypothesis awaits articulation. What remains for the immediate future is to put each of these three hypotheses to as severe testing as available data permit.

The minimal data for the distribution of *O. planiceps* are fatal for the proposal of Morrone (2000) and for that of Hernández et al. (1992). Neither author (or set of authors) imagined that this species existed. *Hypsiboas hutchinsi* (Fig. 2) is acceptable to the proposal of Morrone (2000) but not for the provincial proposal of Hernández et al. (1992).

Figure 2. Known distribution of *Hypsiboas hutchinsi*. Open symbol (record of Pyburn & Hall, 1984). Solid symbols represent vouchers in the ICN.
We return to the, surely independent, assertions of A. Wallace (in *Brooks*, 1984) and C. Darwin (in *Ghiselin*, 1969) that, every fact (=species) is either for or against a particular hypothesis. Are the museum records of *Hypsiboas hutchinsi* and *Osteocephalus planiceps* sufficient to require re-thinking of biogeographic proposals? I think that the answer is yes. We still need to understand the pattern of organic distributions in eastern Colombia.

**Literature cited**


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