Esqueleto do artigo

**Western Amazonia is the primary source of New Word monkey biodiversity**

Bioregional shifts of New World monkeys’ lineages during Cenozoic

Abstract

Here we estimate the direction and timing of range shifts of extant and fossil New World monkeys (Platyrrhini). Based on current geographic distribution, we elaborated a bioregional scheme, and then we reconstruct the biogeographic history of the clade. We used recently published platyrrhine phylogenies (n = 116) that explicitly acknowledge that living species and fossils are part of the same macroevolutionary process (FBD). Then we estimated ancestral ranges taking into account topological and age uncertainty by inferring dispersal and extinction events over a sample of trees from the posterior distribution and by replicating biogeographic stochastic mappings (BSM) for each tree. We analyzed the most frequent events of dispersal (d) and range-switch (d + e) between source and sink bioregions. Geographic display of bioregions were very congruent with neotropical biomes, and Amazonia was split into western and eastern portions. Western Amazonia (WAM) was the main source of platyrrhine lineages (in situ speciation and origin of dispersal events) and the most frequently events occurred from WAM to Eastern Amazonia (EAM), to Choco (CHO), to Patagonia (PAT) to South Atlantic Forest (SAF) and to Caribbean (CAR).

Time?

O que eu quero discutir?

Descrever os eventos de dispersão na narrativa histórica dos macacos

Onde quer chegar?

Mostrar a importância do processo de dispersão para entender os eventos históricos na narrativa dos macacos.

1. Introduction
   1. Platyrrhini taxonomy, diversity and distribution.
   2. Hypothesis of place of origins
   3. Hypothesis of place of arrival in South America
   4. Time of origin and fossils
   5. Evolution and diversification
   6. platy biogeography
      1. Regionalization
      2. Topological and age uncertainty
   7. Objective

Here we estimate the direction and timing of range shifts of extant and fossil Platyrrhini accounting for topological and age uncertainty.

1. Methods
   1. Biogeographic units
      1. IUCN
      2. Infomap (site and parameters)
   2. Phylogenetic trees
      1. Molecular and fossil (FBD process)
      2. Number of terminals and fossils
   3. Geographic distribution (extant and fossil)
      1. IUCN, GBIF and SpeciesLINK
      2. Taxon names (ITIS)
      3. Coordinate cleaner
      4. Coding
   4. Dispersal and extinction inference
      1. DEC model
      2. Dispersal and switch range definition
      3. Topological and age uncertainty (BSM and replication)
      4. Dispersal constraint models (M1, M2 and M3)
   5. Direction and time of events
      1. Shift direction (network and map)
      2. Shift times (histogram or line graph)
2. Results
   1. Bioregions
      1. Number of areas, names and geographic display
      2. Species ranges (histogram)
      3. Bioregion richness (histogram deitado)
   2. Best fitted model (AIC)
      1. Unconstrained model
      2. Dispersal (network and map)
      3. Switch-range (network and map)
      4. Time of dispersal events (absolute)
3. Discussion
   1. Regionalization of new world monkeys
   2. The importance of dispersal in the historical narrative of Playhrrini.
   3. Amazon inner dynamics (*Generator of primate diversity*)
   4. Amazon and outer bioregion dynamics
      1. Western Amazon and Atlantic Forest dynamics *(Atlantic Forest: Miocene colonizations*)
      2. Western Amazonia and Chocó dynamics *(The Andes: vicariance through mountain uplift or skirting around the edges)*
      3. Western Amazonia and Caribe dynamics *(Central America: primates in the great American Interchange)*
      4. Western Amazonia and Chaco dynamics *(Caatinga, Cerrado, Chaco, Llanos: primate expansion and extirpation in dry open habitats)*
      5. Western Amazon and Patagonia dynamics (Silvestro et al. 2019).
4. Conclusion
5. References
6. Supplementary
   1. Inferred events overview (table)
   2. Sympatric speciation (histogram)
   3. Vicariance (map)
   4. Lineages through time, multiple trees (ltt plot)
   5. Lineages through time by area (ltt plot)