ABS-00104

The imbalance of diversity and distribution in plant phylogeny: The importance of sister group perspective

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Keywords: Diversity, distribution, sister group, phylogeny

Stephen Jay Gould, the world's famous paleontologist, once said that teleosts (modern bony fishes) stock the world's oceans, lakes and rivers, and include nearly 100 times as many species as primates (and about five times more than all mammals combined). How can we consider teleosts not the main line of vertebrates? Was it really reasonable to compare teleosts with primates in the first place? This notion is equivalent to comparing the spore-producing plants (or spore plants) with any single small group of seed-producing plants (or seed plants), such as *Rosa* or Cycadaceae, and asking a similar question. Like spore plants stock the whole world, how can we think that spore plants are not the main line of embryophytes? Like teleosts, spore plants are a paraphyletic group that diverged much earlier than *Rosa*. Early divergence allows sufficient time for spore plants to diversify and colonize. More importantly, if two groups (teleosts vs primates) are randomly selected for comparison, the result will depend on the chosen group size. So, what would be the result if Sarcopterygii (some bony fishes, amphibians, reptiles, birds and mammals) were selected to compare with teleosts? Besides, is there any logical comparison method that can objectively reflect the imbalance of diversity and distribution in phylogeny? Perhaps comparing between sister groups is probably the only objective and reasonable way.