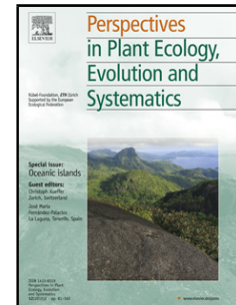


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Resolving the puzzle of Martin's broad embryo: a solution based on morphology, taxonomy and phylogeny

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Highlights

- We hypothesize that Martin defined a broad embryo solely on its outline/silhouette, i.e. wider than tall.
- A review of Martin's broad embryo families/taxa and the Hydatellaceae and Piperaceae was conducted.

Martin's broad embryo includes at least four morphologically distinct kinds of embryos.

- The Juncaceae, Cyperaceae and Commelinaceae have a capitate embryo, or variation thereof.
- The Nymphaeaceae and Cabomaceae have a distinctive embryo that is cupulate.
- The true broad embryo is found in Eriocaulaceae/Maycaceae/Xyridaceae, other Poales with undifferentiated embryos and Hydatellaceae.
- Martin's broad-embryo families and his broad genera in non-broad families are either monocots in the Poales or phylogenetically basal angiosperms.

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