



Potential Use of Angiosperm353 to Help Bio-prospectors Differentiate between Members of the Genus *Attalea*

Jonathan Daniel Hulse*

Department of Biology, Shepherd University, United States of America

*Corresponding Author: Jonathan Daniel Hulse, Department of Biology, Shepherd University, United States of America.

DOI: 10.31080/ASAG.2020.04.0884

Received: July 25, 2020

Published: August 11, 2020

© All rights are reserved by **Jonathan Daniel Hulse**.

Abstract

The family of palm trees, *Arecaceae*, provides to the incredible biological diversity in the tropics, and currently includes 181 genera and over 2600 species. Of these 2600 plus species, only a portion of these species have been molecularly characterized because many of these species had little or no economic value to Americans and Europeans, so they have simply not been a priority to bio-prospectors, until now. The advancement of Angiosperm353® a biotechnology kit, can differentiate the inner workings of this vast plant family, and minute details can finally be resolved. In particular, there have been discrepancies between the species of the genera *Attalea*, which include agriculturally and economically important members, that share similar morphology, which are hard to differentiate morphologically. Every member of this genus have not been molecularly characterized at this point in time, and this manuscript proposes the use of Angiosperm353® to help resolve the inner workings of this enormous plant family, to help bio-prospectors correctly identify members of this genus.

Keywords: Angiosperm353; Economic Botany; Silviculture; *Attalea*; Palm trees

Introduction

There is no greater symbol for rest, relaxation, and refreshment than the image of a lush palm tree near a sun filled beach. Although humans are drawn to picturesque, postcard landscapes of palm trees on beaches, the majority of palm trees inhabit upland ecosystems in the tropics, where they are cultivated for essential non-timber forest products. With climate change on the rise, bio-prospecting for tropical and sub-tropical silvicultural crops of palm trees from Central and South America shouldn't be overlooked, because they offer a potential alternative to traditional crops grown on other tropical continents. The identification process and comparison between similar morphological forms of closely related genera is often a major limitation of bio-prospecting, especially when trying to differentiate palm trees.

The family of palm trees, *Arecaceae*, provides to the incredible biological diversity in the tropics, and currently includes 181 genera and over 2600 species [3,7]. Of these 2600 plus species, only a fraction of these have been molecularly characterized because many of these species have little or no economic value to Americans and Europeans, so they have simply not been a priority to economic botanists, until now [5,11]. Recent progressions in biotechnology have made the molecular identification of every palm tree species a realistic goal.

The advancement of Angiosperm353®, a biotechnology kit produced by Arbor Biosciences®, can differentiate the inner workings of this vast plant family, and species level identification can finally be resolved in morphologically similar species [9]. In particular, there have been discrepancies between members of the genera *Attalea*,

which have similar morphology, and every member of this genera have not been molecularly characterized at this point in time [7]. Angiosperm353[®] seems like a promising option to sequence all of the members of the genus *Attalea*, allowing bio-prospectors to appropriately select exact species for silvicultural production [9].

Bio-prospectors are interested in economically important members and ability to identify this genus because members of the genus *Attalea* are cultivated and processed to make palm oils, soaps, wine, as well as an abundance of home fabrication products [1,2,4,5,10]. Despite extensive cultivation of species within the genus *Attalea*, the molecular relationships between these two diverse genera has not been fully resolved, limiting bio-prospectors from utilizing these diverse species [1,2,4,5,10].

Bio-prospectors are also interested in boosting biological diversity by introducing non-invasive, ecologically, important members that can provide to the diversity of the tropics. The genus *Attalea* produce fruit and seeds that provide nutrition for a variety of beetles, primates, and were once thought to be disseminated by extinct giant megafauna [6,8,12,13]. The advantage of bio-prospecting for ecologically important species as well as economically important species is that they can boost pollinators and secondary interactions that improve biological diversity and reduce the chances of disease.

Conclusion

This economically and ecologically important clade of palm trees would be an ideal candidate for testing with Angiosperm353[®] because traditional morphological studies on this genus are antiquated, old-fashioned, and unreliable [7]. Future researchers should be able to work out species level relationship between the members of the genus *Attalea* and will help bio-prospectors find novel silvicultural crops.

Acknowledgements

No external funding was provided for this study. The single author was the only researcher who engaged in the production of this manuscript. All information provided in this manuscript shall be used by referencing this study. All data is available in the main text or the supplementary materials.

Conflict of Interest

Author declares no conflict of interests.

Bibliography

1. Bernal Rodrigo., *et al.* "Uses and commercial prospects for the wine palm, *Attalea butyracea*, in Colombia". *Ethnobotany Research and Applications* 8 (2010): 255-268.
2. Blicher-Mathiesen Ulla and Henrik Balslev. "Attalea colenda (Arecaceae), a potential lauric oil resource". *Economic Botany* 44.3 (1990): 360-368.
3. Christenhusz Maarten JM and James W Byng. "The number of known plants species in the world and its annual increase". *Phytotaxa* 261.3 (2016): 201-217.
4. Feil Jan Peter. "Fruit production of attalea colenda (arecaceae) in coastal ecuador—an alternative oil resource?". *Economic Botany* 50.3 (1996): 300-309.
5. Freitas Cintia., *et al.* "Phylogenetic analysis of *Attalea* (Arecaceae): insights into the historical biogeography of a recently diversified Neotropical plant group". *Botanical Journal of the Linnean Society* 182.2 (2016): 287-302.
6. Gálvez Dumas and Patrick A Jansen. "Bruchid beetle infestation and the value of *Attalea butyracea* endocarps for neotropical rodents". *Journal of Tropical Ecology* (2007): 381-384.
7. Glassman Sidney F. A taxonomic treatment of the palm subtribe Attaleinae (tribe Cocoeae). 59. Urbana: University of Illinois Press (1999).
8. Guimarães Jr., *et al.* "Seed dispersal anachronisms: rethinking the fruits extinct megafauna ate". *PloS One* 3.3 (2008): e1745.
9. Johnson, Matthew G., *et al.* "A universal probe set for targeted sequencing of 353 nuclear genes from any flowering plant designed using k-medoids clustering". *Systematic Biology* 68.4 (2019): 594-606.
10. Myers Ronald L. "Humedales dominados por palmas (Arecaceae) en el Neotrópico: Una introducción". *Revista de Biología Tropical* 61.1 (2013): 5-24.
11. Pintaud Jean-Christophe. "An overview of the taxonomy of *Attalea* (Arecaceae)". *Revista Peruana de Biología* 15.1 (2008): 53-62.
12. Quiroga-Castro Verónica D and Alexandra I Roldán. "The Fate of *Attalea phalerata* (Palmae) Seeds Dispersed to a Tapir Lartrine 1". *Biotropica* 33.3 (2001): 472-477.

13. Verderane Michele P, *et al.* "Socioecology of wild bearded capuchin monkeys (*Sapajus libidinosus*): an analysis of social relationships among female primates that use tools in feeding". *Behaviour* 150.6 (2013): 659-689.

Assets from publication with us

- Prompt Acknowledgement after receiving the article
- Thorough Double blinded peer review
- Rapid Publication
- Issue of Publication Certificate
- High visibility of your Published work

Website: www.actascientific.com/

Submit Article: www.actascientific.com/submission.php

Email us: editor@actascientific.com

Contact us: +91 9182824667