

***Pelagodoxa henryana* (Arecaceae):  
A Supplement of Additional  
Photographs and Figures to the  
2019 Article in the Journal *PALMS***

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With its large, initially undivided leaves; big, curious, warty fruits; monotypic nature; and mysterious, remote, island habitat, *Pelagodoxa henryana* has long fascinated palm botanists, collectors and growers, and been one of the holy grails of all who have an interest in palms. The possibility of a second species of *Pelagodoxa* has generated a substantial amount of interest but the recent literature on the subject has dismissed this prospect and accepted or recognized only one species. However, for 40 years the senior author has propagated and grown *P. henryana* nearly side by side with a second species of the genus, first in Hawaii, U.S.A and later at his wife's home in Papeari, Tahiti, French Polynesia, allowing ample opportunity to compare and contrast the two species at various stages of development.

An article we wrote reassessing the genus *Pelagodoxa* was published in the journal *PALMS* [Hodel et al., Reassessment of *Pelagodoxa*, *PALMS* 63(3): 113-146. 2019]. In it we document substantial and critical differences between the two species, *P. henryana* and *P. mesocarpa*, establish the validity and resurrect the name of the second species from synonymy, discuss molecular data, phylogeny and phytogeography, ethnobotany and conservation of *Pelagodoxa* and what impact, if any, they might have had in its speciation and insular distribution. We also summarize the cultivation requirements for these handsome and intriguing palms.

Here we provide supplemental photographs with extended captions and tables illustrating the critical morphological characters of the genus and between the two species to support our findings further.



1. *Pelagodoxa* are moderate, solitary, unarmed, pleonanthic, monoecious, tree palms, as here with *P. mesocarpa* cultivated in Suva, Fiji. (All photos by Donald R. Hodel).



2. A trio of *Pelagodoxa henryana* in the Jardin Botanique Harrison Smith in Papeari, Tahiti.



3. Marianne Hodel provides scale for a short but mature, understory individual of *Pelagodoxa henryana* at the type locality, Taipivai Valley, Nuku Hiva, Marquesas Islands, French Polynesia. *Butaud et al. 3495.*



4. Several individuals of *Pelagodoxa henryana* emerge above the disturbed forest at the type locality in Taipivai Valley, Nuku Hiva, Marquesas Islands, French Polynesia. *Butaud et al.* 3495.



5. *Pelagodoxa henryana* grows at the type locality in Taipivai Valley, Nuku Hiva, Marquesas Islands, French Polynesia. *Butaud et al.* 3495.



**6.** Trunks of *Pelagodoxa*, as here with *P. henryana*, are brown, bare,  $\pm$  smooth but lightly and closely marked with ring-like leaf scars. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.



7. Trunks of *Pelagodoxa*, as here with *P. henryana*, are slightly flared at the base. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.



8. The adaxial and abaxial leaf blade rachis of *Pelagodoxa henryana* is green to light green. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.





9. The adaxial leaf blade rachis of *Pelagodoxa mesocarpa* is initially orange aging to tan when old. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3493.



**10.** The abaxial leaf blade rachis of *Pelagodoxa mesocarpa* is initially orange aging to tan when old. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3493.



**11.** The abaxial leaf blade rachis of *Pelagodoxa mesocarpa* is initially orange aging to tan when old. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3493.



12. The petiole of *Pelagodoxa henryana* is greenish with some marginal fibers. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.



13. The petiole of *Pelagodoxa mesocarpa* is yellowish with fewer marginal fibers. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3493.



14. The prophyll of the inflorescence of *Pelagodoxa* (here with *P. henryana*) is inserted near the base of the peduncle and incompletely encloses the inflorescence in bud. Here the proximal part of the prophyll has rotted away but the attachment scar is visible just above the semi-circular base. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.



15. The peduncular bract of *Pelagodoxa* (here with *P. henryana*), similar to the prophyll and inserted just above the latter's base, encloses the inflorescence in bud. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.



16. The peduncular bract of *Pelagodoxa* (here with *P. henryana*) typically falls away early, leaving only a short, truncate base 2–2.5 cm high. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.



17. Inflorescences of *Pelagodoxa henryana* (top, *Butaud et al.* 3494) are branched to two orders (black numbering) while those of *P. mesocarpa* (bottom, *Butaud et al.* 3493) are branched to three orders. Note the indumentum and the much larger rachis bract subtending the branch in *P. henryana*. Garden of Marianne and Donald Hodel, Papeari, Tahiti.



18. Fruits of *Pelagodoxa* are large and warty, as here with *P. henryana*. Type locality, Taipivai Valley, Nuku Hiva, Marquesas Islands, French Polynesia. *Butaud et al.* 3495.



19. The exocarp of fruits of *Pelagodoxa* are prominently cracked into low, pyramidal corky warts, as here with *P. henryana*. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.





20. Fruits of *Pelagodoxa henryana* are larger and have a green,  $\pm$  fibrous, and non-fragrant mesocarp. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.



21. Fruits of *Pelagodoxa mesocarpa* are smaller and have an orange, pulpy, sweet-smelling mesocarp. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3493.



**22.** Comparison of fruit size of *Pelagodoxa mesocarpa* (left, *Butaud et al.* 3493) and *P. henryana* (right, *Butaud et al.* 3494). Garden of Marianne and Donald Hodel, Papeari, Tahiti.



**23.** Comparison of seed size of *Pelagodoxa mesocarpa* (left, *Butaud et al.* 3493) and *P. henryana* (right, *Butaud et al.* 3494). Garden of Marianne and Donald Hodel, Papeari, Tahiti.

24. Table of Comparisons of Means ( $\bar{x}$ ) of Selected Fruit and Seed Characteristics of *Pelagodoxa henryana* and *P. mesocarpa*, Cultivated, Papeari, Tahiti, 2018. (n = 10 fruits per species; n = 5 seeds per species).

Character	<i>P. henryana</i> (SD)	<i>P. mesocarpa</i> (SD)	Mean Difference	Difference at ( $p < 0.05$ )
<b>Fruit</b>				
Length (mm)	90.9 (2.4)	70.1 (1.8)	20.76	18.74
Width (mm)	92.9 (3.2)	67.2 (1.6)	25.76	23.30
Warts	117.2 (11.12)	108.6 (15.25)	9	0
Warts/Surface Area	0.44 (0.05)	0.73 (0.09)	0.292	0.223
Volume (cm <sup>3</sup> )	406.28 (37.03)	169.21 (12.39)	237.064	210.611
Eccentricity	0.98 (0.01)	0.96 (0.01)	0.021	0.01
<b>Seed</b>				
Length (mm)	59.2 (1.5)	48.4 (1.1)	10.8	0.885
Width (mm)	58.0 (0.17)	37.8 (1.9)	20.2	17.5
Volume (cm <sup>3</sup> )	105.53 (8.2)	41.38 (4.16)	64.142	54.05
Eccentricity	0.98 (0.01)	0.78 (0.03)	0.199	0.16



25. Inflorescences of *Pelagodoxa mesocarpa* are heavily laden with fruits. Note the orange-tan petioles and leaf blade rachises. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3493.



26. Inflorescences of *Pelagodoxa mesocarpa* are heavily laden with fruits. Note the orange-tan petioles and leaf blade rachises. Garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3493.



27. Inflorescence of *Pelagodoxa mesocarpa* are heavily laden with fruits. Jeff and Suchin Marcus' Floribunda Palms and Exotics, Hawaii.



28. A trio of *Pelagodoxa henryana* grows in the garden of Marianne and Donald Hodel, Papeari, Tahiti. *Butaud et al.* 3494.



29. Marianne Hodel is happy about her wheelbarrow full of *Pelagodoxa* fruits collected in her and Donald Hodel's garden in Papeari, Tahiti.

30. Chronological Summary of Phylogenetic Relationships of *Pelagodoxa* with Other Taxa.

Reference, Date	Relationships
Beccari in Bois, 1917	<i>Johannesteijsmannia altifrons</i> , <i>Manicaria saccifera</i>
Burret, 1928	<i>Johannesteijsmannia</i> , <i>Manicaria</i> , <i>Pholidocarpus</i> , <i>Sommieria</i>
Martelli, 1932	" <i>Orania</i> group"
Martelli, 1935	tribe Areceae
Beccari and Pichi-Sermolli, 1955	subtribe Iguanurinae, <i>Sommieria</i>
Satake, 1962	subfamily Phytelphantoideae, <i>Manicaria</i> , <i>Phytelphas</i> , <i>Sommieria</i>
Moore, 1973	" <i>Clinostigma</i> alliance," <i>Iguanura</i> , <i>Neoveitchia</i> , <i>Sommieria</i>
Uhl and Dransfield, 1987	subtribe Iguanurinae, <i>Heterospathe</i>
Pintaud 1999	basal and sister to <i>Sommieria</i>
Lewis and Doyle 2002	<i>Sommieria</i>
Stauffer et al., 2004	<i>Sommieria</i>
Dransfield et al., 2005	<i>Sommieria</i>
Asmussen et al., 2006	<i>Sommieria</i>
Loo et al., 2006	<i>Sommieria</i>
Norup et al. 2006	<i>Sommieria</i>
Dransfield et al., 2008	<i>Sommieria</i>
Baker et al., 2009	<i>Sommieria</i>
Baker et al., 2011	<i>Sommieria</i>
Baker and Dransfield, 2016	<i>Sommieria</i>
Faurby et al., 2016	<i>Sommieria</i>

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Published 16 August 2019.

PalmArbor: <http://ucanr.edu/sites/HodelPalmsTrees/PalmArbor/>

Editor: Donald R. Hodel

Hodel Palms and Trees: <http://ucanr.edu/sites/HodelPalmsTrees/>