

# A Review of the Genus *Pritchardia*

Donald R. Hodel

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### FRONT COVER

*Pritchardia hillebrandii* is now restricted to the tops of the stack-like, rocky islets of Huelo (shown here) and Mokapa off the north coast of Molokai. It covers the top of the islet nearly to the exclusion of all other woody vegetation (Photo by Donald R. Hodel).

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# **A Review of the Genus *Pritchardia***

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*Pritchardia* includes 26 species of handsome, highly ornamental fan palms from Hawaii and the South Pacific. Two of the South Pacific species are popular in tropical landscapes around the world while several of the Hawaiian species have proven reliable subjects in subtropical and Mediterranean-climate gardens. In this account I provide a review of the genus, including two Hawaiian species new to science.

There is no up-to-date taxonomic treatment of *Pritchardia*. Beccari and Rock (1921) provided the last monograph while Read and Hodel (1999 [updated in Wagner & Herbst 2003]) gave a brief account of the Hawaiian species. Both treatments have their shortcomings, and the genus is in need of a comprehensive monograph. Hodel (1980) provided a popular summary of the Hawaiian species, which focused primarily on their distribution, ecology and conservation status.

This account, which reviews the species of *Pritchardia* and provides the justification for my species concepts, will serve as the taxonomic and nomenclatural basis for a fully illustrated, popular book on the Hawaiian species that Melany Chapin, Jeff Marcus and I shall complete in 2008 or early 2009, as well as form the basis for a treatment of the entire genus for a larger project on palms of the Pacific islands. It is hoped that this account will also be the starting point for a much needed monograph of *Pritchardia* employing several modern disciplines and technologies as well as more traditional approaches, that I hope to undertake with colleagues David Lorence, Chrissen Gemmill, Cliff Morden, Christine Bacon and Melany Chapin.

### The genus *Pritchardia*

*Pritchardia* is distributed over a vast area of the Pacific Ocean. There are three well-known South Pacific species: *P. mitiarioana* on Mitiaro Island in the Cook Islands and on Makatea and Niau Islands in the Tuamotu Archipelago of French Polynesia, *P. thurstonii* in the Lau Group of eastern Fiji and on Eua Island in Tonga and *P. pacifica*, which has yet to be collected in a truly wild state but is presumed

to be from Fiji or elsewhere in the South Pacific. The remaining 23 species are Hawaiian endemics (Appendix 1).

Two other species purportedly from the South Pacific, *Pritchardia pericularum* and *P. vuylstekeana*, were described from juvenile, cultivated plants in European stove-houses in the 19<sup>th</sup> century but are difficult to place simply because there is insufficient information and material to treat them adequately. They are best referred to as insufficiently known or dubious species. No material matching their described fruit size has ever been found in the wild in the South Pacific. The vastness of the Pacific Ocean and the remote and isolated nature of many of its islands, however, certainly leave open the opportunity for the discovery of new species and/or the natural habitats of *P. pacifica*, *P. pericularum* and *P. vuylstekeana*.

The two South Pacific species of known habitat, *Pritchardia mitiarioana* and *P. thurstonii*, are found in low, scrubby, moist to wet forests on limestone substrates from sea level to about 200 m elevation. *Pritchardia pacifica* may be found in the same or similar habitat. The Hawaiian species inhabit low to tall, dry to very wet forests on soils derived from basalt, often on nearly vertical cliffs in spectacular fashion, from sea level to 1400 m elevation. A *Pritchardia* was recorded from Laysan (a coral atoll over 1500 km to the northwest of Honolulu in the Leeward Hawaiian Islands), but unfortunately, no collections were made, and that palm was last seen about 1900 (Beccari & Rock 1921). If a truly natural population, it would have been the only atoll habitat with a coralline substrate of a *Pritchardia* in Hawaii, a featured shared with the South Pacific species.

*Pritchardia* species are small to large, short to tall, solitary, unarmed, pleonanthic, hermaphroditic tree palms. Their trunks are usually erect, generally longitudinally grooved or striate to smooth, and not visibly ringed with leaf scars or only obscurely so and then only near the base when vertical trunk elongation was relatively vigorous and rapid.

Leaves are costapalmate, typically drying as they senesce, and then disintegrating and/or falling away in moist and wet habitats but sometimes persisting and forming a skirt in drier habitats. Leaf bases and petioles are nearly always covered to some degree, at least initially, with a whitish, more or less mealy indumentum that extends onto the ridge folds

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#### frontispiece

One of the tallest species of the genus, *Pritchardia gordonii* emerges above the moist forest at the type locality, Honopue Gulch, Kohala Forest Reserve, Hawaii, (Hodel 2010, holotype).

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on the abaxial leaf blade surface near the base, where it typically takes on a more cottony or woolly texture. Proximal petiole margins bear papery, wing-like appendages that vary from more or less intact but irregularly shaped to degraded and hair-like. When especially abundant, the hair-like fibers form a conspicuous web-like mass that can extend distally along the petiole for a considerable distance (Fig. 1).

Leaf blades may be strongly undulate to flat, divided one-fourth to slightly over one-half their radius, with the distal free portion of their segment tips pendulous to stiff and rigid. Plication is induplicate. Filamentous hairs originating at the points of disjunction of the segments may be present. The abaxial blade surface is usually variously covered with light-colored (often tan when young, fading to silvery or grayish white), scaly hairs, called lepidia (Fig. 2). In some species the lepidia are so densely arranged that they cover the blade surface completely, obscuring the green tissue and giving it a silvery to grayish white color

(Fig. 3). Infrequently, blades are conspicuously waxy glaucous and then are grayish green to nearly white in color.

Inflorescences of *Pritchardia* are composed of one to several, relatively short and compact panicles, each on a much longer axis, and all arising from or near a common base or peduncle that is sheathed within one prophyll. Inflorescences are shorter than the petioles to exceeding the blades of subtending leaves in flower, and tend to elongate even farther in fruit.

The peduncle-like inflorescence axes are conspicuously longer than the panicles and sheathed with several to numerous, overlapping bracts. The prophyll and bracts are typically sparsely to densely covered, at least initially, with various types and colors of hairs, and may be intact or disintegrate in fruit. Panicles are branched to two to four orders and the rachillae and rachis, like other parts of the palm, are glabrous or covered, at least initially, with a variety of hairs.



1. Like several other species in the genus, *Pritchardia forbesiana* has abundant fibers forming a conspicuous web-like mass near the base of the petiole.

2. The abaxial blade surface is usually variously covered with light-colored, scales, called lepidia, as here with *Pritchardia napaliensis*.



3. In several species the lepidia are so densely arranged that they cover the blade surface completely, obscuring the green tissue and giving it a silvery to grayish white color, as here with *Pritchardia martii*.



Flowers are borne singly, often densely packed, along the rachillae. The tubular calyx is shallowly three-lobed and conspicuously shorter than the corolla. The corolla consists of three petals connate proximally into a short tube and divided distally at a level coincident with a distinct abscission zone into three, elongate, valvate lobes that form an imperfect

cap over the stamens. At anthesis the corolla lobes separate and fall away, although in some instances they may spread and persist for a short time. The six stamens are connate proximally, forming a conspicuous tube adnate to and exceeding the tube of the corolla, and free distally as short, distinct filaments upon which sit the dorsifixed, versatile anthers (Fig.



4). The distal portion of the staminal tube is sometimes outwardly flared over and above the tubular corolla and calyx bases.

Although highly variable, even within a species, the flowers of *Pritchardia* are distinctive in their deciduous corolla lobes, a character that easily distinguishes the genus from all related genera in the Livistoneae except the New World *Colpothrinax*. Once included in *Pritchardia* (Beccari & Rock 1921), *Colpothrinax* differs in its inflorescence having the rachis or branched portion as long as or longer than the peduncle or unbranched portion and the lateral, rather than basal, embryo.

Fresh fruits of *Pritchardia* are small (less than 25 mm wide) to large (30 to 60 mm wide), variously shaped, nearly always longer than wide, and brown to black when mature (Fig. 5).

#### Characters Used to Distinguish Species of *Pritchardia*

With a few exceptions, it is difficult to distinguish Hawaiian species of *Pritchardia* or juvenile plants of any species. The species are morphologically very similar and highly

4. Flowers of *Pritchardia beccariana* are typical for the genus. Those at the top (near but not yet at anthesis) still retain the three distal corolla lobes that form a cap over the stamens while those at the bottom (at anthesis) have dropped the corolla lobes to reveal the six stamens with their anthers seated on the rim of the conspicuous tube formed by the connate filaments.

variable, often with a gradation of subtle characters that blurs the boundaries between species, making it difficult to know where one species ends and another begins.

Characters relied upon in the past for distinguishing species of *Pritchardia*, such as the type of the lepidia (not the density) on the abaxial leaf blade surface, the absolute presence or absence of hairs (not their nature or permanence) on the rachillae, floral morphology, and minor differences in fruit size and shape, seem to be too variable within a species or are invariable among species to be useful. This variation, or lack of it, can be frustrating, and has resulted in much confusion in identifying and distinguishing species.

Even the late Harold St. John, one of the foremost students of Hawaiian plants but a consummate "splitter" and never one to pass up the chance to name a new species based on the most minor of differences, stated that he visited the same tree of *Pritchardia martii* in the Koolau Mountains near Honolulu on successive years and at each visit the presence or absence of hairs on the rachillae and the fruit size and shape differed so much that the tree appeared to be a different species from one year to the next (St. John 1932). Recognizing the inherent dangers, he fortunately refrained from naming and describing either as new.

With few exceptions, a combination of characters, rather than one single character, is necessary to distinguish species of *Pritchardia*. The most useful characters are the nature of the proximal margins of the petiole, particularly the presence and abundance or absence of hair-like fibers; the leaf blade, including whether it is undulate or flat, whether the segment tips are pendulous or stiff, and the density of the lepidia on the abaxial surface; the length of the inflorescences in flower and fruit in relation to the petiole and leaf blade; the panicle, including the

degree of branching and the type and permanence of any hairs; and fruit width (25 mm or less or 30 mm or more) and shape.

Using these characters and a few others, which I compiled from the literature (Beccari & Rock 1921 and other original accounts), herbarium specimens, sometimes cultivated plants, and, most critically, from extensive notes and photographs taken from wild populations, I constructed a data matrix that, when completed, enabled me to circumscribe species and construct a key. Unfortunately, several of the most useful characters, such as those of the leaf blade and relative inflorescence length, are simply not apparent in most herbarium specimens. If such specimens are to be useful, these characters must be noted in the label data that, as with most herbarium collections of palms, are so critical but usually lacking.

Even some of the characters I found to be most useful can be tricky to employ. Whether the leaf blade segment tips are pendulous or stiff can vary within a species. Typically they are stiff on the newer leaves but tend to droop on older leaves because of wind or age. Also, the distal portions of initially pendulous tips can weather away, especially in wet, windy,

exposed locations, leaving just the stiff stubs or bases. Exposure to light and general ecological conditions can affect petiole length and leaf blade size and, thus, inflorescence length relative to these organs.

Fortunately, species of *Pritchardia* in the wild are relatively easy to identify because, with few exceptions, they rarely occur sympatrically, and when they do, the differences between or among them are readily apparent. Most species, therefore, can be identified simply by knowing where they occur.

Thus, the key to the species of *Pritchardia* is of limited usefulness in the herbarium and the wild. It will be more useful for cultivated plants but, because some species of *Pritchardia* sometimes tend to do strange and bizarre things in cultivation, its usefulness may be slightly limited there, much to the chagrin of growers and collectors. For example, cultivated *Pritchardia*, when small and/or young, are notorious for producing an abundance of rigid, upwardly curved inflorescences that remain more or less permanently sheathed within the prophyll and peduncular bracts and resemble to a great degree rhinoceros horns. At least one species, *P. napaliensis*, has produced

5. Like most other species in the genus, fruits of *Pritchardia forbesiana* are nearly always longer than wide and brown to black when mature and ripe.



multiple stems in cultivation, a condition never observed in the wild. Climatic and/or cultural conditions in cultivation tend to produce changes in petiole length and leaf blade size and, thus, inflorescence length relative to these organs. Conditions in cultivation tend to affect panicle size and branching and fruit size and shape. Leaf blades that are typically flat on wild plants, especially on plants protected by the forest canopy, frequently become undulate when subjected to higher light and/or are stressed because of less than optimal growing conditions found in cultivation. The key does provide a concise method, however, to comprehend the most obvious differences among species.

Other than the new species, I have kept the descriptions to a minimum, including only information critical to distinguishing the species. Herbarium abbreviations follow Index Herbariorum (<http://sciweb.nybg.org/science2/IndexHerbariorum.asp>).

The findings of Gemmill (1996), who performed a detailed molecular study of population genetics of *Pritchardia*, differ somewhat from mine. In several cases I am simply unable to find good morphological characters to support her arrangement of taxa.

Gemmill (pers. comm.) feels that *Pritchardia* has only recently arrived and radiated in the Hawaiian Islands, producing a complex of very

closely related species, which often share a number of genetic characters. The genus is still in the early stages of speciation; hence, species possess characters with a high degree of plasticity or lability. This morphological and genetic decoupling might explain, at least partly, why I am, so far, unable to find morphological characters to support her arrangement of taxa in all cases. The frustrating lack of variability in some instances is also evidence of recent arrival, speciation and continuing evolution.

### Species Complexes

It is possible to group the Hawaiian species informally into several species complexes. I assign no formal rank to these and list them only to show possible relationships among species.

**Forbesiana:** *P. forbesiana*, *P. gordonii*, *P. lowreyana*, *P. munroi*, *P. schattaueri*

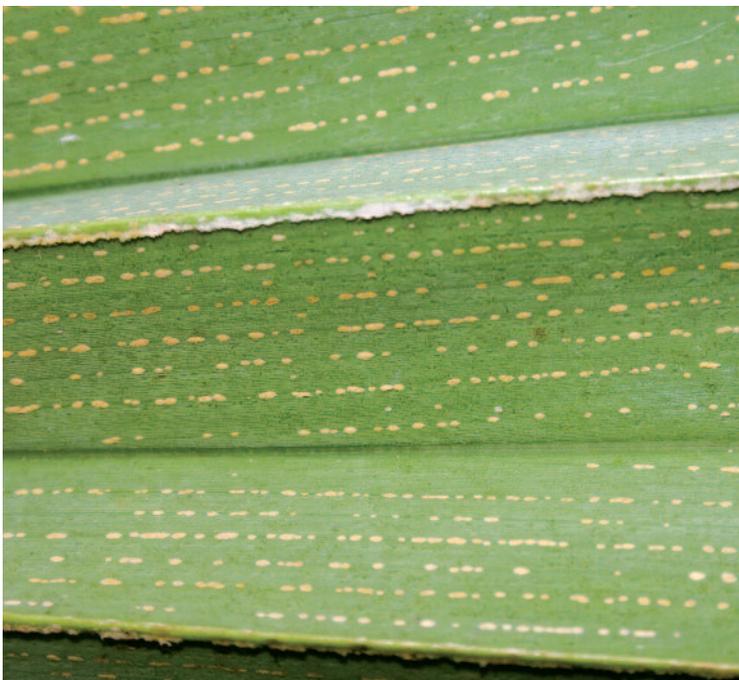
**Hillebrandii:** *P. glabrata*, *P. hillebrandii*, *P. kaalae*, *P. maideniana*, *P. remota*

**Lanigera:** *P. beccariana*, *P. lanigera*, *P. woodii*

**Martii:** *P. arecina*, *P. martii*

**Minor:** *P. flynnii*, *P. hardyi*, *P. minor*, *P. napaliensis*, *P. perlmannii*, *P. viscosa*

**Waialealeana:** *P. kahukuensis*, *P. waialealeana*



6. The arrangement of lepidia on the abaxial leaf blade in distinct, parallel lines is diagnostic for *Pritchardia thurstonii*.

### Key to the Species of *Pritchardia*

(All species in the key are Hawaiian except *Pritchardia mitiaroana*, *P. pacifica* and *P. thurstonii*, which occur in the South Pacific.)

**1a.** Trunk smooth, dark gray, slightly ventricose, emitting a distinct somewhat hollow, resonating, drum-like sound when sharply struck; panicles branched to 3 or 4 orders . . . . . *P. mitiaroana*

**1b.** Trunk not smooth, dark gray, ventricose, not emitting a hollow, resonating sound when sharply struck; panicles branched to 2 or 3 orders . . . . . 2

**2a.** Lepidia on abaxial leaf blade surface conspicuously arranged in distinct, parallel lines (Fig. 6) . . . . . *P. thurstonii*

**2b.** Lepidia on abaxial leaf blade surface randomly scattered, confluent (completely covering surface), or absent . . . . . 3

**3a.** Abaxial leaf blade surface covered completely or nearly so with lepidia, mostly obscuring blade surface and appearing white, gray, silvery or brownish . . . . . 4

**3b.** Abaxial leaf blade surface incompletely covered with lepidia or lepidia absent, appearing mostly green (Fig. 2) . . . . . 12

**4a.** Rachillae and flowers viscous (covered with a shiny, sticky, varnish-like substance) . . . . . *P. viscosa*

**4b.** Rachillae and flowers not viscous . . . . . 5

**5a.** Inflorescences equaling to exceeding leaf blades in flower, exceeding leaf blades in fruit . . . . . 6

**5b.** Inflorescences shorter than leaf blades in flower, shorter than or equaling leaf blades in fruit . . . . . 7

**6a.** Fruits to 16 mm wide; leaf blades flat . . . . . *P. hardyi*

**6b.** Fruits 30 mm wide or more; leaf blades slightly undulate . . . . . *P. martii*

**7a.** Fruits 30 mm wide or more . . . . . 8

**7b.** Fruits to 25 mm wide . . . . . 9

**8a.** Proximal margins of petioles with abundant fibers; rachillae with woolly indumentum . . . . . *P. arecina*

**8b.** Proximal margins of petioles with irregularly shaped, papery ligules or wings or only a few fibers; rachillae glabrous or with felt-like indumentum . . . . . *P. martii*

**9a.** Rachillae permanently clothed with thick, pinkish brown, woolly indumentum . . *P. minor*

**9b.** Rachillae glabrous or clothed with brownish, felt-like indumentum . . . . . 10

**10a.** Stem to 15 m tall; tips of leaf blade segments drooping . . . . . *P. kahukuensis*

**10b.** Stem to 5 m tall; tips of leaf blade segments stiff . . . . . 11

**11a.** Leaf blade moderately undulate; rachillae covered with short, dense, felt-like indumentum in flower . . . . . *P. flynnii*

**11b.** Leaf blade flat; rachillae glabrous in flower . . . . . *P. perlmanii*

**12a.** Inflorescences equaling or exceeding leaf blades in flower, exceeding leaf blades in fruit . . . . . *P. kaalae*

**12b.** Inflorescences shorter than leaf blades in flower, shorter than or equaling leaf blades in fruit . . . . . 13

**13a.** Inflorescences shorter than or exceeding petioles in flower, exceeding petioles or equaling leaf blades in fruit . . . . . 14

**13b.** Inflorescences shorter than or about equaling petioles in flower and fruit . . . . . 17

**14a.** Rachillae permanently clothed with hairs . . . . . 15

**14b.** Rachillae glabrous or clothed with deciduous hairs . . . . . 16

**15a.** Rachillae with thick, pinkish brown, woolly indumentum . . . . . *P. lanigera*

**15b.** Rachillae with dense, brownish, felt-like indumentum . . . . . *P. woodii*

**16a.** Tips of leaf blade segments stiff or drooping, bifid 1/2–3/4 their length; fruits longer than wide . . . . . *P. lowreyana*

**16b.** Tips of leaf blade segments pendulous, bifid for their entire length; fruits wider than long . . . . . *P. gordonii*

**17a.** Rachillae permanently clothed with thick, uniform, grayish indumentum . . . . . *P. munroi*

**17b.** Rachillae glabrous or clothed with scurfy, mostly deciduous indumentum . . . . . 18

**18a.** Fruits 30 mm wide or more . . . . . 19

**18b.** Fruits to 25 mm wide . . . . . 21

**19a.** Leaf blade segment tips stiff; proximal petiole margins with only a few to moderate fibers . . . . . *P. beccariana*

- 19b. Leaf blade segment tips drooping or pendulous; proximal petiole margins with abundant hair-like fibers . . . . . 20
- 20a. Leaf blade divided to less than 1/3; rachillae with scurfy hairs in flower . . . . *P. forbesiana*
- 20b. Leaf blade divided to more than 1/3; rachillae glabrous in flower . . . . . *P. schattaueri*
- 21a. Leaf blades flat . . . . . *P. napaliensis*
- 21b. Leaf blades undulate or strongly folded . . . . . 22
- 22a. Leaf blades conspicuously waxy glaucous, usually grayish green to nearly white . . . . . *P. hillebrandii*
- 22b. Leaf blades lacking any waxy glaucous covering, mostly green . . . . . 23
- 23a. Leaf blades diamond-shaped in outline from conspicuous lateral compression and folding (Fig. 7) . . . . . *P. maideniana*
- 23b. Leaf blades rounded, variously undulate . . . . . 24
- 24a. Leaf blade segment tips stiff; panicles branched to 2 orders . . . . . *P. pacifica*
- 24b. Leaf blade segment tips pendulous to drooping; panicles usually branched to 3 orders . . . . . 25

25a. Folds on abaxial surface at base of leaf blade lacking thick, cottony indumentum; fruits longer than wide . . . . . *P. waialealeana*

25b. Folds on abaxial surface at base of leaf blade clothed with thick, cottony indumentum; fruits more or less globose. . 26

26a. Leaf blade surface lightly waxy-glaucous; trunks typically 7–10 m tall . . . . . *P. remota*

26b. Leaf blade surface not waxy-glaucous; trunks typically 1–5 m tall . . . . . *P. glabrata*

***Pritchardia arecina*** Becc., Webbia 4: 224. 1913. *Styloma arecina* (Becc.) O. F. Cook, J. Wash. Acad. Sci. 5: 241. 1915. Type: Honomanu, Maui (E. Maui), Hawaii, *Rock 8821* (Holotype FI, isotypes BISH!, GH).

To 15 m tall, emergent (Fig. 8); proximal margins of petiole with moderate to abundant fibers; leaf blade slightly undulate to nearly flat, divided 1/4–1/3, abaxial surface completely covered with lepidia and appearing silvery grayish white to somewhat reddish brown, segment tips stiff; inflorescences composed of 1 or 2 panicles, equaling to exceeding petioles in flower, exceeding petioles or equaling leaf blades in fruit, panicles branched to 2 orders, rachillae permanently clothed with dense, felt-like to nearly woolly indumentum; fruits 45 × 38–40 mm, ellipsoid.

7. Leaf blades of *Pritchardia maideniana* are diamond-shaped in outline, the result of lateral compression and subsequent, accordion-like folding.





8. *Pritchardia arecina* emerges well above the canopy in very wet forest on the northeastern slope of Mt. Haleakala, East Maui, Hawaii.

Distribution: Wet forest on the north and northeastern slopes of Haleakala, East Maui, 450–1300 m elevation.

*Pritchardia arecina* is distinguished by its petioles with an abundance of fibers proximally, leaf blades completely covered abaxially with lepidia, and large fruits. It is similar to the highly variable *P. martii*, but the latter differs in its petioles with irregularly shaped, papery ligules or wings or only a few fibers proximally. It is also somewhat similar to *P. woodii*, which occurs not too far to the southwest in East Maui but in slightly drier areas; *P. woodii*, however, differs in its leaf blades incompletely covered abaxially with lepidia and petioles with only a few fibers proximally.

*Specimens Examined.* U.S.A. Hawaii. Maui (E. Maui): above Hana, *Forbes* 2692, 2693 (BISH);

Honomanu, *Forbes* 2592, 2593, 2594 (BISH), *Rock* 8821 (BISH); Kawaipapa, *Wood* 7980, 7989, 7990, 7991, 7997, 8000 (PTBG); Waikamoi, *Forbes* 2621 (BISH). CULT. U.S.A. Hawaii. Oahu: Foster Garden *ex* Nahiku, E. Maui, *Potter s. n.*, 27 Feb. 1958 (BISH).

***Pritchardia beccariana*** Rock, Bull. Torrey Bot. Club 43: 386. 1916. Type: Glenwood, Hawaii, Hawaii, *Rock* 10356 (Holotype BISH!, isotypes FI, GH).

*Pritchardia beccariana* var. *giffardiana* Becc., Mem. Bernice P. Bishop Mus. 8: 59. 1921. Type: Kalaiulehua, Oloa, Hawaii, Hawaii, *Rock* 12799 (Holotype FI, isotype BISH!).

To 20 m tall (Fig. 9); proximal margins of petiole with slight to moderate fibers; leaf blade nearly flat, divided 1/5–1/4, abaxial surface incompletely covered with scattered lepidia, segment tips stiff; inflorescences



9. *Pritchardia beccariana* is an imposing and handsome species in the Upper Waiakea Forest Reserve west of Hilo, Hawaii.

composed of 2–4 panicles, shorter than or equaling petioles in flower and fruit (infrequently slightly exceeding petioles in fruit), panicles branched to 3 orders, rachillae glabrous to clothed with scurfy indumentum in flower, glabrous in fruit; fruits 40 × 30–40 mm, globose to ellipsoid.

Distribution: Wet forest on the northeastern and eastern slope of Mauna Loa, Hawaii, 300–1300 m elevation.

*Pritchardia beccariana* is distinct in its large, flat, round, shallowly divided leaf blades incompletely covered abaxially with lepidia and with stiff segment tips, inflorescences shorter than or about equaling the petioles, and large fruits. It is similar to *P. gordonii* and *P. schattaueri*, both of which differ in their leaf blades with pendulous segment tips and petiole margins with an abundance of conspicuous fibers proximally.

*Specimens Examined.* U.S.A. Hawaii. Hawaii: Kulani Road (Stainback Highway), *Degener 21797* (BISH), *Henrickson 4133* (BISH), *Krajina 660702117* (HAW), *St. John 22370* (BISH); above Hilo, *Rock 3650, 3654* (BISH); Glenwood (29 mile marker above Hilo) *Degener 9716, 9717* (BISH), *Rock 10356* (BISH), *Rock s. n.*, Aug. 1915 (BISH); Upper Olaa Forest Reserve, Wright Road, *Hodel 146, 147* (PTBG); Kalaiulehua, *Rock 12799* (BISH), *Rock 12959* (BISH); S. of Saddle Road, 10 miles from Hilo, *Bishop 1833* (HAW). CULT. U.S.A. Hawaii. Oahu: Waimea Valley Audubon Center, *79p1071, Zona 1003* (HAW).

***Pritchardia flynnii*** Lorence & Gemmill, *Novon 14*: 185. 2004. Type: Kahili Ridge, Kauai, Hawaii, *Lorence 8451* (Holotype PTBG!, isotypes MO, US).

To 5 m tall: proximal margins of petiole with few fibers; leaf blade undulate, divided 1/4–1/2, abaxial surface completely covered with lepidia



10. *Pritchardia flynnii* clings to very steep slopes at the type locality along a ridge south of Mt. Kahili, Kauai, Hawaii.

or nearly so, appearing silvery grayish white, segment tips stiff; inflorescences composed of 1 panicle, shorter than or equaling petioles in flower, equaling petioles or equaling leaf blades in fruit, panicles branched to 2 or 3 orders, rachillae clothed with dense, felt-like indumentum in flower, glabrous or with felt-like hairs in fruit; fruits 25–35 × 18–23 mm, ellipsoid to ovoid.

Distribution: Wet forest on the eastern and southeastern slope of the Waialeale massif and Kahili ridge (Fig. 10), Kauai, 500–1000 m elevation.

*Pritchardia flynnii* is distinguished by its undulate leaf blades completely covered abaxially with lepidia, rachillae clothed with dense, felt-like indumentum, and small fruits. I interpret *P. flynnii* more narrowly than did Lorence and Gemmill in their original 2004 description. I refer collections from the Power Line Trail (formerly known as the Pole Line Trail) and the Makaleha Mountains to *P. perlmanii*, which differs in its flat leaf blade and glabrous rachillae, while they included these in *P. flynnii*.

*Specimens Examined.* U.S.A. Hawaii. Kauai: ridge S. from Mt. Kahili, *Chapin* 57 (PTBG), *Flynn*

9496 (PTBG), *Lorence* 8451 (PTBG); Wahiawa Stream and Mountains, *Flynn* 2932 (PTBG), *Lorence* 6655, 8385 (PTBG), *Wood* 237, 238, 239, 7466 (PTBG); between Waialeale and Kawaikini, “Blue Hole,” *Lorence* 5400, *Wood* 345 (PTBG).

***Pritchardia forbesiana*** Rock, Mem. Bernice P. Bishop Mus. 8: 52. 1921. Type: Honokohau, Mauna Eke, Maui (W. Maui), Hawaii, *Forbes* 472 (Holotype BISH!, isotype FI).

To 10 m tall; proximal margins of petiole with abundant fibers (Fig. 1); leaf blade undulate, divided 1/3, abaxial surface incompletely covered with scattered lepidia, segment tips stiff to drooping; inflorescences composed of 1–4 panicles, shorter than to equaling petioles in flower and fruit, panicles branched to 2 orders, rachillae glabrous to clothed with scurfy indumentum in flower, glabrous in fruit; fruits 40–45 × 32–35 mm, ellipsoid (Fig. 5).

Distribution: Wet forest on northeastern and eastern slopes and valleys of the Puu Kukui massif, West Maui and far eastern Molokai (Fig. 11), 300–1300 m elevation.

*Pritchardia forbesiana*, one of four Hawaiian species that is recorded from more than one



11. One of four Hawaiian species to occur on more than one island, *Pritchardia forbesiana* is found in nearly pasture-like conditions in far eastern Molokai (as shown here) but also ranges into West Maui.

island, is distinguished by its petiole margins with an abundance of conspicuous fibers proximally, leaf blades incompletely covered abaxially with lepidia and with drooping segment tips, inflorescences shorter than or equaling the petioles, and large fruits. On Molokai *P. forbesiana* occurs with or near *P. lowreyana* but the latter differs in its longer inflorescences that in fruit equal the leaf blade.

*Specimens Examined.* U.S.A. Hawaii. Maui (W. Maui): Honanana Stream, *Oppenheimer 50201* (BISH); just below Mt. Eke, *Degener 9711* (BISH), *Forbes 472* (BISH); beyond Haelaau Cabin on Puu Kukui Trail, *Annable 3815* (BISH), *Bishop 1137* (HAW); Poohahoahoa Stream, *Wagner 5842* (BISH); Kahakuloa, *Wood 3161* (PTBG); Waihee, *Wood 7409* (PTBG). CULT. U.S.A. Hawaii. Oahu: Waimea Valley Audubon Center, *85s422*, ex N. shore of Molokai, *Hodel 2013* (BISH), *79s567*, ex N. of Halawa Valley, Molokai, *Hodel 2014* (BISH).

***Pritchardia glabrata*** Becc. & Rock, Mem. Bernice P. Bishop Mus. 8: 42. 1921. Type: Iao Valley, Maui (W. Maui), Hawaii, *Rock 14077* (Holotype FI [photo!]).

*Pritchardia lanaiensis* Becc. & Rock, Mem. Bernice P. Bishop Mus. 8: 41. 1921. Type: Mauna Lei Gorge, Lanai, Hawaii, *Rock (ex Munro) 17242* (Holotype FI, isotype BISH!).

*Pritchardia elliptica* Rock & Caum, Occas. Pap. Bernice P. Bishop Mus. 9(5): 14. 1930. Type: Kunoa Valley, Lanai, Hawaii, *Munro s. n.*, 18 Oct. 1927 (Holotype BISH!).

To 5 m tall (Fig. 12); proximal margins of petiole with only a few fibers; leaf blade undulate, divided 1/2, abaxial surface incompletely covered with scattered lepidia, segment tips stiff to drooping; inflorescences composed of 1–3 panicles, shorter than or equaling petioles in flower and fruit, panicles

branched to 2 or 3 orders, rachillae glabrous; fruits 20–30 × 20–25 mm, globose to ellipsoid.

Distribution: Moist forest on Lanai and the southern and southeastern slopes and valleys of the Puu Kukui massif, West Maui, 300–900 m elevation.

I could find no reliable characters to separate *Pritchardia glabrata* from *P. elliptica* and *P. lanaiensis*; thus, with the inclusion of these in synonymy, *P. glabrata* is another of the four Hawaiian species that is recorded from more than one island.

*Pritchardia glabrata* is difficult to distinguish from *P. remota* and *P. waialealeana*. All three share the undulate leaf blades incompletely covered abaxially with lepidia and with drooping segment tips, inflorescences shorter than or equaling the petioles with panicles branched to three orders, glabrous rachillae, and small fruits. Both the latter species, however, differ in their generally larger habit. Also, *P. remota* differs in its slightly waxy glaucous leaf blades while *P. waialealeana* differs in the lack of cottony hairs or mealy indumentum on the abaxial folds of its leaf blades and the longer-than-wide fruits.

The holotype of *Pritchardia lanaiensis* at FI is unnumbered while the isotype at BISH has a Rock number, probably one that Rock added later to Munro's specimen. Rock not

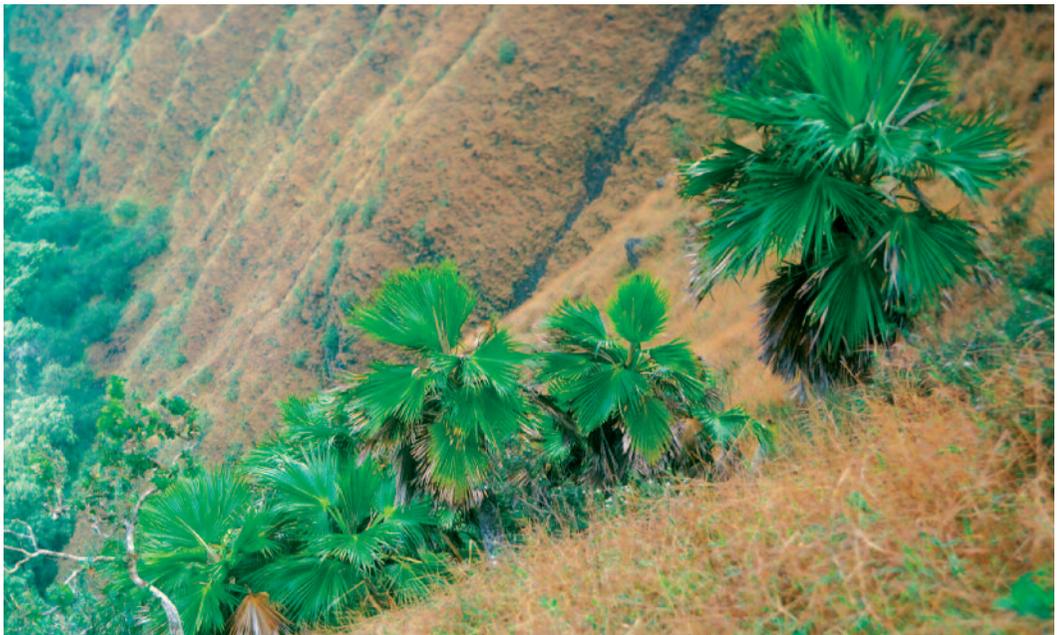
infrequently added his or some other number (perhaps a number from a herbarium numbering system) to other collectors' material.

*Specimens Examined.* U.S.A. Hawaii. Maui (W. Maui): Iao Valley, *Flynn 2699* (PTBG), *Perlman 12969* (PTBG), *Rock 12801* (BISH), *14077* (FI), *Wood 256, 257, 7586* (PTBG); upper Waikapu, *Wood 7579* (PTBG). Lanai: Haua Gulch, Palea Ridge, *Perlman 16386* (PTBG), *Wood 7526* (PTBG); Kunoa Valley, *Munro s. n.* 18 October 1927 (BISH), *Munro 221, 350* (BISH), *Perlman 16388, 16392, 16394* (PTBG), *Wood 7517* (PTBG); Kunoa Ridge, *Wood 7530* (PTBG); Mauna Lei Gorge, *Hobdy 208* (BISH), *Munro s. n.*, March 1918, *56* (BISH), *Rock 17242* (BISH); 3<sup>rd</sup> valley east of Kaiholena, *Munro 202* (BISH); Waialala, *Perlman 12938, 16382, 16384, 16385* (PTBG); mountain at east end of island, *Munro 245* (BISH). CULT. U.S.A. Hawaii. Maui: Kahanu Garden, Hana, *Flynn 5797* (PTBG), *Lorence 7668* (PTBG). Oahu: Waimea Valley Audubon Center, *88s168, Zona 1004* (HAW).

***Pritchardia gordonii*** Hodel sp. nov., Frontispiece and Figs. 13–15.

*P. schattaueri* affinis sed inflorescentiis quam petiolis longioribus et fructibus latioribus quam longioribus differt. Typus: U.S.A. Hawaii. Honopue Gulch, Kohala Forest Reserve, Hawaii, *Hodel et al. 2010* (Holotypus BISH).

12. *Pritchardia glabrata* occurs on Lanai, Hawaii (where it was formerly known as *P. lanaiensis*), as here on the dry, nearly vertical sides of Hookio Gulch in January 1980.



Trunk to 20 m tall (Fig. 13), 25 cm diam., longitudinally grooved, faintly ringed, internodes 7.5–10 cm. Leaves 25–30, erect to spreading; leaf bases to 50 cm long, 23 cm wide proximally, tapering to 7.5 cm wide distally; petioles 75–125 cm long, 7.5 cm wide at base, 3.5–4 cm wide and 1.2 cm thick at blade, convex adaxially, rounded abaxially, margins sharp and proximally with moderate to abundant, tan fibers, densely covered abaxially with whitish, mealy indumentum; hastula semicircular, 1.2 cm high, blade 1 × 1.5 m, costapalmate for ca. 23 cm, deeply divided into ca. 70 segments, middle-lateral ones the largest, to 92 × 5 cm, free apical portion to 46 cm long, these bifid for 41 cm, tips pendulous, long-acuminate, glossy light green adaxially, light green and sparsely dotted with minute scales abaxially, whitish indumentum on petiole extending onto segment folds abaxially, most proximal segments 46 × 0.5–1 cm, ribbon-like, pendulous. Inflorescences 6–10, interfoliar, to 1.2 m long, arching (Fig. 14), slightly shorter than or equaling petioles in flower, equaling or exceeding petioles but shorter than leaf



blades in fruit, composed of up to 3 long axes each terminating in a panicle, peduncles arising from a common base and sheathed by a common prophyll, middle axis the longest, to 1 m long, each axis rounded, 1.6 cm diam.; prophyll to 30 cm long, 2-keeled, 5–7 cm wide and 1 cm thick, 1st peduncular bract attached 6 or 7 cm distal of prophyll attachment, to 45 cm long and sheathing the bases of the 3 axes, up to 7 additional peduncular bracts per axis, brown, papery, moderately covered abaxially where protected with scales to 3 mm long, proximal bracts lanceolate, acute, ± tightly sheathing, distal bracts broadly lanceolate, inflated, loosely sheathing, most distal bract the smallest, to 12.5 cm long and equaling second most distal bract, both extending on to and covering ca. 1/2 of panicle; panicles branched to 2 orders, rachis to 13 cm long, proximal branches with sub-peduncle 2.5–3.5 cm long, sub-rachis 2.5 cm long and with up to 4 rachillae each, distal branches simple rachillae; rachillae to 13 cm long, 2 or 3 mm diam., terete, strongly flexuose, all parts of panicle glabrous, bracts subtending rachillae and panicle branches 5 × 0.8 mm. Flowers 5–8 mm apart; in bud 10 × 5 mm, at anthesis 12 × 12 mm, yellowish green; calyx 7.5 × 7.5 mm, coriaceous, sepals imbricate at the apex, mucronate; corolla tubular, greatly exceeding calyx, lobes 8 × 3 mm, lanceolate, acute, light green, prominently nerved adaxially, faintly nerved abaxially; staminal tube exerted 2 mm above calyx, stamens spreading, borne on filaments 1.5 mm long, anthers 3–4 mm long, oblong, dorsifixed near base; pistil 7 × 3 mm, spindle-shaped, ovary 3 × 3 mm, style 4 mm long, exerted 5 mm above staminal ring, columnar, tapered apically, bottom of pistil seated 3 mm above bottom of calyx. Fruits 50 × 60 mm, oblate (Fig. 15), dark brown to black; mesocarp 13 mm thick; seeds 32 × 32 mm.

Distribution: Moist to wet forest on very steep slopes, Kohala Mountains, Hawaii, 400–500 m elevation.

*Pritchardia gordonii* is known from only about 23 mature palms in two populations about 100 meters apart. The more southerly population consists of about eight mature palms and several juveniles and seedlings while the northerly population includes about 15 mature

13. Leaf blades of *Pritchardia gordonii* are glossy light green, deeply divided, and with pendulous segment tips (Hodel 2010, holotype).

14. The arching inflorescences of *Pritchardia gordonii* are slightly shorter than or equaling the petioles in flower (Hodel 2010, holotype).



15. Fruits of *Pritchardia gordonii*, among the largest in the genus, are wider than long (Hodel 2010, holotype).



palms. Associated genera include *Metrosideros*, *Perrottetia*, *Tetraplasandra*, *Urea* and *Xylosma*.

Threats to the survival of *Pritchardia gordonii* include rats and invasive, exotic weeds such as strawberry guava (*Psidium cattleianum*), Indian fleabane (*Pluchea indica*) and assorted grasses. The conservation status of *P. gordonii* is probably best considered endangered because of the small number of mature palms and the threats to their survival. It is apparently cultivated in Wahiawa Botanical Garden (HBG 73.0074) of the Honolulu Botanic Gardens system on Oahu from the late Earl Bishop's 1973 collection.

*Pritchardia gordonii* is very similar to *P. schattaueri* from South Kona, near the opposite end of the island of Hawaii. They share the very tall habit, leaf blades incompletely covered abaxially with lepidia and with pendulous segment tips, glabrous rachillae,

and large fruits. *Pritchardia schattaueri* differs, however, in its leaf blades with broader and less deeply bifid segment tips (resulting in the tips appearing less dramatically pendulous), inflorescences shorter than or about equaling the petioles, and longer-than-wide fruits.

The name honors Rick Gordon, co-collector of the type, who for 40 years has been the ditch man for the Kohala Ditch Company and later the Surety Kohala Corporation that supplied water to sugar cane and other consumers in the Kohala area of Hawaii. More recently Rick has also been responsible for trail and cabin maintenance in the Kohala Forest Reserve for the State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife. Since the late 1960s, Rick has been aware of these palms, developed a special fondness for their conservation and protection and brought them to the attention of others.

*Specimens Examined.* U.S.A. Hawaii. Hawaii: Kohala Forest Reserve, ca. 100 m down steep, east-facing slope of Honopue Gulch, 19 July 2006, *D. R. Hodel 2010* (with R. Gordon, J. Marcus & K. Morris) (BISH); *Bishop 1831* (HAW).

***Pritchardia hardyi*** Rock, Mem. Bernice P. Bishop Mus. 8: 61. 1921. Type: Power Line Trail, Kauai, Hawaii, *Rock 17296* (Holotype BISH!, isotypes FI, GH).

*Pritchardia weissichiana* Rock, Occas. Pap. Bernice P. Bishop Mus. 23: 62. 1962. Type: Power Line Trail, Kauai, Hawaii, *Rock s. n.*, 19 Jan. 1962 (Holotype BISH!).

To 10 m tall; proximal margins of petiole with only a few fibers; leaf blade flat, divided 1/2, abaxial surface completely covered with lepidia and appearing silvery grayish white, segment tips stiff; inflorescences composed of 2–5 panicles, equaling or exceeding leaf blades in flower (Fig. 16), greatly exceeding leaf blades in fruit, panicles branched to 2 or 3 orders, rachillae clothed with dense, felt-like indumentum or glabrous; fruits 20–35 × 15–16 mm, ellipsoid to obovoid.



Distribution: Wet forest below the Waialeale massif near and along the Power Line Trail in east central Kauai, 500–750 m elevation.

*Pritchardia hardyi* is distinctive in its leaf blades completely covered abaxially with lepidia, inflorescences equaling to exceeding the leaf blades in flowers and exceeding them in fruit, and small fruits. It is similar to *P. viscosa* but the latter differs in its viscous panicles and inflorescences shorter than the petioles. The photograph of *P. hardyi* in Beccari and Rock (1921, Pl. XIII A) actually depicts *P. waialealeana*.

*Specimens Examined.* U.S.A. Hawaii. Kauai: Power Line Trail, *Bishop 1280* (HAW), *Herbst 2851* (HAW), *Read 87-206, 87-207, 87-208, 87-210* (PTBG), *Rock 17296* (BISH), *Rock s. n.* 19 Jan. 1962 (BISH), *Wood 229, 230, 231* (PTBG); ridge between Kahili and Kawaikini, *Wood 3509* (PTBG); Kahili, *Bishop 1275* (HAW); Ioli headwaters, *Wood 7963, 7966, 7966-A* (PTBG). CULT. U.S.A. Hawaii. Oahu: Wahiawa Botanical Garden, *HBG 67.492, Wiser 87-28* (PTBG).

***Pritchardia hillebrandii*** Becc., Malesia 3: 292. 1889 (1890). *Washingtonia hillebrandii* (Becc.) Kuntze, Revis. Gen. Pl. 2: 737. 1891. *Eupritchardii hillebrandii* (Becc.) Kuntze, Revis. Gen. Pl. 3(2): 323. 1898. *Styloma hillebrandii* (Becc.) O. F. Cook, J. Wash. Acad. Sci. 5: 241. 1915. Type: Cult., Honolulu, Oahu (?) or Molokai (?), Hawaii, *Hillebrand s. n.* or 467 (Holotype B [destroyed, photo at FI!], isotypes K, FI [fragments!]).

*Pritchardia insignis* Becc., Webbia 4: 219. 1913. *Styloma insignis* (Becc.) O. F. Cook, J. Wash. Acad. Sci. 5: 241. 1915. Type: Cult. Botanic Garden, Demerara, Georgetown, Guyana, *Anonymous 7970* and *8800* (Syntypes B [destroyed?], isosyntypes FI [photos!], K).

To 8 m tall; proximal margins of petiole with only a few fibers; leaf blade strongly undulate and often of a rather coarse appearance, divided 2/5–1/2, conspicuously waxy-glaucous (Fig. 17), grayish green, rarely to nearly white

16 The flat, stiff leaf blades completely covered abaxially with lepidia and appearing silvery grayish white and inflorescences equaling to greatly exceeding the leaves characterize *Pritchardia hardyi* (near Summit Camp, Power Line Trail, Kauai, Hawaii, October 1975).

or plain green, abaxial surface more or less devoid of lepidia, segment tips stiff to drooping; inflorescences composed of 1–5 panicles, shorter than or equaling petioles in flower and fruit, panicles branched to 3 orders, rachillae glabrous; fruits 15–22 × 14–19 mm, globose, often keeled or ridged.

Distribution: Now restricted to the tops of the stack-like, rocky islets of Huelo and Mokapa off the north coast of Molokai, 75–100 m elevation (Front Cover). As recently as the 1970s, a few plants of *Pritchardia hillebrandii* were also on the valley floors and at the base of the immense coastal sea cliffs along the north coast of Molokai although these may have been cultivated because they were near or at sites of human activity. Nonetheless, they are gone today, rats and goats likely having driven them to extinction (S. Perlman and K. Wood, pers. comm.).

*Pritchardia hillebrandii* is distinctive in its conspicuously waxy glaucous leaf blades more or less devoid of lepidia, inflorescences shorter than or equaling the petioles, and small fruits. Leaf blades can be so heavily glaucous that

they appear nearly white (Fig. 18). It is similar to *P. maideniana* but the latter differs in its diamond-shaped (in outline) leaf blades (the result of strong and conspicuous folding) that mostly lack the glaucous covering.

It is unclear whether Hillebrand's type material originated from cultivated plants in Honolulu or from wild or cultivated plants on Molokai. Beccari (1890) noted that much confusion surrounded the provenance and labels on Hillebrand's specimens at B, although there is a loose note in the photograph at FI of the type at B with the name Molokai handwritten on it. It is also unclear whether the numbers identifying the syntypes of *P. insignis* (7970 and 8800) were applied by the Botanic Garden in Guyana or its herbarium or by the Berlin Herbarium.

*Specimens Examined.* U.S.A. Hawaii. Molokai: Mokapa Islet, Wood 8299 (PTBG); Huelo Islet, Wood 3838, 8028 (PTBG). CULT. U.S.A. Hawaii. Oahu: Honolulu, Rock 12002, 12005, 12007, 12013, 12014 (BISH); University of Hawaii, *Krajina* 6277 (BISH); Waimea Valley Audubon Center, 75p2294, Zona 1006 (HAW). Oahu or

17. Leaf blades of *Pritchardia hillebrandii*, often of a rather coarse appearance, are typically waxy-glaucous and grayish green (cultivated, Molokai, Hawaii).





Molokai: *Hillebrand s. n.* (FI); *Rock 17345* (BISH); Kamalo, *Rock s. n.*, Feb. 1920 (BISH). Kauai: Hanapepe, *Wood 210* (BISH). Guyana: Georgetown, Demerara, Botanic Garden, *Anonymous 7970* and *8800* (FI).

***Pritchardia kaalae*** Rock, Mem. Bernice P. Bishop Mus. 8: 46. 1921. Type: Makaleha Valley, Waianae Mountains, Oahu, Hawaii, *Rock 17250* (Holotype BISH!, isotypes FI, GH).

*Pritchardia kaalae* var. *minima* Caum, Occas. Pap. Bernice P. Bishop Mus. 9(5): 13. 1930. Type: Makua-Makaha Ridge, Waianae Mountains, Oahu, Hawaii, *Landgraf 25* (Holotype BISH!).

To 10 m tall; proximal margins of petiole with only a few fibers; leaf blade slightly undulate, divided 1/3–1/2, abaxial surface incompletely covered with scattered lepidia, segment tips stiff to drooping; inflorescences composed of 1–3 panicles, equaling to exceeding leaf blades in flower, exceeding leaf blades in fruit (Fig. 19), panicles branched to 2 orders, rachillae glabrous; fruits 25 × 25 mm, globose.

Distribution: Moist forest in valleys or on exposed ridges in the northern and northwestern Waianae Mountains, Oahu, 450–980 m elevation.

18. In a few instances leaf blades of *Pritchardia hillebrandii* are so heavily waxy glaucous that they appear nearly white, as on this famous cultivated plant at Hoomaluhia Botanical Garden, Oahu, Hawaii.

Among the Hawaiian species, *Pritchardia kaalae* is distinctive in its leaf blades incompletely covered abaxially with lepidia and inflorescences equaling or exceeding the leaf blades in flower and exceeding them in fruit. The other Hawaiian species with exceedingly long inflorescences, *P. hardyi* and some forms of *P. martii*, differ in their leaf blades completely covered abaxially with lepidia. *Pritchardia thurstonii*, a South Pacific species, has leaf blades incompletely covered abaxially with lepidia and inflorescences exceeding the leaf blades; however, it differs in its flat leaf blades only shallowly divided and with stiff segment tips, lepidia conspicuously arranged in parallel lines, and smaller fruits.

*Specimens Examined.* U.S.A. Hawaii. Oahu: *Rock s. n.* (BISH); Waianae Mts., Makaleha Valley, *Bishop 1211* (HAW), *Rock 17250* (BISH); Makua-Keau forest Reserve, *Wood 300* (PTBG); Puu Kalena, *Wood 1566* (PTBG); Makua-Makaha Ridge (Ohikilolo), *Bishop 1200* (HAW); *Landgraf 25* (BISH). CULT. U.S.A. Hawaii. Oahu: Waimea Valley Audubon Center, *90s264*, *Zona 1008* (HAW). Kauai: National Tropical Botanical Garden, *NTBG 950531.001*, *Chapin 16* (PTBG); *Pacheco 1* (PTBG).

***Pritchardia kahukuensis*** Caum, Occas. Pap. Bernice P. Bishop Mus. 9(5): 13. 1930. Type: Pupukeya-Malaekahana Trail, Kahuku, Oahu, Hawaii, *Caum 154* (Holotype BISH!).

To 15(–25) m tall (Fig. 20); proximal margins of petiole with few, coarse, tan, papery, fibers or ligules; leaf blade slightly undulate, divided 1/3–1/2, adaxial surface glossy green, abaxial surface completely but thinly covered with lepidia and appearing grayish, segment tips drooping; inflorescences composed of one panicle, erect and slightly shorter than leaf blades in flower, arching and about equaling or slightly exceeding leaf blades in fruit, panicle branched to 2(3) orders, rachillae permanently clothed with short, dense reddish brown hairs; fruits 15 × 11 mm, ellipsoid to ovoid.

Distribution: Wet forest at the northwestern end of the Koolau Mountains, Oahu, 500–550 m elevation.

19. On the drier, exposed Ohikilolo Ridge in the Waianae Mountains, Oahu, Hawaii, *Pritchardia kaalae* is a small plant with infructescences greatly exceeding the compact crown of leaves.



Long included as a synonym of *Pritchardia martii* (Read & Hodel 1999), this unusual species with large, tall trunks and full, heavy crowns of leaves occurs sparingly as widely scattered individuals on steep slopes and ridge tops at the very northwest end of the Koolau range on Oahu. It grows with or close to forms of *P. martii* with inflorescences greatly exceeding the leaf blades in fruit, which at times in the past had been erroneously referred to *P. kahukuensis*. *Pritchardia martii* differs, however, in its leaf blades with stiff segment tips, generally hemispherical crowns of leaves, and, in this region, inflorescences greatly exceeding the leaf blades in fruit.

With its full, spherical crown of leaves with drooping segment tips, *Pritchardia kahukuensis* is similar in habit to *P. waialealeana*, *P.*

*schattaueri* and *P. gordonii*, all three of which differ in their leaf blades incompletely covered abaxially with lepidia. The paucity of collections of *P. kahukuensis* may be more apparent than real because characters for distinguishing it from *P. martii* are not readily apparent in the herbarium.

Although Caum originally described the fruits of *Pritchardia kahukuensis* as "15 mm long, 11 mm in diameter," and there are fruits of this size in the type collection, additional fruits in the type collection are much larger, to 45 × 35 mm. However, Leland Miyano and I visited the type locality and, while we were unable to find mature fruits on the tree, we observed rat-eaten, apparently full-sized fruits under several trees that were the size that Caum noted in his original description. The much larger fruits in



20. Restricted to the northwest end of the Koolau Range on Oahu, Hawaii, *Pritchardia kahukuensis* is characterized by its tall trunks, the large, full, spherical crowns of leaves with drooping segment tips, infructescences about equaling the leaf blades, and small fruits (Hodel 2018).

the type collection were likely placed there in error and probably represent *P. martii*.

*Specimens Examined.* U.S.A. Hawaii. Oahu: Koolau Mts., Malaekahana opposite Kahuku, *Brash s. n.*, 1 April 1962 (BISH); Pupukea, *Hodel 2017, 2018* (BISH), *Stone 2824* (BISH); Pupukea-Malaekahana Trail, Kahuku, *Caum 154* (BISH).

***Pritchardia lanigera*** Becc., *Malesia* 3: 298. 1889 (1890). *Washingtonia lanigera* (Becc.) Kuntze, *Revis. Gen. Pl.* 2: 737. 1891. *Eupritchardia lanigera* (Becc.) Kuntze, *Revis. Gen. Pl.* 3(2): 323. 1898. *Styloma lanigera* (Becc.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Kohala Mountains, Hawaii, Hawaii, *Lydgate s. n.* (Holotype B [destroyed, photo at FI!], isotype FI [photo of fragment!]).

*Pritchardia eriostachya* Becc., *Webbia* 4: 232. 1913. *Styloma eriostachya* (Becc.) O. F.

Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Naalehu, Hawaii, Hawaii, *Rock 10004* (Holotype FI, isotypes BISH!, GH).

*Pritchardia montis-kea* Rock, *Mem. Bernice P. Bishop Mus.* 8: 65. 1921. Type: Mana, Hawaii, Hawaii, *Rock 17348* (Holotype BISH!, isotype GH).

To 15 m tall (Fig 21); proximal margins of petiole with moderate fibers; leaf blade slightly undulate to nearly flat, divided 2/5–1/2, abaxial surface incompletely covered with scattered lepidia, segment tips stiff; inflorescences composed of 1–3 panicles, equaling or exceeding petioles in flower, exceeding petioles but shorter than leaf blades in fruit, panicles branched to 2 orders, rachillae permanently clothed with dense, reddish brown, cottony or woolly indumentum (Fig. 22); fruits 35–55 × 30–40 mm, globose to ellipsoid.

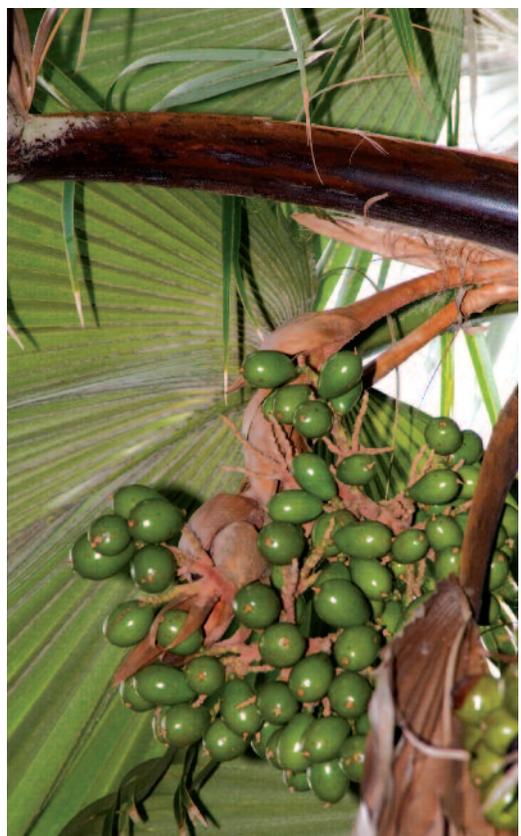
Distribution: Wet forest in the Kohala Mountains, northern and eastern slopes of Mauna Kea, and on the southeastern slope of Mauna Loa, Hawaii, 500–1400 m elevation.

*Pritchardia lanigera* is distinguished by its leaf blades incompletely covered abaxially with lepidia, inflorescences equaling or exceeding the petioles in flower and exceeding the petioles but shorter than the leaf blades in fruit, and the rachillae permanently clothed in cottony to woolly indumentum. It is similar to *P. woodii* but the latter differs in its rachillae clothed with felt-like rather than cottony or woolly indumentum.

Although Beccari (1890) and Beccari and Rock (1921) stated that Lydgate collected the type, photographs at FI of the destroyed holotype at B show it to have only Hillebrand's name on it. Lydgate frequently collected for or with Hillebrand, though, and it is likely that Hillebrand, who sent his original set of specimens to B, would have put his own name on specimens even if Lydgate had collected them.

*Specimens Examined.* U.S.A. Hawaii. Hawaii. Kohala Mountains: *Hillebrand s. n.* (BISH); *Lydgate s. n.* (FI); above Awini, *Rock 8820* (BISH); above Waimea, *Rock 17349* (BISH); between Waimanu and Kawainui, *Wood 4651* (BISH, PTBG); Waimanu, *Perlman 16406* (PTBG), *Wood 7611* (PTBG). Mauna Kea: below Mana, *Rock 17348* (BISH). Kau: above Naalehu, *Hodel 154* (PTBG), *Rock s. n.*, January 1912, *Rock s. n.*, March 1918 (BISH), *Rock 10004* (BISH). CULT. U.S.A. Hawaii. Oahu: Waimea Valley Audubon Center, *76s85, Zona 1002* (HAW).

***Pritchardia lowreyana*** Rock, Mem. Bernice P. Bishop Mus. 8: 53. 1921. Type: Waialeia cliffs, Molokai, Hawaii, *Rock s. n.*, June 1918 (Holotype BISH!, isotype FI).



21. A medium-sized palm, *Pritchardia lanigera* is restricted to wet forest on the island of Hawaii, as here above Naalehu in the Kau Forest Reserve on the southeastern slope of the active volcano, Mauna Loa.

22. Rachillae of *Pritchardia lanigera* are permanently clothed with dense, reddish brown, cottony or woolly indumentum (Kau Forest Reserve, Hawaii).

*Pritchardia brevicalyx* Becc. & Rock, Mem. Bernice P. Bishop Mus. 8: 56. 1921. Type: Wailau Valley, Molokai, *Rock 16000* (Holotype FI, isotype BISH!).

*Pritchardia lowreyana* var. *turbinata* Rock ex Becc., Mem. Bernice P. Bishop Mus. 8: 55. 1921. Type: Waialeia Ridge, Molokai, Hawaii, *Rock 17344* (Holotype BISH!, isotype GH).

*Pritchardia donata* Caum, Occas. Pap. Bernice P. Bishop Mus. 9(5): 12. 1930. Type: Cult., Honolulu, Oahu, Hawaii, *Caum 152* [Lectotype BISH!, designated by St. John (1984)].

To 10 m tall; proximal margins of petiole with moderate fibers; leaf blade slightly undulate, divided 2/5–1/2, abaxial surface incompletely covered with scattered lepidia, segment tips drooping to occasionally stiff; inflorescences composed of 1–3 panicles, equaling or exceeding petioles in flower, exceeding petioles or equaling leaf blades in fruit (Fig. 23), panicles branched to 2 or 3 orders, rachillae glabrous to clothed with scurfy indumentum in flower, glabrous in fruit or rarely with scurfy indumentum; fruits 35–60 × 30–45 mm, globose to ovoid.

Distribution: Wet to moist forests in valleys and on exposed slopes and sea cliffs, eastern Molokai, 250–1000 m elevation.

*Pritchardia lowreyana* is distinctive in its leaf blades incompletely covered abaxially with lepidia, inflorescences equaling to exceeding petioles in flower and exceeding petioles to equaling leaf blades in fruit, glabrous rachillae, and large fruits. On Molokai it occurs with or near *P. forbesiana*, but the latter differs in its petioles with a greater abundance of fibers proximally and inflorescences shorter than or equal to the petioles. One anomalous collection, *Rock 17346* from Waiakapua Valley, Molokai, is rather striking in its fruiting rachillae densely clothed with scurfy indumentum.

This well-documented species from Molokai has frequently been identified as or confused with *Pritchardia gaudichaudii* and *P. macrocarpa* (see the account of the former under *P. martii* and the latter in the section on dubious or insufficiently known species for an explanation). In Beccari and Rock (1921), photographs of *P. lowreyana* are erroneously captioned as *P. gaudichaudii* (Pl. VIII A, B) and as *P. macrocarpa* (Pl. XII A, B).

23. Inflorescences of *Pritchardia lowreyana* typically equal the leaf blades in fruit, as here in the nearly ever-present mist and clouds at the type locality (steep slopes, back of Waialeia Valley, Molokai, Hawaii).



24. *Pritchardia maideniana* typically has a skirt of dead, persistent leaves and is found around brackish water pools or seepage in dry areas, as here at Milolii, South Kona, Hawaii.



*Pritchardia lowreyana* has long been cultivated in Honolulu, the most famous plant being the tree at Hillebrand's former residence, now Foster Botanical Garden of the Honolulu Botanical Gardens system, and has official designation as an Exceptional Tree of Hawaii (Belknap 1982).

The holotype of *Pritchardia lowreyana* at BISH is unnumbered while the isotype at FI is numbered *Rock 14075*. St. John (1984, p. 479) selected one of the syntypes of *P. donata* (*Caum 152*) as the lectotype for this binomial.

*Specimens Examined*. U.S.A. Hawaii. Molokai: Kahanui Ridge, *Bishop 1684, 1685* (HAW);

Waialeia, *Rock s. n.*, March 1918 (BISH), *Rock s. n.* June 1918 (BISH), *Rock 17344* (BISH); Waiakapua Valley, *Rock 17346* (BISH); Wailau, *Degener 9713* (BISH), *Forbes 542* (BISH), *Fosberg 9673* (BISH), *Rock 16000* (BISH), *St. John 23337, 23522* (BISH); Kapailoa, above Haupu Bay, *Wood 9233* (PTBG). CULT. U.S.A. Hawaii. Molokai: Meyer Residence at Kalae, *Rock 17340* (BISH). Lanai: beginning of trail to Haalelepaakai Summit, *Wood 7516* (PTBG). Oahu: Honolulu, *Caum 152* (BISH), *Caum 153* (BISH); Wahiawa Botanical Garden, *Annable 3637* (BISH); Mary Foster's Garden (Foster Garden, *HBG 71.500*), *Bishop 1673* (HAW), *Rock 12800, 12817* (BISH), *Sinego s. n.*, 25 Sept. 1995



25. The most variable species in the genus, *Pritchardia martii* has inflorescences ranging from shorter than the petioles in flower and fruit to exceeding the petioles or leaf blades in flower and greatly exceeding leaf blades in fruit, as here in the Kahuku Forest Reserve, Koolau Range, Oahu, Hawaii (Hodel 2019).

(BISH); Bishop Museum, *Bishop s. n.*, 31 March 1971 (BISH). Kauai: National Tropical Botanical Garden, *NTBG 890138.005*, *ex* ridges above Wailau, *Chapin 65* (PTBG), *O'Rourke 5* (PTBG), *Tangalin 1* (PTBG).

***Pritchardia maideniana*** Becc., *Webbia* 4: 213. 1913. *Styloma maideniana* (Becc.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Cult. Royal Botanic Gardens, Sydney, Australia, *Boorman s. n.* (dated 1912) (Lectotype [here selected] FI [photo!]).

*Pritchardia affinis* Becc., *Mem. Bernice P. Bishop Mus.* 8: 37. 1921. Type: Kealia, S. Kona, Hawaii, Hawaii, *Rock 12796* (Holotype FI, isotype BISH!).

*Pritchardia affinis* var. *gracilis* Becc., *Mem. Bernice P. Bishop Mus.* 8: 40. 1921. Type: Kiholo Bay, N. Kona, Hawaii, Hawaii, *Rock 12797* (Holotype FI, isotype BISH!).

*Pritchardia affinis* var. *halophila* Becc., *Mem. Bernice P. Bishop Mus.* 8: 39. 1921. Type: Kalapana, Puna, Hawaii, Hawaii, *Rock 12795* (Holotype FI, isotype BISH!).

*Pritchardia affinis* var. *rhopalocarpa* Becc., *Mem. Bernice P. Bishop Mus.* 8: 40. 1921.

Type: Napoopoo, Kealakekua Bay, S. Kona, Hawaii, Hawaii, *Rock 12779* (Holotype FI, isotype BISH!).

To 10 m tall; dead, persistent leaves often forming a skirt (Fig. 24), proximal margins of petiole with a few to moderate hair-like fibers; leaf blade diamond-shaped in outline and strongly folded from lateral compression (Fig. 7), divided 1/2, slightly waxy-glaucous, abaxial surface incompletely covered with scattered lepidia, segment tips mostly stiff, occasionally drooping; inflorescences composed of 1–5 panicles, shorter than to equaling petioles in flower and fruit, panicles branched to 2 orders, rachillae glabrous; fruits 12–23 × 12–23 mm, globose.

Distribution: Grouped around brackish water ponds near sea level to scattered or grouped in dry to moist forest, Kona, Kau, and Puna, Hawaii, to 700 m elevation. The range of *Pritchardia maideniana* encompasses an area with a long history of intense human activity; thus, it is difficult to determine which individuals or populations, if any, are truly wild and which are remnants of cultivated plants.

Beccari (1913) based *Pritchardia maideniana* on two unnumbered collections that J. Boorman had made from one or two cultivated plants, purportedly of Hawaiian origin, in the Royal Botanic Gardens, Sydney, Australia, and that J. Maiden had forwarded to Beccari in 1911 and 1912 (one is dated 1911 and the other is dated 1912). Because it is more complete, I have selected Boorman's 1912 collection at FI as the lectotype.

I have examined photographs of the types at FI, the (or one of the) original living plant(s) growing in the Royal Botanic Gardens in Sydney from which the types were collected, and living plants in Hawaii grown from seeds from the Australian plant, and I can find no differences between *Pritchardia maideniana* and *Pritchardia affinis*. The latter is synonymized here.

*Pritchardia maideniana* is distinguished by its cuneate (diamond-shaped in outline) leaf blades (the result of conspicuous lateral folding, somewhat like that of an accordion) incompletely covered abaxially with lepidia, and inflorescences shorter than or equaling petioles in flower and fruit. It is similar to *P. hillebrandii*, but the latter differs in the rounder leaf blades with a distinctive and conspicuous glaucous covering.

*Specimens Examined.* U.S.A. Hawaii. Hawaii. N. Kona: S. of Aanaehoomalu at Kaloapoa, *Hodel 125* (PTBG); Kiholo Bay, *Hodel 126, 127* (PTBG), *Rock 12797* (BISH). S. Kona: S. of Kailua-Kona, *Degener 9723* (BISH); Kaohe, *Rock 17347* (BISH); Kealakekua Bay, *Rock 12780, 12798* (BISH), Napoopoo, *Rock 12779* (BISH); Kealia, *Rock 12796* (BISH); Hookena, *Wood 8913* (PTBG); Milolii, *Hodel 165, 166* (PTBG). Kau: Punaluu, *Hodel 145, 167, 172* (PTBG), *Wood 8912* (PTBG). Puna: Kalapana, *Rock 12795* (BISH). CULT. Australia. New South Wales: Royal Botanic Gardens, Sydney, *Boorman s. n.*, 1912 (FI), *Boorman s. n.*, 1911 (FI). USA. Hawaii: Kamoia State Historical Park, Holualoa, *Corn s. n.*, 6 Sept. 1985 (BISH). Oahu: Honolulu, *Rock 12000, 12001, 12003, 12006* (BISH); Bishop Museum, *Imada 2001-47* (BISH); Foster Garden, *Anonymous s. n.*, 17 Aug. 1962 (BISH); University of Hawaii, *Krajina 620210230* (BISH); Waimea Valley Audubon Center, *76s1088, Zona 1000* (HAW), *88s140, Zona 1035* (HAW). Maui: Kahanu Garden, Hana, *Wood 209* (PTBG). Kauai: National Tropical Botanical Garden ex Palani Junction, N. Kona, Hawaii, *O'Rourke 6* (PTBG).

***Pritchardia martii*** (Gaudich.) H. Wendl., *Bonplandia* 10: 199. 1862. *Livistona martii* Gaudich., *Voy. Bonite, Bot.*: t. 58, 59. 1842. *Livistona martiana* (Gaud.) Mart., *Hist. Nat. Palm.* 3 (ed. 2): 242. 1849. *Washingtonia martii* (Gaudich.) Kuntze, *Revis. Gen. Pl.* 2: 737. 1891. *Eupritchardia martii* (Gaudich.) Kuntze, *Revis. Gen. Pl.* 3(2): 323. 1898. *Styloma martii* (Gaudich.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Oahu, Hawaii, *Gaudichaud s. n.* (Lectotype [here selected] P [photo!]; isolectotypes G [photo!], K [photo!]).

*Livistona gaudichaudii* Mart., *Hist. Nat. Palm.* 3 (ed. 2): 242. 1849. *Pritchardia gaudichaudii* (Mart.) H. Wendl., *Bonplandia* 10: 199. 1862. *Washingtonia gaudichaudii* (Mart.) Kuntze, *Revis. Gen. Pl.* 2: 737. 1891. *Eupritchardia gaudichaudii* (Mart.) Kuntze, *Revis. Gen. Pl.* 3(2): 323. 1898. *Styloma gaudichaudii* (Mart.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Oahu, Hawaii, *Gaudichaud s. n.* (Holotype G [photo!], isotypes FI [fragment, photo!]).

*Pritchardia rockiana* Becc., *Webbia* 4: 228. 1913. *Styloma rockiana* (Becc.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Punaluu, Oahu, Hawaii, *Rock 8822* (Holotype BISH!, isotype GH).

*Pritchardia kahanae* Rock & Caum, *Mem. Bernice P. Bishop Mus.* 8: 75. 1921. Type: Kahana Valley, Oahu, Hawaii, *Rock (ex Caum) 18001* (Holotype BISH!).

*Pritchardia martioides* Rock & Caum, *Mem. Bernice P. Bishop Mus.* 8: 76. 1921. Type: Puu Kaaumakua, Oahu, Hawaii, *Rock (ex Caum) 18000* (Holotype BISH!).

*Pritchardia kamapuaana* Caum, *Occas. Pap. Bernice P. Bishop Mus.* 9(5): 10. 1930. Type: Hauula-Kaluanui Ridge, Oahu, Hawaii, *Caum 151* (Holotype BISH, isotype BH).

*Pritchardia macdanielsii* Caum, *Occas. Pap. Bernice P. Bishop Mus.* 9(5): 11. 1930. Type: Hauula-Kaluanui Ridge, Oahu, Hawaii, *MacDaniels 168* (Holotype BISH!; isotype BH).

To 10 m tall (Fig. 25); proximal margins of petiole with irregularly shaped, papery ligules or wings or only a few (to rarely moderate) fibers; leaf blade slightly undulate to nearly flat, divided 1/4–1/2, abaxial surface completely covered with lepidia and appearing silvery grayish white to sometimes tinged with

brown (Fig. 3), segment tips stiff; inflorescences composed of 1–4 panicles, shorter than petioles in flower and fruit to exceeding petioles or leaf blades in flower and greatly exceeding leaf blades in fruit (Fig. 25), panicles branched to 2 orders, rachillae clothed with dense, felt-like indumentum or glabrous; fruits 40–50 × 25–40 mm, ellipsoid to globose to ovoid.

Distribution: Moist to wet forests in valleys and on exposed ridges and cliffs, Koolau Mountains and southern Waianae Mountains, Oahu, 300–800 m elevation.

*Pritchardia martii* can be distinguished by its petioles with irregularly shaped, papery ligules or wings or only a few fibers proximally; leaf blades completely covered abaxially with lepidia; rachillae glabrous or with felt-like indumentum; and large fruits. *Pritchardia arecina* is similar but differs in its petioles with an abundance fibers proximally.

Although poorly documented, the identities of *Pritchardia martii* and *P. gaudichaudii* are, nonetheless, inextricably linked and critical to establishing taxonomic and nomenclatural order among the Hawaiian taxa, because they are the oldest names in the genus. Gaudichaud collected the original material of both during the voyage of the *Bonite* in Hawaii in October, 1836.

The original material of *Livistona martii* consists of a small, perhaps juvenile leaf and old inflorescence without fruits at P and similar leaves at G and K. The material at P bears a label stating “Gaudichaud Iles Sandwich” but has no date although St. John annotated the leaf in 1954 with the date “1836.” The material at G and K bear labels stating “Iles Sandwich M. Gaudichaud 1839,” with the date most likely being in error because Gaudichaud was not in Hawaii that year.

Gaudichaud’s original illustration and accompanying explanation (Voy. Bonite, Bot.: t. 58, 59. 1842.), obviously based on the specimens (although they are not cited), formally establish *Livistona martii*, yet they are hardly diagnostic and reveal little if anything about the nature of the species. In the first description of *L. martii*, however, Martius (1849) described the leaf as “*subtus dense griseo-tomentoso-furfuraceis*” in apparent reference to the abaxial leaf blade surface being completely covered with lepidia. This critically diagnostic character, while not apparent in Gaudichaud’s illustration, is present on the leaf at G, or at

least once was (patches of it apparently have fallen away with time). Where it is present it forms a solid cover (Fred Stauffer, pers. comm.).

Because Gaudichaud’s illustrations and specimens share equal ranking as original material, I have selected the Gaudichaud specimen at P as the lectotype and the specimens at G and K as isolectotypes.

Beccari (1890) contended that, based on voyage information in the log of the *Bonite*, Gaudichaud probably collected the original material of *Pritchardia martii* and *P. gaudichaudii* on Oahu. If so, Gaudichaud most likely collected them in the Koolau Mountains. The Koolau range is easily accessible from Honolulu, the major port and city on Oahu where the *Bonite* would have likely docked, and where Gaudichaud disembarked and spent time exploring. There are no collections from the Koolau range that have scattered lepidia incompletely covering the abaxial leaf blade surface; all collections have lepidia completely covering the blade surface.

Beccari (1890) determined that, based on Gaudichaud’s concept, *Pritchardia martii* was a larger plant with larger leaf blade segments and the abaxial surface most likely completely covered with lepidia while *P. gaudichaudii* was a smaller plant with smaller segments and the abaxial surface with scattered lepidia. Beccari felt that *P. gaudichaudii* was common in the vicinity of Honolulu and *P. martii*, while proving to be somewhat elusive, most certainly would eventually be found also on Oahu. Indeed, Beccari (Beccari & Rock 1921), after examining specimens that Rock had sent him from the Koolau range near Honolulu, described the abaxial leaf blade surface as “very densely clothed with an appressed felt or tomentum,” thus concurring with Martius and identifying this palm as *P. martii*.

Martius (1849) named and described the second species, *Livistona gaudichaudii*, based on Gaudichaud’s 1836 collections. It is unclear if Martius segregated out a portion of the original *L. martii* material that he had examined and felt was different or if the material was separate from the original. Martius distinguished *L. gaudichaudii* from *L. martii* primarily on the number of leaf blade segments, an extremely variable character of little or no merit.

The type of *Livistona gaudichaudii* at G consists of a small, perhaps juvenile leaf with the label “Isles Sandwich M. Gaudichaud 1836,” and is

quite similar in size, shape, and presentation to the leaves of *L. martii* at P, G, and K. Like that of *L. martii*, the abaxial leaf blade surface of *L. gaudichaudii* at G is completely covered with lepidia, or at least at one time was. Where it is present, it forms a solid cover (Fred Stauffer, pers. comm.).

Beccari (Beccari & Rock 1921) surprisingly changed his mind about the origin of *Pritchardia gaudichaudii*, saying he could now identify this species with material that Rock had collected on the cliffs of Waialeia above Kalaupapa on Molokai, despite the fact that the log of the *Bonite* did not mention landing on Molokai. Beccari alleged that Rock had also seen this species on the rock islets off the north coast of Molokai but was unable to collect it there. Beccari explained how he had decided that the origin of *P. gaudichaudii* was now Molokai rather than Oahu, as he had contended in his 1890 account. He stated, "That this Molokai palm is really one of the two collected by Gaudichaud in the Hawaiian Islands is extremely probable, in consideration of the fact that clumps of it are plainly visible from the sea, and very likely had been noticed by naturalists of the *Bonite*." He attempted to bolster his conclusion by stating, "But the best argument for the identification of *Pr. Gaudichaudii* with the palm of the cliff of Molokai, rests on the perfect correspondence of the nature of the indument that covers the lower surface of the leaves of the type specimens of *Pr. Gaudichaudii* with that covering those collected by Rock."

I feel that Beccari misinterpreted the type material of *Pritchardia gaudichaudii*. He did not say he saw the material at G and, if he had, it may be that he interpreted the patchy nature of the lepidia on the abaxial leaf blade surface to mean it was incompletely covered. Or, perhaps he had seen additional, different material, now lost or destroyed, that was juvenile in nature. This character (the extent



26. With a slender trunk, *Pritchardia minor* is one of the smaller species of the genus, and is especially compact when growing in exposed places, such as on this steep slope of Kalalau Valley near Kokee, Kauai, Hawaii.

27. The panicles permanently clothed with thick, pinkish brown, woolly indumentum are diagnostic for *Pritchardia minor* (Kokee, Kauai, Hawaii, October 1975).

of lepidia completely covering the abaxial leaf blade surface) is a function of time and age for species that possess it. It is lacking or incompletely covers abaxial leaf blade surfaces of juvenile plants; complete coverage of the blade surface, if it is to occur, develops only on older plants.

Beccari also felt that the palms on the islets were the same as those on the cliffs of Molokai proper. He surmised, probably correctly, that the islets were likely once connected to Molokai. Perhaps more significantly for him, though, he stated that fruits purportedly collected by Spencer (here Beccari erroneously attributes the collector to Lydgate) on these islets, which Beccari illustrated in his 1890 account, matched perfectly with Rock's material. That *Pritchardia gaudichaudii* grew on these islets is highly unlikely, though, because Huelo and Mokapa islets have been recently and thoroughly explored and only *P. hillebrandii* has been collected there. Spencer's collections probably came from the Molokai sea cliffs or valleys, not the offshore islets.

Nonetheless, Beccari and Rock (1921) placed *Pritchardia gaudichaudii* primarily on the

windward sea cliffs and valley walls of eastern Molokai from Waialeia to Wailau valleys although they noted it also occurred on the ridges and flat areas just above and inland. There it grew with *P. lowreyana*, which was distinct in its "larger, ovate, conically pointed fruit, and in the different aspect of the lower surface of the leaf-blade, which is dotted with a quite different form of lepidia."

In summary, it is clear that the name *Pritchardia martii* is best applied to material from the Koolau Range on Oahu, which like the type, has lepidia completely covering the abaxial leaf blade surface. The name *P. gaudichaudii* is also best applied to material from the Koolau range on Oahu and, thus, is a synonym of *P. martii* because only one species (albeit a highly variable one) occurs there near downtown or the historic section of Honolulu. Gaudichaud most likely collected on this island and all material from the Koolau range has lepidia completely covering the abaxial leaf blade surface (like the type) while no collections from Molokai have this character. The name *P. gaudichaudii* has been erroneously applied to material in cultivation of *P. lowreyana*, which is from Molokai.

28. Trunks of *Pritchardia mitiarioana* are smooth and gray, and plants occur in scattered, dense colonies on Mitiaro Island, Cook Islands.



By far the most variable species of the genus, *Pritchardia martii* displays an astonishing and frustrating range of characters from one end of the Koolau Mountains to the other. Individuals clinging to the windward cliffs are typically dwarfed and stunted with much reduced, compact crowns of small leaves (Back Cover) while a short distance away, just lee of the Koolau crest and in protected valleys or swales where soil is better and deeper and moisture more constant, individuals are robust and tall with fuller, more expansive crowns of large leaves. The two forms could easily be mistaken as two, distinct species. Inflorescences range from shorter than the petioles to greatly exceeding the leaf blades. I had hoped to be able to segregate out these forms of *P. martii* with exceptionally long inflorescences, which occur primarily at the northwestern and southeastern ends of the Koolau range, but the

existence of intermediate forms precluded me from doing so. The Koolau range is also where *P. martii* forms its famous vertical, line-like colonies that can extend for 100 meters or more down the nearly sheer windward cliffs.

The inclusion of the famous outlier in the southern Waianae Mountains, consisting of two somewhat stunted and spindly yet reproductive individuals posed precariously at the top of a basalt cliff (Fig. 31) and one juvenile in the rocky rubble below, within *Pritchardia martii* is bound to be controversial. Many people feel this population, discovered in the 1980s, should be formally described and named, if for no other reason than to give it formal recognition so it can be officially assessed and assigned the appropriate conservation status. However, it easily falls within the range of variability encompassed by *P. martii* in the Koolau Mountains to the west.

29. Trunks of *Pritchardia mitiaroana* typically are slightly ventricose and emit a hollow, drum-like sound when sharply struck (Mitiaro Island, Cook Islands).





30. Inflorescences of *Pritchardia mitiaroana* are composed of one panicle branched to three or four orders and are shorter than or about equaling petioles in flower and fruit (Mitiaro Island, Cook Islands).

The Waianae population may not have always been so isolated. Before the arrival of humans in Hawaii, moist forest covered the great, sweeping Leilehua plain, which extends westward from the Koolau range to connect with the Waianae range. Fossil evidence shows that *Pritchardia* once inhabited this intermountain plain, at least along its southern fringes. It is likely that the *P. martii* in the Koolau range extended throughout the moist forest of the Leilehua plain and even up into the Waianae range. As human activity and/or natural events destroyed the forest on the Leilehua plain, the Waianae population of *P. martii* was cut off and isolated from the Koolau populations.

*Specimens Examined.* U.S.A. Hawaii. Oahu. Koolau Mountains: *Gaudichaud s. n.* (P; G, K); t. 58, 59, Voy. Bonite, Bot. (1842); *Gaudichaud s. n.* (G, FI); *Pearsall s. n.*, 25 April 1948 (BISH); Aiea, *Takeuchi 236* (BISH); Anahulu Trail, *Degener 10466* (BISH); Halawa Ridge, *Degener 10467* (BISH); Halawa Valley, *Woodward 3* (BISH); Halawa-Heeia Divide, Haiku, *St. John 20435* (BISH); Hauula-Kaluanui Ridge, *Caum 151* (BISH), *MacDaniels 168* (BISH); Kahana Valley, *Rock (ex Caum) 18001* (BISH); Kahana, Waikane-Schofield Trail, *Fosberg 8771, 12179, 12253* (BISH), *St. John 10180* (BISH); Kaluanui, *Meebold s. n.*, May 1932 (BISH), *St. John 10110,*

*10589, 10590, 10591* (BISH); Kamapuaa Summit, *Degener 10468* (BISH); Kawaihoa, *Bryan 871* (BISH); Kawaihoa trailhead at Kuhuku Cabin, *Warshauer 597* (BISH); Kipapa Gulch, Waipio, *Fosberg 9750, 9789* (BISH), *Cowan 96, 97* (BISH); Kipapa-Waiahole Crest, *Grant 7231* (BISH); Kipapau, *Wood 7571* (PTBG); Koloa, *Takeuchi 2940* (BISH, HAW); Koolauloa and Waialua, *Wood 232, 233* (PTBG); Kuliouou-Niu Ridge, *Obata 87-452* (BISH); Kuliouou, *Wood 2613* (PTBG), *Zschokke 1282* (BISH); Laie, *Takeuchi 2616* (BISH); Laie-Malaekahana Ridge, *Fosberg 9437* (BISH), *St. John 11559* (BISH); Moanalua, *Bishop 1249* (HAW), *Rock s. n.*, 1916 (BISH), *Swezey 17350* (BISH); Mt. Olympus, *Forbes 2556* (BISH), *Rock s. n.*, Oct. 1912, *12539* (BISH), *Swezey s. n.*, 3 Oct. 1921 (BISH); Niu Valley, *Hillebrand s. n.* (BISH); Poamoho Trail Summit, *Fosberg 13325* (BISH); Punaluu, Halemano Gulch, *Bryan 1500* (BISH); Punaluu-Kaipapau, *Forbes s. n.*, 3 May 1909 (BISH); Punaluu Mountains, *Degener 9719* (BISH), *Forbes s. n.*, 14 Nov. 1908 (BISH), *Rock 8822* (BISH), *Rock s. n.*, 31 Oct. 1914 (BISH), *Selling 3644* (BISH), *St. John 10592, 10593, 10594, 10595* (BISH); Pupukea-Kahaluu Trail, *Degener 9718* (BISH); Puu Kaaumakua, *Rock (ex Caum) 18000* (BISH); Puu Konahuanui, *Bishop 1675* (HAW), *Degener 9714* (BISH); Puu Konahuanui-Mt. Olympus, *Forbes 1645, 2256* (BISH), *MacDaniels 120* (BISH); Waiahole Ditch Trail,

*Meebold s. n.*, June 1932 (BISH); Waiahole Valley, *Rock 17251* (BISH), *Takeuchi 2240* (BISH); Waikane-Kahana Divide, *Takeuchi 2041* (BISH, HAW); Waikane-Schofield Trail, *Warshauer 993* (BISH); Wailupe Valley, *Hatheway 515* (BISH), *Rock s. n.*, Jan. 1915, *Rock 10361* (BISH), *Swezey s. n.* (BISH); Waiomao, *Takeuchi 2611* (BISH); Wiliwilinui Ridge, *St. John 22686* (BISH). Waianae Mountains: Palikea, Palawai, *Hodel 2006* (BISH), *Perlman 5400, 5673* (BISH, PTBG), *Wood 1209* (PTBG). CULT. U.S.A. Hawaii. Oahu: Lyon Arboretum, *Little 31256* (BISH), *Zona 999* (HAW); Wahiawa Botanical Garden, *HBG 73.0014, Annable 3635* (BISH); Waimea Valley Audubon Center, *84p324, Zona 1007* (HAW).

*Pritchardia minor* Becc., *Webbia* 3: 137. 1910. *Styloma minor* (Becc.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Halemanu, Kauai, Hawaii, *Rock s. n.* March 1909 (Holotype FI [photo!]).

*Pritchardia eriophora* Becc., *Webbia* 4: 235. 1913. *Styloma eriophora* (Becc.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Halemanu, Kauai, Hawaii, *Rock (ex Wilder) 8846* (Holotype FI?, isotype BISH!).

To 10 m tall (Fig. 26); proximal margins of petiole with only a few fibers; leaf blade nearly flat, divided 1/3–1/2, abaxial surface completely covered with lepidia and appearing silvery grayish white, segment tips stiff or only

31. This specimen of *Pritchardia munroi*, in mostly destroyed, dry to mesic forest near Kamalo, is one of the few remaining on Molokai, Hawaii.





32. The rachillae densely covered with uniform, grayish brown, permanent hairs and small fruits are diagnostic for *Pritchardia munroi*.

slightly drooping in shade; inflorescences composed of 1 or 2 panicles, shorter than petioles in flower and fruit, panicles branched to 2 orders, rachillae permanently clothed with dense, pinkish brown, woolly indumentum (Fig. 27); fruits 15–30 × 12–13 mm, ovoid to ellipsoid to obovoid.

Distribution: Moist to wet forests in valleys and on exposed slopes, western Napali Coast, Kokee, and Waimea Canyon, Kauai, 500–1300 m elevation.

*Pritchardia minor* is distinguished by its small fruits and panicles permanently clothed with thick, pinkish brown, woolly indumentum. One of the smaller species of the genus, *Pritchardia minor* is similar in habit to *P. napaliensis*, and their ranges may overlap slightly, but the latter differs in its leaf blades incompletely covered abaxially with lepidia and the panicles and rachillae lacking hairs.

The type of *Pritchardia minor* consists of a few fruits that Rock collected on Kauai in 1909 and sent to nurseryman F. Franceschi in Santa Barbara, California who forwarded them to Beccari. After Beccari had named and given an unusually meager description of *P. minor* in 1910, Rock sent complete material to Beccari in 1911 upon which the expanded description in the 1921 monograph was based (Beccari & Rock 1921).

*Specimens Examined.* U.S.A. Kauai: Cranwell 3103, Degener 30209 (BISH), Gemmill 5 (PTBG), Rock s. n., March 1909, via D. Franceschi (FI), Rock 5061 or 17319 (BISH); Halemanu, Rock 8846 (BISH); Honopu, E. rim, Degener 21512 (BISH), Wood 2825, 5051, 7721 (PTBG); Kaumuohua, Kalalau, Rock 17319 (BISH); Kaholuamanu, Opaiwela, Rock 8846a, 17098 (BISH); between Kalalau and Honopue, Fosberg 12703 (BISH); Kalalau Trail, Meebold 26359 (BISH); head of Kawaikoi, Bryan 1489 (BISH); Koaie Canyon, Wood 3462 (PTBG); Kokee, Bishop 1253 (HAW), Chock 1120 (PTBG), Rock s. n., Feb. 1956 (BISH), Wood 226, 245, 7946 (PTBG); Kokee, Kalalau Valley, Chapin 82 (PTBG), Flynn 3209, 3974 (PTBG), Hobdy 3050 (BISH), Wood 250, 1638, 7360, 7537 (PTBG); Kokee, NW. of Lehua Makawi, Degener 23957 (BISH); Kokee, Honopu Ridge, Kalalau, Montgomery s. n., 22 Jan. 1991 (BISH); Kokee, Kumuwela Ridge Jeep Trail, Bishop 1258 (HAW), Plucknett 3387 (BISH), St. John 13842 (BISH); Nualolo Valley, Bishop 1293 (HAW); Pihea, St. John 22916 (BISH); Pohakua, Perlman 12690 (PTBG); Waimea Canyon, Degener 9722 (BISH), Forbes 936 (BISH), Lorence 5768 (PTBG). CULT. U.S.A. Hawaii. Oahu: Waimea Valley Audubon Center, 79p1074, Zona 1033 (HAW).

*Pritchardia mitiaroana* J. Dransf. & Y. Ehrh., Principes 39: 37. 1995. Type: Mitiaro, Cook

Islands, *Ehrhart s. n.* 26 April 1991 (Holotype K [photo!], isotype P).

To 10 m tall; proximal margins of petiole moderately and coarsely fibrous; stem smooth, moderately to dark gray (Figs. 28 & 29), slightly ventricose (Fig. 29), emitting a hollow, resonating, drum-like sound when sharply struck with the knuckles of the closed fist; leaf blade slightly undulate, divided 1/4–1/3, abaxial surface white-waxy, abundantly but incompletely covered with lepidia, segment tips stiff or slightly drooping; inflorescences composed of 1 panicle, shorter than or about equaling petioles in flower and fruit, panicles branched to (3 or) 4 orders (Fig. 30), rachillae glabrous; fruits 5–7 mm diam., globose.

Distribution: Moist forest on rough karst limestone, Mitiaro Island of the Cook Islands and Makatea and Niau islands of the Tuamotu Archipelago, French Polynesia, 5–100 m elev. On Mitiaro, *Pritchardia mitiarioana* occurs as scattered, dense colonies (Fig. 28), the under story of which is completely covered with a thick layer of dead, fallen leaves of the palms.

The smooth, gray, slightly ventricose trunk, which emits a hollow sound when struck, is by itself sufficient to distinguish *Pritchardia mitiarioana* in life. The highly ramified, large panicles typically branched to four orders and very small fruits are also distinctive. Wilder (1934) erroneously referred to and illustrated this species as *P. vuylstekeana*.

It is difficult to traverse the thick, scrubby vegetation (frequently with numerous *Pandanus* with their exceedingly prickly leaf margins) and rocky, sharp, uneven terrain where *Pritchardia mitiarioana* occurs on Mitiaro and Makatea Islands. On Makatea it is especially difficult and even dangerous because the terrain is rather densely punctuated and pockmarked with precipitous depressions, many of them up to five meters deep or more

and, with their openings covered or camouflaged with a layer of living or dead vegetation, they are a perfect trap for the



33. *Pritchardia napaliensis*, here at the type locality in Hoolulu Valley, occurs in moist to wet forests on steep slopes along the Napali Coast, Kauai, Hawaii.

34. *Pritchardia pacifica* is distinguished by a combination of characters, including its undulate leaf blades with the abaxial surface more or less devoid of lepidia, inflorescences shorter than or equaling the petioles, and small fruits (Avarua, Rarotonga, Cook Islands).

unwary explorer. Although some of these holes are natural, many are the result of extensive phosphate mining that once occurred on Makatea. The mining and accompanying destruction of vegetation probably also devastated the populations of *P. mitiarioana* on the island; relatively few individuals exist there today. Fortunately, the species is more common on Mitiaro, and Jean-Yves Mayer reported (pers. comm.) that on Niau, not too far from Makatea, it is especially abundant, with about 1000 reproductive individuals and numerous juvenile plants.

*Specimens Examined.* COOK ISLANDS. Mitiaro: Ehrhart s. n. 26 April 1991 (K); Flynn 7046 (PTBG). FRENCH POLYNESIA. Tuamotu Archipelago: Makatea, Wilder s. n. 28 Aug. 1929 (BISH), Wilder 1200 (BISH); Niau, Florence 10093 (P [photo]), 10178 (BISH, P [photo]).

*Pritchardia munroi* Rock, Mem. Bernice P. Bishop Mus. 8: 62. 1921. Type: Kamalo, Molokai, Hawaii, Rock 17342 (Holotype BISH, Isotype GH).

To 5 m tall (Fig. 31); proximal margins of petiole moderately fibrous; leaf blade strongly undulate, divided 1/2, abaxial surface incompletely covered with scattered lepidia, segment tips drooping; inflorescences composed of 1–5 panicles, shorter than petioles in flower and fruit, panicles branched to 2 orders, rachillae permanently clothed with thick, uniform, grayish brown hairs (Fig. 32); fruits 22 × 20 mm, globose.

*Distribution:* Dry to moist forest, lee side of eastern Molokai and south side of Puu Kukui massif, West Maui, 600–1000 m elevation.

*Pritchardia munroi* is another of the four Hawaiian species that is recorded from more than one island. The rachillae densely covered with uniform, grayish brown, permanent hairs and small fruits are diagnostic.

*Specimens Examined.* U.S.A. Hawaii. Molokai: Kapuaokoolau Gulch, Bishop 1752 (HAW), Perlman 16555 (PTBG); Wawaia Gulch, Perlman 18256 (PTBG), Wood 6289 (PTBG); above

35. Leaf blades completely covered abaxially with lepidia, glabrous rachillae, and small fruits distinguish *Pritchardia perlmanii*, as here in the nearly inaccessible upper Waioli Valley, Kauai, Hawaii.



36. *Pritchardia remota* has somewhat coarse, heavy-looking blades with pendulous segment tips [cultivated, Koko Crater Botanical Garden (HBG 97.0173), Oahu, Hawaii].



Kamalo, *Rock 17342* (BISH), *Wood 1383* (PTBG). Maui (W. Maui): Pohakea Gulch, *Degener 9712* (BISH), *Hobdy 404, 538* (BISH), *Wood 7314* (PTBG); Ukumahame, *Wood 7318* (PTBG). CULT. U.S.A. Hawaii. Molokai: Meyer Residence at Kalae, *Rock 17341* (BISH). Oahu: Waimea Valley Audubon Center, *75s2295, Zona 1036* (HAW).

***Pritchardia napaliensis*** H. St. John, *Pacific Sci.* 35: 97. 1981. Type: Hoolulu Valley, Kauai, Hawaii, *Christensen 39* (Holotype BISH!, isotype US).

*Pritchardia limahuliensis* H. St. John, *Phytologia* 64: 177. 1988. Type: Limahuli Valley, Kauai, Hawaii, *Perlman 7* (Holotype BISH!).

To 10 m tall; proximal margins of petiole sparsely to moderately fibrous; leaf blade nearly flat, divided 1/2, abaxial surface incompletely covered with scattered lepidia, segment tips stiff or only slightly drooping in shade; inflorescences composed of 1–3

panicles, shorter than to equaling petioles in flower and fruit, panicles branched to 2 (or 3?) orders, rachillae glabrous; fruits 17–23 × 14–18 mm, ellipsoid.

Distribution: Moist to wet forests on steep slopes, Napali Coast, Kauai, 150–600 m elevation (Fig. 33).

*Pritchardia napaliensis* is distinguished by its flat leaf blade incompletely covered abaxially with lepidia, inflorescences shorter than or equaling the petioles, and small fruits. *Pritchardia napaliensis* is similar in habit to *P. minor* and their ranges may overlap slightly but the latter differs in its leaf blades completely covered abaxially with lepidia and the panicles permanently clothed with thick, pinkish brown, woolly indumentum.

I am unable to find significant differences between *Pritchardia napaliensis* and *P. limahuliensis* after examining the types and living plants at the type localities of both species. Collections and cultivated plants from

higher elevations in upper Limahuli Valley, which have been annotated or labeled as *P. limahuliensis*, have the abaxial leaf blade surface completely covered with lepidia and are best referred to *P. perlmanii*.

*Specimens Examined.* U.S.A. Hawaii. Kauai: Hanakapiai Valley, below Pohakea, *Perlman 15446, 16521, 16686* (PTBG); Hoolulu Valley, *Christensen 39* (BISH), *St. John 23185* (BISH), *Wood 215, 216, 7289* (PTBG); lower Limahuli Valley, *Perlman 7* (BISH), *Perlman 12932* (PTBG), *Wood 295, 296* (PTBG); Pohakuao, *Perlman 12690* (PTBG), *Wood 1784, 7651, 7652, 8055, 9883* (PTBG). CULT. U.S.A. Hawaii. Kauai: National Tropical Botanical Garden, *NTBG 930109, Chapin 75* (PTBG)

***Pritchardia pacifica*** Seem. & H. Wendl., *Bonplandia* 10: 197. 1862. *Washingtonia pacifica* (Seem. & H. Wendl.) Kuntze, *Revis. Gen. Pl.* 2: 737. 1891. *Eupritchardia pacifica* (Seem. & H. Wendl.) Kuntze, *Revis. Gen. Pl.* 3(2): 323. 1898. *Styloma pacifica* (Seem. & H. Wendl.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type (Cult.): Fiji, *Seemann 659* (Holotype K [photo!]; isotypes FI [photo of fragment!], GH, MEL, P [photo!]).

*Pritchardia pacifica* var. *samoensis* Becc., *Webbia* 4: 206. 1913. Type: Samoa, *Powell s. n.* (Holotype K?).

*Pritchardia pacifica* var. *marquisensis* F. Br., *Bernice P. Bishop Mus. Bull.* 84: 118. 1931. Type: Nukuhiva, Marquesas Islands, French Polynesia, *Brown 647* (Holotype BISH!).

To 15 m tall; proximal margins of petiole with only a few fibers; leaf blade undulate, divided 1/4–1/3, slightly waxy-glaucous, abaxial surface more or less devoid of lepidia, segment tips stiff; inflorescences composed of 1–4 panicles, shorter than to equaling petioles in flower and fruit, panicles branched to 2 orders, rachillae glabrous (Fig. 34); fruits 11–12 mm diam., globose.

Distribution: Known only from cultivation, typically around sites of human activity, sometimes escaping and growing wild in nearby secondary growth, Marshall Islands, Solomon Islands, Vanuatu, Niue, Fiji, Tonga, Samoa, French Polynesia, 0–100 m elev.

*Pritchardia pacifica* is distinguished by its rounded, undulate leaf blades with stiff segment tips and abaxial surface more or less devoid of lepidia, inflorescences shorter than or equaling the petioles (Fig. 34), and small

fruits. Perhaps the most widely cultivated species of the genus in tropical landscapes and gardens, it is among the most handsome of palms.

Truly natural populations of *Pritchardia pacifica* are unknown. Dennis and McQueen (1989) reported it growing wild on Nggela Island north of Guadalcanal in the Solomon Islands but referred to it as *P. woodfordiana*, a name of no botanical standing. *Pritchardia pacifica* has erroneously been reported to be growing wild on Eua Island in Tonga (Lister 1893, Beccari & Rock 1921, Watling 2005), but the species there is actually *P. thurstonii*. Burkill (1901) reported *P. pacifica* on Vavau Island of Tonga, but I have not seen the specimen at K to verify its identity.

*Cultivated Specimens Examined:* FIJI. *Seemann 659* (K, FI, P). Rotuma: Motusa Island: *McClatchey 69* (BISH); Itutiu, *St. John 19778* (BISH). MARSHALL ISLANDS. Likiep Island: *St. John 21819* (BISH). NIUE. Alofi: *Yuncker 9976* (BISH). Halagigie: *Sykes 589* (BISH). TONGA. Niuatoputapu Island: Fakaalofa, *Kirch 239* (BISH). WESTERN SAMOA. Savaii: Fanga, *Christophersen 3598* (BISH); Salailua, *Christophersen 2842* (BISH). AMERICAN SAMOA. Tutuila: Pago Pago, *Bryan 1004* (BISH); *Setchell 265* (BISH). Manua Group: Ofu Island, Aloafao, *Garber 1012* (BISH), *Ragone 2000-01* (PTBG). FRENCH POLYNESIA. Marquesas Islands: Nukuhiva, Hapua Valley, *Brown 647* (BISH). U.S.A. Hawaii. Kauai: National Tropical Bot. Gard. (*NTBG 860148.01*), *Chapin 54* (PTBG); Sheraton Poipu Hotel, *Wood 208* (PTBG).

***Pritchardia perlmanii*** Gemmill, *Novon* 8: 18. 1998. Type: Waioli Valley, Kauai, Hawaii, *Wood 1545* (Holotype PTBG!).

To 5 m tall; proximal margins of petiole sparsely to moderately fibrous; leaf blade nearly flat, divided 2/5–1/2, abaxial surface completely covered with lepidia or nearly so, appearing silvery grayish white, segment tips stiff or slightly drooping; inflorescences composed of 1 panicle, shorter than or equaling petioles in flower, equaling petioles to equaling leaf blades in fruit, panicle branched to 2 orders, rachillae glabrous; fruits 19–40 × 12–21 mm, obovoid.

Distribution: Wet forest on the northeastern slope of the Waialeale massif and the Makaleha Mountains, Kauai, 600–800 m elevation.

*Pritchardia perlmanii* is distinguished by its flat leaf blades completely covered abaxially with

37. Fewer than a dozen plants of *Pritchardia schattaueri* remain in the wild, and they are among the tallest in the genus, reaching up to 25 m in height (type locality, Papa, South Kona, Hawaii).



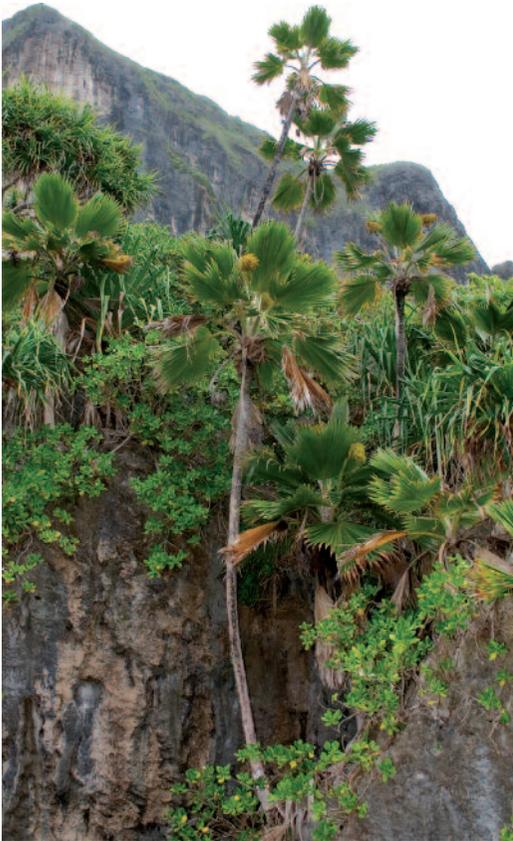
lepidia, glabrous rachillae, and small fruits (Fig. 35). I interpret *P. perlmanii* more broadly than did Lorence and Gemmill (2004). I refer collections from the Power Line Trail and the Makaleha Mountains to *P. perlmanii* while they referred these to *P. flynnii*, which differs in its undulate leaf blades and rachillae clothed with felt-like indumentum.

*Specimens Examined.* U.S.A. Hawaii. Kauai: Lumahai Valley, *Perlman* 16270, 16271, 16272, 16343 (PTBG), *Wood* 7331, 7343 (PTBG); Power Line Trail, *Chapin* 76 (PTBG); Wainiha, *Christensen* 289 (BISH, PTBG), *Wood* 2347 (PTBG); Hanalei River headwaters, *Wood* 2448 (PTBG); Makaleha Mountains, *Lorence* 7413, 7424, 8380, 8383 (PTBG), *Perlman* 16260

(PTBG), *Wood* 2501, 2675, 7304, 7306 (PTBG); Wainiha Valley, *Taylor* 1 (PTBG); upper Waioli Valley, *Perlman* 12935 (PTBG); *Wood* 1545 (PTBG).

***Pritchardia remota*** Becc., *Malesia* 3: 294. 1890. *Washingtonia remota* (Becc.) Kuntze, *Revis. Gen. Pl.* 2: 737. 1891. *Eupritchardia remota* (Kuntze) Kuntze, *Revis. Gen. Pl.* 3(2): 323. 1898. *Styloma remota* (Becc.) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Cult., Honolulu, Oahu, Hawaii, *Hillebrand s. n.* (Holotype K [photo!]).

*Pritchardia aylmer-robinsonii* H. St. John, *Pacific Sci.* 13: 163. 1959. Type: Mokouia Valley, Niihau Island, Hawaii, *St. John* 22813 (Holotype BISH!).



To 10 m tall; proximal margins of petiole moderately fibrous; leaf blade strongly undulate, slightly waxy glaucous, divided 2/5–3/5, abaxial surface incompletely covered with scattered lepidia, segment tips drooping; inflorescences composed of 1–5 panicles, shorter than to equaling petioles in flower and fruit, panicles branched to 3 orders, rachillae glabrous; fruits 18–20 × 18 or 19 mm, globose.

Distribution: Dry forest at the base of basalt cliffs, Nihoa and Nihoa (Leeward Hawaiian Islands), 75–250 m elevation.

*Pritchardia remota* is another of the four Hawaiian species that is recorded from more than one island. It is difficult to distinguish from *P. glabrata* and *P. waialealeana*. All three share the undulate leaf blades incompletely covered abaxially with lepidia and with drooping segment tips, inflorescences shorter than or equaling the petioles with panicles branched to three orders, glabrous rachillae, and small fruits. However, *P. glabrata* differs in its leaf blades lacking the glaucous covering while *P. waialealeana* differs in the cottony hairs or mealy indumentum lacking on the abaxial folds of its leaf blades and the longer-than-wide fruits. Also, leaf blades of *P. remota* have a somewhat coarse and heavy-looking appearance (Fig. 36).

I am unable to find significant differences between *Pritchardia remota* and *P. aylmer-robinsonii* after examining the types and cultivated living plants from the type localities of both species. Some cultivated plants of *P. remota* have distinctive orange flowers yet photographs taken by Derral Herbst at the type locality on Nihoa show the flowers to be yellow.

Beccari initially based *Pritchardia remota* on a portion of an inflorescence that Hillebrand had collected from a plant cultivated on the grounds of Iolani Palace in Honolulu that a Dr. Rooke had procured from Nihoa Island in 1858. Beccari (Beccari & Rock 1921) later



38. On Eua Island, Tonga, *Pritchardia thurstonii* occurs near the sea on a jumble of gigantic, limestone boulders.

39. Leaf blades of *Pritchardia viscosa* are flat, completely covered abaxially with lepidia and appear silvery grayish white, and have stiff segment tips, as here below the Waialeale massif on Kauai, Hawaii.

expanded the description from material that Brown had collected on Nihoa in 1911 and that Rock had forwarded to Beccari. There is another Hillebrand collection at K, which is complete and contains leaves and inflorescences, that Beccari may have also used to expand the description.

*Specimens Examined*: U.S.A. Hawaii. Nihoa: *Brown s. n.*, 1911 (BISH), *Brown 10347* (BISH, FI [photo]), *Christophersen 9a* (BISH), *Cooke s. n.*, June 1923 (BISH); Valley 2 & 5, *Caum 72* (BISH); E. Valley, *Long 2412* (HAW), *2440* (BISH, HAW); W. Valley, *Long 2443* (BISH, HAW). Niihau: *Brown 1430* (BISH); Kiekie, *St. John 23657* (BISH); Mokouia Valley, *St. John 22813* (BISH). CULT. U.S.A. Hawaii. Oahu: Honolulu, *Hillebrand s. n.* (K [photo]), *Rock 12004* (BISH); Iolani Palace, *Hillebrand s. n.* (K); Oahu College, Punahou, *Rock 12011* (BISH); Foster Garden, *Potter s. n.*, 7 Feb. 1958 (BISH). Kauai: Kekaha, 24.9 mile marker, *Wood 249* (PTBG); National Tropical Botanical Garden, *NTBG 950198.001*, *Chapin 59* (PTBG), *ex W.* Palm Valley, Nihoa, *O'Rourke 4* (PTBG).

***Pritchardia schattaueri*** Hodel, *Principes* 29: 31. 1985. Type: Papa, S. Kona, Hawaii, Hawaii, *Moore 10570* (Holotype BH!).

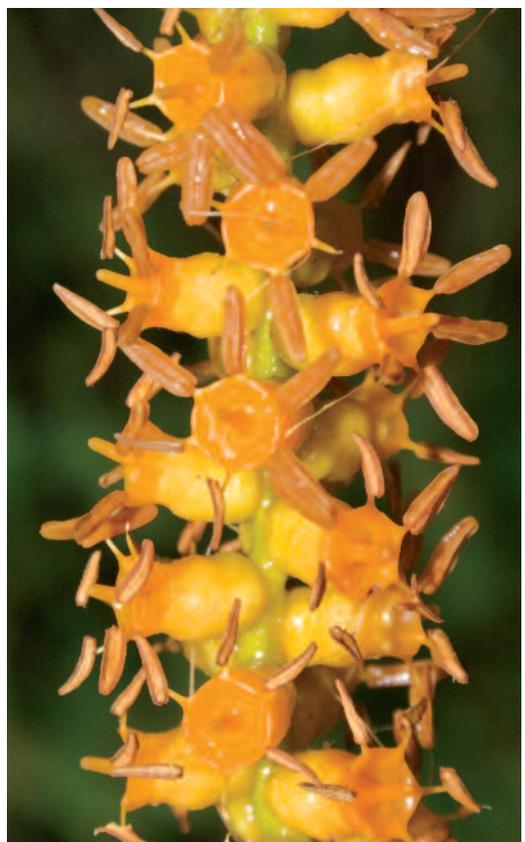
To 25 m tall (Fig. 37); proximal margins of petiole with abundant fibers; leaf blade slightly undulate, divided 1/3–2/5, abaxial surface incompletely covered with scattered lepidia, segment tips drooping; inflorescences composed of 1–4 panicles, shorter than or about equaling petioles in flower and fruit, panicles branched to 2 orders, rachillae glabrous; fruits 30–50 × 30–40 mm, globose to obovoid.

Distribution: Moist forest on gentle slopes, South Kona, Hawaii, 600–800 m elevation.

*Pritchardia schattaueri* can be distinguished by its leaf blades incompletely covered abaxially with lepidia and divided to more than one-third with pendulous segment tips,

40. Inflorescences of *Pritchardia viscosa* are composed of one to five panicles and densely covered with whitish and reddish brown hairs (below the Waialeale massif, Kauai, Hawaii).

41. Rachillae and flowers of *Pritchardia viscosa* are more or less permanently viscous (covered with a shiny, sticky, varnish-like substance) (below the Waialeale massif, Kauai, Hawaii).



inflorescences shorter than or about equaling the petioles, glabrous rachillae and large fruits. It is similar to *P. gordonii* but the latter differs in having leaf blades with narrower and more deeply bifid segment tips (resulting in the tips appearing more conspicuously pendulous), slightly longer inflorescences equaling or exceeding the petioles in fruit, and oblate fruits.

*Specimens Examined.* U.S.A. Hawaii. Hawaii. South Kona: Papa, Hoomau Ranch, *Hodel 169* (PTBG), *Moore 10570* (BH), *Wood 372* (PTBG); Honomalino, *Bishop 1832* (HAW). CULT. U.S.A. Hawaii. Oahu: Waimea Valley Audubon Center, *76s454*, *Zona 1001* (HAW).



***Pritchardia thurstonii*** F. Muell. & Drude, *Gartenflora* 36: 486. 1887. *Washingtonia thurstonii* (F. Muell. & Drude) Kuntze, *Revis. Gen. Pl.* 2: 737. 1891. *Eupritchardia thurstonii* (F. Muell. & Drude) Kuntze, *Revis. Gen. Pl.* 3(2): 323. 1898. *Styloma thurstonii* (F. Muell. & Drude) O. F. Cook, *J. Wash. Acad. Sci.* 5: 241. 1915. Type: Fiji, *Thurston s. n.* Oct. 1886 (Lectotype MEL, isolectotype K [photo!]).

To 8 m tall, erect, rarely distinctly serpentine or saxophone-shaped; proximal margins of petiole with only a few fibers; leaf blade flat, divided 1/5–1/4, slightly waxy-glaucous, abaxial leaf blade surface with lepidia conspicuously arranged in distinct, parallel lines (Fig. 6), segment tips stiff; inflorescences composed of 1 panicle, equaling or exceeding leaf blades in flower to greatly exceeding leaf blades in fruit, panicles branched to 2–3 orders, rachillae glabrous; fruits 7 mm diam., globose.

Distribution: Moist to wet forest on rough, sharp, folded, pitted, fissured karst limestone, slopes, cliffs, large boulders and small islands, Fiji (Lau Group: Vanuabalavu, Vulaga, and Ogea Driki) and Tonga (Eua), 0–200 m elev.

The lepidia on the abaxial leaf blade surface, conspicuously arranged in distinct, parallel lines, are diagnostic for *Pritchardia thurstonii* (Fig. 6). It is rather widely cultivated in tropical gardens.

On Vulaga and Ogea Driki in the Lau Group of Fiji, *Pritchardia thurstonii* is restricted, in rather spectacular fashion, to the tops of small, mushroom-shaped, karst limestone islets in their lagoons, nearly to the exclusion of all other woody vegetation (Fuller 1997, Fuller & Jones 1999, Watling 2005). On Eua island in Tonga, it is confined to the rock escarpment 200–300 m high on the southeast coast. There it occurs from the lip or crest near the top of the escarpment, sometimes with serpentine trunks, down to the sea coast. At the base of the escarpment, near and at the sea, is a jumble of gigantic, limestone boulders, some as much as 10–15 m in diameter, amongst and on top of which grow *P. thurstonii* (Fig. 38). There is no barrier reef at this point, and waves crashing on the rocks at times envelope the surrounding area, including the palms, in a salt-laden haze.

42. One of the tallest species in the genus, *Pritchardia waialealeana* can grow to 20 meters in height (Power Line Trail, Kauai, Hawaii).

43. The abaxial surface of the leaf blade of *Pritchardia waialealeana* mostly lacks the cottony hairs on the folds at the base (Power Line Trail, Kauai, Hawaii).

Because Mueller and Drude did not designate a holotype from the original material, Moore selected a lectotype at MEL and an isolectotype at K as the type material for this species (Moore 1979).

Several workers (Lister 1893, Burkill 1901, Beccari & Rock 1921, Watling 2005) have erroneously referred to Tongan material of *Pritchardia thurstonii* as *P. pacifica*. Likewise, herbarium specimens of *P. thurstonii* from Tonga are frequently misidentified as *P. pacifica*.

*Specimens Examined.* FIJI (Lau Group). *Thurston s. n.* (K). Ongeandriti (Ogea Driki): Bryan 389 (BISH). Fulanga (Vulaga): Smith 1230 (BISH). TONGA. Eua Island: south plateau cliffs, Parks 16374 (BISH, K [photo]); Vaifele, Sykes 1129 (BISH); Haaluma, Yuncker 15607 (BISH). CULT. U.S.A. Hawaii. Kauai: National Tropical Bot. Gard. (NTBG 950211.001) Chapin 058 (PTBG).

***Pritchardia viscosa*** Rock, Mem. Bernice P. Bishop Mus. 8: 66. 1921. Type: Kahiliwai Valley, Kauai, Hawaii, Rock 17295 (Holotype BISH!, isotypes FI, GH).

To 10 m tall; proximal margins of petiole with only a few fibers; leaf blade flat, divided 1/3, abaxial surface completely covered with lepidia, appearing silvery grayish white, segment tips stiff (Fig. 39); inflorescences composed of 1–5 panicles (Fig. 40), shorter than petioles in flower and fruit, panicle branched to 2 orders, rachillae clothed with scurfy indumentum in flower, glabrous or nearly so in fruit, rachillae and flowers viscous (Fig. 41); fruits 19–40 × 12–21 mm, ellipsoid to obovoid.

*Distribution:* Wet forest on the northeastern slope of the Waialeale massif and the Makaleha Mountains, Kauai, 600–800 m elevation. This species is very rare; only a few plants are known.

Its leaf blades completely covered abaxially with lepidia, inflorescences shorter than the petioles, and especially the viscous panicles and flowers, which alone are diagnostic, readily distinguish *Pritchardia viscosa*.

*Specimens Examined.* U.S.A. Hawaii. Kauai: Power Line Trail, Flynn 3545 (PTBG); Kahiliwai Valley, Rock 17295 (BISH).



***Pritchardia waialealeana*** Read, Principes 32: 135. 1988. Type: Power Line Trail, Kauai, Hawaii, Lorence 8446 (Neotype [here designated] PTBG!; isoneotype K).

To 20 m tall (Fig. 42); proximal margins of petiole with only a few fibers; leaf blade slightly undulate, divided 2/5, abaxial surface incompletely covered with scattered lepidia and mostly lacking cottony indumentum on folds at base (Fig. 43), segment tips drooping to occasionally stiff; inflorescences composed of 1–3 panicles, shorter than or equaling petioles in flower and fruit, panicles branched to 3 orders (Fig. 44), rachillae glabrous; fruits (immature) 20 × 15 mm, ellipsoid.

*Distribution:* Wet forest below the Waialeale massif in east central Kauai, 500–750 m elevation.

*Pritchardia waialealeana* is difficult to distinguish from *P. glabrata* and *P. remota*. All three share the undulate leaf blades incompletely covered abaxially with lepidia and with drooping segment tips, inflorescences shorter than or equaling the petioles with panicles branched to three orders, glabrous rachillae, and small fruits. However, both *P. glabrata* and *P. remota* differ in the folds on the



44. Inflorescences of *Pritchardia waialealeana* have panicles branched to three orders (Power Line Trail, Kauai, Hawaii).

abaxial surface of their leaf blades clothed with thick, cottony or mealy indumentum and the more or less rounded fruits.

A search failed to reveal any of Read's designated type material (*Read 87-211*) at US, BISH, HLA (HAW), BH, or PTBG; thus, I have designated *Lorence 8446* from the type locality as the neotype. A photograph of *Pritchardia waialealeana* is erroneously captioned *P. hardyi* in Beccari and Rock (1921, Pl. XIII A).

*Specimens Examined.* U.S.A. Hawaii. Kauai: Power Line Trail, *Bishop 1279* (HAW), *Lorence 8446* (PTBG), *Wood 227, 228* (PTBG); Makaleha Mountains, *Wood 7305* (PTBG).

***Pritchardia woodii*** Hodel sp. nov., Figs. 45–49.

*P. lanigeræ* affinis sed rhachillis et rhachidibus velutinis differt. Typus: U.S.A.. Hawaii. Maui (E. Maui): Waihoi Valley, Hana Forest Reserve, *Hodel et al. 2009* (Holotypus BISH!).

Solitary, to 15 m tall (Fig. 45); trunk 20–25 cm diam., grayish, longitudinally grooved. Leaves 15–20, erect to spreading; leaf bases tapering to 25 cm wide distally; petioles 60–105 cm long, 3.5–4.5 cm wide at blade, flat distally, toward base becoming convex adaxially and rounded abaxially, a faint stripe or rib extending adaxially throughout its length, margins sharp (sword-like), green with white to tan mealy indumentum abaxially on margins extending onto folds of blade,

proximally with aggregated ribbon-like appendages and only sparsely to moderately fibrous; blade 80–130 × 100–145 cm, subcircular, costapalmate for 20–35 cm, hastula semicircular, 0.5–8 cm high, 4 cm wide, sharp, blade divided into 55–70 segments, middle-lateral ones the largest, 85–115 × 5 cm, most proximal ones smallest, 20–45 × 0.5–1 cm, middle-lateral segments with tips free for 35 cm and bifid for 25 cm, most proximal segment with tips free for 20–25 cm and bifid for 12 cm, tips rigid, long-acuminate, glossy light green and glabrous adaxially except for white mealy indumentum on folds, similar abaxially but moderately dotted with faint, minute, irregularly shaped, tan to whitish lepidia. Inflorescences 5–7 interfoliar, 75–135 cm long, erect and shorter than or equaling petioles in flower, arching or nodding and exceeding petioles but shorter than leaf blades in fruit, composed of 1 or 2 long axes each terminating in a compact panicle (Fig. 46); axes 65–120 cm long, slender, 1.8–3 cm wide and 1.1 cm thick at base with prophyll, 1–2 cm wide at apex and flattened, densely covered with grayish brown, short, velvety hairs under bracts; prophyll 25 × 7.5 cm, marescent at tip, flattened and bicarinate at base, 7–8 peduncular bracts, these 15–40 cm long, longest proximally, shortest distally, tightly sheathing proximally, expanded and boat-like distally, papery, brown, uppermost extending onto and partially concealing panicle, all bracts with scurfy, deciduous indumentum; panicle



45. *Pritchardia woodii* grows to about 15 m tall in scattered but dense colonies in Waihoi Valley, East Maui, Hawaii (Hodel 2009, holotype).

densely branched to 2 orders, 15–22 cm long, rachis 10–15 cm long, proximal branches with sub-peduncle to 2.5 cm long, sub-rachis 1.5 cm long, and with 5–8 rachillae, distal branches simple rachillae, 20–25 rachillae total, rachillae 8–13 cm long, 2 mm diam. in flower, 3–3.5 mm diam. in fruit, stiff, strongly

flexuose, narrowly diverging (45 degrees or less) from rachis, densely covered in flower and fruit with short, velvety hairs (Fig. 47), these white to grayish in flower, brownish in fruit. Flowers densely placed in 1 or 2 spiralling rows 3–5 mm apart (Fig. 48), flowers 2 or 3 mm apart within a row, very strongly slanted or



46. Infructescences of *Pritchardia woodii* are composed of one to two, compact panicles, each on a long axis that nearly equals the leaf blades [type tree (Hodel 2009), Waihoi Valley, East Maui, Hawaii].



47. Rachillae of *Pritchardia woodii* are densely and permanently clothed with short, velvety hairs [cultivated, Hoomaluhia Botanical Garden (HBG 87.1439, Hodel 2011), Oahu, Hawaii].

disposed distally, sometimes nearly reclining, in prominent clefts 1.5 mm deep, each cleft with a filamentous bracteole 4 or 5 mm long subtending the flower proximally; flowers at anthesis 9–10 × 7–10 mm, greenish yellow; calyx 5 mm high, coriaceous, greenish proximally, yellowish green distally, sepals imbricate at apex, mucronate; corolla tube about equaling calyx, lobes 6 × 3 mm, lanceolate, acute, light yellowish, prominently nerved adaxially, faintly nerved abaxially; staminal tube amber to brownish, exerted 1 mm above calyx, stamens spreading, borne on filaments 1 or 2 mm long, anthers 4 mm long, oblong, medifixed dorsally about 1/3 from their base, spreading flat; pistil 6–7 × 2 or 3 mm, spindle-shaped, ovary 2.5 × 2 mm, style 3.0–3.5 mm long, yellowish, exerted 2 or 3 mm above staminal ring, columnar, truncate apically. Fruits (not yet fully ripe) 45–50 ×

40–45 mm (Fig. 49), ovoid to ellipsoid, greenish, sometimes warty.

Distribution: Moist to wet forest in Waihoi and Kipahulu Valleys, East Maui, Hawaii, 700–1000 m elevation.

*Pritchardia woodii* occurs as groups of five to ten individuals scattered in Waihoi and Kipahulu Valleys, East Maui. Associated genera include *Cheirodendron*, *Labordia*, *Machaerina* and *Perrottetia*. Potential threats include invasive plant species such as *Clidemia hirta* and *Rubus rosifolius* and pigs and rats. The conservation status of *P. woodii* is probably best considered endangered because of the small number of mature palms and the threats to their survival. It is cultivated at Hoomaluhia and Wahiawa Botanical Gardens of the Honolulu Botanical Gardens system on Oahu.

*Pritchardia woodii* is very similar to *P. lanigera* but the latter differs in the rachillae and rachis covered with woolly indumentum. It is also somewhat similar to *P. arecina*, which occurs not too far to the northeast and north in East Maui but in slightly wetter areas; *P. arecina*, however, differs in having leaf blades completely covered abaxially with lepidia and petioles with an abundance of fibers proximally.

The epithet honors Ken Wood, field botanist for the National Tropical Botanical Garden on Kauai and prodigious collector of Hawaiian *Pritchardia*, including two of the paratypes of this species.

*Specimens Examined.* U.S.A. Hawaii. Maui (E. Maui): Hana Forest Reserve, Waihoi Valley, S. side of valley near Waiohinu Stream, 900 m elev., 14 July 2006, D. R. Hodel 2009 (with R. Hobdy & K. Morris) (BISH); *Herbst 2619* (BISH); Haleakala National Park, Kipahulu Valley, *Wood 7683, 7687* (PTBG). CULT. U.S.A. Hawaii. Oahu: Hoomaluhia Botanical Garden, *HBG 87.1439, Hodel 2011* (BISH), originally collected by R. Read and R. Hobdy, 16 Dec. 1987, Waihoi Valley, Maui; Wahiawa Botanical Garden, *HBG 72.0617, Hodel 2012* (BISH), originally collected by D. Herbst, 24 July 1972, Waihoi Valley, Maui.

#### Imperfectly Known or Dubious Species

***Pritchardia aurea*** Linden ex Becc., Mem. Bernice P. Bishop Mus. 8: 76. 1921 Type: Cult. (ex Herrenhausen), *Anonymous s. n.* (Holotype B [destroyed], isotype FI [fragment]).

This binomial first appeared as a name only (Rev. Hort. 50: 186. 1878) in a listing of plants that nurseryman Jean Linden had presented at the Exposition Internationale d'Horticulture at Gand (Ghent) in 1878. It appeared again as a name only (Ill. Hort. 28: 32. 1881) in a listing of plants that Linden introduced to commerce and shortly thereafter in an account of plants at the Royal Botanical Gardens, Kew (Rep. Roy. Bot. Gard. Kew 1882 [1884]: 65).

48. *Pritchardia woodii* has densely placed, very strongly slanted or disposed flowers [cultivated, Wahiawa Botanical Garden (HBG 72.0617, *Hodel 2012*), Oahu, Hawaii].

49. Fruits of *Pritchardia woodii* are large [cultivated, Wahiawa Botanical Garden (HBG 72.0617, *Hodel 2012*), Oahu, Hawaii].



Beccari (1890, 1907, 1913) listed *Pritchardia aurea* as a name only or insufficiently known species, although in his 1907 account he stated that he had seen sterile material at B that originated from Herrenhausen. He also said that it should be compared to *P. pacifica*. Finally Beccari (in Beccari & Rock 1921) validated the name when he provided a short description, apparently generated from the material he had seen at B. He stated that it differed from all other species in the transverse or nearly horizontal, unequally lobate ligula and the broadly cuneate base of the leaf blade. He added that the abaxial leaf blade surface was "sprinkled with small prominent subglandiform, pluricellular, yellowish bodies."

Unfortunately, the meager description and fragmentary type are insufficient to identify this species.

***Pritchardia macrocarpa*** Linden ex André, Ill. Hort. 26: 105, Pl. 352. 1879. Type: Cult. (Holotype, Plate 352 in André, Ill. Hort. 26. 1879.)

This binomial first appeared as a name only (Rev. Hort. 48: 375. 1876.) in a discussion of new palms that nurseryman Jean Linden introduced at an exposition in Brussels. It appeared again as a name only (Rev. Hort. 50: 186. 1878) in a listing of plants that Linden had presented at the Exposition Internationale d'Horticulture at Gand (Ghent) in 1878.

In a discussion of new palms that Linden had made available to commerce, André (Ill. Hort. 26: 105, Pl. 352. 1879.) provided a very short description, thus validating the species, even if he had no intention of doing so. He said (translated), "Tall tree, in habit similar to *P. martiana* (sic), but distinct in its more robust growth, larger fronds, and fruits the size of *Juglans regia* (English walnut) nuts." A search of herbaria where Linden types would likely be deposited yielded no specimens annotated as *Pritchardia macrocarpa*. Thus, an illustration of a young, juvenile plant that accompanies the article constitutes the type. Neither the brief description nor the illustration is diagnostic.

The binomial appeared several times thereafter in European horticultural accounts but these were always simply listings of the name and, if a description was provided, it was identical (or nearly so) to André's original description. Beccari (1890, 1907, 1913) listed *Pritchardia macrocarpa* as a name only or insufficiently known species, although in his 1907 account he stated that he had seen sterile material at

B from Herrenhausen and that it should be compared to *P. gaudichaudii*.

Beccari (Beccari & Rock 1921), providing a lengthy and detailed description, concluded that he had finally and positively identified *Pritchardia macrocarpa*, and that Hillebrand had collected it on Oahu although Hillebrand had erroneously referred to it as *P. martii*. Beccari also stated that a specimen at B, which he had seen and which was labeled "Palolo, Oahu (large seed) Hillebr. March 1870," probably belonged to *P. macrocarpa* although it apparently consisted only of a panicle with fruits and old flowers.

Beccari added that Rock, who had systematically explored the mountains near Honolulu, had never encountered this palm in the wild, probably because of encroaching urbanization. Beccari accepted that it once existed there and thought that Hillebrand (1888) was referring to it when he said, "In Nuuanu, where until recent times two clumps could be seen from the upper part of the valley, one was completely exterminated when the natives found that the trees were saleable to amateurs of gardening in Honolulu; the other owes its preservation to the absolute inaccessibility of the cliffs on which it stands."

However, Beccari stated that Rock had noted a number of these palms cultivated in Honolulu, and it was from one of these, a specimen growing in the yard of Hillebrand's former residence (now Foster Garden of the Honolulu Botanical Gardens), that Rock collected material from which the description of *Pritchardia macrocarpa* was derived. This famous specimen is still alive, has a protective fence around it, and was designated an Exceptional Tree of Hawaii (Belknap 1982), but is best referred to *P. lowreyana* from Molokai.

In his description of *Pritchardia macrocarpa*, Beccari described the abaxial leaf blade surface as "minutely dotted with small inconspicuous lepidia;" thus, the blade surface is incompletely covered, ruling out *P. martii*, the only species known from the Koolau Mountains behind downtown Honolulu.

Thus, I feel that Beccari and Rock erred in their interpretation of *Pritchardia macrocarpa*. What Hillebrand collected in Palolo Valley in 1870 was really *P. martii*, which is common in the upper reaches of the valley, and the reason Rock had never seen *P. macrocarpa* in the wild on Oahu was because it never occurred there. What Beccari interpreted to be *P. macrocarpa*,

which he based on the famous cultivated tree in Hillebrand's former residence, matches up very well or is identical to *P. lowreyana* from Molokai. The name *Pritchardia macrocarpa*, thus, is best relegated to an insufficiently known or dubious species.

***Pritchardia pericularum*** H. Wendl. ex Becc., Malesia 3:292. 1890. *Washingtonia pericularum* (H. Wendl.) Kuntze, Revis. Gen. Pl. 2: 737. 1891. *Eupritchardia pericularum* (H. Wendl.) Kuntze, Revis. Gen. Pl. 3(2): 323. 1898. *Styloma pericularum* (H. Wendl.) O. F. Cook, J. Wash. Acad. Sci. 5: 241. 1915. Type: Cult. (ex Herrenhausen), *Anonymous s. n.* (Holotype B [destroyed], Isotype FI [fragment, photo!]).

Habit unknown; leaf blade glabrous, devoid of lepidia on the abaxial surface; fruits 20 × 18 mm, globose; seed 12 × 13 mm.

Beccari and Rock (1921) attributed this binomial to Wendland, who may have provided the name in a 1870s or 1880s nursery catalog or seed list of Charles Vuylsteke, a nurseryman from Loochristi, near Ghent, Belgium. A search of Vuylsteke's available nursery catalogs, however, failed to reveal the name, let alone a description that could be considered a formal naming of the species. The first documented appearance of the binomial was as a name only (Rev. Hort. 55: 206. 1883) in a discussion of plants that Vuylsteke had exhibited at the Exposition Internationale de la Société Royale d'Agriculture et de Botanique de Gand in 1883.

Beccari (1890) provided a very brief description of the plant, thus validating the species, primarily giving the size of the fruits and seeds and the general color of the leaf and petiole, saying *Pritchardia pericularum* differed from *P. vuylstekeana* in its smaller fruits and petiole. Unfortunately, Beccari gave no information about the material on which he based the description. Later Beccari (1907) gave a brief description of the fruits, simply repeating the scant information from his 1890 account.

A few years later Beccari (1913), citing material at B that originated from a plant cultivated at Herrenhausen, provided a more detailed description of a leaf, apparently from an adult plant. Although there is no way to verify the authenticity of the material at B, there is a high degree of probability that it was authentic *Pritchardia pericularum* because Wendland was in charge of Herrenhausen at the time when the plants would have been cultivated there.

Finally, Beccari (Beccari & Rock 1921) gave a very brief description of the fruits and seeds, obviously relying again on Beccari's scant original information, and of the leaf blade, which he noted was glabrous and devoid of lepidia on the abaxial surface. He also noted that it grew with *P. vuylstekeana* in the Tuamotu Archipelago. Thus, although the accounts do not explicitly state its habitat, it can be inferred that it is the same as that of *Pritchardia vuylstekeana* (which see).

The identity of this poorly known and documented entity is a mystery. Its origin in the Tuamotu Archipelago is even dubious. No material matching the fruit size of *Pritchardia pericularum* has ever been collected in the wild in the South Pacific, let alone the Tuamotu Archipelago, indicating its provenance may be in error.

***Pritchardia vuylstekeana*** H. Wendl. in André, Rev. Hort. 55: 329. 1883. *Washingtonia vuylstekeana* (H. Wendl.) Kuntze, Revis. Gen. Pl. 2: 737. 1891. *Eupritchardia vuylstekeana* (H. Wendl.) Kuntze, Revis. Gen. Pl. 3(2): 323. 1898. *Styloma vuylstekeana* (H. Wendl.) O. F. Cook, J. Wash. Acad. Sci. 5: 241. 1915. Type: Fig. 59 in André (1883) (Holotype!).

Habit unknown; leaf blade glabrous, devoid of lepidia on the abaxial surface; fruits 24 × 20 mm, globose to ellipsoid; seed 14 × 15 mm.

This binomial has a history similar to that of the preceding one. It first appeared as a name only (Rev. Hort. 55: 206. 1883) in a discussion of plants that Vuylsteke had exhibited at the Exposition Internationale de la Société Royale d'Agriculture et de Botanique de Gand in 1883. The binomial may have also appeared in Vuylsteke's nursery catalogs or seed lists of the same era, although a search of the available catalogs failed to reveal the name.

The binomial was again listed as a name only (Gard. Chron. 109: 693. 1883) in a discussion of plants that Vuylsteke had presented at the Paris Exhibition in 1883. In that account, an illustration provided by Vuylsteke of a juvenile plant accompanied the article.

Nearly simultaneously, André (Rev. Hort. 55: 329. f. 59. 1883), reporting on the 1883 Gand (Ghent) exposition, provided a more lengthy account of *Pritchardia vuylstekeana* in which, quoting directly from a letter or other information that Wendland had written, appeared the name and a description of the fruits, seeds and (very briefly) a leaf from a

young plant. Thus, the name and description were formally validated and are attributed to Wendland. Also, the same illustration that appeared in *The Gardeners' Chronicle* was reproduced in André's article. As no type was designated, it is accepted as the holotype.

André gave additional, general information about the plant, which he had seen at Ghent, and commented on its suitability as a horticultural subject for European stovehouses. He also provided information (probably from Vuylsteke) about the habitat of this species in the Tuamotu Archipelago in French Polynesia. He stated that the seeds were collected from a low, uninhabited island with no prior European contact that, because of rocky cliffs, was nearly inaccessible and so difficult to land upon that many boats had crashed in previous attempts. The seeds retained their viability after a seven-month voyage and germinated. No information was provided about who collected them or when, or the exact location or name of the island.

Beccari (1890, 1907) gave a brief description of the fruits, simply repeating the scant information that André had provided. A few years later Beccari (1913), citing material he had examined at B that originated from a plant cultivated at Herrenhausen, provided a more detailed description of a leaf, apparently from an adult plant. As was the case with *Pritchardia pericularum*, there is no way to verify the authenticity of the material at B, although there is a high probability that it was authentic *Pritchardia vuylstekeana*.

Beccari (Beccari & Rock 1921) gave a very brief description of the fruits and seeds, obviously relying again on Wendland's scant original information, and of the leaf blade, which he noted was glabrous and devoid of lepidia on the abaxial surface.

Like *Pritchardia pericularum*, the identity of this poorly known and documented entity remains a mystery. Its origin in the Tuamotu Archipelago is dubious. Nearly all islands in the archipelago are low, coral atolls without rocky cliffs. The one well known raised island with rocky cliffs in the archipelago is Makatea. Although Makatea does have an indigenous *Pritchardia*, it is *P. mitiarioana*, which differs in its small fruits 7 mm in diameter, about one-third the size of those of *P. vuylstekeana*. The report of *P. vuylstekeana* on Makatea (Wilder 1934) is an error. Material cultivated as *P. vuylstekeana* in collections in Hawaii, Tahiti and perhaps elsewhere, is *P. pacifica*.

Whatever their final disposition, *Pritchardia pericularum* and *P. vuylstekeana* are probably the same taxon. Their fruit size and abaxial leaf blade surface devoid of lepidia immediately conjure up *P. hillebrandii* or perhaps *P. maideniana*.

### Names of No Botanical Standing

#### *Pritchardia moensii* hort.

This binomial first appeared as a name only (Rev. Hort. 55: 206. 1883.) in a discussion of plants that Moens had exhibited at the Exposition Internationale de la Société Royale d'Agriculture et de Botanique de Gand in 1883. The account stated it was from the Tuamotu Archipelago. There was no indication about who attributed the name to Moens.

Beccari (1890, 1907, 1913) listed it as a name only and stated in the first two accounts that it was probably allied to *Pritchardia pericularum* and *P. vuylstekeana*, probably simply because of its purported origin.

#### *Pritchardia woodfordiana* hort. ex Dennis & McQueen

This name was applied to plants of *Pritchardia pacifica* purportedly growing wild on Nggela Island north of Guadalcanal in the Solomon Islands (Dennis & McQueen 1989).

### Excluded Names

*Pritchardia borneensis* hort. ex Linden = *Licuala* sp.?

*Pritchardia cusiniana* hort. ex Linden = *Livistona* sp.?

*Pritchardia filamentosa* H. Wendl. ex Franceschi = *Washingtonia filifera* (Linden ex André) H. Wendl. ex de Bary.

*Pritchardia filifera* Linden = *Washingtonia filifera* (Linden ex André) H. Wendl. ex de Bary.

*Pritchardia grandis* (H. Wendl.) W. Bull = *Licuala grandis* H. Wendl.

*Pritchardia grandis* H.J. Veitch = *Licuala orbicularis* Becc.

*Pritchardia robusta* (H. Wendl.) Schrot. = *Washingtonia robusta* H. Wendl.

*Pritchardia wrightii* (Griseb. & H. Wendl. ex Voss) Becc. = *Colpothrinax wrightii* Griseb. & H. Wendl. ex Voss.

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#### LITERATURE CITED

- BECCARI, O. 1890. Le palme del genere *Pritchardia*. Malesia 3: 281–317.
- BECCARI, O. 1907. Le palme americane della tribú delle Corypheeae. Webbia 2: 1–343.
- BECCARI, O. 1913. Contributi alla conoscenza delle palme. Webbia 4: 143–240.
- BECCARI, O. AND J.F. ROCK. 1921. A monographic study of the genus *Pritchardia*. Mem. Bernice P. Bishop Mus. 13: 1–77, Pl. 1–24.
- BELKNAP, J.P. 1982. Majesty: Exceptional Trees of Hawaii. Outdoor Circle, Honolulu, Hawaii.
- BURKILL, I.H. 1901. The flora of Vavau, one of the Tonga Islands. J. Linn. Soc. Bot. 35: 20–65.
- DENNIS, G. AND C. MCQUEEN. 1989. Palms in the Solomon Islands, pp. 9–45 in: J.L. DOWE (ed.), Palms of the Solomon Islands. The Palm and Cycad Societies of Australia, Milton, Queensland, Australia.
- FULLER, D. 1997. Conservation Status, Diversity and Systematics of the Indigenous Palms of Fiji. M.S. Thesis. University of the South Pacific, Suva, Fiji.
- FULLER, D. AND E.C. JONES. 1999. Venture to Vanua Balavu: collecting *Pritchardia thurstonii* in its native habitat. Palms 43: 184–189.

- GEMMILL, C.E.C. 1996. Population genetics and systematics of the Hawaiian taxa *Pritchardia* (Arecaceae) and *Brighamia* (Campanulaceae). Ph.D. Thesis. University of Colorado, Boulder, Colorado.
- HODEL, D.R. 1980. Notes on *Pritchardia* in Hawaii. *Principes* 24: 65–81.
- LISTER, J.J. 1893. Notes on the position, geology, and aspects of the vegetation of the Tonga Islands, pp.160–162 in: W B. HEMSLEY, On the flora of the Friendly Islands. *J. Linn. Soc. Bot.* 30: 158–217.
- MARTIUS, C.F.P. VON. 1849. *Historia Naturalis Palmarum*. Vol. 3. T. O. Weigel, Leipzig.
- MOORE, H.E., JR. 1979. Arecaceae, pp. 392–438 in: A.C. SMITH (ed.), *Flora Vitiensis Nova*. Pacific Tropical Botanical Garden, Lawai, Kauai, Hawaii.
- READ, R.W. AND D.R. HODEL. 1999. Arecaceae, pp. 1360–1375 in: W.L. WAGNER, D.R. HERBST AND S.H. SOHMER (eds.), *Manual of the Flowering Plants of Hawai'i*, Rev. Ed. Bernice P. Bishop Mus. Spec. Pub. 97. Bernice P. Bishop Museum and University of Hawaii Press, Hawaii.
- ST. JOHN, H. 1932. Notes on *Pritchardia*. *Occas. Pap. Bernice P. Bishop Mus.* 9(19): 3–5.
- ST. JOHN, H. 1984. Novelties among the Phanerogamae, *Hawaiian Plant Studies* 123. *Bull. Torrey Bot. Club* 111: 479–482.
- WAGNER, W.L. AND D.R. HERBST. 2003. Supplement to the *Manual of the Flowering Plants of Hawai'i*. <http://ravenel.si.edu/botany/pacificislandbiodiversity/hawaiianflora/ManualSupplement3.1.pdf> (Accessed March 1, 2007).
- WATLING, D. 2005. *Palms of the Fiji Islands*. Environmental Consultants, Suva, Fiji.
- WILDER, G.P. 1934. The flora of Makatea. Bernice P. Bishop Mus. *Bull.* 120.

#### Appendix 1. *Pritchardia* of the Hawaiian Islands.

Hawaii	Niihau
<i>P. beccariana</i>	<i>P. remota</i>
<i>P. gordonii</i>	
<i>P. lanigera</i>	Maui
<i>P. maideniana</i>	<i>P. arecina</i>
<i>P. schattaueri</i>	<i>P. forbesiana</i>
	<i>P. glabrata</i>
Lanai	<i>P. munroi</i>
<i>P. glabrata</i>	<i>P. woodii</i>
Kauai	Molokai
<i>P. flynnii</i>	<i>P. forbesiana</i>
<i>P. hardyi</i>	<i>P. hillebrandii</i>
<i>P. minor</i>	<i>P. lowreyana</i>
<i>P. napaliensis</i>	<i>P. munroi</i>
<i>P. perlmanii</i>	
<i>P. viscosa</i>	Oahu
<i>P. waialealeana</i>	<i>P. kaalae</i>
	<i>P. kahukuensis</i>
Nihoa	<i>P. martii</i>
<i>P. remota</i>	

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### BACK COVER

*Pritchardia martii* occurs along the length of the Koolau Range on Oahu, Hawaii, where it typically grows to only a few meters tall on the steep windward slope (terminus of the Poamoho Trail).

