

KEY TO THE GENERA OF BROMELIACEAE at 08/2012. by Derek Butcher

This follows roughly the information given in the Monograph by Smith and Downs (Flora Neotropica no. 14, 1974 - 77) which covered 46 genera. This was expanded in Lyman Smith's paper in Beitr. Biol. Pflanzen 63 (1988) 403 - 411 to cover 51 genera where he added new genera *Steyerbromelia*, *Brewcaria*, *Pseudaechmea*, and *Lymania*. *Lindmania* was revived from synonymy of *Cottendorfia*. In the same issue but on pages 101 - 113 Elvira Gross reported findings on the germination processes of the three subfamilies and one facet is shown in the key below. The key was further updated in 1998 by L B Smith and W Till to cover 56 genera in The Families and Genera of Vascular plants, Kubitzki pages 83 - 86 (1998) where *Alcantarea*, *Werauhia*, *Ursulaea*, *Pepinia*, and *Racinaea* were added. *Abromeitiella* had been placed in synonymy under *Deuterocohnia* Note that *Streptocalyx* was retained purely because the genus *Aechmea* is currently in a state of flux. From a horticultural point of view the retention of this genus tends to make sense because of the similar growing conditions needed to get good specimens. However, *Chevaliera* was resurrected to genus status because of its clearly delineated boundaries and is said to be more of a natural group. Since this publication the genera have increased to 58 where Derek Butcher has now added *Canistropsis*, and *Edmundoa*, and made adjustments to *Canistrum*, *Nidularium*, and *Wittrockia* because of Elton Leme's recent work *Canistrum - Bromeliads of the Atlantic Forest* (1997) and *Canistropsis - Bromeliads of the Atlantic Forest* (1998). The merging of *Pepinia* into *Pitcairnia* at generic level in Harvard Papers in Botany Vol. 4 no.1 195 - 202 (1999) by Robinson and Taylor has reduced the genera to 57. The creation of a new genus *Viridantha* for the 'Little Green Mexican' Tillandsias by Espejo in Acta Bot Mex 60: 2002 was not accepted by botanists outside Mexico. The transfer of *Pseudananas* to a synonym of *Ananas* see Coppens d'Eeckenbrugge, G & F Leal, The Pineapple: Botany, Production and uses. CAB Int. 2: 13-32. 2003 reduces the genera to 56. The resurrection of *Andrea* Brown & Leme in Taxon 54 (1): 63-70. 2005 (now *Eduandrea* see Leme et al in J. Brom. Soc 58(2): 61-4. 2008) increases genera to 57. Givnish et al in Aliso 23: 3-26. 2007 gave major changes within Pitcairnioideae which is now Hechtioideae, Puyoideae, Pitcairnioideae, Lindmanioideae, Brocchinioideae, and Navioideae. Genus change is where *Ayensua* is now *Brocchinia* and new genus *Sequencia*. Number remains at 57. In Flora of Sao Paulo by Wanderley et al in 2007 we see some genera of plants from this state of Brazil treated differently. For example, *Canistropsis* treated as *Nidularium*, and *Edmundoa* and *Wittrockia* as *Canistrum*. These moves do not seem to have been accepted other than by botanists in Sao Paulo. No action taken. In 2010 *Lapanthus* added, number now 58.

The splitting of *Vriesea* from *Tillandsia* is still based on petal appendages. The process of re-evaluating the Tillandsioideae has been accomplished so far with the acceptance of *Alcantarea*, *Racinaea*, and *Werauhia*. Some taxa, for example *Tillandsia engleriana* and *Tillandsia myriantha* have petal appendages and should be treated as *Vriesea* in the strict sense, but sit comfortably in the *Tillandsia* sub-genus *Allardtia*.

The splitting of *Portea* from the rest is based on pedicellate flowers but there is an exception in the taxon which has all the attributes of a *Portea* but was described as *Aechmea rubrolilacina*. Leme has also transferred *Portea leptantha* to *Aechmea leptantha* indicating this genus needs review.

KEY

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|---|-------------------------------|
| 1. Fruits indehiscent, baccate | Bromelioideae 9-56 |
| 1a Fruits dehiscent, capsular | 2 |
| 2. Seeds plumose-appendaged | Tillandsioideae 57-64 |
| 2a Seeds winged or naked | 3 |
| 3. Flowers dioecious, plants of Central America ... | Hechtioideae 65 |
| 3a Flowers perfect, or rarely monoecious or polygamodioecious, or dioecious and plants of the Brazilian Shield | 4 |
| 4. Petal blades showy, tightly spiralled after anthesis, broad and distinct from claws | Puyoideae 66 |
| 4a Petal blades remaining free after anthesis, or if slightly coiled, then not clawed | 5 |
| 5. Petals large and conspicuous or, if minute, then sepals imbricate and anthers basifixed, linear | Pitcairnioideae 67-69 |
| 5a Petals minute and sepals cochlear, or petals and bracts various and sepals convolute | 6 |
| 6. Sepals convolute | Lindmanioideae 70 |
| 6a Sepals cochlear and petals minute | 7 |
| 7. Leaves entire, stellate chlorenchyma abundant | Brocchinioideae 71 |
| 7a Leaves toothed, stellate chlorenchyma absent | Navioideae 72-75 |
| 9. Sepals symmetric or nearly so | 10 |
| 9a. Sepals asymmetric | 34 |
| 10.. Filaments forming a tube to which the fleshy petals are joined along their centres but with their margins free; sepals mostly free or nearly so; leaves very laxly and coarsely spinose -serrate | 11 |
| 10a. Filaments not connate but sometimes adnate | 13 |
| 11. Sepals with soft, usually broad apices; inflorescences compound. Mexico and the West Indies to Argentina and Uruguay | <i>Bromelia</i> |
| 11a Sepals spinose-mucronate | 12 |
| 12. Inflorescence simple, with almost no scape. Argentina | <i>Deinacanthon</i> |
| 12a. Inflorescence branched with terminal cone-like branches, with a scape. S Mexico, Guatemala. | <i>Hohenbergiopsis</i> |
| 13 Terminal axes of the inflorescence visible | 14 |
| 13a. Terminal axes of the inflorescence covered by leaves or bracts | 20 |
| 14. Petals naked; sepals 0.5-7 mm long | 15 |
| 14a. Petals appendaged; sepals mostly much larger | 18 |
| 15. Inflorescence compound; sepals broadly ovate or oblong, 0.5-2mm long. Costa Rica and | |

Trinidad to Amazonian Brazil	<i>Araeococcus</i>
15a. Inflorescence simple; sepals narrowly elliptic, 7mm long; flowers subsessile or pedicellate. Mount Itatiaia area in E Brazil	<i>Fernseea</i>
16. Petals zygomorphic or tightly recoiled and flowers sessile. W Mexico and Central America to Argentina and Uruguay	17
16a. Petals not zygomorphic	18
17. Epigynous tube usually well developed	<i>Billbergia</i>
17a. Epigynous tube shallow. W Mexico	<i>Ursulaea</i>
18. Petals erect. E Brazil	19
18a. Petals recoiled at the top	<i>Ursulaea</i>
19. Flowers sessile	<i>Quesnelia</i>
19a. Flowers pedicellate	<i>Neoglaziovia</i>
20. Inflorescence simple, cone-like; flowers solitary in the axil of each bract	21
20a. Inflorescence compound	28
21. Scape short or none; cone-like branches nidular or axillary	22
21a. Scape well developed, obvious	26
22. Floral bracts leaf-like, petals with reflexed lobes. NE Brazil	<i>Orthophytum</i>
22a. Floral bracts leaf-like, petals with straight lobes. NE Brazil	<i>Lapanthus</i>
22b. Floral bracts bract-like	23
23. Scape distinct, its bracts shorter than the floral bracts; petals naked. Mexico and Venezuela to Chile	<i>Greigia</i>
23a. Scape none or very short	24
24. Epigynous tube shallow, bowl-shaped (<i>A. pitcairnioides</i>) Brazil: Bahia	<i>Acanthostachys</i>
24a. Epigynous tube cylindric, deep. Chile	25
25. Sepals obtuse, stamens included, petals blue	<i>Fascicularia</i>
25a. Sepals acute with pungent apex, stamens exerted, petals rose	<i>Ochagavia</i>
26. Scape erect, without bracts (<i>A. strobilacea</i>). S Brazil, Paraguay, Argentina	<i>Acanthostachys</i>
26a. Scape covered with bracts	27
27. Scape bracts leaf-like, scape erect. NE Brazil	<i>Orthophytum</i>
27a. Scape bracts leaf-like, no scape. NE Brazil	<i>Lapanthus</i>
27b. Scape bracts bract-like; scape prostrate. French Guiana and adjacent Brazil	<i>Disteganthus</i>
28. Inflorescence obviously compound with several strobils on an elongate floral axis	29
28a. Inflorescence pseudosimple with hands or flat fascicles in the axils of large bracts	30
29. Floral bracts leaf-like, serrulate; cone-like branches sessile or subsessile. NE Brazil	<i>Orthophytum</i>
29a. Floral bracts bract-like, entire; cone-like branches on distinct scapes. Mexico and Venezuela to Chile	<i>Greigia</i>
30. Outer bracts of the inflorescence leaf-like; sepals high connate; petals naked. NE Brazil	

	<i>Cryptanthus</i>	
30a. Outer bracts of the inflorescence leaf-like; sepals free or connate; petals appendaged		
	<i>Lapanthus</i>	
30b. Outer bracts of the inflorescence bract-like, large, and covering most of the flowers. E Brazil		31
31. Petals erect and apex distinctly obtuse cucullate, connate or agglutinated in a tube the height of the sepals	<i>Nidularium</i>	
31a. Petals sub-erect to spreading at anthesis, free or nearly so		32
32. Inflorescence wool persistent after anthesis	<i>Edmundoa</i>	
32a. Inflorescence wool not persistent		33
33. Stolons slender, flowers 20-35 mm long	<i>Canistropsis</i>	
33. Stolons stout or none, flowers 45 - 80 mm long	<i>Wittrockia</i>	
33. Rhizomes underground, flowers 24-27mm long, leaves entire	<i>Eduandrea</i>	
34. Ovaries coalescing to form a compound fruit; inflorescence simple, strobilate	<i>Ananas</i>	
34a. Ovaries always remaining distinct		35
35. Flowers pedicellate		36
35a. Flowers sessile or subsessile		41
36. Inflorescence nidular, simple in most species; petals naked. Amazonia, E Brazil	<i>Neoregelia</i>	
36a. Inflorescence scapose		37
37. Sepals more or less connate, long-mucronate; petals appendaged. E Brazil	<i>Portea</i>	
37a. Sepals free or unarmed		38
38. Inflorescence simple; sepals without sharp tip		39
38a. Inflorescence compound		40
39. Petals naked. Colombia	<i>Pseudaechmea</i>	
39a. Petals appendaged. Colombia and Guyana to NE Brazil	<i>Aechmea</i> subg. 2. <i>Lamprococcus</i>	
40. Sepals 1.5-3 mm long; inflorescence glabrous; petals naked. Colombia to Suriname and Amazonian Brazil	<i>Araeococcus</i>	
40a. Sepals 3.5-22 mm long; inflorescence lepidote; petals appendaged. Mexico to Peru	<i>Aechmea</i> subg. 1. <i>Podaechmea</i>	
41. Petals appendaged with well-developed appendages		42
41a. Petals naked or with lateral folds or rudimentary or reduced appendages		49
42. Epigynous tube shallow or lacking; flowers in tubular cone-like branches; inflorescence mostly pinnate and lax, rarely digitate or simple and without petal appendages (<i>H. littoralis</i>). Antilles to Venezuela and Brazil.	<i>Hohenbergia</i>	
42a. Epigynous tube well developed; inflorescence various		43
43. Sepals without a sharp tip		45
43a. Sepals with a sharp tip.		44

44. Inflorescence not involucrate . N and S America *Aechmea* subg. 3. *Aechmea*,
Aechmea subg. 4. *Ortgiesia*,
Aechmea subg. 6. *Pothuava*
- 44a. Inflorescence involucrate with large upper scape bracts and primary bracts. S. America
Canistrum
45. Floral bracts attached basally, not decurrent nor forming pouches; flowers polystichous **46**
- 45a. Floral bracts decurrent and forming pouches around the flowers; flowers often distichous.
N and S America *Aechmea* subg. 5. *Platyaechmea*
46. Inflorescence compound **47**
- 46a. Inflorescence simple **48**
47. Leaves distichous; blades marked with spots or bands; floral bracts minute; ovules obtuse
(*Q. marmorata*). Brazil: Espirito Santo to Sao Paulo *Quesnelia*
- 47a. Leaves polystichous or the blades concolorous; floral bracts large to lacking; ovules
long-caudate. Colombia, Venezuela, Amazonian Brazil *Aechmea* subg. 2. *Lamprococcus*
48. Ovules obtuse (no further distinction possible without keying by species). E Brazil
Quesnelia
- 48a. Ovules apiculate to caudate. Central America to Brazil and Argentina
Aechmea subg. 7. *Macrochordion*
49. Ovary deeply sulcate; inflorescence simple or compound. NE Brazil *Lymania*
- 49a. Ovary evenly rounded 1 **50**
50. Inflorescence lax; axes visible **51**
- 50a. Inflorescence dense **54**
51. Inflorescence simple. Costa Rica to Peru *Ronnbergia*
- 51a. Inflorescence pinnately compound **52**
52. Flowers very small; sepals not over 3mm long; ovules few; epigynous tube none. Costa
Rica, Venezuela, Trinidad, Tobago, Guyana to Amazonian Brazil *Araeococcus*
- 52a. Flowers small to large; sepals more than 3 mm long; epigynous tube distinct **53**
53. Branches elongate, many-flowered; flowers perfect; anthers unappendaged. E and
Amazonian Brazil and adjacent areas *Streptocalyx*
- 53a. Branches short, digitately few-flowered; flowers functionally unisexual on different
plants; anthers appendaged. Central America: Guatemala to Costa Rica *Androlepis*
54. Flowers 2 or more in the axil of each bract **55**
- 54a. Flower single in the axil of each bract **56**
55. Inflorescence involucrate; sepals only slightly asymmetric, not with sharp tip or
mucronulate. E Brazil *Nidularium*
- 55a. Inflorescence cone-like; sepals strongly asymmetric, mucronate. E and Amazonian Brazil
and adjacent areas *Streptocalyx*
56. Petals naked or with lateral folds; bracts papery or leathery; leaf blades often petiolate.

- Costa Rica to Peru *Ronnbergia*
- 56a. Petals bearing rudimentary or reduced appendages; bracts mostly thick and ligneous; leaf blades never petiolate; pollen sulcate. Mexico to Peru and Amazonian Brazil, E Brazil *Chevaliera*
57. Ovary nearly or quite superior; seeds plumose on base or apex or largely on the base and only slightly on the apex **58**
- 57a Ovary only half superior; seeds equally plumose-appendaged at both ends; flowers polystichous. Lesser Antilles, Trinidad, adjacent Venezuela *Glomeropitcairnia*
58. Appendage of the seed wholly or largely basal, straight at maturity **59**
- 58a. Appendage of the seed largely apical folded at maturity; sepals strongly asymmetric in most species; flowers in at least slightly more than 2 ranks; leaves often cretaceous-coated on the inside. Florida, Mexico, and the West Indies to Brazil and Peru *Catopsis*
59. Petal bases free or with very short tube exceeded by the sepals; flowers distichous in most species **60**
- 59a. Petal bases conglutinated in a tube, equaling the sepals or, rarely, the petals entirely included in the sepals **64**
60. Petals naked; inflorescence of 1 or more distichous flowered spikes or racemes or rarely reduced to 1 or more polystichous-flowered spikes or to a single flower; plants of southern United States to Argentina and Chile **63**
- 60a. Petal appendages on the inside of the petal base; Mexico and the West Indies to Argentina and Uruguay **61**
61. Seed with the apical appendage divided into a short coma; petals linear long, fusiform, usually 10-15 times longer than wide, soon flaccid and drooping *Alcantarea*
- 61a. Seed with the apical appendage minute and undivided; petals elliptical, usually 5-10 times longer than wide, usually firm and remaining more or less erect after anthesis **62**
62. Flowers with brilliant coloration in most species, bright yellow, orange, or red, rarely dull to white, light yellow, or light orange; the adaxial petal pair arranged apically in respect to the abaxial; petal appendages tongue-shaped; stigma with the convolute blade type morphology, that is, 3 obviously spreading lobes covered with papillae *Vriesea*
- 62a. Flowers generally dull in color, white, greenish white, light green yellowish green, yellow, or light orange; the adaxial petal pair arranged basally in respect to the abaxial; petal appendages finger-like with 1-5 fingers of varying length; stigma with the cupulate type morphology, that is, 3 apical, capitate, cup-shaped lobes, without papillae *Werauhia*
63. Sepals symmetric or if slightly asymmetric, then ovate or lanceolate and broadest below the middle, free or variously connate; seeds usually with a distinct apical appendage *Tillandsia*
- 63a Sepals asymmetric, free or nearly so, broadest near apex, not over 12mm long; seeds without apical appendage *Racinaea*
64. Petal bases always naked; spikes always polystichous flowered. Florida, Mexico, and the West Indies to Brazil and Bolivia *Guzmania*

- 64a. Petal bases bearing appendages on the inside; flowers polystichous rarely secund or distichous. Colombia to Peru ***Mezobromelia***
65. Plants dioecious with functionally unisexual flowers; petals rose or white; plants of Texas, Mexico, and northern Central America ***Hechtia***
66. Petal blades tightly spiraled after anthesis, broad, distinct from the bottom portion; leaf blades narrowly triangular, never contracted at base; ovary superior or slightly inferior; Andean plants of open slopes and summits from Costa Rica and Guayana to Chile and Argentina ***Puya***
67. Ovary wholly superior; petals regular **68**
- 67a. Ovary partially to wholly inferior, or, if superior then the petals zygomorphic. Petals large, naked or appendaged, sepals convolute ***Pitcairnia***
68. Petals naked **69**
- 68a. Petals each bearing a single basal appendage; xerophytic plants of the southern Andes from Peru to Chile, Argentina, and W. Brazil ***Deuterocohnia***
69. Seeds with a sickle-like appendage; petal blades narrow, indistinct from the base; plants of NE Brazil ***Encholirium***
- 69a. Seeds bicaudate-appendaged or clavate. Anthers basifixed, linear, coiled at anthesis, inner filaments adnate to the base of the petals; leaf blades thin, more or less contracted at base; mesophytic plants of Mexico to Argentina and W Brazil ***Fosterella***
- 69b. Seeds broad alate, Bases of the filaments forming a tube and adnate to the petals; petals yellow to orange; plants of Brazil, Uruguay, Paraguay, and Argentina ***Dyckia***
70. Flowers showy. Sepals free, convolute, apically rounded to obtuse, subcoriaceous; petals rose, red, or purple, free, unappendaged, blades broad, spreading after anthesis and not twisted together afterwards. Stamens included; anthers basifixed. Ovary wholly superior; style elongate. Fruit a septicidal capsule. Seeds bicaudate. ***Connellia***
- 70a. Flowers small. Sepals free, convolute, ovate to broadly ovate, rounded or broadly obtuse apically; petals free, unappendaged, exceeding the sepals, white, pink, yellow, or orange. Filaments mostly free; anthers versatile. Ovary superior, glabrous; style slender; placenta short, basal. Fruit an ovoid, septicidal capsule. Seeds slenderly fusiform, bicaudate. ***Lindmania***
71. Capsular fruits, seeds bicaudate appendaged; petals minute, regular, free; sepals cochlear, with the two adaxial overlapping the abaxial; ovary partly to wholly inferior; in florescence racemose, paniculate, or capitate; leaves entire, almost always with stellate chlorenchyma. ***Brocchinia***
72. Seeds bicaudate appendaged ***Sequencia***
- 72a. Seeds not bicaudate appendaged **73**
73. Stigma lobes distorted; sepals spiral in form with the abaxial overlapping both the

- adaxial cells of leaf epidermis straight walled, plants of NE Brazil *Cottendorfia*
73a Stigma lobes uniform 74
74. Petals naked; inflorescence scapose, pinnate, and more or less open or sessile and capitate *Navia*
74a Petals appendaged 75
75. Seeds wedge shaped, inflorescence long-scapose, simple, densely cylindric. *Brewcaria*
75a Seeds narrow elliptic to falcate elliptic, inflorescence compound, lax, stigmas broad,
strongly contorted; *Steyerbromelia*