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The genus *Tillandsia* in Belize includes approximately 30 species, which can be found growing singly, or in large colonies, and can usually be identified by their non-spiny leaves, often flattened inflorescence branches, symmetrical sepals, free petals, and often colorful flower clusters which fade quickly after flowering. They are most always epiphytic growing on trees and shrubs to gain better access to sunlight; an occasional species is found on rocks or on the ground (e.g., *T. dasyliriifolia*). Many have gray/silvery, scaly leaves (e.g., *T. pruinosa*, *T. streptophylla*). The scales (or “trichomes”) help capture water and nutrients from the environment. Some species form water-holding tanks by means of their overlapping leaves. These tanks are rich in with nutrients from the environment, provide sustenance for the plant, and create important habitat for animals in the forest canopy.

The genus is found throughout Belize, but reaches its peak of species diversity on the high summits of the Maya Mountains. Many species are adapted for hummingbird pollination, with brightly-colored bracts and flowers. The seeds of all species in the genus develop inside leathery capsules, which split open into three parts when mature; they are topped by a fluffy coma (resembling a tuft of “hairs”) and then may be dispersed by the wind. Important distinguishing characteristics of the species are the shape of the rosette, the shape and degree of branching of the inflorescence, and the color and length of the various bracts and flowers. All species in Belize, except *T. utriculata*, produce one or more “pups” or “offsets” from the mother plant and continue to grow after the mother branch flowers and dies. This growth habit can eventually form extensive clonal colonies.

District Abbreviations: Belize (B), Cayo (Ca), Corozal (Co), Orange Walk (OW), Stann Creek (SC), Toledo (T).

Elevations are for Belize only. Photos included *not* taken of Belizean plants are identified in the text.

Identification Guide to *Tillandsia* species of Belize

Group 1. Stems elongate, leaves separated from one another along the stem; petals emerald green or yellow (2 species)

Groups 2–7. Stems short, leaves tightly arranged in a rosette; petals purple, pink, greenish, or white (page 2)

Tillandsia usneoides

- Known from **Ca, OW, TO**; 100–580 m elev.
- The most distinctive tillandsia, but often overlooked; the pendent, gray foliage that doesn't even look like a bromeliad is unique, and the emerald-green, fragrant flowers are rarely observed.
- Known as Spanish moss.



Stems can reach several meters long and are soft (BH)



The growth form of *T. usneoides* (left) is similar to that of some lichens (pictured on right; EB)



Capsules thin, slender, splitting into three parts as in all tillandsias (photo of Florida plant; BH)



Flowers small, green, often overlooked, but pleasantly fragrant (photo of Florida plant; WC)

Tillandsia schiedeana

- Common and widespread in Belize in **B, Ca, Co, OW, T**; 40–610 m elev.
- Forms large colonies; distinct with tight “ball” shape, as well as the elongated stems, dense gray scales, reddish floral bracts, and yellow petals and anthers.



Plants exhibit clumping, branching growth (EB)



Leaves spaced out along the stout stem with heavy covering of grayish trichomes (EB)



Inflorescences slender, unbranched, with reddish/orangish bracts and yellow flowers (PN)



Flowers all yellow and protrude above the floral bracts (EB)

Group 2. Plants with bulbous bases, often clumping, often growing in multiple orientations in relation to their attachment (see also *T. dasyliriifolia* in group 6, with bulbous base, but with a large inflorescence and long-spreading branches) (5 species)

Groups 3–7. Plants not bulbous-based, the rosette form a narrow to broad vase (page 3)

Tillandsia balbisiana

- Found in seasonally dry forests in **all Districts**; 5–550 m elev.
- Distinguished by the bulbous base, narrow, leathery, silvery green, spreading, recurved, or twisting leaves; red to orange floral bracts, and purple corollas; plants often colonized by ants.



Distinct bulbous base, leaves spreading, often twisted (EB)



Inflorescences narrow, elongate, simple, or more often compound; scape bracts leaf-like (EB)



Individual inflorescence branches are few and held erect, and are flattened (EB)



Floral bracts sometimes infused with green and red, turning green after flowering (PN)

Tillandsia bulbosa

- Found in **all Districts**, and in many habitats except the wettest ones in the south; 0–760 m elev.
- Distinguished by the gray, bulbous base, few cylindrical, narrow leaves, bright red bracts, lavender corollas.
- Often found hanging upside down individually or in colonies, and inhabited by ants.



Medusa-like growth with bright bracts and flowers (WC)



Plants are found growing at every angle, and often inhabited by ants (BH)



Large, bulbous base, and contrasting leaf and sheath coloration; leaves are deeply channeled (BH)



Floral bracts red; corollas purple, tubular, with protruding anthers (MP)

Tillandsia butzii

- Rare in Belize, known from a single collection from Little Quartz Ridge, **T**; 700–750 m elev.
- Similar to *T. bulbosa* and *T. pseudobaileyi*, but distinguished by the prominent bands of spots on the leaf sheaths.
- Images here taken of a specimen from Mexico.



A poorly known species in terms of the herbarium and photographic record (EB)



As with other species in the pseudobulbous group, plants are found growing at multiple angles, often downwards (EB)



Leaves distinct with bands of maroon spots (EB)

Tillandsia pseudobaileyi

- Discovered in Belize in 2017 by Caves Branch Bot. Gard. staff, from **OW**; 10–20 m elev.
- Rare in Belize; growth similar to *T. bulbosa*, but leaves distinctly “lined” toward base and with dull gray coloration, compared with not lined and with glossy, dark green leaves.



Habit pictured here is of a plant in cultivation at Selby Gardens (PN)



Leaves and bulbous bases have fine vertical lines (DA)



T. pseudobaileyi on right, compared with *T. bulbosa* (left; DA)



Flowers are similar to those of *T. bulbosa* (PN)

Tillandsia ×jaguactalensis

- Rare in Belize, only known from citrus fields in **Ca**; 80 m elev.
- Similar to *T. brachycaulos*, but with elongated flower cluster, and to *T. streptophylla*, but flower cluster compact, versus broadly branching. This is a natural hybrid between these two species.



To date only known from citrus orchards in Belize (EB)



The leaves are widely spreading and densely covered with silvery scales (WC)



Inflorescence bracts are pale pink and elongated (EB)



Flowers are tubular, purple, and with protruding flower parts (EB)

Tillandsia pruinosa

- Known from southern Belize in **Ca, OW, SC, T**; 130–750 m elev.
- Distinctive compact plant with bulbous base, heavy covering of scales, few curved or twisted and
- deeply channeled leaves, pink floral bracts, and purple corollas.



Twisted leaves and compact form with bulbous base; plants grow at various angles from host (EB)



Even in vegetative state, distinguished by the heavy, scaly nature, and few leaves (EB)



Inflorescences paddle-like, strongly flattened, mostly shorter than the leaves (PN)



Flowers with purple, tubular, purple corollas, with protruding, yellow anthers (BH)

Tillandsia streptophylla

- Most common in lowland areas, in **B, Ca, Co, OW, SC, T**; 0–600 m elev.
- The most photographed tillandsia in Belize! A robust species, often teaming with ants; distinguished by the large bulbous base, heavily scaly nature, twisted leaves, and multi-colored flower cluster.



Attractive epiphyte, seen here in forests of Sarstoon-Temash National Park (BH)



Leaves are usually twisted and warped, channeled and heavily covered with trichomes (BH)



Plants can grow in almost any orientation; scape and primary bracts are pink to coral. (EB)



As with all species in this group, corollas are purple, tubular, and with protruding flower parts (EB)

Group 3: Leaves narrow at the base and along entire length, ≤ 3 mm wide (3 species)

Groups 4–7: Leaves broad at the base, ≥ 5 mm wide, tapering evenly to a point, or broad and with parallel margins (page 4)

Tillandsia filifolia

- A rare species from **Ca, SC, T**; 160–750 m elev.
- Distinguished by the narrow leaves and basal sheaths that are blackish and together form a fluffy ball, and the delicate, greenish flower cluster and bracts, and lavender petals.



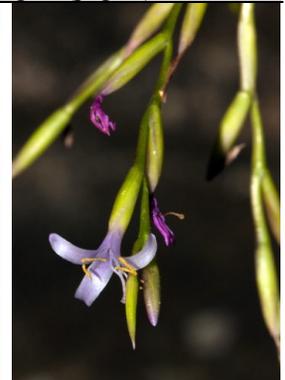
The smallest tillandsia in Belize; produces compact offsets and can occasionally branch (MP)



Leaves very fine and thin, and pointing in every direction (EB)



Inflorescence much longer than leaves, with greenish bracts (EB)



Petals and stamen filaments pale lavender, the petals spreading widely and anthers protruding (EB)

Tillandsia festucoides

- Where found, **B, Ca, OW, SC, T**, this species often occurs in dense colonies; 80–750 m elev.
- One of the narrowest-leaved tillandsias, distinguished by the reddish bracts, laven-der-purple corollas, finely spotted leaves and floral bracts, and non-stoloniferous growth.



Leaves narrow, much shorter than inflorescences; often grows in large colonies (BH)



Many plant parts covered with fine reddish spots (EB)



Lateral inflorescence branches slender, spreading from main axis (EB)



Corolla tubular, purple with protruding flower parts (EB)

Tillandsia juncea

- Found in **B, Ca, OW, SC, T**; 30–900 m elev.
- Identified by the narrow leaves, compact flower clusters, and stoloniferous growth; foliage is often reddish in the sun; confused with *T. festucoides*, but has elongated rhizomes and shorter inflorescence branches (see above).



Grows in large colonies; often with reddish tinge to the narrow leaves in the Pine Ridge (EB)



Elongated stolons are often conspicuous and help distinguish it from *T. festucoides* (EB)



Inflorescences are approximately the same length as the leaves (EB)



Compact flower cluster has short lateral branches and greenish to dull red bracts (PN)

Group 4: Leaves strap-shaped, with mostly the same width along their length (3 species)

Groups 5–7: Leaves narrowly triangular, narrowing gradually from the base to the tip (page 5)

Tillandsia excelsa

- Restricted to high elevations in Belize in **Ca, T**; 700–1100 m elev.
- Distinguished by the large, branched inflorescence with bright colors of orange, red, and yellow. The stiff, lateral inflorescence branches have long primary bracts at their bases and the leaves are spotted below.



Sharon Matola of the Belize Zoo exhibits a “medium-sized” bromeliad specimen (BH)



Young leaves are usually spotted on the lower leaf surface, and soft (JM)



Inflorescence erect, stiff and “spiky” with horizontal branches and red to orange-red bracts (BH)



Petals are purple, and contrast with the red and green bracts (MP)

Tillandsia leiboldiana

- One of the rarest species in Belize, found on the highest peaks of **Ca, SC, T**; 700–1000 m elev.
- A colorful, relatively small species, with reddish leaves (especially on the lower surface); inflorescences shortly branched, usually pendent, with long primary bracts; the petals purple.



The plant is often with pendent inflorescences (PN)



The difference between upper and lower leaf surface color is notable (DA)



Primary bracts red, recurved, as long as the inflorescence branches (PN)



Corolla tubular and flares at the tip; flowers parts are included within (MP)

Tillandsia multicaulis

- A rare species in Belize, restricted to high mountains of **Ca, T**; 800–1100 m elev.
- Similar to *T. anceps* because of the paddle-shaped flower cluster, but with broader leaves, inflorescences often more than 1, found in axils of leaves (versus terminal), and with bright orange-red bracts.



Plants usually with 2 or more inflorescences at a time (BH)



Inflorescence paddle-shaped, with brightly colored scape and floral bracts (LM)



Each flower is subtended, and mostly covered by the orange-red floral bracts (PN)



Petals are purple and the protruding anthers bright yellow (PN)

Group 5: Leaves with colored stripes, bands (see also *Werauhia vittata* in separate guide), or with purple-black leaf bases; petals purple, greenish, or white (4 species)

Groups 6, 7: Leaves mostly of uniform color (unless in bloom); petals purple (page 6)

Tillandsia anceps

- Found in humid forests of **Ca, SC, T**; 10–1000 m elev.
- Distinguished by long, narrow leaves with maroon stripes at the base; flat, paddle-like flower clusters with pink, green, or whitish floral bracts, and lavender flowers.



Leaves long, soft, narrow; flower cluster pink, green or whitish (BH)



Reddish vertical stripes usually present at the leaf bases (EB)



Flower clusters broad, paddle-like (PN)



Petals spreading, lavender; anthers and stigma do not protrude beyond the petals (PN)

Tillandsia flexuosa

- Found in lowland semideciduous forests in **OW**; 10 m elev.
- One of the rarest, most distinctive bromeliads in Belize, this was discovered for the first time in mid-2017 by Caves Branch Bot. Gard; it is distinguished by its twisted, gray-banded leaves, and pink inflorescences.



Inflorescence greatly exceeds the leaves and is widely branched (DA)



Leaves are gray, twisted, and with strong horizontal banding (DA)



Inflorescence has long branches and widely spaced flowers (plant from Panama; PN)



Flower bracts and corolla are pink, and anthers and stamens protruding (plant from Panama; PN)

Tillandsia punctulata

- A rare species in Belize, restricted to high mountains of **Ca, T**; 800–950 m elev.
- Distinguished by the narrow leaves that are purple-black at the base, an inflorescence as long as the leaf blades, red to green bracts, and purple corollas.



Tightly clumping form, narrow leaves and dense colony (BH)



Leaf bases are distinctly dark purple-black (EB)



Inflorescences elongate, arching or erect, with a combination of reddish to greenish bracts (BH)



Petals purple with white tips, anthers protruding; scape bracts reddish, floral bracts green (EB)

Tillandsia orogenes

- Another rare species in Belize, found only on the highest peaks of the Maya Mountains, often growing on *Colpothrinax cookii*, in **Ca, T**; 980–1140 m elev.
- Identified by narrow stiff leaves and dark bases, spreading bright red inflorescences that have long primary bracts.



Dense, clumping growth and elongated inflorescences; shown here in the Maya Mountains (BH)



Leaves narrow, strict, with blackish bases (BH)



The inflorescences are much longer than the leaves, and the primary bracts are reflexed (LM)



Primary bracts are longer than the short lateral branches; petals hidden purple, anthers yellow (LM)

Group 6: Inflorescence > 2x beyond the leaves, branches elongate, slender and flowers widely spaced along them (3 species)

Group 7: Inflorescence less than 2x beyond the leaves, if branched then with densely arranged flowers (page 7, below)

Tillandsia dasyliriifolia

- A species known from coastal and southern Belize and found in **all Districts**; 0–680 m elev.
- Inflorescence similar to *T. izabalensis*, but plants distinguished by the bulbous base, the flower cluster which produces “pups” after flowering, and floral bract length (<23.2 vs >23.4 mm).



Base bulbous with large basal leaf sheaths; leaves strongly covered by silvery scales (PN)



In nature, the young leaves are often pink to bronze (EB)



Bromeliad ‘pups’ develop along the inflorescence branches (EB)



Floral bracts usually red and flowers greenish; inflorescence branches strongly ‘zig zag’ (PN)

Tillandsia izabalensis

- A coastal species found in **Ca, Co, SC, and T**; at low elevations, 5–20 m.
- The tallest tillandsia in the country, and belonging to a complex of several species
- Often confused with *T. dasyliriifolia*. See under that species, as well as the closely related *T. utriculata*.



Exhibiting the large size of a flowering specimen (EB)



Inflorescence few-branched (compare with below; BH)



Rosettes similar to *T. utriculata* (see below; DA)



Inflorescence similar to *T. dasyliriifolia*, but floral bracts longer (EB)

Tillandsia utriculata

- Moist forests, especially common in citrus groves of **Ca, SC**; 5–130 m elev.
- A large plant distinguished by a spreading rosette, slender, straight inflorescence branches, and white petals. See similar species *T. dasyliriifolia* and *T. izabalensis*.



Rosettes are similar to *T. izabalensis*, but inflorescences with numerous, slender branches (EB)



Slender, straight inflorescence branches can be green or burgundy in color (EB)



Leaves are stiff, light to dark green above, paler below; common in citrus orchards (EB)



Corolla tubular, twisted to one side; petals white; anthers and stigma protruding (EB)

Group 7: Inflorescence less than 2x beyond the leaves, if branched then with densely arranged flowers

Group 8: Includes additional rare species and a note on hybrids (page 8, below)

Tillandsia brachycaulos

- This compact species grows in large colonies in the citrus orchards of **Ca**, and is also known from **B, OW, T**; 0–550 m elev.
- Distinguished by flower cluster borne among the central leaves, and vivid red to coral color bracts; compare with *T. variabilis*, which has fewer leaves.



Easily seen when in bloom, often in citrus groves (EB)



Often all parts of the plant are colored, and fade to green after flowering (EB)



After flowering, the plants turn green, even if in full sun; brown structures are fruits (EB)



Purple flowers borne among the colorful bracts; anthers and stigma protruded (EB)

Tillandsia fasciculata

- Known from central to northern Belize in **B, Ca, Co, OW**; 10–400 m elev.
- Recognized by the stiff, narrow, ascending leaves, stout flower clusters with few branches, reddish to green bracts, and lavender/purple corollas. There are several color forms in Belize.



Leaves silvery-gray, light to dark brown at base (BH)



Colonial growth, with red and green colored inflorescences and numerous stiff leaves (BH)



Multi-colored flower cluster, lateral branches short, stout. Compare with "sp. 2" in Group 8 (EB)



An unusual form with greenish floral bracts and white corollas (EB)

Tillandsia chlorophylla

- A rare bromeliad in Belize, only known from "near the border of Guatemala," **T**; elev. unknown.
- Distinguished by the colorful, compound inflorescences with short branches and long primary bracts that envelop the short branches; leaves are slender and long.



Collected only once in Belize along the Guatemala border by William A. Schipp in the 1934 during the British Honduras-Guatemala Boundary Survey. The plant pictured here is from Guatemala and cultivated at Selby Gardens (PN)



Primary bracts that subtend the short branches are as long as, or longer than the branches (PN)



Purple petals protrude well beyond the bracts, and anthers and stigma beyond them (PN)

Tillandsia maya

- Uncommon in Belize, and found only in the citrus orchards of **Ca**; 80 m elev.
- Intermediate between *T. balbisiana*, *T. polystachia*, and *T. brachycaulos*. The plant is less bulbous at the base than *T. balbisiana*, and the inflorescence is more elongated than *T. brachycaulos*. It may be a hybrid.



Discovered in Belize in 2014 by staff of Caves Branch Bot. Gard. (EB)



Foliage similar to *T. polystachia*, see below (EB)



Flower cluster bracts are red and spread widely as in *T. balbisiana* (EB)



Flowers are erect, with purple petals, and with protruding flower parts (EB)

Tillandsia polystachia

- Uncommon in Belize, though can be abundant in citrus orchards, **Ca**; 80–550 m elev.
- Small plant with narrow, stiff, glossy green leaves, green to reddish inflorescence, and purple flowers; leaves can turn bronzy in the sun. Possibly hybridizing, making ID difficult.



Relatively few leaves arching to recurved; often found in Cayo citrus fields (MP)



Inflorescence erect, elongated and slender, with leaf-like scape bracts and short lateral branches (BH)



Leaves are stiff, smooth, recurved or reflexed, and matte green (EB)



Floral bracts often green with some red tinges; purple corollas tubular, and with protruding anthers (EB)

Tillandsia variabilis

- Found in broadleaf forests and citrus orchards of **B, Ca, OW, SC, T**; 25–610 m elev.
- The relatively small size of the rosette, narrow leaves, simple or few-branched pink to red inflorescences, strongly flattened inflorescence branches, help distinguish it from



Leaves are usually green in the shade, reddish in the sun; the inflorescences are red during flowering (PN)



Comparing inflorescences of *T. polystachia* (left) and *T. variabilis*; note lack of lengthy scape bracts in *T. variabilis* (EB)



When inflorescence is branched, the branches have long axes (compare with short branch axes in *T. polystachia*; EB)



Inflorescence branches flattened laterally; corollas tubular, purple, with protruding stamens and stigma (EB)

Group 8: Additional rare or unknown species

- There are three additional species documented in Belize that are poorly known from the herbarium and photographic record.
- One is identified to species level, two are not.
- There are likely more bromeliad species to be discovered in remote areas of the country.



- *Tillandsia tricolor*
- Epiphyte on Maya Mountains, **T**; 750 m elev.
- Only known photo of a Belizean plant is the one shown above of a plant in fruit.
- Bears a stout, simple inflorescence and according to the literature, orange and green bracts when in flower (WC)



- *Tillandsia sp. 1*
- Lithophyte on Pine Ridge, **Ca**; 620 m elev.
- Leaves with coppery tinge above, grayish below.
- Possibly an undescribed species, it has the inflorescence simple, arching; corollas purple with protruding stamens and stigma (EB)



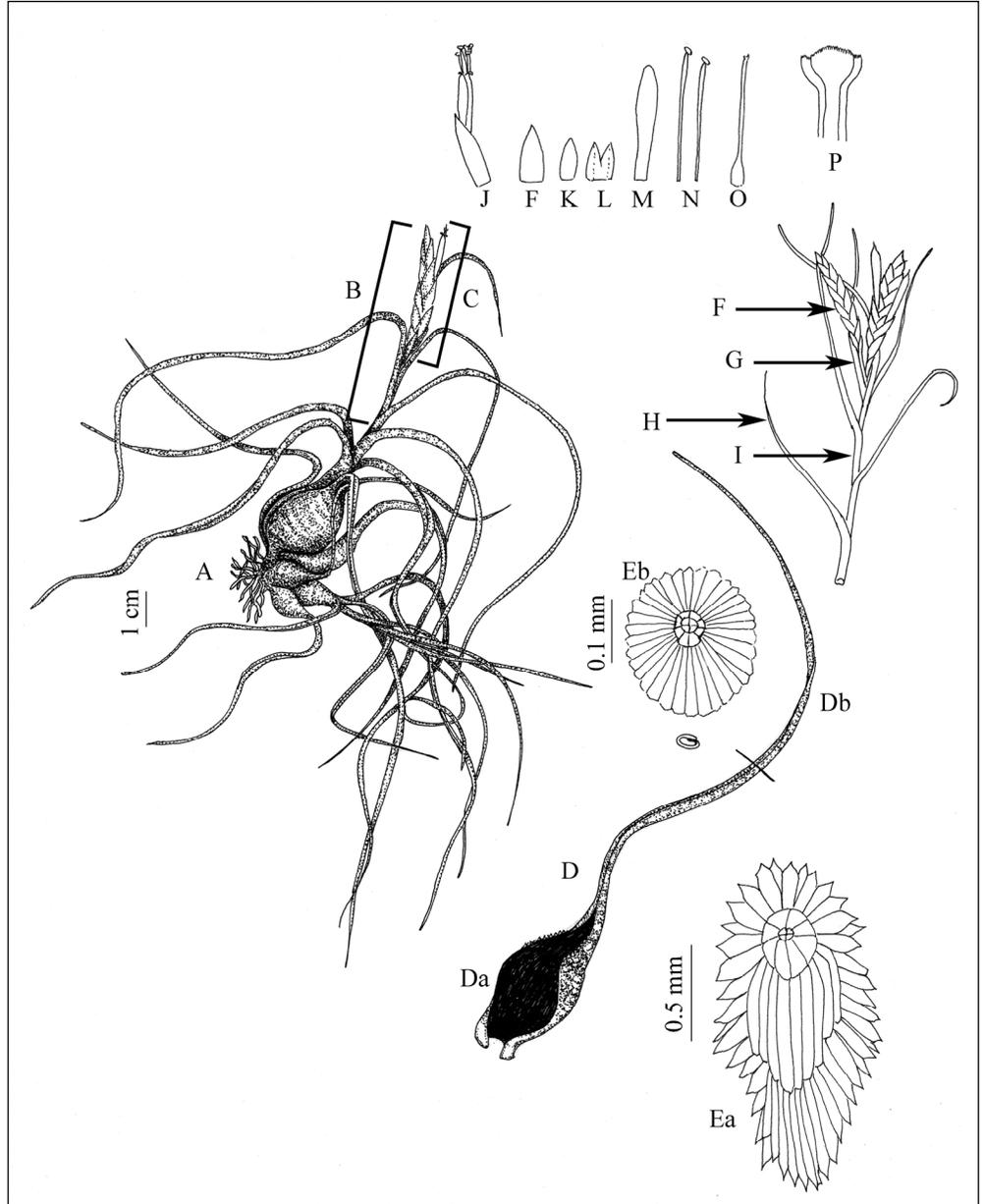
- *Tillandsia sp. 2*
- Epiphyte from **CA, OW**; 400–500 m
- This species belongs to the *Tillandsia fasciculata* complex, but more study is needed to determine the correct name.
- Differs from typical *T. fasciculata* by having a broad, paddle-shaped inflorescence 4–5 cm wide (vs. 1–3 cm); both species can have simple or compound inflorescences and the vegetative portion of the plants is identical (EB)



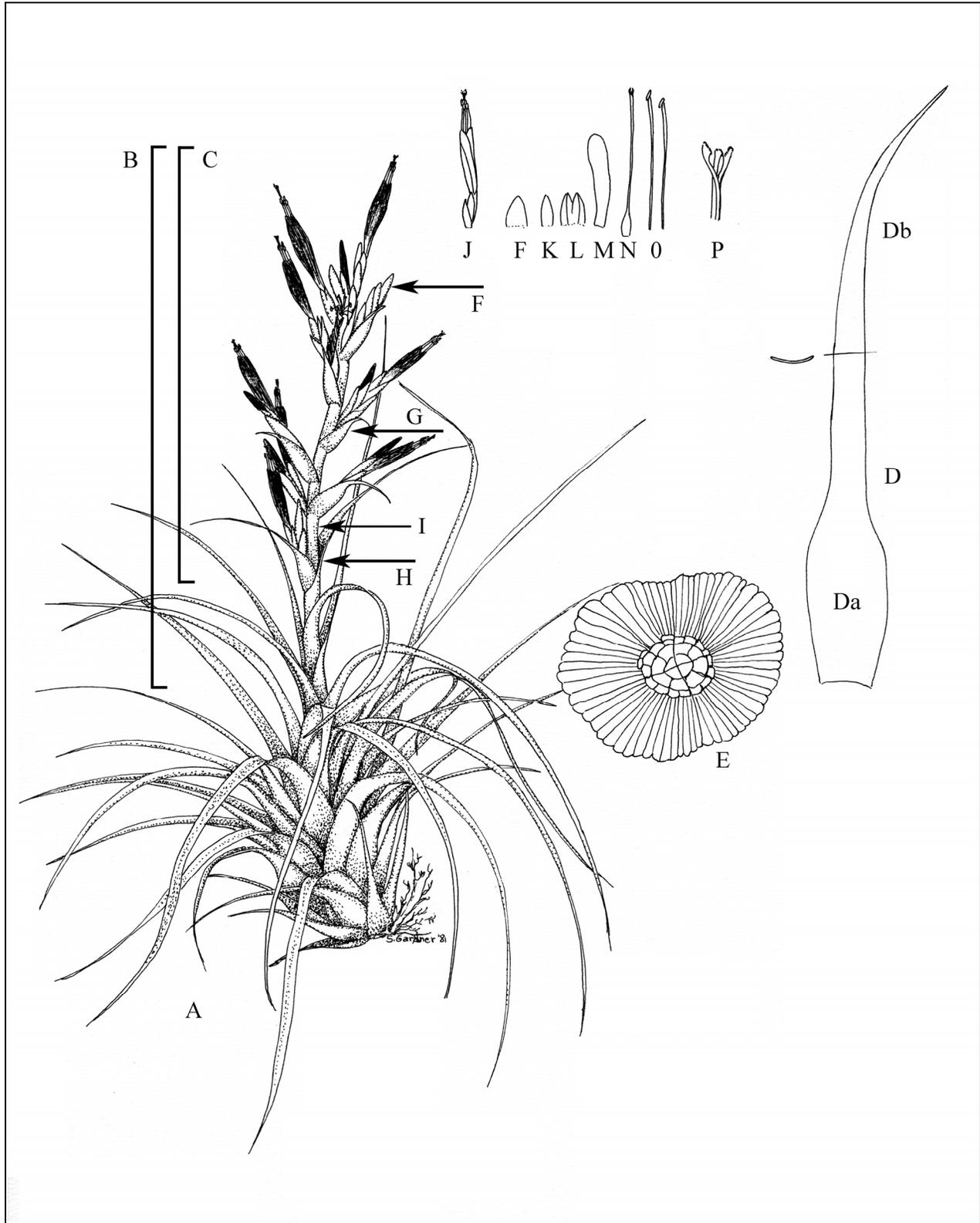
Illustrated Glossary

Letters in parentheses below refer to those in the illustrations.

- **Floral bract (F):** the modified leaf subtending a flower, which can be longer than, and obscure the calyx from view.
- **Flower (J):** consisting of the sepals (K, L; together called calyx), the petals (M; together called corolla), the androecium (N; the male part of the flower, or stamen, consisting of the filament and the anther), and the gynoecium [the female part of the flower, or pistil, consisting of the ovary, style, and stigma (O)].
- **Flower cluster (C):** the portion of the inflorescence consisting of the flowering region of the inflorescence, including the associated primary and floral bracts, the axes bearing flowers, and the flowers themselves.
- **Habit (A).** General shape and growth form of a plant.
- **Inflorescence (B):** the flowering portion of the plant, which consists of the scape and flower cluster.
- **Inflorescence type:** bromeliad inflorescences can be simple (unbranched; see left-side of adjacent illustration, or *T. anceps*) or compound (branched; see right-side of adjacent illustration, or *T. chlorophylla*, below). When compound, the branches can be short (e.g., *T. polystachia*), or elongate and spreading (e.g., *T. utriculata*).
- **Leaf (D):** The vegetative portion of the plant, including the broad basal leaf sheath (Da) and the usually narrower blade, or lamina (Db).
- **Primary bract (G):** the modified leaf at the base of an inflorescence branch; it can be colorful (e.g., *T. leiboldiana*), or small and green, and inconspicuous (e.g., *T. filifolia*)
- **Scale** (see “Trichome” below).
- **Scape (I):** the stalk that connects the vegetative portion of the plant to the flower cluster; the scape may be short and hidden among the leaves and bracts (e.g., *T. brachycaulos*), or elongate and evident (e.g., *T. izabalensis*). Note, the term “peduncle” is used for the same structure in many other plant families.
- **Scape bract (H):** the modified leaf borne along the nodes of the scape that can be from scale-like to leaf-like in appearance.
- **Trichome (E):** minute structures analogous to plant “hairs” and often called scales, that cover the leaves of many bromeliads (seen as a gray cover on many tillandsias). Trichomes in bromeliads are often scale-like and have an elegant “mosaic-window” appearance. They help to facilitate the movement of water and nutrients into the plant, as well as to help regulate water loss.



Tillandsia butzii. **A:** Habit, showing “bulbous” base and ramet (offset, or “pup”) development. **B:** Inflorescence. **C:** Flower cluster. **D:** Leaf; Da: leaf sheath; Db: leaf blade. **E:** Trichomes; Ea: Trichome from abaxial edge of leaf-sheath; Eb: Trichome from abaxial surface of leaf blade. **F:** Floral bract. **G:** Primary bract. **H:** Scape bract. **I:** Scape. **J:** Flower with floral bract. **K:** Anterior sepal. **L:** Posterior sepals. **M:** Petal. **N:** Stamens. **O:** Ovary, style, and stigma. **P:** Stigma (enlarged).



Tillandsia chlorophylla. **A:** Habit. **B:** Inflorescence (compound, or “branched”). **C:** Flower cluster. **D:** Leaf; Da: leaf sheath; Db: leaf blade. **E:** Trichome. **F:** Floral bract. **G:** Primary bract. **H:** Scape bract. **I:** Scape. **J:** Flower with floral bract. **K:** Anterior sepal. **L:** Posterior sepals. **M:** Petal. **N:** Ovary, style, and stigma. **O:** Stamens. **P:** Stigma (enlarged).

Note on Natural Hybrids

Possible hybrids can be observed in several areas of Belize, particularly in the citrus orchards where many species thrive closely together. A more detailed study is needed to determine the possible parents of some hybrids, but we believe the following species may be involved in natural hybridization: *T. balbisiana*, *T. brachycaulos*, *T. fasciculata*, *T. polystachia*, *T. streptophylla*, and *T. variabilis*.

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