Araceae of Belize

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Araceae, commonly known as “aroids” are found widely in Belize and have many growth forms: aquatic, terrestrial herbs, high climbing vines, hemiepiphytes, and epiphytes. There are 12 genera and about 50 species known in Belize, making it the third highest country in Central America in terms of species richness after Costa Rica and Panama. Aroids are found in the majority of the ecosystems in the country, but are richest in the broad-leaf tropical forests of Cayo, Stann Creek, and Toledo, and at all elevations.

Aroids can be distinguished by their herbaceous nature, fleshy fruits, and characteristic inflorescence. The inflorescence is typically comprised of a spadix, which bears the bisexual or unisexual flowers, and a spathe, or bract that subtends the spadix. The spathe can be green, maroon, white, or red and is often a conspicuous part of the inflorescence. The genera are distinguished by characters such as ovule number, presence/absence of a perianth, position and sexuality of the flowers, stamen form, stigma shape. etc. Species are differentiated from one another often by vegetative characters.

Leaves are often thick and fleshy, often ornamental, and can be one of the most conspicuous elements of certain forests. Of note are the changes in leaf form between juvenile and adult plants, particularly in Monstera and Philodendron. These plants, when young, can often be seen with their leaves tightly appressed upon tree trunks as they climb up to the light. Once sufficient light is encountered, the leaves enlarge significantly and change shape as the plant prepares to flower. In Syngonium, the juvenile leaves can be highly ornamented with coloration.

Animals that effect pollination are attracted to the flowers either for their scents that can be harvested to later attract a mate, or as a source of food. Flower fragrances range widely and may be pleasant to humans, such as spicy pepper, citrus, or spearmint gum, or decidedly foul-smelling such as those that have evolved to attract carrion-interested animals. Carrion-type flowers are not known in Belizean species, but found as close as Nicaragua (Dracantium). Likely for Belizean species, beetles, bees, and flies are the main pollinators. The fleshy fruits are frequently dispersed by animals, particularly birds, but in some cases insects (ants) can aid in seed dispersal.

In this guide, Belizean aroids are presented in four groups based on their growth form: 1, aquatic herbs; 2, terrestrial herbs; 3, epiphytic herbs; and 4, hemiepiphytic and terrestrial vines. Some species reported in the literature for Belize were not observed by our team; a section at the end includes these with photographs mostly from other countries.

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

Elevations are for Belize only. Photos not taken of Belizean plants are identified in the text. The authors appreciate the help of Michael Grayum, Tom Croat, Marcos Cedeno Fonseca, and Amy Redfield for their assistance with identification, and Sayuri Tzul for her comments.

Figures right: Inflorescences of the two most common genera of Araceae in Belize, Anthurium and Philodendron. In the upper photo, the bisexual flowers are spread evenly along the spadix. In the lower photo, the male flowers are minute, but visible en masse toward the apex, and the female flowers are hidden inside the lower spathe.
Group 1. Water-loving herbs, either free-floating or rooted in aquatic environments.

**Lemna spp.**
- **B, T:** 0–280 m elev.
- Two species in Belize, *L. aquinocitalis*, *L. valdiviana*, both with leaves only a few mm long.
- Known as “duckweed”
- Often covers large areas of freshwater ponds.
- Plants may be farmed for use in animal feed for the high protein content.

**Pistia stratiotes**
- **B, Ca:** 0–80 m elev.
- Free-floating aquatic, known as “water lettuce,” can grow in massive colonies.
- The leaves are soft and spongy.
- Plants often propagate vegetatively. Flowering/fruiting is not common.
- Spread world-wide and considered an aggressive invader in some areas.

**Montrichardia arborescens**
- **B, Ca, OW, T:** 0–20 m. elev.
- Plants found usually growing along bodies of fresh or brackish waters.
- Long, above-ground stems, can grow to 5 m.
- The spathe has a distinctive acute apex and the leaves have two prominent lobes basally.
- Flowers unisexual.

**Urospatha grandis**
- **SC, T:** 5–50 m elev.
- Leaves arrow-head shaped, membranaceous, strongly veined.
- Flowers bisexual.
- Plants anise-scented, lacking above-ground stems.
- Mangrove forests and ditches.
Group 2. Mostly terrestrial herbs, sometimes lithophytic or rarely epiphytic; stems short, to 1 m; leaves heart-shaped.

**Anthurium huixtense**
- Ca, SC, T; 80–1000 m elev.
- Terrestrial or low epiphyte.
- Leaves heart-shaped, glossy, reddish when young.
- Spathe broad, bright white, falls before the fruit develops.
- Fruits red at maturity.

**Anthurium lucens**
- Ca, SC, T; 220–1100 m elev.
- Often terrestrial, or on rocks or as a low epiphyte.
- Leaves heart-shaped.
- Easily confused with *A. verapazense*, but differs by having relatively broader leaves (1–1.5 times longer than wide) and relatively shorter inflorescences and spadices.

**Anthurium verapazense**
- B, Ca, SC, T; 5–1050 m elev.
- Terrestrial or epiphytic.
- Leaves and inflorescences relatively long compared to *A. lucens*, usually 2–3 times longer than wide.
- Both species have red fruits that develop in the lower 1/2–2/3 of spadix.

**Dieffenbachia oerstedii**
- Ca, SC, T; 10–400 m.
- Stems stout, to 1 m.
- Male and female flowers separate.
- Male and female flowers separate.
- Often forming colonies.
- In Belize, leaves are all green, spotted or striped forms are known elsewhere.
**Spathiphyllum blandum**
- Ca, SC, T; 40–850 m el.
- Plants similar to Dieffenbachia; but lack an elongated stem and flowers are bisexual.
- Two other species are known from Belize, but rare, *S. cochlearispathum* and *S. phyryniifolium*; difficult to distinguish from each other.

**Xanthosoma robustum**
- SC, T; 40–850 m elev.
- Plants with milky sap; stems often elongated; planted for ornament.
- Leaves large, thin, arrow-shaped, whitish below; basal vein free (arrow)
- Spathe green around ovaries, white around stamens.
- See also *X. mexicanum* in poorly known species.

**Group 3. Mostly epiphytic herbs; stems short to many meters long (when long pendent, not climbing); leaves rarely heart-shaped.**

**Anthurium bakeri**
- Ca, SC, T; 5–1130 m elev.
- Handsome epiphyte with leathery, long leaves.
- Leaves few, narrow, broadest at middle; marginal veins distinct.
- Spadix white, spathe light green.
- Fruits bright red.
- Often found in middle or lower canopy levels.

**Anthurium flexile**
- SC, T; 40–720 m elev.
- Scandent epiphyte.
- Leaves membranous, with prominent secondary veins.
- Spadix whitish; spathe green; flowers putrid-smelling.
- Fruits are orange to red at maturity; the infructescence is pendent; seeds are black, which is unusual in the family.
**Anthurium gracile**
- Ca, OW, SC, T; 30–500 m elev.
- Epiphytic herb with short stems and abundant white roots; often in ant nests.
- Leaves always broadest above the middle.
- Spadix greenish, spathe reddish brown.
- Inflorescence arching; infructescence pendent, bright red.

**Anthurium microspadix**
- T; 950–1000 m elev.
- Epiphytic or terrestrial herb with elongated stems.
- Rare species in Belize, only known from two collections high on the Maya Mountain Divide.
- Spathe green, reflexed.

**Anthurium obtusum**
- SC, T; 0–200 m elev.
- Another rare species in Belize, known from few collections.
- Epiphytic, scandent vine with long stems, often in ant nests.
- Similar to *A. scandens*, but spadix lilac (vs. white) and spathe erect (vs. reflexed).

**Anthurium scandens**
- Ca, SC, T; 20–1000 m elev.
- Epiphytic, scandent vine, often in ant nests.
- Leaves membranous, with prominent veins.
- Spadix all white in flower, turning lilac after flowering; spathe green or white, reflexed.
- See comments above on similar species, *A. obtusum*. 
**Group 4. Hemiepiphytic or terrestrial vines**

**Anthurium schlechtendalii**
- B, Ca, Co, OW, SC, T; 5–750 m elev.
- Often epiphytic, or on rocks or rocky banks.
- Humid to dry forests.
- Distinguished by its large size, rosette growth form, leaves that are widest above the middle, and marked 4-sided petioles (leaf stalks) and midveins.

**Monstera acacoyaguensis**
- B, Ca; 5–200 m elev.
- Known from two collections in Belize.
- Medium-sized monstera.
- Leaves perforated.
- Spadix relatively slender.
- Collected in Belize Dist. in 1958 by Percy Gentle and again in 2018 at Caves Branch BG.

**Anthurium pentaphyllum**
- B, Ca, OW, SC, T; 5–750 m elev.
- Common in Belize.
- By far the most climbing, divided-leaf Anthurium in Belize (other sp. in Belize are scandent, but do not climb up trunks).
- Similar to spp. of Syngonium, but flowers bisexual and lacking milky sap.

**Monstera acuminata**
- Ca, OW, SC, T; 40–750 m elev.
- Leaves are large, and may be with or without perforations; they are typically unequal.
- Fruits are relatively short and broad.
**Monstera deliciosa**
- Ca; 650 m elev.
- Rare in Belize, in the Chiquibul region.
- Terrestrial, on rocks, or epiphytic.
- Leaves broad, with deep, regular lobes.
- Mature fruit is sweet when fully ripe.

**Monstera dissecta**
- Ca, SC; 70-650 m elev.
- Large shrubby vine.
- Leaves large, pinnately dissected.

**Monstera pinnatipartita**
- Ca; 80 m elev.
- Rare, and discovered only recently in Belize (2016) growing on the grounds of Caves Branch Lodge.
- Distinguished by the finely dissected leaves and strong marginal veins.

**Monstera tuberculata**
- Ca, SC, T; 200–550 m elev.
- Rare in Belize, in the Chiquibul region where it is terrestrial, on rocks, or epiphytic.
- Distinguished by the tightly appressed juvenile leaves, entire adult leaves, and tuberculate fruits.
**Monstera silepecana**
- SC, T; 50–200 m elev.
- Large shrubby vine with large inflorescences and glossy leaves.
- Observed around the ruins of Mayflower Bocawina National Park and near Dolores in Toledo Dist.

**Philodendron advena**
- Ca, T; 20–960 m elev.
- Common, but infrequently collected, in humid forests of southern Belize.
- Most similar to *P. sagittifolium*, but has leaf blades averaging 1.5 times longer than broad (vs. 1.5–3).

**Philodendron fragrantissimum**
- Ca, SC, T; 30–470 m elev.
- Attractive mid-story hemiephytic vine; climbs to a point on a tree trunk and forms a distinctive rosette.
- Petioles are sharply “D-shaped” in cross section.
- Berries are red, which is unusual in Central American philodendrons.

**Philodendron hederaceum**
- Ca, SC, T; 30–750 m elev.
- Humid forests or along rivers.
- The long-pendent branches and grayish leaves help distinguish this species.
- Spathe rose-colored within.
Philodendron inaequilaterum
- SC, T; 40–450 m elev.
- Leaves with strong secondary veins nearly perpendicular to the midvein.
- Flowers slender, spathe whitish to yellowish.
- Stems slender compared to many other vining philodendrons.

Philodendron jodavisionum
- SC, T; 450–920 m elev.
- Rare in Belize, known from only three collections in remote areas.
- Leaves relatively long compared to width, lustrous above.
- Spathe greenish white.

Philodendron jacquinii
- B, Ca, Co, OW, T; 0–300 m elev.
- Widespread vining hemiepiphytes.
- All photographs courtesy Smithsonian Tropical Research Institute, Neotropical Plant Portal

Philodendron purulhaense
- T; 1100–1130 m elev.
- Rare in Belize, only known from the summit of the Maya Mountains in the vicinity of Doyle’s Delight.
- Leaves large, cordate.
- Spathe greenish turning purplish without, whitish within with rose-purple in tube.
**Philodendron radiatum**
- B, Ca, OW, SC, T; 0–900 m elev.
- A distinctive species in humid forest, the only philodendron in Belize with deeply split leaves and irregular lobes.
- Found vining on the forest floor or high into the canopy; aerial roots often reach many meters down to the forest floor.

**Philodendron sagittifolium**
- Ca, SC, T; 100–1000 m elev.
- Large, robust plant with thick stems and milky sap (arrow).
- Leaves held vertically, lustrous.
- Spathes greenish white without, reddish within.
- See note under *P. advena*.

**Philodendron smithii**
- B, Ca, OW, SC, T; 5–500 m elev.
- Large, robust plant with thickened petioles.
- Peduncles elongate.
- Spathes with reddish tinge within.

**Philodendron tripartitum**
- Ca, SC, T; 30–1000 m elev.
- Leaves distinctive, entire and lobed when juvenile, trifoliolate at maturity.
- Spathes greenish white without, with lines of reddish orange within.
**Philodendron sp.**

- Ca; 130–580 m elev.
- Known from a single collection growing naturally at Caves Branch Lodge.
- Petioles long; leaf blades lustrous.
- Spathe all red.

**Rhodospatha wendlandii**

- SC, T; 40–750 m elev.
- Distinguished by the fine, numerous, parallel secondary veins.
- Similar to *Philodendron inaequilateralum*, but has bisexual flowers, versus unisexual in all species of *Philodendron*.
- Flowers bisexual.

**Syngonium angustatum**

- B, Ca, Co, OW, SC, T; 0–600 m elev.
- Common throughout Belize.
- Juvenile plants have characteristic coloration.
- Adult growth more shrubby and with larger leaves than the similar *S. podophyllum*.
- Sap milky (arrow).

**Syngonium chiapense**

- Ca; 130–580 m elev.
- Rare in Belize, known from a few collections in rugged limestone regions.
- Petioles long and leaflets few.
- Sap milky.
The following are documented in Belize, but were not collected or photographed during our explorations.

**Syngonium neglectum**
- Ca, SC, T; 10–930 m elev.
- Sap milky.
- Fruits bright red.

**Syngonium podophyllum**
- B, Ca, OW, SC, T; 20–750 m elev.
- Inflorescences white and green; fruits red.
- Sap milky.
- The most common syngonium in Belize. The species has spread to other continents and can reach a high level of invasiveness.

**Anthurium berriozabalense**
- T; 50–100 m elev.
- Known from a single collection from near Dolores in southwestern Belize.
- Similar to *A. huixtlense*, *A. lucens*, and *A. verapazense*, but distinguished by deeply cordate leaves.

**Anthurium clavigerum**
- T; 3 m elev.
- Rare in Belize, known from one collection in southern Toledo Dist.
- Similar to *A. pentaphylllum*, but petioles 60–150 cm long (vs. 10–61 cm).

**Anthurium interruptum**
- T; 420–750 m elev.
- Somewhat common in the Bladen Nature Reserve.
- Similar to *A. scandens*, but differs by not having black glandular dots on the lower leaf surface.

**Monstera dubia**
- T; 700–750 m elev.
- Known by a single collection in Belize at the base of Little Quartz Ridge, Colombia River Forest Reserve.
**Philodendron aurantiifolium** ↓
- SC, T; 90–750 m elev.
- Known by several collections in remote areas of the Bladen and Cockscomb regions.
- The strong wings of the petioles are characteristic.

**Philodendron rothschuhianum** ↓
- T; 400 m elev.
- Epiphytic vine.
- Known from one collection in Belize made in the Bladen Nature Reserve.
- Note compound leaves.

**Philodendron schottii** ↓
- B, Ca, SC, T; 5-920 m elev.
- Known from mostly remote areas of central and southern Belize.

**Syngonium macrophyllum** ↓
- Ca, T; 60–750 m elev.
- Scattered in southern Belize in humid forests.

**Syngonium standleyanum** ↓
- T; 400 m elev.
- Known in Belize by a single collection from deep within the Bladen Nature Reserve.

**Syngonium triphyllum** ↓
- T; 100–200 m elev.
- Known in Belize from two collections in the Bladen Reserve.

**Xanthosoma mexicanum** ↓
- T; 700–800 m elev.
- Rare in Belize, known from a single collection deep in the Colombia River Forest Reserve.
- Spathe cut away in photo to show female flowers.

**Philodendron dwyeri** (not pictured)
- Ca; < 500 m elev.
- Endemic to Belize and rare, found growing on rocks near Guacamallo Bridge, Macal River.
- No photograph known of a living, or preserved specimen.
- High priority for conservation since extremely rare and localized. A 2018 visit to the area to relocate the species was unsuccessful.
- Similar in appearance to *Philodendron advena* and *P. sagittifolium*.
- Distinguished from most other philodendrons in Belize by the presence of milky sap (versus clear).

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**Key to the Genera of Araceae**

While the species of Araceae of Belize are grouped above by major growth form, several genera can have species in more than one group. The following key will help the user identify the genera based on more technical characteristics. Below on page 14 are photos to show the most important distinguishing characters listed by “couplets” or the pairs of numbers used in the key.

1. Plants free-floating aquatics.
2. Plants 1-5 mm wide ................................................................. ................................. 
   2. Plants mostly 10-20 cm wide ................................................................. ............................. 
1. Plants rooted in the ground (sometimes below the water line), on rocks, or epiphytic.

Continued on next page...
3. Flowers unisexual (the female grouped together basally and usually hidden within the bulbous base of the spathe, the male borne apically and often visible at flowering (use 10x magnification to view the flower details).

4. Plants vining, terrestrial or hemiepiphytic; leaves simple or variously divided.

5. Sap clear or reddish (but see P. dwyeri on p. 13); leaves simple or trifoliate; fruits separate ..........................Philodendron

5. Sap milky; leaves with 3 or more leaflets; fruits connected at maturity, forming a “syncarp”..................................Syngonium

4. Plants erect herbs, never vining; leaves always simple.

6. Leaf blades acute to rounded basally or slightly heart-shaped with shallow lobes; sap milky .........................Dieffenbachia

6. Leaf blades with two strong basal lobes; sap milky or not.

7. Above ground stem slender, elongate, spiny; sap clear ..........................................................Montrichardia

7. Above ground stem absent, or if present, thin and short, not spiny; sap milky ............................................Xanthosoma

3. Flowers bisexual, mostly all visible at flowering, spathe not bulbous at the base.

8. Leaves simple, cordate or sagittate (heart- or arrow-shaped), with two basal lobes.

9. Spathe twisted, colored green and purple; found in mangrove forests and ditches; leaf blades membranous, secondary venation conspicuous (see photos above) .................................................................Urospatha

9. Spathe mostly flat, never twisted, uniformly colored; leaf blades coriaceous, secondary venation not conspicuous; found in drier areas as low-growing epiphytes, lithophytes, or dry-growing terrestrial ..................................................Anthurium

8. Leaves simple or compound, but if simple, not with two basal lobes.

10. Plants lacking an above-ground stem; leaves arranged distichously (fan-shaped, noticeable at base)............Spathiphyllum

10. Plants with a conspicuous above-ground stem, climbing vines or hemiepiphytes; leaves arranged spirally.

11. Spathe shorter than the spadix and surrounding it by less than half, usually persistent..................................Anthurium

11. Spathe longer than the spadix and forming a large half-shell around it, falling after flowering.

12. Leaf blades coriaceous, secondary venation inconspicuous, often divided or with perforations (holes) ...... Monstera

12. Leaf blades membranaceous, the secondary venation conspicuous, always entire ......................................Rhodospatha