Guide to tropical plant families and genera

Emily Waters and Miranda Kimberley
Royal Botanic Gardens, Kew
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To assist students on the University of Manchester Biology Field Course to the Payamino Territory in Ecuador
This PowerPoint Presentation is the work of Emily Waters and Miranda Kimberley, who took part in the University of Manchester Biology Field Course to Ecuador in August 2006. We hope that it will be useful guide to you in the rainforest as it is a daunting task to identify all the plants and animal species around you.

The following slides give a basic introduction to the plant families that we encountered on our trip. When we were able to identify plants down to genera and species level these are included after the slide of the family to which they belong.

The majority of photos used are our own. Please feel free to use them in projects if so needed, referencing us, but do not use them for commercial purposes. The few that are not ours are referenced accordingly.

Good luck and enjoy the experience!
Family: Acanthaceae

- Types of plant: Mostly herbaceous plants, shrubs or climbers, some trees.

- Common genera: Aphelandra, Justicia.

- Identification features: Leaves opposite frequently with calcified crystals appearing as white streaks in the lamina when seen as a hand lens. Leaf nodes often swollen in young stems. Flowers often surrounded by large bracts. Stamens attached to the petals.
Family: Araceae

- Types of plant: Mostly herbaceous plants with underground tubers or rhizomes or climbers with aerial stems and roots. Some epiphytes and a floating water plant (*Pistia*).

- Common genera: *Anthurium*, *Arum*, *Colocasia*, *Monstera*, *Philodendron*.

- Identification features: Flower often consists of a spike of many tiny flowers packed around a fleshy axis called the spadix. The spike is enclosed by a large leaf-like or petal-like bract called a spathe. Leaves alternate, often with a heart-shaped or arrowhead-shaped blade.
Philodendron

- Family: Araceae
- Identification features: Mostly climbers, some epiphytic, some small trees/shrubs. Distinctive heart-shaped or arrow-shaped, thick, leathery leaves with sheaths at the base. Flower consists of spathe and spadix.
Family: Arecaceae (Palms)

- Types of plant: Monocotyledon trees, shrubs and climbers.
- Common genera: Astrocaryum, Bactris, Chamaedorea.
- Identification features: Unbranched stems with only one apical meristem. Bark often smooth, hairy or spiny. Leaves usually very large, pinnately or palmately divided with a large sheath at the base. Flowers often borne on much-branched panicles. Fruit a berry, drupe or nut, mostly 1-seeded.
Astrocaryum

- Family: Arecaceae
- Identification features: Palm with spiny trunk and leaves.

(CTFS, striweb.si.edu)
**Bactris**

- **Family:** Arecaceae

- **Identification features:** Palm with spines in distinct bands up the trunk.
Family: Begoniaceae

- Types of plant: Herbaceous plants and shrubs, some climbers and epiphytes.
- Common genera: *Begonia*.
- Identification features: Most species have succulent, often jointed stem, with large membranous stipules. Many have thick rhizomes or tubers. Leaves alternate, frequently lobed and asymmetrical with palmate venation. Flowers unisexual, plants monoecious.
Family: Bignoniaceae

- Types of plant: Trees, shrubs and climbers.

- Common genera: *Bignonia*, *Jacaranda*.

- Identification features: Leaves usually compound and opposite, glands are often present at the base of the petiole. Terminal leaflet often replaced by a tendril. Showy flowers clustered together, usually tubular with 5 lobes and is sometimes 2-lipped. Seeds numerous, often flat and winged.
Jacaranda

- Family: Bignoniaceae
- Identification features: Tall tree with pinnate leaves. Distinctive small pale purple bell-shaped flowers.
Bixa orellana (Annatto Tree)

- **Family:** Bixaceae
- **Identification features:** Small tree with large heart-shaped leaves, new stems red/brown. Distinctive hairy/spiny fruits, like a conker fruit but more spiny, containing numerous seeds covered in red pulp (which is used to colour cheesy Doritos and Red Leicester cheese).
Ceiba

- Family: Bombacaceae

- Identification features: Very large tree with buttressed trunk. Palmate leaves with 5-7 entire lobes.
Family: Bromeliaceae (The pineapple family)

• Types of plants: Evergreen herbaceous plants, often epiphytes.

• Common genera: Aechmea, Ananas, Billbergia, Bromelia, Tillandsia.

• Identification features: Short stems and basal rosettes of stiff, often spiny leaves. Flowers held in a spike, raceme or panicle. Flowers are bisexual with 6 stamens and an ovary of 3 fused carpels. Seeds are often winged.
Epiphyllum

- Family: Cactaceae

- Identification features: Epiphytic cactus with fleshy, segmented arms that have 3 ridges with spines.

(Ulf Eliasson, www.desert-tropicals.com)
Family: Caricaceae
(Pawpaw family)

- Types of plant: Small trees.
- Common genera: Carica.
- Identification features: Soft wood and milky white sap. Leaves alternate, often palmately lobed. Flowers held in a panicle or raceme. Trees are usually dioecious. Flower parts in 5’s and the fruit is a berry.
Carica papaya (Papaya or Paw-Paw)

- Family: Caricaceae

- Identification features: Un-branched evergreen tree with milky sap and large palmately lobed leaves.
Family: Costaceae (the ‘Spiral Gingers’)

- Types of plant: Perennial, herbaceous plants.
- Common genera: Costus, Monocostus, Tapeinochilos.
- Identification features: Large underground rhizomes. Often tall stems containing acid sap. Leaves spirally arranged with a ligule and a closed sheath. Flowers usually on a spike, each having only one fertile stamen.
Costus

- Family: Costaceae
- Identification features: Tall herbaceous plants with distinctive spiral growth habit. Leaves spirally arranged, flower spike at the tips of the stems with several bell-shaped flowers.
Family: Cucurbitaceae (The cucumber family)

- Types of plant: Climbing herbaceous plants.
- Common genera: *Cucumis*, *Cucurbita*, *Gurania*.
- Identification features: Spiralling tendrils arising from the leaf base. Alternate leaves, often heart-shaped or palmately lobed and veined, often hairy. Flowers unisexual, often tubular or campanulate.
Gurania bignoniaceae

- **Family:** Cucurbitaceae

- **Identification features:** Climber with large, roughly hairy leaves and tendrils. Distinctive globe flower head of orange flowers.
Family: Cyclanthaceae

- Types of plant: Herbaceous plants or climbers, some partly epiphytic.

- Common genera: *Carludovica*, *Cyclanthus*.

- Identification features: Watery or milky sap in all tissues. Non-climbing plants have no stems and leaf petioles have sheaths at the base. Palm-like leaves, deeply bilobed. Flowers unisexual, densely crowded on to spadixes that are enveloped by two or more bracts.
Carludovica palmata
(Panama Hat Plant)

- Family: Cyclanthaceae

- Identification features:
  Trunkless, plam-like plant with large fan-like palm leaves divided into 2 at the centre, on the end of long stalks. Leaves come from the base of the plant – no trunk. Flowers on a spike, fruits are red/orange berries.
Family: Cyperaceae (Reeds and sedges)

- Types of plant: Perennial and annual grass-like herbaceous plants.
- Common genera: Carex, Cyperus.
- Identification features: Creeping underground rhizome. 3-sided stems with grass-like basal leaves. Flowers in spikelets, usually 3 stamens. Fruit a nutlet.
Manihot (Yucca)

- Family: Euphorbiaceae

- Identification features: Medium sized shrub with deeply lobed leaves. Large tuberous roots which you will be eating a lot of.
Family: Fabaceae
(The ‘Pea family’)

- Types of plant: Herbaceous plants, shrubs, climbers and trees.

- Common genera: Acacia, Bauhinia, Inga, Senna.

- Identification features: Alternate leaves, mostly pinnately compound with stipules. Roots have nodules containing bacteria that fix nitrogen. Flowers have five sepals or petals. Fruit is typically a one-chambered pod.
Bauhinia

- Family: Fabaceae
- Identification features: Tree/shrub with distinctive leaves made up of 2 leaflets joined down one side. New growth often red tinged.
Cassia

- Family: Fabaceae

- Identification features: Large shrub with pale yellow, 5-petaled flowers and distinctive s-shaped curves stamens. Leaves pinnate and slightly blue/green.
Inga

- **Family:** Fabaceae

- **Identification features:**
  - Trees with pinnate leaves with a distinctive winged rachis between the leaflets. Small round nectary glands can be seen along the rachis, which are to attract ants.
  - Very long seed pods containing white pulp.
Family: Heliconiaceae

- Types of plant: Large herbaceous plants.

- Common genera: *Heliconia*.

- Identification features: Plants have rhizomes and pseudostems formed by leaf sheaths. Large leaves with very long petioles, a thick mid-rib and parallel veins. Flowers are very showy and often brightly coloured. Some hang down and some are held terminally erect. Fruit is a blue drupe.
Heliconia chartacea

- Family: Heliconiaceae

- Identification features: Tall evergreen perennial with banana-like leaves. Distinctive pendulous flower, thinner than other species, bract pale pink/purple and yellow.
Heliconia hirsuta

- Family: Heliconiaceae

- Identification features:
  Small herb. Leaves narrow and held out horizontally from a slender stem. They are smooth above but hairy underneath. Flowers have orange petals and red bracts and are held erect.
Heliconia rostrata

- Family: Heliconiaceae

- Identification features: Tall evergreen perennial with banana-like leaves. Distinctive, waxy pendulous flower, the most obvious parts are the scarlet and yellow bracts with green margins.
Heliconia wagneriana

• Family: Heliconiaceae

• Identification features: Tall evergreen perennial with banana-like leaves. Erect (not pendulous) flower, red and yellow bract with green margins and very pointy tips.
Family: Lecythidaceae

- Types of plant: Trees (many very large) and some shrubs.

- Common genera: *Barringtonia, Bertholletia, Grias*.

- Identification features: Large simple leaves spirally arranged in clusters at the tips of the twigs. Flowers generally large and showy, sometimes in spikes or directly from the trunk. Fruits are large with fleshy outer layers and woody inner layers, often with a lid through which the seed leaves the fruit.
Grias neuberthii

- **Family:** Lecythidaceae

- **Identification features:** Flowers which grow directly from the trunk, with yellow, fleshy petals and incurved stamens. Leaves are grouped at the ends of branches. Fruit a brown pod which looks similar to cocoa.
Family: Marantaceae

- Types of plant: Herbaceous plants.

- Common genera: *Calathea*, *Maranta*.

- Identification features:
  Underground rhizomes or tubers. Leaves with long petiole and a thickening (pulvinus) between petiole and blade. Leaves have parallel veins and are often purple on the undersides. Flowers are on a spike or panicle, usually enclosed by a spathe-like bract. Flowers not very conspicuous, bisexual, with one fertile stamen. Fruit is a 3-valved loculicidal capsule.

(Chiquita, www.chiquita.com)
Family: Melastomataceae

- Types of plant: Herbaceous plants, shrubs, trees, climbers and epiphytes.

- Common genera: *Melastoma, Miconia, Mouriri*.

- Identification features: Opposite leaves, each pair at right angles to the next, with very distinctive venation. Usually 3-9 prominent veins running parallel and converging at the petiole and apex. Stem often 4-sided. Flowers bisexual with 4 or 5 sepals and petals. Usually twice as many stamens as petals. Fruit a loculicidal capsule or berry.
Family: Moraceae

- Types of plant: Trees and shrubs.

- Common genera: Artocarpus, Cecropia, Ficus, Pourouma.

- Identification features: The presence of milky sap containing latex. Leaves extremely variable with stipules present. Flowers unisexual, often held in ‘catkins’. Fruit types also extremely variable.
Cecropia

- Family: Moraceae

- Identification features: Medium height tree with greyish smooth bark. Wood is soft and contains a chain of hollow chambers often inhabited by ants. Leaves look like a horse chestnut with more lobes that are rounded at the tips and fan out like a palm. Often growing along the river and in light gaps in the forest.
**Artocarpus incisus** (Breadfruit)

- **Family:** Moraceae

- **Identification features:** Tree with very large, deeply lobed leaves, milky sap and large round fruit.

(Jeff Shimonski, www.tropicaldesigns.com)
Family: Musaceae (Bananas)

- Types of plant: Gigantic, tender, evergreen herbaceous plants.
- Common genera: Musa.
- Identification features: Rhizomes and pseudostems formed by the massive leaf sheaths. Leaves alternate, spirally arranged, oval shaped with a thick central mid-rib with parallel veins running from it to the margin. Flowers are held in a drooping thyrs with male flowers at the tip and female flowers clustered around the base. Fruit is bunches of bananas of course.
Musa paradisa (Banana)

- Family: Musaceae

- Identification features: Tall evergreen tree-like herbaceous plant with massive leaves. Leaves with thick central mid-rib and parallel veins. Leaf margins often torn and ragged. Long pendulous flower with male parts at the tip and female further up, where banana fruit will form.
Family: Rubiaceae

- Types of plant: Trees, shrubs and herbaceous plants.

- Common genera: *Coffea, Cinchona, Rondeletia*.

- Identification features: Leaves opposite or sometimes in whorls, with stipules. Flower heads extremely variable, sometimes panicles, spikes, etc. Flower parts in 4’s or 5’s. Fruit is a drupe, berry, capsule or schizocarp.
Citrus

- Family: Rutaceae

- Identification features: Small tree/large shrub with spines. Small black dots on the leaves. Easily recognised fruits of orange, lime and grapefruit.
Family: Solanaceae
(The potato family)

- Types of plant: Herbaceous plants, shrubs, climbers and trees.
- Common genera: *Capsicum*, *Nicotiana*, *Solanum*.
- Identification features: Very variable leaves. Flowers usually held in an axillary cyme, sometimes a solitary flower. Flowers bisexual with parts in 5’s. Fruit is a berry, drupe or capsule.
Nicotiana (Tobacco)

- Family: Solanaceae

- Identification features: Tall herbaceous plant with hairy, sticky leaves. Flowers tubular and white held in terminal panicles above the foliage.
**Solanum quitoense**
(‘Naranjilla/Lulo’)

- Family: Solanaceae

- Identification features: Herbaceous plant with large heart-shaped leaves with scalloped margins. White potato flower and round orange fruits.