Palms of Belize

CHAMAEDOREA – Ecology and Economic Botany

Nancy C. Garwood (Southern Illinois University) & **Sam Bridgewater** (Natural History Museum, London)

Photos by N.C. Garwood & S.G.M. Bridgewater, except where noted. Produced by N.C. Garwood, R.B. Foster, & T.S. Wachter. Support from G.&B. Moore Foundation and the UK Darwin Initiative.
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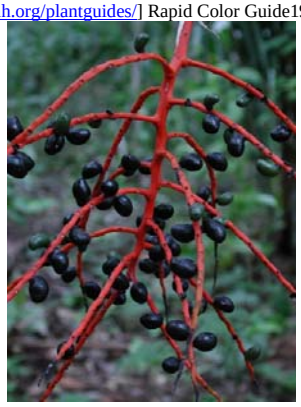
 [RRC@fmnh.org] [www.fmnh.org/plantguides/] Rapid Color Guide195 version 1 (2005)

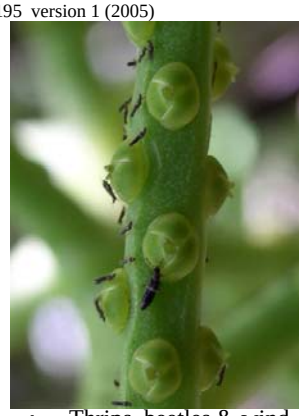
1 *C. tepejilote*, the pacaya palm

2 *C. ernesti-augusti*, the 'fishtail' palm

Chamaedorea **is the largest genus of palms in the Neotropics. There are 11 species in Belize. These shade-tolerant plants are often the most abundant palm in the understory of tropical forests (1, 2), where they play an important ecological role (3, 4).**



3 Birds and mammals disperse the seeds



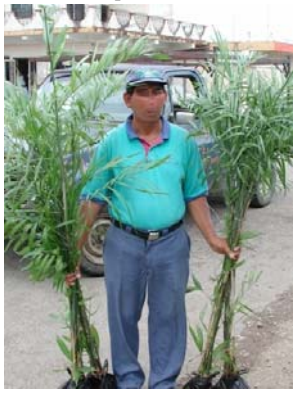
4 Thrips, beetles & wind pollinate the flowers

photo: H. Porter-Morgan (NYBG)

Pacaya, the immature male inflorescences of *C. tepejilote*, has been eaten for millennia in the Mayan region (**5**). Cultivars have been selected by local people as a perennial vegetable crop. It is now exported abroad (below).

5 Pacaya for sale in the Cayo market

6 *C. seifrizii* at a hotel in Cayo District



7 *C. seifrizii* being sold in Belmopan

Chamadorea palms are used locally and internationally as indoor potted plants and in landscaping (**6, 7**). Only a few species used in the international horticultural trade produce seeds outside of their native range, perhaps because pollinators are not available or environmental conditions are inappropriate.

8 Cut leaves in bouquet in New York City

photo: H. Porter-Morgan (NYBG)

The cut leaves of several species are also sold for use in floral displays (**8**). The combined international horticultural and floral trade in *Chamaedorea* palms is a large and important industry. Seeds to support the horticultural industry (**9**), and cut leaves for the floral trade (**10**), are harvested from plants growing wild in tropical forests or in plantations and then exported.

9 Seed for export from a Belizean plantation

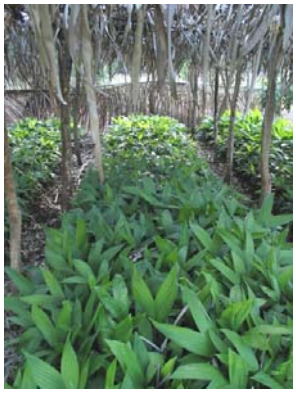
In Belize and Guatemala, the cut leaves and the three palm species providing them are called xaté (pronouced sha-tay). Large amounts of xaté are now being illegally and unsustainably harvested from the forests of Belize (**11**). Unsustainable harvesting (**12**) can kill individual palms and cause regional extinction of species.

10 Cut leaf bundles of xaté macho, *C. oblongata*

This activity deprives Belize of economic benefits from its natural resources, now and in the future. Other activities of the illegal collectors (called xateros), such as hunting, threatens endangered wildlife and degrades the forest ecosystem. This in turn negatively impacts other economic activities such as eco-tourism.

11 Leaf bundles of illegally cut 'fishtail' palm

12 'Fishtail' palm with all of its leaves cut off



13 Nursery of 'fishtail' seedlings for plantations

If wild harvesting of xaté in Belize proves too difficult to regulate, plantation-grown xaté may be a viable alternative (**13**). Several NGOs are now working with local communities to determine whether cultivation of xaté can help small farmers economically by diversifying their income base.

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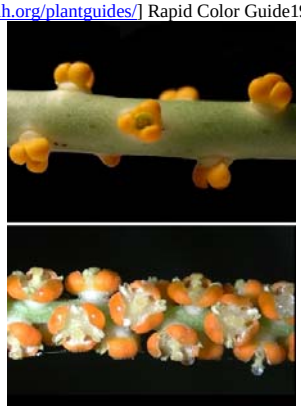
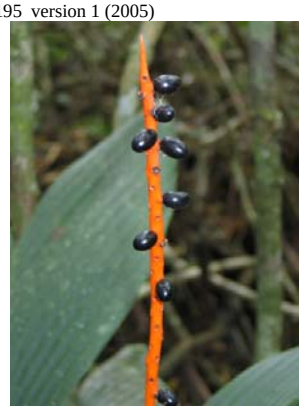
C. ernesti-augusti
(fishtail, xaté)

Height: to 2 m
Stem width: to 1.5 cm
Habit: solitary
Habitat: forest, often on limestone
Distribution: Belize, Cayo, Stan Creek, Toledo
Uses: leaves cut for floral trade, ornamental
(**14-17, 2, 11-13**)


14 Habit


15 Male inflorescence


16 Flowers: female (above) male (below)
upper photo: H. Porter-Morgan (NYBG)


17 Infructescence with ripe fruit

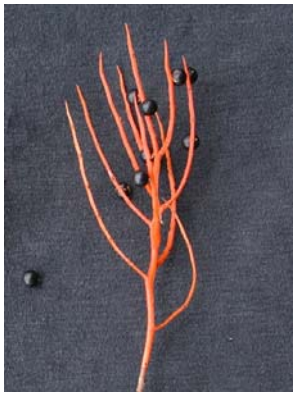
C. elegans
(parlor palm, xaté hembra)

Height: to 2 m
Stem width: 1.5 cm
Habit: solitary
Habitat: forest, often on limestone
Distribution: Cayo
Uses: leaves cut for floral trade, horticulture
(**18-21, 8-9**)


18 Habit


19 Leaf


20 Male inflorescence and flowers


21 Infructescence with ripe fruit

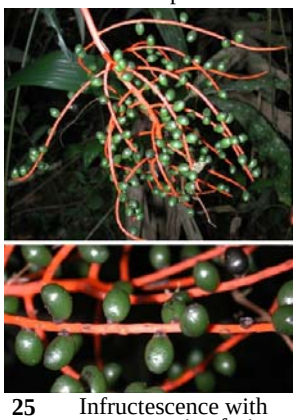
C. oblongata
(xaté macho, jade)

Height: to 3 m
Stem width: to 2.5 cm
Habit: solitary
Habitat: lowland forest
Distribution: Belize, Cayo, Orange Walk, Stann Creek, Toledo
Uses: leaves cut for floral trade, ornamental
ID: similar to *C. neurochlamys* (see below)
(**22-25, 3, 10**)


22 Habit


23 Green apex of sheaths (above); leaflets (below)


24 Flowers: male (right) female (left)
photos: H. Porter-Morgan (NYBG)


25 Infructescence with green, unripe fruit

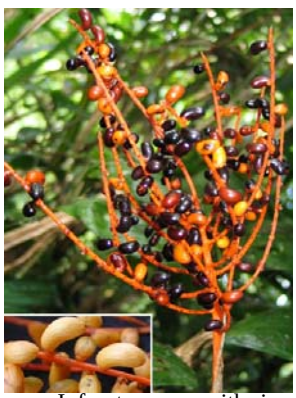
C. neurochlamys
(false jade, monkey-tail)

Height: to 4.5 m
Stem width: to 2.5 cm
Habit: solitary
Habitat: lowland forest
Distribution: Cayo, Orange Walk, Stan Creek, Toledo
Uses: ornamental
ID: similar to *C. oblongata*, but apex of leaf sheath white (not green) and unripe fruit orange (not green)
(**26-29**)


26 Habit


27 White apex of sheaths (above); leaflets (below)


28 Male inflorescence and male flowers
lower photo: H. Porter-Morgan (NYBG)


29 Infructescence with ripe and orange unripe fruit

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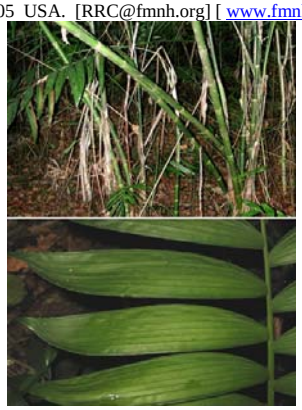
C. tepejilote
(pacaya)

Height: to 7 m
Stem width: to 10 cm
Habit: usually clonal, clumps loose or dense
Habitat: forest, often on limestone
Distribution: Cayo, Orange Walk, Stann Creek, Toledo
Uses: horticulture; male inflorescences cooked
(**30-33, 1, 4-5**)


30 Habit

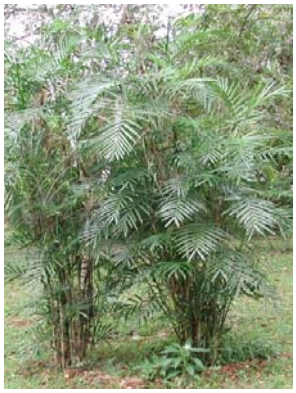

31 Clumped stems (above) and leaflets (below)


32 Male inflorescences


33 Infructescence with maturing fruit

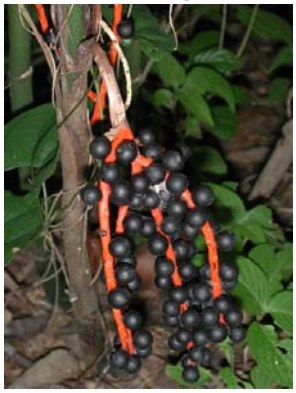
C. seifrizii
(bamboo palm)

Height: to 3 m
Stem width: to 2 cm
Habit: clonal, clumps dense
Habitat: open woodland or forest, often on limestone
Distribution: Belize, Cayo, Corozal, Orange Walk
Uses: horticulture
ID: differs from *C. schippii* in tight clumping of stems and lowland habitat
(**34-37, 6-7**)


34 Habit


35 Leaves


36 Male inflorescence and flowers


37 Infructescence with ripe fruits

C. schippii
(chapai)

Height: to 4 m
Stem width: to 3 cm
Habit: clonal, clumps loose
Habitat: forest, summits of limestone hills
Distribution: Cayo, Toledo
Uses: leaves medicinal
ID: differs from *C. seifrizii* in loose clumping of stems and hilltop habitat
(**38-41**)


38 Habit


39 Leaves

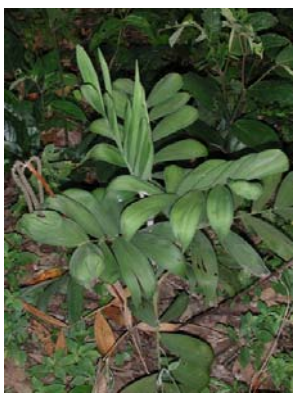

40 Male inflorescences and male flowers


41 Infructescence with ripe fruits

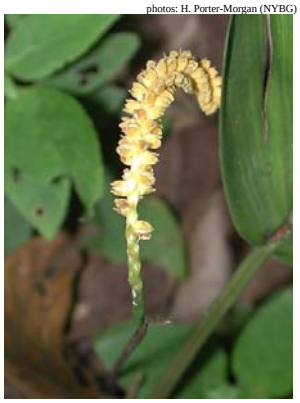
photos: H. Porter-Morgan (NYBG)

C. adscendens

Height: to 2.5 m
Stem width: to 1 cm
Habit: solitary
Habitat: forest, summits of steep limestone hills
Distribution: Toledo
Uses: ornamental
(**42-45**)


42 Habit


43 Adult (above) and juvenile (below) leaves


44 Female inflorescence


45 Infructescence with maturing fruit

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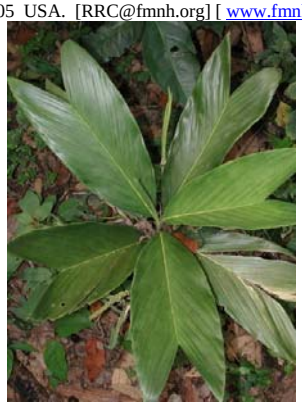
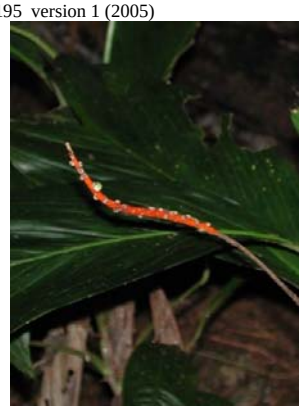
C. geonomiformis

Height: to 2 m
Stem width: to 1 cm
Habit: solitary
Habitat: wet forest, often on limestone
Distribution: Toledo
Uses: ornamental
ID: Leaves narrower & and less deeply notched than *C. ernesti-augusti*
(**46-49**)


46 Habit


47 Leaves


48 Male Inflorescence


49 Infructescence

C. arenbergiana

Height: to 4 m
Stem width: to 3 cm
Habit: solitary
Habitat: wet forest
Distribution: Toledo
Uses: ornamental
ID: Differing from *C. oblongata* & *C. neurochlamys* by much larger leaflets, unbranched female inflorescences, and densely packed flowers and fruits
(**50-52**)


50 Habit


51 Adult leaf


52 Infructescence

This Guide has been produced with assistance from the UK Darwin Initiative

Glossary:

Dioecious – male & female flowers on separate plants
Monoecious – male & female flowers on same plant
Pinnate leaf – leaves compound, with leaflets arranged like a feather
Bifid leaf – leaves simple, apex notched
Petiole – stalk of leaf below leaf blade
Rachis – central stalk of pinnate leaf with leaflets
Inflorescence: stalk bearing flowers
Infructescence: stalk bearing fruits

References:

Balick, MJ, MH Nee, & DE Atha. 2001. *Checklist of the Vascular Plants of Belize*.
Henderson, A, G Galeano, & R Bernal. 1995. *Field Guide to the Palms of the Americas.* Princeton University Press.
Hodel, D. 1992. *Chamaedorea Palms: The species and their cultivation.* International Palm Society, Lawrence, Kansas.

Taxonomic notes:

1) *C. neurochlamys* is sometimes included within the widespread *C. pinnatifrons*
2) *C. schippii* is now considered distinct from the Costa Rican *C. graminifolia*
3) *C. woodsoniana* (right, **53**): one collection reported from northern Cayo, but identification questioned by some researchers; similar to *C. tepejilote* in size, but with narrower leaflets, solitary habit and orange unripe fruit (not green)


53 ***C. woodsoniana*** Habit
photo: R. Foster (F)

Key characters of Chamaedora in Belize

Small understory palms (1 to 12 m tall)
All parts of plant lacking spines
Dioecious (i.e. separate male and femal plants)
Stems and leaf sheaths green with contrasting pale leaf scars circling stem
Leaves bifid or pinnate, usually smooth (not pubescent or scaly)
Leaf margins usually toothed
Petioles often with yellow line on underside
Flowers solitary or in groups of 2-3
Seed surface not brain-like (usually fibrous)

Key characters of other small spineless understory palms in Belize

All are monoecious (i.e. each plant has separate male and female flowers)

If stems and leaf sheaths green and adult leaves pinnate and smooth:
Synecanthus: seed surface smooth & brain-like; inflorescence large and loosely broom-like; petiole lacking yellow line below; flowers in 6-14 lines on inflorescence branches

If stems and/or leaf sheaths brown or grayish and adult leaves bifid or pinnate:
Reinhardtia: leaves pinnate with ragged apex and 'windows' in leaf blade along rachis; flowers on surface of inflorescence (not in pits)
Geonomid palms: flowers in small pits on inflorescence; leaves without 'windows'
Geonoma: leaves bifid or pinnate; brown scales or hairs on leaves or inflorescences
Asterogyne: leaves bifid; with skirt of persistent dead leaves below crown
Calyptrogyne: leaves unequally pinnate & inflorescence spikes held well above leaves