

PROCEEDINGS
OF
THE FIRST SYMPOSIUM
ON
THE BOTANY OF THE BAHAMAS

JUNE 11-14, 1985

College Center of the Finger Lakes
Bahamian Field Station
San Salvador, Bahamas

Editor
Robert R. Smith

Copyright: CCFL Bahamian Field Station 1986
San Salador, Bahamas

All rights reserved. No part of this publication
may be reproduced in any form without permission
from the publisher.

Printed by Don Heuer
in the United States of America

MAJOR PLANT COMMUNITIES OF SAN SALVADOR ISLAND,
THE BAHAMAS

Robert R. Smith
Hartwick College
Oneonta, NY.

San Salvador Island is generally called a "scrubland" vegetation. The island supports approximately 513 species of vascular plants in 337 genera representing 106 families according to the latest checklist of vascular plants. In this list 78 species are cultivated and 435 are native or naturalized. About 60% of the flora comes from the Caribbean area, approximately 30 to 35% comes from the mainland (Florida), and San Salvador possesses a 6 to 8% endemism. This percentage of endemism is approximately the same as that found in the flora of the Bahamas (Correll, 1982).

Where the majority of the native and naturalized species grow depends on three main factors: location, topography and substrate (soil type). Moisture and exposure are secondary to those factors (Correll, 1979). There are seven main plant community types found in the Bahamas (Correll, 1979). On San Salvador these seven types are found, and have been subcategorized to fit the uniqueness of the San Salvador vegetation. Each vegetation type will be treated with its subcategories where appropriate. The coastal communities will be treated first and these will be followed by the inland communities.

Coastal Rock Communities

The Coastal Rock Community (Fig. 1) will be found at the various points around the island such as at North Point, Barker's

Point, and other rocky coastal areas. The soil in this community is gray and sandy with traces of organic matter.

The vegetation is low, usually up to about one meter, and it shows the effect of the salt spray and wind. Many of the plants possess adaptations such as recurved margins, various types of pubescence and thickened cuticles for this severe environment.

The more common plants which are found in the Coastal Rock Community are:

Sea Grape (Coccoloba uvifera)
Bay cedar (Suriana maritima)
Coast spurge (Euphorbia mesembrianthemifolia)
Coast moon-vine (Ipomoea violacea)
Railroad vine (Ipomoea pes-caprae)
Bay lavender (Mallotonia gnaphalodes)
Black torch (Erithalis diffusa)
Common ernodea (Ernodea littoralis)
Sandfly bush (Rhachicallis americana)
Strumpfia (Strumpfia maritima)
Ink Berry (Scaevola plumieri)
Bay geranium (Ambrosia hispida)
Sea-bush (Borrichia arborescens)
Horse bush (Gundlachia corymbosa).

Sand Strand and Uniola Community

There are several Sand Strand and Uniola Communities (Fig. 2) on San Salvador. The most expansive community of this type is along East Beach. This is an area south of United Estates on the northeast coast of the island.

The soil is primarily made up of white calcareous sand. The vegetation height is approximately one and one-half meters tall with the Uniola inflorescences extending above about one-quarter meter. This community consists of Uniola and other graminoids with patches of shrubs such as bay lavender, bay cedar and sea bush. These areas are intermingled with vines, bay

geranium, bay bean and railroad vine.

Some of the common plant species inhabiting the Sand Strand and Uniola Community are:

Sandspur (Cenchrus incertus)
Sea oats (Uniola paniculata)
Coast cyperus (Cyperus planifolius)
Day lily (Hymenocallis arenicola)
Sea Grape (Coccoloba uvifera)
Slender sea pursland (Sesuvium maritimum)
Sea rocket (Cakile lanceolata)
Bay bean (Canavalia rosea)
Bay cedar (Suriana maritima)
Coast spurge (Euphorbia mesembrianthemifolia)
Coast moon-vine (Ipomoea violacea)
Railroad vine (Ipomoea pes-caprae)
Bay lavender (Mallotonia gnaphalodes)
Wild sage (Lantana involucrata)
Bay geranium (Ambrosia hispida)
Sea bush (Borrichia arborescens)
Ink berry (Scaevola plumieri)
Beach Iva (Iva imbricata)

Coastal Coppice Community

Inland from the Coastal Rock Community and the Sand Strand and Uniola Community lies the Coastal Coppice Community. On San Salvador there are two subcommunities making up this community type. These are Coastal Thicket (Fig. 3) and Coccothrinax-shrub (Fig. 4). Although both of these subcommunities are found on various parts of the island, the northwest part of the island shows outstanding examples of both subcategories of the Coastal Coppice Community. Many plants are common to both subcommunities.

In the Coastal Thicket Subcommunity the soil is light and appears to be of a loamy sand type. The vegetation is characteristically from one and one-half to three meters tall. In disturbed areas there is considerable ground cover with such species as pencil flower, spurge and sida. In areas where shrubs

and trees are prevalent, such plants as grannybush, wild sage, ernodia, black torch, horsebush, beefwood, poison-tree, and darling plum are found. A number of vines also occur in this area.

Plants common to the Coastal Thicket Subcommunity are:

Tall Triple-awned grass (Aristida ternipes)
Bush Beard-grass (Andropogon glomeratus)
Swollen wild pine (Tillandsia utriculata)
Auricled green briar (Smilax auriculata)
White beefwood (Guapira discolor)
Ram's horn (Pithecellobium keyense)
Pencil flower (Stylosanthes hamata)
White torch (Amyris elemifera)
Pinwood spurge (Euphorbia lecheoides)
Hardhead (Phyllanthus epiphyllanthus)
Poison tree (Metopium toxiferum)
Wild cherry (Crossopetalum rhacoma)
Darling plum (Reynosa septentrionalis)
Jacquemontia (Jacquemontia havanensis)
Wild sage (Lantana involucrata)
Bahama Wedelia (Wedelia bahamensis)
Angled mistletoe (Phorandendron trinervium)
Woe vine (Cassytha filiformis)

In disturbed areas of the Coastal Coppice Community the following plants are common:

White beggar-ticks (Bidens pilosa)
Blue flower (Stachytarpheta jamaicensis)
Periwinkle (Catharanthus roseus)
Wire-weed (Sida acuta)
Common waltheria (Waltheria indica)
Bahama buttercup (Turnera ulmifolia)
Pencil flower (Stylosanthes hamata)
Jim bay (Leucanena leucocephala)
Wild tobacco (Pluchea odorata)
Wooly corchorus (Corchorus hirsutus)
Wild potato (Echites umbellata)
Wild unction (Urechites lutea)

There are three main locations on San Salvador for the Coccothrinax-shrub Subcommunity. These are 1) the northwest section of the island, 2) Sandy Point area, and 3) Sandy Hook. The soil is also light and very sandy with traces of organic matter. The area is characterized by open sandy areas void of

Figure 1: Coastal
Rock Community



Figure 2: Sand Strand
and Uniola Community



Figure 3: Coastal
Coppice: Coastal
Thicket Subcommunity

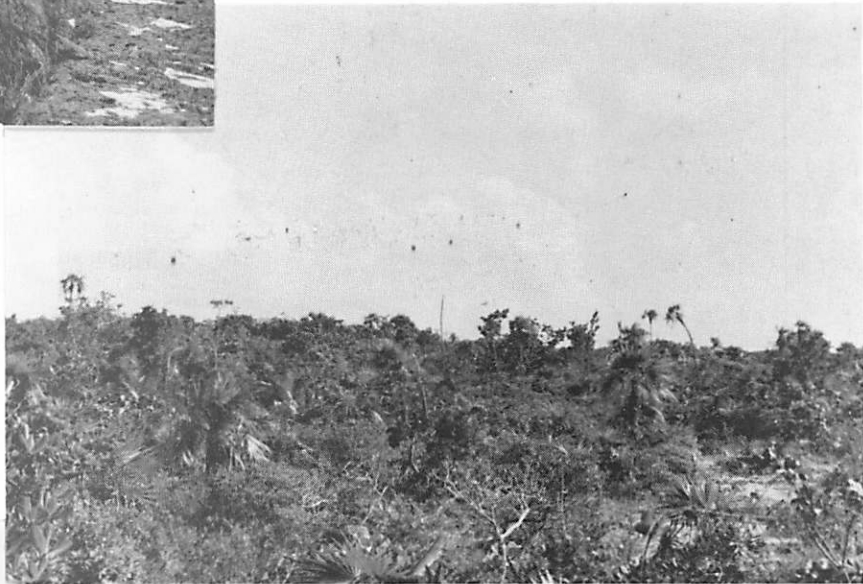


Figure 4: Coastal
Coppice: Coccothrinax-
shrub Subcommunity





Figure 5: Flooded Palmetto Flat Subcommunity



Figure 6: Mangrove Swamp Subcommunity

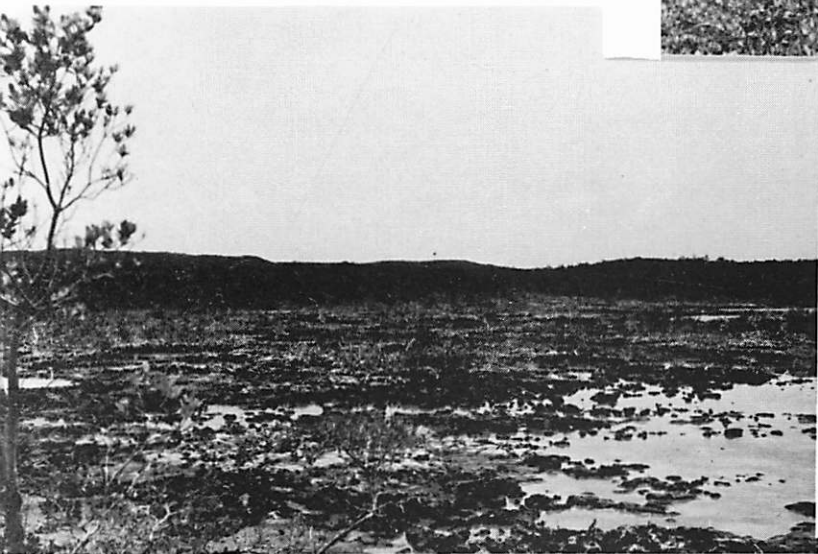
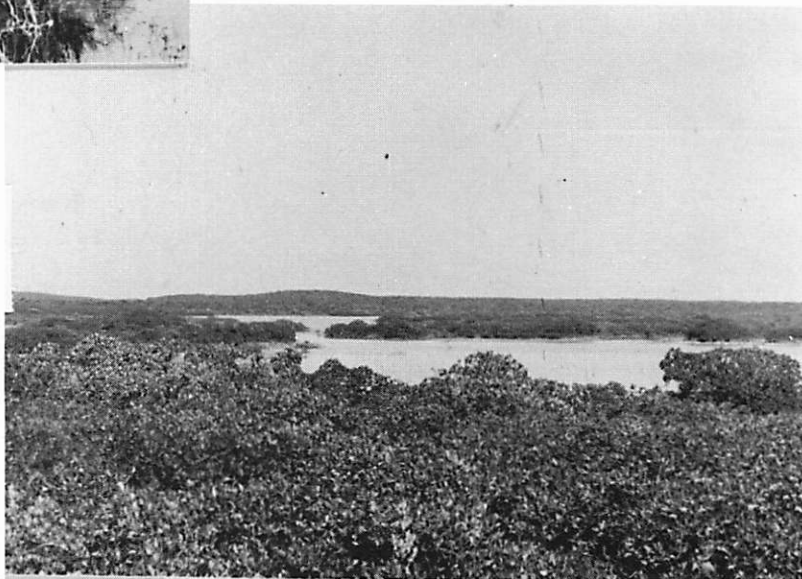


Figure 7: Open Mangrove Flat Subcommunity



Figure 8: Blacklands (Coppice) Subcommunity



vegetation and an abundance of the silver thatch palm. Other plants encountered are Ram's horn, Poison tree, beefwood, shiny stenostomum, darling plum, wild sage and granny bush. These shrubs are all approximately one to one and one-half meters tall. The frequent silver thatch palm reaches heights of three to five meters. Epiphytes are found in the subcommunity in the northwest section of the island.

As stated previously, many of the same species occur in both subcommunities. However, some of the more common species found in the *Coccothrinax*-shrub Subcommunity are:

Triple-awned grass (*Aristida ternipes*)
Silver thatch palm (*Coccothrinax argentata*)
Christmas orchid (*Encyclia hodgeana*)
Sea grape (*Coccoloba uvifera*)
Beefwood (*Guapira discolor*)
Coco plum (*Chrysobalanus icaco*)
Ram's horn (*Pithecellobium keyense*)
Granny bush (*Croton linearis*)
Darling plum (*Reynosa septentrionalis*)
Common waltheria (*Waltheria indica*)
Bahama argythamnia (*Argythamnia candicans*)
Wild saffron (*Bumelia americana*)
Milkweed vine (*Cynanchum inaguense*)
Strongback (*Bourreria ovata*)
Shiny stenostomum (*Antirhea myrtifolia*)
Seven-year apple (*Casasia clusiaefolia*)
Black torch (*Erithalis fruticosa*)
Common ernodea (*Ernodea littoralis*)
Small-flowered catesbya (*Catesbaea parviflora*)
Wild cherry (*Crossopetalum rhacoma*)
Bahama solanum (*Solanum bahamense*)
Privet senna (*cassia lineata*)

Mangrove Community

On San Salvador there are two distinguishable subcommunities under the Mangrove Community. These are the Mangrove Swamp (Fig. 6) consists primarily of red mangroves, black mangroves, and buttonwood. The soil is of a gray color with high salinity and moist to wet. The amount of organic

matter is variable. The height of the vegetation is from two to three meters to over six meters.

The Mangrove Swamp Subcommunity lines the inland brackish lakes on the island, and is the main subcommunity within the tidal basin called Pigeon Creek. The height of the mangroves varies considerably. An average height is about four meters. Along the southwest side of Little Lake at the end of Jake Jones road, the mangrove swamp is rather extensive. The trees are well over six meters tall.

Often the pattern of the different species of mangroves begins with the red mangrove as the pioneer tree. It, with its extensive aerial root system and germinating seed, is the invading species. It is the mangrove closest to or in the brackish or salt water. This species is followed by the black mangrove with its pneumatophores, which is in turn followed by either the white mangrove and buttonwood, or possibly both species.

The loosely arranged green carpet associated with many mangrove areas is usually the succulent-leaved saltwort (Batis) or sea purslane (Sesuvium).

The main plant species found in a Mangrove Swamp are:

Red mangrove (Rhizophora mangle)
Black mangrove (Avicennia germinans)
White mangrove (Laguncularia racemosa)
Buttonwood (Conocarpus erectus)
Saltwort (Batis maritima)
Sea purslane (Sesuvium portulacastrum)

Other plants that may be associated with the mangrove swamp are:

Black willow (Capparis cynophallophora)
Pond apple (Annona glabra)
Mangrove vine (Cissus sicyoides)

The Mangrove flat is a unique subcommunity in which the vegetation is rather sparse. The limestone is of a honeycomb pattern, and the plants, when present, grow out of these holes or depressions which have collected soil particles. The soil water is brackish as are the lakes associated with the subcommunities. There are two extensive areas of mangrove flats. The larger one is along the east shore of Granny Lake. The other one is east of the airstrip and southwest of Flamingo Pond. The average tree height in these areas is one and one-third meters.

The main plants found in this subcommunity are as follows:.

Rush-grass (Sporobolus virginicus)
Glasswort (Salicornia perennis)
Sea purslane (Sesuvium portulacastrum)
Bay cedar (Suriana maritima)
Red mangrove (Rhizophora mangle)
Buttonwood (Conocarpus erectus)
Black mangrove (Avicennia germinans)

Freshwater Formations

On San Salvador Island this community has two subcommunities, the Palmetto Flat (Fig. 5) and the Typha Marshland. In both of these subcommunities the water level fluctuates seasonally and yearly. On occasions these areas have been almost dry, and at other times there has been up to six or eight feet of water with many plants being totally submerged.

The Palmetto Flat is found southwest of Graham's Harbor with a strip of this vegetation type extending sporadically along the northwest side of the island, east of the Queen's Highway. The Typha Marshland is limited to a small section on the west side of the island along either side of the road to the airstrip

and near the Riding Rock marina.

The water may be fresh or slightly brackish, and the soil is sandy with varying amounts of organic matter. The vegetation height also varies, according to plant forms. The sabal palm may reach a height of six meters or more. The buttonwood usually has a shrub habit, and grows to a height of about three meters.

The common plants that are found in the palmetto flat are:

Southern cattail (Typha domingensis)
Tall reed grass (Phragmites australis)
Saw-grass (Cladium jamaicensis)
White-headed rush (Dichromena colorata)
Round-stemmed spike rush (Eleocharis cellulosa)
Palmetto (Sabal palmetto)
Buttonwood (Conocarpus erectus)
Marsh pennywort (Centella asiatica)
Marsh lippia (Phyla stoechadifolia)
Coast stemodia (Stemodia maritima)
Ludwigia (Ludwigia octovalvis)

The Typha Marshlands are similar in species composition to the Palmetto Flat except for the lack of the sabal palm and the woody plants. The sabal palm and woody plants may encircle the dense growth of cattails, tall reed-grasses and sedges. The margin of these areas may also support the distinctive coco plum.

Whiteland Community

The Whiteland Community on San Salvador Island is not noticeably extensive, and most of it is or has been used for agricultural practices. There are three distinctive areas of Whitelands, 1) on the northeast side of the island, just north of United Estates, 2) along the northwest side of the island, north of the New World Museum (an Indian site called "Palmetto Grove"), and 3) in the vicinity of Long Bay Settlement. Due to the disturbance by man, the vegetation is not totally typical of a

Whitelands Community.

The soil in the Whiteland is sandy with some organic matter. In most areas it is a light gray color. However, in some areas it approaches a loam soil type. The vegetation is characterized by the sabal palm and a number of other species.

Some of the common plants of the Whitelands are:

Sabal palm (Sabal palmetto)
Triple-awned grass (Aristida ternipes)
Dog-fennel (Eupatorium capillifolium)
Agave (Agave braceana)
Cinnacord (Acacia choriophylla)
Joe-wood (Jacquinia keyensis)
Poison-tree (Metopium toxiferum)
Ram's horn (Pithecellobium keyensis)
Bahama buttercup (Turnera ulmifera)
Bahama stopper (Psidium longipes)
Small-flowered catesbya (Catesbaea parviflora)
Wild saffron (Bumelia americana)
Wild dilly (Manilkara bahamensis)
Swollen wild pine (Tillandsia utriculata)

Blackland Community

The Blackland Community is by far the most extensive plant community on the island. It encompasses most of the higher inland areas which surround the mangrove communities and the many brackish lakes and ponds. The Blackland Community substrate is characterized by exposed limestone with many depressions of various depths in which soil accumulates. The soil is usually either a red (pineapple loam) or a fertile dark loam. In many areas there is also a considerable ground litter. The Blackland Community is also characterized by dense vegetation and by the lack of a dominant species. Consequently, it is the vegetation type which exhibits the greatest species diversity.

Since the Blackland Community is so extensive and possesses many interesting features, categories of subcommunities

have been designated for these unique areas. The subcommunities of the Blackland Community are: Agricultural areas, Blacklands (Coppice), Open thicket, and Sinkholes.

Agricultural Areas: Most of the agriculture on San Salvador Island occurs in the Blackland Community. These sites are usually within walking distance of the settlements, and show evidences of present or past farming. The method of farming is "slash and burn". The land has a modest recovery period from this type of farming practice. The shrub and tree species that survive are for the most part the same as in a typical blacklands. From observations the Haulback thickets in the Blackland Community seem to indicate that they are an early invader and a persistent species when a farming area has been abandoned.

Blacklands (Coppice): This is the main vegetation subcommunity on the island (Fig. 8). The term Coppice has been used for this category by many botanists in the past. The vegetation is dense and diverse. It supports a great number of epiphytes. In the Blacklands limestone pits of various widths and depths are found. Many of these which resemble wells are of great botanical interest because certain fern species are found there. Such ferns include the Maiden-hair fern, the Toothed Spleenwort, and the Small Halberd fern.

The common plants of the Blacklands include:

Pain-in back (Trema lamarckianum)
Sweet torchwood (Nectandra coriacea)
Black willow (Capparis cynophallophora)
Wild tamarind (Lysiloma latisiliqua)
Haulback (Mimosa bahamensis)
Cat's claw (Pithecellobium unguis-cati)
Thin-leaved erythroxyton (Erythroxyton aerolatum)
Lignum vitae (Guaiacum sanctum)

Figure 9: Blacklands:
Open Thicket Subcommunity



Figure 10: Blacklands:
Sinkhole Subcommunity

where bananas have been planted. On the north end of the island there are a great number of sink holes ranging from ones which are very dry to many which support several feet of fresh water. These sink holes possess unique forms of vegetation. Usually a few towering sabal palms line the margin of the sink and within the sink hole a variety of different plants are found, depending on the amount of water.

Plants common to several of the sink holes on the northern part of the island are as follows:

- Erect burhead (Echinodorus rostratus)
- Eleocharis (Eleocharis sp.)
- Pondweed (Potamogeton illinoensis)
- Najad (Najas guadalupensis)
- Sabal palm (Sabal palmetto)
- Portulaca (Portulaca rubicaulis)

White torch (Amyris elemifera)
Bitterbush (Picramnia pentandra)
Gumelemi, Gumbo limbo (Bursera simaruba)
Bunchosia (Bunchosia glandulosa)
Poison-bush (Grimmeodendron eglandulosum)
Tricera (Buxus bahamensis)
Butter bough (Exothea paniculata)
Three fingers (Thouinia discolor)
Wild salve (Helicteres semitriloba)
Feather bed (Diospyros crassinervis)
Spicate fiddlewood (Citharexylum fruticosum)
Princewood (Exostema caribaeum)

Open Thicket: This unique area (Fig. 9) is located near the Fortune Hill Plantation site, east of Granny Lake and west of Storr's Lake. The vegetation consists of shrubs and trees which are about two to two and one-half meters tall with a number of grasses and sedges interspersed in moist to wet soil. The area appears to be seasonally wet, and possesses large, low, exposed rock which give it a very open appearance.

Some of the plants of the open thicket are:

Bushy beard grass (Andropogon glomeratus)
Tall paspalum (Paspalum arundinacium)
Saw grass (Cladium jamaicense)
Marsh fimbriatylis (Fimbristylis ferruginea)
White-headed rush (Dichromena colorata)
Thatch palm (Thrinax morrissii)
Bay berry (Myrica cerifera)
Sea grape (Coccoloba uvifera)
Haulback (Mimosa bahamensis)
Candle berry (Byrsonima lucida)
Poison-tree (Metopium toxiferum)
Buttonwood (Conocarpus erectus)
Wild dilly (Manilkara bahamensis)
Common ernodea (Ernodea littoralis)
Bahama stopper (Psidium longpipes)

Sink Holes: The blacklands are dotted with many sink holes (Fig. 10) of varying sizes. The larger ones with an accumulation of rich soil are referred to as "banana holes",

Pond apple (Annona glabra)
Bahama swampbush (Pavonia bahamensis)
Bacopa (Bacopa monnieri)
Lippia (Phyla stoechadifolia)
Centella (Centella asiatica)
Ammannia (Ammannia latifolia)

REFERENCES

- Britton, N.L. and Millspaugh, C.F. 1920. The Bahama Flora. New York (reissued by Hofner Publishing Co. New York and London, 1962).
- Correll, D.S. 1979 The Bahama Archipelago and Its Plant Communities. Taxon. 28: 35-40.
- Correll, D.S. and H.B. Correll. 1982 Flora of the Bahama Archipelago. J.Cramer, Germany.
- Howard, R.A. 1950. Vegetation of the Bimini Island Group, Bahamas, B.W.I. Ecol. Monog. 20: 317-349
- Smith, Robert R. 1982. Field Guide to the Vegetation of San Salvador Island, The Bahamas. San Salvador, Bahamas: CCFL Bahamian Field Station.