National Forest Demarcation and Bio-Physical Resource Inventory Project:

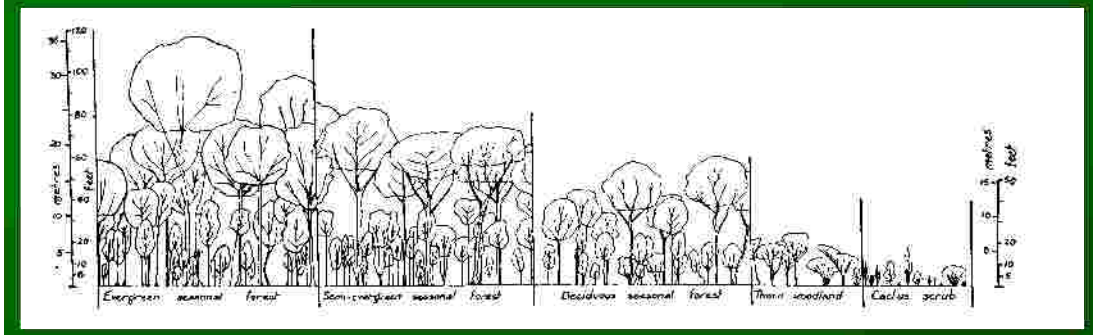
A New Vegetation Classification

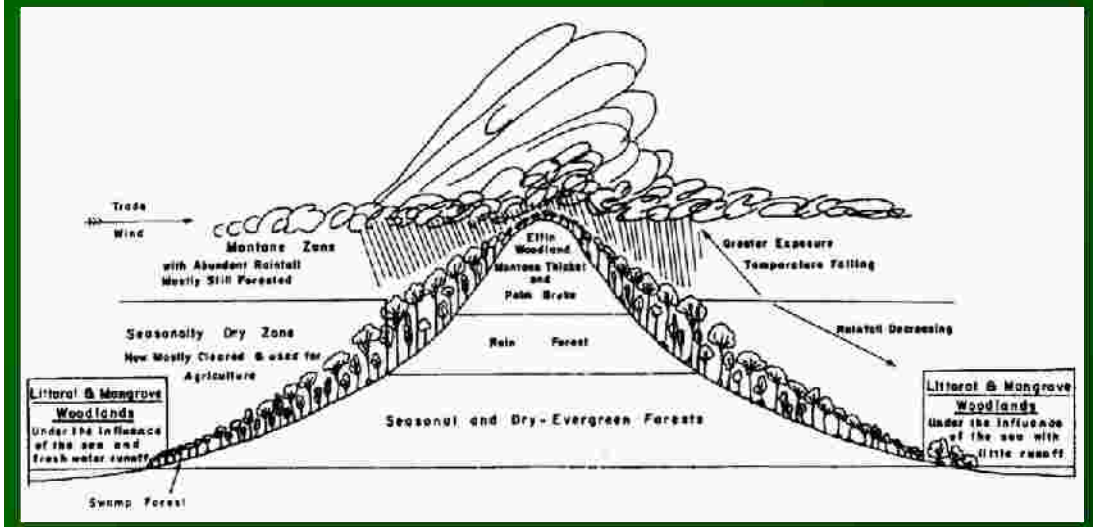
Roger Graveson

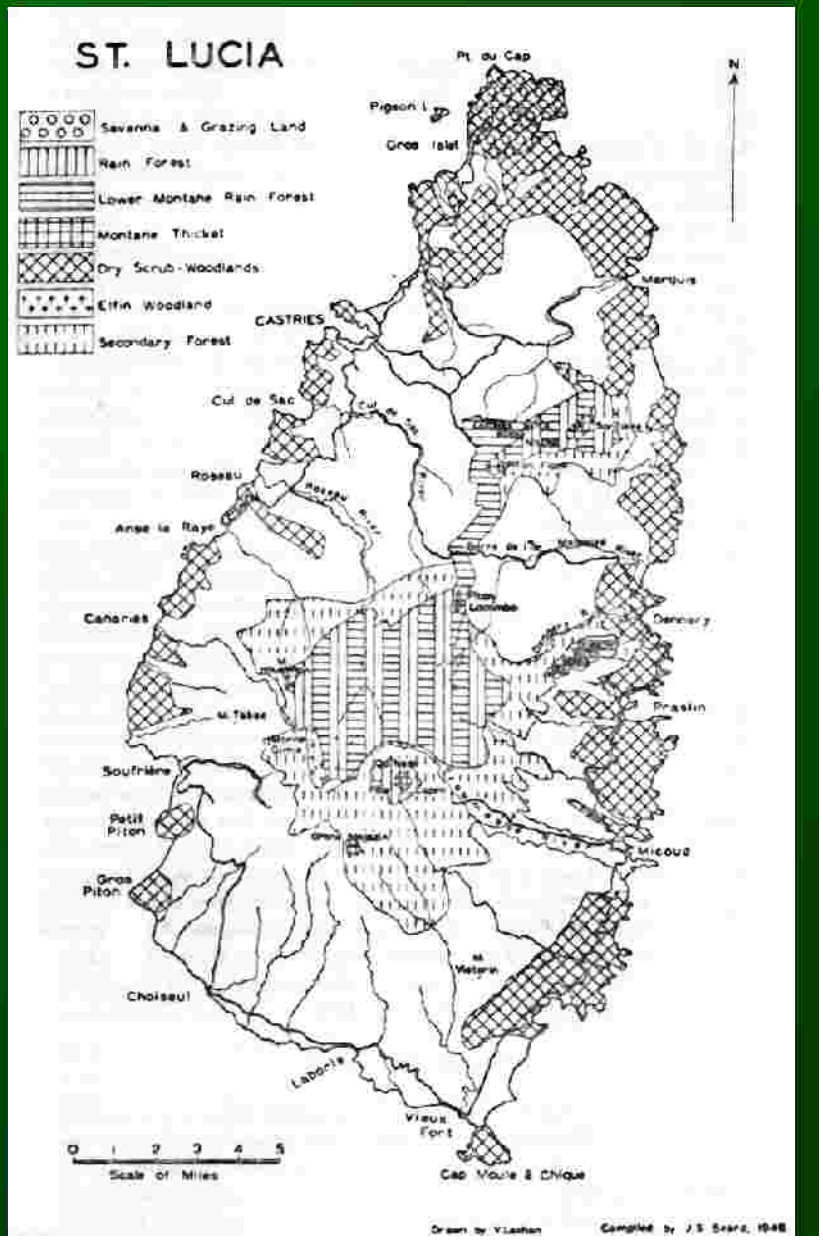
FCG International

Previous Vegetation Classification Systems

Climactic Natural Vegetation Types (Beard, 1944)

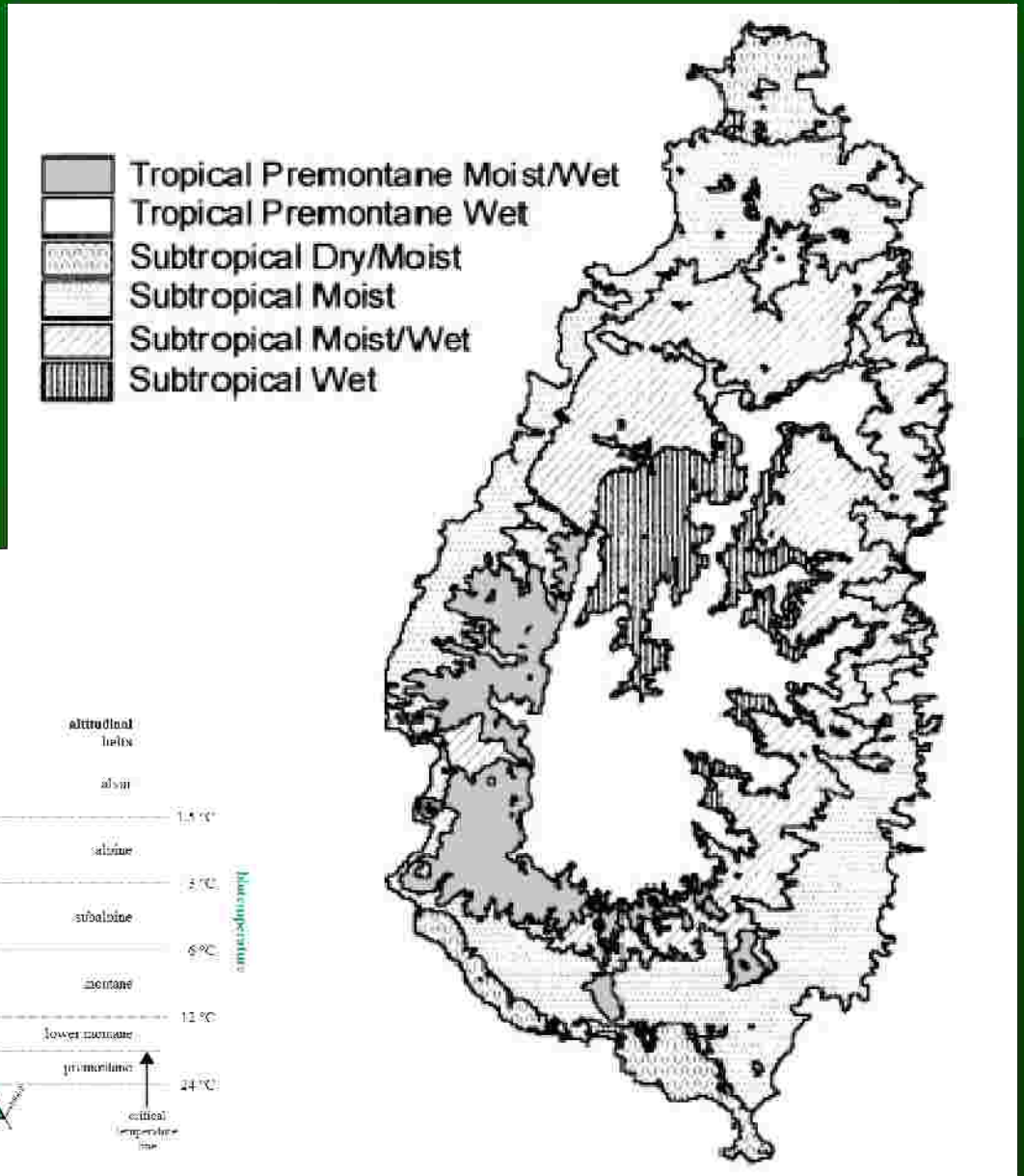


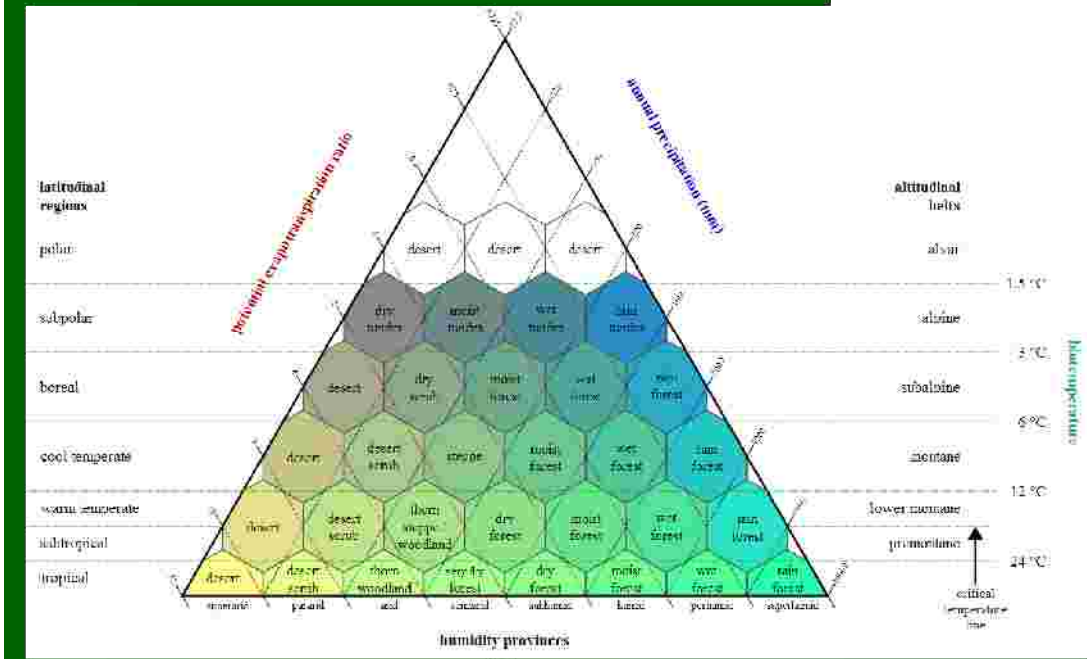




Previous Vegetation Classification Systems

Life Zones (Holdridge, 1967; Isaac & Bourque, 2001)





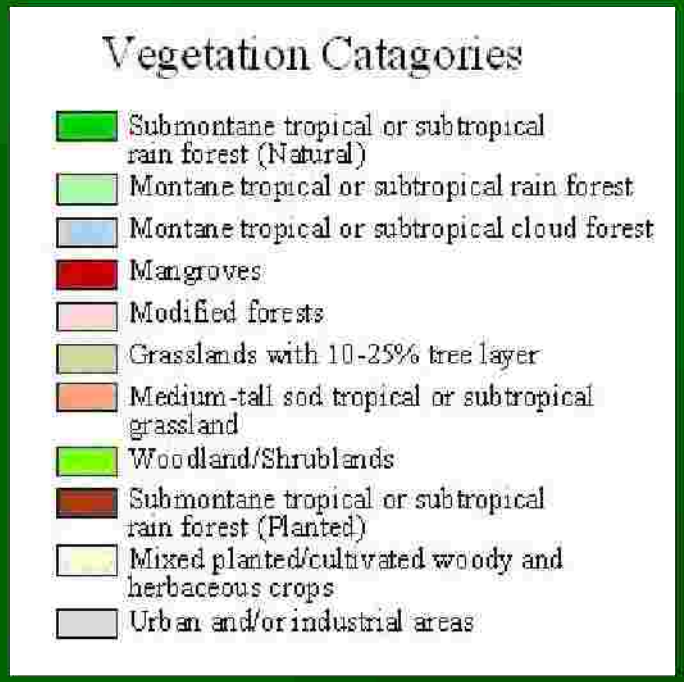
Previous Vegetation Classification Systems

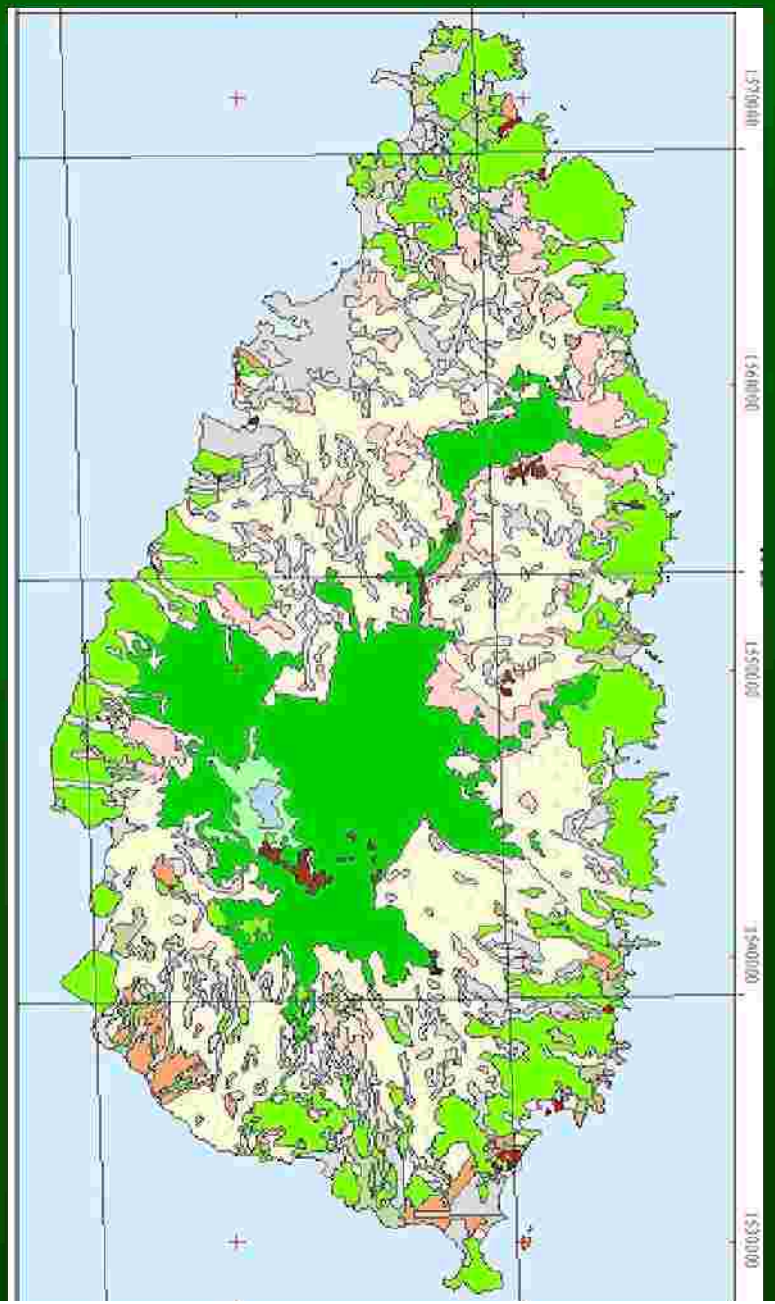
International Vegetation Classification System

Order:	Tree dominated
Class:	**1, Closed Tree Canopy**
Subclass:	**1A,** Evergreen Forest
Group:	**I.A.3, Tropical and subtropical seasonal evergreen forest (mainly broad-leaved evergreen trees with some foliage reduction in the dry season)**
Subgroup:	I.A.3.N, Natural/Semi-natural
Formation:	I.A.3.N.a.
Alliance:	*Cedrela mexicana - Andira inermis - Hymenaea courbaril* Forest Alliance

Previous Vegetation Classification Systems

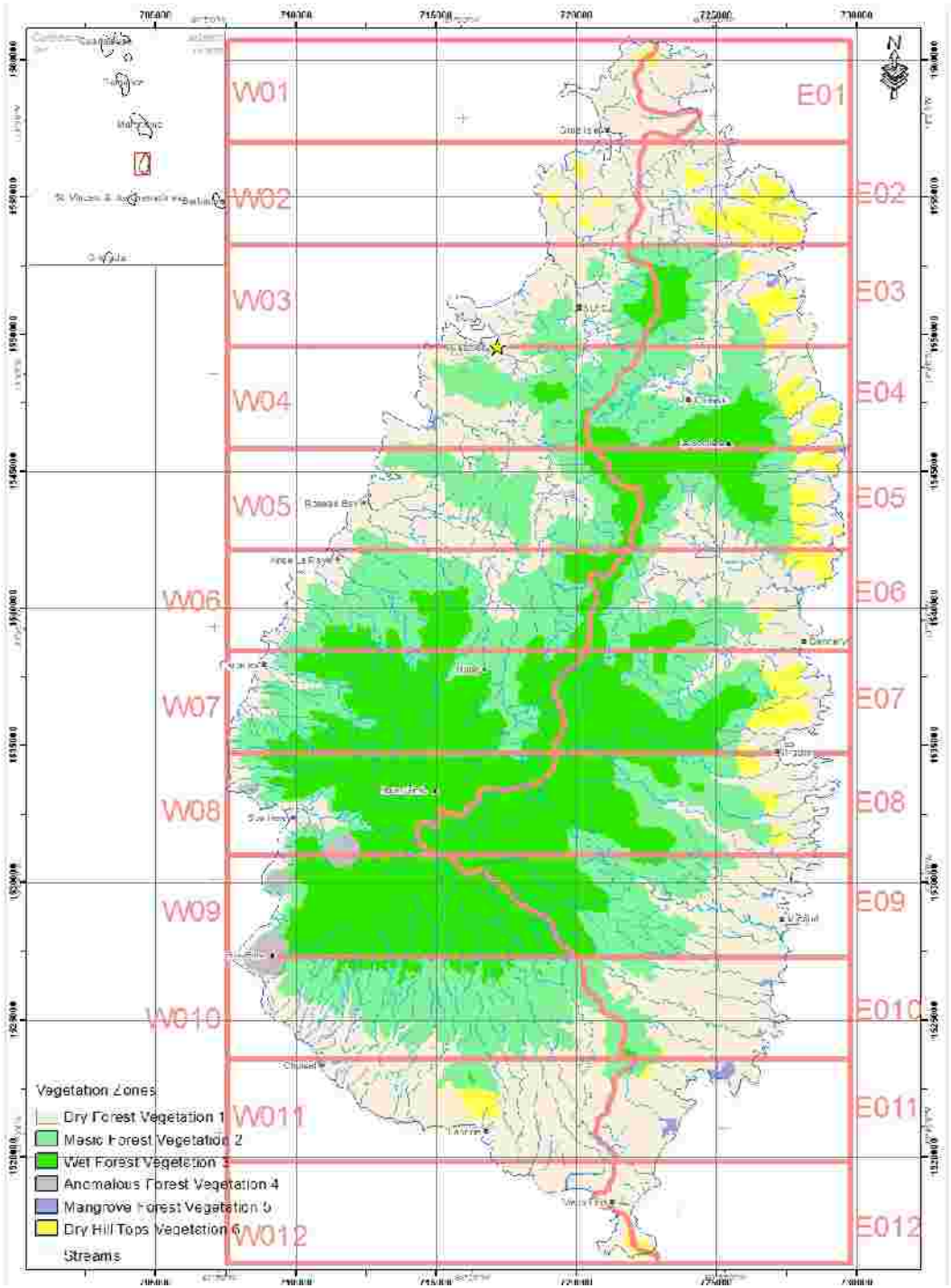
The Nature Conservancy





Survey Methods

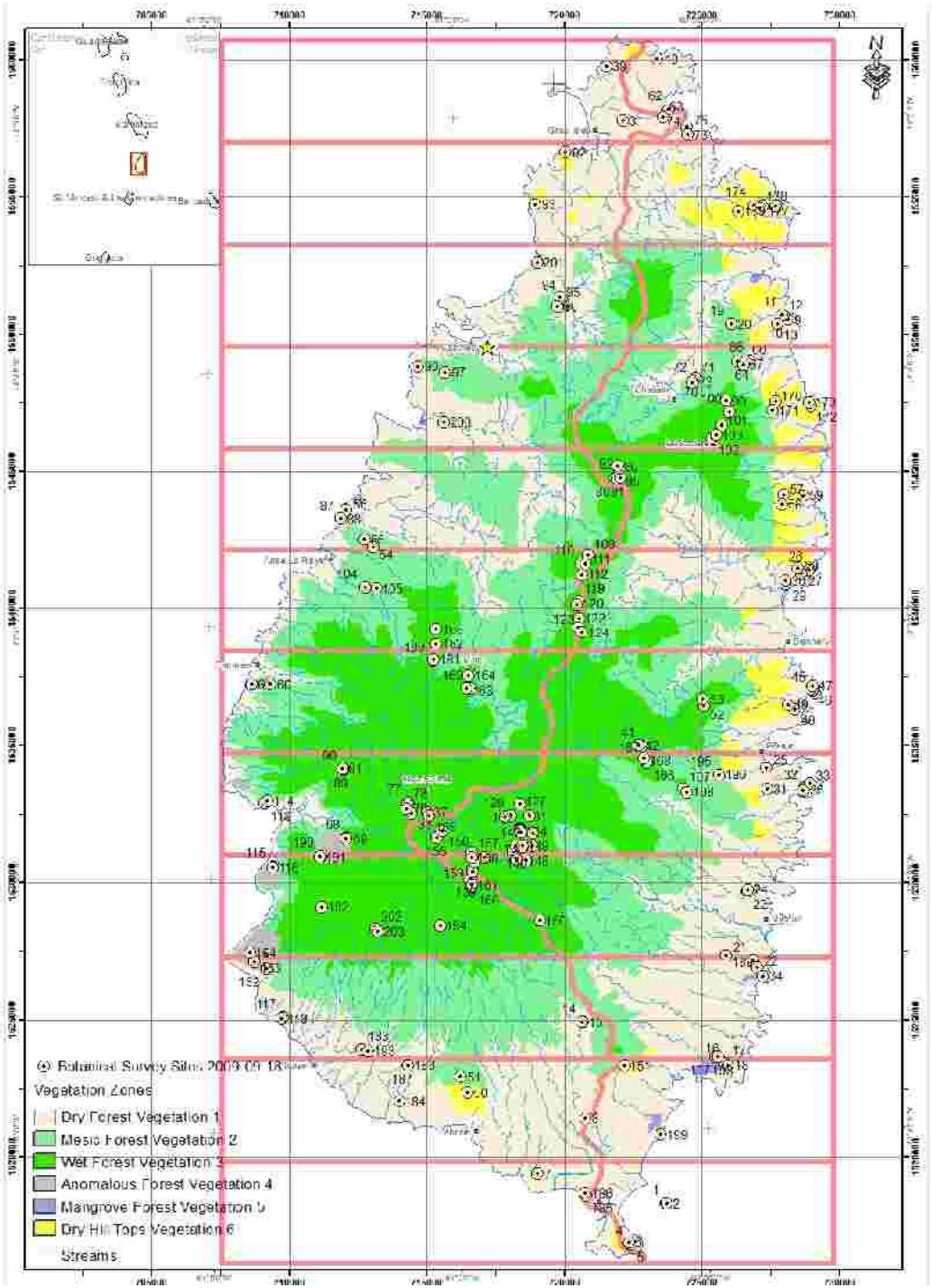
A simple starter map was produced, dividing Saint Lucia into 24 cells and showing known areas of botanical interest.



Survey Methods

Over 200 circular plots were sampled, each one 20 metres in radius.

Floristic and biophysical data were recorded in every plot.



Survey Methods

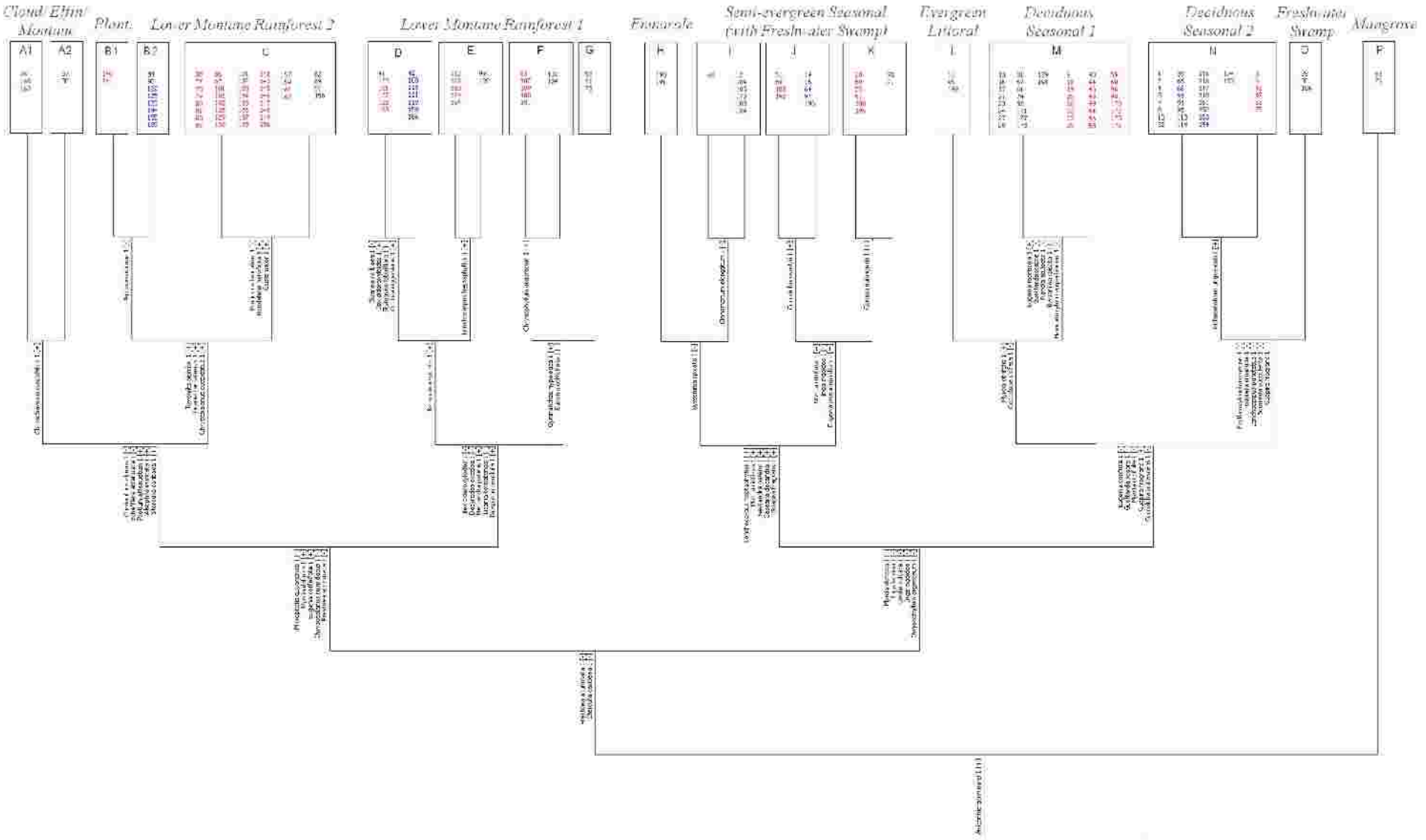
Recording data in the field






Vegetation Classification

Data Analysis - Two-way Indicator Species Analysis (TWINSPAN)



Vegetation Classification

Data Analysis - Manual Floristic Analysis

Forest class	*Forest Class Value (species)*
Deciduous Seasonal Forest (xeric forest)	1
Semi-evergreen Seasonal Forest (mesic forest)	2
Lower Montane Rainforest (rain/wet forest)	3
Cloud Montane Rainforest (altitudinal forest)	4

Forest class	*Mean Forest Class Value (plots)*
Deciduous Seasonal Forest (xeric forest)	1.00 - 1.50
Semi-evergreen Seasonal Forest (mesic forest)	1.51 - 2.50
Lower Montane and Montane Rainforest (rainforest)	2.51 – 3.00
Cloud Montane Rainforest (altitudinal forest)	More than 3.00

Vegetation Classification

Vegetation Types:

Natural Forest

Littoral Evergreen Forest and Shrubland
Mangrove
Freshwater Swamp Forest
Deciduous Seasonal Forest
Semi-evergreen Seasonal Forest
Lower Montane Rainforest
Montane Rainforest
Cloud Montane Rainforest

Non-natural Forest

Tree Plantations

Non-Forest

Elfin Shrublands
Herbaceous Swamp (seasonal or permanent)
Aquatic Herbaceous Vegetation
Littoral Rock and Cliff Vegetation
Littoral Unconsolidated Sand Vegetation
Littoral Scrub, including Cacti
Fumarole Vegetation
Grassland, with or without a few trees or shrubs

Vegetation Types

Littoral Rock and Cliff Vegetation

Mainly herbaceous, often succulent, low vegetation found on coastal cliffs and the flatter rocky areas behind them.

Vegetation Types

Littoral Unconsolidated Sand Vegetation

Mainly herbaceous, salt-tolerant vegetation, growing on loose sand on beaches and adjacent low dunes.
The pioneer species are trailing rooting herbs, with succulent species slightly further inland.
In some locations, shrubs appear on low dunes a few metres inland of high tide.

Vegetation Types

Littoral Scrub, With or Without Cacti

This type of vegetation is found in a narrow zone between littoral rock and cliff vegetation and Deciduous Seasonal Forest or Littoral Evergreen Forest.
It consists of shrubs, cacti and sometimes grassy spaces.

Vegetation Types

Littoral Evergreen Forest and Shrubland

Behind sandy beaches, rocky cliffs and pavements, an evergreen forest or shrubland is found, especially on the Atlantic coast.
The harsh conditions caused by wind, salt-spray, often a thin soil and a water deficit even during most of the wet season, favour an evergreen arborescent flora with thick leathery leaves.
Coccoloba uvifera (wézen, siwiz, sea grape) is commonly present.

Vegetation Types

Mangrove

Mangrove is an evergreen forest of brackish water.
This well-known vegetation class contains only a few widely distributed, salt-tolerant species.
In Saint Lucia, Mangroves contain four tree species and are mainly on the Atlantic coast.

Vegetation Types

Freshwater Swamp Forest

Freshwater Swamp Forest occurs in flat areas close to sea-level, with a permanent or seasonal freshwater flow and no inflow of salt water.
Trees are evergreen and there is a tendency for monotypic (single-species) stands to form. This class varies from the permanently muddy swamp redwood forest beside permanent rivers, to forest behind beaches that rely on seasonal creeks to maintain the water table.

Vegetation Types

Deciduous Seasonal Forest

The taller trees tend to lose all their leaves in most dry seasons, but smaller trees and shrubs are evergreen. There is no moss or cover of ground ferns. Vines and herbaceous ground cover are present, particularly in more disturbed areas. This forest class reaches 700m on Petit Piton.

Vegetation Types

Grassland

Open areas covered mostly by grasses or sedges, but other herbs and low shrubs are also present.
Individual trees or small clumps of trees and taller shrubs may be present.
This vegetation class is most common near areas of Deciduous Seasonal Forest, usually a result of extreme disturbance to that forest class

Vegetation Types

Semi-evergreen Seasonal Forest

Occupies the zone between Deciduous Seasonal Forest and Lower Montane Rainforest.
Characterized by upper canopy trees with rather thin, often broad, and quite often compound leaves, which may lose some, but not all, of their leaves during a dry spell.
There are no, or very few, epiphytes, ground ferns and mosses.
Elevation ranges from almost sea-level in ravines to the summit of Gros Piton.

Vegetation Types

Lower Montane Rainforest

Trees are evergreen because there is usually no water deficit in any month.
Trees of all heights are found, without clear divisions into separate canopy layers.
There is a great abundance of vines, epiphytes, ferns and mosses.
The trees are tightly packed, and can be wide.
This class has been recorded from 100-680m above sea level.

Vegetation Types

Montane Rainforest

On the western side and sheltered eastern slopes of the Mount Gimie Range, including Piton Troumassée, above 650m. Slopes are extremely steep, rainfall is very heavy, there is little wind and landslides are very common.
The steepest areas are covered with tree ferns and palms, with canopy height of about 4-6m, with some scattered taller trees on slightly less steep areas.

Vegetation Types

Cloud Montane Rainforest

On high summits, at 700m or higher (but not in the most windy spots)
The canopy is about 8m high with occasional much taller trees of *Freziera undulata*. Terrestrial ferns, anthuriums, bromeliads, and epiphytes are very common; moss cover is often several cm thick.
Cloud and mist cover, with heavy rainfall, predominate.

Vegetation Types

Elfin Shrubland

In the windiest spots on the Mount Gimie/ Troumassée ridges and peaks, above 700 metres, a shrubland vegetation class dominates.
The canopy is up to 2m tall, but often less, with an occasional slightly taller *Prestoea acuminata* palms.
Cloud and mist cover, with heavy rainfall, predominate.

Vegetation Types

Herbaceous Swamp

Seasonally or permanently muddy or flooded areas with a mainly herbaceous cover, along with some shrubs, and possibly an occasional tree.

Vegetation Types

Aquatic Herbaceous Vegetation

1: Marine Herbaceous Vegetation
Rooted herbs growing in shallow sea water forming beds.

2: Freshwater Herbaceous Vegetation
Floating herbaceous plants in still or slowly moving freshwater.

Vegetation Types

Fumarole Vegetation

This is a rare acid-tolerant class confined to the Sulphur Springs, especially on the slope of Mount Souf.
It is dominated by ferns about 2m tall and a bromeliad, with widely-spaced trees.

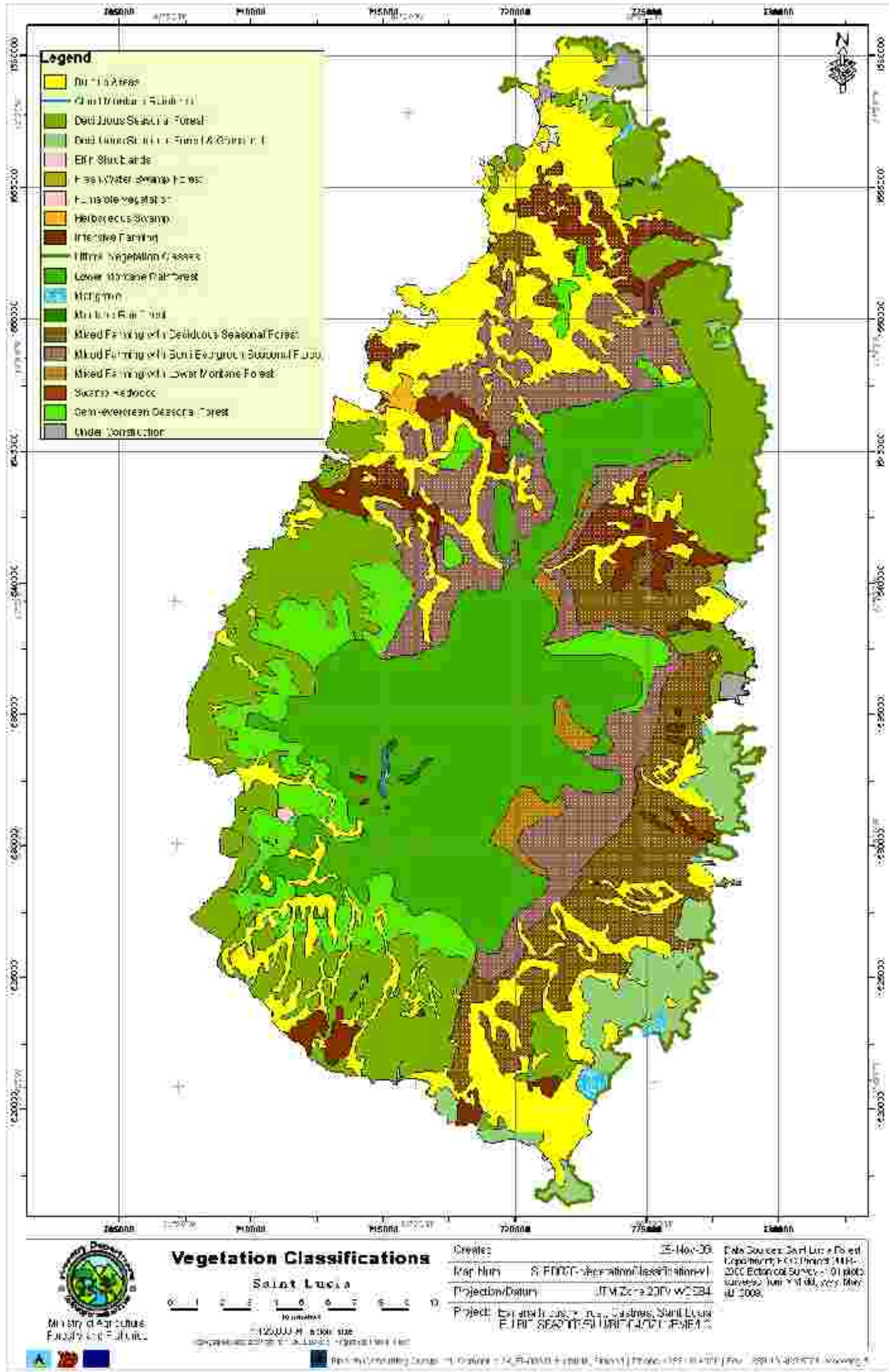
Vegetation Types

Tree Plantations

This class has mature trees that have been planted in an organized manner, mainly in and around the forest reserve, with smaller wild trees and shrubs growing between them.

Vegetation Types

Recommendations


Legend
Deciduous Seasonal Forest
Elfin Shrublands
Herbaceous Swamp
Intensive Farming
Mixed Farming with Deciduous Seasonal Forest
Semi-evergreen Seasonal Forest
Under Construction
Vegetation Classifications
Saint Lucia
Ministry of Agriculture Forestry and Fisheries