Developing a GIS for the Study of St. Lucia Parrots
Objectives

- Compile and synthesize data on parrot breeding ecology
- Develop GIS model for predicting potential nesting habitat
- Develop protocol for surveying distribution and abundance of terrestrial avian communities on St. Lucia
St. Lucia Parrot (*Amazona versicolor*)

- Estimated 125 parrots in 1975
- Conservation Action
  - Captive Breeding
  - Legal protection
  - Public education
- Listed as endangered by IUCN in 1980
- Research on breeding biology in 1990s
Problems

• Develop GIS model for predicting potential nesting habitat
  • Difficulty finding digital maps
  • Non availability of satellite images
  • Satellite images are costly
  • Time consuming
New Objective

• Develop a GIS for the analysis of the parrot’s habitat

  • Develop a database in Access
  • GPS locations of parrot nests
  • Measure nest site characteristics
  • Determine extent of foraging activity
  • Join database to GPS point layer
Study Area

Legend
- Forest Reserve
- Highway

List of Areas (Ha.)

- Castries: 1,393
- Barre de L’Isle North: 251
- Barre de L’Isle South: 725
- Central A: 1,652
- Central B: 1,474
- Quillesse: 1,401
- Saltibus Grand Magazin: 107
- Addition Central: 121
- Dennery: 146
- Dennery Ridge: 71
- Marquis 1: 134
- Marquis 2: 35
- Marquis 3 - 6: 19
- Forestiere Blocks 1 - 5: 12

Total: 3,186.900

Source: Forest and Lands Department 1998
Map produced by "Theodolite Imaging Co. G. J. Chin
Forest Department St. Lucia"
Logical Design for a Habitat Database

Nest Location
- Nest ID (PK)
- Location
- Longitude
- Latitude
- Altitude
- Tree Species
- Nest Direction
- Depth
- No. of chicks
- Year Found
- Year Observed

Foraging Buffer
- Buffer ID
- Nest ID

Forests Plots
- Plot ID (PK)
- Buffer ID (FK)
- Area
- Basal Area
- % Cover
- Tree Count
- Tree Species
- Altitude
- Aspect
- Slope
- Species
- Density

Tree Species
- Tree ID (PK)
- Plot ID (FK)
- Tree Height
- DBH
- Flowering
- Fruits
- Leaves
- Health Condition
Database in Access

- **Nest Location**
  - Nest ID
  - Location
  - Longitude
  - Latitude
  - Altitude

- **Foraging Buffers**
  - Buffer ID
  - Nest ID

- **Forest Plots**
  - Plot ID
  - Buffer ID
  - Area
  - Basal Area
  - Percentage

- **Tree Species**
  - Tree ID
  - Plot ID
  - Tree Height
  - DBH
  - Flowering

*gis_parrot: Database (Access 2000 file format)*

- Objects
  - Tables
  - Queries
  - Forms
  - Reports
  - Pages
  - Macros
  - Modules
- Groups
- Favorites

- Create table in Design view
- Create table by using wizard
- Create table by entering data
- Foraging Buffer
- Forest Plots
- Nest Location
- Tree Species
Developing the GIS

- Download topomap
- Take GPS locations
- Convert GPS data to points layer
- Overlay on topomap
Developing the GIS
Creating Buffers
Problems Encountered

• Finding digital maps for St. Lucia
• Relational database
• Projection
• Getting the correct datum on GPS