

U.S. Virgin Islands Gap Analysis Project

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The U.S. Virgin Islands (USVI) are located in the Caribbean in the northwestern most section of the Lesser Antilles, just east of Puerto Rico. The total area of the USVI is under 350 km², yet they harbor relatively high biodiversity and substantial levels of endemism, particularly among the reptiles. They include St. Thomas, St. John, St. Croix, and a considerable number of cays. The databases of species occurrence, land cover, and stewardship for the USVI GAP are integrated with the Puerto Rico Gap Analysis Project (PRGAP) to allow regional analyses.

Description of Project

USVI GAP includes 143 species of terrestrial vertebrates: 107 birds, 21 reptiles, eight amphibians and seven mammals. These include endemic, breeding resident, breeding migrant, established exotic and non breeding migrants. The majority are breeding residents. Breeding migrants include birds and marine turtles - which use terrestrial habitat for nesting. Ten to 20 percent of the amphibians and reptiles are endemic.

We developed three integrated sets of minimum mapping units to display species ranges and model predicted distributions. These include a grid of 24 km² hexagons contiguous with PRGAP hexagon, a grid of 2 km² hexagons nested within the larger hexagons, and a grid of subwatersheds and cays.

The occurrence data for each species is intersected with each set of map units to produce three distinct range

maps for each species in our analyses. The different range maps have unique advantages and will be useful as we develop species predicted distributions and products for land managers, research and conservation.

The land cover mapping involves using a Self-Organizing Map (SOM) artificial neural network to classify EO-1 ALI scenes from 2007 pan-sharpened to 10 m spatial resolution. EO-1 ALI has a similar spectral range to Landsat 7 ETM+ with a few additional spectral bands and a higher resolution panchromatic band. We are also integrating information on canopy cover and canopy heights extracted from LIDAR data from 2004 (Figure 1).

Status

The stewardship areas mapping, species occurrence databases and species range maps are complete. Species distribution modeling, completion and accuracy assessment of the landcover, expert review, and final gap analyses and reporting are in progress. The final project should be completed in 2010.

Results and Goals

The PR and USVI Gap project products include the development of a new publication series for the Forest Service, the Research Map Series (RMAP), 4 maps published in English and Spanish (Martinuzzi et al. 2008, Gould et al. 2008 a-c), two publications related to PRGAP (Martinuzzi et al. 2009, Gould 2009), and a publication on the USVI GAP range mapping (Gould and Solórzano 2009).

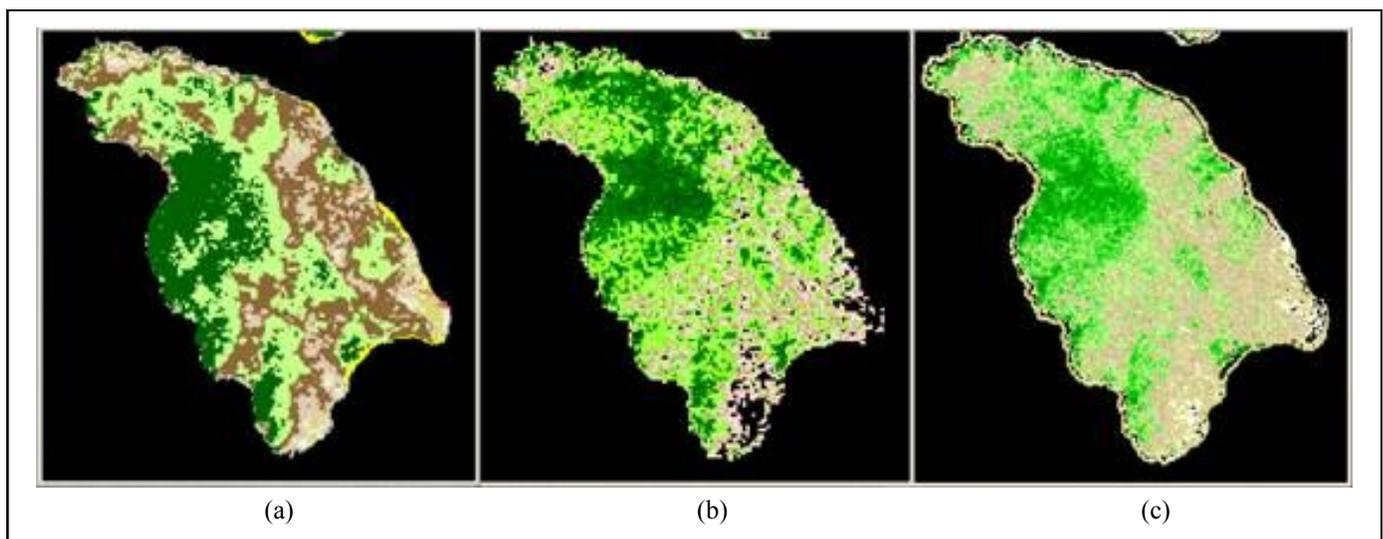


Figure 1. *Hans Lollik Island – St. Thomas* (a) draft land cover, (b) percent canopy cover, and (c) canopy heights. Darker green represents closed forest (a), higher percent of canopy cover (b), and taller trees (c).

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