Mangrove Forests

Coastal Green Infrastructure of the US Virgin Islands
Mangroves in the USVI

- Mangrove forests in the Virgin Islands are the first level of defense in storm surge in hurricanes and mitigate inland flooding from heavy rains
- Shore stabilization
- Fisheries
- Wildlife
Spatial Data Sources

- NOAA Benthic layer for VI
- NOAA NCCOS
- NOAA CROP Data Portal
Map Resources

- UVI Conservation Data Center
- USGS soil maps
- FEMA Firm maps
Spatial Resources

- Resources such as the FWS wetland mapper are best when used at a larger scale.
- US Forest Service – International Institute of Tropical Forestry landcover classification map is excellent and has a mangroves forest cover class.
Current status of VI mangroves

- There was a perception that mangrove forests are being either lost or degraded prior to hurricanes
- Development, sea level rise?
- Mapping resources are completed infrequently relative to the US
- Time comparisons are difficult due to varying cover classes and base data
- Spatial extent and nature of hurricane damage remains unknown
Uncertain status of mangrove forests

• Hurricanes Irma and Maria caused widespread damage.
• Mortality and damage dynamics appear complex and variable.
• Red mangroves may have been more severely affected.
• Mangrove Mortality may be higher than in upland forests and recovery slower.
• Are we ready for another major storm?
Resources moving forward; example projects

- Several field studies completed in the VI
- Sampling methods have been field tested and evaluated for cost
- Perpendicular transects were used to measure the change in species composition
Great Pond & SCRG/Lime Tree Field study

- Multiple mangrove base layers combined to create study site in GIS
- Random point generation for transect locations
- Transects are perpendicular to the coastline
- Overstory; Height, canopy density, health...
- Understory; seedling density, species, size class
Great Pond used as a comparative reference
Post Hurricane Rapid Assessment of Coral Bay

- Rapid sampling methods assessed damage across the entire bay
- Canopy cover, ground cover, tree damage and regeneration were recorded
Coral Bay, St John
Coral Bay Community Council

- All sample sites had tree damage over 50% recorded
- Damage of 100% recorded at several sample points
- Red mangroves showed a higher degree of damage and few signs of regeneration
- Regeneration from propagules was widespread in some sample sites
- Recommendations and results were distributed to the Coral Bay community
Proposed Long Point Mangrove Restoration

- Mangrove pond lost and coastline receded over 80 feet in some location
- Comparison does not include Maria Damage
- Geographic Consulting and Reef Ball proposed partial solution with green infrastructure
- *Phase 1 is ramping up a tree nursery!*
What is needed?

- New resource mapping, including benthic layers for the VI
- Systematic Field Assessment of conditions in key mangrove systems across the territory
- Uniformity in sampling methods
- Defining cause of damage and future threats
- Develop restoration plans for impacted systems
- Prioritize action based on both cost and the value of individual mangrove systems
What are the challenges?

• Funding sources are always a challenge
• A clear path for restoration permitting (US and VI) that can be repeated
• Tree nurseries need time to produce mangroves and other coastal trees for the restoration projects