

Geospatially Detecting *Saccharum spontaneum*: An Invasion of the Panama Canal Watershed

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Overview

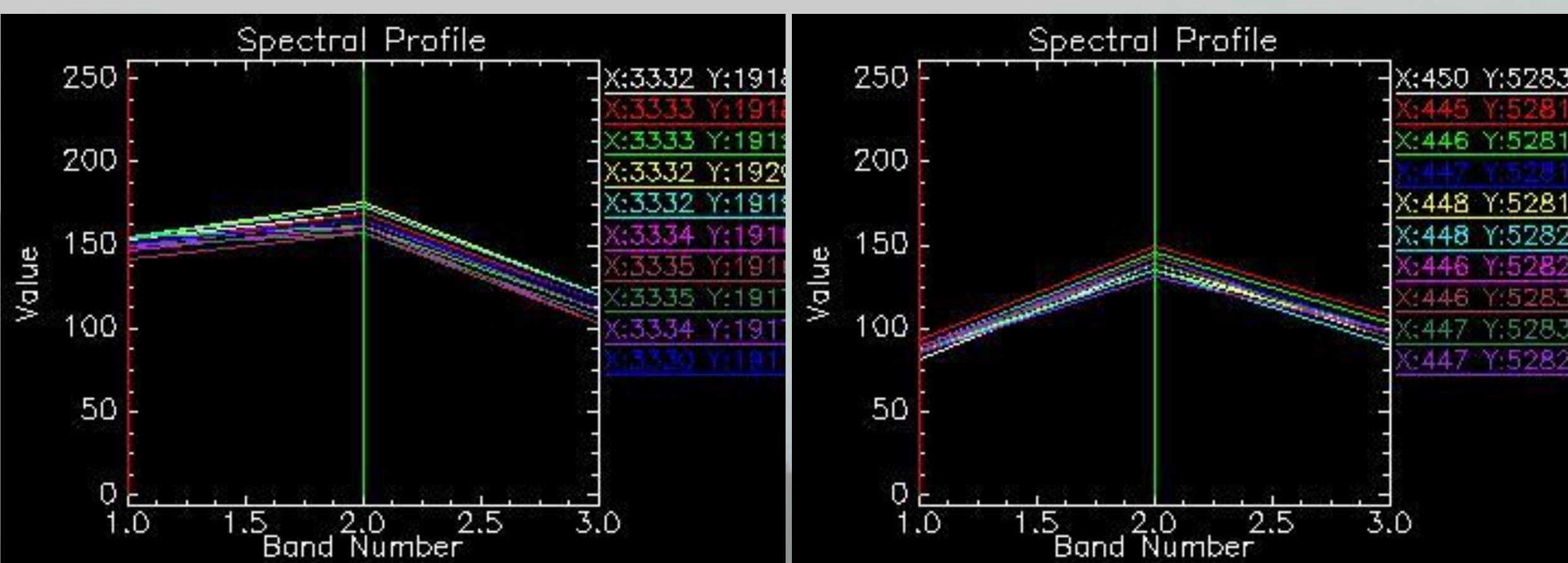
A method to accurately identify the invasive species *S. spontaneum*, or “Canal Grass”, in satellite imagery provides the means to compile a comprehensive spectral library of this grass from all available remote sensing datasets to better understand the extent of the invasion.

Key Findings

Pixel values and spectral signatures were recorded in a spectral library for the following datasets:

- Landsat 7 (October 2000, February 2009, December 2009)
- Landsat 5 (March 2000)
- UAVSAR Radar Imagery (2009)
- ASTER (2006)
- PALSAR Radar Imagery 2011

This same method was applied to sugar cane, genetically very similar to *S. Spontaneum*, to detect any difference in their signatures.

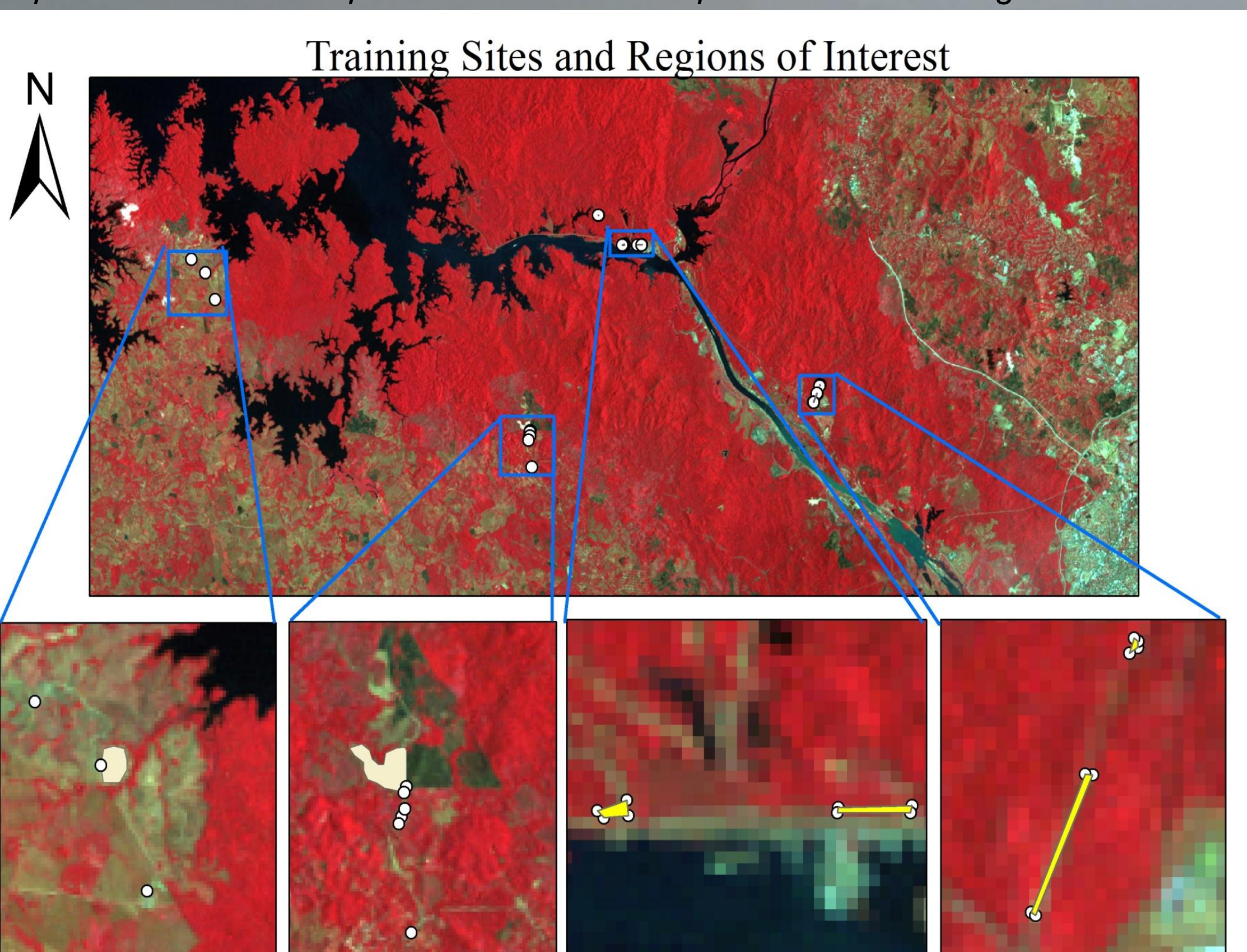


Spectral Profile of *S. spontaneum*

Spectral Profile of Sugar Cane

Explanation and Methods

- GPS waypoints around *S. spontaneum* plots of various sizes and location within the watershed were collected;
- waypoints could then be processed into features, or polygons, using Geographic Information System (GIS) software, facilitating the spectral analysis with accurate geographical positions of the plots;
- ENVI image processing software was used to identify individual pixels in multispectral and RADAR imagery homogeneously occupied by *S. spontaneum* and to compile the library of spectral signatures.



Map Created By Casey Calamaio
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Impact

The implications of this research to Panama in essence strives to understand the interactions an invasive species has on the sensitive biologically diverse rainforest ecosystem with the aid of remote sensing and geospatial monitoring capabilities.

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