**NASA DEVELOP National Program**

University of Georgia

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**Short Title: Southeastern Ecological Forecasting**

**Updated Abstract**

*Hydrilla verticillata* is an invasive aquatic plant that has become a serious problem in Southeastern United States, especially impacting vegetation and water quality. Traditionally, Hydrillainfestation has been tackled using a combination of field-based physical, chemical and biological methods which are often costly. Rapid and accurate spatio-temporal estimates of Hydrilla density and distribution are needed for better monitoring and management of this invasive plant. This project demonstrated an innovative approach using Landsat 8 OLI data to study the spread of this invasive aquatic plant in inland waters. NASA Landsat 8 Operational Land Imager (OLI) imagery in combination with *in situ* data were used to map Hydrilla distribution and density in four lakes across Georgia and Florida. Performances of Visible Atmospherically Resistant Index (VARI) and Green Normalized Difference Vegetation Index (GNDVI) were analyzed for indications of Hydrilla density and distribution, using a combination of statistical techniques, such as coefficient of determination (R2), percent normalized root mean square error (%RMSE), and residual trends. The resulting detection tool for monitoring Hydrilla distribution was delivered to Georgia Power, the J. W. Jones Ecological Research Center, and the Henry County Water Authority for use in water quality restoration decision-making.