CONNECTICUTVIEW 2022- 2023 ACTIVITIES

The overarching goal of ConnecticutView is to foster the awareness and promote the use of remote sensing technology, from space borne sensors to ground based systems, within the state of Connecticut. To this goal, the ConnecticutView engages in various academic and outreach activities targeted at the education of K - 12 students, undergraduate students, graduate students, and the public. In addition, remote sensing technology is used to develop data and information that address specific issues within the state of Connecticut.

Invasive Plant Monitoring:

Connecticut's forest understory is being dramatically exposed to the expansion of invasive plant species. Increased temperatures due to climate change and forest disturbances triggered by biotic and abiotic agents provide conditions more conducive to spread and survivability for other invasive plants. The 2020 Forest Action Plan from the Connecticut Department of Energy and Environmental Protection has emphasized the urgent need of taking measures to control and manage invasive plants in Connecticut forests. Among the list of invasive plants, two invasive plant species significantly contribute to the degradation of forest habitat: Japanese barberry (*Berberis thunbergii*) and multiflora rose (*Rosa multiflora*). In the absence of predation and disease in their introduced environments, these two invasive species present serious threats to forest ecosystem health and biodiversity. Japanese barberry and multiflora rose can damage the structure of native plant communities, prevent native seedling regeneration, and diminish the overall productive capacity of the forest, depreciates native songbird habitat, and pose risk on human health. During the project year of 2022-2023, we continued the tasks related to satellite imagery-based mapping of Japanese barberry and multiflora rose in Connecticut's forest understory. The extended leaf phenology of the invasive shrubs was opportunistically utilized to discriminate invasive understory from native understory as well as overstory. We utilized a suite of vegetation indices derived from time series Sentinel-2 imagery to develop statistical models and to identify most important explanatory variables. Fig. 1 shows the responses of different vegetation indices chosen by the model as optimal variables for detecting invasive plants. Fig. 2 shows classification results for UConn forest and nearby wooded areas.
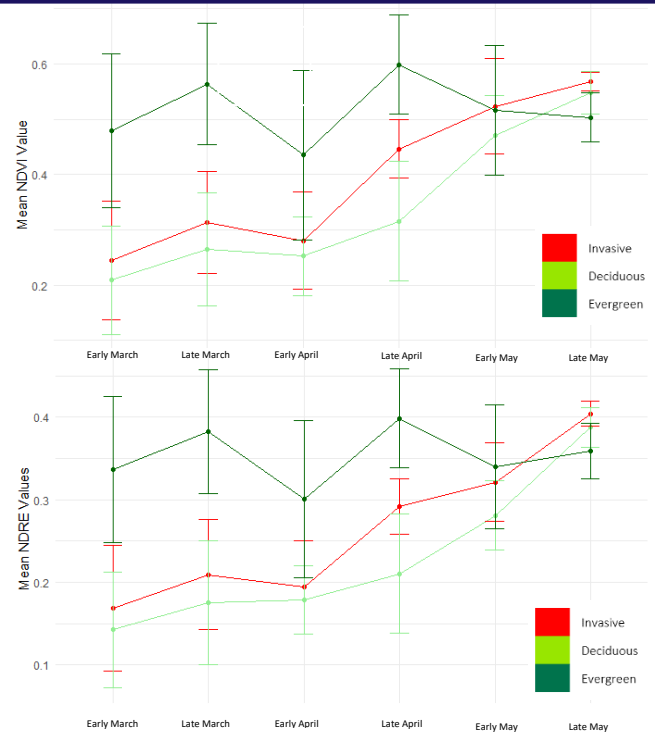

Figure 1: Responses of different vegetation indices (Vis) chosen by the model as optimal variables for detecting invasive plants. VIs from late March and late April were recognized as the most important explanatory variables. This example study area is in UConn Forest, Storrs, CT.
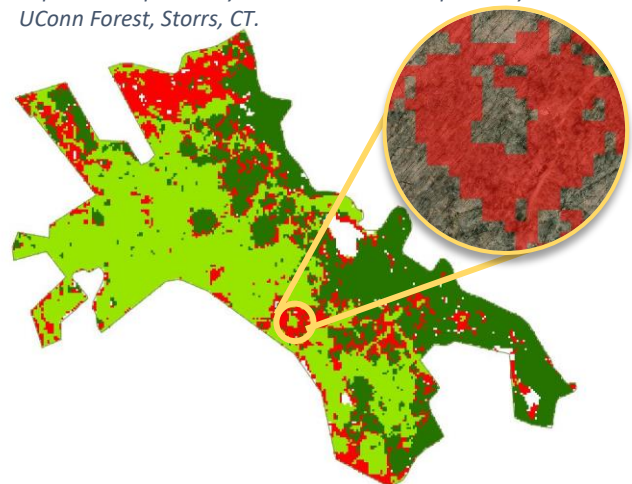

Figure 2: Model classified high-probability pixels of Japanese Barberry and Multiflora rose at UConn Forest, Storrs, CT. Based on Sentinel 2 derived variables of Late March and Late April

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BENEFITS TO CONNECTICUT

While small in area, Connecticut is a diverse state. Connecticut has an abundance of forest, numerous water bodies, and the state borders the Long Island Sound, an ecologically important estuary into which a majority of Connecticut watersheds drain. Connecticut also has a high population density with its associated urban and suburban development, road networks, and golf courses. As such, remote sensing technology can serve as a valuable tool to assist in the monitoring and management of the diverse Connecticut landscape and help educate the citizens on the impacts of human activities on the earth, both locally and globally. Imagery can also serve to highlight the beauty of the planet on which we live.

- Provide remote sensing based informational and data products that address issues specific to Connecticut to improve monitoring and management of the landscape.
- Conduct workshops on remote sensing technologies to train and educate conservation groups and land trusts.
- Showcase "Our Earth Revealed" satellite image exhibit to expose the public to local and global landscapes and the impact of anthropogenic activities.
- Expose K-12 students to remote sensing technology and provide educational outreach programs.

CTView conducted a special workshop on remote sensing technologies as part of UConn Natural Resources Conservation Academy's high school student training program. Top: 12ft x 12ft puzzle of Connecticut. Bottom: Drone training. (July 2022)

CTView displayed Our Earth Revealed Exhibit at the Connecticut Science Center as a special event of Latino Conservation Week. (July 2023)

CONNECTICUTVIEW CONSORTIUM MEMBERSHIP

ConnecticutView collaborates with various partners on a per-project basis. Current partners include:

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