



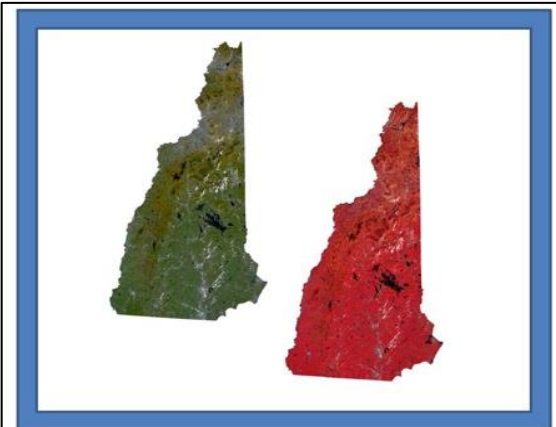
NEW HAMPSHIRE VIEW 2018 - 2019



NEW HAMPSHIRE VIEW HISTORY AND SUCCESSES

NewHampshireView has been an active member of the AmericaView Consortium since 2007. During this time, NHView has conducted numerous applied research projects, supported remote sensing outreach in NH and beyond, and provided educational training on geospatial analysis. A few of these highlights include:

- Evaluating forest mapping, forest change, and forest fragmentation in NH from imagery including Landsat 8, WorldView-2 and others
- Using geospatial analysis for studying first-stage invasive plant events in urban and forested environments
- Co-sponsoring a pilot study for a Geospatial Support Center
- Reinvigorating GIS Day on Campus
- Presenting remote sensing tutorials and putting them online
- Developing educational materials for K-16 students introducing remote sensing concepts specifically for New Hampshire
- Supporting graduate & undergraduate research



Viewing New Hampshire from Space

A Bird's-eye View of the Granite State!



Geospatial Support Center.

New Hampshire from Space education/outreach materials shown in pamphlet form. Also available as posters for classroom use. Materials available on the NHVIEW website.

DISCOVERING THE WORLD THROUGH GIS

Wednesday, November 14

GIS Treats and Support
All-day
Geospatial Support Center
Room 337

Brief Presentations on the Applications of GIS
10am to 3pm
Room 337

Self-guided Poster Walkthrough
All Day
Wednesday and Thursday

GIS Day re-invigorated.

Mini-Trainings	Date Presented	Live	Viewed as of 12/15	Viewed as of 12/16	Viewed as of 9/19
Remote Sensing Basics	10/16/14	51	17,125	33,934	73,063
Selecting the Best Imagery	11/6/14	38	2,686	5,840	9,882
Accuracy Assessment of Remotely Sensed Data	12/4/14	48	1,624	3,591	6,234
The Power of NIR for Mapping	2/19/15	48	428	791	1,688
TOTALS		185	21,863	44,156	90,867

Table showing views of remote sensing tutorials.

NewHampshireView is a member of the AmericaView Consortium, a nationally coordinated network of academic, agency, non-profit, and industry partners and cooperators that share the vision of promoting and supporting the use of remote sensing data and technology within each state. AmericaView is funded by USGS grant agreement G18AP00077.



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Evaluating Unmanned Aerial Systems (UAS) for Investigating Forest Characteristics

This multi-year high impact activity (HIA) will use various Unmanned Aerial Systems (UASs) including both fixed-wing and copter-based systems to evaluate three forest characteristics: (1) forest edge including species distribution and canopy structure, (2) cover type delineation for use as reference data, and (3) invasive species intruding into the forest. The methodology to conduct this research shares a common approach in that the analysis and results of the UAS imagery will be compared to samples collected on the ground to test if the UAS can provide accurate and more efficient information. This is the first of three years on this activity. This year the emphasis was on detecting invasive species using the UAS.

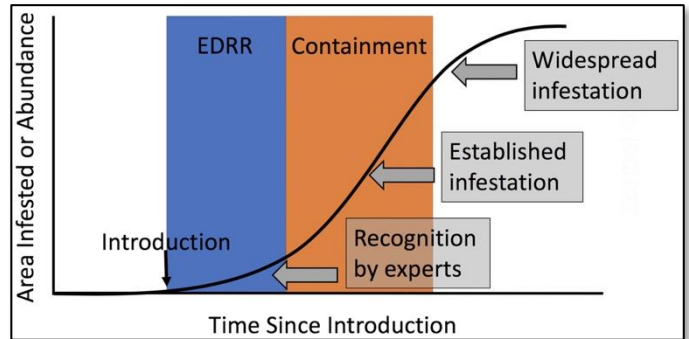


Picture of a senseFly eBee UAS used to collect imagery in this study. This is a light-weight, fixed wing platform capable of carrying a variety of sensors including both visible and multi-spectral cameras.

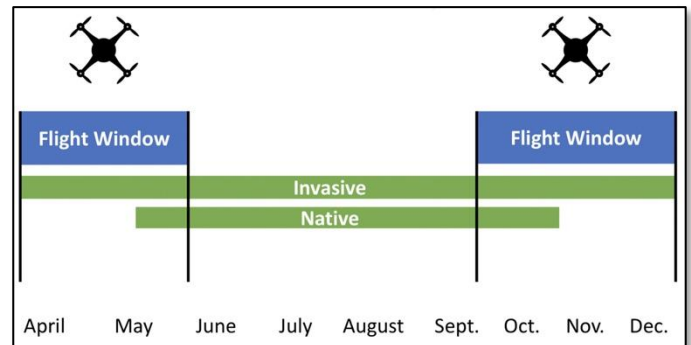
The results of the UAS analysis showed that these two invasive species, *Berberis thunbergii* (Japanese barberry) and *Rosa multiflora* (multiflora rose) can be successfully identified. The overall classification accuracy using an error matrix analysis was 82%. The object-based classification approach produced higher accuracies than the traditional pixel-based approach. Collecting the imagery in the spring was also more accurate than the fall. In conclusion, UAS offers great promise to more efficiently and effectively identify and target invasive plants.

Additional Activities:

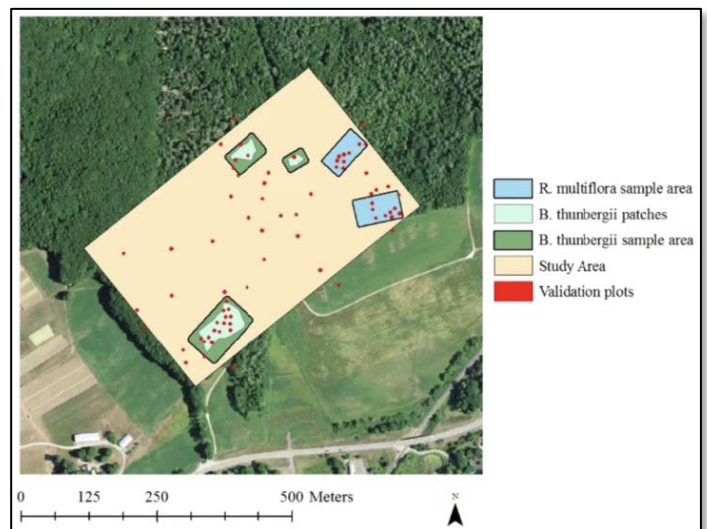
- Support of the UNH Geospatial Support Center.
- Presentations on remote sensing through invited lectures to 4 undergraduate and 1 graduate course.
- Two undergraduate internships for Spring 19.
- One graduate internship for Summer 19.
- Presentation on UAS to NH House of Representatives Committee on Resources, Recreation, and Development. 5/1/19



The key concept for dealing with invasive species is Early Detection and Rapid Removal (EDRR). The use of UAS imagery was tested in this research to determine how it might aid in early detection.



Early detection of invasive species is made possible because invasives tend to leaf out earlier in the spring and remain later in the fall which provides a competitive advantage as shown in this figure, but also a window for detection.



Study area showing the areas of *R. multiflora* (multiflora rose) and *B. thunbergii* (Japanese barberry) along with the validation samples to compare the results of the UAS analysis with what was actually on the ground.

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