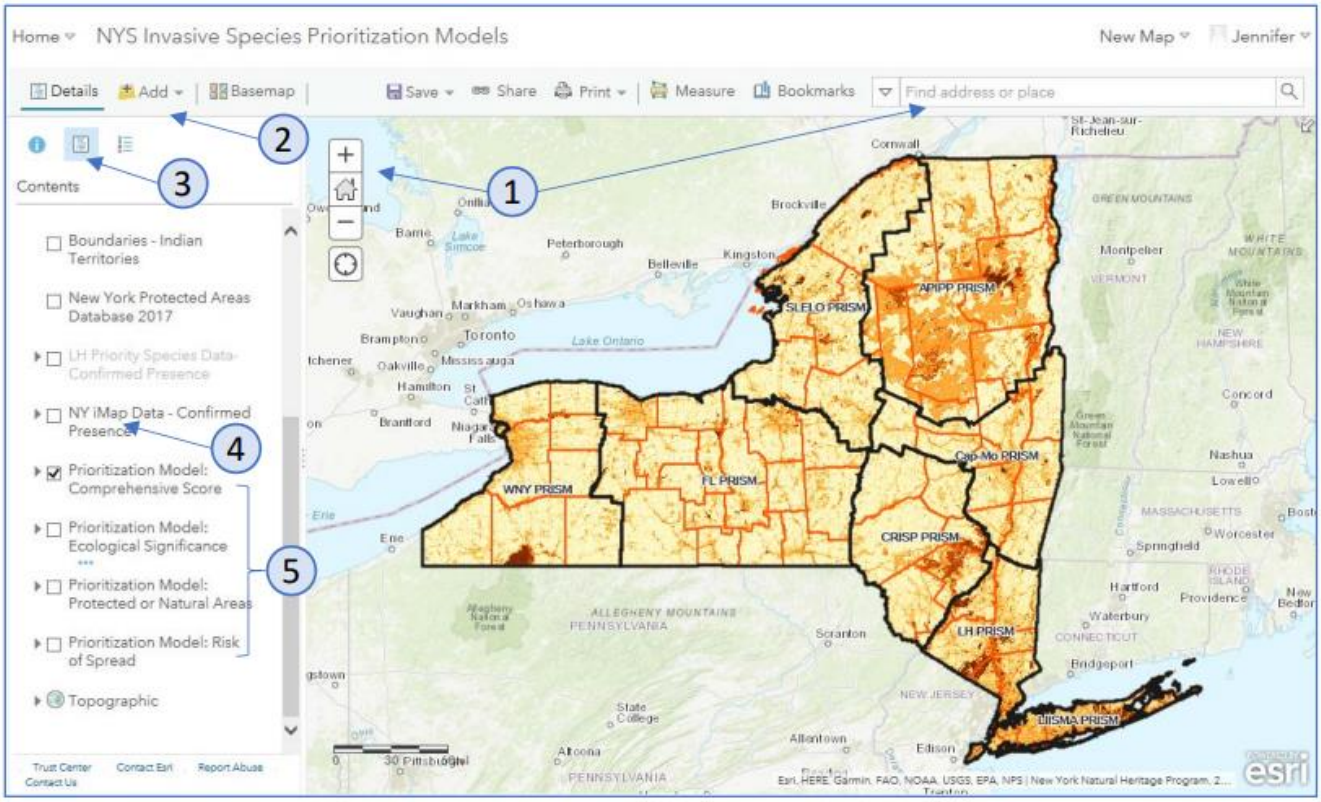
Terrestrial Spatial Prioritization

Map models highlighting areas of high ecological value and risk of invasion

Map models were developed for New York State to help natural resource managers prioritize which areas to focus resources for invasive species monitoring and control efforts. The model represents priority level as a comprehensive score based on the following components (**see next page for details**):

1. **Ecological significance** (locations of rare species, and other biodiversity metrics)
2. **Protected and Natural Land**
3. **Risk of Spread** (road traffic, trails, boat launches, and campgrounds)

View the resulting web map at arcg.is/1DjqLn



Using the spatial prioritization map models online

1. Navigate to or search for the location of interest on the map.
2. If you have other data layers to add to this map, use the “Add” function (available only if signed in.
3. Click “Show Contents of Map” to see the map layers that can be turned on or off
4. Toggle this box on to see statewide iMap Presence data. Please be patient, it can take time to load (approx. 30 sec). Expand the arrow to see symbols.
5. The color ramp for each of the prioritization model layers indicate increasing importance as the color darkens. The comprehensive score is a combination of ecological significance, protected or natural area, and risk of spread. Hover over any layer name and click ●●● to see more details and options.

Note: If you receive an error message, switch to a different browser (Explorer, Safari, Chrome, Firefox) or clear the browser’s cache (Ctrl+Shift+Delete).

Invasive Species Spatial Prioritization layer components (as of October 3, 2016)

ECOLOGICAL SIGNIFICANCE

Layer	Description	Orig. Max	New Max	Weight
Element Occurrence Data	Natural Heritage element occurrences (rare species and significant natural communities), scored based on quality, accuracy, and rarity. Square root transformed the highly skewed data (original values ranged from 0-2103, new values ranged from 0-46). www.dec.ny.gov/animals/29338.html	46	1	50
Mussels	Predicted native mussel richness, according to the Freshwater Blueprint (NYNHP). http://nynhp.org/FBP	17	1	5
BAP	Biological Assessment Profile: multimetric index of water quality, created by the NYS DEC Stream Biomonitoring Unit, based on benthic macroinvertebrate diversity and abundance. www.dec.ny.gov/docs/water_pdf/sop20814final.pdf	9.45	1	5
Element Distribution Models	Habitat predicted to be suitable for rare species according to Natural Heritage Element Distribution Models, created by NYNHP. http://nynhp.org/data	34	1	30
				90

PROTECTED AND NATURAL/LIFTING FACTORS

Layer	Description	Orig. Max	New Max	Weight
NYPAD	New York Protected Areas Database is a spatial database of lands protected, designated, or functioning as open space, natural areas, conservation lands, or recreational areas, created by NYNHP. To provide a measure of relative habitat quality, each polygon was scored by evaluating the **average Natural Heritage Biodiversity Index score for each unique property name.** All NYPAD polygons were ranked by their mean score, and grouped into 10 equal bins (by number of properties, not equal by area), with 10 given to polygons in the highest scoring bin, and 1 to those in the lowest. Polygons were converted to rasters, and used as a meaure of priority which gives additional points to all protected lands, but greater points or "lift" to those areas that protect higher quality habitat. www.nypad.org	10	1	15
Natural Land	Taken from the 2011 National Land Cover Dataset. Points given to land where "Cover Type" is equal to "Natural Cover". www.mrlc.gov/nlcd2011.php	1	1	5
				20

RISK OF SPREAD

Layer	Description	Orig. Max	New Max	Weight
LCA	Landscape Condition Assessment: depicts the presumed impacts from a suite of anthropogenic stressors (e.g., roads, urban and industrial development, and utility corridors) across the landscape of the state. A sigmoid decay function was applied to each stressor to model the attenuation of ecological effects away from its footprint.Created by NYNHP. http://nynhp.org/data	3820	1	35
Trails	Data obtained from NYS GIS Clearinghouse DEC Trails, converted from KML to points. Calculated Euclidean distance to trails, max distance 1000 m. http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1167	1000	1*	5
Campgrounds	Data obtained from NYS GIS Clearinghouse, DEC Campgrounds converted from KML to polygons. Calculated Euclidean distance to campgrounds. Max distance 1000 meters. http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1114	1000	1*	5
Boat Launches	launchs. Max distance was 1000 meters. https://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1268	1000	1*	5
	*Score was inverted (1/(1+distance) so that higher scoring pixels were those closest to the stressors, and the score diminishes with distance from.			50