



# COLLABORATIVE ENVIRONMENTAL MONITORING AT ROBERT V. RIDDELL STATE PARK



HARTWICK  
COLLEGE

CSL 1797

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## OVERVIEW

Hartwick College, in partnership with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) and New York Natural Heritage Program (NYNHP), has recently initiated environmental monitoring at Robert V. Riddell State Park (RVRSP) near Oneonta, NY. The major goals of the research alliance are to provide data for long-term park planning, environmental education, and conservation of biodiversity. Current research at RVRSP includes long-term inventories of forest trees in three gridded plots first surveyed by Hartwick College faculty in the 1990s, natural community sampling and mapping led by NYNHP, and collaborations initiated in 2011 with OPRHP to monitor water quality in the major tributaries (Fig. 1).

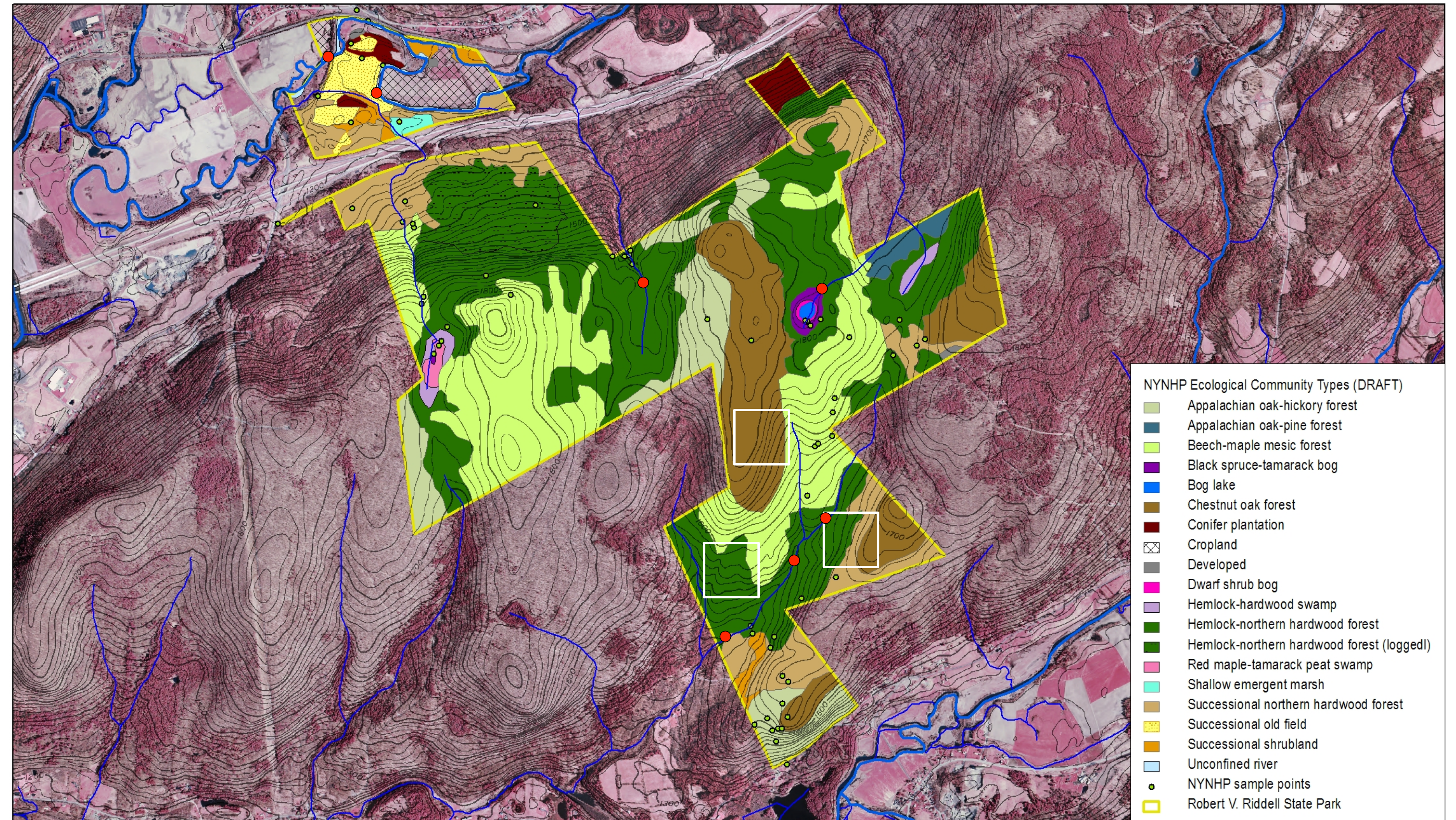
## ROBERT V. RIDDELL STATE PARK

Robert V. Riddell State Park (RVRSP) was created in 2005 from a private gift to the state. In 2008, Hartwick College sold 382 ha of deciduous forest to the state as an addition to the park, expanding its total area to 1,110 ha. RSRVP is located in the Upper Susquehanna River Valley and is easily accessible to visitors, straddling I-88 in Otsego and Delaware Counties. RVRSP offers a variety of low-impact recreational opportunities such as hiking, snowshoeing, and trout fishing. The forest is highly variable in composition and in historical disturbance levels; the north-facing slope south of I-88 was selectively harvested within the last 20 years, whereas the south-facing hillside has been largely undisturbed in the last 100 years. The park also boasts a 5-ha glacial lake and tamarack-black spruce bog complex and other forested wetlands.

## AQUATIC-MONITORING METHODS

- Use monitoring methods from Project Watershed, a program of the Izaak Walton League of America ([www.projectwatershed.org](http://www.projectwatershed.org)).
- Sample permanent sites along streams in the park and on Schenevus Creek (Fig. 1).
- Visual observations of water clarity, streambed characteristics and algae.
- Stream-flow measurements.
- Colorimetric measurements of dissolved oxygen, pH, fecal coliform, phosphate, nitrate, chloride, turbidity and total dissolved solids.
- Sample benthic macroinvertebrates.

## ROBERT V. RIDDELL STATE PARK - HARTWICK COLLEGE PARTNERSHIP PROJECT VEGETATION MAPPING - using field data and ortho images to map ecological communities



Mapping by Julie Lundgren, State Parks Ecologist 2012 NYNHP/OPRHP  
Field assistance from Hartwick College faculty and students  
Base layers: Eastern NYS 2001 1-foot orthoimagery and DOT 1:24,000 topographic image.  
Note: Park boundaries are approximate.

**FIGURE 1.** Major ecological communities at Robert V. Riddell State Park. Classification follows Edinger et al. (2002). Approximate locations of the permanent forest-monitoring plots are shown in white and aquatic-sampling points are indicated as red dots.



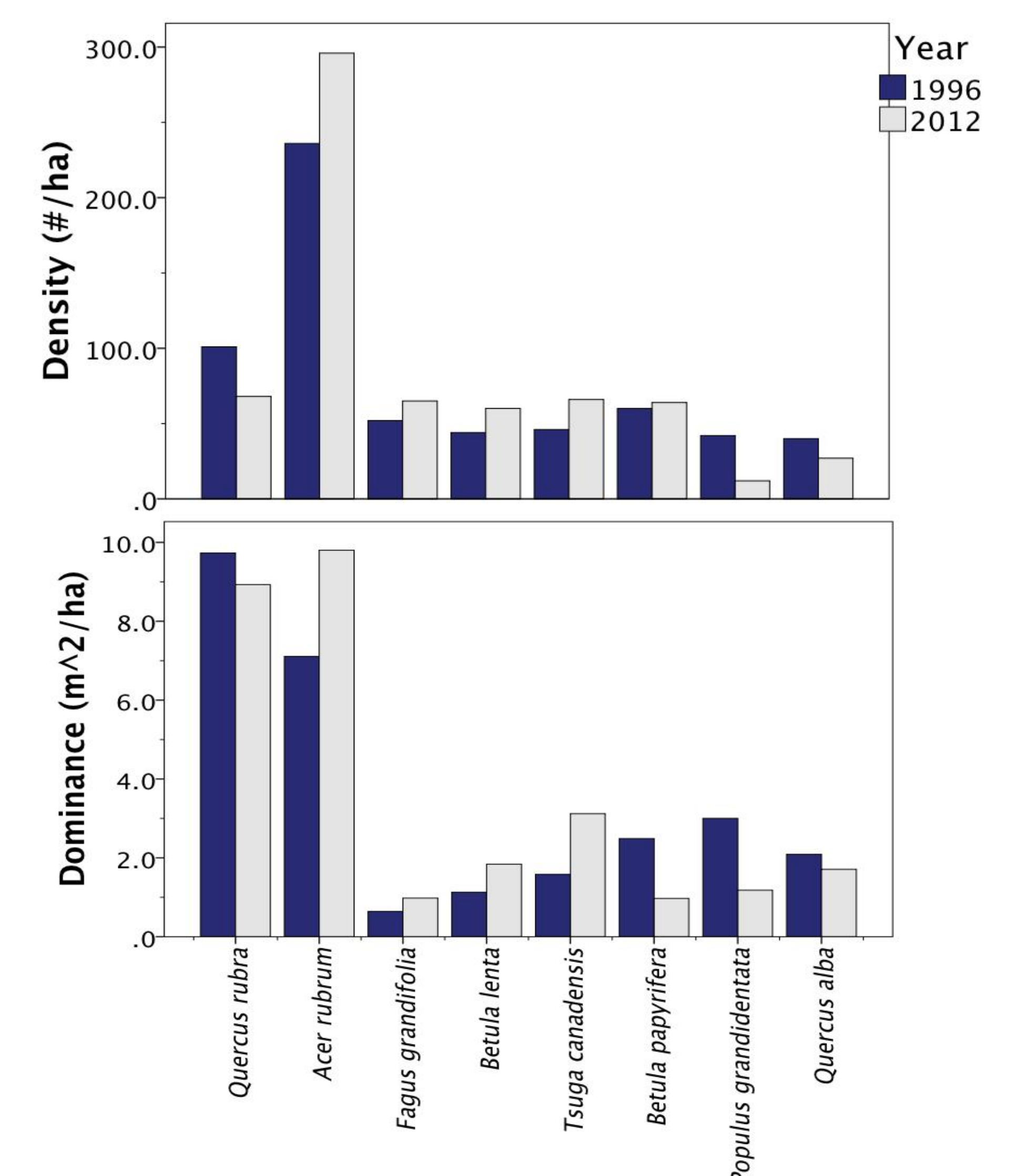
**FIGURE 2.** Sampling aquatic benthic invertebrates to monitor water quality of tributaries at Robert V. Riddell State Park.

## PERMANENT PLOT FOREST-MONITORING METHODS

- 3 plots in different forest communities: hemlock-northern hardwood, successional northern hardwood, and chestnut oak forest (Fig. 1).
- Survey each plot every 6 years.
- 100 permanent survey points every 30m.
- Tree surveys in 8-m radius plots.
- All trees > 2.5 cm identified, measured (DBH) and marked with aluminum tags.
- Saplings > 1m in height are identified and counted.
- Number of dead snags counted within 16-m radius.

## ADDITIONAL RESEARCH IN THE PERMANENT FOREST PLOTS

Each year following a forest inventory, we will estimate the abundance of other species, such as red-backed salamanders, breeding birds, small mammals and invasive plant species, to document their responses to long-term forest succession.



**FIGURE 3.** Density (top) and dominance (bottom) of the 8 most common canopy tree species in the successional northern hardwood plot at RVRSP in 1996 and 2012.