



Exploited Plant Monitoring - Galax

Affected Parks

Blue Ridge Parkway (BLRI)

Importance / Issues

The illegal harvesting of plants for commercial sale in the herbal remedy and floral markets is of growing concern along the Blue Ridge Parkway, where individual poachers have been intercepted leaving the park with tens of thousands of plants. Numerous species of plants targeted by poachers are found in the Blue Ridge Mountains and there is evidence that illegal harvesting activity is increasing. Some of these species do not recover quickly (or at all) from intensive harvesting, and are being eliminated from habitats that are accessible to poachers. The close proximity of desirable species to the Parkway motor road makes them particularly vulnerable to illegal harvesting.

The National Park Service is working with NatureServe to develop a monitoring plan for several plant species known to be significant poaching targets, including galax (*Galax urceolata*). The galax populations being targeted by poachers belong to a genetically distinct form that produces very large leaves that are in demand for floral arrangements, both in the United States and abroad. This larger tetraploid form, believed by some taxonomists to be a separate species, is limited in distribution to the southern Blue Ridge escarpment, where the Blue Ridge Parkway is located. As many as three billion galax leaves have been exported in a single year, virtually all taken from the wild in the Southern Blue Ridge Mountains.

Monitoring Objectives

The goals of this long-term monitoring effort are to determine whether galax populations are declining, or if significant shifts in age class distribution (toward younger plants) are occurring within populations along the Blue Ridge Parkway. Evidence of recent poaching is also being collected and reported to law enforcement rangers as soon as it is found.

Specific objectives are:

1. To detect a 30 percent decrease in the overall cover of galax within the Blue Ridge Parkway study area;
2. To detect a 30 percent decrease in the ratio of large (>3.5 inches) to small leaves in each monitored population.



Large galax population on Blue Ridge Parkway
(Inset: flowering galax © Gary Flemming)

Methods

Because galax grows in a wide variety of habitats and plant communities, predictive modeling was not feasible for locating monitoring plots. Instead, we are mapping galax distribution along the entire 469-mile length of the Parkway, using 100-meter perpendicular trajectories run in opposite directions from the road edge, at half-mile intervals. On these 1,876 rapid assessment trajectories, data is being collected on galax presence/absence, size of galax populations, percentage of large leaves within the populations, dominant tree and shrub species, aspect, slope, and elevation. The qualities most desired by poachers (including leaves 3.5 inches or greater in diameter, populations at least 50 square meters in size, and “invisible accessibility” from the road where poachers can harvest plants without being seen) will be factored into final plot selection.



Permanent monitoring plots will be selected from these mapped populations, ensuring a representative geographic distribution of random plots on the Parkway.

Each plot will consist of up to 10 line transects placed along a permanent central baseline covering the entire galax population, along with two 10m by 10cm belt transects. Total galax abundance is measured using a laser point intercept device for a total of 500-1,000 data points at each monitoring site. The ratio of large to small leaves is determined by counting and measuring all leaves within the belt transects. Abundance and leaf size ratios will be monitored annually and compared with previous years' data to assess population trends.

Protocol Development and Status

MAPPING: As of late winter 2008, we have mapped 369 miles (79%) of the Parkway for galax, collecting data at 1,476 sites.

"Poachable" populations (minimum of 50 square meters of galax; at least some leaves >3.5") have been documented at 8% (116) of the 1,476 sites surveyed. Of these, 44% (51 populations) showed visible signs of poaching in 2007/2008.

Of the 116 poachable populations, 21 were very large, prime sites with many large-leaved plants. 95% of these (20 of the 21), had been poached, many recently and repeatedly.

Three sampling designs have been tested at 5 sites. Initial data was analyzed to determine adequate transect lengths. Additional data will be collected in 2008 to determine final sample size, and final monitoring sites will be selected when mapping is completed in the fall/winter of 2008. We are coordinating our sampling design with the US Forest Service, which is monitoring galax populations on lands adjacent to the Parkway.



More than 50,000 galax plants were confiscated from poachers by Parkway rangers during a recent arrest.



Management Applications

If monitoring efforts indicate significant declines in galax populations, park managers will have the information they need to decide whether and where to deploy additional resource protection efforts, or engage in further research. Recent intensive law enforcement action, focused on poaching sites identified by I&M field crews, has resulted in several key arrests which should translate into eased poaching pressure on this uncommon form of galax.

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