



## Exploited Plants of Rich Coves: 2022 Status Report

### Importance: Illegal Harvest of Native Plants from Park Lands

The commercial-scale illegal harvesting of plants for sale in medicinal and floral markets is a growing concern in many parks. The Southern Appalachian Mountains, known for their exceptional plant diversity, are being increasingly targeted by harvesters seeking large quantities of certain species to satisfy market demands. Four of the plants being targeted are black cohosh (*Actaea racemosa*), bloodroot (*Sanguinaria canadensis*), trilliums (*Trillium* spp.), and ginseng (*Panax quinquefolius*). These plants grow primarily in rich cove habitats, characterized by a diverse array of mesophytic trees and a rich herb layer, supported in part by high moisture availability and deep soils that are less acidic than those generally found in forests in the region. Trilliums are prized by floral collectors as whole plants, while the other three species are harvested primarily for their roots, which are valued for their medicinal properties.

### Overview

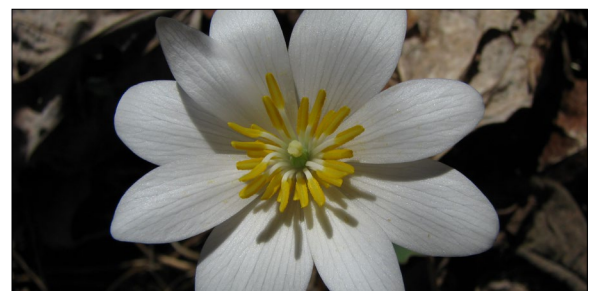
The Appalachian Highlands Inventory and Monitoring Network (APHN) began developing a monitoring program for exploited plants of rich coves on the Blue Ridge Parkway (BLRI) more than 10 years ago. Several iterations of geospatial habitat modeling and ground-truthing led to the completion in 2008 of a model which predicts where rich cove habitats might occur within BLRI boundaries. The areas predicted to be rich cove habitat were divided into 64 blocks, and potential monitoring points were selected from within each block using Generalized Random Tesselation Stratified (GRTS) methods. Network staff visit these points to assess their suitability for long-term monitoring and the accuracy of the habitat model. One permanent monitoring plot is installed at a suitable site within each block.

To date, 848 points have been assessed (59 in 2022), with at least five assessed in each of the 64 blocks. Of those, 55 points have been selected for monitoring and plots installed. Eight blocks had no suitable monitoring location in the first 40 GRTS points and will be excluded from analysis; one block had no suitable monitoring location in the first 20 GRTS points, and evaluation of the second 20 points is scheduled for 2023. Network staff conducted monitoring at 26 permanent plots in 2022. This year represented the third year of data collection using the current methods for 21 plots, the second year for three plots, and the first year for two plots (which were newly installed). These 26 plots were originally scheduled for monitoring in 2021 but the schedule was shifted back one year due to the monitoring hiatus in 2020. The monitoring protocol for this project underwent several major revisions, and the final version was published in November 2018. Thirteen SOPs were revised and re-published in March of 2022.

### Objectives

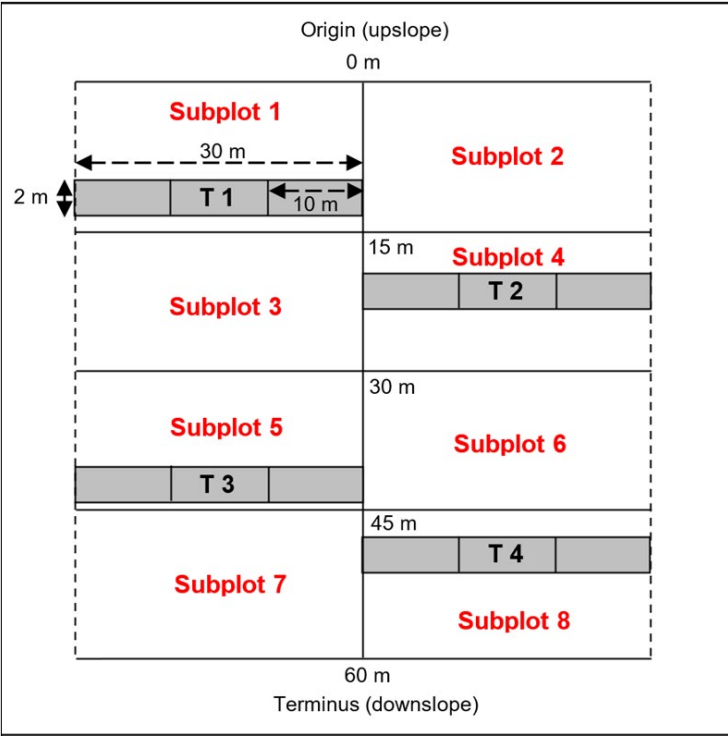
Determine current status and track long-term trends in:

- Densities of target plants
- Patterns of poaching incidence
- Presence and cover of exotic invasive plant species



From the top, ginseng (*Panax quinquefolius*), Vasey's trillium (*Trillium vaseyi*), black cohosh (*Actaea racemosa*), and bloodroot (*Sanguinaria canadensis*). NPS photos / APHN staff.

# Overview (continued)



Rich cove quantitative plot layout (transect locations vary between plots).

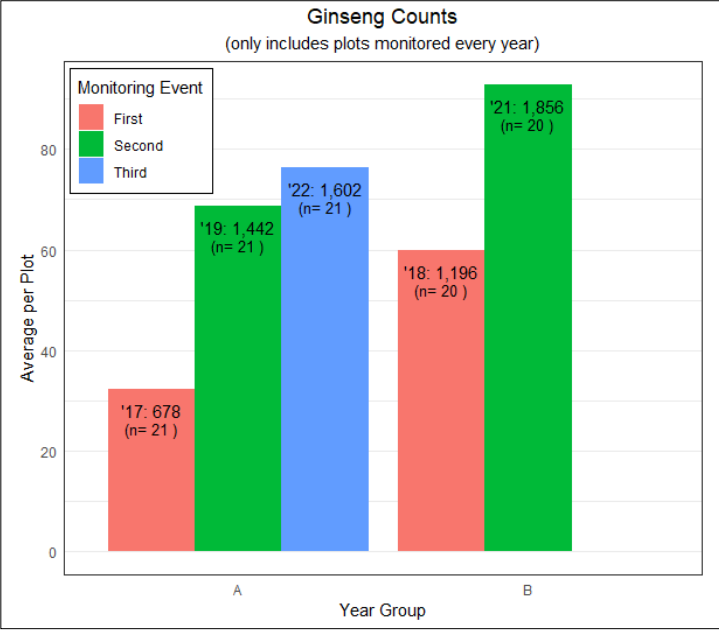
# Example Quantitative Plot Results (Provisional Data)



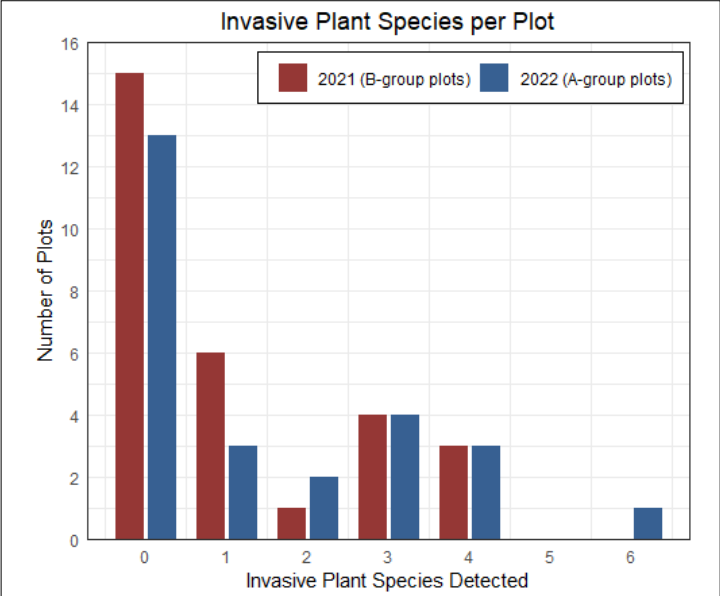
Average number of each target species per transect for the 21 plots monitored for the third time in FY22.

## Example Quantitative Plot Results (Continued)

Monitoring takes place on an alternate-year schedule, with approximately half the plots being monitored in odd-numbered years and the other half monitored in even-numbered years. Therefore, the two years of data shown in the figures below represent different sets of plots, rather than changes between years in a single set of plots. Plots monitored in odd years prior to 2020 are now monitored in even years, and vice-versa.



Number of ginseng plants found in permanent monitoring plots during the first two monitoring cycles. All but five plots yielded fewer remaining ginseng plants than the 200–500 estimated as the minimum necessary for long-term survival of a population under ideal climate conditions.<sup>1</sup>



Number of non-native invasive (NNI) plant species detected in permanent monitoring plots during the last two years. NNI plants were detected in roughly half of all plots (27 of 55), with 13 species detected. On average, plots at lower elevations had a greater number of NNI species and higher total cover of NNI plants.

<sup>1</sup>Gagnon, P., J. Rock, and P. Nantel. 2005. Wild American ginseng populations in the Southern Appalachians may be negatively affected by climate change. Ecological Society of America Annual Meeting. Montreal, Canada.

**Table 1.** Overall Assessment of Conditions and Trends: 2017–2022 (Provisional Data).

| Park                           | Specific Measures                     | Condition Status/ Trend | Resource Condition Comments and Interpretation                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|---------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Blue Ridge Parkway<br>54 Plots | Densities of Target Plants            |                         | Conditions variable, with little information on reference conditions for comparison. An increase in average transect counts of trillium is the most consistent pattern. For the 21 plots monitored for the third time in 2022, plot-wide ginseng counts increased for 12 plots, increased then decreased for five plots, and four plots had no ginseng.          |
|                                | Poaching Incidence                    |                         | At least two poaching incidents occurred in 2018; likely poaching evidence was found in one plot in 2021. Several plots had notably lower ginseng counts in 2022, although no clear evidence of poaching was noted. No trend data are available yet, but anecdotal evidence suggests the majority of the ginseng that once grew on the Parkway has been poached. |
|                                | Presence and Cover of Invasive Plants |                         | Non-native invasive plants were detected in 27 out of 55 plots during the last two years. Total cover of invasives was generally low, with a few exceptions, including one plot that may require replacement if autumn olive ( <i>Elaeagnus umbellata</i> ) continues to spread unchecked. No trend data are available yet.                                      |

**Table 2.** Symbol Key

| Symbol | Condition Status              | Symbol | Trend in Condition         | Symbol | Confidence in Assessment |
|--------|-------------------------------|--------|----------------------------|--------|--------------------------|
|        | Warrants Significant Concern  |        | Condition is Improving     |        | High                     |
|        | Warrants Moderate Concern     |        | Condition is Unchanging    |        | Medium                   |
|        | Resource is in Good Condition |        | Condition is Deteriorating |        | Low                      |

## Key Points in 2022

- Blue Ridge Parkway Law Enforcement rangers have made 16-plus ginseng cases in the past two years, with the majority taking place in September–October when ginseng is in fruit. The chief ranger reports: “In the past several years we continue to see the shift away from ‘local’ ginseng harvest for top dollar sales to drug-related harvest for quick dollars and access to cash.”
- While orienting law enforcement personnel to the rich cove monitoring program in October 2018, APHN staff noted recent evidence of extensive poaching in a monitoring plot. The 2019 monitoring showed a 50% decrease in large plants at that site compared to 2017 (prior to poaching). This site was the only one with a decrease in numbers from 2017 to 2019.
- Incidental observations during the 2022 field season yielded about 20 species that had not previously been documented in the park (mostly arthropods).
- The high priority early detection, rapid response species detected in 2021 has been treated.



Hole where ginseng plant was dug up by poachers. NPS photo / APHN staff.

## For More Information

[Evan Raskin, Assistant Data Manager/Biologist](#)

([evan\\_raskin@nps.gov](mailto:evan_raskin@nps.gov))

[APHN website](#)

(<https://www.nps.gov/im/aphn/index.htm>)



*T. catesbaei*



*T. cuneatum*



*T. erectum*



*T. grandiflorum*



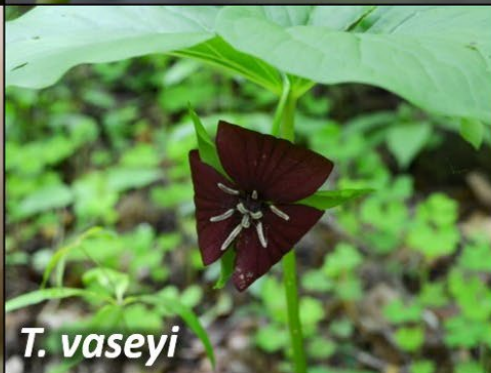
*T. rugelii*



*T. simile*



*T. sulcatum*



*T. vaseyi*



*T. undulatum*

Trillium species documented on the the Blue Ridge Parkway. Created by Evan Raskin (NPS-APHN).