Using FVS to Update Inventory Data to Improve Prescribed Treatments and Timber Sale Decisions

Jared Nobles[1,*]

[1]USDA Forest Service, Ocala National Forest, *ronnie.nobles@usda.gov

Overview:

- Taking old inventory data and running it through FVS to grow out stands to evaluate old silviculture prescriptions and make timber sale decisions.
- The FVS run for the 13 stands that make up the Blue Creek Timber Sale proved to be accurate and represented what was within these stands. When compared to the National Timber Cruise Program the difference in volume was around 1 percent; trees per acre, 3 percent; and basal area, 6-7 percent.
- Having an increased confidence in FVS growth and yield models allows us to update old stand data, have better timber sale planning, and use profitable timber sales to continue restoring Southern Coastal Plain Pine Ecosystem.

Summary:

The timeframe from project planning and data collection to project implementation can span several years. Having updated stand data sufficient to validate silviculture prescriptions before implementation is critical in making sure the desired conditions and goals from the project are met. For the Blue Creek timber sale located on the Ocala National Forest, the original data was collected in 2008 and 2014 before implementation in 2022. Decisions on which stands to harvest, and silviculture prescriptions were finalized in 2015 based on the original data. Another challenge in this process is having enough silviculture and timber staff to recollect data and balancing workloads between multiple on-going large vegetation projects across the district.

The Forest Health Environmental Assessment is a project that identified overstocked southern yellow pine stands across the district to thin addressing the increased potential of a Southern Pine Beetle outbreak following a drought, fire, or storm event. Implementing thinnings is the first step in moving these stands to an uneven- age management which is a primary Forest Objective. The Blue Creek timber sale consists of 13 planted, even-age slash pine stands. In 2022 we needed to validate and possibly update our decision and silviculture prescriptions from 2015. Using FVS we were able to use the original data collected and do a simple run for slash pine with the Southern Variant. The results from FVS validated what we were seeing within the stands in our walk throughs and were later compared to the outputs from the National Cruise Processing Program (NatCruise). After comparing the outputs from FVS and NatCruise we found that standing volume fell within 1-2 percent, trees per acre fell within 3-4 percent, and basal area 6-7 percent. These results increased our confidence in FVS as a

planning tool and allowed for better timber sale planning and packaging to meet our objective, while having a competitive sale that a timber purchaser will buy.

Key Concepts for FVS Users:

- The ability to update old Common Stand Exam data using FVS.
- The Southern Variant of FVS produced accurate estimates of growth for even-age slash pine in central Florida.
- The ability to set a common starting year and bring multiple years of collecting data to the same point in time to view.
- The FVS_Summary2_East table allows users to easily assess stand changes over a simulation timeframe. This output can be exported to Microsoft Excel which facilitates analysis and comparisons to other data sources.
- This project demonstrated that FVS produced accurate estimates of stand volume that were comparable to the production cruise data for the Blue Creek timber sale.

Management Applications/Future Directions:

- This project increased the confidence in the use of FVS as a management planning tool.
- Being able to see the change in stands overtime to have an idea of what a stand may look like since you last visited it.
- Instead of re-inventorying a stand, previous inventory data can be grown to a common starting year in FVS. These results can be used in the field to determine if additional data should be collected for stand exams. This can increase efficiency and allow for better prioritization of stands where additional data should be collected.
- A timber sale has to cover a higher cost per activity for the Agency and the timber purchaser buying the sale. Timber Sale Planning is highly important so that stands are selected and grouped together so that there is enough volume in the sale to cover the cost and be profitable to the timber purchaser.
- The Ocala National Forest silviculture and timber shops will incorporate FVS into future southern yellow pine thinning and treatments. It has shown to be an effective decision making and planning tool.
- Comparison of FVS results with the National Cruise Processing Program will continue across even and uneven aged southern yellow pine stands. This analysis will hopefully build further confidence in the FVS program.

Table 1—Comparing the original data to the common starting year using FVS.

Comparison of Selected Stands		
Measure	**2008/ 2014**	**2022**
Avg BA	102	140
Avg QMD	6.7	8.4
Avg Height	60.4	69.7
Total CCF	11,314	21,173

Table 2—Comparing FVS Output to the NatCruise Outputs.

Measure	FVS	NatCruise	Difference
TPA	369	357	3.3%
BA	140	131	6.5%
Total CCF	21,173	21,409	1.1%

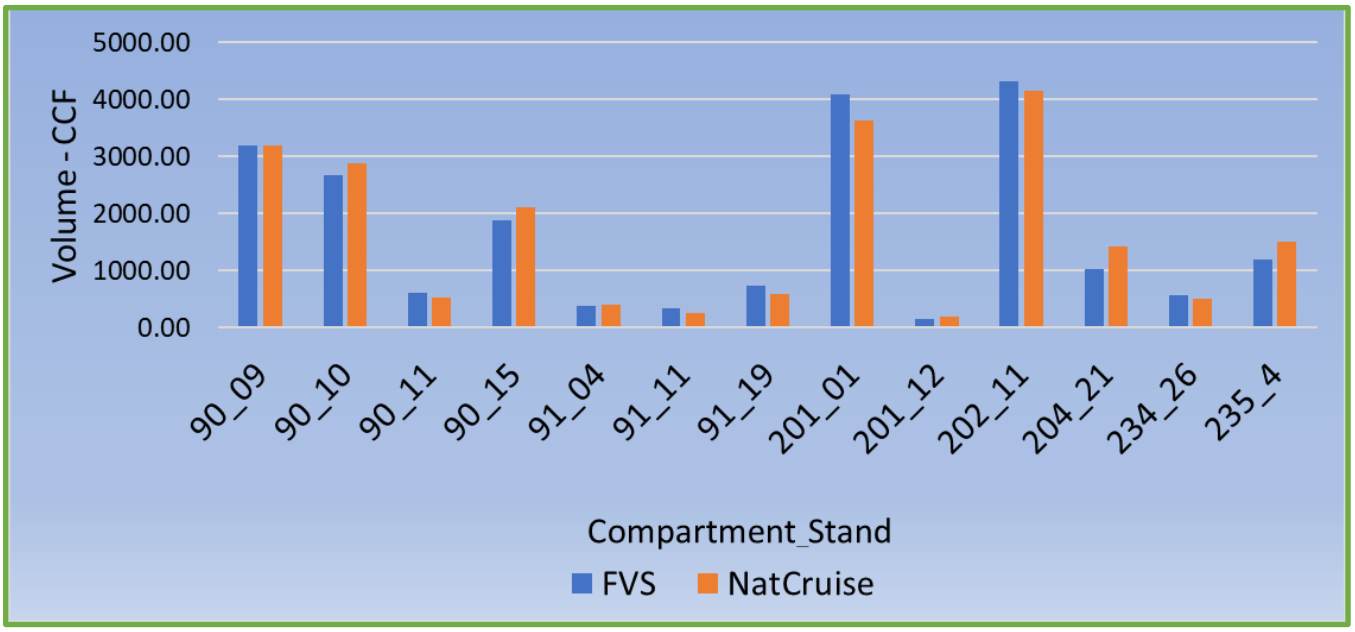

Figure 1—Comparing the volume in Hundred Cubic Feet (CCF) per stand between FVS and NatCruise