Corvallis Forest Inventory Updates 2017

Summary

A new inventory maintenance and updating system was initiated in fall of 2017 with completion of cruising on 382 acres of the Corvallis Forest. This was the first field sampling conducted since 2009. Along with field sampling, the GIS was updated and improved. New stand ID numbers were established, and corrections and improvements were made to stream locations (based on LiDAR terrain data) and road locations, as well as stand and ownership boundaries. Stand vegetation labels, which represent broad vegetation classes, were updated and stand attributes such as slope, aspect and elevation were generated. Treatment year and treatment type information was appended to the stands GIS data to provide historic record of recent treatments, and original stand ID numbers and type codes (as established during the 2007 planning process) were maintained.

In 2008, 86% of the acres were sampled to generate an ownership-wide inventory. Under the current inventory management approach, a much smaller portion of the total acres will be sampled annually. This allows distribution of inventory update costs over time and provides a continually updated and valid inventory. As such, only 14% of the forest was sampled in this most recent effort. Annual sampling going forward will continue to increase total acres sampled with valid data maintained and grown to the current year and invalid data removed from the inventory. For stands that do not currently have cruise data, an average of the values from sampled stands within the same vegetation strata was used to estimate stand level values for the various measured and calculated attributes. Table 1 below shows cruise status by acres, indicating 39% of the acres are not cruised and are using strata averages to inform the 2017 inventory and 45% are using data from 2008 that is reaching the end of it's useful life. However, over time the rolling inventory approach of annual cruising will include more stands with valid inventory data, providing greater confidence in the estimate and ease of inventory maintenance.

Table 1: Acres by Cruise Year

Cruise Year	# Stands	Net Acres	% Total Area
Not Cruised	42	895	39%
2008	24	1,044	45%
2017	14	382	16%

Results

To provide a complete inventory update for the forest we followed the following process: 1) data was discarded for stands that were sampled in 2008 and subsequently harvested; 2) any cruise data from 2008 for stands that were not harvested or otherwise had significant alteration to stocking or structure (e.g.: blowdown, disease infestation etc.) was retained and projected forward to establish estimates of current stand-level metrics; and 3) new data was collected in January of 2018 (prioritizing stands harvested since 2008, and those scheduled for harvest in the next 5 years). These new and existing data provide the current resource inventory estimates for the Corvallis Forest as of December 31, 2017. Stand-level values include average diameter, density metrics, volume metrics, distributions by species and indicators of structure. Ownership level values are based on these stand-level estimates.

Table 2 below illustrates projected growth and growth rates for the period 2008-2018 for stands that have valid data from 2008 cruise.

Table 2: Projected Stand Volume 2008-2017, select stands

Stand ID	Net BF/Ac 2008	Net BF/Ac 2017	Annual Increase (MBF/ac/yr)
1304	62,258	66,258	444
1306	99,121	100,581	162
1310	96,689	98,318	181
1316	75,587	77,972	265
1317	93,071	93,643	64
1808	68,643	79,424	1,198
1809	92,495	94,702	245
1810	138,849	138,900	6
1811	80,393	83,940	394
1901	92,643	95,811	352
1902	84,393	86,589	244
1907	78,976	82,823	427
1909	87,511	89,467	217
1910	6,400	16,576	1,131
1912	3,453	8,483	559
1918	89,671	94,477	534
2601	233	5,861	625
2602	10,215	22,269	1,339
2604	13,845	30,350	1,834
2606	15,215	28,762	1,505
3001	2,331	3,409	120
3002	40,745	50,400	1,073
3004	40,745	50,400	1,073
3005	48,346	56,030	854

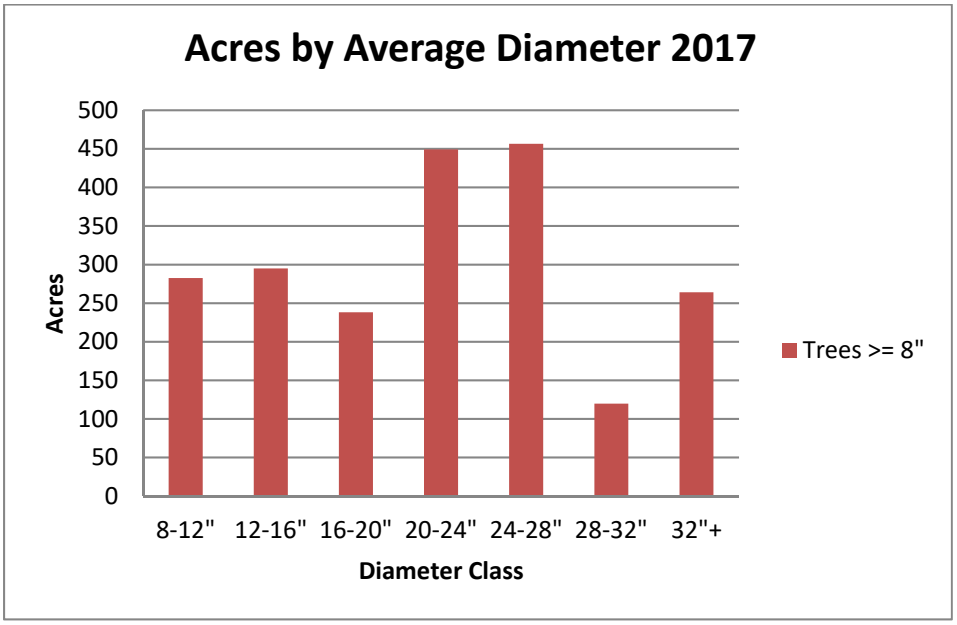
Because cruise data was maintained in the current inventory for any cruised stand that was not harvested between 2008 and 2017, these stands were not cruised in 2017 and therefor there are no direct comparisons of stand-level estimates for the two cruise years (i.e: 2008 and 2017 data).

The table below shows total net Scribner volume by species for the ownership as of December 31, 2017.

Table 3: Total Volume by Species (net MBF)

Species	Total Net BF	% Total
Bigleaf Maple	3,489,848	2.6%
Cherry	38,041	0.0%
Douglas-fir	123,523,200	93.5%
Chinkapin	342,024	0.3%
Grand fir	3,029,364	2.3%
Noble fir	6,810	0.0%
Pacific dogwood	6,691	0.0%
Pacific madrone	37,838	0.0%
Red alder	139,683	0.1%
Western redcedar	1,019,216	0.8%
Western hemlock	411,326	0.3%
White oak	18,074	0.0%
Total	*132,062,115*	*100.0%*

Average stand diameter is a good indicator of age and potential stand complexity and habitat values (larger trees are typically older, and older stands are generally more structurally complex). The chart below illustrates total acres by average stand diameter for trees with diameters of 8" and greater.



Maps illustrating new vegetation types[1] and stand ID numbers are below.

[1] Vegetation type labels are based on species (alpha-code), size class and density. An example is "DH34" where Douglas-fir and Western hemlock are primary and secondary species, size class=3 and density class=4. Size codes are based on 6" diameter classes and density codes are 20% crown cover classes. OG01 and OG02 refer to old growth types 1 & 2 as defined by the 2007 management plan.