

## **News from the Inventory Section, Forest Analysis and Inventory Branch, Ministry of Forests Lands and Natural Resource Operations**

**December 15, 2015**

### **A Few Highlights**

- In the 2015 field season, inventory monitoring plots were established (or remeasured) over the Lillooet, 100 Mile House, Kamloops, and Okanagan TSAs, extending plot coverage on the provincial monitoring grid to over 22 million hectares.
- 100% and 90% of planned air photo acquisition was achieved over the Merritt TSA and Prince George District, respectively.
- All inventory mapping projects (VRI photo-interpretation) are progressing well (Morice, Lakes, Fort St James, Vanderhoof, Quesnel, and southern Vancouver Island).
- An extensive set of updates to the provincial inventory (for wildfire, beetles, harvest and reforestation) will be included in the next release of the provincial forest inventory file (the “veg-comp-poly”), scheduled for release in March.
- Inventory and growth and yield inputs to several Timber Supply Reviews were checked and refined with recent inventory ground sample data.

### **Lakes Photo-interpretation Nears Completion**

In 2012, BC’s Special Committee on Timber Supply called for an update to the Lakes TSA inventory (report recommendation 6.1f). Government endorsed this recommendation and the inventory program has actioned it in three phases. First, a statistical sample of the mature timber in the Lakes TSA was completed in 2012 to provide interim, ground-truth data until additional forest inventory work could be completed. Second, air photos were acquired over the entire TSA and a 1.3 million hectare VRI photo-interpretation project was initiated in 2013. This large project wraps up this fiscal with the final 37 mapsheets on-track for completion in February. The new polygons and attributes are now undergoing third-party quality assurance and maps are being delivered to FAIB for processing and integration into the provincial forest inventory database. The third phase of updating the Lakes TSA inventory will be the establishment of a network of permanent monitoring plots across the TSA. For more information on the Lakes TSA photo-interpretation, contact Roman Bilek ([Roman.Bilek@gov.bc.ca](mailto:Roman.Bilek@gov.bc.ca); 250-387-6043).

### **A Focus on Foliage**

Foliage amount is a key variable determining tree growth within the TASS growth and yield model. Stand Growth Modelling leader Jim Goudie, working with co-authors Roberta Parish and Joe Antos, has just completed the paper “Foliage biomass and specific leaf area equations at

the branch, annual shoot and whole-tree levels for lodgepole pine and white spruce in British Columbia.” The paper has been accepted and will appear in the February issue of the journal *Forest Ecology and Management*. For more information on this work, contact Jim Goudie ([Jim.Goudie@gov.bc.ca](mailto:Jim.Goudie@gov.bc.ca); 250-387-6535).

### **Welcome Derek Sattler**

We are super pleased to welcome Dr. Derek Sattler to our team. Derek recently completed his PhD at the University of Alberta working on modelling wood quality. He and his partner Rut traveled from Quebec and joined the Stand Growth Modelling team in November. Among other things, Derek will be working towards a calibration of TASS-III for western redcedar. For an overview of some of Derek’s research interests, look him up on Google Scholar or ResearchGate. In his spare time Derek enjoys several outdoor activities including rock climbing, hiking and biking. Derek can be reached at [Derek.Sattler@gov.bc.ca](mailto:Derek.Sattler@gov.bc.ca); 250-356-6853.

### **Vanderhoof and Quesnel VRI Photo-interpretation**

The Vanderhoof District photo-interpretation project, totalling 91 mapsheets covering 1.3 million hectares, is scheduled to wrap-up this spring. Currently 40 mapsheets are completed and will be available in the upcoming release of the provincial forest inventory file. The Quesnel West project is moving along with the expected completion of 42 mapsheets this fiscal. This project is scheduled to finish in 2017. Currently 25 mapsheets are completed and will be available in the upcoming release of the provincial forest inventory file. For more information on these two projects, contact Cathy Taylor ([Cathy.Taylor@gov.bc.ca](mailto:Cathy.Taylor@gov.bc.ca); 250-286-9414).

### **Air Photos Acquired in 2015**

In collaboration with GeoBC, digital 4 band air photos were acquired this summer in preparation for VRI mapping over the Prince George District (25cm GSD) and Merritt TSA (30cm GSD). The stereo, orthophoto, DEM and DSM products continue to be worked on by the contractor with delivery of most products expected in the spring of 2016. A compressed, low-resolution, non-standard orthophoto for each area is available. It is a 5m image, and while not as spatially accurate as a true orthophoto, this product is very useful for overview planning and viewing purposes. Contact Ann Morrison ([ann.morrison@gov.bc.ca](mailto:ann.morrison@gov.bc.ca); 250-953-3625) for access to this product and Harald Steiner at GeoBC ([harald.steiner@gov.bc.ca](mailto:harald.steiner@gov.bc.ca); 250- 952-6572) for more information and access to the DEM.

### **Landsat 2015**

Each year we download, process and make available Landsat imagery for the entire province. The 2015 Landsat enhanced images are scheduled to be posted on the image warehouse in January. A 2015 mosaic is being produced for cloud free areas of the province. The few completely cloudy areas will not be filled-in with older imagery since the 2014 Landsat mosaic is already available and can be displayed to fill gaps. The 2015 mosaic should be posted to the image warehouse in February. For more information, contact Ann Morrison ([ann.morrison@gov.bc.ca](mailto:ann.morrison@gov.bc.ca); 250-953-3625).

### **South Island VRI Photo-interpretation**

In 2014, air photos were acquired over southern Vancouver Island. In 2015, VRI photo-interpretation began in a project that covers 1.6 million hectares. There are 17 maps scheduled for completion by February 2016. The photo-estimation is now undergoing third-party quality assurance and maps are being delivered to FAIB for processing and integration into the provincial inventory database. In the spring of 2016, planning will begin for the completion of approximately 40 maps. For more information, contact Roman Bilek ([Roman.Bilek@gov.bc.ca](mailto:Roman.Bilek@gov.bc.ca); 250-387-6043).

### **Inventory Analysis**

Following every major ground sampling project, a standard set of analyses and reports are completed. Inventory analyses provide basic statistics on the forest, insight into the performance of our GY models, forecasts of future stand yields, and an assessment of the accuracy of inventory polygon attributes. In 2015, we completed analyses for the mature stand and the young stand components of the forest in the Prince George TSA. These reports are on our website at:

- [https://www.for.gov.bc.ca/hts/vri/planning\\_reports/tsa\\_analysis/pgtsa\\_vri\\_analysis\\_volume\\_audit.PDF](https://www.for.gov.bc.ca/hts/vri/planning_reports/tsa_analysis/pgtsa_vri_analysis_volume_audit.PDF)
- [https://www.for.gov.bc.ca/hts/vri/monitoring/downloads/young\\_stand\\_monitoring\\_in\\_PG\\_TSA\\_plot\\_Establishment\\_Nov2015.pdf](https://www.for.gov.bc.ca/hts/vri/monitoring/downloads/young_stand_monitoring_in_PG_TSA_plot_Establishment_Nov2015.pdf)

For further information, contact Graham Hawkins ([Graham.Hawkins@gov.bc.ca](mailto:Graham.Hawkins@gov.bc.ca); 250-387-8893).

### **Morice TSA VRI Photo-Interpretation**

The VRI photo-interpretation of Morice TSA, which is divided into north and south projects, is progressing as planned. In the Morice North project, 40 mapsheets are completed and the final 17 mapsheets are scheduled for completion in January. In the Morice South project, 30 mapsheets will be completed this year. The remaining maps within the project area are scheduled to be completed over the next year. In both projects, high resolution false colour and

natural color imagery is being used to aid in the photo estimation of MPB attack and the detection of residual live trees within MPB-impacted stands. Also, new inventory will be produced for a large portion of Tweedsmuir Park. An innovative approach that uses automated polygon delineation followed by manual attribution is currently being used. For more information on these projects, contact Mathias Hulten ([Mathias.Hulten@gov.bc.ca](mailto:Mathias.Hulten@gov.bc.ca); 250-387-8389).

### **Provincial Site Productivity Layer**

Site productivity, quantified by site index, is a critical inventory parameter. The province-wide site index map (also called the provincial site productivity layer) has been updated to include data from four new PEMs for Merritt, Kootenay Lake, Arrow and Cranbrook TSAs. The site index updates have loaded into HectaresBC. Also, access to the raw GIS data and to the PDF maps catalogue has recently changed. Version 4.0 of the provincial site productivity data is now available through a new user interface referred to as a data mashup framework (DMF) which is accessed through the following link: <http://apps.gov.bc.ca/pub/dmf-viewer/?siteid=7198366478891427212>. For further information, contact Graham Hawkins ([Graham.Hawkins@gov.bc.ca](mailto:Graham.Hawkins@gov.bc.ca); 250-387-8893), Ron Planden ([Ron.Planden@gov.bc.ca](mailto:Ron.Planden@gov.bc.ca); 250-387-6867) or surf to: <https://www.for.gov.bc.ca/hts/siteprod/provlayer.html>.

### **Ground Sample Planning for 2016**

Planning for the 2016 field season has begun. CMI and YSM grid sampling projects are planned for the Selkirk Natural Resource District, Rocky Mountain Natural Resource District, Robson TSA, Fraser TSA and Vancouver Island. These projects total 214 CMI ground samples, 215 YSM ground samples and 160 photo samples. In addition, sampling will be undertaken in Haida Gwaii and YSM samples will be re-measured in Quesnel TSA. Approximately 150 PSPs will be re-measured and a number (not yet determined) of EPs will be re-measured. For more information contact: CMI/YSM - Chris Mulvihill ([Chris.Mulvihill@gov.bc.ca](mailto:Chris.Mulvihill@gov.bc.ca); 250-354-6222); Haida Gwaii - Rene de Jong ([Rene.DeJong@gov.bc.ca](mailto:Rene.DeJong@gov.bc.ca); 250-356-1064); PSP – Gary Johansen ([Gary.Johansen@gov.bc.ca](mailto:Gary.Johansen@gov.bc.ca); 250-356-0633); EP – Catherine Bealle Statland ([Catherine.BealleStatland@gov.bc.ca](mailto:Catherine.BealleStatland@gov.bc.ca); 250-387-5447).

### **State of the Inventory**

Like maps? If so, you may want to check out our new publication “Status of British Columbia’s Provincial Forest Inventory, 2015.” The publication provides a set of maps with brief descriptions that characterize the status of i) British Columbia’s provincial forest inventory data and ii) recent forest inventory activities undertaken by the province. The report is available at

<https://www.for.gov.bc.ca/hts/vri/>. For more information, contact Pat Martin ([Pat.Martin@gov.bc.ca](mailto:Pat.Martin@gov.bc.ca); 250-387-3650).

### **VDYP7 and Beetle-damaged Stands**

MPB-damaged stands pose particular problems for the inventory growth model VDYP7. Currently, we are evaluating VDYP7 performance in MPB-damaged stands to devise changes to the model that will improve long-term yield predictions in these stand types. For more information, contact Wenli Xu ([Wenli.Xu@gov.bc.ca](mailto:Wenli.Xu@gov.bc.ca); 250-387-5598).

### **The 2015 Projection**

Each year we release an updated version of the provincial forest inventory GIS coverage. This data set is sometimes called “the veg-comp-poly,” or “the VRI.” The 2015 file will be released in March 2016. The updated file will include approximately 50,000 openings updated from free growing surveys, 168 mapsheets of LVI data in western Williams Lake, updates for 700 wildfires from 2007 to 2014, 3,500 mapsheets of MPB adjustments, 30,000 openings of depletion and regeneration updates, and approximately 3 million hectares of new VRI photo-interpreted polygons. For more information on this massive undertaking, contact Marc Rousseau ([Marc.Rousseau@gov.bc.ca](mailto:Marc.Rousseau@gov.bc.ca); 250-828-4426).

### **In Summary - the 2015-2016 Inventory/GY Program**

The Inventory Section delivers the ministry’s forest inventory and growth and yield program. Activities in 2015/16 include i) acquiring air photos in the Prince George district, and Merritt and Cassiar TSAs; ii) photo-interpretation in Quesnel, Lakes, and Morice TSAs, Vanderhoof district, southern Vancouver Island, and southern Fort St James; iii) tree volume and decay (NVAF) sampling in Kamloops TSA; iv) inventory ground sampling (CMI/YSM and VRI phase 2) in Lillooet, 100 Mile House, Kamloops, Prince George, and Okanagan TSAs; v) re-measurement of PSPs and EPs; vi) improving site productivity information; vii) LVI inventory of Cassiar TSA; viii) stand modelling research and development; ix) inventory data analyses; x) inventory update, projection, and VRIMS maintenance; and xi) many other projects and activities. For more information on the section’s 2015/16 program, contact Gary Johansen ([Gary.Johansen@gov.bc.ca](mailto:Gary.Johansen@gov.bc.ca); 250-356-0633).