

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

**June 03, 2016**

### **A Few Highlights**

- The 2016 inventory field season is in full swing. The planned program includes establishing (or remeasuring) long-term monitoring plots across 10 TSAs (Haida Gwaii, Robson Valley, Golden, Revelstoke, Invermere, Cranbrook, Kootenay Lake, Arrow, Boundary, Fraser, and Quesnel) and Vancouver Island.
- In 2016, air photo acquisition is planned over a northern portion of the Prince George District, central Fort St James, a portion of the Cassiar TSA, and the entire Cranbrook TSA.
- LiDAR-based forest inventory projects are underway in the Kamloops/Okanagan, Merritt, and Haida Gwaii areas.
- All VRI photo-interpretation projects are on schedule. Lakes and Vanderhoof were completed in 2015/16. Fort St James, Quesnel, Morice and southern Vancouver Island are continuing. Prince George and Merritt are starting in 2016.
- After several months delay, the provincial forest inventory file (the “veg-comp”) is now scheduled for release in early June. This file includes the most extensive set of updates to the provincial inventory undertaken in recent years (for wildfire, beetles, harvest and reforestation) and the integration of data produced by new inventory methods (LiDAR and LVI). Behind the scenes, are significant changes to the master database, processing routines, and the yield prediction model (VDYP).

### **Southern Vancouver Island Photo-interpretation**

One goal for the inventory program is to provide complete inventory coverage over the entire province – no data gaps. The VRI photo-interpretation project on southern Vancouver Island is producing consistent inventory data across the area and filling current gaps in coverage. The second year of this project is now underway. The bulk of this year’s activity will be in the western and southern portions of the project area, including the Capital Regional District.

Approximately 60% of the South Island project will be completed by February 2017. For more information, contact Roman Bilek ([Roman.Bilek@gov.bc.ca](mailto:Roman.Bilek@gov.bc.ca); 250-387-6043).

### **Hello my name is...**

Tree tags in permanent sample plots (PSPs) are getting an upgrade. Ten boxes totalling 370 pounds of new metal tags arrived in the office last month. In many PSPs, trees are labeled with plastic tags commonly used in previous decades. As trees in PSPs are remeasured, weathered and brittle plastic tags will be (carefully) replaced with new metal tags that maintain the original

tree number. For more information on the PSP program, contact Gary Johansen ([Gary.Johansen@gov.bc.ca](mailto:Gary.Johansen@gov.bc.ca); 250-356-0633).

### **Ground Sampling in Haida Gwaii**

Our most challenging ground sample project this year is on Haida Gwaii. A grid of long-term monitoring plots will be established across the archipelago with additional sampling of the mature operable area. The sample plan is posted at

[https://www.for.gov.bc.ca/hts/vri/planning\\_reports/tsa\\_gspip.html](https://www.for.gov.bc.ca/hts/vri/planning_reports/tsa_gspip.html). Sample establishment starts the first week in June and all samples are scheduled to be completed before the end of August -- provided Haida Gwaii weather cooperates (over 50% of the samples are helicopter access). For more information on the challenging but spectacular Haida Gwaii project, contact Roman Bilek ([Roman.Bilek@gov.bc.ca](mailto:Roman.Bilek@gov.bc.ca); 250-387-6043) or Rene De Jong ([Rene.DeJong@gov.bc.ca](mailto:Rene.DeJong@gov.bc.ca); 250-356-1064).

### **Gathering of the Clans**

Many of BC's VRI-certified photo-interpreters got together this spring at workshops held in Mesachie Lake and Prince George to discuss photo-interpretation and field calibration processes. Reportedly, everyone had a good time – and outside of Happy Hour the participants worked to clarify procedures, identify potential areas for improvement, and increase consistency. For more information on this rare gathering of the clans, contact Roman Bilek ([Roman.Bilek@gov.bc.ca](mailto:Roman.Bilek@gov.bc.ca); 250-387-6043).

### **Jim Goudie Retires**

Jim Goudie, leader of the Stand Modelling unit, retired in April. Jim worked right to the last hour on the development of TASS III – and then took to the road in his newly purchased trailer to enjoy some much deserved R&R. We salute Jim for his resolute commitment to science-based GY information and his outstanding contribution to stand growth modelling in BC.

### **Sam Otukol Retires**

Sam Otukol, leader of the Forest Biometrics unit, retired in January. Sam was a long-time member of the ministry's forest inventory program, involved in the formative days of the VRI. In recent years, Sam's work portfolio included biomass estimation, VDYP, and statistical analysis procedures. Sam's gentle manner is missed by all and we wish him the best in retirement.

### **Welcome David, James and Geoff**

In the winter and spring we were fortunate to recruit several new staff members. David Cromarty joined the Update team in February. Most recently with West Fraser in 100 Mile House, David brings his operational experience and GIS skills to the significant job of keeping the provincial forest inventory current. David can be reached at [David.Cromarty@gov.bc.ca](mailto:David.Cromarty@gov.bc.ca);

250-371-3858. James Halperin and Geoff Quinn joined the inventory team this spring. Both are with us on a part-time auxiliary basis as they wrap up their respective PhDs. James is a forest biometrician and one of his first assignments is to review our ground sample compilation and recommend procedures for change estimation. James can be reached at [James.Halperin@gov.bc.ca](mailto:James.Halperin@gov.bc.ca); 250-812-0919. Geoff Quinn is a remote sensing specialist. His first assignments include working on an LVI-based inventory of the Cassiar TSA and LiDAR-based inventory work in Kamloops/Okanagan. Geoff can be reached at [Geoffrey.Quinn@gov.bc.ca](mailto:Geoffrey.Quinn@gov.bc.ca); 250-387-6710.

### **Morice Photo-Interpretation Final Year**

A large photo-interpretation project in the Morice TSA is in its final year. Work in the northern half of the TSA was completed last fiscal. This fiscal, all remaining work in the southern half will be completed. High resolution colour infrared imagery is being used to help identify both live and dead trees in MPB-impacted stands. Also, new inventory is being produced for a large portion of Tweedsmuir Park using an innovative approach that combines automated polygon delineation with manual attribution. For more information, contact Mathias Hulten ([Mathias.Hulten@gov.bc.ca](mailto:Mathias.Hulten@gov.bc.ca); 250-387-8389).

### **New Sample Tree Assessment Process**

Starting in the 2016 sampling season, all sample trees in our ground sampling program (VRI, NFI, CMI, YSM) will be assessed for suitability in two ways. First, the historical assessment of “suitable for height” and “suitable for age” will continue unchanged. This assessment is intended to provide an indication of whether the sample tree reflects the height and age of the average plot tree in its cohort. Typical reasons for being not suitable include significant dead or broken top, significant fork, or residual status. Second, an additional assessment using the SIBEC standard is being included. This assessment is intended to provide an indication of whether the sample tree will provide a reliable site index. The SIBEC standard considers factors similar to the first assessment, as well as suppression, wolf/open-grown form, vigorous crown, and percent height loss. These assessments have an impact on how sample trees are used in various data analyses. For more detail, see the current inventory manuals on our website or contact Scott MacKinnon ([Scott.MacKinnon@gov.bc.ca](mailto:Scott.MacKinnon@gov.bc.ca); 250-828-4166).

### **Busy Year in Kootenay-Boundary Region**

In the Kootenay-Boundary Region, 2016 will be a busy year for ground sampling. This field season, samples on the provincial monitoring grid will be established across the full extent of the region. In addition, a set of PSPs are up for remeasurement. To accomplish all this, we are managing three CMI/YSM projects and two or three PSP remeasurement projects in the region. For more information, contact (the very busy) Chris Mulvihill ([Chris.Mulvihill@gov.bc.ca](mailto:Chris.Mulvihill@gov.bc.ca); 250-354-6222).

## **Provincial Site Productivity Layer**

The Provincial Site Productivity Layer provides fine-scale mapping of site index across the province. This GIS coverage is produced by a team that includes FLNRO and MoE ecologists, site productivity researchers, and inventory specialists. The site productivity web site (<http://www.for.gov.bc.ca/hts/siteprod/provlayer.html>) provides access to the latest data (version 5.0) and updated technical documentation. For more 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 Corey Erwin ([Corey.Erwin@gov.bc.ca](mailto:Corey.Erwin@gov.bc.ca); 250-387-9588).

## **Prince George District VRI Photo-interpretation**

Project planning is underway for VRI photo-interpretation of the entire Prince George Natural Resource District. VRI projects are complex and require a considerable investment of staff time and funding. The engagement of local stakeholders is key for success. Inventory staff will meet with local stakeholders in late June to discuss the project plan and determine the priority start-up area. Due to the size of the District, the area will be split into two separate inventory projects. Mathias Hulten will lead the first of the two projects, commencing this fall. For more information, please contact Mathias Hulten ([Mathias.Hulten@gov.bc.ca](mailto:Mathias.Hulten@gov.bc.ca); 250-387-8389) or Graham Hawkins ([Graham.Hawkins@gov.bc.ca](mailto:Graham.Hawkins@gov.bc.ca); 250-387-8893).

## **2015/16 Annual Report Available**

Each year the inventory section prepares an annual report that reconciles the beginning-of-year planned activities with the end-of-year accomplishments. The 2015/16 Annual Report is now available at <https://www.for.gov.bc.ca/hts/vri/>. Of the 59 planned activities, 52 were fully accomplished. For more information, contact Patrick Martin ([Pat.Martin@gov.bc.ca](mailto:Pat.Martin@gov.bc.ca); 250-387-3650).

## **Landsat Time Series**

Advances in computing power and availability of Landsat imagery have given rise to a powerful new mapping approach. From a time series of Landsat satellite scenes, annual disturbances can be detected and mapped. Scientists at the Canadian Forest Service have analyzed the last 3 decades of Landsat data to map disturbances, such as fire and harvesting, over the entire province. We have provided funding support for this work in BC and are now integrating these new disturbance maps into our operations. There is a brief article on these new maps on NASA's website (<http://landsat.gsfc.nasa.gov/?p=12300>). For more information, contact Joanne White ([joanne.white@canada.ca](mailto:joanne.white@canada.ca)) at the Canadian Forest Service or Chris Butson in FAIB ([Chris.Butson@gov.bc.ca](mailto:Chris.Butson@gov.bc.ca); 250-953-3720).

## **Quesnel TSA-West VRI Photo Interpretation**

In the western half of the Quesnel TSA, VRI photo-interpretation has been underway since 2013. The project, which totals about 1.7 million hectares, is expected to wrap-up this year. Portions of

the new inventory will be available in the upcoming release of the provincial forest inventory file. For more information on this project contact Cathy Taylor ([Cathy.Taylor@gov.bc.ca](mailto:Cathy.Taylor@gov.bc.ca); 250-286-9414).

### **Merritt Inventory - LiDAR and VRI Photo Interpretation**

In 2015 air photos were acquired for the entire Merritt TSA. This spring a new VRI inventory is being launched covering 1,146,541 hectares. 25 maps are scheduled for completion this year. In a portion of the TSA, identified by the district as highest priority, LiDAR is being acquired and high resolution LiDAR-based forest inventory will be produced. In addition, the Merritt project is going to employ a new field calibration sampling system to gather more tree data for various data modeling purposes. For more information, contact Cathy Taylor ([Cathy.Taylor@gov.bc.ca](mailto:Cathy.Taylor@gov.bc.ca); 250-286-9414)

### **TIPSY 4.3.2**

A new version of the TIPSY software bundle was released in April. The TIPSY 4.3.2 package includes a number of bug fixes and enhancements to TIPSY, Plotsy, Fan\$ier, and SiteTools. The software can be accessed at <https://www.for.gov.bc.ca/hts/growth/download/download.html>. For more information on the TIPSY suite, contact Mario DiLucca ([Mario.DiLucca@gov.bc.ca](mailto:Mario.DiLucca@gov.bc.ca); 250-387-6679).

### **NFI in BC – Creating Synergy**

Canada's federal, provincial and territorial governments cooperate on a National Forest Inventory (NFI). The NFI employs a nationwide sampling grid, photo-plots at the grid points, and ground samples at a fraction of the grid points. In BC we support the NFI and try to create efficiency and synergy between NFI and the provincial inventory program. To that end, we have adopted the NFI sampling grid for BC's forest monitoring program. The additional ground samples that BC establishes on the grid are broadly consistent with the plot type, plot size and tree measurements of the NFI ground plots already in-place on the grid. Under an agreement with the federal government, we share the cost of re-measuring NFI ground samples in BC (37 samples will be re-measured this year). And, currently we are working to improve the transfer of new VRI polygon data to update the NFI photo-plots. For more information, contact BC's representative on the National Forest Inventory, Matt Makar ([Matt.Makar@gov.bc.ca](mailto:Matt.Makar@gov.bc.ca); 250-828-4427).

### **Ground Sampling Database and Electronic Field Recorder**

The Inventory Sample Management Consolidation (ISM) project has completed signoff of the host design for the first phase of the project. Work has begun on the build for the base station application and the electronic field recorder (handheld) with an anticipated prototype in early January 2017. The first release will include monitoring samples, and VRI Phase 2. Applications for the rest of the ground sample types (permanent sample plots, VRI Phase 1 air calls and

ground calls, and decay and waste data) will be onboarded in release 2 the following year. For more information, contact Tamara Brierley ([Tamara.Brierley@gov.bc.ca](mailto:Tamara.Brierley@gov.bc.ca); 250-356-0703).

### **Photo Interpretation in Fort St James**

A three-year VRI photo-interpretation project in southern Fort St James is into its second year. The total project area is approximately 1.4 million hectares. 40 maps (approx. 600,000 hectares) will be completed this year. The final 40 maps will be completed in 2017/18. For more information, contact Matt Makar ([Matt.Makar@gov.bc.ca](mailto:Matt.Makar@gov.bc.ca); 250-828-4427).

### **In Summary - the 2016-2017 Inventory/GY Program**

The Inventory Section delivers the ministry's forest inventory and growth and yield program. Activities in 2016/17 include i) acquiring air photos for Cranbrook TSA and portions of Cassiar and Prince George TSAs; ii) photo-interpretation in Morice, Prince George, Quesnel, and Merritt TSAs and southern Vancouver Island; iii) LiDAR-based forest inventory projects in Merritt, Kamloops/Okanagan and Haida Gwaii; iv) inventory ground sampling (CMI, YSM, VRI phase 2) in Haida Gwaii, Robson Valley, Golden, Revelstoke, Invermere, Cranbrook, Kootenay Lake, Arrow, Boundary, Fraser, and Quesnel TSAs and Vancouver Island; 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 2016/17 program, contact Pat Martin ([Pat.Martin@gov.bc.ca](mailto:Pat.Martin@gov.bc.ca); 250-387-3650).