Kamloops TSA

Documentation of Analysis for Vegetation Resources Inventory Statistical Adjustment

Jahraus & Associates Consulting Inc.
Maple Ridge, BC
&
Churlish Consulting Ltd.
Victoria, BC

JANUARY 2008

EXECUTIVE SUMMARY

The Kamloops TSA encompassed 4 VRI projects, with ground sampling having taken place between 1998 and 2005:

1. Kamloops TSA (0111)
2. Kamloops TSA targeted Cedar/Hemlock age class 7+ (0112)
3. Adams Lake IFPA (INT1)
4. Adams Lake IFPA (INT2)

The objective of this analysis was to incorporate the data from all of these projects into a single set of adjustment factors for the entire TSA, to adjust the inventory files and to provide a set[1] of adjusted yield curves for timber supply analysis.

Adjustments were provided for both a VDYP6 and VDYP7-based inventory, however it is expected that the operational inventory file will be based on the VDYP7 adjustment. Hence the VDYP7 adjustment was the focus of this analysis.

To maximize the consistency across the unit, the population of interest was defined as VT, operable, greater than 60 years of age. Areas and associated weights were computed based on this target population.

This analysis incorporated destructive sampling data collected in three of the four projects into a TSA-wide set of NVAF values (Table 1). These NVAFs were applied in the ground sample volume compilation.

Table 1: NVAF values by stratum for the Kamloops TSA (based on destructive sampling in Projects 0111, 0112 & INT1.

Species Group	***NVAF***
Balsam	0.96077
Douglas-fir	1.00562
Lodgepole pine	1.04437
Spruce	0.99684
Cedar	0.79084
Hemlock	0.97407
Other	1.02565
Dead (all species)	0.16429

Although all four projects comprised 205 samples, further examination showed that 22 samples were now outside of the population of interest (recent logging, polygon updates, samples in parks, samples less than 60 years of age), leaving 183 samples in the population of interest for analysis. Since the sampling intensity differed among the projects, sample weights were computed and assigned to each sample. These weights were carried with each of the samples throughout the analysis.

[1] Based on a provided list of feature IDs corresponding to the timber harvesting landbase (THLB)

A VDYP7-based adjustment was the focus of this analysis. However, a VDYP6 adjustment was also completed for comparison. The overall estimated population volume impact (at 12.5cm+ dbh utilization net dwb) of the VDYP6 adjustment was 1.07 ± 8.5% (at a 95% confidence level). The overall estimated population volume impact of the VDYP7 adjustment was 1.01 ± 9.5% (at a 95% confidence level). This level of sampling error was within the range of the targets set in the project VPIPs.

When the VDYP7 adjustment factors were applied to the inventory population of interest and the pre- and post- adjustment total volumes were compared, the computed ratio was 1.03, which was reasonably close to the estimated impact of 1.01 estimated from the sample.

The VDYP7 adjustment factors and estimated volume impacts, by stratum, are shown in Table 2.

Table 2: VDYP7 adjustment factors and estimated volume impact for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership".

Stratum	*Area (ha)*	*Ratio of weighted means VDYP7 Adjustment Factors*					*Volume Impact (@12.5cm+dbh net dwb) ± SE as % of ratio at 95%*
		Age	*Height*	*BA @7.5cm+dbh*	*TPH @7.5cm+dbh*	*Volume @12.5cm+ dbh net dw2*	
Deciduous	51,277	0.823	1.411	1.298	0.457	1.111	2.482 ± 10%
IFPA area							
B	13,658	1.015	0.913	1.171	1.601	1.168	1.146 ± 27%
CH	13,253	1.181	0.942	0.917	1.916	0.921	0.789 ± 26%
F	52,980	0.954	0.872	0.999	1.292	0.989	0.820 ± 33%
P	14,265	0.888	0.986	1.499	1.349	1.151	1.646 ± 30%
S	25,384	0.758	0.780	1.015	1.371	1.227	0.958 ± 19%
Non-IFPA							
BS	260,584	0.805	0.924	0.941	1.056	1.227	1.052 ± 27%
CH	56,789	0.853	0.901	0.876	1.074	1.076	0.922 ± 16%
F	412,304	1.049	0.923	0.982	1.088	1.174	1.015 ± 23%
P	270,331	0.931	0.952	0.961	1.066	1.026	0.912 ± 21%

ACKNOWLEDGEMENTS

The following people are acknowledged for their significant contributions to the successful completion of this project: Matt Makar (Southern Interior Forest Region, Kamloops) and Sam Otukol, Gary Johansen and Will Smith (Forest Analysis and Inventory Branch, Victoria).

Table of Contents

1. INTRODUCTION

1.1 Background

Vegetation Resources Inventory (VRI) Phase II ground sampling in the Kamloops TSA encompasses four projects, with ground sampling activities spanning the period between 1998 and 2005. A brief description of each of these projects (0111, 0112, INT1 & INT2) are provided in section 1.3. Preliminary analysis was carried out in several of these projects. For more detailed background information on these projects, please consult the documentation referenced below.

The ground sampling project implementation plans for the Kamloops TSA can found on the Ministry of Forests website via the following links. For project 0111, details are provided in the report: "Kamloops TSA Timber Emphasis VRI Ground Sampling Project Implementation Plan", Ministry of Forests, Kamloops Region, 15 January 2001.

http://www.for.gov.bc.ca/hts/vri/reports&pub/tsa_vpips/kamloopstsa_vrigs_timber_vpip.pdf

For project 0112, refer to the report: "Kamloops TSA Addendum to the Timber Emphasis VRI Ground Sampling Project Implementation Plan" prepared by Simpcw Development on behalf of the Cedar/Hemlock Partition Licensees, June 27, 2003.

http://www.for.gov.bc.ca/hts/vri/reports&pub/tsa_vpips/kamloopstsa_vrigs_timber_vpip_addendum.pdf

For projects INT1 and INT2, the ground sampling project implementation plan is detailed in the document "Interfor's Adams Lake IFPA: Inventory Audit (sic) Sampling Plan", a contract report prepared for Interfor by J.S. Thrower & Assoc., September 1998. A copy of this report is provided in Appendix J.

The preliminary analysis of ground sample data collected in Project 0111 can be found in a report at the following link:

http://www.for.gov.bc.ca/hts/vri/reports&pub/tsa_analysis/kamloopstsa_vri_interim_adjustment.pdf

The results for the analysis of project 0112 can be found in an unpublished report entitled "Kamloops TSA Mature Cedar/Hemlock: Documentation of Final Analysis and Vegetation Resources Inventory Statistical Adjustment", prepared for Integrated Woods Services by Jahraus & Associates Consulting Inc and Churlish Consulting Ltd., March 2005. A copy of this report is provided in Appendix K.

Sampling for the Net Volume Adjustment Factor (NVAF) was completed in 3 of the 4 projects. In the current analysis, the Ministry of Forests and Range[2] calculated selection weights for the NVAF sample trees that allowed pooling of the data and computation of NVAF's applicable to all VRI samples in the TSA as a whole.

1.2 Description of the Inventory Unit

The Kamloops TSA comprises about 2.7 million hectares in the south–western Interior. The TSA includes the communities of Kamloops, Clearwater, Cache Creek, Ashcroft, Chase and Vavenby. The Adams Lake IFPA is in aligned north-south around Adams Lake, north of Chase on the eastern boundary of the TSA and straddling the Kamloops/Headwaters forest district boundaries. A map of the Kamloops TSA is provided in Figure 1.

[2] Will Smith, Volume & Decay Sampling Officer, MoFR Victoria.

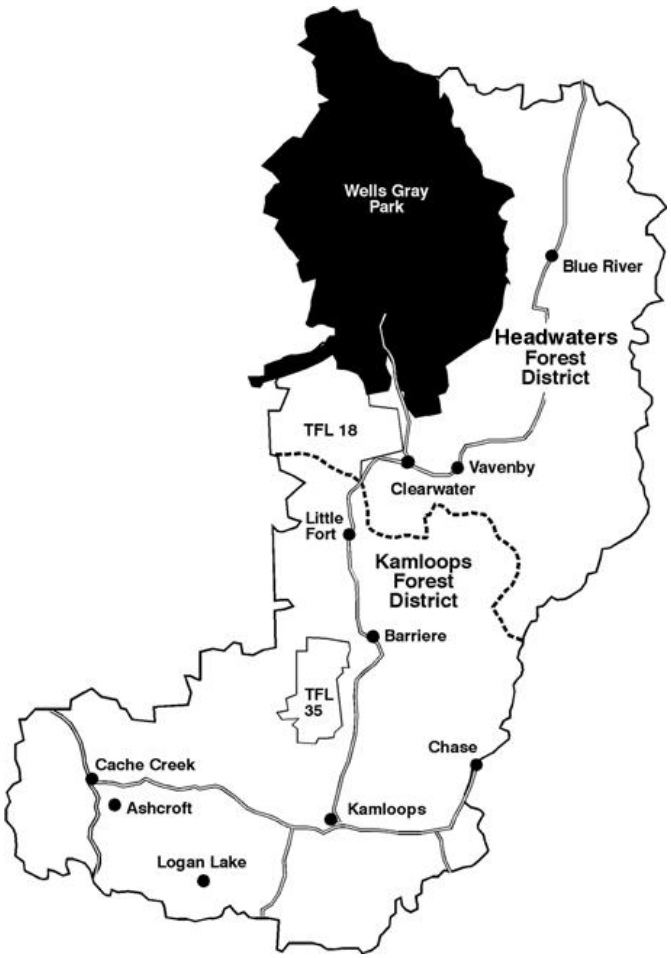


Figure 1: Map of Kamloops TSA.

1.3 VRI ground sampling projects in the Kamloops TSA

A map showing the distribution of samples, by project, within the Kamloops TSA is provided in Appendix A. Brief descriptions of the populations sampled in each project are discussed in the following sections[3].

1.3.1 Project 0111

This was the original Kamloops TSA ground sampling project. A total of 84 samples were established. The target population is the operable Vegetated Treed (VT) portion of the TSA, excluding private lands, parks and other legally recognized protected areas, TFLs, and woodlots. There were 47 samples established in 2001; with the remaining 37 established in the 2004 & 2005 field seasons.

1.3.2 Project 0112

This project focused on the area of the Cedar/Hemlock partition. The target population was Cedar or Hemlock leading stands in age class 6 through 9. It appears that the original sample lists provided for project 0111 were also used to select samples for this project.

[3] Much of this historic information was provided by Matt Makar, Inventory Forester, MoFR Kamloops.

1.3.3 Project INT1

This project sampled the entire Adams Lake IFPA landbase excluding non forest, NCBR and NSR land. Note that there were intended to be 15 immature samples established, but only 5 were completed. In the report it states that due to weather, samples at high elevations were given first priority. As a result, the immature samples in this project are likely to be biased. In Project INT1, "mature" appears to have been defined as greater than 60 years of age, whereas immature is less than or equal to 60 years.

1.3.4 Project INT2

This project was referred to as the "high elevation top-up". All 11 samples in this project were mature and from ESSF biogeoclimatic zones. It appears that this may have been a weather/access-related project. The INT2 samples were the first 11 ESSF samples on the same mature list used for Project INT1.

1.4 Scope and Objectives

The objective of this project was to provide a VRI statistical adjustment of the inventory files for the whole of the Kamloops TSA, in both a VDYP6 and a VDYP7 context. This adjustment was to be based on a common target population of interest defined to use as much data as possible from all four VRI projects in the Kamloops TSA (projects 0111, 0112, INT1 & INT2). In addition, the adjustment was to incorporate TSA-wide Net Volume Adjustment Factor (NVAF) values determined from destructively sampled tree data collected from three projects in the Kamloops TSA.

The VDYP6 adjustment was to be based on the Ministry of Forests & Range (MoFR) old methodological standards for adjustment using the VDYP6 yield model. In addition, a parallel analysis was to be carried out using the draft standards for VRI adjustment using the VDYP7 yield model. Although both sets of adjustment factors will be applied to a cut of the population files (based on a list of feature ID's provided through Forest Analysis and Inventory Branch FAIB) and used to generate a set of adjusted yield tables, it is anticipated that the VDYP7 adjustment will become the official adjustment as the VRIMS data system and VDYP7 become fully operational.

As a secondary objective, this analysis also included an examination of remeasured data collected for 44 samples. A summary of these results are provided in Appendix I.

2. METHODS

2.1 Overview of NVAF analysis

NVAF sampling was carried out in three projects within the Kamloops TSA (0111, 0112, INT1). Appropriate weighting factors were developed so that the NVAF sample tree data from these projects could be combined[4]. As a result of this work, a set of NVAF values (see Table 1) were developed and applied to all sample volumes in the Kamloops TSA.

[4] The NVAF analysis was completed by Ministry of Forests & Range staff (Will Smith, Volume and Decay Sampling Officer).

Table 1: NVAF values by stratum for the Kamloops TSA (based on destructive sampling in Projects 0111, 0112 & INT1.

Species Group	***NVAF***
Balsam	0.96077
Douglas-fir	1.00562
Lodgepole pine	1.04437
Spruce	0.99684
Cedar	0.79084
Hemlock	0.97407
Other	1.02565
Dead (all species)	0.16429

2.2 Population for Adjustment

The four projects that comprised the VRI ground sampling in the Kamloops TSA represented slightly different populations of interest (see section 1.3). In determining the population of interest for this adjustment, the goal was to maximize the number of samples that could be used in the analysis while at the same time ensuring a consistent definition of the target population across the entire TSA. The final target population of interest for the VRI adjustment was defined as:

> *All operable, vegetated treed (VT) polygons greater than or equal to 60 years of age in the Kamloops TSA, excluding "non-contributing"[5] ownerships such as private lands, parks and other legally recognized protected areas, TFLs, and woodlots.*

Vegetated treed was defined as having crown closure greater than 10%. Age was based on the attributes for the rank 1 layer for each polygon in the year of ground sampling. The polygon list generated by these criteria was used to define the population for the statistical adjustment.

Note that in the original sample selection for the INT1 and INT2 projects, operability and ownership were not including in the population definition. However, it was assumed that virtually all of the IFPA area was operable and that the park area within the IFPA was not significant.

As a result of updates to the inventory, new parks classification and, in some cases, slight changes from the original populations of interest, 22 samples were excluded from the analysis. These are detailed in section 2.2.1 below.

2.2.1 Samples excluded from the analysis (outside of target population)

There were a total of 205 samples established among the 4 contributing projects in this analysis. However, after careful examination of these samples, 22 were excluded, leaving 183 samples remaining for the statistical adjustment analysis. Details on these 22 samples are provided in the Data Issues Log for the project (see Appendix C) and are also summarized below:

Recently logged samples: The following samples were excluded because field notes indicated the polygon had been recently logged and/or the sample was now classified as VN.

0111-13

[5] "contributing ownerships" refer to land that contributes to the forest landbase. This includes polygons with a "C" ownership character code on the ownership overlay i.e. designated as land available for long-term integrated resource management.

0111-40

0111-50

0111-95

Samples in parks: The ownership coverage has been updated for newly created parks etc. since the time of sample selection. As a result, a number of samples in project 0111 and 0112 were excluded from this analysis based on ownership.

0111-2

0111-11

0111-49

0111-56

0111-501

0112-531

0112-534

0112-550

Immature samples in project INT1: since only 5 of the planned 15 immature samples were established and these samples were specifically chosen because of their location (high elevation), an unacceptable bias would accompany any adjustment factors developed from these samples. Hence they were not included in the analysis.

INT1-204

INT1-208

INT1-209

INT1-211

INT1-215

Other samples less than 60 years of age: Since the new target population of interest was based on polygons greater than or equal to 60 years, a number of samples were excluded on this basis.

0111-51 (age=56 years)

0111-69 (age=49 years)

0111-90 (age=21 years)

0112-503 (new Phase I polygon age= 33 yrs)

0112-513 (sample incorrectly selected originally; wrong age class)

There were also three samples in Project INT1 that were re-inventoried and were determined to be <60 years of age in the new Phase I inventory. Since the re-inventory was limited to 2 mapsheets (i.e. it did not cover 100% of the IFPA), MoFR (Sam Otukol) recommended that these samples NOT be excluded in the analysis and that the new Phase I attributes be used for these samples. Although these samples do not technically meet the new target population criteria, there would be no way to "weed out" all of the other miss-classifications of age in the IFPA hence it was argued that these samples should remain. The samples in question are listed below and are INCLUDED in the analysis:

INT1-5 (new polygon age = 46 years)

INT1-42 (new polygon age = 53 years)

INT1-69 (new polygon age = 48 years)

2.3 Data Sources

2.3.1 Phase I photo-interpreted inventory data

The Phase I inventory data was obtained as a non-standard inventory file provided by MOFR regional staff (Matt Makar). Since the time of the original sample selection there were 2 mapsheets within the Kamloops TSA that underwent re-inventory: mapsheets 082M023 and 082M012. A total of 19 samples were impacted by this reinventory (refer to the Data Issues Log in Appendix C). In addition, a significant update of the ownership overlay also took place and this impacted a number of samples (see Section 2.2.1). About 2/3 of the samples indicated a reference year of 1990 or later. However the remaining 1/3 of the samples had pre-1990 reference years, with the oldest being from 1955.

Polygons that fell inside the boundaries of the IFPA area were identified on the inventory VEG table using the attribute called IFPA_INSID.

While assembling the inventory data, it was noted that mapsheet 082M082 had duplicate data in the data.mdb file. All of the duplicates were removed prior to the analysis.

About 78% of the samples were from a FIP-type inventory, with the remaining 22% coming from a VRI-type inventory. One of the characteristics of the VRI-type inventory is that it provides photo-interpreted basal area/ha and trees/ha values. However, during the course of the analysis, it was discovered that there was an error in the original basal area/ha field in the Veg_comp_lyr_r1_poly table (e.g. highest basal area/ha was 9). The MoFR corrected this issue and the corrected file[6] was used in the analysis.

In preparation for the adjustment analysis, the Phase I data was projected to the year of ground sampling. The measurement dates among these 4 projects ranged from 1998 through to 2005. Each sample was projected to the year in which it was measured on the ground. Note that VDYP6 and VDYP7 use different versions of SINDEX, the site index function used for height projection. As a result, some of the projected heights coming from the two models will differ.

2.3.2 Phase II ground sample data

All of the ground sample data was recompiled using the current version of the MoFR ground sample compiler. The new, TSA-wide NVAF values were also applied to the volumes. Project 0112 utilized a non-standard 9 plot configuration (IPC plus 8 auxiliary plots) for some samples and hence the compilation was modified to include these extra auxiliary plots where they were available.

For samples that had been re-inventoried, the location of the auxiliary plots relative to new polygon boundaries was examined. In a number of cases it was discovered that one or more auxiliary plot was outside of the boundaries of the polygon of interest, that is, the polygon in which the integrated plot centre (IPC) fell. In such cases, these auxiliary plots were identified and were excluded from the compilation.

It was discovered that the original IPC data from sample 0111-55 was missing in the ground sample database. Since this sample had been NVAF-enhanced, the auxiliary plot data could be derived from the N-type sample data. In 2007, MoFR regional staff (Matt Makar) visited the sample location and collected IPC data. However, the plot had been affected by MPB since the time of the original ground sampling. In consultation with MoFR staff, it was decided that the 2 dead pine trees in the IPC that had been killed by Mountain Pine Beetle since the time of original sample selection would be recoded as “LIVE” in the recompilation of the volume for the sample.

The important attributes of the Phase I and Phase II data that were used in this analysis are shown in Appendix B.

[6] The corrected file was provided by Tim Salkeld, VRI Technical Applications Coordinator, MOFR Victoria.

2.3.3 Data matching

The data matching used to determine the appropriate heights and ages upon which to base the ratios, used the standard procedures outlined by the MoFR. The same set of procedures is applicable to both the VDYP6 and VDYP7 analyses. The results have been included in the Appendix B cut of the analysis spreadsheet.

For each VRI sample polygon, the ground sample data was matched with the corresponding inventory data for the same polygon. The ground heights and ages used in the adjustment were based on the average values for the T, S & L[7] trees for the leading species (by basal area at 4cm + dbh utilization) on the ground. Since a VRI inventory was available for only about 20% of the samples, inventory data (i.e. height and age) for both the leading and second species was limited. The objective in the matching process was to choose an inventory height and age (i.e. for either the leading or second species) so that the ground and inventory species "matched". If a match could not be made at the sp0[8] level, conifer-to-conifer matches were allowed. However, conifer-deciduous matches were not considered acceptable. Note that where second species inventory ages and heights were required, these attributes were also projected to the year of ground sampling.

Based on the VYDP7 species composition, the data matching results were as follows:

- There were 114 samples (~62%) for which the inventory leading species matched the ground leading species at the 4cm+ dbh utilization (Case 1).
- Because the majority of the samples were from a FIP-type inventory and did not have second species height and age data, there were only a further 6 samples where a match with the ground leading species could be made based on the inventory second species (Case 2 or 4).
- There were 51 samples (~28%) were matched based on conifer-to-conifer or deciduous-to-deciduous based in the inventory leading species (Case 3).
- The remaining 12 samples (nearly 5%) could not be matched and were excluded from the development of the age and height adjustment factors.

2.4 Data issues related to the statistical adjustment (data screening)

The majority of the data issues in this analysis were related to determining the set of samples that met the newly defined target population of interest. Data issues and assumptions made in the analysis were discussed with MoFR staff. The issues/questions and their associated resolutions are documented in Appendix C.

Data screening discovered an error with the inventory files related to basal area. This issue was described in section 2.3.1.

2.5 Stratification and weights

Samples from the INT1 and INT2 projects were all established within the boundaries of the Adams Lake IFPA (referred to as the IFPA area). Samples from the 0111 and 0112 projects were established throughout the Kamloops TSA, including the IFPA area. The weights shown in Table 2 were computed for the adjustment

[7] T or "top height" tree is the largest DBH in 0.01 ha plot, regardless of species; L or "leading species" tree is the largest DBH in 0.01 ha plot, of leading species; S or "second species" is the largest DBH in 0.01 ha plot, of second species. T and S trees are selected and measured at the IPC only whereas L trees are selected at the IPC and all auxiliary plots. For details, refer to the MSRM document "Vegetation Resources Inventory Procedures and Standards for Data Analysis Attribute Adjustment and Implementation of Adjustment in a Corporate Database Version 2.0", March 2004.

[8] sp0 refers to the 16 major species codes and is roughly equivalent to the genus level.

analysis. These weights were attached to the respective samples and were carried with them into the analysis strata.

Table 2: Areas and sample size for weight computation, by project and/or sample location.

Leading species (and age class)	*Area (ha in the population of interest)*	*n (in population of interest)*	*Weight (area/n)*
Projects 0111 & 0112 (Kamloops TSA *including* IFPA area)			
CH age class 6+	63460	32	1983
CH age class 4,5	6582	1	6582
Decid	51277	2	25639
B	110158	8	13770
Fd	465284	26	17896
P	284596	19	14979
S	189468	13	14574
Total	*1170825*	*101*	
Projects INT1 & INT2 (IFPA area)			
CH age class 6+	11097	8	1387
CH age class 4,5	2156	2	1078
Decid.	6821	7	974
B	13658	12	1138
FD	52980	26	2038
P	14265	8	1783
S	25384	19	1336
Total	*126361*	*82*	

The analysis strata and the contributing projects are shown in Table 3. The sampling weights for the INT1 and INT2 samples were considerably lower compared with the samples established in the 0111 and 0112 projects (by a factor of 10). As a result, it was decided to keep the IFPA separate from the non-IFPA portion of the TSA in the stratification. However, all IFPA strata included at least one sample from either of projects 0111 or 0112 (see Table 3) and as such, the higher weights of these samples relative to the weights for INT1 and INT2 samples will have an impact in the IFPA strata.

Table 3: Analysis strata and contributing project.

Stratum	*Contributing Project*				*n for stratum*
	0111	*0112*	*INT1*	*INT2*	
Deciduous (TSA-wide)	2	0	7	0	9
IFPA area					
B	2	1	7	5	15
CH	2	4	10	0	16
F	3	0	26	0	29
P	1	0	6	2	9
S	1	0	15	4	20
Non-IFPA area					
BS	17	0	0	0	17
CH	4	23	0	0	27
F	23	0	0	0	23
P	18	0	0	0	18
Total (all strata)					183

2.6 Overview of statistical adjustment

For the VDYP6 analysis, the statistical adjustment followed the MoFR interim process often referred to as the "Fraser Protocol". In this process, the age and height attributes are adjusted first and used as inputs to generate an interim or "attribute-adjusted" VDYP6 volume. This volume is then used to develop a final volume adjustment factor. Hence the adjustment process occurs sequentially in two stages.

The VDYP7 statistical adjustment process is similar in that it is also sequential and involves two stages. However, additional attributes are adjusted at the first stage (age, height, basal area at 7.5cm+ dbh utilization (BA7.5), and trees per hectare at 7.5cm+ dbh utilization (TPH7.5)). Although the process has the flexibility to adjust multiple attributes at the second stage, only volume net decay and waste at the 12.5cm+ dbh utilization will be adjusted at the current time. Within the VDYP7 context, various internal modules of VDYP7 are used to project the polygons, generate additional attributes, and adjust attributes. Hence the VDYP7 model itself takes a much larger role in the statistical adjustment process than did VDYP6.

3. RESULTS

3.1 VDYP6 Adjustment Analysis

3.1.1 Age and height adjustment

When the samples without a suitable inventory species match and/or there were no suitable ground ages or heights were considered, there were 161 samples for age and 162 samples for height that were available for the development of the age and height adjustment factors respectively.

Adjustment factors were computed as the ratio of the weighted mean ground i.e. Phase 2 value over the weighted mean inventory i.e. Phase 1 value, using the weights assigned to each sample as per Table 2.

Tables 4 and 5 show the weighted mean values and the ratio of means for the age and height adjustment factors for the VT, operable, greater than or equal to 60 years of age, and "contributing ownerships" population of interest in the Kamloops TSA.

Table 4: Mean ages[9] and ratio of means adjustment factors, by stratum, for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", for the VDYP6 adjustment.

Stratum	*n*	*Weighted mean ground age (years)*	*Weighted mean inventory age (years)*	*Age adjustment ratio of weighted means*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous	3	64	78	0.823	256%
IFPA area					
B	15	139	137	1.015	36%
CH	13	179	152	1.181	28%
F	27	111	117	0.954	12%
P	8	75	85	0.888	31%
S	16	148	195	0.758	40%
Non-IFPA area					
BS	17	141	175	0.805	16%
CH	26	217	254	0.853	19%
F	20	129	123	1.049	22%
P	16	108	116	0.931	18%

[9] Mean inventory heights and ages are based on the set of values used to develop the adjustment ratios. These may have included second species heights and ages where the second species provided a better "match" with the ground species.

Table 5: Mean heights and ratio of means adjustment factors, by stratum, for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", for the VDYP6 adjustment.

Stratum	*n*	*Weighted mean ground height (m)*	*Weighted mean inventory height (m)*	*Height adjustment ratio of weighted means*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous	3	28.4	20.0	1.416	73%
IFPA area					
B	14	19.0	20.7	0.916	12%
CH	13	25.2	26.6	0.948	14%
F	26	26.1	30.0	0.873	5%
P	8	20.5	20.9	0.980	14%
S	17	23.6	30.3	0.780	19%
Non-IFPA area					
BS	17	24.6	26.7	0.922	12%
CH	26	28.3	31.2	0.906	9%
F	21	22.4	24.3	0.923	11%
P	17	21.2	22.4	0.948	11%

The adjustment ratios in Table 4 indicate that the trends in age bias in the inventory are not consistent among strata and differ in the IFPA and non-IFPA portions of the TSA. For example, whereas age in fir leading stands in the IFPA is overestimated by about 5%, age in fir leading stands in the non-IFPA portion of the TSA are underestimated by about 5%.

Trends in height bias are more consistent. With the exception of deciduous leading stands, height is generally overestimated in the inventory with this overestimation ranging from 2% (for pine in the IFPA area) to as high as over 20% or over 6m on average (for spruce in the IFPA area).

Since the VDYP6 and VDYP7 adjustment for age and height are very similar, scatter plots showing the relationship between ground height (and age) and inventory height (and age) by stratum are only provided for the VDYP7 adjustment (please refer to section 3.2.1.).

3.1.2 Volume adjustment based on NVAF volumes and VDYP6

The height and age adjustment factors were applied to the rank 1 inventory ages and heights for the samples. These adjusted heights and ages, together with the unadjusted species composition, crown closure, and stocking class, were then input into VDYP v6.6d to produce "attribute-adjusted" inventory volumes[10]. The adjustment ratios for volume were then calculated based on the ratio of ground volume to "attribute-adjusted" VDYP6 inventory volume. The analysis was based on net factored (NF) ground volumes to which the NVAF values had been applied in the compilation.

The volume utilization used in the analysis was for live stems 12.5cm + dbh net of decay, waste and breakage (net dwb). This utilization applied to both inventory and ground volumes.

Table 6 below presents volume adjustment factors by strata for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership".

[10] As part of MoFR's stocking class assignment procedure, new stocking classes for all samples were determined based on the adjusted ages and heights prior to producing the "attribute-adjusted" volumes.

Table 6: Mean volumes and volume adjustment ratios, by stratum, for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", for the VDYP6 adjustment. Utilization: 12.5cm+dbh net dwb.

Stratum	*n*	*Weighted mean ground vol/ha*	*Weighted mean attribute-adjusted inventory vol/ha*	*Volume adjustment ratio of weighted means*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous	9	251.7	201.3	1.250	7%
IFPA area					
B	15	202.7	160.3	1.265	28%
CH	16	283.8	306.6	0.926	23%
F	29	276.1	220.7	1.251	23%
P	9	374.9	201.1	1.864	26%
S	20	335.4	233.1	1.439	19%
Non-IFPA area					
BS	17	296.3	245.7	1.206	27%
CH	27	353.9	382.3	0.926	15%
F	23	198.5	163.5	1.214	19%
P	18	233.1	201.2	1.159	21%

The values in Table 6 would suggest that even after the height and age attributes have been adjusted, there is still volume underestimation bias associated with either the other remaining unadjusted inventory attributes (e.g. species composition, stocking class, crown closure) and/or the VDYP6 estimates of volume. The only exception to this trend was for the Cedar/Hemlock stratum in both the IFPA and non-IFPA areas, where the volume adjustment factor was less than 1. The largest volume adjustment factor was for pine in the IFPA. However, the sample size in this stratum was small.

3.1.3 Estimated volume impact for the VDYP6 statistical adjustment

The volume factors in Table 6 represent adjustments to volumes based on inventory heights and ages that have already been adjusted. To provide an estimate of the overall impact of the adjustment process (i.e. the cumulative impact of the age, height and attribute-adjusted volume adjustment) the Phase II sample average ground volume was compared with the unadjusted average inventory volume (i.e. inventory volumes prior to any age, height or volume adjustment). The estimated volume impacts of the adjustment, by stratum and overall, are shown in Table 7.

Table 7: Estimated VDYP6 volume impact by stratum for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", based on the Phase II samples. Utilization: 12.5cm+dbh net dwb.

Stratum	*Area (ha)*	*n*	*Weighted mean ground vol/ha*	*Weighted mean **un**adjusted inventory vol/ha*	*Volume impact (ratio)*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous	51,277	9	251.7	94.6	2.661	± 1.259 or 47%
IFPA area						
B	13,658	15	202.7	182.1	1.113	± 0.307 or 28%
CH	13,253	16	283.8	324.5	0.875	± 0.222 or 25%
F	52,980	29	276.1	272.5	1.013	± 0.215 or 21%
P	14,265	9	374.9	215.5	1.740	± 0.482 or 28%
S	25,384	20	335.4	322.6	1.040	± 0.202 or 19%
Non-IFPA area						
BS	260,584	17	296.3	276.4	1.072	± 0.283 or 26%
CH	56,789	27	353.9	423.3	0.836	± 0.120 or 14%
F	412,304	23	198.5	188.0	1.055	± 0.192 or 18%
P	270,331	18	233.1	227.9	1.023	± 0.207 or 20%

The volume impact estimates in Table 7 are based on the Phase II compiled volumes, which have incorporated the NVAF values. The VRI ground sample data indicates that the largest volume impacts of the adjustments can be expected in the deciduous stratum, where it is estimated that the adjustment will increase volume by about 2.5 times. The pine stratum in the IFPA also shows that a large volume increase is expected as a result of the adjustment. Cedar/hemlock (in both the IFPA and non-IFPA areas) is the only stratum where the adjustment is expected to result in a volume decrease.

3.1.4 Sampling error

The VPIPs for the various original sampling plans in the Kamloops TSA specified target sampling errors of between 10% and 15% (at a 95% probability level). To provide an indication of the sampling error achieved in the VDYP6 adjustment process, a comparison of the overall estimated ground sample volume and the overall estimated unadjusted inventory volume for the sample was made. The overall ratio of these values and its standard error were computed using the formula for a separate ratio estimate after a pre-stratified PPSWR sample. The results for the population of interest defined as VT, operable polygons, ≥ 60 years of age and in "contributing ownerships", are summarized in Table 8 below.

Table 8: ***Estimated*** adjusted VDYP6 total volume and sampling error (for a 95% confidence interval) for the Kamloops TSA based on separate ratio estimators (for the VT, operable, ≥ 60 years of age population in a "contributing ownership"). Utilization: 12.5cm+dbh net dwb.

Volume	*n*	*Total area (ha)*	*Overall estimated total adjusted inventory volume (m^3)*	*Overall estimated total unadj'd inventory volume (m^3)*	*Overall adjustment impact Ratio*	*Sampling error for total adjusted volume (as % of total adjusted volume)*
Overall	*183*	*1,170,825*	*323,736,512*	*302,299,201*	*1.071*	*8.52%*

The overall impact of a VDYP6 adjustment was estimated to be 1.071 within an 8.5% sampling error (at the 95% confidence level). This sampling error met the target set in the VPIP.

3.1.5 Inventory file adjustment for the VDYP6 statistical adjustment

The Phase I inventory files for the population of interest (VT, operable, ≥60 years of age, "contributing ownerships") were adjusted using the factors in Tables 4 and 5 for height and age respectively and Table 6 for volume. The adjustment procedure followed the "Fraser Protocol" for a VDYP6 adjustment. Since the MoFR is currently transitioning to the VDYP7 platform, it is not expected that this VDYP6 adjusted file will be used operationally. However, yield curves based on the VDYP6 adjustment were prepared and provided to support TSR activities.

The pre- and post-adjustment comparisons are based on an inventory file projected to 2001, the median year of ground sampling. The unadjusted total VDYP6 population volume was compared with the final adjusted total VDYP7 population volume[11]. The ratio of the adjusted to unadjusted VDYP6 volume in the population was 1.058, which was close to the 1.071 volume impact ratio that was estimated from the sample and shown in Table 8.

3.2 VDYP7 Adjustment Analysis

The Kamloops TSA VRI statistical adjustment was also performed using VDYP7 and the new process for making adjustments in the VDYP7 context. The Kamloops TSA population file used for this adjustment was not made available in the new PGDB format that is required for input into VRIMS. However, the VDYP7 adjustment factors developed in this analysis will be provided in a standard format so that it will be possible to apply them to the operational inventory files once PGDBs are available and VRIMS has been fully implemented. In addition, adjusted yield curves produced by VDYP7 were generated for all polygons in the THLB for use in the upcoming timber supply analysis[12].

3.2.1 First stage VDYP7 adjustment: Height, age, basal area & trees per hectare

The VDYP7 adjustment process occurs in two stages, similar in this respect to the VDYP6 adjustment. At the first stage, age and height are adjusted. However, two additional inventory attributes, basal area per hectare

[11] Sum of the polygon volumes/ha times the polygon areas. The population volumes in this comparison were based on net dwb volumes at the 12.5cm+ dbh utilization.

[12] Based on a provided list of feature IDs corresponding to the timber harvesting landbase (THLB)

(BA) and trees per hectare (TPH) at 7.5cm+ dbh utilization are also adjusted. The data matching process for the height and age adjustment is the same for both VDYP6 and VDYP7.

The resulting VDYP7 adjustment factors for age, height, basal area and trees per hectare are shown in Tables 9, 10, 11 & 12 respectively. Scatterplots of the Phase I and II relationships for these attributes are provided in Appendix D.

Table 9: Mean ages and ratio of means adjustment factors, by stratum, for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", for the VDYP7 adjustment.

Stratum	*n*	*Weighted mean ground age (yrs)*	*Weighted mean inventory age (yrs)*	*Age adjustment ratio of means*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous (TSA-wide)	3	64	78	0.823	256%
IFPA area					
B	15	139	137	1.015	36%
CH	13	179	152	1.181	28%
F	27	111	117	0.954	12%
P	8	75	85	0.888	31%
S	16	148	195	0.758	40%
Non-IFPA area					
BS	17	141	175	0.805	16%
CH	26	217	254	0.853	19%
F	20	129	123	1.049	22%
P	16	108	116	0.931	18%

Table 10: Mean heights and ratio of means adjustment factors, by stratum, for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", for the VDYP7 adjustment.

Stratum	*n*	*Weighted mean ground height (m)*	*Weighted mean inventory height (m)*	*Height adjustment ratio of means*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous (TSA-wide)	3	28.4	20.1	1.411	70%
IFPA area					
B	14	19.0	20.8	0.913	12%
CH	13	25.2	26.8	0.942	15%
F	26	26.1	30.0	0.872	5%
P	8	20.5	20.8	0.986	14%
S	17	23.6	30.3	0.780	21%
Non-IFPA area					
BS	17	24.6	26.6	0.924	12%
CH	26	28.3	31.4	0.901	9%
F	21	22.4	24.3	0.923	11%
P	17	21.2	22.3	0.952	11%

Table 11: Mean basal area at 7.5cm+ dbh utilization and ratio of means adjustment factors, by stratum, for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", for the VDYP7 adjustment.

Stratum	*n*	*Weighted mean ground basal area/ha*	*Weighted mean inventory basal area/ha*	*Basal area/ha adjustment ratio of means*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous (TSA-wide)	9	29.1	22.4	1.298	37%
IFPA area					
B	15	34.3	29.3	1.171	26%
CH	16	50.3	54.8	0.917	25%
F	29	42.6	42.6	0.999	24%
P	9	51.6	34.4	1.499	24%
S	20	45.1	44.4	1.015	18%
Non-IFPA area					
BS	17	35.5	37.7	0.941	16%
CH	27	57.7	65.9	0.876	16%
F	23	28.4	29.0	0.982	26%
P	18	31.8	33.1	0.961	22%

Table 12: Mean trees per hectare (TPH) at 7.5cm+ dbh utilization and ratio of means adjustment factors, by stratum, for the VT, operable, ≥ 60 years of age population of interest, for the VDYP7 adjustment.

Stratum	*n*	*Weighted mean TPH*	*Weighted mean inventory TPH*	*TPH adjustment ratio of means*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous (TSA-wide)	9	375	821	0.457	103%
IFPA area					
B	15	1172	732	1.601	92%
CH	16	1509	787	1.916	42%
F	29	1200	929	1.292	25%
P	9	1811	1342	1.349	18%
S	20	808	589	1.371	23%
Non-IFPA area					
BS	17	837	793	1.056	27%
CH	27	714	665	1.074	30%
F	23	610	561	1.088	37%
P	18	1043	979	1.066	25%

The age and height adjustment factors for VDYP7 are virtually identical to those for VDYP6. The small discrepancies that are observed are a result of differences in projection year and SINDEX version (see section 2.3.1). From Table 11, it appears that the basal area in the non-IFPA portion of the inventory is generally overestimated. However, for the deciduous stratum, the sample indicates that basal area is underestimated by about 30%. Pine leading stands in the IFPA appear to have an even larger basal area bias in the inventory, with a 50% underestimation. However, it must be noted that these results are based on a relatively small

sample size. The relationships between the ground and the inventory values for basal area and trees per hectare are illustrated in Appendix E. Appendix F provides plots of residuals for all of the stage 1 adjustments (age, height, basal area and trees per hectare).

3.2.2 Second stage VDYP7 adjustment: Volume

The adjustment factors for height, age, BA and TPH were input into the VDYP7 model which then produced an expanded output set of inventory attributes. Only one adjustment factor, that for volume net decay & waste 2 at the 12.5cm+dbh utilization level, was directly developed from the available attributes produced by VDYP7 at this stage. The ratios developed for this particular volume were applied to volumes at other utilizations[13].

Table 13 below shows the VDYP7 volume adjustment factors by strata for the population defined as VT, operable, ≥60 years of age, in "contributing" ownerships. The ground volumes used to compute the adjustment ratio of means were based on net factored volumes to which the NVAF values had been applied in the compilation. All volumes are net decay and waste2 only, at the 12.5cm+ dbh utilization level for all polygons. Scatterplots showing the volume relationship and the residuals from the adjustment are provided in Appendix G.

Table 13: Mean volumes and volume adjustment ratios, by stratum, for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", for the VDYP7 adjustment. Utilization: 12.5cm+dbh net dw2.

Stratum	*n*	*Weighted mean ground vol/ha*	*Weighted mean attribute-adjusted inventory vol/ha*	*Volume adjustment ratio of weighted means*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous IFPA area	9	260.8	234.7	1.111	± 0.114 or 10%
B	15	208.7	178.7	1.168	± 0.327 or 28%
CH	16	298.9	324.6	0.921	± 0.257 or 28%
F	29	286.1	289.2	0.989	± 0.347 or 35%
P	9	382.9	332.8	1.151	± 0.370 or 32%
S	20	343.9	280.3	1.227	± 0.228 or 19%
Non-IFPA area					
BS	17	302.7	246.6	1.227	± 0.319 or 26%
CH	27	376.8	350.2	1.076	± 0.178 or 17%
F	23	204.0	173.7	1.174	± 0.275 or 23%
P	18	238.5	232.4	1.026	± 0.226 or 22%

Note that the volumes in Table 13 are not directly comparable to the volumes in Table 6 since the utilization levels differ. VDYP7 does not produce volumes net decay, waste and breakage until after the final (i.e. second stage) volume adjustment have been applied. In addition, whereas the VDYP6 adjustment approach was to

[13] VDYP7 produces volumes at numerous utilization levels. Any adjustments input into VDYP7 must be harmonized, that is, care must be taken to ensure that the utilization relationships (e.g. volume at 12.5cm+ always less than or equal to volume at 7.5cm+) are not contorted by the adjustment ratios. As a simple approach to ensure harmonization, only one volume adjustment factor was computed and this factor was applied to all of the other volumes. This approach was approved by Sam Otukol, Forest Biometrician, MoFR.

make one volume adjustment that best approximated the utilization applied in a timber supply analysis, VDYP7 automatically produces adjusted volumes for an entire suite of utilizations.

3.2.3 Estimated volume impact for the VDYP7 statistical adjustment

The VDYP7 process does not output volume net decay, waste & breakage until after the stage two volume adjustment factors have been applied to the net decay & waste volumes. However, a special unadjusted run of VDYP7 was done to provide unadjusted volumes net decay, waste & breakage so that the estimated volume impact of the VDYP7 adjustment and its associated sampling error could be computed and more readily compared with the VDYP6 results. The estimated volume impacts of the adjustment, by stratum, are shown in Table 14.

Table 14: Estimated VDYP7 volume impact by stratum for the population of interest defined as VT, operable, ≥ 60 years of age and in a "contributing ownership", based on the Phase II samples. Utilization: 12.5cm+dbh net dwb.

Stratum	*Area (ha)*	*n*	*Weighted mean ground vol/ha*	*Weighted mean **un**adjusted inventory vol/ha*	*Volume impact (ratio)*	*Sampling error as % of ratio (based on 95% confidence interval)*
Deciduous	51,277	9	251.7	101.4	2.482	± 0.238 or 10%
IFPA area						
B	13,658	15	202.7	176.9	1.146	± 0.315 or 27%
CH	13,253	16	283.8	359.6	0.789	± 0.207 or 26%
F	52,980	29	276.1	336.8	0.820	± 0.274 or 33%
P	14,265	9	374.9	227.8	1.646	± 0.497 or 30%
S	25,384	20	335.4	350.0	0.958	± 0.181 or 19%
Non-IFPA area						
BS	260,584	17	296.3	281.6	1.052	± 0.287 or 27%
CH	56,789	27	353.9	383.7	0.922	± 0.147 or 16%
F	412,304	23	198.5	195.5	1.015	± 0.236 or 23%
P	270,331	18	233.1	255.7	0.912	± 0.194 or 21%

The volume impact estimates in Table 14 are based on the Phase II compiled volumes (which have incorporated the NVAF) and unadjusted inventory volumes produced by VDYP7. The VRI ground sample data indicates that the largest volume increase as a result of the adjustment can be expected in the deciduous stratum, followed by pine in the IFPA area.

3.2.4 Sampling error

The VPIPs for the various VRI ground sampling projects in the Kamloops TSA specified target sampling errors of between 10% and 15% (at a 95% probability level). To provide an indication of the sampling error achieved in the VDYP7 adjustment process, a comparison of the overall estimated sample ground volume and the overall estimated VDYP7 unadjusted sample inventory volume was made. The overall ratio of these values and its standard error were computed using the formula for a separate ratio estimate after a pre-stratified PPSWR sample. The results for the population of VT, operable, ≥60 years of age polygons with "contributing" ownership are summarized in Table 15 below.

Table 15: Estimated adjusted VDYP7 total volume and sampling error (for a 95% confidence interval) for the Kamloops TSA based on separate ratio estimators (for the population of VT, operable, ≥ 60 years of age polygons from "contributing" ownerships). Utilization: 12.5cm+dbh. Volumes are net decay, waste & breakage.

Volume	*n*	*Total area (ha)*	*Overall estimated total adjusted inventory volume (m^3)*	*Overall estimated total unadj'd VDYP7 inventory volume (m^3)*	*Overall adjustment impact Ratio*	*Sampling error for total adjusted volume (as % of total adjusted volume)*
Overall	*183*	*1,170,825*	*323,736,512*	*321,462,023*	*1.007*	*9.50%*

The overall impact of a VDYP7 adjustment was estimated to be 1.007 with a 9.5% sampling error (at the 95% confidence level). This sampling error was within the range of targets set in the project VPIPs.

3.2.5 Inventory file adjustment for the VDYP7 statistical adjustment

The Phase I inventory files for the population of interest (VT, operable, ≥60 years of age, "contributing ownerships") were adjusted using the factors in Tables 9 through 13. The adjustment was performed using MoFR's VDYP7 Attribute Adjustment interface for the VDYP7 model.

Appendix H shows the volume and area distribution by age class, for the population of interest, before and after the VDYP7 adjustment. The pre- and post-adjustment comparisons are based on an inventory file projected to 2001, the median year of ground sampling.

The unadjusted total VDYP7 population volume was compared with the final adjusted total VDYP7 population volume[14]. The ratio of the adjusted to unadjusted VDYP7 volume in the population was 1.03, which was reasonably close to the 1.01 volume impact ratio that was estimated from the sample and shown in Table 15.

4. DISCUSSION AND RECOMMENDATIONS

This analysis combined the ground sample data from four projects (INT1, INT2, 0111 & 0112) to compute VDYP7 adjustment factors for ten separate strata within the Kamloops TSA population of interest, defined as all polygons that were Vegetated Treed, operable, ≥ 60 years of age and from "contributing" ownerships. The overall total volume impact of this adjustment was estimated to be 1.007 ± 9.5%. When the adjustment was applied to the population, the adjustment resulted in a 3% increase in the overall total volume in the Kamloops TSA. The difference between the estimated volume impact (i.e. 1.007) and the actual volume impact (1.03) was relatively small and was likely due to slight differences in the sample versus population distribution.

There were two mapsheets in the Kamloops TSA that had undergone re-inventory and new polygon boundary delineation since the time of sample selection and ground sampling. Since the IPC and some portion of the auxiliary plots may have fallen in different polygons in the new inventory, plot locations were examined to determine which plots fell in the IPC polygon. Plots falling outside of the IPC polygon were excluded from

[14] Sum of the polygon volumes/ha times the polygon areas. The population volumes in this comparison were based on net dwb volumes at the 12.5cm+ dbh utilization.

the analysis. As a result, the number of plots and hence the compiled volume for a particular sample may have changed compared with the compiled volume in the original project analysis.

It is recommended that the general implications of polygon boundary redelineation and the loss of auxiliary plots in ground sample compilations should be further examined.

Comparison of these results with previous interim analyses of the original individual projects (i.e. INT1 & 2, 0111 and 0112) may be difficult. For example, there are a number of factors that could contribute to compiled volume differences within a stratum including:

- Polygon boundary redelineation and resulting exclusion of auxiliary plot(s) for a given sample;
- Changes to the compiler since time of original analysis (FIZ-based to BEC-based loss factors; VBAR regression);
- Application of new TSA-wide NVAF values;
- New population of interest definitions (some original samples may have been excluded due to changes in ownership etc.);
- Addition of samples from other projects, with accompanying sample weights that may differ by several orders of magnitude compared with other stratum samples (e.g. this was the case for many of the IFPA strata).

As a result, caution must be exercised in any direct comparison of this analysis with results from previous interim analyses of the original individual projects.

In some leading species strata (e.g. fir leading and pine leading), there were substantial differences in the VDYP7 volume impact of the adjustment between the IFPA and the non-IFPA areas. In the fir leading stratum, this difference (i.e. the volume impact between the IFPA and non-IFPA areas), although quite large for VDYP7, was relatively minor for VDYP6. It is difficult to pinpoint the reasons for these differences but a number of factors could be at play including:

- The IFPA area represented 11% of the fir leading area in the TSA and only 5% of the pine leading area in the TSA. It is possible that average site conditions for this stratum in the non-IFPA portion of the TSA were not mirrored in conditions for the IFPA samples.
- Although there were more samples in the fir leading stratum in the IFPA compared with the non-IFPA, the sampling error for the estimated volume impact in the IFPA was larger, indicating a higher level of variability among the IFPA samples.
- The non-IFPA fir and pine strata had the highest proportion of samples from a V-type inventory (i.e. with a complete set of VRI attributes). On the other hand, over 80% of the IFPA samples in these leading species strata were from F-type inventories (i.e. old FIP inventories) which require VDYP7 to estimate more initial values (e.g. basal area, trees per hectare, percent forest land, etc.).
- The volume response of VDYP7 to inputs such as site height, basal area, stockability, etc. is more sensitive than for VDYP6.
- The volume impact ratios in Tables 7 and 14 not only reflect potential bias in the yield models but they also reflect bias in the underlying inventory attributes such as height and basal area that are required inputs for the yield models. Also note that VDYP7 relies, in part, on a different set of input attributes (e.g. basal area) compared with VDYP6 (e.g. crown closure). Hence it is important to be aware that the overall volume bias implied by the impact ratios in Tables 7 and 14 is influenced by bias in the inventory attributes as well as bias in the yield models.

It is recommended that further analysis be undertaken to facilitate an increased understanding of the sensitivity of VDYP7 to changes in input attributes.

Remeasurement data was also collected for 44 samples in project 0111 with the objective of looking at potential impacts of Mountain Pine Beetle (MPB). The analysis of this data was complicated by the fact that some trees were fallen for NVAF between the time of original sampling and the time of the remeasurement[15]. In addition, tree status (live/dead) was only collected for the integrated plot centre (IPC) and was not collected in the auxiliary plots. Hence the analysis of the remeasured data was restricted to matched tree data[16] collected at the IPCs. Because of the restrictions on the analysis and some of the data inconsistencies that were observed[17], the results were presented graphically at a high level. However, even with the limitations of this analysis, the impact of the MPB on these samples was dramatic.

It is recommended that more specific guidelines be developed for the collection and analysis of remeasurement data to ensure that this data will have sufficient integrity for meaningful interpretation.

[15] Matt Makar, MFR, Southern Interior Region.

[16] There were several cases where a tree appeared in the IPC in either the original measurement or the remeasurement but not both. These trees were excluded from the analysis and computation of statistics.

[17] DBH and/or height decreasing from original to remeasurement; trees changing species from original to remeasurement; etc.

5. APPENDIX A: MAP OF SAMPLE LOCATIONS

The map (in pdf format) will be merged into the final pdf version of the report.

6. APPENDIX B: INVENTORY AND GROUND ATTRIBUTES USED IN THE ADJUSTMENT

								VDYP7 Inventory Attributes for "measurement year" (from "Kamloops inv proj 23AUG07.xls")																		VDYP6 Inventory attributes for "measurement year" (from "Kamloops inv proj 23AUG07.xls" and volumes from "Kamloops inv proj 01aug07.xls)													
Project ID	Project Sample Number	Sample List Map	Sample List Poly	Analysis Map	Analysis Poly	Analysis stratum	Polygon Area (ha)	Ground sample measurement year	inventory standard	sp01	sp02	sp03	sp04	sp05	sp06	pct1	pct2	pct3	pct4	pct5	pct6	Age_1 at measurement year	Height_1 at measurment year	Age_2 at measurement year	Height_2 at measurment year	BA @7.5cm+ at measurement year	TPH @7.5cm+ at measurement year	init_ba	init_tph	VOL_DWB_125 unadjusted	SPEC_CD_1	SPEC_PCT_1	SPEC_CD_2	SPEC_PCT_2	ref_yr	v6_age_prj1	v6_ht_prj1	v6_age_prj2	v6_ht_prj2	v6_cr_closure	stockingclass	v6_vol_dwb @12.5cm+ dbh
0111	0001	092I088	463	092I088	463	NI-F	43.26	2001	V	FD	PL	AT				70	20	10				125	26.52	125	19.1	41.433	373.09	41	380	273.6	FD	70	PL	20	1998	125	26.5	125	19.2	55	1	183
0111	0003	092P038	618	092P038	618	NI-P	14.56	2001	F	PL	SE	FD	BL			54	21	13	12			126	24.36			42.424	1148.4		0	326.2	PL	60	SE	20	1995	126	24.4	125	19.2	55	1	301.8
0111	0005	082M023	174	082M023	309	I-S	36.74	2001	V	SE	BL	HW	FD	CW		43	30	20	5	2		94	31.2	94	31.2	50.948	305.66	50	300	402.5	SE	43	BL	30	1997	94	31.1	94	31.5	62	0	342.9
0111	0006	092I067	163	092I067	163	NI-F	13.98	2001	V	FD						100						129	22.85			20.575	172.84	20	175	119.6	FD	100		0	1996	129	22.9	75	16.3	40	1	156.5
0111	0007	083D044	57	083D044	57	NI-P	22.63	2001	F	PL	S					89	11					86	17.94			32.844	1698.6		0	166	PL	90	S	10	1985	86	18.1			70	3	178.8
0111	0008	092P039	1192	092P039	1192	NI-P	9.5	2001	F	PL	AT	EP	FD			74	12	7	7			106	27.48			29.751	802.11		0	292.4	PL	80	AT	10	1995	106	27.6	125	19.2	70	3	322.5
0111	0009	092I038	48	092I038	48	NI-P	20.05	2001	F	PL	SE	AT				82	11	7				149	24.39			38.858	1168.4		0	322.4	PL	85	SE	10	1992	149	24.5			70	3	331.2
0111	0010	092I058	718	092I058	718	NI-F	21.78	2001	V	FD	PL					90	10					189	30.49	145	24.2	60.015	1470.5	60	1500	442	FD	90	PL	10	1996	189	30.5	145	24.3	60	1	315.7
0111	0012	082M023	530	082M023	611	I-B	23.11	2001	V	BL	SE	CW				56	40	4				80	16.34	80	18.1	22.304	246.87	20	210	102.8	BL	56	SE	40	1995	80	16.1	80	18.4	30	0	146.3
0111	0014	092P040	586	092P040	586	NI-F	9.6	2001	F	FD						100						106	23.8			31.499	819.45		0	181	FD	100		0	1995	106	23.8	125	19.2	70	0	207.8
0111	0015	092I048	31	092I048	31	NI-BS	16.39	2001	V	SE	PL	FD	AT			40	30	20	10			119	26.31	127	20.3	45.471	573.43	45	600	335.5	SE	40	PL	30	1996	119	26.3	127	20.3	55	0	193.3
0111	0016	092I093	565	092I093	565	NI-F	21.84	2001	F	FD	PY					72	28					126	18.49			14.676	411.46		0	73	FD	70	PY	30	1995	126	18.5	125	19.2	30	1	86.2
0111	0017	083D004	629	083D004	629	NI-BS	28.87	2001	F	S	BL					70	30					211	35.37			40.482	475.85		0	398.7	S	75	BL	25	1990	211	35.4			40	1	394.4
0111	0018	083D014	374	083D014	374	NI-CH	19.09	2001	F	H	CW					55	45					334	28			60.239	603.33		0	251.5	H	60	CW	40	1967	334	28			60	1	365.1
0111	0019	092I094	236	092I094	236	NI-F	43.71	2001	F	FD	PL					85	15					126	21.56			25.594	740.46		0	143.5	FD	80	PL	20	1995	126	21.6	125	19.2	50	1	165.6
0111	0020	082M034	94	082M034	94	I-P	33.55	2001	F	PL	FD					88	12					81	21.49			33.853	1304.2		0	234	PL	90	FD	10	1990	81	21.6	99	21.4	60	3	225.5
0111	0021	082M063	102	082M063	102	NI-F	15.72	2001	F	FD	PL					67	33					76	26.2			39.766	1176.2		0	306.7	FD	60	PL	40	1985	76	26.2			70	0	271.4
0111	0022	092I076	335	092I076	335	NI-F	64.26	2001	V	FD						100						85	13.29			21.023	126.13	20	120	59.7	FD	100		0	1996	85	13.3	138	20.3	25	0	32.8
0111	0023	092I055	489	092I055	489	NI-P	215.31	2001	V	PL	SE					95	5					131	20.28	110	22.7	32.35	1306.7		1800	215.2	PL	95	SE	5	1996	131	20.3	110	22.8	70	3	127.3
0111	0024	092I097	15	092I097	15	Decid	3.06	2001	F	AT	PL					88	12					78	20.28			24.756	912.6		0	111.2	AT	85	PL	15	1977	78	20.2	125	19.2	70	0	125.2
0111	0025	092I064	170	092I064	170	NI-P	42.59	2001	V	PL	FD	AT	SE			45	25	25	5			74	13.21	70	13.6	14.435	1169.1	0	550	33.5	PL	45	FD	25	1996	74	13.3	70	13.6	60	0	64.7
0111	0026	082M042	327	082M042	327	NI-BS	302.68	2001	F	B	S					63	37					234	25.79			36.79	828.15		381	248.7	B	60	S	40	1967	234	26.1	99	21.4	50	1	268.3
0111	0027	082M045	418	082M045	418	NI-BS	29.21	2001	F	S	FD	AT	PL			51	31	10	8			85	18.47			23.252	1127.9		0	112.9	S	50	FD	30	1986	85	18.4	99	21.4	40	0	147.7
0111	0028	092I087	840	092I087	840	NI-P	17.39	2001	V	PY	FD					60	40					86	17.06	86	17.1	20.572	105	20	110	103.3	PY	60	FD	40	1998	86	17	86	16.9	40	0	75.2
0111	0030	082M061	528	082M061	528	NI-BS	47.45	2001	F	S	B	PL				60	31	9				119	29.96			44.973	960.16		804	387.3	S	60	B	30	1967	119	29.9	99	21.4	70	0	346.8
0111	0032	092I070	248	092I070	248	NI-P	87.3	2001	V	PY	FD					95	5					129	24.09	103	15.7	12.464	90.61	12	100	101	PY	95	FD	5	1996	129	24.1	103	15.5	35	1	62
0111	0033	082M023	1603	082M023	559	I-CH	10.01	2001	V	CW	HW	EP				80	15	5				140	25.52	94	21.6	57.698	1436	56	1467	261.8	CW	80	HW	15	1997	140	25.4	94	21.7	65	1	270
0111	0034	082L071	516	082L071	516	NI-F	30.84	2001	V	FD	EP	PL				50	40	10				76	17.04	69	14.6	11.612	854.17	10	800	35.8	FD	50	EP	40	1996	76	17	69	14.7	70	0	55.5
0111	0035	082M041	687	082M041	687	NI-CH	58.48	2001	F	CW	FD					84	16					309	30.53			78.552	501.53		0	388.2	CW	80	FD	20	1992	309	30.3	99	21.4	30	1	391.6
0111	0036	082M013	533	082M013	2095	NI-BS	16.03	2001	F	S	B					76	24					236	34.5			39.971	466		0	389.1	S	80	B	20	1990	236	34.5	33	12	40	1	386.1
0111	0037	092I076	380	092I076	380	NI-F	23.11	2001	V	FD						100						129	22.85			60.221	301.11	60	300	314.5	FD	100		0	1996	129	22.9	138	20.3	50	1	169.1
0111	0038	082L071	520	082L071	520	NI-F	30.86	2001	V	FD	EP	AT	PY			65	20	10	5			149	25.69	69	15.1	15.348	184.37	15	185	90.8	FD	65	EP	20	1996	149	25.7	69	15.2	50	1	40.1
0111	0041	082M054	162	082M054	162	NI-F	30.58	2001	F	FD	EP	PW				62	22	16				103	27.41			33.127	845.81		0	252.7	FD	60	EP	20	1968	103	27.4	99	21.4	60	0	219.7
0111	0042	092I090	508	092I090	508	NI-P	33.23	2001	F	PL						100						111	28.4			44.371	1035.8		0	484.2	PL	100		0	1960	111	28.9	125	19.2	70	3	429.2
0111	0043	083D003	655	083D003	655	NI-BS	33.61	2001	F	B	S					84	16					194	26.31			36.256	764.19		0	230.5	B	82	S	18	1967	194	26.8			40	1	281.7
0111	0044	092I072	1070	092I072	1070	NI-BS	18.2	2001	V	SE	BL	PL				70	20	10				209	26.54	138	20.3	49.915	225.29	50	225	331.3	SE	70	BL	20	1998	209	26.6	138	20.3	50	1	187.3
0111	0047	092P030	789	092P030	789	NI-F	59.2	2001	F	FD	AT	EP				60	29	11				116	23.68			18.028	437.22		0	98.9	FD	60	AT	30	1995	116	23.7	125	19.2	20	0	112.7
0111	0048	082M023	34	082M023	170	I-F	20.92	2001	V	FD	CW	PL	SE			48	30	20	2			148	37.43	133	23.5	63.841	1158.2	63	1200	566.8	FD	48	CW	30	1997	148	37.4	133	23.4	65	1	277.4
0111	0052	082M044	586	082M044	586	I-B	30.42	2004	F	BL	S					63	37					148	17.65			19.498	685.04		5442	93.7	BL	60	S	40	1989	148	17.4	99	21.4	20	2	70.1
0111	0053	092I068	252	092I068	252	NI-F	24.88	2001	V	FD						100						129	16.66			5.6477	268.98	5	250	21.5	FD	100		0	1996	129	16.7	112	19.7	40	1	80.3
0111	0055	092I098	10	092I088	10	NI-P	28.54	2005	V	PL	SE	BL				75	20	5				129	22.69	120	21.9	45.292	728.69	45	750	329	PL	75	SE	20	1998	129	22.8	120	22	60	1	333.9
0111	0058	083D044	56	083D044	56	NI-BS	59.09	2004	F	S	PL	B				73	16	11				97	30.53			48.899	1078.4		0	448.4	S	70	PL	20	1967	97	30.4			70	0	410.8
0111	0060	092P039	307	092P039	307	NI-BS	12.17	2004	F	SE	BL	PL				71	16	13				119	25.29			40.703	1022.6		0	301.4	SE	70	PL	15	1995	119	25.3	125	19.2	55	0	300.2
0111	0061	082M073	692	082M073	692	NI-P	25.82	2004	F	PL	BL	SE	PW	CW		46	32	16	3	3		97	23.15			42.569	1320.9		0	290.6	PL	50	BL	30	1967	97	23.6			60	1	278.7
0111	0062	083D054	396	083D054	396	NI-BS	33.19	2004	F	BL	HW	CW	S			69	12	11	8			65	14.18			19.121	1058.1		4600	56.2	BL	70	CW	10	1994	65	14.1			20	0	120
0111	0063	082M083	345	082M083	345	NI-BS	43.68	2004	F	BL	SE					52	48					299	30.45			35.299	482.66		0	329.3	SE	50	BL	50	1985	299	30.8			30	1	277.5
0111	0064	082M073	355	082M073	355	NI-BS	23.75	2004	F	SE	BL	PL				58	33	9				199	25.09			34.023	820.27		0	224.3	SE	60	BL	30	1985	199	25.6			50	1	259.8
0111	0065	092I056	320	092I056	320	NI-P	78.75	2001	V	PL	FD	AT	SE			50	40	5	5			109	17.77	100	16.7	5.5932	528.44	5	500	17.5	PL	50	FD	40	1996	109	17.8	100	16.5	30	1	103.8
0111	0066	082M045	227	082M045	227	I-F	179.5	2004	F	FD	PL	HW	PW			53	25	13	9			118	29.55			46.618	1086.2		0	398.9	FD	50	PL	30	1986	118	29.5	99	21.4	70	0	343
0111	0067	092P058	1264	092P058	1264	NI-P	10.92	2004	F	PL	SE	BL				77	17	6				115	28.25			43.96	927.97		0	418.5	PL	80	SE	15	1973	115	28.6	125	19.2	60	1	382.1
0111	0068	082M054	319	082M054	319	NI-F	84.74	2004	F	FD	PW	EP	PL			42	25	24	9			96	33.62			37.277	738.26		0	385.4	FD	40	PW	30	1968	96	33.5	99	21.4	60	0	353.1
0111	0070	092P049	837	092P049	837	NI-F	19.67	2004	F	FD	CW	SE				67	24	9				149	26.74			42.033	840.53		0	261.7	FD	70	CW	20	1995	149	26.7	125	19.2	35	1	271
0111	0071	092I067	371	092I067	371	NI-F	45.23	2004	V	FD	PL	SE				85	10	5				141	23.66	112	19.5	30.895	393.32	30	400	191.1	FD	85	PL	10	1996	141	23.7	112	19.7	60	1	207.3
0111	0072	092I089	279	092I089	279	NI-BS	16.4	2004	F	FD	SE	BL				37	36	27				129	26.11			35.302	906.18		0	258.8	SE	40	FD	35	1995	129	26.2	125	19.2	50	1	289.5
0111	0073	092I070	273	092I070	273	NI-P	52.12	2001	V	PY	FD					85	15					140	21.59	90	14.7	17.196	181.85	17	200	109.9	PY	85	FD	15	1996	140	21.4	90	14.6	30	1	49
0111	0074	082M072	357	082M072	357	NI-BS	149.57	2004	F	B	S					83	17					177	18.38			34.121	1285.6		0	135.4	B	80	S	20	1967	177	17.6			60	1	171.1
0111	0075	092I083	594	092I083	548	NI-F	48.41	2004	V													68	6.8	68		0	0	2	400		FD	100		0	1996	68	6.8	138	20.3	20	0	0
0111	0076	082M073	208	082M073	208	NI-CH	3.1	2004	F	HW	CW	BL				83	10	7				237	33.92			43.717	358.57		0	261.3	HW	85	CW	8	1967	237	33.9			20	1	498.2
0111	0077	083D015	335	083D015	335	NI-CH	23.79	2004	F	CW	H	B	S			64	19	9	8			164	31.55			66.512	673.87		0	424.1	CW	60	H	20	1990	164	31.1			50	1	382.8

		Compiled ground sample data from "NVAF ground attribute 27JUL07.xls" (all available aux plots including "EXTRA"'s)																Height and Age Case Matching																	
Project ID	Project Sample Number	NO_PLOT	SPB_CPCT @4cm+dbh	BA_HA @4cm+dbh	STEMS_HA @4cm+dbh	QMD @4cm+dbh	SPB_CPCT @7.5cm+dbh	BA_HA @7.5cm+dbh	STEMS_HA @7.5cm+dbh	QMD @7.5cm+dbh	SPB_CPCT @12.5cm+dbh	BA_HA @12.5cm+dbh	STEMS_HA @12.5cm+dbh	QMD @12.5cm+dbh	NVL_NW2 @12.5cm+dbh	NVL_NWB @12.5cm+dbh	Grd lead @ 4cm+dbh	AGE_TLS	HT_TLS	N_AG_TLS	N_HT_TLS	inventory standard	V7 lead SP01	V7 sp02	V7 case	V7 meas_age for match	V7 meas_ht match	V6 lead	V6 SPEC_CD_2	V6 case	V6 meas_age for match	V6 meas_ht for match
0111	0001	4	Fd 100	20.25	368	26.5	Fd 100	20.25	368	26.5	Fd 100	18	118	44.0	133.287	130.359	FD	197.3	22.15	3	2	V	FD	PL	1	125	26.52	FD	PL	1	125	26.5
0111	0003	5	Pl 70 Bl 26 Sx 04	37.8	1600	17.3	Pl 73 Bl 23	36.4	940	22.2	Pl 76 Bl 20	35	759	24.2	313.743	307.427	PLI	123.3	24.93	4	4	F	PL	SE	1	126	24.36	PL	SE	1	126	24.4
0111	0005	**2**	Fd 58 S 25 Bl 17	54	675	31.9	Fd 58 S 25	54	675	31.9	Fd 58 S 25	54	675	31.9	455.945	446.400	FD	.	.	0	0	V	SE	BL	3	94	31.2	SE	BL	3	94	31.1
0111	0006	5	Fd 100	25.2	331	31.1	Fd 100	25.2	331	31.1	Fd 100	25.2	331	31.1	160.925	157.300	FD	167.2	16.22	5	5	V	FD		1	129	22.85	FD		1	129	22.9
0111	0007	5	Hw 36 Cw 26 Pl 23 Fd 10 Sx 05	70.2	2323	19.6	Hw 36 Cw	70.2	2323	19.6	Hw 39 Cw	64.8	1637	22.4	431.633	415.016	HW	147.7	24.30	3	2	F	PL	S	3	86	17.94	PL	S	3	86	18.1
0111	0008	4	At 67 Ep 33	7.5	150	25.2	At 67 Ep 33	7.5	150	25.2	At 67 Ep 33	7.5	150	25.2	61.415	58.946	AT	85.3	24.20	2	2	F	PL	AT	5			PL	AT	5	.	.
0111	0009	5	Pl 91 Bl 09	39.6	1581	17.9	Pl 91 Bl 09	39.6	1581	17.9	Pl 95 Bl 05	36	961	21.8	348.267	341.265	PL	101.5	21.55	4	4	F	PL	SE	1	149	24.39	PL	SE	1	149	24.5
0111	0010	5	Fd 46 Sx 46 Pl 04 At 04	43.2	361	39.0	Fd 46 Sx 46	43.2	361	39.0	Fd 46 Sx 46	43.2	361	39.0	399.014	390.309	FD	144.9	30.97	3	3	V	FD	PL	1	189	30.49	FD	PL	1	189	30.5
0111	0012	4	Bl 52 Cw 24 Sx 24	31.25	2494	12.6	Bl 57 Cw 2	28.75	1113	18.1	Bl 52 Cw 2	26.25	906	19.2	143.495	138.681	BL	139.0	17.58	4	4	V	BL	SE	1	80	16.34	BL	SE	1	80	16.1
0111	0014	5	Fd 88 Pl 08 Ep 04	56	2686	16.3	Fd 90 Pl 08	54.6	2342	17.2	Fd 89 Pl 08	50.4	1610	20.0	268.709	262.743	FDI	118.9	21.76	5	5	F	FD		1	106	23.8	FD		1	106	23.8
0111	0015	5	Sx 44 Pl 33 Fd 11 At 12	32.4	552	27.3	Sx 44 Pl 33	32.4	552	27.3	Sx 44 Pl 33	32.4	552	27.3	294.355	287.873	SX	108.3	24.95	5	4	V	SE	PL	1	119	26.31	SE	PL	1	119	26.3
0111	0016	5	Py 58 Fd 42	12	125	35.0	Py 58 Fd 42	12	125	35.0	Py 58 Fd 4	12	125	35.0	69.838	68.338	PY	184.7	16.20	3	2	F	FD	PY	2.5	126	18.49	FD	PY	2.5	126	18.5
0111	0017	5	S 84 Bl 16	25	96	57.7	S 84 Bl 16	25	96	57.7	S 84 Bl 16	25	96	57.7	335.450	328.691	S	156.0	32.47	3	3	F	S	BL	1	211	35.37	S	BL	1	211	35.4
0111	0018	4	Hw 53 Cw 38 Fd 09	72	1109	28.7	Hw 53 Cw	72	1109	28.7	Hw 57 Cw	67.5	525	40.5	450.200	425.098	HW	171.5	30.40	2	2	F	H	CW	1	334	28	H	CW	1	334	28
0111	0019	3	Fd 86 Pl 14	11.6667	329	21.2	Fd 86 Pl 14	11.6667	329	21.2	Fd 100	10	67	43.6	100.635	98.486	FDI	.	14.00	0	1	F	FD	PL	1	126	21.56	FD	PL	1	126	21.6
0111	0020	5	Pl 76 Fd 16 Sx 08	66.6	2621	18.0	Pl 78 Fd 17	64.8	2125	19.7	Pl 78 Fd 17	64.8	2125	19.7	522.645	512.075	PLI	69.1	20.60	5	5	F	PL	FD	1	81	21.49	PL	FD	1	81	21.6
0111	0021	5	Fd 28 Ep 24 Cw 24 Hw 12 Sx 08 Pl 04	35	860	22.8	Fd 28 Ep 2	35	860	22.8	Fd 28 Ep 2	35	860	22.8	238.711	230.299	FDI	69.5	27.33	3	3	F	FD	PL	1	76	26.2	FD	PL	1	76	26.2
0111	0022	5	Fd 100	12	626	15.6	Fd 100	11	381	19.2	Fd 100	10	233	23.4	52.924	51.772	FDI	115.4	16.75	2	2	V	FD		1	85	13.29	FD		1	85	13.3
0111	0023	5	Pl 63 Fd 37	16	435	21.6	Pl 63 Fd 37	16	435	21.6	Pl 63 Fd 37	16	435	21.6	127.845	125.119	PL	126.6	17.30	3	3	V	PL	SE	1	131	20.28	PL	SE	1	131	20.3
0111	0024	**2**	At 100	28	169	45.9	At 100	28	169	45.9	At 100	28	169	45.9	314.233	301.539	AT	61.8	28.90	1	1	F	AT	PL	1	78	20.28	AT	PL	1	78	20.2
0111	0025	4	Fd 62 Pl 38	22.75	612	21.8	Fd 62 Pl 38	22.75	612	21.8	Fd 62 Pl 38	22.75	612	21.8	155.558	152.361	FDI	80.5	20.83	3	3	V	PL	FD	2	70	13.6	PL	FD	2	70	13.6
0111	0026	5	Bl 69 Sx 31	46.8	499	34.5	Bl 69 Sx 31	46.8	499	34.5	Bl 69 Sx 31	46.8	499	34.5	474.140	464.519	BL	173.9	23.63	5	4	F	B	S	1	234	25.79	B	S	1	234	26.1
0111	0027	5	Fd 37 S 30 Pl 19 At 11 P 03	27	1332	16.1	Fd 37 S 30	27	1332	16.1	S 35 Fd 26	23	648	21.3	158.199	154.634	FD	69.2	27.00	1	1	F	S	FD	2.5	85	18.47	S	FD	2.5	85	18.4
0111	0028	5	Fd 80 Py 20	10	624	14.3	Fd 78 Py 2	9	270	20.6	Fd 75 Py 2	8	186	23.4	48.140	47.117	FDI	75.3	12.95	4	4	V	PY	FD	2	86	17.1	PY	FD	2	86	16.9
0111	0030	5	S 41 Bl 29 Pl 18 Fd 12	47.6	2387	15.9	S 44 Bl 25	44.8	1209	21.7	S 48 Pl 21	40.6	729	26.6	346.819	339.588	S	135.9	23.74	5	5	F	S	B	1	119	29.96	S	B	1	119	29.9
0111	0032	5	Py 100	17	867	15.8	Py 100	16	628	18.0	Py 100	14	265	25.9	77.820	76.263	PY	100.6	17.50	4	4	V	PY	FD	1	129	24.09	PY	FD	1	129	24.1
0111	0033	5	Hw 48 Cw 35 Ep 10 Pw 07	55.8	2055	18.6	Hw 47 Cw	54	1397	22.2	Hw 43 Cw	50.4	955	25.9	309.371	293.038	HW	140.3	26.24	5	5	V	CW	HW	2	94	21.6	CW	HW	2	94	21.7
0111	0034	5	Fd 68 Pl 18 Ep 09 Sx 05	30.8	872	21.2	Fd 68 Pl 18	30.8	872	21.2	Fd 70 Pl 20	28	409	29.5	214.227	209.418	FD	80.1	22.68	4	4	V	FD	EP	1	76	17.04	FD	EP	1	76	17
0111	0035	3	Hw 40 Cw 27 Fd 13 Ep 13 P 07	35	3661	11.0	Cw 33 Hw	28	687	22.8	Cw 27 Hw	25.667	357	30.2	167.287	160.271	HW	67.1	10.50	2	1	F	CW	FD	3	309	30.53	CW	FD	3	309	30.3
0111	0036	5	Bl 48 Sx 48 Hw 04	50.4	1306	22.2	Bl 48 Sx 48	50.4	1306	22.2	Sx 56 Bl 44	43.2	493	33.4	441.515	432.324	SX	309.0	35.43	3	3	F	S	B	1	236	34.5	S	B	1	236	34.5
0111	0037	3	Fd 100	9.33333	293	20.1	Fd 100	9.33333	293	20.1	Fd 100	9.3333	293	20.1	45.571	44.590	FDI	104.7	15.20	3	3	V	FD		1	129	22.85	FD		1	129	22.9
0111	0038	3	Fd 83 Cw 08 Ep 09	20	962	16.3	Fd 82 Cw 0	18.3333	372	25.0	Fd 80 Cw 1	16.667	217	31.2	121.699	118.883	FD	80.8	17.85	2	2	V	FD	EP	1	149	25.69	FD	EP	1	149	25.7
0111	0041	4	Cw 73 Fd 13 Ep 07 Hw 03 S 04	52.5	1055	25.2	Cw 73 Fd 1	52.5	1055	25.2	Cw 73 Fd 1	52.5	1055	25.2	305.331	288.294	CW	84.6	26.80	4	4	F	FD	EP	3	103	27.41	FD	EP	3	103	27.4
0111	0042	**2**	Pl 100	45.5	1846	17.7	Pl 100	45.5	1846	17.7	Pl 100	38.5	1147	20.7	425.116	416.567	PL	105.7	20.45	2	2	F	PL		1	111	28.4	PL		1	111	28.9
0111	0043	4	Bl 69 Sx 31	28	754	21.7	Bl 69 Sx 31	28	754	21.7	Bl 67 Sx 33	26.25	453	27.2	192.202	188.333	BL	147.2	15.23	4	3	F	B	S	1	194	26.31	B	S	1	194	26.8
0111	0044	5	Se 83 Bl 17	43.2	446	35.1	Se 83 Bl 17	43.2	446	35.1	Se 83 Bl 17	43.2	446	35.1	470.025	460.526	SE	167.5	30.20	3	3	V	SE	BL	1	209	26.54	SE	BL	1	209	26.6
0111	0047	5	At 60 Ep 24 Fd 12 Ac 04	25	542	24.2	At 60 Ep 24	25	542	24.2	At 58 Ep 23	24	455	25.9	212.113	204.042	AT	89.6	21.07	4	3	F	FD	AT	5			FD	AT	5	.	.
0111	0048	5	Fd 46 Cw 43 Ep 04 Pl 04 S 03	50.4	2113	17.4	Fd 48 Cw 4	48.6	1382	21.2	Fd 50 Cw 3	46.8	1049	23.8	330.295	317.500	FD	144.1	30.90	4	4	V	FD	CW	1	148	37.43	FD	CW	1	148	37.4
0111	0052	5	Bl 81 Se 19	31.372	2043	14.0	Bl 80 Se 20	30.36	1780	14.7	Bl 79 Se 21	24.288	806	19.6	150.048	147.014	BL	106.6	15.43	5	4	F	BL	S	1	148	17.65	BL	S	1	148	17.4
0111	0053	5	Fd 100	1.012	42	17.5	Fd 100	1.012	42	17.5	Fd 100	1.012	42	17.5	2.504	2.454	FDI	.	.	0	0	V	FD		1	129	16.66	FD		1	129	16.7
0111	0055	5	Pl 81 Bl 19	32.5	712		Pl 81 Bl 19	32.5	712		Pl 81 Bl 19	32.5	712		292.846	286.952	PL	129.9	26.37	3	3	F	PL	SE	1	129	22.69	PL	SE	1	129	22.8
0111	0058	5	Fd 45 Sw 23 Cw 18 Pl 14	53.9	1411	22.1	Fd 45 Sw 2	53.9	1411	22.1	Fd 48 Sw 2	51.45	989	25.7	398.806	389.059	FD	91.4	27.35	3	2	F	S	PL	3	97	30.53	S	PL	3	97	30.4
0111	0060	3	Se 40 Bl 30 Pl 30	40.8333	2644	14.0	Se 44 Pl 33	36.75	291	40.1	Se 44 Pl 33	36.75	291	40.1	329.371	322.707	SE	123.5	31.40	1	1	F	SE	BL	1	119	25.29	SE	PL	1	119	25.3
0111	0061	5	Pl 53 Bl 32 Sx 12 Hw 03	42.5	2643	14.3	Pl 56 Bl 28	40	1954	16.1	Pl 69 Bl 19	32.5	965	20.7	261.358	256.011	PL	84.8	24.80	1	1	F	PL	BL	1	97	23.15	PL	BL	1	97	23.6
0111	0062	4	Bl 83 Cw 07 Se 07 Fd 03	29.4707	3002	11.2	Bl 84 Cw 0	26.1622	1701	14.0	Bl 87 Cw 0	20.736	851	17.6	105.489	103.282	BL	87.5	16.43	2	4	F	BL	HW	1	65	14.18	BL	CW	1	65	14.1
0111	0063	4	Bl 64 Se 36	17.5	1300	13.1	Bl 58 Se 42	15	510	19.3	Bl 55 Se 45	13.75	357	22.1	100.982	98.944	BL	222.2	20.00	1	1	F	BL	SE	1	299	30.45	SE	BL	2.5	299	30.8
0111	0064	5	Bl 62 Se 27 Cw 11	32.5	1114	19.3	Bl 60 Se 28	31.25	770	22.7	Bl 63 Se 29	30	628	24.7	246.759	241.195	BL	117.4	25.22	5	5	F	SE	BL	2.5	199	25.09	SE	BL	2.5	199	25.6
0111	0065	5	Fd 40 Pl 30 Se 25 At 05	25	1209	16.2	Fd 40 Pl 30	25	1209	16.2	Fd 50 Se 3	20	710	18.9	121.760	119.243	FDI	118.2	16.83	4	4	V	PL	FD	2	100	16.7	PL	FD	2	100	16.5
0111	0066	5	Hw 63 Cw 17 Fd 13 Se 07	58.8	4145	13.4	Hw 59 Cw	53.9	2139	17.9	Hw 53 Cw	46.55	728	28.5	301.219	287.266	HW	131.4	25.58	4	4	F	FD	PL	3	118	29.55	FD	PL	3	118	29.5
0111	0067	5	Se 67 Pl 19 Bl 14	48.6	1233	22.4	Se 67 Pl 19	48.6	1233	22.4	Se 65 Pl 19	46.8	892	25.8	418.267	409.861	SE	121.6	29.97	3	3	F	PL	SE	2.5	115	28.25	PL	SE	2.5	115	28.6
0111	0068	5	Cw 27 Fd 27 Hw 20 Ep 13 Pw 13	54	3080	14.9	Fd 29 Cw 2	50.4	1351	21.8	Fd 32 Cw 2	45	831	26.3	303.045	292.900	FDI	78.5	25.35	2	2	F	FD	PW	1	96	33.62	FD	PW	1	96	33.5
0111	0070	4	Fd 93 Ep 07	23.4375	2927	10.1	Fd 100	18.75	190	35.5	Fd 100	18.75	190	35.5	121.581	118.825	FDI	284.8	22.45	2	2	F	FD	CW	1	149	26.74	FD	CW	1	149	26.7
0111	0071	5	Fd 100	36.75	793	24.3	Fd 100	36.75	793	24.3	Fd 100	34.3	475	30.3	232.260	227.093	FD	222.2	21.18	5	5	V	FD	PL	1	141	23.66	FD	PL	1	141	23.7
0111	0072	3	Fd 50 S 50	30	450	29.1	Fd 50 S 50	30	450	29.1	Fd 50 S 50	30	450	29.1	224.160	219.575	FD	63.9	22.00	2	2	F	FD	SE	1	129	26.11	SE	FD	2.5	129	26.2
0111	0073	5	Py 100	16	354	24.0	Py 100	16	354	24.0	Py 100	16	354	24.0	91.288	89.462	PY	66.8	17.98	4	4	V	PY	FD	1	140	21.59	PY	FD	1	140	21.4
0111	0074	4	Bl 88 Se 12	50	1492	20.7	Bl 88 Se 12	50	1492	20.7	Bl 86 Se 14	45.313	995	24.1	329.792	323.133	BL	118.6	18.55	4	4	F	B	S	1	177	18.38	B	S	1	177	17.6
0111	0075	5	Fd 85 At 15	0.77449	310	5.6	Fd 86 At 14	0.15886	30	8.2		0	0	0.0	0.000	0.000	FD	13.4	3.42	5	5	V	fd?		1	68	6.8	FD		1	68	6.8
0111	0076	4	Hw 53 Cw 41 Bl 06	68	2185	19.9	Hw 53 Cw	68	2185	19.9	Cw 47 Hw	60	995	27.7	347.085	326.383	HW	.	.	0	0	F	HW	CW	1	237	33.92	HW	CW	1	237	33.9
0111	0077	4	Cw 85 Se 10 Bl 05	80	270	61.4	Cw 85 Se 1	80	270	61.4	Cw 85 Se 1	80	270	61.4	574.074	536.998	CW	172.6	26.50	1	1	F	CW	H	1	164	31.55	CW	H	1	164	31.1

								VDYP7 Inventory Attributes for "measurement year" (from "Kamloops inv proj 23AUG07.xls")																						VDYP6 Inventory attributes for "measurement year" (from "Kamloops inv proj 23AUG07.xls" and volumes from "Kamloops inv proj 01aug07.xls)										
Project ID	Project Sample Number	Sample List Map	Sample List Poly	Analysis Map	Analysis Poly	Analysis stratum	Polygon Area (ha)	Ground sample measurement year	inventory standard	sp01	sp02	sp03	sp04	sp05	sp06	pct1	pct2	pct3	pct4	pct5	pct6	Age_1 at measurement year	Height_1 at measurment year	Age_2 at measurement year	Height_2 at measurment year	BA @7.5cm+ at measurement year	TPH @7.5cm+ at measurement year	init_ba	init_tph	VOL_DWB_125 unadjusted	SPEC_CD_1	SPEC_PCT_1	SPEC_CD_2	SPEC_PCT_2	ref_yr	v6_age_prj1	v6_ht_prj1	v6_age_prj2	v6_ht_prj2	v6_cr_closure	stockingclass	v6_vol_dwb @12.5cm+ dbh
0111	0079	092P039	289	092P039	289	NI-BS	5.66	2004	F	SE	BL					64	36					279	36.23			41.76	501.05		0	402.5	SE	70	BL	30	1995	279	36.3	125	19.2	60	1	433.9
0111	0081	092P049	161	092P049	161	NI-F	12.49	2004	F	FD	SE	EP	PL			81	9	6	4			129	30.06			41.247	721.88		0	343.8	FD	80	SE	10	1995	129	30.1	125	19.2	65	1	310.5
0111	0082	092P010	770	092P010	770	NI-F	6.16	2004	F	FD	SE	PL	BL	AT		52	20	17	6	5		123	35.31			33.727	477.43		0	347.9	FD	50	PL	20	1995	123	35.3	125	19.2	45	1	346.9
0111	0084	082L082	151	082L082	151	I-F	18.03	2005	F	FD	EP	AT				49	31	20				85	26.24			24.797	721.4		0	157.8	FD	50	EP	30	1990	85	26.3	69	15.2	50	0	156.3
0111	0085	082M073	441	082M073	441	Decid	29.98	2004	F	AT	PW	PL	SE			54	29	12	5			87	17.53			18.692	706.8		0	80.2	AT	50	PW	30	1967	87	17.2			40	2	50.3
0111	0087	092I055	774	092I055	774	NI-P	11.44	2004	V	PL	SE	FD				80	15	5				148	22.45	138	24.9	35.104	1339.5	35	1400	266.2	PL	80	SE	15	1996	148	22.5	138	25	45	1	263.2
0111	0088	092I095	606	092I095	606	NI-F	17.12	2004	F	FD	PL	SE				57	38	5				189	26.5			32.824	688.14		0	255.5	FD	50	PL	45	1995	189	26.5	125	19.2	55	1	275.9
0111	0089	092I057	519	092I057	519	NI-P	34.92	2004	V	PL	SE					85	15					132	22.75	128	24.9	50.368	1848.1	50	1950	395.6	PL	85	SE	15	1996	132	22.8	128	25.1	70	3	151.6
0111	0091	092I050	603	092I050	603	NI-F	13.39	2004	V	FD	SE	PL	AT			80	10	5	5			142	27.13	142	26.8	8.9144	132.7	8	125	68.7	FD	80	SE	10	1996	142	27.1	142	26.9	30	1	271.1
0111	0093	092I049	179	092I049	179	NI-F	12.21	2004	V	FD						100						126	23.6			40.845	725.91	40	750	227.9	FD	100		0	1998	126	23.6	127	20.3	60	1	192.7
0111	0096	082M012	84	082M012	255	I-CH	63.58	2004	V	CW	FD	EP	SE	AT		45	35	10	5	5		102	23.32	97	29	59.467	663.05	56	700	407.9	CW	45	FD	35	1997	102	23	97	29.3	60	0	308.8
0111	0099	092I094	388	092I094	388	NI-P	56.41	2004	F	PL	FD					74	26					128	24.47			39.933	1170.8		0	337.1	PL	80	FD	20	1996	128	24.5	125	19.2	60	1	302.5
0111	0100	092P090	430	092P090	430	NI-P	4.4	2004	F	SE	PL	BL				43	34	23				133	26.72			46.937	1046.6		0	393.9	PL	40	SE	40	1991	133	26.8	125	19.2	60	1	345.4
0111	0101	082M073	256	082M073	256	NI-BS	46.21	2004	F	BL	SE					83	17					199	21.36			33.316	956.07		0	165.9	BL	80	SE	20	1985	199	21.3			45	1	211.8
0112	0502	083D025	260	083D025	260	NI-CH	48.6	2003	F	H	CW					66	34					203	31.42			59.548	603.89		0	342.9	H	70	CW	30	1990	203	31.4			60	1	419
0112	0504	092P070	273	092P070	273	NI-CH	41.8	2003	F	HW	CW	FD	BL	SE		50	33	9	4	4		158	23.72			49.55	1020.2		0	256.8	HW	50	CW	30	1996	158	23.7	125	19.2	65	1	287
0112	0505	082M093	282	082M093	282	NI-CH	33.87	2003	F	CW	B	S	H			58	16	15	11			331	23.13			53.861	1033.3		643	253.8	CW	50	S	20	1967	331	21.8			65	1	266.5
0112	0506	083D003	142	083D003	142	NI-CH	41.19	2003	F	H	CW					67	33					203	26.09			54.212	812.05		0	254.2	H	70	CW	30	1990	203	26.1			70	1	345.6
0112	0508	082M012	143	082M012	124	I-B	44.96	2003	V	BL	SE	CW	FD	HW	AT	40	30	15	10	3	2	156	25.49	156	27.5	43.6	1243	43	1280	302.1	BL	40	SE	30	1997	156	25.6	156	27.6	65	1	284.8
0112	0511	082M095	187	082M095	187	NI-CH	31.99	2003	F	CW	S					85	15					296	32.24			89.632	642.56		0	447.6	CW	80	S	20	1967	296	31.3			60	1	420.4
0112	0512	082M043	527	082M043	527	I-CH	17.69	2003	F	HW	CW	S	BL			39	35	16	10			313	30.35			65.209	706		0	405.8	HW	40	CW	30	1990	313	30.4	99	21.4	60	1	400.3
0112	0514	083D024	263	083D024	503	NI-CH	83.51	2003	F	CW	H					63	37					273	33.79			77.744	498.91		0	399.1	CW	60	H	40	1990	273	33.6			60	1	470.2
0112	0515	082M012	309	082M012	516	I-CH	35.89	2003	V	CW	EP	PL	FD	AT		55	25	10	5	5		131	21.83	96	19.5	25.215	809.14		750	147.3	CW	55	EP	25	1997	131	21.5	96	19.6	40	1	113
0112	0516	082M076	20	082M076	20	NI-CH	12.35	2003	F	HW	S					92	8					136	25.5			45.4	972.38		0	259.8	HW	90	S	10	1967	136	25.6			60	1	340.9
0112	0517	083D014	66	083D014	66	NI-CH	296.43	2003	F	H	FD	CW				69	18	13				286	37			64.849	537.25		0	479.2	H	70	FD	20	1967	286	37			60	1	508.2
0112	0518	083D053	247	083D053	247	NI-CH	105.81	2003	F	H	FD	SE				64	28	8				256	28.59			54.382	939.51		0	358.8	H	60	FD	30	1967	256	28.6			70	1	396
0112	0519	082M061	361	082M061	361	NI-CH	34.48	2003	F	CW	S	FD				58	24	18				278	33.1			77.259	775.11		0	615.3	CW	50	S	30	1985	278	32.7	99	21.4	60	1	451.1
0112	0520	082M095	141	082M095	141	NI-CH	156.81	2003	F	HW	CW	FD				48	34	18				296	34.02			71.349	650.29		0	462.9	HW	50	CW	30	1967	296	34			70	1	455.2
0112	0523	082L092	676	082L092	676	I-CH	76.51	2003	F	CW	FD	S				68	24	8				213	31.09			77.412	878.42		0	534	CW	60	FD	30	1990	213	30.6	69	15.2	60	1	430.6
0112	0524	082M073	702	082M073	702	NI-CH	24.68	2003	F	HW	BL	CW	FD			47	26	17	10			123	26.65			41.656	825.77		0	280.2	HW	45	BL	30	1967	123	26.7			40	1	366.3
0112	0526	092P088	675	092P088	675	NI-CH	17.74	2003	F	CW	AT	FD	EP	SE		41	21	18	11	9		122	31.89			44.113	775.06		0	375.7	CW	35	AT	25	1991	122	31.7	125	19.2	70	1	343.8
0112	0527	083D045	196	083D045	196	NI-CH	29.39	2003	F	CW	H	S				78	14	8				286	41.64			110.21	472.4		0	669.3	CW	75	H	15	1967	286	41.9			70	1	624.1
0112	0530	083D004	567	083D004	567	NI-CH	90.31	2003	F	H	FD	PW				66	19	15				236	31.69			55.293	819.67		0	422	H	60	PW	20	1967	236	31.7			70	1	437.6
0112	0533	083D053	168	083D053	168	NI-CH	71.35	2003	F	H	CW					54	46					413	33.88			75.037	514.36		0	363	H	60	CW	40	1990	413	33.9			70	1	444.7
0112	0535	082M022	238	082M022	238	NI-CH	51.15	2003	F	CW	H	S				74	18	8				273	32.8			84.18	563.66		0	449.7	CW	70	H	20	1990	273	32.5	33	12	60	1	490.8
0112	0537	083D004	302	083D004	302	NI-CH	36	2003	F	CW	H					63	37					298	36.9			84.239	442.26		0	441	CW	60	H	40	1985	298	36.7			60	1	506.7
0112	0538	082L092	378	082L092	378	I-CH	92.93	2003	F	CW	FD	S				68	25	7				143	27.75			58.102	834.53		0	397.6	CW	60	FD	30	1990	143	27.2	69	15.2	40	1	305
0112	0539	082M041	551	082M041	551	NI-CH	20.32	2003	F	HW	CW	B	S			79	12	5	4			175	31.96			53.395	620.1		0	362.3	HW	80	CW	10	1992	175	32	99	21.4	50	1	452.4
0112	0540	083D045	317	083D045	317	NI-CH	44.61	2003	F	CW	H	B	S			58	33	5	4			281	31.91			73.197	582.45		0	392.2	CW	55	H	35	1990	281	31.6			60	1	434.4
0112	0542	082M085	444	082M085	444	NI-CH	11.4	2003	F	CW	HW					53	47					296	39.85			82.848	395.2		0	462.1	HW	50	CW	50	1967	296	39.9			60	1	527.1
0112	0544	082M064	492	082M064	492	NI-CH	26.95	2003	F	HW	CW	S	PW			50	35	8	7			286	28.73			58.74	713.86		0	321	HW	50	CW	30	1967	286	28.7			60	1	397.3
0112	0549	083D025	289	083D025	289	NI-CH	139.54	2003	F	CW	H	S				54	38	8				304	30.28			69.811	606.61		0	365.4	CW	50	H	40	1990	304	29.9			60	1	405.8
INT1	0001	082M043	273	082M043	273	I-B	48.59	1999	F	BL	S					73	27					159	27.69			40.443	791.56		0	314.6	BL	70	S	30	1990	159	27.9	99	21.4	50	1	287.9
INT1	0002	082M042	149	082M042	149	I-CH	43.84	1999	F	CW	B	S	H			56	18	16	10			139	27.31			52.248	785.86		0	355.4	CW	50	S	20	1992	139	27.2	99	21.4	40	1	312.7
INT1	0003	082M045	13	082M045	13	I-CH	16.63	1999	F	HW	CW	S				57	35	8				293	34.34			69.286	538.86		0	430.4	HW	60	CW	30	1986	293	34.3	99	21.4	60	1	486.4
INT1	0004	082M053	545	082M053	545	I-S	55.13	1999	F	S	CW					50	50					239	30.49			63.913	794.96		0	390.1	S	60	CW	40	1990	239	30.5	99	21.4	60	1	463.3
INT1	0005	082M023	242	082M023	190	Decid	5.56	1998	V	EP	CW					90	10					46	19.28	86	19.2	20.605	806.57	20	800	97.6	EP	90	CW	10	1997	46	19.3	86	19.1	30	0	183.8
INT1	0007	082M024	2008	082M024	2008	I-CH	51.24	1998	F	H	CW	PW				61	32	7				105	27.63			50.289	996.39		0	320.3	H	60	CW	30	1963	105	27.7	99	21.4	70	0	354.2
INT1	0008	082M011	409	082M011	409	I-F	3.88	1998	F	FD	PL					68	32					68	19.87			24.577	1009.7		0	133.2	FD	60	PL	40	1990	68	19.9	69	15.2	40	0	141.9
INT1	0009	082M043	383	082M043	383	I-F	42.79	1998	F	FD	HW	EP				67	23	10				88	28.7			41.896	1257.9		0	297.6	FD	70	HW	20	1990	88	28.7	99	21.4	70	0	341.2
INT1	0010	082M044	388	082M044	388	I-S	18.15	1998	F	S	BL					53	47					312	36.31			44.615	507.33		0	422.3	S	60	BL	40	1986	312	36.3	99	21.4	60	1	414.5
INT1	0011	082M044	506	082M044	506	I-S	46.86	1998	F	S	BL	HW	PL			37	30	25	8			112	23.02			44.06	1341.2		0	263.3	S	40	BL	30	1986	112	23	99	21.4	60	0	231.2
INT1	0012	082L093	622	082L093	622	Decid	6.68	1998	F	EP	PL	AT	FD			50	20	20	10			65	16.31			19.119	783.57		0	91.2	EP	50	PL	20	1963	65	16.4	69	15.2	80	0	64.6
INT1	0013	082M013	493	082M013	493	I-P	52.04	1999	F	PL	FD	AT	PW			35	34	22	9			91	22.27			26.309	838.34		0	166.9	PL	40	FD	30	1968	91	22.6	33	12	40	1	181.2
INT1	0014	082L092	559	082L092	559	I-F	8.47	1998	F	FD						100						118	28.03			32.993	561.69		0	238.9	FD	100		0	1990	118	28	69	15.2	50	0	243.2
INT1	0015	082M043	350	082M043	350	I-F	33.91	1999	F	FD	CW	HW	PW			57	24	12	7			109	28.33			50.874	1161		0	339.3	FD	60	CW	20	1990	109	28.3	99	21.4	60	0	336.3
INT1	0016	082M043	435	082M043	435	I-CH	16.24	1998	F	HW	CW	FD	S			48	34	9	9			208	36.35			69.69	603.3		0	540.3	HW	50	CW	30	1990	208	36.4	99	21.4	60	1	494
INT1	0017	082M003	227	082M003	227	I-S	19.43	1998	F	S	B					76	24					266	33.23			39.179	464.48		0	369.7	S	80	B	20	1992	266	33.2	69	15.2	40	1	363.8
INT1	0018	082M002	357	082M002	357	I-P	153.49	1999	F	PL						100						79	21.24			37.877	1629.9		0	253.8	PL	100		0	1990	79	21.4	69	15.2	80	0	241.7
INT1	0019	082M054	393	082M054	393	I-CH	56.88	1999	F	CW	S	HW	AT	FD		55	16	10	9	10		214	37.01			70.24	559.17		0	547.6	CW	50	S	20	1985	214	36.8	99	21.4	60	1	506.8
INT1	0020	082M022	518	082M022	518	I-S	5.84	1998	F	S	B	FD				47	32	21				101	25.81			37.538	958.5		0	274.4	S	50	B	30	1992	101	25.8	33	12	50	0	242.2
INT1	0021	082M043	505	082M043	505	I-P	26	1999	F	PL	FD	PW				55	35	10				109	24.72			38.489	1035.3		0	313.9	PL	60	FD	30	1990	109	24.8	99	21.4	60	1	281.3

		Compiled ground sample data from "NVAF ground attribute 27JUL07.xls" (all available aux plots including "EXTRA"'s)															Height and Age Case Matching															
Project ID	Project Sample Number	NO_PLOT	SPB_CPCT @4cm+dbh	BA_HA @4cm+dbh	STEMS_HA @4cm+dbh	QMD @4cm+dbh	SPB_CPCT @7.5cm+dbh	BA_HA @7.5cm+dbh	STEMS_HA @7.5cm+dbh	QMD @7.5cm+dbh	SPB_CPCT @12.5cm+dbh	BA_HA @12.5cm+dbh	STEMS_HA @12.5cm+dbh	QMD @12.5cm+dbh	NVL_NW2 @12.5cm+dbh	NVL_NWB @12.5cm+dbh	Grd lead @ 4cm+dbh	AGE_TLS	HT_TLS	N_AG_TLS	N_HT_TLS	inventory standard	V7 lead SP01	V7 sp02	V7 case	V7 meas_age for match	V7 meas_ht match	V6 lead	V6 SPEC_CD_2	V6 case	V6 meas_age for match	V6 meas_ht for match
0111	0079	3	Se 64 Pl 21 Bl 15	29.1667	983	19.4	Se 64 Pl 21	29.1667	983	19.4	Se 69 Pl 2	27.083	568	24.6	216.578	212.224	SE	137.8	24.95	2	2	F	SE	BL	1	279	36.23	SE	BL	1	279	36.3
0111	0081	3	Fd 60 Cw 20 Se 20	53.3333	439	39.3	Fd 60 Cw 2	53.3333	439	39.3	Fd 60 Cw 2	53.333	439	39.3	517.924	502.614	FD	132.0	36.53	3	3	F	FD	SE	1	129	30.06	FD	SE	1	129	30.1
0111	0082	5	Fd 56 Se 15 At 11 Bl 11 Ep 07	48.6	1076	24.0	Fd 56 Se 1	48.6	1076	24.0	Fd 58 Se 1	46.8	883	26.0	433.366	422.311	FD	131.5	35.33	4	4	F	FD	SE	1	123	35.31	FD	PL	1	123	35.3
0111	0084	5	Cw 36 Fd 27 Ep 27 At 10	39.6	914	23.5	Cw 36 Fd 2	39.6	914	23.5	Cw 33 Fd 2	37.8	618	27.9	287.864	275.894	CW	66.3	23.27	3	3	F	FD	EP	3	85	26.24	FD	EP	3	85	26.3
0111	0085	5	Cw 35 Se 29 Pw 18 Pl 12 Fd 06	30.6	446	29.5	Cw 35 Se 2	30.6	446	29.5	Cw 31 Se 3	28.8	285	35.9	224.082	217.701	CW	57.4	16.60	1	1	F	AT	PW	5	.	.	AT	PW	5	.	.
0111	0087	3	Pl 50 Se 42 Fd 08	36	1490	17.5	Pl 50 Se 42	36	1490	17.5	Pl 50 Se 4	30	658	24.1	246.120	241.172	PL	.	20.70	0	2	V	PL	SE	1	148	22.45	PL	SE	1	148	22.5
0111	0088	5	S 67 Pl 22 Fd 11	32.4	536	27.8	S 67 Pl 22	32.4	536	27.8	S 67 Pl 22	32.4	536	27.8	314.908	308.545	S	148.2	32.60	3	3	F	FD	PL	3	189	26.5	FD	PL	3	189	26.5
0111	0089	5	Pl 75 Se 21 Fd 04	30	1515	15.9	Pl 78 Se 1	28.75	1181	17.6	Pl 86 Se 1	26.25	850	19.8	240.047	235.226	PL	124.6	22.08	5	5	V	PL	SE	1	132	22.75	PL	SE	1	132	22.8
0111	0091	4	Bl 37 Se 32 Pl 21 Fd 10	29.6875	555	26.1	Bl 37 Se 3	29.6875	555	26.1	Bl 37 Se 3	29.688	555	26.1	237.982	233.140	BL	89.6	20.70	2	2	V	FD	SE	3	142	27.13	FD	SE	3	142	27.1
0111	0093	5	Fd 100	34.2	794	23.4	Fd 100	34.2	794	23.4	Fd 100	34.2	794	23.4	206.376	201.901	FDI	128.2	24.83	3	3	V	FD		1	126	23.6	FD		1	126	23.6
0111	0096	5	Cw 70 Ep 24 Fd 03 Pw 03	66.6	5484	12.4	Cw 68 Ep 2	61.2	2418	18.0	Cw 62 Ep 3	52.2	1476	21.2	329.701	311.201	CW	132.1	20.33	4	4	V	CW	FD	1	102	23.32	CW	FD	1	102	23
0111	0099	5	Fd 68 Pl 32	42.5	731	27.2	Fd 68 Pl 3	42.5	731	27.2	Fd 68 Pl 3	42.5	731	27.2	325.778	318.877	FD	151.9	22.88	4	4	F	PL	FD	2.5	128	24.47	PL	FD	2.5	128	24.5
0111	0100	3	Pl 68 Se 32	39.5833	1124	21.2	Pl 68 Se 3	39.5833	1124	21.2	Pl 67 Se 3	37.5	824	24.1	305.250	299.118	PL	75.3	19.30	3	2	F	SE	PL	2.5	133	26.72	PL	SE	1	133	26.8
0111	0101	5	Bl 71 Se 29	34.3	469	30.5	Bl 71 Se 2	34.3	469	30.5	Bl 71 Se 2	34.3	469	30.5	484.677	474.867	BL	162.3	17.60	3	2	F	BL	SE	1	199	21.36	BL	SE	1	199	21.3
0112	0502	3	Hw 100	58.6667	281	51.5	Hw 100	58.6667	281	51.5	Hw 100	58.667	281	51.5	379.870	358.009	HW	176.7	28.90	3	3	F	H	CW	1	203	31.42	H	CW	1	203	31.4
0112	0504	7	Cw 58 Hw 42	53.1429	672	31.7	Cw 58 Hw	53.1429	672	31.7	Cw 60 Hw	51.429	518	35.5	304.387	283.758	CW	326.5	22.00	1	1	F	HW	CW	2.5	158	23.72	HW	CW	2.5	158	23.7
0112	0505	9	Cw 45 Sx 24 Hw 17 Bl 14	38.6667	674	27.0	Cw 45 Sx 2	38.6667	674	27.0	Cw 46 Sx 2	37.333	388	35.0	273.430	260.510	CW	172.0	25.40	3	2	F	CW	B	1	331	23.13	CW	S	1	331	21.8
0112	0506	9	Hw 58 Cw 33 Fd 09	42.6667	1228	21.0	Hw 55 Cw	39.1111	234	46.2	Hw 55 Cw	39.111	234	46.2	248.552	233.701	HW	259.1	27.17	4	3	F	H	CW	1	203	26.09	H	CW	1	203	26.1
0112	0508	4	Cw 37 Fd 37 Bl 21 Hw 05	42.75	1608	18.4	Cw 39 Fd 3	40.5	694	27.3	Cw 41 Fd 4	38.25	478	31.9	291.529	280.481	CW	192.6	21.97	3	3	V	BL	SE	3	156	25.49	BL	SE	3	156	25.6
0112	0511	7	Cw 75 Hw 17 S 06 Bl 02	90.8571	946	35.0	Cw 75 Hw	90.8571	946	35.0	Cw 78 Hw	87.429	535	45.6	574.324	533.596	CW	269.1	36.53	4	3	F	CW	S	1	296	32.24	CW	S	1	296	31.3
0112	0512	7	Hw 77 Fd 10 Cw 10 Pw 03	53.1429	2169	17.7	Hw 77 Fd 1	51.4286	1473	21.1	Hw 74 Fd 1	46.286	818	26.8	321.097	307.274	HW	249.3	32.17	6	3	F	HW	CW	1	313	30.35	HW	CW	1	313	30.4
0112	0514	8	Cw 63 Hw 33 Sx 04	60	286	51.7	Cw 63 Hw	60	286	51.7	Cw 63 Hw	60	286	51.7	424.710	395.354	CW	187.2	32.38	4	4	F	CW	H	1	273	33.79	CW	H	1	273	33.6
0112	0515	9	Cw 62 Fd 13 Ep 10 Hw 08 Pl 07	39	2255	14.8	Cw 61 Ep 1	36	1231	19.3	Cw 61 Ep 1	33	890	21.7	205.297	194.711	CW	107.0	16.93	6	4	V	CW	EP	1	131	21.83	CW	EP	1	131	21.5
0112	0516	5	Cw 63 Hw 37	57.6	2924	15.8	Cw 59 Hw	52.8	749	30.0	Cw 59 Hw	52.8	749	30.0	354.000	339.229	CW	110.2	22.75	2	2	F	HW	S	3	136	25.5	HW	S	3	136	25.6
0112	0517	9	Cw 74 Hw 19 Bl 04 Sx 03	60.75	301	50.7	Cw 74 Hw	60.75	301	50.7	Cw 74 Hw	60.75	301	50.7	420.872	391.995	CW	232.6	30.23	4	3	F	H	FD	3	286	37	H	FD	3	286	37
0112	0518	9	Hw 68 Fd 32	55.1111	788	29.8	Hw 68 Fd 3	55.1111	788	29.8	Hw 67 Fd 3	53.333	638	32.6	373.024	358.868	HW	205.3	23.13	7	4	F	H	FD	1	256	28.59	H	FD	1	256	28.6
0112	0519	7	Cw 81 Bl 08 Hw 08 S 03	59.4286	1739	20.9	Cw 84 Hw	57.1429	903	28.4	Cw 84 Hw	57.143	903	28.4	349.554	324.414	CW	156.0	28.70	5	4	F	CW	S	1	278	33.1	CW	S	1	278	32.7
0112	0520	9	Hw 81 Cw 19	69.3333	1697	22.8	Hw 81 Cw	69.3333	1697	22.8	Hw 79 Cw	62.667	995	28.3	398.691	376.117	HW	204.1	24.16	8	7	F	HW	CW	1	296	34.02	HW	CW	1	296	34
0112	0523	9	Cw 76 Hw 14 S 07 Bl 03	78.6667	673	38.6	Cw 76 Hw	78.6667	673	38.6	Cw 78 Hw	77.333	477	45.5	534.885	499.061	CW	386.8	30.10	8	6	F	CW	FD	1	213	31.09	CW	FD	1	213	30.6
0112	0524	7	Cw 42 S 29 Bl 23 Hw 06	53.1429	2365	16.9	Cw 43 S 2	51.4286	1066	24.8	Cw 46 S 2	48	538	33.7	357.587	341.115	CW	258.0	32.00	2	1	F	HW	BL	3	123	26.65	HW	BL	3	123	26.7
0112	0526	4	Cw 92 S 08	96	421	53.9	Cw 92 S 0	96	421	53.9	Cw 92 S 0	96	421	53.9	692.989	640.398	CW	325.6	32.28	4	4	F	CW	AT	1	122	31.89	CW	AT	1	122	31.7
0112	0527	4	Hw 80 Cw 20	30	551	26.3	Hw 80 Cw	30	551	26.3	Hw 78 Cw	27	286	34.7	182.398	172.144	HW	133.8	21.27	3	3	F	CW	H	2.5	286	41.64	CW	H	2.5	286	41.9
0112	0530	5	Hw 86 Cw 10 Fd 04	67.2	2849	17.3	Hw 90 Fd (	64	1503	23.3	Hw 89 Fd (	60.8	866	29.9	354.443	338.373	HW	184.3	22.63	3	3	F	H	FD	1	236	31.69	H	PW	1	236	31.7
0112	0533	9	Hw 100	46.2222	341	41.6	Hw 100	46.2222	341	41.6	Hw 100	46.222	341	41.6	374.889	355.454	HW	225.3	28.25	5	4	F	H	CW	1	413	33.88	H	CW	1	413	33.9
0112	0535	9	Hw 61 Cw 33 Fd 04 S 02	61.3333	1140	26.2	Hw 61 Cw	61.3333	1140	26.2	Hw 60 Cw	60	935	28.6	366.427	346.153	HW	335.1	27.22	7	5	F	CW	H	2.5	273	32.8	CW	H	2.5	273	32.5
0112	0537	6	Hw 78 Cw 22	46	241	49.3	Hw 78 Cw	46	241	49.3	Hw 78 Cw	46	241	49.3	353.755	333.102	HW	283.4	37.70	3	3	F	CW	H	2.5	298	36.9	CW	H	2.5	298	36.7
0112	0538	9	Cw 51 S 23 Fd 20 Bl 06	35	2236	14.1	Cw 50 S 2	34	1782	15.6	Cw 42 Fd 2	26	506	25.6	150.805	144.944	CW	169.5	18.45	2	2	F	CW	FD	1	143	27.75	CW	FD	1	143	27.2
0112	0539	6	Hw 57 Cw 43	60	1372	23.6	Hw 55 Cw	58	907	28.5	Hw 52 Cw	54	367	43.3	352.302	328.462	HW	252.4	34.20	5	3	F	HW	CW	1	175	31.96	HW	CW	1	175	32
0112	0540	3	Cw 75 Hw 25	48	211	53.8	Cw 75 Hw	48	211	53.8	Cw 75 Hw	48	211	53.8	298.210	274.500	CW	295.3	35.40	2	2	F	CW	H	1	281	31.91	CW	H	1	281	31.6
0112	0542	7	Cw 51 Hw 49	70.2857	300	54.6	Cw 51 Hw	70.2857	300	54.6	Cw 51 Hw	70.286	300	54.6	560.270	523.113	CW	254.2	37.37	3	3	F	CW	HW	1	296	39.85	HW	CW	2.5	296	39.9
0112	0544	5	Hw 68 Cw 32	60.8	653	34.4	Hw 68 Cw	60.8	653	34.4	Hw 68 Cw	60.8	653	34.4	357.092	334.720	HW	195.1	26.30	3	2	F	HW	CW	1	286	28.73	HW	CW	1	286	28.7
0112	0549	9	Cw 68 Hw 32	42.75	168	57.0	Cw 68 Hw	42.75	168	57.0	Cw 68 Hw	42.75	168	57.0	283.855	262.729	CW	192.4	32.83	3	3	F	CW	H	1	304	30.28	CW	H	1	304	29.9
INT1	0001	3	Bl 60 Sx 40	35	1095	20.2	Bl 60 Sx 4	35	1095	20.2	Bl 57 Sx 4	32.667	845	22.2	197.075	193.120	BL	91.9	22.85	2	2	F	BL	S	1	159	27.69	BL	S	1	159	27.9
INT1	0002	4	Cw 71 Bl 14 Sx 15	17.5	186	34.7	Cw 71 Bl 1	17.5	186	34.7	Cw 71 Bl 1	17.5	186	34.7	95.004	90.239	CW	95.6	22.75	2	2	F	CW	B	1	139	27.31	CW	S	1	139	27.2
INT1	0003	4	Hw 53 Sx 32 Cw 15	57	1211	24.5	Hw 53 Sx 3	57	1211	24.5	Hw 44 Sx 3	48	230	51.5	454.976	437.616	HW	.	34.40	0	1	F	HW	CW	1	293	34.34	HW	CW	1	293	34.3
INT1	0004	3	Hw 58 Cw 42	104	2272	24.1	Hw 56 Cw	100	904	37.5	Hw 56 Cw	100	904	37.5	709.376	668.844	HW	.	37.55	0	2	F	S	CW	3	239	30.49	S	CW	3	239	30.5
INT1	0005	**1**	Fd 50 Pw 50	36	62	86.1	Fd 50 Pw 5	36	62	86.1	Fd 50 Pw 5	36	62	86.1	517.716	507.365	FDI	127.2	26.20	1	1	V	EP	CW	4	86	19.2	EP	CW	4	86	19.1
INT1	0007	5	Fd 80 Hw 17 Cw 03	63	1607	22.3	Fd 80 Hw 1	63	1607	22.3	Fd 88 Hw (	57.6	1140	25.4	407.794	397.874	FD	173.9	32.42	5	5	F	H	CW	3	105	27.63	H	CW	3	105	27.7
INT1	0008	5	Fd 61 Pl 39	25.2	1122	16.9	Fd 59 Pl 41	23.8	643	21.7	Fd 59 Pl 41	23.8	643	21.7	166.095	162.618	FD	105.0	16.70	3	3	F	FD	PL	1	68	19.87	FD	PL	1	68	19.9
INT1	0009	3	Fd 58 Cw 25 Ep 13 Sx 04	72	2046	21.2	Fd 58 Cw 2	72	2046	21.2	Fd 59 Cw 2	66	1399	24.5	477.316	463.978	FD	117.9	31.23	3	3	F	FD	HW	1	88	28.7	FD	HW	1	88	28.7
INT1	0010	5	Bl 60 Sx 40	35	750	24.4	Bl 60 Sx 4	35	750	24.4	Bl 58 Sx 42	33.6	634	26.0	244.338	239.430	BL	213.1	23.63	3	3	F	S	BL	2.5	312	36.31	S	BL	2.5	312	36.3
INT1	0011	4	Bl 75 Sx 25	7	972	9.6	Bl 67 Sx 3	5.25	476	11.9	Sx 100	1.75	7	57.9	15.499	15.189	BL	101.8	13.70	3	3	F	S	BL	2.5	112	23.02	S	BL	2.5	112	23
INT1	0012	5	Ep 48 Fd 28 Pl 14 Cw 07 At 03	29	3363	10.5	Ep 44 Fd 3	27	2037	13.0	Fd 44 Ep 2	18	622	19.2	111.323	108.452	EP	61.4	16.20	2	2	F	EP	PL	1	65	16.31	EP	PL	1	65	16.4
INT1	0013	5	Cw 46 Pl 25 Fd 08 Hw 08 Ep 08 Pw 05	24	923	18.2	Cw 43 Pl 2	23	531	23.5	Cw 43 Pl 2	23	531	23.5	156.186	151.040	CW	51.6	19.25	2	2	F	PL	FD	3	91	22.27	PL	FD	3	91	22.6
INT1	0014	4	Fd 79 Py 21	42	669	28.3	Fd 79 Py 2	42	669	28.3	Fd 79 Py 2	42	669	28.3	319.049	312.363	FDI	85.9	26.78	4	4	F	FD		1	118	28.03	FD		1	118	28
INT1	0015	4	Bl 36 Sx 27 Fd 18 Cw 19	49.5	2708	15.3	Bl 40 Sx 3	45	879	25.5	Bl 40 Sx 3	45	879	25.5	321.791	314.703	BL	88.9	24.63	3	3	F	FD	CW	3	109	28.33	FD	CW	3	109	28.3
INT1	0016	5	Hw 74 Fd 15 Cw 11	61.2	1742	21.2	Hw 73 Fd 1	59.4	825	30.3	Hw 72 Fd 1	57.6	448	40.4	464.961	446.008	HW	173.0	33.90	2	2	F	HW	CW	1	208	36.35	HW	CW	1	208	36.4
INT1	0017	5	Bl 50 Sx 50	57.6	1375	23.1	Bl 50 Sx 5	57.6	1375	23.1	Bl 53 Sx 47	54	1016	26.0	398.439	390.433	SX	275.9	26.30	1	1	F	S	B	1	266	33.23	S	B	1	266	33.2
INT1	0018	5	Pl 97 Fd 03	37	816	24.0	Pl 97 Fd 0	37	816	24.0	Pl 97 Fd 0	37	816	24.0	313.093	306.803	PL	67.0	23.20	5	5	F	PL		1	79	21.24	PL		1	79	21.4
INT1	0019	3	Hw 44 Cw 22 Sx 22 Pl 12	36	6787	8.2	Hw 50 Sx 3	24	1122	16.5	Hw 40 Sx 4	20	737	18.6	116.972	114.467	HW	.	.	0	0	F	CW	S	3	214	37.01	CW	S	3	214	36.8
INT1	0020	4	Sx 43 Bl 36 Fd 14 At 07	31.5	2549	12.5	Sx 46 Bl 31	29.25	1195	17.7	Sx 55 Bl 1	24.75	598	22.9	160.314	156.994	SX	101.7	23.55	2	2	F	S	B	1	101	25.81	S	B	1	101	25.8
INT1	0021	3	Cw 30 Fd 25 Bl 15 Pl 15 Sx 15	60	3354	15.1	Cw 26 Fd 2	57	2617	16.7	Fd 25 Cw 1	48	1381	21.0	270.775	264.507	CW	.	.	0	0	F	PL	FD	3	109	24.72	PL	FD	3	109	24.8

								VDYP7 Inventory Attributes for "measurement year" (from "Kamloops inv proj 23AUG07.xls")																					VDYP6 Inventory attributes for "measurement year" (from "Kamloops inv proj 23AUG07.xls" and volumes from "Kamloops inv proj 01aug07.xls)											
Project ID	Project Sample Number	Sample List Map	Sample List Poly	Analysis Map	Analysis Poly	Analysis stratum	Polygon Area (ha)	Ground sample measurement year	inventory standard	sp01	sp02	sp03	sp04	sp05	sp06	pct1	pct2	pct3	pct4	pct5	pct6	Age_1 at measurement year	Height_1 at measurment year	Age_2 at measurement year	Height_2 at measurment year	BA @7.5cm+ at measurement year	TPH @7.5cm+ at measurement year	init_ba	init_tph	VOL_DWB_125 unadjusted	SPEC_CD_1	SPEC_PCT_1	SPEC_CD_2	SPEC_PCT_2	ref_yr	v6_age_prj1	v6_ht_prj1	v6_age_prj2	v6_ht_prj2	v6_cr_closure	stockingclass	v6_vol_dwb @12.5cm+ dbh
INT1	0022	082M033	125	082M033	125	I-B	43.02	1999	F	BL	S					74	26					109	25.27			39.502	939.28		0	278.2	BL	70	S	30	1990	109	25.5	99	21.4	50	0	255.6
INT1	0023	082M033	127	082M033	127	I-S	44.85	1998	F	S	PL	BL	FD			60	17	12	11			87	31.59			44.6	878.65		0	440.4	S	60	PL	20	1991	87	31.6	99	21.4	60	0	398.9
INT1	0024	082M003	246	082M003	246	I-S	45.48	1998	F	S	B					55	45					206	27.54			35.716	653.18		0	264.6	S	60	B	40	1992	206	27.5	69	15.2	40	1	271.4
INT1	0025	082M034	233	082M034	233	I-S	63.4	1999	F	S	BL					54	46					259	33.38			43.447	596.68		0	384.9	S	60	BL	40	1990	259	33.4	99	21.4	60	1	381
INT1	0026	082M013	519	082M013	519	Decid	16.23	1998	F	AT	FD	EP	PL			39	28	24	9			63	20.59			29.409	1344.1		0	150.5	AT	40	FD	30	1990	63	20.6	33	12	80	0	134.7
INT1	0027	082M011	491	082M011	491	I-F	13.39	1998	F	FD	S	PL				62	19	19				168	32.63			47.463	695.12		0	445.8	FD	60	S	20	1990	168	32.6	69	15.2	60	1	441.8
INT1	0028	082L082	229	082L082	229	I-S	95.38	1998	F	S	B	CW				64	22	14				156	31.54			35.279	482.6		0	288.2	S	70	B	20	1992	156	31.5	69	15.2	20	1	316.9
INT1	0029	082M002	717	082M002	717	I-B	50.48	1998	F	BL	S					91	9					170	25.25			34.918	689.45		0	227.7	BL	90	S	10	1992	170	25.3	69	15.2	30	1	243.6
INT1	0030	082M044	54	082M044	54	I-S	86.86	1998	F	S	BL					54	46					290	37.46			41.261	475.07		0	379.4	S	60	BL	40	1968	290	37.5	99	21.4	60	1	436.2
INT1	0031	082L082	351	082L082	351	Decid	64.6	1998	F	EP	CW	FD				44	38	18				118	25.7			28.989	1019.5		0	200.9	EP	50	CW	30	1990	118	25.6	69	15.2	70	1	255.3
INT1	0032	082M001	565	082M001	565	I-B	27.51	1998	F	B	S					72	28					138	24.81			29.436	641.21		0	203.4	B	70	S	30	1990	138	25	69	15.2	30	1	221.7
INT1	0033	082M002	508	082M002	508	I-S	6.8	1999	F	EP	S					55	45					69	18.65			25.522	1299.9		0	108.1	S	50	EP	50	1990	69	18.6	69	15.2	70	0	126
INT1	0034	082M023	11	082M023	249	I-S	8.09	1998	V	SE	BL	FD	AT			65	20	10	5			151	29.09	131	22.1	39.973	745.93	40	750	310.3	SE	65	BL	20	1997	151	29.1	131	22.1	50	1	197.8
INT1	0035	082L092	26	082L092	26	I-CH	101.38	1998	F	CW	B	H	S			45	25	21	9			188	22.79			42.533	854.83		0	236.6	CW	40	B	30	1990	188	22.4	69	15.2	40	1	270.7
INT1	0036	082M011	131	082M011	131	I-F	19.97	1998	F	FD	AT	S	PL			41	20	20	19			118	31.12			41.979	706.86		0	359.1	FD	40	S	20	1990	118	31.1	69	15.2	60	0	377.4
INT1	0037	082L092	409	082L092	409	I-F	7.17	1998	F	FD	CW	AT	PL			70	12	10	8			128	27.88			41.501	862.29		0	288.3	FD	70	CW	10	1990	128	27.9	69	15.2	60	1	317.6
INT1	0038	082M022	445	082M022	445	I-B	6.56	1999	F	B	S	CW	AT			72	17	6	5			139	21.95			35.113	957.05		0	195.4	B	70	S	20	1990	139	22	33	12	50	1	201.3
INT1	0039	082L082	140	082L082	140	I-F	47.1	1998	F	FD	EP	AT				70	15	15				100	30.67			33.86	706.29		0	264.5	FD	70	AT	15	1968	100	30.7	69	15.2	60	0	253.7
INT1	0040	082M053	547	082M053	547	I-F	77.29	1999	F	FD	CW	H	PW			67	27	4	2			104	34.63			65.076	1153.5		550	550.4	FD	72	CW	22	1987	104	34.6	99	21.4	70	0	477.8
INT1	0041	082M043	456	082M043	456	I-CH	34.25	1998	F	HW	CW	FD				50	31	19				115	25.92			47.941	998.56		0	294.4	HW	50	CW	30	1968	115	26	99	21.4	60	0	306.4
INT1	0042	082M012	168	082M012	1700	I-CH	10.29	2000	V	CW	BL	SE				47	43	10				53	5.4	48	8.5	0.0501	7.63		10667	0	CW	47	BL	44	1997	53	5.3	48	8.7	30	0	37.4
INT1	0043	082M044	279	082M044	279	I-P	20.93	2000	F	PL	FD	SE				55	34	11				67	19.81			32.867	1547.1		0	188.7	PL	60	FD	30	1990	67	19.9	99	21.4	70	0	182.1
INT1	0044	082L091	373	082L091	373	I-B	3.81	2000	F	B	S	CW				66	19	15				210	31.43			3.0653	39.25		0	25.7	B	70	S	20	1990	210	31.8	69	15.2	10	2	152.3
INT1	0045	082M001	183	082M001	183	I-F	69.74	2000	F	FD	PL	AT				75	20	5				104	32.11			34.744	620.69		0	324.6	FD	70	PL	25	1992	104	32.1	69	15.2	70	0	370.3
INT1	0046	082M002	181	082M002	181	I-F	65.46	2000	F	FD	AT	PL				92	4	4				80	21.99			30.989	998.85		0	164.4	FD	90	AT	5	1990	80	22	69	15.2	60	0	167.2
INT1	0047	082M033	408	082M033	408	I-F	12.98	1998	F	CW	FD	S	HW			37	35	17	11			208	30.39			65.112	1037		0	388.6	FD	40	CW	30	1990	208	30.4	99	21.4	70	1	415.7
INT1	0049	082M033	571	082M033	571	I-F	20.9	1998	F	FD	AT	PL				63	20	17				120	28.71			42.187	817.04		0	321.3	FD	60	PL	20	1968	120	28.7	99	21.4	70	0	294.4
INT1	0050	082M011	781	082M011	781	I-P	76.24	2000	F	PL	FD					76	24					71	16.92			29.648	1845.7		0	132.4	PL	80	FD	20	1992	71	17	69	15.2	70	0	138.3
INT1	0051	082M054	415	082M054	415	I-CH	94.32	2000	F	HW	CW	FD	S	PW		51	23	10	8	8		272	31.64			60.83	698.43		0	413.5	HW	50	CW	20	1968	272	31.6	99	21.4	60	1	431.3
INT1	0052	082M043	77	082M043	77	I-F	172.55	2000	F	FD	PW	CW	S			52	25	13	10			97	35.14			56.496	1058.8		445	585.7	FD	50	PW	30	1968	97	35	99	21.4	80	0	448.2
INT1	0053	082M033	94	082M033	94	I-F	32.68	2000	F	FD	CW	HW	EP	PL		37	23	22	10	8		90	25.92			37.344	1099.4		0	214.9	FD	40	HW	20	1990	90	25.9	99	21.4	50	0	266.8
INT1	0054	082M023	23	082M023	1777	I-F	9.79	2000	V	FD	CW	AT				95	3	2				99	31.65	99	21.5	48.965	1308.2	48	1333	399.6	FD	95	CW	3	1997	99	31.7	99	21.4	65	0	255.6
INT1	0055	082M033	566	082M033	566	I-F	16.28	2000	F	FD	CW	PW	EP			38	36	15	11			160	24.7			34.688	880.4		0	187.1	FD	40	CW	30	1990	160	24.7	99	21.4	40	1	220.1
INT1	0056	082M001	853	082M001	853	I-F	6.68	2000	F	FD	PL					86	14					70	16.98			24.058	1360.1		0	84.6	FD	80	PL	20	1990	70	17	69	15.2	60	0	103.6
INT1	0057	082M003	254	082M003	254	I-S	54.9	2000	F	S	B					77	23					210	28.7			38.263	671.58		0	305.5	S	80	B	20	1990	210	28.7	69	15.2	50	1	315.7
INT1	0058	082M013	17	082M013	17	I-F	15.54	2000	F	FD	CW	EP				76	13	11				140	37.2			49.842	695.75		0	494.8	FD	80	CW	10	1990	140	37.2	33	12	60	1	389
INT1	0059	082L093	338	082L093	338	I-CH	75.57	2000	F	CW	EP	AC	FD	AT		47	27	9	9	8		98	20.52			32.514	1327.9		0	182.9	CW	40	EP	30	1992	98	20	69	15.2	60	0	168
INT1	0060	082M012	312	082M012	1928	I-F	3.61	2000	V	FD	PL	EP	AT			80	15	4	1			73	27.81	73	26.4	33.263	645.41	32	655	265.3	FD	80	PL	15	1997	73	27.8	73	26.5	75	0	317
INT1	0061	082M011	51	082M011	51	I-P	180.21	2000	F	PL						100						73	24.31			40.412	1453.9		0	334	PL	100		0	1992	73	24.4	69	15.2	80	0	299.5
INT1	0062	082M011	146	082M011	146	I-S	6.08	2000	F	S	AT	EP	FD			38	29	23	10			140	28.18			39.598	880.04		0	286.1	S	40	AT	30	1990	140	28.2	69	15.2	70	1	267.8
INT1	0063	082M053	587	082M053	587	I-B	23.28	2000	F	BL	S					63	37					210	26.53			38.461	776.38		0	290.7	BL	60	S	40	1990	210	26.7	99	21.4	50	1	275.7
INT1	0064	082M011	770	082M011	770	Decid	8.67	2000	F	AT	EP	FD				68	21	11				80	19.39			20.119	885.71		0	79.8	AT	70	EP	20	1990	80	19.3	69	15.2	60	0	97.9
INT1	0065	082M012	715	082M012	1254	I-F	10.11	2000	V	FD						100						128	25.6			45.363	491.73	45	500	284.7	FD	100		0	1997	128	25.6	156	17.1	60	1	224.5
INT1	0066	082M045	250	082M045	250	Decid	136.97	2000	F	AT	BL	S	CW	FD		36	21	20	13	10		94	25.8			35.328	730.4		0	220.3	AT	40	S	20	1986	94	25.7	99	21.4	40	1	223.5
INT1	0067	082L082	308	082L082	308	I-F	68.61	2000	F	FD	CW	EP				78	12	10				142	27.75			30.949	673.46		0	209.4	FD	80	CW	10	1968	142	27.7	69	15.2	50	1	225.6
INT1	0068	082M012	115	082M012	249	I-F	11.63	2000	V	FD	CW	SE	PW	BL		45	30	10	10	5		153	34.28	153	24.3	45.678	790.46	45	800	380.5	FD	45	CW	30	1997	153	34.3	153	24.2	60	1	280.3
INT1	0069	082M023	337	082M023	925	Decid	8.24	2000	V	EP	FD	CW	AT			70	15	10	5			48	16.53	48	15.4	41.63	776.24	40	800	170.4	EP	70	FD	15	1997	48	16.6	48	15.6	80	0	63.2
INT1	0070	082M002	560	082M002	560	I-S	78.64	2000	F	S	B	PL				51	32	17				110	29.35			45.565	1004.5		0	399.4	S	50	B	30	1960	110	29.3	69	15.2	60	0	322.5
INT1	0071	082M002	84	082M002	84	I-F	74.49	2000	F	FD	AT	PL				83	9	8				75	26.62			38.399	995		0	269.8	FD	80	AT	10	1990	75	26.6	69	15.2	70	0	238.9
INT1	0072	082M002	235	082M002	235	I-F	28.02	2000	F	FD						100						120	25.16			27.672	545.5		0	176.7	FD	100		0	1990	120	25.2	69	15.2	40	0	185.6
INT1	0073	082M011	758	082M011	758	I-F	36.1	2000	F	FD	AT					71	29					100	22.42			17.499	448.36		0	92.4	FD	70	AT	30	1990	100	22.4	69	15.2	20	0	109.5
INT2	0001	082M002	404	082M002	404	I-B	30.65	2003	F	B	S					83	17					185	26.91			40.037	831.04		0	269.6	B	80	S	20	1968	185	27.6	69	15.2	50	1	309.5
INT2	0002	082M002	152	082M002	152	I-P	65.01	2003	F	PL	S	B				48	31	21				88	17.45			34.445	1682.8		0	159.4	PL	50	S	30	1990	88	17.6	69	15.2	60	3	155.1
INT2	0003	082M022	431	082M022	431	I-B	13.56	2003	F	B	S					54	46					138	23.37			35.734	918.62		0	250.2	B	50	S	50	1990	138	23.5	33	12	50	1	231.2
INT2	0004	082M023	294	082M023	821	I-S	9.7	2003	V	SE	BL					78	22					203	31.9	146	25.5	47.551	562.4	48	567	395.1	SE	78	BL	22	1997	203	32	146	25.7	50	1	268
INT2	0005	082M022	512	082M022	512	I-B	86.5	2003	F	B	S					82	18					200	22.25			30.305	733.55		0	169.8	B	80	S	20	1992	200	22.2	33	12	30	1	210.5
INT2	0006	082M003	306	082M003	306	I-S	11.19	2003	F	S	B					56	44					213	26.01			36.38	786.32		0	248	S	60	B	40	1990	213	26	69	15.2	50	1	262.3
INT2	0007	082M042	126	082M042	812	I-S	62.64	2003	F	S	B					77	23					241	28.67			38.125	645.24		0	303.3	S	80	B	20	1992	241	28.7	99	21.4	50	1	314.7
INT2	0008	082M034	132	082M034	132	I-B	6.76	2003	F	BL	S					74	26					212	21.77			37.288	1058.3		0	205.1	BL	70	S	30	1991	212	21.7	99	21.4	60	1	215.7
INT2	0009	082M022	390	082M022	390	I-B	104.67	2003	F	BL	SE					73	27					80	17.38			17.652	678.82		7099	82.8	BL	70	SE	30	1992	80	17.1	33	12	12	0	127.9
INT2	0010	082M012	425	082M012	734	I-P	40.79	2003	V	PL	BL	SE	FD			40	35	20	5			156	21.63	156	17.1	40.265	1024.7	40	1033	221.6	PL	40	BL	35	1997	156	21.7	156	17.1	55	1	160.3
INT2	1111	082L081	86	082L081	86	I-S	98.33	2003	F	S	B					71	29					203	30.84			31.177	535.59		0	244.7	S	74	B	26	1955	203	30.8	69	15.2	30	1	312.5

		Compiled ground sample data from "NVAF ground attribute 27JUL07.xls" (all available aux plots including "EXTRA"'s)														Height and Age Case Matching																					
Project ID	Project Sample Number	NO_PLOT	SPB_CPCT @4cm+dbh	BA_HA @4cm+dbh	STEMS_HA @4cm+dbh	QMD @4cm+dbh	SPB_CPCT @7.5cm+dbh	BA_HA @7.5cm+dbh	STEMS_HA @7.5cm+dbh	QMD @7.5cm+dbh	SPB_CPCT @12.5cm+dbh	BA_HA @12.5cm+dbh	STEMS_HA @12.5cm+dbh	QMD @12.5cm+dbh	NVL_NW2 @12.5cm+dbh	NVL_NWB @12.5cm+dbh	Grd lead @ 4cm+dbh	AGE_TLS	HT_TLS	N_AG_TLS	N_HT_TLS	inventory standard	V7 lead SP01	V7 sp02	V7 case	V7 meas_age for match	V7 meas_ht match	V6 lead	V6 SPEC_CD_2	V6 case	V6 meas_age for match	V6 meas_ht for match
INT1	0022	5	Bl 81 Sx 19	36	1163	19.9	Bl 81 Sx 19	36	1163	19.9	Bl 81 Sx 19	36	1163	19.9	211.340	207.085	BL	91.1	17.74	5	5	F	BL	S	1	109	25.27	BL	S	1	109	25.5
INT1	0023	2	Sx 78 Bl 22	31.5	440	30.2	Sx 78 Bl 22	31.5	440	30.2	Sx 78 Bl 22	31.5	440	30.2	258.043	252.797	SX	82.1	27.25	2	2	F	S	PL	1	87	31.59	S	PL	1	87	31.6
INT1	0024	5	Bl 61 Sx 39	50.4	2486	16.1	Bl 59 Sx 41	48.6	1909	18.0	Bl 52 Sx 48	41.4	582	30.1	316.251	309.903	BL	111.1	17.05	2	2	F	S	B	2.5	206	27.54	S	B	2.5	206	27.5
INT1	0025	3	Sx 57 Bl 43	16.3333	455	21.4	Sx 57 Bl 43	16.3333	455	21.4	Sx 57 Bl 43	16.333	455	21.4	84.316	82.626	SX	276.5	22.30	1	1	F	S	BL	1	259	33.38	S	BL	1	259	33.4
INT1	0026	5	Pl 36 Fd 29 Sx 21 Cw 14	14	1587	10.6	Pl 42 Fd 33	12	346	21.0	Pl 42 Fd 33	12	346	21.0	81.594	79.697	PL	64.1	18.40	2	2	F	AT	FD	4.5	.	.	AT	FD	5	.	.
INT1	0027	5	Fd 61 Pl 18 Bl 14 Sx 07	50.4	1782	19.0	Fd 59 Pl 19	48.6	966	25.3	Fd 60 Pl 20	45	566	31.8	405.180	396.769	FD	148.1	34.55	2	2	F	FD	S	1	168	32.63	FD	S	1	168	32.6
INT1	0028	5	Bl 60 Sx 24 Ac 12 Cw 04	25	292	33.0	Bl 60 Sx 24	25	292	33.0	Bl 60 Sx 24	25	292	33.0	183.465	179.354	BL	56.8	18.20	3	3	F	S	B	2.5	156	31.54	S	B	2.5	156	31.5
INT1	0029	5	Bl 100	34.2	1243	18.7	Bl 100	30.6	346	33.5	Bl 100	30.6	346	33.5	235.504	230.768	BL	105.2	18.90	2	2	F	BL	S	1	170	25.25	BL	S	1	170	25.3
INT1	0030	5	Hw 58 Cw 29 Sx 08 Bl 05	68.4	1326	25.6	Hw 58 Cw	68.4	1326	25.6	Hw 56 Cw	64.8	990	28.9	427.920	408.820	HW	85.4	25.80	1	1	F	S	BL	3	290	37.46	S	BL	3	290	37.5
INT1	0031	5	Cw 53 Fd 25 Ep 09 Pl 06 Sx 07	44.8	1644	18.6	Cw 55 Fd 2	43.4	1132	22.1	Cw 55 Fd 2	40.6	839	24.8	244.575	235.323	CW	93.9	22.60	4	4	F	EP	CW	5			EP	CW	5	.	.
INT1	0032	3	Bl 75 Sx 17 Cw 08	28	205	41.7	Bl 75 Sx 17	28	205	41.7	Bl 75 Sx 17	28	205	41.7	227.588	222.827	BL	47.1	21.20	2	2	F	B	S	1	138	24.81	B	S	1	138	25
INT1	0033	3	Pl 100	25	789	20.1	Pl 100	25	789	20.1	Pl 100	25	789	20.1	176.531	172.981	PL	62.4	16.23	3	3	F	EP	S	4.5	.	.	S	EP	3	69	18.6
INT1	0034	3	Sx 57 Bl 14 Cw 14 Ac 07 Hw 08	42	3514	12.3	Sx 50 Bl 17	36	496	30.4	Sx 50 Bl 17	36	496	30.4	257.352	250.433	SX	71.7	27.30	2	2	V	SE	BL	1	151	29.09	SE	BL	1	151	29.1
INT1	0035	5	Hw 45 Cw 36 Fd 09 Sx 10	15.4	1641	10.9	Hw 56 Cw	12.6	476	18.4	Hw 63 Cw	11.2	301	21.7	45.252	43.136	HW	88.1	13.63	4	4	F	CW	B	3	188	22.79	CW	B	3	188	22.4
INT1	0036	3	Fd 65 Sx 24 At 11	51	545	34.5	Fd 65 Sx 24	51	545	34.5	Fd 65 Sx 24	51	545	34.5	459.347	448.682	FD	122.1	31.70	1	1	F	FD	AT	1	118	31.12	FD	S	1	118	31.1
INT1	0037	3	Fd 100	8.33333	637	12.9	Fd 100	6.66667	204	20.4	Fd 100	6.6667	204	20.4	43.572	42.651	FDI	110.4	20.00	1	1	F	FD	CW	1	128	27.88	FD	CW	1	128	27.9
INT1	0038	5	Bl 90 Sx 07 Fd 03	58.8	3830	14.0	Bl 90 Sx 08	54.6	2513	16.6	Bl 88 Sx 09	46.2	1401	20.5	279.428	273.805	BL	74.2	21.28	5	5	F	B	S	1	139	21.95	B	S	1	139	22
INT1	0039	5	Cw 79 Fd 11 Ep 10	26.6	985	18.5	Cw 78 Fd 1	25.2	641	22.4	Cw 78 Fd 1	25.2	641	22.4	127.896	121.699	CW	129.6	24.20	3	3	F	FD	EP	3	100	30.67	FD	AT	3	100	30.7
INT1	0040	5	Fd 74 Hw 17 Cw 09	55.2	1038	26.0	Fd 74 Hw 1	55.2	1038	26.0	Fd 77 Hw 1	52.8	785	29.3	433.063	422.662	FDI	109.4	36.28	5	5	F	FD	CW	1	104	34.63	FD	CW	1	104	34.6
INT1	0041	5	Fd 33 Cw 22 Ep 11 Ac 11 Hw 11 Pw 12	12.6	989	12.7	Fd 43 Cw 2	9.8	266	21.7	Fd 50 Cw 3	8.4	110	31.2	72.141	70.154	FDI	147.0	35.10	1	1	F	HW	CW	3	115	25.92	HW	CW	3	115	26
INT1	0042	1	Cw 83 Bl 17	144	20085	9.6	Cw 80 Bl 2	120	4995	17.5	Cw 100	96	957	35.7	519.022	476.122	CW	270.9	.	1	0	V	CW	BL	1	53	5.4	CW	BL	1	53	5.3
INT1	0043	4	Pl 87 S 07 Hw 06	26.25	1775	13.7	Pl 93 S 07	24.5	982	17.8	Pl 93 S 07	24.5	982	17.8	182.715	179.043	PLI	73.1	22.18	4	4	F	PL	FD	1	67	19.81	PL	FD	1	67	19.9
INT1	0044	4	S 56 Bl 44	33.75	392	33.1	S 56 Bl 44	33.75	392	33.1	S 56 Bl 44	33.75	392	33.1	292.433	286.560	S	150.4	.	1	0	F	B	S	2.5	210	31.43	B	S	2.5	210	31.8
INT1	0045	5	Pl 76 At 19 Fd 05	29.4	551	26.1	Pl 76 At 19	29.4	551	26.1	Pl 76 At 19	29.4	551	26.1	255.976	249.829	PLI	108.9	26.50	3	3	F	FD	PL	2.5	104	32.11	FD	PL	2.5	104	32.1
INT1	0046	4	Fd 84 S 12 Pl 04	56.25	3637	14.0	Fd 83 S 13	54	2915	15.4	Fd 79 S 16	42.75	1449	19.4	267.619	262.000	FDI	79.1	24.25	4	4	F	FD	AT	1	80	21.99	FD	AT	1	80	22
INT1	0047	5	Hw 57 Cw 43	14	332	23.2	Hw 57 Cw	14	332	23.2	Cw 50 Hw	12	119	35.8	81.239	77.239	HW	130.9	20.30	2	2	F	CW	FD	3	208	30.39	FD	CW	3	208	30.4
INT1	0049	5	Cw 50 Fd 17 Pw 17 Ep 16	16.8	757	16.8	Cw 55 Pw	15.4	347	23.8	Cw 60 Pw	14	137	36.1	94.918	91.181	CW	91.2	20.40	2	2	F	FD	AT	3	120	28.71	FD	PL	3	120	28.7
INT1	0050	4	Bl 46 S 23 Cw 19 Pl 12	58.5	4310	13.1	Bl 43 S 26	51.75	1599	20.3	Bl 43 S 26	51.75	1599	20.3	340.548	331.787	BL	124.1	22.75	3	2	F	PL	FD	3	71	16.92	PL	FD	3	71	17
INT1	0051	4	Hw 94 Cw 06	69.75	2287	19.7	Hw 93 Cw	67.5	1629	23.0	Hw 93 Cw	60.75	824	30.6	449.397	428.558	HW	322.0	30.90	4	1	F	HW	CW	1	272	31.64	HW	CW	1	272	31.6
INT1	0052	5	Fd 38 Cw 31 At 12 Hw 12 Pw 04 S 03	36.4	574	28.4	Fd 38 Cw 3	36.4	574	28.4	Fd 38 Cw 3	36.4	574	28.4	286.206	277.177	FDI	93.4	31.85	4	4	F	FD	PW	1	97	35.14	FD	PW	1	97	35
INT1	0053	4	Fd 53 Cw 41 Ep 06	59.5	4964	12.4	Fd 60 Cw 3	52.5	1460	21.4	Fd 63 Cw 3	47.25	883	26.1	357.678	345.735	FDI	193.0	.	2	0	F	FD	CW	1	90	25.92	FD	HW	1	90	25.9
INT1	0054	2	Fd 83 Cw 17	36	707	25.5	Fd 83 Cw 1	36	707	25.5	Fd 83 Cw 1	36	707	25.5	312.031	305.192	FDI	96.9	28.90	2	2	V	FD	CW	1	99	31.65	FD	CW	1	99	31.7
INT1	0055	5	Cw 44 Fd 24 Pl 20 Ep 12	35	2042	14.8	Cw 46 Fd 2	33.6	1121	19.5	Cw 48 Pl 2	32.2	835	22.2	193.047	185.448	CW	115.2	30.20	1	1	F	FD	CW	2.5	160	24.7	FD	CW	2.5	160	24.7
INT1	0056	3	Fd 100	46.6667	2607	15.1	Fd 100	43.3333	1788	17.6	Fd 100	40	1073	21.8	239.783	234.677	FDI	59.9	16.90	3	3	F	FD	PL	1	70	16.98	FD	PL	1	70	17
INT1	0057	5	Bl 100	23.4	590	22.5	Bl 100	23.4	590	22.5	Bl 100	23.4	590	22.5	156.311	153.140	BL	206.2	27.00	3	2	F	S	B	2.5	210	28.7	S	B	2.5	210	28.7
INT1	0058	4	Fd 57 Cw 40 Hw 03	52.5	1388	21.9	Fd 59 Cw 3	50.75	725	29.8	Fd 59 Cw 3	50.75	725	29.8	351.025	340.399	FDI	76.9	25.58	3	4	F	FD	CW	1	140	37.2	FD	CW	1	140	37.2
INT1	0059	5	Ep 48 Fd 19 Cw 16 Pl 10 At 07	31	2164	13.5	Ep 50 Fd 1	26	403	28.7	Ep 50 Fd 1	26	403	28.7	207.484	200.223	EP	74.8	22.05	2	2	F	CW	EP	5	.	.	CW	EP	5	.	.
INT1	0060	4	Ep 46 Fd 43 Pl 07 Cw 04	49	1654	19.4	Ep 46 Fd 4	49	1654	19.4	Ep 46 Fd 4	49	1654	19.4	309.934	300.773	EP	.	.	0	0	V	FD	PL	5	.	.	FD	PL	5	.	.
INT1	0061	5	Fd 53 S 37 Pl 05 Cw 05	45.6	1824	17.8	Fd 53 S 37	45.6	1824	17.8	Fd 56 S 38	38.4	834	24.2	294.894	288.825	FDI	63.1	26.17	3	3	F	PL		3	73	24.31	PL		3	73	24.4
INT1	0062	2	Ac 36 S 36 Bl 18 At 10	49.5	1733	19.1	Ac 36 S 36	49.5	1733	19.1	Ac 44 Bl 22	40.5	644	28.3	400.859	387.493	ACT	66.0	33.50	1	1	F	S	AT	5	.	.	S	AT	5	.	.
INT1	0063	5	Bl 65 S 35	41.4	488	32.9	Bl 65 S 35	41.4	488	32.9	Bl 65 S 35	41.4	488	32.9	369.292	361.866	BL	271.8	34.40	2	2	F	BL	S	1	210	26.53	BL	S	1	210	26.7
INT1	0064	3	Fd 60 At 20 Ep 20	23.3333	531	23.7	Fd 60 At 20	23.3333	531	23.7	Fd 60 At 20	23.333	531	23.7	164.975	160.349	FDI	61.7	27.85	1	2	F	AT	EP	5	.	.	AT	EP	5	.	.
INT1	0065	3	Fd 100	21	184	38.2	Fd 100	21	184	38.2	Fd 100	21	184	38.2	153.289	149.490	FDI	155.1	21.60	2	2	V	FD		1	128	25.6	FD		1	128	25.6
INT1	0066	5	Cw 62 Fd 15 S 08 Pl 04 At 04 Pw 04 Hw 03	36.4	2019	15.1	Cw 60 Fd 1	35	1360	18.1	Cw 58 Fd 1	33.6	1220	18.7	160.154	154.086	CW	45.4	17.15	4	4	F	AT	BL	4.5	.	.	AT	S	5	.	.
INT1	0067	4	Cw 43 Fd 24 Ep 14 At 10 Pl 09	36.75	880	23.1	Cw 43 Fd 2	36.75	880	23.1	Cw 40 Fd 2	35	572	27.9	259.725	250.661	CW	79.8	22.60	1	1	F	FD	CW	2.5	142	27.75	FD	CW	2.5	142	27.7
INT1	0068	5	S 25 Cw 20 Fd 20 Hw 20 Bl 10 Pw 05	36	472	31.2	S 25 Cw 20	36	472	31.2	S 25 Cw 20	36	472	31.2	261.706	254.168	S	92.9	25.20	3	3	V	FD	CW	3	153	34.28	FD	CW	3	153	34.3
INT1	0069	5	Ep 50 Fd 39 Cw 11	18	725	17.8	Ep 50 Fd 39	18	725	17.8	Ep 50 Fd 3	16	442	21.5	103.663	100.214	EP	.	.	0	0	V	EP	FD	1	48	16.53	EP	FD	1	48	16.6
INT1	0070	5	Bl 50 S 50	39.2	711	26.5	Bl 50 S 50	39.2	711	26.5	Bl 50 S 50	39.2	711	26.5	250.350	245.326	S	95.3	18.70	1	1	F	S	B	1	110	29.35	S	B	1	110	29.3
INT1	0071	5	Fd 77 S 10 Ep 05 Pl 05 Cw 03	54.6	1419	22.1	Fd 77 S 10	54.6	1419	22.1	Fd 81 Ep 0	51.8	1061	24.9	383.277	374.754	FDI	64.1	24.84	5	5	F	FD	AT	1	75	26.62	FD	AT	1	75	26.6
INT1	0072	5	Fd 100	46.2	1046	23.7	Fd 100	46.2	1046	23.7	Fd 100	44.8	920	24.9	323.588	316.640	FDI	142.5	24.73	4	4	F	FD		1	120	25.16	FD		1	120	25.2
INT1	0073	2	At 100	2.43641	50	24.9	At 100	2.43641	50	24.9	At 100	2.4364	50	24.9	16.392	15.736	AT	58.1	12.10	2	2	F	FD	AT	5	.	.	FD	AT	5	.	.
INT2	0001	2	Bl 80 Se 20	45	3714	12.4	Bl 78 Se 22	40.5	1422	19.0	Bl 75 Se 25	36	549	28.9	234.248	229.558	BL	145.0	20.55	2	2	F	B	S	1	185	26.91	B	S	1	185	27.6
INT2	0002	4	Bl 43 Pl 29 Se 28	42	2692	14.1	Bl 38 Pl 31	39	1866	16.3	Pl 40 Bl 30	30	617	24.9	217.033	212.671	BL	76.1	14.80	3	3	F	PL	S	3	88	17.45	PL	S	3	88	17.6
INT2	0003	5	Se 67 Bl 33	36	1102	20.4	Se 67 Bl 33	36	1102	20.4	Se 64 Bl 36	33.6	803	23.1	237.833	233.068	SE	102.5	23.70	5	5	F	B	S	2.5	138	23.37	B	S	2.5	138	23.5
INT2	0004	4	Se 67 Bl 33	47.25	724	28.8	Se 67 Bl 33	47.25	724	28.8	Se 67 Bl 33	47.25	724	28.8	377.685	370.106	SE	120.5	24.60	3	3	V	SE	BL	1	203	31.9	SE	BL	1	203	32
INT2	0005	5	Bl 50 Se 50	19.6	1659	12.3	Se 54 Bl 46	18.2	738	17.7	Se 64 Bl 36	15.4	350	23.7	100.007	97.998	BL	114.3	9.70	1	1	F	B	S	1	200	22.25	B	S	1	200	22.2
INT2	0006	4	Bl 73 Se 27	45.5	2932	14.1	Bl 71 Se 29	42	1041	22.7	Bl 68 Se 32	38.5	460	32.6	314.199	307.894	BL	162.2	26.50	3	1	F	S	B	2.5	213	26.01	S	B	2.5	213	26
INT2	0007	5	Bl 50 Se 50	50.4	1174	23.4	Se 52 Bl 48	48.6	631	31.3	Se 52 Bl 48	48.6	631	31.3	413.028	404.716	SE	280.0	23.50	2	1	F	S	B	1	241	28.67	S	B	1	241	28.7
INT2	0008	3	Bl 65 Se 35	60	1625	21.7	Bl 65 Se 35	60	1625	21.7	Bl 65 Se 35	60	1625	21.7	434.587	425.865	BL	138.3	25.30	1	1	F	BL	S	1	212	21.77	BL	S	1	212	21.7
INT2	0009	5	Bl 59 Se 41	40.8	2913	13.4	Bl 56 Se 44	38.4	2118	15.2	Se 58 Bl 42	28.8	742	22.2	183.097	179.390	BL	58.7	16.18	5	5	F	BL	SE	1	80	17.38	BL	SE	1	80	17.1
INT2	0010	4	Bl 50 Pl 29 Se 21	24.5	1613	13.9	Bl 50 Pl 29	24.5	1613	13.9	Bl 36 Pl 36	19.25	643	19.5	114.543	112.245	BL	123.6	13.70	3	3	V	PL	BL	2	156	17.1	PL	BL	2	156	17.1
INT2	1111	5	Bl 88 Se 08 Fd 04	33.6	1759	15.6	Bl 86 Se 09	30.8	965	20.2	Bl 86 Se 10	29.4	794	21.7	168.614	165.082	BL	124.8	18.48	5	5	F	S	B	2.5	203	30.84	S	B	2.5	203	30.8

7. APPENDIX C: DATA ISSUES

This table documents questions and responses regarding the Kamloops TSA VRI data that were made during the course of the analysis. A detailed analysis/status of sample and plot locations was provided by Matt Makar.

Sample #	Issue	Action/Resolution
0111-1	Listed as 54N (federal) ownership	Only 54N poly in unit; leave in.
0111-2	69N Bonaparte Park	Exclude from analysis
0111-5	New re-inventory; original poly 174; new poly 309	Compiled with IPC + east AUX plot; others excluded since outside poly boundary
0111-11	69N Bonaparte Park	Exclude from analysis
0111-12	Map 0082M023 re-inventoried; original poly 530; new poly 611	Same poly shape; just new number.
0111-13	VN recent logging	Exclude
0111-30	Part of poly logged but sample location OK	Include
0111-33	Map 0082M023 re-inventoried; original poly 1603; new poly 559	All plots OK. Include.
0111-36	This sample falls outside the TSA but is in the correct polygon as selected from the sample list. Partial logging of original poly 533.	Sample falls in remnant (new poly number 2095); use attribute on inventory for poly 533 as per Matt.
0111-40	VN polygon recently logged	Exclude
0111-43	Updated opening boundaries in this area.	Crew drew on cluster layout card that east aux was in a new cutblock, but still called it in the target poly. This aux should be called OUT of the polygon.
0111-48	Map 0082M023 re-inventoried; original poly 34; new poly 170	All plots OK. Include.
0111-49	Ownership 40N	Exclude from analysis
0111-50	VN polygon recently logged	Exclude
0111-51	Age=56yrs; outside of new population of interest	Exclude
0111-55	This was an NVAF-enhanced plot however the original IPC data was lost. Matt revisited the sample in 2007 and collected IPC data but the IPC had been affected by MPB and 2 previously live pl in the IPC were now dead.	Decided to “revive” the 2 dead pine in the IPC that were likely alive at the time of original sample establishment. Hence the volume at 12.5cm+dbh utilization net dw2 with NVAF applied was 293 m3/ha.
0111-56	69N Tunkwa Park	Exclude
0111-69	Age=49 yrs; outside of new population of interest	Exclude
0111-75	Original poly 594; polygon boundaries have changed, probably due to update. Sample is in correct location and now falls in poly 548 (same opening).	Aux plots OK. Include.
0111-90	Age=21 yrs; outside of new population of interest	Exclude
0111-95	Polygon recently logged	Exclude as VN
0111-96	New re-inventory; original poly 84; new poly 255.	Aux plots OK. Include.
0111-99	Part of polygon logged.	Sample location OK.
0111-501	Oregana Creek PA. Park.	Exclude
0112-503	New re-inventory; new polygon age = 33 yrs. (not in population of interest)	Exclude

0112-508	New re-inventory; new poly delineation.	IPC now in poly 124; exclude S & E aux
0112-513	Originally age class 2; chosen in error since outside of original population of interest.	Exclude
0112-514	New re-inventory; original poly 263; new poly 503.	Aux plots OK. Include.
0112-515	New re-inventory; original poly 309; new poly 516.	Aux plots OK. Include.
0112-531	70N ownership	Exclude
0112-534	Park; Upper Adams River	Exclude
0112-550	70N ownership	Exclude
INT1-5	New re-inventory; original poly 242; new poly 190	Exclude S, W & N aux plots in compilation of sample.
INT1-15	Part of sample outside target poly.	Exclude W aux plot in compilation
INT1-34	New re-inventory; original poly 11; new poly 249.	Exclude S & E aux from compilation.
INT1-42	New re-inventory; original poly 168; new poly 1700.	W is only aux to be included in compilation.
INT1-54	New re-inventory; original poly 23; new poly 1777.	Compile only IPC and E aux.
INT1-60	New re-inventory; original poly 312; new poly 1928.	Exclude N aux (in cutblock)
INT1-65	New re-inventory; original poly 715; new poly 1254.	Exclude S & E aux
INT1-68	New re-inventory; original poly 115; new poly 249.	Aux plots OK. Include.
INT1-69	New re-inventory; original poly 337; new poly 925.	Aux plots checked; OK. Include.
INT1-73	Sample lies less than 5 m from target polygon; N & S plots should be dropped, but otherwise, use sample data.	Exclude N & S aux.
INT1-204, 208, 209, 211, 215	Immature samples; original sample plan called for 15 samples to be established in the immature but only 5 were established.	Exclude
INT2-4	New re-inventory; original poly 294; new poly 821.	Include
INT2-7	New re-inventory; original poly 126; new poly 812.	Include
INT2-10	New re-inventory; original poly 425; new poly 734.	Include

8. APPENDIX D: VDYP7 HEIGHT AND AGE SCATTERPLOTS

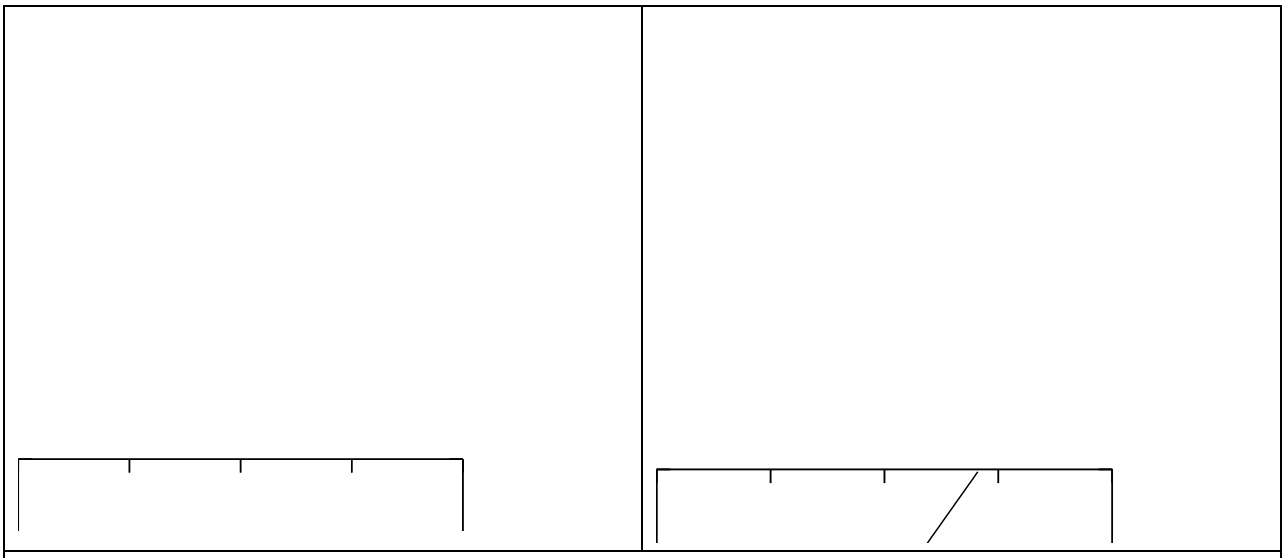


Fig. 1: Deciduous stratum (TSA-wide). Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 974; × = 25,639.

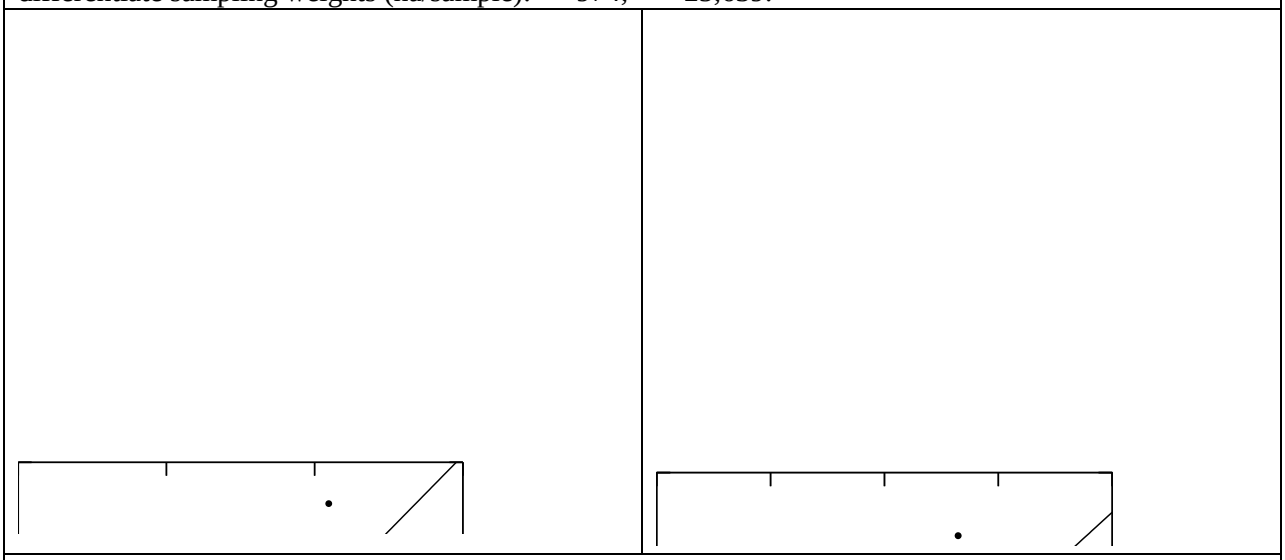


Fig. 2: IFPA area Balsam leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 1,138; × = 13,770

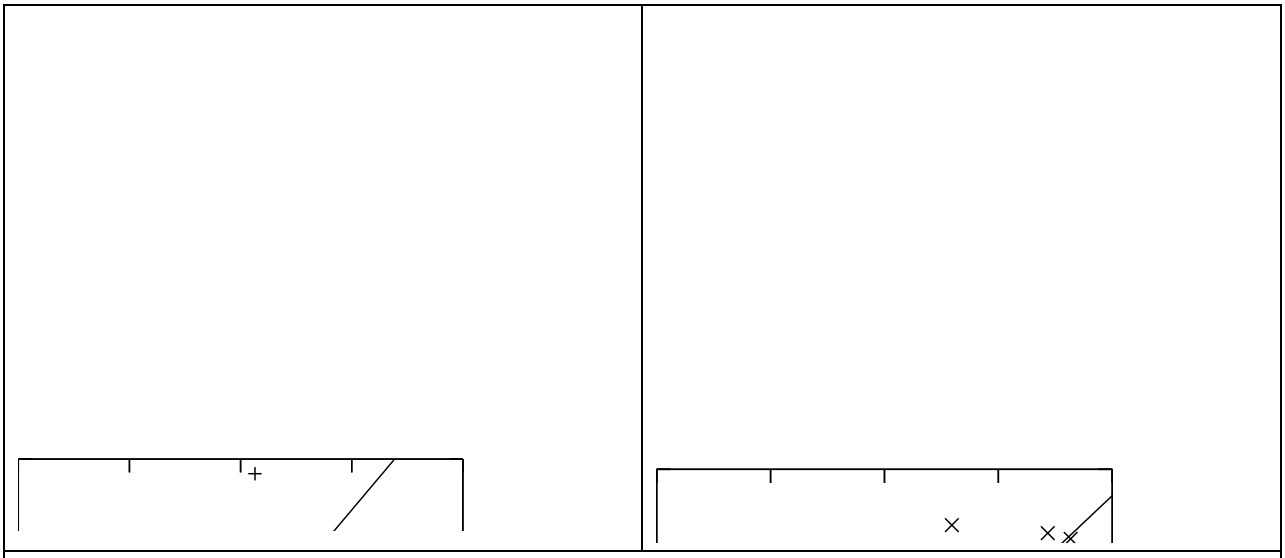


Fig. 3: IFPA area Cedar or Hemlock leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): ●= 1,078; × = 1,387; + = 1,983; ▲= 6,582.

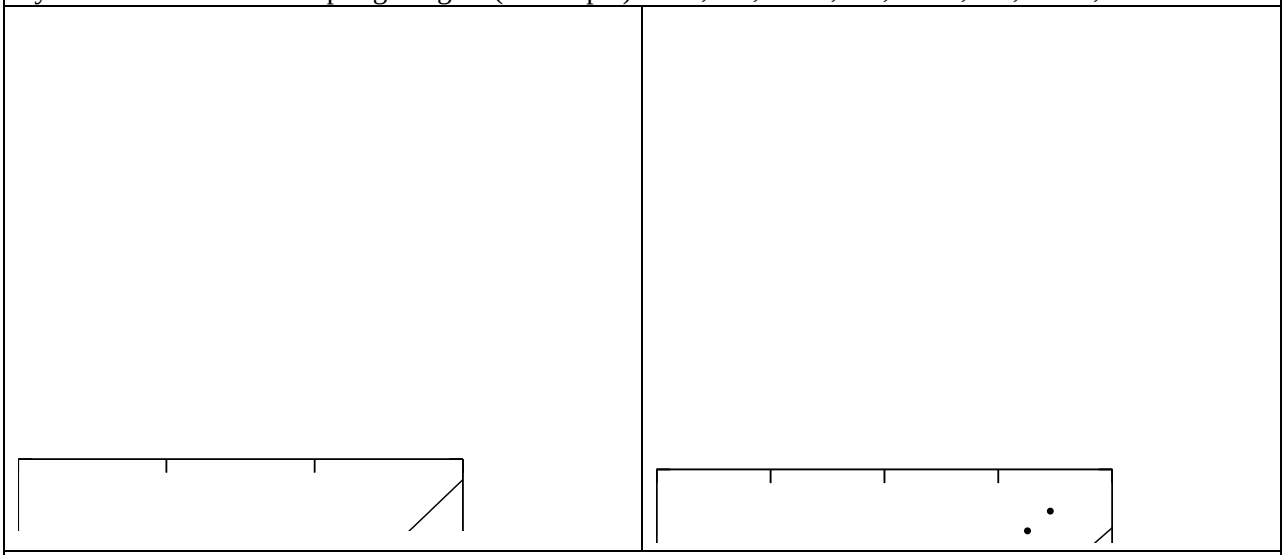


Fig. 4: IFPA area Fir leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): ●= 2,038; × = 17,896.

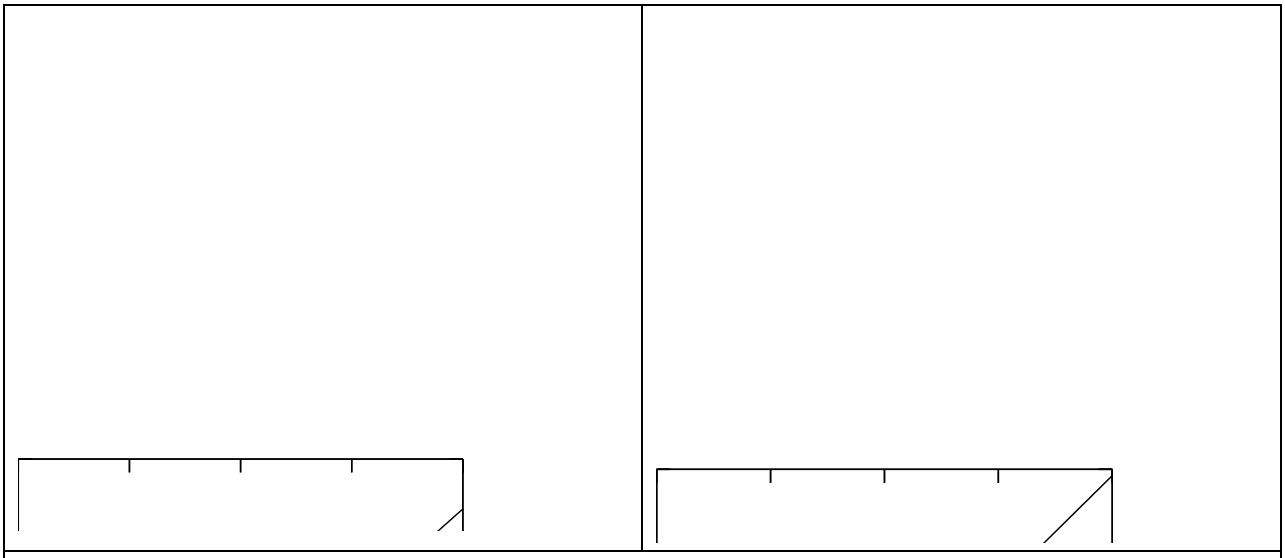


Fig. 5: IFPA area Pine leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 1,783; × = 14,979.

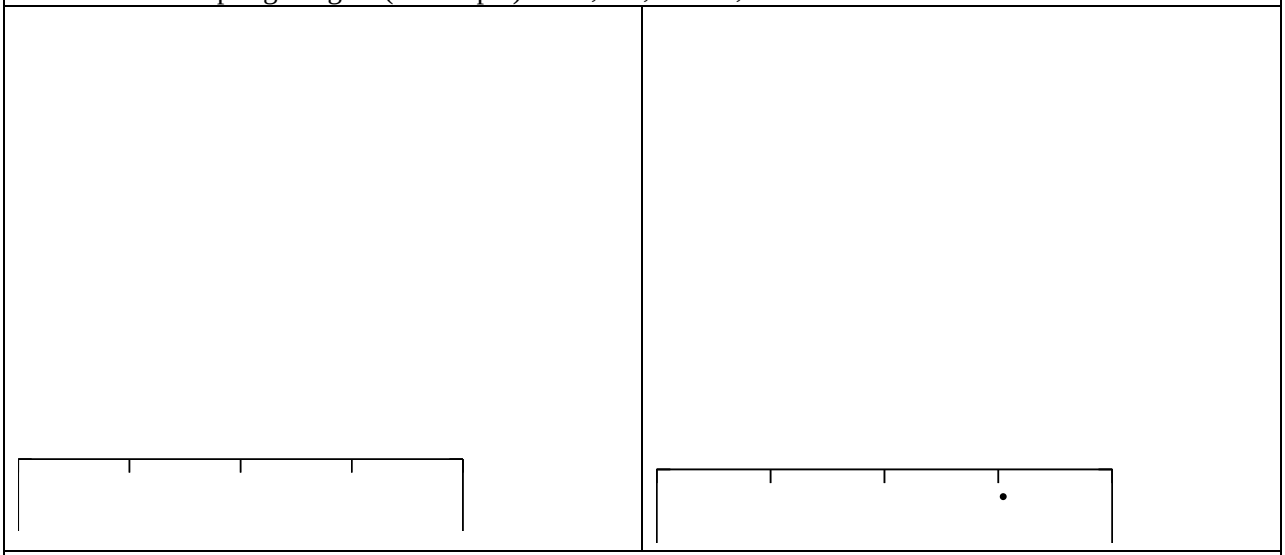


Fig. 6: IFPA area Spruce leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. All samples shown on graph have the same weight.

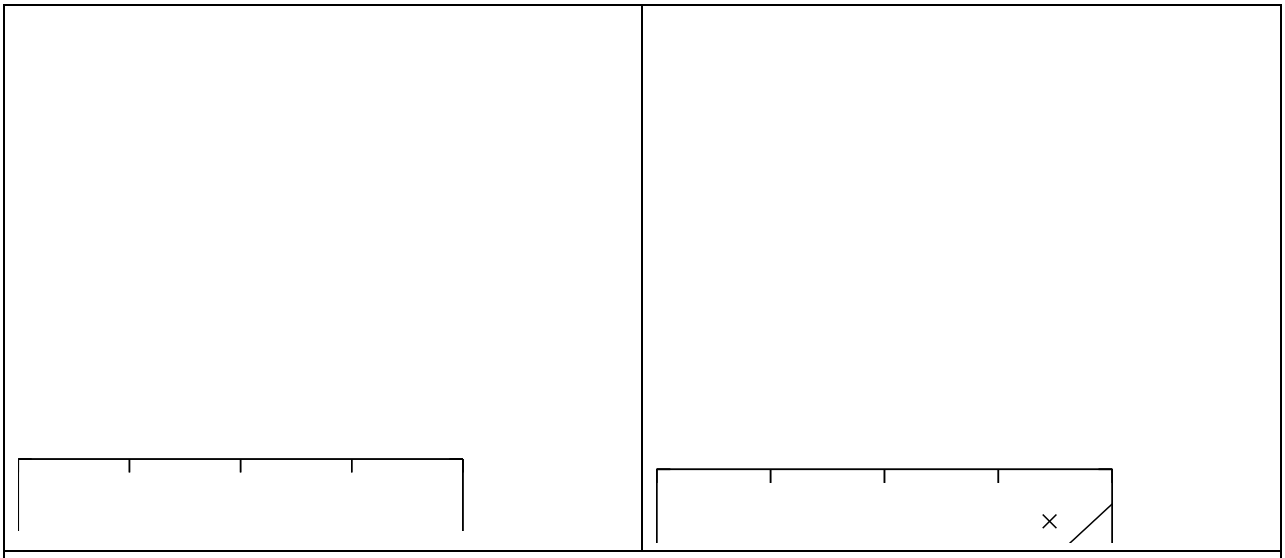


Fig. 7: Non-IFPA area Balsam or Spruce leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 13,770; × = 14,574.

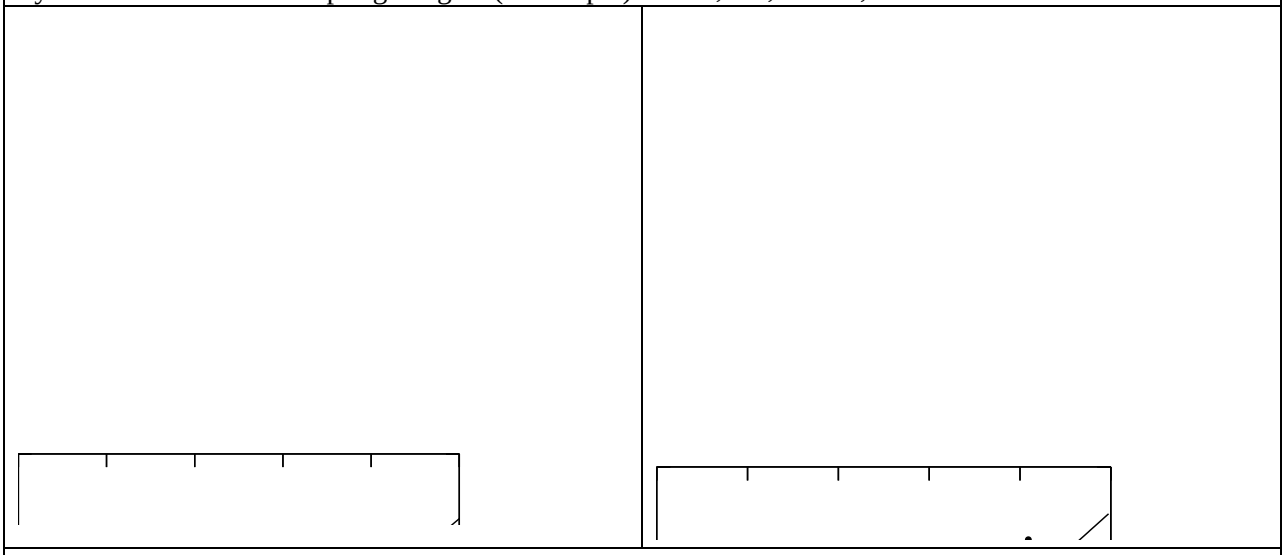


Fig. 8: Non-IFPA area Cedar or Hemlock leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. All samples shown on graph have the same weight.

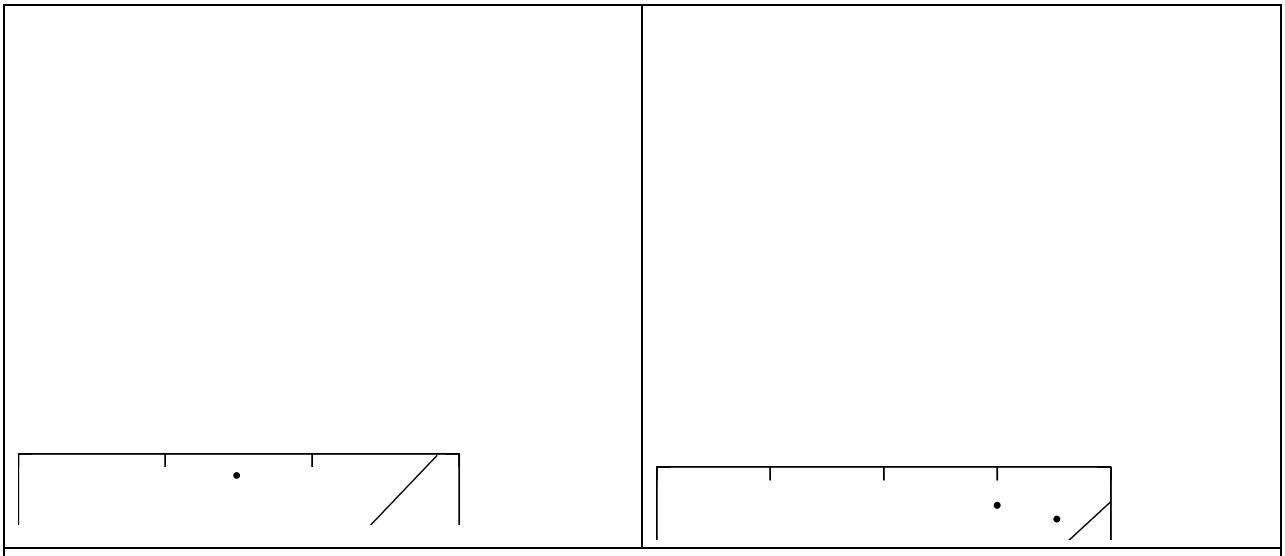


Fig. 9: Non-IFPA area Fir leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. All samples shown on graph have the same weight.

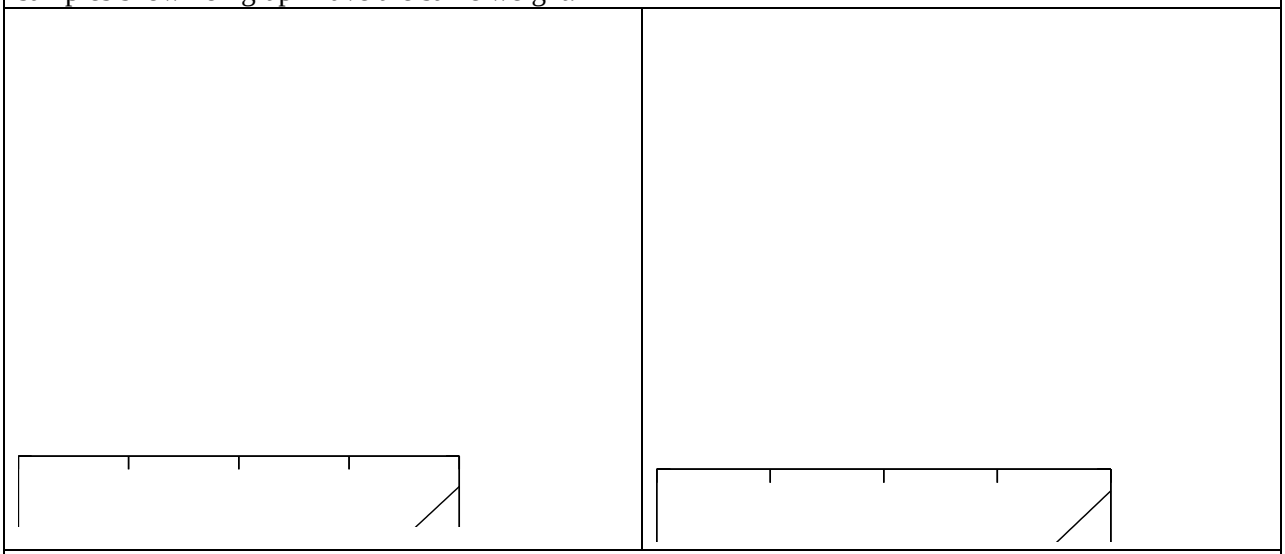


Fig. 10: Non-IFPA area Pine leading stratum. Age and height relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. All samples shown on graph have the same weight.

9. APPENDIX E: VDYP7 BASAL AREA AND TPH

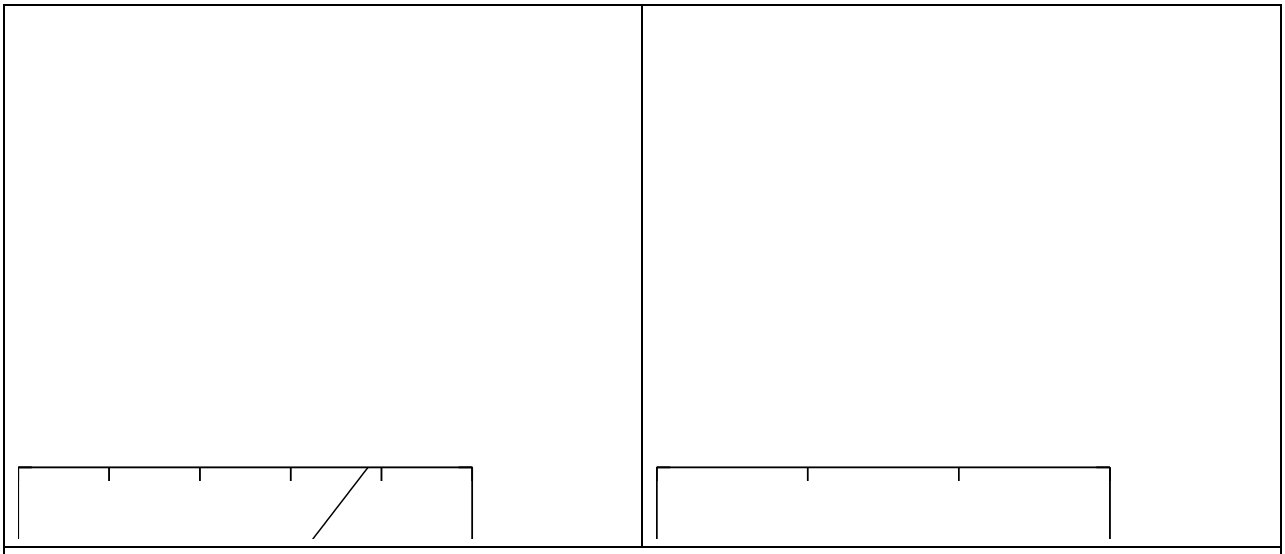


Fig. 11: Deciduous stratum (TSA-wide). Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 974; × = 25,639.

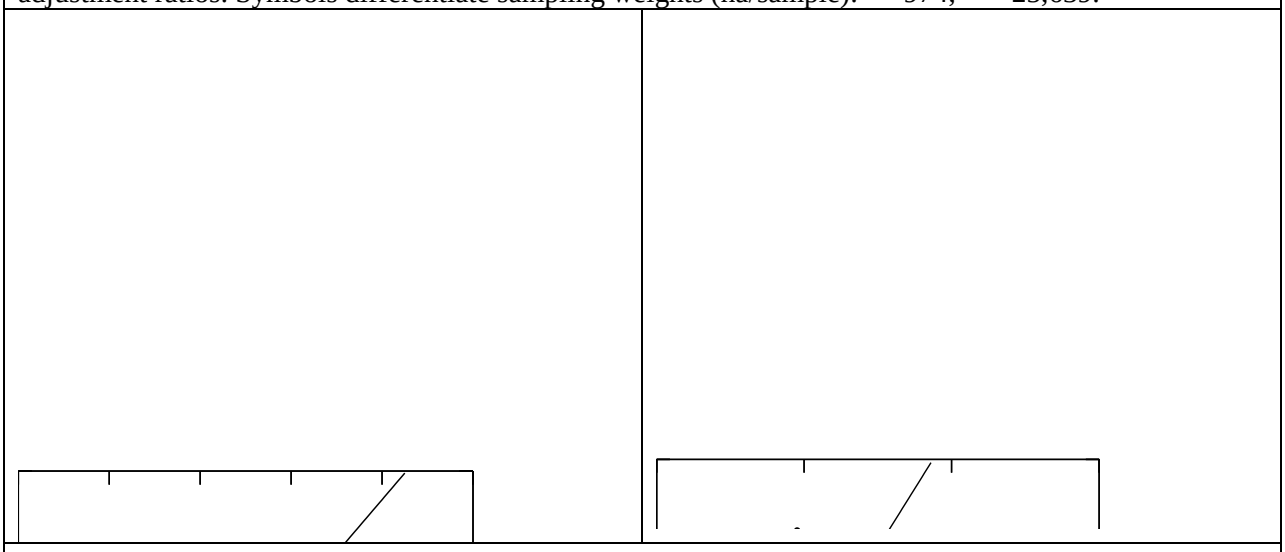


Fig. 12: IFPA area Balsam leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 1,138; × = 13,770

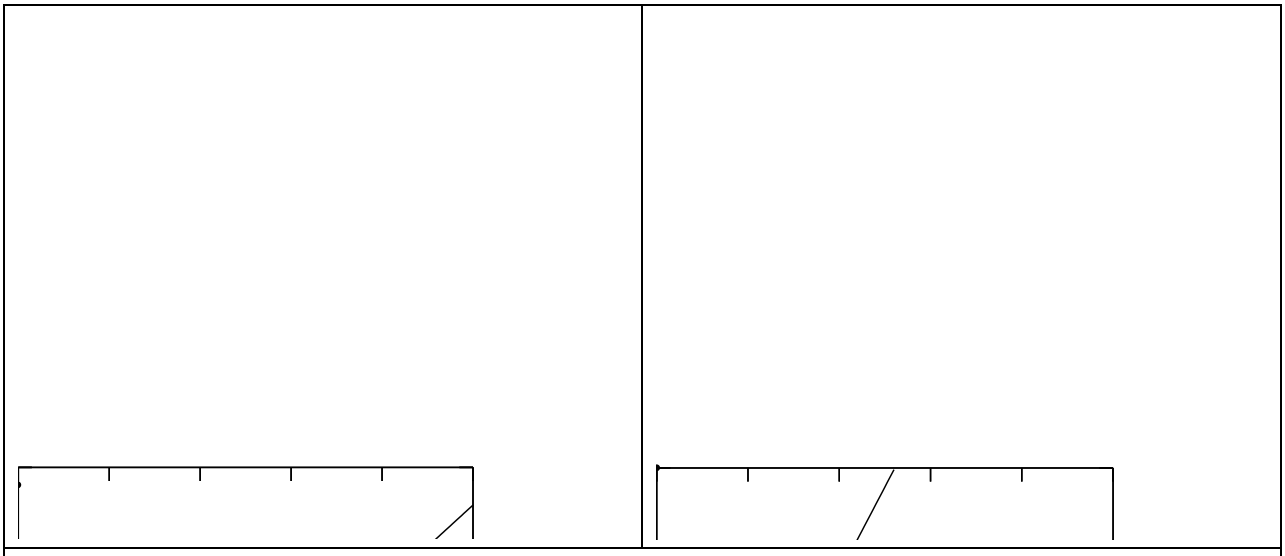


Fig. 13: IFPA area Cedar or Hemlock leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 1,078; × = 1,387; + = 1,983; ▲= 6,582.

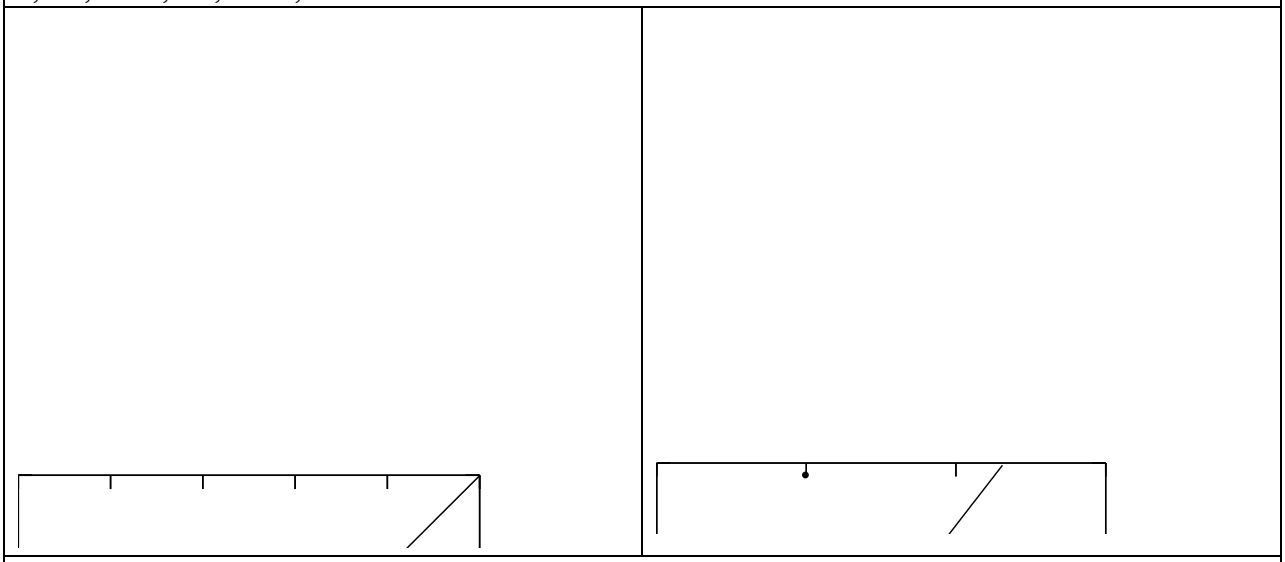


Fig. 14: IFPA area Fir leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 2,038; × = 17,896.

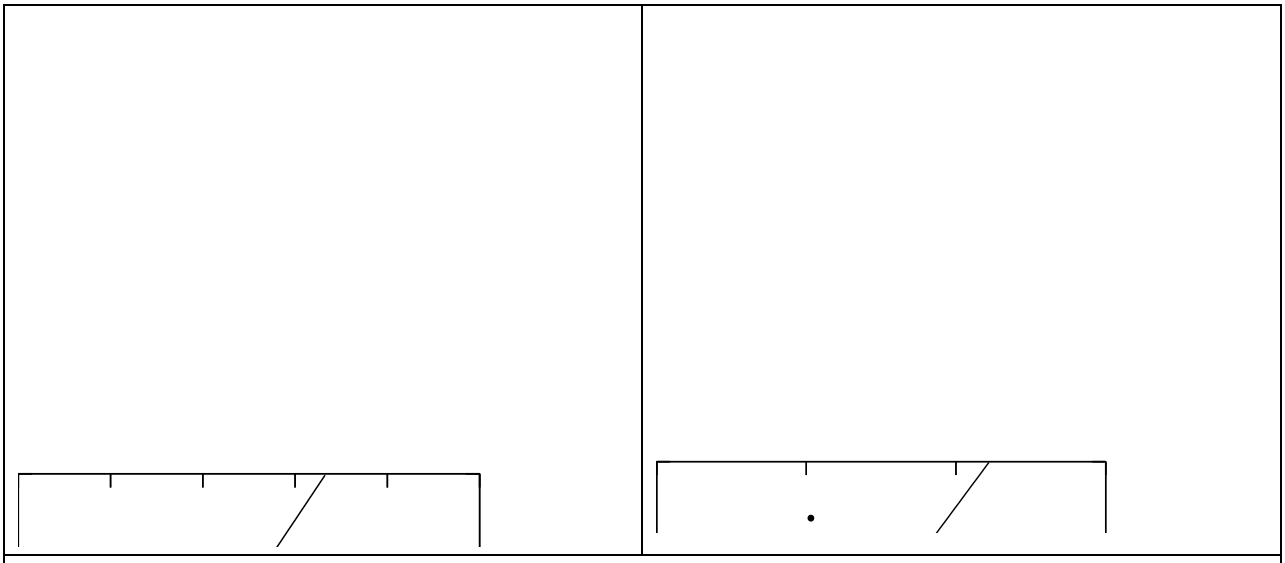


Fig. 15: IFPA area Pine leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 1,783; × = 14,979.

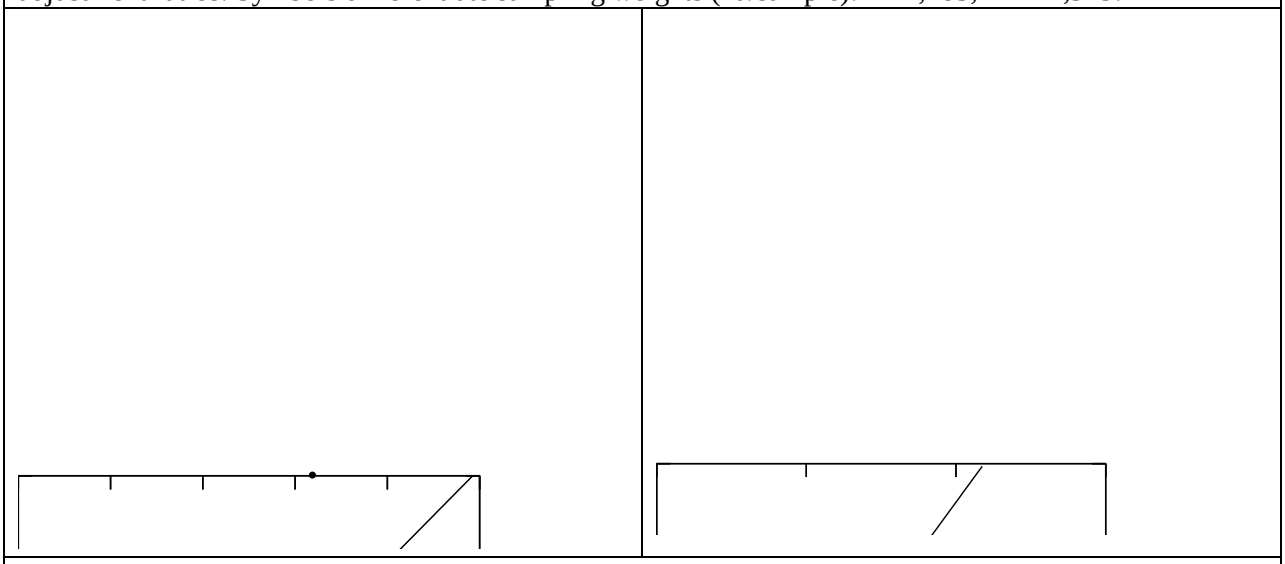


Fig. 16: IFPA area Spruce leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 1,336; × = 14,574.

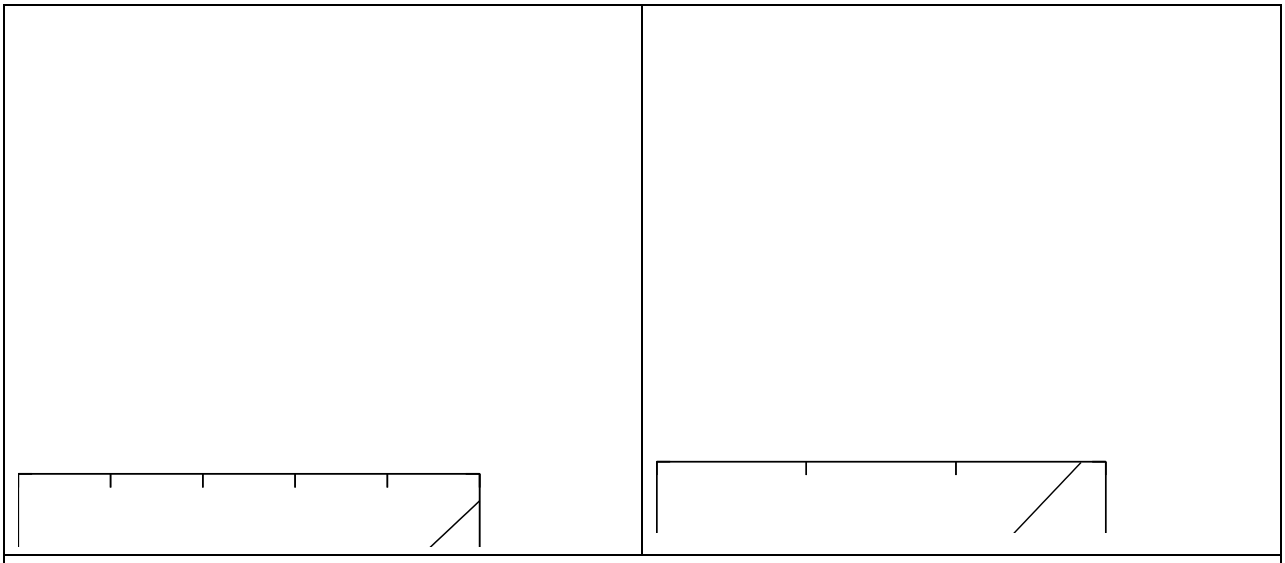


Fig. 17: Non-IFPA area Balsam or Spruce leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. Symbols differentiate sampling weights (ha/sample): •= 13,770; × = 14,574.

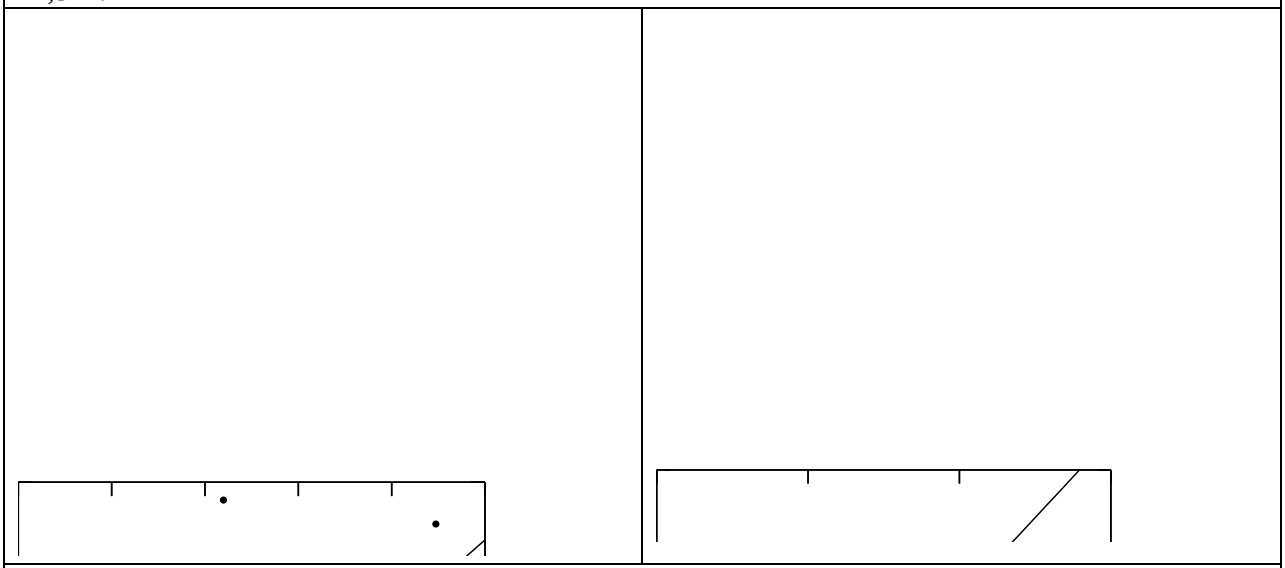


Fig. 18: Non-IFPA area Cedar or Hemlock leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. All samples shown on graph have the same weight.

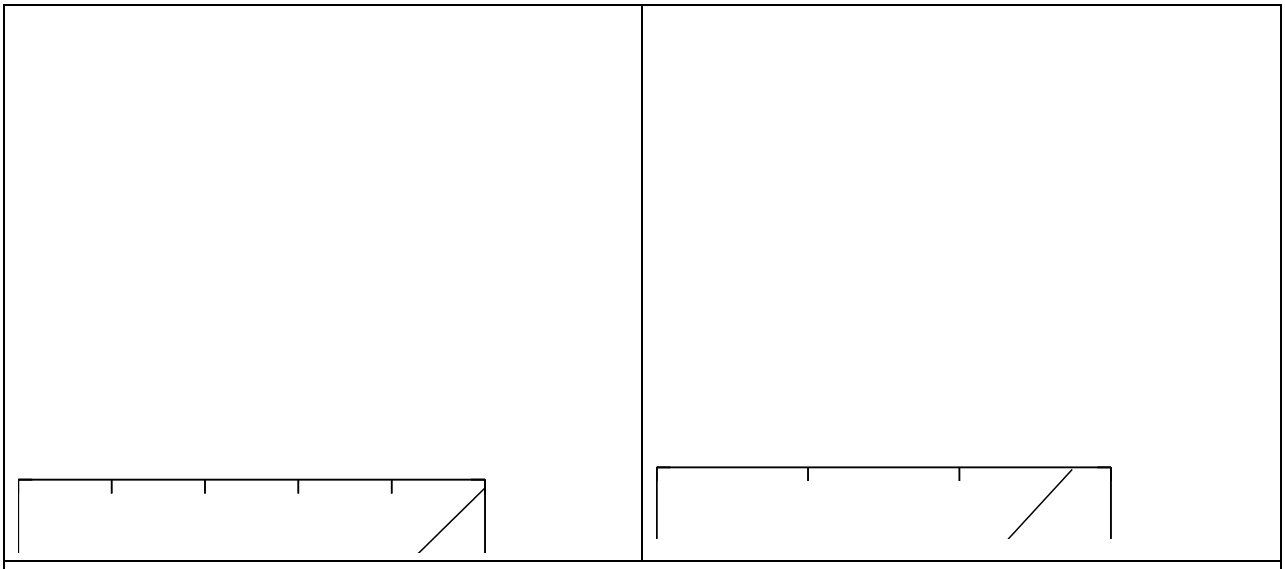


Fig. 19: Non-IFPA area Fir leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. All samples shown on graph have the same weight.

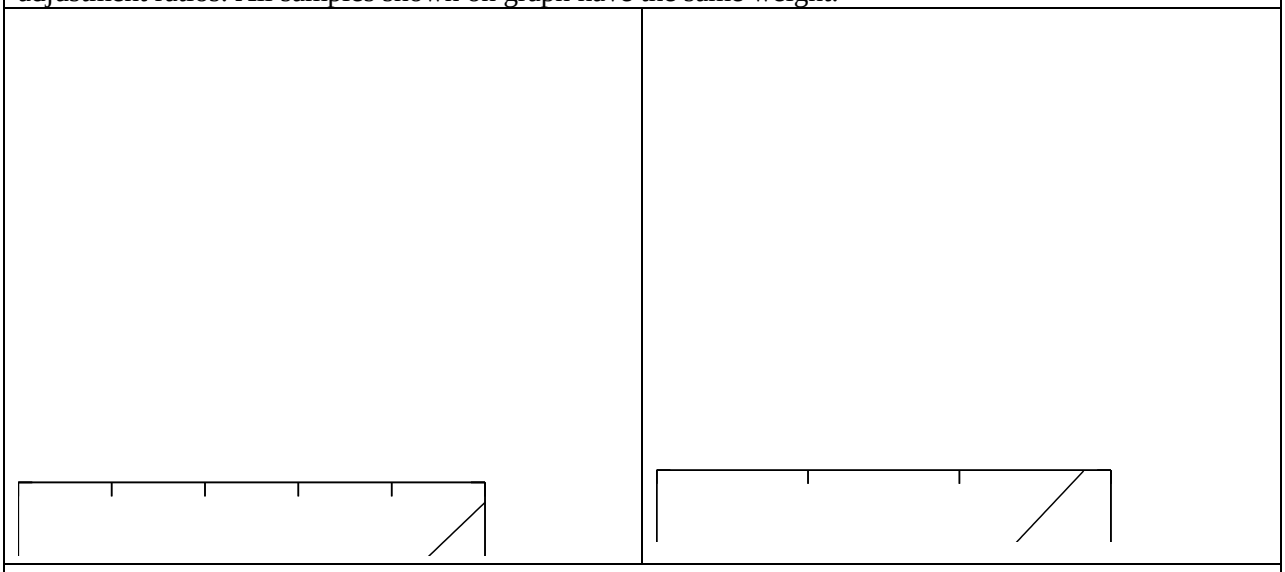


Fig. 20: Non-IFPA area Pine leading stratum. Basal area/ha and trees/ha (@7.5cm+dbh) relationships: ground (Phase II) attribute versus VDYP7 (Phase I) attribute. The lines on the graphs correspond to the adjustment ratios. All samples shown on graph have the same weight.

10. APPENDIX F: VDYP7 STAGE 1 ADJUSTMENT RESIDUALS

Age Residuals by stratum

Fig. 21: Deciduous stratum (TSA-wide). Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. Symbols differentiate sampling weights (ha/sample): •= 974; × = 25,639.

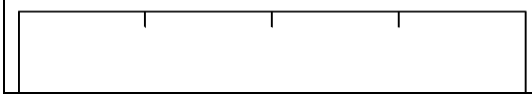


Fig. 22: IFPA area Balsam leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. Symbols differentiate sampling weights (ha/sample): •= 1,138; × = 13,770

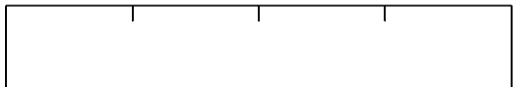


Fig. 23: IFPA area Cedar or Hemlock leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. Symbols differentiate sampling weights (ha/sample): •= 1,078; × = 1,387; + = 1,983; ▲= 6,582.

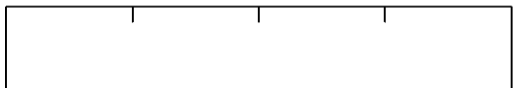


Fig. 24: IFPA area Fir leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. Symbols differentiate sampling weights (ha/sample): •= 2,038; × = 17,896.

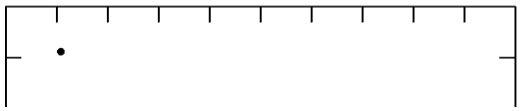


Fig. 25: IFPA area Pine leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. Symbols differentiate sampling weights (ha/sample): •= 1,783; × = 14,979.

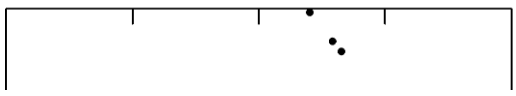


Fig. 26: IFPA area Spruce leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. All samples shown on graph have the same weight.

Fig. 27: Non-IFPA area Balsam or Spruce leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. Symbols differentiate sampling weights (ha/sample): •= 13,770; × = 14,574.

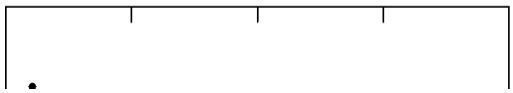
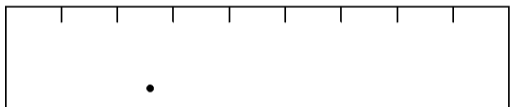


Fig. 28: Non-IFPA area Cedar or Hemlock leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. All samples shown on graph have the same weight.

	Fig. 29: Non-IFPA area Fir leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. All samples shown on graph have the same weight.
	Fig. 30: Non-IFPA area Pine leading stratum. Age residuals (Phase II ground age – adjusted Phase I inventory age) versus unadjusted VDYP7 (Phase I) age. All samples shown on graph have the same weight.

Height Residuals by stratum

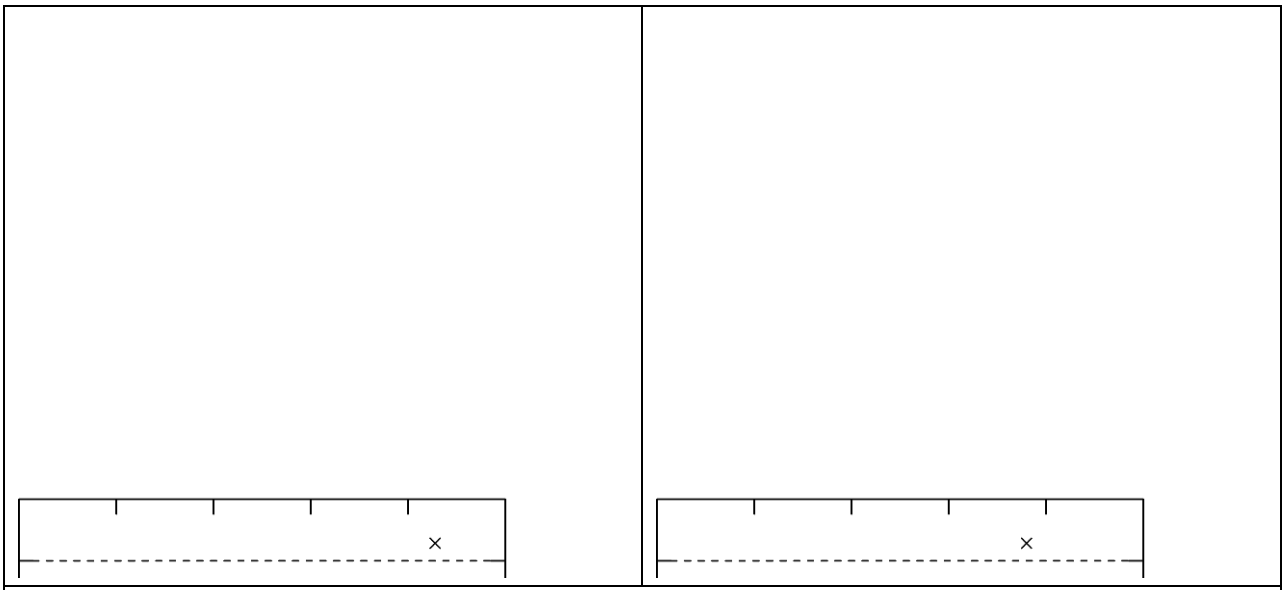


Fig. 31: Deciduous stratum (TSA-wide). Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 974; × = 25,639.

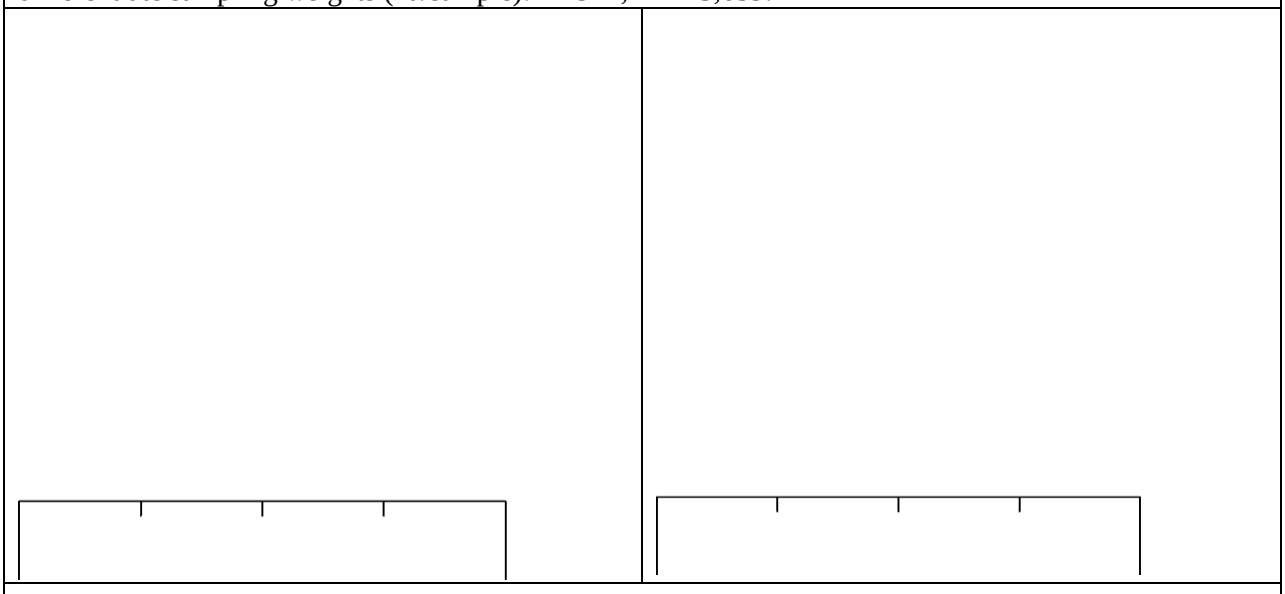


Fig. 32: IFPA area Balsam leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,138; × = 13,770

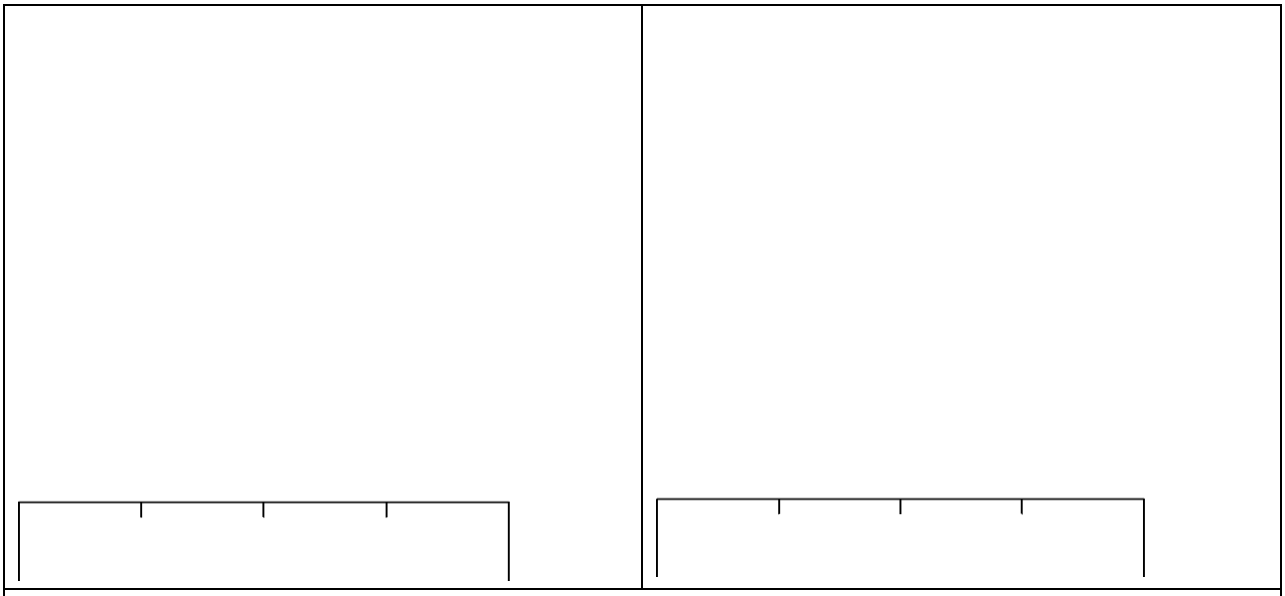


Fig. 33: IFPA area Cedar or Hemlock leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. Symbols differentiate sampling weights (ha/sample): ●= 1,078; × = 1,387; + = 1,983; ▲= 6,582.

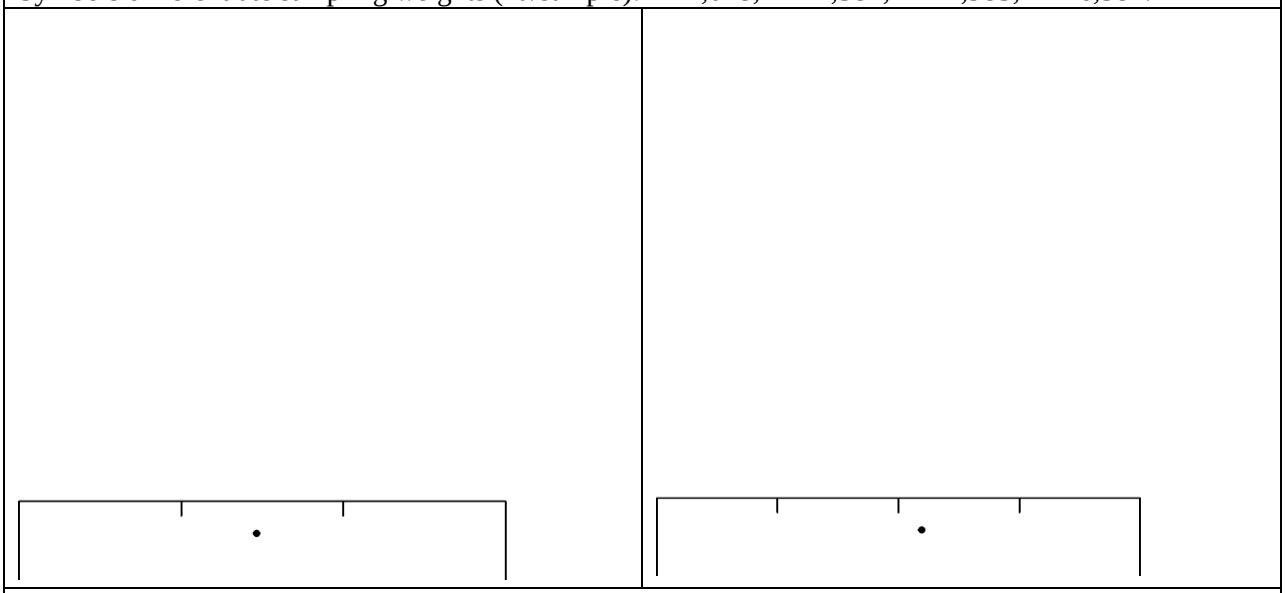


Fig. 34: IFPA area Fir leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. Symbols differentiate sampling weights (ha/sample): ●= 2,038; × = 17,896.

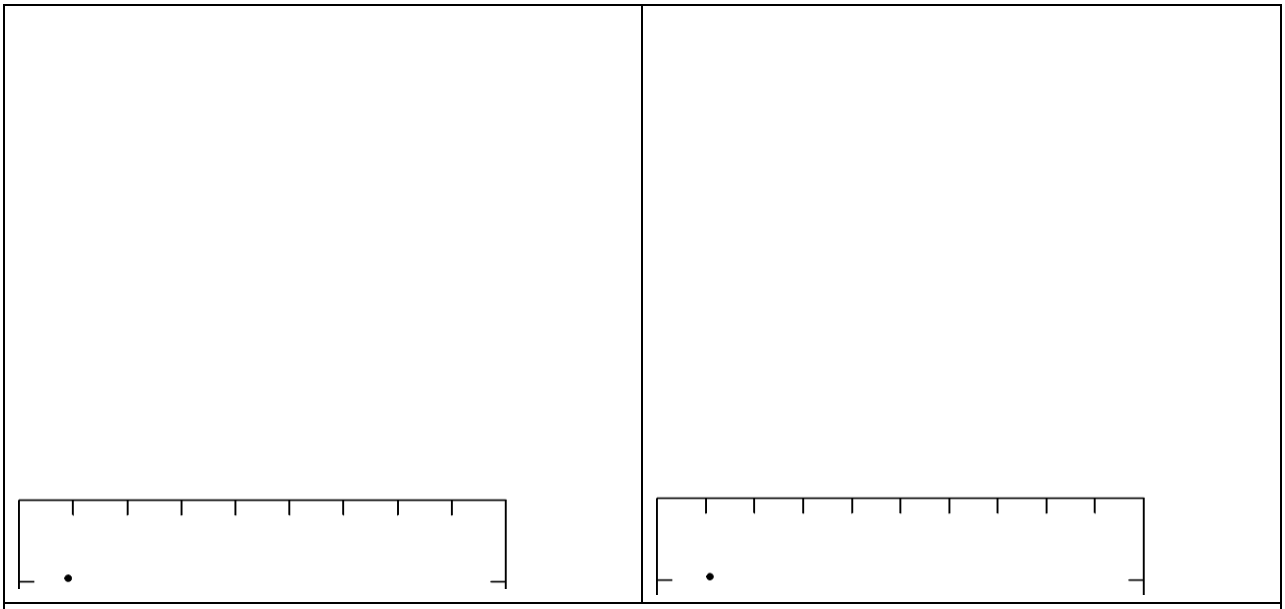


Fig. 35: IFPA area Pine leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,783; × = 14,979.

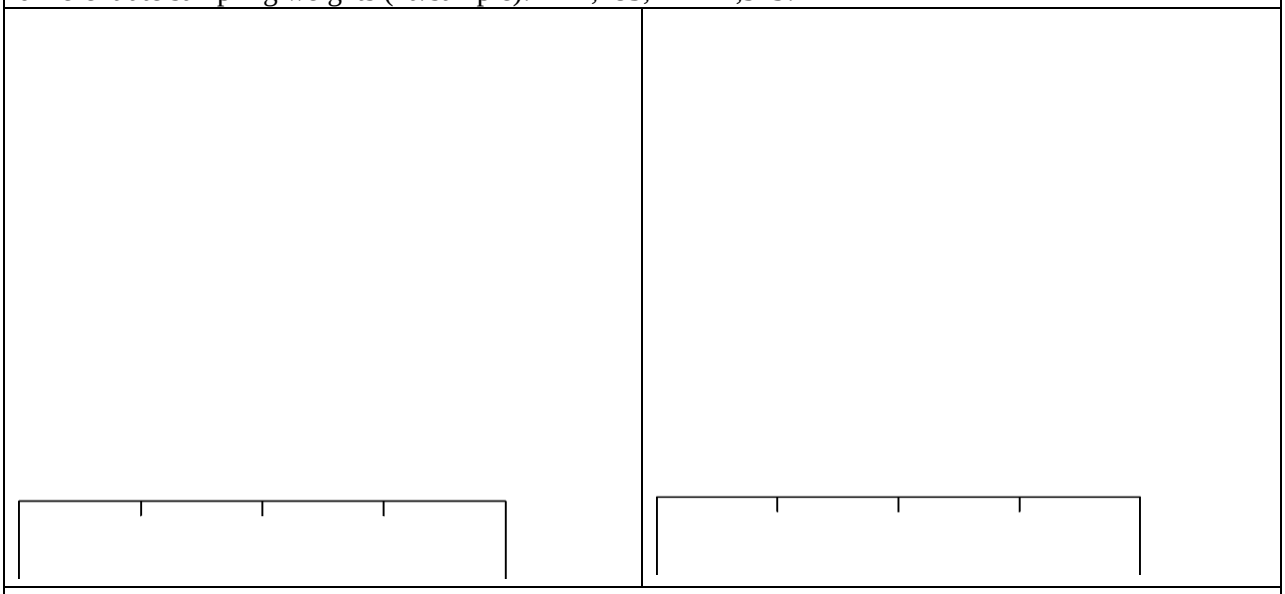


Fig. 36: IFPA area Spruce leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,336; × = 14,574.

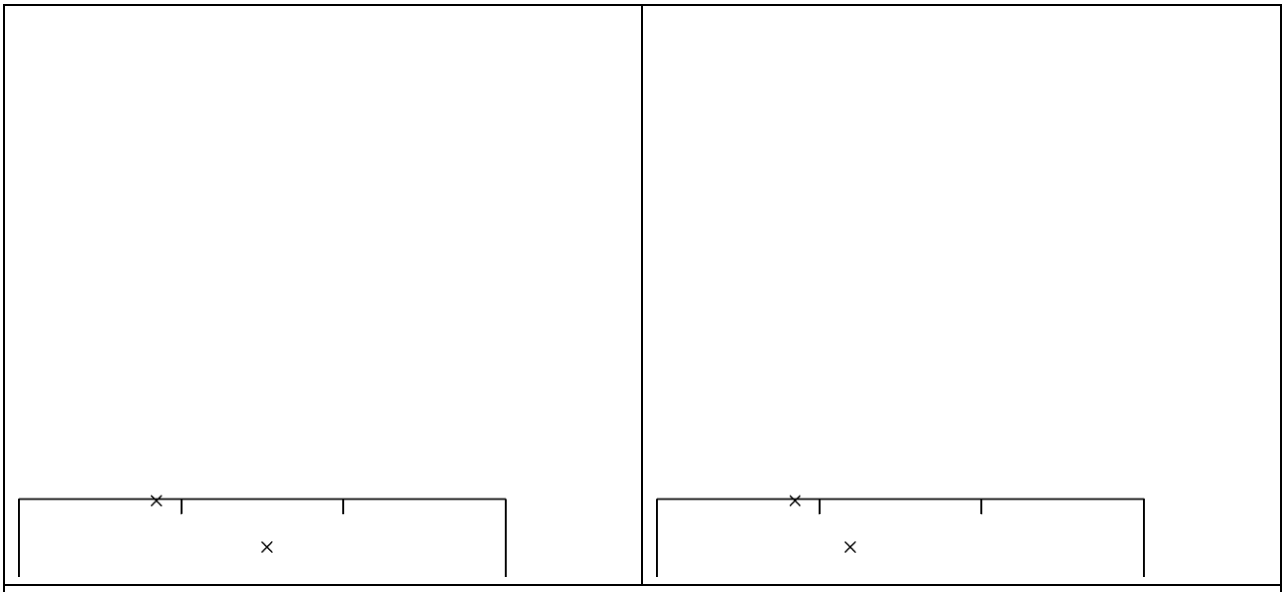


Fig. 37: Non-IFPA area Balsam or Spruce leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. Symbols differentiate sampling weights (ha/sample): ●= 13,770; × = 14,574.

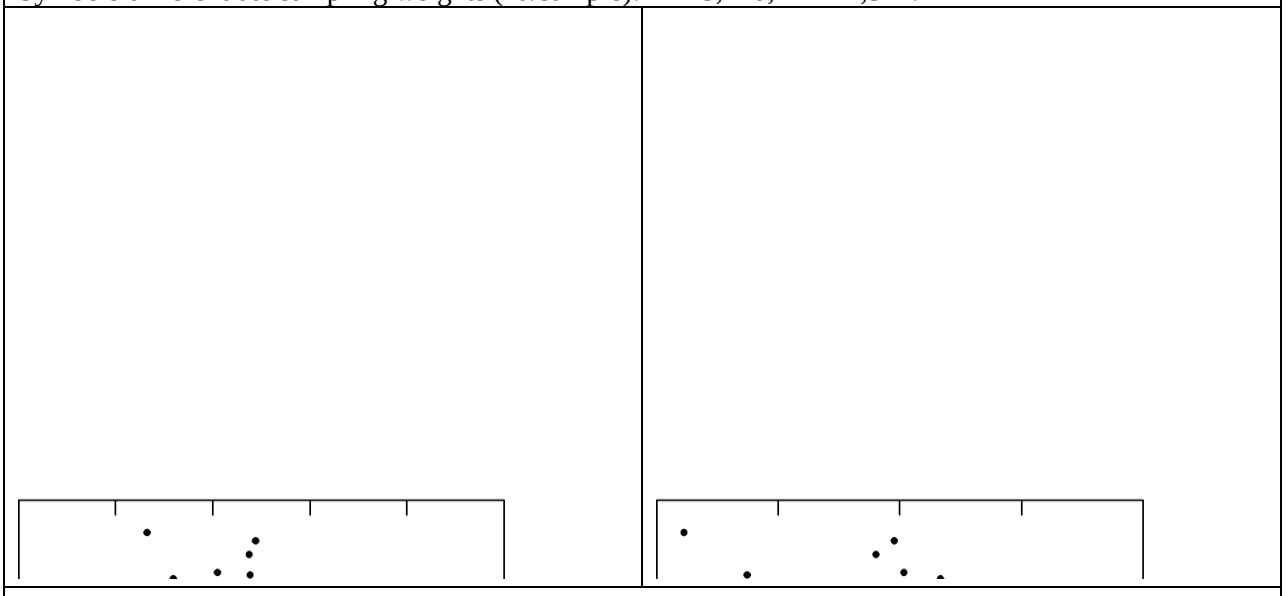


Fig. 38: Non-IFPA area Cedar or Hemlock leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. All samples shown on graph have the same weight.

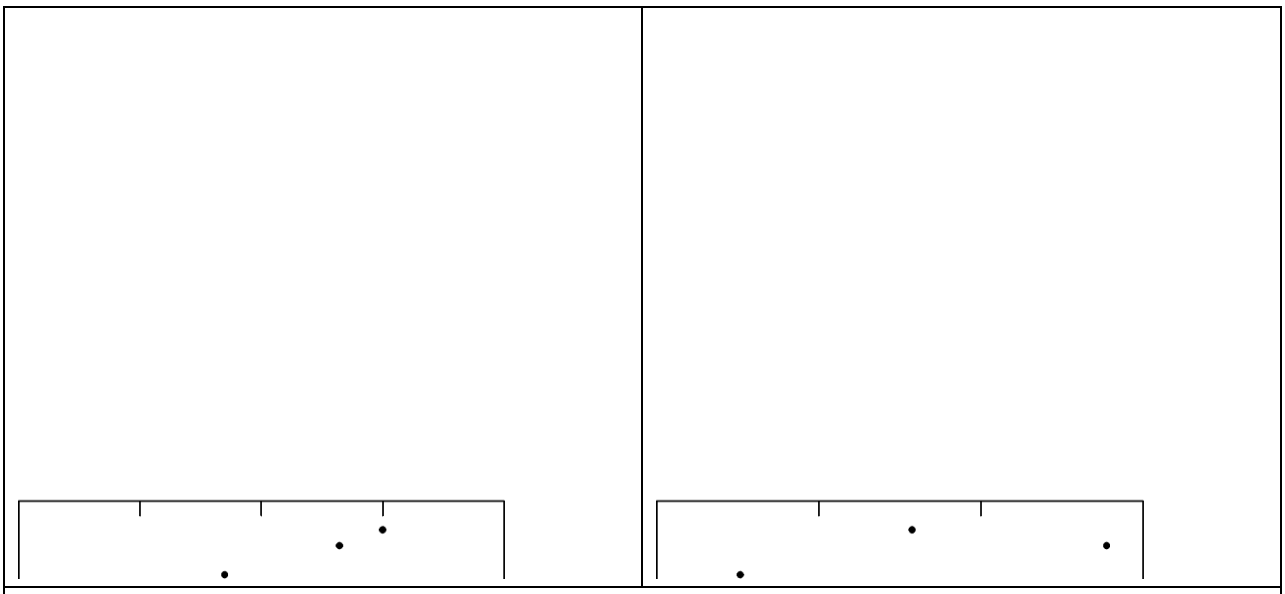


Fig. 39: Non-IFPA area Fir leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. All samples shown on graph have the same weight.

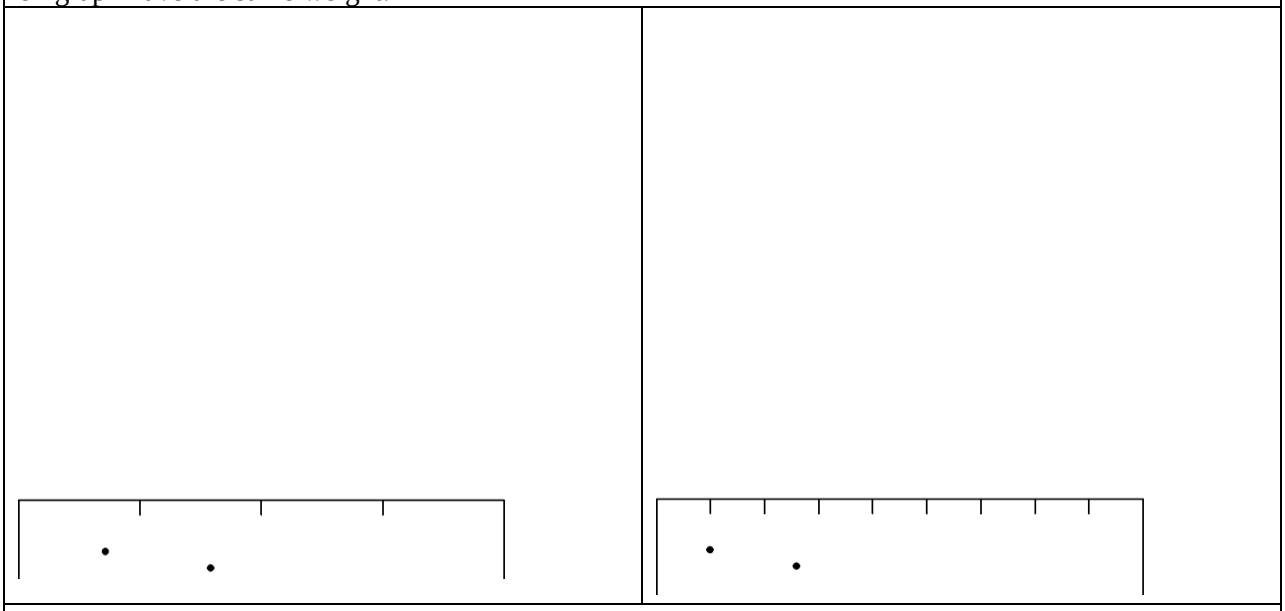


Fig. 40: Non-IFPA area Pine leading stratum. Height residuals (Phase II ground height – adjusted Phase I inventory height) versus unadjusted VDYP7 (Phase I) height and age, respectively. All samples shown on graph have the same weight.

Basal area/ha (BA) Residuals by stratum

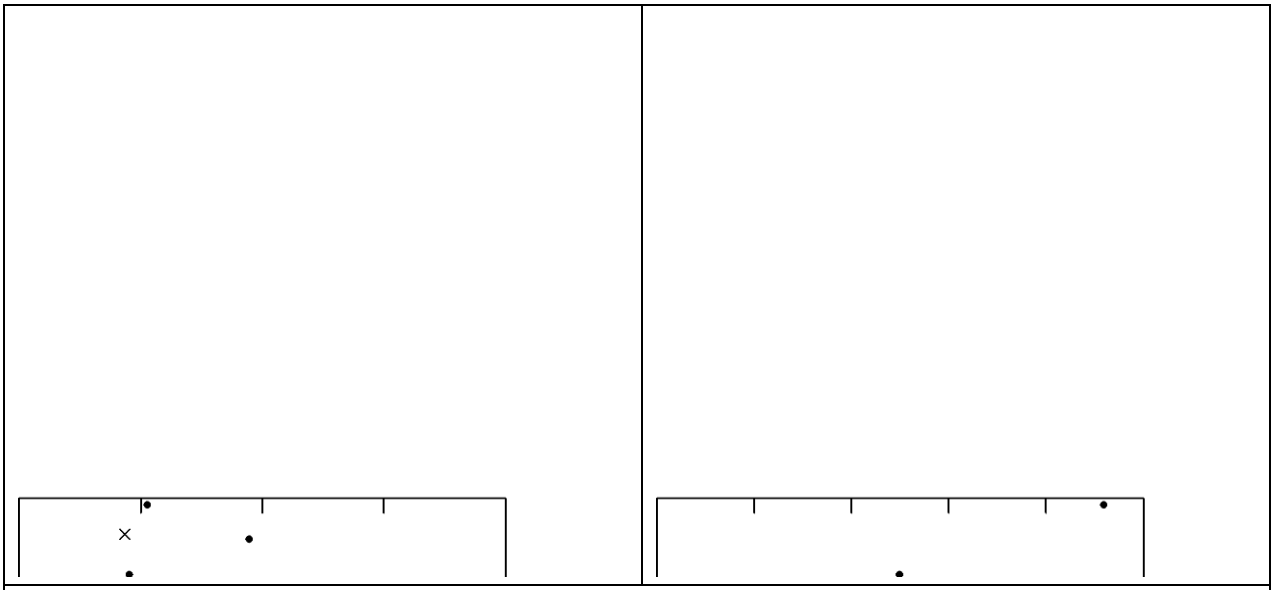


Fig. 41: Deciduous stratum (TSA-wide). Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 974; × = 25,639.

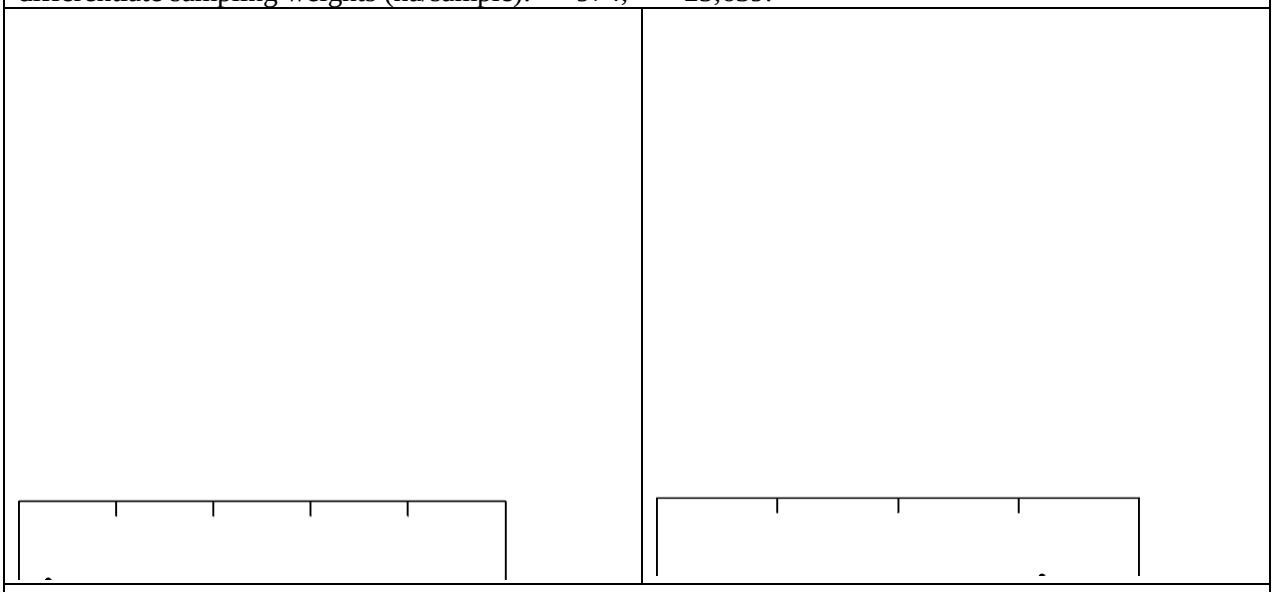


Fig. 42: IFPA area Balsam leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,138; × = 13,770

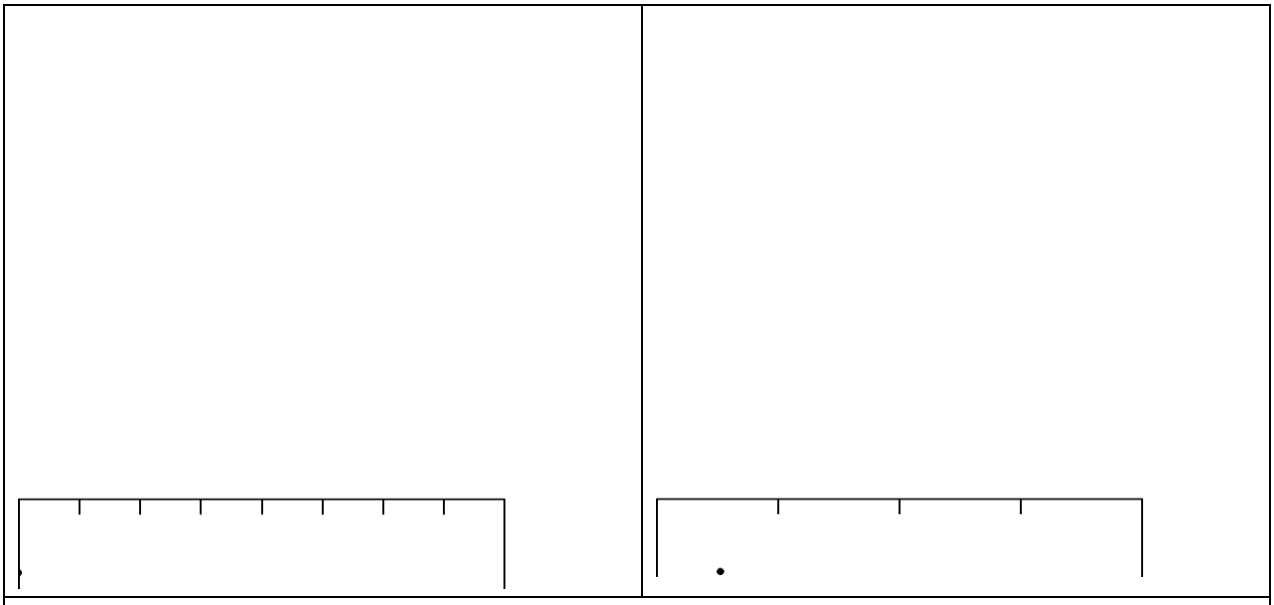


Fig. 43: IFPA area Cedar or Hemlock leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,078; × = 1,387; + = 1,983; ▲= 6,582.

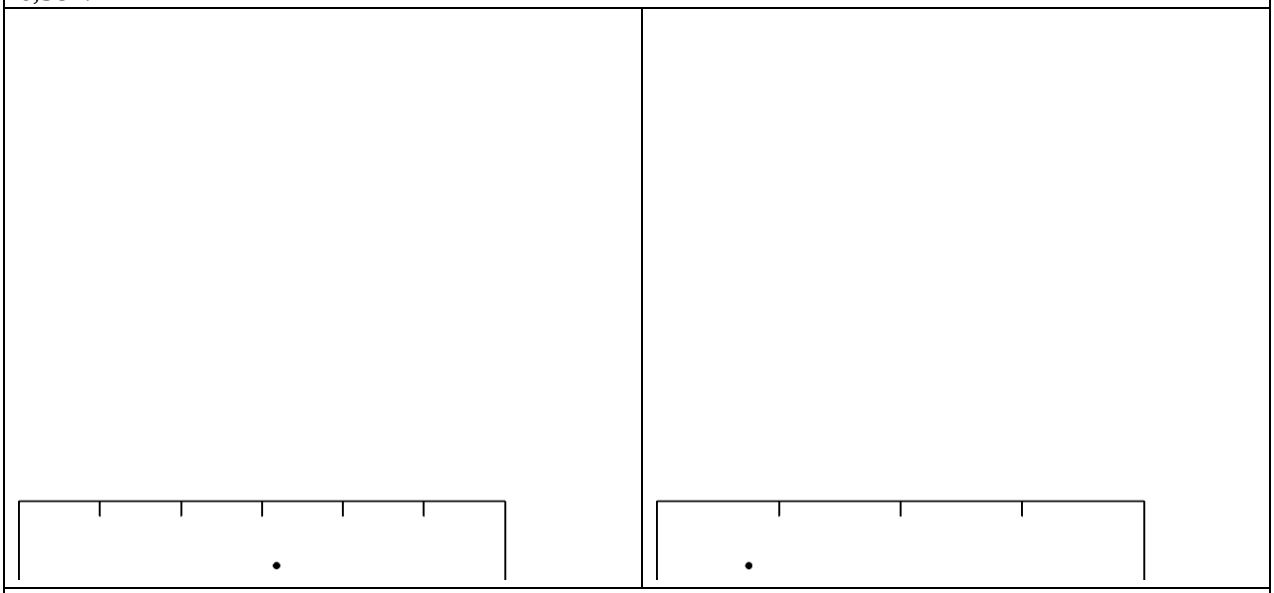


Fig. 44: IFPA area Fir leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 2,038; × = 17,896.

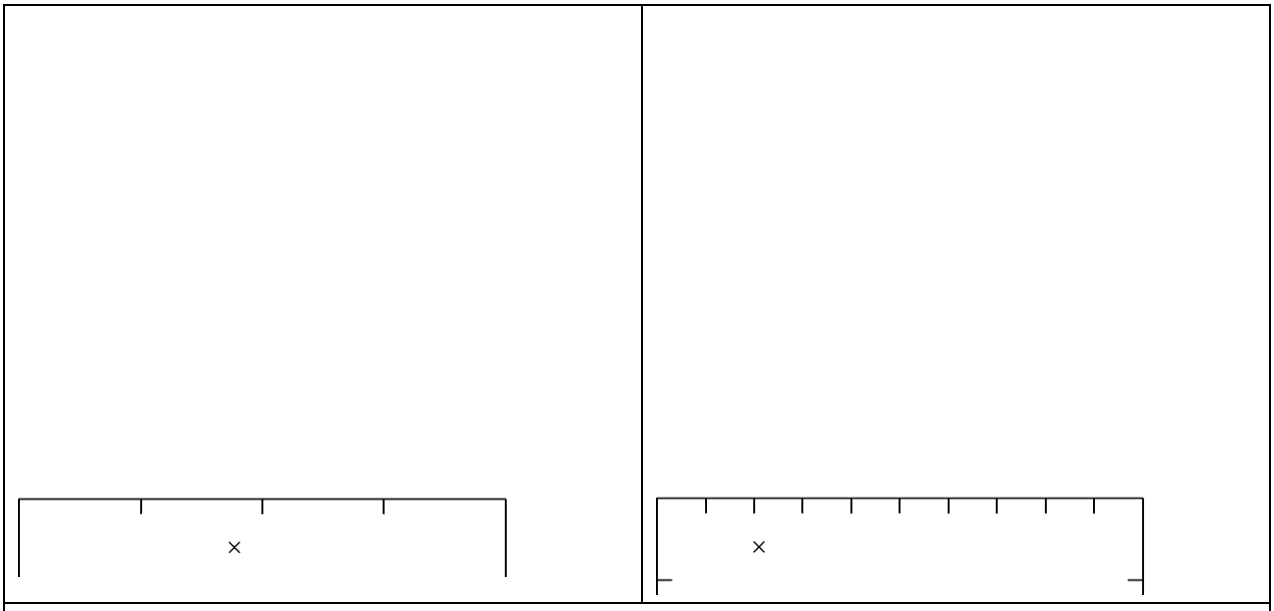


Fig. 45: IFPA area Pine leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,783; × = 14,979.

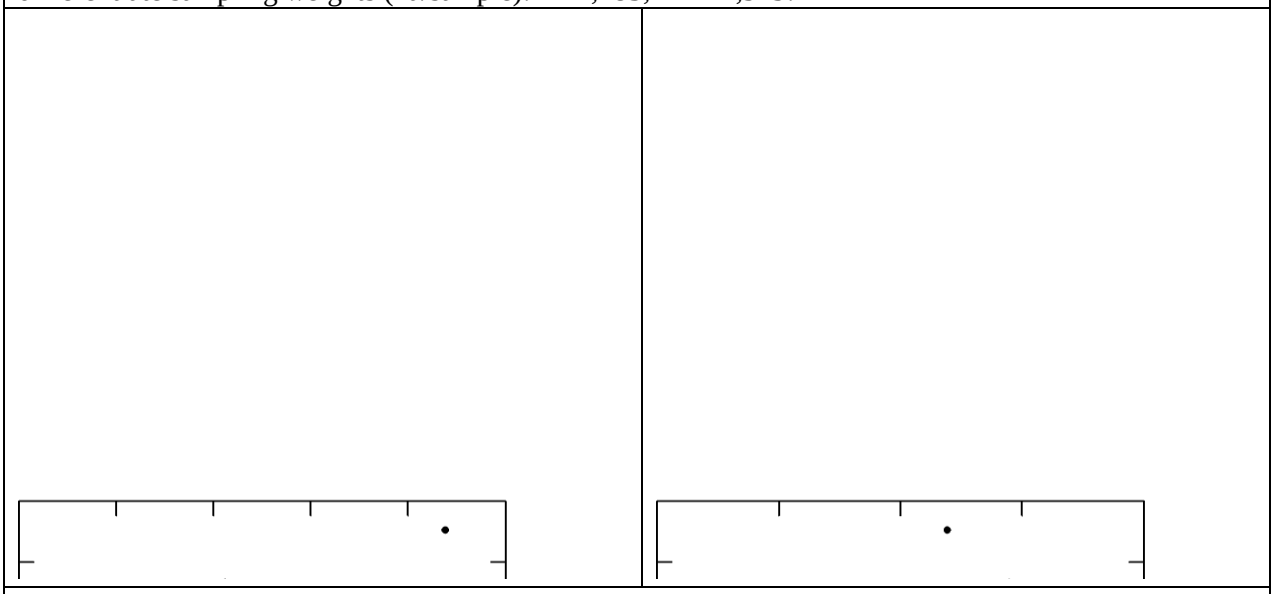


Fig. 46: IFPA area Spruce leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,336; × = 14,574.

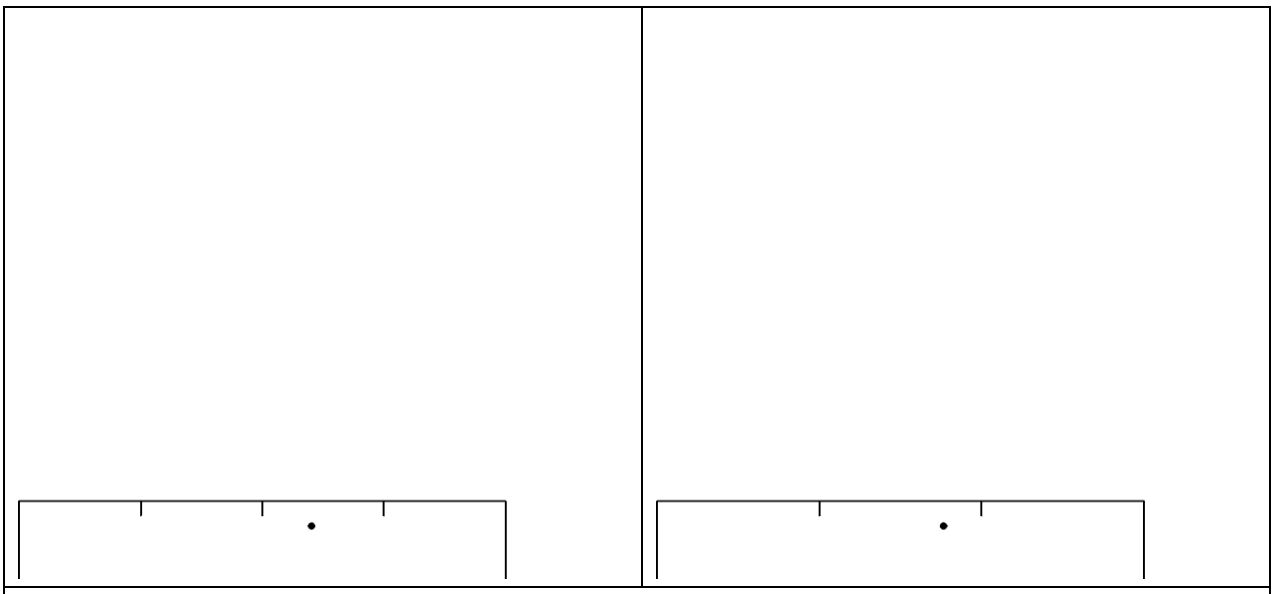


Fig. 47: Non-IFPA area Balsam or Spruce leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. Symbols differentiate sampling weights (ha/sample): ●= 13,770; × = 14,574.

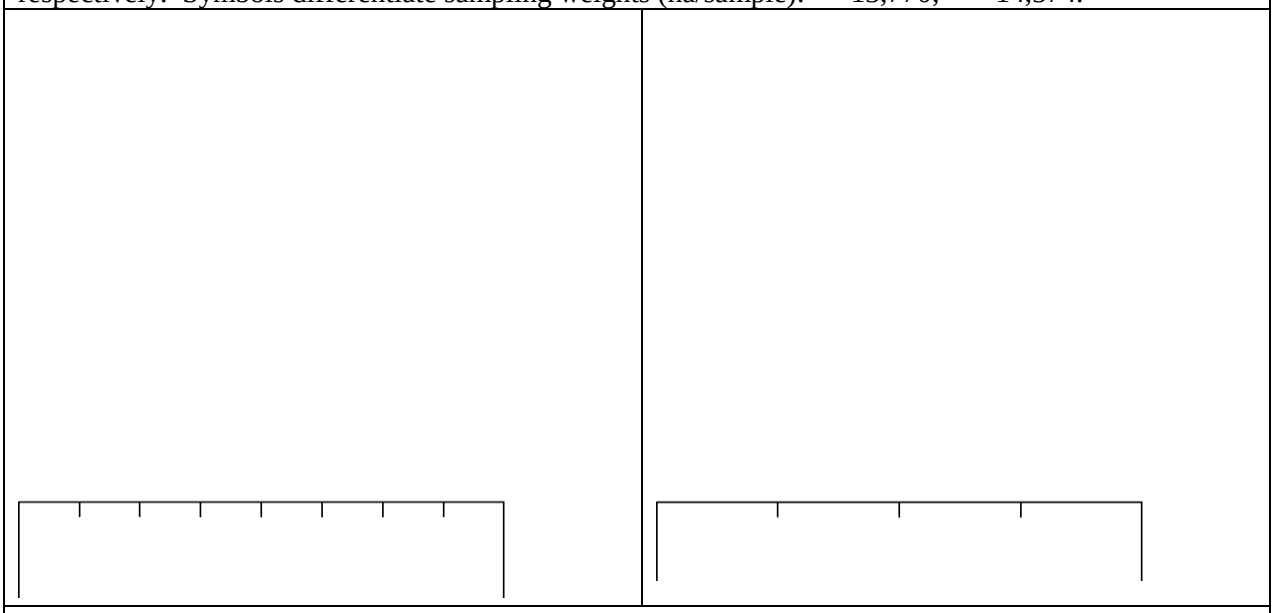


Fig. 48: Non-IFPA area Cedar or Hemlock leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. All samples shown on graph have the same weight.

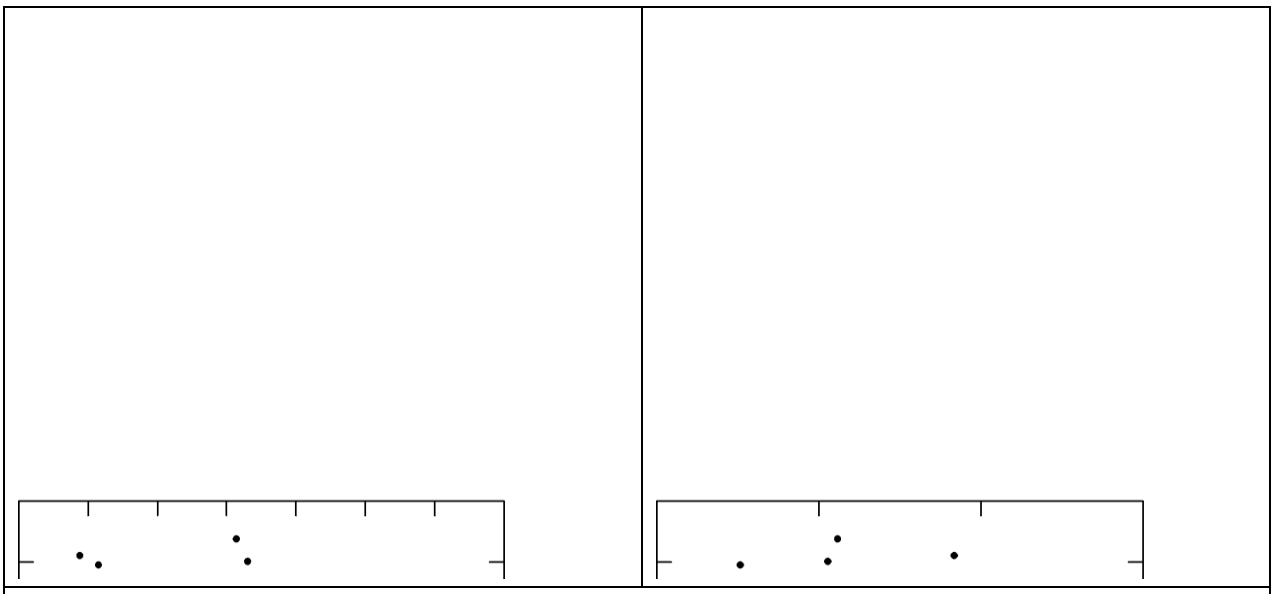


Fig. 49: Non-IFPA area Fir leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. All samples shown on graph have the same weight.

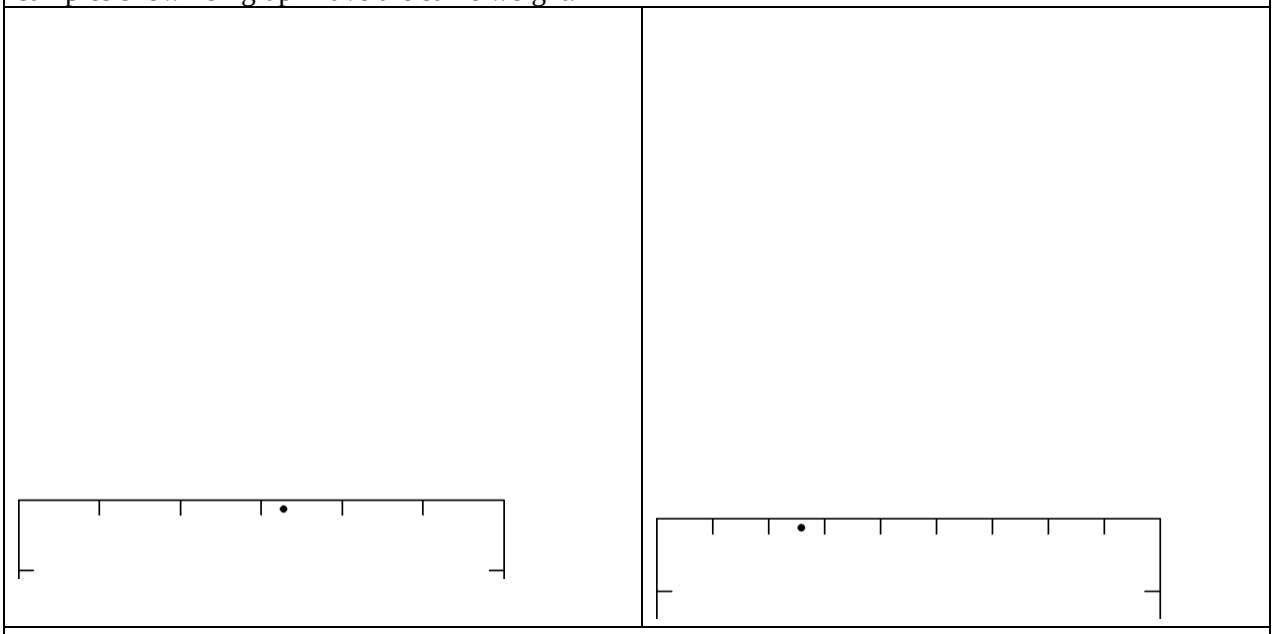


Fig. 50: Non-IFPA area Pine leading stratum. Basal area/ha @ 7.5cm+ dbh residuals (Phase II ground BA – adjusted Phase I inventory BA) versus unadjusted VDYP7 (Phase I) BA and age, respectively. All samples shown on graph have the same weight.

Trees/ha (TPH) Residuals by stratum

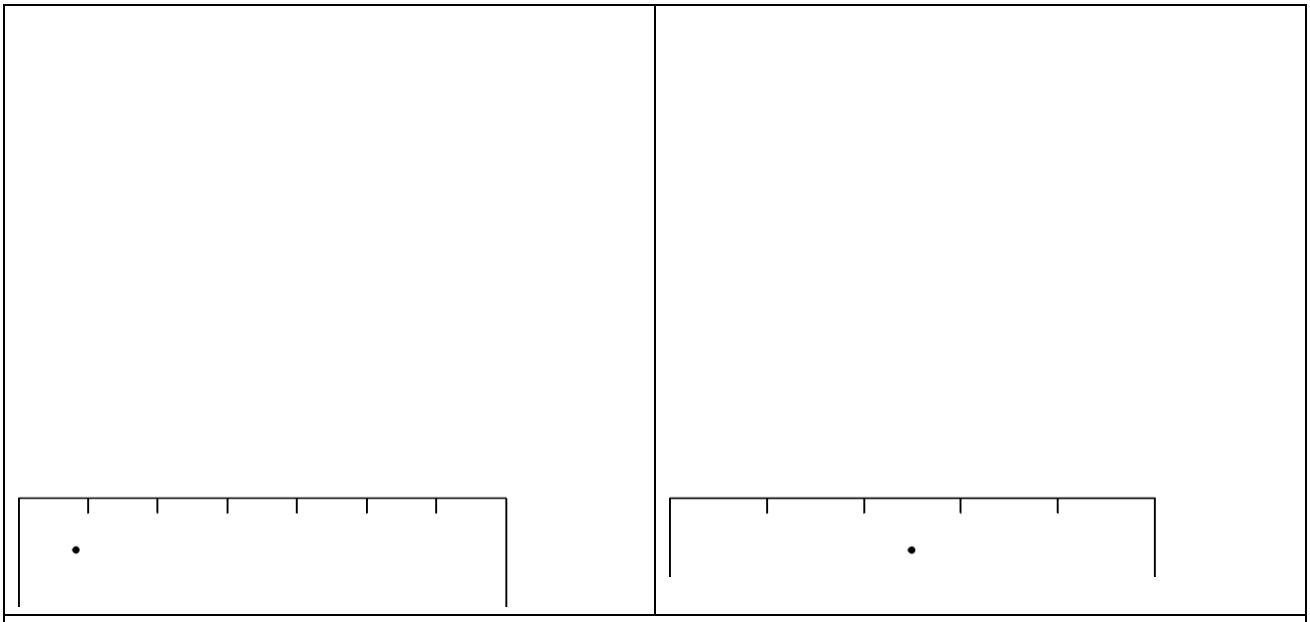


Fig. 51: Deciduous stratum (TSA-wide). Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 974; × = 25,639.

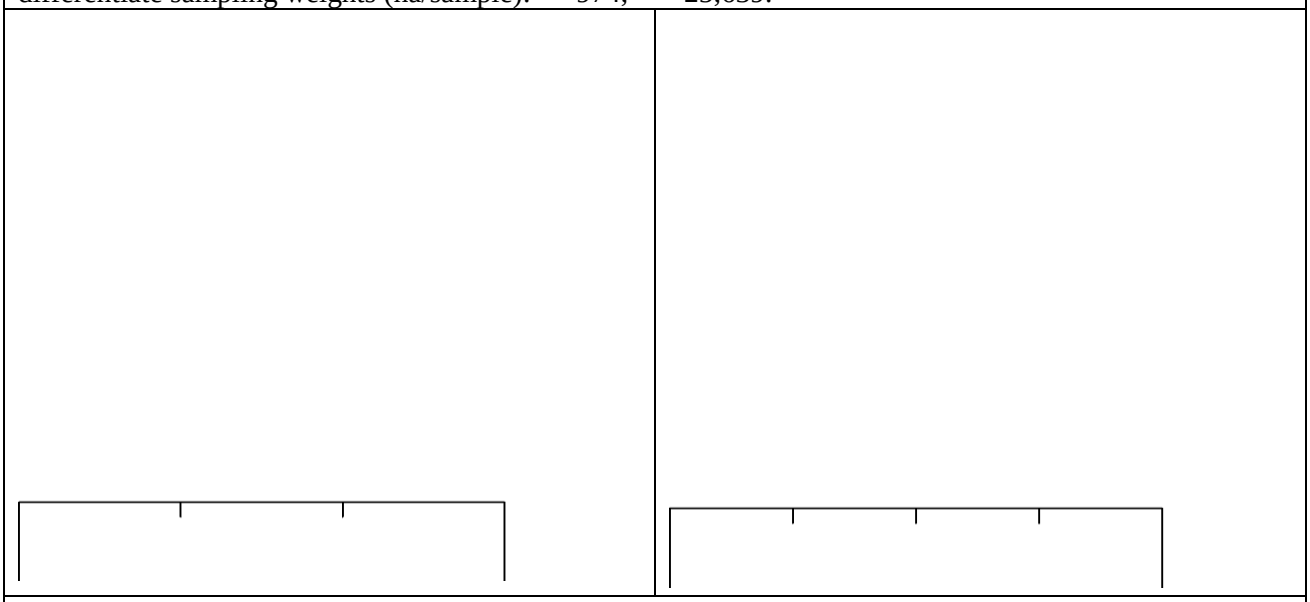


Fig. 52: IFPA area Balsam leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,138; × = 13,770

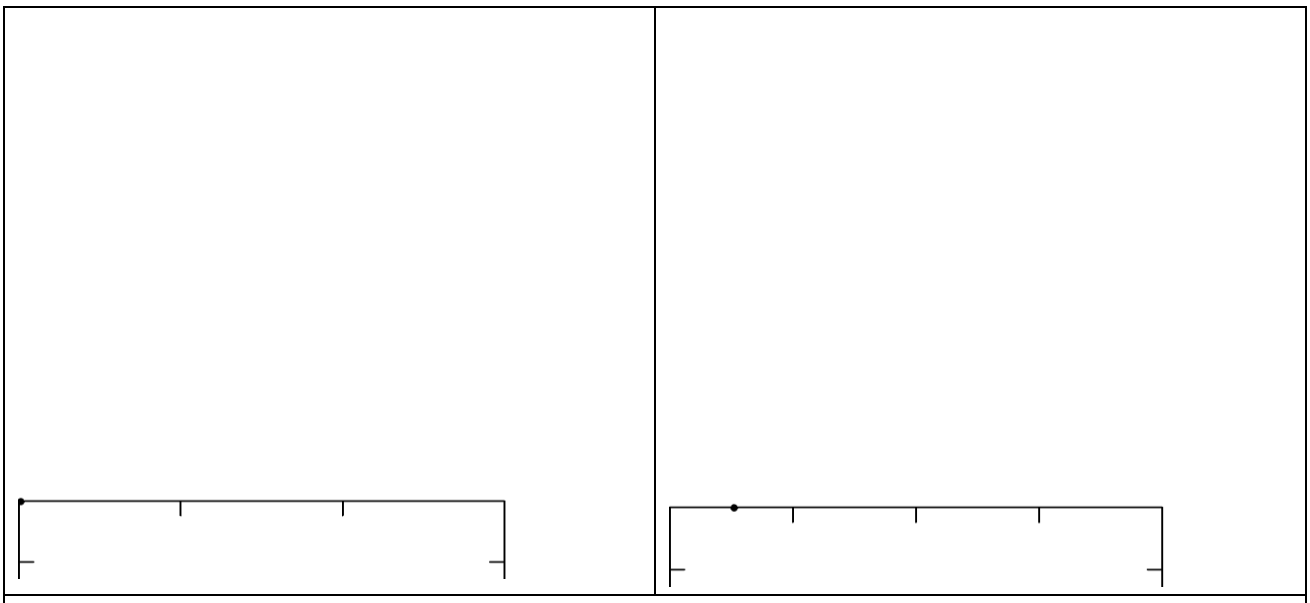


Fig. 53: IFPA area Cedar or Hemlock leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. Symbols differentiate sampling weights (ha/sample): ●= 1,078; × = 1,387; + = 1,983; ▲= 6,582.

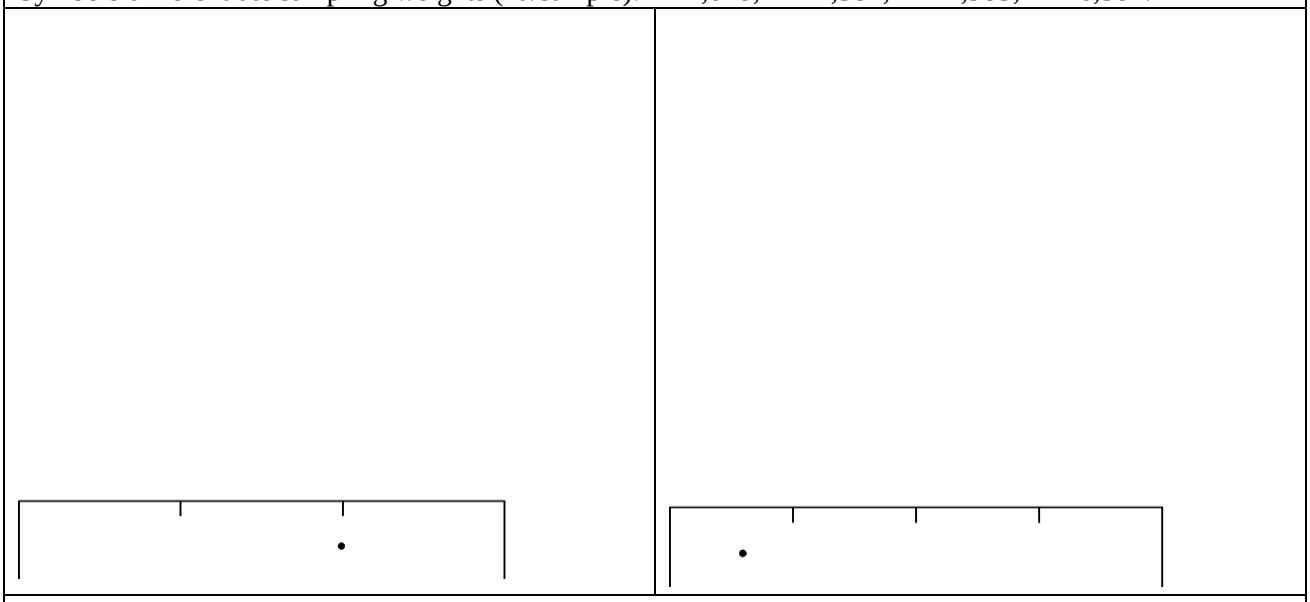


Fig. 54: IFPA area Fir leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. Symbols differentiate sampling weights (ha/sample): ●= 2,038; × = 17,896.

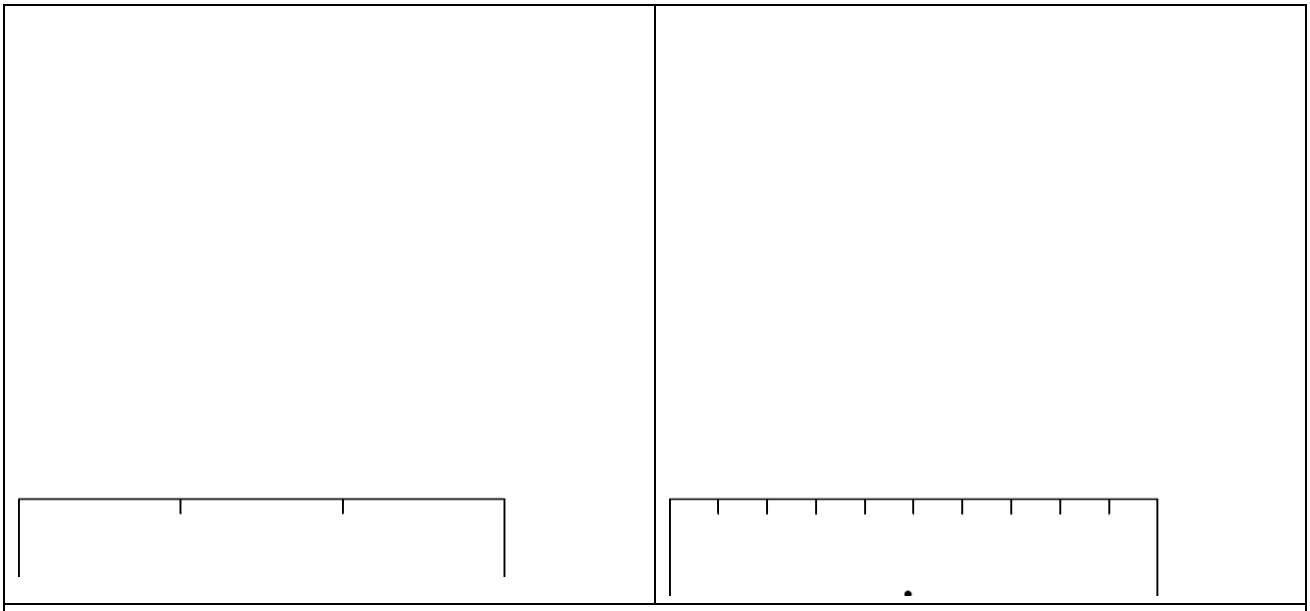


Fig. 55: IFPA area Pine leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,783; × = 14,979.

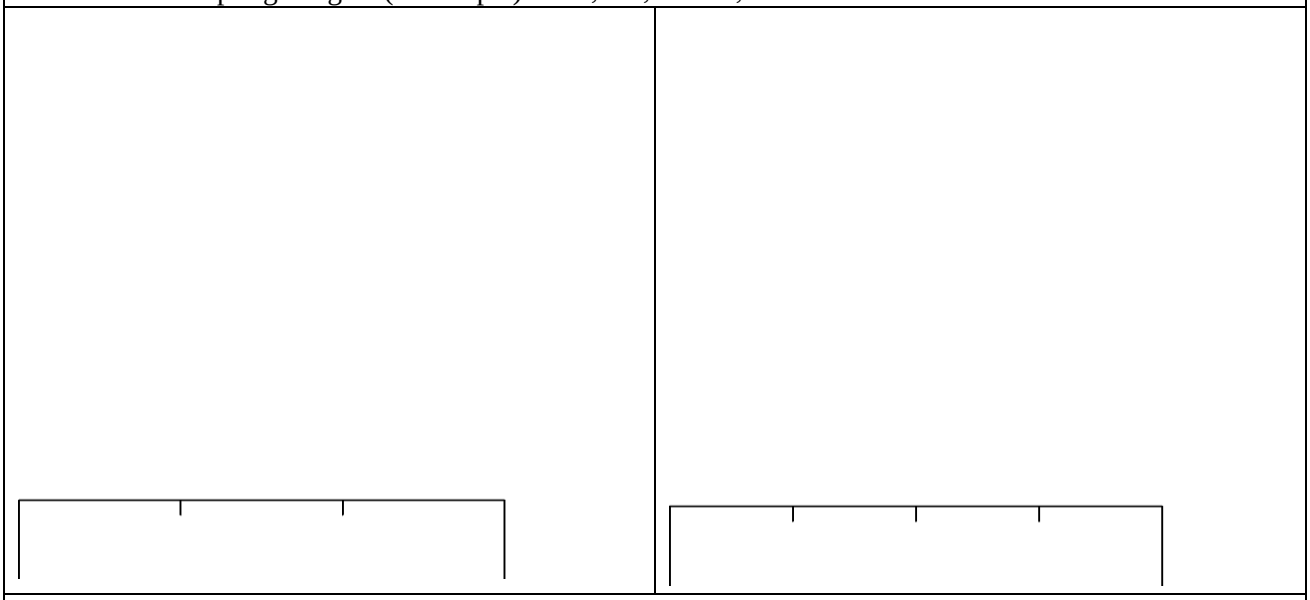


Fig. 56: IFPA area Spruce leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,336; × = 14,574.

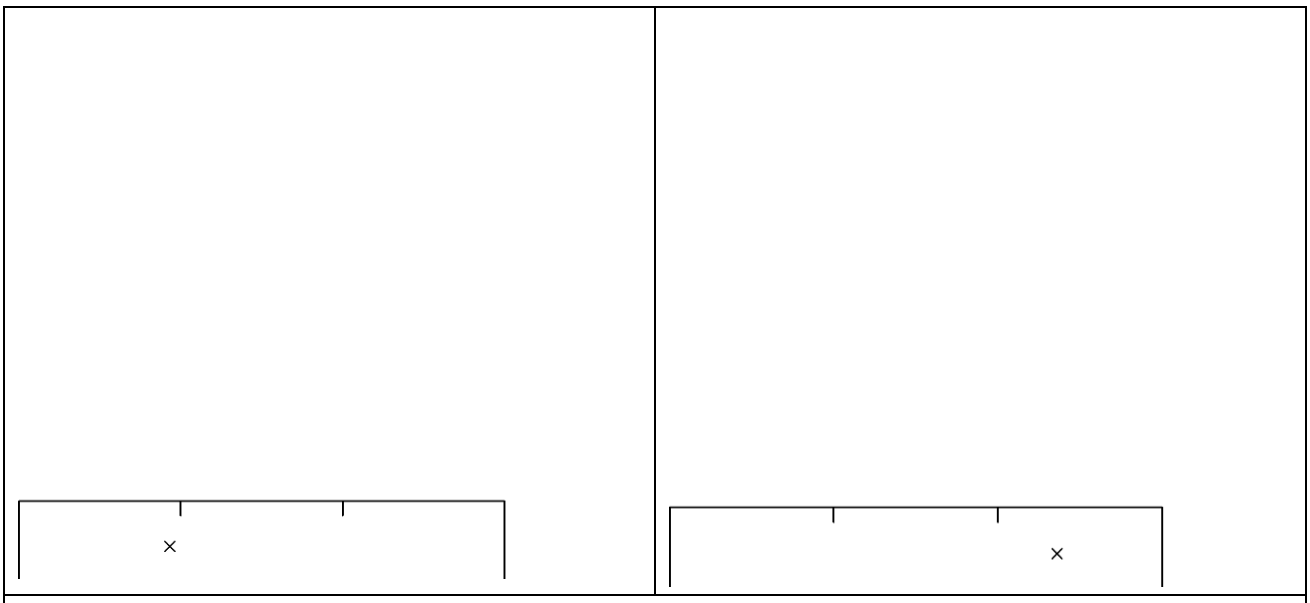


Fig. 57: Non-IFPA area Balsam or Spruce leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. Symbols differentiate sampling weights (ha/sample): •= 13,770; × = 14,574.

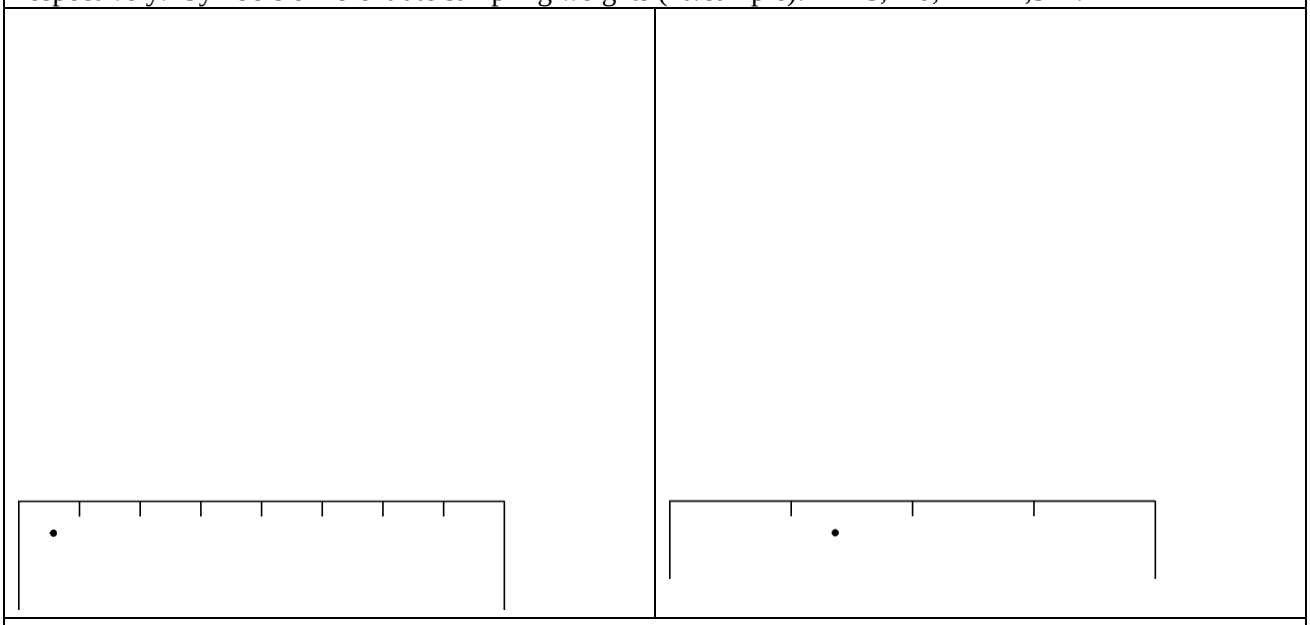


Fig. 58: Non-IFPA area Cedar or Hemlock leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. All samples shown on graph have the same weight.

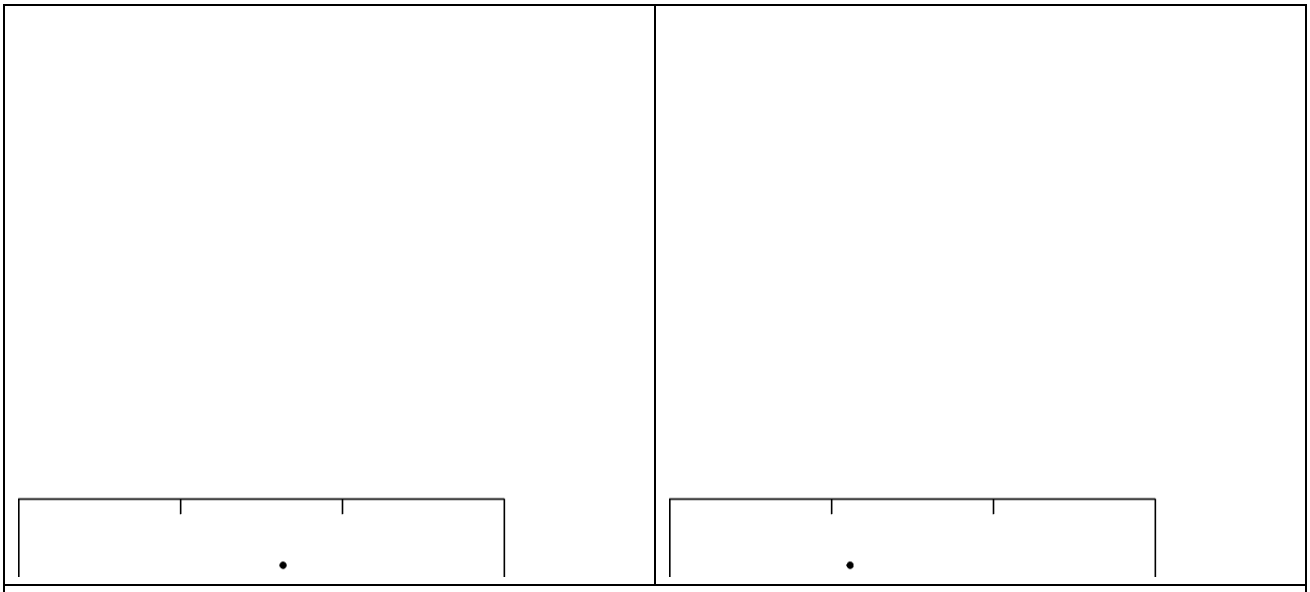


Fig. 59: Non-IFPA area Fir leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. All samples shown on graph have the same weight.

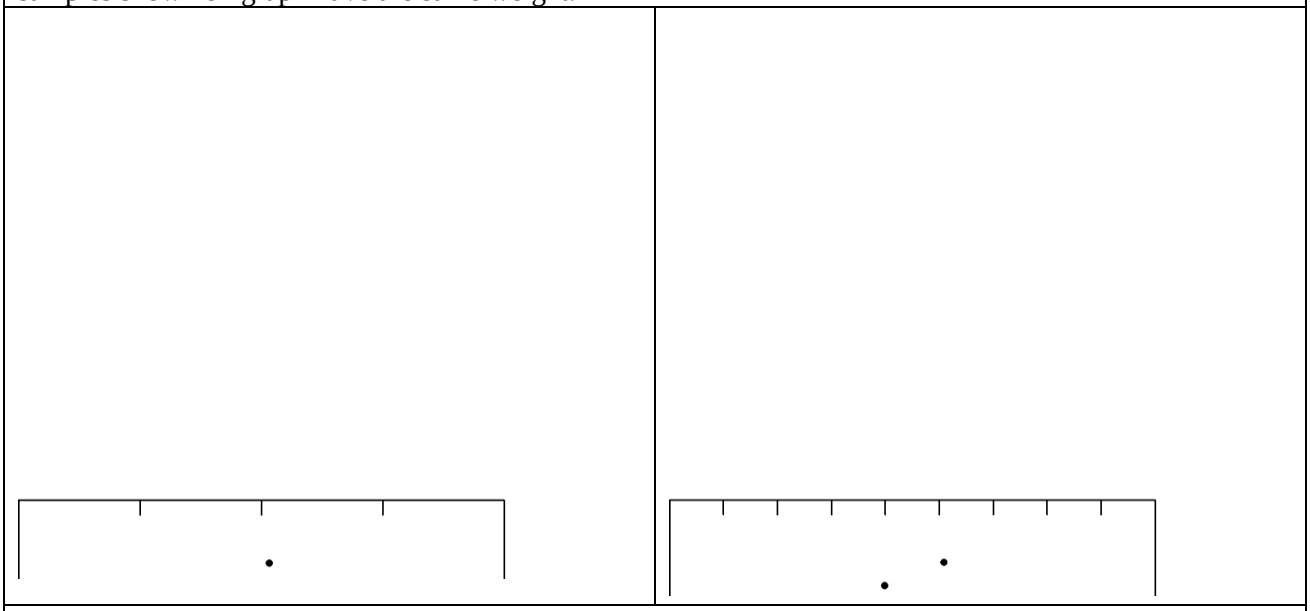
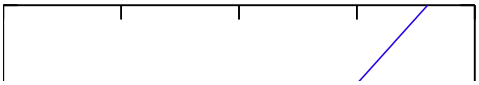
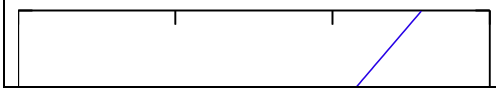


Fig. 60: Non-IFPA area Pine leading stratum. Trees/ha @ 7.5cm+ dbh residuals (Phase II ground TPH – adjusted Phase I inventory TPH) versus unadjusted VDYP7 (Phase I) TPH and age, respectively. All samples shown on graph have the same weight.

11. APPENDIX G: VDYP7 VOLUME ADJUSTMENT SCATTER PLOTS AND RESIDUALS

Volume/ha Scatter Plots by stratum

	Fig. 61: Deciduous stratum (TSA-wide). Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. Symbols differentiate sampling weights (ha/sample): •= 974; × = 25,639.
	Fig. 62: IFPA area Balsam leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. Symbols differentiate sampling weights (ha/sample): •= 1,138; × = 13,770

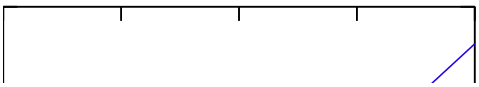


Fig. 63: IFPA area Cedar or Hemlock leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. Symbols differentiate sampling weights (ha/sample): •= 1,078; × = 1,387; + = 1,983; ▲= 6,582.

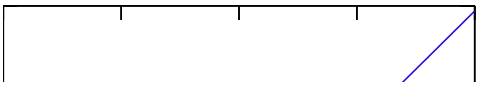


Fig. 64: IFPA area Fir leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. Symbols differentiate sampling weights (ha/sample): •= 2,038; × = 17,896.

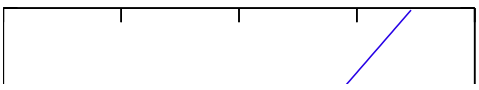


Fig. 65: IFPA area Pine leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. Symbols differentiate sampling weights (ha/sample): •= 1,783; × = 14,979.

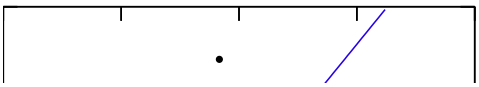


Fig. 66: IFPA area Spruce leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. All samples shown on graph have the same weight.

Fig. 67: Non-IFPA area Balsam or Spruce leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. Symbols differentiate sampling weights (ha/sample): •= 13,770; × = 14,574.

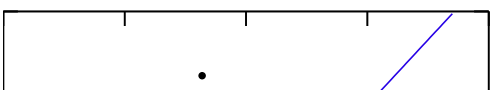


Fig. 68: Non-IFPA area Cedar or Hemlock leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. All samples shown on graph have the same weight.

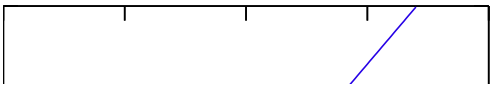


Fig. 69: Non-IFPA area Fir leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. All samples shown on graph have the same weight.

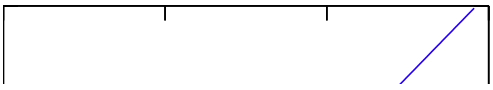


Fig. 70: Non-IFPA area Pine leading stratum. Volume/ha (@12.5cm+dbh net dw2) relationship: ground (Phase II) vol/ha versus attribute-adjusted VDYP7 (Phase I) vol/ha. The line on the graphs corresponds to the adjustment ratio. All samples shown on graph have the same weight.

Volume/ha Residuals by stratum

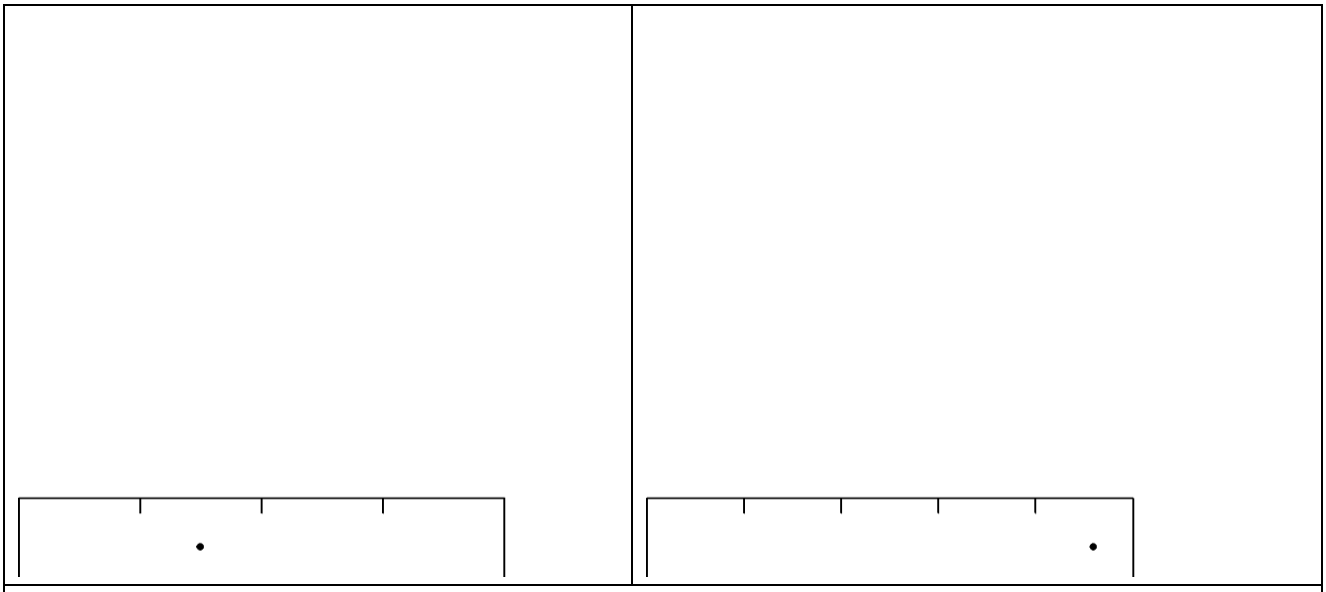


Fig. 71: Deciduous stratum (TSA-wide). Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. Symbols differentiate sampling weights (ha/sample): •= 974; × = 25,639.

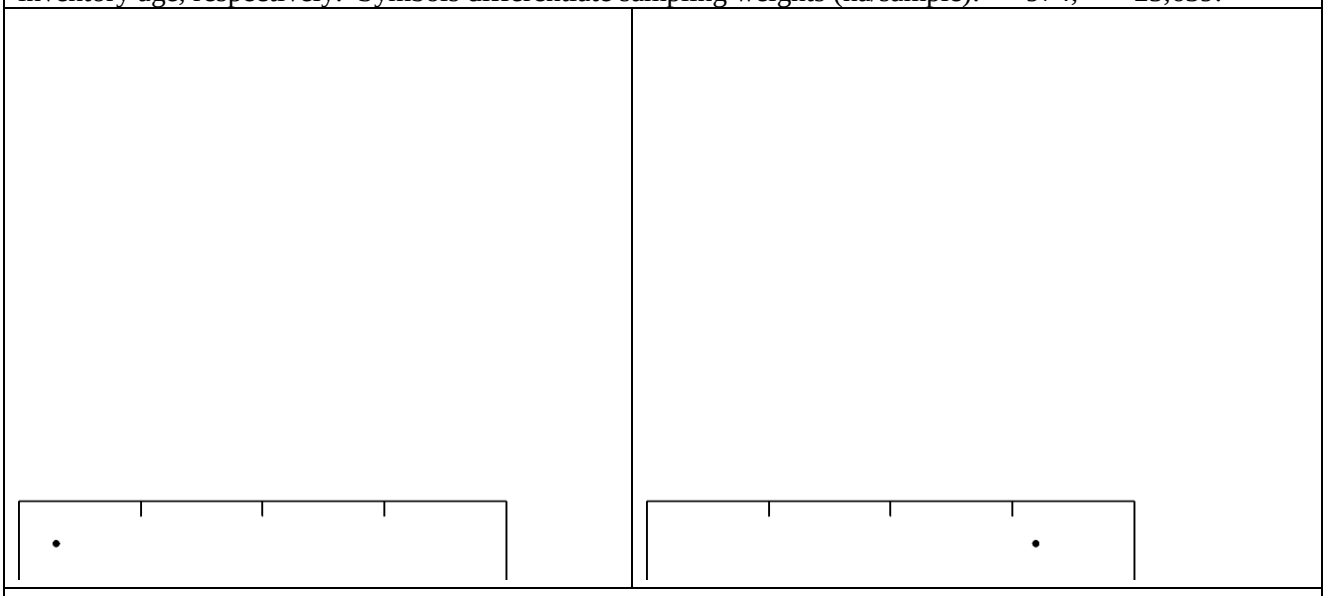


Fig. 72: IFPA area Balsam leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,138; × = 13,770

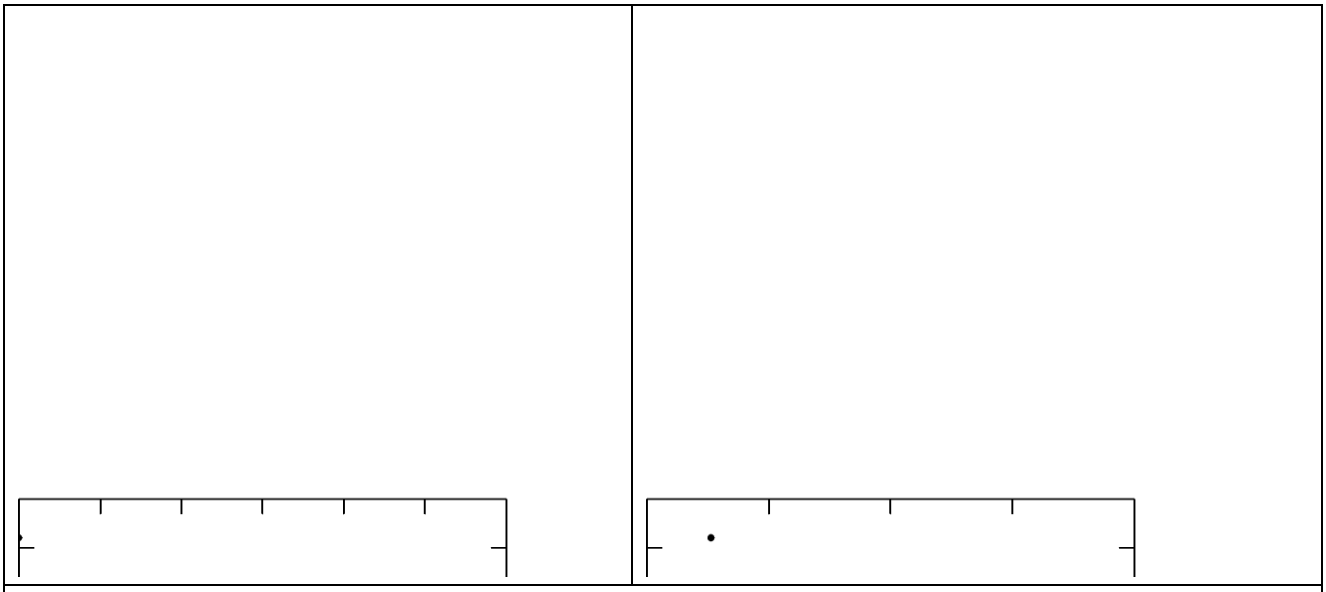


Fig. 73: IFPA area Cedar or Hemlock leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. Symbols differentiate sampling weights (ha/sample): ●= 1,078; × = 1,387; + = 1,983; ▲= 6,582.

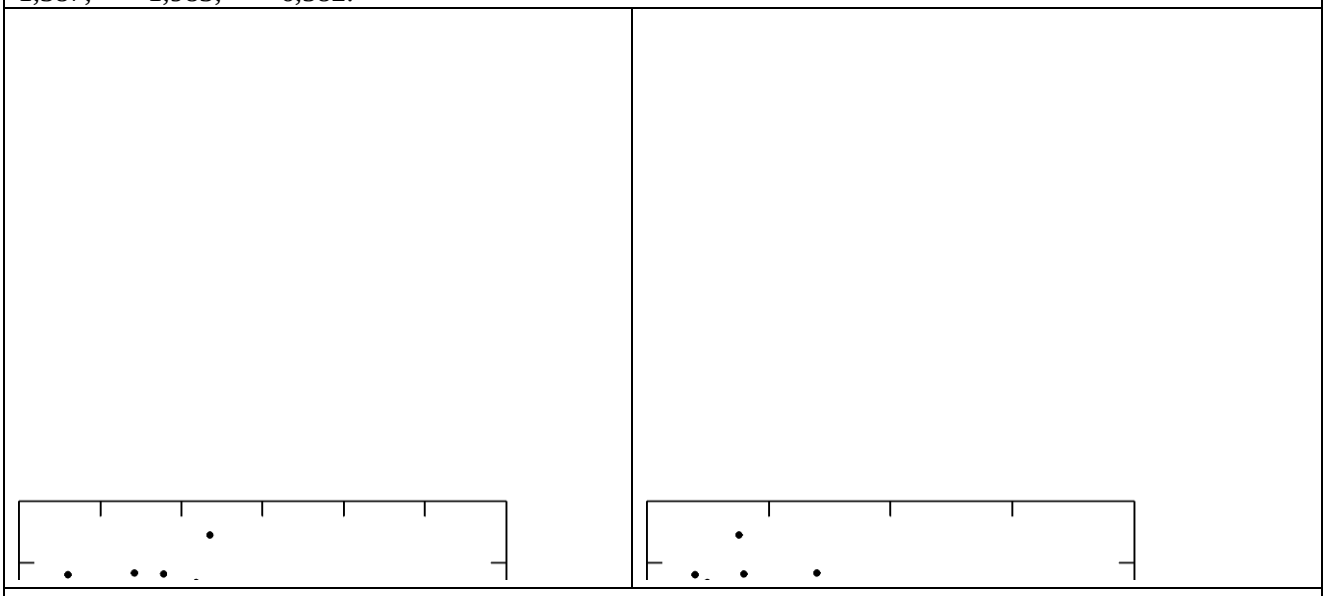


Fig. 74: IFPA area Fir leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. Symbols differentiate sampling weights (ha/sample): ●= 2,038; × = 17,896.

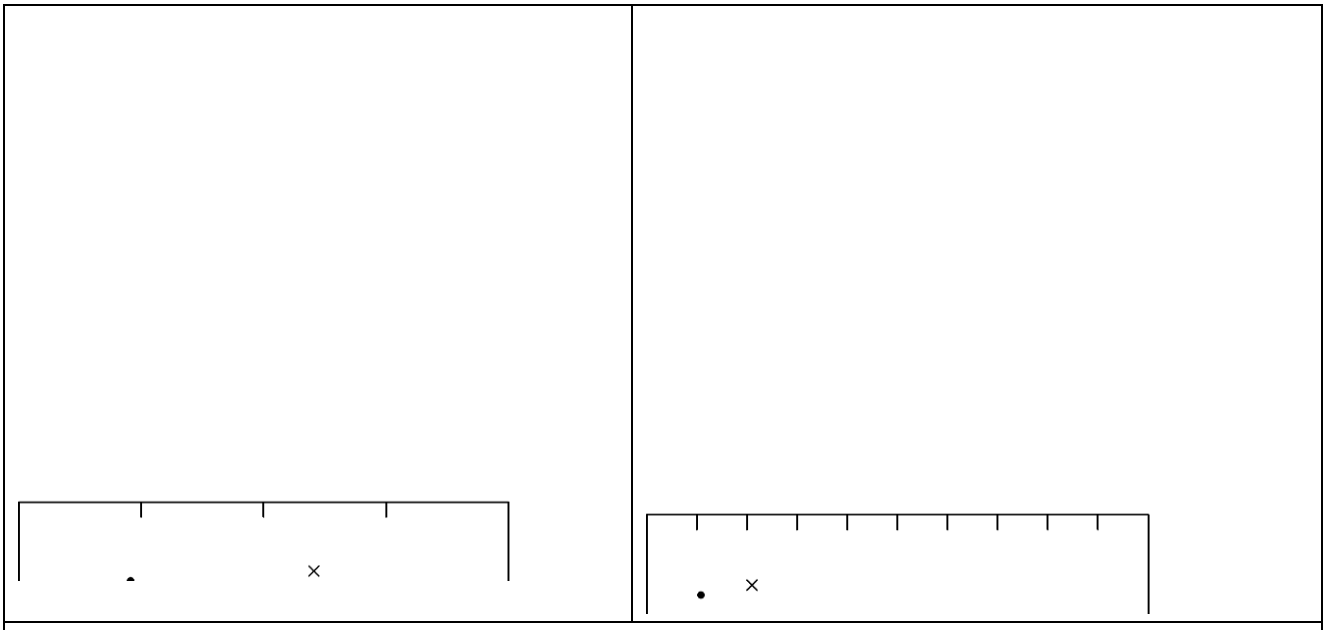


Fig. 75: IFPA area Pine leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,783; × = 14,979.

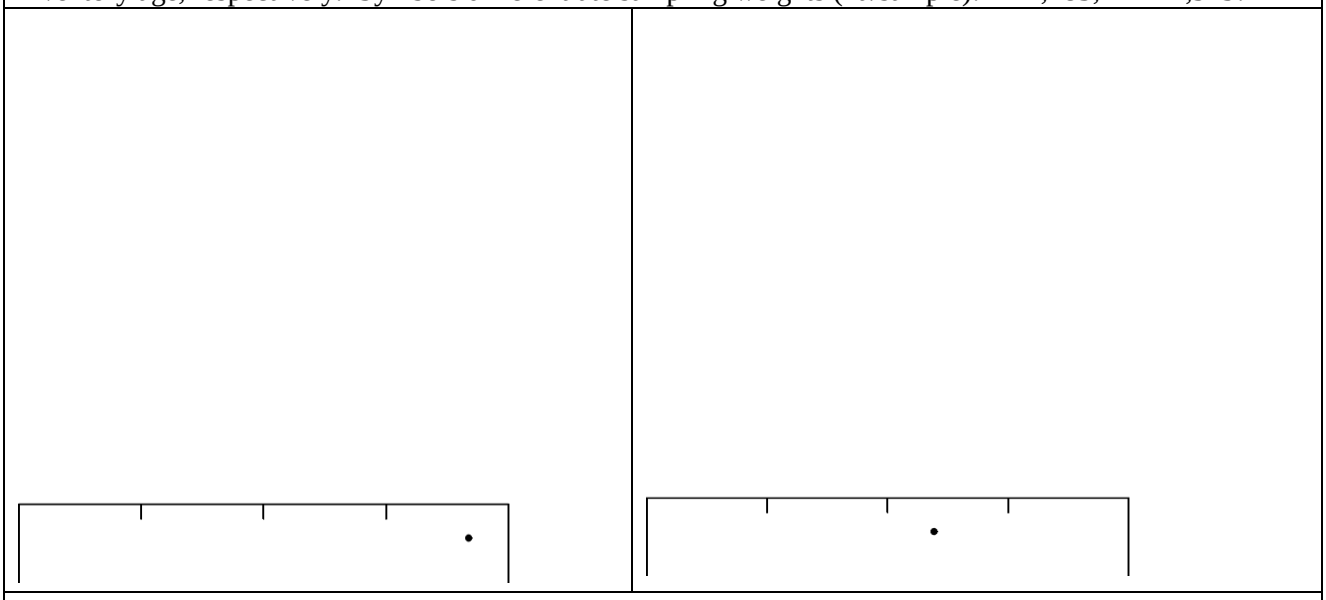


Fig. 76: IFPA area Spruce leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. Symbols differentiate sampling weights (ha/sample): •= 1,336; × = 14,574.

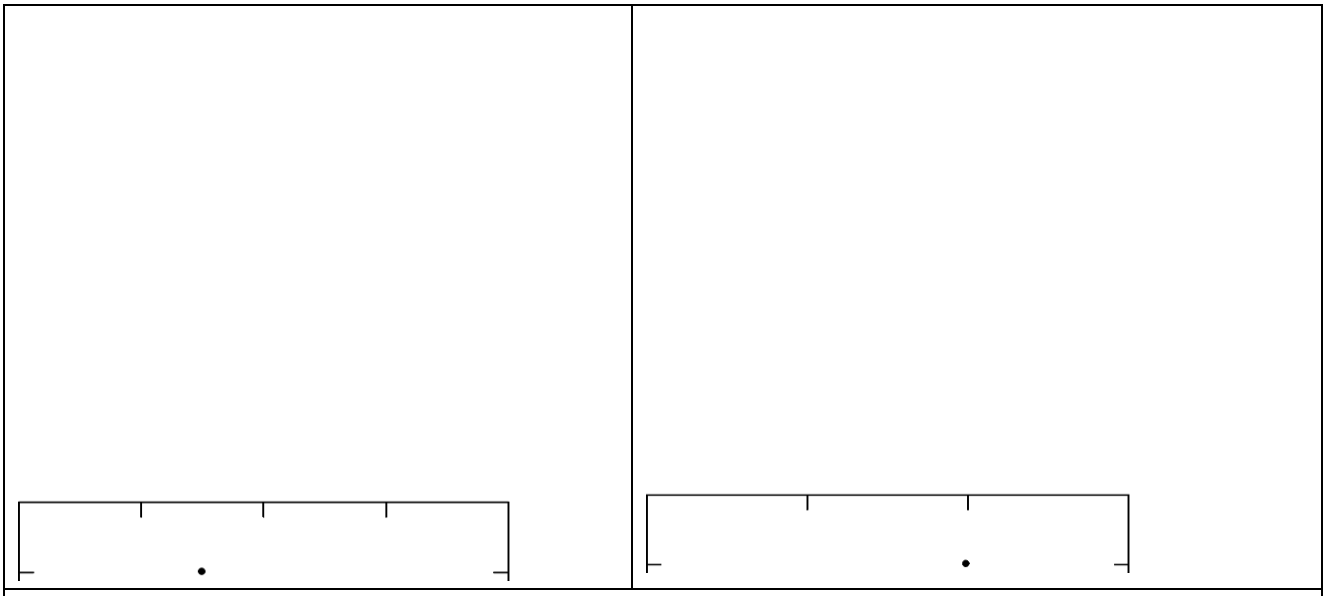


Fig. 77: Non-IFPA area Balsam or Spruce leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. Symbols differentiate sampling weights (ha/sample): •= 13,770; × = 14,574.

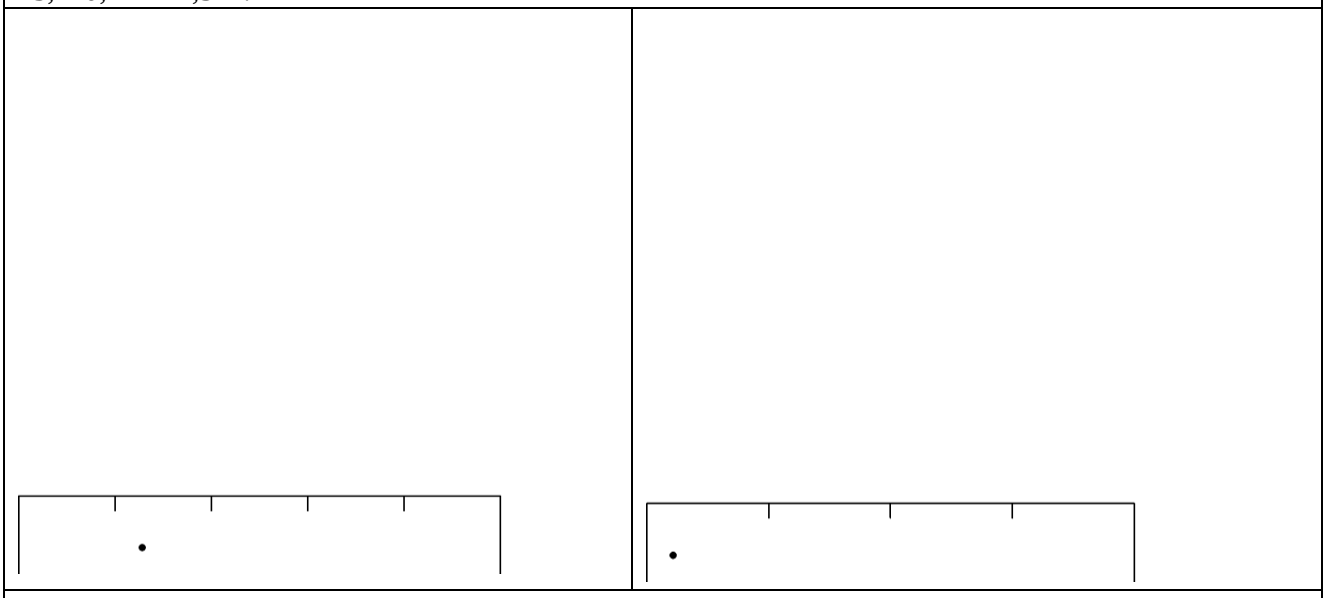


Fig. 78: Non-IFPA area Cedar or Hemlock leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. All samples shown on graph have the same weight.

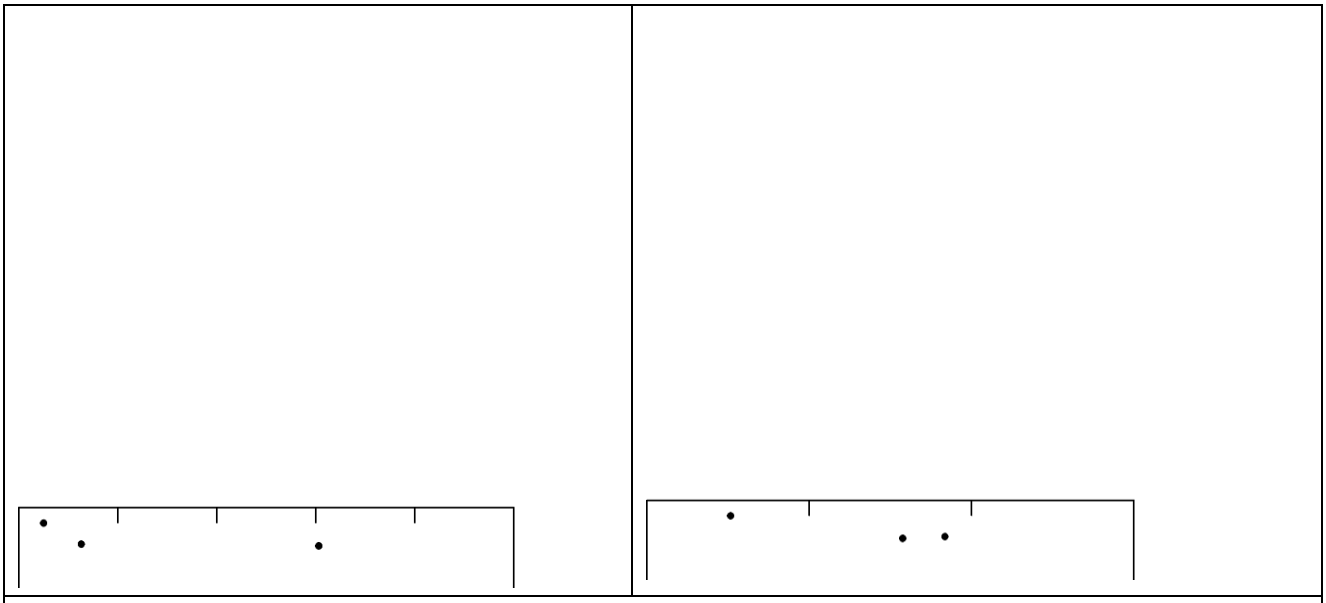


Fig. 79: Non-IFPA area Fir leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. All samples shown on graph have the same weight.

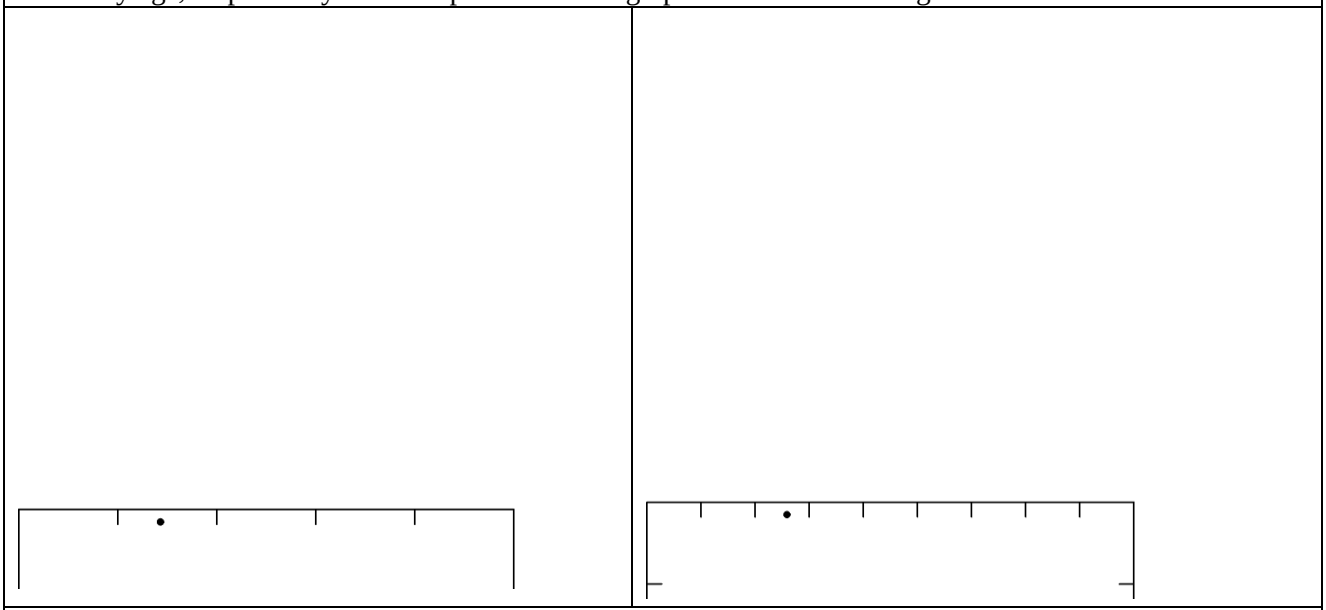
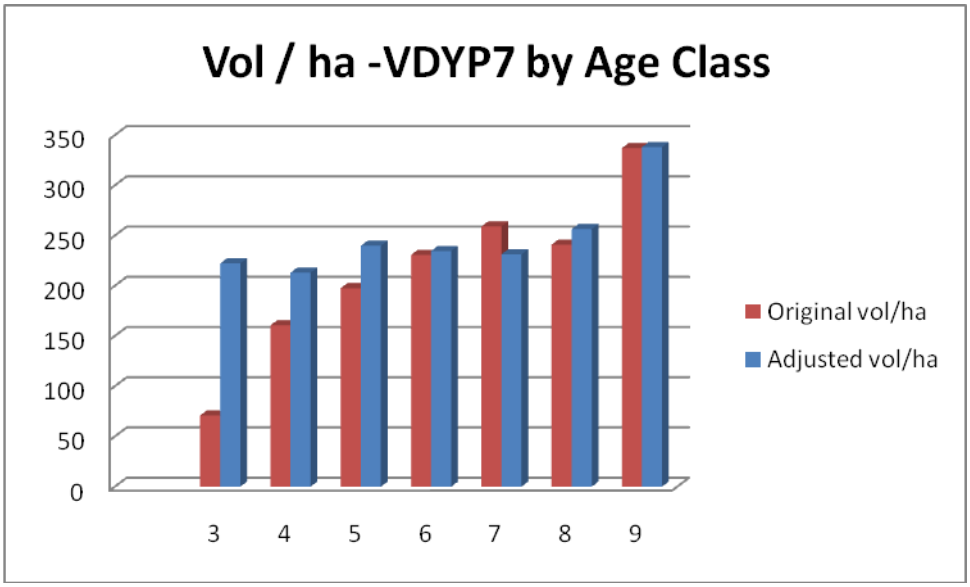
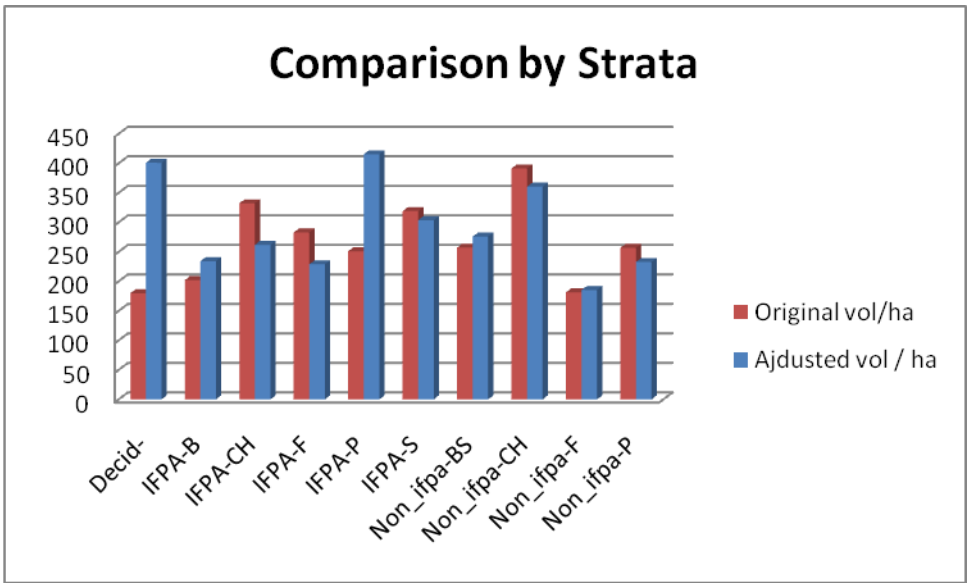


Fig. 80: Non-IFPA area Pine leading stratum. Volume/ha @ 12.5cm+ dbh net dw2 residuals (Phase II ground vol/ha – adjusted Phase I inventory vol/ha) versus attribute-adjusted VDYP7 (Phase I) vol/ha and Phase I inventory age, respectively. All samples shown on graph have the same weight.

12. APPENDIX H: POPULATION DISTRIBUTIONS PRE- AND POST-ADJUSTMENT

- The population was projected to 2001 (~midpoint ground sampling year).
- The pre & post-adjustment comparison excluded polygons where VDYP7 did not generate either a pre- or a post-adjustment volume (i.e. both volumes had to have been generated to be included in the comparison). This is typically for stands that do not meet VDYP7's minimum QMD threshold.
- As a result, the comparison is based on an area that is 0.4% smaller than the population total area (i.e. 1,165,395 vs. 1,170,825).





13. APPENDIX I: ANALYSIS RESULTS FOR REMEASURED DATA

Remeasurement data was collected for 44 samples in project 0111 with the objective of looking at potential impacts of Mountain Pine Beetle (MPB). Twenty of these samples were remeasured after 2 years and 24 of these samples were remeasured after 5 years. These two groups of samples were analyzed separately. To simplify the analysis, stratification and sample weights were ignored. In this project the remeasured samples maintained the same project number and sample number but were identified using an "R" sample type code[18].

Unfortunately, some of these samples had been selected for NVAF and hence included some trees that were fallen for NVAF between the time of original sampling and the time of the remeasurement[19]. In addition, tree status (live/dead) was only collected for the integrated plot centre (IPC) and was not collected in the auxiliary plots. Hence the analysis of the remeasured data was restricted to matched tree data[20] collected at the IPCs.

Restricting the analysis to the IPC data in itself resulted in some data anomalies. For example, the IPC for sample #68 included an inordinately high number of trees. If considered in combination with the 4 auxiliary plots, the basal area/ha estimate for this sample was 45 m^2/ha. However, based on the IPC alone, the estimate of basal area/ha was 210 m^2/ha.

This analysis focused on the change in the status of the trees between the two measurements. Each tree was assigned to one 13 mutually exclusive and collectively exhaustive categories. These categories were defined to track the status of trees in this analysis and are explained in Table 1. Note that the damage/severity codes in Table 1 pertain to values at remeasurement since DAMAGE was blank for all trees in the original measurement with the exception of 2 dead trees (which were assigned to category 5 below). Only trees in the IPC were considered. For each sample, trees/ha, basal area/ha and whole stem volume/ha (all at the 12.5cm+ dbh utilization) was computed for each of these 13 categories. In this manner, summation across all categories would provide the total per hectare value for the sample.

To show the impact of MPB in these stands over time, specified categories were summed or aggregated to enable more meaningful interpretation. These aggregations are outlined in Table 2 and correspond to the "slices" identified in the pie charts[21] provided in Figures 1 to 6.

Because of the restrictions on the analysis and some of the data inconsistencies that were observed[22], the results are presented graphically at a high level and caution must be exercised in any interpretation and extrapolation of these trends. However, even with these limitations, the impact of the MPB on these samples is dramatic.

---

[18] In this way, "equivalency" was maintained and the samples were easy to track. In other projects, however, remeasured samples have been assigned new sample numbers and sometimes new project numbers. Often, "equivalency" lists to link the original and the remeasured samples have been incomplete or ambiguous. Obviously, this seriously compromises the usefulness of the data.

[19] Matt Makar, MFR, Southern Interior Region.

[20] There were several cases where a tree appeared in the IPC in either the original measurement or the remeasurement but not both. These trees were excluded from the analysis and computation of statistics.

[21] The value of a "slice" in a pie chart is based on the average over all samples in either the 2 year remeasurement group (n=19) or the 5 year remeasurement group (n=24).

[22] DBH and/or height decreasing from original to remeasurement; trees changing species from original to remeasurement; etc. When samples where basal area and/or volume (total live + dead) decreased over time were excluded, the sample size was reduced to an extent that many trends were lost or minimized. Hence only the one sample where tree species changed (sample #61) was excluded.

Table 1: Categories to define tree status.

Category	*Live/Dead (L/D) at remeasurement*	*L/D in original measurement*	*Species*	*Damage code at remeasurement (IBM[23] or blank)*	*Severity*
1	L	L	PLI or PL	IBM	GR[24]
2	L	L	PLI or PL	blank	
3	L	L	Other conif.	blank	
4	L	L	Decid	blank	
5	D	D	PLI or PL	IBM	any[25]
6	D	D	PLI or PL	blank	
7	D	L	PLI or PL	IBM	GY
8	D	L	PLI or PL	IBM	RA[26]
9	D	L	PLI or PL	blank	
10	D	L	Other conif.	blank	
11	D	D	Other conif.	blank	
12	D	L	Decid	blank	
13	D	D	Decid	blank	

Table 2: Aggregations of tree status categories used for analysis.

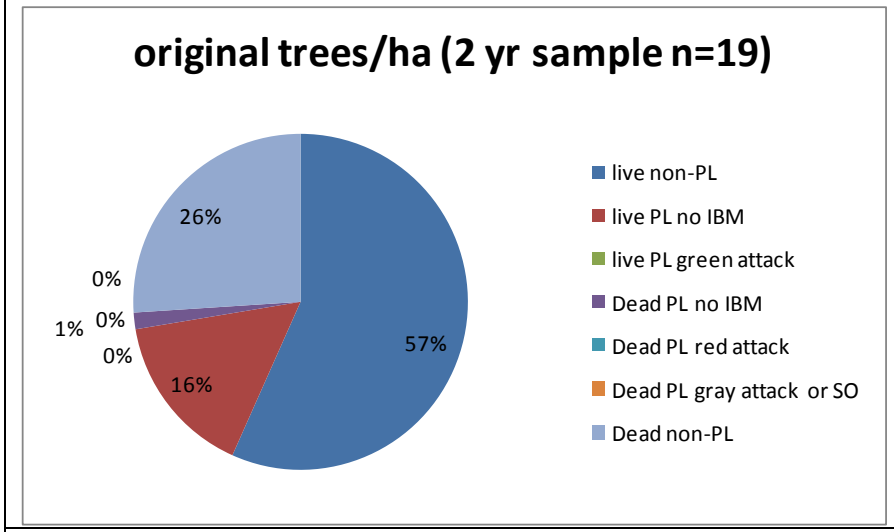
Aggregation corresponding to labels on Pie Charts	*Categories from Table 1 included in summation to generate per hectare values*	
	Original measurement	*Remeasurement*
Live, non-PL	3, 4, 10, 12	3, 4
Live PL, no IBM	1, 2, 8, 9	2
Live PL, green attack	No trees	1
Dead PL, no IBM	6	6, 9
Dead PL, red attack	No trees	8
Dead PL, gray attack or SO (standing old dead)	5	5, 7
Dead, non-PL	11, 13	10, 11, 12, 13

[23] A damage code of IBM refers to the Mountain Pine Beetle. Damage codes in this data set were either blank or IBM.

[24] All trees in this category with an IBM damage code indicated GR (green attack) for severity hence to other category was necessary.

[25] Trees in this category were either gray attack (GY) or standing old dead (SO).

[26] RA= red attack



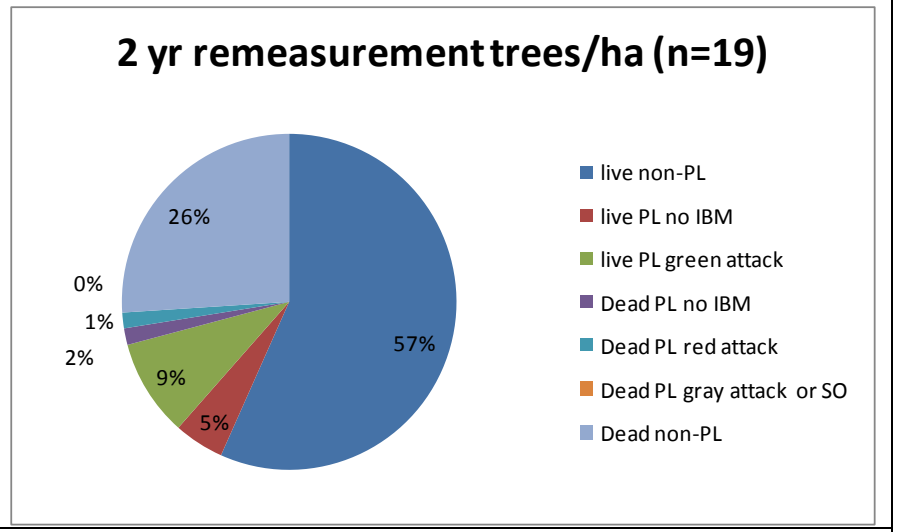
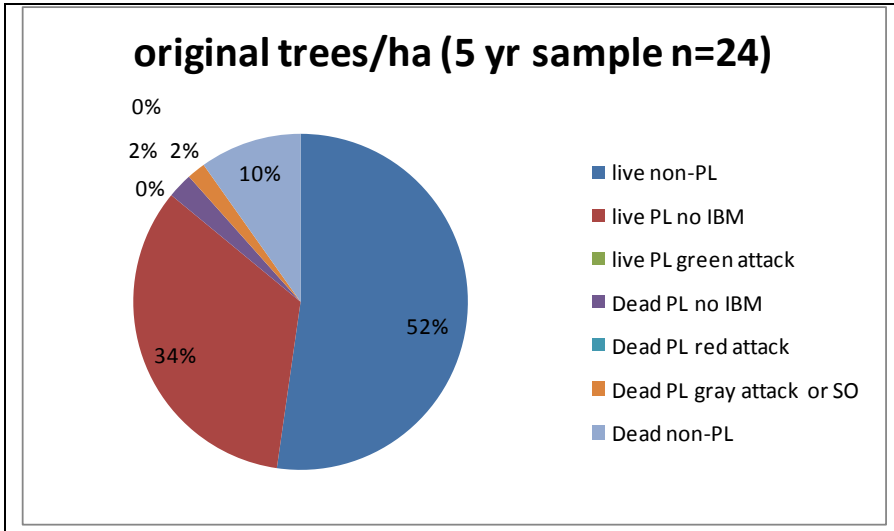


Figure 1: Change in proportion of trees/ha by tree status for samples with a 2-year remeasurement.



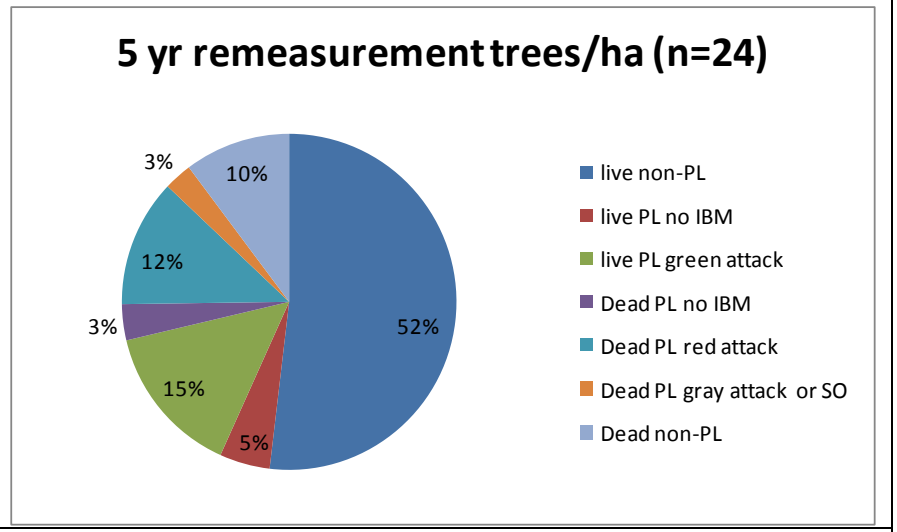
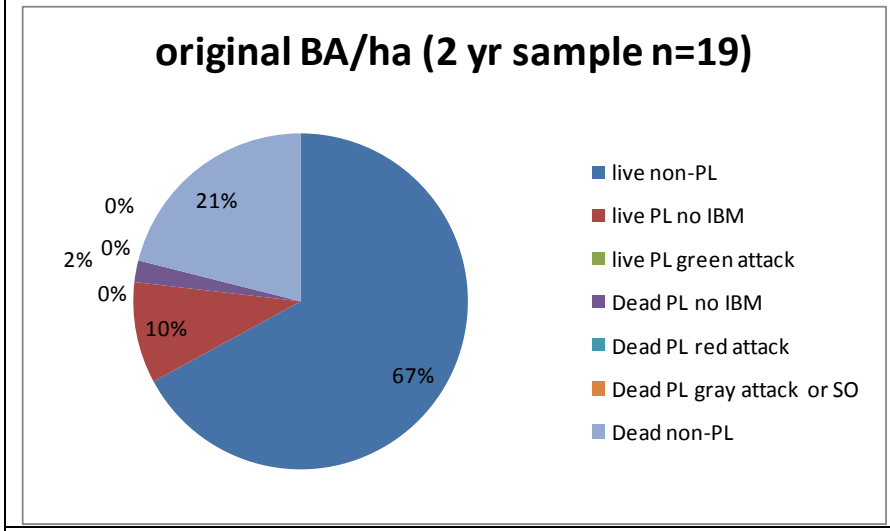


Figure 2: Change in proportion of trees/ha by tree status for samples with a 5-year remeasurement.



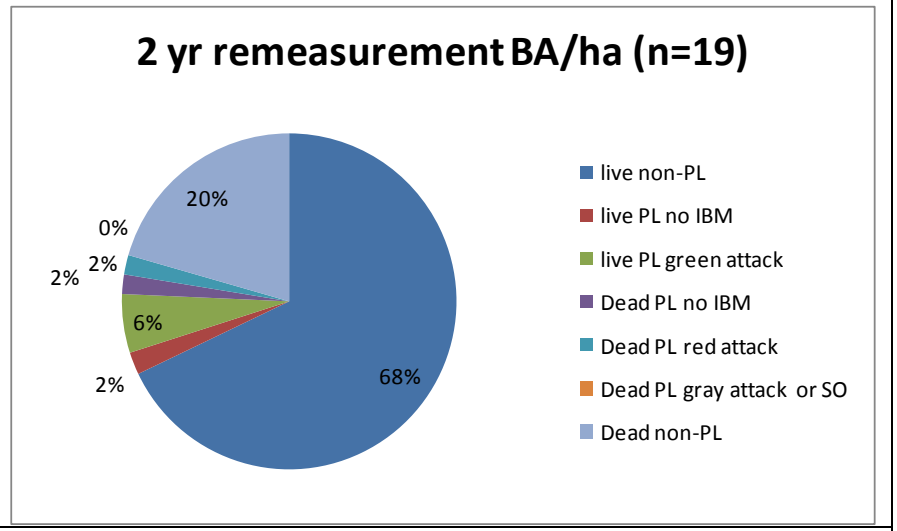
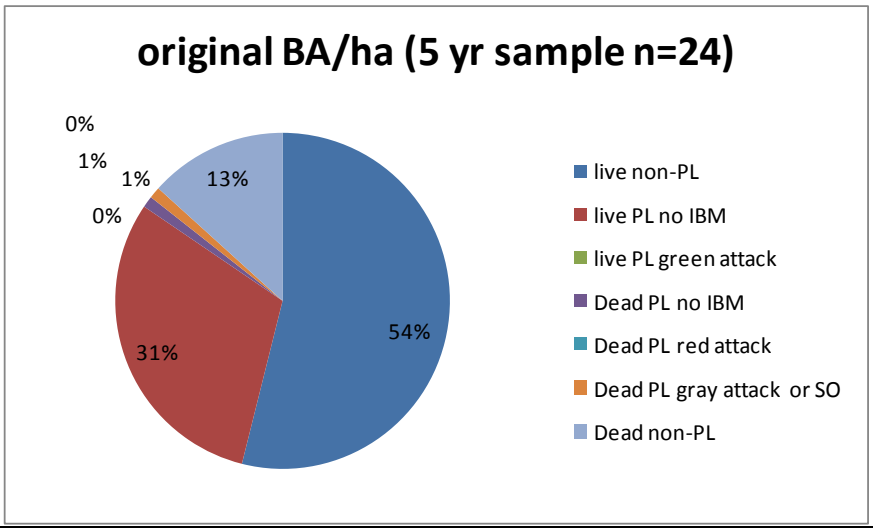


Figure 3: Change in proportion of basal area/ha by tree status for samples with a 2-year remeasurement.



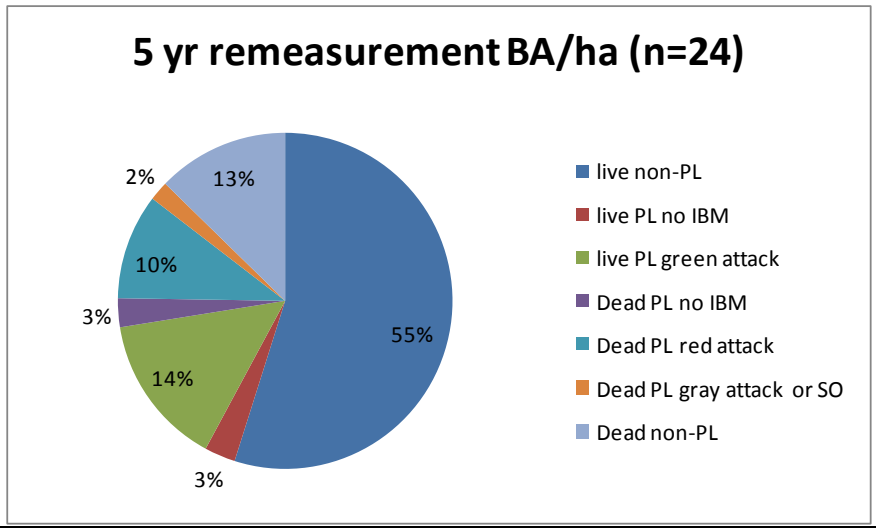
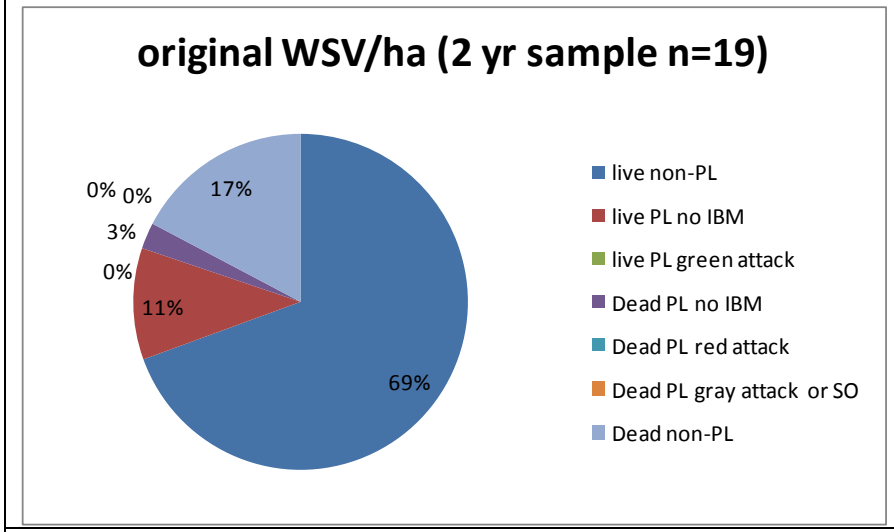


Figure 4: Change in proportion of basal area/ha by tree status for samples with a 5-year remeasurement.



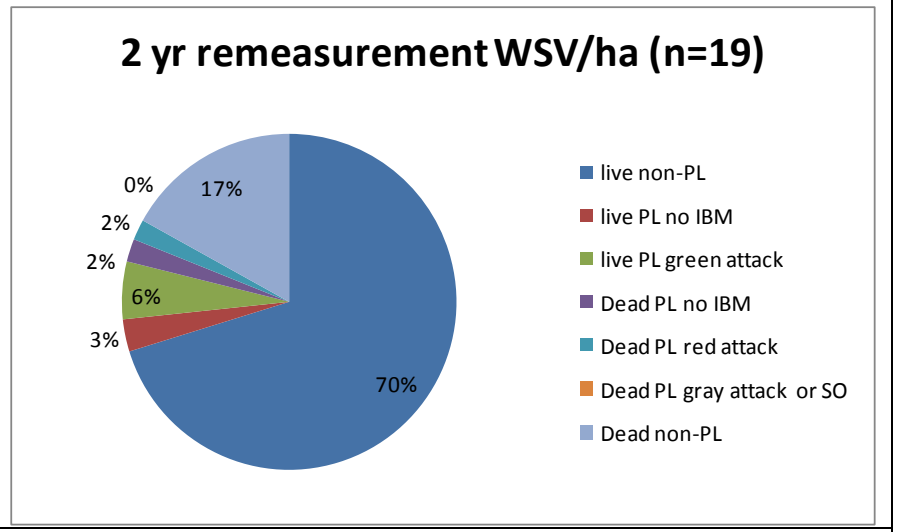
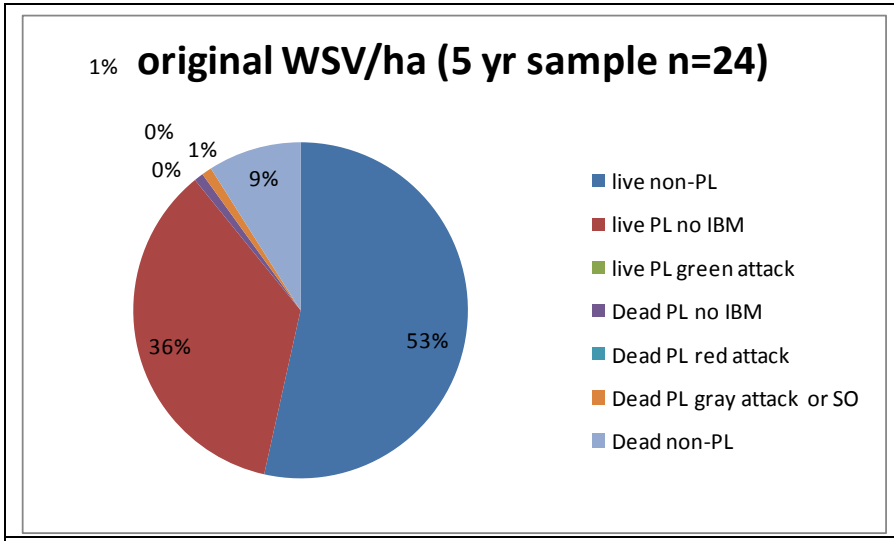


Figure 5: Change in proportion of whole stem volume/ha by tree status for samples with a 2-year remeasurement.



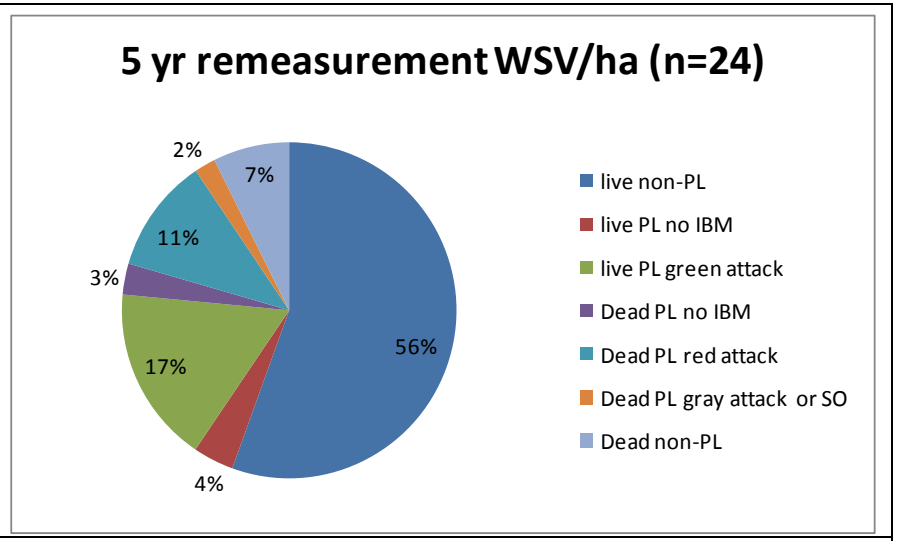


Figure 6: Change in proportion of whole stem volume/ha by tree status for samples with a 5-year remeasurement.

14. APPENDIX J: COPY OF GROUND SAMPLING PROJECT IMPLEMENTATION PLAN FOR INT1 AND INT2

This VPIP will be merged into the final pdf version of the report.

15. APPENDIX J: COPY OF STATISTICAL ADJUSTMENT ANALYSIS ADJUSTMENT FOR PROJECT 0112

This VPIP will be merged into the final pdf version of the report.