Hinton Wood Products

A division of West Fraser Mills Ltd.

Yield Analysis

for the 2014 DFMP

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EXECUTIVE SUMMARY

This document describes the development of yield curves for Hinton Wood Products' (HWP) Landbase which will be used in the Timber Supply Analysis (TSA) for the 2014 Detailed Forest Management Plan (DFMP). In addition to tree length curves, utilization curves were developed to represent sawlog volumes generated using cut-to-length harvesting. Included are yield curves for regenerating stands that are based on performance survey data collected in accordance with the Reforestation Standard of Alberta and its predecessor, the Alternative Reforestation Standards used by some Alberta companies from 2006 to 2008. New targets for regenerating stands are also proposed.

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1 Introduction

This document describes the data and processing used to develop the yield relationships for timber supply analysis (TSA) purposes. The analysis was completed to meet the requirements of the Alberta Forest Management Planning Standard (Alberta Sustainable Resource Development 2006). Separate documents describe the landbase classification and components of the TSA.

The yield analysis involved:

- Compilation of permanent sample plot data
- Statistical analysis to develop empirical yield relationships for unmanaged stands
- Compilation of RSA data to develop yield relationships for managed stands.
- Long Run Sustained Yield and MAI Standard calculations

2 Permanent Sample Plot Compilation Process

This section details the process used to compile permanent (PSP) sample plot data for use in development of subsequent yield relationships.

Hinton Wood Products permanent sample plot data was used to yield relationships. The most current forest inventory has been used to stratify the landbase.

There are five Natural Sub-regions (Figure 2), as provided by ESRD in 1994, within the FMA: Alpine, Sub-alpine, Upper Foothills, Lower Foothills and Montane. The 1994 version of the boundaries was used to ensure consistency with the provincial taper equations used in the analysis.

2.1 Data Collection and Plot Selection

This data was collected as part of HWP's permanent sample plot (PSP) program. Collection of the sample plot data was consistent with the Permanent Growth Sample Program Manual (Hinton Wood Products, 2012). See Appendix A for PSP data collection procedures.

Plots selected from these programs will be used in the upcoming yield analysis. Plot locations were overlaid with the results of the landbase classification. Only those plots located on the active landbase were selected for compilation and subsequent yield analysis. For PSP's with more than one measurement that were not defined as regenerating, the plot measurement nearest to but not more than 10 years from the date of the AVI Inventory (2001) was selected. Regenerating plots measured prior to 1992 were included. A total of 1,101 spatially referenced plots were selected.

Table 1 Selected Plot Distributions by Yield Class and Measurement Year

Measurement Year	Number of Plots									
	Aw	Hw/Pl	Hw/Sw	Sw/Hw	Pl/Hw	Sb/Hw	Sw	Pl	Sb	Total
1991	10	7	-	5	8	-	16	56	-	102
1992	1	1	-	-	-	-	-	9	-	11
1993	-	-	-	-	1	-	-	7	-	8
1994	4	4	1	3	2	-	-	1	-	15
1995	6	2	8	3	7	-	4	13	-	43
1996	8	5	3	2	5	-	3	8	-	34
1997	3	2	1	1	-	-	2	6	-	15
1998	3	1	2	2	-	-	6	30	-	44
1999	2	-	-	1	3	-	10	19	-	35
2000	3	3	3	-	2	-	8	20	3	42
2001	16	4	4	11	13	-	26	74	2	150
2002	3	1	4	5	7	-	18	38	-	76
2003	7	3	3	4	17	3	28	118	3	186
2004	42	14	16	5	5	-	2	14	-	98
2005	-	4	-	-	9	-	6	14	-	33
2006	8	9	3	13	16	-	22	48	-	119
2007	3	4	2	4	6	-	13	56	-	88
2008	-	-	-	-	-	-	2	-	-	2
Total	119	64	50	59	101	3	166	531	8	1,101

Figure 1 Selected Plot Distributions by Yield Class and Measurement Year

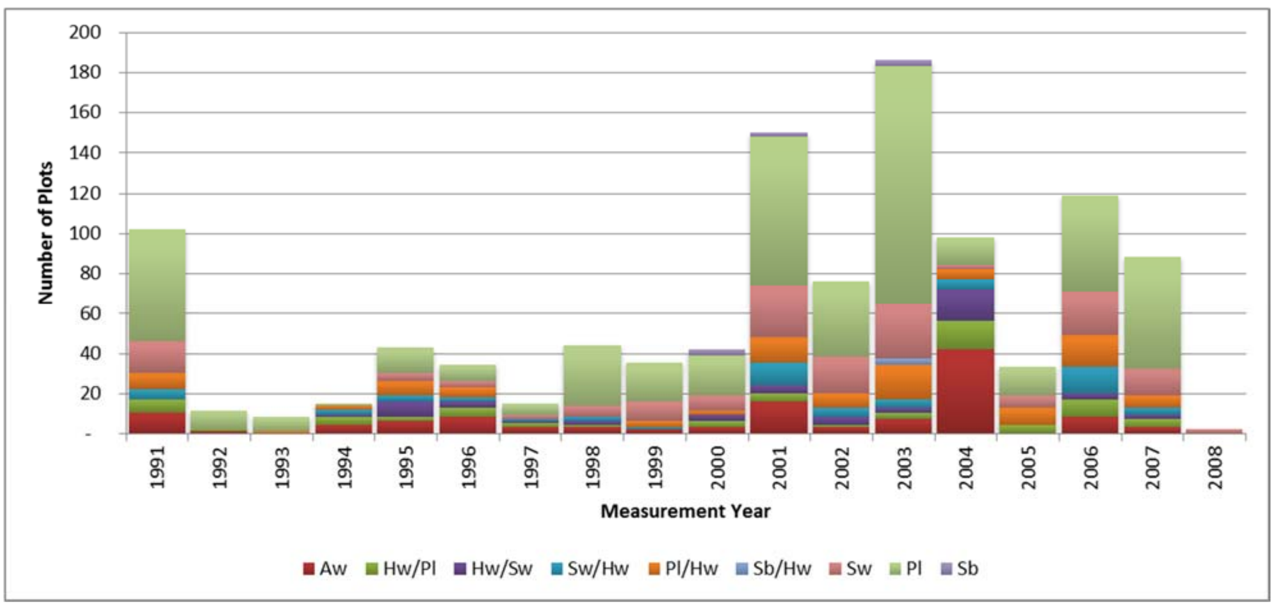
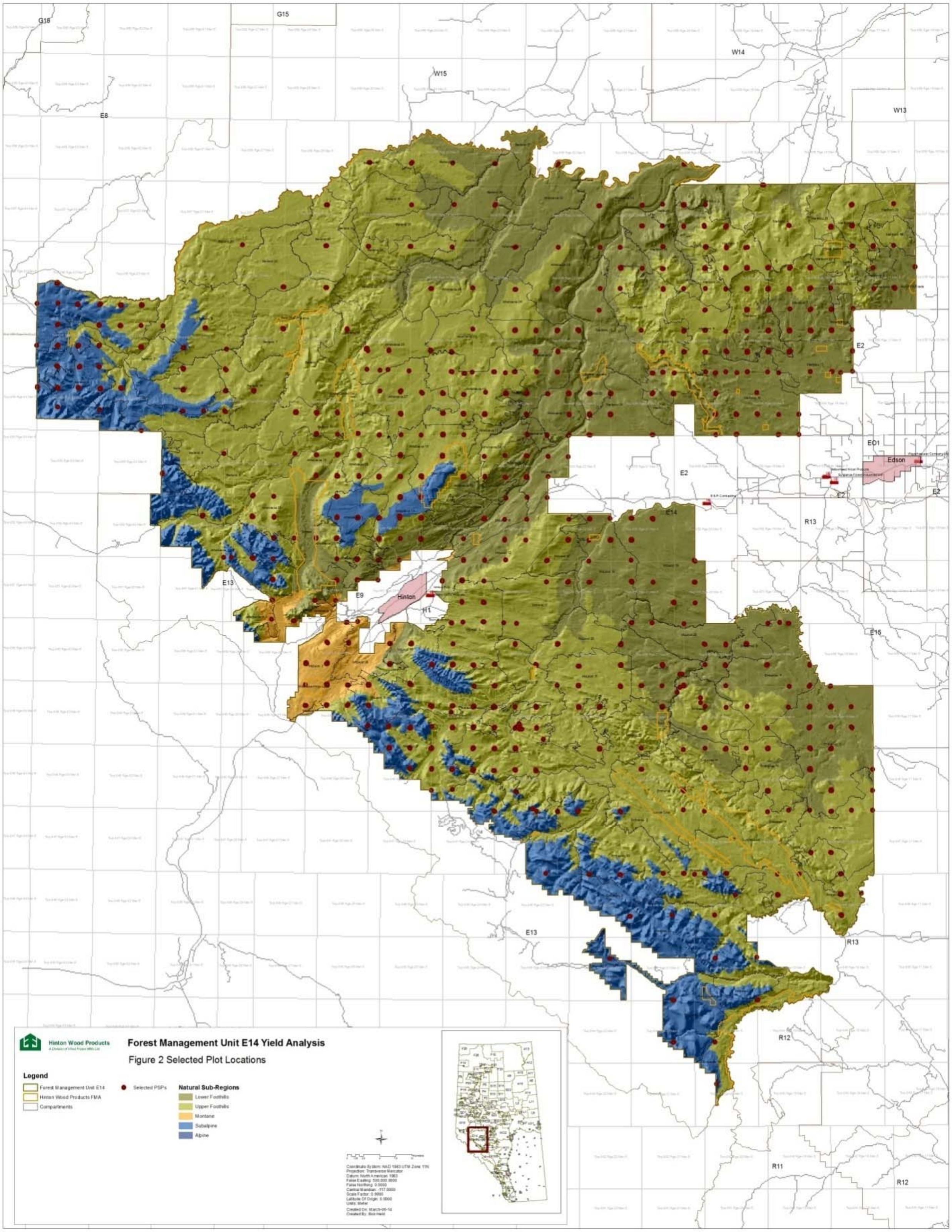


Figure 2 Natural Sub-Regions and Selected Plots



2.2 Plot Compilation

The plot compilation process is broken down into:

- Identification of the tree models to be used.
- Summary of the individual tree data to the plot level for various utilizations.

The coefficients are provided in Appendix B.

2.3 Utilization Standards

Utilization Standards by applicability are provided in Table 2. The tree length and CTL yield curves were used to develop a ratio which is applied to the regenerated yields in the timber supply analysis.

Table 2 Utilization Standards and Applicability

Utilization Standard	Minimum Top Diameter (cm)	Minimum Stump Diameter (cm)	Minimum Stump Height (m)	Minimum Log Length (m)	Acceptable Log Lengths (m)	Application
15/11/15cm/3.76m	11	15	15	3.76	NA	Coniferous Unmanaged Yields - Tree Length
15/11/15cm/3.76m	11	15	15	3.76	4.98,4.37,3.76	Coniferous Unmanaged Yields - Cut To Length
15/10/30cm/2.67m	10	15	30	2.67	NA	Deciduous Unmanaged Yields – Tree Length
15/10/30cm	10	15	30	NA	NA	Deciduous Regenerated Yields, RSA Compilation and GYPSY Projections
15/11/15cm	11	15	15	NA	NA	Coniferous Regenerated Yields - FMP Compilation

2.4 Tree Model Relationships

Tree models were used to predict:

- Heights where not collected
- Stump diameters where not collected
- Diameter inside bark at intervals up the tree

All models were based on the work completed by Dr. Shongming Huang and included in the document *Ecologically based individual tree volume estimation for major Alberta tree species* (Huang 1994).

2.5 DBH/Height

Not all heights were collected in the field-sampling program. Where the heights are missing, the Chapmann-Richards relationship was used. This is an accepted model for height prediction by ESRD.

The relationship is:

$$Height = 1.3 + b_0 * (1 - \exp^{-b_1 * dbh})^{b_2}$$

Where: height = tree height (m)

dbh = diameter at breast height (cm)

Exp = natural exponent

b0, b1, b2=parameter estimates

2.6 Stump Diameter / DBH

Similar to the heights, a quadratic model was developed to determine the stump diameter where missing. Stump diameter is required in determining merchantable volumes. The relationship is:

$$Stumpdiam = b0 + b1 * dbh + b2 * dbh^2$$

Where: stumpdiam = stump diameter (cm) at .3 m

dbh =diameter at breast height (cm)

b0, b1, b2= coefficients

2.7 Taper Model

The LFS natural sub-region based taper model was used in calculation of tree volumes. Appropriate equations were applied based on the 1994 Natural Sub-region boundaries. The model predicts the diameter (inside bark) for any point on the tree given a DBH and height. The model form is:

$$d = a_0 D^{a_1} a_2{}^{D} X^{b_1 Z^2 + b_2 \ln(Z+0.001) + b_3 \sqrt{Z} + b_4 e^Z + b_5 (D/H)}$$

Where: $X = (1 - \sqrt{h/H})/(1 - \sqrt{p})$

and d = diameter inside bark at *h* (cm)
h = height above the ground (m), $0 \le h \le H$
H = total tree height (m)
D = diameter at breast height outside bark (cm)
Z = *h* / *H*
p = location of the inflection point, assumed to be at 22.5% of total height above the ground
e = base of the natural logarithm (= 2.71828)
$a_1, a_2, a_3, b_1, b_2, b_3, b_4, b_5$ = Coefficient estimates.

See Table 2 for the utilization standards. Only live trees were used in the compilation. Table 3 provides a list of the species.

Table 3 Species Codes

Species Code	Name	Scientific Name	Species Class
NO	No Tally	N/A	N/A
AW	Trembling Aspen	Populus tremuloides	Dec
BW	White Birch	Betula papyrifera	Dec
FA	Alpine Fir	Abies lasiocarpa	Con
FB	Balsam Fir	Abies balsamea	Con
LT	Tamarack	Larix laricina	Con
PB	Balsam Poplar	Populus balsamifera	Dec
PL	Lodgepole Pine	Pinus contorta	Con
SB	Black Spruce	Picea mariana	Con
SE	Engelmann Spruce	Picea engelmannii	Con
SW	White Spruce	Picea glauca	Con

The plot compilation process involved:

- Calculate merchantable length - the taper model was used to calculate the merchantable lengths for all trees. The length is from the stump to the point at minimum top diameter.
- In the case of coniferous cut to length (CTL), the merchantable length was reduced to reflect the CTL lengths provided in Table 2. Compilation of acceptable lengths has been weighted to the preferred length of 4.98 m. This resulted in a shorter merchantable length than that calculated for the coniferous tree length. Development of the ratios for acceptable log lengths is described in the Solid Wood Defect Study in Appendix D.
- Section trees– All trees that met the minimum stump diameter and merchantable length criteria were sectioned into 20 logs using the taper model.
- Calculate diameters for the logs – top and bottom diameters (inside bark) were calculated. The taper model predicts diameter inside bark (DIB), at various heights above ground for a tree of given DBH and total height. From these diameters, basal areas were calculated.
- Calculate log volumes - using Smalian's equation, a volume (m^3) is calculated for each log,
- $$Volume = len * (bab + bau) / 2$$
- where: volume = section volume (m^3)

  len = section length (m)

  bab = basal area of the bottom of the section (m^2)

  bau = basal area of the top of the section (m^2)
- Calculate tree volumes – all section volumes were summed to produce a total tree volume. The volume per hectare that the trees represent was calculated by multiplying by the expansion factor (10000/ plot area).

- Summarize data to provide plot estimates –The final data set contains information about volume, stems, site index, diameter, height, and basal area for each plot. This data is provided in a MS Access Format (Yield.mdb).

2.8 Compilation and Results

The final compiled plot data set is provided in Microsoft Access® format. The data dictionary for the compiled tree and plot information are provided in Appendix I and J.

3 Yield Analysis

This section describes the datasets and methods used to create volume/age and tree size/age relationships for use in the subsequent timber supply analysis. The yield curves developed characterize the unmanaged and regenerated states of the active landbase.

This section details the process used to derive the relationships. The process included:

- Stratification of compiled plot data
- Selection of models
- Regression analysis to develop unmanaged stand yield relationships
- Growth and Yield Projection System (GYPSY) projections to develop regenerated stand yield relationships
- Calculation of Long Run Sustained Yield Averages (LRSYA) for each yield class and the total active landbase
- Determine MAI Standards

3.1 Unmanaged Stand Yield Relationships

The compiled plot dataset described in the previous section was used in development of the unmanaged stand yield relationships. There were 1,101 plots located on the active landbase selected for this analysis.

Only live trees were used in the compilation.

3.2 Plot Stratification

Yield class assignments were based on the approved Alberta Vegetation Inventory for FMU E14. See Landbase document for Stratification process. Some grouping of plot data was required to accommodate under-represented strata. Table 1 provides the distribution of plots in each stratum.

Black Spruce

As there were only 8 black spruce plots on the active landbase, these were grouped with the white spruce to produce a single yield curve. In order to more closely represent the growth of black spruce, a comparison was made between plot volumes at comparable ages for both tree length and cut-to-length processing. The resulting adjustments are shown in Table 4 and will be applied to the black spruce curves in the TSA.

Table 4 Volume Adjustments for Black Spruce Strata

	Tree Length			Cut-to-length		
	White Spruce	Black Spruce	Adjustment	White Spruce	Black Spruce	Adjustment
Total Area	81,957	3,838		81,957	3,839	
Number of Plots	166	8		166	9	
Average Coniferous m^3	163.7	131.7	-19.6%	158	121	-23.7%
Average Deciduous m^3	7.7	-	-100.0%	8	-	-100.0%

Mixedwood Strata

Duncan's multiple range test was conducted on the coniferous, deciduous and total volumes for the compiled data from the plots assigned to the 21 HwPl and 29 PlHw strata with ages 80 or older. Duncan's test is a result-guided test that compares the strata means while controlling other errors. Results show a difference only in the coniferous volume, not in deciduous or total. Regression analysis of all 165 mixedwood pine plots using a dummy variable to assess coefficient confidence intervals showed similar results.

The same two analyses were completed to compare the 22 HwSw and 17 SwHw plots. The Duncan's test showed a difference in deciduous volume for the two strata, but not in coniferous or total volume. The regression analysis of all 109 mixedwood spruce plots showed coniferous volumes to not be significantly different, while deciduous and total were different.

Given the inconclusive and sometimes conflicting results from these tests as well as the variability in the individual plot volumes for all 4 of the mixedwood strata and the small sample size, a decision was made to group the mixedwood strata. Results of the analyses are shown in Appendix C.

3.3 Model Selection

Yield relationships were developed to project volume (coniferous and deciduous) and tree size. The independent variable used is age as calculated as the Measurement Year minus the AVI Origin.

$$\text{Volume} = \text{b0} * \text{AGE}^{\text{b1}} * \text{e}^{(\text{-b2*AGE})}$$

Where: volume = gross merchantable stand volume at 15/11cm+/15cm/3.84m utilization

age = stand age at year of measurement

b0,b1, b2 = coefficients

e = natural logarithm (2.71828)

$$\text{TPM} = \text{b0} * \text{AGE}^{\text{b1}}$$

Where: TPM = Trees per cubic meter at 15/11cm+/15cm/3.84m utilization

age = stand age at year of measurement

b0,b1 = coefficients

3.4 Model Calibration

Model calibration was completed using SAS® Statistical procedure PROC NLIN. As discussed in Section 3.3, sample sizes in some strata were either too low to provide reliable yield estimates or did not exist at all. There strata were grouped in the analysis procedure. The groupings are:

- Yield Classes 3, 4and 6 (HW/SW, SW/HW, SB/HW)
- Yield Classes 2 and 5 (HW/PL and PL/HW)
- Yield Classes 7 and 9 (SW and SB)

The Pl stratum (yield class 8) and Hw stratum (yield class 1) were not grouped with other strata. The Sb stratum will be represented by the Sw stratum with an adjustment factor applied.

Table 5 Model Coefficients and Fit Statistics for Unmanaged Stand Yields – Tree Length Coniferous Volumes

	Yield Class	Number of Plots	b0	b1	b2	r2	Mean Bias	RMSE
1	RSA Stratum AW	119	0.01283	2.13712	0.01283	0.076	(1.50)	6,514.81
2	RSA Stratum HW/PL	165	0.01385	2.28328	0.01385	0.443	(3.43)	4,066.07
3	RSA Stratum HW/SW	112	0.00877	2.28851	0.00877	0.398	(3.71)	7,179.16
4	RSA Stratum SW/HW	112	0.00877	2.28851	0.00877	0.398	(3.71)	7,179.16
5	RSA Stratum PL/HW	165	0.01385	2.28328	0.01385	0.443	(3.43)	4,066.07
6	RSA Stratum SB/HW	112	0.00877	2.28851	0.00877	0.398	(3.71)	7,179.16
7	RSA Stratum SW	174	0.03852	2.02114	0.01007	0.317	(0.15)	12,880.30
8	RSA Stratum PL	531	0.00071	3.12135	0.01884	0.534	(0.52)	7,738.34
9	RSA Stratum SB	174	0.03852	2.02114	0.01007	0.317	(0.15)	12,880.30

Table 6 Model Coefficients and Fit Statistics for Unmanaged Stands Yield – Cut to Length Coniferous Volumes

	Yield Class	Number of Plots	b0	b1	b2	r2	Mean Bias	RMSE
1	RSA Stratum AW	119	0.01264	2.13064	0.01264	0.075	(1.47)	6,336.78
2	RSA Stratum HW/PL	165	0.01345	2.27320	0.01345	0.438	(3.43)	3,931.32
3	RSA Stratum HW/SW	112	0.00852	2.28422	0.00852	0.397	(3.86)	7,033.98
4	RSA Stratum SW/HW	112	0.00852	2.28422	0.00852	0.397	(3.86)	7,033.98
5	RSA Stratum PL/HW	165	0.01345	2.27320	0.01345	0.438	(3.43)	3,931.32
6	RSA Stratum SB/HW	112	0.00852	2.28422	0.00852	0.397	(3.86)	7,033.98
7	RSA Stratum SW	174	0.03387	2.04455	0.01022	0.311	(0.11)	12,451.93
8	RSA Stratum PL	531	0.00055	3.17313	0.01904	0.522	(0.45)	7,476.62
9	RSA Stratum SB	174	0.03387	2.04455	0.01022	0.311	(0.11)	12,451.93

Table 7 Model Coefficients and Fit Statistics for Unmanaged Stand Yields – Tree Length Deciduous Volumes

	Yield Class	Number of Plots	b0	b1	b2	r2	Mean Bias	RMSE
1	RSA Stratum AW	119	0.01267	2.34544	0.01267	0.210	(1.24)	12,739.31
2	RSA Stratum HW/PL	165	0.00777	2.21301	0.00777	0.269	(1.22)	5,734.35
3	RSA Stratum HW/SW	112	0.01801	2.21161	0.01801	0.172	(4.71)	5,212.38
4	RSA Stratum SW/HW	112	0.01801	2.21161	0.01801	0.172	(4.71)	5,212.38
5	RSA Stratum PL/HW	165	0.00777	2.21301	0.00777	0.269	(1.22)	5,734.35
6	RSA Stratum SB/HW	112	0.01801	2.21161	0.01801	0.172	(4.71)	5,212.38
7	RSA Stratum SW	174	0.02121	1.74310	0.02121	0.024	(0.55)	341.85
8	RSA Stratum PL	531	0.01252	1.70013	0.01252	0.028	(0.65)	559.90
9	RSA Stratum SB	174	0.02121	1.74310	0.02121	0.024	(0.55)	341.85

Table 8 Model Coefficients and Fit Statistics for Unmanaged Stand Yields – Tree Length Coniferous Tree Size

	Yield Class	Number of Plots	b0	b1	b2	r2	Mean Bias	RMSE
1	RSA Stratum AW	104	696.00424	(1.12003)	-	0.309	(0.02)	9.59
2	RSA Stratum HW/PL	113	322.81367	(0.95341)	-	0.574	(0.12)	10.54
3	RSA Stratum HW/SW	79	281.12852	(0.95302)	-	0.464	(0.12)	10.04
4	RSA Stratum SW/HW	79	281.12852	(0.95302)	-	0.464	(0.12)	10.04
5	RSA Stratum PL/HW	113	322.81367	(0.95341)	-	0.574	(0.12)	10.54
6	RSA Stratum SB/HW	79	281.12852	(0.95302)	-	0.464	(0.12)	10.04
7	RSA Stratum SW	44	67.11673	(0.58207)	-	0.301	(0.02)	9.50
8	RSA Stratum PL	79	67.39229	(0.51754)	-	0.329	(0.09)	13.38
9	RSA Stratum SB	44	67.11673	(0.58207)	-	0.301	(0.02)	9.50

Table 9 Model Coefficients and Fit Statistics for Unmanaged Stand Yields – Cut to Length Coniferous Tree Size

	Yield Class	Number of Plots	b0	b1	b2	r2	Mean Bias	RMSE
1	RSA Stratum AW	104	679.35470	(1.09745)	-	0.281	(0.02)	12.18
2	RSA Stratum HW/PL	113	360.35625	(0.96291)	-	0.584	(0.13)	11.96
3	RSA Stratum HW/SW	79	320.11246	(0.96654)	-	0.478	(0.14)	11.44
4	RSA Stratum SW/HW	79	320.11246	(0.96654)	-	0.478	(0.14)	11.44
5	RSA Stratum PL/HW	113	360.35625	(0.96291)	-	0.584	(0.13)	11.96
6	RSA Stratum SB/HW	79	320.11246	(0.96654)	-	0.478	(0.14)	11.44
7	RSA Stratum SW	44	73.60267	(0.58796)	-	0.302	(0.03)	11.09
8	RSA Stratum PL	79	71.86738	(0.51272)	-	0.322	(0.10)	16.09
9	RSA Stratum SB	44	73.60267	(0.58796)	-	0.302	(0.03)	11.09

Table 10 Model Coefficients and Fit Statistics for Unmanaged Stand Yields – Deciduous Tree Size

	Yield Class	Number of Plots	b0	b1	b2	r2	Mean Bias	RMSE
1	RSA Stratum AW	104	11,506.74215	(1.79163)	-	0.635	0.03	10.47
2	RSA Stratum HW/PL	113	226.40612	(0.84722)	-	0.390	(0.17)	24.35
3	RSA Stratum HW/SW	79	551.18904	(1.00511)	-	0.334	(0.39)	54.40
4	RSA Stratum SW/HW	79	551.18904	(1.00511)	-	0.334	(0.39)	54.40
5	RSA Stratum PL/HW	113	226.40612	(0.84722)	-	0.390	(0.17)	24.35
6	RSA Stratum SB/HW	79	551.18904	(1.00511)	-	0.334	(0.39)	54.40
7	RSA Stratum SW	44	143.58247	(0.68882)	-	0.228	0.02	24.64
8	RSA Stratum PL	79	66.96464	(0.54312)	-	0.211	(0.17)	36.31
9	RSA Stratum SB	44	143.58247	(0.68882)	-	0.228	0.02	24.64

3.5 Coniferous Cut to Length Log Size Distribution

A comparison of log distributions was completed to ensure the compilations approximated the log volume distributions found in the solid wood defect study. Data from the study are provided in the Yields.xls file. The final report is included in Appendix D.

Table 11 Comparison of Solid Wood Defect Study and Cruise Compilation Log Length Distributions

Log Length	SWD Study Sample		Cruise Compilation	
	Volume	% of Total Volume	Volume	% of Total Volume
> 16	-	0%	-	0%
16 ft	506	79%	106,768	80%
14 ft	45	7%	10,303	8%
12 ft	86	13%	15,772	12%
< 12	-	0%	-	0%
Total	637	100%	132,843	100%

3.6 Regenerated Stand Yield Relationships

Regenerated stand yield relationships were developed using compiled 2006 to 2012 performance survey data and Growth and Yield Projection System (GYPSY) version 1.0. Data collected in 2006 to 2008 were collected in compliance with the voluntary Alternative Regeneration Standard (ARS) which changed yearly. The process described in the Reforestations Standard of Alberta (RSA) was used to compile all of the performance survey information. In total, 888 blocks (1,093 unique polygons) were selected in creating the regenerated yield relationships. Figure 3 provides the locations of the blocks used in the analysis. Table 12 and Table 13 provide summaries by survey and stratum respectively. Appendix G provides information for each Opening.

Regenerated yields were created for yield classes 2 through 9.

Yield Class groupings:

- Hw/Sw, Sw/Hw and Sb/Hw (yield classes 3,4 and 6)
- Hw/Pl and Pl/Hw (yield classes 2 and 5)
- Sw and Sb (yield classes 7 and 9)
- Pl (yield class 8)

For the Hw stratum (yield class 1), the yield estimates calculated in section 3.4 were insufficient to develop reliable regenerated yield estimates, so unmanaged stand curves will be used.

Table 12 Performance Survey Populations

Timber Year	System Type	Number of Openings	Survey Area (ha)	Population Area (ha)
2006	N	184	3,228	3,228
2007	N	158	4,025	4,025
2008	N	260	6,440	6,440
2009	A	65	987	4,681
2010	A	70	837	11,032
2010	N	7	82	82
2010	N	17	156	156
2011	A	57	806	5,494
2012	A	69	998	8,034
2012	N	1	18	18
Total		**888**	**17,576**	**43,190**

Table 13 Performance Surveys by Stratum

Description	Number of Openings	Survey Area (ha)
PlHw/HwPl	72	863
HwSw/SxHw	75	1,356
Sw	198	3,982
Pl	516	11,162
Hw	10	45
NA	17	168
Total	**888**	**17,576**

The process involved:

1. Re-stratify the original RSA survey strata to the yield strata used in the landbase as defined in Table 13 (See Appendix C).

2. Generate the GYPSY inputs as per the RSA process (See the GYPSY_Input table in the database – YieldData.mdb on the provided media).

3. Project Coniferous and Deciduous Volumes and Densities for each Opening/Polygon from ages 0 to 250 years at two utilizations (RSA Compilation and FMP Compilation). See Table 2 for the utilization standards used. (Yield_Regenerated_Yield Table in Yields.mdb)

4. Calculate the weightings required to produce the final yield estimates. A two-step weighting was used:

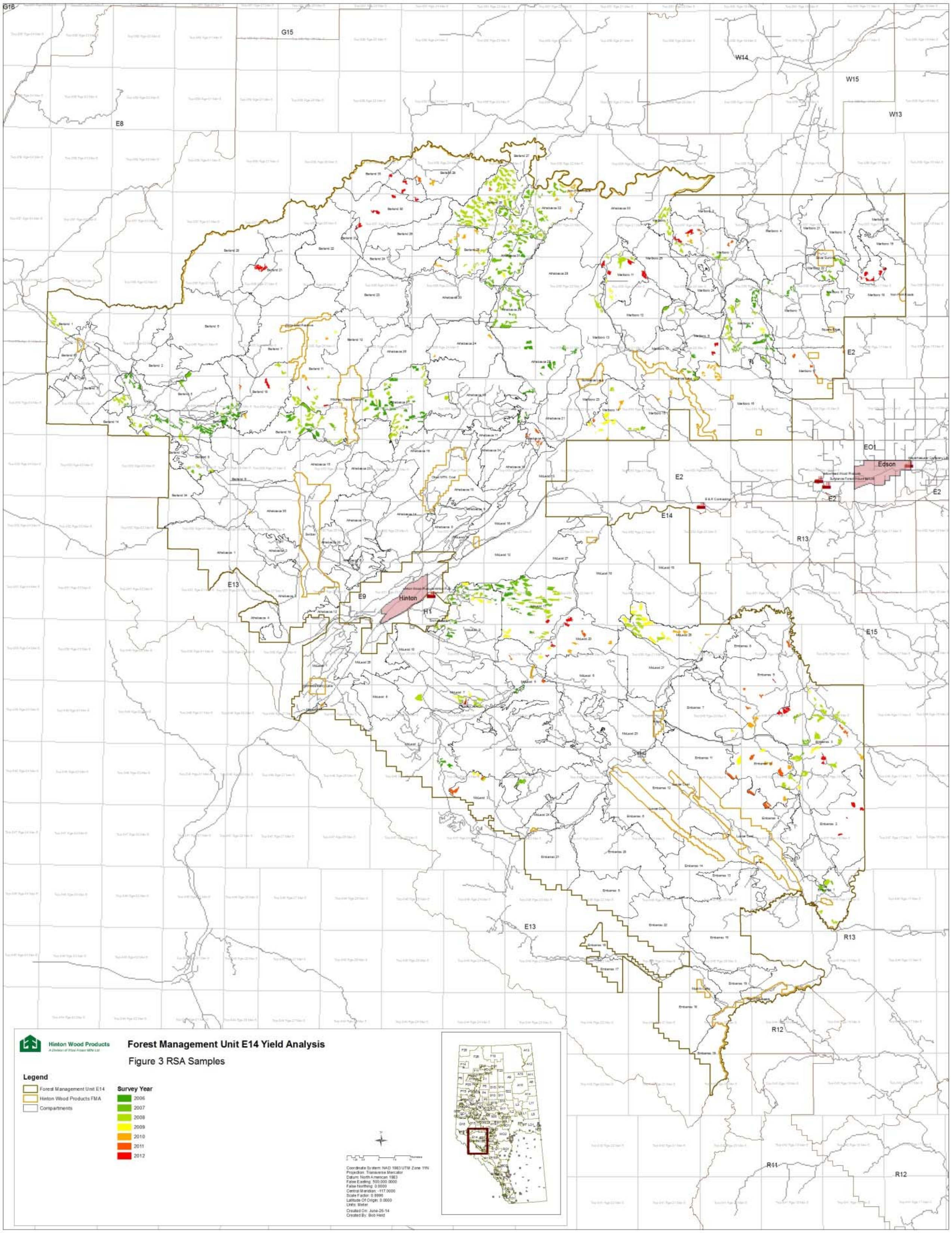
    a. If the sample program was based on the RSA photo interpreted standard (SYSTEM _TYPE = "Y") the information in the Inclusion probabilities table is used (ie. [AREA_X] /[Sel_weight] / [Comp_weight]) to calculate a weight value for each unique opening/polygon. This value is then totaled by population and the assigned yield strata. Finally, the weight value is divided by the total to calculate a weight for each of the opening/polygons.

    b. If the sample program was not based on the RSA photo interpreted standard (SYSTEM _TYPE = "N") weights are calculated as the area of the opening/polygon divided by the total area of the strata by population (see Table 12).

5. The final weight is calculated as the area of the stratum in a population divided by the total area of the stratum for the all of the surveyed opening/polygons multiplied by the weights calculated in steps 4a and 4b. (See the Yield_regeneratedYieldWeights table in Yields.mdb).

6. Final regenerated yield relationships were calculated as the coniferous and deciduous volumes and tree size values multiplied by the final weight summarized by yield strata and age. (See Yield_YieldTable in Yields.mdb).

Figure 3 RSA Sample Blocks



3.7 Final Yield Relationships

Figure 4 and Figure 5 provide the weighted average coniferous and deciduous regenerated yields, respectively. (Appendices E, F and G provide the final weighted, Unmanaged and regenerated yields respectively).

Figure 4 Weighted Yields – Coniferous Landbase (15/11/15/3.76m)

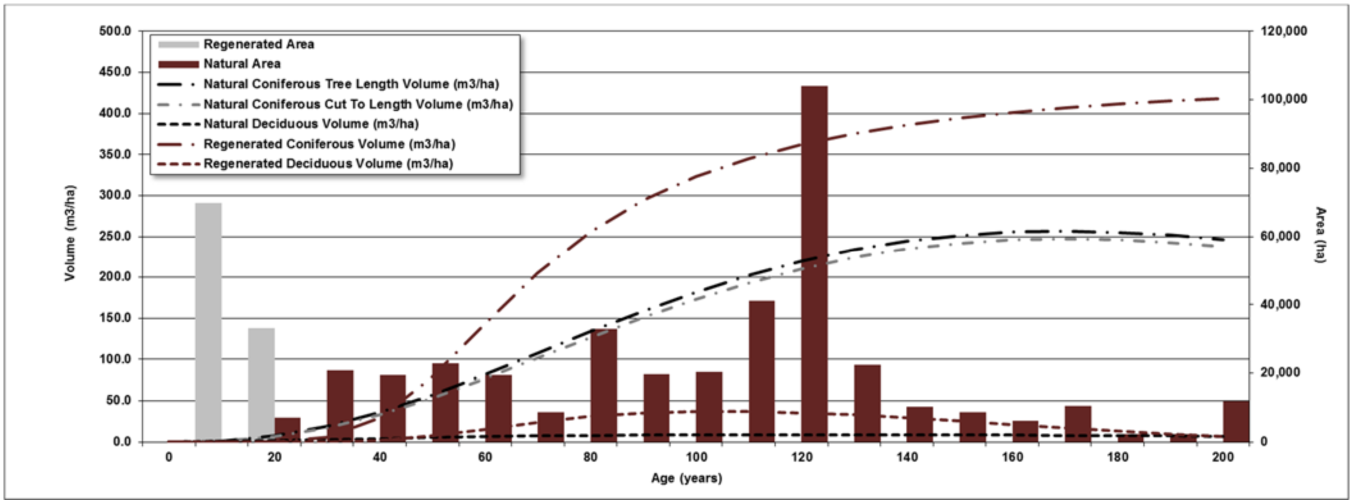
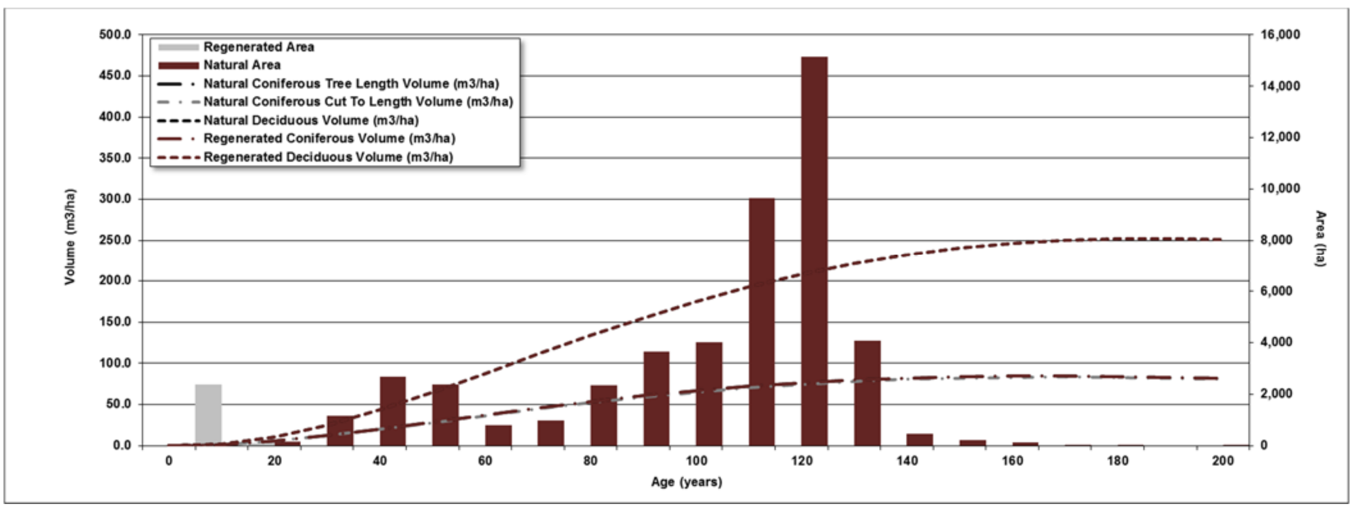


Figure 5 Weighted Yields – Deciduous Landbase (15/10/30/2.67m)



4 Long Run Sustained Yield Averages

Culmination of Mean Annual Increment (Max MAI) was assessed for the current state, no transitions and a fully regenerated state (Long Run Sustained Yield Average LRSYA). The "No Transitions" assumes that all regenerating openings display unmanaged yields. The regenerated state assumes all stands have transitioned to the regenerated yield curves. Table 14, Table 15 and Table 16 provide LRSYA estimates by Yield Class for the current and regenerated status, respectively. Assuming that harvested areas transition to regenerated curves increases the mean annual increment (for coniferous tree length volume) from 1,105,854 m^3/year to 1,262,234 m^3, an increase of 14.1%. The LRSYA is 1,955,583 m^3, an increase of 76.8% over the unmanaged state.

Table 14 Total MAI Current State

Yield Class	State	Net Area	Coniferous Tree Length				Coniferous Cut to Length				Deciduous			
			Vol. m³/ha	Max MAI m³/ha/yr	Culm. Age	Total MAI m³	Vol. m³/ha	Max MAI m³/ha/yr	Culm. Age	Total MAI m³	Vol. m³/ha	Max MAI m³/ha/yr	Culm. Age	Total MAI m³
1	Regen	2,476	72.1	0.66	110	1,623	70.4	0.64	110	1,584	193.0	1.75	110	4,345
1	Natural	47,881	72.1	0.66	110	31,391	70.4	0.64	110	30,628	193.3	1.76	110	84,132
2	Regen	1,120	245.6	2.73	90	3,055	236.3	2.63	90	2,939	79.9	0.89	90	994
2	Natural	24,082	115.2	1.28	90	30,834	110.9	1.23	90	29,667	81.6	0.91	90	21,830
3	Regen	1,467	256.9	2.57	100	3,770	250.9	2.51	100	3,682	99.9	1.00	100	1,466
3	Natural	23,748	225.1	1.50	150	35,634	222.2	1.48	150	35,177	78.9	0.53	150	12,497
4	Regen	3,030	256.9	2.57	100	7,783	250.9	2.51	100	7,601	99.9	1.00	100	3,026
4	Natural	21,092	225.1	1.50	150	31,649	222.2	1.48	150	31,243	78.9	0.53	150	11,099
5	Regen	2,848	245.6	2.73	90	7,770	236.3	2.63	90	7,476	79.9	0.89	90	2,529
5	Natural	40,125	115.2	1.28	90	51,374	110.9	1.23	90	49,431	81.6	0.91	90	36,373
6	Regen	11	256.9	2.57	100	28	250.9	2.51	100	27	99.9	1.00	100	11
6	Natural	487	225.1	1.50	150	731	222.2	1.48	150	722	78.9	0.53	150	257
7	Regen	18,012	291.7	2.92	100	52,539	281.4	2.81	100	50,678	54.9	0.55	100	9,886
7	Natural	81,215	155.2	1.55	100	126,051	149.7	1.50	100	121,585	7.8	0.08	100	6,332
8	Regen	84,683	301.6	3.35	90	283,810	285.8	3.18	90	268,901	31.9	0.35	90	30,026
8	Natural	306,038	211.6	1.92	110	588,740	201.8	1.83	110	561,356	9.3	0.08	110	25,958
9	Regen	306	233.4	2.33	100	713	211.0	2.11	100	645	-	-	100	-
9	Natural	3,816	124.2	1.24	100	4,738	112.3	1.12	100	4,284	-	-	100	-
Total		**662,434**	**199.4**	**1.91**	**106**	**1,262,234**	**190.9**	**1.82**	**106**	**1,207,626**	**40.0**	**0.38**	**106**	**250,759**

Table 15 Total MAI No Transitions

Yield Class	State	Net Area	Coniferous Tree Length				Coniferous Cut to Length				Deciduous			
			Vol. m³/ha	Max MAI m³/ha/yr	Culm. Age	Total MAI m³	Vol. m³/ha	Max MAI m³/ha/yr	Culm. Age	Total MAI m³	Vol. m³/ha	Max MAI m³/ha/yr	Culm. Age	Total MAI m³
1	Natural	50,357	72.1	0.66	110	33,015	70.4	0.64	110	32,212	193.3	1.76	110	88,483
2	Natural	25,202	115.2	1.28	90	32,267	110.9	1.23	90	31,046	81.6	0.91	90	22,845
3	Natural	25,215	225.1	1.50	150	37,836	222.2	1.48	150	37,351	78.9	0.53	150	13,269
4	Natural	24,121	225.1	1.50	150	36,195	222.2	1.48	150	35,731	78.9	0.53	150	12,694
5	Natural	42,973	115.2	1.28	90	55,021	110.9	1.23	90	52,939	81.6	0.91	90	38,954
6	Natural	498	225.1	1.50	150	748	222.2	1.48	150	738	78.9	0.53	150	262
7	Natural	99,227	155.2	1.55	100	154,006	149.7	1.50	100	148,550	7.8	0.08	100	7,736
8	Natural	390,720	211.6	1.92	110	751,649	201.8	1.83	110	716,687	9.3	0.08	110	33,140
9	Natural	4,121	124.2	1.24	100	5,117	112.3	1.12	100	4,627	-	-	100	-
Total		**662,434**	**183.1**	**1.67**	**109**	**1,105,854**	**175.6**	**1.60**	**109**	**1,059,881**	**35.7**	**0.33**	**109**	**217,384**

Table 16 Long Run Sustained Yield Averages

Yield Class	State	Net Area	Coniferous Tree Length				Coniferous Cut to Length				Deciduous			
			Vol. m^3/ha	Max MAI m^3/ha/yr	Culm. Age	Total MAI m^3	Vol. m^3/ha	Max MAI m^3/ha/yr	Culm. Age	Total MAI m^3	Vol. m^3/ha	Max MAI m^3/ha/yr	Culm. Age	Total MAI m^3
1	Regen	50,357	72.1	0.66	110	33,013	70.4	0.64	110	32,211	193.0	1.75	110	88,344
2	Regen	25,202	245.6	2.73	90	68,761	236.3	2.63	90	66,160	79.9	0.89	90	22,381
3	Regen	25,215	256.9	2.57	100	64,779	250.9	2.51	100	63,263	99.9	1.00	100	25,185
4	Regen	24,121	256.9	2.57	100	61,969	250.9	2.51	100	60,519	99.9	1.00	100	24,093
5	Regen	42,973	245.6	2.73	90	117,249	236.3	2.63	90	112,813	79.9	0.89	90	38,163
6	Regen	498	256.9	2.57	100	1,280	250.9	2.51	100	1,250	99.9	1.00	100	498
7	Regen	99,227	291.7	2.92	100	289,436	281.4	2.81	100	279,182	54.9	0.55	100	54,460
8	Regen	390,720	301.6	3.35	90	1,309,478	285.8	3.18	90	1,240,690	31.9	0.35	90	138,539
9	Regen	4,121	233.4	2.33	100	9,617	211.0	2.11	100	8,696	-	-	100	-
Total		**662,434**	**273.1**	**2.95**	**94**	**1,955,583**	**260.6**	**2.82**	**94**	**1,864,785**	**57.5**	**0.59**	**94**	**391,662**

4.1 MAI Standards

Calculation of MAI Standards for RSA monitoring are required and provided in Table 17. The standard for stratum 9-Sb reflects the 20% reduction applied to the coniferous standard for stratum 7-Sw and no deciduous volume, as discussed in Section 3.2. HWP included assumptions of volume gain for improved stock in pure Sw & Pl strata in the Timber Supply Analysis. There are three additional managed stand strata in Table 17 to reflect the addition of improved stock strata Sw-TI4, Pl-TI4, and Pl-TI8, where TI4 represents a 4% percent volume gain and TI8 represents an 8% percent volume gain. These additional codes will allow tracking of improved stock deployment and assessment against the target with performance surveys.

Table 17 MAI Standards for RSA Monitoring

FMP Strata	Base-10 Strata	Primary Species	FMP Utilization Standard (SDOB/TDIB/STHT/Process)		FMP Culmination MAI (m^3/ha/yr)			Conversion Factor		RSA Culmination MAI (m^3/ha/yr)		
			Coniferous	Deciduous	Age	Coniferous	Deciduous	Coniferous	Deciduous	Age	Coniferous	Deciduous
1-Aw	I-D	DEC	15/11/15/TL	15/10/30/TL	110	0.66	1.75	0.00%	0.00%	110	0.66	1.75
2-Hw/Pl	II-DC-Pl	CON	15/11/15/TL	15/10/30/TL	90	2.73	0.89	-1.88%	-4.74%	100	2.68	0.85
3-Hw/Sw	III-DC-Sx	CON	15/11/15/TL	15/10/30/TL	100	2.57	1.00	-1.36%	0.07%	100	2.53	1.00
4-Sw/Hw	IV-CD-Sw	CON	15/11/15/TL	15/10/30/TL	100	2.57	1.00	-1.36%	0.07%	100	2.53	1.00
5-Pl/Hw	V-CD-Pl	CON	15/11/15/TL	15/10/30/TL	90	2.73	0.89	-1.88%	-4.74%	100	2.68	0.85
6-Sb/Hw	VI-CD-Sb	CON	15/11/15/TL	15/10/30/TL	100	2.57	1.00	-1.36%	0.07%	100	2.53	1.00
7-Sw	VII-C-Sw	CON	15/11/15/TL	15/10/30/TL	100	2.92	0.55	-1.55%	0.00%	100	2.87	0.55
7-Sw-TI4	VII-C-Sw	CON	15/11/15/TL	15/10/30/TL	100	3.04	0.55	-1.55%	0.00%	100	2.98	0.55
8-Pl	VIII-C-Pl	CON	15/11/15/TL	15/10/30/TL	90	3.35	0.35	-1.66%	-0.01%	90	3.30	0.35
8-Pl-TI4	VIII-C-Pl	CON	15/11/15/TL	15/10/30/TL	90	3.48	0.35	-1.66%	-0.01%	90	3.43	0.35
8-Pl-TI8	VIII-C-Pl	CON	15/11/15/TL	15/10/30/TL	90	3.62	0.35	-1.66%	-0.01%	90	3.56	0.35
9-Sb	IX-C-Sb	CON	15/11/15/TL	15/10/30/TL	100	2.33	-	-1.55%	0.00%	100	2.30	-

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Appendix A Permanent Growth Sample Program Manual

Hinton Wood Products
A division of West Fraser Mills Ltd.

Woodlands Department

Permanent Growth Sample Program Manual

Version 19
April, 2012

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[redacted]

1. Introduction

Hinton Wood Products, A division of West Fraser Mills Ltd. (HWP) manages a Permanent Growth Sample (PGS) program on its Forest Management Agreement Area (FMA) surrounding the town of Hinton, Alberta. There are over 3200 PGS plots, which constitute one of the most comprehensive programs in North America.

1.1 Program Objectives

The overall objective of HWP's PGS program is to forecast the growth and yield of wood fibre on the FMA. This information is used in the determination of the FMA's Annual Allowable Cut (AAC) volume and is the foundation of the scientific approach to forest management used on the FMA.

Other objectives associated with the PGS Program include:

- Determine relationships between individual tree- and stand-level characteristics, site productivity, stand condition and rate of stand decline in fire-origin and post harvest regenerated stands.
- Develop acceptable regeneration performance standards by site and species.
- Enhance the stand inventory program's ability to accurately predict volumes for small wood and individual deciduous species.
- Develop localized volume and product stand estimates.
- Develop pre- and post- harvest relationships between individual tree- and stand-level responses to silviculture and harvest practices.
- Develop site index relationships for individual species by ecological unit.
- Quantify losses and predict the risk of losses associated with insects, diseases, animals and other natural causes in fire-origin and regenerated stands.
- Provide wildlife habitat information and its changes over time, which will support the development of wildlife models and the forecasting of habitat changes through natural stand evolution and management intervention.

1.2 Purpose of Manual

The purpose of this manual is to document the history and field procedures for the establishment, measurement and maintenance of plots in the HWP PGS program.

2. Program Background

Over the history of the PGS program there have been several changes which need to be understood to ensure proper use of the data.

2.1 Continuous Forest Inventory Plots and the Permanent Growth Sampling Program

Between 1956 and 1961, North Western Pulp & Power Ltd. (now Hinton Wood Products) established approximately 3000 inventory plots throughout the Hinton Pulpwood Lease. These square-shaped, one-fifth acre plots were arranged in clusters of four with the cluster centres established every two miles at the intersection of the Alberta Legal Survey grid section lines (in the case of baselines and correction lines, the clusters of four plots were divided to align with the baseline/correction line offset). This systematic inventory sampling program was known as the Continuous Forest Inventory (CFI).

In areas that had been legally surveyed, and therefore marked on the ground, cluster centres were established at the original survey pin. The four plots within the cluster were established at a distance of 100.6 m at azimuths of 45, 135, 225 and 315 degrees from the cluster centre (Figure 1).

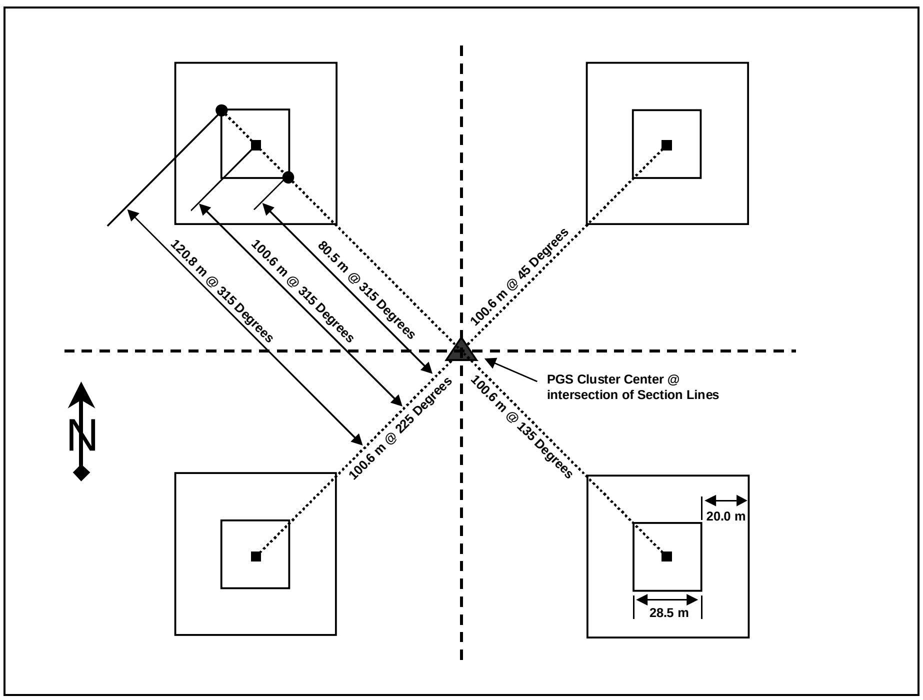

Figure 1. CFI Cluster Layout

In areas that had not been legally surveyed, and therefore not marked on the ground, the plot clusters were pre-positioned using forest cover type maps and aerial photos. Section intersections were first identified on the forest cover maps, and then transferred to aerial photos. Using the aerial photos, permanently identifiable tie-points were identified, which were used as the point of commencement (POC) for locating the cluster centre. Azimuth and distance from the POC to the cluster center were measured from the photograph and used to establish the PGS plots on the ground. At subsequent visits, POC's were relocated when a more convenient tie-point was available (ie. new road, seismic line, etc.).

The original intent of the CFI was simply to inventory the forest resource of the recently allocated Hinton Pulpwood Lease, for which no inventory or mapping had been completed for yet. Soon after the CFI was completed, and the first Forest Management Plan was prepared, it became evident that the real value of the CFI plots was not in creating forest inventories, but rather developing growth and yield tables. In 1970, the CFI program was converted into the Permanent Growth Sample Program, at which time the second measurement of the originally established plots began (re-measurement intervals were originally scheduled for five years, but this was revised to ten years after the first re-measurement).

2.2 Expansion and Focus Plots

In 1988, the FMA was expanded to include additional areas in what is today known as the Athabasca, Berland and Embarras working circles. In 1991, an additional 114 PGS plots were established on a two-mile by two-mile grid.

In addition to the systematically located PGS plots (original CFI and PGS grid), a number of other PGS plots have been established in an effort to fill specific shortcomings of the existing data or to assess specific operational opportunities. Table 1 identifies the current plot installations in the PGS Program.

Table 1. PGS Program Installation Groups.

Plots Set	Original Intent	Plot size Ha (acre)	First Measurement
Original CFI/PGS grid	Inventory – G & Y	0.08 (1/5)	1957/1958
1988 Expansion grid	G & Y	0.04 (1/10)	1990/1991
Robb (Embarras)	Young Pine	0.04 (1/10)	1969/1970
McCardell Creek	Young Pine	0.04 (1/10)	1970
Lynx Creek (Marlboro)	Young Pine	0.04 (1/10)	1980
Canyon Creek (Athabasca)	Mixedwood	0.04 (1/10)	1988
Lambert Creek (McLeod)	Young Aspen	0.04 (1/10)	1996
Caribou Lichen Thinning (Berland)	Caribou & Lichen	0.04 (1/10)	1999

2.3 Procedural Changes

Given the duration of the PGS program on the FMA, there have been several procedural changes over the years. Table 2 does not capture all the changes that have occurred over the many years of the program, but highlights some of the most significant changes, and is more comprehensive for the later years of the program.

Table 2. Procedural Highlights and Significant Changes to the PGS Program.

Year	Procedural Change
1961	• Minimum tagging limit reduced from 11.7 cm (4.6”) to 7.6 cm (3.0”).
1970	• CFI converted to PGS program. • New establishment plot size reduced from 0.08 ha (0.1 acre) to 0.04 ha (0.2 acre). • Minimum tagging limit reduced from 7.6 cm (3.0”) to 5.08 cm (2.0”). • Incorporation of variable sized subplots within main plots.
1971	• Plot re-establishment efforts begin.
1993	• Plot ecological classification efforts begin.
1995	• Proportion of tree heights measured increased from 20 % (every tree with number ending in “0” or “5”) to 100 %.
1997	• Geo-referencing of plot locations using Geographic Positioning System (GPS) begins.
1999	• Minimum tagging limits reduced from 5.08 cm to 5.0 cm for 0.08 ha plots and from 5.08 cm to 2.0 cm for 0.04 ha plots.

2000	• Minimum tagging limits raised from 5.0 cm to 7.0 cm for 0.08 ha plots and from 2.0 cm to 5.0 cm for 0.04 ha plots
2003	• Minimum tagging limit raised from 7.0 cm in 0.08 ha plots and 5.0 cm in 0.04 ha plots to >7.0 cm for both plot sizes. • Incorporation of 10 m2 circular regeneration plot within main plot. • Subplot size options reduced to three (30, 50 or 100 m2). • New methodology for tree numbering within newly established plots: o Trees >7.1 cm DBH = 1 – 999 o Trees >= 1.3 m height and <=7.0 cm DBH = 8001 – 8999 o Trees >= 0.3 m height and < 1.3 m height = 9001 – 9999 • Revised methodology for site tree assessment (including stem analysis). • Detailed crown assessments (multiple crown radii, crown fullness factor).

2.3.1 Metric Conversion

The PGS program was established and operated using imperial units for many years. All historical data has been converted from imperial to metric, which is now the current standard for all measurements and assessments (Table 3).

Table 3. Imperial to Metric Conversions for PGS Plots.

	Imperial Measure	Metric Conversion	New Metric Standard
1/10 acre Plot Dimensions	66.0 X 66.0 ft	0.04047 ha	20.1 X 20.1 m
1/5 acre Plot Dimensions	93.4 X 93.4 ft	0.08094 ha	28.5 X 28.5 m
Cluster Centre to Plot centres	330 ft. (5 chains)	100.58	101.0 m
Breast Height	4.5 ft	1.37 m	1.30 m

2.3.2 Recent Changes

As of 2006 there are a number of new issues that will impact the PGS program.

Mountain Pine Beetle

The mountain pine beetle (MPB) epidemic will shortly begin to impact the results obtained from the PGS program. After a plot has been infected the measurements may still provide interesting information, however post-infection measurements will be of limited use for projecting future stand growth. Therefore, crews must clearly indicate if there are any signs of infestation within the plot. In section 3.7.2.13 a new "M" category has been added to a plot damage category.

Reducing the number of plots within a cluster

Originally the CFI and PGS plots were located in clusters of 4 plots (Figure 1). This procedure has been reviewed by HWP staff in conjunction with expert forest biometricians and it was deemed excessive to use 4 plots in a cluster. Therefore, when opportunities arise such as an entire cluster of 4 plots being harvested only 2 plots will be re-established. Currently, HWP does not intend to initiate an active plot decommission program, rather this task will be completed through a process of attrition. The distribution of fire origin to regeneration stands must be considered during this process. Due to the increase in regenerated stand area versus fire origin, measurements in regenerated stands are currently of more value than mature fire origin stands. Considering this, if 2 plots are harvested in a cluster and 2 have not been harvested it is important to re-establish 1 (and maybe 2) of the harvested plots. It is essential that HWP staff give clear guidance to the field crews for each plot cluster on a case-by-case basis. Due to the nature of operational forestry, this is not a process that can be fully addressed through a *one-size-fits-all* rule set.

3. PGS Plot Establishment / Re-establishment

This section describes the methodologies and standards for establishing new, and re-establishing old PGS plots. Generally, new establishments will have additional objectives to those defined for the PGS program, and therefore, may have different methodologies than those defined in the following section.

The re-establishment of PGS plots will generally take place following the harvesting of a plot located within a designated harvest area.

3.1 Plot Positioning

When establishing a PGS plot, the field crew will assess the pre-determined position to verify that the plot will be contained within one stand type. If this is not the case, the field crew will re-locate the plot to ensure that it is contained within one stand. No new plots are to be established or re-established in older (80+ years) fire-origin stands..

If possible, when re-establishing a plot after harvest, the plot should be contained within the original plot. Plots that have been established based on the original CFI/PGS grid will be located 100.6 m from the plot centre at an azimuth of 45 degrees offset from the cardinal directions (unless otherwise stated on the cluster centre tag or access notes). If the re-establishment position needs to be moved to fit within one stand type, the plot can first be moved forward along the same azimuth as the original plot tie line, by 30m increments to a maximum of 120m from the original plot location. If a suitable position cannot be found along this azimuth, the plot can be moved by re-starting from the cluster centre and adding 10° to the azimuth and advancing 100.6m along this azimuth. If a valid plot location has not been found then 30m increments can be added to a maximum of 220.6m (from plot cluster centre) until a valid location has been found. If a plot cannot be established within 220.6m total then an additional 10° can be added to the azimuth and the process repeated to a maximum of +60°. If a plot is still not established then -10° can be subtracted from the azimuth and the process repeated to a maximum of -60°. During this process it may be possible for a new plot to be established close to a pre-existing plot. However, only neighbouring plot buffers are allowed to overlap, the main tree plots must not overlap with the buffer of another plot, if this were to occur the new plot must not be established in that location. Rather the process of finding a plot location must continue as outlined above.

Upon completion of the above process if a plot can not be re-established inside the original plot area, the decision to either move the plot or not re-establish it must be discussed with the HWP contract manager on a case by case basis.

3.2 Plot Centre

Once the position of the plot centre has been determined, a formal plot centre will be established. The plot centre will serve as the point from which all plot boundaries will be determined.

The actual plot centre location will be marked with a metal stake driven into the ground and painted blue. A minimum of 50 cm of the stake will remain above the ground. The centre stake will have an aluminium tag affixed to it with the following information:

- “PGS Plot Centre”
- Working Circle
- PGS Plot Number
- PGS Plot Installation Number
- Azimuth and distance from Cluster Centre to Plot Centre
- Azimuth and distance from Plot Center to Plot Center Tree.
- Date

A plot centre tree/marker will also be established as follows:

- Select the nearest healthy (living, and expected to be standing at time of next measurement – 10 years later). If no suitable tree exists, a square wooden stake will be driven into the ground next to the metal stake to serve as a marker.

- The centre witness tree/marker will be painted with a double band of blue paint at a target height of 2.0 m (each band will be a minimum of 3” thick, and will cover the entire circumference of the tree). In addition, a single band of blue paint will be painted between the height of 0.1 and 0.2 m (minimum of 3” thick and covering the entire circumference) to help identify the witness tree stump or marker in the event it was cut down.

- The centre witness tree/marker will have an aluminium tag affixed to it (facing the direction of the centre stake) with the following information inscribed:

    - “PGS Plot Centre Tree” or “PGS Plot Centre Marker”
    - Working Circle
    - PGS Plot Number
    - PGS Plot Installation Number
    - Azimuth and distance from Cluster Centre to Plot Centre
    - Azimuth and distance from Centre Tree/Marker to Plot Centre
    - Date

3.3 Plot Geo-referencing

Each time a PGS plot is visited it will be geo-referenced by digitally locating the plot center using a Global Positioning System (GPS) receiver. The following guidelines and standards apply when using GPS to geo-reference PGS plots:

- The GPS unit will be positioned directly above the centre post where possible, or within 30 cm where not possible.

- Data points for each plot centre will be stored in HWP’s Silvpoint Data Dictionary. The GPS point standards are as follows:
    - A minimum of 120 points is required.
    - PDOP values must be less than 8.0 for all points.
    - Three-dimensional points may be retained
    - Either static or dynamic point collection modes are acceptable

- When submitting GPS data to HWP, the data will be in file format and will be submitted digitally on CD.

3.4 Plot Types and Sizes.

In each PGS plot, there are either two or three plots to assess. Each plot differs in purpose and size, as described in the following section. Refer to Table 4 for plot dimensions, and Figure 2 for plot layout illustration. The dimensions stated in Table 4 are based on horizontal distance as opposed to slope distance; refer to Appendix 1 for slope correction tables and calculation examples.

Table 4. Description of PGS Plot Dimensions and Placements.

Plot Type	Area (m2)	Shape	Dimensions (m)	Diagonal / Diameter (m)	Positioning
Main Tree	405	Square	20.1 x 20.1	28.3	Plot Centre
	810	Square	28.5 x 28.5	40.3	
Subplot	30	Square	5.5 x 5.5	7.78	Plot Centre
	50	Square	7.1 x 7.1	10.04	
	100	Square	10 x 10	14.14	
Regeneration	10	Circular	1.78m radius	1.78	Plot Centre

3.4.1 Main Tree Plot

A main tree plot of 0.04ha (20.1m x 20.1m) will be established or re-established around the plot center for each PGS plot. Within the main tree plot all trees that have a DBH measurement of 7.1cm or greater will be sampled. A number of fire-origin main tree plots are 0.08ha (28.5m x 28.5m) in size. These will be considered valid plot until a need for re-establishment occurs.

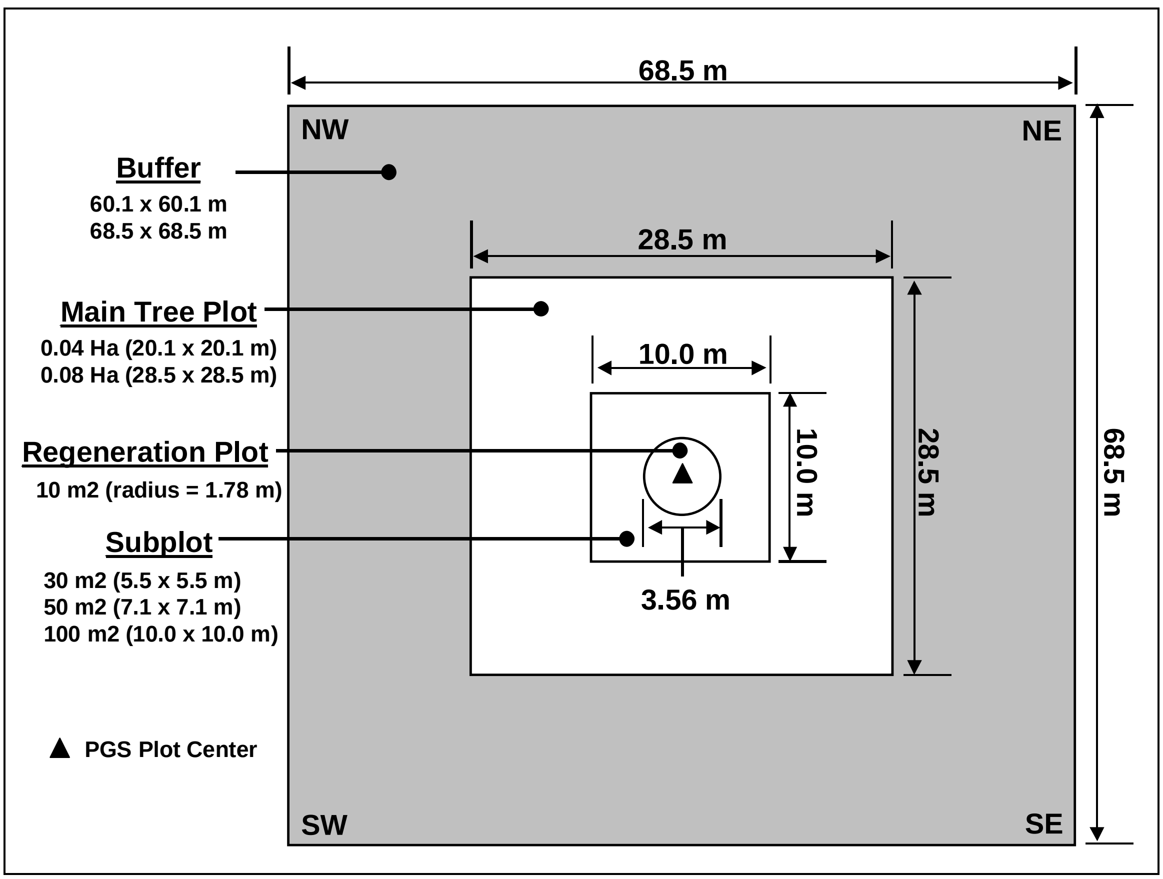

Figure 2. Example of PGS Plot Layout.

3.4.2 Subplot

A subplot will be established or re-established within each main tree plot. The subplot, like the main tree plot, will be positioned around the plot centre. All newly established subplots will be square and 30m^2 in size (5.5 x 5.5m), however all extant fire-origin subplots of 50m^2 or 100m^2 will be measured and considered valid until the plot has been either harvested or decommissioned.

3.4.3 Regeneration Plot

A regeneration plot will be established or re-established in each main tree plot. The regeneration plot is a 10 m2 circular plot positioned around the plot centre.

3.5 Plot Layout and Demarcation

The layout and demarcation of newly established or re-established plots is critical to accurately capturing the plot trees. In addition, clear and consistent demarcation will make working in the plot and locating the plot in the future more efficient.

Unless otherwise stated, all paint used for demarcation will be blue tree paint (spray variety).

3.5.1 Main Tree Plot

Layout and demarcation of the main tree plot will be the most time consuming due to its size, potential number of borderline trees, requirement of sectors and a sizeable buffer.

3.5.1.1 Corners

Once the plot centre has been established and the plot size determined, the plot corners will be installed as described in Appendix 2. At each of the plot corners, a metal stake will be pounded into the ground such that a minimum of 50cm is above the ground. These corner posts will be painted blue and yellow and blue flagging will be attached to the metal post and to a nearby tree or shrub.

Once all four posts are installed, string will be attached to clearly mark the plot boundary. At each of the corner posts, three witness corner trees will be selected and marked. The witness trees will be trees outside of the plot and surrounding the corner post. On each of these trees paint an "x" facing the direction of the corner post.

3.5.1.2 Borderline Trees

Once the corners have been established and marked and the string is in place, the plot should be assessed for borderline trees (trees that are partially in the plot).

If the tree germination point is inside the plot, the tree will be measured, and will have the word "IN" painted facing the centre of the plot. Conversely, if the point of germination is outside the plot, the tree will be excluded, and will have the word "OUT" painted facing the centre of the plot. If the field crew cannot determine whether the point of germination is inside or outside of the plot area (this should be a very rare occurrence), the first instance will be classed as inside the plot – the next instance will be classed as outside the plot. In either case, the tree will either have the word "IN" or "OUT" painted on it in the direction of the plot centre.

3.5.1.3 Plot Sectors

Once the plot corners have been established and the plot boundary string is in place, the plot will be divided into four equal North – South oriented sectors (refer to Figure 3). These sectors provide an efficient means to numbering the trees within the plot. String joining the north and south string boundary should be used to establish the sector boundaries. The spacing between the sectors is 5.03m for the 0.04Ha plot or 7.13m for existing 0.08 Ha plots. The resultant sectors are numbered 1 – 4 starting with 1 on the east side of the plot and ending with 4 on the west side of the plot.

3.5.1.4 Buffer

The main plot will have a buffer painted around it at a distance of 20 from the perimeter (refer to Figure 2). In some cases, there may not be sufficient room to establish a buffer of 20 m, in which case, the buffer will be established as near to 20 m as possible. The buffer will be marked by painting a blue dot (approximately 20 cm in diameter) at eye-level (approximately 1.5 – 1.8 m) on the side of the tree opposite that facing the PGS plot.

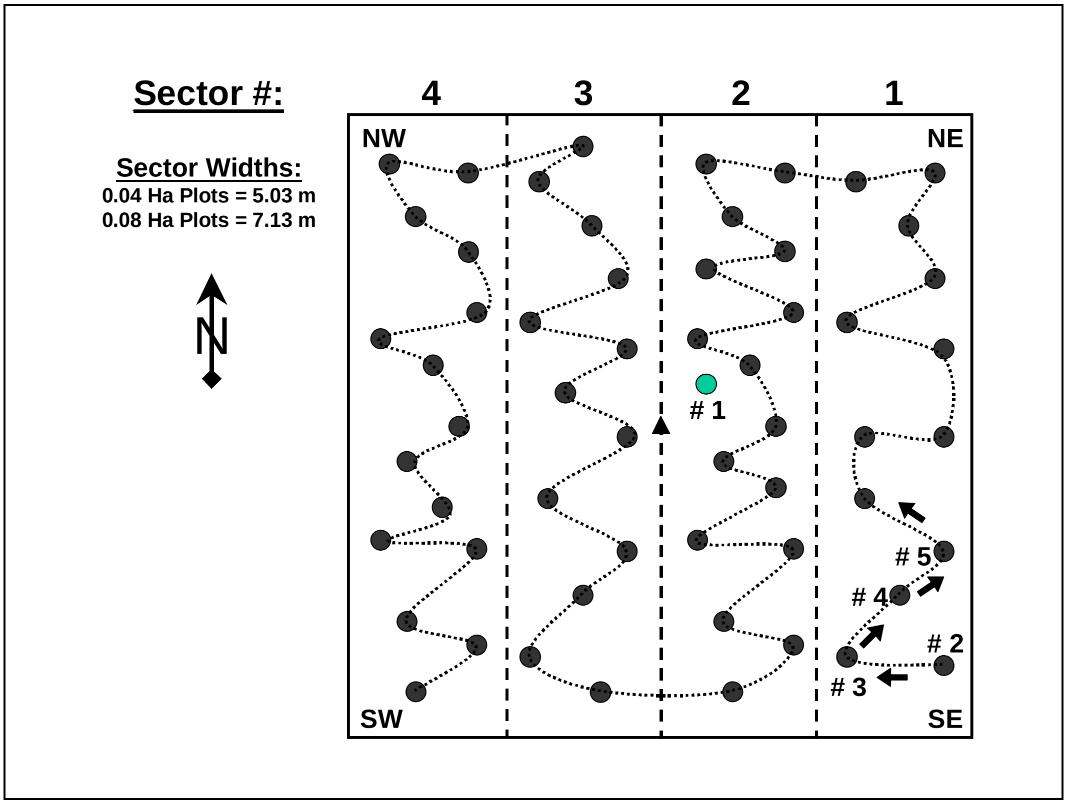

Figure 3. Plot Sector Layout and Numbering Pattern.

3.5.2 Subplot

The Layout and demarcation of the subplot is generally significantly less time consuming than that of the main tree plot, primarily due to its reduced size.

3.5.2.1 Corners

Like the main tree plot, the subplot uses the same set-up procedures as those described in Appendix 2. At each of the four subplot corners, a metal pin will be inserted into the ground. These corner pins will be painted blue, and blue and yellow flagging will be tied to the pin and to a nearby tree or shrub.

3.5.2.2 Borderline Trees

Borderline trees are assessed in the same manner as within the main tree plot. In most cases the trees will be too small to paint the word "IN" or "OUT" on them, therefore, borderline trees do not need to be marked in this manner.

3.5.3 Regeneration Plot

The regeneration plot is established around the plot centre. Given the size of the trees, it is much easier to determine which trees are in/out of the plot. No markings are required for borderline trees in the regeneration plot.

3.6 Tree Tagging and Numbering

Proper and consistent tree tagging and numbering is critical for both locating specific trees in an efficient manner and correctly accounting for trees within the database.

The following general tagging and numbering guidelines will be adhered to:

- **Tags**
  - Un-used, un-damaged, new aluminium tags will be used.

- **Numbers on Tags**
  - Min of 1 cm in height.
  - Underlined when the number contains "6" or "9".

- **Nail Positioning**
  - Entry point of nail will be at breast height (unless obstructed). Refer to Appendix 4 – Tree Assessments – DBH positioning.
  - Head of nail should be lower than the entry point into the tree.
  - During each re-visit nails must be adjusted to ensure that at least 3 cm of nail is out of tree to allow for growth.

- **Forked Trees**
  - If fork(s) occurs below 1.3 m, each of the resultant stems will be tagged as separate trees.
  - If fork(s) occur above 1.3 m, the stem will be treated as one stem.

3.6.1 Main Tree plot

All living or free standing dead trees with a DBH >= 7.1 cm will be tagged and numbered. Aluminium tags will be attached using 3" aluminium nails at a height of 1.3 m above the point of germination (DBH). If abnormalities such as branch whorls, swelling or major scarring will prevent the accurate measurement of the DBH, the nail and the measurement position will be moved. Refer to DBH Measurements in Appendix 4 for examples of how to determine DBH from point of germination, and where to re-position the measurement point in the event of abnormalities.

Tagging will begin with the centre tree (tree # 1). The centre trees will get a full-length tag, which will be installed so that the tag will face plot centre. Tree # 2 will be located in the southeast corner of the plot in Sector 1. Consecutive numbering will continue in a zig-zag manner as illustrated in Figure 3. These trees will be tagged using a half-length tag, with the exception of the last tagged tree, which will get a full-length tag (indicating the last number used in the plot). With the exception of tree # 1, all tags in Sectors 1 and 3 will be installed on the south side of the tree, while all tags in Sectors 2 and 4 will be installed on the north side of the tree.

Valid numbers in the main tree plot are 1 – 999.

3.6.2 Subplot

Within the subplot, all living or free standing trees with a height >=1.3 m and <= 7.0 cm DBH will be tagged and numbered. Trees with DBH >= 4.0 cm will have their tags affixed by nailing it to the tree, whereas trees with DBH <4.0 cm will have their tags attached to a branch. The DBH position will be marked on the tree with blue paint.

The tagging pattern for the subplot will adhere to that of the main plot – numbering is to begin in the southeast corner of the subplot, the tags are to face the same direction of those in the main plot sectors and the zig-zag pattern is to be followed. All trees tagged in the subplot will get half-length tags, except for the last tree tagged, which will get a full-length tag (indicating the last number used in the plot).

Newly established subplots will use the tree tagging numbers **8001 to 8999**. Some older established subplots may have tagged subplot trees with a main tree plot sequential number. Subplot trees were identified by either a "B" or a "S" in the *subplot* field.

Note subplot trees are <u>not</u> to be renumbered as they grow to become a "main plot" tree or if they were originally numbered with a main tree plot number.

3.6.3 Regeneration Plot

Since 2003, all living or free standing trees with a height >= 0.3 m and < 1.3 m within the regeneration plot, have been tagged and numbered. Since the establishment or re-establishment of plots generally occurs outside of the growing season, there may be snow covering the smaller trees. For this reason, the field crew will need to clear the snow out of the area inside the regeneration plot. Caution should be exercised when removing the snow such that trees are not damaged.

All regeneration plot trees will be tagged either by:

1. Inserting a metal pigtail into the ground directly next to the tree and towards the plot centre. However, this may not be possible if the ground is frozen.
2. Affixing a tag to a branch of the tree (not around the main stem). A spot of spray paint on the tree stem may also help for identifying measured trees on re-visit.

All trees tagged in the regeneration plot will get half-length tags, except for the last tree, which will get a full length tag indicating the last number used in the plot).

Newly established regeneration plots will use the regeneration subplot tree tagging numbers of **9001 to 9999**.

Note regeneration trees are <u>not</u> to be renumbered as they grow to become a "subplot" or "main plot" tree.

3.7 Data Collection

Data will be collected in three phases for each PGS Plot as follows:

1 – Plot Data
2 – Measurement Data
3 – Tree Data

3.7.1 Plot Data

The plot data relates to information that defines the constant attributes of the plot and the status of assessments completed on the plot. Table 5 identifies the plot information to be collected by the field crew at the time of establishment or re-establishment of PGS plots:

Table 5. Plot Data Requirements for Establishment or Re-establishment.

Plot Key	**Declination**	**Aspect**
HWP FMA	**Plot Number**	**Elevation**
Working Circle	**Establishment Number**	**Stem Mapped**
Compartment	**Establishment Status**	**Geo-referenced**
Installation Group	**Plot Size**	**Site Index Plot**
Cluster Number	**Plot Status**	**Regeneration Plot**
Azimuth CC to PC	**Slope Position**	**Comments**
Distance CC to PC	**Slope class**	

3.7.1.1 Plot Key

This field is used to identify the plot key. The plot key is the unique number that identifies the plot – it is a combination of the Working Circle (1 digit), Installation Number (2 digits) and the PGS Plot Number (4 digits). In the case of establishment, the plot key will be determined by HWP prior field establishment, and in the case of re-establishment, the plot key will remain the same as the previously established plot.

3.7.1.2 Hinton Wood Products FMA

This field is used to identify whether the plot is situated within the HWP FMA. Valid entries and their associated descriptions are defined in Table 6.

Table 6. HWP FMA Field Valid Codes.

HWP FMA Code	Description
Y	Yes – Within HWP Hinton FMA
N	No – Not within HWP Hinton FMA
U	U – Unknown if within HWP Hinton FMA

3.7.1.3 Working Circle

This field is used to identify the working circle that the plot is situated within. Valid entries and their associated descriptions are defined in Table 7.

Table 7. Working Circle Field Valid Codes.

Working Circle Code	Description
1	Athabasca
2	Marlboro
3	Embarras
4	McLeod
5	Berland

3.7.1.4 Compartment

This field is used to identify the compartment that the plot is situated within. Each compartment in the HWP FMA has a number assigned to it. These designated compartment numbers are unique in each of the five working circles.

3.7.1.5 Installation Group

This field is used to identify the installation group that each plot belongs to (refer to Table 1 for additional information on PGS Program installation groups. Valid entries and their associated descriptions are defined in Table 8.

Table 8. Installation Group Field Valid Codes.

Installation Group Code	Description
1	Original CFI /PGS Grid
2	1988 FMA Expansion Grid
3	Robb 1/10 Acre Plots (1/5 acre plots 995-999) – Embarras
4	McCardell Creek 1/10 Acre Plots – McLeod
5	Lynx Creek 1/10 Acre Plots (1/5 acre plots 990-995) – Marlboro
6	Canyon Creek Plots - Athabasca
7	Lambert Creek 1/10 Acre Aspen Plots – McLeod
8	Caribou Lichen Thinning Trial – Berland 16

3.7.1.6 Cluster Number

This field is used to identify the cluster number that each plot belongs to. A unique cluster number has been assigned to each of the PGS clusters on the Hinton FMA. The numbering of these clusters commences in the NW corner and ends in the SE corner of the Hinton FMA.

3.7.1.7 Azimuth from CC to PC

This field is used to identify the azimuth from the Cluster Centre to the Plot Centre. In the event that there is no cluster centre established, this field will be used to define the azimuth from the Tie-point to the Plot Centre.

3.7.1.8 Distance from CC to PC

This field is used to identify the distance in meters from the Cluster Centre to the Plot Centre. In the event that there is no cluster centre established, this field will be used to define the distance from the Tie Point to the Plot Centre.

3.7.1.9 Declination

This field is used to identify the declination setting on the compass that was used to determine the azimuth from Cluster Center to Plot Center and to set up the plot.

3.7.1.10 Plot Number

This field is used to identify the PGS plot number that is unique to the Installation Group and Working Circle. In the case of plot establishment, the plot number will be determined by HWP prior to field establishment, and in the case of re-establishment, the plot number will remain the same as the previously established plot.

3.7.1.11 Establishment Number

This field is used to identify the number of times the plot has been re-established.

3.7.1.12 Establishment Status

This field is used to identify the status of the forest at the time of plot establishment/re-establishment. Valid entries and their associated descriptions are defined in Table 9.

Table 9. Establishment Status Field Valid Codes.

Establishment Status Code	Description
F	Fire origin
R	Regenerated

3.7.1.13 Plot Size

This field is used to identify the size of the PGS main tree plot. Valid entries and their associated descriptions are defined in Table 10.

Table 10. Plot Size Field Valid Codes.

Plot Size Codes	Description

405	405 m2
810	810 m2

3.7.1.14 Plot Status

This field is used to identify the status of the plot. Valid entries and their associated descriptions are defined in Table 11.

Table 11. Plot Status Field Valid Codes.

Plot Status Code	Description
A	**Active** - Plot in good condition. Tree tags not near being overcome by tree growth. Plot intact and all markings visible.
I	**Inactive** – Plot in, or approaching poor condition. Tree tags being overcome by tree growth or otherwise missing. Plot still intact, but in need of maintenance.
L	**Lapsed** – Many tags no longer visible, making tree number determination uncertain. Plot markings have faded and are unrecognizable.
H	**Harvested** – All trees in the plot have been harvested.
P	**Partially harvested**. Not all plot trees were harvested.
X	**Destroyed by human** – ie. cutline, road, pipeline, landing etc.
B	**Destroyed by nature** – ie. burn, flood, windthrow etc.
C	**Within cutblock**, but not field confirmed
N	**Not found**
U	**Unknown**

3.7.1.15 Slope Position

This field is used to identify the average slope position of the plot relative to the immediate surrounding area. Valid entries and their associated descriptions are defined in Table 12.

Table 12. Slope Position Field Valid Codes.

Slope Position Code	Description
C	Crest
U	Upper slope
M	Middle slope
L	Lower slope
T	Toe
E	Level
D	Depression
R	Rolling

3.7.1.16 Slope Class

This field is used to identify the average slope class within the plot. This value will be assessed using a clinometer. Valid entries and their associated descriptions are defined in Table 13.

Table 13. Slope Class Field Valid Codes.

Slope Class Code	Description
0	< 11 %
1	11 – 20 %
2	21 – 30 %
3	31 – 40 %
4	41 – 50 %
5	51 – 60 %
6	61 – 70 %
7	71 – 80 %

8	81 – 90 %
9	> 90 %

3.7.1.17 Aspect

This field is used to identify the average aspect within the plot. Valid entries and their associated descriptions are defined in Table 14.

Table 14. Aspect Field Valid Codes.

Aspect Code	Description
F	Flat
N	North
NE	Northeast
NW	Northwest
E	East
W	West
SE	Southeast
SW	Southwest
S	South

3.7.1.18 Elevation

This field is used to identify the elevation (meters above sea level) at the plot centre. This measure will be completed using a calibrated and benchmarked altimeter.

3.7.1.19 Stem-mapped

This field is used to identify whether the trees in the plot have been stem-mapped (azimuth and distance from plot centre recorded for each tree). Valid entries for this field are: “Y” – plot has been stem-mapped, or “N” – plot has not been stem-mapped.

3.7.1.20 Geo-referenced

This field is used to confirm that the plot centre was geo-referenced using a global positioning system. Valid entries for this field are: “Y” – plot centre has been geo-referenced, or “N” – plot centre has not been geo-referenced.

3.7.1.21 Site Indexed

This field is used to identify whether a site index assessment has been completed on the plot. Valid entries for this field are: “Y” – site index assessment has been completed, or “N” – site index assessment has not been completed.

3.7.1.22 Regeneration Plot

This field is used to identify whether a regeneration plot has been established in the plot. Valid entries for this field are: “Y” – a regeneration plot has been established within the plot, or “N” – a regeneration plot has not been established in the plot.

3.7.2 Measurement Data

The measurement data captures information related to the actual assessment of the plot and the general plot attributes that will change over subsequent measurements. Table 15 identifies the measurement information to be collected by the field crew at the time of establishment or re-establishment of PGS plots:

Table 15. Plot Measurement Data Requirements for Establishment or Re-Establishment.

Plot Key	**Average Buffer Width**	**Field Broad Cover Type**
Measurement Number	**Buffer Representative**	**Uneven-aged Type**

Measurement Date	**Silviculture System**	**Plot Damage 1**
Measurement Company	**Field Overstorey Type**	**Plot Damage 2**
Tagging Limit	**Field Understorey Type**	**Subplot Size**

3.7.2.1 Plot Key

The unique plot key number will be the same as that in the Plot Data.

3.7.2.2 Measurement Number

This field is used to identify the number of times that the plot has been measured. In the case of establishment or re-establishments, the measurement number will be “1”.

3.7.2.3 Measurement Date

This field is used to identify the date that the plot was measured. The valid date format for this field is “YYYYMMDD” – ie. July 5, 2003 = 20030705.

3.7.2.4 Measurement Company

This field is used to identify the name of the company that completed the measurements on the plot.

3.7.2.5 Tagging Limit

This field is used to identify the DBH tagging limits used in the main tree plot for the current measurement. Simply indicate the minimum acceptable DBH value (to the nearest 1/10th of a cm) for the trees within the mensuration plot – ie. if tagging limit is >7.0, record 7.1.

3.7.2.6 Average Buffer Width

This field is used to identify the average width of the buffer surrounding the main plot. The target buffer width is 20 m. Simply record the average buffer width to the nearest meter.

3.7.2.7 Buffer Representative

This field is used to identify whether or not he plot buffer is representative of the forest and ecological type present in the mensuration plot. Valid entries for this field are: “Y” – the buffer is representative of the mensuration plot, “N” – the buffer is not representative of the mensuration plot, or “X” – there is no buffer around the mensuration plot.

3.7.2.8 Silviculture System

This field is used to identify the silviculture system used to regenerate the stand containing the plot. Valid entries and their associated descriptions are defined in Table 16.

Table 16. Silviculture System Field Valid Codes.

Silviculture System Code	Description
N	No harvesting
CC	Clearcut
ST	Seed tree
SW	Shelterwood
RC	Release cut (understorey retention)
GS	Group selection
SS	Single-tree selection
CT	Commercial thinning

3.7.2.9 Field Overstorey Type

This field is used to identify the overall field overstorey type of the stand that the plot is situated within. The current Alberta Vegetation Inventory standards will be used for this assessment; and the required components are:

- Crown cover class
- Height class
- Species composition

Refer to Appendix 3 for AVI codes and descriptions.

3.7.2.10 Field Understorey Type (if understorey is present)

This field is used to identify the overall field understorey type of the stand that the plot is situated within. The same standards and information for understorey are required as for that of the field overstorey type.

3.7.2.11 Field Broad Cover Type

This field is used to identify the broad field cover type of the overall overstorey of the stand that the plot is situated in. Valid entries and their associated descriptions are defined in Table 17.

Table 17. Field Understorey Type Field Valid Codes.

Field Broad Cover Type	Description (% Coniferous)
C	>= 80 %
CD	< 80 % and >/= 50 %
DC	< 50 % and >/= 20%
D	< 20 %

3.7.2.12 Uneven-aged Type

This field is used to identify whether the portion of the stand within the plot is uneven-aged or even aged. Valid entries for this field are “Y” – yes, stand is uneven-aged, or “N” – no, stand is not uneven aged.

3.7.2.13 Plot Damage 1 and 2

These fields are used to identify the two most significant type(s) of damage found within the main tree plot. **Plot Damage 1** will identify the most significant damaging agent, and **Plot Damage 2** will identify the next most significant damaging agent. Valid entries and their associated descriptions are defined in Table 18.

Table 18. Plot Damage Fields Valid Codes.

Plot Damage Code	Description
A	Animal
D	Disease
F	Fire
F	Flooding
H	Human
I	Insects: non-MPB
M*	Mountain Pine Beetle
N	No Observable Damage
R	Weather
W	Wind

* - Over the next number of years MPB infestations are expected have a significantly greater impact on stand growth than a more typical (non-epidemic) insect infestation. Therefore, field crews are to use the “M” designation exclusively when MPB damage is observable within a plot. All uses of “I” will be assumed by data analysts to be indicative of non-MPB insects.

3.7.2.14 Subplot Size

This field is used to identify the size of the subplot established within the main tree plot. Valid entries and their associated descriptions are defined in Table 19.

Table 19. Subplot Size Field Valid Codes.

Subplot Size Code	Description
30	30 m2
50	50 m2
100	100 m2

3.7.3 Tree Data

The tree data captures information related to the actual assessment of the trees. Table 20 identifies which tree measurements are to be collected for trees within the Main Plot, Subplot and the Regeneration Plot. A description for each of the measurements and any qualifications relevant to the specific plots follows the table. In older plots subplot trees are identified by either a **"B"** or **"S"** in the *subplot* field.

Appendix 4 contains several aids for the assessment of tree related data.

Table 20. Tree Data Requirements for Main, Subplot and Regeneration Plots.

Measurement/Assessment	Main Tree Plot	Subplot	Regeneration Plot
Sector #	**X**	**X**	**X**
Species	**X**	**X**	**X**
DBH	**X**	**X**	
Root Collar Diameter			**X**
Height	**X**	**X**	**X**
Height to Live Crown	**X**	**X**	
Crown Fullness	**X**	**X**	
Crown Radii (4)	**X**	**X**	
Crown Position	**X**	**X**	
Mortality	**X**	**X**	
Damage	**X**	**X**	**X**
Damage Severity	**X**	**X**	**X**
Tree Status	**X**	**X**	**X**

3.7.3.1 Sector

This field is used to identify the main tree plot sector number that the tree falls in (as defined in Figure 3). Valid entries for this field are the numerical values 1 – 4.

3.7.3.2 Species

This field is used to identify the species of the tree. The valid species codes and their descriptions are defined in Table 21.

Table 21. Species Field Valid Codes.

Species Code	Description
AW	Trembling aspen
BW	White birch
FA	Alpine fir
FB	Balsam fir
FD	Douglas fir
LT	Larch
PB	Balsam poplar
PL	Lodgepole pine
SB	Black spruce

SE	Englemann spruce
SW	White spruce

3.7.3.3 DBH

This field is used to identify the stem diameter at breast height (1.3 m above the point of germination). The DBH is measured using a diameter tape and is recorded in centimetres to the nearest 1/10th cm. The diameter tape is to be positioned such that it is perpendicular to the general angle of the tree (in most cases level with the ground, except in the case of leaning trees). The tape is to be pulled tight, and have no obstructions between it and the bark (ie. branches). Refer to Appendix 4 – Section 8.1.

3.7.3.4 Root Collar Diameter

This field is used to identify the diameter of the root collar (point of germination) for trees that are part of the regeneration plot. The root collar diameter is measured using callipers and is recorded in centimetres to the nearest 1/10th cm.

3.7.3.5 Height

This field is used to identify the total height of the tree (from the point of germination to the tallest piece of living foliage (i.e. **do <u>not</u> include dead tops in height measurements**). The height is measured using either a Vertex, laser clinometer, or traditional clinometer and measuring tape for trees >= 7.5 m, and a telescopic height pole for trees < 7.5 m. All heights are measured in meters to the nearest 1/10th m.

Leaning trees must be assessed to account for the lean and its affect on the height. Refer to Appendix 4 – Sections 8.2 and 8.3.

3.7.3.6 Height to Live Crown

This field is used to identify the height to live crown (from the point of germination to the lowest point of the continuous live crown). The lowest point of the continuous live crown occurs at the point where the live crown is no longer continuous radially or horizontally. Refer to Appendix 4 – Section 8.4.

The height to live crown is measured using the same instruments and standards as total tree height.

3.7.3.7 Crown Fullness

This field is used to identify the percent of the crown shape that is filled with live branches and needles/leaves. The valid crown fullness codes and their associated descriptions are defined in Table 22. Refer to Appendix 4 – Section 8.5.

Table 22. Crown Fullness Field Valid Codes.

Crown Fullness % Code	Code
0	0 – 10 %
1	11 – 20 %
2	21 – 30 %
3	31 – 40 %
4	41 – 50 %
5	51 – 60%
6	61 – 70 %
7	71 – 80 %
8	81 – 90 %
9	91 – 100 %

3.7.3.8 Crown Radius

This field is used to identify the total length of the longest branches in the four cardinal directions (N, S, E and W). Measured using a measuring tape or stick and recorded in metres to the nearest 1/10th of a meter. Refer to Appendix 4 – Section 8.6.

3.7.3.9 Crown Position

This field is used to identify the crown position of the tree relative to the relative to the stand canopy. The valid crown position codes and their associated descriptions are defined in Table 23. Refer to Appendix 4 – Section 8.7.

Table 23. Crown Class Field Valid Codes.

Crown Pos Code	Crown Position	Description
V	Veteran	Signifies a tree that was part of the previous stand that survived the last stand destroying event. These trees are significantly older than the neighbouring trees. The usual characteristics of veterans include a crown that is almost entirely above the general level of the canopy and it is much larger than neighbouring trees with a more fully developed crown.
D	Dominant	Crown extends above the general level of the canopy and receives full light from above and partial light from the sides.
C	Co-dominant	Crown forms the general level of the canopy and receives full light from above but little light from the sides. Use this class where two or more trees of equal size are adjacent to one another.
I	Intermediate	Crown below (but extends into the lower region of) the general level of the canopy and receives direct light from above but not from sides. Trees in this class usually have small, crowded crowns.
S	Suppressed	Crown entirely below the general level of the canopy and receives no direct light either from the above or from the sides. Trees in this class normally display restricted height growth and may have elongated lateral branches, leaning terminal growth, or flat tops.
O	Open Grown	Tree has grown entirely in the open. Trees in this class receive full light from above and all sides. If a tree is in this category and is also a "veteran", the "veteran" call supersedes this category (crown position should be recorded as "V"). This designation should be used only when another category is not possible. **It should be a rare call.**

3.7.3.10 Mortality

This field is used to identify the cause of death to the tree, where applicable. The mortality valid codes and their associated descriptions are defined in Table 24.

Table 24. Mortality Field Valid Codes.

Mortality Code	Description
A	Animal
D	Disease
F	Fire
H	Human
I	Insects: non-MPB
M*	Mountain Pine Beetle

N	No Observable Damage
O	Flooding
R	Adverse Weather
S	Suppression
U	Unknown
W	Wind-throw

Note: If the cause of the mortality can be more precisely identified, record this in the comment field (ie. Western gall rust).

3.7.3.11 Damage 1 and 2

The fields Damage 1 and Damage 2 have different uses depending on if the tree is live or dead, as described in the following section.

3.7.3.11.1 Live Trees

In the case of live trees, these fields are used to identify the two most prevalent damaging agents to the tree. The field Damage 1 is to reflect the most significant damage, while Damage 2 is to reflect the next most significant damage. The live tree valid codes and their associated description are defined in Table 25.

Table 25. Damage 1 and Damage 2 Fields Valid Codes for Live Trees.

Damage Code	Description
AB	Animal: Ungulate browsing
AC	Animal: Beaver felling or chewing
AH	Animal: Horse trampling
AL	Animal: Rabbit chewing
AO	Animal: Other
AP	Animal: Porcupine chewing
AR	Animal: Ungulate rubbing
AS	Animal: Squirrel
AT	Animal: Bear tearing
AU	Animal: Bear
DA	Disease: Atropellis canker
DB	Disease: Blister rust
DC	Disease: Conks
DD	Disease: Dieback
DH	Disease: Hypoxylon canker
DI	Disease: Witches' broom
DM	Disease: Dwarf mistletoe
DN	Disease: Needle rust
DO	Disease: Other
DR	Disease: Armillaria root rot
DW	Disease: Western gall rust
FR	Fire: Fire damage
HM	Human: Human damage
IA	Insect: Aphid
IB	Insect: Wood borer
ID	Insect: Defoliators
IM	Insect: Mountain pine beetle
IO	Insect: Other
IR	Insect: Root collar weevil
IT	Insect: Lodgepole pine terminal weevil
PB	Physical: Lean
PC	Physical: Crook (previously included sweep as well)
PD	Physical: Dead or Damaged top
PF	Physical: Forked tree
PG	Physical: Spiral grain
PH	Physical: Heavy branching
PL	Physical: Dead top with lateral assuming dominance
PM	Physical: Broken or missing top
PO	Physical: Other (poor form – that does not fit into another category)
PR	Physical: Rot or decay

PS	Physical: Scar or catface
PT	Physical: Mechanical (ie. trees rubbing together)
PU	Physical: Suppressed tree with very poor vigor
PW	Physical: Sweep (previously included in PC – Physical: Crook or sweep)
UK	Unknown
WB	Weather: Blowdown
WC	Weather: Frost crack
WF	Weather: frost heaving
WH	Weather: Hail
WN	Weather: Snow or ice
WR	Weather: Red belt

3.7.3.11.2 Dead Trees

In the case of dead trees, the Damage 1 field is used to identify the physical attributes of the dead tree. The dead tree Damage 1 valid codes and associated descriptions are defined in Table 26.

Table 26. Damage 1 Field Valid Codes for Dead Trees.

Dead Damage 1 Codes	Description
A	Recently dead – still wet
B	Hard, main stem dry, fine branches present
C	Hard, main stem dry, fine branches absent
D	Hard, few or no branches present
E	Soft, no branches, stem decomposing
F	Decomposed

In the case of dead trees, the Damage 2 field is used to identify the proportion of the original bark that remains on the tree. The dead tree Damage 2 valid codes and their associated description are defined in Table 27.

Table 27. Damage 2 Field Valid Codes for Dead Trees.

Dead Damage 2 Codes	Description
A	76 – 100 % bark present
B	51 – 75 % bark present
C	26 – 50 % bark present
D	0 – 25 % bark present

3.7.3.12 Damage Severity 1 and 2

These fields are used to identify the severity of the damage identified in the fields Damage 1 and Damage 2. The valid codes and their associated descriptions are defined in Table 28.

Table 28. Damage 1 and Damage 2 Severity Fields Valid Codes for Live Trees.

Severity Code	Severity	Description
0	Unspecified	
1	Minimal	• Tree is expected to fully recover with little effect on tree growth or form. • Gall rust and mistletoe limited to lateral branches. • Forked top may not persist with growth.
2	Moderate	• Growth rate and/or tree form will be reduced. • Minor effect on log quality. • Damage becoming apparent on bole. • Forked top occurs above 5m.
3	Significant	• Growth rate and/or tree form will be considerably reduced. • Most damage on lower bole. • Forked top occurs below 5m.
4	Severe	• Tree will probably die or be rendered non-merchantable. Extensive bole damage. Extensive physical defects. Multiple

		forks along bole.

3.7.3.13 Tree Status

This field is used to identify the status of the tree. Valid codes and their associated descriptions are defined in Table 29.

Table 29. Tree Status Field Valid Codes.

Tree Status Code	Tree Status	Description
L	Live	Standing or down tree with live needles, leaves or buds.
S	Snag	Unsupported standing dead tree.
B	Stub	Unsupported standing dead tree with broken stem.
P	Stump	Sawn or otherwise man-made cut at or near base of tree.
G	Log	Down or externally supported dead tree not attached at the stump.
M	Missing	Tree cannot be found inside the plot.
T	Site Tree	Top height tree
F	First Measurement	First measurement on tree. **This code is used only on re-measurements.**
U	Below Tagging Limit	Tree was previously included and measured when minimum tagging limits were lower.

3.7.3.14 Planted

This field is used to distinguish planted trees from ingress. Valid codes and their associated descriptions are defined in Table 30.

Table 30. Tree Status Field Valid Codes.

Tree Status Code	Tree Status	Description
P	Planted	Tree was planted at site origin.
L	Later Planting	Tree was planted but after the original site origin. Likely due to failure of the original site treatments.
V	Ingress / Volunteer	Tree regenerated from natural seed on site.
S	Seeded	Tree regenerated from manufactured seed.
U	Unknown	Origin is unknown

3.8 Plot Photographs

Digital photographs will be taken at each plot at each establishment or re-establishment visit. The intent of the photographs is to capture the detail of stand structure and crown development, as well as facilitate the explanation of data anomalies. A minimum of four photographs will be taken at each plot as described below and as shown in Figure 4:

- **Level perspective (required):** From plot center, a photograph will be taken parallel to the ground from eye-level towards the southwest(GSW) and northeast(GNE) corners.
- **Crown perspective(required):** From the plot center, a photograph will be taken of the crown from eye-level towards the southwest(CSW) and northeast(CNE) corners.
- **Miscellaneous (optional):** Any pictures that may help explain unusual tree or plot conditions, ie. Unknown or unusual tree or plot damage.

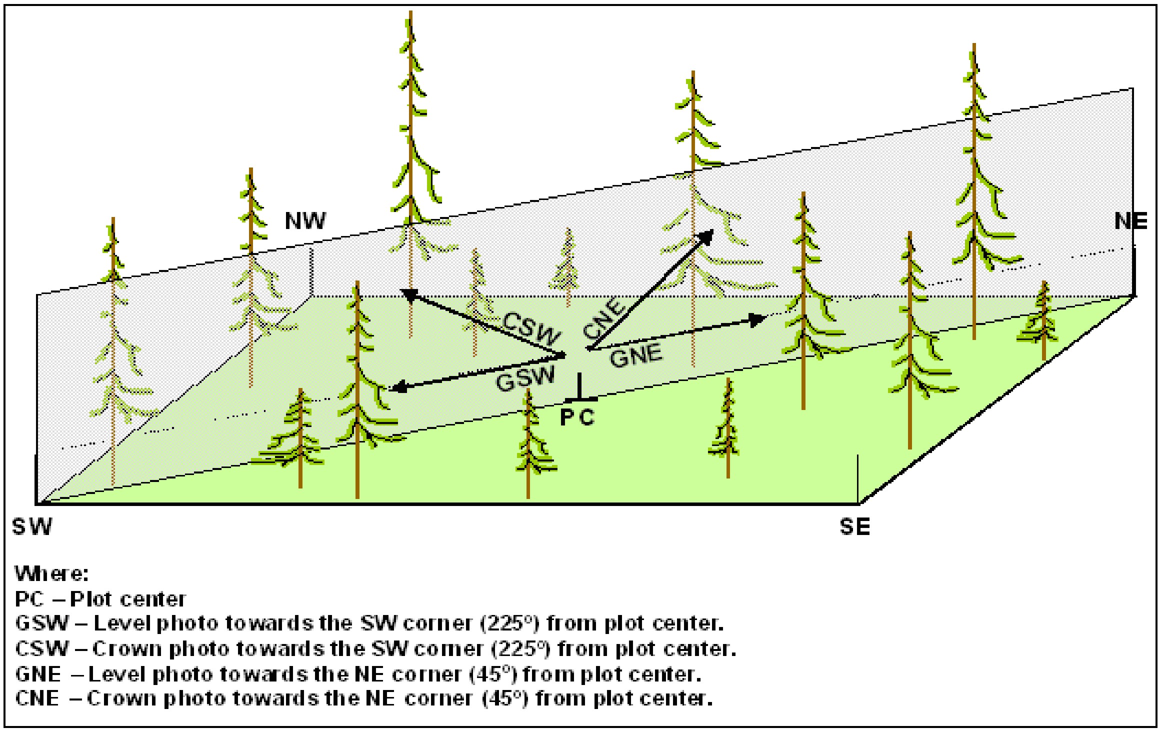

Figure 4. PGS Plot Photo requirements.

3.8.1 Formatting Guidelines

The following guidelines are to be adhered to when taking digital photographs for the PGS Program:

- Focal length: Between 20 – 50 mm (lower focal lengths preferred).
- Pixel size: Medium to fine.
- Picture size: Medium format (4 x 6)
- File format: JPEG Image (*.jpg)
- File size: 200 – 300 KB.

3.8.2 Naming Standards

The following naming standards will be adhered to for the submission of digital photographs:

Plot Key + "_" + Photo ID + "_" + Year

ie. 1020329_CSW_2003

When miscellaneous photos are taken, a brief descriptive term will be substituted in the position of the "Photo ID", ie. plotdamage.

3.8.3 Submission

PGS plot photographs for each established or re-established plot will be submitted at the end of each contract on CD ROM.

3.9 Ecological Land Classification Data

As of 2002, all existing PGS plots have been Ecologically Land Classified as per the standards set in the Field Guide to Ecosites of West Central Alberta.

When new PGS plots are established or re-established, Ecological Land Classification (ELC) will be completed on the main tree plot. The required ELC data be submitted digitally using the ELC data input template. The fields and their associated descriptions are located in Appendix 5.

3.9.1 Seasonal Considerations

ELC will only be completed during the summer season when all herbaceous and deciduous vegetation is thriving, and when the soil conditions are not frozen. Since the majority of the PGS related work is completed in the winter (or at least outside of the growing season), ELC assessment will require a second site visit during the summer.

3.9.2 Split Ecology Plots

A split ecology PGS plot is defined as a main tree plot that contains more than one distinct ecological plant community each representing >= 20 % of the area of the plot. A separate ecological assessment will be required for each ecological plant community that represents >= 20% of the area of the plot.

When establishing or re-establishing PGS plots the field crew is given the flexibility to move the plot position to locate it within a homogenous stand and ecological type, however, since this work is generally completed during the winter, it is possible that subtle ecological changes may exist in the plot, thereby requiring more than one ecological assessment.

3.9.3 Harvested Sites

When establishing or re-establishing PGS plots in harvested areas, two ELC's will be assigned to each distinct ecological type that represents > 20 % of the main tree plot area. The two ELC's to assign are:

1 – The present site conditions
2 – The predicted mature site conditions based on adjacent stand attributes.

3.9.4 Altered Soil Conditions

If soil conditions have been disturbed within the main tree plot (ie. seismic lines, site preparation, windthrow etc.) all the soil assessments will be completed in an area that is not directly affected by the soil disturbance(s)

3.10 Tie-points and Tie-Lines

The purpose of tie-points and tie-lines is to aid future field crews in locating PGS plots. Refer to Figure 5 for an illustration of the placement of tie-points and tie-lines.

3.10.1 Tie-points

The following general guidelines will be adhered to when establishing tie-points:

- Tie-points should be established on passable roads, in locations that are identifiable on aerial photographs and/or maps (ie. road junctions, seismic line/pipeline/powerline intersections).
- The first tie-point should be established at the point where the field crew leaves the truck to proceed on foot or ATV.

- Each tie point will only represent one distance and azimuth – this will either lead to the cluster centre/pot centre or to the next tie-point.
- In cases where there are more than one tie-points, the complete directions from each tie point to the final destination will be recoded on the tag at each tie-point (refer to Figure 5).

3.10.2 Tie-point Demarcation

A healthy large tree that is expected to live for at least another 10 years will be selected as the tie-point. The Tie-point Tree will be blazed with an axe on 4 sides at a height of approximately 1.6 m. Blazes will be a minimum of 30 cm long and 10 cm wide (depending on the size of tree) and will be painted blue. A metal Tag will be nailed to the tree, below the blaze, in the direction that the tie-line will proceed. The nails will be hammered into the tree such that a minimum of three centimetres is outside of the tree, thereby allowing room for growth. The metal tag will contain the following information:

- PGS Plot Tie Point
- Working Circle
- Date
- PGS Cluster Number
- PGS Plot Number(s)
- Azimuth(s) and horizontal distance(s) to cluster centre or plot centre (if no cluster centre)

3.10.3 Tie-lines

The following general guidelines will be adhered to when establishing tie-lines:

- Individual tie-lines leading from tie-point to tie-point or tie-point to final destination will always be straight (one azimuth).
- Tie-lines are used to lead the way to and from cluster centres and plot centres.

3.10.4 Tie-lines Demarcation

Tie-lines will be marked by painting a blue dot on both sides of the tree in the direction of the tie-line, spaced apart so that painted trees can easily bee seen in both directions when standing on the line. The blue dot will be approximately 25 cm in diameter and will be positioned at eye-level (approximately 1.5 m in height). The marking of the tie-line will cease within the plot buffers.

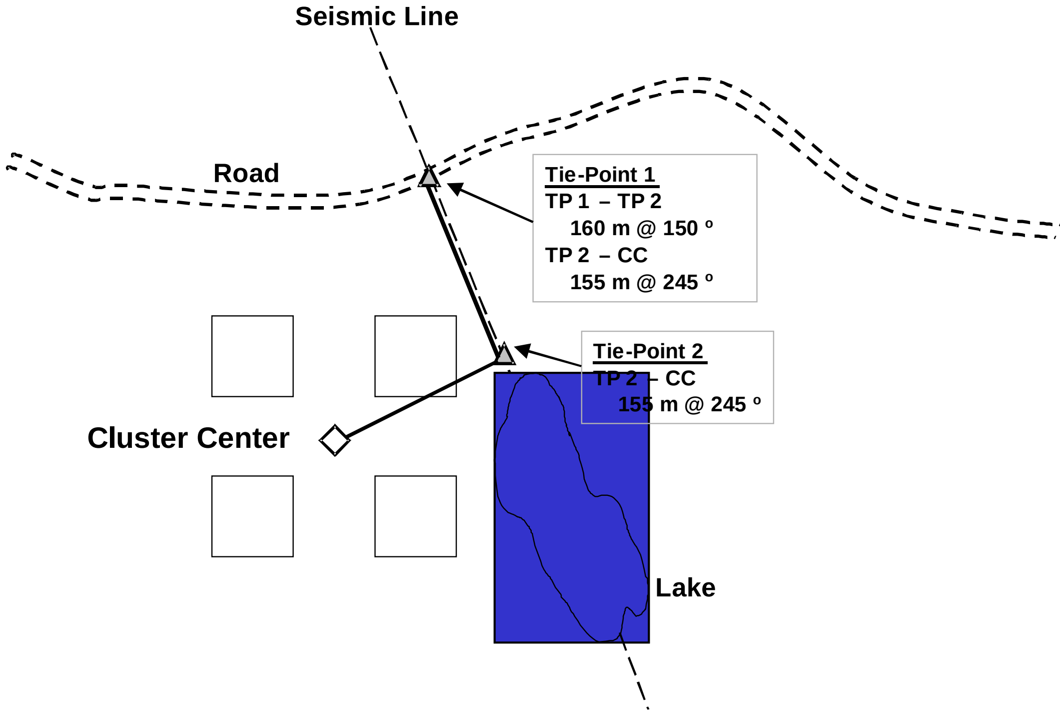

Figure 5. Tie-points and Tie-lines.

3.11 Plot Location Package

At the time of establishment, re-establishment or re-measurement, a Plot Location Packaged will be prepared or updated to reflect the current plot location and surroundings. The three requirements of the Plot Location Package are:

- Cluster Location Map
- Cluster Access Notes
- Cluster Layout Map

Refer to Appendix 6 for the templates used for Plot Location Packages as well as an example of a complete Plot Location Package.

3.11.1 Cluster Location Map

The purpose of the Cluster Location Map is to identify the location of the cluster centre, and the most efficient route to access it. The map will be a modified GIS map using a scale of 1:20,000 or 1:30,000. The following information is required on the Cluster Location Map:

- Scale, North arrow, Declination.
- Names and Kilometre marker of roads.
- Distance and direction to major road and major town.
- Historical harvest areas.
- Access modes for portions of the access route (ie. 4 WD, 2 WD, snowmobile, walk, etc).
- Water bodies.
- Tie point(s) with azimuth and distance.

The Cluster Location Map will be completed on the Cluster Location Template (Appendix 6).

3.11.2 Cluster Access Notes

The purpose of the Cluster Access Notes are to document the distance(s) and mode(s) of transportation used to access the PGS cluster centre. The notes are to document the route of travel from the town of Hinton to the PGS cluster centre. Distances are reported based on road mileage markers (vehicle odometers in the absence of road markers) and hip-chains.

The Cluster Access Notes will be completed on the PGS Cluster Access Notes template (Appendix 6)

3.11.3 Cluster Layout Map

The purpose of the Cluster Layout Map is to document the position of the plots within the cluster. It is particularly useful for identifying operational activity and major cover type changes, in the proximity of the plots. These maps do not need to be to scale, but should be drawn at an approximate scale of 1:2,500. The following information is required on the Cluster Layout Map:

- Scale, North arrow, declination.
- Cluster centre with description of cluster centre Tree.
- Existing plots and their associated buffers.
- Roads, seismic lines, pipelines, powerlines, etc.
- Water bodies.
- Significant cover type changes.
- Azimuth and distance to each plot from the cluster centre.
- Additional information that may be useful for accessing cluster centre or the plot centres.

The Cluster layout map is to be completed on the PGS Cluster Layout Map template (Appendix 6).

4. PGS Plot Re-measurement

This section describes the methodologies and standards for the maintenance and re-measurement of existing PGS plots.

4.1 Plot Re-measurement Schedule

Re-measurement of PGS plots will be completed outside of the growing season. In general the intent is to re-measure each plot at a 10 year interval. In some instances (young regenerating stands) a 5 year measurement interval may be beneficial.

4.2 PGS Plot Maintenance

Good plot maintenance is key to the long term viability of the PGS program. Well maintained plots make possible to link measurements to individual trees. Maintenance must be completed during each re-measurement. This section identifies the maintenance tasks to be completed by the re-measurement crew.

4.2.1 Plot Buffer

The plot buffer will be re-established at a distance of 20 m from the mensuration plot boundary. If there are obstacles that prevent the establishment of the buffer at a distance of 20 (ie. road, pipeline), the buffer boundary will be marked along the obstacle where necessary. If the previously established buffer was established at a distance of less than 20 m from the plot boundary, and there is sufficient area, the buffer will be re-established at a distance of 20 m from the plot boundary.

Plot Buffer maintenance markings are to follow the standards described under Section 3.5.1.

4.2.2 Tie Points

All tie-points are to be re-tagged if the tag is missing, has been damaged, or if any of the information on the tag has changed (ie. Tie information).

4.2.3 Tie Lines

All tie-lines are to be re-painted.

4.2.4 Tree Tags / Nails

All damaged and/or missing tree tags will be replaced and all tags that are either restricting branch or stem growth, or likely will be within 5 to 10 years will be adjusted to allow for future growth. Tags must never be tied around the main stem of the tree. All trees must be re-adjusted to be a minimum of 3 cm out of tree.

4.2.5 Corner Posts

All damaged and/or missing corner posts will be replaced. All corner posts will be re-painted and will have a ribbon affixed to both the post and a nearby tree or shrub to allow easier sighting of the corner.

4.2.6 Centre Post

Damaged and or missing centre posts will be re-established as described under Section 3.2. Care must be taken to ensure that the plot centre post is positioned in the exact position as the original. The centre post will be re-painted and will have a ribbon affixed to both it and a nearby tree or shrub to allow easier sighting of the plot centre.

4.2.7 Plot Centre Tree

The plot centre tree is to be re-tagged if the tag is missing, has been damaged, or if any of the information on the tag has changed (ie. Tie information). The required information and the positioning of the tag are described in Section 3.2. In addition to assessing the tag, the centre tree will be re-painted as described in Section 3.2.

4.2.8 Corner Witness Trees

The corner witness trees will be re-painted as described in Section 3.5.1.

4.3 Plot Set-up

Following the plot maintenance, the field crew will layout the main tree and subplot boundaries and the sector divisions using string, as described in Section 3.5.1. This will facilitate navigating the plot and assessing which trees are now eligible for inclusion and which sector they are in.

4.4 Data Collection

Data collection for plot re-measurement is similar to that for plot establishment, however, there are fewer fields to assess.

4.4.1 Plot Data

The majority of the plot data will not change over the life of the plot, therefore, only a portion needs to be assessed at the time of re-measurement. Table 31 identifies all the fields in the plot data table, where the shaded fields will be provided for reference, and the non-shaded fields will be assessed and updated only if necessary. Refer to Section 3.7.1 for information on each field.

Table 31. Plot Data Requirements for Re-measurements.

Plot Key	**Declination**	**Aspect**
HWP FMA	**Plot Number**	**Elevation**
Working Circle	**Establishment Number**	**Stem Mapped**
Compartment	**Establishment Status**	**GPS'd**
Installation Group	**Plot Size**	**Site Index Plot**
Cluster Number	**Plot Status**	**Regeneration Plot**
Azimuth CC to PC	**Slope Position**	**Comments**
Distance CC to PC	**Slope class**	

4.4.2 Measurement Data

All of the measurement data will need to be assessed as this information can change between measurements. Table 32 identifies all the fields in the measurement data table where the shaded fields will be provided for reference, and the non-shaded fields will be assessed and populated. Refer to Section 3.7.2 for information on each field.

Table 32. Plot Measurement Data Requirements for Re-measurements.

Plot Key	**Average Buffer Width**	**Previous Plot Damage 1**
Prev. Measure. Number	**Buffer Representative**	**Plot Damage 1**
Measurement Number	**Silviculture System**	**Previous Plot Damage 2**
Measurement Date	**Field Overstorey Type**	**Plot Damage 2**
Measuring Company	**Field Understorey Type**	**Subplot Size**
Previous Tagging Limit	**Field Overstorey Cover Type**	**Crown Closure %**
Tagging Limit	**Uneven-aged Type**	

4.4.3 Tree Data

All of the tree data will need to be assessed, as this information will change as new trees enter the plot and as existing trees status, size and condition change. Table 33 identifies all the fields in the tree data table where the shaded fields will be provided for reference and the non-shaded fields will be assessed and populated. Refer to section 3.7.3 for information on each field.

Table 33. Tree Data Requirements for Re-measurements.

Plot Key	**DBH**	**Crown Radius South**
Previous Measure Number	**Previous Crown Class**	**Crown Radius West**
Measurement Number	**Crown Class**	**Crown Fullness**
Tree Number **Subplot (when valid)**	**Previous Height**	**Mortality Cause**
Previous Species	**Height**	**Damage 1 ID**
Species	**Previous Height to Live Crown**	**Damage 1 Severity**
Previous Tree Status	**Height to Live Crown**	**Damage 2 ID**
Tree Status	**Crown Radius North**	**Damage 2 Severity**
Previous DBH	**Crown Radius East**	**Comments**

4.4.3.1 Previous Measurement Data

As indicated in Table 33, the previous measurement data will be provided for several fields. This will provide the field crew the opportunity to compare the previous and current measures/attributes, and will provide an opportunity to assess potential data errors. Some of the fields in the data logger will alert the field crew when there is a suspicious value/code entered relative to the previous value/code.

The field crew will record in the comments field any time that they re-checked values for a particular field.

4.4.3.2 New plot trees

New trees will be tagged and numbered using the next sequential number available in whichever plot the tree is entering (ie. main tree plot, subplot or regeneration pot). In most cases, the field crew will be able to determine the next sequential number to use by looking at the last number used in the previous measurement data, but this should always be confirmed by checking the number of the tree with the full-length tag (in the appropriate plot). Once a new tree has entered the plot, it will be assessed in the same manner as the other trees in the same plot. Once all new trees have been tagged and numbered, previous full-length tag will be replaced with a half-length tag, and the highest numbered ingress tree will get the full-length tag. Do not re-number trees that grow out of the regeneration plot or subplot.

4.4.3.3 Missing Tag Trees

Trees found to be above the tagging limit, but without tags may need to be evaluated. The field crew will need to reference the position of the tree relative to other tagged trees, and attempt to determine the consecutive number for the tree. If the tree cannot be logically associated with the existing data, it will be treated as ingress. If the tree positioning and attributes are consistent with a tree in the data that has not been accounted for, it will be tagged and re-numbered as that tree.

4.4.3.4 Missing Trees

If a tree cannot be found, the code "M" for missing will be assigned to the Tree Status field. The tree number will not be reassigned.

4.5 Plot Photographs

Plot photographs are required at each re-measurement visit. The standards for plot photographs to be taken at the time of re-measurement are consistent with those described under Section 3.8 – Plot Photographs (under PGS Plot Establishment / Re-establishment).

4.6 Ecological Land Classification Data

Ecological land classification data collection is generally collected at the time of installation/re-establishment, however, if the field crew is instructed to collect ELC data at timing of re-measurement, the methods will be consistent with those described under Section 3.

5. Site Index Measurements

This section describes the protocol for collecting site index information on PGS plots. Information is to be collected on the three top height trees of the leading AVI species within the site index plot ($300m^2$). In some cases, three suitable trees may not be available (e.g., due to a large number of damaged stems). In these cases an attempt should be made to collect data on one or two trees.

Until further notice there is a moratorium on destructive site index PGS sampling. All site index measurements will now be estimated by field counting a breast height (1.3m) increment core and measuring total tree height on three top height trees. The ~~strikethrough~~ font below is included so that the procedures of the historical destructive sampling program will not be lost.

5.1 Stands with breast height age <50 years

When the breast height age of the stand is less than 50 years old then both the DBH and total height will be measured on the 3 largest DBH trees of the leading AVI species. A 300 m^2 (9.77m radius) plot should initially be established 10m southwest from the southwest corner of the main plot. If the tree has a DBH greater than 10 cm then age the tree by an increment core. Trees less than 10cm DBH can be used as a site tree, as the tree age can be assumed to equal stand age.

If an SI plot cannot be successfully established in the SW then go to the NW, next NE, next SE. Trees in this plot are numbered 1001 through 1003.

~~When the breast height age of the stand being sampled is less than 50 years, measure the total height and breast height age by taking a ring count from a destructive sample at 1.3 m for the 3 largest DBH trees of the leading AVI species in a 300 m^2 (9.77m radius) plot established 10m southeast from the southeast corner of the main plot. Trees in this plot are numbered 1001 through 1003.~~

5.2 Stands with breast height age >50 years

When the breast height age of the stand being sampled is greater than 50 years, ~~section~~ increment core age (at breast height), measure the DBH and total height of the 3 largest DBH trees of the leading AVI species in a 300 m^2 (9.77m radius) plot established 10m southwest from the southwest corner of the main plot. Trees in this plot are numbered 2001 through 2003. ~~Protocols for stem sectioning are found in section 5.4.~~

If an SI plot cannot be successfully established in the SW then go to the NW, next NE, next SE.

5.3 Tree selection criteria

Top height trees are the largest diameter non-veteran trees which are free growing, relatively straight, without broken or damaged tops, appear healthy and show little to no signs of insect or disease damage. Western gall rust on dead branches or on live branches >10cm from the main stem is acceptable.

Based on the increments, the trees should not show signs of serious suppression (damage severity rating = 0 or 1). In some cases, the entire stand may show signs of suppression. It is critical that only dominant and/or co-dominant stems are used as site index samples.

If two appropriate stems are not available, the sample plot location should be dropped, and no site index information collected. In this case the plot is moved clockwise to the NW corner and evaluated. Continue moving the SI plot in a clockwise direction (SW, NW, NE, SE) until either two suitable trees are located within one plot or all locations have been ruled out as sources for SI data collection.

5.4 Tree sectioning protocol

No destructive sampling is to be done. The ~~strikethrough~~ font below is included so that the procedures of the historical destructive sampling program will not be lost.

~~The top height trees are to be felled and sectioned generally following the LFS stem analysis sectioning protocols. Eleven disks are obtained from each felled tree at the following heights:~~

- ~~Disk 1: 0.3 m above ground~~
- ~~Disk 2: 1.3m~~
- ~~Disk 3: 1.3m + 1/10 × (tree height – 1.3m)~~
- ~~Disk 4: 1.3m + 2/10 × (tree height – 1.3m)~~
- ~~Disk 5: 1.3m + 3/10 × (tree height – 1.3m)~~
- ~~Disk 6: 1.3m + 4/10 × (tree height – 1.3m)~~
- ~~Disk 7: 1.3m + 5/10 × (tree height – 1.3m)~~
- ~~Disk 8: 1.3m + 6/10 × (tree height – 1.3m)~~
- ~~Disk 9: 1.3m + 7/10 × (tree height – 1.3m)~~
- ~~Disk 10: 1.3m + 8/10 × (tree height – 1.3m)~~
- ~~Disk 11: 1.3m + 9/10 × (tree height – 1.3m)~~

~~Each disk is approximately 4 cm thick. All discs are to be properly labelled, with the working circle; PGS plot number and tree number.~~

~~The tree sectioning protocol is as follows:~~

1. ~~fall the tree at a stump height of 30 cm,~~
2. ~~delimb the tree, if necessary~~
3. ~~string measurement tape along tree stem,~~
4. ~~mark the first section at 1m from the stump using lumber crayon or spray paint,~~
5. ~~mark the remainder of stem at calculated intervals using lumber crayon or spray paint,~~
6. ~~begin to cut the sections and their representative disks (approximately 4 cm thick)~~
   i. ~~cut a disk from the top of the stump section (Disk 1) (record identification information on bottom side of disk, to facilitate aging from the top of the disk; this sequence may have to be reversed, if branch whorls make this difficult, the objective is to determine age from the side of the disk closest to the target length).~~
   ii. ~~cut stem at breast height mark (1.3 m = stump height plus first 1 m section mark, Disk=2) (record identification information on bottom side of disk, to facilitate aging from the top of the disk; this sequence may have to be reversed, if branch whorls make this difficult, the objective being to determine age from the side of the disk closest to the target length).~~
   iii. ~~continue to cut stem at marked intervals (steps 4 and 5 above).~~
   iv. ~~try to keep measurement side of the disks as clean as possible.~~
7. ~~place disks in burlap, or other breathable bags and label the bag with working circle, compartment, plot number, and tree number.~~

5.5 Site index data collection

Table 34 identifies all the fields in the site index data collection template that will be assessed and populated for each tree. Refer to section 5.5.1 for information on each field.

Table 34. Tree Data Requirements for site index measurements

Plot Key	Crown Class
Working Circle	Height
PGS Plot Number	Crown Fullness
SI Plot Location	Damage 1 ID

SI Plot Area	Damage 1 Severity
SI Tree Number	Damage 2 ID
Species	Damage 2 Severity
DBH	Comments

5.5.1 Site index data collection fields

Fields specific to the collection of site index are described below, fields relating to tree measurement are discussed in section 3.7.3.

5.5.1.1 SI Tree Number

Record the number of the tree being measured, acceptable ranges are from 1001-1003 for stands <50 years breast height age, and 2001-2003 for stands >50 years breast height age

5.5.1.2 SI Plot Area

Record the size of the plot used to identify the top height trees. Plots will be $300m^2$ unless otherwise specified

5.5.1.3 Measurements for plots < 50 years breast height age

Record the age at breast height and the total height for trees as described in section 5.1.

5.5.1.4 SI Plot Location

Record the location of the SI plot in relation to the main PGS plot. Eg. SW

6. Quality Assurance

Quality Assurance (QA) is an integral part of HWP's PGS plot program. The main objectives of the QA protocol are to:

1. Provide a quality control mechanism for data collected.
2. Ensure that data collected are consistent, complete, and accurate.
3. Define precision targets to provide a degree of comfort in data reliability.

This protocol describes the standards and procedures to provide QA on established PGS plots. The standards for package completion, plot and tree measurements are outlined in Appendix 7.

6.1 Sampling Intensity

Quality assurance is broken down into two components: an office component that includes a review of cluster location packages and tally cards for completeness, and a field component that monitors the accuracy of field measurements. 100 % of the cluster location packages submitted will be reviewed for completeness and a total of 10% of the plots completed will be field checked.

Selection of plots for field checking is typically random, but may be influenced by erroneous or suspect data identified during the office review. Within the plots selected for field audits, 10% of the trees, to a maximum of 15 trees per plot, will be sampled for QA. The trees in this sample will be subject to an audit of all measured and estimated attributes.

6.2 Scheduling Audits

A pre-work meeting will be held with all contractors prior to commencing fieldwork. This meeting will provide an opportunity to clearly communicate expectations and answer technical questions regarding sampling methods and standards of measurement.

The frequency of QA audits will also be discussed in the pre-work meeting. All audits will be conducted within two weeks of receipt of the original data and ideally within two weeks of the original measurement. Measurement crews will always have the opportunity to be present during QA audits.

6.3 QA Procedures

A quality control program will be implemented:

i. Completed plot measurements will be submitted in groups of 10 for quality control review.
ii. Ten percent of plots will be randomly selected for quality control measurements.
iii. The main tree plot, the subplot, and the regeneration plot should each be evaluated for QA.
iv. If the quality-measured plot fails, all 10 plots within the submission will be considered failed. The contractor will need to address the deficiencies at their own cost and re-submit all 10 ten plots for a second quality control measurement.

Details of the quality standards and tolerances used in the audit are described in Appendix 7. The contractor will receive a report detailing any issues found for each audit, using the format found in Appendix 7.

6.3.1 PGS Cluster Location Package

The cluster location map and access notes will be checked for accuracy when accessing the plots. This includes verification of distances traveled, landmarks and other reference points. Refer to Appendix 6 and sections 3.10 and 3.11 for cluster location package protocol.

6.3.2 Cluster/Plot Layout

Quality control crews/contractor will ensure that the plot location and plot identification markers are properly labelled in the field. This includes an inspection of all tie lines and tie points, plot center locations and markings, azimuths, distances, plot identification tags, and plot buffers. For re-establishment of plots after harvest, the plot location will be checked to ensure that it coincides with the procedures outlined in section 3.1.

6.3.3 Tree Measurements

Measurements that do not meet the standards identified on the PGS measurement tolerances summary found in Appendix 7 will be recorded. Measurements that exceed the precision standards are averaged over the entire sample. If greater than 10% of the quantitative tree measurements (DBH, height, etc.) exceed the measurement precision standards the plot will be considered failed. Additionally, for some qualitative tree measurements (such as: species and mortality code) any errors will result in the plot being designated as failed. Where a problem with measurements is identified, the number of stems audited may be increased to determine the scope and severity of the problem.

6.4 Protocol for Failed Quality Audits

HWP will address quality control by one of the following options: 1) through HWP staff, or: 2) through an independent third party contractor, or; 3) in instances where field contractors have solid experience and history with the PGS program, then HWP may allow field contractors to establish their own internal quality assurance program.

Payment on any submission will be held until the package passes both the office and the field component of the audit. A failed office audit will not normally delay the field audit.

6.4.1 Failed Office Component

If a submission fails the office component of an audit, the package will be returned to the original measurement contractor for re-working. When it is resubmitted, it will undergo a 100% audit.

6.4.2 Failed Field Component

If a submission fails the field audit, the following procedure will be used:

i. The original contractor will be given a detailed explanation of the reason for the failures. All plots within the submission will be considered failed. The contractor must address the deficiencies at their own cost and re-submit all plots for a second quality control measurement.
ii. The second quality control will include the failed plot from the first quality control and one additional randomly selected plot. Both plots will need to pass audit for the group of 10 to pass. Steps ***i*** and ***ii*** will be repeated until the audit is passed.
iii. To ensure all parties understand the quality control parameters, a one month grace-period will begin (provided there are no gross errors) as soon as the field measurement contractor receiving the

first audit for the sample year. During the grace-period, HWP will cover all costs to the quality control contractor (regardless if audits are passed or failed). However after the grace period or in the case of gross error, HWP reserves the right to charge the original field measurement contractor all costs incurred to either the quality control contractor or HWP staff for follow-up quality control re-measurements caused due to failed audits.

iv. Persistent failed audits denote poor quality and will be grounds for termination of the contract.

If the field measurement contractor wishes to formally dispute the audit findings, the HWP contract manager will visit plots along with a representative from both the field measurement contractor and the quality control crew/contractor to work through any misunderstandings. All complaints about the audit should be discussed directly with the HWP contract manager – who will be the final arbiter in all such matters.

References

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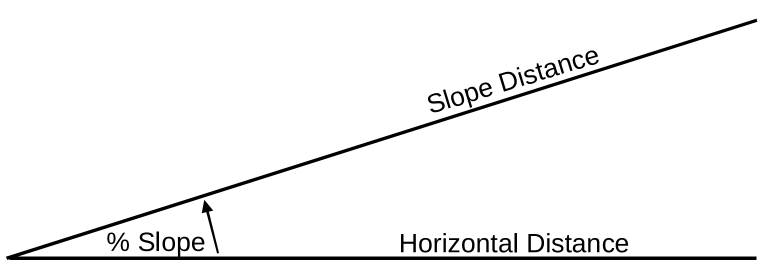
7. Appendix 1 – Slope Correction Tables and Examples

7.1 Slope Correction Factor Table

% Slope	Slope Factor	% Slope	Slope Factor	% Slope	Slope Factor	% Slope	Slope Factor	% Slope	Slope Factor
6	.999	35	.944	64	.842	93	.732	122	.634
7	.998	36	.941	65	.838	94	.729	123	.631
8	.997	37	.938	66	.835	95	.725	124	.628
9	.996	38	.935	67	.831	96	.721	125	.625
10	.996	39	.932	68	.827	97	.718	126	.622
11	.995	40	.928	69	.823	98	.714	127	.619
12	.994	41	.925	70	.819	99	.711	128	.616
13	.993	42	.922	71	.815	100	.707	129	.613
14	.992	43	.919	72	.812	101	.705	130	.610
15	.990	44	.915	73	.808	102	.700	131	.607
16	.989	45	.912	74	.804	103	.697	132	.604
17	.986	46	.908	75	.800	104	.693	133	.601
18	.984	47	.905	76	.796	105	.690	134	.598
19	.982	48	.902	77	.792	106	.686	135	.595
20	.981	49	.898	78	.789	107	.683	136	.592
21	.987	50	.894	79	.785	108	.679	137	.590
22	.977	51	.891	80	.781	109	.676	138	.587
23	.975	52	.887	81	.777	110	.673	139	.584
24	.972	53	.884	82	.733	111	.669	140	.581
25	.970	54	.880	83	.769	112	.666	141	.587
26	.968	55	.876	84	.766	113	.663	142	.576
27	.965	56	.873	85	.762	114	.659	143	.573
28	.963	57	.869	86	.758	115	.656	144	.570
29	.960	58	.865	87	.754	116	.653	145	.568
30	.958	59	.861	88	.751	117	.650	146	.565
31	.955	60	.857	89	.747	118	.647	147	.562
32	.952	61	.854	90	.743	119	.643	148	.560
33	.950	62	.860	91	.740	120	.640	149	.557
34	.947	63	.846	92	.736	121	.637	150	.555

7.2 Slope Correction Calculation Examples



<u>Determination of Slope Distance to achieve desired Horizontal Distance:</u>
Example:
• % Slope = 30 %
• Desired Horizontal Distance = 20 m
Slope Distance = Desired Horizontal Distance / Slope Correction Factor (from table)
= 20 m / 0.958 = <u>20.88 m</u>.

<u>Determination of Horizontal Distance from Slope Distance:</u>
Example:
• % Slope = 30 %
• Slope Distance = 20 m
Horizontal Distance = Slope Distance X Slope Correction Factor (from table)
= 20 X 0.958 = <u>19.16 m</u>.

8. Appendix 2 – Main Tree Plot and Subplot Boundary Installation

8.1 Plot Boundary Layout Procedures.

1 – Determine plot centre and size of plot.

2 – Mark plot centre with a non-metallic temporary stake (to prevent interference with compass readings).

3 – Holding the compass directly above the plot centre, determine the 45 ^{o} azimuth. Using a metal measuring tape, measure half the diagonal distance of the selected plot size from the plot centre – install a temporary non-metallic stake at this position. This will be the Northeast corner of the plot (Table 14 – page 14).

4 – Complete the step 3 for the following azimuths: 135 ^{o}, 225 ^{o} and 315 ^{o} for the Southeast, Southwest and Northwest corners respectively.

5 – To check the accuracy of the plot corner positions, using a metal measuring tape, measure the length of each side (from corner to corner). The length of each side should be equal to that defined for the appropriate plot size.

6 – If the sides are not the appropriate length for the particular plot size, the field crew will re-do the plot set-up to achieve the desired dimensions and accuracy.

7 – Once the plot centre and corners are accurately established, the temporary non-metallic stakes will be replaced with permanent metal stakes.

9. Appendix 3 – AVI Requirements within PGS Program

9.1 AVI Standards Associated with Weldwood's PGS Program

Field calls are required for the overstorey and understorey (where applicable). Only four components of the AVI descriptor are required for the purposes of the PGS Program:

1 – Crown Closure Class

Assess the proportion of the ground that is covered by the needles/leaves of the trees during the growing season. Qualify this proportion using the following codes:

Crown Closure Class	Descriptor
A	6 – 25 %
B	26 – 50 %
C	51 – 75 %
D	75 – 100%

2 – Average Height Class

The average height in meters of the dominant and co-dominant trees in the plot.

3 – Species Composition

The top five most prominent species in the plot (species codes are consistent with those of the PGS Program).

4 – Species Proportion.

In descending order, identify the species composition (using the approved species codes), followed by the proportion that species contributes to the overall crown closure within the stand:

Species Proportion Code	Descriptor
1	1 – 10 %
2	11 – 20 %
3	21 – 30 %
4	31 – 40 %
5	41 – 50 %
6	51 – 60 %
7	61 – 70 %
8	71 – 80 %
9	81 – 90 %
10	91 – 100 %

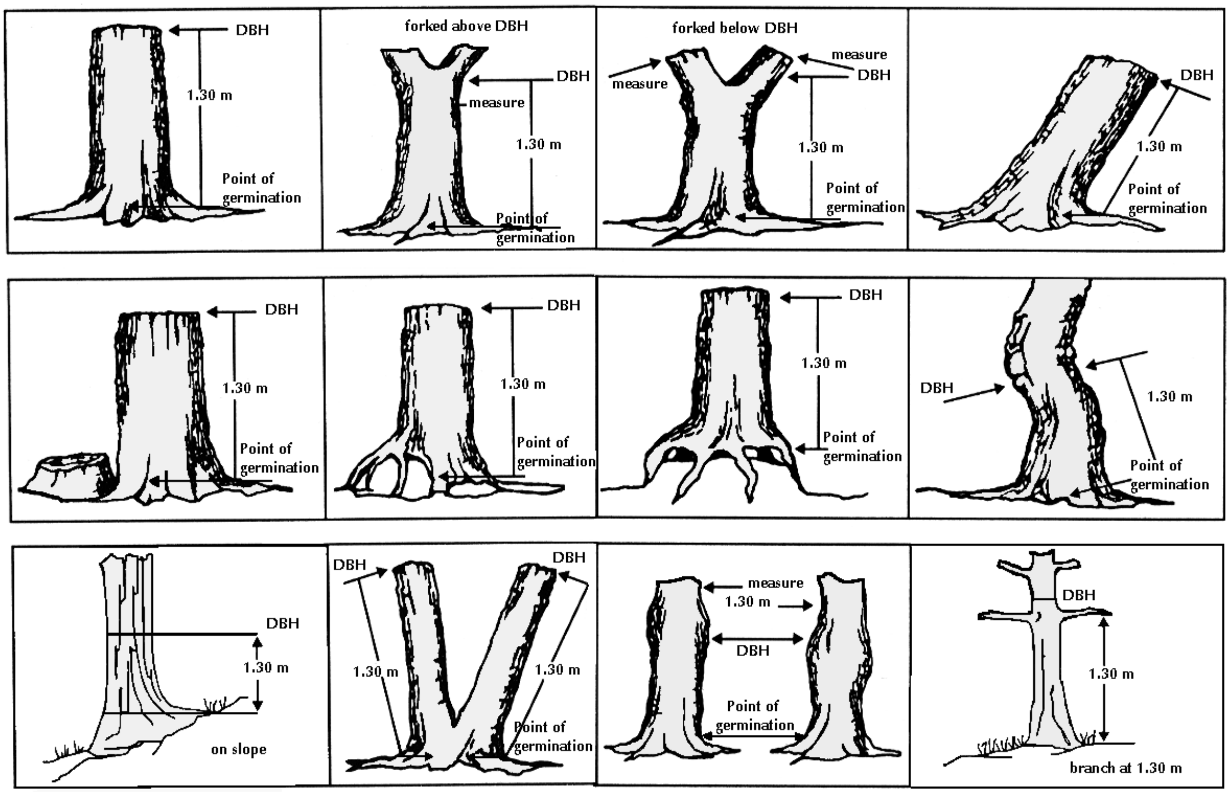
Example:

C 23 Pl5 Aw3 Sw1 Sb1 →

Attribute	Descriptor
C	Dom & Codom crown closure between 50 – 75 %
23	Dom & Codom avg. height = 23 m
Pl5	Lodgepole pine between 41-50 %
Aw3	Aspen between 21-30 %
Sw1	White spruce between 0-10 %
Sb1	Black spruce between 0-10 %

10. Appendix 4 – Tree Assessment

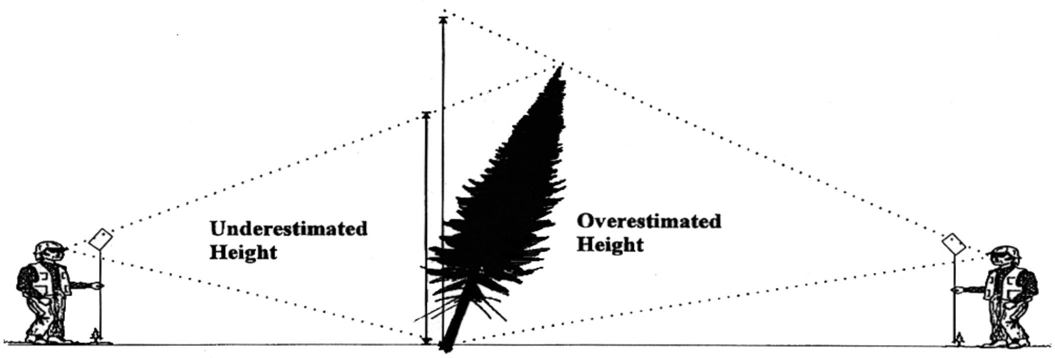
10.1 DBH Positioning



Modified from: Ontario Ministry of Natural Resources. 1994. PSP Establishment Manual for Northeastern Ontario. P.16-17.

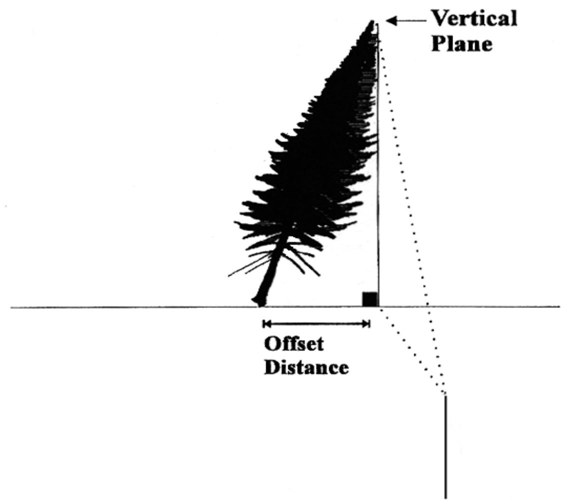
10.2 Height Measurement of Leaning Tree

INCORRECT METHOD TO MEASURE TREE HEIGHT



OBSERVERS ARE PARALLELL TO THE LEAN OF THE TREE

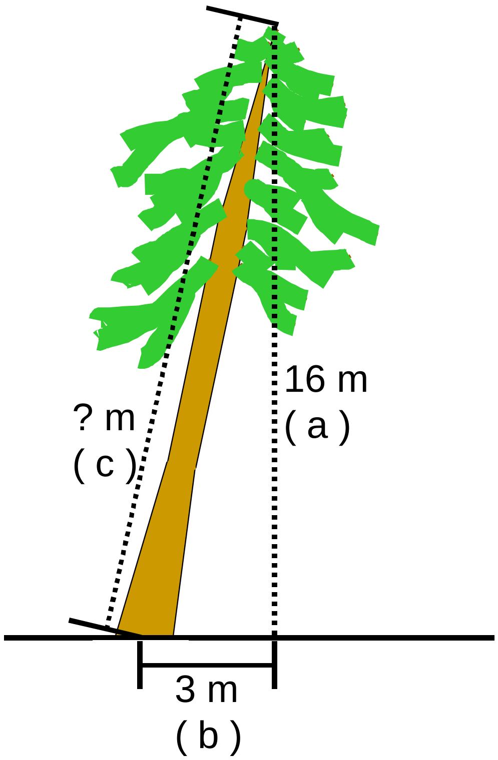
CORRECT METHOD TO MEASURE TREE HEIGHT



OBSERVER IS PERPENDICULAR TO THE LEAN OF THE TREE

Modified from: Ontario Ministry of Natural Resources. 1995. Field Manual for Establishing and Measuring Permanent Sample Plots. P.E-12.

10.3 Measurement and Calculation of Leaning Tree Hieght.



Using Pythagoras' Theorem:

$a^2 + b^2 = c^2$

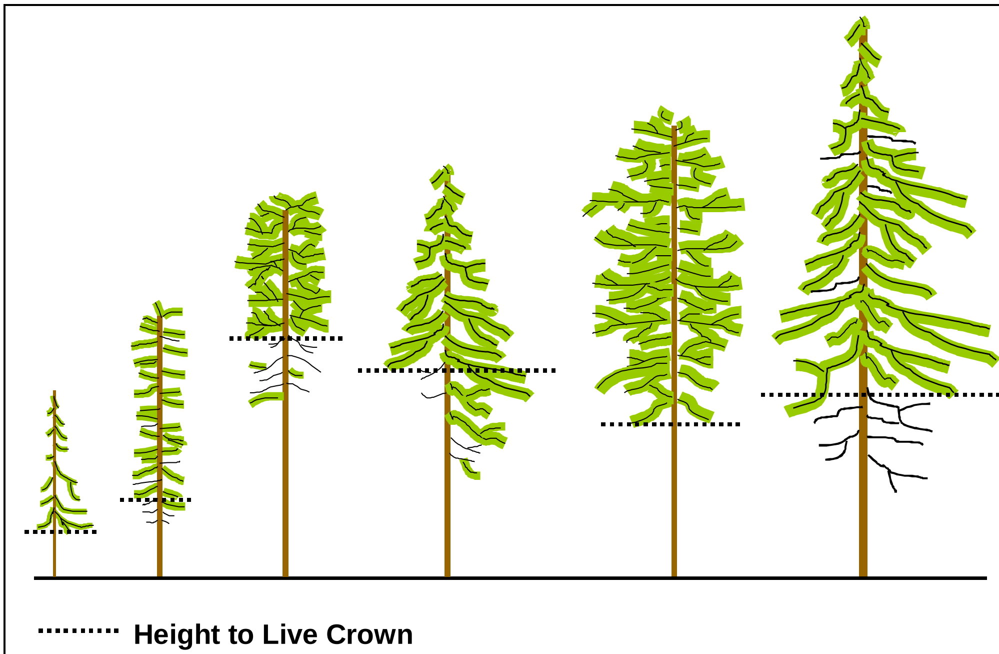
$16^2 + 3^2 = c^2$

$\sqrt{265} = \sqrt{c^2}$

$\underline{\mathbf{16.28 = c}}$

<u>Height of Leaning Tree: 16.3m</u>

10.4 Height to Live Crown



10.5 Crown Fullness Factor Assessment

i) The Crown Fullness Factor is a code that represents a quantitative assessment of the proportion of the crown that is filled with live branches and needles/leaves.

This assessment is completed along with the assessment of 1) height to live crown, and 2) crown radius, to provide a means of relatively comparing crowns.

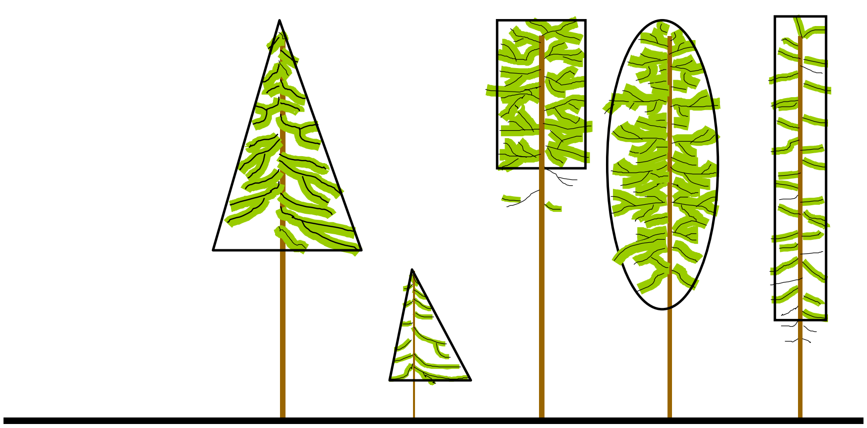
Crown fullness factor assessment can be completed on trees of any size or species (however, for deciduous trees, the assessment must be completed while the needles or leaves are still on).

Methodology

1. Envisage the selected crown encompassing the live crown, and assess what portion of the shape is filled with live branches and needles/leaves as opposed to empty space.

2. Based on the percent of the imaginary shape that is filled with live branches and needles/leaves, assign a crown fullness % code, as defined in the following table:

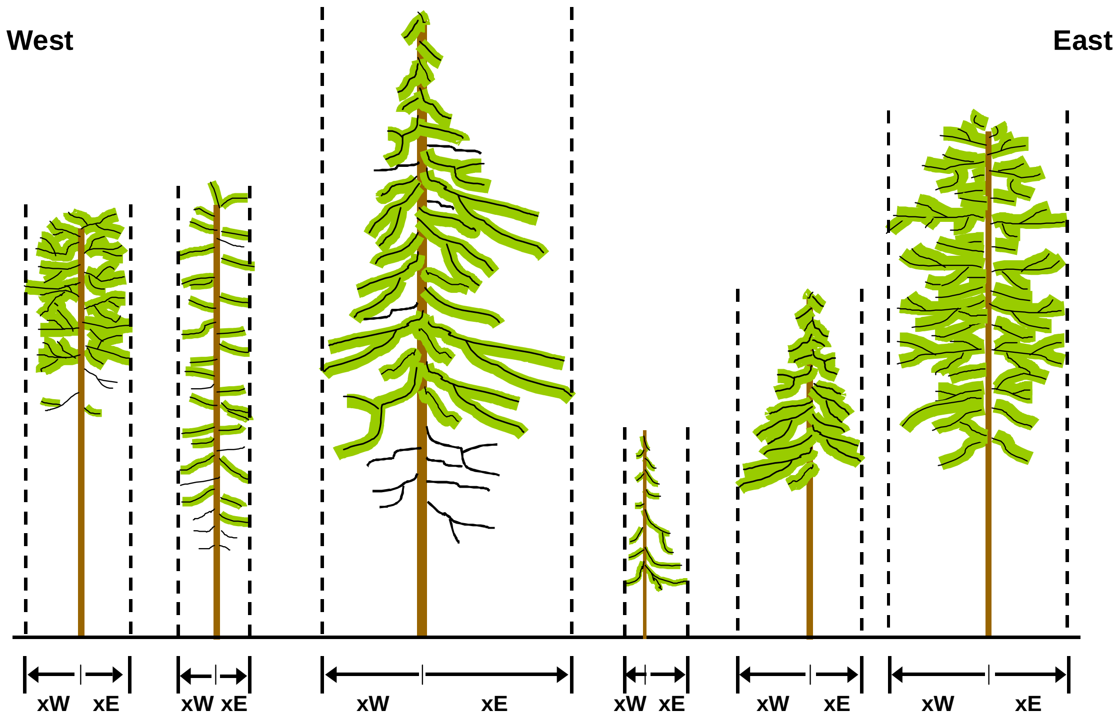
Crown Fullness %	Code
0 – 10 %	0
11 – 20 %	1
21 – 30 %	2
31 – 40 %	3
41 – 50 %	4
51 – 60%	5
61 – 70 %	6
71 – 80 %	7
81 – 90 %	8
91 – 100 %	9



Crown Shape	Triangle	Triangle	Rectangle	Ellipse	Rectangle
Crown Shape Code	T	T	R	E	R
Crown Fullness %	43 %	16 %	71 %	64 %	22 %
Crown Fullness % Code	4	1	7	6	2

Figure 6. Crown Fullness Factor Assessment

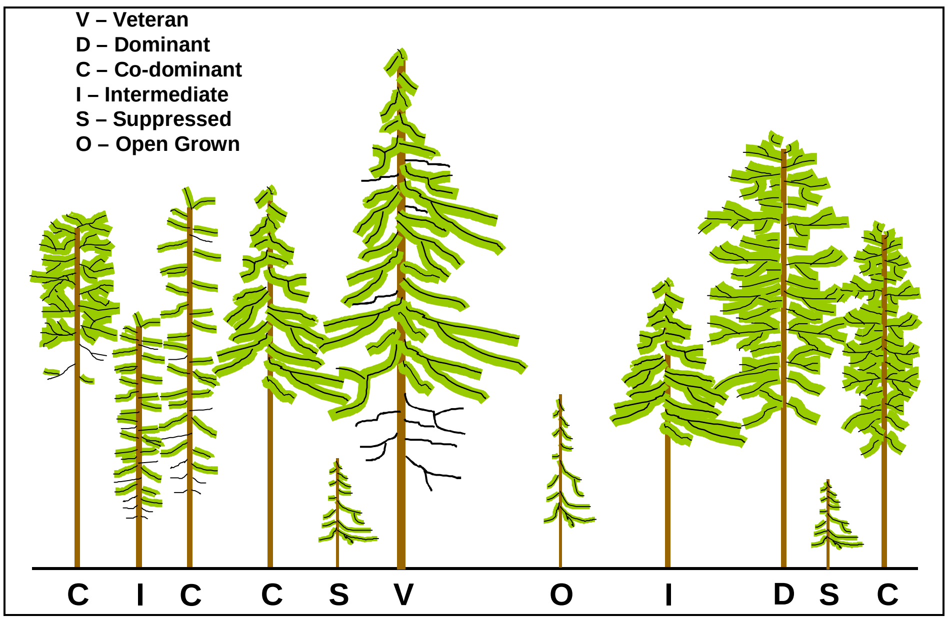
10.6 Crown Radius Assessment



Where:
xW = the West crown radius measurement of the tree.
xE = the East crown radius measurement of the tree.

Note:
In addition to West and East, crown radius measurements are also required for North and South cardinal directions.

Crown Position Assessment



11. Appendix 5 – Ecological Land Classification

11.1 ELC Tally Card. Page 1

ECOLOGICAL ASSESSMENT FORM

Page of

Plot No. ______ Location ______ Date (Yr Mo Day) ______

Strip Line ______ Surveyed by: ______

SITE

Ecoregion	Aspect Class	Edatopic Grid Position
Ecosite	Slope Pos. C U M L T D E	MR 1 2 3 4 5 6 7 8 9
Phase	Slope Class	NR A B C D E F
Community		Surface Expression A B F H I L M R S T U V
Ecosite Fit G F P		Parent Material M L E F GF O R
Ecosite Prediction		

SOILS

Duff Depth ______ cm

Humus Form Mor Moder Mull

Depth to:	
Water	cm
Mottles	cm
Gleying	cm
Calcar.	cm
ERD	cm
Bedrock	cm

Soil Type:

Layer 1:
Thickness (cm): ______
Texture: ______
Coarse Frag.: % ______
Coarse Frag. Type: G C S B

Layer 2:
Thickness (cm): ______
Texture: ______
Coarse Frag.: % ______
Coarse Frag. Type G C S B

Layer 3:
Thickness (cm): ______
Texture: ______
Coarse Frag.: % ______
Coarse Frag. Type G C S B

VEGETATION

Forest Cover Type: ______ Breast Height Age: ______

Vegetation Structure	SW	SE	SB	PL	PJ	FB	LT	FD	AW	PB	BW	
Main Canopy												
Understory > 10m												
Understory 4 - 10m												
Understory < 4m												

Cover Classes (%) A: < 1 B: 1 - 5 C: 6 - 20 D: 21 - 50 E: > 50

PAIRED PLOT LINKAGE & SITE INDEX

Pair Plot Linkage: Yes No | Link to Plot #:

Site Index Information

Tree #	Species	G.I.(yrs)	G.I.(cm)	D.B.H.(cm)	B.H. Age (yrs)	Height(m)

Comments:

11.2 ELC Tally Card. Page 2

VEGETATION TABLE					
SHRUB LAYER			**HERB LAYER**		
Common Juniper	junicom		Stiff Clubmoss	lycoann	
Kinnikinnick	arctuva		Ground-Cedar	lycocom	
Bog Cranberry	vaccvit		Showy Aster	astecon	
Labrador Tea	ledugro		Lindsey's Aster	astecil	
Shrubby Cinquefoil	potefru		Heart-Leaved Arnica	arnicor	
Blueberry	vaccmyr		Wild Strawberry	fragvir	
Dwarf Bilberry	vacccae		Bunchberry	corncan	
Tall Bilberry	vaccmem		Fireweed	epilang	
White Meadowsweet	spirbet		Twinflower	linnbor	
Saskatoon	amelaln		Northern Bedstraw	galibor	
Buffalo-berry	shepcan		Cream-colored Peavine	lathoch	
Beaked Hazel	corycor		Wild Vetch	viciame	
Prickly Rose	rosaaci		Yarrow	achimil	
Low-bush Cranberry	vibuedu		Common Pink Wintergreen	pyroasa	
White Rhododendron	rhodalb		One-sided Wintergreen	orthsec	
False Azalea	menzfer		Lily-of-the-Valley	malacan	
Elderberry	sambrac		Tall Mertensia	mertpan	
Mountain Ash	sorbsco		Wild Sarsaparilla	aralnud	
Wild Raspberry	rubuida		Running Raspberry	rubupub	
Thimbleberry	rubupar		Sweet-scented Bedstraw	galitri	
Black Current	ribelac		Palmate-leaved Coltsfoot	petapal	
Choke Cherry	prunvir		Baneberry	actarub	
Snowberry	sympalb		Bishop's Cap	mitenud	
Bracted Honeysuckle	loniinv		Kidney-leaved Violet	violren	
Twining Honeysuckle	lonidio		Twisted-stalk	streamp	
Green Alder	alnucri		Oak Fern	gymndry	
Devil's Club	oplohor		Tall Larkspur	delpgla	
Red-Osier Dogwood	cornsto		Cow-parsnip	heralan	
Willow	salispp		Large-leaved Avens	geummac	
Bog Birch	betugla		Woodland Horsetail	equisyl	
Small Bog Cranberry	oxycmic		Common Horsetail	equiarv	
			Meadow Horsetail	equipra	
			Dwarf Scouring Rush	equisci	
MOSSES/LICHENS			Cloudberry	rubucha	
Haircap Moss	polycom		Three-leaved False Solomon's Seal	smiltri	
Red-stem Feathermoss	pleusch		Buck-bean	menytri	
Stair-step Moss	hylospl				
Knight's Plume Moss	ptilcri				
Glow Moss	aulapal		**GRASSES/SEDGES**		
Golden Moss	tomenit		Hairy Wild Rye	elyminn	
Peat Mosses	sphaspp		Marsh Reed Grass	calacan	
Reindeer Lichen	cladspp		Sedges	carespp	
Green Dog Lichen	peltspp		Cotton Grasses	eriospp	

Cover Classes (%) A: < 1; B: 1-5; C: 6-20; D: 21-50; E: > 50

Note: Within each category the species are arranged by moisture requirements. Dry (top) to Wet (bottom)

General Shrub/Herb height: ______________ m   General Shrub/Herb vigor: G F P

11.3 ELC Tally Card Attributes

Plot – Record the Working Circle and the unique plot number.
i.e., Plot # 21 in the Marlboro: 2-021.

Location – Record the Working Circle and the Compartment number.
i.e., Marlboro 6: 2-06

Date – Record the date that the field assessment was completed.
i.e., June 3rd, 1999: 06/03/99

Strip Line – This field is used when the ELC is completed in conjunction with the operational ELC done within the FMA area. The Working Circle, Compartment and Strip Line number are recorded.
i.e., Strip line 18 in Marlboro 6: 2-06-18

If the ELC is not completed in conjunction with the operational ELC, record "N/A" in the field.

Surveyed by – Record the surveyor(s) and the company's name that completed the ELC assessment.

Site Characteristics
The following fields are to be completed according the FGTEWCA:
- Ecoregion
- Ecosite
- Phase
- Community
- Moisture regime
- Nutrient regime
- Parent Material

The following fields are to be completed according to Section 5.1.2 of this manual (Site information):
- Aspect class
- Slope position
- Slope class

Ecosite Fit – Indicate how accurately the determined ecological classification corresponds to that described in the FGTEWCA, by circling one of the following alpha codes:
G – Good
F – Fair
P - Poor

Surface Expression – Indicate the surface expression of the site by circling the appropriate alpha codes (Description of each surface expression can be found in this section):
A – apron
B – Blanket
F – Fan
H – Hummocky
I – Inclined
L – Level
M – Rolling
R – Ridged
S – Steep
T – Terraced

U – Undulating
V - Veneer

Soil Characteristics
The following fields are to be completed according to the FGTEWCA:

- Organic Matter Thickness
- Depth to "x"
- Soil type
- Soil layer ID
- Soil layer thickness
- Soil layer texture
- Soil layer coarse fragment %

Soil layer coarse fragment type – Indicate the predominant category to coarse fragment found in each soil layer, by circling the appropriate code (as defined by the Canadian System of Soil Classification, 2nd Edition):

G – Gravel: less than 8 cm in diameter
C – Cobbles: greater than 8 cm and less than 25 cm in diameter
S – Stones: greater than 25 cm and less than 60 cm in diameter
B – Boulders: greater than 60 cm in diameter

Vegetation Characteristics
Forest cover type – Complete this field according to the methods described in Section 6.1, Stand Information, of this manual.

Breast Height Age – Determine the breast height (1.3 m above germination) age of the site trees within the plot, as per section 3.7.3 – age measurements. For trees less than 1.3 m, the whorls of the tree should be counted to determine the age.

Vegetation Structure – Complete the Vegetation Structure Table by inserting the following cover classes in the appropriate structural level for the appropriate species:

A - <1 %
B – 1–5 %
C – 6–20 %
D – 21–50 %
E - >50 %

Pair Plot Linkage & Site Index
Pair Plot Linkage – When two plots within a cluster, one in a mature stand and one in a regenerating stand, are found to have the same ecosite they will be considered "paired plots". However, the surveyor must be confident that the plot in the regenerated stand had the same ELC as the plot in the mature timber.

Paired plots linkages within a cluster should be indicated by circling either "Yes" or "No". If an ecological linkage exists, record the plot number in the "Link to Plot" field.

Site Index Information – This section is targeted at collecting site quality information for regenerating stands. Site index data is to be collected from PGS plots located within regenerating stands that are less than or equal to 60 years in age. To collect site index information, the PGS plot should be split into 4, square quadrants (NW,SW,SE,SW) from which one site tree should be selected from each quadrant (see section 3.6.6). In the case that a site tree cannot be found within the quadrant, then no tree will be selected in that quadrant.

Site Index Tree Sample Selection:
Species – Determine the dominant crop species, which is healthy and expected to survive to rotation age.

DBH – Select the largest diameter tree of the site index species in each plot.
Age – Minimum of three years of annual growth above breast height.
Stem Condition – Dominant or co-dominant and not overtopped by competing vegetation.
Ring width – Vigorous; uniform from pith to bark (at breast height).

Once the site tree has been selected in each quadrant, each tree should be flagged and identified as a site tree. If the site tree's first three to five annual whorls above BH can be determined, then both the growth intercept and site index measurements should be taken; meaning, all columns in the Site Index Information table are to be completed. If the first three to five annual whorls above breast height cannot be determined, no measurements will be taken. Consistent data collection and database/analysis issues are the basis for this decision.

Tree # – Record the Site Tree number you have assigned to the tree (#1- 3), in this field. If the site tree has a tag from the last measurement, record the tree number as well.

Species – Record the species of the site tree. All three site trees are to be of the same species – the dominant tree species in both composition and crown positioning.

G.I. Age (growth increment age) – Record the number of years included in the length measurement. A minimum of three and a maximum of five years is used for this particular method. Choose the higher growth increment age where available (i.e. 5 whorls instead of 3 whorls).

G.I. Length (length of the chosen G.I. Age) – Record the length of the growth increment in centimeters. From the first whorl above DBH, measure to the whorl, which ends the annual growth of the last year in the growth increment age. i.e., if G.I. age = 4, measure the length of the section from the first whorl above DBH, to the top of the fourth section of annual growth.

D.B.H. (diameter at breast height) – Record the diameter at breast height as described in Section 5.2, PGS Plot Tally Sheet.

B.H Age (age at breast height) - Record the age of the tree at breast height as described in section 5.2, PGS Plot Tally Sheet. If these measurements are taken in the middle of the growing season, the height should be taken at the end of the previous growing season.

Height (total height of tree) – Record the total height of the tree as described in section 5.2, PGS Plot Tally Sheet. If these measurements are taken in the middle of the growing season, the height should be taken the end of the previous growing season.

Vegetation Table
Vegetation List – Complete the vegetation list by recording the cover class codes as described in Section 3.7.1.4, next to the appropriate species.

General Shrub/Herb Layer – Record the average height of the shrub/herb layer on site. This estimate is recorded to the nearest 1/10 of a meter.

General Shrub/Herb Height – Indicate the overall vigor of the shrub/herb layer on the site by circling one of the following condition codes:

G – Good
F – Fair
P – Poor

Surface Expression

The surface expression of genetic materials is their form (assemblage of slopes) and pattern of forms. Form as applied to unconsolidated deposits refers specifically to the product of the initial mode of origin of the materials. When applied to consolidated materials, form refers to the product of their modification by geological processes. Surface expression also indicates the manner in which unconsolidated genetic materials relate to the underlying unit.

Classes for unconsolidated and consolidated mineral components

a—Apron	h—Hummocky
m—Rolling	t—Terraced
b—Blanket	i—Inclined
r—Ridged	u—Undulating
f—Fan	l—Level
s—Steep	v—Veneer

Apron: A relatively gentle slope at the foot of a steeper slope and formed by materials from the steeper, upper slope.
Examples: two or more coalescing fans, a simple slope.

Blanket: A mantle of unconsolidated materials thick enough to mask minor irregularities in the underlying unit but still conforming to the general underlying topography.
Examples: lacustrine blanket overlying hummocky moraine.

Fan: A fan-shaped form similar to the segment of a cone and having a perceptible gradient form the apex to the toe.
Examples: alluvial fans, talus cones, some deltas.

Hummocky: A very complex sequence of slopes extending from somewhat rounded depressions or kettles of various sizes to irregular to conical knolls or knobs. There is a general lack of concordance between knolls or depressions. Slopes are generally 9-70% (5-35°).
Examples: hummocky moraine, hummocky glaciofluvial.

Inclined: A sloping, unidirectional surface with a generally constant slope not broken by marked irregularities. Slopes are 2-70% (1-35°). The form of incline slopes is not related to the initial mode of origin of the underlying material.
Examples: terrace scarps, river banks.

Level: A flat or very gently sloping, unidirectional surface with a generally constant slope not broken by marked elevations and depressions. Slopes are generally less than 2% (1°).
Examples: floodplain, lake plain, some deltas.

Rolling: A very regular sequence of moderate slopes extending from rounded, sometimes confined concave depressions to broad, rounded convexities producing a wavelike pattern of moderate relief. Slope length is often 1.6 km or greater and gradients are greater than 5% (3°).
Examples: bedrock controlled ground moraine, some drumlins.

Ridged: A long, narrow elevation of the surface, usually sharp crested with steep sides. The ridges may be parallel, sub parallel, or intersecting.
Examples: eskers, crevasse fillings, washboard moraines, some drumlins.

Steep: Erosional slopes, greater than 70% (35°), on both consolidated and unconsolidated materials. The form of a steep erosional slope on unconsolidated materials is not related to the initial mode of origin of the underlying material.
Examples: escarpments, river banks, escarpments, river banks, and lakeshore bluffs.

Terraced: Scarp face and the horizontal or gently inclined surface (tread) above it.
Examples: alluvial terrace.

Undulating: A very regular sequence of gently slopes that extends from rounded, sometimes confined concavities to broad rounded convexities producing a wavelike pattern of low local relief. Slope length is generally less than
0.8 km and the dominant gradient of slopes is 2-5% (1-3°).
Examples: some drumlins, some ground moraine, lacustrine veneers and blanket over morainal deposits.

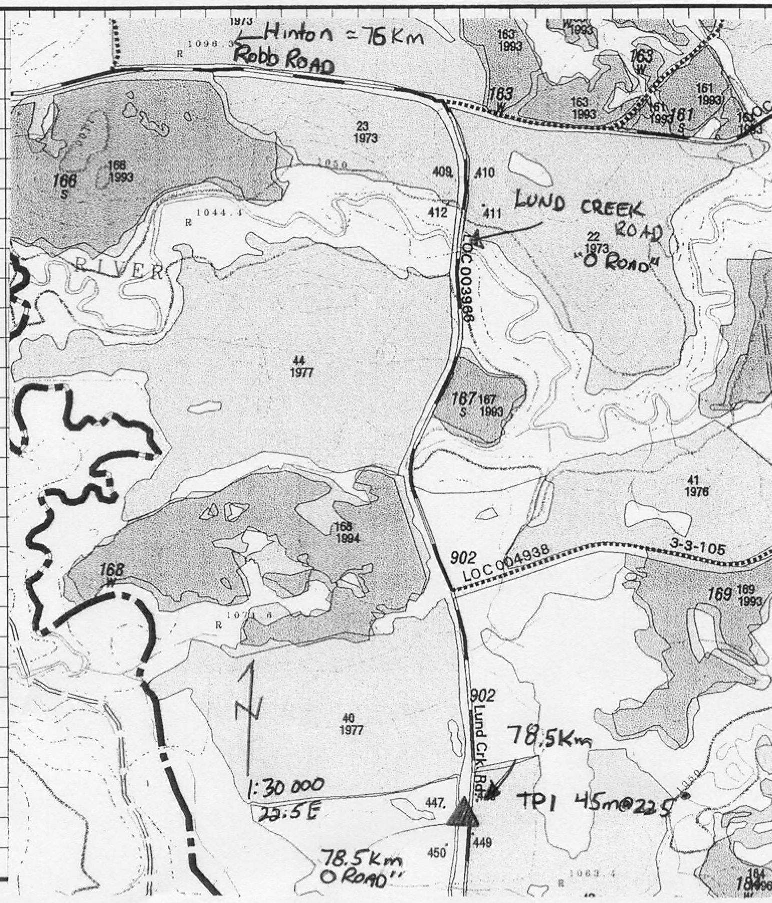
Veneer: Unconsolidated materials too thin to mask the minor irregularities too thin to mask the minor irregularities of the underlying unit surface. A veneer will range from 10 cm to 1 m in thickness and will possess no form typical of the material's genesis.
Examples: shallow lacustrine deposits overlying glacial till, loess cap, etc.

12. Appendix 6 – Plot Location Package

12.1 Example of Completed PGS Cluster Access Map

Weldwood PGS Cluster Access Map

Working Circle	3	**Twn / Rng**	4 8 1 8/1 9
Installation	1	**Photo #**	2 2 E - 1 6 6
PGS Plot Numbers	4 4 7 - 4 5 0	**Drawn by**	
Compartment	0 3	**Date drawn**	F E B 0 1



Notes:

Plot 3-449 Destroyed By Handcut SL

12.2 Example of Completed PGS Cluster Access Notes

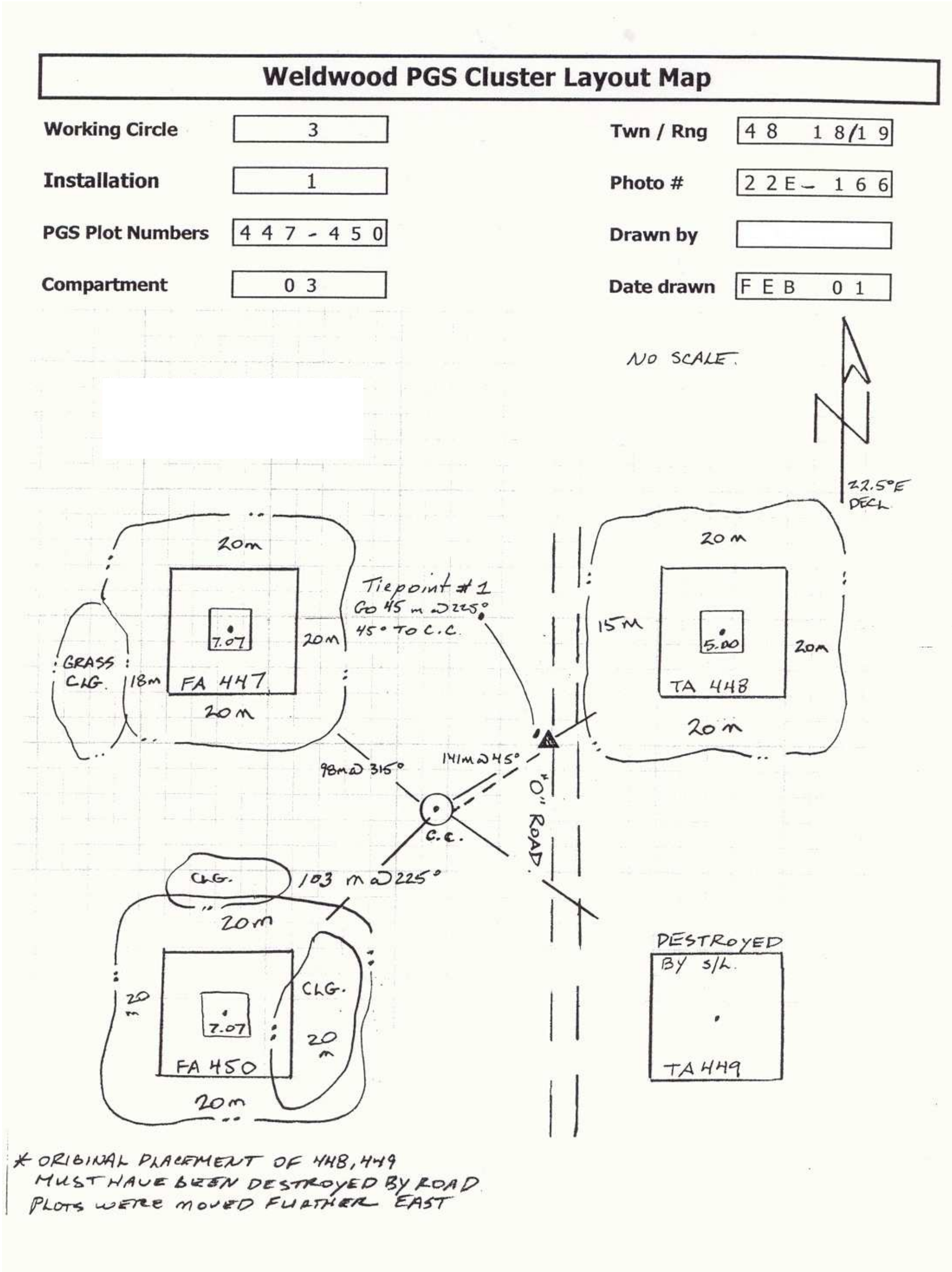
Weldwood PGS Plot Establishment Program

Access Notes

Working Circle	4	Twp/Rng	50/26,27
Installation	1	Date	February 1,2001
PGS Plot Numbers	257-260	Written by	
Compartment	1		

Km	Description
0	At junction of Highway 16W and Highway 40N drive west on Highway 16. 2WD.
10.9	Drive north on Kinky Lake Road. 2WD.
Reset	
2.45	Turn north (right) at fork in road. 2WD.
5.2	Turn northwest (left) on road. 2WD.
6.5	Turn southwest (left) on road. 2WD.
Reset	
1.05	Tie-point on north side of road. Walk 60m @ 360 degrees to cluster center.

12.3 Example of Completed PGS Cluster Access Notes



12.4 PGS Cluster Access Map Template

Weldwood PGS Cluster Access Map			
Working Circle		**Twn / Rng**	
Installation		**Photo #**	
PGS Plot Numbers		**Drawn by**	
Compartment		**Date drawn**	

N

Scale

Notes:

12.5 PGS Cluster Access Notes Template

Weldwood PGS Cluster Access Notes

Working Circle		Twn / Rng	
Installation		Date	
PGS Plot Numbers		Written By	
Compartment			

Km	Description
0.0	

12.6 PGS Cluster Layout Map Template

Weldwood PGS Cluster Layout Map

Working Circle		**Twn / Rng**	
Installation		**Photo #**	
PGS Plot Numbers		**Drawn by**	
Compartment		**Date drawn**	

Scale

Notes:

13. Appendix 7 - PGS Measurement Tolerances Summary

13.1 PGS audit summary

PGS Audit Summary			
Contractor	Audit date	Submission status	
AUDIT ELEMENT	**COMMENTS**	**PASS**	**FAIL**
ACCESS NOTES			
CLUSTER LOCATION MAPS			
CLUSTER LAYOUT MAPS			
AERIAL PHOTOS			
FIELD DEMARCATION			
PLOT DATA			
MEASUREMENT DATA			
TREE DATA			
COMMENTS			

13.2 PGS field audit summary

PGS Plot Field Audit Summary					
Contractor	Submission date	Audit date			
Field work date	Plot #				
FIELD DEMARCATION	**STANDARD**	**PLOT NUMBERS WITH ERRORS**			
Tie point tag	Includes all required information, no errors				
Plot center tag	Includes all required information, no errors				
Cluster center tag	Includes all required information, no errors				
Improper plot dimensions	+ / - 5% of correct dimension				
Tie line azimuth TP to CC and CC to PC	+ / - 2 degrees				
Tie line distance TP to CC and CC to PC	+ / - 5%				
Improper 20m outer plot buffer	+ / - 2m				
Accuracy of access notes	+/- 10% on distance, no missed steps				
PLOT DATA	**STANDARD**	**PLOT NUMBERS WITH ERRORS**			
Establishment status	No errors				
Plot size	No errors				
Plot status	No errors				
Slope position	+ /- one class of proper code				
Slope class	+ /- one class of proper code				
Aspect	+ /- one class of proper code				
Elevation	+ /- one class of proper code				
MEASUREMENT DATA	**STANDARD**	**PLOT NUMBERS WITH ERRORS**			
Buffer representative	No errors				
Silviculture system	No errors				
Field overstorey type	Crown cover - +/- one AVI class				
	Height - +/- 2 meters				
	Composition - +/- 10% for each species included				
Field understorey type	Crown cover - +/- one AVI class				
	Height - +/- 2 meters				
	Composition - +/- 10% for each species included				
Field broad cover type	No errors				
Uneven aged type	No errors				
Plot damage 1 and 2	No errors				
Subplot size	No errors				
TREE DATA	**STANDARD**	**TREE NUMBERS WITH ERRORS**			
Sector number	No error				
Species	No error				
Diameter	+/- 0.2 cm, or 2%				
Root collar diameter	+/- 0.2 cm, or 2%				
Height	+/- 0.2 m + 2%				
Height to live crown	+/- 10% of tree height				
Crown fullness	+ / - one class				
Crown radius (4 directions)	+/- 30cm				
Crown position	+/- one class, up to 10% of check sample				
Mortality code	No error				
Damage 1 and 2	Living - No error				
	Dead- +/- one class, up to 10% of check sample				
Damage severity 1 and 2	+/- one class, up to 10% of damages				
Status	No error				

TREE NUMBERS WITH ERRORS

TREE #	Meas	ORIG	CHECK	TREE #	Meas	ORIG	CHECK	TREE #	Meas	ORIG	CHECK

13.3 PGS Cluster Location Package Audit Summary

PGS Cluster Location Package Audit Summary							
Contractor	Submission date		Audit date				
Submission #	Re-submission of previous package?						
ACCESS NOTES	**STANDARD**	**PLOT NUMBERS WITH ERRORS**					
Names of roads	No errors						
Access modes for each section	No errors						
Significant landmarks, and their location	No errors						
Location of tie point	No errors						
Where the access notes terminate (CC or PC)	No errors						
CLUSTER LOCATION MAPS	**STANDARD**	**PLOT NUMBERS WITH ERRORS**					
Scale	No errors						
North arrow with declination	No errors						
Tie point with azimuth and distance to PGS plot	No errors						
Roads with identifying labels	No errors						
Direction and distance to major road or town	No errors						
Kilometer markings	No errors						
Water bodies	No errors						
Historical harvest areas	No errors						
CLUSTER LAYOUT MAPS	**STANDARD**	**PLOT NUMBERS WITH ERRORS**					
North arrow with declination	No errors						
Cluster center location indicated	No errors						
Individual plot numbers labelled	No errors						
Plot locations with azimuth and distance to each	No errors						
Proportional plots with proportional buffers	No errors						
Buffer width indicated	No errors						
Roads in immediate vicinity	No errors						
Seismic lines in immediate vicinity	No errors						
Pipelines in immediate vicinity	No errors						
Powerlines in immediate vicinity	No errors						
Water bodies in immediate vicinity	No errors						
Significant stand type changes	No errors						
AERIAL PHOTOS	**STANDARD**	**PLOT NUMBERS WITH ERRORS**					
Individual plot centers pin pricked	No errors						
Plot centers labelled on back with WC/Plot #	No errors						

Appendix B Tree Model Coefficients

Stump Diameter / DBH

Natural Sub-Region	Species	b0	b1
Alpine	AW	(1.6465)	1.2397
Alpine	BW	0.3004	1.1577
Alpine	FB	1.2658	0.9522
Alpine	LT	0.5000	1.0627
Alpine	PB	0.5871	1.0706
Alpine	PL	(0.1597)	1.0462
Alpine	SB	0.9828	0.9433
Alpine	SE	(0.1075)	1.1013
Alpine	SW	(2.1122)	1.2755
Subalpine	AW	(1.6465)	1.2397
Subalpine	BW	0.3004	1.1577
Subalpine	FA	1.2658	0.9522
Subalpine	FB	1.2658	0.9522
Subalpine	LT	0.5000	1.0627
Subalpine	PB	0.5871	1.0706
Subalpine	PL	(0.1597)	1.0462
Subalpine	SB	0.9828	0.9433
Subalpine	SE	(0.1075)	1.1013
Subalpine	SW	(2.1122)	1.2755
Montane	AW	(0.0936)	1.0835
Montane	BW	0.3004	1.1577
Montane	FB	0.6640	1.0197
Montane	LT	0.5000	1.0627
Montane	PB	0.5871	1.0706
Montane	PL	0.5825	1.0343
Montane	SB	0.9828	0.9433
Montane	SE	(0.1075)	1.1013
Montane	SW	0.1906	1.0696
Upper Foothills	AW	(1.6465)	1.2397
Upper Foothills	BW	0.3004	1.1577
Upper Foothills	FA	1.2658	0.9522
Upper Foothills	FB	1.2658	0.9522
Upper Foothills	LT	0.5000	1.0627
Upper Foothills	PB	0.5871	1.0706
Upper Foothills	PL	(0.4872)	1.1123
Upper Foothills	SB	0.9828	0.9433
Upper Foothills	SE	(0.1075)	1.1013
Upper Foothills	SW	(2.1122)	1.2755
Lower Foothills	AW	(0.0936)	1.0835
Lower Foothills	BW	0.3004	1.1577
Lower Foothills	FA	1.2658	0.9522
Lower Foothills	FB	0.6640	1.0197
Lower Foothills	LT	0.5000	1.0627
Lower Foothills	PB	0.5871	1.0706
Lower Foothills	PL	0.5825	1.0343
Lower Foothills	SB	0.9828	0.9433
Lower Foothills	SE	(0.1075)	1.1013
Lower Foothills	SW	0.1906	1.0696

DBH / Height

Natural Sub-Region	Species	b0	b1	b2
Alpine	AW	28.0750	0.0486	1.2173
Alpine	BW	27.9727	0.0352	0.8695
Alpine	FB	24.3383	0.0671	1.5909
Alpine	LT	26.3266	0.0538	1.4026
Alpine	PB	25.1413	0.0649	1.3192
Alpine	PL	24.4114	0.0356	0.7846
Alpine	SB	24.9305	0.0528	1.2552
Alpine	SE	36.3184	0.0260	1.0930
Alpine	SW	38.3117	0.0264	1.1152
Subalpine	AW	28.0750	0.0486	1.2173
Subalpine	BW	27.9727	0.0352	0.8695
Subalpine	FA	24.3383	0.0671	1.5909
Subalpine	FB	24.3383	0.0671	1.5909
Subalpine	LT	26.3266	0.0538	1.4026
Subalpine	PB	25.1413	0.0649	1.3192
Subalpine	PL	24.4114	0.0356	0.7846
Subalpine	SB	24.9305	0.0528	1.2552
Subalpine	SE	36.3184	0.0260	1.0930
Subalpine	SW	38.3117	0.0264	1.1152
Montane	AW	25.6731	0.0737	1.2608
Montane	BW	27.9727	0.0352	0.8695
Montane	FB	28.6319	0.0523	1.4467
Montane	LT	26.3266	0.0538	1.4026
Montane	PB	25.1413	0.0649	1.3192
Montane	PL	29.6276	0.0546	1.2997
Montane	SB	24.9305	0.0528	1.2552
Montane	SE	36.3184	0.0260	1.0930
Montane	SW	32.4278	0.0506	1.3940
Upper Foothills	AW	28.0750	0.0486	1.2173
Upper Foothills	BW	27.9727	0.0352	0.8695
Upper Foothills	FA	24.3383	0.0671	1.5909
Upper Foothills	FB	24.3383	0.0671	1.5909
Upper Foothills	LT	26.3266	0.0538	1.4026
Upper Foothills	PB	25.1413	0.0649	1.3192
Upper Foothills	PL	24.8398	0.0647	1.2937
Upper Foothills	SB	24.9305	0.0528	1.2552
Upper Foothills	SE	36.3184	0.0260	1.0930
Upper Foothills	SW	38.3117	0.0264	1.1152
Lower Foothills	AW	25.6731	0.0737	1.2608
Lower Foothills	BW	27.9727	0.0352	0.8695
Lower Foothills	FA	24.3383	0.0671	1.5909
Lower Foothills	FB	28.6319	0.0523	1.4467
Lower Foothills	LT	26.3266	0.0538	1.4026
Lower Foothills	PB	25.1413	0.0649	1.3192
Lower Foothills	PL	29.6276	0.0546	1.2997
Lower Foothills	SB	24.9305	0.0528	1.2552
Lower Foothills	SE	36.3184	0.0260	1.0930
Lower Foothills	SW	32.4278	0.0506	1.3940

Taper

Natural Sub-Region	Species	a1	a2	a3	b1	b2	b3	b4	b5
Alpine	AW	0.58884	1.16190	0.99210	0.70930	(0.07545)	(0.11604)	0.04095	0.11364
Alpine	BW	0.89436	1.00772	0.99138	(0.48307)	0.15559	(2.27312)	1.32650	0.16890
Alpine	FB	1.10801	0.89838	1.00182	1.33834	(0.30463)	2.69436	(1.27762)	0.08744
Alpine	LT	0.93352	0.96547	0.99839	2.07946	(0.46203)	3.73206	(1.95019)	0.19043
Alpine	PB	0.91333	0.92259	1.00257	0.30845	(0.06567)	(0.10213)	0.22634	0.02315
Alpine	PL	0.80065	1.05354	0.99557	0.56835	(0.12511)	0.61009	(0.23844)	0.04540
Alpine	SB	0.95762	0.94674	1.00045	1.43046	(0.35670)	2.95073	(1.45547)	0.15426
Alpine	SE	0.71339	1.07153	0.99607	1.15368	(0.28381)	2.02271	(0.95378)	0.10161
Alpine	SW	0.71339	1.07153	0.99607	1.15368	(0.28381)	2.02271	(0.95378)	0.10161
Subalpine	AW	0.58884	1.16190	0.99210	0.70930	(0.07545)	(0.11604)	0.04095	0.11364
Subalpine	BW	0.89436	1.00772	0.99138	(0.48307)	0.15559	(2.27312)	1.32650	0.16890
Subalpine	FA	1.10801	0.89838	1.00182	1.33834	(0.30463)	2.69436	(1.27762)	0.08744
Subalpine	FB	1.10801	0.89838	1.00182	1.33834	(0.30463)	2.69436	(1.27762)	0.08744
Subalpine	LT	0.93352	0.96547	0.99839	2.07946	(0.46203)	3.73206	(1.95019)	0.19043
Subalpine	PB	0.91333	0.92259	1.00257	0.30845	(0.06567)	(0.10213)	0.22634	0.02315
Subalpine	PL	0.80065	1.05354	0.99557	0.56835	(0.12511)	0.61009	(0.23844)	0.04540
Subalpine	SB	0.95762	0.94674	1.00045	1.43046	(0.35670)	2.95073	(1.45547)	0.15426
Subalpine	SE	0.71339	1.07153	0.99607	1.15368	(0.28381)	2.02271	(0.95378)	0.10161
Subalpine	SW	0.71339	1.07153	0.99607	1.15368	(0.28381)	2.02271	(0.95378)	0.10161
Montane	AW	0.90562	0.96489	1.00005	0.55324	(0.04974)	(0.28077)	0.17069	0.07579
Montane	BW	0.89436	1.00772	0.99138	(0.48307)	0.15559	(2.27312)	1.32650	0.16890
Montane	FB	0.91865	0.99023	0.99729	1.56851	(0.38426)	3.50347	(1.67719)	0.12817
Montane	LT	0.93352	0.96547	0.99839	2.07946	(0.46203)	3.73206	(1.95019)	0.19043
Montane	PB	0.91333	0.92259	1.00257	0.30845	(0.06567)	(0.10213)	0.22634	0.02315
Montane	PL	0.95716	0.95999	0.99977	0.76675	(0.14076)	0.66604	(0.35505)	0.13214
Montane	SB	0.95762	0.94674	1.00045	1.43046	(0.35670)	2.95073	(1.45547)	0.15426
Montane	SE	0.86269	0.99315	0.99877	1.13502	(0.25238)	1.88532	(0.92144)	0.15023
Montane	SW	0.86269	0.99315	0.99877	1.13502	(0.25238)	1.88532	(0.92144)	0.15023
Upper Foothills	AW	0.58884	1.16190	0.99210	0.70930	(0.07545)	(0.11604)	0.04095	0.11364
Upper Foothills	BW	0.89436	1.00772	0.99138	(0.48307)	0.15559	(2.27312)	1.32650	0.16890
Upper Foothills	FA	1.10801	0.89838	1.00182	1.33834	(0.30463)	2.69436	(1.27762)	0.08744
Upper Foothills	FB	1.10801	0.89838	1.00182	1.33834	(0.30463)	2.69436	(1.27762)	0.08744
Upper Foothills	LT	0.93352	0.96547	0.99839	2.07946	(0.46203)	3.73206	(1.95019)	0.19043
Upper Foothills	PB	0.91333	0.92259	1.00257	0.30845	(0.06567)	(0.10213)	0.22634	0.02315
Upper Foothills	PL	0.82867	1.02420	0.99749	0.59619	(0.11878)	0.46559	(0.19618)	0.08309
Upper Foothills	SB	0.95762	0.94674	1.00045	1.43046	(0.35670)	2.95073	(1.45547)	0.15426
Upper Foothills	SE	0.71339	1.07153	0.99607	1.15368	(0.28381)	2.02271	(0.95378)	0.10161
Upper Foothills	SW	0.71339	1.07153	0.99607	1.15368	(0.28381)	2.02271	(0.95378)	0.10161
Lower Foothills	AW	0.90562	0.96489	1.00005	0.55324	(0.04974)	(0.28077)	0.17069	0.07579
Lower Foothills	BW	0.89436	1.00772	0.99138	(0.48307)	0.15559	(2.27312)	1.32650	0.16890
Lower Foothills	FA	1.10801	0.89838	1.00182	1.33834	(0.30463)	2.69436	(1.27762)	0.08744
Lower Foothills	FB	0.91865	0.99023	0.99729	1.56851	(0.38426)	3.50347	(1.67719)	0.12817
Lower Foothills	LT	0.93352	0.96547	0.99839	2.07946	(0.46203)	3.73206	(1.95019)	0.19043
Lower Foothills	PB	0.91333	0.92259	1.00257	0.30845	(0.06567)	(0.10213)	0.22634	0.02315
Lower Foothills	PL	0.95716	0.95999	0.99977	0.76675	(0.14076)	0.66604	(0.35505)	0.13214
Lower Foothills	SB	0.95762	0.94674	1.00045	1.43046	(0.35670)	2.95073	(1.45547)	0.15426
Lower Foothills	SE	0.86269	0.99315	0.99877	1.13502	(0.25238)	1.88532	(0.92144)	0.15023
Lower Foothills	SW	0.86269	0.99315	0.99877	1.13502	(0.25238)	1.88532	(0.92144)	0.15023

Appendix C Analysis of Mixedwood Strata Differences

Pl/Hw and Hw/Pl Unmanaged Stands – Coniferous, Deciduous and Total Volumes

Duncan Range Test (Age >= 80):			
Pl MX			
Deciduous Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
HwPl	21	142.14	A
PlHw	29	81.45	A
Conferous Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
PlHw	29	149.27	A
HwPl	21	99.05	B
Total Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
HwPl	21	241.19	A
PlHw	29	230.73	A

Regression (Refit Models using dummy variables and assess Coefficient (c0) Confidence Intervals):

N	**165**	**Lower**	**Upper**	
Deciduous Volume		(0.0059)	0.0011	Not Significant
Coniferous Volume		0.0005	0.0103	Significant
Total Volume		(0.0031)	0.0009	Not Significant

Sw/Hw and Hw/Sw Unmanaged Stands – Coniferous, Deciduous and Total Volumes

Duncan Range Test (Age >= 80):			
Sw Mx			
Deciduous Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
HwSw	22	118.14	A
SwHw	17	28.21	B
Conferous Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
SwHw	17	214.47	A
HwSw	22	145.51	A
Total Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
HwSw	22	263.65	A
SwHw	17	242.69	A

Regression (Refit Models using dummy variables and assess Coefficient (c0) Confidence Intervals):				
N	**109**	**Lower**	**Upper**	
Deciduous Volume		(0.0203)	(0.0049)	Significant
Coniferous Volume		(0.0018)	0.0043	Not Significant
Total Volume		(0.0059)	(0.0009)	Significant

Pl/Hw and Hw/Pl Regenerated Stands – Coniferous, Deciduous and Total MAI's

Duncan Range Test (Age >= 80):			
Pl MX			
Deciduous Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
HwPl	12	1.45	A
PlHw	40	0.91	B
Conferous Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
PlHw	40	3.01	A
HwPl	12	2.57	B
Total Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
HwPl	12	4.03	A
PlHw	40	3.93	A

Sw/Hw and Hw/Sw Regenerated Stands – Coniferous, Deciduous and Total MAI's

Duncan Range Test (Age >= 80):			
Sw Mx			
Deciduous Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
HwSw	24	1.42	A
SwHw	31	0.81	A
Conferous Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
SwHw	31	2.76	A
HwSw	24	2.39	B
Total Volume			
Strata	**Samples**	**Average**	**Duncan Grouping**
HwSw	24	3.82	A
SwHw	31	3.58	A

Appendix D Solid Wood Defect Study

West Fraser Mills Ltd

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Solid Wood Defect Study

In the 2010 Mountain Pine Beetle amendment to the Detailed Forest Management Plan (DFMP) for Hinton Wood Products (HWP), a reduction of 5% was applied to the coniferous annual allowable cut to account for losses due to rot, solid wood defects and manufacturing defects. Deciduous yield curves were reduced by 13.2% to account for losses due to rot. Although the deciduous number was based on a study (FORTRENDS Consulting Inc. 1990), the conifer reduction was negotiated in the absence of empirical data. It was agreed that a joint project would be conducted with the participation of local staff members from Alberta Environment and Sustainable Resource Development (ESRD) to provide a more precise estimate for the 2014 DFMP. This paper describes the results of that project.

Objectives of the project were:

1) Determine coniferous cull and waste percentages for use in yield curves and timber supply analyses.
2) Determine length ratios (12, 14, 16 foot) for development of individual coniferous CTL yield curves.

Sample Selection

A stratified sampling design was used to ensure that at least one block was sampled for each harvesting contractor for each of three timber years. The project sampling intensity of 15 blocks was completed in accordance with the timeline agreed to between HWP and ESRD. Five blocks were sampled in each of the 2010, 2011, and 2012 timber years (Table 1). Though block selection was random, the sampling was influenced by the work schedule of harvesting contractors and the availability of ESRD and HWP personnel.

Sample blocks were selected after a sample day was identified. HWP's Operations Superintendent visited the block one day prior to the designated day and instructed the harvesting contractor to ensure that approximately 100 stems were placed in a safe location for manual scaling. The selection process ensured that each major harvest contractor was sampled at least once each year. Harvesting was completed at a 15cm stump height with a 15cm minimum merchantable stump diameter (outside bark). All stems were simply delimbed and topped at an 11cm diameter inside bark (12cm diameter class) and placed on brow logs to be checked for quality infractions. No quality infractions were removed prior to measuring.

Procedure

The contractor did not buck the stem, rather each log was pseudo-sectioned into one of three log classes by a certified scaler in accordance with HWP's current cut-to-length (CTL) harvesting practices, the Alberta Scaling Manual and the Hinton Wood Products Log Quality Manual. Dead (dry) wood is excluded from the yield curves and, therefore, was not sampled. HWP is not required to utilize any dead (dry) wood.

Measurements were recorded on a tally card (Figure 1) and included:

1. Species
2. Top diameter was marked for CTL and TL utilization standards. Utilization standard is 11cm top diameter inside bark which is recorded as a 12cm diameter class for scaling purposes.
3. Starting from the stump, stem form defect or mechanical damage was identified as per HWP log quality specifications. Logs were pencil bucked as per specifications for the defect.
4. Starting from the stump, logs were pencil bucked for the entire stem according to harvest system log lengths, accommodating the previous defect and damage lengths that were identified.
5. Lengths, large end diameter and small end diameter of each log were measured.
6. Tops larger than the minimum top diameter were recorded as missing.

Table 1. Sampling Schedule

Date	Block	Quality Assessor	Scaler	ESRD Representatives	Harvesting Contractor
28 Jul 2010	3-7-1791	B. Alexander	D. Kowalchuk	C. Yurich, T. Nenadovich, R. Alm	Moore's Logging Ltd (#665)
4 Oct 2010	5-11-2855	B. Alexander	D. Kowalchuk	T. Nenadovich, F. Raedschelders	Echo Logging Ltd. (#606)
19 Nov 2010	5-30-3683	B. Alexander	D. Kowalchuk	C. Yurich, T. Nenadovich, F. Raedschelders, B. MacIver, T. Parkinson	Leniam Industries (#626)
20 Jan 2011	2-13-3686	B. Alexander B. Cooper	D. Kowalchuk	C. Yurich, T. Nenadovich, F. Raedschelders, B. MacIver,	Moore's Logging Ltd (#665)
9 Mar 2011	4-12-0264	B. Alexander	D. Kowalchuk	C. Yurich, T. Nenadovich, B. MacIver	Promise Contractors (#624)
19 Aug 2011	5-12-1305	B. Alexander	D. Kowalchuk	D. Bath, F. Scobie, B. MacIver, R. Alm, B. Horne	Echo Logging Ltd. (#606)
9 Nov 2011	2-13-1818	B. Alexander	D. Kowalchuk	B. Horne, F. Raedschelders, B. MacIver	Moore's Logging Ltd. (#665)
16 Dec 2011	5-30-2564	B. Alexander K. Scott	D. Kowalchuk	B. Horne, D. Bath, F. Scobie, B. MacIver,	Leniam Industries (#626)
3 Feb 2012	3-8-0871	B. Alexander K. Scott	D. Kowalchuk	B. Horne, F. Scobie, B. MacIver	Promise Contractors (#624)
7 Mar 2012	2-19-485	B. Alexander K. Scott, K. Courser	D. Kowalchuk	B. Horne, F. Scobie, B. MacIver, R. Alm	K.Tek (for BRL)
24 Aug 2012	5-25-776	B. Alexander	D. Kowalchuk	B. Horne, J. Schroeder, B. MacIver	Echo Logging Ltd. (#606)
11 Oct 2012	5-29-1888	B. Alexander	D. Kowalchuk	B. Horne, F. Scobie, B. MacIver	Leniam Industries (#626)
3 Dec 2012	2-10-727	R. Briand	D. Kowalchuk	B. Horne, F. Scobie, B. MacIver	Moore's Logging Ltd. (#665)
22 Jan 2013	2-16-447	R. Briand	D. Kowalchuk	B. Horne, F. Scobie, D. Bath	Promise Contractors (#624)
21 Feb 2013	2-22-2896	R. Briand K. Courser	D. Kowalchuk	B. Horne, F. Scobie, D. Bath	Moore's Logging Ltd. (#665)

Losses due to mechanical damage were tallied separately and discussed with the contractor. HWP's objective is to have zero losses due to contractor damage. See Figure 2 (next page) for an illustration of the measurement hierarchy. Defect codes are listed on the sample tally sheet in Figure 1. Diameter classes are shown in Figure 3.

Table 2. Acceptable log lengths

Log Class Category	Minimum Length (m)	Maximum Length (m)
1	4.98	5.05
2	4.36	4.44
3	3.76	3.84
4*	3.12	3.30

* Valid length only until August 19, 2011

Figure 1. Sample Tally Sheet

Block	9-99-9999	Page	1
Quality Assessor	Bruce Alexander	Date	30-Jun-10
Recorder	Richard Briand	SRD	Me, you and him
Scaler	Darwin	Util Std.	15/11/15

Log Measurements

Log #	Bolt #	Type	Code	Length (m)	Butt Diam (cm)	Top Diam (cm)
1	1	CTL	NA	5.05	28	22
1	2	CTL	NA	5.05	22	22
1	3	CTL	NA	5.05	18	16
1	4	CTL	NA	4.37	16	14
1	5	TL	NA	4.80	16	12

these two logs are measured from the same "butt" (16 cm). The first measurement (Type=TL) captures the acceptable CTL log, the second measurement (Type=TL) captures the full length to the minimum top.

Only conifer logs are measured

Type:	Definition
CTL	cut-to-length log
TL	tree-length log

Code:	Definition
NA	None
BS	Butt Shatter
CF	Cat Face
DF	Deformed
FK	Fork
PG	Pistol Grip
RB	Rotten Butt
RT	Rotten Top
SC	SawCut/Plunge
SW	Sweep
CR	Crook
TS	Top Shatter
UD	Unacceptable Dry
UB	Undersize Butt
OL	Overlength
MI	Missing (top is too large)

Figure 2. Measurement Hierarchy

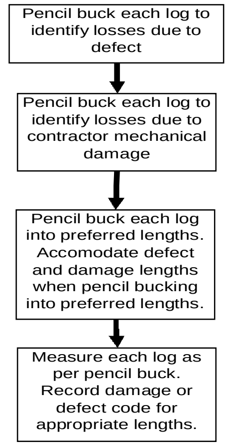
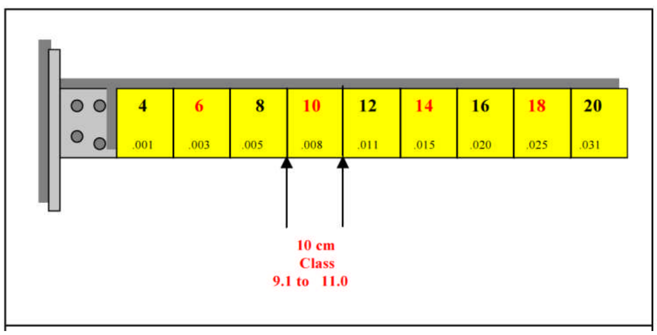


Figure 3. Diameter Classes (source: Alberta Timber Scaling Manual)

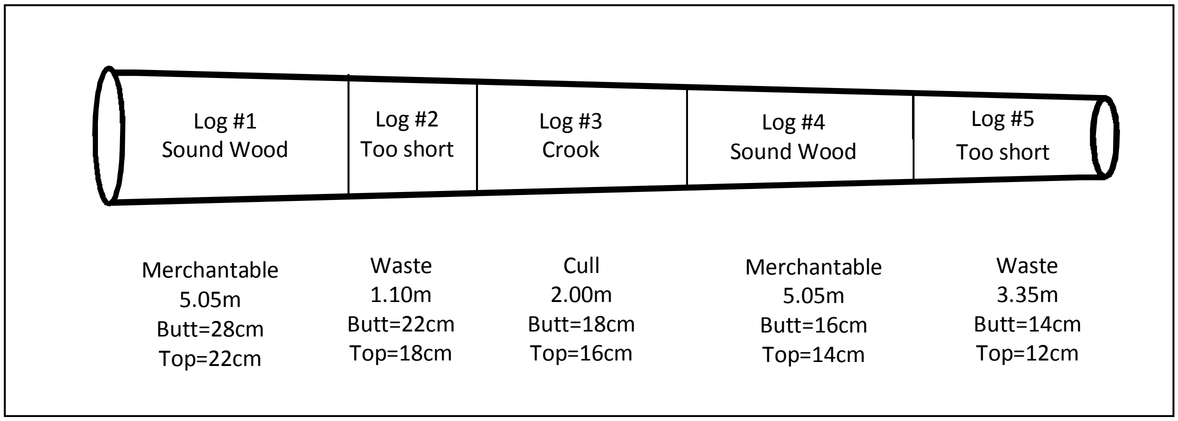


Shortly after the August 19, 2011 sample had been taken, HWP staff became aware of a problem where the 10 foot logs (3.12m to 3.30m) were becoming stuck during the milling process and causing frequent work stoppages. The 10 foot category was not permitted for the November 9, 2011 sample and all other samples taken thereafter. As SWD is calculated on a percentage basis, it was expected that this change would have negligible impact on the projections.

The AAC of the 2010 MPB amendment assumed tree length harvesting (minimum log length = 3.76m). As the project began, HWP was instituting a major shift toward CTL harvesting. Therefore the manual scaling was done to emulate CTL harvesting, however the entire tree length stem was first evaluated for cull. This design allows for an estimate of cull for both tree length harvesting and CTL harvesting. To understand the sampling process, an example tree is discussed.

The example in Figure 4 shows how cull was measured separately from waste. Logs #2 and #5 represent CTL loss caused by achieving optimal merchandising. If the log were processed to a tree length standard, the cull would still be removed (Log #3), but all of the remaining volume would be delivered to the mill. By classifying each log of the optimized logs as merchantable volume, cull or waste, losses may be consistently classified and quantified.

Figure 4. Example Tree



Log #	Manual Scaling Category	
	Tree Length	**Cut-to-Length**
1	Sound	Sound
2	Sound: Added to log #1	Defect: Sound but counted as waste because the crook defect in log three prohibits another valid log size (Table 2).
3	Defect: Crook	Defect: Crook
4	Sound	Sound
5	Sound: Added to log #4	Waste – too short.

Compilation

Logs were categorized into one of 3 classes:

- Merchantable – logs shown as NA or butt flare (BF)
- Waste - logs that were waste due to not meeting the minimum log length of 3.12m (WST, WCTL).
- Cull - all other defects including butt shatter (BS), cat face (CF), deformed (DF), fork (FK), pistol grip (PG), rotten butt (RB), rotten top (RT), saw cut/plunge (SC), sweep (SW), crook (CK), top shatter (TS).

Butt Flare (BF) is a deduction for log quality purposes at HWP. It is not a volume deduction as it indicates that the stem has been harvested below a 15cm stump height, generating additional volume that was not included in yield curves. Dead, dry (UD), missing (MI), undersized butt (UB), XX and non-merchantable (NMER) were all excluded from the analysis.

Smalian's formula was used to calculate the volume of each individual log, whether it was merchantable, waste or cull.

$$\text{Log Volume} = \frac{\text{length}}{2} \bullet (\pi \left(\frac{\text{butt diameter}}{200}\right)^2 + \pi \left(\frac{\text{top diameter}}{200}\right)^2)$$

where:
Log Volume (Smalian's formula) = m^3
length = length of log (m)
butt diameter = log butt diameter (cm)
top diameter = log top diameter (cm)

Mill Data

Records kept at the HWP sawmill include the number of pieces of each length that enter the mill by shift, by day and by month. These data do not differentiate between sources and it was not possible to determine whether the individual logs were delivered from the Hinton FMA area and to what standard they had been merchandised. It was decided to use scale data.

During the 2012 timber year, sawlog (CTL) volume was delivered from 212 different cutblocks on the HWP FMA. Pulpwood was recovered from 134 of these openings. The remaining 78 blocks were processed for sawlog (CTL) volume only. Thirty-nine of the sawlog-only blocks had one or more loads selected for sampling in the HWP yard, either for regulatory or quality purposes. The sample data were analysed to determine a distribution of lengths produced from the sawlog-only blocks.

Of the 44,001 pieces measured in the sample loads, 83 (0.2%) were less than 3.71m and 46 (0.1%) were greater than 5.28m. The acceptable lengths were 37.1cm to 43.2cm for 12 foot, 43.2 to 49.3 for 14 foot and 49.3 to 52.8 for 16 foot. Resulting distribution was 14.3%, 5.4% and 80.0% for 12, 14 and 16 foot, respectively.

Analysis

Summaries of the sample data were prepared by Working Circle, Compartment, Block and Log to report the number of sections, total volume, cumulative length, top diameter and volume by waste, cull or none. In addition, volumes of logs <12ft, 12ft, 14ft, 16ft and >16ft are provided.

The sample trees then had a bucking simulation applied to approximate the actual data. The results were used to compile plot data for CTL yield curves. Weightings were used to approximate the log distributions of the actual samples. This resulted in the distribution shown in Table 3 below.

Table 3. Comparison of Log Length Distributions

Log Length	Sample	Theoretical	Mill Data
12'	11.1%	10.1%	14.3%
14'	7.3%	7.6%	5.4%
16'	81.6%	82.3%	80.0%

Comparison of the volumes generated by the sample bucking versus the simulation bucking showed a difference of 4.5%. This was to be expected as the theoretical bucking does not take into account cull.

Results and Discussion

Objective 1 – Determine coniferous cull and waste percentages

Assigning each piece of each of the sample trees to one of three categories allowed the solid wood defect (cull) deductions to be separated from losses due to cut-to-length processing. Compilation of the sample data showed that 2.5% of the tree volume was cull. This deduction will be applied to all of the coniferous volumes in the timber supply analysis.

Waste due to CTL processing was assessed at 1.8% of total volume of the sample trees measured.

Objective 2 - Determine length ratios for development of CTL yield curves

Application of a constant deduction for losses due to CTL processing does not account for changes in the shape and size of individual trees over time. For this reason, a bucking simulation algorithm was developed to be applied to plot data so that measured trees could be theoretically merchandised in a manner consistent with operational practices. The algorithm was applied to the sample trees and the resulting distribution of log sizes was compared to the mill data and the volumes were compared to the sample measurements. The bucking simulation was deemed to be representative of actual merchandising and was used in the development of all coniferous yield curves in lieu of a specified percent reduction.

Reference

- FORTRENDS Consulting Inc. 1990. *Results from a study of defect in aspen trees.* TMT Report No.: R9055. Prepared for Weldwood of Canada Hinton, Alberta. Prepared by FORTRENDS Consulting Inc, Victoria, B.C. November 3, 1990.

Appendix A – Sawlog Specifications

Hinton Wood Products - Log Quality Specifications Jan-12

Cut to Length Sawlog Specifications:

Allowable Species	– Pine, Spruce, Balsam
Maximum Length	– 16' 8" (5.08 m)
Minimum Length	– 12' 4" (3.76 m)
Maximum Butt Diameter	– Infinite (Sawmill can only use 24" (0.61 m) but we find markets for oversize)
Minimum Top Diameter	– 4.33" (11 cm)

Preferred CTL lengths are:

- 16' 4" (4.98 m) to 16' 8" (5.08 m)
- 14' 4" (4.37 m) to 14' 8" (4.47m)
- 12' 4" (3.76 m) to 12' 8" (3.86 m)

DEFECT	DEFINITION	APPLICATION
Butt Flare	Where the butt end of the log is excessively flared (greater than 2.0") beyond the natural taper of the log.	When excessive butt flare exists the log will be cut back the necessary length to meet the 2.0" allowable parameter.
Butt Shatter	Any log that has broken or shattered fibre on the butt.	When butt shatter is present it will be cut out in 2.0ft increments until the shatter no longer persists. Greater care during falling and handling phases must be taken to prevent fibre loss. This will be monitored by the Company.
Cat Face	Any log between a 6.0" and 10.0" butt diameter where less than 65% of the diameter is present to make lumber from the point where the cat face is situated on the log.	Cut out the segment of the log that is impacted by cat face greater than the specified diameter. The cut point will be as close to the cat face on both ends ensuring that there is a minimal 12' 4" log above and below the infraction.
	Any log between a 10.1" and 24.0" butt diameter where less than 50% of the diameter is present to make lumber from the point where the cat face is situated on the log.	Cut out the segment of the log that is impacted by cat face greater than the specified diameter. The cut point will be as close to the cat face on both ends ensuring that there is a minimal 12' 4" log above and below the infraction.
Deformity (ie.burl)	Any major deformity and/or burl.	The specific section of major deformity along the length of the log will be cut out.
Fork	Any evidence of a fork including the bark seam.	A fork will be cut at the point of division on a log. The portions of the log above and below the fork will be merchandised if the log meets specification.
Pistol Grip	Severe curve or an abrupt bend at the base of the log.	Pistol grip will be cut out where there is greater than 50% displacement by diameter.
Rotten Butt		The portion of the log where rot exceeds 50% basal area will be cut out in 2.0ft increments until less than 50% of the basal area is effected.
Rotten Top	Any log where the rot in the top is greater than 50% of the basal area.	The portion of the log where rot exceeds 50% basal area will be cut out in 2.0ft increments until less than 50% of the basal area is effected.
Saw Cut/Plunge	Any log between a 6.0" and 10.0" butt diameter is not to have any saw cut/plunge. Any log between a 10.1" and 24.0" butt diameter is allowed a saw cut/plunge up to 2.0".	Areas of the saw cut/plunge exceeding the definition will be cut at the exact point of the infraction. Increased effort at the falling phase must be made to minimize such fibre loss. This will be monitored by the Company.
Sweep	Excessive sweep is identified when a tape measure leaves the surface of a log when it is run from center to center down a 16ft length.	Excessive sweep will be cut at the point(s) along the length of the log to achieve minimum sweep within the tolerances but also ensuring a minimum length.
Crook	A log which is offset at a point along its length	Crook will be cut out only where the exact section of the log is greater than 50% displacement by diameter. The portions of the logs above and below the crook will be merchandised if the log meets specification.
Top Shatter	Shatter in the top of the log where the diameter is greater than or equal to 4.72".	When top shatter is present it will be cut out in 2.0ft increments until the shatter no longer persists. Greater care during falling and handling phases must be taken to prevent fibre loss. This will be monitored by the Company.
Unacceptable Dry	Any dead, dry or severely checked log.	Dead, dry and severely checked logs will be left on the cutblock. Not calculated in the AAC.

Appendix E ARS/RSA Opening Information

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2006	1	5010541257N	1	N	Pl	Pl	3,227.5	19.61	-	-	-	0.0086	0.0018
2006	1	5180560917A	1	N	Sw	Sw	3,227.5	5.09	-	-	-	0.0085	0.0013
2006	1	5180561495A	1	N	Sw	Sw	3,227.5	8.74	-	-	-	0.0146	0.0022
2006	1	5180561719A	1	N	Sw	Sw	3,227.5	12.30	-	-	-	0.0206	0.0031
2006	1	5180561841A	1	N	Sw	Sw	3,227.5	10.24	-	-	-	0.0171	0.0026
2006	1	5180561854A	1	N	Sw	Sw	3,227.5	20.61	-	-	-	0.0345	0.0052
2006	1	5180561899A	1	N	Sw	Sw	3,227.5	12.96	-	-	-	0.0217	0.0033
2006	1	5190551499A	1	N	Pl	Pl	3,227.5	19.16	-	-	-	0.0084	0.0017
2006	1	5190552285A	1	N	HwSx/SwHw	HwSx/SwHw	3,227.5	81.07	-	-	-	0.6033	0.0598
2006	1	5190552305A	1	N	Sw	Sw	3,227.5	18.39	-	-	-	0.0308	0.0046
2006	1	5190552399A	1	N	PlHw/HwPl	PlHw/HwPl	3,227.5	16.12	-	-	-	0.1275	0.0187
2006	1	5190552651A	1	N	Pl	Pl	3,227.5	25.18	-	-	-	0.0111	0.0023
2006	1	5190552674A	1	N	NA	NA	3,227.5	2.60	-	-	-	0.0280	0.0155
2006	1	5190552696A	1	N	NA	NA	3,227.5	4.17	-	-	-	0.0449	0.0249
2006	1	5190553361A	1	N	PlHw/HwPl	PlHw/HwPl	3,227.5	22.64	-	-	-	0.1791	0.0262
2006	1	5190561019A	1	N	HwSx/SwHw	HwSx/SwHw	3,227.5	18.87	-	-	-	0.1404	0.0139
2006	1	5190561033A	1	N	PlHw/HwPl	PlHw/HwPl	3,227.5	34.32	-	-	-	0.2715	0.0397
2006	1	5190561046A	1	N	Pl	Pl	3,227.5	9.52	-	-	-	0.0042	0.0009
2006	1	5190561313A	1	N	Sw	Sw	3,227.5	3.94	-	-	-	0.0066	0.0010
2006	1	5190561381A	1	N	Sw	Sw	3,227.5	3.36	-	-	-	0.0056	0.0008
2006	1	5190561428A	1	N	Sw	Sw	3,227.5	1.18	-	-	-	0.0020	0.0003
2006	1	5190561485A	1	N	Sw	Sw	3,227.5	6.61	-	-	-	0.0111	0.0017
2006	1	5190561551A	1	N	Sw	Sw	3,227.5	20.30	-	-	-	0.0340	0.0051
2006	1	5190561575A	1	N	Sw	Sw	3,227.5	43.43	-	-	-	0.0727	0.0109
2006	1	5190562166A	1	N	Pl	Pl	3,227.5	30.80	-	-	-	0.0136	0.0028
2006	1	5190562314A	1	N	Sw	Sw	3,227.5	10.59	-	-	-	0.0177	0.0027
2006	1	5190562403A	1	N	Sw	Sw	3,227.5	2.94	-	-	-	0.0049	0.0007
2006	1	5190562908A	1	N	Sw	Sw	3,227.5	14.34	-	-	-	0.0240	0.0036
2006	1	5190565262A	1	N	Pl	Pl	3,227.5	1.87	-	-	-	0.0008	0.0002
2006	1	5200550346A	1	N	Sw	Sw	3,227.5	28.28	-	-	-	0.0473	0.0071
2006	1	5200550449N	1	N	Sw	Sw	3,227.5	18.09	-	-	-	0.0303	0.0045
2006	1	5200551542A	1	N	Pl	Pl	3,227.5	27.38	-	-	-	0.0121	0.0025
2006	1	5220550684A	1	N	Pl	Pl	3,227.5	10.03	-	-	-	0.0044	0.0009
2006	1	5220550781A	1	N	Pl	Pl	3,227.5	17.41	-	-	-	0.0077	0.0016
2006	1	5220550853A	1	N	Pl	Pl	3,227.5	57.01	-	-	-	0.0251	0.0051
2006	1	5220550896A	1	N	Pl	Pl	3,227.5	33.95	-	-	-	0.0150	0.0030
2006	1	5220551557A	1	N	Pl	Pl	3,227.5	4.52	-	-	-	0.0020	0.0004
2006	1	5220551591A	1	N	Pl	Pl	3,227.5	26.38	-	-	-	0.0116	0.0024
2006	1	5220552180A	1	N	Pl	Pl	3,227.5	33.67	-	-	-	0.0148	0.0030
2006	1	5230493355A	1	N	Sw	Sw	3,227.5	9.62	-	-	-	0.0161	0.0024
2006	1	5230493357A	1	N	Sw	Sw	3,227.5	11.68	-	-	-	0.0195	0.0029
2006	1	5230493358A	1	N	Sw	Sw	3,227.5	8.35	-	-	-	0.0140	0.0021
2006	1	5230500301A	1	N	Sw	Sw	3,227.5	0.63	-	-	-	0.0011	0.0002
2006	1	5230500302A	1	N	Pl	Pl	3,227.5	1.86	-	-	-	0.0008	0.0002
2006	1	5230500303A	1	N	Pl	Pl	3,227.5	2.96	-	-	-	0.0013	0.0003
2006	1	5230500402A	1	N	Pl	Pl	3,227.5	3.58	-	-	-	0.0016	0.0003
2006	1	5230503462A	1	N	Sw	Sw	3,227.5	19.55	-	-	-	0.0327	0.0049
2006	1	5230510820A	1	N	NA	NA	3,227.5	1.20	-	-	-	0.0129	0.0072
2006	1	5230510829A	1	N	Pl	Pl	3,227.5	2.48	-	-	-	0.0011	0.0002
2006	1	5230510956A	1	N	NA	NA	3,227.5	1.79	-	-	-	0.0193	0.0107
2006	1	5230510975A	1	N	NA	NA	3,227.5	10.66	-	-	-	0.1148	0.0636
2006	1	5230510976A	1	N	NA	NA	3,227.5	1.82	-	-	-	0.0196	0.0109
2006	1	5230511025A	1	N	NA	NA	3,227.5	15.35	-	-	-	0.1652	0.0916
2006	1	5230511032A	1	N	NA	NA	3,227.5	5.84	-	-	-	0.0629	0.0349
2006	1	5230511061A	1	N	NA	NA	3,227.5	5.80	-	-	-	0.0624	0.0346
2006	1	5230511151A	1	N	NA	NA	3,227.5	31.96	-	-	-	0.3441	0.1908
2006	1	5230511649A	1	N	Pl	Pl	3,227.5	69.15	-	-	-	0.0305	0.0062
2006	1	5230511685A	1	N	HwSx/SwHw	HwSx/SwHw	3,227.5	21.69	-	-	-	0.1614	0.0160
2006	1	5230511714A	1	N	NA	NA	3,227.5	8.45	-	-	-	0.0910	0.0504
2006	1	5230511733A	1	N	Sw	Sw	3,227.5	24.27	-	-	-	0.0406	0.0061
2006	1	5230511871A	1	N	NA	NA	3,227.5	0.72	-	-	-	0.0078	0.0043
2006	1	5230511874A	1	N	NA	NA	3,227.5	2.53	-	-	-	0.0272	0.0151
2006	1	5230511944A	1	N	Sw	Sw	3,227.5	12.30	-	-	-	0.0206	0.0031
2006	1	5230512003A	1	N	Sw	Sw	3,227.5	11.55	-	-	-	0.0193	0.0029
2006	1	5230512045A	1	N	Sw	Sw	3,227.5	11.70	-	-	-	0.0196	0.0029
2006	1	5230512077A	1	N	Pl	Pl	3,227.5	53.12	-	-	-	0.0234	0.0048
2006	1	5230512165A	1	N	Pl	Pl	3,227.5	38.94	-	-	-	0.0172	0.0035
2006	1	5230512776A	1	N	Pl	Pl	3,227.5	40.65	-	-	-	0.0179	0.0036
2006	1	5230541048A	1	N	HwSx/SwHw	HwSx/SwHw	3,227.5	12.74	-	-	-	0.0948	0.0094
2006	1	5230541089A	1	N	Pl	Pl	3,227.5	2.38	-	-	-	0.0010	0.0002
2006	1	5230541402A	1	N	Pl	Pl	3,227.5	9.62	-	-	-	0.0042	0.0009
2006	1	5230541415A	1	N	Pl	Pl	3,227.5	13.05	-	-	-	0.0057	0.0012
2006	1	5230541533A	1	N	Pl	Pl	3,227.5	26.75	-	-	-	0.0118	0.0024
2006	1	5230541582A	1	N	Pl	Pl	3,227.5	1.54	-	-	-	0.0007	0.0001
2006	1	5230542647A	1	N	Sw	Sw	3,227.5	53.78	-	-	-	0.0900	0.0135
2006	1	5230551855A	1	N	Pl	Pl	3,227.5	33.61	-	-	-	0.0148	0.0030
2006	1	5230560580A	1	N	Pl	Pl	3,227.5	1.66	-	-	-	0.0007	0.0001
2006	1	5230570254A	1	N	Pl	Pl	3,227.5	26.56	-	-	-	0.0117	0.0024
2006	1	5230570280A	1	N	Pl	Pl	3,227.5	30.87	-	-	-	0.0136	0.0028
2006	1	5240482905N	1	N	Pl	Pl	3,227.5	25.65	-	-	-	0.0113	0.0023
2006	1	5240482917N	1	N	Pl	Pl	3,227.5	34.20	-	-	-	0.0151	0.0031
2006	1	5240483065N	1	N	Pl	Pl	3,227.5	4.51	-	-	-	0.0020	0.0004
2006	1	5240483074N	1	N	Pl	Pl	3,227.5	3.00	-	-	-	0.0013	0.0003
2006	1	5240483092N	1	N	Pl	Pl	3,227.5	14.06	-	-	-	0.0062	0.0013
2006	1	5240483098N	1	N	Pl	Pl	3,227.5	6.74	-	-	-	0.0030	0.0006
2006	1	5240502958A	1	N	Pl	Pl	3,227.5	18.47	-	-	-	0.0081	0.0017
2006	1	5240502988A	1	N	Pl	Pl	3,227.5	13.80	-	-	-	0.0061	0.0012
2006	1	5240503251A	1	N	Pl	Pl	3,227.5	7.07	-	-	-	0.0031	0.0006
2006	1	5240503292A	1	N	Sw	Sw	3,227.5	12.66	-	-	-	0.0212	0.0032
2006	1	5240510300A	1	N	Sw	Sw	3,227.5	15.35	-	-	-	0.0257	0.0039
2006	1	5240511078A	1	N	Sw	Sw	3,227.5	6.30	-	-	-	0.0105	0.0016
2006	1	5240511416A	1	N	Sw	Sw	3,227.5	6.01	-	-	-	0.0101	0.0015
2006	1	5240511465A	1	N	Pl	Pl	3,227.5	5.32	-	-	-	0.0023	0.0005
2006	1	5240511521A	1	N	Sw	Sw	3,227.5	14.14	-	-	-	0.0237	0.0036
2006	1	5240511597A	1	N	Sw	Sw	3,227.5	5.93	-	-	-	0.0099	0.0015
2006	1	5240512335A	1	N	Sw	Sw	3,227.5	7.87	-	-	-	0.0132	0.0020
2006	1	5240512344A	1	N	Sw	Sw	3,227.5	7.04	-	-	-	0.0118	0.0018
2006	1	5240512362A	1	N	Sw	Sw	3,227.5	8.49	-	-	-	0.0142	0.0021
2006	1	5240512434A	1	N	Sw	Sw	3,227.5	12.03	-	-	-	0.0201	0.0030
2006	1	5240512458A	1	N	Sw	Sw	3,227.5	4.19	-	-	-	0.0070	0.0011
2006	1	5240512476A	1	N	Sw	Sw	3,227.5	14.12	-	-	-	0.0236	0.0035
2006	1	5240543371A	1	N	Pl	Pl	3,227.5	9.91	-	-	-	0.0044	0.0009
2006	1	5250531812A	1	N	Pl	Pl	3,227.5	32.70	-	-	-	0.0144	0.0029
2006	1	5250541141A	1	N	Pl	Pl	3,227.5	11.90	-	-	-	0.0052	0.0011
2006	1	5250541145A	1	N	Pl	Pl	3,227.5	17.09	-	-	-	0.0075	0.0015
2006	1	5250541287A	1	N	Pl	Pl	3,227.5	15.20	-	-	-	0.0067	0.0014

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2006	1	5250541396A	1	N	Pl	Pl	3,227.5	24.35	-	-	-	0.0107	0.0022
2006	1	5250541434A	1	N	Pl	Pl	3,227.5	17.05	-	-	-	0.0075	0.0015
2006	1	5250541492A	1	N	Pl	Pl	3,227.5	38.53	-	-	-	0.0170	0.0035
2006	1	5250541518A	1	N	Pl	Pl	3,227.5	25.73	-	-	-	0.0113	0.0023
2006	1	5250541636A	1	N	Pl	Pl	3,227.5	48.44	-	-	-	0.0213	0.0043
2006	1	5250541749A	1	N	Pl	Pl	3,227.5	29.91	-	-	-	0.0132	0.0027
2006	1	5250541947A	1	N	Sw	Sw	3,227.5	18.81	-	-	-	0.0315	0.0047
2006	1	5250542013A	1	N	Pl	Pl	3,227.5	54.82	-	-	-	0.0242	0.0049
2006	1	5250542084A	1	N	PlHw/HwPl	PlHw/HwPl	3,227.5	39.93	-	-	-	0.3158	0.0462
2006	1	5250542143A	1	N	Pl	Pl	3,227.5	16.17	-	-	-	0.0071	0.0014
2006	1	5250542175A	1	N	Pl	Pl	3,227.5	21.20	-	-	-	0.0093	0.0019
2006	1	5250542194A	1	N	Pl	Pl	3,227.5	22.32	-	-	-	0.0098	0.0020
2006	1	5250542417A	1	N	Pl	Pl	3,227.5	10.30	-	-	-	0.0045	0.0009
2006	1	5250542647A	1	N	Pl	Pl	3,227.5	1.62	-	-	-	0.0007	0.0001
2006	1	5250542880A	1	N	Pl	Pl	3,227.5	16.67	-	-	-	0.0073	0.0015
2006	1	5250542894A	1	N	PlHw/HwPl	PlHw/HwPl	3,227.5	13.42	-	-	-	0.1061	0.0155
2006	1	5250543418A	1	N	Pl	Pl	3,227.5	60.67	-	-	-	0.0267	0.0054
2006	1	5250550668A	1	N	Pl	Pl	3,227.5	18.06	-	-	-	0.0080	0.0016
2006	1	5250550730A	1	N	Pl	Pl	3,227.5	24.70	-	-	-	0.0109	0.0022
2006	1	5250551349A	1	N	Sw	Sw	3,227.5	57.54	-	-	-	0.0963	0.0144
2006	1	5250560352A	1	N	Hw	Hw	3,227.5	6.54	-	-	-	1.0000	0.1461
2006	1	5260540542A	1	N	Pl	Pl	3,227.5	29.79	-	-	-	0.0131	0.0027
2006	1	5260540574A	1	N	Pl	Pl	3,227.5	39.60	-	-	-	0.0174	0.0035
2006	1	5260540697A	1	N	Pl	Pl	3,227.5	27.65	-	-	-	0.0122	0.0025
2006	1	5270540708A	1	N	Pl	Pl	3,227.5	2.71	-	-	-	0.0012	0.0002
2006	1	5270540738A	1	N	Pl	Pl	3,227.5	12.54	-	-	-	0.0055	0.0011
2006	1	5270540832A	1	N	Pl	Pl	3,227.5	24.20	-	-	-	0.0107	0.0022
2006	1	5270540873A	1	N	Pl	Pl	3,227.5	39.46	-	-	-	0.0174	0.0035
2006	1	5270541198N	1	N	Pl	Pl	3,227.5	30.40	-	-	-	0.0134	0.0027
2006	1	5270541333A	1	N	Pl	Pl	3,227.5	10.08	-	-	-	0.0044	0.0009
2006	1	5270541482A	1	N	Pl	Pl	3,227.5	36.14	-	-	-	0.0159	0.0032
2006	1	5270541860A	1	N	Pl	Pl	3,227.5	2.05	-	-	-	0.0009	0.0002
2006	1	5270541861A	1	N	Pl	Pl	3,227.5	0.31	-	-	-	0.0001	0.0000
2006	1	5270541862A	1	N	Pl	Pl	3,227.5	1.25	-	-	-	0.0006	0.0001
2006	1	5270541867A	1	N	Pl	Pl	3,227.5	10.14	-	-	-	0.0045	0.0009
2006	1	5270541871A	1	N	Pl	Pl	3,227.5	4.40	-	-	-	0.0019	0.0004
2006	1	6010540218A	1	N	Pl	Pl	3,227.5	12.02	-	-	-	0.0053	0.0011
2006	1	6010540284A	1	N	Sb	Sw	3,227.5	2.25	-	-	-	0.0038	0.0006
2006	1	6010540316A	1	N	Pl	Pl	3,227.5	16.30	-	-	-	0.0072	0.0015
2006	1	6010540368A	1	N	Pl	Pl	3,227.5	36.99	-	-	-	0.0163	0.0033
2006	1	6010540375A	1	N	Pl	Pl	3,227.5	69.32	-	-	-	0.0305	0.0062
2006	1	6010540439A	1	N	Pl	Pl	3,227.5	2.50	-	-	-	0.0011	0.0002
2006	1	6010540488A	1	N	Pl	Pl	3,227.5	22.40	-	-	-	0.0099	0.0020
2006	1	6010540507A	1	N	Pl	Pl	3,227.5	3.72	-	-	-	0.0016	0.0003
2006	1	6010540616A	1	N	Pl	Pl	3,227.5	19.44	-	-	-	0.0086	0.0017
2006	1	6010540679A	1	N	Pl	Pl	3,227.5	4.82	-	-	-	0.0021	0.0004
2006	1	6010540795A	1	N	Pl	Pl	3,227.5	15.65	-	-	-	0.0069	0.0014
2006	1	6010540796A	1	N	Pl	Pl	3,227.5	5.64	-	-	-	0.0025	0.0005
2006	1	6010540812A	1	N	Pl	Pl	3,227.5	5.57	-	-	-	0.0025	0.0005
2006	1	6010540832A	1	N	Pl	Pl	3,227.5	5.74	-	-	-	0.0025	0.0005
2006	1	6010540874A	1	N	Pl	Pl	3,227.5	1.44	-	-	-	0.0006	0.0001
2006	1	6010540884A	1	N	Pl	Pl	3,227.5	7.28	-	-	-	0.0032	0.0007
2006	1	6010540940A	1	N	Pl	Pl	3,227.5	9.82	-	-	-	0.0043	0.0009
2006	1	6010541000A	1	N	Pl	Pl	3,227.5	19.34	-	-	-	0.0085	0.0017
2006	1	6010541113A	1	N	Pl	Pl	3,227.5	4.71	-	-	-	0.0021	0.0004
2006	1	6010541131A	1	N	Pl	Pl	3,227.5	15.39	-	-	-	0.0068	0.0014
2006	1	6010541136A	1	N	Pl	Pl	3,227.5	12.32	-	-	-	0.0054	0.0011
2006	1	6010541233A	1	N	Pl	Pl	3,227.5	20.35	-	-	-	0.0090	0.0018
2006	1	6010541235A	1	N	Pl	Pl	3,227.5	58.89	-	-	-	0.0259	0.0053
2006	1	6010541281A	1	N	Pl	Pl	3,227.5	1.58	-	-	-	0.0007	0.0001
2006	1	6010541291A	1	N	Pl	Pl	3,227.5	6.15	-	-	-	0.0027	0.0006
2006	1	6010541383A	1	N	Pl	Pl	3,227.5	26.75	-	-	-	0.0118	0.0024
2006	1	6010541386A	1	N	Pl	Pl	3,227.5	27.10	-	-	-	0.0119	0.0024
2006	1	6010541463A	1	N	Pl	Pl	3,227.5	13.43	-	-	-	0.0059	0.0012
2006	1	6020540421A	1	N	Pl	Pl	3,227.5	1.60	-	-	-	0.0007	0.0001
2006	1	6020541187A	1	N	Pl	Pl	3,227.5	15.79	-	-	-	0.0070	0.0014
2006	1	6020541215A	1	N	Pl	Pl	3,227.5	26.77	-	-	-	0.0118	0.0024
2006	1	6020541236A	1	N	Pl	Pl	3,227.5	7.17	-	-	-	0.0032	0.0006
2006	1	6020541285A	1	N	Pl	Pl	3,227.5	27.70	-	-	-	0.0122	0.0025
2006	1	6020541460A	1	N	Pl	Pl	3,227.5	33.10	-	-	-	0.0146	0.0030
2006	1	6020542718A	1	N	Pl	Pl	3,227.5	26.65	-	-	-	0.0117	0.0024
2006	1	6020543312A	1	N	Pl	Pl	3,227.5	10.46	-	-	-	0.0046	0.0009
2006	1	6020543324A	1	N	Pl	Pl	3,227.5	2.88	-	-	-	0.0013	0.0003
2006	1	6020543328A	1	N	Pl	Pl	3,227.5	21.32	-	-	-	0.0094	0.0019
2006	1	6020543350A	1	N	Pl	Pl	3,227.5	25.07	-	-	-	0.0110	0.0022
2006	1	6020543461A	1	N	Pl	Pl	3,227.5	7.11	-	-	-	0.0031	0.0006
2006	1	6020543478A	1	N	Pl	Pl	3,227.5	9.96	-	-	-	0.0044	0.0009
2006	1	6020543487A	1	N	Pl	Pl	3,227.5	13.34	-	-	-	0.0059	0.0012
2007	1	5180462901A	1	N	Sw	Sw	4,024.6	15.30	-	-	-	0.0126	0.0038
2007	1	5180463091A	1	N	Pl	Pl	4,024.6	68.78	-	-	-	0.0262	0.0062
2007	1	5180480700A	1	N	Sw	Sw	4,024.6	4.60	-	-	-	0.0038	0.0012
2007	1	5180561443A	1	N	Sw	Sw	4,024.6	33.75	-	-	-	0.0279	0.0085
2007	1	5180562299A	1	N	Sw	Sw	4,024.6	33.46	-	-	-	0.0276	0.0084
2007	1	5180562388A	1	N	Pl	Pl	4,024.6	38.55	-	-	-	0.0147	0.0035
2007	1	5180562653A	1	N	Sw	Sw	4,024.6	16.71	-	-	-	0.0138	0.0042
2007	1	5180563580A	1	N	Pl	Pl	4,024.6	5.82	-	-	-	0.0022	0.0005
2007	1	5180563625A	1	N	Sw	Sw	4,024.6	32.42	-	-	-	0.0268	0.0081
2007	1	5180563673A	1	N	Sw	Sw	4,024.6	41.67	-	-	-	0.0344	0.0105
2007	1	5190482600A	1	N	Pl	Pl	4,024.6	12.21	-	-	-	0.0046	0.0011
2007	1	5190483600A	1	N	Pl	Pl	4,024.6	55.49	-	-	-	0.0211	0.0050
2007	1	5190491600A	1	N	Pl	Pl	4,024.6	14.02	-	-	-	0.0053	0.0013
2007	1	5190492450A	1	N	Pl	Pl	4,024.6	22.60	-	-	-	0.0086	0.0020
2007	1	5190551139A	1	N	Sw	Sw	4,024.6	41.09	-	-	-	0.0339	0.0103
2007	1	5190551783A	1	N	HwSx/SwHw	HwSx/SwHw	4,024.6	53.38	-	-	-	0.8462	0.0394
2007	1	5190552046A	1	N	Sw	Sw	4,024.6	29.33	-	-	-	0.0242	0.0074
2007	1	5190563100A	1	N	Sw	Sw	4,024.6	37.46	-	-	-	0.0309	0.0094
2007	1	5200550497A	1	N	Sw	Sw	4,024.6	22.21	-	-	-	0.0183	0.0056
2007	1	5200560600A	1	N	Pl	Pl	4,024.6	61.01	-	-	-	0.0232	0.0055
2007	1	5210541042A	1	N	Sw	Sw	4,024.6	32.17	-	-	-	0.0266	0.0081
2007	1	5220511797A	1	N	Pl	Pl	4,024.6	14.12	-	-	-	0.0054	0.0013
2007	1	5220511803A	1	N	Pl	Pl	4,024.6	39.17	-	-	-	0.0149	0.0035
2007	1	5220511965A	1	N	Pl	Pl	4,024.6	53.64	-	-	-	0.0204	0.0048
2007	1	5220570400A	1	N	Pl	Pl	4,024.6	32.66	-	-	-	0.0124	0.0029
2007	1	5220570701A	1	N	Sw	Sw	4,024.6	13.90	-	-	-	0.0115	0.0035
2007	1	5220570702A	1	N	Pl	Pl	4,024.6	11.25	-	-	-	0.0043	0.0010
2007	1	5220570788A	1	N	Pl	Pl	4,024.6	14.46	-	-	-	0.0055	0.0013

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2007	1	5220570802A	1	N	Pl	Pl	4,024.6	30.44	-	-	-	0.0116	0.0027
2007	1	5220571700A	1	N	Pl	Pl	4,024.6	1.22	-	-	-	0.0005	0.0001
2007	1	5220571801A	1	N	Pl	Pl	4,024.6	4.77	-	-	-	0.0018	0.0004
2007	1	5220571803A	1	N	Pl	Pl	4,024.6	22.88	-	-	-	0.0087	0.0020
2007	1	5220571804A	1	N	Pl	Pl	4,024.6	6.30	-	-	-	0.0024	0.0006
2007	1	5220571900A	1	N	Pl	Pl	4,024.6	34.05	-	-	-	0.0130	0.0031
2007	1	5220572001A	1	N	Sw	Sw	4,024.6	21.05	-	-	-	0.0174	0.0053
2007	1	5220572100A	1	N	Pl	Pl	4,024.6	6.01	-	-	-	0.0023	0.0005
2007	1	5220572600A	1	N	Pl	Pl	4,024.6	45.48	-	-	-	0.0173	0.0041
2007	1	5220572900A	1	N	Sw	Sw	4,024.6	30.26	-	-	-	0.0250	0.0076
2007	1	5220573100A	1	N	Pl	Pl	4,024.6	4.43	-	-	-	0.0017	0.0004
2007	1	5220573200A	1	N	Pl	Pl	4,024.6	6.75	-	-	-	0.0026	0.0006
2007	1	5220573201A	1	N	Pl	Pl	4,024.6	34.68	-	-	-	0.0132	0.0031
2007	1	5220580300A	1	N	Sw	Sw	4,024.6	27.52	-	-	-	0.0227	0.0069
2007	1	5220580301A	1	N	Pl	Pl	4,024.6	20.76	-	-	-	0.0079	0.0019
2007	1	5220580400A	1	N	Pl	Pl	4,024.6	5.56	-	-	-	0.0021	0.0005
2007	1	5220580500A	1	N	Pl	Pl	4,024.6	2.86	-	-	-	0.0011	0.0003
2007	1	5220580501A	1	N	Pl	Pl	4,024.6	48.69	-	-	-	0.0185	0.0044
2007	1	5230481676A	1	N	Pl	Pl	4,024.6	84.49	-	-	-	0.0321	0.0076
2007	1	5230511167A	1	N	NA	NA	4,024.6	64.55	-	-	-	1.0000	0.3853
2007	1	5230511500A	1	N	Pl	Pl	4,024.6	33.39	-	-	-	0.0127	0.0030
2007	1	5230511720A	1	N	Sw	Sw	4,024.6	25.62	-	-	-	0.0212	0.0064
2007	1	5230511838A	1	N	Hw	Hw	4,024.6	10.96	-	-	-	1.0000	0.2449
2007	1	5230511966A	1	N	Sw	Sw	4,024.6	54.83	-	-	-	0.0453	0.0138
2007	1	5230512331A	1	N	Sw	Sw	4,024.6	81.02	-	-	-	0.0669	0.0203
2007	1	5230512338A	1	N	Sw	Sw	4,024.6	49.52	-	-	-	0.0409	0.0124
2007	1	5230512700A	1	N	Pl	Pl	4,024.6	33.42	-	-	-	0.0127	0.0030
2007	1	5230512711A	1	N	Pl	Pl	4,024.6	79.91	-	-	-	0.0304	0.0072
2007	1	5230512793A	1	N	Sw	Sw	4,024.6	35.60	-	-	-	0.0294	0.0089
2007	1	5230553314A	1	N	Pl	Pl	4,024.6	42.85	-	-	-	0.0163	0.0038
2007	1	5230553401A	1	N	Sw	Sw	4,024.6	77.76	-	-	-	0.0642	0.0195
2007	1	5230553425A	1	N	Pl	Pl	4,024.6	13.45	-	-	-	0.0051	0.0012
2007	1	5230553485A	1	N	Sw	Sw	4,024.6	30.31	-	-	-	0.0250	0.0076
2007	1	5230560301A	1	N	Sw	Sw	4,024.6	24.51	-	-	-	0.0202	0.0062
2007	1	5230560488A	1	N	Pl	Pl	4,024.6	30.90	-	-	-	0.0118	0.0028
2007	1	5230561015A	1	N	Pl	Pl	4,024.6	26.80	-	-	-	0.0102	0.0024
2007	1	5230561072A	1	N	Pl	Pl	4,024.6	15.51	-	-	-	0.0059	0.0014
2007	1	5230561127A	1	N	Pl	Pl	4,024.6	45.93	-	-	-	0.0175	0.0041
2007	1	5230561142A	1	N	Pl	Pl	4,024.6	33.13	-	-	-	0.0126	0.0030
2007	1	5230561183A	1	N	Pl	Pl	4,024.6	30.67	-	-	-	0.0117	0.0027
2007	1	5230561189A	1	N	Pl	Pl	4,024.6	38.53	-	-	-	0.0147	0.0035
2007	1	5230561445A	1	N	Pl	Pl	4,024.6	25.00	-	-	-	0.0095	0.0022
2007	1	5230561567A	1	N	PlHw/HwPl	PlHw/HwPl	4,024.6	27.04	-	-	-	0.5726	0.0313
2007	1	5230561582A	1	N	Sw	Sw	4,024.6	0.30	-	-	-	0.0002	0.0001
2007	1	5230561586A	1	N	Sw	Sw	4,024.6	2.64	-	-	-	0.0022	0.0007
2007	1	5230561697A	1	N	Pl	Pl	4,024.6	21.12	-	-	-	0.0080	0.0019
2007	1	5230562023A	1	N	Pl	Pl	4,024.6	15.85	-	-	-	0.0060	0.0014
2007	1	5230562058A	1	N	Pl	Pl	4,024.6	18.25	-	-	-	0.0069	0.0016
2007	1	5230562062A	1	N	Pl	Pl	4,024.6	34.32	-	-	-	0.0131	0.0031
2007	1	5230562095A	1	N	Pl	Pl	4,024.6	19.79	-	-	-	0.0075	0.0018
2007	1	5230562605A	1	N	Pl	Pl	4,024.6	18.74	-	-	-	0.0071	0.0017
2007	1	5230562700A	1	N	Sw	Sw	4,024.6	16.29	-	-	-	0.0135	0.0041
2007	1	5230562728A	1	N	Pl	Pl	4,024.6	28.76	-	-	-	0.0109	0.0026
2007	1	5230562762A	1	N	Pl	Pl	4,024.6	33.35	-	-	-	0.0127	0.0030
2007	1	5230562836A	1	N	Pl	Pl	4,024.6	10.98	-	-	-	0.0042	0.0010
2007	1	5230562853A	1	N	Pl	Pl	4,024.6	32.98	-	-	-	0.0125	0.0030
2007	1	5230563301A	1	N	Pl	Pl	4,024.6	12.65	-	-	-	0.0048	0.0011
2007	1	5230563315A	1	N	Sw	Sw	4,024.6	66.05	-	-	-	0.0546	0.0166
2007	1	5230563400A	1	N	Pl	Pl	4,024.6	11.97	-	-	-	0.0046	0.0011
2007	1	5230563468A	1	N	Pl	Pl	4,024.6	31.72	-	-	-	0.0121	0.0028
2007	1	5230570123A	1	N	Pl	Pl	4,024.6	25.05	-	-	-	0.0095	0.0022
2007	1	5230570208A	1	N	Pl	Pl	4,024.6	12.08	-	-	-	0.0046	0.0011
2007	1	5230570339A	1	N	Sw	Sw	4,024.6	41.39	-	-	-	0.0342	0.0104
2007	1	5230570365A	1	N	Pl	Pl	4,024.6	21.68	-	-	-	0.0082	0.0019
2007	1	5230571000A	1	N	Sw	Sw	4,024.6	25.65	-	-	-	0.0212	0.0064
2007	1	5230571064A	1	N	Sw	Sw	4,024.6	23.82	-	-	-	0.0197	0.0060
2007	1	5230571123A	1	N	Pl	Pl	4,024.6	18.19	-	-	-	0.0069	0.0016
2007	1	5230571129A	1	N	Sw	Sw	4,024.6	23.02	-	-	-	0.0190	0.0058
2007	1	5230571200A	1	N	Pl	Pl	4,024.6	17.50	-	-	-	0.0067	0.0016
2007	1	5230571219A	1	N	Pl	Pl	4,024.6	19.32	-	-	-	0.0074	0.0017
2007	1	5230571300A	1	N	Pl	Pl	4,024.6	5.58	-	-	-	0.0021	0.0005
2007	1	5230571302A	1	N	Pl	Pl	4,024.6	25.22	-	-	-	0.0096	0.0023
2007	1	5230571400A	1	N	Pl	Pl	4,024.6	12.34	-	-	-	0.0047	0.0011
2007	1	5230571501A	1	N	Pl	Pl	4,024.6	8.43	-	-	-	0.0032	0.0008
2007	1	5230571503A	1	N	Sw	Sw	4,024.6	15.23	-	-	-	0.0126	0.0038
2007	1	5230571827A	1	N	PlHw/HwPl	PlHw/HwPl	4,024.6	20.18	-	-	-	0.4274	0.0234
2007	1	5230571995A	1	N	Pl	Pl	4,024.6	40.54	-	-	-	0.0154	0.0036
2007	1	5230572100A	1	N	Pl	Pl	4,024.6	4.67	-	-	-	0.0018	0.0004
2007	1	5230572200A	1	N	Pl	Pl	4,024.6	10.87	-	-	-	0.0041	0.0010
2007	1	5230572301A	1	N	Pl	Pl	4,024.6	36.55	-	-	-	0.0139	0.0033
2007	1	5230572302A	1	N	Pl	Pl	4,024.6	32.23	-	-	-	0.0123	0.0029
2007	1	5230572601A	1	N	Pl	Pl	4,024.6	36.14	-	-	-	0.0138	0.0032
2007	1	5230572700A	1	N	Pl	Pl	4,024.6	23.76	-	-	-	0.0090	0.0021
2007	1	5230572701A	1	N	Pl	Pl	4,024.6	44.54	-	-	-	0.0169	0.0040
2007	1	5230573101A	1	N	Pl	Pl	4,024.6	7.32	-	-	-	0.0028	0.0007
2007	1	5230573500A	1	N	Pl	Pl	4,024.6	8.79	-	-	-	0.0033	0.0008
2007	1	5230573600A	1	N	Pl	Pl	4,024.6	7.48	-	-	-	0.0028	0.0007
2007	1	5230580100A	1	N	Pl	Pl	4,024.6	26.80	-	-	-	0.0102	0.0024
2007	1	5230580200A	1	N	Pl	Pl	4,024.6	4.24	-	-	-	0.0016	0.0004
2007	1	5230580300A	1	N	Pl	Pl	4,024.6	13.18	-	-	-	0.0050	0.0012
2007	1	5230580301A	1	N	Pl	Pl	4,024.6	17.68	-	-	-	0.0067	0.0016
2007	1	5240492611A	1	N	Pl	Pl	4,024.6	8.16	-	-	-	0.0031	0.0007
2007	1	5240503101A	1	N	Sw	Sw	4,024.6	16.20	-	-	-	0.0134	0.0041
2007	1	5240503275A	1	N	Sw	Sw	4,024.6	12.57	-	-	-	0.0104	0.0032
2007	1	5240510030A	1	N	NA	NA	4,024.6	-	-	-	-	-	-
2007	1	5240510301A	1	N	Pl	Pl	4,024.6	8.98	-	-	-	0.0034	0.0008
2007	1	5240510400A	1	N	Pl	Pl	4,024.6	3.11	-	-	-	0.0012	0.0003
2007	1	5240510481A	1	N	Pl	Pl	4,024.6	2.51	-	-	-	0.0010	0.0002
2007	1	5240511447A	1	N	Sw	Sw	4,024.6	17.32	-	-	-	0.0143	0.0043
2007	1	5240511539A	1	N	Sw	Sw	4,024.6	10.71	-	-	-	0.0088	0.0027
2007	1	5240511631A	1	N	Sw	Sw	4,024.6	7.66	-	-	-	0.0063	0.0019
2007	1	5240511657A	1	N	Sw	Sw	4,024.6	26.92	-	-	-	0.0222	0.0068
2007	1	5240511694A	1	N	Sw	Sw	4,024.6	24.60	-	-	-	0.0203	0.0062
2007	1	5240512200A	1	N	Sw	Sw	4,024.6	7.03	-	-	-	0.0058	0.0018
2007	1	5240512201A	1	N	Sw	Sw	4,024.6	9.44	-	-	-	0.0078	0.0024
2007	1	5240512251A	1	N	HwSx/SwHw	HwSx/SwHw	4,024.6	9.70	-	-	-	0.1538	0.0072

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2007	1	5240512400A	1	N	Sw	Sw	4,024.6	25.58	-	-	-	0.0211	0.0064
2007	1	5240541800A	1	N	Pl	Pl	4,024.6	41.31	-	-	-	0.0157	0.0037
2007	1	5240572300A	1	N	Pl	Pl	4,024.6	11.72	-	-	-	0.0045	0.0010
2007	1	5240572301A	1	N	Pl	Pl	4,024.6	13.63	-	-	-	0.0052	0.0012
2007	1	5240572302A	1	N	Sb	Sw	4,024.6	16.09	-	-	-	0.0133	0.0040
2007	1	5240572600A	1	N	Pl	Pl	4,024.6	15.07	-	-	-	0.0057	0.0014
2007	1	5260532500A	1	N	Pl	Pl	4,024.6	20.23	-	-	-	0.0077	0.0018
2007	1	5260540627A	1	N	Pl	Pl	4,024.6	56.10	-	-	-	0.0213	0.0050
2007	1	5260540700A	1	N	Pl	Pl	4,024.6	37.47	-	-	-	0.0143	0.0034
2007	1	5260540783A	1	N	Pl	Pl	4,024.6	62.95	-	-	-	0.0240	0.0056
2007	1	5260541000A	1	N	Sw	Sw	4,024.6	6.59	-	-	-	0.0054	0.0017
2007	1	5260541600A	1	N	Pl	Pl	4,024.6	31.68	-	-	-	0.0121	0.0028
2007	1	5260541603A	1	N	Pl	Pl	4,024.6	2.42	-	-	-	0.0009	0.0002
2007	1	5270541311A	1	N	Pl	Pl	4,024.6	18.20	-	-	-	0.0069	0.0016
2007	1	5280542400A	1	N	Pl	Pl	4,024.6	23.58	-	-	-	0.0090	0.0021
2007	1	6010530100A	1	N	Pl	Pl	4,024.6	12.92	-	-	-	0.0049	0.0012
2007	1	6010531501A	1	N	Pl	Pl	4,024.6	13.90	-	-	-	0.0053	0.0012
2007	1	6010531502A	1	N	Pl	Pl	4,024.6	21.00	-	-	-	0.0080	0.0019
2007	1	6010533201A	1	N	Pl	Pl	4,024.6	7.12	-	-	-	0.0027	0.0006
2007	1	6010533500A	1	N	Pl	Pl	4,024.6	85.50	-	-	-	0.0325	0.0077
2007	1	6010540836A	1	N	Sb	Sw	4,024.6	3.35	-	-	-	0.0028	0.0008
2007	1	6010543231A	1	N	Pl	Pl	4,024.6	45.37	-	-	-	0.0173	0.0041
2007	1	6010550570A	1	N	Pl	Pl	4,024.6	57.58	-	-	-	0.0219	0.0052
2007	1	6020540900A	1	N	Pl	Pl	4,024.6	4.43	-	-	-	0.0017	0.0004
2008	1	5180460400A	1	N	Pl	Pl	6,440.0	32.42	-	-	-	0.0073	0.0029
2008	1	5180460900A	1	N	Pl	Pl	6,440.0	21.68	-	-	-	0.0049	0.0019
2008	1	5180462947A	1	N	Pl	Pl	6,440.0	61.94	-	-	-	0.0139	0.0055
2008	1	5180480501A	1	N	Sw	Sw	6,440.0	14.81	-	-	-	0.0095	0.0037
2008	1	5180480900A	1	N	Sw	Sw	6,440.0	46.84	-	-	-	0.0301	0.0118
2008	1	5180481500A	1	N	Sw	Sw	6,440.0	58.35	-	-	-	0.0375	0.0147
2008	1	5180481900A	1	N	Sw	Sw	6,440.0	53.61	-	-	-	0.0345	0.0135
2008	1	5180490702A	1	N	Sw	Sw	6,440.0	74.28	-	-	-	0.0478	0.0187
2008	1	5180491501A	1	N	Pl	Pl	6,440.0	26.91	-	-	-	0.0060	0.0024
2008	1	5180492901A	1	N	Pl	Pl	6,440.0	16.05	-	-	-	0.0036	0.0014
2008	1	5180493101A	1	N	Pl	Pl	6,440.0	10.42	-	-	-	0.0023	0.0009
2008	1	5190481401A	1	N	Sw	Sw	6,440.0	49.55	-	-	-	0.0319	0.0124
2008	1	5190483601A	1	N	Pl	Pl	6,440.0	96.36	-	-	-	0.0216	0.0086
2008	1	5190490300A	1	N	Pl	Pl	6,440.0	36.88	-	-	-	0.0083	0.0033
2008	1	5190491337A	1	N	Pl	Pl	6,440.0	11.47	-	-	-	0.0026	0.0010
2008	1	5190491400A	1	N	Sw	Sw	6,440.0	44.11	-	-	-	0.0284	0.0111
2008	1	5190491401A	1	N	Pl	Pl	6,440.0	88.13	-	-	-	0.0197	0.0079
2008	1	5190492400A	1	N	Pl	Pl	6,440.0	50.25	-	-	-	0.0112	0.0045
2008	1	5190492401A	1	N	Sw	Sw	6,440.0	21.86	-	-	-	0.0141	0.0055
2008	1	5190492482A	1	N	Pl	Pl	6,440.0	8.60	-	-	-	0.0019	0.0008
2008	1	5190492600A	1	N	Pl	Pl	6,440.0	20.36	-	-	-	0.0046	0.0018
2008	1	5190551901A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	28.75	-	-	-	0.1106	0.0212
2008	1	5190552001A	1	N	Sw	Sw	6,440.0	11.95	-	-	-	0.0077	0.0030
2008	1	5190552901A	1	N	Sw	Sw	6,440.0	0.92	-	-	-	0.0006	0.0002
2008	1	5190553000A	1	N	NA	NA	6,440.0	-	-	-	-	-	-
2008	1	5190553001A	1	N	Sw	Sw	6,440.0	4.82	-	-	-	0.0031	0.0012
2008	1	5190553063A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	6.14	-	-	-	0.0236	0.0045
2008	1	5190553074A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	13.88	-	-	-	0.0534	0.0102
2008	1	5190553150A	1	N	Sw	Sw	6,440.0	41.88	-	-	-	0.0269	0.0105
2008	1	5190553173A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	1.91	-	-	-	0.0074	0.0014
2008	1	5190553195A	1	N	Sw	Sw	6,440.0	6.15	-	-	-	0.0040	0.0015
2008	1	5190553282A	1	N	Sw	Sw	6,440.0	23.85	-	-	-	0.0153	0.0060
2008	1	5190560401A	1	N	Sw	Sw	6,440.0	21.80	-	-	-	0.0140	0.0055
2008	1	5190560862A	1	N	Sw	Sw	6,440.0	17.11	-	-	-	0.0110	0.0043
2008	1	5190562015A	1	N	Sw	Sw	6,440.0	64.82	-	-	-	0.0417	0.0163
2008	1	5190562200A	1	N	Sw	Sw	6,440.0	8.80	-	-	-	0.0057	0.0022
2008	1	5190563200A	1	N	Pl	Pl	6,440.0	13.78	-	-	-	0.0031	0.0012
2008	1	5190563201A	1	N	Sw	Sw	6,440.0	8.64	-	-	-	0.0056	0.0022
2008	1	5190570600A	1	N	Pl	Pl	6,440.0	10.74	-	-	-	0.0024	0.0010
2008	1	5190570900A	1	N	Sw	Sw	6,440.0	11.49	-	-	-	0.0074	0.0029
2008	1	5200502600A	1	N	Pl	Pl	6,440.0	37.73	-	-	-	0.0084	0.0034
2008	1	5200502700A	1	N	Sw	Sw	6,440.0	54.91	-	-	-	0.0353	0.0138
2008	1	5200503200A	1	N	Pl	Pl	6,440.0	48.64	-	-	-	0.0109	0.0044
2008	1	5200503201A	1	N	Sw	Sw	6,440.0	19.79	-	-	-	0.0127	0.0050
2008	1	5200503203A	1	N	Sw	Sw	6,440.0	59.57	-	-	-	0.0383	0.0150
2008	1	5200503205A	1	N	Sw	Sw	6,440.0	23.94	-	-	-	0.0154	0.0060
2008	1	5200503301A	1	N	Pl	Pl	6,440.0	11.32	-	-	-	0.0025	0.0010
2008	1	5200503400A	1	N	Sw	Sw	6,440.0	60.52	-	-	-	0.0389	0.0152
2008	1	5200503501A	1	N	Sw	Sw	6,440.0	30.77	-	-	-	0.0198	0.0077
2008	1	5200550350A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	39.50	-	-	-	0.1520	0.0291
2008	1	5200560417A	1	N	Pl	Pl	6,440.0	33.63	-	-	-	0.0075	0.0030
2008	1	5200570200A	1	N	Pl	Pl	6,440.0	5.75	-	-	-	0.0013	0.0005
2008	1	5200570300A	1	N	Sw	Sw	6,440.0	25.73	-	-	-	0.0166	0.0065
2008	1	5200570402A	1	N	Sw	Sw	6,440.0	10.46	-	-	-	0.0067	0.0026
2008	1	5200570800A	1	N	Sw	Sw	6,440.0	4.48	-	-	-	0.0029	0.0011
2008	1	5200570900A	1	N	Sw	Sw	6,440.0	11.79	-	-	-	0.0076	0.0030
2008	1	5200571000A	1	N	Pl	Pl	6,440.0	2.04	-	-	-	0.0005	0.0002
2008	1	5200571707A	1	N	Sw	Sw	6,440.0	18.04	-	-	-	0.0116	0.0045
2008	1	5200571734A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	6.13	-	-	-	0.0236	0.0045
2008	1	5200571802A	1	N	Sw	Sw	6,440.0	34.37	-	-	-	0.0221	0.0086
2008	1	5200571928A	1	N	Sw	Sw	6,440.0	6.36	-	-	-	0.0041	0.0016
2008	1	5200571974A	1	N	Sw	Sw	6,440.0	7.01	-	-	-	0.0045	0.0018
2008	1	5200571982A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	11.05	-	-	-	0.0425	0.0081
2008	1	5200572003A	1	N	Sw	Sw	6,440.0	3.11	-	-	-	0.0020	0.0008
2008	1	5200573060A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	26.00	-	-	-	0.1001	0.0192
2008	1	5200573066A	1	N	Sw	Sw	6,440.0	47.95	-	-	-	0.0309	0.0120
2008	1	5200573094A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	37.36	-	-	-	0.1438	0.0275
2008	1	5210502600A	1	N	Pl	Pl	6,440.0	19.01	-	-	-	0.0043	0.0017
2008	1	5210503300A	1	N	Sw	Sw	6,440.0	3.20	-	-	-	0.0021	0.0008
2008	1	5210540911A	1	N	Sw	Sw	6,440.0	14.27	-	-	-	0.0092	0.0036
2008	1	5210540940A	1	N	Sw	Sw	6,440.0	5.59	-	-	-	0.0036	0.0014
2008	1	5210540991A	1	N	Sw	Sw	6,440.0	24.21	-	-	-	0.0156	0.0061
2008	1	5210543104A	1	N	PlHw/HwPl	PlHw/HwPl	6,440.0	30.51	-	-	-	0.2066	0.0353
2008	1	5210560702A	1	N	Pl	Pl	6,440.0	87.77	-	-	-	0.0196	0.0079
2008	1	5210561702A	1	N	Sw	Sw	6,440.0	1.25	-	-	-	0.0008	0.0003
2008	1	5210561703A	1	N	Sw	Sw	6,440.0	1.31	-	-	-	0.0008	0.0003
2008	1	5210561704A	1	N	Sw	Sw	6,440.0	1.72	-	-	-	0.0011	0.0004
2008	1	5210563209A	1	N	Sw	Sw	6,440.0	14.51	-	-	-	0.0093	0.0036
2008	1	5210563210A	1	N	Pl	Pl	6,440.0	5.41	-	-	-	0.0012	0.0005
2008	1	5210563211A	1	N	Pl	Pl	6,440.0	2.85	-	-	-	0.0006	0.0003
2008	1	5210563448A	1	N	Sw	Sw	6,440.0	22.32	-	-	-	0.0144	0.0056
2008	1	5210570422A	1	N	Sw	Sw	6,440.0	10.04	-	-	-	0.0065	0.0025

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2008	1	5210572474A	1	N	Sw	Sw	6,440.0	13.20	-	-	-	0.0085	0.0033
2008	1	5220500701A	1	N	Sw	Sw	6,440.0	55.41	-	-	-	0.0357	0.0139
2008	1	5220510601A	1	N	Sw	Sw	6,440.0	29.40	-	-	-	0.0189	0.0074
2008	1	5220511719A	1	N	Pl	Pl	6,440.0	35.51	-	-	-	0.0079	0.0032
2008	1	5220511801A	1	N	Pl	Pl	6,440.0	54.13	-	-	-	0.0121	0.0048
2008	1	5220511992A	1	N	Pl	Pl	6,440.0	18.46	-	-	-	0.0041	0.0017
2008	1	5220570700A	1	N	PlHw/HwPl	PlHw/HwPl	6,440.0	12.79	-	-	-	0.0866	0.0148
2008	1	5220571800A	1	N	Sw	Sw	6,440.0	38.22	-	-	-	0.0246	0.0096
2008	1	5220571802A	1	N	Pl	Pl	6,440.0	6.87	-	-	-	0.0015	0.0006
2008	1	5220571805A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	8.65	-	-	-	0.0333	0.0064
2008	1	5220571850A	1	N	Sw	Sw	6,440.0	25.99	-	-	-	0.0167	0.0065
2008	1	5220572000A	1	N	Pl	Pl	6,440.0	8.40	-	-	-	0.0019	0.0008
2008	1	5220572700A	1	N	Pl	Pl	6,440.0	18.94	-	-	-	0.0042	0.0017
2008	1	5220573400A	1	N	Sw	Sw	6,440.0	6.37	-	-	-	0.0041	0.0016
2008	1	5220580302A	1	N	Pl	Pl	6,440.0	34.66	-	-	-	0.0078	0.0031
2008	1	5220580303A	1	N	Sw	Sw	6,440.0	24.23	-	-	-	0.0156	0.0061
2008	1	5230502601A	1	N	Pl	Pl	6,440.0	29.65	-	-	-	0.0066	0.0027
2008	1	5230502602A	1	N	Pl	Pl	6,440.0	13.73	-	-	-	0.0031	0.0012
2008	1	5230503401A	1	N	Pl	Pl	6,440.0	2.42	-	-	-	0.0005	0.0002
2008	1	5230503501A	1	N	Pl	Pl	6,440.0	19.81	-	-	-	0.0044	0.0018
2008	1	5230511100A	1	N	PlHw/HwPl	PlHw/HwPl	6,440.0	37.59	-	-	-	0.2545	0.0435
2008	1	5230511101A	1	N	NA	NA	6,440.0	10.10	-	-	-	1.0000	0.0603
2008	1	5230511200A	1	N	PlHw/HwPl	PlHw/HwPl	6,440.0	15.74	-	-	-	0.1066	0.0182
2008	1	5230511321A	1	N	Pl	Pl	6,440.0	45.68	-	-	-	0.0102	0.0041
2008	1	5230511357A	1	N	Pl	Pl	6,440.0	34.80	-	-	-	0.0078	0.0031
2008	1	5230512000A	1	N	Pl	Pl	6,440.0	41.18	-	-	-	0.0092	0.0037
2008	1	5230560416A	1	N	Pl	Pl	6,440.0	14.59	-	-	-	0.0033	0.0013
2008	1	5230563101A	1	N	Pl	Pl	6,440.0	22.51	-	-	-	0.0050	0.0020
2008	1	5230563601A	1	N	Pl	Pl	6,440.0	27.39	-	-	-	0.0061	0.0025
2008	1	5230570501A	1	N	Pl	Pl	6,440.0	36.34	-	-	-	0.0081	0.0033
2008	1	5230570801A	1	N	Pl	Pl	6,440.0	13.41	-	-	-	0.0030	0.0012
2008	1	5230571301A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	14.50	-	-	-	0.0558	0.0107
2008	1	5230571502A	1	N	Pl	Pl	6,440.0	26.15	-	-	-	0.0059	0.0023
2008	1	5230571601A	1	N	Pl	Pl	6,440.0	34.03	-	-	-	0.0076	0.0030
2008	1	5230571800A	1	N	PlHw/HwPl	PlHw/HwPl	6,440.0	7.47	-	-	-	0.0506	0.0087
2008	1	5230571963A	1	N	Pl	Pl	6,440.0	34.50	-	-	-	0.0077	0.0031
2008	1	5230572000A	1	N	Pl	Pl	6,440.0	10.18	-	-	-	0.0023	0.0009
2008	1	5230572001A	1	N	Pl	Pl	6,440.0	13.50	-	-	-	0.0030	0.0012
2008	1	5230572003A	1	N	Pl	Pl	6,440.0	28.86	-	-	-	0.0065	0.0026
2008	1	5230572065A	1	N	Pl	Pl	6,440.0	20.31	-	-	-	0.0045	0.0018
2008	1	5230572300A	1	N	Pl	Pl	6,440.0	18.94	-	-	-	0.0042	0.0017
2008	1	5230572600A	1	N	Pl	Pl	6,440.0	19.89	-	-	-	0.0045	0.0018
2008	1	5230572702A	1	N	Pl	Pl	6,440.0	7.52	-	-	-	0.0017	0.0007
2008	1	5230572800A	1	N	Sw	Sw	6,440.0	3.79	-	-	-	0.0024	0.0010
2008	1	5230572900A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	30.19	-	-	-	0.1162	0.0223
2008	1	5230573000A	1	N	Pl	Pl	6,440.0	60.70	-	-	-	0.0136	0.0054
2008	1	5230573001A	1	N	Pl	Pl	6,440.0	23.86	-	-	-	0.0053	0.0021
2008	1	5230573002A	1	N	Pl	Pl	6,440.0	26.60	-	-	-	0.0060	0.0024
2008	1	5230573100A	1	N	HwSx/SwHw	HwSx/SwHw	6,440.0	35.78	-	-	-	0.1377	0.0264
2008	1	5230573102A	1	N	Pl	Pl	6,440.0	6.39	-	-	-	0.0014	0.0006
2008	1	5230573103A	1	N	Pl	Pl	6,440.0	41.70	-	-	-	0.0093	0.0037
2008	1	5230573202A	1	N	Pl	Pl	6,440.0	20.28	-	-	-	0.0045	0.0018
2008	1	5230573300A	1	N	Pl	Pl	6,440.0	29.38	-	-	-	0.0066	0.0026
2008	1	5230573301A	1	N	Pl	Pl	6,440.0	19.61	-	-	-	0.0044	0.0018
2008	1	5230573400A	1	N	Pl	Pl	6,440.0	19.85	-	-	-	0.0044	0.0018
2008	1	5230573401A	1	N	Pl	Pl	6,440.0	26.15	-	-	-	0.0059	0.0023
2008	1	5230573402A	1	N	Pl	Pl	6,440.0	7.29	-	-	-	0.0016	0.0007
2008	1	5230580302A	1	N	Pl	Pl	6,440.0	28.95	-	-	-	0.0065	0.0026
2008	1	5230580303A	1	N	Pl	Pl	6,440.0	15.88	-	-	-	0.0036	0.0014
2008	1	5230580304A	1	N	Pl	Pl	6,440.0	10.79	-	-	-	0.0024	0.0010
2008	1	5230580401A	1	N	Pl	Pl	6,440.0	51.17	-	-	-	0.0115	0.0046
2008	1	5230580423A	1	N	Pl	Pl	6,440.0	16.95	-	-	-	0.0038	0.0015
2008	1	5230580434A	1	N	Pl	Pl	6,440.0	7.65	-	-	-	0.0017	0.0007
2008	1	5230580465A	1	N	Pl	Pl	6,440.0	14.88	-	-	-	0.0033	0.0013
2008	1	5230580822A	1	N	Pl	Pl	6,440.0	23.80	-	-	-	0.0053	0.0021
2008	1	5230580860A	1	N	Pl	Pl	6,440.0	30.12	-	-	-	0.0067	0.0027
2008	1	5230580900A	1	N	Pl	Pl	6,440.0	48.15	-	-	-	0.0108	0.0043
2008	1	5230580901A	1	N	Pl	Pl	6,440.0	10.87	-	-	-	0.0024	0.0010
2008	1	5230580902A	1	N	Pl	Pl	6,440.0	53.50	-	-	-	0.0120	0.0048
2008	1	5230580940A	1	N	Pl	Pl	6,440.0	41.18	-	-	-	0.0092	0.0037
2008	1	5230581000A	1	N	Pl	Pl	6,440.0	26.86	-	-	-	0.0060	0.0024
2008	1	5230581001A	1	N	Pl	Pl	6,440.0	25.91	-	-	-	0.0058	0.0023
2008	1	5230581101A	1	N	Pl	Pl	6,440.0	19.78	-	-	-	0.0044	0.0018
2008	1	5230581500A	1	N	Pl	Pl	6,440.0	41.51	-	-	-	0.0093	0.0037
2008	1	5230581501A	1	N	Pl	Pl	6,440.0	21.38	-	-	-	0.0048	0.0019
2008	1	5230583283A	1	N	Pl	Pl	6,440.0	33.36	-	-	-	0.0075	0.0030
2008	1	5240482401A	1	N	Sw	Sw	6,440.0	19.96	-	-	-	0.0128	0.0050
2008	1	5240492622A	1	N	Pl	Pl	6,440.0	19.77	-	-	-	0.0044	0.0018
2008	1	5240492650A	1	N	Pl	Pl	6,440.0	18.09	-	-	-	0.0040	0.0016
2008	1	5240492676A	1	N	Pl	Pl	6,440.0	32.70	-	-	-	0.0073	0.0029
2008	1	5240492723A	1	N	Pl	Pl	6,440.0	18.48	-	-	-	0.0041	0.0017
2008	1	5240492842A	1	N	Pl	Pl	6,440.0	5.25	-	-	-	0.0012	0.0005
2008	1	5240492874A	1	N	Pl	Pl	6,440.0	49.60	-	-	-	0.0111	0.0044
2008	1	5240511300A	1	N	Sw	Sw	6,440.0	23.21	-	-	-	0.0149	0.0058
2008	1	5240511800A	1	N	Sw	Sw	6,440.0	26.02	-	-	-	0.0167	0.0065
2008	1	5240542101A	1	N	Pl	Pl	6,440.0	35.09	-	-	-	0.0079	0.0031
2008	1	5240542201A	1	N	PlHw/HwPl	PlHw/HwPl	6,440.0	28.03	-	-	-	0.1898	0.0325
2008	1	5240543101A	1	N	Pl	Pl	6,440.0	31.31	-	-	-	0.0070	0.0028
2008	1	5240550501A	1	N	Pl	Pl	6,440.0	26.19	-	-	-	0.0059	0.0023
2008	1	5240550601A	1	N	Pl	Pl	6,440.0	1.01	-	-	-	0.0002	0.0001
2008	1	5240550801A	1	N	Pl	Pl	6,440.0	17.29	-	-	-	0.0039	0.0015
2008	1	5240562301A	1	N	Pl	Pl	6,440.0	14.48	-	-	-	0.0032	0.0013
2008	1	5240562501A	1	N	Pl	Pl	6,440.0	6.05	-	-	-	0.0014	0.0005
2008	1	5240562502A	1	N	Pl	Pl	6,440.0	11.58	-	-	-	0.0026	0.0010
2008	1	5240563301A	1	N	Sw	Sw	6,440.0	115.01	-	-	-	0.0740	0.0289
2008	1	5240570201A	1	N	Pl	Pl	6,440.0	49.81	-	-	-	0.0111	0.0045
2008	1	5240571101A	1	N	Pl	Pl	6,440.0	13.80	-	-	-	0.0031	0.0012
2008	1	5240571300A	1	N	Pl	Pl	6,440.0	31.64	-	-	-	0.0071	0.0028
2008	1	5240572303A	1	N	Pl	Pl	6,440.0	17.12	-	-	-	0.0038	0.0015
2008	1	5240572304A	1	N	Pl	Pl	6,440.0	11.50	-	-	-	0.0026	0.0010
2008	1	5240572400A	1	N	Pl	Pl	6,440.0	44.53	-	-	-	0.0100	0.0040
2008	1	5240572401A	1	N	Pl	Pl	6,440.0	50.60	-	-	-	0.0113	0.0045
2008	1	5240572402A	1	N	Pl	Pl	6,440.0	7.42	-	-	-	0.0017	0.0007
2008	1	5240572500A	1	N	Pl	Pl	6,440.0	8.01	-	-	-	0.0018	0.0007
2008	1	5240572577A	1	N	Pl	Pl	6,440.0	57.33	-	-	-	0.0128	0.0051
2008	1	5240572601A	1	N	Pl	Pl	6,440.0	53.01	-	-	-	0.0119	0.0047

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2008	1	5240573402A	1	N	Pl	Pl	6,440.0	38.06	-	-	-	0.0085	0.0034
2008	1	5240573423A	1	N	Pl	Pl	6,440.0	27.30	-	-	-	0.0061	0.0024
2008	1	5250492667A	1	N	Pl	Pl	6,440.0	89.39	-	-	-	0.0200	0.0080
2008	1	5250540301A	1	N	Pl	Pl	6,440.0	8.22	-	-	-	0.0018	0.0007
2008	1	5250540302A	1	N	Pl	Pl	6,440.0	10.15	-	-	-	0.0023	0.0009
2008	1	5250540401A	1	N	Pl	Pl	6,440.0	75.44	-	-	-	0.0169	0.0068
2008	1	5250541001A	1	N	Pl	Pl	6,440.0	16.33	-	-	-	0.0037	0.0015
2008	1	5250541002A	1	N	Pl	Pl	6,440.0	22.35	-	-	-	0.0050	0.0020
2008	1	5250541003A	1	N	Pl	Pl	6,440.0	72.45	-	-	-	0.0162	0.0065
2008	1	5250541004A	1	N	Pl	Pl	6,440.0	22.23	-	-	-	0.0050	0.0020
2008	1	5250541502A	1	N	Pl	Pl	6,440.0	12.24	-	-	-	0.0027	0.0011
2008	1	5250541901A	1	N	Pl	Pl	6,440.0	37.42	-	-	-	0.0084	0.0034
2008	1	5250542001A	1	N	Pl	Pl	6,440.0	17.35	-	-	-	0.0039	0.0016
2008	1	5250542101A	1	N	Sw	Sw	6,440.0	8.25	-	-	-	0.0053	0.0021
2008	1	5250542301A	1	N	Pl	Pl	6,440.0	39.63	-	-	-	0.0089	0.0036
2008	1	5250542700A	1	N	Pl	Pl	6,440.0	62.89	-	-	-	0.0141	0.0056
2008	1	5250543301A	1	N	PlHw/HwPl	PlHw/HwPl	6,440.0	15.58	-	-	-	0.1055	0.0180
2008	1	5250543302A	1	N	Pl	Pl	6,440.0	10.48	-	-	-	0.0023	0.0009
2008	1	5260533400A	1	N	Sw	Sw	6,440.0	8.92	-	-	-	0.0057	0.0022
2008	1	5260540908A	1	N	Pl	Pl	6,440.0	43.87	-	-	-	0.0098	0.0039
2008	1	5260540909A	1	N	Pl	Pl	6,440.0	51.38	-	-	-	0.0115	0.0046
2008	1	5260541285A	1	N	Sw	Sw	6,440.0	43.83	-	-	-	0.0282	0.0110
2008	1	5260541601A	1	N	Pl	Pl	6,440.0	29.84	-	-	-	0.0067	0.0027
2008	1	5260541882A	1	N	Pl	Pl	6,440.0	32.11	-	-	-	0.0072	0.0029
2008	1	5260542000A	1	N	Pl	Pl	6,440.0	26.05	-	-	-	0.0058	0.0023
2008	1	5260542100A	1	N	Pl	Pl	6,440.0	24.87	-	-	-	0.0056	0.0022
2008	1	5260542904A	1	N	Pl	Pl	6,440.0	5.35	-	-	-	0.0012	0.0005
2008	1	5260543302A	1	N	Sw	Sw	6,440.0	9.49	-	-	-	0.0061	0.0024
2008	1	5260572901A	1	N	Pl	Pl	6,440.0	29.91	-	-	-	0.0067	0.0027
2008	1	5270533100A	1	N	Pl	Pl	6,440.0	28.56	-	-	-	0.0064	0.0026
2008	1	5270533300A	1	N	Pl	Pl	6,440.0	6.57	-	-	-	0.0015	0.0006
2008	1	5270541201A	1	N	Pl	Pl	6,440.0	12.65	-	-	-	0.0028	0.0011
2008	1	5270541707A	1	N	Pl	Pl	6,440.0	9.79	-	-	-	0.0022	0.0009
2008	1	5270541749A	1	N	Pl	Pl	6,440.0	4.79	-	-	-	0.0011	0.0004
2008	1	5270541863A	1	N	Pl	Pl	6,440.0	5.55	-	-	-	0.0012	0.0005
2008	1	5270542402A	1	N	Pl	Pl	6,440.0	21.62	-	-	-	0.0048	0.0019
2008	1	5270542403A	1	N	Pl	Pl	6,440.0	32.43	-	-	-	0.0073	0.0029
2008	1	5270542502A	1	N	Pl	Pl	6,440.0	35.39	-	-	-	0.0079	0.0032
2008	1	5270550104A	1	N	Pl	Pl	6,440.0	25.68	-	-	-	0.0057	0.0023
2008	1	5270551103A	1	N	Pl	Pl	6,440.0	2.69	-	-	-	0.0006	0.0002
2008	1	5270551104A	1	N	Pl	Pl	6,440.0	0.89	-	-	-	0.0002	0.0001
2008	1	5270551201A	1	N	Pl	Pl	6,440.0	31.90	-	-	-	0.0071	0.0029
2008	1	6010531401A	1	N	Pl	Pl	6,440.0	27.67	-	-	-	0.0062	0.0025
2008	1	6010531601A	1	N	Pl	Pl	6,440.0	22.03	-	-	-	0.0049	0.0020
2008	1	6010532101A	1	N	Pl	Pl	6,440.0	19.86	-	-	-	0.0044	0.0018
2008	1	6010533101A	1	N	Pl	Pl	6,440.0	44.92	-	-	-	0.0101	0.0040
2008	1	6010533202A	1	N	Pl	Pl	6,440.0	33.16	-	-	-	0.0074	0.0030
2008	1	6010541813A	1	N	Pl	Pl	6,440.0	13.42	-	-	-	0.0030	0.0012
2008	1	6020540201A	1	N	Pl	Pl	6,440.0	8.54	-	-	-	0.0019	0.0008
2008	1	6020540301A	1	N	Pl	Pl	6,440.0	42.48	-	-	-	0.0095	0.0038
2008	1	6020540401A	1	N	Pl	Pl	6,440.0	12.12	-	-	-	0.0027	0.0011
2008	1	6020540801A	1	N	Pl	Pl	6,440.0	18.53	-	-	-	0.0041	0.0017
2008	1	6020540901A	1	N	Pl	Pl	6,440.0	24.81	-	-	-	0.0056	0.0022
2008	1	6020540902A	1	N	Pl	Pl	6,440.0	7.83	-	-	-	0.0018	0.0007
2008	1	6020541001A	1	N	Pl	Pl	6,440.0	25.61	-	-	-	0.0057	0.0023
2008	1	6020541002A	1	N	Pl	Pl	6,440.0	7.89	-	-	-	0.0018	0.0007
2008	1	6020541101A	1	N	Pl	Pl	6,440.0	7.57	-	-	-	0.0017	0.0007
2008	1	6020541901A	1	N	Pl	Pl	6,440.0	46.95	-	-	-	0.0105	0.0042
2008	1	6020542001A	1	N	Pl	Pl	6,440.0	3.38	-	-	-	0.0008	0.0003
2008	1	6020542002A	1	N	Pl	Pl	6,440.0	3.68	-	-	-	0.0008	0.0003
2008	1	6020542003A	1	N	Pl	Pl	6,440.0	20.14	-	-	-	0.0045	0.0018
2008	1	6020542004A	1	N	Pl	Pl	6,440.0	23.76	-	-	-	0.0053	0.0021
2008	1	6020542005A	1	N	Pl	Pl	6,440.0	12.73	-	-	-	0.0028	0.0011
2008	1	6020542006A	1	N	Pl	Pl	6,440.0	11.84	-	-	-	0.0026	0.0011
2008	1	6030551901A	1	N	Pl	Pl	6,440.0	13.62	-	-	-	0.0030	0.0012
2008	1	6030552600A	1	N	Pl	Pl	6,440.0	18.60	-	-	-	0.0042	0.0017
2008	1	6030552903A	1	N	Pl	Pl	6,440.0	12.37	-	-	-	0.0028	0.0011
2008	1	6030553000A	1	N	Pl	Pl	6,440.0	14.04	-	-	-	0.0031	0.0013
2008	1	6030553001A	1	N	Pl	Pl	6,440.0	13.55	-	-	-	0.0030	0.0012
2008	1	6030553100A	1	N	Pl	Pl	6,440.0	4.69	-	-	-	0.0010	0.0004
2008	1	6030553200A	1	N	Pl	Pl	6,440.0	18.73	-	-	-	0.0042	0.0017
2008	1	6030553201A	1	N	Pl	Pl	6,440.0	21.15	-	-	-	0.0047	0.0019
2009	1	5180480600A	1	Y	SwHw	HwSx/SwHw	4,681.3	22.51	16.00	0.8792	18.1984	0.0597	0.0233
2009	1	5180482800A	3	Y	HwSx	HwSx/SwHw	4,681.3	0.54	0.53	1.0000	0.5347	0.0018	0.0007
2009	1	5190483201A	2	Y	SwHw	HwSx/SwHw	4,681.3	27.70	8.32	0.8836	9.4196	0.0309	0.0121
2009	1	5190492500A	1	Y	Pl	Pl	4,681.3	5.89	5.89	0.0550	107.0758	0.0950	0.0011
2009	1	5190492500A	2	Y	Pl	Pl	4,681.3	5.06	5.06	0.0512	98.7607	0.0876	0.0010
2009	1	5190552601A	1	Y	SwHw	HwSx/SwHw	4,681.3	9.35	9.35	0.8836	10.5764	0.0347	0.0135
2009	1	5190552701A	1	Y	HwSx	HwSx/SwHw	4,681.3	24.80	16.00	1.0000	16.0000	0.0525	0.0205
2009	1	5200482501A	2	Y	PlHw	PlHw/HwPl	4,681.3	9.99	10.00	1.0000	9.9954	0.0798	0.0152
2009	1	5200491201A	1	Y	SwHw	HwSx/SwHw	4,681.3	14.42	14.42	0.8740	16.5030	0.0542	0.0211
2009	1	5200500020A	1	Y	SwHw	HwSx/SwHw	4,681.3	1.94	1.95	0.8840	2.2013	0.0072	0.0028
2009	1	5200502002A	1	Y	PlHw	PlHw/HwPl	4,681.3	5.23	5.23	1.0000	5.2311	0.0418	0.0079
2009	1	5200502701A	1	Y	Pl	Pl	4,681.3	9.88	14.33	0.4064	35.2624	0.0313	0.0004
2009	1	5200502701A	2	Y	PlHw	PlHw/HwPl	4,681.3	14.33	9.88	1.0000	9.8802	0.0789	0.0150
2009	1	5200502800A	1	Y	SwHw	HwSx/SwHw	4,681.3	26.95	16.00	0.8792	18.1984	0.0597	0.0233
2009	1	5200503202A	1	Y	SwHw	HwSx/SwHw	4,681.3	30.94	16.00	0.8856	18.0668	0.0593	0.0231
2009	1	5200503204A	2	Y	HwSx	HwSx/SwHw	4,681.3	13.63	13.64	1.0000	13.6384	0.0448	0.0175
2009	1	5200503300A	2	Y	SwHw	HwSx/SwHw	4,681.3	3.82	3.82	0.8920	4.2828	0.0141	0.0055
2009	1	5200503500A	1	Y	PlHw	PlHw/HwPl	4,681.3	11.48	11.48	1.0000	11.4847	0.0917	0.0174
2009	1	5200503500A	2	Y	HwPl	PlHw/HwPl	4,681.3	2.25	2.26	1.0000	2.2551	0.0180	0.0034
2009	1	5210502500A	2	Y	PlHw	PlHw/HwPl	4,681.3	18.89	16.00	1.0000	16.0000	0.1278	0.0243
2009	1	5210503403A	1	Y	Pl	Pl	4,681.3	22.23	16.00	0.4108	38.9484	0.0346	0.0004
2009	1	5210503403A	2	Y	PlHw	PlHw/HwPl	4,681.3	44.39	16.00	1.0000	16.0000	0.1278	0.0243
2009	1	5210510201A	1	Y	PlHw	PlHw/HwPl	4,681.3	3.82	2.67	1.0000	2.6715	0.0213	0.0040
2009	1	5210511001A	1	Y	Sw	Sw	4,681.3	7.52	7.53	0.1794	41.9633	0.0566	0.0023
2009	1	5210511001A	2	Y	Pl	Pl	4,681.3	25.40	16.00	0.1310	122.1374	0.1084	0.0013
2009	1	5210511001A	3	Y	Pl	Pl	4,681.3	4.26	4.27	0.1202	35.5079	0.0315	0.0004
2009	1	5210540607A	1	Y	Sw	Sw	4,681.3	1.13	1.13	0.1440	7.8586	0.0106	0.0004
2009	1	5210540701A	1	Y	Sw	Sw	4,681.3	51.63	16.00	0.1364	117.3021	0.1583	0.0063
2009	1	5210540702A	1	Y	HwSx	HwSx/SwHw	4,681.3	34.82	16.00	1.0000	16.0000	0.0525	0.0205
2009	1	5210541301A	1	Y	HwSx	HwSx/SwHw	4,681.3	53.00	16.00	1.0000	16.0000	0.0525	0.0205
2009	1	5210560801A	1	Y	Sw	Sw	4,681.3	25.26	16.00	0.1440	111.1111	0.1499	0.0060
2009	1	5210561701A	3	Y	PlHw	PlHw/HwPl	4,681.3	2.13	2.14	1.0000	2.1390	0.0171	0.0032
2009	1	5210562001A	1	Y	Sw	Sw	4,681.3	11.41	11.42	0.1382	82.6077	0.1115	0.0045
2009	1	5220540101A	1	Y	Sw	Sw	4,681.3	18.91	16.00	0.1472	108.6957	0.1467	0.0059

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2009	1	5220540102A	1	Y	SwHw	HwSx/SwHw	4,681.3	1.42	1.42	0.8844	1.6059	0.0053	0.0021
2009	1	5220540201A	1	Y	Sw	Sw	4,681.3	3.76	3.76	0.1418	26.5224	0.0358	0.0014
2009	1	5220541137A	1	Y	SwHw	HwSx/SwHw	4,681.3	34.69	16.00	0.8774	18.2357	0.0599	0.0234
2009	1	5230500401A	1	Y	Pl	Pl	4,681.3	8.19	15.83	0.3290	48.1034	0.0427	0.0005
2009	1	5230500401A	2	Y	SwHw	HwSx/SwHw	4,681.3	15.82	8.19	0.8940	9.1656	0.0301	0.0117
2009	1	5230501102A	1	Y	HwSx	HwSx/SwHw	4,681.3	2.79	2.80	1.0000	2.7960	0.0092	0.0036
2009	1	5230502303A	1	Y	SwHw	HwSx/SwHw	4,681.3	42.36	16.00	0.8762	18.2607	0.0599	0.0234
2009	1	5230502401A	1	Y	Pl	Pl	4,681.3	3.42	5.18	0.6068	8.5376	0.0076	0.0001
2009	1	5230502401A	2	Y	PlHw	PlHw/HwPl	4,681.3	7.73	7.73	1.0000	7.7329	0.0618	0.0117
2009	1	5230502401A	3	Y	HwPl	PlHw/HwPl	4,681.3	5.18	3.43	1.0000	3.4259	0.0274	0.0052
2009	1	5230502901A	1	Y	SwHw	HwSx/SwHw	4,681.3	38.15	16.00	0.8862	18.0546	0.0593	0.0231
2009	1	5230511801A	1	Y	HwSx	HwSx/SwHw	4,681.3	41.22	16.00	1.0000	16.0000	0.0525	0.0205
2009	1	5230511802A	1	Y	HwSx	HwSx/SwHw	4,681.3	16.76	16.00	1.0000	16.0000	0.0525	0.0205
2009	1	5230562201A	1	Y	Pl	Pl	4,681.3	22.86	16.00	0.9880	16.1943	0.0144	0.0002
2009	1	5230562201A	3	Y	Hw	Hw	4,681.3	1.45	1.45	1.0000	1.4525	1.0000	0.0324
2009	1	5240482302A	1	Y	Sw	Sw	4,681.3	19.05	16.00	0.1430	111.8881	0.1510	0.0061
2009	1	5240482303A	1	Y	Sw	Sw	4,681.3	18.40	16.00	0.1402	114.1227	0.1540	0.0062
2009	1	5240492701A	1	Y	PlHw	PlHw/HwPl	4,681.3	16.07	16.00	1.0000	16.0000	0.1278	0.0243
2009	1	5240492701A	2	Y	PlHw	PlHw/HwPl	4,681.3	3.76	3.76	1.0000	3.7640	0.0301	0.0057
2009	1	5240492901A	1	Y	PlHw	PlHw/HwPl	4,681.3	15.40	15.40	1.0000	15.4025	0.1230	0.0233
2009	1	5240510401A	1	Y	HwSx	HwSx/SwHw	4,681.3	8.37	8.38	1.0000	8.3764	0.0275	0.0107
2009	1	5240511001A	1	Y	PlHw	PlHw/HwPl	4,681.3	3.22	3.22	1.0000	3.2200	0.0257	0.0049
2009	1	5240511401A	1	Y	SwHw	HwSx/SwHw	4,681.3	20.72	16.00	0.8728	18.3318	0.0602	0.0235
2009	1	5240512601A	1	Y	SwHw	HwSx/SwHw	4,681.3	42.52	16.00	0.8776	18.2315	0.0598	0.0234
2009	1	5240551505A	1	Y	Sw	Sw	4,681.3	2.60	2.61	0.1368	19.0429	0.0257	0.0010
2009	1	5260542700A	1	Y	Pl	Pl	4,681.3	3.67	3.67	0.0318	115.5447	0.1025	0.0012
2009	1	5260552101A	1	Y	Pl	Pl	4,681.3	2.64	3.07	0.0596	51.5352	0.0457	0.0005
2009	1	5260552101A	2	Y	Pl	Pl	4,681.3	3.07	2.64	0.0568	46.4798	0.0412	0.0005
2009	1	5260552606A	2	Y	Pl	Pl	4,681.3	3.44	7.24	0.0566	127.8407	0.1134	0.0013
2009	1	5260552606A	3	Y	Pl	Pl	4,681.3	7.23	3.45	0.0538	64.0810	0.0568	0.0007
2009	1	5270543403A	1	Y	Pl	Pl	4,681.3	5.53	5.53	0.0262	211.2229	0.1874	0.0022
2010	1	5180483601A	2	Y	Sb	Sw	11,031.8	6.69	6.6900	0.0824	81.1893	0.0502	0.0015
2010	1	5180483601A	3	Y	Pl	Pl	11,031.8	2.17	2.1700	0.1196	18.1438	0.0040	0.0001
2010	1	5180483601A	4	Y	Pl	Pl	11,031.8	27.28	16.0000	0.1258	127.1860	0.0282	0.0010
2010	1	5190480201A	2	Y	Pl	Pl	11,031.8	21.50	16.0000	0.0722	221.6066	0.0491	0.0018
2010	1	5190480201A	4	Y	Pl	Pl	11,031.8	8.21	8.2100	0.0696	117.9598	0.0261	0.0010
2010	1	5190482605A	1	Y	Pl	Pl	11,031.8	17.61	16.0000	0.0716	223.4637	0.0495	0.0018
2010	1	5190482605A	2	Y	Pl	Pl	11,031.8	11.03	11.0300	0.0682	161.7302	0.0358	0.0013
2010	1	5190482801A	2	Y	Pl	Pl	11,031.8	11.03	11.0300	0.5740	19.2160	0.0043	0.0002
2010	1	5190482801A	3	Y	PlHw	PlHw/HwPl	11,031.8	12.83	12.8300	0.9210	13.9305	0.0979	0.0183
2010	1	5190482803A	1	Y	PlHw	PlHw/HwPl	11,031.8	20.42	16.0000	0.9082	17.6173	0.1239	0.0231
2010	1	5190491700A	1	Y	SwHw	HwSx/SwHw	11,031.8	12.50	12.5000	0.5624	22.2262	0.1053	0.0110
2010	1	5190491700A	2	Y	Sw	Sw	11,031.8	14.23	14.2300	0.2066	68.8771	0.0426	0.0012
2010	1	5190491701A	1	Y	SwHw	HwSx/SwHw	11,031.8	12.09	12.0900	0.5356	22.5728	0.1070	0.0112
2010	1	5190491702A	1	Y	Pl	Pl	11,031.8	4.67	4.6700	0.3290	14.1945	0.0031	0.0001
2010	1	5190491702A	2	Y	SwHw	HwSx/SwHw	11,031.8	3.68	3.6800	0.5404	6.8098	0.0323	0.0034
2010	1	5190491802A	1	Y	Pl	Pl	11,031.8	53.35	16.0000	0.0458	349.3450	0.0774	0.0029
2010	1	5200492400A	1	Y	PlHw	PlHw/HwPl	11,031.8	5.56	5.5600	0.9160	6.0699	0.0427	0.0080
2010	1	5200500054C	1	Y	SwHw	HwSx/SwHw	11,031.8	2.38	2.3800	0.5438	4.3766	0.0207	0.0022
2010	1	5200502702A	2	Y	Pl	Pl	11,031.8	8.08	8.0800	0.0570	141.7544	0.0314	0.0012
2010	1	5200502802A	1	Y	Pl	Pl	11,031.8	11.57	11.5700	0.0576	200.8681	0.0445	0.0017
2010	1	5200503100A	1	Y	Sw	Sw	11,031.8	19.30	16.0000	0.0528	303.0303	0.1872	0.0055
2010	1	5200503100A	2	Y	Pl	Pl	11,031.8	12.43	12.4300	0.0738	168.4282	0.0373	0.0014
2010	1	5200503600A	1	Y	SwHw	HwSx/SwHw	11,031.8	37.97	16.0000	0.5332	30.0075	0.1422	0.0148
2010	1	5200543001A	1	Y	Pl	Pl	11,031.8	1.90	1.9000	0.0768	24.7396	0.0055	0.0002
2010	1	5200543001A	2	Y	Sw	Sw	11,031.8	13.70	13.7000	0.0558	245.5197	0.1517	0.0044
2010	1	5200571003A	1	Y	Sw	Sw	11,031.8	12.38	12.3800	0.0834	148.4412	0.0917	0.0027
2010	1	5200571003A	3	Y	Sw	Sw	11,031.8	6.93	6.9300	0.0742	93.3962	0.0577	0.0017
2010	1	5200571604A	2	Y	HwSx	HwSx/SwHw	11,031.8	2.67	2.6700	0.7906	3.3772	0.0160	0.0017
2010	1	5200571604A	3	Y	SwHw	HwSx/SwHw	11,031.8	5.50	5.5000	0.8308	6.6201	0.0314	0.0033
2010	1	5210542606A	3	Y	Pl	Pl	11,031.8	3.74	3.7400	0.1032	36.2403	0.0080	0.0003
2010	1	5220502101A	1	Y	Pl	Pl	11,031.8	18.35	16.0000	0.1052	152.0913	0.0337	0.0013
2010	1	5220502101A	2	Y	Pl	Pl	11,031.8	2.50	2.5000	0.0956	26.1506	0.0058	0.0002
2010	1	5220502504A	2	Y	Pl	Pl	11,031.8	24.65	16.0000	0.0430	372.0930	0.0824	0.0031
2010	1	5220502504A	3	Y	Sb	Sw	11,031.8	2.53	2.5300	0.0360	70.2778	0.0434	0.0013
2010	1	5220540107A	1	Y	SwHw	HwSx/SwHw	11,031.8	16.10	16.0000	0.5402	29.6187	0.1404	0.0146
2010	1	5220572702A	1	Y	PlHw	PlHw/HwPl	11,031.8	18.22	16.0000	0.9218	17.3573	0.1220	0.0228
2010	1	5220573203A	2	Y	PlHw	PlHw/HwPl	11,031.8	18.95	16.0000	0.9220	17.3536	0.1220	0.0228
2010	1	5220573404A	2	Y	Sw	Sw	11,031.8	32.10	16.0000	0.0274	583.9416	0.3608	0.0105
2010	1	5220580304A	2	Y	SwHw	HwSx/SwHw	11,031.8	11.80	11.8000	0.5390	21.8924	0.1037	0.0108
2010	1	5220580305A	2	Y	PlHw	PlHw/HwPl	11,031.8	31.46	16.0000	0.9132	17.5208	0.1232	0.0230
2010	1	5230501502A	1	Y	Hw	Hw	11,031.8	1.25	1.2500	1.0000	1.2500	0.3378	0.0279
2010	1	5230552900A	2	Y	Pl	Pl	11,031.8	10.85	10.8500	0.3354	32.3494	0.0072	0.0003
2010	1	5230552900A	3	Y	SwHw	HwSx/SwHw	11,031.8	11.57	11.5700	0.5484	21.0977	0.1000	0.0104
2010	1	5230570600A	3	Y	PlHw	PlHw/HwPl	11,031.8	5.62	5.6200	0.9228	6.0902	0.0428	0.0080
2010	1	5230571505A	1	Y	HwPl	PlHw/HwPl	11,031.8	3.04	3.0400	0.9152	3.3217	0.0234	0.0044
2010	1	5230571802A	2	Y	Pl	Pl	11,031.8	2.76	2.7600	0.0906	30.4636	0.0067	0.0003
2010	1	5230571802A	3	Y	Pl	Pl	11,031.8	21.51	16.0000	0.1002	159.6806	0.0354	0.0013
2010	1	5240550902A	2	Y	SbHw	HwSx/SwHw	11,031.8	5.18	5.1800	0.5426	9.5466	0.0452	0.0047
2010	1	5240562800A	2	Y	Pl	Pl	11,031.8	17.54	16.0000	0.0738	216.8022	0.0480	0.0018
2010	1	5240570017A	1	Y	Pl	Pl	11,031.8	10.63	10.6300	0.7196	14.7721	0.0033	0.0001
2010	1	5240570017A	2	Y	HwSx	HwSx/SwHw	11,031.8	4.15	4.1500	0.9118	4.5514	0.0216	0.0023
2010	1	5240570017A	3	Y	PlHw	PlHw/HwPl	11,031.8	3.35	3.3500	0.9578	3.4976	0.0246	0.0046
2010	1	5240571003A	2	Y	PlHw	PlHw/HwPl	11,031.8	18.77	16.0000	1.0000	16.0000	0.1125	0.0210
2010	1	5240571003A	3	Y	HwPl	PlHw/HwPl	11,031.8	3.86	3.8600	0.9884	3.9053	0.0275	0.0051
2010	1	5240571102A	2	Y	PlHw	PlHw/HwPl	11,031.8	1.94	1.9400	0.9170	2.1156	0.0149	0.0028
2010	1	5240571102A	3	Y	Pl	Pl	11,031.8	1.83	1.8300	0.5998	3.0510	0.0007	0.0000
2010	1	5240571102A	4	Y	Sb	Sw	11,031.8	1.46	1.4600	0.3586	4.0714	0.0025	0.0001
2010	1	5240571205A	1	Y	Pl	Pl	11,031.8	11.99	11.9900	0.9976	12.0188	0.0027	0.0001
2010	1	5240571205A	2	Y	PlHw	PlHw/HwPl	11,031.8	13.13	13.1300	1.0000	13.1300	0.0923	0.0172
2010	1	5240571205A	3	Y	Hw	Hw	11,031.8	2.45	2.4500	1.0000	2.4500	0.6622	0.0547
2010	1	5240580862A	1	Y	Pl	Pl	11,031.8	33.19	16.0000	0.5692	28.1096	0.0062	0.0002
2010	1	5240580862A	2	Y	Sw	Sw	11,031.8	6.86	6.8600	0.3452	19.8725	0.0123	0.0004
2010	1	5240580862A	3	Y	PlHw	PlHw/HwPl	11,031.8	3.97	3.9700	0.9188	4.3209	0.0304	0.0057
2010	1	5260540501A	1	Y	SwHw	HwSx/SwHw	11,031.8	9.80	9.8000	0.5630	17.4067	0.0825	0.0086
2010	1	5260541401A	2	Y	Pl	Pl	11,031.8	2.24	2.2400	0.0336	66.6667	0.0148	0.0005
2010	1	5260541401A	3	Y	Pl	Pl	11,031.8	14.88	14.8800	0.0368	404.3478	0.0896	0.0033
2010	1	5260550502A	1	Y	Pl	Pl	11,031.8	17.32	16.0000	0.0424	377.3585	0.0836	0.0031
2010	1	5260550502A	2	Y	Pl	Pl	11,031.8	2.38	2.3800	0.0396	60.1010	0.0133	0.0005
2010	1	5260552203A	4	Y	SwHw	HwSx/SwHw	11,031.8	6.14	6.1400	0.5624	10.9175	0.0517	0.0054
2010	1	5270540701A	1	Y	Pl	Pl	11,031.8	27.26	16.0000	0.0218	733.9450	0.1626	0.0060
2010	2	5200551001A	1	N	Pl	Pl	156.2	8.15	-	-	-	0.0916	0.0007
2010	2	5200551001A	2	N	MxPl	PlHw/HwPl	156.2	3.57	-	-	-	0.0923	0.0041
2010	2	5200551002A	1	N	Pl	Pl	156.2	6.46	-	-	-	0.0726	0.0006
2010	2	5200551011A	1	N	MxPl	PlHw/HwPl	156.2	18.27	-	-	-	0.4725	0.0212
2010	2	5200551012A	1	N	Pl	Pl	156.2	5.87	-	-	-	0.0660	0.0005

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2010	2	5200551012A	2	N	MxPl	PlHw/HwPl	156.2	2.44	-	-	-	0.0631	0.0028
2010	2	5200551031A	1	N	Pl	Pl	156.2	8.30	-	-	-	0.0933	0.0007
2010	2	5200551032A	1	N	Pl	Pl	156.2	17.99	-	-	-	0.2022	0.0016
2010	2	5200551032A	2	N	MxPl	PlHw/HwPl	156.2	7.24	-	-	-	0.1872	0.0084
2010	2	5200551033A	1	N	Pl	Pl	156.2	12.99	-	-	-	0.1460	0.0012
2010	2	5200551033A	2	N	MxPl	PlHw/HwPl	156.2	2.25	-	-	-	0.0582	0.0026
2010	2	5200551035A	1	N	Sw	Sw	156.2	2.69	-	-	-	0.0943	0.0007
2010	2	5200551036A	1	N	Sw	Sw	156.2	15.87	-	-	-	0.5561	0.0040
2010	2	5200551037A	1	N	Sw	Sw	156.2	9.98	-	-	-	0.3497	0.0025
2010	2	5200551038A	1	N	Pl	Pl	156.2	11.34	-	-	-	0.1275	0.0010
2010	2	5200551038A	2	N	MxPl	PlHw/HwPl	156.2	4.90	-	-	-	0.1267	0.0057
2010	2	5200551041A	1	N	Pl	Pl	156.2	17.85	-	-	-	0.2007	0.0016
2010	3	5210542000A	1	N	Sw	Sw	81.7	23.74	-	-	-	0.5681	0.0060
2010	3	5210542000A	2	N	Pl	Pl	81.7	26.08	-	-	-	0.6536	0.0023
2010	3	5220502501A	2	N	Pl	Pl	81.7	12.49	-	-	-	0.3130	0.0011
2010	3	5220502501A	3	N	Sw	Sw	81.7	3.58	-	-	-	0.0857	0.0009
2010	3	5220502501A	4	N	Sw	Sw	81.7	6.78	-	-	-	0.1622	0.0017
2010	3	5240510402A	1	N	Sw	Sw	81.7	7.69	-	-	-	0.1840	0.0019
2010	3	6020541401A	1	N	Pl	Pl	81.7	1.33	-	-	-	0.0333	0.0001
2011	1	5180491001A	2	Y	Pl	Pl	5,494.3	55.36	16.0000	0.0946	169.1332	0.0437	0.0021
2011	1	5180542728A	1	Y	Pl	Pl	5,494.3	2.44	2.4400	0.1030	23.6893	0.0061	0.0003
2011	1	5180550373A	1	Y	Pl	Pl	5,494.3	8.04	8.0400	0.1588	50.6297	0.0131	0.0006
2011	1	5180550373A	2	Y	Sw	Sw	5,494.3	8.56	8.5600	0.1170	73.1624	0.0548	0.0015
2011	1	5180551002A	1	Y	Pl	Pl	5,494.3	15.50	15.5000	0.0926	167.3866	0.0432	0.0020
2011	1	5180551014A	1	Y	Pl	Pl	5,494.3	1.58	1.5800	0.1030	15.3398	0.0040	0.0002
2011	1	5180551018A	1	Y	Pl	Pl	5,494.3	7.04	7.0400	0.9866	7.1356	0.0018	0.0001
2011	1	5180551018A	2	Y	PlHw	PlHw/HwPl	5,494.3	10.24	10.2400	1.0000	10.2400	0.1727	0.0134
2011	1	5180551018A	3	Y	HwSx	HwSx/SwHw	5,494.3	4.54	4.5400	1.0000	4.5400	0.0819	0.0056
2011	1	5180551356A	1	Y	PlHw	PlHw/HwPl	5,494.3	23.75	16.0000	1.0000	16.0000	0.2698	0.0210
2011	1	5190473300A	3	Y	PlHw	PlHw/HwPl	5,494.3	4.95	4.9500	1.0000	4.9500	0.0835	0.0065
2011	1	5190480701A	1	Y	SwHw	HwSx/SwHw	5,494.3	38.89	16.0000	1.0000	16.0000	0.2888	0.0198
2011	1	5190480701A	2	Y	Hw	Hw	5,494.3	6.18	6.1800	1.0000	6.1800	0.5402	0.1381
2011	1	5190482201A	1	Y	Pl	Pl	5,494.3	65.05	16.0000	0.0388	412.3711	0.1064	0.0050
2011	1	5190483203A	1	Y	Pl	Pl	5,494.3	26.72	16.0000	0.8028	19.9302	0.0051	0.0002
2011	1	5190483203A	2	Y	Sw	Sw	5,494.3	5.01	5.0100	0.7200	6.9583	0.0052	0.0001
2011	1	5190483203A	3	Y	HwPl	PlHw/HwPl	5,494.3	8.75	8.7500	1.0000	8.7500	0.1475	0.0115
2011	1	5190492002A	1	Y	Pl	Pl	5,494.3	12.87	12.8700	0.0872	147.5917	0.0381	0.0018
2011	1	5190492002A	2	Y	Sw	Sw	5,494.3	5.46	5.4600	0.0842	64.8456	0.0486	0.0013
2011	1	5190493101A	2	Y	Pl	Pl	5,494.3	3.28	3.2800	0.0638	51.4107	0.0133	0.0006
2011	1	5190493101A	3	Y	Pl	Pl	5,494.3	7.78	7.7800	0.0698	111.4613	0.0288	0.0014
2011	1	5190493300A	1	Y	Sw	Sw	5,494.3	17.97	16.0000	0.0592	270.2703	0.2025	0.0055
2011	1	5190502600A	1	Y	Pl	Pl	5,494.3	29.90	16.0000	0.1098	145.7195	0.0376	0.0018
2011	1	5190570801A	1	Y	Pl	Pl	5,494.3	7.15	7.1500	0.0922	77.5488	0.0200	0.0009
2011	1	5190570801A	2	Y	Sw	Sw	5,494.3	7.40	7.4000	0.0900	82.2222	0.0616	0.0017
2011	1	5190570802A	1	Y	Sw	Sw	5,494.3	15.62	15.6200	0.0578	270.2422	0.2025	0.0055
2011	1	5200482400A	1	Y	Pl	Pl	5,494.3	4.38	4.3800	0.8996	4.8688	0.0013	0.0001
2011	1	5200482400A	2	Y	Pl	Pl	5,494.3	14.44	14.4400	0.9240	15.6277	0.0040	0.0002
2011	1	5200482400A	3	Y	HwSx	HwSx/SwHw	5,494.3	30.88	16.0000	1.0000	16.0000	0.2888	0.0198
2011	1	5200482450A	1	Y	Pl	Pl	5,494.3	4.77	4.7700	0.9052	5.2696	0.0014	0.0001
2011	1	5200482450A	2	Y	HwSx	HwSx/SwHw	5,494.3	8.92	8.9200	1.0000	8.9200	0.1610	0.0111
2011	1	5200543003A	1	Y	SwHw	HwSx/SwHw	5,494.3	5.33	5.3300	1.0000	5.3300	0.0962	0.0066
2011	1	5200571504A	1	Y	Sw	Sw	5,494.3	20.33	16.0000	0.0550	290.9091	0.2180	0.0060
2011	1	5220503303A	1	Y	Pl	Pl	5,494.3	36.39	16.0000	0.0342	467.8363	0.1208	0.0057
2011	1	5220541102A	1	Y	Pl	Pl	5,494.3	16.90	16.0000	0.1052	152.0913	0.0393	0.0018
2011	1	5230500261A	1	Y	Pl	Pl	5,494.3	22.10	16.0000	0.0334	479.0419	0.1237	0.0058
2011	1	5230501727A	1	Y	Pl	Pl	5,494.3	12.08	12.0800	0.0384	314.5833	0.0812	0.0038
2011	1	5230533601A	1	Y	Pl	Pl	5,494.3	19.70	16.0000	0.1108	144.4043	0.0373	0.0018
2011	1	5230533602A	1	Y	Hw	Hw	5,494.3	2.41	2.4100	1.0000	2.4100	0.2107	0.0539
2011	1	5230533603A	1	Y	HwPl	PlHw/HwPl	5,494.3	4.66	4.6600	1.0000	4.6600	0.0786	0.0061
2011	1	5230533605A	1	Y	Pl	Pl	5,494.3	5.74	5.7400	0.9608	5.9742	0.0015	0.0001
2011	1	5230533605A	2	Y	HwSx	HwSx/SwHw	5,494.3	4.61	4.6100	1.0000	4.6100	0.0832	0.0057
2011	1	5230540101A	1	Y	Pl	Pl	5,494.3	19.87	16.0000	0.9926	16.1193	0.0042	0.0002
2011	1	5230540101A	3	Y	Sw	Sw	5,494.3	3.22	3.2200	0.9620	3.3472	0.0025	0.0001
2011	1	5230540101A	4	Y	Hw	Hw	5,494.3	2.85	2.8500	1.0000	2.8500	0.2491	0.0637
2011	1	5230540204A	1	Y	Sw	Sw	5,494.3	7.18	7.1800	0.7546	9.5150	0.0071	0.0002
2011	1	5230540204A	3	Y	Pl	Pl	5,494.3	2.72	2.7200	0.9084	2.9943	0.0008	0.0000
2011	1	5230540204A	4	Y	Pl	Pl	5,494.3	6.00	6.0000	0.9356	6.4130	0.0017	0.0001
2011	1	5230540204A	5	Y	HwPl	PlHw/HwPl	5,494.3	3.85	3.8500	1.0000	3.8500	0.0649	0.0050
2011	1	5230580502A	1	Y	Pl	Pl	5,494.3	16.77	16.0000	0.1044	153.2567	0.0396	0.0019
2011	1	5240480901A	1	Y	Pl	Pl	5,494.3	79.84	16.0000	0.0354	451.9774	0.1167	0.0055
2011	1	5240481429A	1	Y	Sw	Sw	5,494.3	18.33	16.0000	0.0608	263.1579	0.1972	0.0054
2011	1	5240562702A	1	Y	Pl	Pl	5,494.3	8.08	8.0800	0.1100	73.4545	0.0190	0.0009
2011	1	5240580770A	4	Y	PlHw	PlHw/HwPl	5,494.3	7.70	7.7000	1.0000	7.7000	0.1298	0.0101
2011	1	5260543404A	1	Y	HwPl	PlHw/HwPl	5,494.3	3.16	3.1600	1.0000	3.1600	0.0533	0.0041
2011	1	5270543003A	1	Y	Pl	Pl	5,494.3	9.50	9.5000	0.0742	128.0323	0.0330	0.0016
2011	1	5270543003A	3	Y	Pl	Pl	5,494.3	3.49	3.4900	0.0660	52.8788	0.0136	0.0006
2012	1	5170562070A	1	Y	Pl	Pl	8,034.4	5.60	5.6000	0.2980	18.7919	0.0042	0.0002
2012	1	5170562070A	2	Y	HwPl	PlHw/HwPl	8,034.4	5.70	5.7000	0.5836	9.7670	0.0605	0.0078
2012	1	5170562149A	2	Y	HwSx	HwSx/SwHw	8,034.4	13.10	13.1000	1.0000	13.1000	0.1145	0.0114
2012	1	5170562753A	1	Y	Pl	Pl	8,034.4	19.82	16.0000	0.1360	117.6471	0.0265	0.0014
2012	1	5170562753A	2	Y	Pl	Pl	8,034.4	10.61	10.6100	0.1264	83.9399	0.0189	0.0010
2012	1	5170562758A	2	Y	PlHw	PlHw/HwPl	8,034.4	3.55	3.5500	0.5916	6.0007	0.0372	0.0048
2012	1	5170562846A	1	Y	Pl	Pl	8,034.4	23.19	16.0000	0.2938	54.4588	0.0123	0.0006
2012	1	5170562846A	2	Y	PlHw	PlHw/HwPl	8,034.4	8.48	8.4800	0.5892	14.3924	0.0892	0.0115
2012	1	5180472285A	1	Y	Pl	Pl	8,034.4	9.97	9.9700	0.0800	124.6250	0.0281	0.0015
2012	1	5180472285A	2	Y	Sw	Sw	8,034.4	3.34	3.3400	0.0670	49.8507	0.0273	0.0011
2012	1	5180472285A	3	Y	Pl	Pl	8,034.4	2.98	2.9800	0.0764	39.0052	0.0088	0.0005
2012	1	5180473542A	1	Y	PlHw	PlHw/HwPl	8,034.4	3.49	3.4900	0.5504	6.3408	0.0393	0.0051
2012	1	5180473636A	1	Y	Pl	Pl	8,034.4	12.36	12.3600	0.0394	313.7056	0.0708	0.0037
2012	1	5180473636A	2	Y	Pl	Pl	8,034.4	10.82	10.8200	0.0368	294.0217	0.0663	0.0034
2012	1	5180480222A	1	Y	Pl	Pl	8,034.4	23.32	16.0000	0.0616	259.7403	0.0586	0.0030
2012	1	5180480222A	2	Y	Sw	Sw	8,034.4	15.90	15.9000	0.0574	277.0035	0.1515	0.0063
2012	1	5180483301A	1	Y	Pl	Pl	8,034.4	14.52	14.5200	0.9880	14.6964	0.0033	0.0002
2012	1	5180483301A	2	Y	Sw	Sw	8,034.4	5.57	5.5700	0.9512	5.8558	0.0032	0.0001
2012	1	5180483301A	3	Y	Hw	Hw	8,034.4	7.95	7.9500	1.0000	7.9500	0.7458	0.1777
2012	1	5180483301A	4	Y	Pl	Pl	8,034.4	25.03	16.0000	0.9922	16.1258	0.0036	0.0002
2012	1	5180483301A	5	Y	Pl	Pl	8,034.4	3.43	3.4300	0.9828	3.4900	0.0008	0.0000
2012	1	5190492301A	2	Y	SwHw	HwSx/SwHw	8,034.4	7.86	7.8600	1.0000	7.8600	0.0687	0.0068
2012	1	5190492302A	1	Y	Pl	Pl	8,034.4	63.83	16.0000	0.9818	16.2966	0.0037	0.0002
2012	1	5190492302A	2	Y	Hw	Hw	8,034.4	2.71	2.7100	1.0000	2.7100	0.2542	0.0606
2012	1	5190492302A	3	Y	PlHw	PlHw/HwPl	8,034.4	5.51	5.5100	1.0000	5.5100	0.0341	0.0044
2012	1	5190500307A	2	Y	HwSx	HwSx/SwHw	8,034.4	2.68	2.6800	1.0000	2.6800	0.0234	0.0023
2012	1	5200551381A	1	Y	PlHw	PlHw/HwPl	8,034.4	0.71	0.7100	0.5490	1.2933	0.0080	0.0010
2012	1	5200551382A	1	Y	Sw	Sw	8,034.4	25.12	16.0000	0.0372	430.1075	0.2352	0.0097
2012	1	5200552484A	2	Y	HwSx	HwSx/SwHw	8,034.4	2.96	2.9600	1.0000	2.9600	0.0259	0.0026
2012	1	5200570801A	1	Y	Pl	Pl	8,034.4	18.92	16.0000	0.1014	157.7909	0.0356	0.0018

Timber Year	Population	Opening	Polygon	System Type	RSA Strata	Yield Class	RSA Population Area	RSA Area	Area_X	Sel_Weight	Comp_weight	RSA Weight	Final Weight
2012	1	5200570801A	3	Y	Sw	Sw	8,034.4	20.35	16.0000	0.0866	184.7575	0.1010	0.0042
2012	1	5200571506A	1	Y	Sw	Sw	8,034.4	53.52	16.0000	0.0414	386.4734	0.2113	0.0088
2012	1	5210540103A	1	Y	Sw	Sw	8,034.4	2.09	2.0900	0.0394	53.0457	0.0290	0.0012
2012	1	5210562672A	1	Y	Pl	Pl	8,034.4	42.00	16.0000	0.1040	153.8462	0.0347	0.0018
2012	1	5210562964A	1	Y	Sw	Sw	8,034.4	11.02	11.0200	0.4442	24.8086	0.0136	0.0006
2012	1	5210562964A	2	Y	Pl	Pl	8,034.4	12.55	12.5500	0.5810	21.6007	0.0049	0.0003
2012	1	5210562964A	3	Y	HwSx	HwSx/SwHw	8,034.4	5.87	5.8700	1.0000	5.8700	0.0513	0.0051
2012	1	5210563176A	1	Y	HwSx	HwSx/SwHw	8,034.4	21.97	16.0000	1.0000	16.0000	0.1399	0.0139
2012	1	5210563176A	3	Y	SwHw	HwSx/SwHw	8,034.4	5.95	5.9500	1.0000	5.9500	0.0520	0.0052
2012	1	5210563469A	1	Y	PlHw	PlHw/HwPl	8,034.4	20.13	16.0000	0.9628	16.6182	0.1030	0.0133
2012	1	5210563469A	2	Y	Sw	Sw	8,034.4	11.29	11.2900	0.5390	20.9462	0.0115	0.0005
2012	1	5210563469A	3	Y	HwSx	HwSx/SwHw	8,034.4	2.00	2.0000	1.0000	2.0000	0.0175	0.0017
2012	1	5210563469A	4	Y	Pl	Pl	8,034.4	10.14	10.1400	0.6684	15.1706	0.0034	0.0002
2012	1	5220503203A	1	Y	Pl	Pl	8,034.4	27.45	16.0000	0.0744	215.0538	0.0485	0.0025
2012	1	5220510302A	1	Y	Pl	Pl	8,034.4	2.99	2.9900	0.0756	39.5503	0.0089	0.0005
2012	1	5220510401A	1	Y	Pl	Pl	8,034.4	25.48	16.0000	0.2920	54.7945	0.0124	0.0006
2012	1	5220510401A	2	Y	PlHw	PlHw/HwPl	8,034.4	20.99	16.0000	0.5798	27.5957	0.1710	0.0221
2012	1	5230502403A	1	Y	Pl	Pl	8,034.4	17.87	16.0000	0.0388	412.3711	0.0930	0.0048
2012	1	5230502403A	2	Y	Pl	Pl	8,034.4	3.74	3.7400	0.0354	105.6497	0.0238	0.0012
2012	1	5230502404A	3	Y	HwPl	PlHw/HwPl	8,034.4	3.30	3.3000	0.5758	5.7312	0.0355	0.0046
2012	1	5230502502A	1	Y	PlHw	PlHw/HwPl	8,034.4	4.33	4.3300	0.5412	8.0007	0.0496	0.0064
2012	1	5230510101A	1	Y	SwHw	HwSx/SwHw	8,034.4	24.99	16.0000	1.0000	16.0000	0.1399	0.0139
2012	1	5230540203A	1	Y	PlHw	PlHw/HwPl	8,034.4	3.87	3.8700	0.5440	7.1140	0.0441	0.0057
2012	1	5240573105A	2	Y	HwPl	PlHw/HwPl	8,034.4	2.68	2.6800	0.5590	4.7943	0.0297	0.0038
2012	1	5250571880A	2	Y	HwSx	HwSx/SwHw	8,034.4	15.11	15.1100	1.0000	15.1100	0.1321	0.0131
2012	1	5250572861A	1	Y	HwSx	HwSx/SwHw	8,034.4	21.55	16.0000	1.0000	16.0000	0.1399	0.0139
2012	1	5250573533A	3	Y	HwPl	PlHw/HwPl	8,034.4	2.72	2.7200	0.5598	4.8589	0.0301	0.0039
2012	1	5250580114A	1	Y	PlHw	PlHw/HwPl	8,034.4	8.12	8.1200	0.5566	14.5886	0.0904	0.0117
2012	1	5250581037A	1	Y	PlHw	PlHw/HwPl	8,034.4	17.79	16.0000	0.5564	28.7563	0.1782	0.0230
2012	1	5250581225A	1	Y	Pl	Pl	8,034.4	11.97	11.9700	0.5756	20.7957	0.0047	0.0002
2012	1	5250581225A	2	Y	HwSx	HwSx/SwHw	8,034.4	10.86	10.8600	1.0000	10.8600	0.0949	0.0094
2012	1	5260542105A	1	Y	Sw	Sw	8,034.4	16.79	16.0000	0.0404	396.0396	0.2165	0.0090
2012	1	5260543003A	2	Y	Pl	Pl	8,034.4	2.72	2.7200	0.0372	73.1183	0.0165	0.0009
2012	1	5260543003A	3	Y	Pl	Pl	8,034.4	9.71	9.7100	0.0398	243.9698	0.0550	0.0028
2012	1	5270543300A	1	Y	Pl	Pl	8,034.4	35.31	16.0000	0.0400	400.0000	0.0902	0.0047
2012	1	5270543300A	2	Y	Pl	Pl	8,034.4	17.12	16.0000	0.0366	437.1585	0.0986	0.0051
2012	1	5270562730A	1	Y	Pl	Pl	8,034.4	74.32	16.0000	0.0612	261.4379	0.0590	0.0030
2012	1	5270562730A	3	Y	Pl	Pl	8,034.4	28.36	16.0000	0.0578	276.8166	0.0624	0.0032
2012	1	5270562730A	4	Y	Pl	Pl	8,034.4	9.88	9.8800	0.0526	187.8327	0.0424	0.0022
2012	2	5240492723B	1	N	Pl	Pl	18.3	18.29	-	-	-	1.0000	0.0016

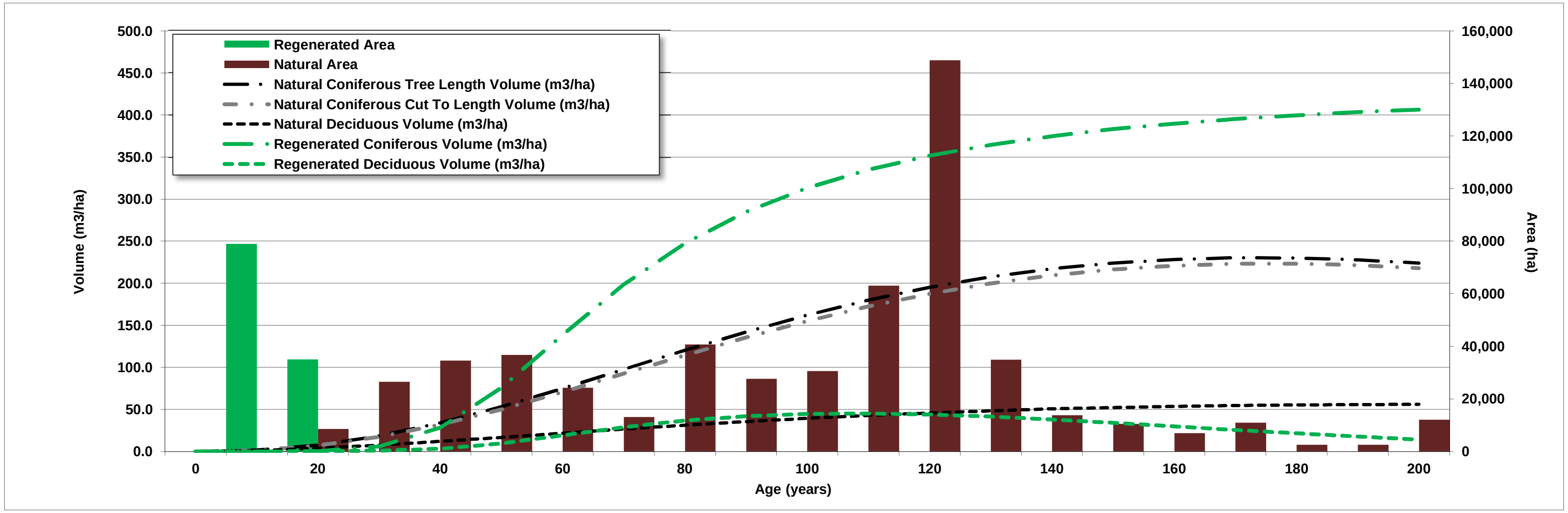
Appendix F RSA Re-stratification

RSA Survey Strata	Assigned Strata	Assigned Yield Class	Primary Species
0_Hw	Hw	1	DEC
0_HwPl	PlHw/HwPl	2	CON
0_HwPl/PlHw	PlHw/HwPl	2	CON
0_HwSx	HwSx/SwHw	3	CON
0_HwSx/SwHw	HwSx/SwHw	3	CON
0_Pl	Pl	8	CON
0_PlHw	PlHw/HwPl	5	CON
0_PlHw/H	PlHw/HwPl	5	CON
0_PlHw/HwPl	PlHw/HwPl	5	CON
0_sb	Sb	9	CON
0_Sb/Sw	Sb	9	CON
0_SbHw/SwHw	SbHw	6	CON
0_Sw	Sw	7	CON
0_Sw/Sb	Sw	7	CON
0_SwHw	HwSx/SwHw	4	CON
0_SwHw/H	HwSx/SwHw	4	CON
0_SwHw/HwSx	SwHw/HwSx	4	CON
0_SwHw/SbHw	Sb/Hw	6	CON
001_HwPl	PlHw/HwPl	2	CON
001_Pl	Pl	8	CON
001_Pl/Hw	PlHw/HwPl	5	CON
001_Sw/Hw	Sw/Hw	4	CON
H1_HwSx	HwSx/SwHw	3	CON
H1_Pl	Pl	8	CON
H1_PlHw/HwPl	PlHw/HwPl	5	CON
H1_Sw	Sw	7	CON
Hw	Hw	1	DEC
Hw-H	Hw	1	DEC
Hw-L	Hw	1	DEC
HwM	Hw	1	DEC
Hw-M	Hw	1	DEC
HwPl	PlHw/HwPl	2	CON
HwPl/PlHw	PlHw/HwPl	5	CON
HwPlH	PlHw/HwPl	2	CON
HwSx	HwSx/SwHw	3	CON
HwSx/SwHw	HwSx/SwHw	3	CON
HwSxD	HwSx/SwHw	3	CON
HwSxH	HwSx/SwHw	3	CON
LF_Pl	Pl	8	CON
MxPl	PlHw/HwPl	5	CON
MxPl-H	PlHw/HwPl	2	CON
MxPl-M	PlHw/HwPl	2	CON
MxSw-H	HwSx/SwHw	4	CON
MxSw-M	HwSx/SwHw	4	CON
MxSx-H	HwSx/SwHw	3	CON
MxSx-M	HwSx/SwHw	3	CON
OT_P	Pl	8	CON
OT_Pl	Pl	8	CON
Pl	Pl	8	CON
Pl/Hw	PlHw/HwPl	5	CON
PlD	Pl	8	CON
PlH	Pl	8	CON
Pl-H	Pl	8	CON
PlHw	PlHw/HwPl	5	CON
PlHw/HwPl	PlHw/HwPl	5	CON

RSA Survey Strata	Assigned Strata	Assigned Yield Class	Primary Species
PlHwD	PlHw/HwPl	5	CON
PlHwH	PlHw/HwPl	5	CON
PlHwM	PlHw/HwPl	5	CON
PL-L	Pl	8	CON
PlM	Pl	8	CON
Pl-M	Pl	8	CON
Sb	Sw	9	CON
SbHw	HwSx/SwHw	6	CON
Sb-M	Sb	9	CON
Sw	Sw	7	CON
SwH	Sw	7	CON
Sw-H	Sw	7	CON
SwHw	HwSx/SwHw	4	CON
SwHwD	HwSx/SwHw	4	CON
SwHwH	HwSx/SwHw	4	CON
SwM	Sw	7	CON
Sw-M	Sw	7	CON
Sw--M	Sw	7	CON
W_Hw	Sw	1	DEC
W_HwSx/SwHw/SbHw	HwSx/SwHw	4	CON
W_Pl	Pl	8	CON
W_PlHw/HwPl	PlHw/HwPl	5	CON
W_Sb	Sb	9	CON
W_Sw	Sw	7	CON

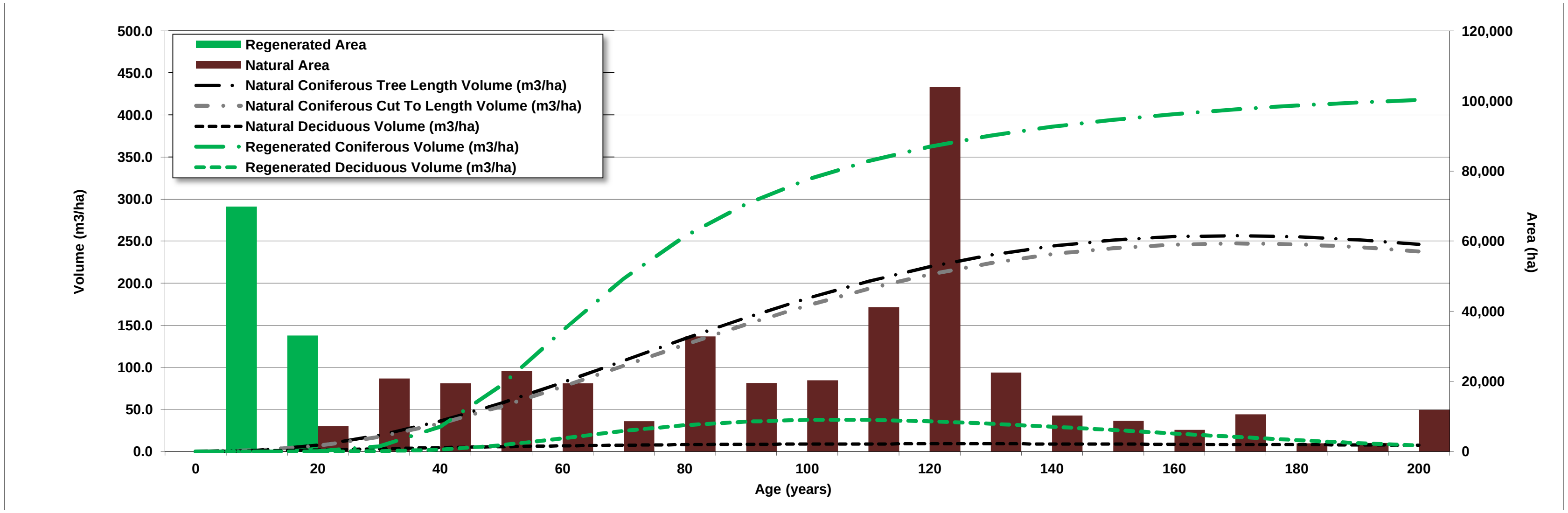
Appendix G Weighted Yield Relationships

Yieldclass **All** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**



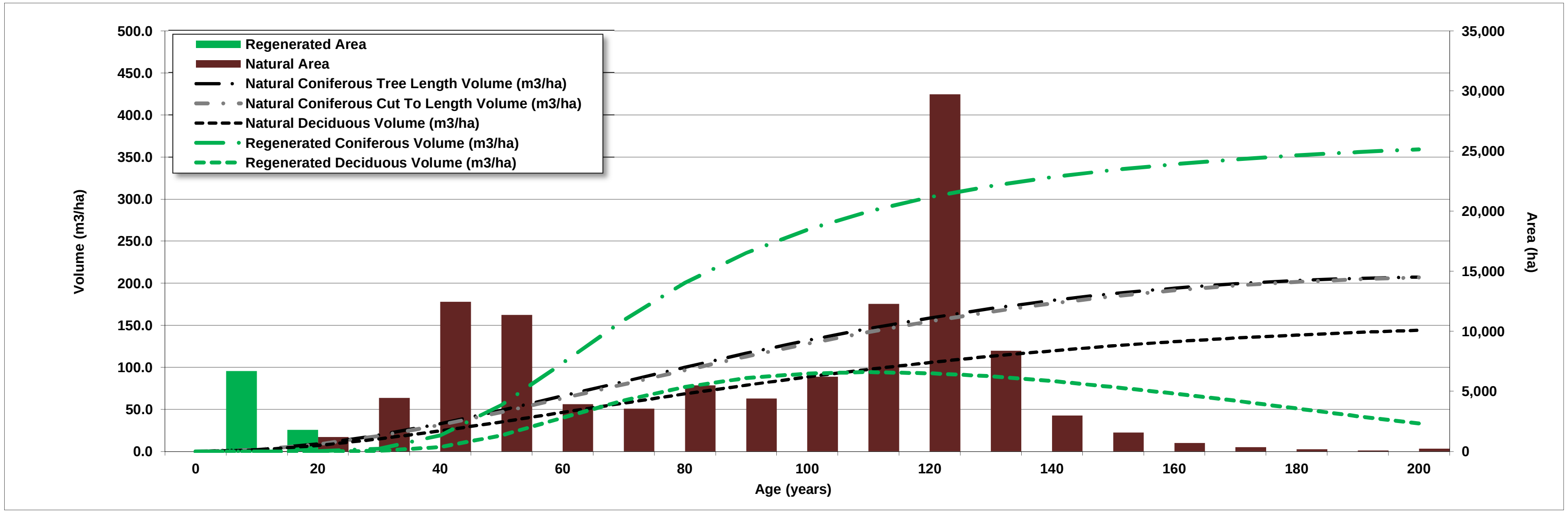
	Natural							Regenerated				
	Coniferous Tree Length		Coniferous Cut To Length		Deciduous			Coniferous		Deciduous		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural Area	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Regenerated Area
0	0.0	0.00	0.0	0.00	0.0	0.00	-	0.0		0.0		
10	1.5	0.15	1.4	0.14	1.0	0.10	48	0.0	0.00	0.1	0.01	78,984
20	7.5	0.37	6.9	0.35	3.6	0.18	8,514	0.4	0.02	0.2	0.01	34,968
30	18.4	0.61	17.2	0.57	7.4	0.25	26,449	5.8	0.19	0.8	0.03	
40	34.0	0.85	31.8	0.80	11.8	0.29	34,542	28.4	0.71	3.2	0.08	
50	53.2	1.06	50.0	1.00	16.6	0.33	36,666	75.9	1.52	9.5	0.19	
60	74.8	1.25	70.6	1.18	21.5	0.36	24,214	138.4	2.31	19.0	0.32	
70	97.5	1.39	92.4	1.32	26.4	0.38	13,117	198.4	2.83	28.8	0.41	
80	120.2	1.50	114.4	1.43	31.0	0.39	40,665	247.3	3.09	36.7	0.46	
90	141.9	1.58	135.4	1.50	35.3	0.39	27,638	284.8	3.16	41.9	0.47	
100	162.0	1.62	155.0	1.55	39.2	0.39	30,544	313.3	3.13	44.5	0.45	
110	179.8	1.63	172.4	1.57	42.7	0.39	63,099	334.9	3.04	45.0	0.41	
120	194.9	1.62	187.4	1.56	45.7	0.38	148,877	351.6	2.93	43.8	0.36	
130	207.4	1.60	199.7	1.54	48.3	0.37	34,925	364.6	2.80	41.3	0.32	
140	217.0	1.55	209.4	1.50	50.5	0.36	13,712	374.9	2.68	37.9	0.27	
150	223.9	1.49	216.4	1.44	52.2	0.35	10,485	383.1	2.55	33.9	0.23	
160	228.2	1.43	220.8	1.38	53.6	0.34	6,930	389.8	2.44	29.7	0.19	
170	230.1	1.35	223.0	1.31	54.6	0.32	10,918	395.2	2.32	25.4	0.15	
180	229.9	1.28	223.0	1.24	55.3	0.31	2,539	399.7	2.22	21.4	0.12	
190	227.8	1.20	221.2	1.16	55.7	0.29	2,488	403.4	2.12	17.6	0.09	
200	224.0	1.12	217.8	1.09	55.8	0.28	12,111	406.4	2.03	14.2	0.07	

<u>Yieldclass</u> **Coniferous** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**



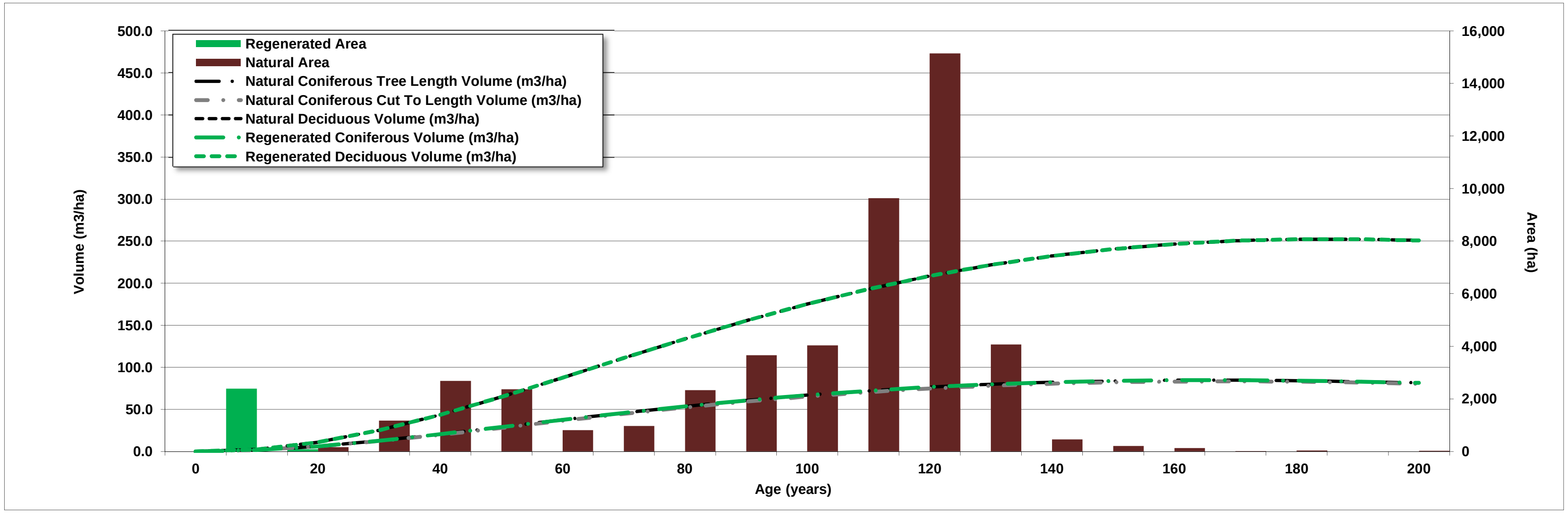
	Natural							Regenerated				
	Coniferous Tree Length		Coniferous Cut To Length		Deciduous			Coniferous		Deciduous		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural Area	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Regenerated Area
0	0.0	0.00	0.0	0.00	0.0	0.00	-	0.0		0.0		
10	1.4	0.14	1.3	0.13	0.6	0.06	40	0.0	0.00	0.0	0.00	69,912
20	7.3	0.37	6.7	0.33	1.8	0.09	7,169	0.3	0.02	0.0	0.00	33,088
30	18.9	0.63	17.4	0.58	3.1	0.10	20,814	5.9	0.20	0.2	0.01	
40	36.0	0.90	33.4	0.83	4.4	0.11	19,415	29.4	0.73	2.0	0.05	
50	57.5	1.15	53.6	1.07	5.5	0.11	22,952	78.8	1.58	7.4	0.15	
60	81.9	1.37	76.9	1.28	6.5	0.11	19,478	143.6	2.39	15.7	0.26	
70	107.9	1.54	101.8	1.45	7.3	0.10	8,589	205.5	2.94	24.2	0.35	
80	134.0	1.67	126.9	1.59	7.9	0.10	32,828	255.8	3.20	31.0	0.39	
90	159.0	1.77	151.1	1.68	8.4	0.09	19,564	294.3	3.27	35.4	0.39	
100	182.0	1.82	173.5	1.74	8.7	0.09	20,308	323.3	3.23	37.4	0.37	
110	202.4	1.84	193.4	1.76	8.9	0.08	41,174	345.3	3.14	37.4	0.34	
120	219.6	1.83	210.3	1.75	9.0	0.07	104,012	362.3	3.02	35.8	0.30	
130	233.5	1.80	224.0	1.72	9.0	0.07	22,470	375.5	2.89	33.0	0.25	
140	244.0	1.74	234.5	1.67	8.9	0.06	10,267	385.9	2.76	29.4	0.21	
150	251.2	1.67	241.7	1.61	8.7	0.06	8,708	394.3	2.63	25.4	0.17	
160	255.3	1.60	245.9	1.54	8.5	0.05	6,112	401.1	2.51	21.3	0.13	
170	256.6	1.51	247.3	1.45	8.2	0.05	10,565	406.6	2.39	17.2	0.10	
180	255.2	1.42	246.2	1.37	7.9	0.04	2,336	411.2	2.28	13.4	0.07	
190	251.7	1.32	242.9	1.28	7.6	0.04	2,397	415.0	2.18	9.9	0.05	
200	246.2	1.23	237.7	1.19	7.2	0.04	11,867	418.1	2.09	6.9	0.03	

Yieldclass Mixedwood 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous



	Natural							Regenerated				
	Coniferous Tree Length		Coniferous Cut To Length		Deciduous			Coniferous		Deciduous		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural Area	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Regenerated Area
0	0.0	0.00	0.0	0.00	0.0	0.00	-	0.0		0.0		
10	2.0	0.20	1.9	0.19	1.7	0.17	8	0.0	0.00	0.0	0.00	6,682
20	8.6	0.43	8.2	0.41	6.9	0.34	1,186	0.1	0.01	0.0	0.00	1,793
30	19.3	0.64	18.5	0.62	14.7	0.49	4,465	3.1	0.10	0.6	0.02	
40	33.1	0.83	31.6	0.79	24.4	0.61	12,441	18.9	0.47	5.3	0.13	
50	48.9	0.98	46.8	0.94	35.1	0.70	11,350	55.1	1.10	19.2	0.38	
60	65.8	1.10	63.1	1.05	46.3	0.77	3,930	105.1	1.75	40.1	0.67	
70	83.1	1.19	79.9	1.14	57.5	0.82	3,557	156.1	2.23	60.7	0.87	
80	100.1	1.25	96.6	1.21	68.4	0.85	5,504	200.3	2.50	76.6	0.96	
90	116.5	1.29	112.7	1.25	78.8	0.88	4,412	235.9	2.62	87.0	0.97	
100	131.9	1.32	128.0	1.28	88.5	0.88	6,205	263.7	2.64	92.6	0.93	
110	146.0	1.33	142.0	1.29	97.5	0.89	12,285	285.3	2.59	94.3	0.86	
120	158.7	1.32	154.8	1.29	105.6	0.88	29,718	302.2	2.52	93.0	0.77	
130	169.9	1.31	166.2	1.28	113.0	0.87	8,384	315.5	2.43	89.2	0.69	
140	179.5	1.28	176.1	1.26	119.6	0.85	2,992	326.0	2.33	83.6	0.60	
150	187.6	1.25	184.6	1.23	125.4	0.84	1,572	334.5	2.23	76.6	0.51	
160	194.2	1.21	191.6	1.20	130.4	0.82	695	341.5	2.13	68.8	0.43	
170	199.3	1.17	197.3	1.16	134.8	0.79	347	347.2	2.04	60.1	0.35	
180	203.1	1.13	201.6	1.12	138.5	0.77	171	352.0	1.96	51.0	0.28	
190	205.7	1.08	204.7	1.08	141.5	0.74	90	355.9	1.87	41.9	0.22	
200	207.1	1.04	206.7	1.03	144.0	0.72	219	359.3	1.80	33.4	0.17	

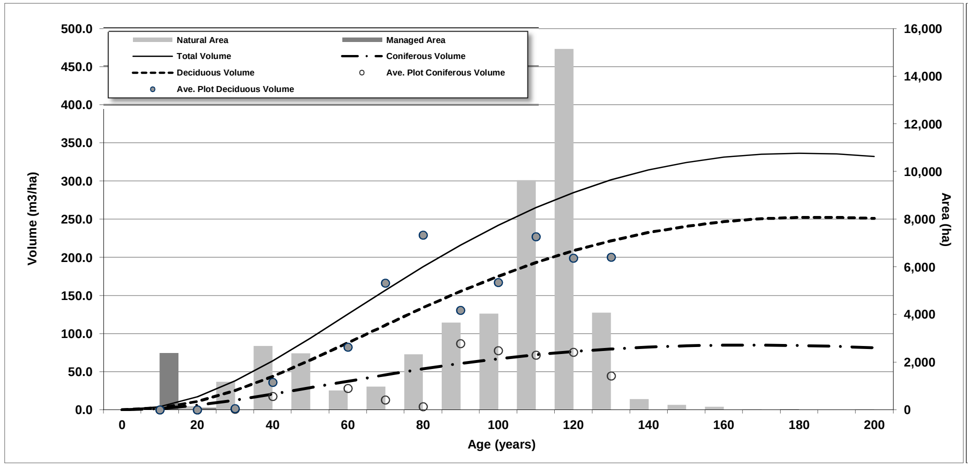
Yieldclass **Deciduous** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**

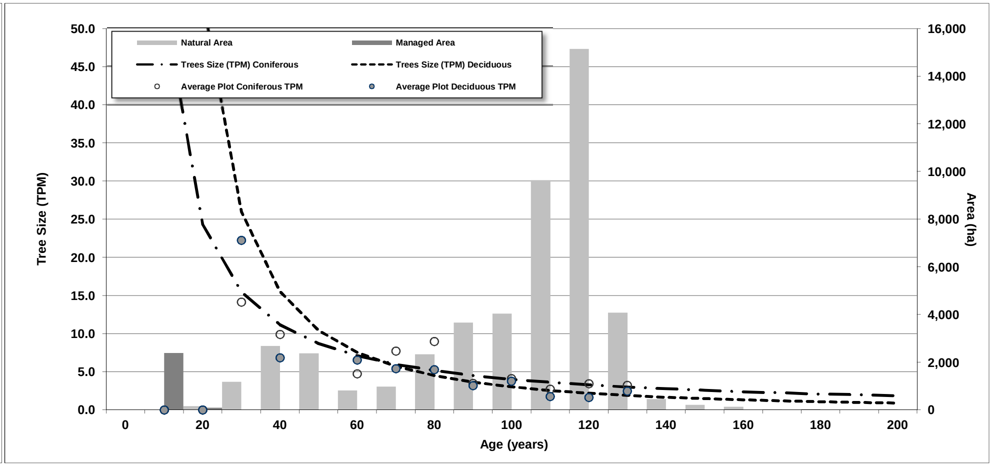


	Natural							Regenerated				
	Coniferous Tree Length		Coniferous Cut To Length		Deciduous			Coniferous		Deciduous		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural Area	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Regenerated Area
0	0.0	0.00	0.0	0.00	0.0	0.00	-	0.0		0.0		
10	1.5	0.15	1.5	0.15	2.5	0.25	-	1.5	0.15	2.5	0.25	2,390
20	6.0	0.30	5.8	0.29	11.1	0.55	159	6.0	0.30	11.1	0.55	87
30	12.5	0.42	12.1	0.40	25.2	0.84	1,170	12.5	0.42	25.2	0.84	
40	20.4	0.51	19.8	0.49	43.7	1.09	2,685	20.4	0.51	43.7	1.09	
50	28.9	0.58	28.0	0.56	64.9	1.30	2,364	28.9	0.58	64.9	1.30	
60	37.5	0.63	36.4	0.61	87.7	1.46	806	37.5	0.63	87.7	1.46	
70	45.9	0.66	44.5	0.64	111.0	1.59	971	45.9	0.66	111.0	1.59	
80	53.7	0.67	52.2	0.65	133.7	1.67	2,333	53.7	0.67	133.7	1.67	
90	60.7	0.67	59.1	0.66	155.3	1.73	3,662	60.7	0.67	155.3	1.73	
100	66.9	0.67	65.2	0.65	175.2	1.75	4,031	66.9	0.67	175.2	1.75	
110	72.1	0.66	70.4	0.64	193.0	1.75	9,640	72.1	0.66	193.0	1.75	
120	76.4	0.64	74.6	0.62	208.5	1.74	15,147	76.4	0.64	208.5	1.74	
130	79.7	0.61	78.0	0.60	221.6	1.70	4,071	79.7	0.61	221.6	1.70	
140	82.2	0.59	80.5	0.57	232.3	1.66	453	82.2	0.59	232.3	1.66	
150	83.8	0.56	82.2	0.55	240.6	1.60	205	83.8	0.56	240.6	1.60	
160	84.6	0.53	83.1	0.52	246.7	1.54	124	84.6	0.53	246.7	1.54	
170	84.7	0.50	83.3	0.49	250.5	1.47	5	84.7	0.50	250.5	1.47	
180	84.2	0.47	82.9	0.46	252.4	1.40	32	84.2	0.47	252.4	1.40	
190	83.1	0.44	82.0	0.43	252.4	1.33	-	83.1	0.44	252.4	1.33	
200	81.5	0.41	80.6	0.40	250.8	1.25	25	81.5	0.41	250.8	1.25	

Appendix H Unmanaged Yield Relationships

Yieldclass **RSA Stratum AW (TL)** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**

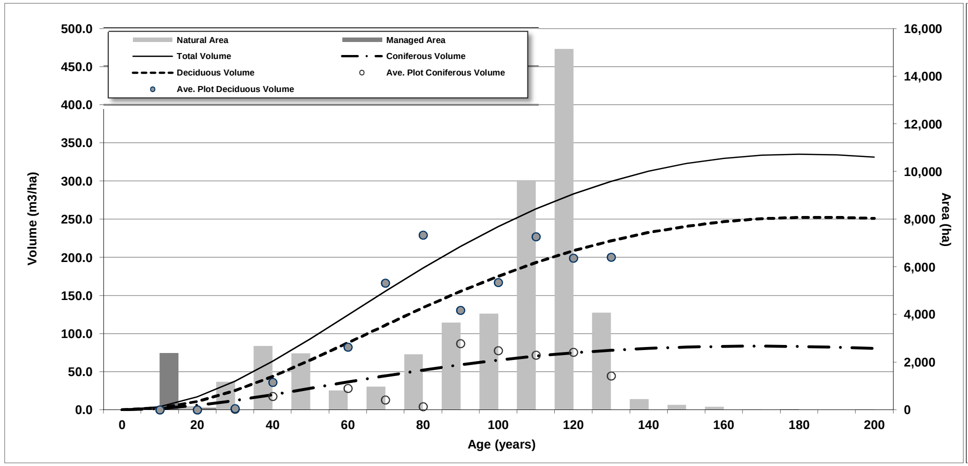


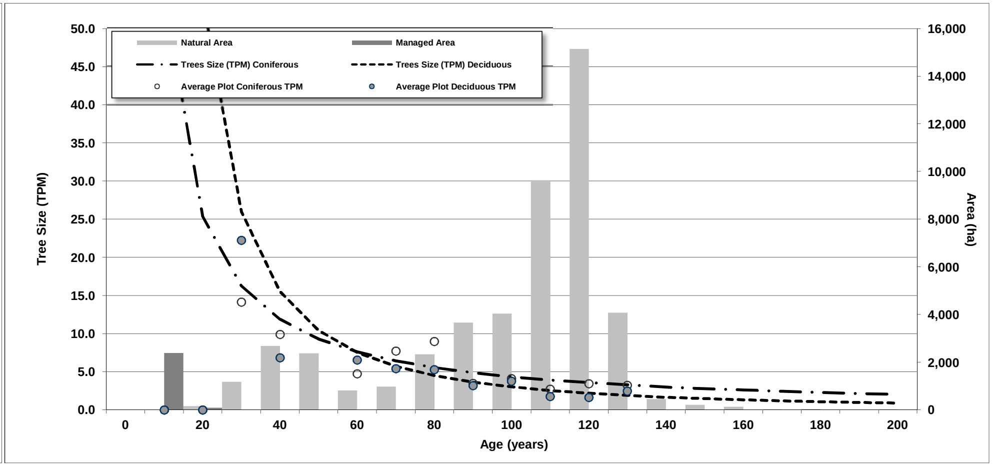


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		**B0**	0.012830	**R2**	0.076	**B0**	0.01267	**R2**	0.21
Number of Plots	**119**	**B1**	2.137124	**Mean Bias**	(1.495)	**B1**	2.34544	**Mean Bias**	(1.24)
Total Area	50,357	**B2**	0.012830	**RMSE**	6,515	**B2**	0.01267	**RMSE**	12,739.31
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		**B0**	696.004242	**R2**	0.309	**B0**	11,506.74215	**R2**	0.64
Number of Plots	**119**	**B1**	(1.120025)	**Mean Bias**	(0.017)	**B1**	(1.79163)	**Mean Bias**	0.03
		B2	-	**RMSE**	10	**B2**		**RMSE**	10.47

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	1.5	0.15	2.5	0.25	4.0	0.40	-	2,390	1	0.0	0.0				52.8	185.92	1	0.0	0.0
20	6.0	0.30	11.1	0.55	17.1	0.85	159	87	2	0.0	0.0				24.3	53.70	2	0.0	0.0
30	12.5	0.42	25.2	0.84	37.8	1.26	1,170	-	8	0.6	1.7				15.4	25.97	8	14.2	22.2
40	20.4	0.51	43.7	1.09	64.0	1.60	2,685	-	1	17.5	36.2				11.2	15.51	1	9.9	6.8
50	28.9	0.58	64.9	1.30	93.8	1.88	2,364	-							8.7	10.40			
60	37.5	0.63	87.7	1.46	125.2	2.09	806	-	3	28.3	82.2				7.1	7.50	3	4.7	6.6
70	45.9	0.66	111.0	1.59	156.8	2.24	971	-	10	13.0	166.0				6.0	5.69	10	7.7	5.4
80	53.7	0.67	133.7	1.67	187.4	2.34	2,333	-	2	4.1	229.2				5.1	4.48	2	9.0	5.3
90	60.7	0.67	155.3	1.73	216.0	2.40	3,662	-	17	87.0	130.7				4.5	3.63	17	3.5	3.2
100	66.9	0.67	175.2	1.75	242.0	2.42	4,031	-	31	77.6	166.9	6	97.1	274.3	4.0	3.00	31	4.1	3.8
110	72.1	0.66	193.0	1.75	265.1	2.41	9,640	-	31	71.7	226.9	3	164.5	227.8	3.6	2.53	31	2.7	1.7
120	76.4	0.64	208.5	1.74	284.9	2.37	15,147	-	10	75.7	198.8	1	41.7	90.0	3.3	2.17	10	3.4	1.6
130	79.7	0.61	221.6	1.70	301.4	2.32	4,071	-	3	44.4	200.3	1	33.7	194.0	3.0	1.88	3	3.3	2.5
140	82.2	0.59	232.3	1.66	314.5	2.25	453	-							2.7	1.64			
150	83.8	0.56	240.6	1.60	324.4	2.16	205	-							2.5	1.45			
160	84.6	0.53	246.7	1.54	331.2	2.07	124	-							2.4	1.29			
170	84.7	0.50	250.5	1.47	335.2	1.97	5	-							2.2	1.16			
180	84.2	0.47	252.4	1.40	336.5	1.87	32	-							2.1	1.05			
190	83.1	0.44	252.4	1.33	335.5	1.77	-	-							2.0	0.95			
200	81.5	0.41	250.8	1.25	332.4	1.66	25	-							1.8	0.87			

Yieldclass RSA Stratum AW (CTL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

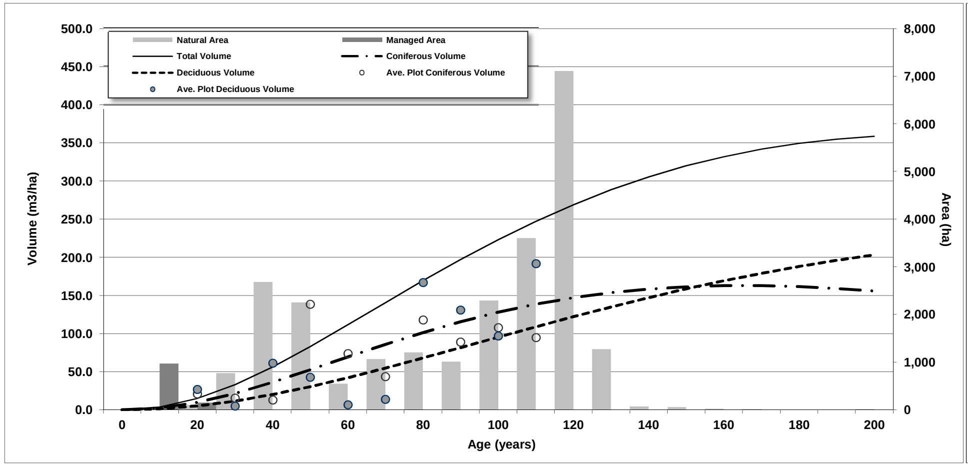


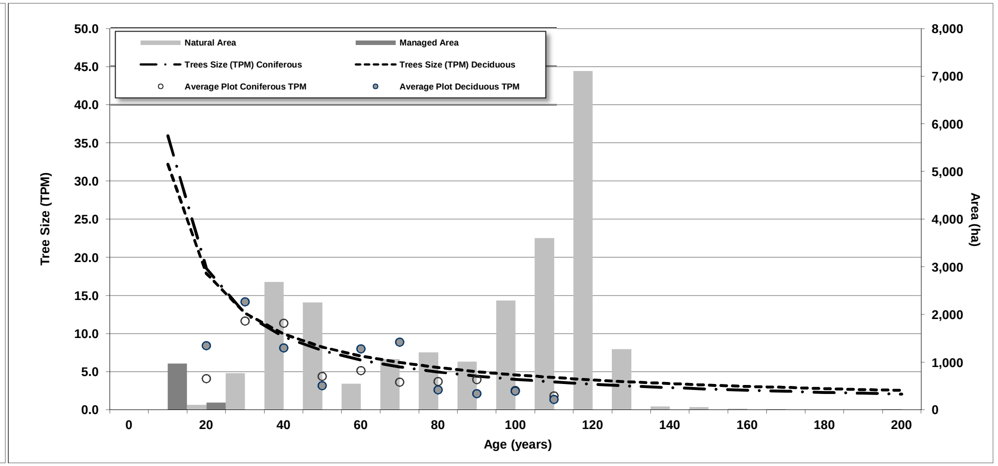


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.012643	R2	0.075	B0	0.01267	R2	0.21
Number of Plots	119	B1	2.130636	Mean Bias	(1.468)	B1	2.34544	Mean Bias	(1.24)
Total Area	50,357	B2	0.012643	RMSE	6,337	B2	0.01267	RMSE	12,739.31
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	679.354702	R2	0.281	B0	11,506.74215	R2	0.64
Number of Plots	119	B1	(1.097448)	Mean Bias	(0.023)	B1	(1.79163)	Mean Bias	0.03
		B2	-	RMSE	12	B2		RMSE	10.47

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	1.5	0.15	2.5	0.25	4.0	0.40	-	2,390	1	0.0	0.0				54.3	185.92	1	0.0	0.0
20	5.8	0.29	11.1	0.55	16.9	0.84	159	87	2	0.0	0.0				25.4	53.70	2	0.0	0.0
30	12.1	0.40	25.2	0.84	37.4	1.25	1,170	-	8	0.6	1.7				16.3	25.97	8	14.2	22.2
40	19.8	0.49	43.7	1.09	63.4	1.59	2,685	-	1	17.5	36.2				11.9	15.51	1	9.9	6.8
50	28.0	0.56	64.9	1.30	92.9	1.86	2,364	-							9.3	10.40			
60	36.4	0.61	87.7	1.46	124.1	2.07	806	-	3	28.3	82.2				7.6	7.50	3	4.7	6.6
70	44.5	0.64	111.0	1.59	155.5	2.22	971	-	10	13.0	166.0				6.4	5.69	10	7.7	5.4
80	52.2	0.65	133.7	1.67	185.9	2.32	2,333	-	2	4.1	229.2				5.5	4.48	2	9.0	5.3
90	59.1	0.66	155.3	1.73	214.4	2.38	3,662	-	17	87.0	130.7				4.9	3.63	17	3.5	3.2
100	65.2	0.65	175.2	1.75	240.3	2.40	4,031	-	31	77.6	166.9	6	97.1	274.3	4.3	3.00	31	4.1	3.8
110	70.4	0.64	193.0	1.75	263.3	2.39	9,640	-	31	71.7	226.9	3	164.5	227.8	3.9	2.53	31	2.7	1.7
120	74.6	0.62	208.5	1.74	283.1	2.36	15,147	-	10	75.7	198.8	1	41.7	90.0	3.6	2.17	10	3.4	1.6
130	78.0	0.60	221.6	1.70	299.6	2.30	4,071	-	3	44.4	200.3	1	33.7	194.0	3.3	1.88	3	3.3	2.5
140	80.5	0.57	232.3	1.66	312.8	2.23	453	-							3.0	1.64			
150	82.2	0.55	240.6	1.60	322.8	2.15	205	-							2.8	1.45			
160	83.1	0.52	246.7	1.54	329.7	2.06	124	-							2.6	1.29			
170	83.3	0.49	250.5	1.47	333.8	1.96	5	-							2.4	1.16			
180	82.9	0.46	252.4	1.40	335.3	1.86	32	-							2.3	1.05			
190	82.0	0.43	252.4	1.33	334.4	1.76	-	-							2.1	0.95			
200	80.6	0.40	250.8	1.25	331.4	1.66	25	-							2.0	0.87			

Yieldclass **RSA Stratum HW/PL (TL)** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**

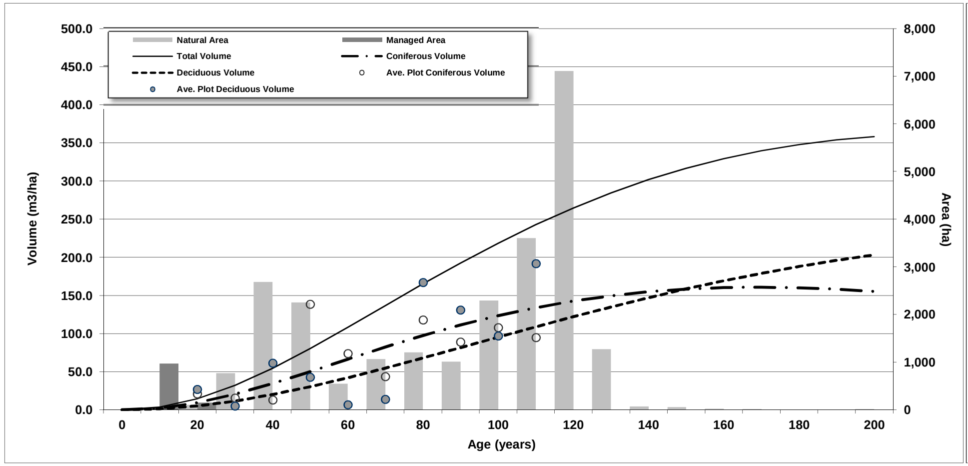


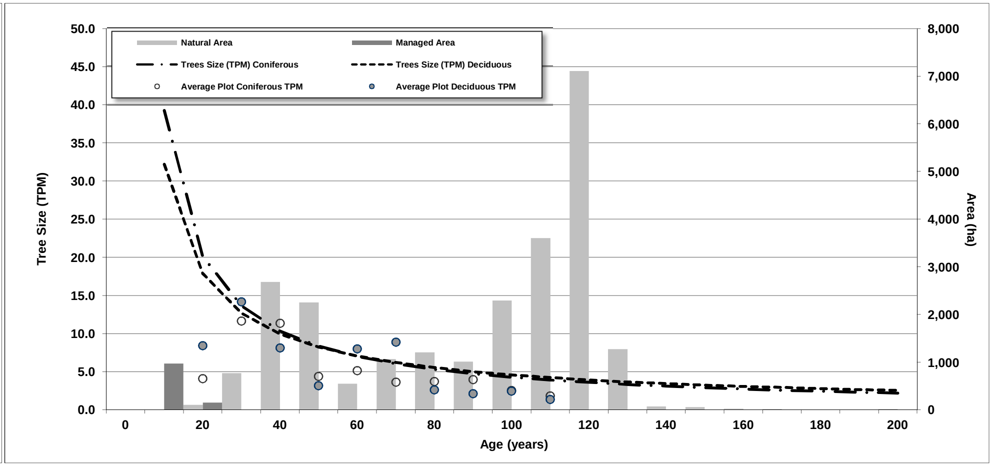


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.013852	R2	0.443	B0	0.00777	R2	0.27
Number of Plots	64	B1	2.283278	Mean Bias	(3.425)	B1	2.21301	Mean Bias	(1.22)
Total Area	25,202	B2	0.013852	RMSE	4,066	B2	0.00777	RMSE	5,734.35
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	322.813669	R2	0.574	B0	226.40612	R2	0.39
Number of Plots	64	B1	(0.953414)	Mean Bias	(0.116)	B1	(0.84722)	Mean Bias	(0.17)
		B2	-	RMSE	11	B2		RMSE	24.35

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	2.3	0.23	1.2	0.12	3.5	0.35	-	968							35.9	32.19			
20	9.8	0.49	5.0	0.25	14.9	0.74	106	152	2	21.0	27.0				18.6	17.89	2	4.1	8.4
30	21.6	0.72	11.4	0.38	33.0	1.10	765	-	18	15.7	5.1				12.6	12.69	18	11.7	14.2
40	36.2	0.91	20.0	0.50	56.2	1.41	2,682	-	4	12.8	61.5				9.6	9.94	4	11.4	8.1
50	52.5	1.05	30.3	0.61	82.8	1.66	2,255	-	3	138.4	42.9	2	171.0	64.3	7.7	8.23	3	4.4	3.2
60	69.3	1.15	42.0	0.70	111.3	1.85	546	-	5	73.8	6.5				6.5	7.05	5	5.2	8.0
70	85.8	1.23	54.6	0.78	140.4	2.01	1,062	-	1	43.7	13.9				5.6	6.19	1	3.7	8.9
80	101.3	1.27	67.9	0.85	169.2	2.12	1,205	-	6	118.1	167.2	2	112.8	45.7	4.9	5.53	6	3.7	2.6
90	115.4	1.28	81.6	0.91	197.0	2.19	1,008	-	4	89.1	131.0				4.4	5.00	4	4.0	2.2
100	127.8	1.28	95.3	0.95	223.1	2.23	2,290	-	11	107.9	97.1	1	78.1	80.5	4.0	4.58	11	2.6	2.5
110	138.3	1.26	108.9	0.99	247.2	2.25	3,606	-	10	94.8	191.8	1	96.6	341.5	3.7	4.22	10	1.9	1.4
120	146.9	1.22	122.1	1.02	269.0	2.24	7,106	-							3.4	3.92			
130	153.5	1.18	134.9	1.04	288.4	2.22	1,270	-							3.1	3.66			
140	158.3	1.13	147.0	1.05	305.3	2.18	72	-							2.9	3.44			
150	161.3	1.08	158.5	1.06	319.8	2.13	57	-							2.7	3.25			
160	162.8	1.02	169.1	1.06	331.9	2.07	21	-							2.6	3.07			
170	162.8	0.96	178.9	1.05	341.7	2.01	16	-							2.4	2.92			
180	161.5	0.90	187.9	1.04	349.3	1.94	-	-							2.3	2.78			
190	159.0	0.84	195.9	1.03	355.0	1.87	-	-							2.2	2.66			
200	155.7	0.78	203.1	1.02	358.7	1.79	15	-							2.1	2.54			

Yieldclass RSA Stratum HW/PL (CTL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

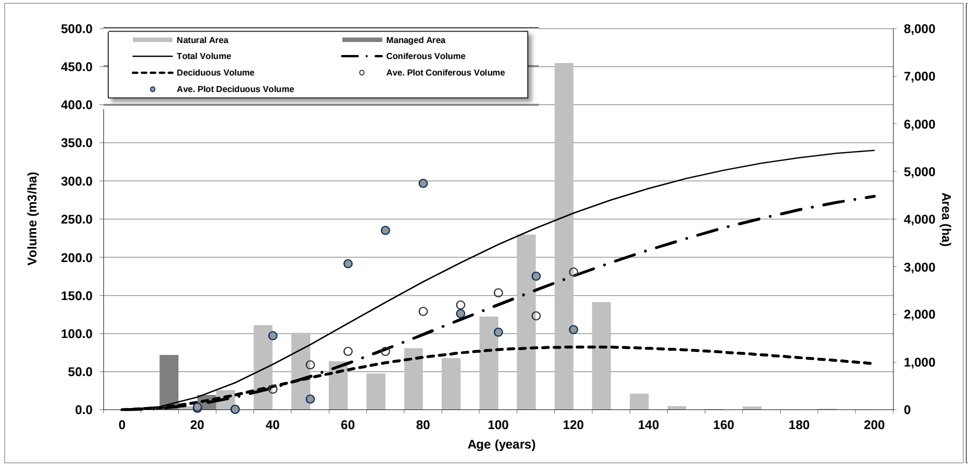


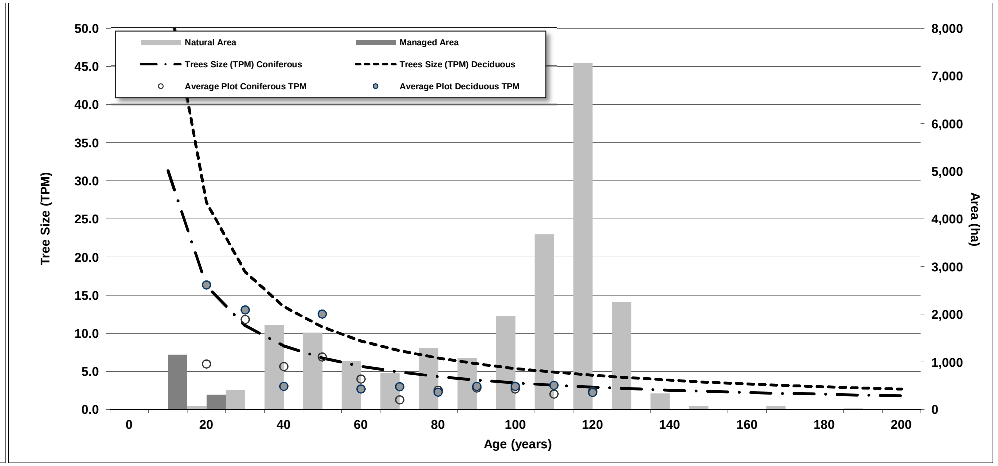


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.013447	R2	0.438	B0	0.00777	R2	0.27
Number of Plots	64	B1	2.273202	Mean Bias	(3.431)	B1	2.21301	Mean Bias	(1.22)
Total Area	25,202	B2	0.013447	RMSE	3,931	B2	0.00777	RMSE	5,734.35
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	360.356245	R2	0.584	B0	226.40612	R2	0.39
Number of Plots	64	B1	(0.962912)	Mean Bias	(0.131)	B1	(0.84722)	Mean Bias	(0.17)
		B2	-	RMSE	12	B2		RMSE	24.35

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	2.2	0.22	1.2	0.12	3.4	0.34	-	968							39.2	32.19			
20	9.3	0.47	5.0	0.25	14.4	0.72	106	152	2	21.0	27.0				20.1	17.89	2	4.1	8.4
30	20.5	0.68	11.4	0.38	31.9	1.06	765	-	18	15.7	5.1				13.6	12.69	18	11.7	14.2
40	34.4	0.86	20.0	0.50	54.4	1.36	2,682	-	4	12.8	61.5				10.3	9.94	4	11.4	8.1
50	50.0	1.00	30.3	0.61	80.3	1.61	2,255	-	3	138.4	42.9	2	171.0	64.3	8.3	8.23	3	4.4	3.2
60	66.1	1.10	42.0	0.70	108.1	1.80	546	-	5	73.8	6.5				7.0	7.05	5	5.2	8.0
70	82.1	1.17	54.6	0.78	136.7	1.95	1,062	-	1	43.7	13.9				6.0	6.19	1	3.7	8.9
80	97.2	1.21	67.9	0.85	165.1	2.06	1,205	-	6	118.1	167.2	2	112.8	45.7	5.3	5.53	6	3.7	2.6
90	111.0	1.23	81.6	0.91	192.6	2.14	1,008	-	4	89.1	131.0				4.7	5.00	4	4.0	2.2
100	123.3	1.23	95.3	0.95	218.6	2.19	2,290	-	11	107.9	97.1	1	78.1	80.5	4.3	4.58	11	2.6	2.5
110	133.9	1.22	108.9	0.99	242.7	2.21	3,606	-	10	94.8	191.8	1	96.6	341.5	3.9	4.22	10	1.9	1.4
120	142.6	1.19	122.1	1.02	264.7	2.21	7,106	-							3.6	3.92			
130	149.6	1.15	134.9	1.04	284.4	2.19	1,270	-							3.3	3.66			
140	154.7	1.11	147.0	1.05	301.8	2.16	72	-							3.1	3.44			
150	158.2	1.05	158.5	1.06	316.7	2.11	57	-							2.9	3.25			
160	160.2	1.00	169.1	1.06	329.3	2.06	21	-							2.7	3.07			
170	160.7	0.95	178.9	1.05	339.7	2.00	16	-							2.6	2.92			
180	160.0	0.89	187.9	1.04	347.9	1.93	-	-							2.4	2.78			
190	158.2	0.83	195.9	1.03	354.1	1.86	-	-							2.3	2.66			
200	155.4	0.78	203.1	1.02	358.4	1.79	15	-							2.2	2.54			

Yieldclass RSA Stratum HW/SW (TL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

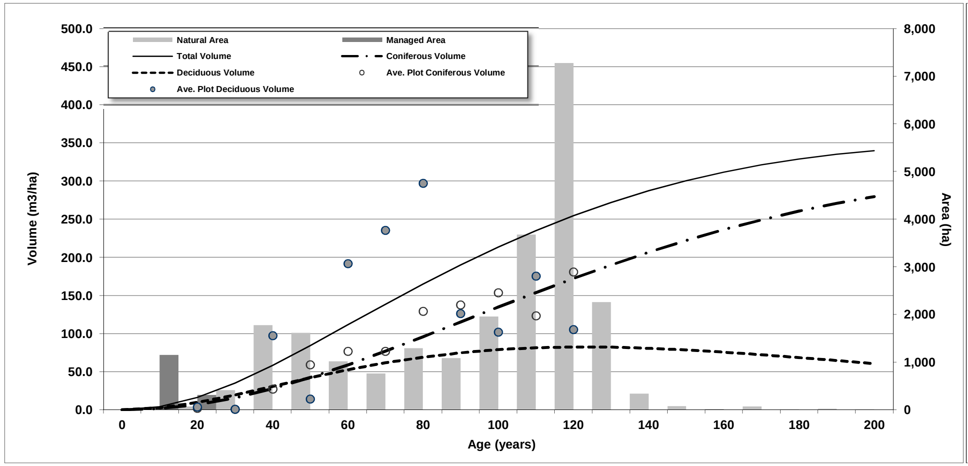


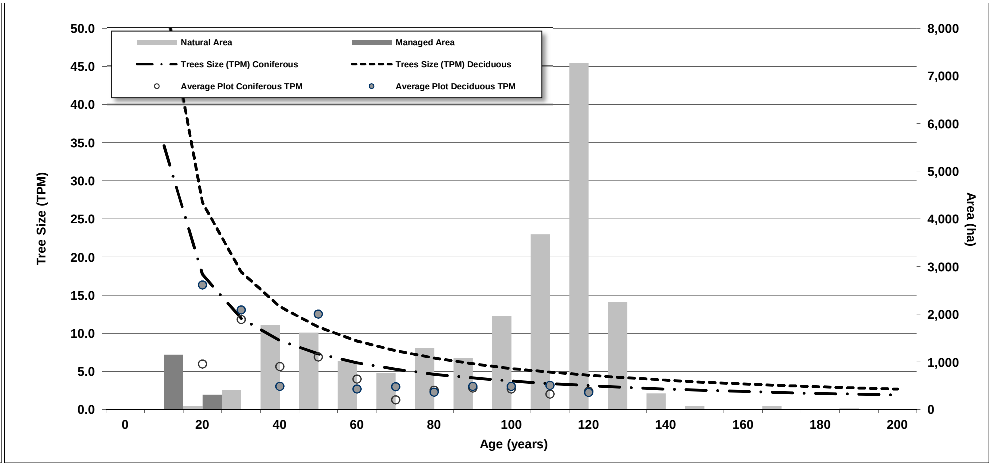


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.008772	R2	0.398	B0	0.01801	R2	0.17
Number of Plots	50	B1	2.288511	Mean Bias	(3.711)	B1	2.21161	Mean Bias	(4.71)
Total Area	25,215	B2	0.008772	RMSE	7,179	B2	0.01801	RMSE	5,212.38
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	281.128520	R2	0.464	B0	551.18904	R2	0.33
Number of Plots	50	B1	(0.953015)	Mean Bias	(0.120)	B1	(1.00511)	Mean Bias	(0.39)
		B2	-	RMSE	10	B2		RMSE	54.40

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	1.6	0.16	2.4	0.24	4.0	0.40	-	1,153							31.3	54.47			
20	7.0	0.35	9.5	0.47	16.5	0.82	70	314	2	2.1	3.7				16.2	27.14	2	6.0	16.4
30	16.2	0.54	19.4	0.65	35.6	1.19	413	-	6	0.7	0.9				11.0	18.06	6	11.8	13.1
40	28.6	0.72	30.6	0.77	59.2	1.48	1,778	-	3	27.3	97.3				8.4	13.52	3	5.7	3.1
50	43.7	0.87	41.9	0.84	85.6	1.71	1,618	-	7	59.4	14.4				6.8	10.81	7	6.9	12.6
60	60.8	1.01	52.3	0.87	113.1	1.89	1,020	-	1	76.6	191.6				5.7	9.00	1	4.0	2.7
70	79.2	1.13	61.5	0.88	140.7	2.01	764	-	1	76.9	235.5				4.9	7.71	1	1.3	3.0
80	98.5	1.23	69.0	0.86	167.5	2.09	1,294	-	1	129.2	297.2				4.3	6.74	1	2.6	2.3
90	118.2	1.31	74.8	0.83	192.9	2.14	1,083	-	7	137.6	126.2	1	249.6	98.2	3.9	5.99	7	2.8	3.1
100	137.8	1.38	78.8	0.79	216.6	2.17	1,958	-	15	153.5	101.8	1	418.4	61.8	3.5	5.38	15	2.7	3.1
110	157.0	1.43	81.3	0.74	238.2	2.17	3,674	-	5	123.4	175.3				3.2	4.89	5	2.1	3.2
120	175.5	1.46	82.3	0.69	257.8	2.15	7,279	-	2	180.8	105.3				2.9	4.48	2	2.4	2.3
130	193.0	1.48	82.0	0.63	275.1	2.12	2,261	-							2.7	4.14			
140	209.5	1.50	80.7	0.58	290.2	2.07	341	-							2.5	3.84			
150	224.7	1.50	78.5	0.52	303.3	2.02	78	-							2.4	3.58			
160	238.6	1.49	75.7	0.47	314.3	1.96	18	-							2.2	3.36			
170	251.1	1.48	72.3	0.43	323.4	1.90	67	-							2.1	3.16			
180	262.2	1.46	68.5	0.38	330.7	1.84	5	-							2.0	2.98			
190	271.8	1.43	64.5	0.34	336.3	1.77	22	-							1.9	2.82			
200	280.0	1.40	60.3	0.30	340.3	1.70	4	-							1.8	2.68			

Yieldclass RSA Stratum HW/SW (CTL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

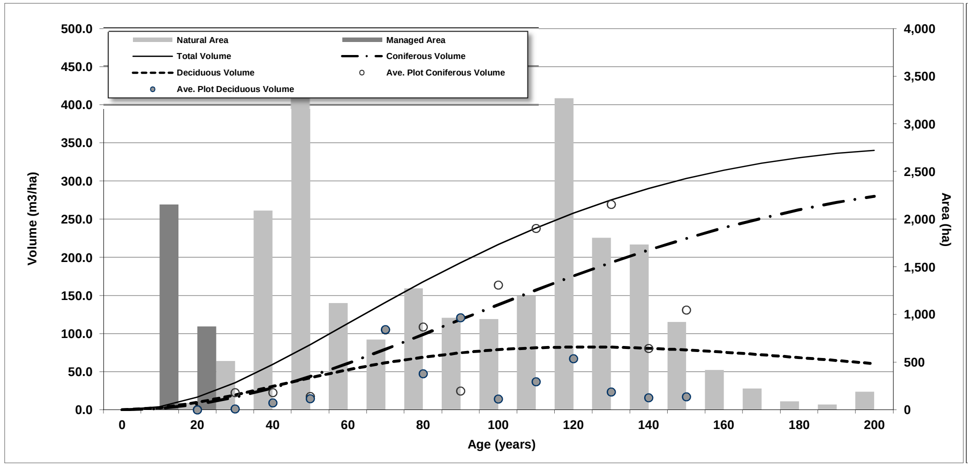


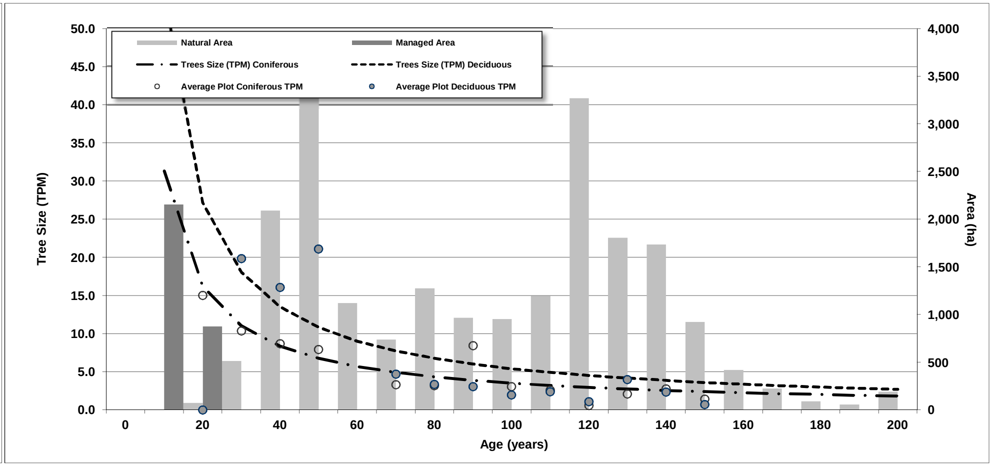


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.008522	R2	0.397	B0	0.01801	R2	0.17
Number of Plots	50	B1	2.284219	Mean Bias	(3.861)	B1	2.21161	Mean Bias	(4.71)
Total Area	25,215	B2	0.008522	RMSE	7,034	B2	0.01801	RMSE	5,212.38
TPM/Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1		B0	320.112460	R2	0.478	B0	551.18904	R2	0.33
Number of Plots	50	B1	(0.966536)	Mean Bias	(0.141)	B1	(1.00511)	Mean Bias	(0.39)
		B2	-	RMSE	11	B2		RMSE	54.40

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	1.5	0.15	2.4	0.24	4.0	0.40	-	1,153							34.6	54.47			
20	6.7	0.34	9.5	0.47	16.2	0.81	70	314	2	2.1	3.7				17.7	27.14	2	6.0	16.4
30	15.6	0.52	19.4	0.65	35.0	1.17	413	-	6	0.7	0.9				12.0	18.06	6	11.8	13.1
40	27.7	0.69	30.6	0.77	58.3	1.46	1,778	-	3	27.3	97.3				9.1	13.52	3	5.7	3.1
50	42.3	0.85	41.9	0.84	84.2	1.68	1,618	-	7	59.4	14.4				7.3	10.81	7	6.9	12.6
60	58.9	0.98	52.3	0.87	111.2	1.85	1,020	-	1	76.6	191.6				6.1	9.00	1	4.0	2.7
70	76.9	1.10	61.5	0.88	138.4	1.98	764	-	1	76.9	235.5				5.3	7.71	1	1.3	3.0
80	95.8	1.20	69.0	0.86	164.8	2.06	1,294	-	1	129.2	297.2				4.6	6.74	1	2.6	2.3
90	115.2	1.28	74.8	0.83	189.9	2.11	1,083	-	7	137.6	126.2	1	249.6	98.2	4.1	5.99	7	2.8	3.1
100	134.5	1.35	78.8	0.79	213.4	2.13	1,958	-	15	153.5	101.8	1	418.4	61.8	3.7	5.38	15	2.7	3.1
110	153.6	1.40	81.3	0.74	234.9	2.14	3,674	-	5	123.4	175.3				3.4	4.89	5	2.1	3.2
120	172.1	1.43	82.3	0.69	254.4	2.12	7,279	-	2	180.8	105.3				3.1	4.48	2	2.4	2.3
130	189.7	1.46	82.0	0.63	271.8	2.09	2,261	-							2.9	4.14			
140	206.4	1.47	80.7	0.58	287.1	2.05	341	-							2.7	3.84			
150	221.8	1.48	78.5	0.52	300.4	2.00	78	-							2.5	3.58			
160	236.1	1.48	75.7	0.47	311.7	1.95	18	-							2.4	3.36			
170	249.0	1.46	72.3	0.43	321.3	1.89	67	-							2.2	3.16			
180	260.5	1.45	68.5	0.38	329.0	1.83	5	-							2.1	2.98			
190	270.7	1.42	64.5	0.34	335.2	1.76	22	-							2.0	2.82			
200	279.5	1.40	60.3	0.30	339.8	1.70	4	-							1.9	2.68			

Yieldclass RSA Stratum SW/HW (TL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

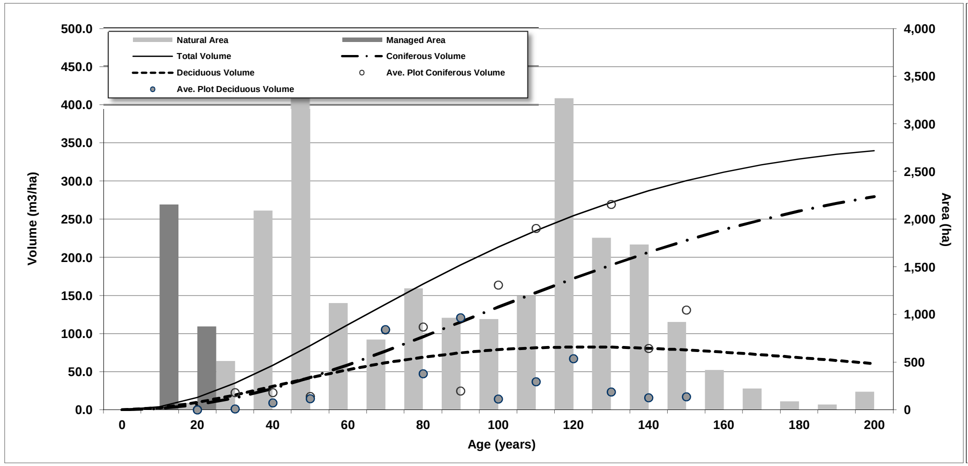


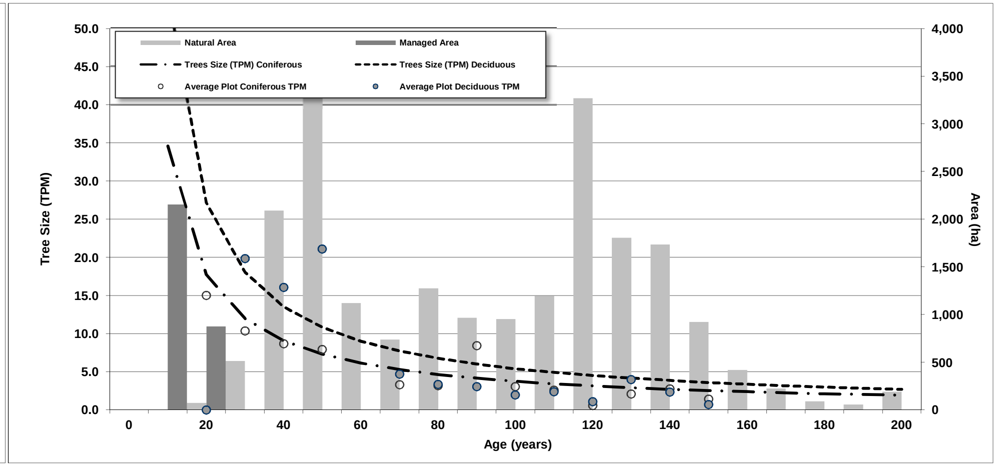


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.008772	R2	0.398	B0	0.01801	R2	0.17
Number of Plots	59	B1	2.288511	Mean Bias	(3.711)	B1	2.21161	Mean Bias	(4.71)
Total Area	24,121	B2	0.008772	RMSE	7,179	B2	0.01801	RMSE	5,212.38
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	281.128520	R2	0.464	B0	551.18904	R2	0.33
Number of Plots	59	B1	(0.953015)	Mean Bias	(0.120)	B1	(1.00511)	Mean Bias	(0.39)
		B2	-	RMSE	10	B2		RMSE	54.40

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	1.6	0.16	2.4	0.24	4.0	0.40	-	2,155							31.3	54.47			
20	7.0	0.35	9.5	0.47	16.5	0.82	73	875	4	0.4	0.0				16.2	27.14	4	15.0	0.0
30	16.2	0.54	19.4	0.65	35.6	1.19	513	-	6	22.5	1.4				11.0	18.06	6	10.4	19.9
40	28.6	0.72	30.6	0.77	59.2	1.48	2,091	-	21	22.8	9.3	1	47.7	16.1	8.4	13.52	21	8.7	16.1
50	43.7	0.87	41.9	0.84	85.6	1.71	3,474	-	6	17.8	14.6				6.8	10.81	6	7.9	21.1
60	60.8	1.01	52.3	0.87	113.1	1.89	1,118	-							5.7	9.00			
70	79.2	1.13	61.5	0.88	140.7	2.01	738	-	1	104.8	105.3				4.9	7.71	1	3.3	4.7
80	98.5	1.23	69.0	0.86	167.5	2.09	1,274	-	3	108.8	47.6				4.3	6.74	3	3.2	3.4
90	118.2	1.31	74.8	0.83	192.9	2.14	965	-	1	24.9	120.7				3.9	5.99	1	8.4	3.1
100	137.8	1.38	78.8	0.79	216.6	2.17	950	-	4	163.5	14.2				3.5	5.38	4	3.1	2.0
110	157.0	1.43	81.3	0.74	238.2	2.17	1,194	-	7	237.8	36.9				3.2	4.89	7	2.6	2.4
120	175.5	1.46	82.3	0.69	257.8	2.15	3,268	-	1	509.6	67.2				2.9	4.48	1	0.6	1.1
130	193.0	1.48	82.0	0.63	275.1	2.12	1,805	-	2	269.6	23.3				2.7	4.14	2	2.1	4.0
140	209.5	1.50	80.7	0.58	290.2	2.07	1,733	-	1	80.6	15.9				2.5	3.84	1	2.8	2.3
150	224.7	1.50	78.5	0.52	303.3	2.02	921	-	2	131.1	17.4				2.4	3.58	2	1.4	0.7
160	238.6	1.49	75.7	0.47	314.3	1.96	417	-							2.2	3.36			
170	251.1	1.48	72.3	0.43	323.4	1.90	224	-							2.1	3.16			
180	262.2	1.46	68.5	0.38	330.7	1.84	88	-							2.0	2.98			
190	271.8	1.43	64.5	0.34	336.3	1.77	56	-							1.9	2.82			
200	280.0	1.40	60.3	0.30	340.3	1.70	189	-							1.8	2.68			

<u>Yieldclass</u> RSA Stratum SW/HW (CTL) **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**

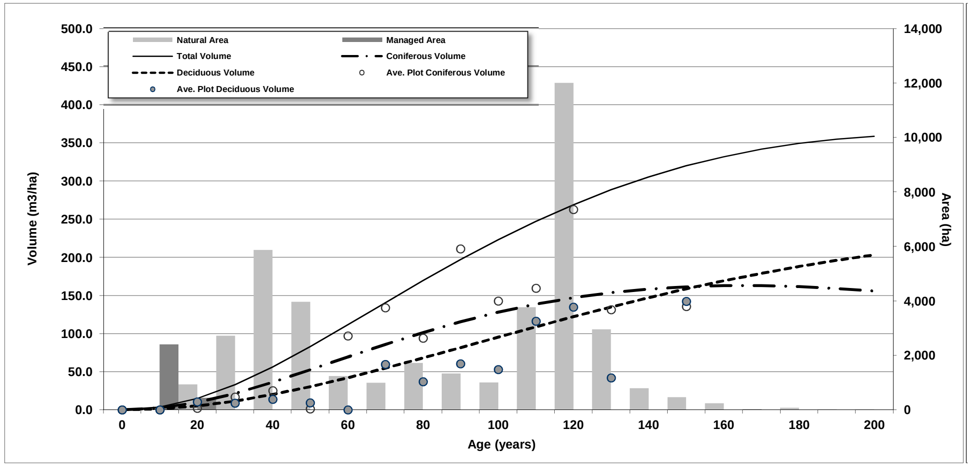


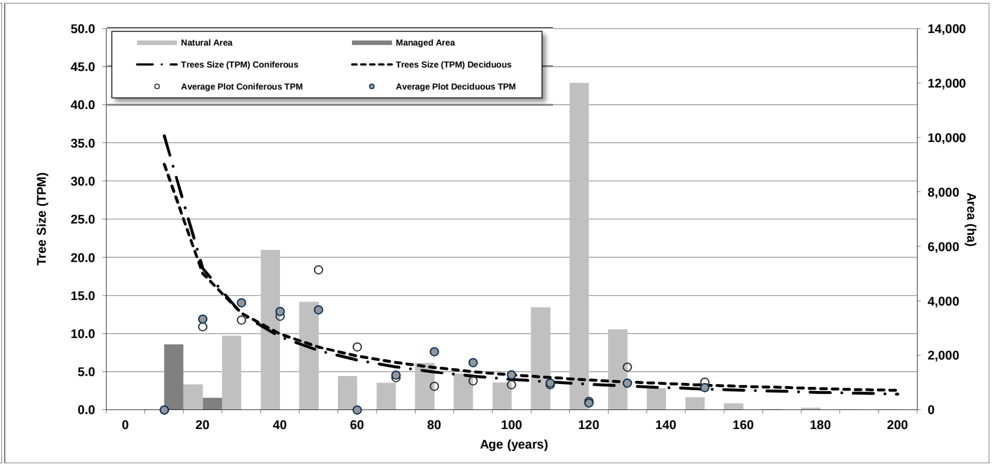


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.008522	R2	0.397	B0	0.01801	R2	0.17
Number of Plots	59	B1	2.284219	Mean Bias	(3.861)	B1	2.21161	Mean Bias	(4.71)
Total Area	24,121	B2	0.008522	RMSE	7,034	B2	0.01801	RMSE	5,212.38
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	320.112460	R2	0.478	B0	551.18904	R2	0.33
Number of Plots	59	B1	(0.966536)	Mean Bias	(0.141)	B1	(1.00511)	Mean Bias	(0.39)
		B2	-	RMSE	11	B2		RMSE	54.40

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	1.5	0.15	2.4	0.24	4.0	0.40	-	2,155							34.6	54.47			
20	6.7	0.34	9.5	0.47	16.2	0.81	73	875	4	0.4	0.0				17.7	27.14	4	15.0	0.0
30	15.6	0.52	19.4	0.65	35.0	1.17	513	-	6	22.5	1.4				12.0	18.06	6	10.4	19.9
40	27.7	0.69	30.6	0.77	58.3	1.46	2,091	-	21	22.8	9.3	1	47.7	16.1	9.1	13.52	21	8.7	16.1
50	42.3	0.85	41.9	0.84	84.2	1.68	3,474	-	6	17.8	14.6				7.3	10.81	6	7.9	21.1
60	58.9	0.98	52.3	0.87	111.2	1.85	1,118	-							6.1	9.00			
70	76.9	1.10	61.5	0.88	138.4	1.98	738	-	1	104.8	105.3				5.3	7.71	1	3.3	4.7
80	95.8	1.20	69.0	0.86	164.8	2.06	1,274	-	3	108.8	47.6				4.6	6.74	3	3.2	3.4
90	115.2	1.28	74.8	0.83	189.9	2.11	965	-	1	24.9	120.7				4.1	5.99	1	8.4	3.1
100	134.5	1.35	78.8	0.79	213.4	2.13	950	-	4	163.5	14.2				3.7	5.38	4	3.1	2.0
110	153.6	1.40	81.3	0.74	234.9	2.14	1,194	-	7	237.8	36.9				3.4	4.89	7	2.6	2.4
120	172.1	1.43	82.3	0.69	254.4	2.12	3,268	-	1	509.6	67.2				3.1	4.48	1	0.6	1.1
130	189.7	1.46	82.0	0.63	271.8	2.09	1,805	-	2	269.6	23.3				2.9	4.14	2	2.1	4.0
140	206.4	1.47	80.7	0.58	287.1	2.05	1,733	-	1	80.6	15.9				2.7	3.84	1	2.8	2.3
150	221.8	1.48	78.5	0.52	300.4	2.00	921	-	2	131.1	17.4				2.5	3.58	2	1.4	0.7
160	236.1	1.48	75.7	0.47	311.7	1.95	417	-							2.4	3.36			
170	249.0	1.46	72.3	0.43	321.3	1.89	224	-							2.2	3.16			
180	260.5	1.45	68.5	0.38	329.0	1.83	88	-							2.1	2.98			
190	270.7	1.42	64.5	0.34	335.2	1.76	56	-							2.0	2.82			
200	279.5	1.40	60.3	0.30	339.8	1.70	189	-							1.9	2.68			

Yieldclass RSA Stratum PL/HW (TL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

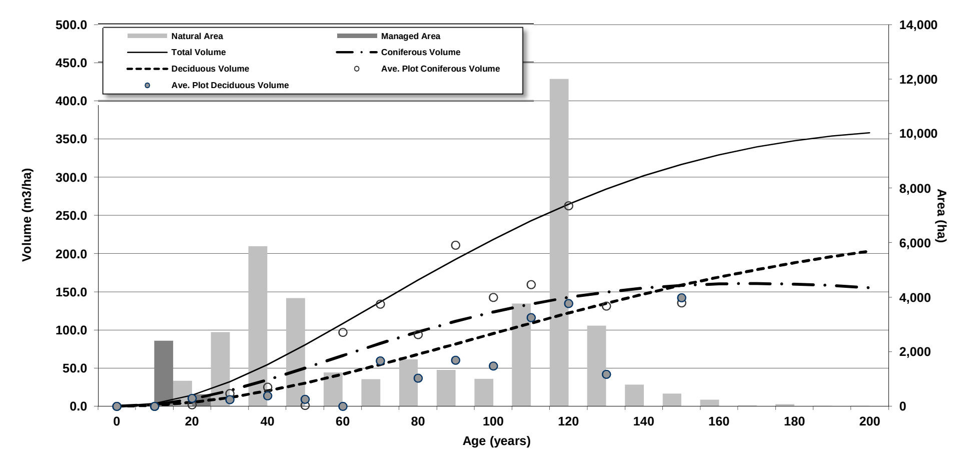


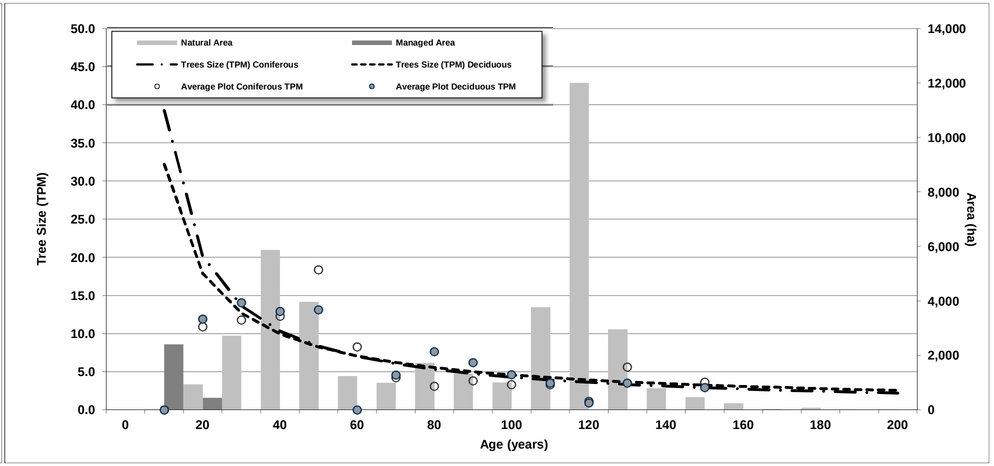


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.013852	R2	0.443	B0	0.00777	R2	0.27
Number of Plots	101	B1	2.283278	Mean Bias	(3.425)	B1	2.21301	Mean Bias	(1.22)
Total Area	42,973	B2	0.013852	RMSE	4,066	B2	0.00777	RMSE	5,734.35
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	322.813669	R2	0.574	B0	226.40612	R2	0.39
Number of Plots	99	B1	(0.953414)	Mean Bias	(0.116)	B1	(0.84722)	Mean Bias	(0.17)
		B2	-	RMSE	11	B2		RMSE	24.35

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-	2	0.0	0.0								
10	2.3	0.23	1.2	0.12	3.5	0.35	8	2,406	5	0.0	0.0				35.9	32.19	5	0.0	0.0
20	9.8	0.49	5.0	0.25	14.9	0.74	937	442	15	2.0	10.3				18.6	17.89	15	10.9	11.9
30	21.6	0.72	11.4	0.38	33.0	1.10	2,719	-	26	16.7	8.6				12.6	12.69	26	11.8	14.0
40	36.2	0.91	20.0	0.50	56.2	1.41	5,866	-	9	25.0	13.9				9.6	9.94	9	12.3	12.9
50	52.5	1.05	30.3	0.61	82.8	1.66	3,967	-	1	1.3	9.4				7.7	8.23	1	18.4	13.2
60	69.3	1.15	42.0	0.70	111.3	1.85	1,237	-	1	97.0	0.0				6.5	7.05	1	8.3	0.0
70	85.8	1.23	54.6	0.78	140.4	2.01	988	-	5	133.9	59.6				5.6	6.19	5	4.3	4.6
80	101.3	1.27	67.9	0.85	169.2	2.12	1,723	-	3	93.8	37.0				4.9	5.53	3	3.1	7.7
90	115.4	1.28	81.6	0.91	197.0	2.19	1,329	-	5	211.2	60.4				4.4	5.00	5	3.8	6.2
100	127.8	1.28	95.3	0.95	223.1	2.23	1,004	-	15	142.5	53.1	4	123.0	108.0	4.0	4.58	15	3.3	4.6
110	138.3	1.26	108.9	0.99	247.2	2.25	3,767	-	8	159.4	116.1				3.7	4.22	8	3.3	3.5
120	146.9	1.22	122.1	1.02	269.0	2.24	12,009	-	2	262.6	134.7				3.4	3.92	2	1.1	0.9
130	153.5	1.18	134.9	1.04	288.4	2.22	2,958	-	2	131.2	42.1				3.1	3.66	2	5.6	3.5
140	158.3	1.13	147.0	1.05	305.3	2.18	791	-							2.9	3.44			
150	161.3	1.08	158.5	1.06	319.8	2.13	458	-	2	135.6	142.1				2.7	3.25	2	3.7	3.0
160	162.8	1.02	169.1	1.06	331.9	2.07	235	-							2.6	3.07			
170	162.8	0.96	178.9	1.05	341.7	2.01	27	-							2.4	2.92			
180	161.5	0.90	187.9	1.04	349.3	1.94	78	-							2.3	2.78			
190	159.0	0.84	195.9	1.03	355.0	1.87	12	-							2.2	2.66			
200	155.7	0.78	203.1	1.02	358.7	1.79	11	-							2.1	2.54			

<u>Yieldclass</u> RSA Stratum PL/HW (CTL) **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**

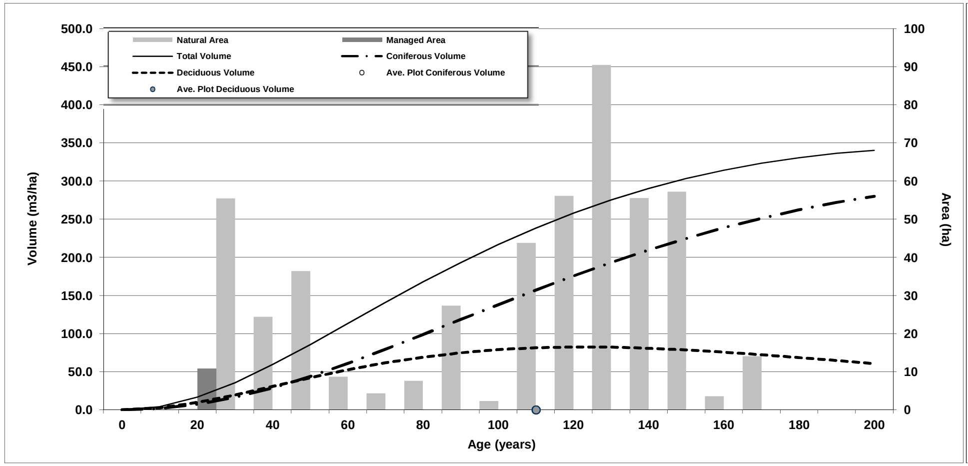


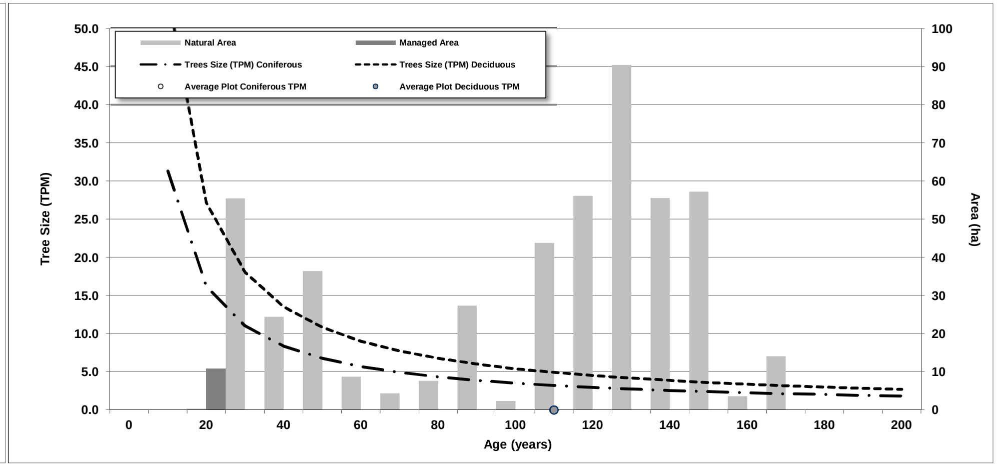


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.013447	R2	0.438	B0	0.00777	R2	0.27
Number of Plots	101	B1	2.273202	Mean Bias	(3.431)	B1	2.21301	Mean Bias	(1.22)
Total Area	42,973	B2	0.013447	RMSE	3,931	B2	0.00777	RMSE	5,734.35
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	360.356245	R2	0.584	B0	226.40612	R2	0.39
Number of Plots	99	B1	(0.962912)	Mean Bias	(0.131)	B1	(0.84722)	Mean Bias	(0.17)
		B2	-	RMSE	12	B2		RMSE	24.35

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-	2	0.0	0.0								
10	2.2	0.22	1.2	0.12	3.4	0.34	8	2,406	5	0.0	0.0				39.2	32.19	5	0.0	0.0
20	9.3	0.47	5.0	0.25	14.4	0.72	937	442	15	2.0	10.3				20.1	17.89	15	10.9	11.9
30	20.5	0.68	11.4	0.38	31.9	1.06	2,719	-	26	16.7	8.6				13.6	12.69	26	11.8	14.0
40	34.4	0.86	20.0	0.50	54.4	1.36	5,866	-	9	25.0	13.9				10.3	9.94	9	12.3	12.9
50	50.0	1.00	30.3	0.61	80.3	1.61	3,967	-	1	1.3	9.4				8.3	8.23	1	18.4	13.2
60	66.1	1.10	42.0	0.70	108.1	1.80	1,237	-	1	97.0	0.0				7.0	7.05	1	8.3	0.0
70	82.1	1.17	54.6	0.78	136.7	1.95	988	-	5	133.9	59.6				6.0	6.19	5	4.3	4.6
80	97.2	1.21	67.9	0.85	165.1	2.06	1,723	-	3	93.8	37.0				5.3	5.53	3	3.1	7.7
90	111.0	1.23	81.6	0.91	192.6	2.14	1,329	-	5	211.2	60.4				4.7	5.00	5	3.8	6.2
100	123.3	1.23	95.3	0.95	218.6	2.19	1,004	-	15	142.5	53.1	4	123.0	108.0	4.3	4.58	15	3.3	4.6
110	133.9	1.22	108.9	0.99	242.7	2.21	3,767	-	8	159.4	116.1				3.9	4.22	8	3.3	3.5
120	142.6	1.19	122.1	1.02	264.7	2.21	12,009	-	2	262.6	134.7				3.6	3.92	2	1.1	0.9
130	149.6	1.15	134.9	1.04	284.4	2.19	2,958	-	2	131.2	42.1				3.3	3.66	2	5.6	3.5
140	154.7	1.11	147.0	1.05	301.8	2.16	791	-							3.1	3.44			
150	158.2	1.05	158.5	1.06	316.7	2.11	458	-	2	135.6	142.1				2.9	3.25	2	3.7	3.0
160	160.2	1.00	169.1	1.06	329.3	2.06	235	-							2.7	3.07			
170	160.7	0.95	178.9	1.05	339.7	2.00	27	-							2.6	2.92			
180	160.0	0.89	187.9	1.04	347.9	1.93	78	-							2.4	2.78			
190	158.2	0.83	195.9	1.03	354.1	1.86	12	-							2.3	2.66			
200	155.4	0.78	203.1	1.02	358.4	1.79	11	-							2.2	2.54			

Yieldclass RSA Stratum SB/HW (TL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

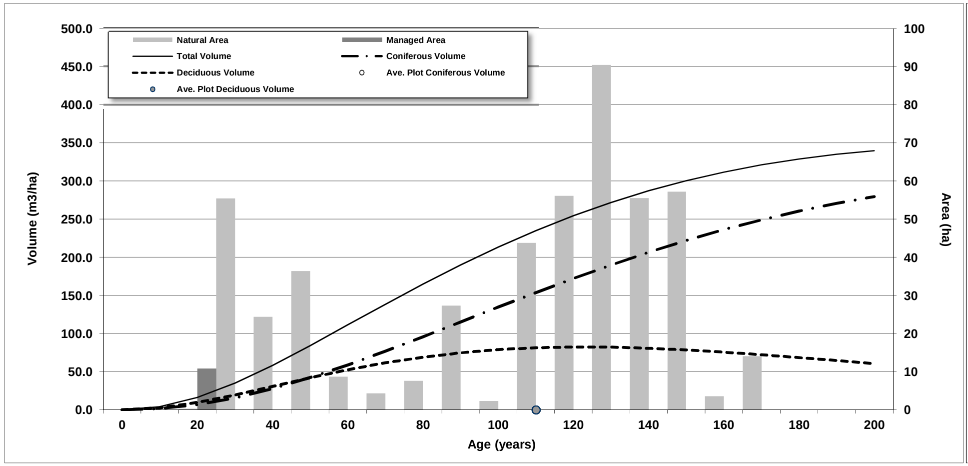


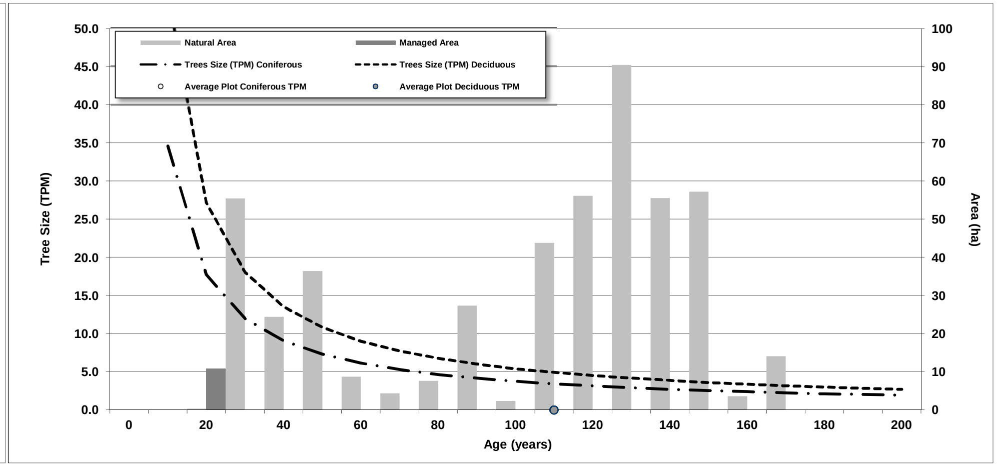


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.008772	R2	0.398	B0	0.01801	R2	0.17
Number of Plots	3	B1	2.288511	Mean Bias	(3.711)	B1	2.21161	Mean Bias	(4.71)
Total Area	498	B2	0.008772	RMSE	7,179	B2	0.01801	RMSE	5,212.38
TPM/Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1		B0	281.128520	R2	0.464	B0	551.18904	R2	0.33
Number of Plots	3	B1	(0.953015)	Mean Bias	(0.120)	B1	(1.00511)	Mean Bias	(0.39)
		B2	-	RMSE	10	B2		RMSE	54.40

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	1.6	0.16	2.4	0.24	4.0	0.40	-	-							31.3	54.47			
20	7.0	0.35	9.5	0.47	16.5	0.82	0	11							16.2	27.14			
30	16.2	0.54	19.4	0.65	35.6	1.19	55	-							11.0	18.06			
40	28.6	0.72	30.6	0.77	59.2	1.48	24	-							8.4	13.52			
50	43.7	0.87	41.9	0.84	85.6	1.71	36	-							6.8	10.81			
60	60.8	1.01	52.3	0.87	113.1	1.89	9	-							5.7	9.00			
70	79.2	1.13	61.5	0.88	140.7	2.01	4	-							4.9	7.71			
80	98.5	1.23	69.0	0.86	167.5	2.09	8	-							4.3	6.74			
90	118.2	1.31	74.8	0.83	192.9	2.14	27	-							3.9	5.99			
100	137.8	1.38	78.8	0.79	216.6	2.17	2	-							3.5	5.38			
110	157.0	1.43	81.3	0.74	238.2	2.17	44	-	3	0.0	0.0				3.2	4.89	3	0.0	0.0
120	175.5	1.46	82.3	0.69	257.8	2.15	56	-							2.9	4.48			
130	193.0	1.48	82.0	0.63	275.1	2.12	90	-							2.7	4.14			
140	209.5	1.50	80.7	0.58	290.2	2.07	55	-							2.5	3.84			
150	224.7	1.50	78.5	0.52	303.3	2.02	57	-							2.4	3.58			
160	238.6	1.49	75.7	0.47	314.3	1.96	4	-							2.2	3.36			
170	251.1	1.48	72.3	0.43	323.4	1.90	14	-							2.1	3.16			
180	262.2	1.46	68.5	0.38	330.7	1.84	-	-							2.0	2.98			
190	271.8	1.43	64.5	0.34	336.3	1.77	-	-							1.9	2.82			
200	280.0	1.40	60.3	0.30	340.3	1.70	-	-							1.8	2.68			

Yieldclass RSA Stratum SB/HW (CTL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

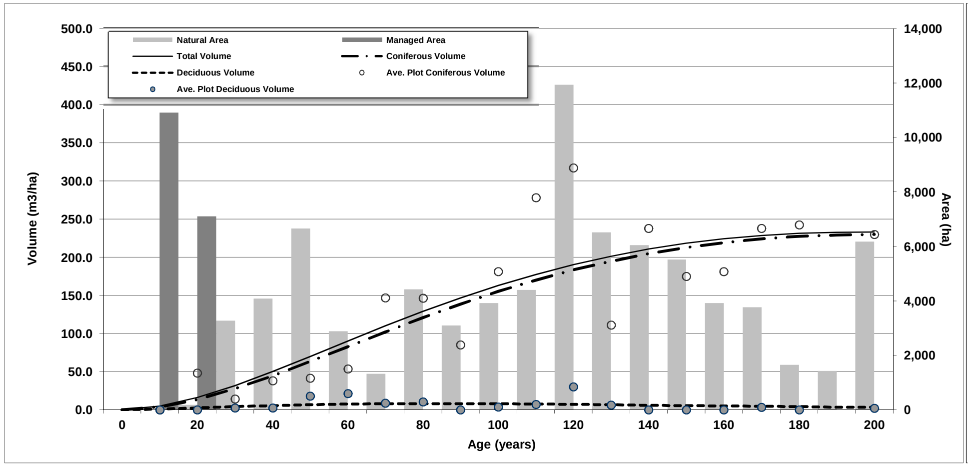


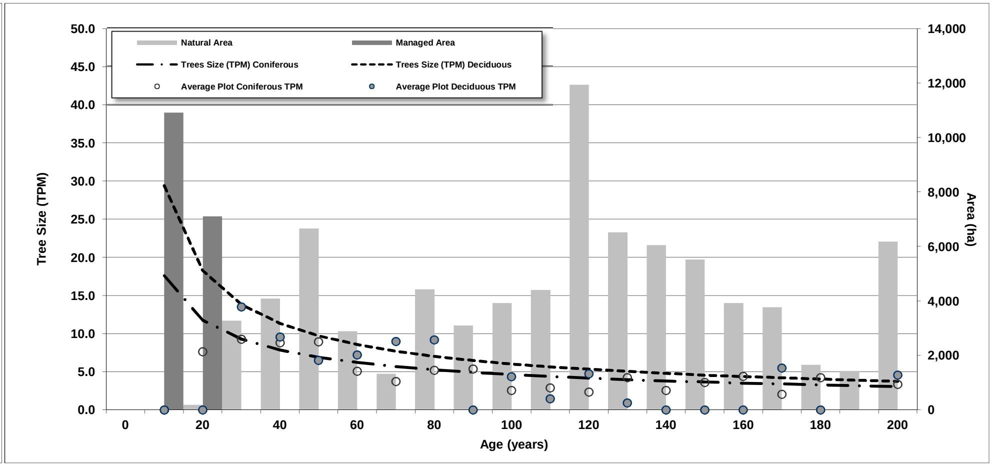


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.008522	R2	0.397	B0	0.01801	R2	0.17
Number of Plots	3	B1	2.284219	Mean Bias	(3.861)	B1	2.21161	Mean Bias	(4.71)
Total Area	498	B2	0.008522	RMSE	7,034	B2	0.01801	RMSE	5,212.38
TPM/Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1		B0	320.112460	R2	0.478	B0	551.18904	R2	0.33
Number of Plots	3	B1	(0.966536)	Mean Bias	(0.141)	B1	(1.00511)	Mean Bias	(0.39)
		B2	-	RMSE	11	B2		RMSE	54.40

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	1.5	0.15	2.4	0.24	4.0	0.40	-	-							34.6	54.47			
20	6.7	0.34	9.5	0.47	16.2	0.81	0	11							17.7	27.14			
30	15.6	0.52	19.4	0.65	35.0	1.17	55	-							12.0	18.06			
40	27.7	0.69	30.6	0.77	58.3	1.46	24	-							9.1	13.52			
50	42.3	0.85	41.9	0.84	84.2	1.68	36	-							7.3	10.81			
60	58.9	0.98	52.3	0.87	111.2	1.85	9	-							6.1	9.00			
70	76.9	1.10	61.5	0.88	138.4	1.98	4	-							5.3	7.71			
80	95.8	1.20	69.0	0.86	164.8	2.06	8	-							4.6	6.74			
90	115.2	1.28	74.8	0.83	189.9	2.11	27	-							4.1	5.99			
100	134.5	1.35	78.8	0.79	213.4	2.13	2	-							3.7	5.38			
110	153.6	1.40	81.3	0.74	234.9	2.14	44	-	3	0.0	0.0				3.4	4.89	3	0.0	0.0
120	172.1	1.43	82.3	0.69	254.4	2.12	56	-							3.1	4.48			
130	189.7	1.46	82.0	0.63	271.8	2.09	90	-							2.9	4.14			
140	206.4	1.47	80.7	0.58	287.1	2.05	55	-							2.7	3.84			
150	221.8	1.48	78.5	0.52	300.4	2.00	57	-							2.5	3.58			
160	236.1	1.48	75.7	0.47	311.7	1.95	4	-							2.4	3.36			
170	249.0	1.46	72.3	0.43	321.3	1.89	14	-							2.2	3.16			
180	260.5	1.45	68.5	0.38	329.0	1.83	-	-							2.1	2.98			
190	270.7	1.42	64.5	0.34	335.2	1.76	-	-							2.0	2.82			
200	279.5	1.40	60.3	0.30	339.8	1.70	-	-							1.9	2.68			

Yieldclass RSA Stratum SW (TL) | 15/11/15cm/3.76m coniferous | 15/10/30cm/2.67m deciduous

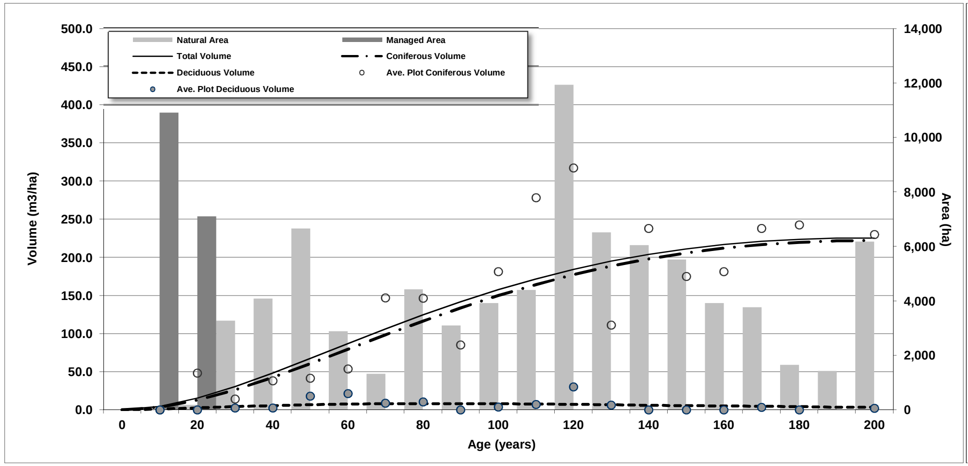


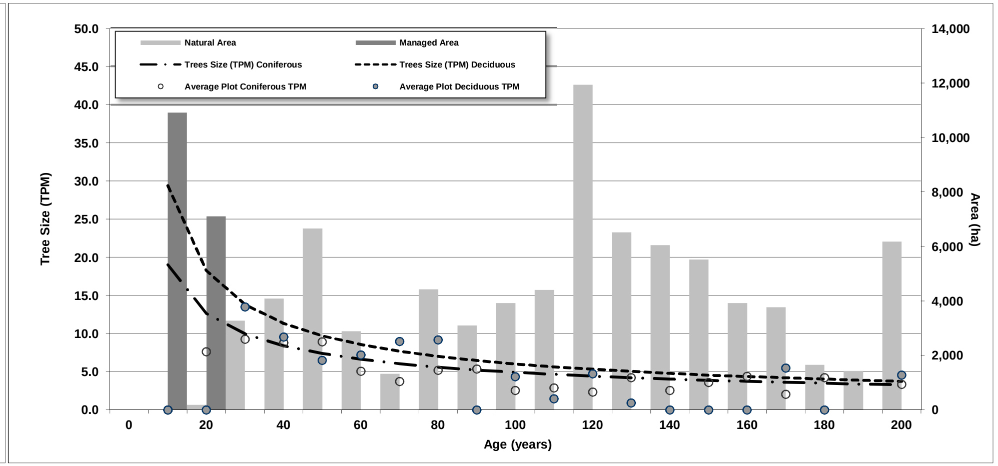


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.038519	R2	0.317	B0	0.02121	R2	0.02
Number of Plots	166	B1	2.021140	Mean Bias	(0.146)	B1	1.74310	Mean Bias	(0.55)
Total Area	99,227	B2	0.010069	RMSE	12,880	B2	0.02121	RMSE	341.85
TPM/Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1		B0	67.116732	R2	0.301	B0	143.58247	R2	0.23
Number of Plots	166	B1	(0.582072)	Mean Bias	(0.021)	B1	(0.68882)	Mean Bias	0.02
		B2	-	RMSE	10	B2		RMSE	24.64

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	3.7	0.37	0.9	0.09	4.6	0.46	-	10,909	2	0.0	0.0				17.6	29.40	2	0.0	0.0
20	13.4	0.67	2.6	0.13	16.0	0.80	182	7,103	14	48.1	0.0				11.7	18.24	14	7.6	0.0
30	27.5	0.92	4.2	0.14	31.8	1.06	3,276	-	14	14.2	2.3				9.3	13.79	14	9.3	13.5
40	44.5	1.11	5.6	0.14	50.2	1.25	4,083	-	28	38.0	2.6	1	411.5	9.0	7.8	11.31	28	8.8	9.6
50	63.2	1.26	6.7	0.13	69.9	1.40	6,659	-	3	41.7	18.0				6.9	9.70	3	8.9	6.5
60	82.6	1.38	7.5	0.12	90.1	1.50	2,890	-	7	53.5	21.2				6.2	8.56	7	5.1	7.2
70	102.0	1.46	7.9	0.11	109.9	1.57	1,322	-	5	146.7	8.8	1	265.1	27.8	5.7	7.69	5	3.7	9.0
80	120.9	1.51	8.1	0.10	128.9	1.61	4,421	-	10	146.3	10.6				5.2	7.02	10	5.2	9.2
90	138.6	1.54	8.0	0.09	146.7	1.63	3,099	-	3	85.0	0.0	1	69.1		4.9	6.47	3	5.4	0.0
100	155.1	1.55	7.8	0.08	162.9	1.63	3,921	-	11	181.1	3.7				4.6	6.02	11	2.6	4.4
110	170.1	1.55	7.4	0.07	177.5	1.61	4,406	-	7	278.2	7.2				4.4	5.64	7	2.9	1.5
120	183.3	1.53	7.0	0.06	190.3	1.59	11,934	-	8	317.4	30.2				4.1	5.31	8	2.4	4.7
130	194.9	1.50	6.5	0.05	201.4	1.55	6,512	-	11	111.3	6.2				3.9	5.02	11	4.3	0.9
140	204.7	1.46	6.0	0.04	210.7	1.50	6,051	-	7	238.2	0.0	1	127.0		3.8	4.77	7	2.6	0.0
150	212.8	1.42	5.5	0.04	218.2	1.45	5,512	-	9	174.9	0.0				3.6	4.55	9	3.6	0.0
160	219.2	1.37	5.0	0.03	224.2	1.40	3,923	-	6	181.4	0.0				3.5	4.35	6	4.4	0.0
170	224.0	1.32	4.5	0.03	228.5	1.34	3,771	-	4	238.1	3.4				3.4	4.18	4	2.0	5.5
180	227.4	1.26	4.0	0.02	231.4	1.29	1,656	-	3	242.5	0.0				3.3	4.01	3	4.2	0.0
190	229.4	1.21	3.5	0.02	232.9	1.23	1,423	-							3.2	3.87			
200	230.0	1.15	3.1	0.02	233.2	1.17	6,172	-	14.0	229.9	1.9	1	120.9		3.1	3.73	14.0	3.4	4.6

Yieldclass RSA Stratum SW (CTL) 15/11/15cm/3.76m coniferous 15/10/30cm/2.67m deciduous

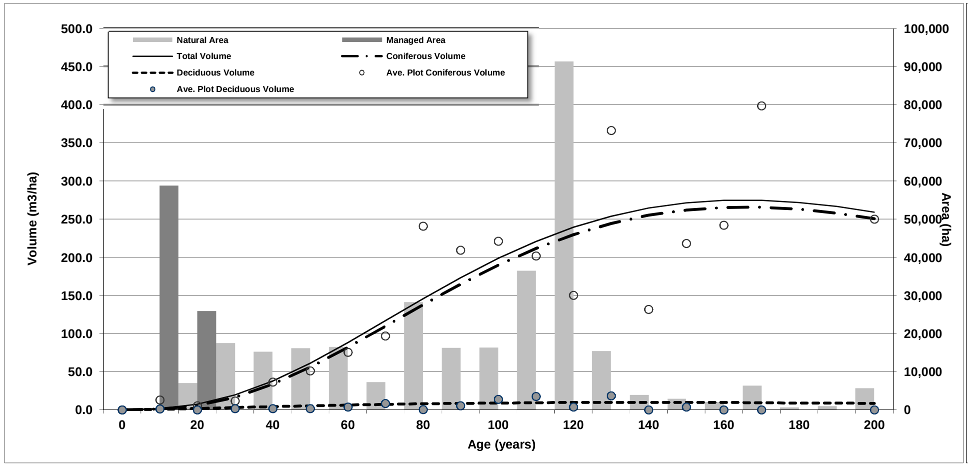


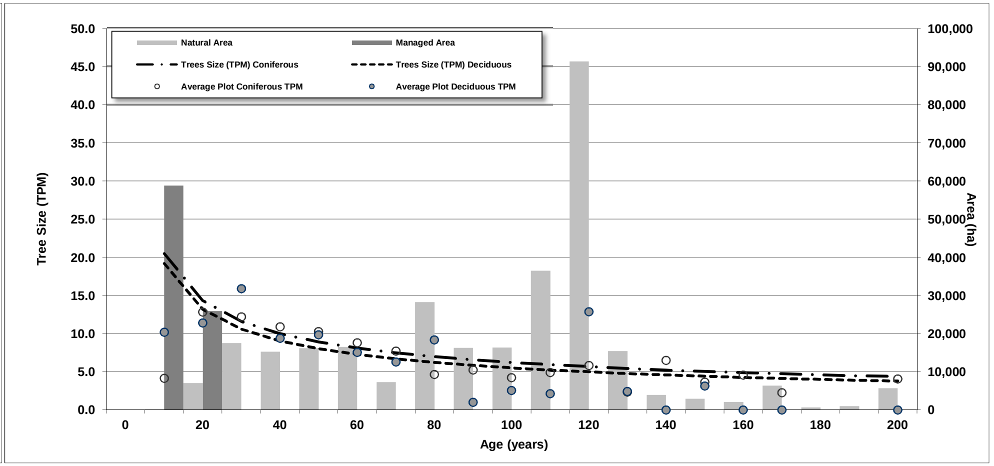


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.033872	R2	0.311	B0	0.02121	R2	0.02
Number of Plots	166	B1	2.044547	Mean Bias	(0.112)	B1	1.74310	Mean Bias	(0.55)
Total Area	99,227	B2	0.010222	RMSE	12,452	B2	0.02121	RMSE	341.85
TPM/Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1		B0	73.602673	R2	0.302	B0	143.58247	R2	0.23
Number of Plots	166	B1	(0.587964)	Mean Bias	(0.027)	B1	(0.68882)	Mean Bias	0.02
		B2	-	RMSE	11	B2		RMSE	24.64

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	3.4	0.34	0.9	0.09	4.3	0.43	-	10,909	2	0.0	0.0				19.0	29.40	2	0.0	0.0
20	12.6	0.63	2.6	0.13	15.2	0.76	182	7,103	14	48.1	0.0				12.6	18.24	14	7.6	0.0
30	26.1	0.87	4.2	0.14	30.3	1.01	3,276	-	14	14.2	2.3				10.0	13.79	14	9.3	13.5
40	42.4	1.06	5.6	0.14	48.1	1.20	4,083	-	28	38.0	2.6	1	411.5	9.0	8.4	11.31	28	8.8	9.6
50	60.5	1.21	6.7	0.13	67.2	1.34	6,659	-	3	41.7	18.0				7.4	9.70	3	8.9	6.5
60	79.2	1.32	7.5	0.12	86.7	1.45	2,890	-	7	53.5	21.2				6.6	8.56	7	5.1	7.2
70	98.1	1.40	7.9	0.11	106.0	1.51	1,322	-	5	146.7	8.8	1	265.1	27.8	6.1	7.69	5	3.7	9.0
80	116.3	1.45	8.1	0.10	124.4	1.55	4,421	-	10	146.3	10.6				5.6	7.02	10	5.2	9.2
90	133.6	1.48	8.0	0.09	141.6	1.57	3,099	-	3	85.0	0.0	1	69.1		5.2	6.47	3	5.4	0.0
100	149.6	1.50	7.8	0.08	157.4	1.57	3,921	-	11	181.1	3.7				4.9	6.02	11	2.6	4.4
110	164.1	1.49	7.4	0.07	171.6	1.56	4,406	-	7	278.2	7.2				4.6	5.64	7	2.9	1.5
120	177.1	1.48	7.0	0.06	184.1	1.53	11,934	-	8	317.4	30.2				4.4	5.31	8	2.4	4.7
130	188.3	1.45	6.5	0.05	194.8	1.50	6,512	-	11	111.3	6.2				4.2	5.02	11	4.3	0.9
140	197.8	1.41	6.0	0.04	203.8	1.46	6,051	-	7	238.2	0.0	1	127.0		4.0	4.77	7	2.6	0.0
150	205.6	1.37	5.5	0.04	211.1	1.41	5,512	-	9	174.9	0.0				3.9	4.55	9	3.6	0.0
160	211.8	1.32	5.0	0.03	216.8	1.35	3,923	-	6	181.4	0.0				3.7	4.35	6	4.4	0.0
170	216.5	1.27	4.5	0.03	220.9	1.30	3,771	-	4	238.1	3.4				3.6	4.18	4	2.0	5.5
180	219.7	1.22	4.0	0.02	223.6	1.24	1,656	-	3	242.5	0.0				3.5	4.01	3	4.2	0.0
190	221.5	1.17	3.5	0.02	225.0	1.18	1,423	-							3.4	3.87			
200	222.1	1.11	3.1	0.02	225.2	1.13	6,172	-	14.0	229.9	1.9	1	120.9		3.3	3.73	14.0	3.4	4.6

Yieldclass **RSA Stratum PL (TL)** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**

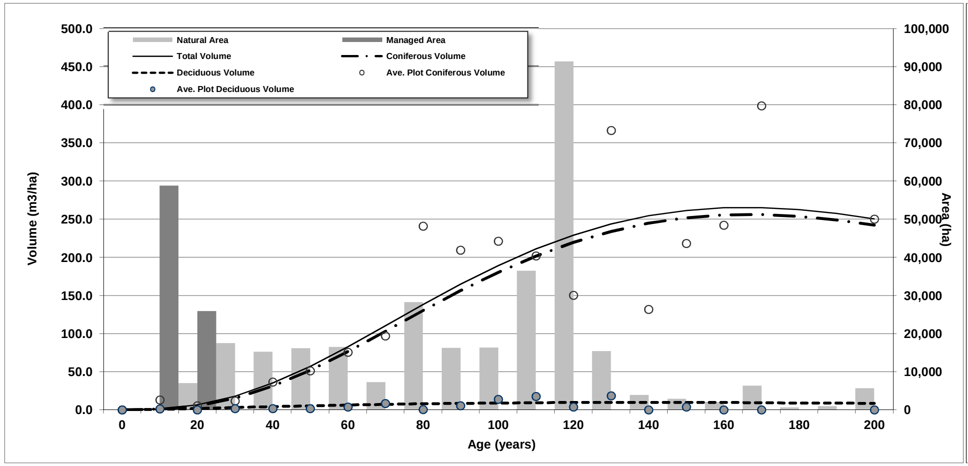


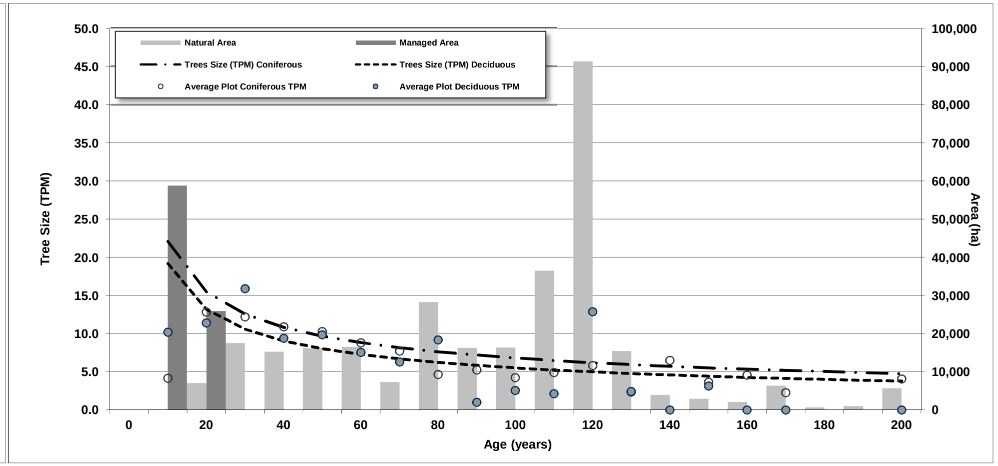


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.000713	R2	0.534	B0	0.01252	R2	0.03
Number of Plots	531	B1	3.121352	Mean Bias	(0.515)	B1	1.70013	Mean Bias	(0.65)
Total Area	390,720	B2	0.018839	RMSE	7,738	B2	0.01252	RMSE	559.90
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	67.392289	R2	0.329	B0	66.96464	R2	0.21
Number of Plots	525	B1	(0.517541)	Mean Bias	(0.089)	B1	(0.54312)	Mean Bias	(0.17)
		B2	-	RMSE	13	B2		RMSE	36.31

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-	6	0.0	0.0								
10	0.8	0.08	0.6	0.06	1.3	0.13	40	58,788	63	13.1	1.4				20.5	19.17	63	4.1	10.2
20	5.6	0.28	1.6	0.08	7.2	0.36	6,986	25,895	63	5.5	0.2				14.3	13.16	63	12.8	11.4
30	16.5	0.55	2.8	0.09	19.3	0.64	17,514	-	50	11.7	1.5				11.6	10.56	50	12.2	15.9
40	33.6	0.84	4.0	0.10	37.6	0.94	15,210	-	57	36.6	1.6				10.0	9.03	57	10.9	9.4
50	55.9	1.12	5.2	0.10	61.0	1.22	16,183	-	40	51.2	1.7	2	222.0	14.3	8.9	8.00	40	10.3	9.8
60	81.7	1.36	6.2	0.10	88.0	1.47	16,449	-	30	75.5	3.6				8.1	7.25	30	8.8	7.6
70	109.5	1.56	7.1	0.10	116.7	1.67	7,230	-	18	97.1	8.4				7.5	6.66	18	7.7	6.3
80	137.6	1.72	7.9	0.10	145.6	1.82	28,216	-	9	241.1	0.3	1	353.3		7.0	6.20	9	4.6	9.2
90	164.7	1.83	8.5	0.09	173.2	1.92	16,214	-	29	209.6	5.4	2	254.5		6.6	5.81	29	5.2	1.0
100	189.5	1.90	9.0	0.09	198.5	1.99	16,283	-	52	221.1	13.9	13	298.6	18.3	6.2	5.49	52	4.2	2.6
110	211.4	1.92	9.3	0.08	220.7	2.01	36,495	-	51	201.8	17.6	11	271.8	32.0	5.9	5.21	51	4.9	2.1
120	229.7	1.91	9.6	0.08	239.2	1.99	91,361	-	9	150.0	4.0				5.7	4.97	9	5.8	12.9
130	244.2	1.88	9.7	0.07	253.9	1.95	15,385	-	11	366.4	18.5				5.4	4.76	11	2.4	2.4
140	255.0	1.82	9.7	0.07	264.6	1.89	3,922	-	7	132.0	0.0				5.2	4.57	7	6.5	0.0
150	261.9	1.75	9.6	0.06	271.5	1.81	2,881	-	10	218.1	3.6	2	422.7		5.0	4.41	10	3.7	3.2
160	265.4	1.66	9.4	0.06	274.8	1.72	2,089	-	14	242.2	0.0				4.9	4.25	14	4.6	0.0
170	265.6	1.56	9.2	0.05	274.8	1.62	6,337	-	1	398.5	0.0				4.7	4.12	1	2.3	0.0
180	263.0	1.46	9.0	0.05	271.9	1.51	635	-							4.6	3.99			
190	257.8	1.36	8.7	0.05	266.5	1.40	956	-							4.5	3.87			
200	250.7	1.25	8.4	0.04	259.0	1.30	5,652	-	11.0	249.9	0.0	2	190.0		4.3	3.77	11.0	4.1	0.0

Yieldclass **RSA Stratum PL (CTL)** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**

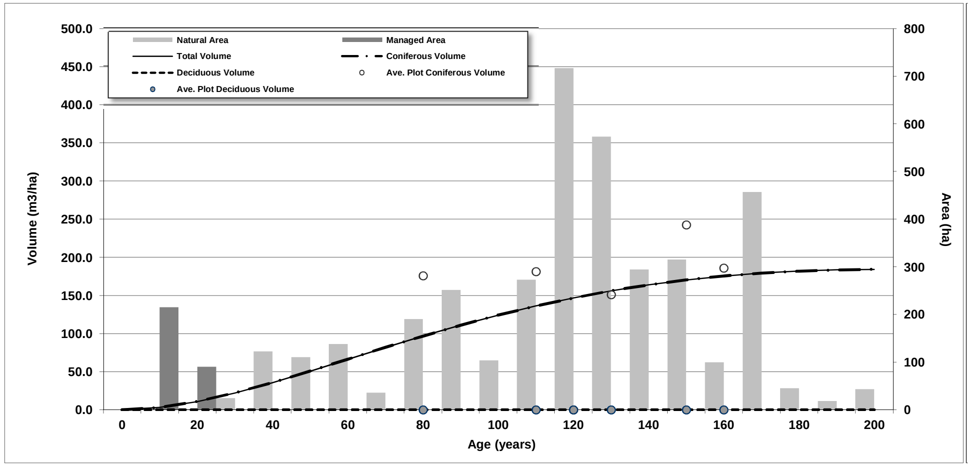


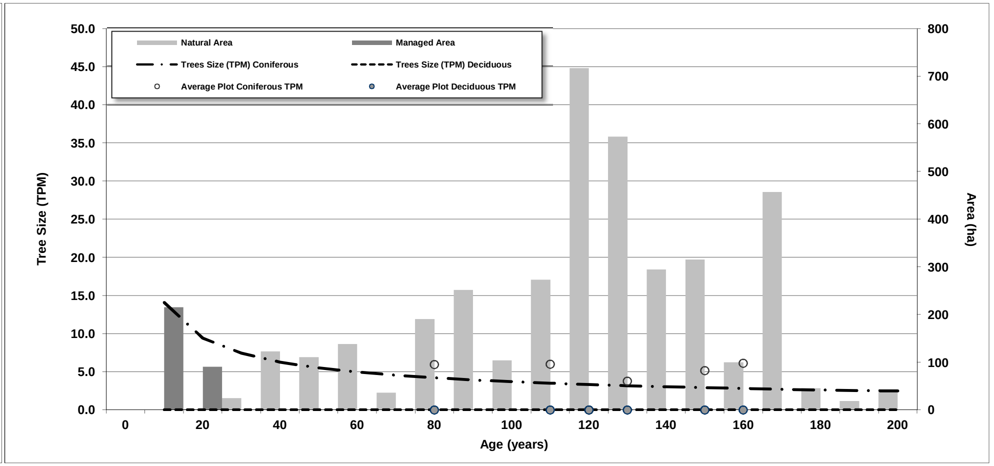


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.000545	R2	0.522	B0	0.01252	R2	0.03
Number of Plots	531	B1	3.173133	Mean Bias	(0.447)	B1	1.70013	Mean Bias	(0.65)
Total Area	390,720	B2	0.019042	RMSE	7,477	B2	0.01252	RMSE	559.90
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	71.867376	R2	0.322	B0	66.96464	R2	0.21
Number of Plots	525	B1	(0.512715)	Mean Bias	(0.098)	B1	(0.54312)	Mean Bias	(0.17)
		B2	-	RMSE	16	B2		RMSE	36.31

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-	6	0.0	0.0								
10	0.7	0.07	0.6	0.06	1.2	0.12	40	58,788	63	13.1	1.4				22.1	19.17	63	4.1	10.2
20	5.0	0.25	1.6	0.08	6.6	0.33	6,986	25,895	63	5.5	0.2				15.5	13.16	63	12.8	11.4
30	15.0	0.50	2.8	0.09	17.8	0.59	17,514	-	50	11.7	1.5				12.6	10.56	50	12.2	15.9
40	30.8	0.77	4.0	0.10	34.9	0.87	15,210	-	57	36.6	1.6				10.8	9.03	57	10.9	9.4
50	51.8	1.04	5.2	0.10	56.9	1.14	16,183	-	40	51.2	1.7	2	222.0	14.3	9.7	8.00	40	10.3	9.8
60	76.3	1.27	6.2	0.10	82.5	1.38	16,449	-	30	75.5	3.6				8.8	7.25	30	8.8	7.6
70	102.9	1.47	7.1	0.10	110.0	1.57	7,230	-	18	97.1	8.4				8.1	6.66	18	7.7	6.3
80	129.9	1.62	7.9	0.10	137.8	1.72	28,216	-	9	241.1	0.3	1	353.3		7.6	6.20	9	4.6	9.2
90	156.0	1.73	8.5	0.09	164.5	1.83	16,214	-	29	209.6	5.4	2	254.5		7.2	5.81	29	5.2	1.0
100	180.2	1.80	9.0	0.09	189.2	1.89	16,283	-	52	221.1	13.9	13	298.6	18.3	6.8	5.49	52	4.2	2.6
110	201.5	1.83	9.3	0.08	210.9	1.92	36,495	-	51	201.8	17.6	11	271.8	32.0	6.5	5.21	51	4.9	2.1
120	219.6	1.83	9.6	0.08	229.1	1.91	91,361	-	9	150.0	4.0				6.2	4.97	9	5.8	12.9
130	234.0	1.80	9.7	0.07	243.6	1.87	15,385	-	11	366.4	18.5				5.9	4.76	11	2.4	2.4
140	244.7	1.75	9.7	0.07	254.3	1.82	3,922	-	7	132.0	0.0				5.7	4.57	7	6.5	0.0
150	251.7	1.68	9.6	0.06	261.3	1.74	2,881	-	10	218.1	3.6	2	422.7		5.5	4.41	10	3.7	3.2
160	255.4	1.60	9.4	0.06	264.8	1.66	2,089	-	14	242.2	0.0				5.3	4.25	14	4.6	0.0
170	255.9	1.51	9.2	0.05	265.1	1.56	6,337	-	1	398.5	0.0				5.2	4.12	1	2.3	0.0
180	253.6	1.41	9.0	0.05	262.6	1.46	635	-							5.0	3.99			
190	248.8	1.31	8.7	0.05	257.5	1.36	956	-							4.9	3.87			
200	242.0	1.21	8.4	0.04	250.4	1.25	5,652	-	11.0	249.9	0.0	2	190.0		4.8	3.77	11.0	4.1	0.0

Yieldclass **RSA Stratum SB (TL)** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**

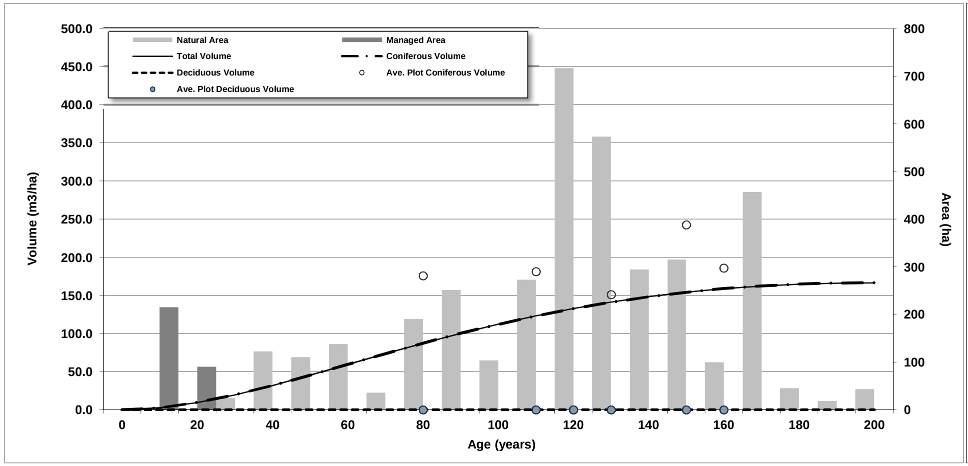


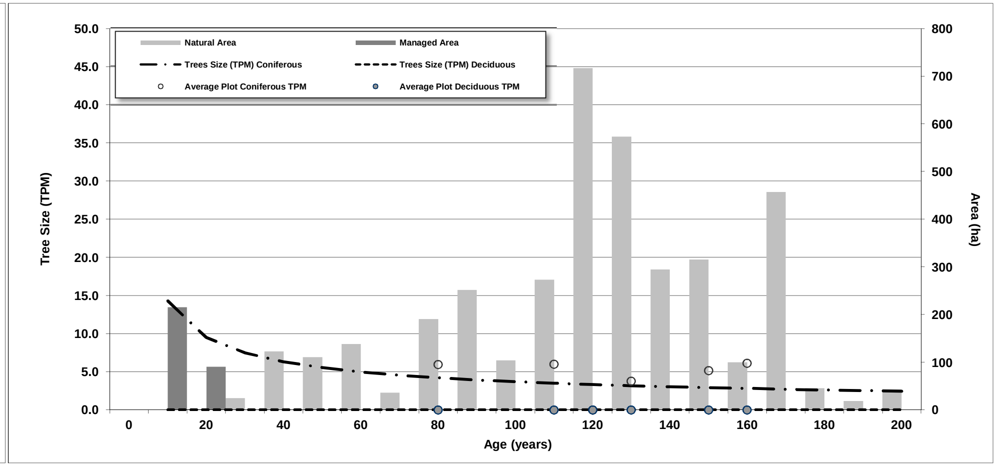


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.038519	R2	0.317	B0	0.02121	R2	0.02
Number of Plots	8	B1	2.021140	Mean Bias	(0.146)	B1	1.74310	Mean Bias	(0.55)
Total Area	4,121	B2	0.010069	RMSE	12,880	B2	0.02121	RMSE	341.85
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	67.116732	R2	0.301	B0	143.58247	R2	0.23
Number of Plots	8	B1	(0.582072)	Mean Bias	(0.021)	B1	(0.68882)	Mean Bias	0.02
		B2	-	RMSE	10	B2		RMSE	24.64

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	2.9	0.29	0.0	0.00	2.9	0.29	-	215							14.1	0.00			
20	10.7	0.54	0.0	0.00	10.7	0.54	1	91							9.4	0.00			
30	22.0	0.73	0.0	0.00	22.0	0.73	24	-							7.4	0.00			
40	35.6	0.89	0.0	0.00	35.6	0.89	123	-							6.3	0.00			
50	50.6	1.01	0.0	0.00	50.6	1.01	110	-							5.5	0.00			
60	66.1	1.10	0.0	0.00	66.1	1.10	138	-							5.0	0.00			
70	81.6	1.17	0.0	0.00	81.6	1.17	36	-							4.5	0.00			
80	96.7	1.21	0.0	0.00	96.7	1.21	191	-	1	176.0	0.0	1	176.0		4.2	0.00	1	6.0	0.0
90	110.9	1.23	0.0	0.00	110.9	1.23	252	-							3.9	0.00			
100	124.1	1.24	0.0	0.00	124.1	1.24	104	-							3.7	0.00			
110	136.0	1.24	0.0	0.00	136.0	1.24	273	-	1	181.2	0.0				3.5	0.00	1	6.0	0.0
120	146.7	1.22	0.0	0.00	146.7	1.22	717	-	2	0.0	0.0				3.3	0.00	2	0.0	0.0
130	155.9	1.20	0.0	0.00	155.9	1.20	573	-	2	151.2	0.0				3.2	0.00	2	3.8	0.0
140	163.8	1.17	0.0	0.00	163.8	1.17	294	-							3.0	0.00			
150	170.2	1.13	0.0	0.00	170.2	1.13	315	-	1	242.5	0.0				2.9	0.00	1	5.1	0.0
160	175.4	1.10	0.0	0.00	175.4	1.10	100	-	1	185.9	0.0				2.8	0.00	1	6.1	0.0
170	179.2	1.05	0.0	0.00	179.2	1.05	457	-							2.7	0.00			
180	181.9	1.01	0.0	0.00	181.9	1.01	46	-							2.6	0.00			
190	183.5	0.97	0.0	0.00	183.5	0.97	18	-							2.5	0.00			
200	184.0	0.92	0.0	0.00	184.0	0.92	43	-							2.5	0.00			

Yieldclass **RSA Stratum SB (CTL)** **15/11/15cm/3.76m coniferous** **15/10/30cm/2.67m deciduous**



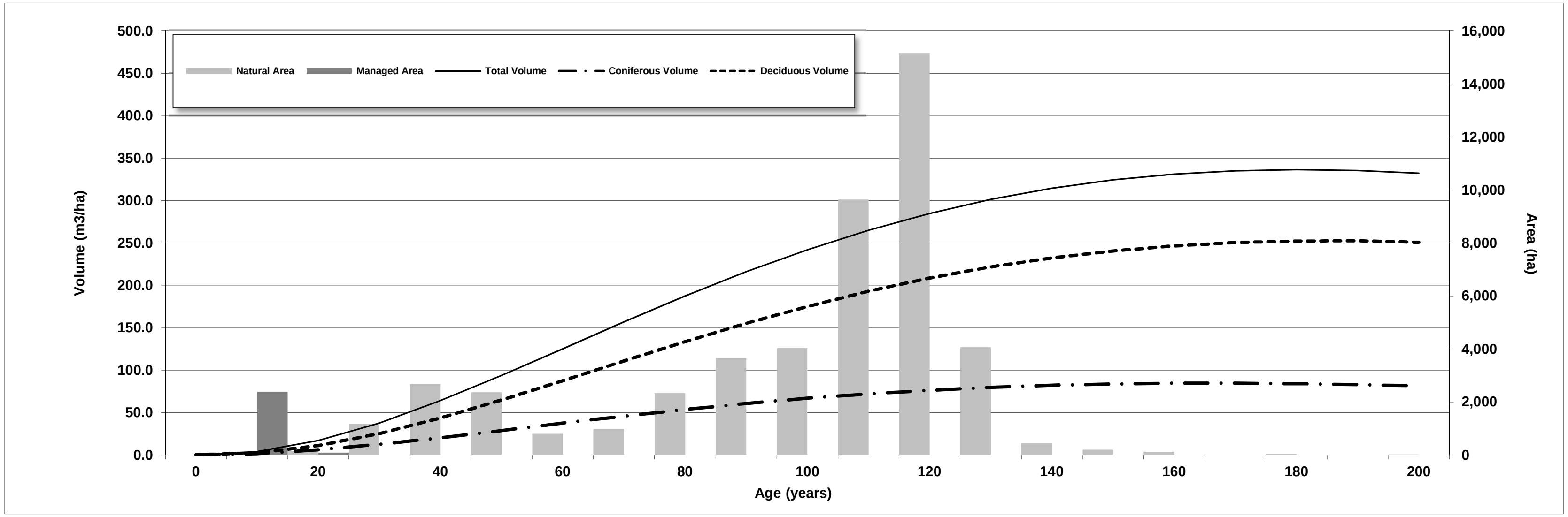


Volume /Age		Coniferous 15/11/.15cm/3.76m				Deciduous 15/10/.30cm/2.67m			
Volume = b0*age^b1*Exp(-b2*age)		B0	0.033872	R2	0.311	B0	0.02121	R2	0.02
Number of Plots	8	B1	2.044547	Mean Bias	(0.112)	B1	1.74310	Mean Bias	(0.55)
Total Area	4,121	B2	0.010222	RMSE	12,452	B2	0.02121	RMSE	341.85
TPM/Age		**Coniferous 15/11/.15cm/3.76m**				**Deciduous 15/10/.30cm/2.67m**			
Volume = b0*age^b1		B0	73.602673	R2	0.302	B0	143.58247	R2	0.23
Number of Plots	8	B1	(0.587964)	Mean Bias	(0.027)	B1	(0.68882)	Mean Bias	0.02
		B2	-	RMSE	11	B2		RMSE	24.64

	Gross Coniferous		Gross Deciduous		Total Volume		Area (ha)		Average Plot Volumes			Harvested Plot Volumes			Trees Size (TPM)		All Plots		
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Number of Plots	Average Plot Coniferous Volume	Average Plot Deciduous Volume	Number of Plots	Average Harvested Coniferous Volume	Average Harvested Deciduous Volume	Coniferous	Deciduous	Number of Plots	Average Plot Coniferous TPM	Average Plot Deciduous TPM
0	0.0	0.00	0.0	0.00	0.0		-	-											
10	2.5	0.25	0.0	0.00	2.5	0.25	-	215							14.3	0.00			
20	9.5	0.47	0.0	0.00	9.5	0.47	1	91							9.5	0.00			
30	19.6	0.65	0.0	0.00	19.6	0.65	24	-							7.5	0.00			
40	31.8	0.80	0.0	0.00	31.8	0.80	123	-							6.3	0.00			
50	45.3	0.91	0.0	0.00	45.3	0.91	110	-							5.5	0.00			
60	59.4	0.99	0.0	0.00	59.4	0.99	138	-							5.0	0.00			
70	73.5	1.05	0.0	0.00	73.5	1.05	36	-							4.5	0.00			
80	87.2	1.09	0.0	0.00	87.2	1.09	191	-	1	176.0	0.0	1	176.0		4.2	0.00	1	6.0	0.0
90	100.2	1.11	0.0	0.00	100.2	1.11	252	-							3.9	0.00			
100	112.2	1.12	0.0	0.00	112.2	1.12	104	-							3.7	0.00			
110	123.1	1.12	0.0	0.00	123.1	1.12	273	-	1	181.2	0.0				3.5	0.00	1	6.0	0.0
120	132.8	1.11	0.0	0.00	132.8	1.11	717	-	2	0.0	0.0				3.3	0.00	2	0.0	0.0
130	141.2	1.09	0.0	0.00	141.2	1.09	573	-	2	151.2	0.0				3.2	0.00	2	3.8	0.0
140	148.3	1.06	0.0	0.00	148.3	1.06	294	-							3.0	0.00			
150	154.2	1.03	0.0	0.00	154.2	1.03	315	-	1	242.5	0.0				2.9	0.00	1	5.1	0.0
160	158.9	0.99	0.0	0.00	158.9	0.99	100	-	1	185.9	0.0				2.8	0.00	1	6.1	0.0
170	162.4	0.96	0.0	0.00	162.4	0.96	457	-							2.7	0.00			
180	164.8	0.92	0.0	0.00	164.8	0.92	46	-							2.6	0.00			
190	166.1	0.87	0.0	0.00	166.1	0.87	18	-							2.5	0.00			
200	166.6	0.83	0.0	0.00	166.6	0.83	43	-							2.4	0.00			

Appendix I Regenerated Yield Relationships

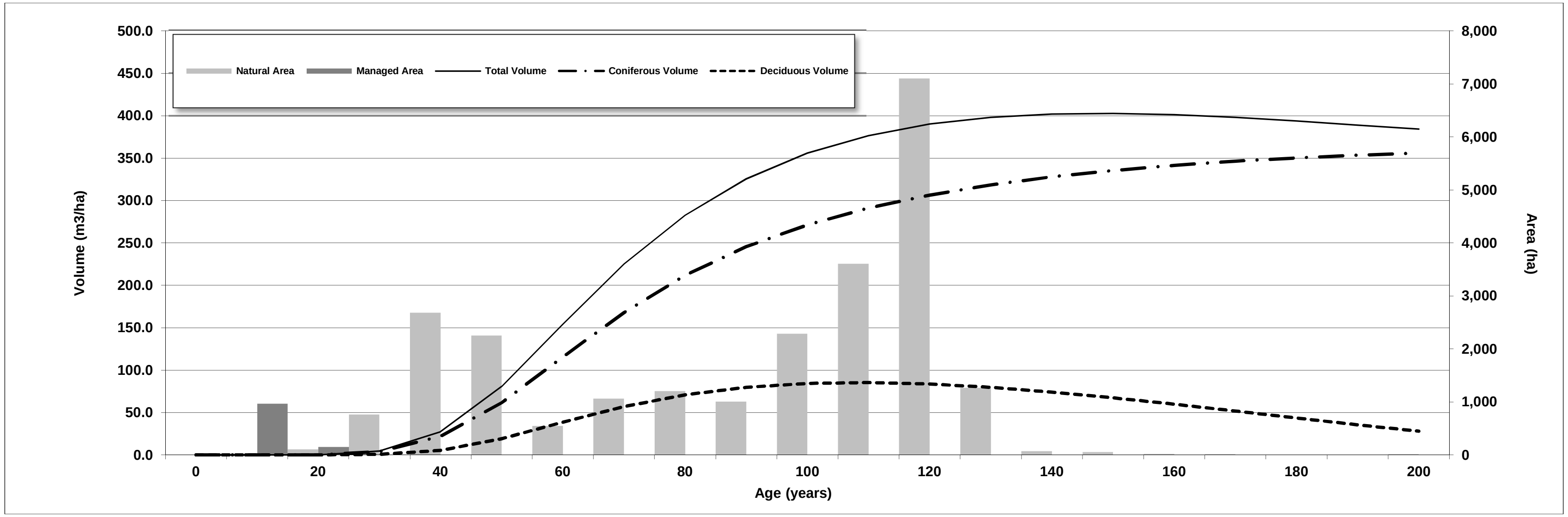
Yieldclass **Regenerated AW** **15/11/15cm/3.66m coniferous** **15/10/30cm/3.66m deciduous**



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	21	Managed	2,476.4
Total Area Sampled (ha)	92.3	Natural	47,880.9

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	1.5	0.15	2.5	0.25	4.0	0.40	-	2,390		
20	6.0	0.30	11.1	0.55	17.1	0.85	159	87		
30	12.5	0.42	25.2	0.84	37.8	1.26	1,170	-		
40	20.4	0.51	43.7	1.09	64.0	1.60	2,685	-	11.2	15.51
50	28.9	0.58	64.9	1.30	93.8	1.88	2,364	-	8.7	10.40
60	37.5	0.63	87.7	1.46	125.2	2.09	806	-	7.1	7.50
70	45.9	0.66	111.0	1.59	156.8	2.24	971	-	6.0	5.69
80	53.7	0.67	133.7	1.67	187.4	2.34	2,333	-	5.1	4.48
90	60.7	0.67	155.3	1.73	216.0	2.40	3,662	-	4.5	3.63
100	66.9	0.67	175.2	1.75	242.0	2.42	4,031	-	4.0	3.00
110	72.1	0.66	193.0	1.75	265.1	2.41	9,640	-	3.6	2.53
120	76.4	0.64	208.5	1.74	284.9	2.37	15,147	-	3.3	2.17
130	79.7	0.61	221.6	1.70	301.4	2.32	4,071	-	3.0	1.88
140	82.2	0.59	232.3	1.66	314.5	2.25	453	-	2.7	1.64
150	83.8	0.56	240.6	1.60	324.4	2.16	205	-	2.5	1.45
160	84.6	0.53	246.7	1.54	331.2	2.07	124	-	2.4	1.29
170	84.7	0.50	250.5	1.47	335.2	1.97	5	-	2.2	1.16
180	84.2	0.47	252.4	1.40	336.5	1.87	32	-	2.1	1.05
190	83.1	0.44	252.4	1.33	335.5	1.77	-	-	2.0	0.95
200	81.5	0.41	250.8	1.25	332.4	1.66	25	-	1.8	0.87

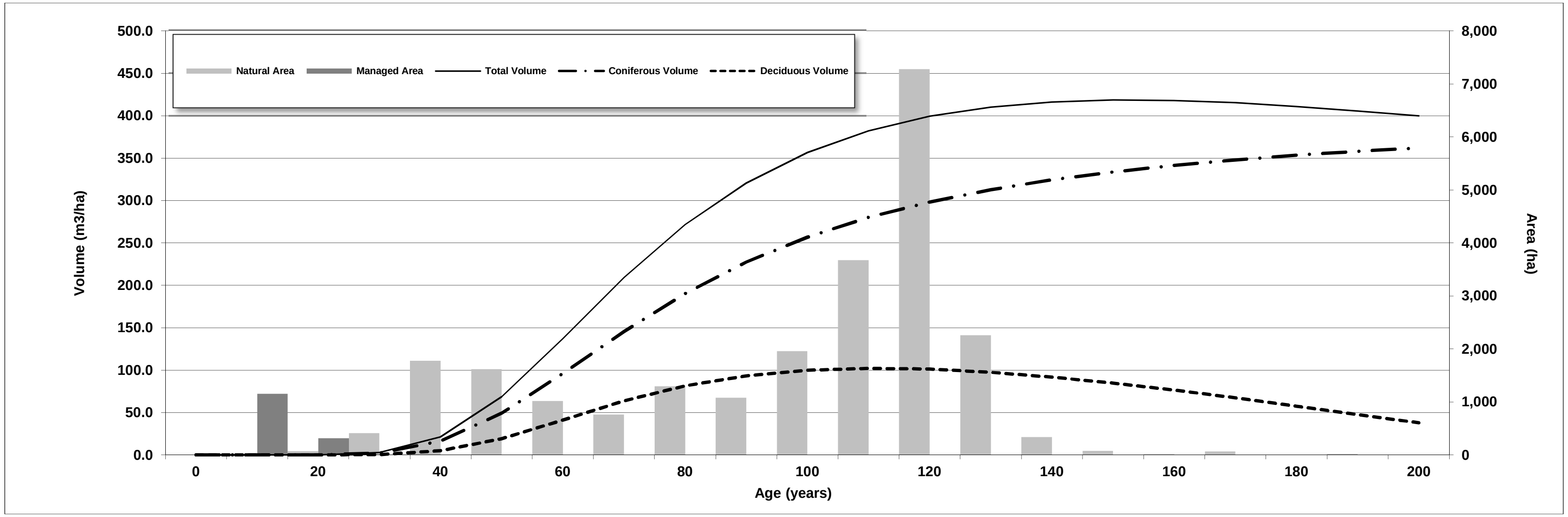
Yieldclass **Regenerated HW/PL** **15/11/15cm/3.66m coniferous** **15/10/30cm/3.66m deciduous**



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	169	Managed	1,119.5
Total Area Sampled (ha)	1,903.9	Natural	24,082.1

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	-	968		
20	0.2	0.01	0.0	0.00	0.2	0.01	106	152		
30	4.1	0.14	0.7	0.02	4.8	0.16	765	-		
40	22.0	0.55	5.5	0.14	27.5	0.69	2,682	-	77.7	71.68
50	61.7	1.23	19.1	0.38	80.8	1.62	2,255	-	25.3	25.12
60	115.5	1.92	38.6	0.64	154.1	2.57	546	-	11.5	12.42
70	168.1	2.40	57.1	0.82	225.2	3.22	1,062	-	6.7	7.94
80	211.7	2.65	71.0	0.89	282.7	3.53	1,205	-	4.7	6.06
90	245.6	2.73	79.9	0.89	325.5	3.62	1,008	-	3.6	5.40
100	271.4	2.71	84.4	0.84	355.9	3.56	2,290	-	2.9	6.15
110	291.3	2.65	85.4	0.78	376.6	3.42	3,606	-	2.4	49.28
120	306.6	2.55	83.6	0.70	390.2	3.25	7,106	-	2.1	566.09
130	318.5	2.45	79.8	0.61	398.3	3.06	1,270	-	1.8	4.86
140	327.9	2.34	74.2	0.53	402.1	2.87	72	-	1.6	16.23
150	335.4	2.24	67.4	0.45	402.8	2.69	57	-	1.4	8.70
160	341.4	2.13	59.9	0.37	401.3	2.51	21	-	1.3	8.38
170	346.3	2.04	51.8	0.30	398.1	2.34	16	-	1.2	16.21
180	350.3	1.95	43.6	0.24	393.8	2.19	-	-	1.1	2.27
190	353.5	1.86	35.5	0.19	389.0	2.05	-	-	1.0	2.18
200	356.1	1.78	28.2	0.14	384.4	1.92	15	-	0.9	1.09

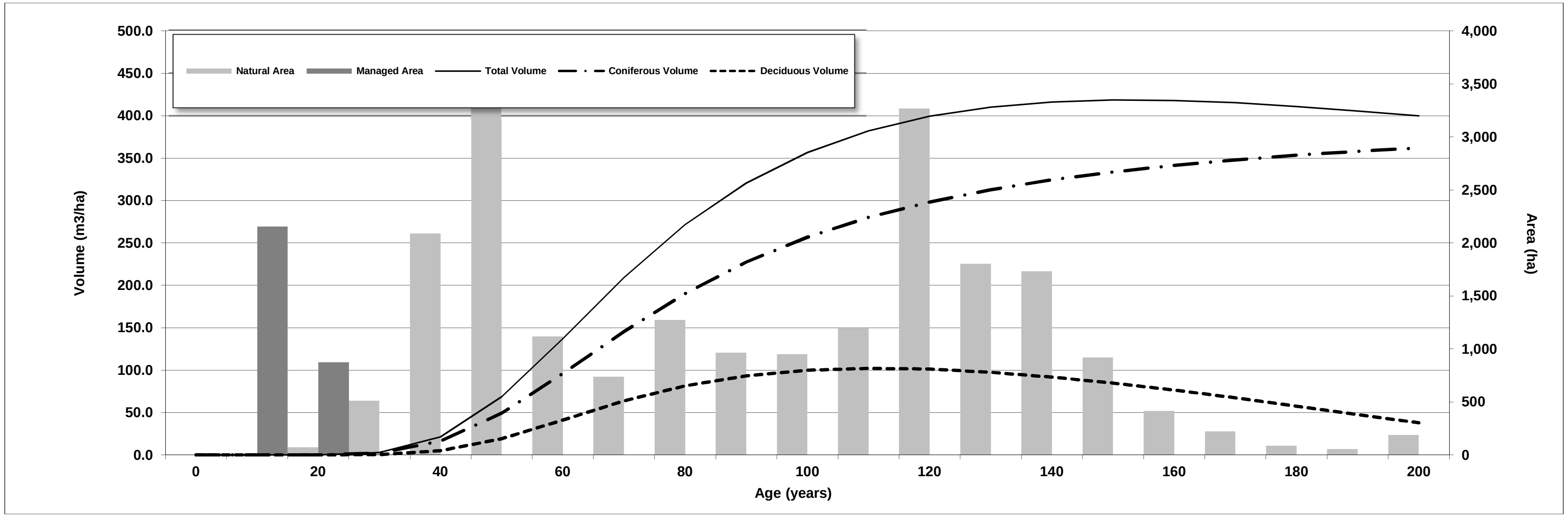
Yieldclass **Regenerated HW/SW** **15/11/15cm/3.66m coniferous** **15/10/30cm/3.66m deciduous**



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	165	Managed	1,467.4
Total Area Sampled (ha)	2,844.2	Natural	23,747.5

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	-	1,153		
20	0.0	0.00	0.0	0.00	0.1	0.00	70	314		
30	2.2	0.07	0.6	0.02	2.8	0.09	413	-		
40	16.3	0.41	5.2	0.13	21.4	0.54	1,778	-	56.8	77.49
50	49.4	0.99	19.3	0.39	68.6	1.37	1,618	-	20.1	27.89
60	95.9	1.60	41.3	0.69	137.3	2.29	1,020	-	10.2	12.93
70	145.5	2.08	63.8	0.91	209.3	2.99	764	-	6.5	7.74
80	190.3	2.38	81.5	1.02	271.8	3.40	1,294	-	4.7	5.56
90	227.4	2.53	93.3	1.04	320.7	3.56	1,083	-	3.7	4.58
100	256.9	2.57	99.9	1.00	356.8	3.57	1,958	-	3.0	4.48
110	280.1	2.55	102.2	0.93	382.3	3.48	3,674	-	2.5	12.18
120	298.3	2.49	101.2	0.84	399.5	3.33	7,279	-	2.2	657.45
130	312.8	2.41	97.5	0.75	410.3	3.16	2,261	-	1.9	14.63
140	324.4	2.32	91.9	0.66	416.2	2.97	341	-	1.7	31.16
150	333.8	2.23	84.8	0.57	418.6	2.79	78	-	1.5	2.44
160	341.5	2.13	76.6	0.48	418.1	2.61	18	-	1.3	69.61
170	348.0	2.05	67.4	0.40	415.4	2.44	67	-	1.2	43.36
180	353.4	1.96	57.6	0.32	411.0	2.28	5	-	1.1	2.27
190	358.1	1.88	47.5	0.25	405.5	2.13	22	-	1.0	51.88
200	362.0	1.81	37.9	0.19	399.9	2.00	4	-	0.9	2.39

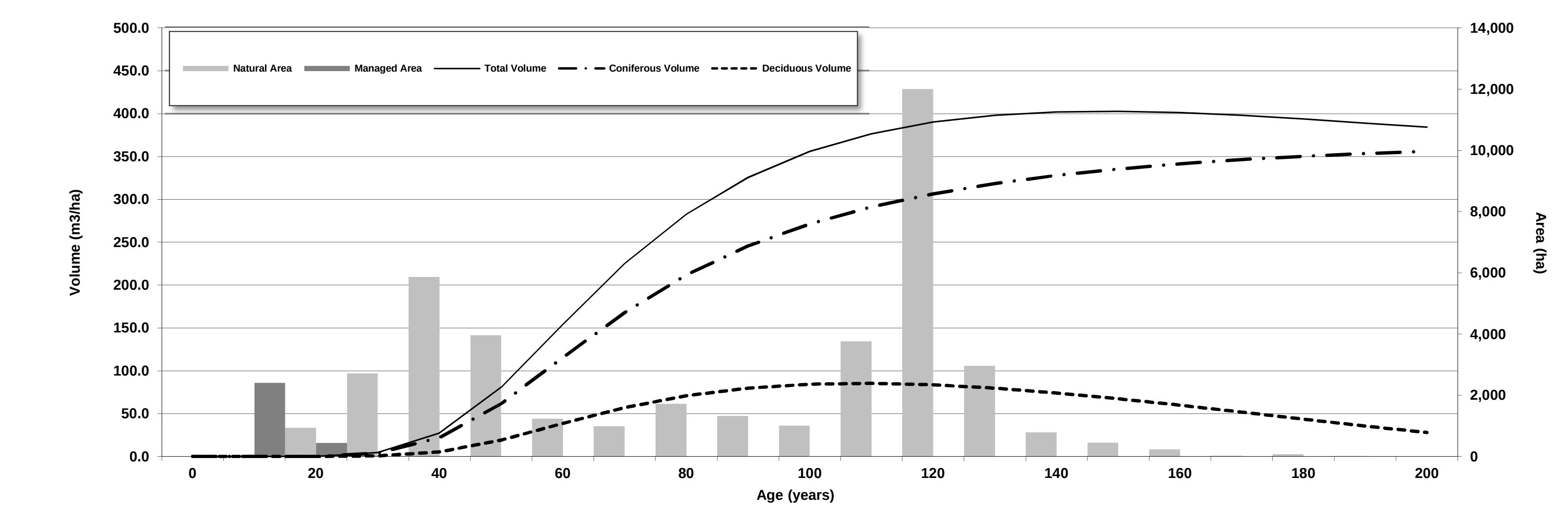
Yieldclass Regenerated SW/HW 15/11/15cm/3.66m coniferous 15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	165	Managed	3,029.6
Total Area Sampled (ha)	2,844.2	Natural	21,091.7

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	-	2,155		
20	0.0	0.00	0.0	0.00	0.1	0.00	73	875		
30	2.2	0.07	0.6	0.02	2.8	0.09	513	-		
40	16.3	0.41	5.2	0.13	21.4	0.54	2,091	-	56.8	77.49
50	49.4	0.99	19.3	0.39	68.6	1.37	3,474	-	20.1	27.89
60	95.9	1.60	41.3	0.69	137.3	2.29	1,118	-	10.2	12.93
70	145.5	2.08	63.8	0.91	209.3	2.99	738	-	6.5	7.74
80	190.3	2.38	81.5	1.02	271.8	3.40	1,274	-	4.7	5.56
90	227.4	2.53	93.3	1.04	320.7	3.56	965	-	3.7	4.58
100	256.9	2.57	99.9	1.00	356.8	3.57	950	-	3.0	4.48
110	280.1	2.55	102.2	0.93	382.3	3.48	1,194	-	2.5	12.18
120	298.3	2.49	101.2	0.84	399.5	3.33	3,268	-	2.2	657.45
130	312.8	2.41	97.5	0.75	410.3	3.16	1,805	-	1.9	14.63
140	324.4	2.32	91.9	0.66	416.2	2.97	1,733	-	1.7	31.16
150	333.8	2.23	84.8	0.57	418.6	2.79	921	-	1.5	2.44
160	341.5	2.13	76.6	0.48	418.1	2.61	417	-	1.3	69.61
170	348.0	2.05	67.4	0.40	415.4	2.44	224	-	1.2	43.36
180	353.4	1.96	57.6	0.32	411.0	2.28	88	-	1.1	2.27
190	358.1	1.88	47.5	0.25	405.5	2.13	56	-	1.0	51.88
200	362.0	1.81	37.9	0.19	399.9	2.00	189	-	0.9	2.39

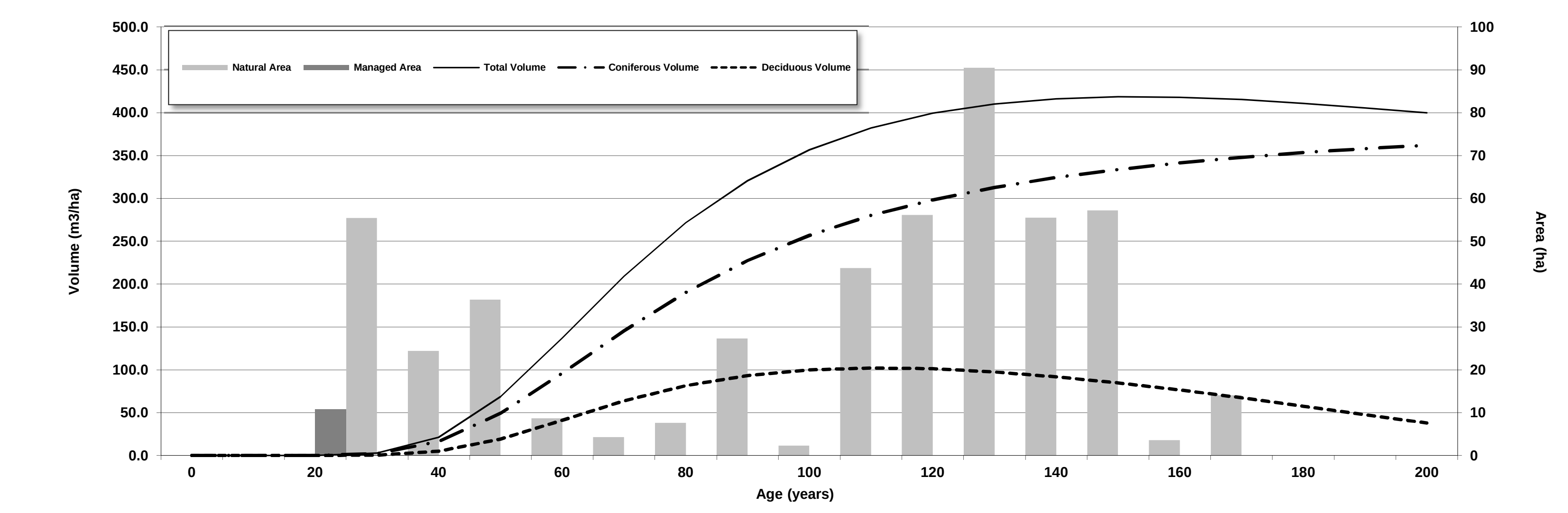
Yieldclass Regenerated PL/HW 15/11/15cm/3.66m coniferous 15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	169	Managed	2,847.8
Total Area Sampled (ha)	1,903.9	Natural	40,124.9

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	8	2,406		
20	0.2	0.01	0.0	0.00	0.2	0.01	937	442		
30	4.1	0.14	0.7	0.02	4.8	0.16	2,719	-		
40	22.0	0.55	5.5	0.14	27.5	0.69	5,866	-	77.7	71.68
50	61.7	1.23	19.1	0.38	80.8	1.62	3,967	-	25.3	25.12
60	115.5	1.92	38.6	0.64	154.1	2.57	1,237	-	11.5	12.42
70	168.1	2.40	57.1	0.82	225.2	3.22	988	-	6.7	7.94
80	211.7	2.65	71.0	0.89	282.7	3.53	1,723	-	4.7	6.06
90	245.6	2.73	79.9	0.89	325.5	3.62	1,329	-	3.6	5.40
100	271.4	2.71	84.4	0.84	355.9	3.56	1,004	-	2.9	6.15
110	291.3	2.65	85.4	0.78	376.6	3.42	3,767	-	2.4	49.28
120	306.6	2.55	83.6	0.70	390.2	3.25	12,009	-	2.1	566.09
130	318.5	2.45	79.8	0.61	398.3	3.06	2,958	-	1.8	4.86
140	327.9	2.34	74.2	0.53	402.1	2.87	791	-	1.6	16.23
150	335.4	2.24	67.4	0.45	402.8	2.69	458	-	1.4	8.70
160	341.4	2.13	59.9	0.37	401.3	2.51	235	-	1.3	8.38
170	346.3	2.04	51.8	0.30	398.1	2.34	27	-	1.2	16.21
180	350.3	1.95	43.6	0.24	393.8	2.19	78	-	1.1	2.27
190	353.5	1.86	35.5	0.19	389.0	2.05	12	-	1.0	2.18
200	356.1	1.78	28.2	0.14	384.4	1.92	11	-	0.9	1.09

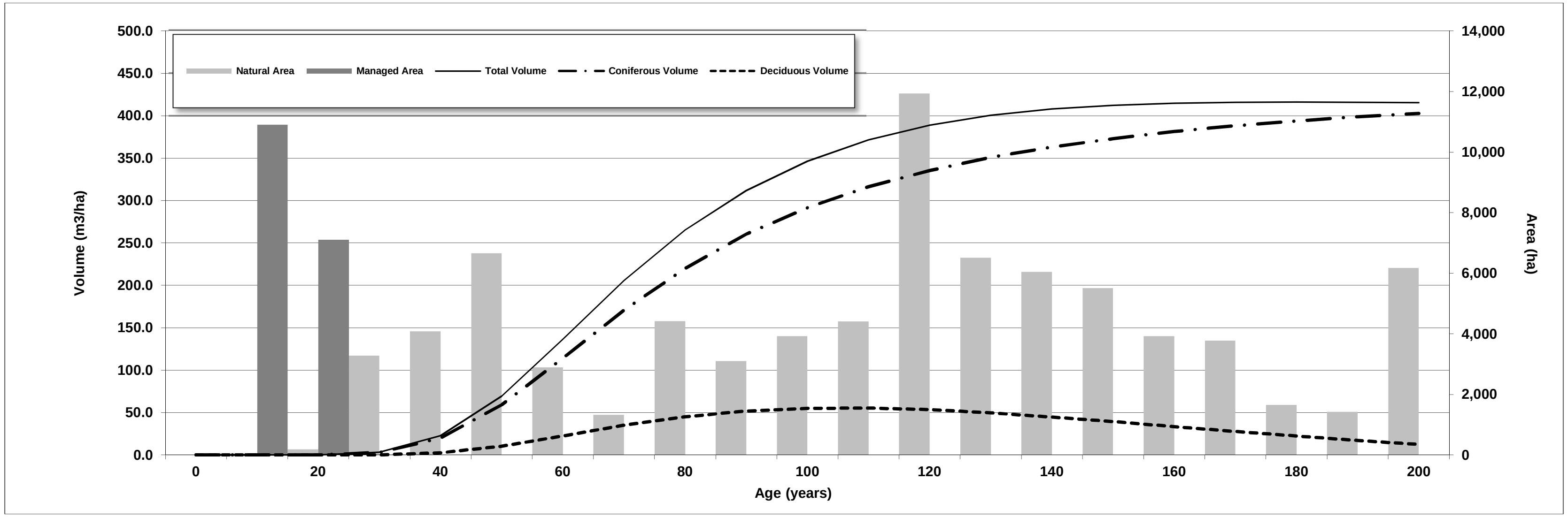
Yieldclass Regenerated SB/HW 15/11/15cm/3.66m coniferous 15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	165	Managed	10.8
Total Area Sampled (ha)	2,844.2	Natural	487.4

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	-	-		
20	0.0	0.00	0.0	0.00	0.1	0.00	0	11		
30	2.2	0.07	0.6	0.02	2.8	0.09	55	-		
40	16.3	0.41	5.2	0.13	21.4	0.54	24	-	56.8	77.49
50	49.4	0.99	19.3	0.39	68.6	1.37	36	-	20.1	27.89
60	95.9	1.60	41.3	0.69	137.3	2.29	9	-	10.2	12.93
70	145.5	2.08	63.8	0.91	209.3	2.99	4	-	6.5	7.74
80	190.3	2.38	81.5	1.02	271.8	3.40	8	-	4.7	5.56
90	227.4	2.53	93.3	1.04	320.7	3.56	27	-	3.7	4.58
100	256.9	2.57	99.9	1.00	356.8	3.57	2	-	3.0	4.48
110	280.1	2.55	102.2	0.93	382.3	3.48	44	-	2.5	12.18
120	298.3	2.49	101.2	0.84	399.5	3.33	56	-	2.2	657.45
130	312.8	2.41	97.5	0.75	410.3	3.16	90	-	1.9	14.63
140	324.4	2.32	91.9	0.66	416.2	2.97	55	-	1.7	31.16
150	333.8	2.23	84.8	0.57	418.6	2.79	57	-	1.5	2.44
160	341.5	2.13	76.6	0.48	418.1	2.61	4	-	1.3	69.61
170	348.0	2.05	67.4	0.40	415.4	2.44	14	-	1.2	43.36
180	353.4	1.96	57.6	0.32	411.0	2.28	-	-	1.1	2.27
190	358.1	1.88	47.5	0.25	405.5	2.13	-	-	1.0	51.88
200	362.0	1.81	37.9	0.19	399.9	2.00	-	-	0.9	2.39

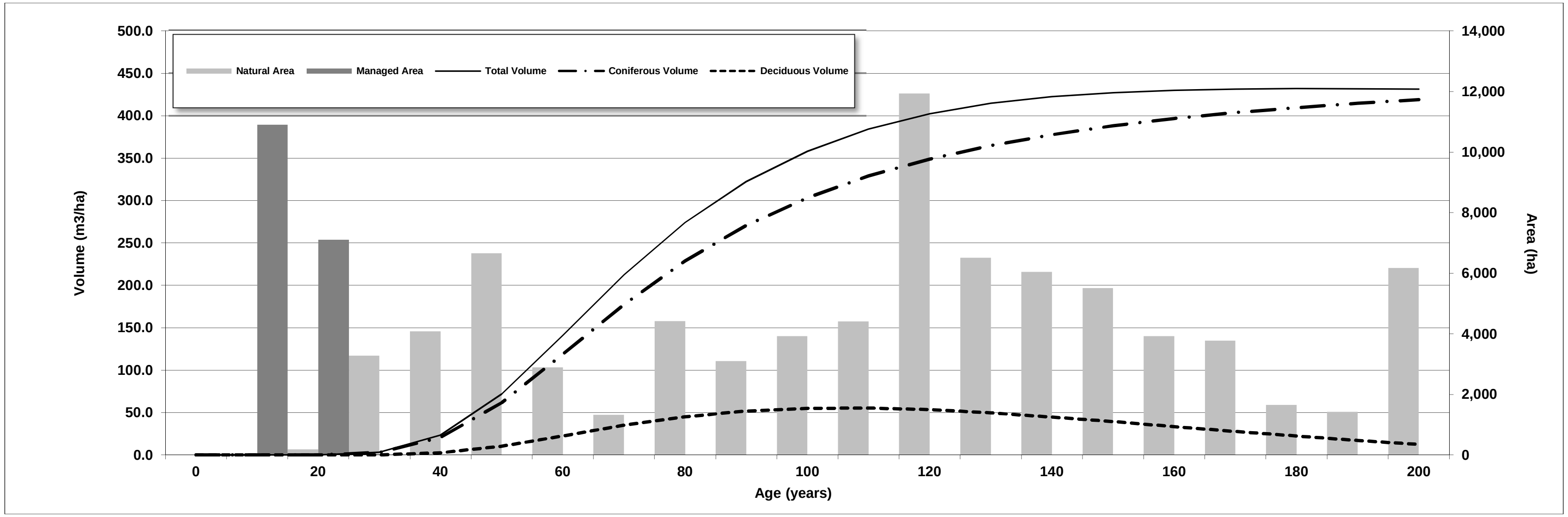
Yieldclass Regenerated SW   15/11/15cm/3.66m coniferous   15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	450	Managed	18,011.9
Total Area Sampled (ha)	8,478.3	Natural	81,214.9

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	-	10,909		
20	0.1	0.00	0.0	0.00	0.1	0.00	182	7,103		
30	3.0	0.10	0.3	0.01	3.2	0.11	3,276	-		
40	19.9	0.50	2.7	0.07	22.6	0.57	4,083	-	50.4	100.89
50	59.3	1.19	10.3	0.21	69.7	1.39	6,659	-	18.2	36.00
60	114.1	1.90	22.5	0.37	136.6	2.28	2,890	-	9.3	17.04
70	170.6	2.44	35.0	0.50	205.7	2.94	1,322	-	5.9	10.58
80	220.1	2.75	45.1	0.56	265.2	3.32	4,421	-	4.3	8.25
90	260.2	2.89	51.6	0.57	311.8	3.46	3,099	-	3.4	8.52
100	291.7	2.92	54.9	0.55	346.6	3.47	3,921	-	2.8	31.06
110	316.3	2.88	55.3	0.50	371.6	3.38	4,406	-	2.4	11.95
120	335.6	2.80	53.4	0.45	389.0	3.24	11,934	-	2.1	65.79
130	350.9	2.70	49.7	0.38	400.6	3.08	6,512	-	1.8	289.09
140	363.2	2.59	44.9	0.32	408.0	2.91	6,051	-	1.6	10.52
150	373.1	2.49	39.3	0.26	412.4	2.75	5,512	-	1.5	130.98
160	381.3	2.38	33.5	0.21	414.8	2.59	3,923	-	1.3	6.92
170	388.1	2.28	27.7	0.16	415.9	2.45	3,771	-	1.2	24.06
180	393.9	2.19	22.4	0.12	416.3	2.31	1,656	-	1.1	46.42
190	398.7	2.10	17.2	0.09	415.9	2.19	1,423	-	1.0	4.23
200	402.9	2.01	12.6	0.06	415.4	2.08	6,172	-	0.9	27.10

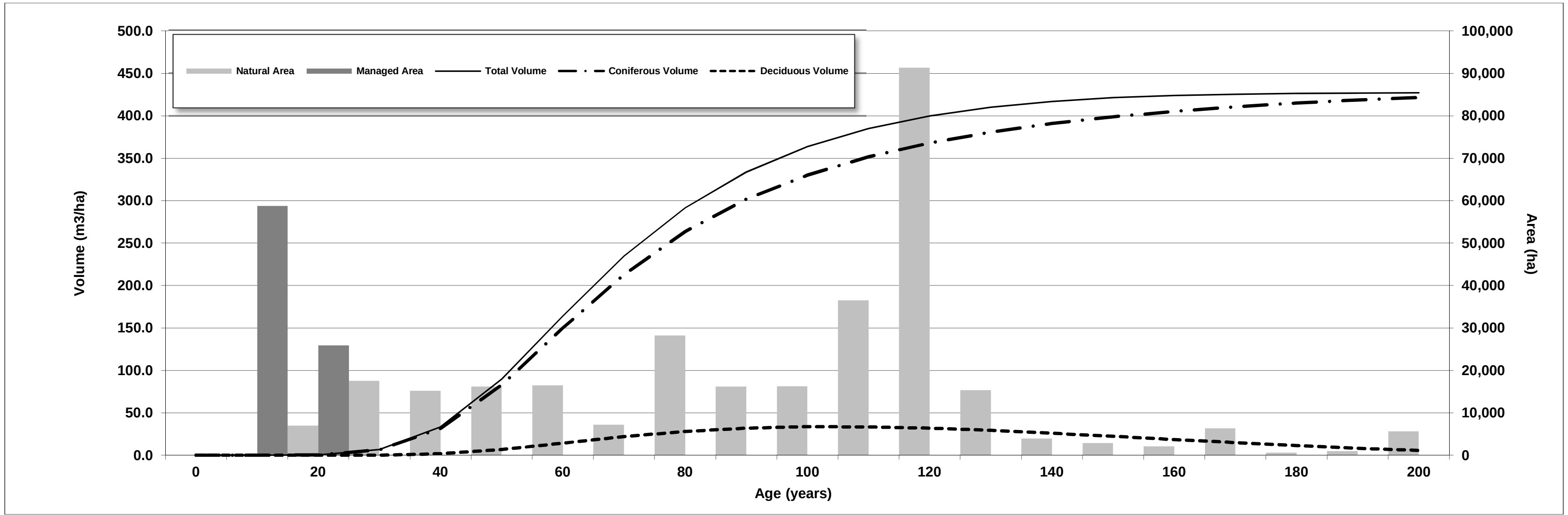
Yieldclass Regenerated Improved Stock Region I SW   15/11/15cm/3.66m coniferous   15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	450	Managed	18,011.9
Total Area Sampled (ha)	8,478.3	Natural	81,214.9

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	-	10,909		
20	0.1	0.00	0.0	0.00	0.1	0.00	182	7,103		
30	3.1	0.10	0.3	0.01	3.3	0.11	3,276	-		
40	20.7	0.52	2.7	0.07	23.4	0.59	4,083	-	50.4	100.89
50	61.7	1.23	10.3	0.21	72.0	1.44	6,659	-	18.2	36.00
60	118.6	1.98	22.5	0.37	141.1	2.35	2,890	-	9.3	17.04
70	177.5	2.54	35.0	0.50	212.5	3.04	1,322	-	5.9	10.58
80	228.9	2.86	45.1	0.56	274.0	3.43	4,421	-	4.3	8.25
90	270.6	3.01	51.6	0.57	322.2	3.58	3,099	-	3.4	8.52
100	303.4	3.03	54.9	0.55	358.2	3.58	3,921	-	2.8	31.06
110	329.0	2.99	55.3	0.50	384.3	3.49	4,406	-	2.4	11.95
120	349.0	2.91	53.4	0.45	402.4	3.35	11,934	-	2.1	65.79
130	364.9	2.81	49.7	0.38	414.7	3.19	6,512	-	1.8	289.09
140	377.7	2.70	44.9	0.32	422.5	3.02	6,051	-	1.6	10.52
150	388.0	2.59	39.3	0.26	427.3	2.85	5,512	-	1.5	130.98
160	396.6	2.48	33.5	0.21	430.0	2.69	3,923	-	1.3	6.92
170	403.7	2.37	27.7	0.16	431.4	2.54	3,771	-	1.2	24.06
180	409.6	2.28	22.4	0.12	432.0	2.40	1,656	-	1.1	46.42
190	414.7	2.18	17.2	0.09	431.9	2.27	1,423	-	1.0	4.23
200	419.0	2.09	12.6	0.06	431.5	2.16	6,172	-	0.9	27.10

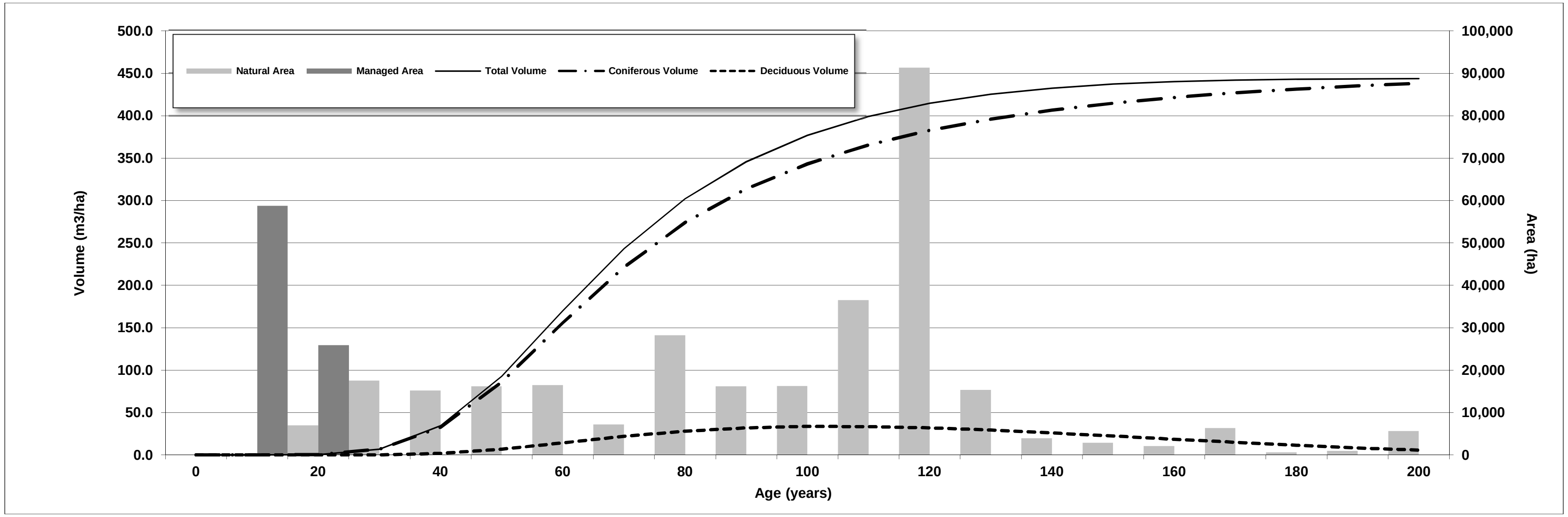
Yieldclass Regenerated PL 15/11/15cm/3.66m coniferous 15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	1,199	Managed	84,682.9
Total Area Sampled (ha)	23,808.3	Natural	306,037.5

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	40	58,788		
20	0.4	0.02	0.0	0.00	0.4	0.02	6,986	25,895		
30	6.5	0.22	0.2	0.01	6.7	0.22	17,514	-		
40	31.4	0.79	1.9	0.05	33.3	0.83	15,210	-	54.6	105.03
50	83.0	1.66	6.7	0.13	89.7	1.79	16,183	-	19.6	36.85
60	149.9	2.50	14.2	0.24	164.1	2.74	16,449	-	9.5	18.27
70	213.1	3.04	21.9	0.31	234.9	3.36	7,230	-	5.9	12.48
80	263.5	3.29	28.0	0.35	291.5	3.64	28,216	-	4.2	13.18
90	301.6	3.35	31.9	0.35	333.5	3.71	16,214	-	3.2	1510.14
100	330.1	3.30	33.6	0.34	363.8	3.64	16,283	-	2.6	16261.51
110	351.6	3.20	33.5	0.30	385.1	3.50	36,495	-	2.2	7038.25
120	368.1	3.07	32.0	0.27	400.0	3.33	91,361	-	1.9	217.29
130	380.8	2.93	29.4	0.23	410.2	3.16	15,385	-	1.7	276.22
140	390.9	2.79	26.1	0.19	417.0	2.98	3,922	-	1.5	64543.58
150	398.9	2.66	22.4	0.15	421.3	2.81	2,881	-	1.3	257.23
160	405.4	2.53	18.6	0.12	424.0	2.65	2,089	-	1.2	28.49
170	410.6	2.42	14.9	0.09	425.5	2.50	6,337	-	1.1	240.26
180	414.9	2.31	11.5	0.06	426.4	2.37	635	-	1.0	8.05
190	418.5	2.20	8.4	0.04	426.8	2.25	956	-	0.9	18.74
200	421.4	2.11	5.7	0.03	427.1	2.14	5,652	-	0.8	1.29

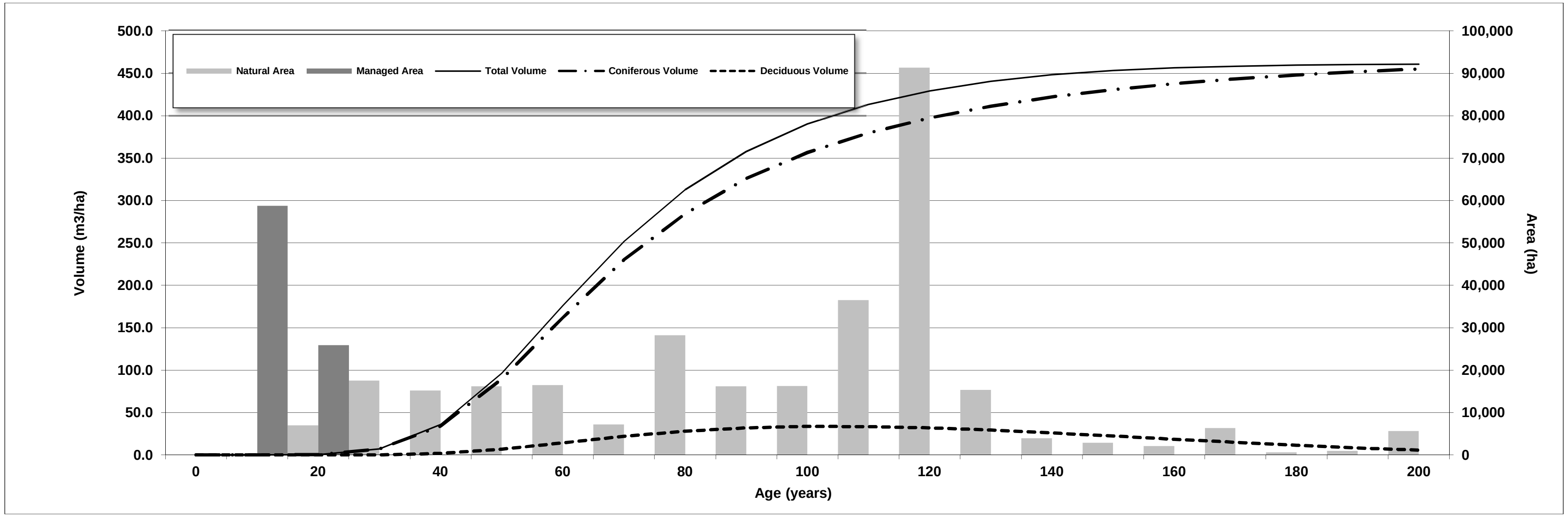
Yieldclass Regenerated Improved Stock Region A PL   15/11/15cm/3.66m coniferous   15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	1,199	Managed	84,682.9
Total Area Sampled (ha)	23,808.3	Natural	306,037.5

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	40	58,788		
20	0.4	0.02	0.0	0.00	0.4	0.02	6,986	25,895		
30	6.8	0.23	0.2	0.01	7.0	0.23	17,514	-		
40	32.7	0.82	1.9	0.05	34.6	0.86	15,210	-	54.6	105.03
50	86.3	1.73	6.7	0.13	93.0	1.86	16,183	-	19.6	36.85
60	155.9	2.60	14.2	0.24	170.1	2.84	16,449	-	9.5	18.27
70	221.6	3.17	21.9	0.31	243.5	3.48	7,230	-	5.9	12.48
80	274.1	3.43	28.0	0.35	302.1	3.78	28,216	-	4.2	13.18
90	313.7	3.49	31.9	0.35	345.6	3.84	16,214	-	3.2	1510.14
100	343.3	3.43	33.6	0.34	377.0	3.77	16,283	-	2.6	16261.51
110	365.7	3.32	33.5	0.30	399.2	3.63	36,495	-	2.2	7038.25
120	382.8	3.19	32.0	0.27	414.7	3.46	91,361	-	1.9	217.29
130	396.1	3.05	29.4	0.23	425.4	3.27	15,385	-	1.7	276.22
140	406.5	2.90	26.1	0.19	432.6	3.09	3,922	-	1.5	64543.58
150	414.9	2.77	22.4	0.15	437.3	2.92	2,881	-	1.3	257.23
160	421.6	2.63	18.6	0.12	440.2	2.75	2,089	-	1.2	28.49
170	427.1	2.51	14.9	0.09	442.0	2.60	6,337	-	1.1	240.26
180	431.5	2.40	11.5	0.06	443.0	2.46	635	-	1.0	8.05
190	435.2	2.29	8.4	0.04	443.6	2.33	956	-	0.9	18.74
200	438.3	2.19	5.7	0.03	443.9	2.22	5,652	-	0.8	1.29

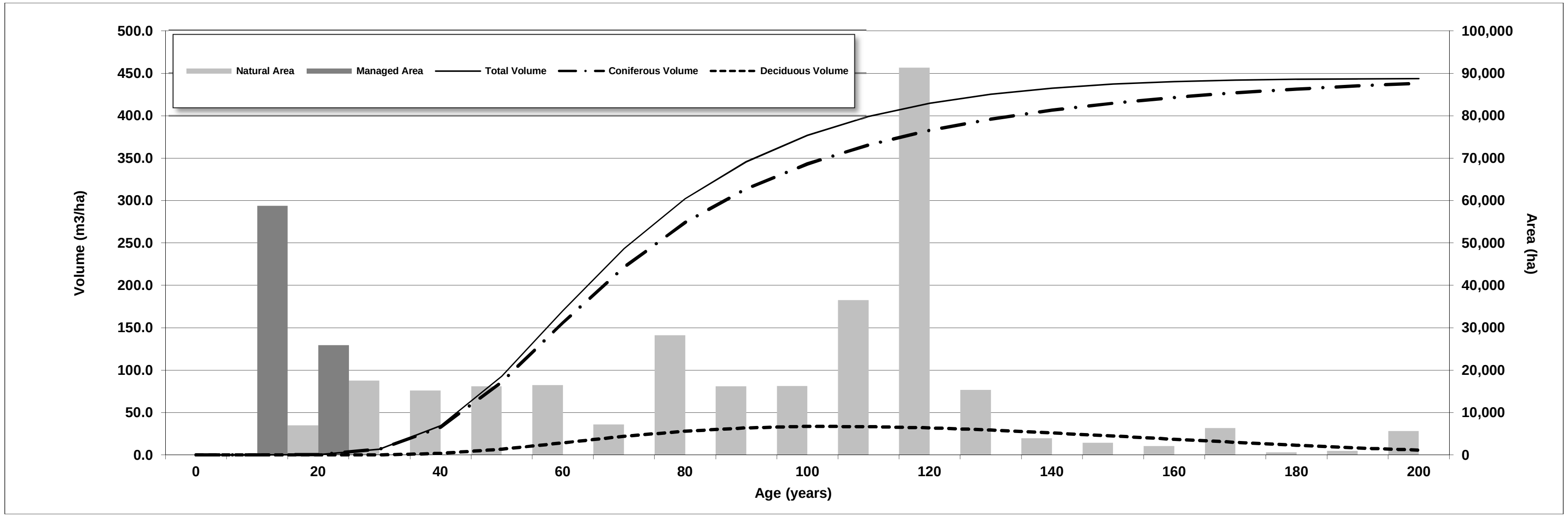
Yieldclass Regenerated Improved Stock Region B1 PL 15/11/15cm/3.66m coniferous 15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	1,199	Managed	84,682.9
Total Area Sampled (ha)	23,808.3	Natural	306,037.5

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	40	58,788		
20	0.4	0.02	0.0	0.00	0.4	0.02	6,986	25,895		
30	7.0	0.23	0.2	0.01	7.2	0.24	17,514	-		
40	34.0	0.85	1.9	0.05	35.8	0.90	15,210	-	54.6	105.03
50	89.6	1.79	6.7	0.13	96.4	1.93	16,183	-	19.6	36.85
60	161.9	2.70	14.2	0.24	176.1	2.94	16,449	-	9.5	18.27
70	230.1	3.29	21.9	0.31	252.0	3.60	7,230	-	5.9	12.48
80	284.6	3.56	28.0	0.35	312.6	3.91	28,216	-	4.2	13.18
90	325.8	3.62	31.9	0.35	357.7	3.97	16,214	-	3.2	1510.14
100	356.5	3.57	33.6	0.34	390.2	3.90	16,283	-	2.6	16261.51
110	379.7	3.45	33.5	0.30	413.3	3.76	36,495	-	2.2	7038.25
120	397.5	3.31	32.0	0.27	429.5	3.58	91,361	-	1.9	217.29
130	411.3	3.16	29.4	0.23	440.7	3.39	15,385	-	1.7	276.22
140	422.1	3.02	26.1	0.19	448.2	3.20	3,922	-	1.5	64543.58
150	430.8	2.87	22.4	0.15	453.2	3.02	2,881	-	1.3	257.23
160	437.8	2.74	18.6	0.12	456.4	2.85	2,089	-	1.2	28.49
170	443.5	2.61	14.9	0.09	458.4	2.70	6,337	-	1.1	240.26
180	448.1	2.49	11.5	0.06	459.6	2.55	635	-	1.0	8.05
190	452.0	2.38	8.4	0.04	460.3	2.42	956	-	0.9	18.74
200	455.1	2.28	5.7	0.03	460.8	2.30	5,652	-	0.8	1.29

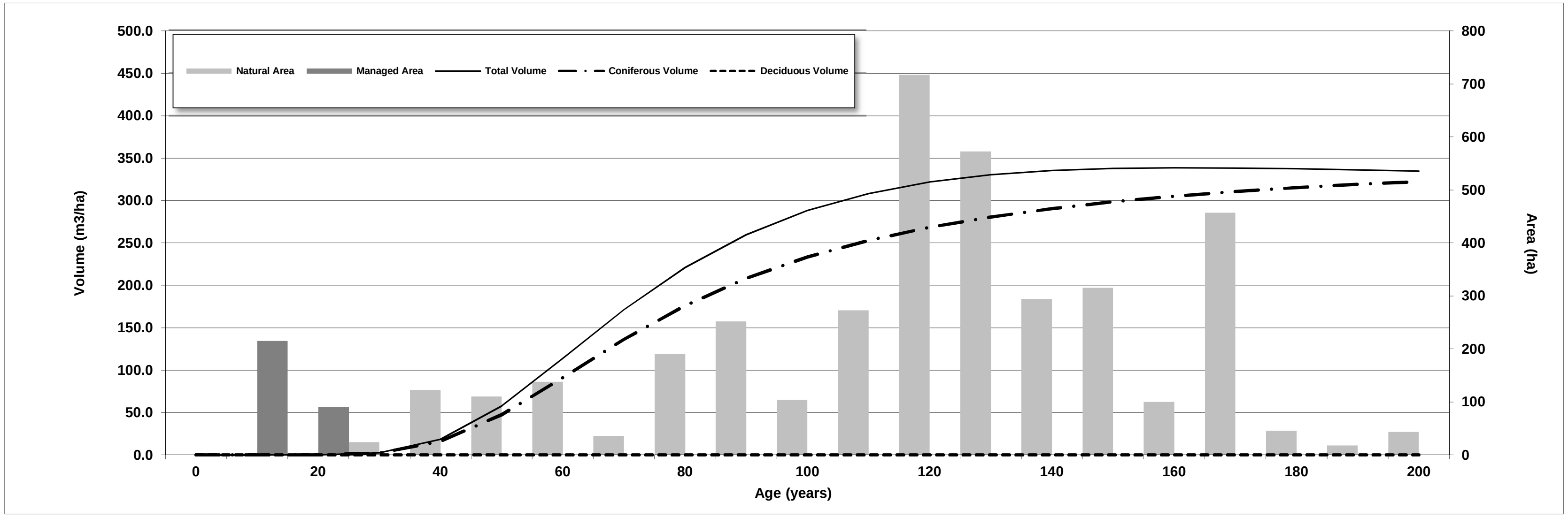
Yieldclass Regenerated Improved Stock Region B2 PL   15/11/15cm/3.66m coniferous   15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	1,199	Managed	84,682.9
Total Area Sampled (ha)	23,808.3	Natural	306,037.5

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	40	58,788		
20	0.4	0.02	0.0	0.00	0.4	0.02	6,986	25,895		
30	6.8	0.23	0.2	0.01	7.0	0.23	17,514	-		
40	32.7	0.82	1.9	0.05	34.6	0.86	15,210	-	54.6	105.03
50	86.3	1.73	6.7	0.13	93.0	1.86	16,183	-	19.6	36.85
60	155.9	2.60	14.2	0.24	170.1	2.84	16,449	-	9.5	18.27
70	221.6	3.17	21.9	0.31	243.5	3.48	7,230	-	5.9	12.48
80	274.1	3.43	28.0	0.35	302.1	3.78	28,216	-	4.2	13.18
90	313.7	3.49	31.9	0.35	345.6	3.84	16,214	-	3.2	1510.14
100	343.3	3.43	33.6	0.34	377.0	3.77	16,283	-	2.6	16261.51
110	365.7	3.32	33.5	0.30	399.2	3.63	36,495	-	2.2	7038.25
120	382.8	3.19	32.0	0.27	414.7	3.46	91,361	-	1.9	217.29
130	396.1	3.05	29.4	0.23	425.4	3.27	15,385	-	1.7	276.22
140	406.5	2.90	26.1	0.19	432.6	3.09	3,922	-	1.5	64543.58
150	414.9	2.77	22.4	0.15	437.3	2.92	2,881	-	1.3	257.23
160	421.6	2.63	18.6	0.12	440.2	2.75	2,089	-	1.2	28.49
170	427.1	2.51	14.9	0.09	442.0	2.60	6,337	-	1.1	240.26
180	431.5	2.40	11.5	0.06	443.0	2.46	635	-	1.0	8.05
190	435.2	2.29	8.4	0.04	443.6	2.33	956	-	0.9	18.74
200	438.3	2.19	5.7	0.03	443.9	2.22	5,652	-	0.8	1.29

Yieldclass Regenerated SB   15/11/15cm/3.66m coniferous   15/10/30cm/3.66m deciduous



15/11/.15cm/3.76m		Total Areas (ha)	
GYPSY version 1.0			
Number of Polygons	-	Managed	305.5
Total Area Sampled (ha)	-	Natural	3,815.6

	Gross Coniferous (15/11/15cm/3.66m)		Gross Deciduous (15/10/30cm/3.66m)		Total Volume		Area (ha)		Tree Size	
Age	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Volume (m3/ha)	MAI (m3/ha/yr)	Natural	Managed	Coniferous	Deciduous
0	0.0	0.00	0.0	0.00	0.0		-	-		
10	0.0	0.00	0.0	0.00	0.0	0.00	-	215		
20	0.1	0.00	0.0	0.00	0.1	0.00	1	91		
30	2.4	0.08	0.0	0.00	2.6	0.11	24	-		
40	16.0	0.40	0.0	0.00	18.6	0.57	123	-	50.4	100.89
50	47.5	0.95	0.0	0.00	57.8	1.39	110	-	18.2	36.00
60	91.2	1.52	0.0	0.00	113.7	2.28	138	-	9.3	17.04
70	136.5	1.95	0.0	0.00	171.5	2.94	36	-	5.9	10.58
80	176.1	2.20	0.0	0.00	221.2	3.32	191	-	4.3	8.25
90	208.2	2.31	0.0	0.00	259.8	3.46	252	-	3.4	8.52
100	233.4	2.33	0.0	0.00	288.2	3.47	104	-	2.8	31.06
110	253.0	2.30	0.0	0.00	308.4	3.38	273	-	2.4	11.95
120	268.5	2.24	0.0	0.00	321.9	3.24	717	-	2.1	65.79
130	280.7	2.16	0.0	0.00	330.4	3.08	573	-	1.8	289.09
140	290.5	2.08	0.0	0.00	335.4	2.91	294	-	1.6	10.52
150	298.5	1.99	0.0	0.00	337.8	2.75	315	-	1.5	130.98
160	305.0	1.91	0.0	0.00	338.5	2.59	100	-	1.3	6.92
170	310.5	1.83	0.0	0.00	338.2	2.45	457	-	1.2	24.06
180	315.1	1.75	0.0	0.00	337.5	2.31	46	-	1.1	46.42
190	319.0	1.68	0.0	0.00	336.2	2.19	18	-	1.0	4.23
200	322.3	1.61	0.0	0.00	334.9	2.08	43	-	0.9	27.10

Appendix J Yields Database and Landbase Layer Data Dictionaries

Yields Access Database (Yields.mdb)

Compiled GYPSY Input Values as per RSA Manual

Field Name	Type	Precision		Description
Timber_Year	Integer	10		as Per RSA Manual
Population	Integer	10		
Opening	String	12		
Polygon	String	3		
System_Type	String	1		
Area_ha	decimal	7	2	
Strata	String	16		
N_Basic_Plots	Integer	10		
N_Detailed_Plots	Integer	10		
Optional_Diam	String	1		
Spatial	String	1		
BA_Known	String	1		
StandAge	decimal	5	1	
Tage_AW	decimal	5	1	
SI_BH_AW	decimal	4	1	
Den13_AW	decimal	6	0	
PS_AW	decimal	5	1	
BA_AW	decimal	7	5	
Tage_SB	decimal	5	1	
SI_BH_SB	decimal	4	1	
Den03_SB	decimal	6	0	
PS_SB	decimal	5	1	
BA_SB	decimal	7	5	
Tage_SW	decimal	5	1	
SI_BH_SW	decimal	4	1	
Den03_SW	decimal	6	0	
PS_SW	decimal	5	1	
BA_SW	decimal	7	5	
Tage_PL	decimal	5	1	
SI_BH_PL	decimal	4	1	
Den03_PL	decimal	6	0	
PS_PL	decimal	5	1	
BA_PL	decimal	7	5	

Compiled Individual Tree Values

Field Name	Type	Precision		Description
Versionid	String	10		24 = "TL", 27 = "CTL"
CruiseId	String	10		HWP0001' Defines HWP PSP program
PlotID	Integer	10		Plot Number
MeasurementNumber	Integer	10		Measurement Number
TreeNumber	Integer	10		Tree Number
Species	String	2		Species - See Table 2
SpeciesClass	String	3		Species Class - defines Coniferous (Con) and Deciduous (Dec)
DBH	decimal	5	1	Diameter Breast height (cm)
Height	decimal	4	1	Measured Tree Height (m)
PredictedHeight	decimal	4	1	Predicted Height from DBH/ht relationships (m)
StumpDiameter	decimal	5	1	Measured Stump Diameter (cm)
PredictedStumpDiameter	decimal	5	1	Predicted Stump Diamter (cm)
MerchantableLength	decimal	6	3	Merchantable length (m) base on utilization standard - (see Table 3)
TRF	Single	7		Tree expansion factor (m2/tree)
TreeVolume	decimal	10	4	Tree volume (m3/ha))
isDead	Integer	10		Designation for dead trees (1) - Alive = 0
TopDiameter	decimal	5	1	Top Diameter (Version 27 only)
Bucking Solution	String	20		Number of 16', 14', 12', 10' and 8' Logs (Version 27 only)
Vol1	decimal	10	5	Pct by volume of 16' logs (Version 27 only)
Vol2	decimal	10	5	Pct by volume of 14' logs (Version 27 only)
Vol3	decimal	10	5	Pct by volume of 12' logs (Version 27 only)

Compiled Plot Data for Yield Analysis

Field Name	Type	Precision	Description
Versionid	String	10	24 = "TL", 27 = "CTL"
CruiseId	String	10	HWP0001' Defines HWP PSP program
PlotID	Integer	10	Plot Number
MeasurementNumber	Integer	10	Measurement Number
EstablishmentStatusId	String	1	Defines plot as natural ("F") or Regenerated ("R")
MeasurementYear	Integer	10	Plot Measurement Year
HarvestYear	Integer	10	Year plot was harvested
NRegionId	Integer	10	Natural Subregion 7 - Alpine 8 - Sub-Alpine, 9 = Montane, 10 = Upper Foothills, 11 = Lower Foothills
Yieldclass	Integer	10	Yield Class (Base 10)
AVIAge	Integer	10	Age from AVI calculated as Plot Measurement year - AVI Age
GVolCon	Single	7	Confierous Volume (m3/ha)
GVolDec	Single	7	Deciduous Volume (m3/ha)
StemsCon	Integer	10	Coniferous Stems per Hectare
StemsDec	Integer	10	Deciduous Stems Per hectare
X_Coord	Integer	10	UTM 11 Nad 83 X Coordinate
Y_Coord	Integer	10	UTM 11 Nad 83 Y Coordinate
OVLID	Integer	10	Linkage to Land base File (HWPLandbase OVL_ID)
LBDeletion	Integer	10	Land base Deletion Code - See Land base Document

Individual RSA Yield Curves for each Opening/Polygon

Field Name	Type	Precision		Description
Timber_year	Integer	10		Timber Year of Survey - See Table 8
Population	Integer	10		Population - See Table 8
Opening	String	11		Opening Number
Polygon	String	30		Polygon
RunSeries	Integer	10		GYPSY Compilation identifier 1000 = FMP Compilation, 2000 = RSA Compilation
Stratum	String	50		Assigned Strata (Hw, HwSw/SwHw, HwPl/PlHw, Sw and Pl
Age	Integer	10		Projected age
Population Area	Double	8		Population area - See Table 8
FinalWeight	decimal	6	5	Final weight to calculate yields
ConiferousVolume	Double	8		Merchantable Coniferous Volume (m3/ha)
DeciduousVolume	Double	8		Merchantable Deciduous Volume (m3/ha)
ConiferousDensity	Double	8		Merchantable Coniferous Density (stems per hectare)
DeciduousDensity	Double	8		Merchantable Deciduous Density (stems per hectare)
ConiferousTPM	Double	8		Coniferous Tree Size (m3/tree)
DeciduousTPM	Double	8		Deciduous tree Size (m3/tree)

Assigned Weights (Population and Strata) for each Opening/Polygon

Field Name	Type	Precision		Description
FMAID	Integer	10		FMA indentifier 2 =HWP
OpeningNumber	String	11		Opening Number
Polygon	String	5		Polygon
RunSeries	Integer	10		GYPSY Compilation identifier 1000 = FMP Compilation, 2000 = RSA Compilation
TimberYear	Integer	10		Timber Year of Survey - See Table 8
Population	Integer	10		Population - See Table 8
OriginalStrata	String	50		Original RSA Strata from Survey
YieldStrata	String	50		Assigned yield Strata
Area	decimal	18	2	Area of Polygon (ha0
PopulationArea	decimal	18	2	Total Population Area (ha)
Area_x	Double	8		Inclusion Probability values

Sel_Weight	Double	8	
Comp_Weight	Double	8	
Weight	Double	8	Population Weight
FinalWeight	Double	8	Final Weight

Final Yield Coefficients and Fit Statistics for Natural Yields (Volume and TPM)

Field Name	Type	Precision	
Versionid	String	10	5 = "TL", 6 = "CTL"
Model	String	50	
YieldClass	Integer	10	
YieldClassDescription	String	50	
Covergroup	String	15	
NaturalSubregions	Integer	10	
CrownClosureClasses	String	15	
SiteClasses	String	15	
DominantSpecies	String	15	
ConifModelForm	Integer	10	
Conif_b0	Double	8	
Conif_b1	Double	8	
Conif_b2	Double	8	
Conif_r2	Double	8	
Conif_MeanBias	Double	8	
Conif_RMSE	Double	8	
DecidModelForm	Integer	10	
Decid_b0	Double	8	
Decid_b1	Double	8	
Decid_b2	Double	8	
Decid_r2	Double	8	
Decid_MeanBias	Double	8	
Decid_RMSE	Double	8	
NoPlots	Integer	10	
ConiferousMaxMAIAge	Integer	10	
ConiferousMaxMAIVolume	Double	8	
ConiferousMaxMAI	Double	8	
DeciduousMaxMAIAge	Integer	10	
DeciduousMaxMAIVolume	Double	8	
DeciduousMaxMAI	Double	8	

HWPLandbase Geodatabase Layer

Name	HWPLandBase	
Projection	UTM11	See Landbase Classification document for detail
Datum	NAD83	

Source	Field Name	Data Type	Length	Description
Overlay Coverage	**OBJECTID**	OID	4	Unique Polygon Identifier (ESRI)
	Forestkey	Integer	4	AVI polygon number
	DZID	Integer	2	CONTROLLED PARENTAGE PROGRAM REGIONS (0 to 13)
	FireNumber	Character	12	Fire Numbers
	FSID	Integer	4	Fire Smart Zones (0,33,34,36,38)
	IsFMU	Integer	2	Identifier for areas within FMU (1 = Inside FMU R10)
	IsFMA	Integer	2	Identifier for areas within FMA (0 = Outside of FMA or 1 = Inside of FMA)
	HydroID	Integer	4	Hydrology (0 = None, 1 = A/B class streams, 3 = Traditional OGR, 4 = Lakes)
	isInOp	Integer	2	Identifies Inoperable Areas (0 = Operable or 1 = Inoperable)
	DISPID	Character	10	Blank or Valid Disposition
	NRegionID	Integer	2	Natural Subregion Identifications are extracted from the HWP Ecosite layer
				0 None
				8 Alpine
				9 Montane
				10 Upper Foothills
				11 Lower Foothills
	PUID	Integer	4	Compartment Identifier (>= 0)
	isRetention	Integer	2	Defines Retention Polygons (0 or 1 for Retention)
	RiparianID	Integer	2	Riparian Zone Identifier (0 = None, 1 = Complex, 2 Fluvial, 3 = Seepage, 4 = ELC Wetland)
	StratumID	Integer	2	Defines RSA Base 10 Strata (0,1,2,3,4,5,6,7,8,9)
	SMAID	Integer	2	Special Management Areas (0,1,2,3,4,5,6)
	isTrl	Integer	2	Identifies Linear Disturbances (Trails and Seismic Lines: 0 = non Trail or 1 = Trail)
	WSID	Integer	4	WaterShed Identifier (0 to 27)
	BlockOID	Integer	4	0 or Between 180174 and 413349
	OVLID	Integer	4	Unique Landbase Identifier
Block Information (Prefix "LBC_")	**FieldNumber**	Character	20	ARIS Reported Block Identifier
	BlockStage	character	20	Defines 'Harvested', 'Planned' Blocks, Null if neither
	OpeningNumber	Character	20	Opening Number
	ARISAOPArea	Double	8	ARIS reported AOP Area (null, > 0)
	ARISNetHarvestArea	Double	8	ARIS reported Net_Harvested_Hectares (null, > 0)
	ARISUpdateArea	Double	8	ARIS reported Update_Area (null, > 0)
	SkidClearanceDate	Date	8	Skid Clearance Date
	ARISDisposition	Character	20	ARIS Disposition
	ARISResponsibility	Character	5	ARIS Responsibility Code (NULL,A1,A2,AA,AN,AQ,F4,F5,IC,IF,IQ)
	ARISOperator	Character	5	ARIS Operator (NULL,,CECH,FRIA,GABE,GRAY,LFS,LPFC,MCLN,RAYD,ROCK,SFPI,SFPL,SPRA,VOIL,VSIX)
	ARISRegenStandard	Character	20	ARIS Regeneration Standard (NULL,CC,CD,CH,CS,DC,DD,DH,DS,HC,HH,MH,MS,SC,SD,WFML*,SH,SS)
	ARISDeclaration	Character	50	ARIS Regeneration Declaration (NULL,C-2000,CD-2000,CONF,D-2000,DC-2000,PR91)
	LastSurveyType	Character	5	Last Survey Type (NULL, Est Survey, Per Survey)
	LastSurveyDate	Date	8	Last Survey Date (null, 1977-05-01 to 2010-05-09)
	LastSurveyStatus	Character	10	Last Survey Status (NULL,CSR,FTG,NSR,PSC,RTD,SR)
	LastSurveyStocking	Double	8	Last Survey Stocking (null, 0 to 99)
	AssumedLiablity	Integer	4	Reforestation Liability Asssumed (0 = no liability, 1 = liability assumed)
	Pre91Block	Integer	10	Identifier for blocks harvested prior to 1991 (-1 = < 1991, 0 = >= 1991)
	SitePrepMethod	Character	5	Dominant Site Prep method used on the block
	SitePrepArea	Double	8	Area Site Prepped
	SitePrepRatio	Double	8	Percent of block site prepped
	PlantSpps	Character	5	Dominant Species Planted
	PlantArea	Double	8	Area Planted
	PlantTrees	Integer	8	Number of Trees Planted
	PlantRatio	Double	8	Percent of Block Planted
	SeedSpps	Character	5	Species Seeded
	ImprovedStockIDs	Character	10	Improved Stock Deployed
	ImprovedStockPct	Double	8	Percent of block with improved stock (by area)
	StratumAssignmentID	Integer	4	Rule for stratum assignment (1 to 14)

Source	Field Name	Data Type	Length	Description
Compiled AVI Pre Disturbance (Have "LBC_" prefix)	**Fulllabel**	Character	50	Cover type (concatenated overstory and understory)
	OCG	Character	5	Stand Overstory Covergroup Assignment
				Blank None
				C Pure Coniferous
				CD Coniferous/Deciduous
				DC Deciduous/Coniferous
				D Pure Deciduous
	UCG	Character	5	Stand Understory Covergroup Assignment
				Blank None
				C Pure Coniferous
				CD Coniferous/Deciduous
				DC Deciduous/Coniferous
				D Pure Deciduous
	OYieldClass	Integer	4	Overstory Yield Class (0 to 9)
	UYieldClass	Integer	4	Understory Yield Class (0 to 9)
	Rank	Integer	4	Layer to be managed (0 = None, 1 = Overstory, 2 = Understorey)
	Age	Integer	4	Stand Age from AVI
	AgeClass	Integer	4	Age Class from Above (10 Year classes)
	MPBRisk	Integer	4	Compartment Risk Factor (1, 2 or 3)
	SSI	Integer	4	Stand Susceptibility Index (0 to 100)
	CF	Double	8	Climate Factor (0 to 1)
	MPBRank	Integer	4	Stand MPB Ranking (0 to 3)
	FBPID	Integer	4	Fire Risk Identifier
	SubjectiveDeletionId	Integer	4	Subjective Deletion (0 to 4)
	Landbase	Integer	4	Numerical Landbase designations :
				1 = Coniferous
				2 = Deciduous
	FireYr	Integer	4	Year of Wild Fire
	HarvYr	Integer	4	Year of Harvest (From Skid Clearance Date)
	DisturbanceYr	Integer	4	Disturbance Year (Greater of Harv Yr or Fire Yr)
	SeralStageID	Integer	4	Seral Stage Identifier (0 to 90)
Final Assignments (Prefix "LBC_")	**AssignedPlanningUnitid**	Integer	4	Compartment Identifier (>= 0)
	AssignedNRegionId	Integer	4	Natural Subregion Identifications are extracted from the HWP Ecosite layer
	AssignedYieldClass	Integer	4	Yield Class Assignment as per Landbase Classification Document
				0 None
				1 RSA Stratum AW
				2 RSA Stratum HW/PL
				3 RSA Stratum HW/SW
				4 RSA Stratum SW/HW
				5 RSA Stratum PL/HW
				6 RSA Stratum SB/HW
				7 RSA Stratum SW
				8 RSA Stratum PL
				9 RSA Stratum SB
	YieldAdjustment	Character	**5**	Yield adjustment applied as per performance survey stocking results (0 to 100)
	AssignedLandbase	Integer	10	Numerical Landbase designations :
				1 = Coniferous
				2 = Deciduous
	AssignedCG	Character	5	Final Covergroup Assignment
				Blank None
				C Pure Coniferous
				CD Coniferous/Deciduous
				DC Deciduous/Coniferous
				D Pure Deciduous
	AssignedMPBIndex	Double	4	Assigned MPB Index to Polygon
	AssignedMPBRank	Integer	4	Assigned MPB Rank to Polygon
	AssignedAge	Integer	4	Final Assigned Stand Age from AVI
	AssignedAgeClass	Integer	4	Final Assigned Age Class based on AssignedAge
	Status	Character	2	Landbase Status (ie. Natural-ST or Regenerated-RT or None-NA)
	LB_Deletion	Integer	4	Reason why polygon was deleted, incorporates appropriate heirarchy :
				1 Non FMA (Mines, Towns, Protected) Passive
				2 Non-Forested Passive
				3 Oil and Gas Passive
				4 Seismic Lines Passive
				5 Inoperable/Inaccessible Passive
				6 Watercourse Passive
				7 Subjective Deletions Passive
				8 UnHarvested Burns Passive
				9 Waived Reforestation Liability Passive
				10 Performance Survey < 50% Passive
				11 Incomplete ARIS Information Passive
				12 Horizontal Stands Passive
				13 Cannot Assign an Age Passive
				14 No YieldClass Assignment Passive
				99 AAC Active
				991 AAC - Planned Block Active
				992 AAC - Improved Stock Active
				993 AAC - Retention Active
				994 AAC - Traditional Hydro Only Active
				995 AAC - Riparian and Hydro Active
				996 AAC - Riparian Only Active

Source	Field Name	Data Type	Length	Description
	LBStatus	Character	20	Landbase Contribution (Passive or Active)
	Areaha	Double	8	Area of the polygon in hectares
	Shape_Length	Double	8	Polygon Perimeter (m)
	Shape_Area	Double	8	Polygon Area (m^2)

Appendix K SAS Output

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	3
R	8.928E-7
PPC(B0)	2.075E-7
RPC(B0)	0.000948
Object	9.093E-8
Objective	1490499
Observations Read	119
Observations Used	119
Observations Missing	0

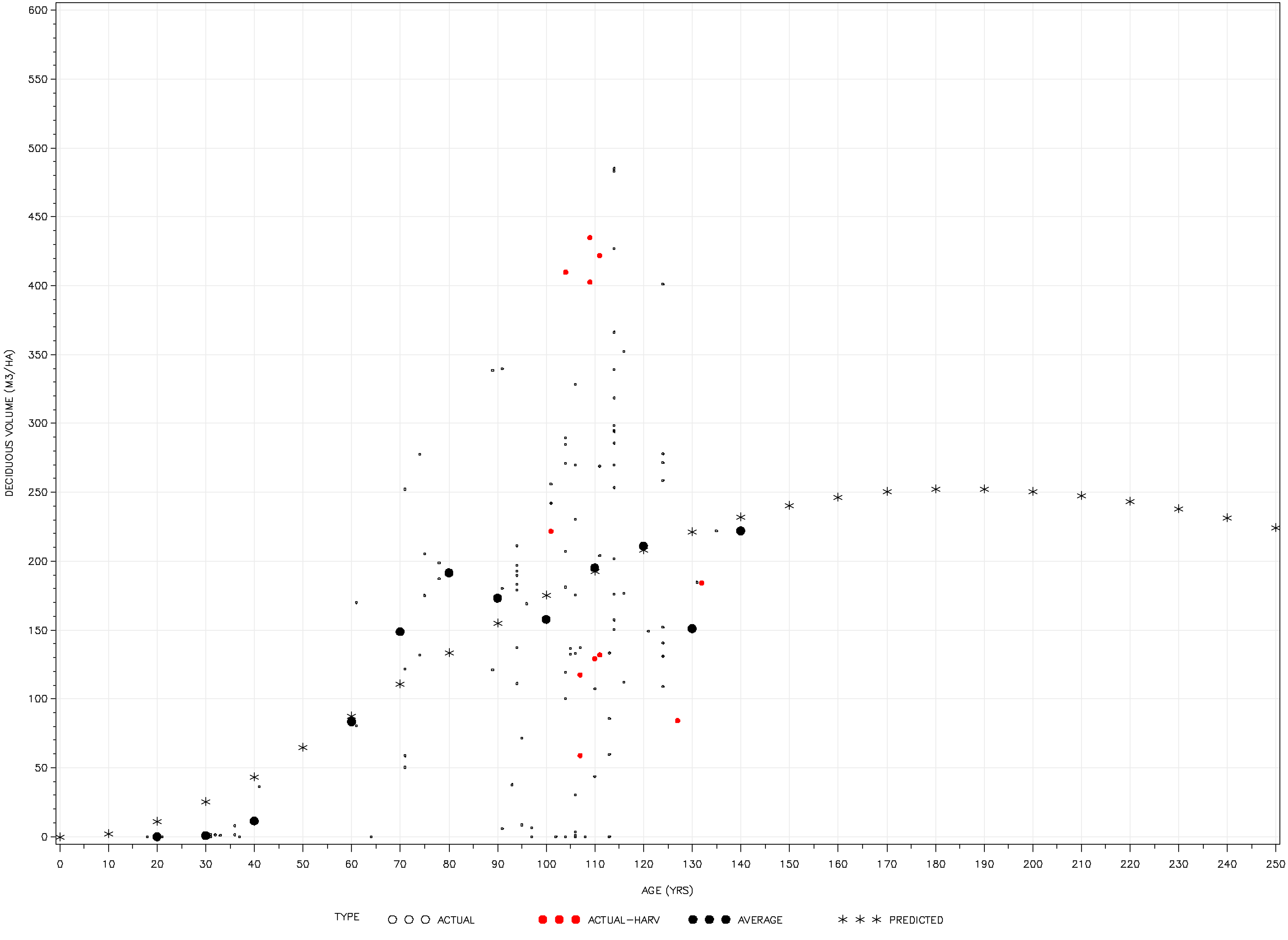
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3563802	1781901	139.87	<.0001
Error	117	1490499	12739.3		
Uncorrected Total	119	5054301			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0127	0.00476	0.00324	0.0221
B1	2.3454	0.0327	2.2806	2.4102

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.9205078
B1	0.9205078	1.0000000

PURE DECIDUOUS (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	8
R	5.779E-6
PPC(B0)	0.000042
RPC(B0)	0.000114
Object	1.58E-10
Objective	755718.2
Observations Read	119
Observations Used	119
Observations Missing	0

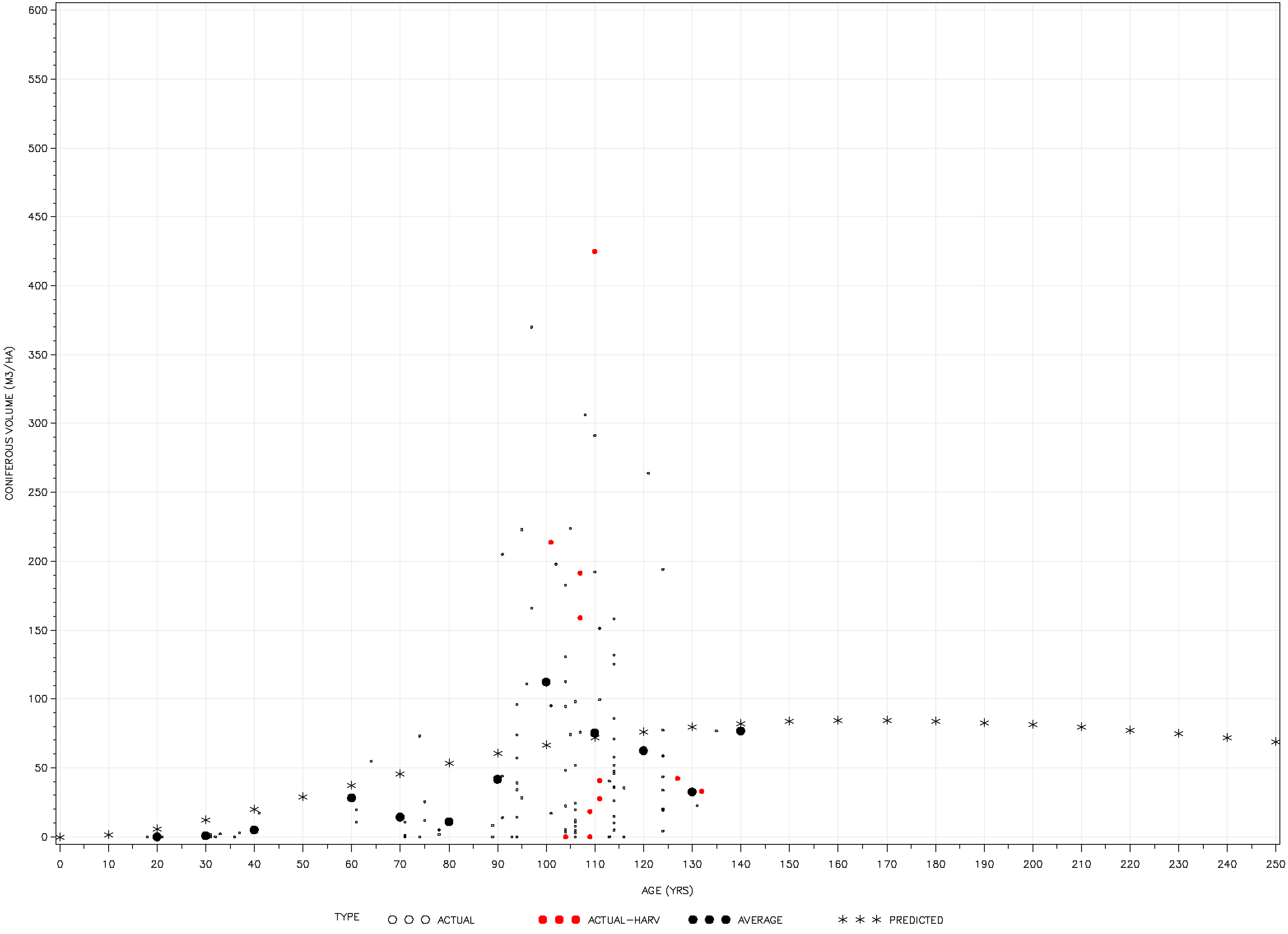
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	503411	251705	38.97	<.0001
Error	117	755718	6459.1		
Uncorrected Total	119	1259129			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0128	0.00859	-0.00418	0.0298
B1	2.1371	0.0599	2.0185	2.2557

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.9143761
B1	0.9143761	1.0000000

PURE DECIDUOUS (15/11 CONIFEROUS, 15/10 DECIDUOUS)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.012830	2.13712	119	-1.49536	6514.81	0.076284	0.012667	2.34544	-1.24407	12739.31	0.20959

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	4
R	2.98E-6
PPC(B0)	0.000019
RPC(B0)	0.000171
Object	6.64E-10
Objective	934699.2
Observations Read	165
Observations Used	165
Observations Missing	0

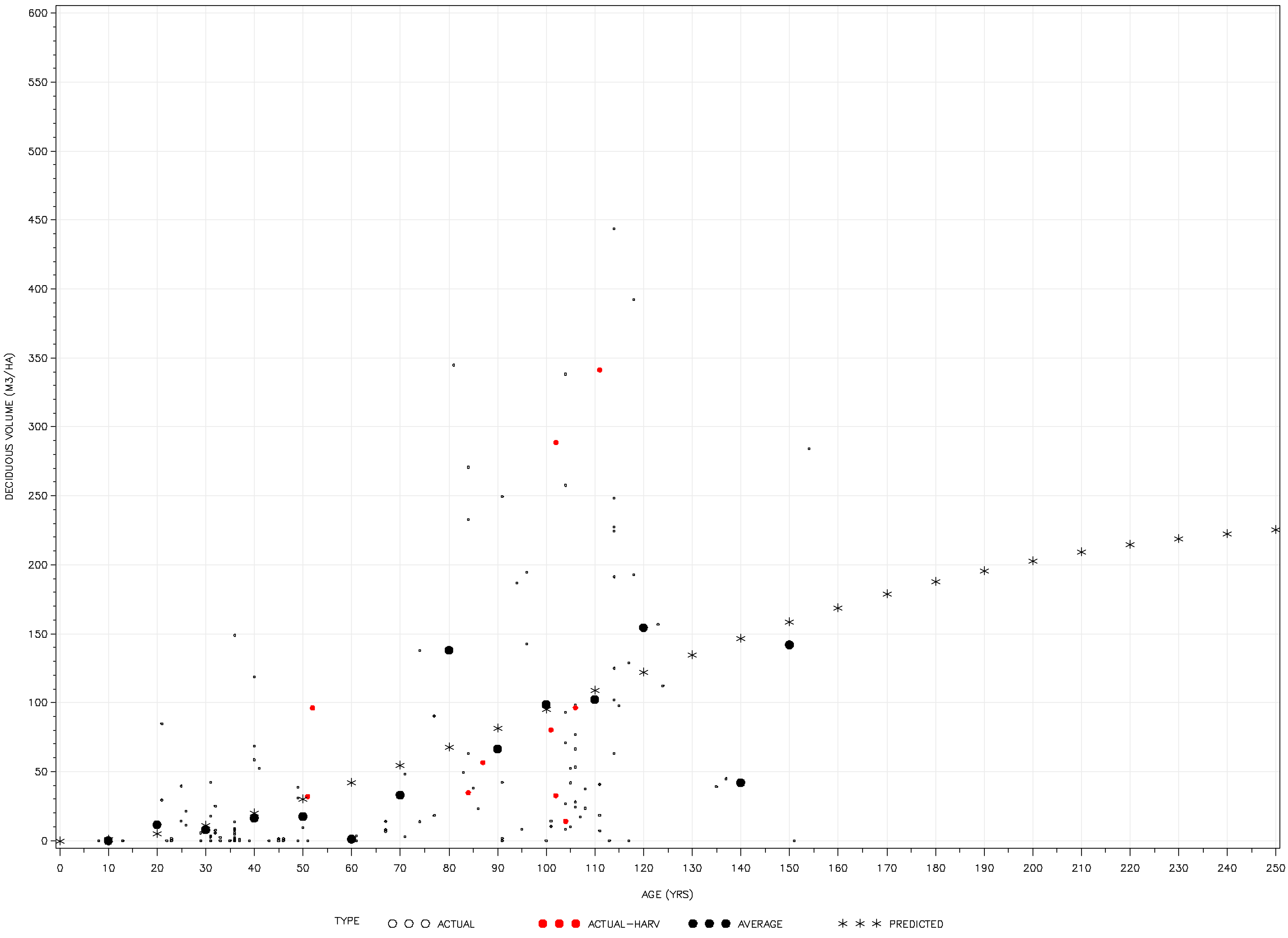
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	798668	399334	69.64	<.0001
Error	163	934699	5734.4		
Uncorrected Total	165	1733367			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00777	0.00384	0.000194	0.0154
B1	2.2130	0.0246	2.1643	2.2617

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.6753621
B1	-0.6753621	1.0000000

HW/PL 1(15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	4
R	1.283E-6
PPC(B0)	3.104E-6
RPC(B0)	0.000027
Object	1.19E-10
Objective	662769.7
Observations Read	165
Observations Used	165
Observations Missing	0

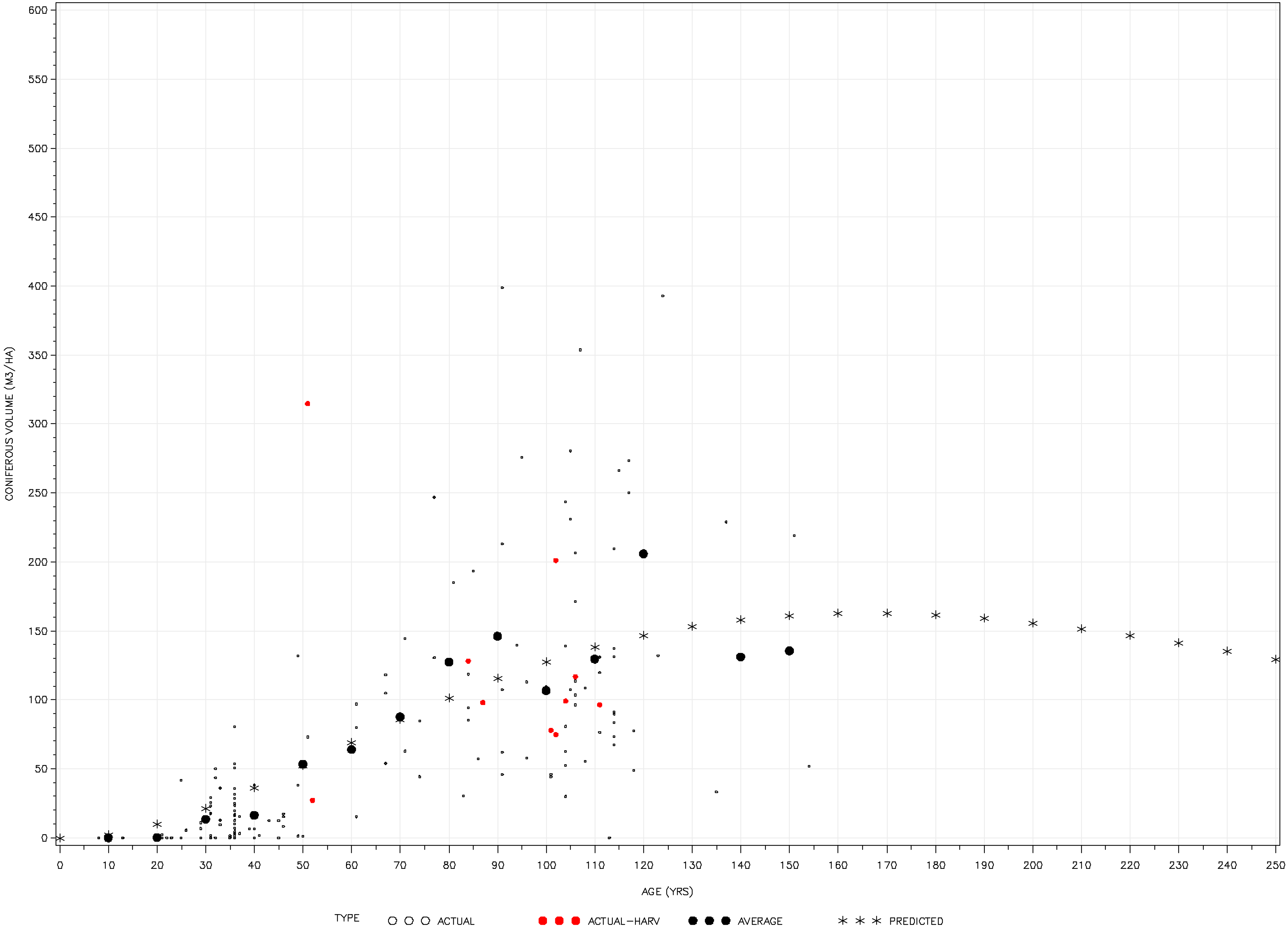
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1354474	677237	166.56	<.0001
Error	163	662770	4066.1		
Uncorrected Total	165	2017243			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0139	0.00264	0.00865	0.0191
B1	2.2833	0.0216	2.2407	2.3259

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8348889
B1	0.8348889	1.0000000

HW/PL 1(15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.013853	2.28328	165	-3.42546	4066.07	0.44285	.007774735	2.21301	-1.21676	5734.35	0.26874

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.474E-6
PPC(B0)	0.000021
RPC(B0)	0.00005
Object	1.91E-10
Objective	573361.5
Observations Read	112
Observations Used	112
Observations Missing	0

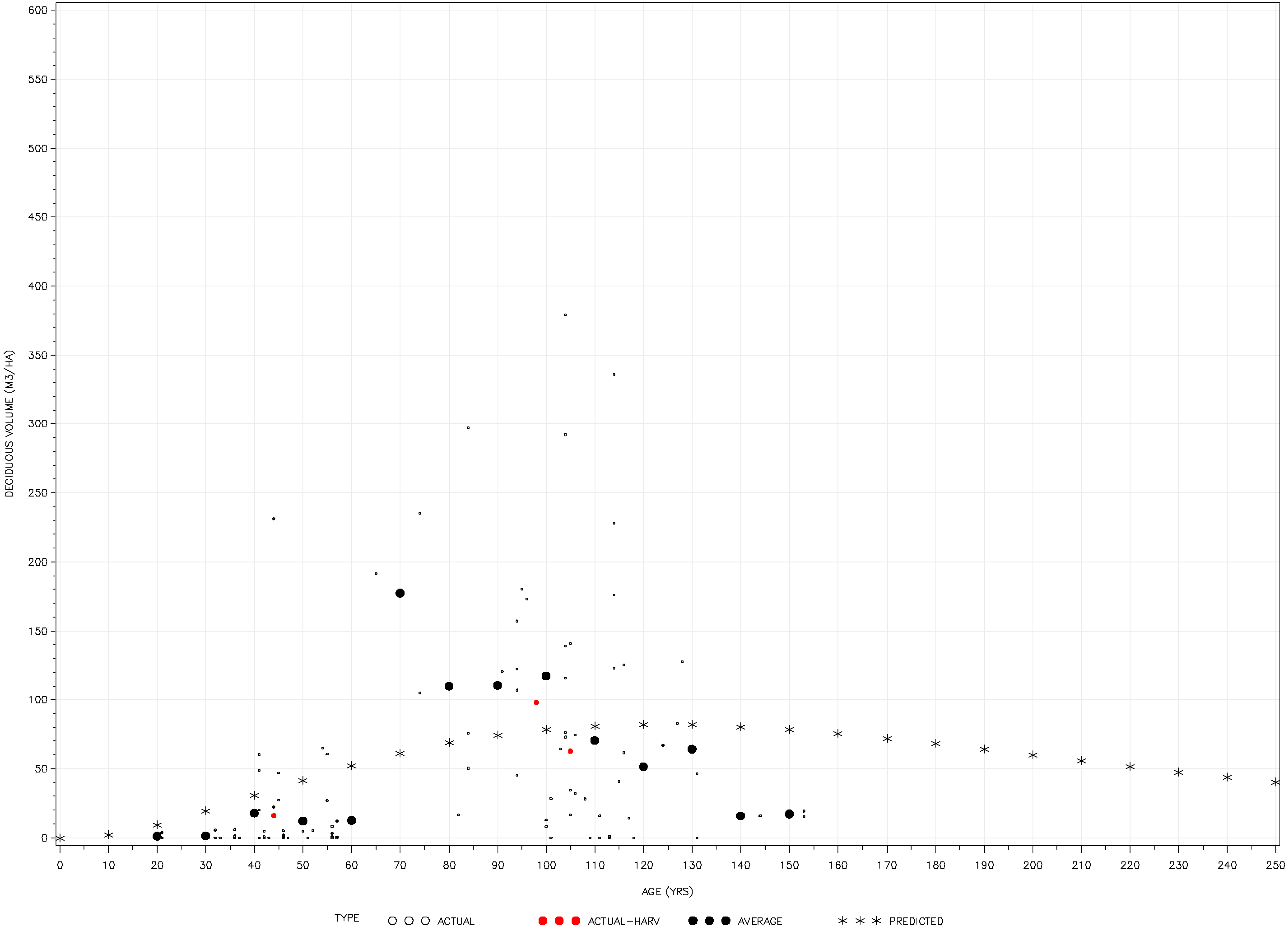
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	414387	207193	39.75	<.0001
Error	110	573361	5212.4		
Uncorrected Total	112	987748			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0180	0.00475	0.00859	0.0274
B1	2.2116	0.0529	2.1069	2.3164

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8862813
B1	0.8862813	1.0000000

SW/HW (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	6
R	2.129E-6
PPC(B0)	8.157E-6
RPC(B0)	0.000039
Object	8.39E-11
Objective	789707.4
Observations Read	112
Observations Used	112
Observations Missing	0

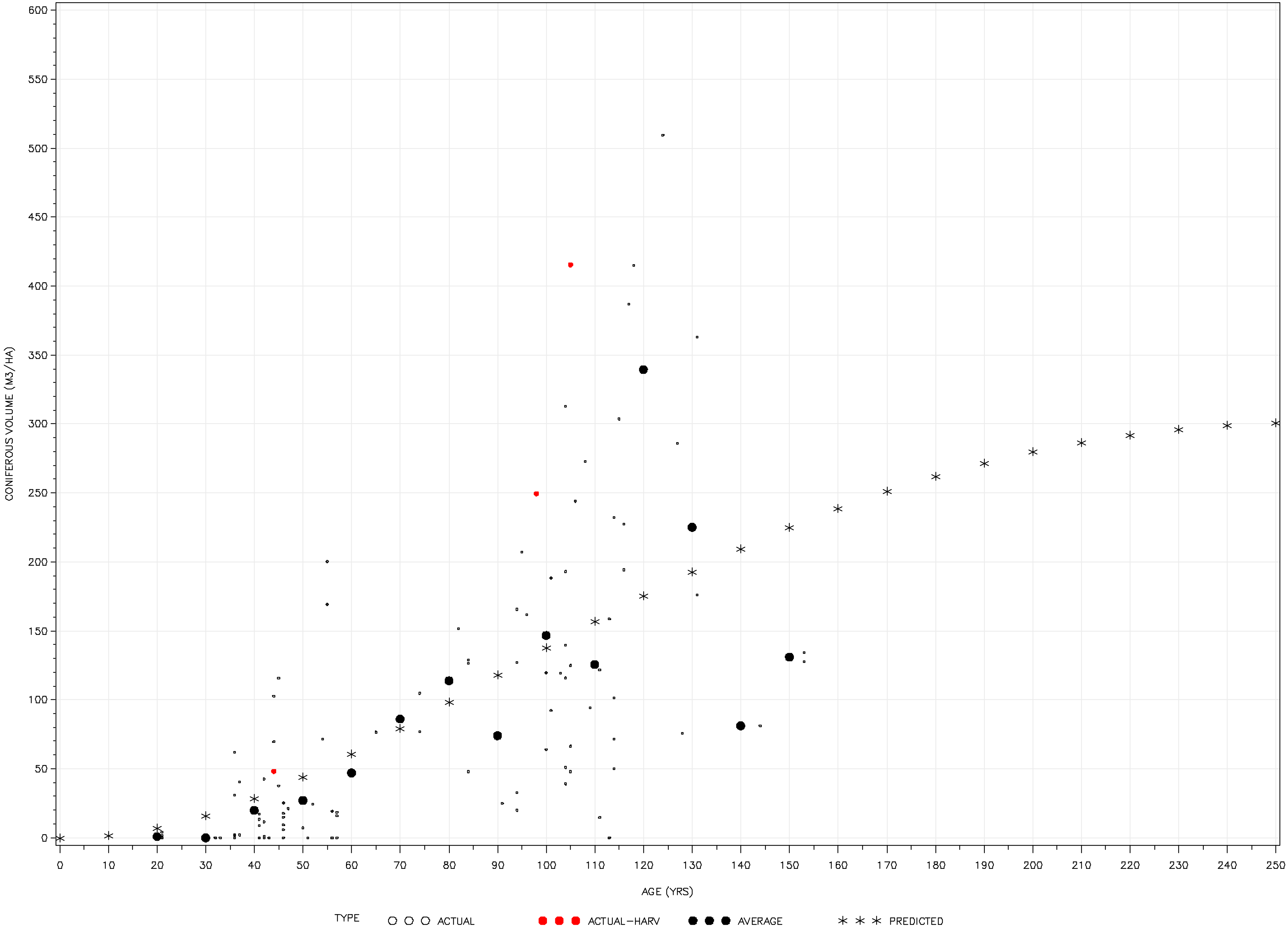
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1401471	700735	97.61	<.0001
Error	110	789707	7179.2		
Uncorrected Total	112	2191178			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00877	0.00321	0.00241	0.0151
B1	2.2885	0.0153	2.2581	2.3189

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.1083115
B1	-0.1083115	1.0000000

SW/HW (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	.008772861	2.28851	112	-3.71077	7179.16	0.39826	0.018006	2.21161	-4.70789	5212.38	0.17168

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.474E-6
PPC(B0)	0.000021
RPC(B0)	0.00005
Object	1.91E-10
Objective	573361.5
Observations Read	112
Observations Used	112
Observations Missing	0

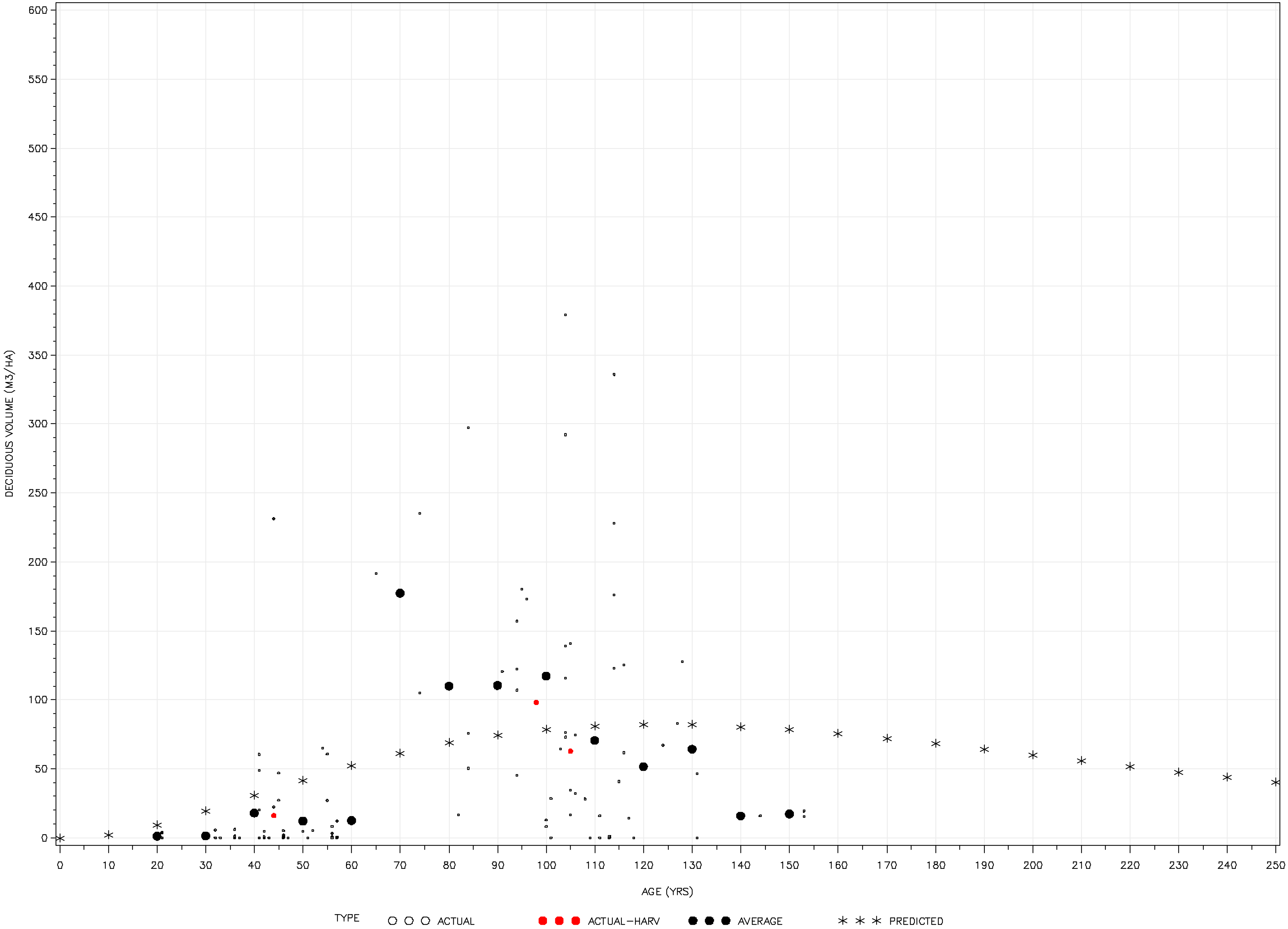
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	414387	207193	39.75	<.0001
Error	110	573361	5212.4		
Uncorrected Total	112	987748			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0180	0.00475	0.00859	0.0274
B1	2.2116	0.0529	2.1069	2.3164

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8862813
B1	0.8862813	1.0000000

SW/HW (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	6
R	2.129E-6
PPC(B0)	8.157E-6
RPC(B0)	0.000039
Object	8.39E-11
Objective	789707.4
Observations Read	112
Observations Used	112
Observations Missing	0

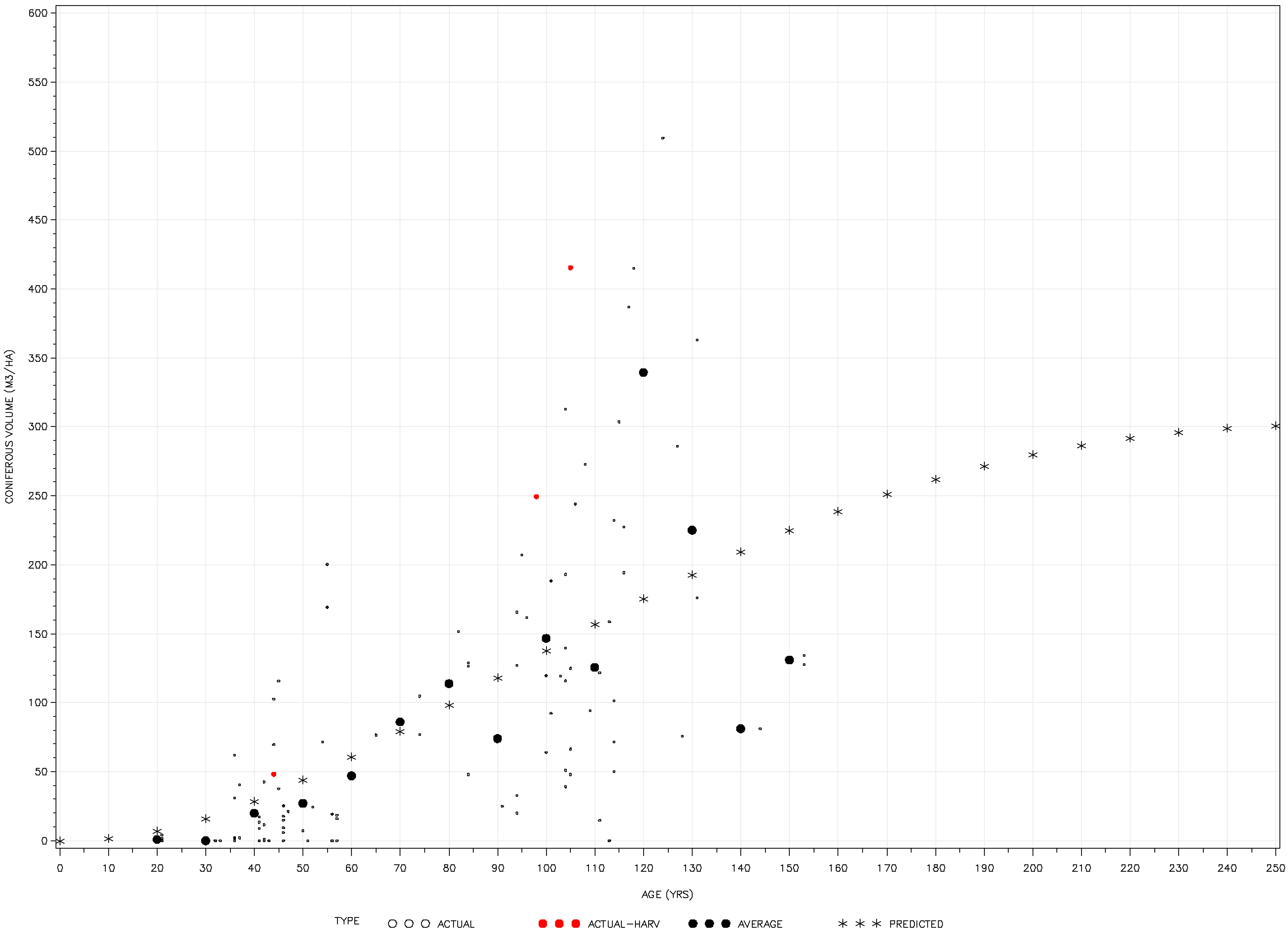
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1401471	700735	97.61	<.0001
Error	110	789707	7179.2		
Uncorrected Total	112	2191178			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00877	0.00321	0.00241	0.0151
B1	2.2885	0.0153	2.2581	2.3189

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.1083115
B1	-0.1083115	1.0000000

SW/HW (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	.008772861	2.28851	112	-3.71077	7179.16	0.39826	0.018006	2.21161	-4.70789	5212.38	0.17168

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	4
R	2.98E-6
PPC(B0)	0.000019
RPC(B0)	0.000171
Object	6.64E-10
Objective	934699.2
Observations Read	165
Observations Used	165
Observations Missing	0

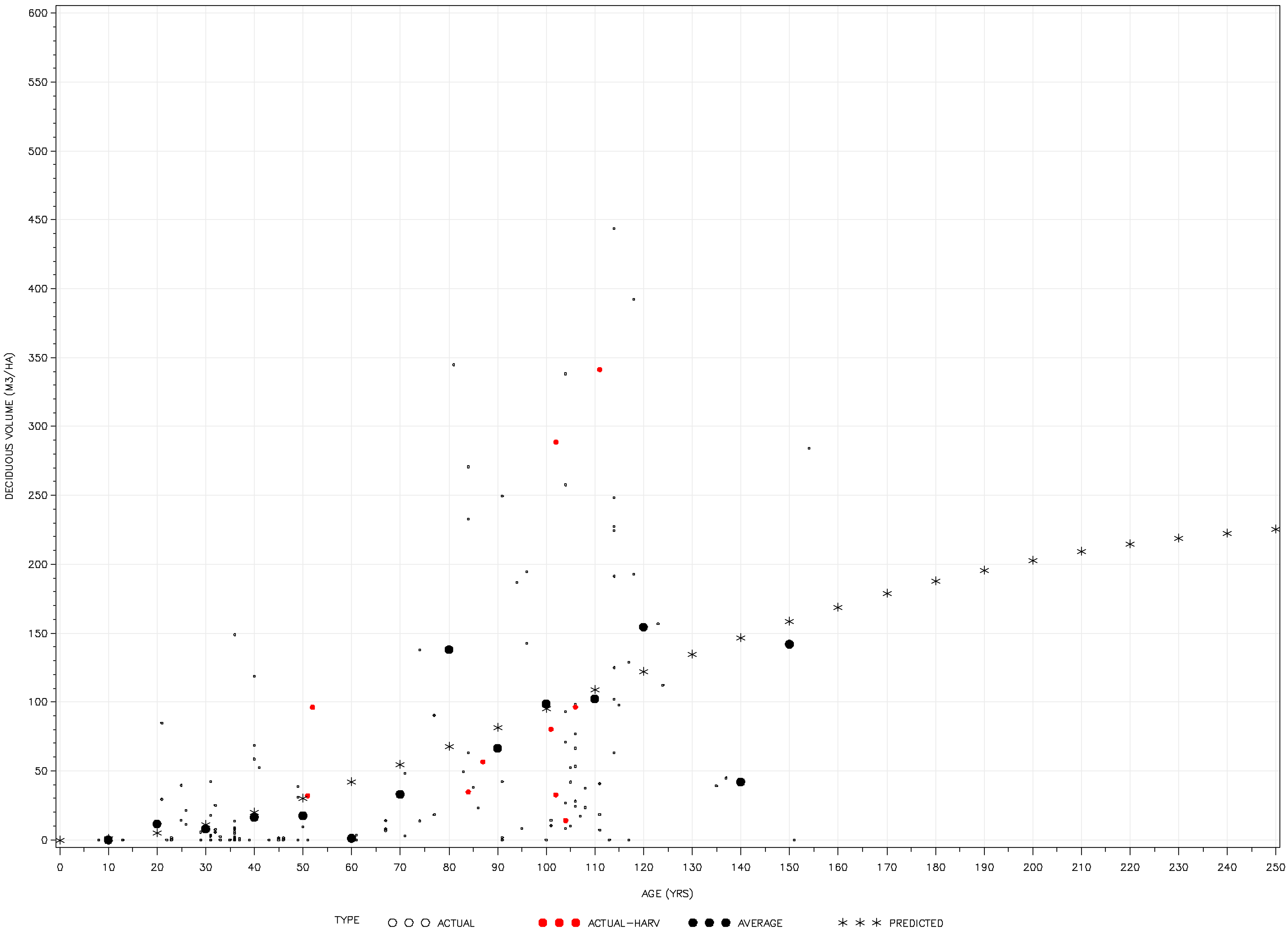
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	798668	399334	69.64	<.0001
Error	163	934699	5734.4		
Uncorrected Total	165	1733367			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00777	0.00384	0.000194	0.0154
B1	2.2130	0.0246	2.1643	2.2617

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.6753621
B1	-0.6753621	1.0000000

PL/HW (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	4
R	1.283E-6
PPC(B0)	3.104E-6
RPC(B0)	0.000027
Object	1.19E-10
Objective	662769.7
Observations Read	165
Observations Used	165
Observations Missing	0

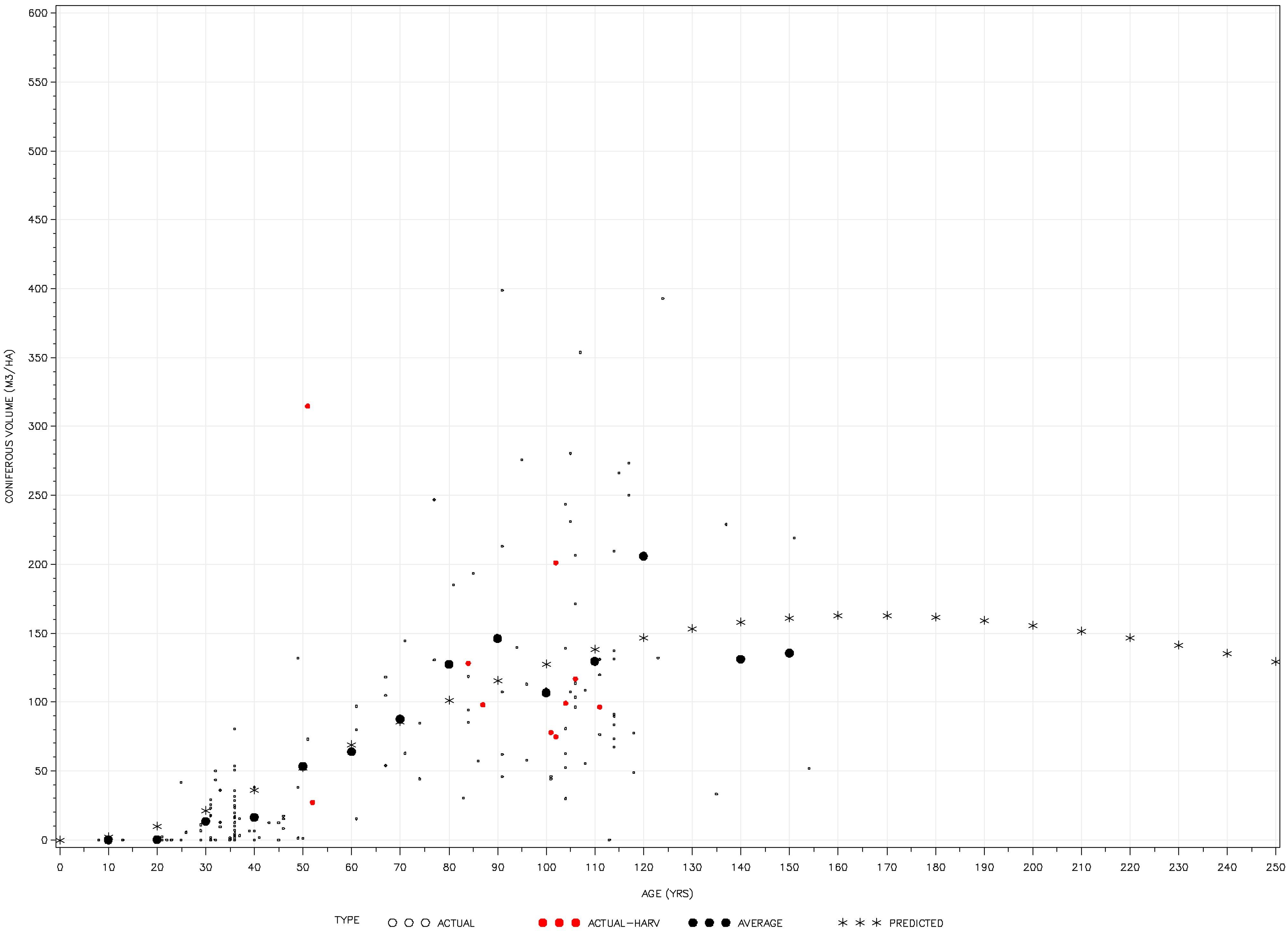
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1354474	677237	166.56	<.0001
Error	163	662770	4066.1		
Uncorrected Total	165	2017243			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0139	0.00264	0.00865	0.0191
B1	2.2833	0.0216	2.2407	2.3259

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8348889
B1	0.8348889	1.0000000

PL/HW (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.013853	2.28328	165	-3.42546	4066.07	0.44285	.007774735	2.21301	-1.21676	5734.35	0.26874

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.474E-6
PPC(B0)	0.000021
RPC(B0)	0.00005
Object	1.91E-10
Objective	573361.5
Observations Read	112
Observations Used	112
Observations Missing	0

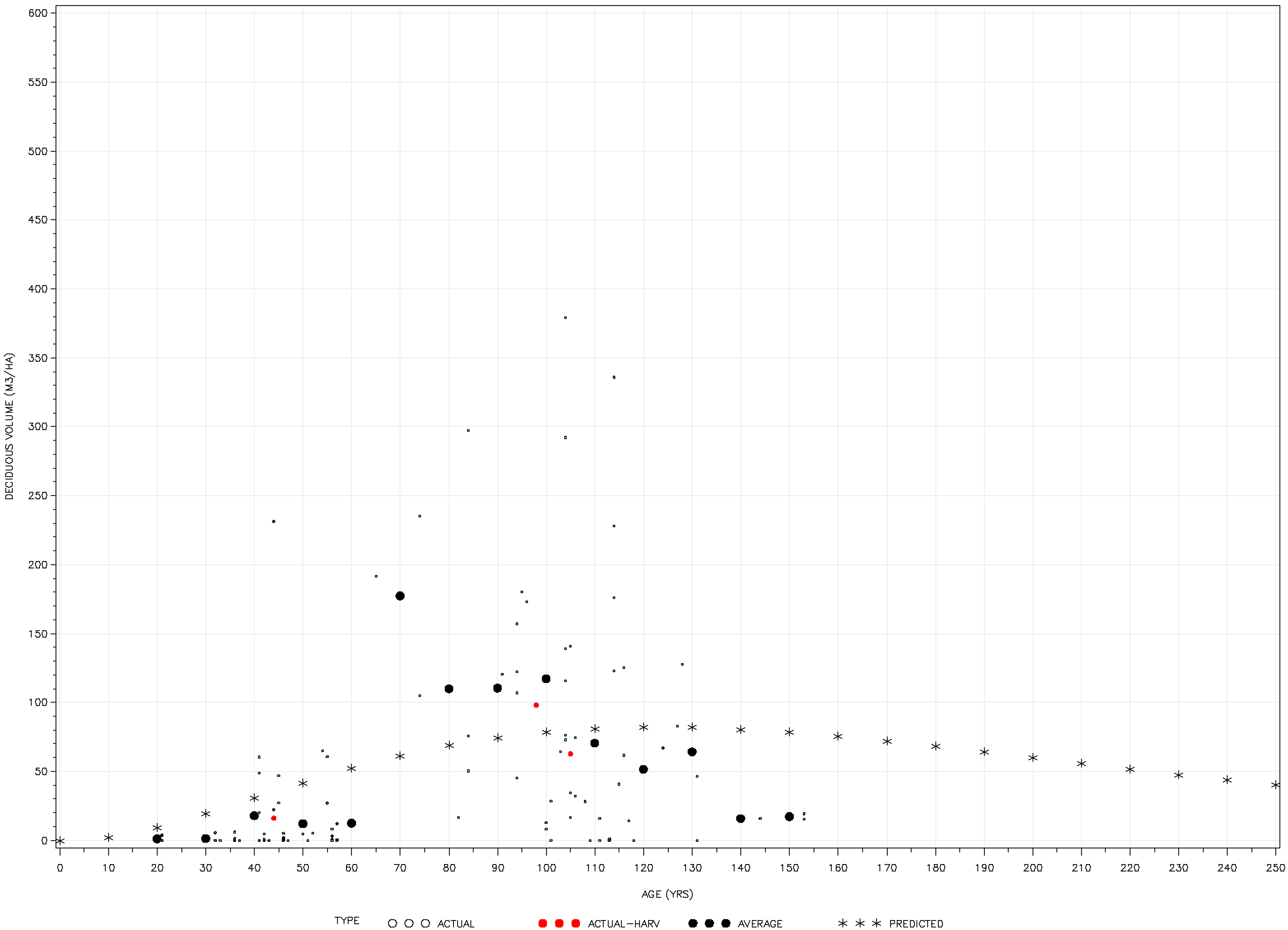
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	414387	207193	39.75	<.0001
Error	110	573361	5212.4		
Uncorrected Total	112	987748			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0180	0.00475	0.00859	0.0274
B1	2.2116	0.0529	2.1069	2.3164

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8862813
B1	0.8862813	1.0000000

SB/HW (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	6
R	2.129E-6
PPC(B0)	8.157E-6
RPC(B0)	0.000039
Object	8.39E-11
Objective	789707.4
Observations Read	112
Observations Used	112
Observations Missing	0

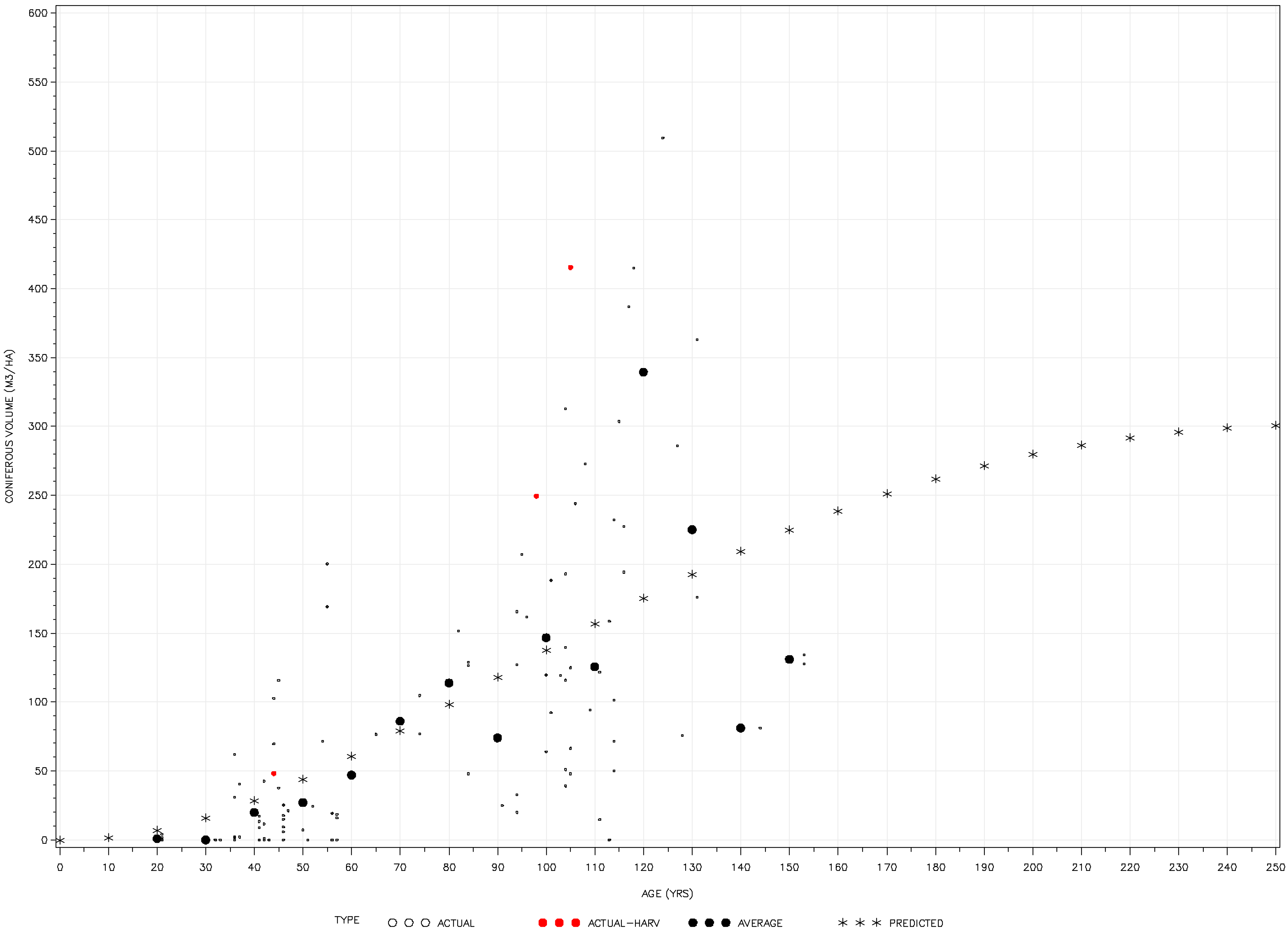
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1401471	700735	97.61	<.0001
Error	110	789707	7179.2		
Uncorrected Total	112	2191178			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00877	0.00321	0.00241	0.0151
B1	2.2885	0.0153	2.2581	2.3189

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.1083115
B1	-0.1083115	1.0000000

SB/HW (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	.008772861	2.28851	112	-3.71077	7179.16	0.39826	0.018006	2.21161	-4.70789	5212.38	0.17168

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.622E-6
PPC(B0)	0.00003
RPC(B0)	0.000101
Object	4.83E-10
Objective	58797.87
Observations Read	174
Observations Used	174
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6079.8	3039.9	8.89	0.0002
Error	172	58797.9	341.8		
Uncorrected Total	174	64877.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0212	0.00633	0.00871	0.0337
B1	1.7431	0.0891	1.5673	1.9189

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8055721
B1	0.8055721	1.0000000

PURE WHITE SPRUCE (15/11 Coniferous, 15/10 Deciduous)

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	28
Subiterations	51
Average Subiterations	1.821429
R	8.27E-7
PPC(B0)	0.000019
RPC(B0)	0.000212
Object	1E-10
Objective	2202532
Observations Read	174
Observations Used	174
Observations Missing	0

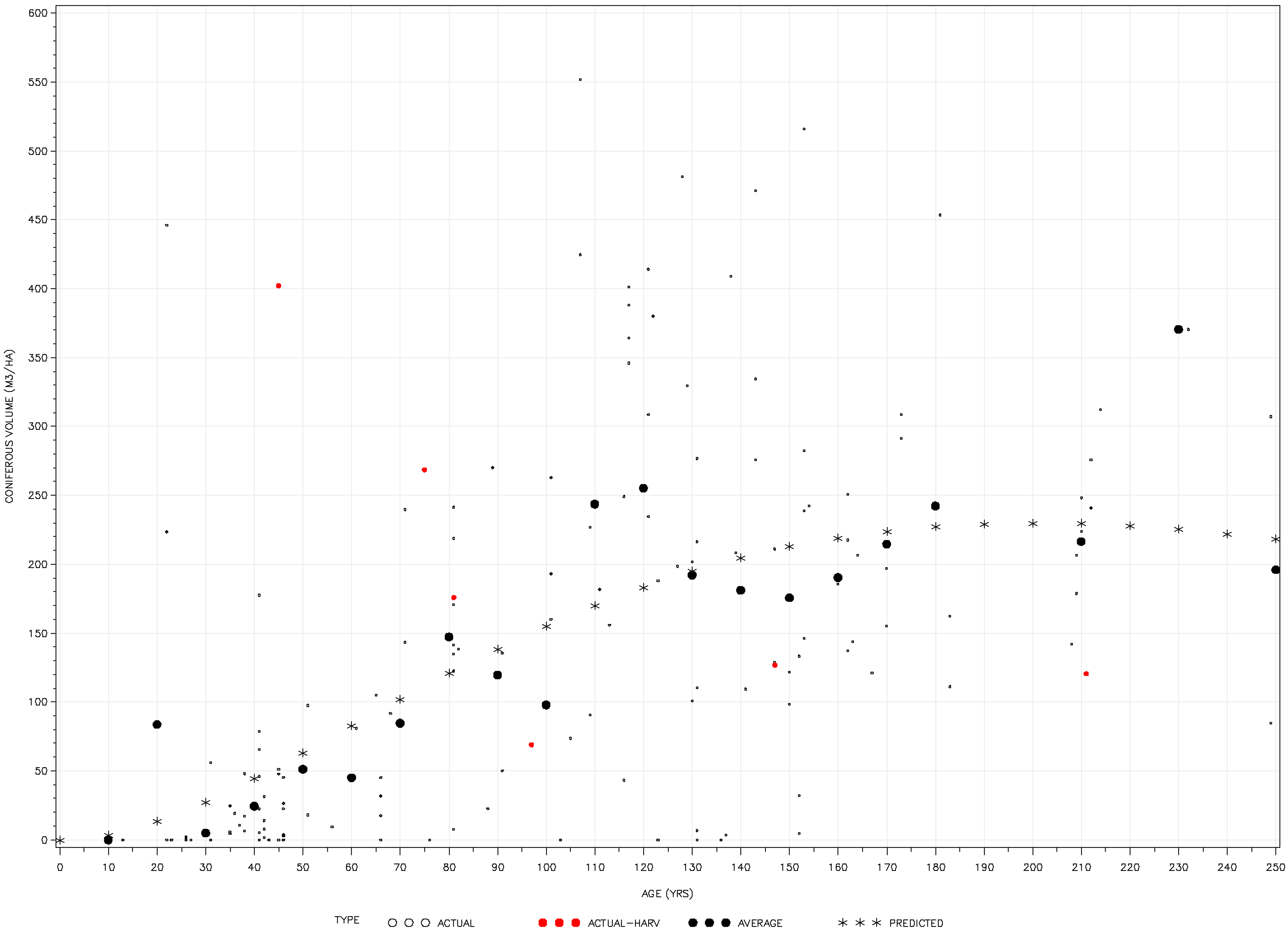
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	4032757	1344252	104.36	<.0001
Error	171	2202532	12880.3		
Uncorrected Total	174	6235289			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0385	0.0831	-0.1254	0.2025
B1	2.0211	0.5553	0.9251	3.1172
B2	0.0101	0.00419	0.00179	0.0183

Approximate Correlation Matrix			
	B0	B1	B2
B0	1.0000000	-0.9962939	-0.9314802
B1	-0.9962939	1.0000000	0.9584120
B2	-0.9314802	0.9584120	1.0000000

PURE WHITE SPRUCE (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	CONIF_B2	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.038519	2.02114	0.010069	174	-0.14629	12880.30	0.31741	0.021212	1.74310	-0.55338	341.848	0.024130

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	16
R	9.452E-6
PPC(B0)	0.000074
RPC(B0)	0.000115
Object	7.61E-11
Objective	296186.5
Observations Read	531
Observations Used	531
Observations Missing	0

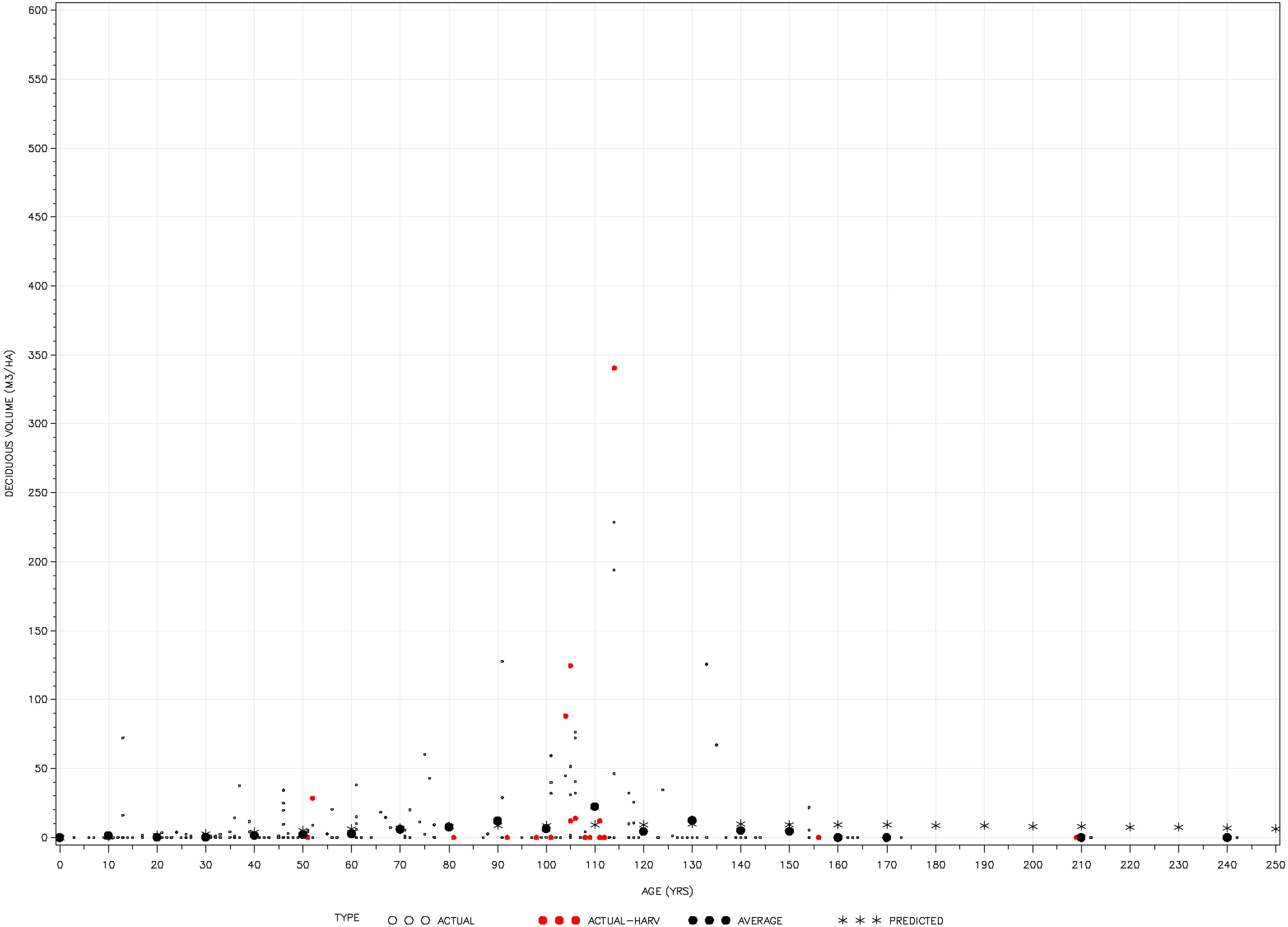
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	21958.8	10979.4	19.61	<.0001
Error	529	296186	559.9		
Uncorrected Total	531	318145			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0125	0.00430	0.00406	0.0210
B1	1.7001	0.0433	1.6151	1.7852

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.6074422
B1	0.6074422	1.0000000

PURE PINE (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	40
Subiterations	78
Average Subiterations	1.95
R	4.617E-6
PPC(B0)	0.000116
RPC(B0)	0.000884
Object	1.681E-9
Objective	4085844
Observations Read	531
Observations Used	531
Observations Missing	0

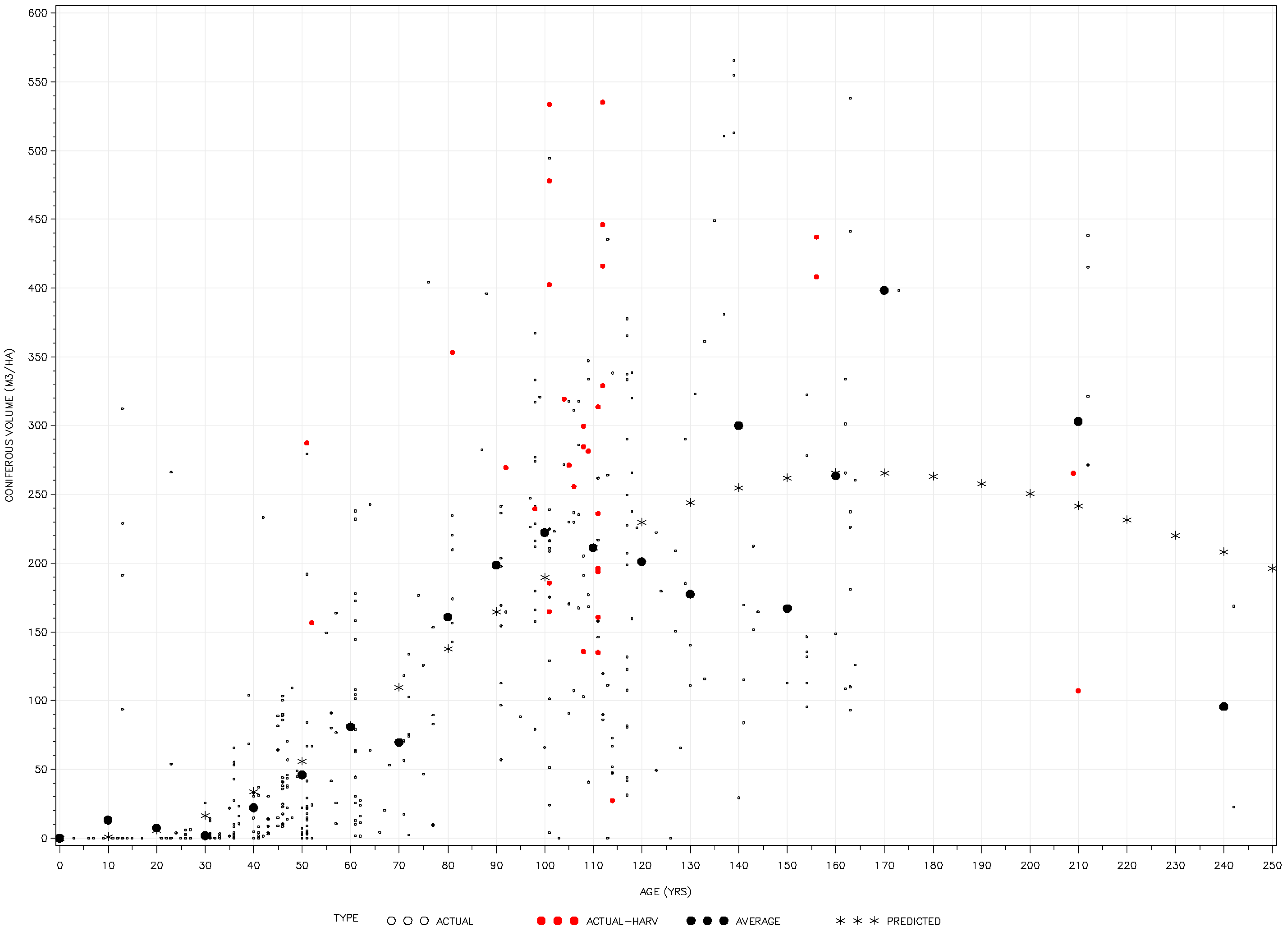
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	10366432	3455477	446.54	<.0001
Error	528	4085844	7738.3		
Uncorrected Total	531	14452277			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.000713	0.000913	-0.00108	0.00251
B1	3.1214	0.3364	2.4605	3.7822
B2	0.0188	0.00278	0.0134	0.0243

Approximate Correlation Matrix			
	B0	B1	B2
B0	1.0000000	-0.9971282	-0.9393420
B1	-0.9971282	1.0000000	0.9619558
B2	-0.9393420	0.9619558	1.0000000

PURE PINE (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	CONIF_B2	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	.000713209	3.12135	0.018839	531	-0.51528	7738.34	0.53405	0.012516	1.70013	-0.65043	559.899	0.028270

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.622E-6
PPC(B0)	0.00003
RPC(B0)	0.000101
Object	4.83E-10
Objective	58797.87
Observations Read	174
Observations Used	174
Observations Missing	0

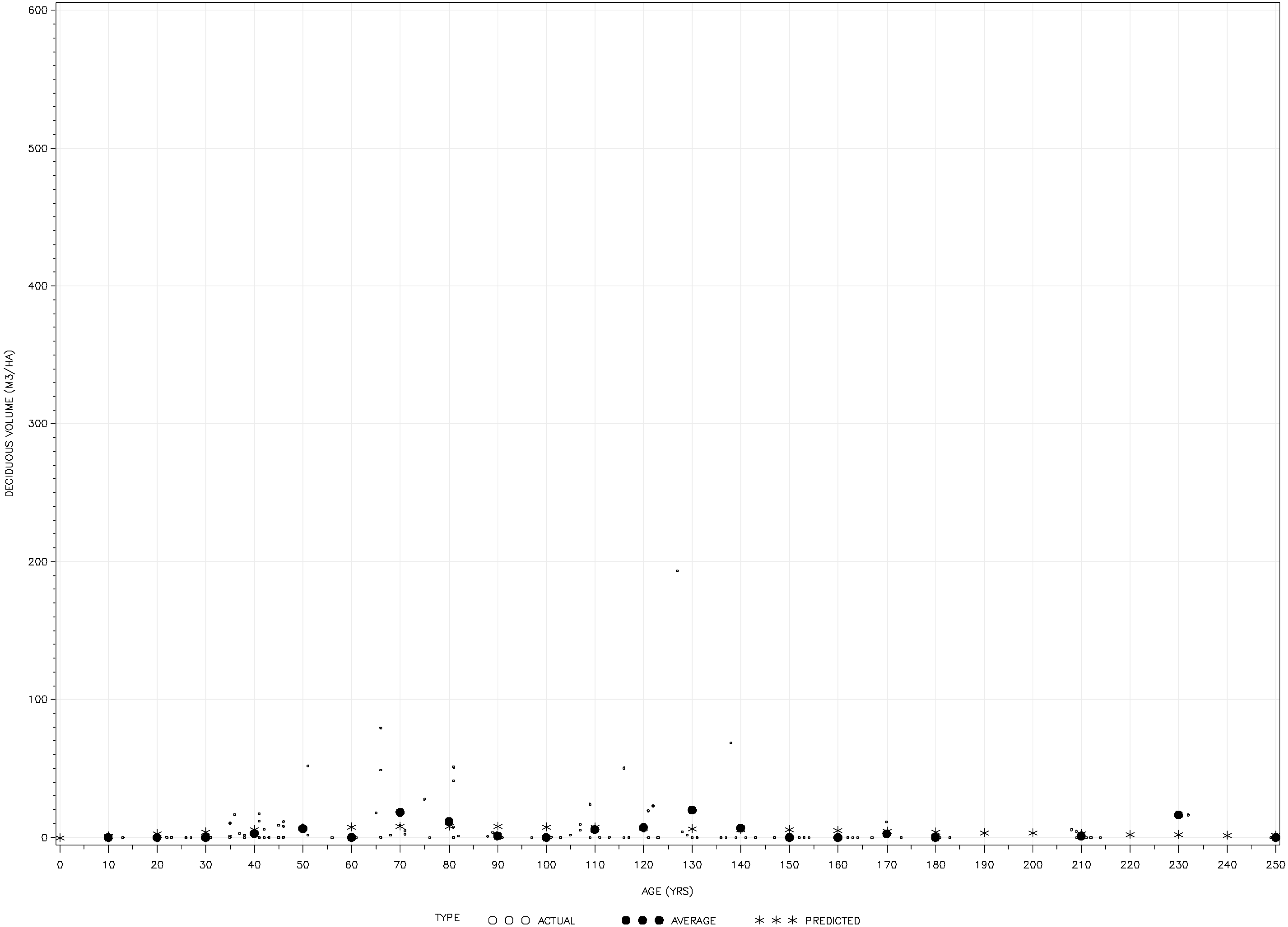
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6079.8	3039.9	8.89	0.0002
Error	172	58797.9	341.8		
Uncorrected Total	174	64877.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0212	0.00633	0.00871	0.0337
B1	1.7431	0.0891	1.5673	1.9189

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8055721
B1	0.8055721	1.0000000

SB (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	5
R	1.526E-6
PPC(B0)	2.252E-6
RPC(B0)	0.000024
Object	2.84E-10
Objective	2205812
Observations Read	174
Observations Used	174
Observations Missing	0

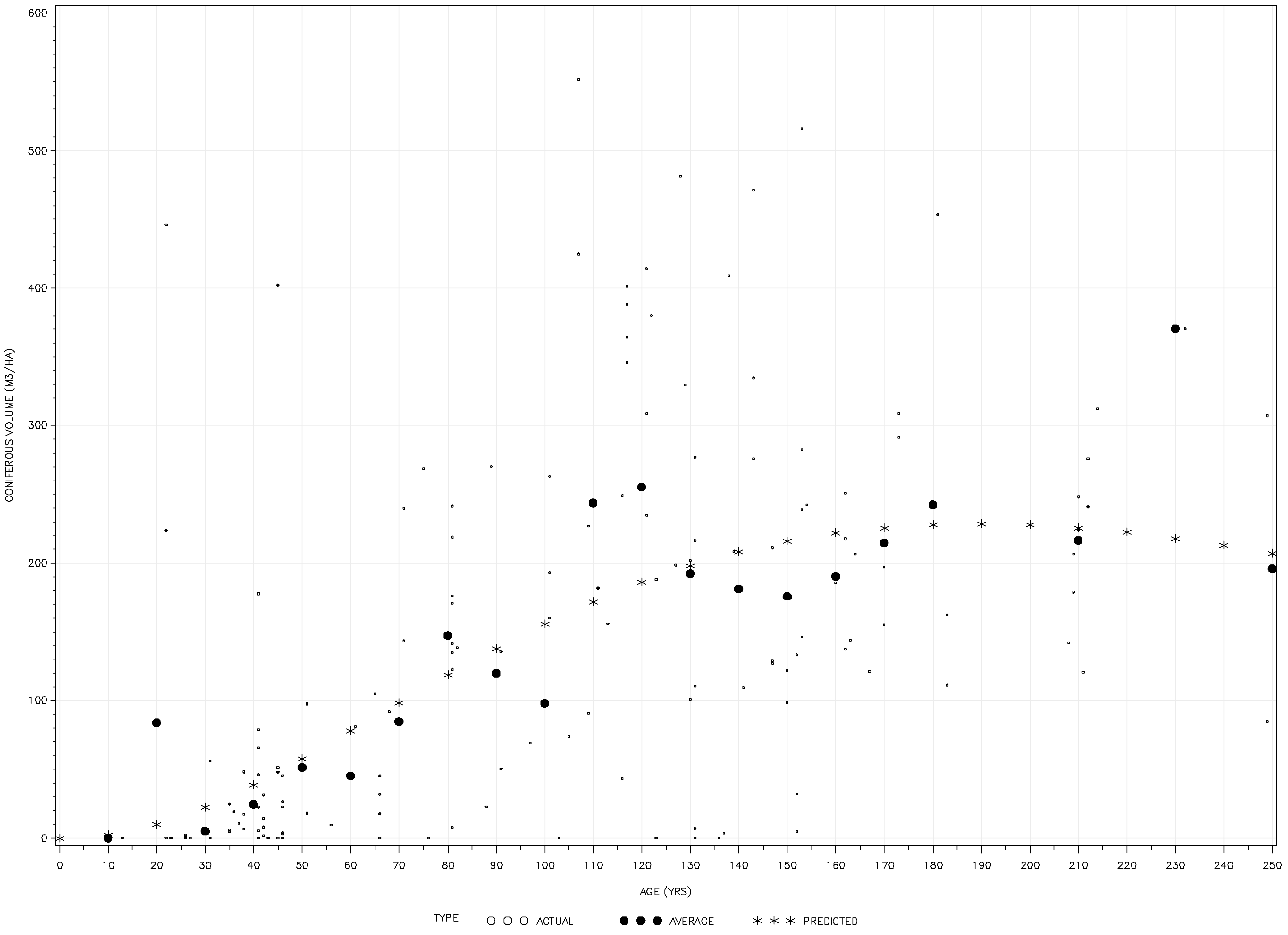
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	4029477	2014738	157.10	<.0001
Error	172	2205812	12824.5		
Uncorrected Total	174	6235289			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0123	0.00138	0.00954	0.0150
B1	2.3182	0.0223	2.2742	2.3621

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8589633
B1	0.8589633	1.0000000

SB (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.012262	2.31815	174	1.57929	12899.49	0.31640	0.021212	1.74310	-0.55338	341.848	0.024130

The NLIN Procedure

NOTE: Convergence criterion met.

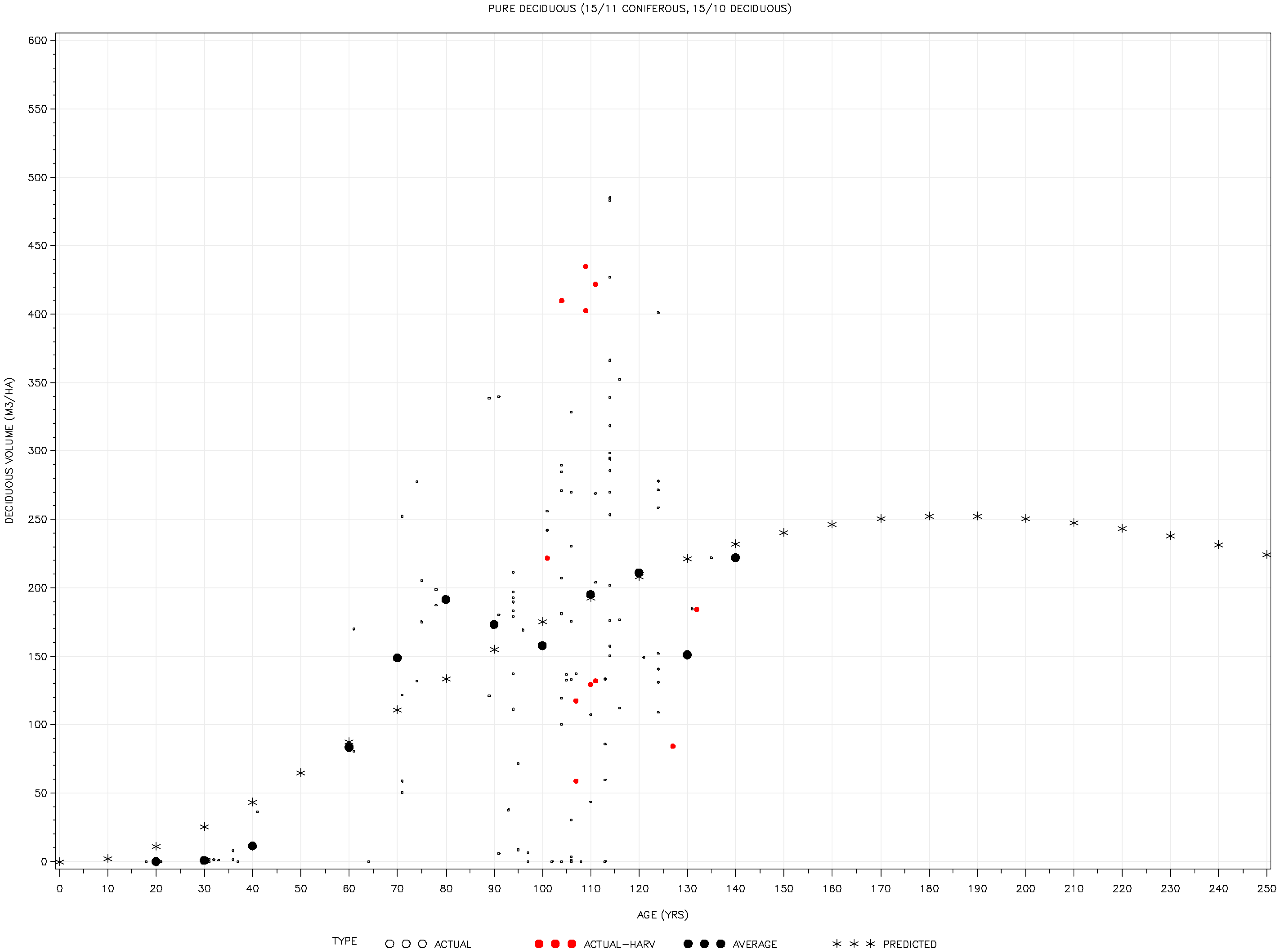
Estimation Summary	
Method	Gauss-Newton
Iterations	3
R	8.928E-7
PPC(B0)	2.075E-7
RPC(B0)	0.000948
Object	9.093E-8
Objective	1490499
Observations Read	119
Observations Used	119
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3563802	1781901	139.87	<.0001
Error	117	1490499	12739.3		
Uncorrected Total	119	5054301			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0127	0.00476	0.00324	0.0221
B1	2.3454	0.0327	2.2806	2.4102

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.9205078
B1	0.9205078	1.0000000


PURE DECIDUOUS (15/11 CONIFEROUS, 15/10 DECIDUOUS)
DECIDUOUS VOLUME (M3/HA)
0
50
100
150
200
250
300
350
400
450
500
550
600
AGE (YRS)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250
TYPE
ACTUAL
ACTUAL-HARV
AVERAGE
PREDICTED

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	8
R	5.139E-6
PPC(B0)	0.000038
RPC(B0)	0.000103
Object	1.22E-10
Objective	735066.4
Observations Read	119
Observations Used	119
Observations Missing	0

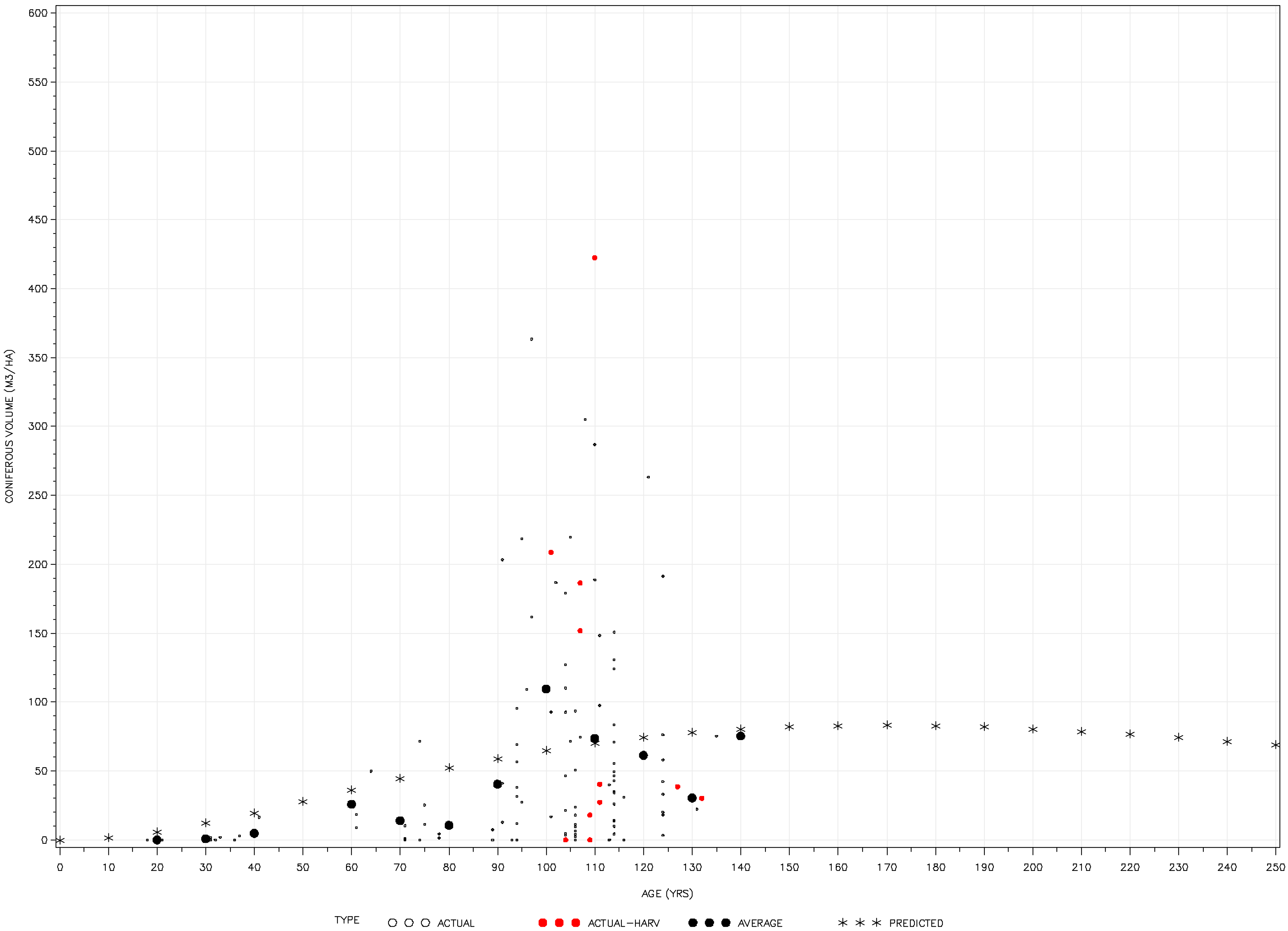
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	478961	239481	38.12	<.0001
Error	117	735066	6282.6		
Uncorrected Total	119	1214027			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0126	0.00867	-0.00453	0.0298
B1	2.1306	0.0586	2.0146	2.2467

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.9083595
B1	0.9083595	1.0000000

PURE DECIDUOUS (15/11 CONIFEROUS, 15/10 DECIDUOUS)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.012644	2.13064	119	-1.46769	6336.78	0.075192	0.012667	2.34544	-1.24407	12739.31	0.20959

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	4
R	2.98E-6
PPC(B0)	0.000019
RPC(B0)	0.000171
Object	6.64E-10
Objective	934699.2
Observations Read	165
Observations Used	165
Observations Missing	0

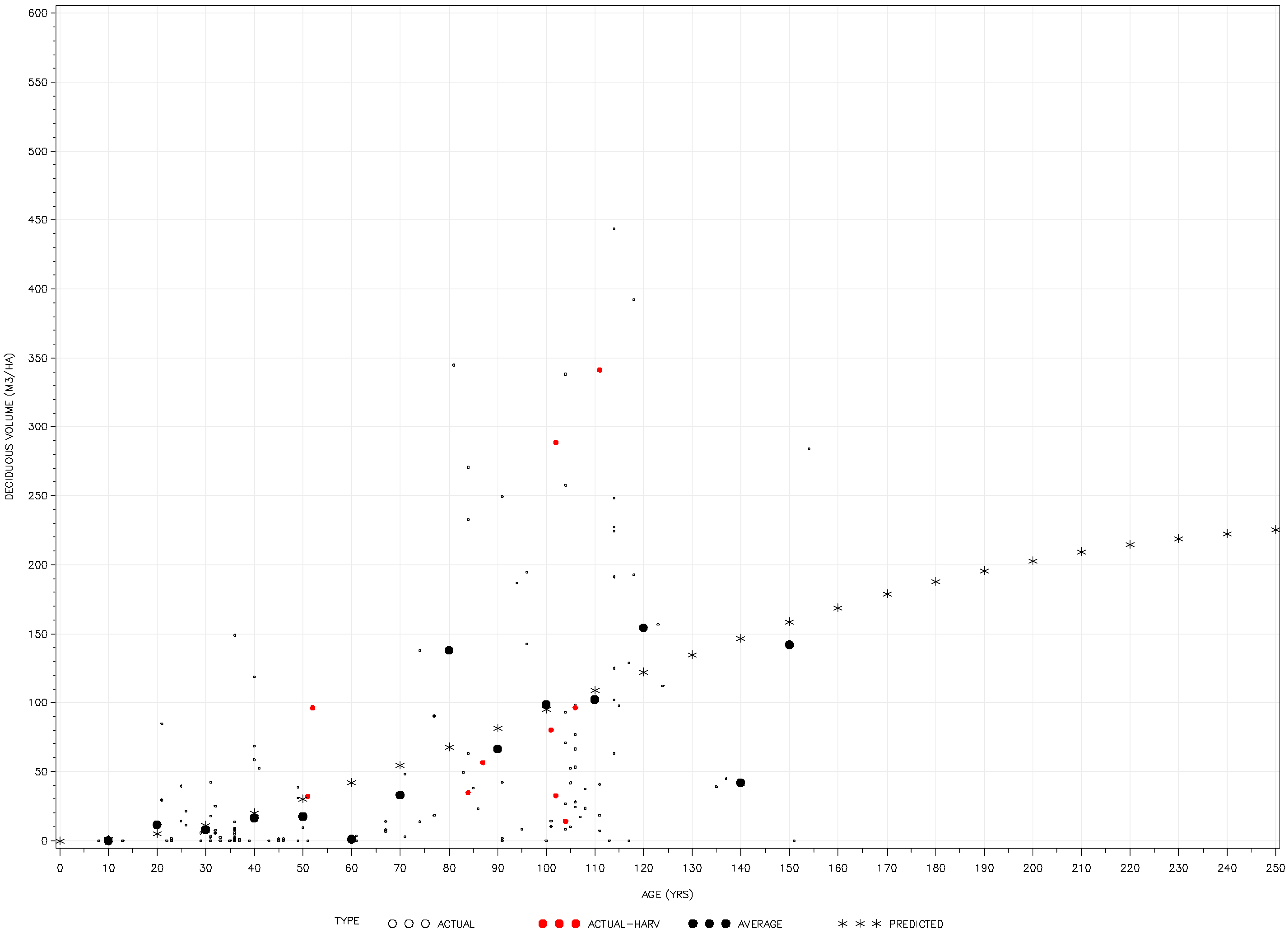
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	798668	399334	69.64	<.0001
Error	163	934699	5734.4		
Uncorrected Total	165	1733367			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00777	0.00384	0.000194	0.0154
B1	2.2130	0.0246	2.1643	2.2617

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.6753621
B1	-0.6753621	1.0000000

HW/PL 1(15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	4
R	9.573E-6
PPC(B0)	0.000024
RPC(B0)	0.000199
Object	5.411E-9
Objective	640804.4
Observations Read	165
Observations Used	165
Observations Missing	0

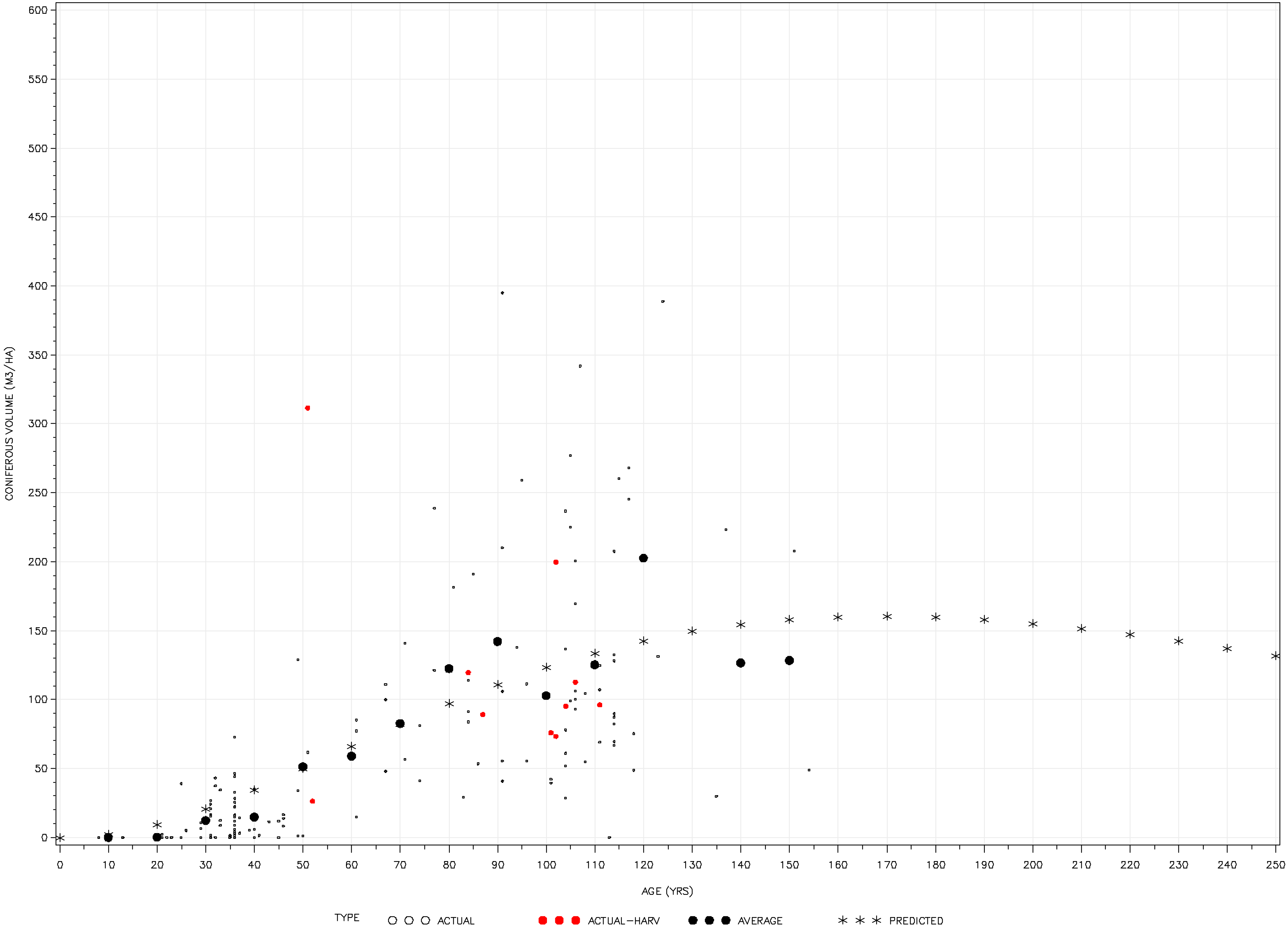
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1264073	632037	160.77	<.0001
Error	163	640804	3931.3		
Uncorrected Total	165	1904878			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0134	0.00268	0.00816	0.0187
B1	2.2732	0.0210	2.2317	2.3147

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8181548
B1	0.8181548	1.0000000

HW/PL 1(15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.013448	2.27320	165	-3.43051	3931.32	0.43779	.007774735	2.21301	-1.21676	5734.35	0.26874

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.474E-6
PPC(B0)	0.000021
RPC(B0)	0.00005
Object	1.91E-10
Objective	573361.5
Observations Read	112
Observations Used	112
Observations Missing	0

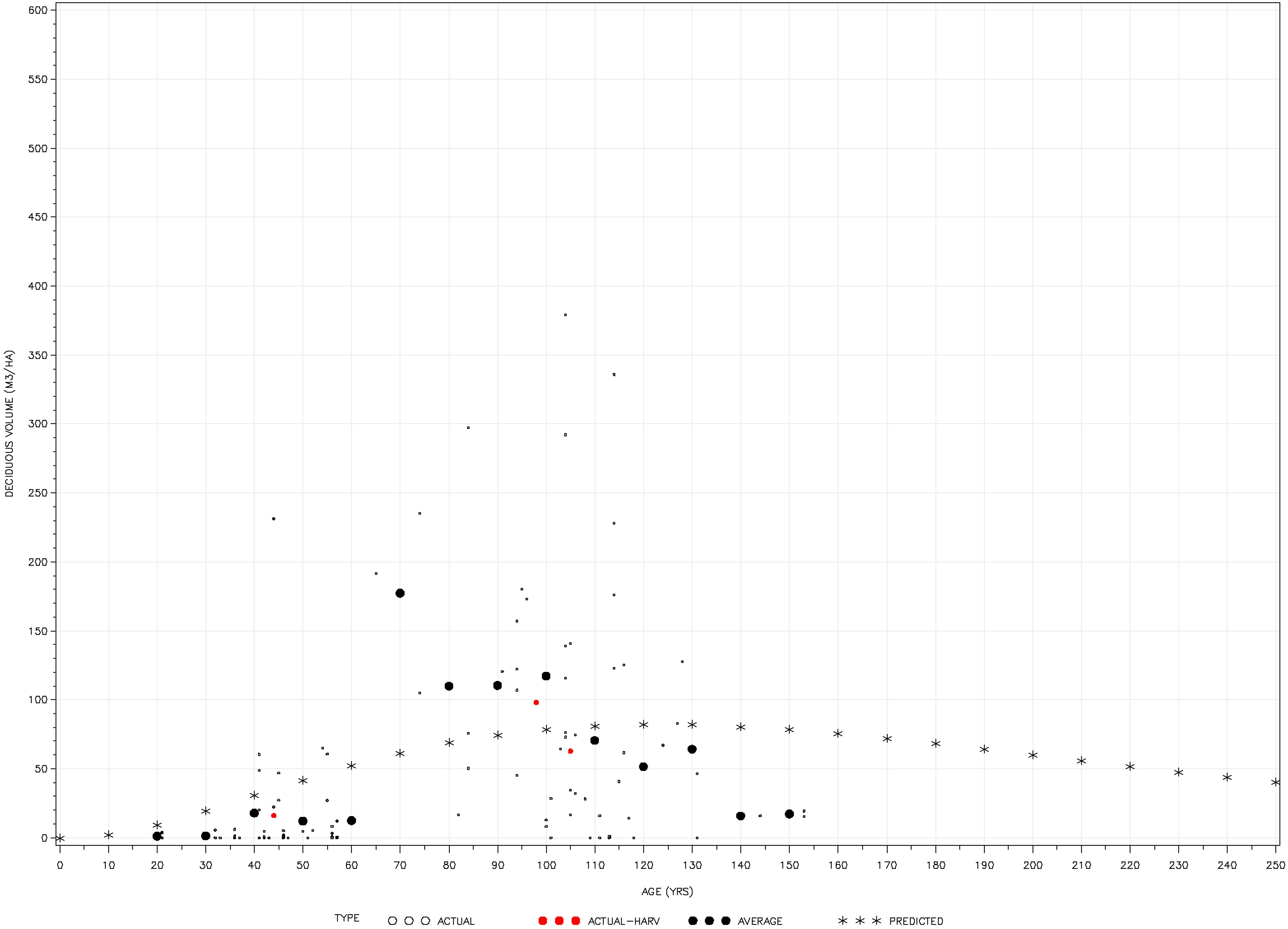
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	414387	207193	39.75	<.0001
Error	110	573361	5212.4		
Uncorrected Total	112	987748			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0180	0.00475	0.00859	0.0274
B1	2.2116	0.0529	2.1069	2.3164

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8862813
B1	0.8862813	1.0000000

SW/HW (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

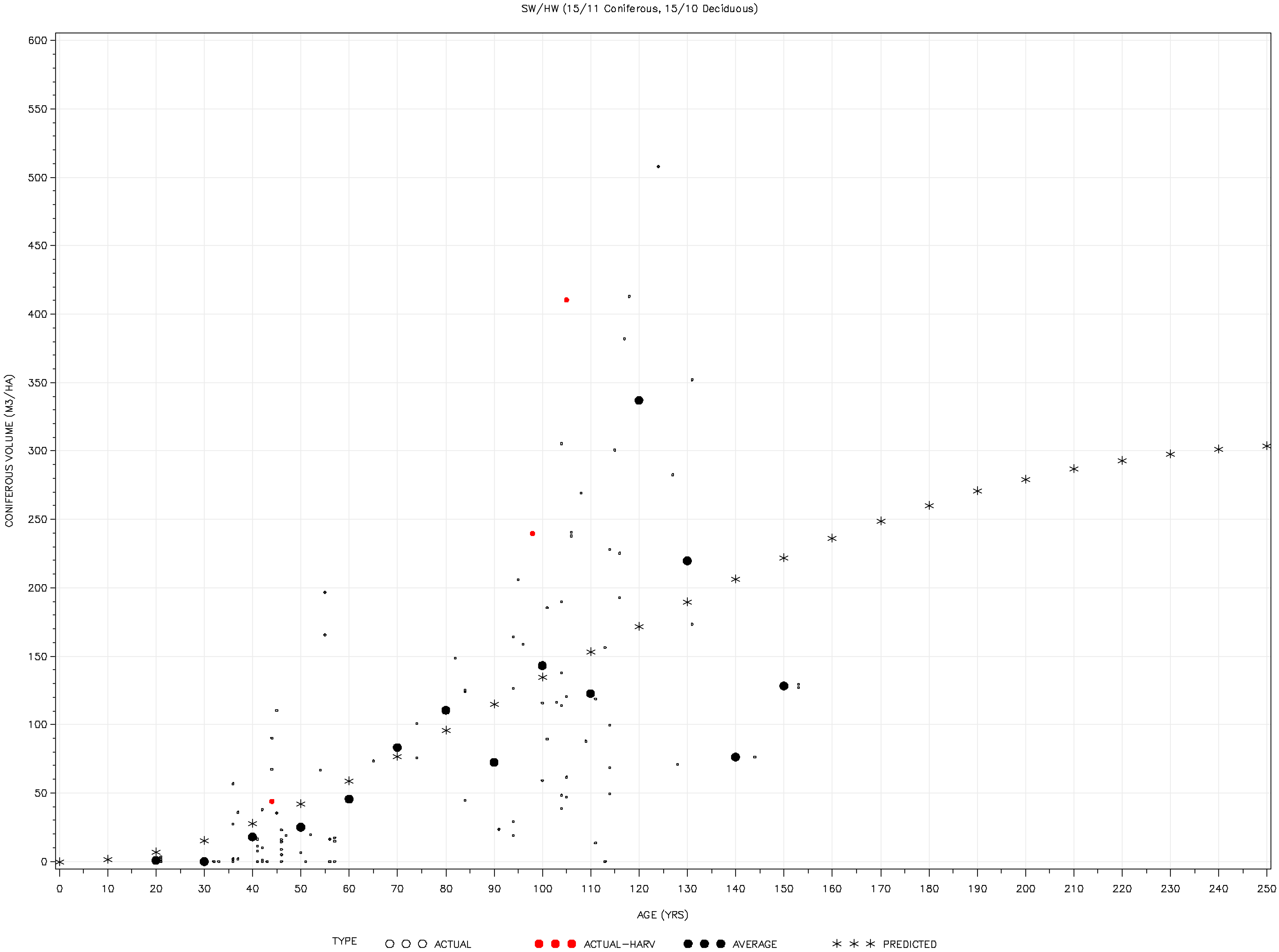
Estimation Summary	
Method	Gauss-Newton
Iterations	6
R	2.786E-6
PPC(B0)	0.000011
RPC(B0)	0.000051
Object	1.3E-10
Objective	773738
Observations Read	112
Observations Used	112
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1342701	671351	95.44	<.0001
Error	110	773738	7034.0		
Uncorrected Total	112	2116439			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00852	0.00323	0.00212	0.0149
B1	2.2842	0.0159	2.2527	2.3157

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.2420985
B1	-0.2420985	1.0000000


SW/HW (15/11 Coniferous, 15/10 Deciduous)
CONIFEROUS VOLUME (M3/HA)
600
550
500
450
400
350
300
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
AGE (YRS)
TYPE
ACTUAL
ACTUAL-HARV
AVERAGE
PREDICTED

Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	.008522291	2.28422	112	-3.86077	7033.98	0.39680	0.018006	2.21161	-4.70789	5212.38	0.17168

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.474E-6
PPC(B0)	0.000021
RPC(B0)	0.00005
Object	1.91E-10
Objective	573361.5
Observations Read	112
Observations Used	112
Observations Missing	0

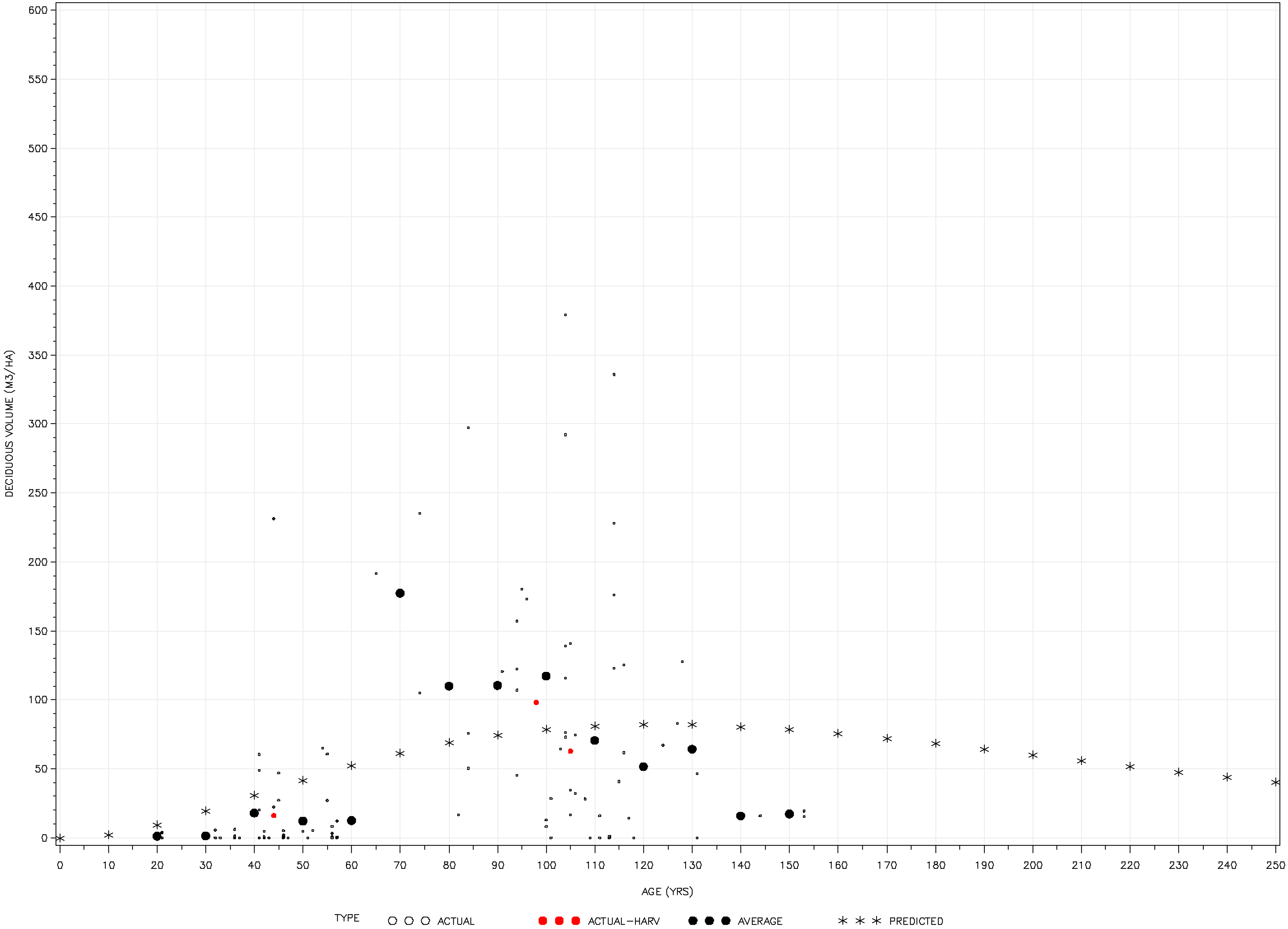
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	414387	207193	39.75	<.0001
Error	110	573361	5212.4		
Uncorrected Total	112	987748			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0180	0.00475	0.00859	0.0274
B1	2.2116	0.0529	2.1069	2.3164

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8862813
B1	0.8862813	1.0000000

SW/HW (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	6
R	2.786E-6
PPC(B0)	0.000011
RPC(B0)	0.000051
Object	1.3E-10
Objective	773738
Observations Read	112
Observations Used	112
Observations Missing	0

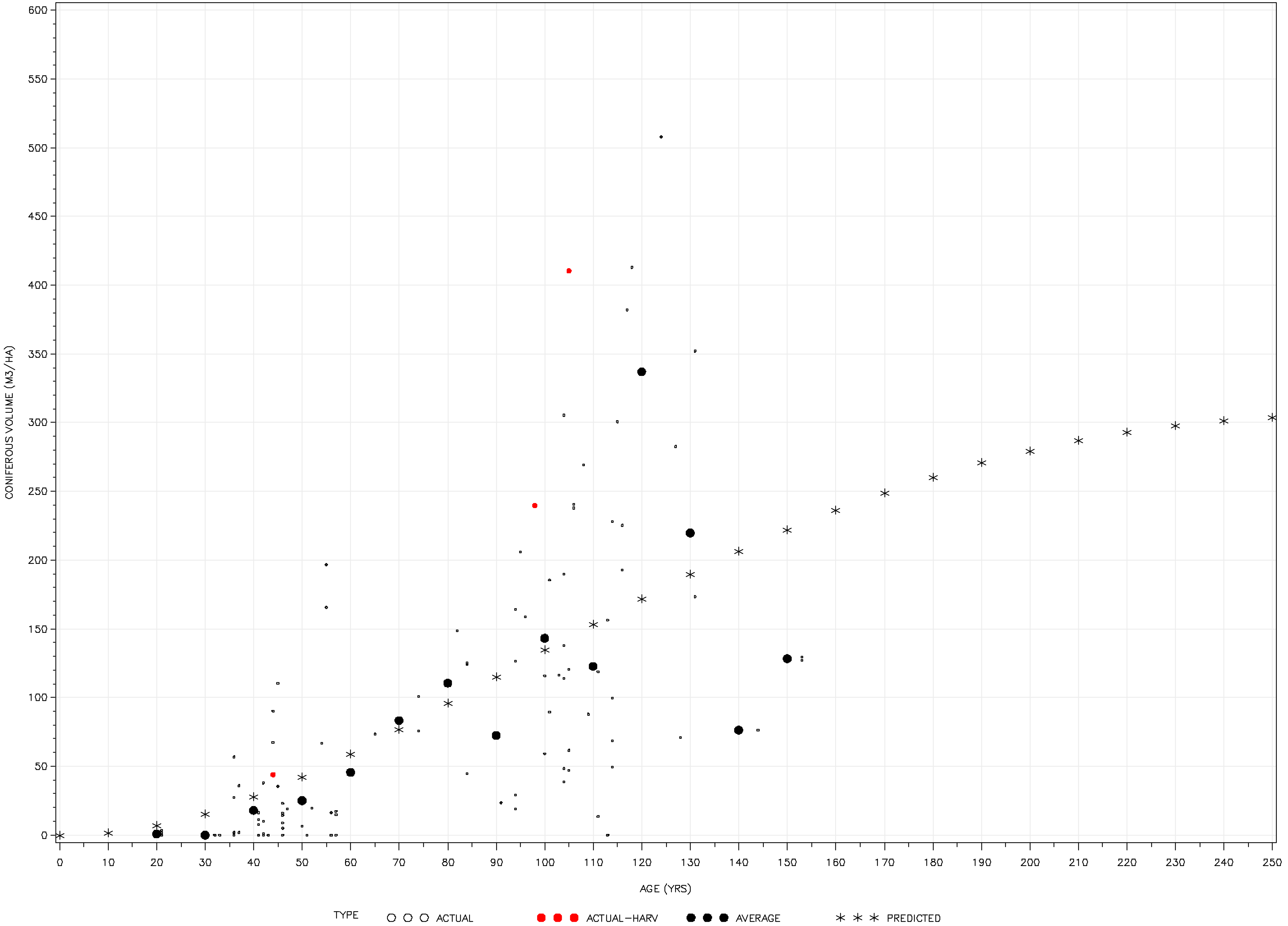
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1342701	671351	95.44	<.0001
Error	110	773738	7034.0		
Uncorrected Total	112	2116439			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00852	0.00323	0.00212	0.0149
B1	2.2842	0.0159	2.2527	2.3157

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.2420985
B1	-0.2420985	1.0000000

SW/HW (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	.008522291	2.28422	112	-3.86077	7033.98	0.39680	0.018006	2.21161	-4.70789	5212.38	0.17168

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	4
R	2.98E-6
PPC(B0)	0.000019
RPC(B0)	0.000171
Object	6.64E-10
Objective	934699.2
Observations Read	165
Observations Used	165
Observations Missing	0

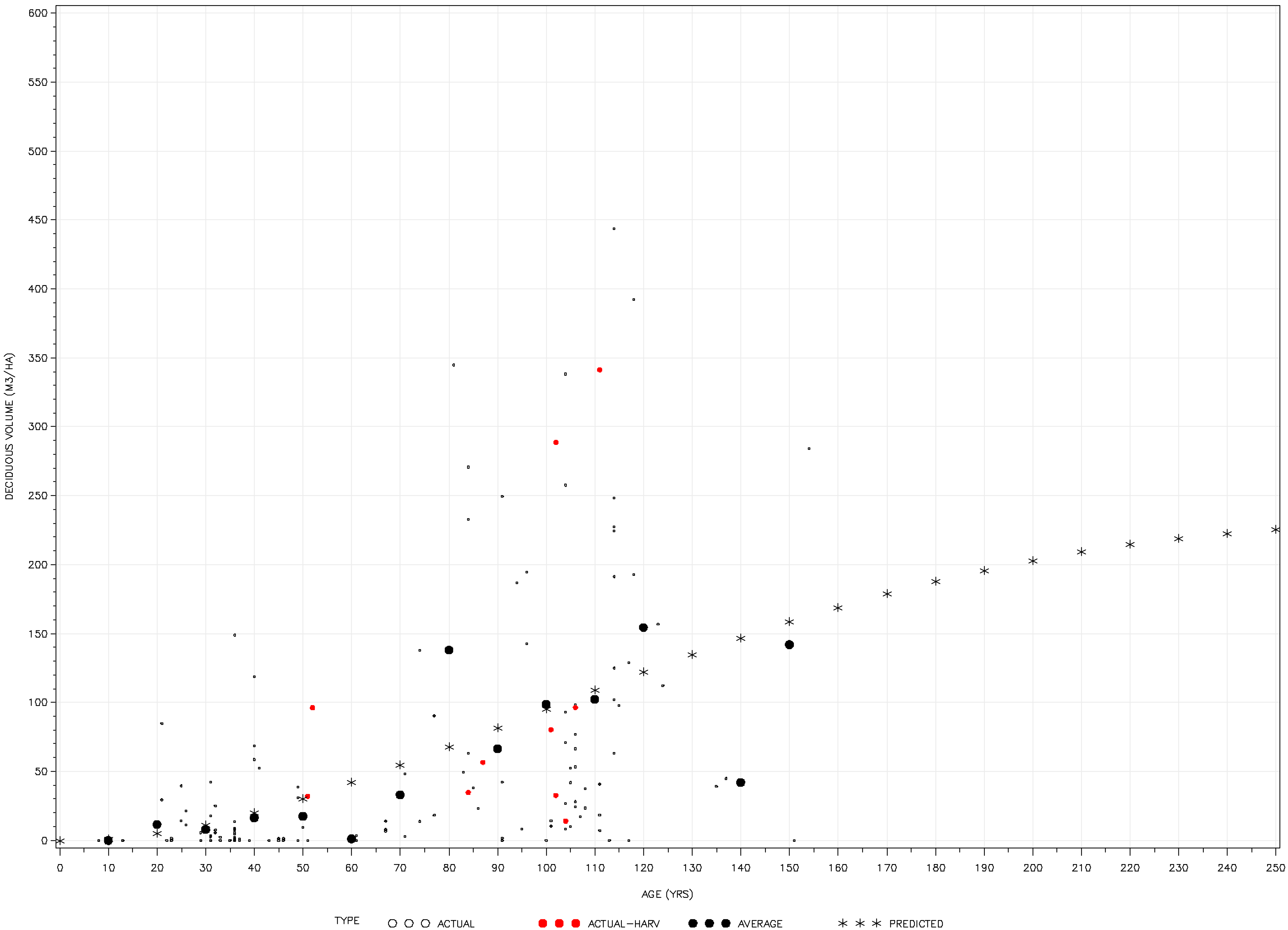
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	798668	399334	69.64	<.0001
Error	163	934699	5734.4		
Uncorrected Total	165	1733367			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00777	0.00384	0.000194	0.0154
B1	2.2130	0.0246	2.1643	2.2617

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.6753621
B1	-0.6753621	1.0000000

PL/HW (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	4
R	9.573E-6
PPC(B0)	0.000024
RPC(B0)	0.000199
Object	5.411E-9
Objective	640804.4
Observations Read	165
Observations Used	165
Observations Missing	0

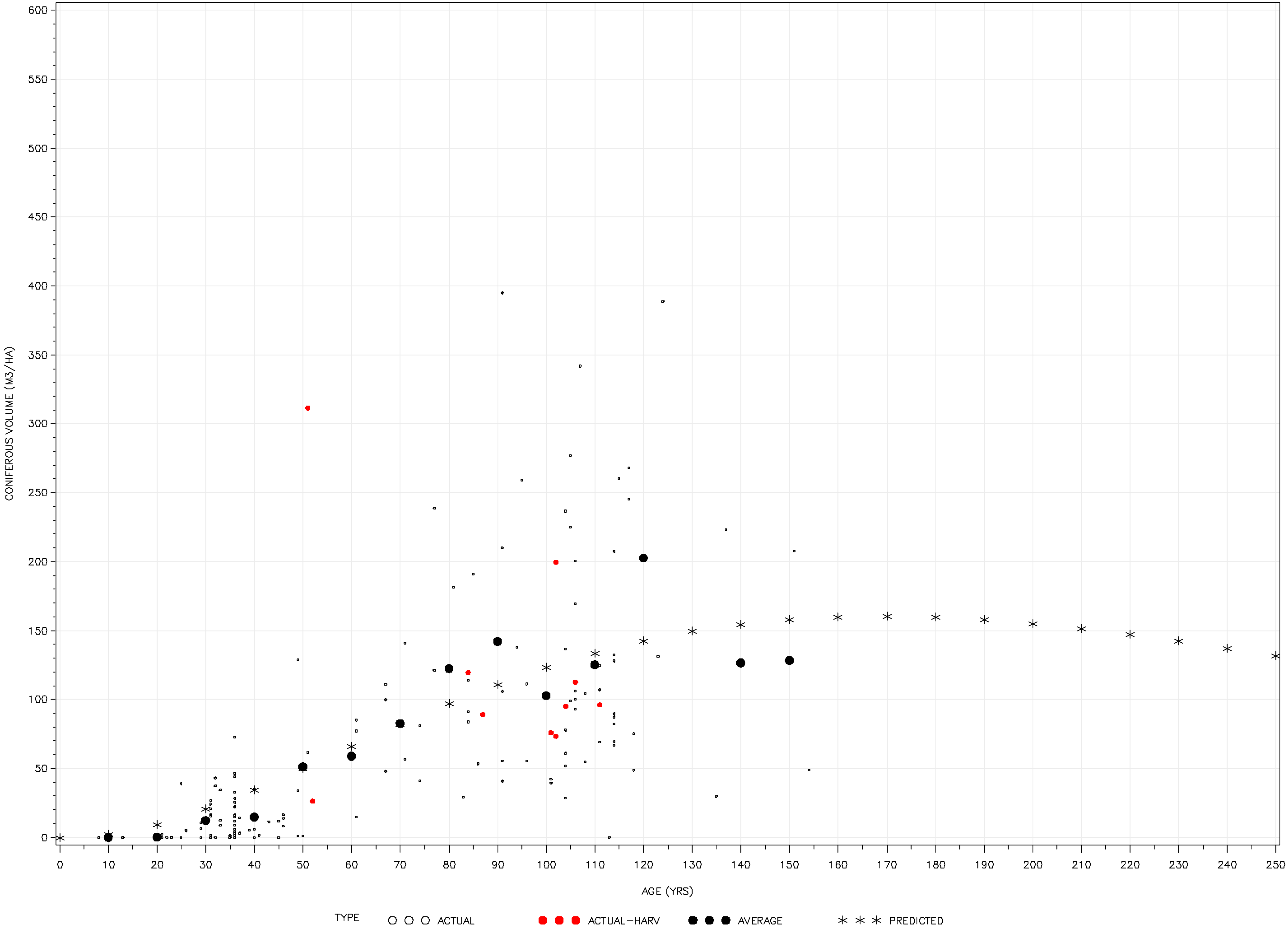
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1264073	632037	160.77	<.0001
Error	163	640804	3931.3		
Uncorrected Total	165	1904878			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0134	0.00268	0.00816	0.0187
B1	2.2732	0.0210	2.2317	2.3147

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8181548
B1	0.8181548	1.0000000

PL/HW (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.013448	2.27320	165	-3.43051	3931.32	0.43779	.007774735	2.21301	-1.21676	5734.35	0.26874

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.474E-6
PPC(B0)	0.000021
RPC(B0)	0.00005
Object	1.91E-10
Objective	573361.5
Observations Read	112
Observations Used	112
Observations Missing	0

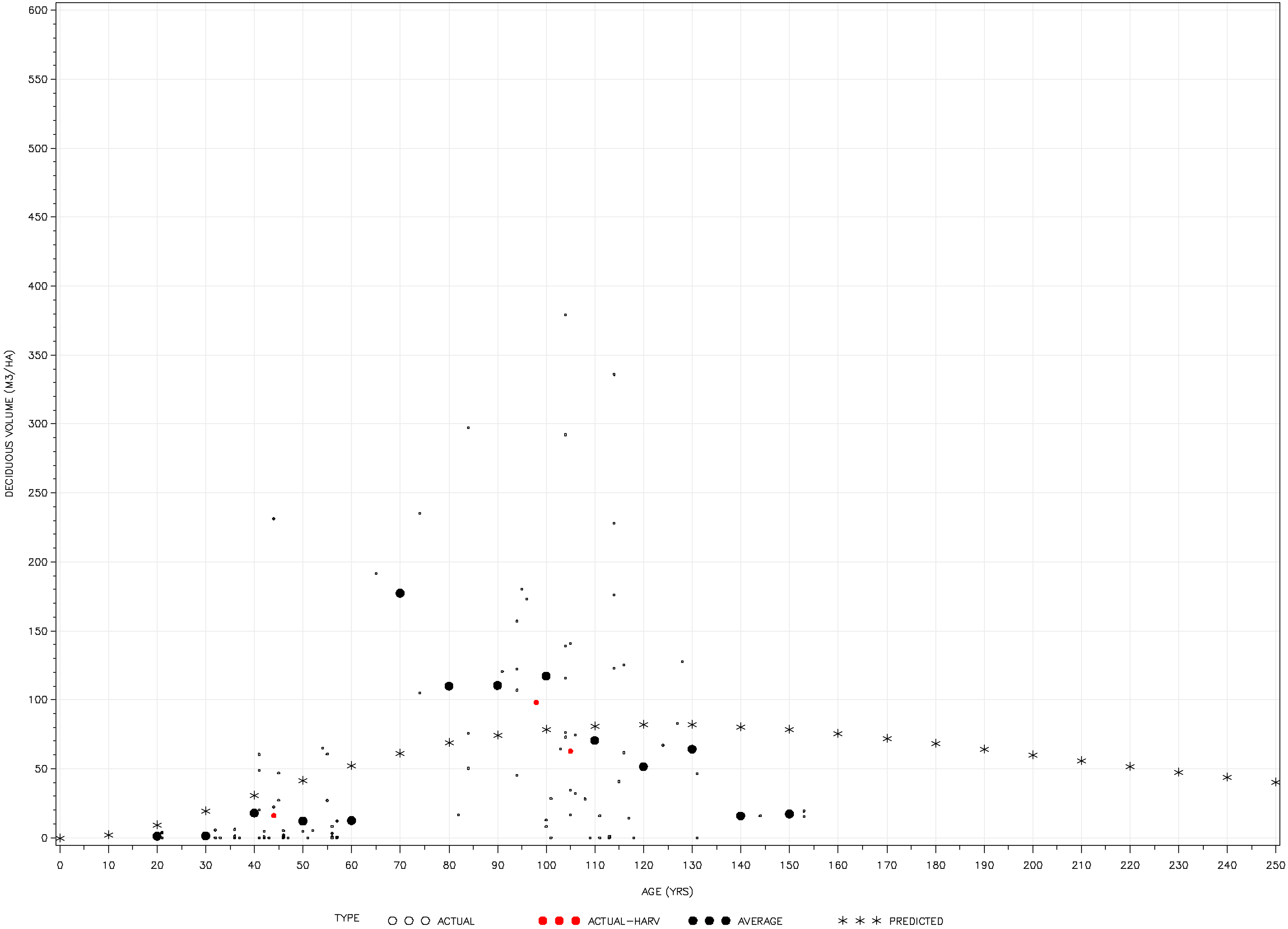
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	414387	207193	39.75	<.0001
Error	110	573361	5212.4		
Uncorrected Total	112	987748			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0180	0.00475	0.00859	0.0274
B1	2.2116	0.0529	2.1069	2.3164

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8862813
B1	0.8862813	1.0000000

SB/HW (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	6
R	2.786E-6
PPC(B0)	0.000011
RPC(B0)	0.000051
Object	1.3E-10
Objective	773738
Observations Read	112
Observations Used	112
Observations Missing	0

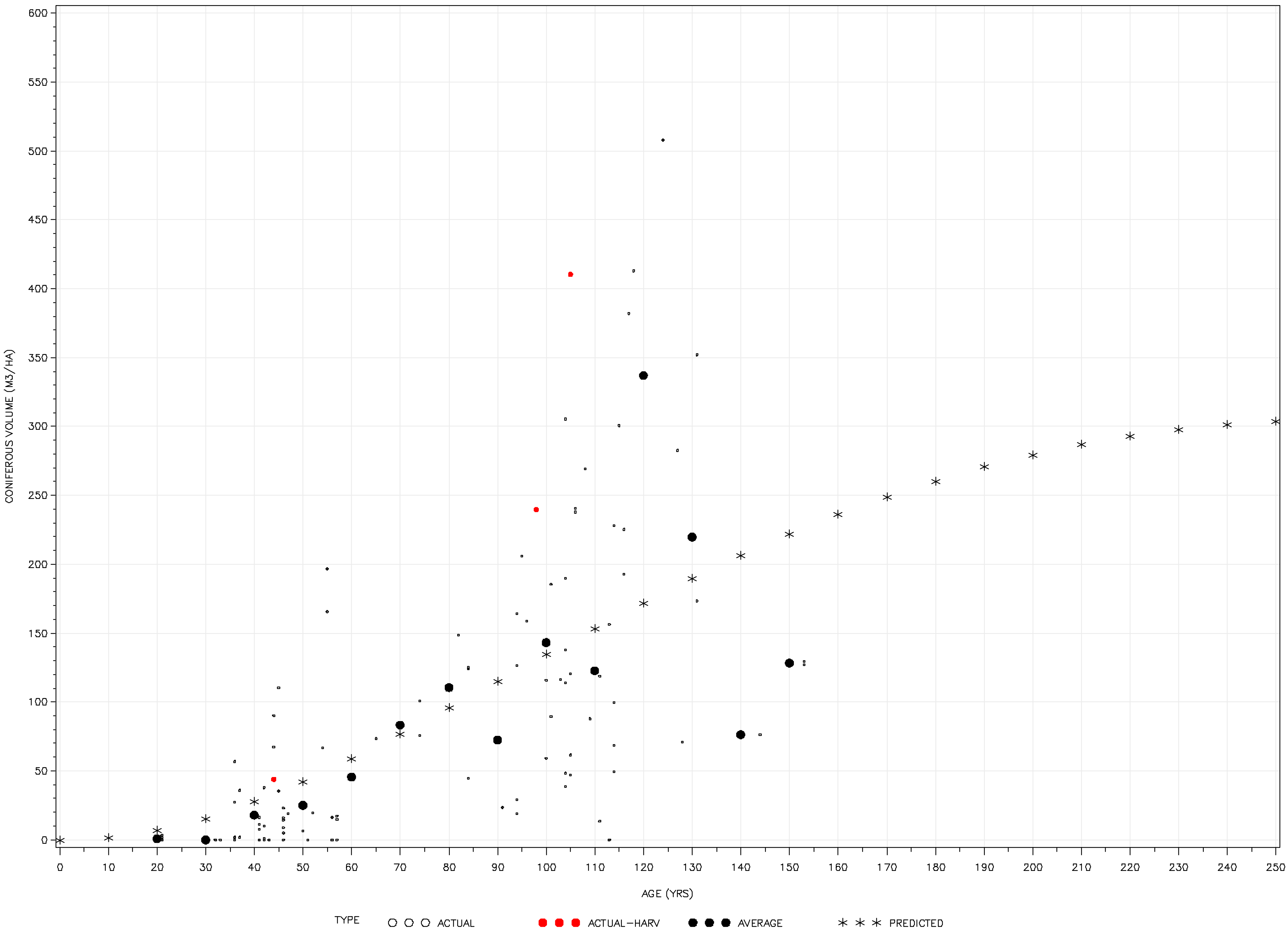
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	1342701	671351	95.44	<.0001
Error	110	773738	7034.0		
Uncorrected Total	112	2116439			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00852	0.00323	0.00212	0.0149
B1	2.2842	0.0159	2.2527	2.3157

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.2420985
B1	-0.2420985	1.0000000

SB/HW (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	.008522291	2.28422	112	-3.86077	7033.98	0.39680	0.018006	2.21161	-4.70789	5212.38	0.17168

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.622E-6
PPC(B0)	0.00003
RPC(B0)	0.000101
Object	4.83E-10
Objective	58797.87
Observations Read	174
Observations Used	174
Observations Missing	0

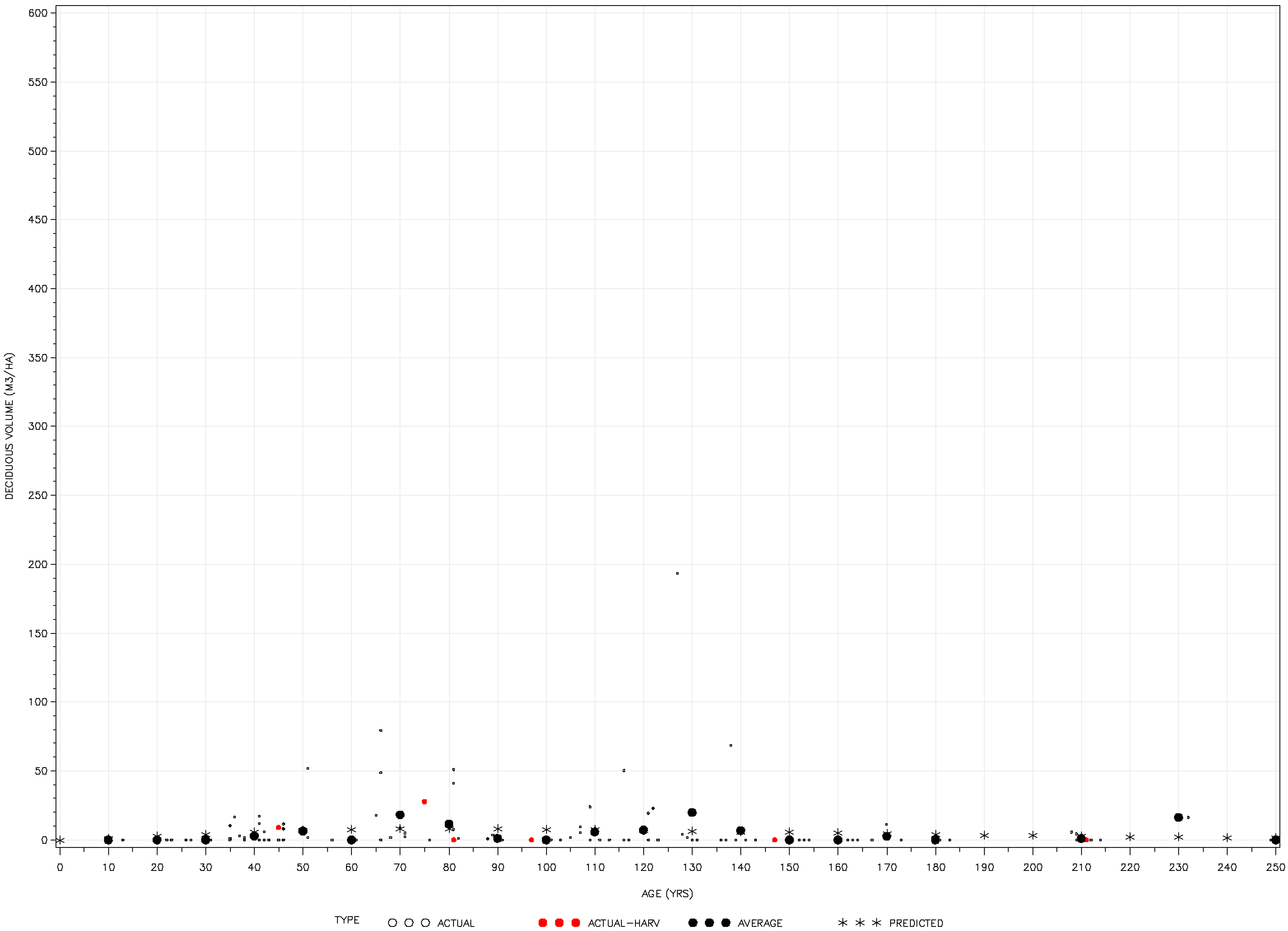
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6079.8	3039.9	8.89	0.0002
Error	172	58797.9	341.8		
Uncorrected Total	174	64877.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0212	0.00633	0.00871	0.0337
B1	1.7431	0.0891	1.5673	1.9189

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8055721
B1	0.8055721	1.0000000

PURE WHITE SPRUCE (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	28
Subiterations	50
Average Subiterations	1.785714
R	1.615E-6
PPC(B0)	0.000032
RPC(B0)	0.000142
Object	1.26E-10
Objective	2129279
Observations Read	174
Observations Used	174
Observations Missing	0

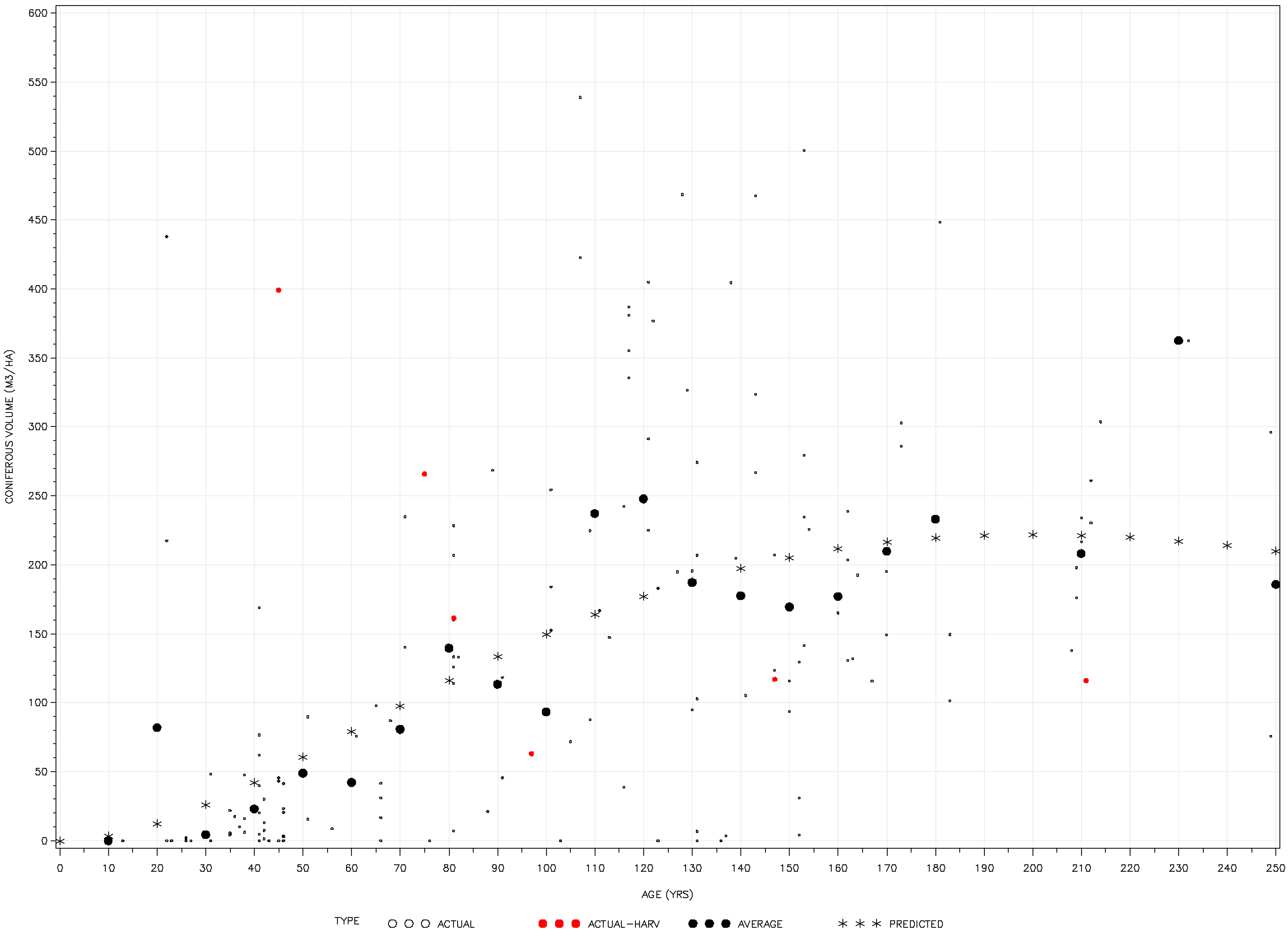
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	3755246	1251749	100.53	<.0001
Error	171	2129279	12451.9		
Uncorrected Total	174	5884525			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0339	0.0751	-0.1144	0.1821
B1	2.0445	0.5706	0.9182	3.1709
B2	0.0102	0.00430	0.00173	0.0187

Approximate Correlation Matrix			
	B0	B1	B2
B0	1.0000000	-0.9963371	-0.9320109
B1	-0.9963371	1.0000000	0.9586958
B2	-0.9320109	0.9586958	1.0000000

PURE WHITE SPRUCE (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	CONIF_B2	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.033873	2.04455	0.010223	174	-0.11177	12451.93	0.31066	0.021212	1.74310	-0.55338	341.848	0.024130

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	16
R	9.452E-6
PPC(B0)	0.000074
RPC(B0)	0.000115
Object	7.61E-11
Objective	296186.5
Observations Read	531
Observations Used	531
Observations Missing	0

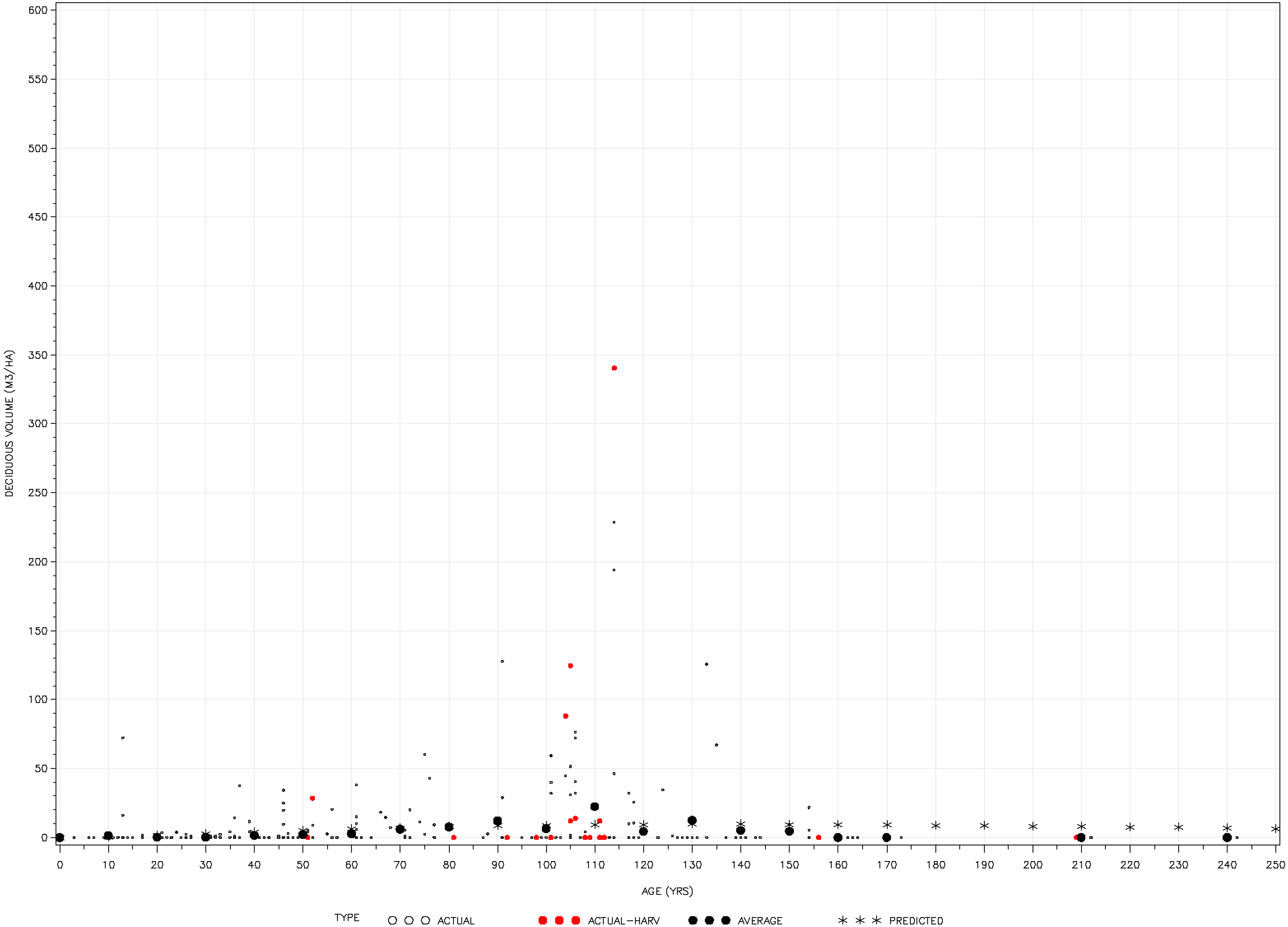
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	21958.8	10979.4	19.61	<.0001
Error	529	296186	559.9		
Uncorrected Total	531	318145			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0125	0.00430	0.00406	0.0210
B1	1.7001	0.0433	1.6151	1.7852

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.6074422
B1	0.6074422	1.0000000

PURE PINE (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	34
Subiterations	65
Average Subiterations	1.911765
R	2.434E-6
PPC(B0)	0.000038
RPC(B0)	0.00056
Object	3.2E-10
Objective	3947657
Observations Read	531
Observations Used	531
Observations Missing	0

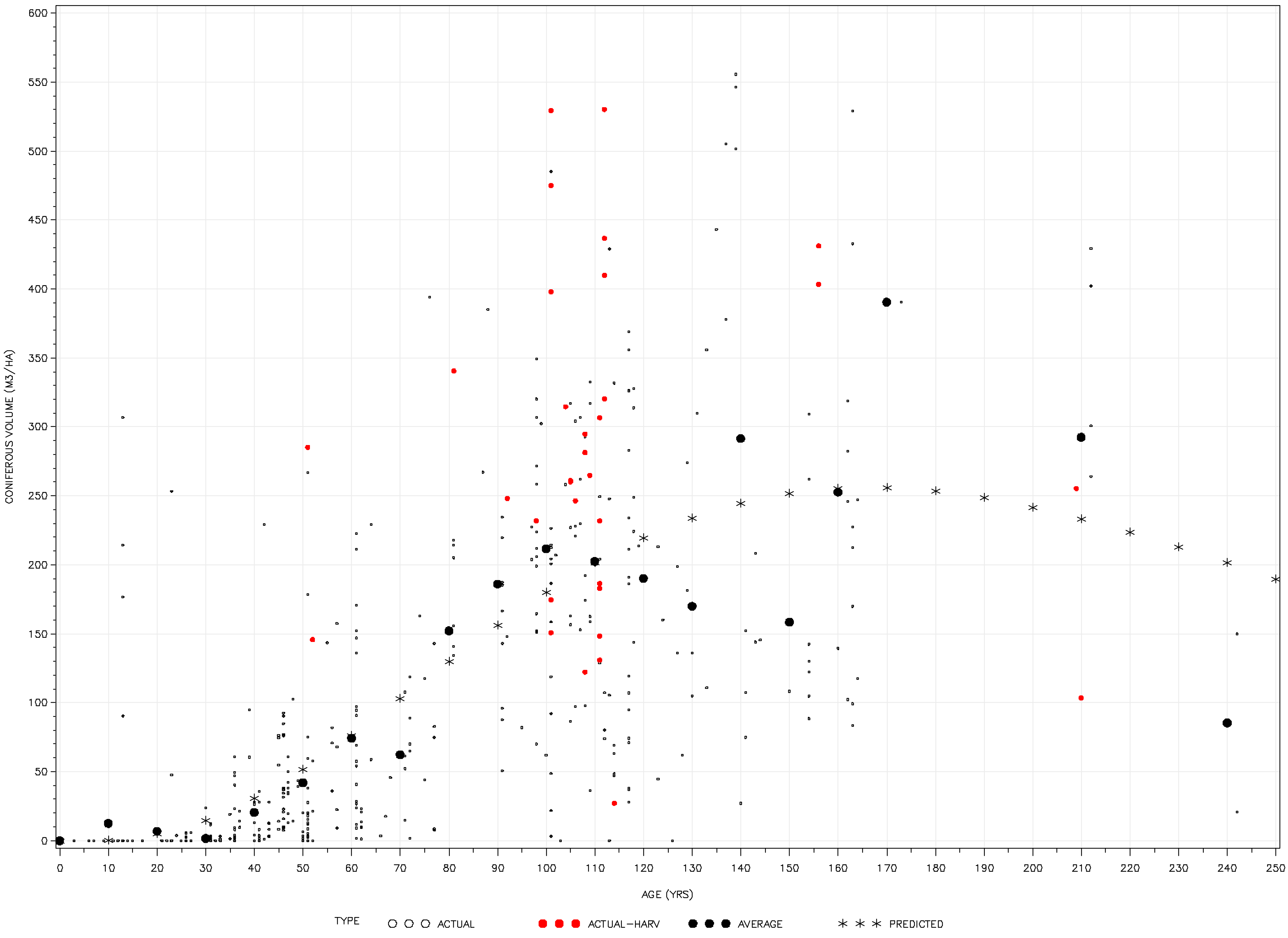
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	9437428	3145809	420.75	<.0001
Error	528	3947657	7476.6		
Uncorrected Total	531	13385085			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.000545	0.000733	-0.00089	0.00198
B1	3.1731	0.3525	2.4806	3.8657
B2	0.0190	0.00288	0.0134	0.0247

Approximate Correlation Matrix			
	B0	B1	B2
B0	1.0000000	-0.9972174	-0.9405877
B1	-0.9972174	1.0000000	0.9626399
B2	-0.9405877	0.9626399	1.0000000

PURE PINE (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	CONIF_B2	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	.000545056	3.17313	0.019043	531	-0.44690	7476.62	0.52200	0.012516	1.70013	-0.65043	559.899	0.028270

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	11
R	7.622E-6
PPC(B0)	0.00003
RPC(B0)	0.000101
Object	4.83E-10
Objective	58797.87
Observations Read	174
Observations Used	174
Observations Missing	0

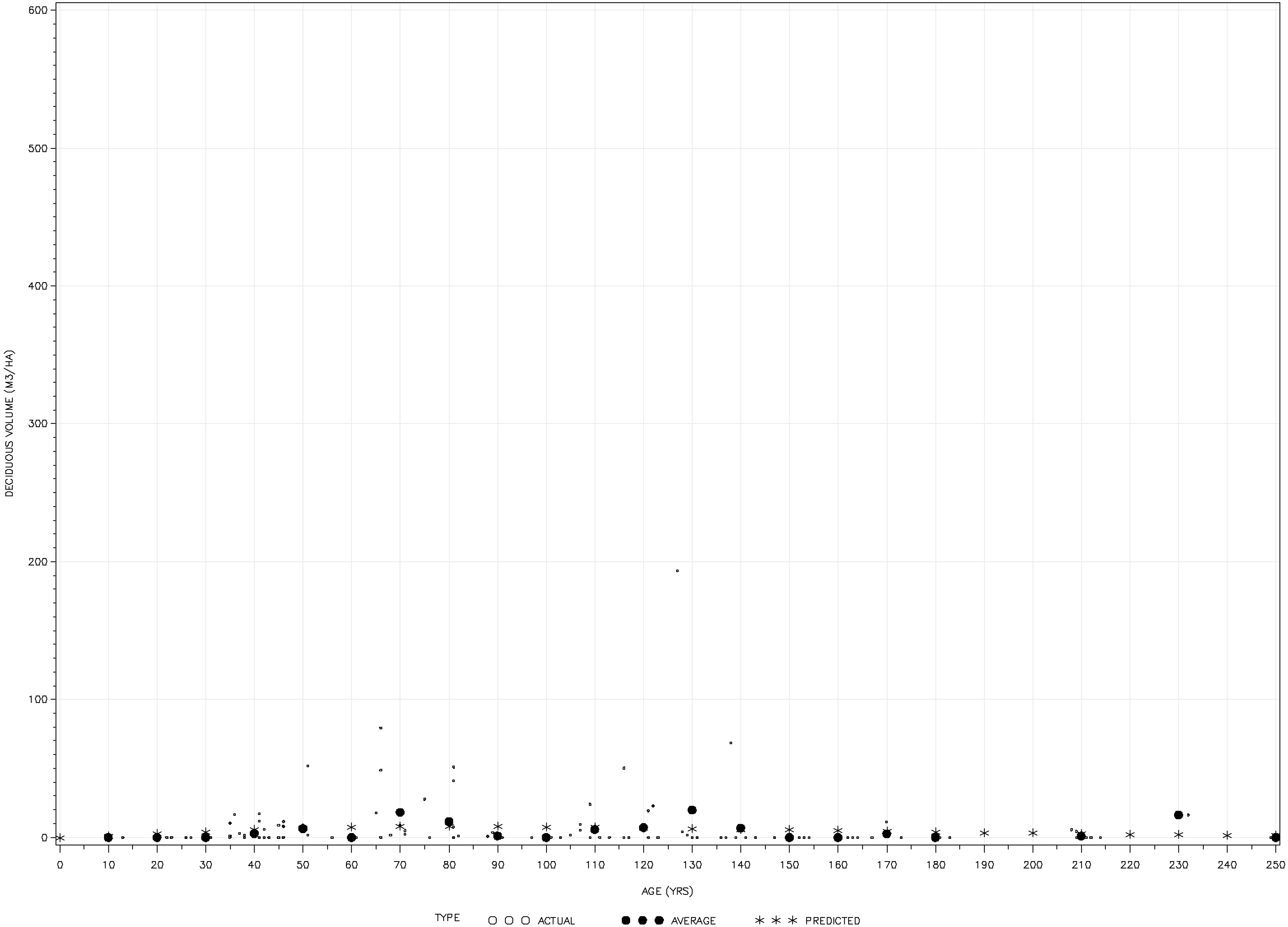
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6079.8	3039.9	8.89	0.0002
Error	172	58797.9	341.8		
Uncorrected Total	174	64877.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0212	0.00633	0.00871	0.0337
B1	1.7431	0.0891	1.5673	1.9189

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8055721
B1	0.8055721	1.0000000

SB (15/11 Coniferous, 15/10 Deciduous)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	5
R	1.578E-6
PPC(B0)	2.382E-6
RPC(B0)	0.000026
Object	3.23E-10
Objective	2131682
Observations Read	174
Observations Used	174
Observations Missing	0

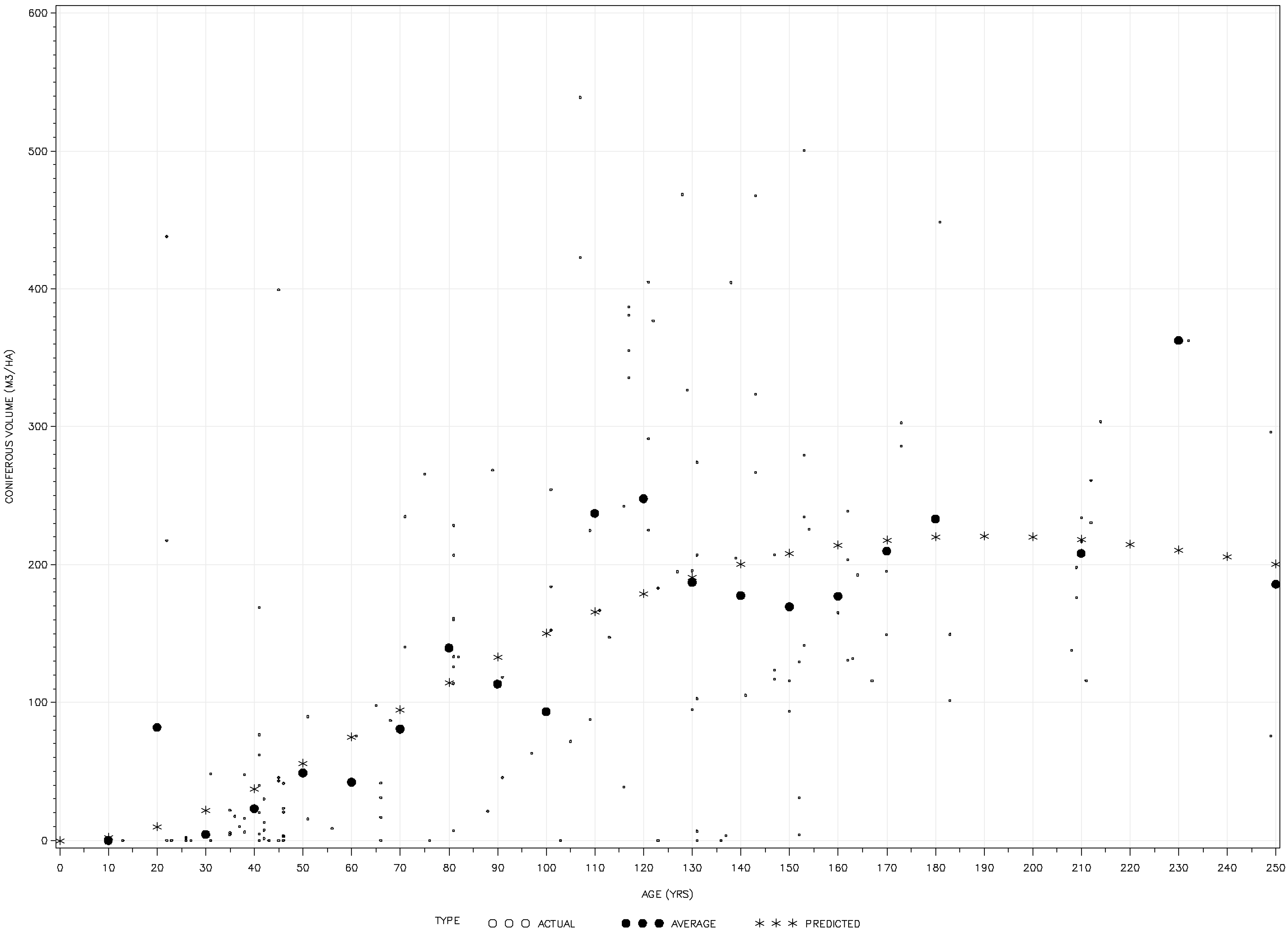
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3752843	1876421	151.40	<.0001
Error	172	2131682	12393.5		
Uncorrected Total	174	5884525			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0122	0.00140	0.00941	0.0150
B1	2.3099	0.0225	2.2655	2.3544

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	0.8570093
B1	0.8570093	1.0000000

SB (15/11 Coniferous, 15/10 Deciduous)



Obs	CONIF_B0	CONIF_B1	N	CONIF_MEANBIAS	CONIF_RMSE	CONIF_R2	DECID_B0	DECID_B1	DECID_MEANBIAS	DECID_RMSE	DECID_R2
1	0.012184	2.30993	174	1.36171	12465.98	0.30988	0.021212	1.74310	-0.55338	341.848	0.024130

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	83
Subiterations	170
Average Subiterations	2.048193
R	5.437E-6
PPC(B0)	0.000024
RPC(B0)	0.001281
Object	7.67E-7
Objective	1057.065
Observations Read	104
Observations Used	104
Observations Missing	0

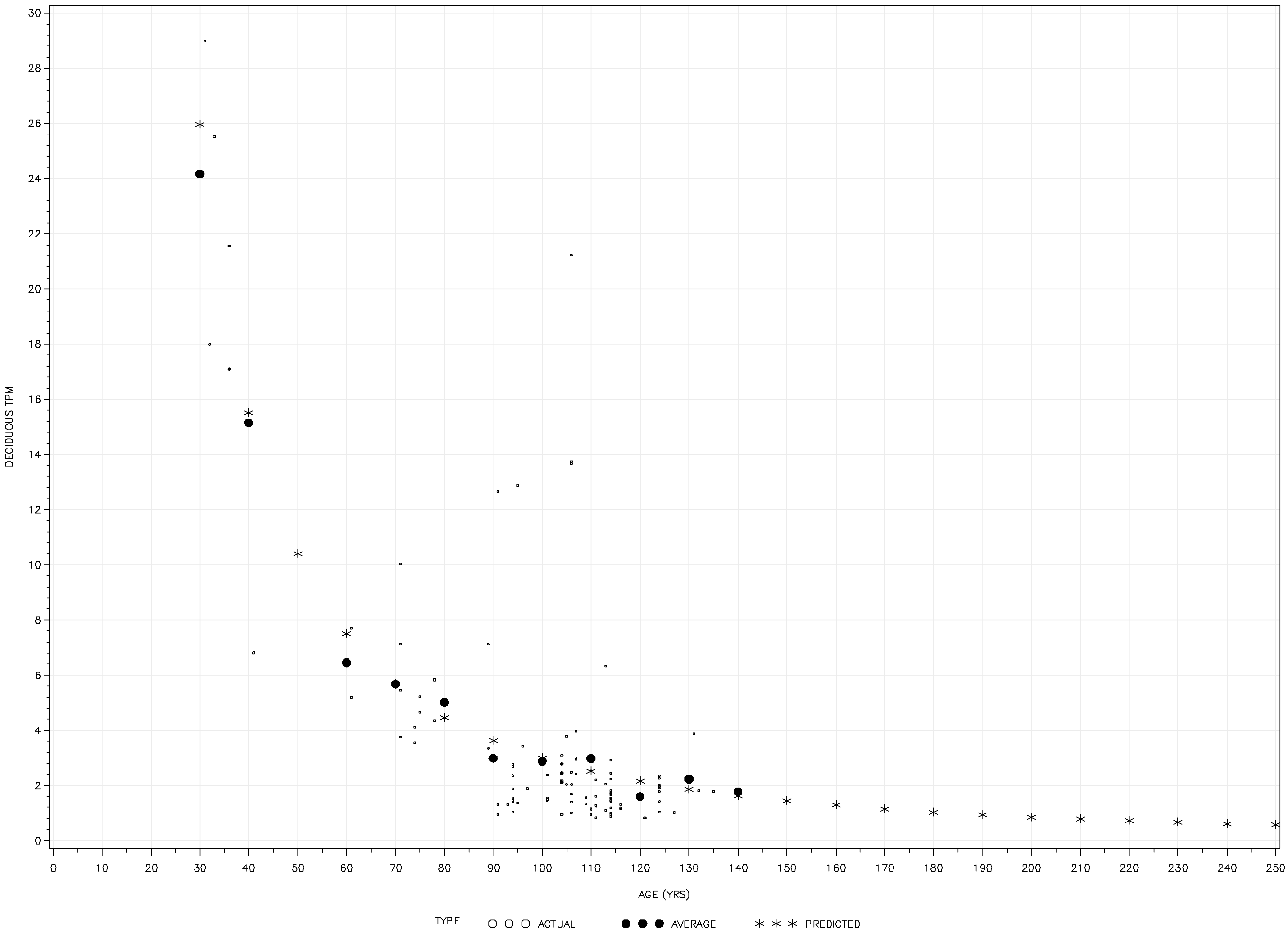
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3539.3	1769.7	170.76	<.0001
Error	102	1057.1	10.3634		
Uncorrected Total	104	4596.4			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	11506.7	5163.8	1264.3	21749.2
B1	-1.7916	0.1174	-2.0245	-1.5588

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9927038
B1	-0.9927038	1.0000000

PURE DECIDUOUS TPM (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	122
Subiterations	262
Average Subiterations	2.147541
R	9.908E-6
PPC(B0)	0.000044
RPC(B0)	0.001896
Object	2.586E-7
Objective	892.1609
Observations Read	96
Observations Used	96
Observations Missing	0

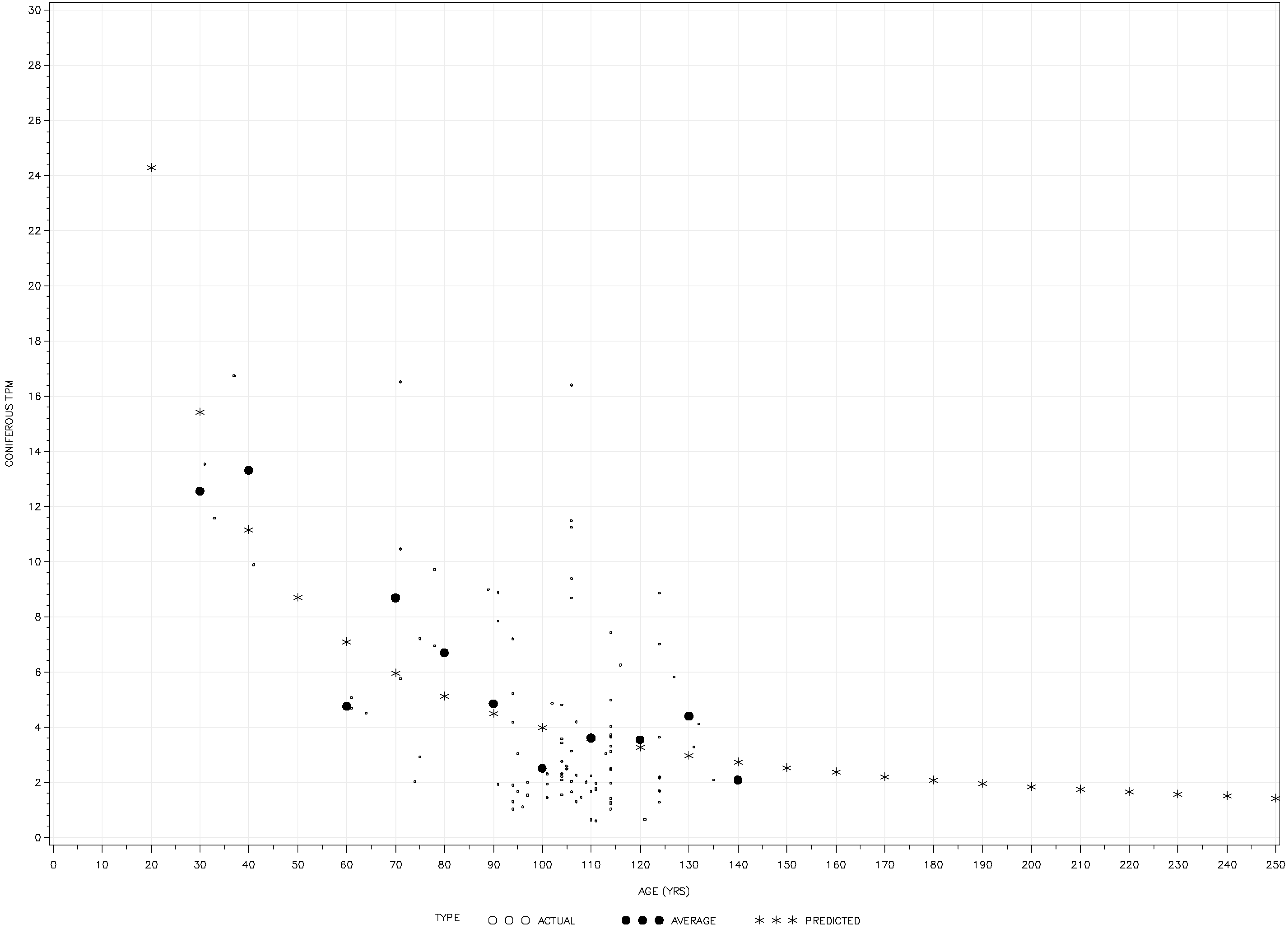
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	2184.3	1092.1	115.07	<.0001
Error	94	892.2	9.4911		
Uncorrected Total	96	3076.4			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	696.0	388.4	-75.1848	1467.2
B1	-1.1200	0.1308	-1.3797	-0.8604

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9929990
B1	-0.9929990	1.0000000

PURE DECIDUOUS TPM (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	51
Subiterations	90
Average Subiterations	1.764706
R	6.068E-6
PPC(B0)	0.000027
RPC(B0)	0.000109
Object	4.48E-10
Objective	2678.316
Observations Read	113
Observations Used	113
Observations Missing	0

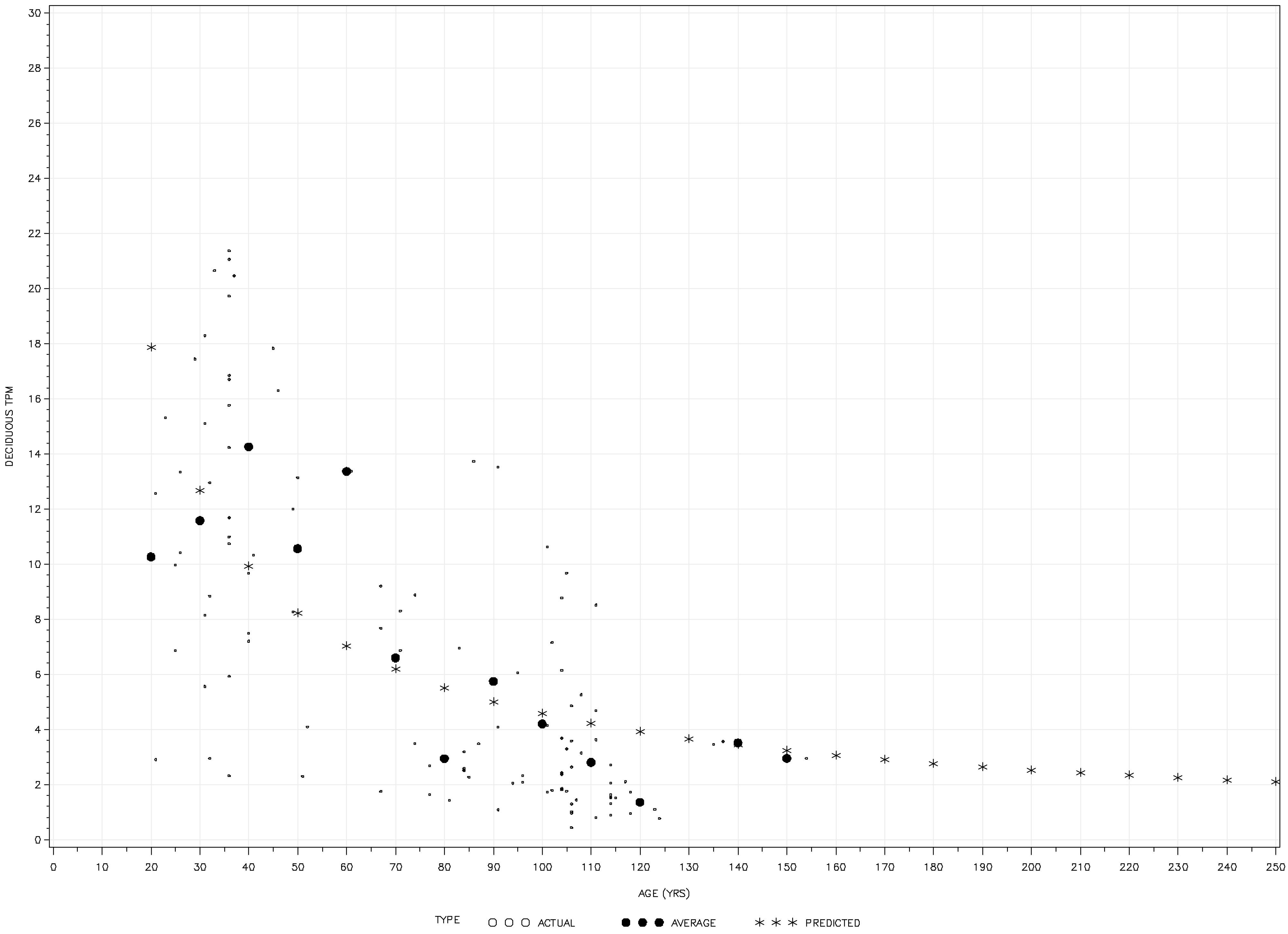
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	7194.9	3597.4	149.09	<.0001
Error	111	2678.3	24.1290		
Uncorrected Total	113	9873.2			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	226.4	97.0073	34.1798	418.6
B1	-0.8472	0.1148	-1.0748	-0.6197

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9908241
B1	-0.9908241	1.0000000

HW/PL 1(15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	79
Subiterations	155
Average Subiterations	1.962025
R	6.633E-6
PPC(B0)	0.000024
RPC(B0)	0.000125
Object	9.72E-10
Objective	1370.6
Observations Read	133
Observations Used	133
Observations Missing	0

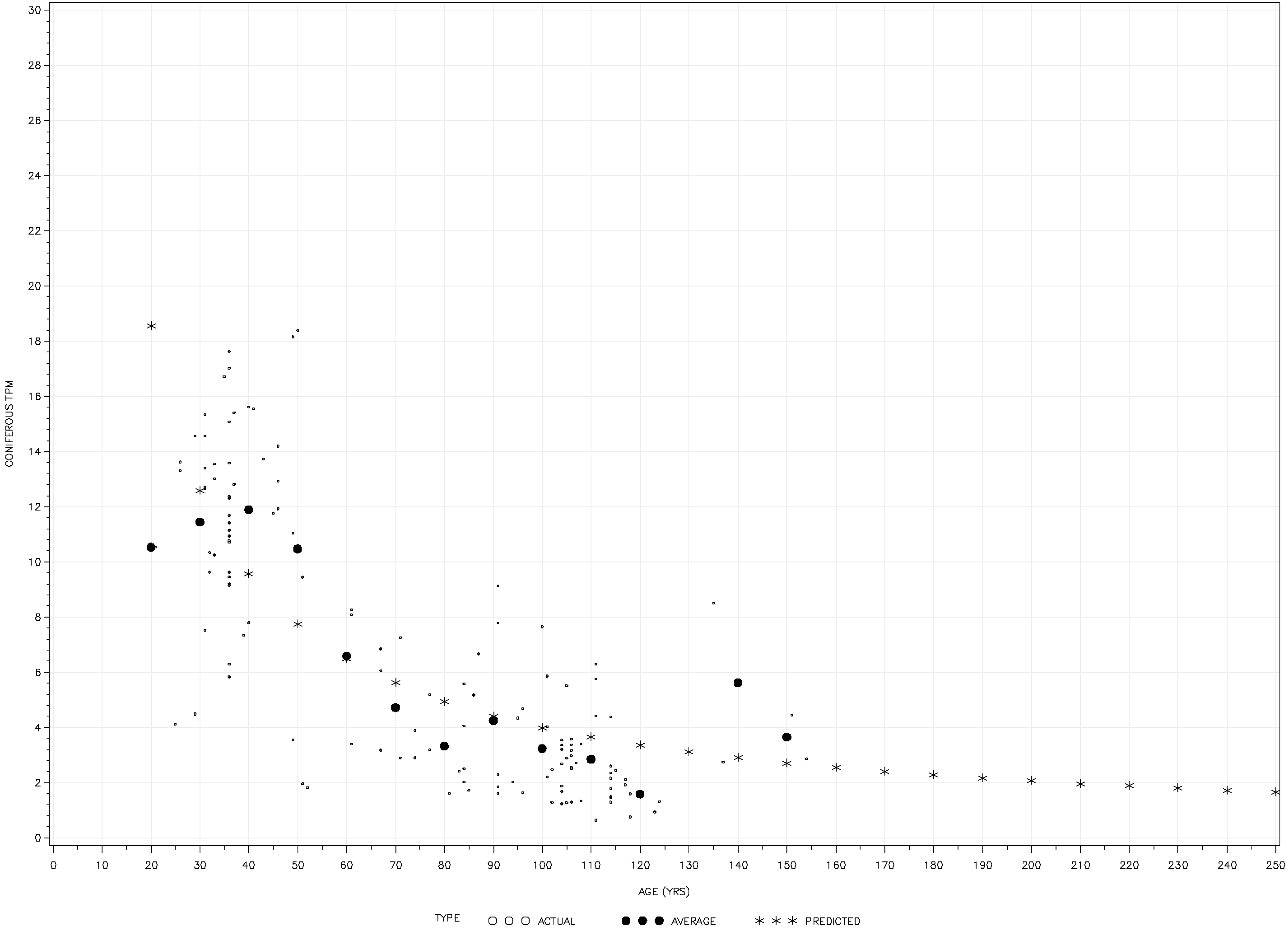
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	7785.6	3892.8	372.07	<.0001
Error	131	1370.6	10.4626		
Uncorrected Total	133	9156.2			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	322.8	102.5	120.0	525.7
B1	-0.9534	0.0853	-1.1222	-0.7847

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9933186
B1	-0.9933186	1.0000000

HW/PL 1(15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	56
Subiterations	97
Average Subiterations	1.732143
R	7.289E-6
PPC(B0)	0.000042
RPC(B0)	0.000116
Object	2.56E-10
Objective	4134.436
Observations Read	79
Observations Used	79
Observations Missing	0

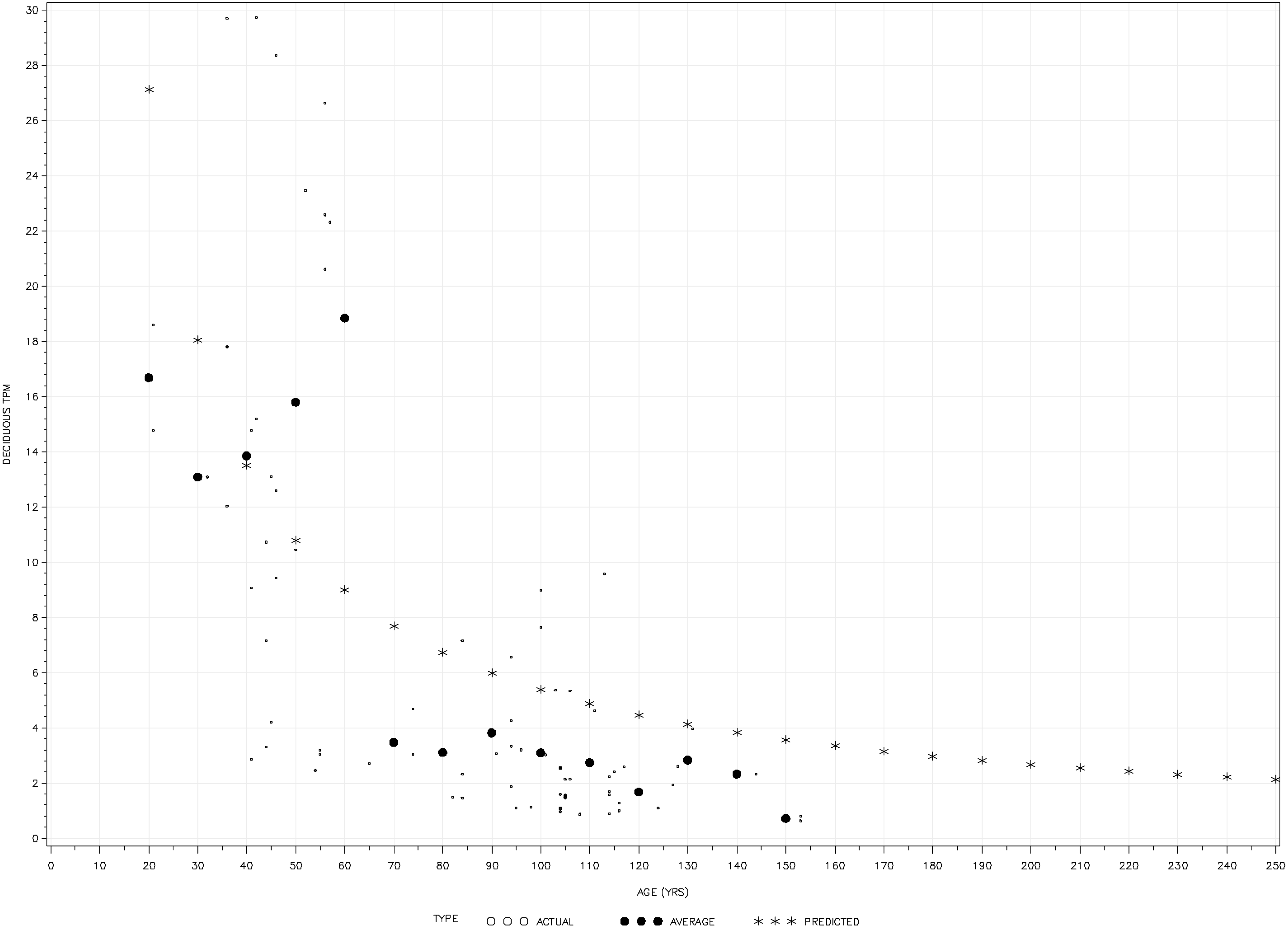
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6812.2	3406.1	63.44	<.0001
Error	77	4134.4	53.6940		
Uncorrected Total	79	10946.6			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	551.2	367.4	-180.4	1282.8
B1	-1.0051	0.1740	-1.3516	-0.6587

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9910902
B1	-0.9910902	1.0000000

HW/SW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	73
Subiterations	143
Average Subiterations	1.958904
R	4.44E-6
PPC(B0)	0.000018
RPC(B0)	0.000083
Object	3.16E-10
Objective	853.756
Observations Read	88
Observations Used	88
Observations Missing	0

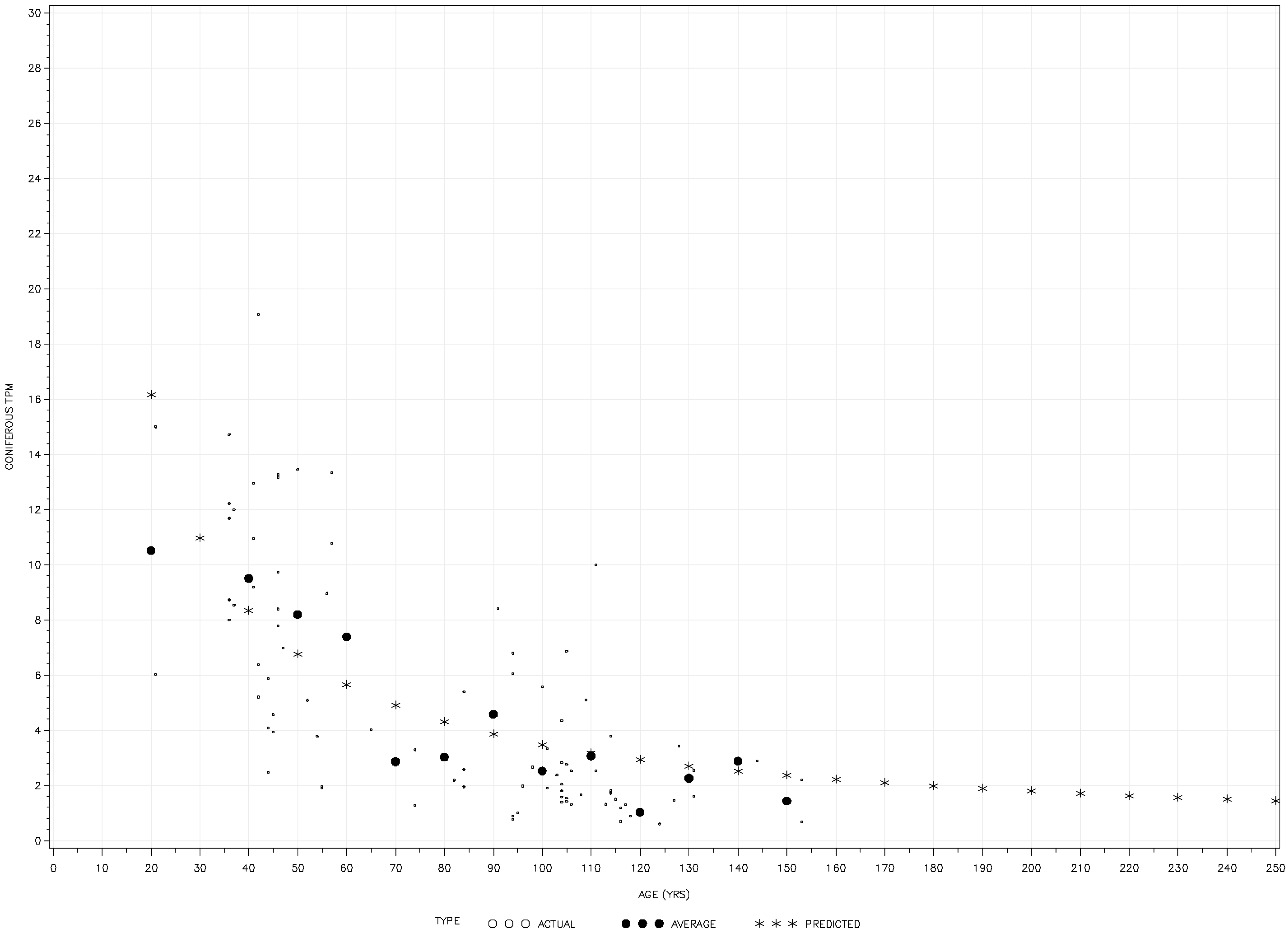
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3005.2	1502.6	151.36	<.0001
Error	86	853.8	9.9274		
Uncorrected Total	88	3859.0			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	281.1	125.9	30.8016	531.5
B1	-0.9530	0.1163	-1.1842	-0.7218

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9917334
B1	-0.9917334	1.0000000

HW/SW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

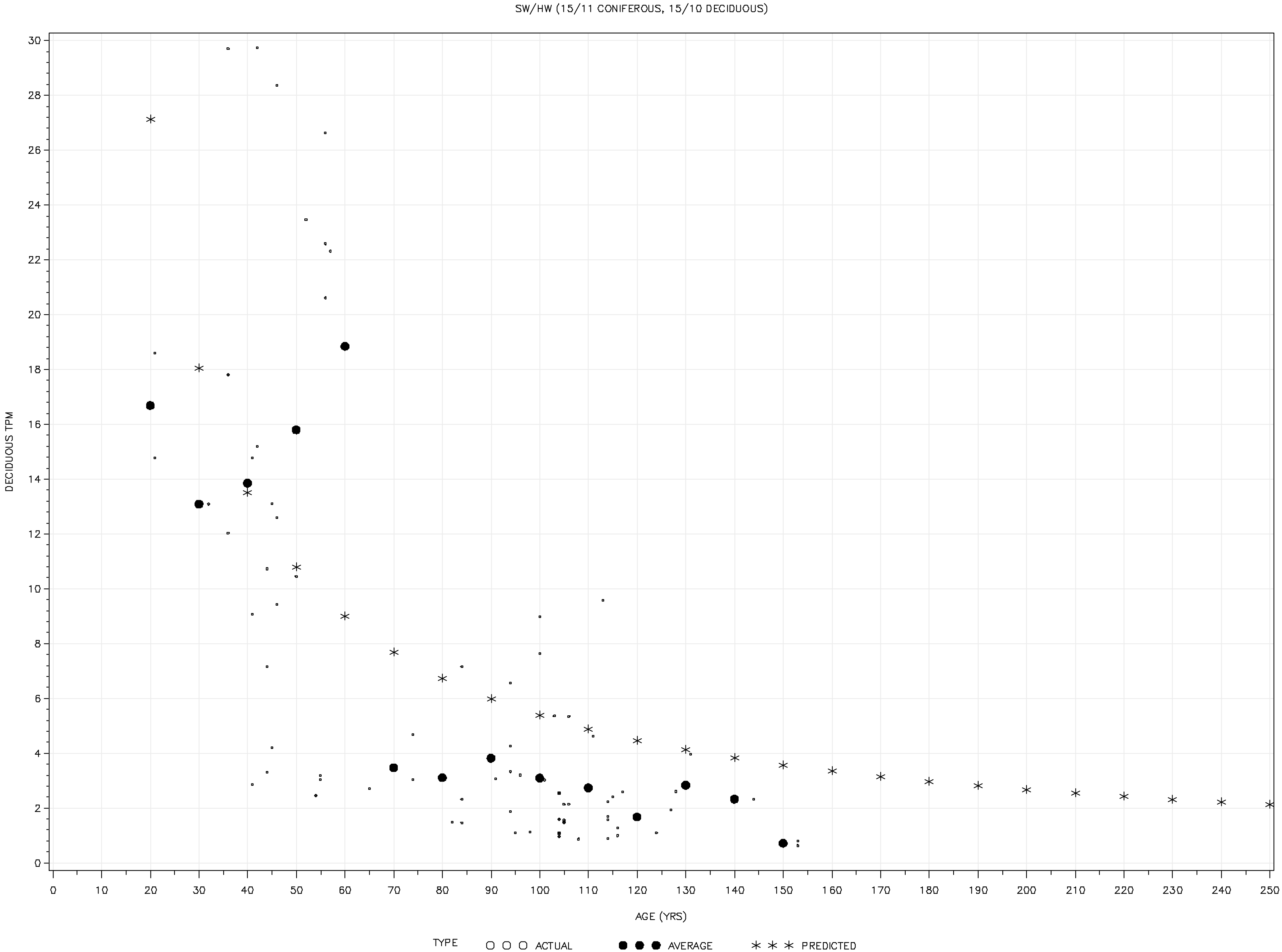
Estimation Summary	
Method	Gauss-Newton
Iterations	56
Subiterations	97
Average Subiterations	1.732143
R	7.289E-6
PPC(B0)	0.000042
RPC(B0)	0.000116
Object	2.56E-10
Objective	4134.436
Observations Read	79
Observations Used	79
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6812.2	3406.1	63.44	<.0001
Error	77	4134.4	53.6940		
Uncorrected Total	79	10946.6			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	551.2	367.4	-180.4	1282.8
B1	-1.0051	0.1740	-1.3516	-0.6587

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9910902
B1	-0.9910902	1.0000000


SW/HW (15/11 CONIFEROUS, 15/10 DECIDUOUS)
DECIDUOUS TPM
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
AGE (YRS)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250
TYPE
ACTUAL
AVERAGE
PREDICTED

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	73
Subiterations	143
Average Subiterations	1.958904
R	4.44E-6
PPC(B0)	0.000018
RPC(B0)	0.000083
Object	3.16E-10
Objective	853.756
Observations Read	88
Observations Used	88
Observations Missing	0

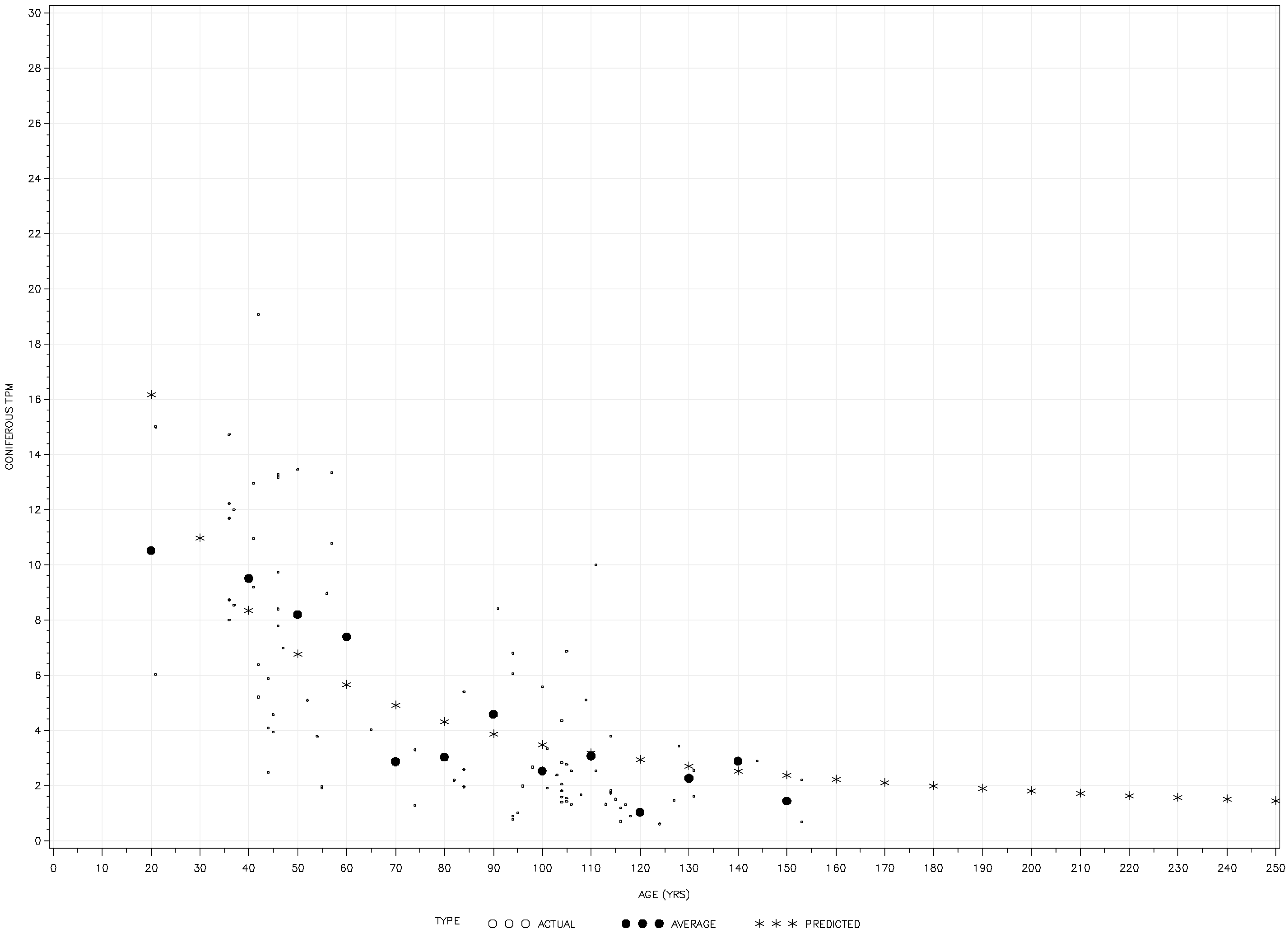
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3005.2	1502.6	151.36	<.0001
Error	86	853.8	9.9274		
Uncorrected Total	88	3859.0			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	281.1	125.9	30.8016	531.5
B1	-0.9530	0.1163	-1.1842	-0.7218

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9917334
B1	-0.9917334	1.0000000

SW/HW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	51
Subiterations	90
Average Subiterations	1.764706
R	6.068E-6
PPC(B0)	0.000027
RPC(B0)	0.000109
Object	4.48E-10
Objective	2678.316
Observations Read	113
Observations Used	113
Observations Missing	0

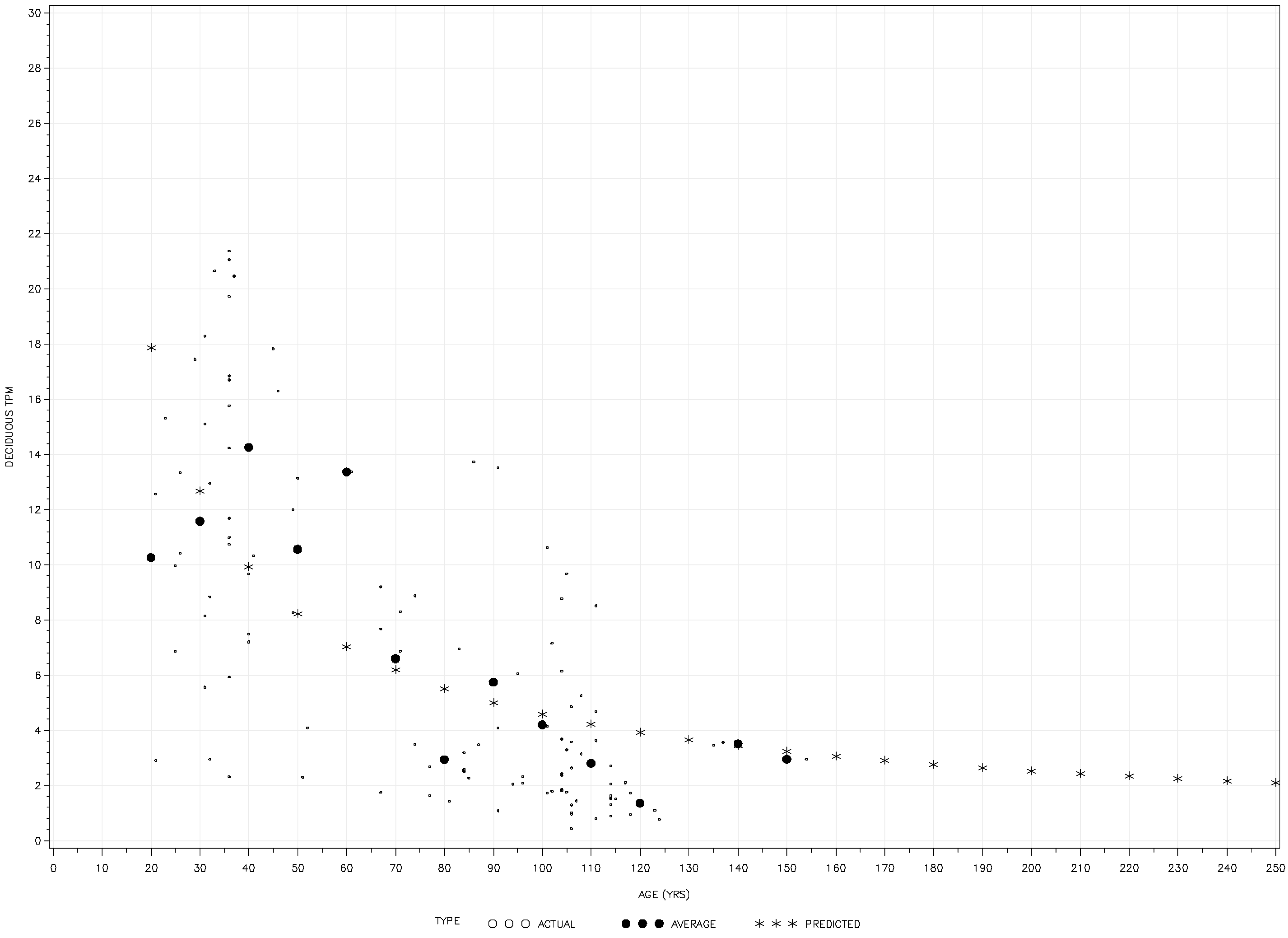
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	7194.9	3597.4	149.09	<.0001
Error	111	2678.3	24.1290		
Uncorrected Total	113	9873.2			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	226.4	97.0073	34.1798	418.6
B1	-0.8472	0.1148	-1.0748	-0.6197

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9908241
B1	-0.9908241	1.0000000

PL/HW 1(15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

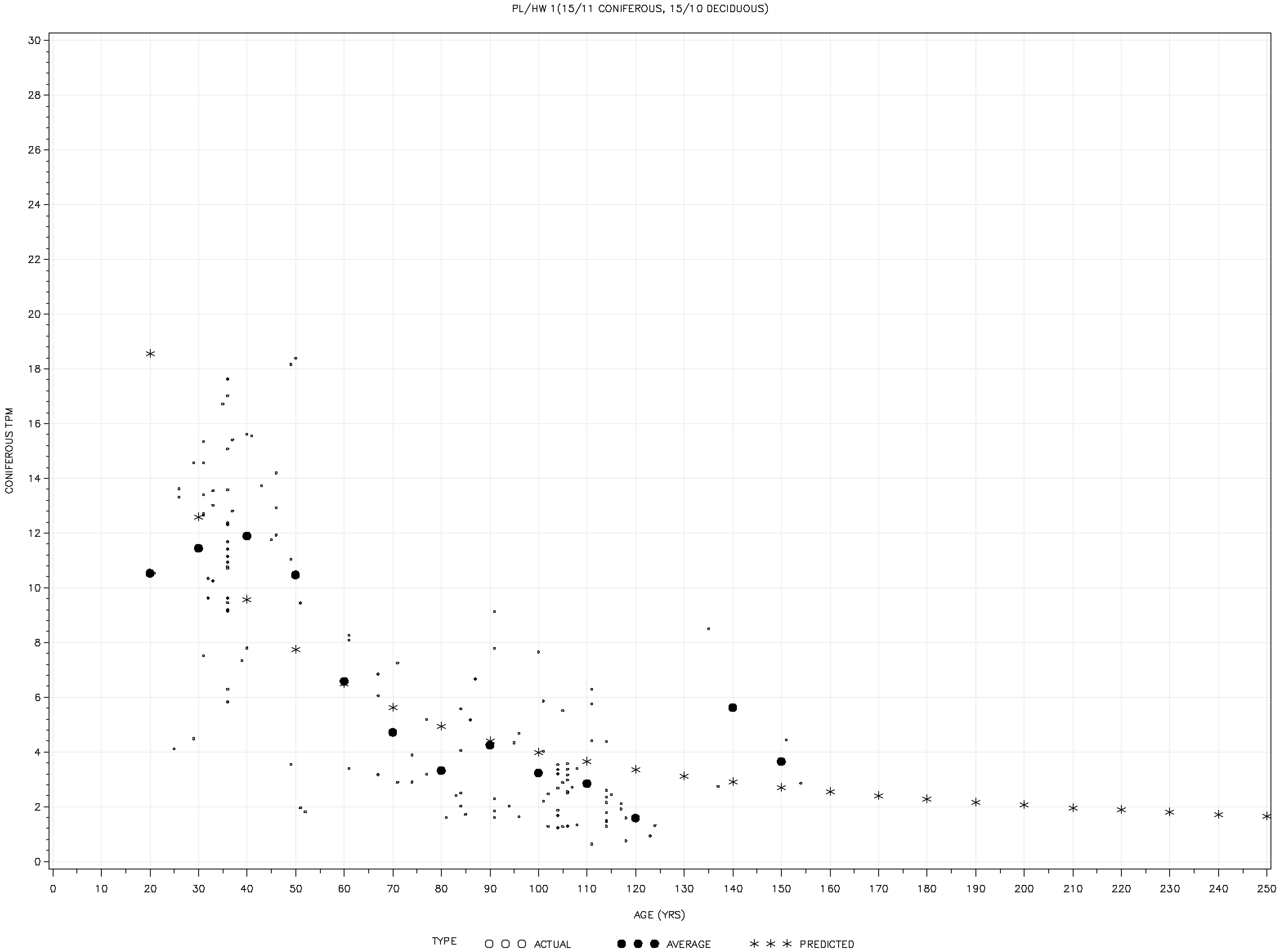
Estimation Summary	
Method	Gauss-Newton
Iterations	79
Subiterations	155
Average Subiterations	1.962025
R	6.633E-6
PPC(B0)	0.000024
RPC(B0)	0.000125
Object	9.72E-10
Objective	1370.6
Observations Read	133
Observations Used	133
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	7785.6	3892.8	372.07	<.0001
Error	131	1370.6	10.4626		
Uncorrected Total	133	9156.2			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	322.8	102.5	120.0	525.7
B1	-0.9534	0.0853	-1.1222	-0.7847

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9933186
B1	-0.9933186	1.0000000


PL/HW 1(15/11 CONIFEROUS, 15/10 DECIDUOUS)
CONIFEROUS TPM
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250
AGE (YRS)
TYPE
ACTUAL
AVERAGE
PREDICTED

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	56
Subiterations	97
Average Subiterations	1.732143
R	7.289E-6
PPC(B0)	0.000042
RPC(B0)	0.000116
Object	2.56E-10
Objective	4134.436
Observations Read	79
Observations Used	79
Observations Missing	0

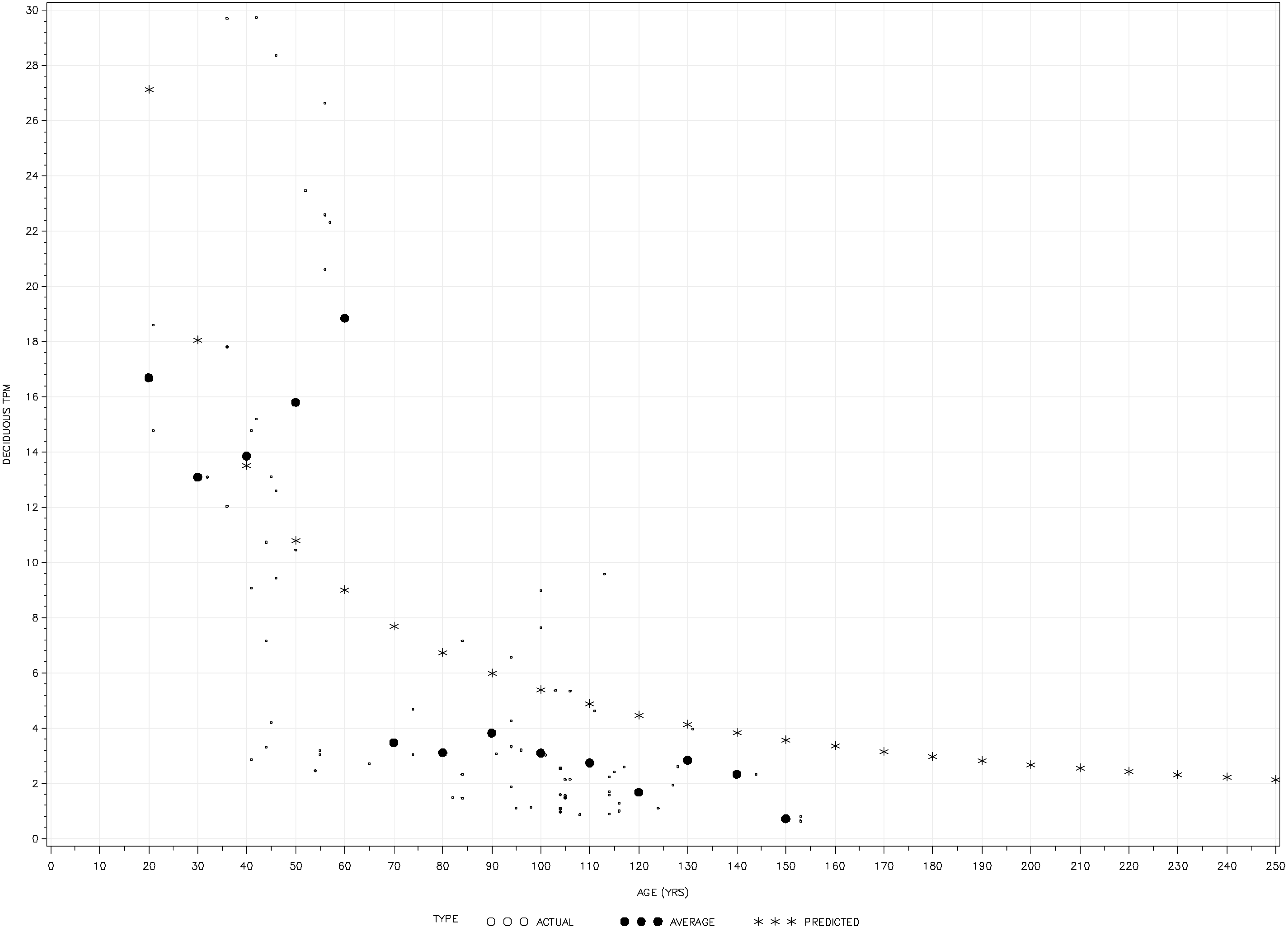
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6812.2	3406.1	63.44	<.0001
Error	77	4134.4	53.6940		
Uncorrected Total	79	10946.6			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	551.2	367.4	-180.4	1282.8
B1	-1.0051	0.1740	-1.3516	-0.6587

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9910902
B1	-0.9910902	1.0000000

SB/HW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	73
Subiterations	143
Average Subiterations	1.958904
R	4.44E-6
PPC(B0)	0.000018
RPC(B0)	0.000083
Object	3.16E-10
Objective	853.756
Observations Read	88
Observations Used	88
Observations Missing	0

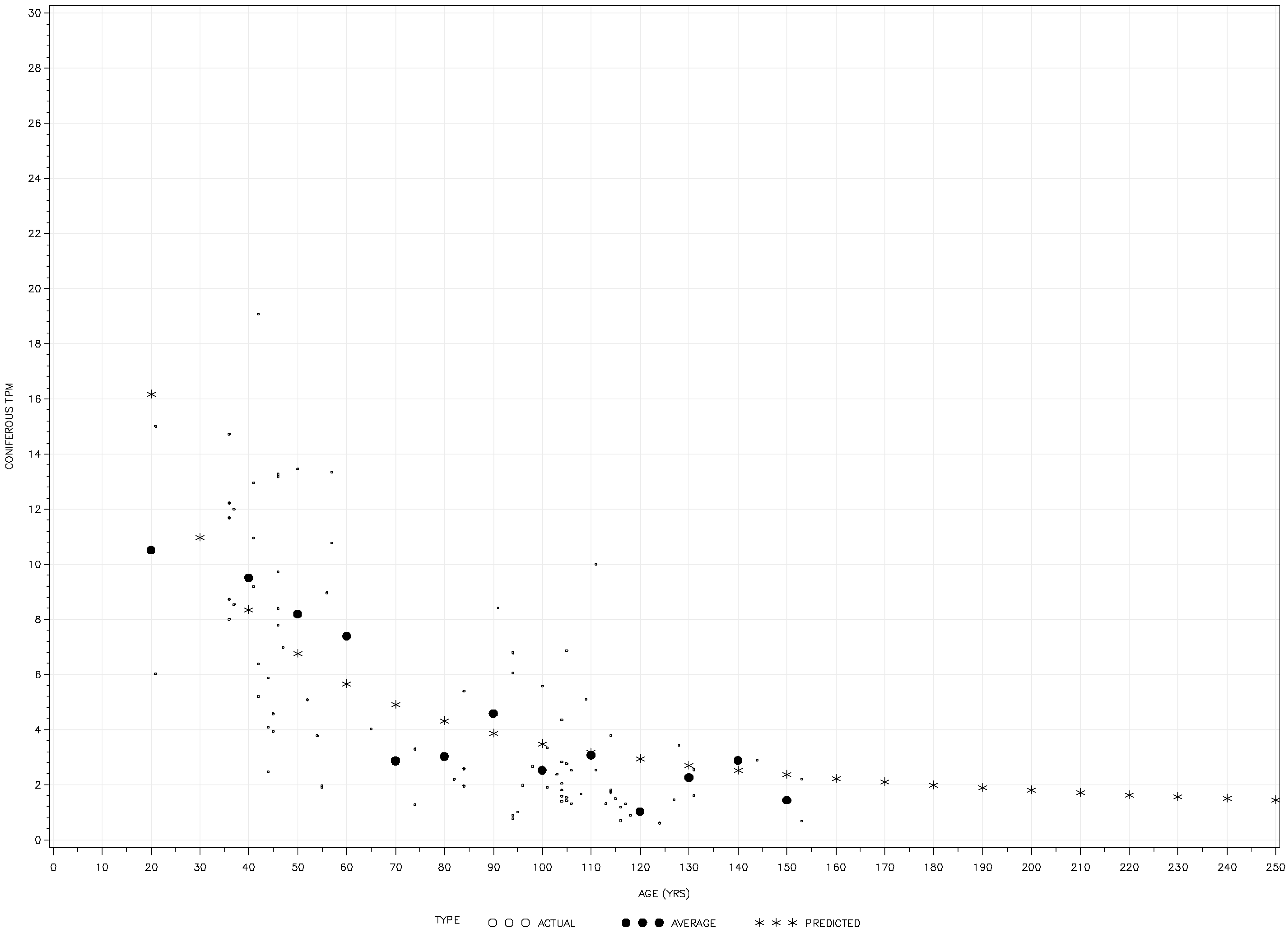
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3005.2	1502.6	151.36	<.0001
Error	86	853.8	9.9274		
Uncorrected Total	88	3859.0			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	281.1	125.9	30.8016	531.5
B1	-0.9530	0.1163	-1.1842	-0.7218

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9917334
B1	-0.9917334	1.0000000

SB/HW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	25
Subiterations	35
Average Subiterations	1.4
R	8.144E-6
PPC(B0)	0.000045
RPC(B0)	0.001182
Object	2.04E-7
Objective	1010.247
Observations Read	44
Observations Used	44
Observations Missing	0

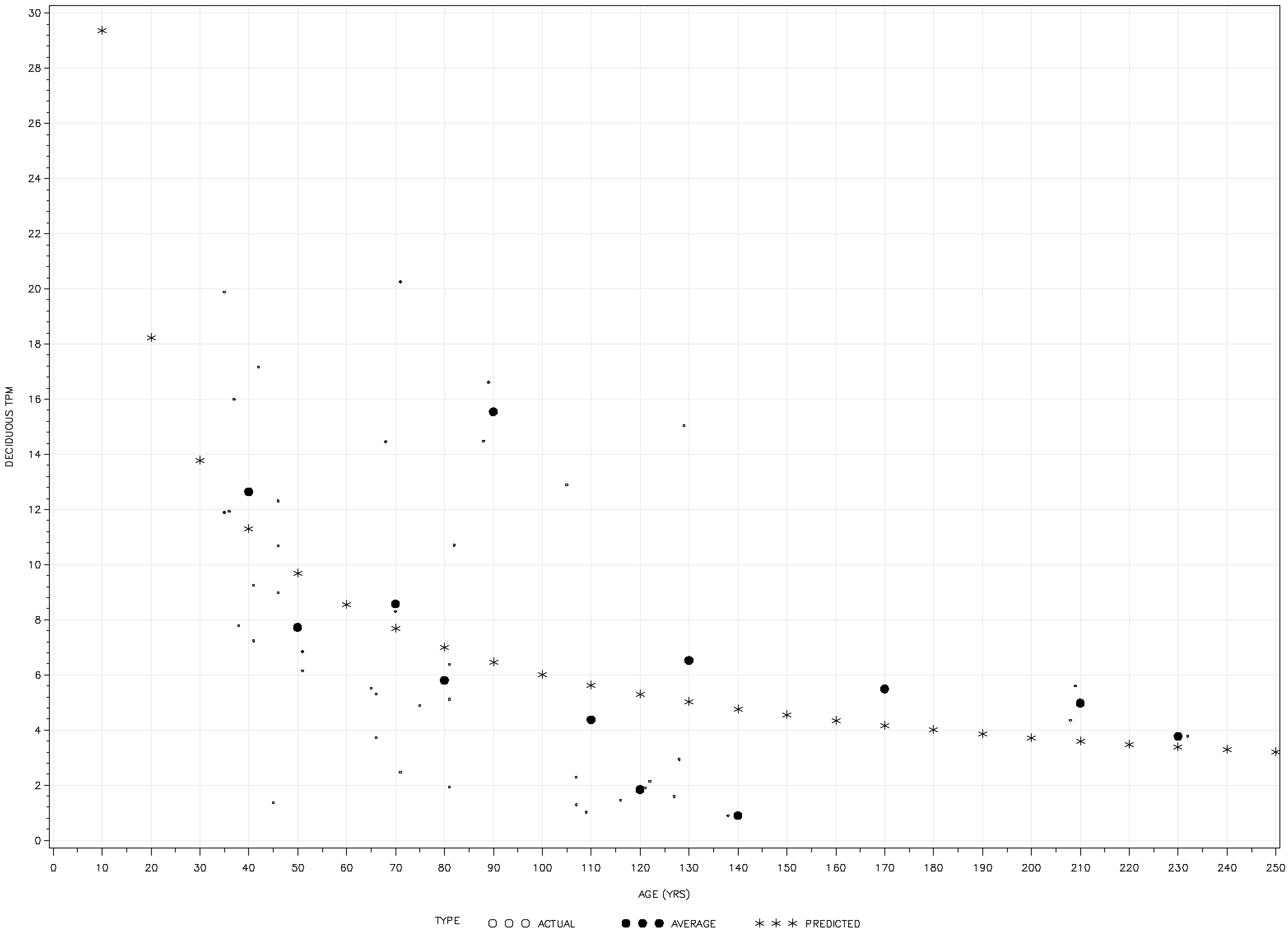
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	2864.5	1432.3	59.54	<.0001
Error	42	1010.2	24.0535		
Uncorrected Total	44	3874.8			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	143.6	121.7	-102.1	389.3
B1	-0.6888	0.2094	-1.1115	-0.2662

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9941421
B1	-0.9941421	1.0000000

SW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	82
Subiterations	167
Average Subiterations	2.036585
R	2.591E-6
PPC(B0)	9.546E-6
RPC(B0)	0.000108
Object	7.73E-10
Objective	1263.93
Observations Read	136
Observations Used	136
Observations Missing	0

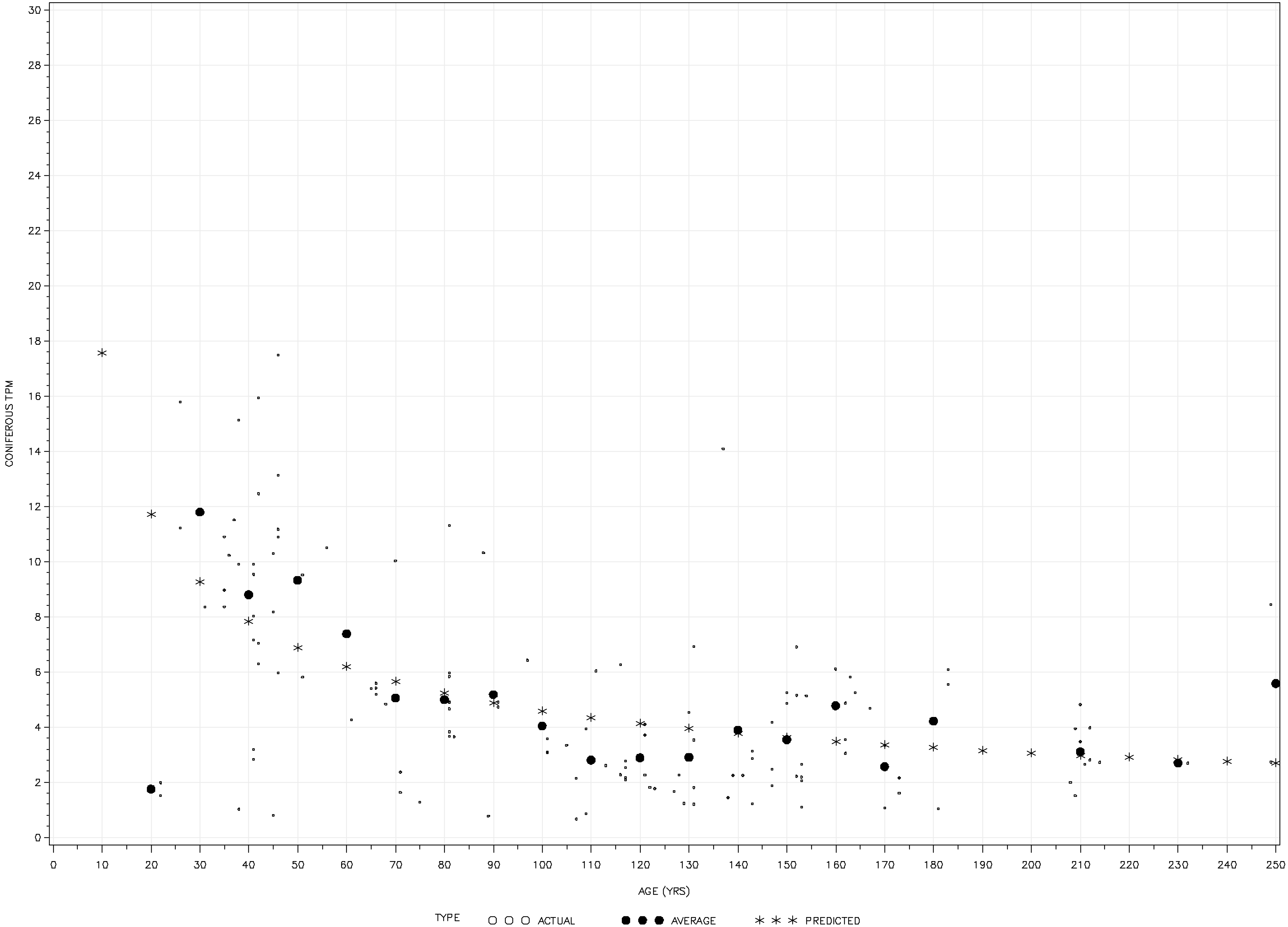
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3995.1	1997.5	211.78	<.0001
Error	134	1263.9	9.4323		
Uncorrected Total	136	5259.0			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	67.1167	21.6191	24.3580	109.9
B1	-0.5821	0.0779	-0.7361	-0.4280

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9885569
B1	-0.9885569	1.0000000

SW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	53
Subiterations	88
Average Subiterations	1.660377
R	4.601E-6
PPC(B0)	0.000019
RPC(B0)	0.00005
Object	8.98E-11
Objective	2759.914
Observations Read	79
Observations Used	79
Observations Missing	0

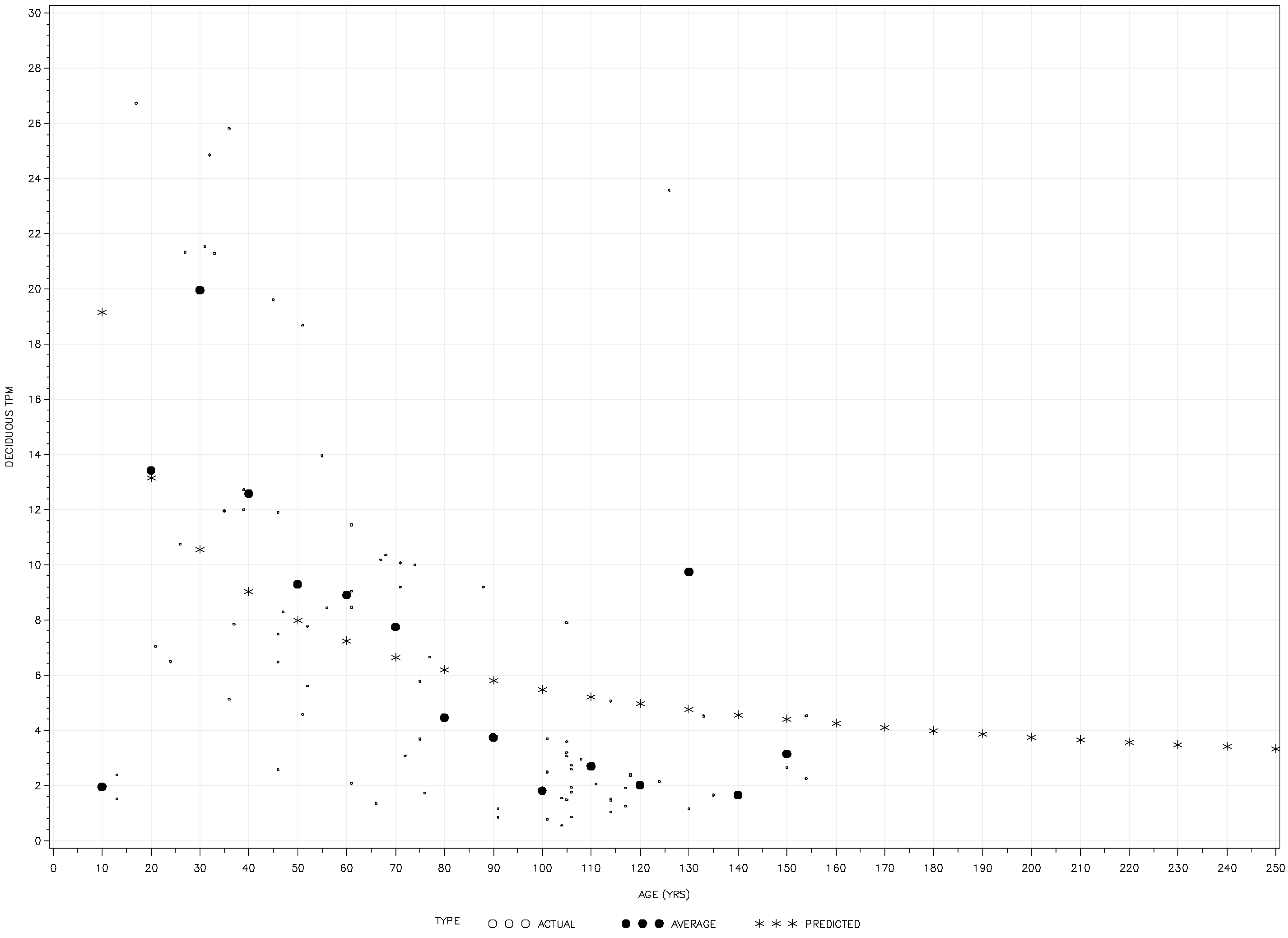
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	4595.2	2297.6	64.10	<.0001
Error	77	2759.9	35.8430		
Uncorrected Total	79	7355.1			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	66.9646	32.3257	2.5960	131.3
B1	-0.5431	0.1264	-0.7947	-0.2915

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9831210
B1	-0.9831210	1.0000000

PL (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

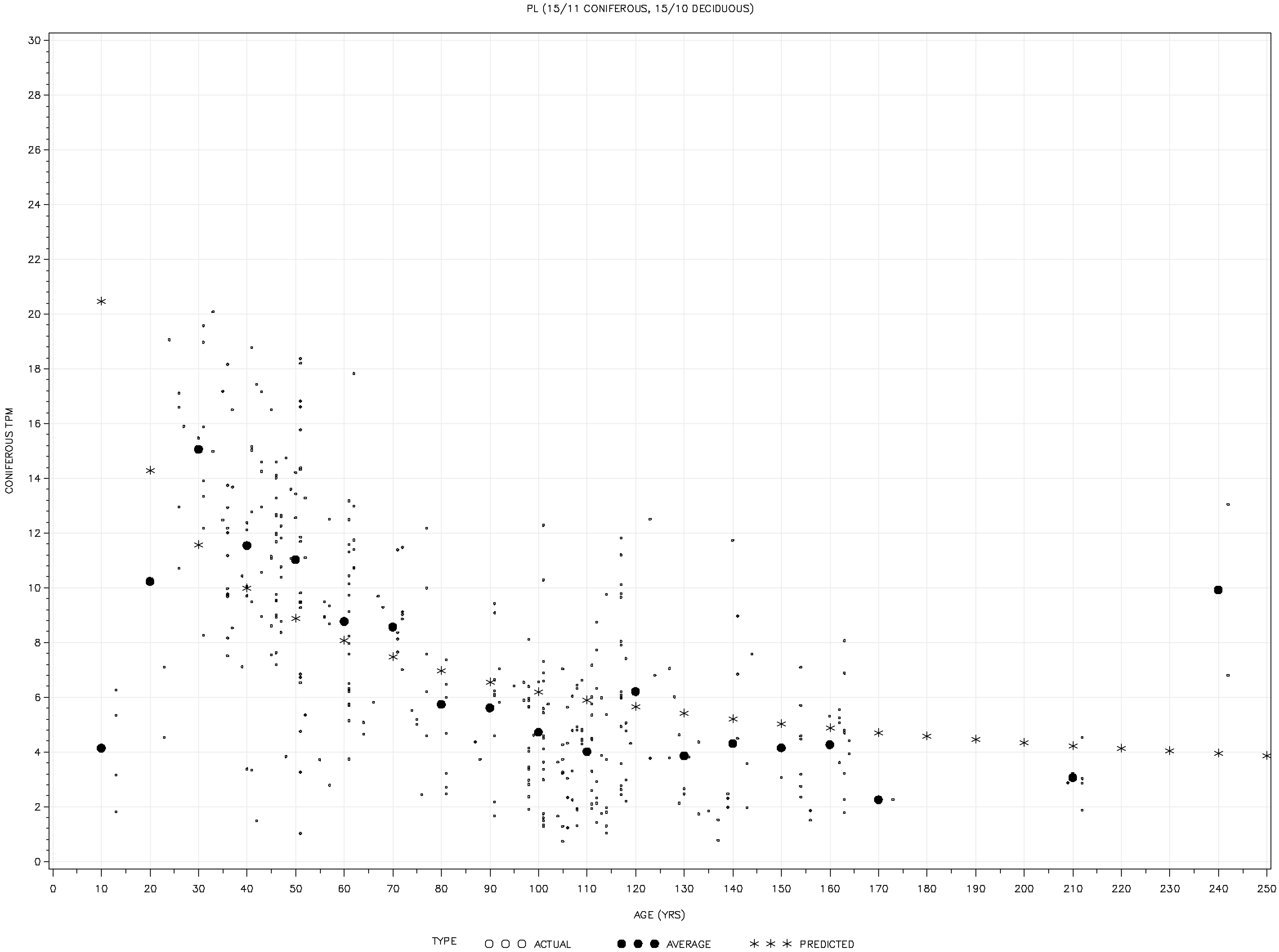
Estimation Summary	
Method	Gauss-Newton
Iterations	61
Subiterations	115
Average Subiterations	1.885246
R	5.629E-6
PPC(B0)	0.000017
RPC(B0)	0.000059
Object	2.57E-10
Objective	5003.538
Observations Read	377
Observations Used	377
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	22827.1	11413.5	855.41	<.0001
Error	375	5003.5	13.3428		
Uncorrected Total	377	27830.6			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	67.3923	10.8894	45.9803	88.8042
B1	-0.5175	0.0400	-0.5962	-0.4389

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9887428
B1	-0.9887428	1.0000000


PL (15/11 CONIFEROUS, 15/10 DECIDUOUS)
CONIFEROUS TPM
0
2
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10
12
14
16
18
20
22
24
26
28
30
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250
AGE (YRS)
TYPE
ACTUAL
AVERAGE
PREDICTED

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	25
Subiterations	35
Average Subiterations	1.4
R	8.144E-6
PPC(B0)	0.000045
RPC(B0)	0.001182
Object	2.04E-7
Objective	1010.247
Observations Read	44
Observations Used	44
Observations Missing	0

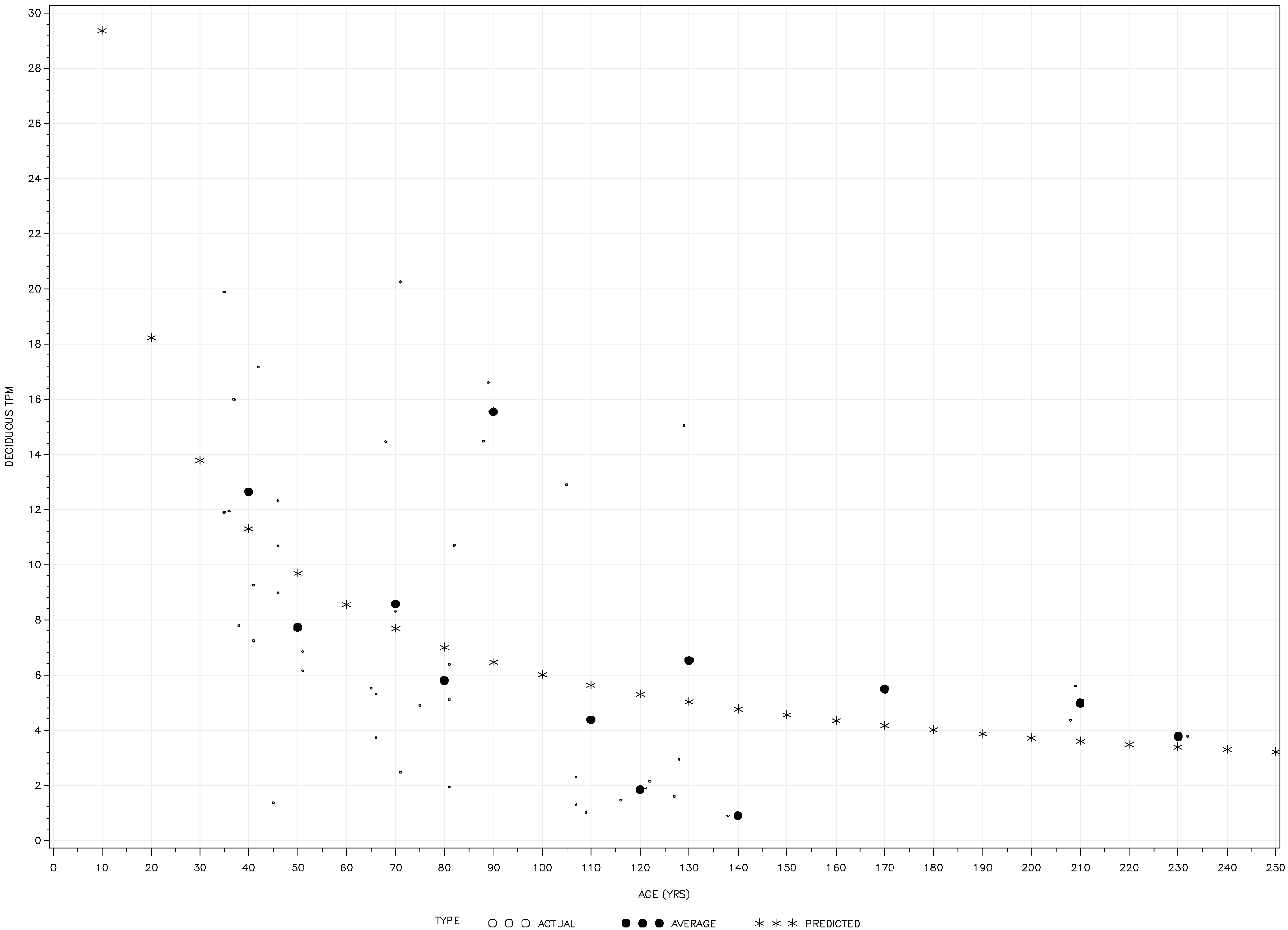
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	2864.5	1432.3	59.54	<.0001
Error	42	1010.2	24.0535		
Uncorrected Total	44	3874.8			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	143.6	121.7	-102.1	389.3
B1	-0.6888	0.2094	-1.1115	-0.2662

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9941421
B1	-0.9941421	1.0000000

SB (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	82
Subiterations	167
Average Subiterations	2.036585
R	2.591E-6
PPC(B0)	9.546E-6
RPC(B0)	0.000108
Object	7.73E-10
Objective	1263.93
Observations Read	136
Observations Used	136
Observations Missing	0

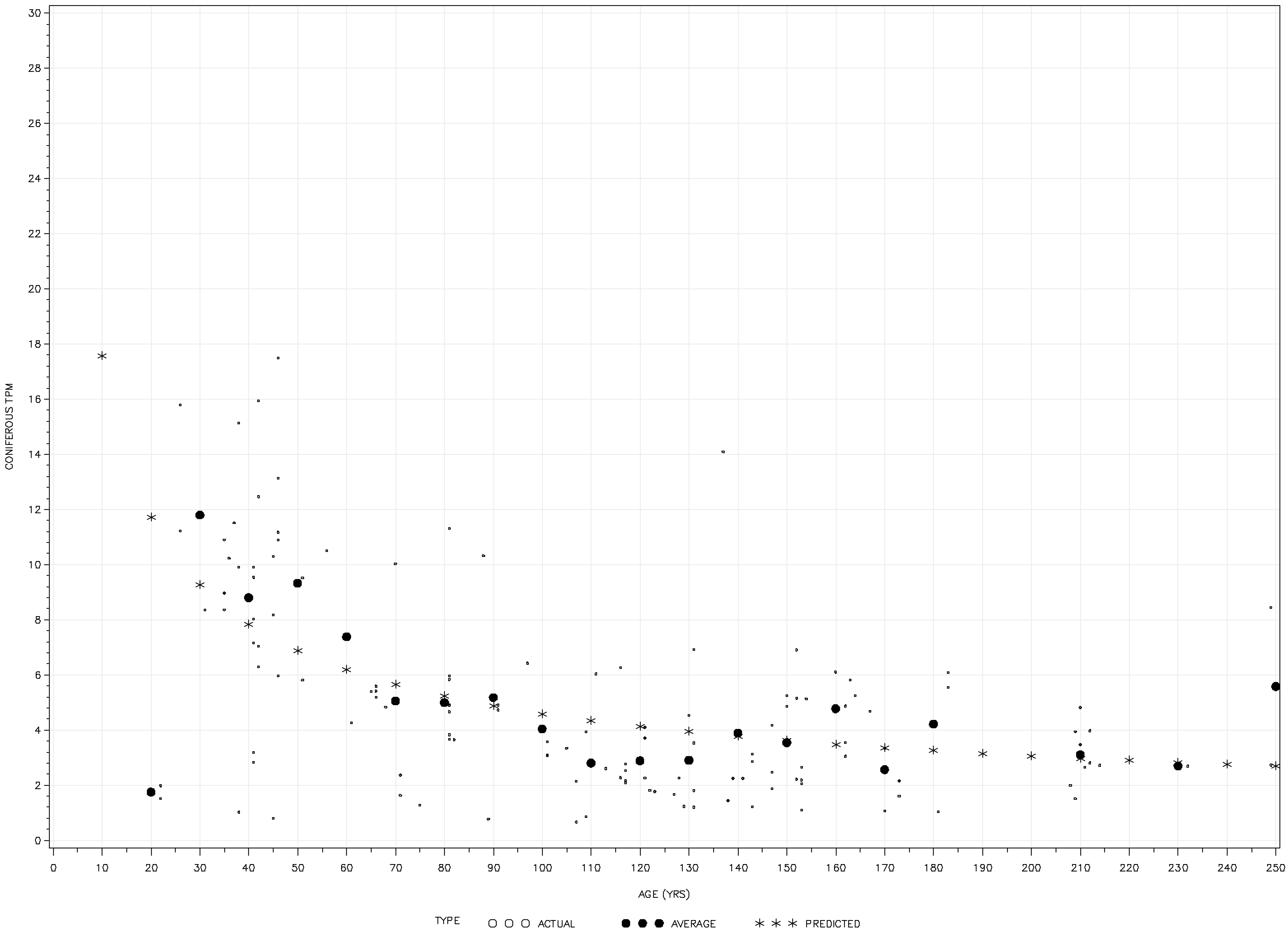
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3995.1	1997.5	211.78	<.0001
Error	134	1263.9	9.4323		
Uncorrected Total	136	5259.0			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	67.1167	21.6191	24.3580	109.9
B1	-0.5821	0.0779	-0.7361	-0.4280

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9885569
B1	-0.9885569	1.0000000

SB (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	83
Subiterations	170
Average Subiterations	2.048193
R	5.437E-6
PPC(B0)	0.000024
RPC(B0)	0.001281
Object	7.67E-7
Objective	1057.065
Observations Read	104
Observations Used	104
Observations Missing	0

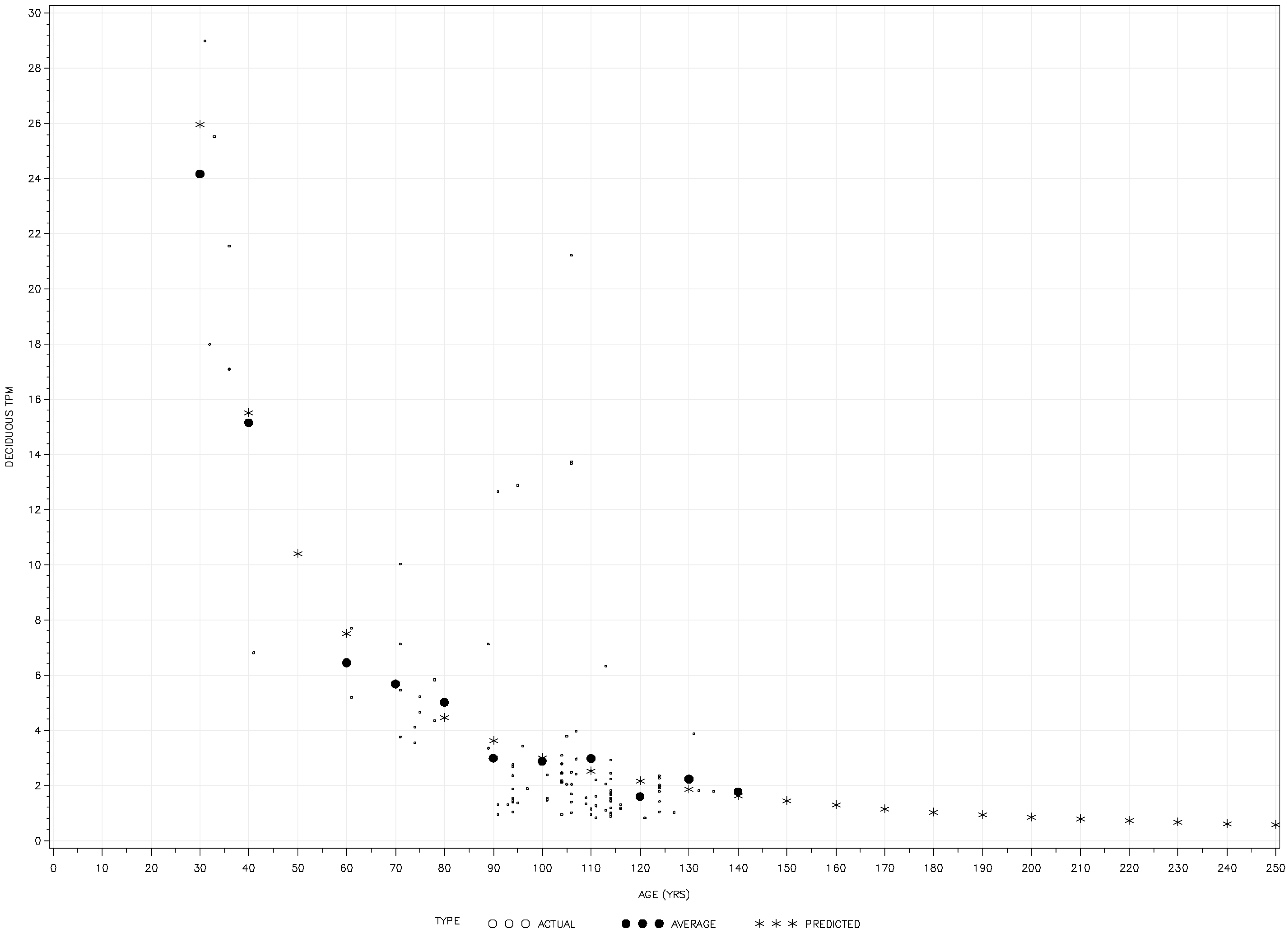
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3539.3	1769.7	170.76	<.0001
Error	102	1057.1	10.3634		
Uncorrected Total	104	4596.4			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	11506.7	5163.8	1264.3	21749.2
B1	-1.7916	0.1174	-2.0245	-1.5588

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9927038
B1	-0.9927038	1.0000000

PURE DECIDUOUS TPM (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

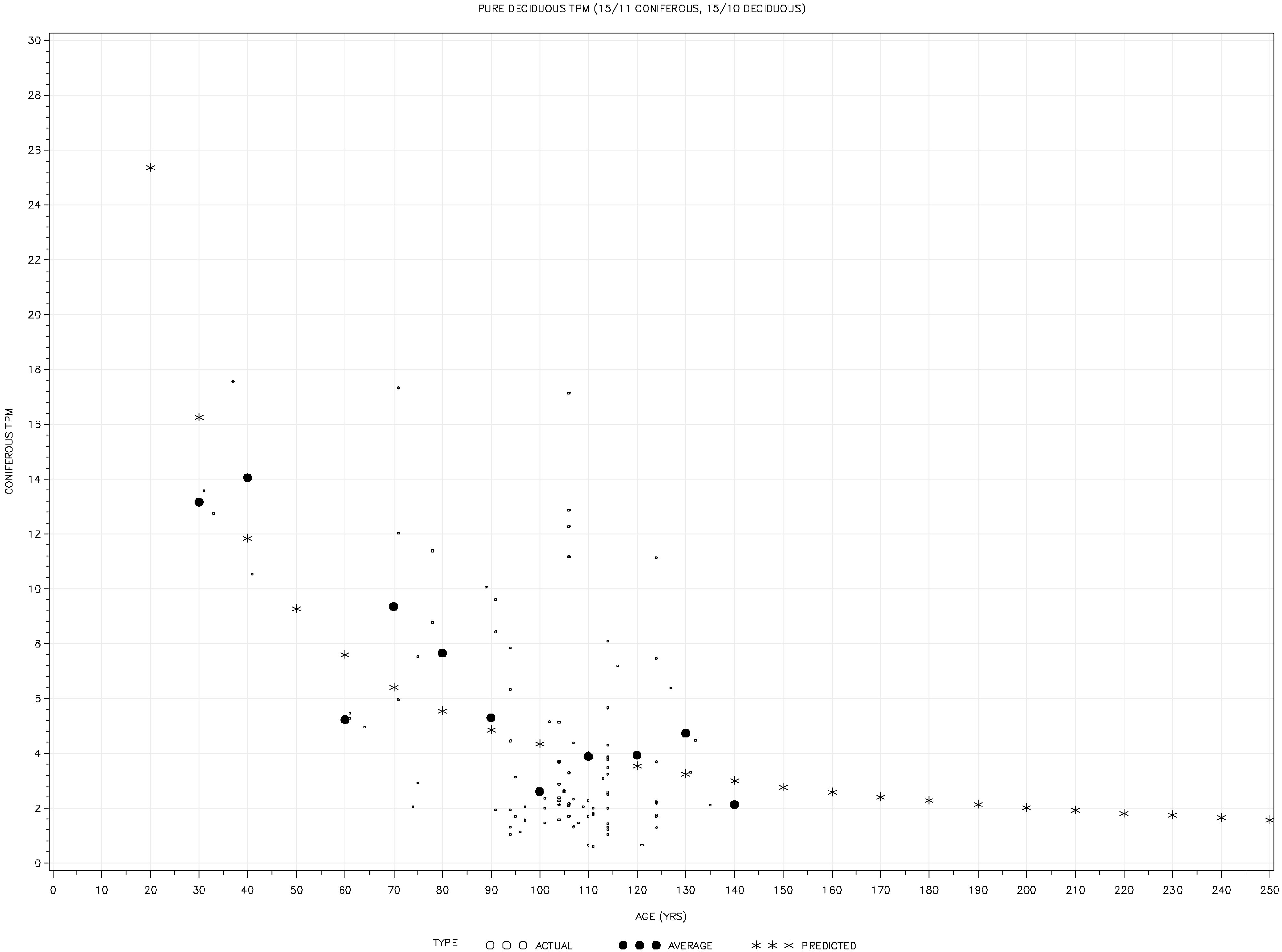
Estimation Summary	
Method	Gauss-Newton
Iterations	115
Subiterations	246
Average Subiterations	2.13913
R	2.883E-6
PPC(B0)	0.000016
RPC(B0)	0.000417
Object	5.136E-9
Objective	1132.353
Observations Read	96
Observations Used	96
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	2520.5	1260.2	104.62	<.0001
Error	94	1132.4	12.0463		
Uncorrected Total	96	3652.8			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	679.4	401.1	-117.1	1475.8
B1	-1.0974	0.1380	-1.3714	-0.8235

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9931213
B1	-0.9931213	1.0000000


PURE DECIDUOUS TPM (15/11 CONIFEROUS, 15/10 DECIDUOUS)
CONIFEROUS TPM
0
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14
16
18
20
22
24
26
28
30
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250
AGE (YRS)
TYPE
ACTUAL
AVERAGE
PREDICTED

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	51
Subiterations	90
Average Subiterations	1.764706
R	6.068E-6
PPC(B0)	0.000027
RPC(B0)	0.000109
Object	4.48E-10
Objective	2678.316
Observations Read	113
Observations Used	113
Observations Missing	0

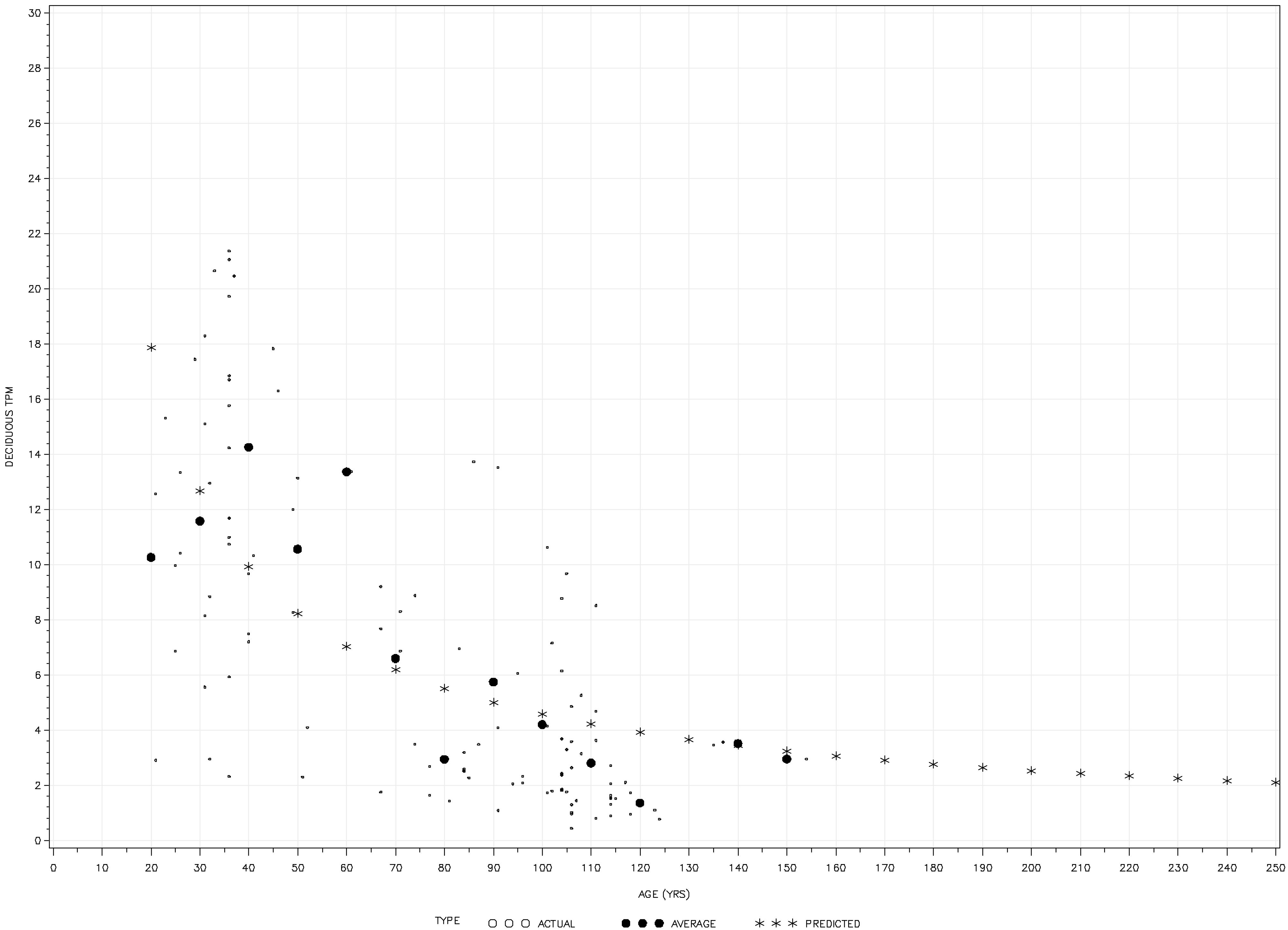
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	7194.9	3597.4	149.09	<.0001
Error	111	2678.3	24.1290		
Uncorrected Total	113	9873.2			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	226.4	97.0073	34.1798	418.6
B1	-0.8472	0.1148	-1.0748	-0.6197

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9908241
B1	-0.9908241	1.0000000

HW/PL 1(15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	73
Subiterations	141
Average Subiterations	1.931507
R	4.68E-6
PPC(B0)	0.000017
RPC(B0)	0.000085
Object	4.46E-10
Objective	1554.92
Observations Read	133
Observations Used	133
Observations Missing	0

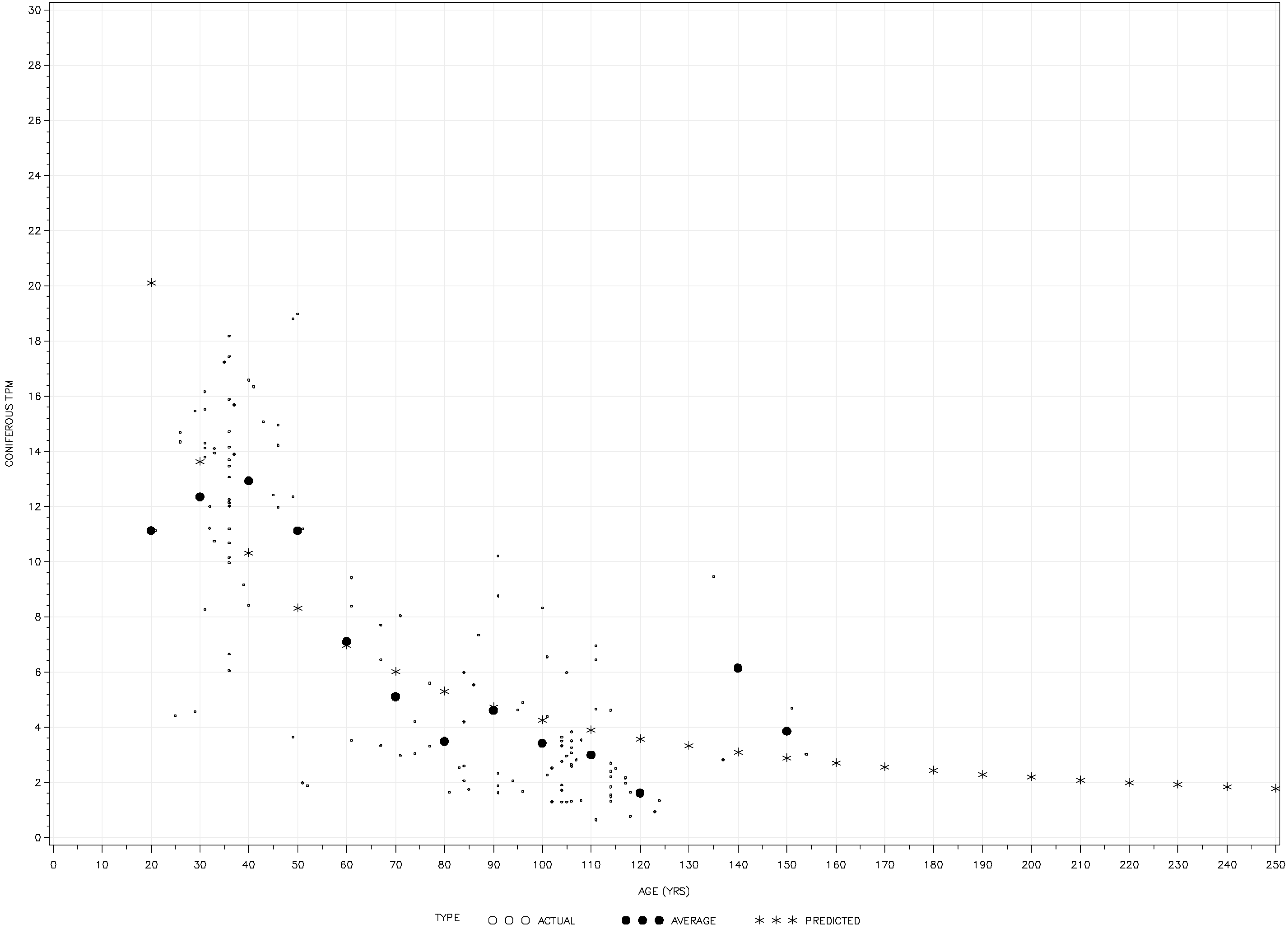
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	9043.8	4521.9	380.96	<.0001
Error	131	1554.9	11.8696		
Uncorrected Total	133	10598.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	360.4	113.5	135.7	585.0
B1	-0.9629	0.0847	-1.1305	-0.7954

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9933681
B1	-0.9933681	1.0000000

HW/PL 1(15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	56
Subiterations	97
Average Subiterations	1.732143
R	7.289E-6
PPC(B0)	0.000042
RPC(B0)	0.000116
Object	2.56E-10
Objective	4134.436
Observations Read	79
Observations Used	79
Observations Missing	0

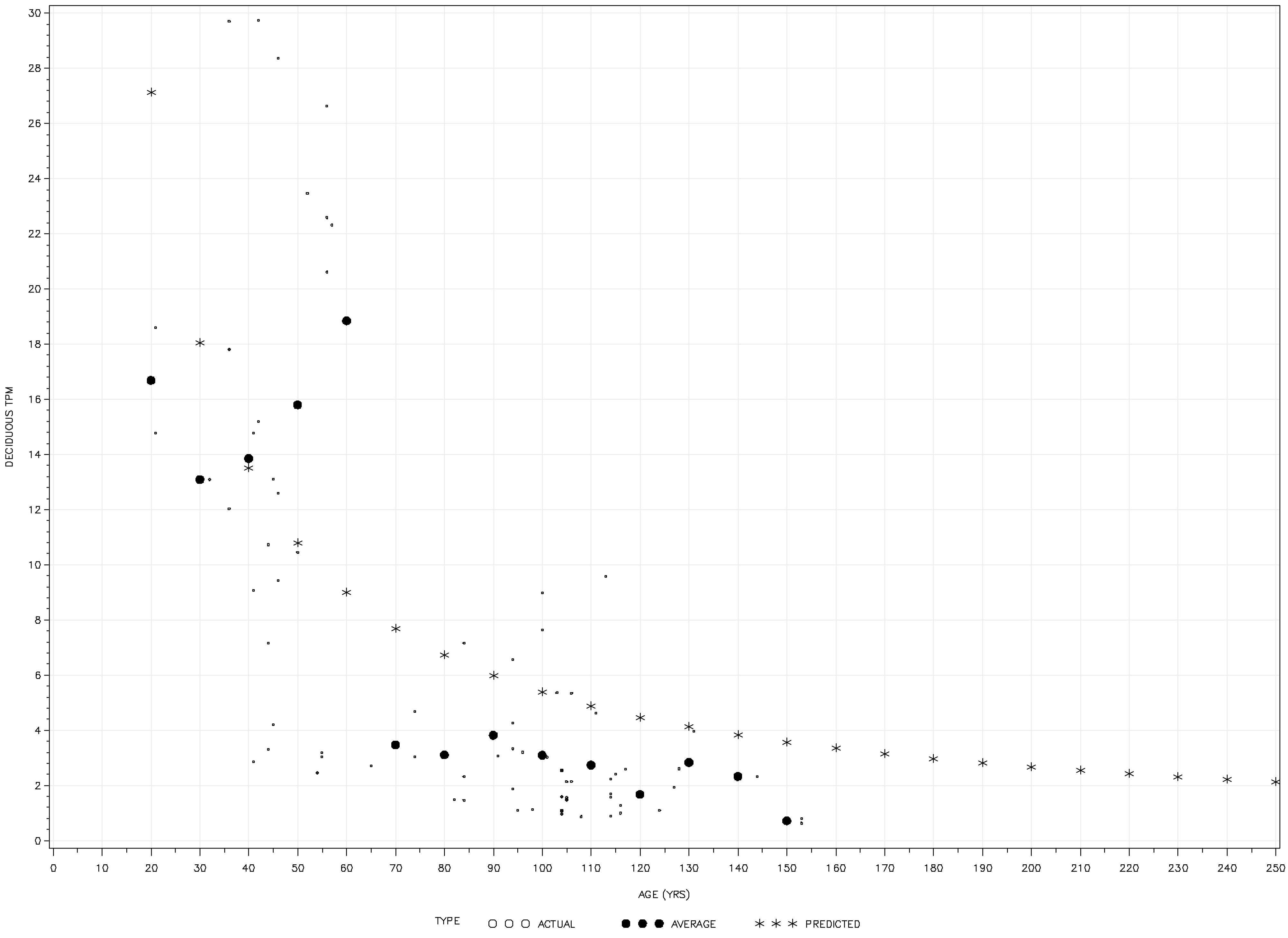
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6812.2	3406.1	63.44	<.0001
Error	77	4134.4	53.6940		
Uncorrected Total	79	10946.6			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	551.2	367.4	-180.4	1282.8
B1	-1.0051	0.1740	-1.3516	-0.6587

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9910902
B1	-0.9910902	1.0000000

HW/SW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	77
Subiterations	151
Average Subiterations	1.961039
R	4.11E-6
PPC(B0)	0.000017
RPC(B0)	0.000072
Object	2.39E-10
Objective	972.3604
Observations Read	88
Observations Used	88
Observations Missing	0

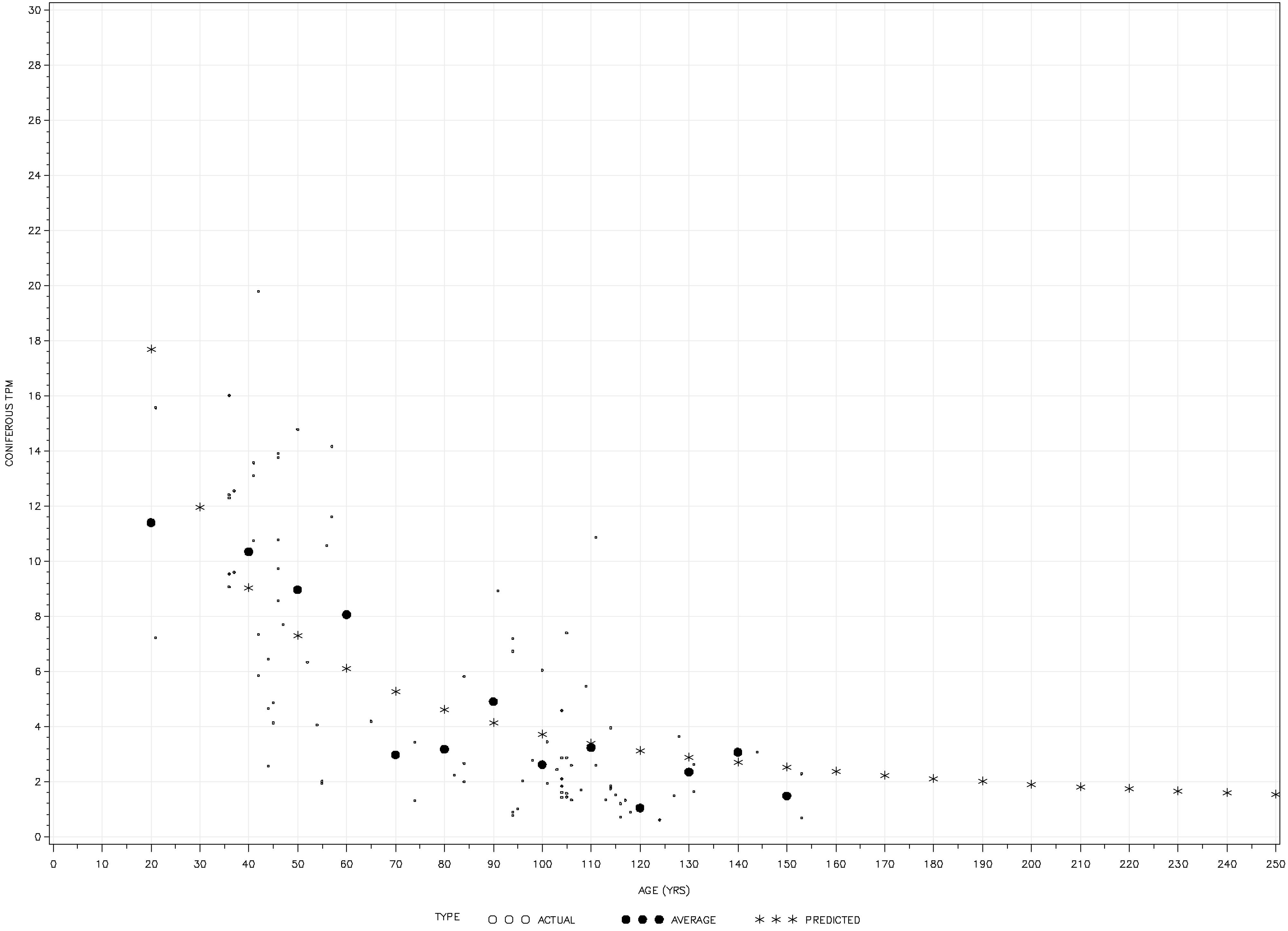
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3514.4	1757.2	155.41	<.0001
Error	86	972.4	11.3065		
Uncorrected Total	88	4486.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	320.1	141.6	38.7059	601.5
B1	-0.9665	0.1150	-1.1952	-0.7379

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9917398
B1	-0.9917398	1.0000000

HW/SW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	56
Subiterations	97
Average Subiterations	1.732143
R	7.289E-6
PPC(B0)	0.000042
RPC(B0)	0.000116
Object	2.56E-10
Objective	4134.436
Observations Read	79
Observations Used	79
Observations Missing	0

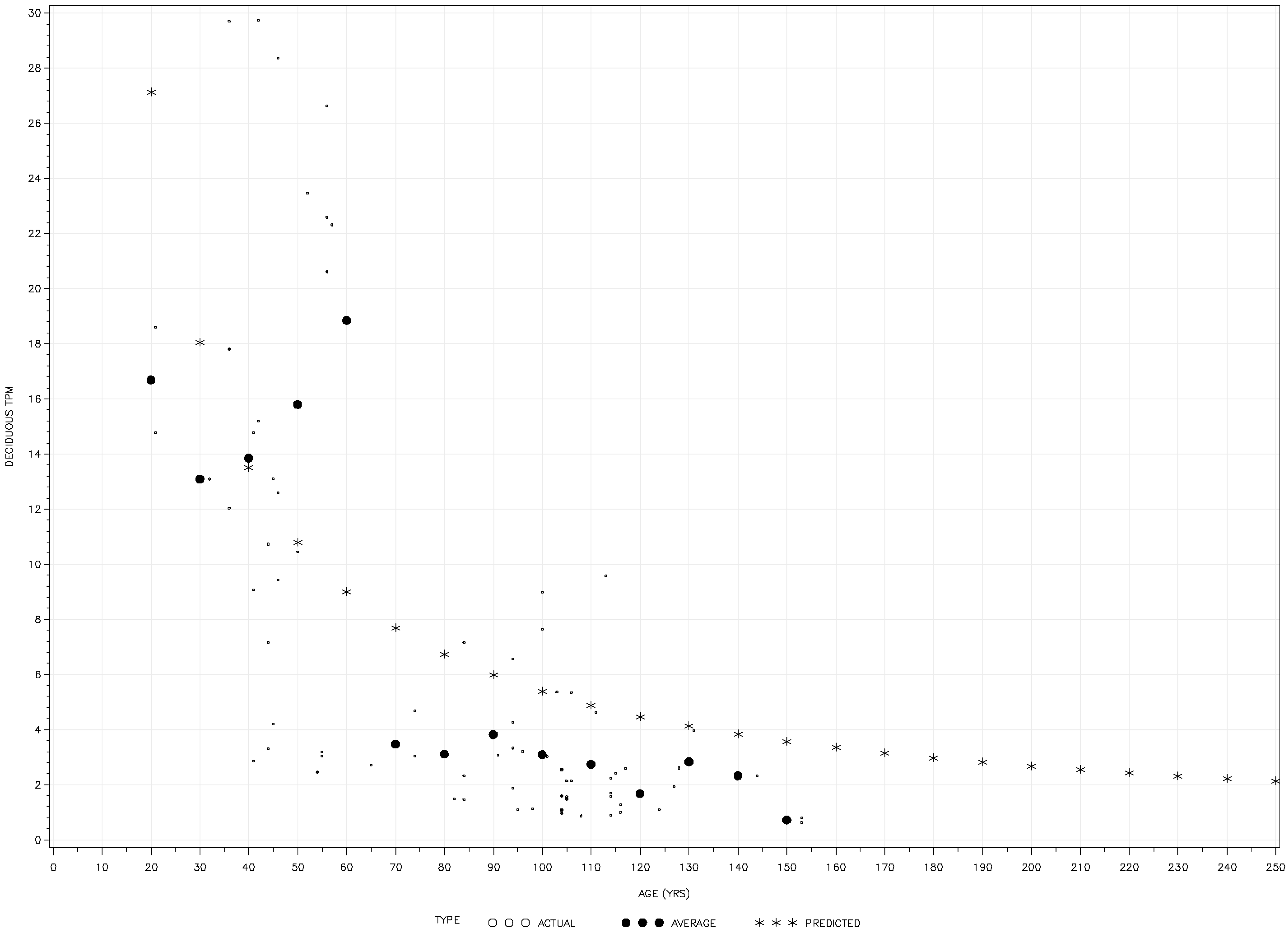
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6812.2	3406.1	63.44	<.0001
Error	77	4134.4	53.6940		
Uncorrected Total	79	10946.6			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	551.2	367.4	-180.4	1282.8
B1	-1.0051	0.1740	-1.3516	-0.6587

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9910902
B1	-0.9910902	1.0000000

SW/HW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

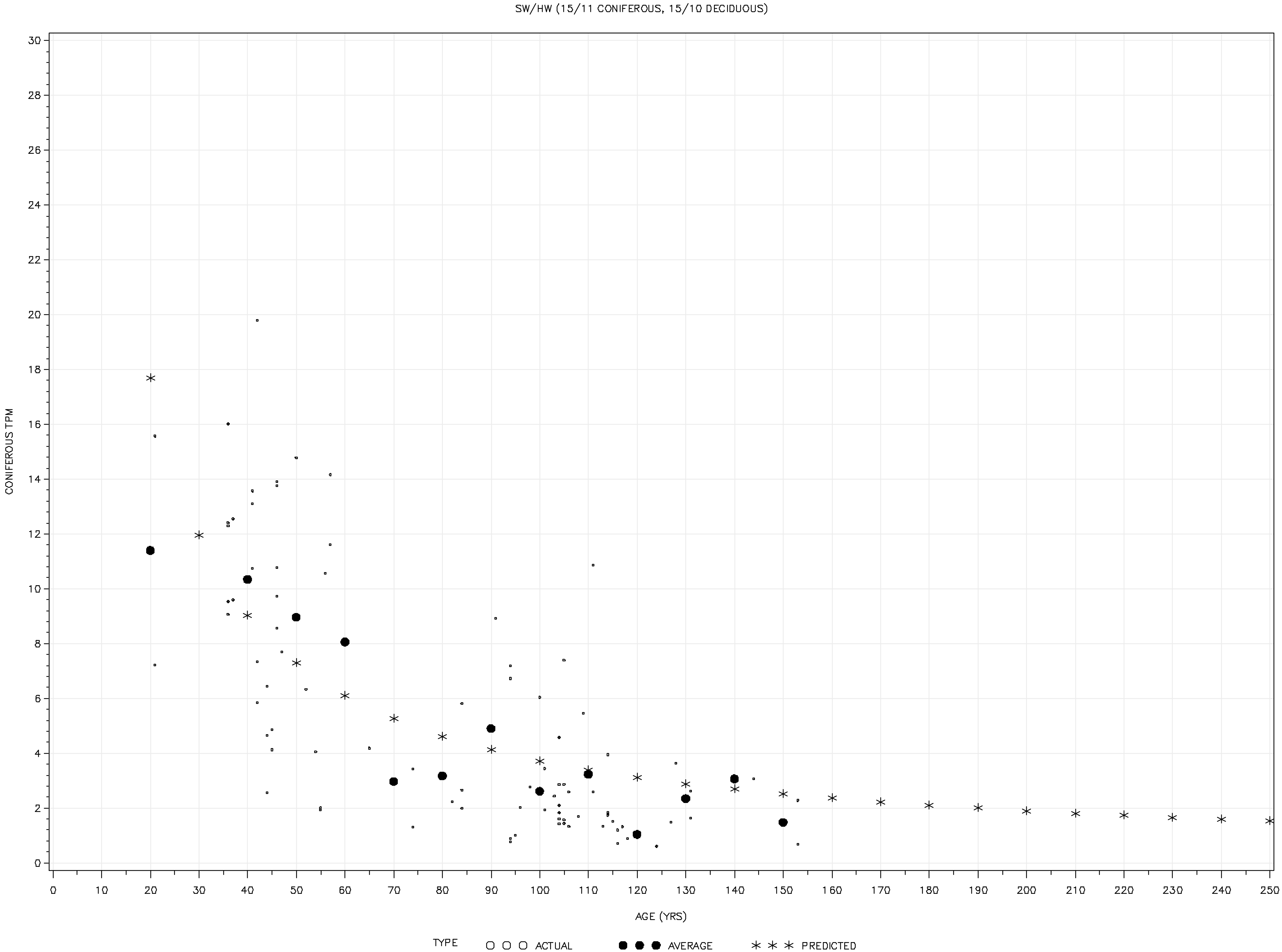
Estimation Summary	
Method	Gauss-Newton
Iterations	77
Subiterations	151
Average Subiterations	1.961039
R	4.11E-6
PPC(B0)	0.000017
RPC(B0)	0.000072
Object	2.39E-10
Objective	972.3604
Observations Read	88
Observations Used	88
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3514.4	1757.2	155.41	<.0001
Error	86	972.4	11.3065		
Uncorrected Total	88	4486.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	320.1	141.6	38.7059	601.5
B1	-0.9665	0.1150	-1.1952	-0.7379

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9917398
B1	-0.9917398	1.0000000


SW/HW (15/11 CONIFEROUS, 15/10 DECIDUOUS)
CONIFEROUS TPM
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
AGE (YRS)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250
TYPE
ACTUAL
AVERAGE
PREDICTED

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	51
Subiterations	90
Average Subiterations	1.764706
R	6.068E-6
PPC(B0)	0.000027
RPC(B0)	0.000109
Object	4.48E-10
Objective	2678.316
Observations Read	113
Observations Used	113
Observations Missing	0

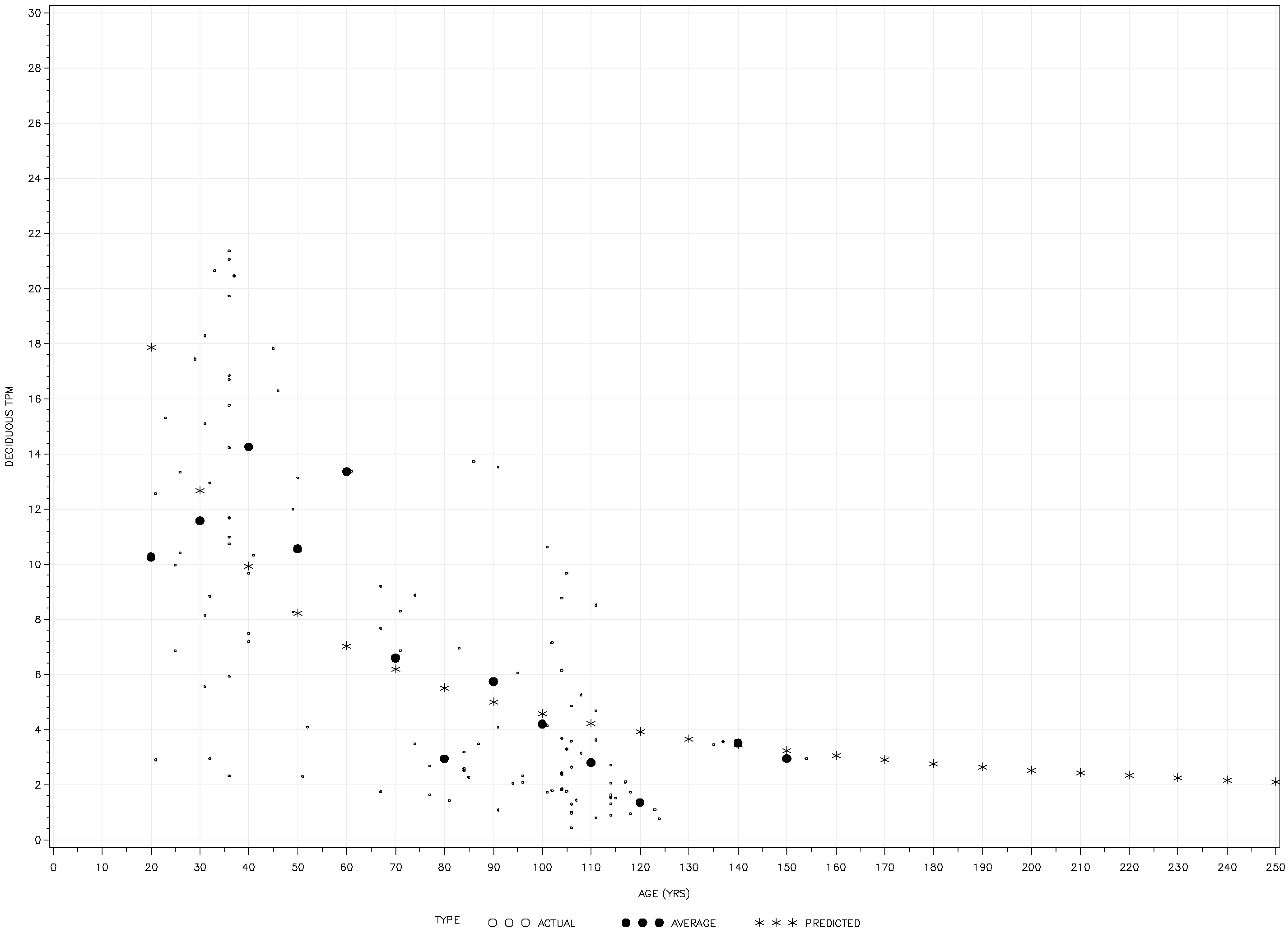
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	7194.9	3597.4	149.09	<.0001
Error	111	2678.3	24.1290		
Uncorrected Total	113	9873.2			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	226.4	97.0073	34.1798	418.6
B1	-0.8472	0.1148	-1.0748	-0.6197

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9908241
B1	-0.9908241	1.0000000

PL/HW 1(15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	73
Subiterations	141
Average Subiterations	1.931507
R	4.68E-6
PPC(B0)	0.000017
RPC(B0)	0.000085
Object	4.46E-10
Objective	1554.92
Observations Read	133
Observations Used	133
Observations Missing	0

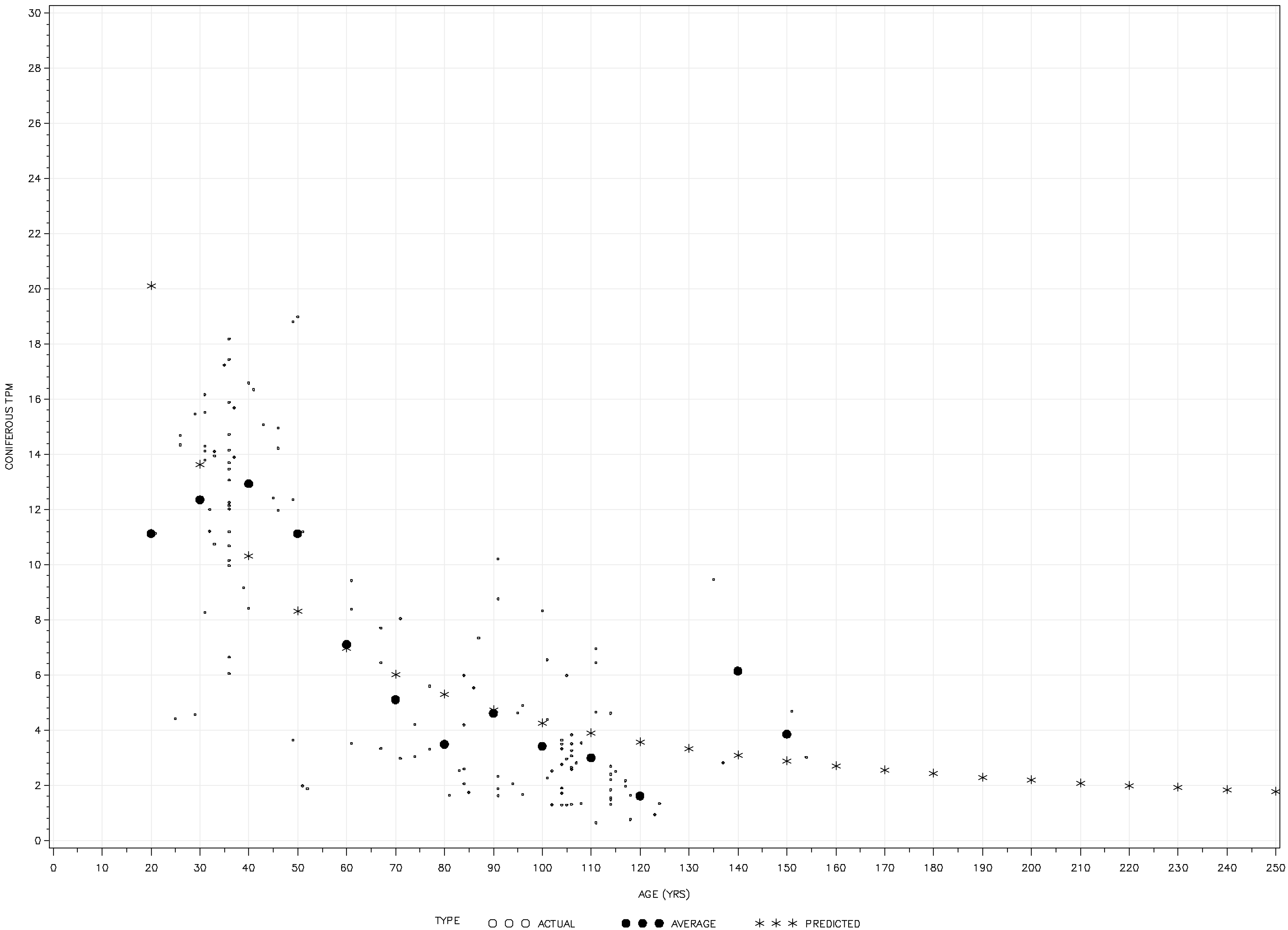
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	9043.8	4521.9	380.96	<.0001
Error	131	1554.9	11.8696		
Uncorrected Total	133	10598.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	360.4	113.5	135.7	585.0
B1	-0.9629	0.0847	-1.1305	-0.7954

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9933681
B1	-0.9933681	1.0000000

PL/HW 1(15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	56
Subiterations	97
Average Subiterations	1.732143
R	7.289E-6
PPC(B0)	0.000042
RPC(B0)	0.000116
Object	2.56E-10
Objective	4134.436
Observations Read	79
Observations Used	79
Observations Missing	0

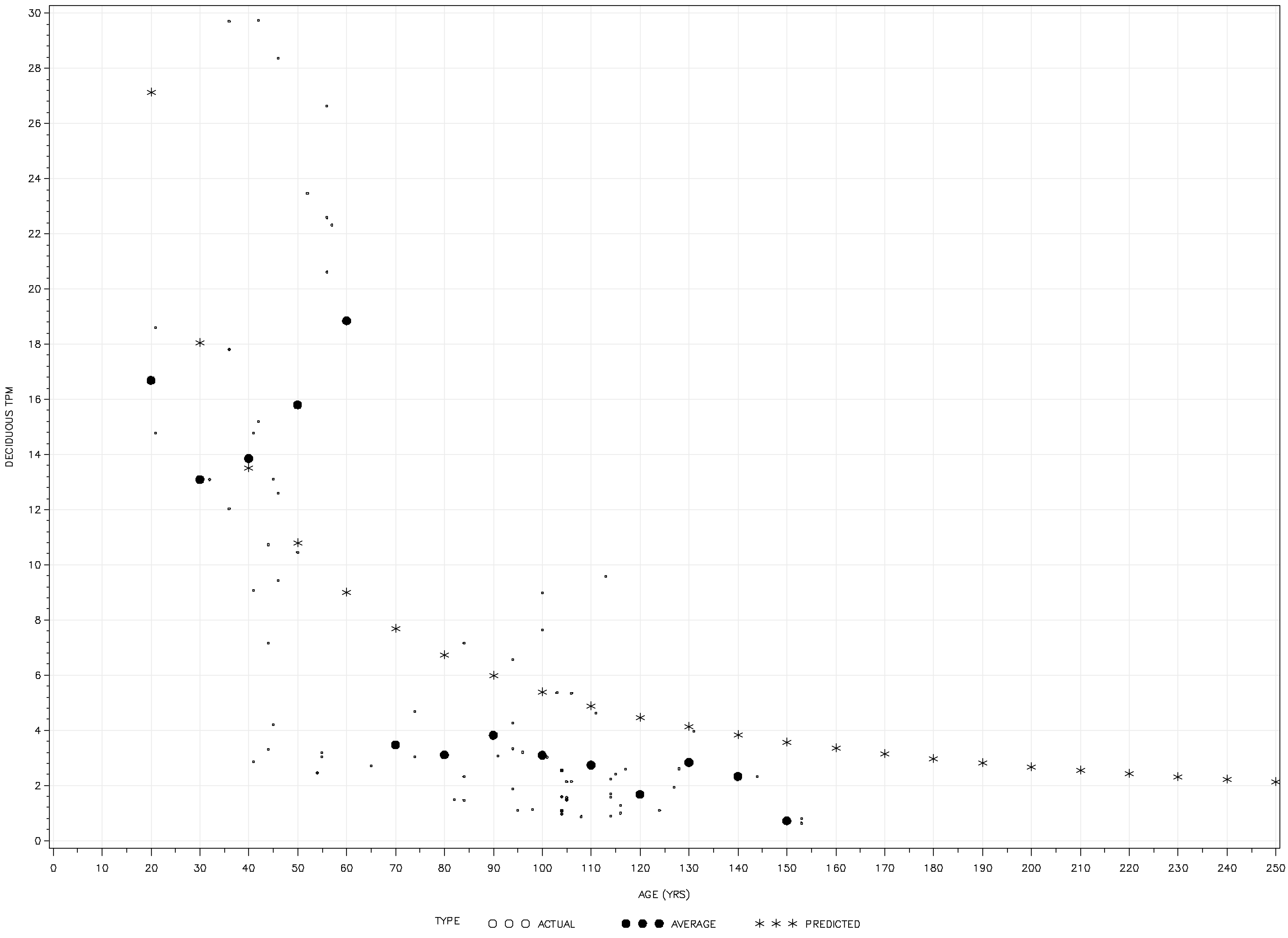
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	6812.2	3406.1	63.44	<.0001
Error	77	4134.4	53.6940		
Uncorrected Total	79	10946.6			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	551.2	367.4	-180.4	1282.8
B1	-1.0051	0.1740	-1.3516	-0.6587

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9910902
B1	-0.9910902	1.0000000

SB/HW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	77
Subiterations	151
Average Subiterations	1.961039
R	4.11E-6
PPC(B0)	0.000017
RPC(B0)	0.000072
Object	2.39E-10
Objective	972.3604
Observations Read	88
Observations Used	88
Observations Missing	0

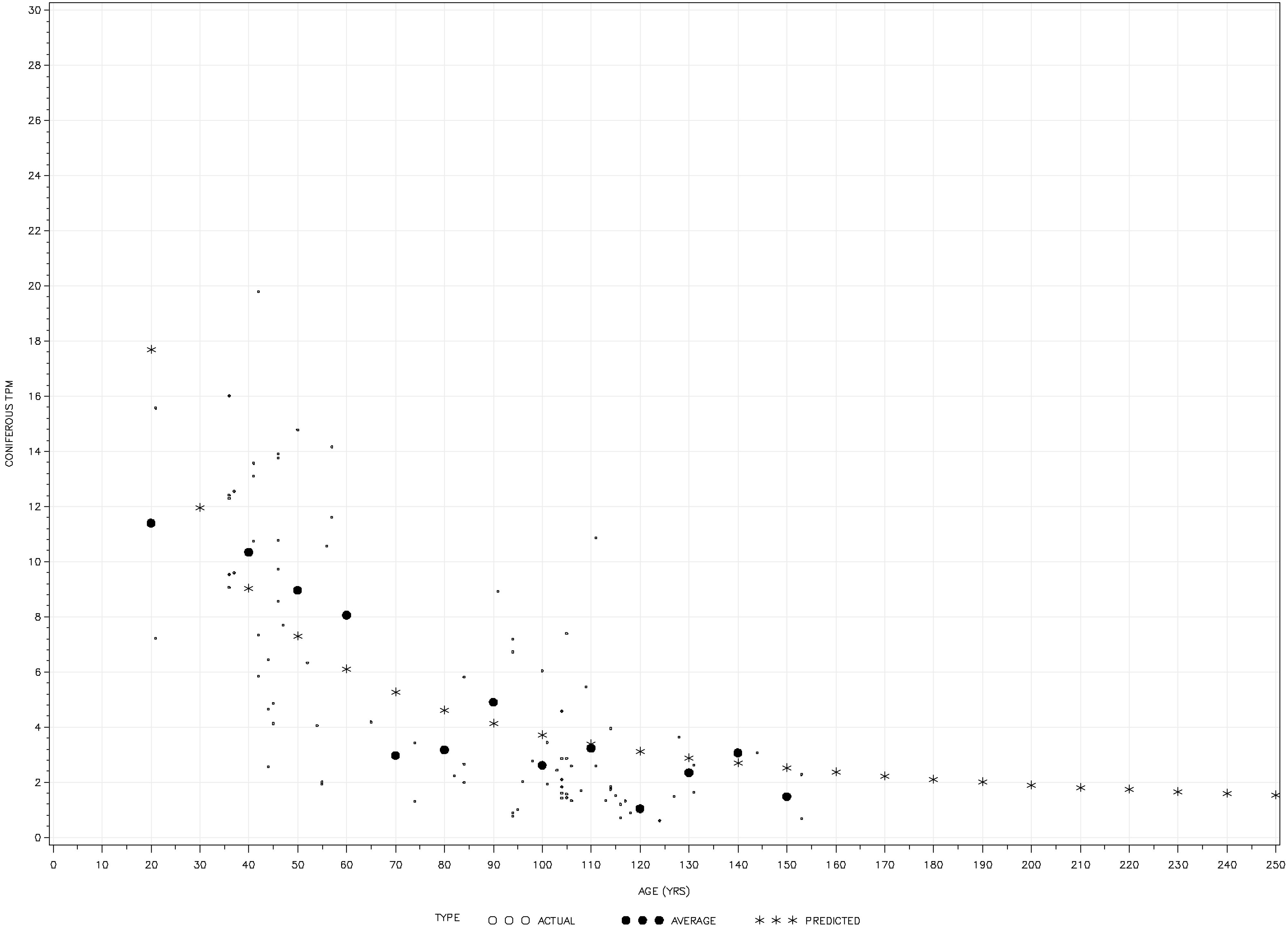
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	3514.4	1757.2	155.41	<.0001
Error	86	972.4	11.3065		
Uncorrected Total	88	4486.7			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	320.1	141.6	38.7059	601.5
B1	-0.9665	0.1150	-1.1952	-0.7379

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9917398
B1	-0.9917398	1.0000000

SB/HW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

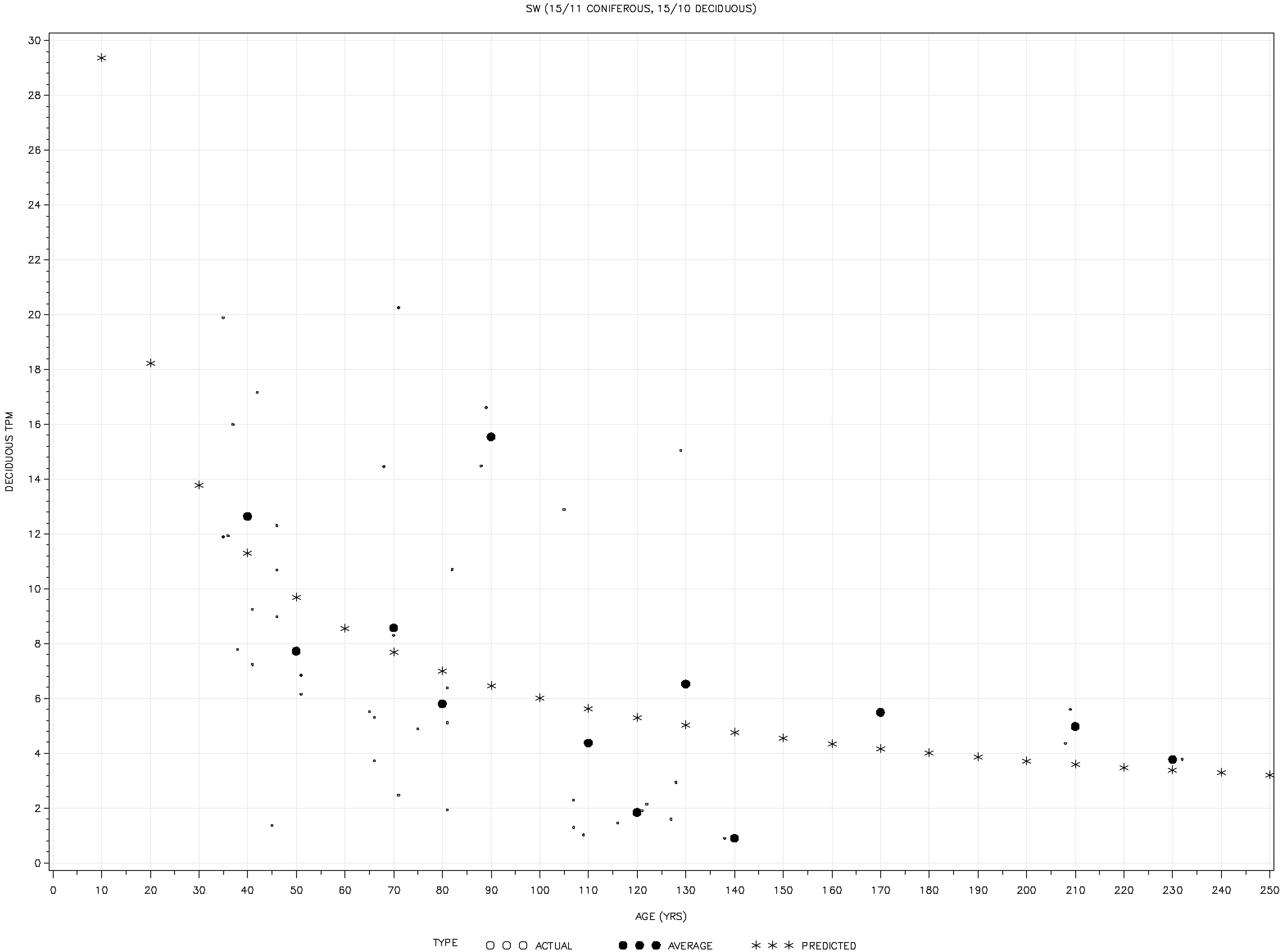
Estimation Summary	
Method	Gauss-Newton
Iterations	25
Subiterations	35
Average Subiterations	1.4
R	8.144E-6
PPC(B0)	0.000045
RPC(B0)	0.001182
Object	2.04E-7
Objective	1010.247
Observations Read	44
Observations Used	44
Observations Missing	0

Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	2864.5	1432.3	59.54	<.0001
Error	42	1010.2	24.0535		
Uncorrected Total	44	3874.8			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	143.6	121.7	-102.1	389.3
B1	-0.6888	0.2094	-1.1115	-0.2662

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9941421
B1	-0.9941421	1.0000000


SW (15/11 CONIFEROUS, 15/10 DECIDUOUS)
DECIDUOUS TPM
AGE (YRS)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250
TYPE
ACTUAL
AVERAGE
PREDICTED

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	86
Subiterations	177
Average Subiterations	2.05814
R	1.689E-6
PPC(B0)	6.286E-6
RPC(B0)	0.000062
Object	2.67E-10
Objective	1474.439
Observations Read	136
Observations Used	136
Observations Missing	0

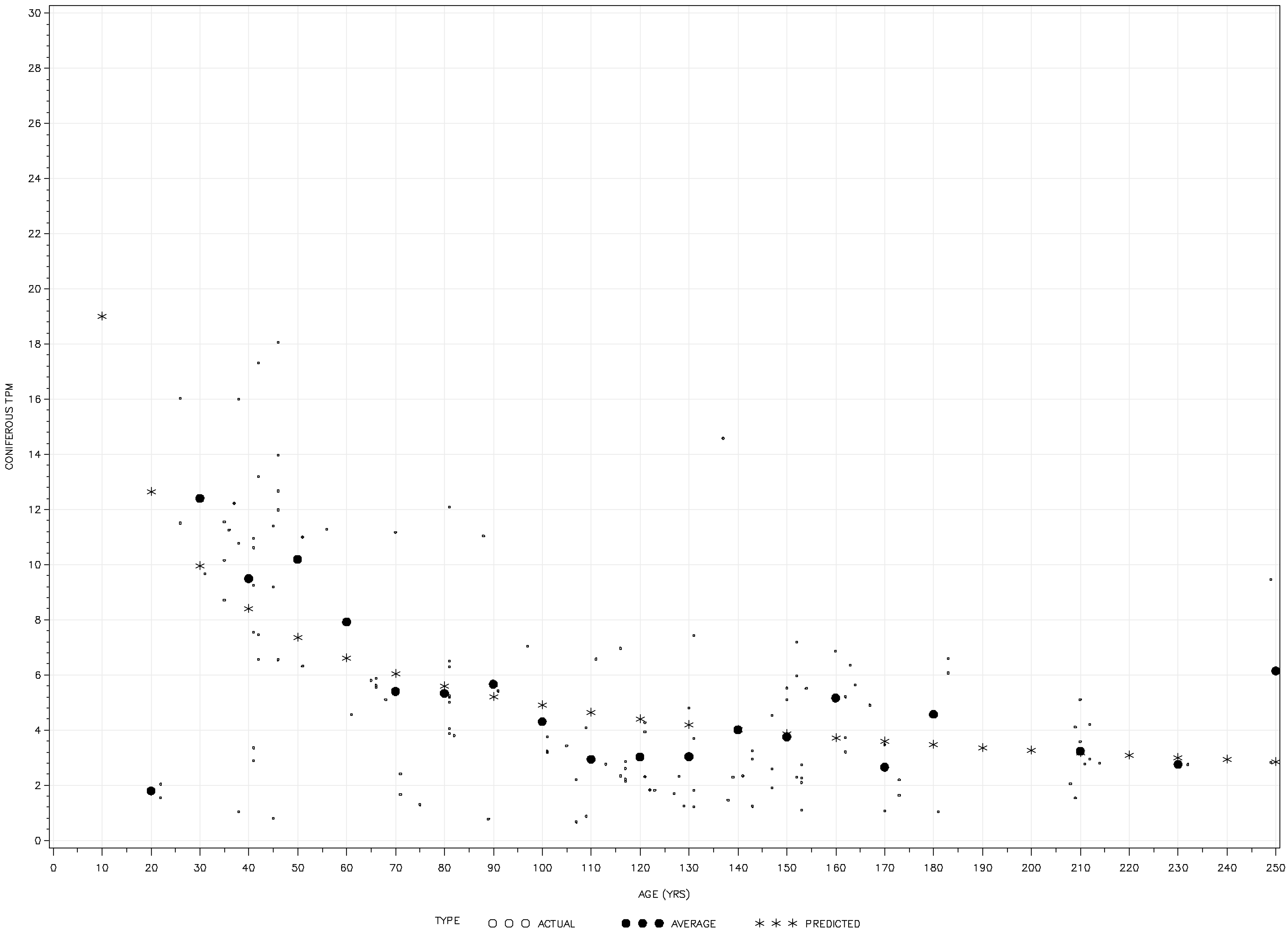
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	4578.7	2289.4	208.06	<.0001
Error	134	1474.4	11.0033		
Uncorrected Total	136	6053.1			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	73.6027	23.9240	26.2851	120.9
B1	-0.5880	0.0787	-0.7436	-0.4323

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9885618
B1	-0.9885618	1.0000000

SW (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	53
Subiterations	88
Average Subiterations	1.660377
R	4.601E-6
PPC(B0)	0.000019
RPC(B0)	0.00005
Object	8.98E-11
Objective	2759.914
Observations Read	79
Observations Used	79
Observations Missing	0

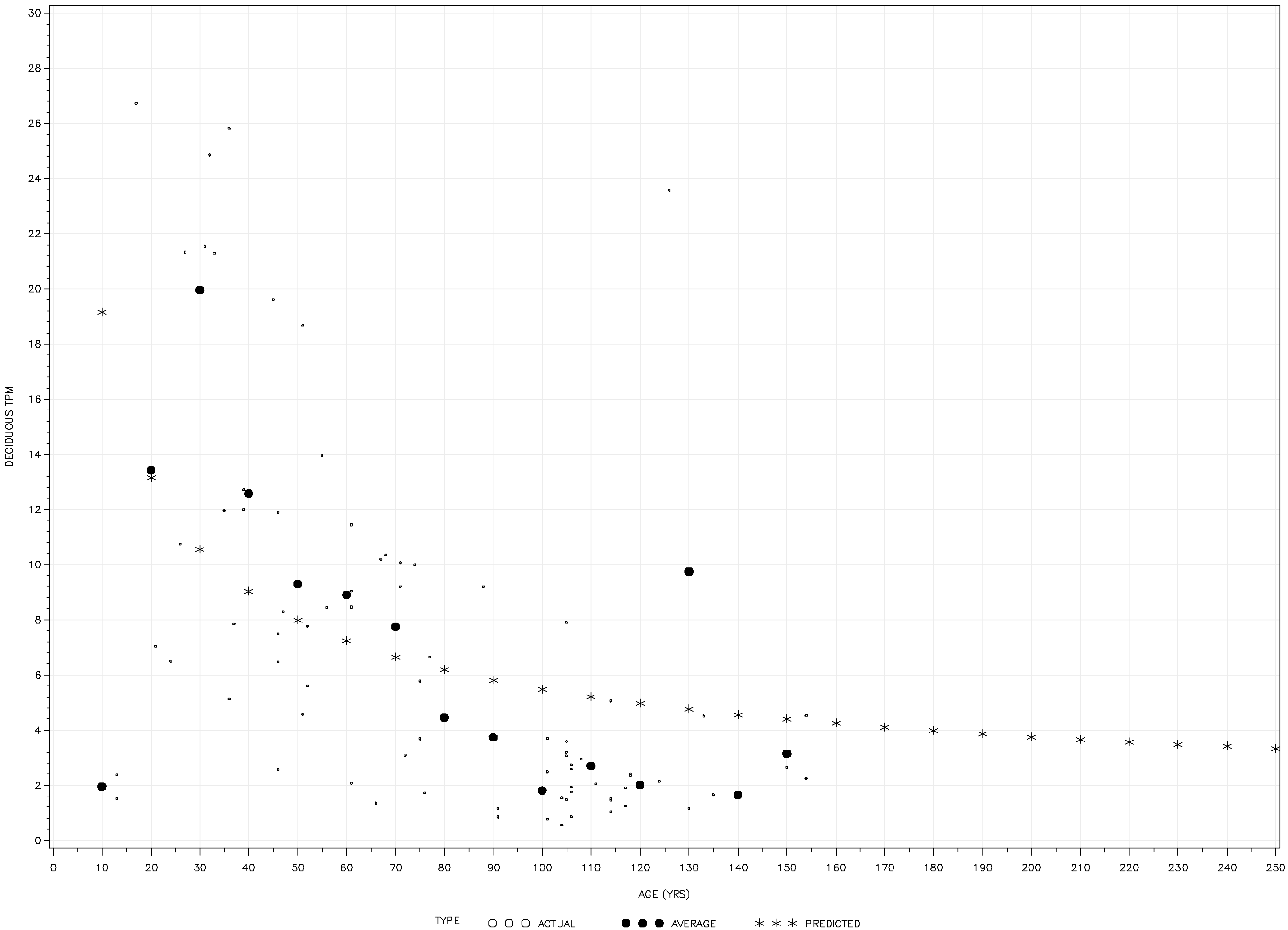
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	4595.2	2297.6	64.10	<.0001
Error	77	2759.9	35.8430		
Uncorrected Total	79	7355.1			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	66.9646	32.3257	2.5960	131.3
B1	-0.5431	0.1264	-0.7947	-0.2915

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9831210
B1	-0.9831210	1.0000000

PL (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	78
Subiterations	153
Average Subiterations	1.961538
R	6.192E-6
PPC(B0)	0.000019
RPC(B0)	0.000064
Object	2.93E-10
Objective	6018.939
Observations Read	377
Observations Used	377
Observations Missing	0

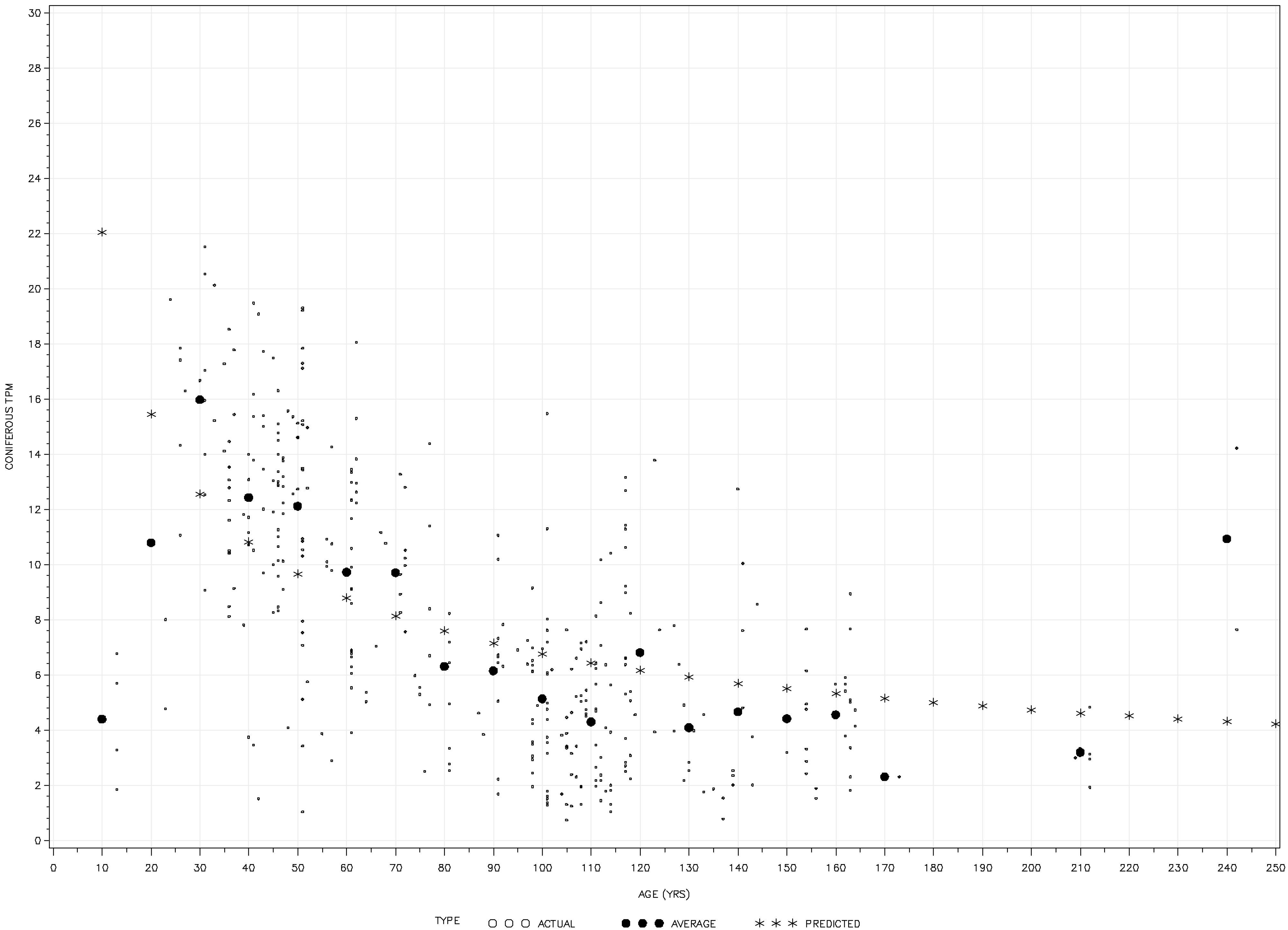
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	26979.9	13489.9	840.47	<.0001
Error	375	6018.9	16.0505		
Uncorrected Total	377	32998.8			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	71.8674	11.7346	48.7936	94.9412
B1	-0.5127	0.0404	-0.5921	-0.4333

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9887800
B1	-0.9887800	1.0000000

PL (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	25
Subiterations	35
Average Subiterations	1.4
R	8.144E-6
PPC(B0)	0.000045
RPC(B0)	0.001182
Object	2.04E-7
Objective	1010.247
Observations Read	44
Observations Used	44
Observations Missing	0

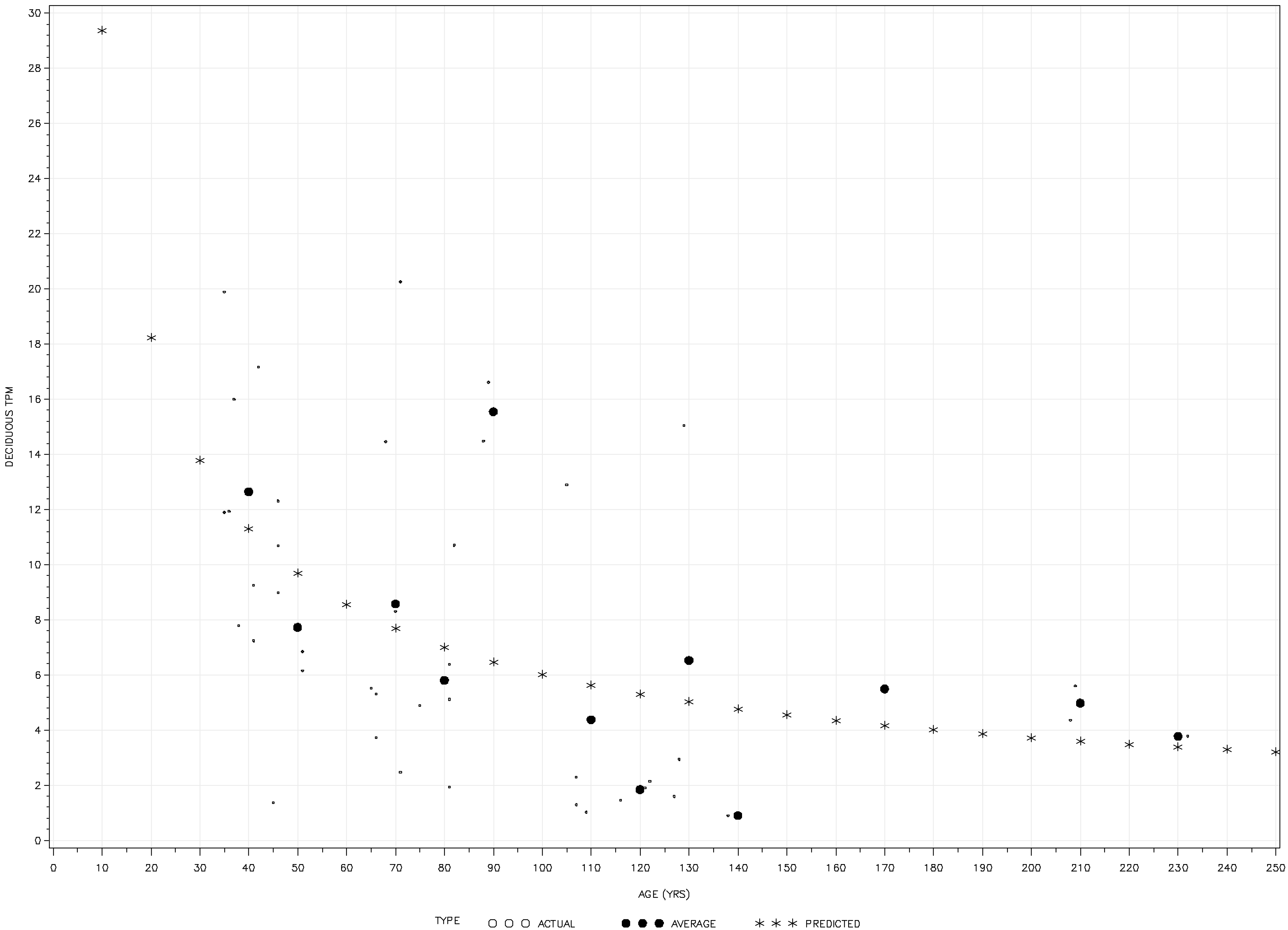
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	2864.5	1432.3	59.54	<.0001
Error	42	1010.2	24.0535		
Uncorrected Total	44	3874.8			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	143.6	121.7	-102.1	389.3
B1	-0.6888	0.2094	-1.1115	-0.2662

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9941421
B1	-0.9941421	1.0000000

SB (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	86
Subiterations	177
Average Subiterations	2.05814
R	1.689E-6
PPC(B0)	6.286E-6
RPC(B0)	0.000062
Object	2.67E-10
Objective	1474.439
Observations Read	136
Observations Used	136
Observations Missing	0

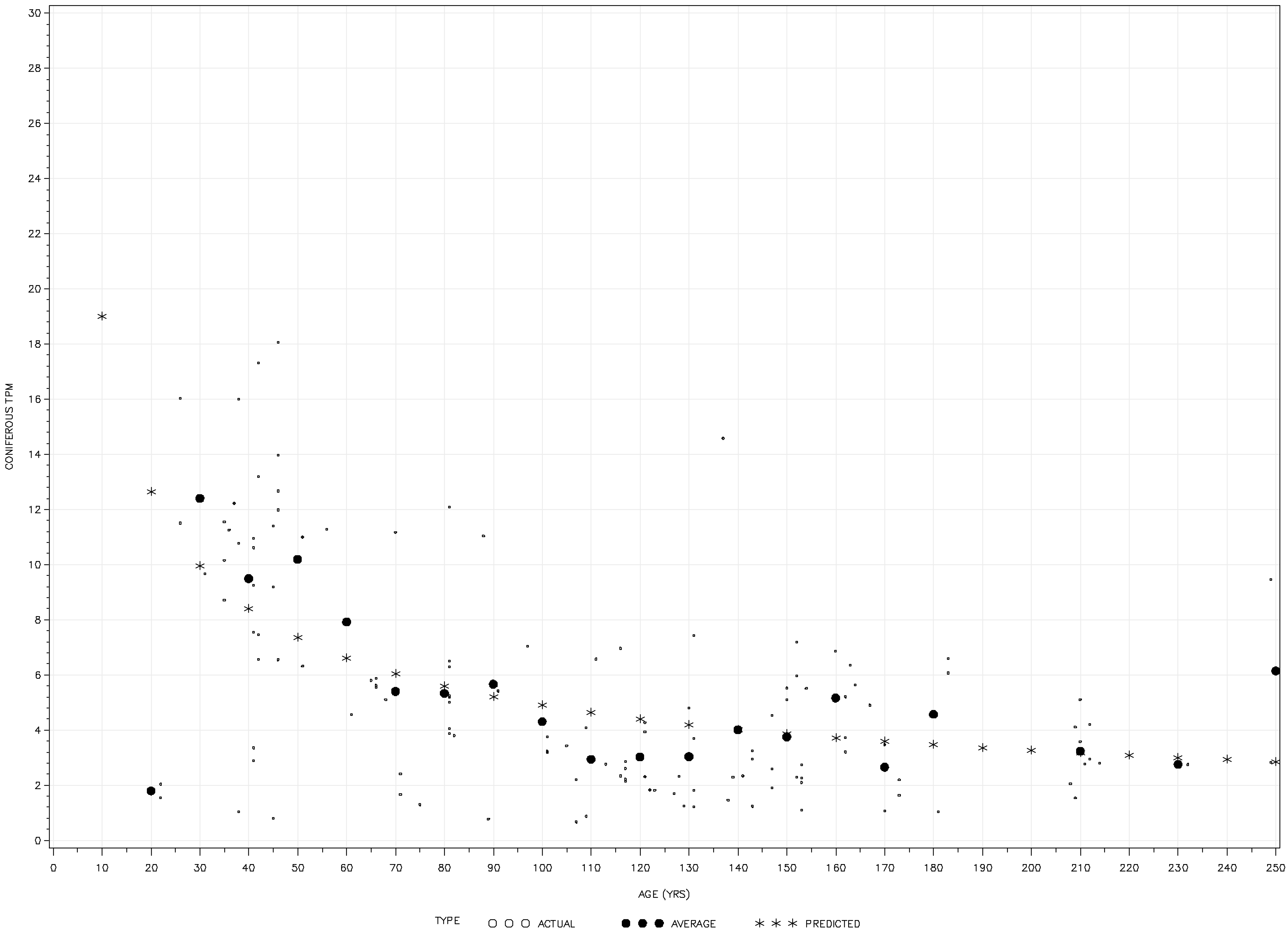
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	2	4578.7	2289.4	208.06	<.0001
Error	134	1474.4	11.0033		
Uncorrected Total	136	6053.1			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	73.6027	23.9240	26.2851	120.9
B1	-0.5880	0.0787	-0.7436	-0.4323

Approximate Correlation Matrix		
	B0	B1
B0	1.0000000	-0.9885618
B1	-0.9885618	1.0000000

SB (15/11 CONIFEROUS, 15/10 DECIDUOUS)



The ANOVA Procedure

Class Level Information		
Class	Levels	Values
YIELDCLASS	2	2 5

Number of Observations Read	50
Number of Observations Used	50

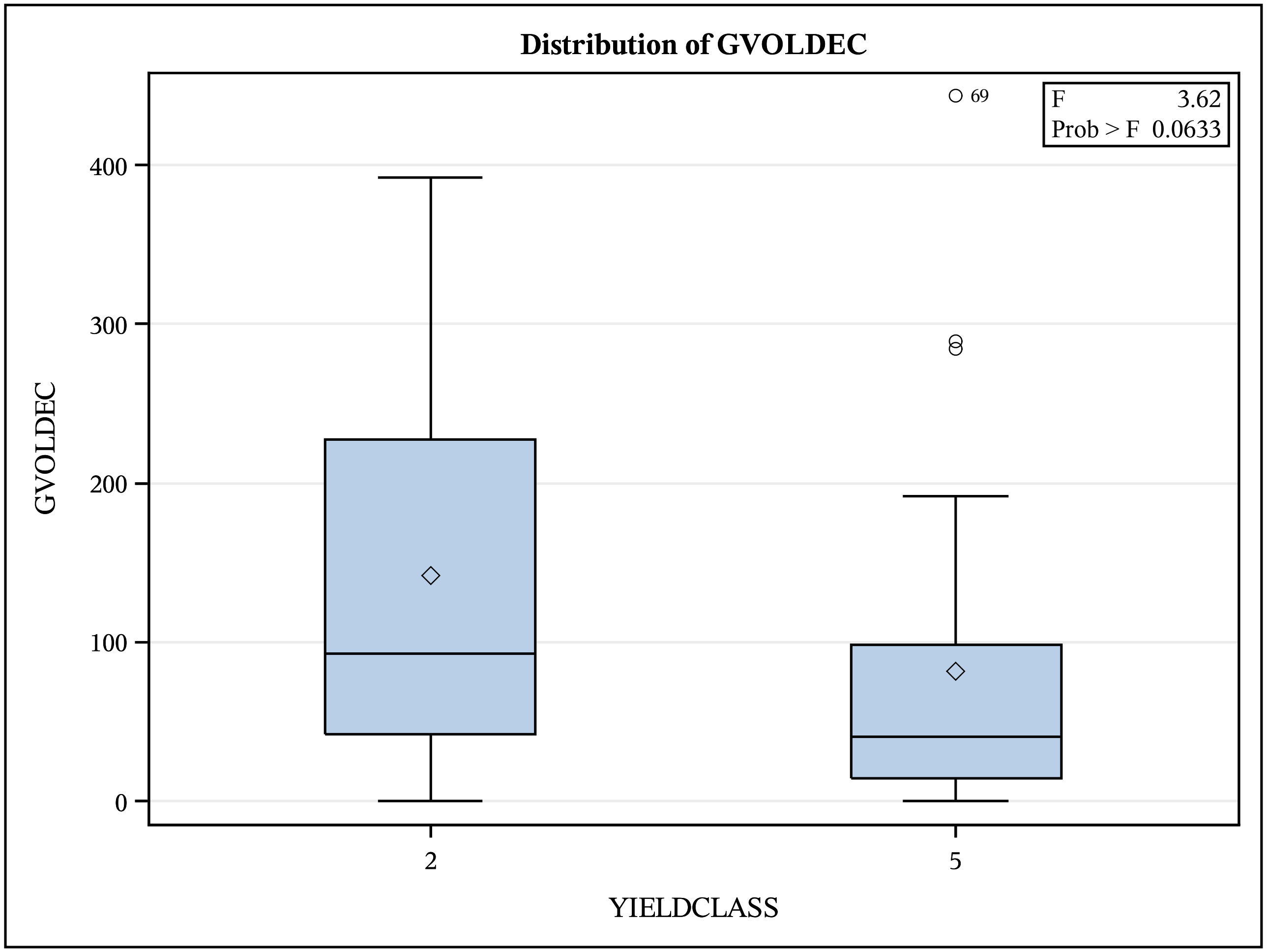
The ANOVA Procedure

Dependent Variable: GVOLDEC GVOLDEC

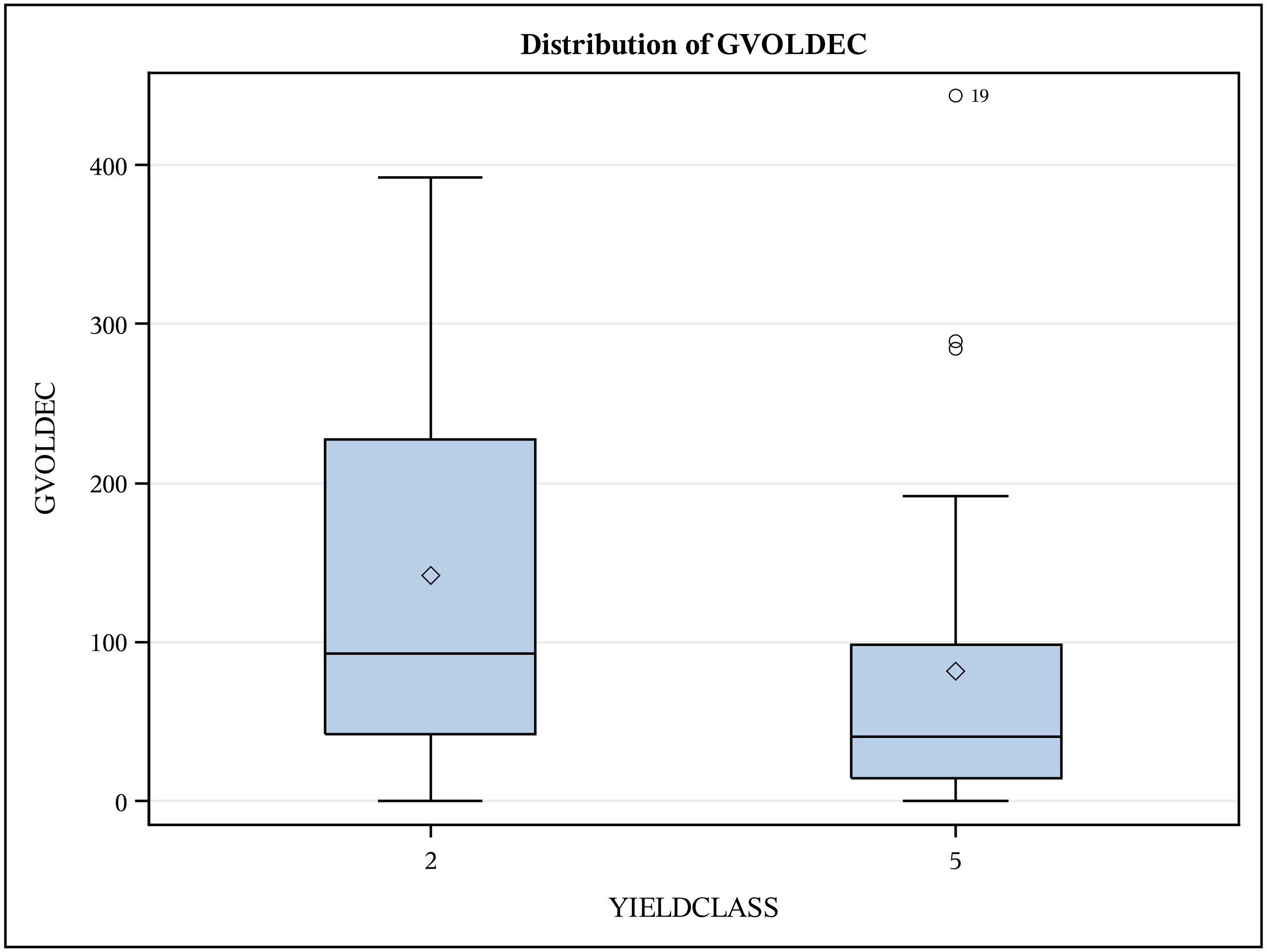
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	44865.6725	44865.6725	3.62	0.0633
Error	48	595673.8779	12409.8725		
Corrected Total	49	640539.5504			

R-Square	Coeff Var	Root MSE	GVOLDEC Mean
0.070044	104.1670	111.3996	106.9432

Source	DF	Anova SS	Mean Square	F Value	Pr > F
YIELDCLASS	1	44865.67247	44865.67247	3.62	0.0633



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for GVOLDEC

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	48
Error Mean Square	12409.87
Harmonic Mean of Cell Sizes	24.36

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	64.18

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	YIELDCLASS
A	142.14	21	2
A			
A	81.45	29	5

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
YIELDCLASS	2	2 5

Number of Observations Read	50
Number of Observations Used	50

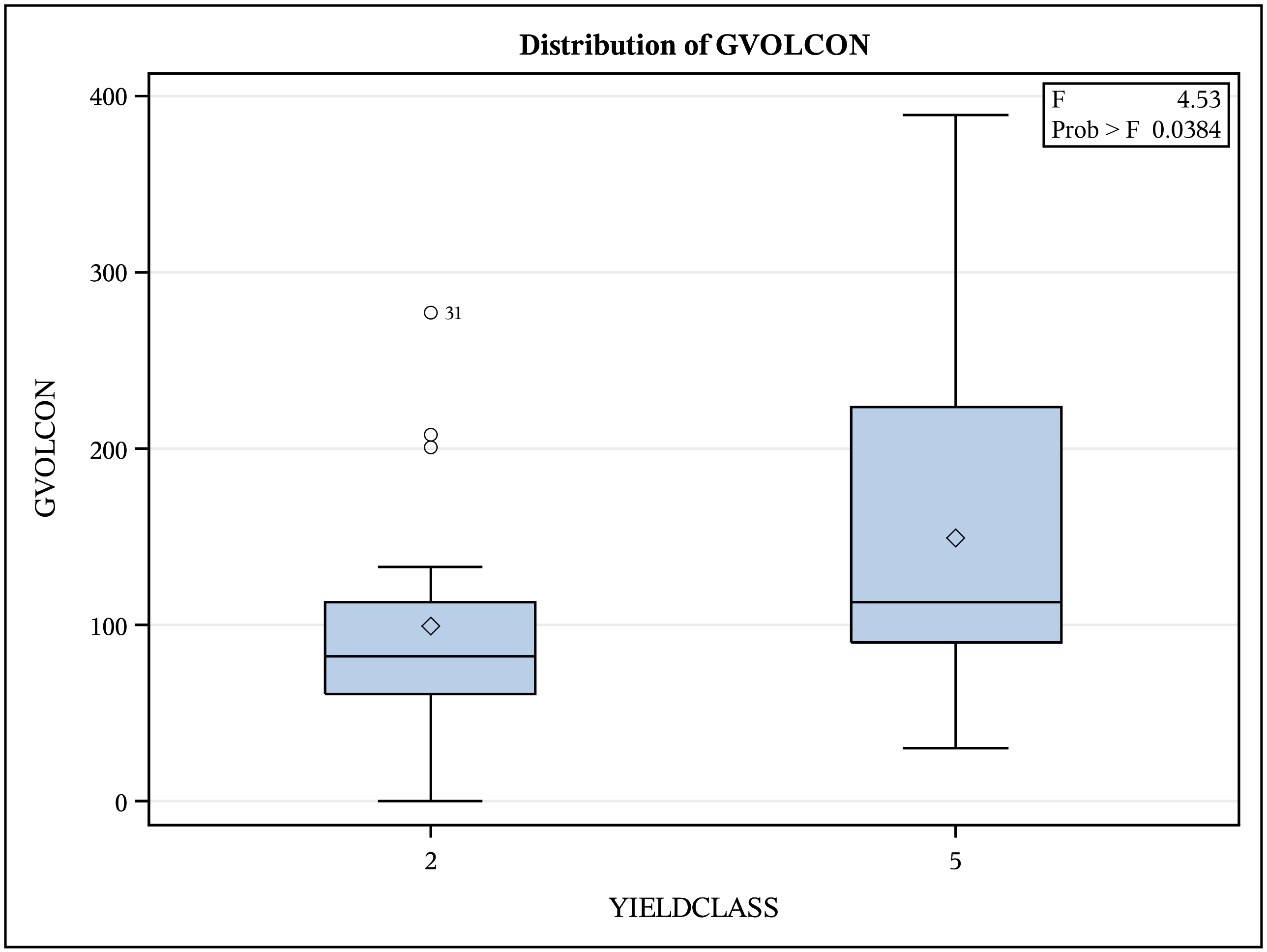
The ANOVA Procedure

Dependent Variable: GVOLCON GVOLCON

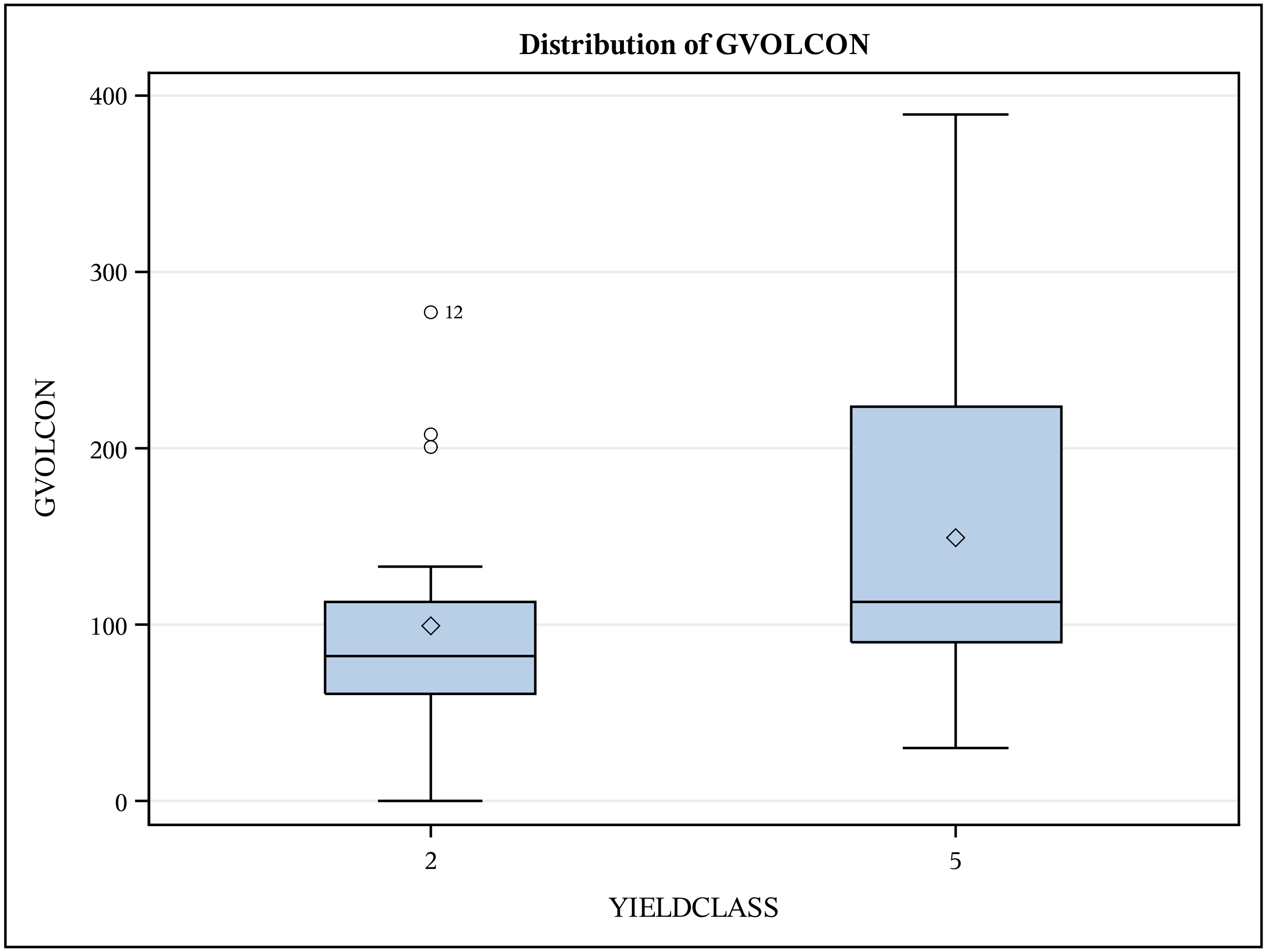
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	30724.6264	30724.6264	4.53	0.0384
Error	48	325223.7955	6775.4957		
Corrected Total	49	355948.4220			

R-Square	Coeff Var	Root MSE	GVOLCON Mean
0.086318	64.21799	82.31340	128.1781

Source	DF	Anova SS	Mean Square	F Value	Pr > F
YIELDCLASS	1	30724.62643	30724.62643	4.53	0.0384



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for GVOLCON

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	48
Error Mean Square	6775.496
Harmonic Mean of Cell Sizes	24.36

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	47.42

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	YIELDCLASS
A	149.27	29	5
B	99.05	21	2

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
YIELDCLASS	2	2 5

Number of Observations Read	50
Number of Observations Used	50

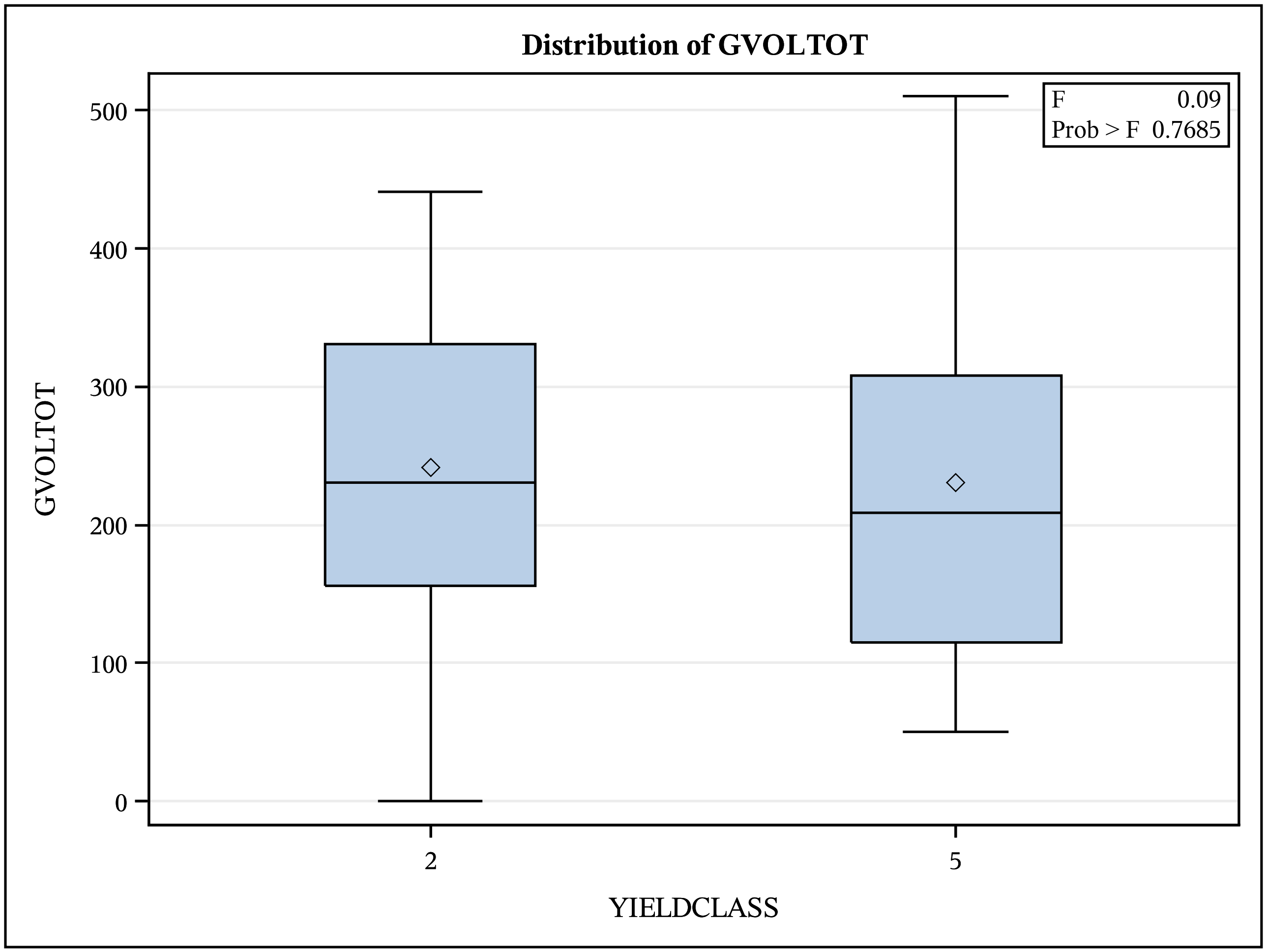
The ANOVA Procedure

Dependent Variable: GVOLTOT GVOLTOT

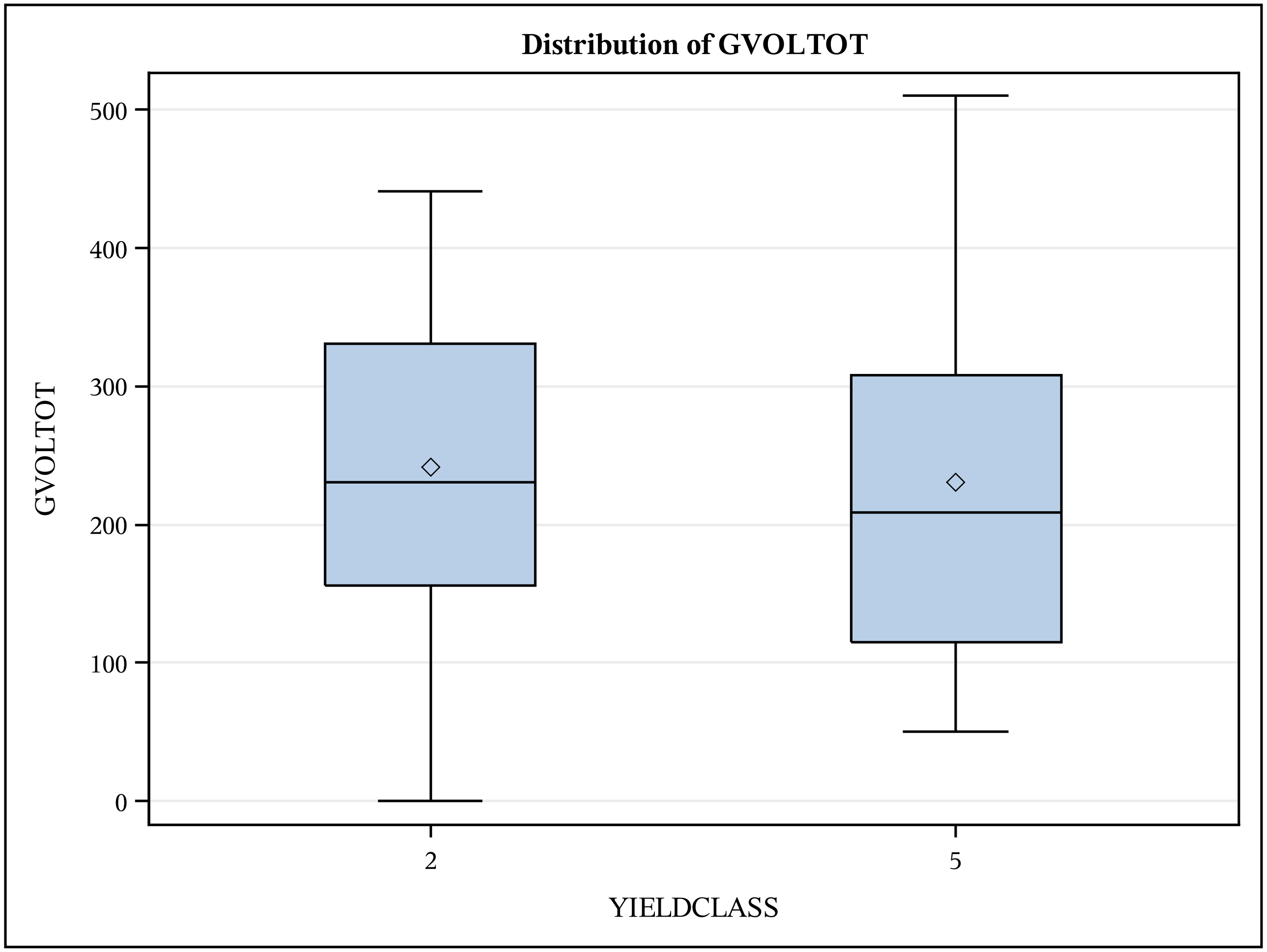
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1334.4971	1334.4971	0.09	0.7685
Error	48	731371.5903	15236.9081		
Corrected Total	49	732706.0874			

R-Square	Coeff Var	Root MSE	GVOLTOT Mean
0.001821	52.49965	123.4379	235.1213

Source	DF	Anova SS	Mean Square	F Value	Pr > F
YIELDCLASS	1	1334.497074	1334.497074	0.09	0.7685



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for GVOLTOT

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	48
Error Mean Square	15236.91
Harmonic Mean of Cell Sizes	24.36

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	71.11

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	YIELDCLASS
A	241.19	21	2
A			
A	230.73	29	5

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	6
R	2.263E-6
PPC(B0)	0.000018
RPC(C0)	0.000966
Object	1.18E-8
Objective	847119.3
Observations Read	165
Observations Used	165
Observations Missing	0

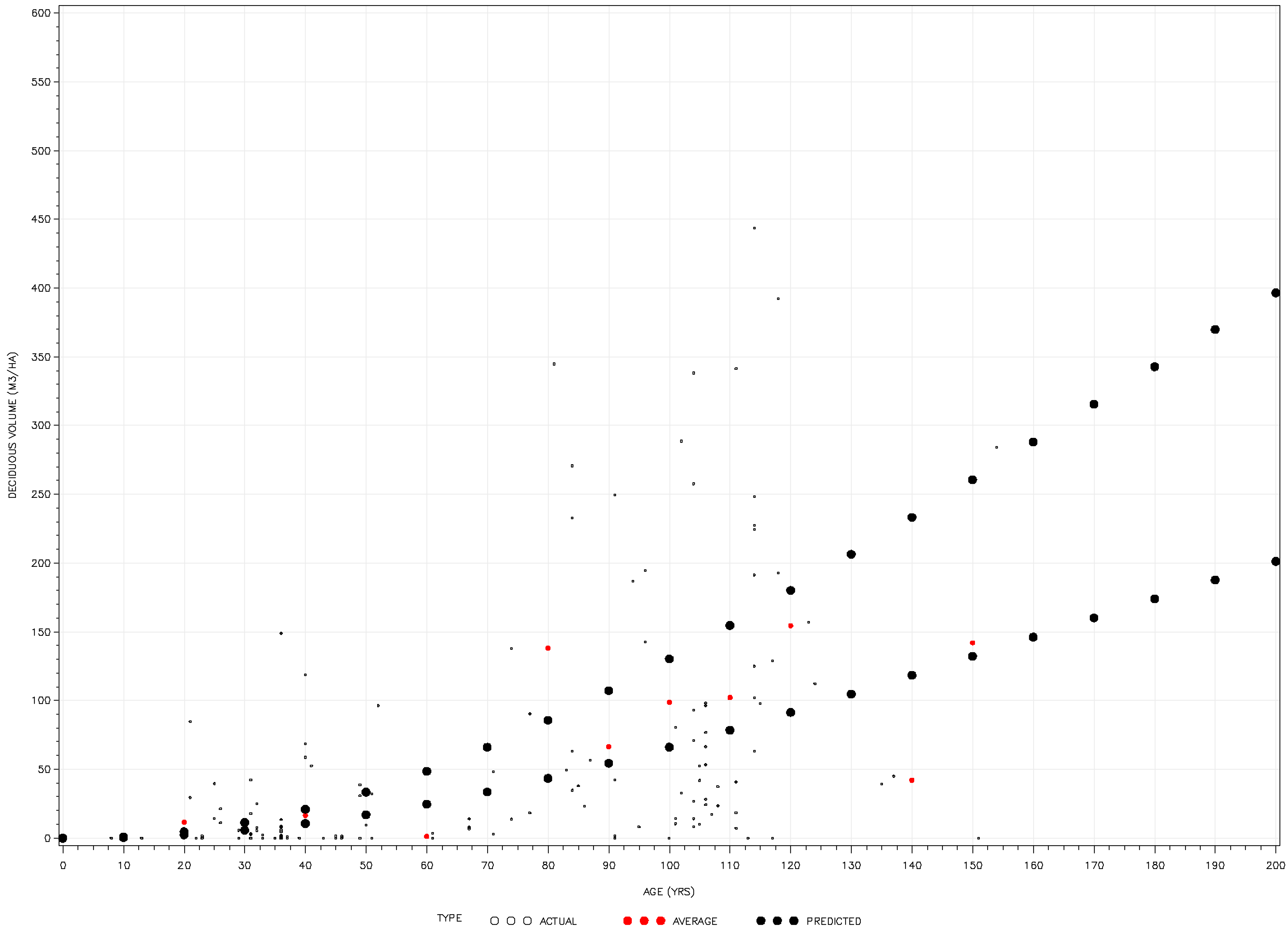
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	886248	295416	56.49	<.0001
Error	162	847119	5229.1		
Uncorrected Total	165	1733367			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00494	0.00370	-0.00238	0.0123
B1	2.3180	0.0800	2.1600	2.4759
C0	-0.00243	0.00177	-0.00593	0.00107

Approximate Correlation Matrix			
	B0	B1	C0
B0	1.0000000	-0.9698545	-0.9698326
B1	-0.9698545	1.0000000	0.9088437
C0	-0.9698326	0.9088437	1.0000000

COMPARISON ON HW/PL AND PL/HW



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	6
R	3.145E-6
PPC(C0)	0.000013
RPC(C0)	0.000108
Object	3.08E-10
Objective	606264.8
Observations Read	165
Observations Used	165
Observations Missing	0

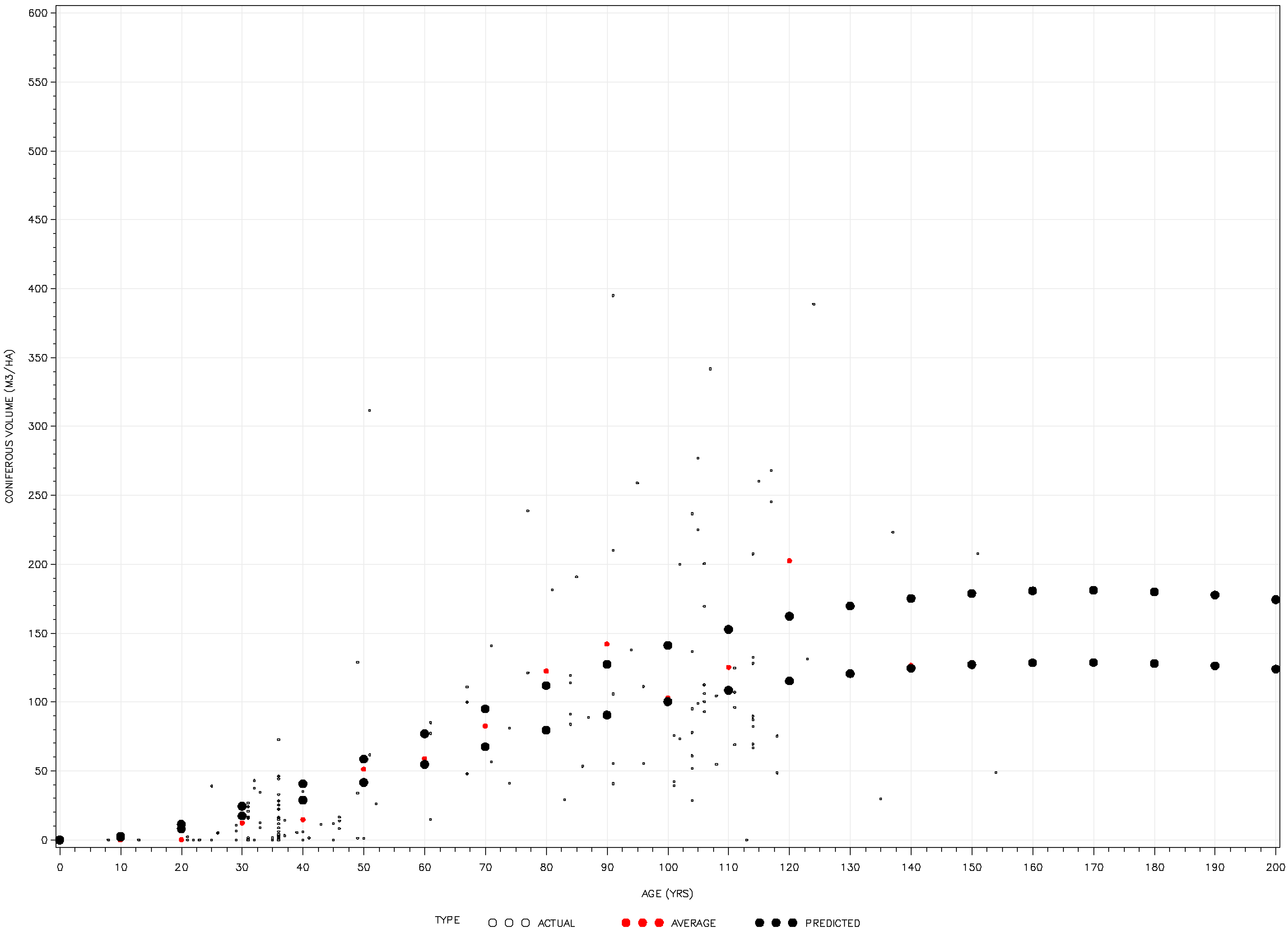
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	1298613	432871	115.67	<.0001
Error	162	606265	3742.4		
Uncorrected Total	165	1904878			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0133	0.00246	0.00847	0.0182
B1	2.2278	0.0268	2.1748	2.2807
C0	0.00542	0.00246	0.000549	0.0103

Approximate Correlation Matrix			
	B0	B1	C0
B0	1.0000000	0.5739705	0.4198405
B1	0.5739705	1.0000000	-0.3895692
C0	0.4198405	-0.3895692	1.0000000

COMPARISON ON HW/PL AND PL/HW



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	7
R	1.69E-6
PPC(B0)	3.746E-6
RPC(B0)	0.000042
Object	3.2E-10
Objective	1275167
Observations Read	165
Observations Used	165
Observations Missing	0

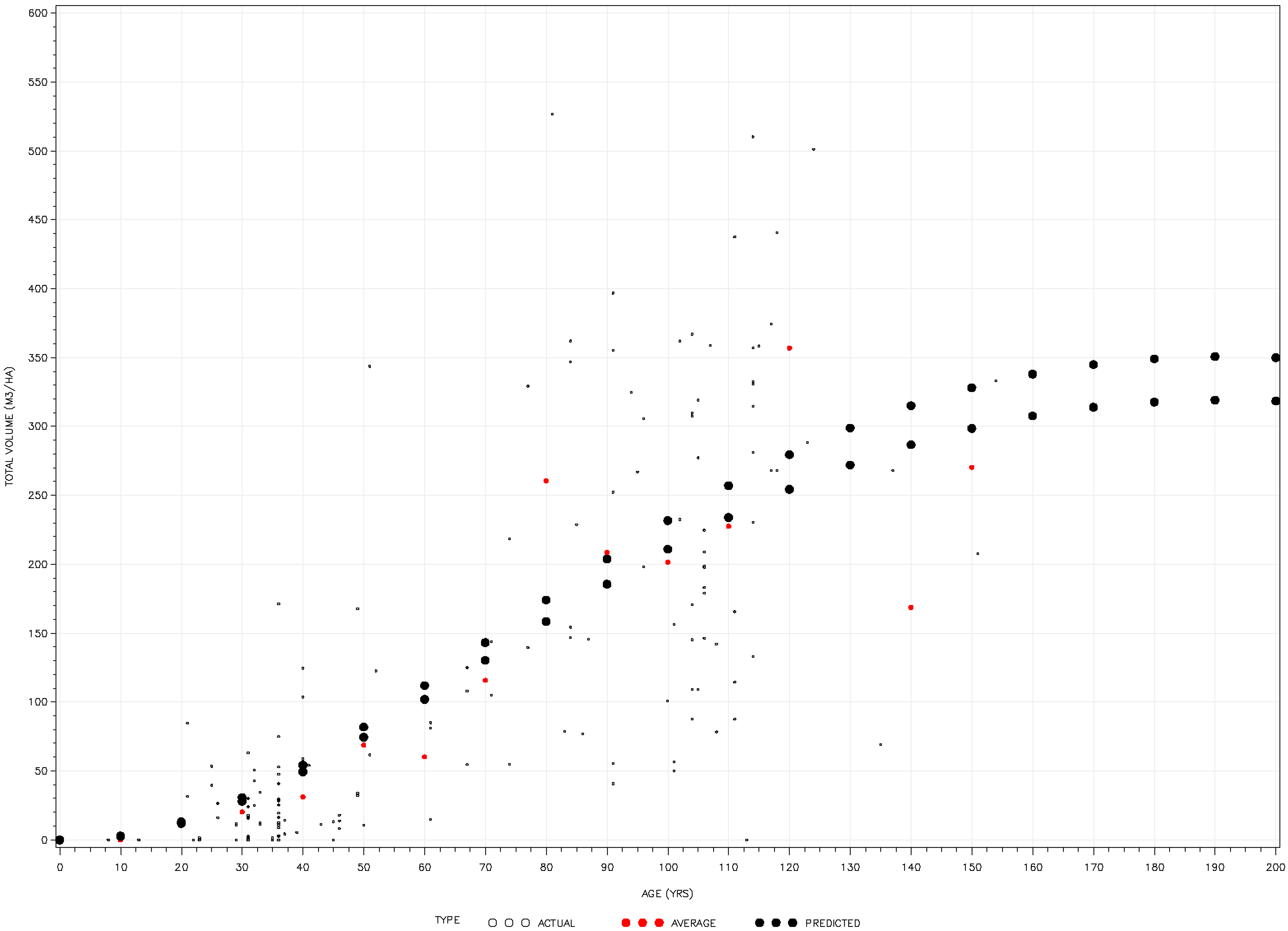
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	4073351	1357784	172.50	<.0001
Error	162	1275167	7871.4		
Uncorrected Total	165	5348518			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0126	0.00225	0.00812	0.0170
B1	2.4058	0.0180	2.3703	2.4413
C0	-0.00113	0.00101	-0.00313	0.000872

Approximate Correlation Matrix			
	B0	B1	C0
B0	1.0000000	0.6392237	-0.0838345
B1	0.6392237	1.0000000	-0.6106589
C0	-0.0838345	-0.6106589	1.0000000

COMPARISON ON HW/PL AND PL/HW



The ANOVA Procedure

Class Level Information		
Class	Levels	Values
YIELDCLASS	2	3 4

Number of Observations Read	39
Number of Observations Used	39

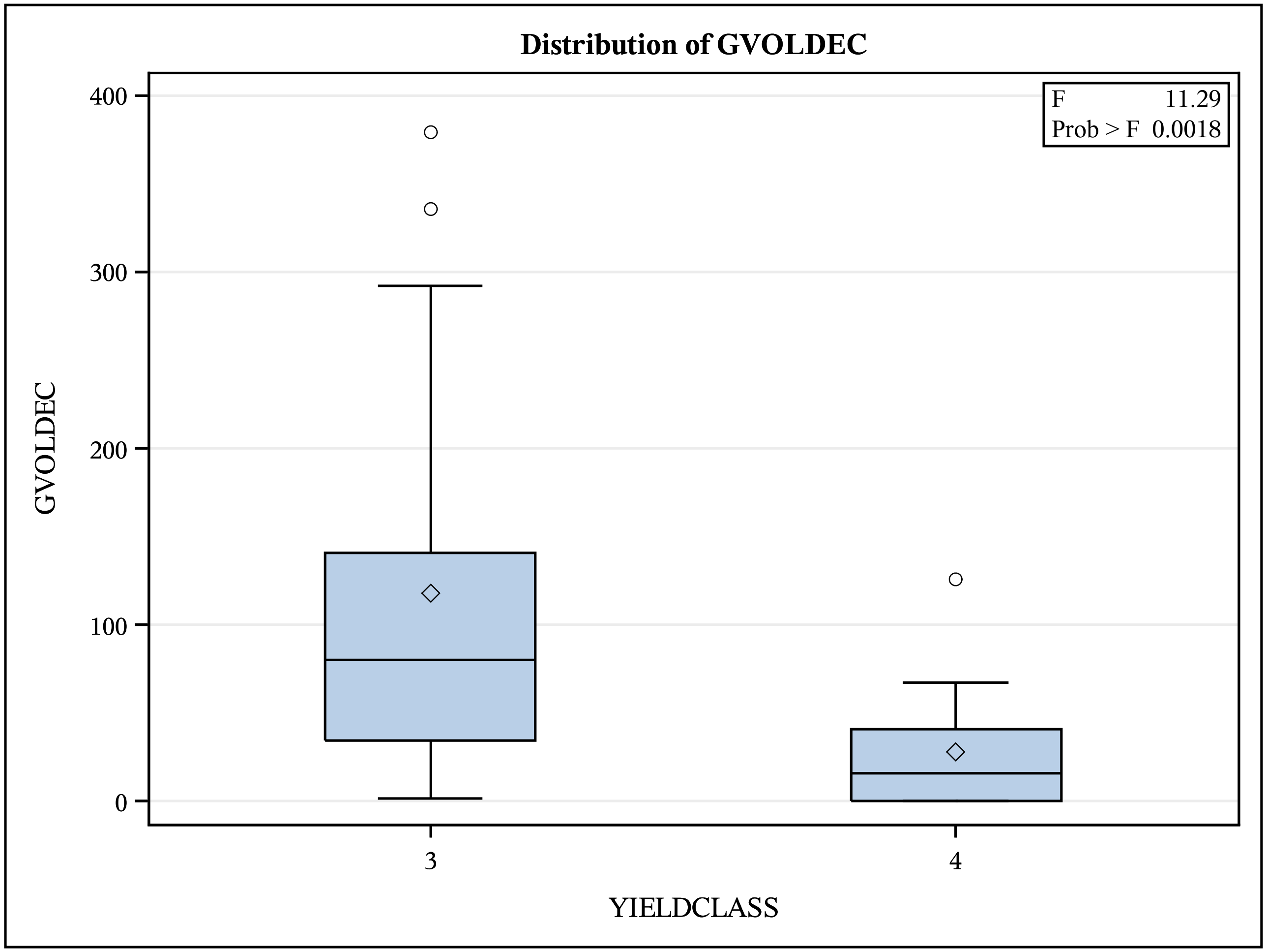
The ANOVA Procedure

Dependent Variable: GVOLDEC GVOLDEC

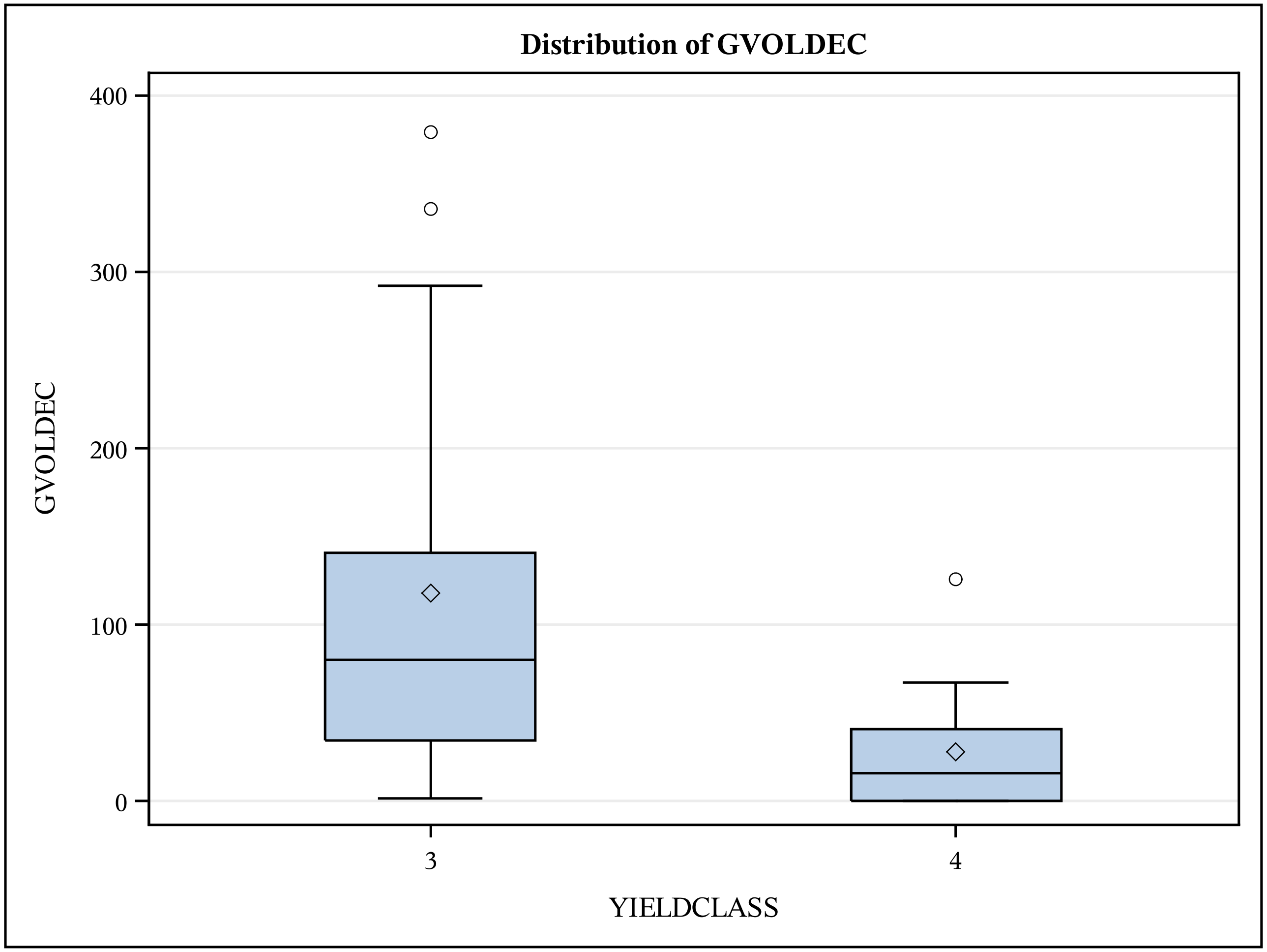
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	77542.0832	77542.0832	11.29	0.0018
Error	37	254183.8733	6869.8344		
Corrected Total	38	331725.9565			

R-Square	Coeff Var	Root MSE	GVOLDEC Mean
0.233753	104.9978	82.88446	78.93921

Source	DF	Anova SS	Mean Square	F Value	Pr > F
YIELDCLASS	1	77542.08318	77542.08318	11.29	0.0018



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for GVOLDEC

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	37
Error Mean Square	6869.834
Harmonic Mean of Cell Sizes	19.17949

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	54.23

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	YIELDCLASS
A	118.14	22	3
B	28.21	17	4

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
YIELDCLASS	2	3 4

Number of Observations Read	39
Number of Observations Used	39

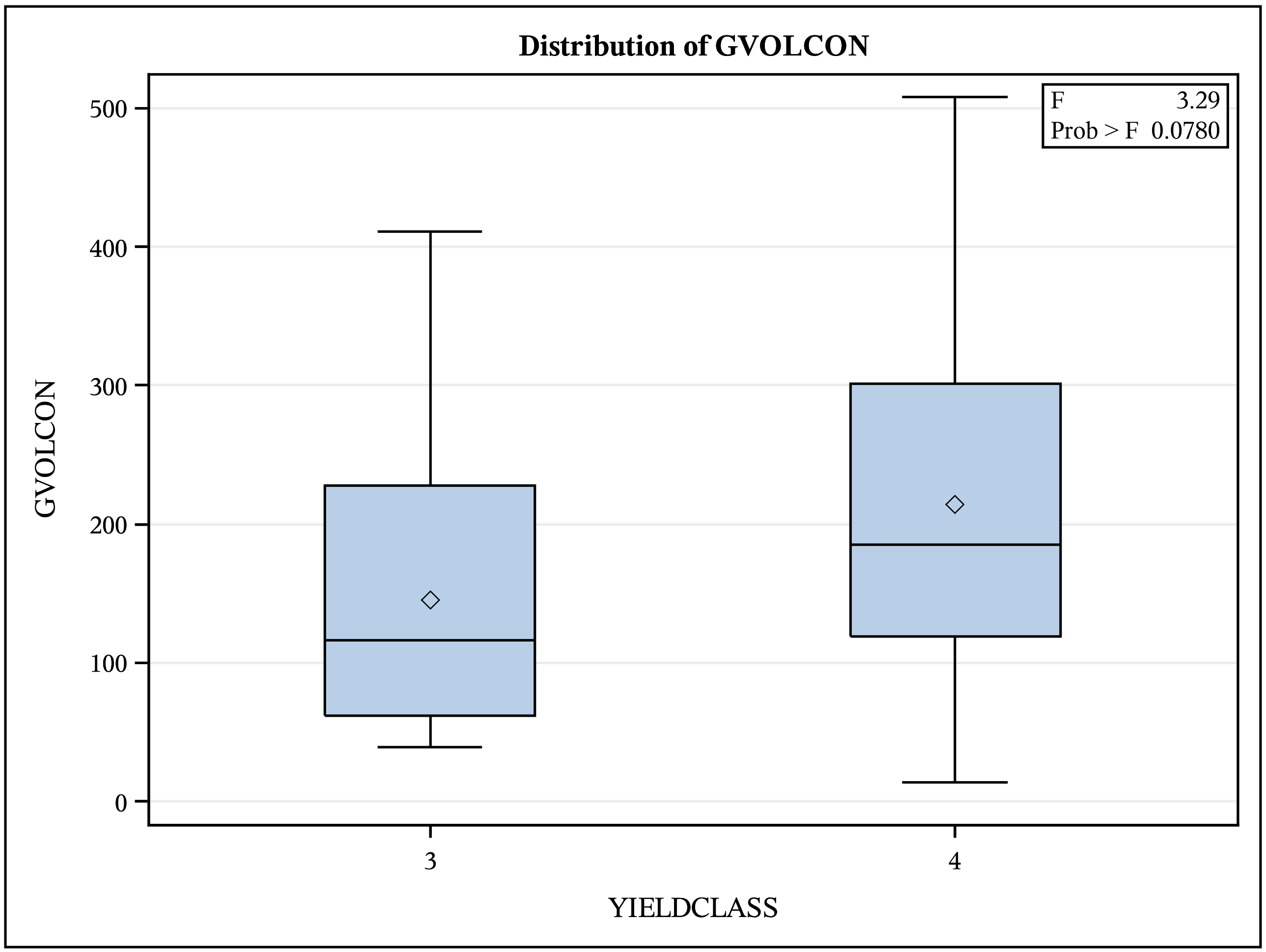
The ANOVA Procedure

Dependent Variable: GVOLCON GVOLCON

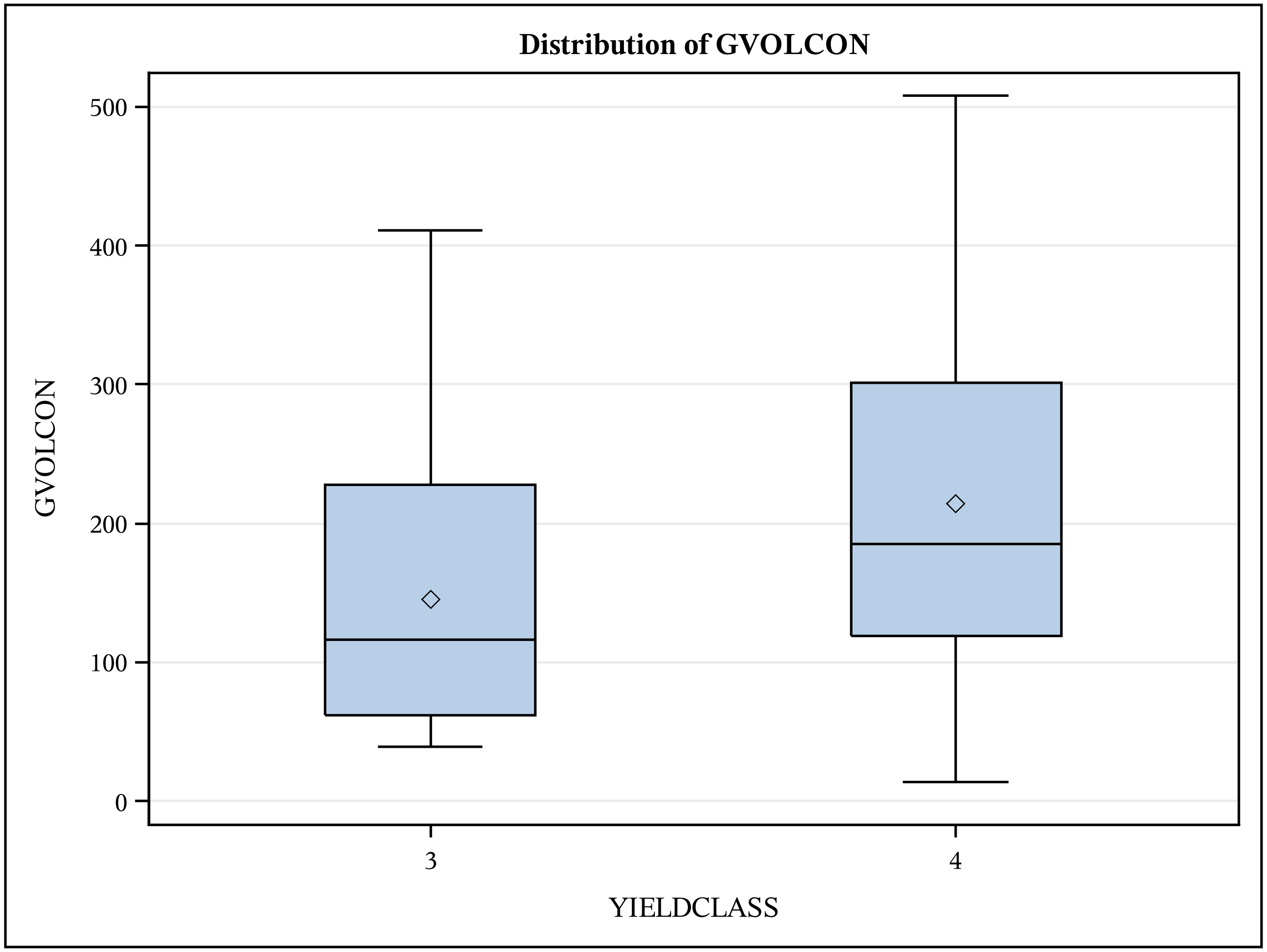
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	45603.8810	45603.8810	3.29	0.0780
Error	37	513508.0446	13878.5958		
Corrected Total	38	559111.9256			

R-Square	Coeff Var	Root MSE	GVOLCON Mean
0.081565	67.09954	117.8075	175.5712

Source	DF	Anova SS	Mean Square	F Value	Pr > F
YIELDCLASS	1	45603.88102	45603.88102	3.29	0.0780



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for GVOLCON

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	37
Error Mean Square	13878.6
Harmonic Mean of Cell Sizes	19.17949

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	77.08

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	YIELDCLASS
A	214.47	17	4
A			
A	145.51	22	3

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
YIELDCLASS	2	3 4

Number of Observations Read	39
Number of Observations Used	39

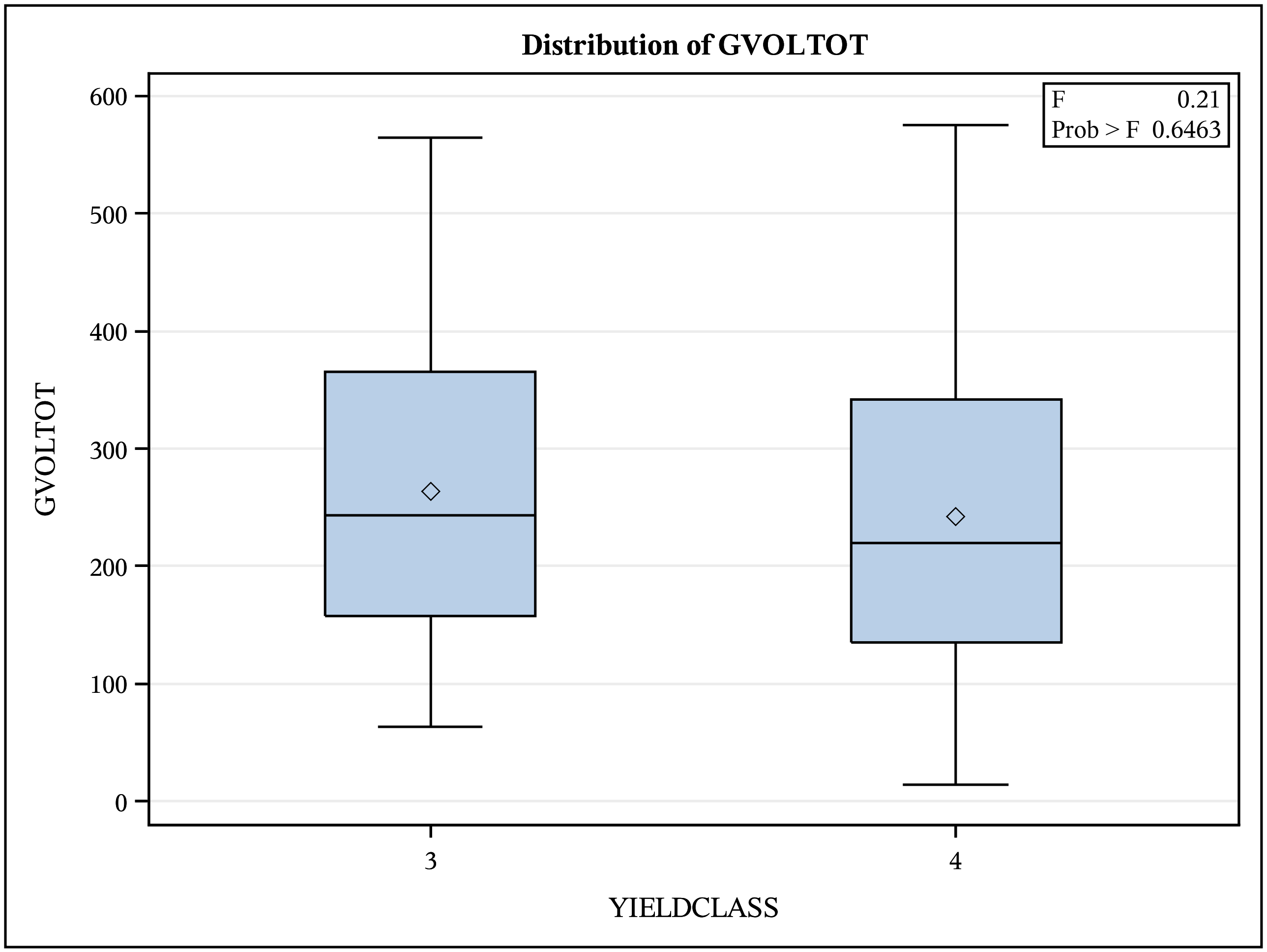
The ANOVA Procedure

Dependent Variable: GVOLTOT GVOLTOT

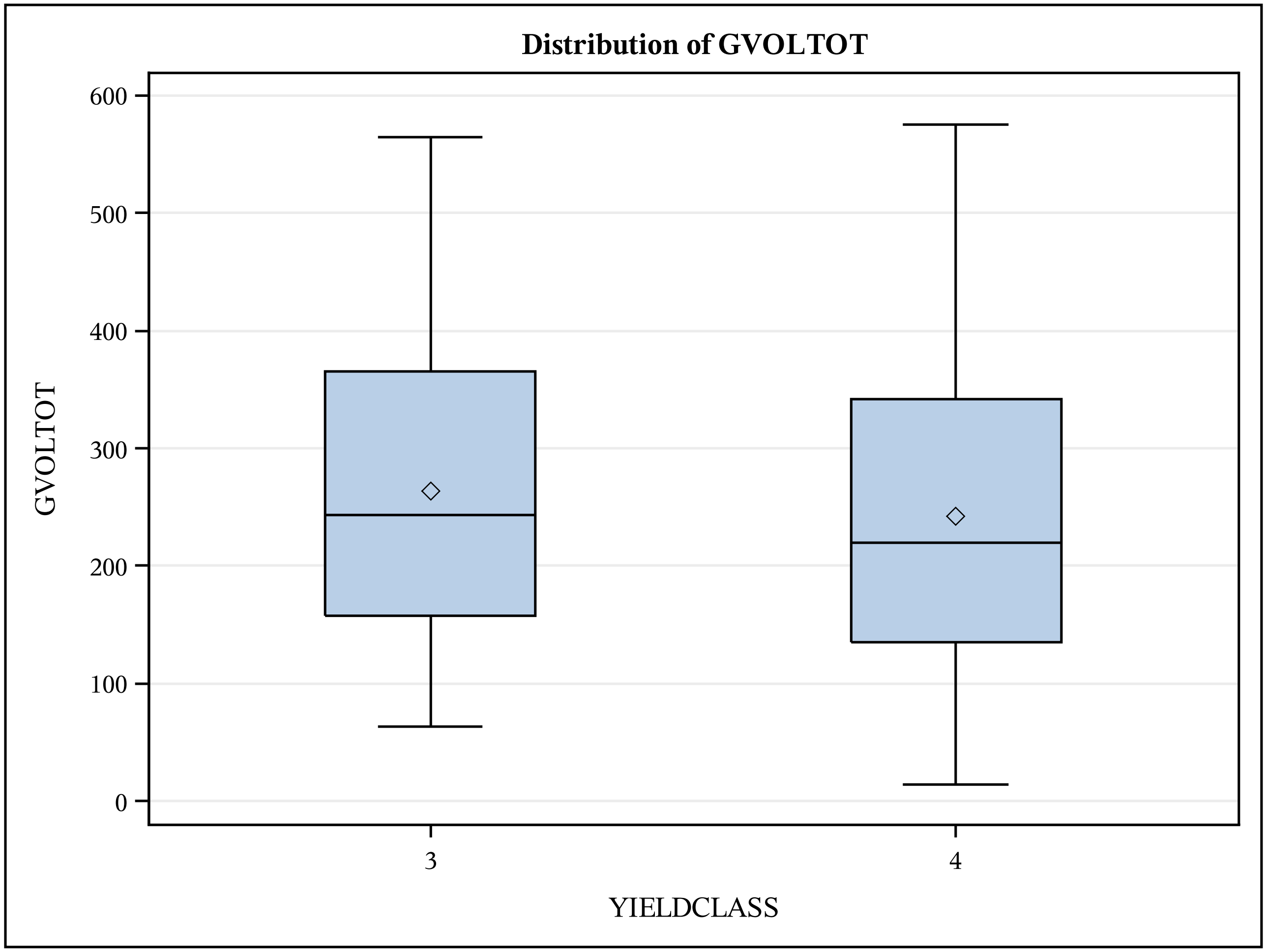
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	4213.7157	4213.7157	0.21	0.6463
Error	37	728245.1876	19682.3024		
Corrected Total	38	732458.9033			

R-Square	Coeff Var	Root MSE	GVOLTOT Mean
0.005753	55.12295	140.2936	254.5104

Source	DF	Anova SS	Mean Square	F Value	Pr > F
YIELDCLASS	1	4213.715667	4213.715667	0.21	0.6463



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for GVOLTOT

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	37
Error Mean Square	19682.3
Harmonic Mean of Cell Sizes	19.17949

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	91.79

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	YIELDCLASS
A	263.65	22	3
A			
A	242.69	17	4

The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	8
R	3.66E-6
PPC(C0)	0.000011
RPC(C0)	0.00007
Object	4.34E-10
Objective	424231.1
Observations Read	109
Observations Used	109
Observations Missing	0

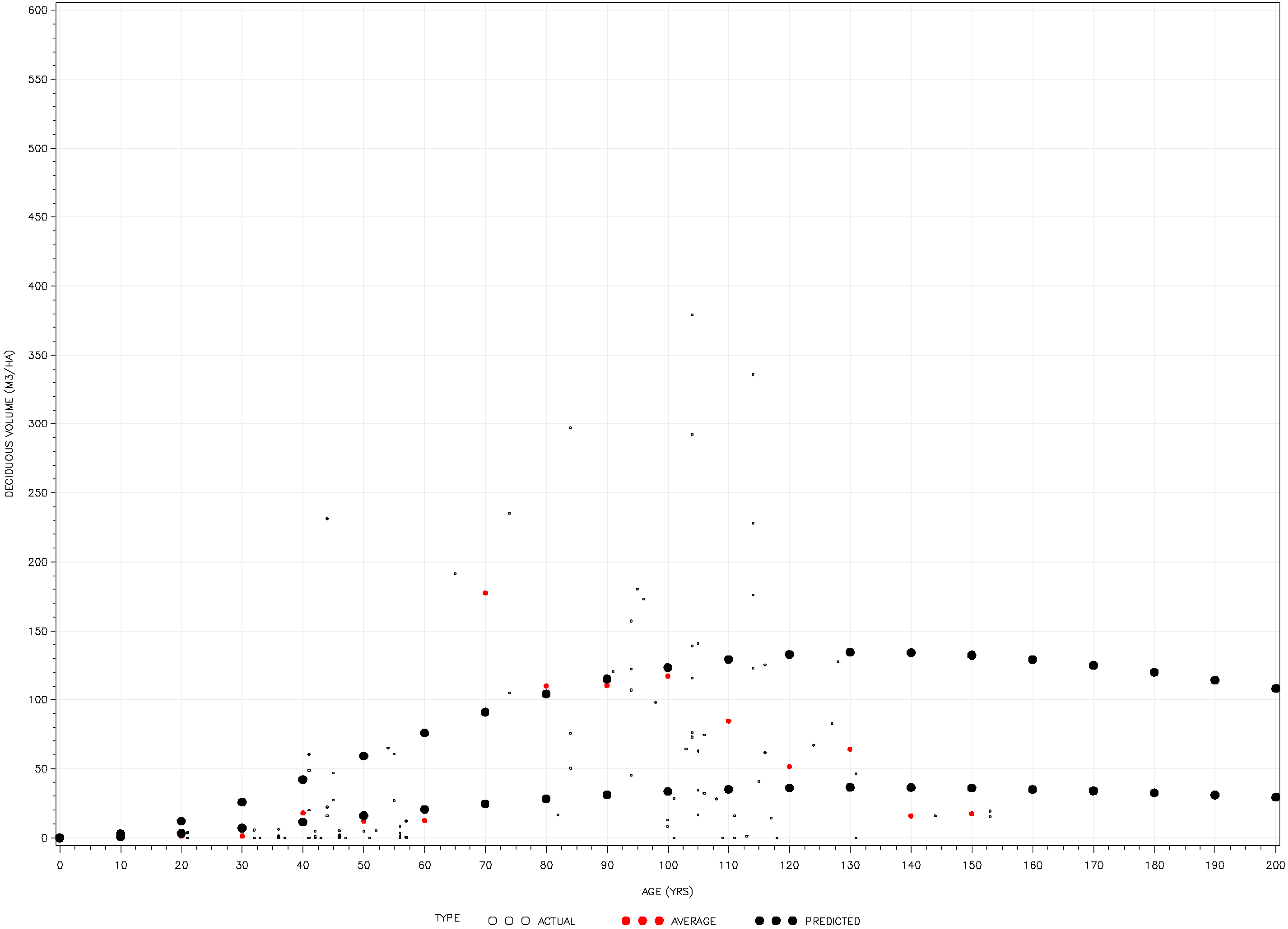
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	563517	187839	46.93	<.0001
Error	106	424231	4002.2		
Uncorrected Total	109	987748			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0173	0.00485	0.00766	0.0269
B1	2.3022	0.0489	2.2053	2.3991
C0	-0.0126	0.00389	-0.0203	-0.00486

Approximate Correlation Matrix			
	B0	B1	C0
B0	1.0000000	0.9221837	-0.8989168
B1	0.9221837	1.0000000	-0.8691752
C0	-0.8989168	-0.8691752	1.0000000

COMPARISON ON HW/SW AND SW/HW



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	8
R	7.305E-6
PPC(C0)	0.000052
RPC(C0)	0.000164
Object	3.6E-10
Objective	687087
Observations Read	109
Observations Used	109
Observations Missing	0

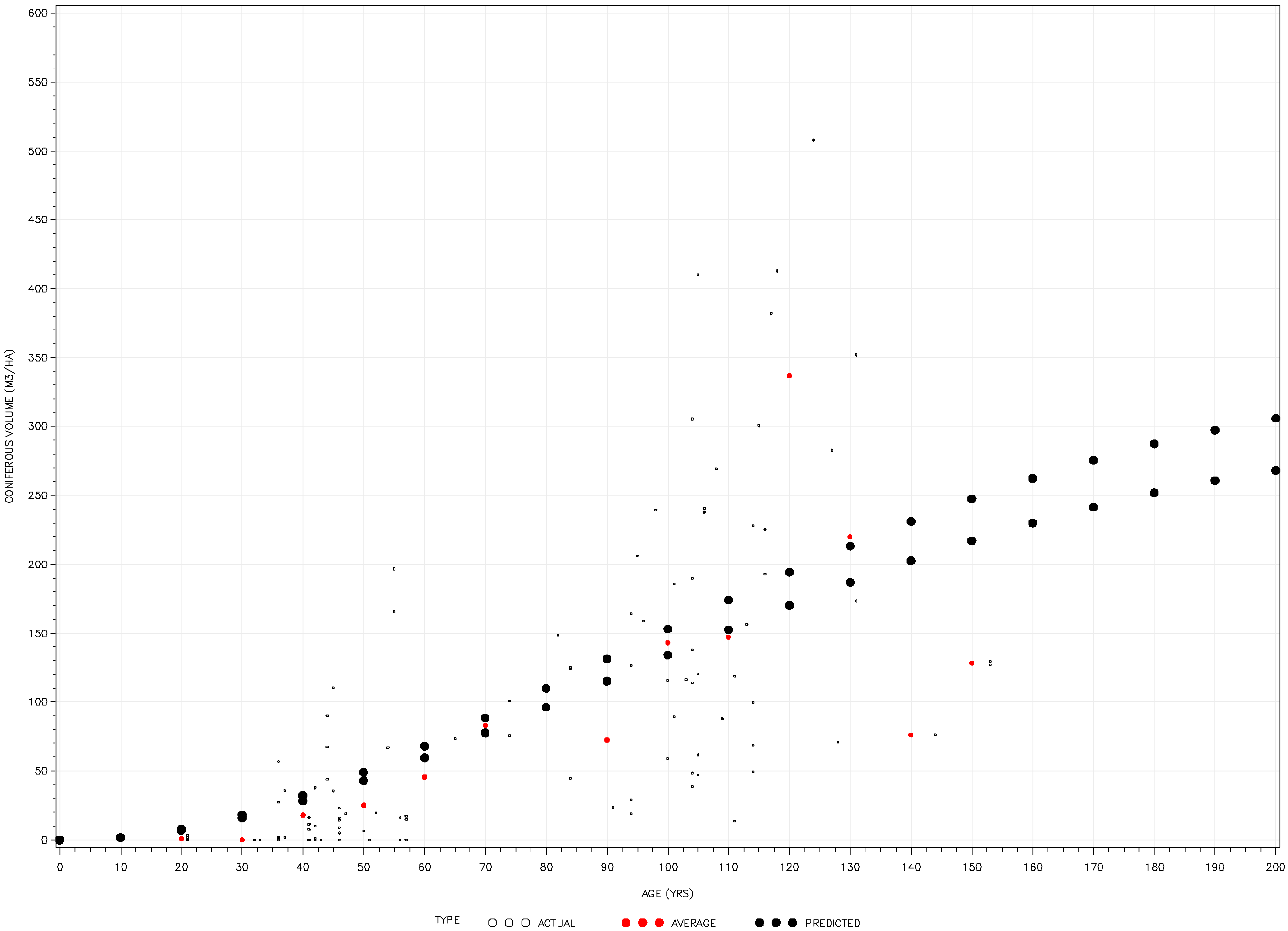
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	1429352	476451	73.50	<.0001
Error	106	687087	6482.0		
Uncorrected Total	109	2116439			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.00889	0.00291	0.00312	0.0147
B1	2.2824	0.0218	2.2392	2.3257
C0	0.00125	0.00155	-0.00183	0.00433

Approximate Correlation Matrix			
	B0	B1	C0
B0	1.0000000	-0.1667882	0.4570296
B1	-0.1667882	1.0000000	-0.7299271
C0	0.4570296	-0.7299271	1.0000000

COMPARISON ON HW/SW AND SW/HW



The NLIN Procedure

NOTE: Convergence criterion met.

Estimation Summary	
Method	Gauss-Newton
Iterations	9
Subiterations	1
Average Subiterations	0.111111
R	5.738E-6
PPC(B0)	0.000012
RPC(B0)	0.000051
Object	4.4E-10
Objective	1112058
Observations Read	109
Observations Used	109
Observations Missing	0

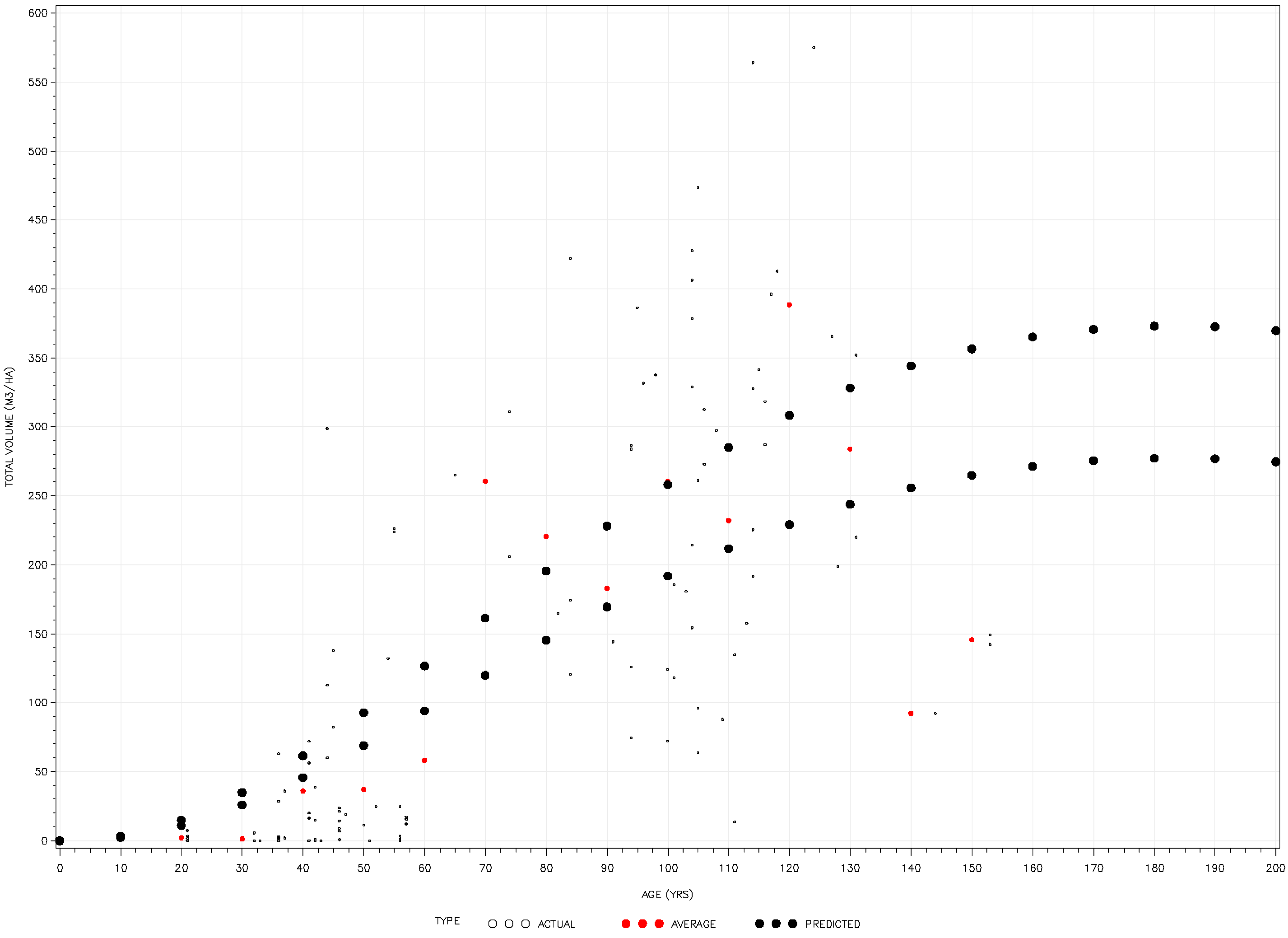
Note: An intercept was not specified for this model.

Source	DF	Sum of Squares	Mean Square	F Value	Approx Pr > F
Model	3	3456749	1152250	109.83	<.0001
Error	106	1112058	10491.1		
Uncorrected Total	109	4568807			

Parameter	Estimate	Approx Std Error	Approximate 95% Confidence Limits	
B0	0.0133	0.00282	0.00768	0.0189
B1	2.4327	0.0228	2.3875	2.4779
C0	-0.00341	0.00127	-0.00593	-0.00089

Approximate Correlation Matrix			
	B0	B1	C0
B0	1.0000000	0.7734566	-0.4017235
B1	0.7734566	1.0000000	-0.6428239
C0	-0.4017235	-0.6428239	1.0000000

COMPARISON ON HW/SW AND SW/HW



The ANOVA Procedure

Class Level Information		
Class	Levels	Values
STRATA	2	HwSx SwHw

Number of Observations Read	55
Number of Observations Used	55

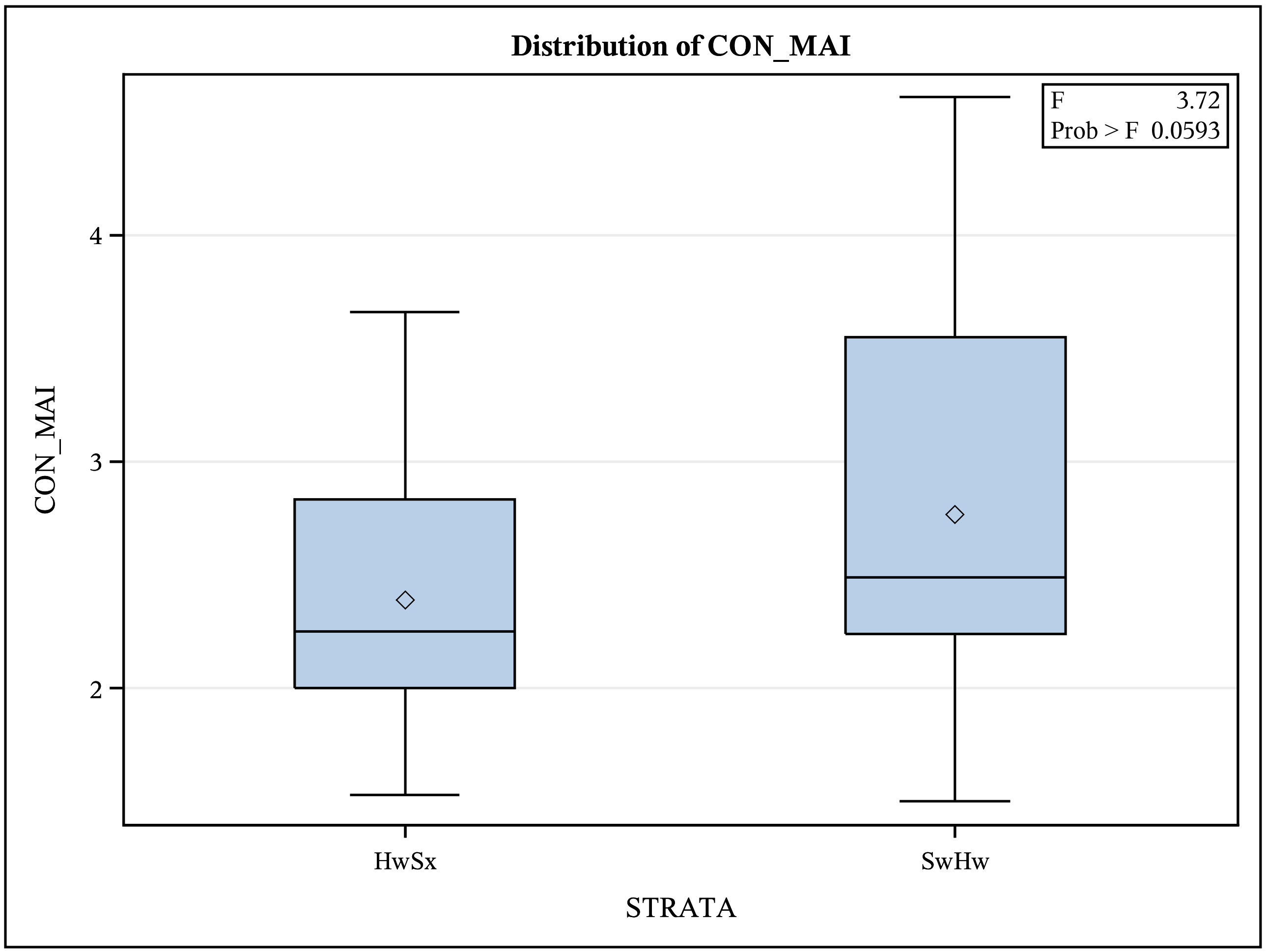
The ANOVA Procedure

Dependent Variable: CON_MAI CON_MAI

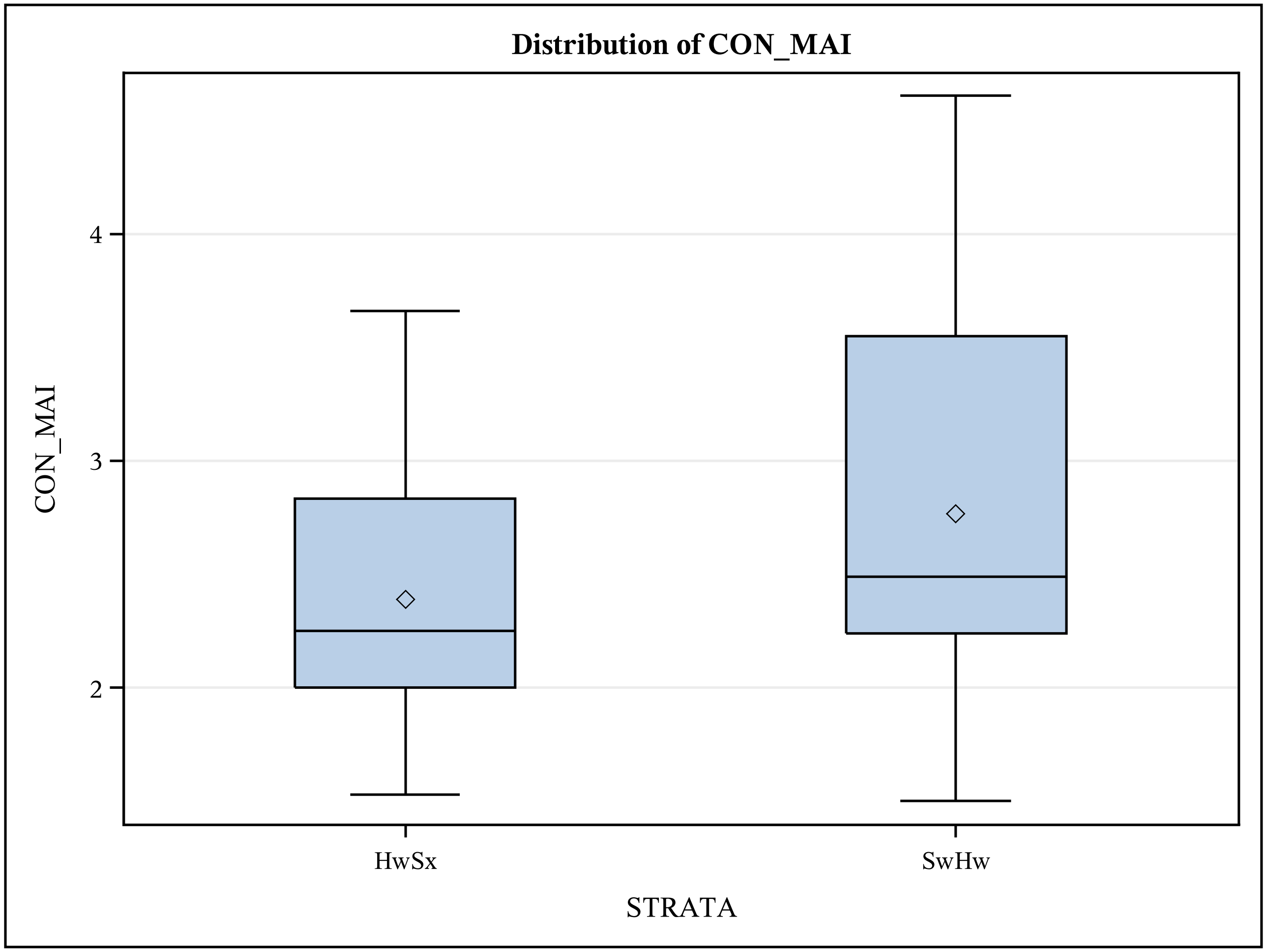
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1.88051711	1.88051711	3.72	0.0593
Error	53	26.82170108	0.50606983		
Corrected Total	54	28.70221818			

R-Square	Coeff Var	Root MSE	CON_MAI Mean
0.065518	27.34187	0.711386	2.601818

Source	DF	Anova SS	Mean Square	F Value	Pr > F
STRATA	1	1.88051711	1.88051711	3.72	0.0593



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for CON_MAI

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	53
Error Mean Square	0.50607
Harmonic Mean of Cell Sizes	27.05455

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	.3879

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	STRATA
A	2.7645	31	SwHw
A			
A	2.3917	24	HwSx

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
STRATA	2	HwSx SwHw

Number of Observations Read	55
Number of Observations Used	55

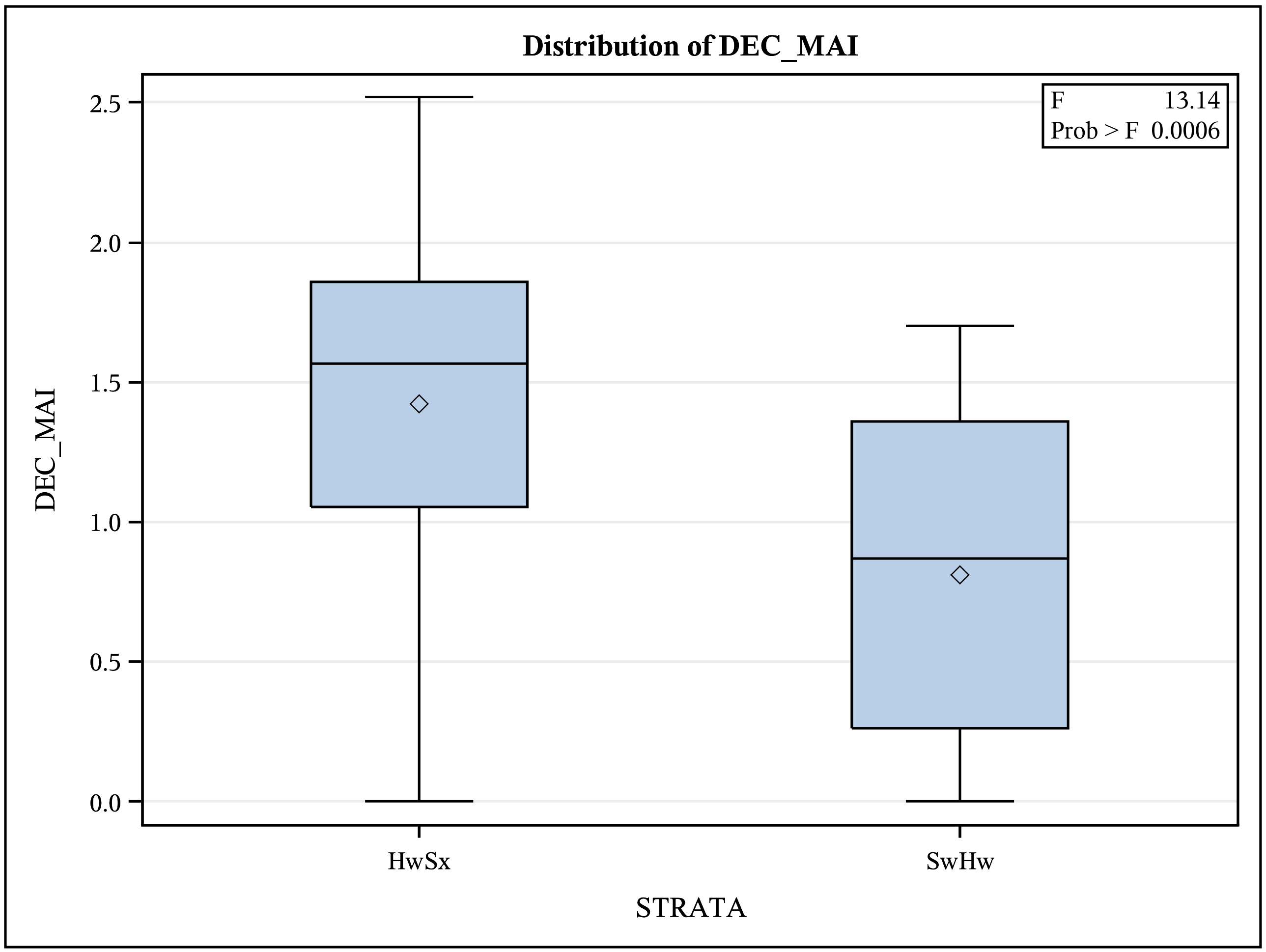
The ANOVA Procedure

Dependent Variable: DEC_MAI DEC_MAI

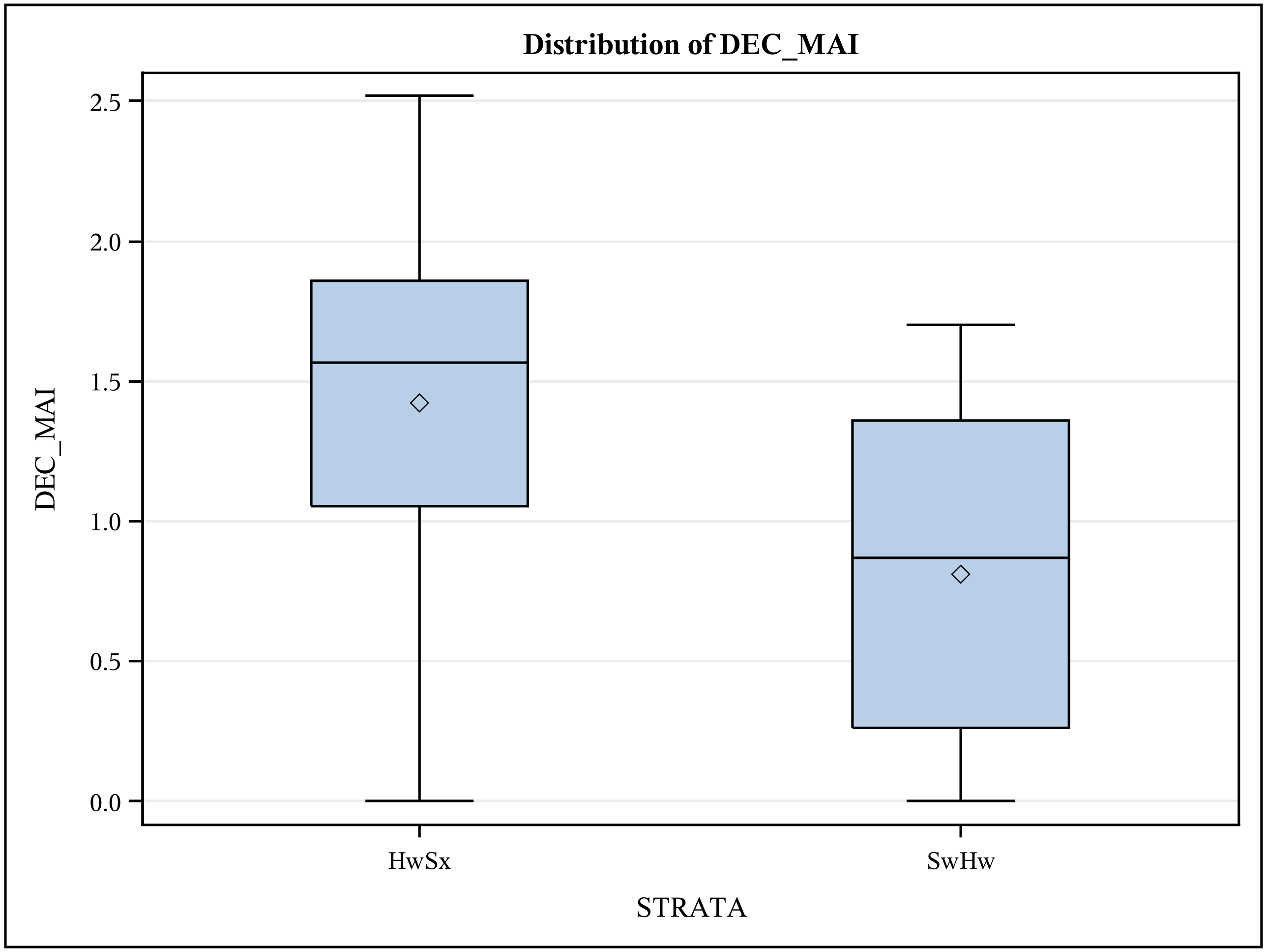
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	5.07951926	5.07951926	13.14	0.0006
Error	53	20.48683347	0.38654403		
Corrected Total	54	25.56635273			

R-Square	Coeff Var	Root MSE	DEC_MAI Mean
0.198680	57.65464	0.621727	1.078364

Source	DF	Anova SS	Mean Square	F Value	Pr > F
STRATA	1	5.07951926	5.07951926	13.14	0.0006



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for DEC_MAI

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	53
Error Mean Square	0.386544
Harmonic Mean of Cell Sizes	27.05455

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	.3390

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	STRATA
A	1.4238	24	HwSx
B	0.8110	31	SwHw

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
STRATA	2	HwSx SwHw

Number of Observations Read	55
Number of Observations Used	55

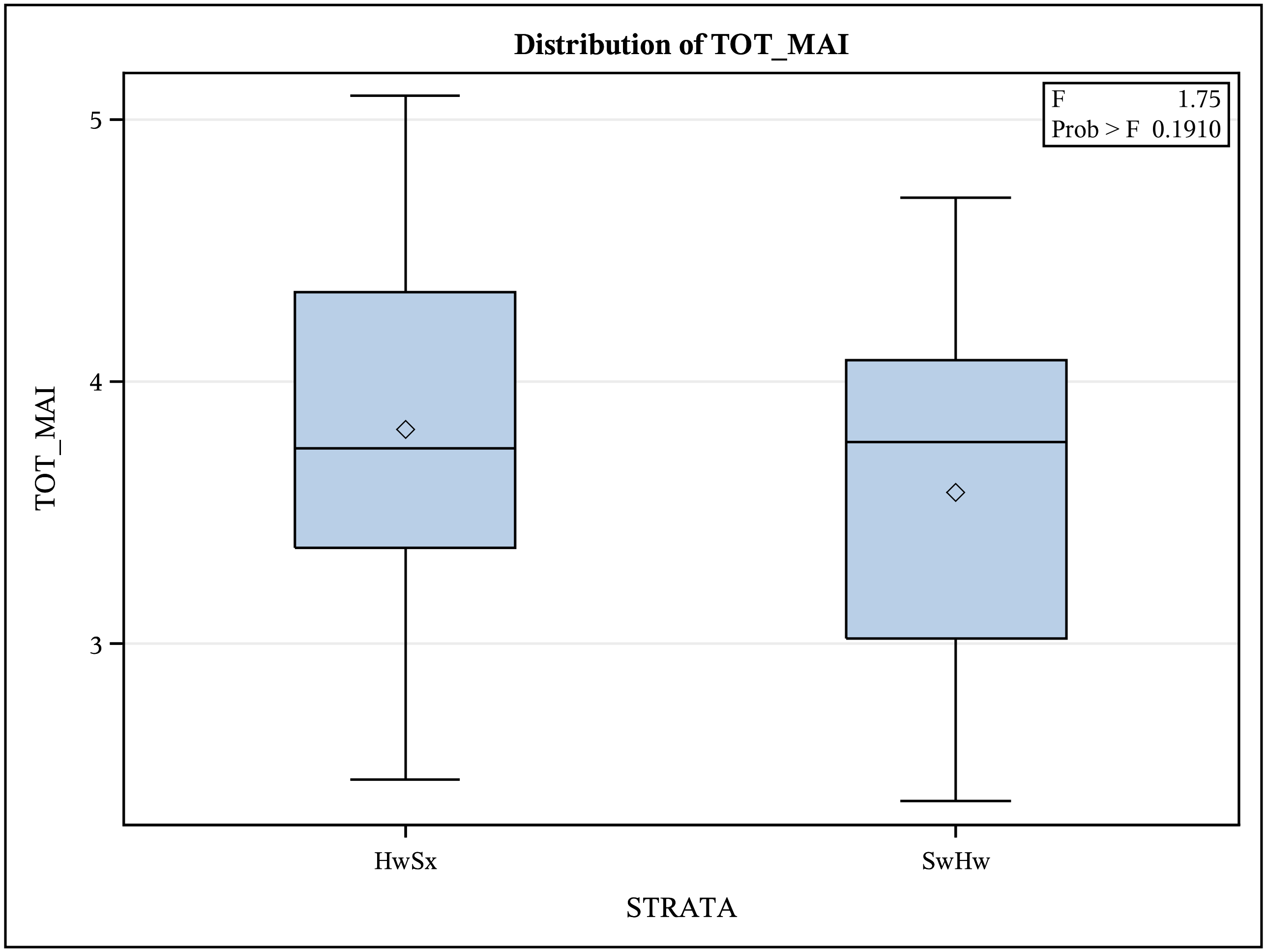
The ANOVA Procedure

Dependent Variable: TOT_MAI TOT_MAI

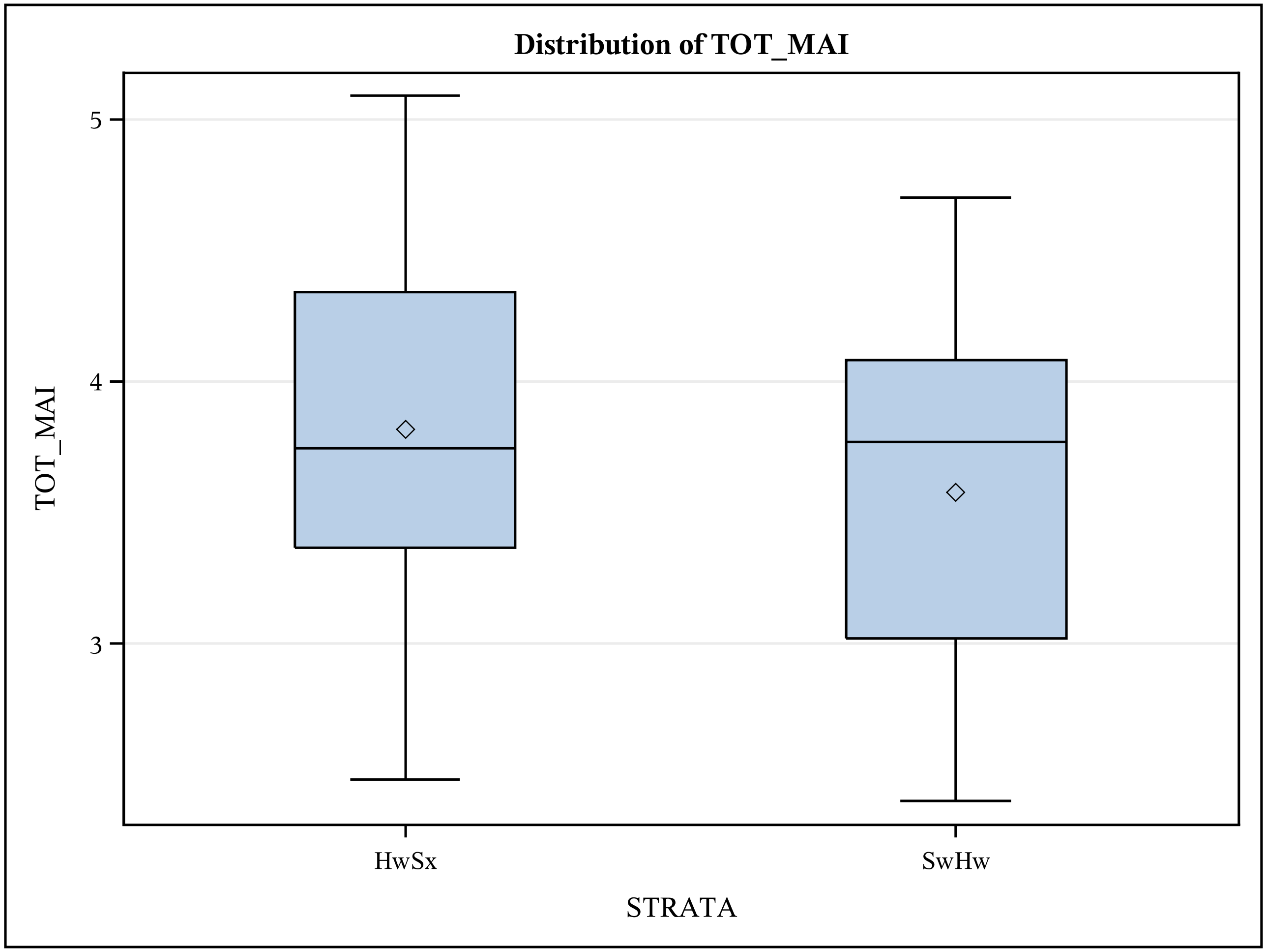
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	0.77873461	0.77873461	1.75	0.1910
Error	53	23.52316358	0.44383328		
Corrected Total	54	24.30189818			

R-Square	Coeff Var	Root MSE	TOT_MAI Mean
0.032044	18.10259	0.666208	3.680182

Source	DF	Anova SS	Mean Square	F Value	Pr > F
STRATA	1	0.77873461	0.77873461	1.75	0.1910



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for TOT_MAI

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	53
Error Mean Square	0.443833
Harmonic Mean of Cell Sizes	27.05455

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	.3633

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	STRATA
A	3.8154	24	HwSx
A			
A	3.5755	31	SwHw

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
STRATA	2	HwPl PlHw

Number of Observations Read	52
Number of Observations Used	52

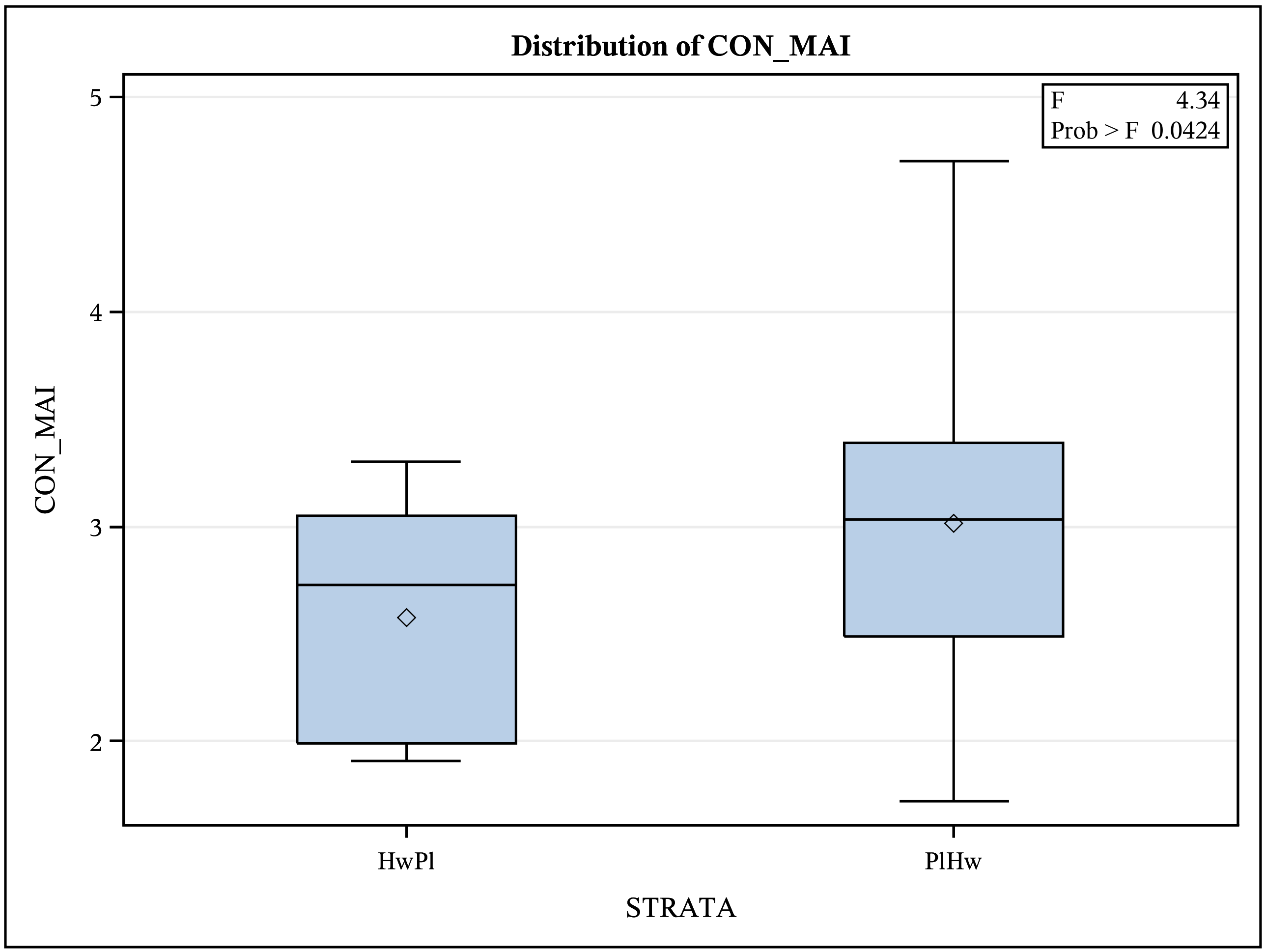
The ANOVA Procedure

Dependent Variable: CON_MAI CON_MAI

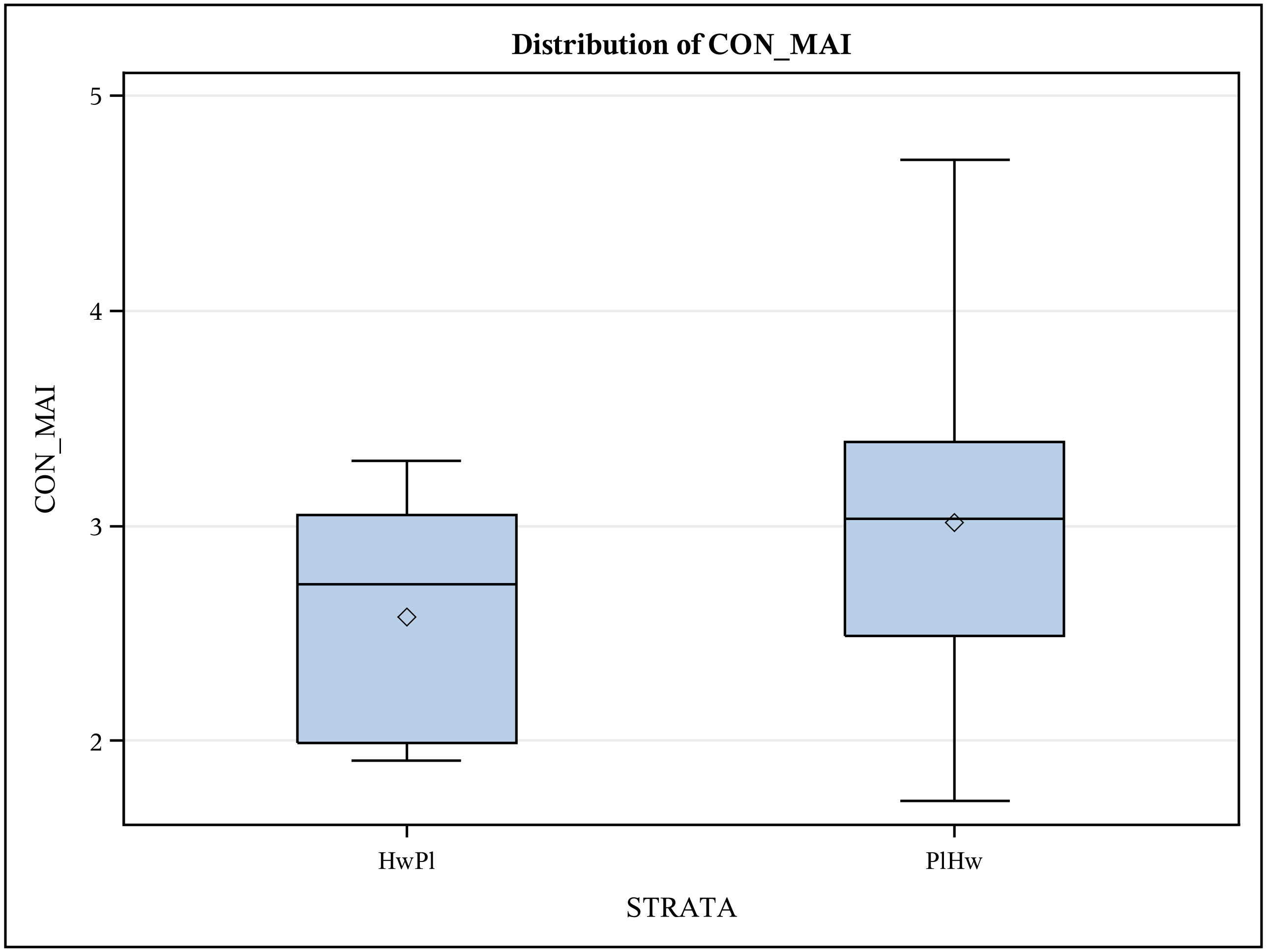
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1.78775391	1.78775391	4.34	0.0424
Error	50	20.61306917	0.41226138		
Corrected Total	51	22.40082308			

R-Square	Coeff Var	Root MSE	CON_MAI Mean
0.079808	22.04407	0.642076	2.912692

Source	DF	Anova SS	Mean Square	F Value	Pr > F
STRATA	1	1.78775391	1.78775391	4.34	0.0424



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for CON_MAI

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	50
Error Mean Square	0.412261
Harmonic Mean of Cell Sizes	18.46154

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	.4245

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	STRATA
A	3.0143	40	PlHw
B	2.5742	12	HwPl

The ANOVA Procedure

Class Level Information		
Class	Levels	Values
STRATA	2	HwPl PlHw

Number of Observations Read	52
Number of Observations Used	52

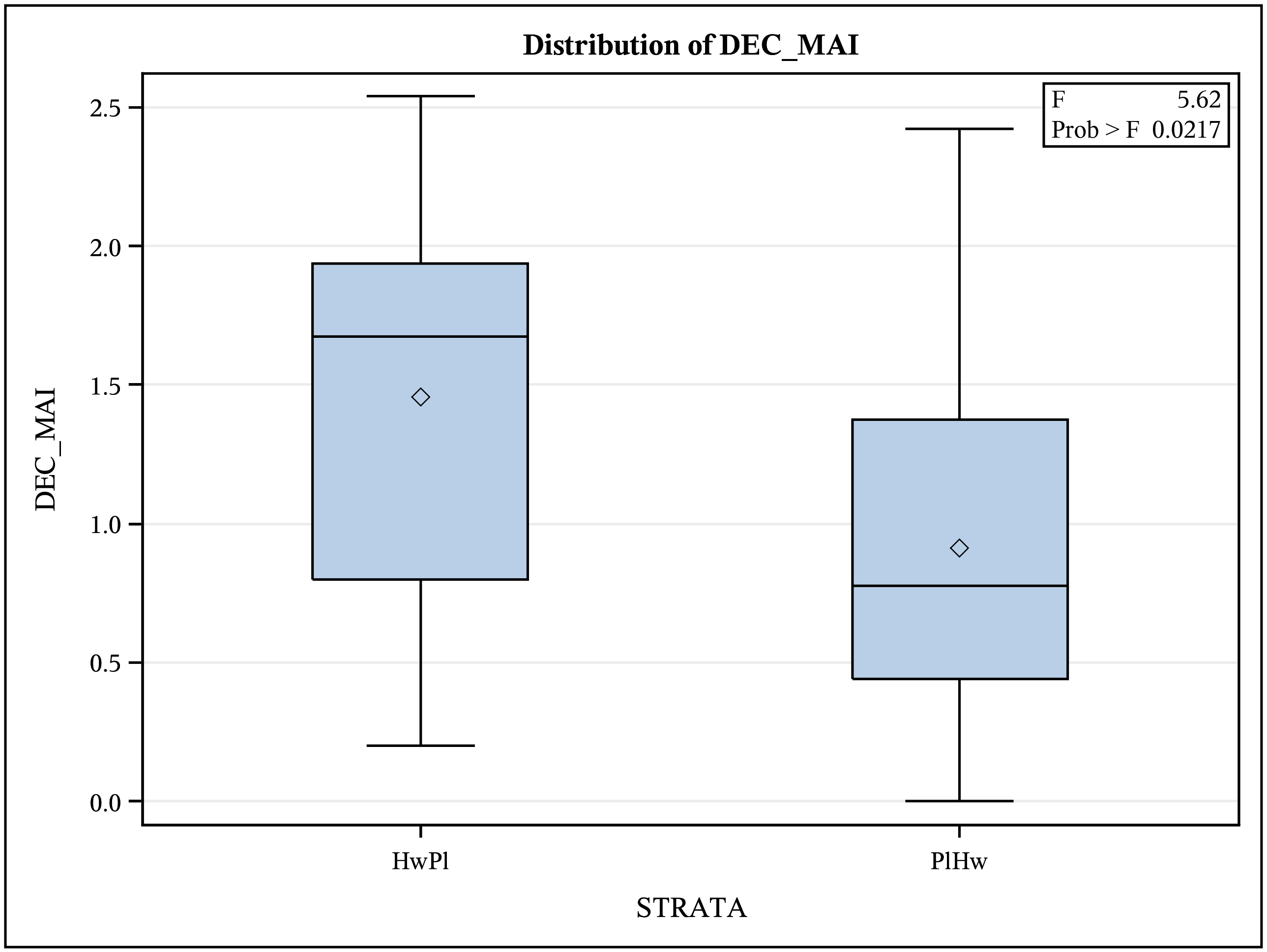
The ANOVA Procedure

Dependent Variable: DEC_MAI DEC_MAI

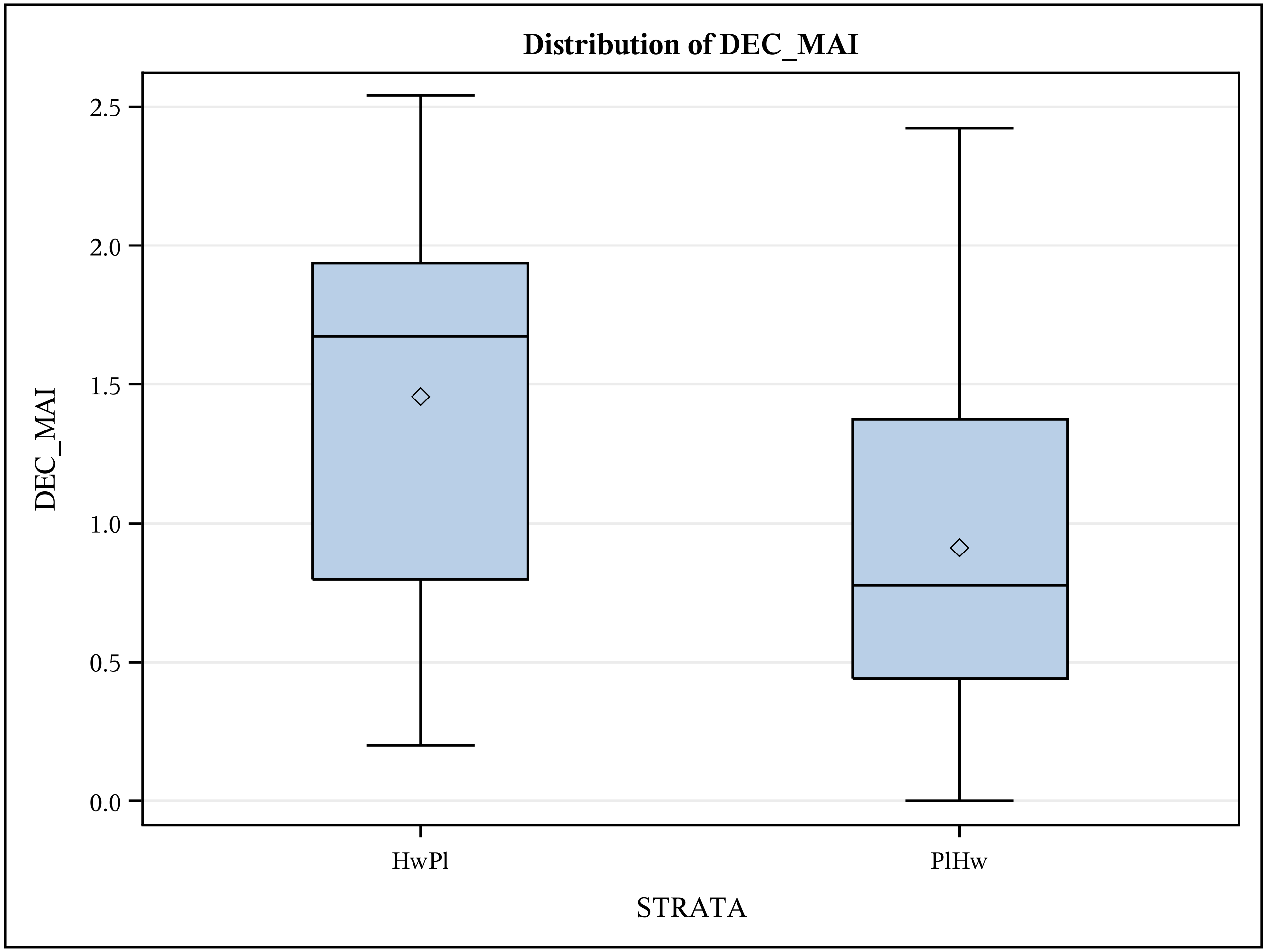
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	2.71583853	2.71583853	5.62	0.0217
Error	50	24.17846917	0.48356938		
Corrected Total	51	26.89430769			

R-Square	Coeff Var	Root MSE	DEC_MAI Mean
0.100982	67.06298	0.695392	1.036923

Source	DF	Anova SS	Mean Square	F Value	Pr > F
STRATA	1	2.71583853	2.71583853	5.62	0.0217



The ANOVA Procedure



The ANOVA Procedure

Duncan's Multiple Range Test for DEC_MAI

Note: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	50
Error Mean Square	0.483569
Harmonic Mean of Cell Sizes	18.46154

Note: Cell sizes are not equal.

Number of Means	2
Critical Range	.4597

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	STRATA
A	1.4542	12	HwPl
B	0.9118	40	PlHw