

Monitoring Harvest Activity Across 28 Mountain Pine Beetle Impacted Management Units.

July 25, 2011

Introduction:

This is an update to the “Monitoring Harvest Activity Across 29 Mountain Pine Beetle impacted Management Units” report dated December 2009. TFL 42 is not included in this report as it is now a Community Forest. Lodgepole pine comprises 15 percent or more of the volume on the timber harvesting land bases of the TSAs and TFLs analyzed. This report provides time series of harvest activity from January 1, 2001 to December 31, 2010.

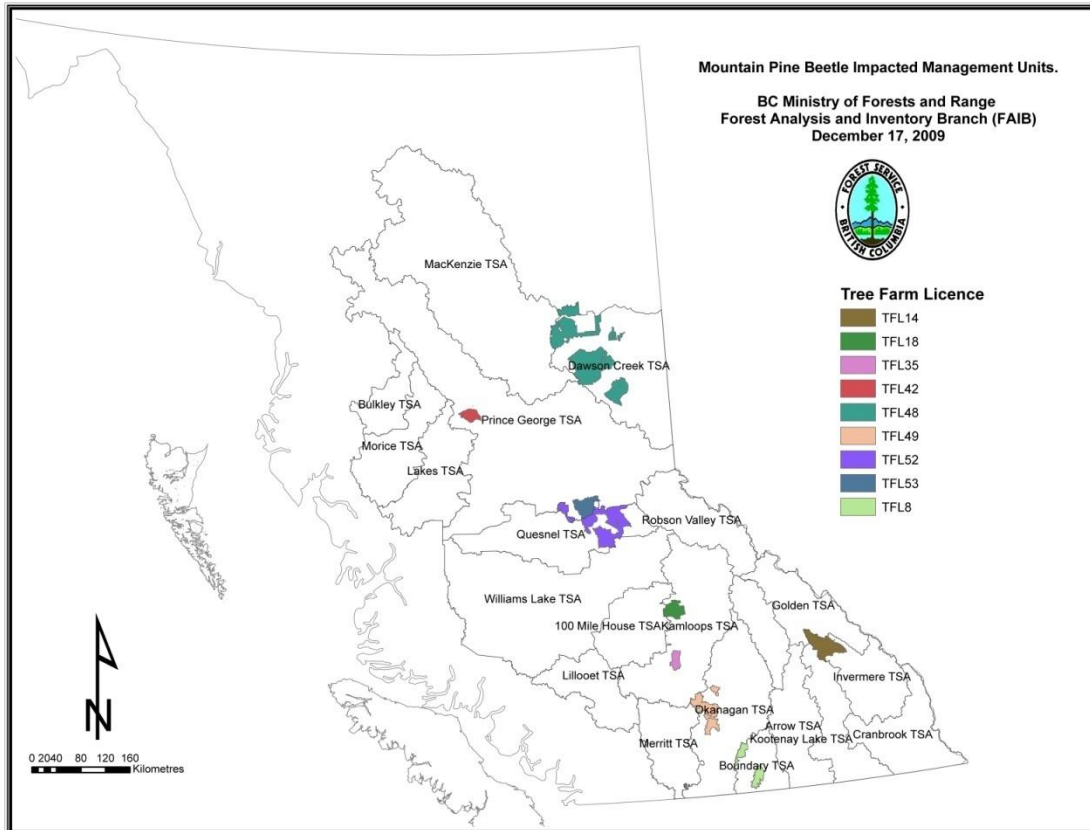


Figure A. Management units (TSAs and TFLs) monitored for harvest activity. Note that TFL 42 no longer exists.

Three statistics are presented for each TSA and TFL:

1. total harvest;
2. pine harvest; and
3. harvest from pine-leading timber marks.

The statistics exclude the volumes from any other tenure types within the TSA or TFL outer boundaries.

Methodology:

Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) Timber Pricing Branch harvest billing data and Forest Tenures Branch data were used to generate the statistics. However, the species composition of cutblocks harvested has to be inferred using the species composition of the timber mark. Specifically, by timber mark, year and species, the “billed volume including avoidable waste harvested from provincial crown land” was extracted from the Timber Pricing Branch database. This database was queried on February 8th 2011.

Results:

Time series data for the 20 TSAs and 8 TFLs are presented in figures 1 through 28. The absolute total harvest, pine harvest and harvest from pine-leading timber marks are presented in Figure “A”. The percentage of the total harvest that is pine and from pine-leading timber marks is presented in Figure “B”.

The management units have been ordered from highest to lowest percent pine on the timber harvesting land base (THLB) using the latest Timber Supply Review information available. Ordering was based on a percent pine calculated by dividing the volume of pine leading stands by the volume found in all stands that had at least 150 cubic meters of merchantable volume within the THLB.

An overall summary of the trends from 2006 through 2010 is provided in Tables 1 and 2 and are subsequently discussed (page 32).

Timber mark

A timber mark is a unique identifier indicating the cutting permit and licence under which wood from one or more cutblocks is harvested.

Pine leading mark

A pine leading mark is where the majority of the harvestable volume is lodgepole pine.

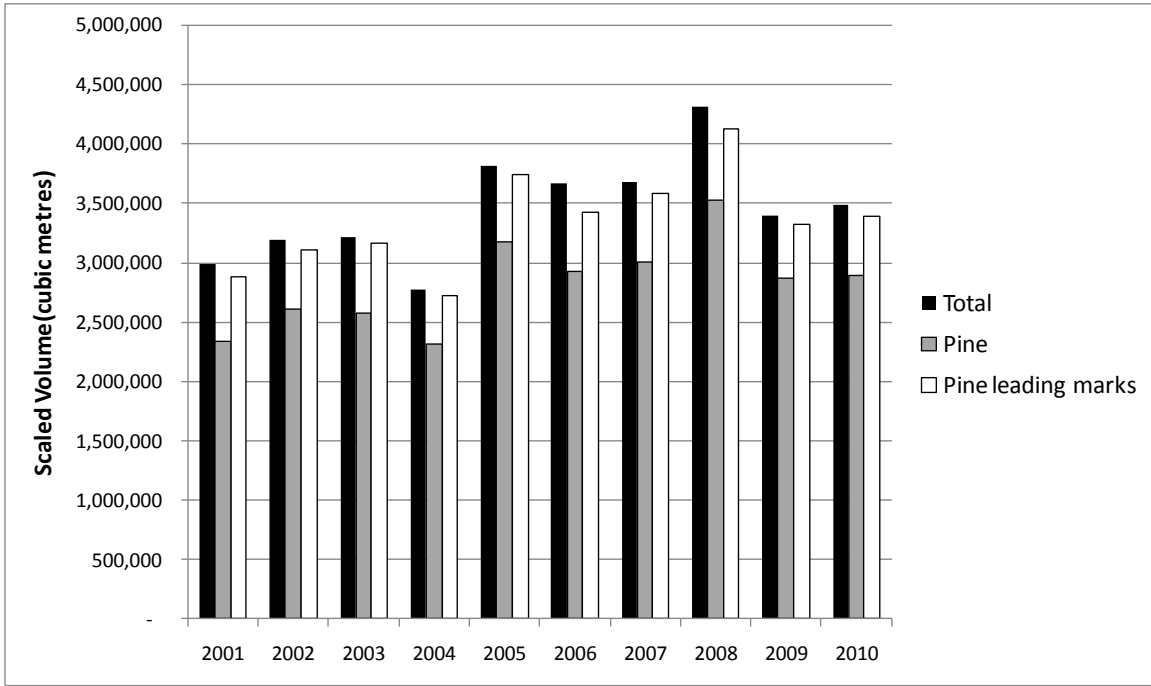


Figure 1A: Total harvest, pine harvest and the harvest from pine leading marks. (Quesnel TSA—70% pine)

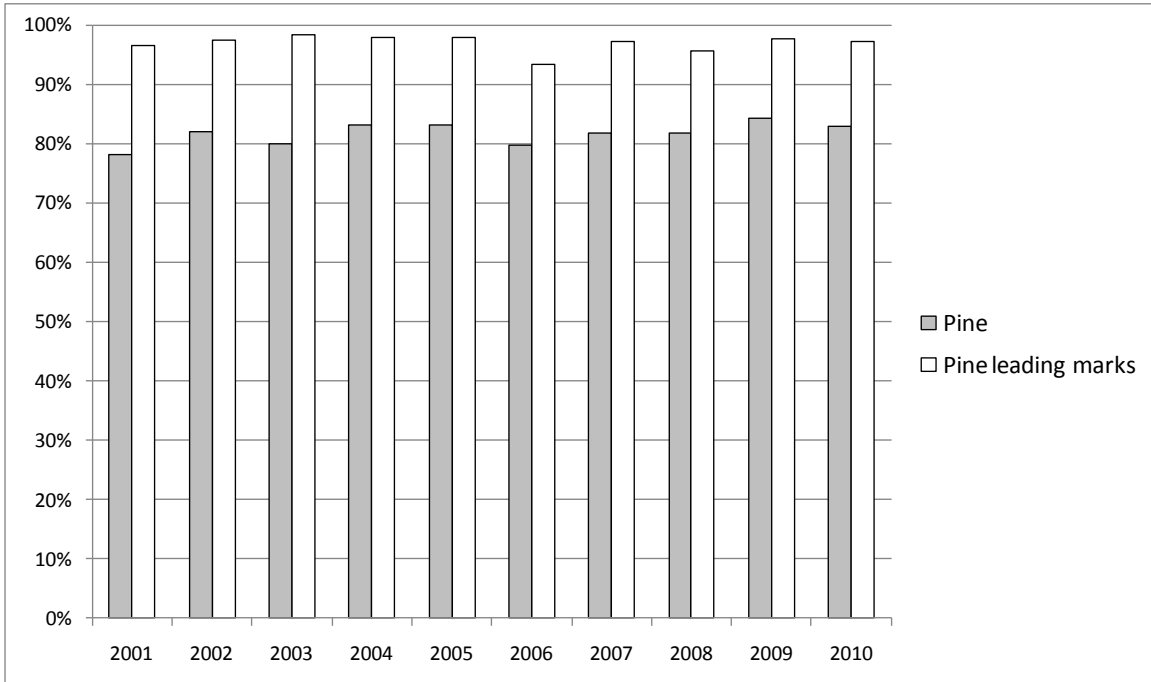


Figure 1B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Quesnel TSA—70% pine)

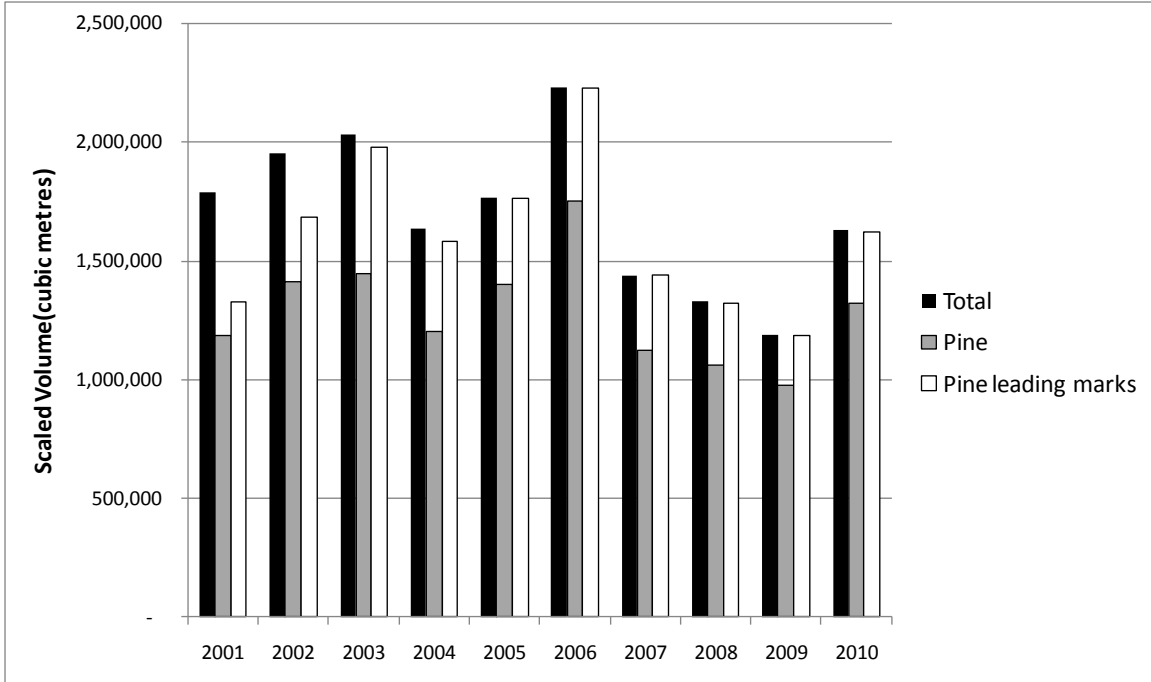


Figure 2A: Total harvest, pine harvest and the harvest from pine leading marks (Lakes TSA—64% pine)

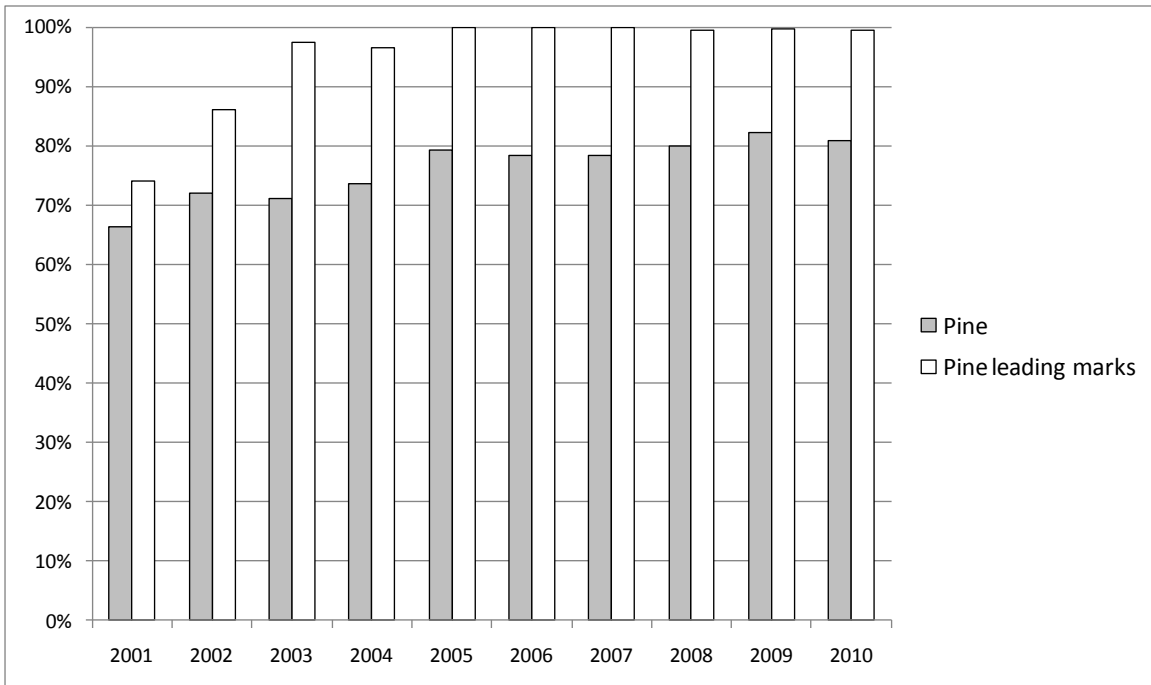


Figure 2B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Lakes TSA—64% pine)

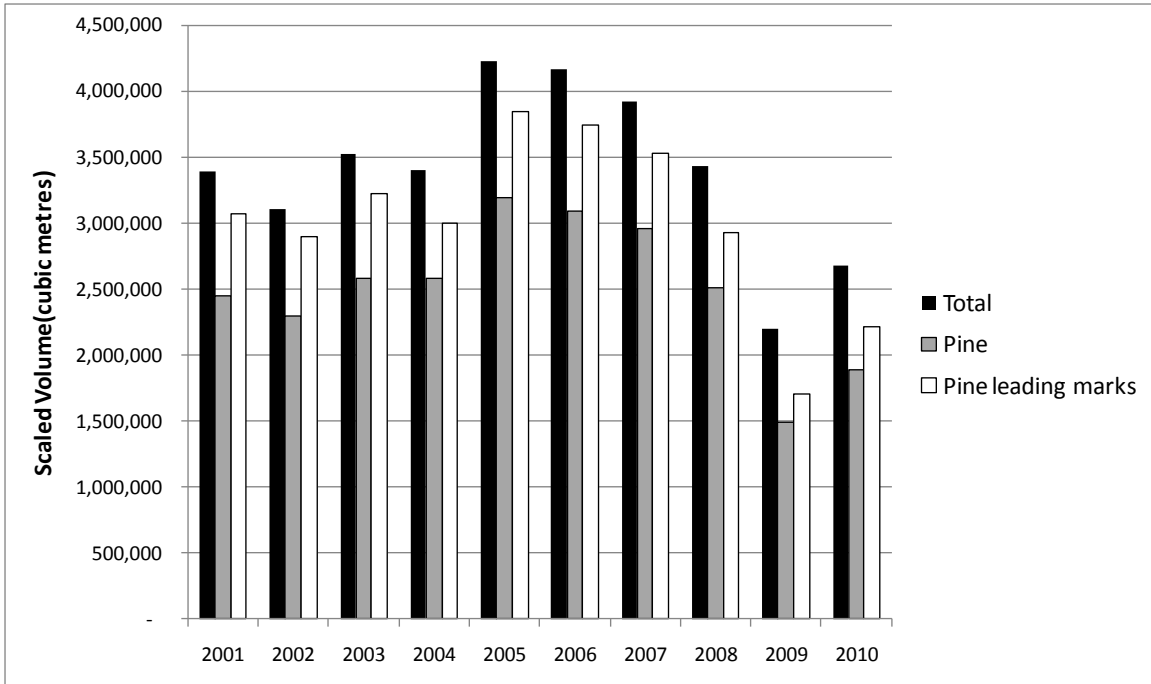


Figure 3A: Total harvest, pine harvest and the harvest from pine leading marks (Williams Lake TSA—61% pine)

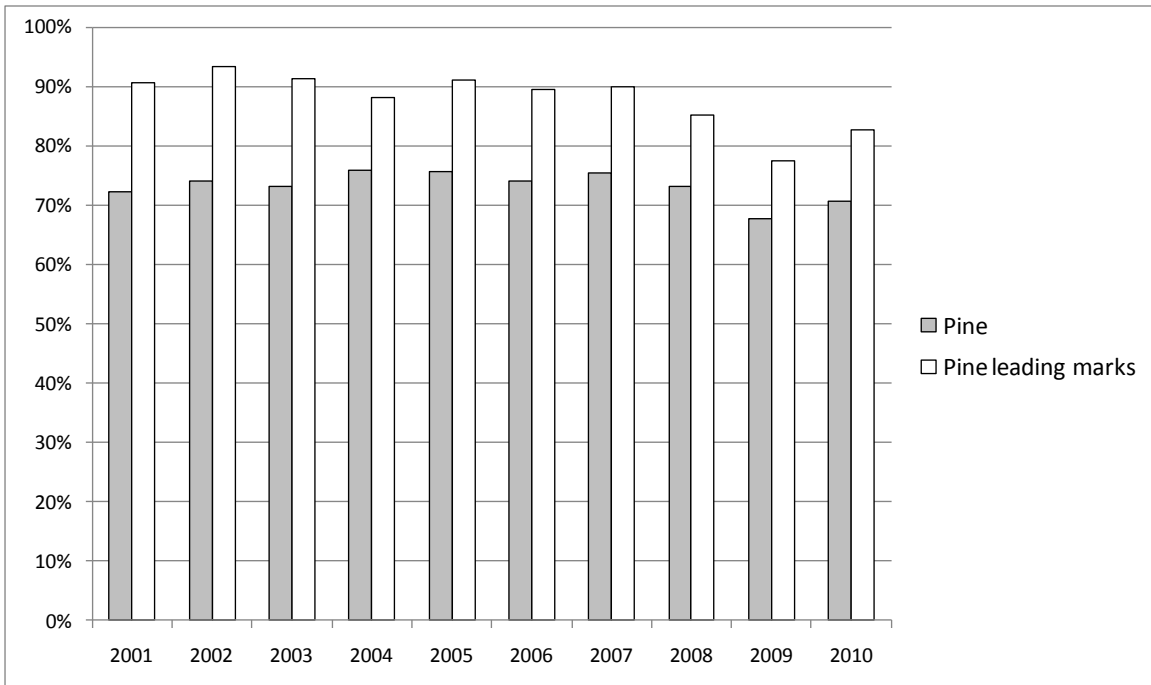


Figure 3B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Williams Lake TSA—61% pine)

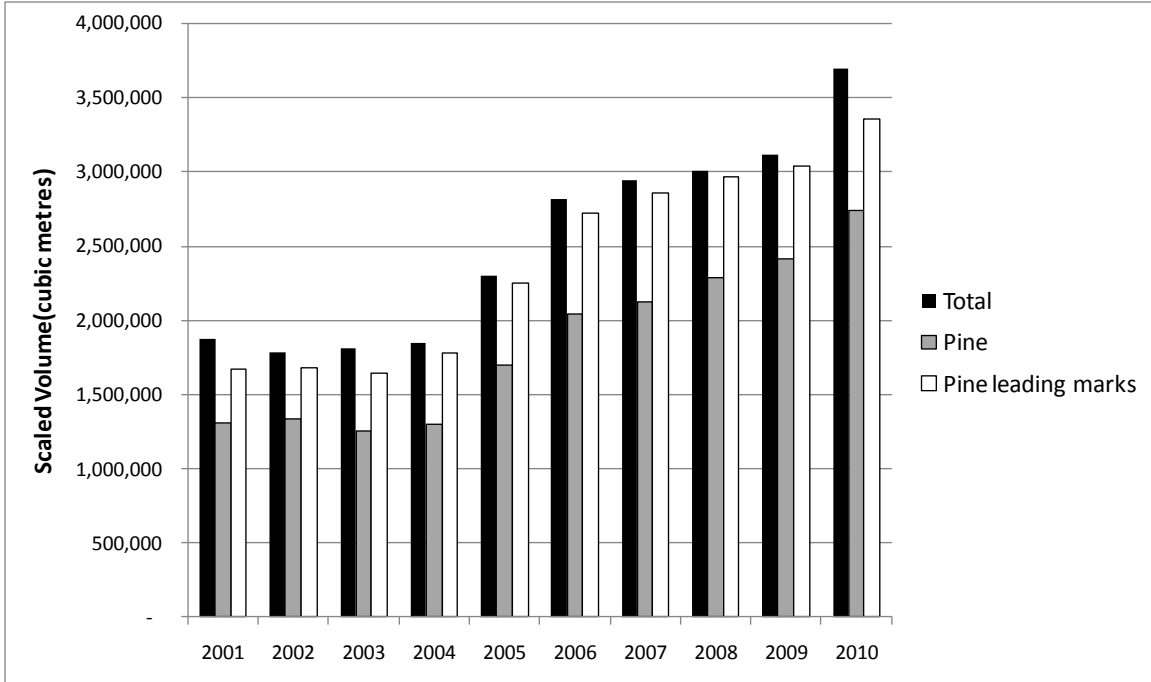


Figure 4A: Total harvest, pine harvest and the harvest from pine leading marks (Merritt TSA—58% pine)

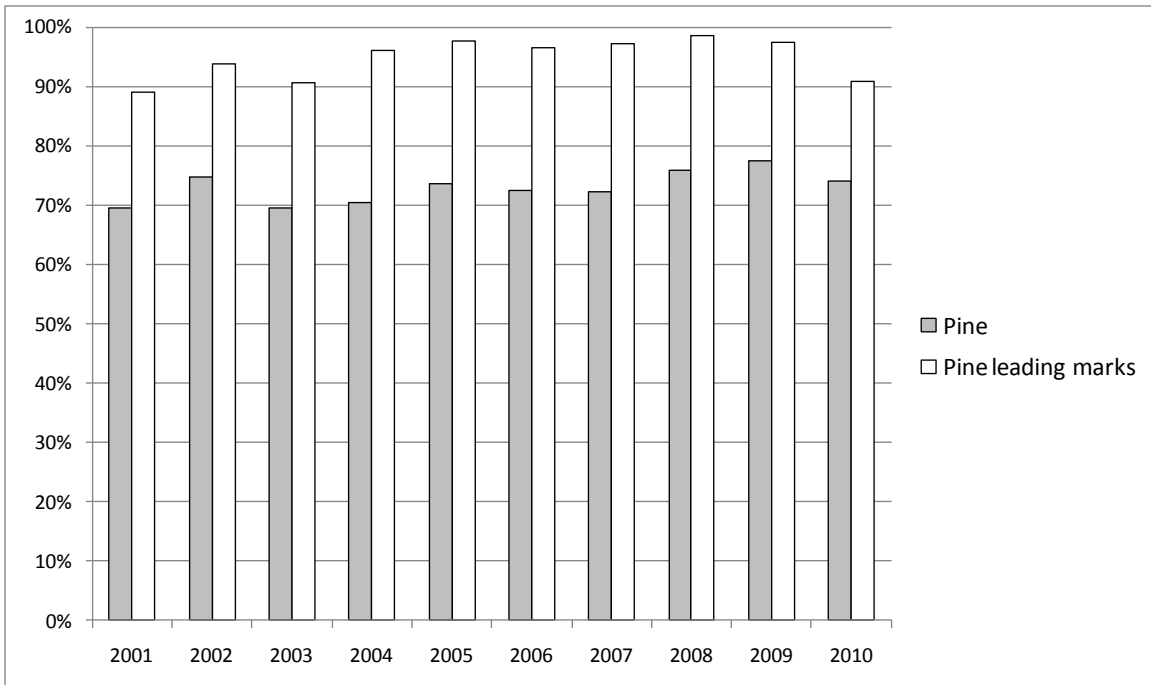


Figure 4B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Merritt TSA—58% pine)

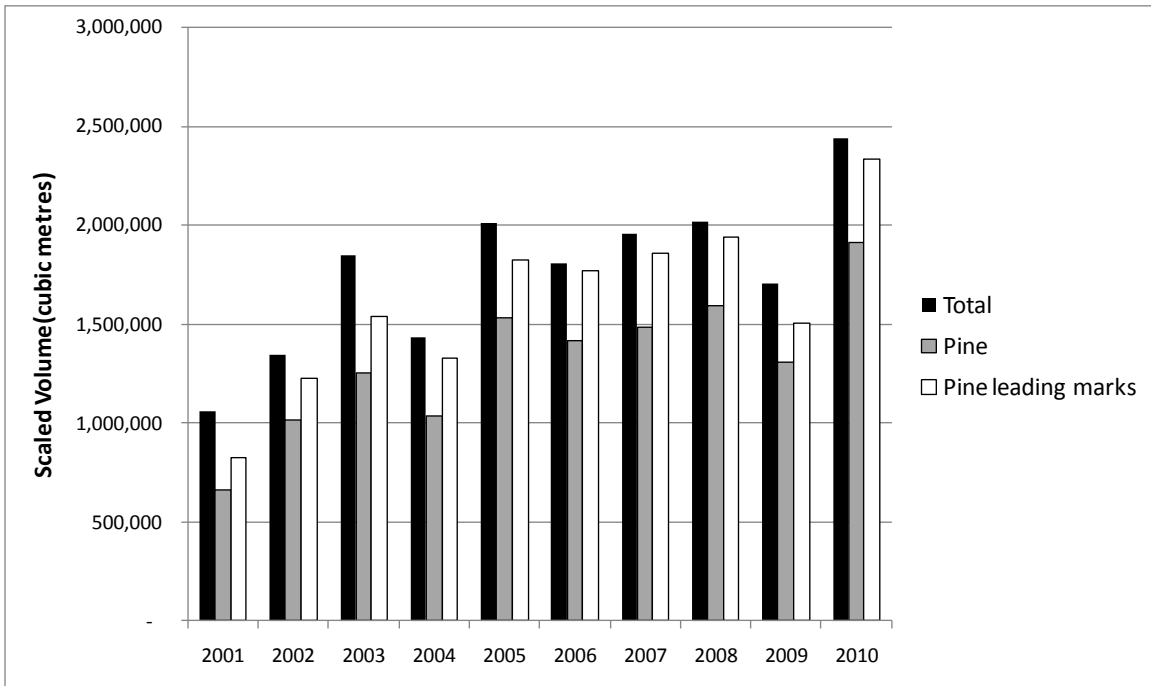


Figure 5A: Total harvest, pine harvest and the harvest from pine leading marks (100 Mile TSA—55% pine)

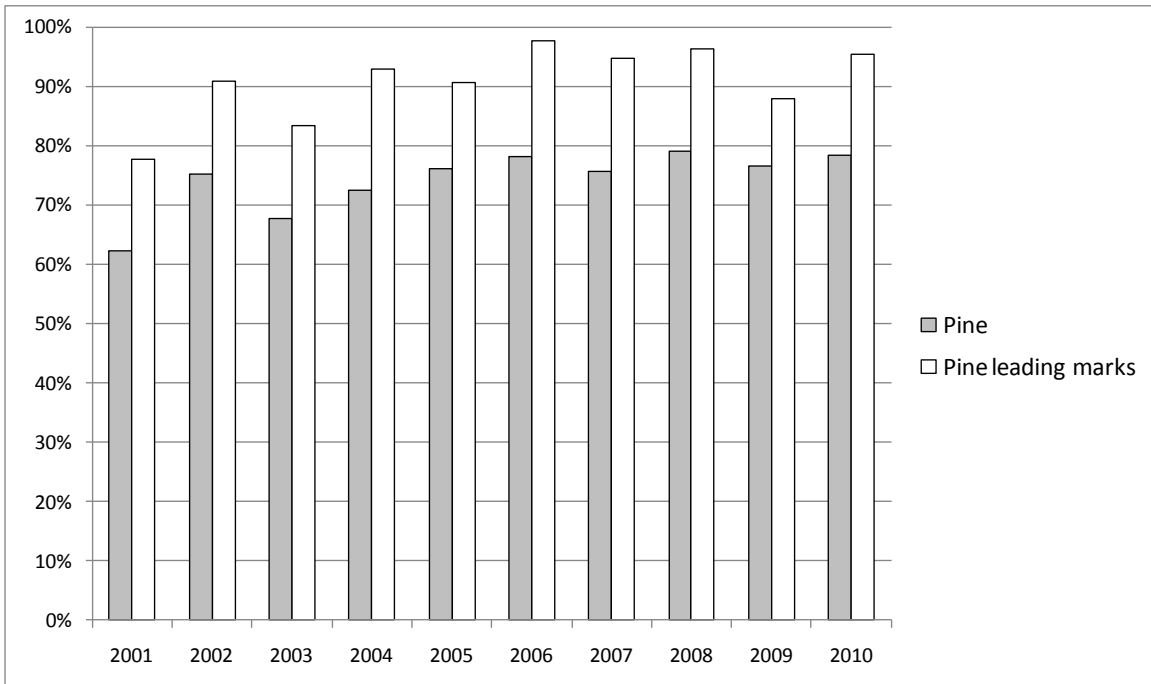


Figure 5B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (100 Mile TSA—55% pine)

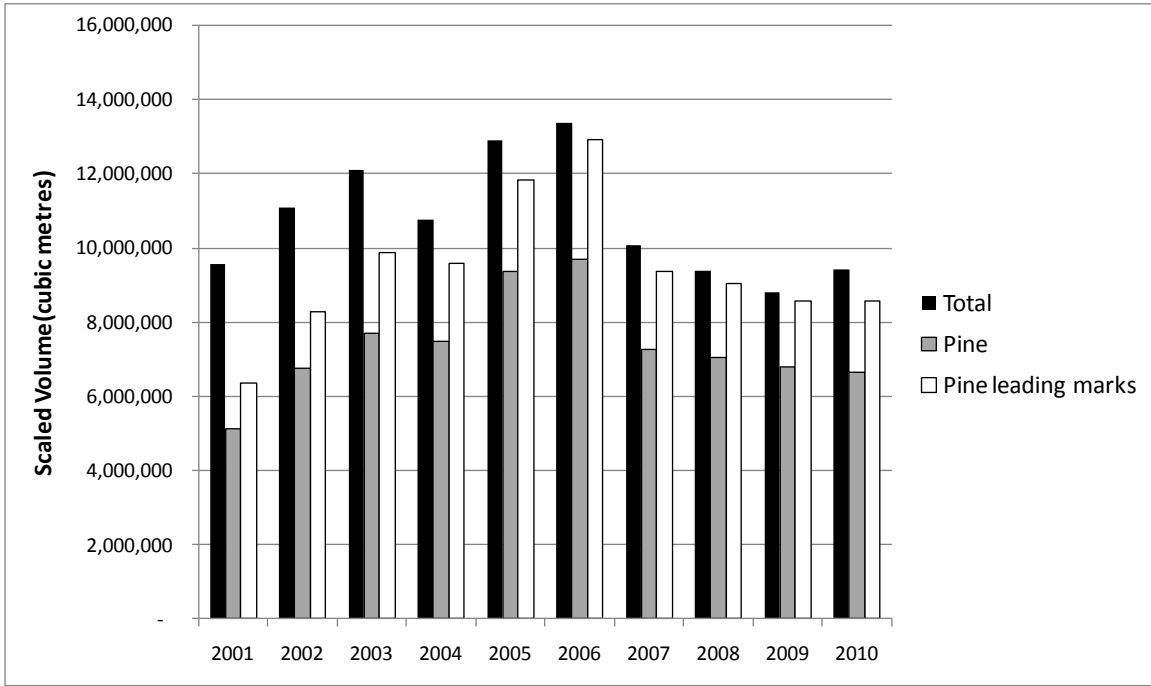


Figure 6A: Total harvest, pine harvest and the harvest from pine leading marks (Prince George TSA—48% pine)

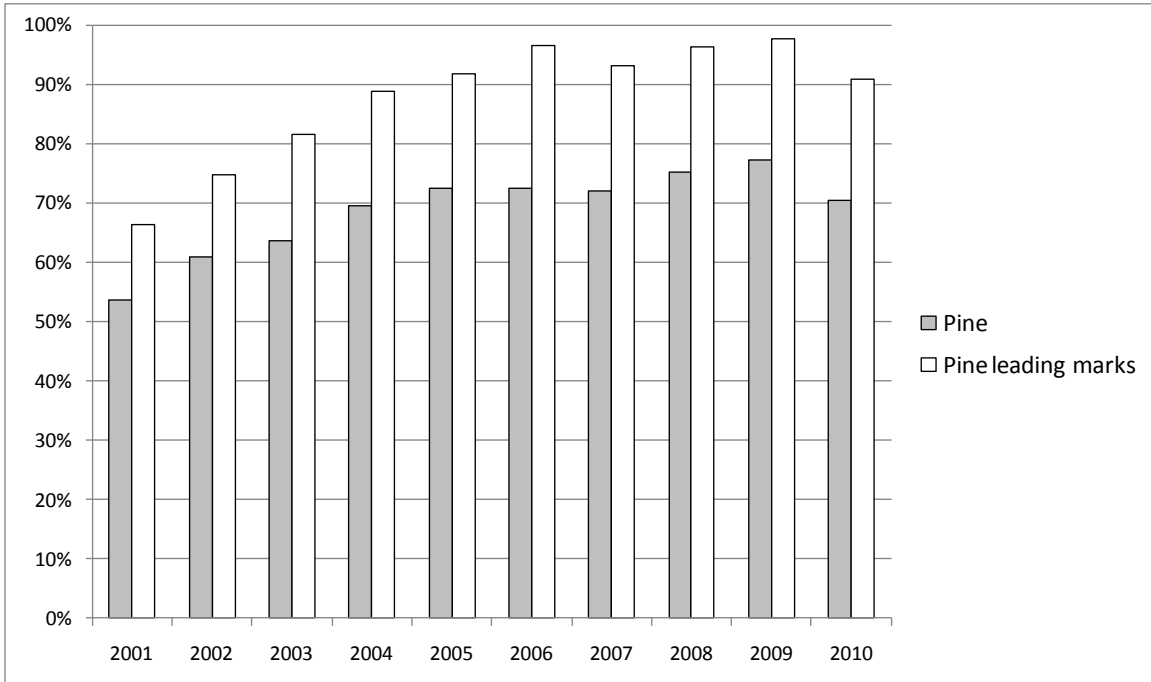


Figure 6B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Prince George TSA—48% pine)

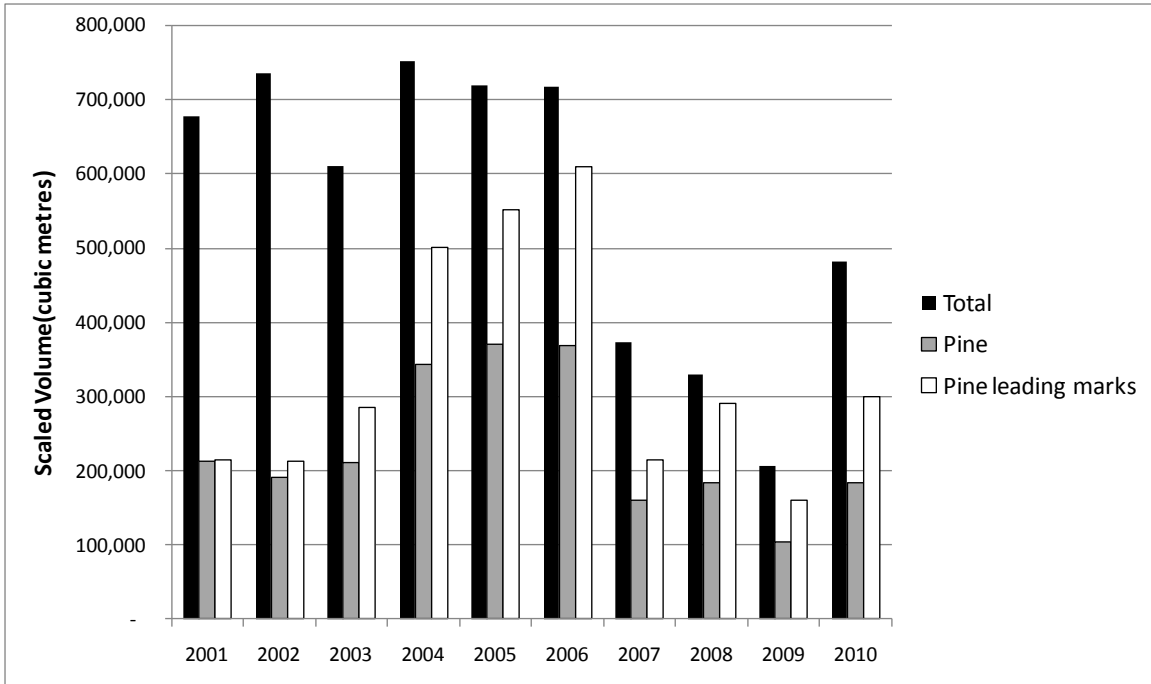


Figure 7A: Total harvest, pine harvest and the harvest from pine leading marks (Boundary TSA—46% pine)

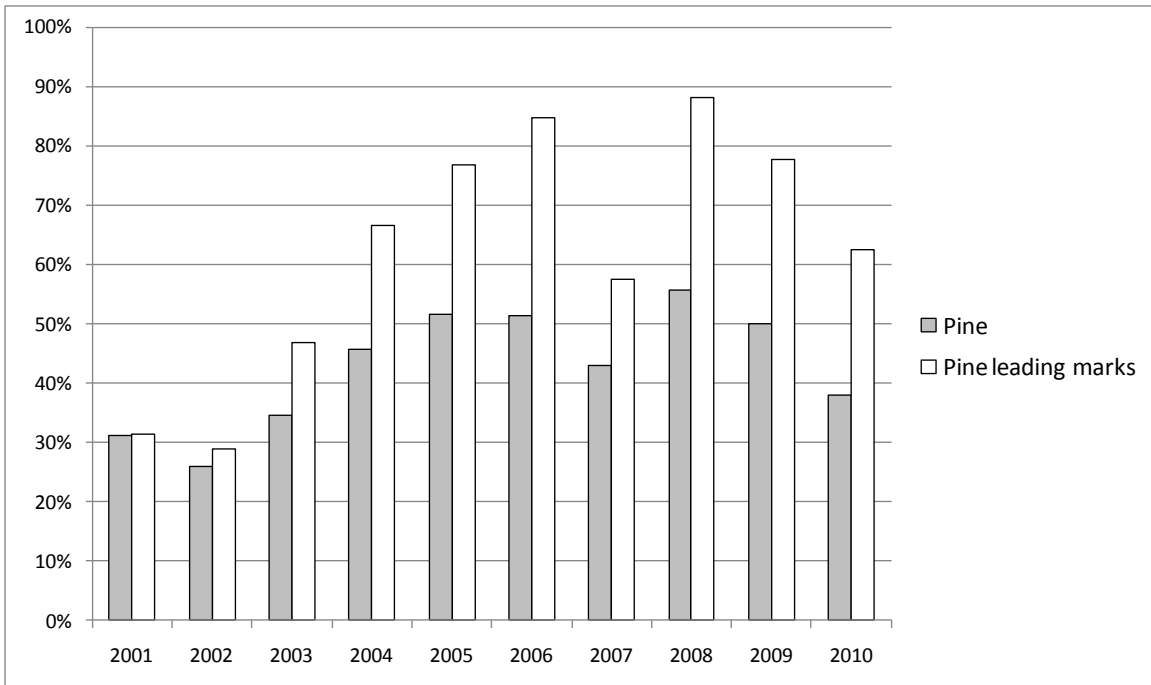


Figure 7B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Boundary TSA—46% pine)

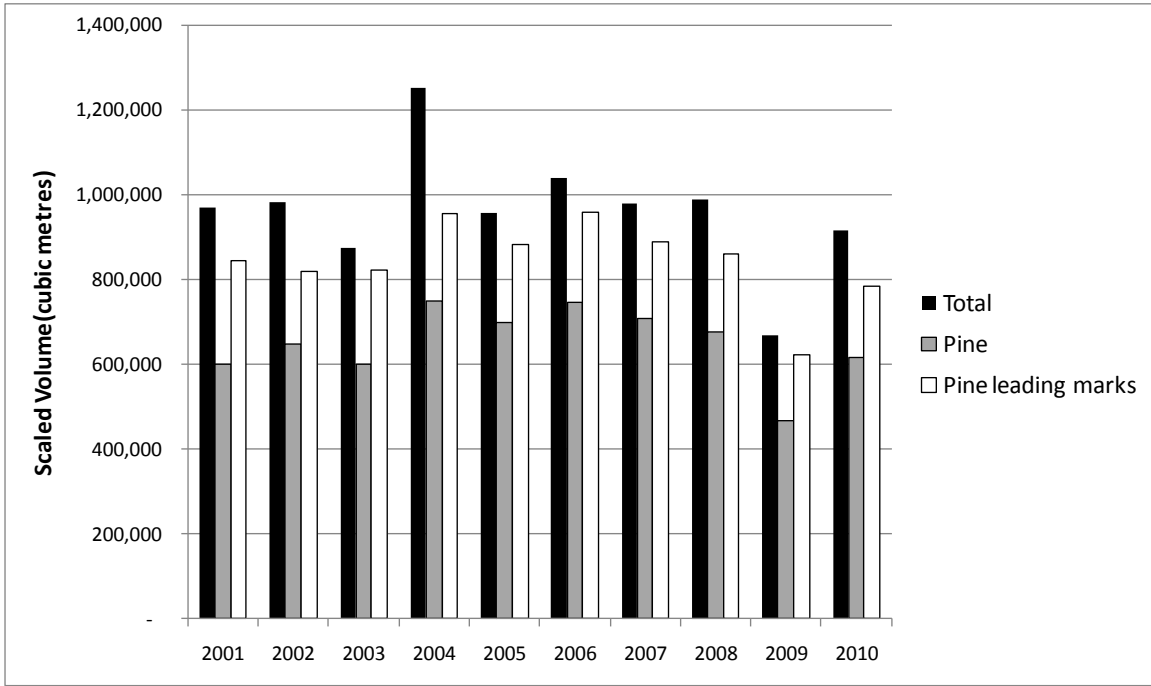


Figure 8A: Total harvest, pine harvest and the harvest from pine leading marks (Cranbrook TSA—45% pine)

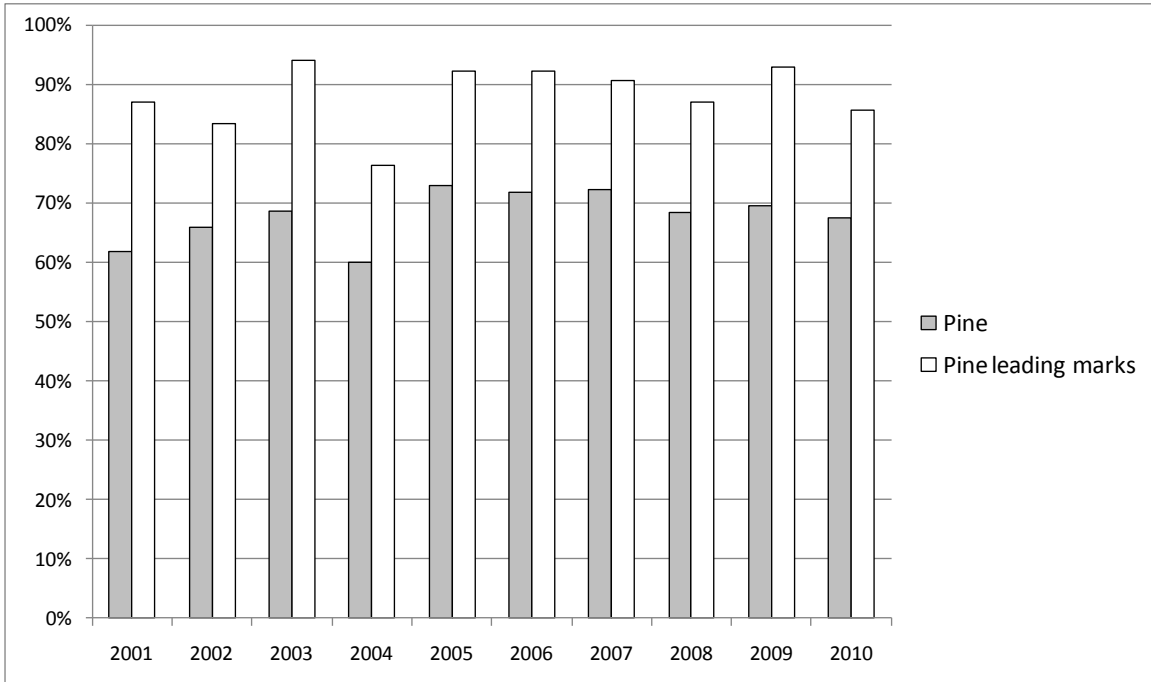


Figure 8B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Cranbrook TSA—45% pine)

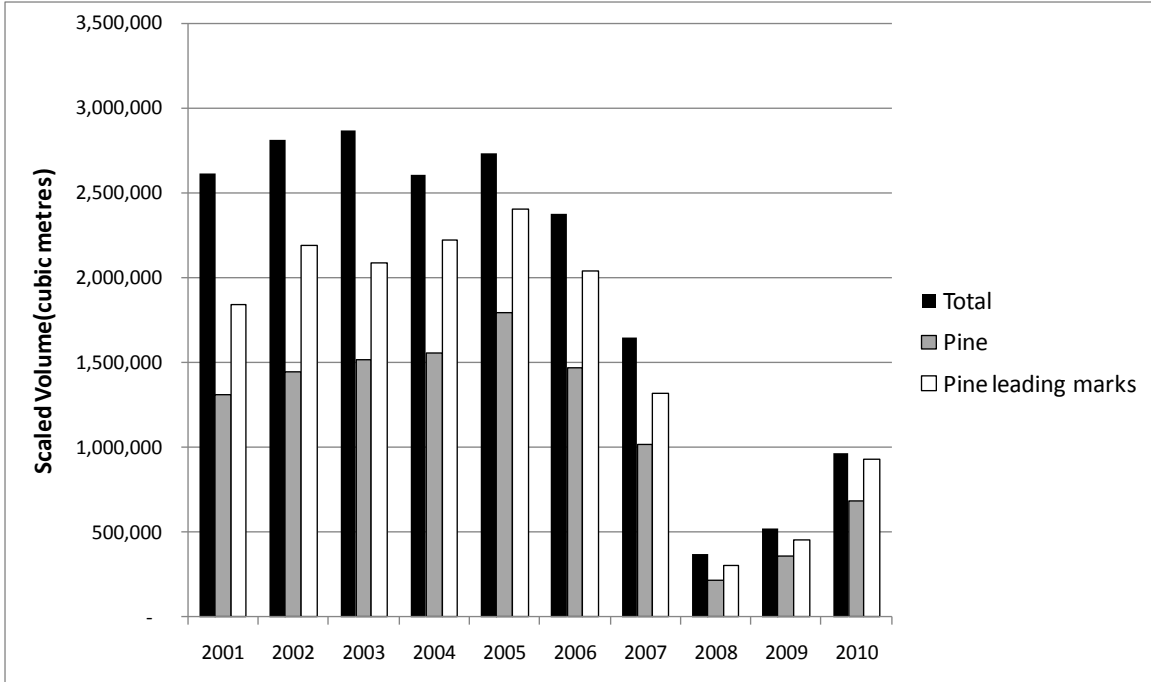


Figure 9A: Total harvest, pine harvest and the harvest from pine leading marks (MacKenzie TSA—44% pine)

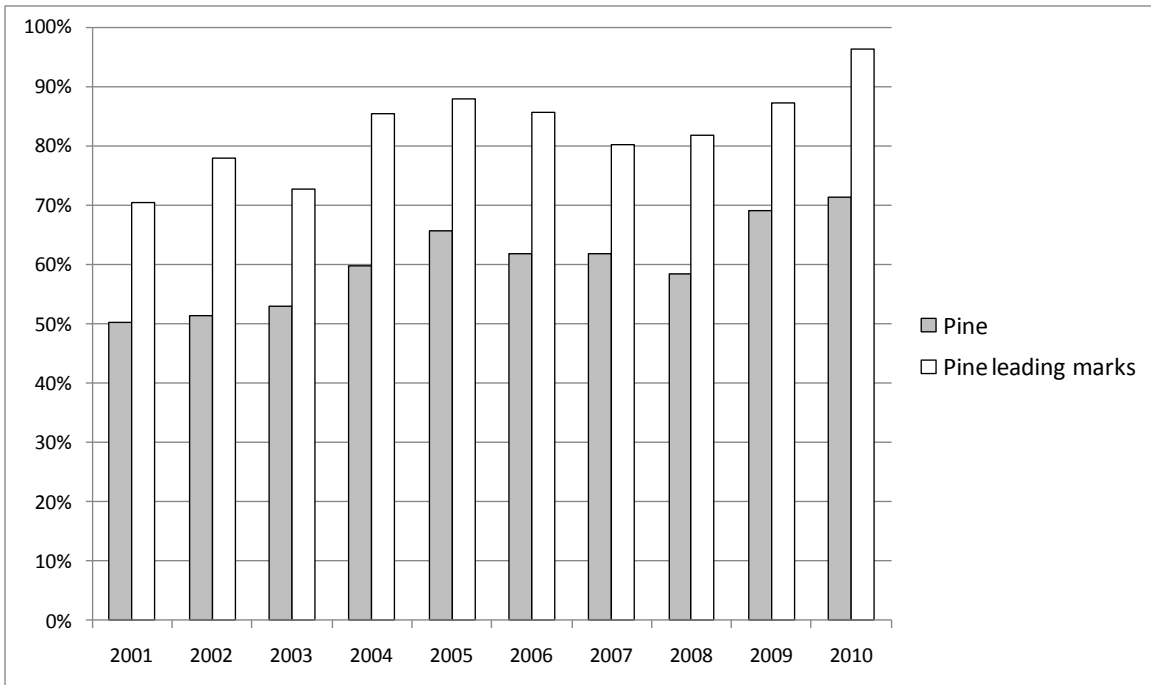


Figure 9B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (MacKenzie TSA—44% pine)

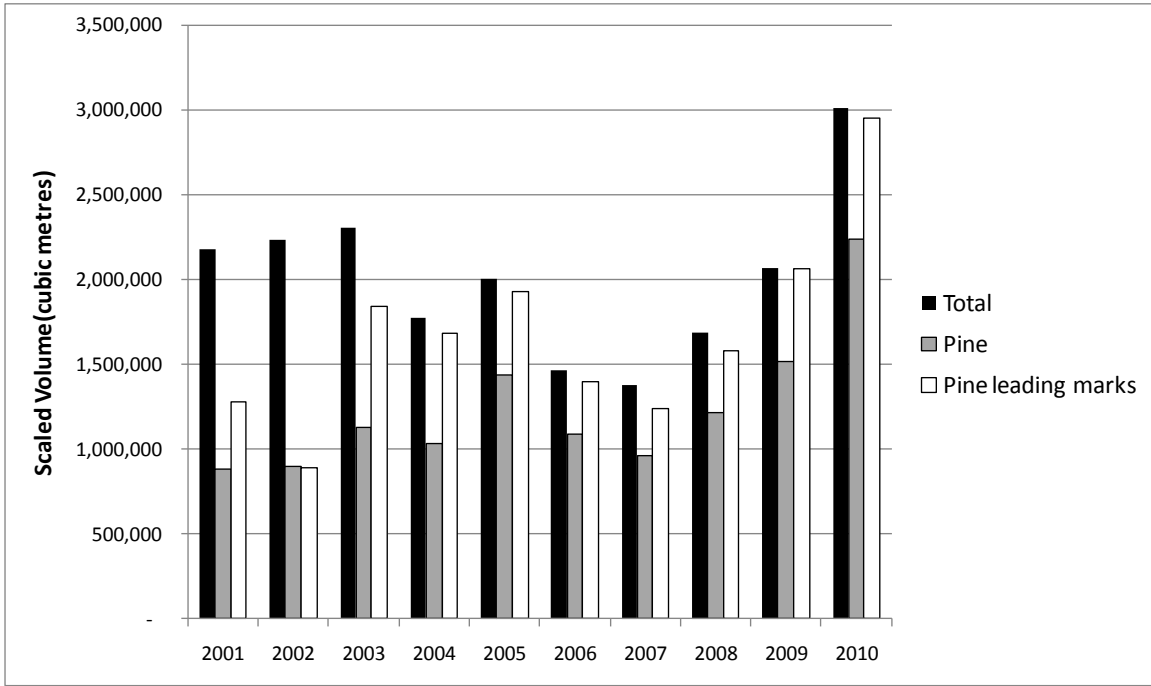


Figure 10A: Total harvest, pine harvest and the harvest from pine leading marks (Morice TSA—43% pine)

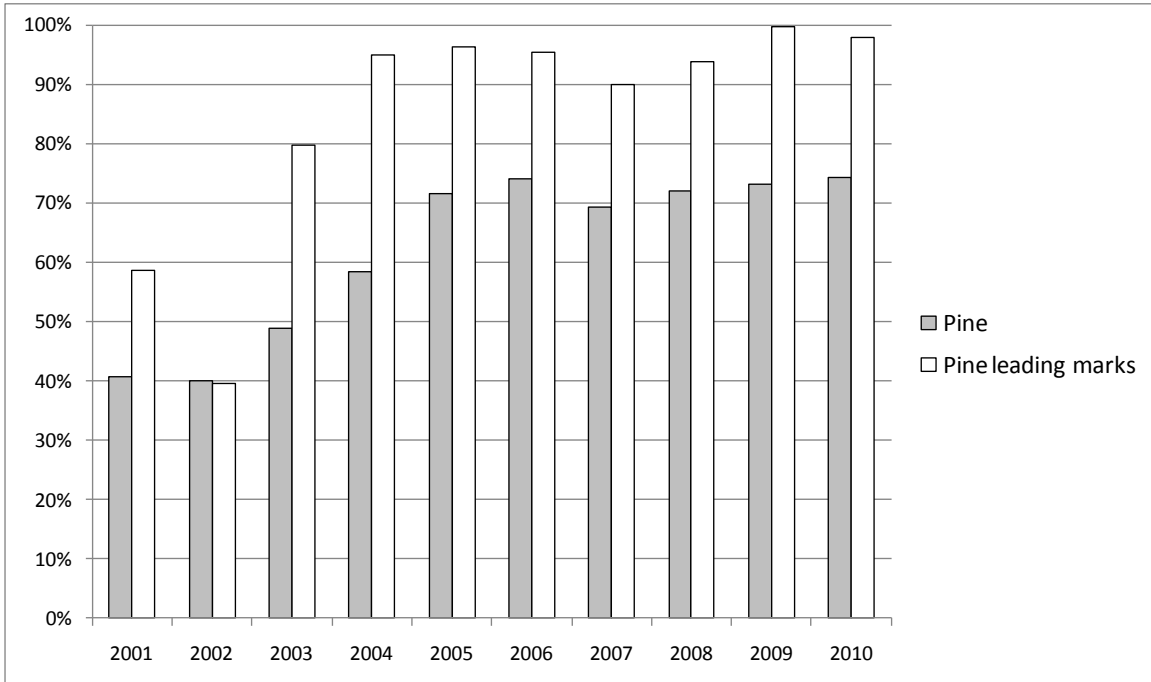


Figure 10B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Morice TSA—43% pine)

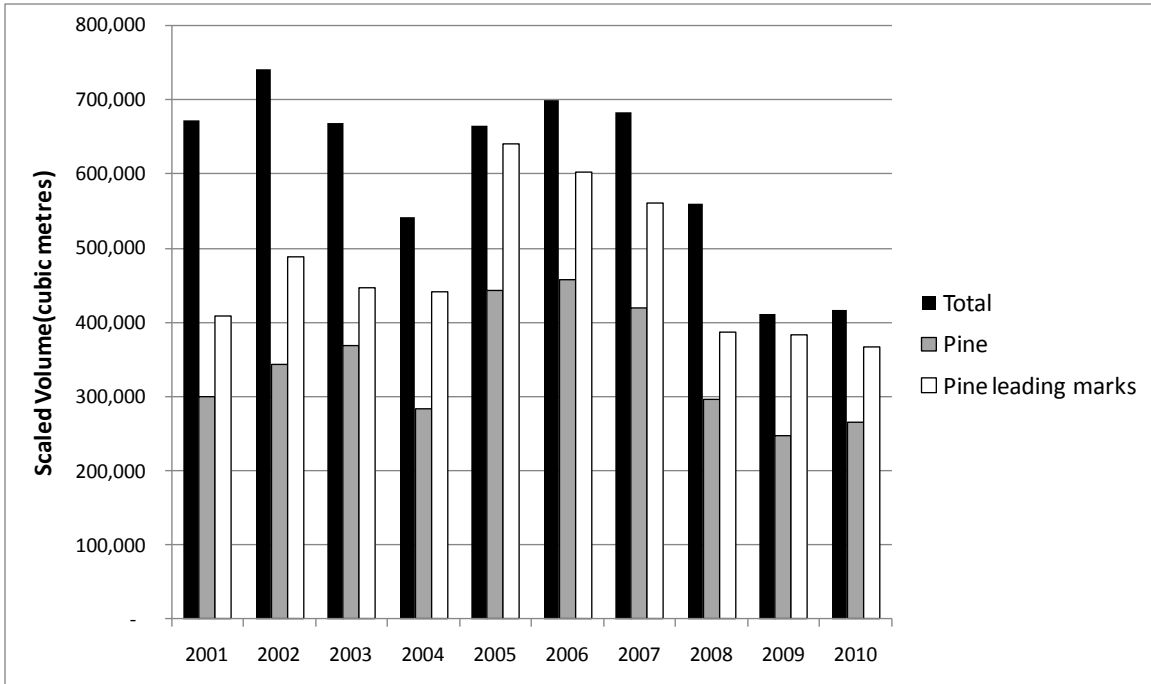


Figure 11A: Total harvest, pine harvest and the harvest from pine leading marks (Invermere TSA—41% pine)

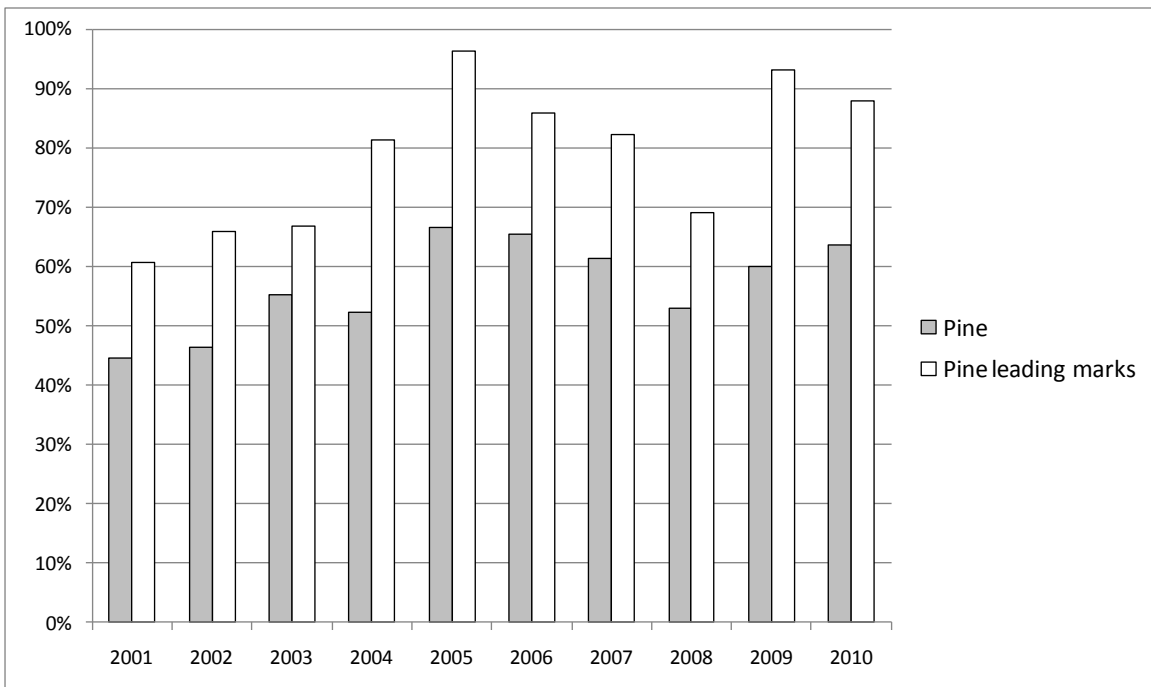


Figure 11B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Invermere TSA—41% pine)

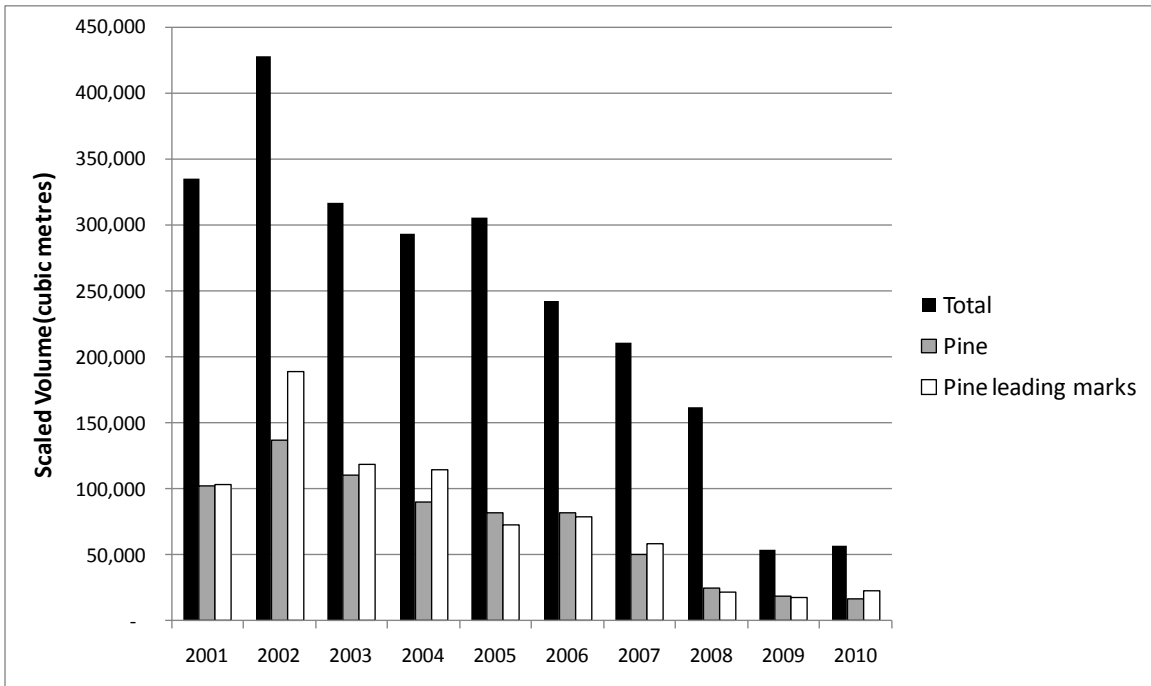


Figure 12A: Total harvest, pine harvest and the harvest from pine leading marks (Lillooet TSA—39% pine)

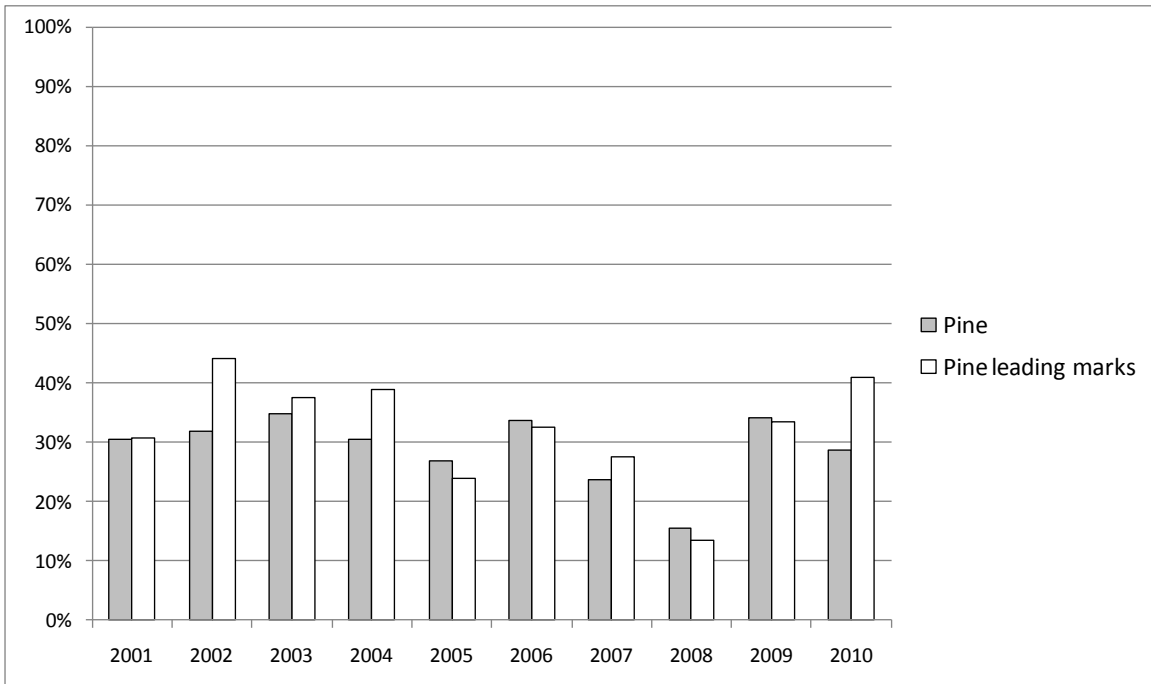


Figure 12B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Lillooet TSA—39% pine)

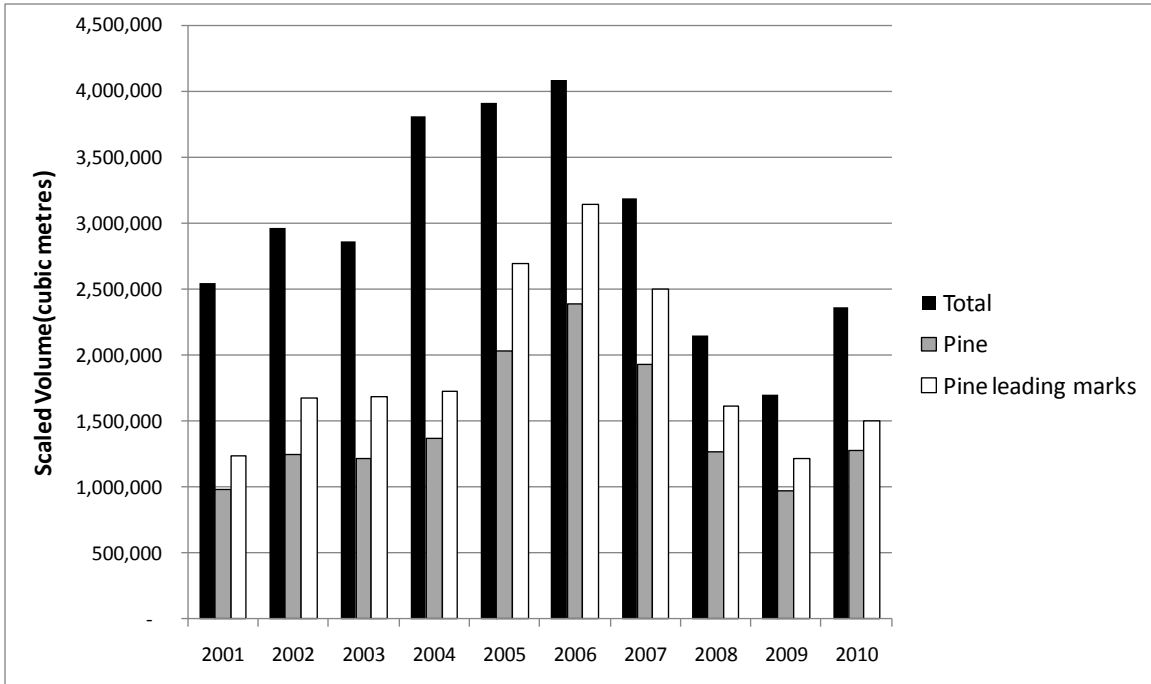


Figure 13A: Total harvest, pine harvest and the harvest from pine leading marks (Kamloops TSA—30% pine)

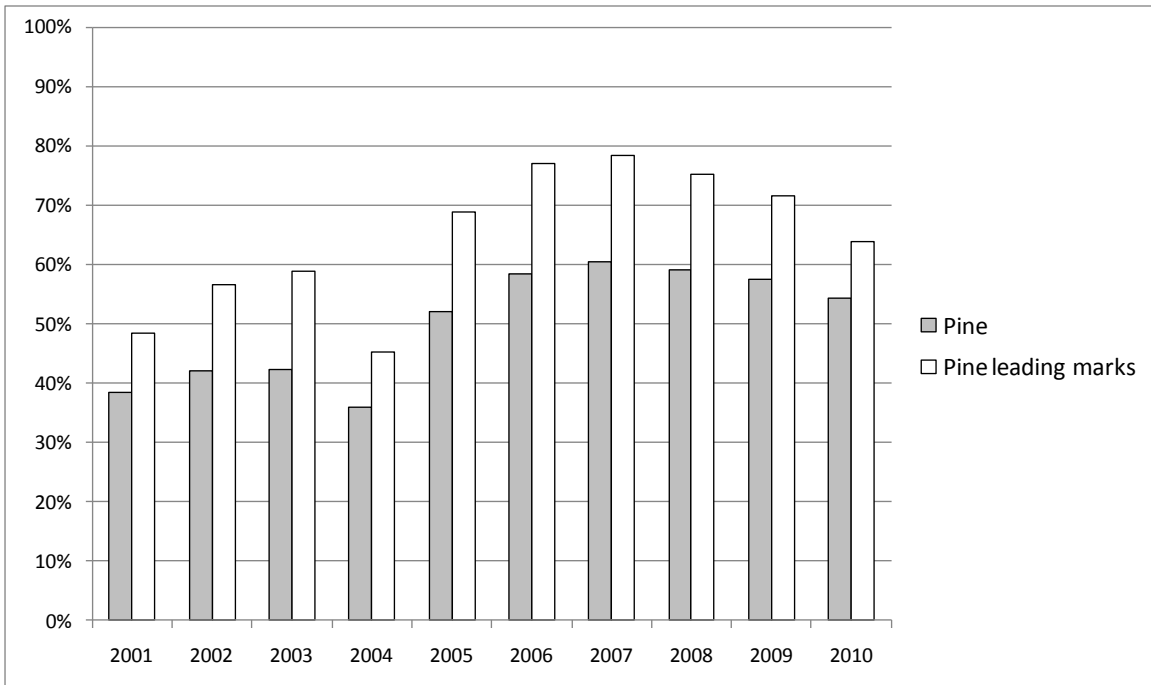


Figure 13B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Kamloops TSA—30% pine)

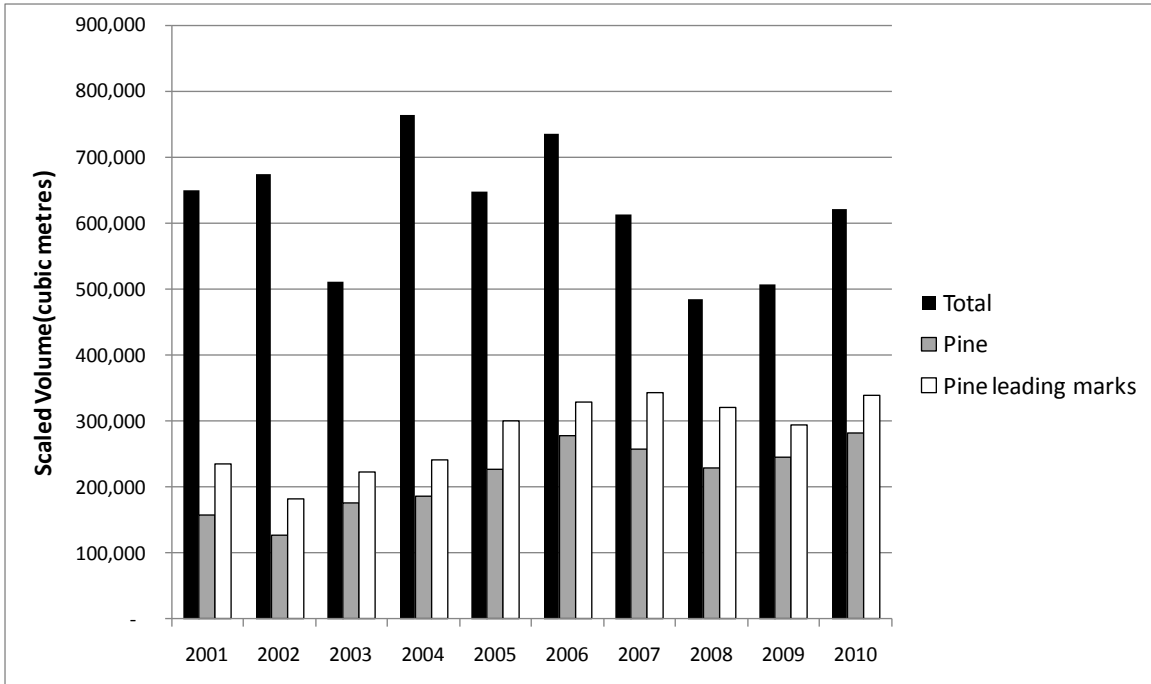


Figure 14A: Total harvest, pine harvest and the harvest from pine leading marks (Kootenay Lake TSA—29% pine)

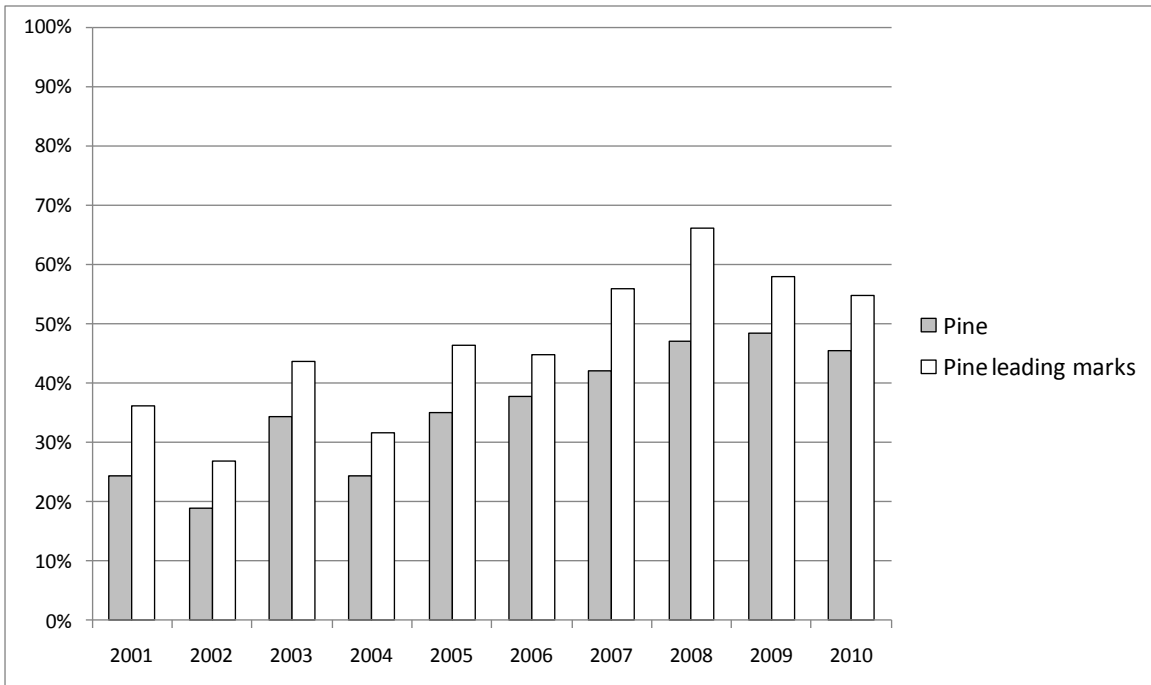


Figure 14B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Kootenay Lake TSA—29% pine)

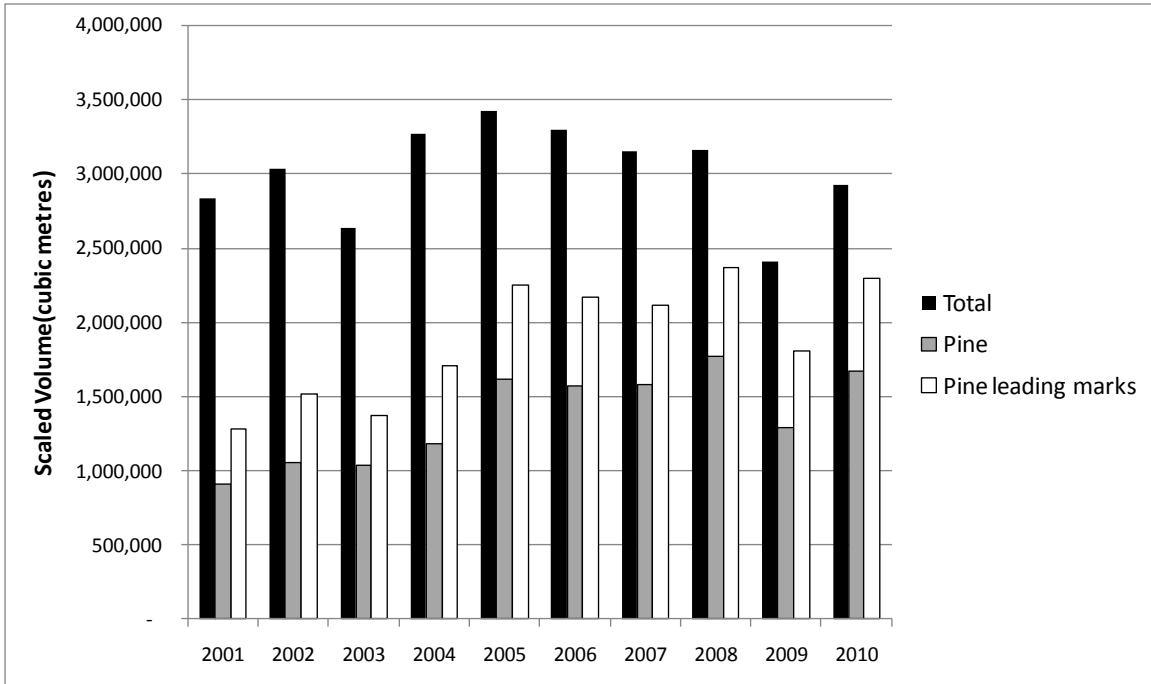


Figure 15A: Total harvest, pine harvest and the harvest from pine leading marks (Okanagan TSA—26% pine)

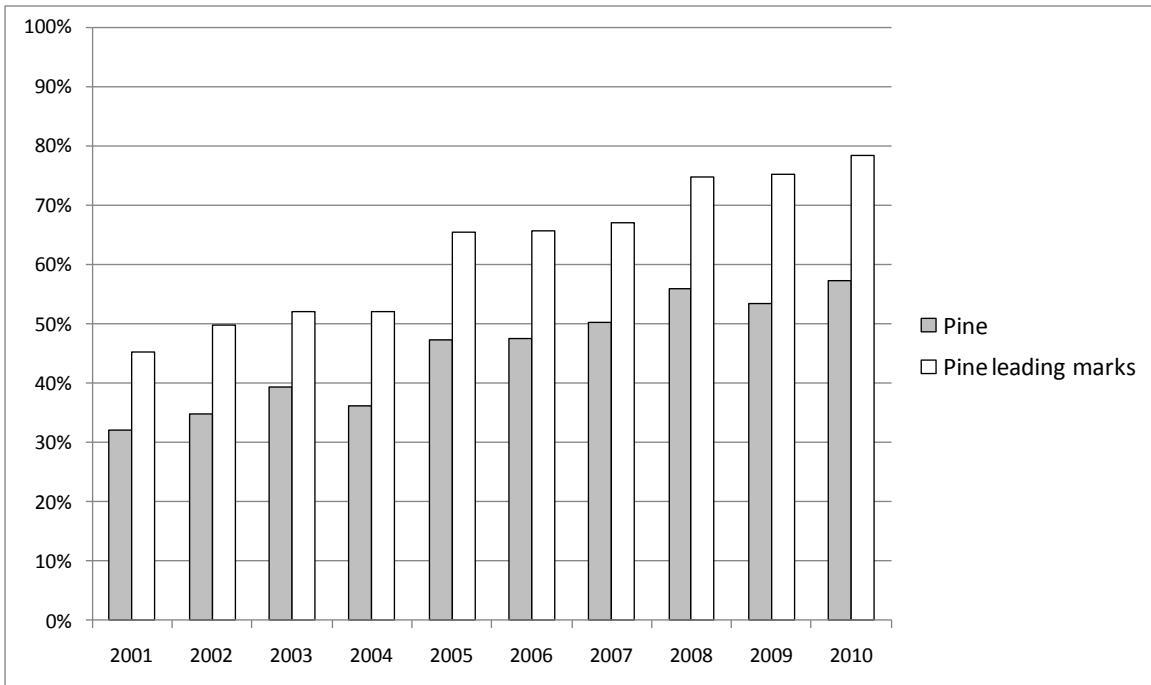


Figure 15B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Okanagan TSA—26% pine)

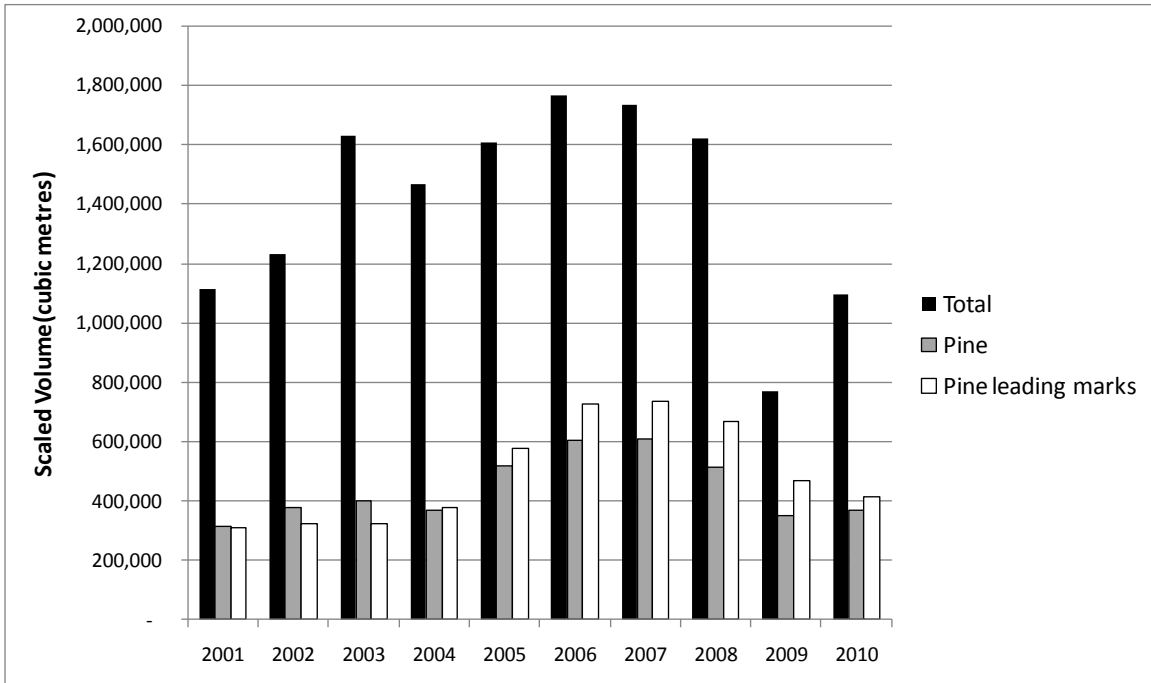


Figure 16A: Total harvest, pine harvest and the harvest from pine leading marks (Dawson Creek TSA—25% pine)

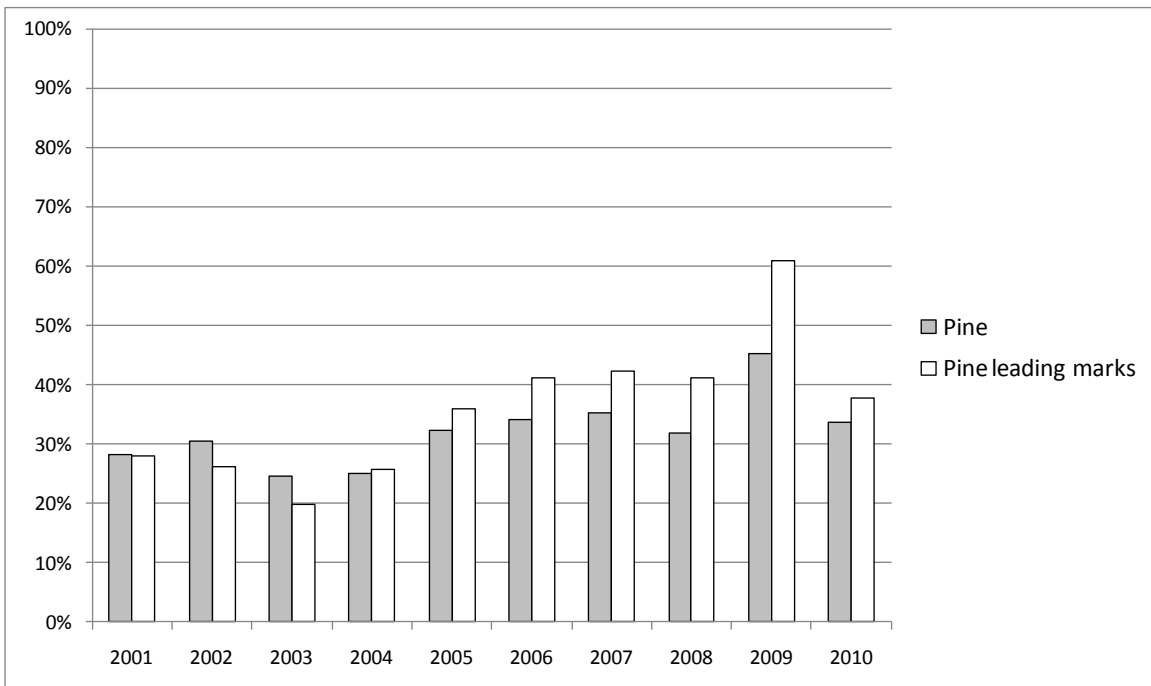


Figure 16B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Dawson Creek TSA—25% pine)

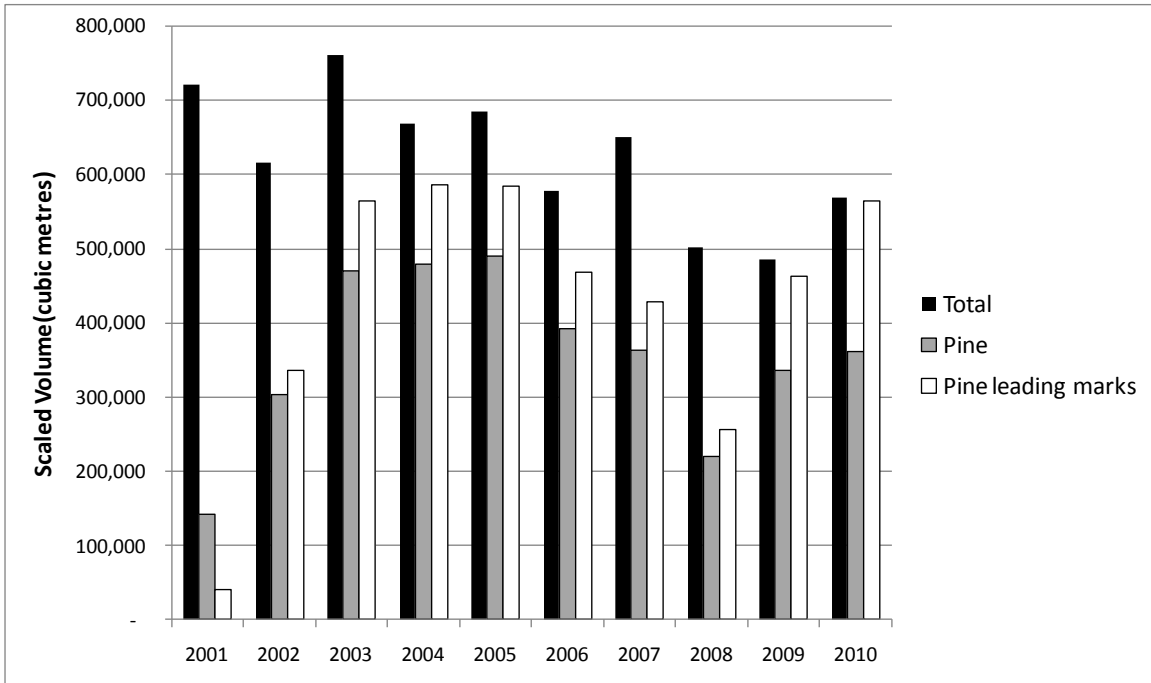


Figure 17A: Total harvest, pine harvest and the harvest from pine leading marks (Bulkley TSA—25% pine)

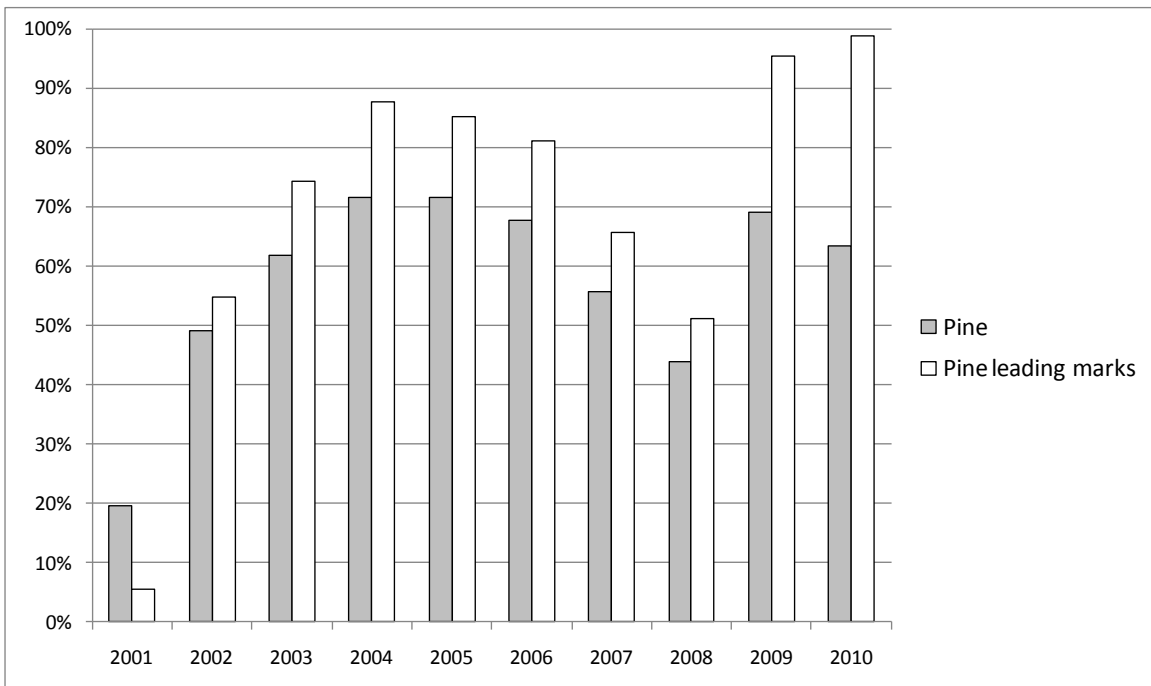


Figure 17B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Bulkley TSA—25% pine)

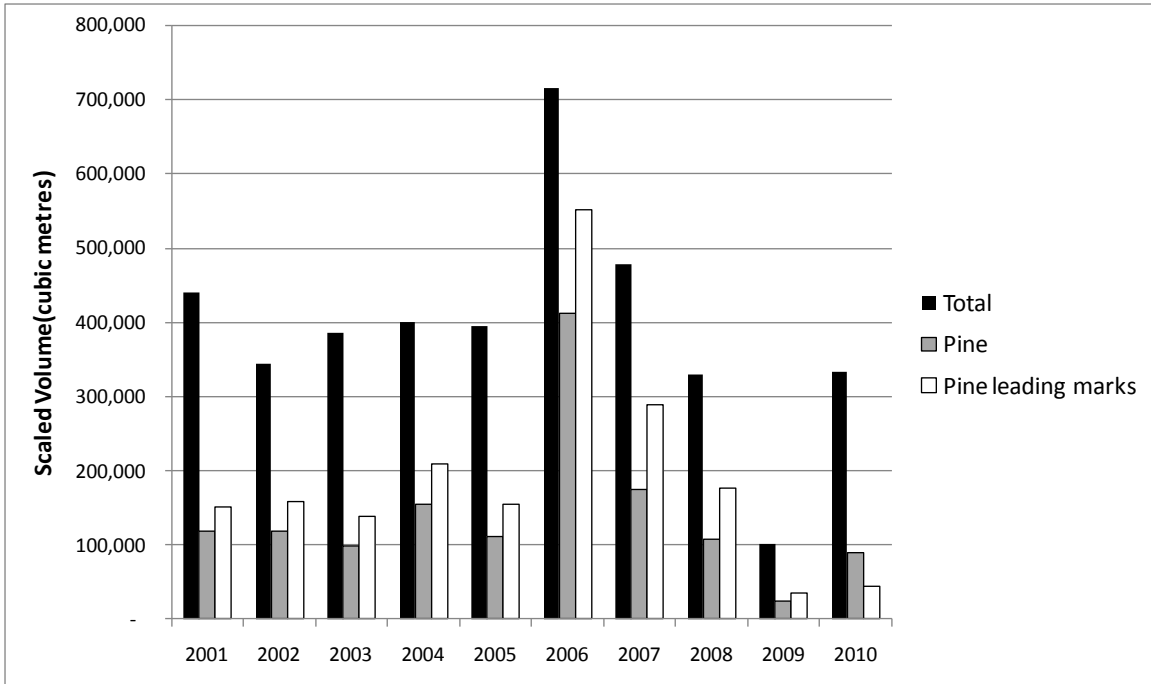


Figure 18A: Total harvest, pine harvest and the harvest from pine leading marks (Golden TSA—19% pine)

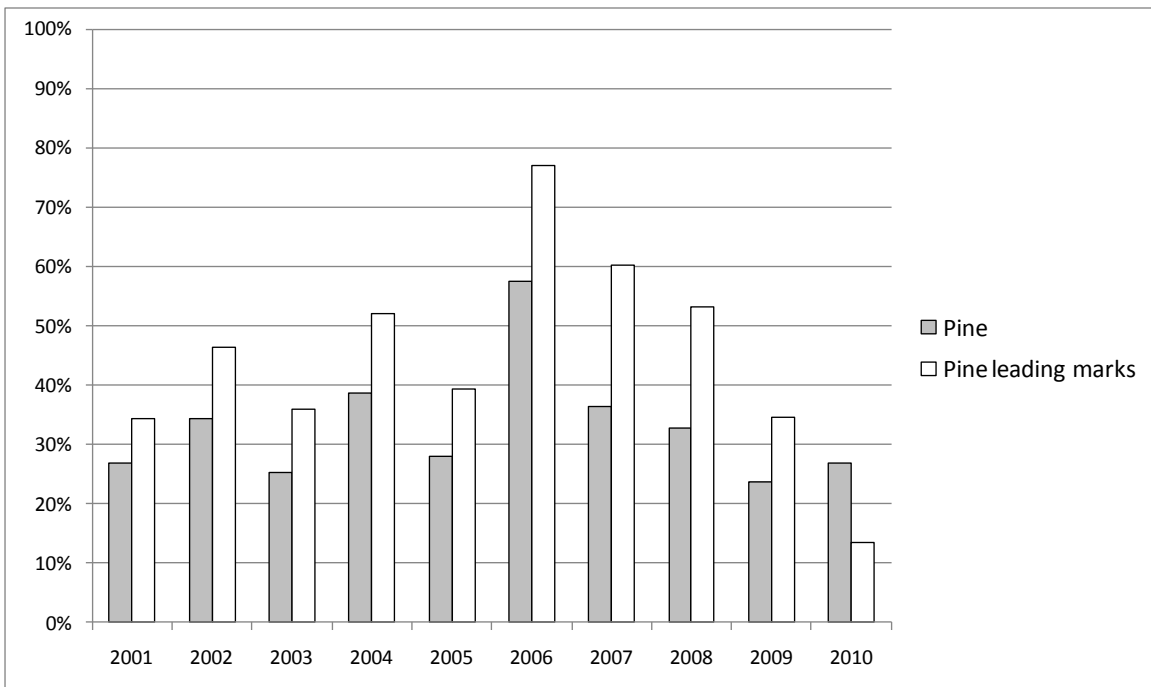


Figure 18B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Golden TSA—19% pine)

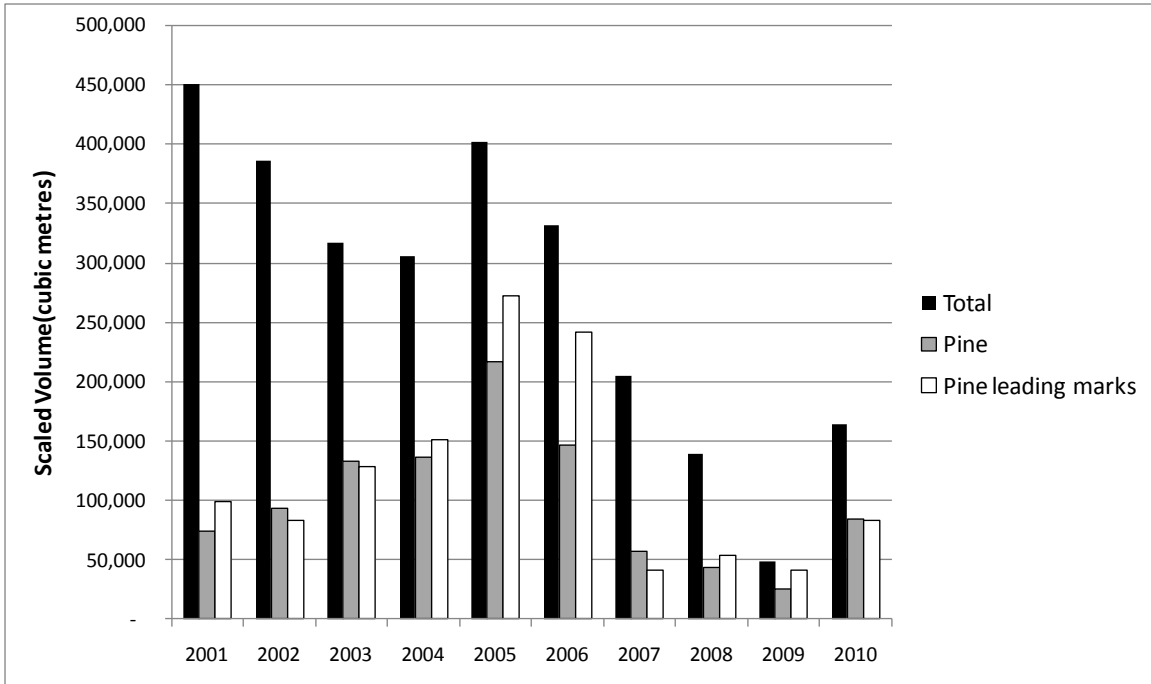


Figure 19A: Total harvest, pine harvest and the harvest from pine leading marks (Robson Valley TSA—16% pine)

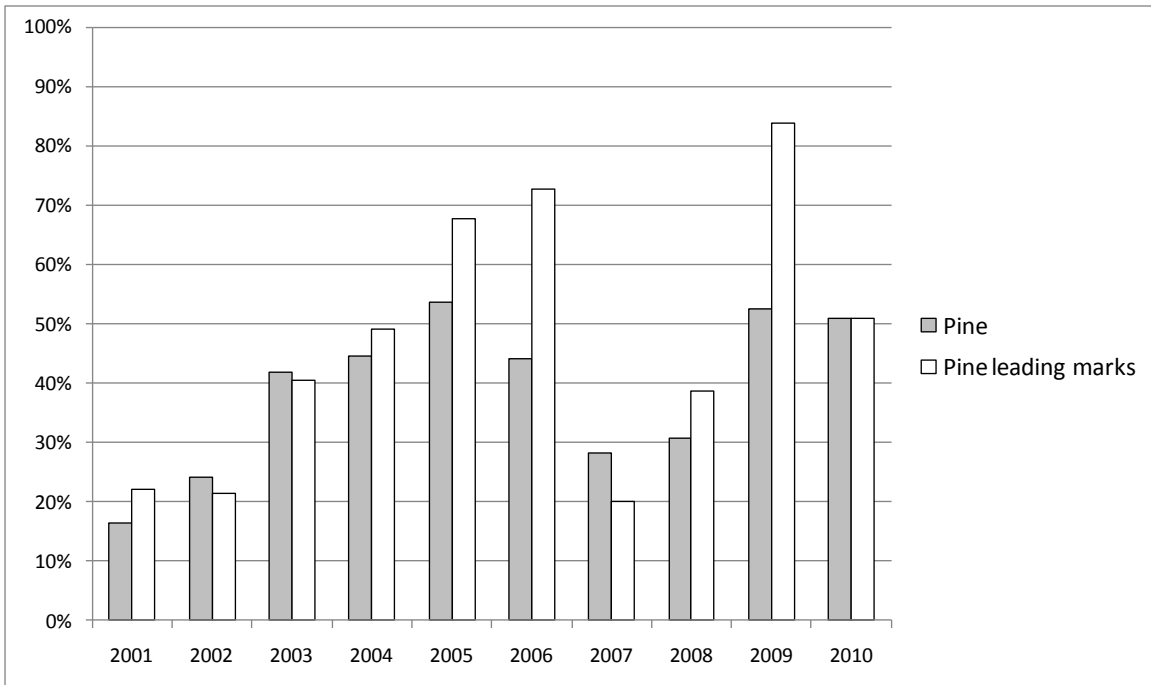


Figure 19B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Robson Valley TSA—16% pine)

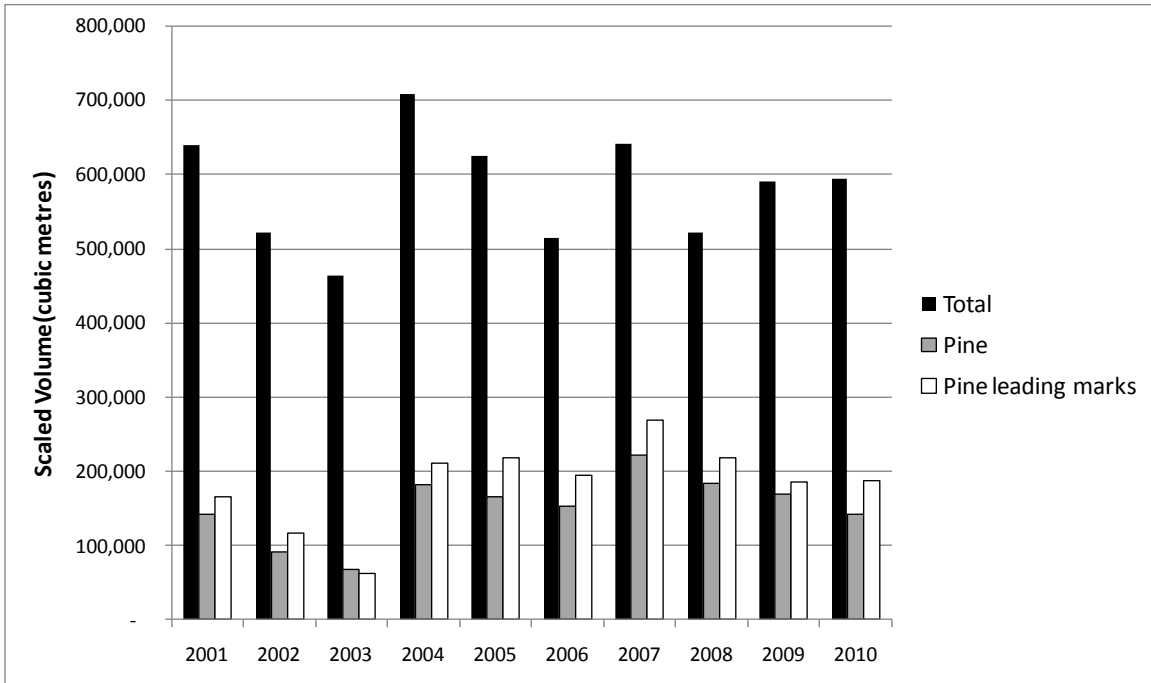


Figure 20A: Total harvest, pine harvest and the harvest from pine leading marks (Arrow TSA—15% pine)

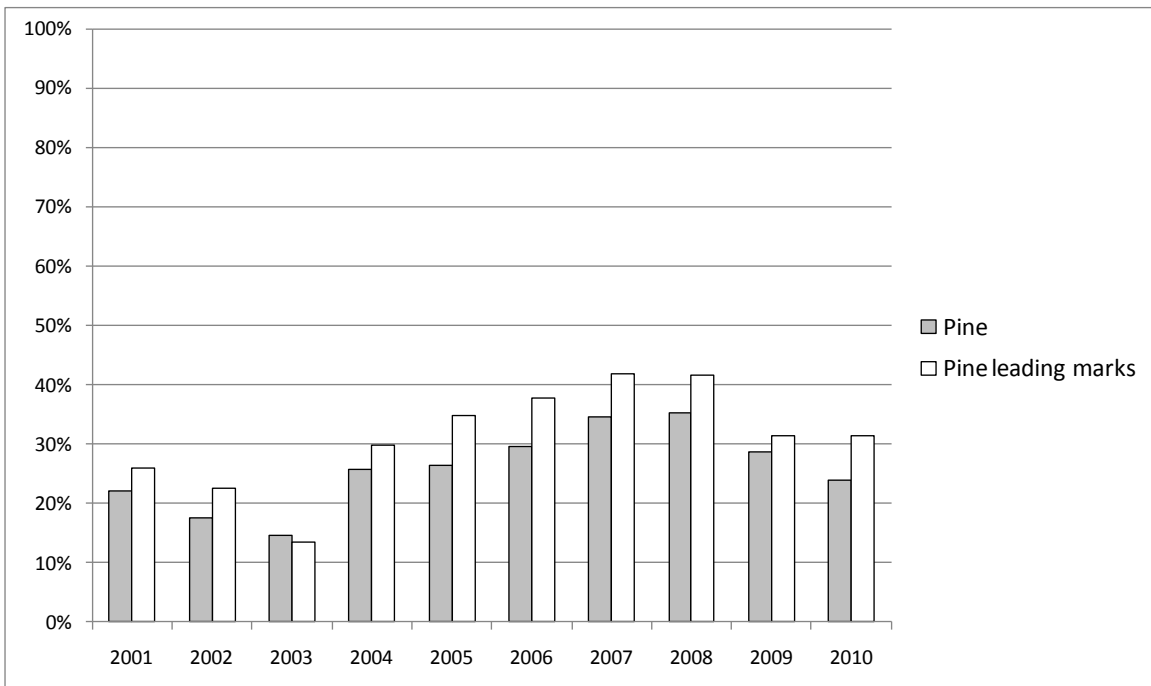


Figure 20B: Percent of harvest that is pine and percent of harvest that comes from pine leading marks (Arrow TSA—15% pine)

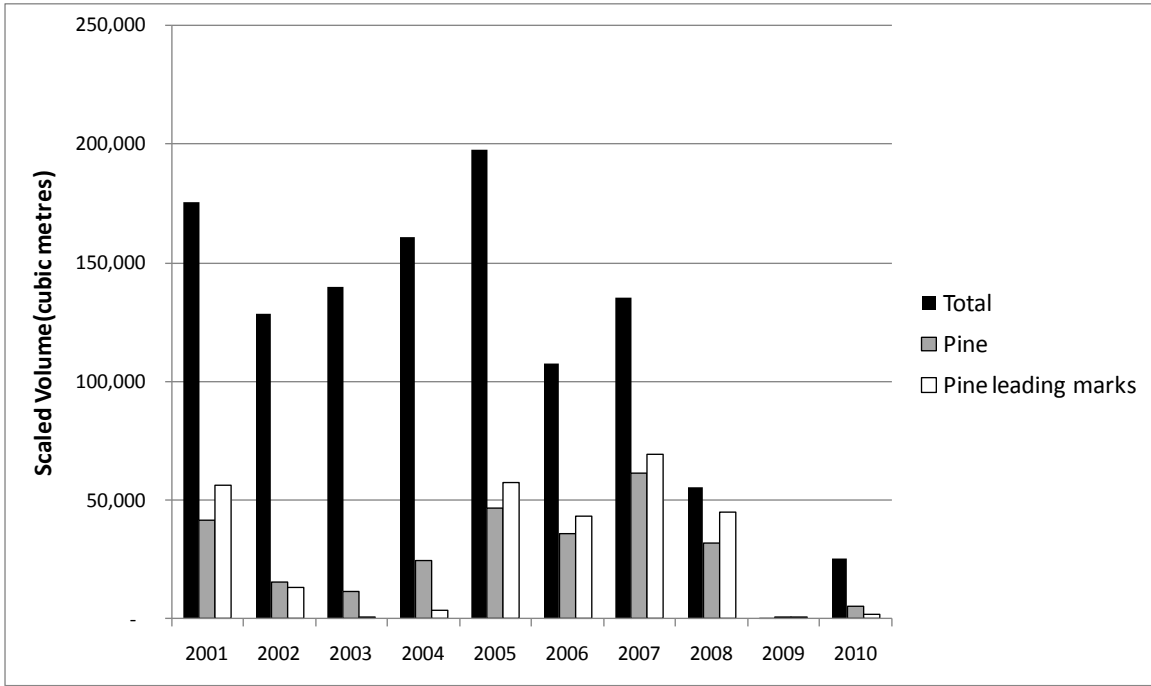


Figure 21A: Total harvest, pine harvest (TFL 8 (Interfor)—49% pine)

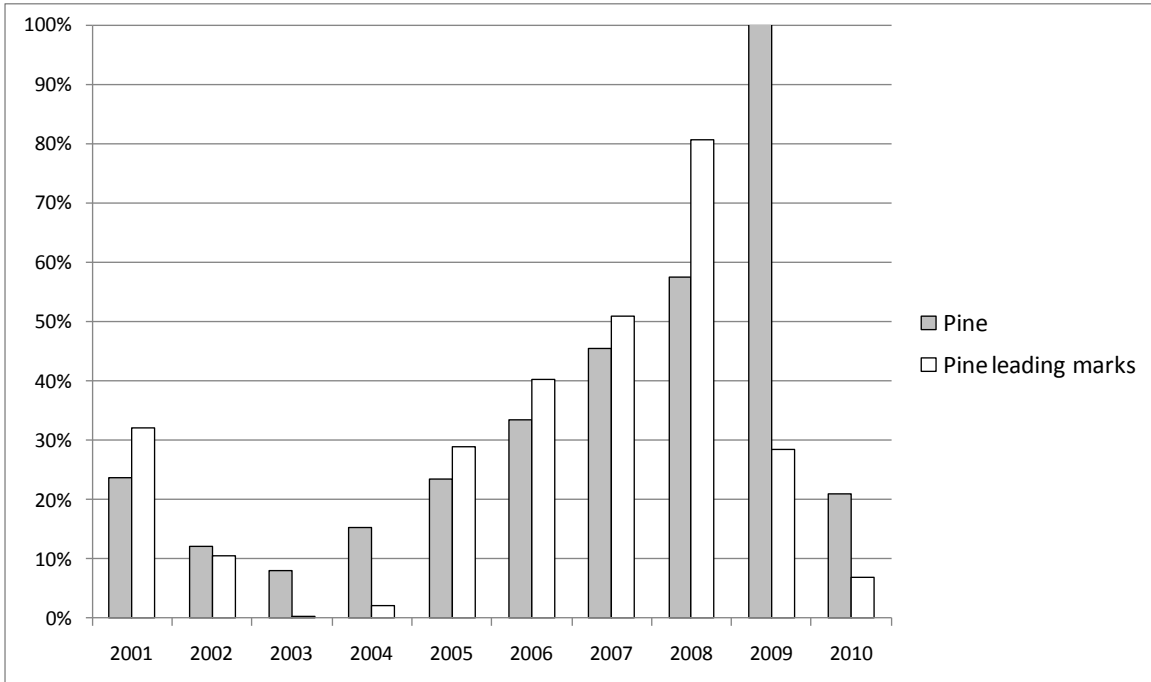


Figure 21B: Percent of harvest that is pine (TFL 8 (Interfor)—49% pine)

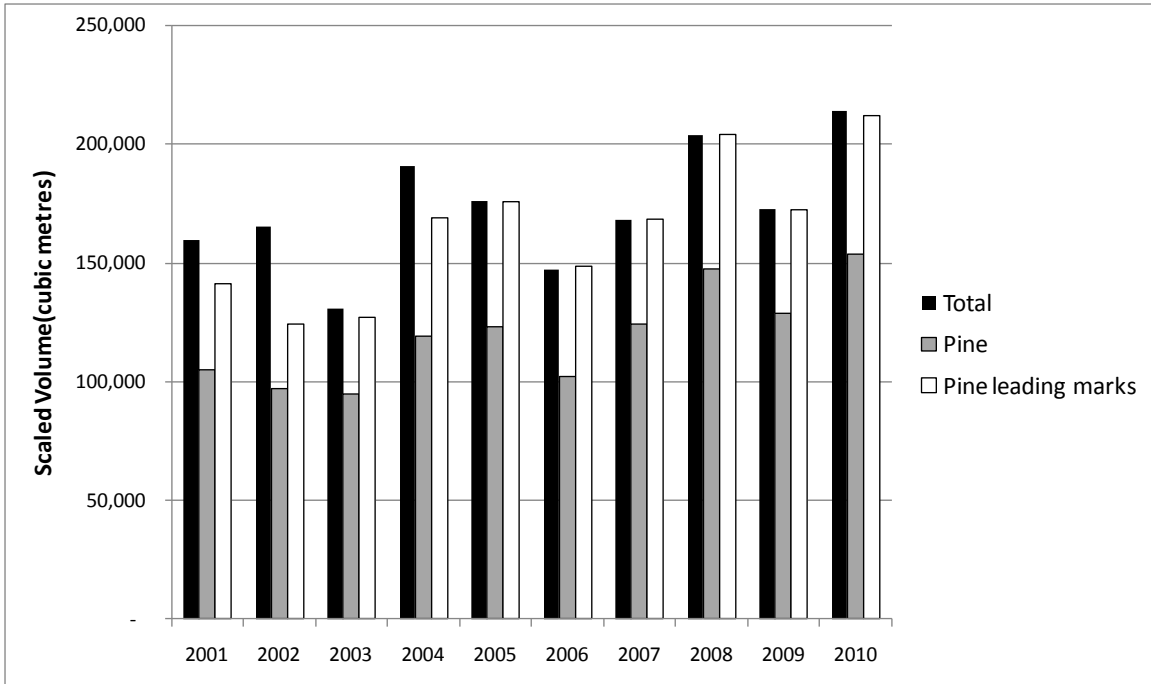


Figure 22A: Total harvest, pine harvest
(TFL 14 (Tembec)—43% pine)

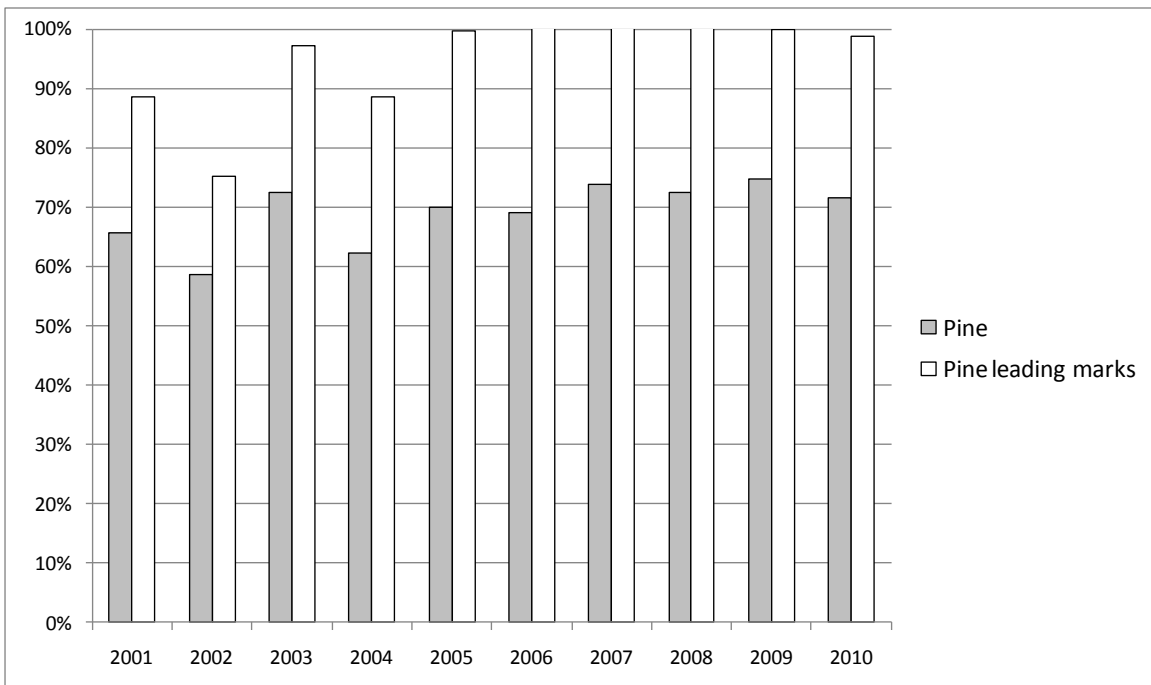


Figure 22B: Percent of harvest that is pine
(TFL 14 (Tembec)—43% pine)

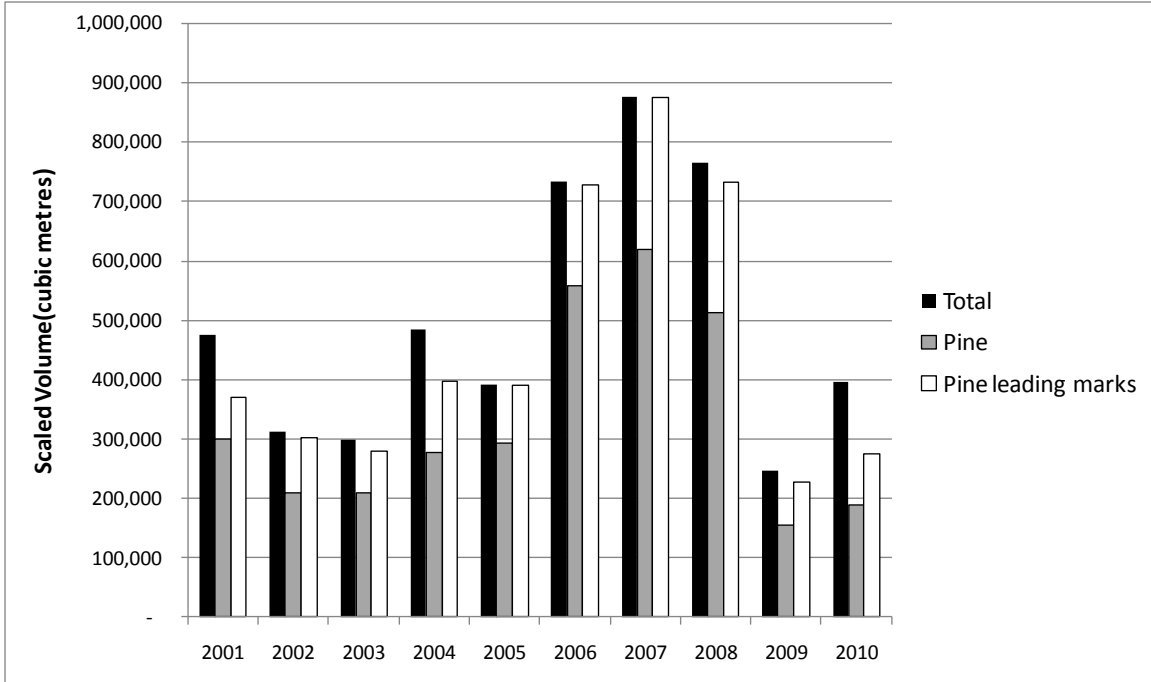


Figure 23A: Total harvest, pine harvest
(TFL 49 (Tolko)—42% pine)

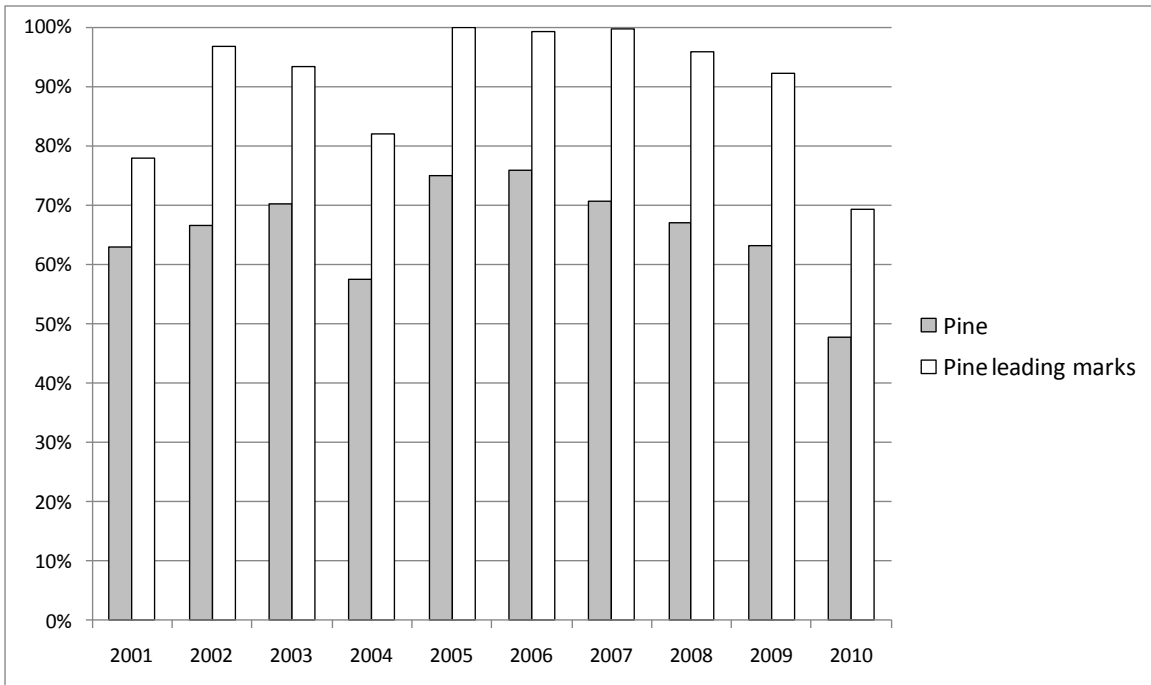


Figure 23B: Percent of harvest that is pine
(TFL 49 (Tolko)—42% pine)

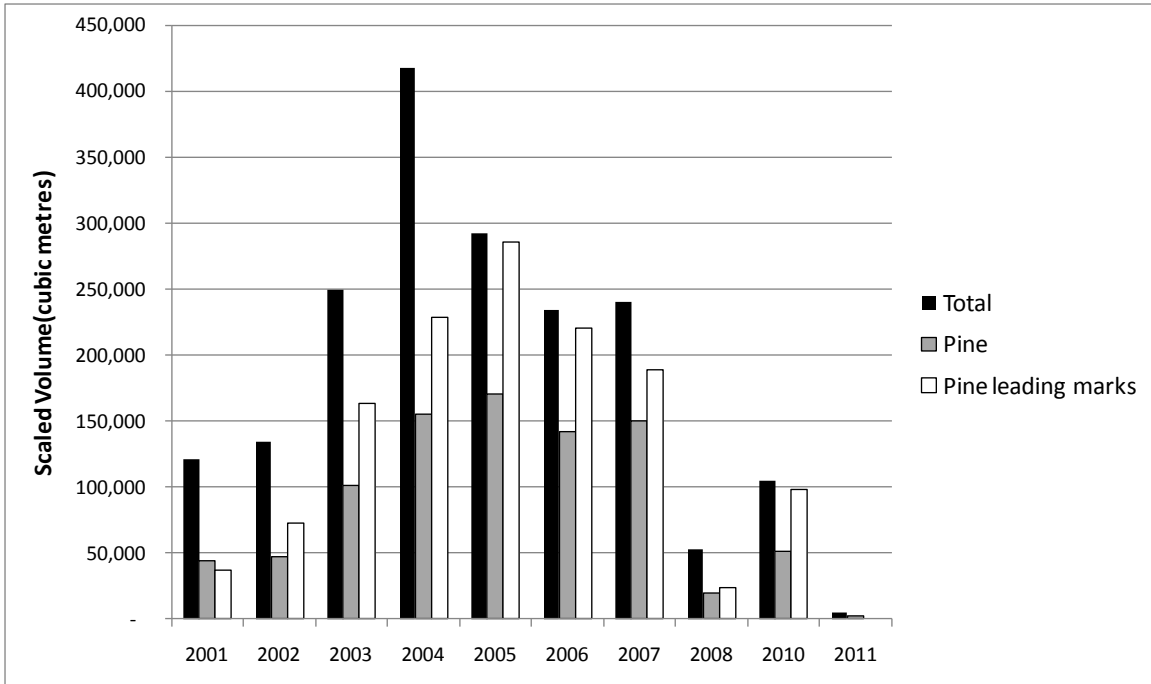


Figure 24A: Total harvest, pine harvest
(TFL 35 (Weyerhaeuser)—36% pine)

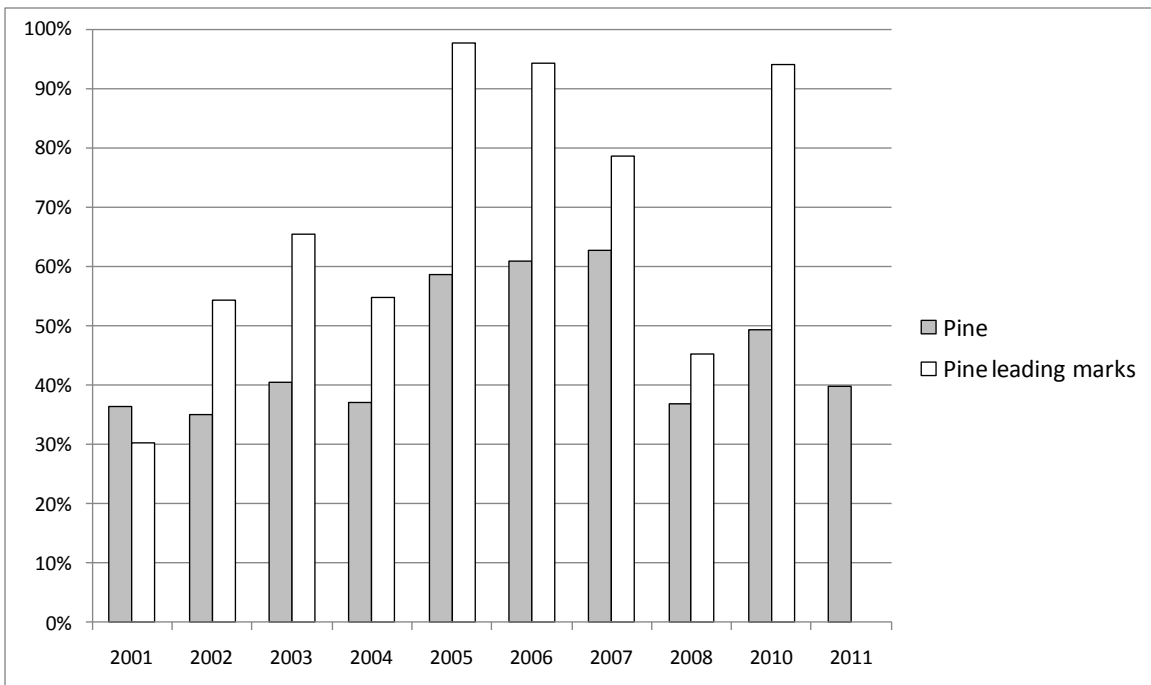


Figure 24B: Percent of harvest that is pine
(TFL 35 (Weyerhaeuser)—36% pine)

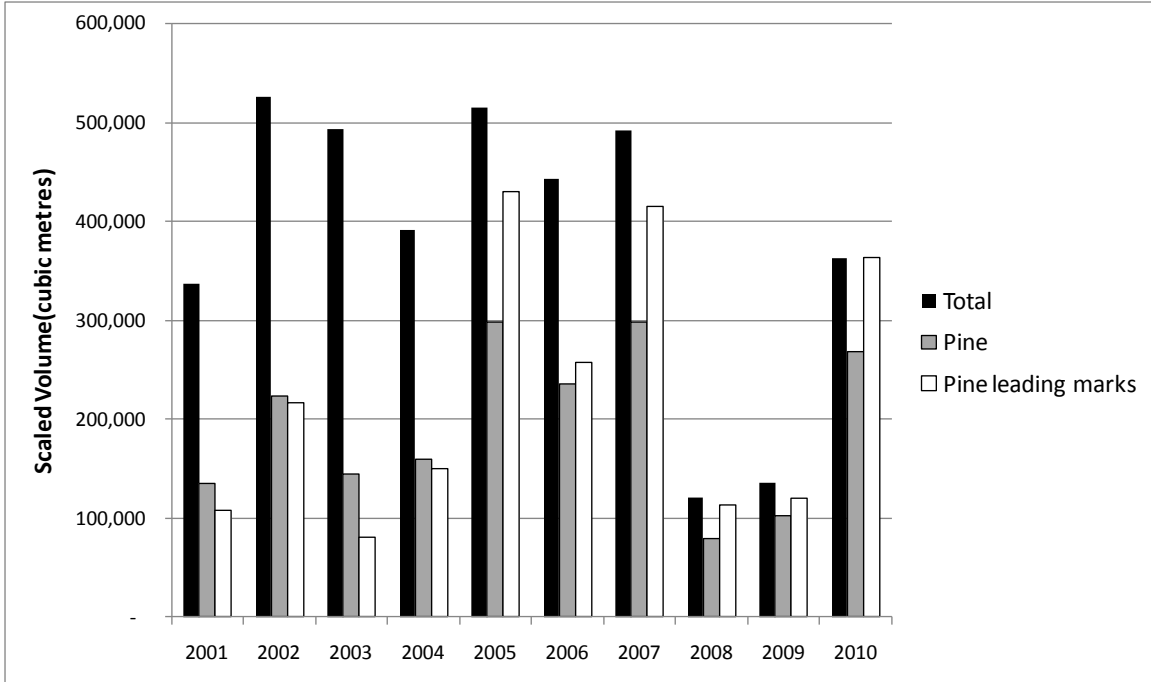


Figure 25A: Total harvest, pine harvest
(TFL 48 (Canfor)—32% pine)

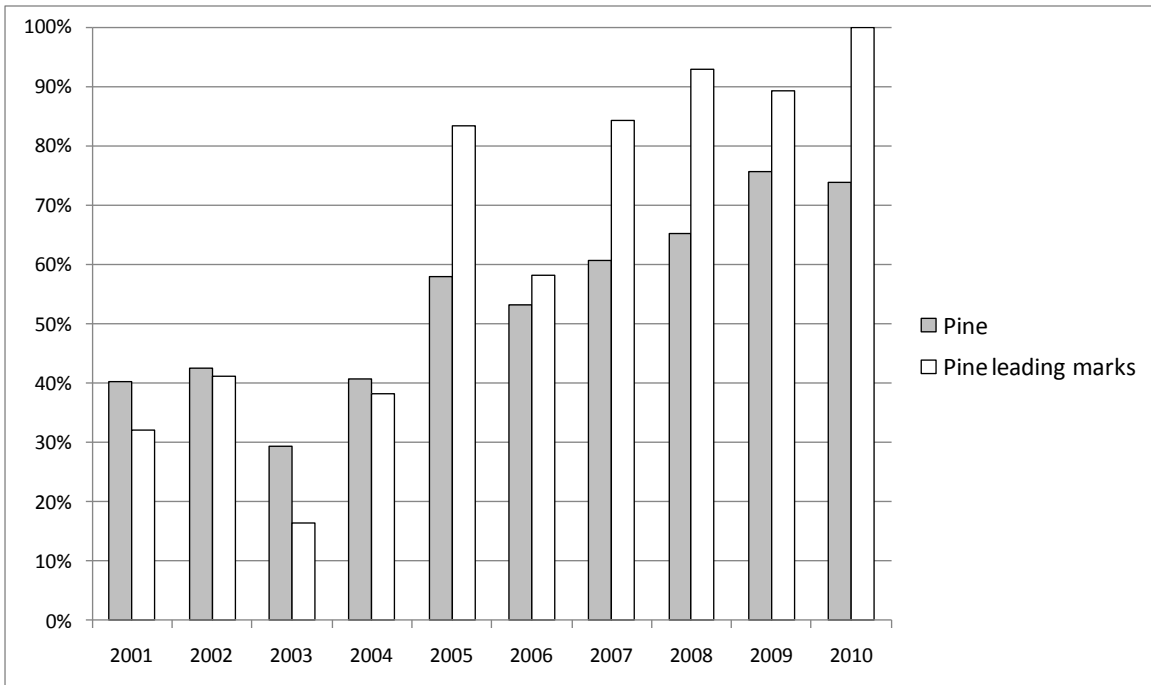


Figure 25B: Percent of harvest that is pine
(TFL 48 (Canfor)—32% pine)

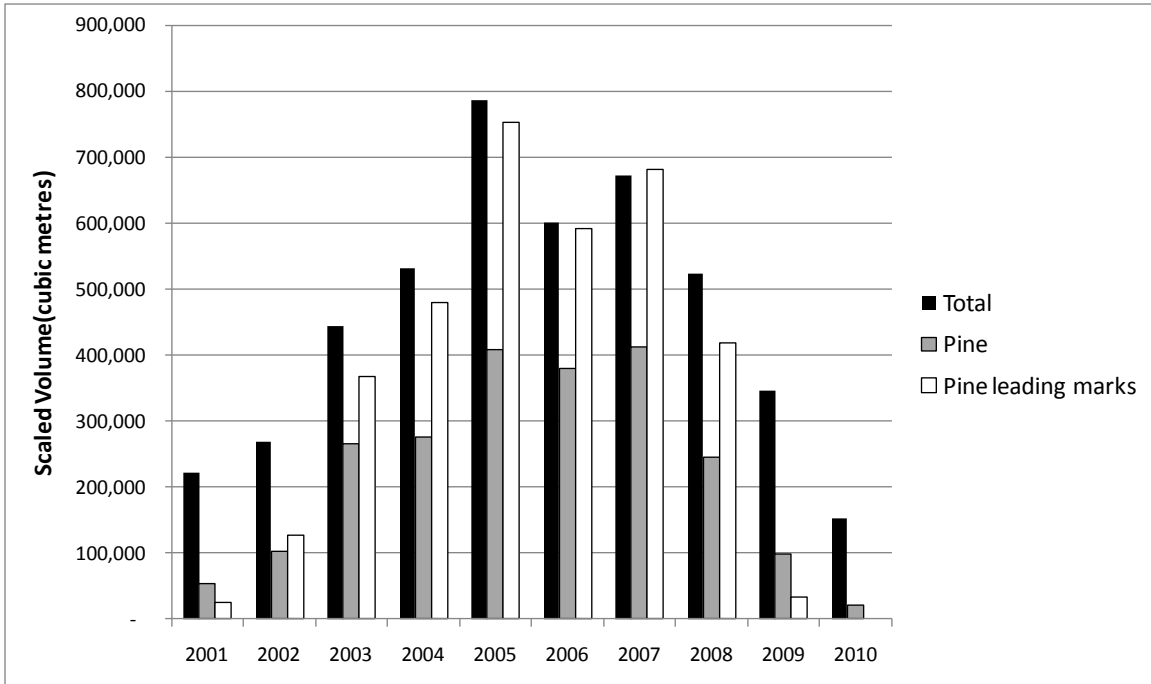


Figure 26A: Total harvest, pine harvest
(TFL 53 (Dunkley)—30% pine)

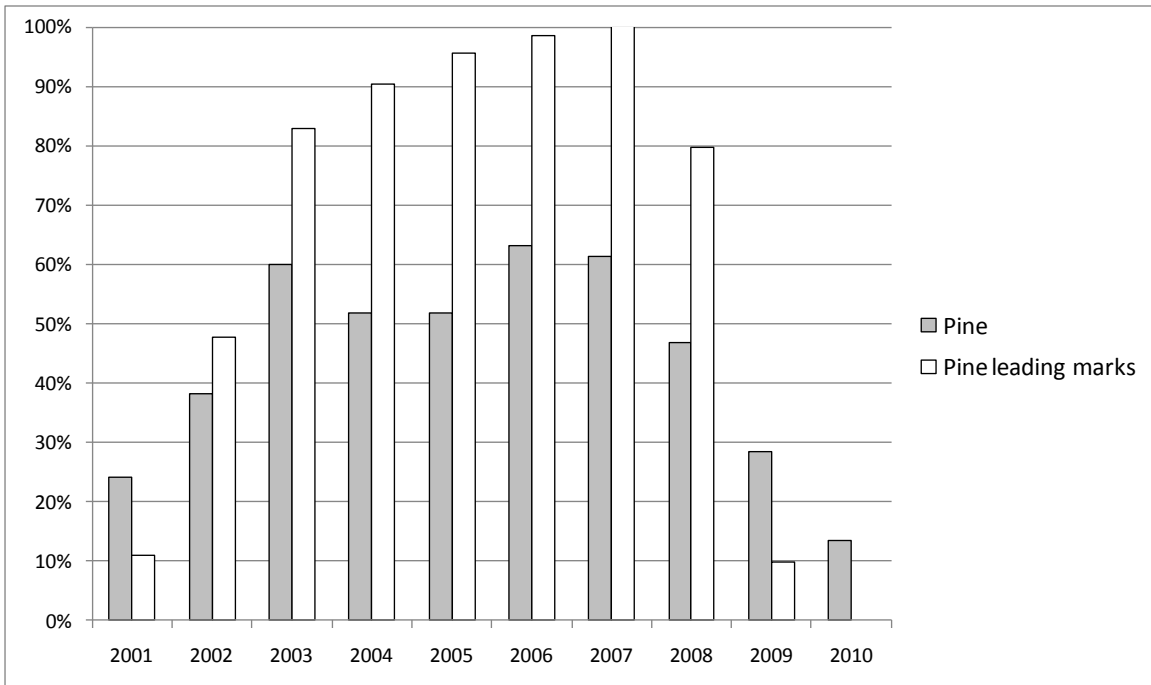


Figure 26B: Percent of harvest that is pine
(TFL 53 (Dunkley)—30% pine)

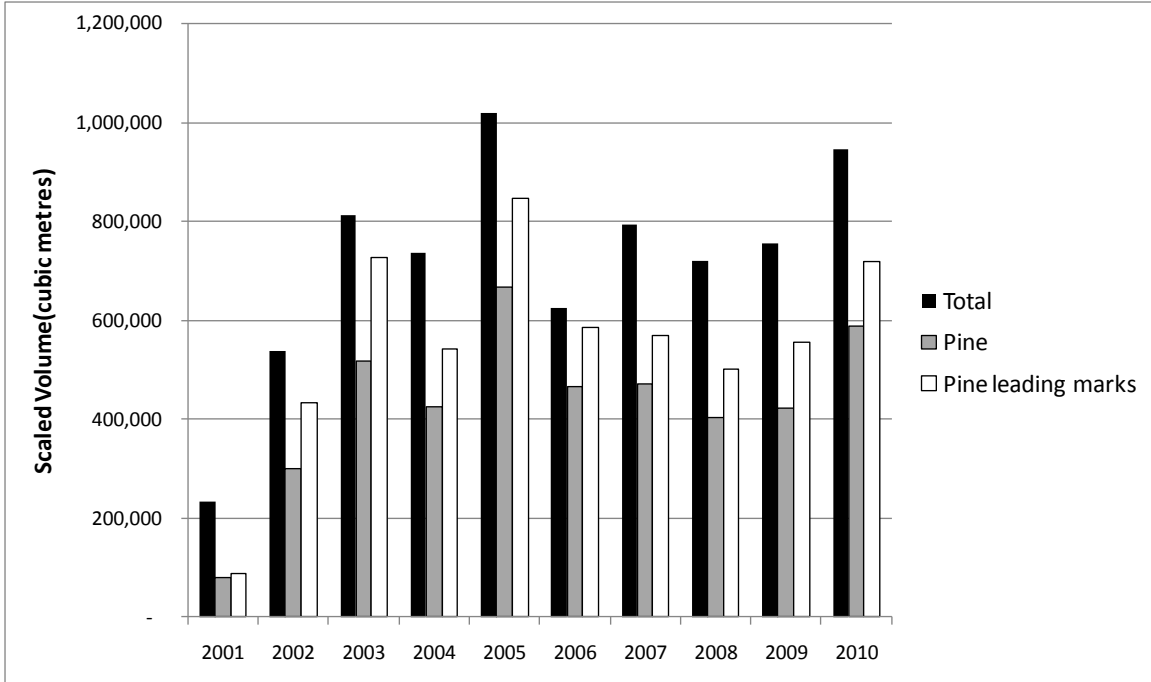


Figure 27A: Total harvest, pine harvest (TFL 52 (West Fraser)—26% pine)

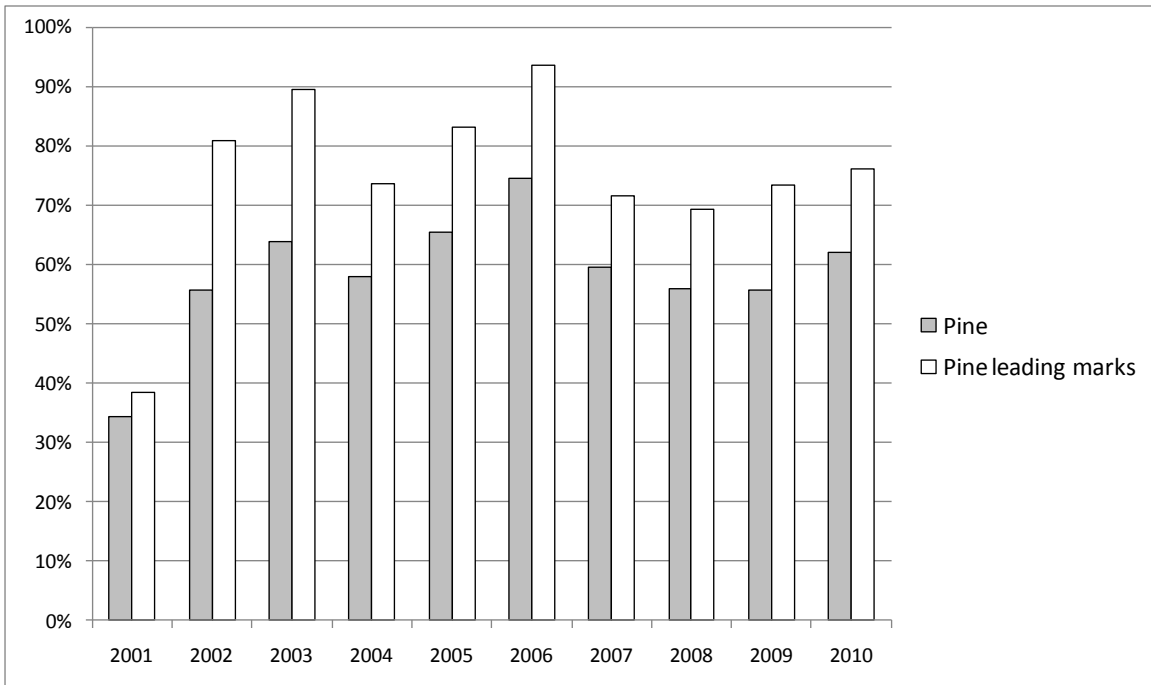


Figure 27B: Percent of harvest that is pine (TFL 52 (West Fraser)—26% pine)

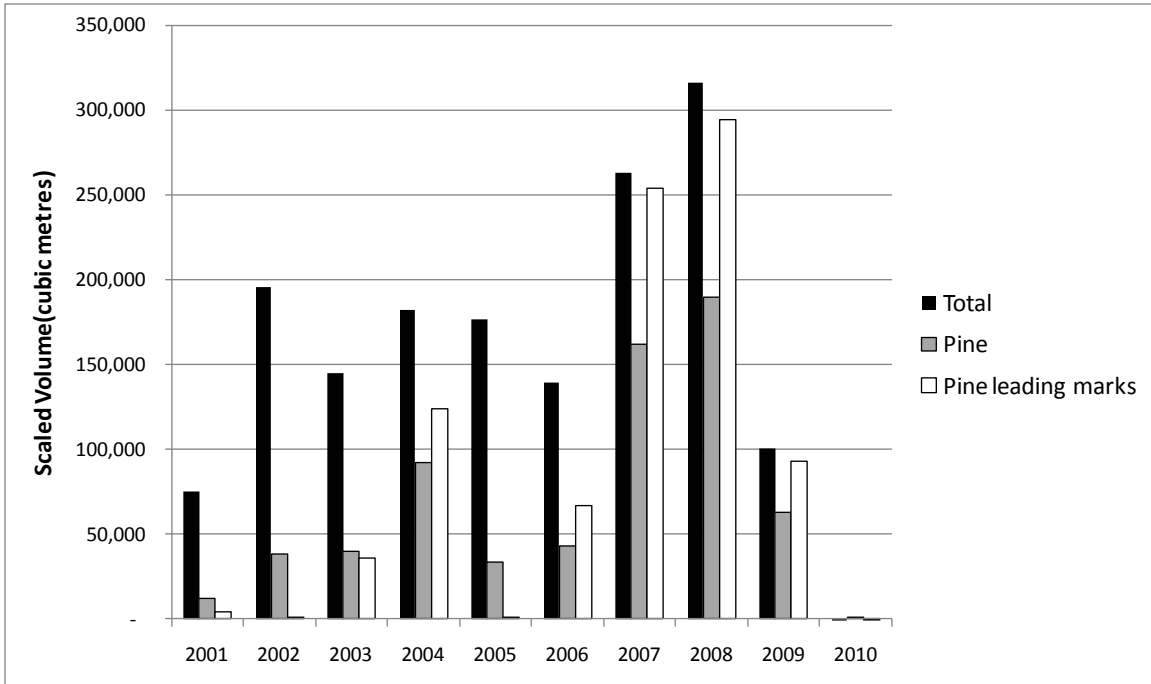


Figure 28A: Total harvest, pine harvest
(TFL 18 (Canfor)—25% pine)

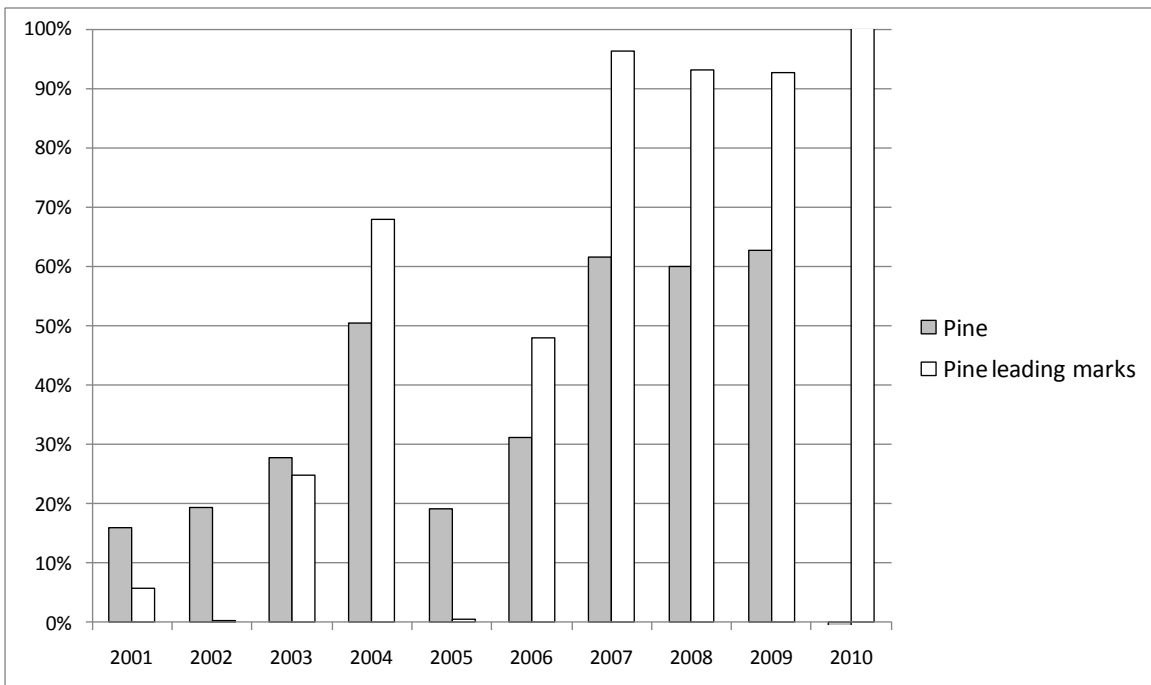


Figure 28B: Percent of harvest that is pine
(TFL 18 (Canfor)—25% pine)

Results - Summary and Interpretation:

For 2006-2010, the data presented in Figures 1B through 28B have been summarized into two tables. Table 1 summarizes the contribution of pine to the overall harvest and Table 2 depicts the contribution of pine leading timber marks to the overall harvest.

Each table lists the following information:

1. The percentage of the THLB that is pine (by area);
2. The estimated volume of pine left on the THLB;
3. The year that maximum harvest (of pine or pine leading timber marks) occurred;
4. The maximum harvest expressed as a percentage of total harvest (e.g.: Max(84%));
5. The pine (or pine leading timber mark) harvest expressed as a percentage of the maximum.

Quesnel, for example, has the following characteristics:

1. 70% of the THLB (by area) is pine leading;
2. There is an estimated 76 million cubic metres of pine (of various quality) left on the THLB;
3. The harvest of pine volume peaked in 2009 at 84% of the total harvest;
4. In 2006 and 2010 the harvest of pine expressed as a percentage of total harvest was 4% and 1% respectively less than the 2009 maximum;
5. With regard to the harvest of pine leading marks the maximum also occurred in 2009 and was 98% of the total harvest.

A cell coded N/A means that no harvest was recorded for that year.

Management units have also been colour coded as follows:

- a. Green if the harvest of pine (or pine leading harvest) has declined by 5% or less since the year of the maximum.
- b. Yellow if the harvest of pine (or pine leading harvest) has declined between 5% and 10% since the year of the maximum.
- c. Orange if the harvest of pine (or pine leading harvest) has declined by more than 10% since the year of the maximum.
- d. Grey indicates that no estimate of the remaining pine volume was known at the time of writing, and that Ministry staff should follow-up with licensees to gain an understanding why the salvage of pine has trailed off (dramatically in some cases).

Table 1: Contribution of pine to harvest for MPB impacted management units (MUs).

Management Unit	% MU Pine	Remaining Pine Volume (million m3)	Harvest Year				
			2006	2007	2008	2009	2010
Quesnel TSA	70%	76	-4%	-3%	-3%	Max(84%)	-1%
Lakes TSA	64%	58	-4%	-4%	-2%	Max(82%)	-1%
Williams Lake TSA	61%	64	-2%	Max(75%)	-3%	-8%	-5%
Merritt TSA	58%	55	-5%	-5%	-1%	Max(77%)	-3%
100 Mile TSA	55%	40	-1%	-3%	Max(79%)	-3%	-1%
Prince George TSA	48%	186	-5%	-5%	-2%	Max(77%)	-7%
Boundary TSA	46%	14	-4%	-13%	Max(56%)	-6%	-18%
Cranbrook TSA	45%	26	Max(72%)	Max(72%)	-5%	-3%	-6%
MacKenzie TSA	44%	88	-9%	-10%	-13%	-2%	Max(71%)
Morice TSA	43%	52	Max(74%)	-5%	-2%	-1%	Max(74%)
Invermere TSA	41%	11	Max(65%)	-5%	-14%	-7%	-3%
Lillooet TSA	39%	11	Max(34%)	-11%	-19%	Max(34%)	-6%
Kamloops TSA	30%	44	-2%	Max(60%)	-1%	-3%	-6%
Kootenay Lake TSA	29%	8	-11%	-7%	-1%	Max(49%)	-3%
Okanagan TSA	26%	130	-10%	-7%	-1%	-4%	Max(57%)
Dawson Creek TSA	25%	Unknown	-11%	-10%	-14%	Max(45%)	-12%
Bulkley TSA	25%	Unknown	-4%	-16%	-28%	Max(69%)	-8%
Golden TSA	19%	6	Max(57%)	-21%	-25%	-34%	-31%
Robson TSA	16%	6	-8%	-24%	-24%	-12%	Max(52%)
Arrow TSA	15%	Unknown	-6%	-1%	Max(35%)	-7%	-11%
TFL 8 Interfor	49%	Unknown	-24%	-12%	Max(57%)	N/A	-36%
TFL 14 Tembec	43%	Unknown	-5%	-1%	-2%	Max(75%)	-3%
TFL 49 Tolko	42%	Unknown	Max(76%)	-5%	-9%	-13%	-28%
TFL 35 West Fraser	36%	Unknown	-2%	Max(63%)	-26%	N/A	-13%
TFL 48 Canfor	32%	Unknown	-23%	-15%	-11%	Max(76%)	-2%
TFL 53 Dunkley	30%	Unknown	Max(63%)	-2%	-16%	-35%	-50%
TFL 52 West Fraser	26%	Unknown	Max(74%)	-15%	-18%	-19%	-12%
TFL 18 Canfor	25%	Unknown	-32%	-1%	-3%	Max(63%)	N/A

Table 2: Contribution of pine leading marks to harvest for MPB impacted MUs.

Management Unit	% MU Pine	Remaining Pine Volume (million m3)	Harvest Year				
			2006	2007	2008	2009	2010
Quesnel TSA	70%	76	-5%	-1%	-3%	Max(98%)	-1%
Lakes TSA	64%	58	Max(100%)	Max(100%)	Max(100%)	Max(100%)	-1%
Williams Lake TSA	61%	64	Max(90%)	Max(90%)	-5%	-12%	-7%
Merritt TSA	58%	55	-2%	-1%	Max(99%)	-1%	-8%
100 Mile TSA	55%	40	Max(98%)	-3%	-1%	-10%	-2%
Prince George TSA	48%	186	-1%	-5%	-1%	Max(98%)	-7%
Boundary TSA	46%	14	-3%	-31%	Max(88%)	-10%	-26%
Cranbrook TSA	45%	26	-2%	-3%	-7%	Max(93%)	-8%
MacKenzie TSA	44%	88	-11%	-16%	-15%	-9%	Max(96%)
Morice TSA	43%	52	-4%	-10%	-6%	Max(100%)	-2%
Invermere TSA	41%	11	-7%	-11%	-24%	Max(93%)	-5%
Lillooet TSA	39%	11	-9%	-13%	-27%	-8%	Max(41%)
Kamloops TSA	30%	44	-1%	Max(78%)	-3%	-7%	-15%
Kootenay Lake TSA	29%	8	-21%	-10%	Max(66%)	-8%	-11%
Okanagan TSA	26%	130	-13%	-11%	-4%	-3%	Max(78%)
Dawson Creek TSA	25%	Unknown	-20%	-19%	-20%	Max(61%)	-23%
Bulkley TSA	25%	Unknown	-18%	-33%	-48%	-3%	Max(99%)
Golden TSA	19%	6	Max(77%)	-17%	-24%	-43%	-64%
Robson TSA	16%	6	Max(72%)	-52%	-36%	-10%	-20%
Arrow TSA	15%	Unknown	-4%	Max(42%)	Max(42%)	-10%	-10%
TFL 8 Interfor	49%	Unknown	-40%	-30%	Max(81%)	N/A	-74%
TFL 14 Tembec	43%	Unknown	0%	-1%	-1%	-1%	-2%
TFL 49 Tolko	42%	Unknown	-1%	0%	-4%	-8%	-31%
TFL 35 West Fraser	36%	Unknown	Max(94%)	-15%	-49%	N/A	Max(94%)
TFL 48 Canfor	32%	Unknown	-42%	-16%	-7%	-11%	Max(100%)
TFL 53 Dunkley	30%	Unknown	-2%	Max(100%)	-20%	-89%	-100%
TFL 52 West Fraser	26%	Unknown	Max(94%)	-22%	-24%	-20%	-18%
TFL 18 Canfor	25%	Unknown	-48%	Max(96%)	-3%	-4%	N/A

Discussion and Conclusion:

Tables 1 and 2 contain data that allow tracking of harvest activity in management units and a comparison of harvesting trends among management units.

In management units that have been coded green, licensees have continued to focus harvesting on pine. In management units that have been coded yellow, the harvest of pine is decreasing and it is recommended that Ministry staff encourage licensees to continue the salvage of pine for as long as possible.

In management units that have been coded orange, it is recommended Ministry staff follow-up with licensees to gain an understanding why the salvage of pine has trailed off. The observed decline in pine harvest cannot be explained by a lack of pine for salvage. There are still millions of cubic metres of pine left across these management units. However, the pine left on these land bases may not be of sufficient quality to economically harvest. Hence the need for Ministry staff to gain a better understanding of why pine salvage is declining.

In management units that have been coded grey, the salvage of pine is declining and we do not know why in most cases. Most of these grey-coded units are TFLs where the licensee is the sole custodian of the inventory and the volume of remaining pine is unknown. However, for TFL 53 we know that the harvest of pine has dramatically declined because the licensee has salvaged most of the pine and the AAC has been reduced to reflect this. For management units coded grey it is recommended that Ministry staff follow up with licensees to understand why salvage is trailing off.

In those cases where there is a significant decrease in the percentage of pine harvest, (such as Boundary and Golden TSAs and TFLs 8, 49 and 52) the percentage of the harvest from pine leading marks is even greater (see Tables 1 and 2). This indicates a shift in harvest from pine dominated stands to more mixed stands where pine is a smaller component of the stand.

Overall the salvage of beetle impacted stands is still good. But salvage levels are slightly lower than reported a year ago, perhaps reflecting less economic harvest opportunities in these stand types.

Recommended Next Steps:

To ensure harvest activities are aligned with AACs, it is recommended that staff from Forest Analysis & Inventory Branch follow-up with staff in the management units coded yellow, orange and grey to understand why pine salvage is decreasing.

It is also recommended that this study be repeated in 2012 to monitor the level of pine salvage in the province.