

Introduction

This report was prepared in response to the Adam's Lake band's request for information regarding an increase in huckleberry production on a specific site in their traditional territory. Given the method of data collection and analysis, this paper can only present a speculative rationale and propose follow-up steps and possible research hypotheses.

Background

Adams Lake Band members observed a dramatic increase in black huckleberries (*Vaccinium membranaceum*) (also known as blue huckleberry and globe huckleberry in British Columbia) on CP715, block 2 in the summer of 2000. In previous years, berry production was reported to be very low in this area. Adams Lake elder, Mary Thomas, did not recall a bumper crop for at least 6-7 years, nor did she recall crops as productive as those observed in 2000. It is reported that 20 -30 people picked berries on this site for 3 - 4 weeks in the summer months and that this site provided enough berries for both the Adams Lake and Neskonlith band members.

Location

Adams Lake Band is located in the Shuswap Lakes area of the interior of British Columbia. The cutblock is located between the 17 and 18 kilometre markers along the 670 Road above Kwitkoit Creek in the Salmon Arm Forest District (approximately 51° 03' N and 119° 26' W). The block is in the Interior Cedar Hemlock (ICH) biogeoclimatic zone in the mw subzone. The eastern boundary of the block is transitional with the Engelmann Spruce-Subalpine Fir (ESSF) zone. The cutblock has a west (to slightly northwest) aspect in an upper slope (mostly xeric) position on rolling terrain. The elevation averages around 950 metres with a 20-40% slope.

The block was divided into three treatment units; the north end, the south end and the west side . The north end was logged in 1990, the west in 1991 and the

south in 1992. All three sites were planted with Douglas-fir (*Pseudotsuga menziesii*) and Lodgepole pine (*Pinus contorta*) (north and west in 1992 and south in 1993). Unlike the west and south sites, the north site was not broadcast burned before planting.

The Plant

In British Columbia, *V. membranaceum* is common and widespread at mid to high elevations in dry to moist coniferous forests, openings and clearings (Parish et al 1996). It is a low to medium (30-120-cm) rhizomatous shrub. The complex and extensive system of underground roots is located primarily in the top 10-15 cm of soil (MoF Bibliography). The presence of black huckleberry usually indicates a high acid humus form and nitrogen poor soils (Klinka et al 1989). The best soils to support huckleberry plants have high organic matter content, low bulk density (not compacted or heavy-textured) and high moisture content (Stark and Baker 1992).

Despite the fact that the plant is shade tolerant, existing research by Stark in 1992 indicates that berry production appears higher with increased light on some sites. Black huckleberries can reproduce through seeds although germination rates are extremely low under natural conditions. This lack of sexual reproduction is of concern since this plant is so important to humans as well as a wide array of wildlife (Stark 1992). Vegetative reproduction is most often a result of disturbance, although clones can expand laterally even in the absence of disturbance. (MoF Bibliography)

Methodology

A ground reconnaissance was used to establish baseline data on species density, vegetative competition and productivity. Anecdotal information and other literature were used to compliment baseline data. Data gathered includes:

- maps of burned and unburned treatment units;

- Ministry of Forests Protection Branch weather station data (three sites);
- the preharvest silvicultural prescription (SP);
- a 1999 appraisal silvicultural survey;
- discussions with berry pickers on site;
- interview of an Adams Lake elder.

In addition, a comprehensive bibliography on black huckleberry from the Ministry of Forests research branch was referenced. Samples from several bushes bearing different coloured berries were taken for species identification

Results

The ground reconnaissance showed that huckleberry shrubs are most dense on the rocky outcrops and steeper slopes. The flatter benches that run parallel to the road were more heavily vegetated with competing vegetation, but had fewer huckleberry shrubs overall. No shrubs were visible in the understory of the adjacent stand east of the cutblock. The seepage area on the edge of the block next to the uncut timber was heavily vegetated with devil's club (*Oplopanax horridus*). By the size and numbers of bear scat on the block, it was also evident that bears were taking advantage of the productivity of the site.

Neither the SP nor the 1999 appraisal document mentions huckleberry in the brush layer. The south half of the cutblock that had been broadcast burned showed smaller huckleberry shrubs with slightly different plant associations. There were few notable differences in berry productivity between any of the treatment units; however, First Nation pickers encountered on the site believed that the burned site produced sweeter berries.

Because of differences in colour and flavour, the First Nations pickers also assumed there were three different species on the site. Plant ecologist, Fraser Russell, identified all the plant samples as one and the same; black huckleberry (*Vaccinium membranaceum*). The different colours of berries are most likely due

to varying levels of ripeness, or to plant responses to the growing site (i.e. colour may differ from a dry rocky outcrop to a moist depression). Similarly, flavour may change due to differences in site quality (moisture, nutrients and treatment).

In the existing research, it appears that harvesting reduces the competition for light and nutrients and is often followed by increased growth and yields of huckleberry. However, site conditions (moisture and community composition) and the types of harvest and post harvest treatment all influence the response of huckleberry. Because of its shallow root system, huckleberry is susceptible to scarification and hot slash burns from heavy fuel loading. Alternatively, light broadcast burns have been shown to stimulate growth of new stems and increase berry yields while preventing the invasion of competing vegetation. (MoF Bibliography)

Kamloops Forest Regional ecologist, Dennis Lloyd, has speculated that the increased yields are a result of seasonal climatic conditions this year. This observation is consistent with the higher precipitation and cooler spring/summer temperatures .

Summary

Informal enquiries with local people from the Lillooet and Hazelton areas also showed that black huckleberry production was high in those areas of the province as well in the summer of 2000. It is unknown whether their observations correlate with past logging activities. The numbers of huckleberry plants on this cutblock could be attributed to the logging that took place in 1990-92 since the disturbance associated with logging could have initiated rhizome sprouting as well as decreased the competition from other plant species. However, this association is speculative since there is no information available on huckleberry density in the understory prior to harvesting. Current research suggests that huckleberry productivity is best on 6-17 year old clearcuts, but this is dependent

on site quality and after approximately 25 years, productivity drops again (MoF Bibliography).

Discussion

The Ministry of Forests approached Adams Lake Band's question by gathering and analysing existing data rather than initiate more research. By doing this it is hoped that the band's enquiries will be addressed in a more timely manner.

Questions that arose during the course of this study include:

- How does disturbance through harvesting or site treatment affect berry production?
- Does burning affect flavour?
- Is there a relationship between bears and berry production?
- Is there a relationship between weather and berry production?
- Is there a correlation between plant stress and berry productivity?

These questions may be answered through on-going research in various parts of North America, including British Columbia. Evelyn Hamilton from the Ministry of Forests Research Branch is in the process of compiling research data pertaining to *Vaccinium membranaceum* and is the source of the bibliography cited in this report.

The next steps for Adams Lake band:

- Talk to members of the community to establish a research question (hypothesis);
- Form partnership(s) to commence research;
- Establish research trials.

Food

All Interior First Peoples ate huckleberries. They were collected in large quantities from July to September depending on the elevation. They were dried in the sun or over a fire if the weather was not suitable (Turner 1997). Today

huckleberries still play an important role in First Nation communities. People pick the berries and preserve them by canning, freezing or making jams and jellies.

Literature Cited

Klinka, K. et al. 1989. *Indicator Plants of Coastal British Columbia*. UBC Press: Vancouver. p239.

Parish, Roberta et al. 1996. *Plants of the Southern Interior: British Columbia*. Lone Pine Publishing: Vancouver. p92.

Stark, N. and Stephen Baker. 1992. *The Ecology & Culture of Montana Huckleberries: A Guide for Growers and Researchers*. School of Forestry, The University of Montana. Miscellaneous Publication 52. Pp 87.

Turner, Nancy J. 1997. *Food Plants of Interior First Peoples*. UBC Press: Vancouver. P 117.

Bibliography on *Vaccinium membranaceum* available from Evelyn Hamilton at Ministry of Forests Research Branch. Email: Evelyn.Hamilton@gems8.gov.bc.ca or call (250) 387-3650.