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SHEEP GRAZING ON SPRUCE PLANTATIONS
AT HENDRIX LAKE

Interim Report
1984

P. Salm and D. Tweedhope
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MINISTRY OF FORESTS

100 MILE HOUSE FOREST DISTRICT

December 3, 1984

Prepared By:

P.J. Salm, R.P.F.

D.J. Tweedhope, CET
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SHEEP GRAZING ON SPRUCE PLANTATIONS AT HENDRIX LAKE

INTRODUCTION

Due to local interest to find unused crown range suitable for sheep, the 100 Mile House Forest District's range and silviculture sections in conjunction with a local sheep breeder discussed the possibility of running sheep in recently planted cutblocks at Hendrix Lake. This area, one of our District's few remaining unused range areas, was also chosen to determine if their grazing of shrubs and forbs in plantations would help alleviate their competition with planted stock. Of great concern was the potential browsing and trampling damage to the trees.

Temporary grazing permits were issued to five sheep owners who agreed to graze a total of 128 domestic sheep (70 ewes and 58 feeder lambs) in cutblocks on a trial basis. Protection for planted trees from trampling or browsing was provided in the grazing permit with a 48 hour stock removal clause. The duration of the project was 34 days.

LOCAL GEOGRAPHY

The township of Hendrix Lake is located approximately 40 miles NE of 100 Mile House. The plantations, one mile due west of the townsite, are situated on the boundary of the Englemann Spruce-Sub-Alpine Fir "h" subzone and the Interior Cedar Hemlock "h" subzone (Biogeoclimatic units of the Cariboo Forest Region).
A breakdown of actual site conditions for each plantation are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Plantation A</th>
<th>Plantation B</th>
</tr>
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<tbody>
<tr>
<td>Mapsheet Opening</td>
<td>92A2c-3</td>
<td>92A2c-10</td>
</tr>
<tr>
<td>Area</td>
<td>60 ha</td>
<td>26 ha</td>
</tr>
<tr>
<td>Aspect</td>
<td>East</td>
<td>East</td>
</tr>
<tr>
<td>Slope</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>Elevation</td>
<td>1200 m</td>
<td>1300 m</td>
</tr>
<tr>
<td>Year/Season logged</td>
<td>1972/winter</td>
<td>1974/winter</td>
</tr>
<tr>
<td>Site preparation</td>
<td>landing burning only</td>
<td>landing burning only</td>
</tr>
<tr>
<td>Year planted</td>
<td>1977</td>
<td>1982</td>
</tr>
<tr>
<td>Species planted</td>
<td>Spruce 1+0 P</td>
<td>Spruce 2+0 BR</td>
</tr>
<tr>
<td>Current tree status</td>
<td>Non-free growing</td>
<td>Non-free growing</td>
</tr>
<tr>
<td>Current vegetation</td>
<td>75% Fireweed, 10% Alder, 5% Willow, 5% Lupine, Gooseberry, Ladyfern, Twinberry, Pinegrass</td>
<td>75% Fireweed, 10% Alder, 10% Willow, Gooseberry, Lupine, Pinegrass</td>
</tr>
</tbody>
</table>

**FIELD OPERATIONS**

The 128 sheep were transported to Plantation A by the respective owners on July 22, 1984 and released from a central landing into the cutblock. All sheep were wool marked with spray paint in the owner's particular color or mark, after which the lambs were weighed before release. After release, a portable corral was set up on the landing to serve as a holding facility at night and a bedding ground for the sheep when not grazing. Two herders were camped at this central landing and remained with the sheep for the duration of the project. As well as providing the sheep protection from predation, the herders role was to prevent overgrazing of a particular area thereby reducing the potential for seedling browsing. The sheep were moved from Plantation A to Plantation B after 14 days and the camp moved to the first landing in the Plantation B cutblock.
Distribution of the sheep was accomplished by the establishment of a single network of existing skid trails, man made trails, and motorbike paths through the fireweed. With these paths in place prior to the sheep being turned out, distribution throughout the cutblock could be controlled by the herders.

That the sheep did not seem to range as far from the base camp in the first plantation as compared to the second seems to indicate that there is an adjustment period required before the sheep will range over the entire cutblock.

The sheep's grazing pattern on the plantations differed somewhat from that of cattle as sheep returned to the base camp to bed down after feeding whereas cattle tend to bed down in the cutblock. This reduces the degree of damage done to the planted trees through smothering.

The planted stock within the block considered non-free growing by Ministry standards (due to competition from inhibiting forbs) varied in height and condition. In almost all cases the trees were dwarfed by fireweed which averaged three to four feet.

Browsing and trampling damage to the tree seedlings was found to be minimal (less than 5% of trees affected).
Prior to removal of the animals from the area, the sheep were accounted for and the lambs weighed. Gains ranged from five to twenty-two pounds per animal or approximately an average of 1/2 pound per day. No predator problems were encountered.

**OBSERVATIONS & DISCUSSION**

It must be made clear at the outset that due to the limited scale of this project, the results while significant, are somewhat inconclusive. The anticipated degree of seedling damage by sheep on areas differing in site than that of our observed plantations is unknown. Further, the degree of seedling release, if any, due to decreased competition of forage is unclear.

These uncertainties however, should not deter from the potential gains of grazing sheep on suitable plantations. Decreased competition for sunlight, available nutrients, and moisture offered through grazing of herbaceous growth as well as the fertilizer effect of animal urine and feces, should result in better survival and growth of existing seedlings. More work is required to correlate relationships between the degree of range utilization, additional survival and growth of seedlings, and the resulting seedling damage incurred. It is estimated that for significant silvicultural results, a tenfold increase in sheep numbers would have been required for the two areas.
Little difference in browsing and trampling of seedlings was found between the two grazed areas. Our observations showed no increase in palatability of trees in the two year old plantation.

Further data is also required in defining the appropriate turnout date for the sheep. Trees must be given the opportunity to harden-off following spring flushing thereby reducing palatability. This will also allow for adequate green-up of available forage. The decision obviously should be a site specific one.

From a range standpoint, the trial was a total success. A previously unused range area may now be under permit to domestic sheep and it would seem to offer the prospect of an economically viable business venture running sheep in this area. Grazing fees, though nominal, would still result in an increase in revenue for the province. Weight gains of approximately 1/2 pound per day are economically acceptable to the sheep breeders in addition to decreasing the grazing pressure on the breeder's deeded lands.

SUMMARY

The results of the project were found to be very favourable to all parties involved. The sheep breeders may have a range area and the possibility of being able to expand their ranching operations. Silviculturally, minimal damage of both planted and natural trees
attributed to sheep, combined with the potential for increased timber yield, encourages further projects of a larger scale. From a range standpoint, the possibility of annual use in an area previously thought to have had little grazing potential was well worth the effort.

DISTRICT PLANS FOR 1985

In 1985, a proposed grazing system will see the sheep started off on the east side of Boss Creek on the Hydro powerline right-of-way and moved along the powerline to the townsite at Hendrix Lake. Starting off on the powerline would reduce the herbaceous cover on the line, with a possible saving to B.C. Hydro by reducing the amount of slashing of tall brush required on the the right-of-way, as well as providing for an earlier turnout for the sheep. Grazing from Boss Creek to Hendrix Lake would also allow the planted stock time to complete the hardening-off process before sheep are permitted to graze on the cutblocks.

Tentative plans call for the introduction of 800 to 1,000 head of sheep during next year's trial. Cutblock selection, grazing permit special conditions, time limits and research information to be documented will be discussed by a committee made up of Forest Service range and silviculture staff, the sheep breeders and Agriculture personnel.