SHELTERCONE SEEDING TRIAL
SX 83105 N
WORKING PLAN 1983

G. Richardson
(Revelstoke Sawmills, Radium, B.C.)
March 9, 1983

The District Manager,
Ministry of Forests,
Invermere, B.C.
VOA 1K0.

Dear Sir,

Attached herewith is our working plan for the sheltercone seeding to be carried out under Section-88 of the Forest Act during the spring of 1983.

Yours truly,
REVELSTOKE SAWMILL (RADlUM) LTD.

G. Richardson
Forestry

GR/ce
Location: Pinnacle Creek, Invermere T.S.A.

Tenure: Forest Licence A18979
Cutting Permit 37 Blocks: 2, 3, and 4

Objective:
1) To redeem the areas satisfactorily restocked
2) The development of an alternative to planting seedlings

Estimated Cost:
Cone establishment: $33,414.24 = JUN 02 1977
Project surveys: 3,839.66 = JUL 02 1977

Estimated Total of 1983 Costs: $37,253.90

Date: May 1983 (as weather permits)

Method:
Cones to be established at 2.5 meter spacing in conjunction with
Fir and Pl PSB 313 plugs:
A contract planting crew will complete the seeding along with
planting on the same openings (see attached schedule).
The ground will be hand screefed and the seed dispensed via a
hand garden seeder.
The quality inspections and project follow-up will be carried out
by the company's seasonal staff under the supervision of regular
personnel.
The M.O.F. will conduct fertilization trials on the project.

Seedzone: 4020
Species: Douglas - Fir
Seedlot: 2350 - germination rate 77%
Seed Requirements:  
- 76,200 sheltercones to be established
- 3 seeds/cone
- 228,600 seeds
- 104 seeds/gram
- 10% allowance
- 2,417 grams of seed required

Pretreatment of Seed:  
The M.O.F. will be responsible the shipping and stratification of the seed.

Personnel:  
Talking Tree Forestry Contracting Ltd. has been awarded the seeding contract. A ten person crew will be employed.

Equipment:  
Screef: shovel or mattock
Cone: Cercor, transparent plastic cone.
Supplier: Canadian Forestry Equipment, Edmonton, Alta.
Seeder: Hand operated seed dispenser

Sampling:  
As per Chris Thompson's letter to D. Rounsville (attached).
NOTE: The seedbed survey will not be carried out as screeing will be required.

Method of data Analysis: Tabular

Write-up Responsibility: Direct Seeding Project - Revelstoke Sawmill (Radium) Ltd.
Fertilization treats - Ministry of Forests, Invermere

Site description: See attached "Regeneration Survey Sheet Data".
March 18, 1981

Mr. D. Roundville
Crestbrook Forest Industries Ltd.
Parsons, B.C.
VOL 1LO

Dear Dennis:

Hereewith is a summary of survey requirements for direct seeding operations:

1. **Broadcast Seeding**

   Section 8 of the "Manual" is based on broadcast seeding. Due to the nature of broadcast seeding the surveys specified in Section 8 are generally appropriate viz:

   1.1 Seedbed survey and Ecosystem Mapping (8.52)
   1.2 Rodent Population Assessment (8.7)
   1.3 Evaluation (8.8)

   This is the most critical and least understood part. A minimum for broadcast seeding would be two surveys. One at about three weeks to detect germination, the second in the fall to assess survival. Since it will be impossible to precisely relate germination to survival, the first survey can be at half the intensity of the second. The survival assessment is the most important assessment.

   Section 8.8 suggests a survey intensity that should produce about two percent sampling intensity. On small areas sampling should be increased until a minimum of 30 plots (50 m²) are used.

   Note, that the design is systematic not a random line.

   Sampling increases with the number of variables. Thus, if there are two ecosystems involved, the ecosystem becomes the sampling unit, instead of the treatment block, and a minimum of 30 plots are required per sampling unit.

2. **Spot Seeding**

   Due to the fact that the precise location of each spot is known, more intensive work is possible.

   2.1 There is less emphasis on the seedbed survey, but it should not be ignored. It is assumed that appropriate spots will be used. Ecosystem mapping is still essential.
2. Spot Seeding Cont.

2.2 Rodent Population Assessment is still required. Rodents can still smell out buried seed, even under sheltercones, though they may have more difficulty reaching them. This is particularly important with large seeded species like Douglas fir. We have no information on the effectiveness of seed wafers in overcoming the attractiveness of seeds to rodents.

2.3 Evaluation

The design of assessments is similar to that of broadcast seeding. Systematic plots to ensure sampling 200 seeded spots, per treatment. "Treatment" implies species or ecosystem, or whatever variables you identify. To give an extreme example:

- Fir and Larch seeded
- Ecosystems 3B & 3C
- Sheltercaps & no caps

Spots required = 200 x 2 x 2 = 1,600 spots at an average of 6 spots per plot = 267 plots!

Because each seeded spot is known, more frequent surveys will be productive. A tentative schedule would be:
- Two weeks after seeding,
- Four weeks after seeding,
- Two months after seeding,
- Four months after seeding.

This can be varied as indicated by the results from each survey. The aim is to identify the pattern of germination and mortality through the first growing season.

I hope this answers your points. Please do not hesitate to contact me if you have any further questions.

Yours truly,

G. F. Thompson
Regional Research Officer

CF:bb

cc. Mr. R. Muller, Invermere Forest District

Mr. R. A. Waldie, Silviculture, Nelson Regional Office