PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES

HON. R. A. WILLIAMS, *Minister* J. S. STOKES, *Deputy Minister of Forests*

REPORT

of the

FOREST SERVICE

YEAR ENDED DECEMBER 31

1972

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1973

VICTORIA, B.C., March 1973.

The Honourable WALTER S. OWEN, Q.C., LL.D.,
Lieutenant-Governor of British Columbia.

MAY IT PLEASE YOUR HONOUR:

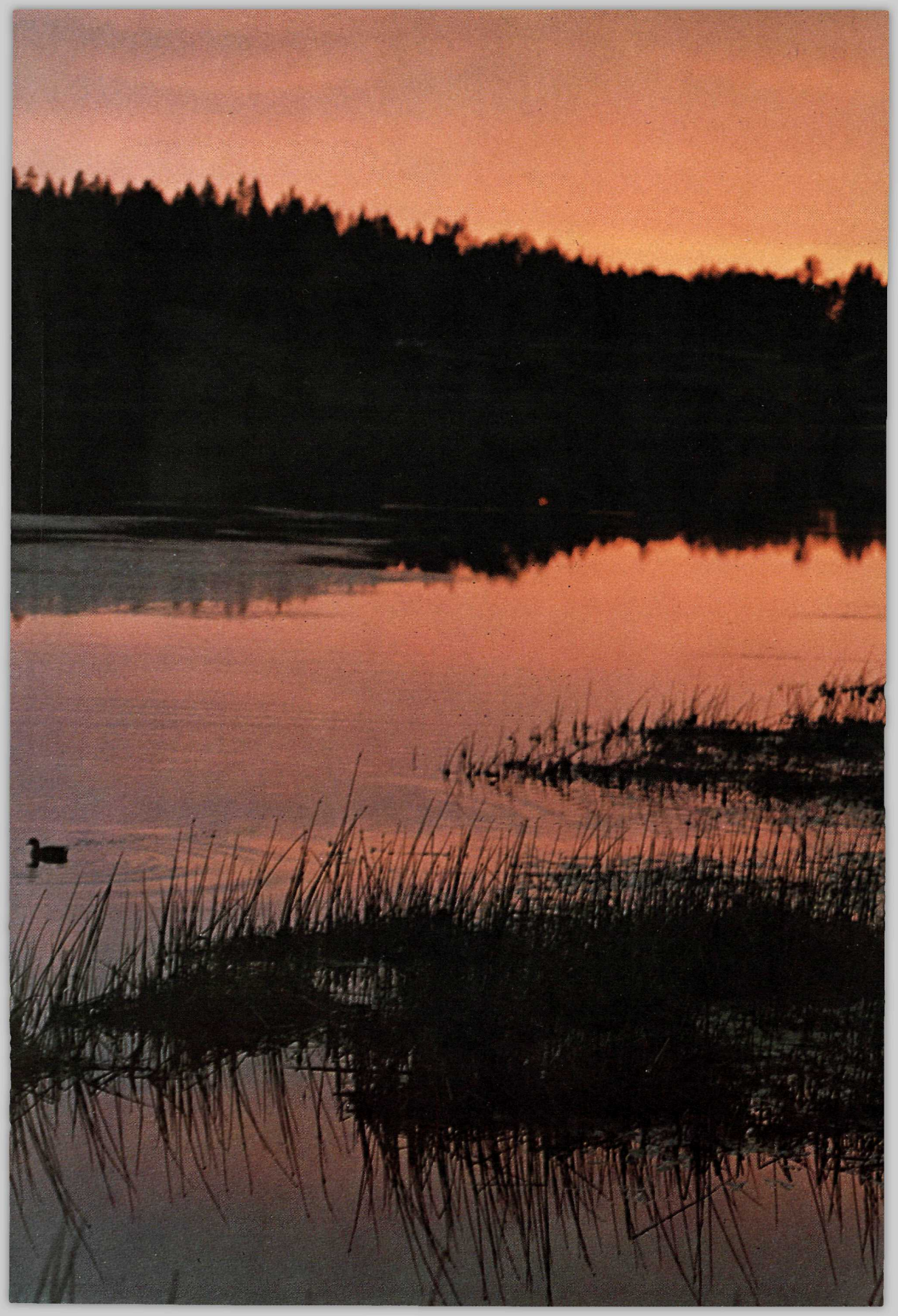
Herewith I respectfully submit the Annual Report of the Forest Service of the Department of Lands, Forests, and Water Resources for 1972.

R. A. WILLIAMS
Minister of Lands, Forests, and Water Resources

The Honourable R. A. Williams,
Minister of Lands, Forests, and Water Resources,
Victoria, B.C.

SIR: This is the Annual Report of the Forest Service for 1972.

J. S. STOKES
Deputy Minister of Forests



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REPORT OF THE FOREST SERVICE, 1972

CHIEF FORESTER'S REPORT

Financial returns to the Forest Service in 1972 exceeded all expectations, with amounts billed and collected climbing to new records and reflecting substantial increases over 1971 totals. Conditions at year's end indicated the trend would continue well into 1973.

The total amount charged against logging operations rose by 60.5 per cent to $108,659,791. Actual revenue collections reached $102,636,777—68.5 per cent higher than the 1971 total. Timber sale stumpage (constituting the bulk of the revenue) increased by 83.5 per cent to $91,180,674.

The total scale of all products in 1972 was 1,963,747,008 cubic feet—a decrease of 1.6 per cent from the previous year. (The Interior scale increased by 9.8 per cent over the 1971 figure to a record of more than one billion cubic feet of timber; while the Coast scale dropped by 13 per cent.)

Demand for lumber became relatively strong during 1972, and there was a significant improvement in the pulp market.

With continuing public concern over use of forest land, the Service's public relations programme placed heavy emphasis on the "balanced use" concept.

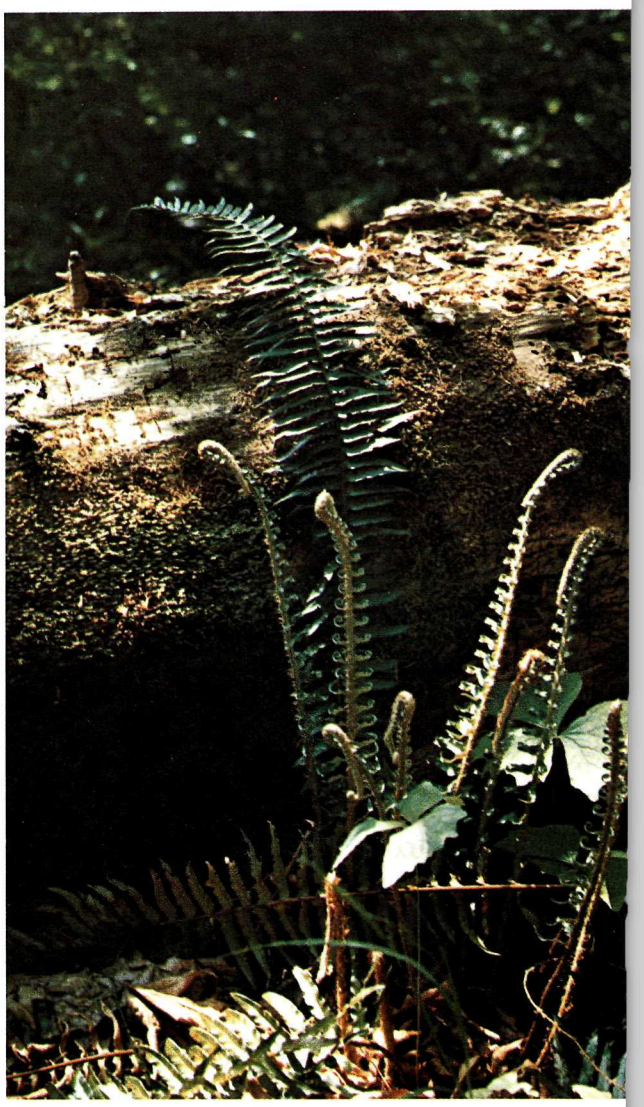
Other highlights of 1972:

- Collection of drift logs under log salvage regulations totalled 9,864,322 cubic feet —an increase of some 2,800,000 cubic feet over 1971.
- Export of logs, down 60 per cent from 1971, virtually ceased early in 1972 when log stocks reached a seriously low level. At year's end logs were still in short supply.
- Stocks of wood chips (a surplus situation earlier in the year) were substantially reduced. Some plants even faced shortages.
- There were nine inventory projects undertaken during the year and the area inventoried was 26,936,336 acres.
- To provide access for replanting the Van Fire area in the Prince Rupert Forest District, engineering crews completed a bridge across the Babine River and worked on the first 10 miles of the Nilkitkwa River Forest Road beyond the bridge.
- Field survey crews completed 255 miles of road location.
- A second shallow-draught "pusher" tug, the *Forest Mariner,* was commissioned for pondage-clearance work.
- Nearly 1,000 students and other young people were employed by the Forest Service throughout the summer.
- Site-preparation work on the Canadian portion of the Libby Reservoir continued with an additional 1,180 acres treated. Nearly 260 acres were treated in the Duncan Reservoir area; while Williston Lake reached full pool, ending the pre-flood programme, and with some 95,700 acres treated. The waterway-improvement programme on the Mica Reservoir continued with the treatment of 10,400 acres.
- There were 1,903 forest fires in British Columbia in 1972. This compared with 2,898 in 1971, and the record number of 4,003 in 1970. Lightning was the

largest single cause of the 1972 fires, accounting for 583 (30.7% of the total). Forest Service fire-fighting costs totalled $2,287,710. The cost to other parties was $1,707,987. The 1972 forest fires burned 64,413 acres—compared with the 10-year average of 229,487 acres.

- More than 48,000,000 seedlings were provided for planting projects on a total of 110,794 acres; and a total of 993,683 lineal feet of seed-beds was sown in 1972. The inventory from 1972 sowing is estimated at 68,128,000 plantable trees.
- In the Service's first operational year in the recreation programme, nearly 300 camping-sites were established or improved, and an estimated 153,000 persons used the sites.
- For the new Forest Productivity Committee, 1972 was the first field season in the managed-stand yield table programme, with 210 plots established and requiring the measurement of some 55,000 trees.
- Inter-racial crosses with Douglas fir, started in 1963, continued; and there appears to be no incompatability barrier preventing successful crosses between trees thousands of miles apart.
- Intensive research is under way relating to establishment of lodgepole pine plantations and growth control of container stock.
- Forage production on most Crown range was above average, while use by domestic stock declined. Cattle prices reached record high levels.

inventory division



SWORDFERN

INVENTORY DIVISION

HIGHLIGHTS

The number of forest inventory projects was increased to nine this year. Due to the size of the Finlay PSYU, where it was necessary to establish three separate field parties, and the Liard PSYU, where only half the unit could be completed, only six and one-half units were inventoried. Nevertheless, the acreage inventoried rose from 15,547,540 acres in 1971 to 26,936,336 acres in 1972.

The Growth and Yield Section was expanded and two subsections established—natural stands and managed stands. The latter subsection will collect tree-growth data for the Forest Productivity Programme.

FOREST CLASSIFICATION AND SAMPLING

Seven of the nine field parties undertaking the classification of forest-cover types and the sampling of mature and immature types were located throughout the northern half of the Province. Three of these had to be assigned to the Finlay PSYU because it was from three to six times as large as any of the other units being inventoried. One party was headquartered at Germansen Lake, one at Ingenika at the north end of Lake Williston, and one on a self-contained float camp on the lake. The barge unit included a helicopter pad.

Due to the almost complete lack of road access in the Liard, Klappan, Finlay, and Peace projects, and the size of some of the units and the addition of a ninth project, four helicopters were used for air classification and transportation of sampling crews and equipment. For the same reasons, a considerable amount of fixed-wing flying-time was required. Again, because of the lack of road access, river and lake transportation was used to a great extent, with both powered craft and rubber rafting.

UNIT STANDARD INVENTORY

Table A—1972 Field Work

Public Sustained-yield Unit	Maps Classified	Number of Samples		Total Estimated Acreage
		Mature	Immature	
Finlay	389	659	409	12,282,815
Klappan (proposed)	66	373	77	4,453,294
Lac la Hache	93	164	217	2,006,702
Liard (proposed) (east half)	47	124	56	3,831,431
Morice	75	241	113	1,463,610
Peace	98	238	116	1,775,458
Spallumcheen	55	296	242	1,123,026
Totals	823	2,095	1,230	26,936,336

GROWTH AND YIELD SECTION

NATURAL STANDS

A total of 153 new permanent growth plots were established in the Nicola, Similkameen, and Kamloops PSYU's. The remeasurement cycle went into its second year and 20 permanent sample plots in the Victoria watershed and on the Sechelt Peninsula were remeasured.

Fifty-one local volume over-age curves were constructed using data collected in the Eagle, Quesnel, Kingcome (Broughton portion), Takla, Sikanni, Dawson

Creek, and Longworth PSYU's. Diameter over-age curves were also drawn for these units. Site-index curves based on both 50- and 100-year reference ages were completed for cedar and spruce on the Coast and spruce in the Interior.

Managed Stands

The main problems encountered in the reconnaissance or location stage were:

(1) Finding suitable areas on aerial photos meeting requirements of uniform texture, slope, and species composition:

(2) Finding areas in the field from those above that meet soil requirements and (or) have not been thinned or fertilized already (especially a problem in accessible portions of TFL's):

(3) Finding areas that meet all the above specifications but do not have the uniformity on the ground as seen on the photo (some disturbance has occurred since the photos were taken, such as snow damage), or the stand is infected by root rot or mistletoe.

During the summer, 202 square plots 0.05 hectare in size in 17 installations, and eight square plots 0.10 hectare in size in one installation, were established, with each plot having a buffer zone of equal size surrounding it. Over 55,000 trees were recorded.

All measurements were taken in metric units. Each tree 5.0 cm. in d.b.h. and larger was tagged. Ten sample tree heights and five ages were taken from each plot.

The plots were marked for low-level 70-mm. photography, using white signal cotton.

Thinning operations commenced in early October and Inventory crews completed measurements on 78 of the thinned plots by December and on 36 plots which were not due to be thinned. Remaining measurements will be completed next spring.

In September, 70-mm. photography of the plots was undertaken. Considerable difficulty was experienced in locating the plots from a helicopter moving at about 40 m.p.h. Other methods of plot location or larger helicopters will have to be checked out next year. The photographs developed to date indicate it may be necessary to refly some areas next spring.

VOLUME AND DECAY SECTION

The continuing decay studies in the hemlock-cedar wet belt were confined to the North Arm of Quesnel Lake. A total of 641 hemlock and cedar trees was felled and measured on nine study areas.

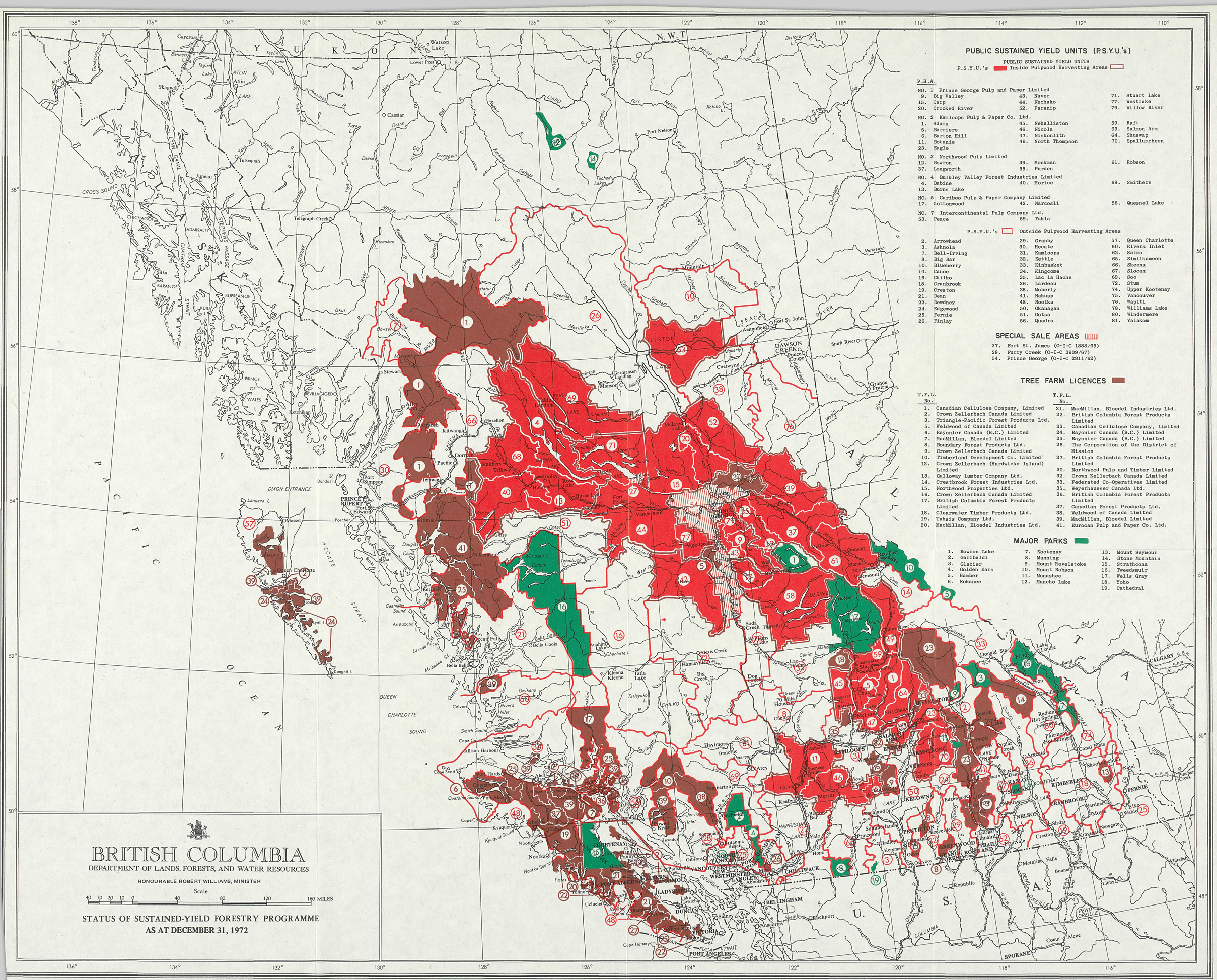
Volume table and loss factor sampling covered six northern units—Finlay, Fort Nelson, Klappan, Sikanni, Stuart Lake, and Takla PSYU's.

Immature Douglas fir trees selected from the eastern slopes of Vancouver Island were felled, sectioned, and measured as a start toward the construction of managed-stand volume tables.

Volume and depletion studies will be extended to far northern units such as the Liard, Kechika, and Dease PSYU's, while the hemlock-cedar decay studies continue in the Shuswap and Barriere PSYU's.

MAPPING AND DATA PROCESSING SECTION

Eight survey reports were published during 1972 for areas surveyed to unit standards. These were Aleza Lake Forest Reserve, Dawson Creek SSA, Eagle PSYU, Broughton portion of Kingcome PSYU, Longworth PSYU, Quesnel Lake PSYU, Sikanni PSYU (proposed), and Takla PSYU.


BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES
HONOURABLE ROBERT WILLIAMS, MINISTER
Scale
40 30 20 10 0 40 80 120 160 MILES
STATUS OF SUSTAINED-YIELD FORESTRY PROGRAMME
AS AT DECEMBER 31, 1972
PUBLIC SUSTAINED YIELD UNITS (P.S.Y.U.'s)
PUBLIC SUSTAINED YIELD UNITS
P.S.Y.U.'s Inside Pulpwood Harvesting Areas
P.H.A.
NO. 1 Prince George Pulp and Paper Limited
9. Big Valley
15. Carp
20. Crooked River
43. Naver
44. Nechako
52. Parsnip
71. Stuart Lake
77. Westlake
79. Willow River
NO. 2 Kamloops Pulp & Paper Co. Ltd.
1. Adams
5. Barriere
6. Barton Hill
11. Botanie
23. Eagle
45. Nehalliston
46. Nicola
47. Niskonlith
49. North Thompson
59. Raft
63. Salmon Arm
64. Shuswap
70. Spallumcheen
NO. 3 Northwood Pulp Limited
12. Bowron
37. Longworth
39. Monkman
55. Purden
61. Robson
NO. 4 Bulkley Valley Forest Industries Limited
4. Babine
13. Burns Lake
40. Morice
68. Smithers
NO. 5 Cariboo Pulp & Paper Company Limited
17. Cottonwood
42. Narcosli
58. Quesnel Lake
NO. 7 Intercontinental Pulp Company Ltd.
53. Peace
69. Takla
P.S.Y.U.'s Outside Pulpwood Harvesting Areas
2. Arrowhead
3. Ashnola
7. Bell-Irving
8. Big Bar
10. Blueberry
14. Canoe
16. Chilko
18. Cranbrook
19. Creston
21. Dean
22. Dewdney
24. Edgewood
25. Fernie
26. Finlay
29. Granby
30. Hecate
31. Kamloops
32. Kettle
33. Kinbasket
34. Kingcome
35. Lac la Hache
36. Lardeau
38. Moberly
41. Nakusp
48. Nootka
50. Okanagan
51. Ootsa
56. Quadra
57. Queen Charlotte
60. Rivers Inlet
62. Salmo
65. Similkameen
66. Skeena
67. Slocan
69. Soo
72. Stum
74. Upper Kootenay
75. Vancouver
76. Wapiti
78. Williams Lake
80. Windermere
81. Yalakom
SPECIAL SALE AREAS
27. Fort St. James (O-I-C 1888/65)
28. Furry Creek (O-I-C 3909/67)
54. Prince George (O-I-C 2811/62)
TREE FARM LICENCES
T.F.L. No.
1. Canadian Cellulose Company, Limited
2. Crown Zellerbach Canada Limited
3. Triangle-Pacific Forest Products Ltd.
5. Weldwood of Canada Limited
6. Rayonier Canada (B.C.) Limited
7. MacMillan, Bloedel Limited
8. Boundary Forest Products Ltd.
9. Crown Zellerbach Canada Limited
10. Timberland Development Co. Limited
12. Crown Zellerbach (Hardwicke Island) Limited
13. Galloway Lumber Company Ltd.
14. Crestbrook Forest Industries Ltd.
15. Northwood Properties Ltd.
16. Crown Zellerbach Canada Limited
17. British Columbia Forest Products Limited
18. Clearwater Timber Products Ltd.
19. Tahsis Company Ltd.
20. MacMillan, Bloedel Industries Ltd.
21. MacMillan, Bloedel Industries Ltd.
22. British Columbia Forest Products Limited
23. Canadian Cellulose Company, Limited
24. Rayonier Canada (B.C.) Limited
25. Rayonier Canada (B.C.) Limited
26. The Corporation of the District of Mission
27. British Columbia Forest Products Limited
30. Northwood Pulp and Timber Limited
32. Crown Zellerbach Canada Limited
33. Federated Co-Operatives Limited
35. Weyerhaueser Canada Ltd.
36. British Columbia Forest Products Limited
37. Canadian Forest Products Ltd.
38. Weldwood of Canada Limited
39. MacMillan, Bloedel Limited
41. Eurocan Pulp and Paper Co. Ltd.
MAJOR PARKS
1. Bowron Lake
2. Garibaldi
3. Glacier
4. Golden Ears
5. Hamber
6. Kokanee
7. Kootenay
8. Manning
9. Mount Revelstoke
10. Mount Robson
11. Monashee
12. Muncho Lake
13. Mount Seymour
14. Stone Mountain
15. Strathcona
16. Tweedsmuir
17. Wells Gray
18. Yoho
19. Cathedral
Y U K O N
N.W.T.
ALASKA
PACIFIC OCEAN
U. S. A.
ALBERTA
Watson Lake
Lower Post
Cassiar
Fort Nelson
Tulsequah
Juneau
Telegraph Creek
Stewart
Ketchikan
Kitwanga
Hazelton
Dorreen
Pacific
Terrace
Kitimat
Prince Rupert
Port Edward
Masset
Queen Charlotte
Ocean Falls
Bella Coola
Bella Bella
Port Alberni
Nootka
Ucluelet
Tofino
Port Hardy
Port Alice
Port Alberni
Nanaimo
Ladysmith
Duncan
Victoria
Port Angeles
Cape Flattery
Bellingham
Chilliwack
Vancouver
New Westminster
Langley
Abbotsford
Mission
Hope
Princeton
Penticton
Kelowna
Vernon
Kamloops
Merritt
Lillooet
Williams Lake
Quesnel
Prince George
Mackenzie
Fort St. John
Dawson Creek
Chetwynd
Fort St. James
Burns Lake
Smithers
Terrace
Revelstoke
Golden
Cranbrook
Kimberley
Fernie
Nelson
Trail
Castlegar
Grand Forks
Greenwood
Rossland
Salmo
Creston
Kaslo
Nakusp
Slocan
Salmon Arm
Spallumcheen
Radium Hot Springs
Invermere
Fairmont Hot Springs
Spillimacheen
Lake Louise
Banff
Calgary
Spokane
Coeur d'Alene
Libby
Bonners Ferry
Kingsgate
Newgate
Moyie
Wardner
Elko
Waldo
Natal
Sparwood
Elkford
Chetwynd
Tumbler Ridge
Dawson Creek
Fort St. John
Pouce Coupe
Grande Prairie
Spirit River
Peace River
Hudson's Hope
Fort Nelson
Watson Lake
Atlin
Carcross
Skagway
Haines
Sitka
Ketchikan
Prince of Wales I.
Queen Charlotte Sound
Hecate Strait
Dixon Entrance
Cross Sound
Chatham Strait
Stephens Passage
Lynn Canal
Portland Canal
Observatory Inlet
Alice Arm
Kitsault
Anyox
Port Simpson
Masset
Langara I.
Dundas I.
Graham I.
Moresby I.
Lasqueti I.
Texada I.
Gabriola I.
Galiano I.
Saltspring I.
Pender I.
Mayne I.
Salt Spring I.
Vancouver I.
Queen Charlotte I.
Haida Gwaii
Kunghit I.
Cape Scott
Cape Cook
Cape Flattery
Cape Beale
Cape Mudge
Cape Lazo

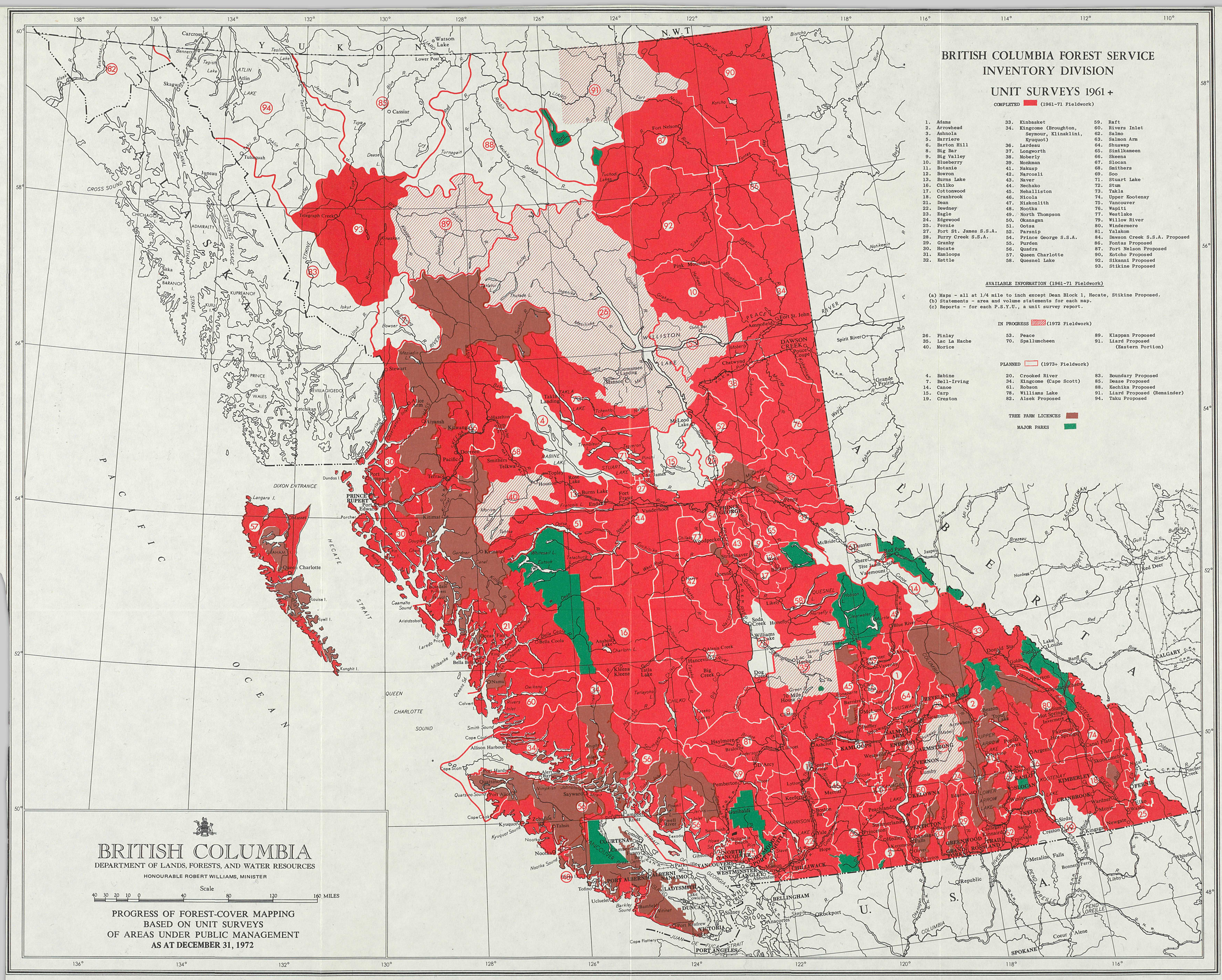

BRITISH COLUMBIA FOREST SERVICE
INVENTORY DIVISION
UNIT SURVEYS 1961 +
COMPLETED (1961-71 Fieldwork)
1. Adams
2. Arrowhead
3. Ashnola
5. Barriere
6. Barton Hill
8. Big Bar
9. Big Valley
10. Blueberry
11. Botanie
12. Bowron
13. Burns Lake
16. Chilko
17. Cottonwood
18. Cranbrook
21. Dean
22. Dewdney
23. Eagle
24. Edgewood
25. Fernie
27. Fort St. James S.S.A.
28. Furry Creek S.S.A.
29. Granby
30. Hecate
31. Kamloops
32. Kettle
33. Kinbasket
34. Kingcome (Broughton, Seymour, Klinaklini, Kyuquot)
36. Lardeau
37. Longworth
38. Moberly
39. Monkman
41. Nakusp
42. Narcosli
43. Naver
44. Nechako
45. Nehalliston
46. Nicola
47. Niskonlith
48. Nootka
49. North Thompson
50. Okanagan
51. Ootsa
52. Parsnip
54. Prince George S.S.A.
55. Purden
56. Quadra
57. Queen Charlotte
58. Quesnel Lake
59. Raft
60. Rivers Inlet
62. Salmo
63. Salmon Arm
64. Shuswap
65. Similkameen
66. Skeena
67. Slocan
68. Smithers
69. Soo
71. Stuart Lake
72. Stum
73. Takla
74. Upper Kootenay
75. Vancouver
76. Wapiti
77. Westlake
79. Willow River
80. Windermere
81. Yalakom
84. Dawson Creek S.S.A. Proposed
86. Fontas Proposed
87. Fort Nelson Proposed
90. Kotcho Proposed
92. Sikanni Proposed
93. Stikine Proposed
AVAILABLE INFORMATION (1961-71 Fieldwork)
(a) Maps - all at 1/4 mile to inch except Dean Block 1, Hecate, Stikine Proposed.
(b) Statements - area and volume statements for each map.
(c) Reports - for each P.S.Y.U., a unit survey report.
IN PROGRESS (1972 Fieldwork)
26. Finlay
35. Lac La Hache
40. Morice
53. Peace
70. Spallumcheen
89. Klappan Proposed
91. Liard Proposed (Eastern Portion)
PLANNED (1973+ Fieldwork)
4. Babine
7. Bell-Irving
14. Canoe
15. Carp
19. Creston
20. Crooked River
34. Kingcome (Cape Scott)
61. Robson
78. Williams Lake
82. Alsek Proposed
83. Boundary Proposed
85. Dease Proposed
88. Kechika Proposed
91. Liard Proposed (Remainder)
94. Taku Proposed
TREE FARM LICENCES
MAJOR PARKS
BRITISH COLUMBIA
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES
HONOURABLE ROBERT WILLIAMS, MINISTER
Scale
40 30 20 10 0 40 80 120 160 MILES
PROGRESS OF FOREST-COVER MAPPING
BASED ON UNIT SURVEYS
OF AREAS UNDER PUBLIC MANAGEMENT
AS AT DECEMBER 31, 1972
Y U K O N
N.W.T.
A L A S K A
P A C I F I C O C E A N
A L B E R T A
U. S. A.
Carcross
Watson Lake
Lower Post
Cassiar
Tulsequah
Juneau
Telegraph Creek
Stewart
Alice Arm
Kitwanga
Hazelton
Dorreen
Pacific
Smithers
Telkwa
Terrace
Kitimat
Kemano
Port Simpson
PRINCE RUPERT
Port Edward
Masset
Queen Charlotte
Bella Bella
Bella Coola
Namu
Port Hardy
Port Alberni
Tofino
Ucluelet
Zeballos
Tahsis
Nootka
Kyuquot
Sayward
Campbell River
Courtenay
Cumberland
Alert Bay
Port Alberni
Ladysmith
Duncan
Victoria
Port Renfrew
Sidney
Port Angeles
Bellingham
Anacortes
Rockport
Cape Flattery
Cape Scott
Cape Cook
Cape Ferrelo
Langara I.
Dundas I.
Porcher
Kunghit I.
Louise I.
Lyell I.
Graham I.
Kuiu I.
Baranof I.
Admiralty I.
Revillagigedo I.
Prince of Wales I.
Ketchikan
Skagway
Atlin
Tatshenshini
Alsek
Bennett
Carcross
Teslin
Tagish
Lake
Jennings
Tuya
Dease
Cry L.
Turnagain
Stikine
Iskut
Unuk
Bowser
Bell-Irving
Nass
Kitsumkalum
Kitimat
Skeena
Bulkley
Morice
Nechako
Stuart
Fraser
Quesnel
Chilcotin
Chilko
Taseko
Bella Coola
Dean
Homathko
Toba
Powell River
Sechelt
Squamish
Vancouver
New Westminster
Langley
Abbotsford
Chilliwack
Hope
Princeton
Penticton
Kelowna
Vernon
Kamloops
Salmon Arm
Revelstoke
Golden
Cranbrook
Kimberley
Fernie
Nelson
Trail
Grand Forks
Greenwood
Rossland
Creston
Kaslo
Slocan
Nakusp
Revelstoke
Salmo
Sicamous
Enderby
Armstrong
Lillooet
Ashcroft
Merritt
Lytton
Pemberton
Bralorne
Williams Lake
Quesnel
Prince George
Mackenzie
Fort St. James
Fort Fraser
Vanderhoof
Burns Lake
Endako
Houston
Topley
Rose Lake
Takla Landing
Germansen Landing
Manson C.
Gitsomé
McLeod Lake
Chetwynd
Dawson Creek
Fort St. John
Pink Mountain
Fort Nelson
Fort Simpson
Fort Liard
Watson Lake
Dawson
Mayo
Keno
Ross River
Faro
Carmacks
Whitehorse
Haines Junction
Kluane Lake
Tuchodi Lake
Kotcho L.
Muskwa
Liard
Dease
Cry L.
Turnagain
Stikine
Iskut
Unuk
Bowser
Nass

Table B—Production of Final Forest-cover Maps for 1971 Projects

Public Sustained-yield Unit	Number of Maps	Forest and Nonforest Area in Acres			Volume in Cunits for Mature Crown Area
		Crown	Alienated	Total	
Aleza Lake Forest Reserve	3	19,665	.....	19,665	153,560[1]
Dawson Creek SSA (proposed)	163	2,027,696	1,892,171	3,919,867	3,165,280[1]
Eagle	24	351,854	35,775	387,629	8,326,940[1]
Kingcome (Broughton portion)	91	1,242,694	100,319	1,343,013	46,362,910[2]
Longworth	68	1,215,095	46,873	1,261,968	31,980,410[1]
Quesnel Lake	94	2,073,296	57,998	2,131,294	40,952,460[1]
Sikanni	206	4,403,067	14,275	4,417,342	10,438,560[1]
Takla (northern portion)	105	2,207,269	20,156	2,227,425	37,810,160[1]
Totals	754	13,540,636	2,167,567	15,708,203	179,190,280

[1] Volume at 7.1″+d.b.h. close utilization less decay.
[2] Volume at 9.1″+d.b.h close utilization less decay.

Requests for 36 inventory summaries were received during the year. Area involved was 2,773,667 acres and volume at Close "U" was 4,867,468 M c.f.

Land-purchase applications in the Prince George SSA accounted for only three of the 36 requests, representing an area of 1,420 acres and a volume of 70 M c.f. at 7.1″+C.D.

In June a revised edition of the *Forest Inventory Statistics of British Columbia* was published. All field work up to and including 1970 was incorporated.

The number of final forest-cover maps produced during the year dropped slightly to 754. The number of maps supplied to all departments, however, rose over 15 per cent to 23,300. The number of map reductions printed in the 1860 Xerox also rose by about the same percentage to 37,600 copies.

Eight Provincial forest reserves were gazetted during the year—Arrowhead, Eagle, Edgewood, Nakusp, Salmon Arm, Shuswap, Spallumcheen, and Takla. Altogether, 47 forests have been established.

Under the Provincial Forestry Youth Programme, 48 persons were hired for the summer months and proved invaluable to the Division. About half of them were employed in making transfer sheets for a volume and depletion programme which will take four years to complete at the rate achieved this year. About an equal number were employed in making coloured key maps for unit survey reports. The remainder were employed on various jobs in the office and at the warehouse.

research division

FIREWEED

RESEARCH DIVISION

A detailed report on the research programme for 1972 will appear in the *Forest Research Review* compiled at the end of the fiscal year.

FOREST-LAND CLASSIFICATION

The geology, landforms, and soils of 40,000 acres in Kitimat Valley and 30,000 acres burnt over in the Van Fire were mapped for the Prince Rupert District. The maps will be used to plan reforestation programmes.

A soil survey was undertaken for the Reforestation Division and a report prepared on the value and use of alternative sites for a nursery, clone banks, and seed orchards in the Kamloops Forest District.

Geology-landform-soil and air-photo courses were presented in Prince George and Victoria through the education facilities at New Caledonia College, University of Victoria, and Camosun College. These courses were well attended by personnel from many Government departments and industry.

A bibliography of resource information was prepared for the Prince George Forest District. It contains illustrative maps, tables, and references on climate, bedrock geology, landforms, forest regions, hydrology, mining, recreation, wildlife, and fisheries.

A soils compendium is included with detailed information on all soils previously reported by Federal and Provincial soil survey agencies. A soils compendium for Vancouver Island is in press.

The response of Douglas fir growing on five major soils to macronutrients and micronutrients is under investigation in the Sayward Forest, Vancouver Island. Statistical analyses of diameter and height measurements are in progress.

In a study of ecological classifications, vegetation data of 735 plots located from Sinclair Mills to Smithers in the north central Interior were classified by dissimilarity analysis—a polythetic hierarchical divisive method. The analysis divided the data into 45 final groups. The results are being interpreted in terms of habitat factors related to final groups.

PROVENANCE AND TREE BREEDING

The total heights and diameters at one-third height were measured on all Douglas fir trees at 14 provenance test-sites, totalling 100 acres. Maintenance crews controlled vegetation, prevented browsing, replaced dead plants, and removed wild seedlings on 39 acres.

Total heights and diameters at one-third total height were measured on the eight test-sites planted with intraspecific crosses of Douglas-fir. This represents 34 acres of plantations which have now been measured for the second time since they were planted. Research Note 55, summarizing the performance of the intraspecific crosses up to the end of 1971, was published.

Some 30,500 seedlings from crosses within and between inbred lines of Douglas fir were transplanted in the spring. Root-tip samples were removed throughout the growing season and prepared for cytological study. The first S_3 inbreds germinated in the seed-beds and have all survived to date.

Crosses of Douglas fir plus trees made in 1971 (E.P. 707), using a factorial mating design, were sown at Cowichan in the spring of 1972. Twenty-five clones are represented as female parents, all of which were crossed with the same four male

testers. The field design calls for 400 seedlings from each cross, and there are now over 61,000 seedlings at the 1–0 stage.

The objective of a new project (E.P. 708) is to provide material and information through progeny testing and reselection procedures so that Douglas fir seed orchards incorporating the greatest genetic gain may be established to meet future reforestation requirements.

The seed produced by controlled pollination in 1971 and not allocated to E.P. 707 is being held in storage until it can be fitted into field testing. Controlled pollination is also being carried out when the opportunity arises to add to this pool of seed from which test populations will be drawn. Production of strobili was light in 1972, but pollinations were carried out at the Forest Experiment Station and at the Tahsis Co. seed orchard in Saanich. MacMillan Bloedel foresters also co-operated actively to produce crosses for this project.

A total of 35,000 filled seeds was obtained, representing 55 crosses.

Field trials of 30 *contorta* provenances, grown at two nurseries, were planted in the Nechako and Cranbrook PSYU's in May 1971. Spring and fall assessments, including second-year height measures, have been completed. Data from Prince George have been checked and computerized; data from Nelson are due.

Field trials, using surplus stock from a nursery study of variation among 144 provenances, were established in June 1972.

Staff from the Kamloops and Vancouver Forest Districts co-operated in planting 43 provenances in 10 blocks in both the Dewdney and Stum PSYU's. First-year survival and height growth were recently assessed, the data computerized but not yet analysed. High mortality (50 per cent) in several blocks is associated with severe root-pruning, bad planting, and late planting.

Surplus stocks from nursery studies of 780 wind-pollinated families were planted in the Willow PSYU in September 1971. Their purpose is to permit the estimation of genetic parameters of breeding stock included in the Red Rock arboretum. Maintenance work in the 65-acre plantation during the current year includes staking and tagging.

A comparative field test of 153 range-wide provenances in four climatic zones is being planned to guide racial selection by district reforestation officers. The trials will also permit long-term study of variation.

Two-year-old seedlings are growing in three randomized blocks at Red Rock Nursery. During the summer, growth rhythms were estimated and compared by measuring shoot and needle extension during the growing season. This material also provided evidence of blight—the first recorded incidence on lodgepole pine of a disease which has caused significant losses on other species in both forest and nursery in Europe and the United States. Lodgepole pine provenances from the Wet Belt, North Cascades, and Sierras appear to be especially susceptible. A manuscript has been prepared for the Canadian Journal of Forest Research.

October assessments of grafts indicate the "take" of 2,378 ramets of 75 northern plus trees to be 80.2 per cent. Second-year losses were negligible. Clones of 91 plus trees from north central British Columbia were propagated early in 1973. Eighty-five per cent of 3,955 grafts are healthy.

A 13-acre arboretum comprising 81 coastal, frost-tender provenances is well established in the North Arm of Lake Cowichan Experiment Station. Although intended primarily as a reserve of breeding, scientific, and educational material, it has been laid out in two fully randomized blocks of 30-tree plots to facilitate both protection and crude statistical evaluation. As a basis for future growth comparisons, height measures were recorded in November, after "beating-up" the less than 1 per cent mortality since planting in April 1972.

Delayed site-preparation, late spring, and access problems necessitated a postponement of the planting of the Red Rock arboretum until spring 1973. This decision also necessitated the retransplanting of 24.3 thousand pre-bundled and labelled stock. The decision was fortunate for an opportunity was provided to install a more informative design for the 780 families and 91 provenances to be included on the 90-acre tract. The layout is staked-out and the additional tagging completed.

To evaluate the potential of wide-crossing as a means of obtaining increased yield in lodgepole pine, seed of 14 intraspecific crosses was sown at Red Rock in May. The crosses had been made by Dr. A. Fletcher, of the British Forestry Commission, and hybrids include north x south coast, coast x interior, north interior x south interior.

Two-year-old plants of six diverse shore pine populations have been grown at Lake Cowichan. Test-sites have been selected in the Kitimat Valley and the Lens Creek drainage. The latter will use Nelder variable-spacing design. The objective is to investigate provenance reactions to environmental stresses and to determine the relationship between initial spacing and individual tree and stand parameters as well as the interaction with provenance effects.

Forty-nine Sitka spruce seed lots were sown at Lake Cowichan in May, 1972. They will be planted at three test-sites located on the Queen Charlottes, Kitimat Trench, and northwest Vancouver Island. These provenances include the 10 "standard" provenances being incorporated by 12 European countries in an international study of geographic variation in this species. Data from these provenances in the British Columbia tests will permit interpolation and extrapolation from test data obtained in the more intensive European experiments.

The objectives of a new project (E.P. 702) are to propagate and preserve for breeding purposes potentially valuable clones of Sitka spruce. In February, some 126 grafts were made with scions from three trees located in a severely weeviled plantation at Green Timbers. The ortets are believed to be weevil resistant. Survival of the three clones are 2.5, 26, and 52.5 per cent. The ramets have been lined out in the North Road Nursery.

There has been good progress in the tree-improvement programme for the Interior spruces, white and Engelmann. At Red Rock Nursery, clone banks contain grafts from tree selections that have been made in the Prince George, Prince Rupert, and Nelson Forest Districts. Scions and seeds have been collected from 100 individual trees in each of the three forest districts. Clone banks have been established and expanded yearly. The first of these clone banks was for the Prince George Forest District and it is now capable of providing an estimated number of 580 scions for the purpose of establishing a seed orchard.

In the East Kootenay clone bank an additional 127 grafts were planted and the bank now consists of 292 grafts. The Smithers clone bank (Prince Rupert District) was established during the year by planting 189 grafts. Ultimately it will contain approximately 550 grafts, and a further 258 grafts of scions from 27 trees have been potted in the greenhouse.

Half-sib progeny trials have commenced. A plantation of 11,190 seedlings from selected trees in the Prince George District was placed on a specially prepared site at Aleza Lake in May. Survival in October was 97 per cent. Additional test-sites have been prepared at Barbie Lake, Quesnel, and Red Rock.

Seeds from 110 selected trees in the East Kootenay were sown in the Red Rock Nursery. Average germination was 80 per cent. The half-sib seedlings are being grown for field testing in the Nelson District in 1974.

Three hundred and sixty-eight Engelmann x Sitka spruce seedlings were grown in styroblocks in the greenhouse and transplanted in the nursery at Red Rock in August. The objective of this experiment is to study the behaviour and performance of hybrids under central Interior environmental conditions.

Three hundred and thirteen potted exotic spruces were delivered to the Chilliwack picetum.

A picetum was established in the spring at Red Rock. A total of 520 seedlings was planted, representing 26 seed sources and 13 species. Survival in October was 100 per cent.

Dr. Gene Namkoong visited British Columbia during July and August at the request of the Research Division. He submitted a report of a consultation on all the tree-breeding programmes. The report is under study and a second meeting with Dr. Namkoong will take place early next year.

SEEDLING PHYSIOLOGY STUDIES

Potassium requirements of Douglas fir and Interior spruce, growing on sandy nursery soils, were investigated by means of frequency and level of application experiments at Red Rock and Surrey Nurseries. Results indicate routine dressings of potassium, currently used by the nurseries, are adequate for first year's growth.

At the request of the Productivity Committee, the value of foliar analysis for predicting stand response to fertilizer treatment was examined. A review of the literature on the subject indicated current methods involving measurement of foliar nutrient concentrations are of limited predictive value, but that measurement of specific amino acids could provide more sensitive measures of stand nutrient status. Research has commenced to determine whether measurement of amino acids in Douglas fir foliage is a feasible approach.

Frost-hardiness studies were continued to assess the effect of weather conditions, particularly frosts, on development of hardiness in 2–0 Douglas fir. In all experiments, absolute hardiness has been determined by freezing tests together with 1 kiloherz: 1 megaherz stem impedance ratios in order to establish the general validity of impedance ratio for rapid hardiness assessment.

An experiment conducted at four nurseries, with the assistance of the Reforestation Division, examined the value of four herbicides for weed control in conifer seed-beds. Prometone appeared to control weeds as effectively as propazine, but may affect seedling survival more than propazine. Screening tests further confirmed that other triazine herbicides are well tolerated by most conifers.

Two Ph.D. graduates were hired, on an annual contract basis, to work on currently important problems concerning establishment of lodgepole pine plantations and growth control of container stock. Lodgepole pine establishment is being considered primarily in terms of planting-stock root growth and root regeneration. Nutrient, water stress, and photoperiod treatments are being tested to assess their value in controlling growth and inducing dormancy of container-grown conifer seedlings.

SILVICULTURE

Prince George and Prince Rupert Districts

Consultations were held with Northwood Pulp Ltd. and British Columbia Forest Products Ltd. on current and proposed silvicultural projects. Assistance was provided to district personnel for a broadcast seeding project at Barbie Lake and a silvicultural evaluation was made of 400 acres which had been clearcut by Dunkley Lumber Co. Ltd.

Five provenance experiments were measured for the survival and growth of Douglas fir, lodgepole pine, and Interior spruce. Field assessments of the survival and growth of container-grown seedlings and of the performance of white spruce seedlings planted during the growing season are continuing.

Tap-root malformation is suspected as a major reason for the many toppling lodgepole pines observed in newly established plantations. Five-year-old sample trees were excavated for a study of tap-root malformation at four localities of a previously completed planting trial. Root lengths and root habits were recorded. Measurements are being compiled as supporting information to the new study.

The critical lifting period for lodgepole pine is being investigated simultaneously in the Red Rock Nursery. The objectives are: (1) to determine the safe periods for handling and planting of freshly lifted lodgepole pine stock, (2) to study the behaviour of cold-stored stock when lifted on two dates in the spring and planted throughout the summer, and (3) to relate survival, initial growth, frost susceptibility, and moisture stress with planting date, climatic data, and condition of plants during the growing season over a period of three years.

A new project has been established to study the root development of nursery-grown lodgepole pine seedlings in relation to planting techniques, age-class of stock, root-pruning, tap-root habit of wildings, and soil characteristics on three major pine site-types in the Prince George Forest District.

Kamloops Forest District

The district forestry crew and student assistants spaced 50 acres of a 10-year-old natural stand of lodgepole pine. Assistance was provided to select treatments and plot sites. Thirty-five acres were spaced 8 x 8 feet in two separate blocks and the remaining acreage was divided into three 4-acre blocks spaced to 0 feet (control), 10 feet, and 12 feet. The purpose is to provide spaced stands useful for future growth (simulation) studies.

Plots established in the 1971 direct seeding of Douglas fir and lodgepole pine in the cedar-hemlock rehabilitation project area near Enderby were re-examined.

Reports were prepared on the quality of alpine fir residuals in clearcut spruce-alpine fir types and on the post-treatment of lodgepole pine cutover areas. During 1971 and 1972, approximately 40 clearcut blocks, ranging from 10 to 500 acres and cutover for periods from one to four years, were examined for seed-bed, cone distribution, and regeneration.

In co-operation with the Grazing Division, the survival and growth of lodgepole pine on cutover areas that have been seeded to nonrhizomous grass for grazing of cattle is being monitored closely. Nine areas sown with grass during 1971/72 were examined for success of sowing. Plot establishment to study effects of grass on natural and planted seedlings was completed on seven areas and data collected. Two areas have not been used for observations.

Climatic stations were established on eight of the areas in co-operation with the climatology sector of the B.C. Land Inventory. These were maintained through the late spring, summer, and autumn seasons. An additional nine areas in the Kamloops and Cariboo Forest Districts have been selected for grass sowing and study in 1973.

Tenth-year measurements of all trees within the 4 x 4, 8 x 8, 12 x 12, 16 x 16, and 20 x 20 foot spacings were added to the experimental record of a ponderosa pine planting trial.

The survival and height of western larch seedlings planted at 6 x 6, 8 x 8, 12 x 12, and 16 x 16 foot spacings in 1-acre blocks were measured five years after planting.

Nelson Forest District

The second five-year height measurement was made in late fall at both the Rock Creek and Cherry Creek replications of the ponderosa pine spacing trial reported under the Kamloops District.

The effectiveness of the district drag scarifier in inducing natural regeneration of lodgepole pine is being evaluated at Elk and Wuho Creeks in the East Kootenay and Goathide Creek and Kettle River in the West Kootenay. Regeneration surveys will be carried out in the fall of 1973.

A 10-year reassessment was made in late October of yellow pine planting trials planted between 1960 and 1962 (Research Note 41). B.C. Hydro is planning to run a power-line through the Findlay Creek replications.

All equipment has been removed from the Mosquito Creek location in a study of seed dispersal and natural regeneration in the Columbia Forest Zone. The area will be abandoned after the results of a regeneration survey made in summer 1972 are assessed. The seed catch from the good cone crop of 1971 has been counted.

Assessment of the attempt to record last year's onto-snow seedfall at the experimental location near Murphy Creek is proving to be intractable. There was a poor cone crop of both cedar and hemlock at Murphy Creek this year, though a few hemlock cones were collected for germination tests.

Engelmann spruce season of planting trials is nearing completion at three areas —Cedar Creek, Rodd Creek, and Monk Creek. Preliminary evaluation of the data suggests the best time to plant is probably in the spring.

The bud-forcing study carried out on spruce and fir from the Golden area correctly indicated a poor cone crop for 1972.

The cone crop in four permanent study areas was negligible, fairly representing the cone crop in the central and eastern portions of the district. The western portion (Kettle and Granby areas) had a better, though still poor, cone crop that was heavily infested with insects.

The juvenile growth behaviour of 30 lodgepole pine provenances at Negro Creek appears to be generally excellent. Leader growth of 15 inches was recorded in second year after planting.

Vancouver Forest District

An analysis of the reforestation problems at high-elevation planting-sites is being undertaken to identify primary causes of planting failures and to recommend improved practices. Consideration is also being given to factors affecting natural regeneration and the place of tree-species such as yellow cedar and mountain hemlock in future reforestation programmes.

Problem areas have been visited and discussions have been held with field foresters and with research foresters in the Canada Forest Service and at the University of British Columbia. In Northern Washington, noble fir was found to be the most resistant of the true firs to the balsam woolly aphid and was also the fastest grower at high elevation. Douglas fir was not planted above 3,500 feet a.s.l., snowbreak being a seriously limiting factor. Main factors for early survival, however, were dependent on depth of mineral soil and soil moisture.

It was suggested several years ago that mudpack seedlings could be used to extend the normal planting season on the Coast into late spring and summer. To

assess this possibility, 2–0 and 1–0 mudpacks were planted at four dates, beside 2–0 bare-root seedlings lifted in the dormant condition and those lifted during the growing season. Plantations were established in two years using 23 plots within six locations. Plots were distributed to give a good sample of slopes, aspects, soils, and ground cover. Five of the six locations were at high elevation.

Third-year results indicated normal bare-root stock was superior to the remaining treatments.

In survival, the bare-root stock was equivalent to, or in many plots superior to, both 1–0 and 2–0 mudpacks on all planting dates.

In total height, bare-root stock was superior to both mudpack stocks on all plantings, while even in the third growing season its current growth was also superior.

For the different planting dates, the best results were given for all treatments in the first two plantings. Summer-lifted stock was shown to be unsatisfactory. This result was confirmed by the third-year assessment.

The study showed that using criteria of survival and growth, while neglecting economic aspects, bare-root stock which was well planted could give excellent results in an extended planting season. However, the distribution and quantity of summer precipitation will influence success. Neither 2–0 nor 1–0 mudpacks at this time appear suitable for extending the planting season or offering improved survival and growth.

Thinning plots established by the Research Division in 1952 at Lake Cowichan are proving very useful to current tree and stand growth simulation studies. A schedule of thinnings based upon the system of research suggested by O'Connor at the 1935 British Empire Forestry Conference in South Africa is now nearing completion.

Stem charts were constructed for 17 plots by plotting to a scale of 5 feet to 1 inch the positions of live trees and tagged stumps still identifiable from previous thinnings.

At the Cowichan Lake Experimental Station, improvements to grounds and existing facilities were continued. These included stumping and additional cleaning of another 12 acres of the previously logged area, clean-up of 2,000 feet of beach in the vicinity of the camp, installation of new culverts, and widening of the station road.

Due to the change in nursery practice from bare-root to container-grown seedlings, a study was made to determine the feasibility of producing container-grown seedlings at the station without the use of a heated greenhouse.

On July 1 the Reforestation Camp at Cowichan Lake was transferred to the Research Division.

DATA PROCESSING

The numerous checks involved in the design of a seed orchard has initiated a computerized seed-orchard layout programme that simplifies planning and eliminates errors. The programme is based on a randomized-block design using two ramets of each clone within a block with the restriction that ramets of the same clone should not occur as neighbours within any given block. Although some manual adjustment may be necessary to fit blocks together, this programme could be useful in seed-orchard planning, where the above design is accepted.

A new computerized system has been completed to summarize and analyse the Productivity Committee's fertilizer-thinning treatment trials. The first stage calculates plot basal areas by sectors and plot mean diameters for each installation and randomly assigns the treatments to each plot. The second stage lists the information for each tree in a plot and gives the 20 per cent and 35 per cent ($\pm 5\%$) thinning

restrictions on basal area by sectors. Once the trees to be thinned have been marked, the third step is implemented which summarizes the thinned plots only, number of live trees, basal area, mean diameter and d/D ratio for the "before," "thinned," and "after" categories. This system will be revised this winter as field experience to date has altered the requirements of the project.

Another new system has been designed to do the tedious calculations involved in thinning studies. It requires enough sample diameter and height measurements for a plot to make it possible to derive a relationship between the two. The final report is a plot summary giving frequency, the totals for basal area and volume, and the averages for diameter, height, and volume for the "before," "thinned," "dead," and "after" categories of each d.b.h. inch class. Plot totals are given for each category on both a total and per acre basis. This summary can be modified to be suitable for any number of different species and should prove to be useful for any thinning programme.

A programme is now available for seedling physiology research which computes net photosynthesis, transpiration rate, and diffusive resistance to the transfer of water vapour so that data collected from infrared gas analyses equipment can be processed.

Assistance was given to the Reforestation Division in the evaluation of their container planting trials, to the Productivity Committee in scheduling various activities in their spacing and fertilizing experiments, to BCLI in their plant sociology studies, to Management Division in lumber-recovery factor calculations, and to Forest Engineering in evaluating truck performances.

reforestation division

EASTER LILY

REFORESTATION DIVISION

FOREST TREE SEED

Tree-seed Improvement

At the Koksilah Seed Orchard (Mainland High Elevation), seed strobili developed on 5 per cent of the trees, but survival of the conelets was poor. This is likely due to the inability of the young trees to withstand the nutrient drain of cone production. Indications are for a poor seed crop in 1973 at this orchard.

At the Campbell River Seed Orchard (Island High Elevation), little flowering occurred during 1972, due primarily to tree distress prior to graft mortality. Three controlled crosses were conducted and bulk seed collections made from the remaining trees (yields yet to be evaluated). Commercial fertilizers applied during the year appeared to increase tree vigour, and urea applied to grafted trees early in the flushing stage seems to have stimulated reproductive bud formation. Pollen density sampling was carried out, but results were incomplete.

Planting of the North Coast half-sib seedling orchard (Campbell River) was completed in 1972 and the orchard now consists of 1,276 seedlings representing 41 family and provenance collections. Flowering occurred on 12 six-year-old trees and yielded 130 cones.

Crown and private lands were examined in the Ladysmith and Saanich areas to determine a site for the Dewdney Seed Orchard (Coast-Interior Transition).

Collections of scion material from 88 trees in the source area were made in the fall, with grafting and rooting planned for next spring.

In the Vancouver Forest District, 36.9 acres of seed-production area were maintained and a further 21.5 acres developed and treated with 3.5 tons of fertilizer. None of the areas produced a usable cone crop in 1972, and there was only limited activity on Interior production areas.

On the Coast, a bud survey in the fall indicated a negligible to light crop in Douglas fir and hemlock in 1973.

Development of the Prince George Seed Orchard continued, with sufficient land now ready to receive some 18,000 seedlings planned for outplanting next year. A small lodgepole pine clone bank was established near the Red Rock administration area and improvements were made to the lower clone bank-site.

Koksilah Seed Centre

Early in the spring the centre weighed and treated 1,319.325 kgm. of seed for the sowing of bare-root and container nurseries. A further 264.502 kgm. were prepared for direct seeding. A total of 802 separate seed tests was conducted.

Although there were no collectable seed crops of major species in 1972, 7,734 bushels of lodgepole pine cones were collected in the Interior; 5,287 bushels of lodgepole pine and 10 bushels of hemlock were extracted. A total of 18,464.590 kgm. of seed was in storage at the end of 1972.

A new controlled environment germinator and a refrigerator were acquired for the seed centre and minor changes were made in the seed storage units. The centre staff carried out studies to improve the efficiency and results of standard testing procedures related to nursery production. An up-to-date table of seed yields was produced and included in the brochure on lodgepole pine collecting which was distributed to Forest Service, industry, and other interested agencies.

FOREST NURSERIES

Heavy January snowfalls at all coastal nurseries followed by cool, moist weather delayed lifting of trees and preparation of land for sowing. In some cases lifting was delayed to the extent stock started to break dormancy before it could be lifted. This created problems, with planting also delayed due to snow conditions. However, most stock reached the planting-sites in good condition.

During the year, more than 48 million seedlings were shipped to planting projects throughout the Province. Of this total the breakdown by species was Douglas fir, 65 per cent; Interior spruce, 10.5 per cent; Sitka spruce, 6.4 per cent; lodgepole pine, 16.5 per cent; and western hemlock, 1.5 per cent.

A total of 993,683 lineal feet of seed-beds was sown in 1972. Some nurseries reported good germination while others experienced difficulty with certain species or seed provenances. Cool weather during the spring months retarded growth at most nurseries, but weather improved during the summer and early fall and adequate seedling growth was achieved. Early fall frosts were prevalent and some damage was sustained. An outbreak of Arctic air in early December may have damaged some stock.

The inventory from 1972 sowing is estimated at 68,128,000 plantable trees, of which 60,869,000 should be available as 2–0 stock in the 1973/74 planting season, and the remaining 7,259,000 as transplant stock in the 1974/75 season. These totals will be increased by stock produced for planting in the developing container nurseries.

In the construction of new facilities and the preparation of additional nursery space, 1972 was an active year for all nurseries. The highlight of the year was the decision to develop the Skimikin Nursery site near Salmon Arm. Development started in early June, and 26 acres were rough-cleared, with 6 acres prepared for the sowing of seed-beds in spring 1973. Other development work at Skimikin included fencing, access roads, power-line right-of-way, and drilling of wells. A number of temporary buildings was erected for storage sheds, a workshop, an implement shed, and three porta-buildings were set up for offices.

At Surrey Nursery, 78 acres were rough-cleared and a final clean-up was completed on a further 34 acres. Construction at Surrey included a 13-bay implement shed, sorting building, and two cooler units. Construction of two further cooler units and a workshop is nearing completion. Approximately 2.6 miles of road were gravelled and considerable renovation and new installation to the irrigation system were completed.

Twelve acres were cleared and a further 11 acres were prepared for sowing at the Chilliwack Nursery. A large implement shed was constructed in 1972 and the nursery office building, sowing shed, and workshop are under construction.

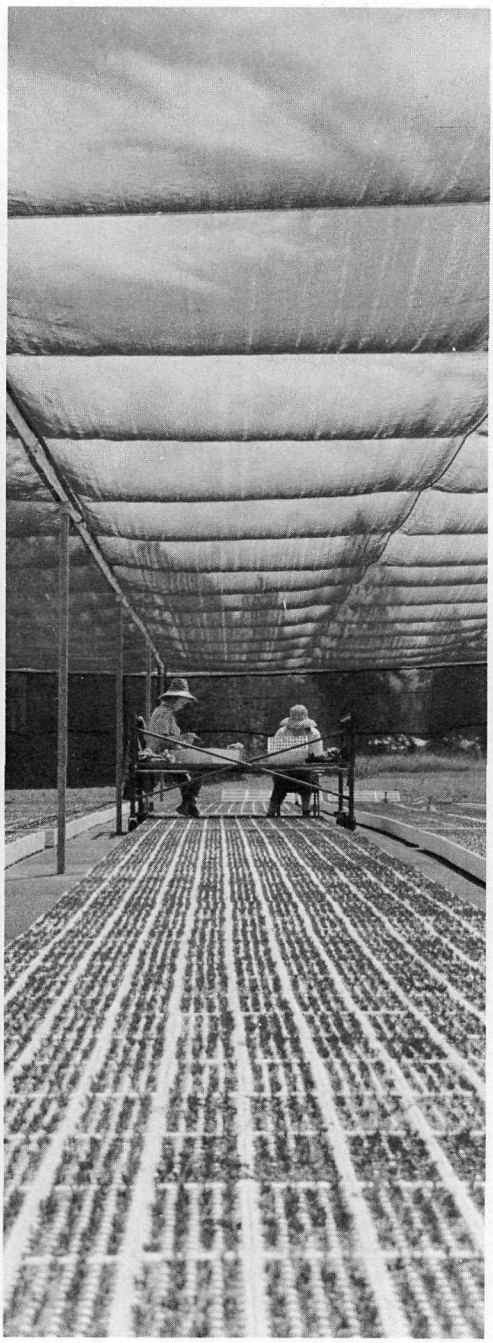
Development at the Campbell River Nursery continued with the clearing of additional seed-bed areas and construction of sheds and a lunchroom and a start on construction of a new office building. Work continued on installation of field drainage and extension of the irrigation systems.

At the Red Rock Nursery, tree-storage facilities were expanded and other minor construction works completed. Work started on construction of an additional seedling storage unit at Koksilah.

A system of mechanical lifting and indoor sorting of bare-root stock developed for large-scale nursery operations was tried successfully at Surrey, Chilliwack, and Red Rock.

No development of additional container-growing facilities was undertaken in 1972 so methods, procedures, and equipment could be evaluated and tested. For

Five - month - old Douglas fir seedlings being grown in styroblock containers at Surrey Nursery.



Clear plastic canopy protects these container seedlings at the Forest Service nursery at Duncan.

Forest Service Forest Nurseries as at December 1972

Name	Location	Year Established	Conventional Forest Nurseries				Container Nurseries	
			Total Acreage	Productive Acreage	Productive Capacity (Millions of Trees)	Remarks *re* Conventional Nurseries	Estimated Productive Capacity (Millions of Trees)	Planned Productive Capacity (Millions of Trees)
Green Timbers	Surrey, near Whalley	1930	160	67	10.0	Includes fields at Haney and Langley	*Nil*	25.0
Koksilah	Duncan	1943–63	70	52	6.3	Sections at Duncan and Koksilah	2.6	25.0
Chilliwack River	15 miles east of Vedder Crossing	1960	125	99	16.0	Some development still required	*Nil*	*Nil*
Telkwa	Telkwa	1963	6	5.5	0.9		Pilot scale	25.0
Red Rock	15 miles south of Prince George	1966	543	145.0	22.0	Minor development still required	Pilot scale	25.0
Campbell River	Campbell River	1967	223	83.0	18.4	Minor development still required	*Nil*	*Nil*
Surrey	3 miles southeast of Cloverdale	1968	465	175.0	31.3	Some development still required	6.4	25.0
Skimikin	8 miles northwest of Salmon Arm	1972	400	150.0	26.0	Major development work still required	2.0	25.0
Totals			1992	776.5	130.9		11.0	150[1]

[1] A good proportion of this may be transplanted in conventional nurseries to produce larger trees.

this reason production decreased from 7,152,000 seedlings in 1971 to 3,320,000 in 1972.

Seedlings moved from the Surrey Nursery to Interior locations in the fall of 1971 overwintered successfully and appeared to be in better condition for planting in the spring.

Each year progress continues in container production culture. For example:

Adjustment of the fertilizer regime to high phosphorus in the spring and fall has produced seedlings of improved quality.

Removal of excess seedlings in each cavity was undertaken at the germinant stage by pulling, rather than by clipping at a later stage, reducing production costs.

It was found seedlings can be conditioned for fall planting by early removal of shade cloth and reduced applications of nitrogen.

Test work continued at Vernon, Red Rock, and Telkwa to determine the feasibility of growing stock in the Interior of the Province.

Results indicate that in the Interior nurseries a combination of both greenhouse and outdoor growing will be necessary to assure plantable quality seedlings in a one-year crop rotation.

A comparative test of plastic greenhouse and outdoor-grown hemlock was undertaken at the Koksilah Nursery. Greenhouse-grown stock was found to be superior in height, diameter, and root growth to outdoor-grown stock.

An assessment of winter storage methods indicated container seedlings may be stored in cold rooms or under protective cover with good results. Further testing of storage methods is planned for the fall of 1973.

RECONNAISSANCE AND SURVEY WORK

As an aid to reforestation planning and work-load distribution, an area-history record system has been developed to provide an up-to-date summary of outstanding N.S.R. and its condition, i.e., brushed-in, unburned slash, ready for planting, etc.

During the year, Forest Service personnel, supplemented with student youth crews, examined 211,150 acres throughout the Province. Of this total, 100,825 acres (48 per cent) were found to be satisfactorily restocked or likely to restock naturally within a short time. A total of 104,459 acres were classified as not-stocked and plantable, and 5,866 acres were classified as unplantable because of rock, swamp, or other condition.

More emphasis must be placed on the location and assessment of suspect N.S.R. areas in the Interior to effectively plan future sowing and planting operations. Field studies indicate about one-third of the area presently not stocked in the Interior will require site preparation before planting can take place. On the Coast, the proportion of readily plantable sites is much higher.

During early summer, a comprehensive survey was made of the West Fire which burned approximately 20,000 acres near Quesnel in 1971. Recommendations were prepared for the rehabilitation of the burned area and work commenced in the fall of 1972. Similar work was undertaken on the Sue Fire area near Golden. Orderly and efficient rehabilitation of these large burns is assured now that a thorough survey has been made and the over-all project planned.

In the Prince Rupert Forest District, composite maps are being prepared for major drainages. Seven such maps for the Bella Coola area are nearing completion.

Forest Service staff carried out an extensive programme of site preparation for planting. A total of 8,192 acres was broadcast-burned under prescription, with residual felling done on 6,073 acres. A further 8,432 acres were scarified for

planting or natural regeneration, and slash was windrowed or bunched on 4,881 acres in preparation for burning.

Sanitation and improvement work were completed on 2,748 acres. This included selective felling for control of mistletoe disease, juvenile spacing, pruning, and plantation release. Most of this silvicultural work was conducted in the Vancouver and Prince Rupert Forest Districts.

PLANTING

Clear, cool weather during March and April delayed the melt of the snow-pack on planting areas. This delay created almost ideal spring planting conditions in the Interior of the Province. Cool, moist weather was general in that region during May and June, except in a few isolated areas where planting had to be suspended temporarily because of high temperatures and lack of soil moisture. These conditions prevailed into July, and should favour plantation survival.

On the Coast the snow-pack delayed spring planting, but with favourable weather conditions in May and June all projects were completed.

Fall planting was carried out under adverse conditions. Several Interior operations were interrupted because of snow early in September and soon after several projects were completely snowed out. On these projects seedling stocks heeled-in on the site were banked up with snow and left over winter.

Production setbacks experienced by nurseries in 1971 permitted a moderate increase in the planting programme for 1972. Significant losses of spruce seedlings at the Red Rock Nursery seriously affected the programme planned for the northern Interior. Total plantings by all agencies reached a new high of 48,394,000 trees on 110,794 acres, of which crews employed by the Forest Service planted 27,254,800 trees (56.5%) on 57,058 acres (the total does not include some 2,000 acres replanted on earlier plantations destroyed by fire). A total of 5,221,000 trees planted were container-grown seedlings (termed "plugs" or "repacks") outplanted on a production basis. These were removed from the containers at the nursery, repacked in pliofilm bags (each containing 25 trees), and forwarded to the planting-site. A total of 2,627,000 was planted in the spring at twice the rate per man-day that bare-root trees can be planted.

Although survival information has not yet been analysed for publication, results of earlier experimental trials show a significant improvement in survival when compared with bare-root stock planted under similar conditions. Growth data from these trials are equally favourable for container-grown seedlings. It is anticipated container-grown tree production will be increased in 1973 to some 11,000,000 seedlings; with plans to continue planting production and survival field trials on a larger scale.

The Forest Service awarded 33 planting contracts during the year, and 5,489,000 trees were contract planted on 12,414 acres. This represents 20.2 per cent of the programme on Crown lands, a slight increase over 1971.

Planting by holders of timber sale harvesting licences increased significantly, a trend which is expected to continue, particularly in the Interior. Altogether, 17 licensees planted 2,253,600 trees on 4,515 acres.

A total of 15,296 survival sample plots was established in the 1972 plantations and a further 10,472 plots in earlier plantations were re-examined. In all districts, survival of plantations varies considerably and a better system of reporting plantation establishment is needed to accurately identify the causes of mortality. In general, spring planting results in higher rates of survival.

CO-OPERATION

Expansion of the Provincial reforestation programme during a period when nursery cultural techniques are being refined and mini-container culture is being developed makes interdepartmental and interagency co-operation essential if the programme is to succeed.

Forest Service container nurseries are being developed in co-operation with the Canadian Forestry Service. During 1972 an automatic seeder for the styroplug containers developed at UBC, under contract to the Canadian Forestry Service, was successfully tested on a production scale.

The Canadian Forestry Service continued to act in an advisory capacity in all phases of the container programme, from seed testing to outplanting. This co-operation has been valuable in the field of equipment design and development toward automated nursery operation. Co-operative studies continued on fertilizer schedules, irrigation, the growing media, and conditions of temperature and light required to produce seedlings of optimum size and quality in mini-containers.

Canadian Forestry Service staff also participated with the Research Division in studies relating to perennial problems in bare-root nurseries—weeds, disease, insects, and other factors affecting quantity and quality of stock produced. With regard to nursery production, a number of reciprocal visits were arranged with nurserymen and equipment suppliers in the United States, with new ideas and approaches to problems gained. Two senior nurserymen attended the Western Forest Nurserymen's Meeting in Olympia, Wash.

Staff and equipment from the Koksilah Nursery prepared a small transplant nursery at the Cowichan Valley Forest Museum, installed drain tiles and an irrigation system. The Douglas fir plantation on the lower field—the first phase of the "Continuous Forest"—was re-established after last year's planting failed because of root rot in heavy clay soil. Drainage of the plantation area was improved to prevent a recurrence.

All nurseries hosted tour groups throughout the year, most being college and school classes. Red Rock Nursery again led in this field with 437 persons touring in 15 separate groups. Nurseries also provided material for various fairs and displays, the largest of which was the Pacific National Exhibition.

INTERDEPARTMENTAL FORESTRY AND CORRECTIONS CAMP PROGRAMME

During 1972, mechanization was introduced into several phases of the Forestry/Corrections programme, so many worth-while projects were completed despite reduction in the over-all camp population. The work-release concept, initiated in 1971, continued with good results and the achievements of these pre-release inmates working out on a daily basis without Corrections supervision were of a high standard.

The Stave Lake Waterways Project commenced late in 1971, and continued through 1972 with a full crew. After a slow start, the men responded to training and became more adept at operating machines and productivity gradually increased as they gained experience. A similar operation with men from the Boulder Bay camp continues at Upper Alouette Lake.

The co-operative programme continued to be of great assistance in the development and operation of our forest nurseries. Inmate crews prepared 41 acres at three nurseries and assisted in the construction and installation of reservoirs, irrigation systems, field drains, buildings, perimeter fencing, and other works. A total

of 487,000 seedlings was transplanted and 506,000 plantable trees were shipped from two inmate nurseries. Snowdon Nursery stopped production following lifting in autumn 1971 and was converted to the North Coast half-sib seedling orchard.

The development and maintenance of access in the forestry programme occupies much of the crews' time and each year an increasing mileage of road, together with bridges, must be maintained and improved. This year four new bridges (including spans of up to 70 ft.) and 2 miles of new road were constructed in addition to routine maintenance.

Trained and equipped fire-suppression crews from two camps took an active part in controlling and mopping up a large fire on Cracroft Island. Men from the Hutda Lake Camp in the Prince George Forest District felled snags on 462 acres in preparation for burning and assisted in manning a fire lookout during periods of high hazard.

Inmate crews thinned, pruned, cleaned, or otherwise improved more than 90 acres of immature forest, planted 120,000 trees, and collected over 1,500 bushels of cones. Logs salvaged from these projects, and from the rehabilitation of Stave and Alouette Lakes, provided raw material for Corrections' sawmills and other minor product operations. Conversion of this material produced lumber, timbers, shakes, posts, fuel wood, and other items for the forestry programme.

Work accomplished by these crews and their supervisors continues to be an important ingredient in both the social and resource programmes of the Province.

information division

CALIFORNIA RHODODENDRON

INFORMATION DIVISION

New and updated brochures, special displays featuring "balanced use" of forest land, new sign programmes, and an increased number of television programmes dealing with Forest Service objectives and operations were all a part of the Service's information programme throughout 1972. There was also a steady flow of routine news releases and articles to the news media, magazines, and other publications.

New brochures included *The Management of British Columbia's Forest Lands, Protecting Your Summer Home, The Cottonwood Story,* and *Williston Lake Timber Salvage and Clean-up.* Newspaper and bill-board advertisements augmented the usual fire season publicity programme; an estimated 46,000 persons saw the Forest Service display at the PNE; "Career Day" displays and programmes were presented at Penticton, Nanaimo, Ladysmith, and Victoria; and a forest management display was shown throughout the Prince Rupert Forest District and at the Cloverdale Trade Fair.

The Campbell River cablevision station presented 13 half-hour programmes devoted to personnel and activities of the Service; and by year's end plans were under way for a similar series for the cablevision outlet at Port Alberni.

Plans were completed for the production of a quarterly magazine, to be entitled *Forestalk,* and featuring articles and colour photos of Service objectives and activities. It's hoped the first issue will appear by the summer of 1973.

PHOTOGRAPHY

There was a drop in over-all print production, but an increase of over 100 per cent in colour print and 35-mm. slide production. Colour processing is still contracted out because facilities and space do not allow for this work in the section's single darkroom. Shortage of space was even more noticeable in 1972, with the employment of three students as photographic assistants during the summer.

Over-all print production was 13,740 (5,592 in colour). Slide production rose to 6,069—about 5,000 of these being duplicates. The emphasis to colour was again reflected in additions to the photo library. While only 453 black and white photos were added, 1,255 colour photos and 683 35-mm. colour slides were filed.

Slide-show production mainly involved editing and sounding existing shows. "Why Burn Slash?" was edited and sounded for the Prince Rupert Forest District; and "Woodland Walk" purchased, duplicated in 12 sets, and sounded, for distribution early in 1973. A start was made on a slide show covering Forest Productivity Committee work.

Major assignments included comprehensive colour coverage of the Okanagan, Chilliwack, and Sayward Provincial Forests, for use in exhibitions and brochures.

Coverage was given to 15 ecological reserves and many recreational sites. In the summer one student photographed establishment and installation of Forest Productivity Committee plots, another gave coverage to Protection Division tests with primacord, and the third worked on slide duplication. Staff photographers continued coverage of Williston Lake, Mica and Libby pondage work. Repeat coverage was given to Red Rock experimental plots, first photographed in 1968.

MOTION PICTURES

The 15-minute film "Trees Unlimited" was released early in the year with 12 copies in circulation.

Two films were shot during the year. The training film "Four Wheels and a Winch" was completed to sounding, for release in January 1973. The other, dealing with the Sayward Forest, will be edited and sounded early in 1973.

Several activities, including suppression crew work, lifting and sorting at the Koksilah Nursery, and classroom tours of the Cowichan Forest Museum, were shot for television use. The Mica and Libby pondage operations were given progress coverage.

FOREST SERVICE LIBRARY

With still no relief from a space problem, the library continues to expand, with some 1,500 additional publications added during 1972. The volumes have now spread out to three additional storage areas. There was a notable increase in the number of loans to Government and industrial foresters; and an average of 1,700 requests monthly for publications in the library's accession list.

Requests for interlibrary loans increased considerably, and much time was saved because of co-operation by librarians at the Pacific Forest Research Centre and the University of Victoria.

The librarian visited the Prince George Forest District library, and assisted in establishing a library at the Williams Lake headquarters of the new Cariboo Forest District.

FILM LIBRARY

Throughout 1972 the film library loaned 2,376 films, and they were seen by a combined adult and student audience of 327,483. This compares with 2,689 loans and 341,320 viewers the previous year.

Twelve films from outside sources were previewed, but none was deemed suitable. Twelve prints of the new Forest Service film "Trees Unlimited" were added to the library.

DISPLAYS

In addition to the PNE's Festival of Forestry and career-day programmes, the Forest Service also presented displays at teachers' professional development programmes at Chilliwack and Sooke; a hotelmen's convention in Vancouver; and assisted in the Prince George fall fair.

EDUCATION

The direct "education" programme of the Division was varied and widespread. It included a tour of schools in the Kamloops-Okanagan region, an outdoor classroom session in Vernon, and lectures to British Columbia Government and Chambers of Commerce travel counsellors. Requests from students and schools for Forest Service information continued at a brisk pace, averaging 200 per month. Significant assistance was extended to development of outdoor classroom facilities and programmes at the Cowichan Valley Forest Museum. Personnel of the Division were guest speakers at numerous service and business clubs and other organizations.

SIGNS

A variety of service signs was developed and established during the year. Such projects included four styles of the "Fire Kills" sign, new components for ranger station signs, special research sign for an area near Youbou, signs to delineate Provincial forest and forest district boundaries, and standardized plantation signs.

The Division also developed signs for Productivity Committee research plots, designed Crown range fence-tags, helped with fire warden magnetic signs, and continued work on recreation signs.

FOREST SERVICE MUSEUM

Many more items were added to the museum throughout 1972; and the display in the rotunda of the Parliament Buildings was removed, with various artifacts being returned to the museum collection or to their owners. Several artifacts were sent to the Provincial Museum on a permanent loan basis.

management division

BUNCHBERRY

MANAGEMENT DIVISION

Demand for lumber continued relatively strong throughout the year, and there was significant improvement in the market for pulp. This made possible continuance of the increase in cut from the Interior where the scale increased 9.8 per cent over 1971 to a record of over one billion cubic feet of timber. On the other hand, the Coast cut continued to decline and fell below the billion cut of 1971 by 13 per cent, partly due to work stoppages in the woods.

Although the Interior scale showed a vigorous increase and for the first time was greater than the Coast cut, it was not sufficient to compensate for the reduction on the Coast. As a result, the total cut for the Province was 1,963,747,008 cubic feet in 1972, a decrease of 1.6 per cent from the 1971 total cut.

The number of close-utilization operations continued to increase throughout the Interior, influenced by the surging demand for wood for lumber mills and by-product chips for the Interior pulp-mills. There were 239 timber sale harvesting licence tenures at year-end, an increase of 36 for 1972, and they accounted for an approved annual cut of 6,987,300 cunits.

During 1972 there were numerous personnel changes in the Management Division in Victoria as well as in the forest districts, partly as a result of staffing of the Cariboo Forest District. Late in the year the appraisal section became a separate group, reporting through Administration to the Forester i/c Management Division.

MARKET PRICES AND STUMPAGE TRENDS

Stumpage rates paid for Crown timber in the Interior (tied directly to dressed-lumber selling prices, which increased steadily all year) again rose significantly as a consequence of the continued higher demand for lumber. The demand for logs on the Coast resulted in improved log prices, with consequent increase in Coast stumpage rates.

The average stumpage prices detail as shown in Table 62 includes the volume of timber sold at salvage value rates as well as the volumes included in close-utilization licences and cutting permits at a standard rate $0.55 per 100 cubic feet. The average stumpage price per 100 cubic feet for all species, excluding salvage wood and close-utilization wood, was $6.22 on the Coast, up from $5.04 in 1971, and $12.66 in the Interior, up from $5.71 in 1971.

STUMPAGE ADJUSTMENTS

Changes in lumber-selling prices resulted in 6,813 upward adjustments in the stumpage rates payable for timber cut on cutting permits and timber sales in the Interior. For timber cut on the Coast there were 2,249 upward adjustments and 297 downward adjustments. Accordingly, the stumpage rates for the timber scaled at the year-end were significantly higher than the year average.

SUSTAINED-YIELD PROGRAMME

(Public Sustained-yield Units)

Again there was no change in the number of public sustained-yield units in the Province which, as indicated by Table 50, remains at 78, but statistics for some units have been revised as a result of new forest inventories. Development of railroad transportation into northern areas of the Province is improving the feasibility

of establishing new industries in that area, thus creating a demand on the forest resource. Reviews are in progress to establish further sustained-yield units as demand develops.

Some of the newer mills achieved higher capacities during the year and this, combined with an improvement in the market for lumber, created a strong demand for increased timber cuts. The close-utilization allowable annual cut has now been fully committed in 52 public sustained-yield units with significant close utilization cut commitments in nine additional units. The resulting cut commitment in public sustained-yield units now stands at 1,322 million cubic feet.

As a result of increasingly strong demands for designation of extensive areas for single-resource use in the form of parks, wilderness areas, and ecological reserves, etc., it will become progressively more difficult to maintain the allowable cuts at their present level in developed units, in spite of efforts to exclude better-site forest land from areas so designated.

An additional eight public sustained-yield units were gazetted as Provincial forest reserves during the year, bringing the total to 47. All pulp-harvesting forests have now been converted to this classification.

Again the Forest Service participated in a number of interdepartmental and interagency field examinations to develop resource and land-use policy and plans for specific areas within the public sustained-yield units. It is anticipated these studies will increase in number with development of more intensive resource-use planning in these units.

TREE-FARM LICENCES

During the year, five working plans were submitted and reviewed, and four plans were approved. One licence indenture was rewritten, but the proposed assignment was not completed.

Two detailed land-use plans, one applicable to four major coastal tree-farm licences, were reviewed. These plans establish licensee guidelines for the integrated use of the forest lands for wood production, stream protection, recreation, wildlife and fishery management, and æsthetics.

Contractor operations within the tree-farm licence areas were continued under the ægis of the guidelines established in 1970.

TREE-FARM LANDS

Five working plans for tree farms were submitted, reviewed, and approved.

Several applications for major additions to existing tree farms, and a number of requests for certification of new tree farms, were held for review subsequent to an assessment of the enabling legislation.

FOREST RECREATION

Overlay mapping of recreation inventory data in public sustained-yield unit management plans continued. Six public sustained-yield units were completed, with 31 other units in various stages of completion.

Recreation planning was completed in the Ashnola PSYU and in progress in 15 other units.

Intensive recreation plans were completed for four areas of high recreation potential, with 10 other such plans in progress.

The Mica pondage land-use plan was initiated, and a recreation reconnaissance completed.

Good progress was made in the first operational year of the recreation programme. A total of 286 sites was improved, with efforts directed to minimum site modification, and installation of facilities for public health and safety needs. Installations included 953 litter barrels and 281 toilets. Servicing was done by temporary help, mainly students, under the direction of ranger staff.

Field reports estimate that 153,000 people and 59,600 vehicles used Forest Service sites during the summer season. Public comment on the recreation programme was most encouraging.

At year-end plans were well advanced for improvement of 118 more sites and for continuing inventory work.

Better liaison was developed with other resource departments—Parks, Mines, and Highways—on matters of mutual interest.

SILVICULTURE

Planning guidelines for logging operations in the coastal region were defined and circulated to all licensees involved in timber harvesting. Soon after, stream-protection requirements underwent some changes. Interior guidelines for watershed and stream protection and regional silvicultural policies and practices are issued by the individual forest districts to cope with variations of climate, soil, and topography that exist between regions.

Scarification for natural regeneration continues to be used as a major adjunct to planting. The Prince George Forest District, for example, blade-scarified some 2,400 acres and drag-scarified 3,550 acres. There was a considerable reduction in burning of lodgepole pine slash following the introduction and rapid build-up of chain-drag scarifiers. Bunching and spot-burning of slash in the southern regions has also encouraged natural regeneration in certain stands.

Clearcutting continues as the best and only means, in most instances, to ensure the satisfactory development of a new crop; however, the size, shape, and extent of openings are being modified to meet requirements of other resource-users.

SCALING

In 1972, additional companies elected to have their production scaled by weight, as indicated in the following table:

Forest District	Number of Weigh Scales at December 31—				
	1968	1969	1970	1971	1972
Vancouver	5	4	6	6	8
Prince Rupert	10	16	20	20	25
Prince George	27	31	37	42 (37)	44
Cariboo	----	----	----	---- (12)	14
Kamloops	19	20	26	33 (26)	27
Nelson	20	20	22	29	30
Totals	81	91	111	130	148

The figures in parentheses under 1971 indicate what the number would have been if the Cariboo Forest District had existed in 1971.

A computer programme has been developed to calculate sampling intensity, so interim calculations may be made monthly instead of an annual or six-month basis; sampling frequency will be controlled more closely, and the accuracy and efficiency of weight-scaling improved.

forest productivity committee

GOATS BEARD

FOREST PRODUCTIVITY COMMITTEE

The programme in 1972 concentrated on obtaining a data base for the preparation of managed-stand yield tables; and with experience gained in the methods trial (E.P. 703) initiated in 1971, a working plan was developed and approved. Reconnaissance to locate areas suitable for balanced installations commenced in April, followed by plot establishment in May. By the end of the field season, 18 installations with their associated climate stations had been established. This necessitated the measurement of some 55,000 trees located on 210 plots.

Following plot establishment, the areas were photographed using the Forest Service 70-mm. fixed-base method. Treatments were then applied to designated plots. In addition, soil samples were taken for both chemical and physical analysis. All areas will again be measured and photographed before the 1973 growing season.

In the fall, reconnaissance for the 1973 field programme commenced with 240 plots located by December 31. Further reconnaissance will be necessary.

In addition to the field programme, considerable progress was made in associated projects. A first draft of a costing manual, prepared under the direction of Dr. D. Haley, is being reviewed and following approval the new procedures will be initiated in 1973 on a trial basis.

Work on variable-density yield tables continues, together with research on climatic cycles. Details of these and other programmes will be reported in the Forest Productivity Committee's annual report due on March 31, 1973.

Two reports were prepared and distributed in 1972—*The Functions and Programme of the Forest Productivity Committee* and an *Operations Manual* outlining the procedures and standards in use in the balanced installation programme. Revisions are being drafted for the *Operations Manual,* based on experience gained during the field season.

PRICKLY PEAR CACTUS

grazing division

GRAZING DIVISION

GENERAL CONDITIONS

The range live-stock industry experienced extreme conditions, favourable and otherwise, during 1972. The winter of 1971/72 was prolonged, snowfall extremely heavy, cold periods lengthy, and in the north quite severe. Winter feed supplies were strained in some areas and concentrates were required to supplement the low-quality and costly hay remaining available. Fortunately, an extreme distress situation was avoided and most stock was brought through the winter in reasonable condition. Horses left to fend for themselves on range were an exemption, particularly in the north, and several prosecutions for neglect of animals resulted.

The spring was cool, the heavy snow-pack disappeared slowly and range forage growth was retarded. Turnout of stock was considerably delayed in many areas. In some cases a shortage of winter feed forced premature range use. Summer moisture conditions were far above normal and forage production was excellent, particularly on lower elevation ranges. Heavy snow in mid-September forced stock off higher ranges earlier than normal, but feed on lower ranges was adequate to support longer than normal fall use. Cattle made good gains and came off the range in good condition.

Hay production was variable both as to quantity and quality. Wet weather during the haying season seriously reduced the quality of much of the early cuttings. In some low-lying areas crops were completely destroyed by flooding, but it appears that in most of the range area winter feed supplies should be sufficient.

Total losses of stock using Crown range were about average, but timber milk-vetch, a native toxic plant, was troublesome in several areas. Predatory animals caused serious losses in the Peace River area, and threatened live-stock production. A committee comprised of a representative of the Fish and Wildlife Branch, of Department of Agriculture, and of Forest Service, with two ranchers, was formed to study and make recommendations on this problem. Radio-equipped rancher range patrols organized by the police were successful in reducing theft of cattle in some areas. Industrial and recreational activities are causing increasing disruption in the use of Crown range for grazing purposes.

The market for all classes of cattle was strong throughout the year, with a significant rise in prices. The weighted-average prices received by cattlemen through the B.C. Livestock Producers' Co-operative Association was $36.30 per hundredweight, compared to $30.87 in 1971—a rise of $5.43.

RANGE AND PASTURE MANAGEMENT

Efforts continued to adjust the management of Crown range to maintain both the resource and a viable live-stock industry in the face of other growing (and often conflicting) uses of the same land. This is a problem of increasing complexity, requiring attention beyond the capacity of existing staff.

Rotational grazing systems commenced on several additional range units. Experience has shown that under an appropriate form of rotational grazing, range condition, production, and utilization can be improved and beef yields increased. Such systems also allow greater flexibility to integrate grazing of domestic stock with other range-land uses. However, they require heavy capital inputs for fencing and the pooling of herds where numerous small operators are involved. Communal grazing presents live-stock management problems requiring co-operation between

users. Such co-operation is difficult to foster, and this, together with the high capital inputs required, limits progress in introducing rotational grazing.

Further progress was made in regulating periods of use in accordance with actual dates of range readiness for grazing and forage production. These vary widely from year to year and adjustments are required annually. The implementation and enforcement of flexible turnout and removal dates place heavy demands on staff time and require considerable adjustment by ranch operators. However, allowing turnout and use based on average dates of range readiness and production is not satisfactory under the intensive and varied range-use pressures which exist.

Division officers participated in numerous field inspections and management planning sessions with various other resource management agencies and user groups to improve integration of range-land uses. Studies to improve knowledge of inter-effects between range uses were continued in co-operation with other agencies. These included the inter-relationship between deer and cattle on range on the north side of Kamloops Lake, cattle-wildlife relationships in the East Kootenay area, and grass seeding-timber regeneration relationships on clearcut areas in various localities.

Range Surveys

During 1972, field work was undertaken on the following areas: Mount Lolo Stock Range; Pinantan-Pemberton Stock Range; west portion, Tunkwa Lake Stock Range; Apex-Nickel Plate area, Keremeos Stock Range; and the Nicola Unit, Nicola Stock Range. Maps and reports on these projects are being compiled.

Maps and reports were completed for the following: Naramata Unit, White Lake Stock Range; Roche Lake-Dardanelles area, Nicola and Monte Hills Stock Ranges; Dog Creek Unit, Clinton Stock Range; and the Gustafsen Lake Unit, Clinton Stock Range.

A light fire season permitted an increased number of routine range inspections by the technical field staff.

Range Improvements

Structural improvements constructed or replaced included 147 miles of trail and road, 111 miles of fencing, 43 water developments, 10 bridges and culverts, 58 cattle guards, six corrals, four range cabins, and nine enclosures for experimental studies or demonstration purposes.

A total of 962 acres was cleared of brush and debris in preparation for subsequent treatment. Cultivation of varying intensities was undertaken on 1,048 acres, and 1,298 acres of previously prepared ground was seeded. A total of 44,670 pounds of grass and legume seed was sown on ground denuded as a result of logging or other industrial activity and on the above-mentioned cultivated sites. One clearcut area of 420 acres was seeded from the air. Prescribed burns to control brush cover 4,500 acres, mainly in the Peace River area.

Miscellaneous improvements included hazard reduction through removal of abandoned buildings and garbage, fencing of mudholes, and control of toxic plants. Limited predator-control measures were undertaken in association with the Fish and Wildlife Branch on three sites. Small patches of knapweed isolated from main areas of infestation were also treated.

Assistance to the programme from the Range Improvement Fund amounted to $203,548. In addition, $20,000 was spent on pasture projects in the Peace River area from special funds provided for that purpose. Range-users contributed substantially to most new projects and to maintenance of existing structural improvements.

CO-OPERATION

Effective range management requires close co-operation between permittees using a common range, and between them and the responsible administrative agency. Local range live-stock associations are the best medium through which this is achieved, and there are 66 such associations recognized under the *Grazing Act*. Three new associations were approved in 1972 and two more became incorporated as a prerequisite to recognition. Forest officers attended a total of 203 association meetings during the year.

Contact was maintained with the British Columbia Cattlemen's Association regarding items of industry-wide importance. The British Columbia Livestock Producers' Co-operative Association, the industry-owned marketing agency, again supplied the selling-price figures for calculating grazing fees under the sliding scale. Approximately 56.7 million pounds of beef animals from the range area were sold through the co-operative during the year.

Canada Department of Agriculture Research Stations involved in range-related research were helpful with technical problems. They are involved in studies of importance in the management of Crown range, some being co-operative surveys with the Forest Service and other agencies. Excellent co-operation also came from various resource management agencies in dealing with common use problems.

ADMINISTRATION

Establishment of the Cariboo Forest District, the bulk of which lies in the range area, resulted in a major redistribution of range-administration responsibilities. The transfer of this large range area from two jurisdictions to a third presented administrative problems but was accomplished with less disruption than expected. With district headquarters located closer, administration and management of the important Cariboo and Chilcotin ranges will undoubtedly become more effective.

The growing complexity of range-land uses produced increased administrative work loads. Problems of use integration are difficult to resolve and require more consultation with other resource-management agencies. Increased interest by the public in land-use decision-making is resulting in considerable time being required to interact with numerous public groups. Correspondence and meetings with such groups, often holding conflicting views, now require considerable staff time which must be diverted from work on management problems. More staff are needed to give proper attention to both facets.

Grazing and Hay Permits

During the year, 1,968 grazing permits were issued authorizing the depasturing of 174,617 cattle, 6,166 horses, and 1,432 sheep on Crown range. The number of permits is up slightly from the previous year. The number of cattle is down by 4,155 head; horses and sheep almost the same. (*See* Table 70 in the Appendix.) The decline in cattle numbers was due to miscellaneous causes such as the purchase of ranches being flooded by the Libby Reservoir and some ranches temporarily understocked following changes in ownership.

Expressed in animal-unit months—the equivalent of one mature cow on the range for one month—total use authorized for all classes of stock was 787,589 animal-unit months, 41,748 less than the previous year. This reduction is due to smaller numbers of cattle and shortened grazing periods.

A total of 176 hay-cutting permits was issued, authorizing the harvesting of 1,916 tons of meadow hay, slightly less than the previous year.

Grazing Fees

Grazing fees are on a sliding scale related to prices for cattle received by producers the previous year. Except for cultivated pastures in the Peace River area, grazing fees per head per month were 62 cents for cattle, 77½ cents for horses, and 15½ cents for sheep—a slight increase over the previous year. The separate scale of fees for cultivated pastures in the Peace River area remained at the rate of $1 per head per month for cattle, $1.25 for horses, and 25 cents for sheep. The hay-cutting fee remained at $1 per ton.

Control and Enforcement

Use of range by domestic stock must be controlled to prevent damage to the resource and conflict with associated uses. The task of detecting and removing mobile trespass live stock on the extensive and largely forested Crown range is difficult and time-consuming, particularly where unauthorized animals are intermingled with others legitimately using the range. Horses, highly mobile and capable of grazing under adverse conditions, present a special problem. In addition to preventing trespass or excess grazing, proper management practices must be followed to protect the range. Although most stock-owners appreciate the need for regulated use, some have no regard for the range resource.

To meet this situation with existing staff, numerous stock counts and range inspections were carried out during the year, mainly by ranger staff in conjunction with other duties. Temporary help were engaged in several areas. The usual number of infractions was discovered, and in most cases a warning was sufficient to correct the situation. It was necessary, however, to take direct action to remove 46 cattle and 189 horses. One range unit was ordered closed to grazing for three years because of damage suffered as a result of trespass use and lack of compliance with permit conditions.

engineering division

SUMAC

ENGINEERING DIVISION

HIGHLIGHTS

To provide access for replanting the Van Fire area in the Prince Rupert District, Forest Service crews completed a bridge across the Babine River and worked on the first 10 miles of the Nilkitkwa River Forest Road beyond the bridge.

Field crews completed an unusually large mileage of road-location survey with the help of students under the *Accelerated Reforestation Act.*

The trend to larger trucks for off-highway log-hauling has led to reconstruction of numerous forest road bridges (originally designed for loads of 45 to 90 tons) for loads of 150 tons.

A second shallow-draught pusher tug, the 40-ft. *Forest Mariner,* was commissioned for pondage-clearance work. The vessel has a square bow and high wheelhouse, enabling her to push either a barge or floating wood.

The trend in small, fast Forest Service boats is toward the proven stock-model fibreglass and aluminum hulls, taking advantage of the economy of standard moulds and volume production.

ENGINEERING SURVEYS

Field survey crews completed 255 miles of road location, bridge-sites, nurseries, ranger stations, lookout-sites, and railroad and highway crossings.

Field-engineering investigations included access-route studies in 35 public sustained-yield units, and 340 miles of road evaluations in tree-farm licences, timber sale harvesting licences, and public sustained-yield units.

DESIGN

Designs, drawings, and specifications were prepared for two pressure-creosoted timber bridges in the Nelson Forest District—one for the White River and the other for the Duncan River—and for reconstruction of five bridges on the Port Hardy Forest Road to allow loads to be increased to 150 tons. This reconstruction utilizes all of the on-site glulam material and most of the sawn timber. A similar redesign was made for a bridge on the Naver Creek Forest Road.

Other design work included several preliminary bridge sketches and estimates, load rating of existing bridges, a helicopter boom for fixed air-base stereophotography, water supply and reservoir facilities, building foundations, and structural checks.

MANAGEMENT ENGINEERING

Further studies were made on the amounts of logs and debris in the Strait of Georgia and the lower Fraser River. These included an estimate of the quantity of wood on beaches and that brought to the Coast by the Fraser River during the spring freshet. A preliminary study on loss of logs from booms is nearing completion.

During April and May about two million cubic feet of debris accumulations on gravel bars in the Fraser River below Hope were burned, preventing it from being swept into the Strait of Georgia by the unusually high runoff.

Development engineering investigations were completed for the Kwoiek drainage in Kamloops District; the Peace River area, including Wapiti, Moberly, Blueberry, and Peace River PSYU's; and a number of other areas. Development studies were updated in the Chilco, Takla, Stuart, and Klappan PSYU's.

Use was made of computer programmes to solve problems involving large quantities of data, and assistance was given to other divisions in programming forest fire cause analysis and the calculation of Forest Inventory data from fixed air-base photo samples.

CONSTRUCTION

Larger road projects included construction of 8.5 miles of new grade on the Binta Lake-Cheslatta Lake Forest Road, 18.5 miles of right-of-way clearing on the Nass River Road, 10 miles of partly completed grade on the Nilkitkwa River Forest Road, and major reconstruction of a short and narrow section of the Cayoosh-Joffre Forest Road.

Glulam-girder bridges were built across the Babine River on the Nilkitkwa River Forest Road and the Chilako River on the Pelican-Holman Forest Road. Construction started on a glulam-girder bridge across the Duncan River on the Duncan River Forest Road, and the rebuilding of five bridges on the Port Hardy Forest Road to carry off-highway industrial loadings of 150 tons.

General maintenance of the forest road system was carried out by crews under district supervision.

RESERVOIR IMPROVEMENTS

Site-preparation work on the Canadian portion of the Libby Reservoir continued with an additional 1,180 acres treated. On the Duncan Reservoir, 257 acres were treated.

Williston Lake reached full pool, bringing the pre-flood programme to an end with some 95,700 acres treated. Postflood treatment started with disposal of non-usable residual wood contained in drawdown areas in the Parsnip Reach. In addition, merchantable logs were boomed and sorted in various areas and residual wood collected and stored for later disposal.

The waterway-improvement programme on the Mica Reservoir continued with the treatment of 10,400 acres. On the Jordan River power development, the 253-acre Bear Creek Reservoir was cleared of standing snags.

BUILDING AND MARINE SERVICES

A wide variety of buildings was completed in many locations, both by Forest Service crews and by contract. Offices, warehouses, and residences were constructed at various ranger stations and a mechanical shop was completed in the Prince George headquarters compound. Major warehousing facilities were constructed at Green Timbers and at the Forest Service Maintenance Depot.

Many building and agricultural engineering projects were carried out as a result of the accelerated reforestation programme. Major buildings and irrigation systems were added to established nurseries, and extensive exploration work was done to establish a water supply for the new Skimikin Nursery.

Mobile accommodation continues to be important. During the year, 60 trailers were purchased, including 35 mobile homes and eight seedling-refrigerator trailers.

A second pusher tug, two boomboats, and a supervisory launch were provided for log and debris sorting on Lake Williston. A small landing craft was purchased to replace a similar craft of World War II vintage. Small aluminum and fibreglass craft were acquired to replace several older wooden boats at various ranger stations.

Materials inspections were carried out on glulam members, ranging from 132-foot-long bridge girders for the Babine River bridge to small building members. In conjunction with the Western Forest Products Laboratory of the Canadian Forestry Service, a technique was developed for the repair of glulam beams by injecting an

epoxy glue into cracks. This technique was used to repair some glulam roof beams in a Williams Lake warehouse and a glulam bridge girder, all of which had developed abnormal cracks as a result of excessive moisture change.

MECHANICAL

A total of 218 vehicles was purchased, of which 153 were replacements for older, unserviceable units in all districts and divisions. The remaining 65 vehicles were additions to the vehicular fleet and consisted of 25 new ones for the Cariboo Forest District, two 1,500-gallon used tanker trucks, 24 of specialized types (e.g., Reforestation crew units), and 14 general purpose units.

Two large tractors and three graders were replaced and six smaller farm-type tractors were obtained as replacements or additions. Miscellaneous nonstandard equipment purchases included a seedling-harvester, a tree-shaker, a rotary brush-cutter, three van trailers, and smaller items.

As a result of a light fire season, pump and chain-saw purchases were comparatively small, but there was considerable purchasing and setting up retardant mixer plants and ancillary equipment such as transfer pumps, and in electrifying some gasoline-powered units.

FOREST SERVICE MAINTENANCE DEPOT

Additional warehousing and adjacent grounds improvement were completed at the depot.

Marine work included overhaul and refit of 40 launches and five jet boats, 80 repairs to launches, and numerous repairs to small craft. Several launches were updated with electronic, navigation, auxiliary, heating, and propulsion equipment. New coastal, lake, and river boats were fitted out and completed. Marine craft on Lake Williston were overhauled and serviced by a crew from the depot. After sea trials and acceptance, the new 40-ft. pusher tug *Forest Mariner* was dismantled at the depot, shipped on Forest Service transport trucks to Lake Williston, and reassembled by a depot crew.

The depot made or assembled 1,562 units, including furniture, tent frames, property boxes, crates, radio repeater buildings, signs, skidder tanks, retardent mixers, and light-plant trailers. More than 2,000 hose and pump fittings, nozzles, and valves were made.

Couplings were installed on 217,200 feet of fire hose; and 293 new pumps, outboard motors, power-saws, and light plants were tested, stored, or shipped.

Maintenance and overhauls were completed on 845 small mechanical units, including pumps, outboards, power-saws, light plants, trail cycles, and other equipment. In addition, 301 larger units were overhauled, including tractors, graders, trucks, trailers, and porta-buildings. Eighty-four new and charter vehicles were fitted out with Forest Service equipment.

The transport pool hauled 3,244 tons and towed 94 trailer units, travelling 230,000 miles.

COMMUNICATIONS

Of the 503 units purchased in 1972, 319 replaced older, high-maintenance equipment for a net inventory increase of 184. The modernization programme for the very high frequency fire portables was completed.

A new operating console in the Kamloops Forest District headquarters aided the division of the Kamloops system into three zones and resulted in greater use of the system by ranger districts. With installation of new equipment in the Cariboo

Forest District Headquarters, the communications link between Williams Lake, Prince George, and Kamloops was removed and the Cariboo system formed into two zones.

Nine battery repeaters were installed, one providing extended range aircraft contact from Smithers, the others giving extended coverage for ranger districts. Communications coverage in seven other ranger districts was increased by the remote control of their base stations. Weak signals due to the extended path through rugged terrain between Terrace and Kitwanga continued to cause interuption in the Prince Rupert system.

protection division

CLUB MOSS

PROTECTION DIVISION

WEATHER

The heavy winter snowfall and cool, wet, spring throughout most of the Province set the pattern for the weather, which continued until mid-July. The exception was an early season drought from early June to mid-July in the northern portion of the Fort Nelson Ranger District where lightning fires were difficult to suppress.

In mid-July an unseasonable heavy rain-storm along the southern Coast established new rainfall records and caused flood damage in several areas. At the same time, general rain spread over the entire Province, preceding the start of a warm, dry trend. The timely summer showers precluded any serious build-up and reduced the fire occurrence.

Unseasonable strong winds during July and in October caused some fire-control problems, especially with slash-burning on Vancouver Island.

Lightning activity was heavier than usual throughout most of the Province. It was invariably accompanied by rain, and lightning fires were relatively few.

FIRE-SUPPRESSION CREWS

The combined fire-suppression crew and standby force totalled 332 personnel. Crews ranged from two to 20 men, and were located at strategic locations throughout the Province. These crews, along with forestry youth crews, acted on 739 of the 1,903 fires. They were employed on a variety of forestry projects when not fighting fires.

PROVINCIAL FORESTRY YOUTH PROGRAMME

The success of the 1971 programme was repeated on an expanded scale. A total of 954 male and female students was employed at numerous locations throughout the Province.

The students performed well in a variety of forestry jobs, with many projects completed which otherwise would have been deferred.

Female students, for the most part, did clerical and research work.

FOREST-USE RESTRICTIONS

There were no forest-use closures invoked in 1972, but strong winds, after the termination of the close season on October 13, necessitated a ban on all open fires in Zones 1, 2, 7, 8, and 9 of the Vancouver Forest District.

The ban was in effect from October 20 to 26 and was invoked to prevent loss of standing timber as a result of escaped slash fires in the area, and to control smoke pollution.

AIRCRAFT

Thirty-one aircraft were retained on contract during the fire season for the detection, supply, and control of forest fires.

Six light aircraft were on fire detection and distributed as follows: Prince Rupert, two; Prince George, two; Cariboo, one; and Kamloops, one.

Three aircraft were on patrol and administrative flying. These aircraft were located as follows: Vancouver, one (Beaver); Kamloops, one (Cessna 337); Nelson, one (Cessna 337).

Other forest districts were allotted funds to charter local aircraft as required.

Fifteen airtankers were under contract for initial attack. The distribution of the tanker aircraft was as follows: Vancouver, one (Canso); Prince Rupert, two (Canso); Prince George, four (A 26's); Kamloops, five (Avengers); Nelson, three (Avengers).

Six bird-dog aircraft were used to direct air-attack operations. Bases for these aircraft, with the type, were as follows: Vancouver, one (Aero Commander); Prince Rupert, one (Cessna 337); Prince George, one (Cessna 210); Kamloops, one (Cessna 210); Nelson, one (Cessna 337). One Cessna 210 alternated between Prince George and Williams Lake.

One Hiller 12E helicopter was under contract to the Vancouver Forest District. Other forest districts were allotted funds for local charter as required.

Two new airtankers appeared in British Columbia during the summer—the P2V-7 Neptune and the Douglas D.C. 6. The P2V-7 Neptune was used operationally on several fires, while the D.C. 6, operational late in August, was only able to show its effectiveness in demonstration drops.

FIRES

Occurrence and Cause

There were 1,903 fires during the 1972 season, compared with the 10-year average of 2,410, and less than half the record number of 4,003 fires in 1970.

The largest single cause was lightning, which accounted for 583 fires—30.7 per cent of the total. Over the past 10 years the annual percentage of lightning-caused fires has averaged 36.6 per cent.

An estimated 24 per cent of the 1972 fires were started by recreationists and smokers—a slight increase in the 10-year average of 22 per cent.

Cost of Fire-fighting

Forest Service costs for fire-fighting totalled $2,287,710. The cost to other parties was $1,707,987.

The average cost to the Fire Suppression Vote per fire was $1,202, slightly less than half the 10-year average of $2,410.

Loss

The area burned over was 64,413 acres, a significant reduction from the 10-year average of 229,487 acres. Understandably, the loss decreased in proportion to the decrease in area of burn.

Slash Disposal

Slash-burning was carried out satisfactorily throughout the Province by industrial operators in spite of the wet season. Some prescribed burning was done by Forest Service crews.

In the Vancouver Forest District, 955 acres of slash were abated by prescribed burns, one of which was a spring burn, under Forest Service direction. Industrial slash-burning started during the second half of August in the northern portion of the district. Burning in the southern portion of the district was delayed by a minor hazard build-up until late September in a number of cases, with some burning deferred until mid-October. Despite the lateness, southern Vancouver Island experienced several damaging escapes. Slash reports covered 67,114 acres of logged-over land, including 11,374 acres exempted from burning. A total of 41,475 acres of the instructed areas was satisfactorily abated by logging operators.

In the Kamloops Forest District, 590 acres were abated in prescribed burns by the Forest Service. Instructed for burning in 1972 were 137 areas, totalling 18,232 acres. Between late August and early October, slash was satisfactorily burned on 14,318 acres.

Slash-burning conditions were good throughout most of the Prince Rupert Forest District during late summer and early fall. One hundred and sixty-one areas of slash, totalling 25,317 acres, were satisfactorily abated by operators. In addition, 13 areas, totalling 2,489 acres, were abated in Forest Service prescribed burns.

Successful slash-burning was completed on 24,200 acres by industrial operations in the Prince George Forest District. An additional 2,320 acres were abated by the Forest Service in prescribed burns.

In the Nelson Forest District 49,000 acres of slash were instructed for burning. Of the instructed areas, 17,555 acres were satisfactorily burned by logging operators.

Satisfactory slash burns were carried out by industry over 7,677 acres of logged-over land in the new Cariboo Forest District. An additional 309 acres of slash were abated by the Forest Service in prescribed burns.

Snag Disposal

In the Vancouver Forest District, snags on 3,070 acres were felled—655 acres by contract and 2,415 acres by Forest Service crews.

An additional 4,000 acres of fire-killed snags in the burned area of the 1971 Sue Fire, north of Golden in the Nelson Forest District, were "cabled down" as a rehabilitation project. The "cabling down" involves stringing a steel cable between two tractors.

Fire-law Enforcement

Information was laid in 27 violations of the *Forest Act*. Seventeen involved burning without a burning permit; five for noncompliance with burning permit conditions; three for failure to render assistance in fire-fighting, and two for miscellaneous offences.

PROTECTION PLANNING AND RESEARCH

Computer Fire Statistics

Maintenance of fire report data continued and information from 1950 to 1971 (inclusive) is on magnetic tape.

Annual protection statistical tables from 1950 were prepared by computer and distributed to all forest districts during the year.

Fire Weather Index values were coded and magnetic taped for the 1970–72 period.

The number of programmes prepared for districts and other users about managed unit planning increased heavily, but the main use of the computer is still oriented to the Provincial detection study.

Visibility Mapping and Lookout Photography

One student was employed for the summer in lookout photography, and 13 lookout panoramic sets were completed.

Visibility mapping had low priority pending completion of the Provincial detection analysis. Only one potential lookout-site was examined in the Vancouver Forest District.

Fuel-moisture Indicator Sticks

The manufacture of fuel-moisture sticks continued. Of the 1,130 sets distributed, 55 per cent went to industry and 45 per cent to the Forest Service.

Similar production is planned for 1973.

Insect, Disease, and Pesticide Administration

Liaison with other Provincial Government departments, Federal agencies, and joint Government/industry committees continued on forest insect problems. There was a general increase in defoliator activity. The false hemlock looper flared up near Salmon Arm, and tussock moths have appeared in the Okanagan Valley. The mountain pine bark beetle activity has increased near Hazelton and the spruce budworm areas have increased east of Pemberton. The black-headed budworm is on Vancouver Island with serious attacks on the north of the island. Amended regulations pertaining to the European pine shoot moth were put into effect.

Pesticide applicator courses were again arranged through the Department of Agriculture for personnel involved in pesticide use. Chemical treatment plans for the Forest Service, forest industry, and other users which could affect the forest environment were reviewed under membership in the Provincial Inter-Departmental Pesticide Committee.

Research Projects

Major project completions during 1972:

Handbooks—One handbook in the Forest Protection Handbook series was completed and distributed, *Pumping and Delivering Water to Fires, No. 7,* in both standard and pocket edition size.

Detection—The Vancouver Forest District detection analysis was concluded and recommended deleting 16 of the 32 existing lookouts with the addition of two specific air patrol routes, one on Vancouver Island and one on the Mainland.

Wheeled skidder attachments—A universal attachment was developed to provide a cradle arrangement permitting wheeled skidders to carry cylindrical tanks of water for fire mop-up activities.

Mobile kitchens—A unit was designed with a 125-man capacity. The prototype was field tested and the revised model was built by a trailer manufacturer. One will go to each forest district.

Explosives for fire-line construction—Comprehensive field tests were carried out on a 400-grain-per-foot experimental detonating cord for building fire-line. Results were encouraging and if the recommended product type can be manufactured for 1973 it will be used in operational tests on actual fires.

Airtankers—A study was completed for the Vancouver Forest District to determine the best primary and secondary airtanker bases available, using computer analysis of fire data and on-site investigation.

Major projects active but not completed during 1972:

Handbooks—Two handbooks, *Fire Retardants* and *Large Fire Administration,* are under way.

Detection—The detection analysis for the Kamloops Forest District was almost completed and some computer aspects were done on the Nelson and Cariboo Forest Districts.

Three Barnes infrared fire spotters were tested on patrol aircraft during the summer months. Results were unsatisfactory due to the high frequency of false alarms.

Fire weather—In co-operation with the Federal Pacific Forest Research Centre, the Provincial danger rating system is being refined. Work started on recalibration and preparation of guidelines for the 1973 season.

A new weather recording form for observations and index calculations is being printed for use in 1973.

Climatological data for all network stations is being resorted, coded, and made compatible for computer analysis.

Equipment development—Prototypes for an economical wood stove, a collapsible pump carrier, and a hose protector for road crossings are in various stages of development and testing.

Service and Co-operation

The forest districts were supplied with 576 two-man, two-day emergency fire-ration packs.

Ten *Planning and Research Reports,* covering a variety of protection projects, were published and distributed to field staff and outside protection agencies. There were numerous requests for the handbook series and reports from other agencies and libraries in Canada and foreign countries.

Numerous requests for computer printouts were received from the districts and the training school on information related to fire data and managed unit planning.

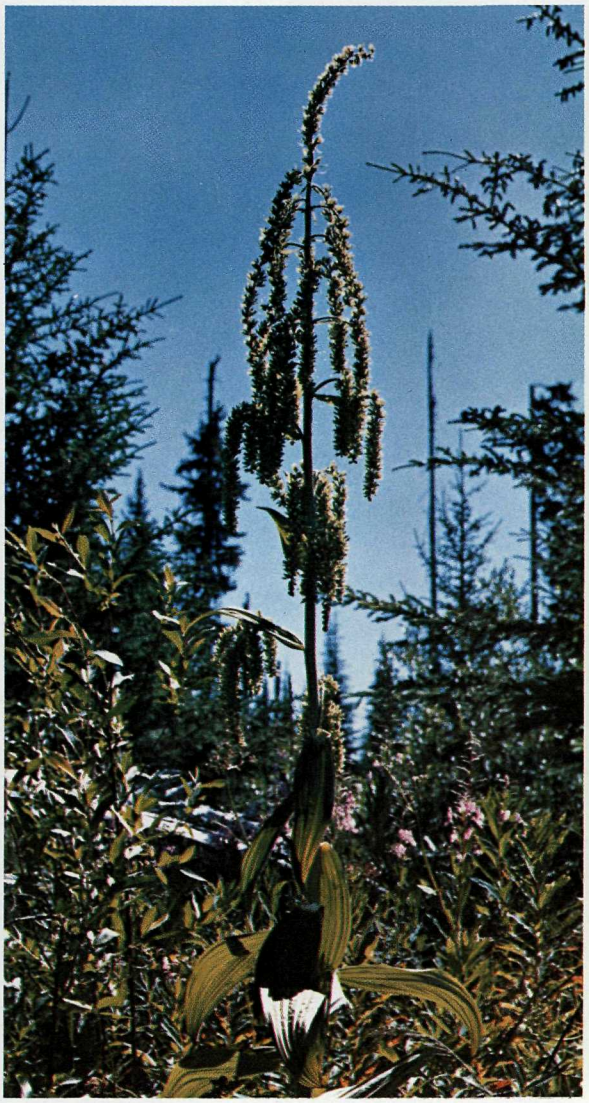
The Federal Pacific Forest Research Centre in Victoria, the Federal Fire Research Institute in Ottawa, and the Faculty of Forestry at the University of British Columbia in Vancouver were supplied with updated duplicate tapes of all fire data from 1950 to date. They will automatically receive updated data after each season's data have been coded and edit-checked.

A sixth fire-training simulator was constructed for the new Cariboo Forest District.

Co-operation continued with the Atmospheric Environmental Service and the Canada Forestry Service on the Provincial fire weather network, weather forecasts, and other weather-related problems.

Active representation was maintained with various committees on protection matters.

During the summer, four students completed the coding of fire data for computer use. Another five students were seconded to the Pacific Forest Research Centre to help in forest fire and insect problems.



training school

INDIAN HELLEBORE

TRAINING SCHOOL

From January 26 to April 14 an experimental advanced training course was held for selected employees who were graduated in the forestry courses from the British Columbia Institute of Technology, Selkirk College, and the Northern Alberta Technical Institute. There were 25 in the class, drawn from the staffs of the forest districts and the Engineering, Reforestation, Research, and Inventory Divisions. The curriculum was designed to complement the earlier technical forestry training of the students with instruction given in Forest Service policies and procedures, natural resource use administration, and personnel management.

Two Forest Service introductory courses were held for newly employed university and technical institute graduates. The course was given May 15, 16, and 17 to 27 university graduates and June 1, 2, and 3 to 32 technical institute graduates. The curriculum included lectures in Forest Service organization and procedures, safety practices, and the Defensive Driving Course.

An advanced class of 24 students commenced on September 18 and will continue to April 1973. The advanced course curriculum has been revised, on a trial basis, to emphasize training in planning forest-land use and recognizing the effect of all facets of forest-land use on the total forest-land resource.

EXTRA COURSES AND FUNCTIONS

The Inventory Division used the school facilities for three weeks in May for training its summer field crews.

A two-day course in ecology, presented by the UBC Department of Continuing Education, was given in June to selected staff of the Victoria divisions and the Vancouver Forest District, with 32 attending.

The three members of the school's instructional staff qualified as Defensive Driving Instructors and have participated in giving the defensive driving course in co-operation with the Accident Prevention Division of the Civil Service Commission.

The Canadian Forestry Association outdoor classroom project held in co-operation with the Surrey School Board was presented again at the school in May.

HIGHLIGHTS, 1972

- Total graduates of Forest Service Training School since 1946:

Basic course	243
Advanced course	343
Technical institute graduates' course	25

- Advanced training for technical institute graduates given for first time.
- Revision of advanced course curriculum to emphasize training in planning use of forest land.

Technical Institute Graduates' Course
(January–April, 1972, Experimental)

	Subject Title	Periods*
12.	Ranger District Organization	17
----	Forest Service Organization	12
27.	Public Speaking	13
11.	Forest Management Policies and Procedures	11
----	Resource Use	10

* Three hours in each period.

Technical Institute Graduates' Course—Continued

Course No. and Title	Periods*
10. Forest Protection Policies and Procedures	13
33. Mechanical Maintenance and Operation	11
..... Man Management	6
14. Fire Suppression	15

Advanced Course (1972/73)

Course No. and Title	Periods*
Mathematics	5
Botany	5
Business English	5
Surveying	6
Dendrology	3
Wood Technology	3
Entomology and Pathology	13
Grazing	4
Silviculture	2
Ecology	4
Forest Management Policies and Procedures	7
Forest Protection Policies and Procedures	17
Public Speaking	18
Resources, Forest	15
Resources, Other	13
PSYU Planning (Mgt. Prot. Ref.)	27
PSYU Operations (Mgt. Prot. Ref.)	32
Scaling	30
Man Management	10
Ranger District Organization	3
Forest Service Divisions	7

* Three hours in each period.

FLY AMANITA

accounting division

ACCOUNTING DIVISION

FISCAL

Financial returns to the Forest Service in 1972 exceeded all expectations, reflecting a continuous escalation of market prices being received for forest products. The totals of both amounts billed and collected climbed to new record highs, with substantial increases over 1971 totals. Conditions at the year's end indicated this trend would continue well into 1973.

Total amounts charged against logging operations rose by 60.5 per cent to $108,659,791 (*see* Table 142), with all forest districts registering gains. Comparisons of Prince George and Kamloops Districts totals must make allowance for the transfer of part of their administration areas to the new Cariboo Forest District, but they showed increases of 108.7 per cent and 94.9 per cent respectively. The Cariboo Forest District itself, which initiated its own billing effective August 1, contributed $4,630,676 to the total. Nelson Forest District was up 118.5 per cent; Prince Rupert, 21.0 per cent; and Vancouver, 4.2 per cent.

Actual revenue collections reached $102,636,777 (*see* Table 141), which was 68.5 per cent larger than the 1971 total. Timber sale stumpage, which constitutes the bulk of the revenue, increased by 83.5 per cent to $91,180,674. Timber sale rentals and fees declined by 15.6 per cent and cruising and advertising by 15.8 per cent.

Timber licence rentals and fees decreased by 2.7 per cent, timber berth rentals and fees by 15.5 per cent, and timber lease rentals and fees by 2.0 per cent. These old tenures are no longer issued and their acreages are reduced by progressive elimination of areas logged.

Collections from grazing permits and fees increased by 13.4 per cent to $532,993. Forest-protection tax showed a modest increase of 5.5 per cent at $1,185,179.

Miscellaneous collections increased 5.1 per cent to $773,132, while weight-scaling rose by 32.3 per cent to $2,004,105. The latter represents a full recovery from the industry of the costs of installing and operating the weight-scaling stations.

Financial tables covering operations for the fiscal year 1971/72 are in the Appendix. Information regarding expenditures is maintained only on a fiscal-year basis and details are published annually by the Department of Finance in Public Accounts.

Additional funds were made available for the Forest Service by the 1972 Session of the Legislature in the form of an *Accelerated Reforestation Fund Act*. This provided a maximum of $10,000,000 for "an accelerated reforestation or forest improvement programme." In addition to the normal expansion of the reforestation programme, funds were subsequently allotted for a Summer Youth Programme which employed 994 young people, additional expenditures on inventory and research projects, recreation facilities, and planning programmes. Particulars of these expenditures will be published in the 1973 report when 1972/73 fiscal-year totals are presented.

ADMINISTRATION

Reflecting buoyant market prices, 1972 collections were maintained at a high and satisfactory level and problem accounts were at a minimum. At the end of December, accounts receivable totalled a record $21,089,597.

Despite a moderate fire season, expenditure accounting volume continued to grow as the result of the expansion in spending approved by the Legislature. The

staff of the Headquarters Accounts Office was increased by two to cope with the additional work. Further additions may be necessary to maintain payments on a current basis.

In the area of fiscal control, plans were initiated to standardize and simplify allotment procedures and update costing methods. Discussions were held with the Comptroller-General's office relative to streamlining budgeting procedures and supplying departmental managers with more useful expenditure data. It is hoped considerable progress will be made in this direction during 1973.

An upsurge in reforestation contract payments and administration developed as the programme of planting smaller logged-off areas in various parts of the Province continued to expand. Minor construction contracts were also more numerous.

Collection of drift logs under the Log Salvage Regulation totalled 9,864,322 cubic feet, an increase of over 2,800,000 cubic feet from 1971. Scarcity of logs on the market has resulted in acceptance of many logs normally left on beaches. Installation of a log-sorting ground by the receiving station in Howe Sound assisted in the increase.

Two new beach-clearing licences were issued, bringing the total of current licences to three, all in the Log Salvage District. During the year, 100,498 cubic feet of logs were removed from the beaches involved.

Liaison with industry's log losses and wood debris is maintained with the Log Security Committee and committee studying floating wood debris.

Export of logs, down 60 per cent from 1971, virtually ceased in April 1972, when log stocks in the Province reached a seriously low level. At year-end, logs were still in short supply. Stocks of wood chips, in a surplus situation at the start of the year, were reduced substantially, with some plants facing shortages. Movement of wood chips throughout the Province is being severely hampered by a lack of sufficient railway chip cars.

personnel division

TRILLIUM

PERSONNEL DIVISION

There were several changes in executive positions. Lorne F. Swannell retired as Chief Forester, and was succeeded by Ian T. Cameron. E. L. (Ted) Young became Assistant Chief Forester (Operations), Peter J. J. Hemphill was named Director of Services, and Norman A. McRae was appointed Assistant Chief Forester (Planning and Special Projects). Eric Robinson was named District Forester for the new Cariboo Forest District.

At the divisional level, R. D. Thomas became Engineer-in-Charge of the Engineering Division, G. C. Warrack was appointed Forester-in-Charge of the Research Division (succeeding retiring R. H. Spilsbury), and E. (Ted) Knight became Forester-in-Charge of the Reforestation Division. A. M. (Bill) Brand was appointed Forest Service Personnel Officer.

Staffing of the new Cariboo Forest District was completed in 1972. Forty-two positions were filled—some of them new, and others involving transfers from the Kamloops and Prince George Forest Districts.

The organization study relating to Ranger staff positions was implemented on April 1, 1972, with further in-service reviews conducted as a continuation of the original report.

COMMUNICATIONS AND TRAINING

A regular meeting of District Foresters and Assistant District Foresters was held in Victoria in January. Ranger meetings were held in Prince Rupert, Nelson, and Prince George. District Protection Officers met in Victoria in November.

A number of seminars and workshops were attended by various groups throughout the year. One Forester, two Technical Forest Officers, and one Technician were selected for Class XVII of the public administration course; and three Foresters, one Engineer, and one Forest Protection Officer graduated from Class XIV of this course, receiving diplomas in public administration from the University of Victoria. Three employees graduated from Class 8 of the correspondence course in public administration, and three employees were selected for Class 9 of this course.

In September, 24 Assistant Rangers commenced the advanced training course at the Forest Service Training School.

ESTABLISHMENT, RECRUITMENT, AND STAFF TURNOVER

Continuously employed personnel during 1972 totalled 2,679, including 889 permanently established positions. A total of 9,191 was seasonally employed.

During the year, 167 persons received Civil Service appointments, and 135 left the Service. Thirty-three 25-year certificates were awarded to Forest Service personnel.

There were 13 retirements and 100 transfers involving permanent staff personnel. Three Foresters and one Engineer left the organization, while 23 Foresters and one Engineer were hired.

Turnover of Civil Service appointed staff, including temporary-continuous positions, was 11 per cent, with the Kamloops, Prince Rupert, and Prince George Forest Districts experiencing the highest numbers. This, for the most part, involved female office personnel. All areas reported significant turnover increases over 1971.

A total of 2,765 employment applications was processed by the personnel office, in addition to those handled by district and divisional offices.

Employment and working conditions remained relatively unchanged. A highlight of the year, however, was the study made by a special commission into employer-employee relations in the Provincial Public Service.

A comprehensive report outlining concepts and recommendations for bargaining rights for Government employees was submitted to the Provincial Secretary.

Co-ordination of safety practices and training are now included in responsibilities of the new Training Officer position.

During the year, 16 B.C. Safety Council awards were earned by various Forest Service groups—three gold, seven bronze, four silver, and two awards of honour.

PERSONNEL DIRECTORY, 1972

(As of December 31)

VICTORIA HEADQUARTERS

J. S. STOKES	DEPUTY MINISTER OF FORESTS
I. T. CAMERON	CHIEF FORESTER
W. E. L. Young	Assistant Chief Forester i/c Operations
N. A. McRae	Assistant Chief Forester i/c Services
P. J. J. Hemphill	Director of Services

Staff Division Heads:

C. Cooper	Forest Counsel
W. V. Hicks	Departmental Comptroller

Operations Branch Division Heads:

W. C. Phillips	Forester i/c Protection Division
J. A. K. Reid	Forester i/c Management Division
J. B. Bruce	Forester i/c Inventory Division
W. C. Pendray	Director, Grazing Division

Services Branch Division Heads:

E. Knight	Forester i/c Reforestation Division
G. C. Warrack	Forester i/c Research Division
E. H. Lyons	Forester i/c Information Division
C. Highsted	Forester i/c Forest Service Training School
R. D. Thomas	Engineer i/c Engineering Division
A. M. Brand	Personnel Officer

FOREST DISTRICTS

VANCOUVER FOREST DISTRICT

H. M. POGUE	DISTRICT FORESTER
L. W. Lehrle	Assistant District Forester

Forest Rangers:

W. G. Howard (Cultus Lake), G. D. Bertram (Hope), J. T. Schmidt (Harrison Lake), J. N. Nelson (Mission), M. H. Mudge (Port Moody), M. N. Neighbor (Squamish), R. S. Wilson (Sechelt), K. A. Northrup (Pender Harbour), S. B. Hollinshead (Powell River), V. J. Doerksen (Lund), G. Stefanac (Campbell River North), W. C. Archer (Sayward), R. A. Campbell (Port McNeill North), R. D. Moss (Port McNeill), A. J. Teindl (Port Hardy), T. Brooks (Campbell River), K. Haley (Port Alberni), G. F. Hawkey (Tofino), N. P. Gilgan (Pemberton), D. E. DeHart (Gold River), M. W. Antonelli (Langford).

PRINCE GEORGE FOREST DISTRICT

W. YOUNG	DISTRICT FORESTER
W. G. Bishop	Assistant District Forester

Forest Rangers:

G. W. Graham (McBride), W. E. Hall (Valemount), M. A. McRae (Prince George E.), G. E. Meents (Prince George N.), L. G. Espenant (Fort St James), H. V. Hopkins (Dawson Creek), J. L. Younghusband (Aleza Lake), H. Osborne (Vanderhoof), V. G. Bate (Fort St. John), P. F. Griffiths (Fort Fraser), D. A. Amonson (Summit Lake), H. L. Miskovich (Fort Nelson), G. E. Magee (Prince George W.), D. F. Wallin (Hixon), L. McQueen (Chetwynd), E. W. Hewitt (Mackenzie).

Kamloops Forest District

A. H. Dixon - District Forester
L. B. B. Boulton - Assistant District Forester

Forest Rangers:

D. J. Wittner (Lumby), M. E. Monteith (Birch Island), O. D. Parsey (Barriere), J. P. Weinard (Kamloops), V. D. Craig (Chase), R. C. Jackson (Salmon Arm), G. G. Jones (Sicamous), D. R. Wood (Lillooet), A. G. Cameron (Vernon), R. W. McDaniel (Penticton), G. F. M. Baker (Princeton), F. Pearce (Kelowna), J. O. Noble (Ashcroft), R. K. M. Berard (Merritt), D. Reiter (Blue River), J. Wanderer (Enderby).

Prince Rupert Forest District

W. G. Hughes - District Forester
R. G. Gill - Assistant District Forester

Forest Rangers:

V. H. Hernandez (Queen Charlotte City), H. W. Quast (Terrace), W. O. Neros (Kitwanga), F. L. Roe (Hazelton), A. R. Pement (Smithers), R. H. Weinard (Houston), W. C. Waldron (Burns Lake), D. J. Neal (Bella Coola), W. H. Jones (Southbank), V. H. Barge (Lower Post), M. F. Wilkinson (Kitimat), R. N. Keep (Stewart).

Nelson Forest District

J. R. Johnston - District Forester
J. A. D. McDonald - Assistant District Forester

Forest Rangers:

G. M. Cartwright (Invermere), J. L. Humphrey (Fernie), S. E. Anderson (Golden), J. B. Gierl (Cranbrook East), R. G. Trenaman (Creston), H. Thompson (Kaslo), B. L. Custance (Lardeau), R. E. Robinson (Nelson), C. C. Jupp (New Denver), J. H. Raven (Nakusp), H. R. Wood (Castlegar), P. J. Russell (Grand Forks), W. R. Anderson (Kettle Valley), H. D. Hamilton (Canal Flats), W. G. Benwell (Mica Creek), W. O. Pistak (Fauquier), G. F. Dodd (Elko), G. R. Webster (Spillimacheen), L. O. Hamann (Cranbrook West), J. A. Hogan (Beaverdell), C. N. Bellmond (Salmo), G. L. Benwell (Revelstoke).

Cariboo Forest District

E. W. Robinson - District Forester
M. G. Isenor - Assistant District Forester

Forest Rangers:

J. H. Little (Quesnel), A. P. Petty (Clinton), J. G. Ward (Williams Lake), E. A. Bouchard (Alexis Creek), G. York (Quesnel), C. Rohn (Quesnel), T. A. Walker (Tatla Lake), J. F. Lynn (Horsefly), R. W. Donnelly (100 Mile House).

APPENDIX

TABULATED DETAILED STATEMENTS TO SUPPLEMENT THE REPORT OF THE FOREST SERVICE, 1972.

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STATUS OF RESEARCH PROJECTS IN 1972

Active at beginning of year	104
Terminated	8
New projects	17
Active at end of year	113

RESEARCH PROJECTS BY DISTRICTS

Subject	Vancouver	Prince Rupert	Prince George	Kamloops	Nelson
Land classification	----	----	1	1	----
Tree-breeding	6	----	1	----	----
Plant ecology	2	----	2	----	1
Silvicultural systems	----	----	----	----	2
Natural regeneration	----	1	1	1	1
Choice and trial of species	8	5	3	3	1
Nursery practice	24	----	2	----	----
Direct seeding	1	3	1	2	----
Planting	3	3	2	----	2
Spacing	4	4	2	1	1
Forest fertilization	1	----	----	----	----
Tending of stands	10	1	----	2	2
Statistics	1	----	----	----	----
Management: Economics	----	----	----	----	1
Totals	60	17	15	10	11

(12)

RESEARCH PUBLICATIONS, 1972

BALDERSTON, M. B., 1972: *Photo-electric measurements of Douglas fir.* Can. J. For. Sci. 2:3:374-6

HEAMAN, J. C., and OWENS, J. N., 1972: *Callus Formation and Root Initiation in Stem Cuttings of Douglas fir.* Can. J. Forest Res. 2, 121-134

ORR-EWING, A. L., FRASER, A. R., and KARLSSON, I., 1972: *Interracial Crosses with Douglas fir.* Res. Note. 55. B.C. Forest Service.

SUMMARY OF PLANTING, 1963–72

Year	Forest Service on Crown Land		Forest Service on Crown-granted Land (Forest Act, Sec. 152)		Companies on Tree-farm Licences		Companies on Timber Sale Harvesting Licences		Other Private		Totals	
	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres	Trees in Thousands	Acres
Coast												
1972[1]	12,998.8	30,458	.....	.....	12,176.0	34,002	187.6	379	4,872.6	11,158	30,235.0	75,997
1971	9,627.0	22,696	55.0	128	11,603.8	31,735	82.4	236	4,756.0	11,370	26,124.2	66,165
1970	7,202.0	17,719	118.0	270	10,616.5	30,512	.....	.....	7,914.6	20,065	25,851.1	68,566
1969	4,791.0	11,356	107.0	201	9,981.6	28,666	.....	.....	5,673.6	14,946	20,553.2	55,169
1968	3,731.9	8,541	82.0	211	8,797.3	25,139	.....	.....	5,470.1	16,688	18,081.3	50,579
1967	4,052.1	9,237	.....	.....	7,036.6	21,784	.....	.....	3,860.6	11,710	14,949.3	42,731
1966	3,856.0	9,241	19.0	55	8,431.9	24,762	.....	.....	3,828.8	11,352	16,135.7	45,410
1965	3,221.7	9,398	628.0	1,453	7,038.5	20,742	.....	.....	4,432.5	13,023	15,320.7	44,616
1964	1,172.4	3,267	1,165.3	3,247	6,917.4	20,395	.....	.....	3,720.6	10,886	12,975.7	37,795
1963	2,080.0	5,413	1,592.2	3,538	6,487.3	18,463	.....	.....	3,130.6	9,226	13,290.1	36,640
Previously planted	90,976.8	110,872	11,702.4	18,712	44,857.4	103,185	.....	.....	5,763.2	12,348	153,299.8	245,117
Totals to date	143,709.7	238,198	15,468.9	27,815	133,944.3	359,385	270.0	615	53,423.2	142,772	346,816.1	768,785
Interior												
1972[1]	14,256.0	26,600	.....	.....	1,692.0	3,721	2,066.0	4,136	145.0	340	18,159.0	34,797
1971	15,449.2	31,049	.....	.....	1,461.0	3,311	743.0	1,497	69.0	165	17,722.2	36,022
1970	7,201.0	14,672	.....	.....	753.0	2,094	40.0	66	166.0	369	8,160.0	17,201
1969	5,019.9	11,167	.....	.....	301.7	911	.....	.....	70.7	127	5,392.3	12,205
1968	2,512.3	5,854	.....	.....	360.0	921	.....	.....	129.3	222	3,001.6	6,997
1967	1,785.3	3,747	.....	.....	635.5	1,557	.....	.....	95.5	207	2,516.3	5,511
1966	2,292.6	4,835	.....	.....	579.7	1,957	.....	.....	120.7	304	2,993.0	7,096
1965	1,755.9	5,442	.....	.....	614.9	2,669	.....	.....	130.4	382	2,501.2	8,493
1964	1,102.2	2,999	.....	.....	207.3	980	.....	.....	45.2	128	1,354.7	4,107
1963	595.4	1,304	.....	.....	329.7	928	.....	.....	5.9	11	931.0	2,243
Previously planted	4,141.1	7,008	.....	.....	1,312.5	2,950	.....	.....	244.1	340	5,697.7	10,298
Totals to date	56,110.9	114,677	.....	.....	8,247.3	21,999	2,849.0	5,699	1,221.8	2,595	68,429.0	144,970
All planted to date	199,820.6	352,875	15,468.9	27,815	142,191.6	381,384	3,119.0	6,314	54,645.0	145,367	415,245.1	913,755
All planted this year	27,254.8	57,058	.....	.....	13,868.0	37,723	2,253.6	4,515	5,017.6	11,498	48,394.0	110,794

[1] Subject to corrections due to late returns.

(47) SUMMARY OF BASIC DATA FOR TREE-FARM LICENCES (PRIVATE SUSTAINED-YIELD UNITS)

Forest District	Number of Tree-farm Licences	Productive Area (Acres)			Total Area (Acres)	Allowable Cut (Cunits)
		Schedule B	Schedule A	Total		
Vancouver	17[1]	2,990,305	1,152,529	4,142,834	6,819,279	4,345,460
Prince Rupert	6[1]	3,539,246	207,125	3,746,371	11,046,617	1,687,100
Prince George	1	390,933	1,733	392,666	447,946	140,000
Cariboo	1	80,643	671	81,314	85,046	44,000
Kamloops	7	726,253	1,841	728,094	776,982	199,310
Nelson	5	1,379,091	42,104	1,421,195	3,325,549	580,050
Grand totals	34	9,106,471	1,406,003	10,512,474	22,501,419	6,995,920

[1] Three tree-farm licences located in both districts.

Schedule B is vacant Crown land.

Schedule A is land for which the tree-farm licence holder has cutting rights other than those conveyed by the tree-farm licence agreement. This may include lands held in fee-simple or temporary tenures, e.g., timber leases, licences, and berths. Following removal of the mature timber, lands held under temporary tenure are transferred to Schodule B.

(48) SUMMARY OF BASIC DATA FOR CERTIFIED TREE-FARMS (PRIVATE SUSTAINED-YIELD UNITS OVER CROWN-GRANTED LANDS)

Within Tree-farm Licences

Forest District	Number of Tree-farms	Productive Area (Acres)				Total Area (Acres)	Estimated Productive Capacity (Cunits)
		Mature	Immature	N.S.R. and N.C.C.	Total		
Vancouver	14	67,443	222,043	35,459	324,945	364,125	329,879
Prince George	1	188	1,033	*Nil*	1,221	1,280	458
Nelson	2	948	4,719	3,940	9,607	10,158	4,312
Totals	17	68,579	227,795	39,399	335,773	375,563	334,649

Not Included Within Tree-Farm Licences

Vancouver	22	105,069	298,365	40,179	443,613	482,556	317,620
Nelson	10	89,480	186,511	108,094	384,085	480,301	94,296 (339,596)
Totals	32	194,549	484,876	148,273	827,698	962,857	411,916 (339,596)
Grand totals	49	263,128	712,671	187,672	1,163,471	1,338,420	746,565 (339,596)

Figures in parentheses ( ) are Christmas trees.

(49) SUMMARY OF BASIC DATA FOR FARM WOOD-LOT LICENCES (PRIVATE SUSTAINED-YIELD UNITS)

Forest District	Number of Farm Wood-lot Licences	Productive Area (Acres)			Total Area (Acres)	Allowable Annual Cut (Cunits)
		Crown	Private	Total		
Vancouver	12	1,860	220	2,080	2,887	736
Prince Rupert	4	1,274	147	1,421	2,436	249
Prince George	6	1,397	11	1,408	1,495	515
Cariboo	12	3,176	580	3,756	4,340	866
Kamloops	3	698	110	808	928	185
Nelson	5	1,457	827	2,284	2,434	300
Grand totals	42	9,862	1,895	11,757	14,520	2,851

(50) SUMMARY OF BASIC DATA FOR PUBLIC SUSTAINED-YIELD UNITS

Forest District	Number of Units	Productive Area (Acres)			Total Area (Including Nonforest) (Acres)	Close Utilization Allowable Annual Cut (Cunits)
		Mature	Immature	Total Productive (Includes N.S.R. and N.C.C.)		
Vancouver	6	3,270,979	1,553,463	5,282,630	10,403,812	2,866,240[1]
Prince Rupert (Coast)	4	4,327,545	324,254	4,720,399	11,616,283	2,540,610[1]
Prince Rupert (Interior)	7	5,750,543	3,154,641	9,297,931	14,272,760	2,544,500[2]
Prince George	19[3]	13,432,486	11,401,047	26,636,742	39,078,171	5,865,250[2]
Cariboo	8[4]	6,808,957	7,405,483	14,725,577	18,693,232	2,440,490[2]
Kamloops	18[5]	4,776,966	4,861,466	10,201,575	13,566,511	2,433,780[2]
Nelson	14	2,779,447	4,972,013	8,577,603	14,287,482	2,168,780[2]
Totals	78	41,146,923	33,672,367	79,442,457	121,918,251	20,859,650

1 Close utilization allowable annual cut (cunits) 9.1″+d.b.h.
2 Close utilization allowable annual cut (cunits) 7.1″+d.b.h.
3 19 units plus Block I portion of the Big Valley PSYU.
4 8 units plus Block II portion of the Big Valley PSYU, plus a portion of the Big Bar PSYU.
5 18 units plus a portion of the Big Bar PSYU.

(51) TOTAL AMOUNT OF TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING THE YEARS 1971 AND 1972 IN CUBIC FEET

Forest District	10-year Average, 1963–72	1971	1972	Increase	Decrease	Net Increase
Vancouver	782,825,559	826,157,819	713,047,185	.....	113,110,634	.....
Prince Rupert (Coast)	135,632,318	176,739,025	159,403,357	.....	17,335,668	.....
Totals, Coast	918,457,877	1,002,896,844	872,450,542	.....	130,446,302	.....
Prince Rupert (Interior)	92,448,796	107,557,355	111,655,553	4,098,198	.....	.....
Prince George	285,611,489	406,980,880	407,512,133	531,253	.....	.....
Kamloops	258,308,864	292,560,757	356,134,164	63,573,407	.....	.....
Nelson	163,445,858	187,085,336	215,994,616	28,909,280	.....	.....
Totals, Interior	799,815,007	994,184,328	1,091,296,466	97,112,138	.....	.....
Grand totals	1,718,272,884	1,997,081,172	1,963,747,008	.....	.....	33,334,164

(52) SPECIES CUT, ALL PRODUCTS BILLED IN 1972, IN CUBIC FEET

Forest District	Fir	Cedar	Spruce	Lodgepole Pine	Hemlock	Balsam	White Pine
Vancouver	159,553,507	154,589,095	9,729,845	333,522	250,993,014	113,864,307	4,042,380
Prince Rupert (Coast)	3,360,109	25,372,150	25,411,614	64,579	73,434,801	29,014,334	2,503
Totals, Coast	162,913,616	179,961,245	35,141,459	398,101	324,427,815	142,878,641	4,044,883
Prince Rupert (Interior)	12,568	5,286,856	23,357,597	33,655,148	32,927,446	14,859,473	.....
Prince George	19,673,753	3,141,215	224,865,333	129,576,899	609,249	27,692,519	21,297
Kamloops	116,101,469	17,858,925	109,131,470	58,695,342	10,805,807	33,221,729	3,144,217
Nelson	25,052,068	24,541,725	79,129,257	26,101,988	19,287,657	28,142,351	3,504,140
Totals, Interior	160,839,858	50,828,721	436,483,657	248,029,377	63,630,159	103,916,072	6,669,654
Grand totals	323,753,474	230,789,966	471,625,116	248,427,478	388,057,974	246,794,713	10,714,537

Forest District	Yellow Pine	Cypress	Larch	Hardwood	Cotton-wood	Unspeci-fied	Total
Vancouver	100,848	13,239,836	.....	1,208,241	3,112,763	2,279,827	713,047,185
Prince Rupert (Coast)	.....	557,901	.....	41,956	2,078,359	65,051	159,403,357
Totals, Coast	100,848	13,797,737	.....	1,250,197	5,191,122	2,344,878	872,450,542
Prince Rupert (Interior)	.....	.....	.....	3,782	1,552,353	330	111,655,553
Prince George	.....	.....	149	976,892	954,827	.....	407,512,133
Kamloops	3,926,474	5,112	2,655,830	377,130	94,163	116,496	356,134,164
Nelson	662,632	.....	9,156,992	9,139	406,667	.....	215,994,616
Totals, Interior	4,589,106	5,112	11,812,971	1,366,943	3,008,010	116,826	1,091,296,466
Grand totals	4,689,954	13,802,849	11,812,971	2,617,140	8,199,132	2,461,704	1,963,747,008

(53) TOTAL SCALE OF ALL PRODUCTS BILLED IN 1972 IN CUBIC FEET (SEGREGATED BY LAND STATUS AND FOREST DISTRICTS)

Land Status	Vancouver	Prince Rupert (Coast)	Prince Rupert (Interior)	Prince George	Kamloops	Nelson	Total
Timber licences	121,332,819	62,149,002	.....	7,825,209	4,149,501	898,462	196,354,993
Timber berths	9,150,474	.....	.....	.....	9,190,129	2,456,997	20,797,600
Timber leases	19,668,697	.....	.....	.....	.....	.....	19,668,697
Pulp leases	30,315,650	2,143,415	.....	.....	.....	.....	32,459,065
Pulp licences	4,875,569	12,157,457	.....	.....	.....	.....	17,033,026
Farm wood-lots	109,375	.....	22,299	112,296	11,894	76,945	332,809
Timber sales	182,801,148	44,478,497	73,003,596	319,329,352	277,072,834	138,402,474	1,035,087,901
Tree-farm licences	139,967,222	25,978,385	33,759,814	23,734,604	24,024,248	40,983,536	288,447,809
Beachcomb, trespass	12,862,027	2,648,677	56,733	.....	.....	.....	15,567,437
No mark visible	29,400,793	.....	.....	.....	.....	.....	29,400,793
Miscellaneous	252,969	658	58,006	35,104,749	10,331,385	2,824,455	48,572,222
Subtotals, Crown lands	550,736,743	149,556,091	106,900,448	386,106,210	324,779,991	185,642,869	1,703,722,352
Federal lands	4,312,999	2,545,625	681,717	323,611	1,458,874	90,688	9,413,514
Crown grants to 1887	124,002,052	268,744	.....	10,953	7,991,986	3,440,286	135,714,021
Crown grants 1887–1906	10,106,670	3,765,199	220,603	135,431	2,101,986	13,195,294	29,525,183
Crown grants 1906–1914	2,962,092	855,505	1,421,984	2,843,512	6,396,416	1,481,114	15,960,623
Crown grants 1914 to date	20,926,629	2,412,193	2,430,801	18,092,416	13,404,911	12,144,365	69,411,315
Totals	713,047,185	159,403,357	111,655,553	407,512,133	356,134,164	215,994,616	1,963,747,008

TIMBER SCALE BILLED IN BRITISH COLUMBIA DURING 1972 (BY MONTHS AND FOREST DISTRICTS)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Vancouver—													
F.b.m.	5,962,582	994,049	43,699	18,245	.....	23,760	41,468	.....	.....	.....	.....	.....	7,083,803
Cubic feet	22,936,332	54,916,464	54,766,203	52,884,091	82,028,833	71,313,178	22,475,518	52,271,803	59,344,778	77,299,950	86,760,884	71,583,325	708,581,359
Lineal feet	192,479	55,960	16,655	11,540	341,871	154,039	.....	26,525	17,315	74,268	342,586	32,145	1,265,383
Cords	1,425	683	1,152	1,321	3,549	361	2,436	2,321	1,976	3,456	2,432	3,062	24,174
All products, cu. ft.	24,210,197	55,185,995	54,897,820	53,019,118	82,626,751	71,467,218	22,711,286	52,519,648	59,553,599	77,690,144	87,258,146	71,907,263	713,047,185
Prince Rupert (Coast)—													
F.b.m.	971	.....	.....	.....	.....	.....	.....	*48,970*	.....	.....	.....	.....	*47,999*
Cubic feet	4,960,183	11,330,218	11,804,463	11,932,049	14,902,582	17,093,395	7,965,377	6,895,189	15,325,225	16,817,511	15,397,561	24,972,214	159,395,967
Cords	.....	.....	.....	.....	.....	.....	.....	.....	154	.....	.....	.....	154
All products, cu. ft.	4,960,345	11,330,218	11,804,463	11,932,049	14,902,582	17,093,395	7,963,377	6,889,027	15,340,615	16,817,511	15,397,561	24,972,214	159,403,357
Prince Rupert (Interior)													
F.b.m.	53,770	32,060	28,606	.....	.....	.....	.....	.....	.....	.....	.....	.....	114,436
Cubic feet	9,629,817	6,883,092	10,712,616	11,284,507	2,288,972	4,598,346	8,196,015	6,422,312	15,696,273	12,770,324	12,001,910	10,921,231	111,405,415
Lineal feet	.....	.....	.....	3,000	5,700	3,985	9,635	10,678	644	6,000	.....	13,500	53,142
Cords	.....	373	20	129	10	18	589	7	472	.....	384	24	2 026
All products, cu. ft.	9,639,168	6,925,978	10,719,191	11,297,077	2,294,292	4,603,092	8,260,601	6,430,998	16,175,436	12,343,274	12,039,390	10,927,056	111,655,553
Prince George—													
F.b.m.	5,589,416	62,903	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,652,319
Cubic feet	37,374,249	46,397,151	64,004,297	37,315,655	5,324,069	14,711,894	36,467,248	39,424,874	40,659,747	31,105,944	26,284,269	27,225,774	406,295,171
Lineal feet	3,440	.....	.....	.....	.....	.....	38,760	23,100	.....	13,680	.....	.....	78,980
Cords	87	75	53	56	115	218	291	242	49	249	.....	396	1,831
All products, cu. ft.	38,357,631	46,415,525	64,009,533	37,321,227	5,335,537	14,733,632	36,525,487	39,466,408	40,664,714	31,135,344	26,284,269	27,262,826	407,512,133
Kamloops—													
F.b.m.	453,654	116,560	735,266	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,305,480
Cubic feet	23,227,323	27,468,770	39,301,178	14,624,468	11,641,102	14,783,547	20,011,724	29,314,198	24,779,464	25,371,987	30,251,943	94,915,891	355,691,595
Lineal feet	36,350	3,755	.....	.....	8,533	4,788	4,530	5,335	460	3,887	7,029	13,571	88,238
Cords	85	.....	82	102	82	99	171	160	334	203	166	204	1,688
All products, cu. ft.	23,341,982	27,491,872	39,437,297	14,634,656	11,652,858	14,796,118	20,029,499	29,333,872	24,811,614	25,393,321	30,269,212	94,941,863	356,134,164
Nelson—													
F.b.m.	2,246,880	740,017	16,643	29,388	.....	.....	.....	.....	.....	.....	.....	.....	3,032,928
Cubic feet	8,697,693	22,267,761	16,198,385	4,077,680	10,703,865	16,589,262	14,093,927	25,107,596	19,441,974	23,575,042	19,331,170	34,771,028	214,855,383
Lineal feet	49,175	81,523	68,148	9,360	188,545	14,222	31,925	96,016	19,530	65,166	67,326	69,970	760,906
Cords	117	427	146	220	717	106	325	181	149	511	550	138	3,587
All products, cu. ft.	9,141,702	22,449,048	16,225,620	4,109,627	10,899,029	16,602,504	14,135,859	25,140,005	19,464,310	23,634,844	19,393,107	34,798,961	215,994,616
Totals for—													
F.b.m.	14,307,273	1,945,589	824,214	47,633	.....	23,760	41,468	*48,970*	.....	.....	.....	.....	17,140,967
Cubic feet	106,825,597	169,263,456	196,787,142	132,118,450	126,889,423	139,089,622	109,209,809	159,435,972	175,247,461	186,940,758	190,027,737	264,389,463	1,956,224,890
Lineal feet	281,444	141,238	84,803	23,900	544,649	177,034	84,850	161,654	37,949	163,001	416,941	129,186	2,246,649
Cords	1,714	1,558	1,453	1,828	4,473	802	3,812	2,911	3,134	4,419	3,532	3,824	33,460
All products, cu. ft.	109,651,025	169,798,636	197,093,924	132,313,754	127,711,049	139,295,959	109,626,109	159,779,958	176,010,288	187,014,438	190,641,685	264,810,183	1,963,747,008

Italic figures indicate a debit.

(55) NUMBER OF ACRES OPERATING UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1963–72

Year	Tree-farm Licences		Tree-farms[1]		Christmas-tree Permits		Farm Wood-lots		Public Sustained-yield Units		Total Acres
	Number	Productive Acres	Number	Productive Acres	Number	Productive Acres[2]	Number	Productive Acres	Number	Productive Acres	
1963	39	7,070,774	25	672,712	346	123,538	53	14,124	82	52,530,686	60,288,296
1964	39	7,146,685	28	682,553	348	119,911	55	14,950	83	60,960,307	68,804,495
1965	40	8,796,577	31	709,452	352	120,065	51	13,978	75	69,781,944	79,301,951
1966	38	9,633,579	32	712,152	347	115,175	47	12,632	76	75,536,237	85,894,600
1967	36	9,687,984	31	714,901	351	119,421	46	12,522	76	75,727,896	86,143,303
1968	36	9,770,637	31	806,123	350	116,594	43	11,165	77	78,545,907	89,133,832
1969	35	9,806,590	30	809,207	344	116,498	43	11,155	77	79,158,869	89,902,319
1970	34	10,214,155	32	867,319	331	110,543	42	11,378	78	79,791,602	90,994,997
1971	34	9,945,772	33	838,539	279	96,401	45	12,523	78	79,698,666	90,591,901
1972	34	19,512,474	32	827,698	327	124,417	42	11,757	78	79,442,457	90,918,803

[1] Exclusive of tree-farms incorporated into tree-farm licences.
[2] Also included in productive acres under public sustained-yield units.

(56)

TOTAL SCALE OF ALL PRODUCTS FROM AREAS OPERATED UNDER APPROVED ANNUAL ALLOWABLE CUTS, 1963–72

Year	Tree-farm Licences		Tree-farms[1]		Christmas Trees			Farm Wood-lots		Public Sustained-yield Units		Total[3] (Cunits)
					Permits		Other Sources[2] (Number of Trees)					
	Number	Cunits	Number	Cunits	Number	Number of Trees		Number	Cunits	Number	Cunits	
1963	39	3,656,316	25	333,050	346	617,753	220,393	53	2,637	82	6,331,930	10,323,933
1964	39	3,508,064	28	345,430	348	511,726	395,168	55	2,536	83	6,076,416	9,932,446
1965	40	3,740,623	31	395,877	352	509,876	207,643	51	2,165	75	6,874,929	11,013,594
1966	38	4,056,234	32	450,587	347	494,798	239,378	47	1,670	76	6,409,467	10,917,958
1967	36	4,493,868	31	433,083	351	541,930	454,031	46	3,783	76	6,395,422	11,326,156
1968	36	5,154,661	31	655,740	350	499,373	413,398	43	2,892	77	7,005,608	12,818,901
1969	35	4,990,935	30	576,465	344	470,044	317,801	43	2,407	77	7,288,446	12,858,253
1970	34	4,942,324	32	383,490	333	381,050	344,466	42	1,333	78	8,428,943	13,756,090
1971	34	5,264,878	33	418,460	279	370,563	88,712	45	2,372	78	9,677,115	15,362,825
1972	34	4,794,155	32	447,190	327	290,561	249,720	42	2,050	78	10,483,780	15,727,175
Ten-year average, 1963–1972	37	4,460,206	30	443,937	338	468,767	293,071	47	2,384	78	7,497,206	12,403,733

[1] Exclusive of tree-farms incorporated into tree-farm licences.
[2] Includes Christmas trees cut from tree-farm licences, tree-farms, and farm wood-lots.
[3] Total Christmas-tree cut is not shown.

(57) LOGGING INSPECTIONS, 1972

Forest District	Type of Tenure Operated				Number of Inspections Made		
	Timber Sale Licences	Cutting Permits (Tree-farm Licences, Farm Wood-lot Licences, and Timber Sale Harvesting Licences)	Leases, Licences, Crown Grants, and Other Tenures	Total	Timber Sale Licences and Cutting Permits	Other Tenures	Total
Vancouver	801	317	1,733	2,851	3,028	2,215	5,243
Prince Rupert	138	253	668	1,059	2,305	1,316	3,621
Prince George	385	664	1,837	2,886	5,404	1,587	6,991
Cariboo	140	207	321	668	1,677	768	2,445
Kamloops	189	419	555	1,163	1,772	1,789	3,561
Nelson	168	302	479	949	1,972	1,299	3,271
Totals, 1972	1,821	2,162	5,593	9,576	16,158	8,974	25,132
Totals, 1971	2,163	1,609	6,602	10,374	15,374	10,037	25,411
Totals, 1970	2,881	1,272	6,230	10,383	16,080	10,112	26,192
Totals, 1969	3,511	876	7,358	11,745	17,518	8,682	26,200
Totals, 1968	4,719	(1)	7,758	12,477	17,480	10,092	27,572
Totals, 1967	5,118	(1)	7,431	12,549	17,663	9,488	27,151
Totals, 1966	5,566	(1)	6,174	11,740	18,593	9,576	28,169
Totals, 1965	6,231	(1)	6,514	12,745	17,869	6,365	24,234
Totals, 1964	6,557	(1)	6,560	13,117	17,789	13,311	31,100
Totals, 1963	6,926	(1)	7,168	14,094	18,021	7,189	25,210
Ten-year average, 1963–72	4,549	(1)	6,739	11,880	17,254	9,383	26,637

[1] Figures not available prior to 1969.

TRESPASSES, 1972

Forest District	Number of Cases	Area Cut Over (Acres)	Quantities Cut							Number of Resulting Seizures	Assessment in Dollars
			Cubic Feet	Lineal Feet	Cords	Christmas Trees	Cedar Shakes	Posts, Car Stakes	Reserved Trees		
											$
Vancouver	81	228	742,221	.....	29	47	.....	.....	42	1	66,080.77
Prince Rupert	59	437	760,492	.....	.....	.....	.....	475	.....	2	27,121.00
Prince George	81	518	1,059,341	.....	.....	.....	.....	.....	32	....	95,155.69
Cariboo	24	177	306,918	.....	.....	.....	.....	.....	.....	....	32,905.72
Kamloops	38	571	859,544	.....	.....	29	.....	229	.....	....	202,367.77
Nelson	39	446	1,353,600	.....	.....	84	.....	.....	.....	....	75,669.58
Totals, 1972	322	2,377	5,088,116	.....	29	160	.....	704	74	3	479,300.53
Totals, 1971	321	2,636	5,804,619	20,327	53	6,839	23,412	900	29	6	270,451.85
Totals, 1970	380	3,545	6,095,826	23,093	70	2,800	34,759	.....	4	8	248,468.40
Totals, 1969	399	2,595	4,725,128	6,220	56	22,526	124,464	2,373	4	17	371,964.95
Totals, 1968	378	2,229	3,067,915	34,013	778	4,127	13,234	29,976	141	6	260,438.20
Totals, 1967	319	1,724	2,785,911	9,365	2,910	3,934	49,635	176	6	1	184,724.80
Totals, 1966	435	2,921	4,184,997	64,535	37	11,001	121,604	1,990	405	5	272,439.56
Totals, 1965	436	4,517	4,093,758	93,546	118	13,204	25,290	75	580	5	239,156.97
Totals, 1964	464	2,488	3,023,375	56,250	305	6,724	453,238	900	2,988	11	284,797.47
Totals, 1963	546	3,761	4,085,328	36,401	3,494	10,995	17,938	2,233	2,145	13	257,136.75
Ten-year average, 1963–72	400	2,879	4,295,497	34,375	785	8,231	86,357	3,933	638	7	288,907.95

(59) AREAS CRUISED FOR TIMBER SALES AND TIMBER SALE HARVESTING LICENCE CUTTING PERMITS, 1972

Forest District	Number Cruised	Acreage	Saw-timber (Cunits)	Pit-props, Poles, and Piles (Lin. Ft.)	Shingle-bolts and Cordwood (Cords)	Car Stakes, Posts, Shakes, Etc. (No.)
Vancouver	319	45,122	1,537,051	.....	6,404	156,045
Prince Rupert	123	40,166	1,743,512	.....	.....	.....
Prince George	165	108,319	2,546,280	.....	.....	.....
Cariboo	18	1,732	15,391	25,000	150	.....
Kamloops	268	150,370	5,471,750	1,587,192	.....	.....
Nelson	156	122,292	3,838,519	10,000	550	565,000
Totals, 1972	1,049	468,001	15,152,503	1,622,192	7,104	721,045
Totals, 1971	427	112,668	2,369,910	9,500	2,520	51,650
Totals, 1970	622	193,737	4,687,620	61,400	5,277	225,850
Totals, 1969	732	233,491	4,451,260	15,300	13,392	2,910,012
Totals, 1968	890	314,595	6,738,850	3,269,400	6,769	704,950
Totals, 1967	848	310,325	5,498,070	6,014,850	12,352	319,450
Totals, 1966	998	361,021	6,794,860	3,674,100	25,675	837,244
Totals, 1965	1,357	496,254	9,519,950	2,650,400	7,616	987,100
Totals, 1964	1,709	661,821	11,074,280	2,944,004	25,154	478,520
Totals, 1963	1,862	716,699	11,659,760	3,887,525	32,519	656,680
Ten-year average, 1963–72	1,049	386,861	7,794,706	2,414,867	13,838	789,250

(60) TIMBER-SALE LICENCE RECORD, 1972

Forest District	Sales Made	Sales Closed	Total Sales Existing	Total Area (Acres)	Area Paying Forest-protection Tax (Acres)
Vancouver	220	249	833	265,821	241,664
Prince Rupert	40	64	185	77,111	64,498
Prince George	71	177	296	145,621	87,932
Kamloops	67	155	436	209,524	176,615
Nelson	47	102	207	189,087	162,020
Totals	445	747	1,957	887,164	732,729
Cash sales	557	.....	.....	.....	.....
Total sales	1,002	.....	.....	.....	.....

Does not include TSHL's, TSL's (Third Band), or cutting permits.

(61)

TIMBER SALES AND CUTTING PERMITS (TIMBER SALE HARVESTING LICENCES) AWARDED BY FOREST DISTRICTS, 1972

Forest District	No. of Sales	No. of Cutting Permits	Acreage	Saw-timber (Cunits)	Poles and Piling (Lin. Ft.)	No. of Posts	No. of Cords	No. of Christmas Trees	No. of Car Stakes	No. of Cedar Shakes	No. of Fence Rails and Palings	Estimated Revenue
Vancouver	272	49	66,118	1,869,732	.....	2,900	4,913	.....	.....	.....	.....	10,026,994.64
Prince Rupert	66	56	58,829	1,679,168	32,400	.....	219	500	1,250	.....	.....	7,419,933.71
Prince George	108	213	232,877	3,802,168	.....	18,750	176	.....	.....	68,972	60	37,644,478.70
Cariboo	13	17	15,676	326,629	.....	600	80	.....	1,000	.....	700	4,401,244.60
Kamloops	354	247	199,597	3,262,919	137,883	42,108	1,308	.....	.....	.....	367	27,888,643.90
Nelson	189	125	122,689	1,904,632	624,627	140,770	2,286	.....	.....	681,400	250,500	12,060,262.62
Totals, 1972	1,002	707	695,786	12,845,248	794,910	205,128	8,982	500	2,250	750,372	251,627	99,441,558.17
Totals, 1971	991	599	530,097	14,100,535	1,180,613	260,158	7,839	493	1,400	144,400	6,860	54,599,946.04
Totals, 1970	1,199	(1)	138,632	2,366,765	1,187,322	317,129	9,520	500	70,700	385,880	4,225	10,164,455.10
Totals, 1969	1,327	(1)	183,116	3,421,106	3,133,706	212,809	16,858	.....	4,500	1,583,644	4,685	31,001,758.65
Totals, 1968	1,241	(1)	212,022	3,867,570	2,005,677	213,654	10,969	300	7,066	424,125	8,875	24,293,171.92
Totals, 1967	1,149	(1)	242,011	4,231,926	2,528,440	160,540	8,816	1,750	7,515	210,930	12,584	13,679,675.37
Totals, 1966	1,126	(1)	208,945	3,281,741	3,952,770	194,353	11,538	1,760	3,650	70,380	3,298	14,166,872.69
Totals, 1965	1,614	(1)	384,850	5,594,617	1,900,163	428,920	16,766	150	13,200	540,860	14,658	23,677,018.31
Totals, 1964	2,281	(1)	606,588	8,979,260	6,985,755	249,998	34,438	387	11,500	504,600	500	37,209,392.28
Totals, 1963	2,183	(1)	534,569	7,687,783	4,123,192	501,980	16,300	1,155	9,800	172,950	3,180	26,194,611.24
Ten-year average, 1963–72	1,411	.....	373,662	6,637,655	2,779,255	274,467	14,203	700	13,158	478,814	31,049	33,442,845.98

1 Cutting permits not included before 1971.

(62)

AVERAGE STUMPAGE PRICES, BY SPECIES AND FOREST DISTRICTS, ON CUTTING PERMITS OF TIMBER SALE HARVESTING LICENCES AND TIMBER SALES ISSUED DURING 1972, PER CUNIT LOG SCALE

Forest District	Douglas Fir			Cedar			Spruce			Hemlock			Balsam		
	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit
		$	$		$	$		$	$		$	$		$	$
Vancouver	273,520	11.56	0.55–41.40	368,046	4.03	0.55–18.50	37,320	11.28	0.55–22.70	648,832	4.28	0.55–22.00	414,631	4.19	2.10–15.10
Prince Rupert (C.)	40,410	9.84	.55–12.90	96,150	2.23	.55– 3.80	160,745	7.81	.55–17.10	230,275	2.37	.55– 6.40	119,620	1.77	1.00– 5.00
Prince Rupert (I.)	.....	.....	.....	26,680	5.71	1.70–23.80	239,993	6.48	.55–14.40	179,531	3.39	1.10–12.40	133,973	3.76	.55–12.70
Prince George	101,134	16.01	.55–22.00	31,954	2.14	.55–11.30	2,143,666	12.19	.55–20.70	19,561	2.81	1.30– 6.70	299,848	3.94	.55–12.40
Cariboo	109,032	19.24	5.15–23.40	9,680	3.60	3.60– 3.60	92,648	15.03	4.45–18.30	6,234	3.40	3.40– 3.40	16,278	4.62	.80– 6.20
Kamloops	616,994	13.62	.55–22.90	162,516	4.52	.55–24.50	1,167,993	10.35	.55–21.20	91,709	4.81	.55–13.40	557,784	4.74	.55–11.60
Nelson	145,473	11.44	.55–22.00	141,178	3.71	.55–22.50	753,263	7.58	.55–19.60	181,099	3.71	.55–13.10	358,475	3.62	.55– 7.90
All districts	1,286,563	13.48	.55–41.40	836,204	3.84	.55–24.50	4,595,628	10.56	.55–22.70	1,357,241	3.79	.55–22.00	1,900,609	4.02	.55–15.10

Forest District	White Pine			Lodgepole Pine			Larch			Other Species			All Species		
	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit
		$	$		$	$		$	$		$	$		$	$
Vancouver	7,030	5.06	1.20–16.10	7,130	2.72	.055– 1.00	.....	.....	.....	113,223	3.35	0.55–18.10	1,869,732	5.35	0.55–41.40
Prince Rupert (C.)	.....	.....	.....	77,310	4.12	5.60– 6.80	.....	.....	.....	130	1.07	.55– 5.60	724,640	4.06	.55–17.10
Prince Rupert (I.)	.....	.....	.....	372,421	4.44	.55–12.40	.....	.....	.....	1,930	.90	.55–12.20	954,528	4.69	.55–23.80
Prince George	.....	.....	.....	1,203,461	7.14	.55–19.30	.....	.....	.....	2,545	2.89	.55–14.30	3,802,169	9.90	.55–22.00
Cariboo	.....	.....	.....	92,737	8.41	4.00–14.20	.....	.....	.....	20	4.20	.80– 8.00	326,629	13.47	.80–23.40
Kamloops	22,160	20.61	2.90–32.70	629,388	4.65	1.00–16.40	8,650	14.62	3.20–19.80	5,725	10.59	.60–24.50	3,262,919	8.55	.55–32.70
Nelson	24,384	15.25	.55–33.70	240,197	4.40	.55–15.00	54,166	12.80	.55–20.20	6,397	5.43	.55–19.60	1,904,632	6.33	.55–33.70
All districts	53,574	16.13	.55–33.70	2,622,644	5.84	.55–19.30	62,816	13.56	.55–20.20	129,970	5.72	.55–24.50	12,845,249	7.74	.55–41.40

(63)

AVERAGE STUMPAGE PRICES RECEIVED, BY SPECIES AND FOREST DISTRICTS, ON TIMBER SCALED ON TREE-FARM LICENCE CUTTING PERMITS DURING 1972

Forest District	Douglas Fir			Cedar			Spruce			Hemlock			Balsam		
	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit
		$	$		$	$		$	$		$	$		$	$
Vancouver	161,371	13.81	0.55–21.44	294,202	5.10	0.55–11.56	21,514	12.47	0.55–21.13	571,859	5.67	0.55–10.80	299,317	5.86	0.55–16.48
Prince Rupert	2	2.61	1.10– 3.90	72,004	1.60	.30–12.50	98,722	4.40	.30–20.20	307,140	1.31	.30– 8.10	84,496	1.24	.30– 3.00
Prince George	9,021	14.60	3.90–23.80	.....	.....	.....	145,169	12.34	3.50–19.40	1	4.72	2.90– 6.50	27,284	5.90	2.10– 8.60
Cariboo	19,780	17.00	10.50–20.50	.....	.....	.....	21,220	10.49	6.60–16.60	.....	.....	.....	4,590	4.38	1.10–11.80
Kamloops	65,285	15.80	1.30–25.40	3,708	4.55	1.90–21.00	105,131	10.85	1.35–26.90	5,406	5.98	1.90–20.80	29,586	3.86	.90– 9.10
Nelson	26,197	13.79	2.50–24.10	71,583	3.21	.60–14.20	127,545	9.57	1.70–21.60	71,815	4.90	.70–14.90	49,449	4.38	1.10–11.80
All districts	281,656	14.52	.55–23.80	441,497	4.22	.30–21.00	519,301	9.76	.30–20.20	956,221	4.21	.30–20.80	494,722	4.79	.30–16.48

Forest District	Lodgepole Pine			White Pine			Larch			Other Species			All Species		
	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit	Volume (Cunits)	Price per Cunit	Price Range per Cunit
		$	$		$	$		$	$		$	$		$	$
Vancouver	27	2.63	1.20– 4.53	4,559	2.96	0.55– 4.50	.....	.....	.....	32,109	4.40	0.55–10.50	1,384,958	6.61	0.55–21.44
Prince Rupert	16,387	.93	.30– 4.50	1	1.92	1.10– 2.20	.....	.....	.....	27,565	.59	.30– 2.20	606,317	1.79	.30–20.20
Prince George	4,552	9.62	3.70–12.70	.....	.....	.....	.....	.....	.....	.....	.....	.....	186,027	11.44	2.10–23.80
Cariboo	6,480	10.30	4.70–13.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	52,070	12.37	2.00–20.50
Kamloops	31,761	6.60	1.00–15.40	435	17.07	1.80–29.80	296	8.88	1.30–20.70	1,235	14.36	2.40–25.30	242,843	10.59	.90–29.80
Nelson	39,946	5.11	.70–20.20	8,538	18.98	11.40–32.60	11,953	13.26	9.20–21.40	669	7.93	2.20–21.60	407,695	7.12	.60–32.60
All districts	99,153	5.44	.30–20.20	13,533	13.31	.55–32.60	12,249	13.15	1.30–21.40	61,578	2.93	.55–25.30	2,879,910	6.42	.30–32.60

(64) TIMBER CUT AND BILLED FROM TIMBER SALES AND TIMBER SALE HARVESTING LICENCES, 1972

Forest District	Cubic Feet	Board-feet	Lineal Feet	Cords	Ties	Posts	Christmas Trees	Car Stakes	Fence Rails, Palings	Slag Poles	Shingle Shakes	Shake Blanks
Vancouver	181,605,422	.....	870	3,119	.....	502	.....	.....	.....	.....	4,147,939	100,252
Prince Rupert (Coast)	44,478,497	.....	.....	.....	.....	.....	500	.....	.....	.....	.....	.....
Prince Rupert (Interior)	72,957,126	.....	35,800	214	.....	.....	.....	1,250	.....	.....	.....	.....
Prince George	319,323,521	.....	.....	53	.....	1,031	.....	.....	.....	.....	.....	.....
Kamloops	277,005,225	.....	5,122	336	.....	30,234	.....	.....	.....	.....	.....	.....
Nelson	138,290,144	.....	348,222	93	.....	3,555	345,615	297	.....	.....	133,459	.....
Totals, 1972	1,033,659,935	.....	390,014	3,815	.....	35,322	346,115	1,547	.....	.....	4,281,398	100,252
Totals, 1971	993,517,156	3,957,998	775,330	5,440	.....	89,015	442,956	742	.....	.....	4,423,122	322,740
Totals, 1970	900,425,581	9,699,203	1,918,009	4,327	.....	36,720	446,549	1,253	.....	.....	4,379,241	866,431
Totals, 1969	804,857,059	6,250,091	3,280,599	7,046	.....	103,192	479,284	3,494	2,441	61,829	5,676,051	1,856,028
Totals, 1968	714,384,574	6,416,864	3,862,509	7,819	.....	172,642	483,503	3,751	.....	.....	4,369,011	1,133,289
Totals, 1967	619,335,789	6,083,295	6,107,876	8,719	.....	283,712	458,795	6,277	.....	.....	3,264,427	553,397
Totals, 1966	712,773,314	7,705,804	8,254,946	12,558	.....	134,518	445,423	2,303	.....	.....	4,296,938	379,893
Totals, 1965	728,521,327	13,198,159	5,732,671	14,576	.....	200,017	448,385	9,454	.....	.....	4,795,873	395,119
Totals, 1964	729,684,953	42,643,124	5,840,321	19,047	.....	403,435	483,002	3,302	9,260	.....	6,379,921	728,183
Totals, 1963	713,287,016	51,131,178	7,811,867	15,217	1,913	500,287	485,637	5,643	88,721	.....	4,679,585	655,827
Ten-year average, 1963–72	795,044,670	14,708,572	4,397,414	9,856	191	195,886	451,965	3,777	10,042	6,183	4,654,557	699,116

(65)

WOOD-PROCESSING PLANTS OF THE PROVINCE, 1972

Forest District	Operating								Shut Down			
	Sawmills				Shingle-mills		Number of Pulp Mills[1]	Number of Veneer and Plywood Plants[1]	Sawmills		Shingle-mills	
	Number	Estimated Eight-hour Daily Capacity, M B.F.	Number of Attached Chippers[1]	Number of Attached Barkers[1]	Number	Estimated Eight-hour Daily Capacity, M B.F.			Number	Estimated Eight-hour Daily Capacity, M B.F.	Number	Estimated Eight-hour Daily Capacity, M B.F.
Vancouver	124	9,556	124	76	50	579	12	14	60	370	19	36
Prince Rupert	77	1,655	16	19	5	3	4	----	90	415	1	2
Prince George	122	4,919	40	48	2	7	3	4	165	1,630	2	3
Cariboo	57	3,105	31	32	1	1	1	2	35	150	----	----
Kamloops	126	4,337	49	61	6	19	1	6	70	279	1	1
Nelson	97	3,280	45	36	10	326	2	4	86	498	5	13
Totals, 1972	603	26,842	305	272	74	935	23	30	506	3,342	28	55
Totals, 1971	627	24,315	244	243	68	606	21	27	576	3,433	12	30
Totals, 1970	881	23,670	230	202	59	531	20	24	322	1,801	9	17
Totals, 1969	974	23,432	227	194	62	643	19	22	309	1,850	17	39
Totals, 1968	902	22,822	186	164	59	705	19	22	332	2,297	13	28
Totals, 1967	931	22,757	197	164	62	784	17	21	340	3,211	5	16
Totals, 1966	1,116	26,729	183	153	57	826	15	20	429	3,344	13	27
Totals, 1965	1,191	27,641	161	144	63	820	12	19	478	2,903	9	26
Totals, 1964	1,417	28,865	97	82	61	680	11	17	513	3,035	6	18
Totals, 1963	1,541	29,339	------	------	69	1,003	----	----	502	3,490	9	65
Ten-year average, 1963–72	1,018	25,642	------	------	63	753	----	----	431	2,871	12	32

[1] Figures not available prior to 1964.

(66) EXPORT OF LOGS (IN CUBIC FEET), 1972

Species	Grade No. 1	Grade No. 2	Grade No. 3	Ungraded and Lumber Reject	Total	Exportable[1]	Exported under Permit[2]
Fir	.....	24,392	57,227	.....	81,619	41,100	40,519
Cedar	50,416	158,932	412,562	.....	621,910	436,806	185,104
Spruce	212,729	738,589	1,719,730	.....	2,671,048	597,255	2,073,793
Hemlock	208,858	462,391	1,842,984	.....	2,514,233	632,457	1,881,776
Balsam	.....	.....	.....	313,672	313,672	178,089	135,583
Lodgepole pine	5,660	77,329	105,717	.....	188,706	110,155	78,551
Cypress	104,400	592,443	2,405,602	.....	3,102,445	686,383	2,416,062
Hardwood	.....	.....	.....	95,173	95,173	95,120	53
Cottonwood	135,033	254,569	209,387	.....	598,989	228,481	370,508
Totals, 1972	717,096	2,308,645	6,753,209	408,845	10,187,795	3,005,846	7,181,949
Totals, 1971	2,874,315	6,094,192	16,817,090	2,324,425	28,110,022	4,630,425	23,479,597
Totals, 1970	3,222,351	7,629,924	30,800,174	8,396,211	50,048,660	13,455,734	36,592,926
Totals, 1969	598,829	3,031,347	17,270,817	5,040,281	25,941,274	10,655,349	15,285,925
Totals, 1968	3,619,562	4,482,835	20,111,753	2,695,646	30,909,796	16,265,130	14,644,666
Totals, 1967	2,021,374	6,886,800	21,499,239	3,495,473	33,902,886	11,418,913	22,483,973
Totals, 1966	1,625,172	4,553,790	14,666,899	2,821,874	23,667,735	7,348,820	16,318,915
Totals, 1965	559,204	1,794,367	5,974,462	1,440,105	9,768,138	6,458,926	3,309,212
Totals, 1964	624,730	2,431,755	5,131,602	637,616	8,825,703	4,741,111	4,084,592
Totals, 1963	578,164	2,691,635	10,465,035	1,730,420	15,465,254	8,518,306	6,946,948
Ten-year average, 1963–72	1,644,080	4,190,529	14,949,028	2,899,089	23,682,726	8,649,856	15,032,870

[1] Export privilege—exported from lands Crown-granted prior to March 13, 1906.
[2] Exported under permit from Crown lands and lands granted after March 12, 1906, under authority of section 97 of the *Forest Act*.

(67) SHIPMENTS OF POLES AND OTHER MINOR FOREST PRODUCTS, 1972

Forest District and Product	Quantity Exported	Approximate Value F.O.B.	Where Marketed		
			Canada	United States	Other Countries
		$			
Vancouver—					
Poles ... lin. ft.	4,097,523	1,656,906.00	900,695	2,983,636	213,192
Piling ... ,,	799,419	338,500.00	111,980	111,785	575,654
Fence-posts ... pieces	1,400	840.00	.....	1,400	.....
Cedar shakes ... ,,	14,177,436	269,400.00	491,715	13,649,721	36,000
Pulp chips ... units	458,299	12,374,000.00	.....	458,299	.....
Prince Rupert—Poles ... lin. ft.	1,960,000	1,568,000.00	760,000	1,200,000	.....
Prince George—					
Poles and piling ... cu. ft.	212,550	425,100.00	212,550	.....	.....
Hop stakes ... lin. ft.	75,540	18,885.00	75,540	.....	.....
Posts ... pieces	152,355	60,292.00	152,355	.....	.....
Shakes and shingles ... squares	163	4,287.00	163	.....	.....
Pulp chips ... units	13,955	165,367.00	13,955	.....	.....
Cariboo—Christmas trees ... pieces	21,118	17,950.30	6,335	8,870	5,913
Kamloops—					
Poles ... lin. ft.	24,465	20,795.25	24,465	.....	.....
Christmas trees ... pieces	114,394	97,234.90	11,498	102,896	.....
Nelson—					
Poles and piling ... lin. ft.	458,816	18,505.00	458,816	.....	.....
Corral rails ... ,,	171,769	5,150.00	119,963	51,806	.....
Mine timbers ... ,,	120,442	18,000.00	120,442	.....	.....
Palings and pickets ... cords	143	11,500.00	76	67	.....
Fence-posts ... ,,	1,431	85,500.00	1,422	9	.....
Shakes and shingles ... pieces	2,165,250	325,000.00	246,500	1,918,750	.....
Christmas trees ... ,,	795,028	63,600.00	141,119	590,694	63,215
Total value, 1972	.....	17,594,812.45	.....	.....	.....
Total value, 1971	.....	8,394,023.00	.....	.....	.....

(68)

TIMBER MARKS ISSUED, 1963–72

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	10-year Average, 1963–72
Old Crown grants	313	356	328	341	277	328	361	220	197	280	300
Crown grants, 1887–1906	125	148	150	130	147	173	159	82	109	120	134
Crown grants, 1906–1914	161	164	172	144	163	190	203	111	126	144	158
Section 58, *Forest Act*	608	672	649	679	680	805	781	540	524	561	650
Stumpage reservations	141	149	133	63	61	48	48	19	7	8	68
Pre-emptions	13	7	8	3	6	9	13	10	4	2	8
Timber berths	12	9	14	10	4	1	11	6	2	1	7
Indian reserves	18	27	24	27	11	24	30	14	12	12	20
Section 24, *Forest Act*	.....	.....	.....	20	214	347	502	418	384	346	223
Timber sales	2,183	2,281	1,614	1,126	1,149	1,241	1,327	1,199	991	1,002	1,411
Special marks and rights-of-way	97	121	153	117	95	101	143	89	115	114	114
Pulp leases	.....	.....	3	12	4	5	2	.....	.....	2	3
Pulp licences	.....	.....	.....	4	1	1	2	1	.....	2	1
Totals	3,671	3,934	3,248	2,676	2,812	3,273	3,582	2,709	2,471	2,594	3,097
Transfers and changes of marks	725	802	740	908	593	773	554	686	548	583	691

(70)

GRAZING PERMITS ISSUED, 1972

Forest District	Number of Permits Issued	Number of Stock Under Permit		
		Cattle	Horses	Sheep
Kamloops	560	78,142	605	1,210
Nelson	403	21,047	753	10
Prince George	317	10,398	2,007	22
Cariboo	678	64,810	2,781	190
Vancouver	10	220	20	.....
Totals, 1972	1,968	174,617	6,166	1,432
Totals, 1971	1,920	178,772	6,186	1,484
Totals, 1970	1,985[1]	178,332	5,651	2,739
Totals, 1969	2,018	180,579	5,545	5,106
Totals, 1968	2,053	188,183	6,338	7,090
Totals, 1967	2,114	188,126	6,837	6,272
Totals, 1966	2,244	189,286	6,572	8,970
Totals, 1965	2,218	188,339	6,677	12,509
Totals, 1964	2,104	173,677	6,231	22,478
Totals, 1963	1,951	158,840	5,860	25,366

[1] Corrected figure.

(102) FIRE OCCURRENCES BY MONTHS, 1972

Forest District	March	April	May	June	July	August	September	October	Total	Per Cent
Vancouver	.....	1	35	34	66	119	45	45	345	18.1
Prince Rupert	.....	.....	54	17	83	9	12	3	178	9.4
Prince George	.....	1	93	45	34	24	23	.....	220	11.6
Kamloops	6	13	59	60	122	166	20	7	453	23.8
Nelson	.....	23	49	28	74	170	28	6	378	19.9
Cariboo	7	25	106	36	64	61	18	12	329	17.2
Totals	13	63	396	220	443	549	146	73	1,903	100.0
Per cent	0.7	3.3	20.8	11.5	23.3	28.9	7.7	3.8	100.0	.....
Ten-year-average	18	63	392	374	648	717	168	30	2,410	.....
Per cent	0.7	2.6	16.4	15.6	26.9	29.7	6.9	1.2	100.0	.....

(103) NUMBER AND CAUSES OF FOREST FIRES, 1972

Forest District	Lightning	Recreational (Campers, Etc.)	Railroads Operating	Smokers	Brush-burning (Not Railway or Right-of-way Clearing)	Range-burning	Road, Power, Telephone, and Pipe-line Construction	Industrial Operations (Logging, Etc.)	Incendiary	Miscellaneous Known Causes	Unknown Causes	Total	Per Cent of Total Fires in Province
Vancouver	64	42	27	79	11	1	13	69	3	36	.....	345	18.1
Prince Rupert	69	12	7	15	9	2	8	20	6	28	2	178	9.4
Prince George	94	25	7	19	19	8	4	30	.....	14	.....	220	11.6
Kamloops	129	47	46	78	10	2	5	29	22	84	1	453	23.8
Nelson	177	32	36	34	6	1	9	22	2	54	5	378	19.9
Cariboo	50	30	13	42	15	45	5	19	44	61	5	329	17.2
Totals	583	188	136	267	70	59	44	189	77	277	13	1,903	100.0
Per cent	30.7	9.9	7.2	14.1	3.6	3.1	2.3	9.9	4.1	14.5	0.6	100.0	.....
Ten-year average, 1963–72	882	222	174	303	106	119	53	184	45	290	32	2,410	.....
Per cent	36.6	9.3	7.3	12.5	4.4	4.9	2.1	7.7	1.8	12.1	1.3	100.0	.....

(104) NUMBER AND CAUSES OF FOREST FIRES FOR THE LAST 10 YEARS

Causes	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	Total
Lightning	1,144	277	1,000	374	958	708	646	1,803	1,327	583	8,820
Recreational (campers, etc.)	221	144	315	230	288	131	188	302	211	188	2,218
Railroads operating	65	51	89	170	455	121	238	246	175	136	1,746
Smokers	220	129	310	281	464	179	374	501	309	267	3,034
Brush-burning (not railway or right-of-way clearing)	82	66	89	156	128	65	133	146	129	70	1,064
Range-burning	95	79	193	149	138	53	128	191	105	59	1,190
Road, power, telephone, and pipe-line construction	24	11	89	101	93	34	52	30	50	44	528
Industrial operations (logging, etc.)	141	81	223	164	248	126	206	255	205	189	1,838
Incendiary	62	45	24	14	42	23	19	70	70	77	446
Miscellaneous known causes	250	178	309	292	348	193	313	432	303	277	2,895
Unknown causes	41	59	44	36	54	14	21	27	14	13	323
Totals	2,345	1,120	2,685	1,967	3,216	1,647	2,318	4,003	2,898	1,903	24,102

(105)

FIRES CLASSIFIED BY SIZE AND TIMBER LOSS, 1972

Forest District	Total Fires		Under ¼ Acre			¼ to 10 Acres			Over 10 to 500 Acres			Over 500 Acres in Extent			Damage		
	Number	Per Cent of Total Fires in Province	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in This Class	Under $100	Between $100 and $1,000	Over $1,000
Vancouver	345	18.1	200	58.0	17.5	94	27.2	16.4	42	12.2	25.0	9	2.6	47.4	276	27	42
Prince Rupert	178	9.4	90	50.6	7.9	69	38.7	12.1	19	10.7	11.3	.....	.....	.....	160	9	9
Prince George	220	11.6	90	41.0	7.9	76	34.0	13.3	46	21.0	27.3	8	4.0	42.2	51	69	100
Kamloops	453	23.8	306	67.5	26.7	128	28.2	22.4	18	3.9	10.7	1	.22	5.2	437	13	3
Nelson	378	19.9	270	71.0	23.6	97	26.0	16.9	11	3.0	6.6	.....	.....	.....	366	9	3
Cariboo	329	17.2	188	57.2	16.4	108	32.8	18.9	32	9.7	19.1	1	.3	5.2	296	27	6
Totals	1,903	100.0	1,144	.....	100.0	572	.....	100.0	168	.....	100.0	19	.....	100.0	1,586	154	163
Per cent	100.0	.....	60.1	.....	.....	30.1	.....	.....	8.9	.....	.....	0.9	.....	.....	83.3	8.1	8.6
Ten-year average, 1963–72	2,410	.....	1,446	.....	.....	722	.....	.....	202	.....	.....	40	.....	.....	2,124	171	115
Per cent	100.0	.....	60.1	.....	.....	29.9	.....	.....	8.4	.....	.....	1.6	.....	.....	88.3	7.0	4.7

(106) LOSS OF PROPERTY OTHER THAN FORESTS, 1972

Forest District	Forest Products Cut, Logs, Lumber, Etc.	Buildings	Railway, Logging, and Sawmill Equipment	Miscellaneous	Total	Per Cent of Total
	$	$	$	$	$	
Vancouver	234,674	53,260	121,000	3,140	412,074	89.7
Prince Rupert	21,883	10	50	2,118	24,061	5.3
Prince George	7,542	500	.....	550	8,592	1.9
Kamloops	2,374	1,600	.....	3,300	7,274	1.5
Nelson	502	250	1,700	.....	2,452	0.5
Cariboo	2,108	1,300	.....	1,867	5,275	1.1
Totals	269,083	56,920	122,750	10,975	459,728	100.0
Per cent	58.6	12.2	26.8	2.4	100.0	.....
Ten-year average, 1963–72	199,587	66,574	148,667	58,784	473,612	.....
Per cent	42.2	14.1	31.2	12.5	100.0	.....

(107) LOSS TO FOREST COVER CAUSED BY FOREST FIRES, 1972—PART I[1]

Forest District	Merchantable Timber				Immature Timber	
	Net Area Killed	Total Volume Killed	Salvable Volume of Timber Killed	Net Stumpage Loss	Net Area Killed	Present Value
	Acres	M Cu. Ft.	M Cu. Ft.	$	Acres	$
Vancouver	723	2,965	895	141,439	6,417	147,702
Prince Rupert	645	1,198	.....	47,454	88	953
Prince George	783	6,878	5,264	38,241	3,017	64,566
Kamloops	206	695	300	30,697	80	2,227
Nelson	146	383	222	4,266	100	2,442
Cariboo	1,122	1,863	98	88,434	1,436	33,895
Totals	3,625	13,982	6,779	350,531	11,138	251,785
Per cent	5.7	100.0	48.4	49.5	17.3	35.1
Ten-year average, 1963–72	41,519	95,796	31,154	1,898,261	57,451	1,530,591
Per cent	18.1	100.0	32.5	53.1	25.2	43.6

[1] The dollar value of losses in merchantable and immature timber represents only stumpage loss to the Crown. Loss to the Provincial economy may be estimated at approximately 10 times the loss values shown.

(107) LOSS TO FOREST COVER CAUSED BY FOREST FIRES, 1972—PART II

Forest District	Not Satisfactorily Restocked				Noncommercial Cover		Grazing or Pasture Land		Nonproductive Sites		Grand Totals		
	Logged, Not Burned	Logged and Burned	Old Burn (Not Logged)	Value of Loss	Area Burned	Value of Loss	Area Burned	Value of Loss	Area Burned	Value of Loss	Area	Quantity	Value of Loss
	Acres	Acres	Acres	$	Acres	$	Acres	$	Acres	$	Acres	M Cu. Ft.	$
Vancouver	5,520	1,326	60	55,377	202	47	.....	.....	960	237	15,208	2,070	344,802
Prince Rupert	274	.....	.....	126	144	98	62	3	19	18	1,232	1,198	48,652
Prince George	1,653	54	24	1,589	7,966	1,990	954	48	24,395	6,076	38,846	1,614	112,510
Kamloops	1,504	36	.....	32,559	362	173	296	264	1,067	254	3,551	395	66,174
Nelson	363	15	1	153	363	89	44	7	20	3	1,052	161	6,960
Cariboo	994	91	1	12,170	346	54	532	30	2	.....	4,524	1,765	134,583
Totals	10,308	1,522	86	101,974	9,383	2,451	1,888	352	26,463	6,588	64,413	7,203	713,681
Per cent	16.1	2.3	0.1	14.1	14.5	0.4	2.9	0.1	41.1	0.8	100.0	51.6	100.0
Ten-year average, 1963–72	12,844	2,174	8,504	85,013	56,604	14,618	8,870	753	41,521	10,267	229,487	64,642	3,539,503
Per cent	5.5	0.9	3.7	2.5	24.7	0.4	3.8	0.1	18.1	0.3	100.0	67.5	100.0

(108) FIRE CAUSES, AREA BURNED, FOREST SERVICE COST, AND TOTAL LOSS, 1972

Causes	Number	Per Cent	Acres	Per Cent	Cost	Per Cent	Loss	Per Cent
					$		$	
Lightning	583	30.7	31,319	48.7	935,552	43.8	102,075	8.7
Recreational (campers, etc.)	188	9.9	338	0.5	88,727	4.2	7,869	0.7
Railroads operating	136	7.2	336	0.5	30,114	1.4	1,338	0.2
Smokers	267	14.1	570	0.9	114,715	5.4	125,543	10.7
Brush-burning (not railway or right-of-way clearing)	70	3.6	3,110	4.8	75,033	3.5	110,847	9.4
Range-burning	59	3.1	2,620	4.4	37,416	1.7	26,530	2.3
Road, power, telephone, and pipe-line construction	44	2.3	1,833	2.8	102,448	4.8	50,446	4.2
Industrial operations (logging, etc.)	189	9.9	17,960	27.5	365,400	17.2	699,123	59.5
Incendiary	77	4.1	73	0.2	56,899	2.6	3,465	0.3
Miscellaneous known causes	277	14.5	6,243	9.6	319,816	14.9	46,886	3.9
Unknown causes	13	0.6	11	0.1	11,664	0.5	174	0.1
Totals	1,903	100.0	64,413	100.0	2,137,784	100.0	1,174,296	100.0

(109)

COMPARISON OF LOSS CAUSED BY FOREST FIRES IN LAST 10 YEARS

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	Total, 10 Years
Total number of fires	2,345	1,120	2,685	1,967	3,216	1,647	2,318	4,003	2,898	1,903	24,102
Area burned (acres)	46,346	7,746	307,132	54,788	244,483	33,381	406,763	260,958	868,864	64,413	2,294,874
Standing timber destroyed (M cu. ft.)	7,953	306	114,585	3,506	170,555	5,361	158,147	144,287	339,285	13,982	957,967
Amount salvable (M cu. ft.)	3,357	117	40,872	1,453	110,136	759	21,499	56,474	70,100	6,779	311,546
	$	$	$	$	$	$	$	$	$	$	$
Loss to forests	308,475	25,793	5,194,473	757,017	4,751,919	455,872	6,776,020	3,437,205	12,974,582	713,681	35,395,037
Loss to other forms of property	225,797	151,338	567,162	164,352	927,201	223,400	663,177	744,901	609,064	459,728	4,736,120
Total loss	534,272	177,131	5,761,635	921,369	5,679,120	679,272	7,439,197	4,182,106	13,583,646	1,173,409	40,131,157

(110) FIRES CLASSIFIED BY FOREST DISTRICT AND COST PER FIRE OF FIRE-FIGHTING, 1972

Forest District	Total Fires	Forest Service Cost			Extinguished Without Cost			Cost Money to Extinguish							
		Total	Per Cent	Average Expenditure per Cost Fire	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in Province	Number	Per Cent of Total Fires in District	Per Cent of Total Fires in Province	Cost Less Than $100 per Fire	Cost $100 to $1,000 per Fire	Cost Over $1,000 to $5,000 per Fire	Cost Over $5,000 to $10,000 per Fire	Cost Over $10,000 per Fire
		$		$											
Vancouver	345	330,256	14.8	957	24	6.0	1.2	321	94.0	16.8	127	135	35	13	35
Prince Rupert	178	222,110	9.9	1,247	41	23.0	2.1	137	77.0	7.1	39	61	28	4	5
Prince George	220	892,016	40.1	4,054	14	6.0	0.1	206	94.0	10.8	37	69	58	18	24
Kamloops	453	292,090	13.1	644	127	28.0	6.6	326	72.0	17.1	184	62	40	24	16
Nelson	378	147,978	6.7	391	113	29.9	5.9	265	70.0	13.9	135	82	41	5	2
Cariboo	329	343,969	15.4	1,046	83	25.2	4.3	246	75.0	12.9	296	27	4	.....	2
Totals	1,903	2,228,419[1]	100.0	1,171	402	.....	20.2	1,501	.....	78.6	818	436	206	64	84
Per cent	100.0	.....	.....	.....	21.1	.....	.....	78.8	.....	.....	42.9	22.9	10.8	3.3	4.4
Ten-year average, 1963–72	2,410	3,645,014	100.0	1,512	543	.....	.....	1,867	.....	.....	895	650	228	45	67
Per cent	100.0	.....	.....	.....	22.5	.....	.....	77.4	.....	.....	37.1	26.9	9.4	1.8	2.7

[1] Cost correct to date. Subject to later revision.

(111) AREAS OF LOGGING SLASH DISPOSED, 1972

Forest District	Acres Abated by Industry	Acres Abated by Forest Service	Total
Vancouver	41,475	955	42,430
Prince Rupert	25,317	2,489	27,806
Prince George	24,200	2,320	26,520
Kamloops	14,318	590	14,908
Nelson	17,555	.....	17,555
Cariboo	7,677	309	7,986
Totals	130,542	6,663	137,205

(141) FOREST REVENUE, 1968–72

	12 Months to Dec. 31, 1968	12 Months to Dec. 31, 1969	12 Months to Dec. 31, 1970	12 Months to Dec. 31, 1971	12 Months to Dec. 31, 1972
	$	$	$	$	$
Timber licence rentals and fees	676,038.52	703,048.63	668,254.04	640,458.88	623,153.52
Timber berth rentals and fees	141,074.38	128,103.62	123,123.68	112,947.83	95,433.78
Timber lease rentals and fees	87,083.55	90,500.60	92,895.76	93,633.27	91,731.48
Timber sale rentals and fees	899,849.28	882,229.95	898,484.23	798,919.11	674,091.83
Timber sale stumpage	44,390,570.94	78,293,115.07	53,524,665.01	49,680,565.02	91,180,674.04
Timber sale cruising and advertising	250,745.80	213,844.25	163,321.01	166,647.42	140,245.57
Timber royalties	4,954,555.27	6,329,417.22	6,217,109.85	5,553,861.92	5,336,035.96
Grazing permits and fees	350,351.93	384,123.83	438,003.68	469,636.16	532,992.78
Forest protection tax	947,389.12	993,509.64	1,006,742.58	1,123,517.24	1,185,179.11
Miscellaneous	473,324.50	428,260.52	669,194.53	735,683.76	773,132.95
Weight-scaling	635,742.30	1,033,160.25	1,149,637.48	1,514,347.62	2,004,105.62
Totals	53,806,725.59	89,479,313.58	64,951,431.85	60,890,218.23	102,636,776.64

AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, 1972

Forest District	Royalty	Miscel-laneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Total
			Scaling Expenses	Scaling Fees			
	$	$	$	$	$	$	$
Vancouver	3,165,304.31	151,810.47	351,555.25	1,780,052.11	23,751,568.95	870,234.97	30,070,526.06
Prince Rupert	1,010,701.88	320,557.95	51,920.06	215,889.02	6,595,008.33	287,624.44	8,481,701.68
Prince George	390,346.55	774,077.89	.....	.....	26,348,689.19	311,253.19	27,824,366.82
Kamloops	393,051.74	674,399.85	.....	.....	22,994,483.63	210,008.10	24,271,943.32
Nelson	251,982.85	378,454.21	.....	.....	12,532,203.39	217,936.73	13,380,577.18
Cariboo[1]	20,086.45	211,646.19	.....	.....	4,374,024.15	24,919.77	4,630,676.56
Totals, 1972	5,231,473.78	2,510,946.56	403,475.31	1,995,941.13	96,595,977.64	1,921,977.20	108,659,791.62
Totals, 1971	5,519,236.50	1,930,657.09	423,107.49	2,107,899.80	55,347,358.35	2,341,636.62	67,669,895.85
Totals, 1970	6,102,283.77	1,480,701.37	430,081.94	2,242,672.37	50,042,114.17	1,998,891.74	62,296,745.36
Totals, 1969	6,394,215.18	1,335,288.66	417,010.41	2,046,118.14	80,270,727.23	1,900,578.27	92,363,937.89
Totals, 1968	5,240,932.73	215,421.57	457,873.04	1,960,676.35	48,292,949.16	1,868,711.35	58,039,564.20
Totals, 1967	3,097,283.30	155,429.93	460,492.24	1,654,526.83	33,111,713.22	1,561,397.57	40,040,843.09
Totals, 1966	3,033,313.36	34,552.21	409,398.60	1,685,787.86	42,032,738.27	1,567,023.40	48,762,813.70
Totals, 1965	2,599,335.52	13,019.78	325,333.63	1,526,114.51	42,997,720.01	1,520,404.68	48,981,928.13
Totals, 1964	2,589,142.31	9,757.95	291,333.62	1,141,321.90	38,793,044.73	1,381,881.96	44,206,482.47
Totals, 1963	2,399,042.45	11,244.13	243,745.53	922,206.05	30,470,629.50	1,258,855.66	35,305,723.32

[1] Charges for five months only.

(143) AMOUNTS CHARGED AGAINST LOGGING OPERATIONS, FISCAL YEAR 1971/72

Forest District	Royalty	Miscellaneous	Scaling Fund		Stumpage	Rentals, Cruising, Advertising, Transfer Fees	Total
			Scaling Expenses	Scaling Fees			
	$	$	$	$	$	$	$
Vancouver	3,651,398.84	71,377.43	369,608.90	1,874,658.38	21,944,341.25	921,191.22	28,832,576.02
Prince Rupert	1,002,705.10	348,017.07	59,653.46	250,020.97	5,415,807.82	364,864.55	7,441,068.97
Prince George	262,558.88	689,476.61	.....	.....	16,126,176.06	396,339.25	17,474,550.80
Kamloops	398,113.48	589,278.86	.....	.....	16,753,466.65	289,428.72	18,030,287.71
Nelson	188,056.07	306,381.03	.....	.....	7,897,788.49	279,256.26	8,671,481.85
Totals, 1971/72	5,502,832.37	2,004,531.00	429,262.36	2,124,679.35	68,137,580.27	2,251.080.00	80,449,965.35
Totals, 1970/71	5,508,498.13	1,717,910.69	382,501.42	1,999,070.86	45,558,857.31	1,914,268.47	57,081,106.88
Totals, 1969/70	7,109,112.86	1,362,256.98	463,629.45	2,393,795.94	77,653,886.17	1,854,858.17	90,817,540.17
Totals, 1968/69	5,606,697.44	531,812.86	430,176.61	1,813,633.15	57,086,138.53	2,053,320.31	67,521,778.90
Totals, 1967/68	3,101,010.90	167,243.61	462,292.44	1,730,158.05	32,528,962.43	1,435,377.37	39,425,044.80
Totals, 1966/67	3,014,116.07	97,618.77	418,649.05	1,633,282.45	38,999,030.55	1,614,407.62	45,777,104.51
Totals, 1965/66	2,835,387.89	12,951.13	363,546.48	1,683,900.58	44,658,459.16	1,586,928.06	52,070,068.62
Totals, 1964/65	2,528,753.61	10,200.85	287,344.41	1,148,796.45	40,402,430.17	1,375,540.12	46,570,174.53
Totals, 1963/64	2,397,693.04	10,103.02	243,758.31	933,939.47	31,559,368.71	1,271,232.39	37,057,425.09
Totals, 1962/63	2,334,087.65	10,478.79	255,471.80	1,001,506.52	27,535,735.53	1,215,900.43	33,017,030.65

(144) FOREST REVENUE, FISCAL YEAR 1971/72

	$
Timber licence rentals and fees	643,858.89
Timber berth rentals and fees	116,167.93
Timber lease rentals and fees	92,716.77
Timber sale rentals and fees	820,705.13
Timber sale stumpage	63,344,101.89
Timber sale cruising and advertising	164,701.01
Timber royalties	5,620,520.07
Grazing permits and fees	480,763.82
Forest-protection tax	1,373,128.82
Miscellaneous	731,075.64
Weight-scaling	1,641,741.74
Total	75,029,481.71

(145) FOREST SERVICE EXPENDITURES, FISCAL YEAR 1971/72

	$
General administration, protection, and management of forests	22,849,623.39
Reforestation and forest nurseries	4,733,885.11
Forest research	222,908.60
Public information and education	87,944.54
Forest Service Training School	173,027.10
Grant to Canadian Forestry Association	17,500.00
Engineering services and forest-development roads	2,972,416.70
Fire suppression	11,022,117.69
Forest inventory	1,549,047.33
Silviculture	1,671,074.23
Grazing Range Improvement Fund[1]	226,199.24
Peace River community pastures	19,998.44
Forestry and Correction Camp Programme	27,787.05
Total	45,573,529.42

[1] Statement provided elsewhere.

(146) SCALING FUND

	$
Deficit, April 1, 1971	205,253.13
Collections, fiscal year 1971/72	2,558,993.28
	2,353,740.15
Expenditures, fiscal year 1971/72	2,786,023.76
Deficit, March 31, 1972	432,283.61
Collections, nine months, April to December, 1972	1,817,165.65
	1,384,882.04
Expenditures, nine months, April to December, 1972	2,011,329.90
Deficit, December 31, 1972	626,447.86

(147) GRAZING RANGE IMPROVEMENT FUND

	$
Deficit, April 1, 1971	8,390.81
Government contribution (sec. 13, *Grazing Act*)	224,691.12
	216,300.31
Expenditures, fiscal year 1971/72	226,199.24
Deficit, March 31, 1972	9,898.93
Government contribution (sec. 13, *Grazing Act*)	240,381.91
	230,482.98
Expenditures, nine months, April to December, 1972	129,642.44
Surplus, December 31, 1972	100,840.54

(148) RESERVOIR WATERWAY IMPROVEMENTS

	$
Expenditures, fiscal year 1971/72	3,742,088.01
Recovered from British Columbia Hydro and Power Authority	1,869,954.46
Balance	1,872,133.55

(151)

DISTRIBUTION OF PERSONNEL, 1972

Personnel	Cariboo	Vancouver	Prince Rupert	Prince George	Kamloops	Nelson	Victoria	Total
Continuously Employed								
Deputy Minister, Chief Forester, and Assistant Chief Foresters	.....	.....	.....	.....	.....	.....	5	5
Division Foresters	.....	.....	.....	.....	.....	.....	6	6
Directors of Grazing	.....	.....	.....	.....	.....	.....	1	1
Forest Counsel and Personnel Officers	.....	.....	.....	.....	.....	.....	4	4
District Foresters and Assistant District Foresters	2	2	2	2	2	2	.....	12
Foresters	12	14	14	16	15	13	128	212
Agrologists and Agrologists-in-Training	4	.....	.....	2	4	2	.....	12
Engineers	1	2	2	1	2	2	37	47
Forest Protection Officers	2	3	1	1	1	1	3	12
Technical Forest Officers	22	43	30	35	33	119	12	294
Superintendent of Scaling and Assistants	.....	2	.....	.....	.....	.....	.....	2
Scalers, Official	23	88	41	75	46	42	.....	320
Scalers, Official, temporary	.....	103	35	.....	.....	.....	.....	138
Comptroller, Accountant, and Audit Assistants	.....	.....	.....	.....	.....	.....	6	6
Engineering, Mechanical and Radio	5	2	4	3	4	9	14	41
Public Information Officers	.....	.....	.....	.....	.....	.....	3	3
Reforestation, Research, and Survey Assistants	4	.....	.....	1	4	1	57	67
Nursery Superintendents	.....	.....	.....	.....	.....	.....	9	9
Draughtsmen and Mapping Assistants	3	5	5	7	5	4	30	59
Clerks, Stenographers, and Messengers	22	102	33	46	31	29	114	377
Superintendent and Foremen, Forest Service Maintenance Depot	.....	.....	.....	.....	.....	.....	8	8
Mechanics, Carpenters, and Technicians	9	8	12	11	13	15	124	192
Launch Crewmen	.....	14	8	.....	.....	.....	1	23
Forest Assistants	58	120	82	112	95	27	88	582
Truck, Tractor, and Equipment Operators	3	6	8	7	8	1	29	62
Foremen	1	3	7	9	1	1	22	44
Miscellaneous	3	12	13	7	5	4	97	141
Totals, continuous personnel	179	529	297	335	269	272	798	2,679
Seasonally Employed								
Technical Forest Officers	.....	.....	.....	.....	.....	.....	2	2
Patrolmen	.....	1	.....	4	.....	1	.....	6
Lookoutmen	14	31	33	32	24	41	.....	165
Dispatchers, Radio Operators, and Clerks	7	1	1	.....	2	3	5	19
Fire-suppression Crewmen	39	82	.....	13	.....	74	.....	208
Reforestation—Snag-fallers, Planters, etc.	.....	.....	601	.....	.....	.....	3,403	4,004
Truck, Tractor, and Equipment Operators	.....	.....	.....	.....	.....	6	40	46
Student and Survey Assistants and Engineering Aides	83	200	62	20	16	184	103	668
Forest Assistants	.....	3	.....	134	159	7	149	452
Foremen	.....	3	.....	6	16	.....	222	247
Miscellaneous	.....	3	.....	10	19	30	633	695
Totals, seasonal personnel	143	324	687	219	236	346	4,557	6,512
Totals, all personnel	322	853	984	554	505	613	5,355	9,191

Printed by K. M. MacDonald, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1973

3,030-173-966