BRITISH COLUMBIA

Ministry of Forests

Use Policy for PrognosisBC(version 2.0).

May 26, 2000

This policy outlines the recommended use of PrognosisBC(version 2.0) and provides the user with the development team's assessment of the current model. This use policy will change over time to reflect further refinements to the model's predictive equations.

PrognosisBC's ability to both compile and project treelist or stand table data, simulate the future dynamics of complex stands (eg: species shifts and breakup) and allow the user to rank alternative partial cutting prescriptions are its great strengths. It is an individual tree, distance independent (ie: non-spatial) growth and yield model.

PrognosisBC is derived from the US Forest Service "Forest Vegetation Simulator", North Idaho model "variant". This "variant" is being progressively re-developed for use in South Eastern BC—the Kamloops and Nelson Forest Regions.

Expected uses of the model range from silviculture gaming (supporting prescription development) to strategic planning. Users should consider using VDYP to project existing even-aged, natural stands and TIPSY to project even aged managed stands.

Refinements included in this release:

- improved growth estimates for trees ≥ 7.5 cm DBH in the IDF;
- improved height prediction at time of inventory (the model estimates missing heights);
- refined BEC based carrying capacity estimates (ie: maximum stand basal area);
- refined asymptote (ie: maximum height) for height growth;
- refined asymptote (ie: maximum DBH) for DBH growth;
- inclusion of FIZ based tree level DWB factors;
- simplified VIEWprog;
- addition of Quick Start for SIMprog; and
- creation of a user's guide and revised tutorials

Applicable species:

It can be used to simulate the development of stands comprised of one or more of the following species:

- White Pine
- Larch,
- Douglas fir,
- Grand fir,
- Western hemlock,
- Red cedar,
- Lodgepole pine,
- Engelmann spruce,
- Subalpine fir,
- Ponderosa pine; and
- Mountain hemlock.

The current model does not support hardwoods.

Geographic scope and reliability of the model:

ISIS—the provincial database to track and plan reforestation activities—was queried to help assess the applicability of the BC model to the commercially important subzone/variants in the Kamloops and Nelson Forest Regions[1]. While the model only applies to 19 of the 40 forested subzone/variants (ie: ecological site units) that occur in these two forest regions, it applies to seven of the 10 most commercially important subzone/variants. The three "top 10" subzone/variants with no coverage were the ESSFwc2, MSdm2 and MSxk[2].

Typically, within a subzone/variant the extremely dry and wet site series are not addressed and the mid-slope site series (ie: "01","03","04" and "05") are well covered by the model. The percent of each commercially forested subzone/variant addressed by the model is presented in Table 1.

The reliability of the model is rated for each site series within a subzone/variant in Tables 2 and 3. The degree of reliability is related to the availability of calibration data in the particular zone, subzone, variant and/or site series.

In the ESSFdk/01&04 and ESSFwm/01 the reliability of the model has been reduced from high to medium. In the IDFdk1&2 the model overestimates the growth of the regeneration and sapling layers. The reliability of the model in these subzones has been reduced to "medium" to reflect this finding. It is anticipated that this problem will be addressed for the next release. Out of prudence, the reliability of the model in the IDFdm1&2 has also been reduced to medium[3].

Usage notes:

PrognosisBC is sensitive to stand density. In the IDF a large portion of the stand biomass can be composed of non-merchantable stems. A nested plot structure is recommended to ensure the entire diameter distribution is described by the ground sample.

Partial cutting from above, below, and/or by diameter class can be simulated. Analogous to a TIPSY bareground projection, the user is required to enter the amount and composition of any regeneration that may occur after a partial cutting. The simulation of repeated partial cuts, where regeneration will be harvested in a subsequent cut, should be treated with caution. Currently, it is recommended that a projection is limited to a maximum of two partial cuts.

It is recommended you seek advice from the Growth & Yield Model Support Centre when simulating the impacts of Armillaria, Phellinus and/or Annonus on stand development.

PrognosisBC is a decision support tool. Whether you are using PrognosisBC, VDYP or TIPSY remember to balance model output with professional experience and knowledge of local conditions and stand dynamics.

[1] January 1, 1988 and September 15, 1999 were used as the start and end dates for the ISIS queries. The Kamloops and Nelson Forest Regions were queried by BEC site series for the total area harvested and total area partial cut. The two forest regions were not delineated by the queries.

[2] Historically, 84% of the ESSFwc2, 92% of the MSdm2 and 95% of the MSxk subzones/variants have been harvested using clearcut systems; they can therefore be adequately handled by VDYP and TIPSY.

[3] The previous reliability matrix was based solely on the performance of the model driver—large tree DBH growth.

Table 1: Percent of each commercially forested subzone/variant in the Kamloops and Nelson Forest Region addressed by PrognosisBC.

(Data source: ISIS query, January 1988-September 1999.
The data is sorted by total "Area harvested". The "top 10" commercially forested subzone/variants are shaded)

BEC subzone/variant	Area Harvested(ha)	Area part. Cut (%)	coverage by model(%)
ICHmw2	49669.5	22	98
ICHmk1	29927.6	24	97
MSdk	28958.2	52	100
ESSFwc2	28540.1	16	0
MSdm2	28133.5	8	0
MSxk	27294	5	0
MSdm1	26708.2	34	83
IDFdm2	22522.6	68	94
IDFdk1	21899.9	49	87
ICHmw3	18902	12	92
ESSFdk	18574.2	10	56
ICHwk1	17087.6	10	87
IDFdk2	16061.1	37	83
ESSFwc4	14476.7	17	15
ESSFdc2	14193.6	6	0
ESSFdc1	11253.9	16	0
ESSFxc	9760.7	2	0
IDFdm1	9164.4	79	91
ICHvk1	8154.6	7	0
ICHdw	7312.1	38	82
IDFmw2	7194.8	34	0
ICHmw1	7080.5	16	8
ESSFwm	6980.4	4	93
SBSmm	5852.6	2	0
ESSFmw	5108.7	2	0
ESSFvc	4867.5	7	0
ESSFwc1	4517.6	21	0
ICHmk2	3434.9	14	0
IDFxh2	3238.7	83	14
IDFmw1	2972	55	0
ESSFdv	2176.2	1	0
ESSFvv	1843.6	49	0
MSdc	1816.6	2	0
PPdh2	1404.1	84	85
IDFxh1	844.6	85	68
PPxh2	179.3	100	26
ICHxw	70.1	46	0
IDFun	52.2	0	0
PPxh1	18	100	0

Table 2: PrognosisBC reliability matrix for the Nelson Region *

	Site Series **						
Subzone/ Variant #	**2**	**3**	**4**	**1**	**5**	**6**	**7**
ESSFdk			**M**	**M**			
ESSFwc4	**P**	**P**					
ESSFwm	**L**	**P**	**P**	**M**			
ICHdw			**L**	**G**			
ICHmk1		**G**	**G**	**G**	**P**		
ICHmw1					**L**	**L**	
ICHmw2	**NF**	**G**	**G**	**G**	**P**	**L**	
ICHmw3		**P**	**M**	**M**	**M**		**P**
ICHwk1	**NF**		**P**	**L**	**L**		
IDFdm1	**NF**		**M**	**M**	**L**		
IDFdm2	**NF**		**M**	**M**	**L**		
IDFxh1			**P**	**P**			
MSdk	**NF**	**M**	**G**	**G**	**L**		**NF**
MSdm1	**L**	**L**	**M**	**L**			
PPdh2	**NF**			**P**			

Reliability		**Requirement for increment data**
Good	**G**	recommended
Medium	**M**	"
Poor	**P**	highly recomm.
low (very poor)	**L**	mandatory
beyond model. Scope	**" "**	N/A
non-forested site	**NF**	N/A

* Some data from Kamloops.
Site Series 8 (and greater) are beyond the current ecological scope of the model.
** Site Series have been arranged approximately in order of increasing soil moisture.
# Omitted Subzone/Variants are beyond the current ecological scope of the model.

Table 3: PrognosisBC reliability matrix for the Kamloops Region *

	Site Series **						
Subzone/ Variant #	**2**	**3**	**4**	**1**	**5**	**6**	**7**
ICHmk1		**M**	**P**				
ICHmw2	**NF**		**P**	**M**	**P**	**L**	
ICHmw3		**P**		**M**			**P**
ICHwk1	**NF**				**L**		
IDFdk1			**M**	**M**			**NF**
IDFdk2		**M**		**M**			
IDFxh1			**P**	**M**			
IDFxh2					**P**	**P**	
MSdm1				**L**			
PPxh2		**P**			**NF**		

Reliability		**Requirement for increment data**
High	**G**	recommended
Medium	**M**	"
Poor	**P**	highly recomm.
low (very poor)	**L**	mandatory
beyond model. scope	**" "**	N/A
non-forested site	**NF**	N/A

* Site Series 2 and 7 (and greater) are beyond the current ecological scope of the model.
** Site Series have been arranged approximately in order of increasing soil moisture.
# Omitted Subzone/Variants are beyond the current ecological scope of the model.

Note: If a "Subzone/Variant" is common to both Forest Regions and has medium (or good) reliability in one region but poor reliability in the other, no data from the second region was used to calibrate the model.