Douglas-fir Beetle Impact Model Keywords:

Program Execution Control:

DFB
DFBECHO
END
RANNSEED

Inventory Data Entry:

CUROUTBKMANSCHED
MANSTART
RANSCHED
RANTSTART

Other Agent Simulations:

WINDTHR

Modification of Model Assumptions:

EXYRMORT
MORTDIS
OLENGTH
STOPROB

CUROUTBK This keyword is used to specify that a Douglas-fir beetle outbreak was already in progress at the time of inventory for which the model will adjust the trees/acre to be killed according to the time remaining in the outbreak. This keyword may appear only once in a Douglas-fir beetle keyword segment.

Field 1 Number of years outbreak has been in progress. This field must have a value if the keyword is entered.
[Range: 0 to 4]

Field 2 Number of trees/acre that have been killed by the outbreak so far. If this field is left blank, trees/acre already killed will be read from damage codes in the Prognosis tree list.
[Range: none]

Fields 3-7 Not used.

Field Default Values

Field	1	2	3	4	5	6	7
All variants							

DFB   This DFB keyword is actually an FVS keyword signifying that the Douglas-fir Beetle Model is to be called. This keyword must appear first in the list of Douglas-fir Beetle Model keywords and all following keywords, up to the associated END keyword, must be Douglas-fir Beetle Model keywords.

        There are no fields associated with this keyword.

DFBECHO   This keyword is used to write Douglas-fir Beetle Model summary tables to a file. It may appear only once in a Douglas-fir beetle keyword segment.

There are no fields associated with this keyword.

Supplemental   An optional supplemental record may be included with this keyword to hold the
Record   name of the file the summary tables are to be written to. The file name may be up to 80 characters in length and may include a pathname. If the supplemental record is left blank, the file name defaults to DFBOUT which will be written to the current directory.

(Note: logical unit number assigned to this file is 21)

END   This keyword is sued to signify the end of a keyword set or the end of a COMMENT block within a keyword set as shown in the example below.

Example:
DFB
Douglas-fir Beetle Model keywords here
.
.
.
COMMENT
any number of comment lines here
.
.
.
END
.
.
.
END

Fields 1-7   Not used.

EXYRMORT   This keyword is used to adjust the number of Douglas-fir trees/acre expected to be killed by the Douglas-fir beetle in each year of an outbreak if the stand is a pure Douglas-fir stand. It may appear only once in a Douglas-fir beetle keyword segment.

Note: The values supplied in fields 1 and 2 are entered into the Douglas-fir Beetle Model mortality equation (described in detail in the User's Guide to the Douglas-fir Beetle Impact Model) which calculates actual mortality based on the total basal area of Douglas-fir in the stand compared to the total basal area of the entire stand.

Field 1   Trees/acre expected to die in each year of an outbreak.
                 [Range: none]

Field 2   Standard deviation of the normal distribution.
                 [Range: none]

Fields 3-7   Not used.

Field Default Values

Field	1	2	3	4	5	6	7
All variants	6.0	2.0					

MANSCHED   This keyword is used to specify a particular year that a regional outbreak will occur. There may be multiple occurrences of the MANSCHED keyword in the keyword set so long as the date for each entry is unique.

Field 1   Date (calendar year of cycle number) in which a regional outbreak will occur. [Range: 4-digit calendar year or 0 to 40 for cycle number]

Fields 2-7   Not used.

Field Default Values

Field	1	2	3	4	5	6	7
All variants	1						

MANSTART   This keyword is used to manually schedule an epidemic. There can be multiple entries of the MANSTART keyword in model keyword set as long as the date is unique for each entry.

Note: The MANSTART keyword may not be combined with the RANSTART keyword. This keyword set is valid with the POPDYN and NOPOPDYN models.

Fields 1-7   Not used.

MORTDIS   This keyword is used to alter the method in which Douglas-fir beetle outbreak mortality is distributed through a stand. It may appear only once in a Douglas-fir beetle keyword segment.

If this keyword is used, the model will distribute mortality through the stand based on basal area. Otherwise, mortality will be distributed based on DBH.

Fields 1-7   Not used.

OLENGTH   This keyword is used to modify the length of an expected Douglas-fir beetle outbreak. It may appear only once in a Douglas-fir keyword segment.

Field 1   Length, in years, of the expected outbreak.
                    [Range: 0 to current FVS cycle length]

Fields 2-7   Not used.

Field Default Values

Field	1	2	3	4	5	6	7
All variants	4						

RANNSEED   This keyword is used to change the random number generator seed value contained in the model.

Field 1   New random number generator seed value.
                    [Range: Any large, non-negative, odd integer]

Fields 2-7   Not used.

Field Default Values

Field	1	2	3	4	5	6	7
All variants	55329						

RANSCHED   This keyword is used to invoke the random automatic scheduling process which will stochastically generate a list of regional outbreaks to occur during the simulation period.

Field 1   Minimum waiting time, in years, between regional outbreaks.

Field 2   Event probability used in the random process; essentially the annual probability of a regional outbreak given that the minimum waiting time since the last outbreak has been exceeded.

Field 3   Date (4-digit calendar year) of the last regional outbreak.

Fields 4-7   Not used.

Field Default Values

Field	1	2	3	4	5	6	7
All variants	10	0.05	1950				

RANSTART This keyword is used to include the stand in a regional outbreak based on a probability calculated in the model. The probability is based on the basal area of all Douglas-fir trees greater than 9 inches DBH compared to the basal area of all trees in the stand with a DBH greater than 9 inches. This probability can be altered through the keyword STOPPROB. The keyword may appear only once in a Douglas-fir beetle keyword segment.

Fields 1-7 Not used.

STOPPROB   This keyword is used to specify a stand outbreak probability (used in conjunction with the keyword RANSTART). It may appear only once in a Douglas-fir beetle keyword set.

Field 1   User specified stand outbreak probability. If this field is left blank, the model will calculate the outbreak probability as discussed in the RANSTART keyword section. [Range: 0.0 to 1.0]

Fields 2-7   Not used.

Field Default Values

Field	1	2	3	4	5	6	7
All variants							

WINDTHR   This keyword is used to simulate a windthrow event in the stand. The model tests for windthrow eligibility based on the values entered with this keyword, kills eligible trees, if any, and then causes an outbreak in the stand if a regional Douglas-fir beetle outbreak was scheduled during the current cycle.

Field 1   The earliest date (calendar year or cycle number) that the event can occur.
[Range: 4-digit calendar year or 0 to 40 for cycle number]

Field 2   Proportion of eligible trees that can be windthrown.
[Range: 0.0 to 1.0]

Field 3   Minimum number of eligible trees/acre necessary for a windthrow event to occur.
[Range: none]

Fields 4-7   Not used.

Field Default Values

Field	1	2	3	4	5	6	7
All variants	1	0.8	0.0				