

PnET-Biosuccession Biomass Output v1.0 Extension User Guide

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1 PnET-Biosuccession Biomass Output Extension

This document describes the **PnET-Biosuccession Biomass output** extension for the LANDIS-II model. For information about the model and its core concepts including succession, see the *LANDIS-II Conceptual Model Description*. Readers should read the *LANDIS-II Model User Guide* prior to reading subsequent sections.

Biomass Output is compatible with LANDIS v6.0, and was designed to provide output when the PnET-Biosuccession extension is used.

This output extension produces a number of optional maps.

1.1 Major Releases

1.1.1 Version 1.0

Initial release.

1.2 Acknowledgements

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2 Input File

The input parameters for this extension are specified in one input file. This text file must comply with the general format requirements described in section 3.1 Text Input Files in the *LANDIS-II Model User Guide*.

2.1 Example inputfile

Note that the order of required keywords “Landisdata”, “TimeStep” and “species” is prescribed. The position of optional keywords Biomass to CohortdeathFreqFileName is exchangeable.

```
LandisData "Output-PnET"

Timestep 10

Species ALL

Biomass      output/biomass/{species}/biomass{timestep}.img

CohortsPerSpecies      output/CohortsPerspecies/{species}/cohorts{timestep}.img

LeafAreaIndex output/LeafAreaIndex/lai{timestep}.img

Establishment output/Establishments/{species}/Est{species}{timestep}.img

Water output/SoilWater/water{timestep}.img

SubCanopyPAR output/SubCanopyPar/SCpar-{timestep}.img

BelowgroundBiomass output/BelowGroundBiom/BGB{timestep}.img

WoodyDebris output/WoodyDebris/WoodyDebris{timestep}.img

Litter      output/NonWoodyDebris/Litter{timestep}.img

AgeDistribution output/AgeDist/Age{timestep}.img

CohortBalance "output/TotalCohorts.txt"
```

2.2 LandisData

The first parameter is the title of the input file:

```
LandisData "Output-PnET"
```

2.3 Timestep

This parameter is the time step of the extension. Value: integer > 0.

Units: years. For example:

```
Timestep 15
```

2.4 Species List (required)

First is a species list of the desired species for which to create maps.

There is a List parameter, Species, followed by a list of one to many species. Alternatively, the keywords **all** (case insensitive) or **none** (case insensitive) **can** be used to indicate biomass should be output for every species or for no individual species (just the sum). If **all** is indicated, do not list any species. For example:

```
Species    pinubank
           pinuresi
           pinustro
           poputrem
           piceglau
```

or...

```
Species    All
```

or...

```
Species    none
```

2.5 Biomass (Optional)

Biomass describes where biomass output maps are placed and their format. These maps will contain total aboveground biomass by species on each cell. (A text file is also written to this folder and contains total biomass and biomass by species (kg/m²) across the landscape at each time step.) The first portion of the name lists the directory where the maps should be placed, relative the location of the scenario text file (e.g., agemaps/). The second portion includes two variables for creating file names. {species} will be replaced with the species name. {timestep} will be replaced with the output time step. Other characters can be inserted as desired. A meaningful file extension (e.g., .img) should also be included.

For example:

```
Biomass output/biomass/bio-{species}-{timestep}.img
```

Note: Biomass output maps are not compatible with the integer-only .gis map output type.

2.6 LeafAreaIndex (Optional)

LeafAreaIndex describes where LAI output maps are placed and their format. These maps will contain total LAI (leaf area index) by species on each cell. For example:

```
LeafAreaIndex output/LAI/{species}/lai-{species}-  
{timestep}.img
```

Note: LAI output maps are not compatible with the integer-only .gis map output type.

2.7 Establishment (Optional)

Establishment, describes where Establishment output maps are placed and their format. These maps will contain establishments (as Boolean 0-1) by species on each cell. For example:

```
Establishment output/EST/{species}/est-{species}-  
{timestep}.img
```

2.8 Water (Optional)

Water describes where Water output maps are placed and their format. These maps will contain bulk soil water (mm) on each cell. For example:

```
WaterMapNames output/WATER/water-{timestep}.img
```

Note: Water output maps are not compatible with the integer-only .gis map output type.

2.9 SubCanopyPAR (Optional)

SubCanopyPAR describes where SubCanopyPAR output maps are placed and their format. These maps will contain SubCanopyPAR values (W/m^2) for each cell. For example:

```
SubCanopyPAR output/SCpar/SCpar-{timestep}.img
```

Note: SubCanopyPAR output maps are not compatible with the integer-only .gis map output type.

2.10 BelowgroundBiomass (Optional)

BelowgroundBiomass, describes where Belowground biomass output maps are placed and their format. These maps will contain root biomass values (gDW/m^2) for each cell. For example:

```
BelowgroundBiomass output/BGB/BGB-{timestep}.img
```

Note: Belowground output maps are not compatible with the integer-only .gis map output type.

2.11 WoodyDebris (Optional)

WoodyDebris describes where WoodyDebris output maps are placed and their format. These maps will contain root biomass values for each cell. For example:

```
WoodyDebris output/WoodyDebris/WoodyDebris-  
{timestep}.img
```

Note: WoodyDebris output maps are not compatible with the integer-only .gis map output type.

2.12 Litter (Optional)

Litter describes where WoodyDebris output maps are placed and their format. These maps will contain root biomass values for each cell. For example:

```
Litter output/WoodyDebris/WoodyDebris-  
{timestep}.img
```

Note: WoodyDebris output maps are not compatible with the integer-only .gis map output type.

2.13 AgeDistribution (Optional)

AgeDistribution writes histograms that contain the age classes of the different species across the landscape. Additionally, it writes the maximum ages of all cohorts per each site in the landscape. For example,

```
AgeDistribution output/AgeDist/MaxAge{timestep}.img
```

Will write a map that contains MaxAge[timestep].img for each timestep. Additionally, it will write a histogram. Age[timestep]Histogram.txt for each time step.

2.14 CohortBalance (Optional)

CohortBalance will write an overview of general parameters to a table according to

```
CohortBalance      "output/TotalCohorts.txt"
```

The table will contain #Cohorts; the total number of cohorts on the landscape, AverageAge; the average age for all species and all sites on the landscape. AverageLAI; average LAI on the landscape, AverageWater; average soil water on the landscape; SubCanopyPar, average subcanopy radiation on the landscape, Litter; average litter on the landscape WoodyDebris; average woody debris on the landscape.