

# LANDIS-II Biomass Output v1.2 Extension User Guide

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Last Revised: June 8, 2007

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# 1 Introduction

This document describes the **Biomass Output** extension for the LANDIS-II model. Readers should read the *LANDIS-II Model User Guide* prior to reading this document.

The output module described herein is fairly simple and produces three types of map:

- the aboveground live biomass (Mg/ha) for individual species,
- the total aboveground live biomass for all species, and
- the dead biomass (forest floor and dead woody biomass).

## 1.1 Version History

This document describes the current version (1.2) of the extension.

### 1.1.1 Changes in version 1.2

- Because of the limitations of 16-bit maps (cell values are integers between 0 and 65,535), the output units are now kg biomass / 100 / ha.

### 1.1.2 Changes in version 1.1

- Cleared up confusing naming convention for total aboveground biomass maps. Previously, the names for total biomass maps were generated by substituting “all” for the “{species}” variable in the map-name template (see section 2.4). Now, the “{species}” variable is replaced with “TotalBiomass”.
- Also, the total biomass maps are now produced even if individual species are not indicated.

## 1.2 Acknowledgements

Funding for the development of LANDIS-II has been provided by the North Central Research Station (Rhinelander, Wisconsin) of the U.S. Forest Service. Valuable contributions to the development of the model and extensions were made by Brian R. Sturtevant, Eric J. Gustafson, and David J. Mladenoff.

## 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*.

**By default, a combined total of aboveground biomass for all species will be output.**

### 2.1 LandisData

The first parameter is the title of the input file:

```
LandisData "Output Biomass"
```

### 2.2 Timestep

The second parameter is the time step in years. For example:

```
Timestep 15
```

### 2.3 Species List

First is an optional species list of the desired species from which to create maps. There is a List parameter, Species, followed by a list of one to many species. Alternatively, the keyword **all** can be used to indicate biomass should be output for every species. If **all** is indicated, do not list any species. For example:

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

### 2.4 Aboveground Live Biomass Map Names

The next parameter, MapNames, describes where output maps are placed and their format. The first portion 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., `.gis`) should also be included. For example:

```
MapNames output/biomass/bio-{species}-{timestep}.gis
```

## 2.5 Dead Pool List

Next is a list of the desired dead pools from which to create maps. There is a List parameter, `DeadPools`, followed by a list. There are only three options for this list: `woody`, `non-woody`, or `both`. For example:

```
DeadPools woody  
non-woody
```

## 2.6 Dead Biomass Map Names

Finally, a second `MapNames` parameter describes where dead biomass output maps are placed and their format. The first portion lists the directory where the maps should be placed, relative to the location of the scenario text file (e.g., `agemaps/`). The second portion includes two variables for creating file names. `{pool}` will be replaced with the dead pool name. `{timestep}` will be replaced with the output time step. Other characters can be inserted as desired. A meaningful file extension (e.g., `.gis`) should also be included. For example:

```
MapNames output/biomass/{pool}-{timestep}.gis
```