

## Manuscript:

Leininger<sup>1</sup>, T.D., Gardiner<sup>1</sup>, E.S., Lockhart<sup>2</sup>, B.R., Schiff<sup>1</sup>, N.M., Wilson<sup>1</sup>, A.D., Devall<sup>2</sup>, M.S., Hamel<sup>2</sup>, P.B., Connor<sup>2</sup>, K.F. Intensity and mode of *Lindera melissifolia* reproduction are affected by flooding and light availability<sup>3</sup>. Ecology and Evolution

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<sup>3</sup>The manuscript was written and prepared by U.S. Government employees on official time, and is therefore in the public domain. The findings and conclusions in this publication are those of the authors and should not be construed to represent any official USDA or U.S. Government determination or policy.

## Summary:

A water impoundment facility was used to control the duration of soil flooding (0, 45, or 90 days) and shade houses were used to control light availability (high = 72 %, intermediate = 33 %, or low = 2 % of ambient light) received by *L. melissifolia* established on native soil of the MAV. A completely randomized, split-plot design was used to evaluate the effects of soil flooding and light availability on *L. melissifolia* reproductive intensity and mode. Analyses were conducted on plot means using PROC GLIMMIX with an adjustment in the error term for the whole-plot factor (SAS 9.4, SAS Institute, Inc., Cary, North Carolina, USA). PROC UNIVARIATE was used to test data normality for each response variable, and residual errors were normalized with Box-Cox, natural log, or square root transformations where appropriate prior to the PROC GLIMMIX analyses. Significance was accepted at  $\alpha = 0.05$ , and we used the least significant difference (LSD) test to separate significant treatment effect means. When a soil flooding and light availability interaction was significant, separation of soil flooding level means was conducted by light availability level, and separation of light availability level means was conducted by soil flooding level. Analysis code and data files are provided for all variables presented in Tables and Figures of the manuscript.

## Funding and permits:

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## **Files:**

### **1a\_Table\_2\_inflorescence\_buds\_code.pdf**

### **1b\_Table\_2\_inflorescence\_buds\_data.csv**

These two files are the program code and data for analysis of the variable “Inflorescence buds” presented in Table 2. Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “BUDS” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “BUDS” refers to the average number of inflorescence buds (number) on a plant in a plot, and is a number.

### **2a\_Table\_2\_inflorescence\_buds\_per\_stem\_length\_code.pdf**

### **2b\_Table\_2\_inflorescence\_buds\_per\_stem\_length\_data.csv**

These two files are the program code and data for analysis of the variable “Buds per length” presented in Table 2. Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “BUDS\_LENGTH” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “BUDS\_LENGTH” refers to average number of inflorescence buds per unit of stem length (number per centimeter) for plants in a plot, and is a number.

### **3a\_Table\_3\_drupes\_per\_plant\_code.pdf**

### **3b\_Table\_3\_drupes\_per\_plant\_data.csv**

These two files are the program code and data for analysis of the variable “Drupes” presented in Table 3. Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “DRUPES” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “DRUPES” refers to average number of drupes (number) on a plant in a plot, and is a number.

### **4a\_Table\_3\_ramets\_per\_plant\_code.pdf**

### **4b\_Table\_3\_ramets\_per\_plant\_data.csv**

These two files are the program code and data for analysis of the variable “Ramets” presented in Table 3. Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “RAMETS” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “RAMETS” refers to average number of ramets (number) on a plant in a plot, and is a number.

#### **5a\_Table\_4\_drupe\_mass\_per\_plant\_code.pdf**

#### **5b\_Table\_4\_drupe\_mass\_per\_plant\_data.csv**

These two files are the program code and data for analysis of the variable “Drupe” presented in Table 4. Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “DRUPE\_MASS” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “DRUPE\_MASS” refers to average drupe dry mass (grams) on a plant in a plot, and is a number.

#### **6a\_Table\_4\_ramet\_mass\_per\_plant\_code.pdf**

#### **6b\_Table\_4\_ramet\_mass\_per\_plant\_data.csv**

These two files are the program code and data for analysis of the variable “Ramets” presented in Table 4. Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “RAMET\_MASS” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “RAMET\_MASS” refers to average ramet dry mass (grams) on a plant in a plot, and is a number.

#### **7a\_Figure\_2\_fruit\_set\_per\_plant\_code.pdf**

#### **7b\_Figure\_2\_fruit\_set\_per\_plant\_data.csv**

These two files are the program code and data for analysis of the variable “Fruit set” presented in Figure 2(A and B). Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “FRUIT\_SET” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “FRUIT\_SET” refers to average fruit set (percent) for each plant in a plot, and is a number.

#### **8a\_Figure\_3\_repro\_intensity\_ratio\_code.pdf**

#### **8b\_Figure\_3\_repro\_intensity\_ratio\_data.csv**

These two files are the program code and data for analysis of the variable “Reproductive intensity ratio” presented in Figure 3(A and B). Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “INT\_RATIO” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “INT\_RATIO” refers to average reproductive intensity ratio (number) for each plant in a plot, and is a number.

#### **9a\_Figure\_4\_repro\_mass\_ratio\_code.pdf**

#### **9b\_Figure\_4\_repro\_mass\_ratio\_data.csv**

These two files are the program code and data for analysis of the variable “Reproductive mass ratio” presented in Figure 4(A and B). Code was written for SAS Version 9.4. Data are arranged in 4 columns and 36 rows of observations. The 4 columns are the variables: “REP” (column 1), “FLOOD” (column 2), “LIGHT” (column 3), and “MASS\_RATIO” (column 4). “REP” refers to experimental replicate of a treatment combination (flood x light), and is a number (1, 2, 3, or 4). “FLOOD” refers to level of soil flooding treatment, and is text (0 days, 45 days, or 90 days). “LIGHT” refers to level of light availability treatment, and is text (72 %, 33 % or 2 %). “MASS\_RATIO” refers to average reproductive mass ratio (grams) for each plant in a plot, and is a number.