**ReadMe for “Temperature responses.R”**

The following ReadMe gives a brief overview of how to use “Temperature responses.R”. ***Please note that running this script is not strictly necessary for the populations in the manuscript as all temperature response parameters already exist in “Temperature response parameters.csv” in the “Model Parameters” folder.***

**Input:** User-defined species name and location for an insect population or all = TRUE

**Output:** Updated “Temperature response parameters.csv” file (if save = TRUE) or print out (if save = FALSE) with the temperature response parameters for either a specified population (if all = FALSE) or all populations (if all = FALSE)

**To run:**

1. Update variable *species* (line 13) and *location* (line 14) with a species name and location name from “Temperature response parameters.csv” (if a new population is added, please add relevant information to a new line in “Temperature response parameters.csv” and then ‘seed’ the parameter columns by adding a rough estimate of each parameter (used for the “start” list in nls in order to estimate parameters via nonlinear regression). Set all = TRUE if the script is to be run for all populations in “Temperature response parameters.csv” or set all = FALSE if the script is to be run just for the specified population.
2. To save parameter fits (over existing values in “Temperature response parameters.csv”), change “save” from FALSE to TRUE in line 18
3. Run the script

**Potential issues:**

* The script only works if the working directory (see line 10) is in the main folder of the downloaded GitHub repo
* The variable *species* (line 13) and *location* (line 14) must exist within “Temperature response parameters.csv” and match the “Population” and “Location” columns exactly
* Some modifications to the “start” list in *nls* functions throughout the script may be needed for new populations not in “Temperature response parameters.csv”

**Script details:**

Lines 5-10 Install required packages and set working directory

Lines 12-18 Have user enter required information

Lines 18-41 Read in, and then find selected population in, “Temperature response parameters.csv”

Lines 43-45 Obtain data for selected population (note: *Apolygus lucorum* is automatically set to its location in “Temperature response data.csv”)

Lines 47-62 Remove columns that do not contain temperature data and set minimum and maximum values for x-axes and reference temperature for *nls* functions below

Lines 46-58 Quantify daily mean temperatures from climate data for historical and future period

Lines 60-71 Fit habitat parameters via *nls* and assess whether climate change parameters should be set to zero in the future (see manuscript)

Lines 73-85 Assign model parameters and end *for* loop

Lines 87-93 Save model parameters (if desired) or print model fits for a specified species