**ReadMe for “Read climate data.R”**

The following ReadMe gives a brief overview of how to use “Read climate data.R”. Please first consult “ReadME download historical climate data.docx” and “ReadME download historical climate data.docx” and confirm that “Historical Tmax <location>.nc”, “Historical Tmin <location>.nc”, “Future Tmax <location>.nc”, “Future Tmin <location>.nc” exist in the “Climate data” folder. ***Please note that running this script is not strictly necessary for the populations in the manuscript as all climate data already exists in the “Climate data” folder of the GitHub repo.***

**Input:** User-defined location for climate data (from “Climate station data.xlsx”)

**Output:** CSV files of historical and future climates, starting with the first day for which there is climate data in “Historical climate data <location>.csv” and day 0 (Jan 1, 2025; see “time” column) in “Future climate data <location>.csv”.

**To run:**

1. Update variable *loc* (line 18) with the location name from “Climate station data.xlsx”
2. To save climate files (over any existing files), change “save” from FALSE to TRUE in line 21
3. To remove climate netCDF data files, change “remove” from FALSE to TRUE in line 24
4. Run the script

**Potential issues:**

* The script only works if the working directory (see line 12) is in the main folder of the downloaded GitHub repo
* The variable *loc* (line 18) must exist within “Climate station data.xlsx” and match the “Location” column exactly
* The NC files for historical and future climates must have been previously downloaded and exist within “Climate data” folder of the downloaded GitHub repo (see “ReadMe download historical climate data.docx” and “ReadMe Python download future climate data.docx”)

**Script details:**

Lines 6-15 Install required packages, set working directory, and read “Climate station data.xlsx”

Lines 17-24 Have user enter required information

Lines 26-35 Find information for selected species in “Climate station data.xlsx”

Lines 37-40 Assign first day for which climate data exists in historical climate

Lines 43-77 Download and process historical climate data

Lines 43-59 Open netCDF files for historical climate data and extract data

Lines 61-69 Enter climate data into R data frame, remove NAs, and save data (if desired)

Lines 71-77 Close and remove (if desired) netCDF files

Lines 80-115 Download and process future climate data

Lines 81-85 Open CSV files for future climate data and extract data

Lines 87-109 Enter climate data into R data frame, remove NAs, and save data (if desired)

Lines 111-115 Close and remove (if desired) netCDF files