Installing deBif

During the computerlabs of the theoretical ecology course we will practice with analyzing several ecological models. These models consist of so-called differential equations. To analyze these models, we will use a R-package called deBif, running in RStudio. For a quick start of the course it is important everyone already installed RStudio and the deBif package before the course. This document provides a short manual to install the required package before the course.

Installing R and RStudio

If R or RStudio are not installed on your device, you first need to install them.

Install the latest distribution of R corresponding to your platform from: https://cran.rstudio.com/.

After installing R, install RStudio through the following link: https://posit.co/download/rstudio-desktop/

Now open RStudio to install the debif package.

Checking your version of R

The debif package requires R version 4.2 or later. Copy and run the following code in RStudio the current version of R installed on your device.

```
version$version.string
```

If the version of R you are running is older than 4.2, install the most recent version through https://cran.rstudio.com/. Afterwards restart RStudio to use the most recent version.

Installing the deBif package

Copy and run the following code in RStudio to install the deBif package. RStudio may prompt to restart R to install or update required packages.

```
install.packages("deBif")
```

In the console, R should report some text stating that the package 'deBif' is successfully unpacked and MF5 sums are checked.

Testing the deBif package

Before using the deBif package, it should be explicitely loaded. Copy and run the following code in RStudio to do so:

```
library(deBif)
```

In the console, the package should prompt a welcome message to the deBif package.

The deBif packages contains an elaborate manual and some examples of biological models. We will load the manual and two models to check that the package is functioning properly.

Copy and run the following code in RStudio to open the package manual in RStudio. It might be useful to save the manual as PDF as preparation for the practicals.

```
deBifHelp()
```

Copy and run the following code to test the phaseplane interface of the deBif package. The code should open a new window containing the title “Phaseplane analysis”, containing several tabs, buttons and graphs.

```
deBifExample("lotka")
```

You always need to close the interface window before you can run other commands in R.

Copy and run the following code to test the bifurcation interface of the deBif package. The code should open a new window containing the title “Bifurcation analysis”, containing several tabs, buttons and graphs.

```
deBifExample("lotkabif")
```

Again you need to close the window before continuing to work in R.

Clearing the environment

The interfaces opened in the previous section save some lists to the R environment. These lists will contain the data needed to recreate the graphs constructed during the model analysis and can be used to save analysis results. Copy and run the following code in RStudio to completely clear your R environment. Note that this also removes data from the environment that was already present before running the comments in this installation guide.

```
rm(list=ls())
```

Need some help?

For a quick start of the practicals it is very important you have RStudio and the deBif package installed before the start of the course. If you run into any questions or problems during the installation, contact one of the course coordinators.

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