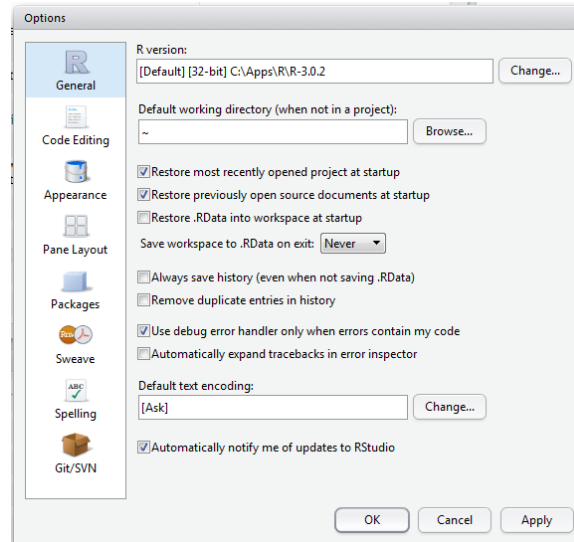
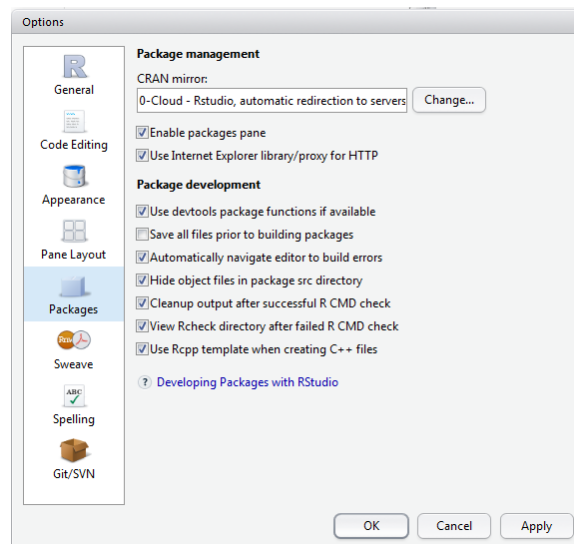


# Preparing RStudio

1. Open RStudio.
2. Select the “Tools” menu and then the “Global Options” submenu. In the ensuing dialog box select the “General” icon on the left (this should already be selected).

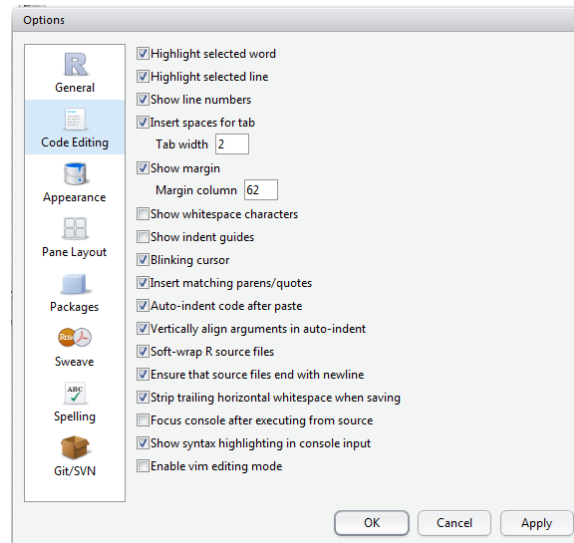


- With the installation instructions from above, the R version should read “[Default][32-bit]” followed by the path to the R program (as shown in the dialog box above). If this does not appear in your installation then select the “Change...” button and then select “Use your machine’s default version of R (32-bit).”<sup>1</sup>
  - You can either leave the other selections at their defaults or change them as you see fit (my preferences are shown in the dialog box above).
3. Select the “Packages” icon in the “options” dialog box opened above. It is useful to set a CRAN mirror in this dialog box. I prefer the “0-Cloud - Rstudio ...” option but you may want to choose a location nearer to you.



<sup>1</sup>Of course, if you installed the 64-bit version of R then you may want to select “use your machine’s default version of R64 (64-bit)”.

4. Select the “Code Editing” icon in the “Options” dialog box opened above. I suggest, in addition to the default selections, selecting the “Highlight selected line”, “Show margin”, and “Show syntax highlighting in console input.”

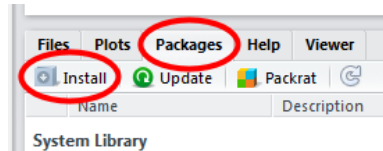


5. No other options need to be set for our purposes. Press “OK.”

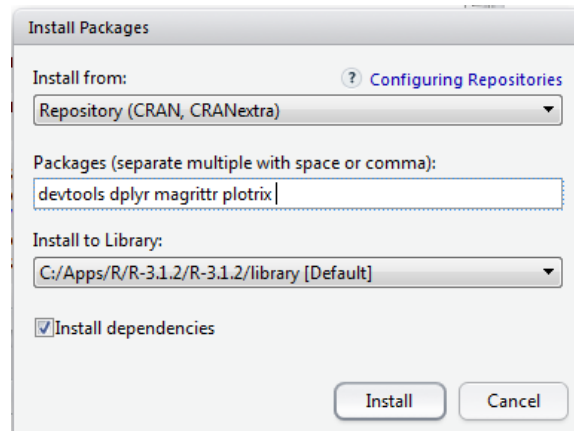
# Installing R Packages from CRAN

R can be extended with external packages. In this workshop, we will use several packages that are distributed via CRAN. These packages are installed following these directions.

1. Open RStudio (if not already open).
2. Select the “Packages” tab in the lower-right pane and then the “Install” button/graphic.



3. Type the name of the packages to be installed in the “Packages (separate multiple with space or comma):” box. Make sure the “Install dependencies” option is checked. For this workshop we will need the *devtools*, *dplyr*, *magrittr*, and *plotrix* packages.

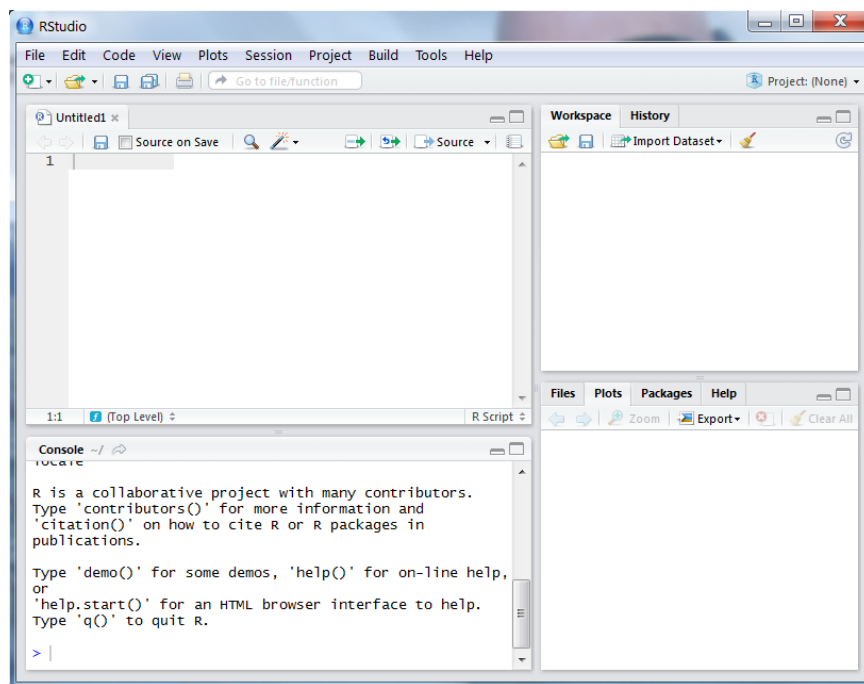


4. Press “Install”. RStudio should now install these packages plus all packages that these depend on. This may take several minutes and you should see several “package ‘xxx’ successfully unpacked and MD5 sums checked” messages.

## Installing FSA and fishWiDNR from GitHub

The **FSA** and **fishWiDNR** packages are special purpose packages that we will use in this workshop have not been officially released on CRAN. These packages are available in GitHub repositories and can be installed following these directions.

1. Open RStudio (if not already open).
2. Open a new R script pane by selecting the “New” icon to the far left on the RStudio toolbar (📄) and choosing “R script” in the ensuing list (alternatively, use the `<CTRL> + <Shift> + N` keystrokes or select the **File.. New.. R Script** menu items). This will open a blank script in the upper-left pane of the RStudio window (below the toolbar, above the “Console” pane).



3. In the R script pane, type the following code exactly: `source("http://www.rforge.net/FSA/InstallFSA.R")`.

```
library(devtools)
install_github(c('droglenc/FSA','droglenc/fishWiDNR'))
```

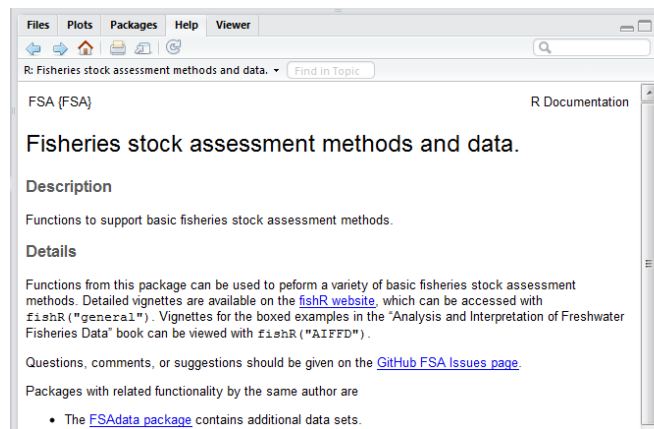
4. In the Console pane, return the cursor to the first line (the one with `library(devtools)`) and press the “Run” button (👉) near the far right of the “R Script” pane toolbar (alternatively press `<CTRL> + <Enter>`). This will “send” the R command to the Console pane. The cursor should move automatically to the second line in the Console. Run this line similarly. RStudio should now download the **FSA** and **FishWiDNR** packages and all associated dependencies. This will take a few minutes with a finish noted by an R prompt (a “greater than”) symbol in the Console pane.
5. Type `library(fishWiDNR)` and `library(FSA)` into the R Script pane. Run each line. The end of your Console pane should look like that below (the version number may be different).

```
Console C:/aaaWork/Web/fishR/Courses/WiDNR_Statewide_2015/
> library(fishwiDNR)
> library(FSA)

#####
## FSA package, version 0.4.40      ##
## by Derek H. Ogle, Northland College ##
##                                ##
## Type ?FSA for documentation.    ##
## Type citation('FSA') for citation ##
## please cite if used in publication. ##
##                                ##
## See fishR.wordpress.com for more ##
## thorough analytical vignettes.   ##
#####

> |
```

6. Type `?FSA` into the R Script pane and run it. A help page that looks like that shown below (the version number may be different) should now appear in the “Help” pane in the lower-right corner of the RStudio window. If this help page appears then the installation is complete and correct. If not, or if you saw an error after typing `library(FSA)`, then see the next section.



## Troubleshooting the Installation of the FSA Package.

The FSA package is not yet an official R package and, thus, the installation is non-standard. My experience suggests that about 10% of installations on Windows machines will result in some sort of error that will cause the FSA package to not be installed properly. The primary cause of this problem is usually that one or more of the official R packages that the FSA package relies on was not installed properly. You can identify this problem by looking closely at the output following the running of the `install_github()` line above. For example, two typical errors are shown below

```
trying URL 'http://streaming.stat.iastate.edu/CRAN/bin/windows/contrib/3.0/gtools_3.2.1.zip'
Warning in install.packages :
  cannot open: HTTP status was '404 Not Found'
Error in download.file(url, destfile, method, mode = "wb", ...) :
  cannot open URL 'http://streaming.stat.iastate.edu/CRAN/bin/windows/contrib/3.0/gtools_3.2.1.zip'
Warning in install.packages :
  download of package 'gtools' failed

Warning: dependency 'multcomp' is not available
trying URL 'http://www.rforge.net/src/contrib/FSA_0.4.3.tar.gz'
Content type 'application/x-gzip' length 643745 bytes (628 Kb)
opened URL
downloaded 628 Kb

ERROR: dependency 'multcomp' is not available for package 'FSA'
```

The first error above indicates that the `gtools` package was not installed and the second shows that the `multcomp` package was not installed. If these errors occurred then one would need to “manually” install these packages as shown in the previous section.

## Questions?

If you have any questions please contact Derek Ogle at [dogle@northland.edu](mailto:dogle@northland.edu). Please make sure to include your operating systems (Windows PC, Mac, Linux/Unix) when contacting me with questions.

A small percentage of users will have trouble automatically installing the FSA package (and the packages that it depends on) to their computer (see the previous section). If you are in this small group then send me a message indicating your operating system and pasting the “error results” from the Console pane (lower-left pane in RStudio) into the e-mail message.