What is R?

"R is a language and environment for statistical computing and graphics. It is a
GNU project which is similar to the S language and environment which was
developed at Bell Laboratories (formerly AT&T, now Lucent Technologies) by John
Chambers and colleagues. R can be considered as a different implementation of S.
There are some important differences, but much code written for S runs unaltered
under R.

R provides a wide variety of statistical (linear and nonlinear modelling,
classical statistical tests, time-series analysis, classification, clustering,
...) and graphical techniques, and is highly extensible. The S language is often
the vehicle of choice for research in statistical methodology, and R provides an
Open Source route to participation in that activity.

One of R's strengths is the ease with which well-designed publication-quality
plots can be produced, including mathematical symbols and formulae where needed.
Great care has been taken over the defaults for the minor design choices in
graphics, but the user retains full control.

R is available as Free Software under the terms of the Free Software
Foundation's GNU General Public License in source code form. It compiles and
runs on a wide variety of UNIX platforms and similar systems (including FreeBSD
and Linux), Windows and MacOS." (from "The R Project for Statistical Computing"
web page)

Downloading R

The R statistical analysis program is available for downloading from the web.
The process for downloading and installing follows.
1. Use a web browser to access the CRAN (Comprehensive R Archive Network)
    web page: http://cran.us.r-project.org/
2. Click on "Windows".
3. Click on "base".
4. Click on "Download R 2.13.0 for Windows" to begin the download. This is
    a 39 MB file so it may take several minutes on a direct network
    connection to download the file.
5. Click on "Save File".
6. In the window that opens, browse to the folder in which you want to save
    the file and click on "Save".
7. Uninstall any previous versions of R and close all programs before
    completing the next step.
8. Install the file by double clicking on it, which will initiate a standard
    Windows installer. Follow the installation instructions. This process
    will insert an entry for R into the Start Menu and create an R icon on
    the Desktop.
9. At this point R is installed. When R is started, a standard Help menu is
    available that contains documentation on R.
10. Additional documentation is on the R web page under Documentation. Under
    Documentation, "Contributed" has user-contributed documentation for
    beginners. You may find one or more of these useful.

Starting R

R may be started from the Start Menu or from the Desktop icon. An important
aspect in using R is to keep different projects on which you are working
separated. We recommend that a separate folder be setup for each project. To

start R for the first time in a project:
1. Place a copy of the Desktop R icon in the project folder.
2. Right click on the R icon in the project folder.
3. Click on the Properties tab.
4. In the "Start in" dialog box, type the directory path for the project folder, e.g., C:\Documents\Project1
5. Start R by clicking on the R icon in the project folder. This will make R automatically reference that folder when accessing and creating data files.

After have done this the first time, simply click on the R icon to begin in that project folder.

Installing and using R library: spsurvey

1. Obtain copies of "spsurvey_2.2.zip" and "sp_0.9-81.zip", which are compressed archive (zip) files containing the spsurvey and sp libraries, respectively. These file may be obtained from the Aquatic Resources Monitoring web pages or from the CRAN web page. Note that the sp library includes functions that are required by the spsurvey library.
2. Start R.
3. Under the "packages" menu, select "Install package from local zip file"
4. Browse to find "spsurvey_2.2.zip" and select it. Click on "Open".
5. R unzips the file and installs the package. The package is installed in a directory called "spsurvey", under the "library" subdirectory in the R software folder. This library subdirectory contains all other installed packages in the same structure.
6. Repeat steps (3) and (4) using the "sp_0.9-81.zip" file.
7. Installation of the packages only needs to be done once.
8. Each time R is started in a session, you have to separately "load" the spsurvey package in order to access the functions and their help files.
9. To do this, click on "Packages" again and select "Load package". Then select "spsurvey" from the menu and click on "OK". The package is loaded and ready for use.
10. After loading the library, help for using the functions in the library is available through the help command, i.e., enter "help(function name)" at the command line, and through the "Help" menu (click on "Help", click on "R functions (text)...", enter the function name, and click on "OK"). Help for the entire library also is available through the "Help" menu (click on "Help", click on "Html help", click on "Packages", and click on "spsurvey").

Text Editors and R

Using a text editor is recommended for use in conjunction with R. Placing all R commands used in a text file will document how the analysis was completed. If necessary, the text file can be re-executed to duplicate any result or to redo an analysis if data has changed.

Although Notepad is available with Windows, Tinn-R provides enhancements for editing and executing files that contain R code. Tinn-R can be downloaded from http://www.sciviews.org/Tinn-R.