

## ADMB 11.1, Revision 1368 (Version 11.1.1368)

Tests and recommendations by Jon Schnute - November 23, 2013

**Step 1.** I built the ADMB libraries from source, following the instructions formerly at these web sites:

<http://www.admb-project.org/buildbot/documentation/quickstartwindows.html>

<http://rusty.nceas.ucsb.edu:8010/documentation/quickstartwindows.html>

(Both sites have gone offline at the time of writing.) In particular:

- I put the contents of "trunk" from the SVN server into the directory C:\admb;
- I used utilities\get-mingw to install mingw in C:\admb\utilities\mingw;
- I used utilities\make to build the package in C:\admb\build\dist;
- I successfully compiled and ran the "simple" example using the script C:\admb\admb.cmd.

**Step 2.** To test the new library, I copied the contents of C:\admb\build\dist to C:\adist.

I made two modifications to my system path: I added

- C:\adist\bin for ADMB, and
- C:\adist\utilities\mingw\bin for mingw.

Both these additions appear to be necessary for the new library to work.

**Step 3.** I successfully used the script C:\adist\bin\admb.cmd (on the path) to build and run the "simple" example. Output from this test appears below:

```
D:\PBS\Rdevel\DevADMB>admb.cmd simple
```

```
*** Parsing tpl file: simple.tpl
```

```
tpl2cpp simple
```

```
xxglobal.tmp
```

```
xxhtop.tmp
```

```
header.tmp
```

```
xxalloc.tmp
```

```
xxtopm.tmp
```

```
    1 file(s) copied.
```

```
*** Compiling source file: simple.cpp
```

```
g++ -c -O3 -DSAFE_ALL -D__GNUDOS__ -Dlinux -DUSE_LAPLACE -fpermissive
```

```
-I. -I"C:\adist"\include -I"C:\adist"\contrib\include -o simple.obj
```

```
simple.cpp
```

```
*** Linking file: simple.obj
g++ -static -o simple.exe simple.obj
"C:\adist"\contrib\lib\libcontrib.a "C:\adist"\lib\libadmb.a
```

### **Comment: The files**

- C:\admb\admb.cmd from the build process and
- C:\adist\bin\admb.cmd from the final library

**differ significantly from each other, even though they both work. Each one is tailored to detect the appropriate paths. The worked example during the build process uses the first, but a working installation presumably would use the second.**

**Step 4. I next tested the scripts `adcomp.cmd` and `adlink.cmd` in `C:\adist\bin\`, which are on the path. Both scripts failed, as seen in the output below from the "simple" example.**

```
D:\PBS\Rdevel\DevADMB>adcomp.cmd simple
g++ -c -O3 -D__GNUDOS__ -Dlinux -DSAFE_ALL -DUSE_LAPLACE -
fpermissive -I. -I"\
include" -I"\contrib\include" -o simple.obj simple.cpp
simple.cpp:1:21: fatal error: admodel.h: No such file or directory
#include <admodel.h>
```

```
D:\PBS\Rdevel\DevADMB>adlink.cmd simple
g++ -s -static -o .exe "\contrib\lib\libcontrib.a"
"\lib\libadmb.a"
g++: error: \contrib\lib\libcontrib.a: No such file or directory
g++: error: \lib\libadmb.a: No such file or directory
g++: fatal error: no input files
compilation terminated.
```

**Step 5. Because the compiler in step 4 failed to find `<admodel.h>`, I decided to try adding the environmental variable `ADMB_HOME=C:\adist`. This time `adcomp` worked, but `adlink` failed with the **dreaded (to me at least) reference to `WinMain@16`**.**

```
D:\PBS\Rdevel\DevADMB>adcomp.cmd simple
g++ -c -O3 -D__GNUDOS__ -Dlinux -DSAFE_ALL -DUSE_LAPLACE -
fpermissive -I. -I"C:\adist\include" -I"C:\adist\contrib\include" -o
simple.obj simple.cpp
```

```
D:\PBS\Rdevel\DevADMB>adlink.cmd simple
g++ -s -static -o .exe "C:\adist\contrib\lib\libcontrib.a"
"C:\adist\lib\libadmb.a"
```

```
c:/adist/utilities/mingw/bin/../../lib/gcc/mingw32/4.8.1/../../../mingw32/lib/libmingw32.a(main.o): In function `main':
e:\p\giaw\src\pkg\mingwrt-4.0.3-1-mingw32-src\bld/../../mingwrt-4.0.3-1-mingw32-src
/src/libcrt/crt/main.c:91: undefined reference to `WinMain@16'
collect2.exe: error: ld returned 1 exit status
```

**Recommendation 1. Revise the current documentation to explain more completely how to use the library at C:\admb\build\dist. Note that currently the entire mingw tree redundantly appears in the two directories C:\admb\utilities\mingw and C:\admb\build\dist\utilities\mingw. We need a more precise statement of the standards for installing ADMB and a related mingw compiler. In particular, we need a clearer statement of the need for changing the path and setting environmental variables.**

**Recommendation 2. Fix the files adcomp.cmd and adlink.cmd in the bin directory. For users (like me) who have already adopted these for routine use, don't discard them needlessly.**

**Recommendation 3. Discuss changes in the interface from version 10.x to 11.x. I don't recall reading anywhere that the command line options for the script admb have changed. The displays below show help screens from these two versions. Some arguments have been removed, and others added. Such changes should not be made lightly, because users like me build their own tools based on the current software design.**

#### **Help screen from ADMB Version 10.x:**

```
Usage: admb [-d] [-g] [-r] [-s] model
```

```
Build AD Model Builder executable from TPL.
```

```
-d      Create DLL
-g      Insert debugging symbols
-r      Create ADMB-RE
-s      Enforce safe bounds
model  Filename prefix, e.g. simple
```

#### **Help screen from ADMB Version 11.x:**

```
Builds AD Model Builder executable or library.
```

```
Usage: admb [-c] [-d] [-g] [-r] [-f] model [src(s)]
```

-c Build only object file(s) (.obj).  
-d Build a dynamic library (.dll).  
-g Build with debug symbols.  
-r Build Random effects library (ADMB-RE).  
-f Build with Fast optimized mode library (no bounds checking).  
By default, admb script builds with bounds checking.  
model TPL file (ie 'simple.tpl' or the filename 'simple' with  
no .tpl extension)  
src(s) C/C++ Source file(s) containing classe(s), method(s)  
and variable(s) that are used in model.

**Incidentally, the 11.x help screen should be redesigned slightly to fit cleanly into a standard console window with 80-character width.**

**Recommendation 4. Clean up the web site so that it's easy to find the current documentation and not get misled by material that is now out of date.**

**Recommendation 5. Somehow this entire project has gotten more complicated than it used to be. Or so it seems to my septuagenarian mind. The revised command scripts are sometimes very clever, for example, by trying to find the right directories for everything. But perhaps the use of environment variables might be simpler and easier to maintain. So my suggestion is: "Keep it septuagenarian simple."**

I've been less active in recent years. For example, I didn't know anything about .cmd files, as opposed to .bat files, until I conducted this review. (I'm still not sure about the difference, although I know that Microsoft likes to make things unnecessarily complicated.) I've found the web site <http://ss64.com/> (click on "CMD") very useful in that regard. Another choice on this web site gives a handy "bash" reference.

Also, I've changed my system path and other environment variables so many times that I looked for a convenient tool to do this. The "Rapid Environment Editor" (<http://www.rapidee.com/>), although sometimes a bit awkward, has proven the most convenient. At least it allows me to see clearly the current state of my system. If you download it, be careful not to get something unwanted. If you use it, be sure to notice the "Restart as administrator" button.

**Best wishes to all developers and users of ADMB. If you can implement my recommendations, I think ADMB will be better for it.**

**Jon Schnute**