1. Goals
   1. Make it easier to use, now and in the future
   2. Change inputs so users don’t have to ape our database organization
   3. Don’t require any R expertise.
   4. Make room for extensions of NARS protocol, when reasonable.
2. How this was done
   1. Points 3,4,5 are most important
3. These are my questions to you
4. First simple example: nrsaChannelMorphology
   1. One argument: one variable
   2. Boatable and wadeable data are generally separated, as they can have different meanings and calculation requirements
   3. Standardized naming: b/w prefix, camel case, alphabetized.
5. This is what the arguments look like
   1. Unneeded columns are ignored
   2. Different arguments may require different columns
6. Second example, allowing user-specified coding
   1. Data arguments are bare-bones – just SITE and VALUE
   2. Additional arguments allow user to use habitat class codes that are different than ours.
   3. These additional arguments also allow the user to extend the habitat classification, create new metrics and redefine some current metrics.
7. Focused view of additional arguments.
   1. This default argument is for NRSA1314; NRSA0809 wadeable has additional habitat types – submerged and different pool classes
8. Not everything is easy to use. Splitting each value into separate arguments results in LWD mets requiring 50 different arguments.
9. Creating those arguments are easily done with subset()
10. Some subsets are of previously calculated metrics
11. Most functions have just a few arguments, but creating the objects for those arguments can be complicated
12. These complications arise based on how the data are organized.
    1. Boatable depths are in two different PARAMETERs, depending on measurement method
    2. Measurement units is in a separate parameter
    3. Some measurement units were not recorded and required a reasoned guess
    4. Finally, depths were converted to meters.
    5. These more complicated steps allow the user to introduce errors
13. And now for something completely different – option C
    1. This is the software developers choice – it’s simple, clear and does not require lots of duplication on our part
    2. Can streamline calculations where only RBS mets are wanted
    3. Will complicate duplication of EPA standard calculations
    4. Mostly just a wrapper for ddply()
14. This is about 1% of what it looks like to recreate EPA calculations
15. Will still need specialized metrics functions.