



READING SCIENTIFIC ARTICLES: A Guide for Non-Scientists (& Lazy Scientists)

Ecology is a science. As one of my professors used to say, “It’s not rocket science -- it’s far more complicated.” Unfortunately, there’s a big gap between the technical writing that scientists use to share information with other scientists, and what most of us non-scientists (and lazy scientists) are able to decipher. This is unfortunate, because what ecological scientists write for other ecologists is the state of the art of what we know about our earth.

Research articles (aka. ‘hard science’). We won’t be reading research articles, but I wanted to describe this essential part of the scientific literature to provide context for the other kinds of articles we’ll see. Research literature is the foundation of ecological science. Especially from the mid-20th Century on, this literature has become highly standardized and technical, and is difficult to read if you’re not committed to scientific study. For a good overview see ‘A Very Brief Introduction to the Scientific Literature,’ (<https://undergraduatesciencelibrarian.org/a-very-brief-introduction-to-the-scientific-literature>) and thank its author, Bonnie Swoger. Do take a look at the section on peer review – how scientists provide quality control on each other for research that is submitted for publication -- at the bottom of that page.

Review articles. Review articles are articles in which eminent scientists are invited to summarize what the scientific community has learned to date about an ecological topic (or group of related topics). Scientific review articles are peer-reviewed and are published in the same journals as research articles. Authors of review articles must substantiate or attribute sources for everything they say, so these articles have many citations in the text. Review articles aren’t as easy to read as popular science (see below), but they’re generally *much* easier than research articles and are rich sources of information that frequently isn’t found in the popular literature. The review articles on our reading lists were chosen for their readability as well as their content.

Popular science. Popular science articles are not, strictly speaking, part of the scientific literature but are an attempt to summarize and interpret ecological knowledge for general readers. Like review articles, popular science articles are usually written by acknowledged experts writing about their field(s) of expertise. Some of these articles are excellent and we use them whenever we can – there just aren’t enough of them covering the topics we need. Because popular science articles are usually not peer-reviewed, we have to trust that the writer(s) present the material as factually as possible.

TIPS

Here are some tips for getting the most out of review and popular science articles:

- **Language.** Don’t get stuck on unfamiliar words words, or the occasional incomprehensible sentences or paragraphs. Sometimes the glossary will help. If you struggle here and there, rest assured you won’t be the only one! Stay with it, skip over what you have to, and get what you can from the article.
- **Statistics.** Some numbers will be important to us (What is the maximum age for Douglas fir, anyway?), but you’re not expected to read and interpret complex statistics. Skip or skim over parts of articles with lots of statistics.
- **The metric system.** OK, so you don’t have to pay attention to statistics and the like, but there’s one element of scientific writing that is troublesome for us in the U.S. and can’t



be avoided. The global scientific community uses the metric system for all measurements of distance, weight or mass, and volume. That leaves those of us in the only industrialized country in the world that hasn't adopted the metric system at a bit of a disadvantage. There's no way around this. Grin and bear it, and refer frequently to the metric conversions table on the Class Materials webpage (or find your own online). A bit of good news is that measurements of time are the same the world around -- a day is 24 hours, a year is 365 days, and that maximum age of Douglas fir is about 1000 years no matter where you go.

- **Citations.** Citations are necessary for the scientific purpose of the articles but sure can interrupt the flow. Skip over and ignore them. Stick with it! [If you're interested, those citations can lead you to sources of more information.]
- **Ask questions.** If there's something in a paper you don't understand, you're probably not the only one! Bring it up in class or email the coordinator with any and all questions. You'll be doing the whole class a favor!
- **Heed instructions!** Pay attention to instructions that come with the reading list or are given in class. Sometimes you'll only be asked to read part of a paper. We may skip sections because they don't apply to class topics, because a section goes to in-depth for our purposes, or because it's too hard to read. Don't stress when you don't have to!

Embrace the adventure!



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