

On scientific writing

Dean Urban

Fall 2012

Duke
NICHOLAS SCHOOL OF
ENVIRONMENTAL & EARTH ENGINEERING

THE

Writing is translational.

- You know more than your audience does
- Your task: fix that

There are many technical styles.

- Tech writing includes proposals, memos, etc and these vary by discipline
- The workhorse style: IMRaD (Intro, Methods, Results & Discussion) probably, your MP

Technical writing is different.

- Aim: make the complicated seem simple
- Science: “Building on the shoulders of giants”
 - Citations establish context and credibility
- Strive for concise, precise, and compelling

Writing is craft.

- Practice!
- Outline or reverse outline
- Edit mercilessly:
 - Is this the right word?
 - Is this sentence clear?
 - Is this paragraph tight?
 - Does this outline flow?

Problem areas in IMRaD

Scope

- Zoom, zoom:
 - Intro: start broad, establish context
 - Zoom in to the details of your case
 - Zoom out again to underscore broad significance

Flow

- Use an outline
 - One idea per line: each idea follows from the preceding, points to the next
- Use a reverse outline
 - Extract key sentence from each paragraph

Your personal role

- Intro is yours (establish ownership)
- Methods and Results are NOT yours
- Discussion and conclusions are yours

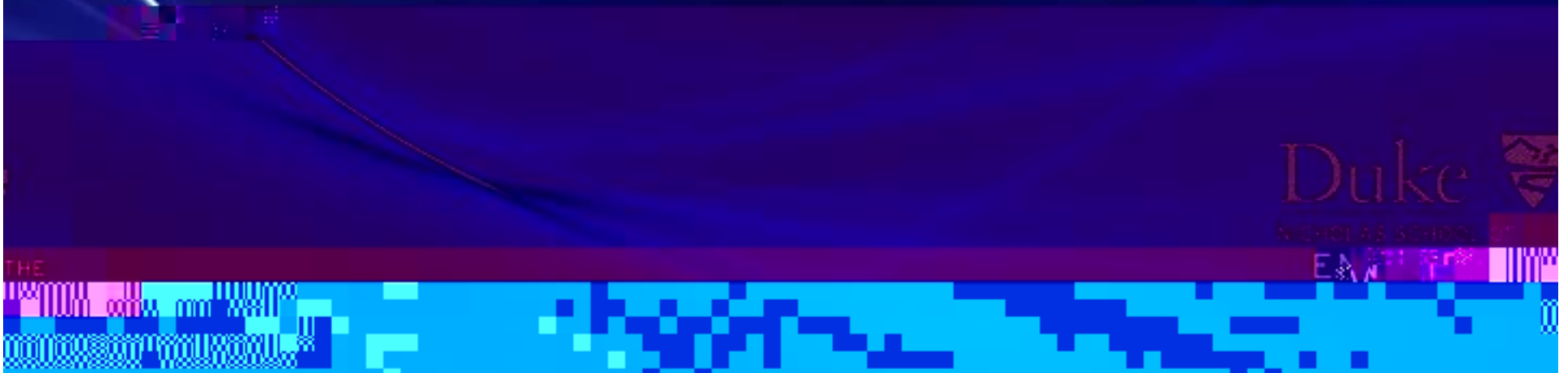
Attribution

- Citations establish:
 - Your own credibility on the subject
 - You know the key players and benchmark papers
 - You understand the context of your own work
 - Guidance to readers who want more info
 - You point to the most useful, pertinent sources

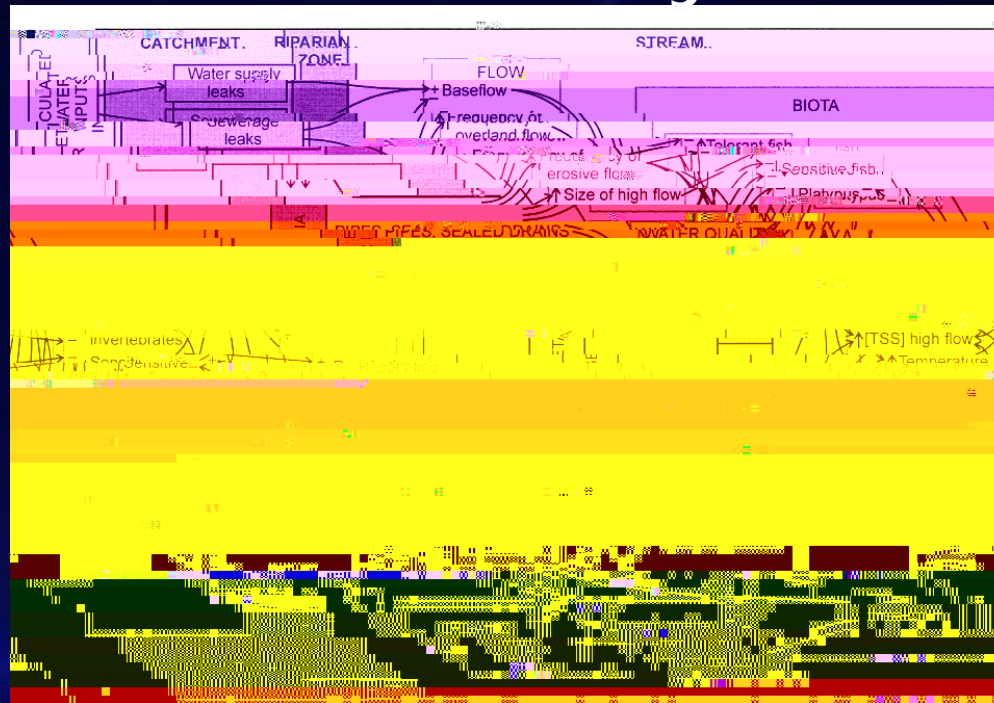
Illustrations

The Results narrative

Figure 1 shows the results of patch size



The urban stream syndrome



Walsh & Meyer 2005

"Urban streams are under connected to their riparian zones and over connected to their catchments."

(Emily Bernhardt)

Scale

“The problem of pattern and scale is the central problem in ecology, unifying population biology and ecosystems science, and marrying basic and applied ecology.” (Simon Levin, 1992)

Making our writing clear, concise, and compelling

Rebecca L. Vidra

Duke
NICHOLAS SCHOOL OF
ENVIRONMENTAL & FORESTRY

THE
Duke University
Nicholas School of
Environmental & Forestry

Communicating with the 3Cs

- Clear
- Concise
- Compelling

First: Identify your audience. Keep your reader in mind.

Then: Figure out what you are writing *for*.

How can we make ideas and arguments accessible to readers?

- Lead them through the document.
 - Every piece of writing has a structure.
 - Use key phrases (guideposts) and formatting.
- Avoid walls of text.
- Make it compelling.

Connecting paragraphs

- The **first sentence** is much more than a topic sentence.
- How will you transition?
 - “Another example of...” exa

Within a paragraph

- Don't expect too much out of a single paragraph.
 - A good rule of thumb: a paragraph should encompass one main idea.
 - Avoid long paragraphs that translate to a **wall of text** in your finished document.

But what about the sentence?

1. Concise sentences need not require yoga.
2. Clear sentences are free of distraction.
3. Verbs don't magically become nouns.
4. Nouns don't look good in strings.
5. Subject and verbs like to be cozy.
6. Keep your commas and semi colons straight.

Clear and Concise:

In an evaluation study, information about the activities, characteristics, and outcomes of a program is systematically collected and scrutinized to determine the impact of a program, demonstrate accountability and success to decision makers, improve program effectiveness, and/or inform decisions about future programming.

Let verbs be verbs!

Instead of:

- requirement
- consideration
- approval
- recommendation
- application
- action

Use these:

- require
- consider
- approve
- recommend
- apply
- act

Eliminate noun strings

- Break up noun strings with prepositions

We are proposing several *transportation demand management strategies* to reduce the number of single occupant vehicles on I 5.

strategies to manage transportation demand...

Keep subjects and verbs close.

- *No habitats associated with listed threatened and endangered species possibly occurring in the project area would be affected by the proposed project.*
- The proposed project would not affect the

Use semi colons correctly.

- Only use semi colons to separate two complete sentences that really need to go together; one of them should be short.
- Semi colons can also be used to separate lists of phrases that are very long; often, commas will suffice.

But what about the sentence?

1. Concise sentences need not require yoga.
2. Clear sentences are free of distraction.
3. Verbs don't magically become nouns.
4. Nouns don't look good in strings.
5. Subject and verbs like to be cozy.
6. Keep your commas and semi colons straight.

To avoid Plagiarism:

- Step 1 understand what it is
 - “Oh, I didn’t know *that* was plagiarism”

This is not an acceptable excuse.

- Step 2 Keep track of your sources
- Step 3 repercussions: Don’t underestimate who is reading your document, or what could happen

Information sources

You are expected to be

Some ideas to keep track of sources

- Color coding text in drafts
 - Cut & pasted material from Christensen (2006)
 - My paraphrasing with citations (Christensen 2006)
- Keep all cut/pasted direct quotes in separate

Modules this semester

<http://www.nicholas.duke.edu/people/students/advising/professiona>
l and EndNote

Citation for NS Students

Margaret Swezey, Duke Writing Studio Tutor

Friday, Sept. 14, 2012 | 1:30 – 3:00 p.m. | A148 LSRC

Learn when and how to cite sources in your academic writing, how to properly quote and paraphrase material, and how to avoid plagiarism. Students will read and discuss writing samples and will get hands on practice. This module is open to all NS students, but international students in particular are encouraged to attend. Max number: 16.

EndNote for NS Professional Students for NS Professional Students

October 5, and offered October 19

1:30 – 3:00 p.m. | 023 Bostock Library

Save research and writing time by learning EndNote, a powerful citation management tool. In this class, you will learn how to automatically enter citations from databases into EndNote and then use EndNote to easily format your citations into bibliographies. Class time will also be spent on how to and when to cite and on ways to avoid plagiarism.

