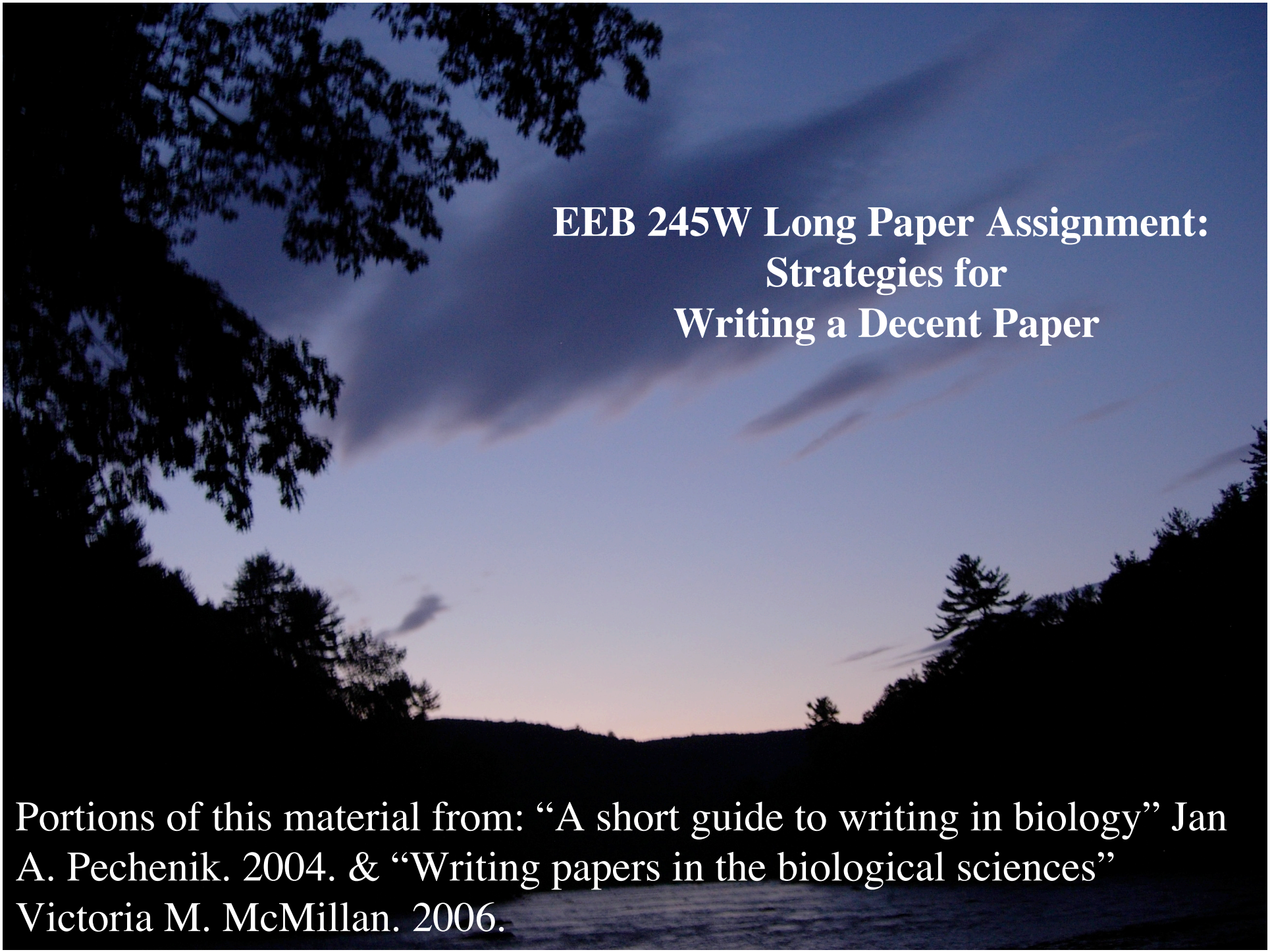


EEB 245W Long Paper Assignment: Strategies for Writing a Decent Paper

Portions of this material from: “A short guide to writing in biology” Jan A. Pechenik. 2004. & “Writing papers in the biological sciences” Victoria M. McMillan. 2006.

Outline

1) Topic choice
2) Organizing/understanding sources
3) Finding connections across sources
or Building a thesis/argument for the paper
4) Conventions of scientific writing

1) Topic Choice

BAD: Sexual selection in copepods

GOOD: A paper on the studies that support the existence of sexual selection in several species of copepods (genetic, behavioral and phylogenetic evidence for this phenomenon). Also explains results of studies in species that do NOT show this behavior and attempts to explain this observation.

1) Topic Choice

A scenario for finding a topic….

A) I’m interested in trout biology……

1) Topic Choice

A scenario for finding a topic….

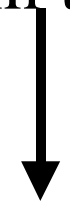
I'm interested in trout biology……

I've found a couple papers on trout populations in the western U.S.-focusing on population genetic structure and impact of pollutants on these populations in Rocky Mountain watersheds.

1) Topic Choice

A scenario for finding a topic….

I'm interested in trout biology……



I've found a couple papers on **trout populations** in the **western U.S.-**focusing on **population genetic structure** and **impact of pollutants** on these populations in Rocky Mountain watersheds.

1) Topic Choice

A scenario for finding a topic….

I'm interested in trout biology……

↓

I've found a couple papers on **trout populations** in the **western U.S.-**focusing on **population genetic structure** and **impact of pollutants** on these populations in Rocky Mountain watersheds.

↓

4 main points-search more and ***expand or narrow*** the topic as necessary

2) Organizing/understanding your sources

After much reading and thinking about sources…..

I've now found eight good PRIMARY LIT papers on trout population genetics including a couple papers on studies like this in other fish species.

2) Organizing/understanding your sources

I've got my eight good PRIMARY LIT
papers on trout population genetics including a couple
papers on studies like this in other fish species.

YOU BETTER BE ABLE TO DIFFERENTIATE PRIMARY VS. SECONDARY LIT. AT THIS POINT IN THE SEMESTER.

2) Organizing/understanding your sources

I've got my eight good PRIMARY LIT papers on trout population genetics include. a couple papers on other fish species.

Read each paper
at least two times (use reading guide!)

2) Organizing/understanding your sources

I've got my eight good PRIMARY LIT papers on trout population genetics, include. a couple papers on other fish species.

Read each paper
at least two times (use reading guide!)

Fill out summary sheet for each

Read review papers, book chapter, glossaries of terms
to help with difficult concepts

3) Finding connections/thesis formulation

- "Comparison of perspectives" or "Compare/Contrast" approach is a useful way to go

- DO NOT MERELY SUMMARIZE EACH STUDY and then stop writing.

- Inform + Evaluate + Interpret

3) Finding connections/thesis formulation

Formulating a thesis statement:

E.g. Trout populations in several Rocky Mt. watersheds show evidence of a decrease in genetic variability as an effect of exposure to pollutants.

3) Finding connections/thesis formulation

Five studies = decreased heterozygosity
Two show no significant change
One has ambiguous results

The results of a suite of recent studies on several organisms supports the contention that ***pollutant stress results in changes in the genetic structure of natural populations.***

I will really impress my W instructor if I find supporting evidence in other groups, with other methods, etc……

3) Finding connections/thesis formulation

Sample Table of Contents for a Long Paper for 245W

The Adaptive Significance of Alarm Calls in Mammals

(Hint: Use subheadings to organize yourself!)

EEB 245W: Example Thesis Statements for Long Paper Assignment

1) Topic: Understanding the Latitudinal Species Richness Gradient

Thesis Statement:
"Divergence in species richness is attributed to a combination of seven explanations. Together these hypotheses provide the most thorough and complete explanation to the existenece of a richness gradient for all species. The strongest explanations are……"

2) Topic: Adaptive Significance of Alarm Calls in Animals in Mammals

Thesis Statement:
"Alarm calls in many mammals serve as critical communication with strong adaptive value. Behavioral, phylogenetic and genetic data from a number of studies supports the idea that these behaviors have evolved in several different mammal groups."

4) Conventions in Scientific Writing

Understand passive vs. active voice:

Lizards were collected from three different sites. *PASSIVE*

O'Donnell et al. (2005) collected lizards from three different sites. *ACTIVE*

Understand your audience:

YOUR AUDIENCE = People with background in the broad area, but lacking specialized knowledge.

4) Conventions in Scientific Writing

Titles

BAD

Studies on Seed Coats
The Bromeliaceae: Research Questions and Controversies
Strategies of Seed Dispersal by Plants Inhabiting Desert Environments

IMPROVED

The Role of Seed Coats in Seed Viability
Physiological Ecology of the Bromeliaceae
Seed Dispersal Strategies in Desert Plants

4) Conventions in Scientific Writing

Do not use informal language/slang

Terms like “I feel” or “Many people think that” are bad choices-
the only evidence that is compelling here is based in scientific in nature.

E.g.:“Simon et al. (2007) contend that their observation of limited genetic diversity across *Ephoron leukon* populations in the northeastern U.S. is a result of bottlenecking events that occurred during glaciation events.”

or

“This scenario is supported by the findings of Smith & Leary (2004), although these authors admit that the variation in hatchling size is not fully explained by multiple paternal inputs.”

4) Conventions in Scientific Writing

Do not use empty language and waste your time

BAD Introductory paragraph

"Many different articles were read about the molecular genetics of human growth hormone……since time is limited, this paper cannot cover all possible aspects of hGH,so a narrower approach has been taken."

4) Conventions in Scientific Writing

REVISED Introductory paragraph

"Human growth hormone (hGH) is a polypeptide hormone, produced from within a gene cluster on chromosome 17, that controls much of the physical growth of the infant and child (Elge, 1997; Brainerd, 1999)…….***I will summarize*** current knowledge of the molecular genetics of hGH ***and suggest ways*** in which continued research may help physicians treat infants with a deficiency in this hormone."

4) Conventions in Scientific Writing

Use **transitions** to link ideas in sentences:

> "During the process of photosynthesis, plants consume carbon dioxide and release oxygen. Both plants and animals depend on oxygen in the utilization of their food. **Thus**, plants provide a constant supply of **this needed substance** to our atmosphere."

More: **Futher, for example, a second point, by contrast, on the other hand, similarly, etc.**

4) Conventions in Scientific Writing

Keep the subject and verb CLOSE!

POOR

"The **results**, being that they were collected over a course of six months of harvest time, **did not** support the occurrence of an annual shift in production of phytotoxins."

REVISED

"The measured phytotoxin **concentrations did not** support an annual shift in the production of these substances over time."