

Name: \_\_\_\_\_ Due Date: \_\_\_\_\_



### Obtaining and using information from the Primary Scientific Literature

In this assignment you will be reintroduced to finding, and more importantly, using, information from the scientific literature. First you will find and read 3 short articles; all of them should be primary sources. To obtain the sources you will need to use at least one of the online services that Marietta College subscribes to that hold databases of journals in the sciences – JSTOR and EJC (Electronic Journal Center). Both of these services provide full-page images of published journals, and the papers you read there should be cited as if you read the paper version.

Any good paper – be it a lab report or some other form of term paper – is trying to make a case. Making that case is done by supplying data (from your own experiments or the works of others) in a logical framework (that's your job). Conventions of writing dictate that you will go about making your case in a series of paragraphs, where each paragraph contributes to the overall argument you are trying to make by dealing with just one topic. Again, the convention is for a paragraph to have a strong topic sentence, combined with other sentences that support the topic. These other sentences may be data taken from the literature (properly cited, of course), your own data (the source of which is described in your procedures or methods section), or logic that ties them all together (taken from your (cited) sources or as a result of your own insight).

When taking information from sources it is important that you do several things. First, you must cite the source so your reader can go to the source to learn more (or to check up on you). Second, you must provide a literature cited section with the full reference so the reader can find your sources. And third, you must present the information in wording and sequence in a way that is your own. You've probably had some experience doing the first 2 in lab reports and other papers already; in this assignment I expect you to do all that competently and to be able to focus on developing that third skill, which involves learning how to paraphrase properly.

Students usually make several mistakes in citing sources:

1. Not citing them! Anything you get from another source should be cited. If you consulted a source and found the data or reasoning there, then you should acknowledge that in your paper. The exception is "common knowledge", but it is better to be safe than sorry. When in doubt, cite the source. When you are writing, insert the citations in the first draft; don't go back later and insert them – it is almost certain you will overlook one or more.

2. Using the wrong format: At Marietta College, in the Biology and Environmental Science Department, we ask that you use a modified citation system which includes the author(s) name(s), the year, and the page number (the last is not normally included in text citations). Further details can be found in your 105 or 106 lab manual or online at: <http://www.marietta.edu/~biol/library/citation.html>
3. Missing references (or misformatted references) in the literature cited section. Again, as you write, each time you use a new source stop and insert the reference. Alternately, prepare a list of all the papers you will use and add it to the paper before writing. When you are finished, search through your text for parentheses and make sure each citation is included in the literature cited. Also go through the literature cited and make sure all the sources are actually used. The proper format for the literature cited can be found in the link above – or on one of the pages it links to, including the sample lab report.
4. Now, all 3 of the above “problems” are no sweat for people who follow directions and check their work. The next problem, not paraphrasing properly, is a bit tougher and is in fact the main emphasis of this assignment. In science, it is rare for us to use quotes when we take information from a source. Rarely are the exact words crucial to our arguments (unlike literature, philosophy, political science, etc. where the exact words are often at the crux of the argument). Instead, we convey the meaning of the other author by paraphrasing. Paraphrasing does not mean changing a word or two here and there! Paraphrasing means putting something entirely in your own words in a way that advances your argument. Here is an example:

Field data gathered at the Tippecanoe River in Indiana (U.S.A) from 1983 to 1989 showed *Stenacron interpunctatum* to prefer microhabitats with slower currents and *Rhithrogena pellucida* to prefer microhabitats with faster currents. *Stenacron interpunctatum* and *R. pellucida* use their flattened body shapes to utilize quite different food sources. A flattened body gives *S. interpunctatum* access to crevices where it feeds on detritus (Woodsdalek 1912, Lamp and Britt 1981, McShaffrey and McCafferty 1986). *Stenacron interpunctatum* feeds on detritus using its labial and maxillary palps in three different feeding cycles (McShaffrey and McCafferty 1986); in two of these cycles it feeds directly on detrital deposits or detritus loosely attached to the substrate, and in the third it filters detritus suspended in the water. Figure 2 illustrates some of the key structures involved in food uptake. A view of a heptageniid in feeding position is shown in Figure 2a. In *S. interpunctatum*, the labial palps are responsible for most feeding, and Figure 2b shows a "diatom's eye" view of the labial palp in feeding position; in a living organism the lower surface of the palp would be in contact with the substrate. The setae used to brush material up from the substrate are indicated as BS in Figure 2b, and are detailed in Figure 2c; those responsible for capturing the loosened detritus are designated as FS in Figure 2b, and are shown in Figures 2d and 2e. Food material retained on these setae is removed by the palmate setae on the apex of the galealacinia (Fig. 2f). Food material captured by bipectinate setae on the maxillary palps are removed by the denticles of the mandibles (Fig. 2g).<sup>1</sup>

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<sup>1</sup>McShaffrey, D. 1992. Comparative functional morphology of larval *Stenacron interpunctatum* and *Rhithrogena pellucida* (Ephemeroptera: Heptageniidae) and *Ephemerella needhami* (Ephemeroptera: Ephemerellidae) with applications in mayfly taxonomy and ecology. **Proceedings of the VII International Conference on Ephemeroptera.**

Here is **good** paraphrase of some of the material from that paragraph:

**It is known that mayflies, even those in the same family, may exploit different microhabitats in streams (topic sentence). McShaffrey (1992, 337) reported that two heptageniid mayflies, *Stenacron interpunctatum* and *Rhithrogena pellucida*, prefer slow and fast currents, respectively. Jae and McCafferty (1996, 492) examined the Potamanthidae and found similar results.**

A poor paraphrase would be:

It is known that mayflies, even those in the same family, may exploit different microhabitats in streams (topic sentence). McShaffrey (1992, 337) used data gathered in the field from 1983 to 1989 to show that *Stenacron interpunctatum* preferred microhabitats with slower currents and *Rhithrogena pellucida* preferred microhabitats with faster currents. Jae and McCafferty (1996, 492) examined the Potamanthidae and found similar results.

(Note: in both cases it is the underlined material that is derived from the earlier paragraph – the last sentence is just an example of how the paragraph would continue with material from another source.)

In the second case, the wording is changed a good bit but the logic and organization of the original statement still comes through. Put the wording in your own words! Make it support your topic, and prune out unneeded details (such as the work being done in Indiana, when it was done, etc.) Note that one crucial detail was added, the fact that both these mayflies are in the same family (which is the point the topic sentence is trying to make).

5. Paraphrasing the wrong paper! In primary and secondary articles, much of the information presented may be taken from other sources. This is particularly true of the introduction and discussion sections. Whenever you want to cite a fact in a paper you must go to the original source, not someone else citing that source. There are two reasons for this. First, the secondary source may be misinterpreting the original source (and you would be perpetuating an error). Second, you should give credit to the person who came up with the idea originally. This sentence was in the example above: “A flattened body gives *S. interpunctatum* access to crevices where it feeds on detritus (Wodsedalek 1912, Lamp and Britt 1981, McShaffrey and McCafferty 1986).” Suppose it was important to your paper to demonstrate that this mayfly, *Stenacron interpunctatum*, was a detritivore. If you found the McShaffrey 1992 paper (quoted here) you might think you hit the jackpot and write “Clearly *S. interpunctatum* is a detritivore (McShaffrey, 1992, 337).” McShaffrey said no such thing (at least in that paper). He was getting evidence from 3 other papers, one of which was written in

1912. You need to go to those sources where the original research is presented – complete with methods – and if they check out, cite one or more of them (ideally you should cite every paper where ORIGINAL research was done on a topic, or where an ORIGINAL conclusion was made). If you can't find the paper, at **least** say "(Woodsedalek 1912 as cited in McShaffrey, 1992, 337). You can get away with this (to some extent) in college, but probably not at the graduate level unless the original paper is very hard to find.

6. Taking material from the abstract. Actually, this is OK to some extent if you are taking information from the abstract that accompanies the paper (as opposed to the abstract in *Biosis Previews* or other such sources which were NOT written by the author(s) of the paper). Note that if you look at only the online abstract you will not be able to place a page number on the citation. Use the abstract, certainly, but as an overview of the paper and not the source of data. Be sure to locate the information in the paper that you need to cite. You may not have to read the entire paper to find the information you want to cite, but certainly read enough to make sure that the information is original to the authors you are citing. For this assignment and others, your instructor may actually read the paper you are citing and look for the information on the page you provided to be sure you are using the source correctly and interpreting the data properly – so DON'T rely on the information in the abstract for this assignment.

Please note that some of the above "mistakes" can be take as plagiarism and that, in turn can have dire consequences, including expulsion. As an instructor, I can't always tell the difference between an innocent mistake (or carelessness or sloppiness) and a deliberate attempt to mislead. So please be careful and do a good job! Again, this exercise is designed to help you practice these skills so you don't have problems in other courses.

That's the background. Here's what you need to do:

**Step 1:** Find and **read** the articles:

You are looking for at least 3 articles. I'll get you started with one; you need to find at least 2 others. First, Go to the Dawes Library site:

<http://www.marietta.edu/~library/>

Choose the OhioLINK tab and select **Research Databases**.

From the new web page, click on the letter **B** to select the databases starting with B. This will take you to a list; select **Biological Abstracts / BIOSIS Previews**.

Click on the "More search boxes" link to bring up additional boxes.

To find the first article, type "**dragonfly**" into the first box and specify "article/book titles" in the drop-down box below it. Type "**Buskirk**" into the next box and select "author names" in its drop-down. click **SUBMIT SEARCH**.

You are looking for this article:

Van Buskirk J, Aschwanden J, Buckelmüller I, Reolon S, Rüttiman S. Bold Tail Coloration Protects Tadpoles from Dragonfly Strikes *Copeia*, 2004(3): 599–602.

Identify it and click on the “**Find a Copy**” link; then the “**View full text of this article in the EJC**” link on the page that pops up. Read the article. Print out a copy.

You will need *at least 2* more PRIMARY articles. See step 2 for the topic sentence you will be developing to get an idea of what type of article(s) you will need. Locate a copy – online or in print – and read it. Make sure you have a printed copy to turn in with your assignment.

**Step 2:** With the papers in hand, pretend you are writing a paper with the following topic sentences in each of 3 different paragraphs:

1. It seems paradoxical, but some prey species will display bright colors that actually attract the attention of predators.
2. In some cases, the bright colors may cause the predator to strike at a less important part of the prey’s body.
3. Write your own topic sentence that develops another aspect of statement 1.

Develop each of these sentences into a complete paragraph of several sentences using the papers you have located (you **MUST** use the dragonfly/tadpole article). Develop the topic, backing it up with correctly cited information from the papers.

### Step 3:

Add a Literature Cited section listing the papers in the correct order and with the correct reference format. Please note that the references included in this assignment may or may NOT be correctly formatted. Again, see:

<http://www.marietta.edu/~biol/library/citation.html>

Or, look at the links on that page for the correct format for your literature cited section.

You do NOT need to turn in these instructions with the assignment. Just type your 3 paragraphs and add the literature cited section (which does not need to be on a separate sheet. You can simply head your assignment with your name, the assignment, the class, the days the class meets, the date and your instructors name. Skip a few lines and go to it. Your paragraphs should be double-spaced.

1. Assuming your paragraphs run to more than one page, staple those pages together.
2. Attach individually stapled copies of the papers you used.
3. Highlight on these papers where you got the information you used in your paragraphs.
4. Use a paper clip or binder clip to assemble the assignment.