Writing Style for Paper

- Correct Header is Single Spaced
- 1 inch margins
- 12 point Times New Roman Style
- Text Body Double-spaced
- Tab Your Paragraphs
- Spell Check
- Correct Grammar
- No Quotes
- Past Tense
- Scientific Names (*Daphnia magna*)
- PROOF-READ
- Just The Facts
- Label Each Section
- DO NOT PLAGIARIZE

Title Page & Abstract

- Correct Header On Top Left is Single Spaced
- Follow the correct format
- First name and school address
- Abstract is one paragraph and should have:
  - Objective of what you are doing
  - Hypothesis (1 sentence)
  - Main points of methods (1 sentence)
  - Results with stats (1 sentence)
  - Discussion on if hypothesis was supported and why or why not (1 or 2 sentences)

  Abstract has no citations

  Use few words (<300)

Introduction

- What biological problem are you trying to test?
- Why do you think this is important?
- Above should include background research with a minimum of 3 peer-reviewed sources cited, should have more.
- Should have a good background of information.
- Cite your sources correctly.
- The last paragraph should include your objective for this project.
- Lastly, you state your hypothesis and null hypothesis.

Methods

- Past tense
- Not a materials list or a bullet of steps, this is a narrative giving just the facts.
- Give proper details (e.g., size, dimensions, number) of animals used, equipment used and how data was observed to be recorded.
- Control is described
- Last section should outline how the data was statistically outlined and what was your statistical confidence based on.
- Figures in this section are not required but can sometimes be helpful.
- Materials should be written so a student from across campus in another Department could read them and then replicate the experience you completed.

Results

- What were you testing?
- What were the results of your experiment?
- Explain and interpret your statistical results.
- Should have at least one figure cited.
  - Use correct format
- Should have at least one table cited.
  - Use correct format
- Cite your figures and tables correctly.

Discussion

- Was your hypothesis excepted or was the null hypothesis excepted? Why or why not?
- What is the significance of these results.
- What do these results mean biologically?
- How do your results compare to other experiments?
- Above should include research with a minimum of 3 peer-reviewed sources cited, should have more.
- What are the implications of your results to the biological world?
- End with a good strong summary statement.

Literature Cited

- Do you have a minimum of 5 peer-reviewed sources?
- Did you include all the sources cited in your paper?
- Are your citations in the correct format?
- Are your internal citations in the correct format?
- Sources are cited by authors last name.
- **Do not use any web sources unless you OK this with the instructor.**
- Do you have the printed first page of the peer-reviewed sources you used?

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Detection of Urine-Based Deer Lures to Mitigate CWD Transmission in Pennsylvania

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ABSTRACT

The Pennsylvania Game Commission contacted Millersville University to perform tests to help combat the transmission and spread of Chronic Wasting Disease (CWD) via better detection of urine-based deer lures. The objective of this study was to use multiple methods and kits designed for detection of urine and blood to determine the best method of detection for urine-based deer lures. Methods included use of kits such as Uritrace®, Nite-Site™ luminol, Hemascein® and Ultra-violet (UV) light. We found that no one technique yielded a positive for all urine-based deer lures. The UV light and Uritrace methods were the most effective and the UV light was the best technique in field-testing. The spread of CWD throughout the Commonwealth has been confirmed and these findings provide a foundation to further develop methods to detect urine-based deer lures to help mitigate the spread of CWD.

Keywords: Chronic Wasting Disease; detection; urine-based lure; white-tailed deer

Chronic Wasting Disease (CWD) is designated as a dangerous transmissible disease believed to be caused by prions, which are transmitted via bodily fluids of white-tailed deer (*Odocoileus virginianus*) (Cullingham et al. 2011). There are no known treatments for CWD infections and the spread of this disease has a potentially severe detrimental impact on wild and captive white-tailed deer (Almberg et al. 2011). White-tailed deer can become reservoirs for other diseases such as bovine tuberculosis (*Mycobacterium bovis*) and brucellosis (*Brucella arbortusz*) that can spread to local livestock (Conner et al. 2008, McShea 2012), also deer serve as an intermediate vector for diseases such as Rocky Mountain spotted fever (*Rickettsia rickettsii*) and Lyme disease (*Borrelia burgdorferi*) which can infect humans (Centers for Disease Control and Prevention 2011).

The first positive test for chronic wasting disease in Pennsylvania was from a captive held whitetail deer in the summer of 2012 (Commonwealth of Pennsylvania 2013). Since the identification of a pen-raised white-tailed deer infected with CWD in Pennsylvania, a Disease Management Area (DMA) was established around the location of the infected deer, in both Adams and York Counties. The Pennsylvania Game Commission established the DMA due to concerns that CWD may spread to wild white-tailed deer herd populations in Pennsylvania (Commonwealth of Pennsylvania 2013).

An executive order given by the Pennsylvania Game Commission established several restrictions within the DMA, one of which was the prohibition of the possession and use of deer urine (Pennsylvania Game Commission 2013). Urine-based deer lures are used by white-tailed deer hunters to attract deer into designated areas for harvest. It is estimated that between 10 and 40% of Pennsylvania hunters have used urine-based deer lures to hunt deer (Pennsylvania Game Commission 2013). At the same time, commercial urine-based deer lures to attract white–tailed deer have become readily available to consumers at common retail sporting goods stores such as Wal-Mart, Bass Pro Shops, and Cabela's. However, urine-

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