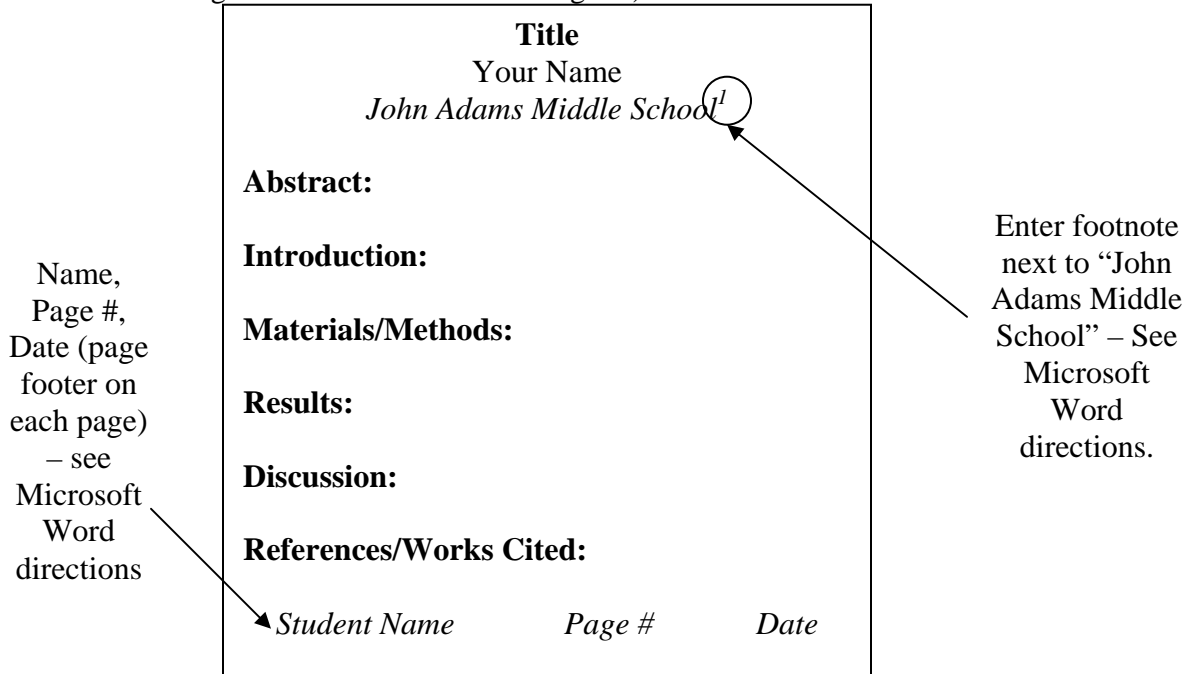


Ocean Globe Research Paper Instructions

Save your file as "LastNameFirstNameOGPaper.doc" and password protect it with your "Student ID#".

FORMAT

- 1) **Font Size** = 12, **Font Type** = Times New Roman, **Margins** = 1" all sides
- 2) See diagram below for format (**note:** yours will not all be on the same page because there will be text under each sections heading– this the order the sections go in):



See timeline for due dates. Make sure you look at the updated calendar online/in classroom. Rough drafts as well as the final draft will be turned in electronically.

WHAT TO WRITE FOR EACH SECTION

Abstract

Very last thing you write (one paragraph; less than 200 words) – summary of your paper.

Abstract Outline (one paragraph):

- a. Restate the purpose, location of study, and general time period data was collected (from introduction and materials/methods sections).
- b. 2-3 sentence brief description of what you found out (from results section). Include rainfall, beach profile, and beach observation results.
- c. 2-3 sentence brief description of your conclusions (from discussion section). Include conclusions about the affects of rainfall on beach slope and beach observations of marine mammals, marine birds, marine plant/animal debris, and non-ocean debris.

Introduction

- 1) Literature Review – Include background information for the topics you are collecting data for.
- 2) Purpose - The purpose of this investigation was to find out if _____.
- 3) Prediction - It was predicted that rainfall and winter storms would _____ because _____.

Introduction Outline:

Paragraph I - Erosion/Deposition

- a. What is a beach?
- b. What causes waves?
- c. What is erosion/deposition?

- d. How do waves cause erosion? How do they affect the shore?
- e. Describe the different factors that affect the amount of erosion and deposition.
 - i. Size of wave and strength of the longshore current.
 - ii. Size of sediment
 - iii. Steepness of slope

Paragraph II – Beach Debris

- a. What kinds of beach debris can be found on the beach in the Santa Monica Basin?
- b. When is it seen the most?
- c. Where does marine plant/animal debris come from?
- d. Where does non-ocean debris come from?
- e. Describe a minimum of 3 ways non-ocean debris impacts the marine/beach ecosystems.

Paragraph III – Marine Birds

- a. What species of marine birds are commonly (ones you see each month) found in the Santa Monica Basin?
- b. What do these species (the common ones only) feed on?
- c. Do these species (the common ones only) have migratory patterns or can they be found in the Santa Monica Basin all year? If they are migratory describe the pattern and where they can be found during various seasons.

Paragraph IV: - Marine Mammals

- a. What species of marine mammals are commonly found in the Santa Monica Basin?
- b. What do these species (the common ones only) feed on?
- c. Do these species (the common ones only) have migratory patterns or can they be found in the Santa Monica Basin all year? If they are migratory describe the pattern and where they can be found during various seasons.

Paragraph V – Purpose and Predictions

- a. Purpose (**1st ½ of Paragraph VI** – 1-2 sentences) - The purpose of this investigation was to find out if _____.
 - b. Prediction (**2nd ½ of Paragraph VI** – 1 prediction for each part of the study) - It was predicted that rainfall and winter storms would _____ because _____.
- i. How did you think rainfall/winter storms would affect the number of marine birds observed? Explain the trends you think we will see between October and April.
 - ii. How did you think rainfall/winter storms would affect the number of marine mammals observed? Explain the trends you think we will see between October and April.
 - iii. How did you think rainfall/winter storms would affect the number of marine plant and animal debris observed? Explain the trends you think we will see between October and April.
 - iv. How did you think rainfall/winter storms would affect the number of non-ocean debris observed? Explain the trends you think we will see between October and April.
 - v. How did you think rainfall/winter storms would affect the slope of the beach? Explain the trends you think we will see between October and April.

Materials and Methods

- 1) Materials – include in procedure.
 - 2) Procedure (see protocol notes)
- Paragraph form...materials are in the procedure. Do NOT make a list of the materials in the paragraph. Simply include them in your procedure.

- Describe how to collect the data at each station. The reader should be able to read your paper and duplicate the study based on what you have written. You don't need to tell the reader that you took a bus to the beach.

Materials/Methods Outline:

Paragraph I:

- 1st sentence - location of study and general time (months/time of day) period data was collected.
- Rest of Paragraph – general description of the layout of the study. Where was the survey area? You may use a diagram (can copy image from www.waterkid.net) if you like. How many stations were there? Where exactly were they located in your survey area?

Paragraph II: Explain how you collected data for station #1 – Atmospheric Data

- Air Temperature – what instrument and unit of measure were used?
- % Cloud Cover – explain how was this measured.
- Maximum Wave Height – explain how this was measured.
- Sea State – explain how this was measured and name the guide you used.
- Wind Speed - what instrument and unit of measure were used?
- Wind Direction - what instruments and unit of measure were used? Make sure you state that wind direction is where the wind is coming from.
- Monthly Rainfall – what instrument and unit of measure were used?

Paragraph III: Explain how you collected data for station #2 – Beach Observations

- Beach Observations of marine mammals, marine plant debris, marine animal debris, non-ocean debris, and marine birds – What did you measure? How did you identify each species (give the full name of the field guides and include them in your references section)?

Paragraph IV: Explain how you collected data for station #3 – Beach Profile and Tide Level Distance.

- Beach Profile – be detailed. Where was the baseline point (Hint: think of the rope we used – its 10 meters long). Describe the beach profiler (2 - 1 meter PVC poles connected by 5 meters of line). Over what distance was measured during each interval? When did you stop? You may use a diagram (can copy image from www.waterkid.net) if you like.
- Tide Level Distance – how was this measured? What units did you use?

Results

- 1) What did you find? FACTS only.
 - 2) Graphs w/headings – put in paper, not at end. Copy and paste from Microsoft Excel file.
- Paragraph giving a detailed explanation of the results in the graph is above each graph. Explain any trends you see. This may include averages. Please do not say that the graph went up, then down, then back up again. This does not explain to the reader what the results are. Be specific and detailed in your answer. Leading questions are as follows (which means that they are there to help you write your paragraph. The questions themselves should NOT be quoted in your paragraphs):
 - Graph
 - Label under graph describing in general what the graph shows.

Results Outline:

Paragraph I – Rainfall Graph

- Which month had the most rainfall? The least? Include amounts.
- Over time, did the amount of rainfall increase over time? Decrease over time? Did it increase over the first few months and then decrease or the opposite? Include total amount it increased or decreased by (add monthly amounts together).
- On average, how much rainfall did the fall months, winter months, and spring months receive?

Paragraph II - Beach Profile Graph:

- a. Which month had the steepest slope? The flattest slope? Calculate the steepest part of the slope for both.
- b. Over time, did the slope get steeper? Flatter? Did it get steeper and then flatten out again or the opposite – flatter then steeper? Be specific. Between which months did it get steeper or flatter?
- c. On average, was the overall slope steep or flat during the fall months, winter months, and spring months?

Paragraphs III-VII - Beach Observation Graphs – one paragraph each (marine birds, marine plant debris, marine animal debris, marine mammals, non-ocean debris):

- a. Which species or type of debris was mostly seen between October and April? Least seen? Include amounts.
- b. Give an average of how many (of each species or type of debris) were seen each month. Don't list the exact number for each month (i.e. in October there were 7, in November there 9...). Calculate the averages.
- c. Were there months where a species or type of debris was seen and then months where that same species or types of debris were absent? If so, describe this trend. Give an average of how many were seen during the period you saw them (i.e. During October and December 10 female pacific mole crabs were seen on average each month. Female pacific mole crabs were not seen at all between January and February. They reappeared in March and an average of 5 was seen in March and April).

Example

Over 7 months of data collection there were Pacific Bottlenose dolphins observed during the months of November and December. An average of 4.5 animals was seen during these months. Marine mammals were not seen during the rest of the study.

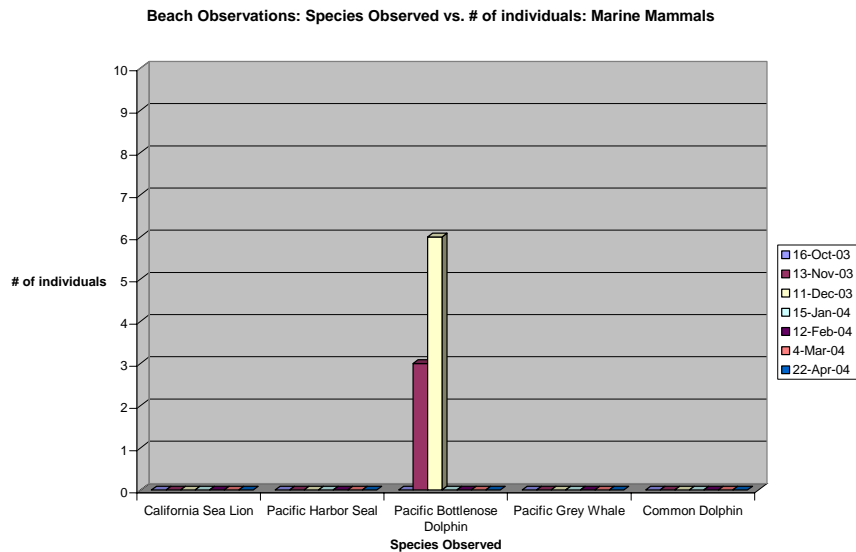


Figure 1: Graph that shows the number of marine mammals that were observed between October 2003 and April 2004.

Discussion

- 1) **Conclusion** (more of an opinion). You don't always have to come up with a conclusion. Your results could leave you to no conclusions especially if there were sources of error that may have changed your results dramatically.
- 2) **Compare/contrast** your conclusion to what you read in your literature packet. Make sure you refer to the source.

Example: The purpose of this investigation was to find out if the changes in weather would affect the steepness of the beach. Also, the purpose was to see if the number of species observed would be affected by the changes in weather. It was predicted that the rainfall would make the profile steeper. During fall, when there was not so much rain, the profile was not as steep. During the rainy season, especially in January, the beach profile was quite steep. This goes to show that rainfall does make the slope of the beach steeper. In Paul D. Komar's book on Beach Process and Sedimentation, it was stated that an increase in wave size and rain during the stormy season would affect the slope of the beach by making it steeper. This study justifies that statement, proving that rain can affect the profile of the beach.

3) **Sources of error:**

- a. Things that could have changed your data. This does NOT include examples such as problems with the computer making it so you could not turn in your data on time. Describe factors at the beach and/or during the actual data collection that could have made your results different.
- b. Explain how this source of error could have been avoided.

4) **Future research** – Describe different types of research studies (related to this one) that could be done in the future. This should NOT be the same experiment. Explain the purpose and the kind of information (results) that might be found.

Discussion Outline:

Paragraph I: Beach Erosion/Deposition Conclusions

- a. Restate the purpose of the investigation.
- b. Restate your beach profile prediction.
- c. Use your results to explain why/how you think that winter storms/rainfall did or did not affect the slope of the beach.
- d. Compare/contrast your conclusions to what the references about beach erosion. Make sure you refer to the source.

Paragraph II: Marine Birds Conclusions

- a. Restate your beach observation prediction for marine birds.
- b. Use your results to explain why/how you think that storms/rainfall did or did not affect the amount of marine birds observed.
- c. Compare/contrast your conclusions to what the references about marine birds.

Paragraph III: Marine Mammals Conclusions

- a. Restate your beach observation prediction for marine mammals.
- d. Use your results to explain why/how you think that storms/rainfall did or did not affect the amount of marine mammals observed.
- b. Compare/contrast your conclusions to what the references about marine mammals.

Paragraph IV: Marine Plant/Animals/Non-Ocean Debris Conclusions

- a. Restate your beach observation prediction for marine plant/animal debris and non-ocean debris.
- b. Use your results to explain why/how you think that storms/rainfall did or did not affect the amount of marine plant/animal debris and non-ocean debris observed.
- c. Compare/contrast your conclusions to what the references about beach debris.

Paragraph V: Sources of Error

- a. Sources of error that could have changed your data (at least two).
- b. Explanation as to how these sources of error could have been avoided.

Paragraph VI: Future Research

- a. What types of different research studies (related to the information you gathered this year) could you do in the future to help you better understand the data you collected this year? Describe at least 2.

- b. Briefly explain (3-4 sentences for each) the purpose of the each study, how each experiment would be carried out (basic methodology and location), and how you think these research studies will add to the one you did this year.

References

You should have the following references (you will need to put in the proper format – see p. 8 of your SCAB book or http://www.adams.smmusd.org/library/online_bib.htm):

- 1) Beach Erosion/Deposition Information:
 - a. Focus on Earth Science California Edition. Prentice Hall. New Jersey. 2001. p. 366-373.
 - b. Carlson, Diane, McGearry, David, and Plummer, Charles. Physical Geology. 2001. p. 340-345.
 - c. Komar, Paul D. “Beach Profiles and Cross-Shore Sediment Transport”. Beach Processes and Sedimentation. 1998. p. 1, 45, 270-271, 284-287.
- 2) Beach Debris Information:
 - a. <http://www.coastal.ca.gov/publiced/marinedebris.html>
 - b. <http://www.healthebay.org/brc/>
 - c. <http://www.coastal.ca.gov/publiced/marinedebris.html>
- 3) Marine Birds Information:
 - a. Look up the various species in field guide and do a search on <http://google.com>.
 - b. <http://bonita.mbnms.nos.noaa.gov/sitechar/bird2.html#2c>
 - c. <http://bonita.mbnms.nos.noaa.gov/sitechar/bird3.html#3>
 - d. Castro, Peter and Huber, Michael. Marine Biology 3rd Edition. 2000.
 - e. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Aves.html#Aves>
 - f. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Larus.html#Larus>
 - g. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Sterna.html#Sterna>
 - h. <http://www.seaworld.org/animal-info/animal-bytes/animalia/eumetazoa/coelomates/deuterostomes/chordata/craniata/aves/index.htm>
- 4) Marine Mammals Information:
 - a. Look up the various species in field guide and do a search on <http://google.com>.
 - b. Castro, Peter and Huber, Michael. Marine Biology 3rd Edition. 2000.
 - c. Bearzi, Maddalena and Steinmetz, Brigitte. 1999. “Contribution to the Knowledge of Marine Mammals in the Santa Monica Basin, California”. 13th Biennial Conference on the Biology of Marine Mammals.
 - d. Leatherwood, Stephen and Reeves, Randall R. The Sierra Club Handbook of Whales and Dolphins. 1983. p.76-82, 220-225.
 - e. <http://www.seaworld.org/animal-info/animal-bytes/animalia/eumetazoa/coelomates/deuterostomes/chordata/craniata/mammalia/pinnipedia/california-sealion.htm>
 - f. <http://www.seaworld.org/animal-info/animal-bytes/animalia/eumetazoa/coelomates/deuterostomes/chordata/craniata/mammalia/cetacea/bottlenose-dolphin.htm>
 - g. http://animaldiversity.ummz.umich.edu/site/accounts/information/Zalophus_californianus.html
 - h. http://animaldiversity.ummz.umich.edu/site/accounts/information/Tursiops_truncatus.html
 - i. <http://www.seaworld.org/animal-info/animal-bytes/animalia/eumetazoa/coelomates/deuterostomes/chordata/craniata/mammalia/species-list-alpha.htm>
- 5) Field Guides (4 guides)
 - a. Field Guides by Robert Perry, UCLA OceanGLOBE and Malibu High School (you need to be specific).

Scientific Paper Examples

Click on the links below to view the scientific paper examples and view their comments (move mouse over yellow comment boxes).

[Student Ocean Globe Paper - http://waterkid.net/projects/student_paper.pdf](http://waterkid.net/projects/student_paper.pdf)

[Steinmetz Cichlid Behavioral Study Paper - http://waterkid.net/projects/cichlid_paper.pdf](http://waterkid.net/projects/cichlid_paper.pdf)

See timeline for due dates!