

Ocean Globe Scientific Research Paper Outline Worksheet

This worksheet is set up so that the sections are in the order they will appear in your paper, BUT the title and abstract (listed first) should be written last. Use this worksheet as a guide to write the paragraphs of your research paper.

Remember: Use the 3rd person and past tense.

Title (Complete 6th – LAST)

Descriptive Title – reader should be able to tell what the experiment was about based on the title.

Abstract Section (Complete 6th – LAST)

- a. Restate the purpose, location of study, and general time period data was collected (from introduction and materials/methods sections).

The purpose of this investigation was to find out if _____

Location of study = _____

General time period data was collected = _____

- 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 Section (Complete 1st)

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.

Size of wave and strength of the longshore current - _____

_____.

Size of sediment - _____

_____.

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 the beach debris seen the most? _____

_____.

c. Where does marine plant/animal debris come from? _____

_____.

d. Where does the non-ocean debris come from? _____

_____.

e. Describe a minimum of 3 ways non-ocean debris impacts the marine/beach ecosystems.

Impact #1: _____
_____.

Impact #2: _____
_____.

Impact #3: _____
_____.

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 (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 V – Purpose and Predictions

a. Purpose (**1st ½ of Paragraph VI** – 1-2 sentences) - The purpose of this investigation was to find out if rainfall/winter storms affect _____

b. Prediction (**2nd ½ of Paragraph VI**) -

Marine Birds – It was predicted that the rainfall/winter storms would cause a _____ in the number of marine birds seen during the winter months because _____

It was also predicted that _____ marine birds would be seen in the fall months and _____ marine birds would be seen in the spring months.

Marine Mammals – It was predicted that the rainfall/winter storms would cause a _____ in the number of marine mammals seen during the winter months because _____

It was also predicted that _____ marine mammals would be seen in the fall months and _____ marine mammals would be seen in the spring months.

Marine Plant/Animal Debris – It was predicted that the rainfall/winter storms would cause a _____ in the amount of marine plant/animal debris seen during the winter months because _____

It was also predicted that _____ marine plant/animal debris would be seen in the fall months and _____ marine plant/animal debris would be seen in the spring months.

Non-Ocean Debris – It was predicted that the rainfall/winter storms would cause a _____ in the amount of non-ocean debris seen during the winter months because _____

It was also predicted that _____ non-ocean debris would be seen in the fall months and _____ non-ocean debris would be seen in the spring months.

Beach Erosion/Deposition – It was predicted that the rainfall/winter storms would cause the slope of the beach

to get _____ because _____

It was also predicted that the beach slope would be _____ during the fall months and _____ during the spring months.

Materials/Methods Section Outline Worksheet (Complete 3rd)

Paragraph I - General Information

- a. Location of study = _____
- b. General time period data was collected (months; time of day) = _____
- c. General description of the layout of the study. Where was the survey area? _____
How many stations were there? _____ Where exactly were those stations located in the survey area? _____

**** You may use a diagram (available on www.waterkid.net). Make sure you site the source correctly in the paper and in the references section.**

Paragraph II – Atmospheric Data Collection

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

Paragraph III – Beach Observation Data Collection

- a. 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 – Beach Profile and Tide Level Distance Data Collection

a. 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 (available on www.waterkid.net). Make sure you site the source correctly in the paper and in the references section.**

Results Section Outline Worksheet (Complete 4th)

Paragraph I – Rainfall Graph

a. Which month had the most rainfall? _____ How much? _____ The least? _____ How much? _____
b. Describe the rainfall trend. 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 or stay the same each month? Include total amount it increased or decreased by (add monthly amounts together). _____

_____.

c. On average, how much rainfall did the fall months receive? _____ Winter months? _____ Spring months? _____

**** Paste graph after this paragraph!**

Paragraph II – Beach Profile Graph

a. Which month had the steepest slope? _____ The flattest slope? _____ Calculate the slope for both. Steepest slope calculation = _____ Flattest slope calculation = _____
b. Describe the beach slope trend. 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? _____
Spring months? _____

**** Paste graph after this paragraph!**

Paragraph III – Marine Birds Graph

a. Which species was mostly seen between October and April? _____ Species least seen? _____
b. Calculate the average number of individuals seen per month for each species. _____

_____.

c. Were there months where a species was seen and then months where that same species 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). _____

**** Paste graph after this paragraph!**

Paragraph IV – Marine Mammals Graph

- a. Which species was mostly seen between October and April? _____ Species least seen? _____
- b. Calculate the average number of individuals seen per month for each species. _____

c. Were there months where a species was seen and then months where that same species 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). _____

**** Paste graph after this paragraph!**

Paragraph V – Marine Plant Debris Graph

- a. Which type of debris was mostly seen between October and April? _____ Debris least seen? _____
- b. Calculate the average number of individuals seen per month for each type of debris. _____

c. Were there months where a type of debris was seen and then months where that same type 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). _____

**** Paste graph after this paragraph!**

Paragraph VI – Marine Animal Debris Graph

- a. Which type of debris was mostly seen between October and April? _____ Debris least seen? _____
- b. Calculate the average number of individuals seen per month for each type of debris. _____

- c. Were there months where a type of debris was seen and then months where that same type 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). _____

**** Paste graph after this paragraph!**

Paragraph VII – Non-Ocean Debris Graph

- a. Which type of debris was mostly seen between October and April? _____ Debris least seen? _____
- b. Calculate the average number of individuals seen per month for each type of debris. _____

- c. Were there months where a type of debris was seen and then months where that same type 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). _____

**** Paste graph after this paragraph!**

Discussion Section Outline Worksheet (Complete 5th)

Paragraph I: Beach Erosion/Deposition Conclusions

- a. Restate the purpose of the investigation. The purpose of this investigation was to find out if rainfall/winter storms affect _____
- _____
- b. Restate your prediction. It was predicted that the rainfall/winter storms would cause the slope of the beach to get _____ because _____
- _____
- It was also predicted that the beach slope would be _____ during the fall months and _____ during the spring months.
- a. Use your results to explain why/how you think that winter storms/rainfall did or did not affect the slope of the beach. _____
- _____
- _____
- _____
- _____
- c. 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 prediction. It was predicted that the rainfall/winter storms would cause a _____ in the number of marine birds seen during the winter months because _____
- _____
- It was also predicted that _____ marine birds would be seen in the fall months and _____ marine birds would be seen in the spring months.
- b. Use your results to explain why/how you think that storms/rainfall did or did not affect the amount of marine birds observed. _____
- _____
- _____
- _____
- b. Compare/contrast your conclusions to what the references about marine birds. Make sure you refer to the source. _____
- _____
- _____
- _____

Paragraph III: Marine Mammals Conclusions

- a. Restate your prediction. It was predicted that the rainfall/winter storms would cause a _____ in the number of marine mammals seen during the winter months because _____.

It was also predicted that _____ marine mammals would be seen in the fall months and _____ marine mammals would be seen in the spring months.

- c. Use your results to explain why/how you think that storms/rainfall did or did not affect the amount of marine mammals observed. _____

- d. Compare/contrast your conclusions to what the references about marine mammals. Make sure you refer to the source. _____

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

- a. Restate your prediction. It was predicted that the rainfall/winter storms would cause a _____ in the amount of marine plant/animal debris seen during the winter months because _____.

It was also predicted that _____ marine plant/animal debris would be seen in the fall months and _____ marine plant/animal debris would be seen in the spring months. It was predicted that the rainfall/winter storms would cause a _____ in the amount of non-ocean debris seen during the winter months because _____.

It was also predicted that _____ non-ocean debris would be seen in the fall months and _____ non-ocean debris would be seen in the spring months.

- e. Use your results to explain why/how you think that storms/rainfall did or did not affect the amount of debris observed. _____

- f. Compare/contrast your conclusions to what the references about debris. Make sure you refer to the source. _____

Paragraph V: Sources of Error

- a. Sources of error that could have changed your data (at least two).

Error #1: _____

Explanation of how error #1 could have changed your data: _____

Explanation of how error #1 could have been avoided: _____

Error #2: _____

Explanation of how error #2 could have changed your data: _____

Explanation of how error #2 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. Briefly explain (3-4 sentences for each) the purpose of 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.

Research Study #1: _____

Purpose - _____

Location - _____

Brief Procedure - _____

How It Will Add To Your Project This Year - _____

Research Study #2: _____

Purpose - _____

Location - _____

Brief Procedure - _____

How It Will Add To Your Project This Year - _____

References Section (Complete 1st)

Minimum of 5 sources. You **must** list every source you use!

**** Write sources on separate sheet of paper!**