

Name \_\_\_\_\_

Date \_\_\_\_\_

## Investigating a Hudson Freshwater Tidal Wetland

### Part 1: Study Site Location and Tide Dynamics

1. Describe the location of the study site. Use specific geographic references (both natural and man-made) in your description.

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2. Briefly explain tides and how the lunar cycle affects tides. Include a distinction between spring and neap tides.

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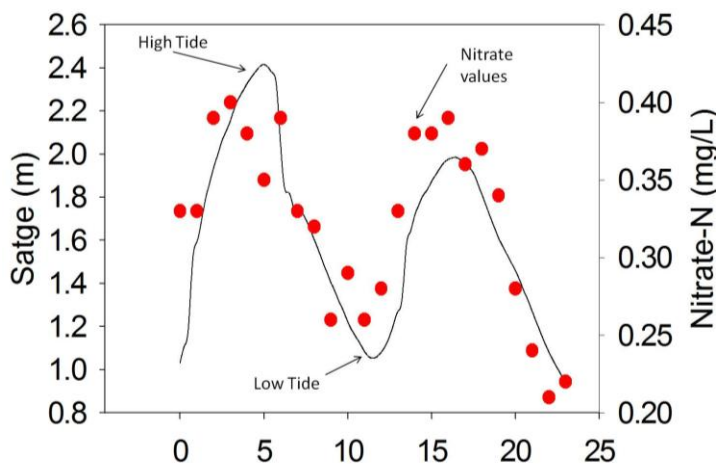


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3. Using what you know about wetlands, explain why there are changes in nitrate-nitrogen over time at Tivoli Bays marsh.



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4. Based on what you know about wetlands, make a prediction for how nitrate-nitrogen and dissolved oxygen levels will change while you are at the marsh. You will take a sample immediately upon arriving at the marsh, and again before you depart.

a. Dissolved oxygen levels will \_\_ *increase* \_\_ *decrease* \_\_ *stay the same* **because**

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b. Nitrate-nitrogen levels will \_\_ *increase* \_\_ *decrease* \_\_ *stay the same* **because**

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5. Using your aerial photo of the study site, use colored markers to outline the three vegetative zones on the transparency. Create a legend to your map. Based on this map, explain what type of vegetation you think will be most prevalent in the marsh and why.

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## Part 2: Field Study

1. Collect water samples when you arrive at the marsh (ideally at or just before high tide) and before departing (on the ebbing tide). On your map, note the location of the water that was collected, especially if you collect multiple samples from different sites. Measure the dissolved oxygen while collecting the water samples and record your data. You will test for nitrates and ammonium (optional) when you return to the classroom.

Parameter	Sample 1 High Tide (Time_____)	Sample 1 Ebb (Time_____)	Sample 2 High Tide (Time_____)	Sample 2 Ebb (Time_____)
Temperature (C)				
Dissolved Oxygen (mg/l)				
Nitrate (mg/l)				
Ammonium (mg/l)				

2. Make a drawing of the marsh, using the aerial photo as a guide (tracing the outline of your photo might help). You will use this as you walk (or canoe/kayak) in the marsh to make observations of tidal zones and upland habitat at different locations. Refer to the “Hudson River Field Guide to Plants of Freshwater Tidal Wetlands” or the Cary Institute Freshwater Marsh Field Guide to help you identify the plants that you see.

## Part 3: Analyzing your field trip data

*Complete the nitrogen test results before completing this section.*

1. Observations:
  - a. Which vegetation type is dominant in your marsh?  
  
\_\_\_\_\_
  - b. Was this the same as your prediction? \_\_\_ yes \_\_\_ no
  - c. Based on your experience, is using an aerial photo to predict the vegetation type an accurate method? Why or why not?  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Your teacher will now give you a GIS vegetation map created by scientists (this map shows dominant plant species). Did you identify all of the plants shown on this map? If not, list the plants that you did not see or identify:

3. Do the nitrogen test results support or refute your hypothesis? Explain.

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4. Did oxygen or temperature change during the ebb phase? Provide your reasoning for these results.

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5. Is there a relationship between vegetation type and water chemistry changes? Explain why or why not.

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