

Squantum Head Virtual Field Trip

PHYS 3800
Physical Geology

1

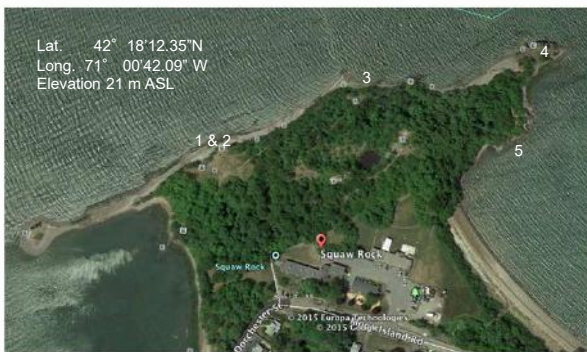
Virtual Field Trip

- Look at the Aerial photo of Squantum Head. The number correspond to the questions on the Squantum Head Field Trip Worksheet.
- Answer all the questions on the work sheet and submit it with a 5-page paper summarizing what you saw in person or virtually on the Field Trip. I advise you to get a better look at the area using Google Earth. The latitude and longitude is shown on the previous slide. Hint, by answering each of the questions on the slides it will help you develop your paper.

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Squaw Head, Squantum

Lat. 42° 18'12.35"N
Long. 71° 00'42.09" W
Elevation 21 m ASL



3

Features that you will see on this field trip

- | | |
|-------------------------------|--------------------------------|
| • Roxbury Formation | • Anticlines |
| • Dorchester Member | • Hydrothermal injection |
| • Squantum Member | • Contact Metamorphism |
| • Cambridge Argillite (Shale) | • Unconformities (what types?) |
| • Joint Sets | • Drumlins |
| • Fault offsets | • Tombolos |
| • Transgression-Regression | • Shingle Beaches |
| • Folds | • Glacial scouring |

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1. Sedimentary Rocks

There are three distinct sedimentary rocks in this slide. Can you identify the rock types? How about a guess at the formations? Are the contacts unconformities? If so, what type of unconformity? No. 1 & 2 on the aerial photo.



5

1a. Close up of previous slide



6

1b. Jointing or Faulting?



7

2. Sedimentary Rocks

Another shot of the same outcrop. Does this angle help you answer the questions? What effect if any does tidal action have on this outcrop? No. 1 & 2 on the aerial photo.



8

2a. Jointing in Roxbury Formation



9

3. Sedimentary Rocks

Looking behind the two intrepid geology students (note the shorts on a field trip in November), what do you see on the horizon? How are those islands formed? Zoom out on Google Earth and see if this tells you anything. Hint: Think Glaciers. No. 1&2 on the aerial photo.



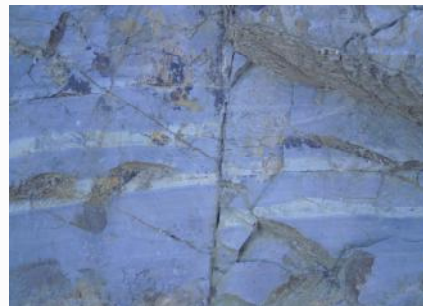
10

3a. What's in the Background?



11

3b. Jointing or Faulting? What type of Rock is it?



12

4. Linear Features

Note the linear feature running from the upper left to the lower right side of the photo. Is it a joint set? Is it a fault? If it is a fault, how can you tell? Why is there a hole in the area of the linear feature? No. 3 on the aerial photo.



13

4b. What is this?



14

5. Rock outcrop on the Beach

Here is a different type of rock on the beach. Is it igneous, sedimentary or metamorphic? Why is it broken up? Is it a result of the way it was formed? Or could some type of tectonic process be in play? Hmm... you figure it out. No. 3 on the aerial photo.



15

6. Sedimentary Rocks

What type of sedimentary rock is this? Can you see bedding? If so, describe it. Is there any other features that you can describe? No. 3 on the aerial photo.



16

7. What is this feature?

Describe this feature.
Are the rocks on either
side of the break in the
rock the same or
different? Why?
Between No. 3 and 4
on the aerial photo.



17

8. What is this feature?

Here is another view of the
feature on the previous
slide. Does this
perspective help you
answer the questions?
Between No. 3 and 4
on the aerial photo.



18

8a. Cliff



19

9. What is it?

Look at this rock. What is
it?
Look at the two sets of
breaks in the rock, one
running from the top right
to bottom left of the photo,
the other running top left
to bottom right of the
photo. Which break is
younger? Why? Are one
or more of these breaks
faults? Or are they joints?



20

10. Geomorphic Features

Describe the landforms you see in the foreground and background of this photo. Between No. 3 and 4 on the aerial photo.



21

10a. Looking towards Squaw Head



22

10b. Roxbury Formation



23

10c. What Type of Rock?



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11. The Point at Squantum Head

Look at the rock outcrop. Can you identify what type of rock it is? How has the rock been modified by geomorphic processes? Which processes are at play? How can you tell? How about any tectonic forces? No. 4 on the aerial photo.



25

11a. Faulting at Squaw Head?



26

12. Linear Feature

Ignoring the graffiti, what is the linear feature? How can you tell? No. 4 on the aerial photo.



27

12a. Describe this feature



28

12b. What is this?



29

13. White linear feature

Observe the white linear feature running from the top left to bottom right of the aerial photo. How do you think it was formed? Did its formation affect the surrounding rocks? No. 4 on the aerial photo.



30

14. Sedimentary Rock

This rock is at the top of the point at Squantum Head. What type of rock is it? How is it different from other rocks you have seen? Why? No. 4 on the aerial photo.



31

14a. Describe this Rock



32

15. Vertical Rocks

Look at this rock formation, what type of rock is it? Why is it standing on end? Between 4 and 5.



33

16. Transgressive-Regressive Sequence

Look at the purple and the grey rock layers. The grey layers are _____ and the purple layers are _____. Which rock is deposited with a rise in sea level? Which with a dropping sea level? No.5



34

16a. Describe these features.



35

16b. Describe this rock.



36

17. Dipping Rock

What kind of rock is it? Why is it dipping (What forces are in effect)?



37

17a. Another View



38

18. Not a dipping rock

Here is the same type of rock near the previous rock but is not dipping. What is going on?



39

18a. A closeup



40

19. Dipping and Not Dipping

The dipping rock is to the left and the horizontal rock to the right. There is a big gap in the middle. What type of tectonic feature might this be? Draw a picture of it when it just formed.



41

19a. Unconformity?



42

20. The End



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