Biodiversity Calculation

Name:

This biodiversity calculation requires the use of the 360 degree videos available on available on the 'Dive Deeper' virtual exhibit https://divedeeper.site/

One of the advantages of videos is that we can watch it multiple times and isee this we missed the first time.

Watch the Deer Island, Green's Point, Sandy Island and Casco Bay Island videos, **stop them at the times displayed in the table below** and count all the different living species that are visible. Also, count all the animals regardless of species. Put the information in the table below.

If you see an animal that you don't recognize, you can find it on the virtual museum at the link below.

	example	**Deer Island (0:27)**	**Green's Point (0:50)**	**Casco Bay Island (0:43)**	**Sandy Island (0:54)**
Species count	4				
Individuals count	86				
Biodiversity Index (see below)	4/86= 0.0465				
Simpson's Index (D) (see below)	0.255				

https://divedeeper.site/species/

To calculate a simple Biodiversity Index - divide the number of species you counted by the total number of individuals you counted. The answer will be a decimal number between 0 and 1. The closer to 1, the more diverse the ecosystem is.

This way of measuring biodiversity is quick and easy, but isn't very accurate. That is why biologists use other more complex calculations. One of these is the Simpson's Index. Follow the steps and equations on the back of this sheet. Write your results in the table above.

Which of these environments is the most biodiverse? _____

Which is the least?_____

Why do biologist look for high biodiversity in ecosystems? What kind of protection does it give to an ecosystem? Discuss what you think with the class.

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Simpson's Index Equation:

$$D = \sum (n / N)^2$$

Simpson's Index = D
n = number of individuals of one species
N = total number of individuals
Σ = sum of all the values of n

EXAMPLE

This uses the same numbers on the example on the front of this page (four species and 86 individuals)

1 Go back to the video and count all the individuals of the each of the four species.

Species 1- 18 individuals; Species 2 - 26 individuals; Species 3 - 22 individuals; Species 4: - 20 individuals

2. Complete the first part of the equation for each of the species above (n/N)

Species 1: 18/86=0.209; Species 2: 26/86=0.302 ; Species 3: 22/86=0.256 ; Species 4: 20/86=0.233

3. Square the result of step 2. $(n/N)^2$

Species 1: 0.209^2=0.0436; Species 2: 0.302^2=0.0912; Species 3: 0.256^2= 0.0655 ; Species 4: 0.233^2=0.0542

4. Sum all the results from step 3 to complete the equation $\Sigma(n/N)^2$

D = 0.0436+0.0912+0.0655+0.0542= 0.255

With this Index, 1 represents infinite diversity and 0, no diversity

Show your work here: