Candidate 5 evidence

Environmental science: Comparing a pond and a river.

1)Aim: The aim of my investigation is to investigate the impact pH has on species richness in the water of Leith and in Holyrood high school pond.

2)Underlying Environmental science: I'm finding out if pH impacts species richness in both a pond and also In a river by measuring the pH of both the pond and the river and then using various sampling techniques such as sweep net sampling and also kick sampling to find out if the pH of the water will effect species richness. This is important because if species are not in the right pH of water they could die due to having a tolerance level which could impact on the biodiversity of the pond and the river and could cause problems for the organisms in that area.

3) Data handling and collection: A) to collect my data I used various sampling techniques such as kick sampling and also sweep net sampling and recorded my findings in the tables below which show what we found whilst using these techniques.

C) **Sweep net sampling results from Holyrood pond 11th October 2017**

Species	Sample 1	Sample 2	Sample 3	Sample 4
Cased caddisfly larvae		2	9	9
Dragonfly Larvae		1		

Alderfly Larvae				
Damselfly Larvae			1	1
Caseless caddisfly larvae			9	
Mayfly stonefly larvae	30	15	20	30
Water beetle larvae	129		1	1
Water bugs				
Ponds skaters				
Water shrimps				
Water snails				
Water slaters				
Water louse				
Blood worm	3	2	4	
Sludge worm	1			1
Rat tailed maggot				
Ph	6	6	5	5
Total	163	20	44	42

Water of Leith Wednesday 11th October kick sampling table results

D)

Species	Sample 1	Sample 2	Sample 3	Sample 4
Cased caddisfly larvae				
Dragonfly Larvae				
Alderfly Larvae				
Damselfly Larvae	2	3	1	
Caseless caddisfly larvae		5	2	1
Mayfly stonefly larvae	5	4	5	3
Water beetle larvae				
Water bugs	8	20	3	8
Ponds skaters				
Water shrimps				
Water snails	55	92	30	31
Water slaters				
Water louse				
Blood worm	3	3	3	8
Sludge worm				

Rat tailed maggot			2	
Midge louse	20	26		29
Orb snails	16	7	10	7
Threadworms	20		4	
Diving beetle			3	
Water mite	30	10	35	35
pH	6	6	5	5
Total	159	170	98	122

E) Simpsons diversity index calculations: water of Leith results:

Sample	No of species	(n-1)	N(n-1)	Total
1	159	158	157	0.99371
2	170	169	168	0.99411
3	98	97	96	0.98979
4	122	121	120	0.99180

Simpson's diversity index calculations: Holyrood High school pond results.

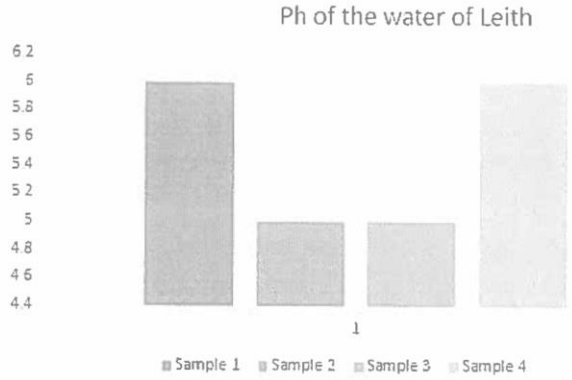
Sample	No of species	(n-1)	N(n-1)	Total
1	163	162	161	0.99386
2	20	19	18	0.95
3	44	43	42	0.97727
4	42	41	40	0.97619

F) Source: LEO Enviro SCI Enquiry website (undated): Most organisms have a well-defined range of Ph. tolerance. If the Ph. falls below the tolerance range, death will occur due to respiratory or osmoregualtory failure. Low Ph. causes a disturbance of the balance of sodium and chloride ions in the blood of most

aquatic animals. At low Ph., hydrogen ions may be taken into cells and sodium ions expelled.

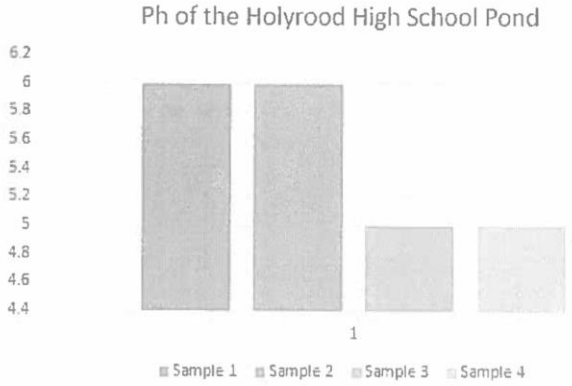
4) Graphical presentation:

Ph. of the water.



Sample points of each Ph measurement taken.

Ph of the water



Sample points of each Ph measurement taken.

5) Analysis: From the data that I gathered it showed that there was not enough evidence to tell us that ph. does in fact effect species richness in the pond and also in the river but it means that there could be another abiotic factor that could be affecting species richness in the pond such as temperature or light intensity.

6) Conclusion: In conclusion to this investigation shows us that there was not enough evidence to show us that ph. does in fact effect species richness in both a pond and also a river due to the tables that showed that the ph. stayed the same and there was no real changes to prove that ph. did was in fact the abiotic factor that effects species richness but this means that it could be another abiotic factor such as light intensity and or temperature that could also affect species richness in the pond and also the river if I was to do this again I would need to get information on other abiotic factors that could impact on species richness .

7)Evaluation: A factor that could have a significant effect on the reliability is the fact that we only had four sample points which meant that we could only gather so much data before we had to stop sampling. To combat this in the future we could have a lot more sample points so that our results would have been more reliable, and so we could gather more information on species and pH which could have also increased the reliability of our investigation.