

Investigation and analysis of water quality in Xinglong Park, Taipei City

Submission category:Earth Science

Investigation and analysis of water quality in Xinglong Park, Taipei City

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# Investigation and analysis of water quality in Xinglong Park, Taipei City

## 1. Preface

### 1-1. Research motivation

I was curious about whether the pollution sources in the water would have an impact on water quality, and wanted to understand the principles behind the phenomenon

### 2. Previous research:

To investigate the water quality of Xinglong Park in Wenshan District and facilitate subsequent analysis of pollution sources, the experiment was divided into two parts.

The first part is that we use the observation materials provided by the globe program to analyze and measure common data such as dissolved oxygen, pH value, turbidity, and temperature.

The second part is to filter the water sample to see if there are any microplastics. Although this experiment is not an observation material provided by the globe program itself, it is conducted in accordance with GLOBE's PROTOCOLS.

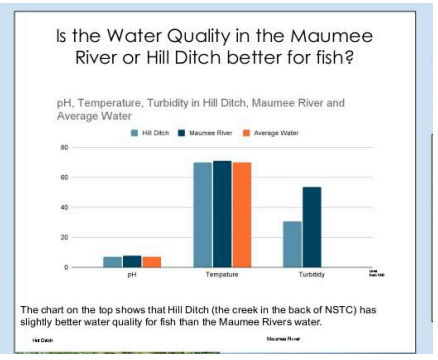
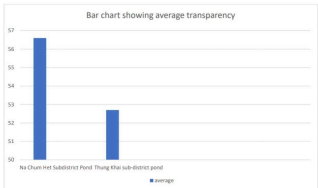
The biological indicators mentioned by researcher Chen Yuan in the paper "Freshwater Water Quality Pollution and Water Quality Pollution Biological Indicators" are also one of the directions for judging water quality. In the paper "Research on Domestic Wastewater Quality Treatment in Tainan City High School Campus" discovered through government and official regulations, researcher Li Junxian even cited information from the Environmental Protection Agency to strengthen enforceability.

Finally, in order to consolidate the core spirit of this paper, I used the keywords water quality or microplastic to search for relevant literature on the IVSS page of the GLOBE official website. I found that other people had done similar research and discussions, and conducted literature discussions.

### 3. Research purpose:

Literature discussion and practical operation of changes in pH value, temperature, turbidity, dissolved oxygen and amount of plastic particles.

## 2. Literature discussion

literature	—	→ →															
discuss	 <p>The chart on the top shows that Hill Ditch (the creek in the back of NSTC) has slightly better water quality for fish than the Maumee Rivers water.</p>	<table border="1" data-bbox="965 1615 1265 1711"> <thead> <tr> <th>location</th> <th>1st time</th> <th>2st time</th> <th>3st time</th> <th>average</th> </tr> </thead> <tbody> <tr> <td>Na Cham Het Subdistrict Pond</td> <td>60.5</td> <td>59</td> <td>50.3</td> <td>56.6</td> </tr> <tr> <td>Thung Khai sub-district pond</td> <td>33</td> <td>60</td> <td>65</td> <td>52.7</td> </tr> </tbody> </table> <p>From Table 4, it was found that water sources from Na Cham Het Subdistrict More transparency Water source from Thung Khai Subdistrict .</p> 	location	1st time	2st time	3st time	average	Na Cham Het Subdistrict Pond	60.5	59	50.3	56.6	Thung Khai sub-district pond	33	60	65	52.7
location	1st time	2st time	3st time	average													
Na Cham Het Subdistrict Pond	60.5	59	50.3	56.6													
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Introduction	This article delves into a study comparing fish habitat quality in Hill Ditch and Maumee River. Results indicate that the Hill Ditch, located behind the NSTC, has slightly better water quality, is favorable for fish growth, and has marginal advantages in pH, temperature, and turbidity. The study concluded that Hill Ditch provides better habitat for fish than the Maumee River.	A comparison of the water quality of natural pools in Na Chum Het and Thung Khai subdistricts of Yan Ta Khao district in Trang Province found that the water quality was poor.
in conclusion	This article refers to how others present data and content. In addition to tables, the same parameters at different locations can also be converted into graphs for comparison.	Calculating the average value of each parameter can illustrate the overall condition of the ecological pool.

3. research methods

From 13:20 to 14:40 on December 26, 2023, the temperature in Wenshan District was 21.8°C at 13:00, 21.8°C at 14:00, and 21.4°C at 15:00.

(one)

1. Select the ecological pool in Xinglong Park and roughly divide the perimeter of the pool into six locations.
2. Measure the dissolved oxygen, pH value, turbidity and temperature respectively and record the data.

parameter	tool	method
Dissolved oxygen	visual grade pills	The purpose is to measure the oxygen content in liquids. First add visual grade pills to the measured object, wait until it dissolves, and then use test paper to record the data. Compare the dissolved oxygen content of the water sample and the standard reference to the ratio of possible polluting original substances to measure the water. same amount of dissolved oxygen.
pH value	pH Wide Range Pills	The purpose is to measure the acidity and alkalinity in liquids. First add pH Wide Range pills to the measured

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		object, wait until it dissolves, and then use test paper and measuring strips to record the data. Compare the water sample and the standard reference pH value to the ratio of possible polluting original substances. , to determine the pH value of water samples.
Turbidity	round bottom of cup	The purpose is to measure the turbidity of liquids to see the degree of contamination. First add the pills to the measurement object, wait until it dissolves, and then use test paper to record the data. The second method is to directly use the measuring cup to measure the liquid. First check the clarity of the circle at the bottom of the cup, then add the measuring strip and then add the measuring strip. After recording the two data, compare the water sample and the standard turbidity for possible contamination sources. The ratio of substances to determine the turbidity of a water sample.
plastic particles	disc test paper	Collect 2 bottles of sample water, use test paper to introduce into the measuring cup, look at the substances filtered out by the test paper and the substances in the water, and then extend the discussion.

3. Analyze the data, locate some special data locations, and speculate on possible causes. (short essay)

4. Guess the causes of pollution sources and propose ways to improve pollution levels. (short essay)



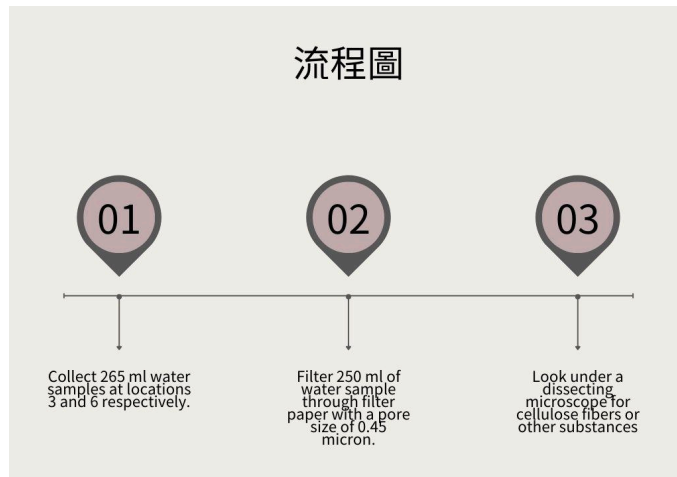
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(Two)

1. Collect 265 ml of water samples at locations 3 and 6 respectively.
2. Filter 250 ml of water sample with filter paper with a pore size of 0.45 micron.
3. Observe under a dissecting microscope whether there are cellulose fibers or other substances.

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### 三、研究分析與結果

Place	GPS	PH value: pill/electronic	temperature (°C)	Turbidity (JTU)	Dissolved oxygen (ppm)
1	25°00'01.04"N 121°33'04.74"E	7.5/7.5	18.6	100	2
2	25°00'.00.57"N 121°33'03.49"E	7.8/7.7	18.3	40	1
3	25°00'00.16"N 121°33'02.53"E	7.7/7.6	18.2	50	2
4	25°00'00.12"N 121°33'03.33"E	7.0/7.5	17.9	50	1
5	25°00'00.22"N 121°33'04.5"E	8.5/8.3	18.3	40	2.5
6	25°00.0064"N 121°33.05.35"E	7.0/7.6	18.9	30	1

water sample 6

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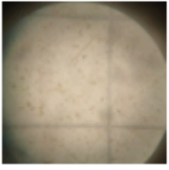
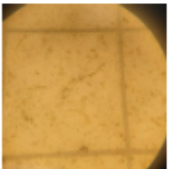
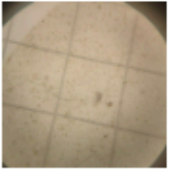
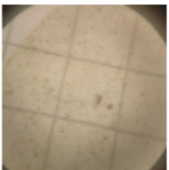
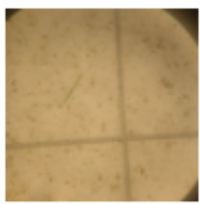

Photo code	shape	color	size(mm)	guess
	Slender strips, not equally thick in the middle and at both ends.	brown	0.16*0.1	hair
	Slender strips, ranging from thick to thin overall. Not sure if it's extra thick or translucent. Very similar to W4N1	brown	0.2*0.006	plant roots or hairs
	Slender strips, ranging from thick to thin overall. Not sure if it's extra thick or translucent. Very similar to W4N1.	brown	0.32*0.006	plant roots or hairs
	Slender strips, ranging from thick to thin overall. Not sure if it's extra thick or translucent. Very similar to W4N1.	brown	0.32*0.006	plant roots or hairs

Photo code	shape	color	size	guess
	Slender strips, equally thick.	green	0.09*0.006	algae
	Slender strips, from thick to thin overall	green	0.1*0.006	algae

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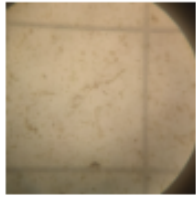
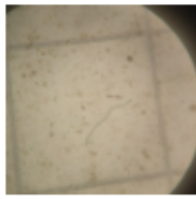
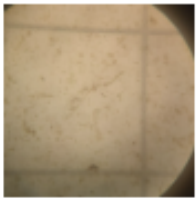
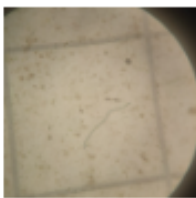
Photo code	shape	color	size	guess
	The slender strip is very long and extremely thin. It almost looks like it is broken in the middle. It is speculated that it is "twisted".	black	0.2*0.006	cellulose fibres
	Slender strips, equally thick, with a "twisted" appearance at both ends	black	0.16*0.006	cellulose fibres

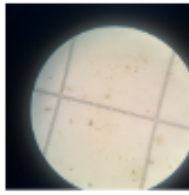
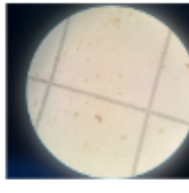
Photo code	shape	color	size	guess
	The slender strip is very long and extremely thin. It almost looks like it is broken in the middle. It is speculated that it is "twisted".	black	0.2*0.006	cellulose fibres
	Slender strips, equally thick, with a "twisted" appearance at both ends	black	0.16*0.006	cellulose fibres

water sample 3



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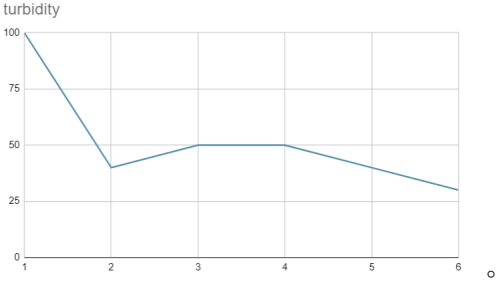
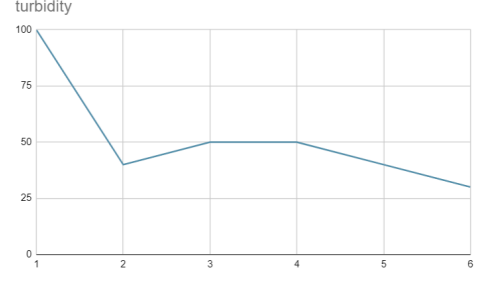
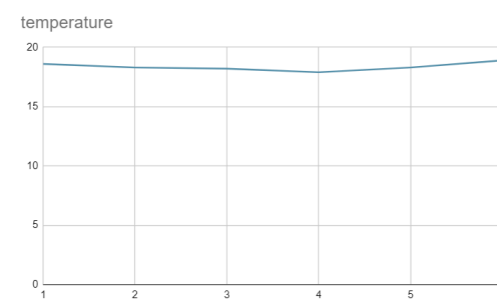
Photo code	shape	color	size	guess
	Slender strip	black	0.23*0.06	hairs
	Slender strip	brown	0.06*0.0066	plant roots or hairs
	Short and wide type	brown	0.05*0.02	plant roots or hairs

Photo code	shape	color	size	guess
	Slender strip	red	0.3*0.06	cellulose fibres
	Slender strip	red	0.12*0.06	cellulose fibres

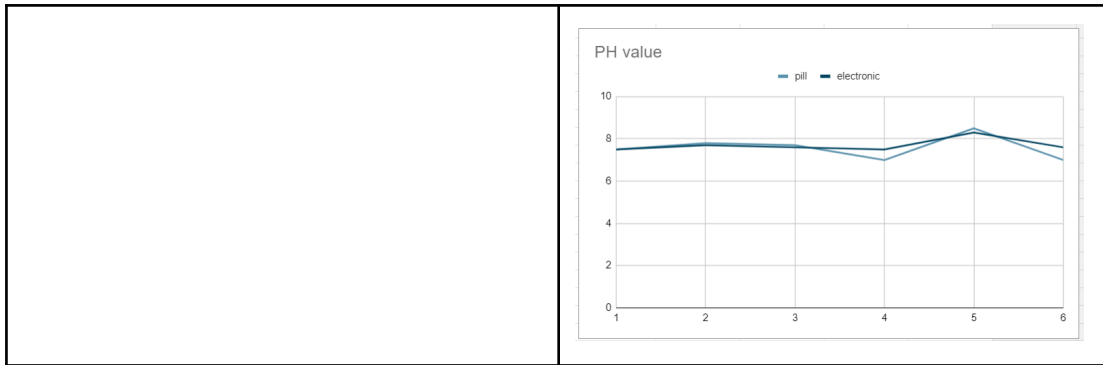
4. Research analysis and results

result	discuss
1. The turbidity at location 1 is 100 (JTU), which is higher than other points.	The water depth was changed to location 1, which made it easier to install to the sediment below when collecting water samples. Next to location 1 is the wash basin, and sewage may flow directly into the ecological pool.

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<p>2. Location 4 is next to the pond water circulation equipment</p>	<p>It is an important hub in the water conservancy system, so all parameters are median or relatively average values.</p> 
<p>3. The temperature at location 4 is 17.9, which is lower than other points</p>	<p>It is speculated that the temperature is lower because new water is coming in all the time.</p> 
<p>4. The pH value of location 5 is 8.5 (8.3), and the pH values of the other five points all fall between 7.0 and 7.8. It can be seen that the turbidity of location 1 is higher than that of other points.</p>	<p>Site 5 is a relatively non-flowing water area next to the main pool, so there is less plankton, and an environment where more algae grows. Algae-shaped respiration and photosynthesis lead to a more alkaline situation.</p>

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### six.References

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