

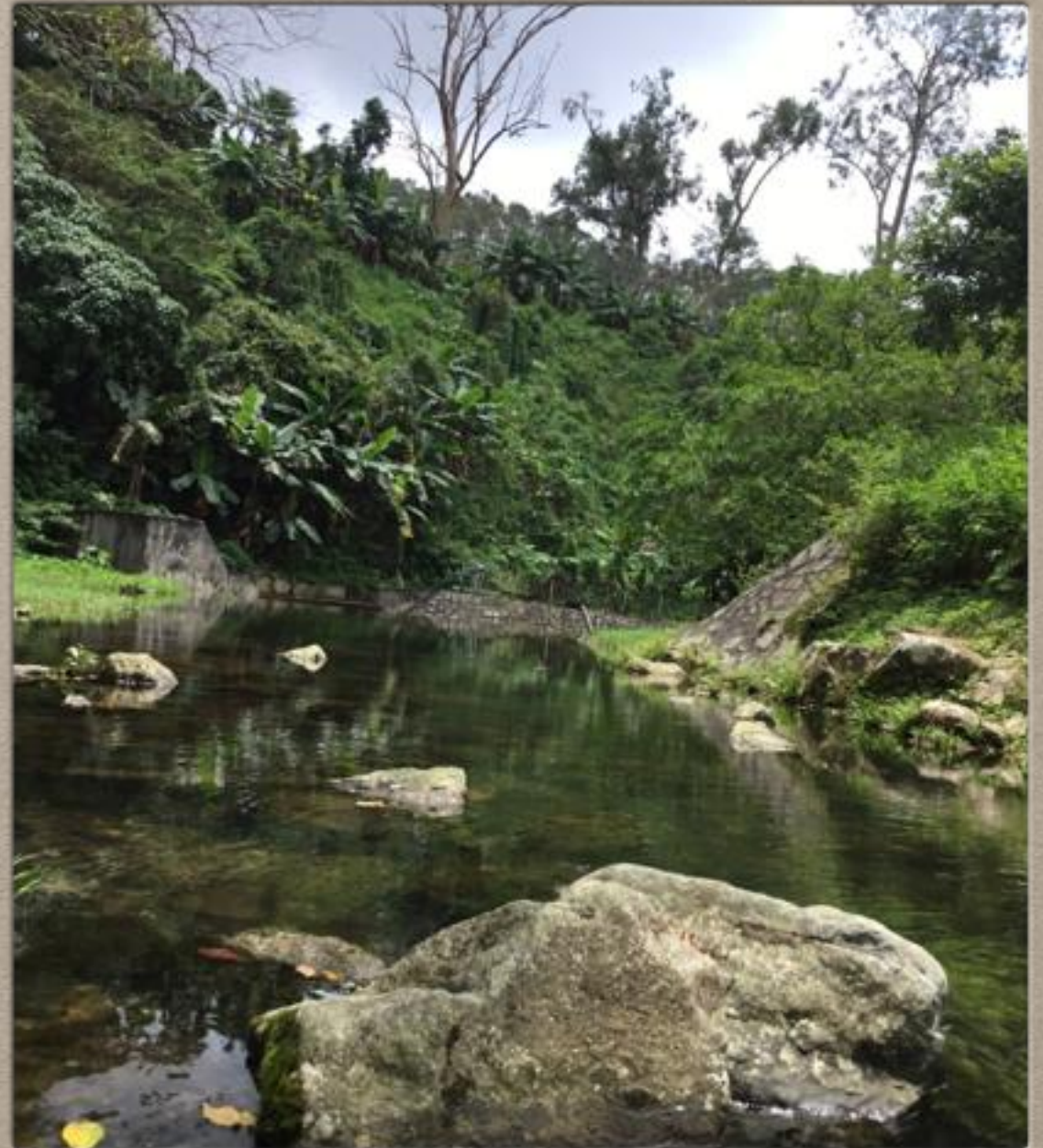


HOW THE VELOCITY OF RIVER FLOW AFFECT THE DIVERSITY OF SPICES AND POPULATION OF ANIMALS

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INTRODUCTION

In Hong Kong, there are many rivers and have a close relationship with human. There are a lot of different species of animals along rivers to form a unique ecosystem. We have a field observation along the Tai Tso Stream to have an investigation of the population and diversity of animals to find out the effects of water flow on animals.



OBJECTIVE AND AIM

Objective: Effect of the water velocity on the population and diversity of animals.

Aim: To find out the water velocity in Tai Tso stream and effects on the population and diversity of animals

INDEPENDENT VARIABLE

- Water flow is measured by water flow meter. Put the water flow meter into the freshwater stream. Repeat the measurement four times and take average.



DEPENDENT VARIABLE

- Abundance of animals
A quadrat is used. Place it in the selected areas to have the investigation. Wait 20 minutes and keep counting the species inside the quadrat. Photos are taken.
A brush is used. Animals attached on the rock surface were swept by the brush and stored in the sorting tray.
- Animal species
Record the number of different animal species.



CONTROLLED VARIABLE

- Water depth
(measured by ruler)
- Light intensity
(measured by light meter)
- Water temperature
(measured by digital thermometer)
- Riverbed foundation
(observe by eyes)



MEASURING THE CONTROLLED VARIABLES

1. Temperature

The temperature of the water was measured by the temperature sensor in the middle of the quadrat for 4 times and take an average result.

Apparatus: Temperature sensors

2. Light intensity

The light intensity was measured by the light intensity meter 10cm above the water surface for 4 times to take an average result.

Apparatus: light intensity meter

3. River Bed Structure

Classify the Substrates of the river bed by eyes and take photo for record

4. Water depth

The water depth was measured by ruler inside the quadrat for 4 times to take an average result.

Apparatus: ruler

ASSUMPTIONS OF CONTROLLED VARIABLES

The pH value and the dissolved oxygen content is the same because the water is connected and from the same resources.

PROCEDURE OF MEASUREMENT

1. Quadrat was put randomly along the periphery of the river channel
2. The water flow velocity was measured by the water gauge with 10cm water depth
3. The species and number of animals were counted in 20 minutes
4. Animals attached on the rock surface were swept by the brush and stored in the plastic sorting tray
5. Photo was taken for recording the result



SITE OF INVESTIGATION

	Site 1	Site 2	Site 3	Site 4
river bed structure	sandy	Stony	Stony	Stony
location	lower course	lower course	middle course	upper course
water flow velocity	0 m/s	0 m/s	0.128 m/s	0.65 m/s
temperature	27.2°C	27.7°C	26.3°C	24.9°C
light intensity	18600 lux	18700 lux	18100 lux	14900 lux
water depth	9 cm	13.15 cm	28.75 cm	14.12 cm

RESULTS

	Site 4	Site 2	Site 3	Site 1	
Goby	1	0	5	0	
Predaceous Chub	0	0	2	0	
Guppy	0	0	1	0	
Mosquito Fish	0	0	2	0	
Suker Belly Loach	3	0	3	0	
Broken-band Hillstream Loach	4	0	4	0	
Banded Folk-tailed Loach	2	0	7	0	
Mayfly Nymph	3	1	0	0	
Water Penny	3	8	0	0	
Large Stream Snail	3	5	1	0	
Pond Snail	0	2	0	0	
Water Skater	4	0	2	0	
Fishfly Larva	0	0	2	0	
Common Freshwater Crab	0	0	0	1	



ANALYSIS

- In site 1, no shells and fishes can be found and the structure of river bed is sandy which is different from other sites but only and crabs
- In site 2, there are fishes such as Sucker belly Loach and Broken-band Hillstream Loach. There are shells such as Large Stream Snails and Water penny. Both fishes and shells and similar population and diversity in still water.
- In site 3, there are higher populations and diversity of fishes such as Banded Folk-tailed Loach and lower population and diversity of shells as there is only large stream snail
- In site 4, There are higher population and diversity of shells such as water penny, large stream snail and pond snail but there is no fishes observed

CONCLUSION

1. The higher the water flow velocity, the higher the population and diversity of shells and lower the population and diversity of fishes.
2. When there is still velocity, the population and diversity of shells and fishes are evenly distributed.
3. The lower the water flow velocity, the higher the population and diversity of fishes and lower the population and diversity of shells.

ASSUMPTION OF CONCLUSION

Shells can attach on the rock surface to adapt the environment with quick water velocity by their suckers for examples large stream snails as the selected species.