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1. Introduction

The aim of field trip is to apply what we have learned in the Geography lessons in school to the real reality. We can say it is another way to learn about Geography. But through this trip, we can realize more about the relation between Geography and human life.

In this field trip, we have focus on 3 major aspect, included pollution, woodland and urban settlement.

For pollution, we are aim to examine the state of water quality in the study area, locate and identify sources and types of pollution. Meanwhile, we have to examine the impacts of stream pollution and nearby land use in affecting the environmental quality of rural landscape and suggest remedial measure.

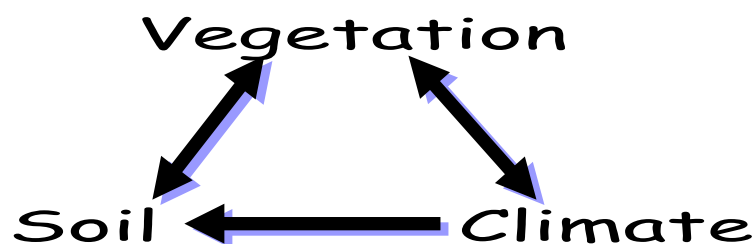
For the woodland ecosystem. We are objected to study the simplified community and the vegetation characteristics of woodland. Also, to study woodland microclimate and its relationship with vegetation and to study ecological succession with reference to different niches in the study area.

Last but not least, to the urban settlement, there are divided into 2 parts, which include urban decay and urban activities. First, for the urban decay, we are objected to study the causes of deterioration of the urban environment and compare the level of urban decay in Sai Kung. Second, for the urban activities, we need to observe and compare the spatial distribution of Sai Kung; also we have more understanding on the city models.

The followings are the analysis and the result of those aspects:

2. VEGETATION ECOSYSTEM

Woodland ecosystem includes vegetation, soil, and climate. In this system, climate, soil and vegetation are inter-related. Climate affects the soil texture and soil structure. Soil affects the types, quantities and height of vegetation. Also, vegetation affects the soil, for example, texture. Moreover, vegetation is interactive with climate. Therefore, our project will show the relationship between climate, vegetation and soil.



2.1. Vegetation of Woodland

2.1.1 Methodology

1. Run a 20m long transect line across an area where can represent the woodland most.
2. Mark down the types, height, circumference of the tree, and width of the tree crown.
3. Observe the presence of climbers.
4. Complete the transect diagram which can compare the height distribution of the vegetation of the interior and fringe.

2.1.2. Analysis

2.1.2.1 Transect of interior and fringe

2.1.2.2 Comparison between interior and fringe

With the reference of the transect diagrams, we can see that trees have different characteristic between the interior and the fringe.

Shrubs	Interior	Fringe
Average heights	Lower(1.34m)	Higher(2.03m)
Total no. of individuals	7	13
Total no. of species	Less	> 3
Distribution	Few	Concentrated

Besides trees, we found that there is some characteristic differences between vegetation (excluding trees) found in the 2 areas, they are as the following:

2.1.2.3 The differences between shrubs and herbs of interior and fringe

With reference to transect diagrams; the average heights of vegetations in interior are lower than that in fringe. Since the intensity of sunlight in interior is less than that in fringe, thus, the vegetations cannot obtain much of energy for growth.

Besides, Moisture is the important factor for the vegetation growth. Therefore, the numbers of species in fringe are more than that in interior since the soil has abundant moisture in fringe, but less in interior.

Moreover, the numbers of vegetations are less in interior as they are affected by the climate and soil. It has better conditions for vegetations to grow in fringe due to more sunlight and moisture. As a result, the number of vegetation is more in fringe than in interior.

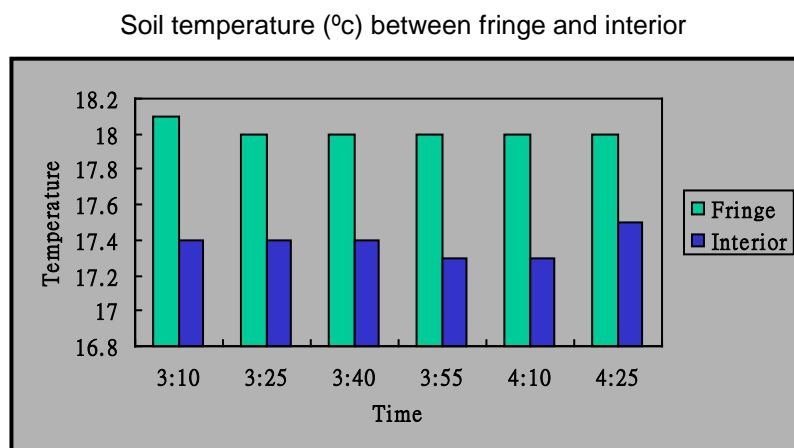
To sum up, the difference between shrubs and herbs of woodland in interior and in fringe, the causes are climate and soil.

2.2. The Micro-Climate of Woodland

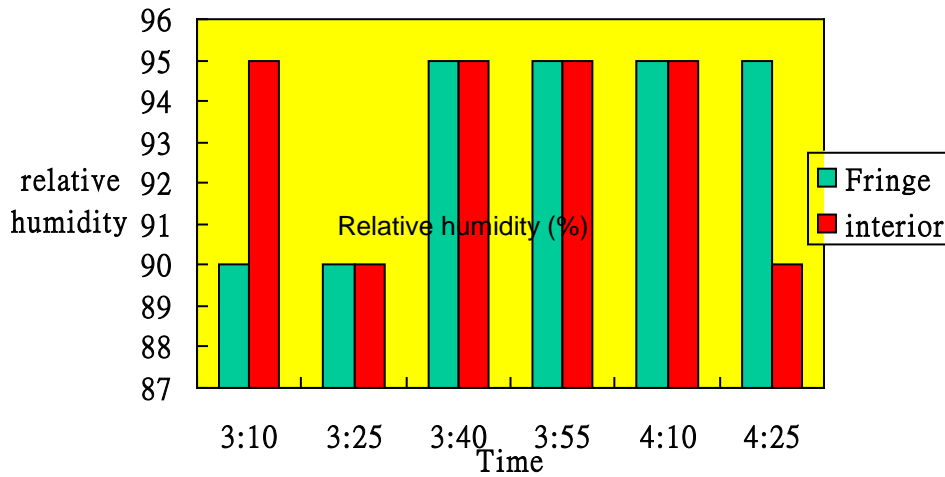
Why do we ensure the vegetations that are affected by climate and soil surely? Certainly, we have the following evidences on microclimate and soil:

There are difference climate between the interior and fringe. We ensure the truth by measuring the soil temperature, light intensity, temperature (dry bulb), relative humidity and wind speed.

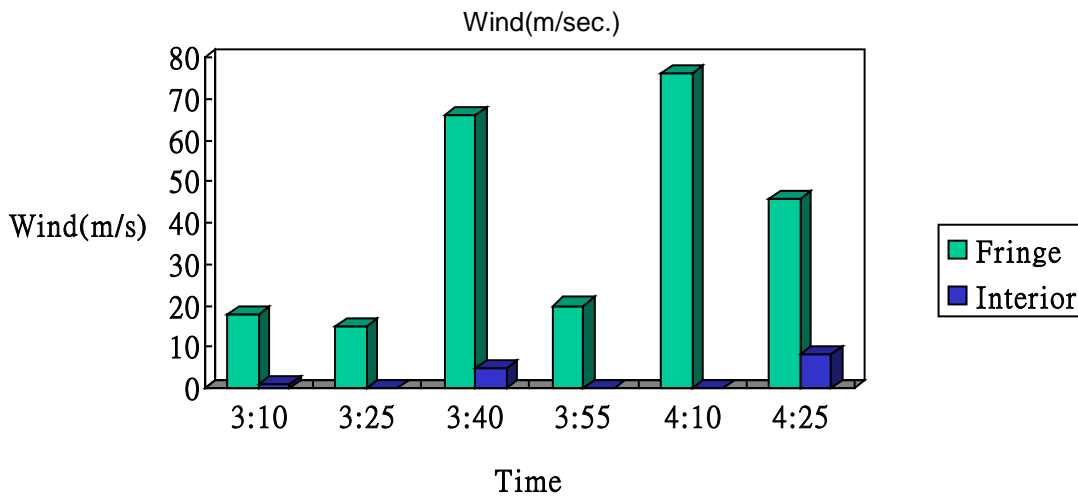
The soil temperature is higher in fringe. Since there are less of trees, the sunlight can infiltrate into the soil directly. However, there are more trees in interior, they will broad the solar radiation, and thus the intensity of sunlight is less.



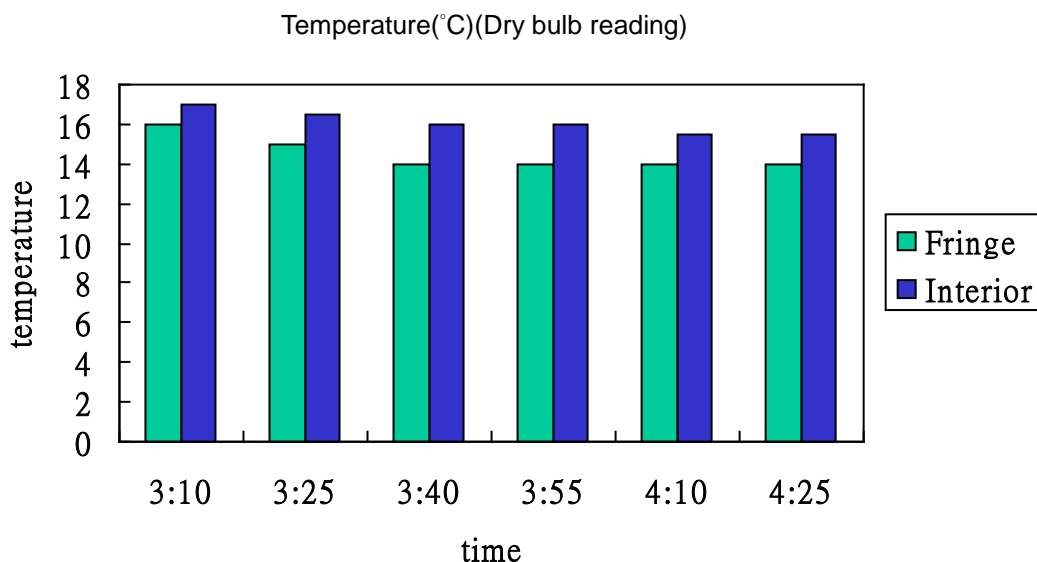
The relative humidity in interior is higher than that in fringe almost all the time, as more vegetation found in there, the trees store much of moisture by their leaves, interior's relative humidity become higher than fringe's. But, since the day which we do our project was rainy day, so the figure may unrealistic.



The wind is strong in fringe as the vegetations are less in there, but more in interior. Why? Since the vegetations act as the barrier to broad wind, therefore, when compare with fringe, the wind is weak in interior.



The temperature is relatively unstable in fringe. Because there is less vegetation than in fringe, it is directly expose to the sun or the wind. So, if the day is sunny, the fringe's temperature will become higher, but the day which we did our project was rainy, so the fringe's temperature is relatively low.



To be concluded, it showed that the numbers of vegetations affect the microclimate. It produces different climate of woodland between the interior and the fringe.

Last but not least, soil also the important factor affects the vegetation. We have done some experiment and observation on soil. Let see the followings:

2.3 Soil of Woodland

2.3.1. Methodology

2.3.1.1. On Field:

- Take different soils in both interior and fringe for the experiment

Test for the infiltration

- By observation to see how deep the water infiltrate into the soil within a minute.

2.3.1.2. In the Laboratory:

Test the soil temperature

- Put a thermometer into the soil and get the soil temperature.

Test the soil acidity

- Add some water into the soil; use the pH paper to test the pH value of the soils in both areas.

Test the soil color

- By observation to determine the soil color in two areas and for further humus content estimation

Test the texture of the soil

- First, get some dried soil samples from both areas and put them on different plates
- Then, by using sieving method, put the soil into equipment in order to separate the different soil texture.
- After the calculation ($[\frac{\text{The weight of the soil texture}}{\text{the total weight of dried soil sample}}] * 100\%$), we can obtain the proportion of different soil texture such as sand, silt and clay
- Compare two types of soil and determine their soil types referring to soil texture triangular table.

Test the soil moisture

- Weigh the same amount of soils collecting from both interior and fringe
- Put the soils into a oven in order to measure their loss of weights
- By the calculation ($[\frac{\text{The loss of weight after drying}}{\text{the weight of soil before dried by oven}}] * 100\%$), we can get the results of the soil moisture content from both soils in interior and fringe.

Test the infiltration

- First, put some soil on the funnel
- Then, put the funnel on top of the beaker
- Pour the water above the funnel and time the experiment
- At last, we can collect the amount of gravitational water from the beaker
- By the result of the amount of gravitational water which is divided by the total time recorded, we can get the infiltration rate

Test the litter content

- Select an area along the transect line, and then put a 50*50 cm quad rat on the area.
- Collect all litter within the quad rat and put them into labeled plastic bag.
- By the calculation (the weight of the litter collected * 4), we can get the result of the litter content

2.3.2. Analysis

After those experiments, we find the following statements:

2.3.2.1. Differences in soil properties between interior and fringe

There is more vegetation in interior, and the trees avoid sunlight reach the soil. So, the temperature of interior soil is lower.

Due to more vegetation, there are more litter and humus in interior soil. The more litter is, the darker the soil is. So, soil color of interior is dark brown because of high humus content. And soil color of fringe is light brown because of moderate humus content.

There is more vegetation in interior, so it leads to weaker wind, which lead to lower evaporation rate. Therefore, the soil moisture in interior is higher.

There is higher soil moisture in interior. So, the more weathering take place. Weathering breaks down large soil particles to be small. Thus, the soil texture of interior is finer.

Since the slope of interior is steeper, the soil easier to absorb water. Thus, the infiltration in interior soil on field is faster.

But the soil was taken to boil on lab. There is no moisture in the soil. Only the soil texture affects the infiltration rate. The finer of soil texture lead to slower infiltration. So, the soil texture of interior is finer and its infiltration is slower.

From the above evidence, we can surely say that, there is an inter-relationship between vegetation, climate and soil.

	Interior	Fringe
Soil temp.	Lower (17.42)	Higher (18)
Soil acidity	Slightly acidic (5.6ph)	Slightly acidic (5.6ph)
Soil color	Dark brown	Light brown
Humus content	High	Moderate
Infiltration rate	Slower (25ml per min)	Faster (30ml per min)
Infiltration on field	Faster (0.022cm per min)	Slower (0.005cm per min)
Soil moisture	Higher (23.3%)	Lower (17.5%)
Soil texture	Fine	Coarse
Sand	Less (18.6%)	More (26%)
Silt	More (67.3%)	Less (63.8%)
Clay	More (14.8%)	Less (13.4%)
Soil type	Silty loam	Silty loam
Litter content	More (264.5gm/sq.metre)	Less (136.1gm/sq.metre)

3. Stream pollution in the rural environment

Stream pollution has been more and more seriously affect streams or rivers in Hong Kong. We had done a study on the above topic in the Ho Chung Valley about water pollution. We've set up 7 sites as our target. In these seven sites, we aimed to examine the state of water quality in the area. And then we tried to locate and identified sources and the types of pollution that we found in the sites. Lastly, we were going to examine the impacts of stream pollution and nearby land use in affecting the environmental quality of rural landscape and suggest remedial measures.

The map of the Ho Chung Valley where we were going to study was shown below:



Our study about water pollution in Ho Chung Valley mainly divided into 2 parts.

In the first part, it was mainly about observing and conducting tests on the water quality. We have to determine the physical properties, including turbidity, PH value, smell, water color, amount of water matter, suspended sediments, etc in the 7 sites respectively.

In order to help us to study the polluted level of the target sites and used for further analysis. Also, we've to map the land use in the vicinity of each sampling point, and pay attention to the usage of water or the land use of the surrounding area. Trying to find out the causes or sources of

the pollution in the sampling point. Eventually, we have to collect a full bottle of stream water, which is use for chemical tests when we back to laboratory. ‘

In the second part of the study is about chemical tests for the collected water in the laboratory. Four chemical tests have been done to the collected water in the seven sampling points respectively. Which included: phosphate test, ammonia test, dissolved oxygen test and conductivity test. The chemical results that we found out could became a strong evidence to determine the polluted level of different sampling points.

After doing the above field study and chemical tests on the different sampling points, now we're going to analyze the pollution level on the Ho Chung Valley, we will also try to figure out the causes of the stream pollution.

Firstly, we have found that the overall amount of dissolved oxygen is high, also, the nearer to the river mouth; the higher the conductivity is since it indicates more metallic substances. What's more, the overall amount of ammonia is very low since it has only very few industrial detergent. As there has very few fertilizers, the overall amount of phosphate is very low.

When it compared with all the sites, only site 1, 4 and 5 have been polluted. It was mainly because the functions have changed. Originally, it was farmland. However, it become different functions now such as abandoned land, residential land, which use foe domestic sewage and also the commercial use. So, the area where we did the field study is slightly polluted.

The data of the water quality in site 1, 5 and 7:

In site 1:

- 1. Waste matter: **Plentiful**
- 2. Green algae: **Abundant**
- 3. Sewage fungus: **Abundant**
- 4. Turbidity: **High**
- 5. Smell: **Strong**

In site 5:

- 1. Waste Matter: **Some**
- 2. Green algae: **None**
- 3. Sewage fungus: **None**
- 4. Turbidity: **Clear**
- 5 .Smell : **None**

In site 7:

- 1.Waste matter: **None**
- 2.Green algae: **None**3.Sewage fungus: **Some**
- 4.Turbidity: **Fairly low**5.Smell: **None**

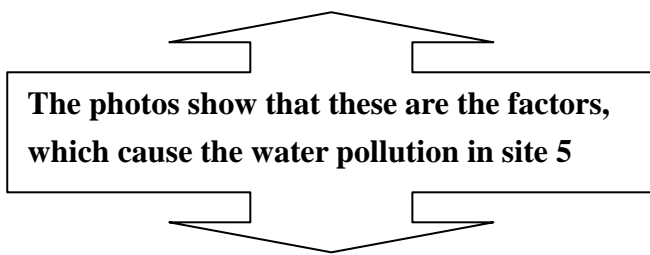
After the experiments, we found that site 1 is the most serious polluted area, as it is near the main road, so it is second accessible place. In this area, commercial, residential areas can be found and there are two discharge points, so we assumed that there are industrial activities. Moreover, metallic substances and chemicals were drain off to the river. As most of the human activities concentrate in this area, it was seriously polluted.

As you can see, water in site 1 is seriously polluted. There is oil that covers on the water

The residential and commercial are factors that affect the quality of water

Site 5 is the third accessible place, it was moderately polluted since the main land use is residential and some human activities, for example, and car park will have some wastes as well. As the main land use is residential, many waste matters were found, these assumed to be domestic wastes from the residents. Since there is weir built near site 3 which blocks waste matter, so the water quality is better near site 3, and the quality is worse in site 4.

The water in site 7 is slightly polluted. Many waste matter were found

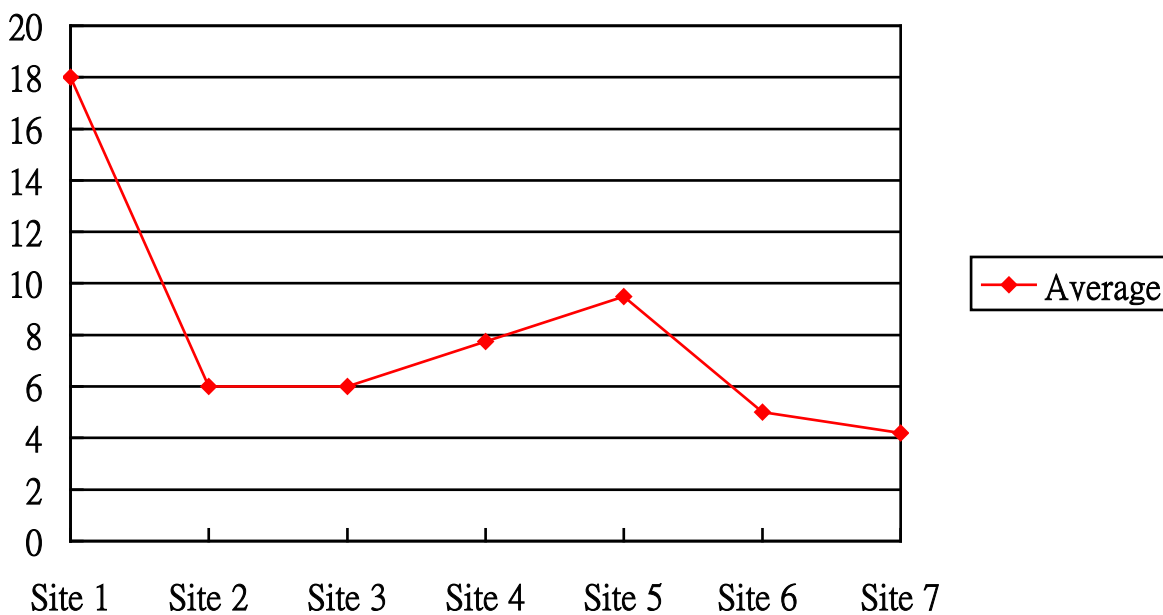


The least polluted area was in site 7, it is because it is place where is inaccessible and have no roads. So, The water quality is good there since there was not many human activities, and mainly use for agricultural activities that has less waste. Furthermore, there was no rain for the past few days, so there is no phosphate washed to the river and only few waste matter were found.

The water in site 7 is less polluted. Clearer water that has less pollutants e.g. rubbish

The graph of the degree of pollution in different sites:

It showed that site is the serious polluted area while site7 is a slightly polluted area



Having a conclusion, the more the human activities, and the higher the degree of pollution. Since the human activities increase, the chemical discharge will become more and more, and this lead to more pollution in the place.

Moreover, during the study of water quality, we have discussed about the remedial measures that can improve the water quality in these areas. For example, the government can have strict control by legislation and educate the citizens. Also, land use zoning, build filter gate and pump

oxygen into water can improve the quality of water. But we think that it is not worthwhile to do so because it is low economic value that there is not sight point but we agree that the government should educate the citizens.

4. Urban Activity

4.1 Urban Land use

We want to examine the general characteristics of Sai Kung. Also, we want to understand the spatial distribution and city model of Sai Kung.

4.1.1 Methodology

1. We walk around the whole town and mark down the location of each occurrence in the town.
2. We will take some photos and write report to illustrate different types of urban activities.

For the urban activity, we need to explain and contrast the characteristics and order of goods for two activities. (Professional and Non professional; Retail and Restaurant). After our observation, we have the following concluding result:

4.1.2. Analysis

4.1.2.1 Professional and Non-Professional Activities

Professional activities

Non-Professional activities

4.1.2.1.1. Scale of operation

※ Professional activities have larger scale of operation than the non-professional activities. The number of population in Sai Kung is about 20000 but the number of professional activities is small, it need a large scale of operation to serve the whole town.

※

4.1.2.1.2. Price of goods/services

※ The price of professional activities is higher because higher qualification and higher order service, such as, doctor need good medical knowledge.

※ Lower in non-professional activities because of the low order service, e.g. Hairdressers do not need very high skill

4.1.2.1.3. Volume of money flow

- ※ Professional has higher volume of money flow as it charges much each time.
- ※ Non-professional has lower money flow they charge a lower price each time.

4.1.2.1.4. Locational pattern

- ※ Both of them are disperse, since each shop needs certain population to support its existence. And there would be keen competition, so they have boundary of market to separate each other's.

4.1.2.1.5. Frequency of occurrence

- ※ Professional is lower because it need smaller threshold population. e.g. Banks need a large customers to support its existence, so there're only a few banks in the whole Sai Kung
- ※ Non-professional is higher, e.g. Barbershop need smaller threshold population, so Sai Kung can support more barber shop to exist.

4.1.2.1.6. Threshold population

- ※ Professional need lower threshold population, as it charges more each time. So only need a few customers to support their survival.
- ※ Non-professional need higher because they charge lower price, so they must make more transaction to support their survival

4.1.2.1.7. Range of goods

- ※ Professional has larger range of goods, because lower frequency of occurrence and higher price, e.g. Medical service can cover the whole town, so its range of goods is large
- ※ Non-professional has smaller range of goods because of higher frequency of occurrence and lower price, e.g. Barber shop serve mainly local customers, so its range of goods is smaller

Non-professional Activity

Professional Activity

4.1.2.2 Restaurant and Retailing

Restaurant

Food Retailing

4.1.2.2.1 The scale of operation

- ※ Restaurant has large scale of operation, which serve the higher income group.
- ※ Retail shop which serve the lower income group so the scale of operation is small.
- ※ We can find that the price of food in restaurant is higher than the retailing store,

4.1.2.2.2. Type of consumer

- ※ Consumer in restaurant mainly are the family and richer people.
- ※ Retailing store mainly housewife and children and poorer people.

4.1.2.2.3 Frequency of consumer:

- ※ Restaurant provides the higher order services, the price is higher, and therefore the people will go there less frequently.
- ※ Retailing store sell the low order of goods and the price is cheaper, so that the people will go there more frequently.

4.1.2.2.4 Volume of money flows

- ※ The money flow of restaurant is higher because cost of the food, service, rent is higher
- ※ Money flow of retail shop is lower because it mainly sells wholesale product, so cost of the foods, rent is lower.

4.1.2.2.5 Frequency of occurrence:

- ※ Frequency of occurrence is lower in restaurant since the range of good is longer, people are willing to walk for a long distance to obtain the foods and services.
- ※ Retail shop have more frequency of occurrence because the range of good is shorter, people will not walk for a long distance to buy the goods in retailing store

4.1.2.2.6 Locational pattern:

- ※ Less amount of restaurant will occur nearer the town center.
- ※ There are more retailing shop in the town and they mainly concentrate near the town center.

Restaurant

Retail store

Besides the urban settlement, we also examine one of the urban problems, urban decay in Sai Kung.

4.2 Urban Decay

4.2.1 Factors affecting Urban Decay

Urban decay refers to the lowering of values or standards of the buildings in inner city areas. The location of urban decay in Sai Kung is mainly in southwestern part (C&D). The pattern of C&D is scattered.

The followings are the factors leading to urban decay in site C&D:

4.2.1.1 Historical factors:

In 30 years ago, people were mainly fishermen who tended to live near the deep bay (Site C&D); therefore, these areas were high accessibility at that time. So, many developments can be obtained. However, the urban decay in site C&D is serious nowadays. Since the low technology affected the quality of buildings, therefore the buildings were not resistant to the physical deterioration, e.g. weathering.

4.2.1.2 Environmental factors:

There is noise pollution (e.g. mahjong, rock music, traffic etc), land pollution (e.g. rubbish, sputum) and air pollution (e.g. restaurants' bad smell, traffic etc). Also, buildings are overcrowding, old-aged (the outside wall is peeling off, the electric wires and steels have been exposed) and little light penetration. So, the buildings are very dangerous. There are lacks of infrastructures around the buildings. These led to poor living condition in these areas.

4.2.1.3 Economical factors:

Due to rural-urban migration, many people and economic activities have moved out, so some buildings are abandoned. The old people are not willing to pay for maintenance. Moreover, types of urban functions performed by inner city areas have decreased. It is mainly residential areas in site C&D, economic values of buildings in these areas have decreased. Therefore, lack of incentives for development of the buildings. As a result, serious decay occurred.

4.2.1.4 Government policy:

As there are low economic values and far away from CBD, the government and owners will not spend too much time and money on those buildings. Besides, it's hard to contact with the owners of the old buildings because they maybe moved away from Hong Kong or died. It's very troublesome to move out the residents in the buildings and that needs a large amount of money. So, the government is not willing to have the renewal planning.

In contrast, in site A&B, there is slightly urban decay in the inner part areas only. Why? As the age of buildings are younger than that in site C&D, also the material of the buildings are mainly made by concrete, therefore, there is less decay occurred. Moreover, there is government planning in site A&B, the buildings are well planned, they are not overcrowded. So, the level of decay is

lower.

4.2.2 Methodology:

1. Go to Sai Kung Town
2. Select one building representative
3. Mark the location of this block on the base map
4. Observe the environmental condition and building condition of this building and determine its score according to the following chart:

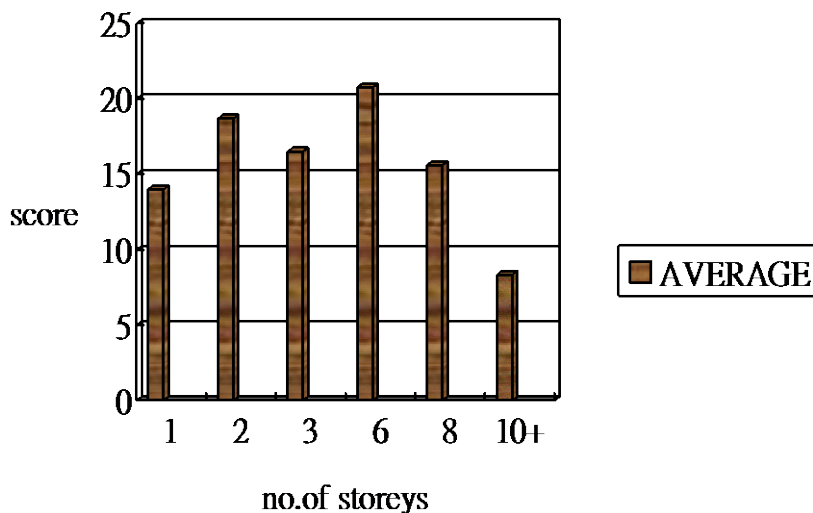
4.2.3 Analysis

Table : Summary of the results

Building Appearance	Much	Some	Little	None
A. Surface deterioration, paint peeling, wall stains	5	3	1	0
B. Broken glass, leaking water pipes	8	4	2	0
C. Timber rot, iron rust	7	3	1	0
D. Displaced tiles/roof units, roof sag, unstable structure	11	6	3	0
E. Illegal structures added to the building	3	2	1	0
F. Building material:	Wood: 10	Brick/ stone: 5	Concrete: 1	
G. Air pollution, offensive smell, noise	3	2	1	0
H. Litter, rubbish dump heaps, insects & vermin, e.g. rats	3	2	1	0
I. Over crowdedness (inadequate space)	3	2	1	0
J. Light penetration (sunlight)	0	1	2	3
K. Grass or trees (green belt)	0	1	2	3

Urban Decay

In contrast, in site A&B, there is slightly urban decay only in the inner part areas. Why? As the age of buildings are younger than that in site C&D, also the material of the buildings is mainly made by concrete, therefore, there is less decay occurred. Moreover, site A&B are with government planning, the buildings are well planned, they are not overcrowded. So, the level of decay is lower.



Some people emphasis that “Urban decay tends to decrease with increasing building height.” According to our evidence, it is not true. First of all, the buildings in Sai Kung center consists mainly 2-3 stories, the degree of depreciation is different.

It is no doubt that “Environmental conditions improve with distance away from the old urban center”. From our observation in site A&B, the living condition is better. Also, there are more recreational facilities, for example, playgrounds, parks and green belt, and public facilities, such as, shopping malls, schools and clinic. Furthermore, the transportation system is more efficient, for example, wider roads, more bus routes and more choice of public transports. However, in site C&D (old urban center), the buildings are messy and overcrowding, most of them have unstable and illegal construction.

4.2.4 Possible Solution

How can we improve the urban decay situations in Sai Kung? There are several methods:

Urban renewal need to practice, for example, poor-quality housing are cleared and the residents are resettled. Then the government needs to start a comprehensive and concrete redevelopment program, such as provide more open spaces and community facilities, road widening, construction of higher buildings, regular maintenance, punishment for illegal buildings and irresponsible owners.

Although there are many conflicts on the urban renewal planning, we think that it is worthwhile to implement the urban renewal in Sai Kung. Since Sai Kung is becoming a new

popular travelling spot, especially for the seafood, resorts and sight spots. If we can improve the environmental condition, it can attract more tourists. Also, we need to concern about the public safety because of peeling wall. And the construction of higher buildings can solve the overcrowding problem. Therefore, it is worthwhile for us to do that!

Besides urban renewal planning, there are some factors, which affect the future housing quality in Sai Kung:

4.2.4.1 Government Policy:

The government can set up legislation to restrict the illegal structures, the buildings will be more safe. Also, the government can allocate different land uses, for example, separating the commercial and residential land use zone because of some commercial activities will affect the living condition of the residents, like mixed land use and to reduce the pollution.

4.2.4.2 Education:

Promoting the positive attitude to the citizens, as teaching them the high risky of constructing the illegal structure and removal of the unstable buildings.

4.2.4.3 Design of buildings:

The developers may improve the building material; for example, try to use more resistant materials in order to against the peeling. Also, the new design can provide more open spaces, which can tackle the problem of overcrowding.

4.2.4.4 Management:

The private developers maintain their buildings regularly.

-5. Conclusion

In nutshell, we have different conclusion in different aspects.

In pollution, we found that the main factor to cause pollution is human activities, rather than agriculture. Also, we ensure the water quality of the upper course is better than that of the middle and lower course.

Moreover, we know that the serious urban decay occurs mainly in the early development and the inner part of the city. Also, to the urban activities, we state that most of the retailing concern in the heart of the city, the pattern of the others just develops around the center.

Furthermore, for the woodland, we gain more knowledge about the inter-relationship between

soil, climate and vegetation. For example, the precipitation will affect the soil, the slope or the texture will affect the infiltration, the infiltration will affect the vegetation growth, and the vegetation growth will affect the species of vegetation. There is relationship between 3 aspects; we need to have the fully understanding on it.