

The Geographic Environment of Hwaam Cave Area

Chŭng-ryŏl, Hong⁴⁾ · Pyŏng-kwan, Won⁵⁾

I. Introduction

The geographic environment means the general state of the environment in the area.

Especially, which means the generation cause, the development process of the cave, and the validity of cave development and conservation in the side of the place of the cave.

This study put emphasise on lying in which place Hwaam cave in Tong-myŏn, Chŏngsŏn-gun, Kangwondo is situated and having in which stand is in comparison with other districts, and how the geological structure which determine the cave forming cause is.

Especially, we survey the relation between the ecological environment of Hwaam cave and the human and society environment around it.

II. Geographic location and environment

Hwaam cave is situated in chonson-gun, which is mountain area on the south east of Kangwon-do and borders on the west of Toughae-shi, Taeback-shi, and Samch ŭk-shi, on the east of Pyŏngch'ang-gun, on the south of Yŏngwŏl-gun, and on the east of Kangnŭng-shi, and Pyŏngch'ang-gun.

The size of Chŏngsŏn-gun is 1,200km², the distance from east to west is 40.25km, the one from north to south is 44.25km.

In Chŏngsŏn-gun, Imgae-myŏn is the widest square, 242km² and

4) Kimchŏn Junior College Professor

5) Chumunjn Fishery & Technique High School Teacher

Tongmyŏn situated in Hwaam cave is the half size of Imgae-myŏn, 131 km².

Kamok-ri is in the last villiage of east, Hwasŏng-ri in Chongson-gun, is in the one of west.

From Seoul, it takes three and a half hours to tour the Yŏngdong express way by way of Hajinbu, by auto mobile, and four and a half hours by way of wonju, Chaechŏn, and Yŏungwol by train.

From Pusan and Kwongju, it requires each 7 and 8 hours to tour by train.

It is convient to be near from Seoul, but not from others.

But in Kangwon-do, especially the cities of the east coast, it is at the eight minutes' distance from Tonghae-shi, and at the ninty minutes distance from Taebak-shi, and Kangnŭng-shi.

The accecibility to the major cities with in the province is better than other distict.

Hwaam cave in Tong-myŏn is situated about 20^{km} to the east of the county office in Chongsŏn-up, and take 20 minutes by bus.

Only general buses are run between Chŏngsŏn-up and Hwaam cave every hour from the office of Tongmyŏn it is about 2^{km} away, from Hwaam mineral water, it about 3^{km} away.

Hwaam cave is administratirely located in 541, Hwaam-ri, Tong-myŏn, Chŏngsŏn-gun, and is geographically on the west slope of Kaghisan (1,060m)

In the scenary around the Hwaam cave, The Tongchŏn run from northeast to southeast.

The width of the river is about 130m, built the bridge for the purpose of cave development.

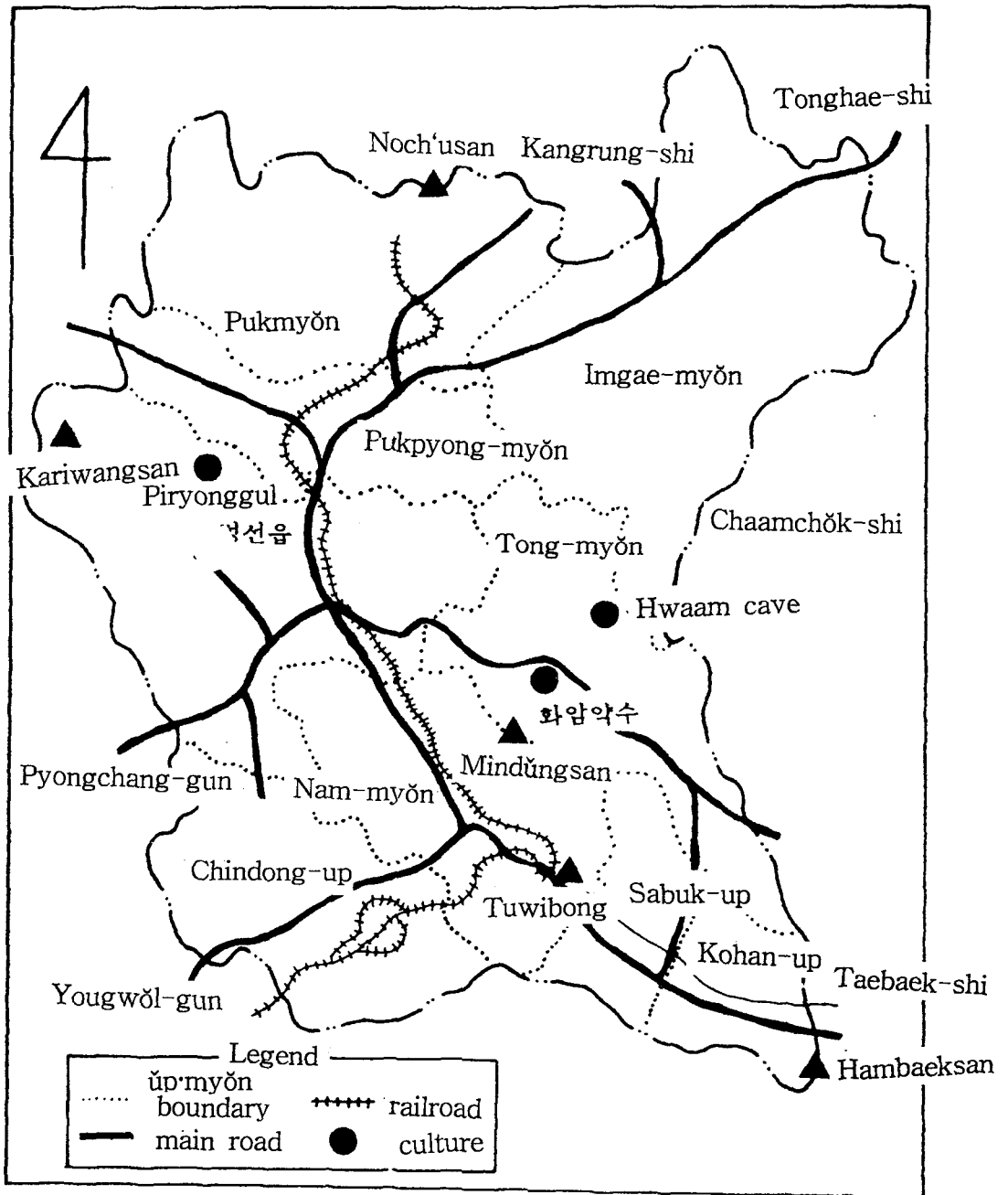


Figure 1 Location Map of Hwaam Cave

The declined entrance road from information center to the entrance is used as a farming land.

III. The outline of spelean district

In researching the geographic structure of Chöngsön-gun, gray and white strange limestone which consist of Chöngsön limestone level that is the late period of Chösöngae large limestone level, which is included in the upper part of the paleozoic era, is widely distributed and gray seil lie in the structure everywhere.

Karst geographies and limestone caves is scattered within Chöngsön-gun. The geographic chronicle of the stratum to formate Hwaam cave is 4~5 hundred millions years old as chongson limestone level of large limestone tong of chösöngae of the cambrian of the paleozoic era.

Around the cave, myobong system Yangdoktong of chösöngae of the paleozoic era, dark green seilb is distributed.

The mountainous district in front of the cave is mainly consist of Magdong limestone system, the near of the cave is consist of Pungchön limestone, and Tongjom kuartzit and Hwach'olch'ung are mixed in many places.

IV. The outline of the geography in the cave district

Chöngsön-gun is the mountain county which is average 800 meters high and is surrounded by over 1,000meters high mountain in height and as a rule which are Nochusan,(1,322m), Kariwangsan(1,561m), Tuwibong(1,469m), Hamtaesan(1,573m), and Chiögsan(1,117m).

The mountain geography like this is generally formed out of the karst geography.

Owing to this fact, there are circular dolines, especially, at the places which have geographies like this, a lot of caves are found.

As Chõngsõn-gun has much mountain geography, it has only a little space to cultivate, if so, it seems that people prefer dry-field farming to rice farming because of the steep slope of cultivating field.

In researching the river there is Tongchõngang which start from Hanriso in paejonri of Tong-myõn and this river (joined) with other branch rivers, and form Choyang river.

Also, Namchõn which start from Kallaesan in Tongmyõn, and go through Nam-myõn flows together with Chõyanggang at Kasuri, and flow to the Yongwol by forming the main river of Namhangang.

Because of this river, there are fine views within many strange rocks at the mountain valley in this area.

Especially, the flow of the river plays roles, to the great extent, to make this area command a fine view.

On the other hand, the flow of rivers like this run not straightly but windingly because of grand and steep mountains, which is a good view, and the accumulated district by windingly flow is used for cultivating field.

The river cliff generated by Tongchõn in front of Hwaam cave and wide accumulated district by windingly flow of the river look beautiful when we see them at the cave entrance.

V. The climatic characteristics of cave district

According to the climated materials of Chõngsõn-gun.

The annual average temperature is 11°C, the lowest month, January, is -3.5°C, the highest one, July, is 23°C.

Annual temperature difference in the area is over 25°C.

Also, the lowest temperature on an average of January records -8.8°C, the highest of July records 26.8°C, not over 30°C.

Therefore, in researching climatic characteristics, the climate of Chöngsön-gun show the continental one with the great annual temperature gap and the cold one that the lowest month is below -3°C, the highest one is below 25°C.

But it includes in Dmj with regard to the climate division of our country, in comparison with the other district of the same latitude.

As a rule, it says that the temperature is somewhat lower.

Because Chöngsön-gun is situated in the inland area, surrounded by the mountain area and affected on the mountain climate by the high place over 1,000m.

We can understand this phenomenon from the daily big climate gap between day and night.

And this area is quite temperature gap because of the height difference by mountain geography, vertical temperature change is somewhat higher by 3-4°C on an average.

In researching the amount of precipitation, it, on an annual average, is about 1,200mm, especially in June and July, a rainy spell in summer in June and July is the pattern that it is raining in summer and dry in winter and represents the characteristics of the tropical monsoon climate.

VI. The ecological environment around the cave

The entrance of Hwaam cave was the tunnel of an abandoned mine which was located in the middle part of the mountain 550 meter high.

The upper part of the cave entrance is partly the rest land and both

sides is the aforested land of pine trees.

The plants near the entrance keep, to some extent, natural states, but there appears the trace that potential plants was quite destructed.

The mountain area around is consist of mixed forest of the needle-leaf tree and a broad-leaved tree in and has good conditions as a habitate of many kind of birds.

The species or individual numbers of cave creature have a relation with the ecosystem around the cave, so it is needed to greenulize the entrance around self-supporting shurb plant, for example, an oak, a bush clover, an azealea, a royal azealea, etc is requird to plant the natural shrub mentioned above.

The explanation about the below picture of the content mentioned above as follows.

VII. Human environment

Chöngsön-gun is consist of four ups and five myön, which are Chöngsön-up Shindong-up, Sabuk-ŭp, Kohan-ŭp, puk-myön.

And Tong-myön, which include Hwaan cave, has 7 administrative districts, ri, and 46 natural villiages.

In researching for the situation about land use of Tong-myön. The forest land occupies 111.39km² of all land, 130km², and holds the most rate like other ŭp and myön districts.

Next the dry field occupies 13.3km², The road 0.77km², and the rice field 0.732km². The land for other practical purpose is almost nothing except for the forest land and the dry field.

Therefore, this fact shows apparently that Chöngsön-gun has much more forest field and especcially dry field in comparing with ohter district

because most of the area is the forest land.



Picture 1 the rest land near the cave entrance.



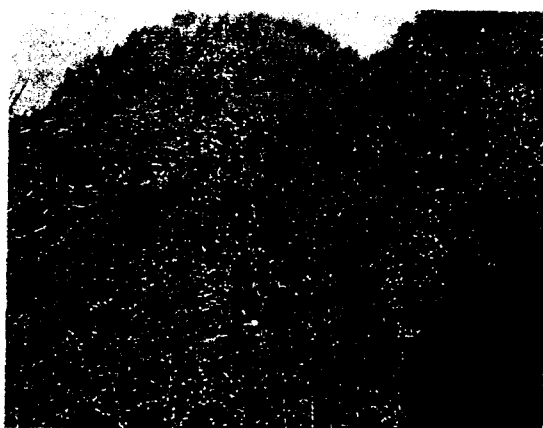
Picture 2 the landscape land of the cave entrance



Picture 3 the aforested land of the pine tree at the entrance road



Picture 4 the cultivating field and the forest area near the cave



Picture 5 the mixed forest area near the cave



Picture 6 the forest area near the cave

And in case of Tong-myŏn, the big characteristic of the area has less rice field than the road land. The population of Chŏngsŏn-gun had 55,204 persons in 1957, and had increased till 1978 had reached 139,862 persons by continuously increasing till 1978 owing to the boom of the mine development, had stayed similar number of persons by 1984 and has decreased after 1984 on account of the derivation phenomenon by the closing of small scale mines by the government policy of the coal rationalization, especially after 1990 the population decreased suddenly, was 72,900 in 1993 and now was reported below 70,000 persons In research for the population constitution by age in Chongson-gun, the youth population below 14 years old was 42.6% in 1980, and decreased, to the half extent, 23.3%, in 1993.

The old one more than 60 years was only 3.8% in 1980, but increased contrary in 9.8% in 1993. This phenomenon also appears in other agricultural districts, but Chŏngsŏn-gun does so more than others, because the coal industry which is the main one of Chŏngsŏn-gun is declining. The less opportunities of getting job cause the population of Chŏngsŏn-gun to decrease.

This phenomenon would get worse without the special measure for preventing them to leave. In case of Tong-myŏn including Hwaam cave, Tong-myŏn family's number, 1774 ones, in then the end of 1993 is the least in 9 up and myŏn of Chŏngsŏn-gun.

Tong-myŏn's population is 1,440 men and 1,341 women, total 2,781 persons of the least within chŏngsŏn-gun.

Though the general tourist resources are not rich, the natural scenery ones are very plentiful. The lack of information makes tourist's number not to increase, it appeared that tourists rapidly increased in number

417,685 persons, during the only one year, 1993, owing to the information that Hwaam cave had been developed. The development of Hwaam cave made Hwaam palgyong, which include in Hwaam mineral water, Turtle rock, Yongmaso, Hwaam cave, Hwapyoju, Chöngsön, Sogŭmgang, Molnundae, Kwangdaegok, become more and more famous. Especially Tong-myön including the cave has a National tourist site, Hwaam tourist site and is a good area as family resort

VIII. Conclusion.

As the above mentioned content, this cave was found by mining, so it is the wide plaze cave formed by the fallen rock of the cave ceiling by the cave tunnel the, the viberation by mining explosion. Therefore, no unusual cave creatures live, the inside part of the cave was ruined by many people.

So, it was changed into local memorial cave opened as tourist one in 1993.

Bibliography

Chöngsön-gun, 1994., *Chöngsön-gun statistical year book*.

Shi-whan, Hong, 1978., *Natural cave of our country*, Kumwhasa.

" , 1983., *Karst cave of Korea*, Speleological society of Korea

" , 1990, *General view of Korea*, Samju Co.

Chönsön-gun, 1990, *Research about fourist Development of Hwaam cave*

" , 1995, *Environmental Conservation and Safe Examination of Hwaam cave*