# How the retaining wall form effects snakes crossing the road in Taiwan

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尤仕承

# Hello!

## I am Shi-Cheng You

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**If you have any questions after my talk, please contact me : dorcustree@gmail.com**

# 1.

# Introduction

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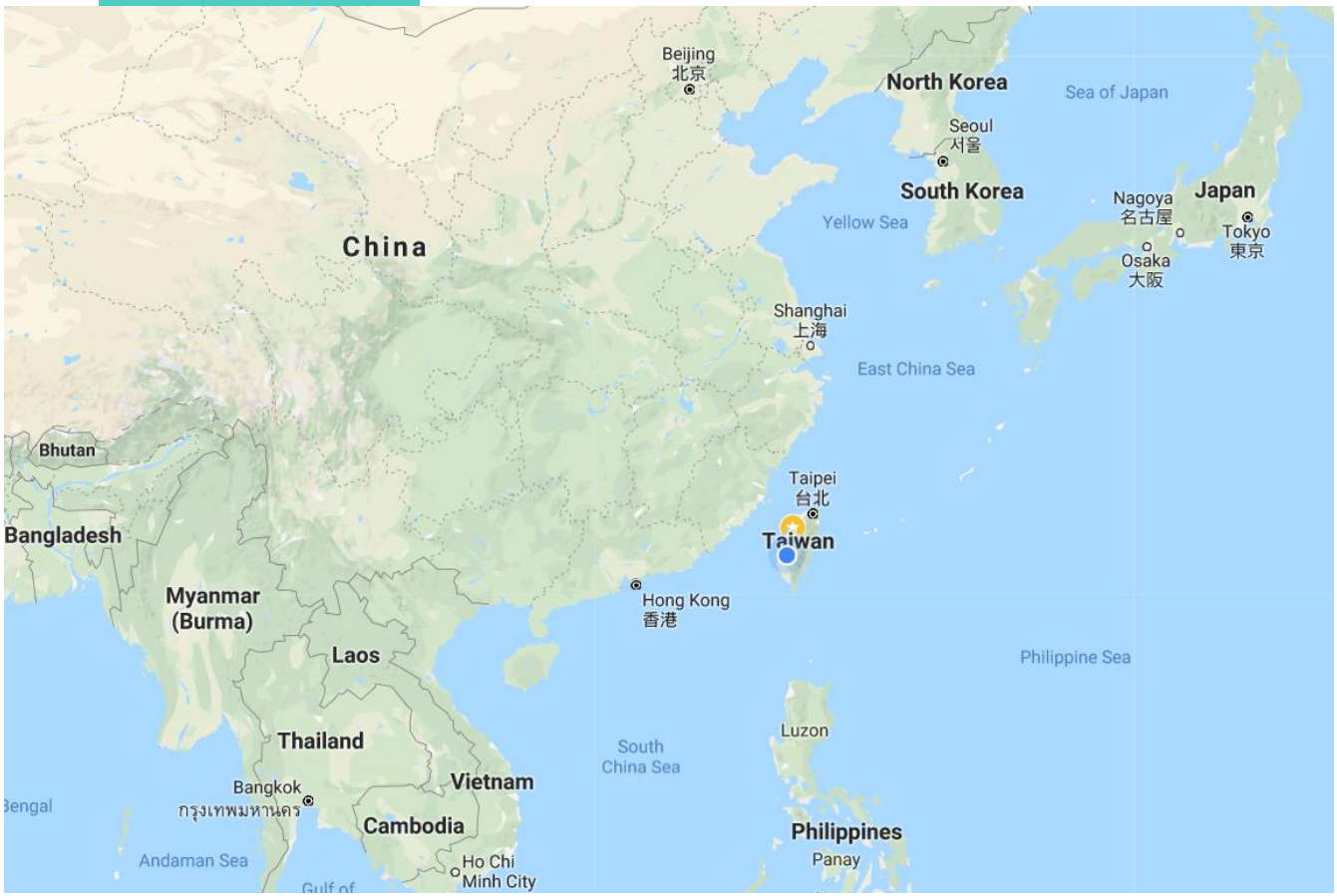



Taiwan is an island in the South China Sea, very close to China.

Taiwan and China are separated by the **Taiwan Strait.**

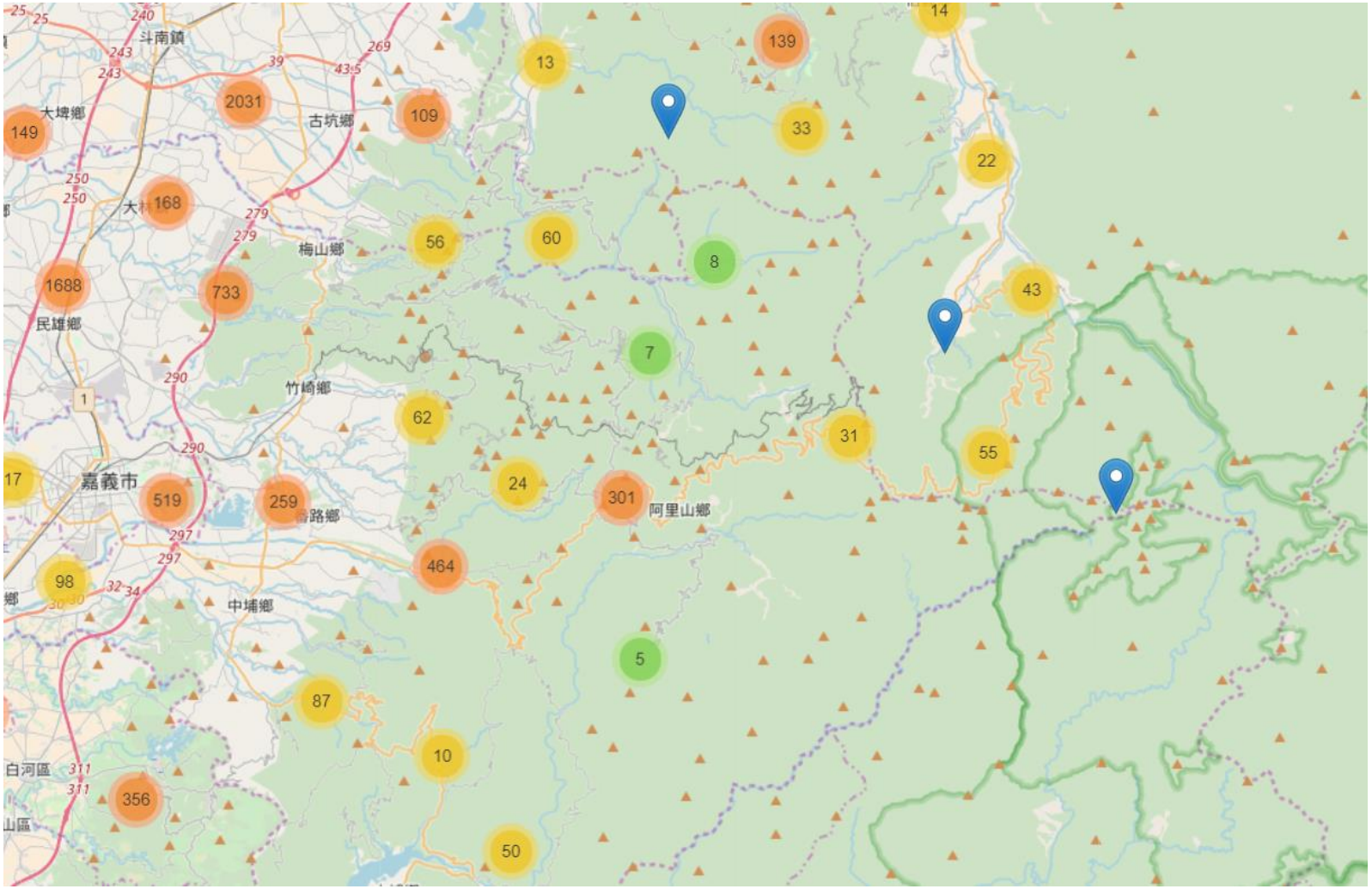
# Introduction


“In the Australia very often if you drive two hours you will probably see either a desert or cornfield,”

“But here in Taiwan you will probably find yourself traveling from a mountain top to the ocean. This is what we call biodiversity – habitat diversity. ”

There are around 987,000 roads in Taiwan and around 550 different species involved in roadside incidents.

# Roadkills in  Alishan




(Taiwan Roadkill Observation Network)

# 2015 Roadkills in  Alishan

# 2.

# Research issue

# 2016 survey

Based on past experience of observation of snake , I speculate that roadside features, such as retaining walls, will have the impact on the rate of roadkill of snakes.

Some structure even become ecological traps.



# 2016 Roadkills in County Highway 169

# Preliminary evidence confirmed

- The concrete retaining wall has the most snakes and the highest roadkill rate.
- Large concrete structures can even trap goats.


# The main victims

From April to June 2016
More than 90% mortality of snakes is contributed by Taiwan slug snake.
Pregnant  Snakes have highest roadkill rate.

# 3.

# Methods and materials

1. Sample Selection
2. Measurement

# Sample Selection

**Taiwan slug snake** *(Pareas formosensis)*

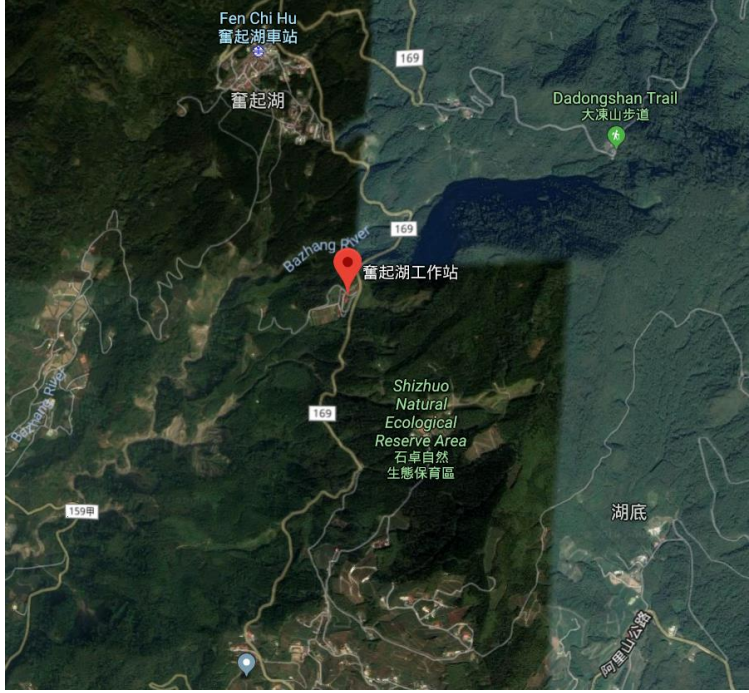
- The Taiwan slug snake is a small snake with total length up to 70 cm (28 in). These snakes are widespread in mountainous, moist forests. Taiwan slug snakes are nocturnal and feed on land snails and slugs.

- Taiwan slug snake raise its head and warn the enemy or predator

# Slug snakes, this is facilitated by asymmetrically evolved dentures, as a 2007 study shows

# 2017 experiment

## Test Retaining Wall Blocking Snake Climbing

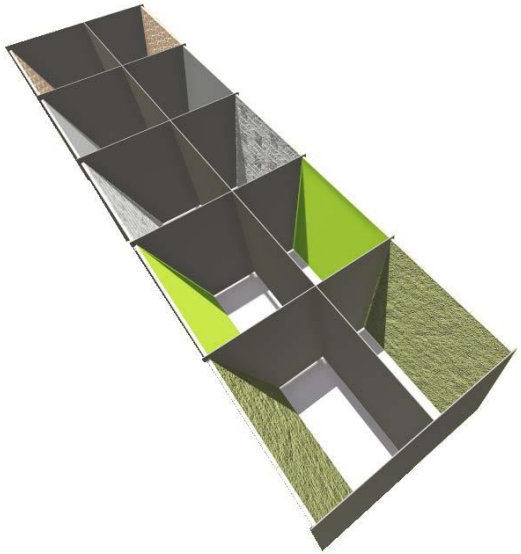


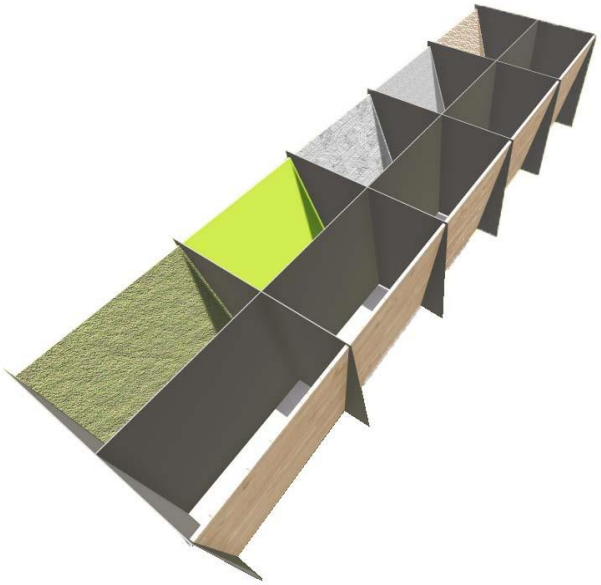

- **Located in Fenqihu** Nursery
- On County Highway 169
- Altitude 1400m

# Device

- Five Kinds of Common Retaining Wall Materials of Alishan (original vegetation、Grass, stone bricks, soil, concrete)

- The slope is 1/3, 1/5





# Measurement

- Measure the time of snakes leaving the device at night.
- Observe by Infrared monitor at night

# 4.

# Results

1. Results
2. Conclusion
3. Suggestion
4. Future

# Results

| Wall material | Soil 1/3 | Soil 1/5 | Stone brick 1/3 | Stone brick 1/5 | Concrete 1/3 | Concrete 1/5 | original vegetation 1/3 | original vegetation 1/5 | Grass 1/3 | Grass 1/5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of climb out | 20 | 13 | 3 | 0 | 0 | 0 | 18 | 24 | 10 | 11 |
| Time(min) | 14.4 | 17.6 | 18.3 | | | | 9.6 | 11.1 | 15.8 | 11.6 |

N=30

23 snakes quickly climbed to the grass but did not climb out.

# Conclusion

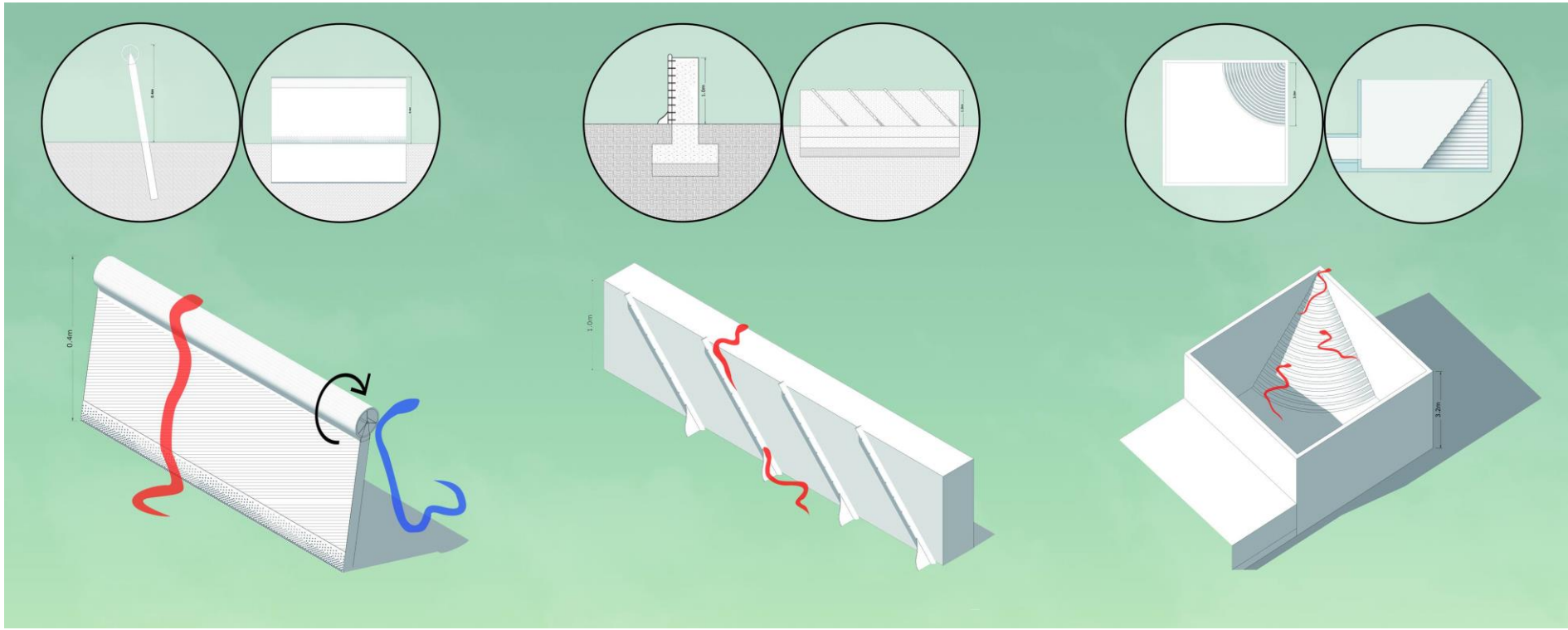
- The results show that grass and original vegetation wall are easy to climb by snakes, followed by the soil wall. Concrete, and stone brick almost completely stop the snake crossing. Expect to be able to improve the roads in mountainous areas by road engineering institution

# Suggestion

- Vertical structures in road side should be avoiding using smooth concrete or stone brick

- Create patterns on concrete structure.

# Future



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# Thanks!

## Thank you for your attention !

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