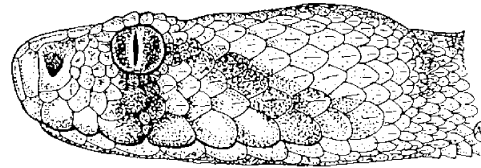




# Effectiveness of road barriers and underpasses for reptiles. The case of Milos viper (*Macrovipera schweizeri*)

Ioannidis Yannis



*Do snakes avoid underpasses?*

*Could barriers and underpasses create cut-off  
problems to the population?*

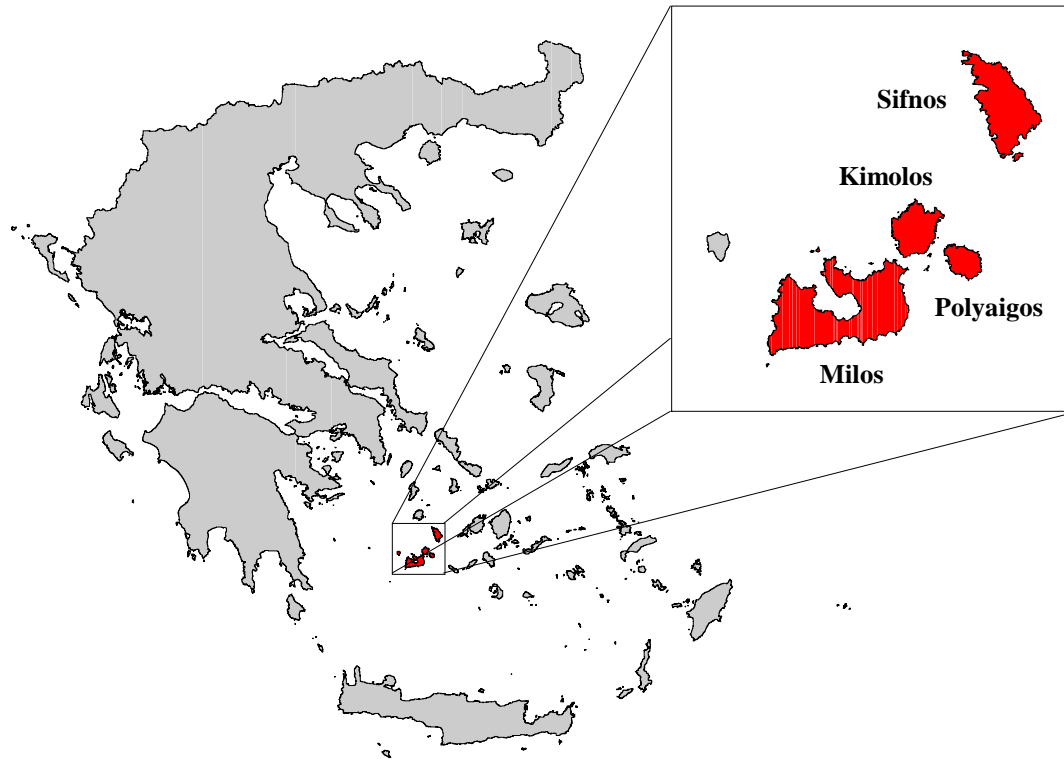
## The species

*Macrovipera schweizeri*: A priority species for the E.C. Directive 92/43



# The species

*Limited distribution area*



# The species

*Limited distribution area*

**Small population size**

*Population size on Milos island 2800-3500 ind.*

*More than 60% of the total population of the species*

# The species

*Limited distribution area*

*Small population size*

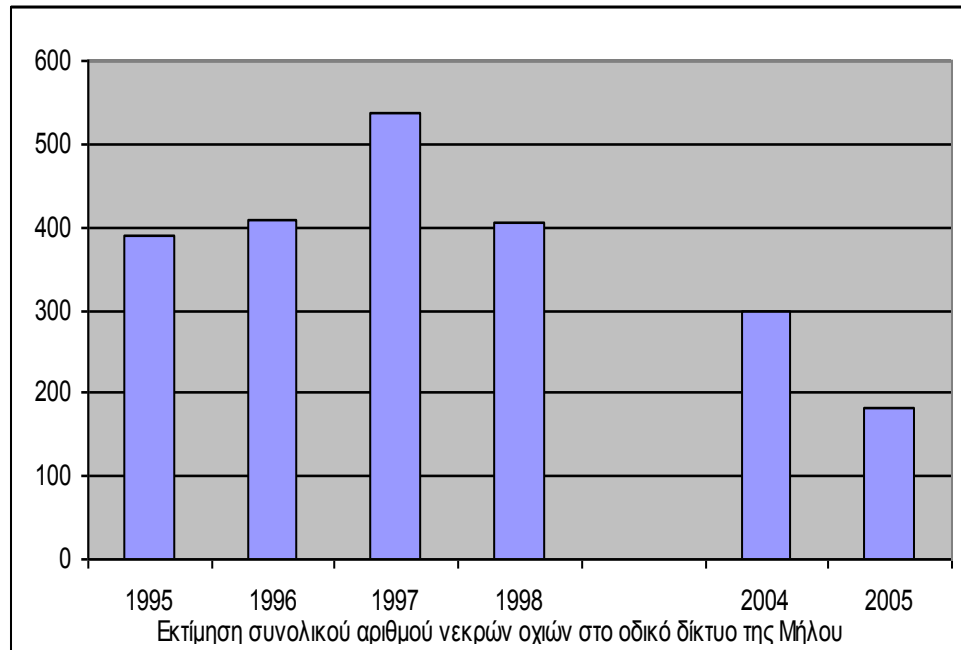
Existing threats for the species and its habitat



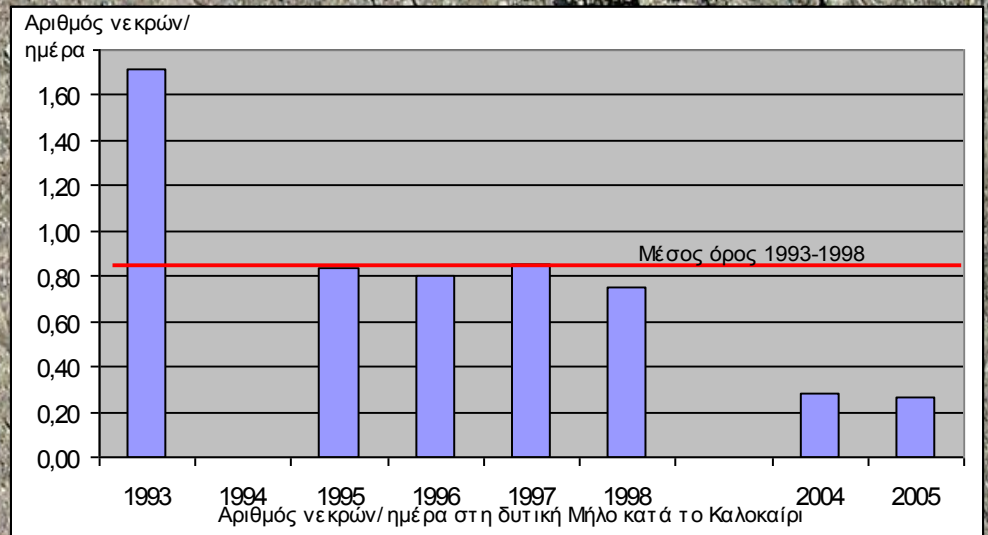
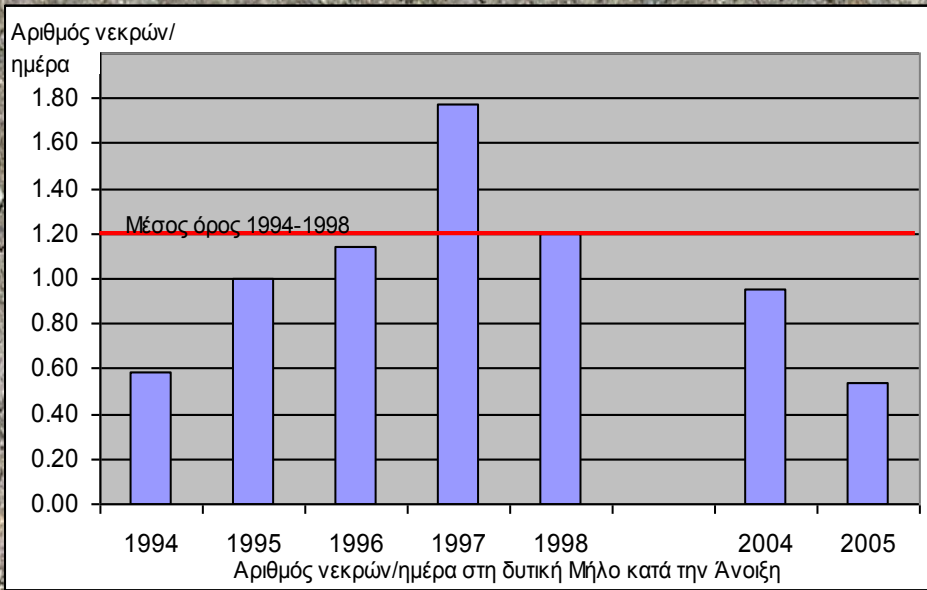
## The problem



Every year 183 - 537 vipers were killed on the road network of Milos island



# The problem



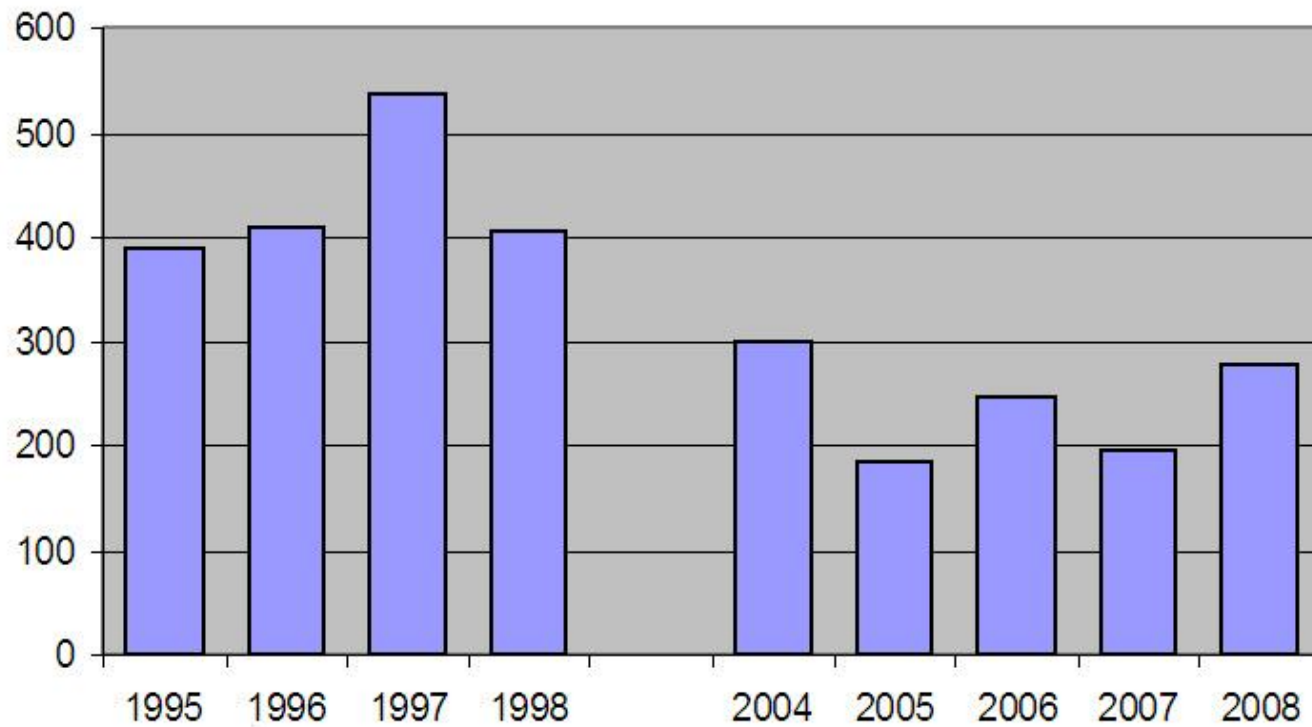
# Possible solutions

- No action

## Possible solutions

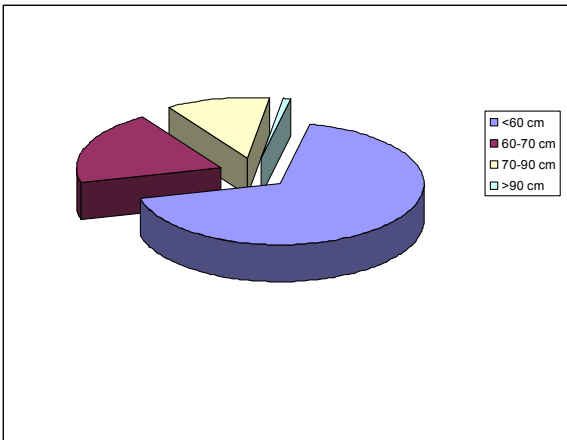
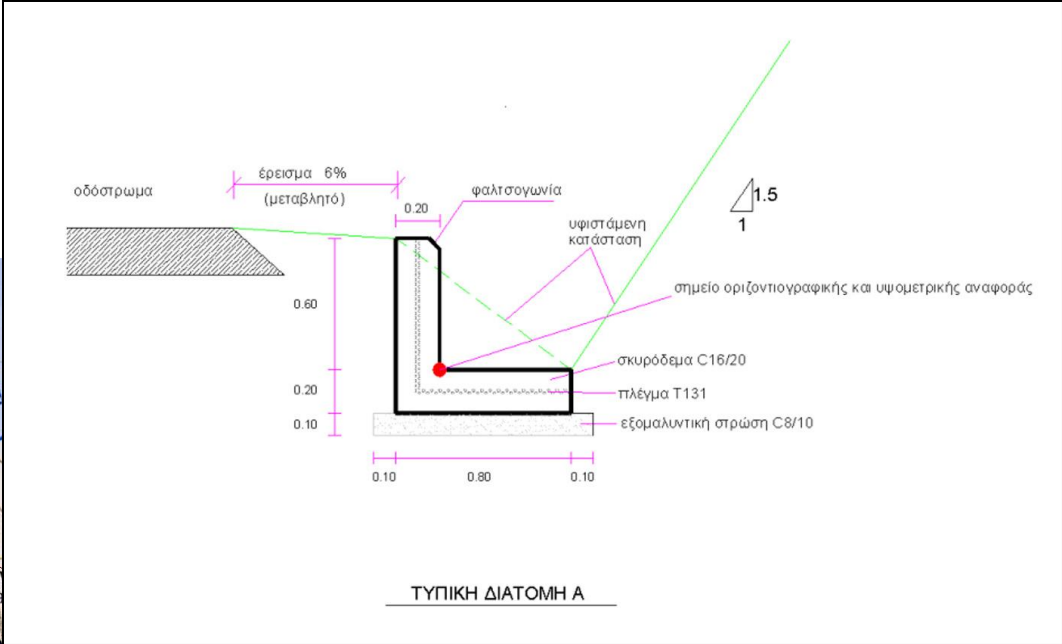
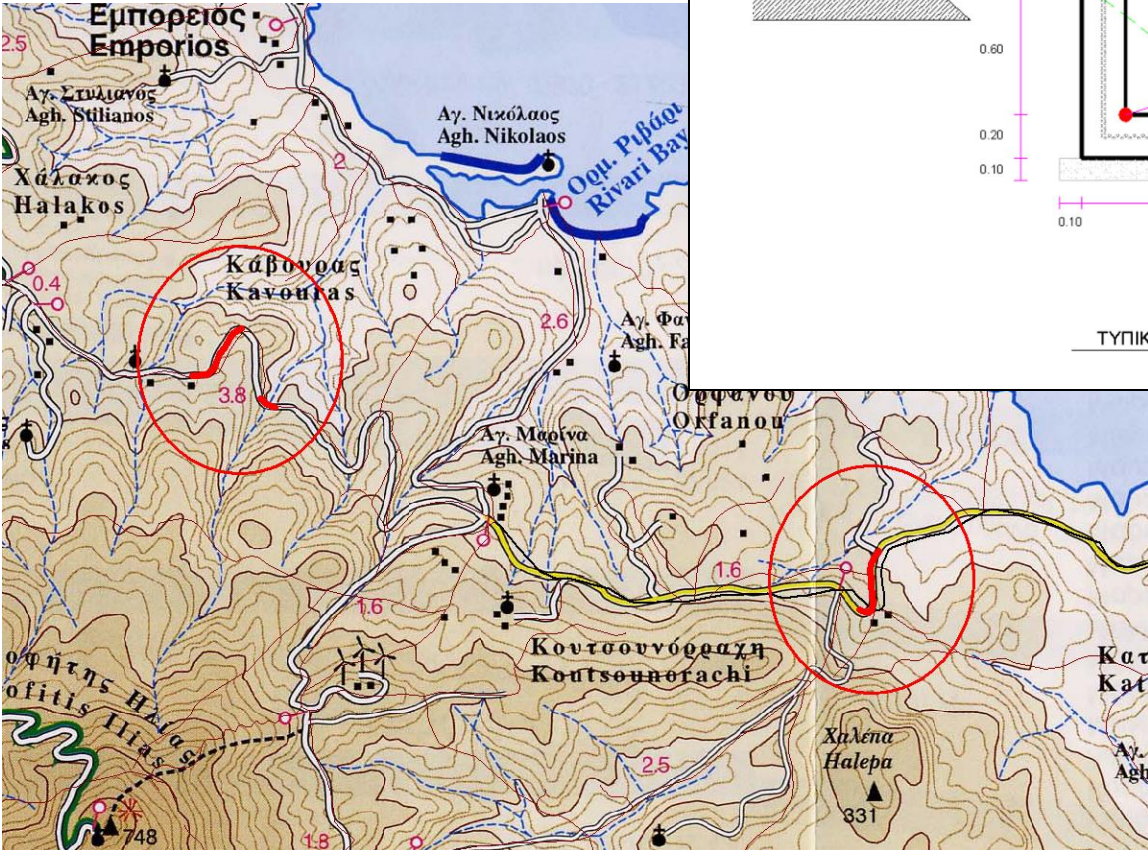
- No action

- Traffic control



# Possible solutions

## Barriers & underpasses



# Barriers



# Underpasses



# Monitoring



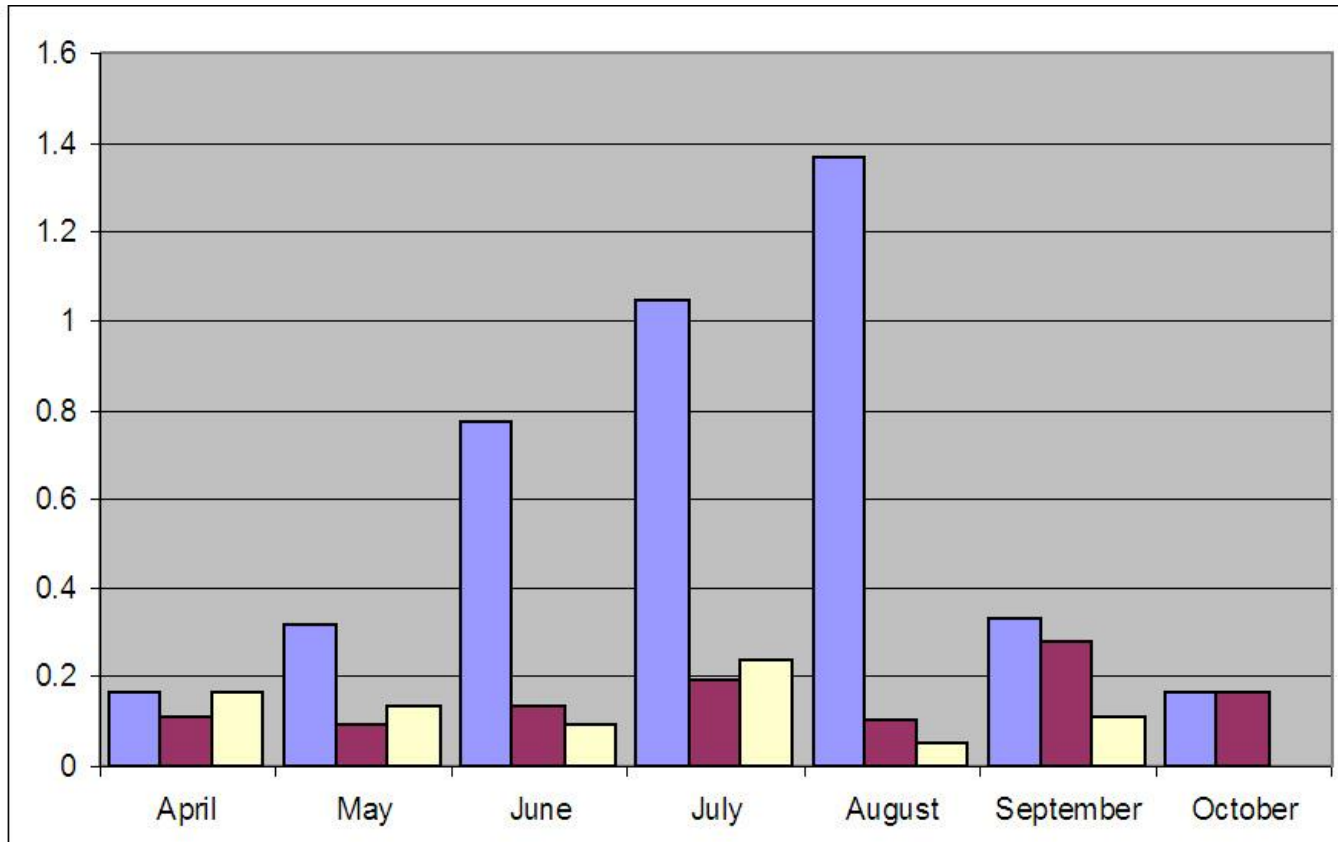
# Monitoring



## Results

Active seasons of 2006-2008: mean daily rate 0,77 viper passages per day. Maximum of 1.16 in 2006 and minimum of 0.57 in 2007.

77% of the vipers that met an underpass, used it to cross the road with an increasing rate from 2006-2008.



# Results

*The best type of underpass*

# Conclusions

- A barrier height of 60 cm is adequate for Milos viper.
- There are no signs of underpass avoidance.
- Importance of a good quality and quantity of field data.
- The right placement of the underpass: a spot where the animals would normally choose to pass the road.
- One underpass every 50 m. of barriers. The distance between two underpasses should not be over 100 m.
- Barriers and underpasses is a good measure to diminish road mortality for snakes but has its cost.
- Importance of annual inspection of barriers
- Long term monitoring of underpass usage would help to overcome possible problems for certain species

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**Antonis Fratzeskakis**

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technical and financial issues*