Hrvatski 54 sa 2019 14 Medunarodni Simpozij Agronoma

Forest succession as a possible factor on chamois population density: Biokovo Mountain as case study

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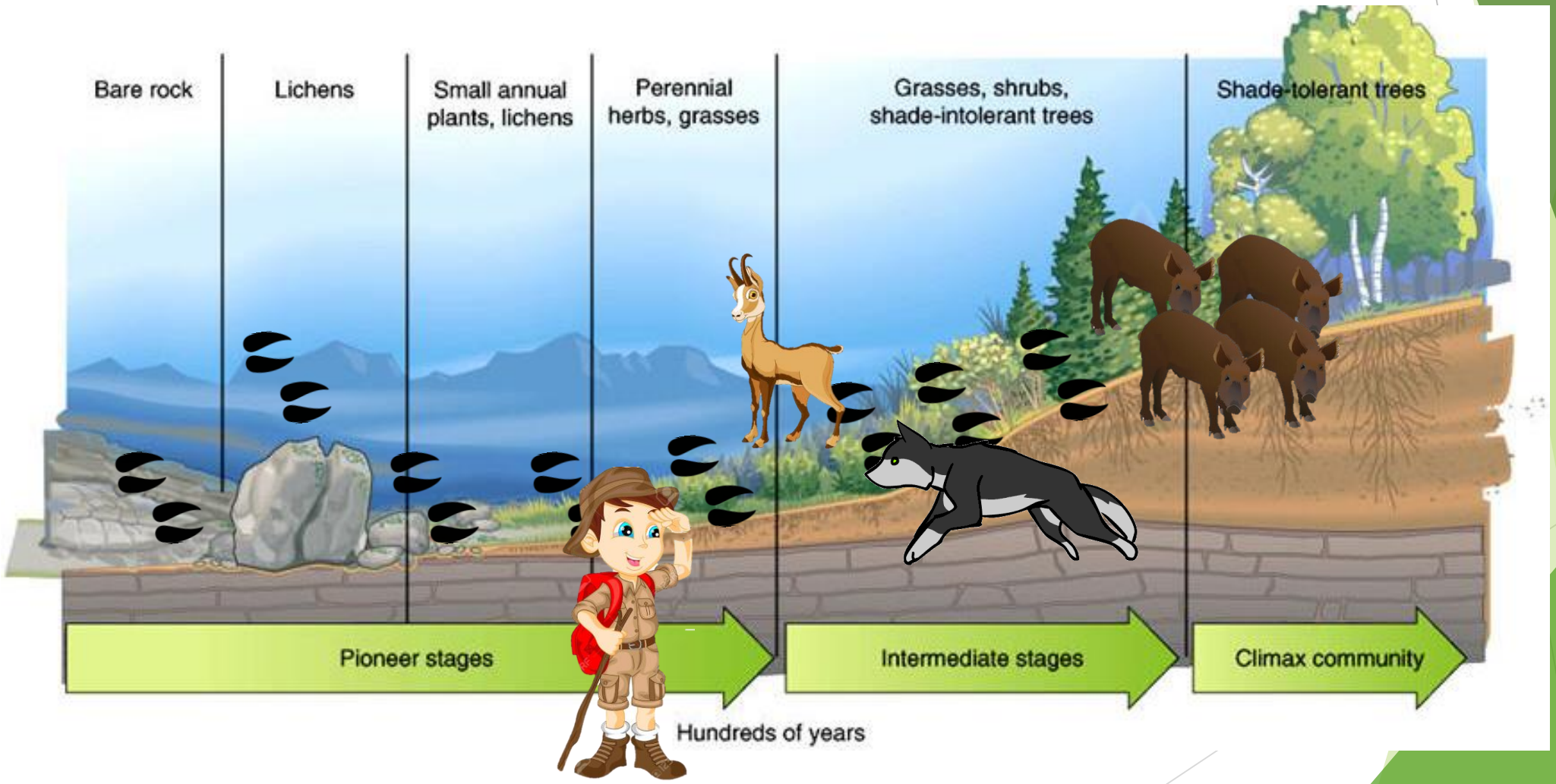
hrzz Hrvatska zaklada za znanost

Introduction

- factors influencing animal abundance and movement patterns
- species-specific needs



The chamois (*Rupicapra rupicapra*)

- high mountain areas with typical mountain climate and open landscapes
- intermediate feeder – open areas (grasslands, pastures)

diet composition: herbaceous vegetation (grass-like plants)

***high level od adaptability**

Aims

i) To calculate the rate of forest succession on Mt Biokovo;

ii) To link possible forest succession and chamois population size/density;

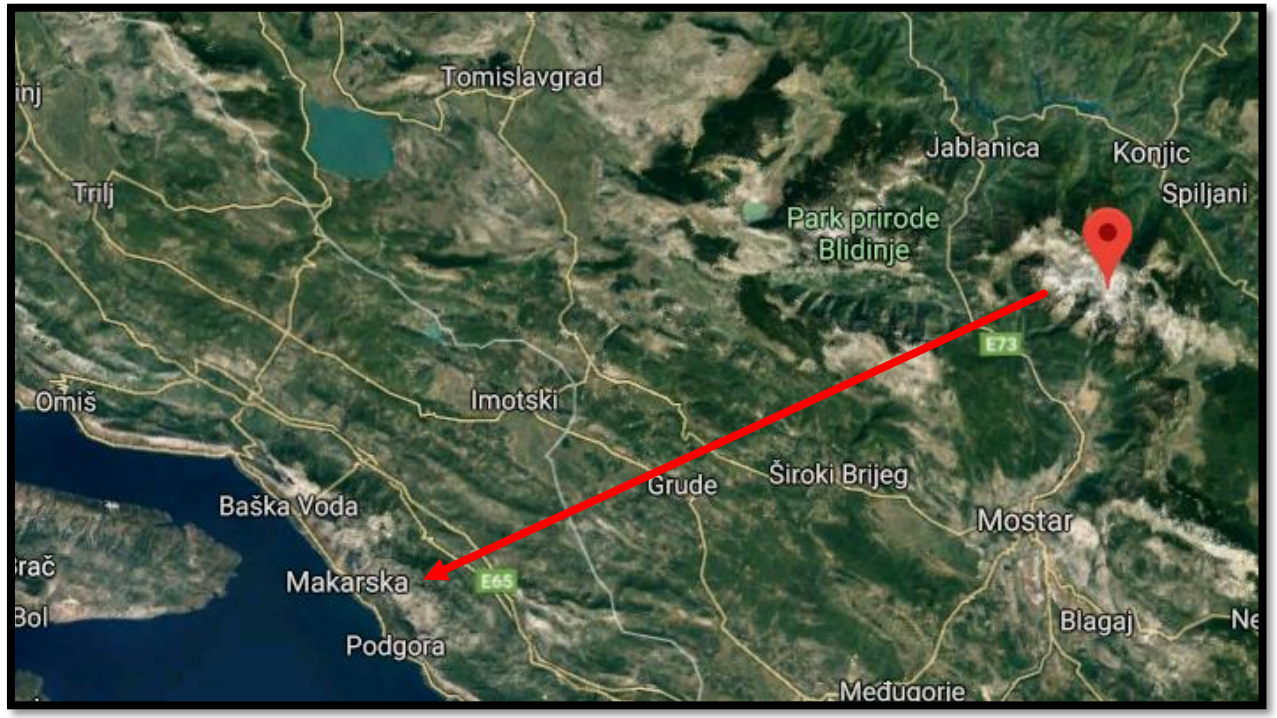
iii) To provide an overview on potential factors that may affected population size in the past

Study area

Mountain Biokovo

1964 to 1967
- several successive translocations from Mt Prenj
- 48 individuals

1990
- 1100 individuals



Rupicapra rupicapra ***balcanica***
Balkan chamois

1762 m

Open areas – rock/shrub

Abies alba

Pine forest

Fagus sylvatica

Ostrya carpinifolia

Carpinus orientalis

0 m

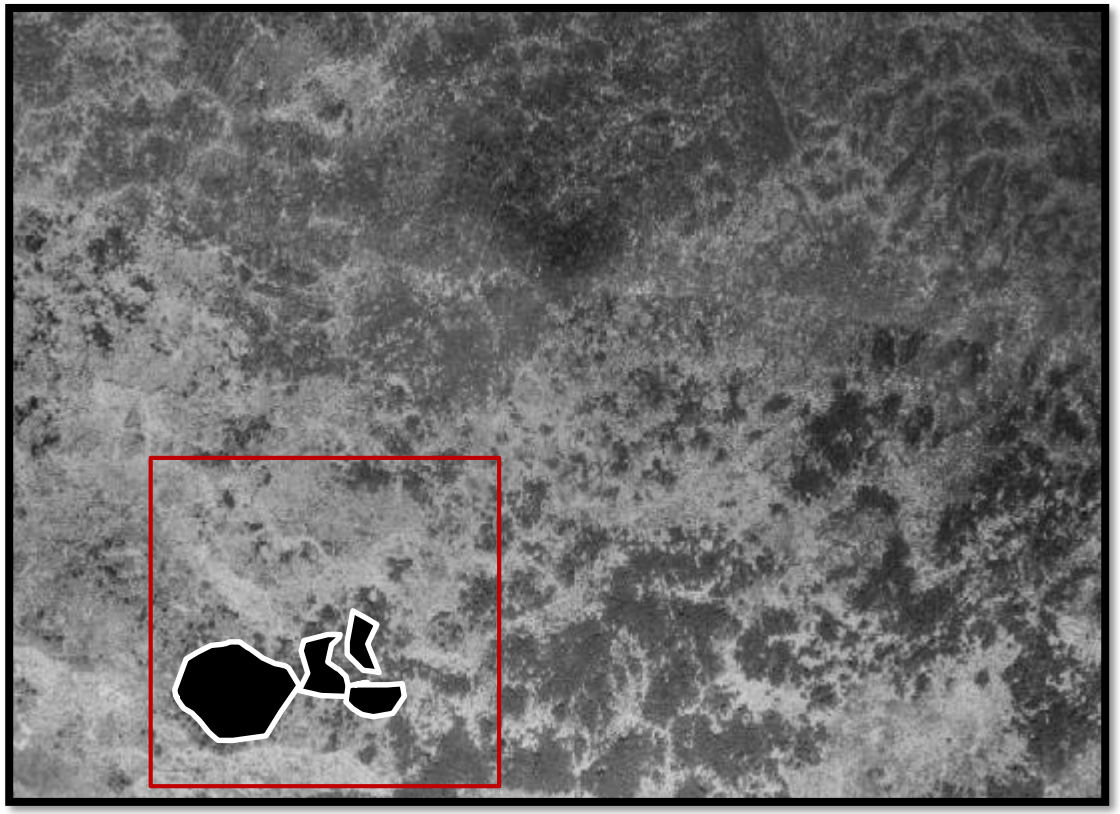
Mainland

Adriatic sea

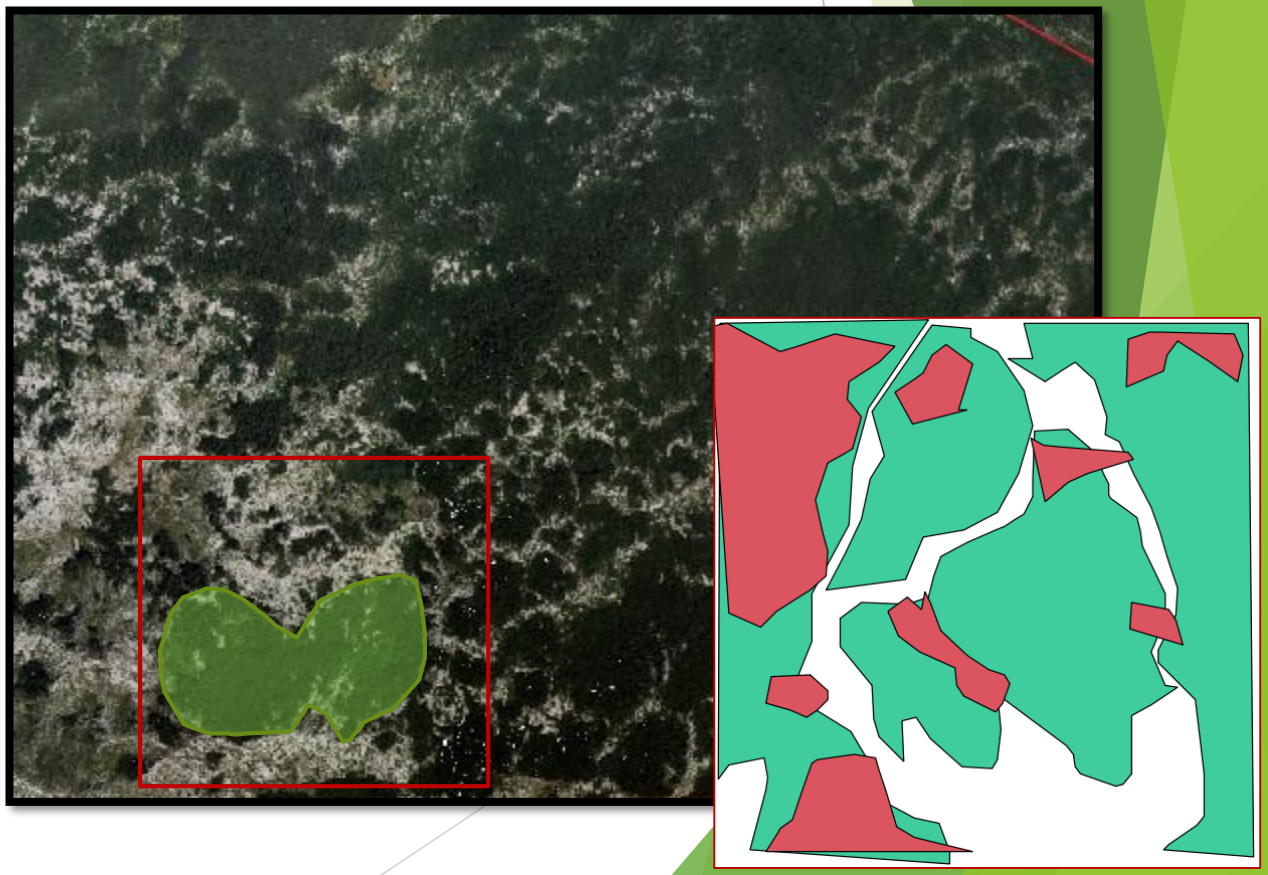
Methods

- 48 years of succession
- Rate of forest and shrub succession – 30 random square plots (100m x 100m)
- 30 ha in total

1968
5-10 m/pixel



2016
0.2-0.5 m/pixel

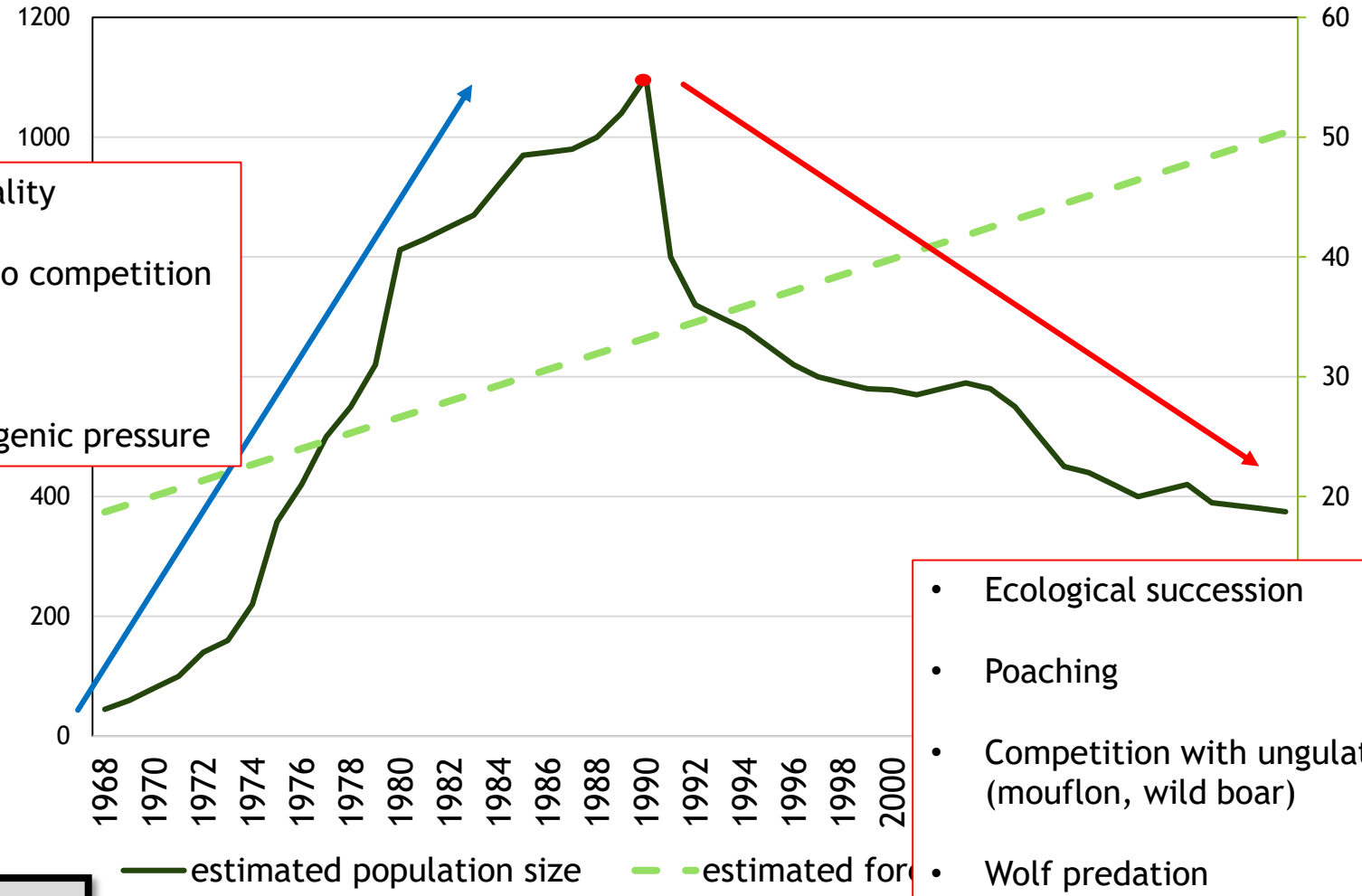


Results

1968 - 5.4 ha (of 30 ha investigated) (18%) was covered with forest/shrub

2016 - 15 ha (of 30 ha investigated (50%) was covered with forest/shrub

~ 0.6 % per year - average forest/shrub progressiveness



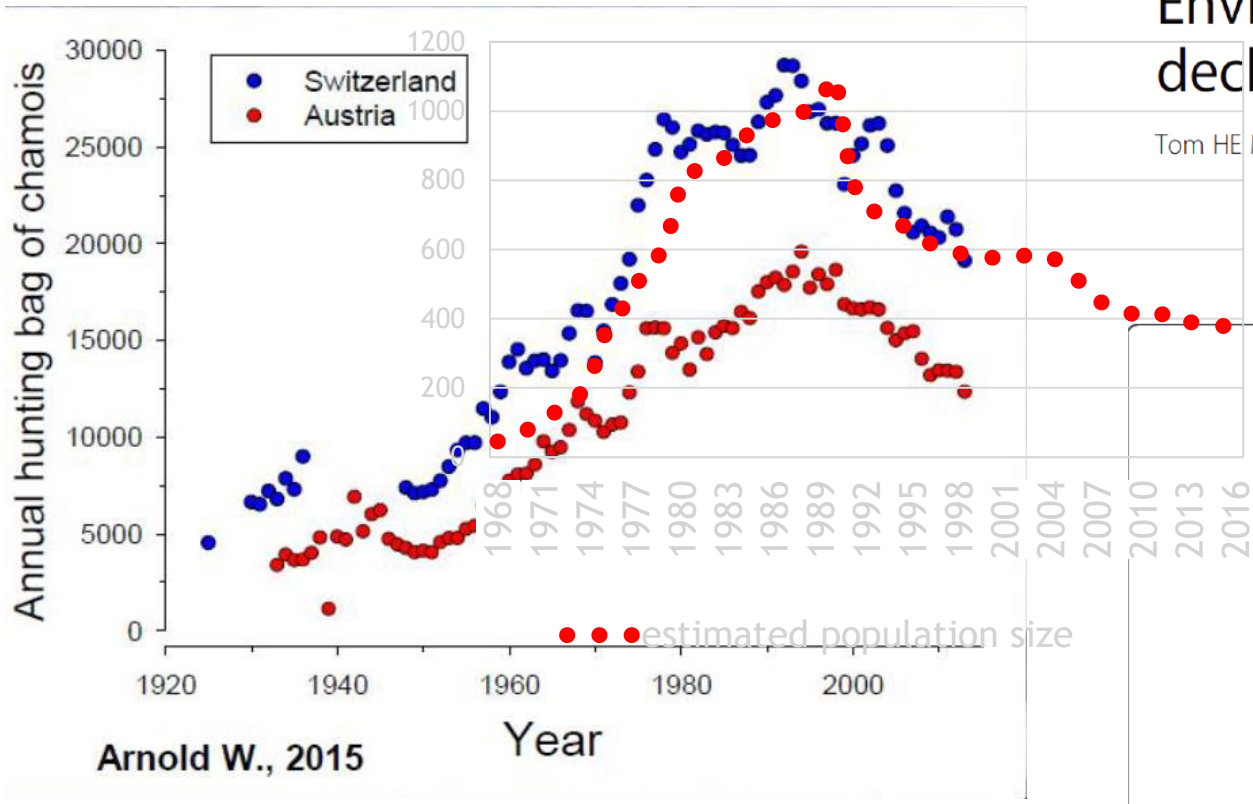
- High habitat quality
- No ungulates – no competition
- No predators
- Lower anthropogenic pressure

???

- Ecological succession
- Poaching
- Competition with ungulates (mouflon, wild boar)
- Wolf predation
- High anthropogenic pressure

Sudden decline

Global warming effect???



Mason et al. Frontiers in Zoology 2014, 11:69
http://www.frontiersinzoology.com/content/11/1/69

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Environmental change and long-term body mass declines in an alpine mammal

Tom HE Mason[1*], Marco Apollonio[2], Roberta Chirichella[2], Stephen G Willis[1] and Philip A Stephens[1]

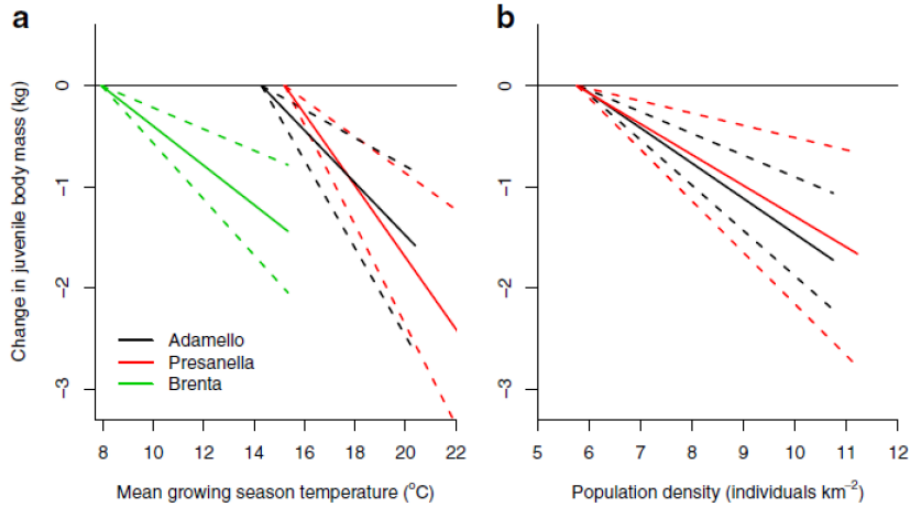

Figure 6 Modelled effects of temperature and population density on juvenile body mass. Modelled effects of **a)** mean growing season temperature and **b)** population density on change in juvenile body mass since 1983 in Adamello (black), Presanella (red) and Brenta (green). Solid lines are predictions of the most parsimonious body mass model for each site, with other predictors set to mean values. Dashed lines are 95% confidence intervals calculated from 1000 bootstrapped replicates [59].

Population size and the effect of environment

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A meta-analysis of the effects of habitat loss and fragmentation on genetic diversity in mammals

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„The main consequences of the combined effects of habitat loss and fragmentation are substantial decreases in population size and species richness and loss of genetic diversity…"

„Habitat loss and fragmentation may also reduce the availability of resources for mammalian species…"

Conclusion

- clear evidence of ecological succession on Mt Biokovo

- ~32 % progression of forest/shrub cover in the past 48 years

- mutual effect of several factors regulated population trend

Q: Can Balkan chamois adopt to changing environmental conditions?

- we need to clarify the influence of ecological succession on Balkan chamois

- future research on feeding ecology and habitat preference should be conducted

ACKNOWLEDGEMENTS

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DNA as a evidence of distribution and vitality of endangered Balkan chamois
IP-2016-06-5751

THANK YOU FOR YOUR ATTENTION!