Effects of climate change in the Swiss National Park

Mitigate or accept?

Rudolf (Ruedi) Haller, Director of the Swiss National Park

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Effects
Mitigate?
Accept?

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Creation	1914
Size (in ha)	17'032
Lowest Point	1374 m
Highest Peak	3173 m
Protection status	IUCN 1A (Natural processes for research)
Ownership	4 municipalities
Residents	0
Trail Network	100 km
Visitors (Hikers)	150’000
Management	ngo (Foundation)
Team	55 (2025, incl. part-time and seasonals)
Annual budget	aprox. 5.4 Mio CHF

Nature protection

Research

Communication

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Rewilding

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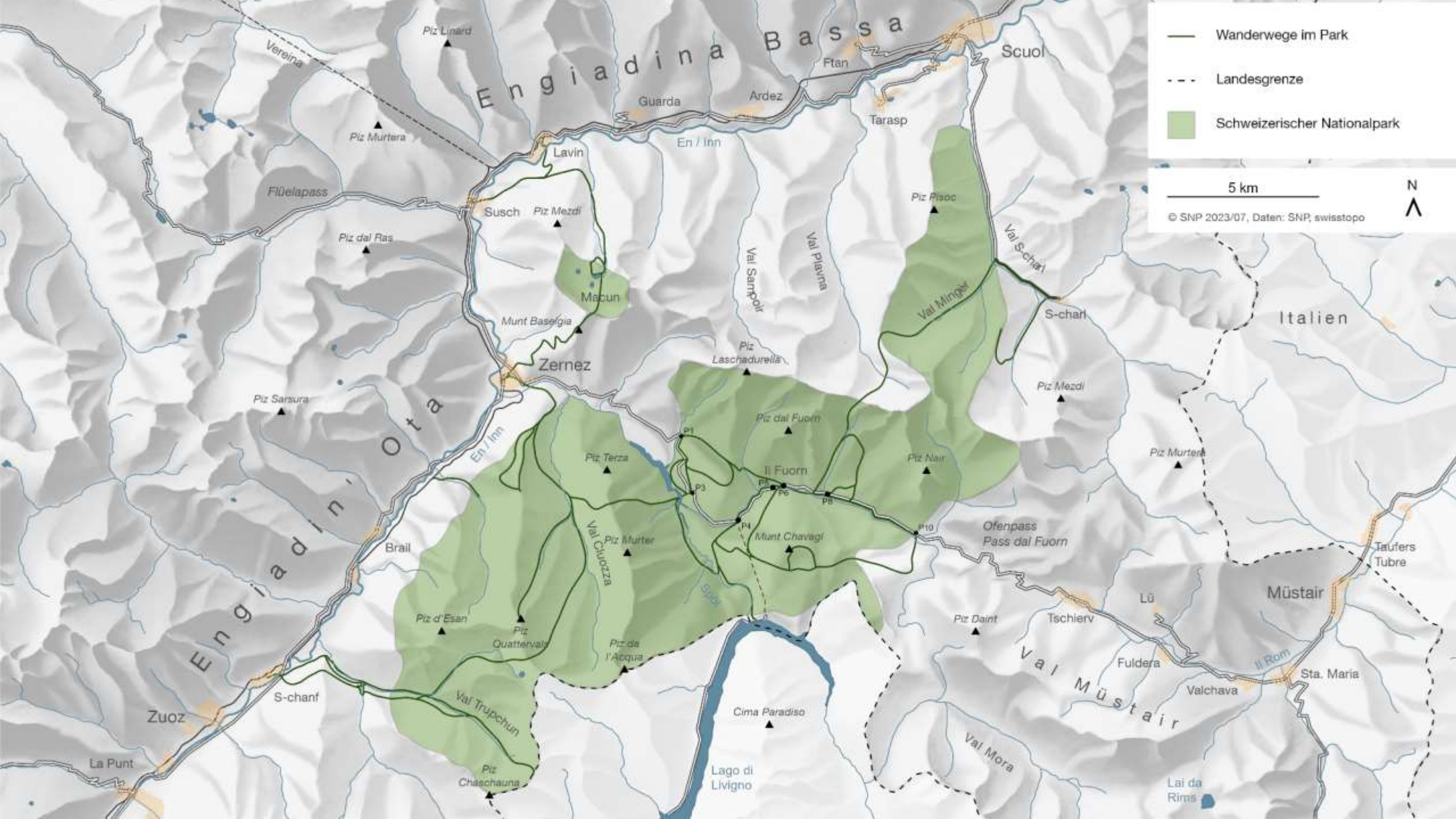
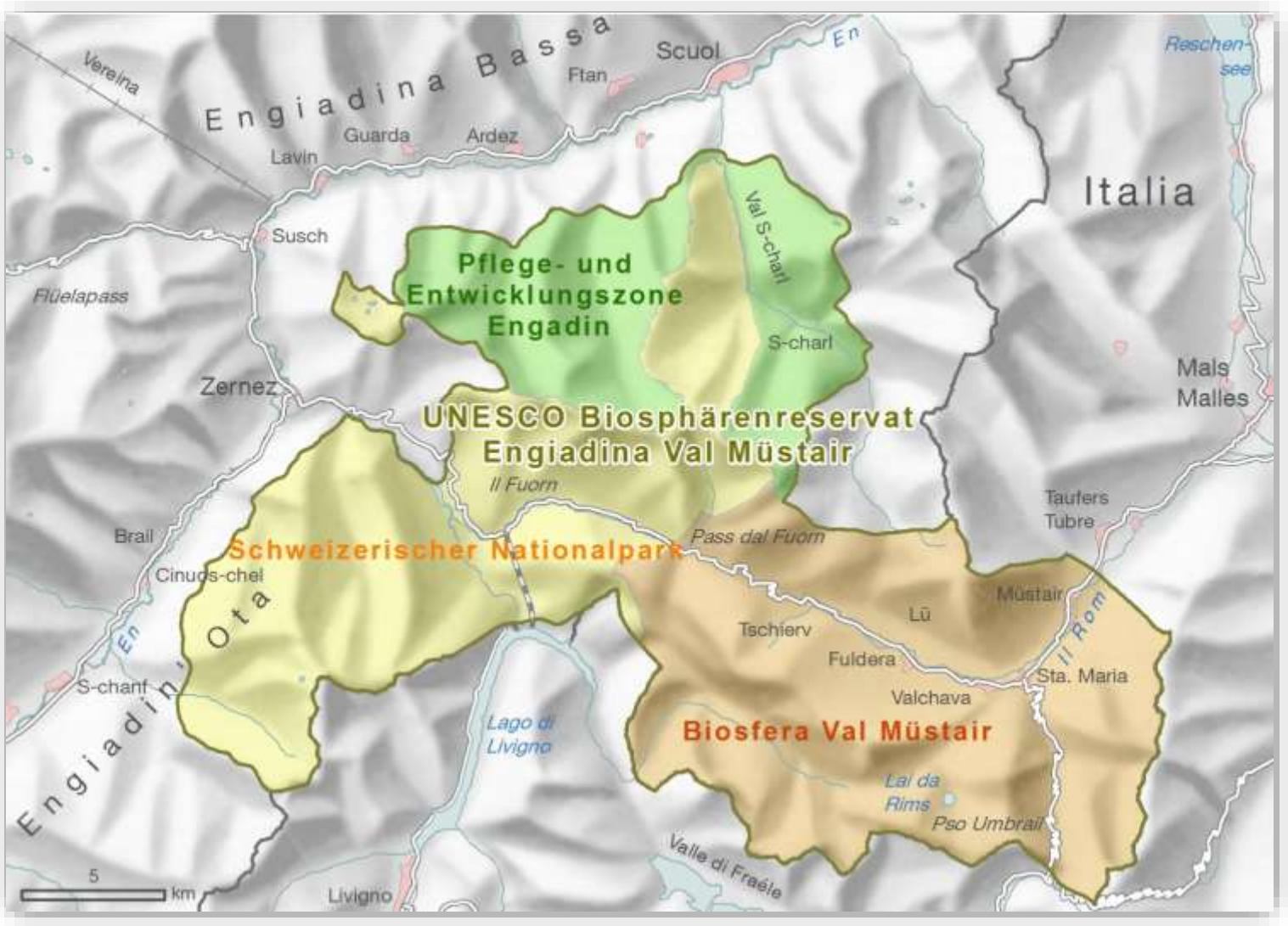
The vision 1914

"All previous changes of the original state over centuries - the long term effects of the hunters, fishermen, foresters, agriculturists, shepherds and mowers […] - will disappear over time and the old original community of life will be restored. A great wilderness experiment will be performed there."

(Schröter 1920)


Wanderwege im Park
Landesgrenze
Schweizerischer Nationalpark
5 km
N
© SNP 2023/07, Daten: SNP, swisstopo
Engiadina Bassa
Engiadin' Ota
Vereina
Piz Linard
Piz Murtera
Flüelapass
Piz dal Ras
Piz Sarsura
Guarda
Ardez
Ftan
Tarasp
Scuol
Lavin
Susch
Piz Mezdi
En / Inn
Macun
Munt Baselgia
Zernez
Val Sampoir
Val Plavna
Piz Pisoc
Val Minger
Val S-charl
S-charl
Italien
Piz Mezdi
Piz Murtera
Piz Laschadurella
Piz dal Fuorn
Piz Nair
Il Fuorn
P1
P3
P4
P5
P6
P8
P10
Piz Terza
Munt Chavagl
Ofenpass
Pass dal Fuorn
Brail
Val Cluozza
Piz Murter
Spöl
Piz d'Esan
Piz Quattervals
Piz da l'Acqua
Val Trupchun
S-chanf
Zuoz
La Punt
Piz Chaschauna
Cima Paradiso
Lago di Livigno
Piz Daint
Tschierv
Lü
Müstair
Taufers
Tubre
Fuldera
Valchava
Il Rom
Sta. Maria
Val Müstair
Val Mora
Lai da Rims

The biosphere reserve Engiadina Val Müstair



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Ergebnisse der wissenschaftlichen Untersuchungen des schweizerischen Nationalparks
Herausgegeben von der Kommission der Schweizerischen Naturforschenden Gesellschaft zur wissenschaftlichen Erforschung des Nationalparks

Résultats des recherches scientifiques entreprises au Parc National suisse
Publiés par la commission de la Société Helvétique des Sciences Naturelles pour les études scientifiques au Parc National

Band VI (Neue Folge)

39.

ÜBER DIE OBERSTEN GRENZEN PFLANZLICHEN LEBENS IM GIPFELBEREICH DES SCHWEIZERISCHEN NATIONALPARKS

Mit 7 Abbildungen

1958

Von

J. BRAUN-BLANQUET
(Comm. de la S.I.G.M.A. No 142)

Zu den vordringlichsten Aufgaben, die sich uns zu Beginn der Erforschung des schweizerischen Nationalparks stellten, gehörte auch die Aufnahme des gesamten Pflanzen- und Tierbestandes; der Höhenverbreitung der Organismen sollte dabei besondere Beachtung geschenkt werden.

Die möglichst genaue Fixierung der Höhengrenzen von Pflanzen und Tieren gestattet nicht nur einen Einblick in die wenig bekannten Lebensmöglichkeitenim Bereich der Hochgipfel; sie schafft auch eine Grundlage, die erlaubt, das Auf und Ab der Lebewesen im Zeitenverlauf zu verfolgen und damit Standorts-, vor allem aber Klimaänderungen einschätzen zu helfen.

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Effects

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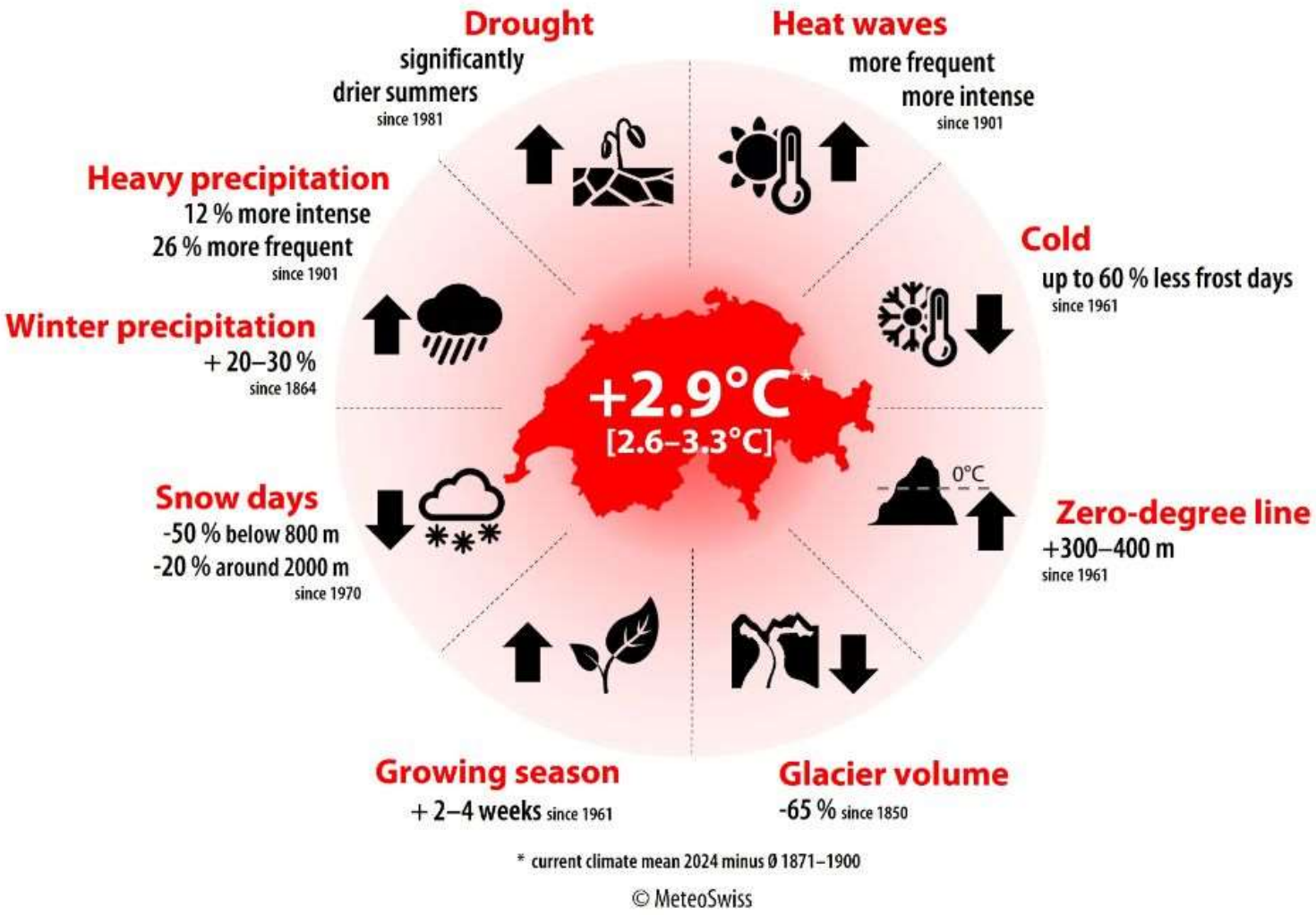
Climate change in Switzerland 2024 compared Ø 1871 - 1900



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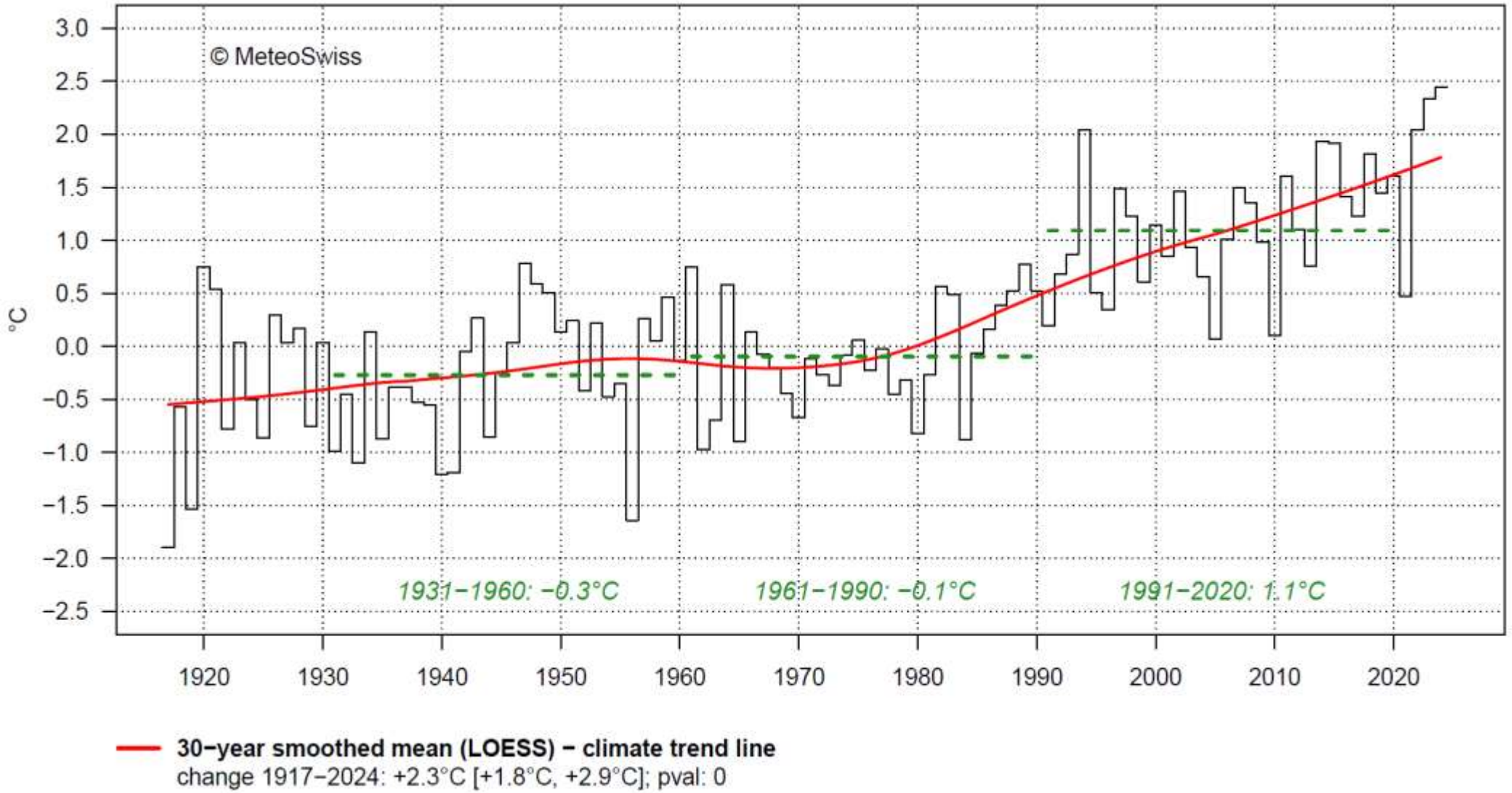
Annual temperature Buffalora (Swiss National Park) 1917−2024



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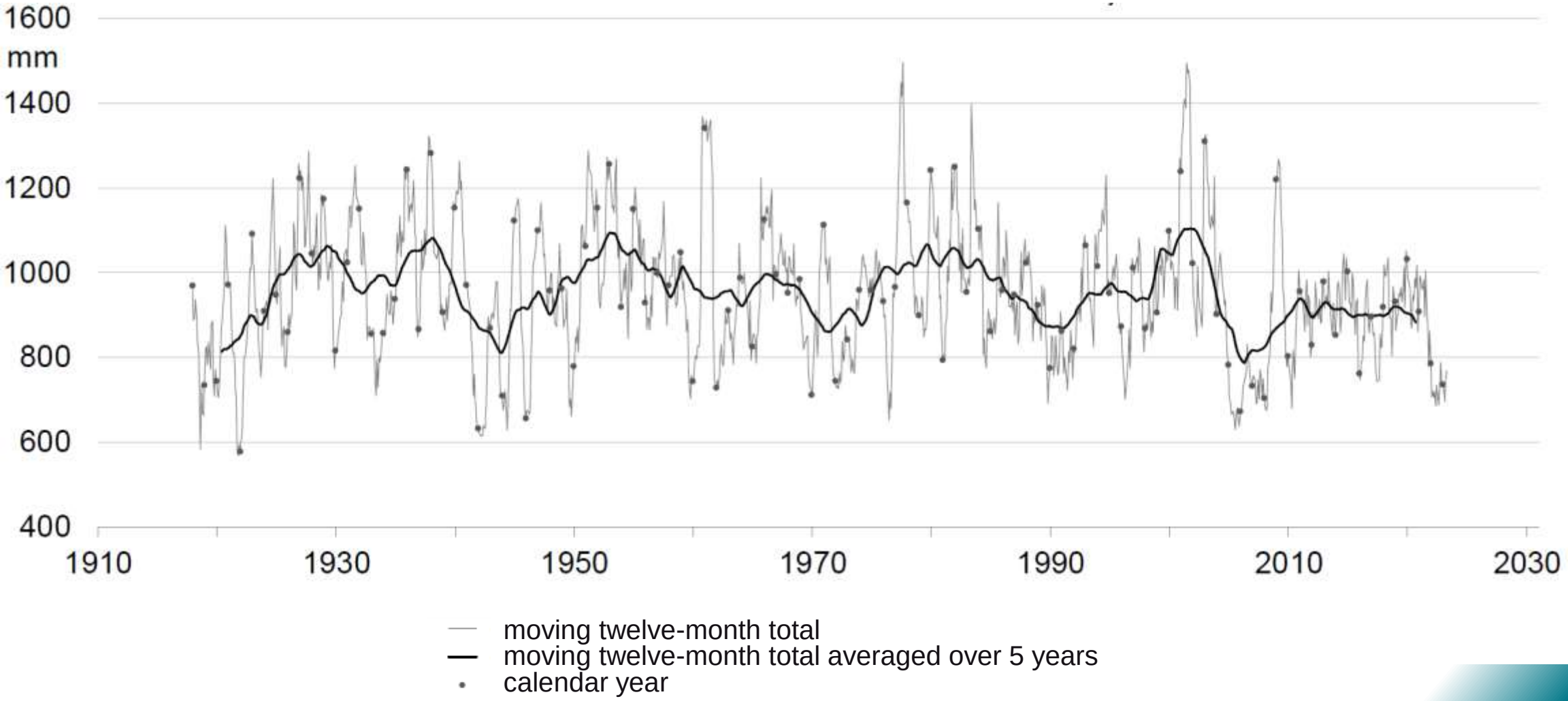
Annual precipitation Buffalora (Swiss National Park) 1917−2023



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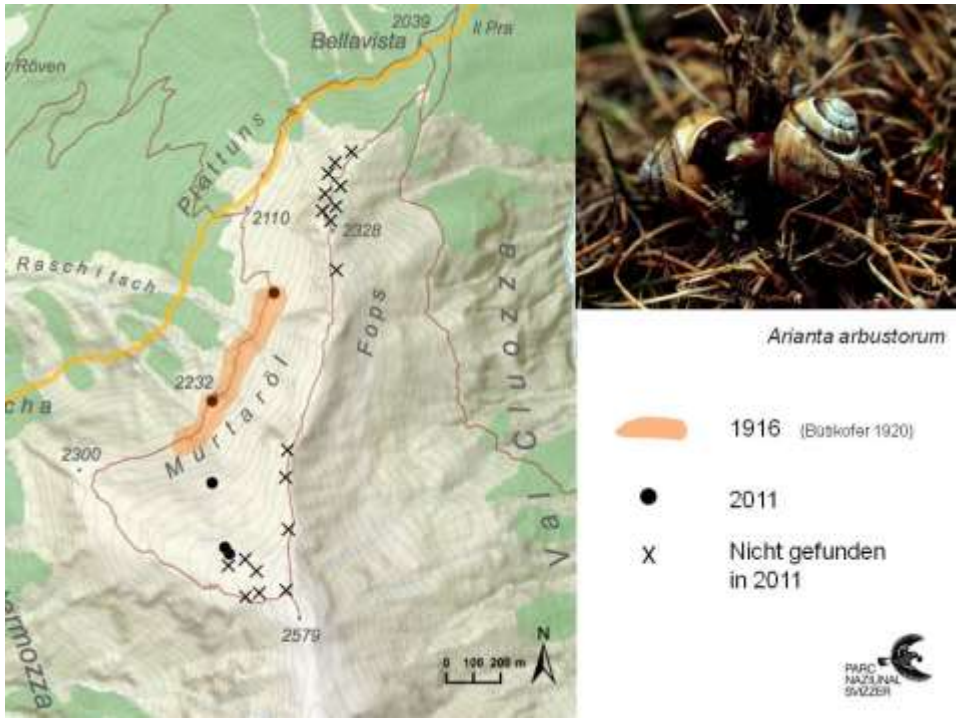
Cops snail (*Arianta arbustorum*) 1916/17 and 2011/12



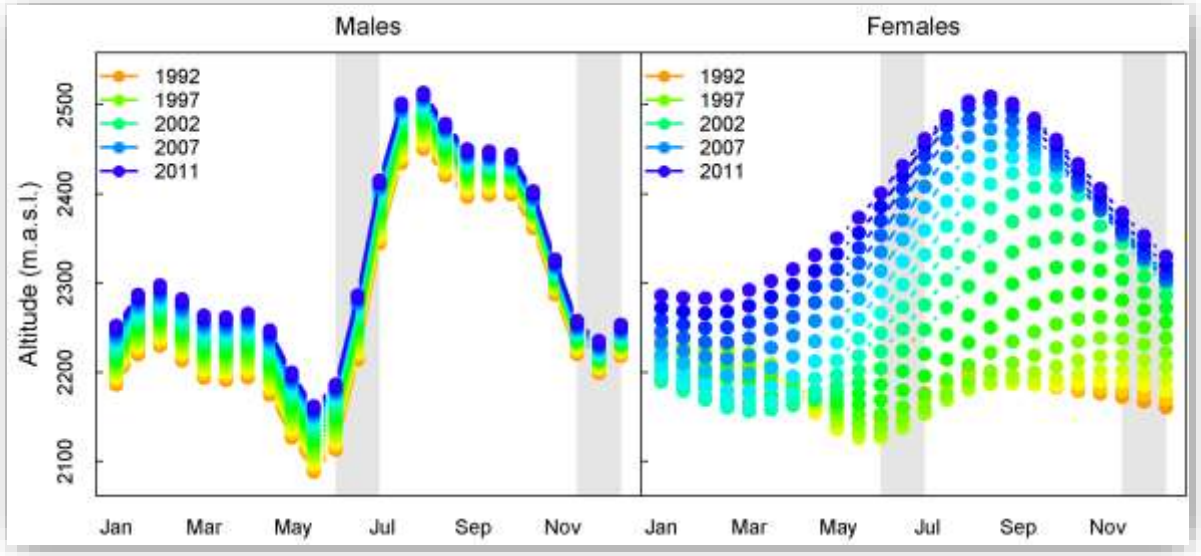
Arianta arbustorum

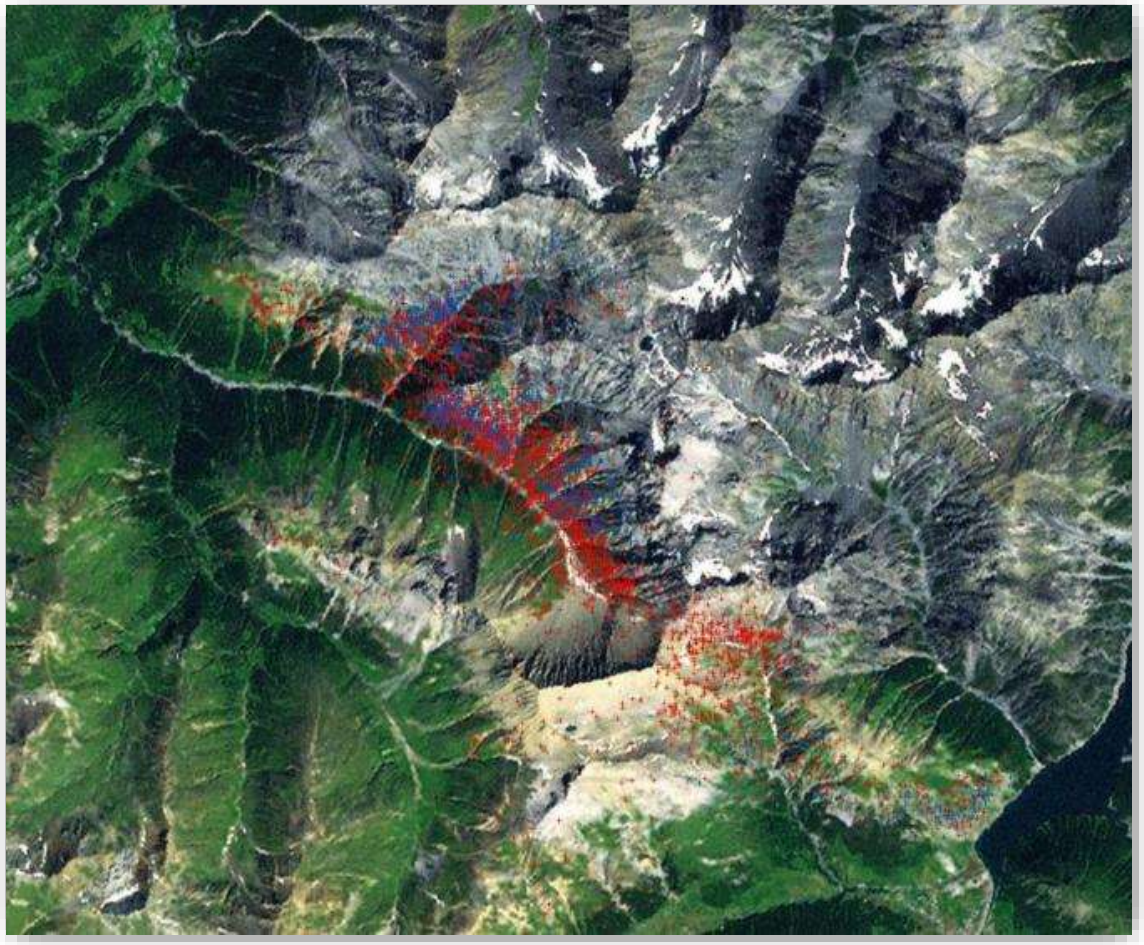
Mountain slope	Aspect	Inclination (°)	Upper elevational limit (m a.s.l.) 1916–1917	2011–2012
1. Val Trupchun	NE	38.3	2400	2521
2. Val Müschauns I	NNW	34.4	2200	2353
3. Val Müschauns II	NW	39.5	2400	2462*
4. Val Tantermozza	NNW	10.9	1850	1962
5. Murtaröl	N	23.2	2300	2464
6. Val dal Botsch	S	25.9	2660*	2665*
7. Pass dal Fuorn	ESE	4.8	1650	1874
8. Vallatscha d'Astras	SSE	28.6	2400	2626
9. Fora da l'Aua	S	30.0	2400	2650

*Farther upslope dispersal hindered by geographical barrier (rock wall). a.s.l., above sea level.

Baur & Baur 2013; Canadian Journal of Forest Research

The altitude distribution of ibex over the last 32 years





Hervindal et al., 2013

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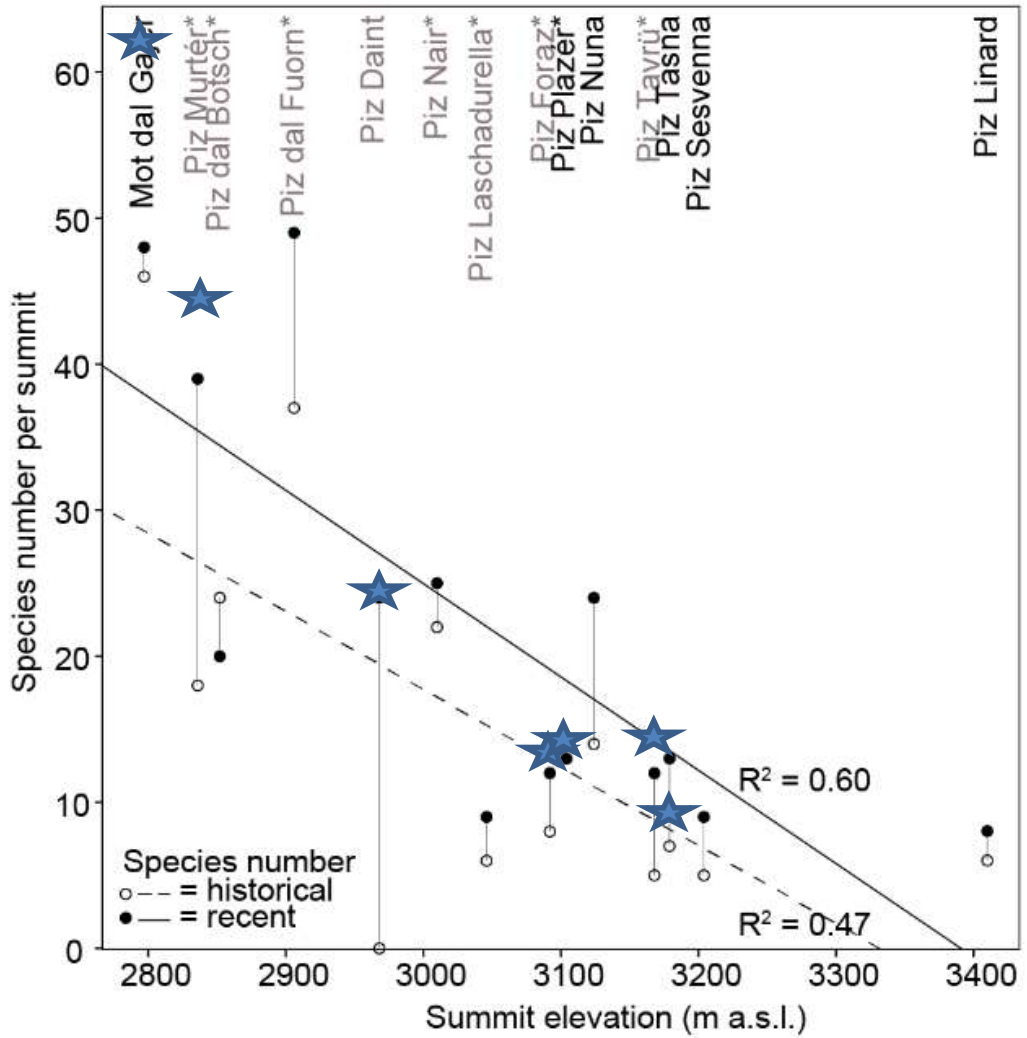
Development of the number of species over the last 100 years



Wipf & Rixen, 2017; Symp. Protected Areas, Salzburg

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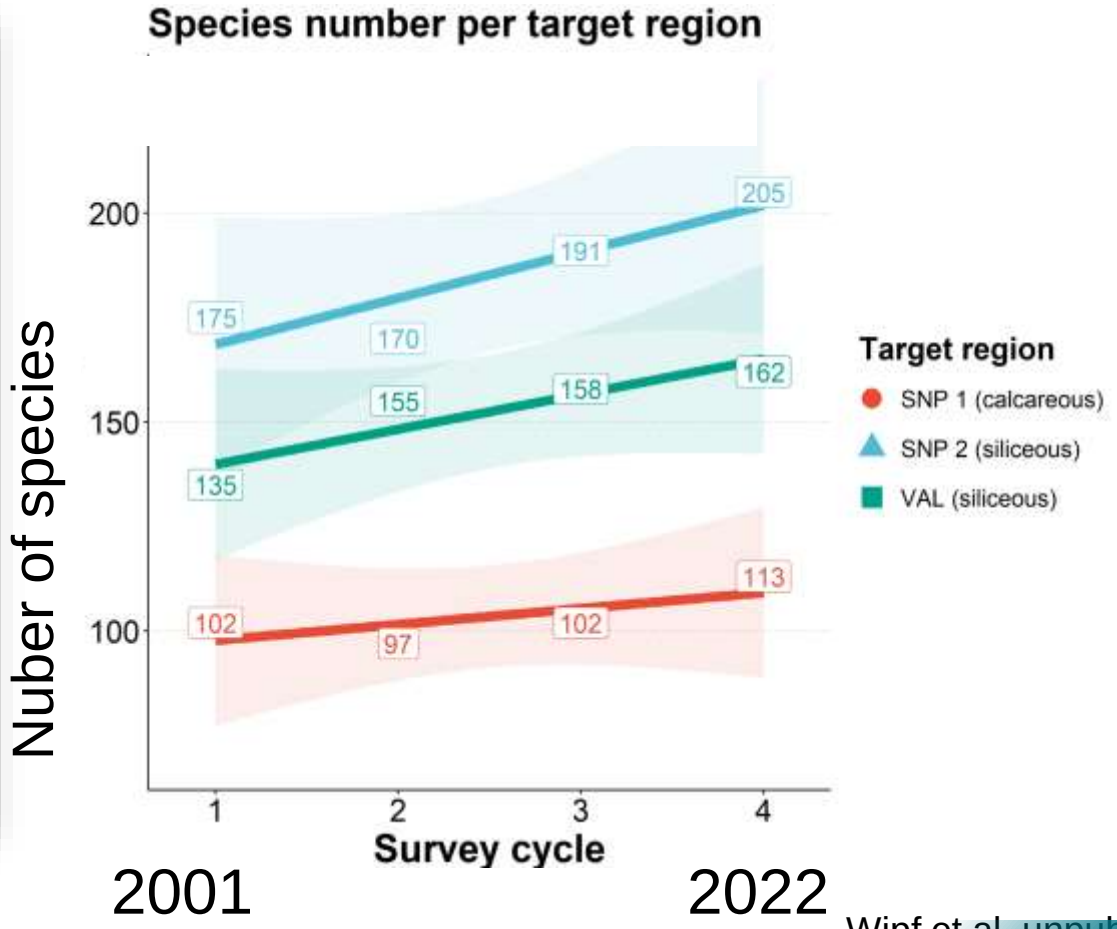
Increase in species (all 4 peaks / region)

Papaver alpinum subsp. *rhaeticum*



Wipf et al. unpubl.

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Winner in occurrence – subalpine species

Artname	Erste Aufn.	Aufn. 2022	Differenz	
Leontodon hispidus	17	27	10	Milchkraut
Ranunculus montanus Willd.	8	17	9	Berg-Hahnenfuss
Botrychium lunaria (L.) Sw.	9	17	8	Mondraute
Carex parviflora Host	5	13	8	Kl. Trauersegge
Hieracium glaciale A.Reyn.	5	13	8	





Loser in occurrence

Artname	Erste Aufn.	Aufn. 2022	Differenz	
Androsace alpina	3	0	-3	Alpen Mannsschild
Saxifraga androsacea	3	0	-3	Mannsschild-Steinbrech
Silene exscapa	10	6	-4	Si-Polsternelke
Cerastium cerastoides	4	0	-4	3-griffliges Hornkraut
Gentiana brachyphylla	16	11	-5	Kurzblättr. Enzian
Gentiana bavarica	9	2	-7	Bayrischer Enzian
Oreochloa disticha	21	13	-8	2-zeiliges Kopfgras

Bilder: www.infoflora.ch

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Mitigate?

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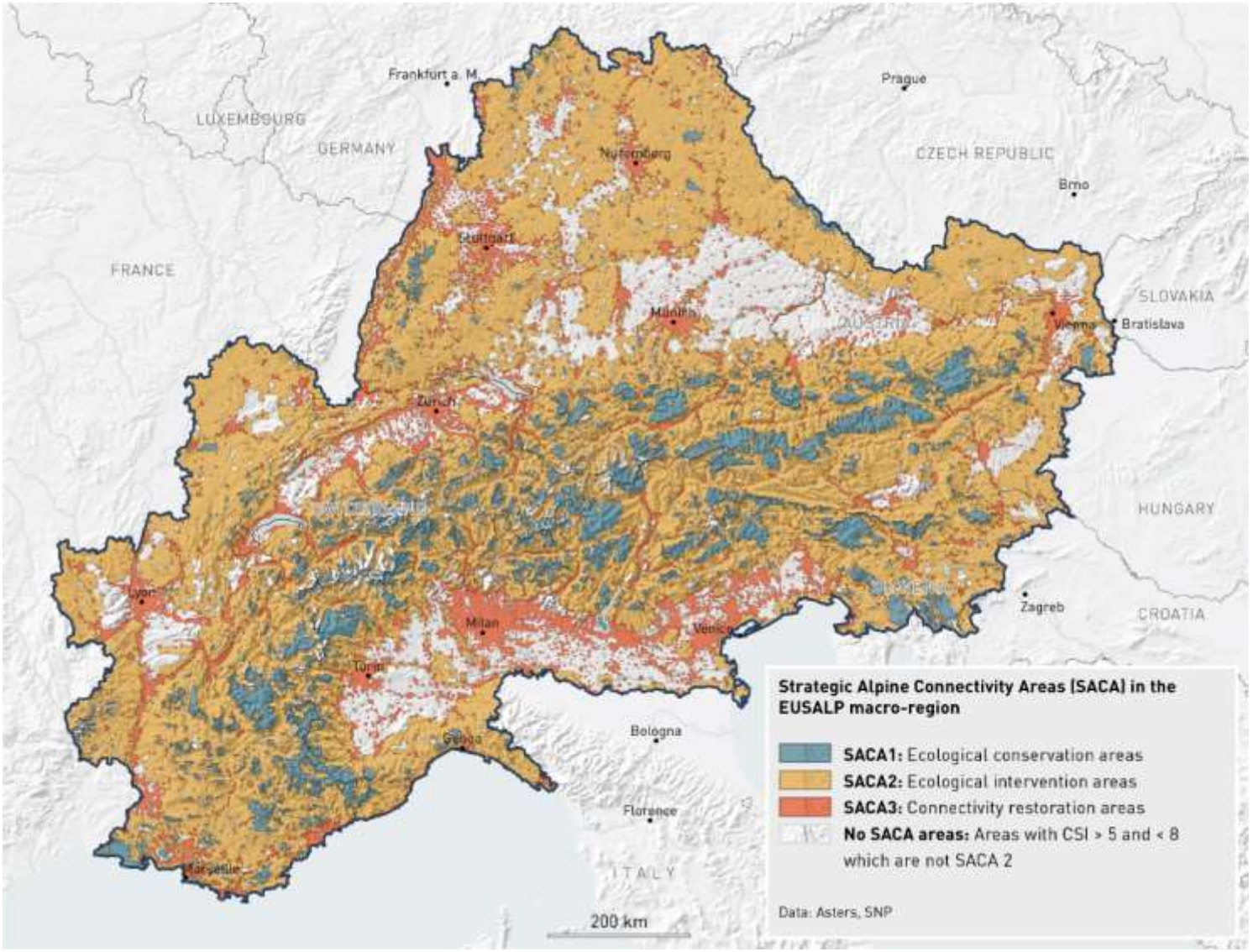
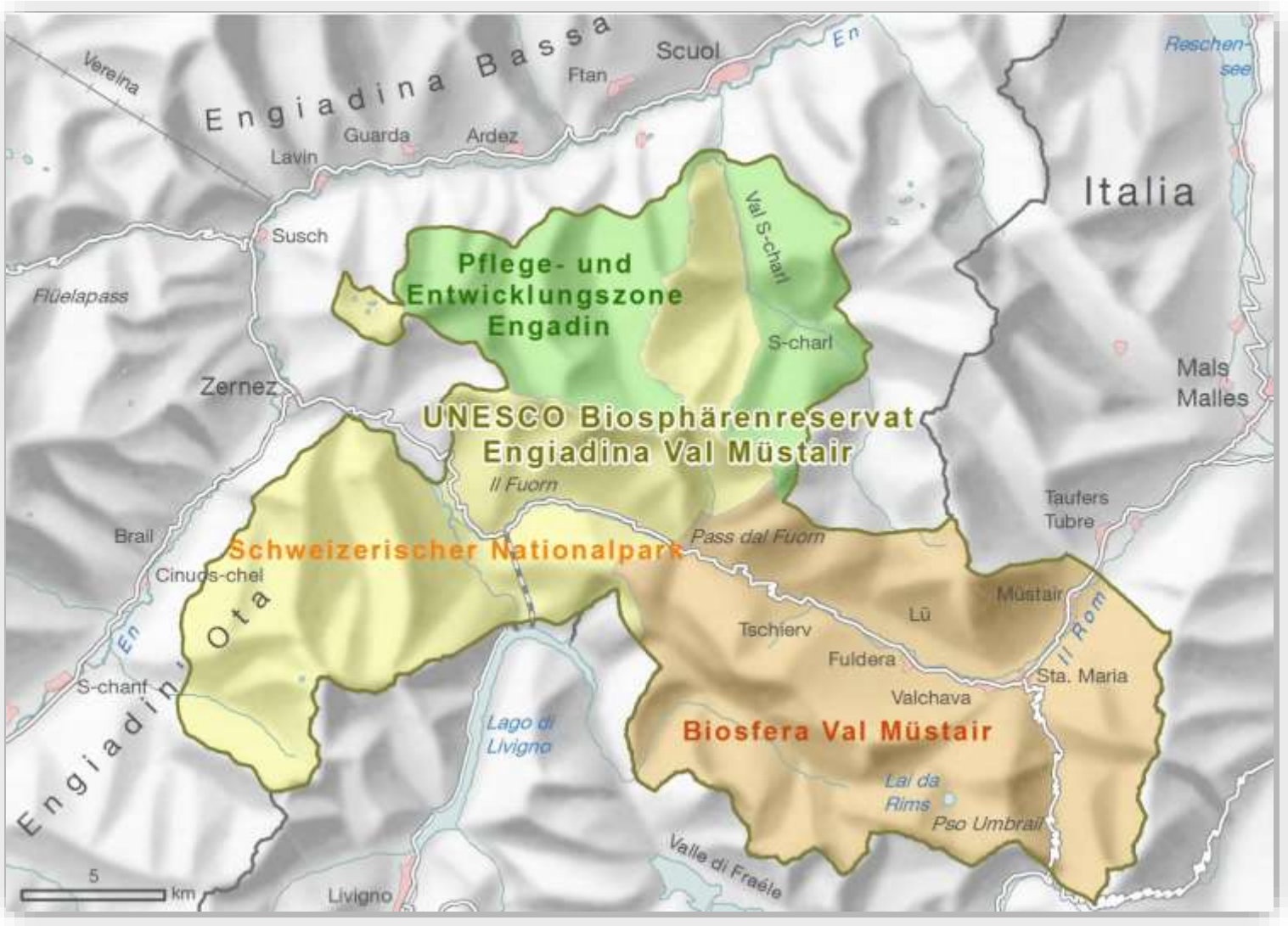
Ecological connectivy – green infrastructure in the Alps



The biosphere reserve Engiadina Val Müstair



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Restoration of a bog in the buffer zone of the UNESCO biosphere reserve

Maintenance of a bog in the buffer zone of the UNESCO biosphere reserve

Accept?

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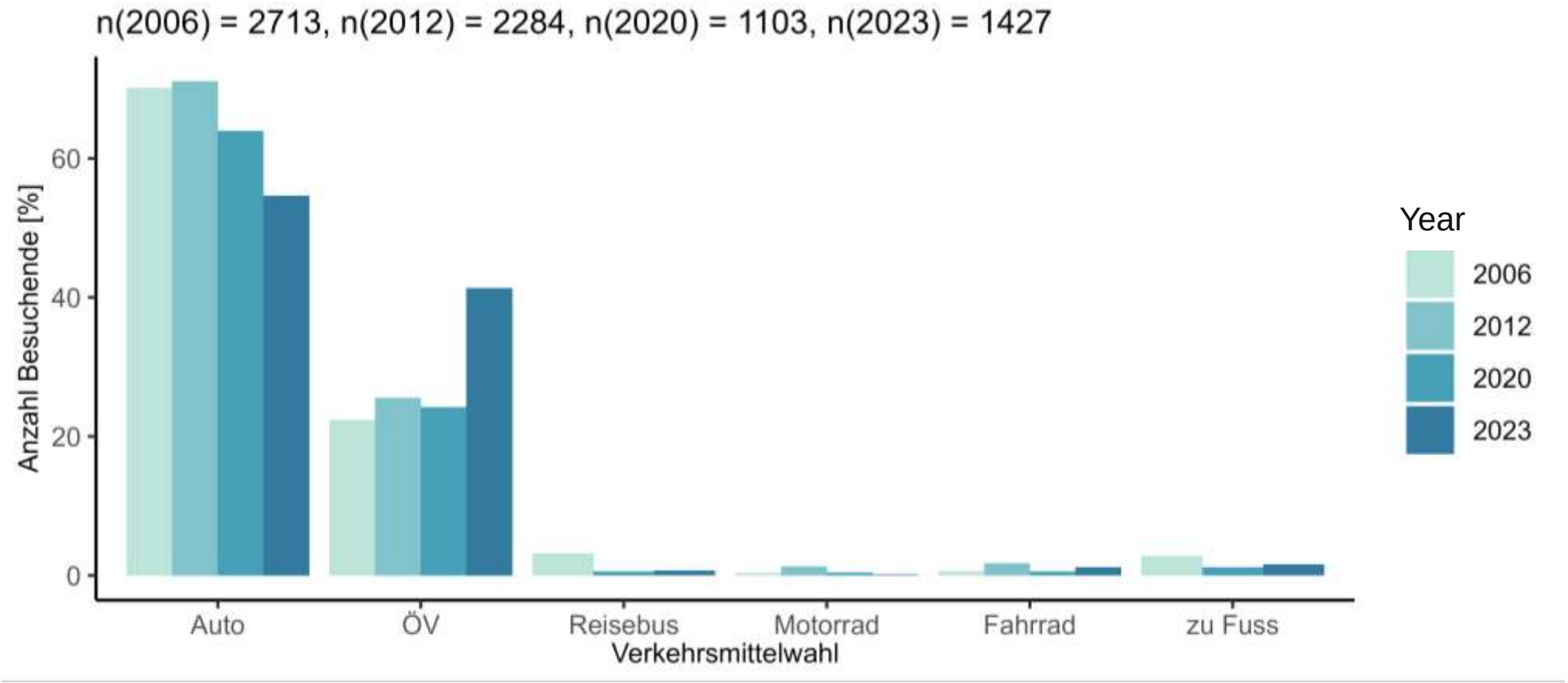
Promotion of travel by public transport

Increasing use of public transport



Gattiker et al.2024, unpubl.

Chamanna Cluozza: Best visited hut in the Swiss Alps 2024

1917

2024

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Fridge on the way

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Does sustainability pay off? - Syrup versus soft drink

	Selling price	Cost of goods	Flight	Revenue
Soft drink 5 dl PET disposable bottle (least effort)	5.50	1.45	0.50	3.55
Soft drink 5 dl open (from 1.5 litre PET disposable bottle)	5.50	0.80	0.50	4.20
Syrup 5 dl open (regional or homemade, often organic)	6.00	0.35	0.05	5.60

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Effects

- Approximately 4’000 kg carried to the hut, mainly fresh products
- 8 helicpoter flights saved in one season
- Low storage space requirements
- No PET waste
- No need to carry drinks
- Varied range of drinks
- ‘Let's try the other varieties...’ Guests often drink more

Restoration of the area around the visitor center

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Restoration of the area around the visitor center

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Conclusion

As a IUCN category 1a protected area, the SNP is limited in terms of climate mitigation measures in the area.

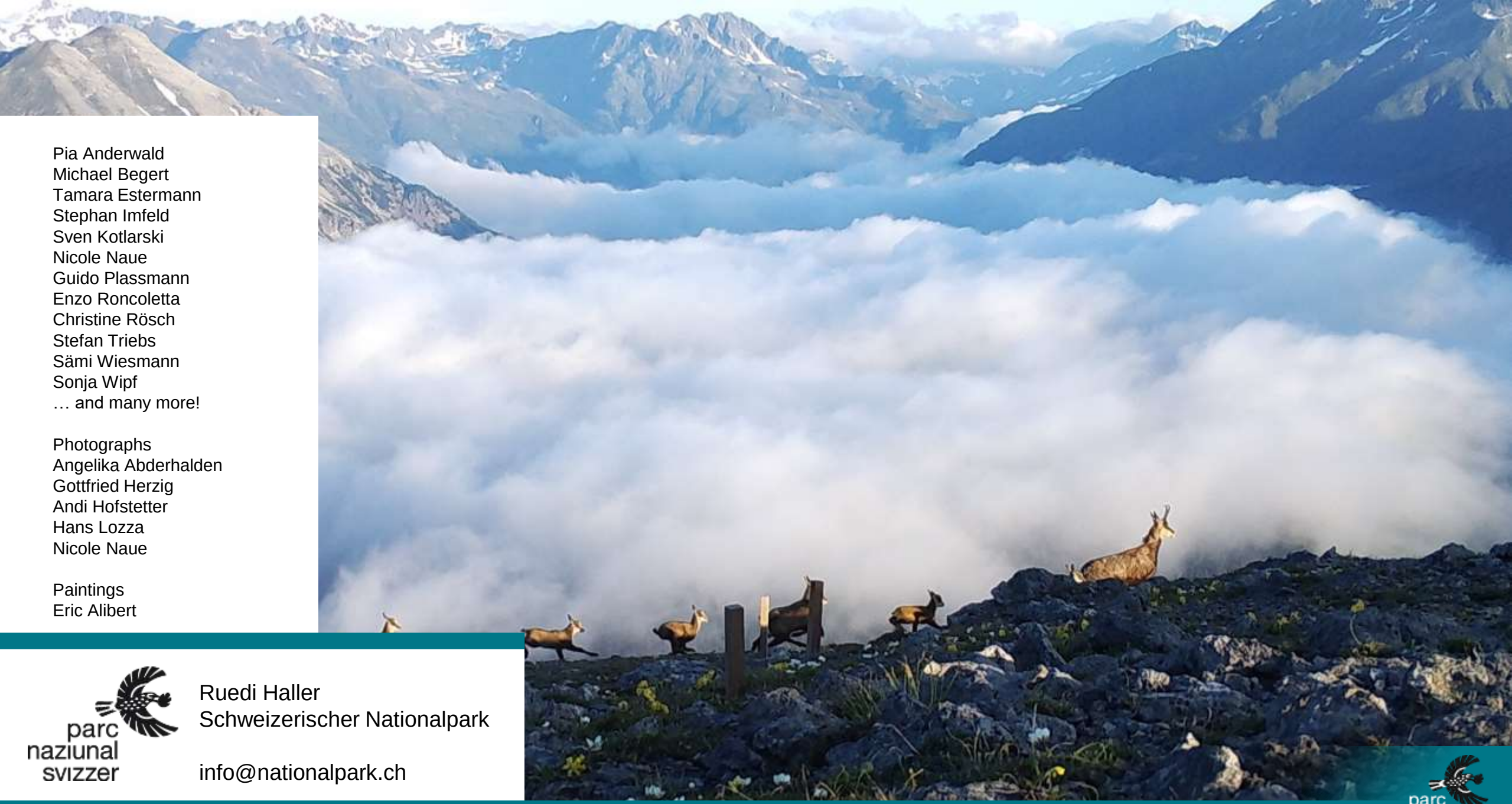
In this context, the SNP serves as a comparative laboratory for the surrounding area.

Conclusion

In addition, we can support the region in implementing measures to mitigate climate change.

Conclusion

There are no limits to our ability to set an example, show people the consequences of climate change in nature and encourage them to use resources sustainably.



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