

# I ghiacciai: ecosistemi fragili a rischio di scomparsa

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# Ecosistemi glaciali

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I ghiacciai ospitano organismi viventi e comunità ecologiche attive



*Andiperla willinki*

# Ecosistemi glaciali

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*Diuca speculifera*

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Foto: BBC

# Ecosistemi glaciali



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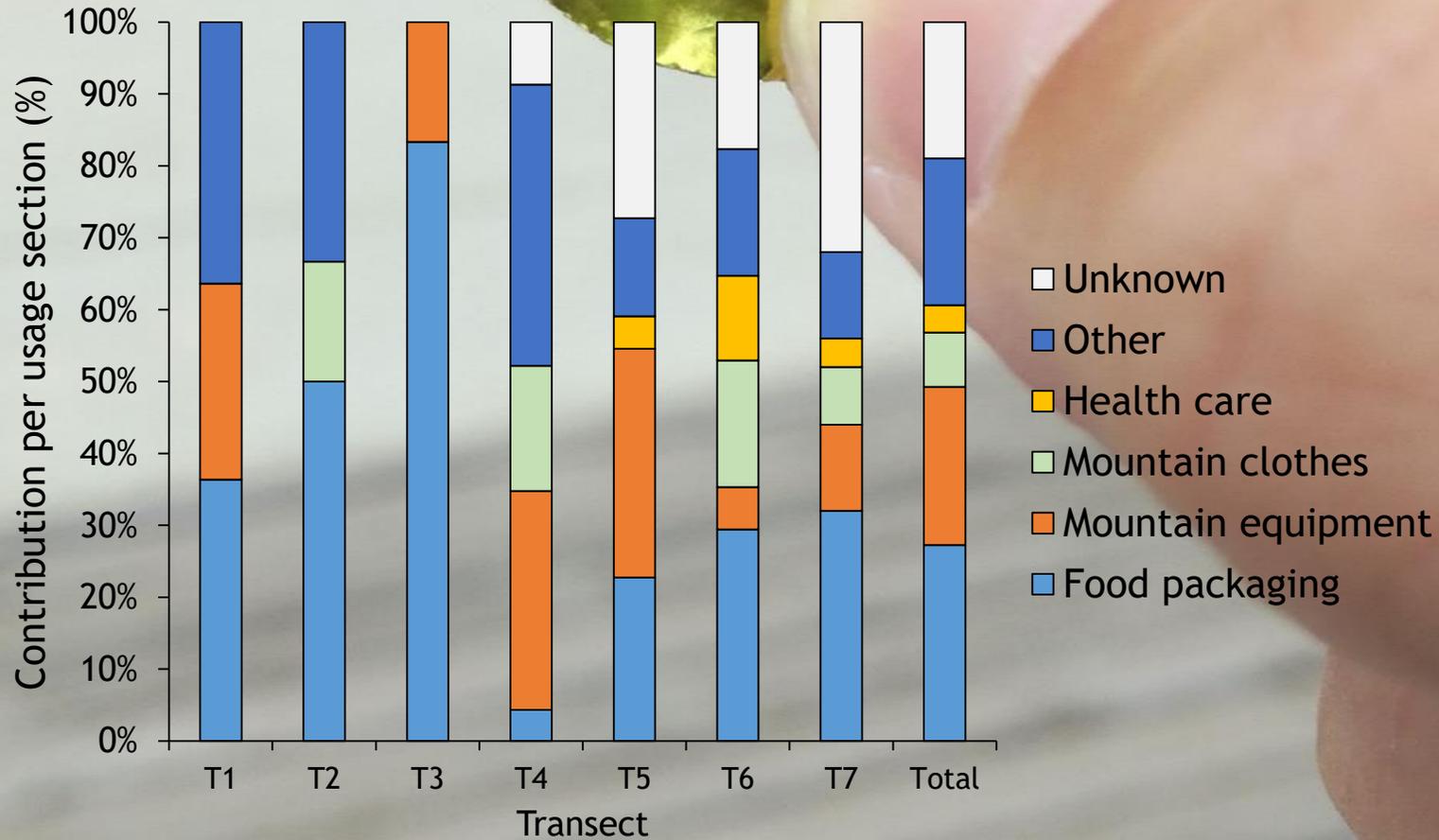




Did mountains escape from plastic contamination?

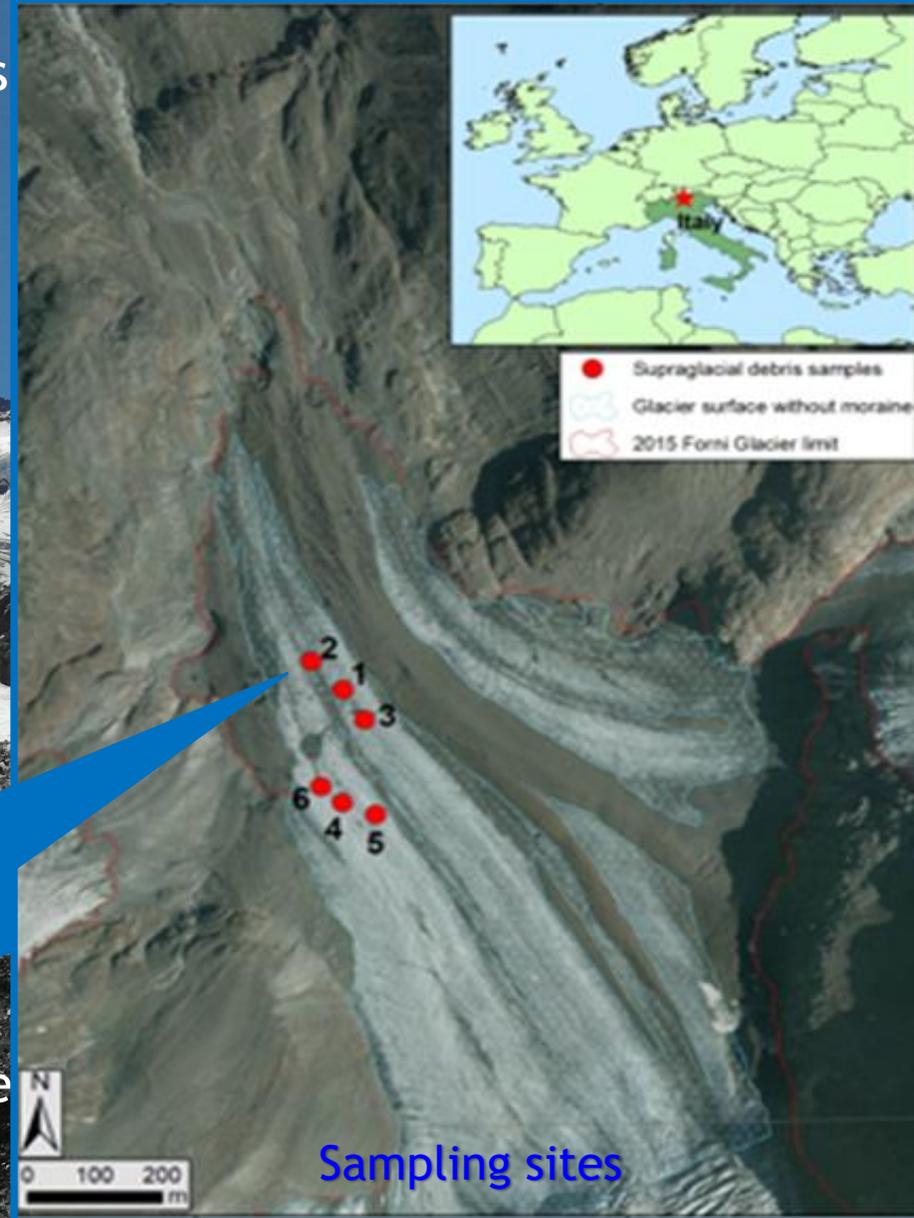
# Origin of macroplastics

T1 = Cima di Solda    T6 = Gnifetti  
T2 = Tre Cannoni    T7 = Breithorn  
T3 = Cevedale  
T4 = Forni Glaciers  
T5 = Indren/Gnifetti



# Looking for microplastics

Exploring the presence of microplastics in s



Forni Glacier  
Total surface

e

74 ± 28 microplastics/kg sediment



Fibers (65.2%) and fragments (34.8%)

Mean size: 687 ± 578 μm

Estimated amount on the ablation area:

131 - 162 millions of microplastics

570 - 801 millions microplastics/km<sup>2</sup>



# Where do microplastics come from?

- Mountaineering activities



- Mountain equipment and clothes



- Atmospheric transport



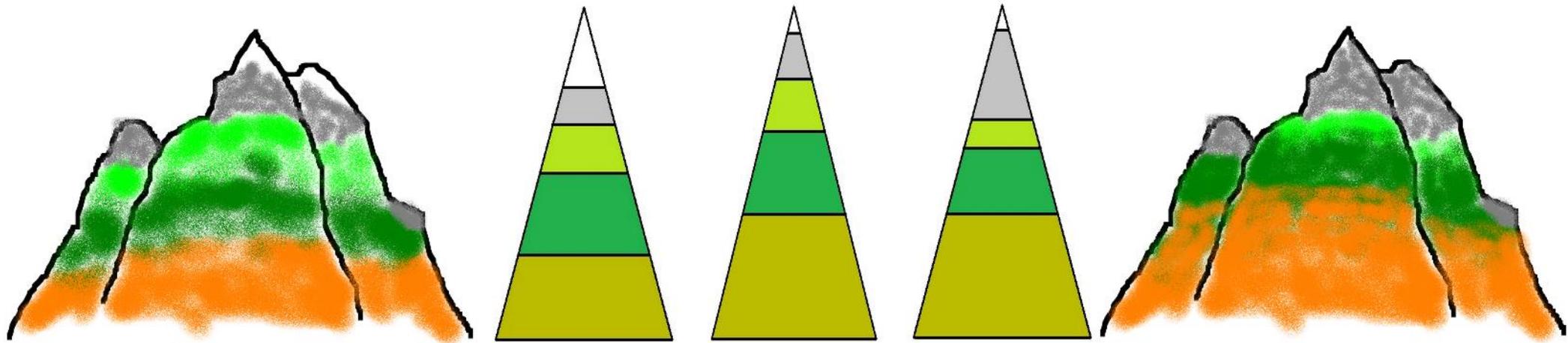
# MONTAGNE – *HOTSPOT* DI BIODIVERSITÀ

- 25% della superficie globale, >50% dei BH
- molte specie endemiche, ma non solo
- 35% delle specie di uccelli nella regione oloartica in montagna – il 40% specialiste delle alte quote



# MONTAGNE – *HOTSPOT* DI CAMBIAMENTI CLIMATICI

particolarmente impattate dal cambiamento climatico



presente

presente

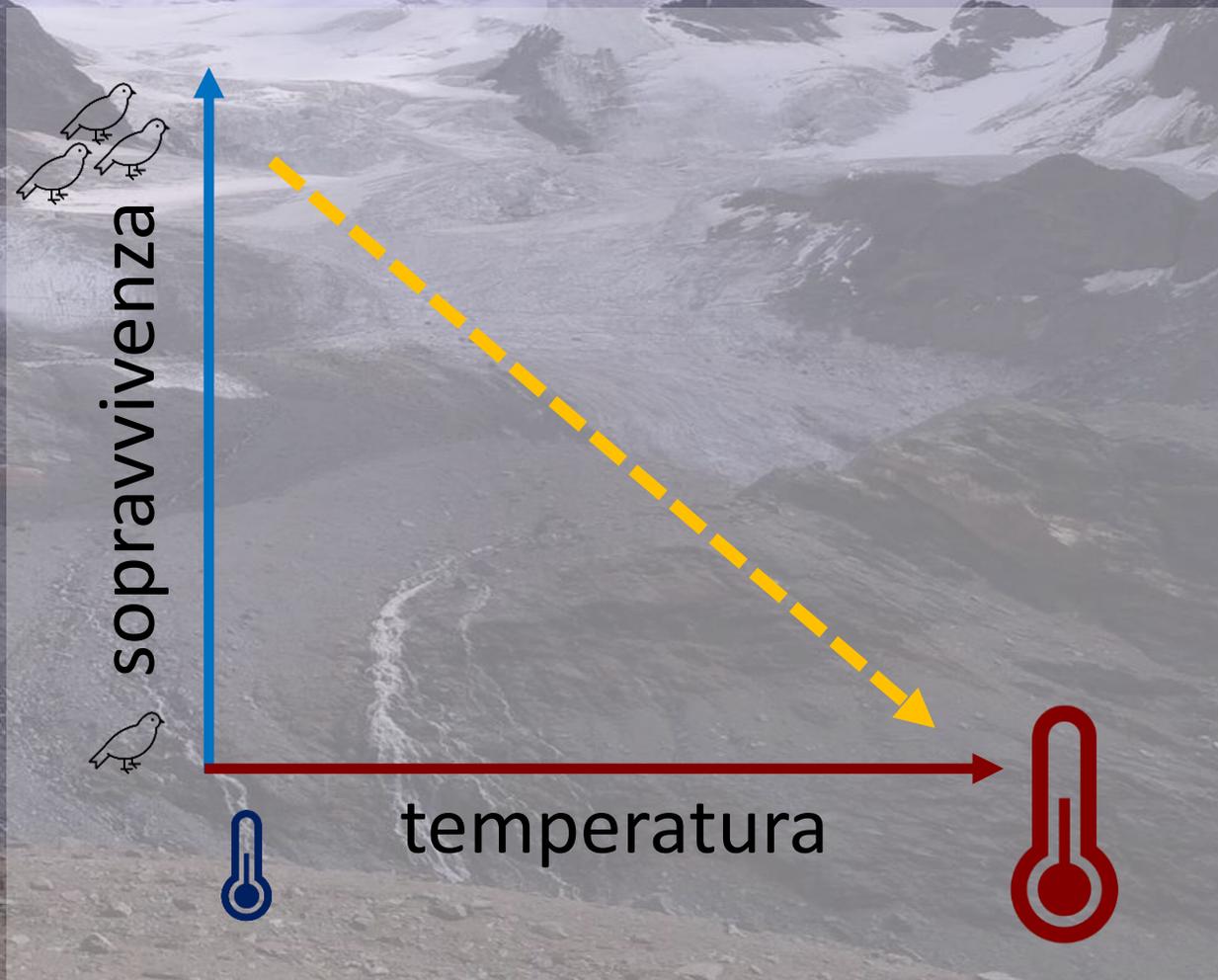
futuro

futuro con limiti imposti dal suolo

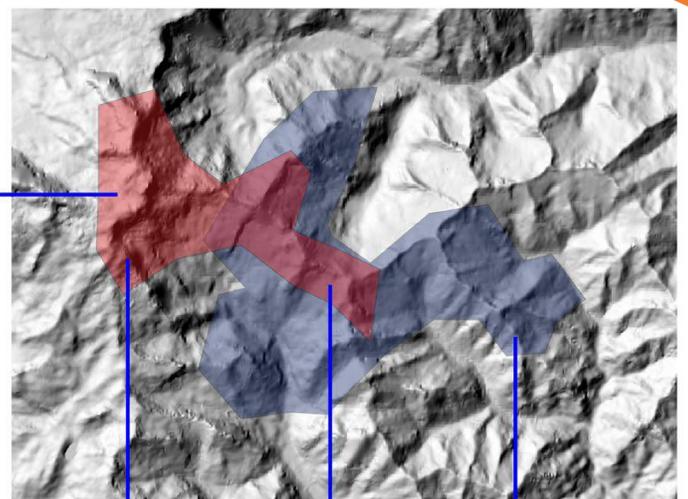
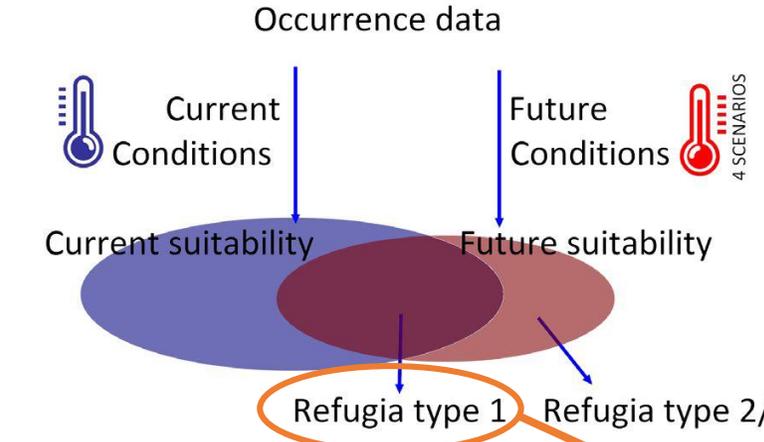
ambienti glaciali e nivali e praterie alpine andranno incontro a shift altitudinale e maggiore contrazione

# IMPATTI SULLE SPECIE D'ALTA QUOTA

molteplici, diretti e indiretti

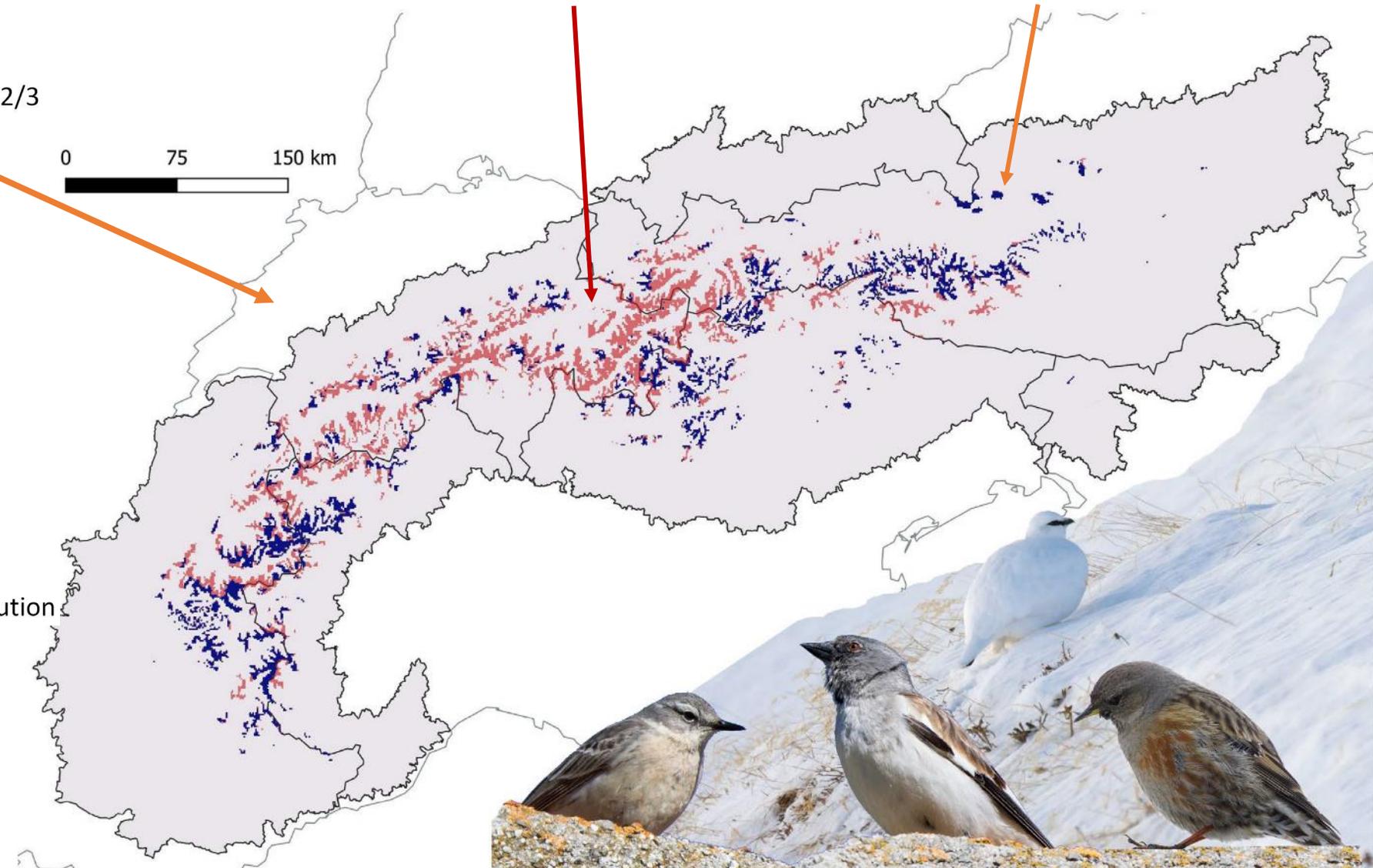


la distribuzione delle specie più sensibili sarà ristretta ai «rifugi climatici». Sulle Alpi...



aree non protette

aree protette



da Brambilla et al. Glob. Chang. Biol. 2022

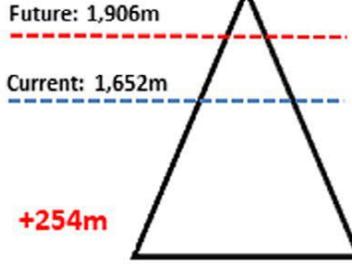
...ma anche nel  
freddo Canada  
(British Columbia)

da Scridel et al. 2021. Diversity & Distributions

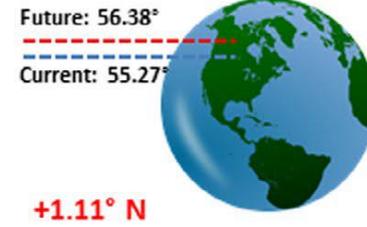


White-tailed ptarmigan

Shift in elevation  
2080s RCP 8.5



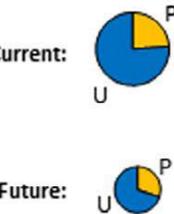
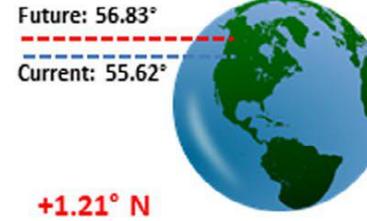
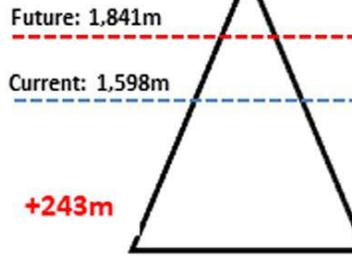
Shift in latitude  
2080s RCP 8.5



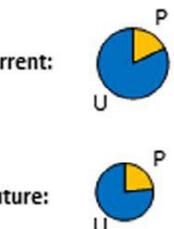
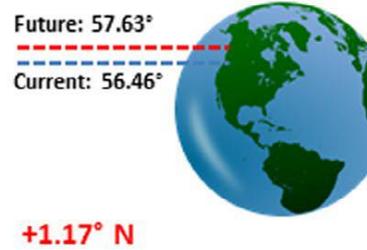
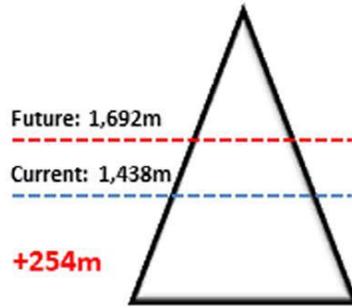
Predicted & estimated range loss  
2080s RCP 8.5



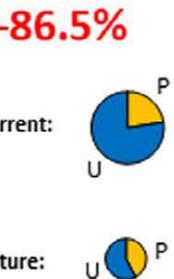
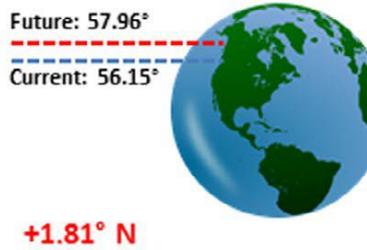
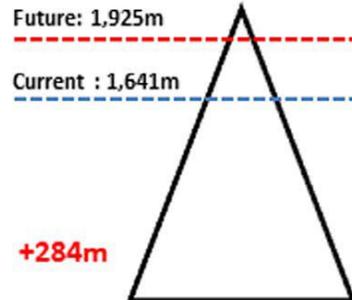
Rock ptarmigan



Willow ptarmigan



All ptarmigan

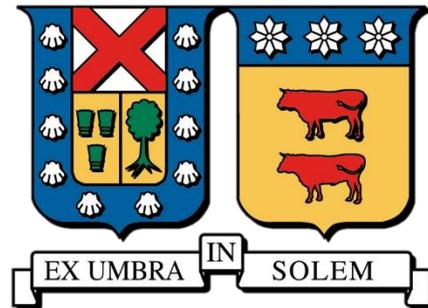




gli ambienti si spostano, i ghiacciai si ritirano: nuovi ambienti possono essere colonizzati...

>> molti coleotteri carabidi impiegano oltre 100 anni prima di colonizzare le aree 'deglacializzate'!

# Grazie ai nostri partner e sponsors



IceCommunities



ADAM MICKIEWICZ  
UNIVERSITY  
IN POZNAŃ



*grazie!*

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