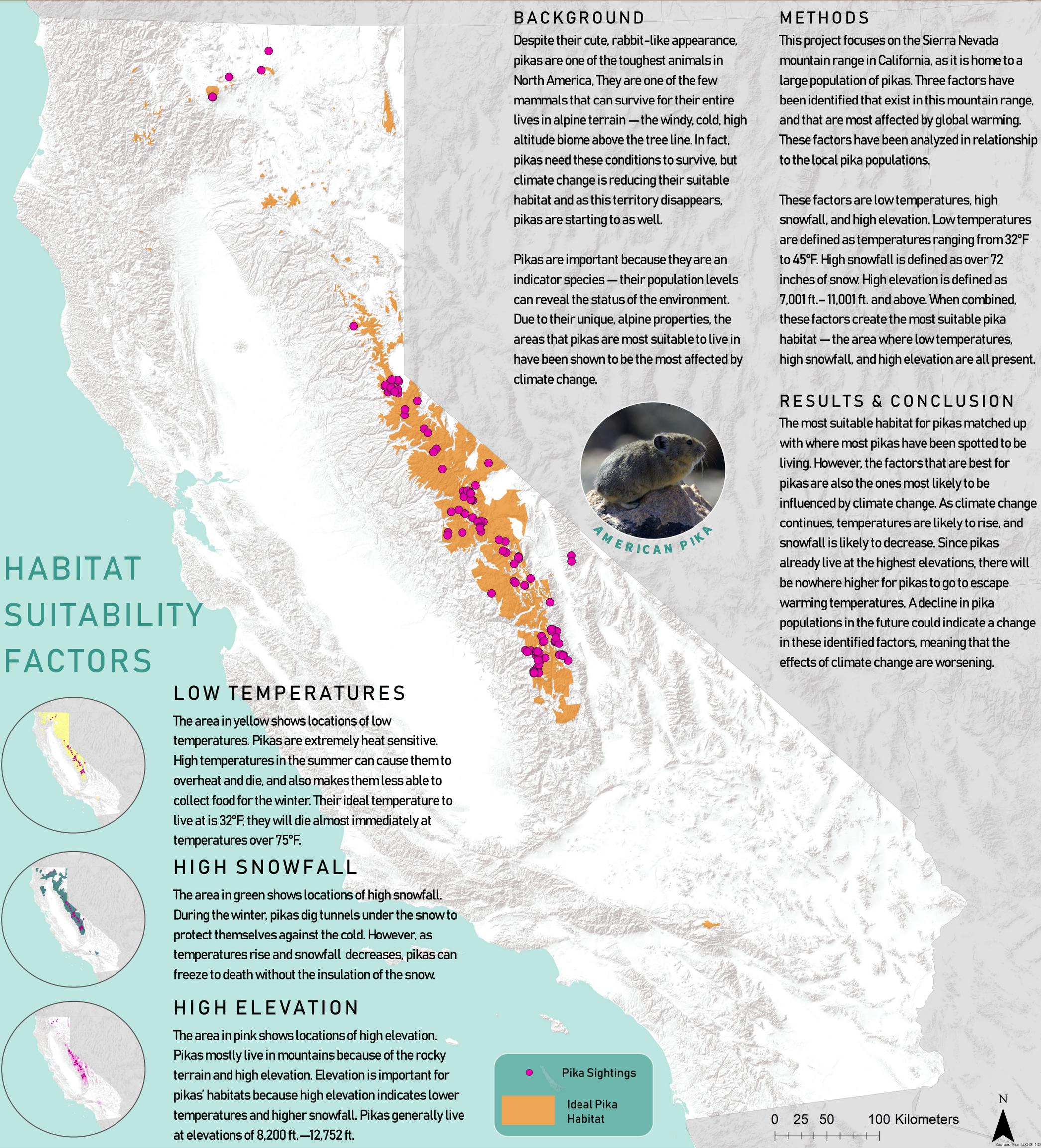


The American Pika & Climate Change in the Sierra Nevada, CA



BACKGROUND

Despite their cute, rabbit-like appearance, pikas are one of the toughest animals in North America. They are one of the few mammals that can survive for their entire lives in alpine terrain — the windy, cold, high altitude biome above the tree line. In fact, pikas need these conditions to survive, but climate change is reducing their suitable habitat and as this territory disappears, pikas are starting to as well.

Pikas are important because they are an indicator species — their population levels can reveal the status of the environment. Due to their unique, alpine properties, the areas that pikas are most suitable to live in have been shown to be the most affected by climate change.

METHODS

This project focuses on the Sierra Nevada mountain range in California, as it is home to a large population of pikas. Three factors have been identified that exist in this mountain range, and that are most affected by global warming. These factors have been analyzed in relationship to the local pika populations.

These factors are low temperatures, high snowfall, and high elevation. Low temperatures are defined as temperatures ranging from 32°F to 45°F. High snowfall is defined as over 72 inches of snow. High elevation is defined as 7,001 ft. – 11,001 ft. and above. When combined, these factors create the most suitable pika habitat — the area where low temperatures, high snowfall, and high elevation are all present.

RESULTS & CONCLUSION

The most suitable habitat for pikas matched up with where most pikas have been spotted to be living. However, the factors that are best for pikas are also the ones most likely to be influenced by climate change. As climate change continues, temperatures are likely to rise, and snowfall is likely to decrease. Since pikas already live at the highest elevations, there will be nowhere higher for pikas to go to escape warming temperatures. A decline in pika populations in the future could indicate a change in these identified factors, meaning that the effects of climate change are worsening.

HABITAT SUITABILITY FACTORS

LOW TEMPERATURES

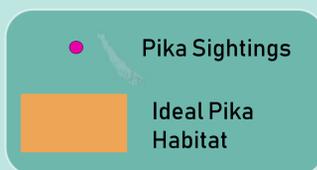
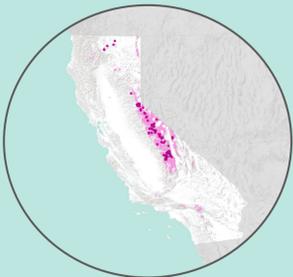
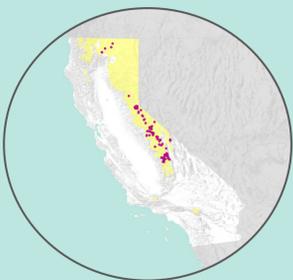
The area in yellow shows locations of low temperatures. Pikas are extremely heat sensitive. High temperatures in the summer can cause them to overheat and die, and also makes them less able to collect food for the winter. Their ideal temperature to live at is 32°F; they will die almost immediately at temperatures over 75°F.

HIGH SNOWFALL

The area in green shows locations of high snowfall. During the winter, pikas dig tunnels under the snow to protect themselves against the cold. However, as temperatures rise and snowfall decreases, pikas can freeze to death without the insulation of the snow.

HIGH ELEVATION

The area in pink shows locations of high elevation. Pikas mostly live in mountains because of the rocky terrain and high elevation. Elevation is important for pikas' habitats because high elevation indicates lower temperatures and higher snowfall. Pikas generally live at elevations of 8,200 ft. – 12,752 ft.



0 25 50 100 Kilometers

