

Sample of an ending summary for the public:



Mountains: understanding the causes of biodiversity

Principal Investigator: Christy McCain

Why do some places, like the tropical forests, have so many species of plants and animals, while others, like deserts, have so few? Understanding evolutionary and ecological factors that create and maintain species diversity is extremely important, especially now that we are losing species rapidly due to habitat destruction, climate change, and disease. Mountains are hotspots in diversity and occur across our globe on most continents and islands and in most climate zones from the tropics to the tundra. Mountains also vary in local climatic factors of temperature, rainfall, humidity and cloud cover as elevation increases. What are the factors associated with high and low diversity on mountains? Dr. Christy McCain has been studying patterns of diversity for vertebrates, invertebrates, and plants on mountains across the globe to determine these important driving factors. She has found that small mammals like rodents and shrews have the highest diversity at intermediate elevations and appear to be associated with cool temperatures, high rainfall and abundant cloud cover. Highest bat diversity is associated with warm, wet conditions that exist on lower slopes of wet mountains such as in the tropics, and associated with intermediate elevations on mountains in dry climates like the American Southwest. In general, it appears that the most productive climates—warmest and wettest—harbor the most species on mountains and these climates occur at low or intermediate elevations. Mountain tops have few species, but many of these are rare and only occur in these isolated alpine habitats. These alpine species and those inhabiting intermediate elevations are most at risk of extinction as climate warms.