



Giant pandas could be left hungry and struggling to survive by global warming, scientists have warned. A new study predicts that climate change is set to wipe out much of the bamboo on which the bears rely for food.

Prime panda habitat in China could be completely lost by the end of the century, say the researchers.

Human development adds to the threat by blocking the bears' access to places where bamboo is less affected by rising temperatures, they point out.

"We will need proactive actions to protect the current giant panda habitats," said lead researcher Mao-Ning Tuanmu, from Yale University in the US.

"We need time to look at areas that might become panda habitat in the future, and to think now about maintaining connectivity of areas of good panda habitat and habitat for other species."

The research, published in the journal *Nature Climate Change*, focused on the Qinling Mountains in Shaanxi province, which is home to around 275 wild pandas. The animals make up around 17% of the entire wild giant panda population.

Qinling pandas have been isolated for thousands of years due to a long history of human habitation around the mountain range. Their restricted range makes them particularly vulnerable

to the loss of food resources.

Bamboo, which carpets the forest floor where the pandas live, is the sole item in the bears' diet and also provides essential food and shelter for other animals.

The plant's unusual reproductive cycle limits its ability to adapt to climate change. One species studied by the scientists only flowers and reproduces every 30-35 years.

Tuanmu's team assessed how three dominant bamboo species were likely to fare in the Qinling Mountains as the climate warmed.

Even the most optimistic forecasts predicted major bamboo die-offs by the turn of the century.

Conservation efforts should now aim to protect areas that have a better chance of supplying pandas with food, despite climate change, said the scientists. Natural "bridges" could also be created to help the pandas escape from a bamboo famine.

Co-author Jianguo Liu, from Michigan State University in the US, said: "Understanding impacts of climate change is an important way for science to assist in making good decisions.

"Looking at the climate impact on the bamboo can help us prepare for the challenges that the panda will likely face in the future."