

Predicting range shifts of *Davidia involucrata* Ball. under future climate change

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Abstract

Understanding and predicting how species will response to future climate change is crucial for biodiversity conservation. Here, we conducted an assessment of future climate change impacts on the distribution of *D. involucrata* in China, using the most recent global circulation models developed in the sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC6). We assessed the potential range shifts in this species by using an ensemble of species distribution models (SDMs). The ensemble SDMs exhibited high predictive ability and suggested that the temperature annual range, annual mean temperature, and precipitation of the driest month are the most influential predictors in shaping distribution patterns of this species. The projections of the ensemble SDMs also suggested that *D. involucrata* is very vulnerable to future climate change, with at least one-third of its suitable range expected to be lost in all future climate change scenarios and will shift to the northward of high-latitude regions. These findings suggest that it is of great urgent and significance to adaptive management strategies to mitigate the impacts of climate change on *D. involucrata*.

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