

## ABSTRACT

The Mountain Pine Beetle (*Dendroctonus ponderosae*) is a unique indicator species in the face of climate change. Since the beginning of this century, it has expanded from its historic territory in the Rocky Mountains at an unprecedented rate. As climate variables continue to change, it is uncertain how the MPB will spread throughout the continental United States. Existing habitat models have studied the current MPB territory, but have not yet been expanded to look at how a changing climate might influence the habitable range for the MPB. In response to recent climate shifts, host tree species have become increasingly susceptible to MPB attack. As their historical habitat is consumed the MPB may also be expanding into new host species. This study applied Maximum Entropy modeling (Maxent) processes to look at habitat suitability for the Mountain Pine Beetle under future climate scenarios. Results for two different emissions scenarios for 2050 and 2070 both showed a change in the MPB's range across the United States. Habitable areas became more concentrated to cooler areas, typically at higher elevations. These models show that as climate change progresses, the Mountain Pine Beetle will be a dynamic variable in forest management across the country as it alters not only its distribution, but also impacted species. Maxent modeling techniques allow a look into the future under varying scenarios to effectively predict the impacts of climate change on the Mountain Pine Beetle and its presence in our forest system.