



Linking remotely sensed ecosystem resilience with forest mortality across the continental United States

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Episodes of forest mortality have been observed worldwide associated with climate change, impacting species composition and ecosystem services such as water resources and carbon sequestration. Yet our ability to predict forest mortality remains limited, especially across large scales. Time series of satellite imagery has been used to document ecosystem resilience globally, but it is not clear how well remotely sensed resilience can inform the prediction of forest mortality across continental, multi-biome scales. Here, we leverage forest inventories across the continental United States to systematically assess the potential of ecosystem resilience derived using different data sets and methods to predict forest mortality. We found high resilience was associated with low mortality in eastern forests but was associated with high mortality in western regions. The unexpected resilience–mortality relation in western United States may be due to several factors including plant trait acclimation, insect population dynamics, or resource competition. Overall, our results not only supported the opportunity to use remotely sensed ecosystem resilience to predict forest mortality but also highlighted that ecological factors may have crucial influences because they can reverse the sign of the resilience–mortality relationships.