An Assemblage of Woodpeckers as an Indicator Species of Fire Intensity Using Fuel Loads as an Intermediary

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Indicator species are a significant part of environmental science, as they are used to predict environmental metrics that may otherwise be unattainable. The growth of the field is unprecedented, as new relationships are found often, due to the necessity of preserving our rapidly changing environment and determining tipping points within it. However, one prominent environmental effect has been somewhat neglected, due to its constantly changing and extremely volatile nature: wildfires. My study seeks to determine if woodpeckers, an indicator species, correlates with wildfire intensities through one of the largest contributing factors: fuel loads. I conducted linear regressions to determine these relationships, and analyze them to determine if said relationships provide a framework for woodpeckers as an indicator species of wildfires. Through this, my results confirm that woodpeckers can act as a strong indicator of wildfire intensity, with an increase of 0.01 woodpecker sightings per minute predicting a 26.7% increase in burn severity ($p=0.02$). They also confirm a correlation of woodpecker sightings with deadwood fuel loads, as a 0.01 increase in woodpecker sightings per minute increases deadwood percentage by 40.45% ($p=0.09$). Finally, I support previous studies which demonstrate that deadwood density predicts increases in burn severity, with a 1% increase in deadwood percentage increasing relative high burn severity by 0.349 percent ($p=0.01$).

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