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**Effect of herbivore damage on broad leaf motion in wind**

NICHOLAS BURNETT, ADIT KOTHARI, University of California, Berkeley — Terrestrial plants regularly experience wind that imposes aerodynamic forces on the plants' leaves. Passive leaf motion (e.g. fluttering) and reconfiguration (e.g. rolling into a cone shape) in wind can affect the drag on the leaf. In the study of passive leaf motion in wind, little attention has been given to the effect of herbivory. Herbivores may alter leaf motion in wind by making holes in the leaf. Also, a small herbivore (e.g. snail) on a leaf can act as a point mass, thereby affecting the leaf's motion in wind. Conversely, accelerations imposed on an herbivore sitting on a leaf by the moving leaf may serve as a defense by dislodging the herbivore. In the present study, we investigated how point masses ( $>1$  g) and holes in leaves of the tuliptree affected passive leaf motion in turbulent winds of 1 and 5 m s<sup>-1</sup>. Leaf motion was unaffected by holes in the leaf surface (about 10% of leaf area), but an herbivore's mass significantly damped the accelerations of fluttering leaves. These results suggest that an herbivore's mass, but not the damage it inflicts, can affect leaf motion in the wind. Furthermore, the damping of leaf fluttering from an herbivore's mass may prevent passive leaf motions from being an effective herbivore defense.

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