**Supplemental methods.**

Normalized difference vegetation index (NDVI; Eq. 1) correlates with vegetation density, canopy cover, and leaf area index (Rouse et al. 1973). Normalized difference moisture index (NDMI; Eq. 2) correlates with similar vegetation characteristics as NDVI, but doesn’t saturate at high levels of foliar biomass (Gao 1996, Huesca et al. 2016). Normalized burn ratio (NBR; Eq. 3) and normalized burn ratio version 2 (NBR2; Eq. 4) respond strongly to fire effects on vegetation (García and Caselles 1991, Key and Benson 2006, Hawbaker et al. 2017, USGS 2017a, 2017b).

Where is the near infrared band (band 4 on Landsat 4, 5, and 7; band 5 on Landsat 8) and is the red band (band 3 on Landsat 4, 5, and 7; band 4 on Landsat 8), is the first short wave infrared band (band 5 on Landsat 4, 5, and 7; band 4 on Landsat 8), is the second short wave infrared band (band 7 on Landsat 4, 5, 7, and 8).

We calculated the delta severity indices (dNBR, dNBR2, dNDVI) by subtracting the respective postfire indices from the prefire indices (NBR, NBR2, and NDVI) without multiplying by a rescaling constant (e.g., we did not multiply the result by 1000 as in Miller and Thode (2007); Eq. 5). Following Reilly et al. (2017), we chose not to correct the delta indices using a phenological offset value (typically calculated as the delta index in homogenous forest patch outside of the fire perimeter), as our approach implicitly accounts for phenology by incorporating multiple cloud-free images across the same time window both before the fire and one year later.

We calculated the relative delta severity indices, RdNBR and RdNDVI, by scaling the respective delta indices (dNBR and dNDVI) from Eq. 6 by a square root transformation of the absolute value of the prefire index:

We calculated the relative burn ratio (RBR) following Parks et al. (2014) using Eq. 7:

We used the digital elevation model to calculate the potential annual heat load (Eq. 9 at each pixel, which is an integrated measure of latitude, slope, and a folding transformation of aspect about the northeast-southwest line, such that northeast becomes 0 radians and southwest becomes radians (McCune and Keon 2002 with correction in McCune 2007):

Where is the potential annual heat load, is a transformation of aspect in radians, and both and are extracted from a digital elevation model with units of radians.