Burning trash for science: using waste to monitor wildfire energies

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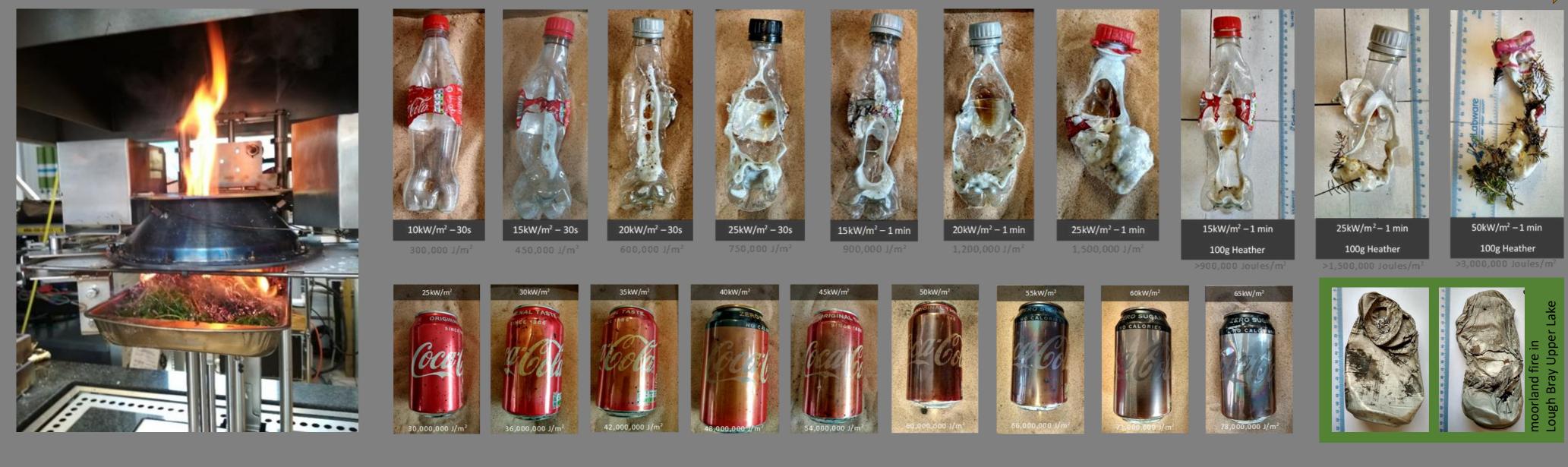
wildFIRE Lab

Collect burned trash for science!

Properties of the wildfires are hard to precisely and accurately measure during the event. This limits our ability to estimate effects of the event on the environment (e.g., how quickly will the area be able to recover, and what will be the long-term carbon storage in an ecosystem Hurteau and Brooks, 2011). Currently used methods of estimating of the 'fire severity' (the amount of vegetation and carbon loss from an ecosystem following a fire) are either subjective (fire severity scales Ryan and Noste 1985), time consuming (charcoal reflectance Belcher et al. 2019) or expensive (thermocouples with data-loggers).

Here we present results of our proof of concept tests of a new approach that may allow ecologists to monitor fire severity and the energy distribution across a burned area by looking at the effects of the fire on litter such as tin cans, bottles and plastic items, that are often revealed following wildfire events. The approach is based on the fact that different types of packages and materials are known to decompose at different temperatures. We will present results from: 1) experimental heating of a range of typical litter based elements in the wildFIRE Lab, using it's state-of-the-art fire testing equipment; 2) field observations and collect litter that has weathered in a moorland environment for further test burns and 3) compare these to litter elements collected from a moorland fire in Lough Bray Upper Lake, Republic of Ireland that took place in 2018, as well as from 2018 Ferndown in Dorset, UK (collected in 2019 along with charcoal pieces for reflectance measurements).

Lab Experiments

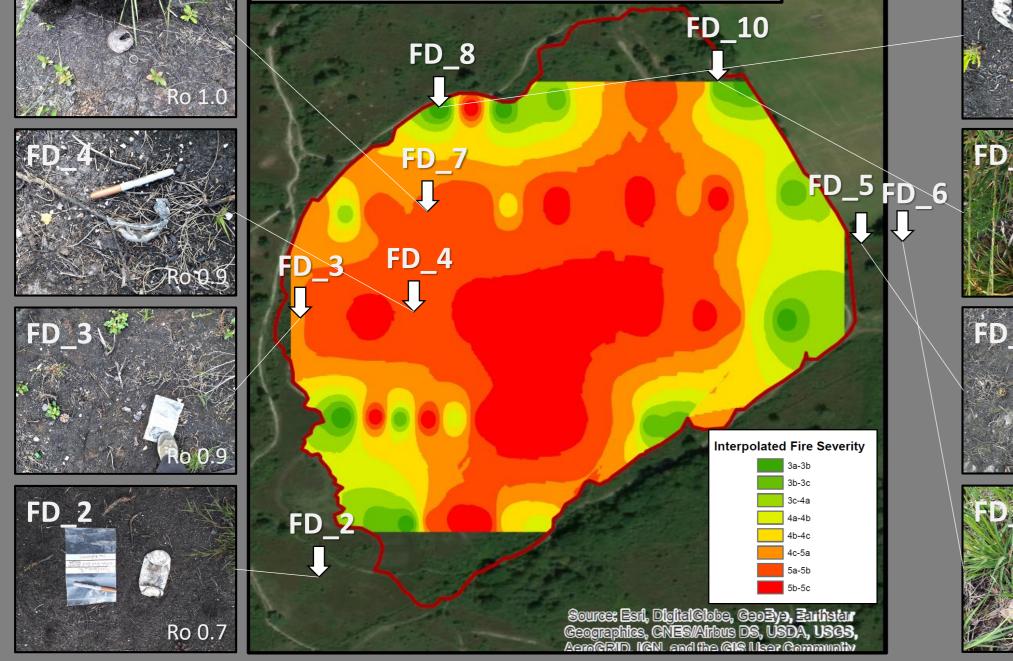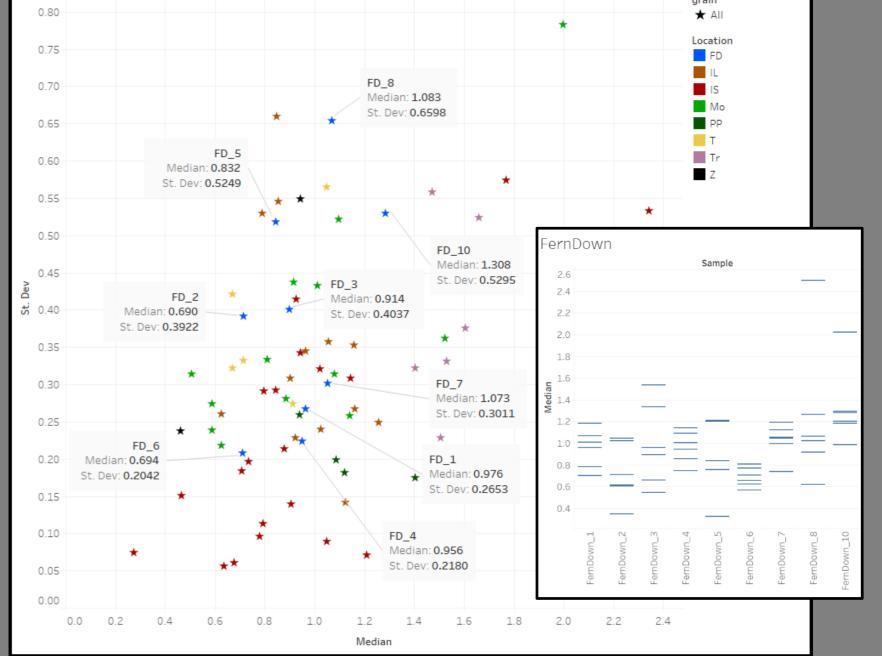## Field Data & Reflectance Measurements