Conference Proceedings – Speaker Transcript

Fuel load, structure and flammability of weeds as key factors in Australian weed classification frameworks

Felipe Aires
University of Sydney
Link to slides

Hello everybody, thanks for listening to my presentation. First of all I would like to acknowledge the Bushfire CRC (now the Bushfire and Natural Hazards CRC) that supported my research during my PhD.

Today I'll present a little of the work I did during my PhD and the results that I believe are quite important and will become more and more important for fire and weed managers as the climate shifts and plant invasion gains more recognition as an emerging issue.

The main idea behind my thesis was that there is already a lot of knowledge about each one of the components forming fire regimes for each type of native fuel types. There are fairly good ways to predict fire behaviour and intensity in native fuels and the empirical models keep being improved.

However, as the fuels shift from native to invasive species the cycle changes and the limited knowledge on fire behaviour of these emergent fuel types may have many practical consequences. For example: incorrect responses in a fire emergency in the urban/bushland interface where most weeds are located and significant ecological impacts due to incorrect vegetation management.

In my work I looked at how the invasion processes of woody plants can alter the distribution of fine fuel biomass in the ground-layer and mid-storey in areas of grassy woodland invaded by Olive tress.

I also saw a shift vertical distribution of fine fuels in areas invaded with Cootamundra wattle in the grassy woodlands of ACT.

After describing the fuels I tested the four components of flammability for 32 invasive species and 10 natives. There is very little data available on leaf and plant flammability of weed species and at the moment there is no standardised way of measuring it. I saw that there are few differences between these plants. Generally speaking invasive species will ignite faster, burn longer and burn better than native plants.

After compiling this data I had the opportunity to simulate the fire behaviour such as rate of forward spread of surface fire in invaded patches using physical models and then compared these to prescribed fires to determine the accuracy of the modelling.

Looking at the whole picture my key point is that we can help integrate and improve fire and weeds management by systematically measuring and describing fuels, measuring plant and leaf flammability in a standardised way and then adding this information to the existing frameworks, such as the weeds of national significance and weed management guidelines.