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# Book of Abstracts

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### E3

#### Using fire on fire-adapted invasive species – the case of *Hakea sericea* Schrad.

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#### Abstract

Fire has been used as a fuel management tool to reduce fire hazard, but an uninformed use of fire may contribute to increase the problem of plant invasions in areas dominated by fire-adapted invasive species. There are many examples of fire-adapted invasive plant species. The Fabaceae, Proteaceae and Myrtaceae families include good examples of these species. Here we present an overview of the role of fire in promoting plant invasions, but also possible solutions of using fire as a control tool, with a particular focus on *Hakea sericea* Schrad. This prickly shrub of Australian origin, has expanded in several world regions, including South Africa, New Zealand and the Iberian Peninsula. It holds a canopy seed bank with serotinous follicles, whose dehiscence is triggered by fire. A set of experimental plots was established in Central Portugal in the frame of project Aliens & Flames aimed at studying the effects of slash and burn treatments on *H. sericea*. Results showed that the burn treatments caused a massive germination of seedlings, whereas the slash treatments induced the resprouting of 61% of the plants. Nevertheless, when combined (slash followed by burn), the two treatments caused a major impact on the invasive plant population, allowing native plants to establish and dominate the plots after two years. Our results also showed that fire should be conducted with maximum residence time, to kill the seeds and decrease dehiscence rate. In conclusion, fire can be a solution to control fire-adapted invasive shrubs holding canopy seed banks such as *H. sericea*, but management should follow very specific technical guidelines to obtain the aimed results.

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### E4

#### Comparative study of invasive and native shrub functional traits of chir pine forest in the central Himalaya

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#### Abstract

Plant invasion has been identified as one of the major threat to forest ecosystems biodiversity, soil nutrient dynamics, ecosystem services and wellbeing across continents. The primary goal of this study was to compare the differences in the functional traits between invasive alien (*Ageratina adenophora* (Spreng.) and *Lantana camara* L.) and native (*Berberis asiatica* Roxb. Ex DC., *Pyracantha crenulata* (D. Don.) M. Roemer and *Rubus ellipticus* Sm.) shrub species of chir pine (*Pinus roxburghii* Sarg.) forest in the central Himalaya. Three 0.5 hectare chir pine forest stands were selected and 20 individual seedlings of similar diameter were tagged for comparative studies of leaf traits, growth pattern, and biomass accumulation in structural organs of each invasive alien and native species. Our one-way ANOVA and Tukey's post hoc test results showed that both invasive alien species have significantly ( $p < 0.05$ ) higher SLA, LWC, total chlorophyll content, foliar nutrient (N and P), RGR, LMR, SMR, nutrient uptake, and nutrient use efficiencies than native species. Leaf litter decomposition rate and nutrient release were also significantly ( $p < 0.05$ ) higher in case of the both invasive alien species. Native species, *R. ellipticus*, shared some of the traits, such as leaf area, chlorophyll content, RGR, LAR, LMR, and nutrient uptake efficiency with invasive alien species. The majority of traits differed among invasive alien and native species, implying that the success of invasive alien species is best described by being functionally distinct from native species. These findings showed that invasive alien species have advanced functional traits that could be contributing to their rapid proliferation in the central Himalaya.