PRODUCTIVITY OF FIREFIGHTING RESOURCES ON LARGE BUSHFIRES

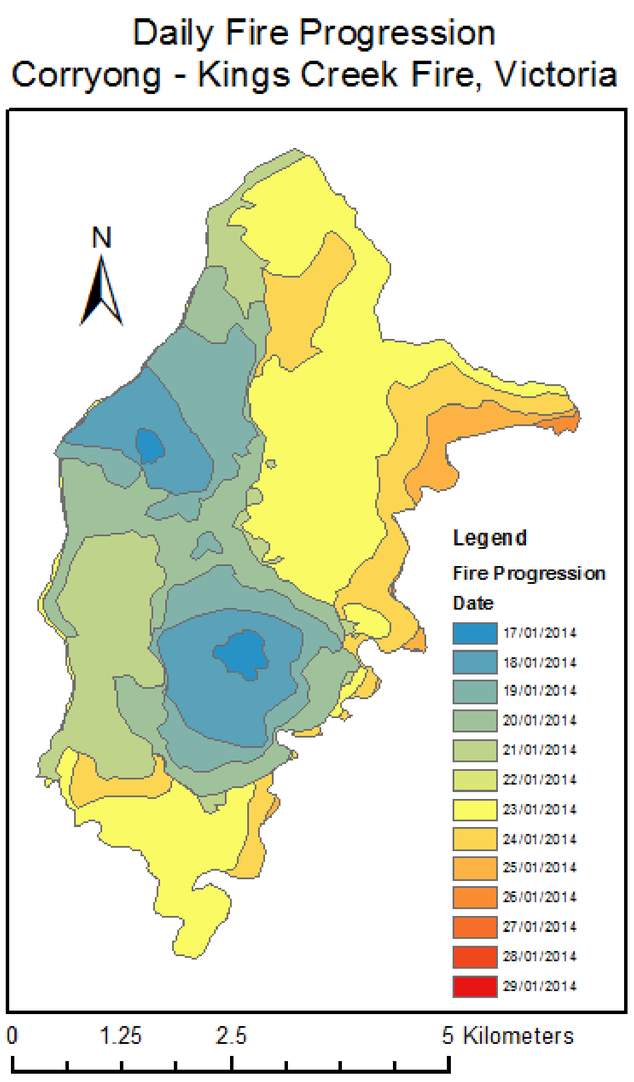
Heather Simpson, Ross Bradstock, Owen Price

Centre for Environmental Risk Management of Bushfires, University of Wollongong, NSW
Contact: hs507@uowmail.edu.au

We have a limited understanding of the productivity of firefighting, or the amount of fire that can be contained by a given number of firefighting resources on large bushfires. The majority of existing research applies to small fires, or initial attack. Research into the productivity of Australian firefighting is even more sparse. The aim of this project is to provide a reliable measure of firefighting productivity for large fires in Australia by using data generated from operational and geospatial firefighting records. This project will seek to answer the following questions:

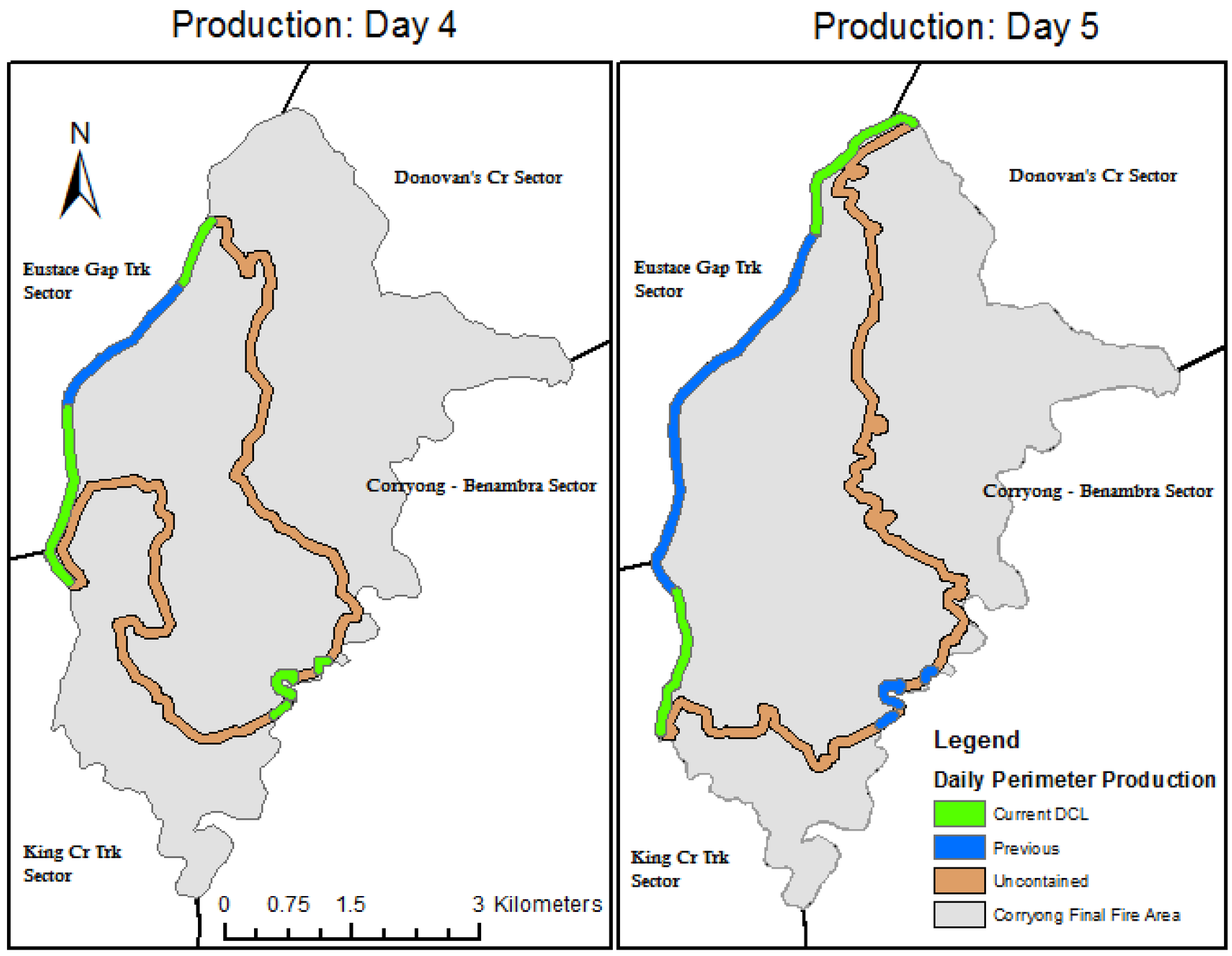
- What are the productivity rates of different types of firefighting resource that work on large fires?
- How do the productivity rates for large fires compare with existing initial attack productivity rates?
- To what degree do environmental factors, such as weather and topography impact resource productivity?

This project examines fires that have burned a minimum of 500 hectares in the State of Victoria between 2010 and 2015. Data has been sourced from the Department of Land, Water and Planning.



A dataset of geospatial and resource data has been compiled that includes daily fire progressions (see example map above), division and sector level resource numbers from Incident Action Plans, and high level operational achievements from Situation Reports and Incident Action Plans.

The productivity of firefighting will be estimated using the Cobb-Douglas production function, an economic method. An assessment of output or daily control line production (DCL) in meters per day will be made at the sector level (see example below), along with daily resource and environmental inputs to form a log-log regression which can be estimated by ordinary least-squares.



Daily Control Line Production =

(Length of fire perimeter that becomes the final perimeter in that sector on a given day)

(The resources and environmental conditions, such as fuel, weather, and topography for that section of perimeter, in that sector, on that day)

Australian Government
Department of Industry, Innovation and Science
Business Cooperative Research Centres Programme

UNIVERSITY OF WOLLONGONG AUSTRALIA