10m—O

BOX 9

Form F.D. 80B

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FORESTS DEPARTMENT

Research Office,

105

DWELLINGUP 6213 Office,

To Fire Operations Officer,
Forests Department,
COMO 6152

23rd November, 1973.
Western Australia

Reference—H.O.

Local

SUBJECT: Research Report: Burning in Dryandra Scrub

Between 27th August and the 23rd of October 1973 a number of experimental spot fires were run in Skelton Block, Dryandra State Forest. The burning was limited to areas of Dryandra scrub (poss. D.noblis). The species occurs in small, isolated patches within the forest and is of uneven age. Some of the larger scrub bushes examined were around 25 years old; growing among plants of a much younger age (12 years old) and appear to have survived a previous burn.

It is a characteristic of this scrub species that it retains its dead leaves on its branches for a number of years thus providing a 'fuel bed' at a height some one to two metres above ground level. It is this aerial 'fuel bed' which carries the fire in such areas, for ground litter is practically non-existant. The ground litter cover is approximately 60% in the old scrub and 30% in the young, and of such composition that it will not give continuous combustion without persistant spotting from ignited scrub crowns above. Fire can progress through the scrub crowns only when driven by fairly strong winds. A brief drop off in wind strength or an abrupt change in wind direction in cool burning conditions (20°C) causes the fire to drop suddenly and go out.

The Burning

The composition of these Dryandra (spp.) scrub areas is such that they do not lend themselves particularly well to the spot fire technique where one has a conventional burning guide in mind. Results indicate a go-no go situation in which wind speeds of 5-6 km/hr and over will cause rapid fire progress through the scrub crowns and fire will not travel at lesser wind speeds.

Fourteen spot fires were run in the scrub type by Dwellingup research staff whose efforts were, on occasion, frustrated by unsatisfactory wind conditions. In Fig. 1 Rates of spread for headfires is compared with wind speed. Ringed fires were in young scrub which contained no 'hang up'. In Fig. 2 Rates of spread are plotted against flame angle.

Indications are that headfire rates of spread well in excess of 150 m/hr would not be uncommon in this scrub type; however, the Dryandra scrub areas appear to be small, occur in isolation and are perhaps being reduced by the process of burning "as soon as it will go".

The fires were burned within the ranges - Temperature 16 to 23° - Relative Humidity 40 to 62% and Wind Speed 3.4 to 7.6 kilometres per hour with resultant rates of spread of 20 to 160 metres per hour and flame height range of 0.3 to 3.7 metres.

The data will be examined in the light of the Jarrah fire danger rating when Met. data has been procured from Narrogin Divisional Office.

GBP 12/4

J. McCORMICK
T.O.

Dist. Superintendent Havel
R.O. Kimber

Dryandra Scrub Fires 1973.

Fig.1.

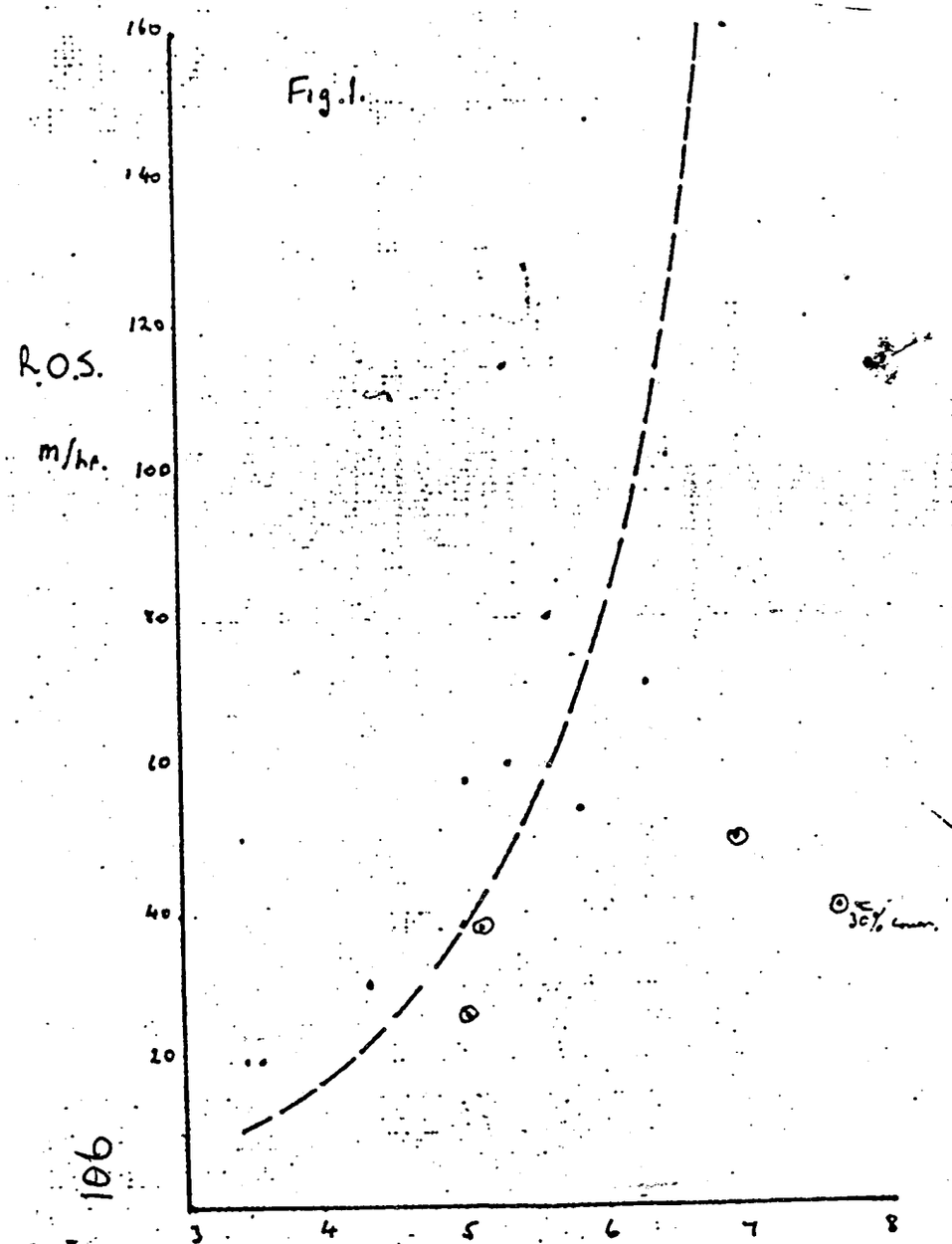
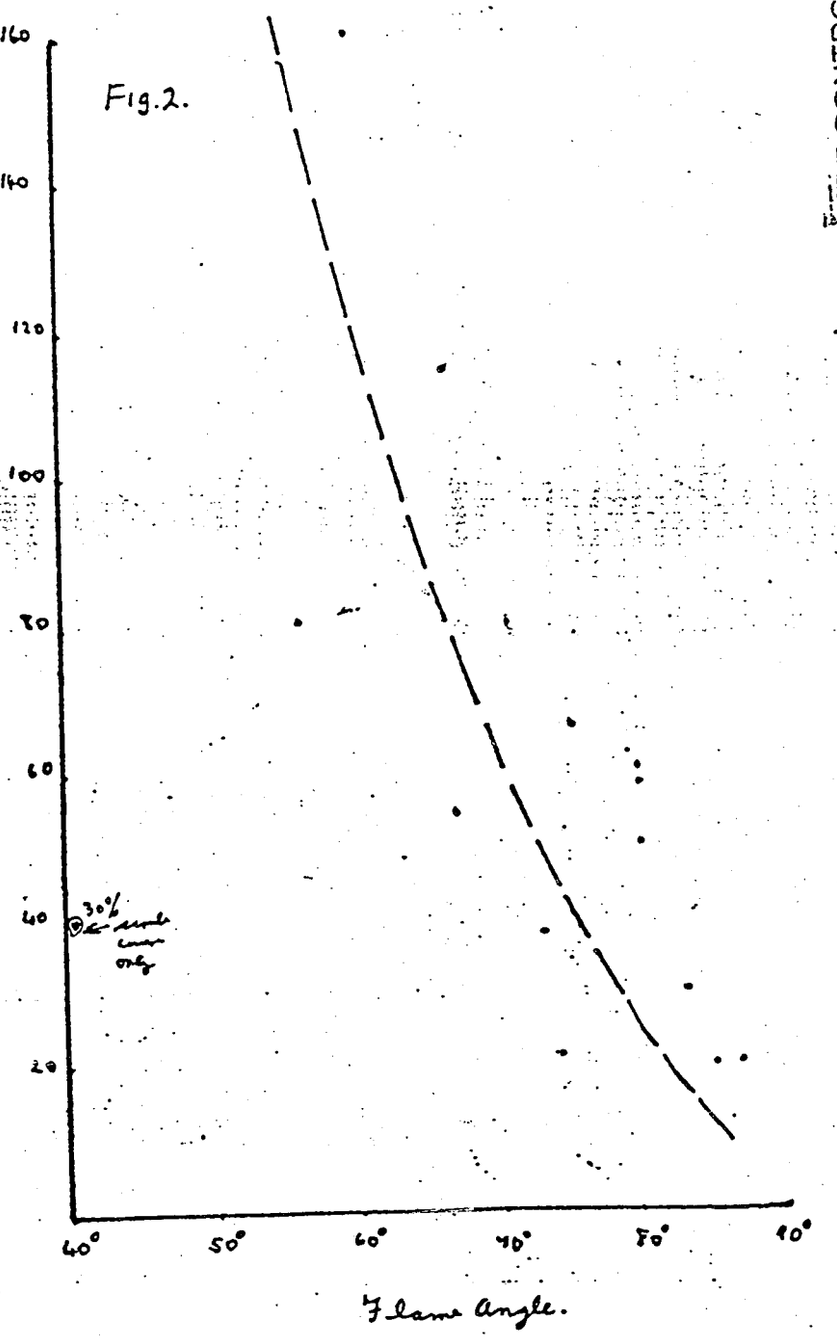


Fig.2.



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