PATCH-BURNING SPINIFEX DESERTS USING AIRCRAFT

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Fire regimes in parts of the spinifex deserts of Western Australia have changed dramatically over the last 50 years. Prior to the departure of Aborigines from their traditional homelands, much of the desert landscape was probably maintained as a mosaic of patches of vegetation at varying stages of regeneration and maturity following fire. Today, large and intense summer wildfires sweep across remote desert nature reserves, placing additional stress on native fauna and flora. Current fire management of parts of these reserves aims to implement a patch-burn strategy to increase fire induced vegetation diversity and to minimise the spread of wildfires. Cost-effective techniques need to be developed to allow appropriate management of the large, remote and poorly accessible desert nature conservation reserves.

Aerial ignition is a procedure which is well suited to overcome the logistical problems associated with prescribed burning in remote areas. Preliminary fire behaviour studies enabled conditions of weather and fuel to be prescribed to achieve the desired range of sizes of burnt patches. As a first approximation, early black and white aerial photographs of remote desert areas were studied to determine the range of sizes of burnt patches during Aboriginal occupation. Aerial ignition trials under prescribed conditions in September 1988 and 1989 successfully emulated this range of sizes. A weather factor function, incorporating wind speed, temperature and relative humidity, related well to both the ignition rate of incendiaries and to the proportion of the area burnt. During trials described by this study, some 141 000 ha of spinifex in the Gibson Desert Nature Reserve was patch-burnt using aircraft at a total cost of $0.32 per hectare. Most burnt patches were less than 20 ha. In all, about 15 % of the trial area was burnt.