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Introduction

Fire is a familiar event in those parts of the world where vegetation experiences extended dry periods, such as most of Australia and parts of New Zealand. Fires lit naturally through lightning strikes have occurred for millions of years but more recent changes to ?re frequency have been brought about through human presence. Parts of the Australian landscape, for example, have been deliberately burnt for millennia by Aboriginal Australians and even more intensively burnt since European settlement.

Changes to a landscape after burning are catastrophic where extreme climatic conditions and fuel loads sustain a conflagration that releases 100 000 kW along a one metre front, whereas small ground ?res might do little more than singe leaf litter. Section 19.1 gives an analysis of energy release by ?res in relation to vegetation types.

Interactions between ?re and many environmental factors such as drought, frost and herbivore attack have imposed strong selective pressures on our major plant families. Indeed, the features outlined in Section 19.2 that contribute to survival of much of Australia's vegetation after ?re are best thought of as adaptations to '?re regimes', the interacting factors that are seen in ?re-prone environments. Development of sclerophylly has been a central feature in the success of major Australian genera such as the eucalypts in the past 30 000 years. Subtle modi?cations to plant life cycles that allow them to survive ?res also include seeding and resprouting habits described in Section 19.3.

Climate has circumscribed changes to the Australasian flora, as seen from pollen and charcoal deposits and climate data over the past 40 million years. Section 19.4 discusses the shaping of our flora through broad changes in climate and the more recent impact of human activity through use of ?re to modify landscapes. Fire and climate interact to generate diverse and dynamic vegetation mosaics, often changing within a few decades of recorded history.

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