Implementing Fire Mosaics to Prevent Large Wildfires and Enhance Ecosystem Health

N.D. Burrows

Director Science Division Department of Conservation and Land Management WA

Natural landscapes are heterogeneous in space and time, comprising a mosaic of patches at different scales that vary in composition, structure and function. At one scale, heterogeneity driven by factors such as climate, landform and soil, results in habitat patches that are relatively stable through time. Superimposed on this is a finer scale, more dynamic heterogeneity induced by natural disturbances. The spatial and temporal patterning of the mosaic affects the distribution and abundance of organisms and it can also greatly affect the severity and intensity of natural disturbances such as fire. Having evolved with fire over millions of years, the health of south-west Australian ecosystems is dependent on specific fire regimes. Organisms display a variety of adaptations to fire and many depend on fire for their persistence. There is ample evidence that at the landscape scale, a diverse fire regime promotes biodiversity. Therefore, where the conservation of biodiversity is a primary objective, fire management is an integral part of land management. Attempting to exclude fire from the landscape for long periods will diminish heterogeneity and threaten ecosystem health. It will also ensure heavy and contiguous fuel accumulations, resulting in large and damaging fires. On the other hand, I postulate that prescribed burning to create a fine-grained mosaic of habitat patches at different post-fire stages will enhance biodiversity and provide protection against large fires by creating a fuel pattern that will reduce the scale and intensity of fires. The frequent and targeted introduction of fire into the landscape should, in time, result in a fine-grained shifting mosaic of patches at different post-fire stages ranging from recently and frequently burnt to long unburnt. Consistent with adaptive management, a large scale field trial is being planned in the south-west of Western Australia to investigate this.