Setting conservation objectives for fire management in SW forests

Concepts for discussion

N. Burrows

Science Division

Our Mission:

"In partnership with the community, we **conserve WA's biodiversity** and manage the lands and waters entrusted to us for the appreciation and benefit of present and future generations"

(Corporate Plan 2000-2005)

Our Principles:

In making decisions, we will be guided by the following principles:

- The diversity and health of ecological communities and indigenous species throughout WA will be maintained and restored.

- We will adopt a flexible and responsive approach to management and operations and be receptive to change.

Conserving biodiversity objective:

"*To protect, conserve and where possible, restore WA's natural biodiversity*"

Strategies:

- "*Protect biodiversity from threatening processes, agents and activities including feral animals, weeds, dieback, and other exotic diseases, salinity and inappropriate fire regimes*"
- "*Use and manage fire to reduce fire hazards and damage to biodiversity and to regenerate and protect ecosystems*"

Biodiversity Conservation (conserving the diversity of life)

- Species
- Habitats/ecosystem
- Genetics

BUT:

At what scale, where and when?

How do we measure/monitor it?

A Paradigm Shift

Perceptions or Reality?

- Determine the best fire management for ameliorating the threat of wildfire to life & property, forest production values and conservation values, and defend the environmental impacts of this.

Alternatively……..

- Determine fire management appropriate to achieve conservation objectives (based on best available knowledge) and then undertake a risk analysis with respect to other values. Adapt with new knowledge gained from research & monitoring.

CALM is not a fire emergency service

Conservation Objectives & Forest Fire

• Forest fire can be as diverse as the environment in which they occur

• For thousands of years fire regimes have varied in frequency, season, intensity, scale and patchiness.

• Pre-historically, these diverse regimes, together with climatic and edaphic factors, have moulded the biodiversity of SW forests

•No single fire regime is optimal for all organisms at any scale

Fire diversity promotes biodiversity

Fire Management Objectives

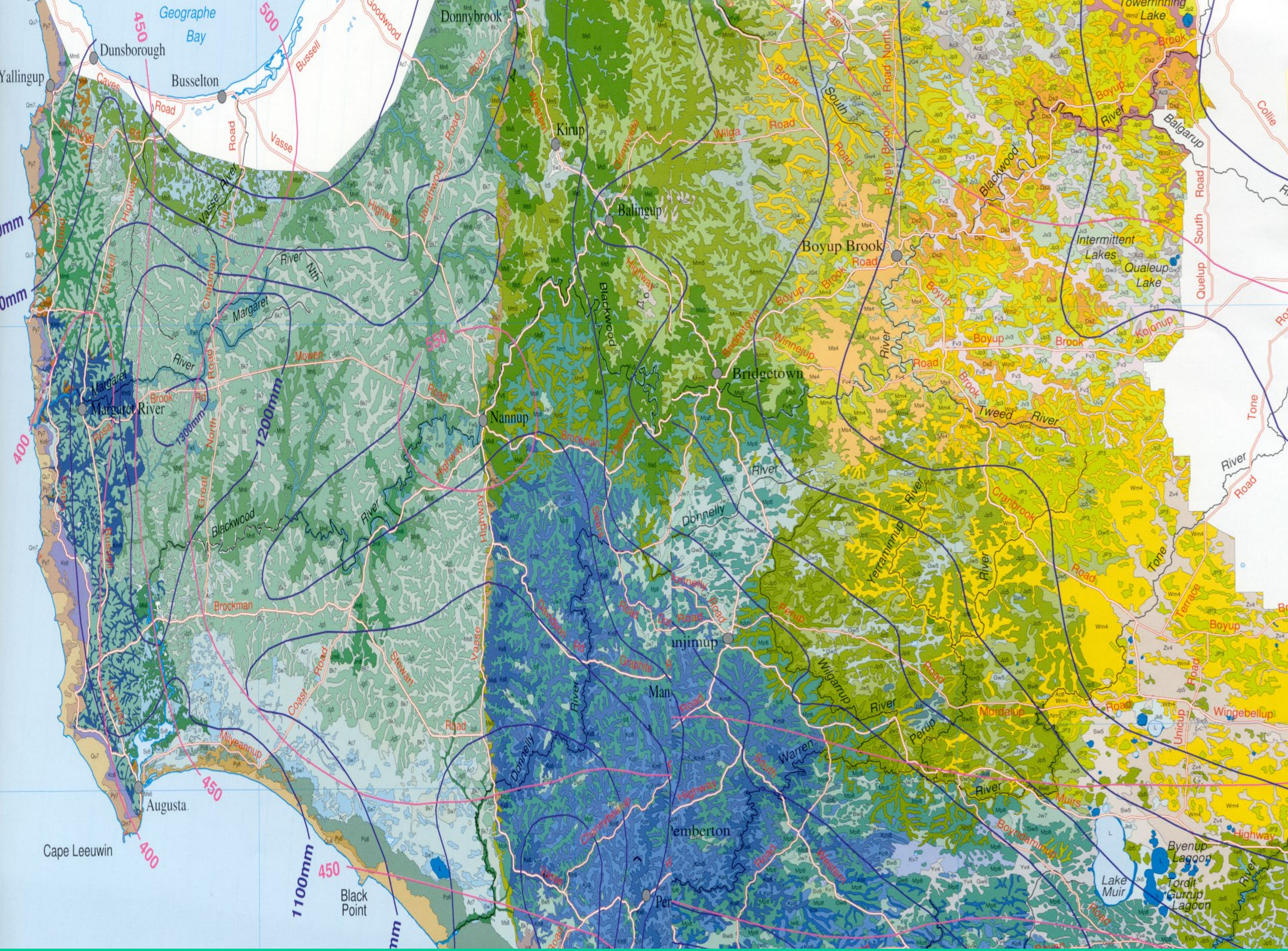
Setting objectives at different spatial & temporal scales

A. At the Landscape Scale:

A definition of a landscape:

"A mosaic where the mix of local ecosystems and landforms is repeated in a similar form over a kilometers-wide area. Several attributes, including geology, soil types, vegetation types, local faunas, climate and natural disturbance regimes tend to be similar and repeated across the whole area".

(Forman 1995)



Geographe Bay
Dunsborough
Yallingup
Busselton
Donnybrook
Kirup
Balingup
Boyup Brook
Intermittent Lakes
Qualeup Lake
Towerrinning Lake
Bridgetown
Nannup
Margaret River
Manjimup
Pemberton
Augusta
Cape Leeuwin
Black Point
Lake Muir
Byenup Lagoon
Tordit Gurrup Lagoon
Balgarup
Collie
Blackwood
River
Margaret
Donnelly
Warren
Tweed
Vasse
Highway
Brockman
Caves
Road
Bussell
Mowen
Rd
Stewart
Coast
Milyeannup
Graphite
Wheatley
Perup
Wingebellup
Mordalup
Muirs
Cranbrook
Yeraminnup
Wilgarrup
Tone
Terrace
Unicup
Quelup
Winnejup
Boyup
Brook
Chapman
Hill
Great
North
Jarrahwood
Goodwood
Wilga
East
Chinnylup
Boyndaminup
1200mm
1100mm
1300mm
450
500
400
550

Conservation objectives: Landscape scale

- To maintain fire diversity, hence biodiversity, through time and space [*with an interlocking mosaic of patches of vegetation at different stages of seral succession including recently burnt and long unburnt, and patches burnt at different seasons and frequencies*].

Broad Strategies - Landscapes

- **Where practical, patch size should be 500-3,000 ha**

- **Mosaic to include a range of fire frequencies and "time since fire" states - the range set by biological indicators/vital attributes.**

- **Proportion of landscape at each "time since fire" state to be a negative exponential with parameters set by biological indicators.**

- **Wildfires will be part of the mosaic**

- **"Dynamic" mosiac ie, temporal and spatial variation - avoid linking patches of similar post-fire state.**

- **Retain protectable, manageable & representative "no planned burn" scientific reference areas where possible. These should be 200-500 ha.**

- **Planning will require utilisation of a number of biophysical databases/information systems. GIS platform**

Fire Management Objectives

B. At the forest patch scale:

A definition of a forest patch:

A spatial element within a landscape. It could be a (sub)catchment or a management boundary, such as a forest block - it could contain a representation of landforms and ecosystems common to the landscape: (500 - 5,000 ha?)

- *To maintain fire diversity and hence biodiversity by introducing patchy burns at various intervals and seasons.*

Broad Strategies

- Fire regime for a patch should vary in season, frequency and interval. Ranges determined from vital attributes.
- Less flammable (fire sensitive) habitats (e.g., riparian zones, some swamps, valley floors, granite outcrops) should be burned less frequently (e.g., min 20-25 yrs).
- More flammable habitats burned at intervals ranging from frequent to infrequent (see Burrows and Friend 1998).
- Burn patchiness and protection of fire sensitive habitats best achieved by low intensity fire under moist conditions.
- Moderate intensity fires under dry conditions should be applied infrequently (see Burrows and Friend 1998) and on smaller scale.

Fire Management Objectives
Scaling objectives

C. At the scale of threatened species and communities

Objectives dictated by legislation and policy

- Careful derivation and implementation of fire or fire exclusion (precautionary approach)
- Protect from regimes known to be deleterious
- Protect isolated populations/communities from single event impacts
- Research & monitor

Broad Strategies

- Implement fire monitoring program (expand FORESTCHECK?)
- Maintain active fire ecology research program

"Smarten up, by not dumbing down"