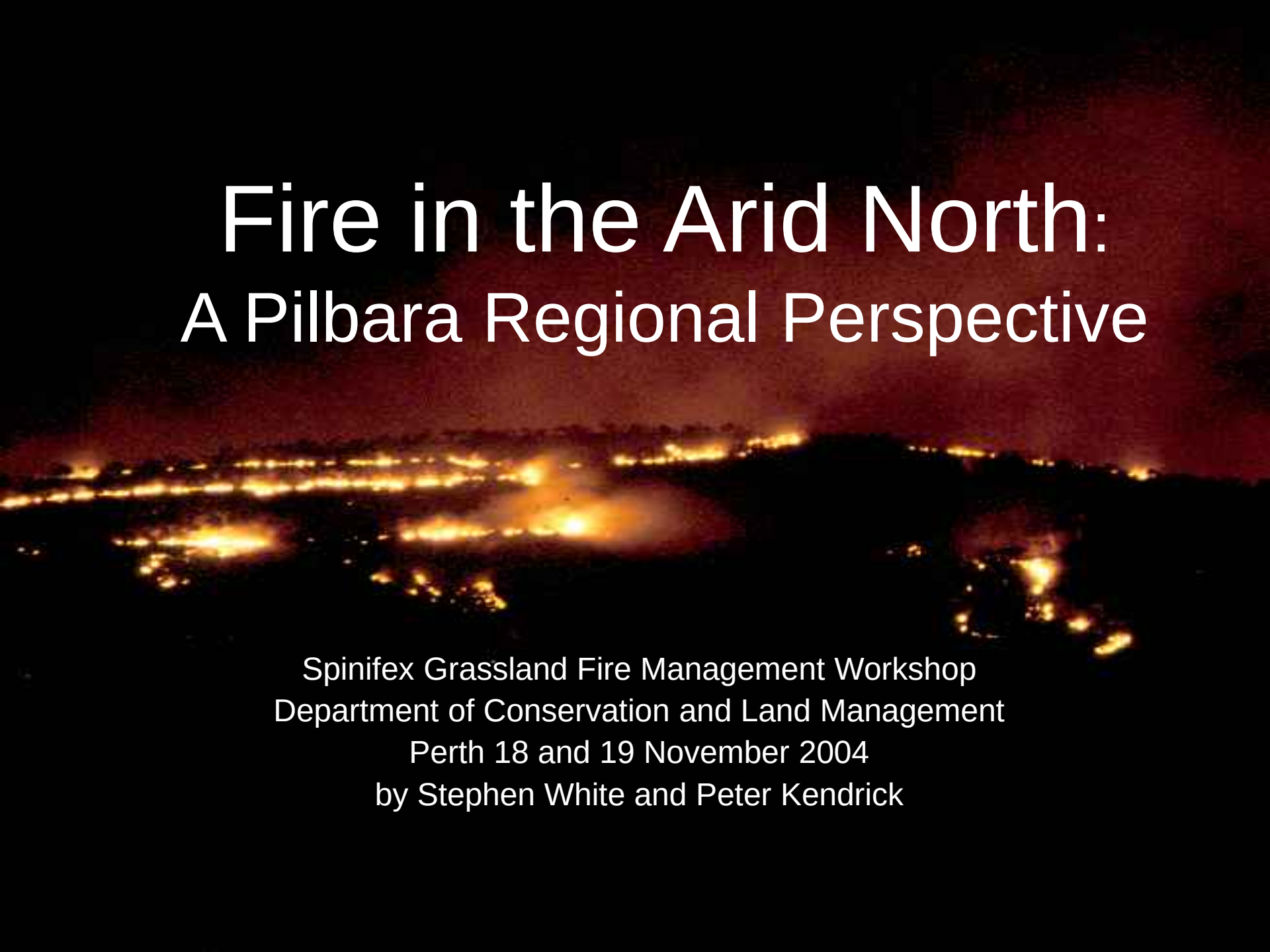


Fire in the Arid North:
A Pilbara Regional Perspective

Spinifex Grassland Fire Management Workshop
Department of Conservation and Land Management
Perth 18 and 19 November 2004

by Stephen White and Peter Kendrick

Current Situation: The Strategic Approach

- Planned fire
- Unplanned fire
- Fire and Biodiversity
- Resources

Planned Burning: Karijini and Millstream

- Moved away from area burning in mid 90's.
- Moved to winter buffer burning within ~1 km of designated flight lines.

Planned Burning: Karijini and Millstream

- Extensive buffer system in place in Karijini in 1998.
- Lightning storm resulted in strikes in most unburnt cells.
- Much of the Park burnt despite buffer system.

Planned Burning: Karijini and Millstream

- Most of Karijini burnt again in 2000.
- Last attempt at buffer burn in Karijini 2003.
- Unsuccessful due to low fuel.
- No buffer system in place in either park.
- Likely to have extensive regrowth this year after cyclonic rain from summer 2004.

Planned Burning: Karijini and Millstream

- There is some small scale hand burning or other fuel modification around high value assets such as rangers headquarters and campground.

Planned “No Planned Burn”, Cape Range National Park

- Management plan 1987 to 1997.
- No planned burning over the whole park and no action to extinguish fires in range.
- “No Planned Burn” being reviewed during the current plan process.

Planned:
Fire Scar Mapping

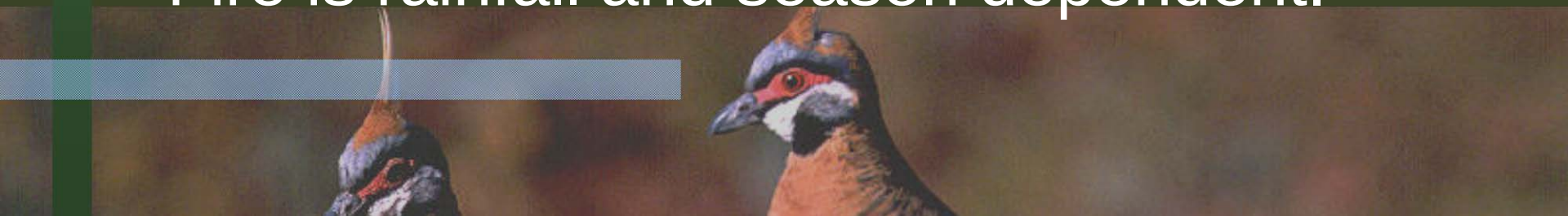
- Joint FESA/CALM program commenced in late 90's.
- Uses Landsat images,
  - Pixel size 30m^2
  - $1200 per 185km by 180km image
  - Automated process
- Allows annual determination of fire scar.
- Allows overlay to determine frequency.
- Assists in planning for planned burns and wildfire by identifying fuel age.

Unplanned fire: Life and Property

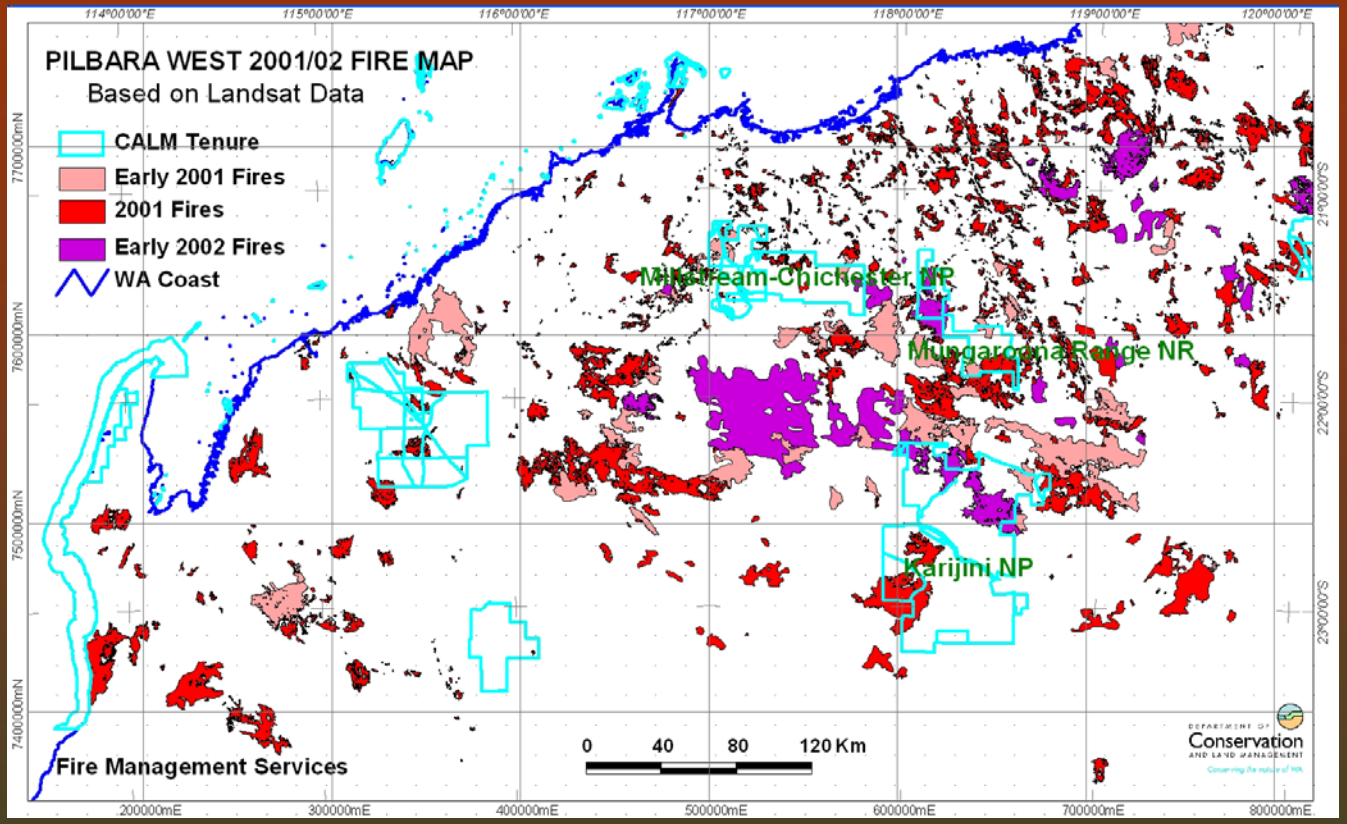
- Up until about 2000, policy to actively contain fires.
- In Hamersley sub-IBRA, expensive, only achievable with assistance of mining companies.
- Felt that they could be more damage than fires,
  - change in surface hydrology,
  - introduction of weeds,
  - allow increased access,
  - direct impact of clearing, and
  - limited success in actual containment.
- After 2000 change to protection of life and property,
  - rangers headquarters,
  - campgrounds,
  - mines etc.

Unplanned fire: Recent History

- Fire behaviour, frequency and scale differs in sub-bioregions,
  - Roebourne Plain,
  - Chichester/Abydos Plain,
  - Hamersley Plateau, and
  - Fortescue Valley
- and desert bioregions
- Fire is rainfall and season dependent.



Fire and Biodiversity



Fire and Biodiversity

- Recognition of the link between fire and biodiversity.
- Working to assumption of need for heterogeneous system to support biodiversity.
- Recognition that large scale fires produce homogeneous systems.
- Recognition that frequent fires are changing vegetation types.

Fire and Biodiversity

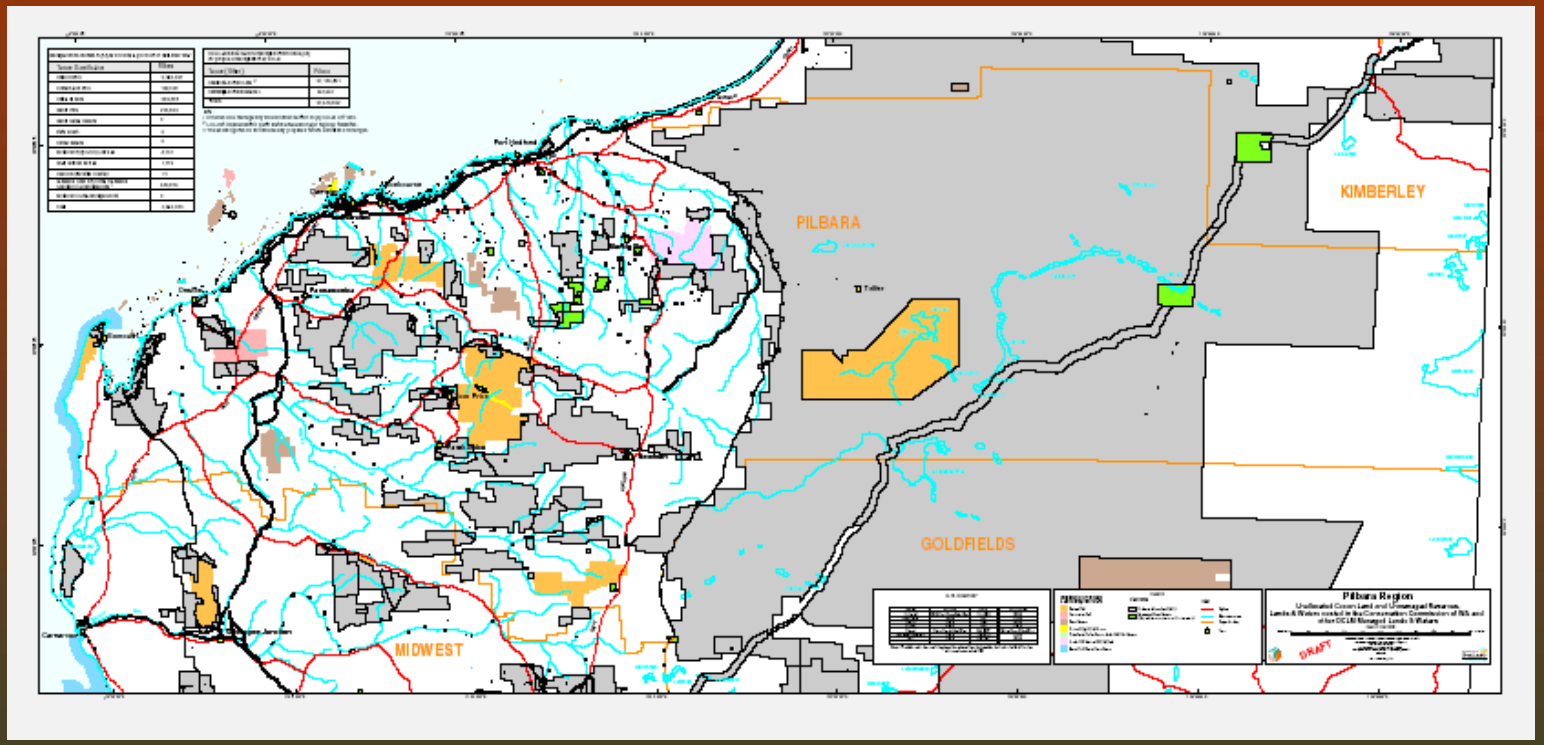
- Fire is a disturbance that encourages the spread of weeds.
- Some species such as mulga and Callitris are very sensitive to fire.
- Large areas of Pilbara have juvenile vegetation due to current regime of frequent fire.
- Other impacts of fire on biodiversity are unknown.

Resources

- Total area of the Pilbara Region is 56,419,979ha
- 38 staff
- 12 light units
- Approximate distance east west ~1,700km
- Approximate distance north south ~700km

- Area of Conservation estate 3,682, 983ha

Resources



•UCL = 27,188,821ha UCR = 481,681ha

Resources

- No dedicated fire management staff in the Pilbara, less than 0.1FTE.
  - Limited fire administration.
  - Limited fire planning.
  - Very little planned burning and no monitoring.
- Level of staffing is adequate for initial wildfire response.
- Level of training is suitable, need opportunity to be exposed to more fire.

The Future:
A new hope.

- Fire and Biodiversity.
- Planned fire.
- Unplanned fire.
- Resources.

Fire and Biodiversity.

- Management planning and action needs to be underpinned with better knowledge.
- Confirmation of need for heterogeneity; determine optimum range for mosaic size.
- Understanding of effect on ecosystem of:-
  - Season,
  - Frequency, and
  - Intensity of fire.
- Method for developing mosaic, randomised or planned.
- Better knowledge of vegetation succession and interaction with rainfall.
- Better ability to predict fire behaviour in different fuel types.

Fire and Biodiversity.

- Knowledge of key fire sensitive/indicator species and communities.
  - What are they?,
  - What are their attributes?, and
  - How do they respond to:
    - Frequency?,
    - Intensity?,
    - Season/rainfall? and
    - Scale?
- Monitoring program to determine response to fire or its absence to support management and allow for timely change, Adaptive Management.

Planned Burning: Conservation Estate and UCL/UMR

- Aim for mosaic across landscape.
  - Significant increase in amount of planned burns.
- Ability to burn in each season and at short notice.
  - Access to staff,
  - Access to aircraft,
  - Flexible approvals process, and
  - Neighbour issues.
- Implement burns to test hypothesis.
  - Burns with normal operational constraints.

Planned Burning: Conservation Estate and UCL/UMR

- Improved Planning
  - Develop a Regional Fire Management Plan,
  - Area Management Plans, and
  - Specific Protection Plans.
- Working with Aboriginal Communities;
  - Training of community people,
  - Assist/carry out cultural burning, and
  - Asset protection burning.

Unplanned fire

- Heterogenous system will prevent large fires and will assist in asset protection.
- Maintain asset protection policy.
- With changes to planned fire, we hope to:
  - have significantly fewer large fires,
  - reduced frequency of wild fires and
  - be in a position where wildfires benefit natural systems.

Resources

- Fire Coordinator.
- GIS Specialist.
- Access to Fire Ecologist, ideally based in Karratha.
- Vegetation map for CALM's Pilbara Region by sub-bioregion.

Challenges

- Resources
  - Size of Pilbara
  - Size of Estate to manage
  - Number of staff available in the field.
  - Staff ops vs planning
  - Funding
- Staff training vs practical experience
- Cultural
  - Weeds buffel and others
  - Neighbours different regimes
  - Synchronising ecological cultural burning.
- Understanding and working with sub-bioregions, fire patterns.

Challenges (Cont)

- Determining impacts of fire frequency flora/fauna.
- Monitoring, asking the right questions initially.
- Monitoring, timely to allow changes to management practices.
- Identifying indicator/surrogate species.
- Optimum size/size range for mosaic.
- Process to develop mosaic.
- Maintaining mosaic over the years.
- Link to CRC’s and other fire programs.

Opportunities

- Working with Neighbours.
- Working with Aboriginal communities.
- NRM.
- Funding 2005/06 onwards.
- UCL, large areas to manage for biodiversity.
- Better use of remote sensing and information technology.
- Develop predictive models of species communities distributions from Pilbara Survey.


Thank you