HOTSPOTS FIRE PROJECT
Case Study: Dry sclerophyll forest

Grass trees and banksias form part of the understorey of this dry sclerophyll forest

Fire Impacts plants & animals

A rich mix of either grassy and/or shrubby plants grows naturally in the understorey of dry sclerophyll forests. Patchy fires play a vital part in ensuring enough space for all plant species including shrubs, grasses and herbs. Both grassy and shrubby patches play a role in conserving the range of animal species found in these forests. Some animals thrive in dense shrubs, while others do best in open grassy areas.

Distribution

Dry sclerophyll forests grow in a broad swathe across the state, extending from the coastal dunes, through river flats, up the escarpment and into the interior.

The term dry sclerophyll forest refers to a diverse and variable collection of different forest communities.

Different types

There are two main types of dry sclerophyll forest; those with a grassy understorey and those with a shrubby or heath understorey. Waratah, banksia, tea-tree, boronias, bush peas, wax flowers and grass trees are among the iconic Australian plants found in the shrubby understorey.

These open forests are home to numerous species of birds and animals. Birds range from the eastern spinebill to powerful owls. The trees provide nesting hollows and nectar for a rainbow array of parrots.

At night the forests are alive with predators like quolls and antechinus, nectar and insect-eating sugar gliders and gentle vegetarians, including koalas. Hollow tree trunks and fallen logs provide shelter for possums and other small mammals.

Rocky outcrops in the forest provide habitat for the vulnerable brush-tailed rock wallaby and for reptiles like the rare broad-headed snake.

In NSW ecologist Dr David Keith has recorded 24 different classes of dry sclerophyll forest, of which 10 have a grassier understorey. Among these is the Clarence Valley Dry Sclerophyll forest which Keith describes as having a distinctive subtropical character with trees growing up to 30 metres tall.

Common species in the Clarence forest include the spotted gum, mahogany, bloodwood and turpentine. Under their lacy canopy grow shorter casuarinas, dogwoods and red ash. A mixture of shrubs, vines, grasses and herbs are found in the understorey. Large areas of the original Clarence dry sclerophyll forest have been cleared for agriculture.

Plants and fire

To protect biodiversity, scientists stress that it is important to have an appropriate fire regime in dry sclerophyll forest and other vegetation types. To create a mosaic of habitats it is also appropriate to vary the intensity, season and area of fire across the landscape.

Key Threat

High frequency fire that disrupts the life cycle of plants and animals and leads to loss of vegetation cover was found to be a “key threatening process” by the NSW Scientific Committee, established through the Threatened Species Conservation Act. Among animals listed under the Threatened Species Act that are at risk from too frequent fires are the spotted-tailed quoll, the eastern quoll, the black-striped wallaby, the brush-tailed rock wallaby, the squirrel glider, the glossy black cockatoo and the eastern bristlebird - all of which occur in the Northern Rivers region.

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Many of the plants in dry sclerophyll forests regenerate after fire. The dominant gums resprout from lignotubers, a woody swelling at the base of the trunk, or from special epicormic shoots beneath the bark.

Mature banksias have insulating cones which open and drop their seeds after fire. Seeds of the violet flowered false sarsaparilla are carried away by ants and germinate rapidly when heated.

After fire, ash provides a nutrient rich seed bed for germination of eucalypt and wattle seeds. Seedlings flourish because competition for light is reduced.

Animals and fire

Both open and shrubby patches play a role in conserving the range of animal species found in dry sclerophyll forests. In one recent study on the Northern Tablelands; scientists Dr Elizabeth Tasker and Professor Christopher Dickman found the hastings river mouse, the new holland mouse and the common dunnart responded well to moderately frequent burning and low intensity grazing. These small mammals favoured areas with a diverse grassy understorey and fire every 3-6 years.

In the same study, long unburnt sites had a more complex shrubby understorey and contained an abundance of brown antechinus and bush rats. Fawn-footed melomys were found only in areas unburnt for 15 years.

The scientists remarked that in grazing leases burned every one to two years there was a greatly reduced understorey and far fewer small mammals.

Dr Alan York, senior research fellow in the School of Forest and Ecosystem Science at the University of Melbourne, says the forests of Northern NSW are "incredibly diverse". He cautions that too frequent fire can wipe out insects that assist with natural composting processes. This in turn affects soils and nutrient cycling and has "serious consequences for long-term sustainability".

Too few fires can also impact on the long term survival of plants and animals. As forests age plants flower less often, seeds remain dormant and uniform thickets of mature shrubs outcompete smaller plants for space and light.

WHAT LANDHOLDERS CAN DO

In working out minimum and maximum fire frequency intervals for dry sclerophyll forest, scientists take into account the fire sensitivity of hundreds of plants.

Across the State, intervals in the 5 to 25 year range, with occasional intervals up to 50 years in some areas, have been recommended. The grass component is likely to be best maintained by short intervals (e.g. 5 – 7 years), while the shrub component is predicted to increase with longer intervals. Try to vary the burning regime within the minimum and maximum recommended fire frequencies. In planning a burning schedule for your land, consult with your nearest Rural Fire Services Fire Control Centre.

False sarsaparilla flowers in the forest understorey.

Acknowledgements

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Reading

- Kenny B, Sutherland E, Tasker E, Bradstock R, *Guidelines for ecologically sustainable fire management*, NSW Parks and Wildlife Service, Hurstville.
- Keith D, 2004, *Ocean shores to desert dunes, the native vegetation of New South Wales*, Department of Environment and Conservation NSW
- Southeast Queensland Fire and Biodiversity Consortium *Individual property fire management planning kit.* See http://www.gu.edu.au/school/asc/fire2/home.html

Further Information

The Hotspots Fire Project is managed by the Nature Conservation Council of NSW. It was funded by the New South Wales government through its Environmental Trust.

For further information contact the project co-ordinator on(02) 9279 2466 or visit our website at: www.hotspotsfireproject.org.au

Credits

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