Estimating the Extent of Declining Forest in South East NSW

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Observations of the health of forest stands according to forest type and forest structure or disturbance history were extrapolated across the region using a geographical information system. Estimates were made of the extent of forest decline across all land tenures.

Vegetation Types and Structure

Maps of forest type according to *'Forest Types in New South Wales'* (Anon. 1989). generated by aerial photography interpretation with field verification, were used where available. These were produced at a scale of 1:25,000. Where they were not available, a modelled vegetation layer was used. This was produced at a scale of 1:100,000, covering the entire region according to a classification into 79 floristic assemblages including terrestrial, freshwater and estuarine plant communities (Keith and Bedward 1999). Forest that was predominantly young even-aged regrowth was identified from aerial photo mapping and, in the case of State forests that had been logged since 1970, from digitised compartment history records. Only limited coverage was available to identify regrowth forest in National Park, Crown Land and private land.

Assessment of Forest Health

Broadscale assessments were conducted within the study area to identify the degree to which various floristic and structural types were affected by forest decline. The health of forest stands was categorised on the basis of overall leaf quantity, form and distribution, and crown structure within each stand (Jurskis these proceedings, Appendix 1). Targeted ground and helicopter surveys were used. A systematic roadside sample (0.5% of State forest) in the Batemans Bay region used the same classification, and results from the two regions were compared.

High altitude eucalypt forests appeared to be in generally healthy condition. Targeted and systematic surveys were restricted to eucalypt types in the coastal area east of the escarpment. Irrespective of forest type, predominantly even-aged stands up to around 30 years old were generally healthy.

Map and Area Estimates

Forest types were categorised into three probability classes of forest decline (Table 1). Some of the names used for forest types in Table 1 refer to combinations of types that were described separately by Anon (1989) or Keith and Bedward (1999). Types that were mostly observed to have health status 2 or worse (Jurskis these proceedings, Appendix 1) were categorised as having a high 1robability of decline. Types that were mostly observed to have health status 0 or 1 were categorised as having a low probability of decline. Some broadly defined forest types varied considerably in health depending upon the presence or absence of particular eucalypt species in the stand. These were classified as having a High / Low probability of decline. For example, Forest Type 157 (Anon. 1989).yellow stringybark - gum, appeared to be generally healthy where the stands were essentially comprised of only the two indicator species, but were generally unhealthy where they included peppermints, woollybutt or bangalay. *(Refer* to *table 1)*

Five probability categories of forest decline were mapped by using Arcview to intersect layers depicting forest type with layers depicting forest structure. Regrowth stands were categorised as High Potential, High / Low Potential or Low probability of decline *(Refer toTable 2).*

Limitations

The accuracy of mapping the probability of decline is limited by the accuracy of the base layers, especially the vegetation model, and by the broadly defined forest types (High / Low Categories). Forest types were categorised on a regional basis according to whether they were mostly healthy or mostly unhealthy. In the map generated by the geographic information system, high probability polygons include some areas that are not declining and low probability polygons include some areas that are substantially affected, particularly those that are located adjacent to high probability polygons.

Results

About 20% of forest in the Eden region is declining in health. The forest types that are mostly declining in health are mainly on private lands and adjacent public lands at the interface between cleared agricultural lands and forests. Areas of eucalypt forest according to tenure and probability of decline are shown in Table 2 *(Refer toTable 2).*

The forest types that are mostly declining in health, are similarly affected in the Batemans Bay region, where about 28% of State forest was estimated to be unhealthy (Category 2 or higher, Jurskis these proceedings).

References

Anon. (1989). *Forest Types in New South Wales.* Research Note No. 17Forestry Commission of New South Wales. Sydney

Keith, D.A. and Bedward, M. (1999). Native vegetation of the south east forests region, Eden, New South Wales. *Cunninghamia* 6: (1) 1-218.

Table 1

HIGH Woollybutt	HIGH/LOW	**LOW**
Grey Ironbark - Stringybark Gum - Box - Stringybark Yertchuk Peppermints Bangalay Stringybark - Gum Appletopped Box Swamp Gum Myanba Dry Scrub Forest Rocky Tops Dry Scrub Forest Flats Wet Herb Forest Brogo Wet Vine Forest Bega Wet Shrub Forest Coastal Gully Shrub Forest Lowland Gully Shrub Forest Dry Grass Forests	Yellow Stringybark - Gum Hinterlanc Wet Shrub Forest Coastal Foothills Dry Shrub Forest	Silvertop Ash Blueleaved Stringybark Coastal Stringybark Red Bloodwood Southern Blue Gum Yellow Stringybark Mountain Wet Herb forest Hinterland Dry Grass Forest Foothills Dry Shrub Forest Inland Intermediate Shrub Forest Lowland Dry Shrub Forest . Eden Dry Scrub Forest Coastal Dry Shrub Forest Silvertop Ash - Stringybark

Table 2

PROBABILITY OF DECLINE	STATE FOREST	NATIONAL PARK	PRIVATE	TOTAL	% OF TOTA
High	11,521	36,217	40,709	90,684	16
High / Low	11,017	14,659	6,233	33,281	6
Low	83,767	111,853	24,338	223,387	41
High Potential	25,051	9,186	8025	42,835	8
High / Low Potential	18,944	3,315	1,805	24,353	4
High Altitude	10,124	55,946	37,186	110,193	20