

# Wandoo Crown Condition 2007

## Report of wandoo crown decline surveys, 2007

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This report covers results from surveys of wandoo crown decline completed in 2007 by community groups and volunteers using the method developed by the Wandoo Recovery Group (WRG, 2005). The WRG greatly appreciates the contributions of volunteers who gave their time to complete these surveys. Without their assistance we could not complete this survey work.

The WRG coordinates this project to assess the extent and severity of wandoo crown decline across wandoo's (*Eucalyptus wandoo*, Blakely) natural range. Each survey is based on assessments of individual trees along typically a 100 m x 20 m transect within woodland blocks or roadside remnant stands. In the survey each tree is assigned to one of three diameter classes, and assessed to separately determine the stage of decline (Figure 1), and the amount of flagging occurring in the tree crown.

Copies of the Assessment Guide, survey sheets and line drawings of crown decline stage are available from the WRG Executive Officer, Liz Manning on 0427 441 482, by email ([lizmanning@bigpond.com](mailto:lizmanning@bigpond.com)) or can be downloaded from the 'Nature and Biodiversity', 'Managing WA forests', 'Conserving our wandoo', 'Mapping' section on the DEC website [www.naturebase.net](http://www.naturebase.net). The links are:  
[www.naturebase.net/component/option,com\\_docman/task,cat\\_view/gid,502/dir,DESC/order,name/Itemid,986/limit,5/limitstart,5/](http://www.naturebase.net/component/option,com_docman/task,cat_view/gid,502/dir,DESC/order,name/Itemid,986/limit,5/limitstart,5/)  
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## Community surveys of wandoo decline in 2007

WRG members and DEC officers conducted three training workshops during 2007. About 40 people attended the workshops and learnt how to survey wandoo stands for crown decline, and contributed to our data collection.

Eighteen monitoring sites have now been established on various land tenures including private property, reserves and national parks between Chittering and Kojonup. During 2007 thirty-seven transects were surveyed across fourteen of the eighteen monitoring sites. A total of 1,688 trees along 4,300m of transect covering 8.6 ha were assessed. Survey intensity ranged from one transect per site to six transects per site.

The survey sites are spread across the geographic range of wandoo, but are widely spaced. Additional survey sites in areas such as Corrigin, Cranbrook, Stirling Range National Park, Three Springs, Dumbleyung and Bolgart would improve understanding of the extent and progression of decline. Understanding of wandoo crown decline would be improved if more surveys were conducted, particularly on those sites where only one or two transects were surveyed.

## Changes in crown condition since 2006

The report of previous surveys completed in 2006 is available at  
[www.naturebase.net/component/option,com\\_docman/task,cat\\_view/gid,502/dir,DESC/order,name/Itemid,986/limit,5/limitstart,5/](http://www.naturebase.net/component/option,com_docman/task,cat_view/gid,502/dir,DESC/order,name/Itemid,986/limit,5/limitstart,5/)

Summaries and interpretation of survey results from each site for 2007 are shown in Table 1. Interpretation of the progression of decline is best on those sites with several transects, and the progression of decline is most clearly identified when exactly the same transect is resurveyed annually.

Four new sites were added this year and four of the sites surveyed in 2006 were not resurveyed in 2007. We can't comment on any change in crown conditions at these eight sites, but the initial surveys still provide useful baseline information for future surveys.

Since 2006 varied changes have occurred on the remaining 10 sites. Four sites remain unchanged (Gorrie Rd., Strathairlie Pastoral Lease, Foxes Lair Reserve, and Karakamia Sanctuary); three sites appear to have improved (Mission rd., South Bokal, and Yilliminning Reserve); and three sites appear to have worsened (Maylinga, West Dale and Paruna).

#### ***Sites that have improved since 2006***

The survey of Mission Rd shows a reduction in flagging and a general improvement in crown condition. South Bokal has had a slight reduction in flagging and the survey data from Yilliminning Reserve shows a substantial reduction in flagging at that site.

#### ***Sites that have worsened since 2006***

There appears to have been an increase in flagging at West Dale, with some trees having flagging over a large proportion of their crowns. This deterioration is reflected in the crown assessments. Some increase in the amount of flagging is also indicated for the Paruna site along with some deterioration in the crown condition. There appears to have been some deterioration in crown condition at Maylinga, and some slight increase in flagging. These changes at Maylinga may not be due to wandoo crown decline and require closer inspection.

#### ***Sites unchanged or not previously surveyed***

Of the four new sites, there was little or no crown decline evident at Goldmine Hill, near North Dandalup, and at Batalling, east of Collie. However, at Bennelaking, just south of Batalling, intermediate levels of decline and extensive flagging on some trees indicate these crowns may continue to deteriorate. At Wundabinirring Brook, the crowns showed advanced decline but only trivial flagging. The small amount of flagging

indicates that the crown decline is stable and the trees at this site may begin to recover.

Gorrie Rd. has only trivial flagging, as was recorded in 2006. The locations of the transects at this site appear to have changed, so the observed change in crown condition is inconclusive. The trees on Strathairlie Pastoral Lease have possibly deteriorated slightly since 2006 – consistent with the low activity of decline agents reported in 2006. Minor flagging is still occurring on some trees at Foxes Lair Reserve. The welcome addition of three new transects at this site will assist interpretation in coming years.

Karakamia Sanctuary continues to show extensive flagging on some trees. This continued flagging, combined with the poor condition of some tree crowns, indicates that progression to advanced decline is likely.

## **Conclusions**

The addition of four new survey sites and increases in the number of transects at two existing sites are encouraging expansions of the survey project.

There is no obvious trend in crown decline across these sites in the southwest, with sites in good and bad condition widely distributed. The greatest change appears to have occurred at Yilliminning Reserve where a substantial reduction in flagging since 2006 indicates a positive improvement at this site. South Bokal and Mission Rd have also improved slightly, though both sites were already in fairly good condition in 2006.

The West Dale site has deteriorated slightly, and along with Karakamia Sanctuary, Paruna Sanctuary, Kupara Reserve and Bennelaking, it is likely that progression of crown decline will further impact these tree stands.

The continued monitoring of all sites will give us valuable insight into the progression of crown decline on individual sites, and across the Southwest.

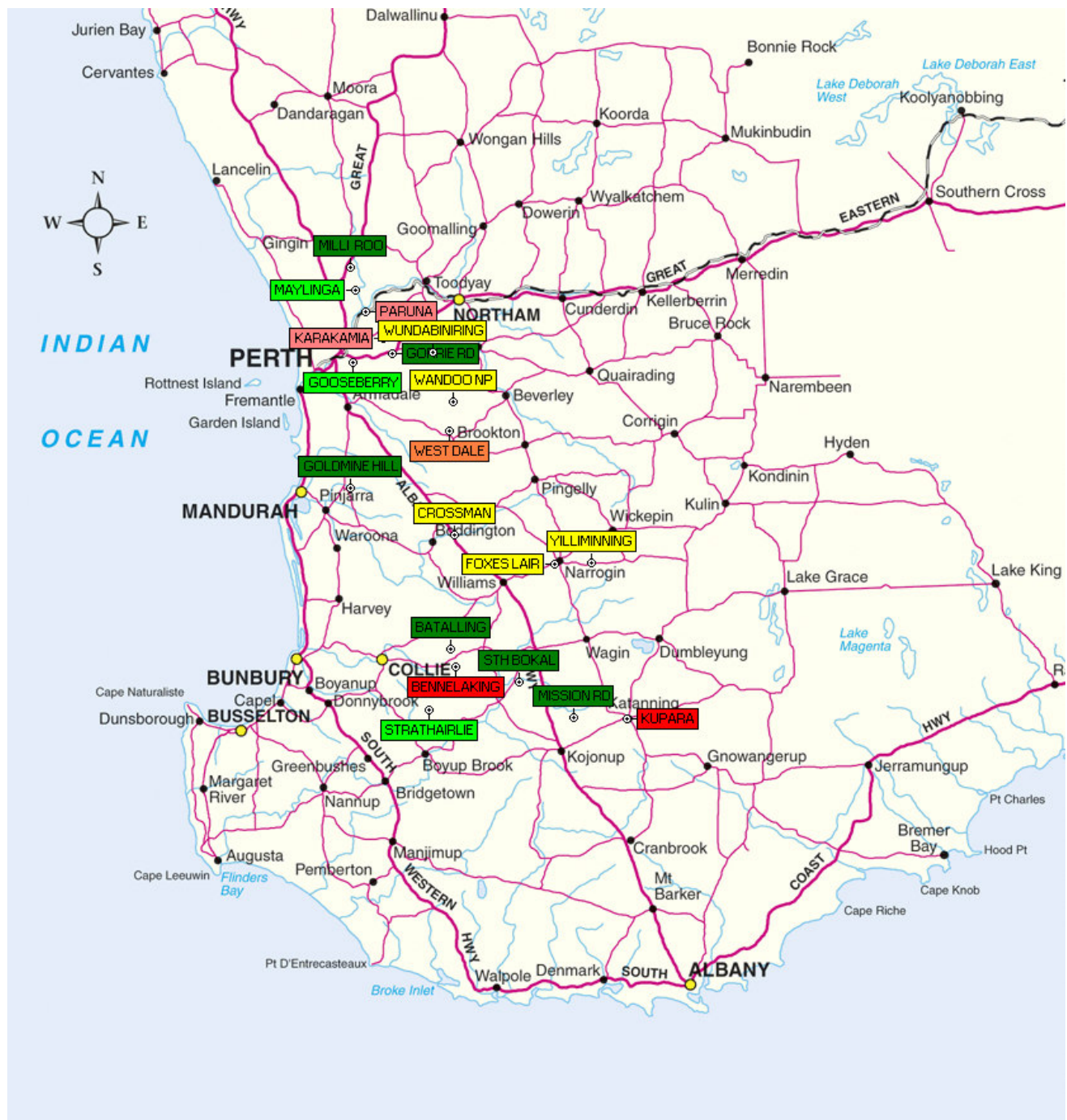


Figure 1. The location of wandoo crown decline survey sites in this project. Colours of the markers indicate the relative outlook for the trees at each site (green = good, red = poor).

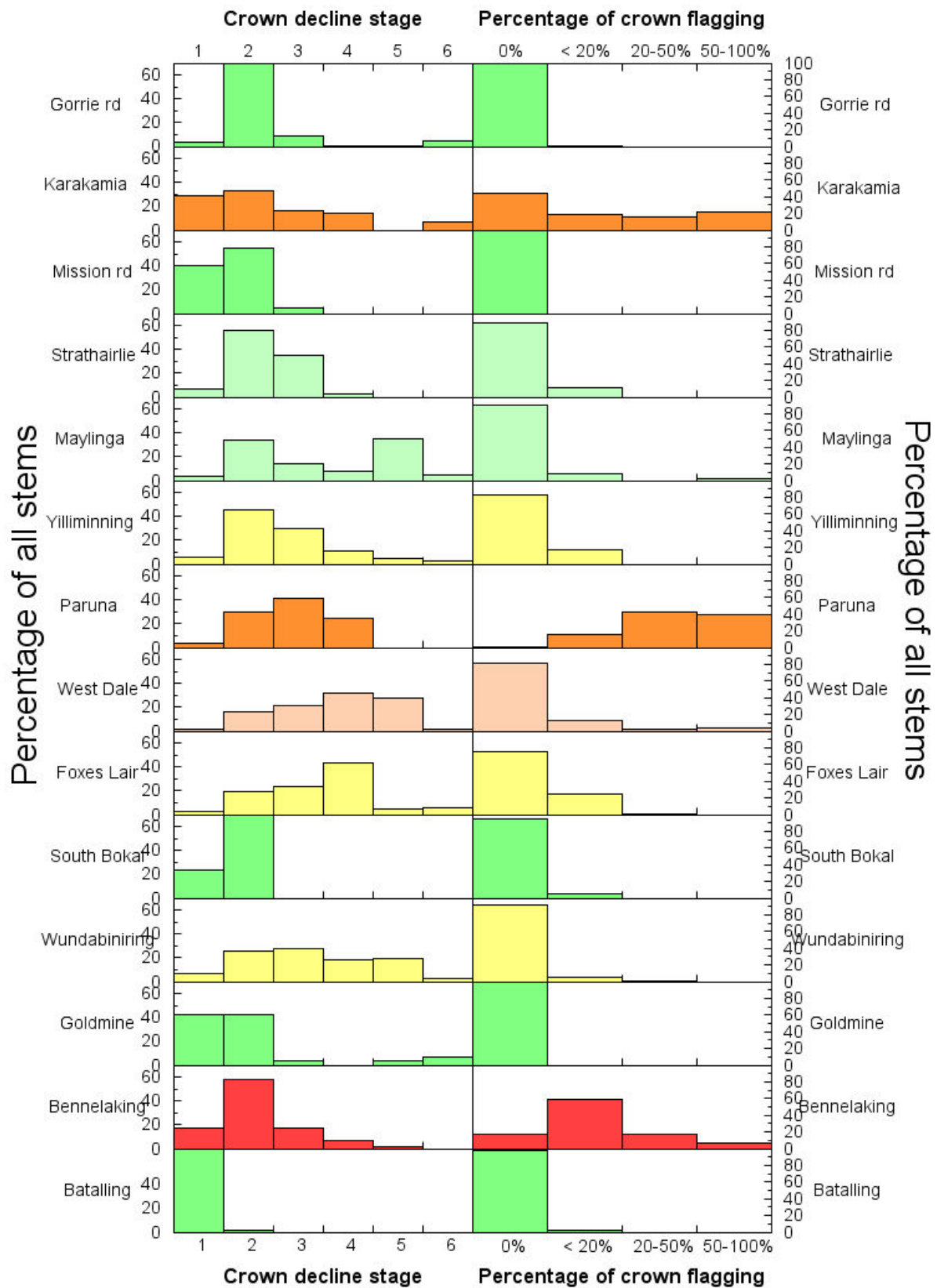


Figure 2. (Left hand side) The percentage of trees at each site assigned to the six crown decline stages. (Right hand side) The proportion of flagging leaves in the tree crown at the time of assessment. Classes are 0%; < 20%; 20%–50%; and 50%–100%. Colours indicate the relative outlook for the trees at each site (green = good, red = poor).

Table 1. Summary and interpretation of wandoo crown decline survey results from 18 sites. Surveys based on the method described in WRG (2005). Colours indicate the relative outlook for the trees at each site (green = good, red = poor).

Site Name	Flagging summary 2007	Crown Decline Stage summary 2007	Summary interpretation for site 2007	Changes at site since 2006	Number of transects 2006	Number of transects 2007	Number of trees surveyed 2006	Number of trees surveyed 2007	Trees per ha 2006	Trees per ha 2007
Goldmine Hill	No flagging	Early decline	Decline agents at very low activity levels. Most trees with the majority of their terminal foliage intact. <b>It is unlikely that any crown decline will progress.</b>	Not surveyed in 2006	0	1		28		280
Batalling	Trivial flagging	Early decline	Decline agents at very low activity levels. Most trees with the majority of their terminal foliage intact. <b>It is unlikely that any crown decline will progress.</b>	Not surveyed in 2006	0	4		120		150
Gorrie Road	Trivial flagging	Early decline	Decline agents at very low activity levels. Most trees with the majority of their terminal foliage intact. <b>Probably decline will not progress, but more information needed.</b>	Location of transects changed – more information needed	4	6	101	469	126	391
Milli Roo Property				Not surveyed in 2007	5	0	112	0	154	
Mission Road	No flagging	Early decline	Decline agents at very low activity levels. Majority of trees with the majority of their terminal foliage intact. <b>Probably decline will not progress.</b>	Some improvement in crown condition and less flagging (i.e. no flagging).	1	1	40	40	200	200
South Bokal	Minor flagging on some trees	Early decline	Decline agents at low activity levels. Majority of trees with the majority of their terminal foliage intact. <b>Probably decline will not progress.</b>	Crowns similar and flagging has decreased. Site is recovering.	1	1	41	38	103	95
Maylinga Property	Trivial flagging (with isolated extensive flagging)	Intermediate decline	Decline agents at very low activity levels. Half of the trees on site with the majority of their terminal foliage intact. Some trees with ongoing decline (?) <b>Possibly decline will progress.</b>	Crowns declined – large movement to C5 may be misleading as there was not much flagging in the previous survey. Extensive crown scorch occurred outside the survey area and the size of the transect was reduced.	1	1	74	62	370	310
Gooseberry Hill National Park				Not surveyed 2007 - site burnt in bushfire	2	0	15	0	75	
Strathairlie Pastoral Lease	Minor flagging on some trees	Early decline	Decline agents at low activity levels. Majority of trees with the majority of their terminal foliage intact. <b>Possibly decline will progress.</b>	Crown decline – increase in C3. Less flagging.	2	2	78	78	164	164
Crossman Reserve				Not surveyed in 2007	7	0	175	0	125	
Foxes Lair Reserve	Minor flagging on some trees	Advanced decline	Decline agents at low activity levels. Majority of trees with majority of terminal foliage lost. <b>Possibly decline will stabilise and crowns will commence recovery.</b>	Minor crown decline – increase in C4. May simply be due to variation in assessment or due to the addition of new transects. The change is inconsequential.	1	4	46	183	230	229
Wundabiniring Brook	Trivial flagging	Advanced decline	Decline agents at low activity levels. Majority of trees with majority of terminal foliage lost. <b>Possibly decline will stabilise and crowns will commence recovery.</b>	Not surveyed in 2006	0	6		269		192
Yilliminning Reserve	Minor flagging on some trees	Intermediate decline	Decline agents at low activity levels. Half of the trees with the majority of terminal foliage lost. <b>Possibly decline will stabilise and crowns will commence recovery.</b>	Crowns similar to 2006 but flagging has decreased.	2	2	98	95	122	119
West Dale	Minor to extensive flagging on some trees	Advanced decline	Decline agents at mostly low activity levels. Majority of trees with majority of terminal foliage lost. <b>Progression to intermediate or advanced decline likely.</b>	Crown decline - increase in C5. Flagging intensified. Possibly the site is deteriorating.	4	4	85	82	106	103
Karakamia Sanctuary	Minor to extensive flagging on most trees	Intermediate decline	Decline agents currently or recently active. Majority of trees with the majority of their terminal foliage intact. <b>Progression to advanced decline likely.</b>	Some slight deterioration of crown condition. Flagging unchanged. No substantial change since 2006.	1	1	57	55	285	275
Paruna Sanctuary	Extensive flagging on most trees	Intermediate decline	Decline agents currently or recently active. Majority of trees with the majority of terminal foliage lost. <b>Progression to advanced decline likely.</b>	Crowns have declined since 2006 and flagging has intensified.	1	1	76	80	127	133
Kupara Reserve				Not re-surveyed in 2007	1	0	16	0	160	
Bennelaking VCL	Extensive flagging on some trees	Intermediate decline	Decline agents currently or recently active. Majority of trees with the majority of their terminal foliage intact. <b>Further decline into decline class C5 is likely.</b>	Not surveyed in 2006	0	3		89		148