

## SAP FEED TREES & YELLOW-BELLIED GLIDERS



Photo: Uwe Mertens

Yellow-bellied Glider (YBG) lapping the sweet sap from *Eucalyptus resinifera* (Red Mahogany)

**JOHN WINTER & ALAN WINLAW**



The far north Queensland populations of the Yellow-bellied Glider (*Petaurus australis* unnamed subspecies), also known as the Fluffy Glider or Yellow-bellied Glider (Wet Tropics), are restricted to altitudes above 700 metres in Tall Eucalypt Forest along the western edge of the Wet Tropics rainforest. The glider occurs as three sub-populations, one on the Mt Windsor Tableland, one on Mt Carbine Tableland and one in patches between Atherton and the Herbert River Gorge. To the south there is a gap in its distribution of approximately 400km to the next known population in the Clarke Ranges near Mackay. Although suitable habitat exists on the Lamb Range east of Mareeba and in Mt Fox-Taravale country, which is south of Herbert R. Gorge, the glider is absent. Yellow-bellied Gliders may once have lived in these areas but disappeared during contractions of suitable forests during past climate changes.

The Wet Tropics population is recognised as being genetically distinct enough to be rated as a subspecies and, because of its limited and isolated populations, is classified as Vulnerable in both Federal and State legislation. The distinctive genetic status of the Yellow-bellied Glider (Wet Tropics) is a further reason for protecting this interesting and attractive animal.

A major constituent of the diet of the yellow-bellied glider is the sap extracted from the trunks of certain tree species. The animals use their lower incisors to gouge out patches of bark, in order to lick up sap which oozes into the wound. In southern Australia over 30 species of tree, mostly Eucalypts are tapped in this way by the glider, but in the Wet Tropics the only tree used for sap is Red Mahogany (also known as Red Stringybark), *Eucalyptus resinifera*. Tapped trees usually show numerous scars up and down the trunk, sometimes as low as a metre above ground. Scarring remains visible for at least 40 years; in some places a scarred tree is seen where yellow-bellied gliders can no longer be found. In addition to sap-tapping incisions on the bark, trees in recent use are scarified by the gliders' claws so the normal grey-brown bark is scratched off, leaving the trunk a strong reddish colour. By day yellow-bellied gliders use dens in hollow branches; 90% of reported den trees in the Wet Tropics have been living Rose Gums, *Eucalyptus grandis*.



Red Mahogany, *E. resinifera* – feed incisions and brown/red bark



*E. resinifera* - active feed incisions



Feed incision made by Yellow-bellied glider on *E. resinifera*



*E. resinifera* with weathered feed incisions. Photos: A. Winlaw



Active Main Tree – trunk covered with >100 Stage 1 and/or Stage 2 incisions. Weathered outer bark removed through activity of gliders leaving reddish colour of unweathered bark. Photo: E. Collins



Inactive Main Tree – trunk covered with >100 Stage 4 incisions, bark weathered. Photo – J. Winter



Typical series of *Petaurus australis* incisions – often in rows; Stage 2 above, Stage 4 below. Photo – T. Barnes



Sap exuding from 'incisions' on Red Bloodwood (*Corymbia intermedia*) – not YBG feed incisions. Photo – A. Winlaw



Red Bloodwood (*Corymbia intermedia*) – red trunk, but not YBG feed tree.

Photo – A. Winlaw



Scars on White Stringybark (*Eucalyptus reducta*) that look very similar to *Petaurus australis* incisions, but are not. Similar looking scars can also occur on Turpentine (*Syncarpia glomulifera*). Photos - A. Winlaw.



Red Bloodwood (*Corymbia intermedia*) with probable Squirrel Glider (*Petaurus norfolcensis*) feeding incisions – the long sloping diagonal series of incisions are the clue and found well outside known range of *Petaurus australis*. Also recorded from Lemon-Scented Gum (*Corymbia citriodora*). Photo- J. Winter

# AGE CLASSES OF YELLOW-BELLIED GLIDER FEEDING INCISIONS



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Red Mahogany (*Eucalyptus resinifera*) with YBG feed incisions  
'Ray's Tree'

August 2012 Photo - A. Winlaw

## Classification

The patches of bark gouged out by Yellow-bellied Gliders on Red Mahogany (*Eucalyptus resinifera*) trees, here referred to as incisions, are classified according to their freshness. The sap, the food the gliders target, is a clear liquid with a sweet sugary taste. It can be seen as a wet stain below the incision and occasionally seen dripping from an overhanging incision. Eventually it becomes clogged with kino, the hard astringent tasting gum exuded by the tree into wounds. Gradually scar tissue grows from the margins of the incision towards its centre until the wound is completely plugged with a seam-like scar in the centre.

The following classification details several distinct stages in this process. Boundaries between stages, particularly in the three older stages, tend to be indistinct because the changes resulting from the healing process are a continuous process.

## Age of Incisions

No estimates have been made of the length of time taken to pass through each stage. However, casual observations indicate that incisions can progress from Stage 1a and well into Stage 2 within a few weeks. Stage 2 incisions gradually age with the kino changing colour from light tan to black. This may take several months. New scar tissue in early Stage 3 incisions may be masked by kino, and Stage 3 incisions may not be obvious until twelve months or more. Stage 4 incisions are at least two years old and may persist for decades.

Thus the presence of Stage 1 and Stage 2 incisions on trees can be taken as evidence that gliders are currently in the area whereas the older stages may only be indicative of a previous occupation by the gliders.

## Yellow-bellied Glider Feeding Scar Stages

### Stage 1 – Furred Edges

Incisions in this stage are fresh looking in which:

- the bark forming the edge of the incision is 'furred', often pale coloured and
- there is no kino or scar tissue present.

Usually this stage can be divided into two further categories according to the presence or absence of sap.

### Stage 1a – Wet Edges

Sap, a sweet clear liquid, exudes from the incision. Its presence is indicated by:

- dark, wet looking edges of the incision or the presence of sap dribbles below the incision
- animals seen feeding at the incision
  - birds, flies and ants during the day
  - moths, antechinus and gliders at night
- fresh (unweathered) bark at base of tree.

### Stage 1b – Dry Edges

The incision is no longer exuding sap as indicated by:

- dry edges to the incision
- no animals are feeding at the incision
- no kino present.

### Stage 2 – Fresh Kino

Kino, a dark red and astringent tasting gum, has started the process of sealing the wound. The stage is characterised by:

- the presence of fresh kino
- absence of scar tissue, except for traces beginning to form round the edges of the incision in more advanced Stage 2
- dry edges to the incision
- kino darkens in colour with age.

### Stage 3 – New Scar Tissue

Scar tissue begins to form over the exposed wood in the incision. The stage is identified by:

- scar tissue clearly in evidence around the edges of the incision, or
- unweathered appearance of the scar tissue when, in the later phase of the stage, the scar tissue has completely covered the wood.

### Stage 4 – Weathered Scar Tissue

Old scars in which the:

- scar tissue has weathered to the same colour as old bark on the trunk.



Exploratory Incision: YBGs have started to chisel into the bark with their lower teeth, but not to a depth that sap is flowing. Photo - T. Barnes



Stage 1a Incision: Fresh sap (clear sugary solution – not to be confused with new dribbles of kino) present around edges of incision. Typical furry edge. During the day incision visited by birds and insects to feed on the sap. Photo - J. Winter



Stage 1b Incision: Sap no longer flowing - lacks dark stain of sap. Incision not visited by insects or birds. No sign of kino. Photo - A. Winlaw.



Stage 2 Incision: Sap stopped flowing, kino (red gum) appearing in incision – no sign of pink scar tissue round edges of incision. Photo - A. Winlaw



Early Stage 3 Incision: Pink scar tissue growing in from the edges of the incision. Photo - E. Collins



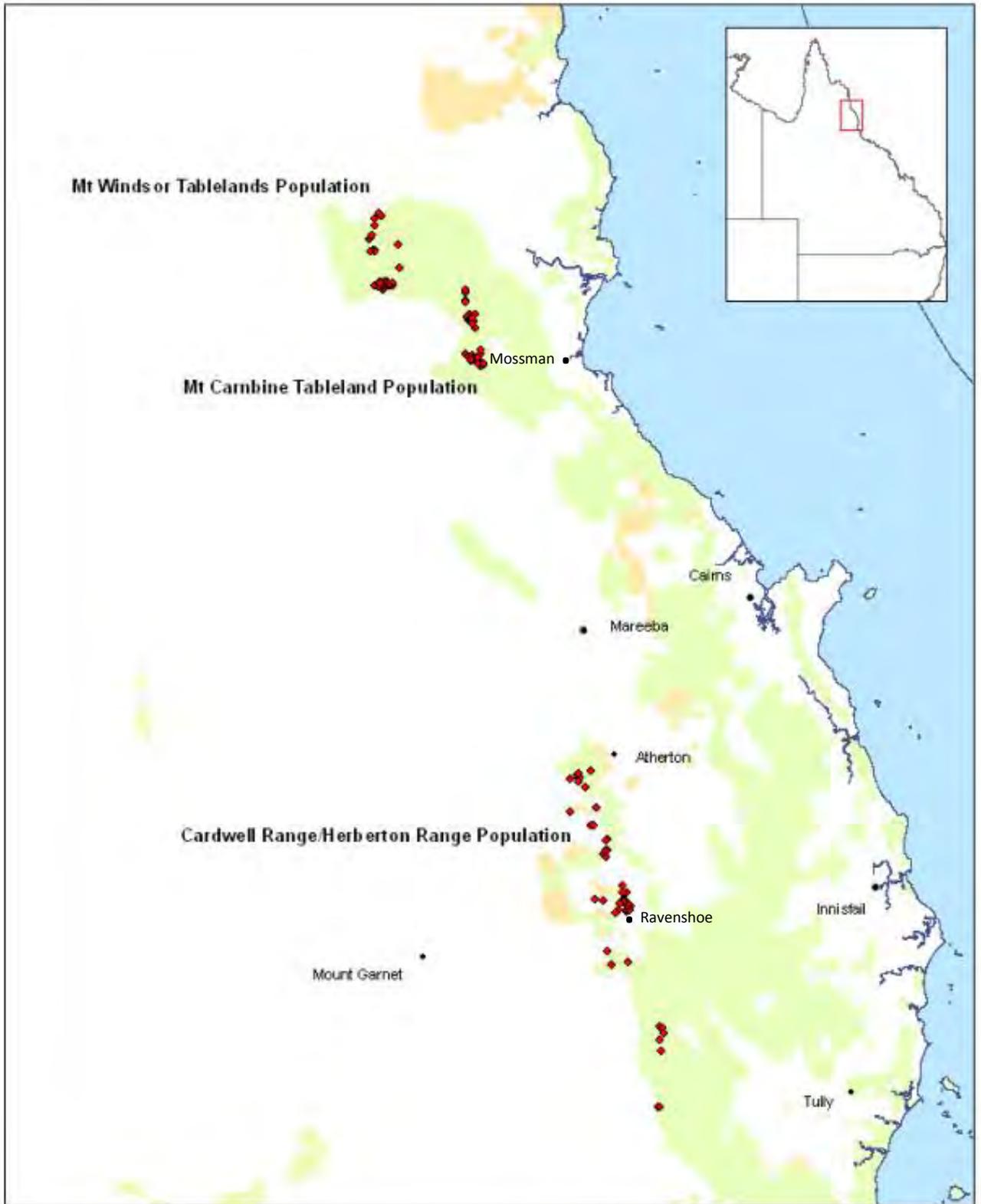
Mid Stage 3 Incision: new pink scar tissue fills incision, old kino still present round edges of incision. Photo - M. Parsons



Late Stage 3 Incision: scar tissue fills incision.  
Photo - E. Collins



Stage 4 Incision: Scar tissue weathered to same colour as surrounding weathered bark. Photo - J. Winter



◆ Yellow-bellied glider sighting records

**Protected Areas of Queensland (estate) and Other Lands**

**Estate Type**

- National Park / Conservation Park / Forest Reserve
- State Forest / Timber Reserve

0 10 20 40 60 80 Kilometers

Queensland Government

Queensland Department of Environment and Heritage  
 Queensland Department of Natural Resources and Water  
 Queensland Department of Transport and Main Roads  
 Queensland Department of Tourism, Industry and Training  
 Queensland Department of Work and Safety  
 Queensland Department of Agriculture, Fisheries and Forestry  
 Queensland Department of Education  
 Queensland Department of Health  
 Queensland Department of Justice  
 Queensland Department of Labour  
 Queensland Department of Local Government  
 Queensland Department of Mines and Energy  
 Queensland Department of Parks and Recreation  
 Queensland Department of Science, Information Technology and Innovation  
 Queensland Department of Transport and Main Roads  
 Queensland Department of Work and Safety  
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 Queensland Department of Science, Information Technology and Innovation

## NOTES



Yellow-bellied glider held by researcher showing lower incisors used to make incisions in feed trees!  
Photo – Steve Craig in Lindenmayer, *Gliders of Australia*

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