

Figure 1: Hollow Bearing Tree<sup>1</sup>

### PROPOSAL FOR IMPROVEMENTS TO THE POLICY AND MANAGEMENT OF SQUIRREL GLIDER HABITATS IN ALBURY

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## INTRODUCTION

This policy proposal aims to give an overview of the current habitat degradation of squirrel gliders in the council area of Albury, New South Wales. Following this, a table of current responses will be presented. Research into academic literature will be used to put forward critiques of current policies and finally, further literature will be used to introduce a proposed policy improvements.

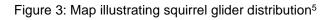


An introduction to the Squirrel Glider

Figure 2: Image of a squirrel glider<sup>2</sup>

The squirrel glider (*Petaurus norfolcensis*) is a native, nocturnal Australian marsupial<sup>3</sup>. It is found in four states, South Australia, Victoria, Queensland, and New South Wales<sup>3</sup>. In all these states except Queensland, Squirrel Gliders appear on the threatened species list<sup>4</sup>. The distribution of Squirrel Gliders is highlighted below:





### Where is Albury?

Albury is located on the border of New South Wales and Victoria. This policy proposal will target the suburbs of Thurgoona and Wirlinga. This is a rapidly growing part of Albury<sup>6</sup> and is also home to the highest squirrel glider population in the region<sup>4</sup>.

## **POLICY PROBLEM OVERVIEW**

The past 20 years there has seen extensive urban sprawl from the City of Albury into the suburbs of Thurgoona and Wirlinga<sup>6</sup>.

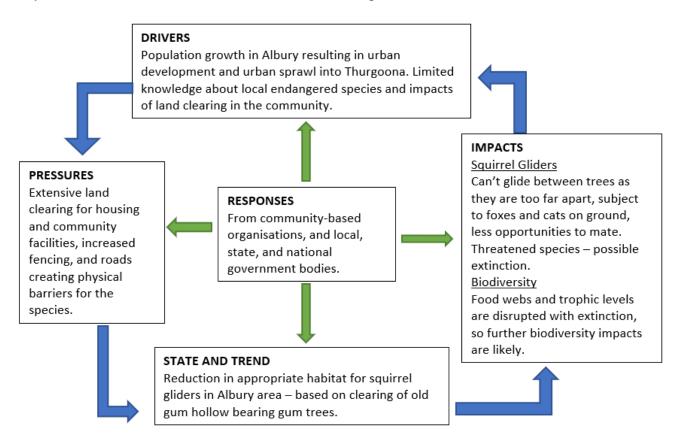
<u>Urbanisation:</u> Clearance of native vegetation and replacement with houses and roads for human use<sup>7</sup> <u>Urban Sprawl:</u> The expansion of the geographic extent of cities and towns<sup>8</sup>

These patterns of human movement and development have resulted in significant land clearing for the construction of residential housing, shops, businesses, parks, and a school<sup>6</sup>. A major concern with land clearing is the abolishment of gum trees bearing hollows. Such trees are over 100 years old and provide homes for squirrel gliders. As they disappear, so too does the squirrel glider<sup>8</sup>.

## In the last 200 years, 85% of native vegetation has been cleared in the Albury/Wodonga region<sup>7</sup>

### **DPSIR ANALYSIS**

This policy proposal follows on from the DPSIR framework presented in the 'Squirrel Glider Habitat Degradation Report Card'<sup>9</sup>. The report card looked at the <u>State and Trend</u> of urban sprawl and land clearing in Albury, outlining the <u>Impacts</u> of this for the population of squirrel gliders and wider biodiversity. <u>Pressures</u> and <u>Drivers</u> leading to population decline were listed and current Responses were evaluated. A summary of this DPSIR framework is outlined in the diagram below;



### **DRIVERS AND PRESSURES**

It is important to consider drivers and pressures when looking at the environmental problem as effective policy should be able to address them directly.

PRESSURES	DRIVERS
Extensive land clearing for housing and community facilities	Urbanisation <sup>7</sup>
Declining amount of gum trees with hollows <sup>5</sup>	Population growth in Albury leading to urban sprawl and development in Thurgoona <sup>6</sup>
<u>New Physical Barriers</u> - Construction of major roads - New property developments - Increased fencing	Land use zoning <sup>10</sup> - prioritization of housing developments over restoring native vegetation
	Limited knowledge about local endangered species <sup>11</sup>

Figure 5: Drivers and Pressures of squirrel glider habitat degradation<sup>9</sup>



Figure 6: One of the many housing developments in Thurgoona<sup>12</sup>

## **OVERVIEW OF CURRENT RESPONSES**

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Scope	Organisation/ Policy	Actions
Local CBO	Albury Conservation Company	<ul> <li>Building Nest Boxes<sup>13</sup></li> <li>Mapping hollow trees<sup>1</sup></li> <li>Threatened species monitoring<sup>14</sup></li> <li>Building community awareness<sup>11</sup></li> </ul>
Local CBO	Wirraminna Environmental Education Centre	<ul> <li>Provide resources for schools<sup>15</sup></li> <li>Collate information about squirrel gliders in the region on their website and YouTube<sup>2</sup></li> </ul>
Local CBO	Parklands Albury Wodonga	<ul> <li>Community programs to spread awareness and aim to optimize conditions for local flora and fauna<sup>16</sup></li> </ul>
Local Gov.	Albury City Council Local Environmental Plan	<ul> <li>Aims to promote sustainable urban development</li> <li>Land use zoning<sup>10</sup></li> </ul>
Local Gov.	Regional Natural Environment Strategy	<ul> <li>Ongoing awareness campaigns about the value of hollow bearing tress<sup>17</sup></li> <li>Install nest boxes<sup>17</sup></li> <li>Collaborate with experts to monitor squirrel gliders<sup>17</sup></li> </ul>
State Gov.	Murray River Region - Local Area Management Plan	<ul> <li>Replace barbed wire fences<sup>5</sup></li> <li>Install nest boxes<sup>5</sup></li> <li>Plant trees<sup>5</sup></li> </ul>
State Gov	NSW Biodiversity Conservation act	<ul> <li>Makes it an offence to damage the habitat of any threatened species<sup>18</sup></li> </ul>
National Gov.	Environmental Protection Biodiversity Conservation Act	<ul> <li>Aims to provide protection for the environment and conserve Australia's biodiversity.<sup>19</sup></li> </ul>

Figure 7: Table of current responses to habitat degradation of squirrel gliders in Albury<sup>9</sup>

### CRITIQUES

Community based organisations (CBOs) have been effective within the realm of what they can achieve without legislation to support them. The Albury Conservation Company (ACC) is a key stakeholder in raising significant awareness about the issue through communicating with local media, building nest boxes and monitoring the species<sup>1,11,13</sup>. The success of these groups highlights the importance of public participation when addressing localised environmental problems.

Government responses have been far less effective. The NSW 'Biodiversity Act' and the 'National Environment Protection Biodiversity Conservation' (EPBC) Act have received a magnitude of criticism from environmental scientists and expert conservationists<sup>20,21,22,23</sup>. Whilst they both aim to maintain biodiversity in Australia by making it theoretically illegal to damage the habitats of threatened species, there are many loopholes. For example, in NSW if a person is unaware that they are damaging a threatened species habitat, they are exempt from penalty<sup>18</sup>. Furthermore, with the EPBC act, other legislation can override it if developers say they will consider environmental impacts<sup>19</sup>. This effectively makes the act weak and allows for habitat destruction with no consequence. These government acts have not prevented extinction, and despite them having existed since 2000, the latest State of the Environment Report still outlines the environment to be in a state of decline<sup>24</sup>. Additionally, reviews of the EPBC act have found that there is no risk base approach when assessing environmental consequences, and it does not consider cumulative impacts of several activities in an area<sup>21</sup>. Management is ineffective with little regulation to approved activities or established performance measures<sup>21</sup>. Dwyer (2018) labelled the policy as, 'complex, confusing and an undesirable mess', as many threatened species do not have adequate recovery plans, and even if they do, there is no legal obligation to actually carry them out<sup>25</sup>. Ultimately, there is currently a lack of government coordination and resources designated to make these acts effective.

A common theme with current responses is they don't directly address the pressures and drivers. Instead, they look for ways which squirrel gliders can adapt to the changing environment around them. Figure 8 highlights the amount of species on the threatened species list<sup>24</sup>, and without further action, there is a great risk that many of these species, including squirrel glider populations will continue to demise, and may become extinct. With these critiques in mind, this report will now propose an action plan for policy improvements.

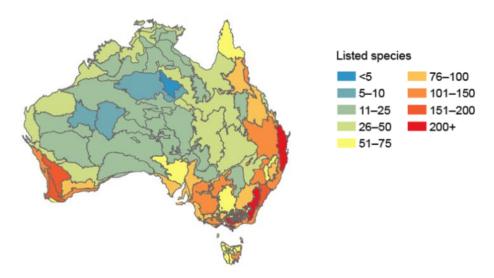


Figure 8: Distribution of threatened species in Australia<sup>24</sup>

## **RECOMMENDATIONS FOR POLICY IMPROVEMENTS**

There are two main actions that are recommended to improve the conditions for squirrel gliders in Albury. The first is a series of changes to state and national legislation that will help maintain biodiversity across the country. The second is the promotion of public participation.

#### 1. Changes to Legislation

An independent review of the EPBC act in June 2020 by Professor Graham Samuel found that significant alterations are needed for it to be effective in protecting Australia's declining biodiversity<sup>21</sup>. As discussed in the critiques section, environmental scientists and conservationists have also expressed concern about the state of biodiversity in Australia and the need for changes to legislation. With these findings and critiques in mind, the following adaptions are recommended:

1.1. Implementation of an independent 'biodiversity commission' and stronger thresholds

Currently, the department of Agriculture, Water, and the Environment oversees national management of the EBPC act.<sup>26</sup> Some states in Australia have 'Environmental Protection Agencies' established under the act as regulators.<sup>27</sup> It is recommended that a 'Biodiversity Commission' that acts on a national scale is established. This organisation will be independent of, but work closely with, the government to oversee reviews, management, and administration of legislation and policy relating to biodiversity. This organisation will establish performance measures in collaboration with environmental experts, which will lead to greater accountability and consistency with conservation.

On a global scale, Australia does not perform well with meeting biodiversity protection goals.<sup>33</sup> There are seven countries that are responsible for sixty percent of the Earth's biodiversity loss – Australia is on that list.<sup>28</sup> A reason for this is the lack of coordination and mismanagement of regulation measures. When comparing Australia to the United States of America, it is clear Australia's laws are not delivering effective results. The US has prevented 291 species from extinction since the implementation of their 'Endangered Species Act' in 1973<sup>30</sup>, whereas the EPBC act in Australia has only confidently saved 2 species<sup>30</sup>. The US have much stronger thresholds that say you cannot harm any threatened species or their habitats<sup>29</sup>. Stronger regulation schemes are imposed and less 'loopholes' exist. Communities can legally hold the government accountable if they don't believe proper management is occurring for species protection<sup>29</sup>. It is recommended that the EPBC act adopts these stronger thresholds with the same level of boundaries and regulation.

#### 1.2. New set of standards for species monitoring

Legge *et al.* (2018) found the state of threatened species monitoring in Australia is poor<sup>31</sup>. Effective monitoring is a vital part of species management. Monitoring allows for a greater understanding around rates of decline and increases ability to determine when further action is critical. Greater monitoring in Australia can be achieved by:

- Implementing legal requirements for all species on the threatened species list to need an approved recovery plan

- Further legal requirements in place for these plans to be acted upon
- Creation of funding models based on how threatened species are and their monitoring needs<sup>31</sup>

Furthermore, it is recommended that a national group in charge of species monitoring is established. This group will be able to keep data in a single place, that can be easily accessed by environmental scientists and the public, keeping them accountable.<sup>31</sup> Additionally, citizen scientists and community monitoring groups should be encouraged.<sup>31</sup> The importance of this will be discussed under 'promotion of public participation'.

### 1.3. Reassessment of land zoning

The 2020 United Nations 'World Cities Report' highlights the importance of not only considering social and economic factors when developing cities, but also the environment.<sup>32</sup> Albury is in a situation where it is still possible to preserve some surrounding native bushland, however further action needs to be taken to ensure this occurs. The current 'Albury City Council Local Environment Plan' outlines zoning for housing development in Thurgoona and Wirlinga<sup>10</sup>. The area currently falls into three zones:

- R1: General residential area to provide housing needs for the community<sup>10</sup>
- R5: Large lot residential aims to provide housing in a rural setting.<sup>10</sup>

**E3**: Environmental management – development should not have adverse effect on ecological communities in this area. Houses, community facilities, agriculture, and education are all permitted with consent.<sup>10</sup>

The plan does not mention clearing native vegetation and has a larger focus on the opportunity to provide housing. Data from the ACC outlines that hollow bearing trees exist in these areas zoned for development and there is no current effort to stop them from being removed. It is recommended that land zoning should be reassessed to take these factors into consideration. This would be done by a vast expansion of **E2** zoning.

**E2**: Environmental Conservation – protection, management, restoration of areas of high ecological significance. Prevention of development that could destroy or damage it. Ensure the long-term viability of populations of threatened species.<sup>10</sup>

Additionally, greater consideration to hollow bearing trees in existing **R1** residential zones should be given, making it more difficult for them to be removed while there is housing development in the vicinity.

These proposed changes will help Australia as a nation conserve its biodiversity. Squirrel Gliders in the Albury region will be directly benefitted by these changes as the laws will help maintain their habitat and require an approved management plan and funding models to ensure their survival.

#### 2. Promotion of public participation

The importance of including of the public in conservation is becoming increasingly acknowledged in scientific methods and policy making. 'Citizen Science' allows for community members to participate in conservation programs and monitoring, whilst increasing enthusiasm and awareness about environmental issues<sup>34</sup>. The CBOs in Albury working towards improving habitat conditions for squirrel gliders have been successful in doing this, however, to increase management effectiveness the following is recommended:

2.1. 'Citizen Science' - Monitoring species and hollows

Community programs which gives residents tools to monitor squirrel glider and hollow bearing trees sightings in their neighborhood would be an effective way of recording squirrel glider activity whilst educating and engaging the public<sup>34</sup>. An example of a similar program is 'ClimateWatch', where general members of the public record sightings and behaviors of species to help scientists understand how climate change is affecting Australian plants and animals<sup>35</sup>. Squirrel gliders would be greatly benefitted if a localised program like this, with updated information and a place for people in Albury to record sightings, was implemented with funding from the council.

2.2. Incentives for nest boxes

Studies have shown that nest boxes can be crucial in providing places for arboreal marsupials (such as squirrel gliders) to live when there is a lack of appropriate natural habitat<sup>36</sup>. Whilst reducing the number of trees removed in Thurgoona and Wirlinga is important, in places where irreversible destruction has occurred other initiatives to help squirrel gliders survive are also required. It is recommended that members of the public are given a monetary incentive to install nest boxes in their backyards. Providing incentives for community members to take action that is beneficial to the environment has proven to be an effective market-based instrument in other areas, such as the solar rebate system and bottle/can recycling scheme, and is a good way promote conservation<sup>37</sup>.



Figure 9: Nest Boxes<sup>13</sup>

2.3. Inclusion of public in decision making

Finally, it is recommended that the public is given a fair chance to have their say in policy making. This means that clear and easy to interpret documents are openly provided in the community so that they are aware of potential changes to legislation<sup>33</sup>. Additionally, the public should be given a fair timeframe to read documents and form opinions about the changes to legislation<sup>38</sup>.

### CONCLUSION

These proposed policy improvements will help achieve the desired outcome of addressing declining habitat for squirrel gliders in Albury. Altering legislation to directly address the pressures and drivers of land clearing, zoning, and minimal community knowledge, will improve habitat conditions for squirrel gliders and their chance of extinction will be reduced. These proposed changes call for greater accountability and coordination within government bodies as well as the incorporation of environmental science in decision making to preserve squirrel glider habitats, and more widely, Australia's biodiversity.



Figure 10: Image of a squirrel glider <sup>39</sup>

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