



Wildlife Road Safety

Overview of wildlife road safety, and what can be done to improve road safety outcomes for our wildlife and all Australians



November 2022



About the NRMA

The NRMA represents over 2.7 million Australians in NSW and the ACT, making it one of the largest tourism and transport companies in Australia. We provide motoring, transport and tourism services to our Members and the community.

We have focused on better transport infrastructure since the beginning, when our founders lobbied for improvements to Sydney's Parramatta Road back in 1920. Independent advocacy is the foundation activity of our organisation and remains critical to who we are today.



About NRMA Insurance

NRMA Insurance is one of Australia's most trusted general insurance providers, helping people protect the things they care about since 1925. It has a long and proud history of working with communities to build their resilience against severe weather and helping to keep people safe on the road.

More than three million customers across Australia choose NRMA Insurance to protect their homes, vehicles, businesses, motorcycles, boats, pets and travel plans.

NRMA Insurance is backed by IAG, Australia and New Zealand's largest general insurer.

Road Safety Series

The NRMA has prepared a series of reports with the aim of identifying the main factors involved in road crashes and initiatives that may help to reduce the risk of loss of life and injuries.

For this report, the NRMA has used data from NRMA Insurance and IAG to help highlight what can be done to improve road safety outcomes for our wildlife and all Australians.

Introduction

Australia is rich in wildlife, including brumbies, wallabies, kangaroos and wombats. Some wildlife can behave erratically and unpredictably on or near higher speed regional roads. As vehicles approach, they can become startled by headlights or vehicle noise and move onto roadways causing a collision. Wildlife deaths on roads can further attract scavengers such as foxes and hawks, creating additional risks to our unique wildlife and the community.

Roads are engineered to enable water to run off the surface quickly. As a result, water accumulates in roadside gullies and culverts that are frequently used by animals, especially in times of drought. The problem is exacerbated by the many large trees alongside roads that provide animals with shelter and shade.

The concentration of animals and prevalence of wildlife in regional and outer metropolitan areas coupled with higher speed limits can result in poor crash outcomes for occupants of vehicles. This includes vehicle damage, occasional injuries and in rare cases death.

Sometimes drivers who swerve to avoid an animal may end up losing control and running off the road, and/or rolling their vehicle. This outcome is likely in the case of popular 4WD vehicles in regional areas which tend to have a higher centre of gravity.

NRMA data analysis suggests the aggregate societal costs of road trauma are approximately \$7 billion per year. The emotional costs arising from road trauma to individuals, families and communities remain unquantifiable. While the instances of collision with wildlife may be low, the consequences of these events for both human and animal welfare is not insignificant.

In the Annual Statistical Statement for Road Traffic Crashes, for the year ending 31 December 2020, collisions with animals contributed to at least 116 reportable crashes. Whilst this may seem like a small number, the NSW Government states that, "one in 41 casualty crashes on country roads involves a collision with an animal". These tend to be collisions which result in some degree of injury or harm. Insurance claim data from IAG suggests that there are far more collisions which do not result in injury but do result in vehicle damage.



Key Takeaways

- 1 Growing traffic volumes on regional roads will likely increase the risk of collisions between motor vehicles and wildlife.
- 2 In the year ending 31 December 2020, 116 reportable casualty crashes occurred on NSW roads, with hundreds more collisions reported as part of insurance claims. 16 fatal crashes have occurred in the five years ending 31 December 2020.
- 3 Major regional centres such as Dubbo, Canberra, Goulburn and Mudgee are most likely to have insurance claims for wildlife collisions.
- 4 Estimates suggest that 10 million animals die on Australian roads each year due to collisions with motor vehicles.
- 5 Government crash data shows that kangaroos and wallabies are most likely to be impacted in a casualty crash.
- 6 The decade long upgrade of the Pacific Highway in NSW (linking Sydney and Brisbane) included installations to improve wildlife safety outcomes, such as grade separated crossings and fencing to minimise wildlife access to the road corridor. It is impractical to assume that all road upgrades will have the same emphasis and consideration given to wildlife safety.
- 7 Artificial intelligence could play a role in reducing collisions in high risk wildlife areas. Thermal cameras capable of detecting high numbers of fauna could be used to help enforce speed limits via a digital display.
- 8 Driver education can help improve outcomes for wildlife, by educating drivers on defensive driving strategies on high risk roads for wildlife.
- 9 The NRMA has partnered with Wildlife Recovery Australia, a joint venture between the Odanata Foundation and Byron Bay Wildlife Hospital (BBWH) to help conserve biodiversity and protect our unique native wildlife. Our support has helped fund BBWH's Wildlife Car Rescue Kits empowering motorists to safely assist injured wildlife on our roads. WRA's network of wildlife sanctuaries across Australia provides an avenue to return healed wildlife to their natural habitats.

Wildlife Collision Statistics

A consolidated database for the reporting of all wildlife collisions doesn't exist. Data reported through the Centre for Road Safety¹ tends to underreport collisions where the outcome is damage to a vehicle only, and there is no way of quantifying and reporting near misses.

Some estimates suggest that 10 million animals die on Australian roads each year due to collisions with motor vehicles².

The Centre for Road Safety consolidates road trauma which occurs within the surveyed road reserve (i.e. not collisions which may occur on private property) through the annual statistical statement for road traffic crashes.

The following table highlights road trauma data for the 2020 calendar year. Note that 2020 was a year of profound travel disruption including widespread bushfires in January, transitioning into extensive flooding in February, and the impacts and restrictions due to the COVID-19 pandemic from March onwards. The disruption and reduction in travel meant that wildlife accidents were below trend.

Table 1: 2020 Centre for Road Safety Wildlife Collision Data

	Fatal Crash	Serious Injury Crash	Moderate Injury Crash	Minor/ Other Injury Crash	Total Casualty Crashes
Stock	0	4	15	7	26
Kangaroo/ wallaby	1	23	28	15	67
Other animal	0	3	14	6	23
Total	1	30	57	28	116

Also note that these tables report crashes as opposed to injuries. So a 'serious injury crash', may have had multiple seriously injured people. In circumstances where there are multiple casualties, the crash is assigned to the most serious casualty denomination. For example, if a crash results in one serious injury and one moderate injury, it is reported as a serious injury crash.

Table 2: 2015-2020 Centre for Road Safety Wildlife Collision Data

	Fatal Crash	Serious Injury Crash	Moderate Injury Crash	Minor/ Other Injury Crash	Total Casualty Crashes
2015	2	68	55	40	165
2016	3	64	62	36	165
2017	3	68	60	29	160
2018	2	59	74	31	166
2019	5	41	61	47	154
2020	1	30	57	28	116
Total	16	330	369	211	926

The data shows that collisions with kangaroos and wallabies tend to make up approximately half of crashes with wildlife resulting in injuries. In the 2015 to 2019 period, casualty crashes from wildlife collisions remained remarkably consistent at approximately 160 per year. As noted above, due to a range of environmental factors and stay at home orders, 2020 was well below trend for wildlife collisions.

IAG has provided claim data around animal collisions by Local Government Area covering NSW and the ACT for the 2017 to 2022 period. Note that an animal collision resulting in an insurance claim will most likely involve a larger animal, or an impact to the windscreen by a bird. The damage would most likely be damage to the bonnet and the components of the engine, and/or the windscreen.

1 <https://roadsafety.transport.nsw.gov.au/statistics/reports.html>

2 <https://theconversation.com/10-million-animals-are-hit-on-our-roads-each-year-heres-how-you-can-help-them-and-steer-clear-of-them-these-holidays-149733>

Table 3: 2017–2022 IAG Animal Collision Data (NSW & ACT)

Suburb	Highest in Suburb	Second Highest in Suburb	Total Claims in Suburb
Dubbo	Golden Highway – 38	Mitchell Highway – 34	689
Canberra	Federal Highway – 35	Monaro Highway – 29	568
Goulburn	Hume Highway – 41	Crookwell Road – 14	479
Mudgee	Castlereagh Highway – 36	Ulan Road – 35	458
Cooma	Monaro Highway – 58	Snowy Mountains Highway – 25	395
Muswellbrook	New England Highway – 49	Wybong Road – 19	387
Orange	Cargo Road – 33	Mitchell Highway – 19	375
Jindabyne	Kosciuszko Road – 48	Alpine Way – 29	366
Singleton	New England Highway – 28	Golden Highway – 19	356
Armidale	New England Highway – 32	Waterfall Highway – 23	351

Much of the academic research with respect to geospatial reports on wildlife collisions is outdated. But a temporal assessment of the data would suggest the areas with high levels of animal collisions have remained relatively consistent over time.

A paper titled *"Frequency of animal-vehicle collisions in NSW"*³ demonstrated the geographic spread of kangaroo and wallaby collisions between 1996 and 2005. It shows considerable 'hot spots' in Western Sydney (though this area has developed considerably since the study), the Hume Highway corridor, Central West, lower Hunter Valley and sections of the north coast as the areas with the most kangaroo and wallaby collisions.

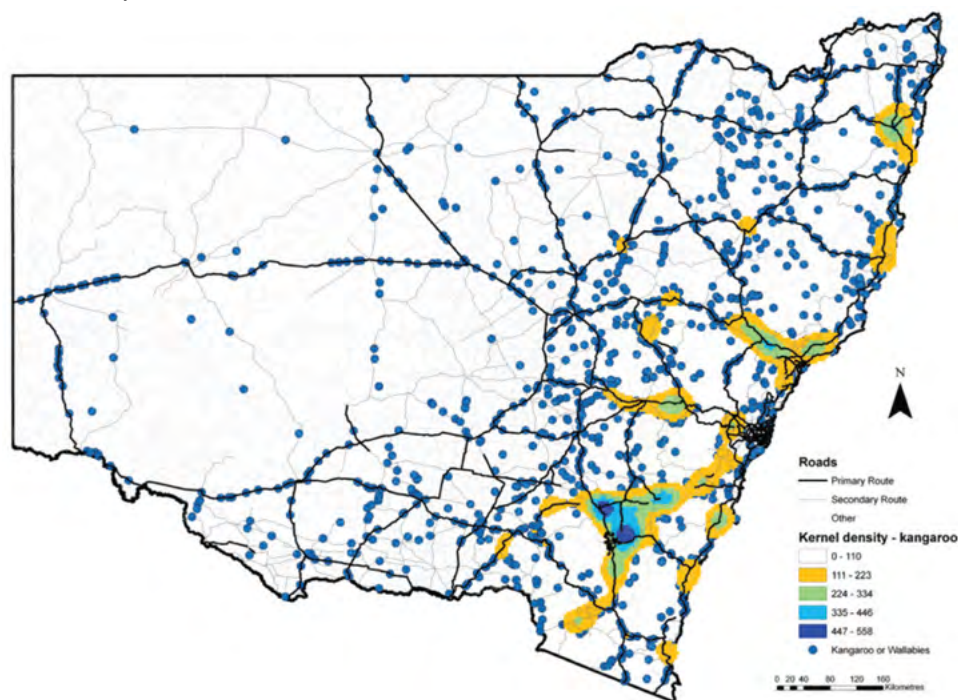


Figure 1. Distribution of crashes involving 'kangaroos or wallabies' recorded in the TADS database between 1996 and 2005 in NSW. Kernel density hotspot locations are highlighted using four categories ranging from high density to low density clusters (dark blue, light blue, light green and yellow respectively). Crash locations within hotspots have been removed for clarity.⁴

3 https://www.researchgate.net/publication/233744160_Frequency_of_animal-vehicle_collisions_in_NSW

4 Frequency of animal-vehicle collisions in NSW - Daniel Ramp and Erin Roger, School of Biological, Earth & Environmental Sciences, University of New South Wales, Sydney 2052 Australia

Crashes involving stock animals during the 1996-2005 period were overwhelmingly in Western Sydney, the far North Coast, Tamworth and Wagga Wagga.

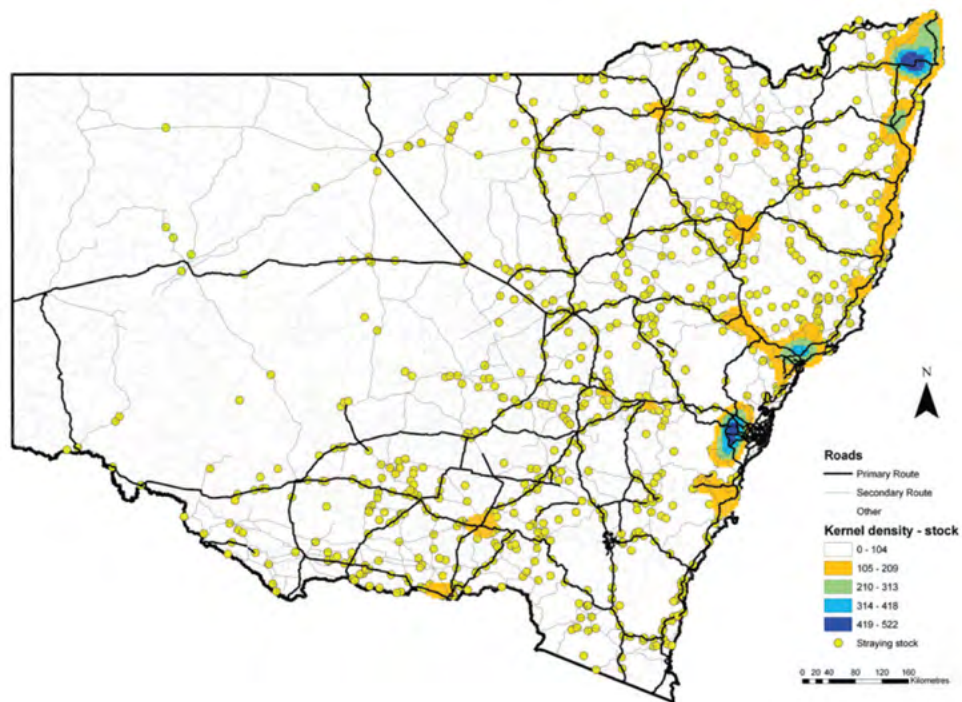
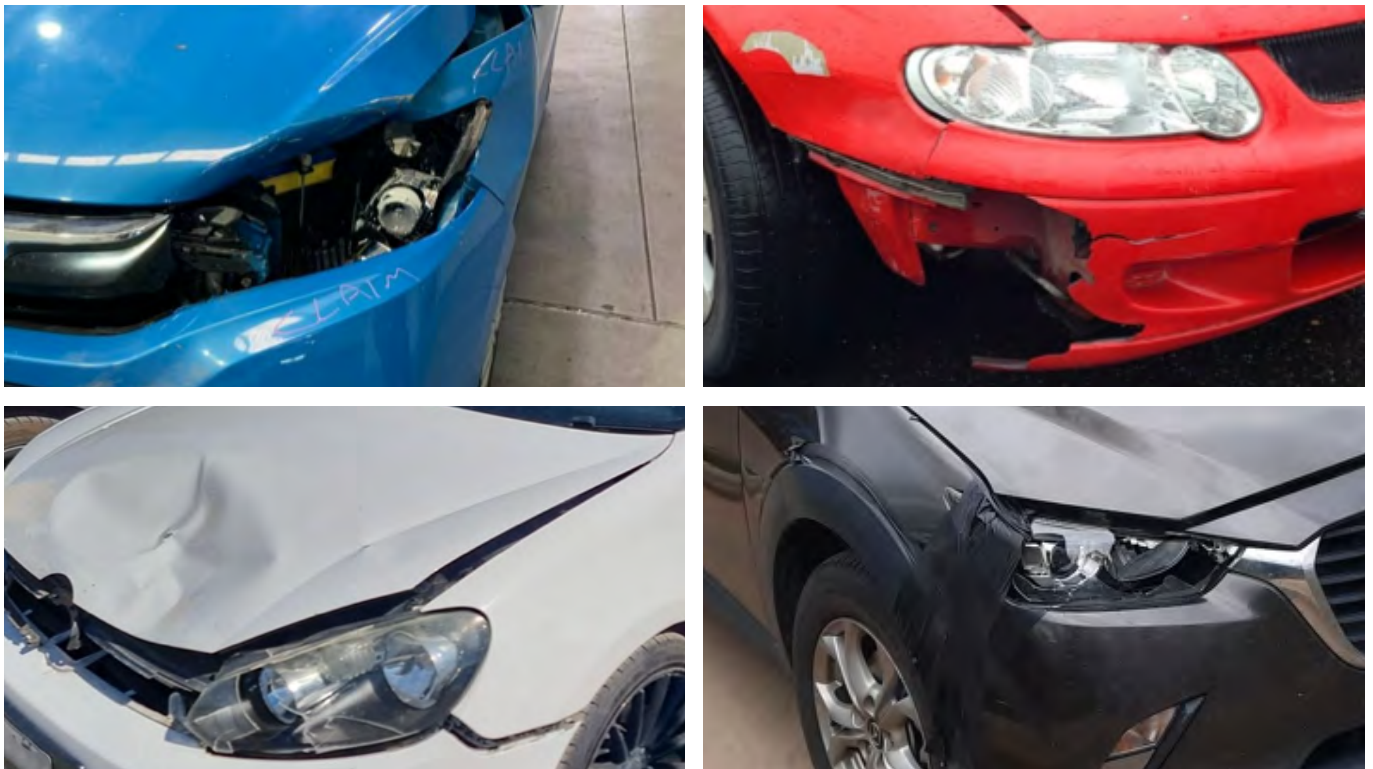


Figure 2. Distribution of crashes involving 'straying stock' recorded in the TADS database between 1996 and 2005 in NSW. Kernel density hotspot locations are highlighted using four categories ranging from high density to low density clusters (dark blue, light blue, light green and yellow respectively).⁵



5 Frequency of animal-vehicle collisions in NSW - Daniel Ramp and Erin Roger, School of Biological, Earth & Environmental Sciences, University of New South Wales, Sydney 2052 Australia

Case Study – Pacific Highway⁶

The Pacific Highway is the major road corridor linking Sydney and Brisbane. Over the past 30 years, the Pacific Highway has undergone an incremental upgrade between Woolgoolga to Ballina to holistically improve road safety. This is particularly the case in the latter half of the upgrade where biodiversity considerations and ecological impacts were more rigorously considered due to a range of new State and Commonwealth legislation.

A major consideration for the upgrade has been around the safety of wildlife, and 'enclosing' the road corridor to prevent wildlife access, as well as providing grade-separated crossings for wildlife.

A number of underpasses have been constructed which allow animals to safely cross the highway corridor.

Extensive fencing set back from the road reserve seeks to prevent wildlife access to the high-speed traffic lanes, and guides wildlife to the grade separated crossings as shown in the image.

A number of 'sugar glider crossings' have also been provided. These are visually similar to power poles and powerlines, but have a net that spans the width of the road to support the safety of sugar gliders crossing.

Roads are not the only transport asset that need protection from wildlife. Airports are a good example of where the unpredictable nature of wildlife movement (birds in particular) can present risks to airplanes.

Wildlife is typically managed by ensuring high fences around airports. Airports may deliberately cover local ponds, and remove food sources from the area. They typically ensure that any grass within the airport is well maintained to prevent nesting and habitats. As a last resort, they may employ radars for detection and use lasers and noise generators to try and disperse the animals.

If birds are still around, then air traffic control may give warnings to pilots to be alert and change course if necessary.



Wildlife underpass



Wildlife fencing



Sugar glider crossing

6 <https://pacifichighway.nsw.gov.au/environment/wildlife-management>

Key Considerations for Wildlife Safety

Connected and Autonomous Vehicles (CAV)

CAVs, including driverless vehicles, are transforming transport, and offer opportunities for safer travel, lower costs and less congestion on our roads.

Consideration will need to be given to how the artificial intelligence (AI) program incorporated into CAVs, will detect wildlife hazards, and how it will be able to differentiate between wildlife, pedestrians and cyclists, and respond accordingly.

Planning and construction

The sustainability and safety of wildlife is increasingly being considered in the planning of major transport projects. For example, the Pacific Highway duplication saw the construction of a number of wildlife crossings above and below the roadway. These facilitate road crossings by kangaroos, sugar gliders, possums and koalas.

The Pacific Highway duplication is a landmark road project completed across several decades. It is improbable that all road projects will have the budget to consider wildlife safety to the same extent.

There has been a long-standing debate as to whether key regional roads such as the Hume Highway should have higher speed limits. Improved roadside barriers, as seen on the Pacific Highway, would have the dual benefit of decreasing run off accidents and preventing wildlife access to the road corridor, which could potentially support higher speed limits.

More prevalent and active signage (similar to school zones) during high risk periods such as dawn, dusk and winter months may also help.

Technological solutions

Technology is advancing at a rapid rate in the transport sector and could potentially offer solutions to reduce wildlife-vehicle collisions.

In some regional areas, there are advisory signs to warn drivers of wildlife in high-risk areas. Variable advisory speed limits supported by advanced technology could also add value.

For example, could a fleet of autonomous drones flying above a 'risky road' or thermal cameras lining the roadside, advise and enforce variable speed limits for a section of road if wildlife is detected, helping to protect people and wildlife?

Driver education

Driver behaviour is the single biggest contributor to motor vehicle accidents. Driver training needs to incorporate risk detection techniques and elaborate on risk minimisation concepts that address driving in areas with significant wildlife activity. Information that driver education programs can deliver on this front include:

- Wildlife tends to be most active at dawn and dusk, so drivers may benefit from being more alert to animals near roads at these times.
- Animals tend to travel together and behave in a 'herd-like' manner. If you see one, there are likely to be more with them or nearby
- There is strong seasonality associated with wildlife collisions with a heavy skew towards winter, which might be attributable to shorter daylight hours.
- If a large animal comes onto the road, it is more likely that a better outcome is hitting the animal rather than trying to swerve where the outcomes may roll the vehicle or result in an impact with a roadside tree, causing severe or fatal injuries.
- The availability of various support services for injured wildlife including 1300 WILDLIFE and the Australian Wildlife Rescue Organisation (WIRES).

NRMA Wildlife Safety Partnership

The NRMA has partnered with Wildlife Recovery Australia (WRA) to help conserve biodiversity and protect Australia's unique wildlife. A joint venture between the Odonata Foundation and Byron Bay Wildlife Hospital (BBWH), WRA through their mobile veterinary hospital and network of wildlife sanctuaries is helping to build a sustainable future for all Australians. The NRMA is proudly supporting BBWH in the production of Wildlife Car Rescue Kits ensuring we can all play our part.

Endorsed by veterinary experts, these compact car kits enable Australian road users to take vital action that could help save injured wildlife on our roads. Each kit contains a range of safety and emergency items and guidelines on how to use them. Importantly they also contain key contact numbers and a QR code for the iFAW Wildlife Rescue App which directs you to the nearest veterinary clinic or wildlife rescue group.

All proceeds from the kits go to BBWH to help carry out lifesaving veterinary care for wildlife.

Sadly, more than three billion native animals died in the 2019/20 bushfires and recent severe weather events such as flooding continues to place more wildlife at risk. By taking care on roads we can all assist in preserving our uniquely Australian wildlife for generations to come.

To purchase a kit visit:

<http://www.byronbaywildlifehospital.org/shop>



Wildlife rescue kit



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