

Wildlife Incidents ACT

2016 to 2024

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Introduction

Background Information:

The ACT is a region with diverse wildlife and significant urban interfaces, making it a critical area for studying wildlife incidents. Understanding interactions between wildlife and human populations here can provide insights applicable both locally and in other similar regions.

Objective of the Study:

The objective is to thoroughly analyse the wildlife incident data to determine the temporal and spatial patterns of incidents, as well as the species most commonly involved. This can help in predicting and mitigating future incidents.

Data Description:

The data includes over 2,000 records of wildlife incidents from 2016 to 2024, detailing the species involved, the date and time of the incident, and the geographical coordinates.

Methodology Overview:

The study uses quantitative methods to analyse the data, including statistical analysis for identifying trends and geographic information system (GIS) mapping to visualize the distribution of incidents.

Analysis Overview

This report employs a combination of statistical analysis and Geographic Information System (GIS) mapping to explore wildlife incident data from the Australian Capital Territory (ACT) between 2016 and 2024. These methods were chosen to effectively uncover temporal, spatial, and species-specific patterns within the data, aiding in the development of targeted management strategies.

Statistical Analysis

Initial data preparation ensured accuracy, followed by exploratory data analysis (EDA) to identify primary trends in the data, such as temporal patterns and species frequency. Time series analysis further elucidated seasonal and hourly fluctuations in incident rates, guiding potential preventive measures.

Geographic Information System (GIS) Mapping

GIS mapping highlighted the spatial distribution of incidents, identifying high-risk areas through heat maps. This visualization helped pinpoint geographical factors influencing wildlife interactions, which is crucial for planning localized intervention strategies.

Seasonal Trends

Description and Analysis

To analyze seasonal trends in wildlife incidents, the data was segmented by month across the years 2016 to 2024. This segmentation allowed for the assessment of how incident rates vary throughout the year, providing insights into potential environmental or biological factors influencing these variations.

The analysis involved calculating the total number of incidents for each month and then visualizing these totals through a bar chart. This visual representation helps identify specific months with higher incident rates, which are notably during the early months of the year (January through March) and again in late spring (September and October).

These peaks in wildlife incidents are hypothesized to be linked to natural wildlife behavior patterns, such as breeding cycles or seasonal migrations. For example, many species, including kangaroos and wombats, have specific breeding seasons which may increase their mobility and visibility, leading to more frequent human-wildlife interactions.

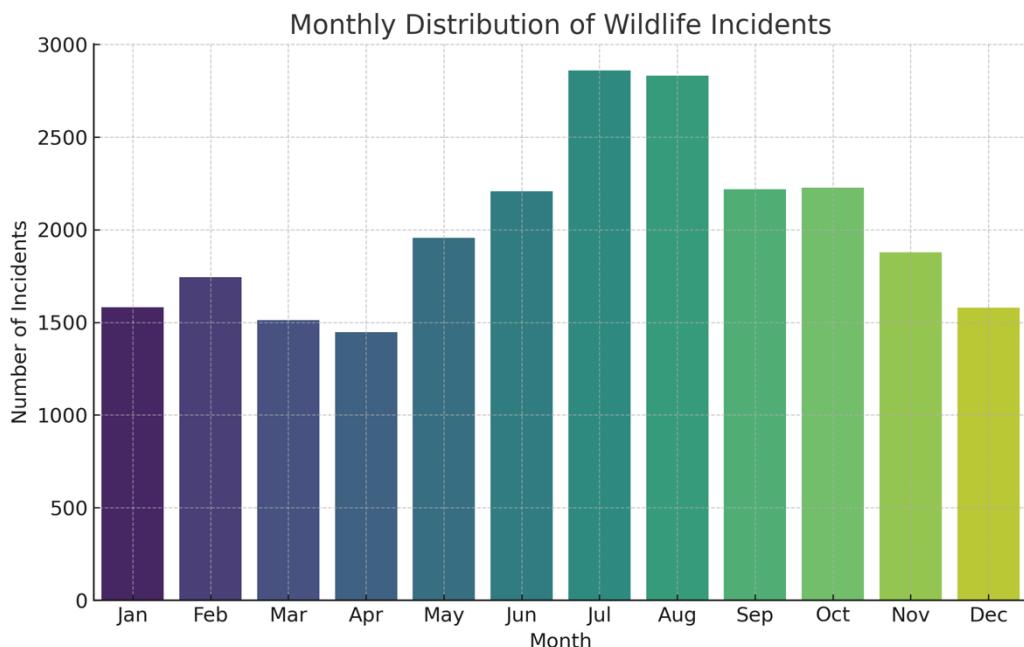


Figure 1: Incidents based on month

Daily Trends

Description and Analysis

The daily distribution of wildlife incidents was analyzed by breaking down the number of incidents per hour across the data period (2016-2024). This analysis helps identify specific times of day when wildlife incidents are most frequent, which is crucial for understanding wildlife behavior and human-wildlife interactions within those hours.

Data processing involved grouping each reported incident by the hour of occurrence. The resulting frequency distribution reveals significant increases in incident rates around dawn and dusk—times known for heightened wildlife activity due to lower light conditions, which many species utilize for moving and feeding to avoid the heat and predators of midday.

Visual Support

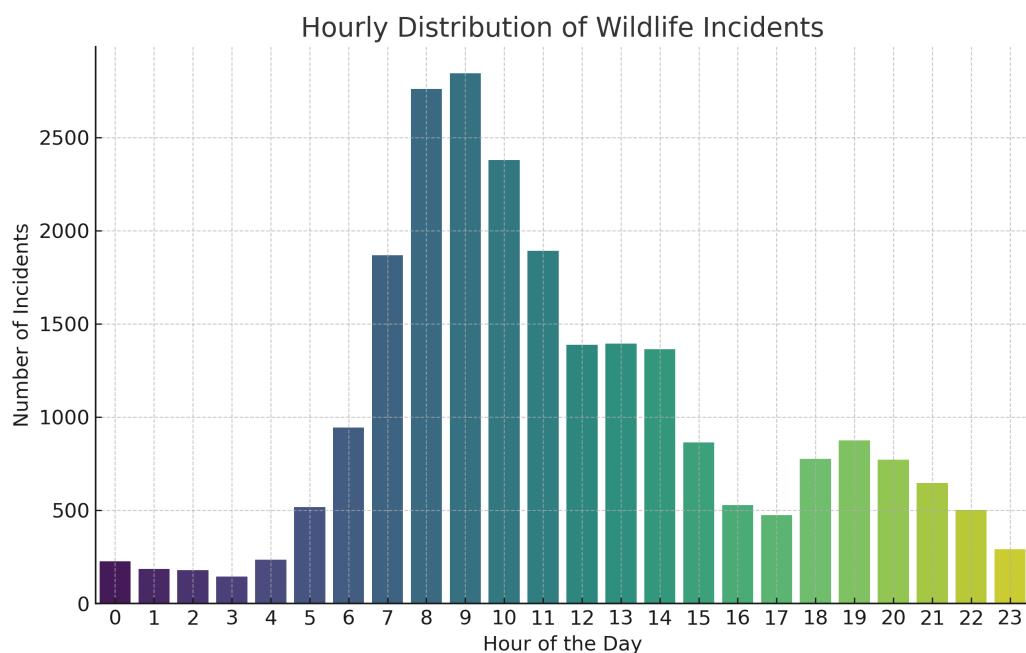


Figure 2: Wildlife incidents based on hour of the day

The chart below, an hourly distribution of wildlife incidents, illustrates this trend clearly. Peaks are observed around 6-8 AM and 5-7 PM, coinciding with sunrise and sunset times in the ACT. These times frame the typical commuting periods for many residents, increasing the likelihood of vehicle-wildlife collisions.

Implications

The patterns observed in the hourly distribution of wildlife incidents suggest several practical recommendations for reducing these occurrences and enhancing safety in wildlife-heavy areas:

- Timing Restrictions: Implement timing restrictions in known wildlife-heavy areas, particularly during dawn and dusk. This could include reduced speed limits during peak hours or temporary road closures in particularly sensitive areas, which have shown to be effective in other regions with high wildlife collision rates.
- Enhanced Monitoring and Patrolling: Increase monitoring and patrolling by wildlife management teams during these critical times. Using technology like motion-sensor cameras and increased patrols can help manage and possibly redirect wildlife movement away from high-traffic areas.
- Public Education and Awareness: Inform and educate the public about the increased risk of wildlife encounters during early morning and late evening. Public awareness campaigns can focus on adjusting driving habits and encouraging commuters to be more vigilant during these hours.
- Infrastructure Improvements: Consider infrastructure solutions such as wildlife overpasses or underpasses at key points along highways that intersect with known wildlife paths. These structures have been successful in mitigating wildlife-vehicle collisions in various parts of the world.
- Data-Driven Scheduling: For areas like national parks or reserves, scheduling visitor access times or guided tours outside peak wildlife activity hours can reduce disturbances to wildlife and lower the risk of incidents.

Species-Specific Trends

Description and Analysis

To better understand the interactions between wildlife and humans within the ACT, an in-depth analysis was conducted focusing on the frequency of incidents involving specific species. This analysis is essential for identifying which species are most at risk of encounters with humans and may require targeted conservation or management efforts.

The data was sorted by species, and the total number of incidents recorded for each species from 2016 to 2024 was tallied. This approach not only reveals the species most frequently involved in incidents but also helps to prioritize conservation strategies based on the species' vulnerability and the frequency of these interactions.



Figure 3: Eastern Gray Kangaroo

The Eastern Grey Kangaroo, for instance, was identified as the most frequently involved species in the data set. This finding is significant given the kangaroo's high visibility and mobility, especially in peri-urban areas of the ACT, which increases the likelihood of vehicle collisions and other human-wildlife conflicts.

Visual Support

Below is a bar chart that visually represents the number of incidents per species, clearly highlighting the Eastern Grey Kangaroo as having the highest frequency of incidents, followed by other species such as wombats and various types of possums.

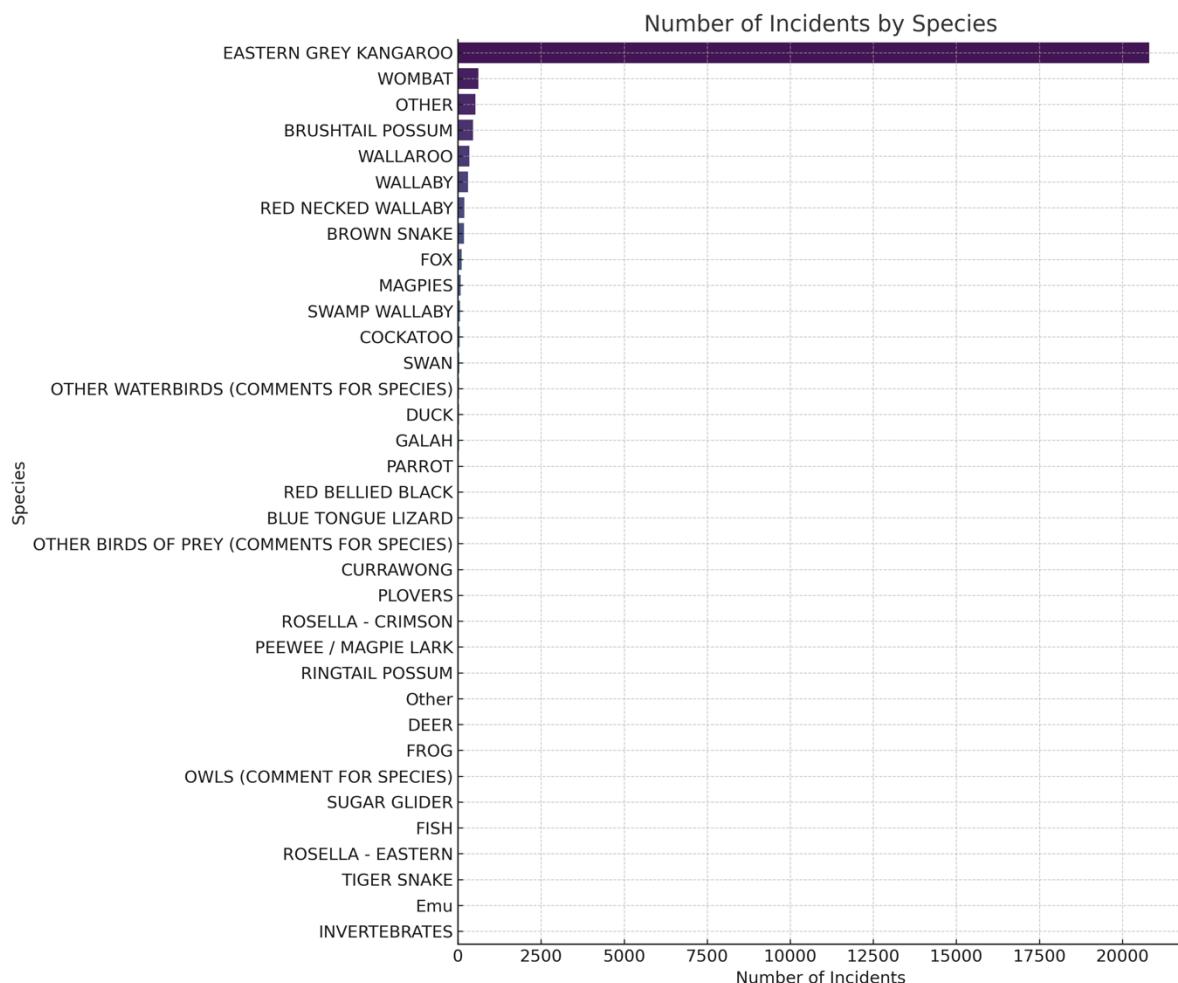


Figure 4: Wildlife Incidents Based on Species

Implications

The species-specific analysis of wildlife incidents provides critical insights that can be used to inform and tailor conservation efforts and public awareness campaigns. Based on the findings, several recommendations are proposed:

- Targeted Conservation Programs: Develop and implement conservation programs specifically designed for the Eastern Grey Kangaroo and other frequently involved species. These could include habitat restoration, fencing to prevent road crossings at high-risk sites, and other measures to reduce conflict.
- Public Awareness Campaigns: Launch awareness campaigns that educate the public about the species most at risk of incidents. These campaigns can include information on how to safely observe and coexist with wildlife, especially in regions where encounters are frequent.
- Wildlife Monitoring and Management: Enhance monitoring of species that frequently encounter humans to better understand their movement patterns and habitat usage. Data from such monitoring can help refine management strategies to mitigate conflicts effectively.
- Policy and Planning: Inform urban planning and traffic management policies with data-driven insights about species-specific trends. Adjustments might include modifying road designs, implementing wildlife corridors, and other infrastructural changes to decrease the likelihood of incidents.
- Community Engagement: Engage local communities in wildlife management efforts, particularly those living in close proximity to natural habitats. Community involvement can lead to more effective and sustainable local conservation strategies.

Geographic Distribution

Description and Analysis

Geographic Information System (GIS) technology was employed to analyze the spatial distribution of wildlife incidents across the Australian Capital Territory (ACT). By mapping each incident based on latitude and longitude data, we were able to visualize and identify areas with high frequencies of wildlife interactions, referred to as hotspots. This spatial analysis is crucial for understanding the relationship between land use, human activity, and wildlife behavior.

For example, the data revealed that the majority of incidents occurred along major roadways and in peri-urban areas where urban development meets natural habitats. These findings are consistent with the general patterns of wildlife movement and the known areas where animals are forced to cross human-made barriers.

Visual Support

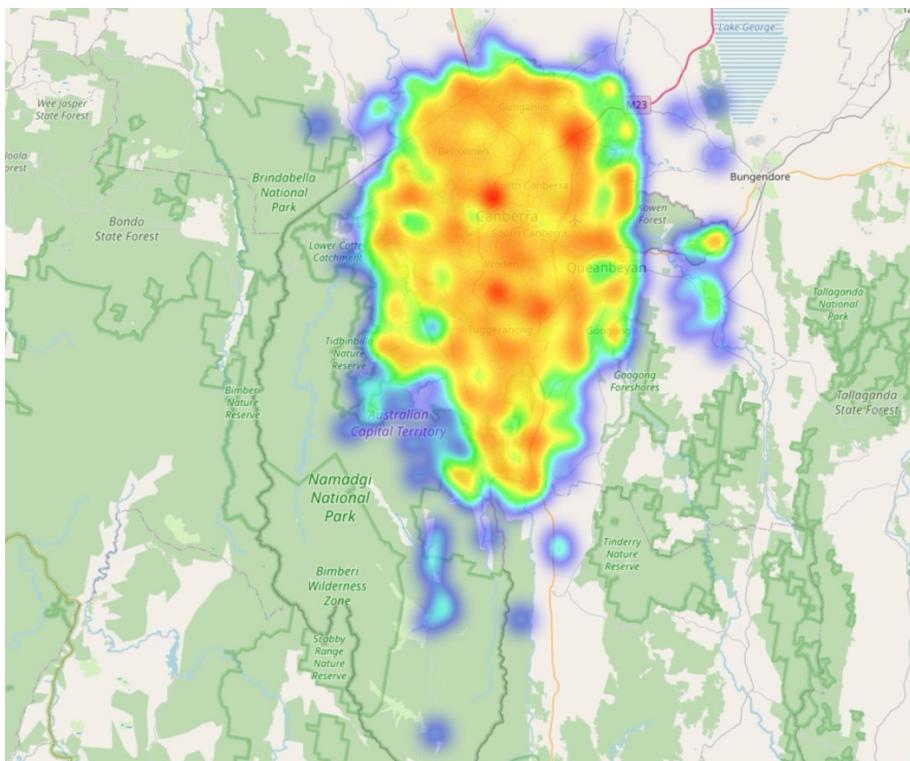


Figure 5: Incidents Heatmap

Note: View the interactive heat map provided in a separate file to explore detailed geographic distributions and identify specific hotspots.

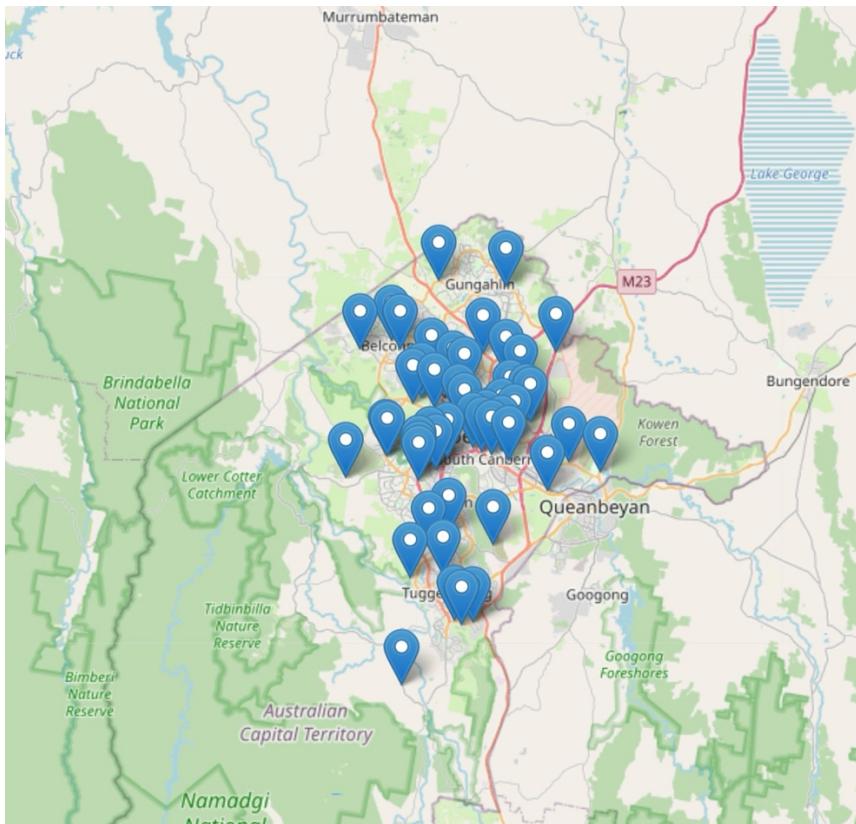


Figure 6: Incidents Location in the ACT

Implications

The insights gained from the geographic distribution of incidents suggest several areas for targeted intervention:

- Infrastructure Modifications: In identified hotspots, particularly around major roads, consider infrastructure modifications such as wildlife crossings (overpasses and underpasses) that can reduce the likelihood of vehicle collisions with wildlife.
- Land Use Planning: Integrate wildlife conservation concerns into land use planning and development processes to ensure that wildlife habitats are preserved and fragmentation is minimized, reducing the necessity for animals to traverse dangerous areas.
- Localized Public Awareness Campaigns: Launch public awareness campaigns in hotspot areas to inform local residents and commuters about the presence of wildlife and provide guidance on how to reduce potential conflicts.

Conclusion

Summary of Findings

The analysis of wildlife incident data from the ACT provides significant insights into the patterns of human-wildlife interactions. Key findings include:

- Temporal Trends: Incidents peak during specific months and times of day, particularly early morning and late afternoon, aligning with animal activity periods.
- Species-Specific Trends: Certain species, notably the Eastern Grey Kangaroo, are more frequently involved in incidents, highlighting species-specific risks and management needs.
- Geographic Distribution: Hotspots for incidents have been identified, primarily along major roadways and in areas where urban development intersects with natural habitats.

Recommendations:

- Enhance Monitoring and Data Collection: Continue and expand the monitoring of wildlife incidents to refine understanding and improve the effectiveness of management strategies.
- Implement Targeted Management Strategies: Apply targeted management strategies in temporal and spatial hotspots, and focus conservation efforts on high-risk species.
- Public Education and Engagement: Increase public awareness and community engagement in wildlife conservation efforts, especially in identified hotspots.
- Policy and Infrastructure Development: Advocate for and implement policy changes that incorporate wildlife conservation into urban planning and infrastructure development.

These recommendations aim to mitigate the impact of human activities on wildlife and improve safety outcomes for both humans and animals in the ACT. By adopting a proactive and informed approach to wildlife management, we can foster a sustainable and harmonious coexistence between urban developments and the natural environment.

References

Wildlife incident locations | Open Data Portal. (n.d.). Retrieved May 14, 2024, from
https://www.data.act.gov.au/Environment/Wildlife-incident-locations/qw4j6rbq/about_data