محمية دبي الصحراوية
DUBAI DESERT CONSERVATION RESERVE

Quantifying wildlife mortality: Vehicle impact studies in the Dubai Desert Conservation Reserve (DDCR) 2023-2024

Pubudu Lakmal Madurapperuma Conservation Ranger Dubai Desert Conservation Reserve

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The Dubai Desert Conservation Reserve

Introduction

The Dubai Desert Conservation Reserve (DDCR) is the first national park in the UAE and a vital sanctuary for the preservation of the region's unique desert biodiversity. Encompassing over 225 square kilometres, the reserve supports an impressive range of wildlife, including 26 species of reptiles, 18 species of mammals, 142 species of birds, and over 300 species of arthropods, alongside more than 70 species of native flora (https://www.ddcr.org/flora-and-fauna/). As a carefully managed conservation area, the DDCR plays a pivotal role in protecting these species and their fragile desert habitats.

Despite its significant conservation efforts, the impact of road infrastructure and vehicle traffic on wildlife within the DDCR has not been systematically studied. Roads, while essential for facilitating human activities, pose a major threat to wildlife globally, with vehicle collisions leading to habitat fragmentation, population declines, and mortality among various species (An Benitez-Lopez, June 2010). For the DDCR, where species survival is often challenging due to the harsh desert environment, understanding and mitigating roadkill is of critical importance. This roadkill survey, the first of its kind in the DDCR, is an essential step toward identifying the extent of wildlife-vehicle interactions and their consequences. It aims to shed light on how road networks and traffic patterns impact wildlife, with a particular focus on nocturnal species such as reptiles, which are often more vulnerable to roadkill due to their activity patterns and inconspicuous nature.

By documenting and analysing roadkill incidents, this study will provide invaluable data to inform conservation strategies, mitigate risks, and promote sustainable management of the DDCR's road networks. This pioneering initiative underscores the importance of proactive measures to ensure that the reserve remains a safe haven for its diverse array of species, aligning with its mission to protect the natural heritage of the UAE.

In 2023, the DDCR team began conducting a roadkill survey on Vertebrates. This survey allowed DDCR to monitor the impact on wildlife from vehicles that enter to reserve every day for tourism and supply deliveries. Species recorded on the survey routes included Cheeseman's gerbil (*Gerbillus cheesmani*), Arabian hare (*Lepus capensis*) Spiny-tailed lizard (*Uromastyx aegyptia leptieni*), Arabian sand boa (*Eryx jayakari*), Arabian horned viper (*Cerastes gasperettii*), Desert monitor (*Varanus griseus*), and other small lizards and geckos. Also, some bird species were recorded such as Black-crowned sparrow lark (*Eremopterix nigriceps*), Greater hoopoe lark (*Alaemon alaudipes*) and Egyptian nightjar (*Caprimulgus aegyptius*).

Road Network and Usage in DDCR

The DDCR has a structured road network designed to balance conservation efforts with tourism activities. The reserve features main roads that connect all key areas (Map 1.0), allowing easy access for management, staff, and tour operators. These roads are essential for daily operations, including patrols, wildlife monitoring, and tourism-related activities.

There is one paved road section within the reserve, running from Oryx 1 (Al Maha Gate) to Al Maha Resort (Map 2.0). However, only 2.6 km of this road is paved, while the rest (5.2 km) consist of gravel roads that are regularly maintained with road base to ensure accessibility.

In addition to the main roads, DDCR has a network of Buffer zones (Map 3.0), nature trails and camp access roads (Map 1.0). These roads are carefully managed to minimize human impact on the environment while allowing controlled access for tourism and conservation activities. The buffer zones within the reserve are designated for desert safaris, primarily for tourism purposes. However, these areas experience very limited use, with vehicles typically operating for only 1–2 hours daily, mainly in the afternoon. Since wildlife in the region tends to seek shelter under bushes or in burrows during the hottest part of the day, the impact on their natural behaviour is minimal. Additionally, night driving is not permitted in these zones, further reducing any potential disturbance to nocturnal wildlife.

The nature trails and camp access roads also have minimal environmental impact due to their restricted use. These roads are utilized for short durations, usually 1–2 hours per day, and exclusively during daylight hours. Only trained guides and drivers are allowed on these routes, and they drive cautiously to observe wildlife and ensure safety. Their knowledge of the reserve's ecosystem helps prevent disturbances to animals and their habitats. No unauthorized vehicles are permitted on these roads, maintaining a controlled environment where human presence is kept to a minimum.

The main roads within DDCR include (Map 1.0) sandy tracks that are wide enough to accommodate two-way traffic but still experience very low vehicle density. Only approved tour operators and DDCR staff are permitted to use these roads, ensuring that traffic remains minimal. These roads are primarily used for conservation operations and daily reserve management activities. Since the number of vehicles is strictly regulated, the overall impact on the desert ecosystem remains low, supporting the reserve's mission of sustainable wildlife conservation.

Within all the main roads, the following sections have been identified as the busiest road areas within the DDCR. (Map 2.0):

- Al Maha road (Oryx 1): From Oryx 1 gate to Al Maha Resort.
  This is the only partially paved road in the reserve, stretching 8.2 km and designed as a two-way road. It is one of the most heavily used routes due to its connection to the Al Maha Resort and other key areas. Other tour operators also frequently use this road for their daily operations.
- Margam road (Oryx 3): From Oryx 3 gate to Arabian Adventure overnight camp.
  Sandy road used frequently by many tour operators.
- Murqquab road (Oryx 2): From Oryx 2 gate to Al Maha Resort.
  Another significant route, primarily gravel, that frequently used by Al Maha Resort and other tour operators.
- EO gate road: From EO gate to Tawi Soheil farm.
  The EO gate is primarily used by the staff and suppliers of Soheil farm, which is located 4km from the gate. Soheil farm mainly grows Alfalfa, a plant used as a livestock feed.
- Nazwa road: From Nazwa gate to DEWA ASR project site.
  The Nazwa gate is mainly used by the DEWA ASR project staff, workers, and suppliers. This project was originally within DDCR but has since been separated by a fence with barbed wire, operating as an independent land (polygon marked in green as shown on Map 1.0 & 2.0). As a result, wildlife cannot access this area and no longer falls under DDCR management or conservation efforts. The gate controls success to these restricted areas, ensuring that only authorized individuals and vehicles enter.

In addition to the main entrances, there are six other gates that provide access to the reserve. However, these gates have remain closed throughout the year and no notable traffic or vehicle activity has been recorded entering the reserve through these point.

Survey Objectives

By compiling data from multiple sources and analysing trends over time, this survey aims to provide insights into mitigating roadkill incidents and improving conservation efforts within the reserve.

- To determine which routes within the reserve experience higher roadkill rates.
- To identify potential causes, including traffic patterns, speed limits, and environmental factors.
- To implement new traffic rules and regulations to ensure the reduction of roadkill incidents.
- To identify the wildlife species most affected by roadkill.
- To use collected data for awareness programs aimed at educating drivers and stakeholders about the impact of roadkill and promoting conservation.

Survey Area

The survey was conducted within the Dubai Desert Conservation Reserve (DDCR), which is located in the Emirate of Dubai, United Arab Emirates (UAE) (Map 6.0). The UAE covers an area of approximately 83,600 km^2, while the Emirate of Dubai spans around 4,114 km^2 (Peter Hellyer, 2001). The DDCR itself covers 225 km^2, making up about 5% of Dubai's total land area (Map 7.0).

The reserve is divided into distinct zones based on land use and visitor activity. The northern region, extending from Al Maha Resort northward (Map 2.0), is the most frequented area due to its high concentration of tourist activities. This area includes multiple tour operator camps and popular excursion routes.

Al Maha Resort, a luxury desert retreat, is centrally located within the reserve. The southern region, from Al Maha Resort southward, is considered the wilderness area (Map 2.0), with minimal tourist activities and a more undisturbed natural environment. This division of land use influences roadkill patterns, as the northern area

experiences more vehicle movement due to tourism (Map 4.0, & 5.0), whereas the southern region sees less traffic and remains more pristine.

Survey Method

The survey was conducted through a combination of direct field observations and data provided by various stakeholders(Table 1.0). The primary objective of the survey was to identify which routes within the reserve had higher roadkill rates and to analyse potential contributing factors, such as traffic patterns and other environmental factors.

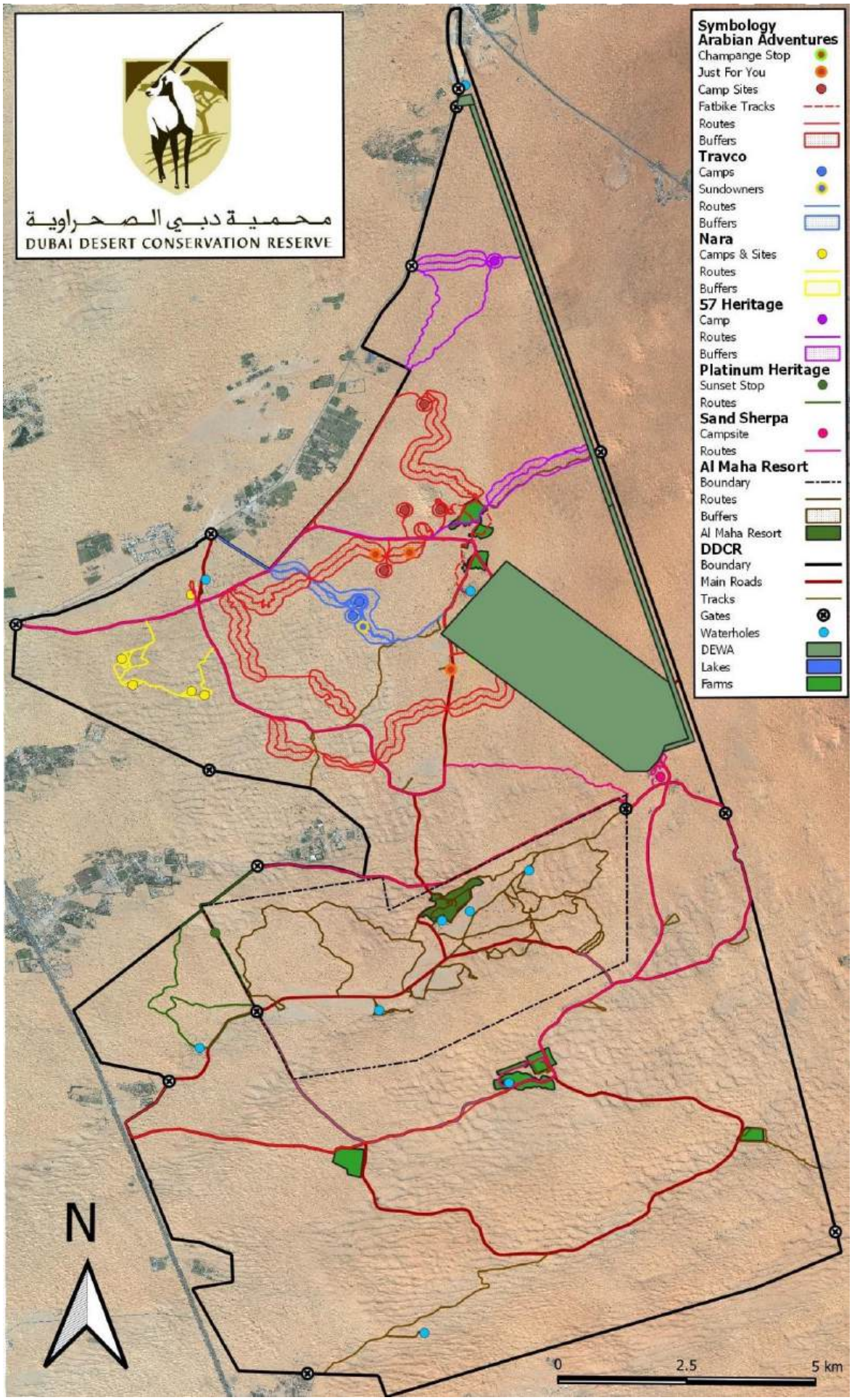
Data collection methods

The majority of the data was collected by the author, who as a Conservation Ranger, frequently patrols the reserve. Data was collected while driving along the main roads of the reserve at a speed of 40 km/h, ensuring the detection of roadkill along the surveyed routes. Due to time constraints, the data set consists mainly of random opportunistic observations. Additional data were provided by the DDCR management and the staff. Tour operators, field guides and desert safari drivers, also with contributed observations, enhancing the dataset.

Roadkill Survey of Dubai Desert Conservation Reserve

No	Date	Time	Gate/Road	Species	Habitat	Road type	Latitude	Longitude	Reporded by	Notes
1	04/01/24	06:28	AL Maha	C. gerbil	Sand D.	Paved.	24.80235	55.61735	Pubudu	
2	21/01/24	19:56	AL maha	C. gerbil	Sand. D	paved	24.7897	55.61078	Basil	
3.	24/01/2024	19:30	AL maha	C. gerbil	Sand. Dune	Paved	24.80181	55.62113	Maria.	
4.	25/01/2024	06/23	AL maha	C. gerbil	Sand. Dune	Paved.	24.80172	55.62115	Gerhard.	
5.	01/02/24	06:20	AL. Maha	D. S. Gecko	S. Dune	Paved.	24.78965	55.61091	Maria	
6	01/02/24	10:23	Alfa gate	C. gerbil	S. Dune	Sandy Road			Pubudu.	
7	05/02/24	06:39	AL. Maha	C. gerbil	S. Dune	Paved	24.78236	55.61469	Maria.	
8	05/02/24	09:15	AL Maha	C. gerbil	S. Dune	Paved.	24.78094	55.32100	Basil.	
9	06/03/24	07:40	AL: Maha	Palm Dove	S. Dune	Sandy	24.78956	55.60891	Pubudu	
10	13/03/24	08:26	Marg. R. area	C. gerbil	"	Sandy	24.78954	55.62300	Pubudu	
11	13/03/24	16:12	AL. E.W. Road	Sand Fish	S. Dune	Sandy	24.79045	55.64925	Pubudu	
12	16/03/24	07:36	AL. Maha	P.S. Gecko	S. Dune	S. Road	24.79079	55.61312	Pubudu.	

Table 1.0 Sample datasheet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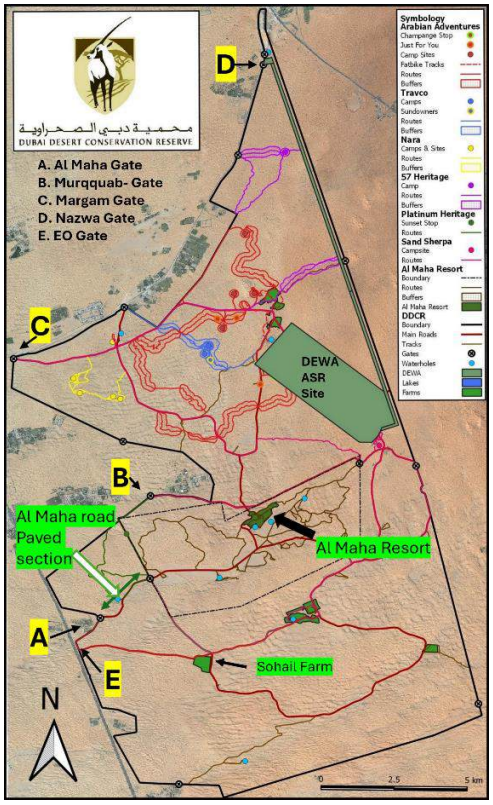
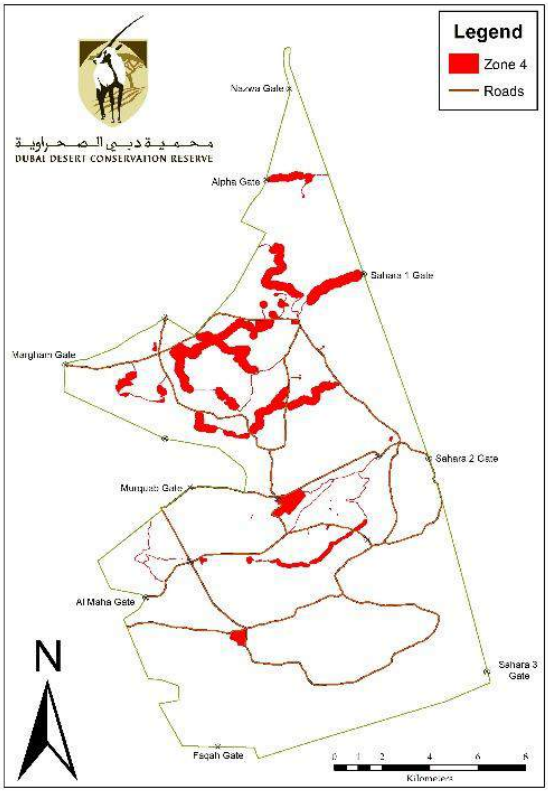
Symbology
Arabian Adventures
Champange Stop
Just For You
Camp Sites
Fatbike Tracks
Routes
Buffers
Travco
Camps
Sundowners
Routes
Buffers
Nara
Camps & Sites
Routes
Buffers
57 Heritage
Camp
Routes
Buffers
Platinum Heritage
Sunset Stop
Routes
Sand Sherpa
Campsite
Routes
Al Maha Resort
Boundary
Routes
Buffers
Al Maha Resort
DDCR
Boundary
Main Roads
Tracks
Gates
Waterholes
DEWA
Lakes
Farms
N
0
2.5
5 km

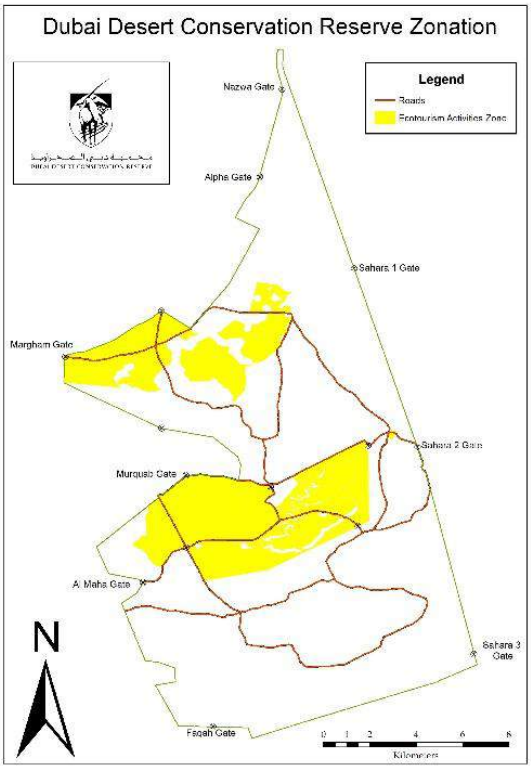
Map 1.0



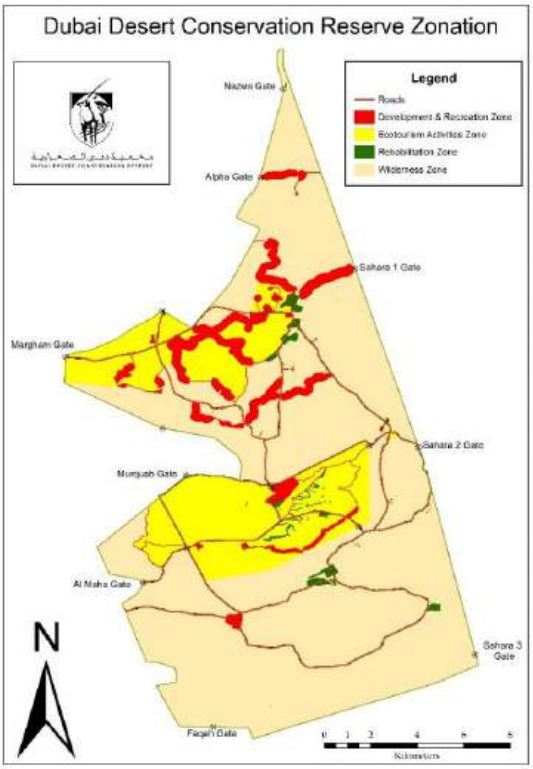
Map 2.0 DEWA ASR site & Al Maha



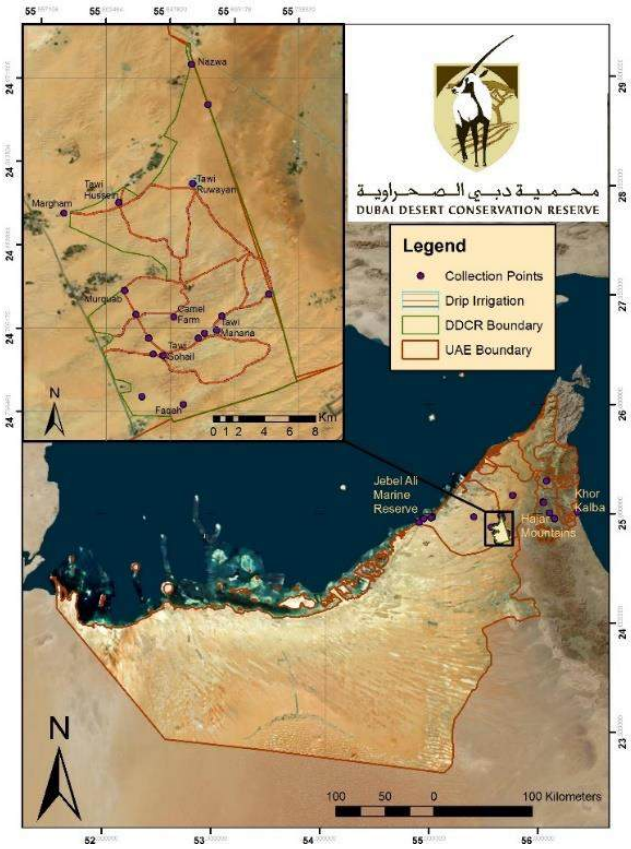
Map 3.0 Buffer zones



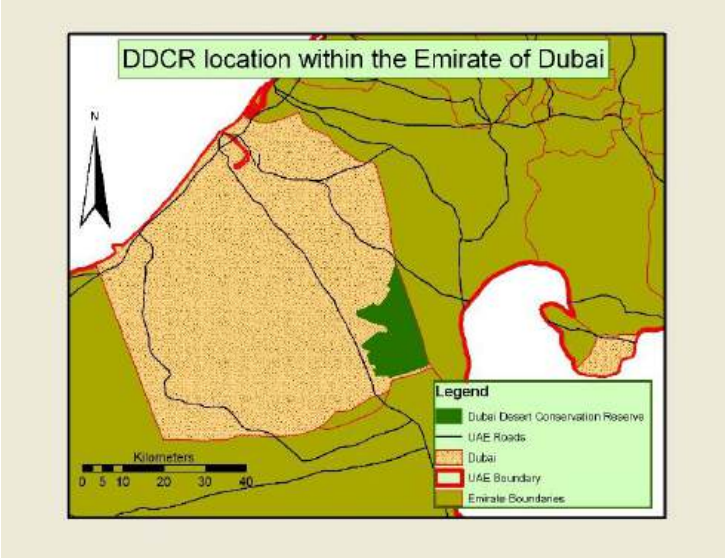
Map 4.0 Tourists activity zones (marked in Yellow)



Map 5.0 Wilderness zone marked in light Brown



Map 6.0



Map 7.0

Overall Visitor Statistics

The reserve receives an average 200000 visitors annually which is 547.94 visitors per day, equivalent to approximately 10.67 visitors per hour (Source -. https://vms.securitasamea.com/#!dashboard) . These visitors use the network of designated roads for access to campsites, safaris, and other activities.

Annual Visitors by Gates

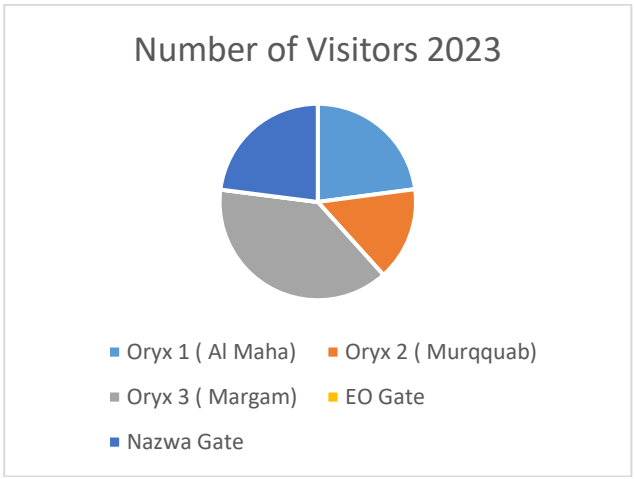


Figure 1.0 Number of visitors by different gates. Year 2023

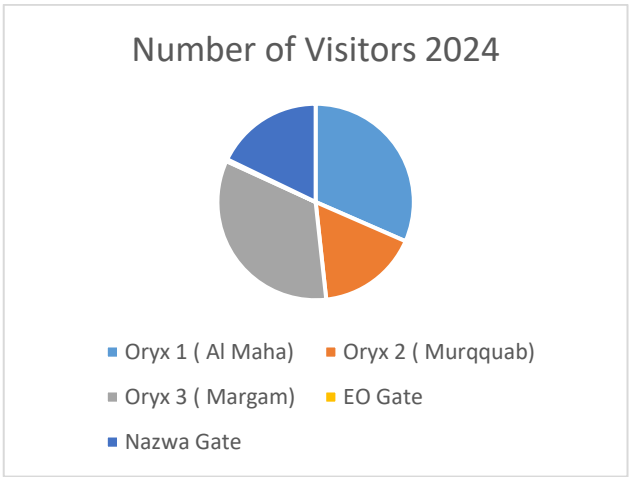


Figure 2.0 Number of visitors by different gates. Year 2024

Figure 3.0 Number of visitors by different gates. Year 2023

Figure 4.0 Number of visitors by different gates. Year 2024

Understanding the annual visitor numbers to the DDCR is crucial for assessing daily traffic levels and their potential impact on the ecosystem. Most visitors enter the reserve through Oryx 1, 2, and 3 gates (Figure 1.0,2.0,3.0,4.0), which serve as the primary access points for eco-tourism and guided experiences. While some visitors also enter through the Nazwa Gate, these numbers are not significant for DDCR's monitoring efforts, as the adjacent DEWA ASR project and land (Map 1.0,2.0) are no longer part of the reserve, even though the gate remains in use.

Among the main roads within the reserve, Margam Road experiences the highest volume of traffic, making it the most frequently used route (Figure 3.0 & 4.0). This is followed by Al Maha Road, which sees the second-highest number of visitors. In contrast, EO Road has the lowest visitor numbers, resulting in minimal traffic in that area. These variations in road usage help determine where conservation efforts should focus to mitigate human impact while maintaining a balance between tourism and ecological preservation.

Of the three main gates, Al Maha is the only entry point where visitors may be unfamiliar with desert driving conditions, local wildlife, and the ecosystem. Unlike other entry points, which primarily serve experienced guides and eco-tour groups, Al Maha welcomes guests who may have limited knowledge of responsible driving in fragile desert environments. This highlights the need for continued education and regulation to ensure minimal disturbance to wildlife and sustainable tourism practices within the reserve.

Daily Traffic Levels on DDCR Roads

Following tables and charts provide a clearer understanding of the daily traffic flow in DDCR through different gates. The highest traffic is recorded at Al Maha gate, while the lowest is at EO gate. Margam and Murqquab gates have the second and third highest traffic volumes, respectively (Figure 5.0,6.0,7.0,8.0).

Number of Vehicles entered from different gates

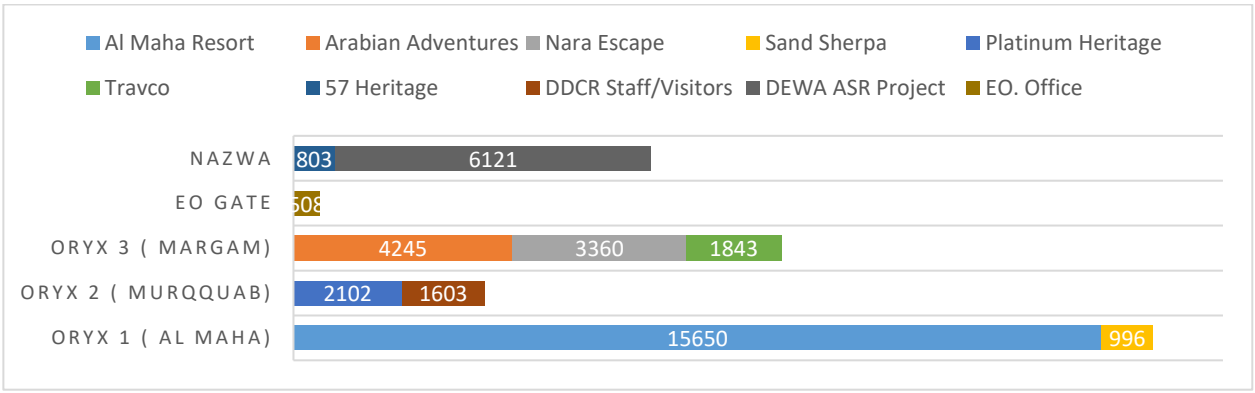


Figure 5.0 Number of vehicles entered from different gates -2023

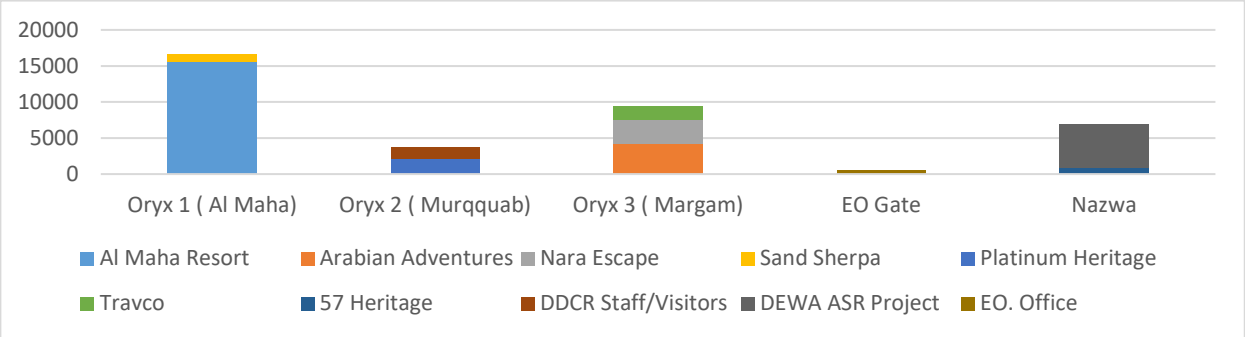


Figure 6.0 Number of vehicles entered from different gates -2023

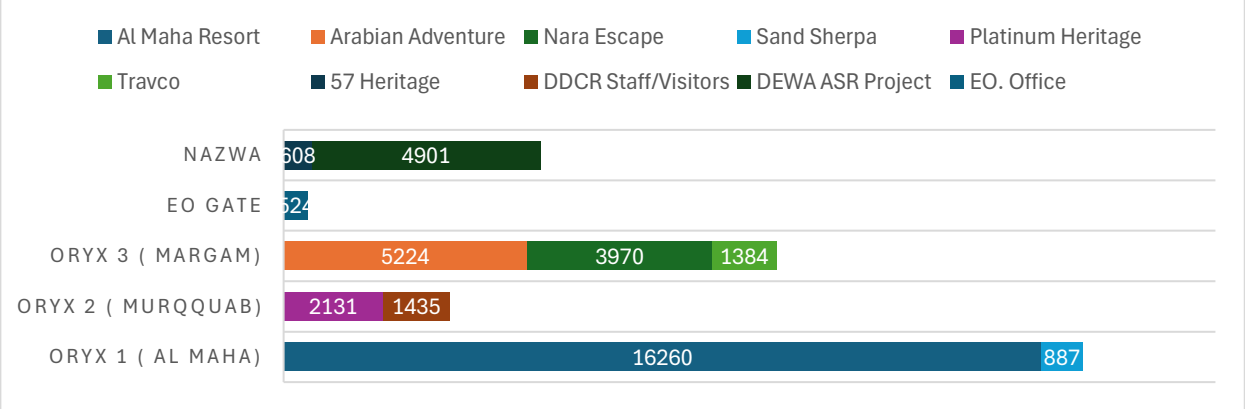


Figure 7.0 Number of vehicles entered from different gates -2024

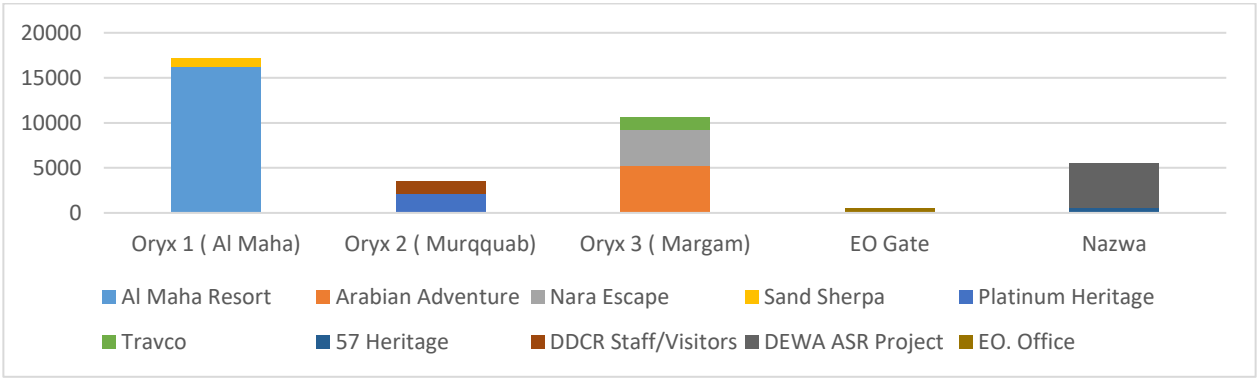


Figure 8.0 Number of vehicles entered from different gates -2024

Results – Year 2023 & 2024

Over the past two years, a total of 152 (54 roadkill in 2023 and 98 roadkill in 2024) roadkill incidents were recorded in the DDCR. These included 82 reptiles, 58 mammals, 8 birds, and 4 invertebrates (Figure 11.0 & 12.0), highlighting the significant impact of road networks on the region's wildlife.

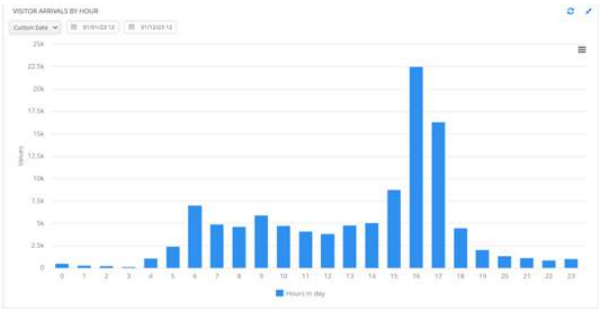
Reptiles accounted for the highest number of roadkill cases, with a total of 82 recorded incidents. Among these were three Desert monitor lizards (*Varanus griseus*) (one in 2023, two in 2024), large predator species that plays a key role in the desert ecosystem (Michael Stanner, Jan 1987). Three individuals of the Spiny-tailed lizards (*Uromastyx aegyptia leptieni*) were recorded within the study area. This species is particularly notable for being strictly herbivorous, relying entirely on plant matter for its diet, a unique trait among desert dwelling reptiles (April Torres Conkey, Dec 2010). Eight snakes were found, including Hooded malpolon (*Malpolon moilensis*), Arabian sand boa (*Eryx jayakari*), Arabian-horned viper (*Cerastes gasperettii*), Saw-scaled viper (*Echis carinatus*), and Afro Asian sand snake (*Psammophis schokari*), all of which are well-adapted to desert conditions but face increased risks from road networks (Neil A Cox, 2012). The majority of reptile roadkill cases involved small lizards such as White-spotted sand lizard (*Acanthodactylus schmidti*), skinks, and geckos such as Dune sand gecko (*Stenodactylus doriae*); species that often go unnoticed but are crucial for maintaining ecological balance.

Across both years, 58 mammal roadkill cases were recorded. The majority of records in mammal species consisted of Cheesman's gerbil (*Gerbillus cheesemani*), a small nocturnal rodent particularly vulnerable to vehicle collisions. Additionally, Arabian hare (*Lepus capensis*) was reported in Year 2023 and 2024, indicating that even larger desert mammals are at risk.

A total of eight bird roadkill cases were recorded, including species such as Black-crowned sparrow lark (*Eremopterix nigriceps*), Greater hoopoe lark (*Alaemon alaudipes*), Crested lark (*Galerida cristata*), Egyptian nightjar (*Caprimulgus aegyptius*), Palm dove (*Spilopelia senegalensis*), and House sparrows (*Passer domesticus*). These records suggest that both ground-foraging and low-flying birds are particularly vulnerable to vehicle collisions, especially in open desert environments.

Although fewer in number, four invertebrate roadkill cases were documented, consisting mainly of scorpions and locusts. While these species are small, their presence in roadkill data highlights the broader ecological impact of roads, affecting even the smallest desert inhabitants.

Most data were collected during the early morning and evening hours, as roadkill incidents were more frequently observed during these times. The high number of morning observations suggests that many animals died during the night due to vehicle collisions. After 9-10 am, predatory birds like Arabian grey shrikes (*Lanius excubitor aucheri*) were observed scavenging on carcasses, which reduced visibility of roadkill later in the day.



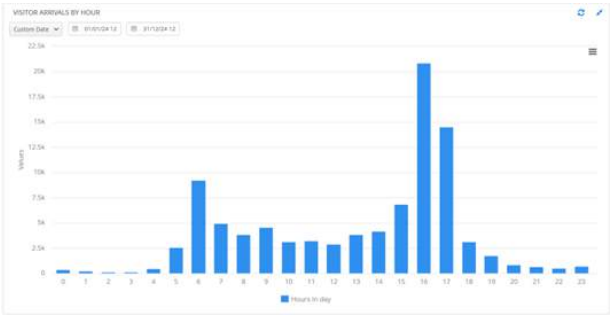
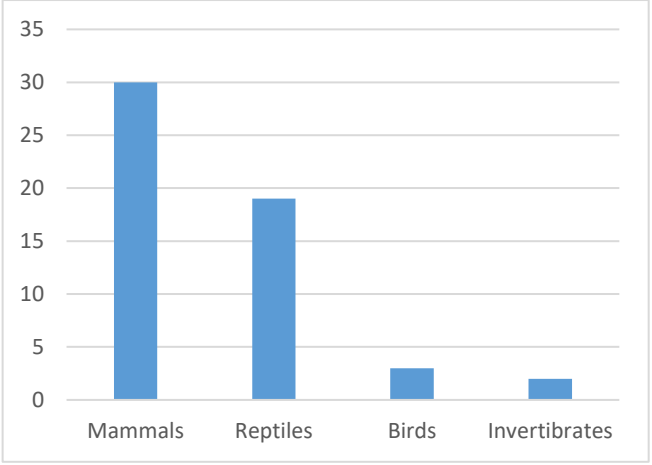


Figure 9.0 2023 Visitor arrival by hour (Source https://vms.securitasamea.com/#!dashboard) Figure 10.0 2024



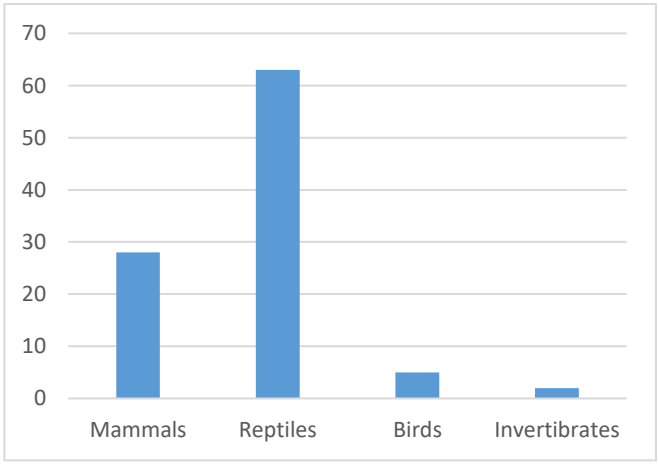


Figure 11.0 Number of Roadkill incidents 2023 Figure 12.0 Number of Roadkill incidents 2024

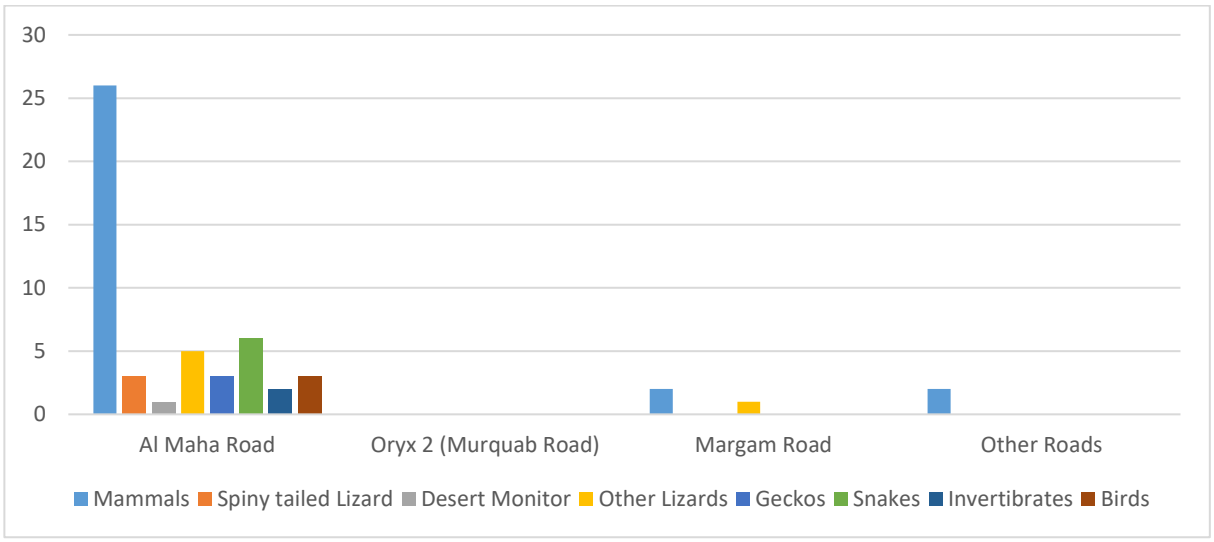


Figure 13.0 Number of Roadkill incidents by roads 2023

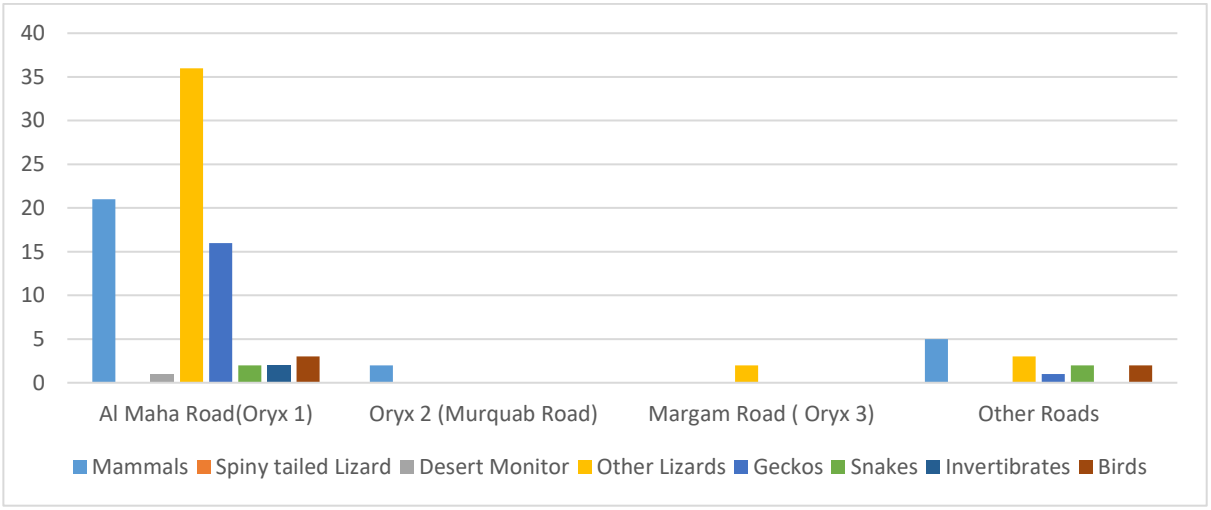
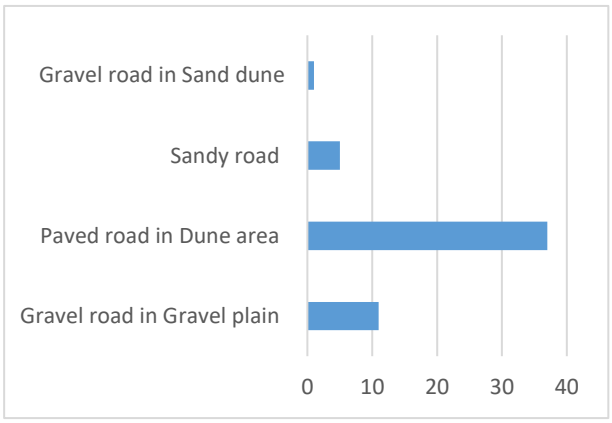


Figure 14.0 Number of Roadkill incidents by gates 2024



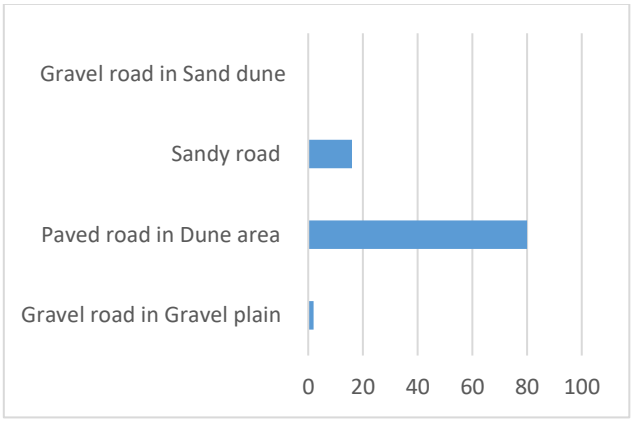
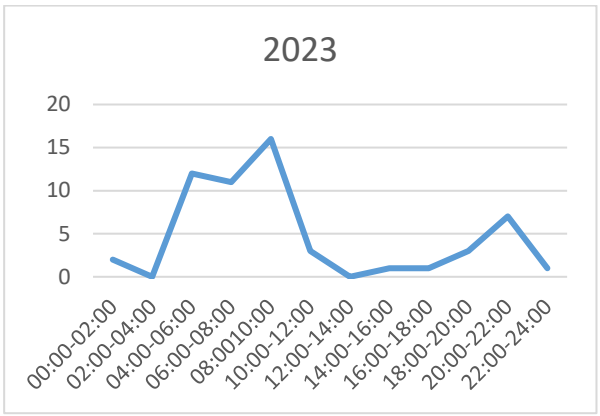


Figure 15.0 (Year 2023) Influence of habitat types on Roadkill incidents Figure 16.0 (Year 2024)



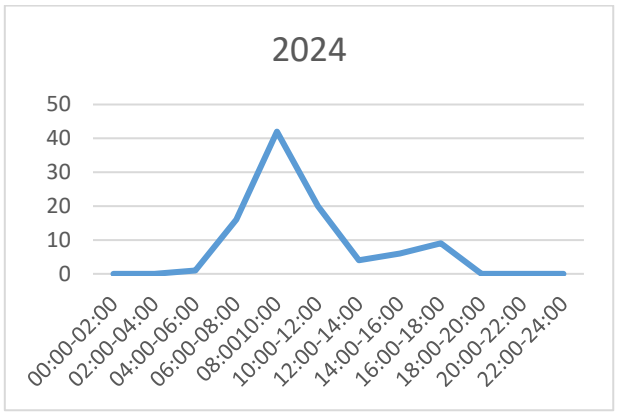
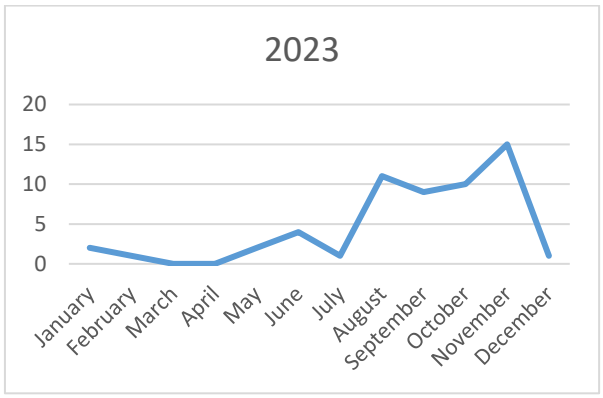


Figure 17.0 Impact of Time of Day on Roadkill incidents Figure18.0



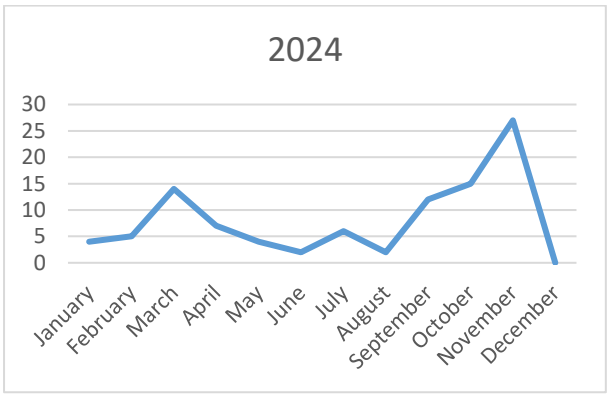


Figure 19.0 Monthly Patterns in Roadkill data Figure 20.0

Discussion

The roadkill surveys conducted in 2023 and 2024 within the Dubai Desert Conservation Reserve (DDCR) highlights an increasing trend in wildlife fatalities, with incidents rising from 54 in 2023 to 98 in 2024. Over the two years, a total of 152 roadkill cases were documented, affecting reptiles, mammals, birds, and invertebrates. The findings emphasize the significant ecological impact of road networks on desert wildlife and the urgent need for mitigation strategies.

In 2023, most roadkill incidents in the DDCR involved mammals, followed by reptiles. However, the number of incidents increased in 2024, indicating a rise in tourist activity within the reserve. The increase in vehicle entries further supports this trend (Figure 5.0,6.0,7.0,8.0). For example, Oryx 1 recorded 15,650 vehicles in 2023, which rose to 16,260 in 2024. Similarly, Oryx 3 saw an increase from 4,245 visitors from Arabian Adventures in 2023 to 5,224 in 2024, while Nara's numbers grew from 3,360 to 3,970. However, Sand Sherpa was one of the few exceptions, with vehicle entries dropping from 996 in 2023 to 887 in 2024 (Figure 5.0,6.0,7.0,8.0). Other tour operators showed mixed trends, with 57 Heritage decreasing from 803 in 2023 to 608 in 2024, while Platinum Heritage saw a slight increase from 2,102 to 2,131. Most vehicle entries continue to come through Oryx 1, making Al Maha road the busiest route, with increasing traffic levels year over year.

The 2023 data shows that mammals were the most common roadkill victims, followed by reptiles (Figure 11.0 & 12.0). However, in 2024, reptile roadkill incidents doubled, while mammal numbers remained similar to 2023. The most affected mammal species was the Cheeseman's gerbil (*Gerbillus cheesemani*), while the most affected reptiles were the Dune sand gecko (*Stenodactylus doriae*) and the White-spotted sand lizard (*Acanthodactylus schmidti*).

Al Maha road accounted for the highest number of roadkill incidents in both years (Figure 13.0,14.0). Since this is the busiest route for visitors and vehicles, it is important to identify the specific sections with the most incidents. GPS data collected during the study indicates that the paved section of Al Maha Road, which is only 2.6 km long, recorded over 75% of the roadkill incidents in both years (Map 8.0,9.0,10.0). This is likely because

the paved section allows for higher speeds, with some vehicles observed traveling at 80–100 km/h (Bushnell velocity speed gun), despite the strict 40 km/h speed limit. In contrast, the gravel sections see lower speeds due to the rough surface, though some larger vehicles, such as delivery trucks and SUVs, have been observed driving at 50–60 km/h.

Most roadkill incidents occurred between 06:00 and 14:00(Figure 17.0 & 18.0). However, many carcasses appeared old and dry due to extreme heat, with some showing signs of scavenging by foxes and birds like Arabian grey shrike *(Lanius excubitor aucheri*). According to Securitas data, visitor arrivals peak is in the afternoon (Figure 9.0,10.0), with an annual average of 547.94 visitors per day entering the reserve through all gates. The busiest months are January–May and September–December (Figure 19.0,20.0), which aligns with the highest number of recorded roadkill incidents. The roadkill data indicates that most incidents occurred between August and December, with a slight increase from January to March. These findings highlight the need for targeted road safety measures, particularly on the paved section of Al Maha Road, to reduce wildlife fatalities.

Role of Road Infrastructure in Roadkill Incidents

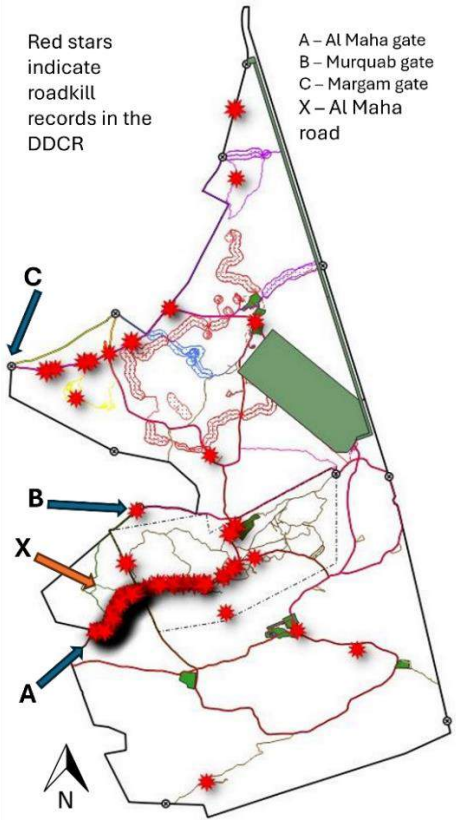
A key finding from the surveys is that roadkill incidents are significantly higher along Oryx One Gate and Al Maha Road, the only paved sections in the reserve (Figure 15.0 & 16.0) (Map 8.0,9.0,10.0). In contrast, sandy roads have notably lower roadkill cases. The primary reason for this is that paved roads heat up quickly in the morning, attracting reptiles that use them for thermoregulation. This behaviour increases their risk of being hit by vehicles. Furthermore, drivers on the paved sections tend to exceed the 40 km/h speed limit, further increasing the likelihood of collisions.

Birds are also frequently found as roadkill in this section, as they come to scavenge animals that died overnight. The presence of abundant vegetation, including Ghaf trees (*Prosopis cineraria*), bushes, and shrubs, supports a high concentration of ground-dwelling wildlife, increasing the chances of roadkill in this area. Additionally, Al Maha road is one of the busiest routes in the reserve, frequently used by hotel guests, suppliers, staff, and visitors. Unlike drivers on sandy roads who are generally trained to look for wildlife and follow conservation protocols many drivers on Al Maha road lack awareness of desert wildlife and are less cautious while driving.

On sandy roads, even drivers who do not have conservation knowledge tend to drive more carefully to protect their vehicles from sand pits and rough terrain. This indirectly benefits wildlife, as animals have more time to move off the road before vehicles approach. In contrast, the smooth paved roads allow for faster driving, making it more difficult for wildlife to react in time.

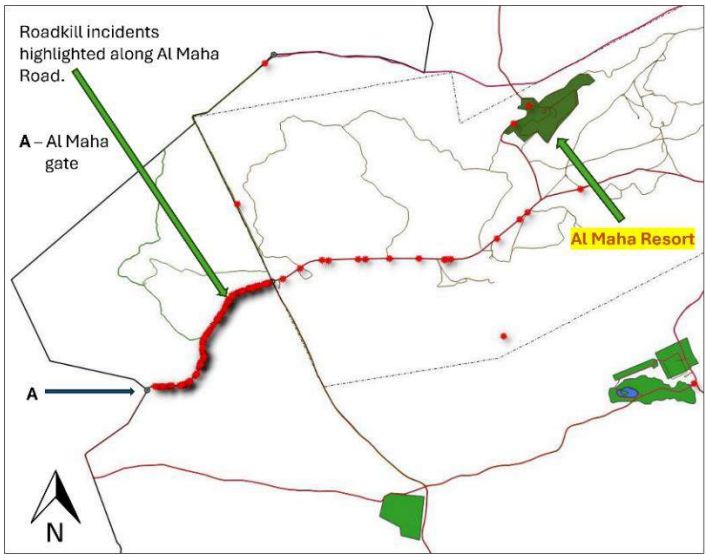
Impact on the Desert Ecosystem

Roadkill has several direct and indirect consequences on the desert ecosystem. The continuous loss of wildlife, especially species with low reproductive rates such as the Arabian hare (*Lepus capensis*) and Desert monitor lizard (*Varanus griseus*), can lead to population declines and disrupt ecological balance. Habitat fragmentation caused by roads restricts wildlife movement, reduces genetic diversity, and increases species' vulnerability to environmental changes (William F Laurance, 2009). Additionally, roadkill alters scavenger dynamics, as dead animals attract predators and scavengers to roadways, putting them at risk of vehicle collisions. The loss of key species also affects ecosystem functions, such as seed dispersal and pest control, ultimately impacting vegetation and other wildlife populations.



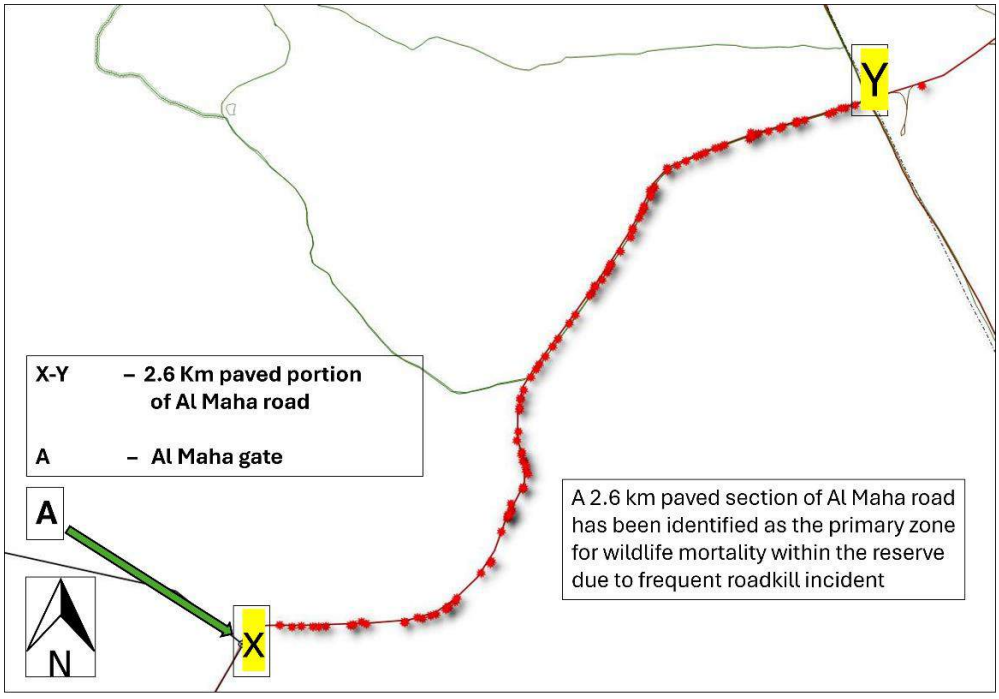
Map 8.0

Roadkill records in the DDCR



Map 9.0

Roadkill incidents highlighted along the Al Maha Road



Map 10.0

2.6 km paved portion of Al Maha Road

Conclusion and Recommendations

The results of this study highlight the urgent need for strategic interventions to reduce wildlife-vehicle collisions within the reserve. Based on observed patterns and hotspot areas, the following recommendations are proposed:

1. Installation of Speed Humps: It is strongly recommended to install speed humps along the 2.6 km of paved road sections, with a minimum interval of every 500 meters. Reducing vehicle speed in these areas will significantly enhance the chances of wildlife, particularly slow-moving species being able to safely escape approaching vehicles.
2. No Future Development of Paved Roads in the Reserve: The creation of paved roads within protected areas should be strictly avoided in the future. These surfaces attract reptiles during early mornings, evenings, and nighttime as they seek warmth for thermoregulation, thereby increasing their exposure to vehicle collisions.
3. Wildlife Crossing Signage: Clear and visible road signs indicating wildlife crossing zones should be installed, especially along paved and frequently used roads such as the Al Maha Road. These signs can serve as visual alerts to drivers, encouraging slower and more cautious driving.
4. Educational and Regulatory Signage: Road signage should include information about the protected nature of the area, clearly stating that the visitor is entering a wildlife reserve. Signage should also outline traffic regulations and associated penalties for violations, reinforcing the seriousness of compliance.
5. Entrance Signage at Al Maha Gate: A large, multilingual sign should be installed at the Al Maha entrance, paired with a speed hump or stop sign to ensure vehicles slow down. This signage should clearly communicate key conservation messages for visitors and drivers who may not have a background in nature or environmental protection.
6. Enhanced Speed Control Enforcement: Increase enforcement of speed limits in key areas such as Al Maha and Margam roads. This can be achieved through the use of speed cameras or regular ranger patrols to deter speeding and improve compliance.
7. Driver Awareness Programs: Conduct targeted awareness programs for drivers, especially hotel staff and suppliers who frequently travel through the reserve. These programs should focus on the ecological value of the area, potential roadkill risks, and safe driving practices.

These measures will contribute significantly to minimizing roadkill incidents and promoting safer coexistence between visitors and the unique biodiversity of the reserve.

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Spiney Tailed Lizard
Uromastyx aegyptia leptieni
11/06/2023
Al Maha Road

Desert Monitor lizard
Varanus griseus
12/08/2023
Al Maha Road

Arabian Horned Viper
Cerastes gasperettii
28/07/2023
Al Maha Road

Sand Boa
Eryx jayakari
19/06/2023
Al Maha Road

Cheesman's Gerbill
Gerbillus cheesemani
22/08/2023
Al Maha Road

Dune Sand gecko
Stenodactylus doriae
30/08/2023
Al Maha Road

Spiney Tailed Lizard
Uromastyx aegyptia leptieni
26/02/2023
Al Maha Road

Black crowened sparrow Lark
Eremopterix nigriceps
02/08/2023
Al Maha Road

Cheesman's Gerbill
Gerbillus cheesemani
24/06/2024
Margam Road

Dune Sand gecko
Stenodactylus doriae
30/08/2023
Al Maha Road