

STUDY ON THE CAUSES OF WILDLIFE MORTALITY ON THE ASIAN ROAD IN GOLESTAN NATIONAL PARK IN IRAN.

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Introduction

This report studies the effects of road kills on wildlife within a 55 kilometer stretch of the Tehran-Mashhad road called the "Asian road". It is a 2 lane road which passes through "Golestan" national park, the oldest national park in Iran. The results are based on analysis of statistics of road kills during a 6 year period, between 2005 and 2010. The mortality of four different classes of wildlife was studied: mammals, birds and reptiles & amphibians.

Frequency of mortality of index species

Mammal casualties are recorded in decreasing frequency as follows: 331 wild boar (*Sus scrofa*), 176 golden jackal (*Canis aureus*), 44 Indian crested porcupine (*Hystrix indica*), 33 fox (*Vulpes vulpes*), 20 marten (*Martes martes* and *Martes foina*), 16 hedgehogs (*Paraechinus sp*), 8 forest cat (*Felis chaus*), 7 wild cat (*Felis silvestris*), 7 brown bear (*Ursus arctus*), 5 least weasel (*Mustela nivalis*), 3 north Persian panther (*Panthera pardus saxicola*), 3 urial sheep (*Ovis orientalis arkal*), 1 Red deer (*Cervus elaphus*). Avian casualties in decreasing frequency: 128 hooded crow (*Corvus corone*), 74 Tawny owl (*Strix aluco*), 17 Blackbird (*Turdus merula*), 4 Great tit (*Parus major*), 3 pheasant (*Phasianus colchicus*), 2 Long-legged buzzard (*Buteo rufinus*), 1 Red headed merlin (*Falco chicquera*), 1 Green woodpecker (*Picus viridis*). The highest mortality was found in those species which utilize the road environment the most.

Table 1. Density of casualties in different months, the months with the highest frequency are yellow.

	2005	2006	2007	2008	2009	2010
Wild boar	July, Aug	Sep	Sep	Aug	Dec	Jun, Sep
Jackal	July, Aug	Oct	Dec	Oct	Jun, Feb	Sep, Jan
Indian crested porcupine	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Fox	May, Jun	Sep, Oct	Aug, Sep	Aug	July, Jan	Aug, Sep
Bear	Dec	Jun		Jun, Oct		April
Panther	Jun			Dec	Dec	
Owl	Jan, Feb	Feb	Uniform	Uniform	May	May
Crow	July	Oct	Aug	Aug	July, Aug	July, Aug
Blackbird	Des	Jun	Aug, Sep	Aug	Uniform	July
Glass snake	July					
Snake			Jun	Jun	Jun, April	Jun
Tortoise					May, Jun	
Lizard						Jun

Results

The increased frequency of mortality for some species such as wild boar, golden jackals and hooded crows during the summer, coincided with an increased rate of vehicle traffic (13,500 vehicles in a day). In addition, it is also believed that food waste thrown away by tourists on the roadside encouraged some scavenging species closer to the roads and had an impact on the rate of mortality (Kahrom, 1995). By overlapping a map showing the highest mortality areas and the map of scenic views, it becomes clear that most of the mortality occurred around promenades. In contrast, increasing rate of traffic does not have any significant effect on mortality rate of some species such as brown bears, panthers or red deer. Based on these facts, we believe that species can be grouped into two categories; 1) road-friendly species and 2) road-avoiding species (Forman & Alexander, 2011)

Discussion - Mammals

Panthers have the highest mortality rate in December. The most common panther casualties are either infant or immature individuals. Young animals leave their mothers at 18 months, (Ziaei, 2009) normally around December which coincides with the observed highest mortality period. It is suggested that inexperience after leaving their mother, together with an unfamiliar environment led these young individuals into trouble.



Fig 1 : Brown bear (*Ursus arctus*) killed in a car accident, Golestan national park, May 2010 (© Javad Selyari).

Brown bear mortality peaks during the Spring and Autumn. When the bears emerge from hibernation, they often move to lower altitudes in search of food (Ziaei, 2009). This could bring them into conflict with humans and also close to the roads. As food is not generally in short supply during the summer, bears do not need to come as close to habitation so therefore avoid roads. However, as food again becomes a factor during the Autumn period, they again have to come closer to the roads.

Birds

There is no obvious increased monthly mortality for owls. There is always an availability of carrion, small mammals and insects throughout the year along many of the roads. As night hunters owls are more prone to car strikes due to being dazzled by oncoming car headlights than perhaps other species. However, the large number of hooded crows found dead suggests that they as carrion eaters are more prone to higher mortality figures during the summer periods.

Lizards & Amphibians

Limited data acquired for reptiles shows that most casualties occur in June. In the Golestan National Park weather conditions are not suitable for reptiles until the middle of May and because of summer's warm weather they usually spend most of their time under stones. So the most active period of their life is June which coincides with time of highest casualties.



Fig 2 : Red deer (*Cervus elaphus*) calf that died from severe injuries, Golestan national park, Jun 2011, (© Javad Selyari)

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