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Wild life mortalities on NH-161 passing through transit ecosystem

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Abstract
Roads have important effects on wild life, such as natural habitat fragmentation which leads to crossing the roads to gain access to crops, pasture, water or territories. Current rates of wildlife road mortality are neither sustainable for biodiversity nor a healthy reflection of our interactions with the environment and the animals who try to coexist with us. The present survey was conducted to estimate the road kills on the National Highways 161 which joins the cities of Akola, Washim, Hingoli, Nanded, Degloor, Sangareddy and Hyderabad in Central-Southern India with each other. A very small segment of 15 km was taken for the study. Road kill incidences were monitored and photographed on daily basis in morning and evening from March 2016 to February 2017. At every sighting of a road kill, information such as place, species name, number and status of the kill was recorded. The present study revealed a total of 60 road kills belonging to 20 species. Birds were the most affected individuals (32 %) followed by reptiles (27 %), mammals (23 %) and amphibians (18 %). Conservation and management implications are essential to prevent this threat to local biodiversity.

Keywords: road kills, threats, biodiversity, highway

Introduction
Spreading across 267,452 kilometers, the road network of Maharashtra is the largest in the country. The six neighbouring states of Maharashtra are connected via 17 National Highways. Maharashtra also has a huge state highway network with a total length of 3688 kilometers.

Wildlife roadkill is the death of wildlife resulting from collision with a moving vehicle. It occurs because wildlife and people driving vehicles are on the road simultaneously, and cannot predict the behaviour of one another. Roads have important effects on wild life, such as natural habitat fragmentation which leads to crossing the roads to gain access to crops, pasture, water or territories. Understanding the negative effects of roads on wildlife is of increasing importance in a world with rapidly expanding road infrastructure (Laurance *et al.*, 2014) [1].

Current rates of wildlife road mortality are neither sustainable for biodiversity nor a healthy reflection of our interactions with the environment and the animals who try to coexist with us. The seasonal variation causes a change in their diet and prey so these wild animals move from one place to other in search of their prey which exposes these to different adverse conditions like road accidents and human - wild life conflict leading to more mortality of these free range wild animals (Patterson, *et al.,* 2004) [2]. Roads impose multiple ecological impacts on local biodiversity including habitat fragmentation, altered microclimates with edge effects, nonpoint-source pollution, increased anthropogenic disturbances, high rates of pest infestations and non-native invasions, altered animal behavior, impeded dispersal and migration, and altered hydrology (Laurance, *et al.,* 2009) [3]. Continuous expansion of the land-based transport networks, their linear nature, and increasing traffic volume can amplify negative impacts of roadkills on population persistence (Karunarathna, *et al.*,2013) [4]. Wildlife roadkills on Indian roads have been studied by various workers (Rajvanshi, *et al.,* 2001 [5], Kumara *et al.,* 2000 [6], Gubbi *et al.,* 2012 [7].

Mterial and Methods
National Highways-161 which joins the cities of Akola, Washim, Hingoli, Nanded, Degloor, Sangareddy and Hyderabad in Central- Southern India with each other. NH-161 passes through some forest and agriculture area (which don't come under "protected area"). A very small segment of 15 km was taken for the study. Road kill incidences of amphibians, reptiles, birds and mammals only were monitored and photographed on daily basis in morning and evening from March 2016 to February 2017. At every sighting of a road kill, information such as place, species name, number and status of the carcass was recorded.

Fig 1: Map showing passage of NH 161 through transitional ecosystems

Results and Discussion

The present study revealed a total of 60 road kills belonging to 20 species. Birds were the most affected individuals (32 %) followed by reptiles (27 %), mammals (23 %) and amphibians (18 %).

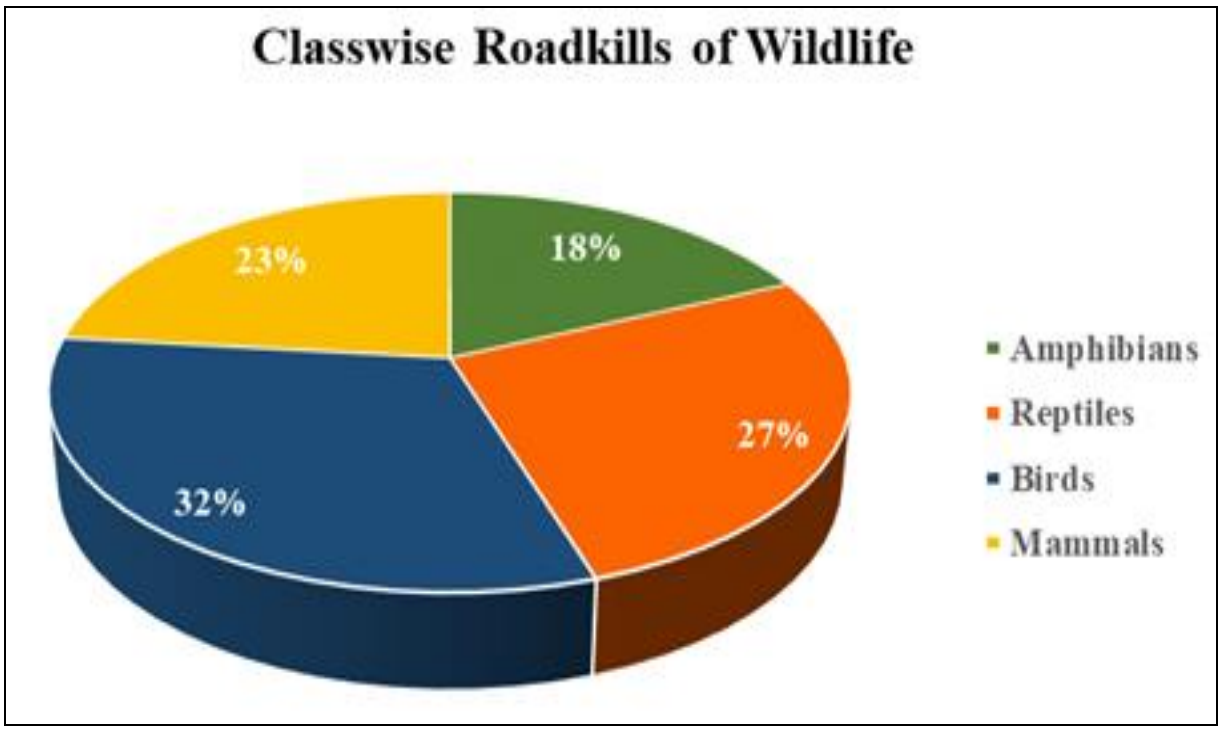

Fig 2: Percent road kills of Wildlife

In study of roadkill in the Amazon region of Ecuador, Filius *et al* (2020) [8] found strikingly high numbers of roadkill in a relatively short period, on a short stretch of road. Roads lead to the death of organisms by direct collision with vehicles, but roads also create barriers for dispersal, cause habitat change and fragmentation, promote pollution (e.g., noise), alter the microclimate near roads, facilitate the spread of invasive species, and increase human activities such as hunting and deforestation. In turn, these direct effects of roads may alter species behavior, demography, gene flow, and the viability of animal populations (Coffin, 2007 [9]; Forman & Alexander, 1998 [10]; Jackson & Fahrig, 2011) [11].

The present study points out that the area survey'ed is a relatively small area, from which it may prove difficult to extrapolate across the larger region. The investigator made the decision to survey this relatively small region due to the trade-off between detection accuracy and kilometers surveyed (Santos *et al.*, 2015) [12]. Although the area under study is not covered under protected area and it is difficult to take preventive measures by the wild life department, on behalf of my college we set signage at the corridor where the frequency of roadkill was more.

Conclusion

The reasons we need to change our behavior are simple. Current rates of wildlife road mortality are neither sustainable for biodiversity nor a healthy reflection of our interactions with the environment and the animals who try to coexist with us. Our driving habits demonstrate the prevailing unconscious state in which we move about. Driving mindlessly and ignoring lifeless bodies on roads decreases our humanity and lends itself to a culture of indifference.

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