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# Inventory of wild animals along the Bengkunat-Sanggi Road in Bukit Barisan Selatan National Park, Lampung Province, Indonesia

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**Abstract.** *Winarno GD, Charles Y, Antonio C. 2024. Inventory of wild animals along the Bengkunat-Sanggi Road in Bukit Barisan Selatan National Park, Lampung Province, Indonesia. Biodiversitas 25: 2917-2924.* The quality of the West Sumatra route Bengkunat-Sanggi in Indonesia has significantly improved since 2005, what was originally a dirt road became an asphalt road, leading to an increase in its utilization by various types of vehicles such as motorbikes, sedans, jeeps, buses, and trucks. This condition has an impact on wildlife activities along the road. The sound of vehicles and lights turning on at night can attract animals to move towards the road, which can endanger these animals. On the other hand, lots of vehicles crossing the road can cause animals to run far away because they are disturbed, so it is thought that the animal's movement area will also change. This study aims to explore the effects of road construction on wildlife presence, with a specific emphasis on endangered species like tigers, elephants, and rhinoceroses near the Bukit Barisan Selatan National Park (BBSNP), Indonesia. Camera traps are currently being employed to record animals living in the vicinity of roads, including those that have fallen victim to vehicle collisions. The division of wildlife habitats by roads poses a substantial threat to their survival and functionality. The presence of traffic roads has been linked to an increase in accidents involving animals attempting to cross the road. Some animals appear to be disturbed by the noise generated by vehicles, leading to a reduction in their home range. Initial monitoring results at the onset of road construction indicated a higher presence of threats wild animals, specifically tiger (*Panthera tigris* subsp. *sumatrae* Pocock, 1929), Sumatran elephant (*Elephas maximus* subsp. *sumatranus* Temminck, 1847) and Sumatran rhino (*Dicerorhinus sumatrensis* G.Fischer, 1814). To safeguard the wildlife along the Sanggi Bengkunat Road, a comprehensive approach involving all stakeholders and ensuring orderly behavior of drivers while navigating the road is imperative.

**Keywords:** BBSNP, camera trap, inventory, wildlife

## INTRODUCTION

Apart from having high biodiversity, it is also a habitat for many endangered flora and fauna. The International Union for Conservation of Nature (IUCN) has classified the Sumatran rhino (*Dicerorhinus sumatrensis* G.Fischer, 1814), tiger (*Panthera tigris* subsp. *sumatrae* Pocock, 1929), and elephant (*Elephas maximus* subsp. *sumatranus* Temminck, 1847) as critically endangered species due to their dwindling populations. Nardelli (2014) that, specifically, the Sumatran rhino in Indonesia is facing the threat of extinction, with the global population has declined from over 800 to less than 100 in the last thirty years. Habitat loss and severe poaching has led to the devastation of rhino populations. Current worldwide population estimates in 2012 are 35 to 44 Javan, 152 to 199 Sumatran, 3,270 Indian, 4,837 black, and 20,143 white rhinos (Miller and Fowler 2015). Despite the efforts of various organizations and stakeholders, the situation remains dire. This decline can be attributed to a combination of factors, including construction of main roads and branch roads, habitat loss, exploitation, and other specific causes (Nardelli 2014).

The Bukit Barisan Selatan National Park (BBSNP) region in Indonesia and its biodiversity are currently facing significant threats as a result of road development, hunting, unauthorized logging, and encroachment through the unlawful conversion of BBSNP forest lands into coffee farms and residential areas. The establishment of roads that fragment national reserves facilitates various illicit practices. According to Prakash and Verma (2022) that anthropogenic activities threaten many habitats and animals, causing the population to decline further. All medium to large western boreal mammals are impacted by changes in the landscape (Fisher and Burton 2018; Wittische et al. 2021). It is crucial to make well-informed decisions about conservation in order to prevent the decline in biodiversity and species extinction resulting from human resource exploitation in various time periods and locations (Dirzo et al. 2014; Johnson et al. 2017; Maxwell et al. 2020).

Illegal poaching in national parks is strongly suspected because there are many roads scattered within the national park and many people around the national park are still relatively poor. The illicit activities taking place within BBSNP, particularly hunting and encroachment, are a result of socioeconomic factors (Purwanto 2016). In

addition to the lack of law enforcement intervention, there is also pressure stemming from the social (poverty, hunger, low education, unemployment, crime, lifestyle) and economic (low income, increasing needs) aspects of the community surrounding BBSNP. Previous endeavors to tackle these illegal activities have been carried out by the BBSNP Center, local and national non-governmental organizations, and the provincial and regency administrations of the regions that make up BBSNP.

Various activities are conducted, including area patrols, law enforcement actions, and promoting local community involvement in BBSNP conservation initiatives (Poole 2005). Despite the implementation of these activities, there remains a lack of proper integration between development and conservation planning. While efforts to address illegal activities have yielded positive results, such as a reduction in encroachment rates and a decline in poaching of endangered species like tigers, rhinos, and elephants, the threat to wildlife survival persists.

The deployment of camera traps has become increasingly prevalent in regions across the global south and in developing nations (Agha et al. 2018; Cremonesi et al. 2021; Galindo-Aguilar et al. 2022). Burton et al. (2015), camera traps are being utilized more and more worldwide to evaluate the occurrence, compilation, and conduct of various mammal species and other taxa. The scientific application of camera traps is swiftly progressing beyond fundamental species inventories and conventional estimates of population densities carnivores. Several camera trap studies have focused on conducting surveys for multiple species, monitoring our observations.

Camera trap research includes ecological hierarchies and their application to animal behavior (Caravaggi et al. 2020) e.g. diet activity (Rowcliffe et al. 2014; Frey et al. 2017), populations (Gardner et al. 2010; Bischof et al. 2020), species distribution (Tobler et al. 2015; Rich et al. 2017), and animal communities (Ahumada et al. 2011; Wittische et al. 2021). By being able to in addition to logical, descriptive analysis, more complex ecological processes such as interactions between species can also be predicted (Clare et al. 2016; Niedballa et al. 2019; Beirne et al. 2021).

The objectives of this research are (i) inventory of wild animals around Bengkunat-Sanggi Road (BSR) based on camera traps, (ii) analyze the presence of rhinos, tigers and Sumatran elephants as well as other wild animals.

## MATERIALS AND METHODS

### Time and location of research

The study was conducted over a duration of four months, starting from March 2012 until June 2012. Even though this data is relatively old, it can be used as documentation and evaluation at this time. If it is planned to install camera traps in the coming year, it could be a consideration to install them in the same location so that the data obtained can be compared. This historical data is very important as a guide in management threats wildlife. The research site was situated along the Bengkunat-Sanggi Road (BSR) 11.5 Km within the Bukit Barisan Selatan National Park (BBSNP), Lampung Province, Indonesia (Figure 1).

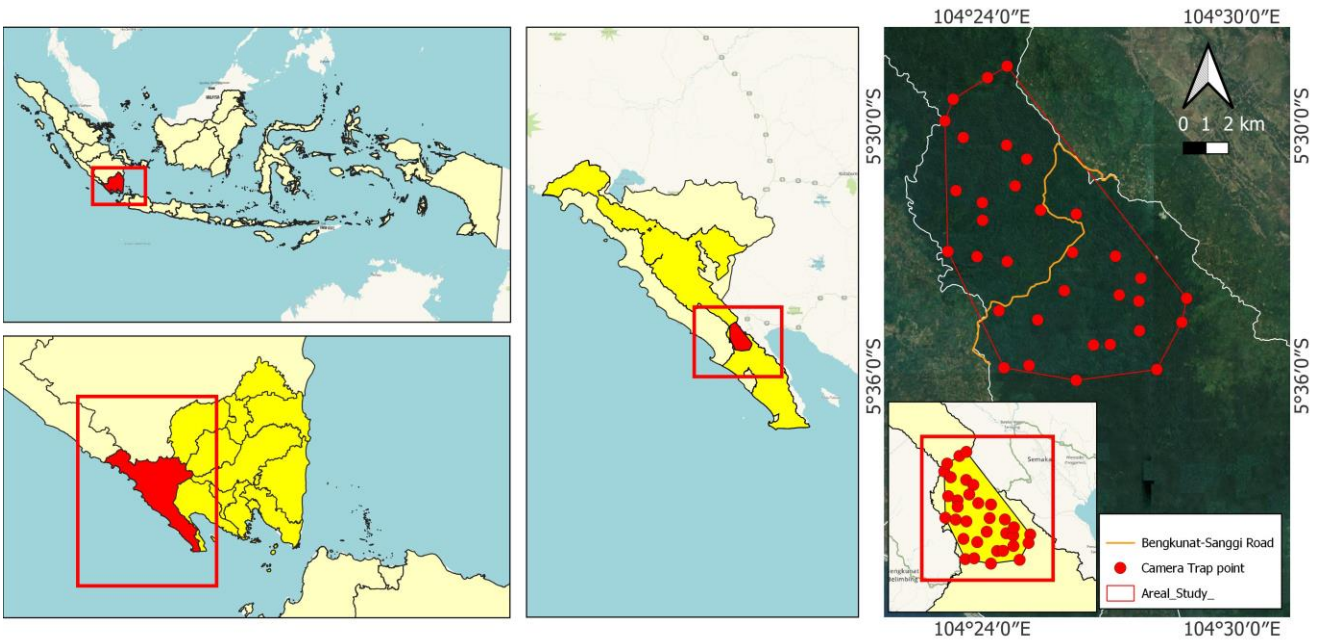


**Figure 1.** The placement of the camera trap along the Bengkunat-Sanggi Road in Bukit Barisan Selatan National Park, Lampung Province, Indonesia

**Materials and equipment**

Materials and equipment used in the research are as follows: general map of the National Park or the entire target area (scale 1:300,000); detailed map of the area surveyed; Maps of planned camera installation points (minimum 1:50,000); data sheet (data entry sheet). Equipment for survey (each team): 52 camera traps, GARMIN 60 CSx GPS, compass, machete, small book (notebook), pocket camera.

**Data collection**

The BSR, which spans a length of 11.5 km, serves as the primary route for conducting animal surveys using camera traps. To ensure comprehensive coverage, cameras are strategically placed on both the right and left sides of the road, with a buffer zone of approximately 500 m between them. The placement of cameras follows a systematic pattern. In the second month, a camera is positioned 1.5 km away from the initial location. Subsequently, in the third month, the camera is moved another 1.5 km from its previous position. This process continues, with each camera being placed 1.5 km apart from the previous month's installation. By the fifth month, the camera is situated 1.5 km away from the fourth month's location. Similarly, in the sixth month, the camera is installed 1.5 km from the fifth month's installation. This sequential arrangement ensures comprehensive coverage along the entire length of the road. The total observation area spans 107.6 $km^2$ (10,760 ha). The distance from the road axis to the north is 9.5 km, while to the south it is 7.9 km. Geographically, the area is characterized by hilly terrain and is predominantly covered by primary forests. The placement of the camera trap is presented in Figure 1.

Throughout this process, the team members are strictly forbidden from smoking or consuming food within a radius of 500 meters until they reach the camera installation site, as well as 500 meters when departing from the site. The camera is positioned at a distance of 4-6 meters from the animal path, utilizing a mounting pole attached to a tree with a diameter of approximately 25 cm. Moreover, the camera is oriented in a manner that avoids capturing the direction of either sunrise or sunset.

The area is segmented into multiple grid cells with dimensions of 8.5×8.5 km, known as large cells. These large cells are further subdivided into smaller cell grids measuring 2×2 km, which are designated as small cells for camera placement. Nevertheless, not all small cells will have cameras installed. The quantity of cameras positioned in each large cell ranges from 6 to 7 cameras and is greatly influenced by the amount of vegetation present.

A grid of cells was established in order to detect 'hotspots' where rhinos are frequently found, as well as the routes taken by other animals. The identification of these hotspots and animal routes along the SBR will be conducted through survey methods. This initial survey aims to analyze the range of rhinos and track the movements of other known animals. Each network within the grid will be thoroughly examined for any indications of rhino presence, such as footprints, tracing marks, scat, and areas where pigs wallow, as well as signs of other animals.

To ensure unbiased identification of individuals as they wallow, camera traps will be strategically positioned to capture the paths used by rhinos when they approach waterholes. These cameras are placed at an elevation of approximately 1.5-2 meters above the ground, at an angle of around 15-20°. The chosen angle guarantees clear imaging while minimizing potential interference from the rhino's infrared LEDs. Moreover, this angle enables the recording of other animals present at the survey location.

Upon entering the designated grid of cells for camera installation, the team made a noteworthy observation regarding the presence of animals in the vicinity. The team meticulously documented these findings on a tally sheet, specifically noting the occurrence of rhinos, elephants, tigers, tapirs (*Tapirus indicus* Desmarest 1819), deer (*Cervus unicolor* Kerr, 1792), bears (*Helarctos malayanus* Raffles, 1822), golden cats (*Catopuma temminckii* Vigors and Horsfield, 1827), clouded leopards (*Neofelis nebulosa* Griffith, 1821). Additionally, the team diligently recorded the GPS coordinates of these animal sightings.

**Data analysis**

The data was collected and analyzed as follows: area density, as determined by footprints and visual data, is indicative of the quantity of rhinos present at a given survey site. Through the comparison of the efficiency of each camera, the utilization of the habitat, and the distribution of animals, spatial analysis can be conducted.

## RESULTS AND DISCUSSION

**General description**

The establishment of roads within national parks has detrimental effects on fauna and habitat. The physical condition of the Bengkunat-Sanggi Road (BSR) at the time of the research in 2012 was asphalt. Until now, the road has always been maintained and is in increasingly better condition. On the other hand, this condition certainly threatens the existence of wild animals close to the road. High speeds can cause accidents for car drivers and wildlife trying to cross. This condition must be considered if the government wants to build a road that enters a forest area. The condition of the road after 2005 has gotten better and more and more vehicles ply it. However, before 2005, it was not used because it was in a damaged condition and had not been reinforced and the number of vehicles passing through was still small. In general, the better the road, the faster vehicles pass. This condition can endanger wild animals crossing the road. Since 2005, the improved quality of BSR has resulted in increased usage in a variety of vehicles such as motorcycles, sedans, jeeps, buses, lorries, and trucks. A study conducted by World Wildlife Fund (WWF) Indonesia found that an average of 1,487 vehicles passed through daily, roughly 62 vehicles per hour. The division caused by highways has negatively affected habitat quality and limited animal movement. According to Boston (2016), Animals may move to avoid the disruption caused by traffic noise, making them more vulnerable to predators.

This habitat damage is caused by the many roads scattered within the forest area. The existence of a main road will encourage the development of branch roads. Human activities can harm the habitats of plants and animals (Lewis at al. 2021). This condition makes it easier for animal hunters to move and set animal traps along the road. Poachers will find it easier to access the deep forest and jungle areas to capture endangered and protected animals. Hunters who start fires and leave lit cigarette butts can also cause forest fires. Camera traps also capture the activities of poachers looking for wild animals. If this is allowed to eat, animals will be increasingly threatened with extinction. Poaching for horn and a loss of habitat have been largely to blame for the species' population declines. Increasingly, however, the unnaturally small and isolated populations that remain are themselves the greatest threat to the species' survival. Some of the remaining sub-populations are likely to comprise just two -five animals, with none containing more than 30. There are now estimated to be between 34 and 47 Sumatran rhinos left in the wild, and efforts are now being invested in captive breeding in an attempt to boost the population. Historically, poaching had depleted the population but their biggest threat today is habitat loss-including forest destruction for palm oil and paper pulp and increasingly, small, fragmented populations failing to breed (Save the Rhino International 2024).

The extent of habitat degradation can be measured by the amount of habitat area that is affected by the construction of a road. In this case, the BSR, which is 11.5 kilometers long and 10 meters wide, has resulted in an estimated loss of 11.5 hectares of animal habitat. This degradation has led to the disappearance of different species of trees, both big and small, and their associated ecological and animal functions (Yang et al. 2024).

There are remnants of landslides, such as mud and wood, visible at various locations along the road. These remnants serve as evidence of escalating harm to the BBSNP region and a lack of emphasis on environmental considerations during road development. The pollution levels are expected to be higher at spots with extremely steep inclines, likely due to vehicles struggling to navigate the terrain and emitting thick smoke as a result.

According to research carried out by WWF, Wildlife Conservation Society (WCS) and Rhino Protection Unit (RPU), the surveys indicate a concerning trend of shrinking and dividing animal habitats, particularly those of large mammals such as tigers, rhinos, and elephants, among others. The presence of this road may present a risk to animals attempting to traverse it. Magioli et al. (2019) recorded 77 roadkilled vertebrates from 14 taxonomic groups along the Comendador Pedro Morganti road (henceforth called CPM road) in Southeastern Brazil. Mammals were the most frequently recorded group (91% of roadkills), which represented 56% of all medium- and large-sized mammal species known to occur in the study area. This event can result in a reduction in the number of animals. Apart from that, the absence of regulations on reducing vehicle speed limits in national park areas and the addition of signage and signs has resulted in animal death rates due to being hit by collisions increasing (Lin and Johnson 2015).

The Sumatran rhino is an animal that is very sensitive to changes in the quality of its habitat. Formerly found throughout Southeast Asia, the Sumatran rhinoceros is now classified as Critically Endangered. The Sumatran rhino (*D. sumatrensis* G.Fischer, 1814) is very close to extinction in Indonesia (Nardelli 2014). Despite decades of conservation efforts, hunting and habitat loss have rendered it one of the rarest large mammals, and the species is threatened with extinction (Havmøller et al. 2015). They are solitary and move when their habitat is disturbed due to: (i) overlapping habitat with other animals; forest fires; (ii) illegal logging; (iii) opening new roads and clearing land. Therefore, habitat protection is an important factor in the conservation of the Sumatran rhino. Pusparini and Wibisono (2013) estimated the presence of 21 rhinoceros, fragmented in three distinct populations: Sukaraja, Way Ngaras and Kubu Perahu areas-just 32% of suitable rhino habitat.

The rhinoceros thrives in primary tropical forests, and can also be spotted in secondary forests. All creatures require sustenance, hydration, protection, and the ability to procreate. Rhinoceroses prefer forested areas with thick foliage, shaded areas for concealment, and access to plant-based sustenance at ground level (Muslim et al. 2015). Typically, rhinoceroses sustain themselves by consuming leaves, shoots, stems, roots, and fruits (Awaliah et al. 2018). Male Sumatran rhinos typically lead solitary lives, although they may encounter females and have overlapping territories, particularly during the mating season. The male Sumatran rhino's range spans up to 5,000 hectares, whereas the female Sumatran rhino's territory is estimated to be between 1,000 and 1,500 hectares (Candra 2016).

**Animal inventory**

The successful deployment of camera traps resulted in the documentation of the presence of the Sumatran rhino (Figure 2) and the identification of various other animal species. Notably, four rhino footprints (Figure 3) were discovered amidst a moderately scattered layer of debris. It is approximated that the lifespan of a rhinoceros track ranges from 2 weeks to 1 month (White et al. 2007). These tracks are situated adjacent to other animal tracks along the ridge. The site itself is characterized by a covering of desiccated leaves.

Rhino tracks were detected on Grid BF 61 and BF 60. By measuring the distance from the grid to the Bengkunat-Sanggi axis road, it was determined to be 2.5 km. In addition to the rhino tracks, other animals were also directly observed, specifically elephants. It is estimated that a herd of wild elephants resides on the northern side of the Bengkunat-Sanggi Road. The observation route primarily revealed tracks of antelope, deer, and pigs. This suggests that there is an ample food supply for carnivorous animals in the area. The trail was discovered in a region abundant with nourishment, as indicated by the presence of vegetation, saplings, and poles.


**Figure 2.** Rhinoceros appearance recorded by trap camera (BF 61)

Previous research has established a plausible connection between roadkills of wild mammals and the season, as documented by Brum et al. (2017). This correlation is likely influenced by the dispersal and migration patterns of the mammals, which are in turn affected by foraging and reproduction, as highlighted by Braz and França (2016).

Between March and June 2012, the utilization of camera traps resulted in a total of 14,716 photo and video files. Among the 53 camera traps that were deployed, 22 distinct species were identified through the use of these camera traps. However, it was observed that 15 camera trap units were damaged during this period. The collected data revealed the presence of tigers in 5 different camera units, although individual tigers could not be distinguished despite their occurrence in 17 camera points.

Further analysis will be conducted to differentiate between individual tigers and determine their population densities. Additionally, one camera unit captured images of elephants, while 3 photos of rhinos were also recorded on the same unit. During 2007-2008 in BBSNP estimated there were 21±7.1 rhinoceroses in the park (Pusparini and Wibisono 2013). Based on patrol data, the distribution of rhinoceros signs had decreased by 70% during 2007-2012 (Talukdar et al. 2012).

The location of the tiger discovery was documented at 17 camera trap stations. It is assumed that the 17 tiger spots found indicate that the tigers are different individuals, so it could be said that the level of tiger density around BSR is high. It is suspected that there is no influence of traffic flow on the population and distribution of tigers, because the tigers are located at a distance of 300 m from the roadside. Tiger behavior is affected by the presence of prey, including piglets, deer, and antelope. These three animals have a highly sensitive nature and avoid dense traffic.

According to Paiman et al. (2018) the availability of prey animals greatly influences tigers' ability to survive. If there is no food in an area, tigers will expand their range in their pursuit of prey, tigers also significantly depend on vegetation cover, which serves the purpose of camouflage (Kemal et al. 2022). Findings various types of prey animals in the form of wild boars, deer and tapirs were found near tiger tracks. This indicates the importance of the presence of prey animals for tigers in their roaming locations.

Figure 4 presents the relative frequency of animal encounters as observed through camera trap monitoring. Among the herbivorous animals commonly captured by camera traps: *C. unicolor* Kerr, 1792; *Muntiacus muntjac* Rafinesque, 1815; *E. maximus* subsp. *sumatranus* Linnaeus, 1758; *Sus scrofa* Linnaeus, 1758; and *T. indicus* subsp. *indicus* Desmarest, 1819, are the most frequently recorded species. Interestingly, herbivorous species tend to utilize the same pathways that elephants use when moving in groups. On the other hand, camera devices often capture carnivores like bears and tigers. These two animals are also frequently observed crossing paths with elephants. It is estimated that there is still an ample amount of food available to support tiger breeding. However, it is crucial to remain cautious about the illegal poaching of tigers for the purpose of sale.

**Figure 3.** Rhino footprints

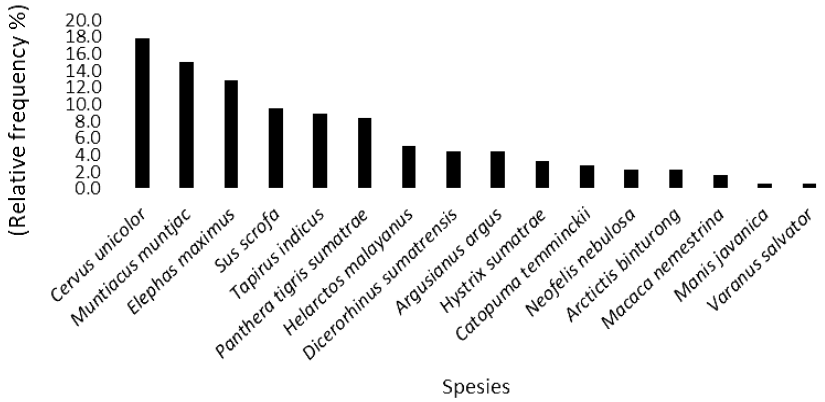


**Figure 4.** Relative frequency of animals recorded by camera traps

**Bengkunat-Sanggi Road and threats to animal existence**

The presence of roads has significant consequences on the wildlife inhabiting areas that are intersected by these roads. The construction of roads in forested regions can lead to various negative outcomes such as illegal logging, agricultural encroachment, forest fires, roadkill incidents involving animals, noise and air pollution disturbances, and habitat destruction. Vehicles passing through these areas can further impact wildlife through factors like vehicle volume, vibrations, engine noise (especially during uphill climbs), and instances of vehicles deliberately obstructing animal pathways. Implementing warning signs along roads can help mitigate these threats by alerting road users to the presence of wildlife and encouraging them to exercise caution and reduce their speed (Hadadi et al. 2015).

Specific regions within the BBSNP area exhibit differences in the presence of animals, which can be attributed to various factors including topography, soil composition, and plant diversity. These factors are closely interconnected with the intricate food web within the ecosystem. In comparison to other areas within the national park, the southern part displays a higher density of habitats. However, a significant concern arises from the fact that the abundance of road traffic has created barriers within biodiversity-rich regions, hindering animals from accessing and utilizing two habitats that are divided by the road.

The threat of irregular traffic is usually greater in frequency than heavy traffic. A number of animals are attracted to warm road surfaces (Jackson 2002), while a number of other species are becoming accustomed to using roads as a means of movement, especially at night. For some species this risk may increase seasonally and require more attention. Vehicle traffic has a massive impact on amphibians. For example, crossing the road in several places in Europe increases mortality by 30-98% (Hels and Buchwald 2001). Forest roads can have both indirect and direct effects on fauna. The impact may be more pronounced on well-maintained roads that allow for faster traffic compared to less frequently used roads. Unlike changes in habitat structure or animal behavior, direct consequences such as animal fatalities or injuries are primarily caused by vehicle collisions. The presence of vehicle traffic in forested areas can greatly influence wildlife populations, with road traffic being a major contributor to the mortality of large animals in the forest. As a result, the construction of roads can lead to the isolation of habitats, potentially leading to a decrease in species diversity within the forest (Boston 2016).

Vehicle traffic is thought to have a negative influence on wildlife (Forman and Alexander 1998). The three main influences are: (i) animals that are crushed to death *(*for example *N. nebulosa* Griffith, 1821) (Clevenger et al. 2003; Taylor and Goldingay 2010); (ii) animals that are getting used to eating from or being attracted to dead animals that have been run over (Dale 2001); (iii) noisy sounds from vehicle sounds and vibrations (Gebresenbet et al. 2011). There have been multiple instances of animal fatalities at BBSNP as a result of being struck or driven over by vehicles, according to secondary information (as illustrated in the photograph below Figure 5). However, quantitative data are unavailable due to the absence of specialized monitoring protocols.

**Changes in animal behavior**

Prior to 2005, the BSR and its surrounding areas were home to a thriving rhinoceros population. This region boasted approximately 20 active rhinoceros habitats, which posed a daunting challenge for motorists attempting to traverse this particular stretch of road. In addition to the poor road conditions, the crossing area was frequented by numerous herds of elephants. However, with the subsequent improvements made to the road's quality and the subsequent increase in its usage since 2005, there has been a noticeable shift in the animals' home ranges. Rhinos, tigers, and elephants have been particularly affected by these changes, resulting in their distribution moving further away from the roads. As a consequence, these animals have started to form separate and disconnected groups over the past four years. It is worth noting that species with larger home ranges, such as apex predators, are more likely to encounter and cross roads, thereby increasing their exposure to traffic and subsequently amplifying the negative impacts on their populations (Caires et al. 2019). Animals demonstrate a tendency to avoid roads due to a range of factors, which can be categorized into two main groups: general avoidance of vehicles and specific avoidance of road-related emissions such as noise and pollutants (Boston 2016).

**Figure 5.** Animal death (*Neofelis nebulosa*) due to being hit by a motor vehicle

The intensity of disturbance is high due to passing vehicles, around 12,800 ha of the area is experiencing pressure and is at risk of being no longer used by animals. It is known that there are no more active rhino wallows found in a 5 km radius on either side of the road, and the elephant track has decreased from 9 lanes to 3 active lanes (2008 Rhino Protection Unit data). In a study conducted by Mustafa et al. (2019), some of the causes of the route reduction were due to area use, hunting, transportation and road access. When both commercial and recreational vehicles traverse these restricted forest roads, it may be necessary to educate all road designers on accident prevention techniques (Boston 2016).

Apart from that, the presence of human activities in animal home ranges has negative impacts that can reduce the level of viability or suitability of the habitat, such as the abundance of food and water sources (Caravaggi et al. 2017), behavioral studies using camera traps are still in their early stages so the full potential of this technology has not yet been realized. Researchers are encouraged to embrace hypotheses to address future challenges and improve the effectiveness of wildlife conservation and habitat management processes.

In conclusion, camera traps installed around Bengkunat-Sanggi Road captured a total of 16 species. Among the herbivore groups frequently recorded were *C. unicolor* Kerr, 1792; *M. muntjac* Rafinesque, 1815; *E. maximus* subsp. *sumatranus* Linnaeus 1758; *S. scrofa* Linnaeus, 1758; and *T. indicus* subsp. *indicus* Desmarest, 1819. Interestingly, during the research, images of rhinos and tigers were still obtained.

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