

**A Zoogeographical Assessment:
Causes for the Elephants' Seasonal Invasion Beyond the Western Boundary of
Yala National Park, Block One**

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Abstract:

Elephants' (*Elephas maximus maximus*) invasion into the crop lands, damaging properties and occasional human deaths are common features in the surroundings of the Yala and Udawalawe National Parks of Southern Wildlife Region. Elephants' invasion beyond the Western boundary of the Yala Block One (Yala B-1) is a prolong problem. The objective of this paper is to identify the main causes for the elephants' seasonal invasion beyond the Western boundary of the Yala B-1. Purposive sampling has been employed as one of the main techniques to collect data from targeted respondents. Particularly, questionnaire survey, in-depth interviews with farmers using semi structured questions, focus groups discussions with victims of elephants' invasions, key informant interviews with park officers and with Jeep drivers were conducted during the months of August and December in 2016 and April in 2017. High concentrated human activities including continuous visits, high concentration of Safari Jeeps, visitors' immoral behavior against elephants, human encroachments to the park: hunting, crop cultivation, cannabis cultivation, falling of trees, allowing domestic livestock to graze, gem mining are on-going inside the Yala B-1. Besides, Choices of the crops for agriculture in the neighbouring areas of the park are pretty much attractive to the Elephants, which direct them to invade villages. Moreover, Elephants becoming aggravated to feed rather ready-made crops in the field, grains in warehouses and food remains from garbage disposing areas as well as in the bins are identified causes for the elephants' invasion beyond the Western boundary of the Yala B-1.

Keywords: Elephants, Seasonal Invasion, Yala Block-1

1.0. Introduction

The impacts of elephants on human environs are the most challengeable issue in the wildlife conservation and management of Sri Lanka. One of the main reasons for such impact is Human Elephant Conflict (Santiapillai *et al.*, 2010) and the Southern Wildlife Region has been identified as one of the major Elephant ranges in the country (DWC, 2011). Yala National Park is not only very famous for elephants but also famous for Human Elephant Conflict (HEC) in and around as an unfortunate circumstance. One of the most important purposes of the National Park is conservation and management of wildlife and their habitats and also the entire ecosystem from the unauthorized human activities and disturbances from immoral human behavior inside the Parks (IUCN, 2016). Elephants' invasion is obviously common in all the bordering areas of the Yala B-1. One of the most important livelihoods of the villagers outside the Yala B-1 is agriculture. Seasonal crops play a prominent role in agriculture. Conversion of forest areas into agriculture lands and settlement areas adjacent to the Yala

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B-1 is a growing and a common trend among villagers. Demarking different types of fences in an irregular manner including self-financed solar power fences are very common features around the agricultural areas, settlements, hotels and restaurants outside the park. Crop riding by Elephants is very frequent in the study sites. According to Santiapillai *et al.* (2010) farmers are in the habit of using dangerous chasing methods. Killing and wounding elephants by people are also on the increase dramatically in an attempt to protect crops, properties and lives. It is the common voice and expectation of the villagers that Elephants should sustain in the Yala National Park. Basically, villagers of the bordering areas of the Yala B-1 and officers expect to restrict elephants in the NPs and forests any way to keep them away riding on neighboring agricultural areas and also people in the vicinities expect to live free from mental agony. However, according to Fernando (2015) drive or translocate of elephants from village areas and restrict them in the park has almost become a failure. It is a challengeable assignment to recognize the roots causes for elephants' invasion and current situation of the conflict and find practical solutions. It is crucial to provide a better solution for the foregone continued invasion and conflict by inverting current circumstances to associate with Human and Elephants with practically implementable, long term, multi-dimensional and sustainable measures.

2.0. Literature Review

Evidences from literature show that elephants' invasion into the bordering areas of the National Parks and HEC are chronic in the Southern Wildlife Region (Jayawardane, 1994; Bandara, 2005; De Silva and De Silva, 2007; Santiapillai *et al.*, 2010; DWC, 2011; Fernando, 2015). Particularly, Haldumulla, the area between Lunugamvehera, Udawalawe and Bundala, Haltota-Haldumulla area North of Udawalawe and Yala NPs in the SWR are identified most critical HEC regions in the Southern Wildlife Region (DWC, 2011). Herath *et al.* (1997) research "Heavy visitor arrivals to National Parks are known to cause negative impacts such as interruptions to the behavior of wildlife including habituation, littering, damages to vegetation and increased cases of visitor non-conformities with environmental standards and park policy" (as cited in Senevirathna & Perera, 2013, p. 04). According to Jayawerdene (1994 & 2002); Santiapillai (2002); Fernando (2015) the main reasons for the HEC in Sri Lanka are poor land use planning, regular damage to crops and dwellings by elephants, reduction of elephant habitats, villagers exploiting jungle products, poor organisation by farmers for protection of crops and property, dangerous crop protection measures, farmers, lack of knowledge of elephant behaviour, present HEC mitigation practices, farmers' lack of awareness of the need to conserve elephants, inefficiency of conservation managers, and lack of data and research. In fact, it is necessary to extract the real causes for the elephants' seasonal invasion and its impacts for the long term sustainable management measures.

3.0. Materials and Methods

As per research methods, purposive sampling has been employed as one of the main techniques to collect data from targeted respondents in five villages who are involved in farming for more than twenty years and above forty years of age. Among the selected farmers thirty percent (30%) was selected as sample for questionnaire survey. Besides, eight (08) in-depth interviews with farmers using semi structured questions, six (06) focus groups discussions with victims of elephants' invasions were

conducted with farmers who consist of 4 to 7 in size. Moreover, two (02) key informant interviews with park officers and three (03) interviews with Jeep drivers were conducted during the months of August and December in 2016 and April in 2017. Particularly, the reasons why the above months were selected were that April is inter-monsoonal while August is dry and December is when Yala gets its most rainfall. Semi Structured In-depth Interviews were employed as the key data collection tool to extract information from farmers who were victimized by elephants' invasion in the study site as a chronic issue. Particularly, through questionnaire survey, in-depth interviews, focus groups discussions and the key informant interview the respondents provided in-depth information regarding lived experiences surrounding the park in fort of elephants, livelihood, their agony, response, decisions, actions and most importantly the main causes, the way and the views on the elephants' invasion and HEC. Further, researcher was able find the detail information regarding the park boundaries, farming areas, seasonal crops, farming inside the parks, grazing areas, elephant's entry to farmlands, crops raiding, elephant's attack, damages followed by elephant's attack and recommendations to mitigate the conflict. Secondary data also were collected from related institutes as well as articles. Descriptive statistical tools and percentage were used to identify causes for seasonal elephants' invasion to the Western villagers outside the Yala B-1.

4.0. Results and Discussion

4.1. Main Causes for Elephants' Invasion

According to the data analysis, there are various reasons for elephants to roam about such as genetic reason, annual routine, feeding on minerals from particular sources in the identified areas and seasonal climatic variation but there are some other reasonable reasons to make elephants roam about from one habitat to another and to invade into the agricultural lands and villages around the park. According to the data analysis, the most collective and very obvious factors for the elephants' invasion beyond the Western boundary of Yala B-1 have been recognized as follows:

- Over visitation and continuous high concentrated human activities in the Yala B-1 where they have been pocketed as the best option by the administrators.
- Choices of the high risk crops for agriculture in the neighbouring areas of the park are pretty much attractive to the Elephants, but are spatially and seasonally suitable to the area, which directs Elephants to invade crop lands.
- Elephants becoming aggravated to feed on rather ready-made crops in the field, grains in warehouses and food remains from garbage disposal areas as well as in the bins.
- As a habit and seasonal routine of certain adult male elephants are randomly used to invading beyond the boundary.

The figure1 below shows the main causes for elephants' seasonal invasion beyond the Western boundary of Yala B-1.

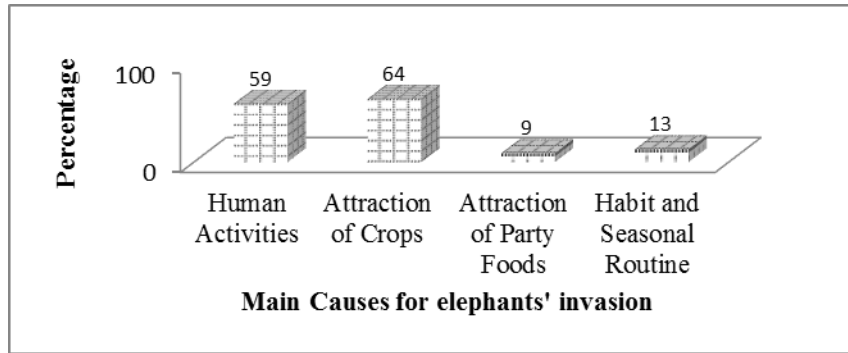


Fig. 1: Main Causes for Elephants' Invasion

4.1.1. Human Activities in the Park:

According to the analysis, human activities are identified among the most important factors in pushing elephants from Yala B-1 towards Western surroundings. Identified human activities in the Yala B-1 are shown below:

- Over and continuous visits,
- High concentration of Safari Jeeps,
- Certain Visitors' immoral behavior against elephants,
- Human encroachments to the park: poaching, hunting, setting fire, crop cultivation, cannabis cultivation, falling of trees, fire wood collection, allowing domestic livestock to graze and gem mining.

The figure2 below shows the human activities inside the Yala B-1.

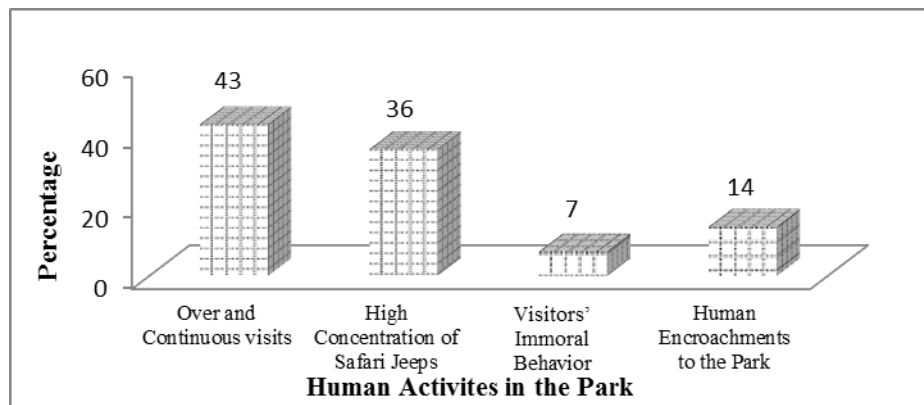


Fig. 2: Human Activities in the Park

4.1.1.1. Over and continuous visits: In the recent years especially from 2009 onwards, quite a number of foreigners visit the Yala B-1 from early November to late January. Among the locals, visiting natural areas and National Parks has become a trendy norm. In the Southern Wildlife Region, pilgrims on their way to Katarama and Sithulpawa are used to visiting the Yala and Udawalawe National Parks. Especially, during the school holidays in the months of April, August and December and also during the Katharagama season which falls in the month of July. However, at present Yala is jam packed with visitors daily. According to Miththapala (2015) Yala, popular with both local and foreign visitors, is over-visited. One third of all visitors to national parks flock there, causing traffic

jams at the entrance to and fro within the Block-1. 43 % of the respondents claimed that this over-visit creates chaos resulting in agony, elephants' attack and invasion out of the park.

Moreover, Yala B-1 has been recognized as one of the most visited National Parks in the recent past. Recent years of 2014, 2015 and 2016 have become record breaking years and it continues to be increasing year by year. Almost all the visitors' target is to have a closer look especially at elephants and leopards. However, during the field surveys it was noticed that from dawn to dusk, elephants' entire daily routine including feeding, roaming and bathing seems to happen in front of the jam packed visitors' claps, snaps, hand waves and shouts. According to the analysis, due to over visit, elephants are trapped, anguished, disturbed and nerved that force them come out of the park to find calm and quiet habitats to live their natural way of life but they don't and wouldn't find it too. Instead, they find readymade tasty, nourished food but at the same time they have been victimized of chasing of villagers with dangerous techniques outside the Western boundary of Yala B-1. As a result, elephants have been becoming vulnerable and motivated towards rudeness. Such human activities direct the elephants to invade beyond the Western boundary of Yala B-1.

4.1.1.2. High Concentration of Safari Jeeps: In the Yala B-1, safari jeeps are common and most suitable mode of travel inside the gravel amorphous park' tracks. Their huge wheels and high elevated seats give visitors an opportunity to safer views, both closely and in distance at elephants. Besides, the driver and the guide are used to bringing the visitors towards proper directions to the hotspots of the park to view elephants and also give explanations. Yala B-1 is very popular due to high concentration of leopards and high possibilities of closer look at elephants and their herds.

According to the analysis, from dawn to dusk between 40 and 50 Safari Jeeps continuously march passing with full of local and foreign visitors to the Yala B-1 are obviously seen. At once around 10 to 15 jeeps enter the Yala B-1. According to a Safari Jeep driver, between 150 and 175 are engaged in Safari based on a routine. However, according to the entrance office of Yala B-1, at present around 600 safari jeeps are registered in Yala B-1, but allowed around 150 to avoid over-crowding of the Block. In some occasions, safari jeeps experience traffic jam in Yala B-1. However, continuous march pass of safari jeeps makes lots of dust along the gravel tracks, their sudden speed ups and stops with engine switch on producing noise, emission and heat which are unbearable and irritable for elephants and other species. At present, safari jeeps are part and parcel of Yala B-1. 36% of the respondents claimed that high concentration of Safari Jeeps pushes the elephants from the Yala B-1 towards Western surroundings. However, quite a number of youths close to the Yala B-1 are employed as jeep drivers. There is a serious concern that if the numbers of jeeps are restricted, many would lose their jobs and this would contribute to make these drivers engage in poaching activities in the park.

4.1.1.3. Certain Visitors' Unpleasant Behavior against Elephants: According to the observation, discussions with jeep drivers and park officers, most of the visitors when they happen to have a closer look at a single elephant or a herd they tend to wave their hands or some objects and almost all the visitors make this opportunity to take photos with flash. Most of the youngsters tend to make a kind of noise towards elephants. Besides, very few throw small stones or some objects towards elephants

which is banned. According to the analysis, 7% of the respondents claimed that repeating of such human practices on a daily basis push elephants outside the park randomly and directly this makes rooms to invade crop fields. The figure3 below shows the certain visitors' behavior against elephants in the Park.

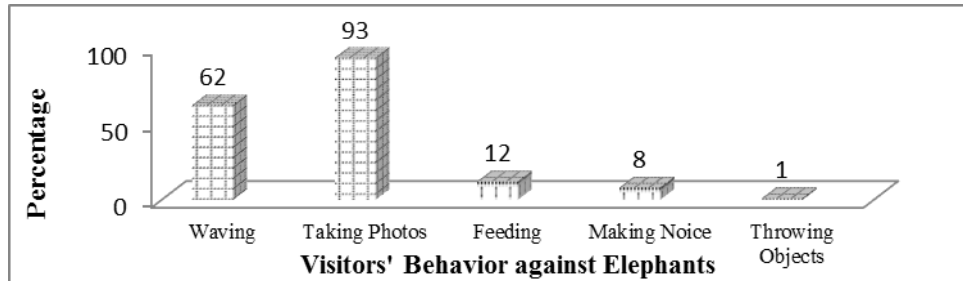


Fig. 3: Visitors' Behavior against Elephants.

4.1.1.4. Human Encroachments to the Yala B-1: According to the analysis, encroachers place continuous burden especially on the elephants inside the Yala B-1 with their unauthorized practices such as breaking the boundary, poaching, hunting, crop cultivation, cannabis cultivation, falling of trees, allowing domestic livestock to graze and burning some areas for the purpose of providing grazing during the dry season.

According to the analysis 14% of the respondents claimed that the foregone anti elephants human practices in the Yala B-1, drive elephants out of the park for their safer, calmer and freer survival. Although they find the tastiest readymade food outside the park, they have to fall victims to human attacks. In return, elephants' attacks are also common in the site. Still, some innocent elephant calves are trapped within the park during the drought and they starve and become vulnerable and fear to come out due to human activities.

Hunting: According to the data analysis, hunting is a large scale hidden practice in the Yala B-1. Besides, it has been revealed that hunting is one of the livelihoods for some of the villagers in the Western surrounding of the park for years. During interviews, it is not denied by the respondents that villagers are not engaged in hunting, incidentally it is agreed upon and in some occasions it is not answered. Hunters are used to encroaching the park breaking the fences or creeping within the space between two fixed wires on the posts horizontally. Electrified fences have been put up only in the selected areas of the boundaries of the park. According to the analysis, villagers mostly hunt the deer, cranes, rabbits, and elks and sell them to the local tourists at very high price through the back door transaction. According to the analysis, hunters encroach the park during the day and night and shoot at any large bodied living being that they come across, especially when they think that these creatures might attack them. However, they do all of these for fear and getting away from it. Within this context, when hunters happen to meet an elephant while hunting they shoot them, otherwise the elephants would attack the hunters. According to the analysis, 64% of the respondents claimed that chronic hunting practices are one of the main reasons to direct elephants to invade the agricultural fields.

Farming inside the parks: Farming inside the park is identified as an unbelievable factor that causes elephants' invasion outside the park. Scattered farming inside the Western adjacent of the Yala B-1 also very obvious. According to the analysis, poverty, lack of permanent livelihood, lack of water for agriculture and shortage of land are forced adjacent villagers to engage in farming in the park. However they are used to growing grains such as cowpeas, gram and green gram that are not much attractive for elephants.

During the discussion, it was revealed by the villagers that they had to struggle with the officers on and off. But the officers do not try to destroy the crops, maybe for the reason that they fear the particular group of farmers or for the sake of kindness. During an interview, it was told by an old farmer that they never go to the park at night but before the dusk elephants come to the crop field in the park and try to destroy these crops. Further, he explained that at these circumstances, they use firing crackers. According to the discussions and interviews, farmers do not consider that farming inside the park is an illegal activity. However, clearing or setting fire on shrubs for the purpose of farming in the elephants' habitats and chasing them away from their own areas by using irritable and hurting methods directly push elephants outside the park to feed.

Cannabis Cultivation (Ganja): According to the analysis, villagers who cultivate cannabis have found the park as the safest place but the only threat for them is wild animals specially elephants. Most of the cannabis farmers are centre-spot their field in the deep part of the park surrounded by the forests. These farmers encroach to the park at dark hours too. In addition to clearing forest cover, encroachers set fire to prepare the field for cannabis cultivation, which is occasionally left unattended causing extensive damage to the ecosystem. Based on the field survey, it has been recognized that except for villagers, numbers of outsiders also invest with the help of villagers in cannabis cultivation and which constitutes the major source of income for the households. Besides, investors, earn high marginal profit from cannabis. Therefore, investors and the farmers are involved in cannabis cultivation accepting any risk in practice. It was indirectly accepted by villagers that those who cultivate cannabis are always with some sort of guns and when they happen to meet wild animals especially elephants they shoot them. Accordingly, cannabis cultivation in the park is playing a crucial role to provoke elephants to invade agricultural areas outside the Yala B-1.

Illegal Felling of Trees: According to the analysis, it has been revealed that illegal felling of trees is a usual practice of some encroachers as their livelihood in the park. Generally, teak and some other dry zone trees are high in demand in Sri Lanka. As a result, the businessmen with the support of encroachers and other influential parties fell trees in the park for the purpose of lump sum of money. However, an officer stressed that they do not have sufficient numbers of officers to prevent this. Besides, those who engage in these illegal activities are ruthless and ruffians. Illegal felling of trees at night is also identified as one of the significant human activities and 11% of the respondents claimed this activity pushes elephants to invade agricultural crops outside the park.

4.1.2. Attraction of Seasonal Crops outside the Yala B-1

Owing to human activities against elephants and lack of carrying capacity inside the park during the dry seasons, and attractive smell from seasonal crops outside the park and also their usual natural seasonal movement and routine outside the park, a combination of all these factors push elephants to invade the farming plots outside the Yala B-1. According to the observation and data analysis, within 50 to 300 meters from the park boundary they can find the varied tastiest, wide range, lump sum, most nourished, fruitful, easily harvestable readymade food such as wood apple (*Limoniaacidissima*), maize (*Zea mays*), banana (*Musa paradisiacal*), sugar cane (*Saccharum officinarum*), manioc (*Manihot esculenta*), paddy (*Oryza sativa*), and vegetables. The figure4 below shows the elephants' preferable food outside the Yala B-1.

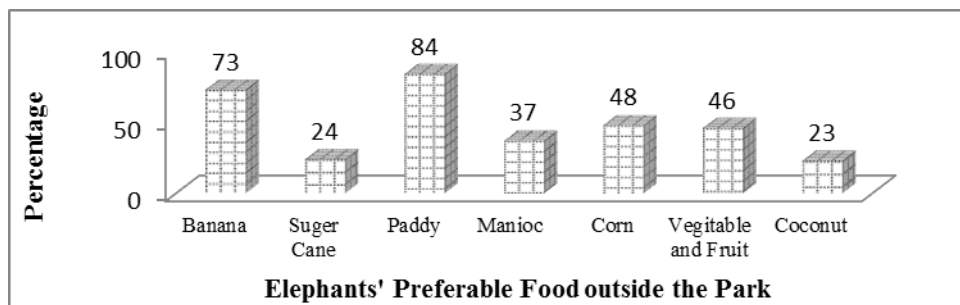


Fig. 4: Elephants' Preferable Food outside the Park.

According to the analysis, at present most of the adult elephants become very familiar with readymade food outside the park and whatsoever human attack and pressure outside the park, one way or the other they tend to come to the farming areas as well as to the warehouses to feed. A servant, in the 'leopard corridor Yala restaurant' located 3.5 kms from Yala B-1 entrance shared as follows: Once a family came to the restaurant in a car and stayed in the restaurant. They kept some wood apple which they received from a relative in Thissamahara among other things in the dickey of the car without considering the servants of the restaurant. Unfortunately, during the dusk, a wild elephant knocked and crashed the dickey and tasted the wood apple in front of them. Further, he said and showed that at present, the restaurant is secured by self-financed solar sourced electric fence around.

4.1.3. Feeding Habits of Food Remains from Garbage Disposal Areas and the Bins

According to the analysis, from the recent past, with the boost of tourism towards National Park and spending nights close to the park in the cabanas, huts, bungalows, hotels and rented houses are a common sight. In these places people tend to have late night parties and share fried rice, koththu and biryani in lunch sheets, regifoam and hardboard packs. Unfortunately, some elephants adapt as a habit to feed the remains of party food from the bins and disposal areas near by the Yala B-1 main entrance. Similarly, around 2 to 3 wild elephants nearby the entrance of Yala B-1, find the remains of party food for the last 4 to 5 years and at present around 10 to 15 elephants become familiar with remains of party food in this area. According to the discussion, two ladies in the closest house to the entrance of Yala B-1 expressed that feeding on remains of party food has been becoming familiar to some five adult male elephants. Once, around 20.00 hours at night an elephant used its trunk and picked up a packet of string

hopper koththu through the space between roof and the wall of the kitchen. Further, they said that elephants are a common sight nearby the bins as well as the renting cabins and hotels especially during the night.

According to the analysis, between 15 and 20 elephants come from 19.00 to 01.00 to the surroundings of the park in order to feed and 85% of them are adult males. Once they come to the farming areas', chasing them into the park is found to be very difficult by using any sorts of efforts and it mostly ends up with clashes between both human and elephants. This situation is very obvious during the dry season from March to early September but higher in May, June and July. The figure 5 below shows the seasonal variations of elephants' Invasion beyond the Western boundary of Yala B-1.

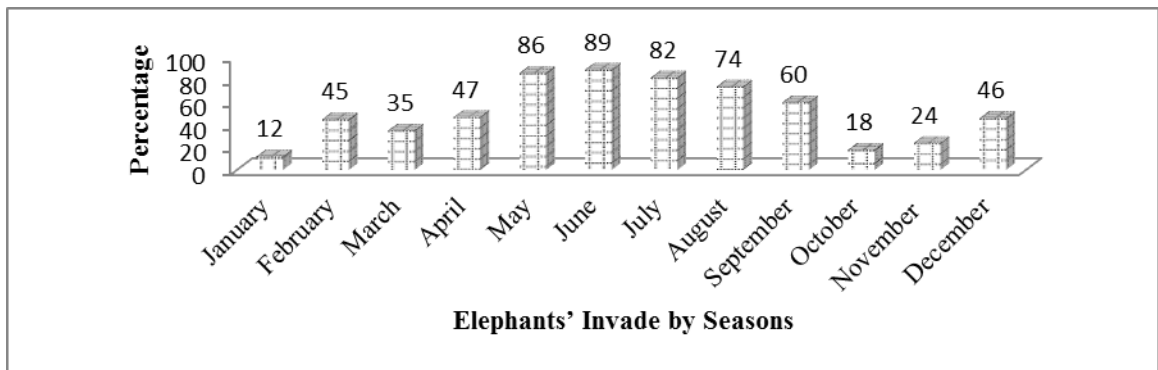


Fig. 5: Elephants' Seasonal Invasion

According to the findings, elephants' invasion into the Western villages of Yala B-1 is comparatively high during May to September but higher in May, June and July. The invasion is rather high during the February as a result of dryness in the site. During the September, Yala B-1 is closed for visitors due to drought, high roaming trend of elephants in and outside the park as well as to avoid elephant's attack in the park. Elephants in the Yala tend to roam more freely during May to September as a result of drought as well as human pressure in the park. However, during November, December and April the invasion beyond the Western boundary of the B-1 is high due to human pressure including over visit and high concentration of Safari Jeeps.

5.0. Conclusion

Continuous high concentrated human activities in the park, seasonal attraction of crops outside the park, feeding habits in the crop field, grains in warehouses and food remains from garbage disposal areas and in the bins and their usual seasonal routine are identified as main factors for elephants' seasonal invasion beyond the Western boundary of Yala B-1. Aroma of seasonal attraction of crops outside the park, human activities inside the park are playing a dominant role for the elephants' invasion towards crop fields. The invasion is very obvious during the dry season from March to early September. Besides, it has been identified that invasion high in May, June and July. It is important to find a better solution for the foregone continued invasion and conflict through practically implementable, long term, multi-dimensional and sustainable measures.

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6.0. References

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