

Elephant Drives in Sri Lanka

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Introduction

Elephant drives are a carry-over from the colonial era when ‘game drives’ were conducted to chase wildlife towards a sportman’s guns. Drives were also used to chase elephants into ‘keddahs’ which are stockades constructed for capturing elephants (Jayewardene 1994a). In more recent times, elephant drives have been carried out to remove elephants from landscapes. Such drives have been conducted in Sri Lanka for decades (Jayewardene 1994b). Few elephant drives have been adequately monitored and their impact on human-elephant conflict (HEC) and elephants remain largely unknown.

Home ranges

Each elephant has an area where it lives, which is known as a ‘home range’. Elephants in a herd will have the same home range. The home range of an elephant in Sri Lanka is around 200 km² on average.

Types of elephant-drives

Elephant drives may be large, medium or small scale.

Large-scale elephant drives cover hundreds of km². They usually drive elephants tens of km and last many months to over a year. The objective of large-scale drives is to eliminate elephants from an extensive landscape of up to a few hundred km². Therefore they aim to remove elephants from their entire home ranges.

Medium-scale elephant drives last a few days to weeks and drive elephants a few km, hence usually chase elephants around within their home ranges. In some cases they may target eliminating elephants from an area by restricting them to part of their home range that lies in a protected area.

Small-scale elephant drives differ from large- and medium-scale drives in that they are incident related and undertaken to chase away elephants intruding into locations such as settlements and crop fields. In most cases people themselves chase the elephants away from such situations by confronting them. Where elephants cannot be chased away by people, the DWC is called upon to do so. Small-scale elephant drives should more rightly be termed ‘elephant chasing’ as they are fundamentally different in intent and extent, although the methodology used is the same.

What is done in an elephant drive?

In large- and medium-scale drives, up to hundreds of people go into the forests where the elephants are (usually areas under the Forest Department) and create a massive disturbance by shouting, lighting thousands of firecrackers and shooting at the elephants with shot guns to make them move out of the area. This goes on day after day, subjecting elephants to intense sustained conflict.

In the past couple of decades, large-scale drives have been combined with the erection of temporary electric fences. The drive starts at one end and as each section of the drive area is 'cleared', a strip of forest is bulldozed and a temporary electric fence put up so that the driven elephants cannot backtrack. Water holes in the drive area are guarded so that elephants cannot find water there and have to move out of the area. Finally the elephants are driven into a Wildlife Department protected area, through an opening in a permanent electric fence on the boundary, which is then closed.

Who are the elephants that can be removed by driving?

In elephants, the females and the young live in herds and adult males are solitary. Most HEC incidents and almost all human deaths and injuries, and damage to property are caused by some of the solitary males. They are also responsible for most crop raiding incidents, especially where elephants raid in spite of crop guarding.

Problem-causing aggressive adult males are almost impossible to remove by driving and therefore remain in the drive area. The elephants that are driven out and confined in protected areas by elephant drives are mostly the females and young that cause little conflict. However, not even all the herds are removed by drives. For example, in the Walawe Left Bank drive conducted in 2005–2006 to drive elephants in the Weerawila-Bundala-Hambanthota-Madunagala-Ridiyagama-Mattala areas to the Lunugamvehera National Park, counts conducted before the drive concluded that there were 106 elephants in the drive area (Anon 2004). When the drive was conducted, 225 elephants were driven into the park. Estimates conducted after the drive, based on individual identification and tracking of elephant herds, found that there were more than 400 elephants still remaining in the drive area after the drive (CCR unpublished data).

While elephant drives have been done for many decades and continue to be conducted throughout elephant range, they have not been able to eliminate elephants from any drive area. HEC is still a major issue in all areas where drives have been conducted and drives continue to be repeated in such areas.

Impacts of drives on HEC

Elephants, by becoming the largest animals on land through evolutionary time, have escaped physical challenge by other species hence tend to respond to aggression by aggression. As a reaction to the intense and extended conflict elephants are exposed to during drives, all elephants, including the solitary males and even herds, that are left behind, are likely to become more aggressive towards people. Elephants that are repeatedly exposed to drives also become refractory to being driven. Consequently, elephant drives result in escalation of conflict in the drive areas. One of the main

reasons for Sri Lanka to have the highest level of HEC in the world, are the decades of elephant drives that have been conducted.

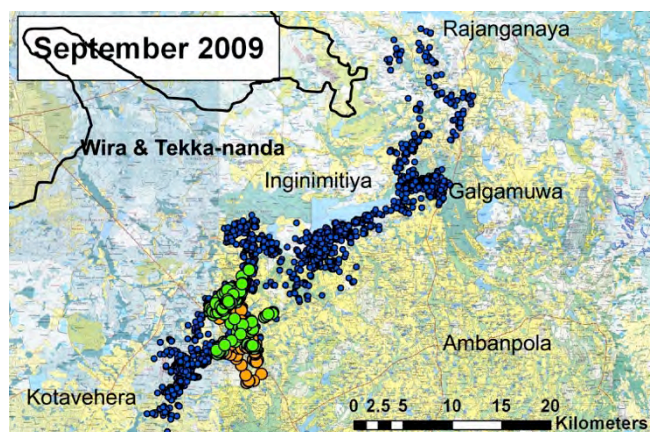
An assessment of drives done from 1974 to 1993 found that in eight of nine drives, some or all driven elephants returned (Jayewardene 1994b). It is interesting to note that even in 2020 there are still elephants and HEC remains a major issue in all the drive areas assessed by Jayewardene (1994b). Surveys of HEC, conducted in the south and northwest of Sri Lanka after drives, have shown that HEC did not appreciably decrease after the drives. In fact, a high proportion of villagers in drive areas stated that HEC increased after drives (CCR unpublished data).

Driven elephants tracked by GPS

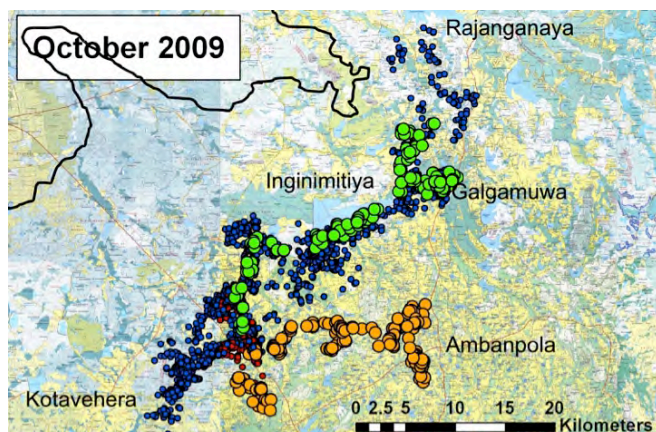
Monitoring of GPS-collared elephants subject to elephant drives has confirmed that problem-causing males cannot be driven out of an area and that even some herds remain in the drive area after a drive or come back to it.

Wira and Tekka Nanda in the Northwest

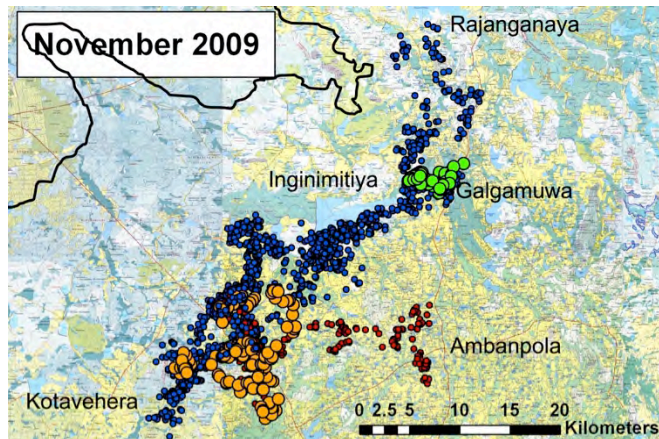
Two elephants subject to drives in the northwest were tracked with GPS collars. The large green circles in the maps represent data for 'Tekka Nanda', a collared female that belonged to a group of about 50 elephants. Previous tracking data from Tekka Nanda is represented by the blue dots and show the ranging pattern of the group. The male 'Wira' was collared a few weeks before the drive and orange circles represent his new data and red dots the older locations.



Both the herd and Wira were in the southern part of the herd's home range when the drive commenced in late September. The thin black line denotes the Tabbowa electric fence. The elephants were to be driven north and put inside the fence at its eastern end.



In October Tekka Nanda and the herd were driven along their home range but Weera escaped the drive and went east into a much more developed area, creating conflict there.



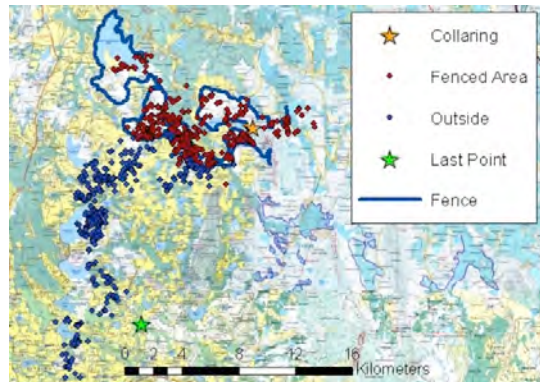
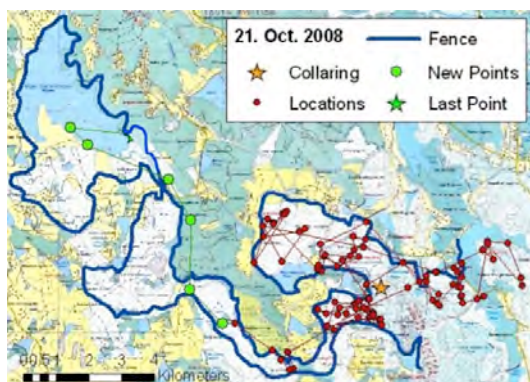
As the drive continued in November, driving the herd to the north, Wira came back to the Kotavehera area.

GPS tracking has also shown that even herds that are successfully driven may return to the drive area. For example, as Tekka Nanda's herd could not be driven inside the Tabbowa fence in 2009, the drive was repeated in 2010. This time they were driven inside Tabbowa, but after only a few days broke the fence and returned to their normal home range.

Sita in the Northwest

Another drive conducted in 2009 drove elephants to the east of Galgamuwa to inside the Resvehera fence. A female (Sita) from a herd driven in was collared just after the drive. After a few weeks the herd broke through the fence and came back to their normal home range.

In 2010 when the drive was repeated, Sita and her herd could not be driven inside the fence as they were refractory to being driven and eventually the drive was abandoned.



Sita just after the drive (left) and a few weeks later (right)

Impacts of elephant drives on elephant herds

Monitoring of elephant herds that were driven from their home ranges into protected areas and confined there by electric fences has shown that many of them, in particular the young, die of starvation (Fernando 2016). This fate befalls not only the elephants that are driven in but also elephants that were resident entirely within the protected area.



Elephants starving inside protected areas after being driven in

Elephants driven into protected areas and confined to them by electric fences do not appear to adapt to the conditions even over the long-term. Therefore elephant drives are extremely detrimental to elephant conservation. Following are two case studies of large- and medium-scale drives.

Case studies of drives

Lunugamvehera drive (large-scale drive)

In conjunction with the Walawe Left Bank Development Project, it was decided to drive the elephants in the Weerawila-Bundala-Hambantota-Madunagala-Ridiyagama-Mattala area to the Lunugamvehera National Park and confine there by an electric fence (Anon. 2004). Prior to the drive, habitat enrichment was undertaken in the Lunugamvehera Park with the rehabilitation and construction of 12 tanks, removal of non-palatable species for elephants and fodder cultivation, and also removal of cattle (Anon. 2004; Mahaweli Authority of Sri Lanka 2005).



End of the Lunugamvehera elephant drive

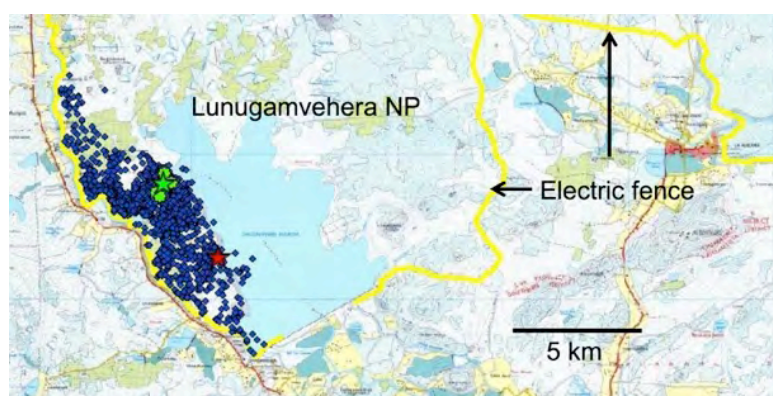
The drive took one and a half years to complete. On September 20th 2006, the drive brought the elephants to the park boundary but the elephants refused to cross the Weerawila-Thanamalwila road into the park. For three days they stayed there without access to water, but still they would not cross. Finally, the elephants had to be physically pushed into the park using bulldozers.

At one point a 107 elephants crossing the road to the park were photographed. A normal sex and age ratio predicts the presence of around 30 adult males in a population of 107 elephants. However, there were only 5 adult males. Presumably the 'missing' adult males were problem-causing individuals and could not be driven out, again confirming the difficulty of removing problem-causing elephants by drives.

Soon after the drive was completed, a female (Disala) from a driven herd was collared inside the park. Disala was in a herd of 12 at the time of collaring.

After 3 years, Disala's home range inside the park was only around 20 km², whereas it should have been around 200 km². The herd did not explore the park but stayed close to the fence in the direction of their home range. They over-used the area and suffered the consequences. At the end of 3 years, there were only 5 members left in Disala's herd, the rest presumably having died.

Many deaths of elephant calves and females were recorded inside the park after the drive. Current estimates of elephant numbers in the Lunugamvehera National Park (2020) suggest the presence of about 250–300 elephants, which probably approximates the number that was there before the drive. Since 225 elephants were driven in in 2006, there should be around 500. Presumably the rest died.



GPS tracking data for Disala for 3 years

Yala elephant drive (medium-scale drive)

The area bordering the Yala National Park Block I is under the Forest Department and extends from Kirinda in the south to Wedihitikanda in the north. It is approximately 150 km² in extent. The Nimalawa Sanctuary of the DWC is also situated within this area. People conduct chena cultivation in parts of this area from October to February during the north-east monsoon. Around 250 elephants used the area intensively during the rest of the year, which provided them with dry-season forage. Most herds moved into the park when chena cultivation commenced and returned in the dry season after the farmers left.

In 2000–2001, an electric fence was constructed between the Forest Department area and the park, and the elephants driven into the park. However, in subsequent years some herds returned to the Forest Department area in the dry season through gaps in the fence. In 2004, the elephants were driven in again and the fence gaps closed. GPS tracking of herds driven in found, that they did not expand their home range into new areas. Similar to Disala in Lunugamvehera, the herds driven in over-used the area close to the fence, particularly in the dry season when they normally went out to the Forest Department areas.

Two herds that were driven-in were tracked with GPS collars. A juvenile male Kavan was collared in the first herd and an adult female, Biso-Menike in the second herd. Both herds used to go out into the Forest Department area during the dry season.

Kavan's herd in addition also used some of the Forest Department area where there was no cultivation during the wet season. They lost approximately 75% of their home range as a result of the drive and being fenced in. The year after the drive, Kavan was found stuck in the mud in the Bembawa tank unable to extricate himself because he was so weak. He was dragged out by DWC officers but collapsed on the tank bed. For three days he lay there and was fed by CCR and DWC officers. He consumed over 50 kg of vegetables such as string beans and pumpkin per day. He was also given intravenous saline and nutrition by DWC veterinarians but died after three days.



Kavan after he was extricated from the Bembawa tank inside the park

Biso Menike's herd used the Forest Department area mostly in the dry season and lost around half its home range as a result of the drive and being fenced in. Biso Menike was pregnant at the time that the herd was driven in and gave birth to her first baby one year after being confined to the park. At the time of giving birth she was in very poor body condition. Two years after being born, the baby died. She gave birth again in 2011. This baby died after one and a half years. Biso Menike has not had any calves since then up to now (2020).

Monitoring the health and demography of elephants in Yala Block I (CCR unpublished data) showed that many individuals of the herds driven in and also of the herds that always ranged entirely inside the park, lost body condition and suffered and some died from starvation. Age of first reproduction and inter-birth interval of some females increased. The growth of some juveniles was retarded and they became stunted. For example Chitra at 10 years of age was the size of a 4 year old. These parameters indicate resource deficiency from the carrying capacity being exceeded, by preventing the herds going out to the Forest Department areas in the dry season.



Biso Menike before (left) and after (right) the drive

Unlike in Lunugamvehera, where the herds were completely driven out of their home ranges, in Yala the herds driven into the park lost only part of their home range. But it resulted in severe repercussions on those herds, as well as the herds that had home ranges entirely inside the park.

Monitoring of the Gemunu herd, which always ranged entirely inside the park, has shown that after the drive and closing of the fence, many juveniles died of starvation. Almost every female in the Gemunu herd has lost calves, some having lost up to three calves. Although the drives were done from 2000–2004, the situation has still not come to a resolution and juvenile deaths were recorded even in 2020.

Impacts of drives on the economy

Continuation of drives and attempting to limit elephants to protected areas will increase HEC and therefore cause greater economic loss. Additionally, the loss of elephant herds due to exceeding the carrying capacity will have a major impact on the elephant populations in the protected areas. A significant proportion of park elephants also use outside areas when they are not being cultivated.

Driving the herds into parks and restricting them there will not have an impact on HEC, as the problem causing males remain in drive areas. However, the resulting loss of herds, will have a major impact on revenue from elephant-viewing based tourism. Currently Sri Lanka is the best place in the world to see Asian elephants in the wild. However, at present the fact is little known and not marketed at all. Proper marketing of elephant-viewing based tourism can bring in very significant revenue to the country.

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Juveniles of the Gemunu herd in Yala that have died since the drive in 2004