Project proposal for mitigating HEC in Gonaganara - Buttala Divisional Secretariat

All For Nature B. V., Eco Team. (Pvt.) Ltd. & Sri Lanka Wilderness Foundation.

Human-Elephant Conflict (HEC) is one of the biggest environmental and socio-economic crises of rural Sri Lanka. Annually elephants cause over $10 million of crop and property damage and in retaliation, the farmers kill the elephants.

Since 2008, farmers have killed approximately 225 elephants and elephants have killed an average of about 60-80 people annually, most in their own villages and fields. The field studies and data gathered over the years by various government and non-government bodies reveals that the problem is only increasing over time. No sustainable approach has been taken so far to mitigate the issues.

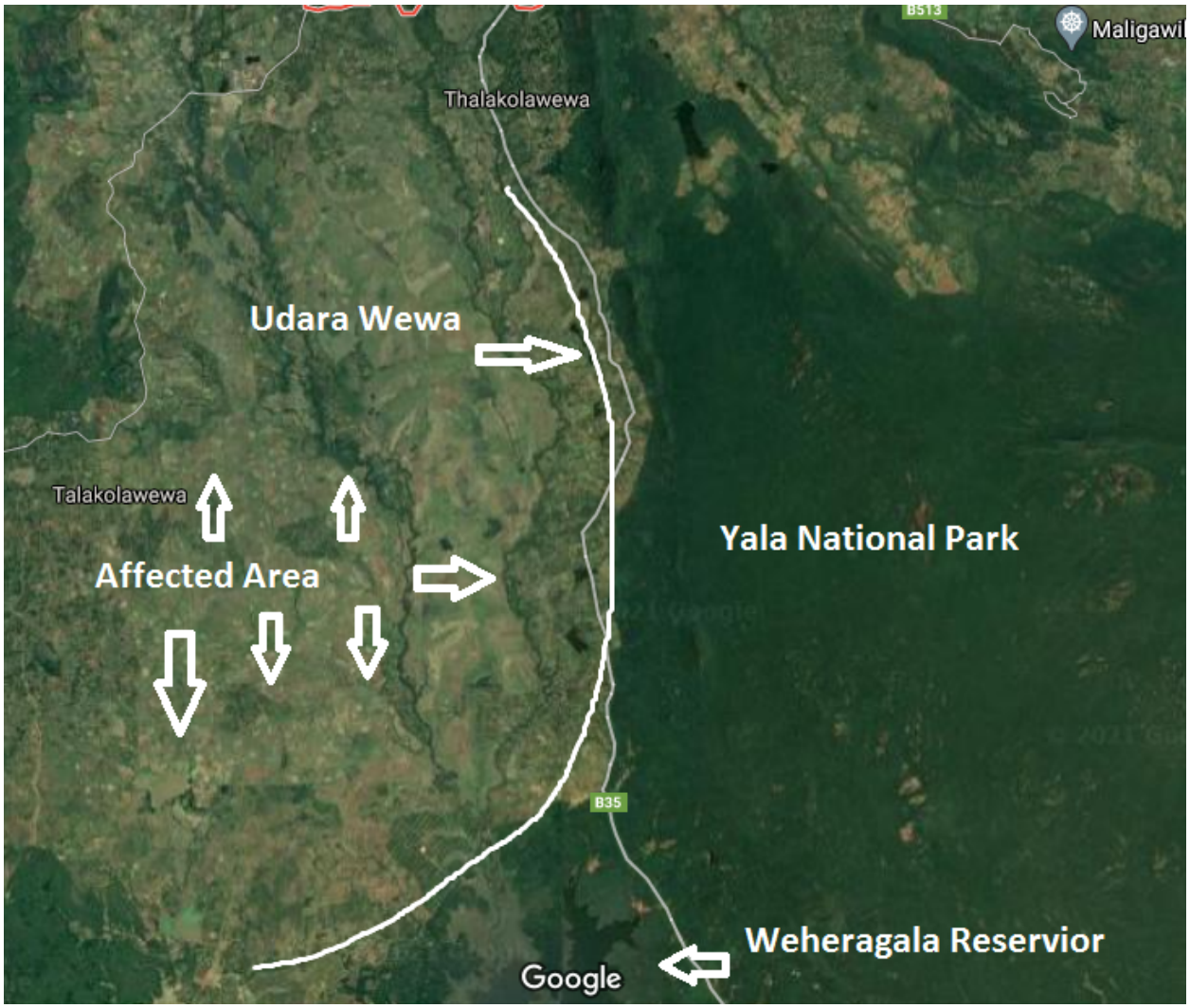
The methods that have been used thus far to find a solution, have been implemented without even trialling out any pilot projects. Hence, these are failing massively due to the lack of compatibility to the area. Also, the root cause - reviving the elephant's food source within the National Park area through sustainable forest management - has never been looked at in any of these projects and that has become the main reason for these HEC mitigation projects to fail.

After interviewing the villagers, the Assistant Government Agent for Buttala - Mr. R. M. R. S. Thilakarathane, the Head Wildlife Officer of Walliamma Ara Office - Mr. Chaminda Attanayake and taking all aspects and recommendations into consideration, we are proposing the following to be implemented to provide a lasting solution for all.

Proposed Pilot Project Area: Gonagahaara - Buttala Divisional Secretariat

Number of affected Families: 500

Affected Area



Gonaganara is a fourth-order administrative division and is located in the Uva Province - Buttala Divisional Secretariat. The estimated terrain elevation above sea level is 108 metres.

The above picture shows the aerial view of the affected area. To the right, you can see the Yala National Park and on the left a man-made tank called Udara Wewa. The main pilot project area is in between these two landmarks.

Current Situation






Current Mitigation Methods

1. Elephant watch tower
2. Road with mobile patrol
3. Three-wire elephant fence
4. Trench
5. Two-wire electric fence
6. Bio fence (with Flax or Linseed plants)
7. Hanging fence

These methods are used to cover an area of 16.5 KM from Manik Ganga (a nearby river) up to Ayakapolla and Demodara. Even though all these methods were implemented, the HEC still continues due to the fact that none of these methods are foolproof and elephants are adapting and learning as to how to overcome all these obstacles.

For example :

- Watchtowers are set up 1 KM apart. But the elephants have learned to avoid them by crossing in-between the towers and also avoid Patrol timings. This takes place despite 30 ground and 20 security staff being on duty assisted by 6 modified tractors. The watchtowers are also subject to occasional attacks.

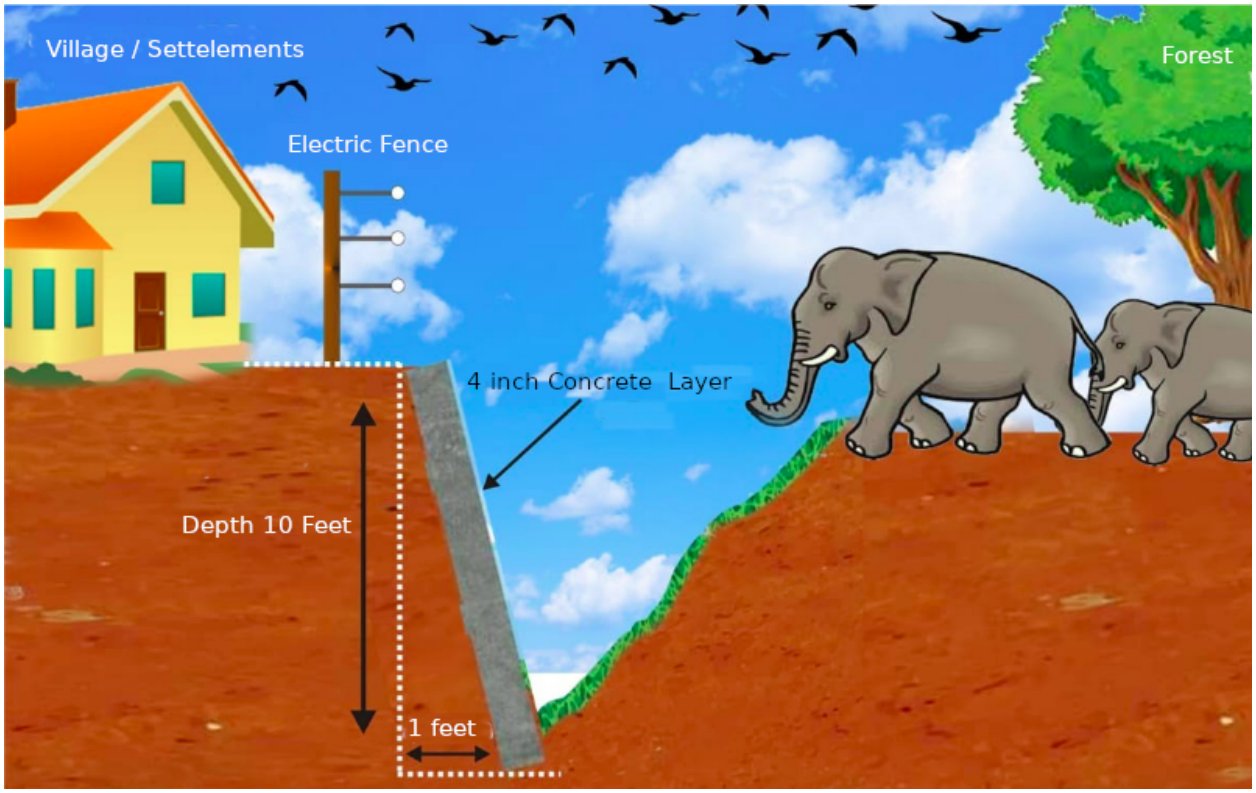
- Elephant fences and the electric fences are broken down using dead branches to avoid getting an electric shock.

- Trench sides are broken down and horizontal pathways are constructed to climb up the trench wall.

- The Bio Fence is proving to be ineffective. Citrus plants require to be implemented in long stretches with a width of 100 metres to be effective. But this is not possible due to the geography of the area. Also, rodents such as porcupines which are abundant in the area tend to destroy plants at young stages. Since it is impractical to care for plants on this site, this solution is also not viable.
- The Bee Hives which were introduced to the area, are populated by Sri Lankan Honey Bees and they are not as aggressive as the African species. So this method has also failed in the area.

Considering all this information, we propose the following method to stop HEC in the area once and for all. Initially, a pilot project will be run to assess its success and thereafter it will be implemented with government aid for the rest of the area.

Proposed Method



Excavate the existing trench to increase the depth. Reinforce the wall towards the village-side with concrete 4 inches thick to prevent elephants from climbing up.

The above method is inspired by the Z-D Canals that are used to irrigate the country. When an elephant falls into one of these canals, it cannot get out without human intervention. The same structure is proposed to be followed here, and by concreting one side of the wall, we are inevitably focing the elephant to climb the only wall it can which will send it back towards the forest.

The video link below illustrates this scenario. This particular incident occurred in March 2019.
Link : An elephant stuck in a canal saved by humans

Estimated expenditure for the 1st 100 metres

Item	Unit Price	Amount
Trench digging (Excavator machine - machine hours)	25 x 5,000	125,000.00
Plywood boards	115 x 2,800	322,000.00
Cement	320 x 1,000	320,000.00
2 x 2 Mesh net (Iron)	45 x 4,750	213,750.00
Sand	13 x 12,000	156,000.00
Chip rock	18 x 8,300	149,400.00
Labour (human days)	120 x 4,000	480,000.00
Miscellaneous		100,000.00
Total		**1,866,150.00**

Estimated expenditure for the first kilometre

Item	Unit Price	Amount
Trench digging (Excavator machine - machine hours)	210 x 5,000	1,050,000.00
Plywood boards	250 x 2,800	700,000.00
Cement	3200 x 1,000	3,200,000.00
2*2 Mesh net (Iron)	450 x 4,750	2,137,500.00
Sand	130 x 12,000	1,560,000.00
Chip rock	180 x 8,300	1,494,000.00
Labour (human days)	1200 x 4,000	4,800,000.00
Miscellaneous		500,000.00
Total		**15,441,500.00**

Alternative suggestions for places where trench digging is not possible

- Creating barriers using Iron spikes.
- Iron rod fencing using repurposed train tracks.
- Night patrolling.

Direct advantages of the project

1. Reduced maintenance cost - since no daily maintenance is required. Expenses for elephant repellent and patrols can be minimised.
2. No crop damage, property damage or loss of human lives. Therefore no government compensation needs to be paid.
3. Poachers and loggers will not be able to enter the forest.
4. Cattle won't be able to enter the forest, so food sources for elephants will be protected.
5. Permanent solution for HEC in the area.

Sustainable forest management - Ensuring the availability of food sources for Elephants within the Park

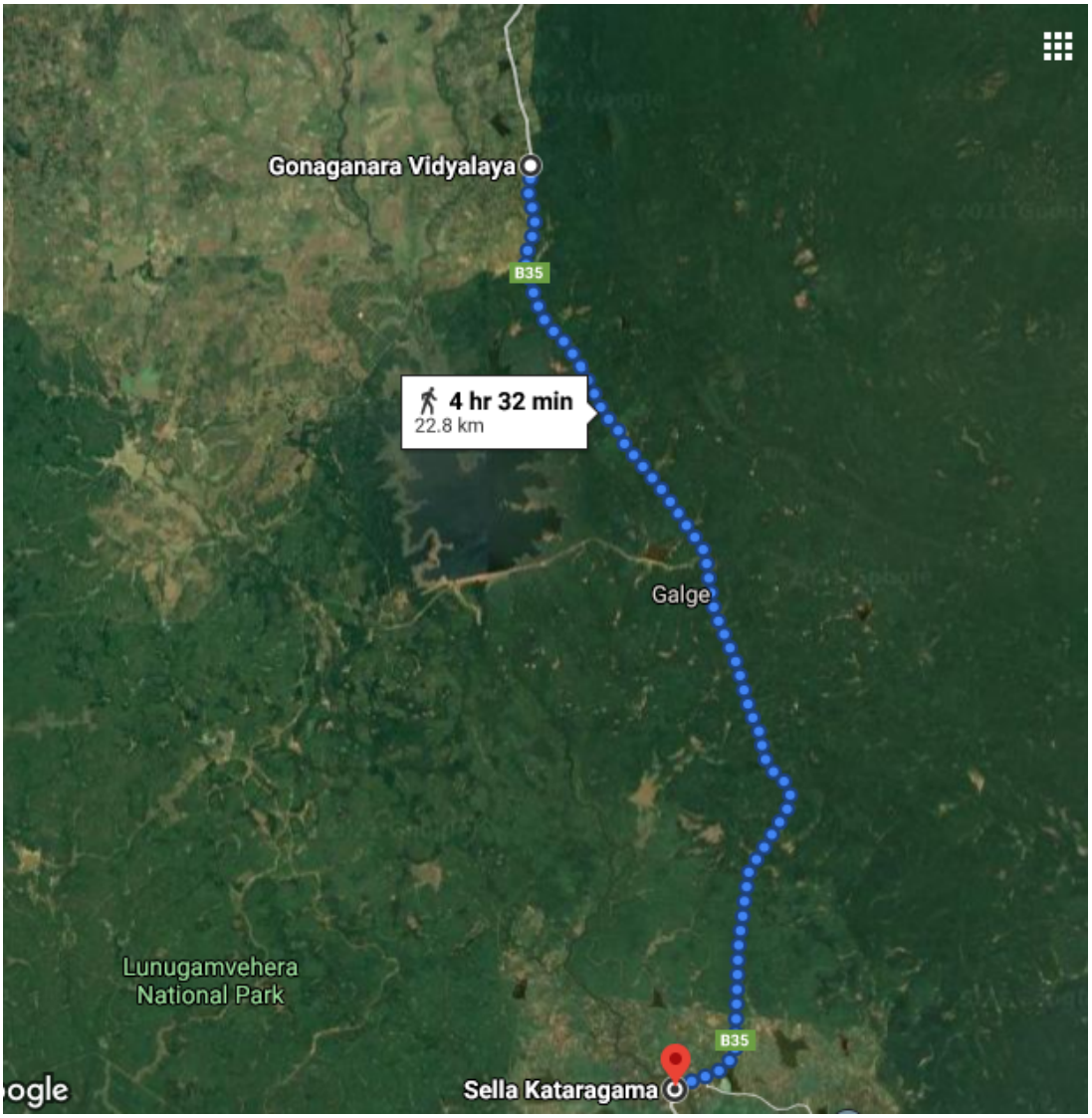
While securing the borders of the National park, it is paramount that food and water sources be established for the elephants in the park area. The steps below should be undertaken to ensure that this target is met.

- The area around the Weheragala tank to be cleaned and all the invasive species to be removed and converted to grassland which will sustain wild elephant herds.

- Invasive species to be removed along the Galge road for a 22 km stretch with a width of 50 m, from Gonagan Ara RD junction to Sellakataragama road and converted to grassland as it was before.

  During the civil war period up to 2008, the sides of the roads were cleared as a security measure along the road. During this process the forest around the road was converted to a grassland and elephants started feeding on the new grass. This minimised the HEC in the area significantly. But now since the war is over , the process of clearing the area and removal of invasives has stopped and the elephants have lost their food source once again.

  Road Map



Difference of the old forest and the cleared grassland along the road which needs to be restored.

You can see the difference between the old forest and the new growth.

- The ancient tank system (Ellanga system) of the olden days from Ganaganara to be reconstructed to at least 50% of its full capacity.

Each white spot shown in the map is a man made lake and connected to each other through small canals. Restoring these will solve the problem of drinking water for elephants as well as other animals.

- Natural water holes to be renovated along the Sellakataragama service road to prevent elephants from coming to the village during the dry season in search of water.

The above (Sustainable Forest Management) is estimated to cost an additional LKR 1 Million.

Project Plan

We have received a donation of **LKR 610,000 from All for Nature - Netherlands** to start the project.

To collect the rest of the funds that are required, we are planning on starting an international fundraiser with a trusted website like “GoFundMe” (still under discussion) as well as other popular publicity avenues like Social Media.

Awareness programs are to be conducted with local expertise to aid the fund raiser and also to keep the villagers informed and safe until the project is completed.

The Government Officials are to be informed and the required permissions to be obtained. Financial and labour support will also be requested from them.

Collaborations with suitable wildlife organisations and university professionals (local and international) are to be sought to make this project successful. (Example : WNPSL, University of Sri Jayewardenepura, The Wild Elephant - Sri Lanka, etc.)

The ultimate objective will be to find a permanent solution to the HEC whilst protecting the wildlife and not to implement any temporary solutions which have little to no effect.

Proposed Timeline

The current plan is to complete this within **6 months**, however this is highly dependent on the Covid -19 situation and the success of the fundraiser program.

Information Source:

1. Field Visit done on 27/01/2021by Migara Perera, Nishanthi Kulathunga and Yasantha Kuruwitaarachchi - Employees of ET- Sri Lanka.
2. Preliminary study done by Mr. Chaminda Attanayake - Assistant DWC Ranger - Walliammarara DWC Office.
3. Divisional Secretariat - Mr. R. M. R. S. Thilakarathne - AGA - Buttala.

Photo Credit: Mr. Chaminda Attanayake - Wildlife Officer - Buttala.

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