

Final Evaluation Report

Your Details	
Full Name	Sanjoy Deb
Project Title	Design and Field Installation of Multiple Roadkill Prevention System Units under a Large Scale Wildlife Safety Initiative
Application ID	31883-В
Date of this Report	10th July 2023



1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Field survey to identify five 'roadkill' hotspot for system implementation				Please find details in Note 1,2,3 & 4.
Electronic circuit design, programming, and testing of all RPS units				Please find details in Note 1,2,3 & 4.
Pole design: Total 5 sets and each set contains four poles; one transmitter pole, one receiver pole and two warning light poles. In together 20 poles				We have installed one additional unit also, total six units. Please find details in Note 1,2,3 & 4.
Pole installation at the project site, mounting circuits and infield system testing				Please find details in Note 1,2,3 & 4.
Monitoring, maintenance, feedback data collection and infield system impact analysis				System is on roll and we are actively collecting compiling and analysing data contentiously.

2. Describe the three most important outcomes of your project.

a). Under this project we have designed and installed five units of the 'Roadkill Prevention System' near Bannari Forest Check Post, Sathyamangalam Tiger Reserve on National Highway 948 (earlier NH209 as in the submitted proposal). It's a permanent structure installed inside a reserve forest area with permission and support from State Forest Department. All the system units are working excellently at present and will continue to do so under our surveillance and initiatives. This is a permanent asset and with proper maintenance, it will keep on proving safety to the road-crossing wild animals for years. The complete details of the system units are given in Note 1.

b). Under this project, under a special request from the Coimbatore Forest Division we have installed an additional system unit (Unit 6) at Madukarai on forest railway track to avoid elephant death from rail accidents. It's a railway track-compatible version of RPS and named as 'Animal on Railway Track Alert System'. It's a permanent structure and a unique system in India and elsewhere in terms of coverage range and technical superiority. The complete details of the system units are given in Note 2.



c). The success and exposure registered under the present project have brought us opportunities to replicate the same technology in other parts of India for animal safety. Under such initiative, a) in collaboration with the Odisha forest department and a local NGO we have installed four units of the Animal Road Crossing Alert System at Dhenkanal, Odisha in May 2022, b) three units are installed at Banarghata National Park in collaboration with Karnataka Forest Department and a local NGO, c) five units are installed at Coorg, Karnataka with support from Karnataka Forest Department. Please find the details in Note 3.

We would like to add two more as follows:

d). Our project has created notable positive hype across India through printed media and social media convergence. Installation of such a system at other forest roadways across Tamil Nadu is under consideration by the state forest department and we have submitted a technical draft to the forest department in this regard.

e). During the execution of the present project, to resolve various technical and other issues, we investigated several new and innovative systems and sub-system designs. Most of those design innovations are proven to be extremely beneficial for our present project and are also expected to be worthy for our future projects. Please find one example detail with following Note 4.



Location of Units 1 to 5 and Unit 6 on Indian Map

Note 1: A total of five units of RPS are installed along with eight Warning Animal Shape Lights (Electronic Signage) interfaced with nearby detection units as shown in



figure 1 below. The lower line of the detection unit is interfaced with Deer Signage whereas the top line is interfaced with Elephant Signage. The units are distributed over 4.5 km of forest roadways with a cumulative coverage of 0.7km.



Fig. 1. Red Bar: RPS system units, Blue Star: Warning Animal Shape Lights (Electronic Signage). Left side is Bhavanisagar Range and right side is the Bannari Range.

Each RPS unit is having a left-side detection sub-unit (laser fence) and a right-side detection sub-unit (laser fence). The length of the sub-unit section is configured with two parameters one animal 'corridor length' and a second 'free space availability' for the system installation. As an example, since due to a stiff rock slope at one side of the road, space was not available for system installation hence the two sub-units of Unit-5 have been placed one after another (as shown in Fig. 1). The unit details are given in the following table format.

Unit. No.	Coverage Length	Detection/Performance (since 15 March 2023)	Relevant Issues
Unit-1	60m (left side) and 50m (right side).	Two elephant detection and four small animal detection	One transmitter pole was pushed to 60° angle with ground by elephant. Later it's aligned straight again.
Unit-2	50 m (left	No elephant detection	This unit is working nicely as of
	side) 62 m	and eight small animal	date
	(right side)	detection	
Unit-3	80 m (left	Three elephant	Transmitter pole on both sides of
	side) 74 m	detection and two	the unit are down by the



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	(right side)	small animal detection	elephant. One transmitter pole reinstalled but the other one is
			fully damaged.
Unit-4	78m (left side) 85m (right side)	Four elephant detection and three small animal detection	Transmitter pole at one side of the unit and receiver pole at the other side are down by the elephant. Presently both the poles are restored
Unit-	5/(1,2) 67m (5/1) and 73m (5/2)	Nine elephant detection and four small animal detection	Unit-5/2 is fully down by elephant and the poles are twisted hence not working at present. The Unit- 5/1 is working well.

Working of the RPS:

Step-1: On detection system sends an SMS to nearby Electronic Signage to switch it on. The glowing signage warns the approaching vehicles about the animal activity on the road.

Step-2: The SMS also switches on a buzzer unit which is kept at the forest check post (shown in the map). Available, forest department personnel manually intimate the vehicles about the animal activity on the road and instruct them to maintain a 30 kph speed limit.

Step-3: System SMS comes to our team members also and we intimate to respective 'Forester' over the phone immediately for counter action. The SMS also helps us to keep a record of unit wise animal detection.



Unit 1 receiver at roadside.jpg 1 receiver at roadside. Unit 1 receiver.



Unit 1 transmitter at roadside. Unit 1 Transmitter connected with high frequency buzzer.





Unit 2 one side pole down by elephant. Unit 2 receiver.



Unit 2 transmitter. Unit 3 receiver.





Unit 3 transmitter. Unit 4 transmitter at roadside.



Unit 4 transmitter with high frequency buzzer. Unit 4 transmitter.





Unit 5 receiver during evening. Unit 5 transmitter glowing during evening.



A herd of deer near to unit 4 during evening. A receiver pole down by elephant.



A receiver unit at roadside. A transmitter pole down by bison.





A transmitter pole down by elephant. A transmitter unit at roadside.



LASER light falling on Unit 4 receiver. A Bison is grazing near to Unit 4 during evening hours.



SMS received from Unit-1 on 3rd and 4th March. SMS received from Unit-3 on 5th March.

Note-2: A railway track compatible version of RPS; 'Animal on Railway Track Alert System (ARTAS)', is installed at Madukkrai to address a special request from the Coimbatore Forest division with a main objective to save elephants from railway accidents. The system unit (Unit-6) is designed with two single LASERs side by side at elephant height. The unit coverage is 210m and has SMS based alert module only for warning. The total number of detections at this unit is five as of date since November 2022.





Working of the Animal on Railway Track Alert System:

Step-1: The SMS also switches on a buzzer unit which is kept at the forest check post (shown in the map). Available, forest department personnel calls immediately to the nearby station master over the hotline and request immediate action to ensure safety.

Step-2: System SMS comes to us also and we intimate to respective 'Forester' over the phone immediately for counter action. The SMS also helps us to keep a record of unit-wise animal detection.



Our ERTAS trial unit is getting inspected by a forest guard. Double transmitter unit of ARTAS with a High Frequency Buzzer Unit to Save it from Elephant damage. Double



receiver configuration of ARTAS for keeping it aligned for longer duration when unit range 150m+.



The ARTAS trial unit video documentation by forest department <u>https://www.youtube.com/watch?v=bPONxiB5yyU</u>. Detection SMS from Madukarai ARTAS unit on Dec 29, 2022.

Note-4: It is found that a traffic warning light (a round shape red light installed with two trial units under the second round of Rufford grant) doesn't have much impact on high speed vehicles. The vehicles moving through trafficless forest roadways during the night barely slow down. Therefore, large LED warning light might be a possible alternative solution but it's expensive and thus not safe from thieves. Apart from that forest department has instructed to install a minimum number of poles since it's a restricted core forest area. They have suggested installing only two warning light poles at the extreme front-end and back-end of the system coverage. Since system units are distributed over a long 5 km forest road, only two warning lights were not sufficient.

Therefore, it was concluded that a small animal shape light will work better and thus we have designed a unique low-cost compact Warning Animal Shape Lights (Electronic Signage) under this project. The light can be interfaced with the detection unit with our 'GSM Light Control' unit (SMS interface). It's compact, lightweight, and doesn't require any dedicated pole set-ups for installation and thus can be clamped with any available metal pole structures (sign boards).

Hence under the modified project execution plan we have installed eight Warning Animal Shape Lights and interfaced those with nearby detection units. The Warning Animal Shape Lights are clamped with the existing notice board pole structures installed by Forest Department and Road Transport Department. This distributed warning light approach has received excellent feedback in comparison to the traffic light warning lights installed under the previous project.





A deer signage at 60m front of Unit 1 of RPS on NH948, Sathyamangalam Tiger Reserve.



A deer signage at 50m front of Unit 3 of RPS on NH948, Sathyamangalam Tiger Reserve.





A deer signage installed at 80m after Unit 4 and 50m ahead of Unit 5/1.



Installed deer signage at Bannari Forest Check post.





A deer signage installed in between Unit 2 and Unit 3.



A glowing deer signage during night on detection on NH948, Sathyamangalam Tiger Reserve.





An elephant signage installed 30m after Unit 1 and 70m ahead of Unit 2.



An elephant signage installed 40m before Unit 5/2.





A glowing elephant signage during night on detection on NH948, Sathyamangalam Tiger Reserve. A Tiger Signage is also installed with Unit 4 since it's a highly active leopard zone.



Eight Warning Animal Shape Lights (Electronic Signage) units are on trial run before installation. The light units are embedded with battery, solar panels, internal circuits and a 'GSM Light Control'.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

The project has promised to establish a permanent structure inside a highly restricted area for animal safety and this theme line aligns the project in a different direction and makes it extremely challenging. The difficulties and their solutions under the present project are listed in the following section:



3.1. Legal Controversy on NH 209 and Permission for System Installation During drafting the proposal, we executed a preliminary field survey and selected a few roadkill hotspots on NH209 (presently renamed as NH948) inside the core area of Sathyamangalam Tiger Reserve and the former DFO has approved the plan.

At the beginning of 2022, The Madras High Court issued a set of directions to be followed in respect of the movement through the road inside the Sathyamangalam Tiger Reserve (NH209). The court ordered a complete ban on the movement of vehicles having more than 12 wheels and weighing more than 16.8 tonnes at any time through these roads (https://timesofindia.indiatimes.com/city/chennai/ban-onvehicles-in-str-leaves-people-divided/articleshow/89492528.cms

https://indianexpress.com/article/cities/chennai/madras-high-court-

sathyamangalam-tiger-reserve-permit-movement-vehicles-7857307/). It created a huge controversy and excessive protests, and aggressive demonstrations are executed in Sathyamangalam by the local farmers and businessmen. Since the roadway through the Sathyamangalam tiger reserve is like the veins of local and interstate trade. The situation was tense for over a month.

Due to that escalating anxious situation, the system installation part of our project was under a big question mark. The new DFO was not willing to provide permission for any permanent structure besides NH948 since it might have triggered further controversy.

Finally, after several months of considering the people's appeal, the high court lifted the complete ban on vehicular movement and rescheduled the restriction from night 9 pm to morning 6 am. Taking a chance on the modified court order, we have met the CCF & FD (superior to DFO and main administrator of Sathyamangalam Tiger Reserve) with our demo prototype model. Being satisfied with our proposal, CCF provided permission for system installation and DFO was also approved.



Our team is explaining the system operation and installation plan to CCF and other forest officials.



3.2. Covid-19 Pandemic and Lock-down

Due to the Covid-19 pandemic and lockdown, the project was under complete halt for almost 18 months. A chunk of priceless time has been lost and project cost has increased further (manpower, component, and every other item cost has increased 20% on average after lockdown).

Under changed circumstances, with indigenous design modification we have minimised the project cost significantly. Moreover, to keep the project budget intact we have shifted the amount proposed under the travel head to the component head and the entire expenditure for travel has been borne by us.

3.3. System Field Installation

The project site on NH948 is a highly active elephant zone. Every day after evening 5 pm, at multiple points elephants take positions and raid vegetables and sugarcane pickup tracks. It's their regular practice and continues up to the late night. Since we need to execute system optical alignment work during dusk, it's highly risky, and even with forest department support, it took a long time to finish the work. After rigorous effort, we finished the installation, but it has brought a new set of challenges. Most of those truck-raiding elephants are bad tempered bulls and have a trend of pulling down any made structure in their territory. Therefore, within a short span of time number of our transmitter poles were down by elephants. Most of the poles are restored but the tussle between the elephant and our team is still going on today.



Transmitter Pole lifted at Madukkrai (Unit-6) near railway track. Transmitter pole lifted at NH209 (Unit-4). Receiver pole lifted at NH209 (Unit-3).

To resolve this issue, we have taken two indigenous technological initiatives. Under the first initiative, we have designed an indigenous handheld Long Range Acoustic Device (LRAD). It's an extremely high volume ear pinching sound generating device and can drive any animals within 30m radius. While working during the evening we used to give it to forest guards accompanying our team during the evening and thus we ensured our own safety.

Secondly, we have innovatively designed high frequency buzzing sound system and integrated it with an RPS transmitter pole. After installation of high frequency buzzing sound system, number of attacks on transmitter poles by the elephants is reduced significantly.





LRAD: an extremely high volume acoustic device to keep wild elephants away. A forest guard is operating LRAD while our team is working at RPS project site on NH948 https://www.facebook.com/Technology4wildlife/videos/762064295492320/



A transmitter pole connected with High Frequency Buzzer unit (blue colour plastic enclosure). Unit 4 Transmitter <u>https://youtu.be/Osi3kOWbm5g</u>

4. Describe the involvement of local communities and how they have benefitted from the project.

As per our project objective, community involvement in our project is nominal. Our team has interacted with the vehicle drivers, forest officials, and locals and collected feedback about the system. That information is getting compiled in form of a journal paper and will be communicated soon.



5. Are there any plans to continue this work?

As per the Indian Roadways Ministry report "India's road network now second largest in the world, grows 59% in 9 years". There are a number of roads bisecting the reserve forest at present and there will be many more in the coming days which will worsen the roadkill scenario further. Since designing underpass animal corridors is highly expensive and most of the other solutions are practically either not feasible or implementable, our verified RPS is expected to be a trademark solution in this regard. Even though the present design is highly effective, the RPS can be technically improved further with the incorporation of AI and machine learning techniques. Therefore, present technology needs to be validated further with the installation of new units and constant incorporation of advanced technological innovations.

Moreover, there are many highly active roadkill hotspots in Sathyamangalam Tiger Reserve and connecting BRT Tiger Reserve. The BRT Tiger Reserve DFO has already placed a request to install a similar system at BRT and Sathyamangalam Tiger Reserve DFO is also interested to extend the project further. The NH948 where we have presently installed five units of RPS is going to be widened further soon and it's already been approved. Wide NH948 will trigger more animal road accidents and thus more RPS units need to be installed for further animal safety.

The trial Animal on Railway Track Alert System (an RPS variant suitable for Railway Track) we have installed at Madukkrai is highly successful. At Madukkrai forest railway track, on average three to four elephants are getting killed every year due to train accidents and the number of small animals (spotted deer, sambar deer, wild pig, and even leopard) death is three to fourfold higher. Installation of more such 'Animal on the Railway Track Alert System' units will significantly contribute towards biodiversity conservation in that area. The Coimbatore Forest department has already offered every possible support to extend the project further.

6. How do you plan to share the results of your work with others?

Considering the success of present RPS project, we were approached by the forest departments and NGOs to install similar systems at other locations in India. In collaboration with the Odisha Forest department and a local NGO we have installed four units of the Animal (Elephant) Road Crossing Alert System at Dhenkanal, Odisha during May 2022. Similar three units are installed at Banarghata National Park in collaboration with Karnataka Forest Department and a local NGO. Five RPS units are installed at Coorg, Karnataka with support from Karnataka Forest Department and local NGO. There are a few more proposals under consideration and expected to be executed soon. In all those projects we have supplied the technology and also provided field support for installation. The NGO and forest department have accommodation for our team during the installation.





Banarghatta Project Receiver. Transporting Banarghatta Project Transmitter & Receiver. Banarghatta Project Elephant shape light for warning.



Coorg Project Receiver. Coorg Project Transmitter. Coorg Project Elephant shape light for warning.



Odisha project transmitter pole. Odisha project warning light. Odisha project receiver pole.

We are ready to collaborate with organisations or individuals for the benefit of wildlife. In this regard, we will provide technical and installation support to replicate the same solution to other roadkill hotspots across India and elsewhere.



We have already received a few more proposals on such collaboration from other parts of India as well as from Sri Lanka. Even though they are at a preliminary level, we believe that some of those will be surely implemented in the coming days.

Along with that, we are also compiling the system performance data and after 6–8 months' time we will frame those in form of a Journal Paper and will communicate for publication.

Our second phase of Rufford project work is already published with journal with following details:

"Design and Implementation of a Generic Roadkill Prevention System (RPS) Using Laser Beams to Reduce Human-Animal Conflict in Forest Boundaries" Source: Lasers in Engineering (Old City Publishing) . 2022, Vol. 53 Issue 5/6, p285-298. 14p, Author(s): Ramkumar, R.; Deb, Sanjoy.

7. Looking ahead, what do you feel are the important next steps?

Considering all the relevant aspects the important next steps will be as follows:

- We have installed a permanent system intending to save wild animals from road accidents. If the system units are maintained efficiently, it will keep on providing benefits to the wild animals for years and will help to maintain sustainable biodiversity in this area. The system requires maintenance two to three times per year more over system mobile numbers need to be recharged monthly. Therefore, we need a minimum of £800 per year to keep all the system units functioning. We have purchased additional components hence we will be executing two to three cycles of system maintenance without any additional support. But for longer run we need to acquire fund to maintain and run the system units. Therefore, we are trying to explore government, NGO, and individual funding options for near future.
- The system needs to prove its efficacy to be included under the governmentverified technology list. Once it's under the government-verified technology list, the government will promote this technology at all the necessary sites and will allocate funds for this. But to reach that level we need to install more RPS units at a larger scale and possibly at multiple forest divisions. The recommendations from multiple DFOs from different forest divisions will be more helpful in getting government authentication.
- The RPS needs to be updated with advanced AI and machine learning technology to transform into more reliable and acceptable technology. As an example, blocking the time of the lower line can identify the type of the animal by computing its movement speed? Or is it possible to count the number of animal crosses? Embedding AI and machine learning technology through system algorithms may provide such features.



8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

All the system units are attached with a sticker which is having the logo of Rufford Organization UK, Tamil Nadu State Forest Department and our institute.

The project is reported in numbers of local printed media in Tamil language and it's also reported with one of the top English news paper in India, The Indian Express (<u>https://www.newindianexpress.com/states/tamil-nadu/2023/apr/13/warning-system-prevents-man-jumbo-conflict-in-sathymangalam-tiger-reserve-2565410.html?fbclid=lwAR3UpdWrzZxCYZrvRu91hL5tYoKDy0GWqvR3fM1WhPZqxYKvs NXnyw6JXA).</u>



Mr. Senthil Kumaran, one of the wildlife film makers from WTI has approached us for filming our RPS project under a National Geographic Funded project documentary. He has visited our project site and together we have approached to forest department for permission. But our project site is legally and politically controversial site; hence our application is not approved yet by the forest department. But things are still under process and hoping for the permission soon.



National geographic team is interacting with our team member at Bannari Temple site. System is getting photographed by National Geographic Team.



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icai Spaces	D Important		Dear Sir, I am Senthil Kumaran (Photographer & Filmmaker) and National Geographic Explorer. Now I am documenting various mitigation models for Human & Elephant confl	lict in India. I am 🧿	
CH Meet	⊳ Sent	78	doing this project through National Geographic funding and associated with WTI. My project covers Assam, Tamil Nadu, Orrisa, Meghalaya, W. Bengal, and Chhattis I am planning to make a film about all our best mitigation management strategies for Human & Elephant conflict issues in India, like early warning systems and varior for the National Construction of Construction of Constructions of Const	garh. us low-cost	
	• D Categories		renom, Alemanave crop and Livelindog. Community activities, Expendit collaring and monitoring, etc. Recently I met Dr.Sanjoy Deb at the WTI event in Cochin. He demonstrated his various early warning system models. It was exciting, and I would like to cover a few project. So, I kindly request you permit me to protect your early warning systems in my film.	models in my +	
	꼺 Social	1,628	Through this film,		
	 Updates 	7,017	 These successful methods and strategies helped to give management plans to other conflict zones and helped to implement them in other countries. These methods give awareness to the local community. 		
	🖳 Forums	14,024	This film helps engineering students understand conflict issues and discover innovative devices for controlling HEC.		
	Promotions	6,998	Here I have attached my profile and reference letter from the National Geographical Society.		
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The email by Mr. Senthil Kumaran to our Principal regarding filming our RPS project.

9. Provide a full list of all the members of your team and their role in the project.

Team Member Name and	Role	Responsibilities
Designation		
Dr. Sanjoy Deb, Associate	PI	Coordinated the entire project
Professor, Dept. of ECE, BIT		activities from field survey, system
Sathyamangalam		design, installation, data analysis,
		communication and others.
Mr. Ramkumar R, Assistant	Co-Pl and	Same as PI
Professor, Dept. of ECE, BIT	Second in	
Sathyamangalam	Command	
Mr. Rajasekhar L, Assistant	Co-Pl	Took a major role in system design
Professor, Dept. of EIE, BIT		
Sathyamangalam		
Mr Sivakumar P, Photographer	Co-Pl	Took a major role to capture
of BIT Multimedia Team		project relevant photos
Mr. M Gunasekhran	Technical	He is the dedicated manpower
	Assistant	recruited under the project and
		played a significant role from start
		to project execution.
Mr Santhosh S, Mr. Guru Akash	Student	They have provided tremendous
A, Mr. Sujhith P (Current 4th year	Project Team	support during field survey, system
BE ECE students) Mr. Karthick P,	Members	design, installation, data
Mr. Dikshit R, Mr. Kishore S and		collection of the project.
Mr. Sadaf Ahmehed (Current		
2nd year BE ECE students)		

10. Any other comments?

Presently we are renowned as 'Technology for Wildlife' across India. Our Facebook page has 6,000 followers (https://www.facebook.com/Technology4wildlife). Our



multiple WhatsApp groups are having 700+ members from top forest officials, researchers, conservationists, and remote farmers. The forest department, NGOs, individual farmers from all over India communicate with us about their wildliferelated problems and we design and provide customised solutions for them. As of date, we have covered eight states in India with our projects and devices. Over the years we have grown a lot and the very first organisation has understood our potential a decade ago is the Rufford. The first grant we received to start our journey was the Rufford Small Grant and we are grateful for that. To address the complex dynamics of human-wildlife conflict through technology, we need to continue our growth further and we need our oldest partner Rufford along with us for this journey.

BANNARI AMMAN INSTITUTE OF TECHNOLOGY	Office of the IQAC bate: 18/07/ 2022
Stay Ahrani militare sances sances and the same same and an analytical strategy at an weat any same theory of the	Submitted to the Principal
	Subject: <u>Project manpower tenure extension</u> -reg.
Date: 03.12.2021	Financial Requirement: Yes, No, On-Duty DA
Submitted to Apex Committee	Advance amount required: Nil
Subject: Transfer of project JRF	Description
Financial Requirement: NA	An amount of Rs. 8,37,030.17/- has been sanctioned and credited by Rufford Foundation, the UK for
Requirement:	the project entitled "Design and Field Installation of Multiple Roadkill Prevention System Units
An amount of Rs.8,37,030.17/- has been sanctioned by Rufford Foundation, UK for the project	Research Fellow) has been proposed for 10 months initially (up to August 2022). For smooth
titled "Design and Field Installation of Multiple Roadkill Prevention System Units under a Large	execution of system installation and maintenance, we need to extend manpower support for another 10 months with the same fellowship amount per month. We have not approval from the
Scale Wildlife Safety Initiative". In this connection, I request your kind permission to transfer,	funding agency in this regard (email attached). As of date total apex approved expenditure under
our present JRF of the ongoing IEF (USA) project, Mr. M Gunasekharn, to the above noted	this project is Rs. 6,38,000/- only and we have procured all the relevant items for project execution.
Rufford funded project with same monthly scholarship. His minimum tenure of appointment	Mention Name (Dept. / Spl. Lab / Clubs & Societies / any other): ECE
the funding agency.	Same JRF will continue from september - 2022 lo
Apex Conjunitiest Approval	Faculty Responsible (Name & ID): Dr. Sanjoy Deb, EC-1834 June 201
SIG No: 143 - Technology for Wildlife Steering No 278	Description matter Accommodation Vahiala Food & Refreshment Not Applicable (at our
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Activity No. 111088 Faculty Responsible: Dr. Sonjoy Deb Outcome expected &Auditable: Placement / Internship / Product / Awards / Students Achievements in Number Others Project Work / Product Submitted by (Dr. Sanjoy Deb, PI) (Dr.C.Poongodi) (Principal)	Image: Inclumentation in the second and a second a second and a second a sec
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JRF (Technical Assistant) Selection Approval Letter from the Institute Apex Body. JRF Tenure Extension Approval Letter from the Institute Apex Body.