

Final Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF format**. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please DO NOT fill in and submit this form until the project has been completed.

Complete the form in English. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Vinita Sangela
Project Title	Understanding diversity and distribution of tiger beetles and their conservation through community participation along the Ramganga River Uttarakhand, India
Application ID	44768-1
Date of this Report	25 February 2026

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
<p>To initiate awareness about tiger beetle through community outreach and awareness programs in the study landscape.</p>			✓	<p>Community outreach and awareness programmes were one of the most important components of this study. Our team organised multiple awareness programmes in selected villages located near the river. A total of 10 awareness programmes were conducted across different villages, which were attended by approximately 320 farmers. During these sessions, informational pamphlets were distributed, and hands-on training was provided to help participants understand the importance of tiger beetles and riparian habitat.</p> <p>Awareness activities were conducted in thirteen schools including primary (1st to 5th class) and secondary (6th to 12th class) schools, reaching approximately 670 students. A presentation on the importance of tiger beetles was delivered, followed by a drawing competition to encourage student participation and interest. Winners of the competition were awarded specially designed caps printed with an image of a tiger beetle and the Rufford Foundation logo, including chocolates as prizes, and pamphlets and refreshments were distributed among the participating students. These pamphlets contained do's and don'ts for conserving tiger beetles and protecting their natural habitats, and were prepared in both Hindi and English to ensure better understanding.</p> <p>To commemorate World Tiger Beetle Day on 11th November, a dedicated workshop</p>

			<p>was organised for college students in partnership with Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) Cell of the Wildlife Institute of India and funded by The Rufford Foundation and EIACP- WII. Information about this program was disseminated through the social media handles of the Wildlife Institute of India (x.com/wii_india/status/1987746738548121771?s=20), EIACP (x.com/wii_eiacc/status/1988260844975816931?s=20), and ROAR (instagram.com/p/DQ1s4wtE4PL/?utm_source=ig_web_copy_link&igsh=MzRIODBiNWFlZA==), as well as our own Instagram page. Our team invited Dr V. P. Uniyal (Professor), a renowned expert on Indian tiger beetles, who delivered an offline lecture on tiger beetle ecology in the Shivalik Hills, India. Following the lecture, the project team conducted hands-on training sessions on tiger beetle identification, field sampling techniques, and habitat assessment, allowing participants to gain practical exposure. Additionally, the team provided a participation certificate to all participants and conducted a quiz; the winner received specially designed caps printed with an image of a tiger beetle and the Rufford Foundation logo. Furthermore, the project team organised an online webinar in collaboration with Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) Cell of the Wildlife Institute of India, Graphic Era University, The Naturalist School and Rhopalocera & Odonata Association of Rajapalayam (ROAR) and funded by The Rufford Foundation to reach a wider national and international audience interested in tiger beetles. The keynote speaker was Dr David Pearson (Arizona State University, USA), one of the world's leading experts on tiger beetles. He delivered an engaging lecture titled "<i>Journeys with Indian Tiger Beetles: From Field Trails to Forgotten Species</i>" during which he shared valuable insights from his extensive work on Indian tiger beetles conducted during the 1990s. The webinar was attended by approximately 179 students and researchers from various regions. The session lasted for one hour and involved active interaction, with participants asking questions, clarifying doubts, and addressing</p>
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			<p>common misconceptions about tiger beetle ecology and conservation. An article on Tiger Beetle Day celebration was published in WII E-newsletter Volume 32, Issue IV, Winter Edition 2025 wii-newsletter-winter-2025.pdf.</p> <p>To extend awareness beyond the immediate community, we created an Instagram page titled “Tigers of Tiny Creatures” to engage and educate people about tiger beetles, and we will continue uploading information on this page to educate people. Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) Cell of the Wildlife Institute of India, Rhopalocera & Odonata Association of Rajapalayam (ROAR) and Wildlife Institute of India also uploaded information about the World Tiger Beetle Day celebration on their Instagram and Twitter handles. As part of the project, a two-month internship opportunity (May and June) was provided to three college students and hands-on training was conducted for some forest staff of Corbett National Park. Our team also had the opportunity to be featured on Baat Pahado Ki, an inspiring community radio show on 91.2FM. This platform provided an opportunity to connect with the local Pahadi communities in their own language and cultural context. A few newspaper articles have also been published, highlighting the school's awareness program initiative.</p> <p>A research paper was published in the Indian Journal of Ecology titled “Tigers of Riverbanks: Ecological Patterns of Riparian Tiger Beetles along the Habitat Gradient in a Tropical Alluvial Plain”, and an international conference was attended in Innsbruck, Austria, where we presented our tiger beetle work to an international audience. Using multiple outreach approaches, the project effectively reached diverse stakeholder groups at local, national, and international levels, achieving its outreach and awareness objectives with measurable outcomes.</p>
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<p>To assess the diversity and distribution of tiger beetles in riparian habitats of Ramganga river.</p>		<p>✓</p>	<p>To conduct this study, area was divided into 19 study sites and in each site, we did random sampling and also marked two tiger beetle species. We divided our study area into two stretches, one is upper Ramganga with 8 sites and other is lower Ramganga with 11 sites. We observed a total of 28 species, of which we found 13 species from lower Ramganga (<i>Cicindela aurulenta</i>, <i>Cylindera albopunctata</i>, <i>Cosmodela juxtata</i>, <i>Chaetodera vigintiguttata</i>, <i>Cylindera bigemina</i>, <i>Cylindera cognata</i>, <i>Cylindera grammophora</i>, <i>Cylindera viridilabris</i>, <i>Calochroa flavomaculata</i>, <i>Lophyra parvimaclata</i>, <i>Cylindera venosa</i>, <i>Myriochila dubia</i>, <i>Calochroa octonotata</i>), 10 species from upper Ramganga (<i>Cosmodela virgula</i>, <i>Cosmodela intermedia</i>, <i>Cylindera agnata</i>, <i>Cylindera erudita</i>, <i>Cylindera subtilesignata</i>, <i>Lophyra cancellate</i>, <i>Neocollyris bonellii</i>, <i>Neocollyris attenuate</i>, <i>Myrichila melancholica</i>, <i>Calomera funereal</i>) and 5 common species that are present in both (<i>Cylindera minuta</i>, <i>Calomera angulata</i>, <i>Calomera chloris</i>, <i>Calomera plumigera</i>, <i>Lophyra striolata</i>). All 28 species of tiger beetle were documented for the first time from the Ramganga river catchment. Assemblages of the tiger beetles showed considerable spatial variation across the 19 sampling sites in terms of species richness, abundance, and diversity indices. Species richness ranged from 1 to 7 species. Total abundance varied markedly among sites, ranging from 5 individuals to a maximum of 53 individuals. Community dominance (Simpson's dominance index, D) ranged from 0.135 to 1.0, reflecting differences in species composition and relative abundances over sites. Lower dominance values sites indicated more evenly distributed communities, whereas higher dominance sites suggested numerical dominance by one or few species. Shannon diversity (H') values ranged from 0.0 to 1.97. Evenness ($e^{H'/S}$) was generally high across sites, ranging from 0.83 to 1.06, indicating a relatively uniform distribution of individuals among species at most locations. We also used the mark-recapture method for two species (<i>Calomera chloris</i>, <i>Calomera plumigera</i>), which are common in both stretches (19 sites), and observed that recapture rates were generally low for both species, resulting in low</p>
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				<p>estimated population sizes at the majority of sampling sites. However, areas with high habitat destruction have a low number of tiger beetle individuals, whereas sandy and open areas have a relatively high number of individuals.</p>
<p>To understand the associations between species and their respective habitats.</p>			✓	<p>The generalized linear model identified climatic and energy-related variables as key drivers of species richness of tiger beetles. The top-ranked model (AICc = 107.0, model weight = 0.606) included annual potential evapotranspiration, mean annual temperature, and elevation. Among these predictors, annual potential evapotranspiration showed a strong and significant positive effect on occurrence ($\beta = 0.0011 \pm 0.00034$ SE, $p = 0.0013$), indicated that areas with higher energy availability were more favorable. Mean annual temperature also exhibited a significant positive association ($\beta = 0.253 \pm 0.092$ SE, $p = 0.0059$), suggested that warmer environments increased the likelihood of occurrence. In contrast, DEM had a significant negative effect ($\beta = -0.0011 \pm 0.00032$ SE, $p = 0.00077$), indicating a preference for lower-elevation areas. Other variables, including climatic moisture index ($\beta = -0.245 \pm 0.314$ SE, $p = 0.436$), Forest cover ($\beta = 0.664 \pm 0.592$ SE, $p = 0.261$), and distance to water ($\beta = 0.00020 \pm 0.00050$ SE, $p = 0.693$), were not statistically significant, suggested that local moisture conditions, forested habitat, and proximity to water exerted limited influence on species richness of tiger beetles. Overall, these results highlighted the dominant role of climatic and energy-related factors in shaping species distribution, while topography and landscape variables had weaker or more nuanced effects.</p>

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

a) Baseline data for tiger beetles: This study generated comprehensive baseline data on tiger beetles (family Cicindelidae), documenting 28 species belonging to 8 genera from the riparian habitats of the study area. All recorded species were reported for the first time from this region, thereby establishing the first primary database of tiger beetle diversity for the area. The study also successfully identified habitat-based associations of these species, demonstrating clear relationships with specific substrate types, moisture conditions, vegetation structure, and disturbance levels. These findings represent a significant outcome of the project by providing an ecological framework for understanding species distribution patterns and habitat specificity within the region.

b) Improved Awareness and Community Engagement: The project successfully increased awareness about tiger beetles among diverse stakeholder groups, including farmers, students, teachers, forest staff and the wider public. Local farming communities improved recognition of tiger beetles as beneficial predators and started minimising disturbance along riverbanks. Educational interactions and related participation activities among school students contributed to improved knowledge retention and encouraged students to act as information carriers within their families. National and international outreach further elevated the visibility of tiger beetles as an understudied yet ecologically important group, promoting informed discussion and correcting common misconceptions regarding their role in ecosystems. Digital engagement by posting activity on the Instagram page and local people also supported by posting in their accounts, media coverage, and research dissemination significantly expanded the project's reach beyond the immediate study landscape, ensuring long-term visibility of tiger beetle conservation issues.

Post-project evaluation of the outreach activities was carried out through informal feedback, participant interactions and follow-up observations. Farmers, students and local community members showed improved understanding of the ecological importance of tiger beetles. Continued interest in the project, discussions with local communities and voluntary sharing of project-related information on social media also reflected the positive impact of the awareness programmes.

c) Tiger Beetle Day Celebration and Visibility: The observance of World Tiger Beetle Day resulted in increased awareness and visibility of tiger beetles among national and international students, researchers, and the general public. The initiative strengthened understanding of tiger beetles as ecologically important components of riparian ecosystems and as indicators of riverbank health. The continued organisation of this event reflected its relevance and growing acceptance, leading to the formal

inclusion of World Tiger Beetle Day within the scheduled outreach activities of the Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) Cell of the Wildlife Institute of India. Overall, this outcome contributed to sustained recognition of tiger beetles within conservation discourse and reinforced the importance of protecting riparian habitats and lesser-known insect biodiversity.

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

In Northern India, the high monsoon and heavy rain in 2025 resulted in difficulties in access some riparian sites along the Ramganga river. This occasionally delayed field surveys and habitat assessments. To address this, the team adjusted the field schedule and prioritised safer areas during adverse conditions and conducted additional visits when the weather improved to ensure complete data collection.

There were some challenges in community engagement, as some village communities initially hesitated to participate in awareness programmes due to a lack of knowledge about tiger beetles and their importance. To overcome this, local leader (Village Pradhan) and school teachers from the area were involved to encourage participation. Also, the project team stayed in the villages for several days to build trust with local residents. Illustrated materials such as pamphlets were also distributed to make the information more visually accessible and easier to understand.

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

The success of this project would not have been possible without the strong support and involvement of local communities in the study area. During field sampling, local people often observed our activities and showed curiosity about our work. Many approached us to learn more, and after understanding the purpose of the study, they shared this information within their communities. As a result, local youth also came forward to interact with the team and learn about the project. During these conversations, several people mentioned that they considered this beetle to be a pest in agricultural fields and sometimes killed them when encountered, and some old people shared that they encountered these beetles more frequently in the past, whereas in recent years they were observed much less often, and some people expressed relief about their reduced presence. We used these opportunities to share accurate information about tiger beetles, explain their ecological benefits, and discuss basic conservation ideas and threats to beetles.

Local school teachers were actively involved in school-based awareness activities, including presentations and drawing competitions. Engaging school children proved to be an effective outreach approach, as it helped extend awareness to their families and encouraged broader community interest in insect biodiversity. Some members of the local community were engaged as field assistants during sampling. They were

trained in basic field methods and provided with a daily allowance for their contribution and efforts, which offered short-term livelihood support while increasing their knowledge and awareness of tiger beetles and their conservation.

5. Are there any plans to continue this work?

Yes, we will continue this work and expand our study into other areas of the Western Himalaya. After working in the Ramganga River area with the support of the Rufford Foundation, we observed that local communities had more misconceptions than accurate knowledge about tiger beetles. This highlighted the need to strengthen awareness efforts in other regions as well. With increasing habitat destruction and climate change affecting tiger beetle population. Very limited research has been conducted on tiger beetles in the Western Himalayan region so far. Apart from a few isolated studies, there is a lack of baseline data from this region. To support the conservation of tiger beetles, further research, long-term monitoring, and targeted awareness programmes for local communities are essential. Therefore, with the aim of expanding diversity assessment and strengthening conservation awareness among local communities, we intend to continue this work.

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

- Research paper entitled “Tigers of Riverbanks: Ecological Patterns of Riparian Tiger Beetles along the Habitat Gradient in a Tropical Alluvial Plain” was published in the “Indian Journal of Ecology”, in which proper acknowledgement was given to the Rufford Foundation for providing the financial aid.
- The result of this work was presented at an international conference “International Mountain Conference, Innsbruck” on 14 - 18 September 2025.
- The details of outreach and awareness programmes were shared in the local newspaper and our Instagram page “Tigers of tiny creatures”.
- Our first progress report and publication were shared in the IUCN SSC Tiger Beetle specialist group, and the results of the complete study will also be shared in this specialist group. This platform will facilitate the dissemination of findings to a global network of experts and contribute to ongoing tiger beetle conservation efforts.
- A field guide on tiger beetles from the Ramganga River is currently under preparation and is expected to be published in the upcoming months. This guide will support other researchers and local communities by helping them recognise and correctly identify tiger beetle species from the region.

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

Tiger beetle is a neglected taxon in ecological studies in India. Therefore, expanding surveys and generating baseline data from other areas across the western Himalaya to address existing data gaps is needed. At the same time, continuous awareness programmes targeting the younger generation are essential to develop an

understanding of the ecological importance of tiger beetles, which are often misunderstood.

Furthermore, expanding baseline surveys and sharing updated data with platforms such as the IUCN SSC tiger beetle specialist group will be an important next step. Strengthening the available baseline information on tiger beetle diversity and distribution will support future conservation planning, monitoring frameworks, and evidence-based management actions at the regional and national levels.

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?

Yes, the Rufford Foundation logo was used on several materials produced during the project:

- We printed the Rufford logo on T-shirts with a common tiger beetle picture and a message, "Tiny Predator, Big Purpose", for our teams during sampling and awareness programmes and a Cap with a tiger beetle picture along with a Rufford Foundation logo were also printed as a prize to students who secured first, second, third, fourth and fifth position in various competitions.
- We used the Rufford logo in pamphlets and flyers that we used for awareness programmes in schools and villages.
- The Foundation was consistently acknowledged and promoted through word-of-mouth across all stages of the project.
- On World Tiger Beetle Day, 2025, a celebration was organised for college students where every participant was provided with certificates having the Rufford logo.
- Information about the World Tiger Beetle Day celebration was shared on different Instagram pages (Tigers of tiny creatures, EIACP, Tiger Beetle Watch) and on the twitter handle of Wildlife Institute of India by using flyer displaying the Rufford logo.
- On our Instagram page, we had uploaded pictures and used hashtags to tag the Rufford Foundation so that people get to know more about the Rufford Foundation.
- We also published a paper entitled "Tigers of Riverbanks: Ecological Patterns of Riparian Tiger Beetles along the Habitat Gradient in a Tropical Alluvial Plain" in the Indian Journal of Ecology, and the Rufford Foundation has been acknowledged to provide the funding aid for the study.

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

The project team includes – Field Assistants, Forest officers, and Volunteers.

Dr. V. P. Uniyal (Mentor)	He has supervised the study and helped with various ecological work and writings.
Dr. S. K. Gupta (Mentor)	He has also supervised the study and facilitated the central facility at the Wildlife Institute of India for the smooth wet laboratory work
Mr. Amar Paul Singh	He helped in framing the study and assisted with field sampling, species identification and data analysis
Dr. Kumudani Bala Gautam	She helped in conducting the awareness work
Karan Negi (Field Assistant)	Assisted in field data sampling
Deepa (Field Assistant)	Field data sampling
Rohit Negi (Field assistant)	Field data sampling
Anjali Bartwal (Field assistant)	Field data sampling
Mr. Amit (Forest Warden)	He coordinated with the Range Officer to guide the team within his range during field sampling in Corbett National Park and ensured that surveys were conducted with a Forest Guard for safety reasons.
Mr. Lalit Mohan (Range officer)	He assisted the team by arranging a gypsy within his range and providing a Forest Guard to ensure that fieldwork was conducted safely.
Mr. Tripathi (Range officer)	He assisted the team with all required paperwork and formalities prior to entering the National Park, ensuring that all documents were properly submitted.
Manish Bhakuni (Volunteer)	He helped in conducting awareness in schools.
Janki (Volunteer)	She helped in conducting an awareness program among farmers.
Mr. Amir Mohi U Din Lone (Programme officer in EIACP cell)	He helped our team and collaborated for the celebration of World Tiger Beetle Day.
Sharan (Founder of ROAR)	He helped us and collaborated on an online celebration for World Tiger Beetle Day.

10. Any other comments?

We sincerely thank the Rufford Foundation for providing financial support for this project and for enabling us to continue working towards the conservation of tiger beetles and their habitats. The support for grassroots-level conservation activities played a crucial role in both documenting tiger beetle diversity and promoting their conservation in the study area. The successful completion of this project along the Ramganga River would not have been possible without this assistance. We deeply

appreciate Rufford's continued commitment to supporting young researchers and students in developing and underdeveloped countries. We hope that the Foundation will continue to support us in the next phase of our work, allowing us to further strengthen research and conservation efforts in other areas.

We also want to thank Dr S. K. Gupta, Dr V. P. Uniyal and Prof. David Pearson for their continued guidance and support at every stage of this work. We are also grateful to Forest Department officials for providing the necessary permission to carry out this study.

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Field Photographs



Figure 1: Tiger beetle sampling pictures.



Figure 2: Field-based training on tiger beetle sampling provided to a forest staff member from Corbett National Park.

Figure 3: Conservation awareness session on tiger beetles conducted for school students. Left: Photograph with the winner of the drawing competition.

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Official Certificate of Participation

To Whom it May Concern,

with this letter we certify that Vinita Sangela participated in #IMC25, held in Innsbruck, Austria from 14 to 18 September 2025, as an active presenter with the following contribution(s):

Title of Abstract, 1st Author, Slot	ID	Presented in Session
Tiger beetles as bioindicators for habitat management and conservation along the Ramganga river Western Himalaya Sangela, Vinita 2025 Sep 16, 15:08 to 15:10 (L17)*	3.8333	FS 3.237: Open Poster Session

*) The scheduled time may differ from the final presentation time for various reasons.

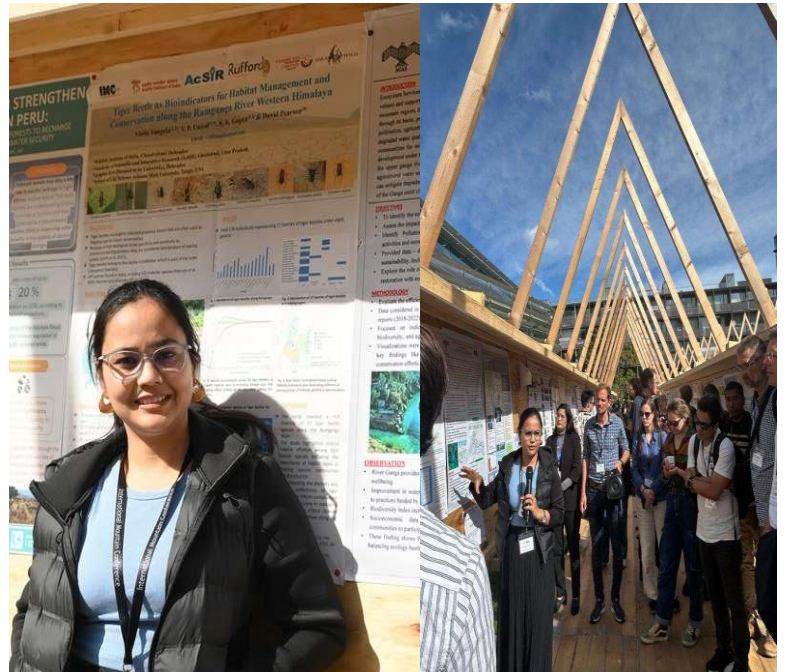


Figure 4: Certificate and photographs of participation in an international conference.

ANNEX – Financial Report

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