

PROGRESS REPORT

Monitoring of fireflies population and their conservation escalation through grass-root participation in Western Himalayan region Uttarakhand, India.



Work Progress:

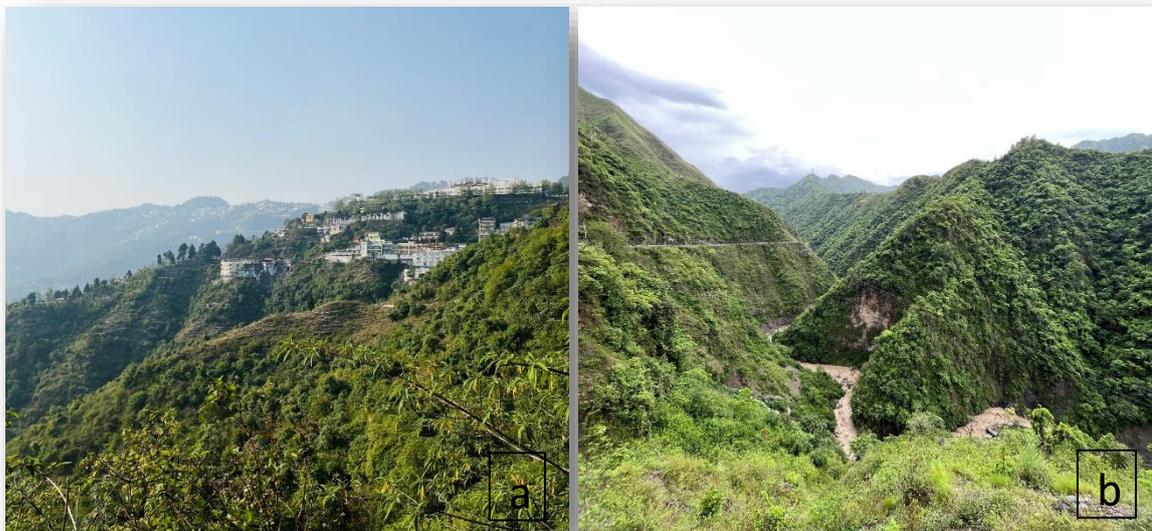


Figure 1. a) Mussoorie & b) Chakrata landscape.

1) Fireflies sampling:

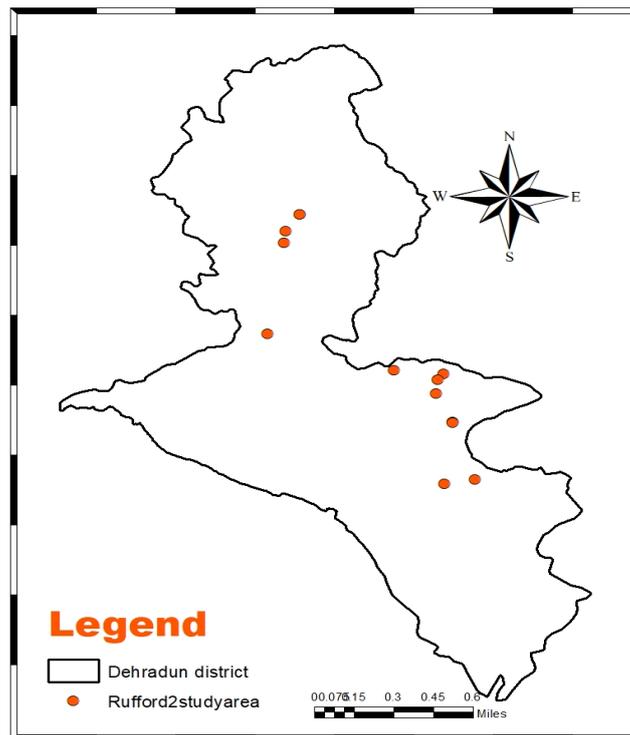


Figure 2. Map showing different sampling fields in Mussoorie and Chakrata Forest Division.

The current project is the continuation of our previous project entitled **“Assessing the status of fireflies and its conservation practises through community participation in Doon valley, Uttarakhand, Western Himalaya”**, which provided the primary data on fireflies diversity in the area. Consequently, this project also aims to document the diversity of these wonderful flashing beetles from Mussoorie and Chakrata forest division (Figure1) with different elevational gradients (Figure 2).



Figure.3 Fireflies sampling photographs.

This time we also opted “time constraint method” to assess fireflies diversity due to the terrain of the study area, however they were captured by using sweep net and hand picking method (Figure 3). The team has explored some very rare and beautiful landscape during the project.

2) Species Identification:



Figure 4. Firefly specimen

During sampling, only those fireflies were captured, which we were not able to identify in the field. The samples were preserved in 70% alcohol, and then taken to the lab for further identification. Currently, we have identified a new genus *Lamprigera* (Figure 4), in addition to two genera's (*Abscondita* & *Asymmetricata*) that were also reported earlier in our previous project. The genus was documented for the first time from Chakrata forest division. Moreover, we are still looking for something new to be found from Mussoorie forest division.

3) Challenges faced in the field:



Figure 5. Leopard in Mussoorie.

Fireflies sampling was done at night, which increases the challenges of working in the field. This year, the monsoon hit the area terribly, there were lots of landslides cases in the mountains especially in Chakrata, which blocks the road. Other than that due to heavy rain and moisture there were too many leeches in the area that our team got beaten by the leeches badly, and on the top of that there were bears and leopard (Figure 5) in the study sites especially in Binog (Mussoorie), which hinders the work.

4) Outreach program



Figure 6. Students participated in the conservational workshop in Dasau, Chakrata

Awareness escalation among communities was one of the most crucial components of this study, and to fulfill the goal the team organized conservational workshop for students and teachers (Figure 6).



Figure 7. Explaining the importance of fireflies and distributing t-shirts to students.

This time we also printed t-shirts having a caption of Firefly project by The Rufford Foundation. A detailed presentation on “Importance of fireflies in our ecosystem” was given to the students, and afterwards some questions were asked to them regarding fireflies and the students who gave answers were presented with the t-shirts (Figure 7).



Fig 8. Different fireflies sighting location across India.

Furthermore, on the occasion of World Firefly Day, firefly survey was conducted on 2nd – 3rd July, 2023. Link of survey was prepared using ArcGIS survey 123 software. The link was uploaded on Wildlife Institute of India official website, WII Instagram page and also circulated through personal contacts. A total of **93 participants** participated in the survey from which 92 were from India and one from Freiburg (Germany). The total number of fireflies sighted was 7,181 from 14 states of India. All the states from where we received the data are as follows- **Uttarakhand, Himachal Pradesh, Uttar Pradesh, Jharkhand, Haryana, Assam, Mumbai West Bengal, Odisha, Madhya**

Pradesh, Andhra Pradesh, Tamil Nadu, Karnataka and Kerala (Figure 8). Maximum participation was seen from Uttarakhand followed by West Bengal.



Figure 9. Articles on fireflies.

Moreover, informative articles on fireflies were published in the local newspapers (Figure 9). Our Instagram page named “Doon fireflies”, also engage and educate people about fireflies. By opting these approaches our team was able to reach to all level of communities, we broaden the space and made a smooth track for knowledge to flow brilliantly among a diverse range of audiences.