Diving into Diversity

Aquatic Beetles of Sukhna Wildlife Sanctuary, Chandigarh

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Background

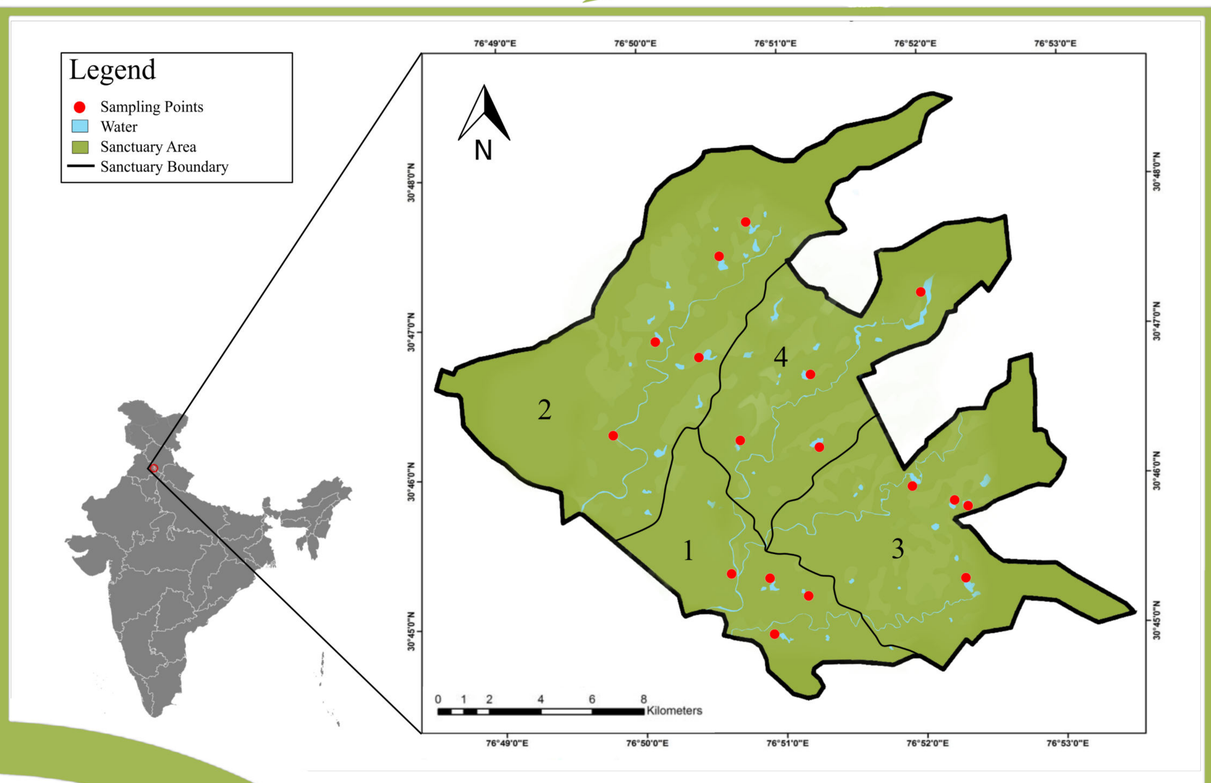
India has an impressive 776 species of aquatic beetles[1], highlighting the country's exceptional biodiversity. Previous studies on Indian aquatic beetles have predominantly concentrated on taxonomic characteristics, offering little understanding of their habitats and ecology[2].

- This study explores the population dynamics and spatial dispersion of aquatic beetles.
- It also sheds light on the species of water beetles and is the first ever taxonomic exploration of the Adephaga of this region.

Why water beetles and why the Shivaliks ?

- Aquatic beetles play crucial roles in freshwater ecosystems by engaging in nutrient cycling and serving as integral components of aquatic food webs[3]. Furthermore, their sensitivity to environmental changes provides valuable insights into ecosystem health
- The Shivalik hills acts s a way point between the Himalayas and the plains and its biodiversity remains largely unexplored.
- Sukhna WLS is located at the heart of this region and hosts the maximum number of freshwater bodies; around 175 sizeable dams and 4 rain fed rivers.

Study Area

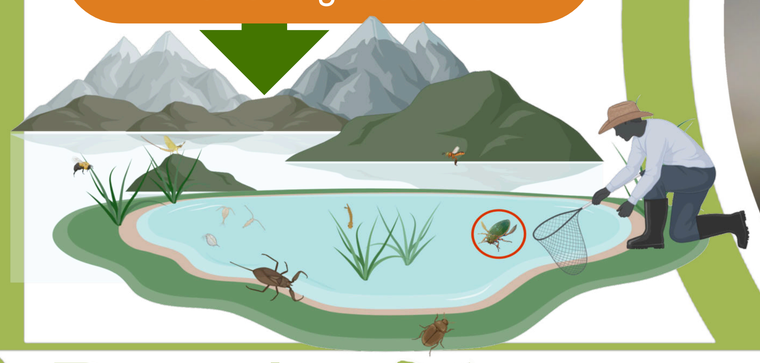


Methodology

Collection of beetles through sweep netting water bodies

Mounting & photographing of specimens

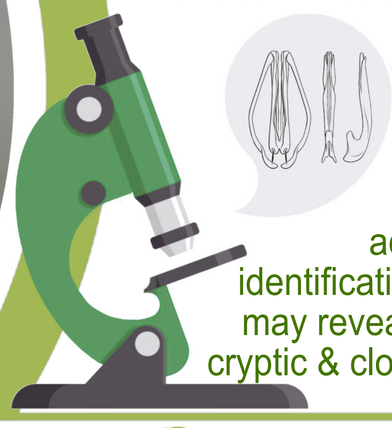
Taxonomic identification & reviewing literature



Future Work

Increase the sampling area: The mountain range extends to over 1200 km and may home to new, un-described species due to its high local endemicity.

Long term Monitoring: Conduct extensive surveys to see temporal variation in beetles.

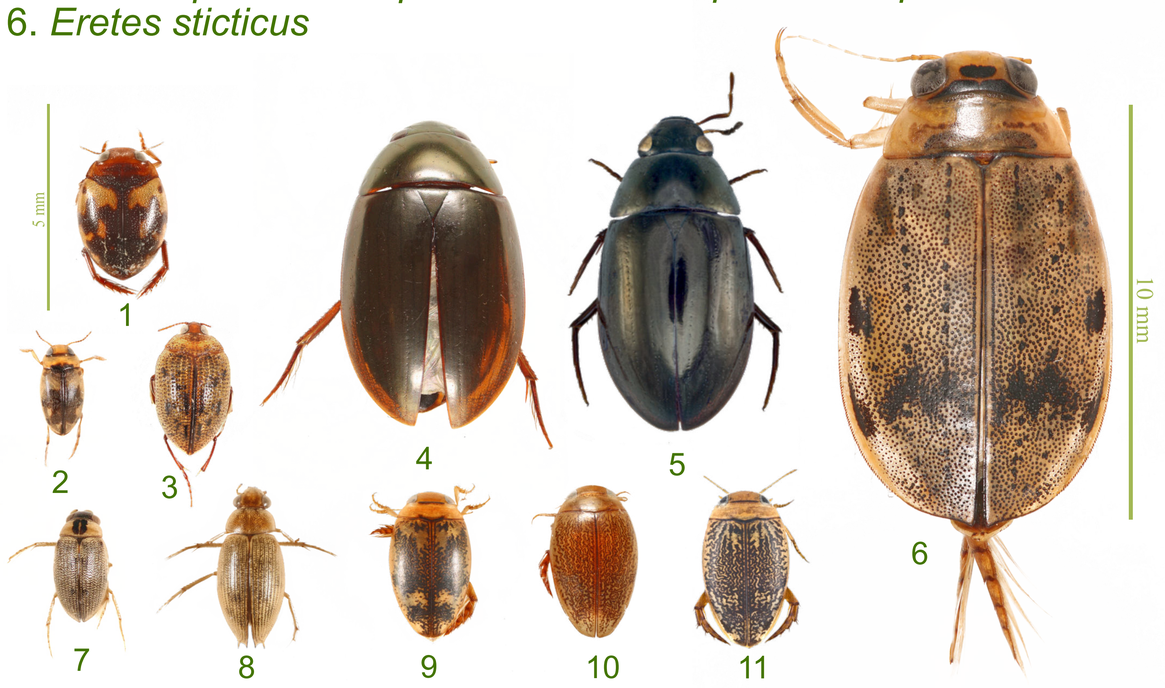


Genetic Based Taxonomy: Employ the use of genetic techniques such as DNA bar coding for accurate and efficient identification of beetles, which may reveal further insights for cryptic & closely related species

Results

11 species across 7 genera and 3 families were found.

1. *Hyphoporus sp.*
2. *Hydroglyphus flammulatus*
3. *Haliplus angustifornis*
4. *Sternolophus rufipes*
5. *Sternolophus inconspicuus*
6. *Eretes sticticus*
7. *Berosus pulchellus*
8. *Berosus increticus*
9. *Laccophilus parvullus*
10. *Laccophilus flexuosus*
11. *Laccophilus sharpi*



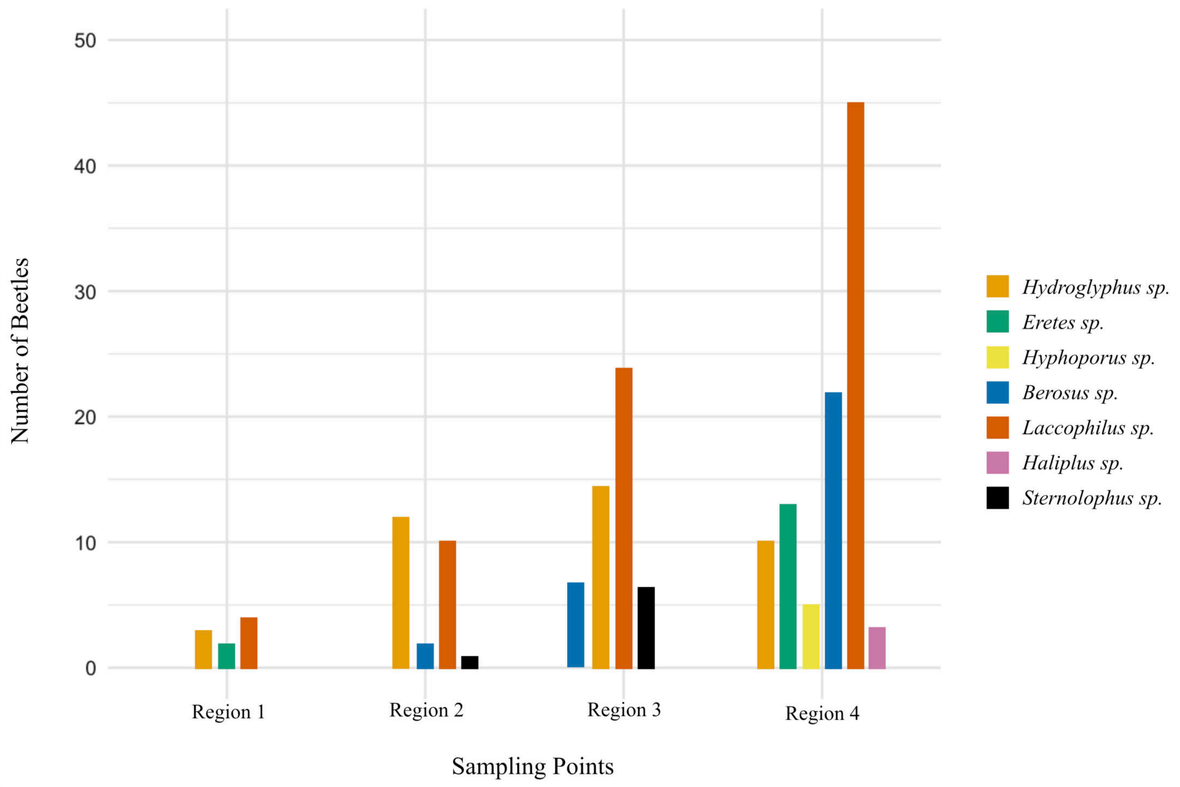
- Laccophilus was the most widespread and abundant species followed by Hydroglyphus.
- Species richness and population exhibited an upward trend with increasing altitude and deeper penetration into the sanctuary.

Discussion

Habitat Generalists: The uniform distribution of species like Laccophilus and Hydroglyphus implies adaptability to diverse conditions, highlighting potential habitat generalism[4].

Altitudinal influence: Altitude may have a substantial influence on the composition of beetles through influencing the distribution of species[5], coupled with anthropogenic and habitat quality, since diversity and populations were greater in the sanctuary's deeper, untouched regions.

Biogeographic Insights: It was been observed that seven out of the eleven aquatic beetle species found in Chandigarh have not yet been reported in the north west region of India[6]. Further exploration may reveal additional endemic or rare species, necessitating targeted conservation efforts.



References

1. Chandra et al (2017), ZSI, 379-400.
2. Sheth et al (2018), Zootaxa, 4459 (2), 235-260.
3. Sharma et al (2019), Acta Zoologica Lituanica 14(1), 31-37.
4. Lundqvist et al (2003), Ecography, 26(3), 355-364.
5. Taher et al (2018),Iranian Journal of Animal Biosystematics, 15, 10.22067
6. Ghosh et al (2012), Catalogue of the Diving Beetles of India

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