

Notes on chalcidid wasp (Hymenoptera: Chalcididae) fauna from Central India

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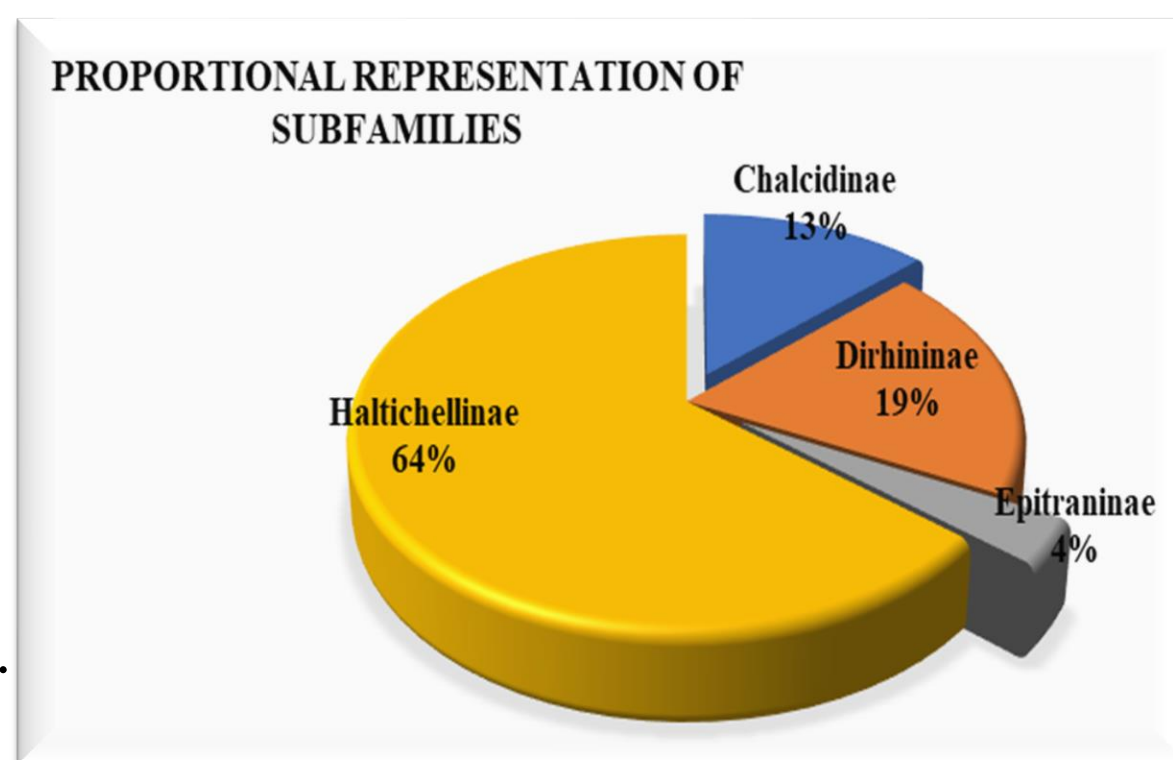
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INTRODUCTION & AIM

❖ Chhattisgarh, a central Indian state with rich faunal diversity, is known for its deeply intertwined culture and lifestyle of its indigenous tribal communities.

❖ Around 44% of the state's total area is under forest cover

❖ The aim of the study was to document the Chalcididae species that are present in the state.



❖ Chalcididae family of small to medium-sized parasitic wasps that are extremely beneficial for managing pest populations, making them an important component of integrated pest management (IPM) programs in natural and agricultural ecosystems.

❖ They have black coloured chitinous body and often with white, yellow and red patches on hind femur, swollen hind femur lined by teeth ventrally, oval shaped tegulae, slender prepectus and reduced wing venation.

Altitude (msl)	No. of individuals (N)	Species Richness (S)	Simpson's Diversity Index (SDI)	Shannon Wiener Index (H')	Margalef Index (α)	Pielou's Evenness Index (E1)
< 250	22	8	0.84	1.80	2.26	0.86
200 – 500	231	57	0.99	4.66	10.29	1.15
500 – 750	40	21	0.97	3.10	5.42	1.02
> 750	61	30	0.98	3.58	7.05	1.05
Mean	88.50	29.00	0.95	3.29	6.26	1.02

MATERIALS & METHODS

❖ **Study area:** Random sampling in 21 locations including various restricted forest areas and agricultural farms.

❖ **Methodology:** Sweep net and yellow pan traps

❖ **Laboratory study:** National Insect Museum, ICAR-National Bureau of Agricultural Insect Resources, Bengaluru, Karnataka (a designated National Repository duly accredited by the Ministry of Environment, Forestry and Climate Change, New Delhi).

❖ **Curation of specimens:** Sorting, dehydration and mounting on triangular points while others were kept in vials with 70% ethyl alcohol solution.

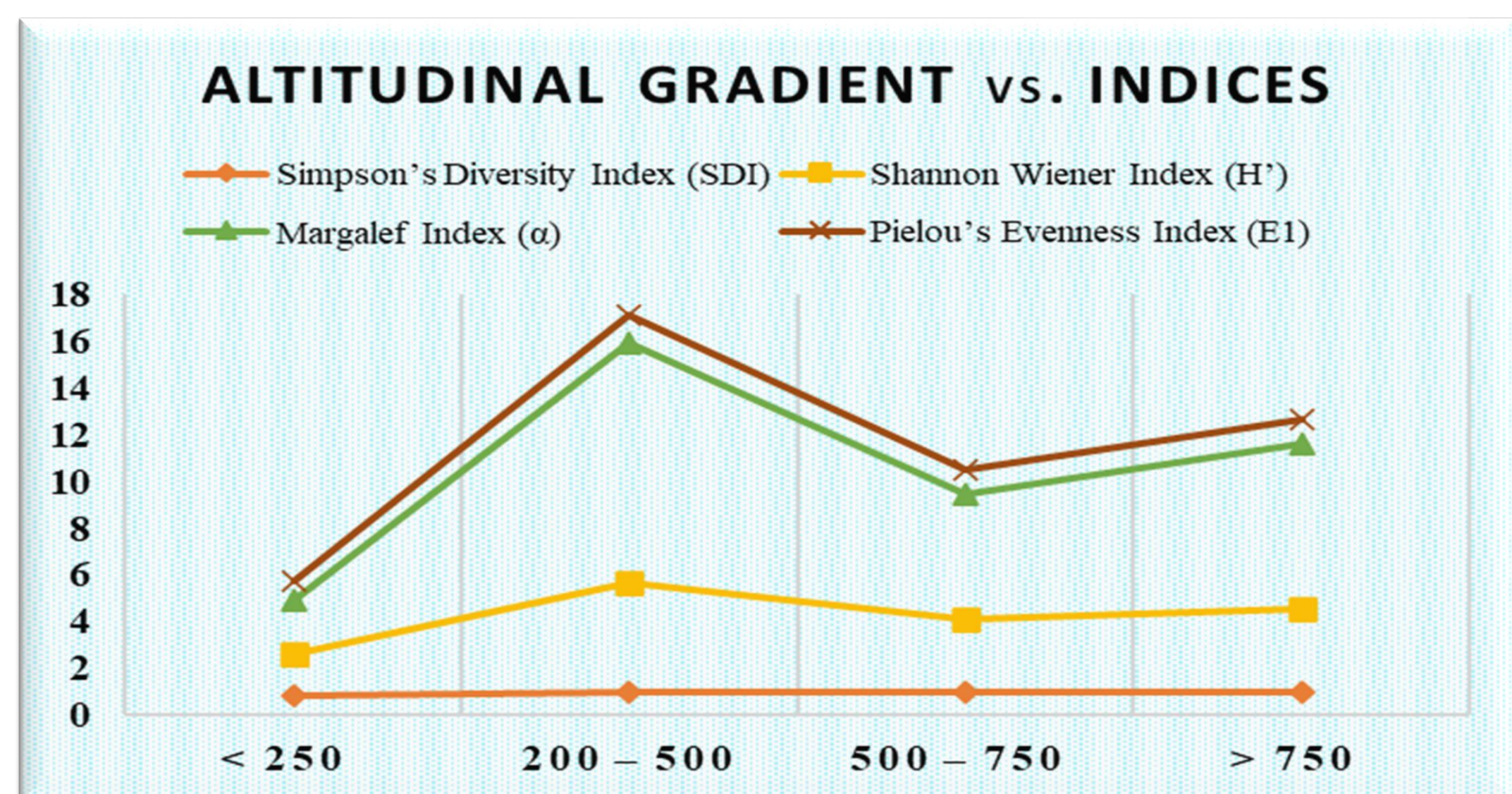
❖ **Analysis:** Chalcididae diversity was calculated using various indices, including Shannon-Wiener, Simpson, Margalef's richness index and Evenness index.

RESULTS & DISCUSSION

❖ 70 species under 11 genera under four families were recorded across the four altitudinal range of Chhattisgarh.

❖ 250 – 500 msl altitudinal range had the highest number of recorded taxa with 57 species under 11 genera followed by 500 – 750 msl (21 species, 8 genera) and > 750 msl (30 species, 8 genera). With just 8 species, < 250 msl had the lowest diversity of chalcidid wasps.

❖ Mean Simpson's Index was 0.95, Shannon Index was 3.29 while Margalef Index was 6.26 and Pielou's Evenness Index was 1.02.



❖ Haltichellinae was the most dominant subfamily followed by Dirhininae, Chalcidinae, and Epitraninae.

❖ Antrocephalus and Hockeria was the most prevalent genus, reported to be in three out of four elevation gradients.

❖ Brachymeria was the most prevalent genus of Chalcidinae subfamily that can be found in all the gradients.

❖ Dirhinus himalayanus and Dirhinus claviger have been found almost across all the gradients, while many of the species were restricted to particular elevation ranges.

CONCLUSION & FUTURE WORK

The distribution of chalcidid wasps in particular gradients varied. Nevertheless, all elevation gradients sustained reasonably large abundance of chalcidid wasps. Based on the surveys, chalcidid wasps was more diverse in 250 – 500 msl and > 750 msl gradient. The subfamily Haltichellinae was discovered to be most diverse, followed by Dirhininae, Chalcidinae and Epitraninae. Some locations of selected elevation gradients were discovered to be classic for various chalcidid wasps, which contributed to the gradient's species variability. The findings and outcomes of the study will serve as a baseline information for other research work in future. The documentation will serve as a salient report to enhance the biodiversity conservation of this region.