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Study shows impact of climate and geography on ecotypes of bees

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PUNE: A study on honeybees (Apis cerana) in the northern Western Ghats has revealed how climatic conditions and geography affect the evolutionary pattern of honeybees leading to distinct geographical "races" called ecospecies or ecotypes.

The study was conducted by a team from the department of zoology at the Savitribai Phule Pune University (SPPU), the National Centre for Cell Science and the department of zoology from Ahmednagar College. The paper was published in the Indian Journal of Experimental Biology in January 2019.

Bimalendu Nath, the head of the department of zoology at SPPU and the main researcher on the project, said the discovery could impact commercial beekeeping. "By identifying ecotypes, beekeepers can opt for a high yielding variety of bee species," Nath said.

Explaining the concept of ecotypes, he said, "A taxonomical key draws on discovering morphological characteristics within the same species. Ecotype or ecospecies is within the same species but has distinct geographic variations. They are geographically distinct genetic varieties. For instance, dogs in Kashmir has more fur compared to dogs elsewhere due to the climatic difference."

The team worked on five ecotypes in the northern Western Ghats — Pune, Nashik, Mahabaleshwar, Wai and Bhimashankar. "We have predicted at least three distinct ecotype races. Using molecular tools and mitochondrial DNA, we could distinguish

them into different genetic races or ecotypes," Nath said.

Nath said that the ecotypes of the Apis cerana species of honeybee have different altitudes, climatic conditions and also flora. "They have to go collect pollen to produce honey. The flora is very specific in these different areas. For example, in Bhimashankar the types of trees you find are very different from Nashik," Nath explained.

The study was conducted over the course of five years.