

The Tool Makers of the Himalayas

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Resting *Aphaenogaster* sp. ants after covering the honey



Aphaenogaster sp. bringing debris to the honey/food site

In our daily lives, we use countless tools, from toothbrushes to table fans, to make life more convenient. We made the first tools around 3.3 to 0.2 million years ago in Africa, like hammers and cutting tools. Then, in the 1960s, van Lawick and Jane Goodall reported the tool-making ability of wild chimpanzees, which was a groundbreaking discovery in ethology. Since then, researchers have documented tool use in many other vertebrates, like mammals, birds, fish, and cephalopods. Earlier, it was thought that only vertebrates could make tools. However, recent research shows some invertebrates, including insects, also demonstrate significant cognitive skills. This suggests that complex cognition is not limited to larger animals only. Although more research is needed to explore these abilities in insects.

Tool-making ability in insects has been comprehensively catalogued, with about 50 cases of tool use documented in 30 different genera of insects. Interestingly, all documented tool-making in ants has been reported from members of the subfamily Myrmicinae. *Pogonomyrmex badius*, *Solenopsis invicta*, *Solenopsis richteri*, *Novomessor albisetosus*, and various *Aphaenogaster* species have exhibited tool-making behaviour. Among these, the genus *Aphaenogaster* has been reported multiple times for its tool-making behaviour. Ants use tools for three main purposes: nest construction, clogging nest entrances, and foraging.

The Himalayas, known for their rich biodiversity and fragile ecosystems, have many endemic species that evolved independently in these mountains. For my PhD research on ants' biodiversity and biotic interactions, I chose the Kedarnath Wildlife Sanctuary as my study area. Over the past two years, I have observed ants in this Himalayan Forest, discovering fascinating diversity and interactions. In this Himalayan forest landscape, species like *Myrmica* spp., *Temnothorax* spp., and *Aphaenogaster* spp. are widely distributed and commonly found.

One fine morning, I took my field gear and instruments and went to the field to study ant behaviour. During my observation, I dropped honey at regular intervals in my transect to attract ants. After half an hour, I returned to the locations where I had dropped the honey. Different ant species and colonies had gathered at the honey baits. Most of the honey drops remained clear, shining golden in the sunlight. However, one bait caught my eye because it was filled with dirt. At first, I thought the wind had blown dirt onto the honey. But upon closer examination, I was astonished!

The dirt on the honey wasn't randomly scattered; it looked intentionally placed systematically. This piqued my curiosity. How could the wind have arranged the dirt so evenly? Upon closer examination, I discovered ants were bringing debris from the surrounding area and placing it on top of the honey.