

# HOW INSECTS, PESTS WIPE OFF AJANTA CAVE PAINTINGS

Relevant for: null | Topic: Promotion and Preservation of Culture Incl. UNESCO

Organic matter in the basal layer of the murals harbours microbes. | Photo Credit: [The Hindu Archives](#)

A classic masterpiece of Buddhist art, the Ajanta caves, is a UNESCO world heritage site and a protected monument of the Archaeological Survey of India. But the cave paintings have started deteriorating in the past few decades and are losing the battle against insects and other climatic stressors.

A research team from National Environmental Engineering Research Institute (CSIR-NEERI) looked at all the available literature on the Ajanta caves and mapped out the different factors causing this damage. They also mention a few environmentally friendly solutions to the problem in a paper recently published in *Heritage*.

The team writes that the most common insects were silverfish, beetles and common bugs. Another main problem was the entry of rainwater and water from the Waghura River. This leads to dampness in the cave atmosphere causing an increase in algae, fungi, insects, and microbes. All these together were changing the original colour of the paintings — white is turning to yellow and blue is becoming green.

The paper notes that “a mixture of hemp, clay, and lime plaster was considered efficient for preserving paintings and carvings in nearby Ellora caves,” but this method was not used in Ajanta caves. Previous studies have shown that the basal layer of the murals was made of mud plaster and organic matter such as paddy husks, grass, vegetable fibres, thus making it a good breeding place for microbes and insects. Even though ASI has started many initiatives to keep bats and pigeons from the caves, it has failed and bat and bird excreta continue to damage the paintings.

The researchers have suggested using certain lights and colour to tackle the problem of insects. For instance, they suggest using ultraviolet light traps as nocturnal insects are known to get attracted to ultraviolet radiation. Also many diurnal species move to yellow light traps so yellow lamps can also be an excellent tool to effectively control moths. By understanding the phototactic behaviour of insects, appropriate wavelength lights can also be used. “Based on the details collected from past studies, we are developing a prototype to address this issue. As it is in the initial stages, more details cannot be disclosed,” says Mr. Piyush Kokate, from the institute and one of the authors of the paper.

ASI is presently carrying out precautionary treatments such as spraying of insecticides and herbicides, fixing the loose plaster on cave walls, regular cleaning and use of preservative coating on the painting.

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