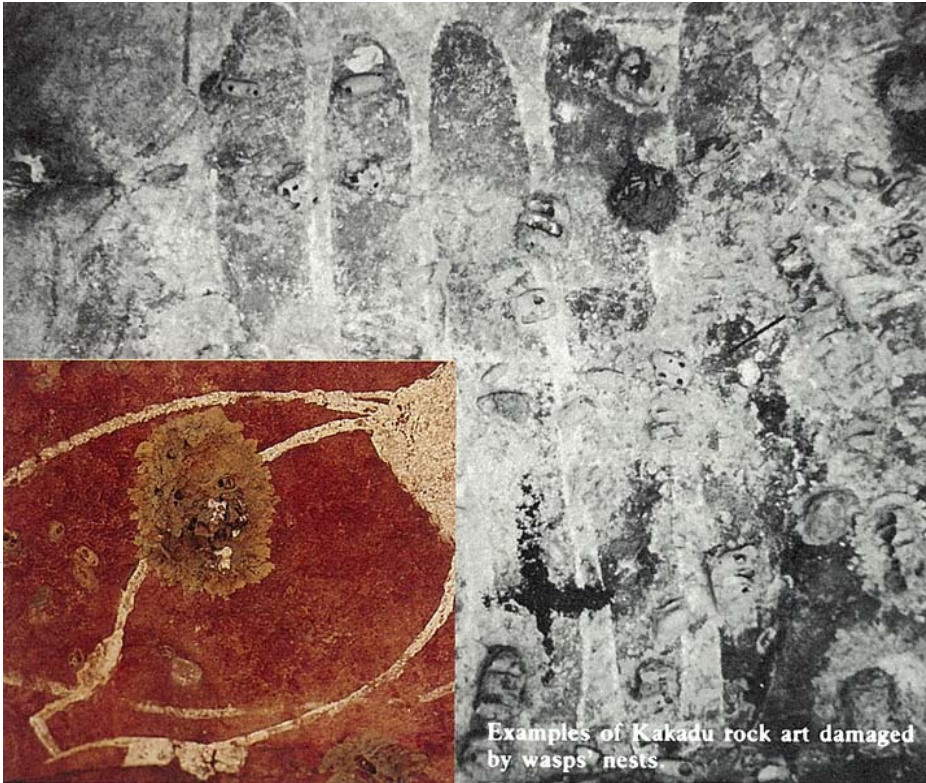


# Wasps threaten Aboriginal rock art



A rich collection of Aboriginal rock art in the Kakadu region of the Northern Territory is being defaced. Overhanging rock shelters that Aboriginal artists favoured as galleries are proving equally attractive to wasps and termites seeking sheltered sites for their mud nests.

In 1979 the Australian National Parks and Wildlife Service commissioned Dr Ian Naumann of the CSIRO Division of Entomology to look into the problem and to see whether anything could be done.

After a number of field trips to the area — some in a four-wheel-drive vehicle, some by helicopter — Dr Naumann was able to gauge the size of the problem and make some recommendations for further action. His report to the NPWS makes it clear that there are no simple, cheap solutions, but that permanently screening the art with wire mesh or perspex may, in the long term, be the most effective option.

He found that the major despoiler of art was *Sceliphron laetum*, a large black and yellow wasp widespread throughout Australia. It is one of the species collectively known as mud-daubers. The wasp, up to 3 cm in length, is readily recognized by its long narrow waist and by the way its long legs hang conspicuously from its body during flight.

Its nest-building habits cause the problems. The female wasp chooses the shelter of an overhanging rock to build

an array of about 12 sausage-shaped cells in which she lays her eggs (the cells can be in 1, 2, 3, or even more tiers). Protected from sun and water, the eggs can safely develop into larvae and then into juvenile wasps.

With remarkable forethought, the wasp provisions each cell with food for the developing larva. Dr Naumann found an average of seven spiders in the cells he examined (although adult wasps feed largely on nectar).

The wasp builds her nest with nearby mud, occasionally the same ochre material as Aboriginal artists used. The nest clings tenaciously to the sandstone rock, perhaps with its strength enhanced by the female's salivary secretions. Attempts at removing it usually damage any underlying art.

Other species of wasps were also found to nest in rock shelters; some are closely related to *S. laetum*, others not so. Some even take over second-hand cells, refurbish them, and lay their eggs. However, none was as numerous as *S. laetum*.

*Sceliphron formosum* is one of the less-numerous species of mud-daubers. The

females will nest on well-lit areas that the related *S. laetum* females usually avoid. However, their scattered mud cells are relatively easy to remove without damaging the sandstone base, and so they pose only a minor threat. Similarly, other mud-nest builders were rare, or their nest was easy to dislodge, or they only used existing cells.

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*The major despoiler of art was a large black and yellow wasp.*

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Termites present an entirely different set of circumstances. Dr Naumann found two species that construct nests that may grow to massive proportions. But the nest galleries, although forming extensive networks, tend to follow natural crevices in the rock; only occasionally do they traverse open art-covered surfaces. If they do encroach upon artwork, the remedy is easy. Since the galleries advance only slowly, it is feasible to inspect sites regularly and destroy any encroaching nests.



The main pest — *Sceliphron laetum*.

## Pesticides?

Preventing damage by *S. laetum* is not so straightforward. Dr Naumann found that the wasps are less likely to build a nest on bare rock than close to existing ones; however, clearing nests from an area is difficult and can damage underlying art.

Dr Naumann tried using 'Pest Strips' (which give off dichlorvos vapour) to discourage the wasps. Six strips were hung in a well-sheltered and relatively confined test site that was heavily encrusted with mud nests. After 6 months,





A mud wasp's nest.

no new nests had appeared, whereas an identical adjacent site carried three new nests. The trial would need to be extended over a much longer time to obtain conclusive results, but it allows some degree of optimism.

Against this it should be noted that the high temperatures and humidities of northern Australia reduce the effective life of pesticides: the useful life of the strips in the field is less than 3 months.

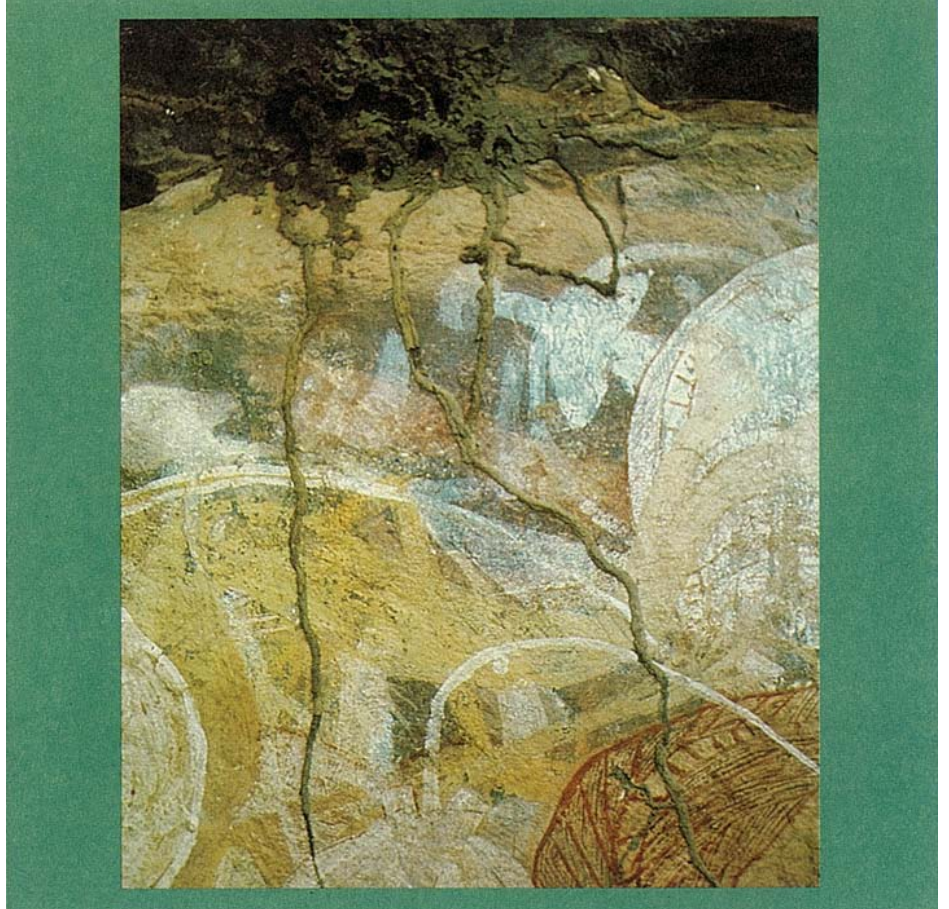
Furthermore, in more open sites where air moves freely, the effectiveness of the strips would be much reduced. At these sites, surface application of pesticide may be needed.

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*Clearing nests from an area is difficult and can damage underlying art.*

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When dichlorvos-bendiocarb mixture was sprayed onto the rock surface in one area, it had the desired result: no new nests. In the United States, chlordane is



**Termites can sometimes cause damage, too.**

sprayed onto susceptible areas to prevent nesting by wasps. However, Dr Naumann is extremely reluctant to encourage the extensive and repeated use of chlorinated hydrocarbon pesticides in the Kakadu National Park.

Residues would almost inevitably create undesirable side-effects in the area, and can be transported elsewhere by water run-off. Indeed, the non-target organisms that could be adversely affected by pesticide applications include the wasp's natural enemies.

Furthermore, repeated spraying of the rock surfaces with pesticide solution will eventually damage fragile artwork. Other ways of applying pesticide — as a powder or as a concentrate painted onto nests, for example — need to be looked into.

However, since art sites are numerous and widespread, and pesticide must be applied during the wet season when travel is most difficult, Dr Naumann believes the pesticide option is a difficult and expensive one.

Instead, he considers that advantage should be taken of natural factors inhibiting the nesting behaviour of wasps. Bright light discourages nesting, and regular clearing of dense vegetation in front of rock art will reduce shade.

During the wet season, mud is everywhere, but when the mud dries up, nest-building will cease. Dr Naumann suggests that care should be taken to ensure that water tanks and taps do not leak and supply a year-round source.

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*Permanently screening the art with wire mesh or perspex may, in the long term, be the most effective option.*

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However, he believes that covering art with a protective screen is the only permanent, and probably the most economical, procedure. Close-mesh wire gauze could be used or, at frequently visited sites, glass or perspex.

Andrew Bell

#### More about the topic

'The Biology of Mud-nesting Hymenoptera (and their Associates) and Isoptera in Rock Shelters of the Kakadu Region, Northern Territory.' Report to the Director, Australian National Parks and Wildlife Service. I. D. Naumann. (CSIRO Division of Entomology: Canberra 1980.)