TOPOGRAPHICAL



X-ray art

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WHEN AN artefact must be destroyed in order to reveal the secrets it holds, you might say researchers are caught between a rock and a hard place.

Until now, pigment research carried out on Aboriginal rock art meant removing a sample of the ancient paint for analysis in a laboratory. Though destructive to the artefact, this research can reveal information about social interaction, travel and trade during prehistoric eras of indigenous culture.

With this in mind, Jillian Huntley, an archaeological researcher from the University of New England in Armidale, aims to pioneer the application of non-destructive methods for rock-art analysis. The new research, carried out in collaboration with the Australian Museum and sponsored by the Australian Geographic Society, uses an X-ray gun to analyse the chemical makeup of rock art, without destroying the sample.

"The major benefit of the method is that it's completely non-destructive," Jillian says. "It's the first time we've been able to do this kind of research without going in with dental probes and scalpels."

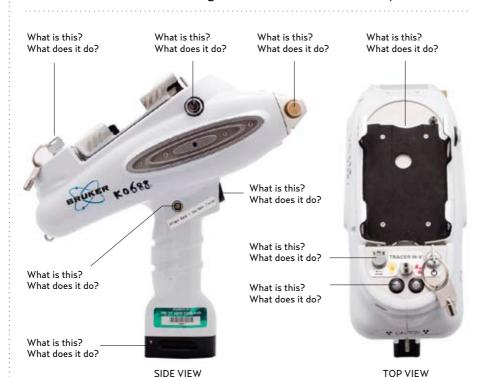
The X-ray gun, mounted on a boom arm with a 4m reach, sends an X-ray beam into the rock and measures the resulting fluorescent photon activity caused by moving electrons within the sample's atoms. The type of energy produced by the photons varies depending on the chemicals that make up the sample. When measured, this energy can be used to



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A RAY GUN FOR ROCK ART

Model Name: Bruker Tracer III-V Weight: xxx Cost: \$??? Shoots: X-rays



identify elements in the rock, and, in turn, different types of ochre. The analysed artefact remains undisturbed.

"Eventually, we'll be able to give the information generated by this investigation to cultural heritage managers, like the NSW National Parks and Wildlife Service, and the Aboriginal community. If they know what the pigments are made out of, they can decide on the best conservation methods for the rock art," Jillian says.

Jillian tells of an Aboriginal elder who remembers seeing rock art at a particular site 30 or 40 years ago, which is no longer visible today. If the ray gun method is successful, it could be used to identify whether ochre is present beneath layers of dust, mineral skins and graffiti.

The ray gun method is being tested on rock-art sites across the Sydney Basin on the NSW east coast, on paintings Jillian estimates could be up to 1500 years old. When this research wraps up at the end of the year, Jillian will begin a second case study in the north-west corner of the Kimberley, WA.





Fundraiser: Western ground parrot

TWO NATIONAL PARKS in southern Western Australia are the last known refuge of one of the world's rarest birds. Less than 140 western ground parrots (Pezoporus wallicus flaviventris) exist in the wild, mostly in Cape Arid National Park and Fitzgerald River National Park in WA. Their numbers continue to decline. The ground-dwelling parrot nests among native heath, making it vulnerable to feral predators. Wild cats are blamed for the critically low numbers. The Department of **Environment and Conservation has** laid toxic bait for the feral felines. The initiative should benefit not just the critically endangered species but also 18 other threatened fauna in the area.

The highly flammable heath habitats pose a similar danger. "Wildfires

tore through Cape Arid National Park in January causing untold damage to numbers of the ground-dwelling parrot," says Sarah Comer, regional ecologist at the DEC in Albany, WA. "We just got back from a trip to Cape Arid where we conducted surveys with volunteers from Friends of the Western Ground Parrot Community Group...and we didn't find many parrots."

Once believed to be a western subspecies of the extinct south Australian ground parrot, recent genetic analysis claims the western ground parrot is a separate and distinct species. There are eight birds in captivity and, with the right funding, Sarah hopes they can start a captivebreeding program, with the longterm aim of reestablishing popula-

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