Rock art evokes beastly echoes of the past

Leigh Dayton, Sydney

PREHISTORIC artists chose sites with unusual acoustics for their paintings, claims an American scientist. This enhanced the impact of their work by giving the art a sound dimension.

Steven Waller of the American Rock Art Research Association recorded echoes at dozens of rock art sites in Europe, North America and Australia. He found that the subject matter of rock art is consistently related to the sounds that reverberate in the caves in which they are found.

Waller suspects that early artists used the caves' acoustics as a way to summon up the sound made by moving animals, and cites the percussive sounds created while making stone tools as an example of the type of sounds they could produce. He claims that when these are made in rock shelters, they evoke the sound of individual hooved animals running. On the other hand, similar sounds made in deep caves resemble those made by herds of animals such as bison, horses or bulls. "It's like the walls are alive," says Waller.

He told a recent conference in Cairns, Australia, that except where felines are depicted, echoes are key elements of every rock art site he has tested. Effective echoes can be made by yelling, clapping or making percussion noises.

At open air sites with paintings, Waller found that echoes reverberate on average at a level of 8 decibels above the level of the background. At sites without art the average was 3 decibels. In deep caves such as Lascaux and Font-de-Gaume in France, echoes in painted chambers produce sound levels of between 23 and 31 decibels. Deep cave walls painted with cats produce sounds from about 1 to 7 decibels. In contrast, surfaces without paint are "totally flat".

Waller has analysed data from 20 rock art sites in Western Europe. His preliminary measurements from North America and Australia indicate that the results will be similar. But one difference has emerged. Waller says that Australian artists appear to have used rock shelters much like parabolic reflectors to focus echoes.

When Waller stood at 30 metres or more from a painted wall, he found that echoes seemed to emanate from the central images. But when he stood any closer, the echoes bounced back too quickly to be distinguished from the original sound. "It's almost spooky," he says. "Where they've drawn a person, and you yell at it, it's like the person is speaking to you."

According to Waller, the best way to appreciate the sophisticated art of our ancient ancestors is to make noise. "Unfortunately, most people walk right up to a painting and study it from inches away, talking in hushed voices," he says. "They never step back and see, or hear, the forest for the trees."

Fish fathers are set good parenting test

Georgia Mason

WHEN a female fish leaves eggs with a male she is trusting him not to abandon or eat them. But the females of one species do not leave this to chance. To choose the most caring father for their offspring, they set males a "good parenting test".

Prospective fathers of a species of Mediterranean blenny (Aidablennius sphynx) are given a trial sample of eggs to look after. When a female returns a day or two later, she will not mate with the male if the eggs have gone (Animal Behaviour, vol 43, p 865).

Sarah Kraak and Eric van den Berghe studied the blenny both in the wild and in the laboratory. The biologists placed glass tubes in the rock crevices where males nested, to serve as artificial nests. The males took to the tubes, often guarding them for months on end.

Kraak and van den Berghe counted the eggs in these tubes every day. They found that males with tubes that were initially empty attracted very small deposits of less than 10 eggs. But if a male successfully retained one of these clutches, his nest was usually filled with hundreds of new eggs within the space of a few days. But if the "test clutch" disappeared within a day, the nest was very unlikely to receive a further batch of eggs.

But were the females really testing the male's parental quality? The researchers were unable to see whether the large clutches were laid by the same females that had laid the "trial egg". But they were able to see that an individual female would return to a nest she had visited after a gap of a few days. And in the laboratory, they found that females did discriminate against seemingly careless fathers.

Kraak and van den Berghe also gave the females a choice between males with empty nests and males who had started off with large clutches which were then "raided" by the biologists. They found that the females greatly preferred the males with nothing in their nests. These males may not have had a test run, but at least they were not proven bad fathers.