



## Q&A Bernie Krause

# Soundscape explorer

Bioacoustician Bernie Krause has travelled the world for decades to gather animal sounds for his Wild Sanctuary archive ([www.wildsanctuary.com](http://www.wildsanctuary.com)). Following the release of his book about this work, *The Great Animal Orchestra*, he talks about the calls of the wild.

### How did you first get into sound?

There were open fields where I grew up near Detroit, Michigan, and I remember the summer-evening sounds of insects and birds. But as with sex in the 1940s, there was no way to discuss it. In my teens I discovered the guitar, and in 1963, three years after graduating from university, I took Pete Seeger's slot in the band The Weavers. Then I moved to California, got into synthesizers and, with my late music partner Paul Beaver, contributed to more than 100 feature films, including *Apocalypse Now* (1979), *Invasion of the Body Snatchers* and *Doctor Doolittle* (1967).

### Tell me about your 1970 album *In a Wild Sanctuary*.

This collaboration with Paul was the first recorded music to use long segments of wild sound. At the time, people would use a parabolic dish to isolate the sounds of bird species. I found stereo recordings more engaging. I went to the woods with a tape recorder and two microphones. I put on my headphones and the space opened up, calming me in a way that music didn't. I decided to record natural soundscapes for the rest of my life.

### What is a soundscape?

Composer and naturalist R. Murray Schafer defined it as everything that reaches

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our ears in a given moment. There are three kinds of sound: geophony (from wind, rain, earthquakes and other natural, non-living sources); biophony (from non-human animals); and anthrophony (from humans and their machines). Anthrophony is getting harder to escape.

### Do animals find acoustic niches?

In 1983 I was in an old-growth forest in Kenya recording for an exhibition at the California Academy of Sciences in San Francisco. Lying in my tent with headphones on, I suddenly heard hyenas, elephants, frogs and insects as an orchestrated collective, each singing within its own bandwidth. The creatures established both temporal and frequency niches for their vocalizations. I have found similar patterns in animal soundscapes around the world.

### What can sound tell us about the health of an ecosystem?

When you record an unhealthy ecosystem or 'biome' — one that has been slashed and



### The Great Animal Orchestra: Finding the Origins of Music in the World's Wild Places

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burned, for example — the voices tend to be faint and chaotic, like an untuned orchestra without a conductor and score. In 1988, I recorded in a site in the Sierra Nevada mountains before it was 'selectively logged' — a technique meant to have no impact on creature density and diversity of habitat. The place looked the same afterwards, but there was only sporadic birdsong, with almost no frogs or insects. Biomic elements find their niches over time, as I discovered in acoustic observations of older, more pristine habitats. I've recorded at that site 15 times over a number of years since the logging, and found that the biophony has not yet recovered.

### How has technology changed your work?

When I started, I had to carry 80 kilograms of expensive equipment into the field to record for a month. Now I can record 10 times as much with less than 5 kilograms of gear. I can cover a site with large numbers of recording monitors and collect vast amounts of calibrated data for future reference. At the same time, we've lost an enormous amount of wild habitat worldwide, and human noise keeps encroaching on the places that remain. These days, to capture one hour of usable material, I must spend several hundred hours searching for undisturbed sites, avoiding human noise, or both. Half my archive is made up of soundscapes that no longer exist.

### What are some of the most remarkable animal sounds you've heard?

Snapping shrimp stun their prey by creating cavitation bubbles with their claws; the bubble explodes like a starting pistol in your ear. I've caught the sound of red fire ants rubbing their hind legs on their abdomens to summon others to dig around a microphone and keep the entrance of their hole clear. One of the most frightening sounds I've recorded was of Ecuadorian baby vultures using a hollow tree to amplify their voices. I've also had close calls with a growling jaguar on an Amazon trail at night, and mountain gorillas in Rwanda, which emitted the loudest screams I've ever heard from any land animal before an attack.

### Is it true that you have also recorded snow falling and maize (corn) growing?

Snow can't be recorded directly. But if you catch the right conditions, when it is almost freezing and the air is heavy with moisture, you can capture the sound by attaching a clip-on microphone to low-lying bushes. When the snow falls on the branches, it creates a little vibration. As for maize, one film I worked on sent me to Iowa to record it growing. I went out with microphones on a hot August night and waited. I discovered that maize grows each night by telescoping upwards. The stalks squeak like rubber balloons. ■

INTERVIEW BY JASCHA HOFFMAN