

Is Your Life Too Loud?

You won't believe just how loud everyday sounds really are and what kind of toll they're taking



by Tom McGrath, Men's Health; Photograph by Joshua Scott

After six hours in a roaring jet, three in a rattling car, one on a thrumming ferry, and 45 minutes hiking down a dark, damp path, I am sitting on a rock in the middle of a forest, listening to nothing at all. It's at this point that I understand what the heck Gordon Hempton was trying to tell me.

This is not just any forest, I should point out. It's Hoh Rain Forest, inside Washington's Olympic National Park, a patch of earth that may contain the quietest place in America. Says who? Well, this takes us back to Hempton, a naturalist type I spoke to before coming out here. Hempton, who makes his living recording the sounds of nature, has started a campaign to preserve quiet places inside America's national parks. The first place he has certified as being almost completely free of manmade noise: a single square inch of soil just down the path from where I'm sitting.

"The extinction of quiet places is rapidly outpacing that of endangered species," Hempton told me on the phone, from his home near Puget Sound. When I asked him why it was so crucial that we preserve such places, he sighed heavily. "Even to ask that shows how far we've been removed from nature."

I mumbled something in agreement, even as I thought to myself that he hadn't exactly answered my question. But now, sitting on this rock, listening to the birds chirp and a nearby stream trickle past, I think I'm beginning to get it.

There's little question that the world has grown louder in recent generations, thanks to everything from the jets that roar over our heads to the iPods that blast in our ears. The problem? Evidence is mounting that our bodies might not be ready for this kind of rumble. Not only are hearing problems on the rise—at last count, more than 30 million Americans had some kind of hearing loss—but research suggests that noise, even relatively low-level noise, may be destroying our health. Specifically, it's believed to play a significant role in everything from sleep disorders and stress responses to high blood pressure and heart disease. Noise, it seems, may be quietly killing us.

Still, I can't say I completely grasped all this until I sat here, away from manmade sounds for probably the first time in my life. Indeed, two things strike me: first, that the 11 hours I spent getting here was actually a form of time travel, since what I'm hearing on this rock today animals, water, wind is exactly what I would have heard had I sat here a century or a millennium ago. More important, my body seems thankful that we have at long last come to a place like this. The sound of all this nothingness is incredibly soothing—in the manner of a tooth that at last stops aching or a low-grade fever that finally breaks. I scrawl "BIG FLUFFY PILLOWS" in my notebook, because it feels as if I have them pressed against my ears.

Aural history

It's tough to say precisely how much louder the world is today than it was a few generations ago, but Emily Thompson assures us that it is. Thompson is a professor at the University of California at San Diego and one of the leaders in the burgeoning field of aural history (essentially, the study of how the world has sounded through the years).

"If you lived in a city in the late 19th century, the sounds you heard were mostly organic—people talking, animals making noise," she says. In contrast, by the 1920s, the sounds of the city had become mostly mechanical—factories groaning and grunting, cars putt-putting around the streets, even an occasional plane sputtering overhead. The racket was so loud—or perhaps so foreign to all those delicate, 19th-century-reared ears—that anti-noise groups actually sprang up in the 1920s, though in the end their solution was less about making things quieter than about finding ways to block out the noise through architecture and various other methods. "This was really when the study of acoustics took off," says Thompson, whose book, *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1933*, surveys these earliest attempts to muffle the country.

In the eight decades since, the world has become exponentially louder. Consider Gordon Hempton's findings: In 1984, he identified 21 places in his home state of Washington that were essentially quiet—that is, they experienced no manmade noise for at least 15 minutes a day. By 1989, thanks to more cars and more air traffic, that number had dropped to just three places.

"It's an unusual experience to hear absolutely nothing," says Elliott Berger, an acoustical scientist and the editor of the last two editions of *The Noise Manual*, a textbook for the audiology community. "It seems we rarely can or do give ourselves the opportunity to appreciate complete silence."

Still, the background noise that bombards us 24-7 is only one contributor to the increasing cacophony. There's also the technology we use to entertain ourselves from multiplex theaters to megawatt amplifiers and the fact that it allows us to turn the volume higher than at any other time in history.

In the 1950s, the average sound level in a movie theater was about 70 to 75 decibels. Now, thanks to advances in sound engineering that have made it possible to amplify noises without distorting them, the average movie sound level is 85 decibels, with scenes in some action pictures (basically anything directed by Michael Bay) spiking as high as 130 decibels. That's only a few decibels less than a jackhammer.

Car stereos are also easier to blare, compared with those in the era of in-dash eight-tracks. "A standard car radio had anywhere from 4 to 5 watts or 80 decibels in the '60s, but a factory radio today has around 80 watts or 102 decibels," says Steve Conner, an audio engineer at Delphi Electronics & Safety, which supplies car stereos to GM. "Some 'tuner' cars with tricked-out stereo systems can reach up to 120 decibels. An hour or so at that level is equivalent to a rock concert."

But again, that's one of today's concerts. If you could flash back to 1976 to hear a gig by the Guinness-certified "loudest rock band in the world," The Who, you'd probably be underwhelmed by their sound system. You might even call Townshend and crew "subdued" (though Pete's hearing loss shows it was loud enough onstage).

"When I started in the 1970s, state-of-the-art amplifiers had 150 to 300 watts powering each channel," says Mark Frink, a longtime concert sound engineer and a contributor to *Mix* magazine, which covers sound technology. "Today, amplifiers have 2,000 or 3,000 watts, and you use 80 or 100 amplifiers for an arena show. That's 300,000 watts of power." The reason, Frink says, is simple: A louder, more powerful show is a more stimulating, memorable show. "If you work in the concert business, people look at you askance if you ever ask, 'Hey, is this too loud?'"

Frink also notes that cranking up the volume can help a performer compensate for lack of talent. "The louder the sound, the harder it is to distinguish pitch. So if you have a singer who can't sing or a guitar player who can't play, just have the sound guy turn it up and he'll sound better." Yes, Ashlee Simpson, we're onto you.

Thanks to portable stereos, we can hear all those lousy singers and guitarists whenever we want and at dangerously loud levels. When Boston University researchers recently tested nine different combinations of portable CD players and headphones, they discovered that at full volume, some pairings actually exceeded 130 decibels. In these earsplitting instances, the study reports, the common culprit turned out to be "insert headphones" the type you see plugged into the head of nearly everyone toting an MP3 player.

"The smaller the headset, the closer to the eardrum, and the more likely it is to cause hearing damage," says study author Clarke Cox, Ph.D. "The popularity of MP3 players is a particular concern, because they can hold more songs than a normal CD, exposing you to that damaging sound longer."

There is, however, one group that benefits from our blasting MP3 players: thieves. In 2005, nine iPods were stolen from subway passengers in Boston because the victims couldn't hear the criminals coming.

Never have I felt so good about being a late adopter of technology.

Turn down that racket

After my brief encounter with absolute silence, I decided to find out how much noise I take in on a typical day. So I bought a sound meter at Radio Shack and carried it with me, recording the various sound levels I heard. (Fair warning: My \$59 meter is not exactly a finely tuned machine, but it does provide a rough picture of how loud things are; think of the following measurements as aural stick figures.)

The first sign of trouble came at 6:45 a.m. in my own kitchen, as my two daughters, ages 6 and 3, began debating loudly what they were going to eat for breakfast. "I don't like Cheerios. I want Lucky Charms!" the 3-year-old yelled. The 6-year-old followed with, "How come she gets to have Lucky Charms?" Standing about two feet away, I looked down at my noise meter, which registered 74 decibels. Is that bad? Well, let's put it this way: Noise experts say anything around 80 decibels incites a stress response in your body. No wonder I was considering trading my coffee mug for a martini glass.

The real revelation, however, came when I got into my car about half an hour later. For six years, I had a two-hour work commute, during which time I amused myself by either listening to talk radio or, more commonly, cranking up the music on my Toyota Tercel's car stereo. I always had some sense that the music was fairly loud — mostly because whenever my wife got in the car, she would bellow, "This is REALLY LOUD!" but I never realized how loud until I switched on my noise meter and popped in U2's How to Dismantle an Atomic Bomb. Driving around my neighborhood was bad enough—the meter registered 84 decibels—but things were worse when I hit the highway and turned up the volume so I could hear the music over the road noise. Suddenly, I was being blasted by 100 decibels, with spikes of 108 decibels whenever Bono really got into it.

The rest of the day held similar sound surprises. The Starbucks where I buy my coffee and read the paper: 82 decibels. The crowded restaurant where I ate lunch: 86 decibels. A typical street in Center City Philadelphia, where my office is: 79 decibels.

What's curious is that, with the possible exception of my kids screaming, none of these noises seemed particularly loud to me. And that's part of the problem when it comes to our health. While our bodies are great at protecting us from many dangers—touch a hot stove, for instance, and your hand will reflexively recoil before you're burned any worse—they're not so great at protecting us from things that are too loud. Yes, you will start to feel pain in your ears when the noise level is 125 decibels, but damage is done well before that, at 85 decibels.

"Noise is something we can habituate to," says Berger. "Hearing is similar to smell in that way you can walk into a bad-smelling room and get used to it pretty quickly."

Noise-induced stress

Though we may not notice noise and may even willingly expose ourselves to it, our brains generally interpret loud sounds as a threat. "Any sound in the hazardous range increases the stress response in your body," says Robert Fifer, Ph.D., director of audiology at the University of Miami's Mailman Center for

Child Development. Among the physiological responses to loud noise that studies have documented: increased heart and breathing rates, heightened blood pressure, greater levels of stress hormones in the bloodstream, and increased brain activity.

Now, on one hand, this sort of reaction is a good thing, since it's what makes us turn our heads when we hear a blaring car horn or wake up when we hear a loud noise in our houses at night. But putting ourselves on this kind of alert all the time—which can happen when we're constantly exposed to loud noise—has a debilitating effect on the body.

In 1998, for example, Cornell University environmental psychologist Gary Evans, Ph.D., published a study of third- and fourth-graders who lived near the newly opened airport in Munich, Germany. (Half of the children lived under flight patterns; the other half lived in quieter areas.) His findings: The children in the chronic-noise group experienced significant increases in blood pressure and levels of stress hormones (epinephrine, norepinephrine and cortisol) over two years, while the children in the quiet areas showed no significant changes. Four years later, Evans published a second study involving another group of kids near the same airport, this one finding that those routinely exposed to airplane noise had impaired reading ability and long-term memory. "Stress hormones can cause any individual—child or adult—to become fatigued much faster than normal," says Fifer. "When that happens, the person can't learn effectively."

It would be logical to assume, then, that regularly blasting CDs inside a car is as bad for our health as being exposed to the distant drone of jet engines, if not worse. If that's the case, then we should all heed my wife's advice and turn the volume down—except that the road noise that would remain wouldn't be much better. In the past decade, at least eight studies have found a heightened stress response among people routinely exposed to traffic noise, and not necessarily at booming levels. (Sound levels ranged from 50 to 70 decibels.) Worse, the stress reaction lingered in many of them even after they'd parked their cars.

In other words, the health effects of sound may, literally, echo through our bodies. And, in fact, recent research supports this notion. A study in the *Journal of Occupational Health* took nighttime readings on workers who were exposed to loud sounds during the day. The results: Not only was the workers' sleep quality worse, but their nighttime heart rates never dropped as low as those of people not exposed to noise, and their cortisol levels were still elevated the following morning.

The long-term consequences of all this noise-induced stress are tough to pin down, but among the possibilities is an increased risk of cardiovascular disease. Though few large population-based studies have been done investigating the link, two years ago German scientists analyzed the existing research and concluded that there was an elevated risk of heart disease for anyone routinely exposed to sound levels over 65 decibels.

I like U2, but not that much.

Bad vibrations

Surprisingly, some researchers argue that our hearts can also be hurt by noise we can hardly hear. The culprit: low-frequency sound waves that, while relatively silent to our ears, may cause a fatal thickening of the heart walls and coronary blood vessels.

"The biggest effect we see is the abnormal growth of collagen, the steel of the body," says Mariana Alves-Pereira, Ph.D., a researcher at the New University of Lisbon, in Portugal. "Our hypothesis is that this is the body trying to stabilize itself against the vibrations of the noise. If I grab you by the shoulders and try to shake you, your instinct is to grab onto something. Basically, this is what your body is doing. It's trying to re-inforce its structural integrity."

Most cases of what's termed "vibroacoustic disease" have been diagnosed in pilots, but Alves-Pereira believes that the phenomenon is much more widespread, since low-frequency noise is everywhere—factories, air conditioners, even cars. "The noise in cars is incredible," she says. "It's actually greater than in an aircraft cockpit."

Alves-Pereira plans additional research on vibroacoustic disease, but in the meantime, what may be the world's largest case study of the syndrome has already taken place in Kokomo, Indiana. In the past several years, a number of the city's 50,000 residents have been suffering from health problems ranging from headaches to increased blood pressure—problems some have attributed to noise dubbed the "Kokomo Hum."

Jim Cowan, a senior consultant for the acoustical research firm Acentech, was hired by the City of Kokomo to investigate the hum in November 2002. Nine months later, he located two industrial fans in the area that were emitting low-frequency sounds. Even though quieting the fans didn't solve everyone's health complaints, Cowan believes that some of the residents may have been suffering from vibroacoustic disease. "Since I became involved in the Kokomo project, I've received calls from people all over the world who are hearing a hum and complaining of the same symptoms."

While many remain skeptical about vibroacoustic disease—they say the evidence isn't yet solid enough—there are other examples of low-frequency noise having a dramatic impact on the body. Last year, the journal *Thorax* reported on several men whose lungs were ruptured by the vibrations from loud music. One was at a club, another at a concert. A third had a 1,000-watt "bass box" in his car.

Perhaps more disturbing, noise not only can put you in the hospital, but also is likely to follow you there. Doctors at Johns Hopkins Hospital recently found that the sound level at more than 20 hospitals worldwide exceeds the limit set by the World Health Organization by an average of 20 decibels. One location at Johns Hopkins itself reached 70 decibels, high enough, say the researchers, to delay wound healing.

The solution you hear most frequently from hearing advocates is for all of us to be much more vigilant about protecting ourselves from loud noise. This means not only becoming more aware of what sounds can harm us, but also actively taking steps to avoid or block out those sounds.

"I'd like to see earplugs become as common as sunglasses or sunscreen," says Laurie Hanin, director of the League for the Hard of Hearing, in New York City. The problem, of course, is that earplugs will never look as sexy as sunglasses, nor is there nearly as much money to be made selling cheap foam ear protection as there is selling \$10 bottles of Coppertone.

A tougher, but in the end more effective, remedy might be to reduce the amount of noise we make in the first place—and not just by putting a decibel cap on the Green Days of the world. "There's technology out there that will make the world quieter," says Les Blomberg, head of the Noise Pollution Clearinghouse, an activist group. He cites things like car tires that give off fewer decibels and rubberized road surfaces that will reduce noise further. He also says we could change air-traffic routes to keep noise down—a measure that may be gaining political support. Last year, New York Congressman Joseph Crowley, whose district includes LaGuardia Airport, introduced a bill that would create the Airport Noise Curfew Commission, which would help set curfews on planes flying over populated areas during normal sleeping hours.

And there are other examples of effective noise reduction. In 2003, soon after discovering that the sound effects on some kids' toys reached as high as 120 decibels, the League for the Hard of Hearing pushed the Toy Industry Association to agree to limits of 90 decibels. France, meanwhile, has laws prohibiting the sale of any personal stereo playing louder than 100 decibels—which forced Apple to build a quieter iPod for sale exclusively in that country.

Still, quieting things down won't be easy. One of the most popular Internet downloads among iPod owners in France is the goPod—a program that lets you override the built-in volume limit.

Men's Health

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