Nordenskiöldsgatan, Gothenburg, Sweden
Photo Credit: Arek N. (wikimedia)

The Healing Power of Nature Sounds in Cities

By Julia Triman

A growing body of research supports the healing power of natural sounds. Supporting prior reports of the health benefits of exposure to natural sounds, one recent study, conducted by Gould van Praag et al. (2017) examined the positive neurobiological impacts of exposure to natural sounds. In urban environments in particular, sometimes the absence of sound is more elusive and difficult to find than the din of various noises: vehicles, construction, music and more. With this in mind, some researchers are studying the potential for various types of nature sounds, among them birdsong, water, and even rustling leaves, to contribute positively to the urban experience and the health of urban residents.

Zhang, Kang and Kang (2017), through a field experiment with seventy participants in Shenyang, China, found that urban natural environments, with natural sounds, have a positive effect on individual attention restoration. The researchers assigned a task to participants designed to elicit mental fatigue, tested all participants' attention levels, then grouped participants in three adjacent areas of a waterfront park on the Hunhe River where they experienced forty minutes of self-directed restorative activity, such as walking, sitting, and viewing the surrounding scenery. A fourth group of participants served as the control group, and received no location change or time for restorative activity. While each area had similar visual stimuli in each location, different types of sounds were dominant: in location A, traffic sounds (both live and recorded); in location B, machine

sounds (primarily a lawn mower; also the loudest environment at 71.4 dBA); and in location C, natural sounds (birds and insects). After the restorative activity, each participant completed a second task to measure attention levels. The researchers determined that, even when accounting for a "practice effect" apparent with the control group, natural sounds that participants experienced in location C, in this case birds and insects, had a significant positive effect on attention restoration when compared to traffic and machine-dominated soundscapes.

Hedblom, Knez, Sang and Gunnarsson (2017) conducted a survey in Gothenburg, Sweden to try to understand how natural sounds and/or soundscape ecology influence people's experience of urban greenery. The researchers sent a survey by mail to people who lived near or adjacent to six different urban sites in the city. Approximately 1,300 people replied to the survey, answering questions evaluating different types of sounds, rating the desirability of bird song, and expressing opinions about the importance of nature-related sounds, trees, and plants for experiencing bird species in the area. The researchers found that people living near places they characterized as having "high naturalness" tended to elicit more positive nature-sound-related evaluations. Overall, women and people of older ages assigned natural sounds and bird song higher importance. Researchers also determined that "visual and audible experiences of urban greenery are connected," suggesting a link between different sensory experiences of urban nature (10). The researchers concluded that their results indicate that the quality of sensory experiences, in this case sounds of nature in local green spaces, are an important factor to consider when designing and planning them.

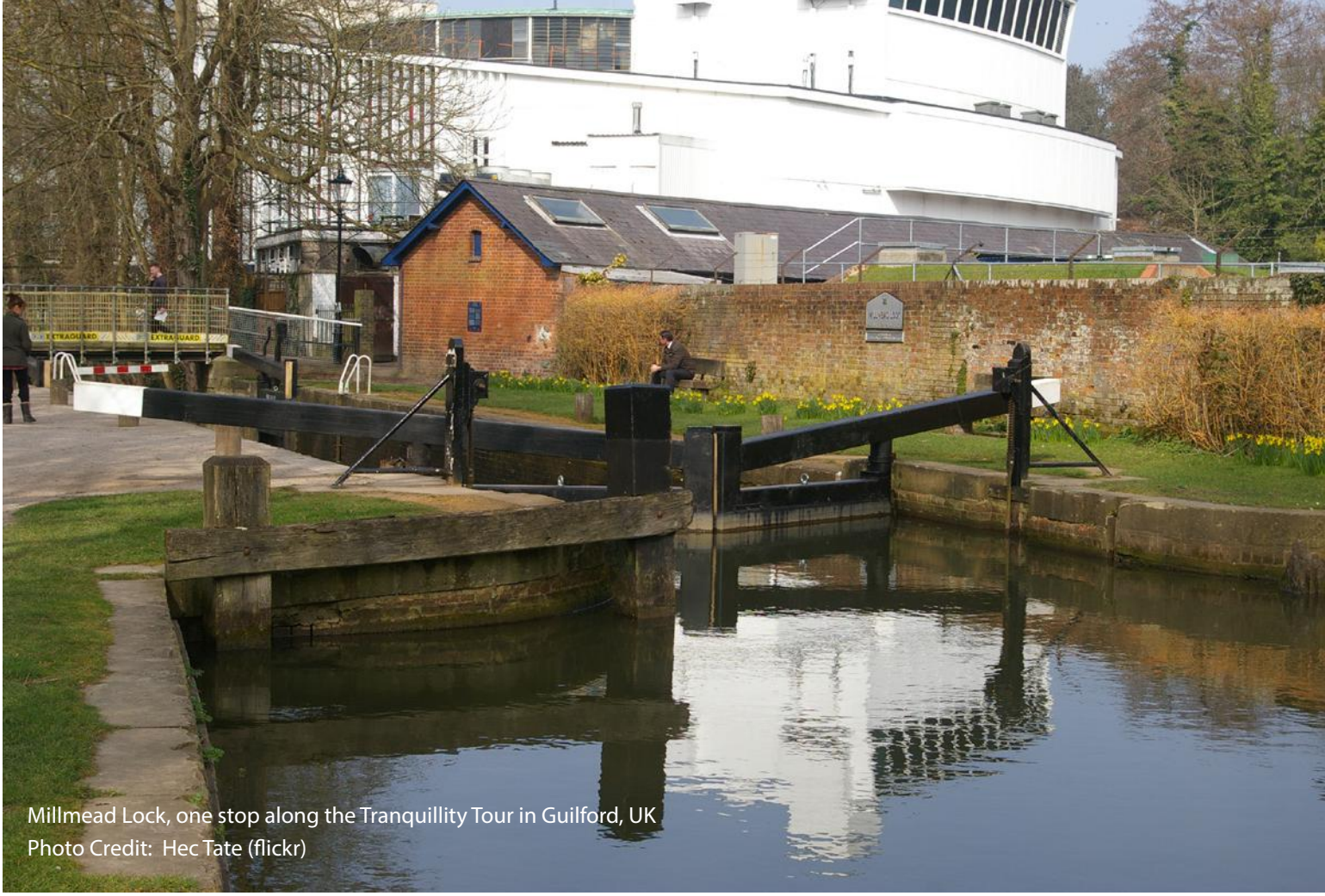
Zhang, Kang and Kang Fig. 4
Participants in restorative experience

Hong and Jeon (2017) expand upon the present practice of noise mapping to identify adverse sound levels with a technique known as soundscape mapping, which measures qualitative aspects of sounds perceived both "positively" and "negatively" by urban residents. Following a body of recent research and experimentation in soundscape mapping in cities, this study explicitly introduces and explores the effect of spatial dependence - how different properties of nearby areas influence one another - in a neighborhood in the northern region of Seoul, South Korea. The researchers conducted field analyses of sound sources, including traffic, human sounds, natural sounds (including water sounds, bird songs, and wind), and other sounds such as construction and mechanical noise and music. They also conducted five-minute recordings at each field site to measure sound pressure levels and psychoacoustic parameters, including loudness and sharpness. Perhaps unsurprisingly, through statistical analysis, the throughout the study area, a finding the researchers say is consistent with prior studies). The consideration of spatial dependence, with detailed information about spatial relationships between different types of sounds and perception of soundscape quality as the fascinating soundscape maps in the article show, makes this research approach highly relevant to urban planners and designers.

Hong and Jeon Fig. 4, Soundscape map for perceived overall soundscape quality

Having solid evidence that nature sounds can be beneficial for urban residents is encouraging, but there is still more to be done to connect urban residents with opportunities to engage with nature sounds. One person at work on this in the U.K. is researcher Greg Watts of the University of Bradford's Centre for Sustainable Environments, who has been studying and experimenting with ways to measure perceived tranquility in urban spaces, and to find ways to encourage people to seek out such spaces in their own cities and towns. In a recent paper, Watts (2017) reported on a field-based study of the "Tranquillity Rating Prediction Tool." In addition, Watts has collaborated with the company Handheld Tours to create a 4.5-kilometer Tranquility Trail for Guilford, UK that one can download and follow using a Smartphone application. Watts says he has also received interest in developing similar trails in Ireland, the United States, and Hong Kong.

Finding spaces for quiet, contemplation, and to hear nature sounds amidst the hustle and bustle of noisy, busy urban lives can be a challenge, but recent empirical evidence reported here suggests this is a decidedly useful pursuit. There are many ways in which we might plan and design for increased exposure to nature sounds, both in parks large and small, and throughout cities and towns. It can be hard to find any place completely devoid of machine and/or human-generated noise (even in the most remote places, air traffic can



Millmead Lock, one stop along the Tranquillity Tour in Guilford, UK
Photo Credit: Hec Tate (flickr)

still be heard with surprising frequency), but a challenge such as this is well worth the effort. If we hear sounds of birds, trees rustling in the breeze, and water trickling through streams in cities, among other sounds, hopefully these are signs of healthier urban ecological dynamics we are constructing for ourselves and our nonhuman co-inhabitants.

Resources

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