CENTER FOR RESEARCH & EVALUATION

Center of Science and Industry

The sound of culture:

Exploring acoustical features of sounds perceived in free-choice learning environments

Donnelley Hayde

Acoustical Society of America

November 19, 2024

What does this sound mean to you?

What if I told you...

- that this sound was recorded in a place intended for learning?
- that people come to this place expecting to have fun?
- that this sound holds *opposite* meanings for many of those people?

How would all of these things affect your approach to exploring acoustics in this kind of environment?

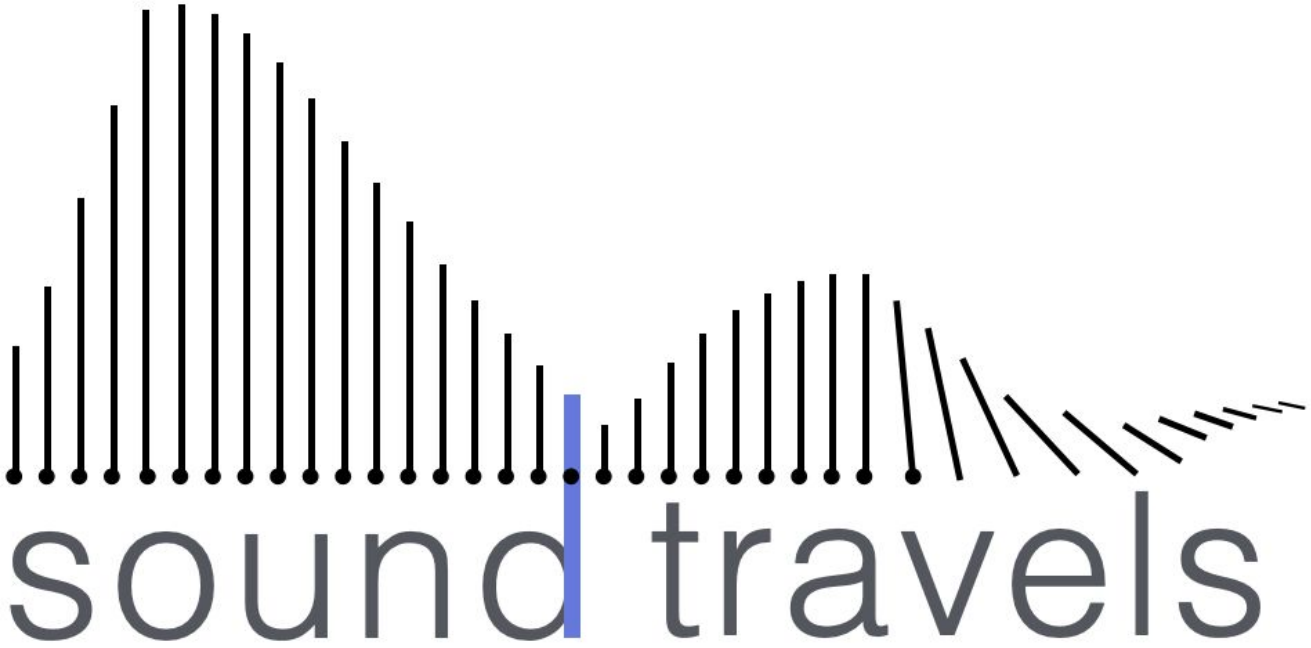
Photo courtesy of COSI / Anna Trankina

Photo courtesy of COSI / Anna Trankina

Photo courtesy of COSI / Anna Trankina

The Sound Travels project

Through a combination of traditional research and practice-based exploration, we are investigating how sounds around us (soundscapes) impact people and their learning in spaces like parks, zoos, and science centers.



DRL AISL #2215101

Our research questions

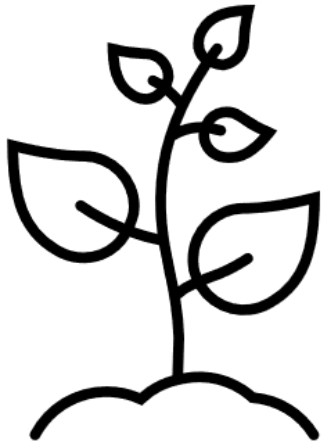
R1: How are soundscapes used by informal science learning (ISL) practitioners?

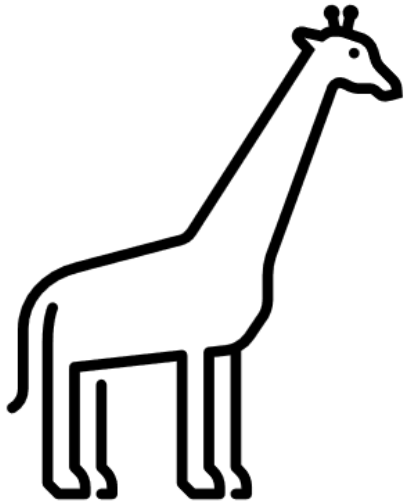
R2: What are the qualities of soundscapes at different ISL sites?

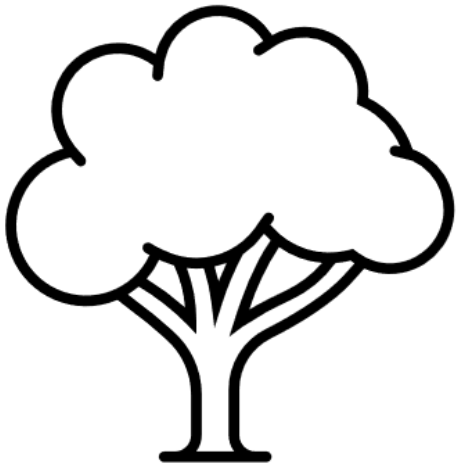
R3: How do informal learners at ISL sites experience sound? To what extent does sound impact attention attraction, dwell time and shared learning in these learners?

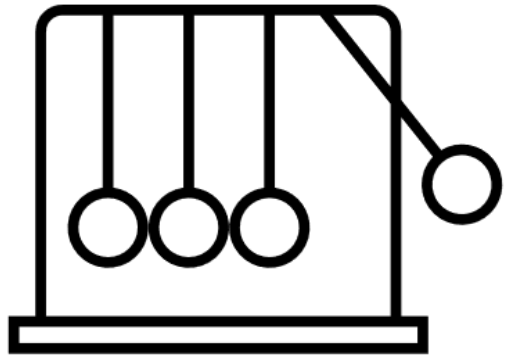
R4: How do qualities of the soundscape correlate with indicators of learning: attraction, attention maintenance, and shared learning?

Our research contexts









Rigor, usability, and value

visitor-facing data collection means thinking about…

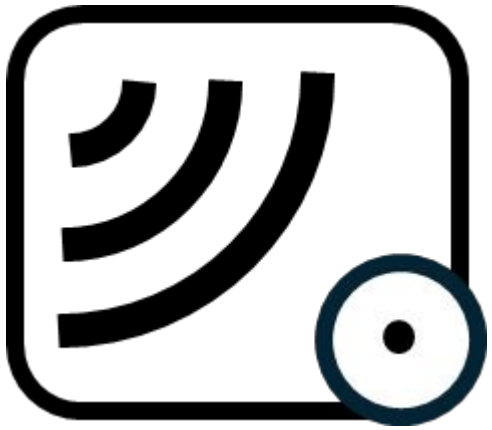
- unique visitor experience of each site
- interests and needs of partners
- aggregating data across sites and methods, including technical study of sound

Photos courtesy of Martha Merson and Laura Weiss

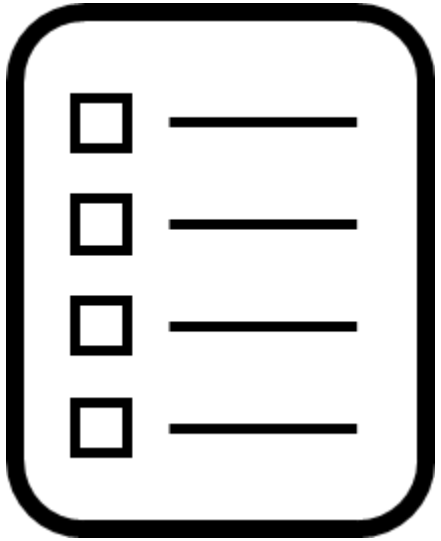
Collecting data at project sites

What we've done so far:

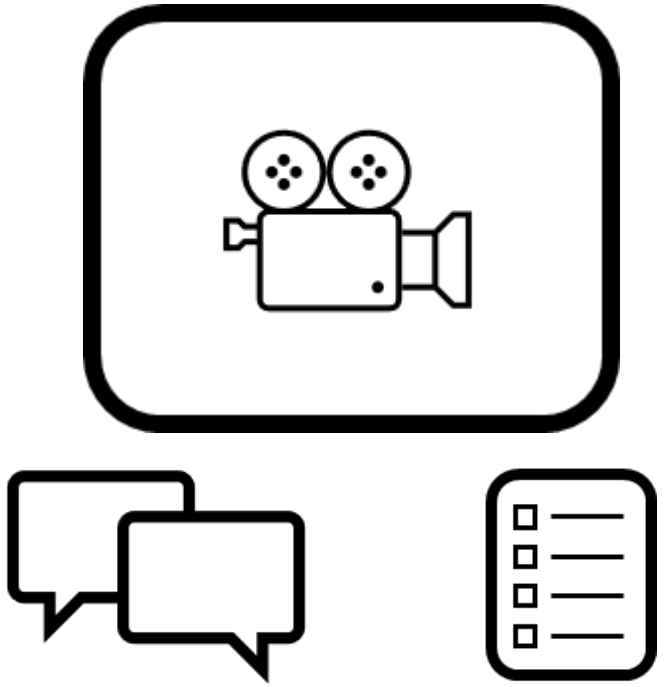
Ambient recording



Visitor questionnaire



Sound Search protocol

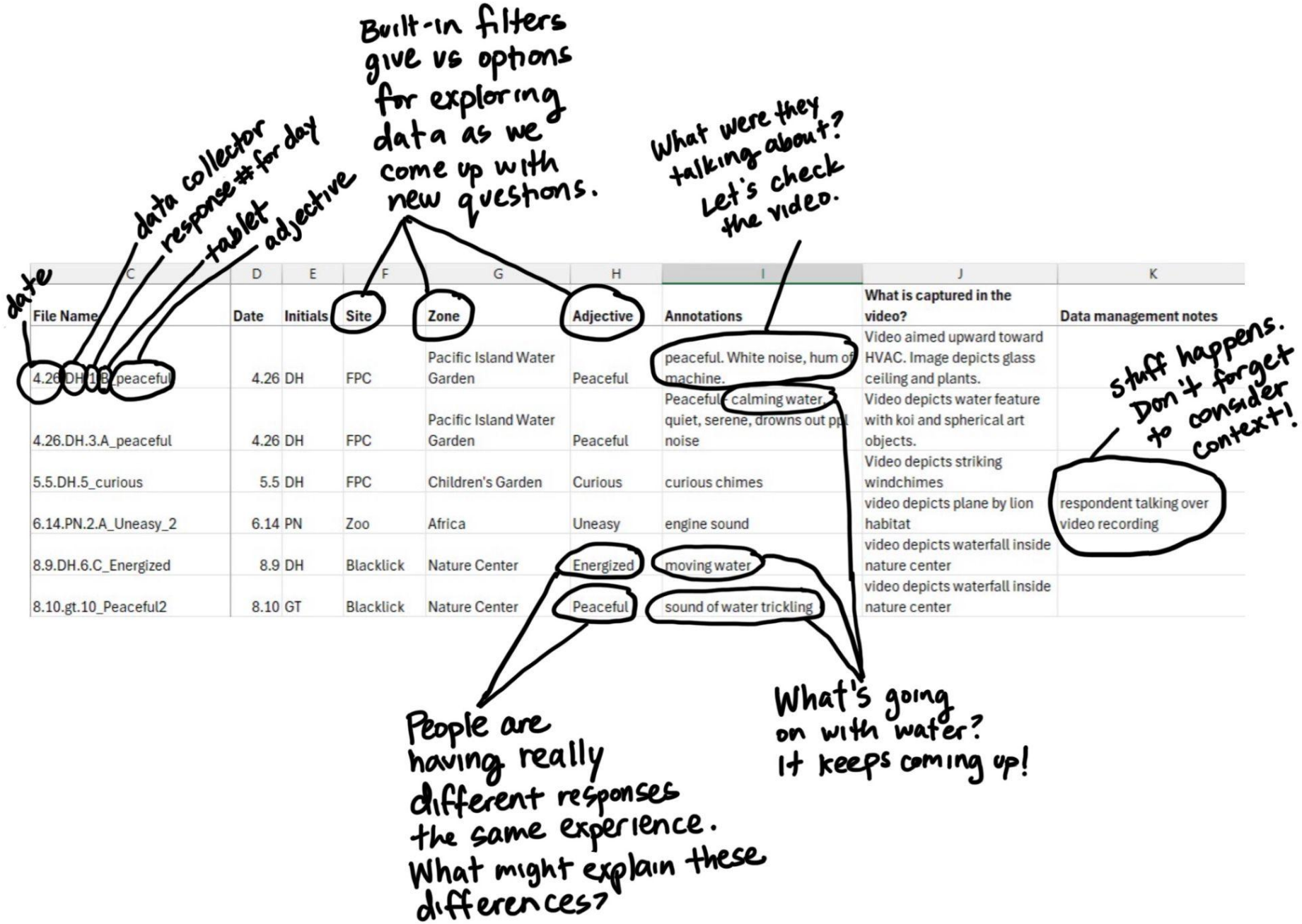


curious?

energized?

uneasy?

peaceful?



	C	D	E	F	G	H	I	J	K
	File Name	**Date**	**Initials**	**Site**	**Zone**	**Adjective**	**Annotations**	**What is captured in the video?**	**Data management notes**
	4.26.DH.1.B_peaceful	4.26	DH	FPC	Pacific Island Water Garden	Peaceful	peaceful. White noise, hum of machine.	Video aimed upward toward HVAC. Image depicts glass ceiling and plants.	
	4.26.DH.3.A_peaceful	4.26	DH	FPC	Pacific Island Water Garden	Peaceful	Peaceful, calming water, quiet, serene, drowns out ppl noise	Video depicts water feature with koi and spherical art objects.	
	5.5.DH.5_curious	5.5	DH	FPC	Children's Garden	Curious	curious chimes	Video depicts striking windchimes	
	6.14.PN.2.A_Uneasy_2	6.14	PN	Zoo	Africa	Uneasy	engine sound	video depicts plane by lion habitat	respondent talking over video recording
	8.9.DH.6.C_Energized	8.9	DH	Blacklick	Nature Center	Energized	moving water	video depicts waterfall inside nature center	
	8.10.gt.10_Peaceful2	8.10	GT	Blacklick	Nature Center	Peaceful	sound of water trickling	video depicts waterfall inside nature center	

Making sense of culture and sound

- deductive coding about how people describe sound
- inductive coding about the sound sources people identify
- triangulating individuals' qualitative and quantitative responses
- exploring patterns: relationships between variables, common themes across adjectives, common themes across sites and zones

We would like to acknowledge and thank...

TERC

Audubon GREAT LAKES

Chicago Park District · Hortus in Urbe · Organized 1934

Columbus Zoo and Aquarium

Northwestern University

Franklin Park Conservatory and Botanical Gardens

Metro Parks

COSI Center of Science and Industry

Deedrick Consulting, LLC

Native Pathways + Reimagine Research Group

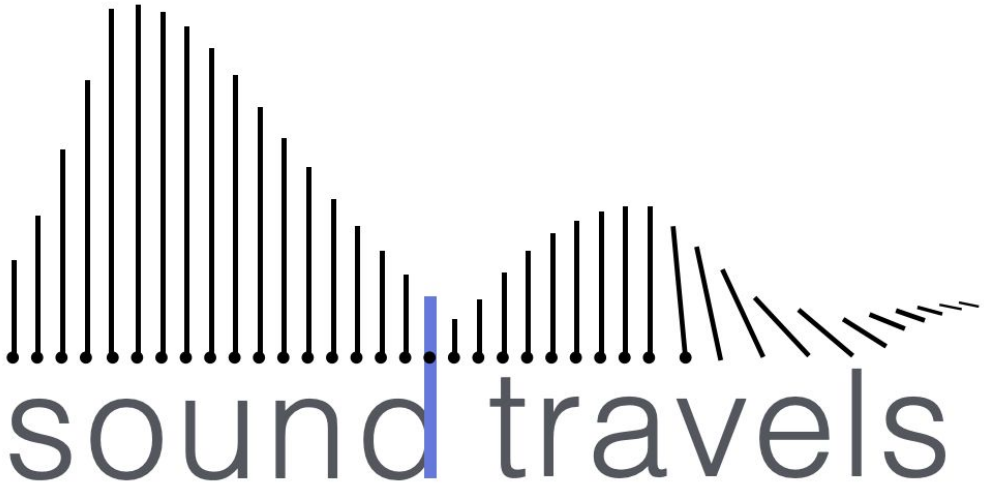
and our advisory team

neighborhood art school

North Park Village Nature Center

Get in touch!

Donnelley Hayde
dhayde@cosi.org



https://www.terc.edu/soundtravels

You can also find our work in the community repository on informalscience.org!