

Acoustic Ecology

Community Insights and Strategic Outlook
A Global Survey

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Outline of the approach to the data

This report offers a strategic analysis of some of the current research projects conducted by practitioners who are members of or associated with the World Forum for Acoustic Ecology (WFAE), concentrating on the organization's vision and the broader implications of sound ecology within local and global contexts. A thematic analysis identifies key themes within strategic visions and future goals, while demographic analysis will highlight the diversity of participant backgrounds, comparing these against thematic trends. Policy-related insights are provided to inform actionable recommendations for policy making, enhanced by an exploration of qualitative insights that consider pragmatic and philosophical perspectives.

This report organizes the findings into interrelated sections, informed by survey data, with the intention to act, in part, as a guide to the WFAE's strategic trajectory. The analytic process has ensured data integrity through cleaning and coding, while quantitative aspects were assessed using fundamental statistical measures.

The survey's thematic analysis revealed key focus areas: **community**, **environmentality**, **technology**, **interdisciplinarity**, and **inclusivity**. The goal of this research has been to help guide the field toward a trajectory shaped by community engagement and public interest, enriched by a wide range of voices from around the world dedicated to acoustic ecology's study and application.

As with any analysis, the author fully anticipates the possibility of errors and misinterpretations within the data presented. Feedback, comments, and constructive criticism are openly welcomed. Such dialogue is invaluable and is embraced in the spirit of refining a collective understanding and shaping a better, more inclusive future vision for the field.

Together, we listen.

Introduction to the report

This report outlines the World Forum for Acoustic Ecology's role and its associates in advancing acoustic and sound ecology, committed to public engagement and environmental justice, and initiating the development for a collective future vision enriched by its inter- and transdisciplinarity.

The initial idea for this report traces back to the approval of a global survey by the President of the World Forum for Acoustic Ecology. This endorsement followed a successful national focus group, held in collaboration with the Canadian Association for Sound Ecology (CASE). Subsequently, leadership passed from the former WFAE president, Eric Leonardson, to Dr. Raquel Castro, who helped facilitate the project. It was also written in collaboration with Claude Schryer (CASE), as well as Jesse Budel and Dr. Leah Barclay (Australian Forum for Acoustic Ecology).

To uphold the highest ethical standards, the study was thoroughly reviewed and received approval from the Research Ethics Board of the primary investigator's affiliate institution, Athabasca University in Canada, with Mickey Vallee (CASE) overseeing the process on October 11, 2023. The survey was then distributed through the WFAE email listserv, providing a Google Forms link for responses, which remained active until December 7, 2023. Data analysis was undertaken in December and January. The report's preparation was carried into late-January, experiencing a slight delay owing to the holiday season.

Participants were asked about their demographic details, professional affiliations, and geographical locations. Questions invited participants to share their experience in acoustic ecology, primary work fields, research interests, and specific focuses within acoustic and sound ecology. The survey also sought insights on emerging methodologies, visions for the field's future, and unexplored areas. Participants had the opportunity to share additional information and comments beyond the survey questions.

The report provides a foundational understanding of acoustic ecology's current state and potential trajectories, integrating responses from sound practitioners globally to a survey on the field's facets, research approaches, and future outlooks, culminating in a direction for the association that is shaped by its members. We extend our gratitude to all participants for their honest feedback in filling out the survey. Your privacy has been a top priority throughout this process.

Identifying key themes

This section aims to delineate the methodology behind the data analysis to ensure transparency in the research process. The thematic analysis of the open-ended responses in the survey revealed some common words and potential themes. It was found that certain responses applied to multiple categories; therefore, they have been cross-categorized to accurately represent their relevance to various aspects of acoustic and sound ecology:

- **Primary Research Interests in Acoustic and Sound Ecology** (Key Words: Sound, research, acoustic, ecology, environmental, soundscape, community, social, noise, urban).
- **Specific Regions, Ecosystems, or Communities of Focus** (Key Words: Urban, community, local, regional, environment, nature, cities, rural, landscapes, public).
- **Emerging Research Methodologies** (Key Words: Sound, recording, technology, data, analysis, digital, acoustic, methods, field, audio).
- **Vision for the Future of Acoustic and Sound Ecology** (Key Words: Research, community, environmental, soundscape, public, awareness, policy, education, conservation, interdisciplinary).
- **Additional Comments or Suggestions** (Key Words: Community, collaboration, global, network, support, education, awareness, diversity, inclusion, policy).

Based on these common words, the following observations were inferred:

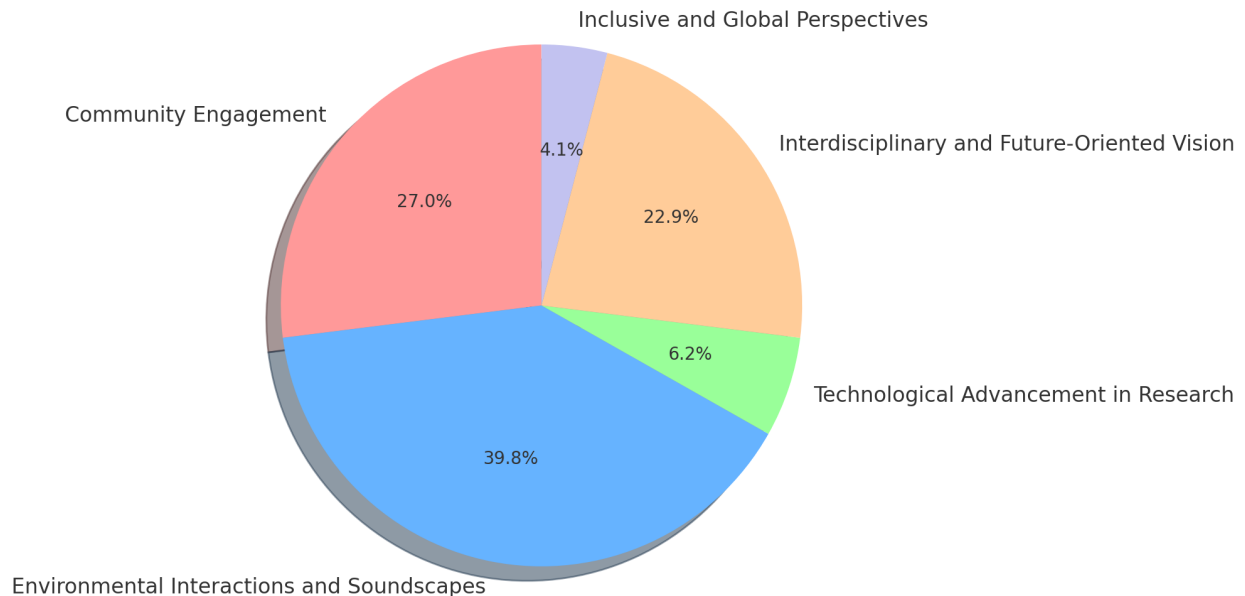
- There is a strong emphasis on community, both in terms of research focus and as a vision for the future.
- Environmental and soundscape aspects are prominent, indicating interest in the interaction between sound and the environment.
- Technology and digital methods are important in emerging research methodologies.
- The future vision includes interdisciplinary approaches and awareness, suggesting a desire for broader engagement with acoustic ecology.
- Policy, education, and conservation are mentioned in the context of future directions, indicating an interest in practical applications and implications of acoustic ecology.

The data was revisited with a focus on search terms, specifically looking for unique mentions within the responses. The inferred themes were then refined and categorized according to the following five areas:

1. **Community Engagement (126 unique mentions):** This theme emerged from words like 'community,' 'social,' and 'public.' It suggests a significant focus on how acoustic ecology is practiced and understood within different social and community contexts and underscores the importance of engaging with various stakeholders.
2. **Environmental Interactions and Soundscapes (186 unique mentions):** Words such as 'environmental,' 'nature,' 'landscapes,' and 'soundscape' highlight the interaction between sound and the environment. This theme captures the interest in studying and preserving the natural acoustic environment and understanding the role of sound in ecological systems.

3. **Technological Advancement in Research (29 unique mentions):** The recurrence of 'technology,' 'digital,' 'data,' and 'methods' points to a theme centered around the use of emerging technologies and methodologies in acoustic ecology research. This includes innovative ways of recording, analyzing, and interpreting sound data.
4. **Interdisciplinary and Future-Oriented Vision (107 unique mentions):** With words like 'interdisciplinary,' 'education,' and 'conservation,' this theme encompasses the desire for a future where acoustic ecology crosses disciplinary boundaries and contributes to educational and conservation efforts.
5. **Inclusive and Global Perspectives (19 unique mentions):** Finally, words such as 'global,' 'diversity,' and 'inclusion' indicate a theme that values a wide array of perspectives and the importance of building a global network of practitioners who contribute to a diverse understanding of acoustic ecology.

The inclusion of 'Technological Advancement in Research' as a category, despite its lower unique mention count, is justified by its pervasive presence across other categories and the understanding that emergent technologies might not yet be widely recognized or named in the field. Similarly, 'Inclusive and Global Perspectives' was prioritized over other potential categories like policy implications, not based on the number of mentions but on its fundamental value in representing under-voiced populations. The focus on inclusivity as a thematic area aligns with the association's commitment to diversity, rather than merely considering policy as an outcome.



Participant demographics

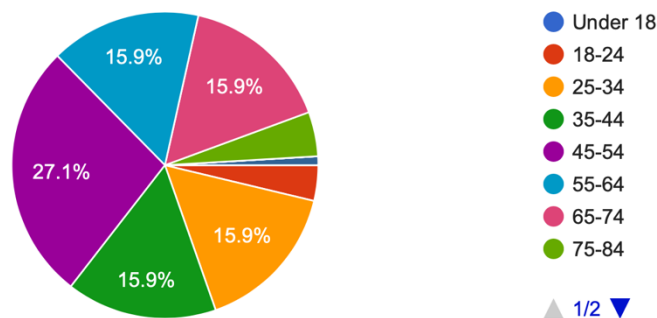
This section provides a detailed insight into the participant makeup, illustrating the diversity of the acoustic ecology community. Analysis of the age distribution shows a wide span, with a notable majority in the 45-54 age bracket, while the educational background of respondents indicates a group with many holding Master's and Doctoral degrees. Geographically, the survey drew an international assembly of participants, with the United States, Canada, Italy, and the United Kingdom most represented, speaking to the survey's global reach. Professional experience among the respondents varied from newcomers to long-standing experts, presenting a spectrum of knowledge and expertise within the field. Additionally, the variety in institutional affiliations emphasizes the interdisciplinary nature of the acoustic ecology community. Collectively, these demographics underscore the vibrant and extensive range of perspectives contributing to the field.

Age Distribution:

The survey respondents displayed a broad range of ages, with the most populous group being those aged 45-54 years, representing 29 individuals. This was followed by equal representation from the 25-34, 35-44, 55-64, and 65-74 age brackets, each with 17 respondents. The survey also included younger adults aged 18-24 years and seniors aged 75-84, with 4 and 5 respondents respectively. Remarkably, there was one respondent aged 100 or above, showcasing the wide generational span of participants.

What is your age range? Please select the appropriate option:

107 responses

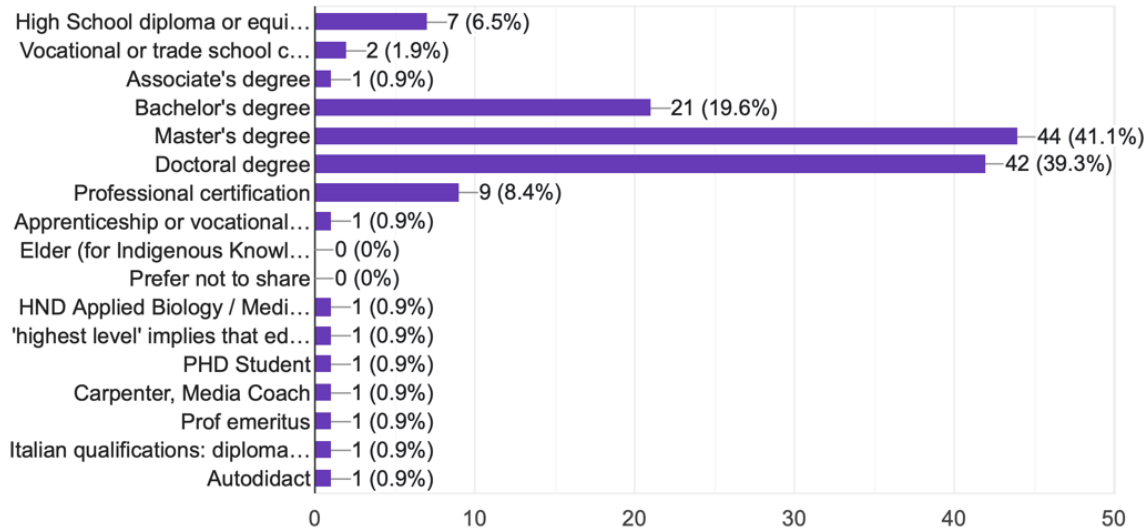


Educational Background:

The survey participants were highly educated, with the majority holding advanced degrees. Thirty-five respondents reported having a Master's degree, and another thirty-five had obtained a Doctoral degree. Thirteen respondents had completed a Bachelor's degree, while others reported various combinations and levels of education, including professional certifications and vocational qualifications, indicative of a highly qualified demographic.

Please select the highest level of education you have completed. You can choose multiple options if applicable.

107 responses



Countries of Residence:

The survey had an international reach, with respondents from various countries, demonstrating the global interest in acoustic ecology. The United States had the highest number of respondents at 34, followed by Canada with 13, Italy with 10, and the United Kingdom with 9. Other countries of residence included:

Australia	France	Belgium
United States	Ireland	Indonesia
United Kingdom	South Africa	Czech Republic
Italy	Spain	Sweden
Canada	Germany	Taiwan
Greece	India	Norway
Portugal	Nigeria	Japan
Finland	Brazil	Mexico
Hungary	Netherlands	

This geographical diversity reflects the worldwide engagement and relevance of the field.

Professional Experience:

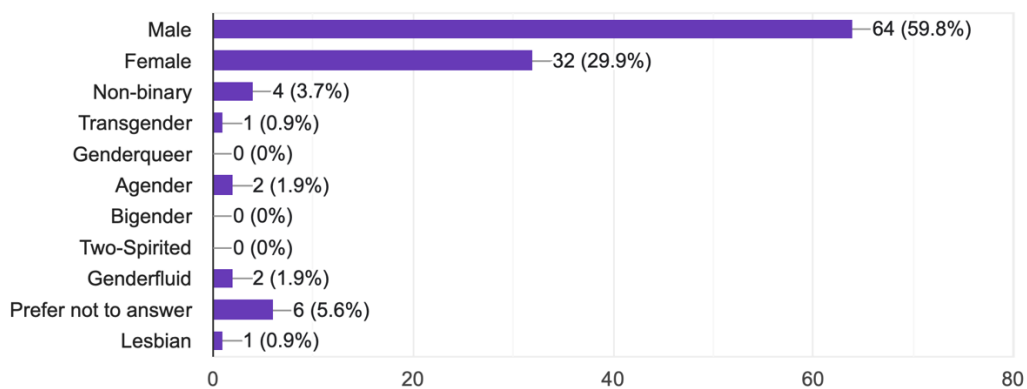
The range of experience in acoustic ecology varied among respondents, with 24 individuals reporting 6-10 years in the field and 20 with 1-5 years. This was closely followed by those with 16-20 years and 21-30 years of experience, demonstrating a depth of expertise within the community. Participants also included a considerable number with 11-15 years, and a smaller, yet significant, cohort with over 30 years of experience, including those in the 41-50 and 51-60 years ranges, and one individual with 61-70 years of experience.

Gender Disparity

Noteworthy was the disparity in gender representation among the survey's respondents. The data indicate a significant predominance of male participants, accounting for a majority with 64 instances, compared to 30 female respondents. This male-dominated representation may highlight existing gender imbalances within the field. Additionally, the survey shows limited representation of non-binary and other gender identities, with only a handful of respondents identifying as Non-binary, Agender, Genderfluid, or combinations thereof. The presence of individuals who preferred not to specify their gender or provided unique descriptions further emphasizes the diversity of gender identities, albeit in smaller numbers. It is possible that this distribution may underscore the need for greater inclusivity and recognition of diverse gender identities in acoustic and sound ecology. Addressing this imbalance is crucial for fostering an environment that values and reflects the full spectrum of gender diversity, which would likely enrich the field with a wider range of perspectives and experiences.

Please select what best represents your gender identity (you may choose more than one). If you prefer not to answer or if none of the provided options can select 'Other' and provide additional details.

107 responses



Racial and Ethnic Disparity:

The survey data on racial and ethnic backgrounds in the field of acoustic and sound ecology indicates a substantial overrepresentation of White or Caucasian respondents. Out of the total responses, 79 individuals identified as White/Caucasian/European, demonstrating a clear predominance of this demographic. This significant

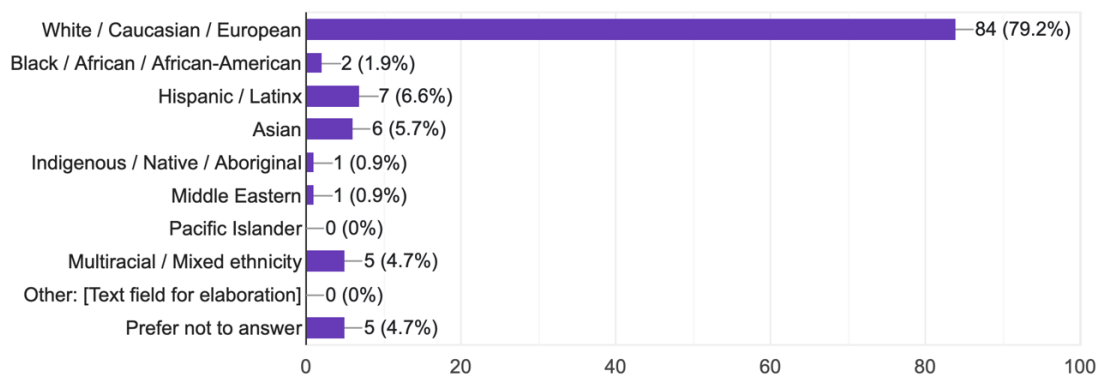
representation contrasts starkly with the much lower numbers of participants from other racial and ethnic backgrounds.

In comparison, only 6 respondents identified as Asian, 5 as Multiracial/Mixed ethnicity, and 4 as Hispanic/Latinx. Additionally, there are 3 individuals who identify as both White/Caucasian/European and Hispanic/Latinx, and 2 as Black/African/African-American. Singular responses were recorded for combinations like White/Caucasian/European with Indigenous/Native/Aboriginal or Middle Eastern backgrounds.

This distribution points to a marked racial and ethnic imbalance within the respondent pool of this survey, reflecting a predominantly white demographic in the field. The limited diversity in racial and ethnic representation underscores the potential need for efforts to encourage and support participation from a broader range of racial and ethnic groups.

Please select the answer that best describes your racial or ethnic background, or choose 'Other' to provide additional details. If you prefer not to answer, you can select 'Prefer not to answer'.

106 responses

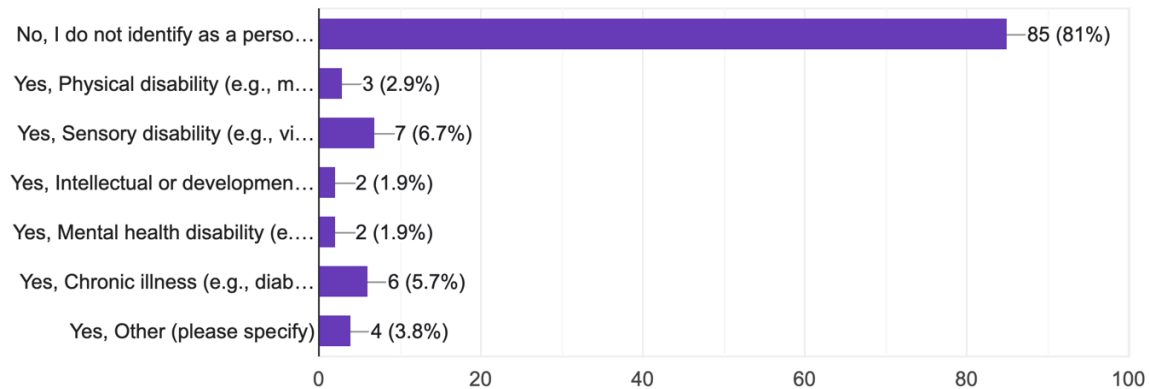


Sensory Disability:

The presence of sensory disabilities among the survey respondents across a range of age groups, particularly with a slight concentration in the 45-54 age range, suggests that sensory disabilities are an important consideration in the field of acoustic and sound ecology. This finding underlines the potential need for inclusive practices and accommodations to ensure that individuals with sensory disabilities can fully participate in and contribute to the field. It also underscores the importance of considering the unique perspectives and experiences of those with sensory disabilities in research and practice, as they can provide valuable insights into the understanding and appreciation of sound and acoustic environments.

Do you identify as a person with a disability? If yes, please select from the list below (you may choose more than one):

105 responses

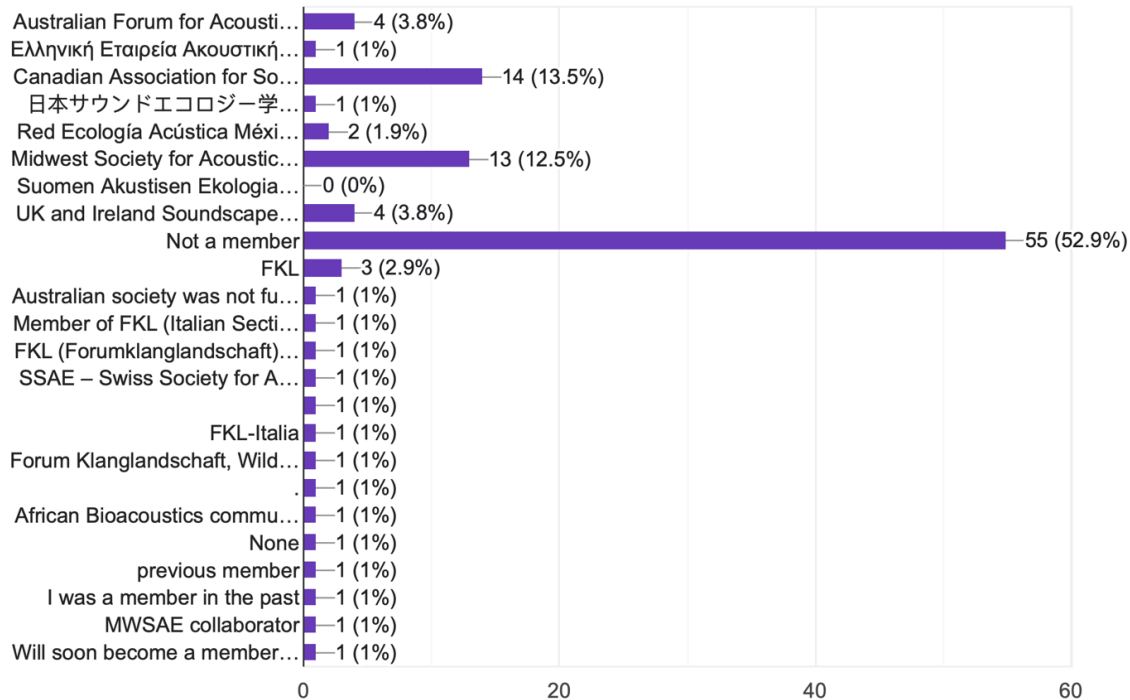


Memberships and Affiliations:

Over half of the respondents (52.9%) are not affiliated with any acoustic ecology association, indicating a significant opportunity for these organizations to increase their membership. The Canadian Association for Acoustic Ecology has the highest representation at 13.5%, which could be influenced by the researcher's affiliation with this organization, possibly contributing to an overrepresentation of Canadian participants. The Midwest Societies for Acoustic Ecology follows closely at 12.5% of respondents. Other associations have minimal representation, suggesting that they might benefit from increased visibility and outreach. The data also hints at a dynamic membership landscape, with some individuals considering joining or having been members in the past, which could warrant further investigation to understand membership trends.

Which acoustic ecology association(s) do you belong to? Please select all that apply or choose 'Not a member' if applicable. You may choose multiple associations if you are a member of more than one.

104 responses



Conclusion:

Despite current challenges regarding equitable representation, the survey data reveals a portrait of a diverse and experienced group of individuals devoted to the field of acoustic ecology. With a wide age range and substantial educational backgrounds, the respondents bring a wealth of knowledge and perspectives to the discipline. The international representation further underscores the universal appeal and importance of acoustic ecology across varied cultural and geographic contexts.

Individual responses

The examples below are selective samples from the data and are not exhaustive. They are synthesized responses, organized under the five themes identified earlier in this report. It should be noted that some responses naturally overlapped multiple themes, which is typical in thematic analysis due to the interdisciplinary nature of the field.

I) What are your primary research interests within the field of acoustic and sound ecology?

1. Community Engagement:

- Soundwalk, exhibitions, sound art, field recording compositions.
- Public sound installation, citizen science, public programs, and environmental education.

2. Environmental Interactions and Soundscapes:

- Ecological sound art, ecoacoustics, and soundscape ecology.
- Impacts of human activity on terrestrial acoustic ecosystems.
- Social and environmental soundscapes, historic soundscapes, past sound environments.

3. Technological Advancement in Research:

- Use of multichannel, ambisonics, live-streaming in ecological sound art.
- Innovative recording practices, including binaural sound artist location performance.
- Development of audio transducers, acoustic monitoring, and soundscape analysis for conservation.

4. Interdisciplinary and Future-Oriented Vision:

- Intersections of creative practice, acoustic ecology, and climate change communication.
- Cross-discipline acoustic machines, interdisciplinary approaches to sound and identity.

5. Inclusive and Global Perspectives:

- Queer futurity in sonic experience, diverse listening practices, and interspecies communication.
- Exploring sonic qualities of space and their implications on social issues like colonialism, racism, gender.

II) If there are specific regions, ecosystems, or communities you focus on in your practice and/or research, what are they?

1. Community Engagement:

- Focusing on a mountain community in northern Italy.
- Working with non-specialist communities, especially people with disabilities.

- Engagement with local communities in schools and urban contexts.
2. Environmental Interactions and Soundscapes:
 - Soundscapes of specific regions like South Australia, Iceland, Brasil and Portugal.
 - Interest in natural ecosystems, like Wood Buffalo National Park (Canada) and water-related ecosystems such as wetlands, bogs, and mudflats.
 3. Technological Advancement in Research:
 - Mention of technological approaches such as spatial sound in Archaeoacoustics.
 - Development of hydrophones for recording in the Arctic regions.
 4. Interdisciplinary and Future-Oriented Vision:
 - Musicologist specializing in the history of settler/Indigenous communities.
 - Incorporating interdisciplinary methods in artistic research, particularly in the Nordic Europe Region.
 5. Inclusive and Global Perspectives:
 - Queer futurity in sonic experience.
 - Inclusive practices in storytelling and education for various demographics, such as children and adults with IDD or neurodivergency.

III) Are there any emerging or innovative research methodologies, techniques, or technologies that you find particularly interesting or relevant to your work?

1. Community Engagement:
 - Active Sound Society, communal singing as social behavior.
 - Location Performance - intuitive improvisation with environments.
2. Environmental Interactions and Soundscapes:
 - Ecoacoustics research, soundscape and AI, sounds of place, sound journals.
 - Phenomenology, ecophenomenology, soundscape ecological theory.
3. Technological Advancement in Research:
 - Audiomoth and the Arbimon platform, LIDAR, immersive audio.
 - Solar-powered art, sustainable arts practices, decolonial approaches.
4. Interdisciplinary and Future-Oriented Vision:
 - Several methodologies crossing media theory and philosophy of technology.
 - Mapping decibels, geospatial mapping (sound mapping).
5. Inclusive and Global Perspectives:
 - Accessibility and inclusion in acoustic ecology.
 - Sonic thinking, animal/plant magnetic fields, human heart/brain rhythms.

IV) How do you envision the future of acoustic and sound ecology, and what areas do you think require more attention and research?

1. Community Engagement:
 - Involvement of citizen scientists in acoustic ecology projects.
 - Community involvement in academic gatherings; public access to academic outputs.
2. Environmental Interactions and Soundscapes:
 - Research on the effect of sound on daily life.
 - Focus on sound reconstruction of environments that can no longer be recorded.
3. Technological Advancement in Research:
 - Emergence of technology in sound recording and modeling.
 - Use of AI for logging and analysis; smaller, more effective sound recording instruments.
4. Interdisciplinary and Future-Oriented Vision:
 - Hybrid approaches that decenter the anthropocentric point of view.
 - Incorporation of noise into Life Cycle Assessments.
5. Inclusive and Global Perspectives:
 - More inclusive engagement with First Nations and Indigenous peoples.
 - Diverse voices and open to dissenting perspectives in the discipline.

These responses reflect the diverse visions for the future of the field, emphasizing community engagement, environmental concerns, technological advancements, interdisciplinary approaches, policy influence, and inclusivity.

V) Is there any other information, or research interest or issues you would like to share that has not been covered in this survey?

1. Community Engagement:
 - Importance of engaging children, youth, and adults sensorially and intimately with environments.
2. Environmental Interactions and Soundscapes:
 - Interest in the interface between technologies and theories of soundscape ecology.
 - Focus on urban violence, urban infrastructures, and everyday life.
3. Technological Advancement in Research:
 - Training in recording techniques and technologies for historic sound design and mapping.
 - Use of emerging technologies in artistic research and sound ecology.
4. Interdisciplinary and Future-Oriented Vision:

- Approaches welcoming social, political, and cultural aspects in soundscape ecology.

5. Inclusive and Global Perspectives:

- More inclusive engagement with First Nations and Indigenous peoples' perspectives.
- Openness to diverse voices and non-traditionalist approaches in the discipline.

These responses reflect additional aspects and perspectives that could be incorporated into the future direction of acoustic and sound ecology.

VI) Thank you for completing this survey. Your valuable input will contribute to the development of a harmonious document that represents the global work being done in acoustic and sound ecology. If you have any additional comments or suggestions, please feel free to include them below.

- Emphasis on training across generations to engage with the environment as interconnected custodians of the planet.
- Suggestion to add more diverse options, including neurodivergent categories, to the survey's disability options (good to keep in mind for future surveys).
- Interest in organizing an International Congress in Acoustic Ecology and forming an International Association of Acoustic Ecologists.
- Desire for greater collaboration between sound artists, recordists, and researchers.
- Interest in extending collaborations with environmental sciences and facilitating more knowledge sharing opportunities.
- Suggestions to focus on the dynamic recovery of WFAE and to involve more disciplines in interaction.

Focus areas

Individual responses have been organized into broad themes, reflecting collective practices and dialogues in the field. This general categorization safeguards the privacy of early-stage projects or those with sensitive content, mitigating the risk of idea exposure. It supports the WFAE's mission while fostering inclusivity and adaptability.

The intention is to direct the WFAE towards enhancing our impact, fostering collaborations, and raising our profile in global acoustic ecology. The use of generalized categorization creates a strategic foundation that serves our mission and promotes broad engagement. This methodology is a calculated move to capture the dynamics of a resilient and dynamic global community.

Community

Sound and Sensory Studies: Auditory Exploration in Nature and Cities	Environmental Art: Awareness and Education Through Creativity	Community Art: Engaging and Uplifting through Local Creativity	Inclusive and accessible artistic collaborations for diverse abilities	Art-based educational outreach programs for diverse age groups
Study of social dynamics in group music and performance art	Exploration of improvisational art in natural environments.	Collaborative projects combining citizen science with acoustic ecology research	Methods for engaging the public through open-access scholarship initiatives	Ways to engage individuals with their environment through multiple senses

Environmentality

Ecological systems and acoustic environments interaction research	Analyzing human impact on terrestrial soundscapes.	Exploring historical and cultural soundscapes	Comparative analysis of regional soundscapes	Studying soundscapes in protected areas for conservation
Integration of AI and technology in soundscape ecology analysis.	Exploring philosophical theories in acoustic ecology (esp. phenomenology)	Studying the impact of daily soundscapes on human behavior and well-being.	Methods for reconstructing lost acoustic environments	Exploring the intersection of soundscape ecology and technology.

Technology

Studying advanced sound capture for environmental art.	Advancements in location-based performance recording, including binaural sound techniques.	Advancements in acoustic tech for environmental monitoring.	Using spatial sound and tech to study acoustics in archaeology.	Developing specialized recording equipment, such as hydrophones, for extreme environments.
Using Audiomoth, Arbimon, and LIDAR for immersive audio.	Solar-powered installations and decolonial approaches in sustainable art.	Emerging technologies' impact on sound recording, modeling, and the arts.	AI's role in analyzing, logging, and enhancing sound recording instruments.	Training in recording techniques for historical soundscape reconstruction and mapping.

Interdisciplinarity

The arts' role in climate change awareness and action.	Studying the influence of sound technology on cultural identity and norms.	Exploring the historical relationship between music and community dynamics, including indigenous and settler interactions.	Theoretical exploration of media, technology, and human experience.	Studying sound's role in defining physical and social spaces.
Artistic practices challenging human-centered views of the world.	Expanding environmental impact assessments to include sound and noise effects.	Exploring how the soundscape intersects with social and political factors.		

Inclusivity

<p>Exploring diverse cultural, biological, and ecological perspectives in sensory experiences.</p>	<p>Examining how auditory and spatial environments contribute to social justice contexts.</p>	<p>Developing universally accessible and inclusive educational and communication strategies.</p>	<p>Interdisciplinary approaches enhancing ecological understanding.</p>	<p>Ensuring cultural narratives include marginalized and Indigenous voices.</p>
<p>Promoting diverse perspectives in global sound research.</p>				

Conclusion

The survey disseminated by the World Forum for Acoustic Ecology has elucidated several focal points within the acoustic and sound ecology community. The demographic data reveal a field with a diverse age range and a high level of education among its practitioners, though it also suggests areas where greater inclusivity could be beneficial, particularly concerning gender and racial representation.

The thematic analysis points to a strong interest in community engagement, environmental interactions, and technological advancements. These areas are not only prevalent in current research but also envisioned as vital to the field's progress. The data suggests that practitioners are keen on integrating innovative technologies with traditional ecological methodologies, which points to a trend towards interdisciplinary approaches.

Considering these findings, it is recommended that the WFAE and its associates focus on developing strategies that enhance inclusivity and equity within the community, such as targeted outreach and support for underrepresented groups. Moreover, fostering interdisciplinary collaborations and maintaining a strong commitment to community-based research could help to broaden the impact of acoustic ecology and ensure that it remains relevant and responsive to societal and environmental changes.

Finally, the survey has acted as a vehicle for the global acoustic ecology community to reflect on its current state and potential futures. The shared vision articulated through the survey responses advocates for a field that is not only technically progressive and environmentally conscious but also socially inclusive and responsive to the needs and voices of its diverse global community. As the field continues to evolve, these collective insights will be invaluable in guiding the strategic direction and fostering a robust, dynamic, and inclusive future for acoustic ecology.