



# Living Earth Community

## Multiple Ways of Being and Knowing

EDITED BY

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# 12. Listening for Coastal Futures

## The Conservatory Project

*Willis Jenkins*

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Eyes widened in surprise as each researcher put on the headphones. Even the two coastal ecologists who had been working here for decades had never before heard the sound. Just below the quiet water lapping at our feet, an oyster reef crackled. Tiny, snapping shrimp amidst the oysters make a punctuated vibration that sounds to human ears like a snapped finger or a dropped pebble. Collectively, these shrimp make it possible for us to hear the reef's structure, as a vertically layered crackling.

The designer of this listening station, the ecoacoustic composer Matthew Burtner, had placed one microphone atop the reef and another inside an oyster shell on the beach. In this way, we were able to hear two worlds simultaneously: the living din of an underwater oyster city, along with surface wind sibilating the dry carapace of a long-dead individual. Trying to still our feet from crunching the millions of shells on which we stood, we listened to the past and future of this coast.

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The Coastal Futures Conservatory foregrounds listening as a form of inquiry that can be ecologically immersive and epistemically integrative. Working alongside a National Science Foundation (NSF)-funded Long-Term Ecological Research site at the Virginia Coast Reserve, the Conservatory connects scientific understandings of coastal change with modes of understanding cultivated in the arts and humanities. Its aim is to open the study of coastal change to multiple ways of knowing, and

then to interleave those knowledges in ways that stimulate integrative understandings of environmental change.

What does it mean to listen for coastal futures? The Conservatory organizes collaborative inquiry around listening in two basic ways. It is an embodied exercise in which all researchers participate, and also a guiding metaphor for attending to living worlds with multiple ways of knowing.

In the first, most literal way of listening, we convene cross-disciplinary research exchanges about coastal change within an intellectual space made by undertaking ecoacoustic listening exercises.<sup>1</sup> Focused attention with handheld microphones at a research site initiates the production of knowledge, by orchestrating an acknowledgment of our enfleshed immersion in soundscapes made by human and nonhuman vibrations. The exercise sets a contemplative threshold, and each researcher, whatever her discipline, comes into the seminar room having been compelled to meditate on her enfleshment in a soundscape made of human, nonhuman, and, especially, her own vibrations. The experience creates a platform for transdisciplinary discussion.

More importantly, the exercises begin to reorient our metaphors of environmental knowing from ocular to aural. North American environmental thought has often aspired to a visual model of knowing, captured in one of Ralph Waldo Emerson's most remembered lines: 'I become a transparent eye-ball; I am nothing; I see all'.<sup>2</sup> His vision suggests a disenfleshed beholding, as if a transparent spiritual presence receiving the self-manifestation of Nature. The Conservatory reorients that tradition by foregrounding the enfleshed ear — an organ that receives not 'all' but just some of those vibrations, mediating these, transforming them into somatic terms interpretable by our minds as 'listening'. Burtner pointed out that other forms of life would perceive the soundscape differently than we did. Each form of life hears the vibrations of the world differently, according to the constraints and affordances of its physiology.

E. O. Wilson, in *The Origins of Creativity*, writes that the limited sensory capacity of humans to perceive the activity of the living

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1 The environmental recording work of Bernie Krause has been foundational for these kinds of exercises and for the emergence of acoustic conservation sciences.

2 Ralph Waldo Emerson, *Nature and Other Essays* (Mineola, NY: Dover Publications, 2009), p. 189.



world helps explain the anthropocentrism of work in the humanities. Epistemic anthropocentrism makes for cultural anthropocentrism, as meaning-making is bound by the affordances of human physiology. Incapable of knowing what it is like to perceive the world as a bat or an oyster, humans tell stories, sing songs, and create their grand projects without attending to the voices of other forms of life. Insensitivity to anthropogenic diminishment of Earth's life, suggests Wilson, stems from the cultural consequences of sensory limitation. The future of nonhuman life depends, in part, on the humanities learning to 'escape the bubble in which the unaided human sensory world remains unnecessarily trapped'.<sup>3</sup>

Our ecoacoustic listening exercises at once focus attention on the sensory constraints of human embodiment, while also expanding our capacity to hear. The apparatus of augmented aurality underscores the mediation of all perception. Listening with a microphone through headphones, my mammalian presence becomes perceptual foreground: the sound of my breathing, the brush of clothing with every small motion, the huge crunching and splashing sounds of a twelve-stone biped attempting to tread gently across a salt marsh. I do not become 'transparent', like Emerson; rather, I sense the life in this marsh — insofar as I do — as one enfleshed within it.

Yet, augmented aurality and designed listening stations also enhance capacities of attention. A hydrophone allows us to hear the crackling life of an oyster reef. That doesn't let us feel what it is like to be an oyster or a reef, but it does let us attend to oyster life in a different way. In that sense, focused listening cultivates a kind of empathy that can deepen scientific understanding, as Karen McGlathery, lead researcher of the Virginia Coast Reserve (VCR), observed. For the sake of honing research attention, McGlathery declared that every new researcher at the VCR should undertake listening exercises.

In fact, that particular exercise has already led to new research. When the environmental scientist Matthew Reidenbach heard the sound made by oysters feeding and filtering, he wondered if variations in oyster activity could be correlated with environmental conditions. With a pair of graduate students from Music and Environmental

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3 E. O. Wilson, *The Origins of Creativity* (New York, NY: Liveright Publishing, 2017), p. 92.

Science, Reidenbach has deployed sensors to record oyster beds in various locations and conditions, in order to investigate whether there may be acoustic signatures of reef health and also to understand how oysters interact with their soundscape.<sup>4</sup> Among other things, it may turn out that anthropogenic vibrations from bridges and boat motors affect oyster activity, which would carry implications for the best places to locate aquaculture and reef restoration, as well as for the design of coastal development.

Designed listening stations push attention a step further by inviting listeners to connect what they are hearing with dynamics of ecological change. Connecting the hydrophone with a shore microphone drew listeners to connect the crackling now of oyster life with the untold cycles of life and death that created the shell beach on which we stood. Another station combined waves lapping against a mudflat with wind rustling through the sea grasses that hold the mudflat in place, inviting listeners to meditate on a micro-dynamic of sea level rise. Listening stations may perhaps cultivate empathic attention to patterns of coastal change.

Sonification of data takes that process yet another step. The Conservatory is transforming VCR data sets on sea level rise and wave action into something humans can hear, so that humans can listen to coastal change in still another way. Transforming data from visual to aural signals allows an audience to experience the science of environmental change in a different somatic register, which can resituate data reception within the immersive experience of hearing. Burtner's compositions then incorporate sonified data sets into musical expression and live performances, thus transforming the science of long-term ecological change into patterned vibrational changes that can be felt in one's body.<sup>5</sup>

Musical expression of long-term data of sea level rise allows audiences to reflect on the emerging species-level scale of human agency, as well as its inextricability from other dynamics of change. Informed

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4 For more information on this research, as well as field recordings and sonifications of data, see [www.coastalconservatory.org](http://www.coastalconservatory.org)

5 'This music is built on techniques of environmental temporality and interrelated energy fluctuations, inspired by an uncommon way of listening to the natural world.' Matthew Burtner, 'Climate Change Music', *South Atlantic Quarterly*, 116.1 (2017), 145–61, at 146, <https://doi.org/10.1215/00382876-3749392>

audiences will know that that the rise in sea level is not entirely driven by anthropogenic forces, which rather interact with and intensify other forces in dynamic that operate over evolutionary time. Yet it remains difficult to imagine. Thinking ‘coupled human-environment systems’ (also known as ‘coupled human and natural systems’) — to use NSF’s clunky terminology — remains a grand challenge in part because responsibility for those systems often seems to depend on distinguishing human drivers within complex systems.

Where ideas of responsibility remain fixated on boundaries, the capacities of the ear may again afford an apt sensory basis for thinking into that imaginative challenge. The philosopher of sound David Dunn writes that ‘when we look at the world our sense of vision emphasizes the distinct boundaries between phenomena. [...] In contrast, the sounds that things make are often not as distinct, and the experience of listening is often on perceiving the inseparability of phenomena.’<sup>6</sup> Burtner’s compositions suppose that when we can hear a dynamic of environmental change, such as sea level rise, our minds are less likely to move to distinguishing and isolating; prioritizing aural over ocular experience disposes our minds to imagine ourselves immersed and participant within what we hear.

For Dunn, that makes music a critically important capacity for developing responsibility for human-influenced ecologies.

It is a different way of thinking about the world, a way to remind ourselves of a prior wholeness when the mind of the forest was not something out there, separate in the world, but something of which we were an intrinsic part. Perhaps music is a conservation strategy for keeping something alive that we now need [...] a way of making sense of the world from which we might refashion our relationship to nonhuman living systems.<sup>7</sup>

If we need music to conserve worlds, then (say Burtner and I) we need a new kind of conservatory: a school of music practice that teaches participants how to listen to and compose with the living world, a school of science practices that conservation with culture, and a school

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6 David Dunn, ‘Nature, Sound Art, and the Sacred’, in *The Book of Music and Nature: An Anthology of Sounds*, ed. by David Rothenberg and Martha Olvaeus (Middletown, CT: Wesleyan University Press, 2001), pp. 95–107, at p. 97.

7 Ibid.

of living that cultivates a wide range cultural capacities to listen to Earth and refashion our relationship with it.

As ecoacoustic composition with long-term ecological research (LTER) data sets creatively expands the experiential basis of our attention, it begins to accomplish something of what Wilson has called the humanities to do: to integrate with sciences in ways that expand sensory limitations of human embodiment and diminish the correlative anthropocentrism of value and regard. Hearing sea level rise within an affective performance makes it more likely that we will regard the phenomenon as significant for the stories by which we make sense of our lives, of our pasts and futures.

Those are interpretive questions for which the humanities are especially well suited. Two Conservatory humanists, the historian Andrew Kahrl and the literary scholar Charlotte Rogers, take cultural memory as their starting point — specifically, exploring how communities have already been listening to coastal change, telling stories about it, and even creating artistic performances in response. An historian of US coasts with a special focus on racial exclusion, Kahrl's research grounds 'coastal futures' in coastal pasts by taking oral histories of longtime Eastern Shore residents (another listening exercise) and by conducting archival research into shoreline development. Meanwhile, Rogers investigates the connected roles of hurricanes and slavery by following cultural responses to hurricanes along a geographic arc that traces the path of slave ships. Following 'the trace lines of trauma', Rogers finds a pattern of literary and artistic response to hurricanes that interprets their cultural meaning. Present in the work of both scholars is attentiveness to dynamics of race and power in shaping, especially along the eastern shores of North America, forms of coastal dwelling.

The Conservatory thus supposes that cultural capacities of environmental listening extend beyond literal listening exercises. In the work of Kahrl and Rogers, the Conservatory employs conventional humanistic methods in order to interpret the political and cultural frames within which Eastern Shore societies make sense of coastal change. In my own work, I am exploring listening as an ethical method and transdisciplinary practice fitting for questions of the Anthropocene.<sup>8</sup>

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8 On the 'Anthropocene', see also 'Anthropology as Cosmic Diplomacy: Toward an Ecological Ethics for Times of Environmental Fragmentation' by Eduardo Kohn in this volume.



In religious and environmental ethics, we need scholarship that deftly pulls research toward grand questions: who is the human driving these changes? How should humans interpret and fit themselves into patterns of the world? What stories shall we tell of the past and future of the coasts?

Metaphors of listening are apt for organizing multi-layered research and inquiring into its significance with one another. Where visual models of integration might try to resolve multiple ways of knowing into a unified vision (which is Wilson's goal), an aural model of integration suggests hearing multiple different things at once. The Conservatory integrates arts, sciences, and humanities seeking resonance without resolution.

The literal ecoacoustic exercises nonetheless remain important. For our Conservatory researchers they offer a shared practice, a form of affective environmental inquiry that serves to ground our intellectual exchanges. With that shared aural experience, our conversation is primed to aspire not toward a unified vision, but toward a vibrating soundscape of thought. Moreover, Dunn holds that the highest possibilities of integration happen when listening is not only a metaphor of knowing but is also grounded in the actual somatic experience: 'the physical act of using our aural sense [...] can become a means to practice and engender integrative behavior'. For Dunn, the exercise of attentive ecoacoustic listening becomes a 'meditative practice' which can 'remind us of the sacred', leading us to rediscover 'our place in the biosphere's fabric of mind'.<sup>9</sup> Perhaps not all our researchers would put it that way, but participants in the Conservatory's first exercises did reflect that it put their inquiries in the context of something larger. Something about listening attentiveness to the living world can induce mythic wonder, which sometimes opens discipline-shaped minds to greater patterns of intelligence.

Being responsive to intelligences beyond the human may help us transform the impoverished notion of the human and the captive humanities. In 'The Human Shore' — a meditation on what the Anthropocene means for postcolonial Atlantic Studies — Ian Baucom writes that the 'interdisciplinary' era of intellectual life that began in tentative exchanges of the life sciences and humanities must now be

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9 Dunn, 'Nature, Sound Art, and the Sacred', pp. 98–99.

deepened into something more transformative for the humanities — and for the human. Moving beyond the ‘conflict of disciplines’ toward a ‘concert of disciplines’ that collectively forges ‘the era of a new humanism’, Baucom observes the paradox that intellectual commitment to the deep future of the planet requires the humanities move beyond the human, drawing its critical ways of knowing beyond love of humanity itself.<sup>10</sup> Organizing a concert of disciplines within that paradox, it seems to me, points toward constellating arts, sciences, and humanities in practices of response to intelligences beyond humanity. Perhaps we can assemble the knowledges we need to reinhabit the human shore by listening to the still-living coast.

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Can the disciplines learn to listen to Earth? In *Braiding Sweetgrass*, Robin Wall Kimmerer observes that while universities often invite students to change the world, we should instead summon them to listen to it. Where settler cultures are characterized by changing lands they have not bothered to understand, Kimmerer suggests that a key pedagogical task is teaching people how to listen to the land’s stories.<sup>11</sup> Yet meanwhile, interdisciplinary institutions for sustainability or resilience invariably tell our publics that we will invent ‘solutions’ for problems of environmental change — implicitly promising them that we will find ways to keep Earth silent. Perhaps we should instead say that we do not yet have the necessary intelligence to imagine decent resolutions to the problems we are causing, but we are inventing ways to listen.

Listening to the land’s story is not alternative to science. Kimmerer, an environmental scientist herself, describes the data-collection apparatus at the Andrews Forest (another LTER site), as instruments for ‘listening to the land for stories that are simultaneously material and spiritual’. The land speaks a language we have either forgotten or have yet to learn. ‘The archive of this language, the sacred text, is the land itself. In the woods there is a constant stream of data, lessons on how we might live, stories of

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10 Ian Baucom, ‘The Human Shore: Postcolonial Studies in an Age of Natural Science’, *History of the Present*, 2.1 (2012), 1–23, at 9, <https://doi.org/10.5406/historypresent.2.1.0001>

11 Robin Wall Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants* (Minneapolis, MN: Milkweed Editions, 2013).

reciprocity, stories of connection.<sup>12</sup> The question here is whether we listen to data as if they were elements of a language of living intelligence.

The imaginative task of listening to the land is vast for disciplines that have made the impossibility of doing so an axiomatic assumption of knowledge. Even when we work across arts, sciences, and humanities, our collaborations can enforce that epistemic anthropocentrism. Indeed, the model of ‘integration’ lauded by the National Academies of Science,<sup>13</sup> often means just adding knowledges about culture and people to knowledges about environments. Thus, Noel Castree observes, ‘epistemic unity is vouchsafed by a presumptive ontological monism’.<sup>14</sup> Yet, the ontology of nature and culture in which Earth cannot speak and humans should not try to listen is — as Phillippe Descola has shown — a minority view.<sup>15</sup> In rejoinder to E. O. Wilson, it must be said that it is not all humans who experiences themselves as incapable of knowing other beings, and not all societies that have been so anthropocentric; those are modern North Atlantic accomplishments.

Recognizing the contingent historical character of the rule against listening to the land is especially critical in a time of global environmental changes driven by modern North Atlantic ways of life. For it is not just a matter of curiosity that other biocultural ontologies exist; we (who know in modern ways) seem to need capacities of listening to intelligences that our disciplines have excluded. At the end of his striking ethnographic account of *How Forests Think*, Eduardo Kohn writes: ‘If “we” are to survive the Anthropocene [...] we will have to actively cultivate these ways of thinking with and like forests’.<sup>16</sup>

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12 Robin Wall Kimmerer, ‘Interview with a Watershed’, in *Forest Under Story: Creative Inquiry in Old-Growth Forest*, ed. by Nathaniel Brodie, Charles Goodrich, and Frederick J. Swanson (Seattle, WA: University of Washington Press, 2016), pp. 41–49.

13 The National Academies of Sciences, Engineering, and Medicine, *The Integration of Humanities and Arts with Science, Engineering, and Medicine in Higher Education* (Washington, DC: The National Academies Press, 2018), <https://doi.org/10.17226/24988>

14 Noel Castree, ‘Global Change Research and “the People Disciplines”: Toward a New Dispensation’, *South Atlantic Quarterly*, 116.1 (2017), 55–67, at 63, <https://doi.org/10.1215/00382876-3749315>

15 Phillippe Descola, *Beyond Nature and Culture*, trans. by Janet Lloyd (Chicago, IL: University of Chicago Press, 2013), <https://doi.org/10.7208/chicago/9780226145006.001.0001>

16 Eduardo Kohn, *How Forests Think: Toward an Anthropology beyond the Human* (Berkeley, CA: University of California Press, 2013), p. 227, <https://doi.org/10.1525/>

The idea of the Anthropocene seems for some an excuse to give up on listening. If ever Earth had something to tell us, goes one line of Anthropocene thought, the human roar now overwhelms it. Can we listen as beings whose mammalian embodiment is not only processing and mediating the incoming vibrations of the world, but is also creating reverb, intensifying its own vibrations and silencing those of others, entering into the chorus of Earth in dissonant ways?

Some of the old ways of practice cultivated in ancient traditions may offer analogies of practice for holding the paradoxes of nonanthropocentric knowing in an anthropogenic world. In several traditions of ancient practice, contemplative practice works to open oneself to the claims of the whole world by overcoming preoccupations with human cares, even while also holding that the world's existence depends, in some way, on human performance of ceremony or liturgy. They aim for nonanthropocentric existence in an anthropogenic world.

The scholar of Christian mysticism, Douglas Christie, has argued for 'an approach to ecology that understands the work of cultivating contemplative awareness as critical and necessary to its full meaning'. Ecological ways of knowing, he argues, need to be grounded in a sense of deep reciprocity with the world. We need 'practices that will help us feel and respond to the claim of the living world upon our lives'.<sup>17</sup> These may arise from recognized religious traditions, says Christie, but a contemplative ecology may also be created from other cultural sources. Christie combines premodern monastic practices with meditations from contemporary North American environmental thought. What the traditional practices offer are long-tested forms for dwelling in paradox and for overcoming human selfness. An ecological spirituality may take many different forms, writes Christie, but 'a common feature of such spirituality or spiritual practice is a deepening of awareness of oneself as existing within and responsible for the larger whole of the living world'.<sup>18</sup> Thinking about those practices amidst uncertainty,

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california/9780520276109.001.0001. See also 'Anthropology as Cosmic Diplomacy: Toward an Ecological Ethics for Times of Environmental Fragmentation' by Eduardo Kohn in this volume.

17 Douglas Christie, *Blue Sapphire of the Mind: Notes for a Contemplative Ecology* (New York, NY: Oxford University Press, 2013), p. xi, <https://doi.org/10.1093/acprof:oso/9780199812325.001.0001>

18 Ibid., p. 20.

loss, and suffering in the context of so much negative environmental change, Christie writes:

Here I believe is where spirituality, ethics, and politics converge. Without real feeling for the immensity in which we live and move and have our being, a sense of relationship and intimacy with it, will it really be possible to care for it? [...] It is here that the contemplative traditions of thought and practice, especially those that risk confronting the darkness, have so much to teach us. [...] It invites and perhaps even helps create in us a posture of humility: a willingness to listen, receive, and respond to all that is unfolding before us. But it also brings with us a great risk, inviting a relinquishment of self so profound it is in fact a kind of death.<sup>19</sup>

It may seem jarring, or at least intellectually indecorous, to frame the work of the Conservatory in terms of spirituality. Turning to religious arts of dying, however, indicates the depth of dislocation I think necessary to reconstellate knowledge practices for a world of rapid anthropogenic change. Not only do we need to reintegrate arts, sciences, and humanities; we need to develop skills of knowing that open human minds to listen and respond to other intelligences of the living world. As Castree puts it, we need the separated disciplines 'not merely to collaborate but *to unsettle each other* so that a new *modus operandi* emerges'.<sup>20</sup> The modes of *knowing* necessary for anthropogenic ecologies, I think, also reflect on themselves as proposed ways of *being* with the living world. I want to know of them: can they be transformed by what they hear?

On the Eastern Shore, as we listen for coastal futures, we assay to do so with all forms of coastal intelligence, human and nonhuman. As the oyster reefs interact with their soundscape, what are they telling us? As the barrier islands move with the seas, they embody a kind of intelligence we need for a world of sea level rise. What story are they telling?

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19 Douglas Christie, 'TheNightOffice: Loss, Darkness, and the Practice of Solidarity', *Anglican Theological Review*, 99.2 (2017), 211–32, at 223–34.

20 Castree, 'Global Change Research', 65.



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