



Extinction, Epistemology, and Ecogogy: Knowing, Learning, and Loving in a Diminishing World

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Abstract

The extinction of species is not just an ecological crisis—it is also an epistemological one. This chapter explores three interwoven dimensions vital to faith-engaged educational contexts: science, community, and metaphysics. It highlights how unrelenting biodiversity loss diminishes our capacity to know, relate, and live meaningfully. The chapter coins and promotes the concept of *ecogogy* as a distinctive eco-pedagogical posture for learning—embodied, affective, relational, and nature-based—sensitively attuned to the holistic well-being of the Earth. Ecogogy is defined here as follows: *Ecogogy encompasses modes of ecological learning that are embodied, affective, and relational—rooted in a mindful and reverent proximity to the more-than-human world and to nature as teacher. It foregrounds the ethical, epistemological, and spiritual dimensions of education in an age of ecological crisis, affirming an ecocentric orientation that holds the Earth in sacred esteem. Ecogogy calls for holistic forms of learning that emerge from, respond to, and remain accountable to the Earth.* This chapter invites educators to view conservation not merely as the stewardship of life, but also as an imperative for safeguarding the conditions for learning, knowing, and cherishing life in all its forms across generations.

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1 Preamble and Positionality

An abridged version of this chapter was first presented by the author as an invited keynote address at the research symposium *Educating for Hope*, organised by the National Institute for Christian Education (NICE) and hosted by Alphacrucis University College in Parramatta, Sydney, Australia, on 9 May 2025. Set against this contextual background, the chapter has been developed with a faith-engaged readership in mind, addressing itself openly to Christian educators. This emphasis is intended and explains the occasional use of terms and concepts such as creation and God. Portions of this chapter leading up to the conceptual introduction of *ecology* develop ideas first explored in an earlier article (written from a worldview-neutral positionality), published open access under a Creative Commons 4.0 licence and adapted here with permission (Luetz 2026). A short public-facing version also appeared in *The Conversation* (“With every extinction, we lose not just a species but a treasure trove of knowledge”)¹. While inclusive engagement with other religions, worldviews, and indigenous spiritualities remains essential (as openly acknowledged in this chapter), this discussion focuses specifically on Christianity and Christian readers, for historical, socio-cultural, and epistemological reasons. Nevertheless, the insights offered here will resonate across a range of faith traditions.

A key contribution of this chapter lies in the conceptualisation and promotion of ecology as an ecologically attuned pedagogy that is embodied, affective, relational, and nature-based. Advocating for experiential and nature-immersive modes of ecological learning, the chapter invites faith-engaged educators to view conservation not merely as the stewardship of life, but also as an ecotheological imperative for safeguarding the conditions for learning, knowing, and cherishing life in all its forms across generations. In doing so, this chapter contributes to the growing body of work at the spirituality–sustainability nexus, seeking to inspire faith-informed education that honours the reciprocal and reverential interrelationships between people and the biosphere. It aims to bridge the science–spirituality divide by fostering consilience between the sciences and humanities, offering an integrated vision of learning for a world in ecological decline.

2 Introduction

This chapter invites us to reflect on a dimension of our planetary crisis that is often overlooked. The extinction of species is not merely an ecological crisis—it is, at its heart, an epistemological one. Extinction closes doors to discovery, forecloses

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relational possibilities, and erodes the conditions for experiencing the divine in the created world. As species vanish, they take with them genetic information, ecological functions, cultural significance, and spiritual insight—precious knowledge that, once extinguished, is gone forever. The word “extinction” itself comes from the Latin *extinctio*, meaning “to quench”—to put out a light (McKean 2005, p. 597). Figuratively speaking, what is being quenched today is not only the existence of individual species, but entire sources of illumination for science, for community, and for the human spirit. We are witnessing what might be called a gradual “dimming” of the knowable world. I begin by establishing the contemporary context of the unfolding extinction crisis.

Science tells us that we are currently living through the sixth mass extinction event in the history of life on Earth (UN 2019; Tollefson 2019). But unlike previous events that were precipitated by natural cataclysms, the contemporary extinction era is overwhelmingly driven by human activities (Ripple et al. 2017; IPBES 2019). Extinction rates are now tens to hundreds of times greater than natural background levels—that is the natural pace at which species might become extinct over geological time scales in the absence of human influence. The United Nations recently warned that one million species may be committed to extinction this century unless urgent action is taken (UN 2019; Tollefson 2019). This is an unfathomable loss.

The biodiversity collapse we are living through is not just a numerical decline, but a catastrophic reduction in the richness of life itself. Yet the epistemological implications of extinction—the consequences for knowing, for learning, and for meaning-making—remain curiously under-explored in the literature (Heise 2016; Tanswell 2024). It is this gap I wish to address. Each extinction erases opportunities for discovery, for companionship, and for spiritual reflection. Each extinction narrows the horizons of future scientific inquiry. Each extinction diminishes human relationality with non-human life. And each extinction mutes the natural world’s sacred resonance, dimming its reflection of divine splendour and presence.

This chapter will explore these ideas by examining extinction and its epistemological consequences across three interwoven dimensions: Science, community, and metaphysics. In Part 1, I will explore the implications of extinction in the area of science, covering the progressive elimination of possibilities for discovery and innovation. In Part 2, I will examine the implications of extinction in the realm of community, covering the erosion of relational and experiential bonds with other creatures. In Part 3, I will sketch the implications of extinction affecting the dimension of metaphysics, covering the diminishment of nature’s capacity to embody divine glory. In Part 4, I will conceptualise ecology as an ecologically attuned pedagogy that is embodied, affective, relational, and nature-based. I strive to show that the conservation of biodiversity is not simply an ecological or ethical duty. It is a theological and epistemological imperative—an act of safeguarding the conditions for knowing, relating, and worshipping within the fullness of biodiverse life. Having set the stage, let us turn first to the scientific dimension—and explore how extinction is closing the doors on discovery and learning.

3 Part 1: Extinction and the Epistemology of Science

If extinction represents a quenching of the light of knowledge, nowhere is this more measurable than in the realm of science. The scientific consequences of species loss are profound. Extinction irrevocably reduces the possibilities for discovery, innovation, and empirical understanding. Every species has a uniquely expressed genetic code and represents biological intricacy. When a species vanishes, the world loses not only its ecological footprint, functions, and fascinations, but also untapped reservoirs of knowledge—genetic blueprints, biochemical pathways, ecological relationships, along with potential medical cures.

A striking example comes from the extinction of the gastric-brooding frog, until recently native to a small rainforested area of Queensland, Australia. This extraordinary amphibian had the remarkable ability to turn its stomach into a womb, brooding its young tadpoles internally by shutting down gastric acid production (Fig. 1).

Scientists believed that studying this biological marvel could have yielded critical insights into treating human conditions like acid reflux and certain cancers (Ceballos and Ehrlich 2023). Specifically, Gerardo Ceballos and Paul Ehrlich lamented the extinction of the gastric-brooding frog as a deeply regrettable loss of opportunity for human science, exclaiming: “Now they are lost to us as experimental models” (Ceballos and Ehrlich 2023, p. 4). Tragically, due to habitat destruction and other human pressures, the gastric-brooding frog became extinct in the mid-1980s. Its extinction also snuffed out its potential to engender new knowledge forever (Fig. 2).

Such stories are tragically common and supported by a vast body of scientific literature. Biodiversity holds untold potential for breakthroughs in fields as diverse as pharmacology, agriculture, materials science, and climate resilience. Extinction forecloses these possibilities. As species disappear, humanity’s library of life—its vault of potential future discoveries—grows smaller. The Christian social ethicist



Fig. 1 Gastric-brooding frog (screenshot from archival material). (Photo: Mike Tyler; publicly available: <https://youtu.be/HyJDfWaKY6U>)

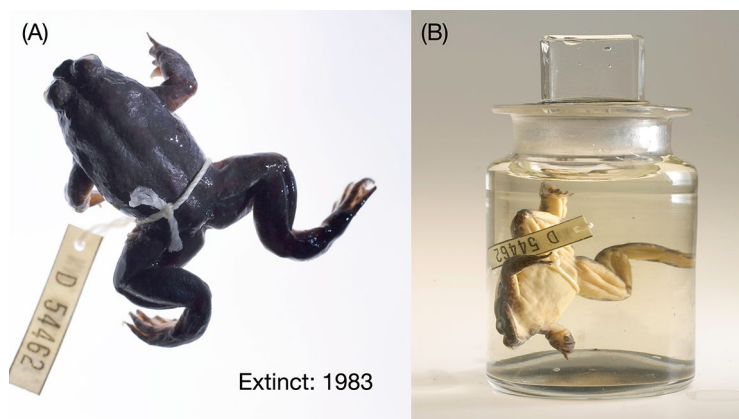


Fig. 2 Preserved specimen of the now extinct gastric-brooding frog. (Photo (a): Benjamin Healley; (b): Michelle McFarlane (Credit: Museums Victoria (CC BY 4.0); <https://collections.museums.victoria.com.au/specimens/331047>))

Richard Davis (2021) has argued that extinction diminishes human influence and control over the natural world. Quoting the protestant reformer Martin Luther (LW 1955–1986, 2:58–59), he concludes that humans are progressively “losing dominion over the creatures given in creation” (Davis 2021, p. 103). He cautions:

Ironically, as humanity gains further technological, military, and economic domination over the biosphere and atmosphere, and as we enter the Anthropocene, we are, from Luther’s perspective, losing power, in so far humanity’s God-given dominion is over an ever-shrinking pool of species (LW 2:100). (Davis 2021, p. 103).

Significantly, the scientific effects of individual species extinction are compounded by scale. Species extinction rarely occurs in isolation. Ecological research demonstrates the phenomenon of so-called “extinction cascades” (Ceballos et al. 2020; Strona and Bradshaw 2022), whereby the losses of individual species destabilise entire ecosystems. When key pollinators, seed dispersers, or predators vanish, there are concurrent cascading declines in associated species, threatening entire life networks that evolved to sustain intricate webs of biodiversity. This cascading effect magnifies the overall epistemological loss. Entire ecological dynamics—food webs, species interdependencies, and biochemical cycles—may collapse before they can even be fully understood. Scientists Ceballos and Ehrlich (2023) lament this cascading loss, using the vivid metaphor of the “mutilation of the tree of life” (p. 1).

Not all species losses are immediately visible or equally lamented. Many extinctions happen quietly, out of public view, among species that were rare, obscure, or had limited ranges. One such example is the Catarina pupfish (Ceballos et al. 2017). It was first discovered and described in 1972 in Mexico. In an attempt to save the fast-declining species, some were brought into captivity in the 1980s and 1990s, but proved very difficult to maintain. In 1994, this tiny fish became extinct in the wild. Gradually, the captive populations also perished. The last male died in 2014; the



Fig. 3 The last male Catarina pupfish (*Megupsilon aporus*). (Photo: Christopher Martin (The last captive-bred male *Megupsilon aporus*; Credit: C. Martin's UC Berkeley lab (CC BY-SA 4.0)). (Scale and text added by author))

species is now classified as extinct (Fig. 3). In such cases, the full extent of epistemological loss may never even be realised—we cannot miss what we never had the chance to study, understand, or appreciate.

This hidden attrition of knowledge is as unfathomable as it is unsettling. And yet we must move beyond instrumentalism and towards intrinsic knowledge value. It is crucial to resist framing extinction solely in utilitarian terms, as the loss of potential medicines, technologies, or ecosystem services. While such instrumental values are important, they represent only a fraction of what is lost. Fundamentally, each species represents a living testament to the creative exuberance of life. Each species embodies intrinsic value and wonder, regardless of its perceived “usefulness” to humans. This broader view aligns with an ecocentric epistemology which recognises that knowledge embedded in nature is not merely a human resource but part of a shared planetary inheritance—a testimony to the complexity, resilience, and beauty of life itself (Luetz and Nunn 2023).

To summarise Part 1, the current sixth mass extinction event threatens not only the diversity of life but also the diversity of knowledge. It inevitably narrows the scope of scientific inquiry, diminishes opportunities for serendipitous discoveries, and accelerates the erosion of the biological foundations upon which much of our scientific knowledge creation is built. If left unchecked, it will leave future generations impoverished—not only ecologically, but also intellectually. As Matthews et al. (2024) observe, the extinction of 562 bird species represents a loss equivalent to “3 billion years of unique evolutionary history” (p. 2). Such staggering figures are a sobering reminder of what is at stake. Having explored the devastating impacts of extinction on science and knowledge creation, we now turn to the second domain: the erosion of human–nature relationships, and the communal and relational losses we suffer as species disappear.

4 Part 2: Extinction and the Epistemology of Community

Building on the previous discussion of the profound scientific losses caused by species extinction, we now shift focus to its equally devastating impact on human community—on the bonds of relationship, identity, and belonging that we share not only with each other but also with the broader community of life. Extinction erodes more than biodiversity; it shrinks the relational world within which human beings can find emotional connection and cultural richness. It progressively diminishes areas of “companionship” linked to the natural world—those countless, often unnoticed, interactions with non-human life that ground our experiences in joy, wonder, and reverence.

I begin by describing the loss of so-called “companion species”. The concept of “companion species”, as explored in some of my previous research, highlights the relational epistemology inherent in human–non-human encounters (Luetz and Nunn 2023). Birds, mammals, trees, fish, insects—all participate with us in a shared relational web. Companion species are not merely resources or aesthetic backdrops to human life. Companion species are co-participants in the broader story of co-dependent life. As each such species disappears, the web of relationality frays. Opportunities for kinship, learning, emotional enrichment, and encounter are irrevocably lost (Buckley 2022). This loss is not abstract; it is felt in everyday experiences—fewer birdsongs at dawn, emptier forests, quieter rivers, and diminished opportunities for companionship (Bogoni et al. 2023; Morrison et al. 2021).

Research confirms what many intuitively know: direct engagement with nature—activities like birdwatching, hiking, or simply spending time in biodiverse environments—fosters psychological well-being, resilience, and a deepened sense of belonging (Buckley 2022; Leal Filho et al. 2024; Soga and Gaston 2016). When biodiversity declines, these avenues for flourishing contract accordingly. As species vanish, human lives grow poorer—emotionally, socially, and imaginatively (Clayton and Myers 2015; Hinds and Sparks 2008).

Ecologist, Dr. Masashi Soga, and conservationist Professor Kevin J. Gaston, have coined a helpful concept to characterise this contraction of human-nature interaction, calling it the growing “extinction of experience”. The “extinction of experience” closely trails the extinction of ecology, compounding cultural impoverishment and eroding both personal and collective identity (Soga and Gaston 2016). This relational loss has profound cultural implications, particularly for communities whose identities are intimately tied to the natural world.

Indigenous peoples, in particular, often maintain cosmologies that enshrine kinship with specific species, landscapes, and ecological processes (Kealiikanakaoleohaililani and Giardina 2016; Nelson and Shilling 2018). For such communities, extinction represents not merely the disappearance of biological entities but the termination of sacred relationships and ancestral obligations. The loss of species and their traditional habitats sever lines of ancestral transmission, disrupt ceremonies, and hollow out the cultural foundations of collective memory.

Examples abound, profoundly impacting indigenous peoples and traditional communities. From the sacred groves protected by communities in Ghana, West

Africa, to the profound connection between Saltwater People and Sea Country in Australia, extinction strikes at the heart of cultural resilience (Aniah and Yelfaanibe 2018; Bock et al. 2021; McNiven 2004). In this meaning, biodiversity conservation is not merely a scientific enterprise. It is an act of cultural preservation, safeguarding the conditions for intergenerational memory, relational continuity, and communal flourishing.

Extinction challenges us to enlarge our understanding of “community”. In an era of mass biodiversity loss, we are called to recognise that community is not limited to human beings alone, but encompasses all creatures who, alongside us, constitute the relational fabric of life. A primary rainforest, especially one designated as a World Heritage site, powerfully embodies such an ecocentric vision of community—a living, enduring web of numberless companion species co-existing in dynamic, interdependent relationships, where no single life form holds ontological primacy (Fig. 4). This perspective of “community” resonates deeply with many indigenous cosmologies, many of which conceive of land, water, animals, and even rocks not as inert matter but as sentient kin—relational partners imbued with agency and meaning (LaDuke 2016; Nelson 2020; Yunkaporta 2019).

Christopher Clark, scientist and conservation bioacoustics researcher, has likened the progressive extinction of species to instruments being plucked out of an orchestra:

Everywhere there is life, there is song. The planet is singing—everywhere. But what’s happening is we’re killing the voices ... It’s like having a symphony [and] one by one, you just pluck each of the instruments out of the orchestra ... and then it’s gone. (Clark 2015; n.p.)

To offer just one example of a disappeared voice from the orchestra of life, avian researchers have documented the extinction of the Kaua’i ‘ō‘ō (*Moho braccatus*), a small black and yellow Hawaiian songbird that was declared extinct in 2023 (Harmon 2024; Lewis 2018; Matthews et al. 2024; Singh 2023). The Discovery



Fig. 4 World Heritage-listed Gondwana Rainforest in Dorrig National Park, Australia. (Photo: Taras Vyshnya / Adobe Stock, licensed)



Fig. 5 The Kaua'i 'Ō'ō (*Moho braccatus*)—a small, black-and-yellow Hawaiian songbird—was officially declared extinct in 2023. The illustration, created by John Gerrard Keulemans in 1893, depicts an adult and juvenile *Moho braccatus*. (Image courtesy of Smithsonian Libraries (<https://www.sil.si.edu/DigitalCollections/nhrarebooks/rothschild/CF/description-search-results-all.cfm>; public domain: https://www.sil.si.edu/DigitalCollections/nhrarebooks/rothschild/plates/plates_pdf/SIL6-3-153a.pdf))

Channel has posted a recording of its last song² for posterity with the following accompanying commentary: “he is the last male of a species singing for a female who will never come, and now his voice has gone” (Clark 2015; n.p.). Alarming, birdsong is declining worldwide, diminishing the richness of our shared sensory environment (Haskell 2022; Morrison et al. 2021) (Fig. 5).

The epistemological consequences of extinction are inclusive of all companion species for one simple reason: set within an ecocentric frame of reference, species are “companion species” not only to humans but also to each other (Luetz and Nunn 2023, p. 2037). The progressive disappearance of voices from the symphony of life leaves the entire community of companion species progressively

² Available here: <https://youtu.be/5THqAY3u5oY> and here: <https://youtu.be/tRaC2Rx3BVY>

impoverished—socially, culturally, and experientially (Buckley 2022). This diminishment is felt across the whole community of life—humans included. This is luminously documented by David George Haskell (2022) in his book *Sounds Wild & Broken*, which synthesises the consequences of extinction as:

... bequeathing the future an impoverished sensory world. As wild sounds disappear forever and human noise smothers other voices, Earth becomes less vital, blander. This decline is not a mere loss of sensory ornament. Sound is generative, and so the erasure of sonic diversity makes the world less creative. (Haskell 2022, pp. xiii-xiv).

To summarise Part 2, extinction reduces opportunities for companionship and kin-based relationships with companion species, diminishing diversity, relationality, culture, and community, and constraining what may be collectively and aesthetically known, shared, and experienced. If biodiversity is relational and participatory, then the loss of species is not only a scientific or ecological crisis but a rupture within the communion of life—a profound injury to the bonds between all companion species. Simply put, vanished species are no longer knowable, relatable, and appreciable. Having explored how extinction erodes scientific knowledge and relational community, we now turn to the third dimension: the metaphysical implications—how extinction obscures humanity’s knowledge of divine glory revealed in creation itself.

5 Part 3: Extinction and Knowledge of the Transcendent

If extinction impoverishes scientific inquiry and relational community, it also strikes at the metaphysical heart of knowing—the ways in which humans apprehend the sacred, seek/find meaning, and experience divine immanence. The natural world has long served not merely as a backdrop for human life, but also as a living testament to truths greater than ourselves. In Christian theology, nature has been regarded as a form of general revelation—a mode through which God’s attributes, creativity, and love are made visible and intelligible to humankind (Knight 2006; Brunner et al. 2014). To gaze upon the heavens, marvel at the intricacy of a rainforest ecosystem, or witness the migrations of birds—these have long served as pathways into wonder, worship, and a reverent awareness of transcendence. This insight is echoed by the Italian Catholic mystic Paul of the Cross (1694–1775), who encouraged his contemporaries to be attentive to God’s presence in nature:

When you are walking alone, listen to the sermon preached to you by the flowers, the trees, the shrubs, the sky, and the whole world. Notice how they preach to you a sermon full of love, of praise of God, and how they invite you to glorify the sublimity of that sovereign Artist who has given them being. (Brunner et al. 2014, pp. 24–25).

Book 5 of the Psalms (107–150), also called the “Hallelujah Psalms”, invites the more-than-human world to join a cosmic liturgy of praise:

Praise the LORD from the earth, you great sea creatures and all ocean depths,

lightning and hail, snow and clouds, stormy winds that do his bidding,
 you mountains and all hills, fruit trees and all cedars,
 wild animals and all cattle, small creatures and flying birds. (Psalm 148:7–10).

The community of praise unmistakably extends beyond humans. The final verse of Book 5 is the concluding apex of a building crescendo that enjoins all living beings to actively participate in all-encompassing worship: “Let everything that has breath praise the LORD. Praise the LORD” (Psalm 150:6). It is the climactic culmination of a liturgical arc, summoning everything that breathes into doxology.

Yet extinction diminishes this capacity for transcendent encounter. It constricts the avenues through which divine glory can be apprehended. Each species lost represents not merely a scientific or relational loss, but a diminishment in the “chorus of creation” singing praises to its creator. When coral reefs bleach and die, when birds fall silent, when forests stand emptied of diversity—the world becomes less vibrant, less exuberant, and less articulate in its testimony to divine abundance and beauty.

Theologian Jonathan Merritt (2010) has suggested that creation serves as a kind of “secondary scripture”. Complementing the bible, nature reveals God’s character alongside the written word. He reasoned: “When we destroy creation, which is God’s revelation, it’s similar to tearing a page out of the Bible” (Merritt 2010, p. 2; citing theologian John Hammett).

If we accept Merritt’s simile—that extinction is epistemologically analogous to “tearing a page out of the Bible” (Merritt 2010, p. 2)—how then are we to comprehend the United Nations’ (2019) warning that by the end of this century, “Humans are driving one million species to extinction” (Tollefson 2019, p. 171)? I offer a comparison. If the extinction of each species were equated to erasing a single verse from the canon of scripture, by the end of this century, humanity would have expunged the entire bible more than 28 times. Depending on which bible version is used, this number may increase to 43.³

Unrelenting biodiversity loss progressively reduces the scope of divine self-disclosure. The mass bleaching of Australia’s Great Barrier Reef offers a particularly stark example. Once a dazzling underwater mosaic of colour and life—and dubbed one of the seven natural wonders of the world—this World Heritage Site has been profoundly diminished by climate-induced bleaching (UNESCO 2024; Climate Council 2024). For indigenous custodians, locals, and tourists alike, the reef’s unrelenting slide towards degradation is not only an environmental disaster but a profound spiritual and metaphysical loss (Marshall et al. 2019; McNiven 2004; Conroy 2019). Epistemologically speaking, sacred immanence—understood by

³My estimates are based on the following data. Variations in verse counts stem from differing canons, translation approaches, and systems of versification across religious traditions and editions of the bible. These figures give a rough idea: The Protestant bible (for example, NIV or KJV) has 66 books and approximately 31,000 verses; the Catholic bible includes an additional seven deuterocanonical books and, therefore, has 73 books and approximately 35,000 verses; The Hebrew bible (Tanakh) follows distinct divisions and versification systems, resulting in a canon of 24 books and approximately 23,000 verses.

many as divine presence or the self-disclosing mystery of God—becomes progressively less knowable and discoverable in and through the Great Barrier Reef as its defacement continues (Luetz et al. 2018, pp. 59–60).

Ecological grief, in this context, becomes not only an emotional response but also an epistemological one—a recognition that as species and ecosystems vanish, so too do the opportunities to encounter, know, and cherish what many discern as God’s immanent presence in nature. Indigenous perspectives and cosmologies illuminate the spiritual dimensions of biodiversity loss and underscore the metaphysical gravity of ecological diminishment (Bock et al. 2021; McNiven 2004). Many indigenous traditions view the land and its creatures as sentient, relational, and sacred (Langton et al. 2024). Extinction within these frameworks is not merely biological loss, but the severance of spiritual relationships and the fraying—or in many cases, rupture—of covenants between humans and non-human kin (Kealiikanakaoleohailani and Giardina 2016; Nelson 2020). For example, Yanyuwa Aboriginal people of northern Australia describe certain marine species as part of their extended family networks. Set within a context of high relationality, the loss of these species is akin to the loss of entire groups of relatives—leading to a grief that encompasses both the physical and spiritual dimensions of existence (Bock et al. 2021; Kearney et al. 2019; Roos Jacobs et al. 2025). There is much to learn from such perspectives. Reframing biodiversity as a sacred trust—and extinction as a spiritual wound—could profoundly reorient conservation ethics from technocratic management towards covenantal responsibility, reciprocal custodianship, and reverential care.

Finally, one of the gravest dangers of extinction is what we may call “metaphysical amnesia”. As species disappear, future generations may forget that the world was ever more abundant, more vibrant, more capable of disclosing its divine glory. This notion of metaphysical amnesia builds upon related concepts such as “environmental generational amnesia” (Kahn 1999, 2002; Kahn and Weiss 2017), “creeping normalcy” (Diamond 2005, p. 425), and the “shifting baseline syndrome” (Soga et al. 2018)—all of which describe the gradual forgetting of ecological abundance across generations. Metaphysical amnesia extends this line of thought by highlighting not only a loss of memory, but a progressively diminishing spiritual sensibility—a fading capacity to perceive nature as a site of worshipful wonder, within which divine immanence can be experienced. I briefly examine these concepts before synthesising their relevance to metaphysical amnesia.

Environmental generational amnesia, a concept introduced by Peter Kahn (1999), describes how each generation comes to regard the progressively degraded state of the environment as normal:

The problem of environmental generational amnesia is that nature gets increasingly diminished and degraded, but children of each generation perceive the environment into which they are born as normal. Thus, across generations, the baseline shifts downward for what counts as healthy nature (Kahn and Weiss 2017, p. 7).

In this way, environmental generational amnesia obscures the true scale of extinction from each new generation, masking ecological loss, and dulling the memory of a once more biodiverse world. Similarly, in his seminal work *Collapse*, Jared Diamond (2005) uses the term “creeping normalcy” (p. 425) to describe how gradual environmental decline—such as species extinction—can go unnoticed over time due to its slow, incremental pace:

If the economy, schools, traffic congestion, [or species extinction] is deteriorating only slowly, it's difficult to recognize that each successive year is on the average slightly worse than the year before, so one's baseline standard for what constitutes 'normalcy' shifts gradually and imperceptibly. It may take a few decades... before people realize, with a jolt, that conditions used to be much better... and that what is accepted as normalcy has crept downwards (Diamond 2005, p. 425).

Through creeping normalcy, the memory of former ecological plenitude recedes from view, nurturing a metaphysical amnesia in which emerging generations forget that the world was once more diverse, more resplendent, and more capable of bearing and emanating traces of divine glory. Finally, “shifting baseline syndrome”, a term coined by Daniel Pauly (1995, p. 430), similarly characterises progressive environmental memory loss. As extinction continues unchecked,

people's accepted thresholds for environmental conditions are continually being lowered. In the absence of past information or experience with historical conditions, members of each new generation accept the situation in which they were raised as being normal (Soga et al. 2018, p. 222).

In summary, as species disappear, each generation recalibrates its sense of ecological abundance based on present conditions, rather than recognising the fuller and more exuberant biodiversity of the past. Over time, extinction becomes less visible—less emotionally, morally, and spiritually salient—as baseline expectations are unconsciously reset and gradually lowered. Metaphysical amnesia dulls our spiritual sensibility, blunting our capacity to perceive nature as a living tapestry, teeming with biodiverse life, and evoking worshipful wonder at a divinely imbued world.

Drawing on rich theological and ethical traditions, Christian educators are uniquely positioned to resist metaphysical amnesia by engaging the doctrines of creation, incarnation, stewardship, and eschatology. By bearing witness to the beauty and complexity of the world that is being lost, they may cultivate practices of remembrance, gratitude, and ecological lament. Having explored the devastating consequences of species extinction for science, community, and metaphysics, we now turn to the final part of this chapter to ask: how might Christian educators respond—not with despair, but with courage, hope, and faithful action?

6 Part 4: Conclusion—Educating for Hope in a Diminishing World

Throughout this chapter, we have reflected on the epistemological dimensions of extinction: how it erodes the foundations of scientific knowledge, ruptures the bonds of relational community, and obscures the metaphysical pathways through which transcendent meaning can be found in the exuberant beauty of biodiversity. We have seen that extinction is not merely an ecological phenomenon. It is an epistemic crisis. It closes down avenues of discovery, relationship, and spiritual insight. It

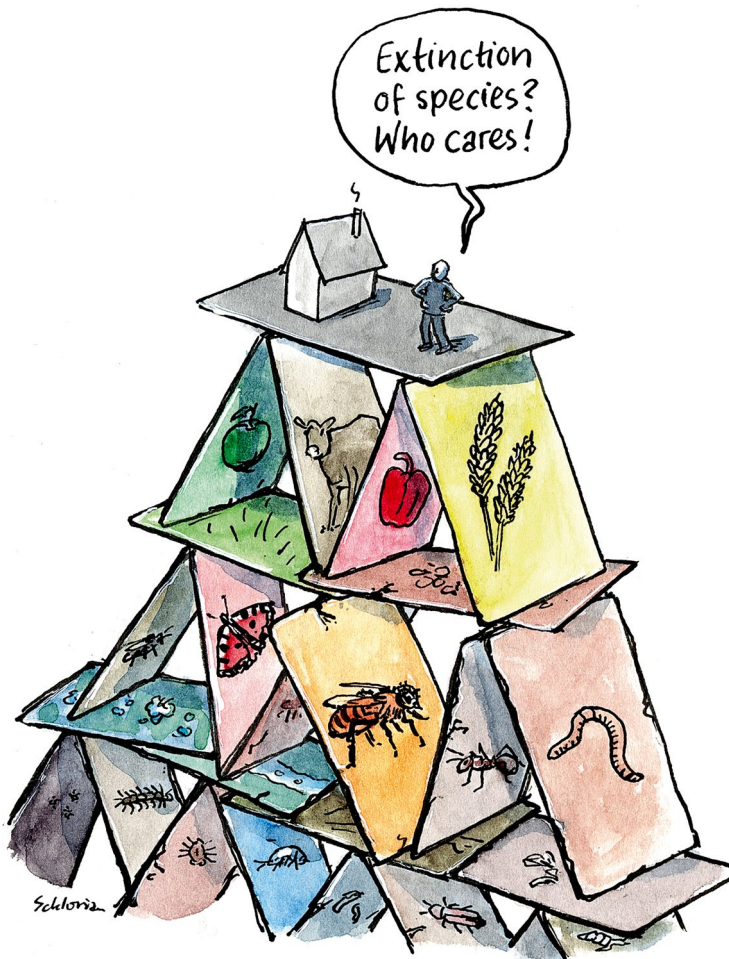


Fig. 6 A haunting illustration of extinction as a shared undoing—an existential unravelling in which the disappearance of species undermines the very foundations of meaning, memory, knowing, and collective survival. (Artwork © Stefan Haller (schlorian.ch), used with kind permission and with sincere thanks to the artist for his generosity)

narrows the horizons of meaning. It shrinks the conditions under which present and future generations might learn, know, and live fully.

Spanning the intersecting domains of science, community, and metaphysics, extinction entails multifaceted implications that are difficult to qualify—let alone quantify. In my previous work (Luetz 2026, p. 301), I described the epistemological consequences of extinction as “ubiquitous—the losses are irreversible, cascade across ecosystems, affect all companion species, carry potentially civilisation-scale consequences for humanity”, and ultimately accelerate what Ceballos et al. (2017, p. E6089) have called “the depletion of Earth’s inspirational and aesthetic resources.” The enormity of what is at stake has been strikingly illustrated by the Swiss artist Stefan Haller (Fig. 6).

In this final part of my chapter, I invite Christian educators to view conservation not merely as the stewardship of life, but as a theological imperative for the safeguarding of biodiversity and the conditions for knowing, learning, and loving life in a diminishing world—that is, cherishing its beauty, honouring its interdependence, and committing to its flourishing. To this end, I introduce ecology as a viable educational strategy.

In Christian theology, hope is not naïve optimism. It is the assurance that, even amidst brokenness, God’s redemptive purposes endure—even as “the whole creation groans” in anticipation of redemption (Romans 8:22). Hope catalyses participation in the healing of creation, recognising that God’s covenant extends not only to humanity but to “every living creature” (Genesis 9:12). Conservation, therefore, is not optional for Christian educators or communities. It is a high-stakes theological imperative—an expression of our human vocation to live in reverent relationship with the Earth, grounded not in utility alone, but in gratitude, wonder, and covenantal faithfulness.

To conserve biodiversity is to safeguard the conditions for knowing, relating, and worshipping within the fullness of biodiverse plenitude. It is to honour the manifold ways in which God’s self-disclosing glory is embodied and revealed through the mysteries and intricacies of ecosystems, the resplendence and beauty of biodiversity, and the wonders and marvels of life itself. In this sense, conservation is, fundamentally, an act of love.

Given the magnitude of the extinction crisis, how can Christian educators respond? While ecology is a worldview-inclusive concept with relevance across faith traditions, this chapter explores its application within a Christian education context. To advance ecology as a framework for faith-informed environmental education, I offer the following conceptualisation:

Ecology encompasses modes of ecological learning that are embodied, affective, and relational—rooted in a mindful and reverent proximity to the more-than-human world and to nature as teacher. It foregrounds the ethical, epistemological, and spiritual dimensions of education in an age of ecological crisis, affirming an ecocentric orientation that holds the Earth in sacred esteem. Ecology calls for holistic forms of learning that emerge from, respond to, and remain accountable to the Earth.

Ecogogy, though newly introduced here as a term, is conceptually grounded in established traditions of environmental education, ecopedagogy, and ecotheology. It builds on the seminal contributions of scholars in environmental and sustainability education who have championed systemic, experiential, and place-based modes of learning—approaches that explicitly challenge anthropocentric, privatised, and instrumentalist conceptions of nature (Bowers 2006; Palmer 1998; Sterling 2001). In a related vein, ecogogy extends the commitments of ecopedagogy (Kahn 2010) by foregrounding epistemic humility, grief literacy, and attentiveness to metaphysical loss. It also resonates with emerging ecological epistemologies which contend that biodiversity loss entails both the disappearance of species as well as the erosion of entire ways of knowing (Abram 1996; Rose 2011). As such, ecogogy reimagines learning as an intentional response to epistemic diminishment. In doing so, it aligns with core themes in ecotheology—emphasising the Earth’s sacramentality and nurturing practices of lament, reverence, and attentiveness to the fingerprints of the divine within creation (Luetz 2024; Luetz and Leo 2021). In synthesis, I propose ecogogy as a distinctive eco-pedagogical posture for learning—embodied, affective, relational, and nature-based—sensitively attuned to the holistic well-being of the Earth. Set against this background, ecogogy is proposed here as a timely framework for sustaining the vitality of the natural world by nurturing a sacrosanct, tender, and familial love for our more-than-human world in peril.

Ecogogy invites learners not simply to acquire factual knowledge about biodiversity loss, but to engage bodily, emotionally, and intimately with nature. It fosters empathy, wonder, grief, and hope. It enjoins us to learn from and within nature—rather than about it from without (Buxton et al. 2021). It reconnects students with the world as a living, relational reality—not an abstraction, but a gift entrusted to their reverential care. Given that most humans now engage with nature “almost exclusively via the interface of a screen” (Buxton et al. 2021, p. 355), there is an urgent need to counter extinction’s invisibility through nature-proximate living, learning, and conscientisation (Wilson 2012)—practices that resist metaphysical amnesia. As Craps (2024) put it: “Acknowledgement of nature’s past abundance and diversity has to go beyond mere cognition and into the realms of affect and embodied experience for it to be effective” (p. 52).

Research by Kahn and Weiss (2017) demonstrates how nature-proximate education can counter environmental generational amnesia, which conceals the true extent of extinction and erodes memory of a richer, more biodiverse past:

One way to solve the problem of environmental generational amnesia is to use the same mechanism that initially led to the problem in the first place. In other words, if lack of interaction with nature has partly caused the problem, then interaction with nature can help solve it. (p. 12).

At a practical level, Kahn and Weiss (2017) call for more direct human-nature interaction: “Make those interactions slightly deeper, slightly more wild than within one’s normal range. Design educational environments to promote such interactions. Design ... diverse and rich interactions with nature.” (p. 20).

In practice, ecological education might build upon and entail:

- *Paradigmatic foundations* that foster epistemic plurality, humility, and attentiveness to worldviews that transcend scientific rationalism and resist reductionist, technocratic framings;
- *Outdoor learning experiences* that nurture attentiveness to local species and ecosystems and support a deepening sense of ecological belonging and care;
- *Storytelling and cultural engagement* that honour indigenous perspectives and relational ways of affectionate nature-knowing;
- *Rituals of lament* that acknowledge ecological loss, honouring the memory of extinct species and desecrated places with reverence;
- *Offerings of gratitude* that celebrate the enduring beauty and inestimable worth of the more-than-human world, cultivating care and custodianship for all that remains;
- *Integrative curricula* that weave together science, theology, ethics, and art in exploring nature's matchless richness and fragile vulnerability;
- *Nature-immersive educational practices* that foster tactile, affective, and sensory-rich experiences—such as birdwatching, contemplative walking, and environmental art.

Such approaches are crucial for suspending “sensory extinction” (Abram 1996; Haskell 2022), countering the “extinction of experience” (Soga and Gaston 2016), and resisting the metaphysical amnesia that threatens to sever future generations from the memory of a more abundant and Spirit-infused world.

To close, I draw on a phrase that was popularised during the Enlightenment by philosopher Immanuel Kant (1724–1804) as a rallying cry for intellectual empowerment, self-determination, and epistemological ingenuity (Kant 1784): “*Sapere aude*”. This Latin phrase can be translated as “dare to know”. Originally heralding the Enlightenment’s confidence in human reason, today, *sapere aude* could be reclaimed and recast as a call for epistemological courage in the face of ecological diminishment. To dare to know is to refuse denial. It is to confront the uncomfortable truths of biodiversity loss. To dare to know is also to mourn—to allow ourselves and our students to feel the full weight of ecological grief. And above all, to dare to know is to act—to shape educational practices, community commitments, and theological imaginations around the sacred task of conservation.

Educators and scholars within Christian contexts are uniquely positioned to foster this courageous knowing. Christian educators can model for their students a posture that is simultaneously intellectually rigorous, relationally attuned, and spiritually grounded. We can bear witness to the sacredness of creation—not only in words, but in our ways of teaching, learning, and living.

The extinction crisis demands nothing less than a renewal of epistemology—a recovery of the scientific, relational, emotional, and spiritual dimensions of knowing that tie us to the more-than-human world. A proactive posture that, even amidst diminishment, calls individuals and communities into deeper kinship with companion species, deeper reverence for life, and proactive participation in God’s

redemptive work. Christian educators face both the challenge and the calling to meaningfully nurture generations who will see, hear, grieve, celebrate, and safeguard the living testimony of God's wonders—so that the light of knowledge, of relationship, and of divine presence may continue to shine, even in a world at risk of dimming.

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